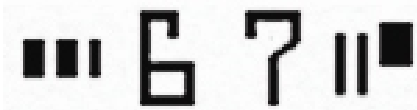


A TROY Group, Inc. White Paper



Three Bryan Drive
Wheeling, WV 26003 USA
(800) 633-2266
www.troypgroup.com

Hewlett Packard vs. Lexmark Toner Cartridges and Printers Why HP is the right choice for MICR printing



Introduction

This paper explains the important design and development technology differences between Hewlett Packard and Lexmark toner cartridges. It explains how these differences could adversely affect print quality and MICR readability leading to an increase in the total cost of ownership.

Problem Statement

MICR check printing is a business critical application. Businesses and organizations printing checks cannot afford to have printer down-time, checks that do not clear the central banking system, or the associated bank charges.

Solution

Properly designed MICR cartridges, for use in Hewlett Packard LaserJet Printers, have inherent design advantages that support superior consistency, reliability, and low cost of ownership over the life of the printer.

Advantage 1

HP integrated toner cartridges, for use in LaserJet printers, replace all critical components with each new cartridge installed. This assures that each user experiences consistency and reliability throughout the life of the cartridge.

Advantage 2

The toner and development process used in Hewlett Packard LaserJet printers is more conducive to the MICR printing application.

Advantage 3

Hewlett Packard LaserJet printers are designed for, among other things, durability and have a demonstrated track record for reliability.

Summary

Hewlett Packard's innovative toner cartridges and rugged LaserJet printer design provide a superior technological solution for the MICR printing application.

Consistency and Reliability

Hewlett Packard Integrated/AIO Toner Cartridge

- ◆ Figure 1 illustrates a cross sectional view of a HP toner cartridge. As shown, the Primary Charge Roller (PCR) is located within the HP toner cartridge. This roller applies a uniform charge directly to the imaging drum (OPC) (Figure 2). The PCR is subject to wear and therefore is replaced with each new cartridge.
- ◆ All other critical printing components are also replaced when each new cartridge is installed, including the OPC and developer roller, assuring consistency and print reliability throughout the life of each cartridge.

There is no guesswork, on component wear, when using Hewlett Packard Integrated/AIO toner cartridges.

Lexmark Toner Cartridge

- ◆ In most popular Lexmark printers, the PCR is part of the printer, instead of the cartridge. The PCR is replaced according to the maintenance schedule of the printer. Changing the PCR is an operator function, which should be done on a projected maintenance schedule; leaving potential for operator error. Since it comes in direct contact with the OPC, any defect on the PCR will exhibit print quality problems.
- ◆ Many new models of Lexmark printers are designed to use a separate “photoconductor kit”, allowing the reuse of the OPC up to a recommended number of prints. The toner used in MICR printing is very abrasive to components in Lexmark cartridges, especially the OPC. Testing has shown that the OPC in Lexmark MICR cartridges fail well before the stated life of a photoconductor kit.

Print defects often occur with wear on the PCR and OPC. The reuse of cartridges components, like in Lexmark laser printers, significantly increases the chance of print defects, since the PCR and OPC are exposed to excessive wear. Print defects could result in out-of-specification MICR characters, rejected checks, and associated bank charges.

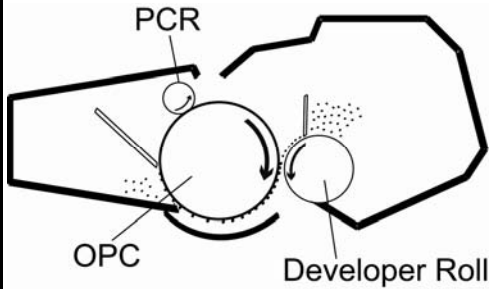


Figure 1

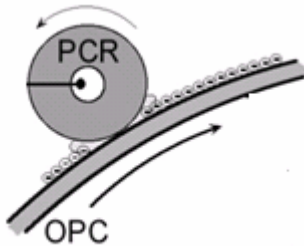


Figure 2

MICR Compatibility

Hewlett Packard LaserJet Cartridge

- ◆ The patented Toner Projection Development, also referred to as “Jump Gap Technology” used in HP LaserJet printing systems, employs a magnetic toner. As a result, Hewlett Packard LaserJet toner contains 40-50% iron, a toner formulation which is naturally conducive to MICR toners.
- ◆ “Jump Gap Technology” refers to the toner jumping across a gap between the magnetic roll to the OPC surface (Figure 3). This is done by applying a voltage to the Developer Roll sleeve.
- ◆ “Jump Gap Technology” prevents friction between the Developer Roll and the OPC, thereby minimizing wear on these critical components.

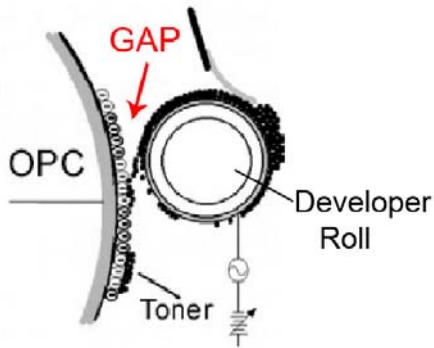


Figure 3

Due to the iron oxide used in the formulations MICR Toner is abrasive by nature. The “Jump Gap Technology” design is favorable for use with MICR toner since there is no contact producing minimal abrasion between the critical components.

Lexmark Laser Printer Cartridge

- ◆ Lexmark uses a Contact Development Method which does not require magnetic toner. Lexmark toner contains 0-10% iron. This cartridge is not designed for an iron-based toner, and requires significant iron-oxide loading for use in MICR applications.
- ◆ In Contact Development, the Developer Roll acts like an ink pad rotating past the toner trough (hopper) picking up a thin layer of toner and transferring the toner to the OPC (Figure 4). The OPC and Developer Roll are continuously in contact with one another.



Figure 4

The Contact Development Design used in Lexmark Laser printers is not complimentary for use with an abrasive MICR toner. This design creates contact wear on critical cartridge components, which often results in dark streaks from PCR wear and light printing due to OPC wear. These defects result in unreadable MICR characters as well as out-of-specification MICR characters, rejected checks, and associated bank charges.

Monochrome Laser Printers Shipments

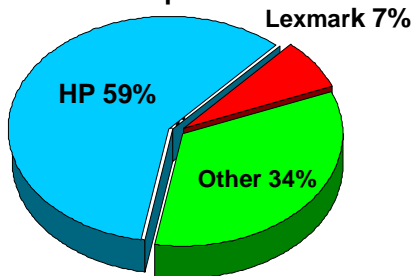


Figure 5 (b)

Printer Reliability

Hewlett Packard Reputation

- ◆ PC Magazine's 19th Annual Reader Satisfaction Survey states that the Hewlett Packard monochrome laser printer line is "alone at the top" with reliability rankings "significantly better than average". The same survey states that Lexmark printers "bring up the rear...with worse-than-average scores" and reliability rankings "significantly worse than average". (a)
- ◆ Numerous design advantages are employed in HP LaserJet printers which result in superior reliability over the printer's life.
- ◆ HP continually ships more monochrome printers than all other competitors combined. This is a testimonial to the Hewlett Packard reputation for quality and reliability, see Figure 5.

Summary

Hewlett Packard's cartridge design and toner development process for laser printers is better suited to the MICR printing application. The cartridge design and toner development process used in Lexmark printers is not well suited to MICR printing. Over the life of a printer these differences can affect reliability as well as MICR readability during the bank clearing process. Inherent design advantages of HP LaserJet printers also help deliver a more reliable printing solution for MICR check printing.

References

- (a) PCMag.com, by Cade Metz, 8/21/2006
- (b) Docutrends, 2005 US Monochrome laser printer shipments, combined 20 ppm through 70ppm



About TROY MICR Toner

- ◆ TROY Group, Inc. is a 15 year member of the Hewlett Packard Solutions Business Partner Program and the only member that manufactures MICR Toner for use in HP LaserJet Printers. HP warranty and service contracts are fully supported by HP when TROY MICR toner cartridges are used in HP LaserJet printers.
- ◆ TROY MICR Toners are custom designed for use in HP LaserJet printers using the manufacturer's printer and fuser settings. This is not the case with some MICR Toner cartridges designed for use in Lexmark printers where higher fuser settings must be used.
- ◆ TROY Group, Inc. is an expert in MICR toner, manufacturing MICR toner from raw materials and filling all new HP toner cartridges in a state-of-the-art ISO 9001:2000 certified facility.
- ◆ TROY Group, Inc. is active in the ongoing battle against check and document fraud with patented anti-fraud solutions. TROY MICR Toner Secure™ includes a tamper evident feature, while TROY Laser Indelible Solution™ provides the highest level of prevention against document alteration available for print on-demand applications.