POWERLASER

We put the **POWER** in your **LASER** printer.

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Laser printer cartridges contains critical elements that require replacements in order to produce a successful and quality remanufactured cartridge:

- Toner
- Wiper Blade
- Doctor Blade
- Recovery Blade &
  Magnetic Roller Sealing Blade
- Magnetic Roller/ Sleeve
- PCR (Primary Charge Roller)
- OPC (Organic Photo-Conductor) Drum

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TONER

The toner is a fine powder composed of fine plastic particles. The most common type of toner used is micro-fine particles of carbon and iron. This toner allows waterproof printing after it has been printed on the paper. The toner we used commonly use at POWER LASER is MICR (Magnetic Ink Character Recognition) toner, which is a special toner that retains magnetic field.

Because there are iron particles in the toner, it can be picked up with a magnet.

The first component involved in transporting the toner is the **MAGNETIC ROLLER** (see more info below). The toner is stored inside a toner hopper in the cartridge. The opening of the hopper is covered with a magnetic roller that picks up the toner to be transported to the drum.

To prevent large uneven heaps of toner from being picked up at one time, the opening between the magnetic roller and the toner hopper is measured off with a component known as the **DOCTOR BLADE** (see more info below). With the correct gapping on both sides of the Doctor Blade, just the right amount of toner is allowed to pass through the opening. A gap too narrow will result in too light a print, and a gap too wide will result in either excessive dark printing and/or leakage.

Our pre-packed toner bottles are set at 15% more than what original equipment manufacturer (OEM) offered in a new cartridge. You will expect 15% more print yield for all our POWER LASER brand of cartridges.




WIPER BLADE

The wiper blade is a polyurethane strip that rides against the length of the drum and covers the waste bin. It is the most expensive component in a toner cartridge, contrary to the popular belief that the OPC drum bears that title.

It is frequently the cause of premature wear and pinhole defects in the OPC drum. Wiper blade "flipping" can result in cartridge failure.

Being an integral component in a toner cartridge, is in constant contact with the OPC drum. Its function is to thoroughly wipe off any residual toner from the drum before the next imaging cycle. Any defect in the cleaning edge lets toner pass by the blade, resulting in a black streak on the printed page. It is a vital component that balances friction and electrostatic force.

As the drum rotates with the 1/3 of a page image on it, and places the image on the paper, some of the toner is still left on the drum and must be cleaned off before the next 1/3 of the image can be placed on the drum.

If it is not cleaned off, the first 1/3 of the image will be repeated in a ghost-like background of the second 1/3 of the image, and the second 1/3 of the image will also be repeated in a ghost-like background of the third 1/3 of the image.

The wiper blade prevents this from happening. However, the edge of the wiper blade must be precision sharp and smooth. The slightest little nick, scratch, or bow will allow unwanted image to pass through and may result in a ghosted repeated image, scratch marks, or lines on the page.

As the wiper blade scrapes the toner from the drum, it drops it into the waste bin. Because the toner in the waste bin has been charged, it can no longer be used.

DOCTOR BLADE

The Doctor Blade has mainly two functions:

- To regulate the amount of toner available on the magnetic developer roller.
- Help electrically charge the toner so that it properly develops the image on the OPC drum.

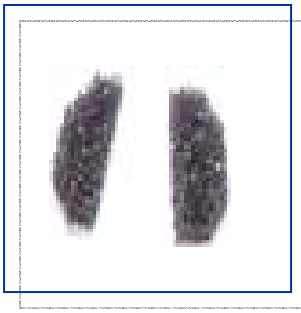
Their surface finish, hardness and dimensional accuracy are all critical to proper functioning.

Problems like streaks, light print, ghosting, white lines, banding and voids are often due to worn, degraded, dirty, or aged doctor blades causing improper flow of toner.

The doctor blade will cause dramatic variations in print quality if becomes warped and loses its force against the developer sleeve (magnetic roller sleeve), the toner layer will vary in both charge and thickness.

The toner which has a lower melting point has greater tendency to stick to the doctor blade. Most cartridges at the end of the life have toner stuck to the blade. If the blade is not replaced, the cartridge is likely to fail.

New doctor blades are also applied with polymerized coating to reduce tendencies of toner sticking or attaching onto the blade; and prevents aging due to oxidation and out-gassing, stopping doctor blade failure.

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RECOVERY BLADE & MAGNETIC ROLLER SEALING BLADE

Recovery Blades act as a seal between the OPC drum and the waste bin to prevent toner in the waste bin from leaking back past the OPC drum and dropping onto the paper, leakage here would create a "Sprinkling "print defect. Material composition, adhesive performance, dimensional accuracy and edge quality are all critical to proper functioning.

The opening to the waste bin is lined with the wiper blade on one side and the recovery blade on the other side. The recovery blade is a thin mylar strip that also rests against the length of the drum.

When the cartridge is in operation, the wiper blade will be on top and the recovery blade on the bottom. As the drum rotates and places the image on the page, the remaining image from the print first passes over the recovery blade, then is scraped clean by the wiper blade. The toner falls downward toward the recovery blade, which scoops it into the waste bin.

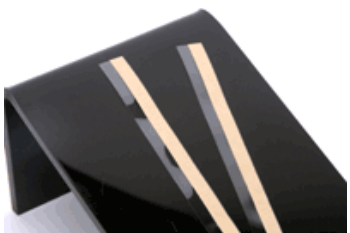
If the recovery blade is rippled, bowed, nicked or scratched, or missing, the toner that is scraped from the drum by the wiper blade will fall onto the paper.

The amount of damage to the recovery blade will determine the amount of toner that will drop on to the page. It could be anything from light peppered dots to dark heaps or chunks.

Original equipment manufacturer (OEM) has sealed the recovery blade perfectly to prevent toner leakage. POWER LASER has sufficient evidence and experience to refurbish and reuse the OEM part instead of replacing it as changing the blade is a tricky business.

If any blade is found faulty, it will not be reuse but discarded (including the hopper). Replacement will not be done completely.

** Magnetic Roller Sealing Blade functions the same as the Recovery Blade. Its position is next to the Doctor Blade, controlling the release of toner onto the Magnetic Roller.*



MAGNETIC ROLLER

This is the most important component for producing solid print density.

As the magnetic roller rotates, toner is attracted to it by a permanent magnetic axle, as a result, toner powder is properly charged resulting in increased image density. As the magnetic roller sleeve surface wears, it loses its ability to properly hold toner resulting in decreasing image density (light prints).

Commonly, only the Magnetic Sleeve is replaced since the charging effect depends greatly on the part. The rest of the assembly only act as a holder to the magnetic sleeve.

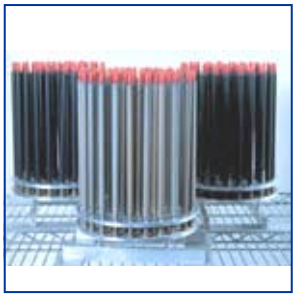



PCR (PRIMARY CHARGE ROLLER)

The PCR is a smaller roller, which is typically about 1/2 inch (10 to 15 mm) in diameter. The main function of the PCR is to electrically charge the OPC drum. It rolls on the OPC drum surface to transfer electrical charge (a uniform negative charge -600V to -720V DC)

If this charge is not uniform and even, toner is attracted to undesired areas of the drum. A poorly charged drum can cause streaks or background shade.

PCR have a typical life of 25,000 to 35,000 pages. Change of this part is vital as OCR film accumulated on the PCR can result in markings appearing on printout. Most commonly, the printed page will have a regular mark every 1 to 1 and 1/2 inches (4 to 6 mm). The exact distance depends on the circumference of the PCR.



OPC DRUM (ORGANIC PHOTO-CONDUCTOR)

The OPC Drum is the Green, Blue, or Red cylinder in the cartridge. It is typically about an inch (25 mm) in diameter, and is the width of a normal sheet of paper.

This is a most critical component. The drum is light sensitive and works in a very cleaver way. It is electrically charged by the PCR. Light from the laser changes the polarity of the charge where it strikes the drum. The Laser unit "fires" text or graphic "pictures" onto this drum which "prints" an electrical pattern onto it. As the OPC drum rotates it passes by the developing roller and toner is attracted to this pattern imprinted on the drum.

As the drum continues to rotate it passes in close proximity to the paper stock and through a system of magnetic differential set up by a "transfer" roller, toner, in the pattern of text you're printing is attracted to the surface of the paper and sticks there until it reaches the Fuser unit. The Fuser is a heated roller device (180-200 C) and a pressure roller which melts the toner and presses it into the paper making the finished waterproof print.

Typically, the OPC Drum has a life of 15,000 to 20,000 pages (depending on the models). As the OPC Drum grows old, it begins to show two signs of aging:

- It doesn't hold a charge well. This causes the printed pages to be light, even when plenty of toner is present.
- A distinctive mark appears on every printed page at intervals of about 3 to 4 inches. (The exact distance is the same every time for a given printer, and is the circumference of the OPC Drum).