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# Xerox N24/32/40 OPC Disassembly Instructions

DOC-0168

## OVERVIEW



These instructions cover the disassembly of the Xerox N24/32/40 family of toner cartridges. These printer engine are rated for 24, 32, or 40 pages per minute depending on the machine.

In addition to the engine variations, there are also many variations of the toner cartridges currently in the field, and care must be taken to correctly identify which cartridge you have. There are currently two major types of cartridges being produced, and each type has it's own variations. The "Type 1" cartridges have a hopper length of approximately 13 5/8", where the "Type 2" cartridges have a hopper length of 15 1/8". Care must be taken not to mix parts from type 1 and type 2 cartridges.

We are currently checking to see what problems may occur if they do get mixed up. Type 1 cartridges are rated for 20,000 pages @5%, Type 2 cartridges are rated for 23,000 pages @5% coverage. The larger hopper allows approximately 150g more toner to be installed.

As far as minor variations, both the type 1 and 2 cartridges may have white or black drum gears, black or silver mag roller sleeves, and the PCR's may be black or white. Testing is under way to determine if life expectancy differs between the different types.

When researching which type cartridge you have, it is currently easiest to go by the page yield of the cartridge. 20,000 pages = Type 1, 23,000 pages = Type 2. See our cross-reference guide and updates for your particular printer.

The biggest topic concerning re-manufacturing these cartridges is not what type of cartridge it is rather what model machine the cartridge came from. Each printer manufacturer is having it's own special electronic "Smart Chip" installed in the cartridge. In order for the machine to accept the cartridge as a new cartridge and print, the chip must either be replaced or reset. If you are replacing the chip, be very careful to have the exact model number of the machine when ordering. The chip serves multiple functions, its primary function is for identification, If you place Xerox cartridge in an Epson machine, error code will show on the screen, and the printer will not function. Another function is a counter that shuts down the machine when the cartridge is used up. On early cartridges the counter function was not enabled, but on all later models it is functioning.

The Smart Chip is located in the four pin connector on the end of the cartridge.

If you are re-manufacturing cartridges outside the US, you must also know what the country of manufacture for the printer is. For example: A cartridge from the USA for the Xerox Docuprint N-24 will not function in any machine outside the USA unless the machine was built in the USA.

Although this printer engine has a lot to keep in mind, with a US list price average of \$290.00, there is a large profit potential in it.

The purpose of this disassembly is to vacuum out toner that will have Spilled inside the cartridge during shipping and/or rough handling, to clean the debris cavity and to fill the toner supply housing with new toner. The disassembly can also be used to examine the internal parts of the cartridge for possible damage should the printing of the cartridge be poor and not

correctable by other means.

This procedure should be read in its entirety before proceeding with the actual recycling process.

## REQUIRED TOOLS



The tools needed to successfully and safely recharge toner cartridges are as follows:

1. Toner approved vacuum. Some type of approved toner vacuuming system is important because toner consists of very fine particles that will pass right through a normal vacuum filter, and blow out the exhaust.
2. A small screw driver (Common Style)
3. A Phillips head screwdriver with removable tips
4. Needle Nose Pliers

## SUPPLIES REQUIRED



1. Black Toner
2. Foil Bag
3. 99% Isopropyl alcohol
4. Cotton Swabs
5. Lint free cotton pads
6. Toner Cloths
7. Kynar Drum Padding Powder
8. Magnetic Roller Cleaner
9. New or reset Smart chip (See text above)
10. New Long Life Drum
11. New PCR [Optional]
12. New Wiper Blade
13. New Doctor Blade [Optional]

## PREPARE WORK AREA



1. Before proceeding with the following procedure you should have a work area available with approximately 4' x 3' clear space. It should be covered with some disposable paper since toner will spill on this area. It is recommended that brown craft paper be used and taped to the work area. This will hold the paper in place when trying to vacuum toner from the paper.
2. An empty garbage can with a strong plastic liner should be adjacent to the work area to empty used toner. It should be at least 2' deep to prevent toner from clouding up and over the top of the bag during disposal.
3. Have a few rags available and some disposable paper towels. Toner Magnet cloths are perfect for this.
4. The work area should be capable of being ventilated, if by accident toner becomes dispersed into the air. An exhaust fan in one window is recommended for ventilation.

## DISASSEMBLY



1. Vacuum the exterior of the cartridge.
2. On each side of the cartridge there is a small pin.
3. Carefully pull these pins out using a pair of needle nose pliers.
4. Remove the Waste Chamber and put aside.

## SEPARATE DEBRIS CAVITY, AND DRUM



1. Remove the two screws on each side of the drum axle plates, remove the plates.
2. Remove the Photo conductive Drum being extremely careful not to scratch it. Do not polish or wipe the drum with a dry cloth since this may scratch the drum. Blow off any remaining dust from the Drum using compressed clean air. If there is any matter on the drum that must be cleaned off, use 99% pure Isopropyl alcohol and a soft lint free cotton pad to lightly wipe the drum surface, then blow off the Drum using compressed clean air.

**CAUTION:** Be very careful not to tilt or shake the can while spraying, as the propellant may spray out and possibly ruin the drum.

3. Place the Photo conductive Drum in a soft lint free cloth and then into a dark colored bag or cover from bright light by some other suitable means. Again, do not rub or wipe the Photo conductive Drum with a dry cloth as this may scratch its surface.  
If the OPC drum is worn or damaged, it should be replaced with a new long life drum.

## CLEANING THE DEBRIS CAVITY



1. Carefully remove the Primary Charge Roller located next to the Wiper Blade.

**WARNING:** Do not clean this roller with alcohol, as this will remove the conductive coating on the roller. This roller takes the place of the corona wire assembly and it is recommended that it be cleaned with a damp lint free cloth only. Place the PCR aside.

2. Remove the top cover of the Waste Chamber by removing the center screw, and prying the cover up from the bottom edge.
3. Gently shake the toner out of the debris cavity, and vacuum clean. **NOTE:** Be very careful not to bend or otherwise damage the small thin recovery blade located next to the Wiper Blade when vacuuming. If this blade is bent down lower than the height of the wiper blade, toner will accumulate on top of the blade and spill into the printer. If the blade does get bent, it should be replaced.
4. Remove the Wiper Blade (2 screws and spacers, lift up and out). **DO NOT** loose the spacers!
5. Clean the rubber Wiping blade using a lint free cloth. This blade removes excess toner from the drum and must be free of any foreign matter. If this blade is worn, or damaged in any way, it should be replaced with a new one. The Wiper Blade should also be replaced if you are replacing the OPC drum. Be careful not to damage this blade. Lightly coat this blade with Kynar Drum Padding Powder model. Do not use plain DPP (Zinc Sterate), as this will stick to the charge roller and cause print defects, ( Small white voids in printed areas)
6. Replace the Wiper Blade, screws, and spacers.

## CLEANING THE TONER SUPPLY HOUSING



The toner supply housing consists of the toner supply, magnetic roller and doctor blade which mounts directly next to the magnetic roller. The doctor blade consists of a metal bar that sits next to the Magnetic roller, with a rubber blade attached to it that rides under the roller. It is the pressure of this rubber blade against the magnetic roller that controls the amount of toner on the magnetic roller. Before cleaning the toner supply, first rotate the magnetic roller by hand and observe the layer of toner applied to the magnetic roller. The toner should form an even consistent layer of toner with no clumps or lumps showing. Should the layer of toner be thicker in some areas the magnetic roller should be cleaned using a dedicated magnetic roller cleaner. Always remove the roller for cleaning and make sure it is completely dry before re-installing it. If there are small lines of no toner on the magnetic roller sleeve, the Doctor Blade must be either cleaned, or replaced.

1. On the gear side of the supply chamber, remove the screw, and Magnetic roller end cap
2. Carefully remove the magnetic roller, vacuum clean and place aside.
3. Remove the two screws and DR blade.

4. Vacuum the Toner hopper thoroughly.
5. Fill the toner hopper through the mag roller opening. Do not remove the toner hopper plug as it is easily damaged, and will most probably leak.
6. Replace the DR blade, Install the bushing and drive gear on the left side of the magnetic roller. Take the magnetic roller assembly, and slide it into the hopper right side first.
7. Install the end cap. Make sure that the roller turns freely

## RE-ASSEMBLE TONER SUPPLY HOUSING, PHOTO CONDUCTIVE DRUM AND DEBRIS CAVITY



1. Before re-installing the old OPC drum in the cartridge, it must be cleaned, inspected for damage, and coated with Kynar DPP to help lubricate it against the wiper blade. Do not use Zinc Sterate as this product will stick to the PCR and cause print defects.  
Remove the OPC drum from storage, and clean with a soft, clean cloth and 99% pure Isopropyl alcohol.
2. Visually inspect the drum for any physical defects such as small chips, or deep scratches, coat the drum with Kynar DPP, and install it into the waste chamber. If the drum is worn or damaged, it should be replaced with a new long life drum.
3. Spin the drum manually counter clockwise, to make sure that it is properly lubricated.
4. Remove the OPC drum and install the PCR.
5. Re-install the OPC drum, and drum axle plates. By installing the above items in this order, you will keep from contaminating the PCR with any excess Kynar
6. Re-assemble the cartridge, spin the OPC drum manually again to check that the gears all mesh properly.
7. Replace the Smart chip with either a new or reset chip. Make sure you have the correct chip for this cartridge!
8. Inspect the electrical contacts on the outside of the cartridge.
9. Test the cartridge in the printer, and inspect the test prints.
10. Wipe the entire cartridge down with the toner magnet cloths and package it in the box with the appropriate directions.

## TESTING CARTRIDGES



Some of the more common toner cartridge problems are:

**A Dirty Primary Charge Roller (PCR);** The primary charge roller is located inside the cartridge, and if dirty will show on the test print as vertical gray streaks down the page, or as a gray background throughout the page.

**A Dirty PCR Connection** will result in dark black horizontal bars across the page, or as shading throughout the page.

**A Scratched Drum** will show up as a very thin, perfectly straight line that runs from the top to the bottom of the test page.

**A Chipped Drum** will result in a dot or series of dots that repeat Down the page

**A Light Damaged Drum** will show up as a shaded area on the test print that should be white. Again this will repeat down the page.

**A Bad Wiper Blade** will result in vertical gray lines down the page, or as shading across the entire page. In either case there will be a film of toner on the drum surface.

## CARTRIDGE PRINTING THEORY



The toner cartridge printing process is best explained as a series of steps, or stages. In the first stage, the Primary Charge roller places a uniform negative DC voltage on the OPC drum surface. This process is called conditioning.

In the second stage, (also called the imaging section), the laser beam will discharge this DC voltage to ground wherever it strikes the OPC's surface, leaving a latent electrostatic image on the drum.

The third stage is where the toner image is developed on the drum by the developing section, (or supply chamber), which contains the toner particles. The toner is held to the magnetic roller sleeve by the stationary magnet inside the sleeve, and a variable DC bias voltage supplied by the high voltage power supply. This variable DC bias voltage is controlled by the printer's intensity setting. The amount of toner on the magnetic roller sleeve is controlled by the rubber Doctor blade, which uses pressure to keep the amount of toner on the magnetic roller sleeve constant. This blade also causes a static charge to build up on the toner which helps keep the coating of toner even, and allows easy transfer to the OPC drum.

At the same time an AC signal is also placed on the magnetic roller sleeve. This signal decreases the attraction of the toner to the Magnetic Roller sleeve, and increases the repelling action of toner against the areas of the drum that were not exposed to the laser beam. This AC potential improves the density, and contrast of the toner on the printed page.

As the laser exposed areas of the OPC drum approach the magnetic roller, the toner particles are attracted to the drums surface due to the opposite voltage potentials of the toner, and laser exposed surface of the OPC drum.

This image is then transferred to the paper as it passes below the drum by the transfer charge roller, which places a positive charge on the back of the paper. This positive charge causes the negatively charged toner on the drum's surface to be attracted to the page. Any residual static charges on the paper are then removed by the static charge eliminator, located in the fuser assembly. The image is then fused on to the paper by the fuser assembly, which is comprised of the upper Teflon coated metal roller and a lower fuser roller. The lower rubber fuser roller presses the page up into the upper fuser roller which then melts the toner into the paper.

The fourth stage is where the OPC drum is cleaned. On average, approximately 90% of the toner is transferred to the paper during the print cycle. The remaining 10% remains on the OPC drum and is cleaned off the Drum by the wiper blade, guided into the waste chamber by the recovery blade, and stored in the waste chamber.

Once the print cycle has been completed, the Primary Charge Roller will then place an AC voltage across the drum surface that erases any residual charges left on the drum surface. The OPC drum is now ready to be Conditioned by the Primary Charge Roller and start the print cycle again.

The advantages of the Primary Charge Roller are that it operates at a lower voltage than the old style corona wire, does not generate ozone, and it replaces the erase lamps that were present in the older style laser printers. The draw back to this technology is that if this roller becomes dirty, or contaminated in any way, the printed pages will have the problems as previously shown on the test pages. Since the Primary Charge Roller is not accessible from the outside of the cartridge, it cannot be cleaned by the user as the Primary Corona Wires can in older style cartridges.

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## RECOMMENDED SUPPLIES



Microsoft OLE DB Provider for ODBC Drivers error '80004005'

[Microsoft][ODBC Microsoft Access Driver]General error Unable to open registry key 'Temporary (volatile) Jet DSN for process 0x698 Thread 0xdd4 DBC 0x9787b54 Jet'.

/script/catSearch.asp, line 58