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Xerox® DocuPrint® 4512, 4512N Remanufacturing Instructions



Drum Unit

About the Cartridges

In October 1996 Xerox[®] added the 12 page-per-minute (ppm) DocuPrint[®] 4512 and 4512N to its family of desktop laser printers. Though paper handling capabilities were considered excellent, print quality was poor, and the series was never distributed through retail channels.

Unlike other Xerox desktop lasers the 4512/4512N engine is based on the 600 dpi Sharp® laser engine, with a two-piece toner/developer unit and separate drum system. When in position in the printer, the drum unit sits on top of the toner unit, making it impossible for the end user to change the toner without removing the

drum unit. This often results in OPC damage.

In December 1996 Sharp introduced its own version of the 4512, the Sharp® JX-9680 (simplex) and the JX-9685 (duplex). Both Sharp models were discontinued April 1999. Manufacturing by Xerox has been discontinued, although the machines are still available through Xerox distributors.

Key Points

• The toner/developer units are keyed, and are not interchangeable. One quick way of telling them apart - the Sharp toner unit handle is green, where Xerox's is orange.

• The toner/developer unit is filled with 380 grams of microfine toner and 185 grams of developer, and has a page yield of 15,000 pages at 5% coverage.

• The developer roller is textured, having no sleeve, and is not replaceable.

• The toner cartridge contains a fuse*, which is detected by the printer when a new cartridge is installed. This causes a stirring cycle to begin, which blends the toner and developer in the developer trough. Once the optimal blend is achieved, the fuse is blown,

Continued on page 2

Sharp[®] Engine Information

Printer Name	Xerox [®] DocuPrint [®] 4512/4512N
Date of Introduction (Current/Discontinued)	October 1996 (Discontinued)*
Print Speed	

Xerox® DocuPrint® 4512/4512N Cartridge Information

\$210/\$150
ages at 5% coverage
c, Mono-component

Model Compatibility

Sharp® JX-9680/JX-9685* *Drum unit/waste bins are interchangeable. Toner/developer units are not. Prices as of February 2002

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www.scc-inc.com/imaging/Imaging.htm

Get the latest information on the web at Static Control's Xerox® DocuPrint® 4512/4512N Online Engine Center at www.scc-inc.com/Engine/Xerox4512



System Support Series[™] Documents are available on our Web site in Adobe[®] Acrobat[®] format.

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> Version II April 2002

Tools and Supplies You Will Need

Tools and Supplies

Recommended for Basic Remanufacturing:

- Compressed Air for Cleaning(See right)
- Soldering iron with precision tip (25-40 watt max.) (DO NOT use a soldering gun)
- Electronic silver solder, self-fluxing, non-acid core
- De-soldering braid
- Small modeller's vice
- Phillips Screwdriver (2 pt)
- Small Flat-Blade Screwdriver
- Tweezers or needlenose pliers
- Small wire cutters
- Two fuses, qualified for Xerox® DocuPrint 4512/4512N
- Anti-static mat & grounding devices Field Service Kit (FSKL3RD) recommended
- Toner qualified for Xerox® DocuPrint® 4512/4512N
- Adhesive Seal qualified for Xerox® DocuPrint® 4512/4512N

Use of Isopropyl Alcohol

For best results, we recommend using ONLY 91-99% for cleaning as directed in these instructions. 91% isopropyl alcohol is available at most major drug stores; 99% isopropyl alcohol is available through distributors of chemical products. Follow the alcohol manufacturer's safety instructions.

Use of Compressed Air

As of April 28, 1971, the Occupational Safety & Health Administration (OSHA) Standard, 29 CFR 1910.242 paragraphs a & b for general industry requires effective chip guarding and personal protective equipment (PPE) when using compressed air. When cleaning residual toner particles from cartridges using a compressed air system, you must use air nozzles meeting OSHA requirements. Air nozzles that regulate air pressure to a maximum of 30 psi comply with this standard. Refer to the OSHA publication for any updates or changes that have occurred since the date noted above.

Continued from page 1

returning the machine to a "ready" mode. For this reason, post-testing the cartridge in one machine then installing it for use in another is not recommended, as the blend may not be suitable for optimum print quality in the end user's machine.

• Sealing the 4512 toner hopper is simple, using the same adhesive seal as is used with the Sharp 9600.

• The drum units are interchangeable with the Sharp JX 9400/9600 series.

• The OEM life rating of the drum unit is 30,000 pages.

• The drum unit contains a fuse* that controls the page counter. At approximately 30,000 pages a drum error message appears. The fuse must be replaced when remanufacturing the cartridge in order to reset the drum counter.

• During reassembly of the drum unit, the toner dam blades can be damaged if the blades and the agitator paddle are not aligned properly. During post-testing, if a clicking noise is detected, disassemble the unit, check the blades and reassemble with the blades and agitator realigned. *To date two types of fuses have been found in the drum unit. Static Control's replacement fuse (X4512FUSE) is qualified for use in both cartridge sections, as a replacement for both types of OEM fuse. See pages 4 (hopper) and 11 (drum unit) for details and replacement instructions.



OEM Fuse Type 1 (Surface-mount, square ceramic fuse) found in both the toner /developer and drum units



OEM Fuse Type 2 (Surface mount, insulated with leads) found in the drum unit

Soldering Tips

• More expensive soldering iron stations use static-dissipative materials in their construction to ensure that static does not build up on the iron itself. Less expensive irons won't necessarily be ESD-safe, but will work well IF you take other anti-static precautions when handling electronic components.

• Soldering guns typically run at 100 watts or more - much too hot, heavy and unwieldy for micro-electronics use. Using a soldering gun, or a soldering iron with a voltage greater than 40 watts will damage the circuit board. 25 watts are sufficient for removal and replacement of this fuse.

• Make sure all components, including the soldering iron tip, are clean and free of dirt and grease.

• Secure your work firmly. A small modeller's vice works well for small circuit boards.• Remove old solder with a desoldering braid (be sure to remove

the braid from your work before the solder cools so none of the braid is left on the joint).

• Before soldering, clean the tip of the hot soldering iron on a sponge dampened with distilled water, then coat the tip with a small amount of fresh solder ("tinning the tip") - especially on new tips.

• Heat all parts of the joint with the iron for approximately one second before applying sufficient solder.

- Do not move components until the solder has cooled.
- The new solder joint should look shiny, with adequate coverage.

Separation of the Toner/Developer Unit

1. Remove screws

Using a Phillips screwdriver, remove the two screws located beneath the developer trough (FIG 1).



NOTE Use extreme caution when handling utility knives. Severe injury may result if not used properly.

2. Separate sections

Using a utility knife, carefully cut the sealing foam between the developer roller and the toner hopper sections (FIG 2).



Carefully pull apart the two sections. Try to avoid tearing the sealing foam (FIG 3). Lay the hopper section aside.





1. Clean the developer trough

Using a small flat blade screwdriver, remove the developer cap (FIG 4) and dump all developer from the unit.



2. Remove the fuse Turn the unit over and locate the strip of tape covering the small circuit board (FIG 6).

in poor print quality.



NOTE A fuse is utilized during the initial start-up of the

cartridge, and is blown immediately afterward. This fuse

must be replaced before each remanufacturing cycle for proper operation of the cartridge. Failure to do so will result

To clean the developer roller and auger, direct the air stream alternately onto the roller and auger (FIG 5a).

Turn both several revolutions using the drive gear on the opposite end of the unit (FIG 5b). Repeat until all developer has been removed.



NOTE Static electricity can damage circuit boards. An antistatic mat or grounding device is recommended anytime you are working on electronic circuitry to avoid problems arising from electrostatic discharge.

Static Control offers a Field Service Kit for this purpose. The kit contains one three-layer, 24" x 24" mat with two 8" x 12" pockets, a wrist strap with 6 ft. coil cord, one 15ft common ground cord system and ground clip and instructions (FSKL3RD).

If not working in a static-free environment, be sure to diffuse any static charge in your body by touching a metal object, such as a countertop, table or chair, before touching the circuit board. Peel back the tape, exposing the circuit board (FIG 7a). The fuse is the small white square located in the lower left corner of the board (FIG 7b).



NOTE Severe burns can result from improper handling of soldering irons. Be careful to avoid burns to skin and clothing. Always rest the tip of the iron on a non-flammable surface and disconnect the power when not in use. For directions in the proper use, consult your soldering iron manufacturer's instructions.

Secure your work so that movement is minimized while replacing the fuse.

Using a 25 to 40 watt (maximum) soldering iron (NOT a soldering gun) with a small tip and a soldering wick, carefully touch the tip of the iron to the dot of solder on each side of the fuse to soften the solder (FIG 8). The wick will absorb the molten solder, freeing the ends of the fuse.



Important The operating temperature of a soldering gun is much too high for delicate circuit boards. Using a soldering gun, or using a soldering iron with a voltage greater than 40 watts, will damage the circuit board. 25 watts are sufficient for removal and replacement of this fuse.

Using tweezers or needlenose pliers, remove the fuse.

NOTE The fuse will be hot immediately after removal of the solder. Be sure to use tweezers, needlenose pliers or a similar instrument to remove the fuse. DO NOT touch the fuse with bare skin, as severe burns could result.

Using the soldering iron and solder wick, remove the remaining solder.

3. Install a new fuse

NOTE The voltage rating of a fuse indicates that the fuse can be relied upon to safely interrupt its rated short circuit current in a circuit where the voltage is equal to or less than its rated voltage.

The OEM fuse is 1/5 ampere. Static Control's 1/4 ampere replacement fuse is slightly more than this cartridge requires, and is fully qualified to operate safely in the 4512/4512N cartridge.

Place the new fuse in position. Using the soldering iron with a precision tip and self-fluxing electronic silver solder, secure the fuse in place. Be sure to cover the ends of the fuse with the solder (FIG 9).



Clean the solder connections using a cotton-tipped swab dampened with 91-99% isopropyl alcohol.

Cover the circuit board with the tape strip (FIG 10). If the tape does not stick, a small piece of electrical tape may be used.



NOTE Electrical tape is designed to protect sensitive electronic components from damage resulting from dust and toner build-up, electrostatic charges, etc. The use of other types of covering may not provide this protection, and damage to the circuit board and/or fuse may result.

NOTE It is recommended to test your connections with a voltage meter before proceeding. Refer to your voltage meter manufacturer's instructions for proper use.

4. Seal the unit

Seal the developer unit using an adhesive seal. For complete instructions, refer to System Support Series[™] (SSS[™]) #331 "How to Install Your Sharp[®] JX-9600/Xerox[®] 4512 Adhesive Seal".



1. Empty and clean the hopper

Using a small flat blade screwdriver, remove the toner hopper cap (FIG 11).



Dump any remaining toner from the unit, and clean all residual material from the hopper thoroughly with dry, filtered, compressed air. Be sure to clean around the sealing foams and the toner delivery port (FIG 12).



NOTE It is recommended that you fill the toner hopper after reassembly of the hopper and developer sections, and after replenishing the developer to prevent toner from falling through the toner delivery port.

Reassembly of the Toner/Developer Unit

1. Secure the sections

Position the developer unit in place on the toner hopper section and replace the two Phillips screws (FIG 13).



2. Replenish the toner and developer

Fill the developer section with qualified developer and replace the fill cap.

Fill the toner hopper with qualified toner and replace the hopper cap (FIG 14).





1. Remove the OPC drum

Using a Phillips screwdriver, remove the endcap screw on the geared side of the drum unit (FIG 15).



Using a Phillips screwdriver, remove the screw on the endcap on the non-geared end of the drum unit (FIG 16).



Using a flat blade screwdriver or similar instrument, carefully pry the endcap up slightly and rotate it away from the unit (FIG 17).



Carefully pry the endcap on the non-geared side of the unit up in the same manner (FIG 18).



Place the unit on the work surface, then slide each end cap out (FIG 19). Lift the drum from the housing. Store the drum in an area that is protected from light and impact damage.



2. Separate and clean the waste bin sections Remove the four Phillips screws (FIG 20).



Separate the sections by applying upward pressure to the large tab, and downward pressure to the smaller tab (FIG 21). Carefully pull the two sections SLIGHTLY apart and dump the waste toner from the waste bin.



NOTE If not working in a static-free environment, be sure to diffuse any static charge in your body by touching a metal object, such as a countertop, table or chair, before touching the circuit board.

Remove the two screws holding the circuit board in place (FIG 23).



Separate the two sections. It is recommended that the three drive gears be removed before cleaning the waste bin with compressed air (FIG 22).



3. Remove the circuit board with fuse

NOTE Static electricity can damage circuit boards. An antistatic mat or grounding device is recommended anytime you are working on electronic circuitry to avoid problems arising from electrostatic discharge.

Static Control offers a Field Service Kit for this purpose. The kit contains one three-layer, 24" x 24" mat with two 8" x 12" pockets, a wrist strap with 6 ft. coil cord, one 15ft common ground cord system and ground clip and instructions (FSKL3RD).

The fuse is attached to the underside of the circuit board. Carefully remove the circuit board and set it aside (FIG 24).





Remove the toner recovery paddle by lifting it out of the housing. Set it aside (FIG 26).



Clean the bottom section of the waste bin housing using ionized, dry, filtered, compressed air (FIG 27). Use care around the recovery blades.



NOTE There are two blades, one clear and one metallic, that act as a toner dam on the bottom section of the waste bin. Be sure to clean around the blades with ionized, dry, filtered, compressed air and inspect them, ensuring that they are undamaged and properly placed.

Clean the top section of the waste bin housing with ionized, dry, filtered, compressed air (FIG 28). Be sure to clean around the foam gasket. It may become dislodged - if so, reseat it, making sure it is undamaged and is properly seated.



Clean around the corona assembly, wiper blade end foams and wiper blade using ionized, dry, filtered, compressed air (FIG 29).





Clean the toner recovery paddle using ionized, dry, filtered, compressed air (FIG 30).

4. Remove the drum reset fuse

The drum reset fuse is soldered to the circuit board. To date, two different types of OEM fuse have been found in the drum unit. Both are 1/5 amp, surface mount fuses. Type 1 is a square ceramic chip and Type 2 is an insulated chip with leads (FIG 31).



The position of the fuse on the board may be perpendicular to the length of the board ("straight") or at an angle. The position does not affect the type of replacement fuse you will use or the method of removal, but does affect how the replacement fuse is to be re-attached to the board (FIG 32).



Secure your work so that movement is minimized while replacing the fuse. For the circuit board, a small modeller's vice works well.

Important The operating temperature of a soldering gun is much too high for delicate circuit boards. Using a soldering gun, or using a soldering iron with a voltage greater than 40 watts will damage the circuit board. 25 watts are sufficient for removal and replacement of this fuse.

To remove Type 1 fuses:

Using a 25 to 40 watt (maximum) soldering iron with a small tip and a soldering wick, carefully touch the tip of the iron to the dot of solder on each side of the fuse to soften the solder (FIG 33). The wick will absorb the molten solder, freeing the ends of the fuse.



NOTE Severe burns can result from improper handling of soldering irons. Be careful to avoid burns to skin and clothing. Always rest the tip of the iron on a non-flammable surface and disconnect the power when not in use. For directions in the proper use, consult your soldering iron manufacturer's instructions.

Using tweezers or needlenose pliers, remove the fuse.

NOTE The fuse will be hot immediately after removal of the solder. Be sure to use tweezers, needlenose pliers or a similar instrument to remove the fuse. DO NOT touch the fuse with bare skin, as severe burns could result.

Using the soldering iron and solder wick, remove the remaining solder.

To remove Type 2 fuses:

Type 2 fuses have a lead extending from each end of the insulated casing. This lead is connected to the end of the two foil runs with a small amount of solder (FIG 34).



5. Install a new fuse

NOTE The voltage rating of a fuse indicates that the fuse can be relied upon to safely interrupt its rated short circuit current in a circuit where the voltage is equal to or less than its rated voltage.

The OEM fuse is 1/5 ampere. Static Control's 1/4 ampere replacement fuse is slightly more than this cartridge requires, and is fully qualified to operate safely in the 4512/4512N cartridge.

The procedure for replacing the fuse will differ slightly, depending on whether the fuse position is straight or angled.

For a straight placement:

Place the new fuse in position. Using the soldering iron with a precision tip and self-fluxing electronic silver solder, secure the fuse in place. Be sure to cover the ends of the fuse with enough solder to hold the fuse in place, but avoid using too much (FIG 36).



NOTE It is recommended to test your connections with a voltage meter before proceeding. Refer to your voltage meter manufacturer's instructions for proper use.

Using a pair of wire cutters, carefully snip each lead and lift the fuse from the board. (FIG 35).



Using a 25 to 40 watt (maximum) soldering iron with a small tip and a soldering wick, carefully touch the tip of the iron to each of the two dots of solder to soften the solder. The wick will absorb the molten solder, removing it from your board.

For angled placement:

Since the replacement fuse does not have leads on each end like those on the OEM insulated fuse, you must create a solder bridge between the new fuse and the foil runs.

Create the bridge by carefully placing a drop of self-fluxing electronic silver solder at the end of each foil run. Using just the tip of the soldering iron, drag a small amount of solder toward the center of the board (FIG 37).



Using the precision tip of the soldering iron and self-fluxing electronic silver solder, secure the fuse in place. Be sure to cover the ends of the fuse with enough solder to hold the fuse securely, but avoid a "glob" (FIG 39).



Clean the solder connections using a cotton-tipped swab dampened with 91-99% isopropyl alcohol.

Center the new fuse between the ends of the solder bridge (FIG 38).



NOTE It is recommended to test your connections with a voltage meter before proceeding. Refer to your voltage meter manufacturer's instructions for proper use.

Reassembly of the Drum Unit/Waste Bin

1. Replace the circuit board

Replace the two circuit board springs. Be sure to place the springs with the curved ends as shown (FIG 40).



NOTE The curved end of the springs must fit around the screws securing the circuit board in position.

Replace the circuit board, fuse down, and secure with two Phillips screws (FIG 41). Check for proper positioning of the ends of the springs.



2. Replace the drive gears Replace the three drive gears, smallest first, largest last (FIG 42).



3. Secure the sections

Place the bottom half on the work surface with the drive gears on your left. Place the top half on top, making sure the toner dam blades are behind the toner recovery paddle. The sections will be properly aligned when the tabs in the back snap in place and the holes in the tabs on the front are aligned with the holes in the drum housing (FIG 43).



NOTE During reassembly of the drum unit, the toner dam blades can be damaged if the blades and the agitator paddle are not aligned properly. During post-testing, if a clicking noise is detected, disassemble the unit, check the blades and reassemble with the blades and agitator realigned.

4. Replace the drum

With the drum in place, slide the end caps through the opening in the housing and into the drum (FIG 44).



Rotate both end caps until locked in place (FIG 45).



NOTE Post-testing the cartridge is not recommended for the N4512 toner/developer cartridge.

The toner cartridge contains a fuse, which is detected by the printer when a new cartridge is installed. This causes a stirring cycle to begin, which blends the toner and developer in the developer trough. Once the optimal blend is achieved, the fuse is blown, returning the machine to a "ready" mode. For this reason, post-testing the cartridge in one machine then installing it for use in another is not recommended, as the blend may not be suitable for optimum print quality in the end user's machine.

Replace the screws on each end cap (FIG 46).





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