TECHNICAL DOCUMENT

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Common Problems and Issues Concerning the Samsung FS-5000 (P8E) Toner Cartridges

OVERVIEW

The purpose of this article is to take a look at some of the problems associated with the Samsung FS-5000 (P8e) style cartridges. Back-grounding and “ghosting” are the main problems experienced with these cartridges. The main thing to keep in mind when doing these cartridges is to make sure that all the contacts are as clean as possible. We have found that taking an acid brush, and cutting half the bristles off works great.

The Samsung FS-5000 engine is an 8-10 ppm (depending on the machine), 600 dpi engine. Next to the Brother TN-460 cartridge, this is one of the most problematic we have seen. It is not a hard cartridge to do; you just have to be careful in how you do it. If the contacts in these cartridges are even a little dirty, (Notice a theme developing here?) or if the developer roller shows any sign of wear, there will be problems.

The machines that are based on the Samsung FS-5000 engine are:

Manufacturer	Model	Current Cartridge#	Yield	Cartridge#	Yield
Lexmark	Optra E310	13T0101	6,000	13T0301	3,000
Lexmark	Optra E312	13T0101	6,000	13T0301	3,000
Lexmark	Optra E312L	13T0101	6,000	13T0301	3,000
Samsung	ML-5000A	ML-5000D5	5,000		
Samsung	ML-5050G	ML-5000D5	5,000		
Samsung	ML-5100A	ML-5000D5	5,000		
Samsung	ML-5200	ML-5000D5	5,000		
Samsung	QL-5100A	ML-5000D5	5,000		
Xerox	Docuprint P8e	113R296	5,000		
Xerox	Docuprint P8ex	113R296	5,000		
Xerox	WorkCentre 385	113R296	5,000		
Xerox	WorkCentre 390	113R462	3,000		

Notice we said Current cartridge #. There have been other part numbers in the past. For Xerox, the 113R296 replaced the 113R455. For Lexmark, the 13T0101 replaced the 12A2202.

The cartridge changes were made when a newer version of the engine was released. When Lexmark released the E312, and Xerox the WC 390, the engine had a slightly different power supply dictating a slightly different toner. At that time all the aftermarket manufacturers that I am aware of reformulated their toners to work with both engine styles.

As stated above, the various models listed all use the same supplies to recycle, however the cartridges are not interchangeable. Figures 1-3 show the various styles. Basically, the notch on the leading edge of the cartridge is in a different place for each manufacturer.

Figure 1 Figure 2

Figure 3

The end cap of all the cartridges houses a small 5 x 20mm, 100ma glass type fuse that must be replaced each cycle. If the fuse is not changed, the printer will not recognize it as a new cartridge. It should be noted that starter cartridges do not have a fuse, they have a black plastic blank shaped like a fuse. See Figure 4

The entire waste system in this cartridge is very small and the wiper blade is very flimsy. These cartridges are listed as having a 100% transfer efficiency. Since there is a waste chamber and wiper blade present, that is clearly not the case, but from what we have seen, it is very close.

The SF-5000(or P8e) cartridge has been the base so far for all the future 6000 page or so Samsung cartridges. Most of them are just variations on this cartridge. Luckily, they were improved enough not to have the P8e's quirks.

CARTRIDGE TROUBLESHOOTING

Ghosting: This is by far the biggest problem we have seen when doing these cartridges. By ghosting I mean that part of a previously printed image is repeating lightly on the page. There are a few possibilities that may cause this.

The contacts on the left side of that cartridge must be thoroughly cleaned. We have found that by scrubbing them with the cut down acid brush and alcohol, this problem virtually disappears. Cleaning them with a cotton swab is not enough. The metal tends to oxidize and a good "scrubbing" is needed. After cleaning them, place a very small amount of conductive grease on them. Remember, when it come to conductive grease, more is NOT better. Just place enough on each contact so that it is barely covered. Too much grease will attract toner to it, and actually start to insulate instead of conducting. See Figure's 4 & 5

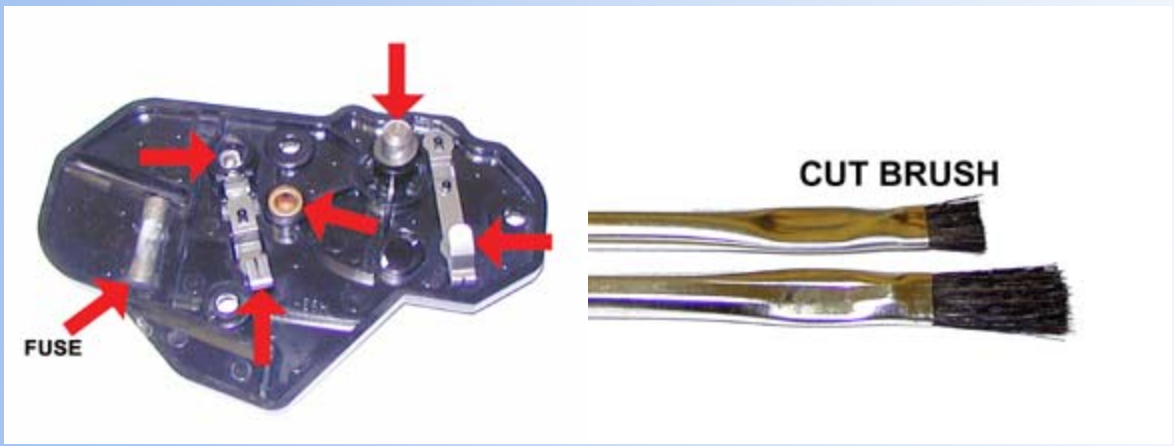

Figure 4 Figure 5

If the PCR has a build up of toner on it, ghosting and/or back-grounding can occur. A small amount of toner on the roller is normal, but if there is a medium to heavy buildup, the roller is bad. The roller can also be bad (electrically) even if there is a normal buildup on the roller. We have found it easier and faster just to replace them with new. This way the question of why there is a buildup of toner on the PCR is solved. Cleaning them does not guarantee that they will work. The OEM PCR's are problematic.

As a side note, when the newer engine version was released (E312), if the old P8e toner was used, toner would buildup on

the PCR. That is why new formulations were developed. This took place probably around the middle to the end of the year 2000. If you still have toner from back then, use it only in P8e or E310 cartridges, not the E312.

Back-grounding/Streaking: This is the second largest problem we have seen with these cartridges, it actually rates right up there with ghosting. As with the ghosting problem, there are a few possible causes but the main culprit is not cleaning the Dr. Blade.

The Dr. Blade must be thoroughly cleaned. If any residual toner is left on the blade, toner will continue to build up and transfer itself to the developer roller. A build up in one specific spot will cause a streak, build up across the entire blade will cause back-grounding. Some people like to remove the blade and clean it, others leave it in and clean it. It doesn't matter which way you use, but there are pitfalls to both. If the blade is removed, it is easier to clean, but setting the blade in its proper location, and getting to seal can be tricky. If you are leaving the blade in, care must be taken not to spill or drip any alcohol inside the cartridge (and ruin the feed roller), you must also be careful not to bend the blade down when cleaning. If the blade is damaged (scored or bent), new blades are available.

The developer roller in the newer cartridges does not last as long as it used to. Samsung made a change about a year ago so that they would not last as long. If you see deeply scored spots on the surface, it must be replaced. The coating is worn through. Normally what happens is toner builds up on the Dr. Blade, and that buildup transfers to the developer roller, causing back-grounding. Sometimes this build up can be cleaned off with a good rubber roller cleaner. Just make sure that the cleaner does not leave a residue. A good rule of thumb is if the roller looks bad, it probably is and should be replaced.

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Last but certainly not least are the contacts in the left side of the cartridge. They should be cleaned as described above under ghosting. If these contacts are not cleaned properly, any or all of the above problems can occur.

REPETITIVE DEFECT CHART

The following is a list of the various rollers in these cartridges and their repetitive rates. If you are getting a repetitive defect, use this chart to help determine the cause.

OPC Drum	97mm
PCR	38mm
Developer roller	58mm
Feed Roller	41mm

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 0x1164 DBC 0x97a3f8c Jet'.

/script/catSearch.asp, line 58