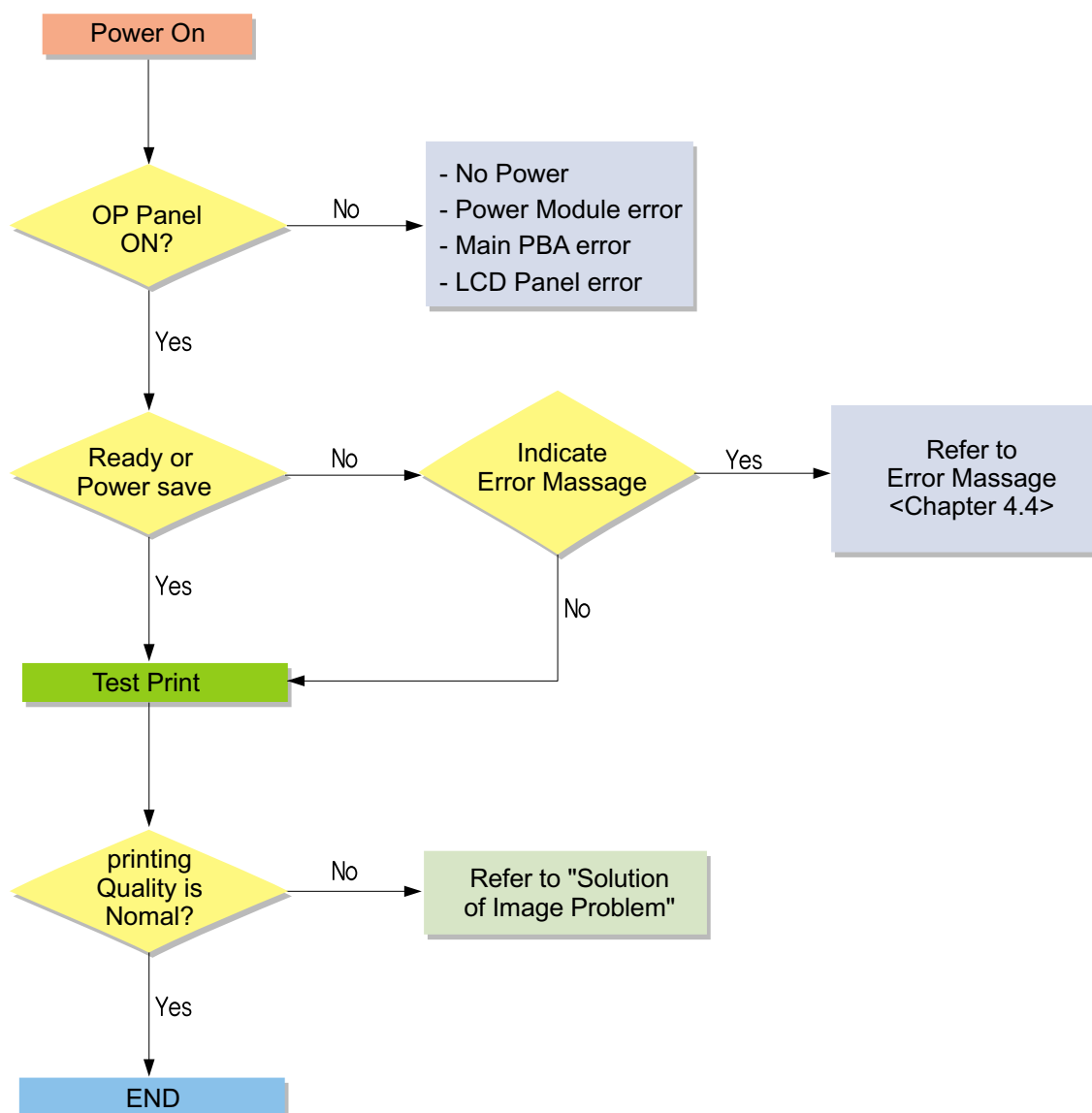


6. Troubleshooting

6.1 Checking Symptoms

Before attempting to repair the printer first obtain a detailed description of the problem from the customer.



6.1.1 Basic Check List

1. Check the Power.

- Does "Warming Up" appear on the display?
--> If not check power cable, switch or SMPS.
--> Does the wall socket work?
- Do the Motors or other components initialize (listen for main motor, fan and LSU sounds)?
--> If not or there are none of the normal startup sounds check cable, switch or SMPS.
--> Does the wall socket work?

2. Check the LCD Panel.

- Is there any display at all?
--> If not check power cable, switch or SMPS.
--> Does the wall socket work?
- Is the display a meaningful message care there any broken or badly formed characters?
--> Check the main PBA and cable harness.
- Is the message on the LCD Panel a standard error message?
--> Refer to section 4.3

3. Check the Paper Path

- Is there a Paper Jam?
--> Remove any paper fragments caught in the paper path.
- Paper Jam occurs repeatedly at a specific point in the Paper Path
--> Open the fuser cover, Jam clear.
--> Dismantle the machine and carefully inspect the region where the jam occurs.
(Especially, check if paper fragments are caught in the Fuser)

4. Print the Information Page (Configuration).

- Try printing a test page from a computer.
--> If there is an error check cables and driver installation.

5. Check the Print Quality.

- Is there are a Print Quality Problem?
--> Refer to section 6.5

6. Check consumables (toner etc.).

- Using the keys print the Test Pattern.
--> Expected life of various consumable parts, compare this with the figures printed and replace as required

6.1.2 Initial Inspection

1. Check Power part

1. The printer does not work no matter how long you wait.
 - A. Is the Power Switch (printer and wall socket) turned on ?
 - B. Is the Power Cord connected to the printer correctly ?
 - C. Is the Power cord connected to the wall socket correctly ?
 - D. Is wall socket working ?
 - E. Is the unit rated at the same voltage as the supply ?
2. Does the Fan work when power is turned on?
 - A. Check the connectors on the SMPS.
 - B. Check the fuses in the SMPS.(F1)

2. Check the Installation Environment.

1. Ensure the installation surface is flat, level and free from vibration.
If necessary move the printer.
2. Ensure that the temperature and humidity of the surroundings are within specification
If necessary move the printer.
3. Ensure that the printer is position away from any air conditioning or other heating or cooling equipment. Also ensure that is not positioned in a direct draft from any air conditioning, fan or open window.
If necessary move the printer.
4. Ensure the printer is not positioned in direct sunlight.
If it is unavoidable use a curtain to shade the printer.
5. Ensure the printer is installed in a clean dust free environment.
Move the printer to clean area if necessary.
6. Some industrial or cleaning processes give of fumes which can affect the printer.
Move the printer away from this type of air pollution

3. Check paper type.

1. Use only paper which is of a suitable quality, weight and size?
See the user guide.

4. Check the overall condition of the printer

1. Is the printer properly maintained ?
Clean the Paper Transport Passages.
Any rollers with dirt surfaces should be cleaned or replaced.

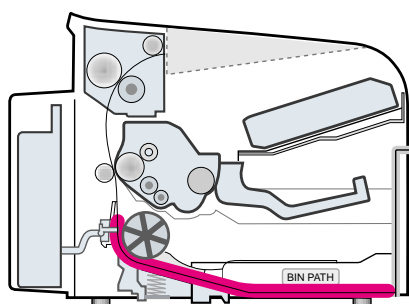
6.2 Bad discharge

6.2.1 Wrong Print Position

- **Description** Printing begins at wrong position on the paper.

Check and Cause	Solution
Wrong sense time caused by defective feed sensor actuator.	Replace the defective actuator

6.2.2 JAM 0

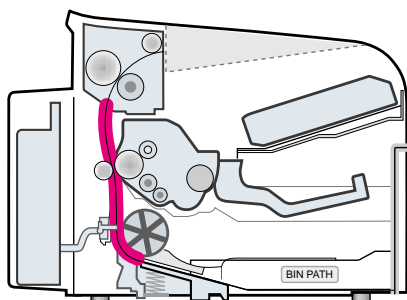


- **Description**

1. Paper is not exited from the cassette.
2. Jam-0 occurs if the paper feeds into the printer.

Check and Cause	Solution
1. Check the Solenoid by using Engine Test Mode-Pick up Test.	1. Replace the solenoid.
2. Check if the pad is loose due to bad sealing of the side-pad.	2. Replace the side-pad Assembly L or R, if necessary.
3. Check the surface of the roller-pickup for foreign matter.	3. Clean with soft cloth dampened with IPA(Isopropyl Alcohol) or water.
4. If the paper feeds into the printer and Jam 0 occurs, perform Engine Test Mode-Feed Sensor Test.	4. Replace the SMPS, HVPS or Sensor.

6.2.3 JAM 1

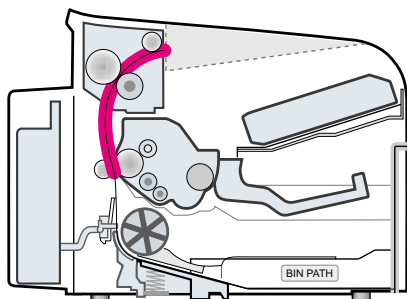


• Description

1. Recording paper is jammed in front of or inside the fuser.
2. Recording paper is stuck in the discharge roller and in the fuser just after passing through the Actuator-Feed.

Check and Cause	Solution
<ol style="list-style-type: none"> 1. If the recording paper is jammed in front of or inside the fuser. 2. If the recording paper is stuck in the discharge roller and the fuser just after passing through the Actuator-Feed, Feed Actuator may be defective. 	<ol style="list-style-type: none"> 1. Replace the SMPS. 2. Reassemble the Actuator-Feed and Spring-Actuator if the returning is bad.

6.2.4 JAM 2



• Description

1. Recording paper is jammed in front of or inside the fuser.
2. Recording paper is stuck in the discharge roller and in the fuser just after passing through the Actuator-Feed.

Check and Cause	Solution
<ol style="list-style-type: none"> 1. If the paper is completely fed out of the printer, but Jam 2 occurs : Exit sensor is defective. <ul style="list-style-type: none"> • After the paper is completely discharged, actuator Exit should return to the original position to shut the photo-sensor. Sometimes it takes longer hour than it should and does not return. 2. If the paper is rolled in the Fuser Roller: <ul style="list-style-type: none"> • This occurs when a Guide claw is broken away or transformed. • It occurs when the Spring of a Guide claw is broken away or transformed. • It occurs when the Heat-Roller or Pressure-Roller is seriously contaminated with the toner. 3. Paper is accordion in the fuser. 	<ol style="list-style-type: none"> 1. Check if the exit sensor actuator is defective. <ul style="list-style-type: none"> • Check if the actuator exit is unformed (Check if the lever part is unformed in shape). • Check whether burrs occur in the assembly part of the actuator exit or not and if the actuator is smoothly operated. • Check if foreign matters and wire get caught in the actuator exit's operation. 2. If the paper is stuck in the fuser : disassemble the fuser and remove the jammed paper, and clean the surface of the pressure roller with dry gauze. 3. Remove the jammed paper after disassembling the fuser : Clean the surface of the pressure roller with dry gauze. <ul style="list-style-type: none"> • Remove the toner particles stained on the rib. • Check the assemblage and performance of the exit.

6.2.5 Multi-Feeding

- **Description** Multiple sheets of paper are fed at once.

Check and Cause	Solution
1. Solenoid malfunction(the solenoid does not work properly): Perform Engine Test Mode-Pick up Test.	1. Replace the solenoid if necessary.
2. Pad-Friction is contaminated with foreign matter.(oil...)	2. Clean the pad friction with soft clothe dampened with IPA(Isopropyl Alcohol).
3. The face of paper is blended.	3. Use the smooth paper.

6.2.6 Paper rolled in the Fuser

- **Description** If contaminated at intervals of 57mm on the back of a paper.

Check and Cause	Solution
1. Contamination of the pressure roller or heat roller (Background, Hot off set).	1. After disassembling the fuser, clean contamination between the heat roller and the thermostat and remove the contamination of the pressure roller.
2. Check the claw of the fuser whether it is unfitted.	2. If there is heavy background, repair it by the background troubleshooting method. 3. The surface of the heat roller with IPA or water 4. Check the warp or separation of the sprint claw and the holder plate claw, and then manage it.

6.2.7 Paper rolled in the Toner Cartridge (OPC Drum)

- **Description** Paper is rolled up in the OPC.

Check and Cause	Solution
1. Paper is too much thin. 2. The face of paper is curled.	1. Recommend to use normal paper. 2. How to remove the rolled in the OPC Drum. <ul style="list-style-type: none">• Remove the paper while turning the OPC Drum against the ongoing direction.

6.3 Set Malfunction – Causes and Solutions

6.3.1 LCD Display Defect (■■■■in LCD Display)

- **Description** Strange characters are displayed in the LCD Window and OPE Panel buttons do not work.

Check and Cause	Solution
<ol style="list-style-type: none"> 1. Clear the memory. 2. Check that the OPE HARNESS is connected to the Connection Board correctly. 	<ol style="list-style-type: none"> 1. Try again after clearing the memory. 2. If re-connecting the harness does not correct the fault replace the OPE Ass'y and the main Board in sequence.

6.3.2 Defective OPE Keypad

- **Description** Pressing keys does not cause the set to respond correctly

Check and Cause	Solution
<ol style="list-style-type: none"> 1. Clear the memory. 2. Check that there is an audible key click when a key is pressed. 	<ol style="list-style-type: none"> 1. Check that the keypad is assembled correctly and the membrane is not damaged, replace the membrane or whole keypad assembly if necessary. 2. If the fault remains replace the OPE Ass'y and the Main board in sequence.

6.3.3 Fuser gear melts due to overheating causing Paper Jam.

- **Description** Constant Jam where paper is entering Fuser unit.
Fuser rollers do not turn

Check and Cause	Solution
1. Check the Heat Lamp, thermostat and thermistor	1. Use Engine Test Mode to test the Fuser -THERM ADC 120. Replace Fuser unit Replace SMPS or Main PBA as appropriate.

6.3.4 Paper Empty

- **Description** Paper Empty is displayed in the LCD panel even when paper is loaded in the cassette.

Check and Cause	Solution
1. Deformed paper sensor actuator or faulty sensor.	1. Replace the defective actuator or sensor.
2. SMPS PBA or Main PBA is defective	2. Replace the SMPS PBA or MAIN PBA as appropriate.
3. Faulty cables or connectors.	

6.3.5 Paper Empty without indication

- **Description** The paper empty message does not appear in the LCD when the paper cassette is empty.

Check and Cause	Solution
1. Deformed paper sensor actuator or faulty sensor.	1. Replace the defective actuator.
2. SMPS PBA or Main PBA is defective	2. Replace the SMPS PBA or MAIN PBA as appropriate
.	

6.3.6 Cover Open

- **Description** The Cover Open message appears on the LCD even when the print cover is closed.

Check and Cause	Solution
1. The 'Open Cover' microswitch may be stuck or faulty	1. Use TECH mode("cover sensor test") to check cover switch operation. Check and replace switch if necessary.
2. The tab on the front cover may be damaged or broken	2. Replace the front cover.
3. Check the connector and cables between HVPS and main PBA.	3. Replace the Main Control board or HVPS as necessary.

6.3.7 No error message when the cover is open

- **Description** The Cover Open message does not appears on the LCD even when the print cover is open.

Check and Cause	Solution
1. The 'Open Cover' microswitch may be stuck or faulty	1. Use TECH mode("cover sensor test") to check cover switch operation. Check and replace switch if necessary.
2. Check the connector and cables between HVPS and main PBA.	2. Replace the Main Control board or HVPS S/W as necessary.

6.3.8 Defective motor operation

- **Description** Main motor is faulty and paper does not feed into the printer, resulting in Jam 0'

Check and Cause	Solution
1. The main motor harness or Motor PCB may be faulty.	1. Check the motor harnesses and connectors, replace if defective.. If the problem persists replace the main PBA. Note Check motor operation using Engine Test Mode.

6.3.9 No Power

- **Description** When system power is turned on the LCD panel does not come on.

Check and Cause	Solution
1. Check if the power input and SMPS output are normal.	1. Replace the power supply cord or SMPS. Check power fuse and SMPS fuses replace if necessary.
2. LCD panel does not come on but normal start up sounds are heard.	2. Replace the OP panel.
3. After replacing SMPS display does not come on and no start up sounds are heard.	3. Replace the main PBA.

6.3.10 Printed Vertical Lines become curved

- **Description** When printing, vertical lines are not straight.

Check and Cause	Solution
1. Check stability of 24V supply to LSU.	1. 24V stable - Replace LSU. 24V unstable replace SMPS, if the problem persists replace the main PBA.

6.4 Bad Software Environment

6.4.1 The printer is not working (1)

- **Description** While Power turned on, the printer is not working in the printing mode.

Check and Cause	Solution
1. Run Self-Test Mode : Turn the power on and pressing "System Data List" by pressing Menu-Reports-System Data.	1. Check the power of the printer and perform the Self-Test. If the test printing works, that means no problems in the printer itself. If the test printing does not work, that means bad functioning of the printer (not because of software).
2. Check if the PC and the printer is properly connected and the toner cartridge installed.	2. Replace the printer cable. If the problems not solved even after the cable replaced, check the amount of the remaining toner.
3. Printing is not working in the Windows.	3. Check if the connection between PC and printer port is proper. If you use windows, check if the printer driver in the controller is set up. If the printer driver is properly set up, check in which program the printing is not working. The best way to find out is to open the memo pad to check the function of printing. If it is not working in a certain program, adjust the setup the program requires. Sometimes, the printout is normal within the Windows basic programs, but it's not working in a particular program. In such case, install the new driver again. If not working in the Windows basic program, Check the setup of the port of CMOS is on ECP. And check the address of IRQ 7 and 378
4. Check if the printer cable is directly connected to peripheral devices	4. If the scanner needs to be connected to the printer, first the remove the scanner from the PC to see if the printer is properly working alone.

6.4.2 The printer is not working (2)

• **Description**

After receiving the printing order, no response at all or the low speed of printing occurs due to wrong setup of the environment rather than malfunction of the printer itself.

Check and Cause	Solution
1. Secure more space of the hard disk.	1. Not working with the message 'insufficient printer memory' means hard disk space problem rather than the RAM problem. In this case, provide more space for the hard disk. Secure more space using the disk utilities program.
2. Printing error occurs even if there is enough space in the hard disk.	2. The connection of the cable and printer port is not proper. Check if the connection is properly done and if the parallel port in CMOS is rightly set up.
3. Check the parallel-port-related items in the CMOS Setup.	3. As a printer port, Select ECP or SPP among SPP(Normal), ECP, and EPP modes(increase printing speed) SPP normal mode support 8-bit data transfer, while ECP Mode transfer the 12-bit data.
4. Reboot the system to print.	4. If the regular font is not printing, the cable or the printer driver may be defective. Turn the PC and printer off, and reboot the system to print again. If not solved, double-click the printer in my computer. If the regular fonts are not printed this time again, the cable must be defective so replace the cable with new one.

6.4.3 Abnormal Printing

• **Description**

The printing is not working properly even when the cable has no problem.
(even after the cable is replaced)

If the printer won't work at all or the strange fonts are repeated, the printer driver may be defective or wrong setup in the CMOS Setup.

Check and Cause	Solution
1. Set up the parallel port in the CMOS SETUP.	1. Select SPP(Normal) or ECP LPT Port the among ECP, EPP or SPP in the CMOS Setup.
2. Printer Driver Error.	2. Check the printer in My Computer.(to see if the printer driver is compatible to the present driver or delete the old driver, if defective and reinstall the new driver)
3. Error message from insufficient memory. (The printing job sometimes stops or due to insufficient virtual memory, but it actually comes from the insufficient space of the hard disk.)	3. Delete the unnecessary files to secure enough space of the hard disk and start printing job again.

6.4.4 SPOOL Error

• Description

To spool which stands for "simultaneous peripheral operations online" a computer document or task list (or "job") is to read it in and store it, usually on a hard disk or larger storage medium so that it can be printed or otherwise processed at a more convenient time (for example, when a printer is finished printing its current document).

Check and Cause	Solution
1. Insufficient space of the hard disk in the directory assigned for the basic spool.	1. Delete the unnecessary files to provide more space to start printing job.
2. If the previous printing error not solved.	2. If there are some files with the extension name of ****.jnl, Delete them and Reboot the Windows to restart printing job.
3. When expected to collide with other program.	3. Shut down all other programs except the current one, if possible.
4. When an application program or the printer driver is damaged.	4. Delete the printer driver completely and reinstall it.
5. When some files related to OS are damaged or virus infected.	5. After rebooting the computer, check for viruses, restore the damaged files and reinstall the program to do the printing job.
6. Memory is less than suggested one.	6. Add up enough memory to the PC.

How to delete the data in the spool manager.

In the spool manager, the installed drivers and the list of the documents waiting to be printed are shown. Select the document to be deleted and check the delete menu.

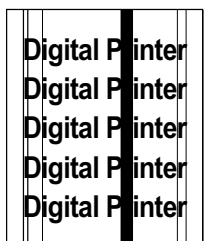
If you intend to delete the current document being printed, the data being transferred to the printer will be put out and then the document is removed. Before choosing the document, the menu is still inactive.

Or put the document out of the list and repeat the routine as in the above or finish the spool manager.

6.5 Bad image

6.5.1 Vertical Black Line and Band

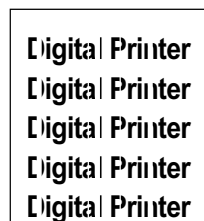
- **Description**
 1. Straight thin black vertical line occurs in the printing.
 2. Dark black vertical band occur in the printing.



Check and Cause	Solution
<ol style="list-style-type: none"> 1. Damaged develop roller in the Developer. Deformed Doctor-blade or cleaning-blade. 2. Scratched surface of the discharge roller in the developer. 3. Partly depression or deformation on the surface of the transfer roller. 	<ol style="list-style-type: none"> 1. If causes 1 and 2 occur in the developer cartridge, replace the developer and try to print out. 2. Replace the transfer roller if occurred as No. 3.

6.5.2 Vertical White Line

- **Description** White vertical voids in the image.



Check and Cause	Solution
<ol style="list-style-type: none"> 1. Foreign matter stuck onto the window of internal lenses of LSU mirror. 2. Foreign matter or toner particles between the developer roller and blade. (In case the life of the developer has been expired, white lines or light image occur in front of the image.) 3. It may occur when Burr and foreign substances are on the window of the developer frame. 4. If the fuser is defective, voids occur periodically at the top of a black image. 	<ol style="list-style-type: none"> 1. Foreign matter stuck onto the window : Clean the LSU window with recommended cleaner(IPA) Clean the window with a clean cotton swab. 2. Foreign matter in the LSU : Open the cover of LSU and clean with a cotton swab on the surface of the reflex mirror. 3. No 3. : Remove the foreign matter and burr of the exposure window. (Developer cartridge) 4. No. 4. : Open the front cover and check ribs that corresponds to the position of the voids. Remove if found. 5. If the problems are not solved, replace the developer cartridge.

6.5.3 Horizontal Black Band

• Description

1. Dark or blurry horizontal stripes occur in the printing periodically.
(They may not occur periodically.)

Digital Printer

Digital Printer

Digital Printer

Digital Printer

Digital Printer

Check and Cause	Solution
<ol style="list-style-type: none"> 1. Bad contacts of the voltage terminals to developer. 2. The rollers of developer may be stained. OPC Drum = 75.5mm Charge Roller = 37.7mm Supply Roller = 47.5mm Develop Roller = 35.2mm Transfer Roller = 46.2mm Heat Roller = 63.9mm Pressure Roller = 75.4mm 	<ol style="list-style-type: none"> 1. Clean each voltage terminal of the Charge, Supply, Develop and Transfer roller. (remove the toner particles and paper particles) 2. Clean the right Gear that has relatively small gap of the teeth in the OPC. 3. If the malfunction persists, replace the developer.

6.5.4 Black/White Spot

• Description

1. Dark or blurry black spots occur periodically in the printing.
2. White spots occur periodically in the printing.

Digital Printer

Digital Printer

Digital Printer

Digital Printer

Digital Printer

Check and Cause	Solution
<ol style="list-style-type: none"> 1. If dark or blurry black spots occur periodically, the rollers in the Developer may be contaminated with foreign matter or paper particles. (Charge roller : 37.7 mm interval OPC drum : 75.5 mm interval) 2. If faded areas or voids occur in a black image at intervals of 75.5 mm, or black spots occur elsewhere, the OPC drum surface is damaged. 3. If a black image is partially broken, the transfer voltage is abnormal or the transfer roller's life has expired. 	<ol style="list-style-type: none"> 1. Run OPC cleaning Mode Print and run the Self-test 2 or 3 times. 2. In case of 75.5 mm interval unremovable in 1, cleanly remove foreign substances stuck on the OPC location equivalent to black spots and white spots with a dry duster. 3. The transfer roller guarantees 50,000 sheets printing. If the roller's life is expired, replace it. 4. In case of 37.7 mm interval unremovable in 1, take measures as to replace the developer cartridge and try to print out. 5. Clean the inside of the set against the paper particles and foreign matter in order not to cause the trouble.

6.5.5 Light Image

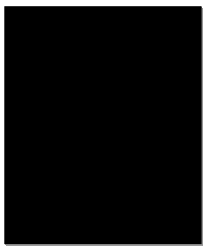
- **Description** The printed image is light, with no ghost.

Digital Printer
Digital Printer
Digital Printer
Digital Printer
Digital Printer

Check and Cause	Solution
1. Develop roller is stained when the toner of developer cartridge is almost consumed.	1. Check if the Toner Save mode is off.
2. Ambient temperature is below than 10°C.	2. Replace the developer cartridge and try to print out.
3. Bad contact caused by the toner stains between the high voltage terminal in the HVPS and the one in the set.	3. Wait 30 minutes after printer is powered on before you start printing.
4. Abnormal output from the HVPS.	4. Clean up the contaminated area by the toner.
	5. Replace the HVPS if the problems are not solved by the above four directions.

6.5.6 Dark Image or a Black

- **Description** The printed image is dark.



Check and Cause	Solution
1. No charge voltage in the engine board.	1. Clean the high voltage charge terminal.
2. Charge voltage is not turned on due to the bad contacts between power supply in the side of the Developer and charge terminal of HVPS.	2. Check the state of the connector which connects the engine board and HVPS.
	3. Replace the HVPS if not solved by the above direction 1 and 2.

6.5.7 Uneven Density

- **Description** Print density is uneven between left and right.

Digital Printer
Digital Printer
Digital Printer
Digital Printer
Digital Printer

Check and Cause	Solution
1. The pressure force on the left and right springs of the transfer roller is not even, the springs are damaged, the transfer roller is improperly installed, or the transfer roller bushing or holder is damaged.	1. Replace both the left and right Spring Holder.
2. The toner level is not even on the developer roller due to the bad blade.	2. Occur in the developer cartridge, replace the developer and try to print out.

6.5.8 Background

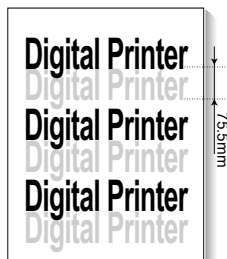
- **Description** Light dark background appears in whole area of the printing.

Digital Printer
Digital Printer
Digital Printer
Digital Printer
Digital Printer

Check and Cause	Solution
1. Does character exist less than 2% per a page, and hasn't it been used long time?	1. The toner cartridge is basically designed to print 3,000 sheets with 5% image.
2. Does recycle paper be used?	2. The B/S is not guaranteed if using recycle paper.
3. Has the life span of the developer ended?	3. Replace the developer when the life span of it has been ended.
4. Is the movement(Up and Down) of the transfer roller smooth?	4. Clean the bushing part of the transfer roller.
5. Is the HVPS normal?	5. If the problem is still not solved, replace the developer.

6.5.9 Ghost (1)

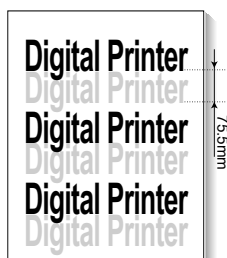
- **Description** Ghost occurs at 75.5 mm intervals of the OPC drum in the whole printing.



Check and Cause	Solution
1. Bad contacts caused by contamination from toner particles between high voltage terminal in the main body and the electrode of the Developer.	1. Clean the terminals when contaminated by toner particles.
2. Bad contacts caused by contamination from toner particles between high voltage terminal in the main body and the one in the HVPS board.	2. Occur in the developer cartridge, replace the developer and try to print out.
3. The life of developer is expired.	3. Replace the Main board and HVPS Board if not solved by the above directions 1-2.
4. Transfer roller lifetime(50.000 sheets) has expired.	4. If not solved by the direction 3, check the transfer roller lifetime and replace it.
5. Abnormal low temperature(below 10°C).	5. Wait about 1 hour after power on before using printer.

6.5.10 Ghost (2)

- **Description** Ghost occurs at 75.5 mm intervals of the OPC drum in the whole printing.
(When printing on card stock or transparencies using manual feeder)



Check and Cause	Solution
When printing on card stock thicker than normal paper or transparencies such as OHP, higher transfer voltage is required.	Select 'Thick Mode' on paper type menu from the software application and after using returning to the original mode is recommended.

6.5.11 Ghost (3)

- **Description** White ghost occurs in the black image printing at 47.5mm intervals.



Check and Cause	Solution
1. The life of the developer may be expired.	1. Occur in the developer cartridge, replace the developer and try to print out.
2. The abnormal voltage and bad contact of the terminal of the supply roller	2. Check the approved voltage of the supply roller and contact of the terminal and adjust if necessary.

6.5.12 Ghost (4)

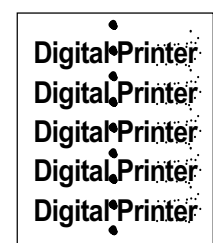
- **Description** Ghost occurs at 47.5mm(or 63.9mm) intervals.



Check and Cause	Solution
The temperature of the fuser is maintained high.	1. Disassemble the fuser and remove the contaminated toner particles on the roller and clean the foreign matter between Thermistor and Heat roller. (▲ Caution : can be deformed)

6.5.13 Stains on the Face of Page

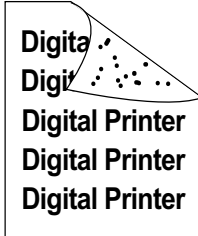
- **Description** The background on the face of the printed page is stained.



Check and Cause	Solution
1. Toner leakage due to improperly sealed developer.	1. Replace the developer cartridge.
2. If the transfer roller is contaminated, stains on the face of page will occur.	2. If the transfer roller is contaminated, run DRUM Cleaning Mode Print 2 or 3 times. And perform Self-Test 2 or 3 times to remove contamination.

6.5.14 Stains on Back of Page

- **Description** The back of the page is stained at 47 mm intervals.



Check and Cause	Solution
1. Transfer roller is contaminated.	1. Perform the DRUM Cleaning Mode Print 2 or 3 times. Run Self-Test to remove the contamination of the transfer roller.
2. Pressure roller is contaminated.	2. Replace the transfer roller if contaminated severely. 3. Disassemble the fuser and clean the H/R(Heat Roller) and P/R(Pressure roller). And check the area between H/R and Thermistor. If contaminated, clean the area not to be deformed.

6.5.15 Blank Page Print out (1)

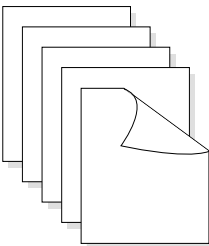
- **Description** Blank page is printed.



Check and Cause	Solution
Bad ground contacts in OPC and/or developer.	Remove contamination of the terminals of the developer and the unit.

6.5.16 Blank Page Print out (2)

- **Description**
 1. Blank page is printed.
 2. One or several blank pages are printed.
 3. When the printer turns on, several blank pages print.



Check and Cause	Solution
1. Bad ground contacts in OPC and/or developer.	1. Remove contamination of the terminals of the developer.
2. Abnormal solenoid.	2. Perform the engine self test using Engine Test Mode to check if the Solenoid is normal.(refer to code 06) 3. If not solved by the above directions 1-2, Replace the engine board. 4. Turn the power off, delete the data of PC and try printing again.

6.6 Fax & Phone Problems

6.6.1 No Dial Tone

- **Description** There is no dial tone when the On-Hook dial button is pressed.

Check and Cause	Solution
1. Check that the telephone line cord supplied with the set is connected to TEL LINE correctly.	1. If the telephone cord is OK but there is no dial tone, try plugging a normal telephone into the wall socket. If this is OK then replace the LIU B'd.
2. Listen for a CLICK sound when the OHD key is pressed.	2. If you cannot hear the OHD CLICK sound, the OPE Ass'y may be defective. Replace the OPE Ass'y. (If the key click sound is off, you cannot hear click sound even if OPE Ass'y has no problem on it)
3. Check the connection of the HARNESS between the LIU and the Main B'd.	3. Check the Speaker connection and the harness between the LIU and the Main PBA, replace as necessary.
4. Check that the SPEAKER is connected correctly.	4. Use Tech mode / Modem Test to check that the speaker and amplifier are working. Replace the Main B'd.

6.6.2 Defective MF DIAL

- **Description** The MF DIAL is not functioning.

Check and Cause	Solution
1. Check that the telephone line cord supplied with the set is connected to TEL LINE correctly.	1. If the telephone cord is OK but there is no dial tone, try plugging a normal telephone into the wall socket. If this is OK then replace the LIU B'd.
2. Listen for a CLICK sound when the KEY is pressed.	2. If you cannot hear the OHD CLICK sound, the OPE Ass'y may be defective. Replace the OPE Ass'y. (After key click sound sets to "ON", and you can hear click sound)
3. Check the connection of the HARNESS between the LIU and the Main B'd.	3. Check the Speaker connection and the harness between the LIU and the Main PBA, replace as necessary.
4. Check that the SPEAKER is connected correctly.	4. Use Tech mode / Modem Test to check that the speaker and amplifier are working. Replace the LIU and Main B'd in sequence
	Notes: Product supports MF DIAL type only.

6.6.3 Defective FAX FORWARD/RECEIVE

- **Description** FAX FORWARD/RECEIVE is not functioning.

Check and Cause	Solution
<ol style="list-style-type: none"> 1. Check that you can hear a dial tone by pressing OHD. 2. Check that you can hear a RECEIVE tone when MODEM testing in TECH Mode. 	<ol style="list-style-type: none"> 1. If MODEM testing is normal and there is no dial tone, then try replacing the LIU B'd. 2. If testing the MODEM shows a fault replace the Main B'd.

6.6.4 Defective FAX FORWARD

- **Description** RECEIVE is functioning, but FORWARD is not functioning or received data is corrupt.

Check and Cause	Solution
<ol style="list-style-type: none"> 1. Check if there is a NOISE line by pressing on-hook dial and listening. 2. Check that the destination fax machine can receive forwarded faxes by using a different sending fax machine (preferably from the same wall socket). 3. Check the cable between the set and the wall socket for damage. 	<ol style="list-style-type: none"> 1. If you can hear a noisy line when using on-hook dial, replace or repair the telephone line 2. Replace LIU. 3. Replace the line cord.

6.6.5 Defective FAX RECEIVE (1)

- **Description** FORWARD is functioning, but RECEIVE is not functioning or the received data is corrupt.

Check and Cause	Solution
<ol style="list-style-type: none"> 1. Check if there is a NOISE line by pressing on-hook dial and listening 2. Use a different fax machine to receive from the same sender (if possible on the same wall socket). 	<ol style="list-style-type: none"> 1. If you can hear a noisy line when using on-hook dial, replace or repair the telephone line. 2. Replace the LIU.

6.6.6 Defective FAX RECEIVE (2)

- **Description** Received data are lengthened or cut in the printing.

Check and Cause	Solution
<ol style="list-style-type: none"> 1. Check if there is a NOISE line by pressing on-hook dial and listening 2. Ask sender to send to another fax machine (if possible connected to the same wall socket) 	<ol style="list-style-type: none"> 1. If you can hear a noisy line when using on-hook dial, replace or repair the telephone line 2. Replace LIU or main PBA in sequence.

6.6.7 Defective FAX RECEIVE (3)

- **Description** The phone is ringing continuously, but it set does not answer the call.

Check and Cause	Solution
Check that the RECEIVE Mode is set to FAX MODE.	If the fault persists even when the RECEIVE Mode is changed to FAX MODE then replace the LIU and the Main B'd in sequence.

6.6.8 Defective FAX RECEIVE (4)

- **Description** Received data is reduced by more than 50% in the printing.

Check and Cause	Solution
Check the FAX status of the forwarding side.	This is a problem with the sending fax machine. Correct the setting on the remote machine..

6.6.9 Defective Automatic Receiving

- **Description** The automatic receiving function is not working.

Check and Cause	Solution
1. Check that the RECEIVE Mode is set to FAX MODE.	1. If the RECEIVE Mode is set to the TEL MODE, reset it to the FAX MODE. 2. Even after the RECEIVE Mode is changed to the FAX Mode, the problem persists then try to replace the LIU and the Main B'd in sequence.

6.7 Copy Problems

6.7.1 White Copy

- **Description** Blank page is printed out when copying.

Check and Cause	Solution
<ol style="list-style-type: none"> 1. Check the Scanner Cover is properly closed. 2. Check shading profile. 3. Check white/black reference voltage on Main PBA. 	<ol style="list-style-type: none"> 1. Room light can pass through a thin original. 2. Redo shading profile in the tech mode. 3. Replace the Main PBA.

6.7.2 Black Copy

- **Description** Black page is printed out when Copying.

Check and Cause	Solution
<ol style="list-style-type: none"> 1. Check for CIS problem on the Main PBA. 2. Check shading profile. 	<ol style="list-style-type: none"> 1. Check the CIS FFC Cable is properly connected. 2. Redo shading profile in the tech mode.

6.7.3 Abnormal noise

- **Description** There is noise from the ADF when copying.

Check and Cause	Solution
1. Check the Scanner Motor, gearbox and rollers.	1. Check for correct assembly of gears and motor. Ensure no parts are fouling and there are no foreign objects in the mechanism or scanner path. Replace any worn parts
2. Check the Motor Driver on Driver PBA.	2. Replace the main PBA and ADF PBA in sequence.

6.7.4 Defective Image Quality

- **Description** The copied image is excessively light or dark

Check and Cause	Solution
1. Check shading profile.	1. Redo shading profile in the tech mode.
2. Check the gap between original and scanner glass.	2. A gap of more than 0.5 mm can cause a blurred image. Ensure rollers and cover close correctly. Replace as necessary.
3. Check printing quality.	3. See "Print" troubleshooting.

6.8 Scanning Problems – Causes and Solutions

6.8.1 PC Scanning problems

- **Description** Unable to scan using a PC.

Check and Cause	Solution
1. Check the Cable (USB or Parallel) is properly connected and that the printer can print correctly.	1. Reconnect the PC and printer, replace any faulty cables. If using a parallel cable, check that the parallel port is properly configured in the BIOS.
2. Check that the driver is installed properly.	2. If printing is OK check that the Scan driver is also installed (Refer to User's Manual.)
3. Check that the copy function operates normally.	3. If the copy function works, replace the Main PBA. If the copy function doesn't work, replace the CIS Ass'y and try again.

6.8.2 Poor Quality of PC Scanned images

- **Description** The image PC scanned is not clear or bad.

Check and Cause	Solution
1. Use TECH mode to carry out a shading test and examine the waveform printout.	1. If the CIS waveform form is abnormal replace the CIS Ass'y.
2. Check if the resolution is set too low in PC Scan options. (Refer to User's Manual.)	2. Teach the user about scanner resolution – refer to the User Guide.

6.9 Toner Cartridge Service

Only toner cartridges supplied by Samsung should be used. Printing defects or set damage caused by the use of non-approved toner cartridges or un-licensed toner refills are not covered by the guarantee.

6.9.1 Precautions on Safe-keeping of Toner Cartridge

Excessive exposure to direct light for more than a few minutes may cause damage to the cartridge.

6.9.2 Service for the Life of Toner Cartridge

If the printed image is light due to the toner supply becoming low you can temporarily improve the print quality by redistributing the toner (Shake the toner cartridge), however you should replace the toner cartridge to solve the problem permanently.

6.9.2.1 Redistributing Toner

When the toner cartridge is near the end of its life, white streaks or light print occurs. The LCD displays the warning message, "Toner Low." You can temporarily reestablish the print quality by redistributing the remaining toner in the cartridge.

6.9.3 Standard of guarantee for consumable parts.

Please refer to User's Manual or Instructions on Fax/Printer Consumables SVC manual for the criteria for judging the quality of consumable parts the standard of guarantee on those parts.

- **Spotting a refilled cartridge by eye.**

One way security screws are used in the manufacture of the cartridge – check if these are damaged.

6.9.4 Error messages in the LCD window related to toner.

This section explains messages on the LCD that are related to the data stored in the EEPROM in the toner cartridge.

6.9.4.1 Toner Low

- Explanation: The amount of toner remaining is less than 10%
- Solution: The cartridge is almost empty or life-expired – replace the cartridge.

6.9.4.2 Toner Empty

- Explanation: The toner cartridge is empty
- Solution: Replace the cartridge.

6.9.4.3 Drum Warning

- Explanation: This message appears when the OPC drum is nearing the end of its life (14,000pages). This means that the life of the mechanical parts in the cartridge has expired (this is not an indication of toner remaining).
- Solution: After printing about 15,000 pages, in a worst case scenario, the waste toner collector might overflow and it may cause the system to fail. Also after 15,000 pages the OPC drum surface will be becoming worn and print quality will degrade, print images will become misty. It is therefore necessary to replace the cartridge even though there may be toner left in it.

When this message occurs there are approximately 1,000 pages left.

6.9.4.4 Replace Drum

- Explanation: The toner cartridge mechanical life is expired.
- Solution: Replace the cartridge.

6.10 Software Problems – Causes and Solutions

6.10.1 The printer is not working (1)

- **Description** While Power turned on, the printer is not working in the printing mode.

Check and Cause	Solution
<ol style="list-style-type: none"> 1. Run Self-Test Mode: using the menu buttons print the test page. 2. Check that the PC and the printer are properly connected and that the toner cartridge installed correctly. 3. Printing is not working in the Windows. 4. Check that the printer cable is directly connected to the printer. 	<ol style="list-style-type: none"> 1. If the test print works that means there are no problems in the printer itself. If the test printing does not work that means the printer is faulty and the problem is not due to computer software or driver settings. 2. Replace the printer cable. If the problem is not solved even after the cable is replaced, check the amount of the remaining toner. (refer to Toner Cartridge Service 7-6, Page 7-25) 3. Check that the connection between PC and printer port are correct. If you use windows, check that the printer driver in the controller is set up correctly set up, the correct port is selected and 'Use On-line' is selected in the driver. If the printer driver is properly set up try printing a test page from the driver properties. Check in which program printing is not working. Try opening 'Note Pad' and printing. If the printer is not working in a certain program, adjust the setup within that program. Sometimes, the printout is normal within the Windows basic programs, but it's not working in a particular program. In this case, uninstall and re-install the new driver. If the printer is not working in the Windows basic programs and you are printing using the parallel port check the port setting in CMOS is on ECP and that the address is IRQ 7 and 378 (for parallel port 1). Try using USB instead of parallel – or vice versa. 4. If you have other devices that need to share the printer port try temporarily disconnecting these devices and perhaps even uninstalling their drivers) to ensure the printer works by itself. If you are using a USB hub try connecting directly to the back of the PC instead.

6.10.2 The printer is not working (2)

- **Description** After receiving the print command there is no response at all or print speed is low due to wrong setup of the environment rather than malfunction of the printer itself.

Check and Cause	Solution
1. Ensure you have sufficient free hard disk space for the temporary work files created during printing.	1. Not working with the message 'insufficient printer memory' means there is a hard disk space problem rather than a printer RAM problem. In this case provide more space on the hard disk. Secure more space using the disk utilities program.
2. Printing error occurs even if there is enough space in the hard disk.	2. The connection of the cable and printer port is not correct. Check that the cable is properly connected and if you are using the parallel port check that the port settings in CMOS is correct.
3. Check the parallel-port-related items in the CMOS Setup.	3. For the printer port, Select ECP. SPP and normal normal modes support 8-bit data transfer, while ECP Mode supports 12-bit data transfer.
4. Reboot the system to print.	4. If the regular font is not printing, the cable or the printer driver may be defective. Turn the PC and printer off, and reboot the system to print again. If not solved, double-click the printer in my computer. If the regular fonts are not printed this time again, the cable must be defective so replace the cable with new one.

6.10.3 Abnormal Printing

- **Description** Printing does not work – even after replacing the cable
Printer does not work at all or strange fonts are printed,

Check and Cause	Solution
1. Set up the parallel port using CMOS SETUP.	1. Ensure that ECP (best) or SPP is selected in the CMOS (BIOS) setup.
2. Printer Driver Error.	2. Ensure that the correct driver is loaded. Use the driver supplied on the CD or downloaded from the Samsung web site. DO NOT use the Microsoft driver supplied with the Windows operating system. If the printer is a GDI or SPL type printer ensure that ALL OTHER GDI or SPL drivers are uninstalled as Windows allows only 1 of this type of driver to be loaded.
3. Error message "insufficient memory". (The printing job sometimes stops due to insufficient virtual memory, this is caused by insufficient space on the hard disk.)	3. Delete any unnecessary files to secure enough space on the hard disk and start the print job again.

6.10.4 SPOOL Error

• Description

SPOOL (simultaneous peripheral operations online) is the process Windows uses to manage print jobs. Jobs are processed and then stored on the hard disk until the printer is ready to accept them

Check and Cause	Solution
1. Insufficient space on the hard disk in the directory assigned for the basic spool.	1. Delete any unnecessary files to provide more space for spool storage.
2. If previous printing errors were not solved.	2. There may be files from previous failed print jobs on the hard disk with the name in the form '*.jnl'. Delete these files and Reboot Windows to restart the printer.
3. There may be conflict with other drivers or programs.	3. Shut down all other programs except the current one, if possible.
4. When an application program or the printer driver is damaged.	4. Delete the printer driver completely and reinstall it.
5. When some files related to the OS are damaged or virus infected.	5 After rebooting the computer, check for viruses, restore the damaged files and reinstall the application program which is not working properly.
6. Memory is less than suggested.	6. Add up more memory to the PC.

How to delete the data in the spool manager.

In the spool manager, the installed drivers and the list of the documents waiting to be printed are shown. Select the document to be deleted and check delete in the menu.

If the job you are deleting is the current job when you delete the job data that has already been transferred to the printer's memory will still be printed. If there is a problem with the printer (out of toner, offline, out of paper etc.) the job may take a long time to delete as it must wait for a time out.

6.11 Windows Problems

Problem	Solution
After installing PortThru the print server name is not displayed under New Print Server in SyncThru.	<ol style="list-style-type: none"> 1. Verify that the printer power switch is turned on and the 'READY' message is displayed on the printer front panel. 2. Verify that the LAN cable is plugged into the PortThru card. 3. There are 2LEDs on the PortThru card. One should flash irregularly and the other should be on. If this is not the case ensure that the network card is properly installed and the PCB and cable connectors make a good connection. If the problem continues check the network cable / socket by using a different cable or socket. If the problem continues replace the network card. 4. Confirm that the print server and the PC which searches for the New Print Server is on the same LAN (correct IP and subnet mask settings). If you want to search for a New Print Server your PC and the print server should be on the same LAN.
The print server name is displayed, but the test page is not printed.	Using the front panel menus print the Network configuration. If the Network menu is not displayed or the configuration page is not printed turn off the printer, ensure the network card is properly fitted then turn it back on and try again. If the problem continues replace the network card.
SyncThru indicates that firmware upgrade is complete but when the network configuration is printed the software version has not changed.	Before attempting to upgrade firmware ensure that computer and printer can communicate using a Ping command.
SyncThru is unable to automatically detect the printer.	<ol style="list-style-type: none"> 1. Check that the LAN cable is connected to the printers. If an IP address is assigned to the computer and printer ensure that the Ping command can see the printer. If an IP address is not allocated to the printer or it is in a different LAN segment then ensure that either IPX/SPX or DLC/LLC protocols are enabled on the computer. 2. Print the network configuration. If the TCP/IP or Network protocols are disabled in the printer either use the front panel to re-enable them or ensure that DLC/LLC protocol is installed in the computer. 3. In SyncThru use the Settings / Protocol Selection menu option to select either TCP/IP or IPX protocols and then use the View/Refresh option to scan the network again. 4. Ensure that the network cable and wall socket are functioning correctly. 5. Ensure that the version of SyncThru is the same as or newer than the version supplied with the printer. 6. Ensure that there is no router between the printer and the computer as SyncThru will not work through a router. 7. Ensure there are no Switch or Router VLAN or Access Control Lists which are blocking communication between the printer and the computer. <p>Note Windows XP does not support DLC/LLC protocols.</p>
The printer does not print via a network connection.	<ol style="list-style-type: none"> 1. Connect the printer using a Parallel or USB cable and ensure that the computer can print. If not check that the printer drivers are installed correctly 2. If the printer can print via a local connection check Printer Properties / Ports and ensure that a TCP/IP port has been allocated to the printer.

6.12 SyncThru Installation Problems

Problem	Solution
"File Transfer Error" message appears during the Installation process.	<ol style="list-style-type: none">1. Make sure that any previously installed version of SyncThru is uninstalled. Restart your PC after uninstalling previous versions.2. If the problem continues, In Windows 95/98 boot into MS/DOS mode and delete the "sammon.dll" file in the windows\system directory the restart Windows and reinstall SyncThru. In Windows NT stop the spooler service using 'Services' in Control Panel, delete the "sammon.dll" file in the windows\system32 directory then restart the spooler service and reinstall SyncThru.
'Unable to add the Port list of Samsung ports' message appears when you add a port.	Verify that your PC restarts after installing SyncThru.