SAMSUNG

Mono Laser MFP

SCX-340x series

SCX-340x / 340xF / 340xW / 340xFW

SERVICE MANUAL

Mono Laser MFP

Contents

Refer to the service manual in the GSPN (see the rear cover) for more information.

Contents

1. Precautions

In order to prevent accidents and damages to the equipment please read the precautions listed below carefully before servicing the product and follow them closely.

1.1. Safety warning

1) Only to be serviced by a factory trained service technician.

   High voltages and lasers inside this product are dangerous. This product should only be serviced by a factory trained service technician.

2) Use only Samsung replacement parts.

   There are no user serviceable parts inside the product. Do not make any unauthorized changes or additions to the product as these could cause the product to malfunctions and create an electric shocks or fire hazards.

3) Laser Safety Statement

   The printer is certified in the U.S. to conform to the requirements of DHHS 21 CFR, chapter 1 Subchapter J for Class I(1) laser products, and elsewhere is certified as a Class I laser product conforming to the requirements of IEC 60825-1. Class I laser products are not considered to be hazardous. The laser system and printer are designed so there is never any human access to laser radiation above a Class I level during normal operation, user maintenance or prescribed service condition.

   - Wavelength: Max. 800 nm (785 -10/+15)
   - Beam divergence
     - Paraller: Max. 13 degrees (10 -4/+3)
     - Perpendicular: Max. 35 degrees (31 -6/+4)
   - Maximum power of energy output: 12 mW

WARNING

Never operate or service the product with the protective cover removed from Laser/Scanner assembly. The reflected beam, although invisible, can damage your eyes.

When using this product, these basic safety precautions should always be followed to reduce risk of fire, electric shock, and personal injury.

1.2. Caution for safety

1.2.1. Toxic material

This product contains toxic materials that could cause illness if ingested.

1) Please keep imaging unit and toner cartridge away from children. The toner powder contained in the imaging unit and toner cartridge may be harmful, and if swallowed, you should contact a doctor.

1.2.2. Electric shock and fire safety precautions

Failure to follow the following instructions could cause electric shock or potentially cause a fire.

1) Use only the correct voltage, failure to do so could damage the product and potentially cause a fire or electric shock.

2) Use only the power cable supplied with the product. Use of an incorrectly specified cable could cause the cable to overheat and potentially cause a fire.

3) Do not overload the power socket, this could lead to overheating of the cables inside the wall and could lead to a fire.

4) Do not allow water or other liquids to spill into the product, this can cause electric shock. Do not allow paper clips, pins or other foreign objects to fall into the product, these could cause a short circuit leading to an electric shock or fire hazard.

5) Never touch the plugs on either end of the power cable with wet hands, this can cause electric shock. When servicing the product, remove the power plug from the wall socket.

6) Use caution when inserting or removing the power cord. When removing the power cord, grip it firmly and pull. The power cord must be inserted completely, otherwise a poor contact could cause overheating leading to a fire.

7) Take care of the power cable. Do not allow it to become twisted, bent sharply around corners or power cable may be damaged. Do not place objects on top of the power cable. If the power cable is damaged it could overheat and cause a fire. Exposed cables could cause an electric shock. Replace the damaged power cable immediately, do not reuse or repair the damaged cable. Some chemicals can attack the coating on the power cable, weakening the cover or exposing cables causing fire and shock risks.

8) Ensure that the power sockets and plugs are not cracked or broken in any way. Any such defects should be repaired immediately. Take care not to cut or damage the power cable or plugs when moving the machine.

9) Use caution during thunder or lightning storms. Samsung recommends that this machine be disconnected from the power source when such weather conditions are expected. Do not touch the machine or the power cord if it is still connected to the wall socket in these weather conditions.

10) Avoid damp or dusty areas, install the product in a clean well ventilated location. Do not position the machine near a humidifier or in front of an air conditioner. Moisture and dust built up inside the machine can lead to overheating and cause a fire or cause parts to rust.

11) Do not position the product in direct sunlight. This will cause the temperature inside the product to rise possibly leading to the product failing to work properly and in extreme conditions could lead to a fire.

12) Do not insert any metal objects into the machine through the ventilator fan or other part of the casing, it could make contact with a high voltage conductor inside the machine and cause an electric shock.

13)  When replacing the SMPS board, please wait 5 minutes after unplugging the power cord, then replace it. You can get a shock by the electric discharge.

1.2.3. Handling precautions

The following instructions are for your own personal safety to avoid injury and so as not to damage the product.

1) Ensure the product is installed on a level surface, capable of supporting its weight. Failure to do so could cause the product to tip or fall.

2) The product contains many rollers, gears and fans. Take great care to ensure that you do not catch your fingers, hair or clothing in any of these rotating devices.

3) Do not place any small metal objects, containers of water, chemicals or other liquids close to the product which if spilled could get into the machine and cause damage or a shock or fire hazard.

4) Do not install the machine in areas with high dust or moisture levels, beside on open window or close to a humidifier or heater. Damage could be caused to the product in such areas.

5) Do not place candles, burning cigarettes, etc on the product, These could cause a fire.

1.2.4. Assembly and Disassembly precautions

1) Replace parts carefully and always use Samsung parts. Take care to note the exact location of parts and also cable routing before dismantling any part of the machine. Ensure all parts and cables are replaced correctly. Please carry out the following procedures before dismantling the product or replacing any parts.

2) Ensure that power is disconnected before servicing or replacing any electrical parts.

3) Disconnect interface cables and power cables.

4) Only use approved spare parts. Ensure that part number, product name, any voltage, current or temperature rating are correct.

5) When removing or re-fitting any parts do not use excessive force, especially when fitting screws into plastic.

6) Take care not to drop any small parts into the machine.

7) Handling of the OPC Drum

   - The OPC Drum can be irreparably damaged if it exposed to light. Take care not to expose the OPC Drum either to direct sunlight or to fluorescent or incandescent room lighting. Exposure for as little as 5 minutes can damage the surface of the photoconductive properties and will result in print quality degradation. Take extra care when servicing the product. Remove the OPC Drum and store it in a black bag or other lightproof container. Take care when working with the Covers (especially the top cover) open as light is admitted to the OPC area and can damage the OPC Drum.

   - Take care not to scratch the green surface of OPC Drum Unit. If the green surface of the Drum Cartridge is scratched or touched the print quality will be compromised.

1.2.5. Disregarding this warning may cause bodily injury

1) Be careful with the high temperature part.

   The fuser unit works at a high temperature. Use caution when working on the printer. Wait for the fuser unit to cool down before disassembly.

2) Do not put fingers or hair into the rotating parts.

   When operating a printer, do not put hand or hair into the rotating parts (Paper feeding entrance, motor, fan, etc.). If do, you can get harm.

3) When you move the printer, use safe lifting and handling techniques.

   This printer is heavy. Use the lifting handles located on each side of the machine. Back injury could be caused if you do not lift carefully.

4) Ensure the printer is installed safely.

   Ensure the printer is installed on a level surface, capable of supporting its weight. Failure to do so could cause the printer to tip or fall possibly causing personal injury or damaging the printer.

5) Do not install the printer on a sloping or unstable surface. After installation, double check that the printer is stable.

1.3. ESD precautions

Certain semiconductor devices can be easily damaged by static electricity. Such components are commonly called "Electrostatically Sensitive (ES) Devices" or ESDs. Examples of typical ESDs are: integrated circuits, some field effect transistors, and semiconductor "chip" components. The techniques outlined below should be followed to help reduce the incidence of component damage caused by static electricity.

CAUTION

Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.

1) Immediately before handling a semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, employ a commercially available wrist strap device, which should be removed for your personal safety reasons prior to applying power to the unit under test.

2) After removing an electrical assembly equipped with ESDs, place the assembly on a conductive surface, such as aluminum or copper foil, or conductive foam, to prevent electrostatic charge buildup in the vicinity of the assembly.

3) Use only a grounded tip soldering iron to solder or desolder ESDs.

4) Use only an "anti-static" solder removal device. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ESDs.

5) Do not use Freon-propelled chemicals. When sprayed, these can generate electrical charges sufficient to damage ESDs.

6) Do not remove a replacement ESD from its protective packaging until immediately before installing it. Most replacement ESDs are packaged with all leads shorted together by conductive foam, aluminum foil, or a comparable conductive material.

7) Immediately before removing the protective shorting material from the leads of a replacement ESD, touch the protective material to the chassis or circuit assembly into which the device will be installed.

8) Maintain continuous electrical contact between the ESD and the assembly into which it will be installed, until completely plugged or soldered into the circuit.

9) Minimize bodily motions when handling unpackaged replacement ESDs. Normal motions, such as the brushing together of clothing fabric and lifting one's foot from a carpeted floor, can generate static electricity sufficient to damage an ESD.

2. Product specification and description

2.1. Product Specification

2.1.1. Product Overview

1) **Speed**
   - Up to 20 ppm in A4 (21 ppm in Letter)
2) **Printing Resolution**
   - Up to 1,200 x 1,200 dpi effective output
3) **Processor**
   - 433 MHz
4) **Printer Language Emulation**
   - SPL
5) **Memory**
   - SCX–340x/340xF/340xW : 64 MB
   - SCX-340xFW : 128 M
6) **Interface**
   - High speed USB 2.0
   - 10/100 BaseTX network connector
   - 802.11b/g/n wireless LAN (SCX-340xFW)
7) **Toner cartridge**
   - Initial : 0.7 K
   - Sales : 1.5K

2.1.2. Specifications

- Product Specifications are subject to change without notice.

2.1.2.1. General Print Engine

Item		Specification
Engine Speed	Simplex	Up to 20 ppm in A4 (21 ppm in Letter)
	Duplex	Manual Duplex
Warmup time	From Sleep	Less than 30 seconds
FPOT	From Ready	Less than 8.5 seconds
	From Sleep	Less than 15.5 seconds

Item	Specification
Resolution	Up to 1,200 x 1,200 dpi effective output

2.1.2.2. Copier

Item		Specification
Copy Speed	Simplex to Simplex	Up to 20 ppm in A4 (21 ppm in Letter)
FCOT (B&W)	From Ready	Less than 14 seconds (from platen)
Copy Resolution	Text	• Scan: 300 x 300 dpi , Printing : 600 x 600 dpi @ ADF • Scan: 600 x 300 dpi , Printing : 600 x 600 dpi @ Platen
	Text/Photo	• Scan: 300 x 300 dpi , Printing : 600 x 600 dpi @ ADF • Scan : 600 x 300 dpi , Printing : 600 x 600 dpi @ Platen
	Photo	• Scan: 600 x 300 dpi , Printing : 600 x 600 dpi @ ADF • Scan: 600 x 600 dpi , Printing : 600 x 600 dpi @ Platen
Original Type	Factory Default	Text/Photo
Max. Original Size	Platen	A4
	ADF	Legal (8.5" x 14")
Basic Copy	Multi Copy	1~99
	Automatic Paper Selection	No
	Manual Paper Selection	No
	Duplex Copy	No
	Darkness Control	11 Levels
	Reduce & Enlarge	25% to 400%

2.1.2.3. Scan Specification

Item		Specification
Item		Specification
Scan Method		Color CIS
Compatibility		TWAIN, WIA
Scan Speed	Linearity, Halftone	15 sec on Platen, 15 sec on ADF @ 300dpi
	Gray	23 sec on Platen, 26 sec on ADF @ 300dpi
	Color	• 256 Color 300 dpi : 65 sec on Platen, 70 sec on ADF • True Color 300 dpi : 70 sec on Platen, 70 sec on ADF
Resolution	Optical	1,200 x 1,200 dpi
	Enhanced	4,800 x 4,800 dpi
Halftone		256 levels
Scan Size	Max. Document Width	Max. 216 mm (8.5")
	Effective Scan Width	Max. 208 mm (8.2")
	Max. Document Length	• ADF : 356 mm (14") P • Platen : 297 mm (11.7")
	Effective Scan Length	• ADF : 348 mm (13.7") • Platen : 289 mm (11.4")
Scan Depth	Color	Internal: 16 bit x 3, External : 8 bit x 3
	Mono	• 1 bit for Lineart & Halftone • 8 bits for Gray scale
ADF	Capacity	40 sheets @ 75 gsm
	Document Size	• Width : 142 ~ 216 mm • Length : 148 ~ 356 mm

2.1.2.4. Fax

Item		Specification
Compatibility		ITU-T G3, ECM
Communication System		PSTN/PABX
Modem Speed		33.6 Kbps
TX Speed		Approx. 3 sec (Mono/Standard/ECM-MMR, @ ITU-T G3 No.1)
Compression		MH/ MR/ MMR/ JBIG/ JPEG (Tx Only)
Color Fax		Yes (Tx only)
ECM		Yes
Resolution (Mono)	Std	203 x 98 dpi
	Fine	203 x 196 dpi
	S.Fine	300 x 300 dpi
Telephone Features	Handset	Yes (China Only)
	On hook Dial	Yes
	Search	Yes (Phone Book)
	Speed Dial	200 locations
	Group Dial	100 Groups
	TAD I/F	Yes
	Tone/Pulse	Yes (Selectable in Tech Mode)
	Pause	Yes
	Auto Redial	Yes
	Last Number Redial	Yes
	Caller ID	Yes
	External Phone Interface	Yes

2.1.2.5. Controller and Software

Item		Specification
Processor		433 MHz
Memory	Std.	• SCX-340x/ 340xF/ 340xW : 64 MB • SCX-340xFW : 128 MB
	Memory expansion	N/A
Printer Languages		SPL
Fonts		Windows Fonts
Print Driver	Default Driver	SPL
	Install	SPL
	Supporting OS	Windows 2000/ XP(32/64bits)/ Vista(32/64bits)/ 2003 Server(32/64bits)/ 2008 Server(32/64bits)/ 7(32/64bits)/ 2008 Server R2(64bits)
		Linux • RedHat Enterprise Linux WS 4, 5 (32/64 bit) • Fedora 4, 5, 6, 7, 8, 9, 10, 11, 12 (32/64 bit) • SuSE Linux 10.0, 10.1 (32 bit) • OpenSuSE 10.2, 10.3, 11.0, 11.1, 11.2 (32/64 bit) • Mandriva 2005, 2006, 2007, 2008, 2009, 2009.1 (32/64 bit) • Ubuntu 5.04, 5.10, 6.06, 6.10, 7.04, 7.10, 8.04, 8.10, 9.04, 9.10(32/64 bit) • SuSE Linux Enterprise Desktop 10, 11 (32/64 bit) • Debian 4.0, 5.0 (32/64 bit)
		Mac OS X 10.4 ~ 10.7
	WHQL	Windows 2000/ XP(32/64bits)/ Vista(32/64bits)/ 2003 Server(32/64bits)/ 2008 Server(32/64bits)/ 7(32/64bits)/ 2008 Server R2(64bits)
	Compatibility	Windows 2000/ XP(32/64bits)/ Vista(32/64bits)/ 2003 Server(32/64bits)/ 2008 Server(32/64bits)/ 7(32/64bits)/ 2008 Server R2(64bits)
Scan Driver	TWAIN	Yes
	WIA	Yes
	ICDM	Yes
	Supporting OS	Windows 2000/ XP(32/64bits)/ Vista(32/64bits)/ 2003 Server(32/64bits)/ 2008 Server(32/64bits)/ 7(32/64bits)/ 2008 Server R2(64bits)
		Linux • RedHat Enterprise Linux WS 4, 5 (32/64 bit) • Fedora 4, 5, 6, 7, 8, 9, 10, 11, 12 (32/64 bit) • SuSE Linux 10.0, 10.1 (32 bit) • OpenSuSE 10.2, 10.3, 11.0, 11.1, 11.2 (32/64 bit) • Mandriva 2005, 2006, 2007, 2008, 2009, 2009.1 (32/64 bit) • Ubuntu 5.04, 5.10, 6.06, 6.10, 7.04, 7.10, 8.04, 8.10, 9.04, 9.10(32/64 bit) • SuSE Linux Enterprise Desktop 10, 11 (32/64 bit) • Debian 4.0, 5.0 (32/64 bit)
		Mac OS X 10.4 ~ 10.7

Item		Specification
Wired Network	Protocol	TCP/IPv4/IPv6, HTTP, SNMPv1/v2c/v3, DNS/WINS, DDNS, DHCP, BOOTP, AutoIP, Standard TCP/IP printing, LPR, IPP, UPnP(SSDP), Bonjour, WSD, SLP, SetIP
	Supporting OS	[Windows] • Windows 2000/ XP(32/64bits)/ Vista(32/64bits)/ 2003 Server(32/64bits)/ 2008 Server(32/64bits)/ 7(32/64bits)/ 2008 Server R2(64bits) [Mac] • Mac OS 10.4~10.7 [Linux] • RedHat 8 ~ 9(32bit)/ Enterprise Linux WS 4, 5 (32/64bit) • Fedora Core 1 ~ 7 (32/64bit) • SuSE 8.2 ~ 10.2/Enterprise Desktop 9~10 (32/64bit) • Madrake 9.2 ~ 10.1 (32/64bit) • Mandriva 2005 ~ 2007 • Ubuntu 6.06 ~ 7.04 • Debian 3.1 ~ 4.0
Wireless Network (SCX–340xW/ FW only)	Protocol	802.11 b/g/n
	Supporting OS	Same as wired network
Application	Samsung Easy Printer Manager Smart Panel Network Management	For Windows and Macintosh For Linux SyncThru Web Service 2.0
Interface	Parallel	N/A
	USB	High speed USB 2.0

2.1.2.6. Paper Handling

Item		Specification
Standard Capacity		150-sheet Multi Purpose Tray @ 80 g/m²
Max. Capacity		150-sheet @ 80 g/m²
Printing	Max. Size	216 x 356 mm (8.5" x 14.02")
	Min. Size	76 x 183 mm (3.0" x 7.2")
Standard Cassette Tray		N/A
Multi-purpose Tray (Bin type)	Capacity	• Plain Paper : 150 sheets @ 80 g/m² • Envelop : 1 sheet @ 80 g/m²
	Media sizes	A4, A5, Letter, Legal, Executive, Folio, Oficio, ISO B5, JIS B5, Envelope(Monarch, No.10, DL, C5), Custom
	Media type	Plain ,Thin, Cotton, Recycled, Archive, Colored, Pre-Printed, Label, Bond, Thick, Envelopes, Cardstock
	Media weight	16~43 lb (60 to 163 g/m²)
	Sensing	N/A
Optional Cassette Tray		N/A
Output Stacking	Capacity	• Face-Down : 100 sheets @ 80 g/m²
	Output Full sensing	N/A
Duplex	Supporting	N/A
Printable Area	Non-Printable Area	• 3 mm (0.12") from edge (Top, Bottom, Left, Right)

2.1.2.7. Consumables

Item		Specification
Toner Cartridge	Part name	MLT-D101S
	Average yield	• Average Cartridge Yield 1,500 standard pages (Ships with 700 pages Starter Toner Cartridge) **NOTE** Declared yield value in accordance with ISO/IEC 19752.

NOTE

Depending on the options, percentage of image area, and job mode used, the toner cartridge's lifespan may differ.

2.1.2.8. Maintenance Part

Item	Part Code	Life
Fuser Unit	• JC91–01075A (220V) • JC91–01074A (110V)	30,000 Pages
Transfer Roller	JC66–02709A	30,000 Pages
Pick-Up Roller Assy	JC93–00525A	30,000 Pages
Friction Pad	JC93–00522A	30,000 Pages
ADF Feed roller	JC97-03959A (ADF Unit)	20,000 Pages
ADF Rubber pad	JC97-03959A (ADF Unit)	20,000 Pages

2.1.2.9. Reliability and Service

Items	Specification
Printing Volume (SET AMPV)	75 sheets/month
MPBF	20,000 sheets
MTTR	30 min.
SET Life Cycle	30,000 sheets or 5 years (whichever comes first)

2.1.2.10. Environment

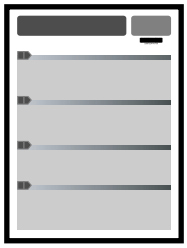
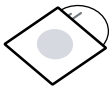
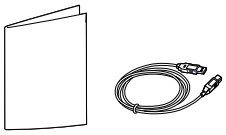
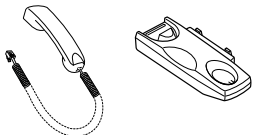
Item		Specification
Dimension (W x D x H)	Machine	• SCX-340x/ 340xW : 389 x 274 x 249 mm (15.3 x 10.8 x 9.8 inches) • SCX-340xF/ 340xFW : 402 x 293 x 296 mm (15.8 x 11.5 x 11.7 inches) • SCX-340xFH : 407 x 293 x 296 mm (16.0 x 11.5 x 11.7 inches)
Weight	Machine with consumables	• SCX-340x /340xW : 6.65 Kg (14.66 lbs) • SCX-340xF /340xFW/ 340xFH/ 340xHW : 8.0 Kg (17.64 lbs)
Noise Level *	Ready mode	Less than 26 dB (A)
	Print mode	Less than 50 dB (A)
	Copy mode	• Scanner glass : Less than 52 dB (A) • Document feeder : Less than 51 dB (A)
	Scan mode	• Scanner glass : Less than 52 dB (A) • Document feeder : Less than 53 dB (A)
Temperature	Operation	10 ~ 32 °C (50 ~ 90 °F)
Humidity	Operation	20 ~ 80% RH
Power rating **	110 volt models	AC 110 - 127 V
	220 volt models	AC 220 - 240 V
Power Consumption	Average operating mode	Less than 230 W
	Ready mode	Less than 35 W
	Power save mode	Less than 1.0 W
	Power off mode	Less than 0.45 W (0.1 W ***)

* Sound Pressure Level, ISO 7779. Configuration tested: basic machine installation, A4 paper, simplex printing.

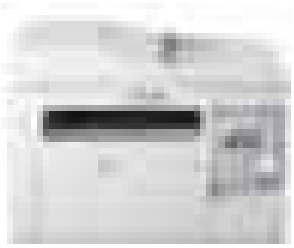
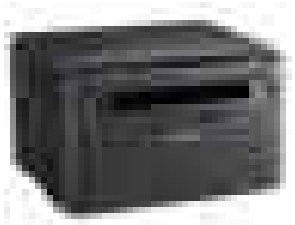
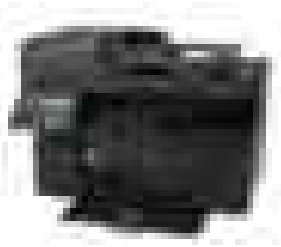
** See the rating label on the machine for the correct voltage (V), frequency (hertz) and type of current (A) for your machine.

*** For the machine that has a power switch.

2.1.2.11. Accessories

Image	Item	Remark
	Power cord	
	Quick installation guide	
	Software CD	The software CD contains the printer drivers and software applications.
	Misc. accessories	Miscellaneous accessories included with your machine may vary by country of purchase and specific model.
	Handset	Handset model only

2.1.3. Model Comparison Table

		Samsung SCX-3405FW	Samsung SCX-3205W	HP M1212nf
Image				
Speed (A4)		20 ppm	16 ppm	18 ppm
FPOT (from ready)		less than 8.5 sec	less than 8.5 sec	less than 8.5 sec
Processor		433 MHz	375 MHz	400 MHz
Memory		64 MB	128 MB	64 MB
Emulation		GDI	GDI, PCL5e	GDI
Paper Capacity	Input	150 Bin	150 CST	150 Bin
	Output	100 sheet	50 sheet	100 sheet
	ADF	40 sheet	N/A	35 sheet
Noise		50 dBA	49 dBA	51 dBA
Toner Cartridge		1.5K (0.7K)	1.5K (0.7K)	1.6K (0.7K)

2.2. System Overview

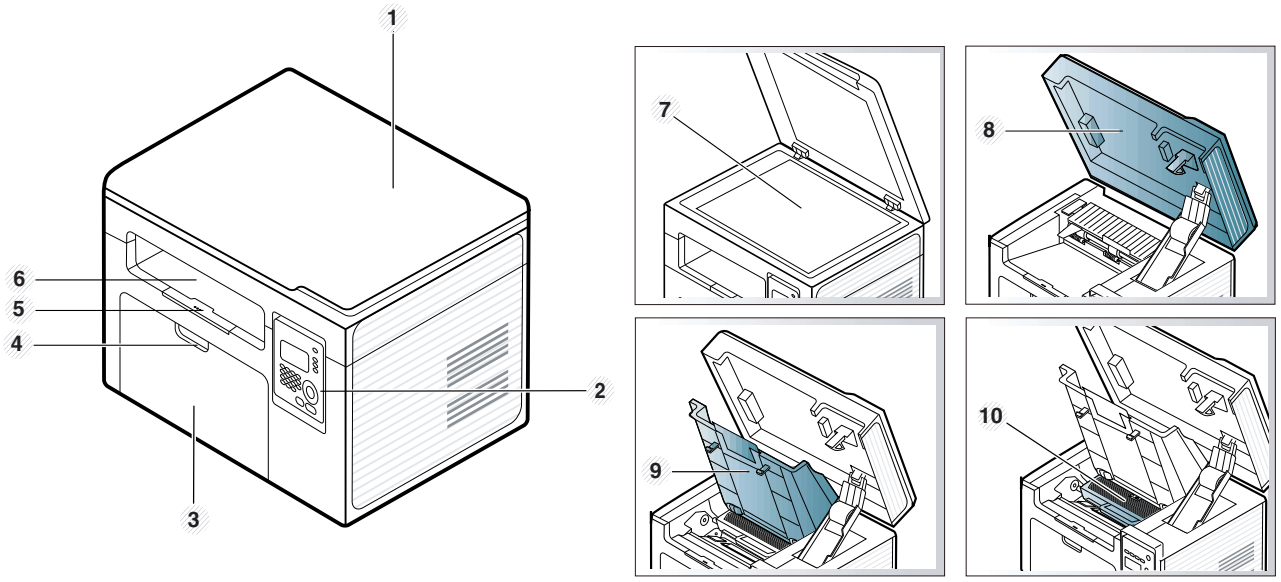
This chapter describes the functions and operating principal of the main component.

2.2.1. Front View

NOTE

- This illustration may differ from your machine depending on your model. There are various types of machine.
- Some features and optional goods may not be available depending on model or country.

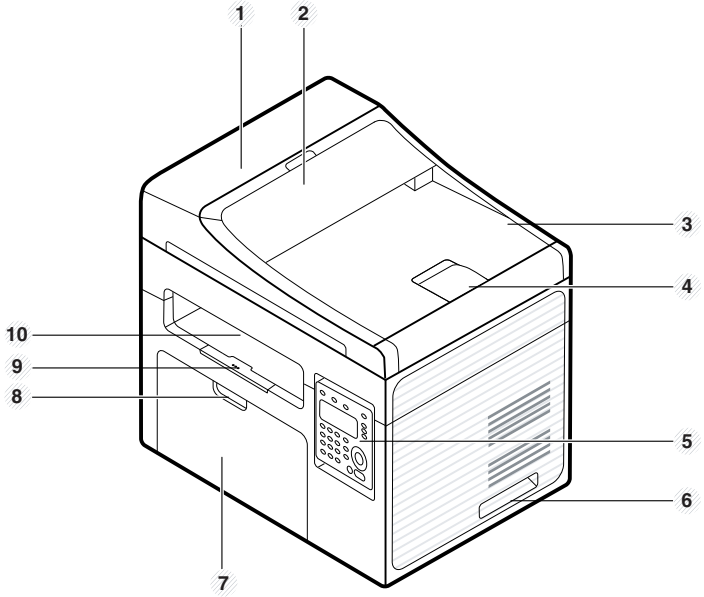
Type A

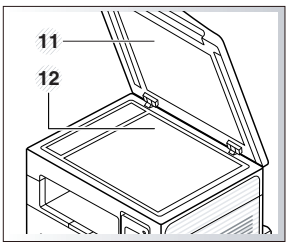


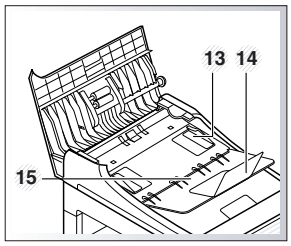
1	Scanner lid
2	Control panel
3	Tray
4	Tray handle
5	Output support
6	Output tray

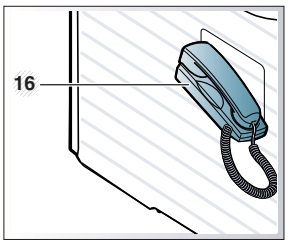
7	Scanner glass
8	Scan unit
9	Inner cover
10	Toner cartridge

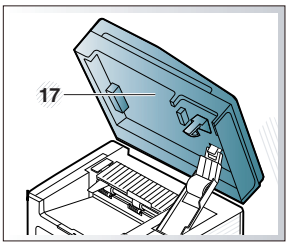
Type B

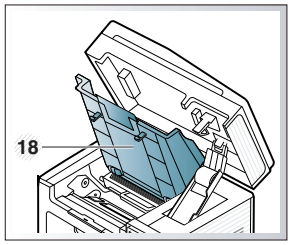


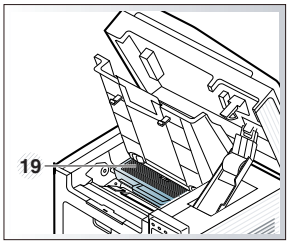












1	Document feeder cover
2	Document feeder guide cover
3	Document feeder output tray
4	Document feeder output support
5	Control panel
6	Handle
7	Tray
8	Tray handle
9	Output support
10	Output tray

11	Scanner lid
12	Scanner glass
13	Paper width guide on a document feeder
14	Document feeder input support
15	Document feeder input tray
16	Handset*
17	Scan unit
18	Inner cover
19	Toner cartridge

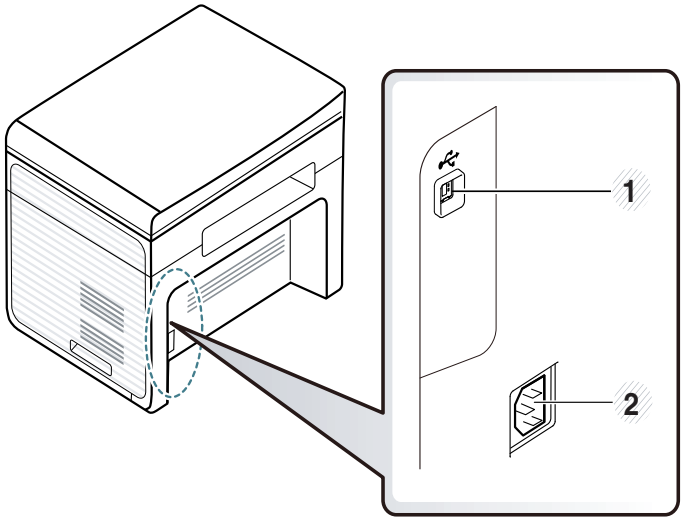
* Handset model (SCX-340xFH) only

2.2.2. Rear View

NOTE

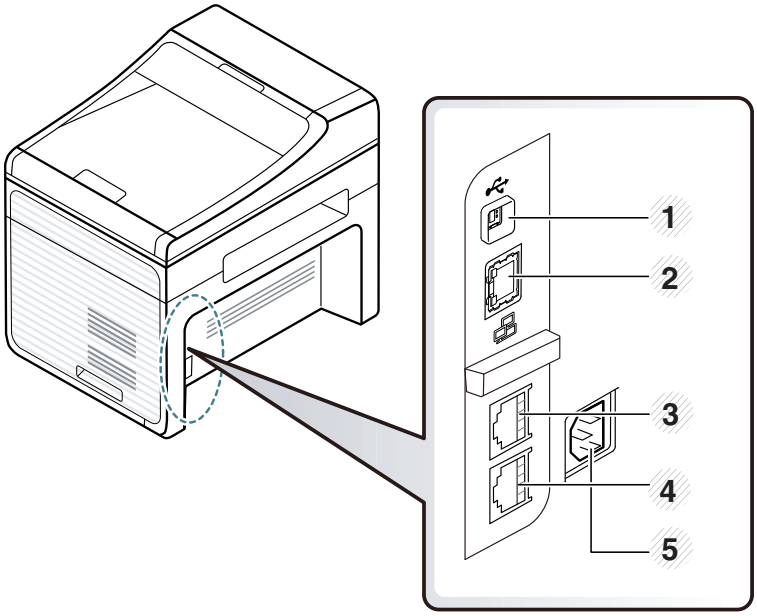
- This illustration may differ from your machine depending on your model. There are various types of machine.
- Some features and optional goods may not be available depending on model or country.

Type A



1	USB port	2	Power receptacle

Type B

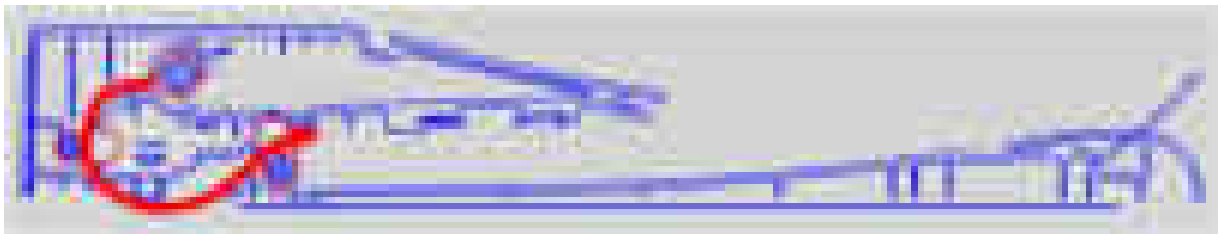


1	USB port	4	Telephone line socket (Line)
2	Network port	5	Power receptacle
3	Extension telephone socket (EXT)		

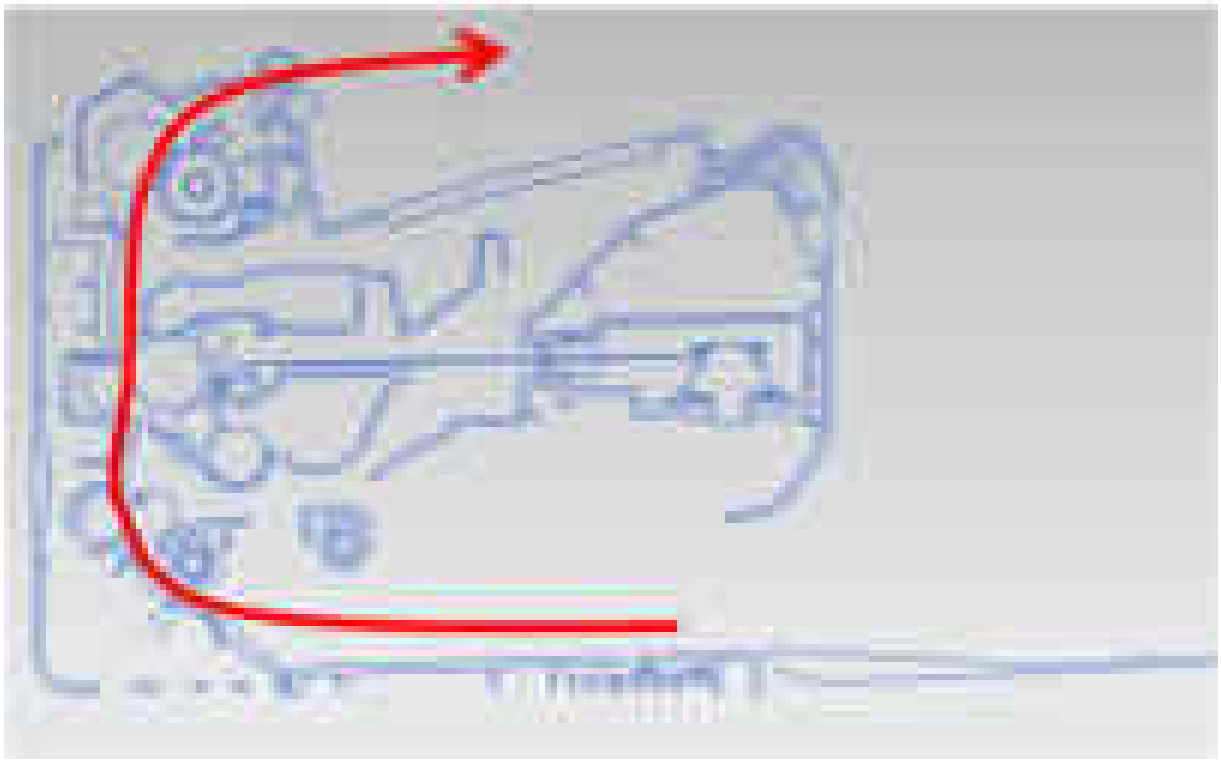
2.2.3. Paper Path

The following diagram displays the path the paper follows during the printing process.

[ADF]

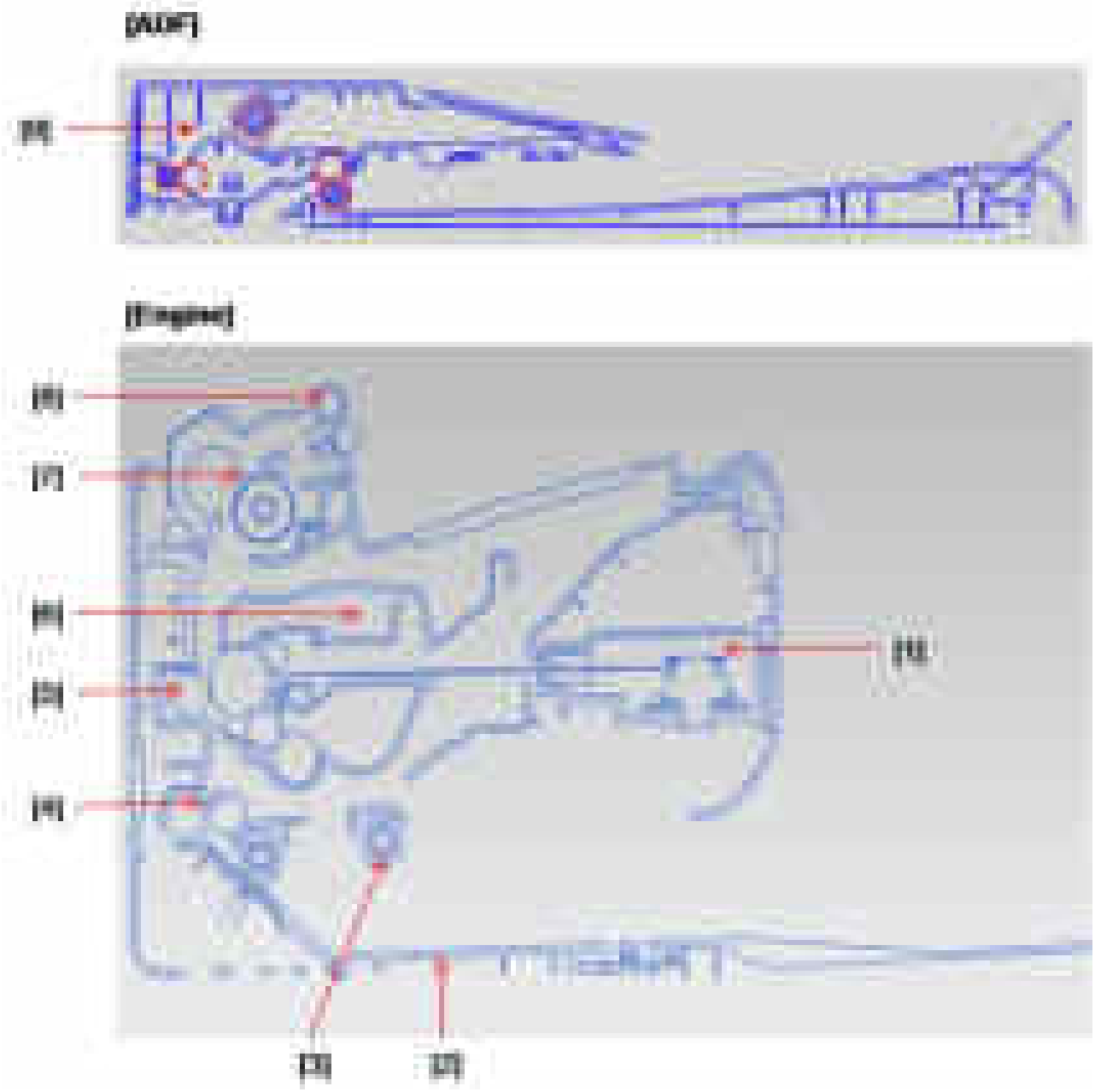


[Engine]



2.2.4. System Layout

This model consists of the scanner parts, engine parts, hardware parts, firmware. The scanner parts consists of ADF and platen. The engine parts consists of the mechanical parts comprising Frame, Toner Cartridge, Drive Unit, Transfer roller, Pick up unit, Fuser, Bin-tray. The hardware parts consists of the main board, SMPS/HVPS board, OPE board, PC interface.



1	LSU
2	Plate-Bottom
3	Pick up roller
4	Feed roller
5	Transfer roller

6	Toner cartridge
7	Fuser unit
8	Exit roller1
9	ADF

2.2.4.1. Feeding Part

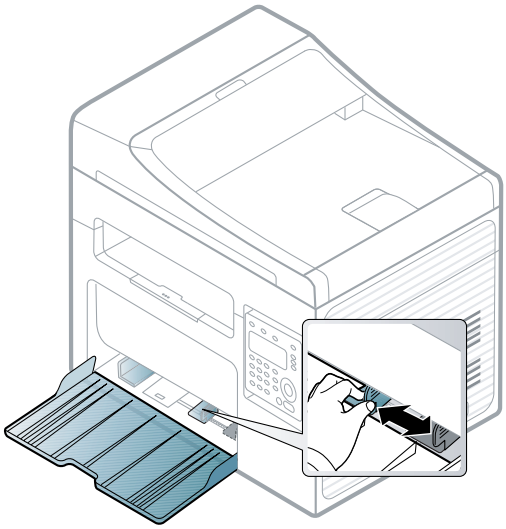
It is consists of a bin-type tray, pick-up roller, friction pad and parts related to paper feed initialization.

1) Input Tray

This model has a bin-type tray.

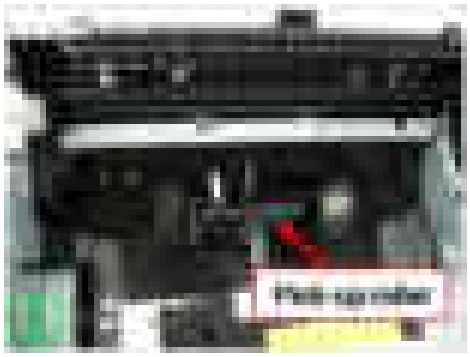
It takes a center loading method and applies ‘friction pad separating method.’

The side guide can be adjusted for various types of papers from A6 to legal size paper. It has a paper detecting function, paper arranging function.



2) Pick-up roller

It has functions such as a paper pickup function, driving control function, paper feeding function, and removing electronic static function. Pick up roller is driven by clutch.



2.2.4.2. Transfer Roller

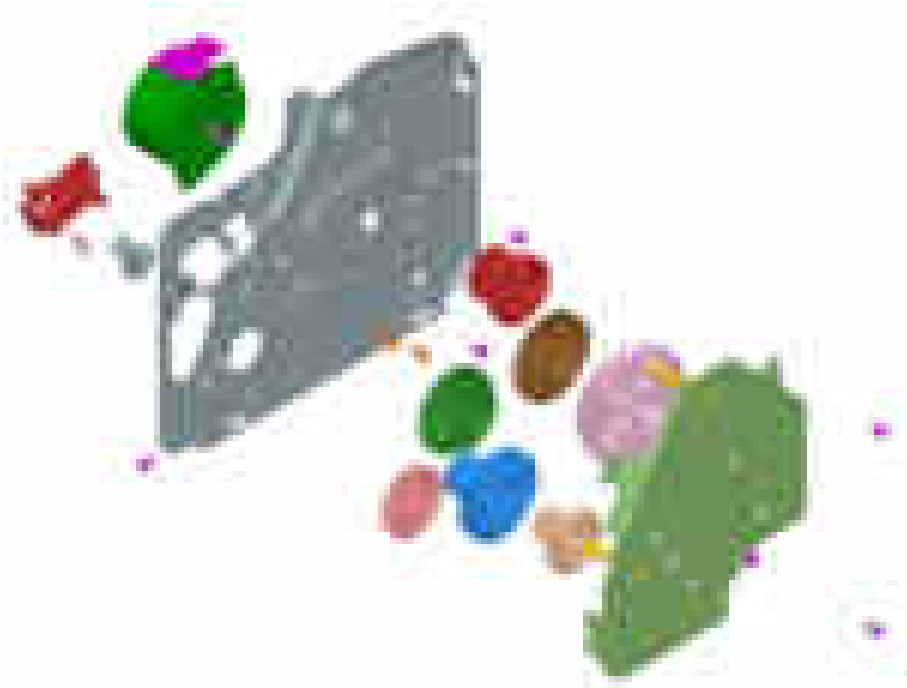
The transfer roller delivers the toner of the OPC drum to the paper.

- Life Span : Print over 30,000 sheets (in 15~30°C)

2.2.4.3. Drive Unit

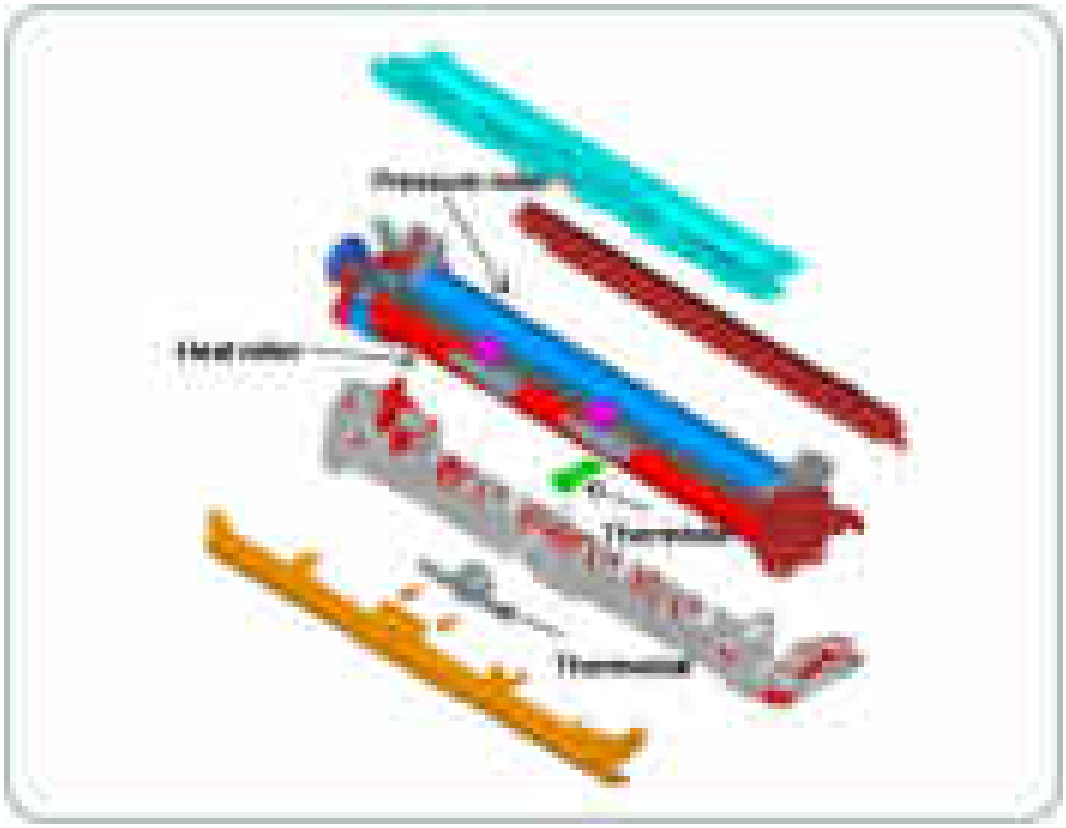
In SCX-340x series, the driving device consists of OPC, Pick- up, Feed, Fuser, Gear- Train connected with Mounting member. A step motor for driving is assembled to the left frame.

- Driving Frequency: Step Motor 810 PPS (1013 rpm)
- It is a power delivery unit by gearing: Step Motor → Pick-up/ Feeder/ OPC/ Fuser/ Exit



2.2.4.4. Fuser Unit

This unit consists of Heat Roller, a Thermostat, and Thermistor, etc. It fuses the toner that was transferred by the transfer roller onto the paper, by applying heat and pressure to complete fusing process.



1) **Thermostat**

When a heat lamp is overheated, a Thermostat cuts off the main power to prevent over- heating.

- Thermostat Type : Non- Contact type Thermostat
- Control Temperature : 195°C ± 5°C

2) **Thermistor**

It is a temperature detecting sensor.

- Temperature Resistance : 7 kΩ(180°C)

3) **Heat roller**

The heat roller transfers the heat from the lamp to apply a heat on the paper.

The surface of a heat roller is coated with Teflon, so toner does not stick to the surface.

4) **Pressure roller**

A pressure roller mounted under a heat roller is made of a silicon resin, and the surface also is coated with Teflon. When a paper passes between a heat roller and a pressure roller, toner adheres to the surface of a paper and is permanently fused.

5) **Halogen Lamp**

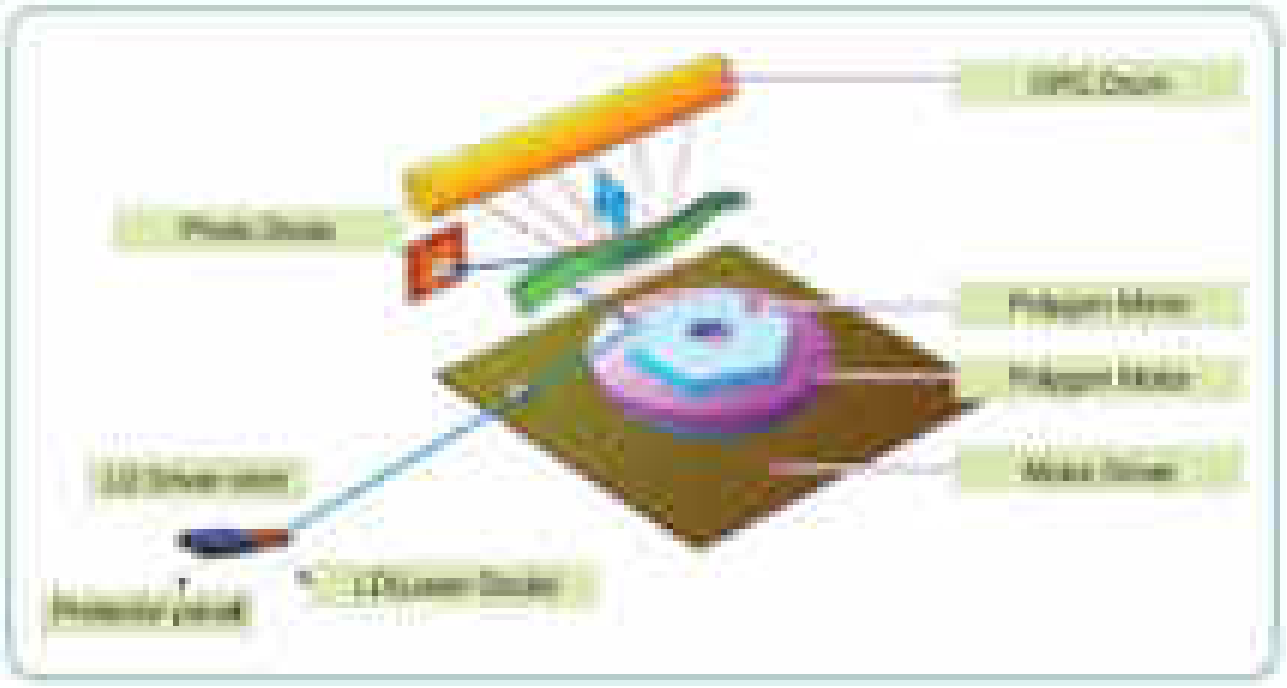
- Voltage : 120 V (115 ± 5 %) / 220 V : 230 ± 5 %
- Capacity : 850 Watt ± 25 W

6) **Items for safety**

- Protecting device for overheating
  - 1st protection device: Hardware cuts off when overheated
  - 2nd protection device: Software cuts off when overheated
  - 3rd protection device: Thermostat cuts off main power.
- **Safety device**
  - A fuser power is cut off when a front cover is opened.
  - Maintain a temperature of fuser cover's surface under 80°C for user, and attach a caution label at where customer can see easily when customer open a rear cover.

2.2.4.5. LSU (Laser Scanner Unit)

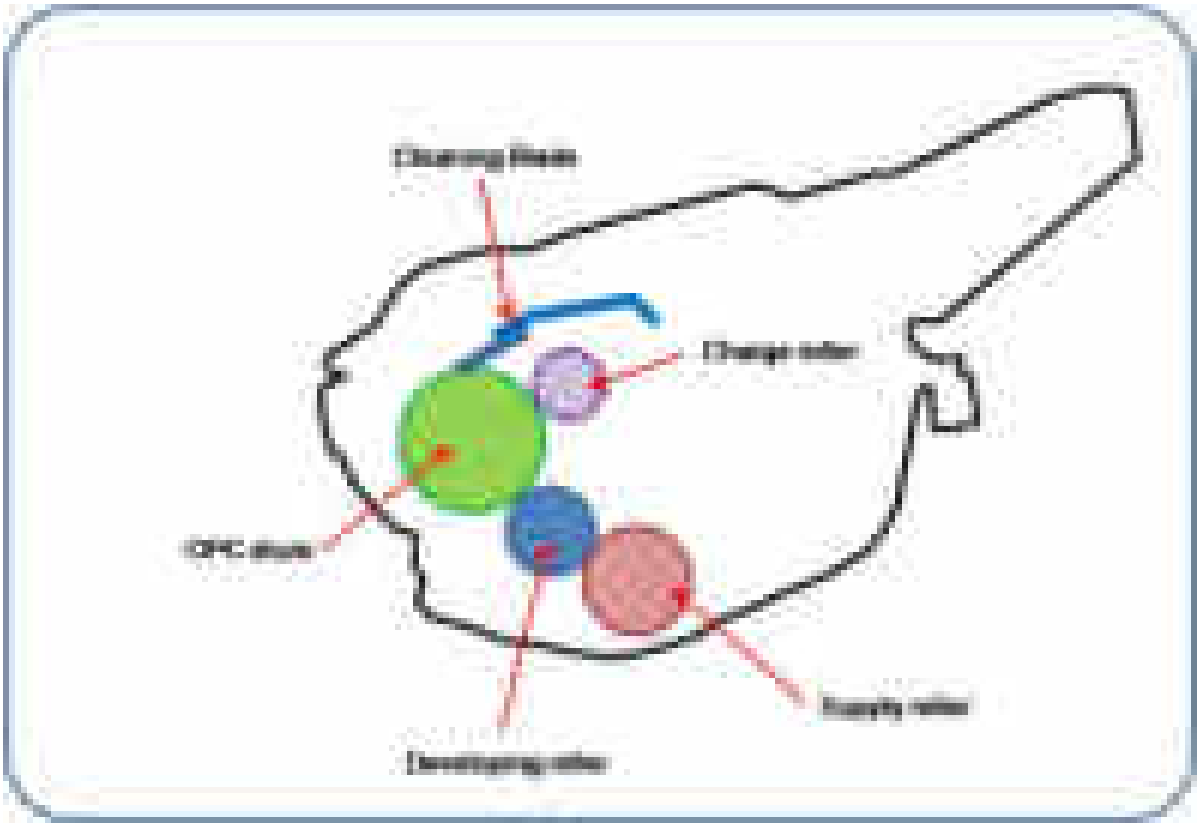
It is the core part of the LBP (Laser Beam Printer) which switches from the video data received to the controller to the electrostatic latent image on the OPC drum by controlling laser beam, exposing OPC drum, and turning principle of polygon mirror. The OPC drum is turned with the paper feeding speed. The HSYNC signal is created when the laser beam from LSU reaches the end of the polygon mirror, and the signal is sent to the controller. The controller detects the HSYNC signal to adjust the vertical line of the image on paper. In other words, after the HSYNC signal is detected, the image data is sent to the LSU to adjust the left margin on paper. The one side of the polygon mirror is one line for scanning.



2.2.4.6. Toner Cartridge

By using the electronic photo process, it creates a visual image. In the toner cartridge, the OPC unit and the developing unit are in a body. The OPC unit has OPC drum and charging roller, and the developing unit has toner, supply roller, developing roller, and blade.

- Developing Method : Non magnetic single component non-contacting method
- Toner : Non magnetic single component pulverized type toner
- The life span of toner (ISO 19752 pattern / A4 standard)
  - Initial toner : 0.7 K
  - Sales toner : 1.5K
- OPC Cleaning : Collect the toner by using cleaning blade
- Handling of wasted toner : Collect the wasted toner in the cleaning frame by using cleaning blade
- Classifying device for toner cartridge: ID is classified by CRUM

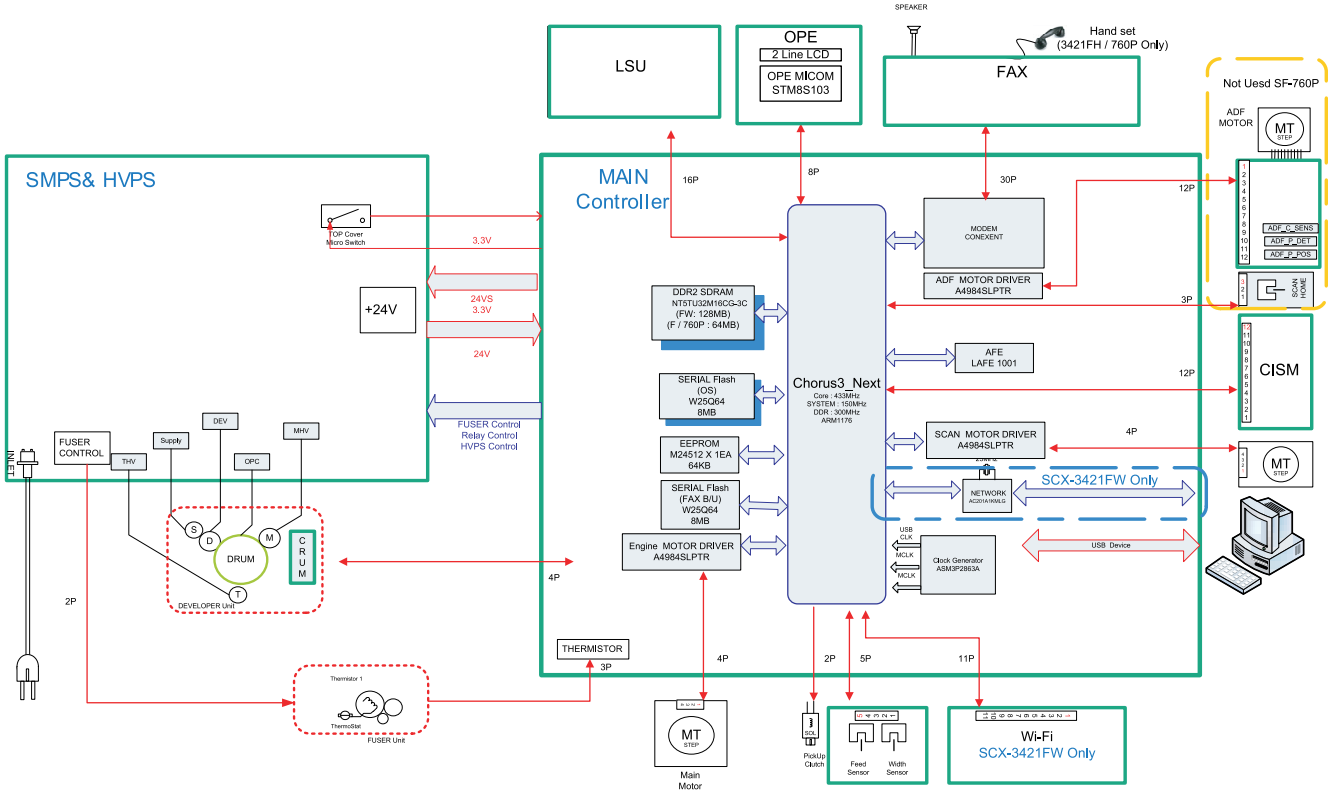


2.2.5. Hardware configuration

The SCX-340x series Electrical Circuit System consists of the following:

- Main board (System board)
- OPE board
- HVPS/SMPS board
- Wireless board (Only SCX-340xW,FW)
- Fax board

Diagram of the SCX-340x series Electrical Circuit



SCX-340x series has a system board of integrated engine controller and video controller.

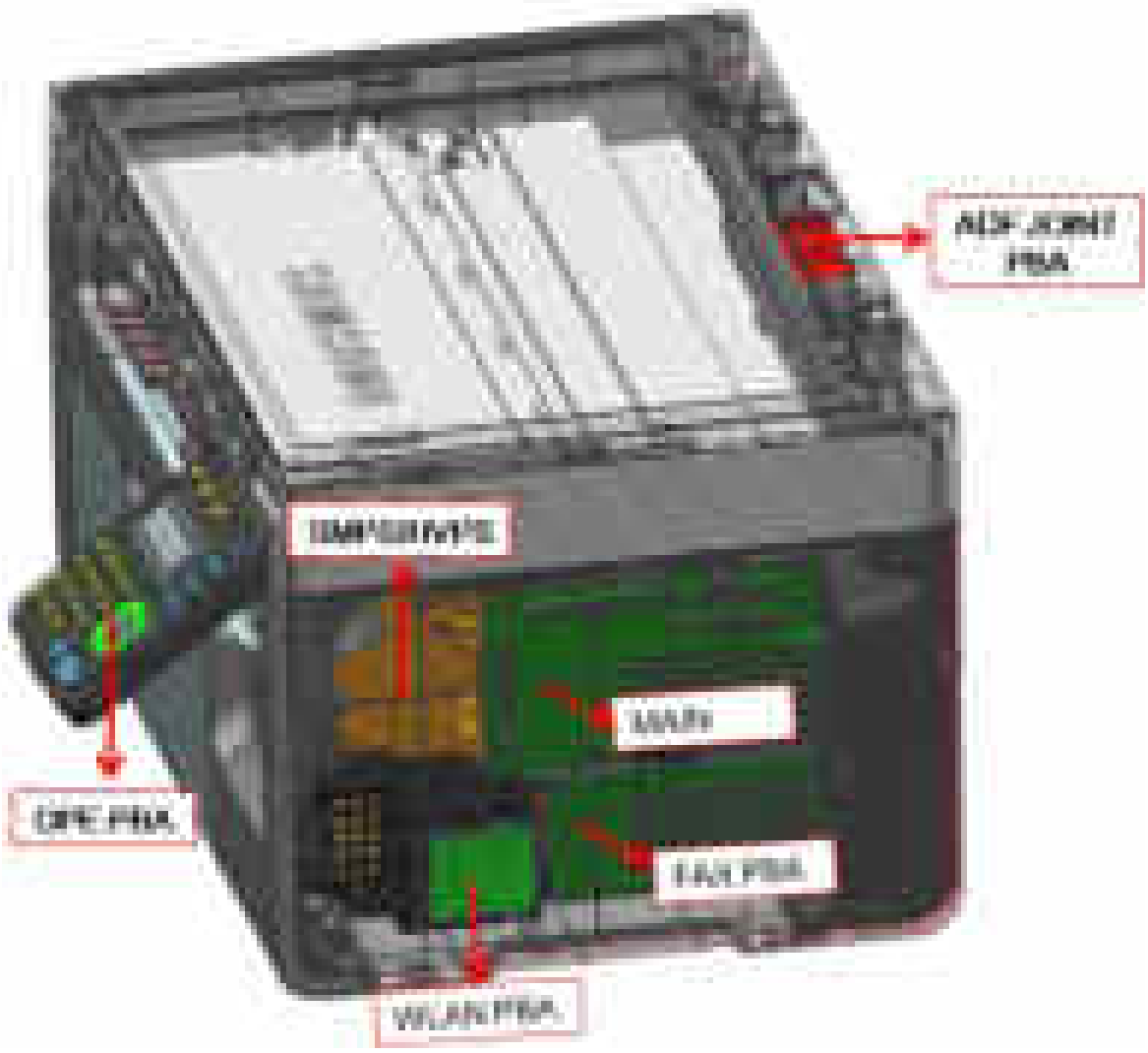
The engine controller controls all modules required to print, that is, LSU, HVPS/SMPS, Fuser, Motor etc. It communicates with the video control block inside CPU for printing. And it has the interface for all video sync signal to print out the video data.

The video controller receives print data from the host through network or USB Port. It takes this information and generates printable video bitmap data.

The main board is adopted 433 MHz C3N CPU that is integrated with engine controller, video controller, SDRAM, Flash ROM. It uses SDRAM and Flash ROM inside the ASIC chip.

Circuit board locations

The following diagrams show the locations of the printer circuit boards:



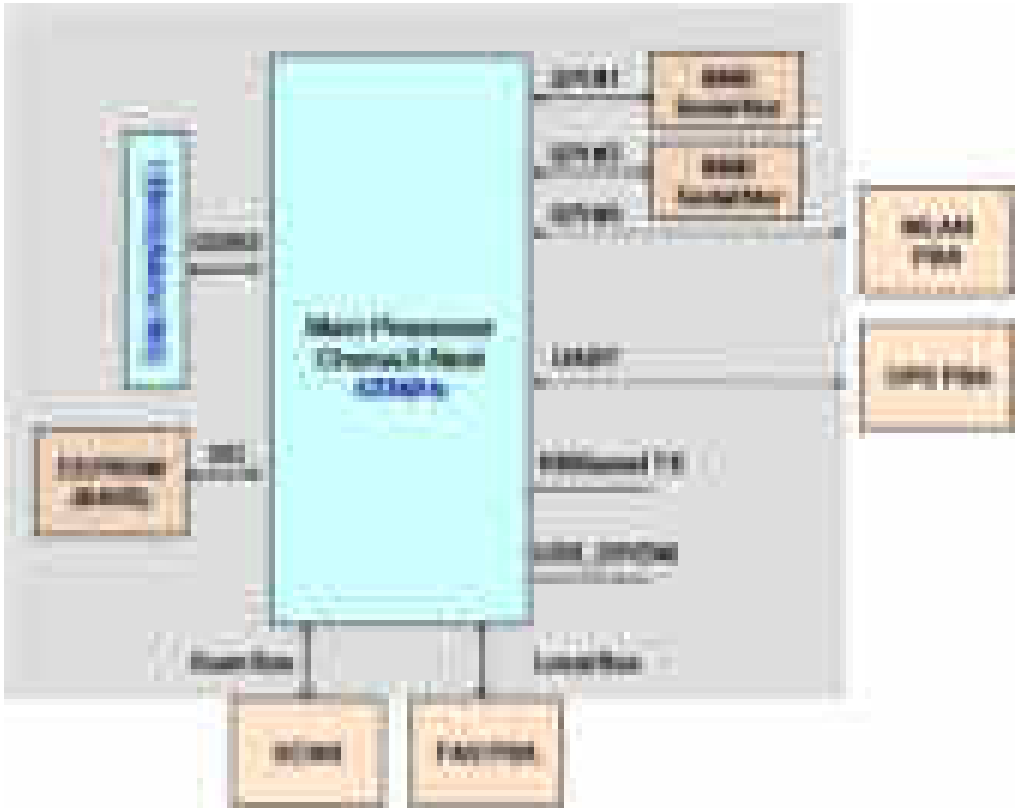
2.2.5.1. Main board

Chorus3–Next(C3N) chip is adopted as the main processor. Its process speed is 433 MHz. It is integrated engine controller, video controller, scan controller.

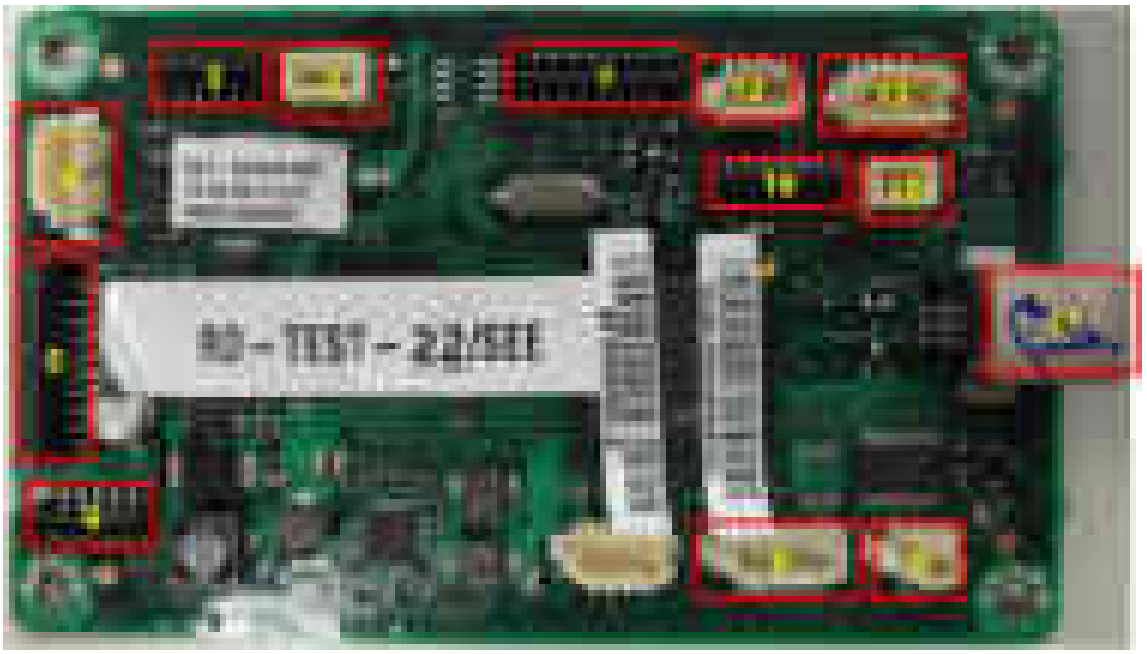
DDR2 128MB is adopted for high speed data processing. Boot has 8 MB SPI + 8 MB SPI.

USB is the embedded type and wired network supports 100M full duplex.

[Main board diagram]



[Main board image — SCX-340x, 340xW]

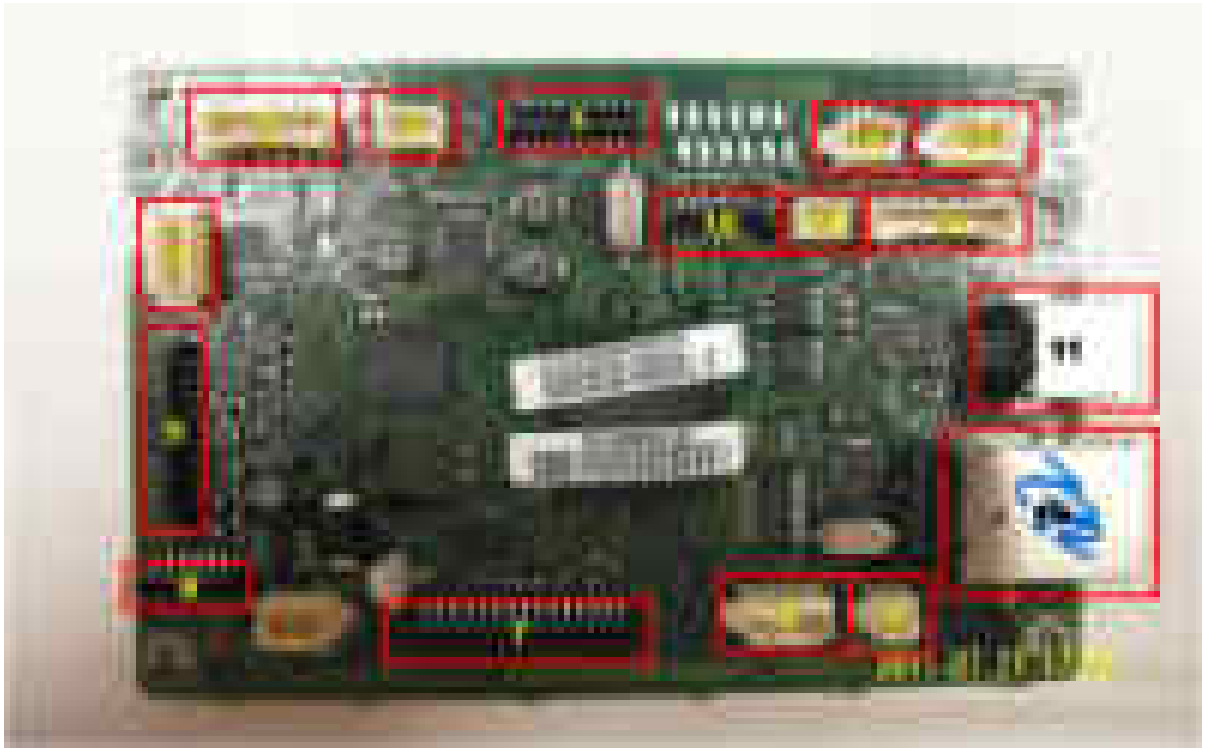


- **Connection**

1	LSU connector
2	CRUM connector
3	OPE connector
4	Engine Motor connector
5	SMPS/HVPS interface connector
6	Wireless module interface connector => Wireless model only
8	Sensor connector
9	Pick up connector
11	USB device connector
12	Fuser thermistor interface connector
13	Scan motor connector
15	Scan home sensor connector
16	CIS interface connector

- **Information**
  - Part code : JC92–02433A~G (SCX-340x) / JC92–02444A~G (SCX-340xW)
  - Part name : PBA-MAN

[Main board image — SCX-340xF, 340xFW]



- **Connection**

1	LSU connector
2	CRUM connector
3	OPE connector
4	Engine Motor connector
5	SMPS/HVPS interface connector
6	Wireless module interface connector => Wireless model only
7	Fax board interface connector
8	Sensor connector
9	Pick up connector
10	Wired network connector => Wireless model only
11	USB device connector
12	Fuser thermistor interface connector
13	Scan motor connector
14	ADF Module interface connector
15	Scan home sensor connector
16	CIS interface connector

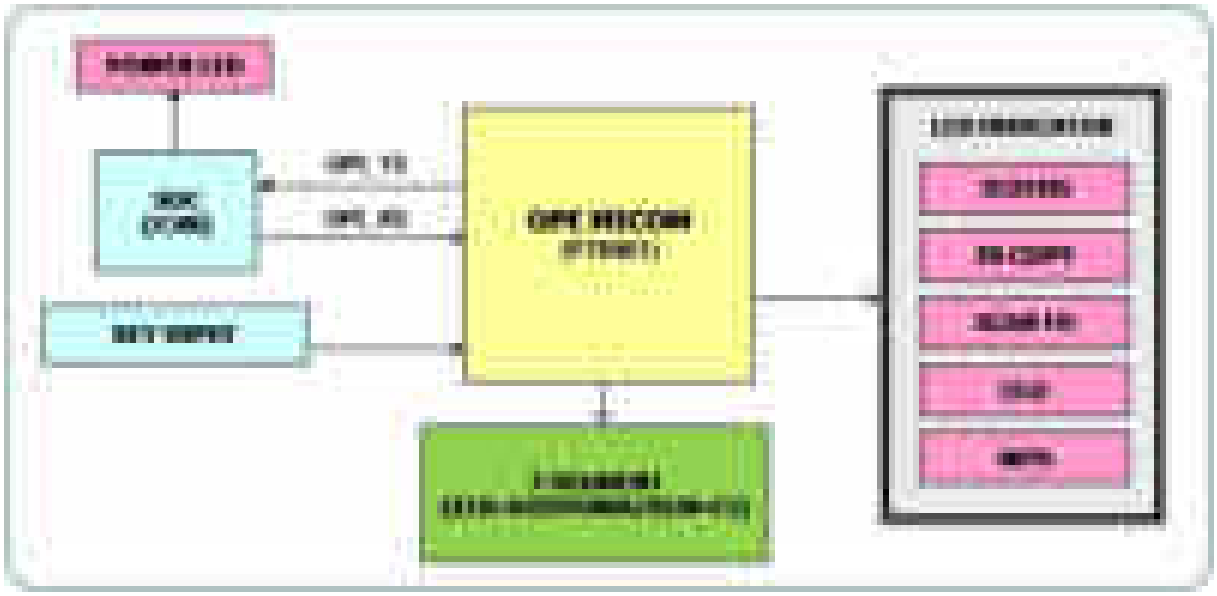
- **Information**
  - Part code : JC92–02434A (SCX-340xF) / JC92–02434B (SCX-340xFW)
  - Part name : PBA-MAN

2.2.5.2. OPE board

SCX-340x & SCX-340xW

The OPE Controller is composed of an OPE MICOM(PT6961), Satus LED, IC Copy LED, Scan To LED, ECO LED, WPS LED. OPE communicates with main controller via UART. The power LED is controlled by the main board.

- **OPE board diagram**



- **OPE board image**

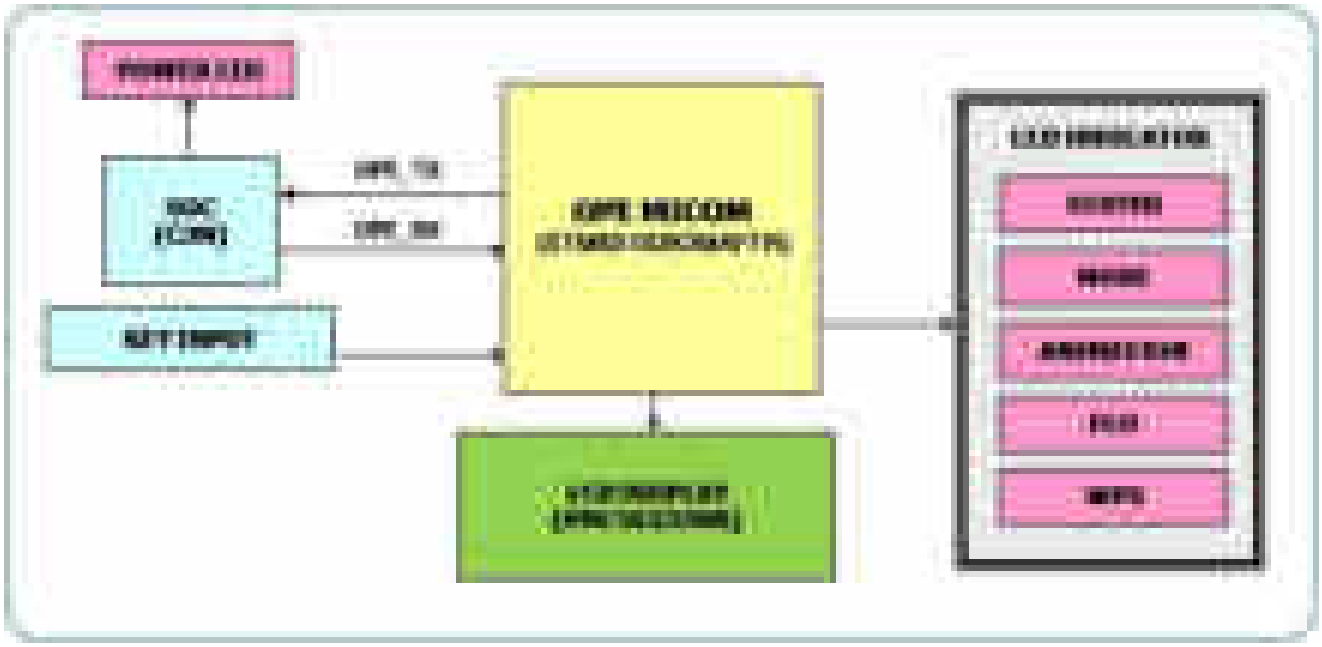
- **Information**
  - Part code : JC92–02415A
  - Part name : PBA-OPE
- **Connection**

1	Interface connector to main board

SCX-340xF & SCX-340xFW

The OPE Controller is composed of an OPE MICOM(STM8SP103K3MAFTR), Satus LED, Mode LED, Animation LED, Power LED, WPS LED, 16x2 Line LCD. OPE communicates with main controller via UART. The power LED is controlled by the main board.

- **OPE board diagram**



- **OPE board image**

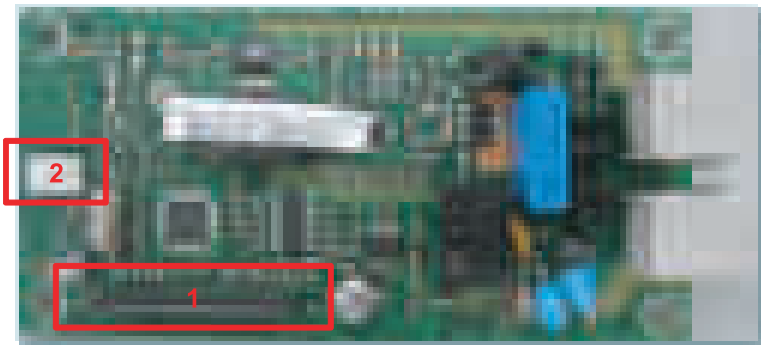
- **Information**
  - Part code : JC92–02404A
  - Part name : PBA-OPE

- **Connection**

1	Interface connector to main board

2.2.5.3. Fax board

Fax controller (FCON) controls the fax sending and receiving. The Connexant DAA (Data Access Arrangement) solution is applied to this board. It consists of three chip solutions : CX82500(SFM336), CX20493(LSD), CX20437(Codec)



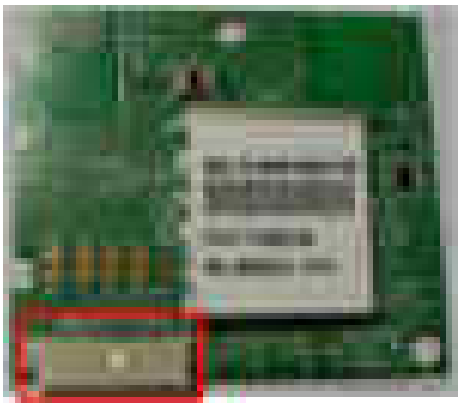
- **Information**
  - Part Code : JC92–01746D/E
  - Part Name : PBA-LIU
- **Connection**

1	Interface connector to main controller
2	Speaker interface

2.2.5.4. Wireless LAN board (wireless model only)

The Wireless LAN Module supports 802.11b/g/n. It communicates with video controller via SPI.

[WLAN board image]



- **Information**
  - Part Code : JC92–02402A
  - PBA name : PBA-WNPC
- **Connection**

1	Interface connector to main board (JC39-01565A , FFC CABLE-WLAN)

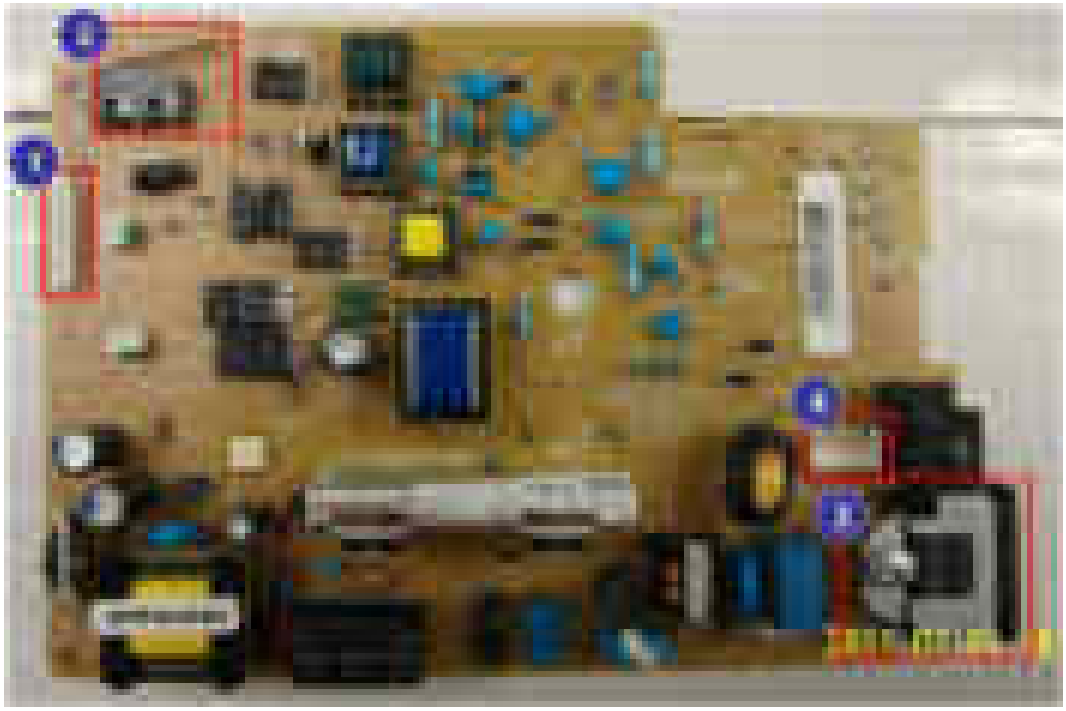
2.2.5.5. SMPS/HVPS board

SCX-340x series has a power board of integrated SMPS and HVPS.

The SMPS (Switching Mode Power Supply) Board supplies electric power to the Main Board and other boards through a Main Controller. The voltage provided includes +24V from a 110V/220V power input.

The HVPS board generates high-voltage channels which includes MHV, DEV DC, DEV AC, SUPPLY, THV.

[SMPS/HVPS board image]



- **Specification**
  - General Input / Output Voltage
  - AC 110V (110V ~ 127V)
  - AC 220V (220V ~ 240V)
  - Input Current : 8.0A (110V) / 6.3A (220V)
  - Output Power: 43.2W
    - DC 24V : 43.2W

- **Information**

	110V	220V
Part Code	JC44–00208A	JC44–00209A
PBA name	SMPS/HVPS V1	SMPS/HVPS V2

- **Connection**

1	Main Board interface connector
2	AC_Inlet
3	COVER OPEN/CLOSE Switch
4	FUSER_AC Output

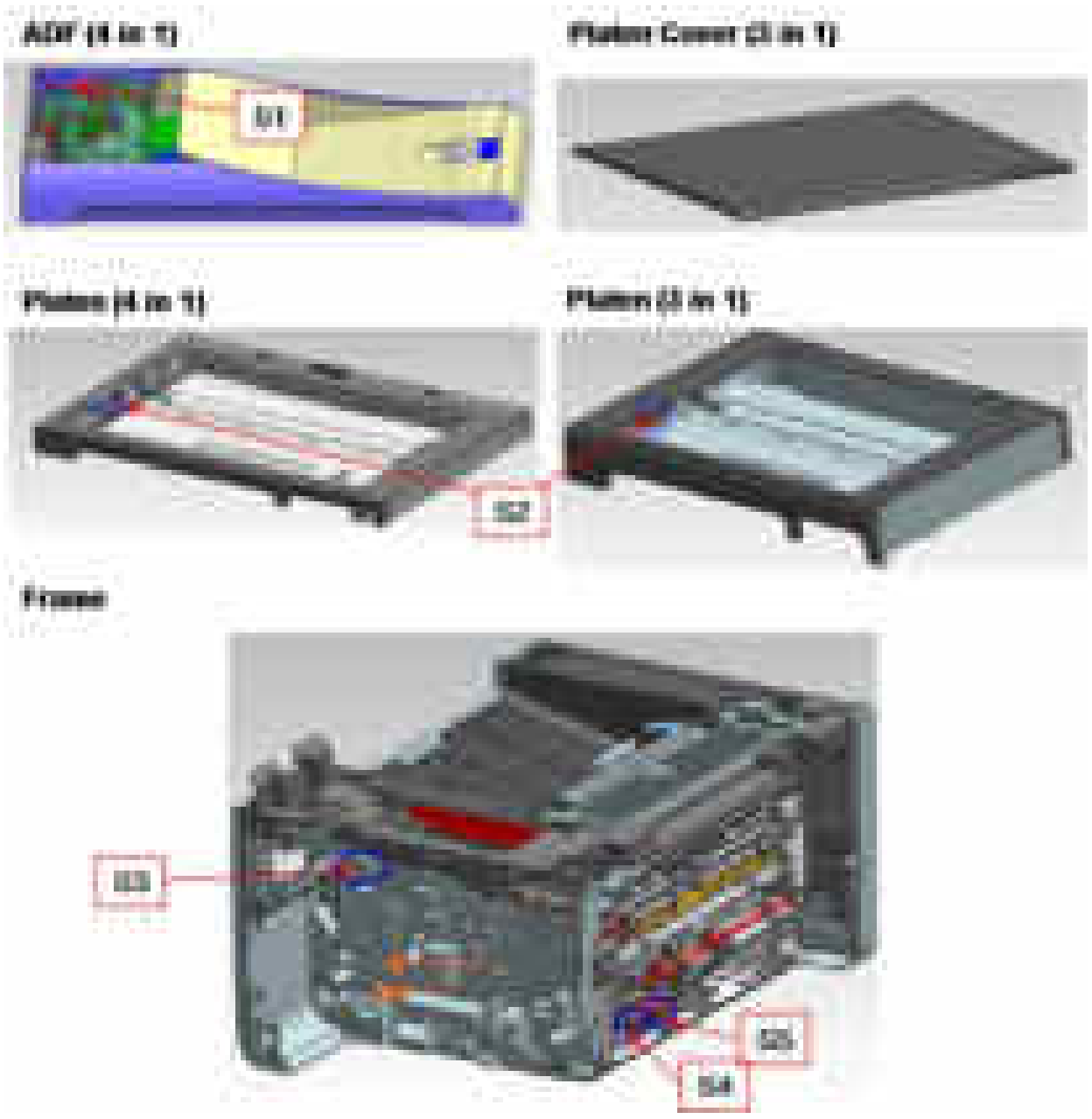
- **Input / Output connector**

AC Output Connector(CN1)		
Pin Assign	Pin No.	Description
1	AC_L	AC Output for Heater Controller
2	AC_N	

DC Output Connector (CN2)		
PIN NO	PIN ASSIGN	Description
1	THV_READ	HVPS
2	PWM_MHV	HVPS
3	nTHV_EN	HVPS
4	PWM_DEV_DC	HVPS
5	+3.3V OPEN	COVER ON, OFF DETECT
6	PWM_DEV_AC	HVPS
7	+3.3V	COVER ON, OFF DETECT
8	nDEV_EN	HVPS
9	PWM_THV	HVPS
10	VPP_DEV_AC	HVPS
11	GND	Common Ground
12	+24VS1	Relay, Fuser
13	GND	Common Ground
14	GND	Common Ground
15	+24V	SMPS
16	RELAY_ON	AC RELAY ON (ACTIVE HIGH)
17	+24V	SMPS
18	GND	Common Ground
19	+24V	SMPS
20	FUSER_ON	FUSER_ON (ACTIVE HIGH)

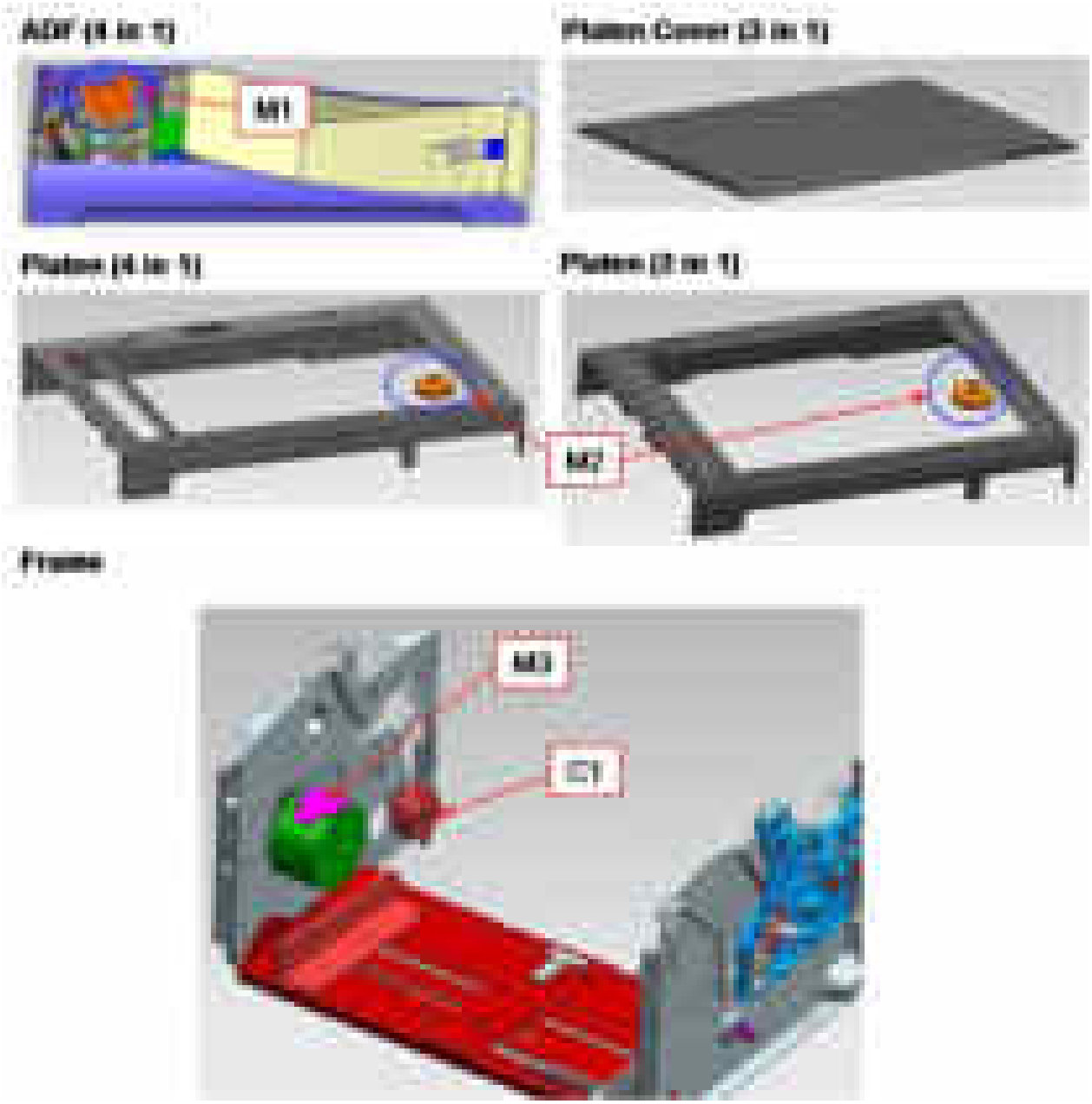
2.2.5.6. Electrical Parts Location

1) Sensors



No.	Description	Controller	Function
S1	Photo interrupter (ADF Cover Open sensor)	ADF board	Cover open detection
S2	Photo interrupter (Home Position sensor)	Main board	CIS detection
S3	Switch Front Cover	SMP/HVPS board	Cover open detection
S4	Photo interrupter (width Sensor)	Main board	Paper detection
S5	Photo interrupter (Feed Sensor)	Main board	Paper detection

2) Motor, Clutch



No.	Description
M1	ADF motor
M2	Scan motor
M3	Main motor
C1	Pick up Clutch

2.2.6. Engine F/W Contol Algorithm

2.2.6.1. Feeding

If feeding from a tray, the drive of the pickup roller is controlled by controlling the clutch. The on/off of the clutch is controlled by controlling the general output port or the external output port. While paper moves, occurrence of Jam is judged as below.

Item	Description
JAM 0 or Paper Empty	• After picking up, paper does not reach the Feed Sensor within a predetermined time. • After picking up, if the feed sensor is not on, re-pick up will be initiated. After re-picking up, if the feed sensor is not on after certain time, it is JAM 0 • Even though the paper reaches to the feed sensor, the feed sensor does not detect the lead edge of the paper.
JAM 1	• After the leading edge of the paper passes the feed sensor, the trailing edge of the paper does not clear the sensor the feed sensor after predetermined period of time.

2.2.6.2. Transfer

The charging voltage, developing voltage and the transfer voltage are controlled by PWM (Pulse Width Modulation). The each output voltage is changeable due to the PWM duty. The transfer voltage admitted when the paper passes the transfer roller is decided by environment conditions. The resistance value of the transfer roller is changed due to the surrounding environment or the environment of the set, and the voltage value, which changes due to the environment, is changed through the AD converter. The voltage value for impressing to the transfer roller is decided by the changed value.

2.2.6.3. Fusing

The temperature change of the heat roller's surface is changed to the resistance value through the use of a thermistor. The Main Board uses the resistance value of the Thermistor and converts it to a voltage value through the use of an AD converter, the temperature is decided based on the voltage value read. The AC power is controlled by comparing the target temperature to the value from the thermistor. If the value from the thermistor is out of controlling range while controlling the fusing, the error stated in the below table occurs.

- **Open Heat Error**

  When the engine operates the warm-up process, if the temperature of the fixing unit is not higher than a specified temperature within a predetermined time, the engine defines Open Heat Error. When this error is detected, the engine stops all functions and keeps the error state. Also, the engine informs the error status of the main system, so it can take appropriate action; and then the error message is displayed at LCD window or LED informing the error status of the user.

- **Low Heat Error**

  When the engine is at stand-by, printing or warm-up mode, if the temperature of the fixing unit is lower than the specified temperature at each state and the lower temperature state is maintained during the specified time, the engine defines Low Heat Error. When this error is detected, the engine stops all functions and keeps it at the error state. Also, the engine informs the error status of the main system, so it can take appropriate action; and then the error message is displayed at LCD window or LED informing the error status of the user.

- **Over Heat Error**

  For overall engine state, if the temperature of the fixing unit is higher than the specified temperature and the temperature state is detected for a specific duration, then the engine defines Over Heat Error. When this error is detected, the engine stops all functions and keeps it at the error state. Also, the engine informs the error status of the main system, so it can take appropriate action; and then the error message is displayed at LCD window or LED informing the error status of the user.

2.2.6.4. LSU

LSU receives the image data from PVC or HPVC and make the latent image on OPC surface. It uses the single beam, LD. The errors related to LSU are as follows:

- **By Lready**

  When the printing is started, the engine drives the polygon motor of LSU. After the specified time is elapsed, if the motor is not in a ready status, the engine detects the error that the polygon motor is not in a ready status. If this error happens, the engine stops all functions and keeps it at the error state. Also, the engine informs the error status of the main system and the error message is displayed at LCD window or LED informing the error status of the user.

- **By Hsync**

  When the polygon motor is ready, the LSU sends out the signal called Hsync and used to synchronize with each image line. So, if the engine does not detect consecutively the signal for a fixed time, it defines the Hsync Error. If this error happens, the engine stops all functions and keeps it at the error state. Also, the engine informs the error status of the main system and then the error message is displayed at LCD window or LED informing the error status of the user. LSU Error Recovery: If the LReady or Hsync error happens, the paper is exited before the error code is initiated. The engine mode is changed to recovery mode and the engine informs the main system of the engine mode. The engine rechecks the LSU error, if the error does not reoccur printing is resumed.

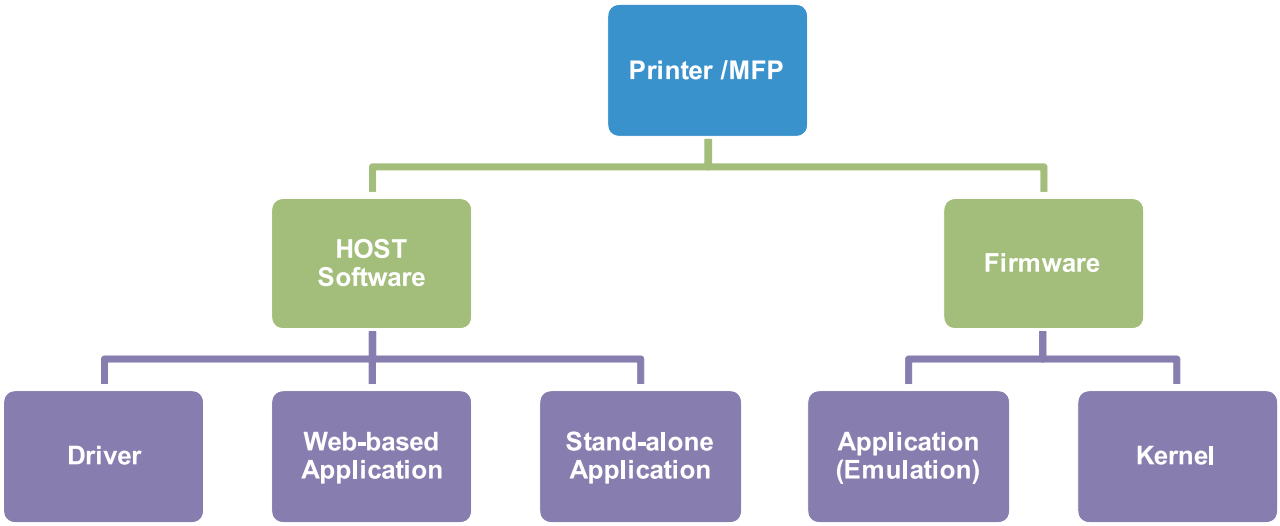
2.2.7. Software Descriptions

2.2.7.1. Software system overview

The software system of this model is constructed with

- Host Software part that the application software operated in Window and Web Environment
- Firmware parts that is a Embedded software controls printing job.

2.2.7.2. Architecture



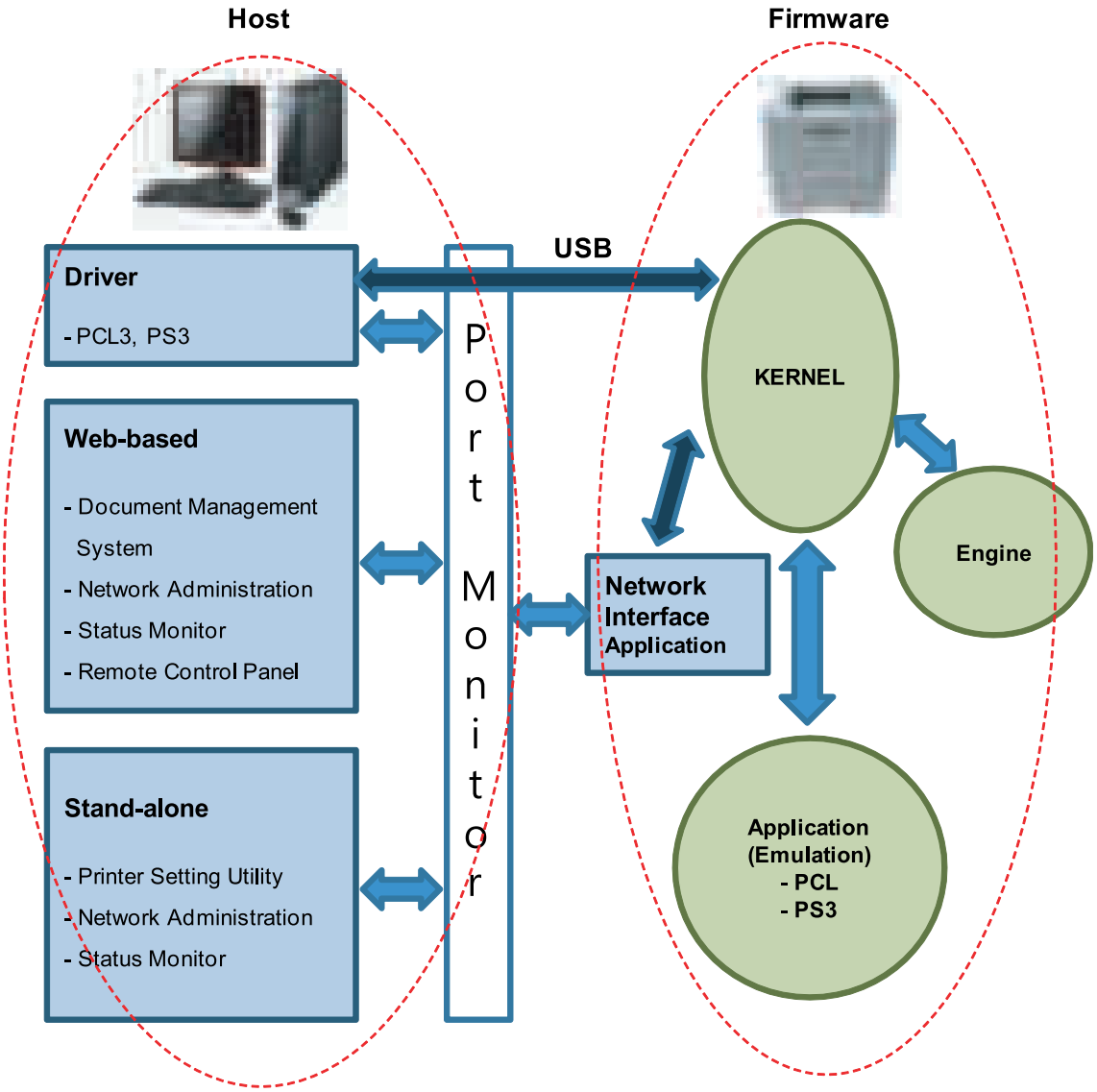
Host Software is made up of

1) Graphic User Interface offers the various editing functions to user in Host.
2) Driver translates the received document to a Printing Command language which printer can understand and transfers data to spooler.
3) Stand-alone Application offers the various printing application such as Easy Printer Manager, Printer Status in Window system.
4) Web-based-Application offers the same functions as Stand-alone Application in Web environment.

Firmware is made up of

1) Application (Emulation) that is a interpreter translates data received from Host to a printing language (PCL, PS, GDI, etc.) to be able to make the user to take same output as originally one what composed in Host.
2) Kernel controls and manage the whole procedure including Control flow and Printing Job before transferring to Engine system.

2.2.7.3. Data and Control Flow



The above Block Diagram is explained that:

Host Side is made up of

1) Driver that is Windows application software translate printed data to one of printer language and create spooler file.

2) Web-based Application that offer a various printer additional functions, management of printing job, printer administration, Status monitor to monitoring the printer status by real time in Web, independent environment on OS.

3) Stand-alone Application that is a similar Window software as same as above 2.

4) Port Monitor that manages the network communication between spooler and Network Interface Card, or various additional application and Network Interface Card,(this is, at first, make communication logical port, manage the data, transfer them from spooler to network port, and offer the result of printing).

Firmware Side is made up of

1) Network Interface Card is that relay the communication between Host and kernel using various network protocol.

2) Kernel is that manages the flow control of emulation procedure, receiving data from Host or Network card and printing with engine & rendering job.

3) Emulation is that interprets the various output data from selected emulation.

4) Engine is that prints rendered bit-map data to paper with required size and type by Kernel.

And then, for Job Spooling function for Multi-User, Multi-Printing that is occurred in Network printing and various additional printing functions, this Kernel use max. 10 Queuing systems in a memory.

In Printing, the two procedures are

1) Case of using USB Port

- After user start to print the wanted document to PCL string or compressed GDI bit-map data, the Driver translates the all graphic data of the client PC and send data to host spooler. And then the spooler sends the data stream to the printer via USB port.
- Kernel receives this data from Host, and then select emulation fit to data and start selected one. After emulation job end, Kernel sends the output bit-map data to Engine using Printer Video Controller (by clock type for LSU).
- Engine print the received data to required paper with the sequential developing process.

2) Case of using Network Interface Card

- After user start to print the wanted document to PCL string or compressed GDI bit-map data, Driver translate the all graphic data of it and send data to host spooler.
- If so, Port monitor managing network port receives data from spooler and sends a data stream to the Network Interface Card.
- Network interface card receives it and send to Kernel part.
- Kernel receives this data from Host, and then select emulation fit to data and start selected one. After emulation job end, Kernel sends the output bit-map data to Engine using Printer Video Controller (by clock type for LSU).
- Engine print the received data to required paper with the sequential developing process.

3. Disassembly and Reassembly

3.1. Precautions when replacing parts

3.1.1. Precautions when assembling and disassembling

- Use only approved Samsung spare parts. Ensure that part number, product name, any voltage, current or temperature rating are correct. Failure to do so could result in damage to the machine, circuit overload, fire or electric shock.
- Do not make any unauthorized changes or additions to the printer, these could cause the printer to malfunction and create electric shock or fire hazards.
- Take care when dismantling the unit to note where each screw goes. There are 19 different screws. Use of the wrong screw could lead to system failure, short circuit or electric shock.
- Do not disassemble the LSU unit. Once it is disassembled dust is admitted to the mirror chamber and will seriously degrade print quality. There are no serviceable parts inside.
- Regularly check the condition of the power cord, plug and socket. Bad contacts could lead to overheating and firfe. Damaged cables could lead to electric shock or unit malfunction.

3.1.2. Preautions when handling PBA

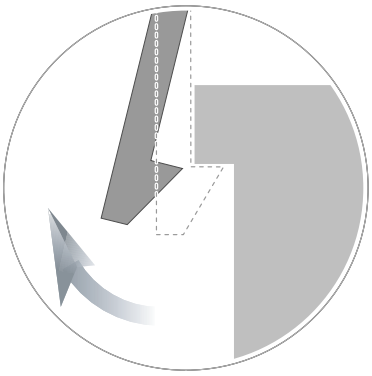
Static electricity can damage a PBA, always used approved anti-static precautions when handling or storing a PBA.

- **Precautions when moving and storing PBA**
  1) Please keep PBA in a conductive case, anti-static bag, or wrapped in aluminum foil.
  2) Do not store a PBA where it is exposed to direct sunlight.
- **Precautions when replacing PBA**
  1) Disconnect power connectors first, before disconnecting other cables.
  2) Do not touch any soldered connections, connector terminals or other electronic parts when handling insulated parts.
- **Precautions when checking PBA**
  1) Before touching a PBA, please touch other grounded areas of the chassis to discharge any static electrical charge on the body.
  2) Take care not to touch the PBA with your bare hands or metal objects as you could create a short circuit or get an electric shock. Take extra care when handling PBAs with moving parts fitted such as sensors, motors or lamps as they may get hot.
  3) Take care when fitting, or removing, screws. Look out for hidden screws. Always ensure that the correct screw is used and always ensure that when toothed washers are removed they are refitted in their original positions.

3.1.3. Releasing Plastic Latches

Many of the parts are held in place with plastic latches. The latches break easily; release them carefully.

To remove such parts, press the hook end of the latch away from the part to which it is latched.



3.2. Screws used in the printer

The screws listed in the table below are used in this printer. Please ensure that, when you disassemble the printer, you keep a note of which screw is used for which part and that, when reassembling the printer, the correct screws are used in the appropriate places.

Part Code	Location	Description	Qty
6003-000196	FRAME	SCREW-TAPTYPE;PWH,+,B,M3,L10,NI PLT,SWRCH18A	20
6003-000269	FRAME	SCREW-TAPTYPE;BH,+,-,S,M3,L6,ZPC(WHT),SWRCH18A,-	13
6006-001078	FUSER	SCREW-TAPTYPE;PH,+,WSP,B,M3,L10,ZPC(WHT),SWRCH18A	1
6003-000269	FUSER-LOWER	SCREW-TAPTYPE;BH,+,-,S,M3,L6,ZPC(WHT),SWRCH18A,-	2
6003-000196	FUSER-UPPER	SCREW-TAPTYPE;PWH,+,B,M3,L10,NI PLT,SWRCH18A	1
6003-000282	FUSER-UPPER	SCREW-TAPTYPE;BH,+,-,B,M3,L8,ZPC(BLK),SWRCH18A,-	7
6003-000196	FRAME-PATH	SCREW-TAPTYPE;PWH,+,B,M3,L10,NI PLT,SWRCH18A	3
6003-000269	FRAME MAIN-LEFT	SCREW-TAPTYPE;BH,+,-,S,M3,L6,ZPC(WHT),SWRCH18A,-	6
6003-000282	FRAME MAIN-LEFT	SCREW-TAPTYPE;BH,+,-,B,M3,L8,ZPC(BLK),SWRCH18A,-	2
6002-000308	FRAME MAIN-RIGHT	SCREW-TAPTYPE;PH,+,-,B,M2.6,L6,ZPC(WHT),SWRCH18A,-	4
6003-000269	FRAME MAIN-RIGHT	SCREW-TAPTYPE;BH,+,-,S,M3,L6,ZPC(WHT),SWRCH18A,-	2
6003-000269	FRAME MAIN-MIDDLE	SCREW-TAPTYPE;BH,+,-,S,M3,L6,ZPC(WHT),SWRCH18A,-	5
6003-000282	LSU	SCREW-TAPTYPE;BH,+,-,B,M3,L8,ZPC(BLK),SWRCH18A,-	5
6003-000269	FRAME-FEED IDLE	SCREW-TAPTYPE;BH,+,-,S,M3,L6,ZPC(WHT),SWRCH18A,-	2
6003-000196	COVER-MIDDLE	SCREW-TAPTYPE;PWH,+,B,M3,L10,NI PLT,SWRCH18A	2
6003-000196	OPE	SCREW-TAPTYPE;PWH,+,B,M3,L10,NI PLT,SWRCH18A	4
6003-000282	SCANNER	SCREW-TAPTYPE;BH,+,-,B,M3,L8,ZPC(BLK),SWRCH18A,-	4
6003-000196	PLATEN	SCREW-TAPTYPE;PWH,+,B,M3,L10,NI PLT,SWRCH18A	4
6003-000196	PLATEN-LOWER	SCREW-TAPTYPE;PWH,+,B,M3,L10,NI PLT,SWRCH18A	5
6003-000269	DRIVE PLATEN	SCREW-TAPTYPE;BH,+,-,S,M3,L6,ZPC(WHT),SWRCH18A,-	2
6003-000196	COVER-REAR	SCREW-TAPTYPE;PWH,+,B,M3,L10,NI PLT,SWRCH18A	2
6003-000196	COVER-FRONT	SCREW-TAPTYPE;PWH,+,B,M3,L10,NI PLT,SWRCH18A	4
6003-000196	COVER-MIDDLE	SCREW-TAPTYPE;PWH,+,B,M3,L10,NI PLT,SWRCH18A	2
6003-000196	HOLDER-OPE	SCREW-TAPTYPE;PWH,+,B,M3,L10,NI PLT,SWRCH18A	2
6003-000196	SHILED-CONTROLLER	SCREW-TAPTYPE;PWH,+,B,M3,L10,NI PLT,SWRCH18A	3
6003-000196	SPEAKER	SCREW-TAPTYPE;PWH,+,B,M3,L10,NI PLT,SWRCH18A	2
6003-000196	WLAN	SCREW-TAPTYPE;PWH,+,B,M3,L10,NI PLT,SWRCH18A	1
6003-000269	COVER-MIDDLE	SCREW-TAPTYPE;BH,+,-,S,M3,L6,ZPC(WHT),SWRCH18A,-	2
6003-000269	COVER-REAR	SCREW-TAPTYPE;BH,+,-,S,M3,L6,ZPC(WHT),SWRCH18A,-	4
6003-000269	FAX-PBA	SCREW-TAPTYPE;BH,+,-,S,M3,L6,ZPC(WHT),SWRCH18A,-	4
6003-000269	MAIN PBA	SCREW-TAPTYPE;BH,+,-,S,M3,L6,ZPC(WHT),SWRCH18A,-	4
6003-000269	SHIELD-CONTROLLER	SCREW-TAPTYPE;BH,+,-,S,M3,L6,ZPC(WHT),SWRCH18A,-	2

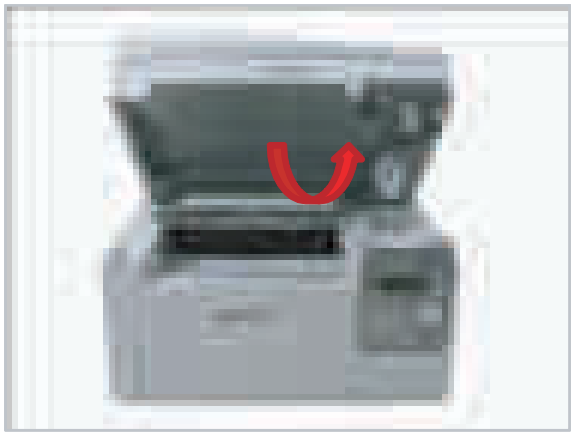
3.3. Replacing the Main SVC parts

NOTE

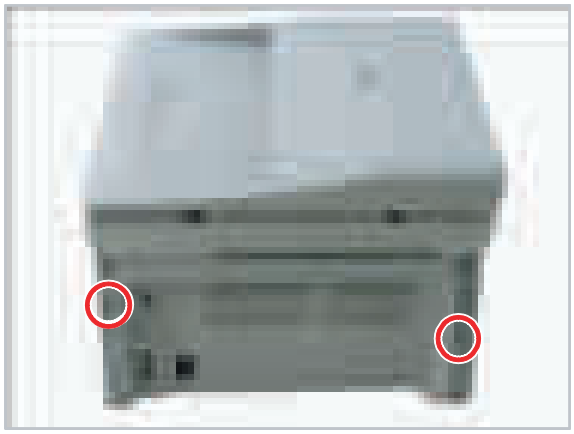
The color of machine may differ from your machine depending on its model.

3.3.1. Right and Left cover

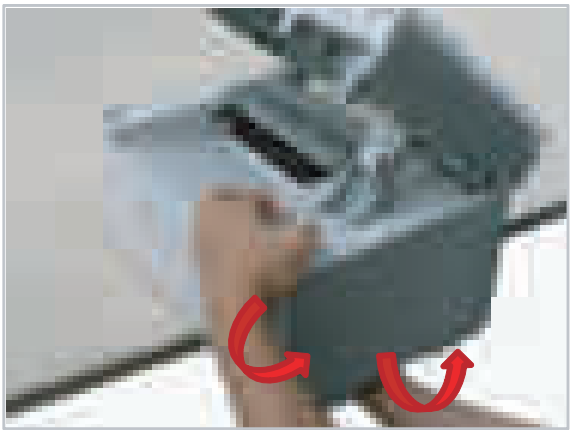
1. Open the Scanner.



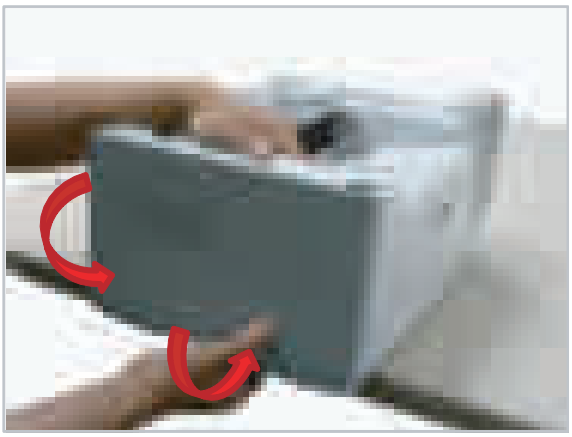
2. Remove 2 screws from the rear.



3. Release the right cover.



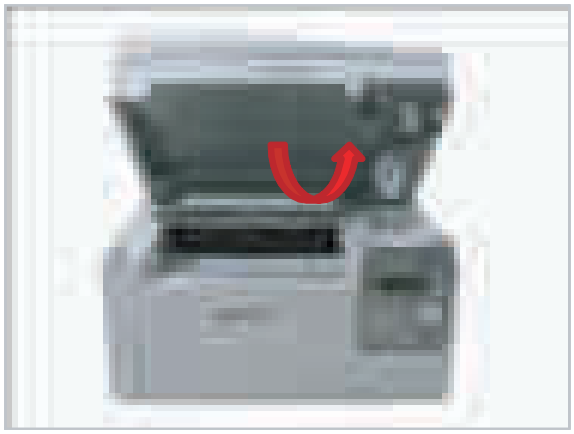
4. Release the left cover.



3.3.2. Scanner Unit

1. Remove the right cover. (Refer to 3.3.1)
2. Unplug the connectors connecting the Scanner Unit on the Main board.

3. Open the Scanner Unit.



4. Release the scanner hinge while pushing the platen bottom connecting it.

5. Lift up and release the Scanner Unit.

3.3.3. ADF Unit

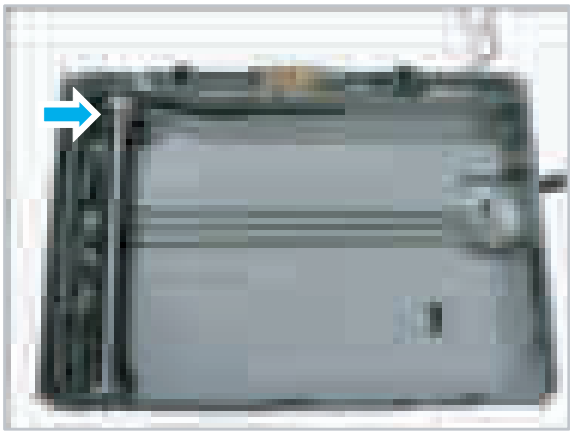
1. Remove the harness cover. Unplug the connector. And release the ADF Unit.

3.3.4. CIS Unit

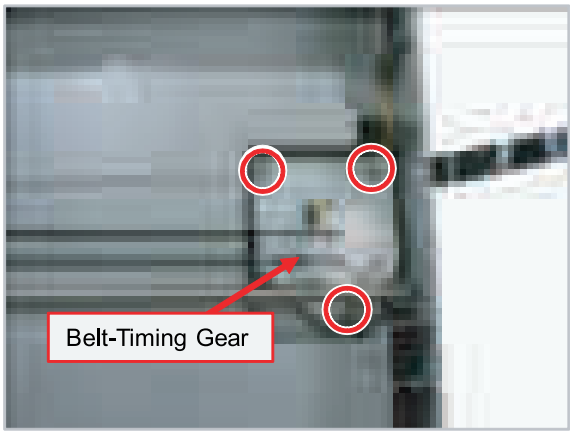
1. Remove the Scanner Unit and ADF Unit.
2. Remove 4 screws from the bottom of the platen.

3. Remove the platen upper from the platen lower.

4. Unplug the CIS flat cable. Release the CIS Unit.

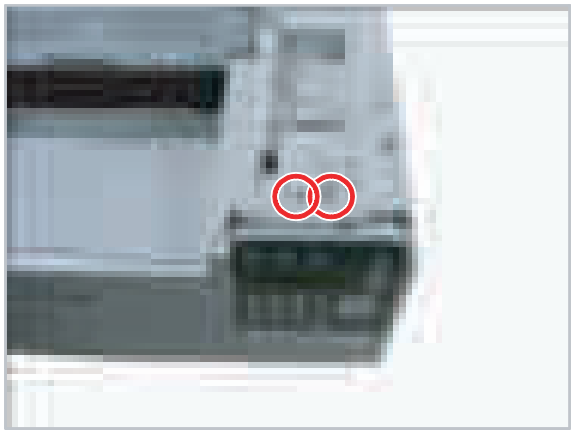


5. Release the Belt-Timing Gear. Remove 3 screws. And release the Scan Drive Unit.

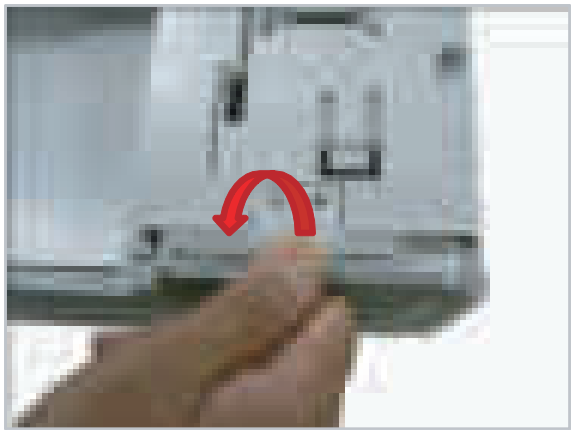


3.3.5. OPE Unit

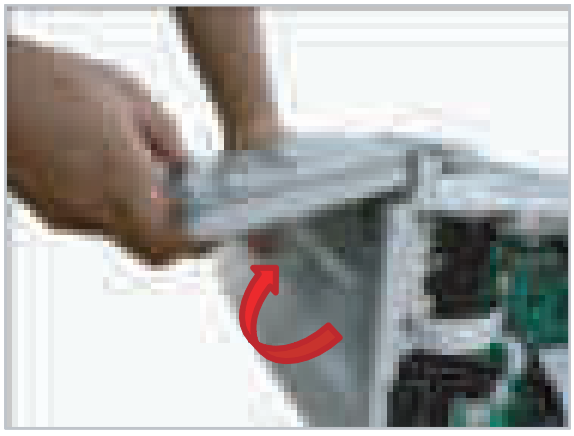
1. Remove 2 screws.



2. Remove the Holder-OPE.

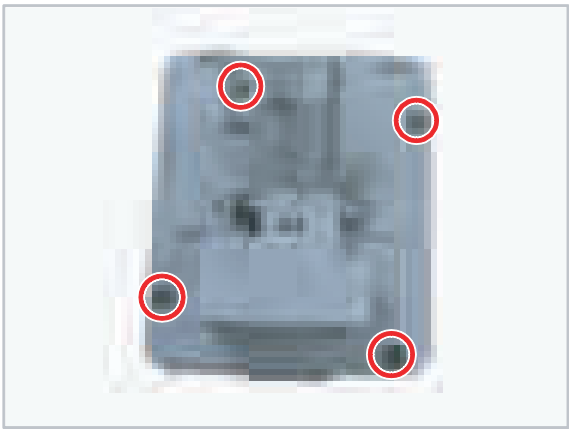


3. Open up the OPE Unit.

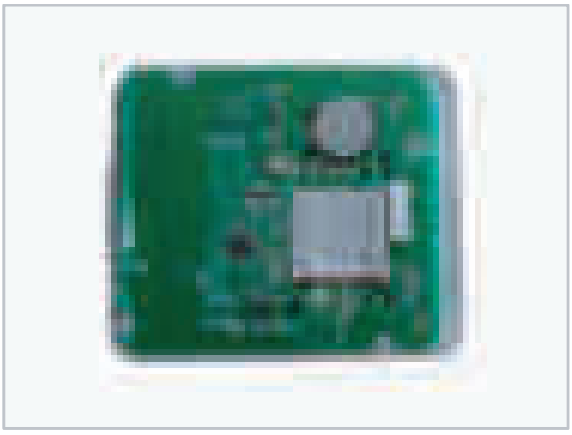


4. Pull the OPE unit to the right and release it.

5. Remove the OPE back cover after removing 4 screws.



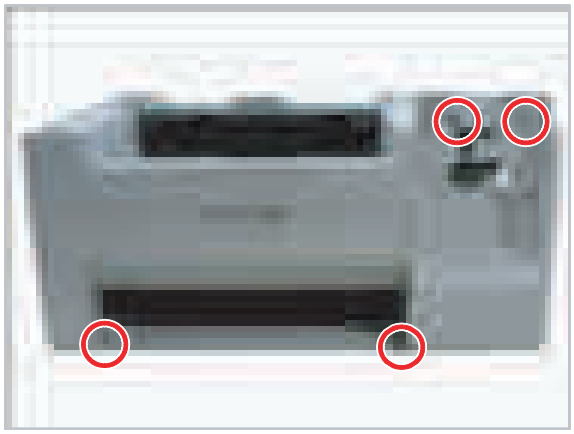
6. Remove the OPE board after removing 1 screw.



3.3.6. Front Cover

1. Remove the Cover-Cassette.

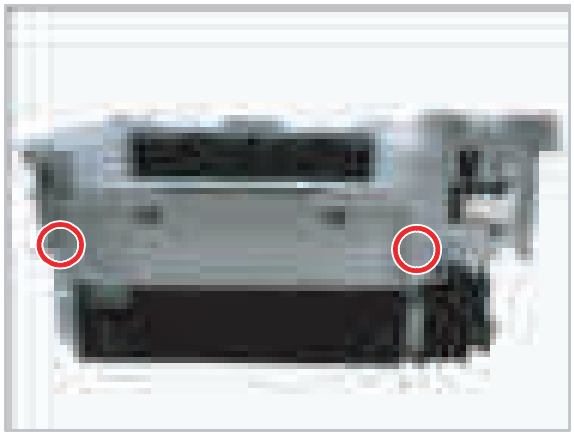
2. Remove 4 screws.



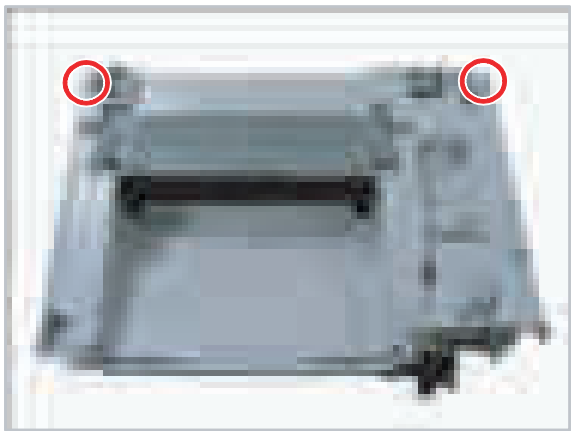
3. Remove the front cover.

3.3.7. Middle Cover

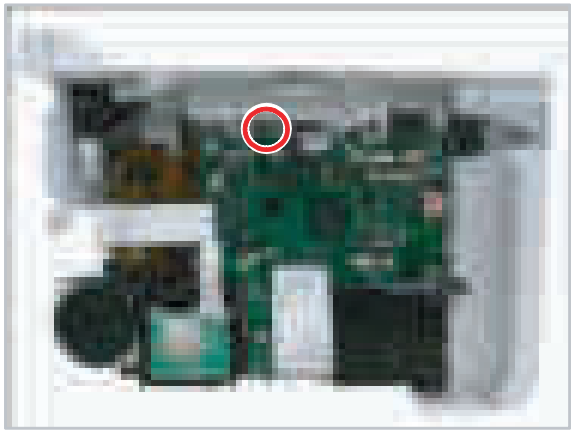
1. Remove 2 screws from the front.



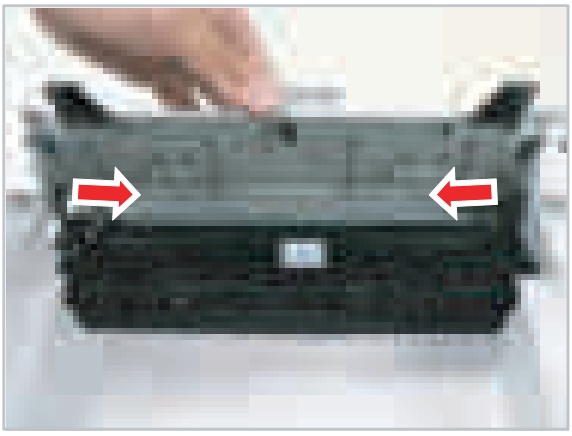
2. Remove 2 screws from the top.



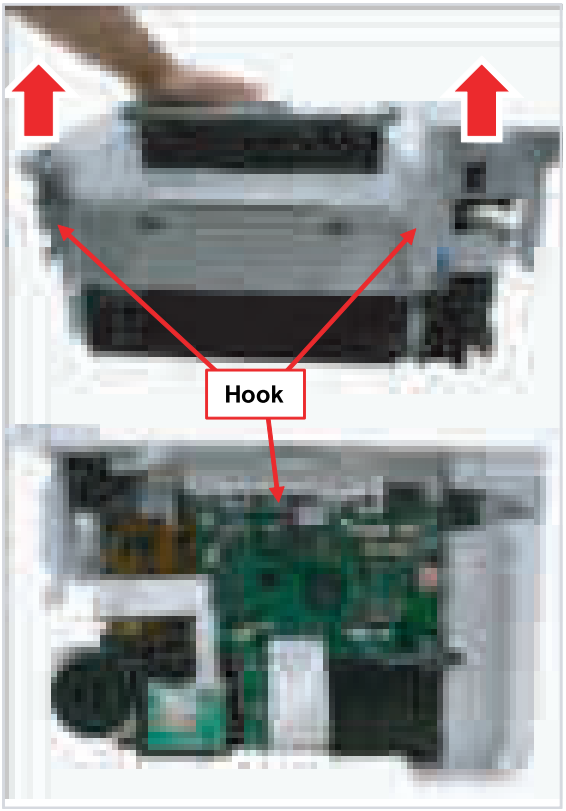
3. Remove 1 screw.



4. Release both jam levers from the jam cover.

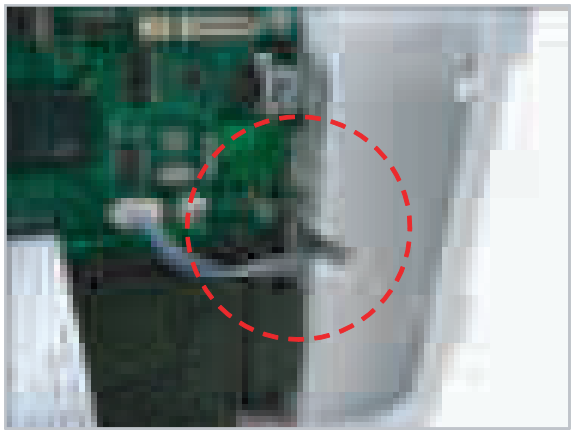


5. Lift up the middle cover after releasing the hooks.

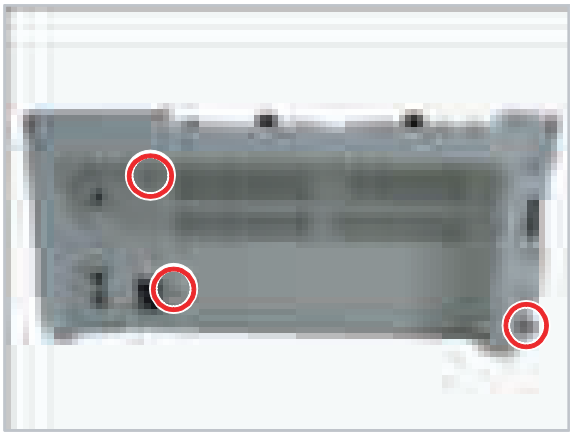


3.3.8. Rear Cover

1. Release the connectors from the rear cover.

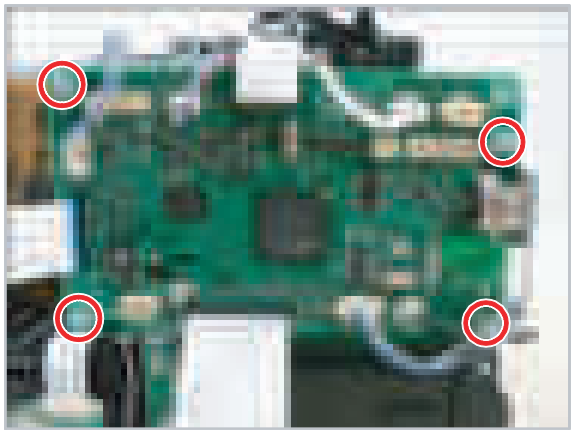


2. Release the rear cover after 3 screws.



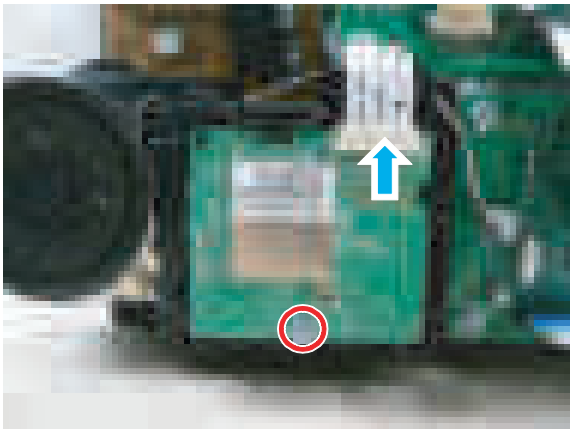
3.3.9. Main board

1. Unplug all connectors on the main board.
2. Remove 4 screws.
3. Release the main board.



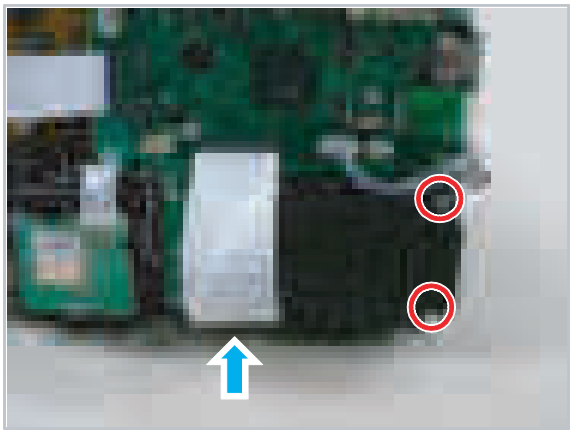
3.3.10. WLAN board

1. Unplug the flat cable.
2. Remove 1 screw.
3. Release the WLAN board.

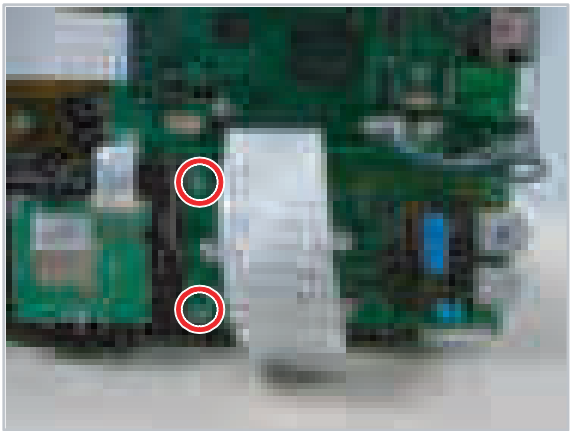


3.3.11. Fax board

1. Unplug the flat cable. Remove the fax cover after removing 2 screws.

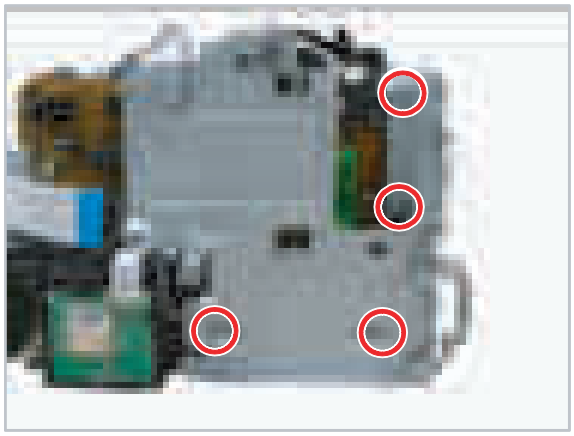


2. Release the fax board after removing 2 screws.

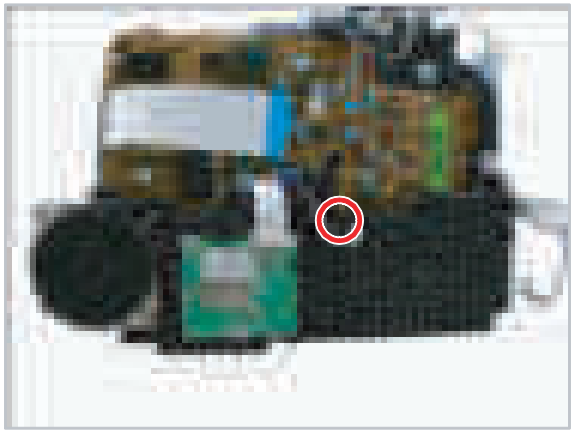


3.3.12. SMPS/HVPS board

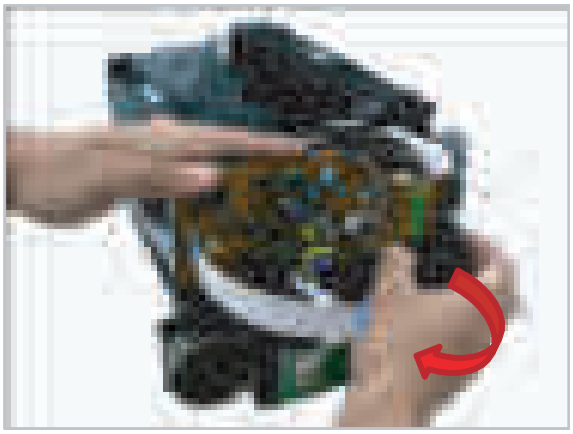
1. Remove the main board and fax board.
2. Remove the shield-controller after removing 4 screws.



3. Remove 1 screw securing the SMPS cover.



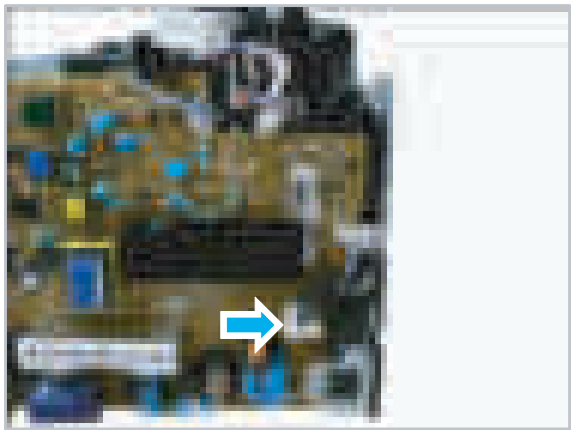
4. Remove the SMPS cover.



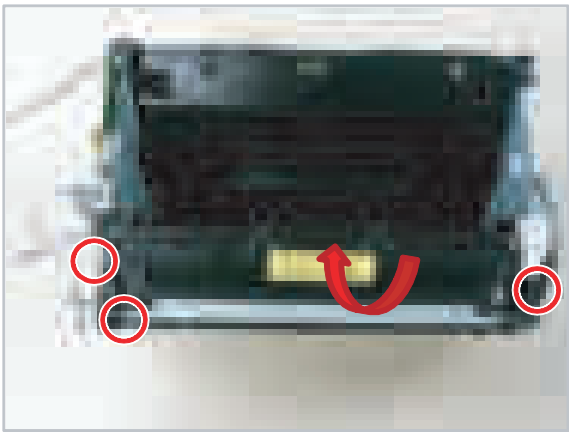
5. Release the SMPS/HVPS board after removing 8 screws.

3.3.13. Fuser Unit

1. Remove the main board. (Refer to 3.3.8)
2. Unplug the fuser connector.



3. Release the fuser unit after removing 3 screws.



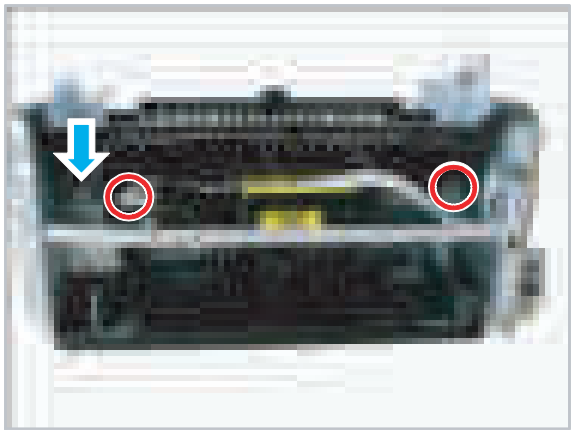
3.3.14. Drive Unit

1. Release the Drive Unit after removing 4 screws.

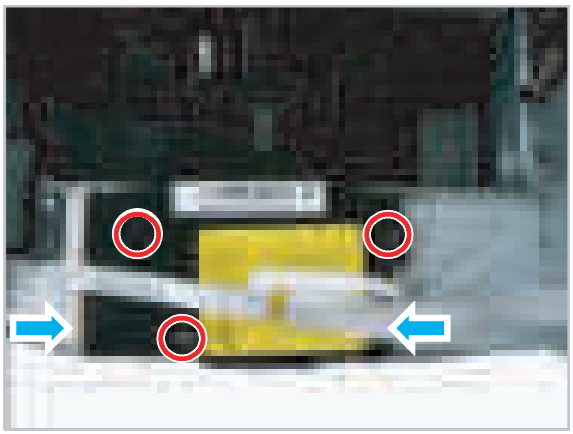
3.3.15. LSU

1. Remove all covers.
2. Remove 2 screws securing the LSU cover.

3. Remove 2 screws securing the LSU cover. Unplug the motor connector. And release the LSU cover.



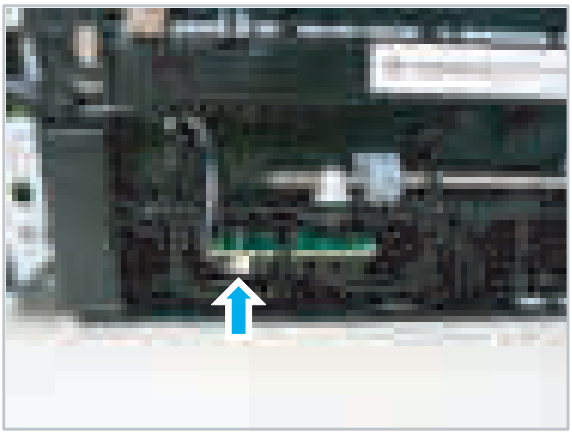
4. Unplug 2 flat cables. Remove 3 screws. And release the LSU.



3.3.16. Feed Sensor PBA

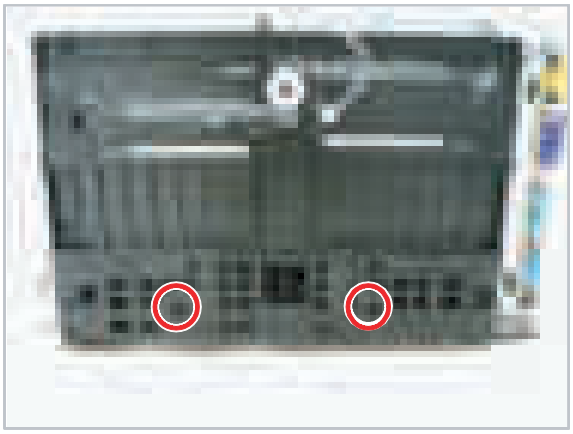
1. Remove the rear cover. (Refer to 3.3.7)

2. Unplug the connector after releasing the Feed Sensor PBA.

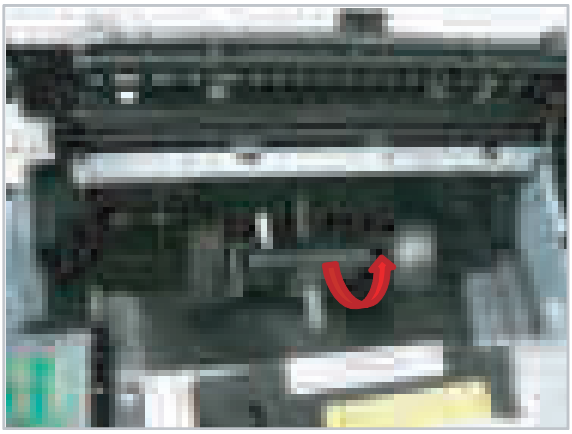


3.3.17. Pick up roller

1. Remove 2 screws from the bottom.



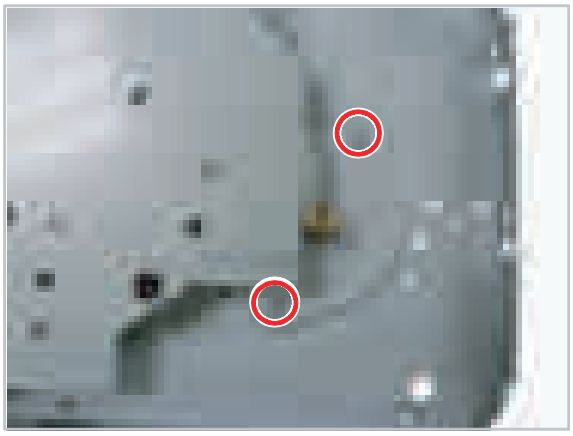
2. Release the pick up roller.



3.3.18. Motor

1. Release the left frame after removing 7 screws.

2. Release the motor after removing 2 screws.



3.3.19. Transfer roller

1. Remove the toner cartridge.
2. Release the left and right cover after removing 2 screws. (refer to 3.3.1)

3. Unplug the connectors on main board. Release the scanner hinge. And release the scanner unit. (refer to 3.3.2)

4. Release the rear cover after removing 6 screws.

5. Push the Bush-TR from the rear and remove the Transfer roller from the front.

6. When reassembling it, push the bush-TR in two direction like below picture.

4. Alignment and Troubleshooting

4.1. Alignment and Adjustments

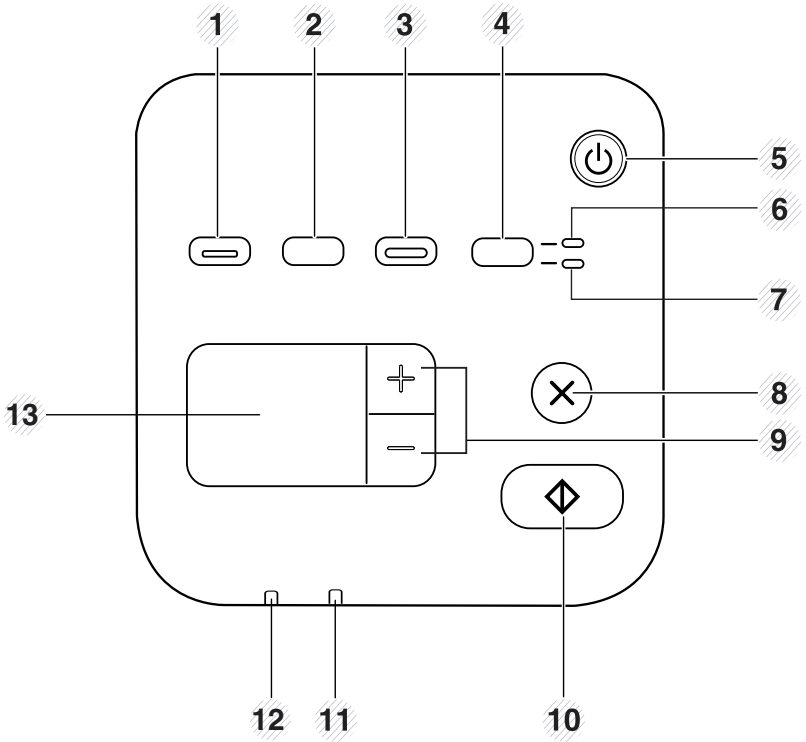
This chapter describes the main functions for service, such as the product maintenance method, the test output related to maintenance and repair, Jam removing method, and so on. It includes the contents of user guide.

4.1.1. Control Panel

NOTE

This control panel may differ from your machine depending on its model. There are various types of control panels.

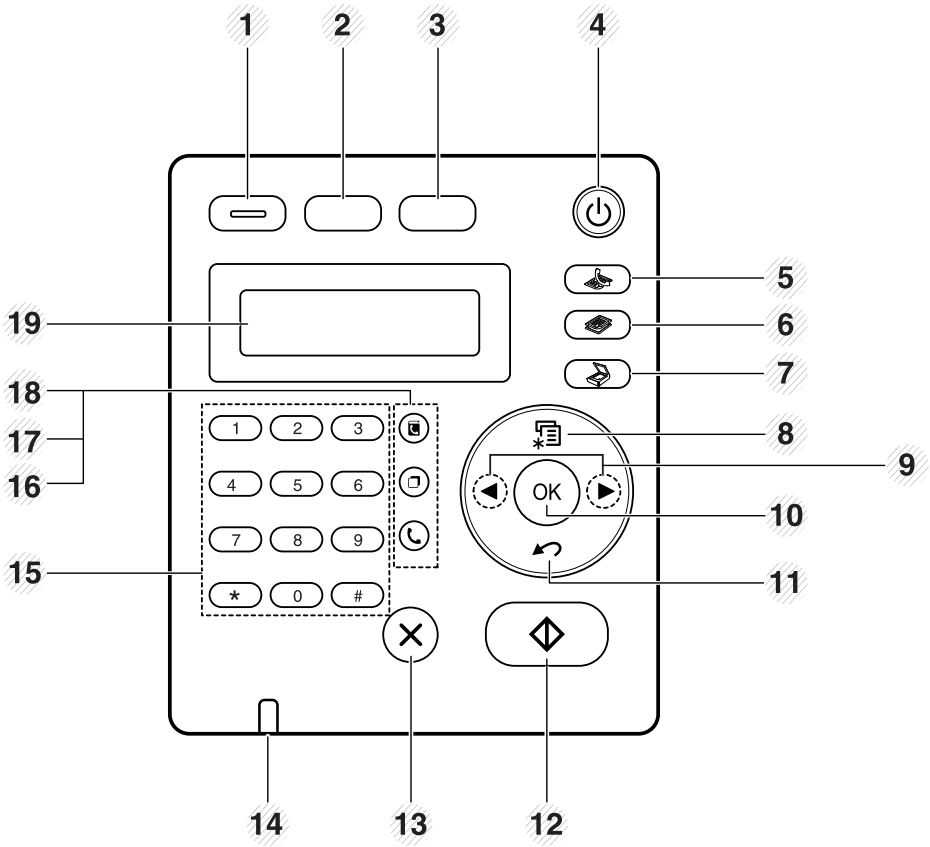
SCX-340x, 340xW (3in1 model)



1	Eco		Turn into eco mode to reduce toner consumption and paper usage.
2	WPS		Configures the wireless network connection easily without a computer.

	Print Screen		Press this button and the green LED will start blinking. If you want to print only the active screen, release the button when the green LED stops blinking. If you want to print the whole screen, release the button while it's blinking. **NOTE** • Print Screen can only be used in the Windows and Macintosh operating systems. • You can only use this function with USB-connected machine. • When printing the active window/ whole monitor screen using the print screen button, the machine may use more toner depending on what is being printed. • You can only use this function if the machine's Easy Printer Manager program is installed.
3	Scan to		Sends scanned data.
4	ID copy		Allows you to copy both sides of an ID card like a driver's license on a single side of paper.
5	Power		Turns the power on or off, or wakes up the machine from the power save mode. If you need to turn the machine off, press this button for more than three seconds.
6	Front LED		When the LED lights on, place the front side of an ID card facing down on the scanner glass.
7	Back LED		When the LED lights on, place the back side of an ID card facing down on the scanner glass.
8	Stop / Clear		Stops an operation at any time and there are more functions. • Cancels the current job. • Prints demo page: Press and hold this button for about 2 seconds until the status LED blinks slowly, and release. • Supplied Info & Event Log: Press and hold this button for about 6 seconds and release. • Prints configuration reports/network configuration reports*: Press and hold this button for about 4 seconds until the status LED blinks fast, and release.
9	+/- Buttons		Allows you to increase/decrease the number of page you want to copy. You can determine the number of copies (up to 99 copies) you want to copy by pressing +/- buttons. The default setting value is 1. • If you press +/- buttons briefly, the number of copies increases/decreases by single digits. • If you press +/- buttons long, the number of copies increases/decreases by ten-fold.
10	Start		Starts a job.
11	Status LED		Indicates the status of your machine.
12	Toner LED		Shows the status of the toner.
13	Display screen		Shows the current status and displays prompts during an operation.

SCX-340xF, 340xFW, 340xFH (4in1 model)



1	Eco		Turn into eco mode to reduce toner consumption and paper usage.
2	WPS		Configures the wireless network connection easily without a computer.
	Print Screen		Press this button and the green LED will start blinking. If you want to print only the active screen, release the button when the green LED stops blinking. If you want to print the whole screen, release the button while it's blinking. • Print Screen can only be used in the Windows and Macintosh operating systems. • You can only use this function with USB-connected machine. • When printing the active window/ whole monitor screen using the print screen button, the machine may use more toner depending on what is being printed. • You can only use this function if the machine's Easy Printer Manager program is installed.
3	ID Copy		Allows you to copy both sides of an ID card like a driver's license on a single side of paper.
4	Power		Turns the power on or off, or wakes up the machine from the power save mode. If you need to turn the machine off, press this button for more than three seconds.
5	Fax		Switches to Fax mode.
6	Copy		Switches to Copy mode.
7	Scan		Switches to Scan mode.

8	Menu		Opens Menu mode and scrolls through the available menus.
9	Left/ Right Arrows		Scrolls through the options available in the selected menu and increases or decreases values.
10	OK		Confirms the selection on the screen.
11	Back		Sends you back to the upper menu level.
12	Start		Starts a job.
13	Stop/ Clear		Stops an operations at any time.
14	Status LED		Indicates the status of your machine.
15	Numeric keypad		Dials a number or enters alphanumeric characters.
16	On Hook Dial		When you press this button, you can hear a dial tone. Then enter a fax number. It is similar to making a call using speaker phone.
17	Redial/ Pause(-)		Redials the last number in ready mode, or inserts a pause(-) into a fax number in edit mode.
18	Address Book		Allows you to store frequently used fax numbers or search for stored fax numbers.
19	Display screen		Shows the current status and displays prompts during an operation.

4.1.2. Understanding the status LED

The color of the LED indicates the machine's current status.

NOTE

- Some LEDs may not be available depending on model or country.
- To resolve the error, look at the error message and its instructions from the troubleshooting part.
- You also can resolve the error with the guideline from the computers's Printing Status or Smart Panel program window.

LED	Status		Description
Status	Off		The machine is off-line.
	Green	Blinking	When the backlight blinks, the machine is receiving or printing data.
		On	• The machine is on-line and can be used.
	Red	Blinking	• A minor error has occurred and the machine is waiting for the error to be cleared. Check the display message. When the problem is cleared, the machine resumes. • Small amount of toner is left in the cartridge. The estimated cartridge life of toner is close. Prepare a new cartridge for replacement. You may temporarily increase the printing quality by redistributing the toner.
		On	• A toner cartridge has almost reached its estimated cartridge life*. It is recommended to replace the toner cartridge. • The cover is opened. Close the cover. • There is no paper in the tray. Load paper in the tray. • The machine has stopped due to a major error. Check the display message.
	Orange	Blinking	Upgrading firmware.
		On	A paper jam has occurred.
WPS	Blue	Blinking	The machine is connecting to a wireless network.
		On	The machine is connected to a wireless network.
		Off	The machine is disconnected from a wireless network.
Power	Blue	On	The machine is in power save mode.
		Off	The machine is in ready mode or machine's power is off.
Eco	Green	On	Eco mode is on. 2-up, toner save on, skip blank page feature will automatically be applied when printing. For 3 in 1 model, this function can be applied when printing from PC.
		Off	Eco mode is off.
Toner	Orange	Blinking	Small amount of toner is left in the cartridge. The estimated cartridge life* of toner is close. Prepare a new cartridge for replacement. You may temporarily increase the printing quality by redistributing the toner.
		On	A toner cartridge has almost reached its estimated cartridge life*. It is recommended to replace the toner cartridge
		Off	All toner cartridges are at normal capacity.

NOTE

* Estimated cartridge life means the expected or estimated toner cartridge life, which indicates the average capacity of print-outs and is designed pursuant to ISO/ IEC 19752. The number of pages may be affected by operating environment, percentage of image area, printing interval, graphics, media and media size. Some amount of toner may remain in the cartridge even when red LED is on and the printer stops printing.

4.1.3. JAM removal

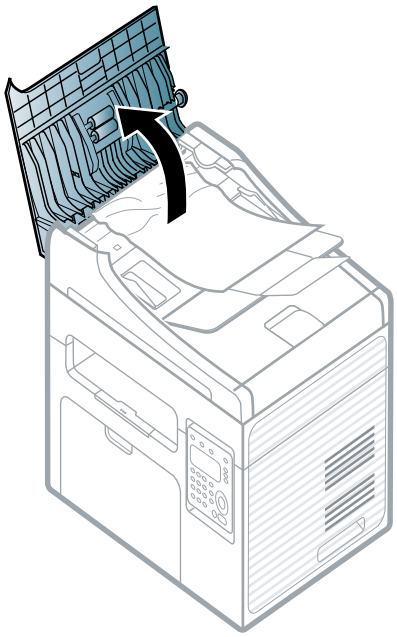
4.1.3.1. Clearing original document jams

NOTE

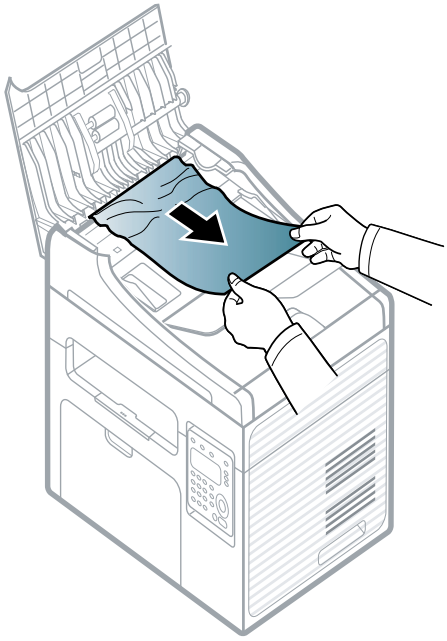
Illustrations on this user's guide may differ from your machine depending on its options or models.

Original paper jam in front of scanner

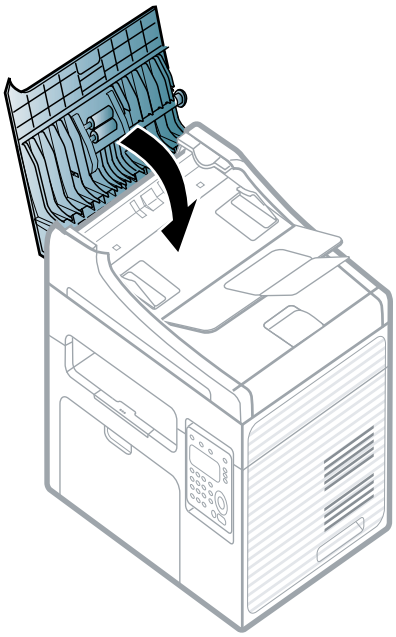
1) Open the document feeder cover.



2) Gently remove the jammed paper from the document feeder.

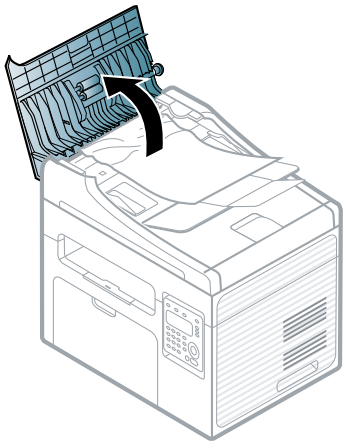


3) Close the document feeder cover.

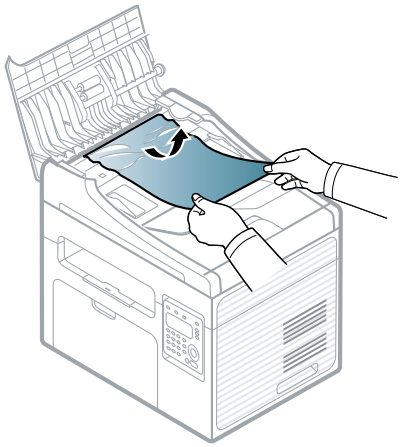


Original paper jam inside of scanner

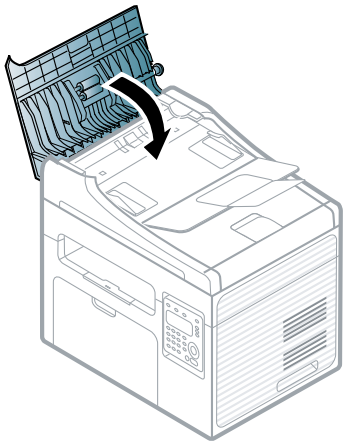
1) Open the document feeder cover.



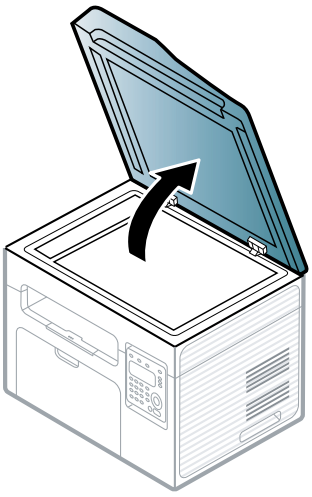
2) Gently remove the jammed paper from the document feeder.



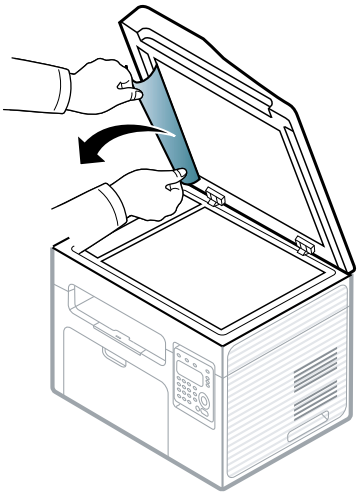
3) Close the document feeder cover.



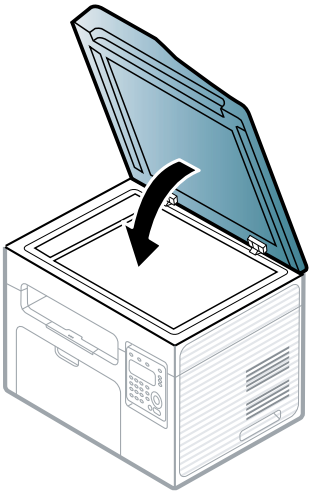
4) Open the document feeder.



5) Grasp the misfeed paper, and remove the paper from the feed area by carefully pulling it.



6) Close the document feeder.



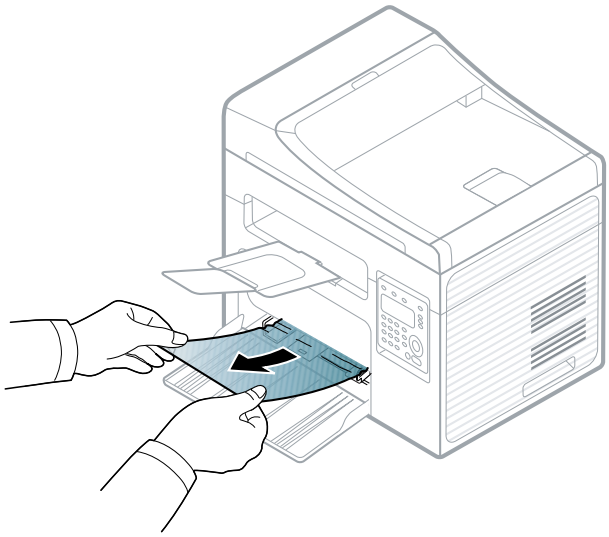
4.1.3.2. Clearing paper jams

NOTE

To avoid tearing the paper, pull the jammed paper out slowly and gently.

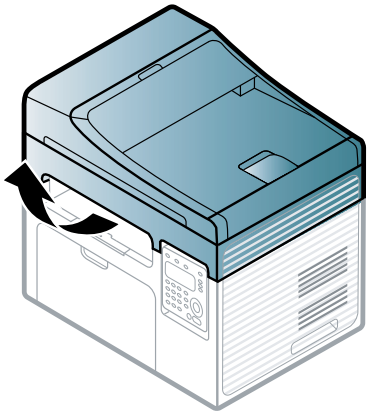
In Tray

1) Remove the jammed paper by gently pulling it straight out.

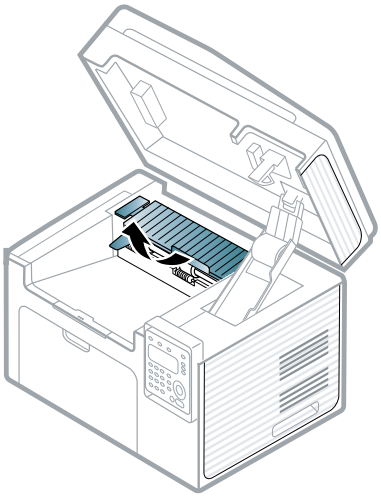


Inside the machine

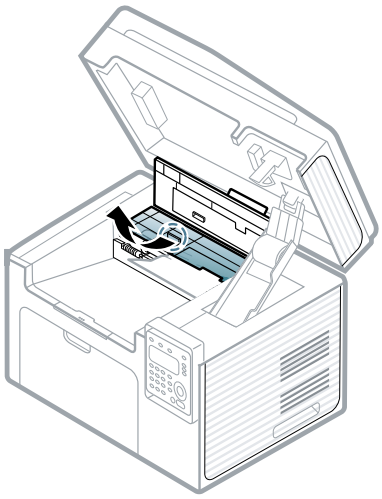
1) Open the scanner unit.



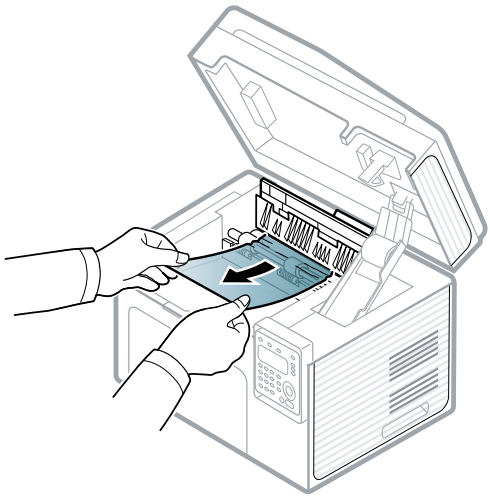
2) Open the jam cover.



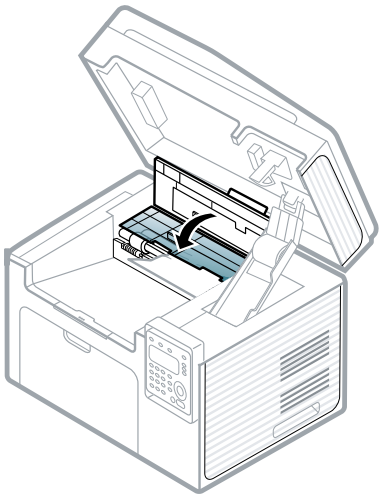
3) Open the fuser dummy cover.



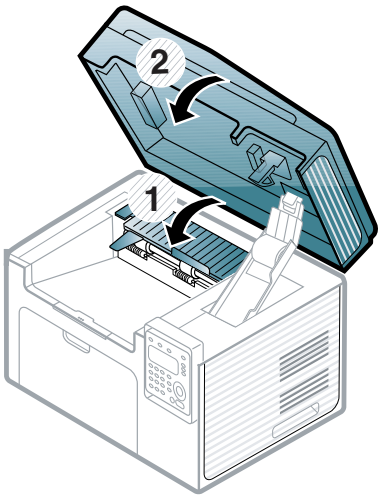
4) Remove the jammed paper by gently pulling it straight out.



5) Close the fuser dummy cover.

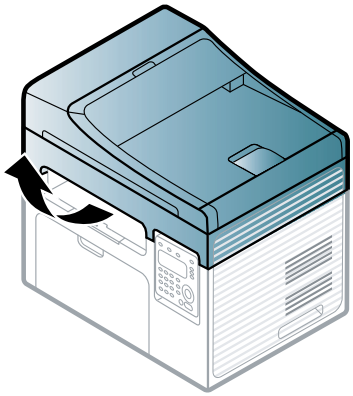


6) Close the jam cover. And then close the scanner unit.

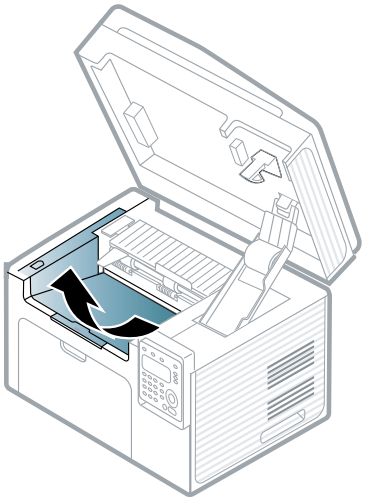


If you do not see the paper in this area, stop and go to next step.

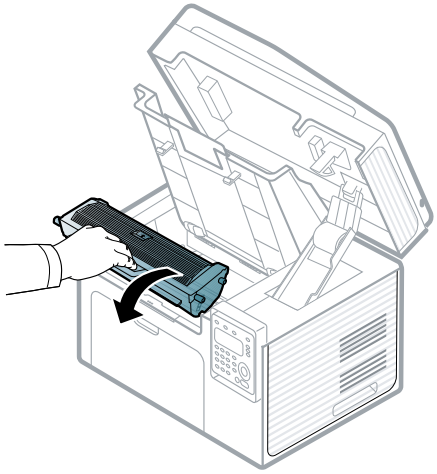
7) Open the scanner unit.



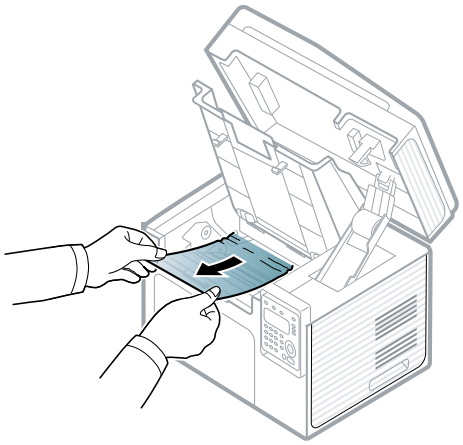
8) Open the middle cover.



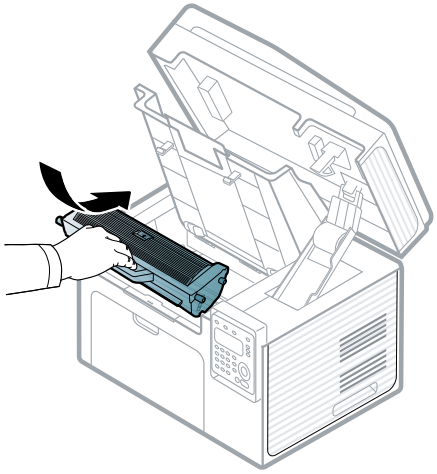
9) Remove the toner cartridge.



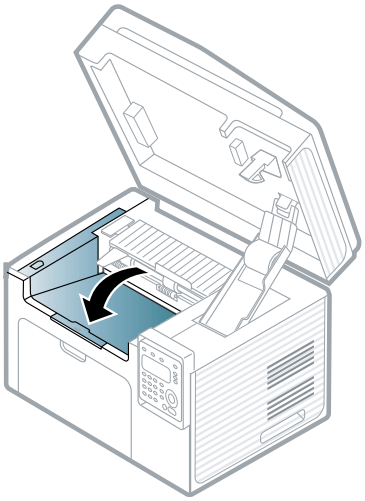
10) Remove the jammed paper by gently pulling it straight out.



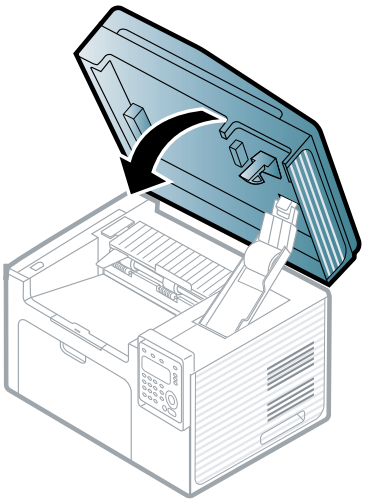
11) Reinstall the toner cartridge.



12) Close the middle cover.



13) Close the scanner unit.



4.1.4. Useful menu item for service

1) Monitoring the supplies life

If you experience frequent paper jams or printing problems, check the number of pages the machine has printed or scanned. Replace the corresponding parts, if necessary.

1) Select **Menu > System Setup > Maintenance > Supplies Life** on the control panel.

2) Select the option you want and press **OK**.

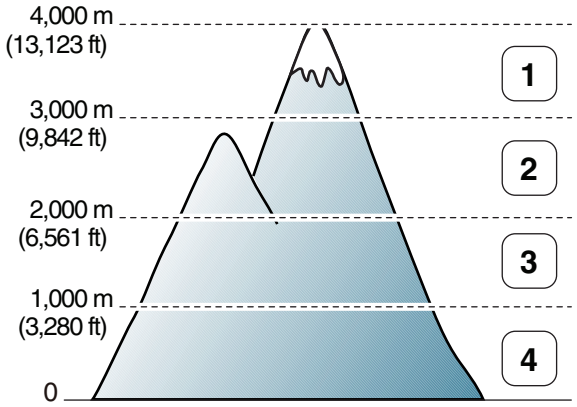
- **Supplies Info**: Prints the supply information page.
- **Total**: Displays the total number of pages printed.
- **ADF Scan**: Displays the number of pages printed by using the document feeder.
- **Platen Scan**: Displays the number of pages scanned by using scanner glass.

3) Press "**Stop/ Clear**" to return to ready mode.

2) Altitude adjustment

Print quality is affected by atmospheric pressure, which is determined by the height of the machine above sea level. The following information will guide you on how to set your machine for the best print quality.

Before you set the altitude value, determine the altitude where you are.



1 High 3
2 High 2
3 High 1
4 Normal

You can set the altitude value from Device Settings or Machine section in Printer Settings Utility program.

- For Windows and Macintosh, open the Samsung Easy Printer Manager program.
  Click **Device Settings > Link** to Program button, you can configure various machine settings.
- For Linux, open the Smart Panel program.
  Click Printer Setting. Click **Setting > Altitude Adjustment**. Select the appropriate value from the drop-down list, and then click Apply.

You can also set the altitude in System Setup option on the machine's display.

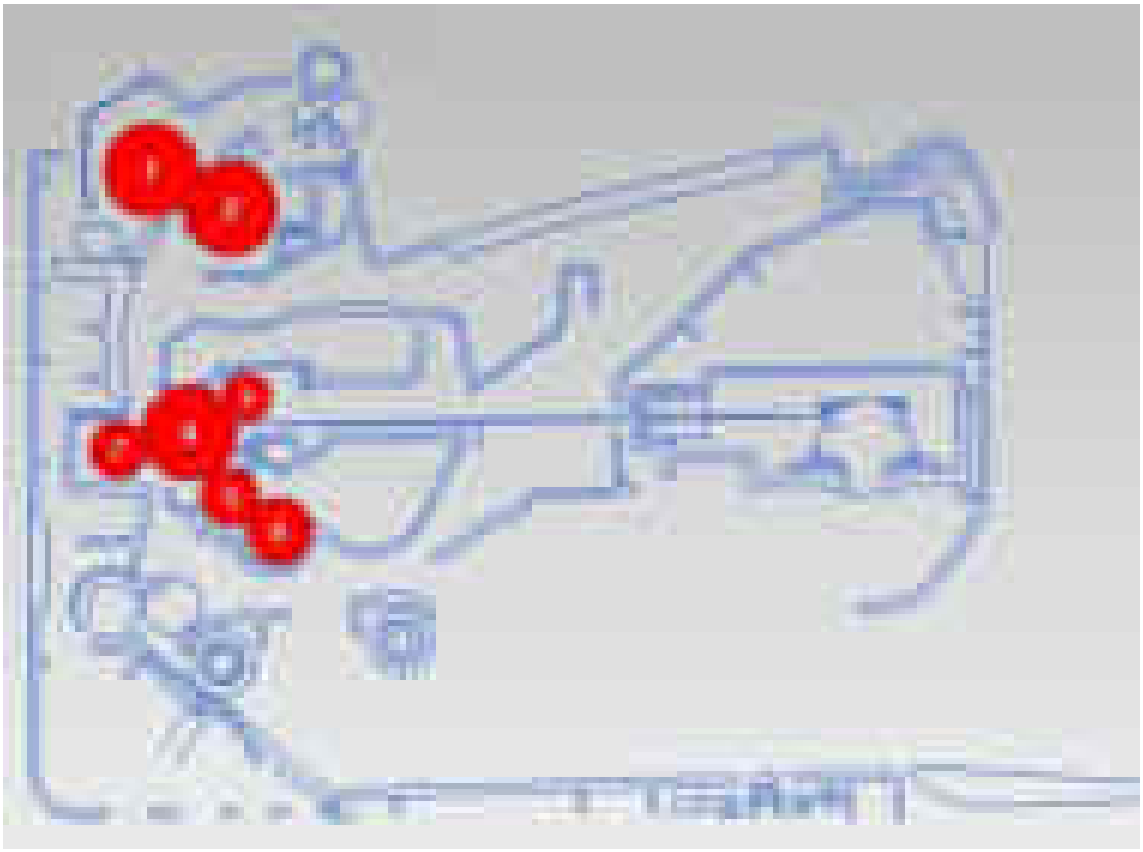
- Select "**Menu > System Setup > Machine Setup > Altitude Adj.** on the control panel.

NOTE

If your machine is connected to the network, you can set the altitude via SyncThru™ Web Service.

4.1.5. Periodic Defective Image

If an image defects appears at regular intervals on the printed-paper, it is due to a faulty or damaged roller. Refer to the table below and check the condition of the appropriate roller.



	Roller	Period (mm)	Phenomenon	Defective part
1	Pressure Roller	62.8 mm	Background	Fuser Unit
2	Heat Roller	63.7 mm	Black spot and image ghost	
3	Charging Roller	26.7 mm	Black Spot and line and periodic band	Toner Cartridge
4	OPC Drum	62.9 mm	White and Black Spots	
5	Developing Roller	33.7 mm	White spot, Horizontal black band	
6	Supply Roller	78.2 mm	Periodic Band by little difference of density	
7	Transfer Roller	39.3 mm	Ghost, Damaged image by abnormal transfer	Transfer roller

4.1.6. Useful management tools

4.1.6.1. Using Samsung Easy Printer Manager (Windows and Macintosh only)

NOTE

- This feature may not be available depending on model or optional goods.
- Available for Windows or Macintosh OS users only.
- For Windows, Internet Explorer 6.0 or higher is the minimum requirement for Samsung Easy Printer Manager.

Samsung Easy Printer Manager is an application that combines Samsung machine settings into one location. Samsung Easy Printer Manager combines device settings as well as printing environments, settings/actions and launching. All of these features provide a gateway to conveniently use your Samsung machine. Samsung Easy Printer Manager provides two different user interfaces for the user to choose from: the basic user interface and the advanced user interface. Switching between the two interfaces is easy: just click a button.

Understanding Samsung Easy Printer Manager

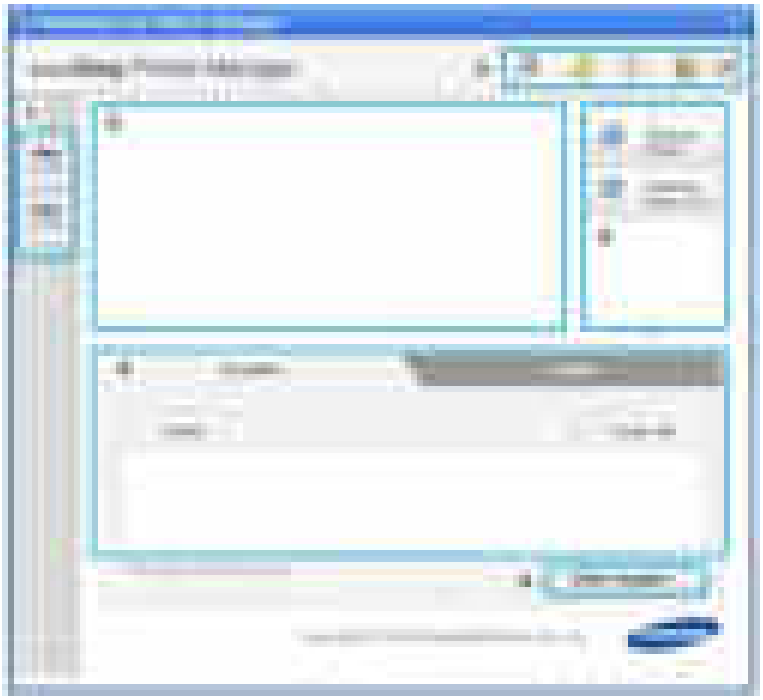
To open the program:

- For Windows, Select Start > Programs or All Programs > Samsung Printers > Samsung Easy Printer Manager > Samsung Easy Printer Manager.
- For Macintosh, Open the Applications folder > Samsung folder > Samsung Easy Printer Manager.

The Samsung Easy Printer Manager interface is comprised of various basic sections as described in the table that follows:

NOTE

The screenshot may differ depending on operating system you are using.



No	Area	Description
1	Printer List	The printer list displays the installed printer icons on your computer.
2	Printer Information	This area gives you general information about your machine. You can check information, such as the machine's model name, IP address (or Port name), and machine status. **NOTE** Troubleshooting button: This button opens Troubleshooting Guide when an error occurs. You can directly open the necessary section in the user's guide.
3	Application Information	Includes links for changing to the advanced settings, preference, help, and about.
4	Quick links	Displays Quick links to machine specific functions. This section also includes links to applications in the advanced settings.
5	Contents Area	Displays information about the selected machine, remaining toner level, and paper. The information will vary based on the machine selected. Some machines do not have this feature.
6	Order Supplies	Click on the Order button from the supply ordering window. You can order replacement toner cartridge(s) from online.

Advanced settings user interface overview

The advanced user interface is intended to be used by the person responsible for managing the network and machines.

- **Device Settings**

  You can configure various machine settings such as machine setup, paper, layout, emulation, network, and print information.

- **Scan to PC Settings**

  This menu includes settings to create or delete scan to PC profiles.
  - **Scan Activation** : Determines whether or not scanning is enabled on the device.
  - **Profile** : Displays the scanning profiles saved on the selected device.
  - **Basic tab** : Contains settings related general scan and device settings.
  - **Image tab** : Contains settings related to image altering.

- **Fax to PC settings**

  This menu includes settings related to the basic fax functionality of the selected device.
  - **Disable** : If Disable is On, incoming faxes will not be received on this device.
  - **Enable Fax Receiving from Device** : Enables faxing on the device and allow more options to be set.

- **Alert Settings**

  This is menu includes settings related to error alerting.
  - **Printer Alert** : Provides settings related to when alerts will be received.
  - **Email Alert** : Provides options relating to receiving alerts via email.
  - **History Alert** : Provides a history of device and toner related alerts.

- **Job Accounting**

  Provides querying of quota information of the specified job accounting user. This quota information can be created and applied to devices by job accounting software such as SyncThru™ or CounThru™ admin software.

4.1.6.2. Using Samsung Printer Status (Windows only)

The Samsung Printer Status is a program that monitors and informs you of the machine status.

NOTE

- The Samsung Printer Status window and its contents shown in this user's guide may differ depending on the machine or operating system in use.
- Check the operating system(s) that are compatible with your machine.

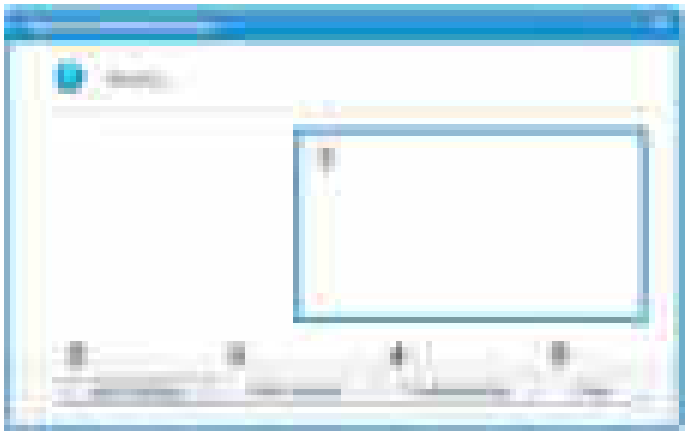
Samsung Printer Status overview

If an error occurs while operating, you can check the error from the Samsung Printer Status. Samsung Printer Status is installed automatically when you install the machine software.

You can also launch Samsung Printer Status manually. Go to the **Printing Preferences** , click the **Basic** tab > **Printer Status** button.

These icons appear on the Windows task bar:

Icon	Mean	Description
	Normal	The machine is in ready mode and experiencing no errors or warnings.
	Warning	The machine is in a state where a soft error has occurred. For example, a toner low status, which may lead to toner empty status.
	Error	The machine has at least one hard error, such as out of paper, fuser error, etc. Machine does not have ability to come to ready without customer intervention.



1	Toner Level	You can view the level of toner remaining in each toner cartridge. The machine and the number of toner cartridge(s) shown in the above window may differ depending on the machine in use. Some machines do not have this feature.
2	Alert Settings	Select the settings you want from the options window.
3	Order Supplies	You can order replacement toner cartridge(s) from online.
4	Troubleshooting	You can directly open the troubleshooting section in the user's guide.
5	Close	Close the window.

4.1.6.3. Using Smart Panel (Linux only)

Smart Panel is a program that monitors and informs you of the machine's status, and allows you to customize the machine's settings. You can download Smart Panel from the Samsung website.

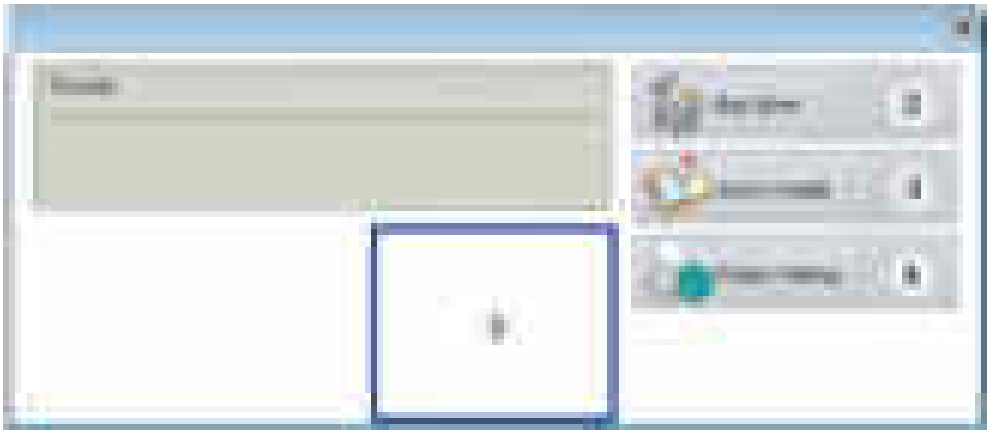
NOTE

- The Smart Panel window and its contents shown in this user's guide may differ depending on the machine or operating system in use.
- Check the operating system(s) that are compatible with this model.

Smart Panel overview

If an error occurs while operating, you can check the error from the Smart Panel. You can also launch Smart Panel manually.

Double-click the Smart Panel icon in the Notification Area.



1	Toner Level	You can view the level of toner remaining in each toner cartridge. The machine and the number of toner cartridge(s) shown in the above window may differ depending on the machine in use. Some machines do not have this feature.
2	Buy Now	You can order replacement toner cartridge(s) from online.
3	User's Guide	You can view the online User's Guide. **NOTE** This button opens the Troubleshooting Guide when an error occurs. You can directly open the troubleshooting section in the user's guide.
4	Printer Setting	You can configure various machine settings in the Printer Settings Utility window. Some machines do not have this feature **NOTE** If you connect your machine to a network, the SyncThru™ Web Service window appears instead of the Printer Settings Utility.

Changing Smart Panel's settings

Right-click in Linux on the Smart Panel icon and select Configure smart panel. Select the settings you want from the Configure smart panel window.

4.1.6.4. Using SyncThru Web Service (SWS)

SWS is an embedded web server in the machine. This web server informs you of machine configuration, version, status and allows you to customize the machine's settings. You can contact this server via wired and wireless network using your web browser in the remote place.

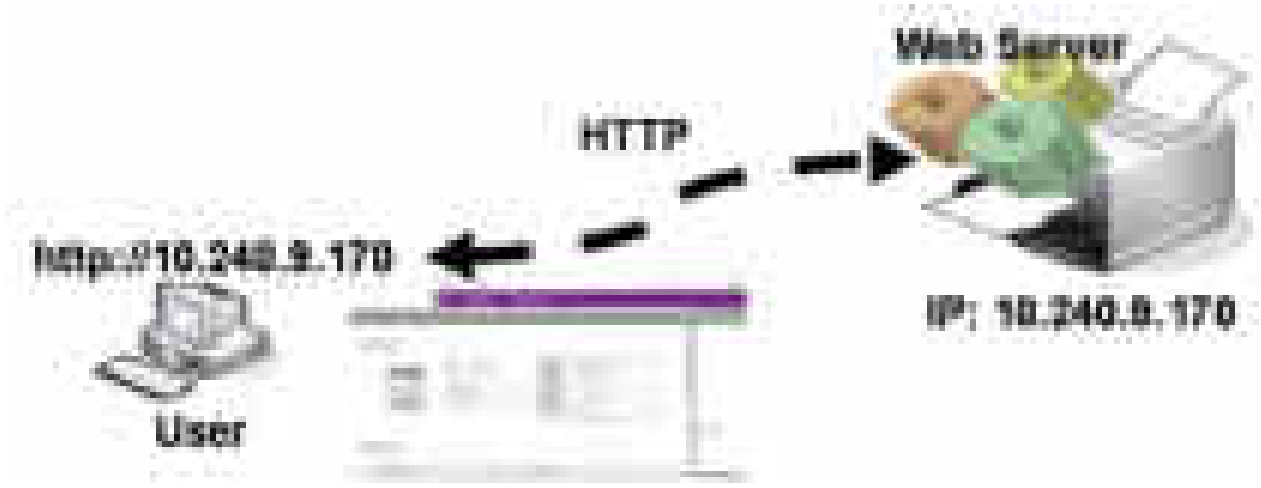
Connecting preparations

- Wired or Wireless Network connection is established.
- Browser (Ex> Internet Explorer) Program on your PC network connected

SWS overview

SyncThru Web Service (SWS)

- accepts HTTP request via port 80 as normal web servers.
- provides interface to users information of networked printers and allow to configure the setting of printers.
- is able to provide more complicated options than Local UI for printer configuration.



Connection Procedure

1) Open the Web-browser and input IP address of machine. Click "Login".
2) Log-in Admin Mode. (ID: admin, PW: sec00000)
3) Select pages to check the configuration and customize the settings.

CAUTION

Please, change SWS Default ID and Password for system security in case of your first connection.

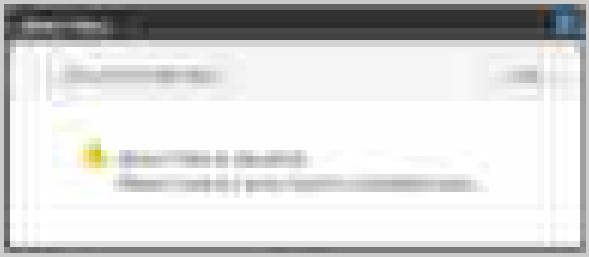
NOTE

If the machine supports 'Direct Print', you can enable this function using the SWS menu. The default configuration is 'Disabled' for your security.

Firstly, you have to login to SWS.

1) Click 'Direct Print Configuration' in the pop up windows when clicking 'Direct Print'.

2) In the 'Services' Menu, check 'Direct Print'.



Or,

1) Click 'System Security' in the 'Security' menu.

2) Select 'Feature Management' in the left frame.

3) In the 'Services' Menu, check 'Direct Print'.

4.1.7. Updating Firmware

This chapter includes instructions for updating the printer firmware. You can update the printer firmware by using one of the following methods :

- Update the firmware by using the USB port.
- Update the firmware by using the Network.

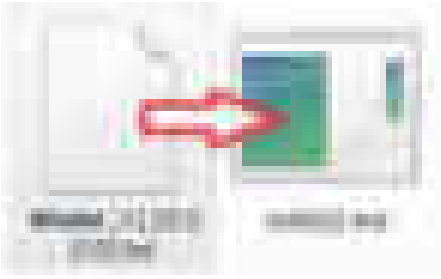
4.1.7.1. Update the firmware by using the USB port

Upgrading preparations

- usblist2.exe : Tool which sends firmware data to printer.
- Firmware file to update.

Upgrade Procedure

1) Turn the machine off.
2) Connect USB cable to printer.
3) Turn the machine on. Check if the printer is the ready status.
4) Drag the firmware file and Drop down on the usblist2.exe.



And then firmware update will be started automatically.

5) When upgrading is completed, machine is automatically re-booting.

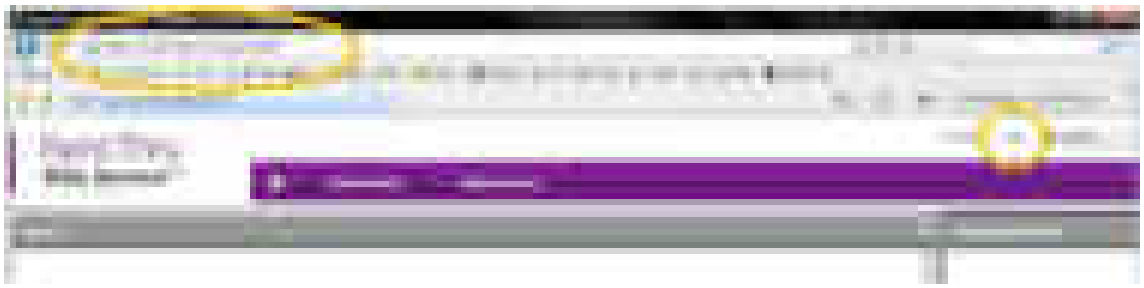
4.1.7.2. Update the firmware by using the network

Upgrading preparations

- Wired or Wireless Network connection is established.
- Firmware file to update

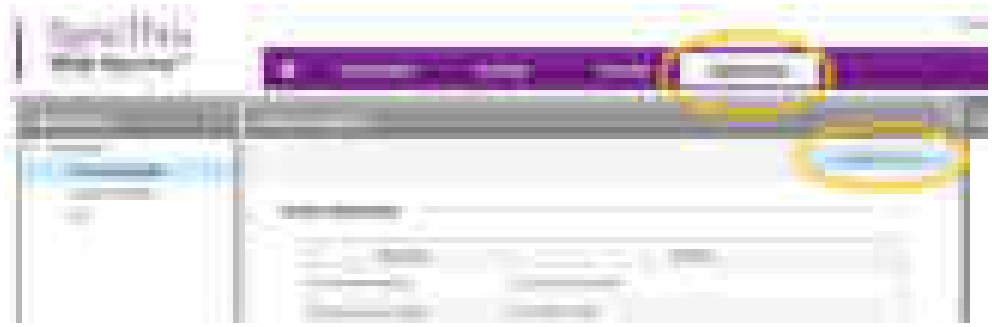
Upgrade Procedure

1) Open the Web-browser and input IP address of machine. Click “Login”.



2) Log-in Admin Mode. (ID: admin, PW: sec00000)

3) Select Maintenance menu and click “upgrade wizard”



4) Select firmware file using “browser” button and press next button.

5) SyncThru will check verify firmware file and compare version and press next button.

6) Machine starts upgrading. SyncThru will return home page after upgrading is completed.

4.1.8. Tech Mode

In service (tech) mode, the technician can check the machine and perform various test to isolate the cause of a malfunction. While in Tech mode, the machine still performs all normal operations.

4.1.8.1. Tech mode (4 in 1 model)

a) Entering Tech mode

1) Press **"Menu > # > 1 > 9 > 3 > 4"** on the control panel continuously.

2) Press **Menu**.

3) Select "**Tech Mode**".

b) Tech mode menu

NOTE

This function does not supported for SCX-340x/SCX- 340xW Series.

Depth 1	Depth 2	Depth 3
Data Setup	Send Level	[9-15]
	DTMF Level	High [0-15]
	Pause Time	[1-9]
	Dial Mode	Tone, Pulse
	Modem Speed	33.6, 28.8, 14.4, 12.0, 9.6, 4.8
	Error Rate	5%, 10%
	Clear All Mem.	
	Toner Low Level	[1:30]:10
	Clear Count	
	Engine Footer	Off, On
	Dial Tone	Off, On
	Caller ID	Off, On
Machine Test	Switch Test	
	Modem Test	
	Dram Test	
	Rom Test	
	Shading Test	
	Scan Aging	

Depth 1	Depth 2	Depth 3
Report	All Report	
	Protocol	
	Supplies Info	
	Configuration	
	Error Info	
	Usage Counter	
	Component Check	
	Fax Options	
EDC Mode	NVM Initialize	
	NVM Read Write	
	Test Routine	

c) Data Setup

- **Send Level**

  You can set the level of the transmission signal. Typically, the Tx level should be under -12 dBm.

  NOTE

  The Send Fax Level is set at the best condition in the shipment from factory.

- **DTMF Level**

  This is a setting value of the High level tone and low level tone at DTMF mode. (Not dial mode)

- **Pause Time**

  It shows the delay time when receiving the pause input at auto dial.

- **Dial Mode**

  This function can choose dial method.

  * Default : Dial (Dial/Pulse)

- **Modem Speed**

  You can set the maximum modem speed. Communication is done with modem speed automatically set at lower speed when communicating with a slower speed modem since communication is done on the standard of the side where modem speed is low for transmission/reception. It is best set 33.6 Kbps as default setting.

- **Error Rate**

  When the error rate is about exceed the set value, the Baud rate automatically adjusts to 2400 bps. This ensures that the error rate remains below the set value. You can select the rate between 5% and 10%.

- **Clear All Memory**

  The function resets the system to factory default settings. This function is used to reset the system to the initial value when the product is functioning abnormally . All the values are returned to the default values, and all the information, which was set by the user, will be erased.

  NOTE

  Always perform a memory clear after replacing the main board. Otherwise, the system may not operate properly.

- **Toner Low Level**

  The function is to set up the time to inform toner low status. This function can provide user convenience for replacing the toner cartridge.

- **Clear Count**

  This function resets the count value you select.

- **Engine Footer**

  This function is for monitoring of the engine status. If you perform this function, at printing, the setting value for engine is shown on the bottom of the printed page.

d) Machine Test

- **Switch Test**

  Use this feature to test all keys on the operation control panel. The result is displayed on the LCD window each time you press a key.

- **Modem Test**

  Use this feature to hear various transmission signals to the telephone line from the modem and to check the modem. If no transmission signal sound is heard, it means the modem part of the main board malfunctioned.

- **Dram Test**

  Use this feature to test the machine's DRAM. The result appears in the LCD display.

- **Shading Test**

  The function is to get the optimum scan quality by the specific character of the CIS (Contact Image Sensor). If the copy image quality is poor, perform this function to check the condition CIS unit.

e) Report

- **All report**

  You can print all report at a time.

- **Protocol**

  Protocol list shows the sequence of the CCITT group 3 T.30 protocol during the most recent sending or receiving operation. Use this list to check for send and receive errors.

- **Supplies Info**

  Supplies Information Report shows toner cartridge information such as toner remaining, toner capacity, toner product date etc.

- **Configuration**

  Configuration report shows the status of the user-selectable options. You may print this list to confirm your changes after changing settings. This page provides useful information for service.

- **Error Info**

  Error Information Report shows error records.

- **Usage Counter**

  Usage page report shows usage page counts since service date. It shows total counts of the simplex print and duplex print.

- **Component Check**

  Component Check Report shows the operation procedure of the machine test in tech mode.

f) EDC mode

- **NVM Initialize**

  This menu is to initialize the NVM value.

- **NVM Read/Write**

  This menu can change a configuration value for engine firmware.

- **Test Routines**

  This menu can perform the operation test for the main components.

Code	Displayed Name	Meaning	Input / Output	State Displayed
100-0000	Main BLDC Motor	Main BLDC Motor is On/Off	Output	On[Off]
101-0010	T1 Pick-Up Clutch	Engages drive to pick up a paper from tray1.	Output	On[Off]
102-0290	Feed Sensor	Detect when a paper is at Feed sensor.	Input	High[Low]
105-0030	Black MHV Bias	Black MHV bias voltage on at normal drive level	Output	On[Off]
106-0030	Black Dev Bias	Black Dev bias voltage on at normal drive level	Output	On[Off]
107-0030	Black THV Bias	Black THV bias voltage on at normal drive level	Output	On[Off]
107-0031	Black THV(-) Bias	Black THV bias voltage on at normal drive level	Output	On[Off]
109-0000	Fuser Temperature A	Detects what the temperature A is on fuser.	Input	Numeric 3 digits
109-0050	Fuser Bias	Fuser bias voltage on at normal drive level	Output	On[Off]
110-0000	LSU Motor1 Run Ready	Detects if LSU motor1 runs at normal speed.	Input	High[Low]
110-0060	LSU Motor1 Run	LSU Motor1 On/Off	Output	On[Off]
110-0110	LSU LD Power4	LSU LD4 Power On/Off (black)	Output	On[Off]

4.1.8.2. Tech Mode (3 in 1 model)

a) Entering Tech mode

In order to enter tech mode, please press button step by step as follows:

- **Up > Up > Stop > Down > Down > Stop > Stop**

Machine displays “UC” in 7 segment area in tech mode.

NOTE

- Button interval is 2 second under.
- If Stop button is pressed in tech mode, machine returns user mode.
- When machine is power off and then on, machine returns user mode.
- Any key was not pressed in tech mode during 30 seconds, machine return user mode.
  (Time is depend on machine timeout)
- You can’t enter tech mode when machine is working (e.g. printing/scanning/coping)
- Machine will not enter sleep mode in tech mode

b) Tech mode menu

	LCD Display	Description
1	**UC**	Print usage counter report (UC)
2	**SO**	Print Shading Report (Report prints out after shading)
3	**SI**	Print Supplies Info Report
4	**EL**	Print Event Log
5	**AA**	Print All Reports • Shading is not work, just print out with current shading data • Exception Report is not printed
6	**SA**	Executes Scanner Aging (If cancel button is pressed, then aging is finished)

	LCD Display	Description
7	**FC**	Executes Factory Memory Clear
8	**LC**	Control Toner Low Level • Toner low alert function is that if machine has 10% below toner, then machine will display alert to tell toner low. • This feature comes from market requirement. You can control percentage for showing toner low alert from 1 to 30.

c) Scanner Aging

- **[Enter Scanner Aging mode]**

  1) Select "**SA**" in Tech mode using Up/Down button pressing.

  2) Scanner will execute scanning infinitely.

- **[Enter Scanner Aging mode]**
  Press Cancel during scan again working.

d) Factory memory clearing

- **[Memory Clearing Mode Sequence]**

  1) Select "**FC**" menu in tech mode.

  2) If you choice factory clear, country number will be displayed on 7 segment.
  Select country number using Up/Down key.

Country	Number
UK	0
FRANCE	1
AUSTRIA	2
SWITZERLAND	3
ITALY	4
SPAIN	5
PORTUGAL	6
NORWAY	7
FINLAND	8
SWEDEN	9
NETHERLANDS	10
DENMARK	11
BELGIUM	12
HUNGARY	13
POLAND	14
CZECH	15
ROMANIA	16
BULGARIA	17
IRELAND	18
GERMANY	19

Country	Number
GREECE	20
TURKEY	21
RUSSIA	22
SOUTHAFRICA	23
INDIA	24
SRILANKA	25
USA	26
CANADA	27
BRAZIL	28
CHILE	29
MEXICO	30
ARGENTINA	31
PERU	32
OMAN	33
BANGLADESH	34
KUWAIT	35
MOROCO	36
ALGERIA	37
PAKISTAN	38
UAE	39

Country	Number
HONGKONG	40
UKRAINE	41
KAZAKHSTAN	42
UZBEKISTAN	43
ESTONIA	44
LATVIA	45
LITHUANIA	46
PUERTORICO	47
VENEZUELA	48
AUSTRALIA	49
TAIWAN	50
SINGAPORE	51
KOREA	52
LUXEMBOURG	53
COLOMBIA	54
SAUDIARABIA	55
ISRAEL	56
IRAN	57
URUGUAY	58
CHINA	59

Country	Number
THAILAND	60
TRINIDAD	61
EGYPT	62
JORDAN	63
LEBANON	64
QATAR	65
TUNISIA	66
YEMEN	67
CYPRUS	68
ICELAND	69
YUGOSLAVIA	70
NEWZEALAND	71
MALAYSIA	72
PANAMA	73
SLOVENIA	74
CROATIA	75
SERBIA	76
GUATEMALA	77
ECUADOR	78
COSTARICA	79
DOMINICAN REPUBLIC	80

Country	Number
NETHERLAND ARTILLES	81
ARTIGUA	82
BAHAMAS	83
BARBADOS	84
BELIZE	85
BERMUDA	86
BONAIRE	87
ELSALVADOR	88
GRANDCAYMAN	89
GUYANA	90
HAITI	91
HONDURAS	92
JAMICA	93
SURINAME	94
TURKSCAICOS	95
BOLIVIA	96
GRENADA	97
PARAGUAY	98
STVINCENT	99
STMAARTEN	100
STLUCIA	101
IRAQ	102

Country	Number
BAHRAIN	103
NICARAGUA	104
SLOVAKIA	105
INDONESIA	106
VIETNAM	107
CAMBODIA	108
PHILIPPINES	109
SYRIA	110
MALTA	111
LIECHTENSTEIN	112
ALBANIA	113
MACEDONIA	114
BOSNIA	115
LAOS	116
NEPAL	117
LIBYA	118
NIGERIA	119
KENYA	120
TANZANIA	121
SUDAN	122
PALESTINE	123
MONTENEGRO	124

3) Press “Start” Key.

4) Machine will execute memory cleaning.

5) After factory memory clearing, machine power off.

NOTE

- You can cancel if machine state in 1~3 sequence number.
- You can’t cancel factory clearing during 4 sequence number .

- **[Memory Clearing not working cases]**
  - Memory clearing is only available in idle mode.
  - Especially, when machine is working in tech mode, if you will select factory clearing, working job will be canceled and then memory clearing is started.

e) Toner Low Alert Level Control

- **[Execution Flow]**

1) Select “**LC**” menu item in tech mode.

2) Machine will display current toner low setting value on 7 segment .

3) Select number using up/down key. You can select 1~30.

4) If you select “start” key, then choice value is accepted and returns to menu choice mode.

4.1.9. EDC program (3 in 1 model only)

NOTE

SCX-340x/340xW (3 in 1) model has not EDC menu in tech mode. Instead, there is a program for EDC function.

The EDC program can check the machine status and perform various test to isolate the cause of a malfunction.

1) How to use the EDC program

1) Download the EDC program in your PC.
2) Connect the printer to the computer using USB cable.
3) Turn on the printer and wait for the printer to finish initializing.
4) Start EDC program. Press the “Menu” Button

5) To exit the EDC Mode, press the “Exit” button.

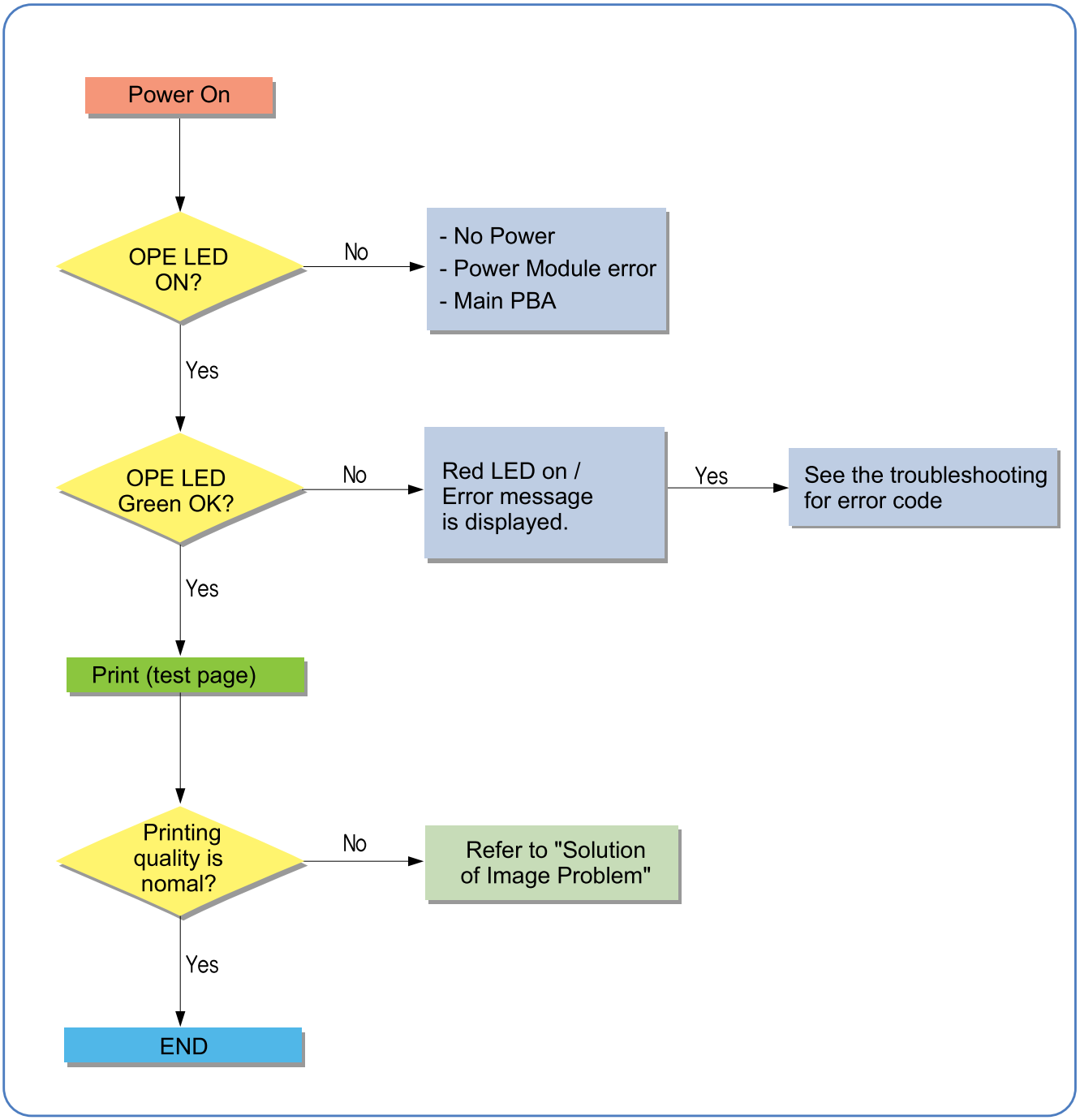
2) EDC mode menu

Displayed Name	Meaning
Main BLDC Motor	Main BLDC Motor is On/Off
T1 Pick-Up Clutch	Engages drive to pick up a paper from tray1.
Feed Sensor	Detect when a paper is at Feed sensor.
Black MHV Bias	Black MHV bias voltage on at normal drive level
Black Dev Bias	Black Dev bias voltage on at normal drive level
Black THV Bias	Black THV bias voltage on at normal drive level
Black THV(-) Bias	Black THV bias voltage on at normal drive level
Fuser Temperature A	Detects what the temperature A is on fuser.
Fuser Bias	Fuser bias voltage on at normal drive level
LSU Motor1 Run Ready	Detects if LSU motor1 runs at normal speed.
LSU Motor1 Run	LSU Motor1 On/Off
LSU LD Power4	LSU LD4 Power On/Off (black)

4.2. Troubleshooting

4.2.1. Procedure of checking the symptoms

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



4.2.1.1. Basic Check List

1) **Check the Power.**

- Check that the power switch is turned on.
- Check that the power cable is plugged into the outlet and the printer.
- Check the voltage of the power outlet.

2) **Check the LED of Panel.**

- Is there OPE LED ON?
  - › If not check power cable, switch SMPS or Main board.
- Is the abnormal Lamp?
  - › Check the Main board and cable harness.

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 image quality problem section.

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

4.2.2. Error Code and Troubleshooting

NOTE

Some messages may not appear on the display depending on the options or models.

- **SCX-340xF/ 340xFW/ 340xFH (4 in 1)**

  Messages appear on the control panel display to indicate the machine's status or errors.

- **SCX-340x/ 340xW (3 in 1)**

  These models have not the LCD. If machine has error, it is hard to know which kinds of error is happened.

  In case of this, machine supports error code display mode.

  - **[Enter Error Code Display Mode]**

    Press button continuously as following key sequence : **Power > Up > Down > Power > Power**

    NOTE

    - Machine only display error code in idle mode. In other word, machine can't print when it is working.
    - Button interval time between each key sequence is 2 seconds below.
    - Machine automatically returns to idle mode after power off/on.

  - **[Exit Error Code Display Mode]**

    In order to exit error code mode, there are two kinds of method.

    - By pressing cancel key : Whenever you press cancel key during error codes are displayed, then return to idle mode.
    - Automatically return : Machine will return idle mode after all error codes are displayed.

Error Code	Error Message	Troubleshooting
C2-1110	Prepare new cartridge	Page 4–35
C2-1120	Replace new cartridge	Page 4–35
C2-1140	Replace new cartridge	Page 4–35
C2-1410	Install toner cartridge	Page 4–35
C2-1510	Not Compatible Toner cartridge	Page 4–36
C2–1710	Error: #C2-1710 Call for Service	Page 4–35
C2–1711	Error: #C2-1711 Call for Service	Page 4–35
C2–1712	Error: #C2-1712 Call for Service	Page 4–35
M2-1110	Paper Jam inside machine	Page 4–36
M2–1116	Paper jam or empty	Page 4–36
M2–1317	Paper Jam inside machine	Page 4–37
S1-5221	Install wireless NIC	Page 4–37
S2-4110	Door open Close it	Page 4–38
S3–3121	Scanner Locked.	Page 4–39
S6-3123	Network Problem: IP Conflict	Page 4–40
U1-2320	Error #U1-2320 Turn off then on	Page 4–40
U1-2330	Error #U1-2330 Turn off then on	Page 4–40
U1-2340	Error #U1-2340 Turn off then on	Page 4–40
U2-1112	Error #U2-1112 Turn off then on	Page 4–41

Error Code	Error Message	Troubleshooting
U2-1113	Error #U2-1113 Turn off then on	Page 4–41
U3-3313	Document jam. Remove jam	Page 4–42
U3-3314	Document jam. Remove jam	Page 4–42
U3-4110	Door of scanner is open.	Page 4–42

► **Error Code**

C2–1110

C2–1120

C2–1140

► **Error message**

Prepare new toner cartridge.

Replace new cartridge.

Replace new cartridge.

► **Symptom**

The remaining toner cartridge is less than 10% / The toner cartridge is at the end of its life.

► **Troubleshooting method**

Print the supply information report.
Check the life remaining of the toner cartridge.
If its life is at the end, turn the machine off and replace the toner cartridge with new one.

► **Error Code**

C2–1410

C2–1710

C2–1711

C2–1712

► **Error message**

Install cartridge.

Error: #C2-1710 Call for Service

Error: #C2-1711 Call for Service

Error: #C2-1712 Call for Service

► **Symptom**

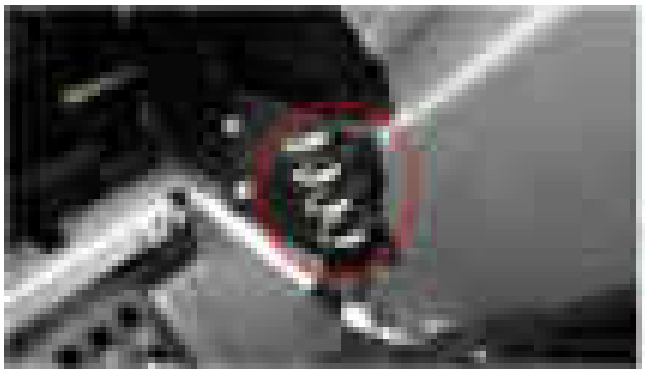
The toner cartridge is not installed. / The machine can't detect the toner cartridge.

► **Troubleshooting method**

1) Check if the toner cartridge is installed. If it is OK, turn the machine off then on.

2) If the error message is not disappear, remove the toner cartridge. Thoroughly roll the cartridge five or six times to distribute the toner evenly inside the cartridge. And reinstall the toner cartridge.

3) If the problem persists, check that the CRUM contact area is contaminated. Clean it.



4) If the problem persists, replace the toner cartridge with new one.

► **Error Code**

C1–1510

► **Error message**

Not compatible Toner cartridge

► **Symptom**

Toner cartridge is not compatible.

► **Troubleshooting method**

1) Print the supply information report. Check information of the toner cartridge.

2) If the toner cartridge is not a Samsung genuine toner cartridge, replace with new one.

► **Error Code**

M2–1110

M2–1116

► **Error message**

Paper jam inside machine.

Paper jam or empty

► **Symptom**

A paper jam was detected at the feed sensor.

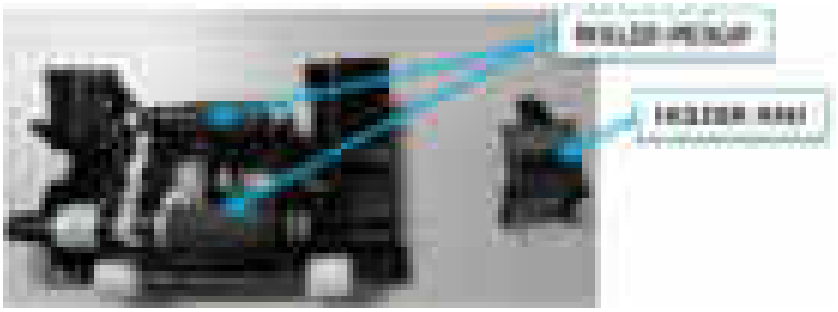
► **Troubleshooting method**

1) Check if paper is on tray.

2) Remove the jammed paper. (Refer to 4.1.3 Jam removal)

3) If the jammed paper occurs continually, check the followings.

a) Check if the pick up rubber or friction pad is worn out or contaminated. Clean the contaminated part or replace it.



b) Check if the connector is connected to the feed sensor PBA correctly.

c) Check if the actuator is assembled correctly.

d) If the connection and actuator are OK, replace the feed sensor PBA.

► **Error Code**

M2–1317

► **Error message**

Paper Jam inside machine

► **Symptom**

A paper jam was detected in the fuser unit area.

► **Troubleshooting method**

1) Open the top cover. Remove the jammed paper.
2) Turn the machine off.
3) Turn the machine on while pushing the cancel button. Wait for rebooting the machine.

► **Error Code**

S1–5221

► **Error message**

Install wireless NIC

► **Symptom**

The communication error between the main board and the wireless board has occurred.

► **Troubleshooting method**

1) Check if the connection between the main board and the wireless board is normal.

2) If the connection is OK, replace the flat cable.
3) If the flat cable is OK, replace the WLAN board.
4) If the problem persists after replacing the WLAN board, replace the main board.

► **Error Code**

S2–4110

► **Error message**

Door open. Close it.

► **Symptom**

Top cover is open or the cover open switch is defective.

► **Troubleshooting method**

1) Check if the top cover is closed perfectly. Open and close it.

2) Remove the right cover. Check if the connection between the main board and SMPS/HVPS board is correct.

3) Check if the cover open switch on SMPS/HVPS board is operated properly. If it is defective, replace the SMPS/HVPS board.

► **Error Code**

S3–3121

► **Error message**

Scanner Locked.

► **Symptom**

CIS unit in the scanner does not move.

► **Troubleshooting method**

1) Check if the CIS unit moves when turning the machine off then on.
2) Check if the CIS cable is connected correctly. Reconnect it.

3) If the CIS unit is defective, replace it.
4) Check if there is any defective part in the scanner. Find and replace it.
5) If the problem persists, replace the main board.

► **Error Code**

S6–3123

► **Error message**

Network Problem : IP Conflict

► **Symptom**

Network has some problem. (IP address conflicts with that of other system. / Communication error / There is no response when checking the ping test.)

► **Troubleshooting method**

Change the machine's IP address.

- Execute the Samsung Easy Printer Manager program. (Device setting — Network — IP address). Change the IP address.
- In case of DHCP or Bootp, reboot the machine to receive a new IP address.

► **Error Code**

U1–2320

U1–2330

U1–2340

► **Error message**

Error #U1-2320 Turn off then on

Error #U1-2330 Turn off then on

Error #U1-2340 Turn off then on

► **Symptom**

The temperature control of fuser unit is abnormal. (U1–2320 : Open Heat Error / U1–2330 : Low Heat Error / U1–2340 : Over Heat Error)

► **Troubleshooting method**

1) Turn the machine off. Re-install the fuser unit. Then turn the machine on. Is the error message is disappeared?
2) If the problem persists, turn the machine off and remove the fuser unit.
   a) Check if the fuser connector is connected properly.
   b) Check if the input voltage is normal.
   c) Check if the thermistor is twisted or contaminated.
3) After confirming continuity in the fuser connector and the problem still exists; order an SMPS/HVPS and Fuser Unit and install as is necessary.

► **Error Code**

U2–1112

U2–1113

► **Error message**

Error #U2-1112 Turn off then on

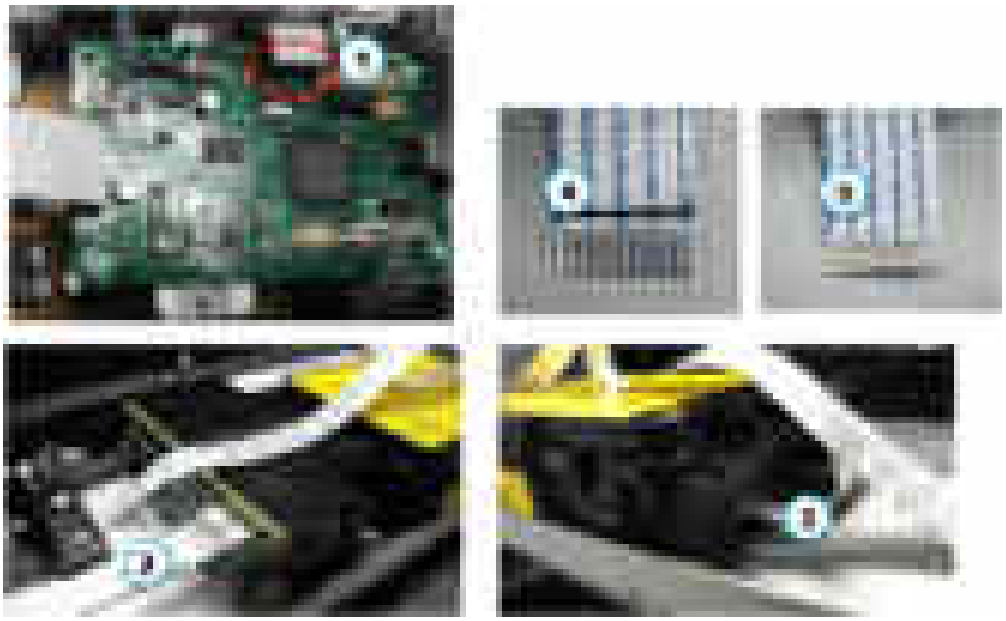
Error #U2-1113 Turn off then on

► **Symptom**

LSU Motor does not work normally.

► **Troubleshooting method**

1) Check if the LSU harness on the main board is connected properly. (picture- 1)
2) If it is OK, check that the LSU harness on LSU board is connected properly. (picture- 2,3)
3) Check if the LSU harness is defective. (picture- 4,5)
4) If the problem persists, replace the LSU.
5) If the problem persists after replacing LSU, replace the main board.



► **Error Code**

U3–3313

U3–3314

► **Error message**

Document jam. Remove jam.

Document jam. Remove jam.

► **Symptom**

A document jam was detected in the ADF unit.

► **Troubleshooting method**

1) Remove the jammed paper from ADF unit.
2) If the error persists, turn the machine off then on.
3) If the document jam occurs continually, open the ADF cover-top. Check if the ADF pick up roller is contaminated or worn out. Clean or replace it.
4) If the pick up roller is OK, check the followings.
   a) Check if the ADF motor is working normally.

   b) Check if the connector on the ADF joint board is connected correctly.
5) If the problem persists, replace the ADF unit.

► **Error Code**

U3–4110

► **Error message**

Scanner Door Open

► **Symptom**

ADF or ADF top cover is opened.

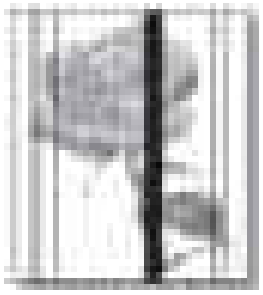
► **Troubleshooting method**

1) Close the ADF unit.
2) Close the ADF top cover.

4.2.3. Image quality problem

1) **Vertical Black Line and Band**

Description : Straight thin black vertical line occurs in the printed image.



Check and cause	Solution
• Damaged develop roller in the toner cartridge. Deformed Doctor-blade or cleaning-blade. • Scratched surface of the charge roller in the toner cartridge.	Replace the toner cartridge.
Partly depression or deformation on the surface of the transfer roller.	Replace the transfer roller.

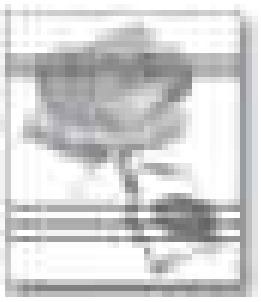
2) **Vertical White Line**

Description : White vertical voids occurs in the printed image.

Check and cause	Solution
Foreign matter stucks onto the window of internal lenses of LSU mirror.	Clean the LSU window with recommended cleaner (IPA). Clean the window with a clean cotton swab.
The life of the toner cartridge has been expired	Replace the toner cartridge.
Some foreign substances are on the window of the toner cartridge frame.	Remove the foreign matter of the exposure window.
If the fuser is defective, voids occur periodically at the top of a black image.	Reinstall the fuser unit.

3) **Horizontal Black Band**

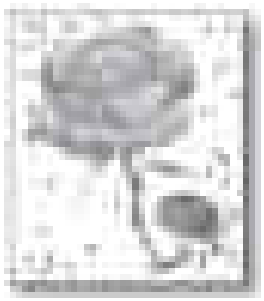
Description : Dark of blurry horizontal stripes occur in the printing periodically.



Check and cause	Solution
Bad contacts of the voltage terminals to toner cartridge.	Clean each voltage terminal of the Charge, Developing and Transfer roller. (remove the toner particles and paper particles)
The rollers of developer may be stained. — OPC Drum = 62.9 mm — Charge Roller = 26.7 mm — Developing Roller = 33.7 mm	Replace the toner cartridge.

4) **Black and White spot**

Description : Dark or blurry black spots occur periodically in the printing.



Check and cause	Solution
If dark or blurry black spots occur periodically, the rollers in the toner cartridge may be contaminated with foreign matte or paper particles. (Charge roller : 26.7 mm interval / OPC drum : 62.9 mm interval)	Clean each voltage terminal of the Charge, Developing roller and Transfer roller. (remove the toner particles and paper particles)
If faded areas or voids occur in a black image at intervals of 62.9 mm, the OPC drum surface is damaged.	Replace the toner cartridge.
If a black image is partially broken, the transfer voltage is abnormal or the transfer roller's life has expired.	• If the transfer roller's life is expired, replace it. • Clean the inside of the set against the paper particles and foreign matter in order not to cause the trouble.

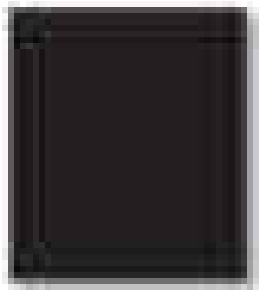
5) **Light image**

Description : The printed image is light, with no ghost.

Check and cause	Solution
Toner cartridge life is expired.	Replace the toner cartridge.
HVPS terminal is contaminated.	Clean the contaminated terminal.
The output from the HVPS is abnormal.	Replace the HVPS board.

6) **Dark or Black page**

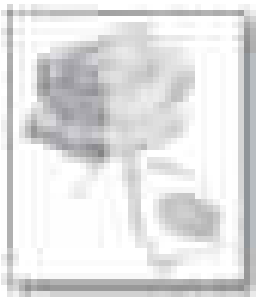
Description : The printed image is dark or black.



Check and cause	Solution
Check if the high voltage terminal is contaminated.	Clean the high voltage terminal.
The charging roller is defective.	Replace the toner cartridge.
The output from the HVPS is abnormal.	Replace the HVPS board.

7) **Uneven Density**

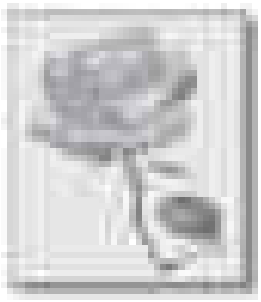
Description : Print density is uneven between left and right.



Check and cause	Solution
• 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.	1) Remove the transfer roller Assy. 2) Check if the transfer roller Assy has any wrong part. 3) Replace the transfer roller Assy.
The toner level is not even on the toner cartridge roller due to the bad doctor blade.	Replace the toner cartridge.

8) **Background**

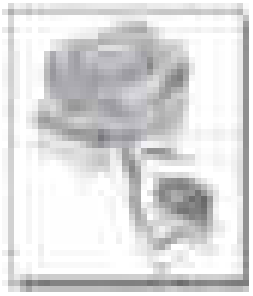
Description : Light dark background appears in whole area of the printing.



Check and cause	Solution
Does recycle paper be used?	Use the proper papers.
The life of the toner cartridge has been expired	Replace the toner cartridge.
The output from the HVPS is abnormal.	Replace the HVPS board.

9) **Ghost**

Description : Ghost occurs at 62.9 mm intervals of the OPC drum.



Check and cause	Solution
The high voltage terminal is contaminated.	Clean the high voltage terminals.
The life of the toner cartridge has been expired	Replace the toner cartridge.
The life of the transfer roller has been expired.	Replace the transfer roller.

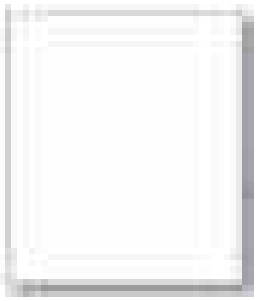
10) **Stains on back of page**

Description : The back of the page is stained.

Check and cause	Solution
Transfer roller is contaminated.	Replace the transfer roller.

11) **Blank page**

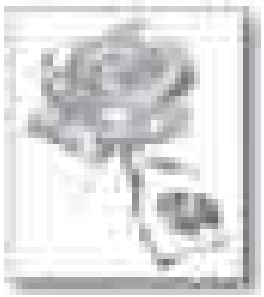
Description : The back of the page is stained.



Check and cause	Solution
The ground contact of the toner cartridge is bad.	Clean the ground terminal of the toner cartridge. If the problem persists, replace the toner cartridge.
LSU is defective.	Replace the LSU.
The connection between the main board and HVPS board is bad.	Reconnect the harness. If the main board or HVPS board is defective, replace it.

12) **Partial image void**

Description : The partial void occurs in the printed page.



Check and cause	Solution
The printer is not installed on flat ground.	Install the printer on flat ground. Print 10 sample pages for test.
The developer circulation in the toner cartridge is bad.	1) Shake the toner cartridge 2~3 times from right to left. Reinstall the toner cartridge. Print 10 sample pages for test. 2) If the problem persists, replace the toner cartridge.
The contact between toner cartridge and transfer roller is bad.	Check if the toner cartridge and transfer roller are installed properly.

4.2.4. Other errors

1) Multi-feeding

- Description : Multiple sheet of paper are fed at once.

Check and cause	Solution
Pick clutch does not work properly.	Replace the defective clutch if necessary.
Pick up roller is worn out or contaminated.	Clean or replace the pick up roller.

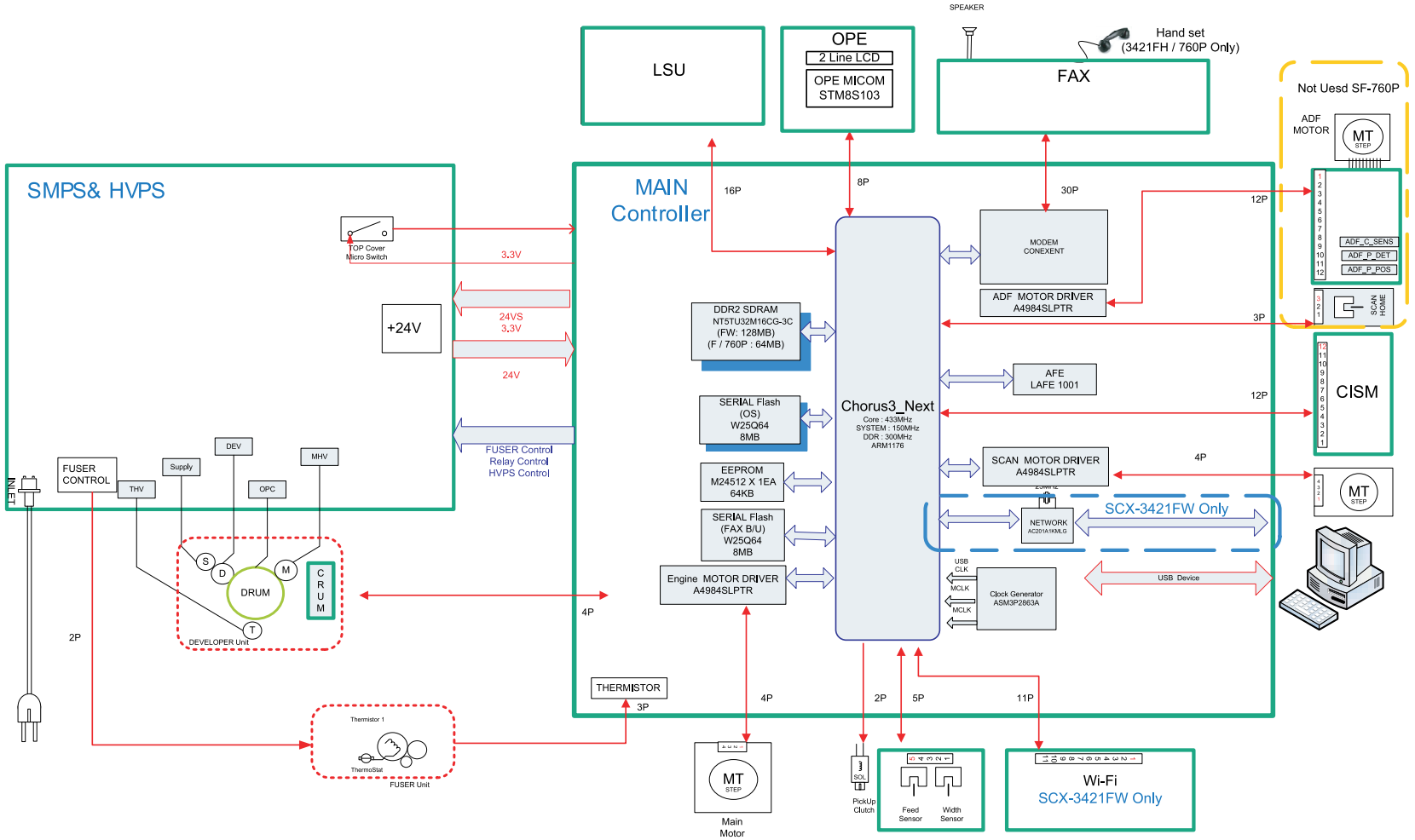
2) No-Power

- Description : When system power is turned on, LED and LCD on the operator panel do not come on.

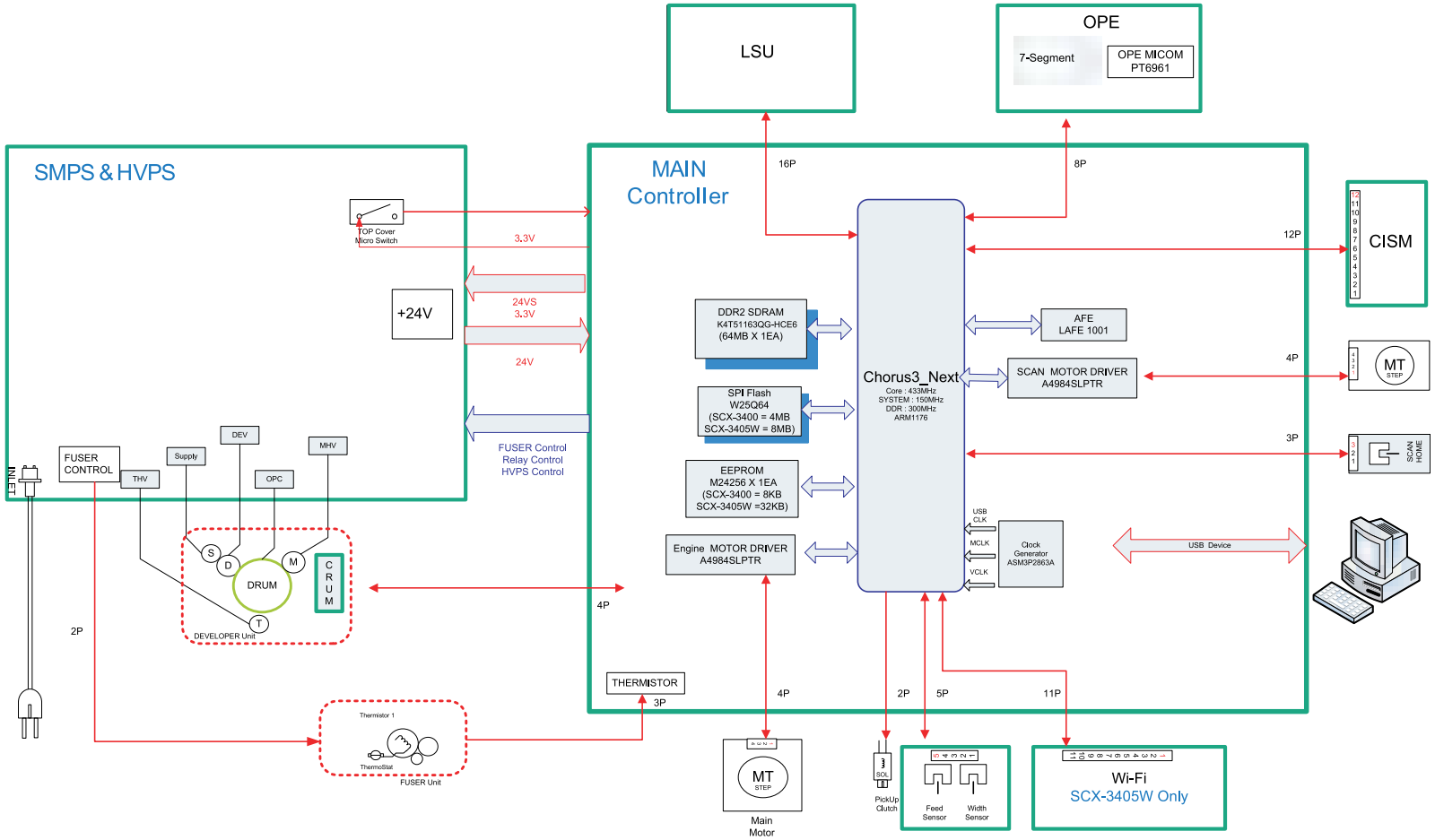
Check and cause	Solution
The connection between main board and OPE board is bad.	Reconnect or replace the harness.
HVPS/SMPS output is abnormal.	Replace the HVPS/SMPS board.

5. System Diagram

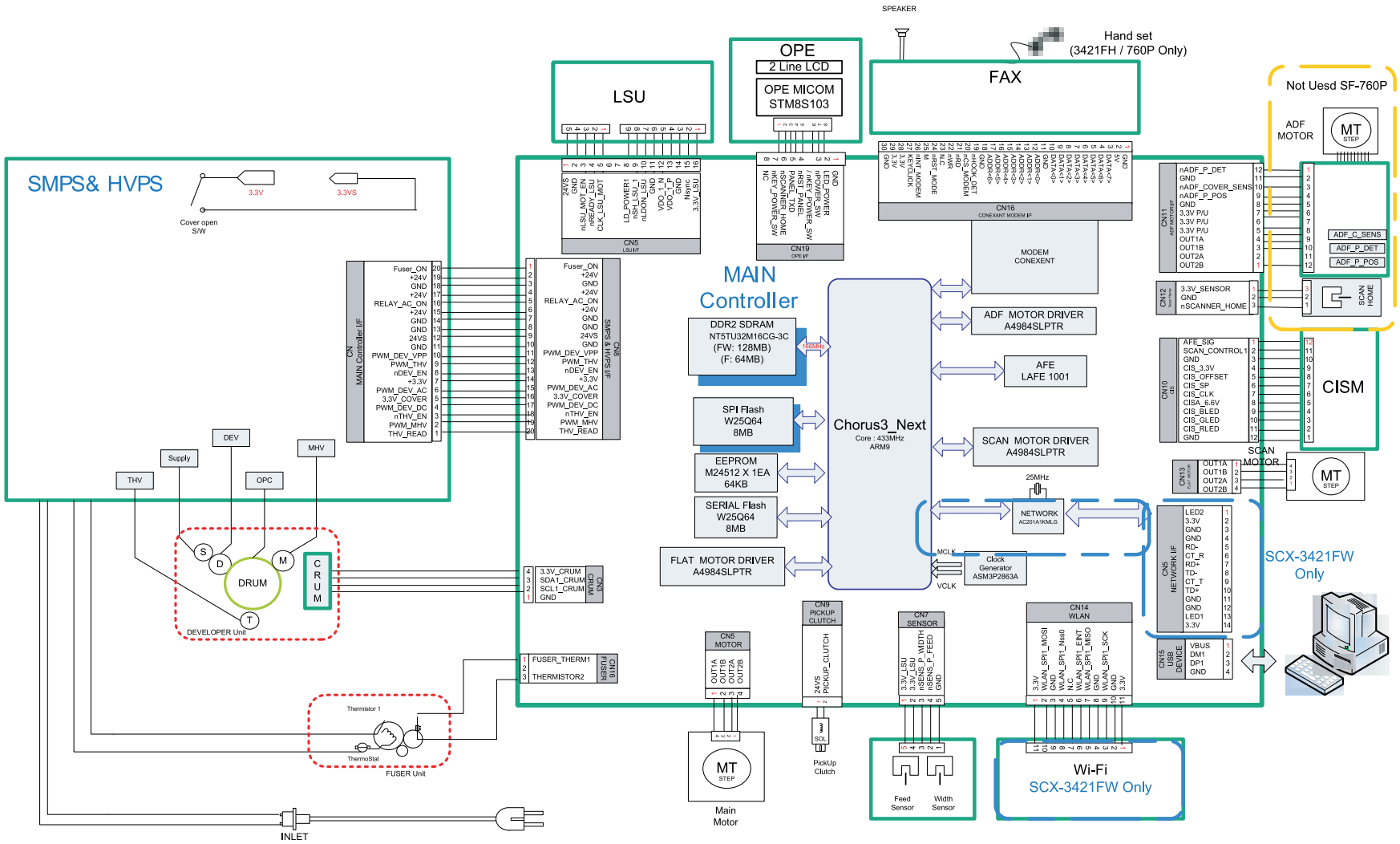
5.1. Block Diagram (4 in 1)



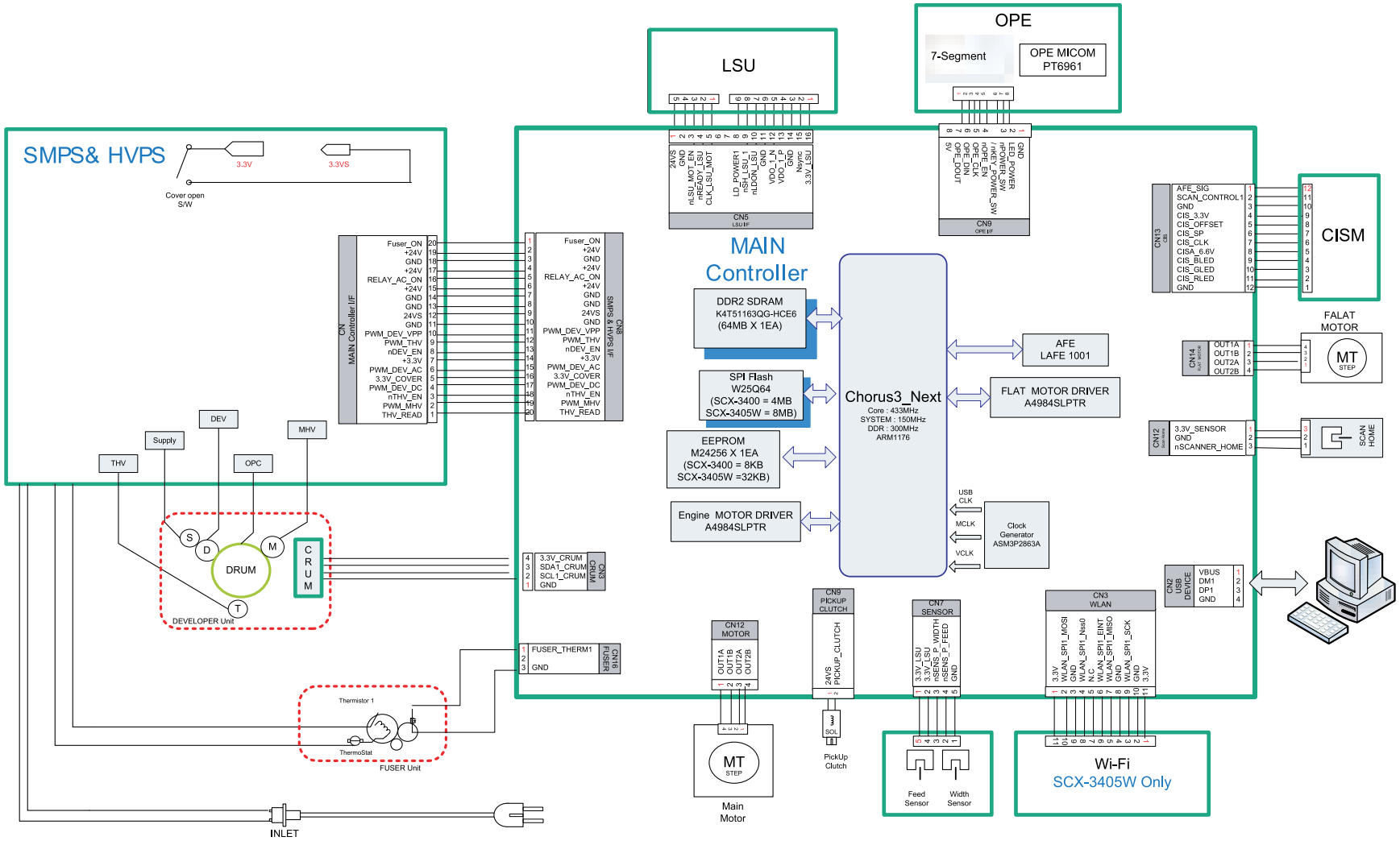
5.2. Block Diagram (3 in 1)



5.3. Connection Diagram (4 in 1)



5.4. Connection Diagram (3 in 1)

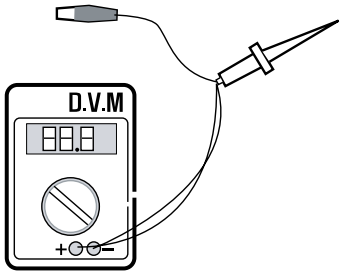
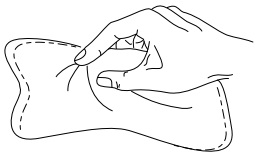
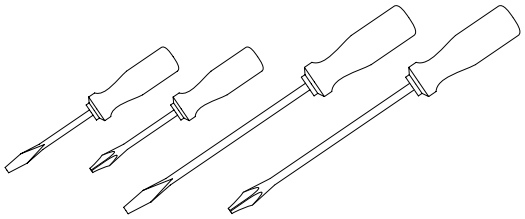
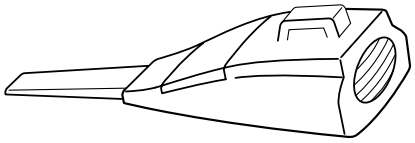
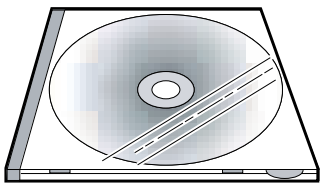


6. Reference Information

This chapter contains the tools list, list of abbreviations used in this manual, and a guide to the location space required when installing the printer. A definition of test pages and Wireless Network information definition is also included.

6.1. Tool for Troubleshooting

The following tools are recommended safe and easy troubleshooting as described in this service manual.

DVM (Digital Volt Meter) Standard : Indicates more than 3 digits. 	**Cleaning Equipments** Standard : An IPA (Isopropyl Alcohol) dry wipe tissue or a gentle neutral detergent and lint-free cloth. 
Driver Standard : "-" type, "+" type (M3 long, M3 short, M2 long, M2 short). 	**Vacuum Cleaner** 
Tweezers Standard : For general home use, small type. 	**Spring Hook** Standard : For general use 
Cotton Swab Standard : For general home use, for medical service. 	**Software (Driver) installation CD ROM** 

6.2. Glossary

The following glossary helps you get familiar with the product by understanding the terminologies commonly used with printing as well as mentioned in this user's guide and service manual.

802.11	802.11 is a set of standards for wireless local area network (WLAN) communication, developed by the IEEE LAN/MAN Standards Committee (IEEE 802).
802.11b/g/n	802.11b/g/n can share same hardware and use the 2.4 GHz band. 802.11b supports bandwidth up to 11 Mbps, 802.11n supports bandwidth up to 150 Mbps. 802.11b/g/n devices may occasionally suffer interference from microwave ovens, cordless telephones, and Bluetooth devices.
Access point	Access Point or Wireless Access Point (AP or WAP) is a device that connects wireless communication devices together on wireless local area networks (WLAN), and acts as a central transmitter and receiver of WLAN radio signals.
ADF	An Automatic Document Feeder (ADF) is a scanning unit that will automatically feed an original sheet of paper so that the machine can scan some amount of the paper at once.
AppleTalk	AppleTalk is a proprietary suite of protocols developed by Apple, Inc for computer networking. It was included in the original Macintosh (1984) and is now deprecated by Apple in favor of TCP/IP networking.
BIT Depth	A computer graphics term describing the number of bits used to represent the color of a single pixel in a bitmapped image. Higher color depth gives a broader range of distinct colors. As the number of bits increases, the number of possible colors becomes impractically large for a color map. 1-bit color is commonly called as monochrome or black and white.
BMP	A bitmapped graphics format used internally by the Microsoft Windows graphics subsystem (GDI), and used commonly as a simple graphics file format on that platform.
BOOTP	Bootstrap Protocol. A network protocol used by a network client to obtain its IP address automatically. This is usually done in the bootstrap process of computers or operating systems running on them. The BOOTP servers assign the IP address from a pool of addresses to each client. BOOTP enables 'diskless workstation' computers to obtain an IP address prior to loading any advanced operating system.
CCD	Charge Coupled Device (CCD) is a hardware which enables the scan job. CCD Locking mechanism is also used to hold the CCD module to prevent any damage when you move the machine.
Collation	Collation is a process of printing a multiple-copy job in sets. When collation is selected, the device prints an entire set before printing additional copies.
Control Panel	A control panel is a flat, typically vertical, area where control or monitoring instruments are displayed. They are typically found in front of the machine.
Coverage	It is the printing term used for a toner usage measurement on printing. For example, 5% coverage means that an A4 sided paper has about 5% image or text on it. So, if the paper or original has complicated images or lots of text on it, the coverage will be higher and at the same time, a toner usage will be as much as the coverage.
CSV	Comma Separated Values (CSV). A type of file format, CSV is used to exchange data between disparate applications. The file format, as it is used in Microsoft Excel, has become a de facto standard throughout the industry, even among non-Microsoft platforms.
DADF	A Duplex Automatic Document Feeder (DADF) is a scanning unit that will automatically feed and turn over an original sheet of paper so that the machine can scan on both sides of the paper.
Default	The value or setting that is in effect when taking a printer out of its box state, reset, or initialized.
DHCP	A Dynamic Host Configuration Protocol (DHCP) is a client-server networking protocol. A DHCP server provides configuration parameters specific to the DHCP client host requesting, generally, information required by the client host to participate on an IP network. DHCP also provides a mechanism for allocation of IP addresses to client hosts.
DIMM	Dual Inline Memory Module (DIMM), a small circuit board that holds memory. DIMM stores all the data within the machine like printing data, received fax data.

DLNA	The Digital Living Network Alliance (DLNA) is a standard that allows devices on a home network to share information with each other across the network.
DNS	The Domain Name Server (DNS) is a system that stores information associated with domain names in a distributed database on networks, such as the Internet.
Dot Matrix Printer	A dot matrix printer refers to a type of computer printer with a print head that runs back and forth on the page and prints by impact, striking an ink-soaked cloth ribbon against the paper, much like a typewriter.
DPI	Dots Per Inch (DPI) is a measurement of resolution that is used for scanning and printing. Generally, higher DPI results in a higher resolution, more visible detail in the image, and a larger file size.
DRPD	Distinctive Ring Pattern Detection. Distinctive Ring is a telephone company service which enables a user to use a single telephone line to answer several different telephone numbers.
Duplex	A mechanism that will automatically turn over a sheet of paper so that the machine can print (or scan) on both sides of the paper. A printer equipped with a Duplex Unit can print on both sides of paper during one print cycle.
Duty Cycle	Duty cycle is the page quantity which does not affect printer performance for a month. Generally the printer has the lifespan limitation such as pages per year. The lifespan means the average capacity of print-outs, usually within the warranty period. For example, if the duty cycle is 48,000 pages per month assuming 20 working days, a printer limits 2,400 pages a day.
ECM	Error Correction Mode (ECM) is an optional transmission mode built into Class 1 fax machines or fax modems. It automatically detects and corrects errors in the fax transmission process that are sometimes caused by telephone line noise.
Emulation	Emulation is a technique of one machine obtaining the same results as another. An emulator duplicates the functions of one system with a different system, so that the second system behaves like the first system. Emulation focuses on exact reproduction of external behavior, which is in contrast to simulation, which concerns an abstract model of the system being simulated, often considering its internal state.
Ethernet	Ethernet is a frame-based computer networking technology for local area networks (LANs). It defines wiring and signaling for the physical layer, and frame formats and protocols for the media access control (MAC)/data link layer of the OSI model. Ethernet is mostly standardized as IEEE 802.3. It has become the most widespread LAN technology in use during the 1990s to the present.
EtherTalk	A suite of protocols developed by Apple Computer for computer networking. It was included in the original Macintosh (1984) and is now deprecated by Apple in favor of TCP/IP networking.
FDI	Foreign Device Interface (FDI) is a card installed inside the machine to allow a third party device such as a coin operated device or a card reader. Those devices allow the pay-for-print service on your machine.
FTP	A File Transfer Protocol (FTP) is a commonly used protocol for exchanging files over any network that supports the TCP/IP protocol (such as the Internet or an intranet).
Fuser Unit	The part of a laser printer that fuses the toner onto the print media. It consists of a heat roller and a pressure roller. After toner is transferred onto the paper, the fuser unit applies heat and pressure to ensure that the toner stays on the paper permanently, which is why paper is warm when it comes out of a laser printer.
Gateway	A connection between computer networks, or between a computer network and a telephone line. It is very popular, as it is a computer or a network that allows access to another computer or network.
Grayscale	A shades of gray that represent light and dark portions of an image when color images are converted to grayscale; colors are represented by various shades of gray.
Halftone	An image type that simulates grayscale by varying the number of dots. Highly colored areas consist of a large number of dots, while lighter areas consist of a smaller number of dots.
HDD	Hard Disk Drive (HDD), commonly referred to as a hard drive or hard disk, is a non-volatile storage device which stores digitally-encoded data on rapidly rotating platters with magnetic surfaces.

IEEE	The Institute of Electrical and Electronics Engineers (IEEE) is an international non-profit, professional organization for the advancement of technology related to electricity.
IEEE 1284	The 1284 parallel port standard was developed by the Institute of Electrical and Electronics Engineers (IEEE). The term "1284-B" refers to a specific connector type on the end of the parallel cable that attaches to the peripheral (for example, a printer).
Intranet	A private network that uses Internet Protocols, network connectivity, and possibly the public telecommunication system to securely share part of an organization's information or operations with its employees. Sometimes the term refers only to the most visible service, the internal website.
IP address	An Internet Protocol (IP) address is a unique number that devices use in order to identify and communicate with each other on a network utilizing the Internet Protocol standard.
IPM	The Images Per Minute (IPM) is a way of measuring the speed of a printer. An IPM rate indicates the number of single-sided sheets a printer can complete within one minute.
IPP	The Internet Printing Protocol (IPP) defines a standard protocol for printing as well as managing print jobs, media size, resolution, and so forth. IPP can be used locally or over the Internet to hundreds of printers, and also supports access control, authentication, and encryption, making it a much more capable and secure printing solution than older ones.
IPX/SPX	IPX/SPX stands for Internet Packet Exchange/Sequenced Packet Exchange. It is a networking protocol used by the Novell NetWare operating systems. IPX and SPX both provide connection services similar to TCP/IP, with the IPX protocol having similarities to IP, and SPX having similarities to TCP. IPX/SPX was primarily designed for local area networks (LANs), and is a very efficient protocol for this purpose (typically its performance exceeds that of TCP/IP on a LAN).
ISO	The International Organization for Standardization (ISO) is an international standard-setting body composed of representatives from national standards bodies. It produces world-wide industrial and commercial standards.
ITU-T	The International Telecommunication Union is an international organization established to standardize and regulate international radio and telecommunications. Its main tasks include standardization, allocation of the radio spectrum, and organizing interconnection arrangements between different countries to allow international phone calls. A -T out of ITU-T indicates telecommunication.
ITU-T No. 1 chart	Standardized test chart published by ITU-T for document facsimile transmissions.
JBIG	Joint Bi-level Image Experts Group (JBIG) is an image compression standard with no loss of accuracy or quality, which was designed for compression of binary images, particularly for faxes, but can also be used on other images.
JPEG	Joint Photographic Experts Group (JPEG) is a most commonly used standard method of lossy compression for photographic images. It is the format used for storing and transmitting photographs on the World Wide Web.
LDAP	The Lightweight Directory Access Protocol (LDAP) is a networking protocol for querying and modifying directory services running over TCP/IP.
LED	A Light-Emitting Diode (LED) is a semiconductor device that indicates the status of a machine.
MAC address	Media Access Control (MAC) address is a unique identifier associated with a network adapter. MAC address is a unique 48-bit identifier usually written as 12 hexadecimal characters grouped in pairs (e. g., 00-00-0c-34-11-4e). This address is usually hard-coded into a Network Interface Card (NIC) by its manufacturer, and used as an aid for routers trying to locate machines on large networks.
MFP	Multi Function Peripheral (MFP) is an office machine that includes the following functionality in one physical body, so as to have a printer, a copier, a fax, a scanner and etc.
MH	Modified Huffman (MH) is a compression method for decreasing the amount of data that needs to be transmitted between the fax machines to transfer the image recommended by ITU-T T.4. MH is a codebook-based run-length encoding scheme optimized to efficiently compress white space. As most faxes consist mostly of white space, this minimizes the transmission time of most faxes.
MMR	Modified Modified READ (MMR) is a compression method recommended by ITU-T T.6.

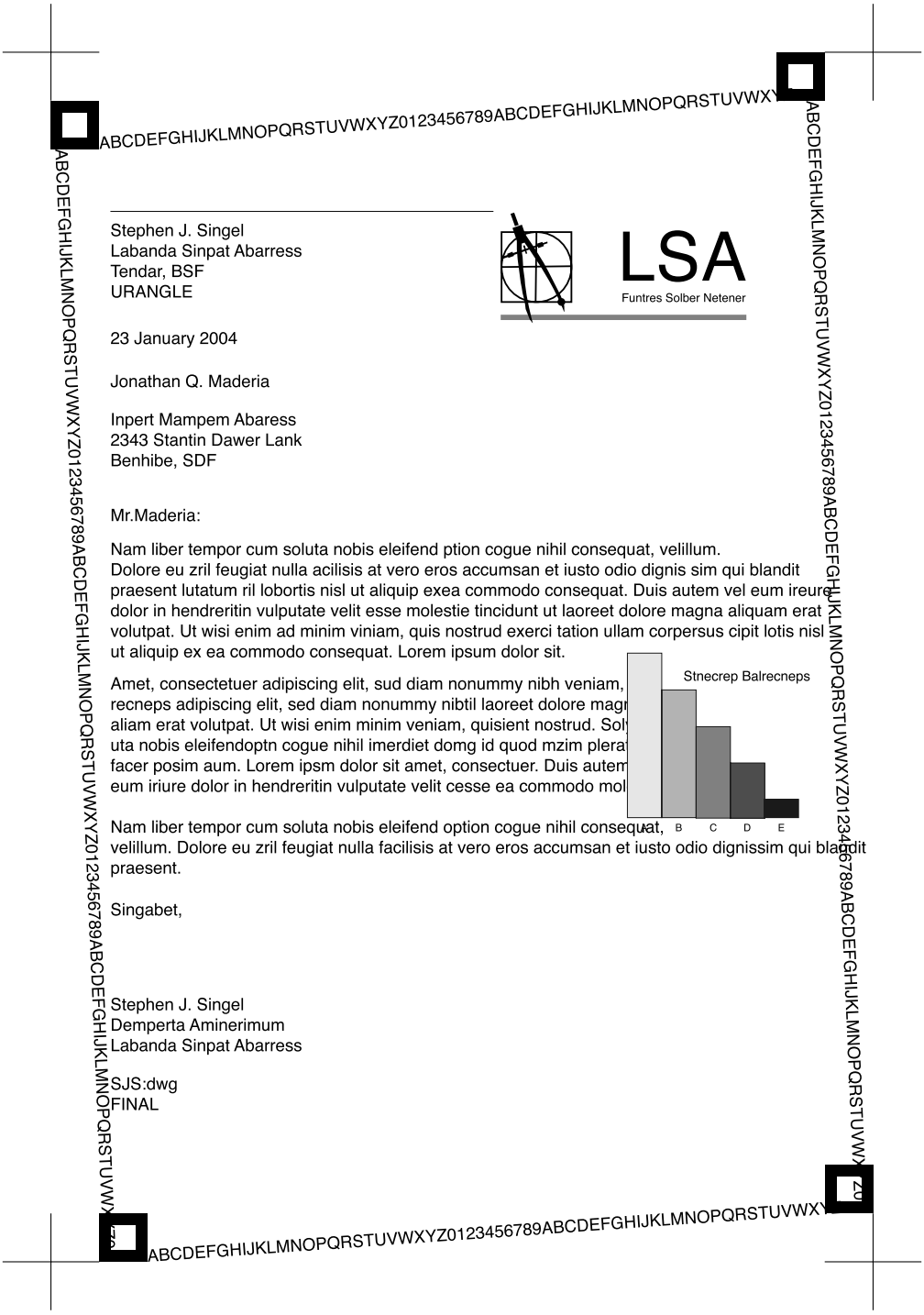
Modem	A device that modulates a carrier signal to encode digital information, and also demodulates such a carrier signal to decode transmitted information.
MR	Modified Read (MR) is a compression method recommended by ITUT T.4. MR encodes the first scanned line using MH. The next line is compared to the first, the differences determined, and then the differences are encoded and transmitted.
NetWare	A network operating system developed by Novell, Inc. It initially used cooperative multitasking to run various services on a PC, and the network protocols were based on the archetypal Xerox XNS stack. Today NetWare supports TCP/IP as well as IPX/SPX.
OPC	Organic Photo Conductor (OPC) is a mechanism that makes a virtual image for print using a laser beam emitted from a laser printer, and it is usually green or rust colored and has a cylinder shape. An imaging unit containing a drum slowly wears the drum surface by its usage in the printer, and it should be replaced appropriately since it gets worn from contact with the cartridge development brush, cleaning mechanism, and paper.
Originals	The first example of something, such as a document, photograph or text, etc, which is copied, reproduced or translated to produce others, but which is not itself copied or derived from something else.
OSI	Open Systems Interconnection (OSI) is a model developed by the International Organization for Standardization (ISO) for communications. OSI offers a standard, modular approach to network design that divides the required set of complex functions into manageable, self-contained, functional layers. The layers are, from top to bottom, Application, Presentation, Session, Transport, Network, Data Link and Physical.
PABX	A private automatic branch exchange (PABX) is an automatic telephone switching system within a private enterprise.
PCL	Printer Command Language (PCL) is a Page Description Language (PDL) developed by HP as a printer protocol and has become an industry standard. Originally developed for early inkjet printers, PCL has been released in varying levels for thermal, dot matrix printer, and laser printers.
PDF	Portable Document Format (PDF) is a proprietary file format developed by Adobe Systems for representing two dimensional documents in a device independent and resolution independent format.
PostScript(PS)	PostScript (PS) is a page description language and programming language used primarily in the electronic and desktop publishing areas. - that is run in an interpreter to generate an image.
Printer Driver	A program used to send commands and transfer data from the computer to the printer.
Print Media	The media like paper, envelopes, labels, and transparencies which can be used in a printer, a scanner, a fax or, a copier.
PPM	Pages Per Minute (PPM) is a method of measurement for determining how fast a printer works, meaning the number of pages a printer can produce in one minute.
PRN file	An interface for a device driver, this allows software to interact with the device driver using standard input/output system calls, which simplifies many tasks.
Protocol	A convention or standard that controls or enables the connection, communication, and data transfer between two computing endpoints.
PSTN	The Public-Switched Telephone Network (PSTN) is the network of the world's public circuit-switched telephone networks which, on industrial premises, is usually routed through the switchboard.
RADIUS	Remote Authentication Dial In User Service (RADIUS) is a protocol for remote user authentication and accounting. RADIUS enables centralized management of authentication data such as usernames and passwords using an AAA (authentication, authorization, and accounting) concept to manage network access.
Resolution	The sharpness of an image, measured in Dots Per Inch (DPI). The higher the dpi, the greater the resolution.
SMB	Server Message Block (SMB) is a network protocol mainly applied to share files, printers, serial ports, and miscellaneous communications between nodes on a network. It also provides an authenticated Interprocess communication mechanism.

SMTP	Simple Mail Transfer Protocol (SMTP) is the standard for e-mail transmissions across the Internet. SMTP is a relatively simple, text based protocol, where one or more recipients of a message are specified, and then the message text is transferred. It is a client server protocol, where the client transmits an email message to the server.
SSID	Service Set Identifier (SSID) is a name of a wireless local area network (WLAN). All wireless devices in a WLAN use the same SSID in order to communicate with each other. The SSIDs are case-sensitive and have a maximum length of 32 characters.
Subnet Mask	The subnet mask is used in conjunction with the network address to determine which part of the address is the network address and which part is the host address.
TCP/IP	The Transmission Control Protocol (TCP) and the Internet Protocol (IP); the set of communications protocols that implement the protocol stack on which the Internet and most commercial networks run.
TCR	Transmission Confirmation Report (TCR) provides details of each transmission such as job status, transmission result and number of pages sent. This report can be set to print after each job or only after failed transmissions.
TIFF	Tagged Image File Format (TIFF) is a variable-resolution bitmapped image format. TIFF describes image data that typically come from scanners. TIFF images make use of tags, keywords defining the characteristics of the image that is included in the file. This flexible and platform-independent format can be used for pictures that have been made by various image processing applications.
Toner Cartridge	A kind of bottle or container used in a machine like a printer which contains toner. Toner is a powder used in laser printers and photocopiers, which forms the text and images on the printed paper. Toner can be fused by a combination of heat/pressure from the fuser, causing it to bind to the fibers in the paper.
TWAIN	An industry standard for scanners and software. By using a TWAINcompliant scanner with a TWAIN-compliant program, a scan can be initiated from within the program. It is an image capture API for Microsoft Windows and Apple Macintosh operating systems.
UNC Path	Uniform Naming Convention (UNC) is a standard way to access network shares in Window NT and other Microsoft products. The format of a UNC path is: \\<servername>\<sharename>\<Additional directory>
URL	Uniform Resource Locator (URL) is the global address of documents and resources on the Internet. The first part of the address indicates what protocol to use, the second part specifies the IP address or the domain name where the resource is located.
USB	Universal Serial Bus (USB) is a standard that was developed by the USB Implementers Forum, Inc., to connect computers and peripherals. Unlike the parallel port, USB is designed to concurrently connect a single computer USB port to multiple peripherals.
Watermark	A watermark is a recognizable image or pattern in paper that appears lighter when viewed by transmitted light. Watermarks were first introduced in Bologna, Italy in 1282; they have been used by papermakers to identify their product, and also on postage stamps, currency, and other government documents to discourage counterfeiting.
WEP	Wired Equivalent Privacy (WEP) is a security protocol specified in IEEE 802.11 to provide the same level of security as that of a wired LAN. WEP provides security by encrypting data over radio so that it is protected as it is transmitted from one end point to another.
WIA	Windows Imaging Architecture (WIA) is an imaging architecture that is originally introduced in Windows Me and Windows XP. A scan can be initiated from within these operating systems by using a WIAcompliant scanner.
WPA	Wi-Fi Protected Access (WPA) is a class of systems to secure wireless (Wi-Fi) computer networks, which was created to improve upon the security features of WEP.
WPA-PSK	WPA-PSK (WPA Pre-Shared Key) is special mode of WPA for small business or home users. A shared key, or password, is configured in the wireless access point (WAP) and any wireless laptop or desktop devices. WPA-PSK generates a unique key for each session between a wireless client and the associated WAP for more advanced security.

WPS	The Wi-Fi Protected Setup (WPS) is a standard for establishing a wireless home network. If your wireless access point supports WPS, you can configure the wireless network connection easily without a computer.
XPS	XML Paper Specification (XPS) is a specification for a Page Description Language (PDL) and a new document format, which has benefits for portable document and electronic document, developed by Microsoft. It is an XML-based specification, based on a new print path and a vector-based device-independent document format.

6.3. The Sample Pattern for the Test

The life of the toner cartridge and the printing speed are measured using the pattern shown below.



6.4. Selecting a location

Select a level, stable place with adequate space for air circulation. Allow extra space for opening covers and trays.

The area should be well-ventilated and away from direct sunlight or sources of heat, cold, and humidity. Do not set the machine close to the edge of your desk or table.

Clearance space

- Front: 326 mm (enough space so that the paper tray can be removed)
- Back: 100 mm (enough space for ventilation)
- Right: 100 mm (enough space for ventilation)
- Left: 100 mm (enough space for ventilation)

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