

Service Manual



Color Laser Printer CLP-620ND CLP-670N/670ND

- Printing speed
 - CLP-620 series : Black/Color 20 ppm (A4)
 - CLP-670 series : Black/Color 24 ppm (A4)
- Resolution : up to 9600x600 dpi effective output
- Toner cartridge
 - Initial : 2.5K/ 2K (black/ color)
 - Sales : 2.5K/2K (black/ color)
 - 5K/4K (black/ color)
- Paper handling
 - Max. 850 sheets paper capacity
 - 250 sheets cassette, 500 sheets option cassette
 - MP tray : 100 sheets
- Memory
 - CLP-620 series : 256 MB (Max. 512 MB)
 - CLP-670 series : 256 MB (Max. 784 MB)
- Network, USB 2.0
- 2 Line LCD



ELECTRONICS

Service Manual

Service Manual

GSPN (Global Service Partner Network)

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1. Precautions

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

1.1 Safety Warning

(1) Only to be serviced by appropriately qualified service technician.

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

(2) Use only Samsung replacement parts

There are no user serviceable parts inside the printer. 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.

(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 1(1) laser products, and elsewhere, it is certified as a Class I laser product conforming to the requirements of IEC 825. 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.

Warning >> Never operate or service the printer 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 pre-cautions should always be followed to reduce risk of fire, electric shock, and injury to persons.



CAUTION - INVISIBLE LASER RADIATION
WHEN THIS COVER OPEN.
DO NOT OPEN THIS COVER.

VORSICHT - UNSICHTBARE LASERSTRAHLUNG,
WENN ABDECKUNG GE...FFNET.
NICHT DEM STRAHL AUSSETZEN.

ATTENTION - RAYONNEMENT LASER INVISIBLE EN CAS
D'OUVERTURE. EXPOSITION DANGEREUSE
AU FAISCEAU.

ATTENZIONE - RADIAZIONE LASER INVISIBLE IN CASO DI
APERTURA. EVITARE L'ESPOSIZIONE AL
FASCIO.

PRECAUCION - RADIACION LASER IVISIBLE CUANDO SE ABRE.
EVITAR EXPONERSE AL RAYO.

ADVARSEL - USYNLIG LASERSTRALNING VED BNING, NR
SIKKERHEDSBRYDERE ER UDE AF FUNKTION.
UNDG UDSAETTELSE FOR STRALNING.

ADVARSEL - USYNLIG LASERSTRALNING NR DEKSEL
PNES. STIRR IKKE INN I STRLEN.
UNNG EKSPONERING FOR STRLEN.

VARNING - OSYNLIG LASERSTRALNING NR DENNA DEL
R...PPNAD OCH SPRREN R URKOPPLAD.
BETRAKTA EJ STRLEN. STRLEN R FARLIG.

VARO! - AVATTAESSA JA SUOJALUKITUS OHITETTAESSA
OLET ALTIINA NKYMTT...MLLE LASER-
STEILYLLE L KATSO STEESEEN.

注 意 - 严禁揭开此盖, 以免激光泄露灼伤

주 의 - 이 덮개를 열면 레이저광에 노출될 수 있으므로
주의하십시오.

1.2 Caution for safety

1.2.1 Toxic material

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

- (1) If the LCD control panel is damaged it is possible for the liquid inside to leak. This liquid is toxic. Contact with the skin should be avoided, wash any splashes from eyes or skin immediately and contact your doctor. If the liquid gets into the mouth or is swallowed see a doctor immediately.
- (2) Please keep Drum cartridge and Toner Cartridge away from children. The toner powder contained in the Drum cartridge and Toner Cartridge may be harmful and if swallowed you should contact a doctor "Material Safety Data" sheets are available online at www.samsung.com.

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 printer and potentially cause a fire or electric shock.
- (2) Use only the power cable supplied with the printer. 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 printer, this can cause electric shock. Do not allow paper clips, pins or other foreign objects to fall into the printer 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 printer remove the power plug from the wall socket.
- (6) Use caution when inserting or removing the power connector. The power connector must be inserted completely, add comma otherwise a poor contact could cause overheating possibly leading to a fire. When removing the power connector grip it firmly and pull, ensure the power switch is turned off first.
- (7) Take care of the power cable. Do not allow it to become twisted, bent sharply round corners or otherwise damaged. Do not place objects on top of the power cable. If the power cable is damaged it could overheat and cause a fire or exposed cables could cause an electric shock. Replace a 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 lightening storms. Samsung recommend 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 printer in a clean well ventilated location. Do not position the machine near a humidifier, or in front of an air conditioner. Damp and dust build up inside the machine can lead to overheating and cause a fire, or cause parts to rust.
- (11) Do not position the printer in direct sunlight. This will cause the temperature inside the printer to rise possibly leading to the printer 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.

1.2.3 Handling Precautions

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

- (1) 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.
- (2) The printer 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 printer 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 an open window or close to a humidifier or heater. Damage could be caused to the printer in such areas.
- (5) Do not place candles, burning cigarettes, etc on the printer, These could cause a fire.

1.2.4 Assembly / Disassembly Precautions

Replace parts carefully, 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 printer or replacing any parts.

- (1) Check the contents of the machine memory and make a note of any user settings. These will be erased if the mainboard or network card is replaced.
- (2) Ensure that power is disconnected before servicing or replacing any electrical parts.
- (3) Disconnect printer 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 is 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 mins can damage the surface? Photoconductive properties and will result in print quality degradation. Take extra care when servicing the printer. 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 the 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 to cool down before disassembly.
- (2) Do not put finger 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
 - The equipment weighs approximately 27 Kg (including consumables), therefore pay attention when handling it.
 - Be sure not to hold the movable parts or units (e.g. the control panel, DADF) when transporting the equipment.
 - Be sure to use a dedicated outlet with 110V/220V power input.
 - The equipment must be grounded for safety.
 - Select a suitable place for installation. Avoid excessive heat, high humidity, dust, vibration and direct sunlight.
 - Provide proper ventilation since the equipment emits a slight amount of ozone.
 - The equipment shall be installed near the socket outlet and shall be accessible.
 - Be sure to fix and plug in the power cable securely after the installation so that no one trips over it.

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 spec and feature

2.1 Product Summary



CLP-620ND
CLP-670N/670ND

- Printing speed
 - CLP-620 series : Black/Color 20 ppm (A4)
 - CLP-670 series : Black/Color 24 ppm (A4)
- Resolution : up to 9600x600 dpi effective output
- Toner cartridge
 - Initial : 2.5K/ 2K (black/ color)
 - Sales : 2.5K/2K (black/ color)5K/4K (black/ color)
- Paper handling
 - Max. 850 sheets paper capacity
 - 250 sheets cassette, 500 sheets option cassette
 - MP tray : 100 sheets
- Memory
 - CLP-620 series : 256 MB (Max. 512 MB)
 - CLP-670 series : 256 MB (Max. 784 MB)
- Network, USB 2.0
- 2 Line LCD

2.2 Specifications

2.2.1 General Print Engine

Item		CLP-620ND	CLP-670N/670ND
Engine Speed	Simplex	B&W : Up to 20 ppm in A4 (21 ppm in Letter) Color : Up to 20 ppm in A4 (21 ppm in Letter)	B&W : Up to 24 ppm in A4 (25 ppm in Letter) Color : Up to 24 ppm in A4 (25 ppm in Letter)
	Duplex	B&W : Up to 9 ipm in A4 (9 ipm in Letter) Color : Up to 9 ipm in A4 (9 ipm in Letter)	B&W : Up to 11 ipm in A4 (11 ipm in Letter) Color : Up to 11 ipm in A4 (11 ipm in Letter)
Warmup time		No Warm up (Instant Fusing System)	No Warm up (Instant Fusing System)
FPOT (B&W)	From Ready	Less than 25 sec	Less than 19.5 sec
	From Coldboot	Less than 25 sec	Less than 19.5 sec
FPOT (Color)	From Ready	Less than 25 sec	Less than 19.5 sec
	From Coldboot	Less than 25 sec	Less than 19.5 sec
Resolution	Optical	Up to 9,600 x 600 dpi effective output	Up to 9,600 x 600 dpi effective output
	Support	Best : 9,600 x 600dpi(class) effective output Normal : 2400 x 600 dpi(class) Draft : 600X600dpi	Best : 9,600 x 600dpi(class) effective output Normal : 2400 x 600 dpi(class) Draft : 600X600dpi

2.2.2 Controller & S/W

Item		CLP-620ND	CLP-670N/670ND
MPU		Samsung CHORUS3 360 MHz	SPGPV4 700 MHz
Memory	Std.	256 MB	256 MB
	Max.	512 MB	768 MB
Memory Expansion		1 Slot	1 Slot
Printer Languages		SPL-C, PCL5, PCL6	PostScript3, PCL6
Fonts		93 scalable and 1 bitmap	93 scalable and 1 bitmap PCL and 136 PS
Driver	Supporting OS	Windows 2000/XP/2003/Vista(include 64bit)/Windows 7, Windows server 2008 R2	Windows 2000/XP/2003/Vista(include 64bit)/Windows 7, Windows server 2008 R2
		Various Linux OS including Red Hat 8.0~9.0, Mandrake 9.2~10.1, SuSE 8.2~9.2 and Fedora Core 1~4,	Various Linux OS including Red Hat 8.0~9.0, Mandrake 9.2~10.1, SuSE 8.2~9.2 and Fedora Core 1~4,
		Mac OS X 10.3~10.6,	Mac OS X 10.3~10.6,
		Citrix Presentation Server, Windows Terminal Services	Citrix Presentation Server, Windows Terminal Services
	Default Driver	- SPL-C - Mono Only Driver CD included	- PCL6 - Mono Only Driver CD included
	WHQL	Windows 2000/XP/2003/Vista (include 64bit)	Windows 2000/XP/2003/Vista (include 64bit)
	Language Localization	Korean, English, French, German, Italian, Spanish, Russian, Dutch, Finish, Swedish, Norwegian, Danish, S.Chinese, Polish, Hungarian, Slovenian, Romanian, Bulgarian	Korean, English, French, German, Italian, Spanish, Russian, Dutch, Finish, Swedish, Norwegian, Danish, S.Chinese, Polish, Hungarian, Slovenian, Romanian, Bulgarian
Application	PC-FAX	N/A	N/A
	PSU	USB only	USB only
	Smart Panel	Yes (Default at install)	Yes (Default at install)
	Network Management	Set IP, SWAS & SWS (Linux, Mac not support, SWAS 4.5 & SWS need Iexplorer 5.0 or higher)	Set IP, SWAS & SWS (Linux, Mac not support, SWAS 4.5 & SWS need Iexplorer 5.0 or higher)
	JMS	N/A	N/A
	SmarThru	SmarThru Office 1.0	SmarThru Office 1.0
	PDF Direct Print Utility	N/A	N/A

Item		CLP-620ND	CLP-670N/670ND
Network Interface	Protocol	TCP/IP,SNMPv3,HTTP1.1, IPP	TCP/IP,SNMPv3,HTTP1.1, IPP
	Network OS	Windows 2000/XP(32/64bit)/2003/Server/2008(32/64bit)/Vista MAC 10.3~10.5 Mac OS X 10.3~10.5 and Universal Mac TCP/IP Only Various Linux OS including Red Hat 8.0~9.0, Fedora Core 1~4, Mandrake 9.2~10.1, and SuSE 8.2~9.2 NetWare 5.x, 6.x HP-UX, Solaris, SunOS, SCO UNIX	Windows 2000(32/64bit)/XP(32/64bit)/2003(32/64bit)/Vista(32/64bit)/2008(32/64bit) MAC 10.3~10.5 Mac OS X 10.3~10.5 and Universal Mac TCP/IP Only RedHat Enterprise Linux WS 4, 5 (32/64bit) - Fedora Core 2~9 (32/64bit) - Mandriva 2005, 2006, 2007, 2008(32/64bit) - openSuSE 9.1, 9.2, 9.3, 10.0, 10.1, 10.2, 10.3, 11.0 (32bit) - SuSE Linux Enterprise Desktop 9, 10 (32/64bit) - Ubuntu 6.04, 6.10, 7.04, 7.10, 8.04 (32/64bit) NetWare 5.x, 6.x HP-UX, Solaris, SunOS, SCO UNIX
Interface	Parallel	N/A	N/A
	USB	USB 2.0	USB 2.0
	Hard Disk	N/A	N/A
	Network	Ethernet 10/100 Base TX	Ethernet 10/100 Base TX
	Wireless	N/A	N/A
	User Interface	16 x 2 line LCD	16 x 2 line LCD
	External device Interface	N/A	N/A

2.2.3 Paper Handling

Item		CLP-620ND	CLP-670N/670ND
Standard Capa.		250-sheet Cassette Tray, 100 MP@ 80g/m ²	250-sheet Cassette Tray, 100 MP@ 80g/m ²
Max. Capa.		850 sheets @ 80g/m ²	850 sheets @ 80g/m ²
Printing	Max. Size	216 X 356((8.5" x 14")	216 X 356((8.5" x 14")
	Min. Size	98 x 148 mm (3.86" x 5.83")	98 x 148 mm (3.86" x 5.83")
	Margin(T/B/L/R)	4 mm, 4 mm, 4 mm, 4 mm	4 mm, 4 mm, 4 mm, 4 mm
Multi-purpose tray	Capacity	100 sheets @ 80g/m ²	100 sheets @ 80g/m ²
	Media sizes	98 x 148 mm (3.86" x 5.83") ~ 216 x 356 mm (8.5" x 14")	98 x 148 mm (3.86" x 5.83") ~ 216 x 356 mm (8.5" x 14")
	Media type	Plain Paper, Thick, Thicker, Extra thick,Thin, Cotton, Archive Paper, Bond, Card Stock, Labels, Preprinted, Color Paper, Envelope, Recycled, Transparency, Glossy 111-130g, Glossy 131-175g, Glossy 176-220g	Plain Paper, Thick, Thicker, Extra thick,Thin, Cotton, Archive Paper, Bond, Card Stock, Labels, Preprinted, Color Paper, Envelope, Recycled, Transparency, Glossy 111-130g, Glossy 131-175g, Glossy 176-220g
	Media weight	16~58lb (60 to 220g/m ²)	16~58lb (60 to 220g/m ²)
	Sensing	Empty sensing No size sensor	Empty sensing No size sensor
Standard Cassette Tray	Capacity	250 sheets @ 80g/m ²	250 sheets @ 80g/m ²
	Media sizes	105~148mm (4.1" x 5.8") ~ 216 x 356mm (8.5" x 14") Custom size (3.86" x 5.83"~ 8.5"x14.0")	105~148mm (4.1" x 5.8") ~ 216 x 356mm (8.5" x 14") Custom size (3.86" x 5.83"~ 8.5"x14.0")
	Media types	Plain paper, Thick,Thin, Preprinted,Color Pape,Cotton,Recycled	Plain paper, Thick,Thin, Preprinted,Color Pape,Cotton,Recycled
	Media weight	16~28lb (60 to 105g/m ²)	16~28lb (60 to 105g/m ²)
	Size sensor	N/A	N/A
	User Interface	Indicator	Indicator
	Sensing	Empty sensing	Empty sensing
Optional Cassette Tray	Capacity	500 sheets @ 80g/m ²	500 sheets @ 80g/m ²
	Media sizes	176~250mm (6.9" x 9.8") ~ 216 x 356mm (8.5" x 14")	176~250mm (6.9" x 9.8") ~ 216 x 356mm (8.5" x 14")
	Media types	Plain paper, Thick,Thin, Preprinted,Color Pape,Cotton,Recycled	Plain paper, Thick,Thin, Preprinted,Color Pape,Cotton,Recycled
	Media weight	16~28lb (60 to 105g/m ²)	16~28lb (60 to 105g/m ²)
	Size sensor	N/A	N/A
	User Interface	Indicator	Indicator
	Sensing	Empty sensing	Empty sensing

Item		CLP-620ND	CLP-670N/670ND
Output Stacking	FaceUp Capacity	N/A	N/A
	FaceDown Capacity	250 sheets @ 80g/m ²	250 sheets @ 80g/m ²
	Output Full sensing	N/A	N/A
	Finishing	N/A	N/A
Duplex	Supporting	Std.	"670N : N/A 670ND : Std."
	Media sizes	A4, Letter, Legal, Oficio, Folio	A4, Letter, Legal, Oficio, Folio
	Media types	Plain paper, Thick, Thin, Preprinted, Color Paper, Recycled	Plain paper, Thick, Thin, Preprinted, Color Paper, Recycled
	Media weight	16~32lb (60 to 120g/m ²)	16~32lb (60 to 120g/m ²)

2.2.4 Reliability and service

Item		CLP-620ND	CLP-670N/670ND
Printing Volume(AMPV)		837 pages (B&W : 335 pages, Color : 502 pages)	■ CLP-670N 987 pages (B&W : 395 pages, Color : 592 pages) ■ CLP-670ND 1101 pages (B&W : 441 pages, Color : 660 pages)
Max Monthly Duty		65,000 pages	80,000 pages
MPBF		58,000 pages	58,000 pages
MTTR		<30 min.	<30 min.
Real-time Clock		None	None
System-record		Total page count (color/mono) Fuser life Transfer belt life Toner Life(CMYK) Tray roller life First operation date(Not revealed to Users)	Total page count (color/mono) Fuser life Transfer belt life Toner Life(CMYK) Tray roller life First operation date(Not revealed to Users)
Test Print		Configuration Sheet Demo Sheet	Configuration Sheet Demo Sheet
RDC	Comm. Mode	N/A	N/A
	Operation	N/A	N/A
Temperature	Operating	15~30°C	15~30°C
	Storage	-20~50°C	-20~50°C
Humidity	Operating	20~80RH	20~80RH
	Storage	0~95RH	0~95RH

2.2.5 Environment

Item		CLP-620ND	CLP-670N/670ND
Acoustic Noise Level(Sound Power/ Pressure)	Printing	Less than 51 dBA print @ CST Less than 52 dBA print @ SCF Less than 53 dBA print @ MP	Less than 52 dBA print @ CST Less than 53 dBA print @ SCF Less than 54 dBA print @ MP
	Standby	Less than 35 dBA	Less than 35 dBA
	Sleep	Background noise level	Background noise level
Input Voltages		110-127 VAC, 50/60Hz	110-127 VAC, 50/60Hz
		220-240 VAC,50/60Hz	220-240 VAC,50/60Hz
		Power Switch	Power Switch
Power Consumption	Ready	Less than 20W	Less than 22W
	AVG.	Less than 560W	Less than 560W
	Max/Peak	Less than 1400W	Less than 1400W
	Sleep	8W	8W
Dimension (W x D x H)	Set	441.5x431x425mm(17.4x17x16.7inch)	441.5x431x425mm(17.4x17x16.7inch)
	Set Packing	611X589X588	611X589X588
	Consumables Packing	405 X 287 X 150 mm (15.9" x 11.3" x 5.9")	405 X 287 X 150 mm (15.9" x 11.3" x 5.9")
Weight	Set (with consumables)	27kg (59.52lb)	27kg (59.52lb)
	Set Packing	31.5kg (69.44lb)	31.6kg (69.66lb)

2.2.6 Consumables

Item		CLP-620ND	CLP-670N/670ND
Toner Cartridge	Model	<ul style="list-style-type: none"> ■ Standard Yield K toner cartridge: CLT-K508S C toner cartridge: CLT-C508S M toner cartridge: CLT-M508S Y toner cartridge: CLT-Y508S <ul style="list-style-type: none"> ■ High Yield K toner cartridge: CLT-K508L C toner cartridge: CLT-C508L M toner cartridge: CLT-M508L Y toner cartridge: CLT-Y508L 	<ul style="list-style-type: none"> ■ Standard Yield K toner cartridge: CLT-K508S C toner cartridge: CLT-C508S M toner cartridge: CLT-M508S Y toner cartridge: CLT-Y508S <ul style="list-style-type: none"> ■ High Yield K toner cartridge: CLT-K508L C toner cartridge: CLT-C508L M toner cartridge: CLT-M508L Y toner cartridge: CLT-Y508L
	Yield (Black)	<ul style="list-style-type: none"> ■ Standard Yield Average Continuous Black Cartridge Yield: 2,500* standard pages <ul style="list-style-type: none"> ■ High Yield Average Continuous Black Cartridge Yield: 5,000* standard pages <p>* Declared yield value in accordance with ISO/IEC 19798 (Ships with 2,500 pages Standard Toner Cartridge)</p>	<ul style="list-style-type: none"> ■ Standard Yield Average Continuous Black Cartridge Yield: 2,500* standard pages <ul style="list-style-type: none"> ■ High Yield Average Continuous Black Cartridge Yield: 5,000* standard pages <p>* Declared yield value in accordance with ISO/IEC 19798 (Ships with 2,500 pages Standard Toner Cartridge)</p>
	Yield (Color)	<ul style="list-style-type: none"> ■ Standard Yield Average Continuous Color (C,M,Y) Cartridge Yield: 2,000* standard pages <ul style="list-style-type: none"> ■ High Yield Average Continuous Color (C,M,Y) Cartridge Yield: 4,000* standard pages <p>* Declared yield value in accordance with ISO/IEC 19798 (Ships with 2,000 pages Standard Toner Cartridge)</p>	<ul style="list-style-type: none"> ■ Standard Yield Average Continuous Color (C,M,Y) Cartridge Yield: 2,000* standard pages <ul style="list-style-type: none"> ■ High Yield Average Continuous Color (C,M,Y) Cartridge Yield: 4,000* standard pages <p>* Declared yield value in accordance with ISO/IEC 19798 (Ships with 2,000 pages Standard Toner Cartridge)</p>
	Key	Unique, Electronic key(Schip V2.0)	Unique, Electronic key(Schip V2.0)
	Life detect	Life detect Sensor(None), Traced via software 90% exhausted: Prepare Toner message 100% exhausted: Replace Toner message 250% exhausted: Hard Stop	Life detect Sensor(None), Traced via software 90% exhausted: Prepare Toner message 100% exhausted: Replace Toner message 250% exhausted: Hard Stop

Item		CLP-620ND	CLP-670N/670ND
Paper Transfer Belt	Model	CLT-T508	CLT-T508
	Yield	50,000 pages	50,000 pages
	Key	Unique, Electronic key(CRUM)	Unique, Electronic key(CRUM)
	Sensor	None, that would be traced via software	None, that would be traced via software




2.2.7 Maintenance parts

항목	자재 코드	수명
Fuser	JC91-00968A (670ND/110V) JC91-00969A (670ND/220V) JC91-00970A (620ND/110V) JC91-00971A (620ND/220V)	100K
Pick-up Roller	JC90-00932A	70K
Friction Pad (Cassette)	JC97-03077A	70K

2.2.8 Option

Item	CLP-620ND	CLP-670N/670ND
Memory	CLP-MEM201: 128 MB CLP-MEM202: 256 MB	CLP-MEM150: 128 MB CLP-MEM160: 256 MB CLP-MEM170: 512 MB
Second Cassette	CLP-S670A (500 sheets)	CLP-S670A (500 sheets)
Wireless Network	N/A	N/A
Tall Stand	N/A	N/A
Hard Disk	N/A	N/A

2.3 Model Comparison Table

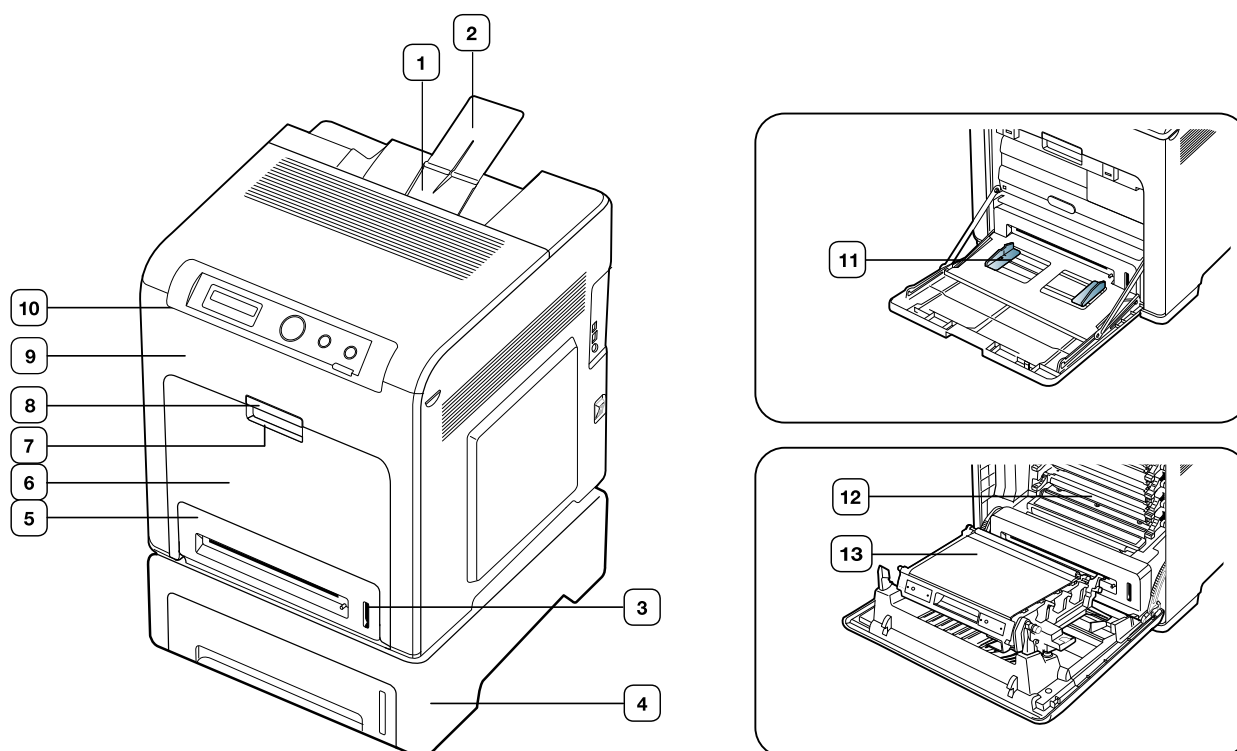
	CLP-620ND	CLP-670N	CLP-670ND
Image			
Speed (A4)	20/20 ppm	24/24 ppm	24/24 ppm
Resolution (dpi)	1,200 x 600	1,200 x 600	1,200 x 600
CPU (MHz)	360	700	700
Memory	256 (Max.512)	256 (Max.784)	256 (Max.784)
FPOT	Less than 27 seconds	Less than 19.5 seconds	Less than 19.5 seconds
Network	Standard	Standard	Standard
Duplex printing	Standard	Manual	Standard
Paper Capacity	250 CST 100 MP	250 CST 100 MP	250 CST 100 MP
Toner cartridge	Standard (Black/Color) : 2.5K / 2K High (Black/Color) : 5K /4K	Standard (Black/Color) : 2.5K / 2K High (Black/Color) : 5K /4K	Standard (Black/Color) : 2.5K / 2K High (Black/Color) : 5K /4K
Option cassette	500 sheet	500 sheet	500 sheet

2.4 Product Configuration

This chapter explains main components of this printer.

2.4.1 Printer external

2.4.1.1 Front view

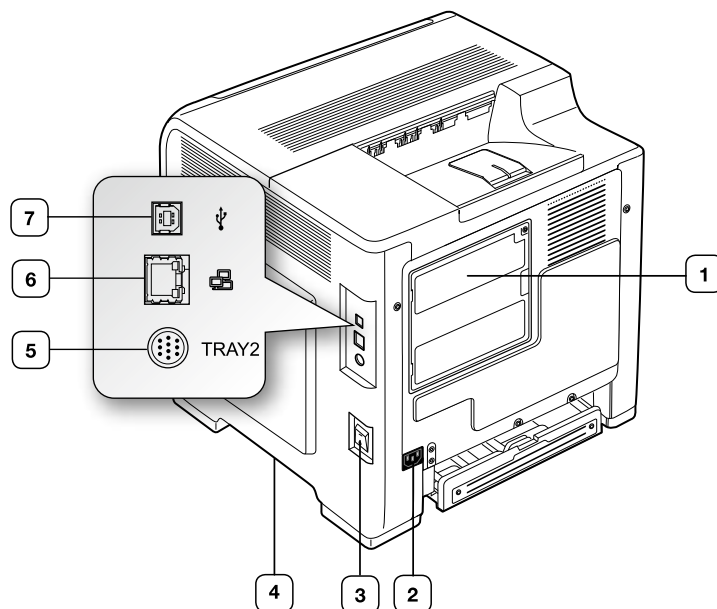


1	Output tray
2	Output support
3	Paper level indicator
4	Optional tray[a]
5	Tray 1
6	Multi-purpose tray
7	Multi-purpose tray handle

8	Front cover handle
9	Front cover
10	Control panel
11	Paper width guides on a multi-purpose tray
12	Toner cartridges
13	Paper transfer belt

[a] This is an optional feature.

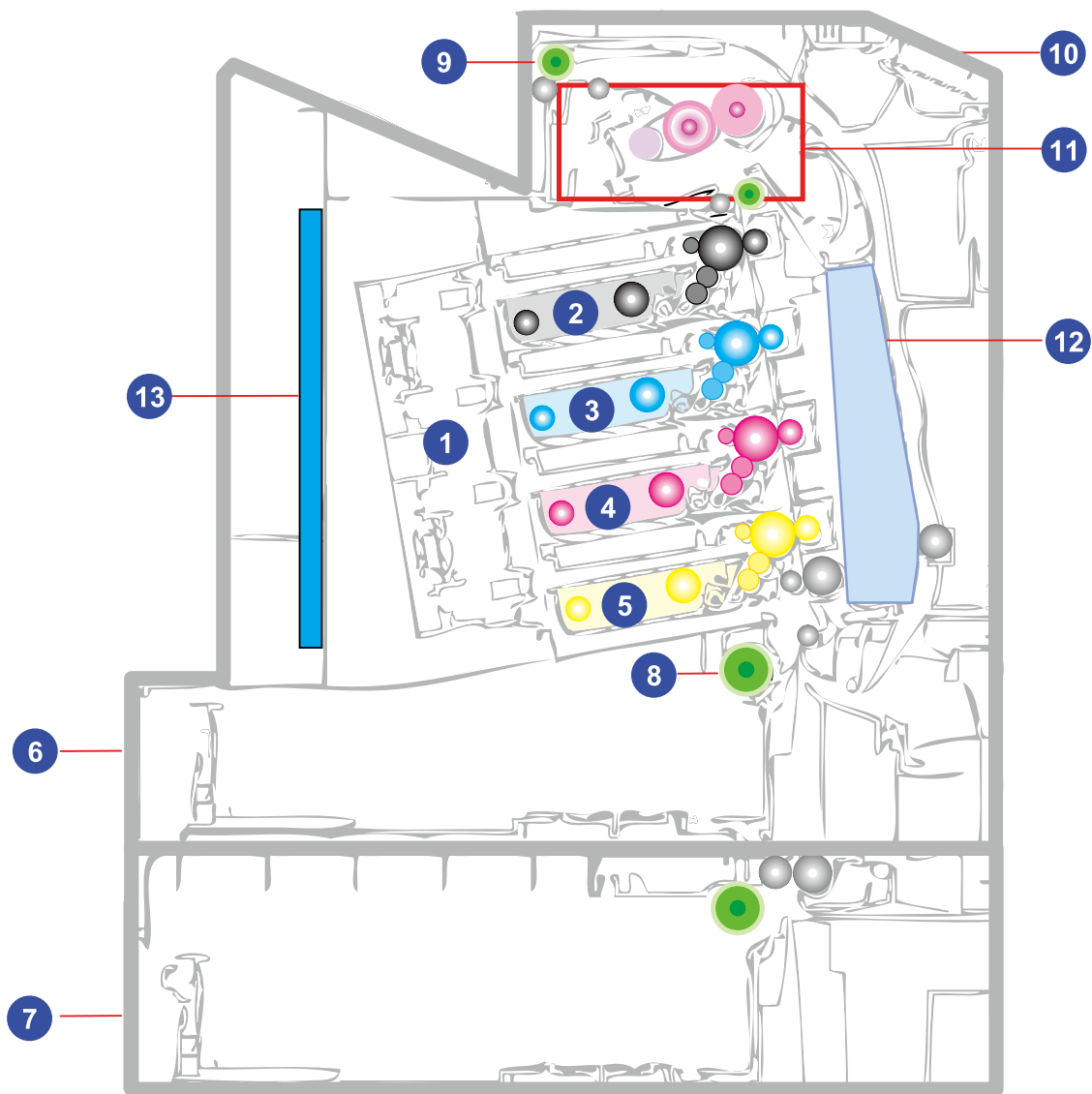
2.4.1.2 Rear View



1	Control board cover
2	Power receptacle
3	Power-switch
4	Handle

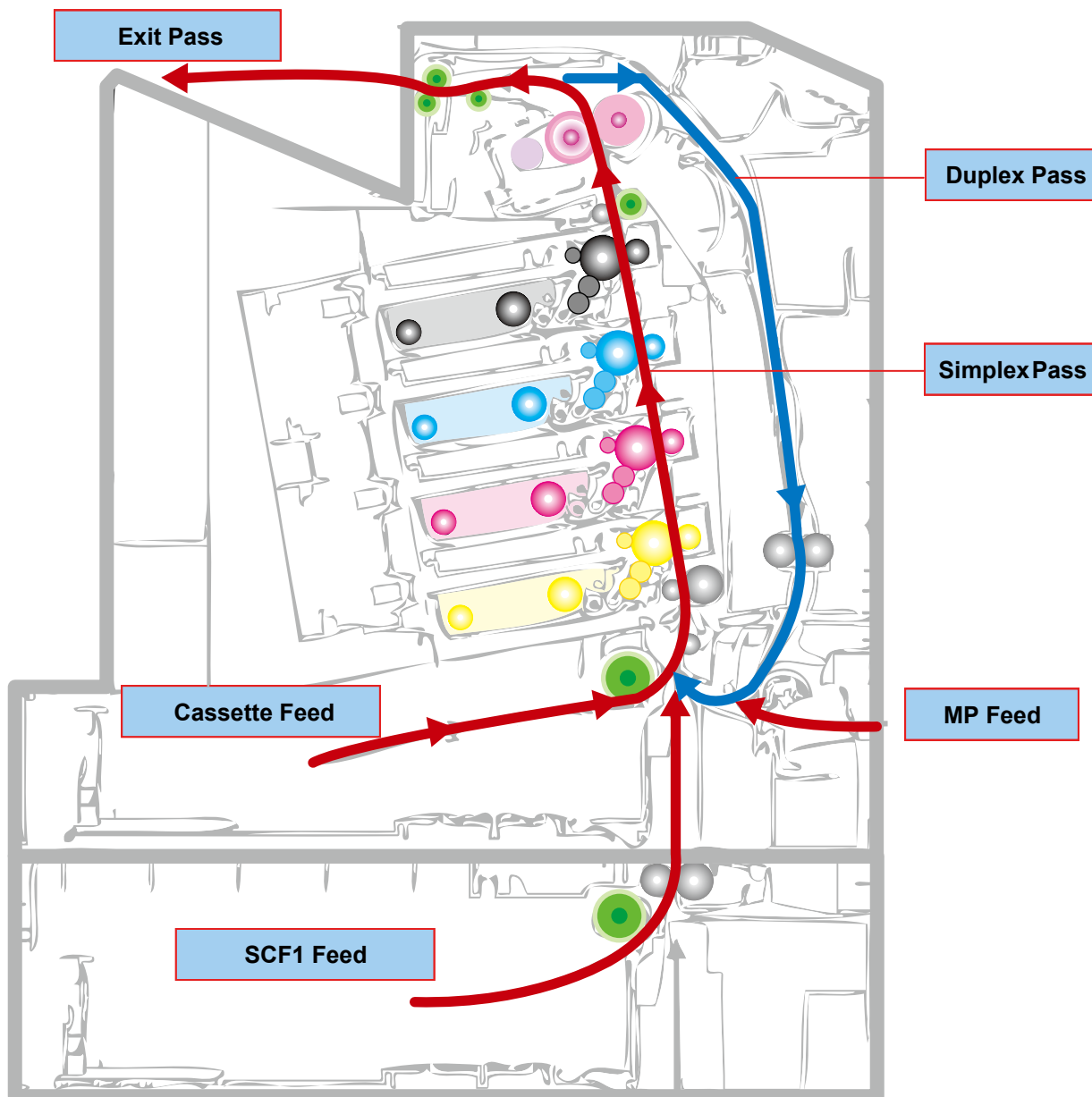
5	Optional tray2 cable connector
6	Network port
7	USB port

2.4.1.3 System Layout



No.	Item	No.	Item
1	LSU	9	Exit Roller
2	Toner cartridge (K)	10	OPE Unit
3	Toner cartridge (C)	11	Fuser Unit
4	Toner cartridge (M)	12	PTB Unit (Paper transfer belt)
5	Toner cartridge (Y)	13	Main PBA
6	Cassette		SMPS PBA
7	SCF Unit (Option cassette)		FDB (Fuser Drive Board) PBA
8	Pick up Roller		

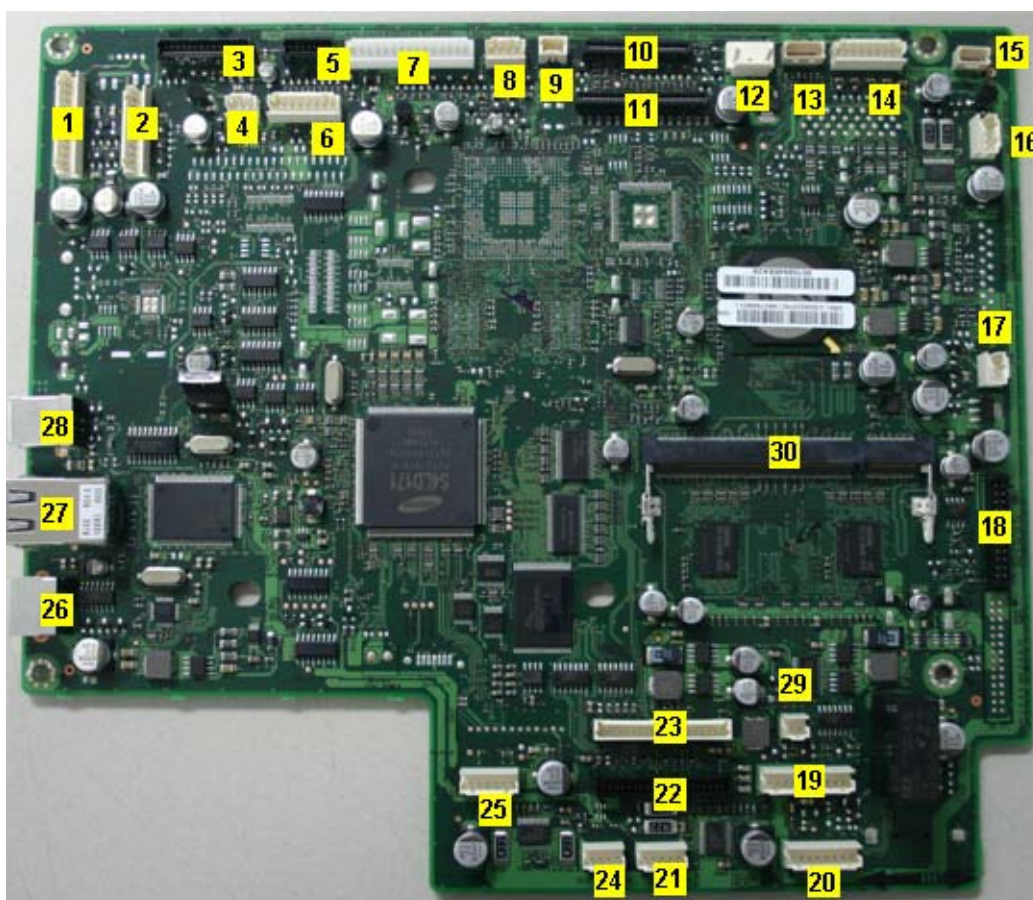
2.4.1.4 Paper Path



2.4.2 Main PBA

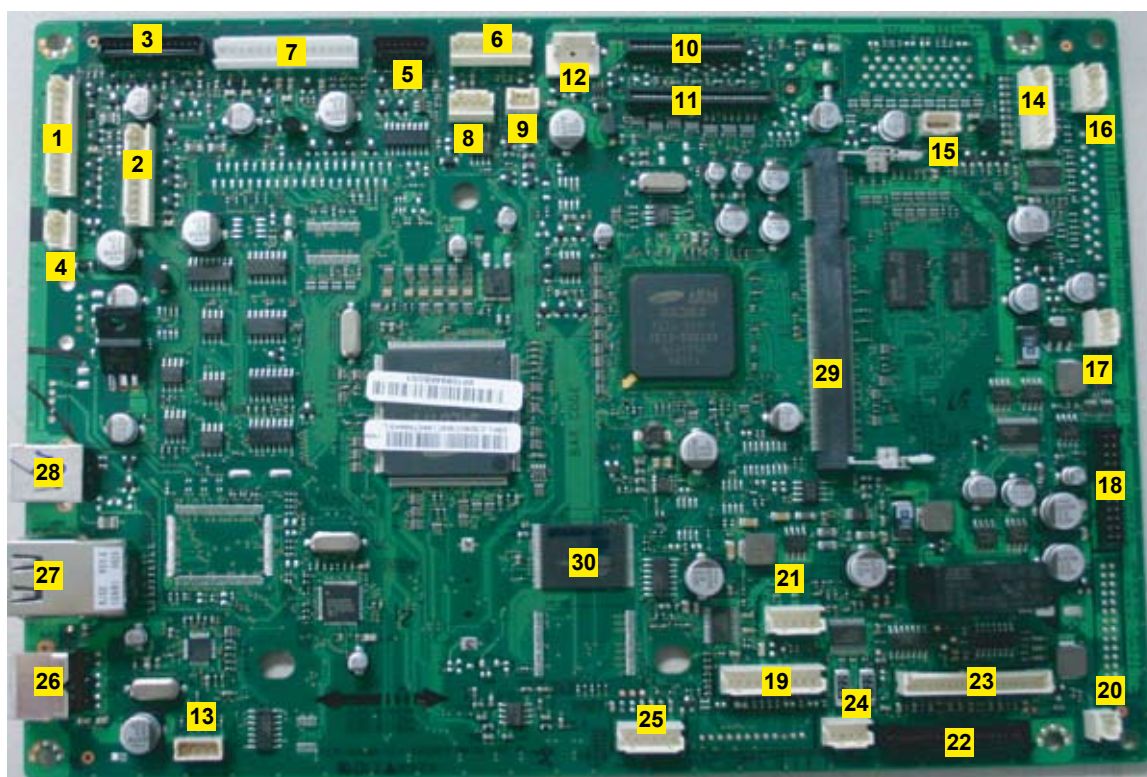
The CLP-620/670 series system controller consists of a main controller and an engine controller on one board. The main controller uses an ARM core chip as a main processor, which is dedicated for printing several internal operating blocks through system programs stored in Flash Memory. The engine controller has an engine control SoC, which includes motor drivers, PWM drivers, LSU drivers, sensors, high-voltage drivers, and other driving units for mechanical parts.

◆ SPGPV4 for CLP-670ND



NO.	Connector	NO.	Connector	NO.	Connector
1	BLDC DEVE, 12pin	11	HVPS2	21	STEP MOTOR (reserved)
2	BLDC OPC, 10pin	12	24V SWITCH	22	C,K LSU , 20pin
3	PTB, 14pin	13	DEBUG, 4pin	23	Y,M LSU , 20pin
4	FAN (reserved) 3pin	14	PTL, 8pin	24	FEED STEP,4pin
5	DEVE CRUM, 7pin	15	FAN (reserved) , 3pin	25	FUSER HEAT CONTROL, 6pin
6	SENER TEMP, 8pin	16	EXIT STEP, 4pin	26	SCF JACK
7	BLDC FUSER, 15pin	17	REAR FAN, 3pin	27	ETHERNET JACK
8	FUSER THERMISTOR,4pin	18	SMPS TYPE4, 24pin	28	USB DEVICE JACK,
9	CURL SENSOR (reserved), 3pin	19	LSU MOTOR 10pin	29	TEMP_LSU, 2pin
10	HVPS1	20	JTAG, 8pin	30	DIMM SLOT

◆ CHROUS3 for CLP-620ND



NO.	Connector	NO.	Connector	NO.	Connector
1	BLDC DEVE, 12pin	11	HVPS2	21	STEP MOTOR (reserved)
2	BLDC OPC, 10pin	12	24V SWITCH	22	C,K LSU , 20pin
3	PTB, 14pin	13	DEBUG, 4pin	23	Y,M LSU , 20pin
4	FAN (reserved) 3pin	14	PTL, 8pin	24	FEED STEP,4pin
5	DEVE CRUM, 7pin	15	FAN (reserved) , 3pin	25	FUSER HEAT CONTROL, 6pin
6	SENER TEMP, 8pin	16	EXIT STEP, 4pin	26	SCF JACK
7	BLDC FUSER, 15pin	17	REAR FAN, 3pin	27	ETHERNET JACK
8	FUSER THERMISTOR, 4pin	18	SMPS TYPE4, 24pin	28	USB DEVICE JACK,
9	CURL SENSOR (reserved), 3pin	19	LSU MOTOR 10pin	29	DIMM SLOT
10	HVPS1	20	TEMP_LSU 2pin	30	FLASH

2) Main PBA Specification (CLP-670 series)

- CPU
 - ARM v5TE compliant core 700MHz (I-Cache : 32KB, D-Cache : 32KB)
- Memory Interface
 - > ROM
 - Nor Flash used (32MB)
 - Interface With SPGPXV4 ROM Controller
 - > SDRAM
 - Size : CLP-670ND(DDR2) : Default 256MB(on-board) (Option 256MB/512MB)
 - > EEPROM
 - Size : 512kb
 - Interface With SPGPV4 I2C Controller
 - > CRUM
 - Size : 256Byte
 - Interface With LPEC3I2C Controller via Deve Crum IF B'D
- I/O Interface
 - > USB
 - DEVICE : High Speed USB 2.0 (High speed 480Mbps)
 - > N/W Embedded
 - SPGPV4 With MII Interface
 - Active LED(Yellow) / Link LED(Green)
 - > PWM
 - High Voltage Control With Duty
 - Main Motor Clock
 - > I2C Interface
 - NVRAM (system information + network information)
 - CRUM

3) Power Flow

- **Main PBA**

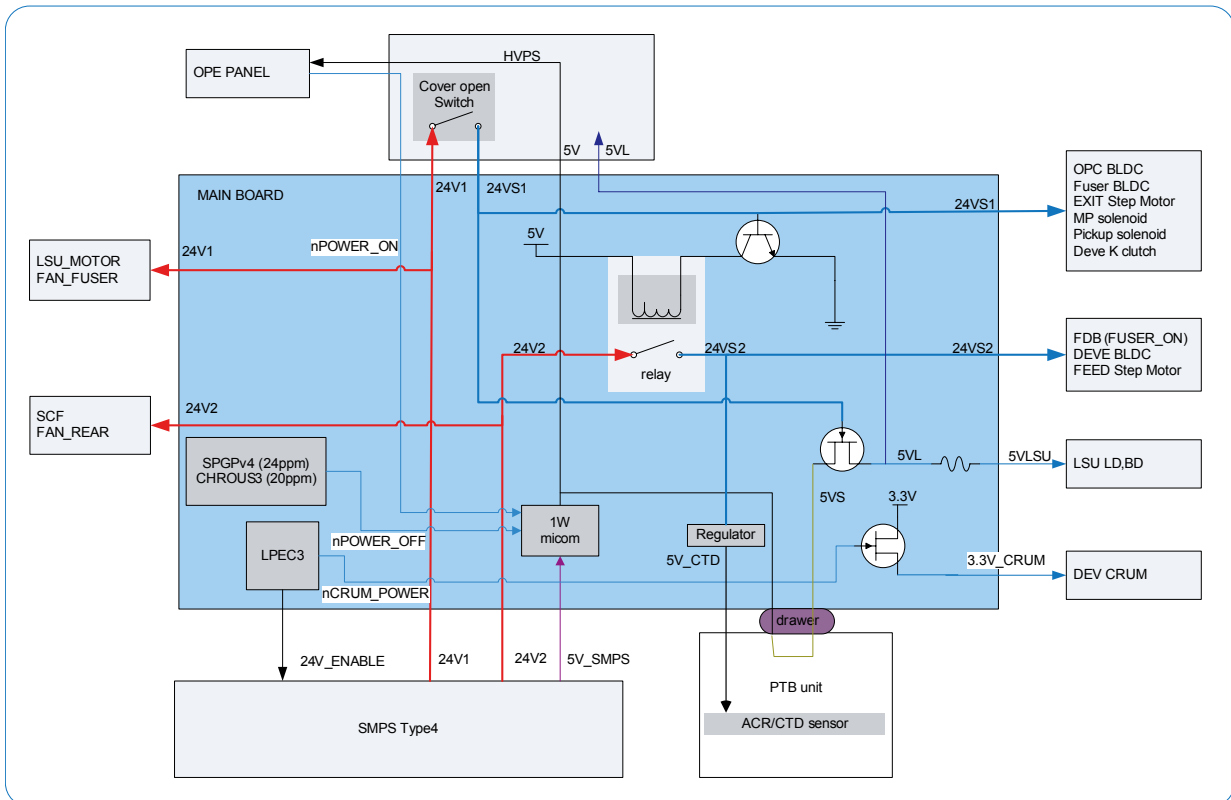
- Supply From SMPS +5V
- Power Supply with Regulator (3.3V & 2.5V & 1.8V & 1.1V & 1.0V: Switching Regulator)
- 3.3V : I/O Operating (Digital & Analog)
- 1.8V : DRAM & Video I/F Voltage
- 1.1V : SPGPV4 CPU Voltage
- 1.0V : SPGPV4/CHROUS3 Core Voltage

- **HVPS**

- High Voltage Source for EP Condition
- Supply From SMPS +24V
- Controlled By PWM Pulse & I/O

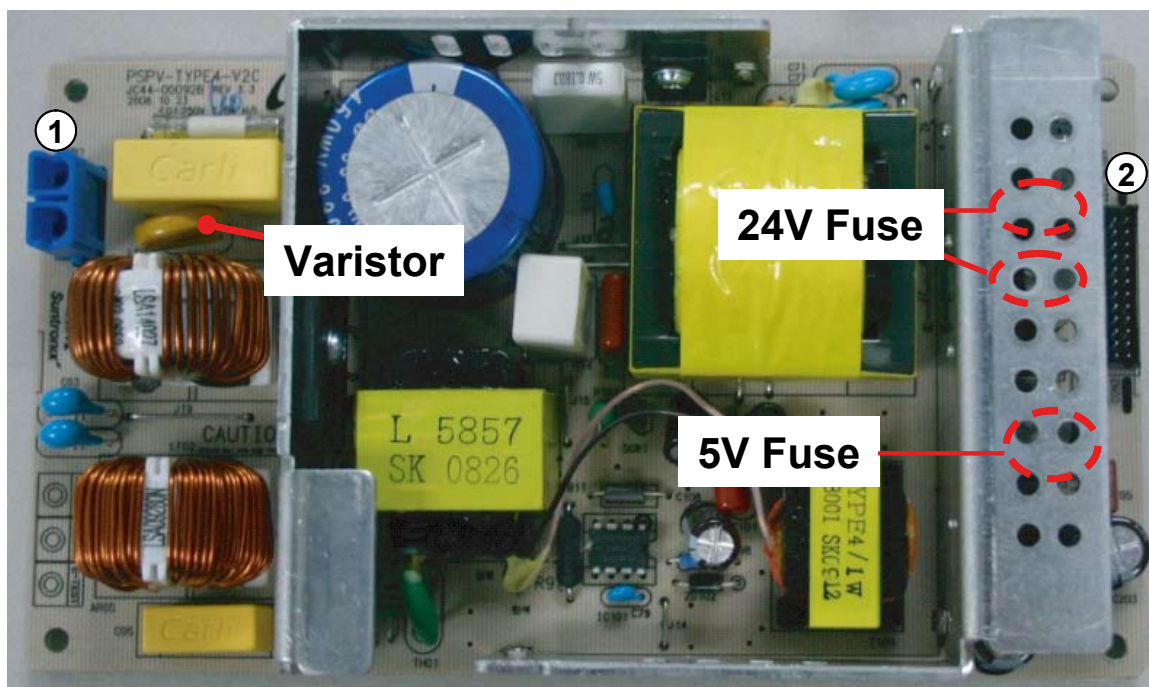
- **SMPS**

- Type 4 (stage 3 type)
- +24V : For use Mechanical Part (Motor & Actuator (Solenoid, Clutch))
- +5V : Logic, Analog, Sensor



2.4.3 SMPS Board

SMPS(Switching Mode Power Supply) Board supplies electric power to a Main Board and other boards through a Main Controller by +5V,+24V from 110V/220V power input. It has safety protection modes for over current and load.



■ Connection

1	INPUT_AC (from Fuser Drive Board)
2	OUTPUT_5V , 24V (to Main PBA) INPUT_24V_Control (from Main PBA)

SPECIFICATION

General Input/Output Voltage

1) AC 110V (90V ~ 135V)

2) AC 220V (180V ~ 270V)

3) Output Power: 143.2W / Max. 200W

DC 5V: 16W ~ 20W

DC 24V: 127.2W ~180W

◆ Input / Output connector

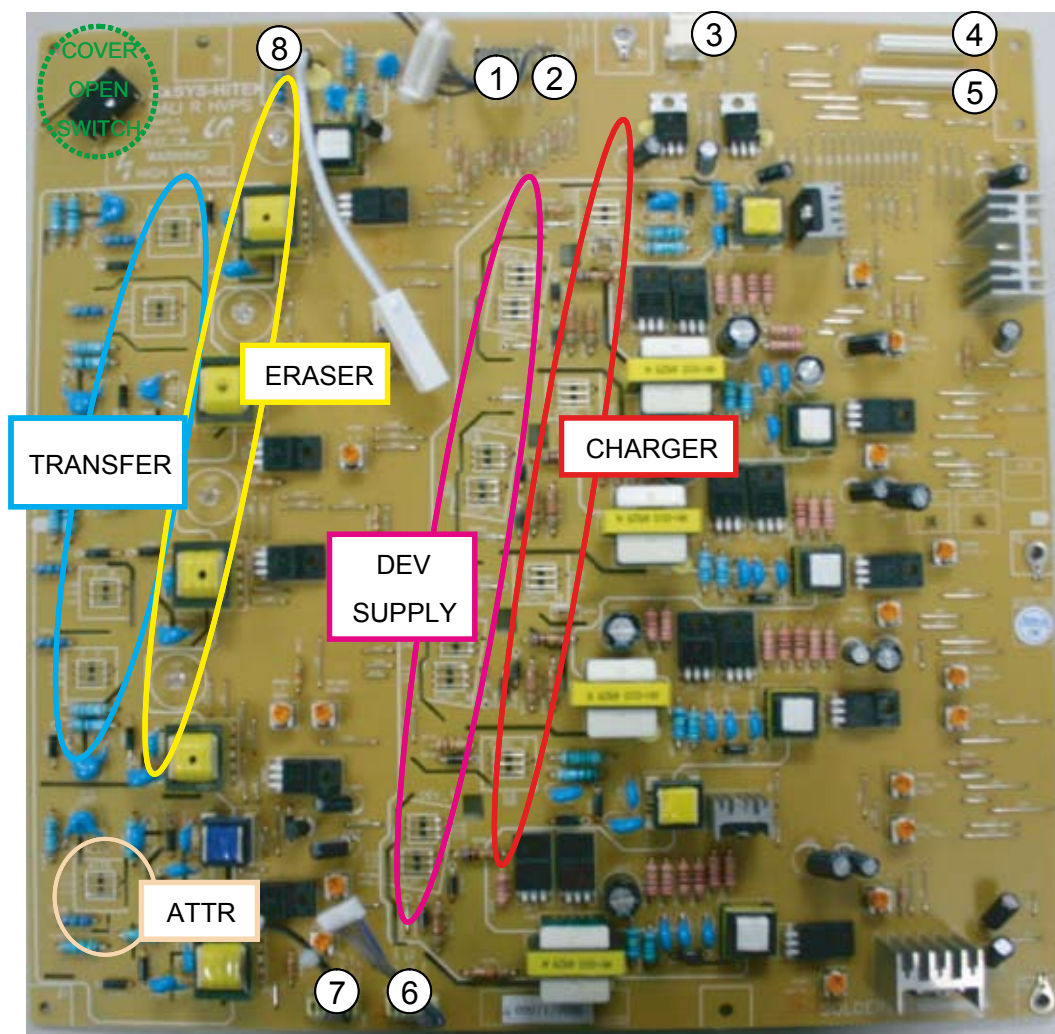
AC Input Connector(CN1)		
PIN ASSIGN	PIN NO	Description
1	AC_L	AC Input
2	AC_N	

AC Input Connector(CN1)					
Description	PIN NO	PIN ASSIGN		PIN NO	Description
Power	+24V1	1	2	GND	+24V Ground
Power	+24V1	3	4	GND	+24V Ground
Power	+24V1	5	6	GND	+24V Ground
Power	+24V1	7	8	GND	+24V Ground
Power	+24V2	9	10	GND	+24V Ground
Power	+24V2	11	12	GND	+24V Ground
Power	+24V2	13	14	GND	+24V Ground
Power	+5V	15	16	GND	+5V Ground
Power	+5V	17	18	GND	+5V Ground
Power	+5V	19	20	GND	+5V Ground
Power	+5V	21	22	GND	+5V Ground
Signal (Power Save Mode)	Standby	23	24	Reserved	Signal (Reserved)

2.4.4 HVPS Board

HVPS (High Voltage Power Supply) Unit generates 17 high-voltage channels which includes T1(4), Charger(2), Deve AC(4), Supply DC(4), Fuser Bias(1), ATTR(2)

HVPS has Cover Open switch and some connectors (from Ope PBA, feed, exit, cst_empty, cst_detect, MP_empty sensor, MP clutch) and Erase Lamp 4EA.



■ Connection

1	PANEL
2	EXIT SENSOR
3	24V SWITCH
4	HVPS1(from Main Board)

5	HVPS2(from Main Board)
6	Feed, CST empty sensor
7	MP solenoid, MP empty, CST detect
8	Fuser bias

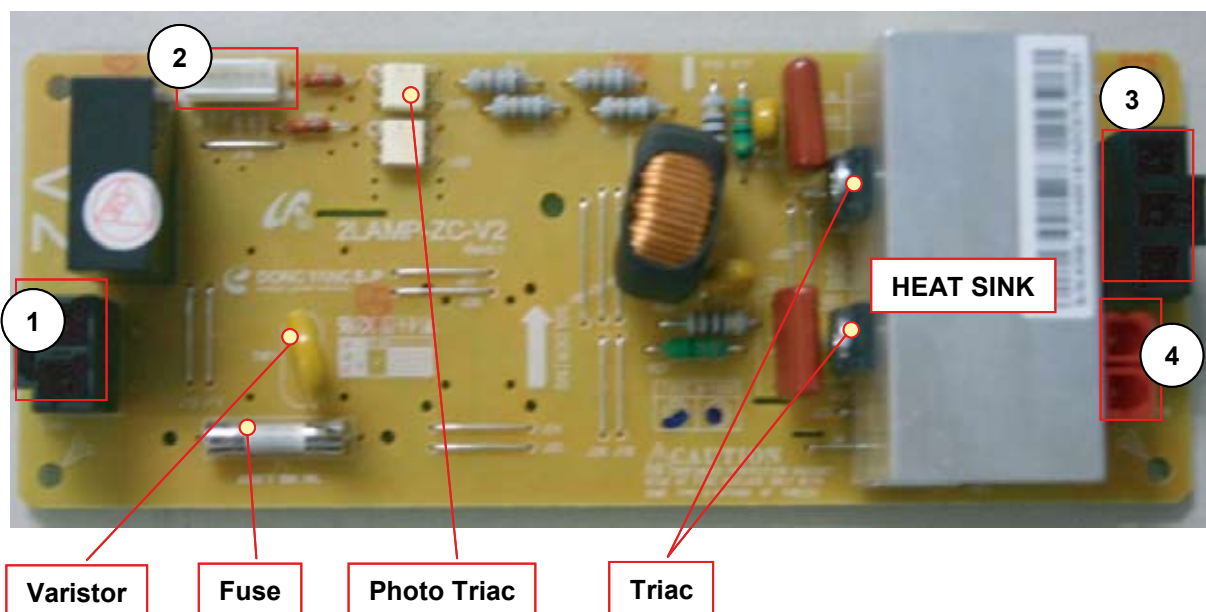
■ Specification

Output	Duty	Output voltage/ current	Load	Read voltage (ADC)
CHARGER_K	169(66%)	-1170V	200M	1.932V (153)
CHARGER Y,M,C	169(66%)	-1170V	200M	-
Deve DC Y,M,C,K	215(84%)	-400V	68pF	-
Deve AC Y,M,C,K	AC freq 2.6kHz AC PWM 92(36%) AC Vpp PWM 65(25%)	174.0V (Approx. 1740V)	68pF	-
T_Y	97(38%)	14uA	90M	1.84V (142)
T_M,C,K	97(38%)	14uA	90M	-
ATTR_P	108(42%)	1418V	100M	0.85V (66)
ATTR_N	on	-800	25M	-
Fuser Bias	128(50%)	418V	100M	-
Eraser	on/off	on/off (18mA ±3mA)	-	-

- ◆ Constant current outputs in T1 channels.
- ◆ Individual T1 channels for each color.
- ◆ AC + DC deve high voltage.
- ◆ 1Chanel charger output to each 4 color`s port.
- ◆ All output channels can be adjusted by using volume control components.

2.4.5 Fuser Drive Board

The FDB (Fuser Drive Board) controls 2 halogen lamps in the fuser unit using control signals which are provided from the ENGINE PBA and supplies AC power to the SMPS. Both V1/V2 FDBs provide max. 1500W output power.



■ Connection

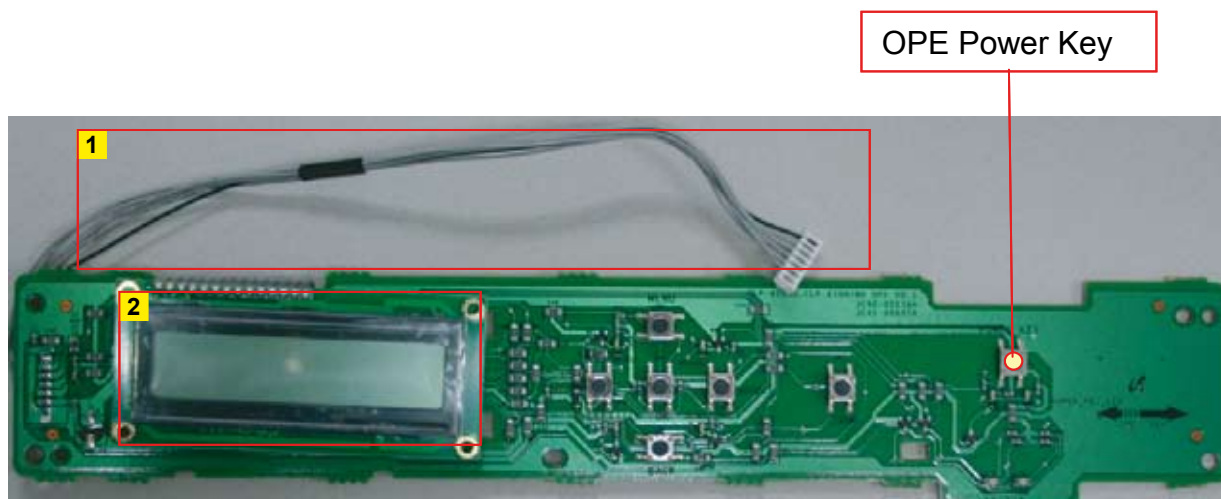
1	INLET AC
2	FUSER CONTROL (from Main board)
3	FUSER AC (to Fuser lamp)
4	SMPS AC (to SMPS)

■ Specification

	V1	V2
Input Voltage (Range)	AC 110V (90 ~ 135V)	AC 220V (180 ~ 270V)
Input Current	20A	10A
Output Power	Max. 1300W	Max. 1300W
Phase Detect	Not support	
Protection	Relay Control Signal	

2.4.6 OPE Board

The OP PBA controls the 2 Line Character LCD(16characters x 2line) unit, and communicates with Main PBA through UART. The OP PBA includes an 8-Bit Microm(HT48C50) and a Power Key.



■ Connection

1	Main IF Harness
2	LCD Module

2.4.7 Feeding Section

1) Cassette (1st tray)

It stores and automatically feeds print paper.

Pick-up Roller picks up paper, controls drive, feeds paper, removes static electricity, and so on.

- Feeding Method : Cassette Type
- Feeding Standard : Center Loading
- Feeding Capacity : Cassette 250 Sheets (80g/m², 20lb Paper Standard)
- Paper Detecting Sensor : Photo Sensor (Empty, Registration, Exit)
- Media size : Letter, Legal, Oficio, Folio, A4, ISO B5, JIS B5, Executive, A5, A6



2) SCF (Second Cassette Feeder, 2nd / 3rd tray)

This is the option unit of CLP-620/670 series. This additionally stores and automatically feeds printing paper. Its function is the same as the Cassette (1st tray). This SCF can be installed until Max. 1 ea.

- Feeding Method : Cassette Type
- Feeding Capacity : Cassette 500 Sheets (80g/m², 20lb Paper Standard)
- Media size : Letter, Legal, Oficio, Folio, A4, ISO B5, JIS B5, Executive, A5



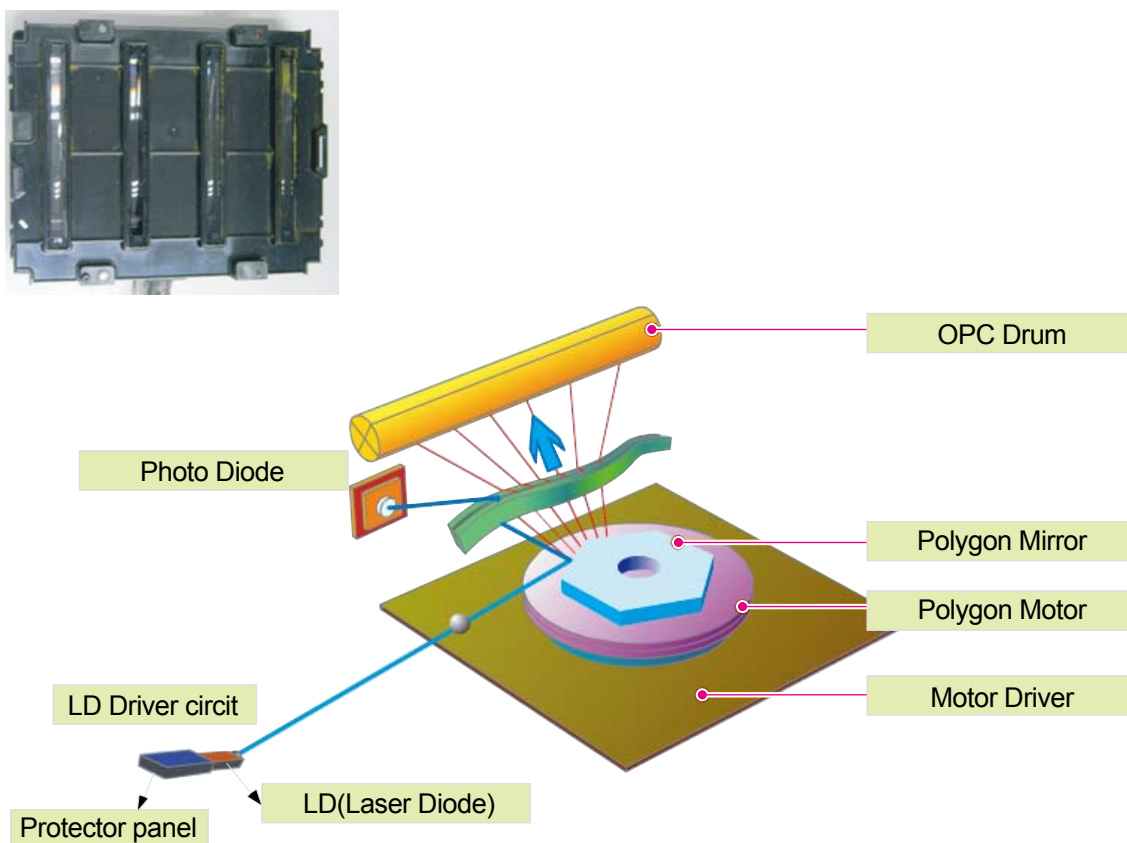
3) MP tray (Multi-Purpose tray)

MP tray allows you to print a variety of media type.

- Feeding Capacity : 100 sheets
- Media size : Letter, Legal, Oficio, Folio, A4, ISO B5, JIS B5, Statement, Executive, A5, A6, Envelope Monarch, Envelope COM-10, No-10, Envelope DL, Envelope C5, Envelope C6, Envelope No 9, Envelope 6 3/4

2.4.8 LSU

LSU consists of LD(Laser Diode) and polygon motor control. For realizing Color Image, it is controled by 4 LD. When the controller generate the printing signal, LD will turn on and Polygon motor starts.If the receiving part in LSU detect the beam , Hsync is generated. When the rotation of polygon motor is steady, it is time of LSU ready status for printing. If either of two condition is not satisfied, LSU error is expected.



Trouble	Failure Analysis
Hsync Error	Though the rotation of polygon motor reach stable, the signal of Hsync is not occurred.
Polygon Motor Error	The Rotation of Polygon Motor can not reach stable

2.4.9 Fuser Unit

This unit consists of HEAT ROLLER, Thermostats and a Thermistor, etc. It melts and fuses the toner, transferred by the transfer roller onto the paper, by applying pressure and high temperature to complete printing job.

- Fusing Type : [Dual Lamp Heating, 700W/500W]
- Heat Roller : Pipe Type (Lamp Inside)
- Pressure Roller
- Thermistor – Temperature Detecting Sensor
contact thermistor 2EA
- Thermostat – Overheat Protection Device



1. Thermostat

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

- Non-Contact type Thermostat

2. 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.

3. 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 permanently.

Trouble	Temperature Control concept
Open Heat Error	90℃ below for 20 sec after power on
Over Heat Error (Fuser High Error)	- 240℃ over for 5sec - 230℃ over for 5sec - 10℃ over than Standby Ref.(170℃) Over for 3min.
Low Heat Error (Fuser Low Error)	10℃ below than target Temp. for 15 sec. At Warm up 20℃ below than target Temp. for 15 sec. At Printing

2.4.10 PTB(Paper Transfer Belt) Unit

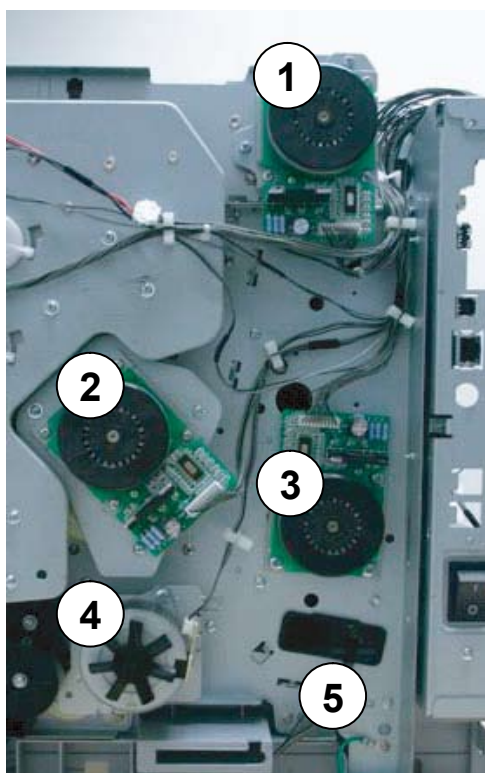
This unit consists of a transfer belt, transfer roller, duplex unit, waste toner tank, etc. The transfer belt carries the printing medium (paper) through OPC drums of each color. As the paper and transfer belt pass between the transfer roller and the OPC drum, the negatively charged toner images formed on OPC drum are transferred to the printing medium (paper) by positive bias applied to the transfer roller. The toner images transferred to the medium is melted down and fixed on the medium by fusing system.

- Life Span : 50,000 images (Declared yield value in accordance with ISO/IEC 24712)



2.4.11 Motors

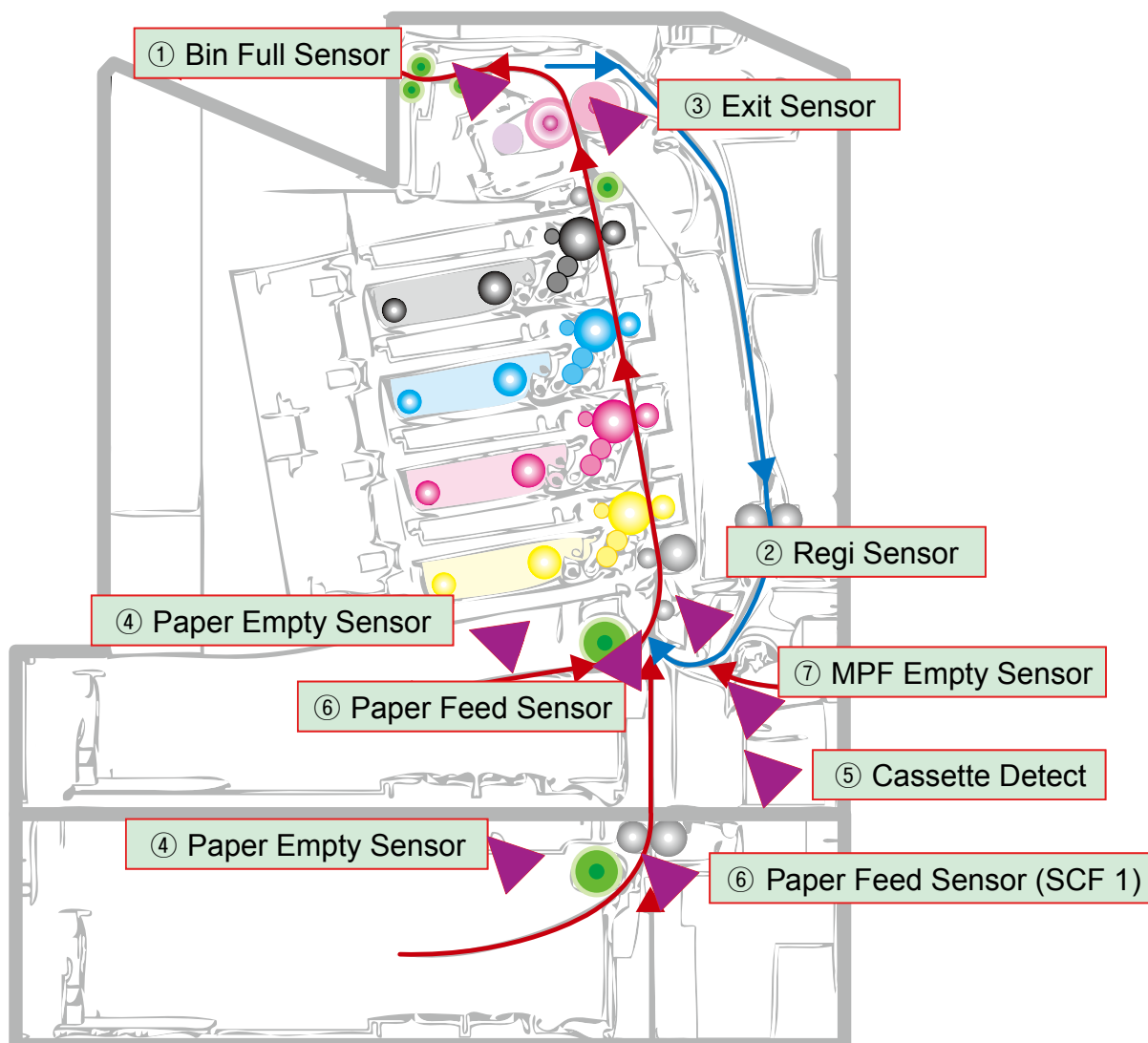
This product has many motors. These motors drive the PTB unit, fuser unit, feeder unit, exit unit, etc.



1	BLDC Motor	For fuser unit
2	BLDC Motor	For OPC Drive unit
3	BLDC Motor	For feeding section driving
4	Step Motor	For feed drive unit
5	Step Motor	For Exit drive unit

2.4.12 Sensors

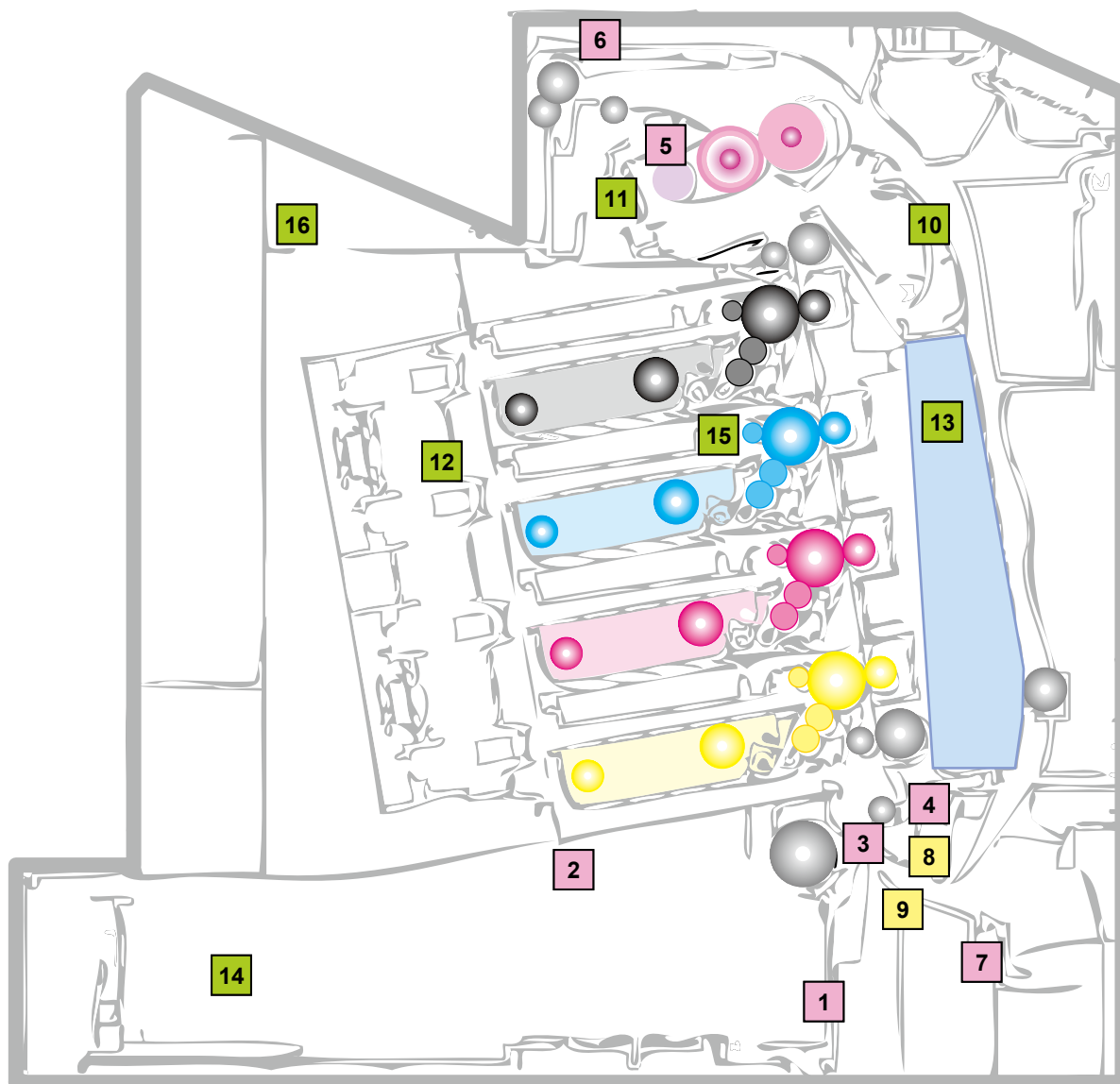
The picture below shows the location of sensors in the machine.



■ DESCRIPTION

- ① Bin Full Sensor :Check overflowing of Paper on Stacker
- ② Regi Sensor :Two Regi Sensor for checking precise paper position
- ③ Exit Sensor :Check paper position on Fuser
- ④ Paper Empty Sensor :Check Paper empty on a cassette
- ⑤ Cassette Detect :Check cassette insertion
- ⑥ Paper Feed Sensor : Check paper position
- ⑦ MPF Empty Sensor :Check paper empty on MPF

Sensor (Expansion)



1	CASSETTE_DETECT
2	PAPER_EMPTY
3	SENS_FEED
4	SENS_REGI
5	SENS_PAPER_EXIT
6	OUTBIN_FULL
7	MP_EMPTY
8	CLUTCH_FEED
9	SOL_PICKUP

10	SENS_ACR
11	THERMOSTAT
12	CRUM_DEVE_Y(M/C/K)
13	CRUM_PTB
14	PAPER_SIZE1(2/3)
15	INNER_TEMP
16	SENS_HUMIDITY OUT_TEMP

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 fire. Damaged cables could lead to electric shock or unit malfunction.

3.1.2 Precautions when handling PBA

Static electricity can damage a PBA, always use 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.

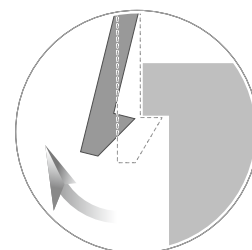
>> Precautions when checking PBA

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.

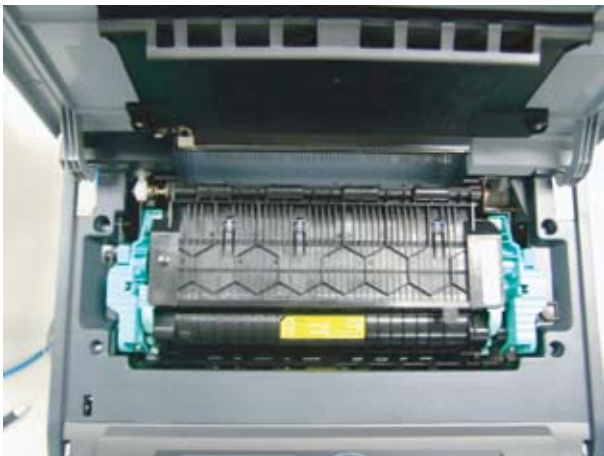


3.2 Replacing a Maintenance Parts

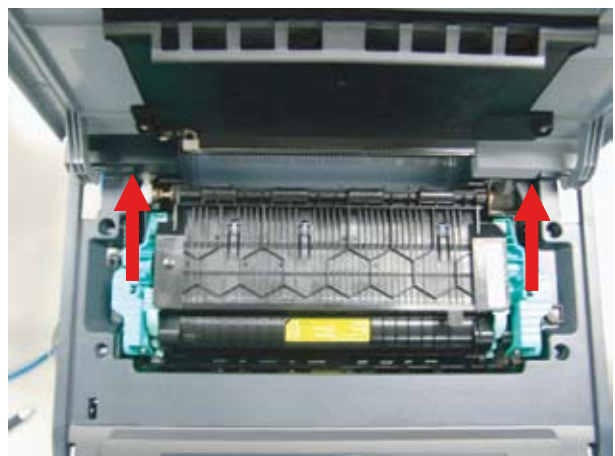
To avoid print quality and paper feed problems resulting from worn parts and to maintain your machine in top working condition, the following parts will need to be replaced after printing the specified number of pages or when the life span of each item has expired.

3.2.1 Fuser Unit

1. Open the Top cover.



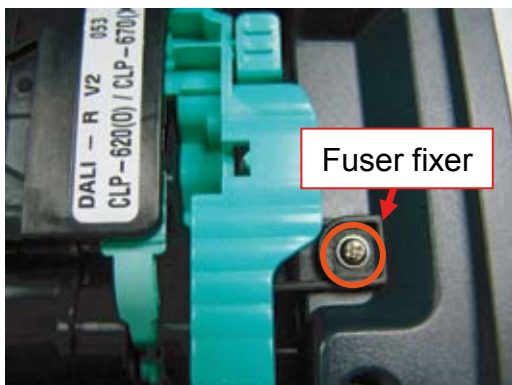
3. Lift the fuser unit up while push the green lever.



Caution

The fuser is very hot. So turn the printer off and wait until the printer to cool before replacing it.

2. Release the fuser fixer after removing 1 screw.

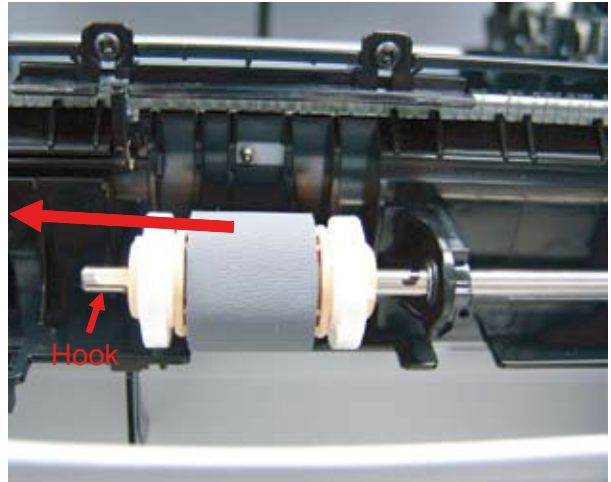


3.2.2 Pick up roller

1. Remove the Cassette Unit.



2. Pull the pick up roller to the direction of arrow.



3.3 General Disassembly

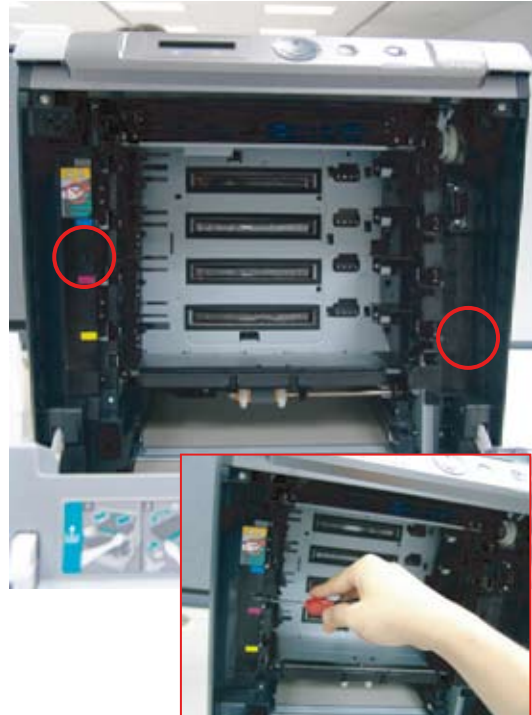
3.3.1 Cover Unit

-Before disassembling the cover unit, remove all toner cartridges.

1. Remove 2 screws from the rear.



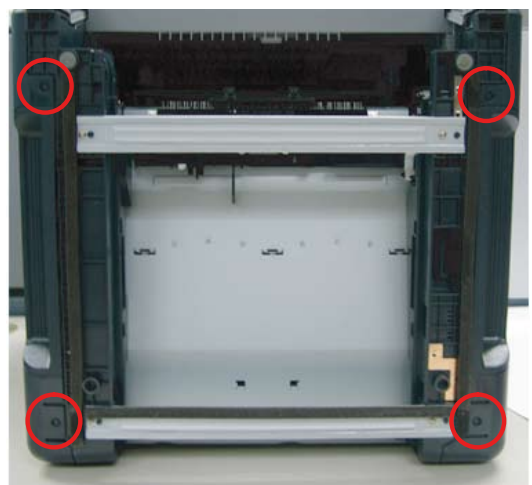
3. Remove one hook with any tool.



2. Open the front cover. And remove 2 screws.



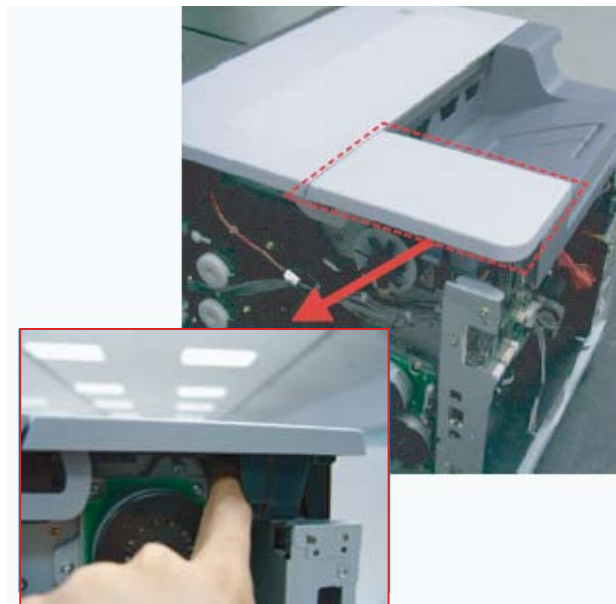
4. Remove 4 hooks from the bottom of both side cover. And remove the right/left cover.



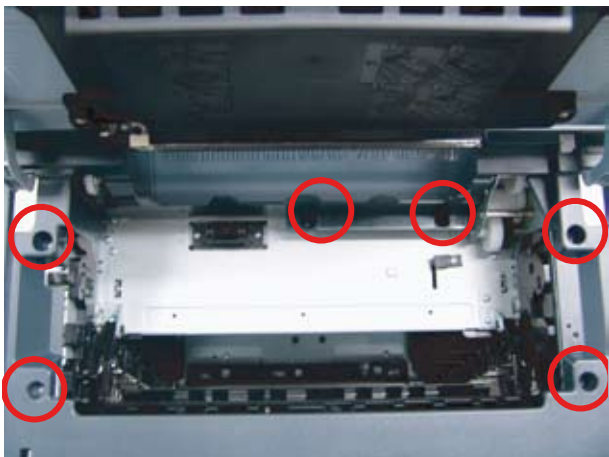
5. Release the rear cover after remove 7 screws.



7. Remove the dummy cover after release the lever.



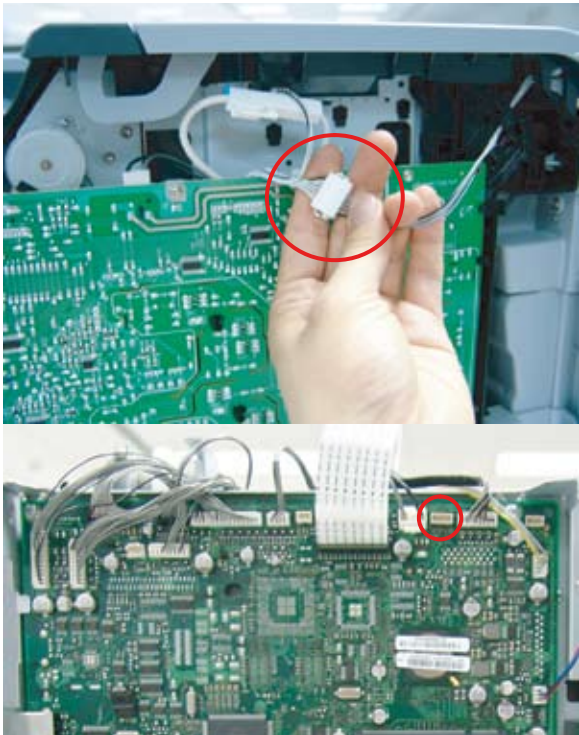
6. Remove 6 screws.



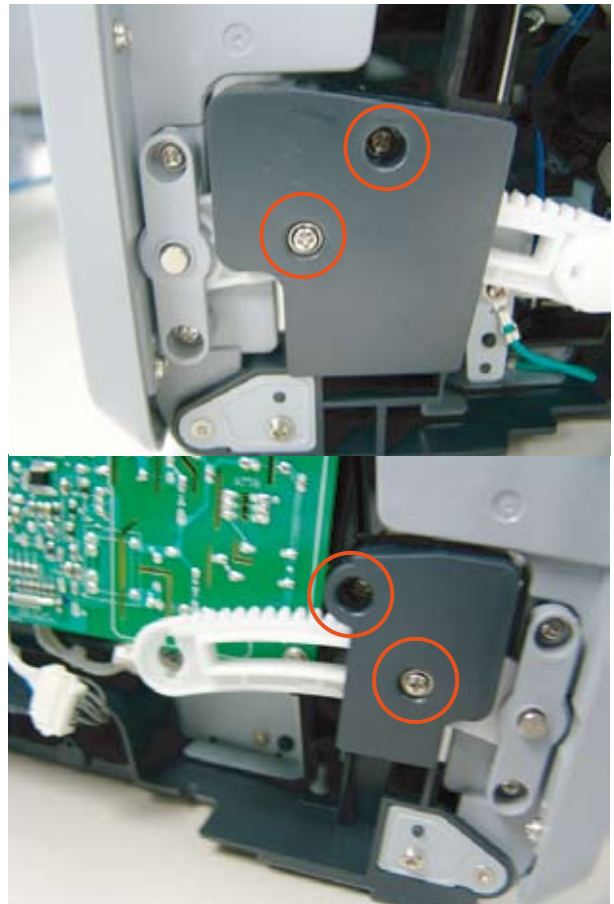
8. Remove 2 screws from both side of top cover.



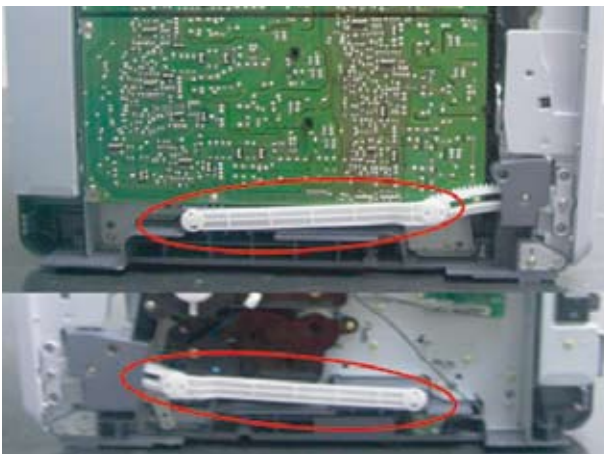
9. Unplug the 2 connectors.
Lift up and release the top cover.



11. Remove 4 screws from both side.



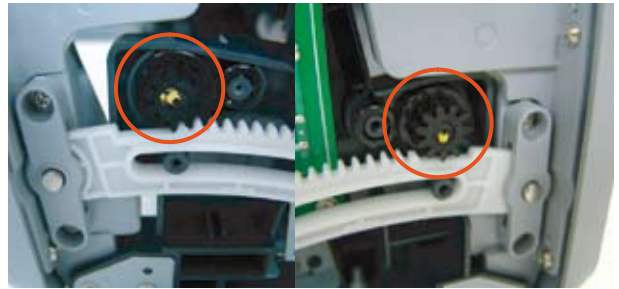
10. Remove the left/right link.



12. Remove the Bracket hinge with any tool after remove one screw.



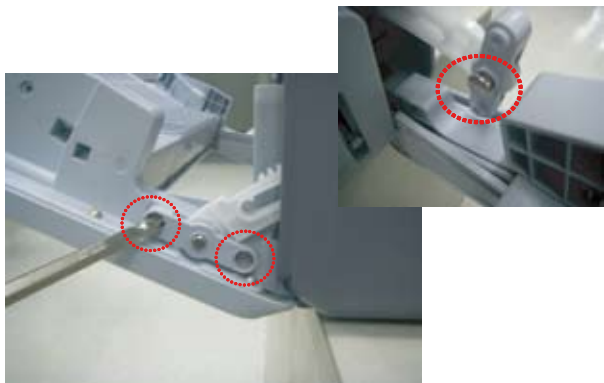
13. Remove the Damper hinge. (2 EA)
And release the front cover.



3.3.2 Front Cover Unit

The following method describes how to disassemble the front cover without removing both side cover.

1. Open the Front Cover. Remove 2 screws. And remove the shaft.



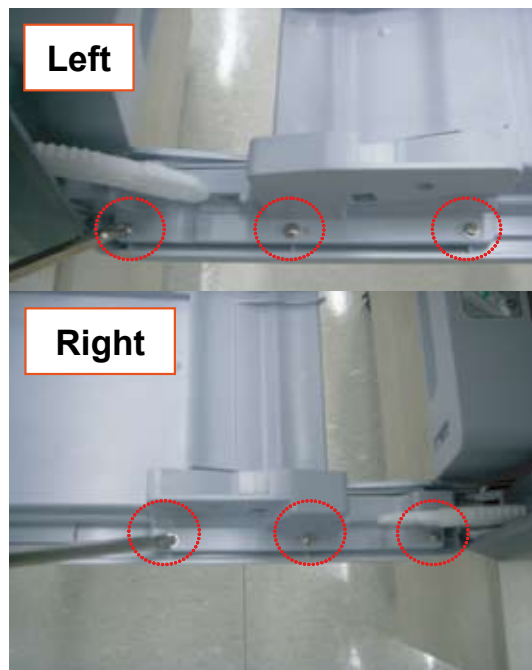
Caution : When reassembling, be careful the shaft head direction.

2. For the opposite side, remove 2 screws and the shaft.

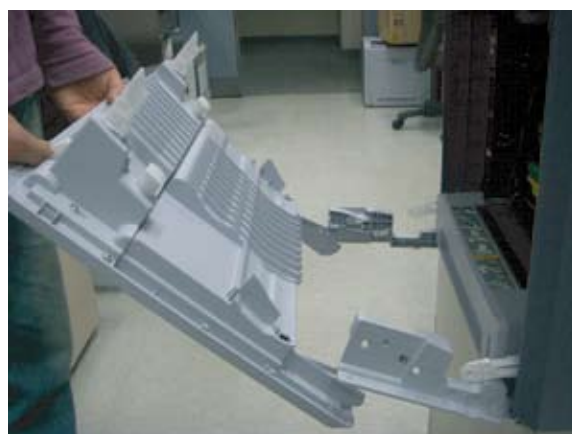


Caution : When reassembling, be careful the shaft head direction.

3. Remove 6 screws from both side.



4. Release the Front cover unit.



3.3.3 OPE Unit

- Before disassembling the OPE unit, remove the Top cover.

1. Remove 2 screws from both side of the top cover.



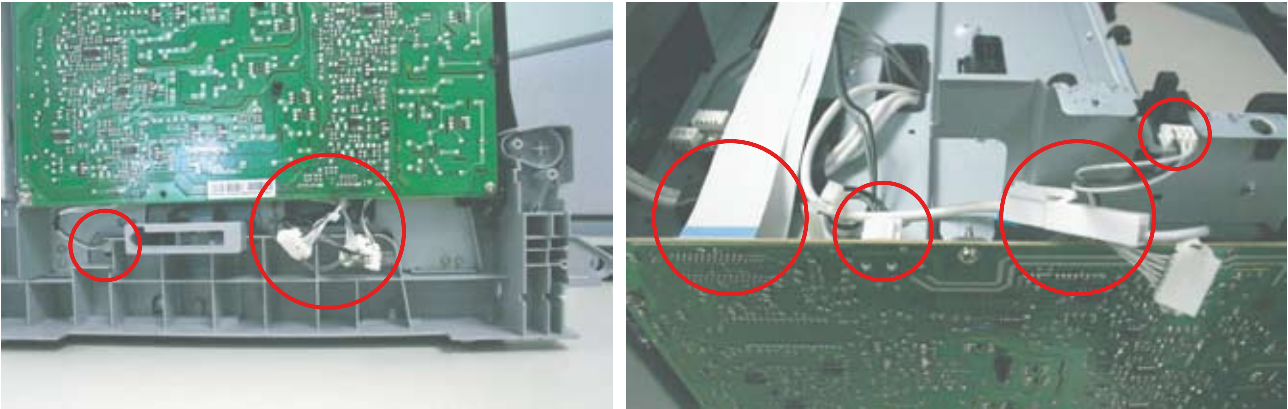
2. Remove 5 screws.



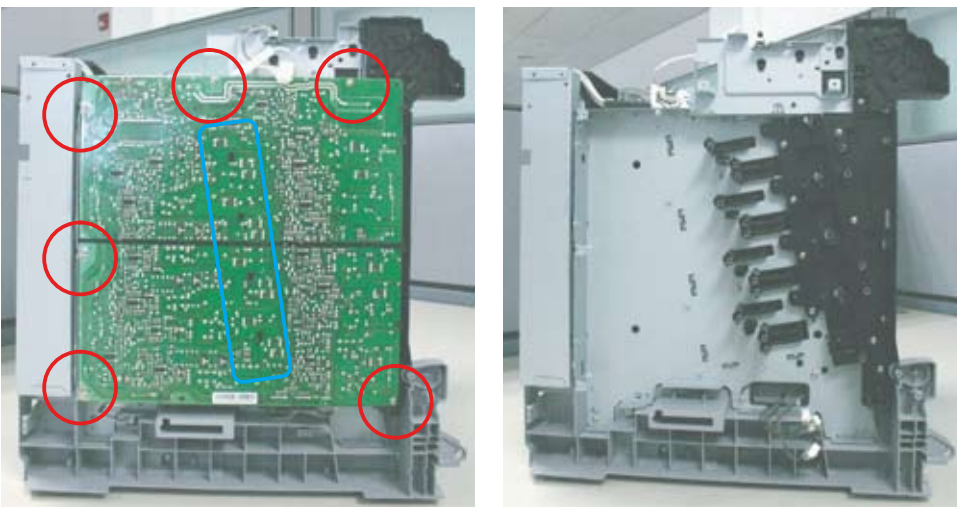
3.3.4 HVPS Board

- Before disassembling the HVPS board, remove all cover.

1. Unplug the harness from the top/bottom of the HVPS Board.



2. Remove 8 screws and unlatch 4 hooks.

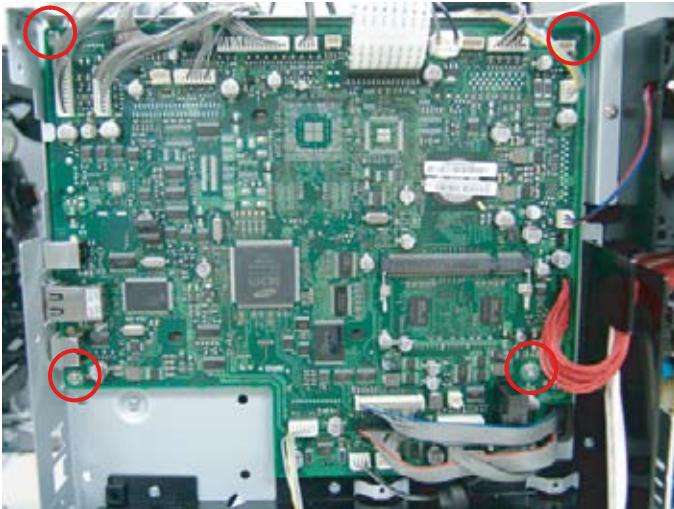


Caution : When replacing the HVSPS board, be careful 16 High voltage terminals on it.

3.3.5 Main PBA

- Before disassembling the Main PBA, remove the rear cover.

1. Unplug all harness from Main PBA.
2. Remove 4 screws and release the Main PBA.



3.3.6 SMPS Board

- Before disassembling the SMPS board, remove the rear cover.

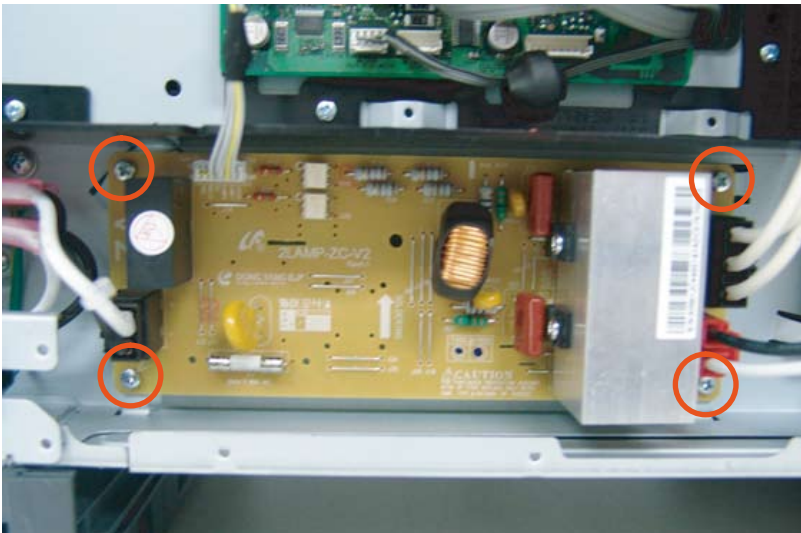
1. Unplug the harness from the SMPS board.
2. Remove 4 screws and release the SMPS board.



3.3.7 Fuser Control Board

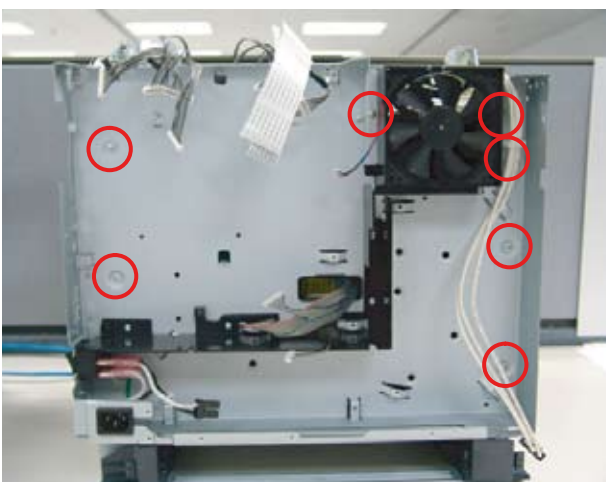
- Before disassembling the Fuser control board, remove the cover unit.

1. Unplug the harness from the Fuser control board.
2. Remove 4 screws and release the Fuser control board.

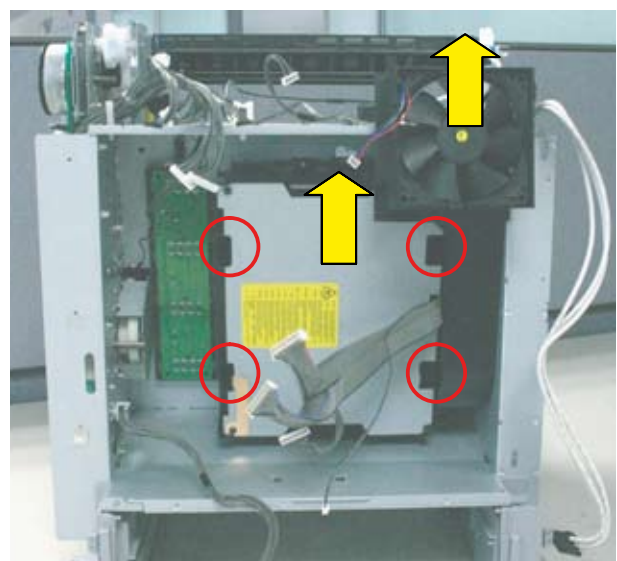


3.3.8 LSU

1. To remove the Bracket main & Duct, remove the 7 screws and release it.

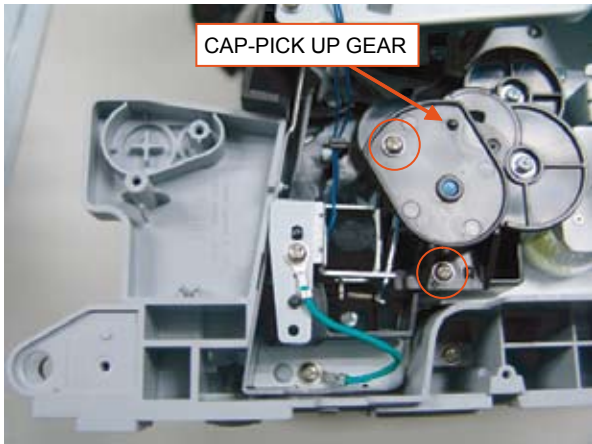


2. Remove the 4 screws and remove the LSU Unit.

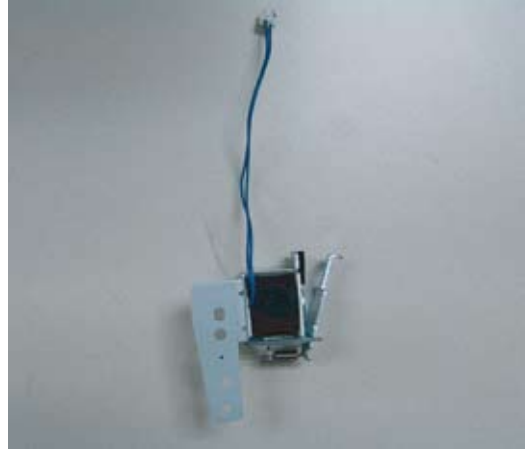


3.3.9 SOLENOID

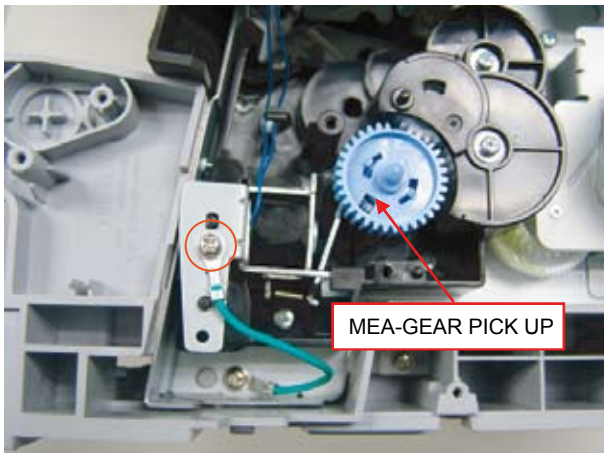
1. Remove 2 screws and release the CAP-PICK UP GEAR.



3. Release the SOLENOID-PICK_UP.



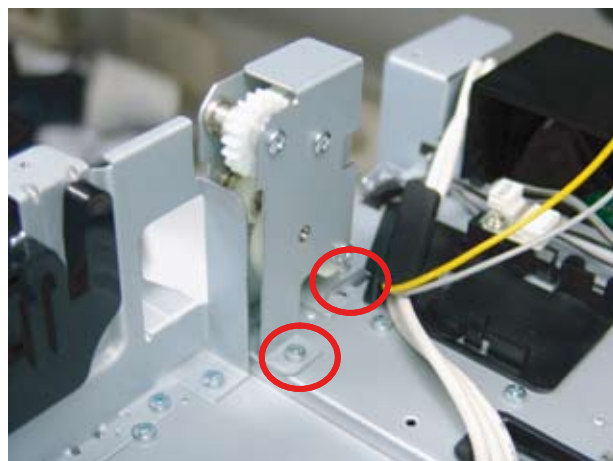
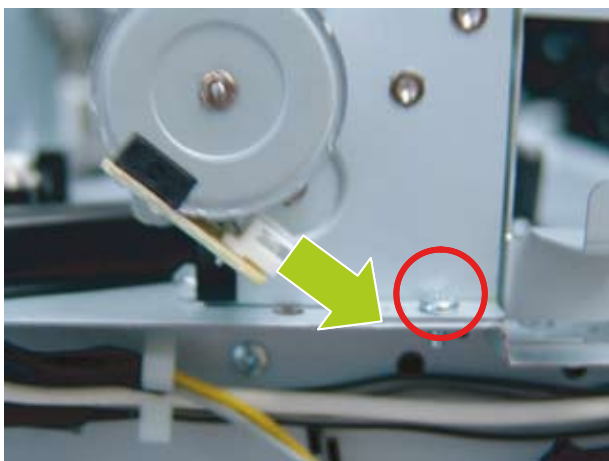
2. Remove the MEA-GEAR PICK UP.
And remove 1 screw.



3.3.10 Drive-Exit Bracket

- Before disassembling the drive-exit bracket, remove the middle cover, HVPS board.

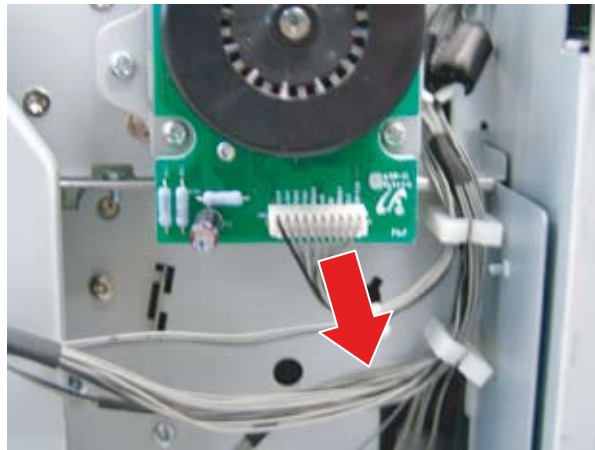
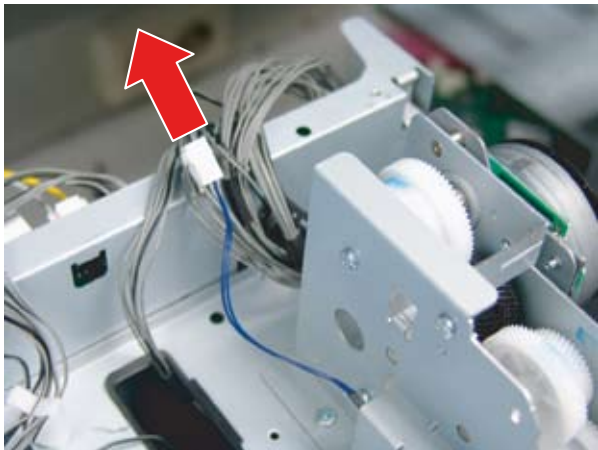
1. Unplug the harness connecting the motor.
2. Remove 3 screws.
3. Release the drive-exit bracket from the frame assy.



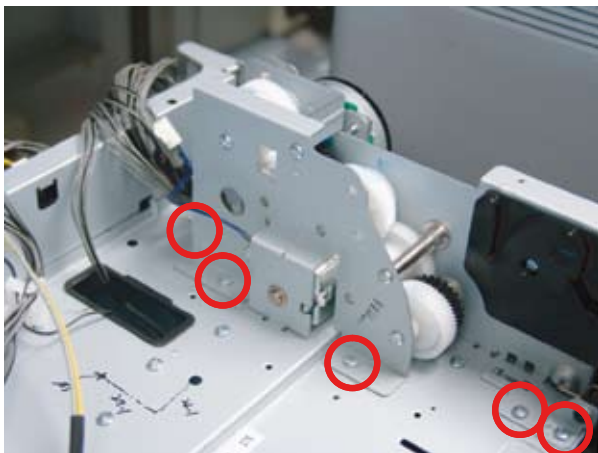
3.3.11 Drive-Fuser Bracket

- Before disassembling the drive-exit bracket, remove the middle cover.

1. Unplug 2 harness connecting the motor and clutch.



2. Remove 6 screws. Release the drive-fuser bracket from the frame assy.

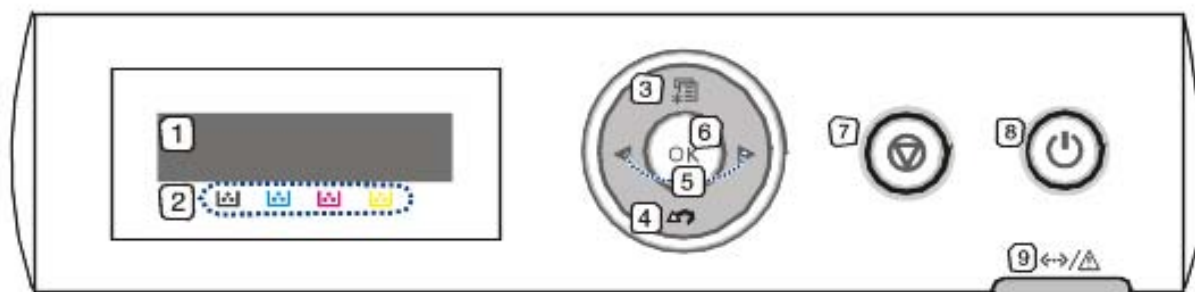






4. Alignment & Troubleshooting

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 manual.

4.1.1 Control Panel



1	Display	Shows the current status and prompts during an operation.
2	Toner colors	Show the status of each toner cartridge.
3	 (menu)	Enters menu mode and scrolls through the available menus.
4	 (Back)	Sends you back to the upper menu level.
5	Arrow	Scroll through the options available in the selected menu, and increase or decrease values.
6	OK	Confirms the selection on the screen.
7	 (Stop)	Stops an operation at any time. The pop-up window appears on the screen showing the current job that the user can stop or resume.
8	 (Power)	Sends the machine into power saver mode. You can also turn the power on and off with this button.
9	Status LED	Shows the status of your machine.

4.1.2 Understanding The Status LED

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

Status		Description
Off		The machine is off-line.
Green	Blinking	<ul style="list-style-type: none"> When the LED blinks slowly, the machine is receiving data from the computer. When the LED blinks rapidly, the machine is printing data.
	On	<ul style="list-style-type: none"> The machine is on-line and can be used. The machine is in power saver mode. When data is received, or any button is pressed, it switches to on-line automatically.
Red	Blinking	<ul style="list-style-type: none"> 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^[a] of toner is close. Prepare a new cartridge for replacement. You may temporarily increase the printing quality by redistributing the toner.
	On	<ul style="list-style-type: none"> A toner cartridge has almost reached its estimated cartridge life^[a]. It is recommended to replace the toner cartridge. A paper jam has occurred. 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

[a] 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 19798. The number of pages may be affected by the percent of image area of your originals, operating environment, printing interval, media type, and media size. Some amount of toner may remain in the cartridge even when red LED is turned on and the printer stops printing.

4.1.3 Menu Overview

This chapter explains the menu item. If you want to know more information about the menu item, refer to the User Guide.

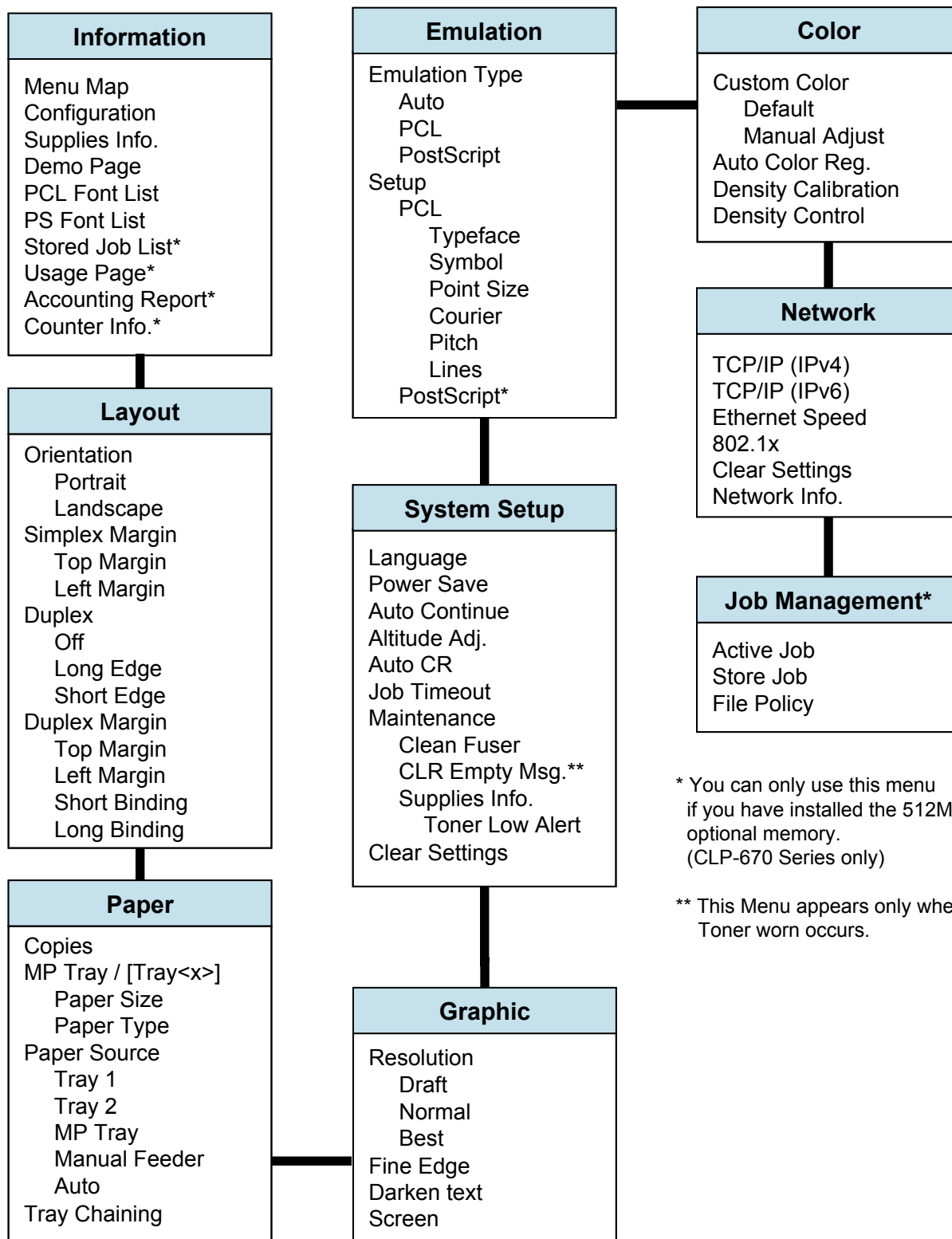
■ ACCESSING OPERATOR PANEL MENU

1. Press Menu on the control panel.
2. Press Scroll (▲ to ▼) to highlight the desired setting and press OK.
3. If the setting item has sub menus, repeat step 2.
4. Press Scroll (▲ to ▼) to access the required value.
5. Press OK to save the selection.
6. If you want to move to the upper level menus, press Back .
7. Press Stop to return to ready mode.

■ Menu Description

- Information : This menu contains information pages that you can print to give details about the printer and its configuration
- Layout : This menu allows you to adjust the paper layout setting.
- Paper : This menu allows you to select the default paper size, default paper type, the tray for printing, etc.
- Graphic : This menu can select the default resolution. If the resolution is high, the clarity of the printouts is shaper, but the print time may take longer. (Draft, Normal, Best)
- System Setup : This menu allows you to setup the machine.
- Emulation : This menu allow you to select the machine language and to set up the emulation configuration.
- Color : This menu allow you to adjust the color setting.
- Network : This menu allow you to configure the network interface.
- Job Management : This menu shows the status for printing jobs.

■ Menu Map



* You can only use this menu if you have installed the 512MB optional memory. (CLP-670 Series only)

** This Menu appears only when Toner worn occurs.

■ Network Menu Map

Depth 1	Depth 2	Depth 3	Depth 4	Depth 5
TCP/IP (IPv4)	DHCP *			
	BOOTP			
	Static	IP Address	192.0.0.192	Subnet Mask
		Primary DNS	0.0.0.0	
Secondary DNS		0.0.0.0		
TCP/IP (IPv6)	IPv6 Activate	On *		
		Off		
	DHCPv6 Config	Router *		
		DHCPv6 Address		
DHCPv6 Off				
Ethernet Speed	Auto *			
	10M Half			
	10M Full			
	100M Half			
	100M Full			
802.1x	Off *			
	On	EAP-MD5	User Name	Stef M
		EAP-MSCHAPv2	User Name	Stef M
		PEAP	User Name	Stef M
Clear Setting	Clear?	Clearing...		
Network Info	Print?	Printing...		


■ Useful Menu Item for service

Printing a machine report

You can print the machine's information.

Configuration : You can print a report on the machine's overall configuration.

Demo Page : You can print the demo page whether your machine is printing properly or not.

1. Press  on the control panel.
2. Press up/down arrow to highlight Information and press OK.
3. Press up/down arrow to highlight Configuration and press OK.
4. The display shows Print?, then press OK to print the configuration report.


Monitoring the supplies life

To view the supply life indicators, follow the steps below:1.Press on the control panel.

1. Press  on the control panel.
2. Press up/down arrow to highlight System Setup and press OK.
3. Press up/down arrow to highlight Maintenance and press OK.
4. Press up/down arrow to highlight Supplies Info. and press OK.
5. The display shows two options as you press up/down arrow.
 - Printed Pages: Displays the total number of pages printed.
 - Remains Info.: Displays how much toner remains in the cartridge.


Cleaning a fuser belt

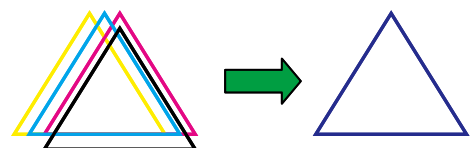
If you are experiencing blurred, faded, or smeared printouts, you can clear the problem by printing a cleaning sheet, provided by your printer.You can Print:1.Press on the control panel.

1. Press  on the control panel.
2. Press up/down arrow to highlight System Setup and press OK.
3. Press up/down arrow to highlight Maintenance and press OK.
4. Press up/down arrow to highlight Clean Fuser and press OK.
Your machine automatically picks up a sheet of paper from the tray and prints out a cleaning sheet with dust or toner particles on it.

Conducting the Auto Color Registration

You can adjust the position of color texts or graphics to match the position of the printed colors to those on your screen. When you have moved the machine or replaced some parts, it is strongly recommended to operate this menu manually.

1. Press  on the control panel.
2. Press up/down arrow to highlight Color and press OK.
3. Press up/down arrow to highlight Auto Color Reg. and press OK.
4. The display shows Run Now? ◀Yes▶ / ▶No▶ , then select yes or no. And press the OK to conduct the Auto Color Registration.

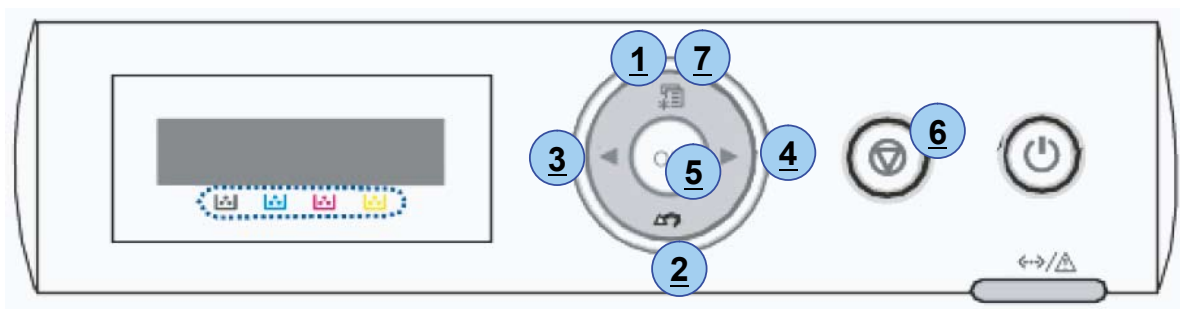


4.1.4 Tech Mode

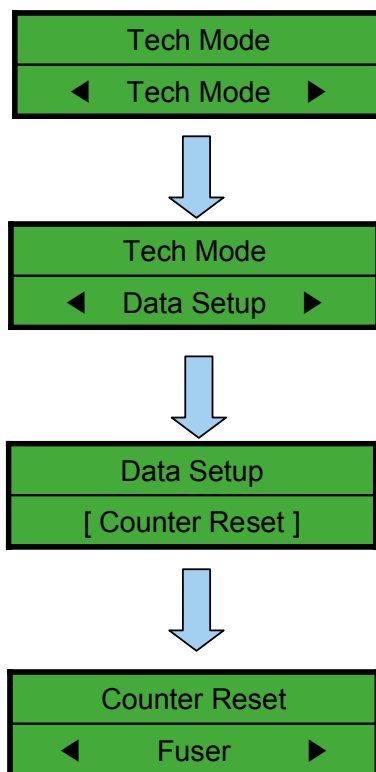
In service (tech) mode, the technician can check the machine and perform various test to isolate the cause of a malfunction. While in Tech mode, the machine still performs all normal operations.

To enter the Tech Mode

To enter the Tech Mode, press “**Menu + Back + Left + Right + OK + Stop + Menu**” in sequence, and the LCD briefly displays ‘Tech Mode’, the machine has entered service tech mode.



After entering the tech mode, select the item you want by using a button on control panel. Below picture shows to select the fuser counter reset.



Tech Mode Structrue

Depth 1	Depth 2	Depth 3	Depth 4
Data Setup	Counter Reset	Fuser	
		Pickup Roller	Tray1
			Tray2
			MP Tray
	Margin	Top Margin	[-10-10]:0
		Left Margin	[-10-10]:0
	B2B Mode	0-99	
	Toner Low Level	[1~30]: 10 %*	
Paper Substitution	Off *		
	On		
Report	Supplies Info	Printing...	
	Event Log	Printing...	
	ACR Report	Printing...	
	Job Duty Report	Printing...	
	Density Report	Printing...	
	CTD Report	Printing...	
Machine Test	Fuser Offset	StandBy Temp.	[-20-0]:0*, -5, -10, -15, -20
		Run Temp.	[-20-0]:0*, -5, -10, -15, -20
		101-185mm Temp.	[-20-0]:0*, -5, -10, -15, -20
		186-216mm Temp.	[-20-0]:0*, -5, -10, -15, -20
		90 gms Temp.	[-20-0]:0*, -5, -10, -15, -20
		Bond Temp.	[-20-0]:0*, -5, -10, -15, -20
		OHP Temp.	[-20-0]:0*, -5, -10, -15, -20
		Cardstock Temp.	[-20-0]:0*, -5, -10, -15, -20
		Env. Temp.	[-20-0]:0*, -5, -10, -15, -20
		Label Temp.	[-20-0]:0*, -5, -10, -15, -20
EDC Mode	NVM Read Write		
	NVM Initialize		
	Test Routines		

Tech Mode Item description

Item	Description
Counter Reset	This menu can reset the counts for the Fuser or Pick up roller. When replacing the fuser or pick up roller, you must do this menu.
Margin	This menu can adjust the paper margin.
Toner Low Level	When the toner remains less than setting up level, the machine notify user of toner low.
B2B Mode	You can set B2B mode
Supplies Info	You can print the supplies information page.
Event Log	You can print the Event Log that is occurred for specific period.
ACR Report	You can print the ACR Report.
NVM Read/ Write	Engine parameter read/write
NVM Initialization	This menu can initialize all NVM values.
Test Routine	You can check status of the machine coponents.

NVM Read/ Write Table

Code	LCD display	Meaning	Default	Min. / Max	Description
105-0030	0030-MHV DC K	Charger HV Black DC Duty	0	-15 ~ +15	+ : Optical Density decrease - : Opticla Density increase
106-0000	0000-Deve DC Y	Deve DC Yellow	0	-25 ~ +25	+ : Optical Density decrease - : Opticla Density increase
106-0010	0010-Deve DC M	Deve DC Magenta	0	-25 ~ +25	+ : Optical Density decrease - : Opticla Density increase
106-0020	0020-Deve DC C	Deve DC Cyan	0	-25 ~ +25	+ : Optical Density decrease - : Opticla Density increase
106-0030	0030-Deve DC K	Deve DC Black	0	-25 ~ +25	+ : Optical Density decrease - : Opticla Density increase
106-0040	0040-Deve VPP Y	Deve VPP Yellow	0	-25 ~ +25	+ : Optical Density decrease - : Opticla Density increase
106-0050	0050-Deve VPP M	Deve VPP Magenta	0	-25 ~ +25	+ : Optical Density decrease - : Opticla Density increase
106-0060	0060-Deve VPP C	Deve VPP Cyan	0	-25 ~ +25	+ : Optical Density decrease - : Opticla Density increase
106-0070	0070-Deve VPP K	Deve VPP Black	0	-25 ~ +25	+ : Optical Density decrease - : Opticla Density increase
106-0080	0080-Deve AC Y	Deve AC Yellow	0	-25 ~ +25	+ : Optical Density slightly increase - : Opticla Density slightly decrease
106-0090	0090-Deve AC M	Deve AC Magenta	0	-25 ~ +25	+ : Optical Density slightly increase - : Opticla Density slightly decrease

Code	LCD display	Meaning	Default	Min. / Max	Description
106-0100	0100-Deve AC C	Deve AC Cyan	0	-25 ~ +25	+ : Optical Density slightly increase - : Opticla Density slightly decrease
106-0110	0110-Deve AC K	Deve AC Black	0	-25 ~ +25	+ : Optical Density slightly increase - : Opticla Density slightly decrease
106-0120	0120-Deve AC Freq	Deve AC Frequency	0	0 ~ +500	+ : Optical Density slightly increase - : Opticla Density slightly decrease
107-0000	0000-THV Y	Transfer1 HV Yellow Duty	0	-25 ~ +25	+ : Toner Retransfer - : Image Delition
107-0010	0010-THV M	Transfer1 HV Magenta Duty	0	-25 ~ +25	+ : Toner Retransfer - : Image Delition
107-0020	0020-THV C	Transfer1 HV Cyan Duty	0	-25 ~ +25	+ : Toner Retransfer - : Image Delition
107-0030	0030-THV K	Transfer1 HV Black Duty	0	-25 ~ +25	+ : Toner Retransfer - : Image Delition
107-0040	0040-THV Low Y	Transfer1 Low HV Yellow Duty In None Image Area	0	-10 ~ +10	+ : OPC Damage - : Voltage overshoot
107-0050	0050-THV Low M	Transfer1 Low HV Magenta Duty In None Image Area	0	-10 ~ +10	+ : OPC Damage - : Voltage overshoot
107-0060	0060-THV Low C	Transfer1 Low HV Cyan Duty In None Image Area	0	-10 ~ +10	+ : OPC Damage - : Voltage overshoot
107-0070	0070-THV Low K	Transfer1 Low HV Black Duty In None Image Area	0	-10 ~ +10	+ : OPC Damage - : Voltage overshoot
107-0130	0130-ATTR+ Bias	ATTR plus bias voltage on at normal drive level	0	-10 ~ +10	+ : paper Charging ↑ - : paper Charging ↓
107-0140	0140-THV Y_Dup	Transfer1 HV Yellow Duplex Duty	0	-25 ~ +25	+ : Toner Retransfer - : Image Delition
107-0150	0150-THV M_Dup	Transfer1 HV Magenta Duplex Duty	0	-25 ~ +25	+ : Toner Retransfer - : Image Delition
107-0160	0160-THV C_Dup	Transfer1 HV Cyan Duplex Duty	0	-25 ~ +25	+ : Toner Retransfer - : Image Delition
107-0170	0170-THV K_Dup	Transfer1 HV Black Duplex Duty	0	-25 ~ +25	+ : Toner Retransfer - : Image Delition

Code	LCD display	Meaning	Default	Min. / Max	Description
109-0010	0010-Print Temp	Target Temperature during run mode.	0	-10 ~ 0	<p>1. Description : As (-) value increases, fusing temperature goes down in normal mode.</p> <p>2. Trouble : Hot offset takes place, or printed paper is too hot. ※ Hot offset : When Fusing temperture is too high, printed image appears again in 95mm cycle</p> <p>3. Trobleshoot : Drop Fusing temperature by increasing (-) value.</p>
109-0020	0020-Low Power Temp	Target Temperature during Power save mode.	0	-10 ~ 0	Reserved
109-0070	0070-Bond Temp	Media type offset for fuser roll temperature.	0	-10 ~ 0	<p>1. Description : As (-) value increases, fusing temperature goes down in bond paper mode.</p> <p>2. Trouble : Hot offset takes place, or printed paper is too hot when bond paper is printed. ※ Hot offset : When Fusing temperture is too high, printed image appears again in 95mm cycle</p> <p>3. Trobleshoot : Drop Fusing temperature by increasing (-) value.</p>
109-0080	0080-Trans Temp	Media type offset for fuser roll temperature.	0	-10 ~ 0	<p>1. Description : As (-) value increases, fusing temperature goes down in OHP mode.</p> <p>2. Trouble : Hot offset takes place, or printed paper is too hot when OHP is printed. ※ Hot offset : When Fusing temperture is too high, printed image appears again in 95mm cycle</p> <p>3. Trobleshoot : Drop Fusing temperature by increasing (-) value.</p>

Code	LCD display	Meaning	Default	Min. / Max	Description
109-0100	0100-Envelopes Temp	Media type offset for fuser roll temperature.	0	-10 ~ 0	<p>1. Description : As (-) value increases, fusing temperature goes down in Envelope mode.</p> <p>2. Trouble : Hot offset takes place, or printed paper is too hot when Envelope is printed. ※ Hot offset : When Fusing temperture is too high, printed image appears again in 95mm cycle</p> <p>3. Trobleshoot : Drop Fusing temperature by increasing (-) value.</p>
109-0110	0110-Labels Temp	Media type offset for fuser roll temperature.	0	-10 ~ 0	<p>1. Description : As (-) value increases, fusing temperature goes down in label mode.</p> <p>2. Trouble : Hot offset takes place, or printed paper is too hot when label is printed. ※ Hot offset : When Fusing temperture is too high, printed image appears again in 95mm cycle</p> <p>3. Trobleshoot : Drop Fusing temperature by increasing (-) value.</p>
109-0120	0120-Fuser Bias Duty	Fuser Bias Duty	0	-10 ~ +10	<p>1. Description : As the digit value increases, fuser bias increases.</p> <p>2. Trouble : When it is cold and dry, printed image of pastel tone appeas again in 95mm cycle.</p> <p>3. Trobleshoot : Increase fuser bias by increasing the digit.</p>
109-0130	0130-Thick Temp	Media type offset for fuser roll temperature.	0	-10 ~ 0	<p>1. Description : As (-) value increases, fusing temperature goes down in thick mode.</p> <p>2. Trouble : Hot offset takes place, or printed paper is too hot when thick paper is printed. ※ Hot offset : When Fusing temperture is too high, printed image appears again in 95mm cycle</p> <p>3. Trobleshoot : Drop Fusing temperature by increasing (-) value.</p>

Code	LCD display	Meaning	Default	Min. / Max	Description
110-0040	0040-LD Power Y	Yellow LD Power at Normal Speed	0	-10 ~ +10	+ : Optical Density increase - : Opticla Density decrease
110-0050	0050-LD Power M	Magenta LD Power at Normal Speed	0	-10 ~ +10	+ : Optical Density increase - : Opticla Density decrease
110-0060	0060-LD Power C	Cyan LD Power at Normal Speed	0	-10 ~ +10	+ : Optical Density increase - : Opticla Density decrease
110-0070	0070-LD Power K	Black LD Power at Normal Speed	0	-10 ~ +10	+ : Optical Density increase - : Opticla Density decrease
112-0000	0000-ACR condition	All Condition of ACR On/ Off	On	On/Off	On : ACR will be executed when environment changes. Off : ACR will be not executed in spite of environmental changes. ※ ACR means Auto Color Registration.
112-0115	0115-Fuser Motor Speed	Fuser Motor Speed For Regi.	0	-10 ~ +10 (step : 2)	+ : Fuser motor speed increase - : Fuser motor speed decrease
112-0116	0116-Feed Motor Speed	Feed Motor Speed For Regi.	0	-10 ~ +10 (step : 1)	+ : Fuser motor speed increase - : Fuser motor speed decrease

Test Routines Menu Item (Engine Diagnostic Test)

Code	LCD Display	Meaning	State Displayed
100-0040	0040-Color OPC	Color OPC BLDC Motor is On/Off	On[Off]
100-0050	0050-Color OPC Rdy	Detect if Color DEV BLDC Motor runs at normal speed	High[Low]
100-0060	0060-Color Dev	Color DEV BLDC Motor is On/Off	On[Off]
100-0070	0070-Color Dev Rdy	Detect if Color DEV BLDC Motor runs at normal speed	High[Low]
100-0120	0120-Exit Mot Fwd	Exit Motor Forward Fast On/Off	On[Off]
100-0130	0130-Exit Mot Slow	Exit Motor Forward Slow On/Off	On[Off]
100-0131	0131-Exit Mot Bwd	Exit Motor Forward Backward On/Off	On[Off]
100-0191	0191-System Fan Run	Start/Stop System Fan run	On[Off]
100-0192	0192-System Fan Rdy	Detects if System Fan runs at normal speed.	High[Low]
101-0000	0000-MP Feed Clutch	Engages drive to pick up a paper from bypass Tray(MP Tray).	On[Off]
101-0010	0010-Tray1 Pickup	Engages drive to pick up a paper from tray1.	On[Off]
101-0020	0020-Tray2 Pickup	Engages drive to pick up a paper from tray2. (Optional)	On[Off]
101-0120	0120-Tray1 Feed Mot	T1 Feed Motor On/Off	On[Off]
101-0130	0130-Tray2 Feed Mot	T2 Feed Motor On/Off	On[Off]
101-0200	0200-K Dev Clutch	Engages drive to Color, Motor dev	On[Off]
102-0000	0000-Tray1 Home Pos	Detect when tray1 is closed.	Closed[Opened]
102-0010	0010-Tray1 Empty	Detect when paper is in Tray1.	High[low]
102-0070	0070-Tray2 Home Pos	Detect when tray2 is closed.	Closed[Opened]
102-0080	0080-Tray2 Empty	Detect when paper is in tray2.	High[low]
102-0090	0090-Tray2 Size1	Detects whether auto size1 sensor of tray2 is high or low.	High[low]
102-0100	0100-Tray2 Size2	Detects whether auto size2 sensor of tray2 is high or low.	High[low]
102-0110	0110-Tray2 Size3	Detects whether auto size3 sensor of tray2 is high or low.	High[low]
102-0280	0280-MP Empty	Detects when paper is in Bypass Tray(MP Tray).	High[low]
102-0290	0290-Feed Sensor	Detect when a paper is at Feed sensor.	High[low]
102-0370	0370-Exit Sens	Detect when a paper is at Exit. sensor.	High[low]
105-0030	0030-K MHV Bias	Black MHV bias voltage on at normal drive level	On[Off]
105-0031	0031-Color MHV Bias	Color MHV bias voltage on at normal drive level	On[Off]
106-0000	0000-Y Dev Bias	Yellow Dev bias voltage on at normal drive level	On[Off]
106-0010	0010-M Dev Bias	Magenta Dev bias voltage on at normal drive level	On[Off]
106-0020	0020-C Dev Bias	Cyan Dev bias voltage on at normal drive level	On[Off]
106-0030	0030-K Dev Bias	Black Dev bias voltage on at normal drive level	On[Off]
106-0031	0031-K Dev AC	Black Dev bias AC voltage on at normal drive level	On[Off]
106-0032	0032-C Dev AC	Cyan Dev bias AC voltage on at normal drive level	On[Off]
106-0033	0033-M Dev AC	Magenta Dev bias AC voltage on at normal drive level	On[Off]
106-0034	0034-Y Dev AC	Yellow Dev bias AC voltage on at normal drive level	On[Off]
107-0000	0000-Y THV Bias	Yellow THV bias voltage on at normal drive level	On[Off]
107-0010	0010-M THV Bias	Magenta THV bias voltage on at normal drive level	On[Off]

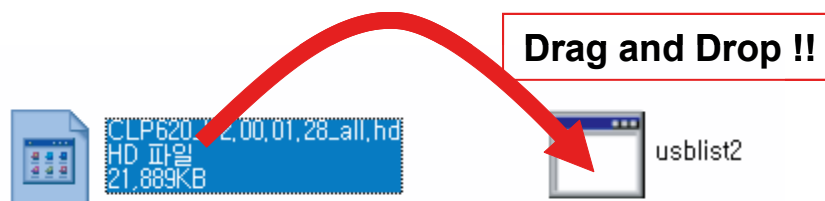
Code	LCD Display	Meaning	State Displayed
107-0020	0020-C THV Bias	Cyan THV bias voltage on at normal drive level	On[Off]
107-0030	0030-K THV Bias	Black THV bias voltage on at normal drive level	On[Off]
107-0040	0040-Y THV Bias R	Detect what the THV value is on the THV Roller	Numeric 3 digits
107-0120	0120-ATTR+ Bias	ATTR plus bias voltage on at normal drive level	On[Off]
107-0140	0140-ATTR- Bias	ATTR Minus bias voltage on at normal drive level	On[Off]
107-0150	0150-PTL	Pre Transfer Lamp 1	On[Off]
107-0160	0160-Erase Lamp	Erase Lamp 1	On[Off]
109-0000	0000-Temp A	Detects what the temperature A is on fuser.	Numeric 3 digits
109-0010	0000-Temp B	Detects what the temperature B is on fuser.	Numeric 3 digits
109-0030	0030-Fuser Mot Fwd	Fuser Motor Forward On/Off	On[Off]
109-0040	0040-Fuser Fan Run	Fuser Fan Motor On/Off	On[Off]
109-0050	0050-Fuser Bias	Fuser bias voltage on at normal drive level	On[Off]
109-0090	0090-Fuser Power On	It controls temperature of fuser as 180 degrees.	On[Off]
110-0000	0000-LSU Motor1 Rdy	Detects if LSU motor1 runs at normal speed.	High[Low]
110-0010	0010-LSU Motor2 Rdy	Detects if LSU motor2 runs at normal speed.	High[Low]
110-0060	0060-LSU Motor1 Run	LSU Motor1 On/Off	On[Off]
110-0070	0070-LSU Motor2 Run	LSU Motor2 On/Off	On[Off]
110-0080	0080-LD Power1	LSU LD1 Power On/Off (yellow)	On[Off]
110-0090	0090-LD Power2	LSU LD2 Power On/Off (magenta)	On[Off]
110-0100	0100-LD Power3	LSU LD3 Power On/Off (cyan)	On[Off]
110-0110	0110-LD Power4	LSU LD4 Power On/Off (black)	On[Off]
112-0000	0000-ACR Exec Now	Start Auto Color Registration	On[Off]
112-0010	0010-Manu Regi Clear	Clear Manual Offset Value of Color Regi.	On[Off]

4.1.5 Firmware Upgrade

- USB and Network port are used to F/W upgrade.
- Network applications (SWAS, SWS) can be used for network port upgrade.

4.1.5.1 Using the USB cable

1. Delete all processing job.
2. Confirm USB connection.
If the network cable is connected, unplug it and connect the USB cable to the machine.
3. Download the firmware file from GSPN or other site and store it to your PC.
4. Decompress the file in some folder.
5. Drag the F/W file and Drop down on the usblast2.exe file.
(CLP-620/670 series ROM have file name like 'CLP620_VA.BB.CC.DD.hd'.)



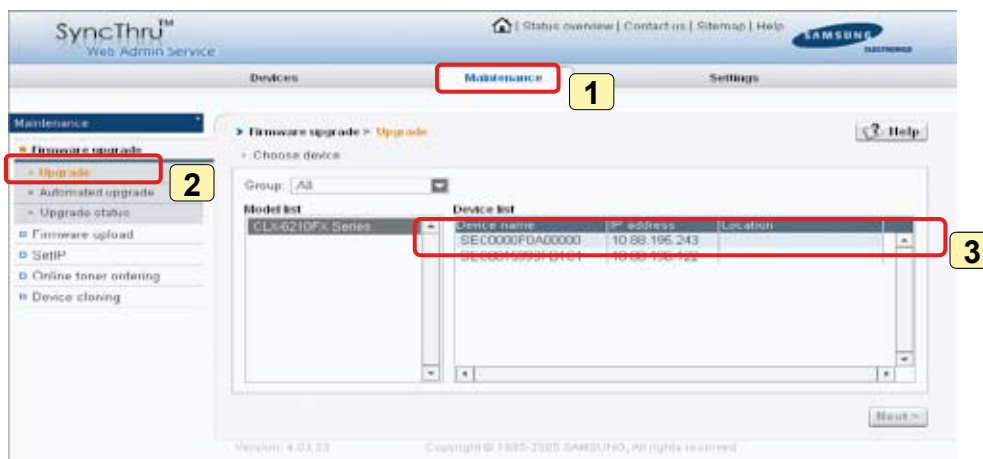
6. It will automatically update and reset.

4.1.5.2 F/W upgrade using SWAS (SyncThru Web Admin Service)

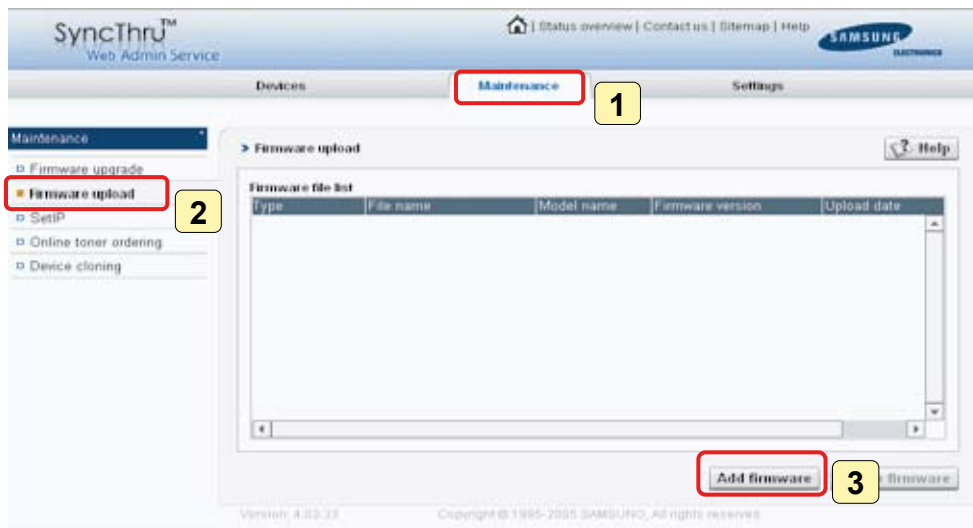
To use below method, SWAS program is installed in PC.
Start the SWAS program.

(Windows Start menu > Programs > Samsung Network Printer Utilities > SyncThru Web Admin Service)

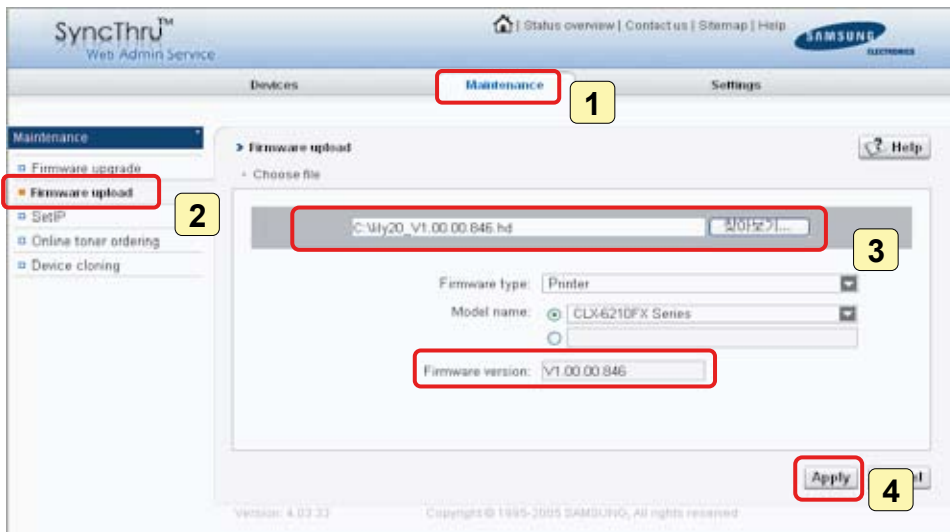
1. Firmware Upgrade → Upgrade (check device using IP address)



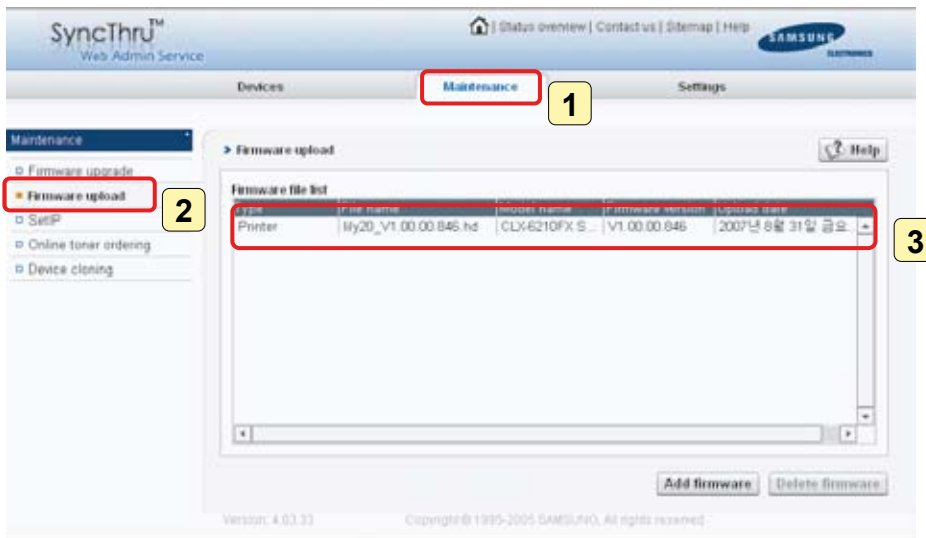
2. Maintenance → Firmware upload (register firmware)



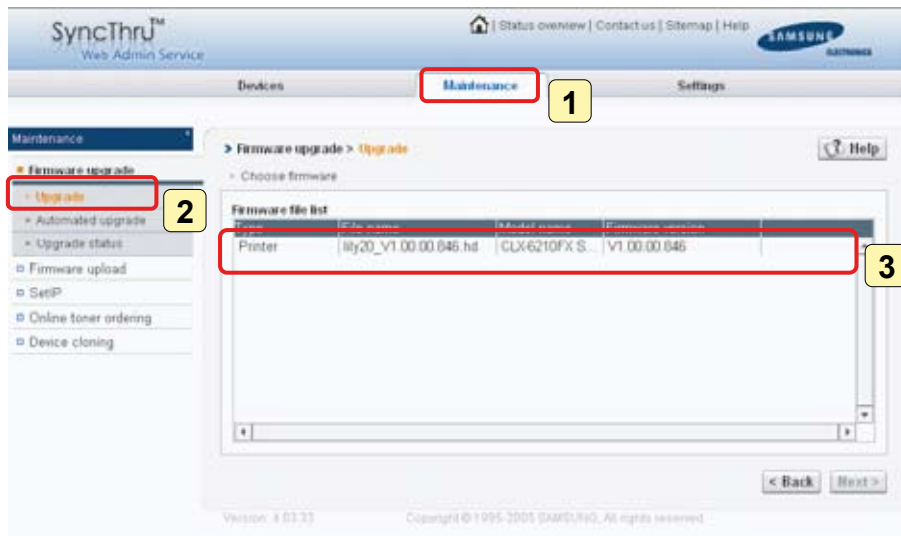
3. Maintenance → Firmware Upload (upload firmware)



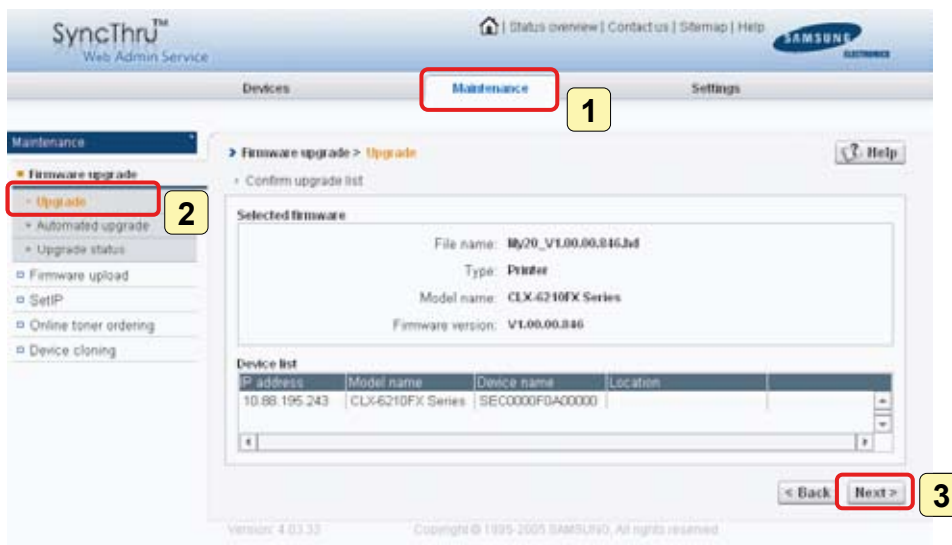
4. Maintenance → Firmware Upload (confirm uploaded firmware)



5. Maintenance → Firmware Upgrade → Upgrade (choose firmware)



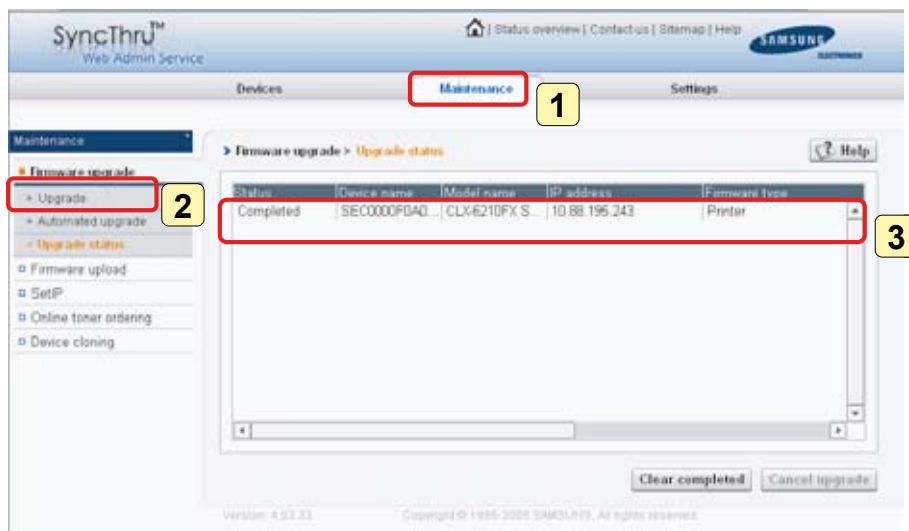
6. Maintenance → Firmware Upgrade → Upgrade (choose firmware)



7. Maintenance → Firmware Upgrade → Upgrade



8. Maintenance → Firmware Upgrade → Upgrade (Done)



4.1.5.3 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 connect this server via wired and wireless network using your web browser in the remote place.

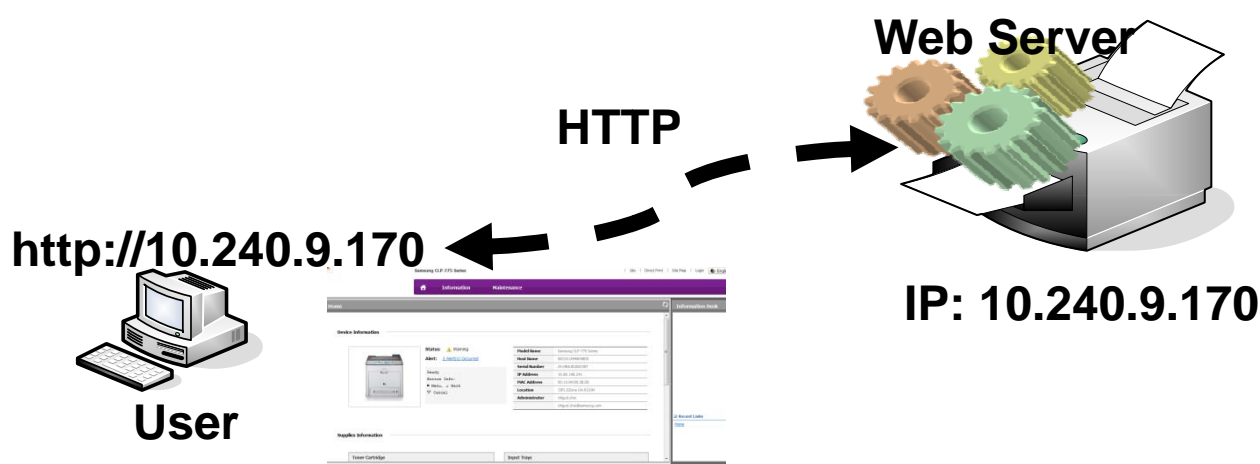
Connecting preparations

- Wired or Wireless Network connection is established.
- Web 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

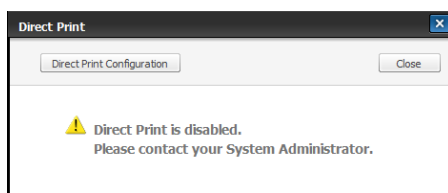
Please, change SWS Default ID and Password for system security in case of your first connection.

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'.



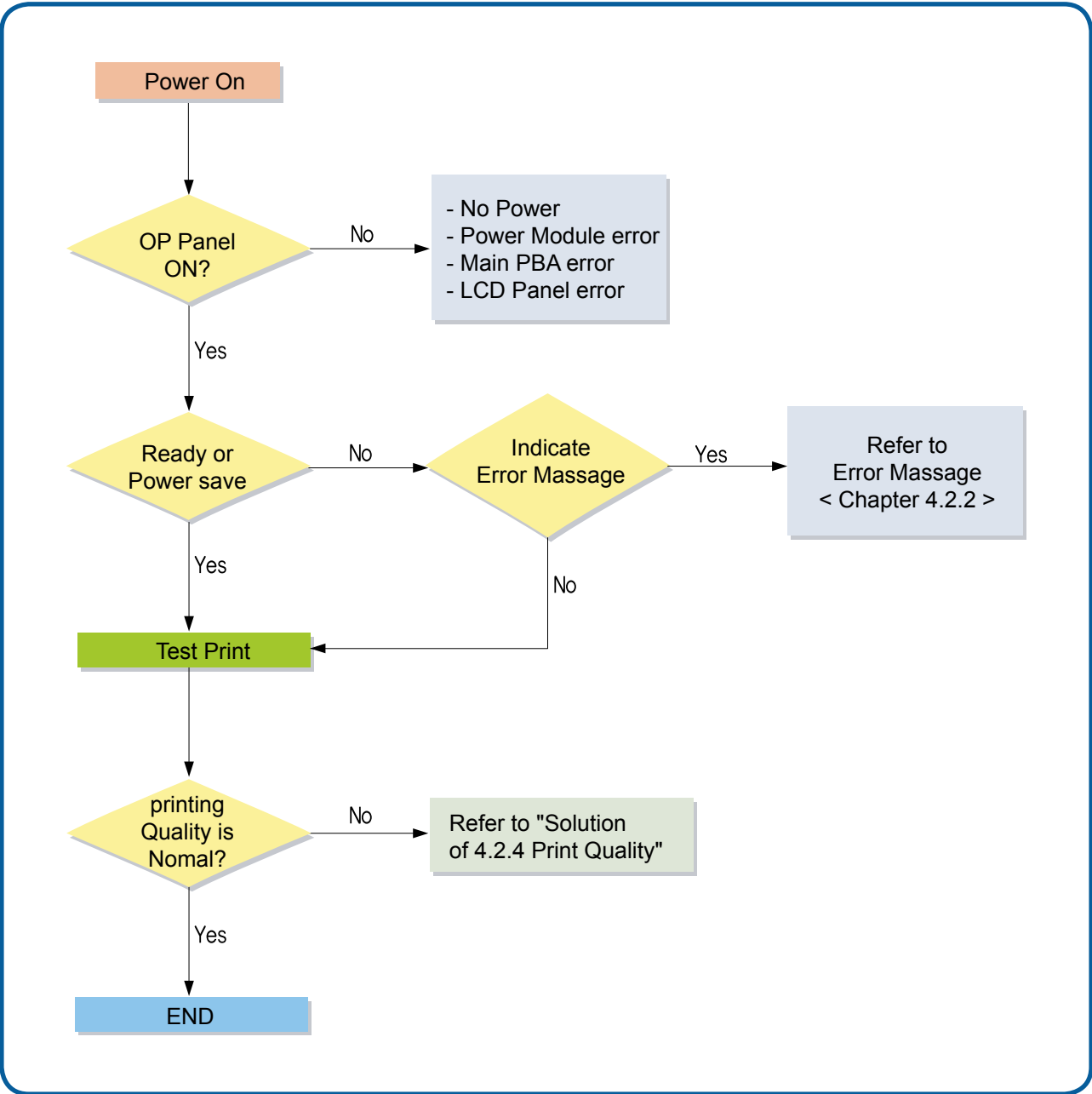
Or,

- 1) Click 'System Security' in the 'Security' menu.
- 2) Select 'Feature Management' in the left frame.
- 3) In the 'Services' Menu, check 'Direct Print'.

4.2 Troubleshooting

4.2.1 Procedure of Checking the Symptoms

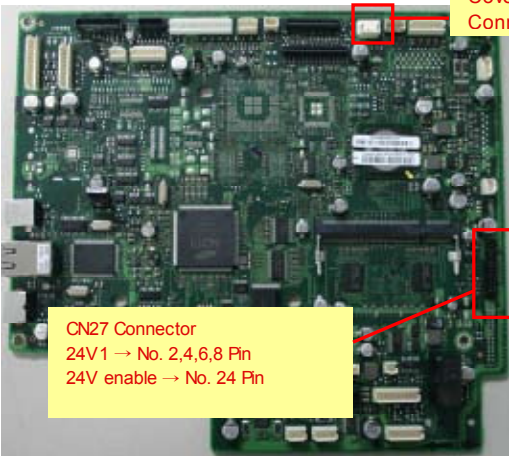
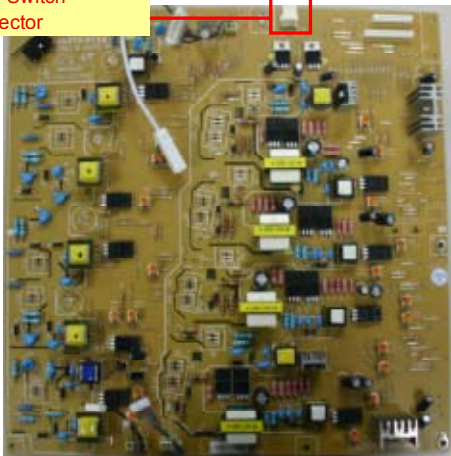
Before attempting to repair the printer first obtain a detailed description of the problem from the customer.



4.2.2 Error Message and Troubleshooting

Messages appear on the Smart Panel program window or on the control panel to indicate machine status or errors. Refer to the tables below to correct the problem.

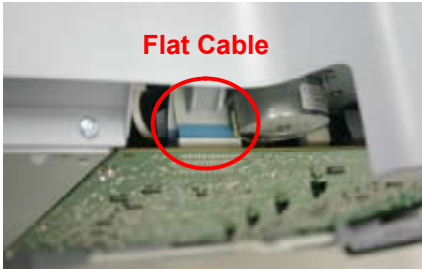

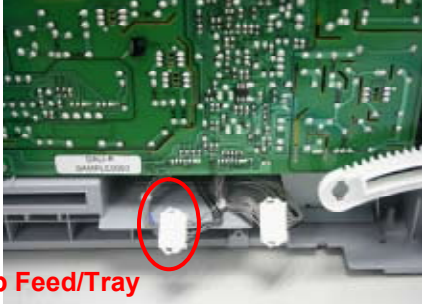
Error Code	Error Message	Troubleshooting Page
01-000	Door Open/Check Transfer Belt	21 page
01-004	Paper Jam in MP Tray	22 page
01-005	Paper Jam in Tray1	23 page
01-006, 01-018	Paper Jam in tray2	24 page
01-009	Paper Jam inside machine	25 page
01-010	Paper Jam in exit area	26 page
01-014	Paper Jam bottom of duplex	27 page
01-017	Output bin Full Remove paper	28 page
02-000	Error #02-000. Turn off then on	29 page
02-001, 02-006	Error #02-001/02-006. Turn off then on	30 page
02-002	Error #02-002. Turn off then on	31 page
02-005	Error #02-005. Turn off then on	31 page
03-006/007	Error #03-006/007. Turn off then on	32 page
03-008	Error #03-008. Turn off then on	32 page
03-009	Error #03-009. Turn off then on	32 page
03-015	Error #03-015. Turn off then on	33 page
04-001	Error #04-001. Turn off then on	34 page
04-002	Error #04-002. Turn off then on	34 page
06/25/26/27-006	Error #06/25/26/27-006 [XXX] toner ※ [XXX] : color	35 page
06/25/26/27-007	Error #06/25/26/27-007 [XXX] toner ※ [XXX] : color	35 page
06/25/26/27-020	Error #06/25/26/27-020 [XXX] toner ※ [XXX] : color	35 page
12-000	Load [Letter] in Tray1	36 page
12-001	Load [Letter] in Tray2	36 page
12-004	Load [Letter] in MP	37 page
21-002	Paper Empty in Tray1	38 page
21-003	Pulled Out Tray1 Cassette	39 page
21-010	Paper Empty in MP Tray	40 page
21-018	Paper Empty in Tray2	41 page
21-019	Pulled Out Tray2 Cassette	42 page
28-001	Not installed Transfer belt	43 page
28-002	Not Compatible Transfer belt	44 page
28-004	Replace new Fuser unit	44 page
28-005	Not Installed Fuser unit	44 page

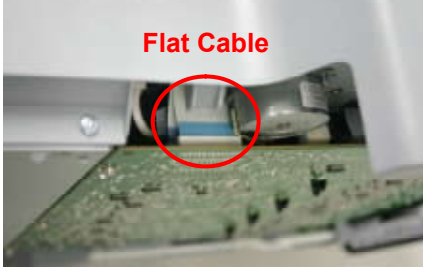

<p>● Code 01-000</p>	<p>● Error message Door Open/Check Transfer Belt</p>
<p>● Symptom The front cover or the top cover is not securely latched or the transfer belt is not installed.</p>	
<p>● Possible Cause</p> <ol style="list-style-type: none"> 1. Harness is defective, Connector is not connected properly. 2. Sensor is defective. 	
<p>● Troubleshooting method :</p> <ol style="list-style-type: none"> 1. Close the front cover or top cover perfectly. 2. If the PTB is not installed, install it. 3. Check the cover switch harness between Main PBA and HVPS. 4. Check the 24V enable signal on Main PBA. If the voltage is high(5V), replace the Main PBA. 5. Check the 24V1 on SMPS. If there is no output, replace the SMPS board. 	
<div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;">  <p style="color: red; font-weight: bold;">Cover Switch Connector</p> <p style="color: red; font-weight: bold;">CN27 Connector 24V 1 → No. 2,4,6,8 Pin 24V enable → No. 24 Pin</p> </div> <div style="text-align: center;">  </div> </div>	

<ul style="list-style-type: none"> • Code 01-004 	<ul style="list-style-type: none"> • Error message Paper Jam in MP tray
<ul style="list-style-type: none"> • Symptom At printing, the paper from the MP tray has not reached to the feed sensor within a programmed period of time after pick up. 	
<ul style="list-style-type: none"> • Possible Cause <ol style="list-style-type: none"> 1. Pickup Clutch does not work. 2. Pickup roller rubber is worn out. 3. Feed Sensor is defective. 	
<ul style="list-style-type: none"> • Troubleshooting method <ol style="list-style-type: none"> 1. Remove the jammed paper in MP tray. 2. Check the MP empty sensor of the Cassette. If it is defective, replace it. 3. If the pick up roller does not rotate, replace the pick up solenoid. 4. Check the feed sensor by using EDC mode after feed a paper from Cassette. Reconnect the harness. If the problem persists, replace the defective part. <ul style="list-style-type: none"> * Actuator-Feed (JC66-02294A) * Photo-Interrupter (0604-001095) 	
<div style="display: flex; justify-content: space-around; align-items: flex-end;"> <div style="text-align: center;">  <p>Flat</p>  <p>6p Feed/Tray empty 7p MP empty/MP solenoid</p> </div> <div style="text-align: center;">  <p>Pickup Solenoid</p> </div> </div>	

<ul style="list-style-type: none"> ● Code 01-005 	<ul style="list-style-type: none"> ● Error message Paper jam in tray 1
<ul style="list-style-type: none"> ● Symptom At printing, the paper from the tray1 has not reached to a feed sensor within a programmed period of time after pick up. 	
<ul style="list-style-type: none"> ● Possible Cause 1. Pickup Clutch does not work. 2. Pickup roller rubber is worn out. 3. Feed Sensor is defective. 	
<ul style="list-style-type: none"> ● Troubleshooting method 1. Take out the cassette and remove the jammed paper. 2. Check if the Guide-adjust is adjusted for paper accurately. 3. Check the separator pad of the cassette. If it become loose or life has expired, replace it. * MEA-HOLDER PAD SHEET (JC97-03077A) 4. If the pick up roller does not rotate, check the MEA-GEAR PICK UP(JC97-02895A) and SOLENOID-PICK UP(JC33-00022A). If it is defective, replace it. 5. If the pick up roller rotates but the paper is not feeding, replace the Feed motor (JC31-00112A). 6. Reconnect connector of CN4,5,9 on HVPS. 7. Reconnect connector of CN1,2 on HVPS and check the flat cable. 8. Check if the life of pick up roller(JC90-00932A) has expired. If so, replace it. After replacing the pick up roller, enter the tech mode and reset the count of the pick up roller. 9. Check Actuator-Feed. If it does not work correctly, check the feed-sensor. 10. Check if the MEA-KNOCK UP PLATE (JC97-02888A) is deformed. 	

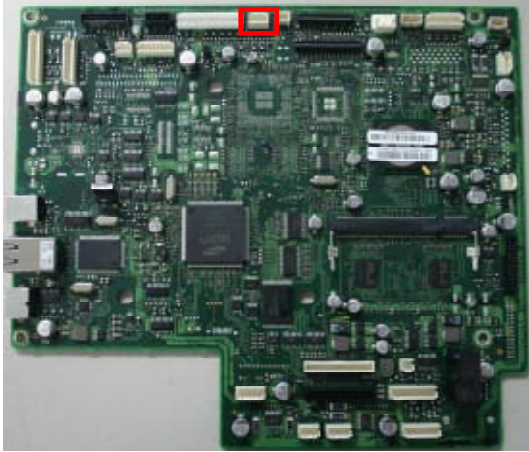
<ul style="list-style-type: none">• Code 01-006 01-018	<ul style="list-style-type: none">• Error message Paper jam in tray 2
<ul style="list-style-type: none">• Symptom At printing, the paper from the tray2 has not reached to a feed sensor within a programmed period of time after pick up.	
<ul style="list-style-type: none">• Possible Cause<ol style="list-style-type: none">1. Pickup Clutch does not work.2. Pickup roller rubber is worn out.3. Feed Sensor is defective.	
<ul style="list-style-type: none">• Troubleshooting method :<ol style="list-style-type: none">1. Take out the 2nd cassette and remove the jammed paper.2. If the pick up roller does not rotate, check the Gear Pick up(JC97-03228A). If it is defective, replace it.3. If the pick up roller rotates but the paper is not feeding, replace the Clutch-Feed(JC97-03270A).4. Reconnect the CN9 connector on Main PBA.5. Check the sensor and connector in SCF.	

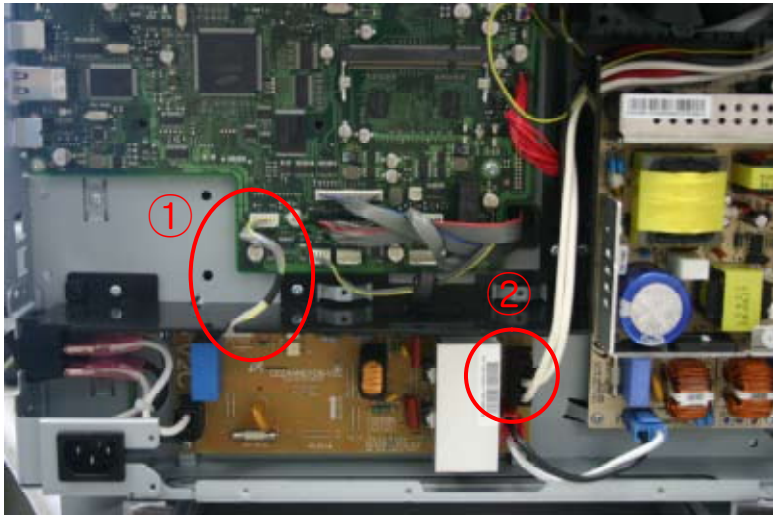
<ul style="list-style-type: none"> • Code 01-009 	<ul style="list-style-type: none"> • Error message Paper jam inside of machine
<ul style="list-style-type: none"> • Symptom Paper jam inside of machine <ol style="list-style-type: none"> 1. At Warm-up, the paper is jamming at Regi sensor or Feed sensor. 2. At printing, the paper is detecting at Regi sensor or Feed sensor continually. 3. At printing, the paper is not detected at exit sensor within a regular time. 	
<ul style="list-style-type: none"> • Possible Cause <ol style="list-style-type: none"> 1. Feed sensor or Regi Sensor is defective. 2. Exit sensor is defective. 3. Feed Clutch is defective. 4. Regi Clutch is defective. 	
<ul style="list-style-type: none"> • Troubleshooting method <ol style="list-style-type: none"> 1. Check the Spring tension of the Regi. roller and Regi shaft. If the spring is defective, replace it. 2. Replace the actuator fuser and exit sensor. 3. Reconnect the flat cable / exit sensor harness / Feed sensor harness. 4. Check the OPC motor working. / OPC lock. 5. Check PTB working condition, if PTB-Belt is torn. 	
<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  <p>Flat Cable</p> </div> <div style="text-align: center;">  <p>3p Exit sensor</p> </div> </div> <div style="text-align: center; margin-top: 20px;">  <p>6p Feed/Tray empty</p> </div>	

<ul style="list-style-type: none"> • Code 01-010 	<ul style="list-style-type: none"> • Error message Paper jam in exit area
<ul style="list-style-type: none"> • Symptom Paper jam in exit area 	
<ul style="list-style-type: none"> • Possible Cause - If there is no jammed paper but error has occurred at warm-up, exit sensor is defective. 	
<ul style="list-style-type: none"> • Troubleshooting method <ol style="list-style-type: none"> 1. If the actuator fuser sensing part has some problems, replace the actuator fuser and exit sensor. 2. Reconnect the flat cable / Exit sensor harness. <div style="display: flex; justify-content: space-around; align-items: center;"> <div data-bbox="347 860 772 1128" style="text-align: center;">  <p>Flat Cable</p> </div> <div data-bbox="785 860 1241 1128" style="text-align: center;">  <p>3p Exit sensor</p> </div> </div>	

<ul style="list-style-type: none">• Code 01-014	<ul style="list-style-type: none">• Error message Paper jam at the bottom of duplex path
<ul style="list-style-type: none">• Symptom <ol style="list-style-type: none">1. At Warm-up, Duplex Ready sensor has detected the paper.2. At Printing, Duplex sensor is not off within a programmed period of time after paper moves into duplex path.	
<ul style="list-style-type: none">• Possible Cause <ol style="list-style-type: none">1. Check the Duplex Ready Sensor Harness and Connector.2. Check if the UI message is changed by the Duplex Ready Sensor operation.3. Check the duplex ready sensor.	
<ul style="list-style-type: none">• Troubleshooting method <ol style="list-style-type: none">1. Open the Front Cover and separate the PTB unit. Remove the Jammed paper.2. If the paper is not reached to the duplex path after the exit sensor sensing, check the Clutch-BK deve. If it is defective, replace it.3. Check if exit actuator's replace time is not accuracy. If so, check if the spring of exit actuator exists or not.4. Check if exit motor reverses when the paper needs to reload to the printer.	

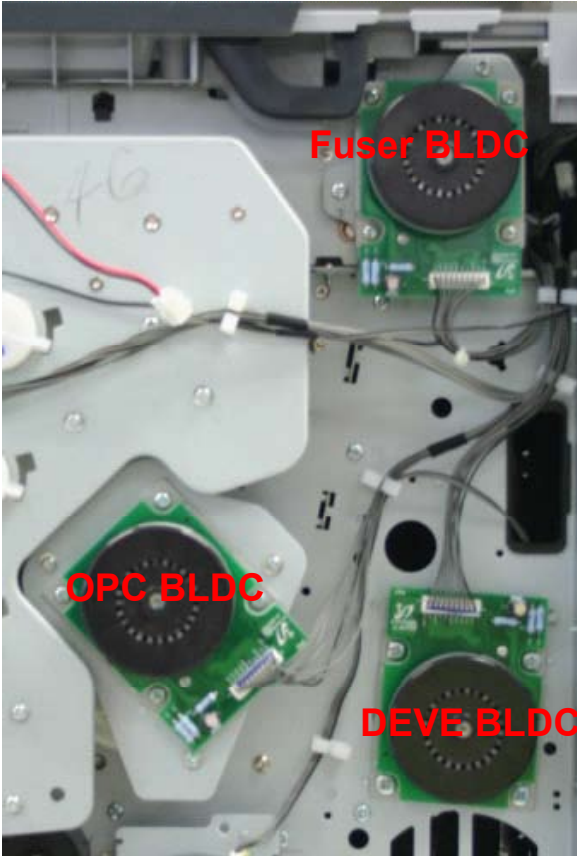
<ul style="list-style-type: none"> ● Code <p>01-017</p>	<ul style="list-style-type: none"> ● Error message <p>Output bin Full. Remove paper</p>
<ul style="list-style-type: none"> ● Symptom <p>The out-bin full sensor is on for 600ms.</p>	
<ul style="list-style-type: none"> ● Possible Cause <ol style="list-style-type: none"> 1. Check the Out-Bin Full Sensor Harness and Connector. 2. Check if the UI message is changed by the Out-Bin Full Sensor operation. 3. Check the Out-Bin Full Sensor. 	
<ul style="list-style-type: none"> ● Troubleshooting method <ol style="list-style-type: none"> 1. Clear the paper on exit tray. 2. Reconnect the CN3 connector on Main-PBA. 3. Replace the Actuator-Stacker and Actuator-OutFull. <ul style="list-style-type: none"> * Actuator-Stacker (JC66-02065A) * Actuator-Outfull (JC66-02064A) * Photo-Interrupter (0604-001095) 	

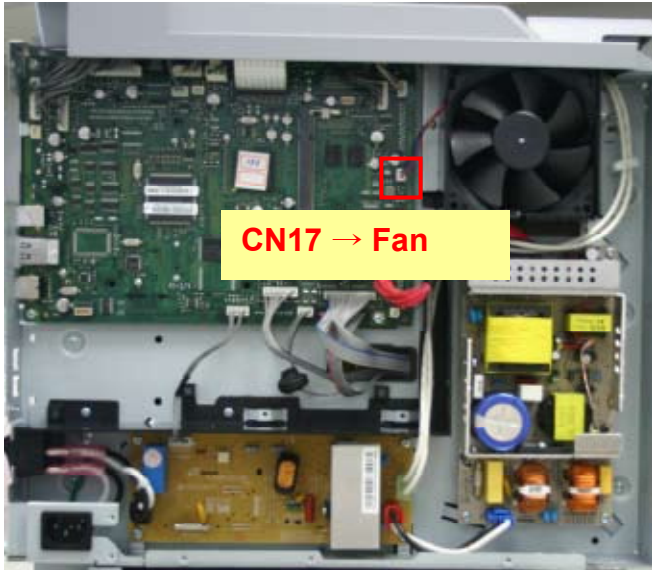
<ul style="list-style-type: none">• Code 02-000	<ul style="list-style-type: none">• Error message Error :#02-000 Please turn off then on.
<ul style="list-style-type: none">• Symptom At Warm-up, this error has occurred. The machine does not work until power off/on.	
<ul style="list-style-type: none">• Possible Cause Fuser Unit is not installed and AC is not supplied to the Heat Lamp.	
<ul style="list-style-type: none">• Troubleshooting method<ol style="list-style-type: none">1. Turn off the power. And turn on the power.2. If the problem persists, replace the fuser unit.3. If the problem persists after replacing the fuser unit, reconnect the CN35 connector on Main-PBA.4. If the problem persists, replace the Main-PBA. <p style="text-align: center;">CN35 → Thermistor</p> 	

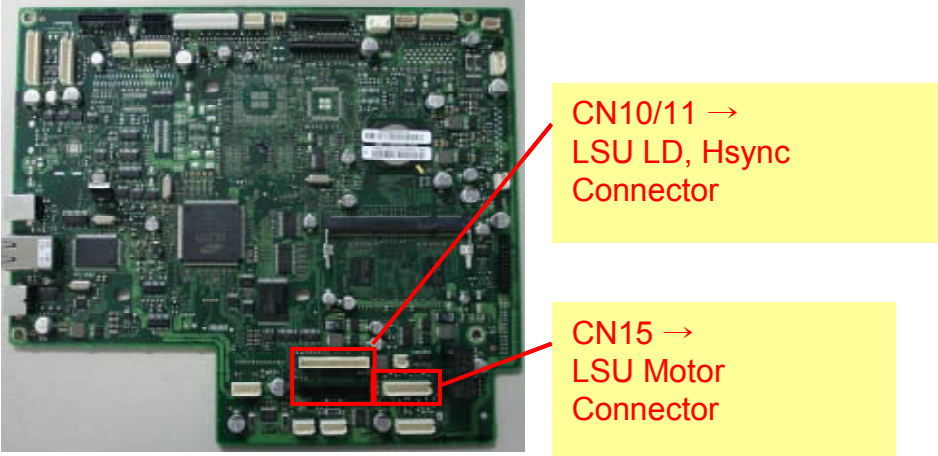
<ul style="list-style-type: none">• Code 02-001 02-006	<ul style="list-style-type: none">• Error message Error :#02-001 Please turn off then on.
<ul style="list-style-type: none">• Symptom At Warm-up, this error has occurred. The machine does not work until power off/on.	
<ul style="list-style-type: none">• Possible Cause Fuser Unit is not installed and AC is not supplied to the Heat Lamp.	
<ul style="list-style-type: none">• Troubleshooting method <ol style="list-style-type: none">1. Turn off the power. And turn on the power.2. Check the connection of the Fuser AC on FDB ②.3. Check the Fuser control harness ①.4. Remove the resistance value of the thermostat. If the value is infinite, replace the thermostat.5. If the problem persists, replace the Fuser unit.6. Replace the SMPS board or FDB (Fuser drive board).	
	

<ul style="list-style-type: none"> ● Code 02-002 	<ul style="list-style-type: none"> ● Error message System Error :#02-002 Please turn off then on.
<ul style="list-style-type: none"> ● Symptom The fuser unit is overheated. The machine does not work until power off/on. 	
<ul style="list-style-type: none"> ● Possible Cause The machine can not control fuser temperature. 	
<ul style="list-style-type: none"> ● Troubleshooting method <ol style="list-style-type: none"> 1. Turn off the power. And turn on the power. 2. Replace the Fuser unit. 3. Replace the FDB. 4. Replace the Main-PBA. 	

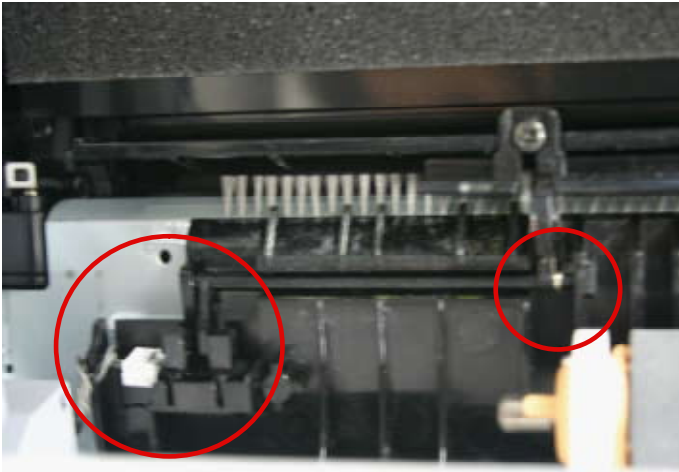
<ul style="list-style-type: none"> ● Code 02-005 	<ul style="list-style-type: none"> ● Error message System Error :#02-005 Please turn off then on.
<ul style="list-style-type: none"> ● Symptom The ADC port is short. 	
<ul style="list-style-type: none"> ● Possible Cause The machine can not control fuser temperature. 	
<ul style="list-style-type: none"> ● Troubleshooting method <ol style="list-style-type: none"> 1. Turn the power off then on again. 2. If the problem persists, replace the Main PBA. 	

<ul style="list-style-type: none">• Code 03-006/007 03-008 03-009	<ul style="list-style-type: none">• Error message Error: #03-006/007 / 008 / 009 Turn off then on
<ul style="list-style-type: none">• Symptom Motor Signal is abnormal.	
<ul style="list-style-type: none">• Possible Cause 1. Harness is defective, Connector is not connected properly. 2. Corresponding motor is defective. 3. Main Board is defective.	
<ul style="list-style-type: none">• Troubleshooting method 1. Check the motor connector. Reconnect the harness. 2. If the problem persists, replace the BLDC motor. 3. If the problem persists after replacing BLDC motor, replace the Main PBA.	
 <p>The image shows the internal components of a device, specifically three BLDC motors. The motors are labeled in red text: 'Fuser BLDC' at the top, 'OPC BLDC' at the bottom left, and 'DEVE BLDC' at the bottom right. Each motor is mounted on a green printed circuit board (PCB) and is connected to a harness of wires. The device's internal structure is white and grey.</p>	

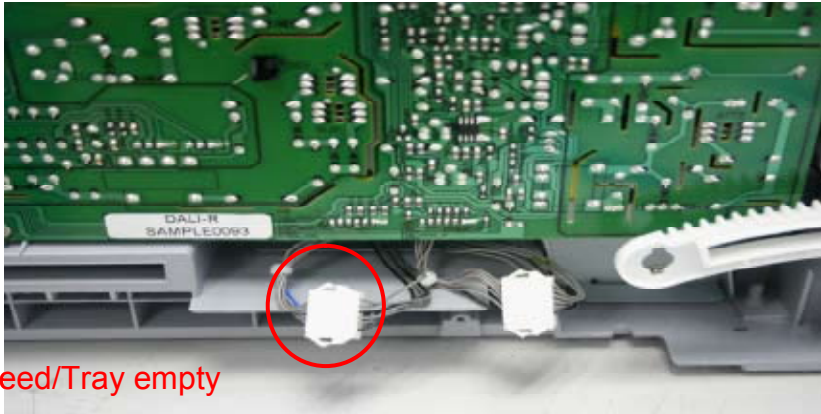
<ul style="list-style-type: none">• Code 03-015	<ul style="list-style-type: none">• Error message Error: #03-015 Turn off then on
<ul style="list-style-type: none">• Symptom Fan does not operate.	
<ul style="list-style-type: none">• Possible Cause Fan is defective.	
<ul style="list-style-type: none">• Troubleshooting method <ol style="list-style-type: none">1. Check the CN17 connector (FAN) on Main PBA.2. If the FAN is defective, replace it.3. If the problem persists, replace the Main PBA. <div data-bbox="466 972 1121 1541"><p>The image shows the internal components of a laptop chassis. A green Main PBA (Printed Board Assembly) is visible, with a red box highlighting a specific connector labeled 'CN17'. A yellow callout box with the text 'CN17 → Fan' points to this connector. To the right of the PBA, a black fan is visible. Below the PBA, a yellow battery pack is connected to the board. The chassis is open, showing the internal layout of components.</p></div>	

<ul style="list-style-type: none"> • Code <p>04-001 04-002</p>	<ul style="list-style-type: none"> • Error message <p>Error: #04-001. Turn off then on. Error: #04-002. Turn off then on.</p>
<ul style="list-style-type: none"> • Symptom <p>Laser beam detect signal has not occurred or is irregular. LSU motor does not operate.</p>	
<ul style="list-style-type: none"> • Possible Cause <ol style="list-style-type: none"> 1. Harness is defective, Connector is not connected properly. 2. LSU is defective. 3. Main Board is defective. 	
<ul style="list-style-type: none"> • Troubleshooting method <ol style="list-style-type: none"> 1. Check the LSU connector on Main PBA. Reconnect it. If necessary, replace it. 2. If the problem persists, replace the LSU or Main PBA. <div data-bbox="325 1010 1267 1464" style="text-align: center;">  </div>	

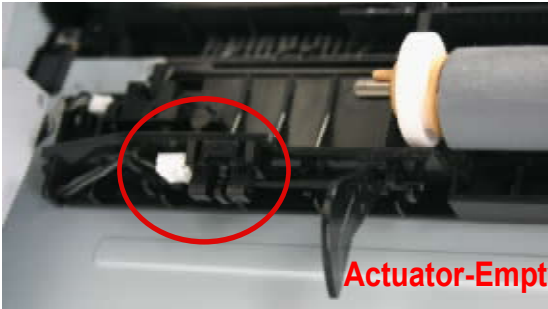
<ul style="list-style-type: none"> • Code 06-006/7/20 25-006/7/20 26-006/7/20 27-006/7/20 	<ul style="list-style-type: none"> • Error message Error: #06/25/26/27-006/7/20 [XXX] toner ※ [XXX] : color
<ul style="list-style-type: none"> • Symptom and Possible Cause The toner cartridge is not installed properly or its connector is contaminated. (006 : Write Error / 007 : Communication Error / 020 : Read Error) 6 : K Cartridge 25 : Cyan Cartridge 26 : Magenta Cartridge 27 : Yellow Cartridge 	
<ul style="list-style-type: none"> • Troubleshooting method 1. Open the front cover. 2. Reinstall Cartridge. 3. Close the front cover perfectly. 	

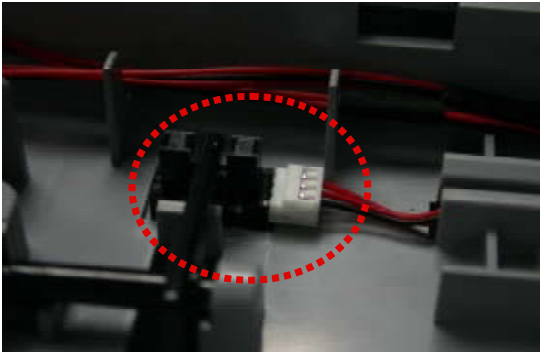
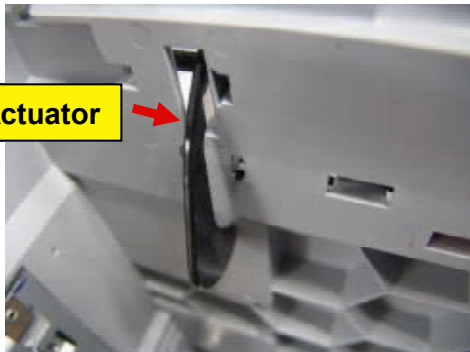
<ul style="list-style-type: none">• Code 12-000 12-001	<ul style="list-style-type: none">• Error message Load [Letter] in Tray 1 Load [Letter] in Tray 2
<ul style="list-style-type: none">• Symptom The paper in tray is not proper.	
<ul style="list-style-type: none">• Possible Cause 1. Check the harness and connector of the Tray1/2 Size Sensor. 2. Tray1/2 Size Sensor is defective.	
<ul style="list-style-type: none">• Troubleshooting method 1. Pull out Tray1 Cassette. 2. Load [Letter] paper in Tray1 Cassette. 3. Install Tray1 Cassette. 4. If the problem persists, check if Feed-Actuator works correctly. <ul style="list-style-type: none">a. Check the spring is put in right place of Actuator Feed.b. Check the connector fits on photo sensor. 	

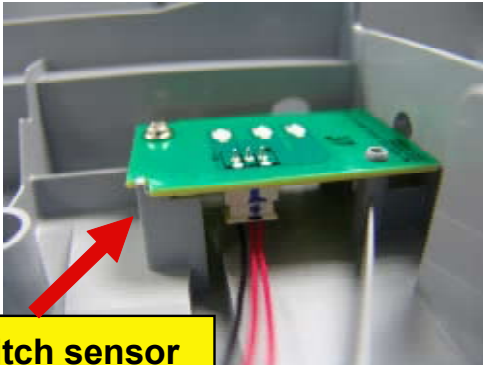
<ul style="list-style-type: none">• Code 12-004	<ul style="list-style-type: none">• Error message Load [Letter] in MP
<ul style="list-style-type: none">• Symptom The paper in MP tray is not proper.	
<ul style="list-style-type: none">• Possible Cause<ol style="list-style-type: none">1. Check the harness and connector of the MP Size Sensor.2. MP Size Sensor is defective.	
<ul style="list-style-type: none">• Troubleshooting method<ol style="list-style-type: none">1. Open MP Tray.2. Load [Letter] paper in MP Tray.	

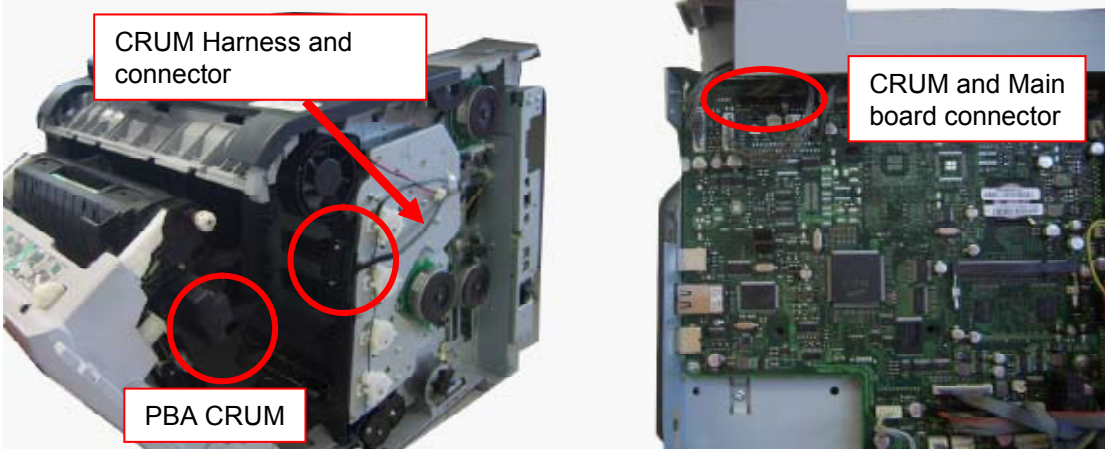
<ul style="list-style-type: none">• Code 21-002	<ul style="list-style-type: none">• Error message Paper Empty in tray1
<ul style="list-style-type: none">• Symptom There is the paper in tray1 but error message is displayed.	
<ul style="list-style-type: none">• Possible Cause<ol style="list-style-type: none">1. Tray1 empty sensor harness is not connected properly. .2. Empty Sensor is defective.	
<ul style="list-style-type: none">• Troubleshooting method<ol style="list-style-type: none">1. Check the paper empty sensor connector. Reconnect it.2. Check the paper empty sensor. If it is defective, replace it.3. Check if the actuator is broken. <div data-bbox="427 972 1251 1384"></div>	

<ul style="list-style-type: none">• Code 21-003	<ul style="list-style-type: none">• Error message Pulled Out Tray1 Cassette
<ul style="list-style-type: none">• Symptom Tray1 cassette is inserted in machine but error message is displayed.	
<ul style="list-style-type: none">• Possible Cause<ol style="list-style-type: none">1. The connector of the Tray1 Home Position Sensor is not connected properly.2. Tray1 Home Position Sensor is defective.	
<ul style="list-style-type: none">• Troubleshooting method<ol style="list-style-type: none">1. Reinstall the tray1 cassette.2. Reconnect the / Feed sensor harness. <div data-bbox="507 817 1150 1142" data-label="Image"><p>6p Feed/Tray empty</p></div> <ol style="list-style-type: none">3. Check the CST Draw connector. Reconnect it. <div data-bbox="549 1296 1042 1666" data-label="Image"></div>	

<ul style="list-style-type: none">• Code 21-010	<ul style="list-style-type: none">• Error message Paper Empty in MP tray
<ul style="list-style-type: none">• Symptom There is the paper in MP tray but error message is displayed.	
<ul style="list-style-type: none">• Possible Cause <ol style="list-style-type: none">1. MP Paper Empty Sensor harness is not connected properly.2. MP Paper Empty Sensor is defective.	
<ul style="list-style-type: none">• Troubleshooting method <ol style="list-style-type: none">1. Check the MP paper empty sensor connector. Reconnect it.2. Check the MP paper empty sensor. If it is defective, replace it.3. Check if the MP Empty actuator is broken. <div data-bbox="496 972 1046 1279"></div>	

<ul style="list-style-type: none"> • Code 21-018 	<ul style="list-style-type: none"> • Error message Paper Empty in Tray2
<ul style="list-style-type: none"> • Symptom There is the paper in tray2 but error message is displayed. 	
<ul style="list-style-type: none"> • Possible Cause 1. Tray2 empty sensor harness is not connected properly. . 2. Empty Sensor is defective. 	
<ul style="list-style-type: none"> • Troubleshooting method 1. Check the paper Tray2 empty sensor connector. Reconnect it. 2. Check the paper Tray2 empty sensor. If it is defective, replace it. 3. Check if the Tray2 actuator is broken. <div style="display: flex; justify-content: space-around; align-items: center;">   </div>	

<ul style="list-style-type: none">• Code 21-019	<ul style="list-style-type: none">• Error message Pulled Out Tray2 Cassette
<ul style="list-style-type: none">• Symptom Tray2 cassette is inserted in machine but error message is displayed.	
<ul style="list-style-type: none">• Possible Cause<ol style="list-style-type: none">1. The connector of the Tray2 Home Position Sensor is not connected properly.2. Tray2 Home Position Sensor is defective.	
<ul style="list-style-type: none">• Troubleshooting method<ol style="list-style-type: none">1. Reinstall the tray2 cassette.2. Check the Tray2 Open micro sensor connector. Reconnect it.3. Check the Tray2 Open micro sensor. If it is defective, replace it <div data-bbox="646 972 1131 1335"></div>	

<ul style="list-style-type: none"> • Code 28-001 	<ul style="list-style-type: none"> • Error message Not installed Transfer belt
<ul style="list-style-type: none"> • Symptom The red LED is turning on and the machine does not operate. 	
<ul style="list-style-type: none"> • Possible Cause <ol style="list-style-type: none"> 1. Transfer belt is not installed properly. 2. Connector pin deformation or damaged harness 3. CRUM PBA or main board malfunction 	
<ul style="list-style-type: none"> • Troubleshooting method <ol style="list-style-type: none"> 1. Check if transfer belt unit is properly installed. 2. Check CRUM PBA connector pins. Replace the CRUM PBA with normal thing and test it. If the CRUM PBA is defective, replace the transfer belt unit or CRUM PBA. 3. Check if the Transfer Belt CRUM Harness is defective and connected on engine board properly. 4. Replace the main board with normal one and test it. If it works replace main board. 	
 <p>The image contains two photographs. The left photograph shows the CRUM PBA (Control Relay Unit) with a red arrow pointing to the 'CRUM Harness and connector' and a red circle around the 'PBA CRUM' component. The right photograph shows the main board with a red circle around the 'CRUM and Main board connector'.</p>	

<ul style="list-style-type: none"> • Code 28-002 	<ul style="list-style-type: none"> • Error message Not Compatible Transfer belt
<ul style="list-style-type: none"> • Symptom The red LED is turning on and the machine does not operate. 	
<ul style="list-style-type: none"> • Possible Cause F/W or Transfer belt CRUM data is not installed correctly. 	
<ul style="list-style-type: none"> • Troubleshooting method 1. Reinstall F/W on the printer and check if machine works properly. 2. Replace Transfer belt CRUM and check if machine works properly. 	

<ul style="list-style-type: none"> • Code 28-004 	<ul style="list-style-type: none"> • Error message Replace new Fuser unit
<ul style="list-style-type: none"> • Possible Cause Fuser unit over a lifetime. 	
<ul style="list-style-type: none"> • Troubleshooting method Replace a current fuser unit with a new one 	

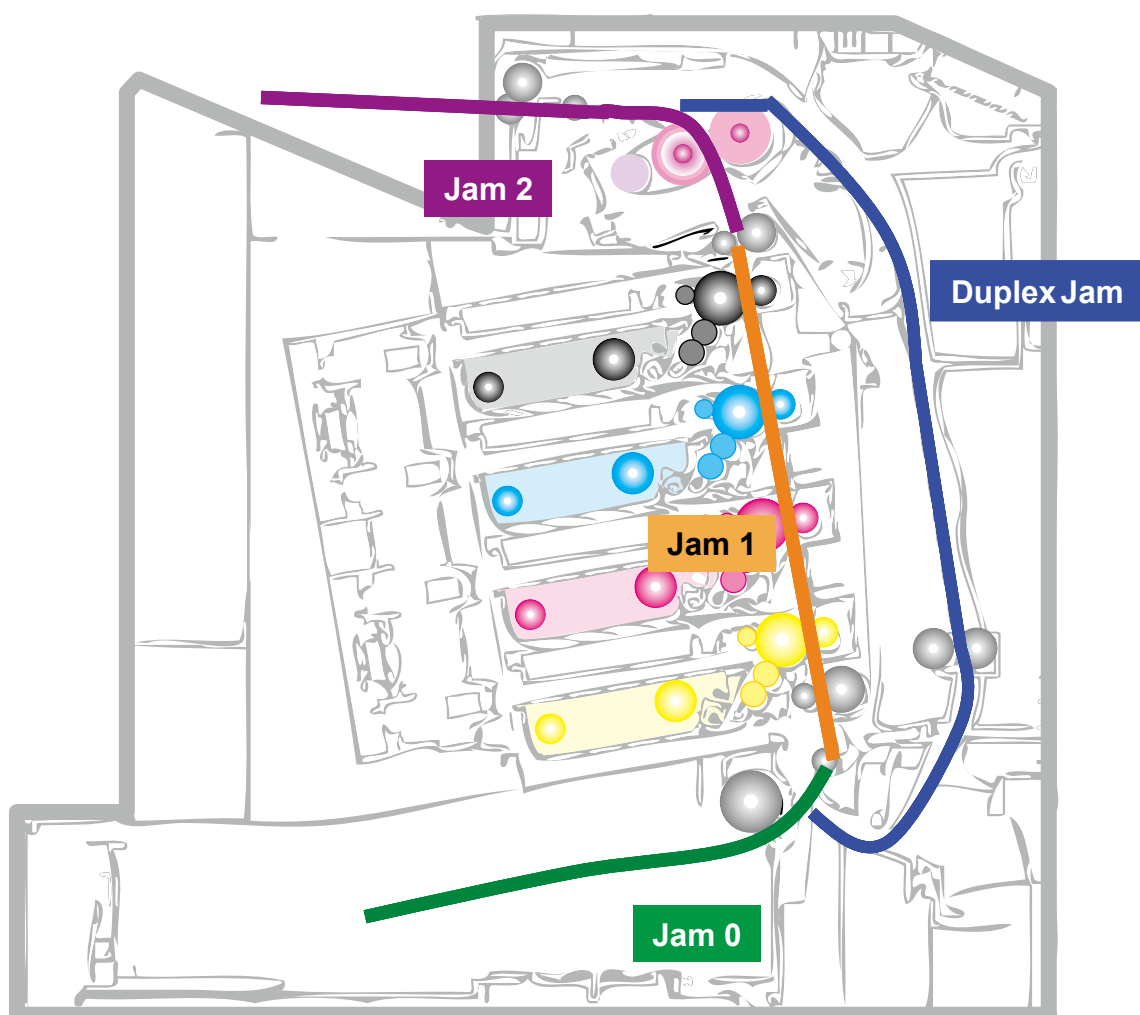
<ul style="list-style-type: none"> • Code 28-005 	<ul style="list-style-type: none"> • Error message Not Installed Fuser Unit
<ul style="list-style-type: none"> • Possible Cause Fuser unit is not installed properly. 	
<ul style="list-style-type: none"> • Troubleshooting method Install the fuser unit. 	

4.2.3 Feeding Problems and solutions

4.2.3.1 Clearing paper JAMS

If a paper jam occurs an error message appears in the LCD display. Find and remove the jammed paper. If you don't see the paper, open the covers. Do not use a tweezers, pincers or other metal tools when clearing a paper jam. This could damage the internal mechanism causing print quality problems or possibly electrical shock.

JAM type



Jam type	Displayed error message
JAM0	Paper Jam in tray1
JAM1	Jam inside machine
JAM2	Jam in exit area
Duplex JAM	Jam bottom of duplex Jam top of duplex

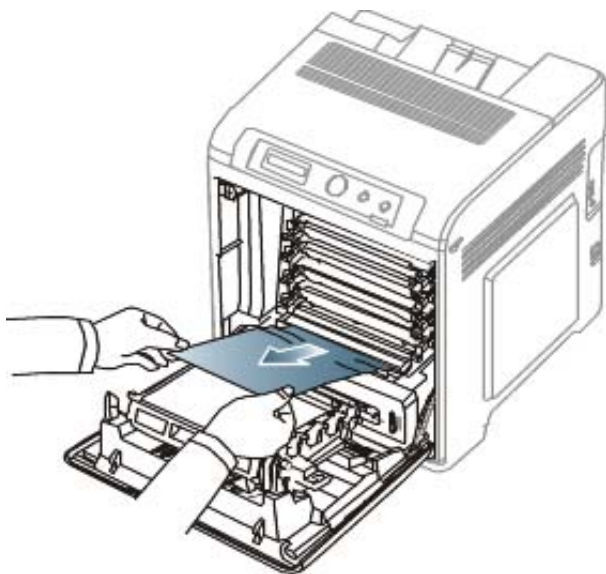
In tray 1

If paper is jammed in the paper feed area, follow the next steps to release the jammed paper.

1. Using the handle, completely open the front cover.



2. Remove the jammed paper by pulling in the direction shown. To avoid tearing the paper, pull it out gently and slowly.



3. Close the front cover.

4. Pull out tray 1.



5. Remove the jammed paper by pulling in the direction shown. To avoid tearing the paper, pull it out gently and slowly.



6. Insert tray 1 back into the machine until it snaps into place. Printing automatically resumes.

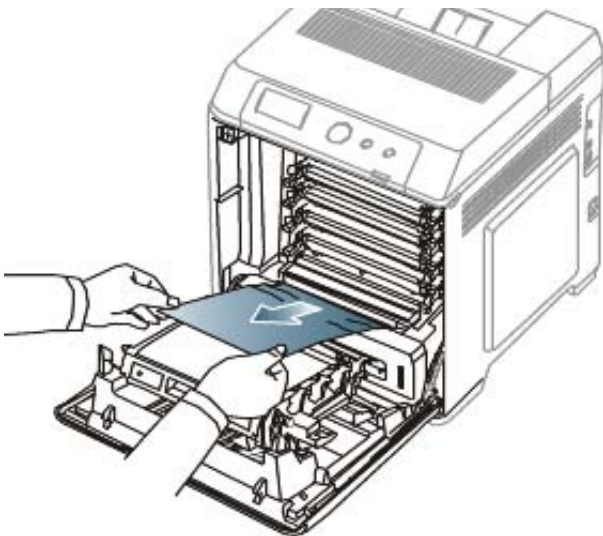
In optional tray

1. Pull out optional tray 2 open.
2. Remove the jammed paper by pulling in the direction shown. To avoid tearing the paper, pull it out gently and slowly.



If the paper does not move when you pull or if you do not see the paper in this area, stop and go to the next step.

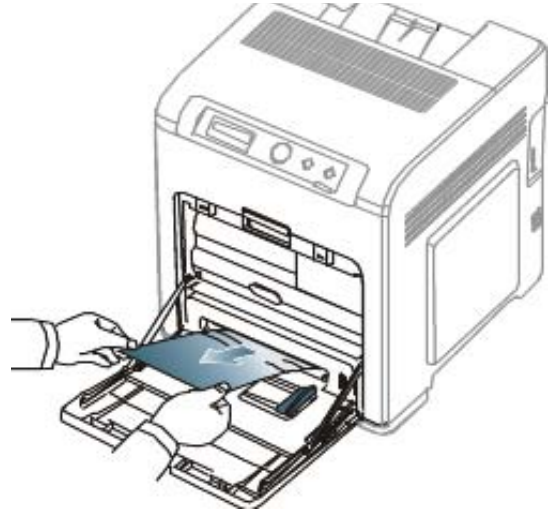
3. Using the handle, completely open the front cover.
4. Remove the jammed paper by pulling in the direction shown. To avoid tearing the paper, pull it out gently and slowly.



5. Close the front cover and insert the trays back into the machine. Printing automatically resumes.

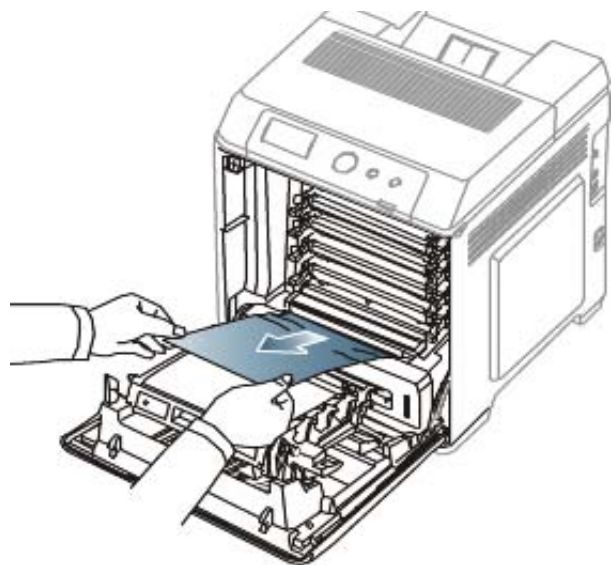
In the multi-purpose tray

1. If the paper is not feeding properly, pull the paper out of the machine.



If you do not see the jammed paper or if there is any resistance when you pull, stop and go to step 3.

2. Open and close the front cover to resume printing.
3. Using the handle, completely open the front cover.
4. Remove the jammed paper by pulling in the direction shown. To avoid tearing the paper, pull it out gently and slowly.



5. Close the front cover to resume printing.

In the fuser unit area

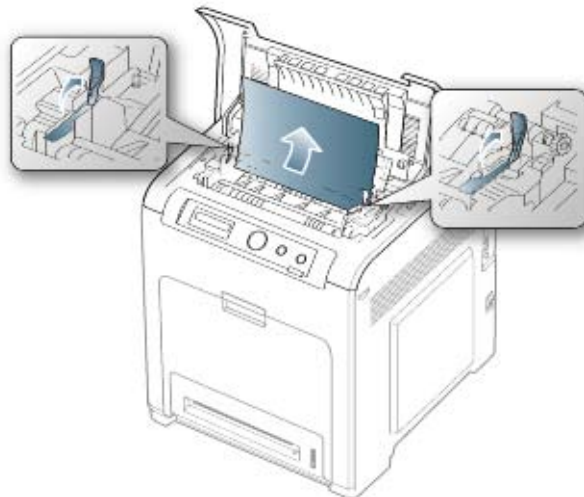
1. Open the top cover.



2. Open the inner cover using the handle on it.



3. Pull up the paper jam lever to loose the fusing part of the fuser unit and carefully take the jammed paper out of the machine.



4. Press down the paper jam lever to fasten the fusing part.

5. Close the inner cover.

6. After removing the jammed paper, check for paper which may be jammed in other parts of the machine.

7. Close the top cover. Ensure that the cover is securely closed.

In exit area

1. Open and close the front cover. The jammed paper is automatically ejected from the machine.
2. Gently pull the paper out of the output tray.
If you do not see the jammed paper or if there is

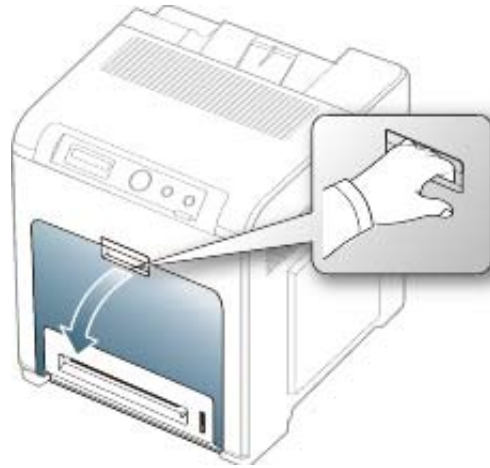


any resistance when you pull, stop and see In the fuser unit area.

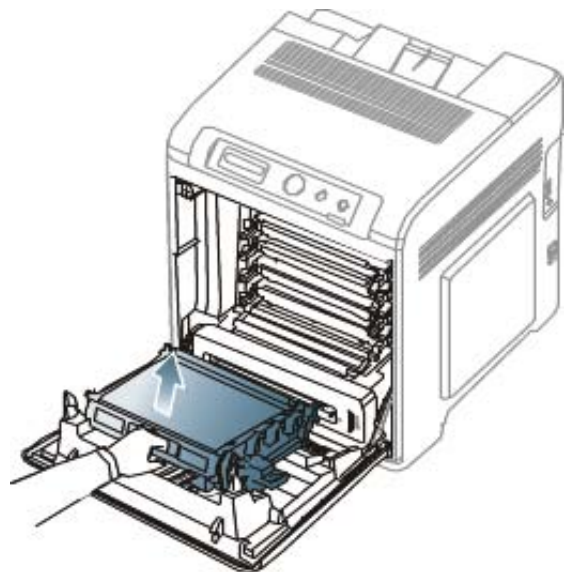
3. Open and close the front cover to resume printing.

In the duplex unit area

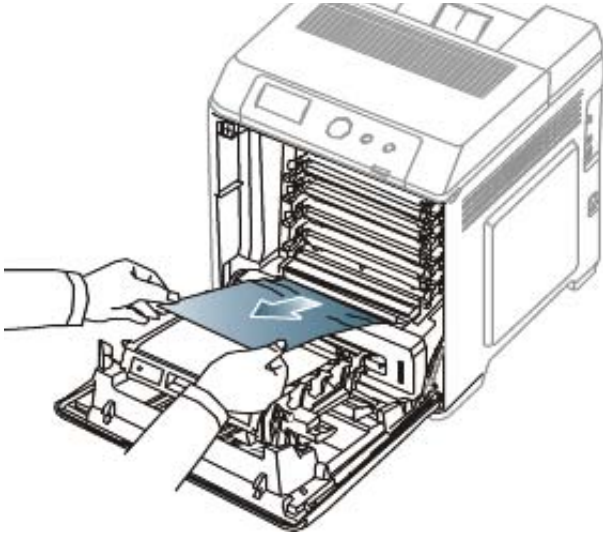
1. Using the handle, completely open the front cover.



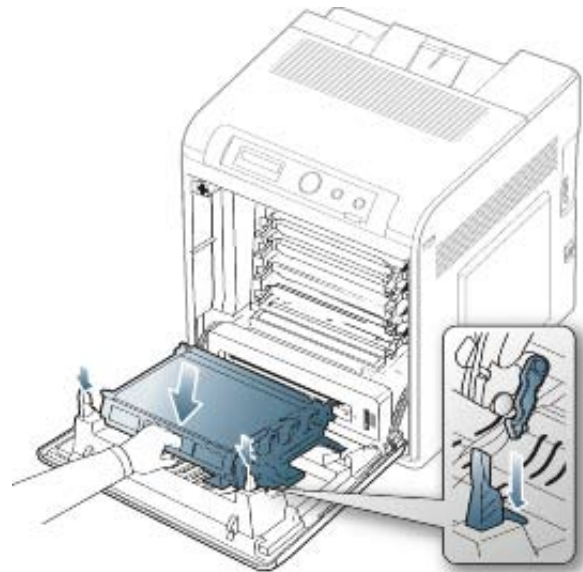
2. Press the green release handle to release the paper transfer belt. Holding the handle on the paper transfer belt, lift it out of the machine.



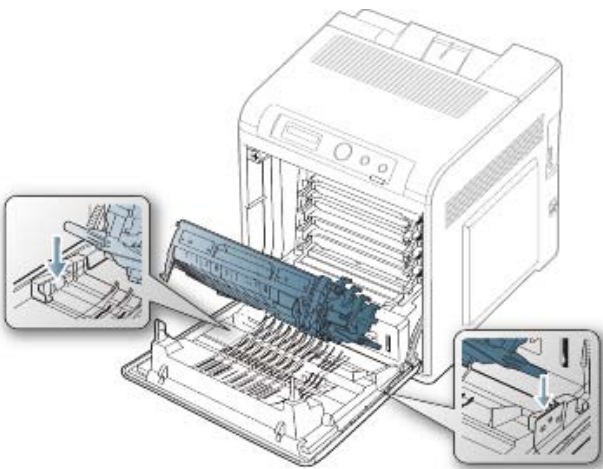
3. Remove the jammed paper by pulling in the direction shown. To avoid tearing the paper, pull it out gently and slowly.



5. Lower the paper transfer belt until it is parallel with the front cover and firmly seated.



4. Holding the handle on the paper transfer belt, align it with the slots on the inside of the front cover.



6. Close the front cover to resume printing.

Multi-Feeding

Description When the paper is feeding, multiple pages are fed.

Step	Cause and Check Point	Yes	No
1	Check that the power code is plugged into electrical outlet. Is it plugged?	Go to step2	Plug the power code.
2	Is the on/off switch in the ON position?	Go to step3	Turn the switch on.
3	Check if the power input and SMPS output are normal. Is it normal?	Go to step4	Replace the SMPS.
4	Check the LCD panel. Is it normal?	Replace the OPE PBA or the Main PBA.	Replace the LCD panel.

Skew paper

Description Paper is skewed.

Step	Cause and Check Point	Yes	No
1	Check the paper is loaded properly.	Go to step 2.	Adjust the paper guide in paper size.
2	Check the rollers on paper path is dirty. Is it dirty?	Clean the rollers.	Go to step 3.
3	Pick up roller, feed roller is defective.	Replace the pick up roller, feed roller together.	Replace the SMPS.

4.2.4 Image Quality Problems and solutions

If a mark or other printing defects occur at regular intervals down on the page, they may be caused by damaged or contaminated rollers. Use the table below to find which roller causes the defect from the periods of the rollers.

If the roller is dirty, try to clean it. If the problem still remains after cleaning, replace the part including the defective roller.

NO	Roller	Period (mm)	Yes	No
1	Fuser Belt	125.7	Waving, Offset, Spot, Line Burst	Fuser Unit
2	Pressure roller	91	Offset, Spot, Line Burst	Fuser Unit
3	OPC Drum	75.39	White and Black Spot, Periodic Banding, Ghost, Color Registration	CMYK toner cartridge
4	Deve Roller	36.1 (CMY)	White Spot, Horizontal Band	CMY toner cartridge
		32.6 (K)	Offset, Spot, Line Burst	K toner cartridge
5	Supply Roller	48.2 (CMY)	Periodic Band (by little difference of density)	CMY toner cartridge
		43.4 (K)		K toner cartridge
6	Transfer Roller	44	White and Black Spot, Periodic Banding	PTB Unit
7	PTB Charge roller	31.4		PTB Unit

Repetitive defect Image check page

Print this page. Align the start line on this page with the printed defect image, and measure to the next occurrence of the defect to determine which roller, drum, or belt causes the defect.

Start line _____



OPC Drum _____

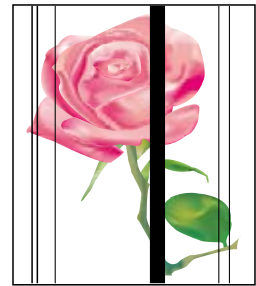
Pressure roller _____

Fuser belt _____

Vertical Black Line and Band

- Description**
1. Straight thin vertical black lines occur in the printed image
 2. Dark black vertical bands occurs in the printed image

Cause and Check Point	Solution
Check if the surface of the charge roller is scratched or contaminated.	Replace the toner cartridge and test again
Check if there are grooves on the circumference of the OPC drum.	Replace the toner cartridge and test again
Check if the cleaning blade is damaged	Replace the toner cartridge and test again
Is the charge roller of PTB unit damaged?	Clean the charge roller of PTB unit, or replace the PTB unit.
Check if paper transfer belt is damaged or contaminated.	Replace the PTB unit and test again.



Vertical White Line

Description White vertical voids in the image.

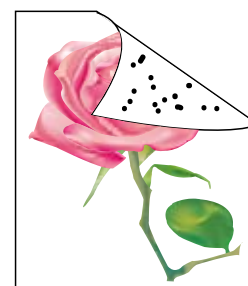
Cause and Check Point	Solution
Check if the LSU window or internal lenses of LSU is contaminated.	Clean the LSU window with recommended cleaner(IPA). Clean the window with a clean cotton swab. If dirt is inside the LSU, replace the LSU.
Check if there are scratches on the circumference of the OPC drum.	Replace the toner cartridge.
Check if there are scratches on the circumference of the developing roller.	Replace the toner cartridge.
Foreign objects inside the toner cartridge.	Replace the toner cartridge.
Check if there are vertical scratches on the transfer unit.	Replace the PTB unit.



Contamination on back of page

Description The back of the page is contaminated.

Cause and Check Point	Solution
Dirty registration roller, pressure roller, feed roller, etc. Any dirty rollers through the path of the paper.	Identify the roller which may cause the problem by comparing the period of the contamination on images with the size of rollers. Clean any dirt from the roller or replace the dirty roller.
Dirty PTB belt or damaged PTB belt.	Clean PTB or replace the PTB unit.
Dirty feed guide, or any paper delivery guide.	Clean the part which cause the contamination.



Dark or Black image

Description The back of the page is contaminated.

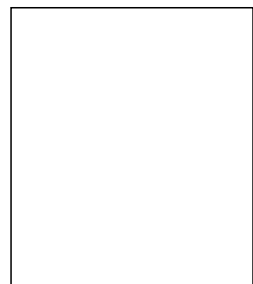
Cause and Check Point	Solution
No charging voltage in the HVPS	Check the connecting state between the Main PBA and HVPS. Reconnect the harness.
Poor contact between toner cartridge and set contacts.	Clean the contacts as necessary. Replace any deformed or damaged contacts.
HVPS is defective.	Replace the HVPS.



Blank Page

Description Blank page is printed.

Cause and Check Point	Solution
Bad contacts from OPC drum and/or toner cartridge to ground.	Check the terminal of Ground-OPC.
Not working the LSU	Check the connector of LSU
Not working the developing bias voltage on HVPS	Check the HVPS B'd and replace it.



Uneven Density

Description Print Density is uneven between left and right.

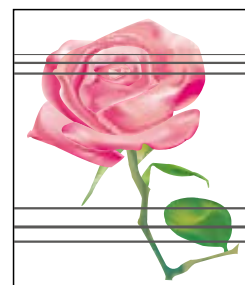
Cause and Check Point	Solution
The pressure force in the left and right springs of the transfer roller is not even, the springs are damaged, the transfer roller is improperly installed	Replace the PTB Unit
The toner layer is not even in the developing roller due to the damaged blade or low toner level.	Replace the toner cartridge
Poor the pressure spring force of the toner cartridge.	Replace the toner cartridge
The life of the Toner Cartridge has expired.	Replace the toner cartridge



Horizontal Bands

Description Dark or white horizontal stripes appear in the page.
(These may occur at regular intervals down the page.)

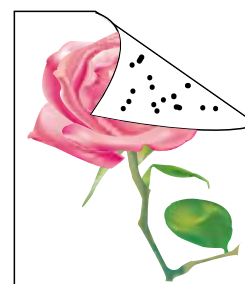
Cause and Check Point	Solution
The developing roller, OPC drum or other rollers in the toner cartridge may be contaminated or deformed.	Replace the toner cartridge.
Contamination of the Gap-Ring - regular intervals 38.9mm	Clean the gap ring, or replace it. Or replace the toner cartridge
Bad contacts of HV terminals of the toner cartridge with high voltage terminals from printer set.	Clean all HV terminals in the cartridge and on the set frame. Ensure all toner or paper dust, particles are removed.



Contamination on the front of the page

Description The front page of the printed page is stained.

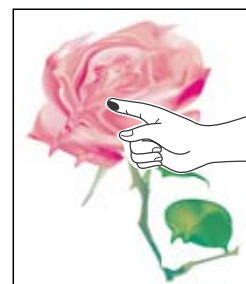
Cause and Check Point	Solution
Toner leakage due to improperly sealed toner cartridge.	Replace the toner cartridge.
Poor OPC cleaning.	Replace the toner cartridge.
Rollers and drum are dirty or defective.	Identify the roller which may cause the problem by comparing the period of the contamination on images with the size of rollers. Clean any dirt from the roller or replace the dirty roller or part.



Poor fusing

Description Toner is not properly fixed on paper.

Cause and Check Point	Solution
The media doesn't meet specification	Use the proper media in specifications.
Fuser is defective	Replace the fuser unit.
FDB (Fuser drive board) is defective.	Replace the FDB.



4.2.5 Common Problems and solutions

No Power

Description When system power is turned on, the printer does not warm up or LCD panel is blank.

Step	Cause and Check Point	Yes	No
1	Check that the power code is plugged into electrical outlet. Is it plugged?	Go to step2	Plug the power code.
2	Is the on/off switch in the ON position?	Go to step3	Turn the switch on.
3	Check if the power input and SMPS output are normal. Is it normal?	Go to step4	Replace the SMPS.
4	Check the LCD panel. Is it normal?	Replace the OPE PBA or the Main PBA.	Replace the LCD panel.

4.2.6 Network problems and solutions

Before Troubleshooting, check below check point.

Check Point	Action
LAN cable check	A. Connected or Not connected B. Wrong cable (defected cable, crossover cable) C. Connection connector (Link partner check)
Network LED check	A. Link LED check (Link LED On when connected) B. Activity LED check (No packet Regularly blinking, packet random blinking depend on Printer Model)
Print Network test page	A. Printed correctly. If not, NIC is in lock up state or NIC can not communicate with printer B. Network address value check : IP address, Subnet Mask, Gateway, MAC address C. NIC F/W version (Correct or not) 1) V1.0x.xx : NPC3 2)V2.0x.xx : NPC3H 3)V3.0x.xx : PHY Board 4)V4.0x.xx : On Board D. Protocol Enable / Disable E. WLAN module / Status check if WLAN available.
Printer SET status check	A. Toner Empty, Paper Empty and so on : Hard Stop cases (Job can be finished completely)

Network Printer Configuration check

1. Address Conflict check
 - A. IP address Conflict : Same IP address in a network
 - Unplug network cable and PING test
 - B. MAC address Conflict : Same MAC address in a physical network
 - Default MAC address or same MAC address (PING and ARP -a)
2. IP get method check (Panel or SWS)
 - A. DHCP/BOOTP : IP can be changed after rebooting
 - B. Auto IP address : Xerox Model default on
3. Protocol Enable / Disable, Port Number (In SWS)
4. IP filtering On/Off
5. SNMP community name check (When SNMP no response)

Host PC Configuration check

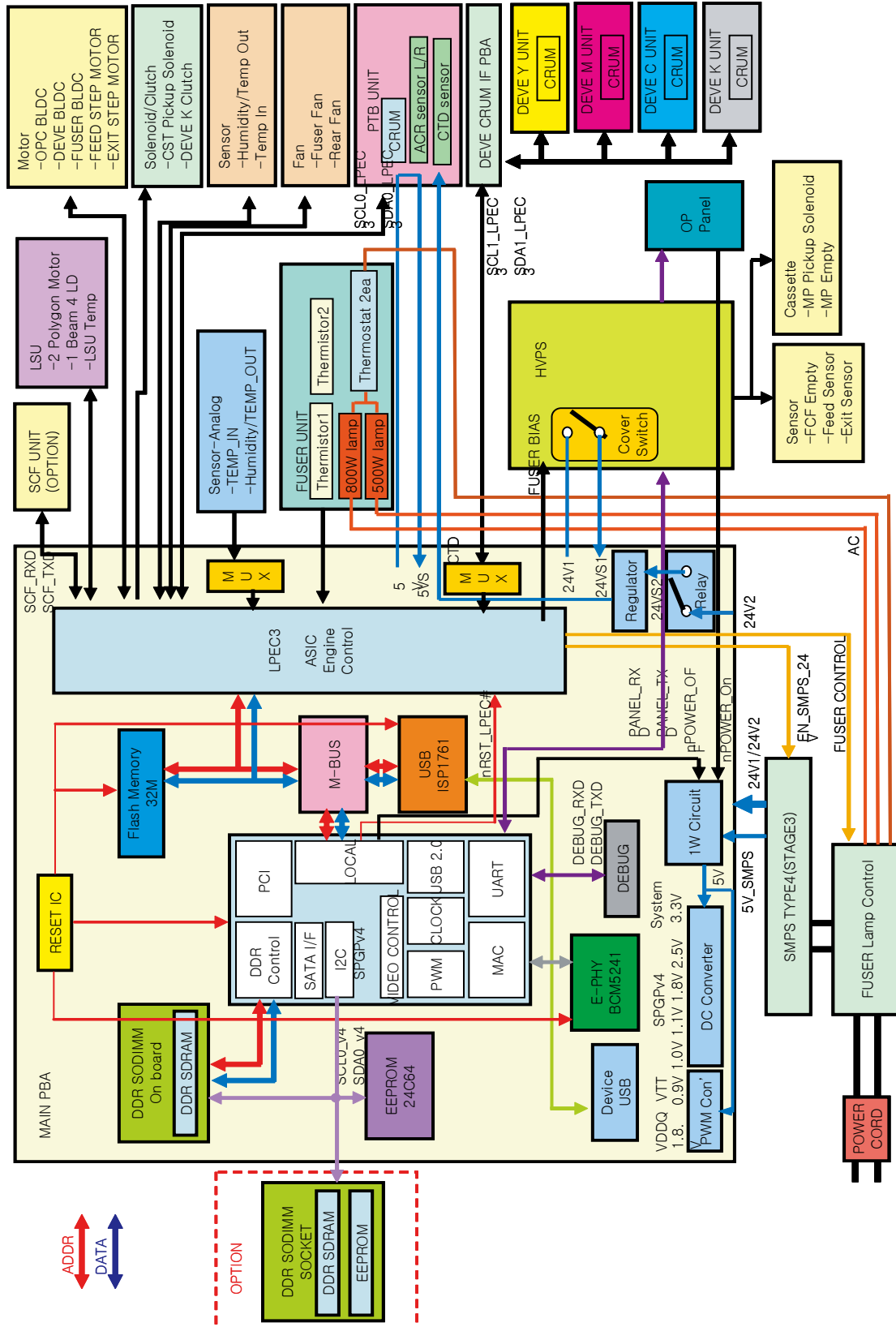
1. Address Conflict check
 - A. IP address Conflict : Same IP address in a network
 - Unplug network cable and PING test at other PC
2. Protocol Enable / Disable, Port Number in printer driver

Factory Default

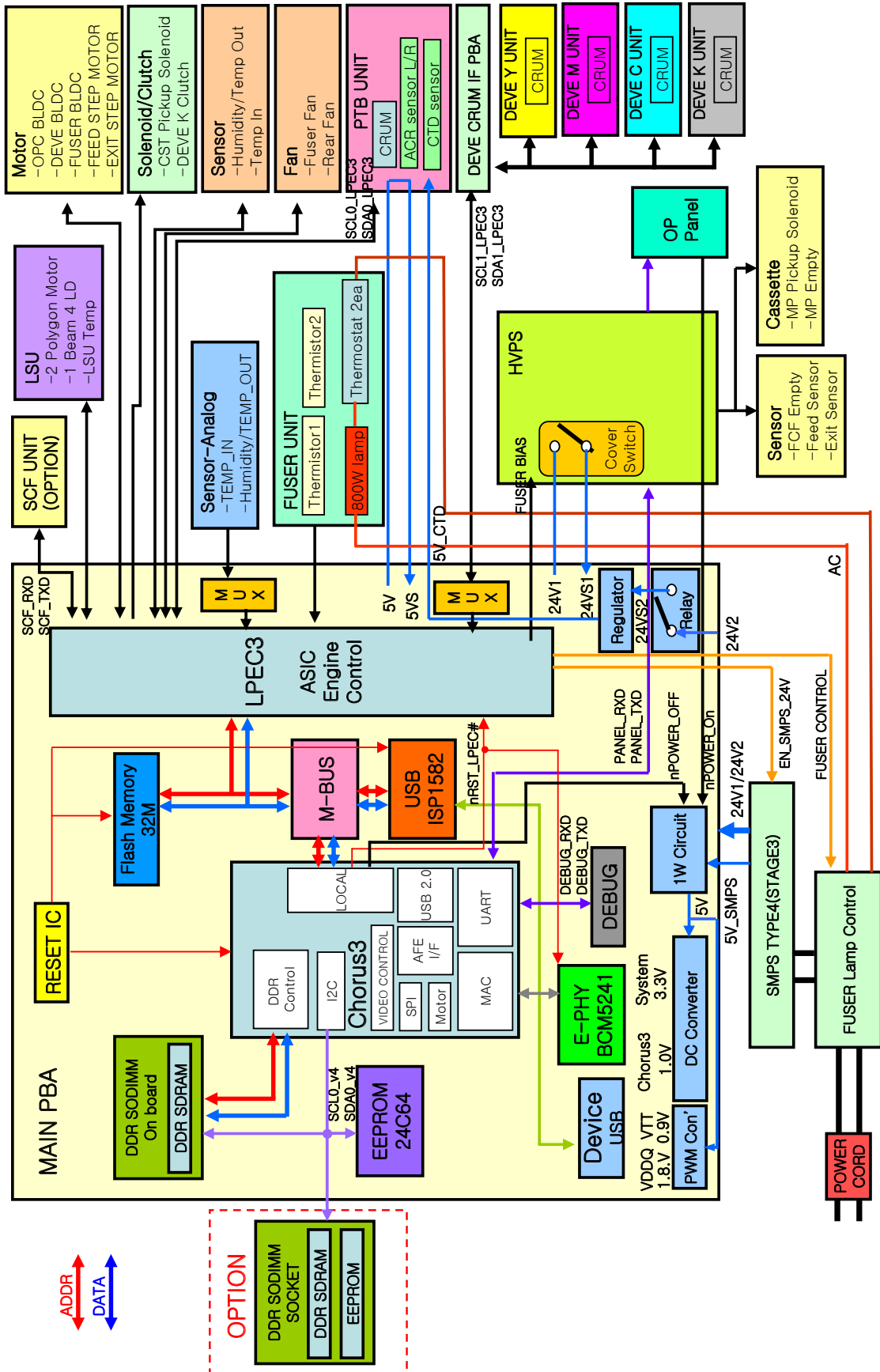
1. Network Value changed to default value
 - A. Some of Network value will not be changed immediately.
 - B. Factory default operation will be done after Power Off / Power On

5. System Diagram

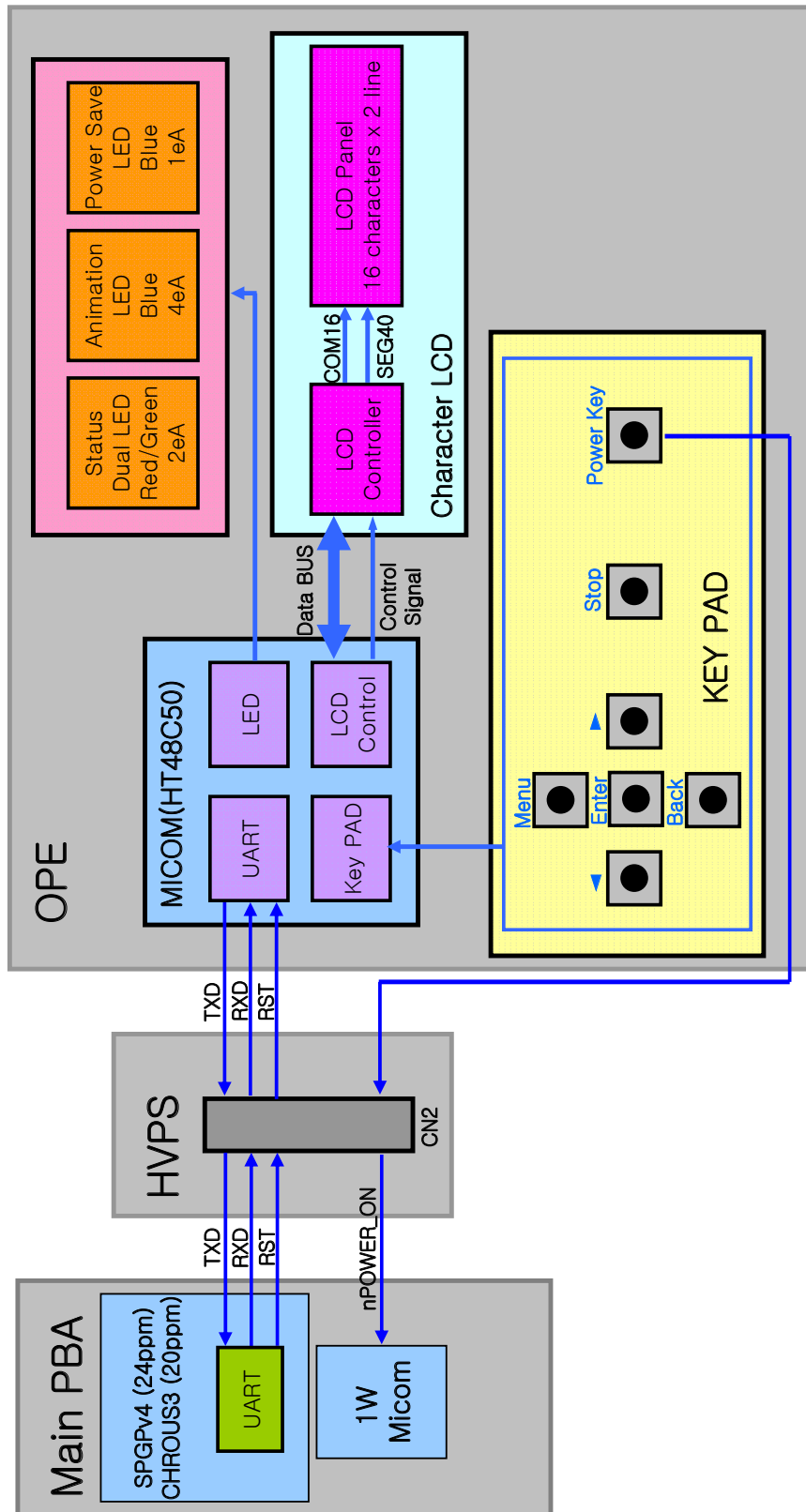
5.1 Main PBA (24ppm) Block Diagram



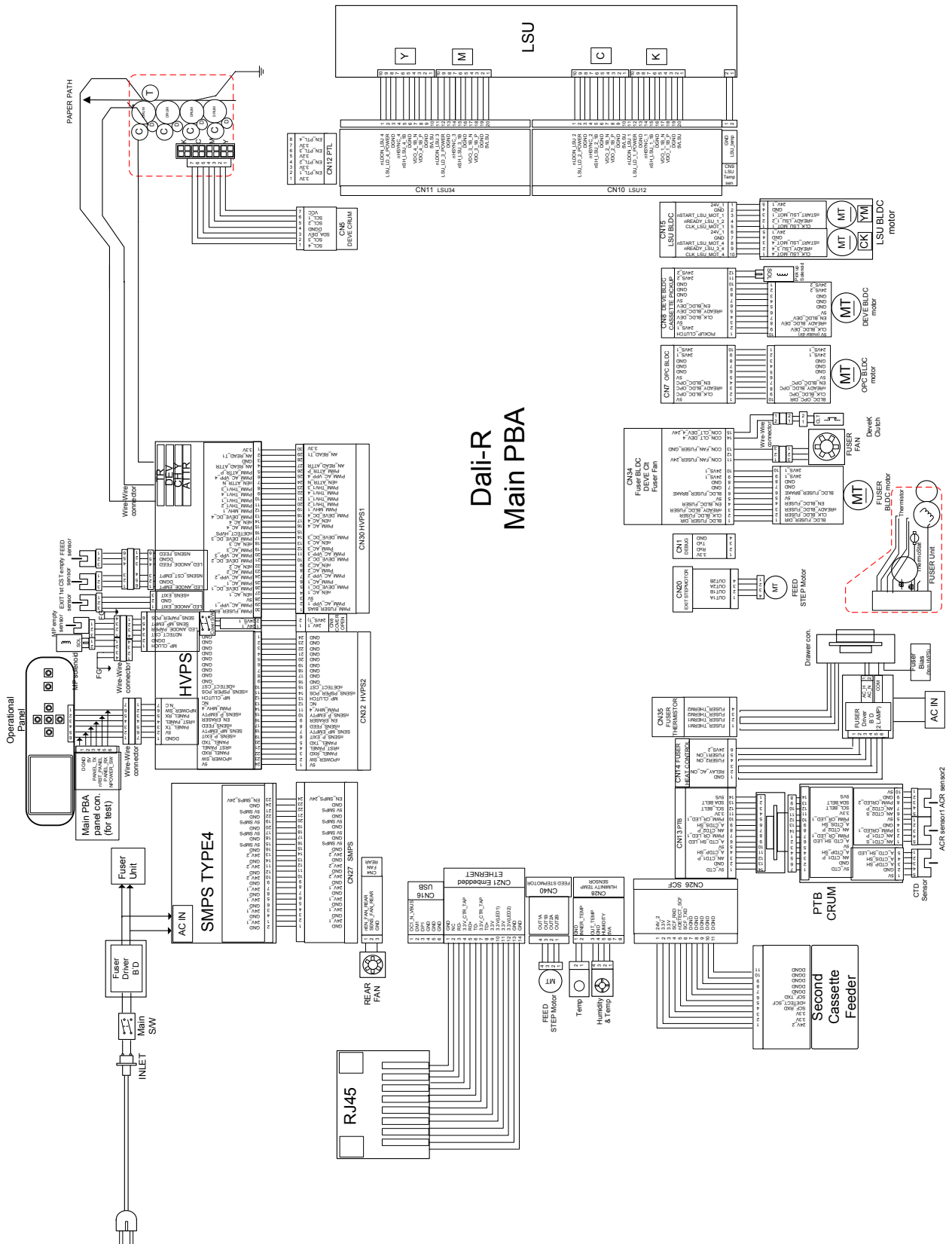
5.2 Main PBA (20ppm) Block Diagram



5.3 OPE PANEL Block Diagram



5.4 Connection Diagram



6. Reference Information

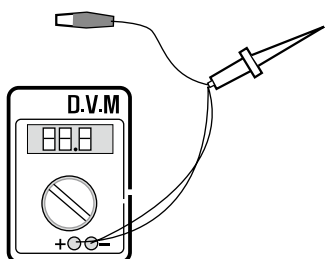
This chapter contains the tools list, list of abbreviations used in this manual, and a guide to the location space required when installing the printer. A definition of tests pages and Wireless Network information definition is also included.

6.1 Tools for Troubleshooting

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

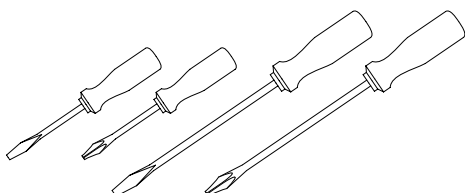
- **DVM(Digital Volt Meter)**

Standard : Indicates more than 3 digits.



- **Driver**

Standard : “-” type, “+” type (M3 long, M3 short, M2 long, M2 short).



- **Tweezers**

Standard : For general home use, small type.



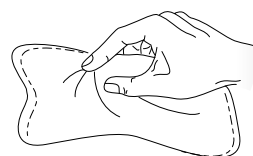
- **Cotton Swab**

Standard : For general home use, for medical service.

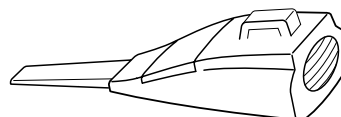


- **Cleaning Equipments**

Standard : An IPA(Isopropyl Alcohol)dry wipe tissue or a gentle neutral detergent and lint-free cloth.



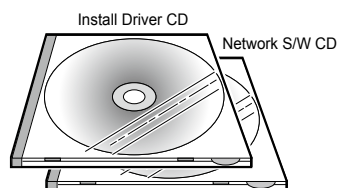
- **Vacuum Cleaner**



- **Brush**



- **Software (Driver) installation CD ROM**



6.2 Acronyms and Abbreviations

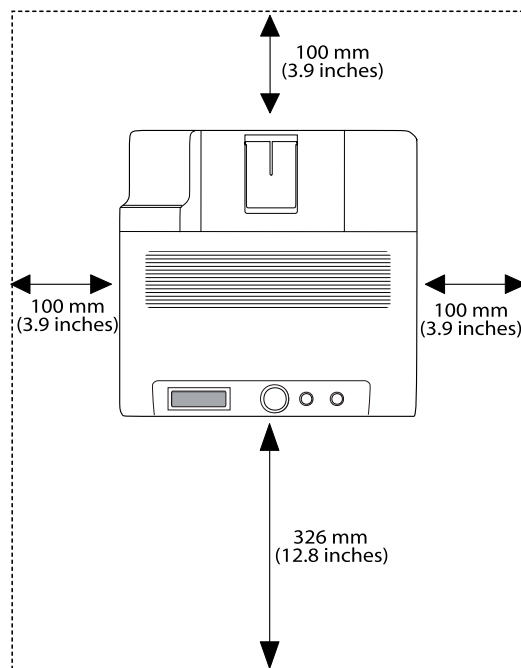
The table below explains the abbreviations and acronyms used in this service manual. Where abbreviations or acronyms are used in the text please refer to this table.

ADC	Analog-to-Digital-Conversion	HBP	Host Based Printing
AP	Access Point	HDD	Hard Disk Drive
AC	Alternating Current	HTML	Hyper Text Transfer Protocol
ASIC	Application Specific Integrated Circuit	HV	High Voltage
ASSY	Assembly	HVPS	High Voltage Power Supply
BIOS	Basic Input Output System	I/F	Interface
BLDC Motor	Brushless DC Motor	I/O	Input and Output
CLBP	Color Laser Beam Printer	lb	Pound(s)
CMOS	Complementary Metal Oxide Semiconductor	IC	Integrated Circuit
CMYK	Cyan, Magenta, Yellow, Black	ICC	International Color Consortium
CN	Connector	IDE	Intelligent Drive Electronics or Integrated Drive Electronics
CON	Connector	IEEE	Institute of Electrical and Electronics Engineers. Inc
CPU	Central Processing Unit	IOT	Image Output Terminal (Color printer, Copier)
CTD Sensor	Color Toner Density Sensor	IPA	Isopropyl Alcohol
dB	Decibel	IPC	Inter Process Communication Enhanced parallel Port
dBA	A-Weighted decibel	IPM	Images Per Minute
dBm	Decibel milliwatt	ITB	Image Transfer Belt
DC	Direct Current	LAN	local area network
DCU	Diagnostic Control Unit	LBP	Laser Beam Printer
DIMM	Dual In-line Memory Module	LCD	Liquid Crystal Display
DPI	Dot Per Inch	LED	Light Emitting Diode
DRAM	Dynamic Random Access Memory	LSU	Laser Scanning Unit
DVM	Digital Voltmeter	MB	Megabyte
ECP	Enhanced Capability Port	MHz	Megahertz
ECU	Engine Control Unit	MPBF	Mean Prints Between Failure
EEPROM	Electrically Erasable Programmable Read Only Memory	MPF/MPT	Multi Purpose Feeder/Multi Purpose Tray
EMI	Electro Magnetic Interference	NIC	Network Interface Card
EP	Electro photographic	NPC	Network Printer Card
EPP	Enhanced Parallel Port	NVRAM	Nonvolatile Random Access Memory
F/W	Firmware	OPC	Organic Photo Conductor
FCF/FCT	First Cassette Feeder/First Cassette Tray	PBA	Printed Board Assembly
FISO	Front-In, Side-Out	PCL	Printer Command Language , Printer Control Language
FPOT	First Print out Time		
GDI	Windows Graphic Device Interface		
GIF	Graphic Interchange Format		
GND	Ground		

PCI	Peripheral Component Interconnect by Intel 1992/6/22, is a local bus standard developed by Intel and introduced in April, 1993 : A60, B60 Pins	SMPS	Switching Mode Power Supply
PCL5Ce	Printer Command Language 5Ce-Color	SPGP	Samsung Printer Graphic Processor
PCL6	Printer Command Language 6	SPL	Samsung Printer Language
PDF	Portable Document Format	SPL-C	Samsung Printer Language-Color
PDL	Page Description Language	Spool	Simultaneous Peripheral Operation Online
Ping	Packet internet or Inter-Network Groper	SRS	Software Requirement Specification
PPD	Postscript Printer Discription	SURF	Surface Rapid Fusing
PPM	Page Per Minute	SW	Switch
PS	Post Script	sync	Synchronous or Synchronization
PS3	Post Script Level3	T1	ITB
PTL	Pre-Transfer Lamp	T2	Transfer Roller
PTB	Paper-Transfer Belt	TRC	Toner Reproduction Curve
PWM	Pulse Width Moduration	PnP	Universal Plug and Play
Q?y	Quantity	U.I.	User Interface
RAM	Random Access Memory	URL	Uniform Resource Locator
RCP	Remote Control Panel	USB	Universal Serial Bus
ROM	Read Only Memory	VCCI	Voluntary Control Council for Interference Information Technology Equipment
SCF/SCT	Second Cassette Feeder/Second Cassette Tray	WECA	Wireless Ethernet Compatibility Alliance
		Wi-Fi	Wireless Fidelity

6.3 Select a location for the printer

- Leave enough room to open the printer trays, covers, and allow for proper ventilation. (see diagram below)
- Provide the proper environment :
 - A firm, level surface
 - Away from the direct airflow of air conditioners, heaters, or ventilators
 - Free of extreme fluctuations of temperature, sunlight, or humidity
 - Clean, dry, and free of dust



6.4 A4 ISO 19752 Standard Pattern

This test page is reproduced at 70% of the normal A4 size

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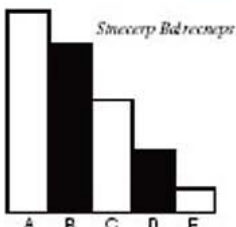
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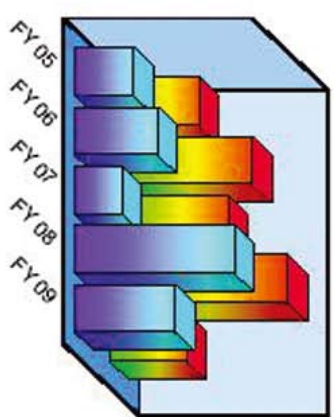
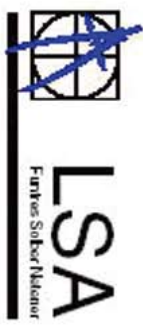
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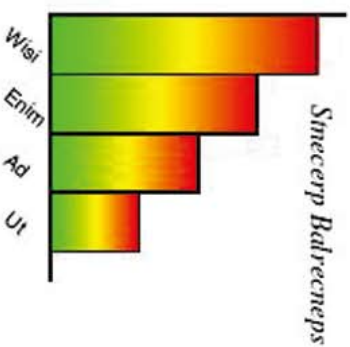
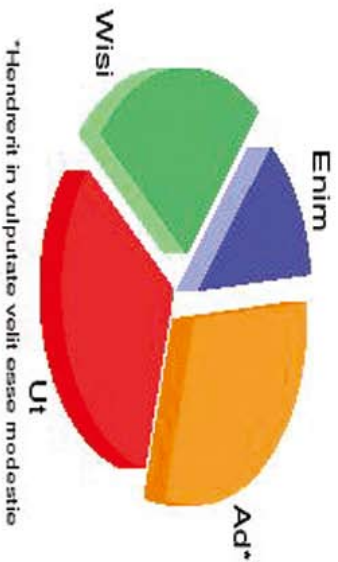
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