SAMSUNG

DIGITAL LASER MFP
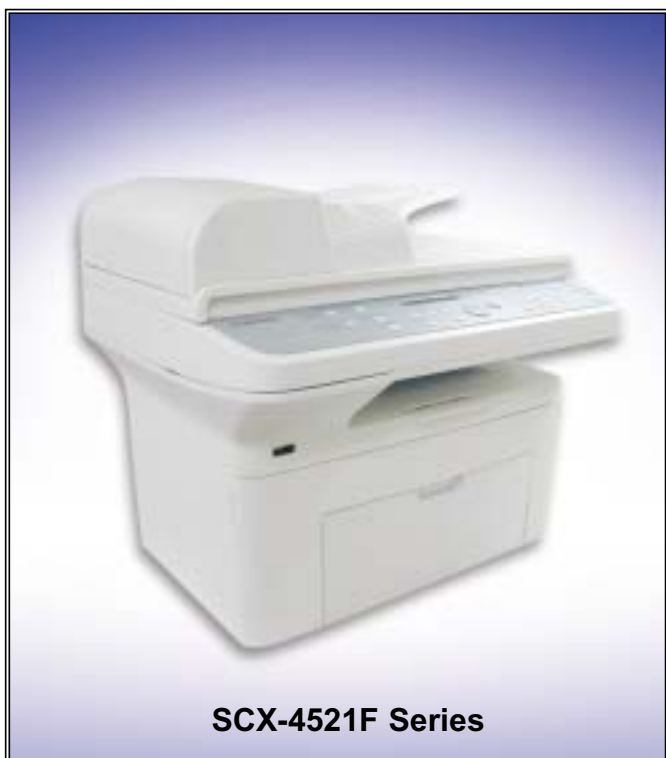
SCX-4521F Series
SCX-4321/XEV

Basic Model : SCX-4521F

SERVICE *Manual*

DIGITAL LASER MFP

SCX-4521F Series

The keynote of Product

- Machine Life: 50,000Pages
- Cpu: Chorus2
- Device Memory: 16MB
- Resolution: 600*600dpi
- Option: N/A
- Printing Speed: 22ppm/LTR,20ppm/A4
- Print Memory: 10MB
- Print Language: SPL
- Path Type: C-Path
- Cassette Capa.: 150sheets
- Outlet Stacking Capa.: 50sheets
- Toner Cartridge: initial(1K), sales(3K)
- ADF Capacity: 30sheets
- Scan Method: 600 dpi Color CIS
- Copy Speed: SDMC: 22Cpm/Ltr, MDMC: 7Cpm/Ltr
- Interface: USB1.1, IEEE1284

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ELECTRONICS

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

(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 INVISIBILE IN CASO DI
APERTURA. EVITARE L ESPOSIZIONE AL
FASCIO.

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

ADVARSEL. - USYNLIG LASERSTR LNING VED BNING, N R
SIKKERHEDSBRYDERE ER UDE AF FUNKTION.
UNDG UDSAETTELSE FOR STR LNING.

ADVARSEL. - USYNLIG LASERSTR LNING N R DEKSEL
 PNES. STIRR IKKE INN I STR LEN.
UNNG EKSPONERING FOR STR LEN.

VARNING - OSYNLIG LASERSTR LNING N R DENNA DEL
R PPNAD OCH SP RREN R URKOPPLAD.
BETRAKTA EJ STR LEN. STR LEN R FARLIG.

VARO! - AVATTAESSA JA SUOJALUKITUS OHITETTAESSA
OLET ALTTIINA N KYM TT M LLE LASER-
S TEILYLLE L KATSO S TEESEEN.

注　意 - 严禁渴开此盖, 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 toner cartridges away from children. The toner powder contained in the toner cartridge may be harmful and if swallowed you should contact a doctor.

1.2.2 Electric Shock and Fire Safety Precautions

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

(1) Use only the correct voltage, failure to do so could damage the 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 otherwise a poor contact could cause overheating possibly leading to a fire. When removing the power connector grip it firmly and pull.

(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. Damp and dust build up inside the machine can lead to overheating and cause a fire.

(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 on 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 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 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's 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 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.
This printer weighs 10.4kg including toner cartridge and cassette. Use safe lifting and handling techniques. Back injury could be caused if you do not lift carefully.
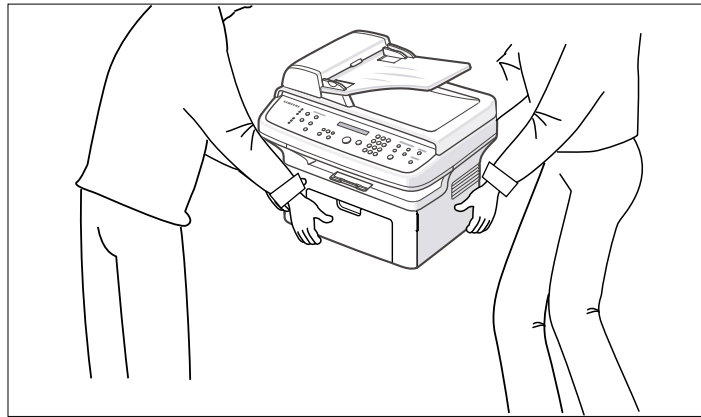
(4) Ensure the printer is installed safely.
The printer weighs 10.4Kg, ensure the printer is installed on a level surface, capable of supporting its weight. Failure to do so could cause the printer to tip or fall possibly causing personal injury or damaging the printer.

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

1.3 ESD Precautions

Certain semiconductor devices can be easily damaged by static electricity. Such components are commonly called "Electrostatically Sensitive (ES) Devices", or ESDs. Examples of typical ESDs are: integrated circuits, some field effect transistors, and semiconductor "chip" components.

The techniques outlined below should be followed to help reduce the incidence of component damage caused by static electricity.

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

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

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

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

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

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

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

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

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

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

1.4 Super Capacitor or Lithium Battery Precautions

1. Exercise caution when replacing a super capacitor or Lithium battery. There could be a danger of explosion and subsequent operator injury and/or equipment damage if incorrectly installed.

2. Be sure to replace the battery with the same or equivalent type recommended by the manufacturer.

3. Super capacitor or Lithium batteries contain toxic substances and should not be opened, crushed, or burned for disposal.

4. Dispose of used batteries according to the manufacture's instructions.

2. Product Specifications

2.1 Product Overview

Item	Descriptions	Remark
Basic Model	SCX-4521F(4-in-1 Flatbed MFP) SCX-4321(3-in-1 Flatbed MFP)	
Target User	SOHO, Economical(Speed/Price) Customer	
Customer Benefits (Sales Points)	- Compact Size - 22ppm/A4, 22ppm/Letter fastest speed in its price class - Favorite Copy - ID Card Copy - Toner Save	
Key Specification	- up to 22ppm/A4(Up to 22ppm/Letter) - 150 sheets Multi-Purpose type paper input/50 sheets Paper Output - 3,000pages toner capacity - 600dpi Print/Copy Resoulusion - Samsung Print Language - 16MB System memory - 30 ADF - 33.6 Kbps Fax Modem - 100 Speed Dial - 72 Hour Battery Back-up	

2.2 Specifications

• Product Specifications are subject to change without notice. See below for product specifications.

2.2.1 General Specifications

Item	Descriptions (SCX-4321 / SCX-4521F)	
Major Features	Copier, Print, Scan, Fax(SCX-4521F)	
Net Dimension (WxDxH)	438(W)*374(D)*368(H)(17.2x14.7x14.5")	
Net Weight(Inc. Toner Cartridge)	10.4kg	
CPU	Chorus-2 (66MHz)	
LCD	2 Line x 16 characters / 2Line x 8 characters(for china and korea)	
Toner Save	Yes (With toner save button)	
I/O Interface	USB1.1 (Compatible with USB 2.0), IEEE 1284 Parallel	
Network Interface	No	
OS Compatibility	Windows 98/Me/NT4.0/2000/XP, Various Linux OS (via USB interface only) including Red Hat 8.0~9.0, Fedora core 1~3, Mandrake 9.0~10.2, and SuSe 8.2~9.2, Mac 10.3	
Power Requirement	110 ~ 127 VAC, 50/60 Hz, 4.5A	
	220 ~ 240 VAC, 50/60 Hz, 2.5A	
Power Consumption	Sleep Mode : Under 10 W	
	Standby Mode : 65W	
	Average : 350 W (Print Mode)	
Energy Star Compliant	Yes	
Power Switch	Yes	
Noise	Warm up	49 dBA
	Stand by	35 dBA
	Coping	55 dBA
	Printing	53dBA
Warm up time	from Power On Status	Less than 35 seconds
	from Sleep Mode	Less than 30 seconds
	(Recovery time)	
Max. Monthly	Print	4,200 pages
Volume	Scan	ADF: 2,500 pages, PLATEN: 1,700 pages
Average Monthly Print Volume	400 pages	
Average Monthly SCAN Volume	150 pages	
Machine Life	ENGINE	5 years or 50,000 Pages. Whichever comes first
	SCANNER	ADF : 30,000 Pages, Platen : 20,000 Pages
Operation	Temperature	10°C ~ 32 °C (50°F ~ 89°F)
conditions	Humidity	20 % ~ 80 % RH
Approval	Class B	
Device Memory	16MB	
Page Counter	Yes	
Print Configuration Sheet(System Data)	Yes	

2.2.2 Print Specifications

Items		SCX-4321	SCX-4521F
Method		Laser Beam Printing	Laser Beam Printing
Speed		Up to 22ppm in A4 (22ppm in Letter)	Up to 22ppm in A4 (22ppm in Letter)
Emulation		SPL	SPL
Power Save		Yes(Interval option: 5, 10,15, 30, 45 minute)	Yes(Interval option: 5, 10,15, 30, 45 minute)
Resolution	Normal	600 x 600 dpi	600 x 600 dpi
	RET	-	-
Memory		10MB	10MB
First Print Out	From Stand by	Approx. 11 seconds	Approx. 11 seconds
Time	From Cold Status	Less than 41 seconds	Less than 41 seconds
Duplex	Print	-	-
WHQL Compliant		Window XP	Window XP
Printable Area		A4: 201.6x288.6mm	A4: 201.6x288.6mm
		LTR: 207.6x270.6mm	LTR: 207.6x270.6mm
		Legal: 207.6x347.6mm	Legal: 207.6x347.6mm
		Folio: 207.6x322.6mm	Folio: 207.6x322.6mm
Halftone (Gray Scale)		256 levels	256 levels

2.2.3 Scan Specifications

Items		SCX-4321	SCX-4521F
Compatibility		Twain standard / WIA Standard (Window 2000/XP)	Twain standard / WIA Standard (Window 2000/XP)
Scan Method		600dpi Color CIS(Contact Image Sensor) Module	600dpi Color CIS(Contact Image Sensor) Module
PC Scan Speed	Lineart, Halftone	10sec Platen(13sec ADF)	10sec Platen(13sec ADF)
through Platen	Gray	23sec Platen (26sec ADF)	23sec Platen (26sec ADF)
	Color 300dpi	65sec Platen(70sec ADF)	65sec Platen(70sec ADF)
Resolution	Optical	600 x 600 dpi	600 x 600 dpi
	Enhanced	4800 x 4800 dpi	4800 x 4800 dpi
Halftone		256 levels	256 levels
Scan Size	Max. Document Width	Max.216mm (8.5")	Max.216mm (8.5")
	Effective Scan Length	297 mm (11.7")	297 mm (11.7")
	Effective Scan Width	Letter/Legal: 208mm(8.2")A4: 202mm	Letter/Legal: 208mm(8.2")A4: 202mm
Scan-to	Button	Yes	Yes
	Application	Yes	Yes
Scan Depth	Color	24 bit	24 bit
	Mono	1bit for Line art, Halftone, 8 Bit for Gray scale	1bit for Line art, Halftone, 8 Bit for Gray scale

2.2.4 Copy Specifications

Item		Descriptions (SCX-4321 / SCX-4521F)
Copy Speed		Up to 22ppm in A4 (22ppm in Letter)
Resolution	Optical	600*600 dpi (Scan:600*600dpi, Print: 600*600dpi)
		- Text & Text/Photo mode : 600*300dpi(ADF, Platen)
		- Photo mode : 600*600dpi (Platen), 600*300dpi(ADF)
	Enhanced	- -
First Copy Out Time	Stand by	Approx. 16 seconds(ADF), Approx. 11 seconds(Platen)
	From Power Save Mode (110V only)	Approx. 46 seconds(ADF), Approx. 40 seconds(Platen)
Original Image type selection		Text, Text/Photo, Photo
Zoom Range		25-400%(Platen), 25-100%(ADF)
Multi Copy		1~99 Pages
Preset		[Original(100%)], [A4 →A5(71%)], [LGL→LTR(78%)], [LGL→ A4(83%)], [A4 →LTR(94%)], [EXE →LTR(104%)], [A5 →A4(141%)], 25%, 50%, 150% 200%, 400%, [Custom: 25-400%)]
Darkness Control		3 level (Light, Normal, Dark)
Auto return to default mode		Yes (after 1 minute)- Time out option: 15, 30, 60, 180 sec., Off
Changeable Default mode		Darkness, Original Type, Reduce/Enlarge, No. of Copies
ID Card Copy	2-up	Yes (ADF Only)
	4-up	Yes (ADF Only)
	Collation	Yes (ADF Only)
	Autofit	Yes (Platen Only)
	LD Card Copy	Yes (Platen Only)
	Clone	Yes (Platen Only)
	Poster	Yes (Platen Only)

2.2.5 Telephone Specificationc

Items		SCX-4321	SCX-4521F
Handset		-	No
On hook Dial		-	Yes
Search		-	Yes(Phone Book)
1-Touch Dial		-	10 ea (0~9)
Speed dial		-	90 locations(10~99)
TAD I/F		-	Yes
Tone/Pulse		-	Tone →Default, Pulse →Changing in Tech Mode
Pause		-	Yes
Auto Redial		-	Yes
Last Number Redial		-	Yes
Distinctive Ring		-	Yes
Caller ID		-	No
Extention Phone Interface		-	Yes
Report & List Print out	Tx/Rx Journal	-	Yes
	Confirmation	-	Yes
	Help List	-	No
	Auto Dial List	-	Yes
	System Data	List all user setting	List all user setting
Sound Control	Ring Volume	-	Yes(Off,Low,MED,HIGH)
	Key Volume	-	Yes(On,Off)
	Alarm Volume	-	Yes(On,Off)
	Speaker	-	Yes(On,Off, Comm)

2.2.6 Fax Specifications

Items		SCX-4321	SCX-4521F
Compatibility		-	ITU-T G3
Modem Speed		-	33.6Kbps
TX Speed		-	3sec
Compression		-	MH/MR/MMR/JPEG
Color Fax		-	Yes(Tx Only)
ECM		-	Yes
Resolution	Std	-	203*98dpi
	Fine	-	203*196dpi
	S.Fine	-	300*300dpi
	Photo	-	203*196dpi
	Color	-	200*200dpi
	Auto Switching	-	Yes
Scan Speed	Standard	-	approx. 3sec (ADF)
		-	approx. 5sec (Platen)
	Fine	-	approx. 7sec (ADF)
		-	approx. 8sec (Platen)
	S.Fine	-	approx. 7sec (ADF)
		-	approx. 8sec (Platen)
Rx fax duplex print out		-	No
Multiple page scan speed (Memory Tx.)		-	7 cpm / Ltr (Standard Resoution Res.)
Receive Mode		-	Fax, TEL, Ans/Fax, DRPD
Memory	Capacity	-	2MB (When Power off Memory Back up)
	Optional Memory	-	No
	Max locations to store to 1 Group Dial	-	99 locations
	Fax Forward	-	Yes(On/Off)
	Broadcasting	-	109 locations(Max locations)
	Cover page	-	NO
	Delayed fax	-	Yes
	Memory RX	-	Yes
Functions	Voice Request	-	No
	TTI	-	Yes
	RTI	-	Yes
	Polling	-	No
	Earth/Recall	-	No
	Auto Reduction	-	Yes
	RDS	-	Yes
Junk Fax barrier		-	Yes
Security Receive		-	Yes
Memory Back-up		-	Max. 72hours

2.2.7 Paper Handling Specifications

Items	SCX-4321	SCX-4521F
Input Capacity and Types	150-sheet Cassette Tray (75 g/㎡, 20 lbs)	150-sheet Cassette Tray (75 g/㎡, 20 lbs)
Output Capacity and Types	50-sheet Face Down(75 g/㎡, 20 lbs)	50-sheet Face Down(75 g/㎡, 20 lbs)
Manual Tray	1 sheet	1 sheet
Media size	A4, A5, A6, Letter, Legal, Folio, Executive, ISO B5, JIS B5, Monarch, Envelope, No.10, DL, C5, C6	
	76 x 127 mm (3" x 5") ~ 216 x 356 mm (8.5" x 14")	
Media Type	Plain Paper, Transparency, Label, Envelope, Tick, Thin, Bond, Color Paper, Card Stock, Preprinted	
Paper Weight	16~24lb (60 to 90g/㎡) for 150 sheets, Cassette Tray	
	16~43lb (60 to 165g/㎡) for 1 sheet, Manual Tray	
ADF Capacity	Up to 30 sheets of 20lb(75g/㎡) paper	Up to 30 sheets of 20lb(75g/㎡) paper
ADF Document Size	Up to Legal	Up to Legal

2.2.8 Software

Items		SCX-4321	SCX-4521F
Compatibility	DOS	No	No
	Win 3.x	No	No
	Win 95	No	No
	Win 98/ME	Yes	Yes
	Win NT 4.0	Yes	Yes
	Win 2000	Yes	Yes
	Win XP	Yes	Yes
	Mac	Yes (10.3)	Yes (10.3)
	Linux	Yes	Yes
Driver	Printer	SPL	SPL
	TWAIN	Yes	Yes
	WIA	Yes	Yes
	ScanToPC	Yes	Yes
	PC-FAX	No	Yes (Send only)
Application	RCP	Yes	Yes
	Status monitor	No	No
	SmarThru4	Yes	Yes

2.2.9 Accessory

Items	SCX-4321	SCX-4521F
Quick Setup Guide	Yes (include Setup Guide and Function Guide)	
Quick User Guide	Yes (Korea Only)	Yes (Korea Only)
S/W CD ROM	1 CD (Contents; Electronic User Manual, SmarThru, Print Driver, Twain Driver, RCP)	
Toner Cartridge	1 EA	
Power Cable	1 EA	
Telephone Jack	No	1 EA
Printer Cable	No	No
Tray Coner	Yes	Yes

2.2.10 Consumables

Items	SCX-4321	SCX-4521F
Type	Single Cartridge	Single Cartridge
How to install	Front door open and front loading	Front door open and front loading
Toner Yield	3,000 pages at ISO 19752 Std. Coverage(Ships with 1,000 pages Starter Toner Cartridge)	
Code	SCX-4521D3	SCX-4521D3
Level Sensor	-	-

3. System Overview

3.1 System Layout

The SCX-4521F/4321 is roughly made up Main Control part, Operation Panel part, Scanner part, Line Interface part and Power part. Each Part is separated Module which focus on common and standard design of different kind products. main control part adopting Fax & LBP Printer exclusive Controller is chorus2 CPU(ASIC) and 1 Board. Scanner part is composed of ADF and Platen and is connected with Main by Harness.

Scanner part

ADF ROLLER   PICK-UP ROLLER

COVER OPEN

EXIT ROLER

ADF-UPPER

FEED ROLLER

ADF-LOWER

SCAN UPPER   WHITE BAR

ADF-GLASS

Engine Part

BIN PATH
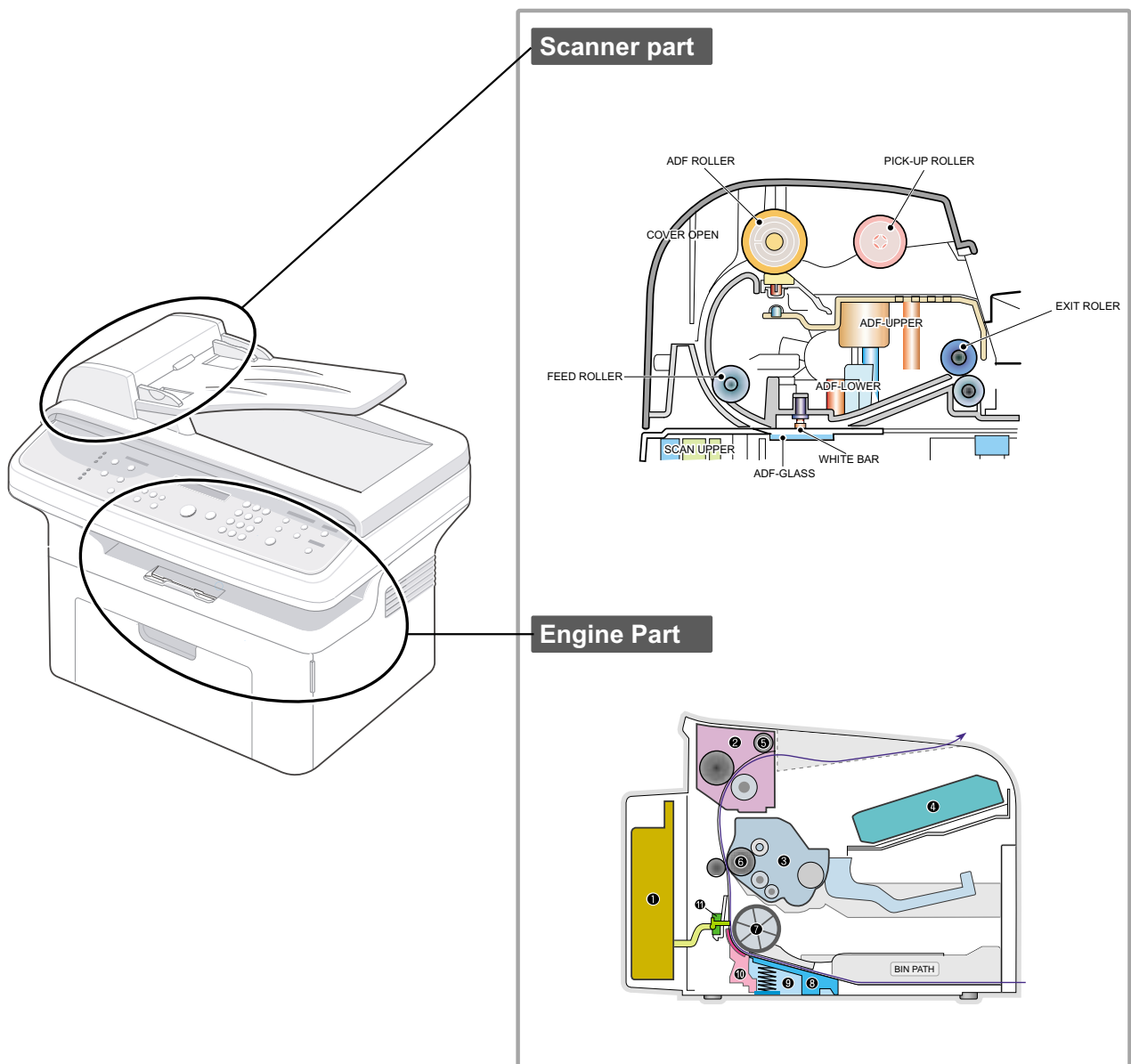
3.1.1 Feeding section

There is a universal cassette which automatically loads paper and the manual feed which supplies paper single sheet at a time. The cassette has a friction pad which separates paper to ensure single sheet feeding, and it has a sensor, which checks when the paper tray is empty.

- Feeding Method: MP Cassette Type
- Feeding Standard: Center Loading
- Feeding Capacity: Cassette-150 sheets (75g/m2, 20lb paper standard)
                Manual 1 sheet (Paper, OHP, Envelop, etc.)
- Paper detecting sensor: Photo sensor
- Paper size sensor: None

3.1.2 Transfer Ass'y

This consists of the PTL (pre-transfer lamp) and the Transfer Roller. The PTL shines a light onto the OPC drum. This lowers the charge on the drum's surface and improves transfer efficiency.
The transfer roller transfers toner from the OPC drum surface to the paper.

- Life expectancy: Over 50,000 sheets (at 16~30°C)

3.1.3 Driver Ass'y

- Gear driven power unit. The motor supplies power to the paper feed unit, the fuser unit, and the toner cartridge.

3.1.4 Fixing Part(Fuser)

- The fuser consists of the Heat Lamp, Heat Roller, Pressure Roller, Thermistor, and Thermostat. It fixes toner to the paper using pressure and heat to complete the printing job.

3.1.4.1 Temperature-Intercepting Device (Thermostat)
The thermostat is a temperature sensing device, which cuts off the power to the heat lamp to prevent overheating fire when the heat lamp or heat roller overheats.

3.1.4.2 Temperature Detecting Sensor (Thermistor)
The Thermistor detects the surface temperature of the heat roller, this information is sent to the main processor which uses this information to regulate the temperature of the heat roller.

3.1.4.3 Heat Roller
The surface of the Heat Roller is heated by the Heat Lamp. As the paper passes between the Heat and Pressure rollers the toner is melted and fixed permanently to the paper. The surface of the roller is coated with Teflon. This ensures that toner does not adhere to the roller surface.
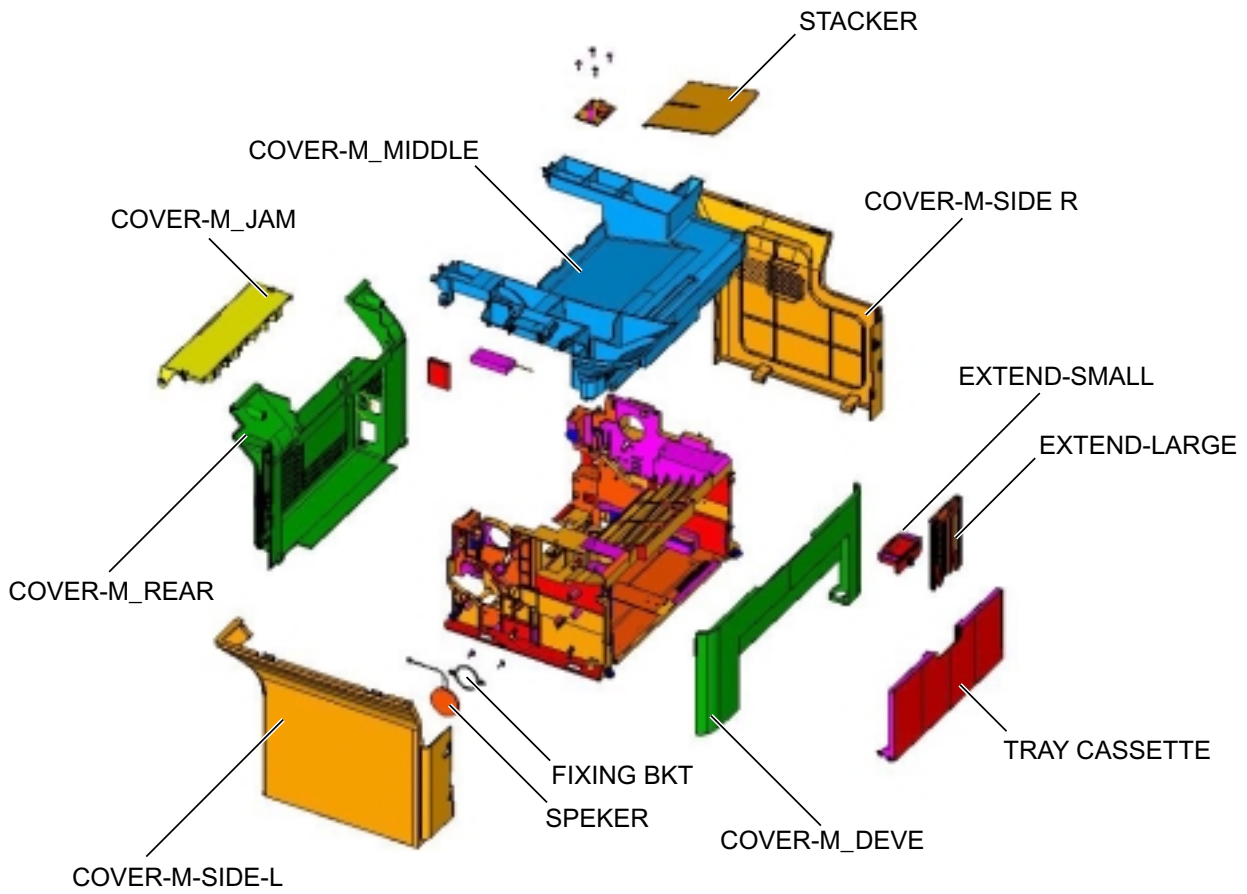
3.1.4.4 Pressure roller

The Pressure Roller mounted under the heat roller, it is made of a silicon resin, and the surface of the roller is coated with Teflon. This ensures that toner does not adhere to the roller surface.
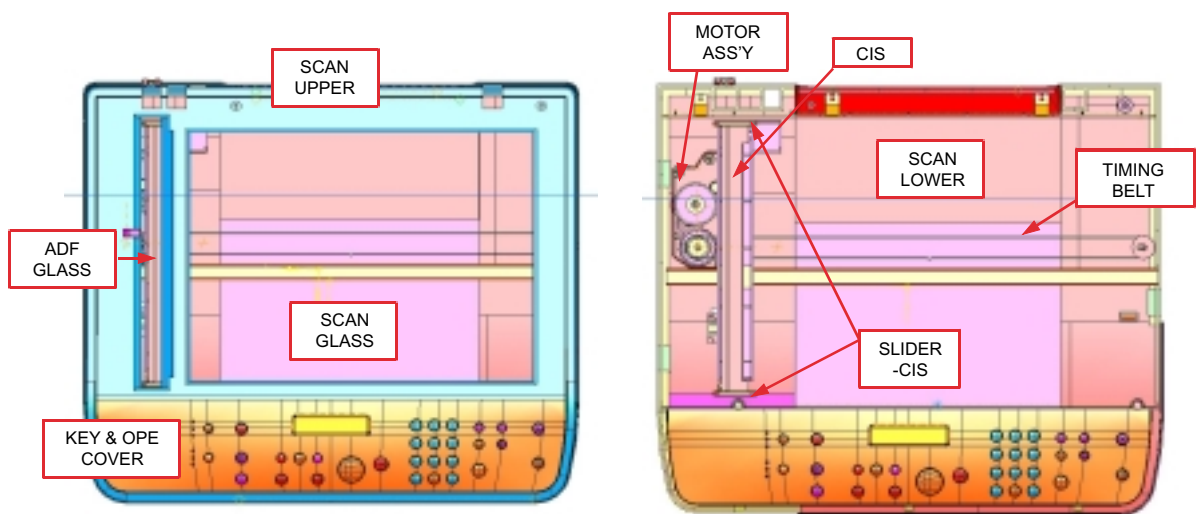
3.1.4.5 Safety Features

• To prevent overheating
  - 1st protection device: Hardware cuts off when overheated
  - 2nd protection device: Software cuts off when overheated
  - 3rd protection device: Thermostat cuts off mains power to the lamp.

• Safety device
  - Fuser power is cut off when the front cover is opened
  - LSU power is cut off when the front cover is opened
  - The temperature of the fuser cover's surface is maintained at less than 80°C to protect the user and a caution label is attached where the customer can see it easily when the rear cover is opened.

[Case part figure]

STACKER

COVER-M_MIDDLE

COVER-M-SIDE R

COVER-M_JAM

EXTEND-SMALL

EXTEND-LARGE

COVER-M_REAR

FIXING BKT

SPEKER

COVER-M_DEVE

TRAY CASSETTE

COVER-M-SIDE-L

[Scan part figure]

SCAN UPPER

MOTOR ASS'Y

CIS

SCAN LOWER

TIMING BELT

ADF GLASS

SCAN GLASS

SLIDER -CIS

KEY & OPE COVER

3.2 Engine H/W Specification

1) Recording Method : LSU(Laser Scanning Unit)

2) Printing Speed : 20ppm

(In continuing printing base Letter, printing pages from 2nd to last during 1min)

3) Recording Density : 600 dpi

4) Cassette Capa. : Cassette ; 150sheets(75g/㎡ Base), 1-sheet Feeding : N/A((DRIVE Selection : Paper, OHP, Envelop - 1 sheet)

5) Manual Tray : All paper 1 sheet

6) Paper Size : Cassette ,Manual ; Width = 76 ~ 216mm, Length = 125mm ~ 356mm

7) Effective recording size

     - A4 :202 x 291 mm

     - Letter :208 x273mm

     - Legal : 208 x 350 mm

     - Folio : 208 x 325 mm

     - TopMargin: 2 $\pm$2 mm

     - Left, Right Margin : 2 $\pm$2 mm

8) CRU(Toner Cartridge)Life : 3,000pages Printing(A4, ISO 19752 Standard Pattern Printing)

9) First Print Out Time : within 11sec (Standby)

10) Warming up time : within 35sec (Ambient : 25 °C)

3.2.1 Main Board Control Part

Main control part of SCX-4521F is made of ASIC(CPU, Image processor, PC I/F part include, Scan interface part, FAX Modem part and Printing process I/F part. CPU handles the BUS control, I/O interface, scan interface, PC interface and other miscellaneous driver circuit.

1) Main Board

    - Main Board has a function of sending Current Image Video Data to LSU of the machine, controlling motor Driving Circuit and monitoring Paper Exit Sensor, Cover Open switch, OPE Panel Inputs.

2) Main Controller

    - CPU : Chorus2 is the main CPU and is made up on the 16/32bit RISC architecture using ARM7TDMI core. Main CPU controls the whole system according to the program code which stored in the Flash-ROM memory.

    - Summary of the Key Function Block:

        · 1.8V for internal Core, 3.3V for I/O Pad with 4KByte Cache.

        · Image Processor included.

        · On-Chip clock generator with PLL.

        · Memory and External Bank Control.

        · DMA Control (5-Channel)

        · Interrupt Control.

        · 2-port USB Host/1-port USB device(ver 1.1) interface control.

        · Parallel interface control.

        · UART(2-Channel)

· Synchronous Serial Interface Control.
· A/D Converter(10-bit, 2channel).
· General I/O Port control.
· Tone Generator.
· RTC with calendar function.
· S/W Assistant function(Rotator)

- Flash Memory : Stores system program and can be updated to the newer system program code through the PC interface. It stores the FAX Journal List, One Touch dial number, speed dial number, and machine configuration setup data.
 · Capcity : 2 Mbyte
 · Access Time : 70 nsec

- SDRAM : SDRAM is used for Print Buffer, Scan buffer when scanning, ECM Buffer when FAX Receiving, and system working memory.
 · Capacity : 16 Mbyte
 · Access Time : 66MHz based on system bus clock.
 · Data Backup : 72 Hours
 · Backup Battery Charging Time : 100hours when completely discharged.

3.2.2 Scan Part

1) Image Signal Input Part
- Image Signal from CIS has a level of about 1.2V and is goes to ADC of Chorus2.
 After ADC, CIS analog signal will be converted to 8-bit Digital signal.

2) Image Processing
- On the surface of the original paper, the light from the CIS LED reflected and goes to the CIS Sensor. Then the light is converted to the appropriate voltage suitable for ADC input. Analog signal from CIS sensor is used for ADC input then is converted to 8-bit digital data. Image processor of the Chorus2 will do the Shading correction function at first, then Gamma correction function next. After then, the data goes to different module according to the copy or FAX resolution mode. When Text mode, the image data goes to LAT module, when Photo mode, the image data goes to Error Diffusion module, when PC-Scan mode, the image data goes directly to the PC through DMA access.

· Summary of the Image sensor interface is as below;
 - Minimum Scan Line Time :1.5ms
 - Scan Resolution : 600*600 dpi
 - Scan Width : 208mm
 - Function
  · White Shading Correction
  · Gamma Correction
  · CIS Interface
  · 256 Gray Scale

3) CIS Driving Part
  - CIS Supply Voltage : +3.3V
  - CIS Max frequency : 5MHz
  - CISLinetime
    · Fax/Copy - 1.5ms
    · PC-Scan - 4.5ms
  - White output volt. : Max 0.8V

4) ADF Driving Part : Driving ADF Stepper motor, and the maximum motor speed is 2000PPS.
  - MOTOR DRIVER : A3978(Allegro)
  - Driving Voltage : 24V DC
  - Phase : 2-2 Phase 2000PPS at Quick Scan,
    2-2 Phase 1000PPS AT Fine Scan,
    2-2 Phase 667PPS AT Super Fine Scan

3.2.3 Fax Modem Part

1) Modem Part
  The modem part is consist of FM336(FAX Modem chip), LIU(Line Interface Unit) and modem analog front end(AFE) functional part.

  - The feature of the FM336 modem chip is as below;
    ① Communication Mode : Half Duplex
    ② Modem Method
     · GROUP 3 : ITU-T V34, V17, V29, V27ter
     · Tonal Signal : ITU-T T.30
     · Binary Signal : ITU-T V.21, T.30
    ③ Image Transmission Time : 3sec (ITU-T NO.1 CHART/Memory Tx/ECM)
    ④ Data Compress : MH, MR, MMR, JPEG
    ⑤ Modem Speed : 33600 / 28800 / 14400 / 12000 / 9600 / 7200 / 4800 / 2400 bps
    ⑥ Receive Level : 0 ~ -48dBm
    ⑦ Output Level
     · Adjustable : -6 ~ -15dBm (1dBm Step)
     · Initial Setting : -12dBm
    ⑧ Receive dynamic range:
     · 0 dBmto-43 dBmfor V.17,V.29,V.27 ter and V.21
     · -9 dBm to -43 dBm for V.34 halfduplex

2) The Gain of the Line signal can be adjusted by setting the register value of the FAX modem chip ,Tx and Rx path is almost directly connected to the impedance matching transformer of the LIU.
  - Adjust Tx Level within Setting Level+0,-2dB range.
  - Adjust Rx Level that has the same level as the TIMS out level if possible, and must not exceed the TIMS out level.
3) Speaker Driving Part
  Analog Switch(MC14053BD) makes a path for FAX Tone, Ring, Key click sound and Analog MUX (MC14051) makes a different signal level so that the the Speaker driver chip(MC34119) can driving the Speaker with different sound volume.

3.2.4 Printing Process Part

Printing Process part is made of PC-Interface part, PVC(Priter Video Controller), LSU control part, High Voltage control part and Fuser Unit control part. PC-interface core is included in the Chorus2 ASIC and controls the PC-interface. LSU control part controls the LSU polygon motor, Laser diode, video data output so thatthe printing image can be made up on the OPC Drum.

3.2.5 Line Interface Part

Line interface part helps the machine connect to the PSTN or PABX Line and is made of almost primary circuit. Its main function is Line connection, Line state monitoring and TAD interface that enables a extension telephone or TAD machine to connect to the SCX-4521F machine.

OPC Drum

Photo Diode

Polygon Mirror

Polygon Motor

Motor Driver

LD Driver circit

LD(Laser Diode)

Protector panel

3.2 Feeding

1) Feeding Type : MP Cassette Type
2) Feeding Standard : Center Loading
3) Feeding Qty : Cassette 150 sheets
4) 1 sheet (Paper, OHP, Envelope etc.)
5) Separating Type: Cassette - Friction Pad
6) sheet
7) Driver Type : Driving by Gearing from Main Motor
8) Pick_up Roller Driver : Solenoid
9) Rubber =1.3 or more
10) Pick up Velocity : 94.8731mm/Sec (Process : 93.0667mm/sec)
11) Paper detecting Sensor : Photo Sensor
12) Paper Size Sensor : None
13) Paper Separating Pad Material : NBR 50
14) Separating
15) Pick_up Ro
16) Feedi
17) Paper
18) Feed
19) Spring
20) Feed
21) Feed
22) Exit Senso
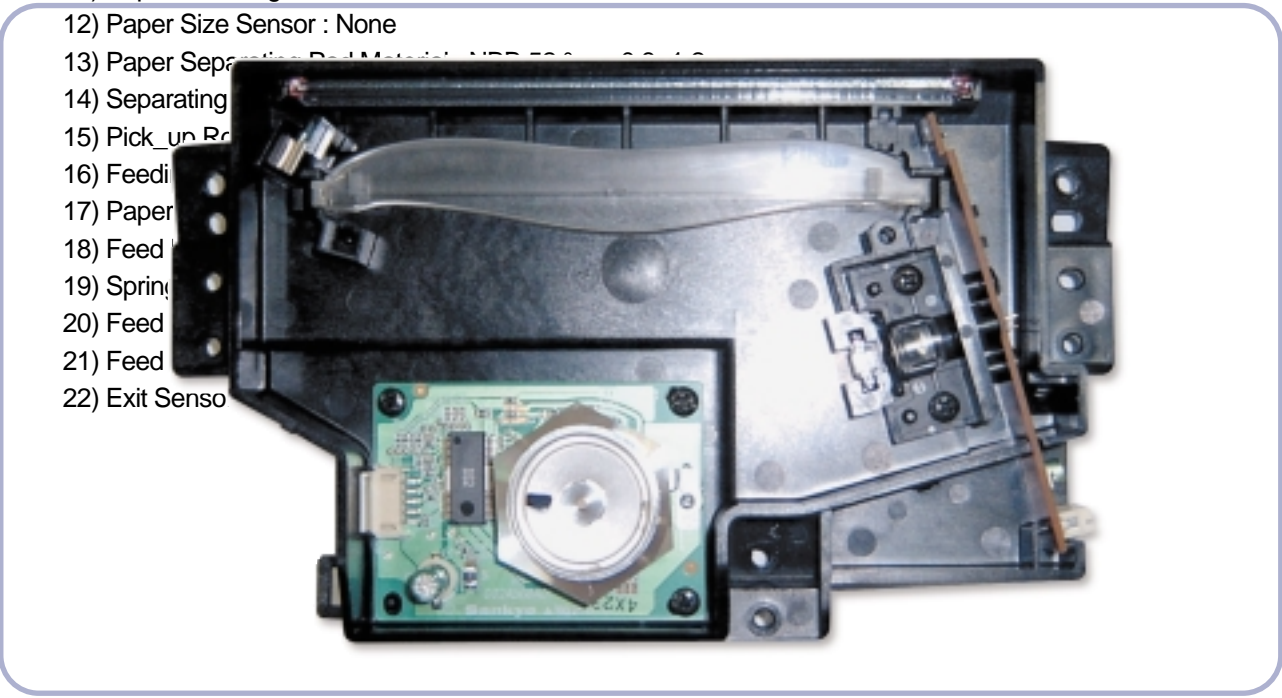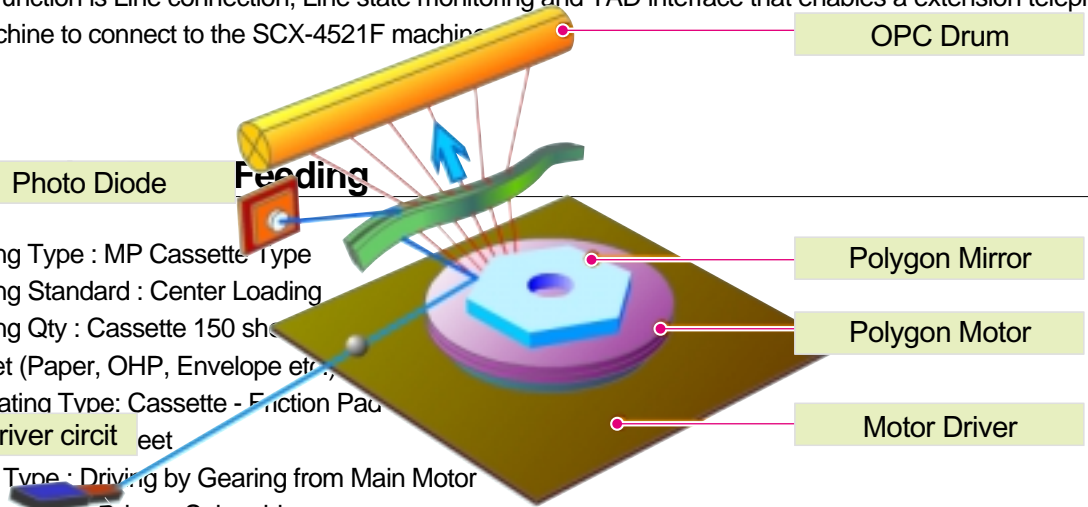
3.3 Deverope Process

- Developing Method : Non magnetic 1 element contacting method
- Toner : Non magnetic 1 element shatter type toner
- Toner Qty:35gf /60gf (1k/3k)
- The life span of toner 1k/3k sheets (ISO 19752 Standard Coverage)
- Toner Residual Sensor : None
- OPC Cleaning : Use the conventional cleaning blade
- Handling of wasted toner : Discard by collecting waste-toner at waste-toner bin.
- OPC Drum Protecting Shutter : None
- Classifying device for toner cartridge: ID is classified by interruption of the frame channel.
- Development Roller type : conductive elastic roller
- Doctor BLADE Type : Regulating toner layer by pressure
- Charge Roller Type : Conductive Roller Contact-Charge

3.3.1 Fuser Specification

1) Heat Lamp
- Heat Lamp Terminal Shape : Terminal Single Type
- Voltage 120 V : 115 $\pm$ 5 %, 220 V : 230 $\pm$ 5 %
- Capacity : 600 Watt $\pm$ 30 W
- Light Qty Distribution : 140%
- Life : 3000 Hr

2) Thermostat
- Thermostat Type : Non-Contact type THERMOSTAT
- Control Temperature : 150°C $\pm$ 5°C

3) Thermistor
- Thermistor Type : HF-R0060 (SEMITEC 364FL Type)
- Temperature Resistance : 7 kΩ(180 °C)
- SYSTEM Temperature SETTING
  - Stand by : 165 $\pm$ 5°C
  - Printing : 175 $\pm$ 5°C(5 minutes before)
         170°C $\pm$ 5°C(5 minutes after)
  - Overshoot: 200°C or less
  - Overheat :210°C or less

4) Safety Relevant Facts
- Protecting device when overheating
  - 1st protecting device : H/W cuts off when detecting an overheating
  - 2st protecting device : S/W cuts off when detecting overheating
  - 3st protecting device : Thermostat cuts off the power
- Safety device
  - The power of Fuser is cut-off after front cover is open.
  - The overheating safety device for customer
  - The surface temperature of the Fuser Cover is under 80°C

3.4 Sanner Part

600dpi Color CIS Module for Flat bed, SCX-4521F uses the CIS scanning method

1) CIS SPEC

     - Scanning size : 216 mm (width for letter-size)

     - Light source : LED

     - Scanning sensor: CIS 600/300 dpi

     - Scanning mode : Color SCAN / Mono SCAN

     - MTF : 30% (300 dpi Chart)

     - CIS interface : Analog output

     - Power supply : 3.3V

     - Clock Frequency: 5MHz max.

     - Number of output : 1

     - LED Current : Red/Green/Blue : 60mA

     - Clamp Level : 1.1V

     - Connection : 12 pin FFC connector (pitch 1.0mm)

2) Scan Resolution

  (a) Transmission

     - Normal : Vertial: 3.85 Line/mm, Horizontal: 8 Pels/mm :203 x 98dpi

     - Fine : Vertial: 7.7 Line/mm, Horizontal: 8 Pels/mm :203 x 196dpi

     - Super Fine : Vertial: 11.8 Line/mm, Horizontal: 11.8 Pels/mm ;300 x 300dpi

  (b) When Copy : Vertial: 11.8 Line/mm, Horizontal: 23.6 Pels/mm :600x300dpi(ADF)

                      Vertial: 23.6 Line/mm, Horizontal: 23.6 Pels/mm :600x600dpi(Platen)

3) Half Tone (Gray Scale) : 256 Levels

4) Scan Line Time

  (a) Tx

     - Normal : 1.5 ms/Line

     - Fine : 1.5 ms/Line

     - Super Fine : 1.5 ms/Line

  (b) Copy : 1.5 ms/Line

  (c) Scan

     - Color : 4.5msec/line

     - Gray : 4.5msec/line

     - Mono : 4.5msec/line

5) Scanning Width

     - MAX SCAN WIDTH : 216 mm (8.5 inches)

     - Effective Scan Width: 208mm

6) ADF Motor

  (a) Motor Spec

     - 정격전압 : 24VDC

     - 정격전류 : 0.6A(Peak)

7) Motor Driver speed & method
  (a) FAX Transmission
        - Normal Mode : 2000 pps
        - Fine Mode : 1000 pps
        - Super Fine Mode : 667 pps
  (b) Copy Job : 667 pps, 2-2
        - max(30sheets) : 50gf
        - min(1sheets) : 20gf

8) Document Detect sensor
  (a) Type : Photo interrupt
  (b) Position : ADF PBA
  (c) LED - max current : 50mA
          - max voltage : 3.3V
  (d) Output - Logic "H" : No Paper
             - Logic "L" : Paper
  (e) Lever-Sensor DOC : ADF Lower Torsion Spring

9) Regi Detect sensor
  (a) Type : Photo interrupt
  (b) Position : ADF PBA
  (c) LED - max current : 50mA
          - max voltage : 3.3V
  (d) Output - Logic "H" : No Paper
             - Logic "L" : Paper
  (e) Lever-Sensor DOC : ADF Lower Torsion Spring

10) Document Scan sensor
  (a) Type : Photo interrupt
  (b) Position : ADF PBA
  (c) LED : - Max current : 50mA
          - Max Voltage : 3.3V
  (d) Output - Logic "H" : Off(No Position), No Paper
             - Logic "L" : On (Doc Position), Paper
  (e) LEVER - SENSOR SCAN : Scan Lower Torsion Spring

3.5 OPE(Operational Panel Equipment)

1) Ope Panel

OPE Panel has a MICOM Chip on it and communicates with Main CPU using Serial communication Line(SIO). OPE Panel consists of Micom, Key Matrix Part, LED Driving Part and LCD Part.

2) Key Description

No	Part	Feature	Function
1	Common	3*4Key	Dialing and Option Input
		S	
		S	
		N	
		U	
		E	
		N	
2	Save	T	
3	Copy	R	
		N	
		C	
		D	ght/Normal/Dark)
		F	s.
4	Fax	R	
		P	
		B	e same time.
		C	
		R	
5	Scan	Scan to	select [scan to PC], [scan to FAX], [scan to E-mail] function.

U5 (IC-DRAM/512K x 16Bit)

U7 (IC-POSI, ADSUST REG)

U10 (IC-CMOS LOGIC, INVER TER)

U12 (IC-MOTOR DRIVER)

U1 (IC-VOLTAGE COMP)

U3 (IC-CLOCK GENERATOR)

12.0MHz

U8 (IC-EEPROM/256x12Bit)

U9 (IC-POSI, FIXED REG)

3) LCD Part

- Number of Characters : 16 Characters x 2 line
  - · Clock, Date display
  - · System Status display
  - · Alarm, Error Message display
  - · Function Dialog Message display

3.6 SMPS & HVPS

It is the power source of entire system. It is assembled by an independent module, so it is possible to use for common use. It is mounted at back of the machine. Power part is divided by two independent PBAs - SMPS PBA and HVPS PBA. SMPS PBA supplies the DC power for driving the system and supplies the AC power to the fuser. SMPS has two output channels : +5V and +24V. HVPS PBA supplies High voltage to the developer part to make a printing image on the paper. High voltages applied to the MHV, THV, DEV, SUPPLY.

3.6.1 SMPS

1) AC Input

- Input Rated Voltage : AC 220V ~ 240V / AC 110V ~ 127V
- Input Voltage fluctuating range: AC 180V ~ 270V / AC 100V ~ 135V
- Rated Frequency : 50/60 Hz
- Frequency fluctuating range : 47 ~ 63 Hz
- Input Current : Under 4.0Arms / 2.5Arms
  (But, the status when lamp is off or rated voltage is inputted/outputted)

2) Rated Output Power

NO	Items	CH1	CH2	Remarks
1	CHANNEL	+5V	+24.0V	
2	CONNECTOR PIN	CON 2 5V PIN : #5pin GND PIN: #6pin	CON 2 24V PIN: #2, #3, #4 GND PIN: #7pin	Jam cover switch included
3	Rated Output	+5V ± 5%(4.75 ~ 5.25V)	+24V -10%/+15%(21.6V ~ 27.6V)	
4	Max. Output current	0.8 A	2.5 A	
5	Peak Loading current	1.0 A	2.7 A	within 1ms Duration
6	RIPPLE NOISE Voltage	100mVp-p or less	500mVp-p or less	
7	Maximum output	2.5W	36W	
8	Peak output	4W	55.2W	1ms
9	Protection for loading shortage and overflowing current	Fuse Protection or Shutdown within 1.5A ~ 3.0A range.	Fuse Protection or Shutdown within 3.5A ~ 4.5A range.	

3) Consumption Power

NO	Item	CH1(+5V)	CH2(24V)	System
1	Stand-By	0.6 A	1.3 A	AVG : 65Wh
2	Printing	0.8 A	1.9 A	AVG : 350Wh
3	Sleep-Mode	0.5 A	0.3 A	AVG : 10Wh

4) Power Cord Length : 1830 ±50mm

5) Power Cord Switch : Exist

6) Feature

  - Withstand Resistance : 100 ㎹ or more (at DC 500V)

  - Insulating revisiting pressure : Must be no problem within 1 min. (at1000Vac,10mA)

  - Leaking Current : under 3.5mA

  - Running Current : under 40A PEAK (AT 25 °C,COLDSTART)

       under 50A PEAK (In other conditions)

  - Rising Time : within 2Sec

  - FallingTime : over 20ms

  - Surge : Ring Wave 6KV-500A (Normal, Common)

7) Environment Condition

  - Operating temperature range : 0 °C ~ 40 °C

  - Maintaining temperature range : -20 °C ~ 40 °C

  - Preserving Humidity Condition : 10% ~ 90% RH

  - Operating atmospheric pressure range : 1atm

8) EMI Requirement : CISPR, FCC, CE, MIC,

9) Safety Requirement : IEC950 UL1950, CSA950, C-UL, Semko, EK, CB, CCC(CCIB),GOST, EPA,

3.6.2 HVPS Board

The HVPS board creates the high voltage of THV/MHV/Supply/Dev and supplies them to the developer part for making best quality printing image. The HVPS part takes the 24V and outputs the high voltage such as THV/MHV/Supply/Dev, and the outputted high voltage is supplied to the toner, OPC cartridge, and transfer roller.

  (a) Transfer High Voltage (THV+)

  - Input Voltage : 24 V DC +15% / -10% (21.6V~27.6V)

  - Out Voltage : +1300KV ±1.5% (200㎹ Load)

  - Out Voltage Trigger : 6.5 μA

  - Input Voltage Variation : ±5 %

      Load Variation : ±5 %

  - Out Voltage Rising Time : 100 ms Max

  - Out VoltageFalling Time : 100 ms Max

  - Transfer Variation Voltage on Environment Variation : +500 V ~ +5000V

  - Control Method on environment : THV-PWM ACTIVE, transfer Active signal, of environment sensing voltage is input and get feed back current, and recalculate it to resistance .

  - Control method on transfer output voltage : It is controlled by changing its duty of THVPWM Signal as follows. 10% Duty : +500V, 90% Duty : +5000V

  (b) Charge Voltage (MHV)

  - Input Voltage : 24 V DC +15% / -10% (21.6V~27.6V)

  - Out Voltage : -1300KV ±50V(50㎹ Load)

  - Out Voltage Rising Time : 50 ms Max

  - Out VoltageFalling Time : 50msMax

  - Out Voltage Range : 30 ㎹ ~ 1000㎹

  - Output Control Signal(MHV-PWM) : Active Low PWM signal for controlling MHV

(c)Developing Voltage (DEV)

- Input Voltage : 24V DC +15% / -10% (21.6V~27.6V)
- Output Voltage: -350V $\pm$ 20V (50 $M\Omega$ Load)
- Output Voltage Fluctuation range: PWM Control
- Input contrast of the output stability degree : $\pm$5 %orless
- Loading contrast : $\pm$5 %orless
- Output Voltage Rising Time : 50 ms Max
- Output Voltage Falling Time : 50 ms Max
- Output Loading range : 10$M\Omega$~1000 $M\Omega$
- Output Control Signal (BIAS-PWM) : Active Low PWM signal for controlling MHV

(d) Supply

- Output Voltage : -550V $\pm$ 50V(50$M\Omega$ Load)
- Input contrast of the output stability degree : under $\pm$5 %
- Loading contrast : $\pm$5 %orless
- Output Voltage Rising Time : 50 ms Max
- Output Voltage Falling Time : 50 ms Max
- Output Loading range : 10 $M\Omega$ ~ 1000 $M\Omega$
- Output Control Signal (BIAS-PWM) : Active Low PWM signal for controlling MHV

3.7 FUSER AC POWER CONTROL

The Fuser(HEAT LAMP) gets heat from AC power. The AC power controls the switch with the Triac, a semiconductor switch. The 'ON/OFF control' is operated when the gate of the Triac is turned on/off by Phototriac (insulting part). In other words, the AC control part is passive circuit, so it turns the heater on/off with
taking signal from engine control part.
When the 'HEATERON' signal is turned on at engine,the LED of PC102 (Photo Triac) takes the voltage and flashes. From the flashing light, the Triac part (light receiving part) takes the voltage,and the voltage is supplied to the gate of Triac and flows into the Triac. As a result, the AC current flows in the heat lamp, and heat is occurred.
On the other hand, when the signal is off, the PC102 is off, the voltage is cut off at the gate of Triac, the Triac becomes off, and then the heat lamp is turned off.

1) Triac feature : 12A, 600V SWITCHING
2) Phototriac Coupler (PC102)

- Turn OnIf Current : 15mA~50mA(Design : 16mA)
- High Repetive Peak Off State Voltage : Min 600V

4. Alignment and Adjustments

4.1 User Mode

The table below shows the map of User settings available in User Mode. These are fully described in the User Guide and are not included here.

1st level			2nd level	3rd level	Default Value
RETURN ◀--			RETURN		
left/right && Enter --▶		14 character	left/right && Enter		
1. Paper Setting ◀ Paper Type ▶	1	Paper Type	Plain Paper, Thick, Thin, Bond, Color Paper, Card stock, Labels, Transparency, Envelope, Preprinted		Plain Paper
	2	Paper Size	A4, Legal, Executive, Folio A5, B5, A6, Letter		By Country
2.Machine Setup ◀ Machine ID ▶	1	Machine ID (Only SCX-4521F)	Fax: ID:		
	2	Date & Time (only SCX-4521F)	00-00-0000 00:00(AM)		
	3	Clock Mode (only SCX-4521F)	12, 24 hours		12hours
	4	Language	[English/FRANCAIS/Espanol/ Portugues/Deutsch/Italiano/ Pycckn/Norsk/Polski/ Suomi/Magyar/Dansk/ cestina/Svenska/Turkse - 15 language		English
	5	Power Save	On	5, 10, 15, 30, 45 min.	5
			Off		
	6	Ignore Toner	On		
			Off		
	7	USB Mode	Fast/Slow		Fast

1st level			2nd level	3rd level	Default Value
RETURN ◄--			RETURN		
left/right && Enter --►		14 character	left/right && Enter		
3.Copy Setup ◄Default-Change ►	1	Default-Change	Darkness	Light/Normal/Dark	Normal
			Original Type	Text, Text/Photo, Photo	Text
			Reduce/Enlarge	[Original(100%)]	100%
				[LGL→LTR(78%)]	
				[LGL→A4(83%)]	
				[A4→A5](71%)]	
				[A4→LTR(94%)]	
				[EXE→LTR(104%)]	
				[A5→A4(141%)]	
				25%	
				50%	
				150%	
				200%	
				400%	
				[Custom:25-400]	
			No. of Copies	[1-99]	1
	2	Timeout	15,30,60,180Sec, Off		60sec
	3	Favorite copy	Clone		
			Copy Collate		
			Autofit		
			2 side in 1 Pg		
			2 UP		
			4 UP		
			Poster		
4. Copy Feature ◄Off ►	1	Off			
	2	Clone			
	3	Copy Collate			
	4	Autofit			
	5	ID Card Copy			
	6	2 UP		This will set to 2UP	
	7	4 UP		This will set to 4UP	
	8	Poster			

1st level			2nd level	3rd level	Default Value
RETURN ◀--			RETURN		
left/right && Enter --▶		14 character	left/right && Enter		
5. Fax Setup (only SCX-4521F) ◀ Default-Change ▶	1	Default-Change	Resolution	Standard/Fine/Super Fine/Photo/Color	Standard
	2	Ring to Answer	1~7		2
	3	Darkness	Light/Normal/Dark		Normal
	4	Redial Term	1~15Min		3minutes
	5	Redials	1~13times		7times
	6	MSG Confirm	On, Off, On-Error		On-Error
	7	Image TCR	On, Off		
	8	Auto Report	On, Off		On
	9	Auto Reduction	On, Off		On
	10	Discard Size	0~30mm		20mm
	11	Receive Code	0~9		9
	12	DRPD Mode	set		
	13	Receive Mode	Fax, Tel, Ans/Fax, DRPD		
6. Fax Feature (only SCX-4521F) ◀ Delay Fax ▶	1	Delay Fax	Fax:		
	2	Priority Fax	Fax:		
	3	Add Page	Yes, No		
	4	Cancel Job	Yes, No		
7. Advanced fax (only SCX-4521F)	1	Send Forward	On,Off		Off
	2	RCV Forward	On	Start Time/ End Time Print Local Copy	
			Off		Off
	3	Junk Fax Setup	On	Fax:	
			Off		Off
	4	Secure Receive	On,Off, Print		Off
	5	Prefix Dial	FAX: xxxxx (5 digits)		
	6	Stamp RCV Name	On, Off		Off
	7	ECM Mode	On, Off		On
8. Reports ◀ Phone Book ▶	1	Phone Book (only SCX-4521F)			
	2	Sent Report (only SCX-4521F)			
	3	RCV Report (only SCX-4521F)			
	4	System Data			
	5	Scheduled Jobs (only SCX-4521F)			
	6	MSG Confirm (only SCX-4521F)			
	7	Junk Fax List (only SCX-4521F)	10 ea		
9. Sound/Volume ◀ Speaker ▶	1	Speaker	On, Off, Comm.		Comm.
	2	Ringer	Off, Low,Med,High		Med
	3	Key Sound	On, Off		Off
	4	Alarm Sound	On, Off		On

\<continue..\>

1st level			2nd level	3rd level	Default Value
RETURN ◄--			RETURN		
left/right && Enter --►		14 character	left/right && Enter		
10. Maintenance ◄ Clean Drum ►	1	Clean Drum	On,Off		Off
	2	Notify Toner	On,Off		Off
	3	Clear Memory	Clear All Mem.		
			Paper setting		
			Machine Setup		
			Copy Setup		
			Fax Setup		
			Fax Feature		
			Advanced Fax		
			Sound/Volume		
			Sent Report		
			RCV Report		
			Phone Book		
	4	Remote Test (only SCX-4521F)	On		Off
			Off		

4.2 Tech Mode and Setting

4.2.1 How to Enter Tech Mode

In service (tech) mode the technician can check the machine and perform various tests to help with failure diagnosis.

When in Tech mode the machine still performs all normal operations.

To enter the Tech mode (SCX-4521F)

To enter the Tech mode press (Menu) → (#) → (1) → (9) → (3) → (4) in sequence and the LCD

briefly displays **'TECH',** the machine has entered service (tech) mode.

To enter the Tech mode (SCX-4321)

To enter the Tech mode press (Menu) → (Return) → (◄) → (►) → (Return) → (✱) in sequence and the LCD

briefly displays **'TECH',** the machine has entered service (tech) mode.

4.2.2 Setting-up System in Tech Mode

1st level		2nd level	3rd level	Default Value
RETURN ◄--		RETURN		
left/right && Enter --►	14 character	left/right && Enter		
Tech Mode ◄Data Setup ►	1 Data Setup	Send Level (only SCX-4521F)	-9~-15	-12
		Modem Speed (only SCX-4521F)	33.6, 28.8, 14.4, 12.0, 9.6, 4.8	33.6
		Error Rate (only SCX-4521F)	5%, 10%	10%
		Dial Mode (only SCX-4521F)	Tone, Pulse	Tone
		Notify Toner	Customer No.	
			Customer Name	
			Service No.	
			Serial No.	
		Clear All Mem.		
		Clear Count	Total Page Count	Enter Password
			CRU Print CNT	
			FLT Scan Count	
			ADF Scan Count	
			Used Toner CNT	
			Edit Toner Dot	
		Flash Upgrade	Local	
			Remote	
		Silence Time (only SCX-4521F)	Off/ 12 Sec/Unlimited	Off
	2 Machine Test	Switch Test		
		Modem Test (only SCX-4521F)		
		Dram Test		
		Rom Test		
		Pattern Test		
		Shading Test		
	3 Report	Protocol(only SCX-4521F)		
		System Data		
	Key History	Error Info		
	New Cartridge			

4.2.3 Setting

4.2.3.1 Changing the Display Language

To change the language that displays on the control panel, follow these steps:

1. Press Menu until "Machine Setup" appears on the top line of the display.

2. Press the scroll button (◀ or ▶) until "Language" appears on the bottom line of the display.

3. Press Enter. The current setting appears on the bottom line of the display.

4. Press the scroll button (◀ or ▶) until the language you want appears on the display.

5. Press Enter to save the selection.

6. To return to Standby mode, press Stop/Clear.

4.2.3.2 Setting the Machine ID (Only for SCX-4521F)

In some countries, you are required by law to indicate your fax number on any fax you send. The Machine ID, containing your telephone number and name (or company name), will be printed at the top of each page sent from your machine.

1. Press Menu until "Machine Setup" appears on the top line of the display. The first available menu item, "Machine ID," displays on the bottom line.

2. Press Enter. The display asks you to enter the fax number.
   If there is a number already set, the number appears.

3. Enter your fax number using the number keypad.

> **NOTE:** If you make a mistake while entering numbers, press the ◀ button to delete the last digit.

4. Press Enter when the number on the display is correct. The display asks you to enter an ID.

5. Enter your name or the company name using the number keypad.
   You can enter alphanumeric characters using the number keypad, and include special symbols by pressing the 0 button.
   For details on how to use the number keypad to enter alphanumeric characters.
   If you want to enter the same letter or number in succession, enter one digit, move the cursor by pressing the ▶ button and enter the next digit.
   If you want to insert a space in the name, you can also use the ▶ button to move the cursor to skip the position.

6. Press Enter when the name on the display is correct.

7. To return to Standby mode, press Stop/Clear.

4.2.3.3 Setting the Date and Time

When you turn your machine on for the first time, the display prompts you to enter the current date and time. After entering, it will not appear anymore. For the SCX-4521F, all of your faxes will have the date and time printed on them.

> **NOTE:** If power to the machine is cut off, you need to reset the correct time and date once the power has been restored.

1. Press Menu until "Machine Setup" appears on the top line of the display.

2. Press the scroll button (◀ or ▶) to display "Date & Time" on the bottom line and press Enter.

3. Enter the correct time and date using the number keypad.
    For the SCX-4321, press the scroll button (◀ or ▶) to enter the time and date.

    Month = 01 ~ 12

    Day = 01 ~ 31

    Year = requires four digits

    Hour = 01 ~ 12 (12-hour mode)

    00 ~ 23 (24-hour mode)

    Minute = 00 ~ 59

> **NOTE:** The date format may differ from country to country.

    You can also use the scroll button (◀ or ▶) to move the cursor under the digit you want to correct and enter a new number. For the SCX-4321, you can use Enter or Upper Level to move the cursor.

4. To sel ect " AM" or "PM" for 12-hour format, press the ＊ or # button or any number button.
    For the SCX-4321, press Enter and then the scroll button (◀ or ▶).
    When the cursor is not under the AM or PM indicator, pressing the ※ or # button immediately moves the cursor to the indicator. For the SCX-4321, press the scroll button (◀ or ▶) to move the cursor to the indicator.
    You can change the clock mode to 24-hour format (e.g. 01:00 PM as 13:00).

5. Press Enter when the time and date on the display is correct.
    When you enter a wrong number, the machine beeps and does not proceed to the next step. If this happens, just reenter the correct number.

6. To return to Standby mode, press Stop/Clear.

4.2.3.4 Changing the Clock Mode

You can set your machine to display the current time using either a 12-hour or 24-hour format.

1. Press Menu until "Machine Setup" appears on the top line of the display.

2. Press the scroll button (◀ or ▶) until you see "Clock Mode" on the bottom line and press Enter.
    The clock mode currently set for the machine displays.

3. Press the scroll button (◀ or ▶) to select the other mode and then press Enter to save the selection.

4. To return to Standby mode, press Stop/Clear.

4.2.3.5 Setting the Paper Size and Type

After loading paper in the tray, you need to set the paper size and type using the control panel buttons. These settings will apply to copy and fax modes. For PC-printing, you need to select the paper size and type in the application program you use on your PC.

1. Press Menu.
    The display shows "Paper Setting" on the top line of the display.

2. Press the scroll button (◀ or ▶) to display "Paper Size" on the bottom line and press Enter to access the menu item.

3. Use the scroll button (◀ or ▶) to find the paper size you are using and press Enter to save it.

4. Press the button to scroll to "Paper Type" and press Enter to access the menu item.

5. Use the scroll button (◀ or ▶) to find the paper type you are using and press Enter to save it.

6. To return to Standby mode, press Stop/Clear.

4.2.3.6 Setting Sounds (Only for SCX-4521F)

You can control the following sounds:

• Speaker: You can turn on or off the sounds from the telephone line through the speaker, such as the dial tone or a fax tone. With this option set to "Comm." the speaker is on until the remote machine answers.

• Ringer: You can adjust the ringer volume.

• Key Sound: With this option set to "On" a key tone sounds each time a key is pressed.

• Alarm Sound: You can turn the alarm sound on or off. With this option set to "On" an alarm tone sounds when an error occurs or fax communication ends.

• You can adjust the volume level using the On Hook Dial button.

4.2.3.7 Speaker, Ringer, Key Sound, and Alarm Sound

1. Press Menu until "Sound/Volume" appears on the top line of the display.

2. Press the scroll button (◀ or ▶) to scroll through the options. Press Enter when you see the desired sound option.

3. Press the scroll button (◀ or ▶) to display the desired status or volume for the option you have selected. You will see the selection on the bottom line of the display. For the ringer volume, you can select "Off," "Low," "Med," and "High". Setting "Off" means that the ringer does not sound. The machine works normally even if the ringer is turned off.

4. Press Enter to save the selection. The next sound option appears.

5. If necessary, repeat steps 2 through 4.

6. To return to Standby mode, press Stop/Clear.

4.2.3.8 Speaker Volume

1. Press On Hook Dial. A dial tone sounds from the speaker.

2. Press the scroll button (◀ or ▶) until you hear the volume you want. The display shows the current volume level.

3. Press On Hook Dial to save the change and return to Standby mode.

> **NOTE:** You can adjust the speaker volume only when the telephone line is connected.

4.2.3.9 Toner Save Mode

Toner Save mode allows your machine to use less toner on each page. Activating this mode extends the life of the toner cartridge beyond what one would experience in the normal mode, but it reduces print quality.

To turn the toner save mode on or off, press Toner Save.

• If the button backlight is on, the mode is active and the machine uses less toner when printing a document.

• If the button backlight is off, the mode is deactivated and the machine prints with the normal quantity of toner.

4.2.3.10 Power Save Mode

Power Save mode allows your machine to reduce power consumption when it is not in actual use. You can turn this mode on and select a length of time for which the machine waits after a job is printed before it switches to a reduced power state.

1. Press Menu until "Machine Setup" appears on top line of the display.

2. Press the scroll button (◀ or ▶) until "Power Save" appears on the bottom line. Press Enter.

3. Press the scroll button (◀ or ▶) to display "On" on the bottom line and press Enter.
    Selecting "Off" means that the power save mode is deactivated.

4. Press the scroll button (◀ or ▶) until the time setting you want appears.
    The available options are 5, 10, 15, 30, and 45 (minutes).

5. Press Enter to save the selection.

6. To return to Standby mode, press Stop/Clear.

4.2.4 FLASH UPGRADE

There are 2 methods to update the Flash Rom, Local and Remote.

(1) Local Machine

• RCP (Remote Control Panel) mode
This method is for Parallel Port or USB Port. Connect the PC and activate the RCP (Remote Control Panel) to upgrade the Firmware.

< Method >
How to Update Firmware using RCP
1. Connect PC and Printer with a Parallel Cable or a USB Cable.
2. Run the RCP utility and select Firmware Update.
3. Search for the Firmware file to be used to update the set using the Browse Icon.
4. Click the Update icon. The firmware file is transmitted to the Printer automatically and the printer is initialized when the download completes.
5. Click the Refresh icon and check that the updated version numbers are displayed.

• DOS Command mode
This method is ONLY for Parallel Port. Connect the PC to the set using a Parallel Cable and enter the DOS Command to upgrade the firmware.

< Method >
1. First of all you need the following files : down.bat, down_com.bin, fprt.exe, and Rom File: (file name for upgrade). Ensure you save ALL of these files in the same folder.
2. At the DOS prompt enter the correct command (as shown below) and push the enter key.
   Then the upgrade will automatically take place..
3. There are two commands use the correct one depending on the condition of the set..
   * When the product is in the idle condition
     down "rom file"
   * When the product is in Ready condition
     (TECH MODE --> DATA SETUP --> FLASH UPGRADE --> LOCAL)
     copy/b "rom file" lpt1
4. Do not turn off the power during the upgrade process.

(2) Remote FAX

It is possible to use a set that already has the latest firmware to upgrade a remote set remotely using the telephone system.

< Method >
1. On the set that has the latest firmware set it toi transmit the upgrade:-
   (TECH MODE •DATA SETUP•••• FLASH UPGRADE•••• REMOTE)
2. Enter the telephone number of the set that needs to be upgraded.
   (Several faxes can be upgrade at the same time. In this case, enter each fax number.)
3. When the enter button is pressed the set sends the firmware file by calling designated fax number.
   (Around 10~15 minutes are needed to send the file.)

< Caution >
1. The Sending and Receiving fax machines MUST be the same model.
2. The sending fax must be set up in ECM mode and the Receiving fax memory must be 100%.
   If not the function will not work.

4.2.5 Machine Test

SWITCH TEST

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

MODEM TEST

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

DRAM TEST

Use this feature to test the machine's DRAM. The result appears in the LCD display.
If all memory is working normally, the LCD shows << O K >>

ROM TEST

Use this feature to test the machine's ROM. The result and the software version appear in the LCD display.
• FLASH VER : 1.00 V
• ENGINE VER :1.00V

PATTERN TEST

Using this pattern printout you can check that the printer mechanism is functioning properly.
This function is for factory manufacturing use only.

SHADING TEST

The function is used to set the optimum scan quality determined by the specific characteristics of the CIS(Contact Image Sensor). If copy image quality is poor perform this function to check the condition of the CIS unit.

< Method >

1. Select the [Shading Test] in TECH MODE (Menu, #, 1934).
2. Push the ENTER button and an image will be scanned.
3. After scanning the CIS SHADING PROFILE will be print out.
4. If the printed image is different to the sample image shown the CIS is defective.

NOTICE : *When you test the CIS, make sure that the cover is closed.*


```
SHADING VALUE

1. MONO GRAY SHADING :
   WHITE : MAX=229 Min=168 Avg=193 Diff=15 PRNU=6




2. RED GRAY SHADING :
   WHITE : MAX=234 Min=174 Avg=200 Diff=14 PRNU=7




3. GREEN GRAY SHADING :
   WHITE : MAX=241 Min=179 Avg=204 Diff=14 PRNU=4




4. BLUE GRAY SHADING :
   WHITE : MAX=240 Min=176 Avg=202 Diff=15 PRNU=6




-------> RESULTS : 03 00 00 00
```
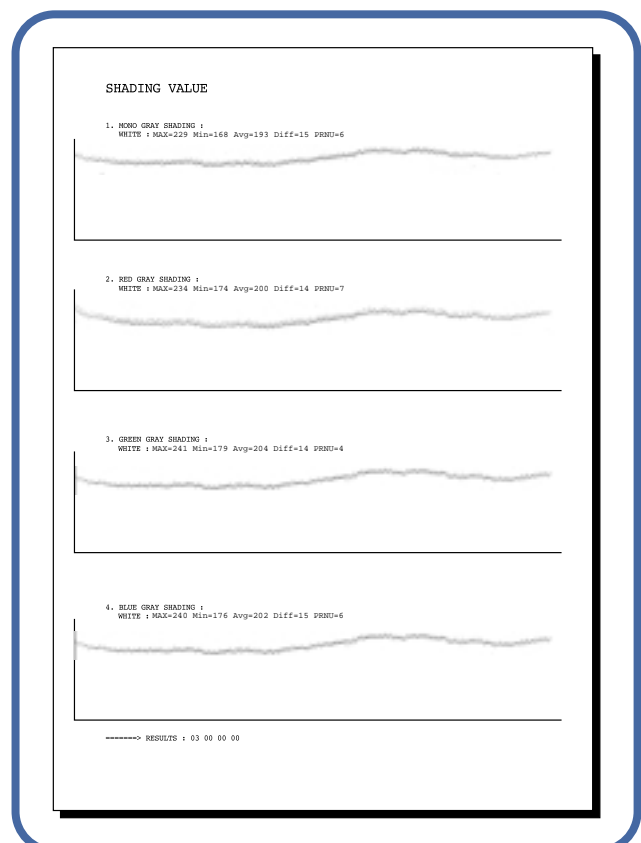
4.2.6 Report

PROTOCOL LIST

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

SYSTEM DATA

This list provides a list of the user system data settings and tech mode settings.

KEY HISTORY

This list shows th input key history.
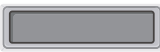
ERROR INFO

This list display the detail machine error list.

4.3 Control Panel

4.3.1 Control Panel Functions (SCX-4521F)

① C O P Y	**Darkness**	Adjusts the brightness of the documents for the current copy job.
	Original Type	Selects the document type for the current copy job.
	No. of Copies	Selects the number of copies.
	Reduce/Enlarge	Makes a copy smaller or larger than the original.
	Favorite Copy	Allows you to use one of the special copy features, such as Clone, Collation, Auto Fit, 2 Sides on 1 page, 2/4 Up (multiple pages on a sheet), and Poster copying after assigning it.
②		Displays the current status and prompts during an operation.
③		Uses to scroll through the available options for the selected menu item.
	Enter	Confirms the selection on the display.
	Menu	Enters Menu mode and scrolls through the menus available.
	Upper Level	Sends you back to the upper menu level.
	Start	Starts a job.
	Stop/Clear	Stops an operation at any time. In Standby mode, clears/cancels the copy options, such as the darkness, the document type setting, the copy size, and the number of copies.
④	**Number Keypad**	Dials a number or enters alphanumeric characters.

⑤ F A X	**Resolution**	Adjusts the resolution of the documents for the current fax job.
	Broadcasting	Allows you to send a fax to multiple destinations.
	Phone Book	Allows you to store frequently-dialed fax numbers as one or two-digit speed dial or group dial numbers for automatic dialing and edit the stored numbers. Also allows you to print a Phonebook list.
	Redial/Pause	In Standby mode, redials the last number or in Edit mode, inserts a pause into a fax number.
	On Hook Dial	Engages the telephone line.
⑥ S C A N	**Scan-to**	Allows you to access a list of your PC software programs that an image can be scanned to. You must create the scan list using the Samsung software (Printer Settings Utility) provided with this machine. For details, see **Software User's Guide**.
⑦ S A V E	**Toner Save**	Allows you to save on toner by using less toner to print a document.

4.3.2 Control Panel Functions (SCX-4321)

① **C** **O** **P** **Y**	**Darkness**	Adjusts the brightness of the documents for the current copy job.
	Original Type	Selects the document type for the current copy job.
	No. of Copies	Selects the number of copies.
	Reduce/Enlarge	Makes a copy smaller or larger than the original.
	Favorite Copy	Allows you to use one of the special copy features, such as Clone, Collation, Auto Fit, 2 Sides on 1 page, 2/4 Up (multiple pages on a sheet), and Poster copying after assigning it.
②		Displays the current status and prompts during an operation.
③		Uses to scroll through the available options for the selected menu item.
	Enter	Confirms the selection on the display.
	Menu	Enters Menu mode and scrolls through the menus available.
	Upper Level	Sends you back to the upper menu level.
	Start	Starts a job.
	Stop/Clear	Stops an operation at any time. In Standby mode, clears/cancels the copy options, such as the darkness, the document type setting, the copy size, and the number of copies.
④ **S** **C** **A** **N**	**Scan-to**	Allows you to access a list of your PC software programs that an image can be scanned to. You must create the scan list using the Samsung software (Printer Settings Utility) provided with this machine. For details, see **Software User's Guide**.
⑤ **S** **A** **V** **E**	**Toner Save**	Allows you to save on toner by using less toner to print a document.

4.4 LCD Status Error Massages

STATUS	LCD Display	Descriptions
Document Jam	Document Jam	When Document Jam occurred at ADF module. This is displayed on LCD, Print in the Transmission Journal.
Door Open or Jam Cover Open	[Front or Rear] [Cover Open]	When machine' front side cover or Jam Cover was opened, it displayed On the LCD.
NO paper	[No Paper] Add Paper	When there is no paper in CASSETTE Tray, machine Displays this message on LCD.
PAPER JAM 0	[Paper Jam 0] Open/Close Door	When the machine encountered paper jam in pick up area, Machine displays on the LCD until DOOR OPEN & CLOSE.
PAPER JAM 1	[Paper Jam 1] Open/Close Door	When the machine encountered paper jam in paper exit of Machine, machine displays on the LCD until DOOR OPEN & CLOSE.
PAPER JAM 2	[Paper Jam 2] Check Inside	When the machine encountered paper jam in paper exit of Machine, machine displays on the LCD until DOOR OPEN & CLOSE.
Communication Error	[COMM. Error]	When the machine has problem in communication, It displayed on the LCD. Machine displays this in case of Transmission. Machine displays this in case of fax handshaking step of Reception.
Line Error	[Line Error]	When the machine has problem in case of Fax Data reception step.
NO ANSWER	[No Answer]	When the machine could not connect to remote fax after Completion of redial up to redial counter in system data.
INCOMPATIBLE	[Incompatible]	Remote party did not have the requested feature, such as polling.
LINE BUSY	Line Busy	The remote fax didn't answer.
POWER FAILURE	Power Failure	When the machine's user memory has not been backup and There was power off / on .
STOP PRESSED	[Stop Pressed]	When the operator pressed the STOP button during transmission.
MEMORY FULL	Memory Full	When the machine has encountered the user memory was full,
FUSER ERROR	CRU Fuse Error	When the machine failed in installing the new toner cartridge.
LSU ERROR	[Hsync Error]	tech mode
LSU ERROR	[LSU Error]	user mode When the machine has encountered the Laser Beam Scanning unit could not reach the READY state,
TONER LOW	[Toner Low]	When the machine has encountered the Toner Low,
TONER EMPTY	[Toner Empty]	When the machine has encountered the Toner Empty,

STATUS	LCD Display	Descriptions
BY PASS JAM	[Bypass Jam]	When the machine detected the non feeding from BYPASS Tray.
GROUP is not available	Group Not Available	You have tried to select a group location where only a single Location number can be used.
RETRY REDIAL?	Retry Redial ?	the machine is waiting for the programmed interval to automatically redial a previously busy station.
NO. NOT ASSIGNED	NO. Not Assigned	The speed dial location you tried to use has no number assigned to it.
Load document	Load Document	You have attempted to set up a sending operation with no Document loaded.
Memory full and canel the job	Cancel ? 1:Yes 2:No	When the machine has encountered the memory full during storing the document into memory, the machine display the "CANCEL ?" to operator whether he/she make a decision the canceling the job or accept the scanned page so far to transmit the remained documents.
Job has not been created	Operation Not Assigned	When operator is doing in ADD/CANCEL operation and There is no job to handle if operator entered the job no.
Low Heat Error	[Low Heat Error]	Temperature could not reach certain level.
Open Fuser Error	Open Fuser Error	The thermister has been disconnected.
Over Heat Error	[Over Heat]	Temperature has gone up very high degree.
	[Jam 1] [No Catridge]	When the machine detected the toner cartridge has not been installed, or detected jam1 in warmup state.
Memory Dial Full	Memory Dial Full	During Auto dial transmission when all 15 jobs are configured and try to add 16th job

4.5 Engine Test Mode

The Engine Test Mode supplies useful functions to check the condition of the print engine. It tests the condition of each device and displays the result of the test on the LCD. It is divided into 5 functions (0~4), and these are shown below.

4.5.1 To enter the Engine Test Mode

To enter the Engine Test mode (SCX-4521F)

Press (Menu) → (#) → (1) → (9) → (3) → (1) in sequence, and the LCD briefly displays

'Engine Test', the machine has entered Engine Test Mode.
Press "0", "1", "2", "3" or "4" to select the Test No. (see list below – left hand column)

To enter the Engine Test mode (SCX-4321)

Press (Menu) → (Return) → (◄) → (►) → (Return) → (◄) in sequence, and the LCD briefly displays

'Engine Test', the machine has entered Engine Test Mode.
Press "0", "1", "2", "3" or "4" to select the Test No. (see list below – left hand column)

4.5.2 Diagnostic

NO.	Sub No.	Engine test	Remark
0	1	Motor Test	1 : On, 2 : Off – next test selected
	2	Pick Up Test	1 : On, 2 : Off – next test selected
	3	Fan Test	1 : On, 2 : Off – next test selected
	4	Manual Clt Test	1 : On, 2 : Off – next test selected
	5	PTL Test	1 : On, 2 : Off – next test selected
1	1	LSU Motor Test	1 : On, 2 : Off – next test selected
	2	LSU Hsync Test	1 : On, 2 : Off – next test selected
	3	LD Test	1 : On, 2 : Off – next test selected
2	1	Feed Sensor Test	1. Check : read the sensor
			2. Next : Next Sensor test
	2	Exit Sensor Test	1. Check : read the sensor
			2. Next : Next Sensor test
	3	Cover Sensor Test	1. Check : read the sensor
			2. Next : Next Sensor test
	4	Empty Sensor Test	1. Check : read the sensor
			2. Next : Next Sensor test
	5	Manual Sensor Text	1. Check : read the sensor
			2. Next : Next Sensor test
3	1	Therm ADC 180	1 : On, 2 : Off (maintain the fusing temp. 80˚C)
	2	Therm ADC 140	1 : On, 2 : Off (maintain the fusing temp. 135˚C)
	3	Therm ADC 120	1 : On, 2 : Off (maintain the fusing temp. 160˚C)
	4	Therm ADC 100	1 : On, 2 : Off (maintain the fusing temp. 191˚C)
4	1	MHV Test	1 : On, 2 : Off (-1550V ± 50V)
	2	Dev Bias Test	1 : On, 2 : Off (-430V ± 20V)
	3	THV EN/NEG Test	1 : On, 2 : Off (-1200V +300V/-150V)
	4	THV ON (1300V)	1 : On, 2 : Off (+1300V ± 20V)
	5	THV ADC 1300V	1 : On, 2 : Off (ADC Value : 101 ± 5)
	6	THV ADC 600V~3500V	1 : On, 2 : Off (Compare each ADC Value)

4.5.3 Detail Description (Engine Test Mode)

Function Name	Description	Display
01.Motor Test	The main motor starts when the execution key is pressed and stops when the stop key is pressed.	Main Motor On/Off
02.Pick Up Test	Automatically stops, when the execution is chosen. stops, when the execution is chosen.	Tray 1,2 Solenoid On/Off
03.Fan Test	The fan starts when the execution key is pressed and stops when the stop key is pressed.	Fan On/Off
04.Manual Clutch Test	The tray2,3 clutch is on for 1sec and then it automatically stops, when the execution is chosen.On this function, the main motor runs before 2sec from the point of the clutch on in order to check the clutch state.	Tray 2,3 Clutch On/Off
05.PTL Test	PTL(Pre-Transfer Lamp) is lights when the execution key chosen and it stops when the stop key is chosen.	PTL On/Off
11.LSU Motor	The laser motor starts when the execution key is pressed and stops when the stop key is pressed.	Laser Motor On/Off
12.LSU Hsync Test	The LSU motor starts and "Laser Ready" is displayed if the motor spins at the correct speed, otherwise "Laser Error" is displayed.	Laser Leady On/Off
13.LD Test	"Diode On" is displayed, when the laser diode is on. Otherwise "Diode Off" is displayed.	Diode On/Off
21.Feed Sen Test	These functions allow the current state of the sensor to be displayed.	"Sensor Off" or " Sensor On "
22.Exit Sen Test		
23.Cover Sen Test	This function allows the current state of the Cover sensor to be displayed. Touch the sensor and confirm that the message changes: "Cover Open" to " Cover Close"	"Cover Open" or "Cover Close"
24.Empty Sen Test	These functions allow the current state of the sensor to be displayed.	"Sensor Off" or " Sensor On "
25.Manual Sen Test		
31.Them ADC 180	"Current value" is displayed on the upper line of the LCD, and "Target value" on the bottom line. Target value is limited from "191°C" to "80°C"	Target temperature and output temperature from thermistor and ADC.
32.Them ADC 140		
33.Them ADC 120		
34.Them ADC 100		
41.MHV Test	These Functions are provided to check whether the control of the HVPS is functioning correctly.	MHV On/Off
42.Dev Bias Test		Dev Bias On/Off
43.THV EN/NEG Test		THV EN/NEG On/Off
44.THV ON(1300V)		THV On/Off
45.THV ADC 1300V		ADC value displayed.
46.THV ADC 600V~3500		ADC value displayed.

4.6 Paper Path and Clearing Paper Jams

4.6.1 Copy & Scan Document Path
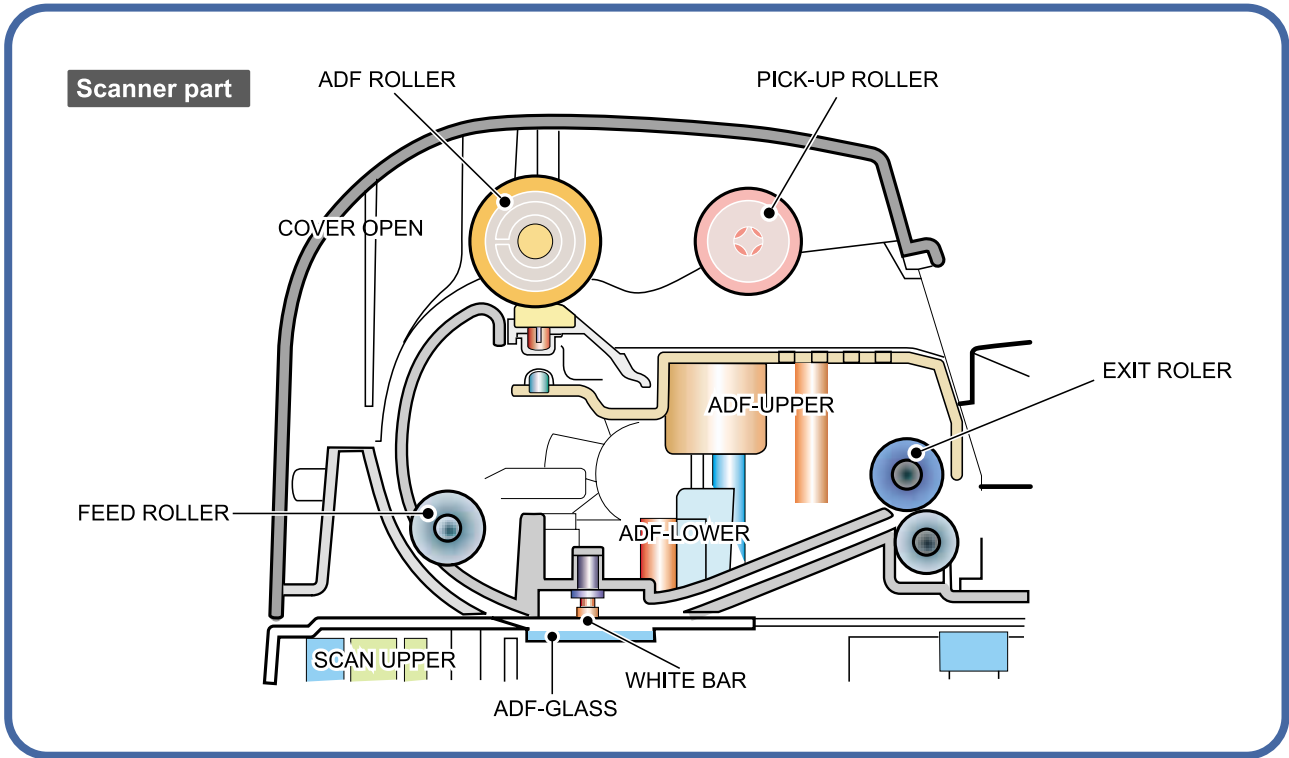
4.6.2 Printer Paper Path

1) After receiving a print command, the printer feeds paper from the main cassette or manual feeder as required.

2) The paper being fed passes the paper feed sensor. (Jam 0 occurs if the sensor is not operated within a certain time)

3) Having passed the paper feed sensor the paper moves to the paper exit sensor via printing process. (Jam 1 occurs if the sensor is not operated within a certain time)

4) The paper then passes through the paper exit sensor and out of the set. (Jam 2 occurs if the trailing edge of the paper does not pass the exit sensor within a certain time of the paper leading edge activating the exit sensor)
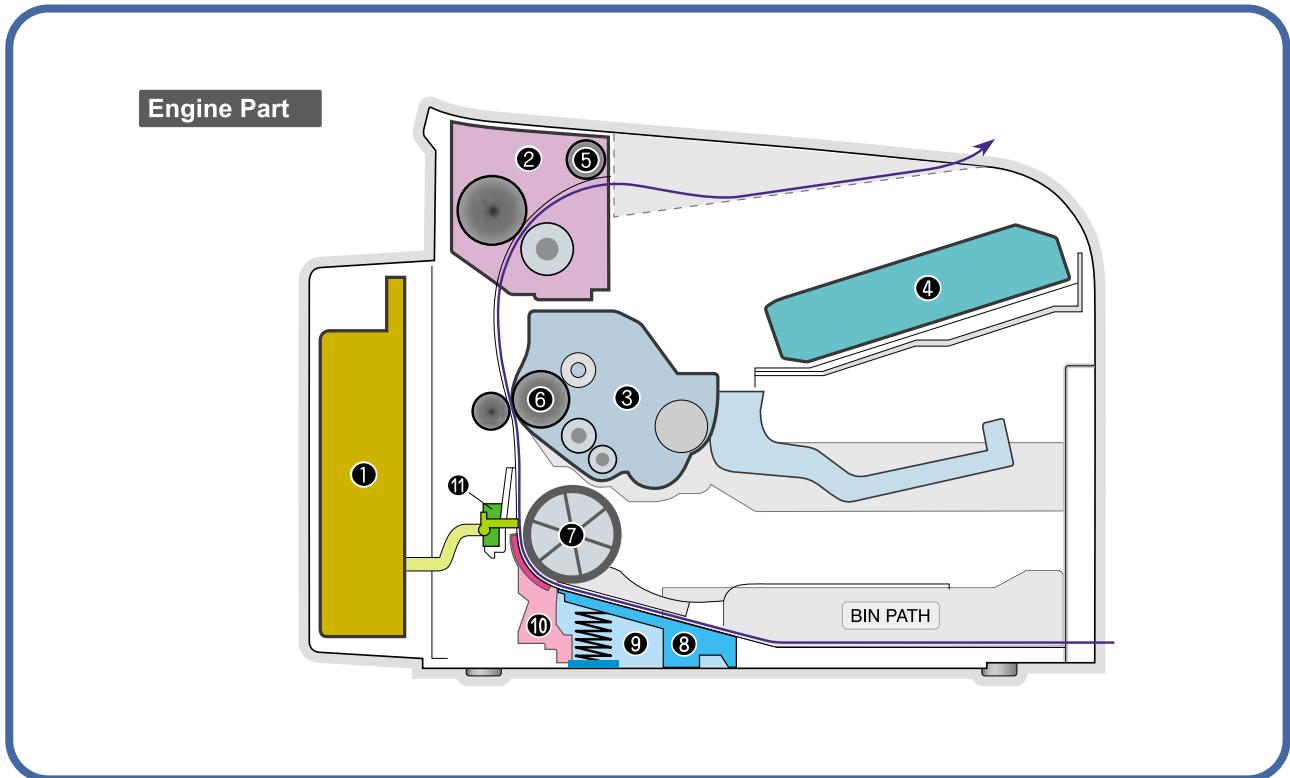
4.6.3 Clearing Paper Jams

When a paper jam occurs, "Paper Jam" appears on the display.
Refer to the table below to locate and clear the paper jam.

Message	Location of Jam
[Paper Jam 0] Open/Close Door	In the tray
[Paper Jam 1] Open/Close Door	In the fuser area or around the toner cartridge.
[Paper Jam 2] Check Inside	In the paper exit area

To avoid tearing the paper, pull out the jammed paper gently and slowly. Follow the instructions in the following sections to clear the jam.

4.6.3.1 In the Tray

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

2. Open and close the front door to resume printing.
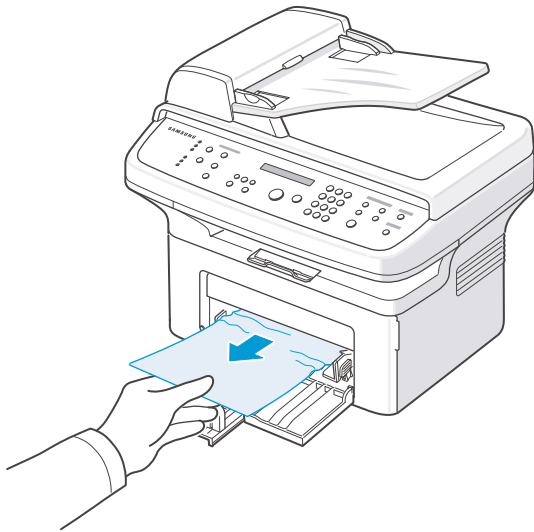
4.6.3.2 In the Fuser Area or Around the Toner Cartridge

> **NOTE:** The fuser area is hot. Take care when removing paper from the machine.

1. Open the front door and pull the toner cartridge out, lightly pushing it down.

2. Remove the jammed paper by gently pulling it straight out.

3. Replace the toner cartridge and close the front door. Printing automatically resumes.
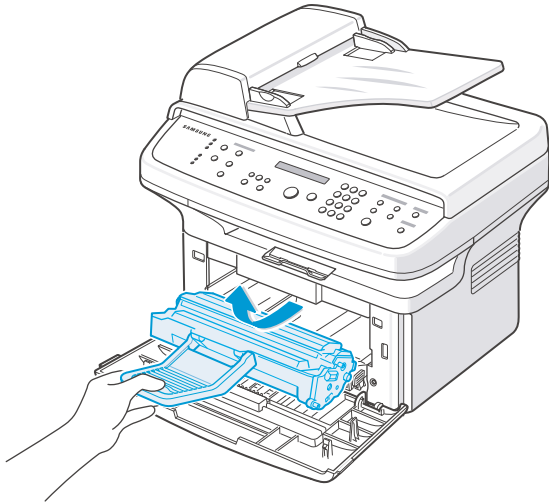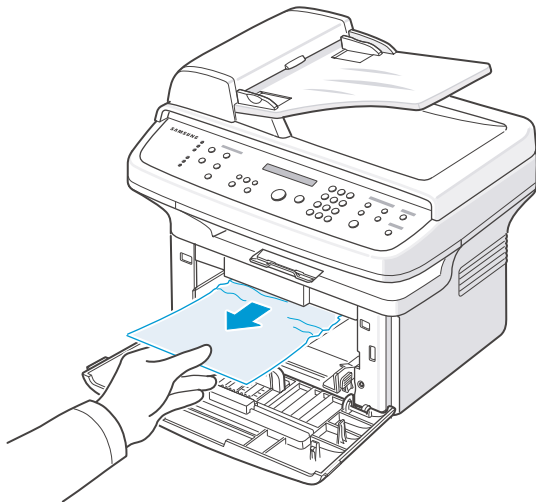
4.6.3.3 In the Paper Exit Area

1. Open and close the front door. The jammed paper automatically exits the machine.
If the paper does not exit, continue to step 2.

2. Gently pull the paper out of the output tray.
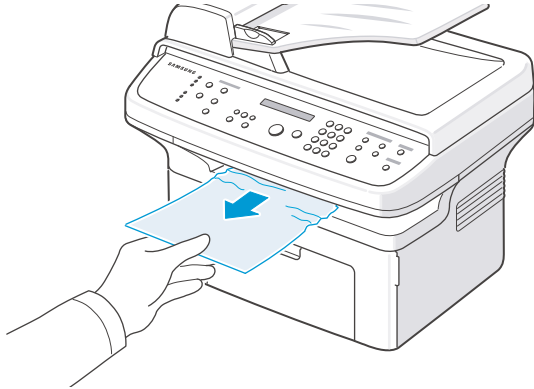
3. If there is any resistance and the paper does not move when you pull, or if you cannot see the paper in the output tray, open the rear door by pulling the tab on it.
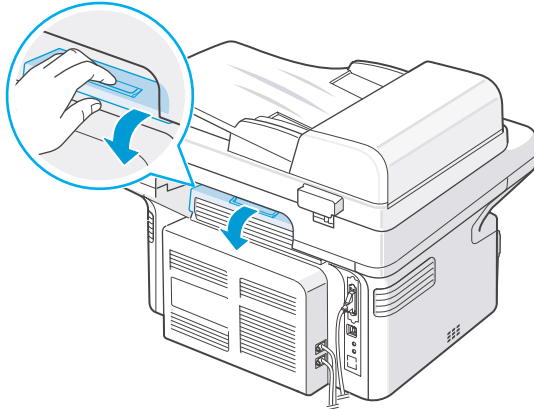
4. Remove the jammed paper by gently pulling it straight out.
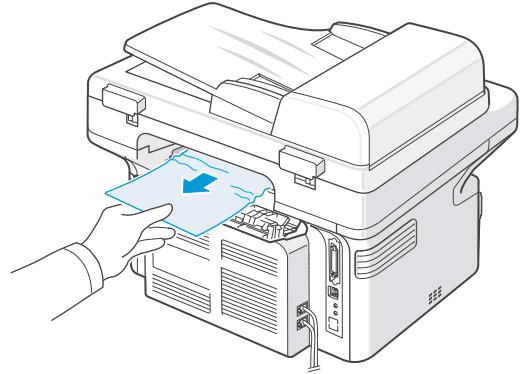
NOTE: Inside of the machine is hot. Take care when removing paper from the machine.

5. Close the rear door.
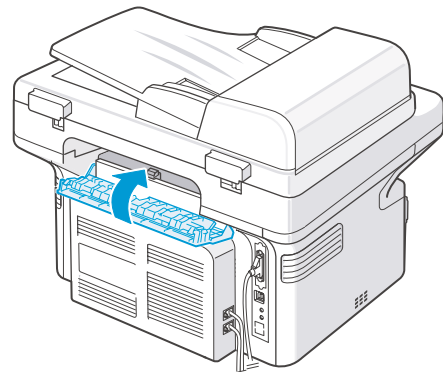
6. Open and close the front door to resume printing.

4.6.3.4 Tips for Avoiding Paper Jams When Printing on the A5-sized Paper

If paper jams occur frequently when you print on A5-sized paper:

1. Load the paper into the tray, as shown below.

2. Open the printer's properties window, set the paper size to A5 from the Paper tab.
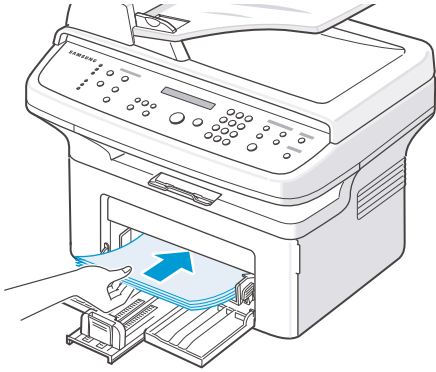
3. From the Orientation option of the Layout tab, set the Rotate option to 90°.

4. Click OK to start printing.
   For details, see Software User's Guide.

4.6.3.5 Tips for Avoiding Paper Jams

By selecting the correct paper types, most paper jams can be avoided. When a paper jam occurs.

• Follow the procedures in "Loading Paper". Ensure that the adjustable guides are positioned correctly.
• Do not overload the tray.
• Do not remove paper from the tray while your machine is printing.
• Flex, fan, and straighten the paper before loading.
• Do not use creased, damp, or highly curled paper.
• Do not mix paper types in the tray.
• Use only recommended print materials. See "Paper Specifications".
• Ensure that the recommended print side of print materials is facing up in the tray.

5. Disassembly and Reassembly

5.1 General Precautions on Disassembly

When you disassemble and reassemble components, you must use extreme caution. The close proximity of cables to moving parts makes proper routing a must.

If components are removed, any cables disturbed by the procedure must be restored as close as possible to their original positions. Before removing any component from the machine, note the cable routing that will be affected.

Whenever servicing the machine, you must perform as follows:

1. Check to verify that documents are not stored in memory.

2. Be sure to remove the toner cartridge before you disassemble parts.

3. Unplug the power cord.

4. Use a flat and clean surface.

5. Replace only with authorized components.

6. Do not force plastic-material components.

7. Make sure all components are in their proper position.

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.
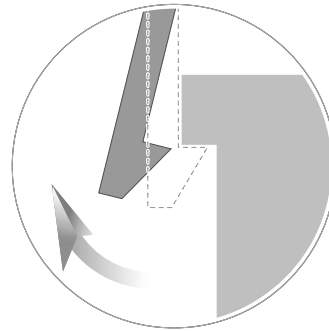
5.2 MP Tray

1. Open the Front Cover.

Front Cover
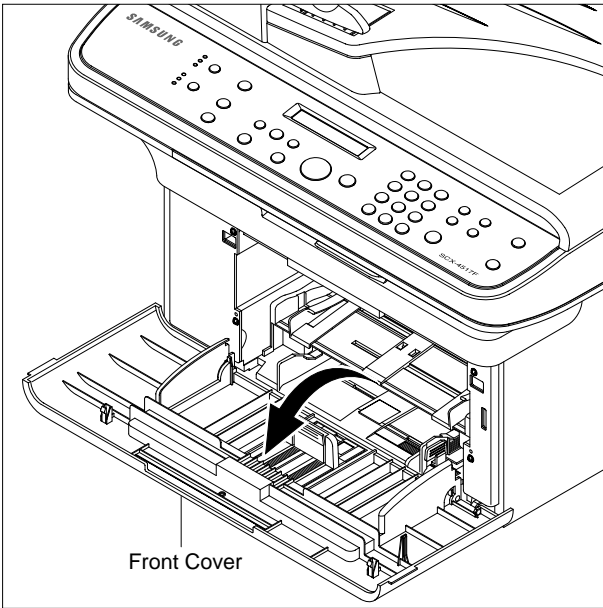
3. Hold the MP Tray and pull it to the arrow direction.
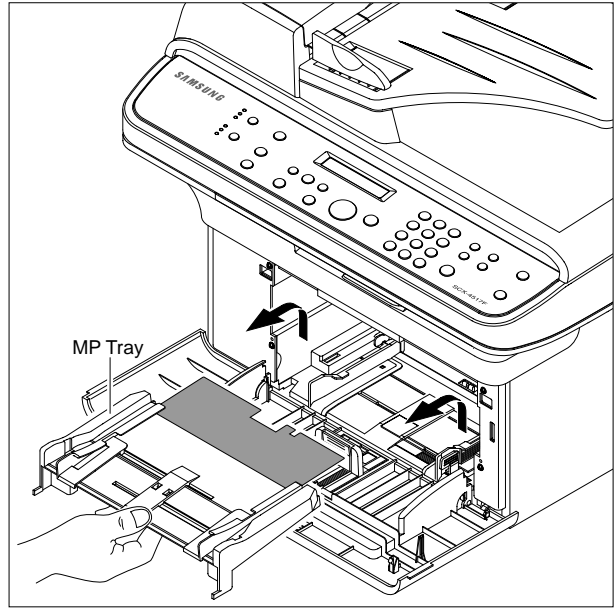
MP Tray

2. Release the Toner Cartridge.

Toner Cartridge
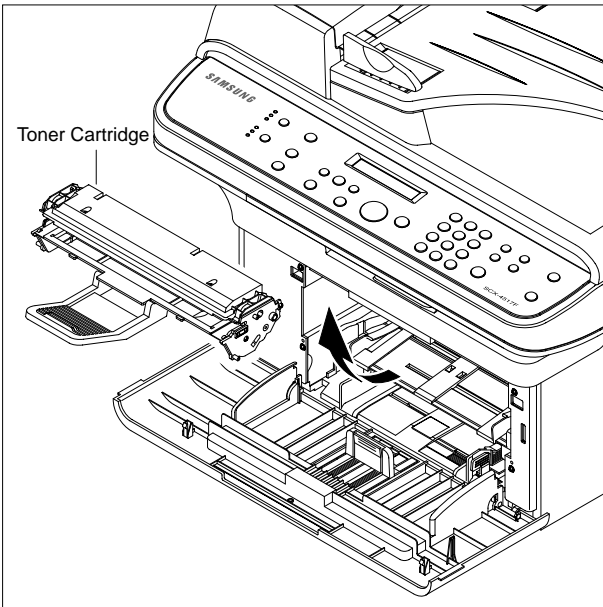
5.3 Pick Up Roller

1. Before you remove the Pick Up Roller, you should remove:
   - MP Tray (Refer to the 5.2)

2. To exchange Pick Up Sponge, pull part Pick Up Housing U while pressing the hook on the both side the Pick Up Housing B.
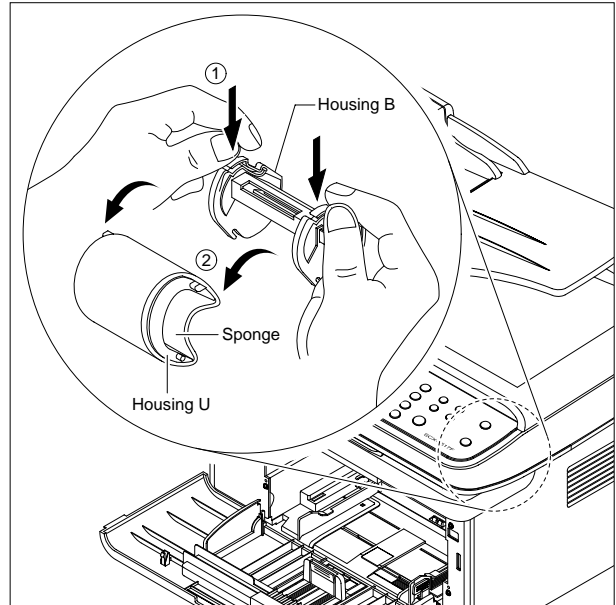
5.4 Front Cover

1. Open the Front Cover.
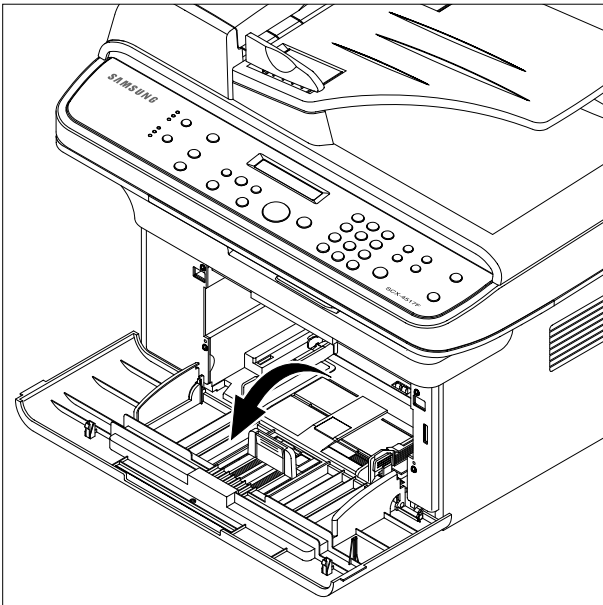
2. To remove the Front Cover, first pull the part below the right side of the Front Cover with a light pressure to the direction of arrow(left).
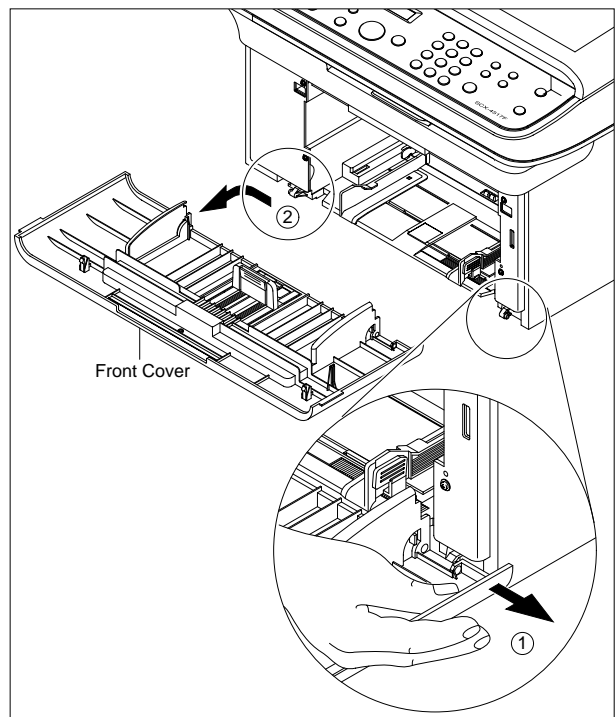
5.5 Cassette Tray

1. Open the Cassette Tray.
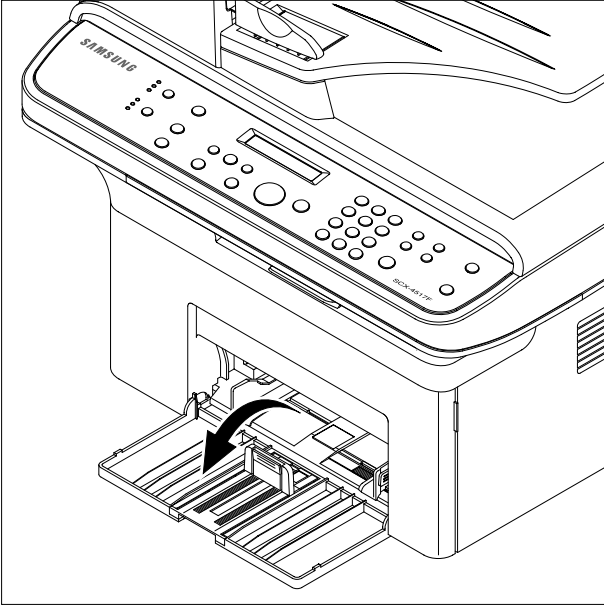
2. As shown below, to remove the Cassette Tray, lift the nob to the direction of the arrow with a light pressure while holding the Set(left).

Cassette Tray
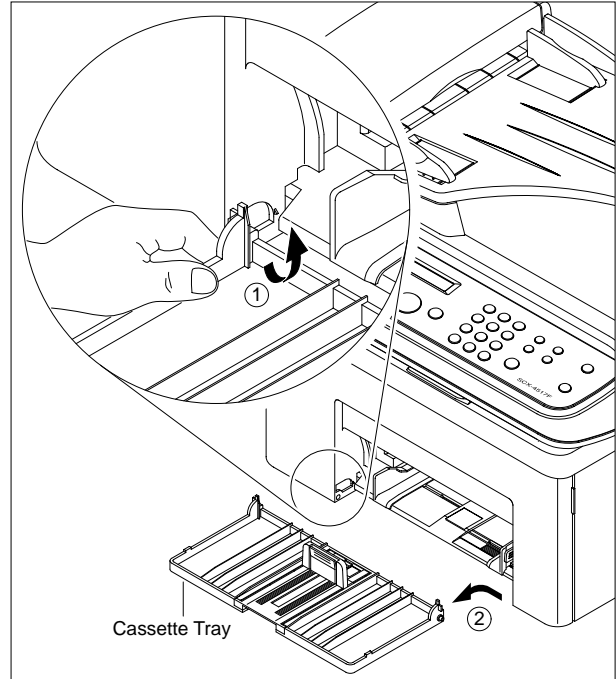
5.6 Rear Cover

1. Remove the four screws securing the Rear Cover and remove it.
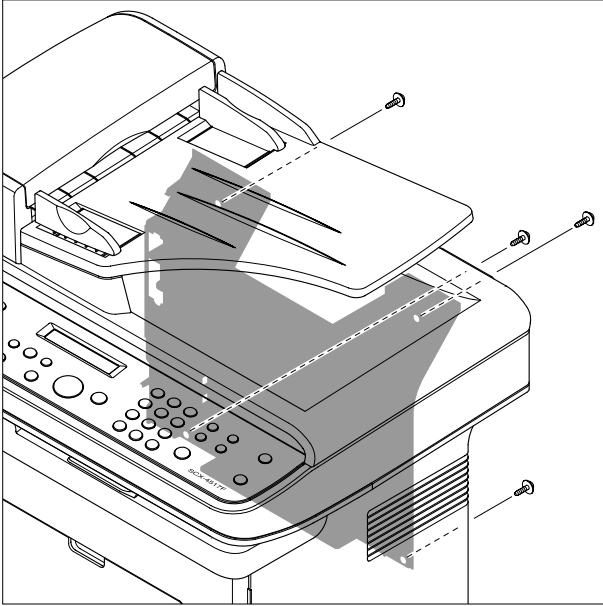
2. Open the Jam Cover.
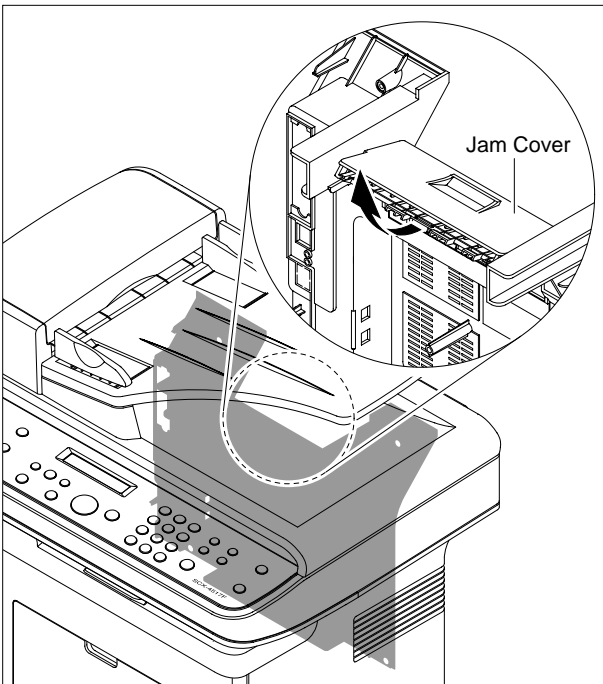
Jam Cover

3. To remove the Rear cover make sure the right Power Switch doesn't get jammed to the Rear Cover, as shown below.
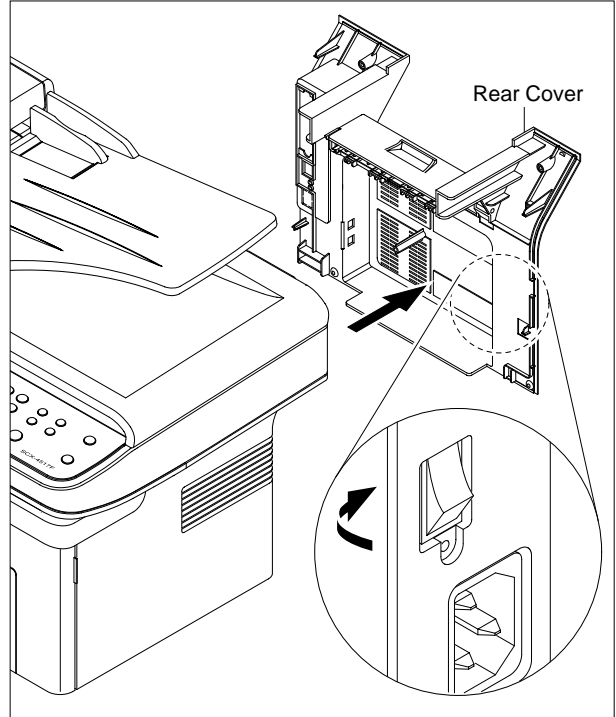
Rear Cover

4. If necessary, remove the Jam Cover in the direction of arrow, as shown below.

Jam Cover
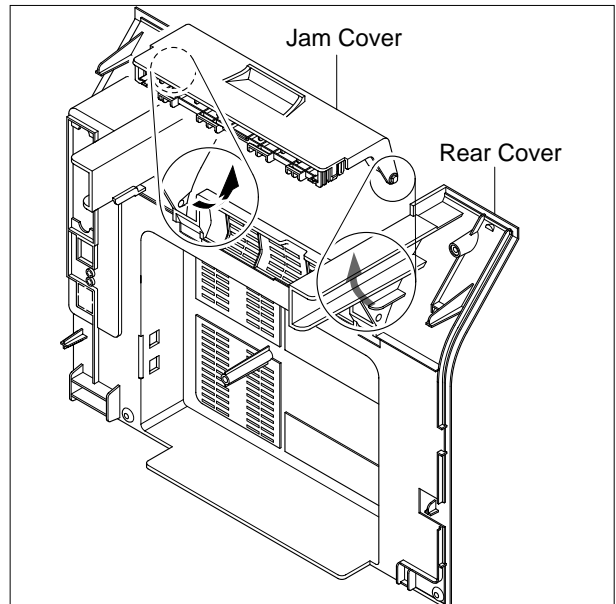
Rear Cover

5.7 Right Cover

1. Before you remove the Right Cover, you should remove:
   - Front Cover (Refer to the 5.4)
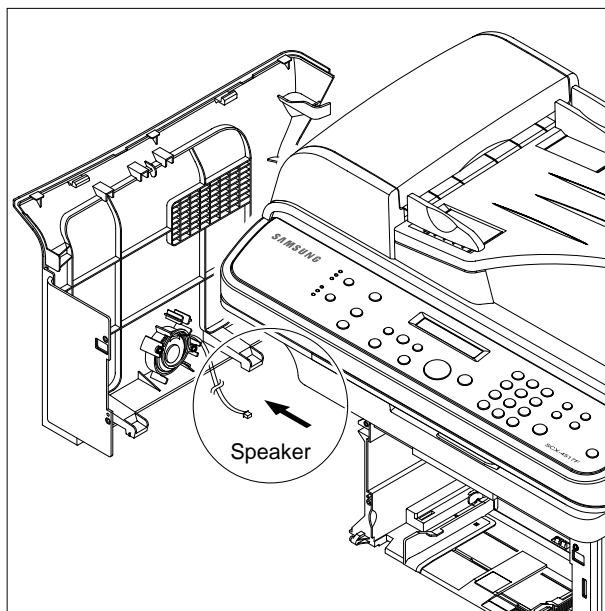   - Rear Cover (Refer to the 5.6)

2. Remove the one screws securing the Right Cover.
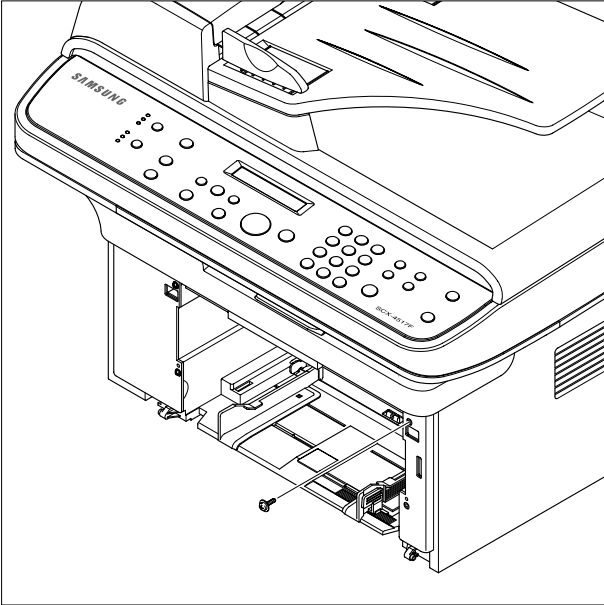
3. Apply light pressure to the back of the Right Cover and pull it to the right side in the direction of arrow, as shown below.

Right Cover
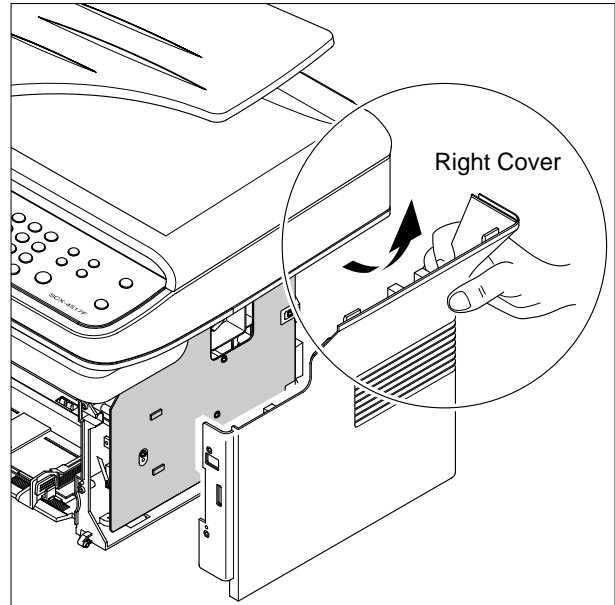
5.8 Left Cover

1. Before you remove the Left Cover, you should remove:
   - Front Cover (Refer to the 5.4)
   - Rear Cover (Refer to the 5.6)

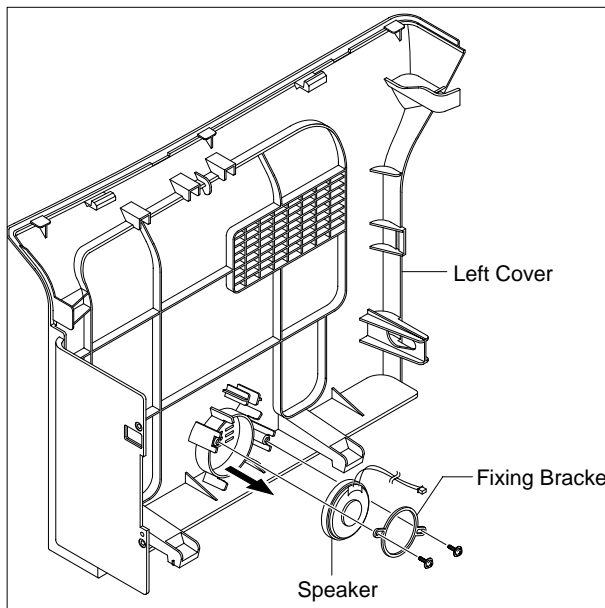2. Remove the one screws securing the Left Cover.
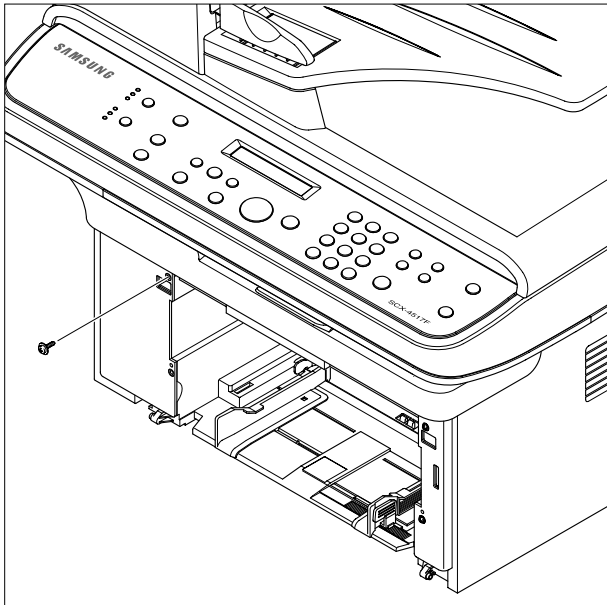
3. Apply light pressure to the back of the Left Cover and pull it to the leftt side in the direction of arrow, as shown below.
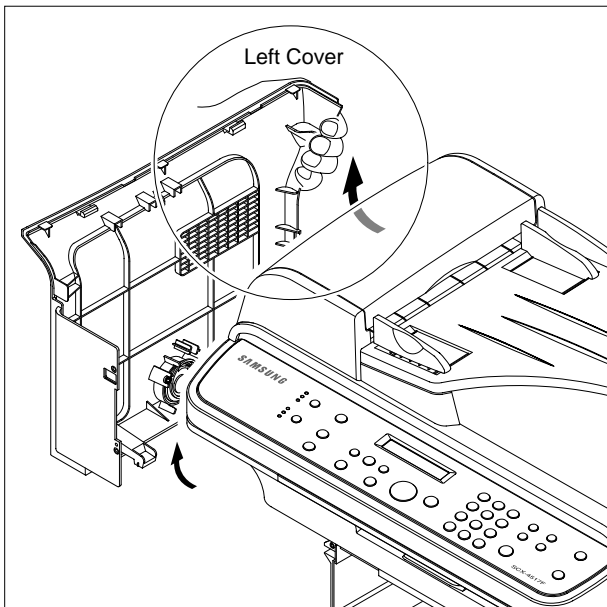
Left Cover

4. Unplug the Speaker Connector from the Main PBA.

Speaker

5. If necessary, remove the two screws securing the Speaker and remove it.

Left Cover

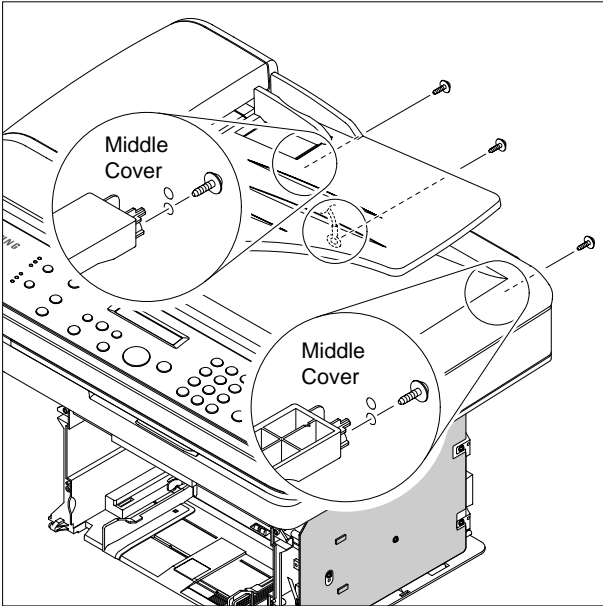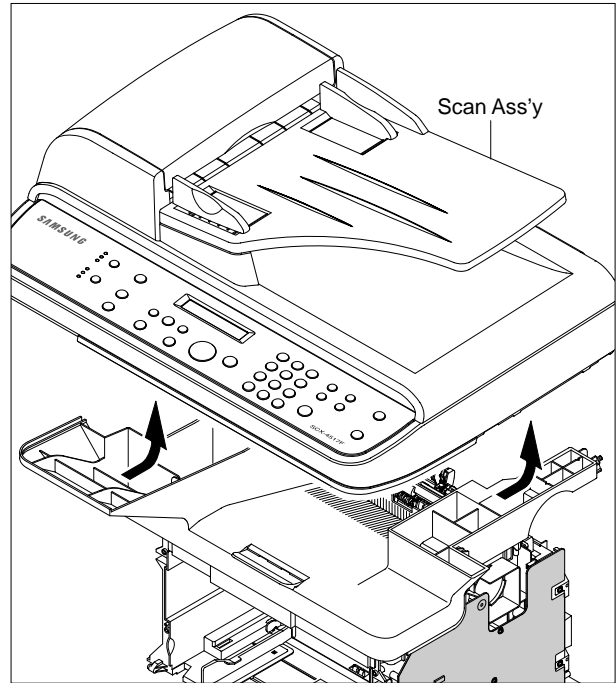Fixing Bracket

Speaker

5.9 Scan Ass'y

1. Before you remove the Scan Ass'y, you should remove:
   - Rear Cover (Refer to the 5.6)
   - Right Cover (Refer to the 5.7)
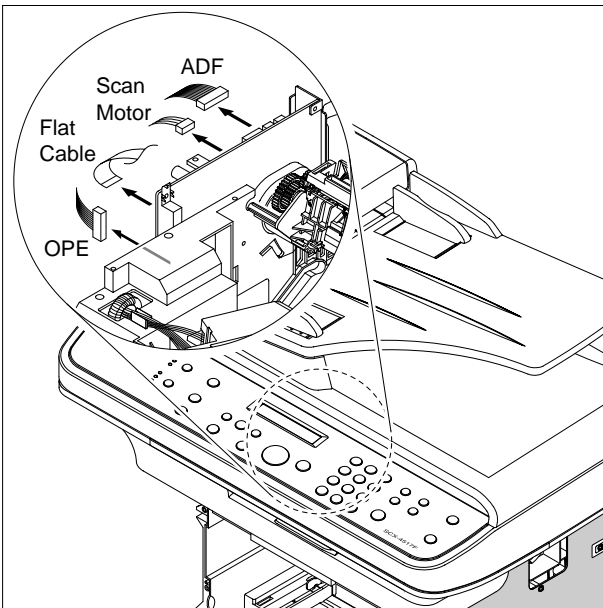   - Left Cover (Refer to the 5.8)

2. Remove the two screws from the Middle Cover and remove the screw securing the Ground Cable.

3. Unplug the three Connectors(ADF, Scan Motor, OPE) and Flat Cable-CIS, as shown below.

4. Release the Scan Ass'y in the direction of arrow, as shown below.

5.10 ADF Housing

1. Before you remove the ADF Housing, you should remove:
   - Scan Ass'y (Refer to the 5.9)

2. Open the ADF Housing and insurt a flat-blade screwdriver into the slot as shown below, and remove the Cap-Hinge from the Platen Housing and ADF Housing.
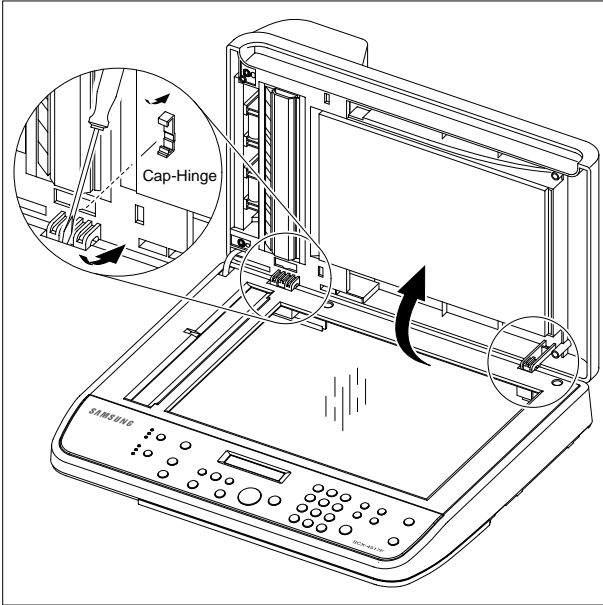
3. Remove the ADF Housing from the Platen Housing. At that time, carefully release the ADF Motor Harness from the Platen Housing, as shown below.
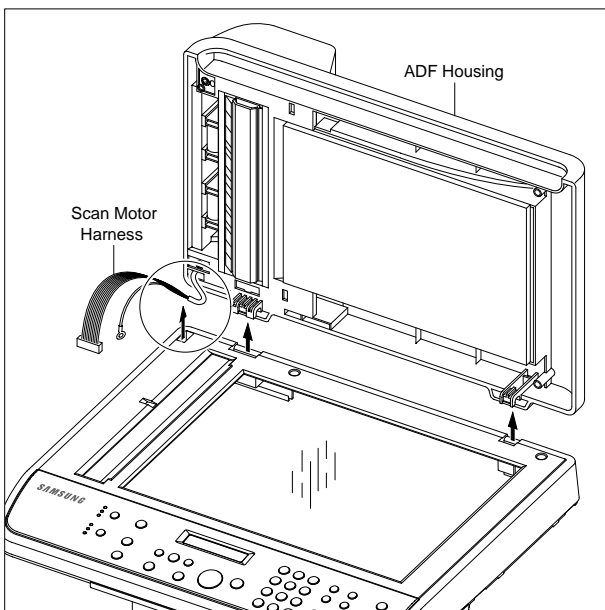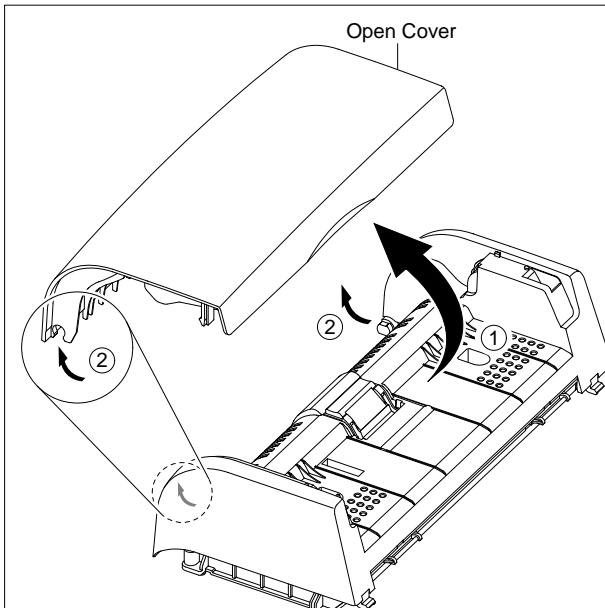

4. Remove the two screws securing the ADF Ass'y and remove it. At that time, carefully release the ADF Motor Harness from the Platen Cover, as shown below.
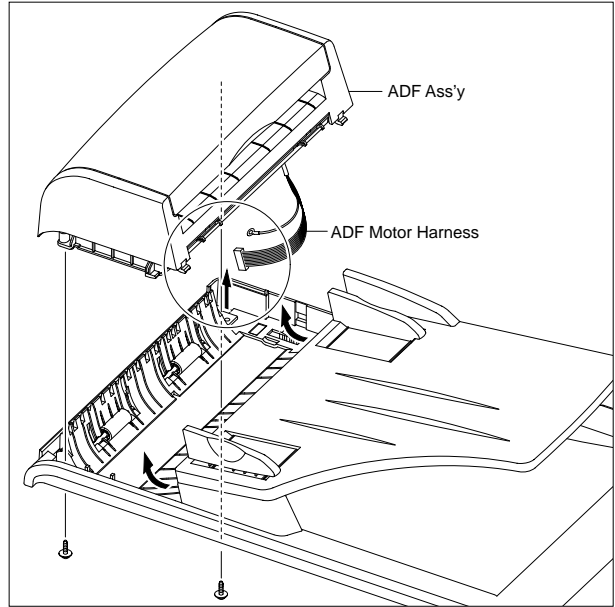
5. If necessary, remove the two screws securing the TX Stacker Ass'y and remove it, as shown below.
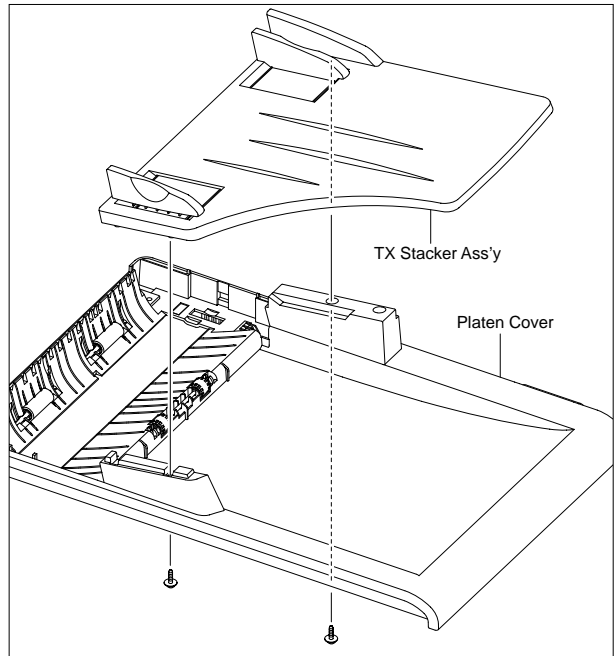
6. Open the Open Cover and remove the Open Cover in the direction of arrow, as shown below.

Open Cover

7. Pull the Bush, then rotate until it reaches the slot, as shown below. Then lift the Pick Up Unit.

Bush

Pick Up Unit

Bearing
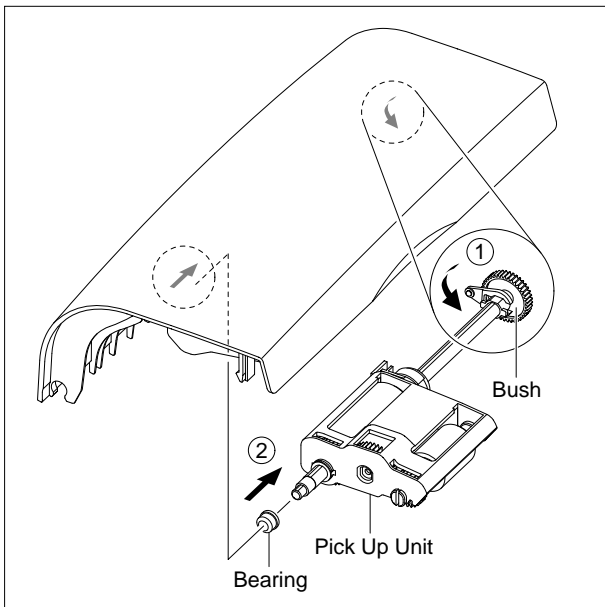
8. Remove the two screws securing the ADF Upper and insurt a flat-blade screwdriver in to slot as shown below, and remove the ADF Upper.

ADF Upper

ADF Lower
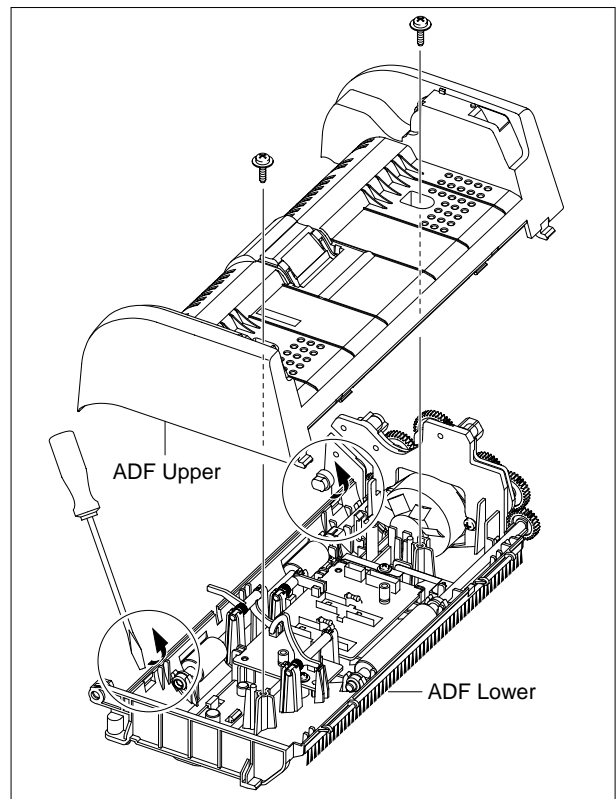
9. Unplug the Connector from the ADF PBA and remove the four screws securing the ADF Motor Housing and remove it in the direction of arrow, as shown below.

ADF Motor Housing
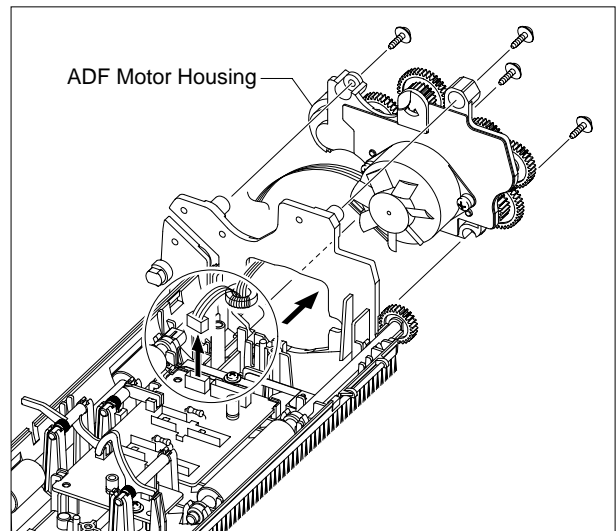
5.11 OPE Unit

* Please refer to this procedure when you disassemble and assemble the SCX-4321.

1. Open the ADF Housing and insurt a flat-blade screwdriver into the crack as shown below, and remove the OPE Unit from the Platen Housing.
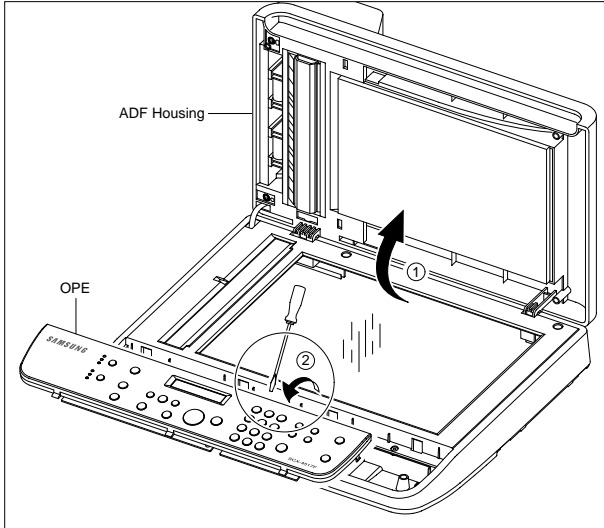
2. Unplug the three Connectors(Battery, OPE, Full Sensor), as shown below.
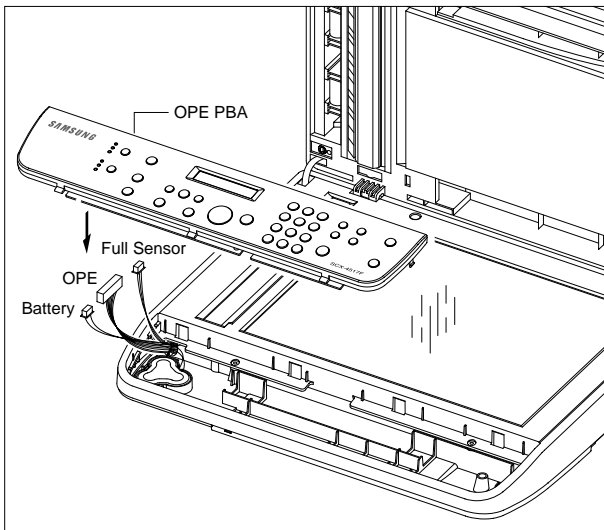
3. Remove the five screws securing the OPE PBA and remove it.
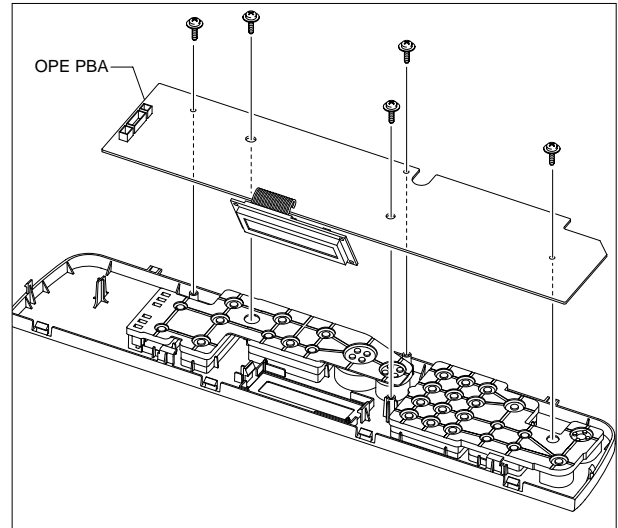
4. Release the Contact Rubbers, as shown below.
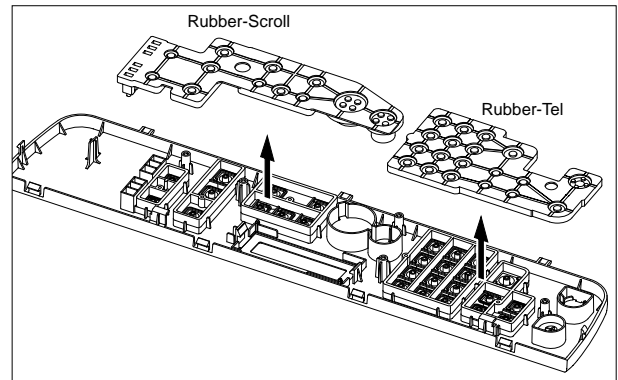
5. Release the Keys, as shown below.
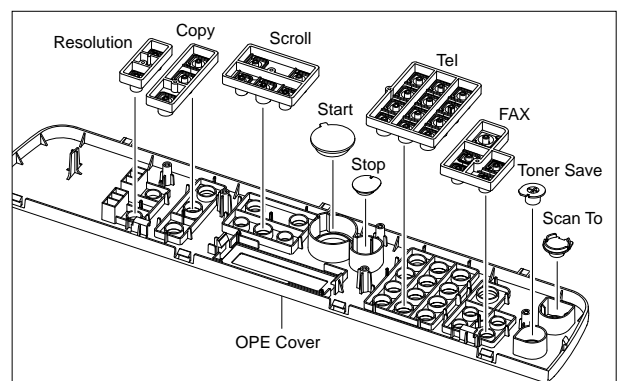
5.12 Platen Housing

1. Before you remove the Platen Housing, you should remove:
   - Scan Ass'y (Refer to the 5.9)
   - ADF Housing (Refer to the 5.10)
   - OPE Unit (Refer to the 5.11)

2. Remove the five screws from the Scan Upper and remove it from the Scan Lower, as shown below.
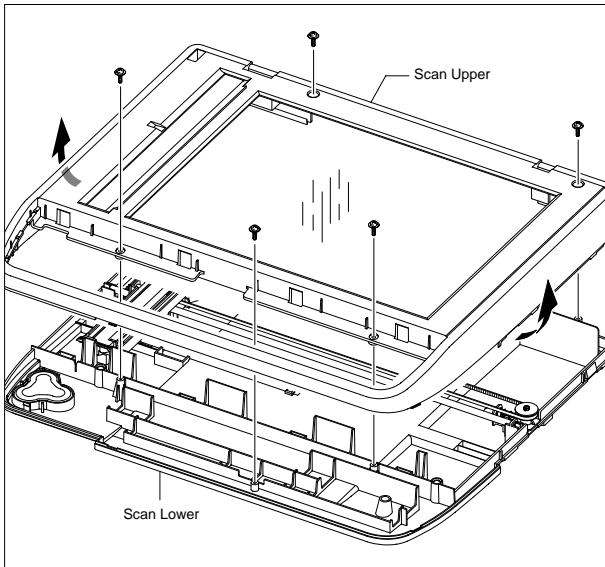
3. Take out the Battery.
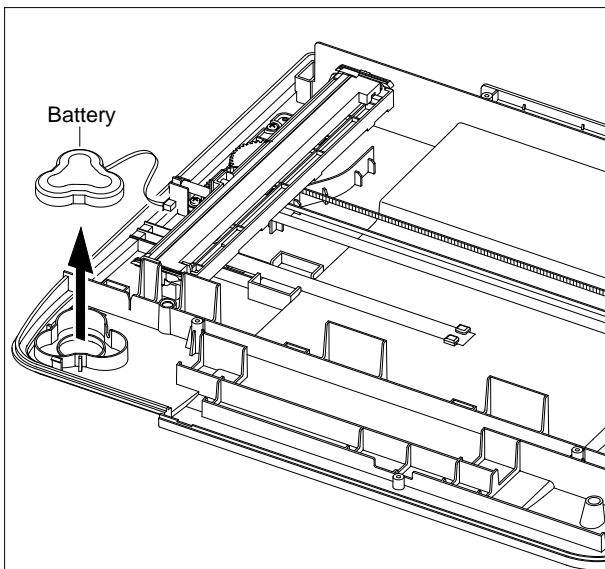
4. Push the Holder in the direction of arrow and remove the Belt, as shown below. (The CIS will come out at the same time.)
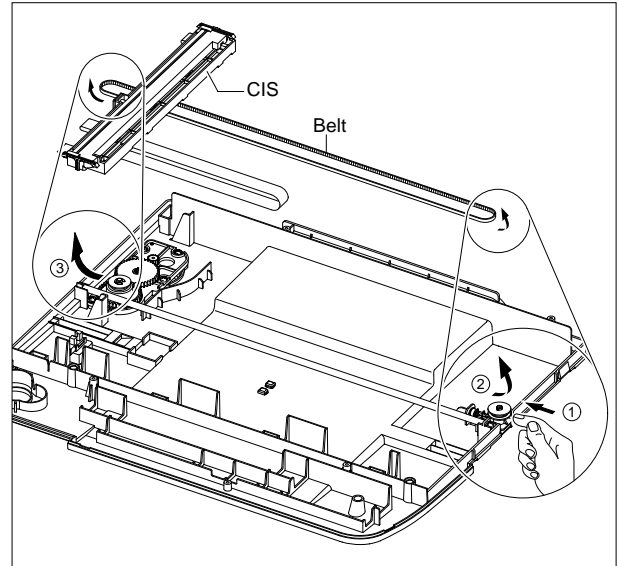
5. Release the Belt and Flat Cable from the CIS.
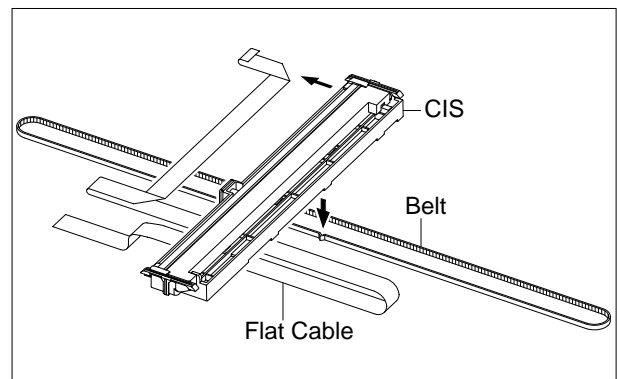
6. Remove the two screws securing the Scan Motor Ass'y and remove it.
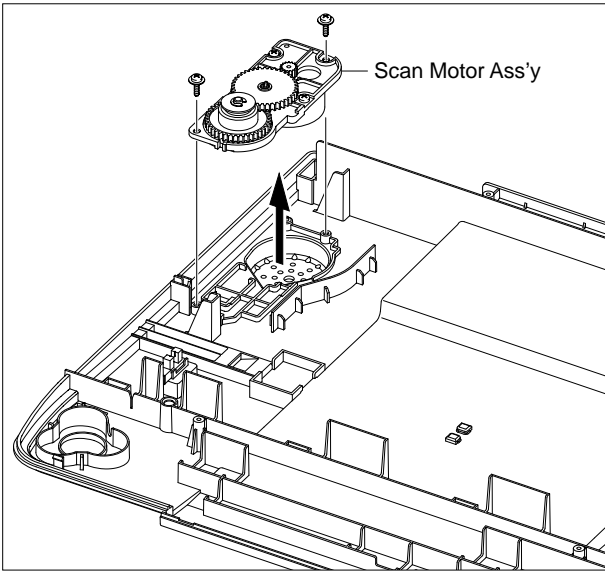
Scan Motor Ass'y

7. If necessary, remove the two screws securing the Scan Motor and remove it.

Scan Motor Bracket

Scan Motor
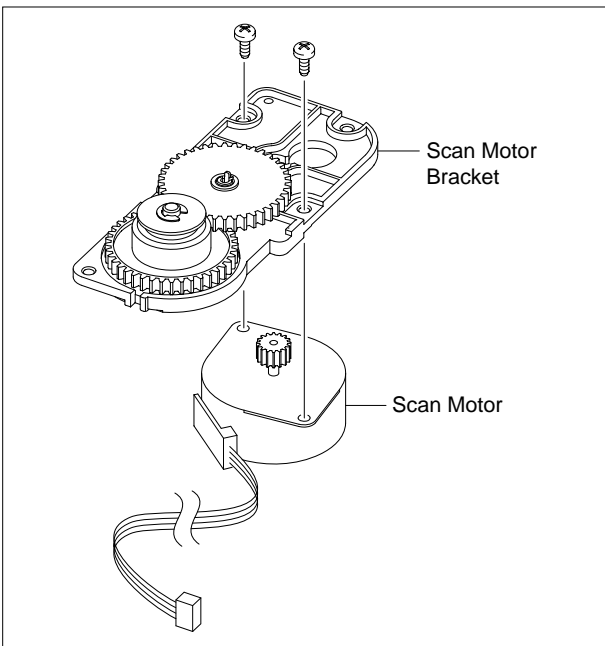
8. Using a flat-blade screwdriver remove the Full Sensor, as shown below.

Full Sensor
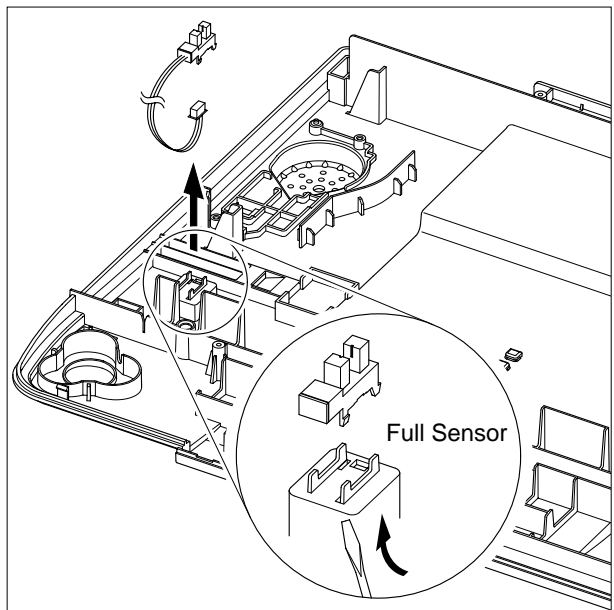
5.13 Middle Cover

1. Before you remove the Middle Cover, you should remove:
   - Scan Ass'y (Refer to the 5.9)

2. Remove the five screws securing the Middle Cover, as shown below.
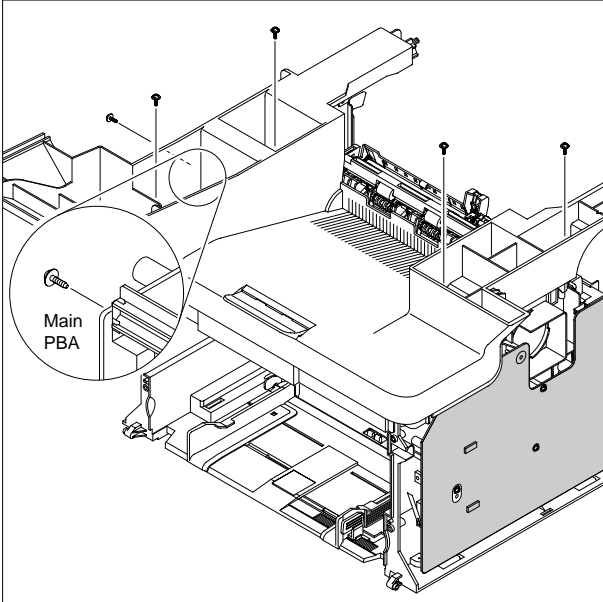
Main PBA

4. If necessary, take out the Stacker.

Stacker
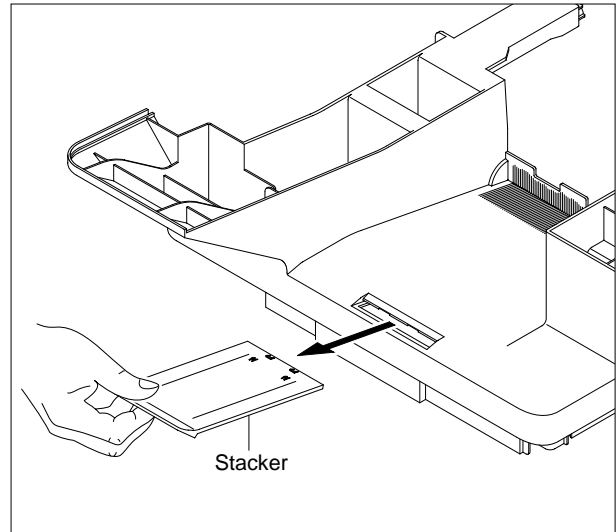
3. Carefully release the Middle Cover from the Main PBA, as shown below.
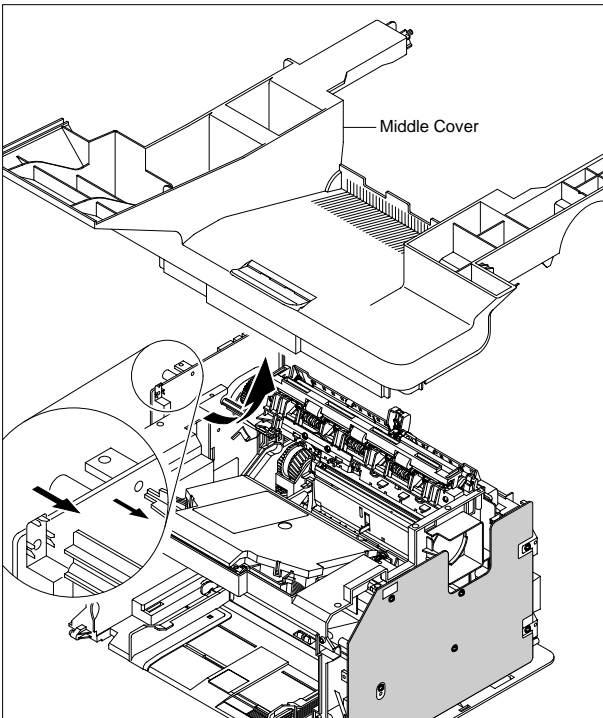
Middle Cover

5.14 HVPS

1. Before you remove the HVPS, you should remove:
   - Scan Ass'y (Refer to the 5.9)
   - Middle Cover (Refer to the 5.13)

2. Remove the three screws securing the Sheet and remove it.
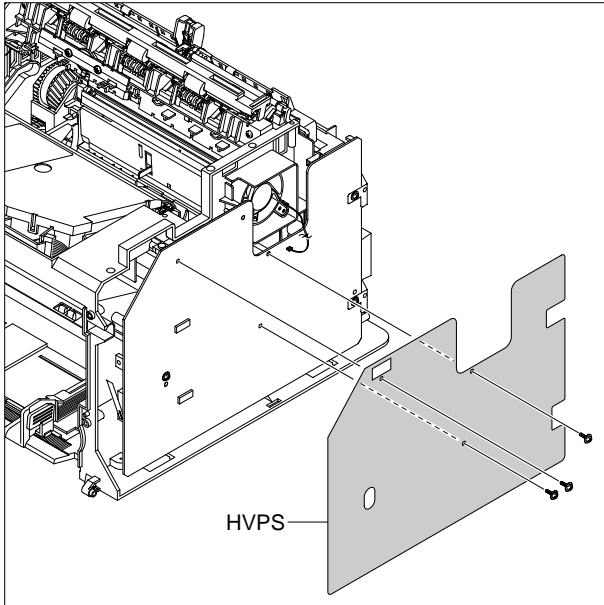
HVPS

3. Remove the three screws securing the HVPS and remove it with the HVPS Ground, as shown below.

HVPS Ground

HVPS

4. Unplug the Connector from the HVPS.

5.15 Main PBA

1. Before you remove the Main PBA, you should remove:
   - Scan Ass'y (Refer to the 5.9)
   - Middle Cover (Refer to the 5.13)

2. Unplug the all Connectors from the Main PBA, as shown below.
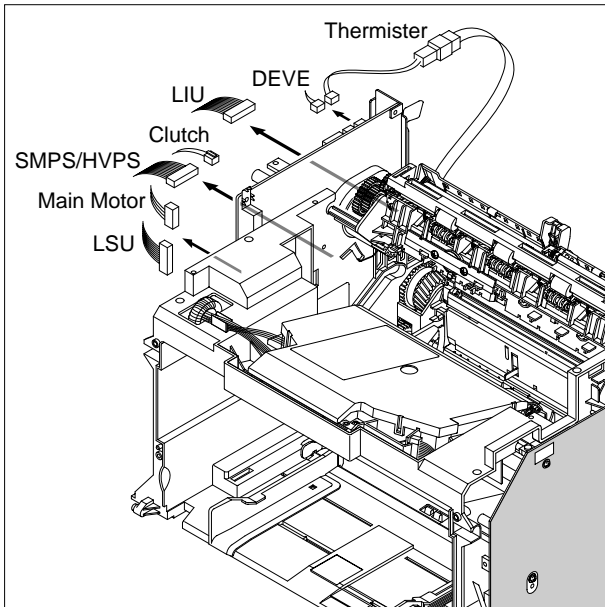
3. Remove the six screws securing the Main PBA and remove it.
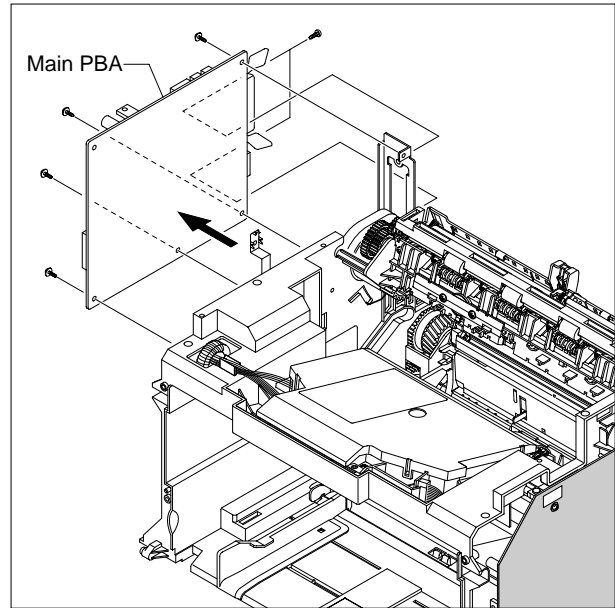
5.16 RX Drive

1. Before you remove the RX Drive, you should remove:
   - Scan Ass'y (Refer to the 5.9)
   - Middle Cover (Refer to the 5.13)
   - Main PBA (Refer to the 5.15)

2. If necessary, remove the two Bracket (Port, Main PBA) and Ground, as shown below.
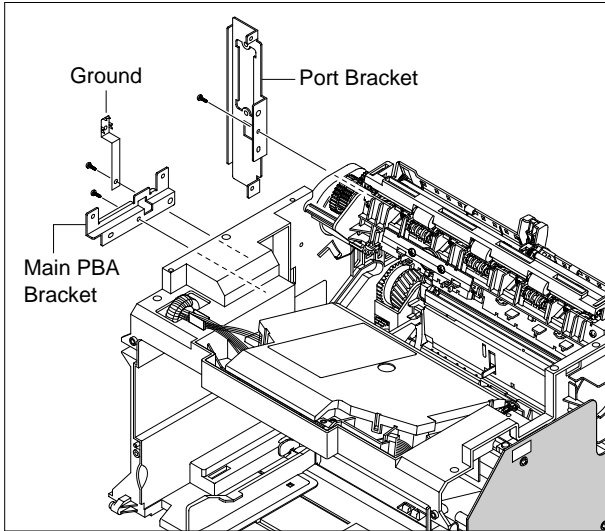
3. Remove the two screws securing the Engine Shield and remove the six screws securing the Frame then remove the RX Drive in the direction of arrow, as shown below.
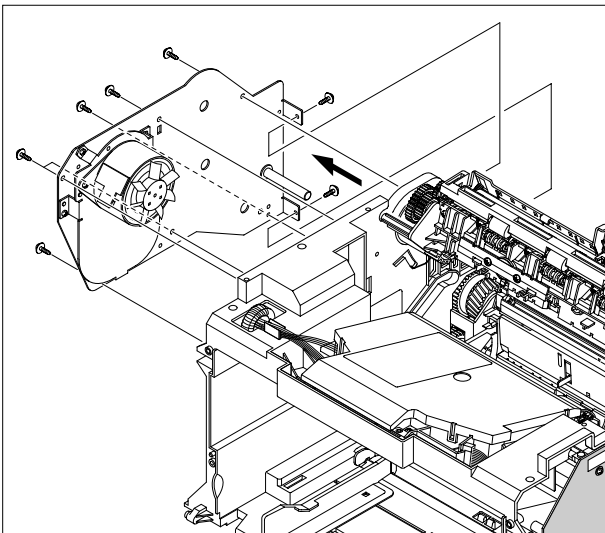
4. Remove the Connector, as shown below.
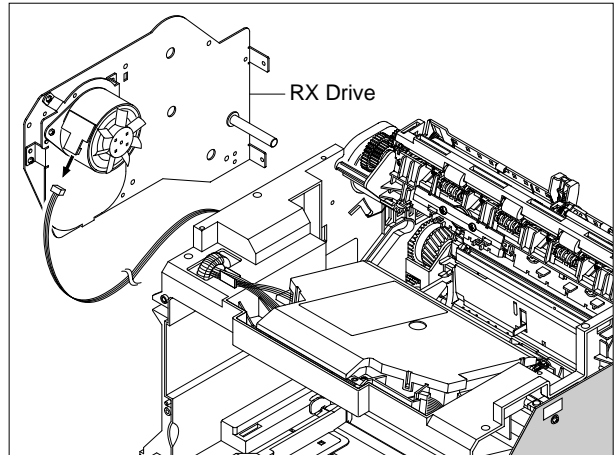
5. Release the four Gears (RDCN, OPC, Fuser, Feed) from the Frame, as shown below.
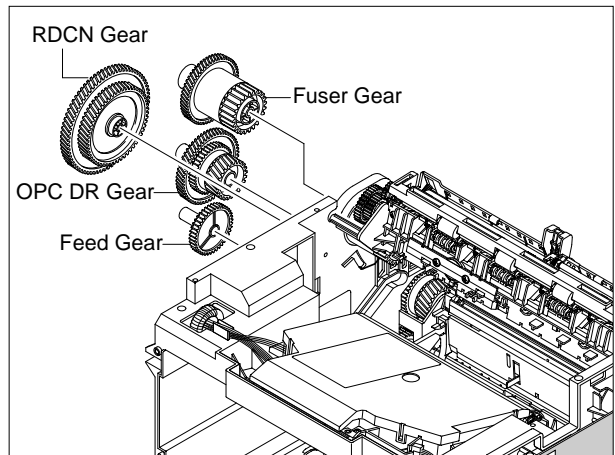
6. Remove the four screws securing the Motor Bracket and remove it. Then remove the two screws securing the Motor and remove it.
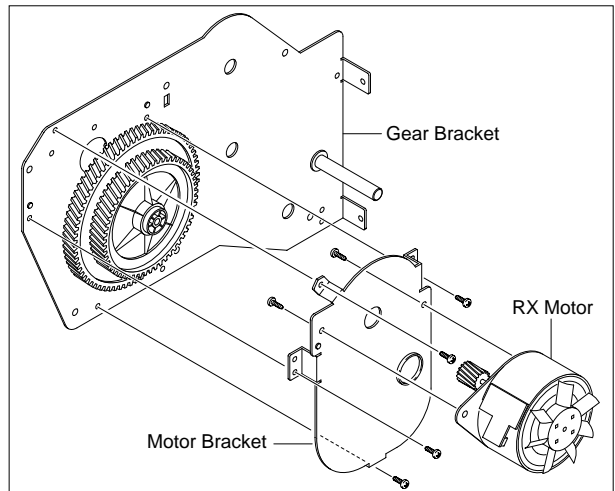
5.17 Fuser

1. Before you remove the Fuser, you should remove:
   - Scan Ass'y (Refer to the 5.9)
   - Middle Cover (Refer to the 5.13)

2. Unplug the two Connectors from the SMPS and Main PBA, as shown below.

Thermister
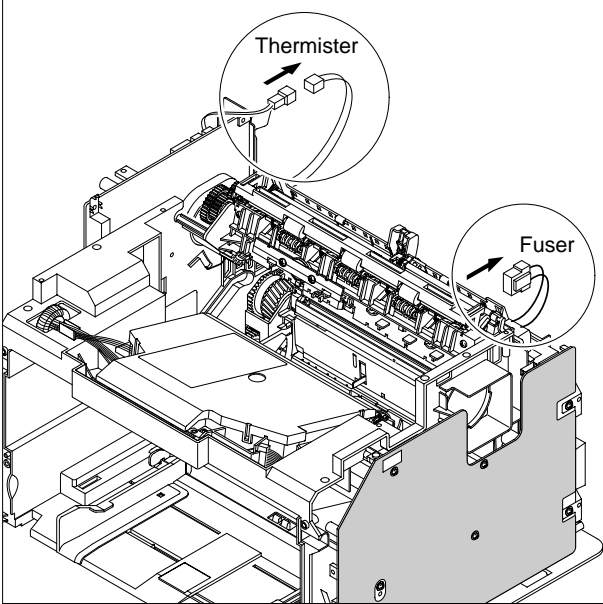
Fuser

3. Remove the four screws securing the Fuser and remove it, as shown below.

Fuser
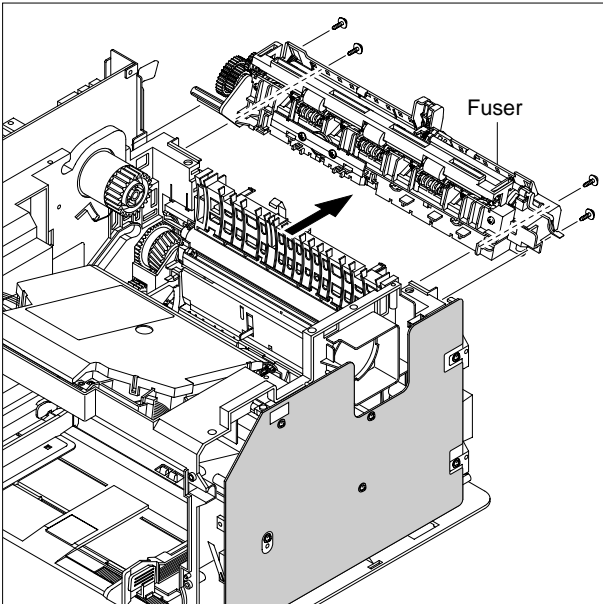
4. Remove the Lever-M-Act Exit in the direction of arrow, as shown below.

Lever-M-Act Exit

②

①
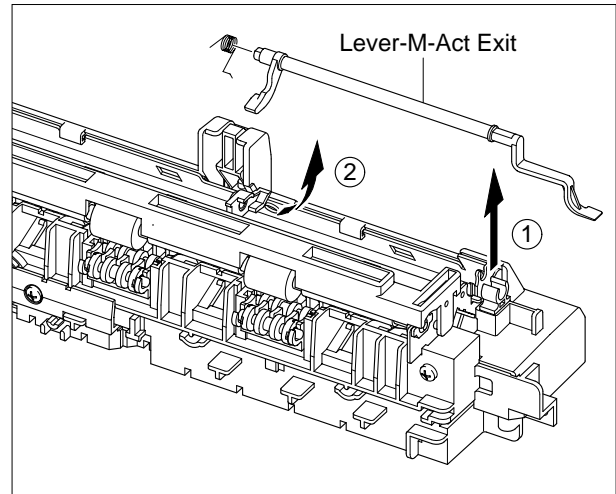
5. Remove the Cover-M-Safty, as shown below.

Cover-M-Safty
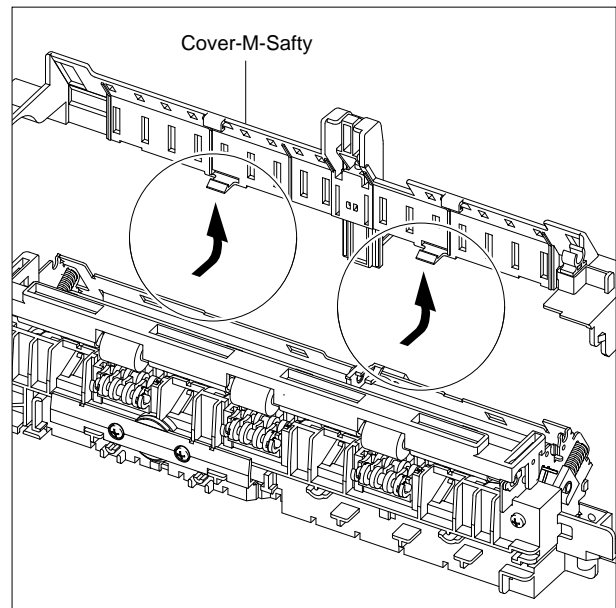
6. Remove the Cover-M-Guide Exit, as shown below.

Cover-M-Guide Exit

7. As shown below rotate the Holder to the direction of the arrow which is attached to the Exit Roller F/Down and Exit Gear(DRV17). (The Roller_Main, Roller_FR, F/Down Holder, Spring will come out at the same time.)

Exit Gear

Exit Roller F/Down

Roller_FR

Roller_Main

Holder
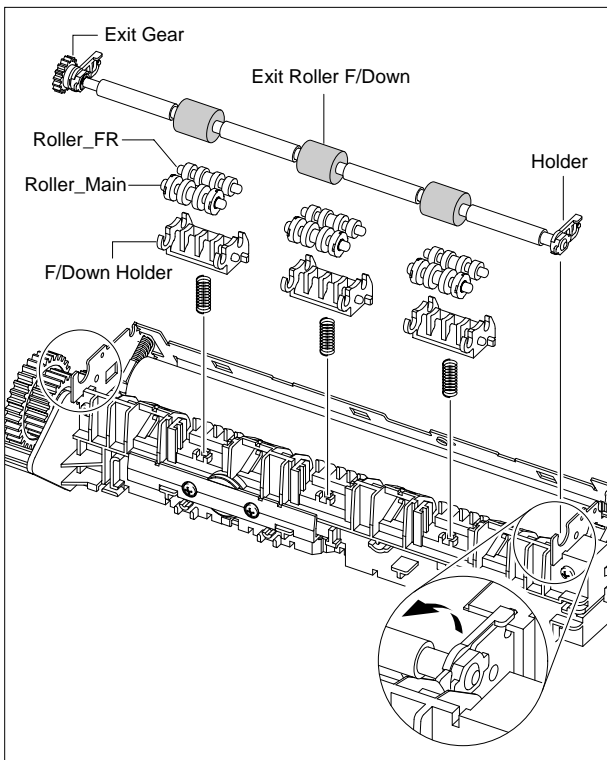
F/Down Holder

NOTICE: *If you don't follow the direction above the Spring will come out forcing the Roller_Main, Roller_FR, F/Down Holder inside the Frame Ass'y.*

8. Remove the two screws securing the Thermo Cap and remove it.

Thermo Cap

9. Take out the Thermostat then release the CBF Harness, as shown below.

Thermostat
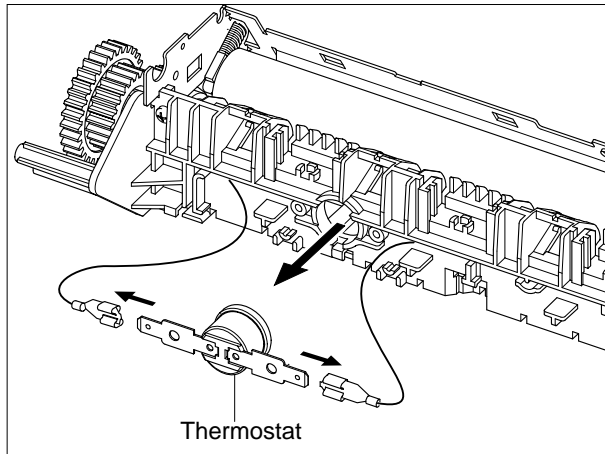
10. Remove the screw securing the Harness and remove it. Then take out the Thermistor, as shown below.

Thermistor
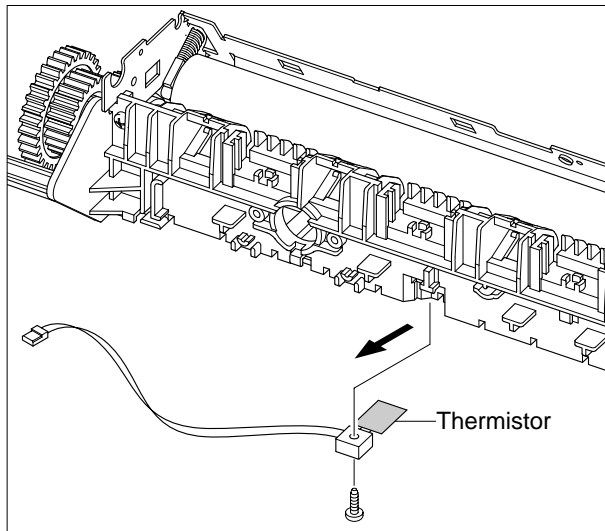
11. Release the CBF Harness from the Halogen Lamp and remove the two screws securing the Halogen Lamp, as shown below.
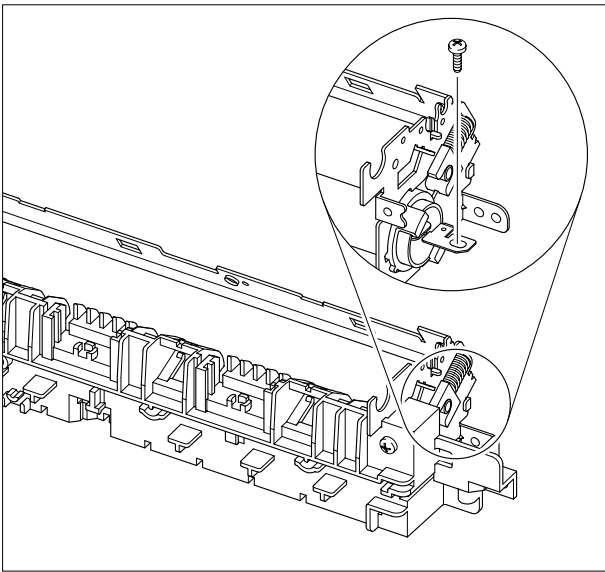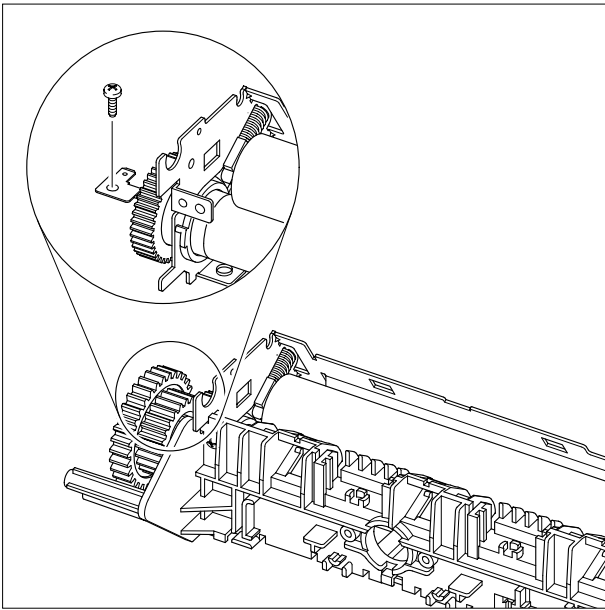
12. Remove the two screws securing the Cover-M and remove it.
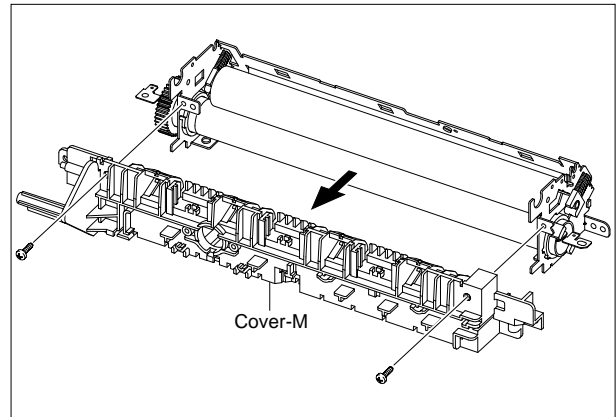
Cover-M

13. Take out the Halogen Lamp in the direction of arrow, as shown below.

Heat Roller

Halogen Lamp
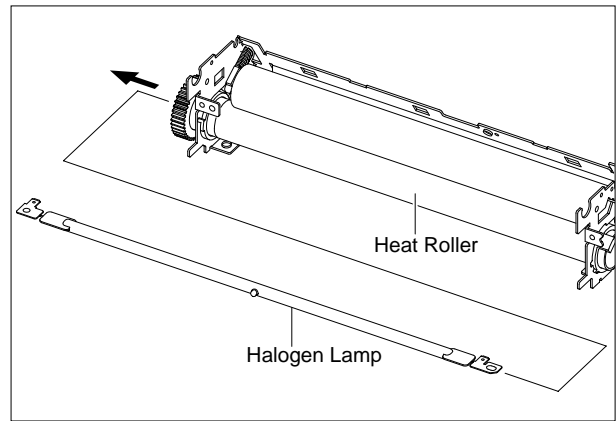
5.18 Engine Shield (LIU PBA, SMPS)

1. Before you remove the Engine Shield, you should remove:
   - Scan Ass'y (Refer to the 5.9)
   - Middle Cover (Refer to the 5.13)

2. Unplug the all Connectors from the SMPS and LIU PBA.
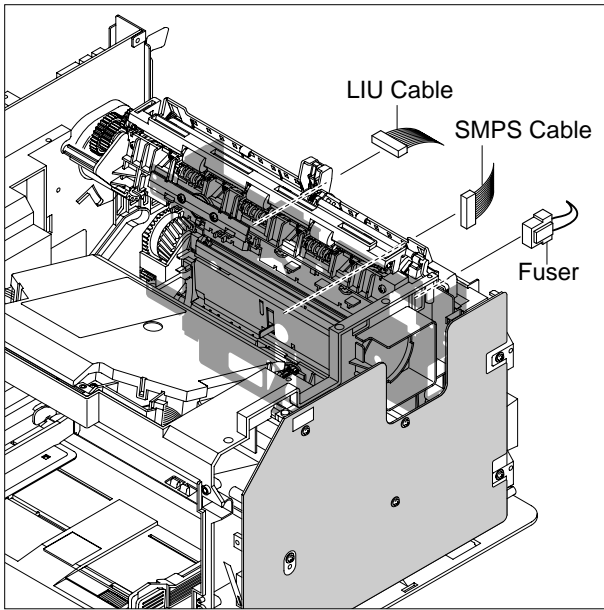
3. Remove the six screws securing the Engine Shield and release the Harness, as shown below. Then carefully release the Engine Shield from the Actuator Feed Sensor Lever.
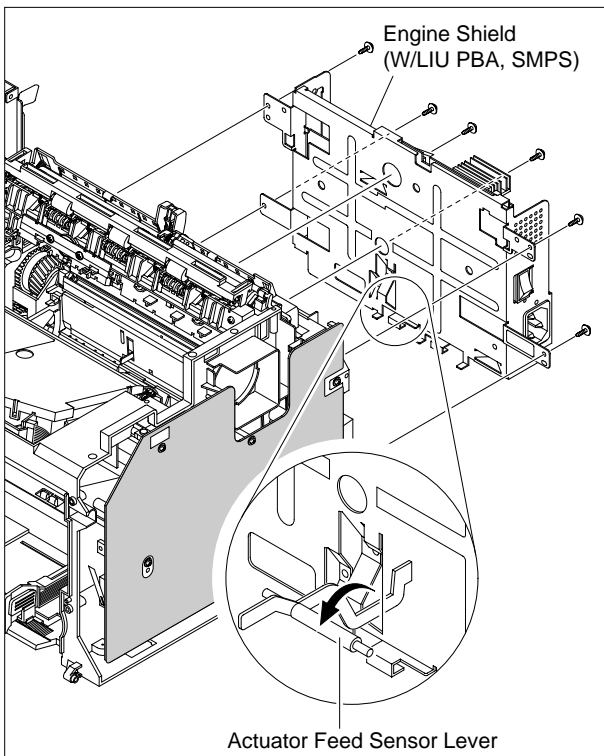
4. When if only remove the SMPS, first remove the Rear Cover (refer to the 5.6) and unplug the Fuser Connector and remove the six screws securing the SMPS. Then unplug the Connector from the Main PBA and carefully release the SMPS, as shown below.
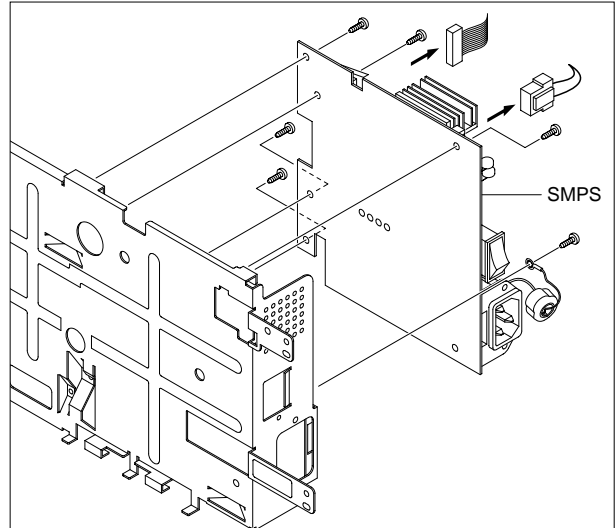
5. When if only remove the LIU PBA, first remove the Rear Cover (refer to the 5.6) and remove the two screws securing the LIU PBA. Then unplug the Connector from the Main PBA and release the LIU PBA as shown below.
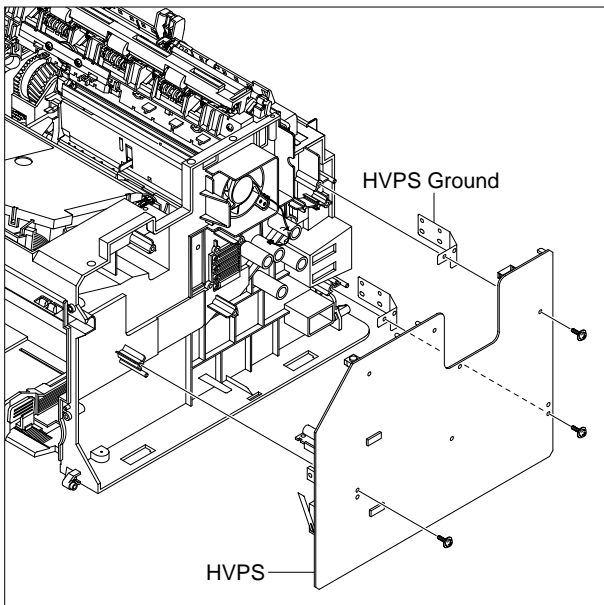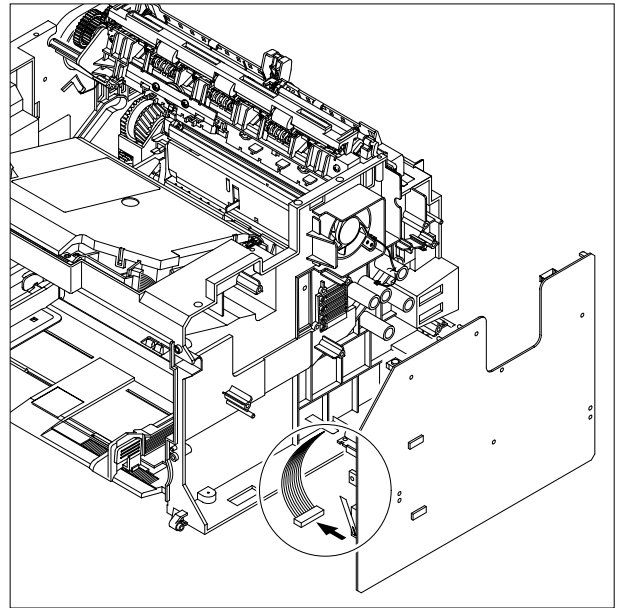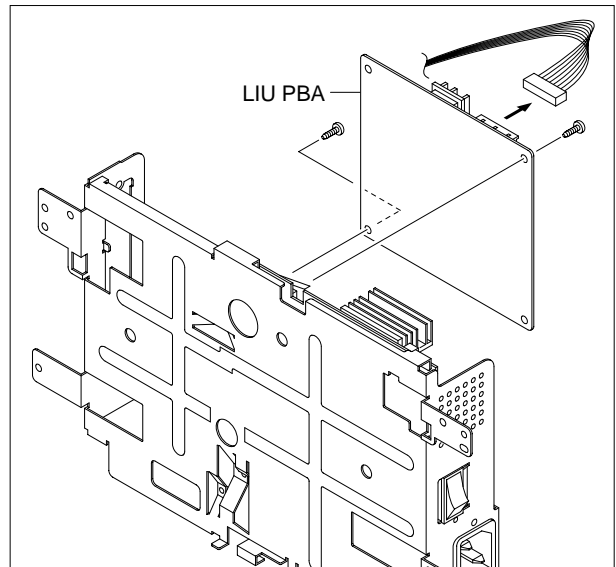
5.19 LSU

1. Before you remove the LSU, you should remove:
   - Scan Ass'y (Refer to the 5.9)
   - Middle Cover (Refer to the 5.13)

2. Remove the three screws securing the LSU and remove it. Then unplug the two Connectors from the LSU.
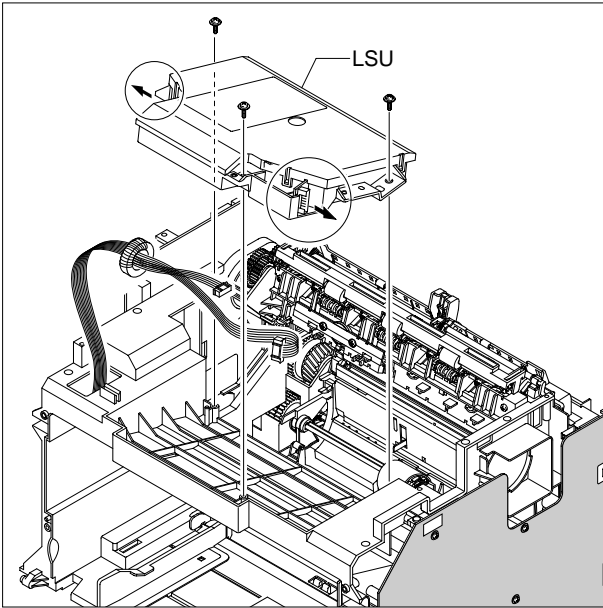
5.20 Paper Path Frame

1. Before you remove the Paper Path Frame, you should remove:
   - Scan Ass'y (Refer to the 5.9)
   - Middle Cover (Refer to the 5.13)
   - Fuser (Refer to the 5.17)
   - Engine Shield (Refer to the 5.18)

2. Remove the four screws securing the Paper Path Frame and remove it in the direction of arrow, as shown below.

Paper Path Frame

3. Remove the Transfer Roller from the Frame, as shown below.

Bush

Transfer Roller

Bush(L)

4. Remove the screw securing the Solenoid-MP and remove it, as shown below.

Solenoid-MP
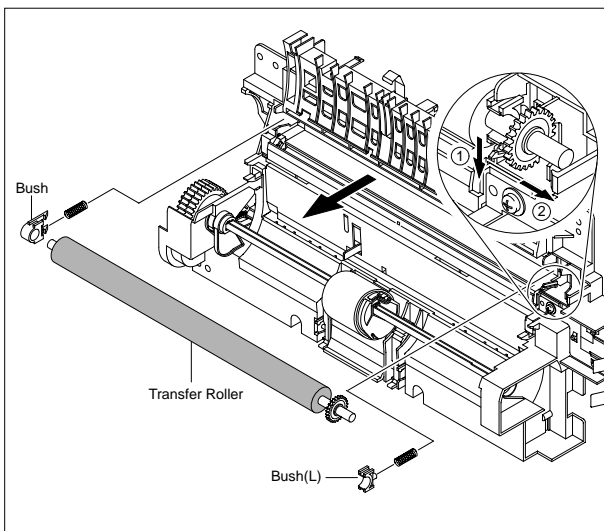
6. Troubleshooting

6.1 Checking Symptoms

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

```
                    ┌──────────────┐
                    │  Power On    │
                    └──────┬───────┘
                           │
                           ▼
                        ◇ OP Panel        No      ┌─────────────────────┐
                          ON? ──────────────────▶ │ - No Power          │
                        ◇                          │ - Power Module error│
                           │                       │ - Main PBA error    │
                          Yes                      │ - LCD Panel error   │
                           │                       └─────────────────────┘
                           ▼
                        ◇ Ready or      No      ◇ Indicate        Yes   ┌──────────────────┐
                          Power save ──────────▶  Error Massage ──────▶ │ Refer to         │
                        ◇                        ◇                      │ Error Massage    │
                           │                        │                   │ <Chapter 4.4>    │
                          Yes                      No                   └──────────────────┘
                           │                        │
                           ▼                        │
                    ┌──────────────┐◀───────────────┘
                    │ Test Print   │
                    └──────┬───────┘
                           │
                           ▼
                        ◇ printing        No      ┌──────────────────────┐
                          Quality is ────────────▶│ Refer to "Solution   │
                          Nomal?                  │ of Image Problem"    │
                        ◇                          └──────────────────────┘
                           │
                          Yes
                           │
                           ▼
                    ┌──────────────┐
                    │    END       │
                    └──────────────┘
```
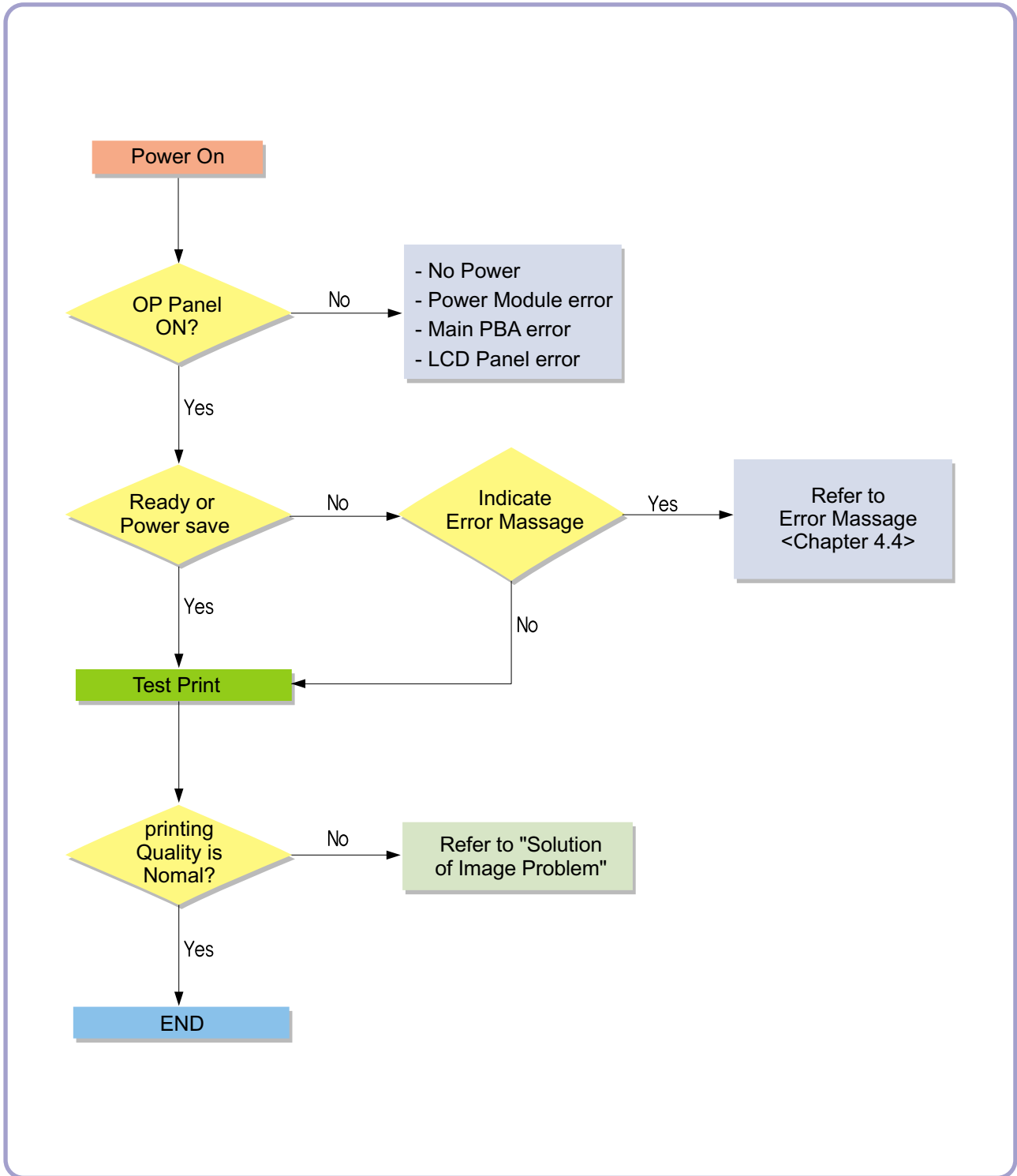
6.1.1 Basic Check List

1. Check the Power.

• Does "Warming Up" appear on the display?

--> If not check power cable, switch or SMPS.

--> Does the wall socket work?

• Do the Motors or other components initialize (listen for main motor, fan and LSU sounds)?

--> If not or there are none of the normal startup sounds check cable, switch or SMPS.

--> Does the wall socket work?

2. Check the LCD Panel.

• Is there any display at all?

--> If not check power cable, switch or SMPS.

--> Does the wall socket work?

• Is the display a meaningful message care there any broken or badly formed characters?

--> Check the main PBA and cable harness.

• Is the message on the LCD Panel a standard error message?

--> Refer to section 4.3

3. Check the Paper Path

• Is there a Paper Jam?

--> Remove any paper fragments caught in the paper path.

• Paper Jam occurs repeatedly at a specific point in the Paper Path

--> Open the fuser cover, Jam clear.

--> Dismantle the machine and carefully inspect the region where the jam occurs.
(Especially, check if paper fragments are caught in the Fuser

4. Print the Information Page (Configuration).

• Try printing a test page from a computer.

--> If there is an error check cables and driver installation.

5. Check the Print Quality.

• Is there are a Print Quality Problem?

--> Refer to section 6.5

6. Check consumables (toner etc.).

• Using the keys print the Test Pattern.

--> Expected life of various consumable parts, compare this with the figures printed and replace as required

6.1.2 Initial Inspection

1. Check Power part

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

2. Check the Installation Environment.

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

3. Check paper type.

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

4. Check the overall condition of the printer

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

6.2 Bad discharge

6.2.1 Wrong Print Position

> • **Description**   Printing begins at wrong position on the paper.

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

6.2.2 JAM 0

BIN PATH
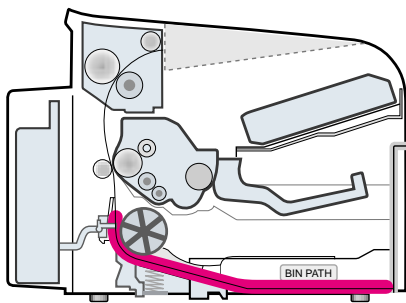
> • **Description**
>
> 1. Paper is not exited from the cassette.
> 2. Jam-0 occurs if the paper feeds into the printer.

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

6.2.3 JAM 1

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

Check and Cause	Solution
1. If the recording paper is jammed in front of or inside the fuser.	1. Replace the SMPS.
2. If the recording paper is stuck in the discharge roller and the fuser just after passing through the Actuator-Feed, Feed Actuator may be defective.	2. Reassemble the Actuator-Feed and Spring-Actuator if the returning is bad.

6.2.4 JAM 2

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

Check and Cause	Solution
1. If the paper is completely fed out of the printer, but Jam 2 occurs : Exit sensor is defective. • After the paper is completely discharged, actuator Exit should return to the original position to shut the photo-sensor. Sometimes it takes longer hour than it should and does not return.	1. Check if the exit sensor actuator is defective. • Check if the actuator exit is unformed (Check if the lever part is unformed in shape). • Check whether burrs occur in the assembly part of the actuator exit or not and if the actuator is smoothly operated. • Check if foreign matters and wire get caught in the actuator exit's operation.
2. If the paper is rolled in the Fuser Roller: • This occurs when a Guide claw is broken away or transformed. • It occurs when the Spring of a Guide claw is broken away or transformed. • It occurs when the Heat-Roller or Pressure-Roller is seriously contaminated with the toner.	2. If the paper is stuck in the fuser : disassemble the fuser and remove the jammed paper, and clean the surface of the pressure roller with dry gauze.
3. Paper is accordion in the fuser.	3. Remove the jammed paper after disassembling the fuser : Clean the surface of the pressure roller with dry gauze. • Remove the toner particles stained on the rib. • Check the assemblage and performance of the exit.

6.2.5 Multi-Feeding

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

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

6.2.6 Paper rolled in the Fuser

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

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

6.2.7 Paper rolled in the Toner Cartridge (OPC Drum)

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

Check and Cause	Solution
1. Paper is too much thin.	1. Recommend to use normal paper.
2. The face of paper is curled.	2. How to remove the rolled in the OPC Drum. • Remove the paper while turning the OPC Drum against the ongoing direction.

6.3 Set Malfunction – Causes and Solutions

6.3.1 LCD Display Defect (▪▪▪▪ in LCD Display)

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

Check and Cause	Solution
1. Clear the memory. 2. Check that the OPE HARNESS is connected to the Connection Board correctly.	1. Try again after clearing the memory. 2. If re-connecting the harness does not correct the fault replace the OPE Ass'y and the main Board in sequence.

6.3.2 Defective OPE Keypad

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

Check and Cause	Solution
1. Clear the memory. 2. Check that there is an audible key click when a key is pressed.	1. Check that the keypad is assembled correctly and the membrane is not damaged, replace the membrane or whole keypad assembly if necessary. 2. If the fault remains replace the OPE Ass'y and the Main board in sequence.

6.3.3 Fuser gear melts due to overheating causing Paper Jam.

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

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

6.3.4 Paper Empty

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

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

6.3.5 Paper Empty without indication

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

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

6.3.6 Cover Open

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

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

6.3.7 No error message when the cover is open

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

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

6.3.8 Defective motor operation

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

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

6.3.9 No Power

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

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

6.3.10 Printed Vertical Lines become curved

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

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

6.4 Bad Software Environment

6.4.1 The printer is not working (1)

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

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

6.4.2 The printer is not working (2)

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

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

6.4.3 Abnormal Printing

• **Description**	The printing is not working properly even when the cable has no problem. (even after the cable is replaced) If the printer won't work at all or the strange fonts are repeated, the printer driver may be defective or wrong setup in the CMOS Setup.

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

6.4.4 SPOOL Error

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

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

⚠ **How to delete the data in the spool manager.**

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

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

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

6.5 Bad image

6.5.1 Vertical Black Line and Band

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

Check and Cause	Solution
1. Damaged develop roller in the Developer. Deformed Doctor-blade or cleaning-blade.	1. If causes 1 and 2 occur in the developer cartridge, replace the developer and try to print out.
2. Scratched surface of the discharge roller in the developer.	2. Replace the transfer roller if occurred as No. 3.
3. Partly depression or deformation on the surface of the transfer roller.	

6.5.2 Vertical White Line

> • **Description**   White vertical voids in the image.

Check and Cause	Solution
1. Foreign matter stuck onto the window of internal lenses of LSU mirror.	1. Foreign matter stuck onto the window : Clean the LSU window with recommended cleaner(IPA) Clean the window with a clean cotton swab.
2. Foreign matter or toner particles between the developer roller and blade. (In case the life of the developer has been expired, white lines or light image occur in front of the image.)	2. Foreign matter in the LSU : Open the cover of LSU and clean with a cotton swab on the surface of the reflex mirror.
3. It may occur when Burr and foreign substances are on the window of the developer frame.	3. No 3. : Remove the foreign matter and burr of the exposure window. (Developer cartridge)
4. If the fuser is defective, voids occur periodically at the top of a black image.	4. No. 4. : Open the front cover and check ribs that corresponds to the position of the voids. Remove if found.
	5. If the problems are not solved, replace the developer cartridge.

6.5.3 Horizontal Black Band

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

~~Digital Printer~~
Digital Printer
Digital Printer
~~Digital Printer~~
~~Digital Printer~~

Check and Cause	Solution
1. Bad contacts of the voltage terminals to developer.	1. Clean each voltage terminal of the Charge, Supply, Develop and Transfer roller. (remove the toner particles and paper particles)
2. The rollers of developer may be stained. OPC Drum = 75.5mm Charge Roller = 37.7mm Supply Roller = 47.5mm Develop Roller = 35.2mm Transfer Roller = 46.2mm Heat Roller = 63.9mm Pressure Roller = 75.4mm	2. Clean the right Gear that has relatively small gap of the teeth in the OPC. 3. If the malfunction persists, replace the developer.

6.5.4 Black/White Spot

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

. Digital Printer .
. Digital Printer .
. Digital Printer .
. Digital Printer .
. Digital Printer .

Check and Cause	Solution
1. If dark or blurry black spots occur periodically, the rollers in the Developer may be contaminated with foreign matte or paper particles. (Charge roller : 37.7 mm interval OPC drum : 75.5 mm interval)	1. Run OPC cleaning Mode Print and run the Self-test 2 or 3 times.
2. If faded areas or voids occur in a black image at intervals of 75.5 mm, or black spots occur elsewhere, the OPC drum surface is damaged.	2. In case of 75.5 mm interval unremovable in 1, cleanly remove foreign substances stuck on the OPC location equivalent to black spots and white spots with a dry duster.
3. If a black image is partially broken, the transfer voltage is abnormal or the transfer roller's life has expired.	3. The transfer roller guarantees 50.000 sheets printing. If the roller's life is expired, replace it.
	4. In case of 37.7 mm interval unremovable in 1, take measures as to replace the developer cartridge and try to print out.
	5. Clean the inside of the set against the paper particles and foreign matter in order not to cause the trouble.

6.5.5 Light Image

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

Digital Printer
Digital Printer
Digital Printer
Digital Printer
Digital Printer

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

6.5.6 Dark Image or a Black

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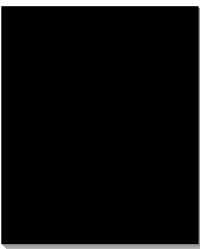
Check and Cause	Solution
1. No charge voltage in the engine board.	1. Clean the high voltage charge terminal.
2. Charge voltage is not turned on due to the bad contacts between power supply in the side of the Developer and charge terminal of HVPS.	2. Check the state of the connector which connects the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

6.5.7 Uneven Density

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

Digital Printer
Digital Printer
Digital Printer
Digital Printer
Digital Printer

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

6.5.8 Background

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

Digital Printer
Digital Printer
Digital Printer
Digital Printer
Digital Printer

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

6.5.9 Ghost (1)

• **Description**   Ghost occurs at 75.5 mm intervals of the OPC drum in the whole printing.
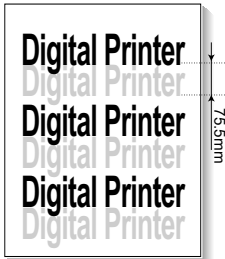
Check and Cause	Solution
1. Bad contacts caused by contamination from toner particles between high voltage terminal in the main body and the electrode of the Developer.	1. Clean the terminals when contaminated by toner particles.
2. Bad contacts caused by contamination from toner particles between high voltage terminal in the main body and the one in the HVPS board.	2. Occur in the developer cartridge, replace the developer and try to print out.
3. The life of developer is expired.	3. Replace the Main board and HVPS Board if not solved by the above directions 1-2.
4. Transfer roller lifetime(50.000 sheets) has expired.	4. If not solved by the direction 3, check the transfer roller lifetime and replace it.
5. Abnormal low temperature(below 10°C).	5. Wait about 1 hour after power on before using printer.

6.5.10 Ghost (2)

• **Description**   Ghost occurs at 75.5 mm intervals of the OPC drum in the whole printing.
(When printing on card stock or transparencies using manual feeder)
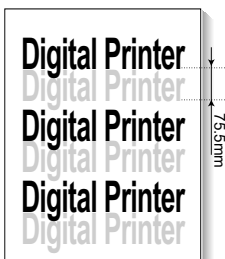
Check and Cause	Solution
When printing on card stock thicker than normal paper or transparencies such as OHP, higher transfer voltage is required.	Select 'Thick Mode' on paper type menu from the software application and after using returning to the original mode is recommended.

6.5.11 Ghost (3)

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

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

6.5.12 Ghost (4)

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

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

6.5.13 Stains on the Face of Page

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

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

6.5.14 Stains on Back of Page

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

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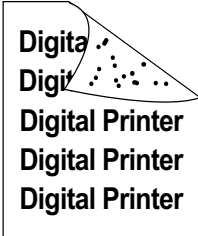
Check and Cause	Solution
1. Transfer roller is contaminated.	1. Perform the DRUM Cleaning Mode Print 2 or 3 times. Run Self-Test to remove the contamination of the transfer roller.
2. Pressure roller is contaminated.	2. Replace the transfer roller if contaminated severely.
	3. Disassemble the fuser and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

6.5.15 Blank Page Print out (1)

> • **Description**   Blank page is printed.

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

6.5.16 Blank Page Print out (2)

> • **Description**   1. Blank page is printed.
> 2. One or several blank pages are printed.
> 3. When the printer turns on, several blank pages print.
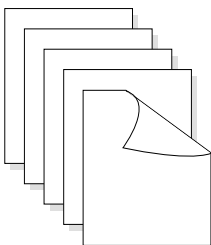
Check and Cause	Solution
1. Bad ground contacts in OPC and/or developer.	1. Remove contamination of the terminals of the developer.
2. Abnormal solenoid.	2. Perform the engine self test using Engine Test Mode to check if the Solenoid is normal.(refer to code 06)
	3. If not solved by the above directions 1-2, Replace the engine board.
	4. Turn the power off, delete the data of PC and try printing again.

6.6 Fax & Phone Problems

6.6.1 No Dial Tone

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

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

6.6.2 Defective MF DIAL

> • **Description**   The MF DIAL is not functioning.

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

6.6.3 Defective FAX FORWARD/RECEIVE

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

Check and Cause	Solution
1. Check that you can hear a dial tone by pressing OHD.	1. If MODEM testing is normal and there is no dial tone, then try replacing the LIU B'd.
2. Check that you can hear a RECEIVE tone when MODEM testing in TECH Mode.	2. If testing the MODEM shows a fault replace the Main B'd.

6.6.4 Defective FAX FORWARD

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

Check and Cause	Solution
1. Check if there is a NOISE line by pressing on-hook dial and listening.	1. If you can hear a noisy line when using on-hook dial, replace or repair the telephone line
2. Check that the destination fax machine can receive forwarded faxes by using a different sending fax machine (preferably from the same wall socket).	2. Replace LIU.
3. Check the cable between the set and the wall socket for damage.	3. Replace the line cord.

6.6.5 Defective FAX RECEIVE (1)

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

Check and Cause	Solution
1. Check if there is a NOISE line by pressing on-hook dial and listening	1. If you can hear a noisy line when using on-hook dial, replace or repair the telephone line.
2. Use a different fax machine to receive from the same sender (if possible on the same wall socket).	2. Replace the LIU.

6.6.6 Defective FAX RECEIVE (2)

• Description   Received data are lengthened or cut in the printing.

Check and Cause	Solution
1. Check if there is a NOISE line by pressing on-hook dial and listening	1. If you can hear a noisy line when using on-hook dial, replace or repair the telephone line
2. Ask sender to send to another fax machine (if possible connected to the same wall socket)	2. Replace LIU or main PBA in sequence.

6.6.7 Defective FAX RECEIVE (3)

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

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

6.6.8 Defective FAX RECEIVE (4)

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

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

6.6.9 Defective Automatic Receiving

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

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

6.7 Copy Problems

6.7.1 White Copy

> • **Description**   Blank page is printed out when copying.

Check and Cause	Solution
1. Check the Scanner Cover is properly closed.	1. Room light can pass through a thin original.
2. Check shading profile.	2. Redo shading profile in the tech mode.
3. Check white/black reference voltage on Main PBA.	3. Replace the Main PBA.

6.7.2 Black Copy

> • **Description**   Black page is printed out when Copying.

Check and Cause	Solution
1. Check for CIS problem on the Main PBA.	1. Check the CIS FFC Cable is properly connected.
2. Check shading profile.	2. Redo shading profile in the tech mode.

6.7.3 Abnormal noise

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

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

6.7.4 Defective Image Quality

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

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

6.8 Scanning Problems – Causes and Solutions

6.8.1 PC Scanning problems

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

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

6.8.2 Poor Quality of PC Scanned images

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

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

6.9 Toner Cartridge Service

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

6.9.1 Precautions on Safe-keeping of Toner Cartridge

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

6.9.2 Service for the Life of Toner Cartridge

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

6.9.2.1 Redistributing Toner

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

6.9.3 Standard of guarantee for consumable parts.

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

• **Spotting a refilled cartridge by eye.**
  One way security screws are used in the manufacture of the cartridge – check if these are damaged.

6.9.4 Error messages in the LCD window related to toner.

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

6.9.4.1 Toner Low

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

6.9.4.2 Toner Empty

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

6.9.4.3 Drum Warning

- Explanation: This message appears when the OPC drum is nearing the end of its life (14,000pages). This means that the life of the mechanical parts in the cartridge has expired (this is not an indication of toner remaining).
- Solution: After printing about 15,000 pages, in a worst case scenario, the waste toner collector might overflow and it may cause the system to fail. Also after 15,000 pages the OPC drum surface will be becoming worn and print quality will degrade, print images will become misty. It is therefore necessary to replace the cartridge even though there may be toner left in it.
  When this message occurs there are approximately 1,000 pages left.

6.9.4.4 Replace Drum

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

6.10 Software Problems – Causes and Solutions

6.10.1 The printer is not working (1)

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

Check and Cause	Solution
1. Run Self-Test Mode: using the menu buttons print the test page.	1. If the test print works that means there are no problems in the printer itself. If the test printing does not work that means the printer is faulty and the problem is not due to computer software or driver settings.
2. Check that the PC and the printer are properly connected and that the toner cartridge installed correctly.	2. Replace the printer cable. If the problem is not solved even after the cable is replaced, check the amount of the remaining toner. (refer to Toner Cartridge Service 7-6, Page 7-25)
3. Printing is not working in the Windows.	3. Check that the connection between PC and printer port are correcct. If you use windows, check that the printer driver in the controller is set up correctly set up, the correct port is selected and 'Use On-line' is selected in the driver. If the printer driver is properly set up try printing a test page from the driver properties. Check in which program printing is not working. Try opening 'Note Pad' and printing. If the printer is not working in a certain program, adjust the setup within that program. Sometimes, the printout is normal within the Windows basic programs, but it's not working in a particular program. In this case, uninstall and re-install the new driver. If the printer is not working in the Windows basic programs and you are printing using the parallel port check the port setting in CMOS is on ECP and that the address is IRQ 7 and 378 (for parallel port 1). Try using USB instead of parallel – or vice versa.
4. Check that the printer cable is directly connected to the printer.	4. If you have other devices that need to share the printer port try temporarily disconnecting these devices and perhaps even uninstalling their drivers) to ensure the printer works by itself. If you are using a USB hub try connecting directly to the back of the PC instead.

6.10.2 The printer is not working (2)

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

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

6.10.3 Abnormal Printing

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

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

6.10.4 SPOOL Error

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

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

⚠ ,**How to delete the data in the spool manager.**

In the spool manager, the installed drivers and the list of the documents waiting to be printed are shown.

Select the document to be deleted and check delete in the menu.

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

6.11 Windows Problems

Problem	Solution
After installing PortThru the print server name is not displayed under New Print Server in SyncThru.	1. Verify that the printer power switch is turned on and the 'READY' message is displayed on the printer front panel. 2. Verify that the LAN cable is plugged into the PortThru card. 3. There are 2LEDs on the PortThru card. One should flash irregularly and the other should be on. If this is not the case ensure that the network card is properly installed and the PCB an cable connectors make a good connection. If the problem continues check the network cable / socket by using a different cable or socket. If the problem continues replace the network card. 4. Confirm that the print server and the PC which searches for the New Print Server is on the same LAN (correct IP and subnet mask settings). If you want to search for a New Print Server your PC and the print server should be on the same LAN.
The print server name is displayed, but the test page is not printed.	Using the front panel menus print the Network configuration. If the Network menu is not displayed or the configuration page is not printed turn off the printer, ensure the network card is properly fitted then turn it back on and try again. If the problem continues replace the network card.
SyncThru indicates that firmware upgrade is complete but when the network configuration is printed the software version has not changed.	Before attempting to upgrade firmware ensure that computer and printer can communicate using a Ping command.
SycThru is unable to automatically detect the printer.	1. Check that the LAN cable is connected to the printers. If an IP address is assigned to the computer and printer ensure that the Ping command can see the printer. If an IP address is not allocated to the printer or it is in a different LAN segment then ensure that either IPX/SPX or DLC/LLC protocols are enabled on the computer. 2. Print the network configuration. If the TCP/IP or Network protocols are disabled in the printer either use the front panel to re-enable them or ensure that DLC/LLC protocol is installed in the computer. 3. In SyncThru use the Settings / Protocol Selection menu option to select either TCP/IP or IPX protocols and then use the View/Refresh option to scan the network again. 4. Ensure that the network cable and wall socket are functioning correctly. 5. Ensure that the version of SyncThru is the same as or newer than the version supplied with the printer. 6. Ensure that there is no router between the printer and the computer as SyncThru will not work through a router. 7. Ensure there are no Switch or Router VLAN or Access Control Lists which are blocking communication between the printer and the computer. **Note** *Windows XP does not support DLC/LLC protocols.*
The printer does not print via a network connection.	1. Connect the printer using a Parallel or USB cable and ensure that the computer can print. If not check that the printer drivers are installed correctly 2. If the printer can print via a local connection check Printer Properties / Ports and ensure that a TCP/Ip port has been allocated to the printer.

6.12 SyncThru Installation Problems

Problem	Solution
"File Transfer Error" message appears during the Installation process.	1. Make sure that any previously installed version of SyncThru is uninstalled. Restart your PC after uninstalling previous versions. 2. If the problem continues, In Windows 95/98 boot into MS/DOS mode and delete the "sammon.dll" file in the windows\system directory the restart Windows and reinstall SyncThru. In Windows NT stop the spooler service using' Services 'in Control Panel, delete the "sammon.dll" file in the windows\system32 directory then restart the spooler service and reinstall SyncThru.
'Unable to add the Port list of Samsung ports' message appears when you add a port.	Verify that your PC restarts after installing SyncThru.

7. Exploded Views and Parts List (SCX-4321/XEV)

Contents

Part Number & Description format.

Part numbers and descriptions are defined according to a company standard. The information below will help you to understand the part number format and assist when ordering spare parts.

• **There are two types of Part number format.**

●●●● – ●●●●●●   ex) 2007-007961   R-CHIP

■■●●○ – ●●●●●■   ex) JB96-01268A   ELA UNIT-COVER TOP

It shows part specific

(● : number   ■ : letter)

Type 1 : This format is used throughout Samsung on all product ranges.
Typically it is used for small components and electronic parts.

Type 2 : This format is controlled by individual Samsung Divisions and is used on specific products, typically for mechanical parts. Type 2 format part numbers fall into 2 categories:

• **A/S privately used part :** It is only used for A/S .

• **Ass'y part :** Assemblies consisting of 2 or more parts. Also used for Service manuals, user guides and diagrams.

• Ass'y parts and A/S privately used Parts can be distinguished by the part Code and Description. They are always Type 2 format. The 2 leading characters indicate private or assembly parts.

DIVISION	PART CODE	DESCRIPTION
A/S Private	**81-****** (JB81-00039A)	AS-********** (AS-USE)
ASS'Y Part	**75-****** (JB75-00068A)	MEC-******** (MEC-CHUTE)
ASS'Y Part	**92-****** (JB92-01131A)	PBA ********* (PBA MAIN-CONTROLLER)
ASS'Y Part	**97-****** (JB97-01089A)	MEA ********* (MEA UNIT-PULLEY IDLE)

7.1 Main Exploded Views

SCX-4521F

SCX-4321

7.2 ADF Assembly Exploded Views

MEA-COVER PLATEN
(see to next page)
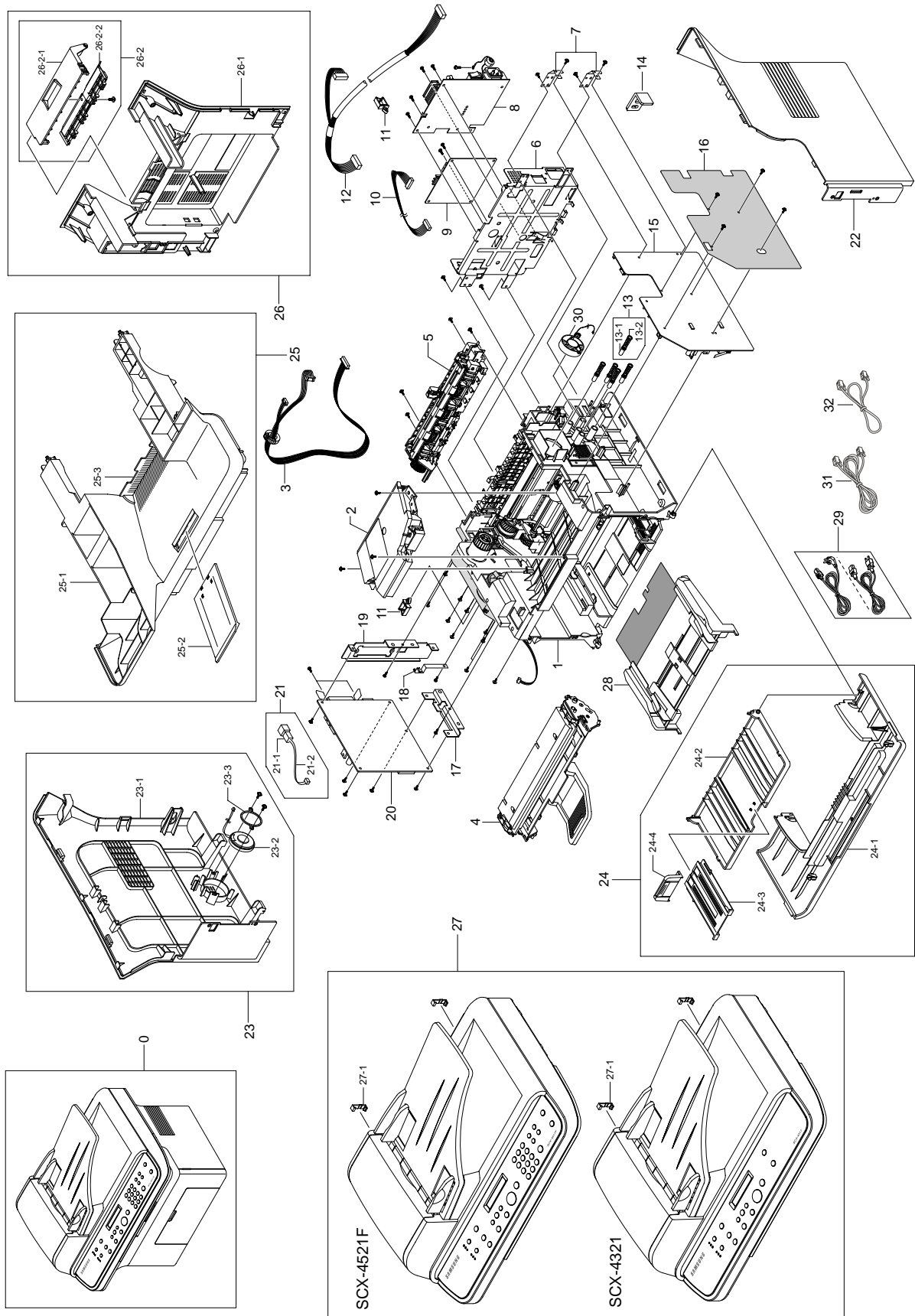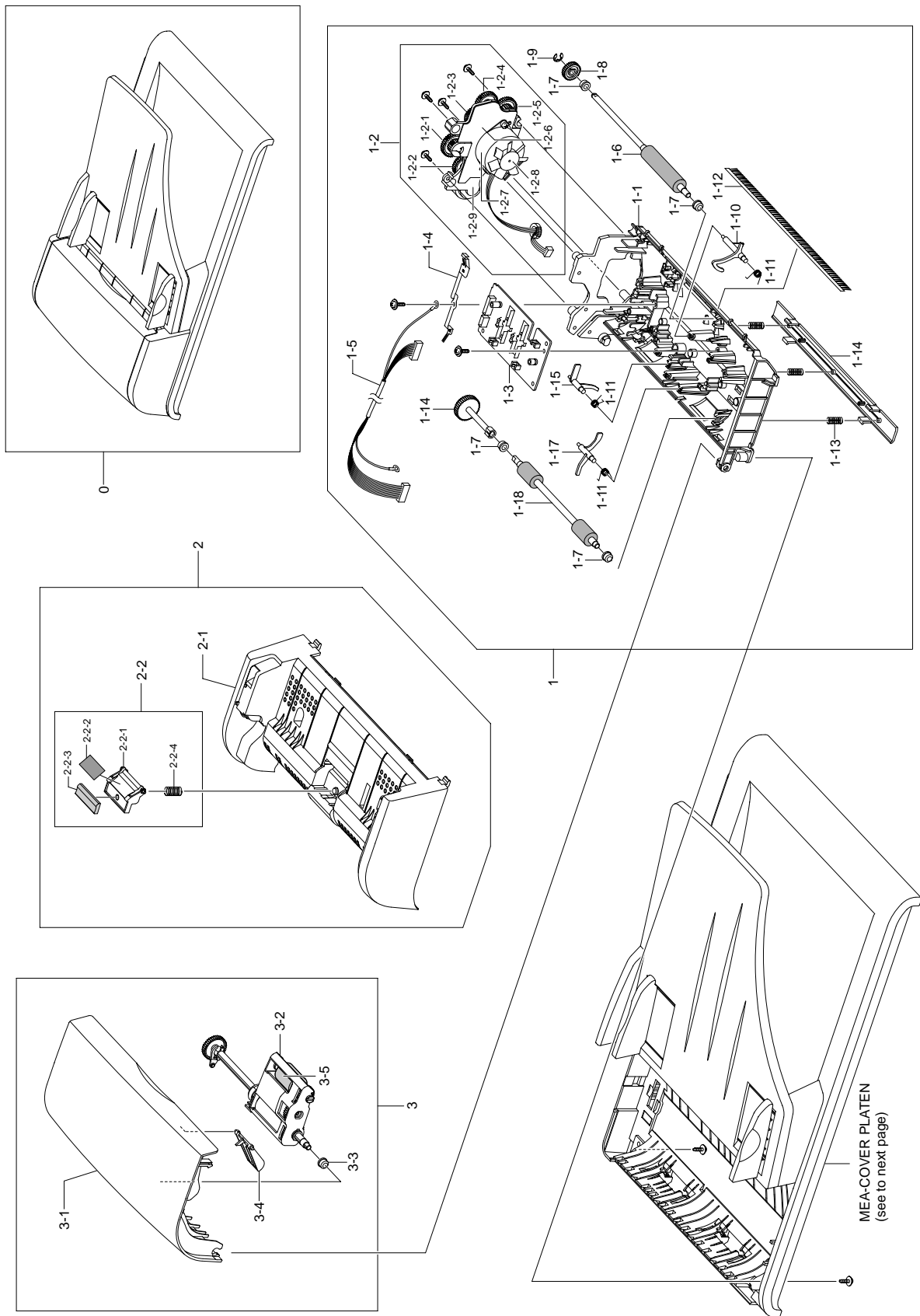
7.3 Platen Cover Assembly Exploded Views
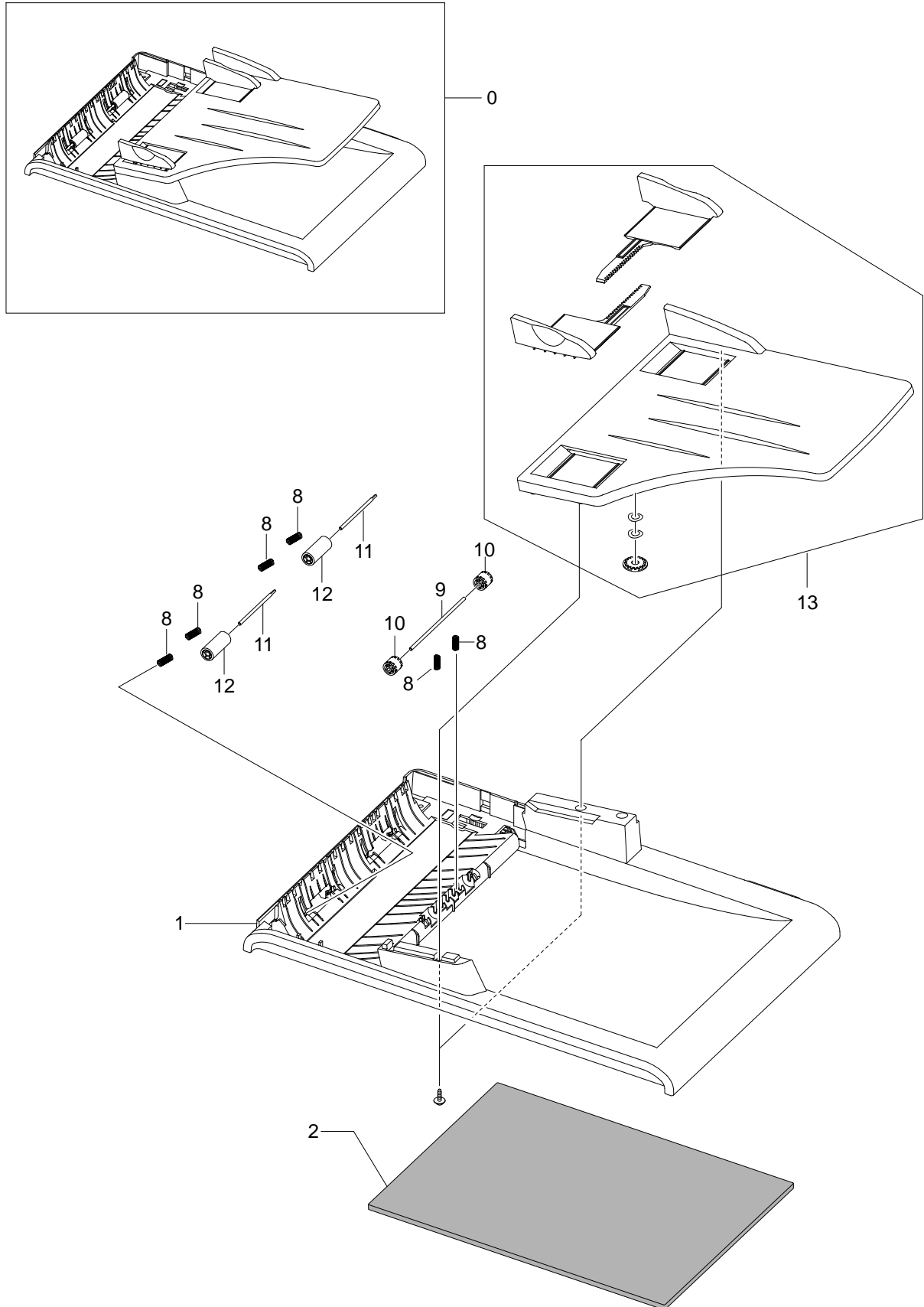
7.4 ADF Platen Assembly Exploded Views

7.5 OPE Unit Exploded Views

SCX-4321 (3in1)

SCX-4521F (4in1)
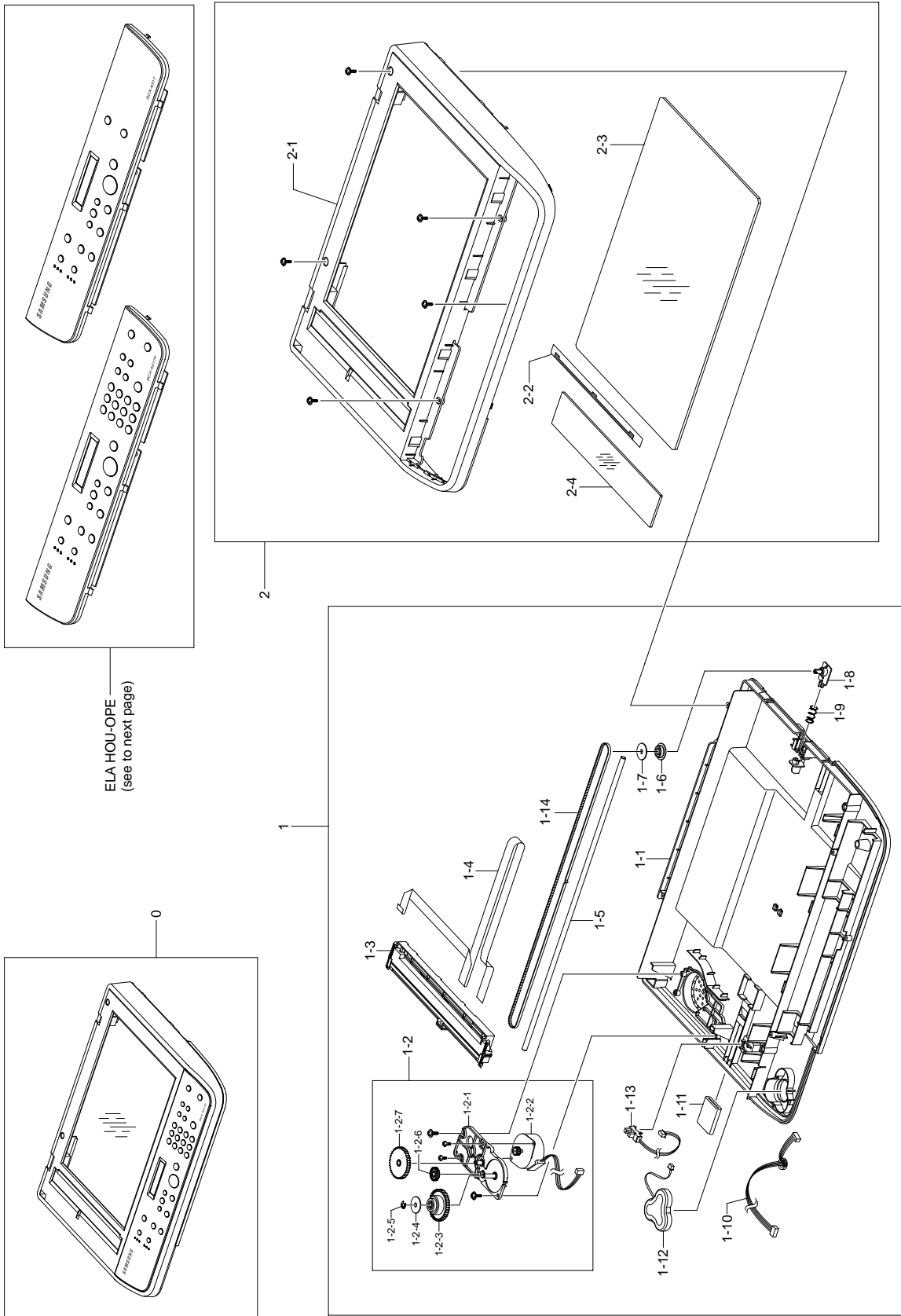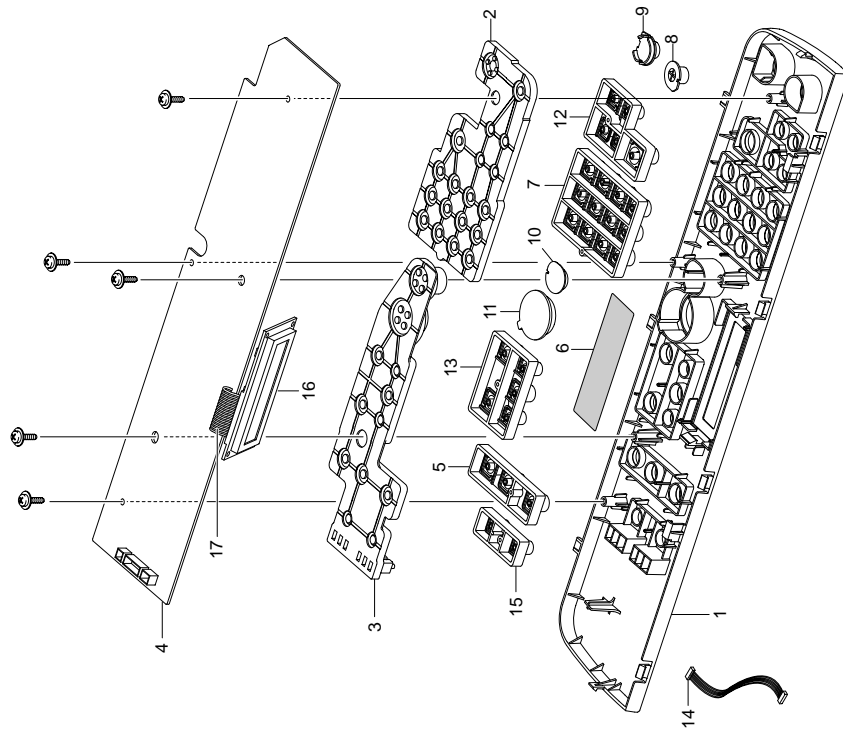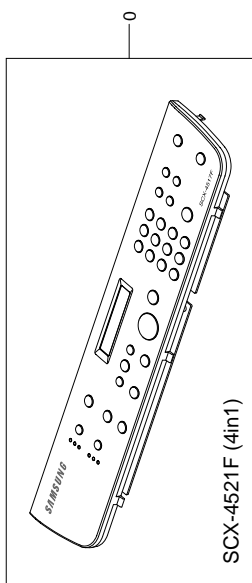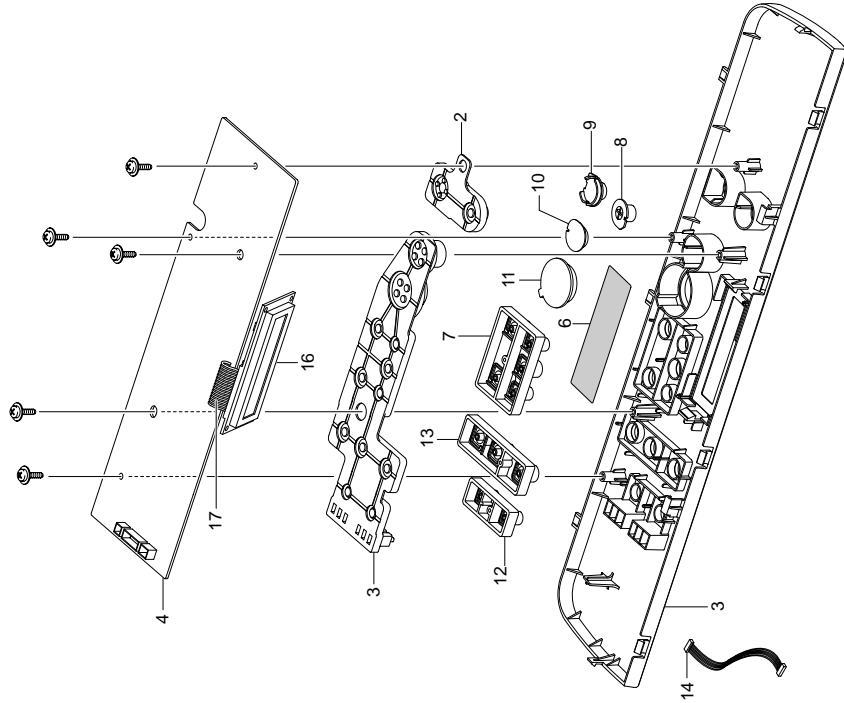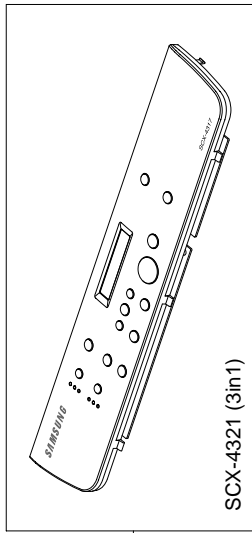
7.6 Pick-Up Unit Exploded Views
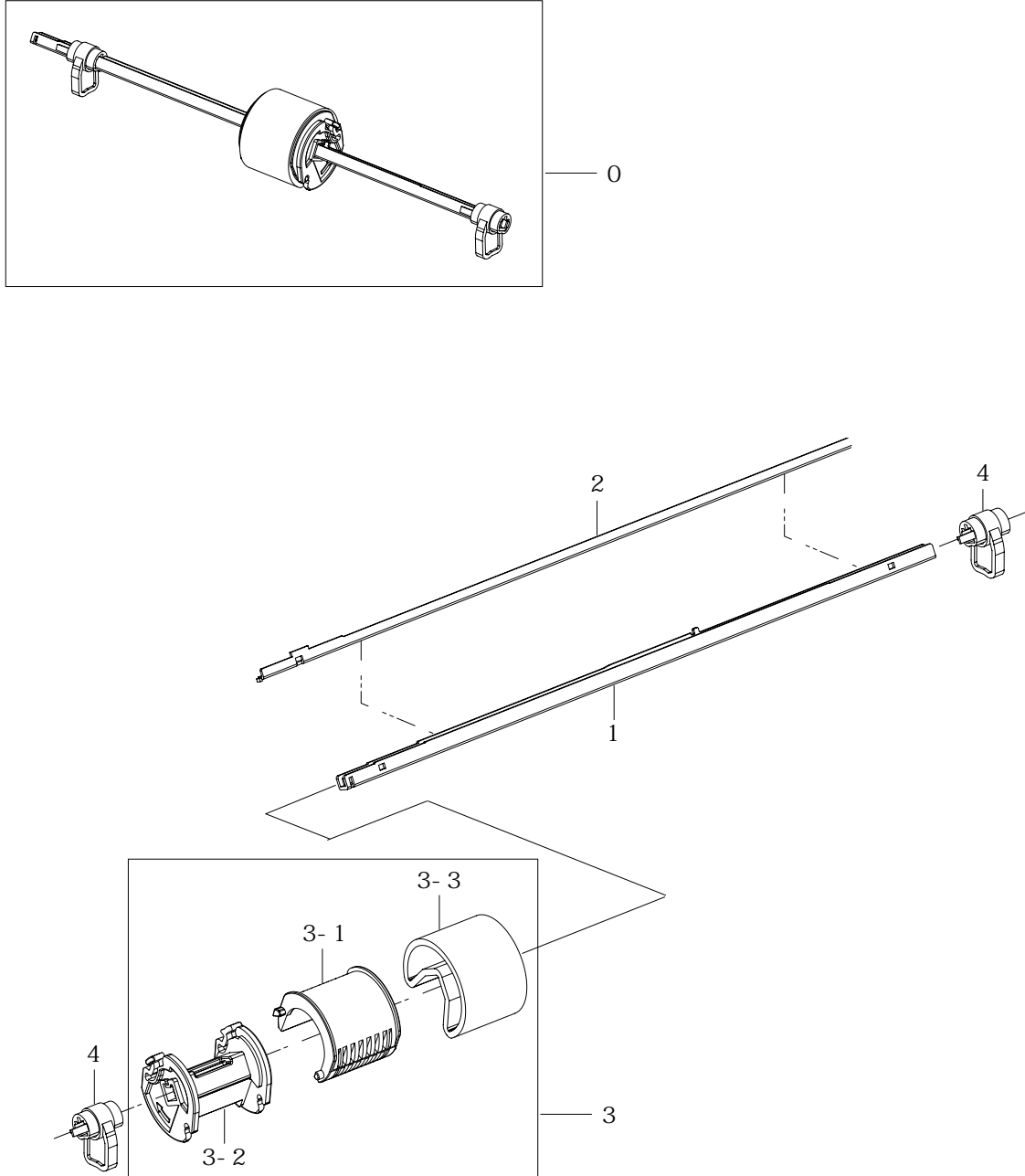
7.7 Main Frame Assembly Exploded Views
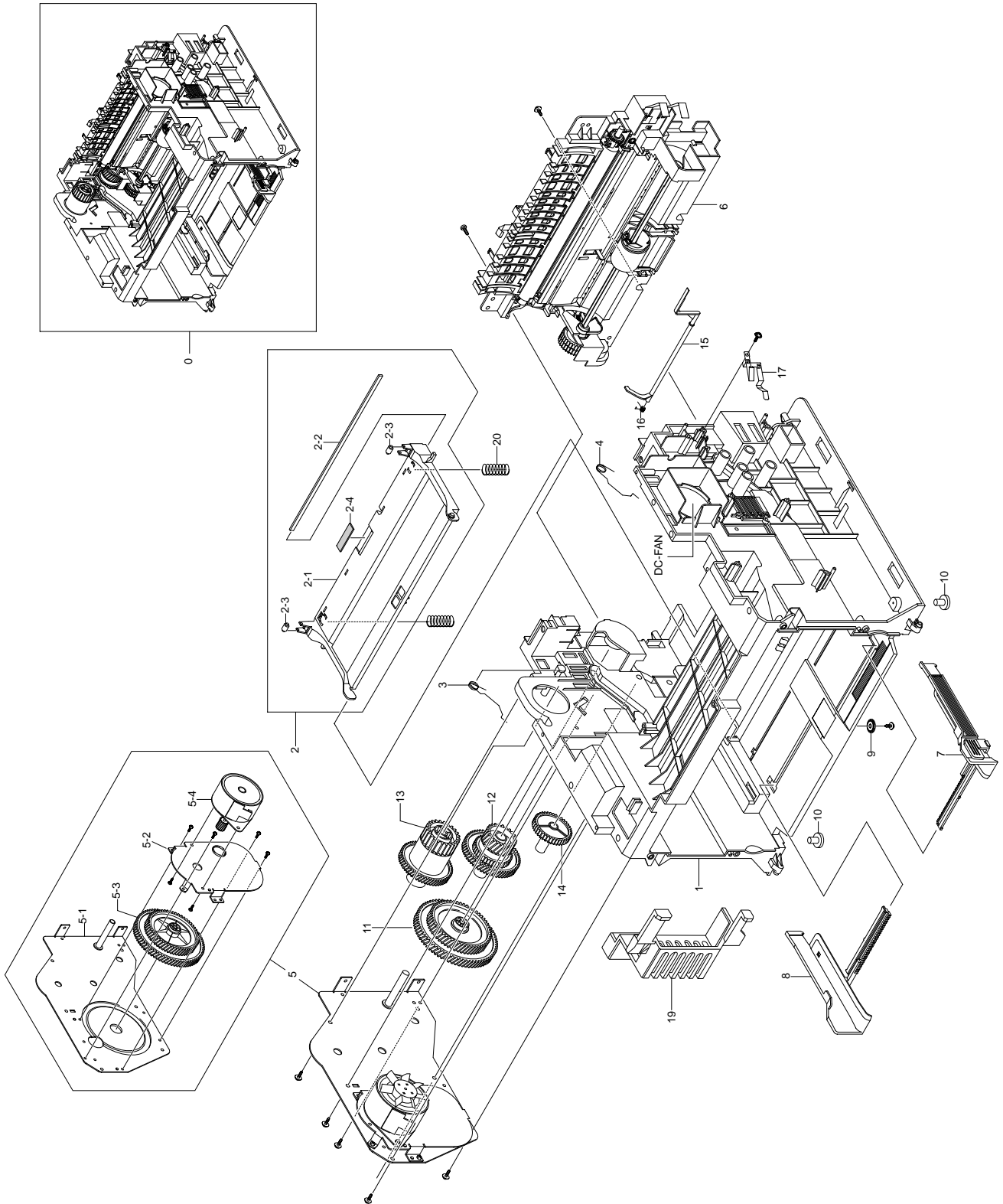
7.8 MP Tray Assembly Exploded Views
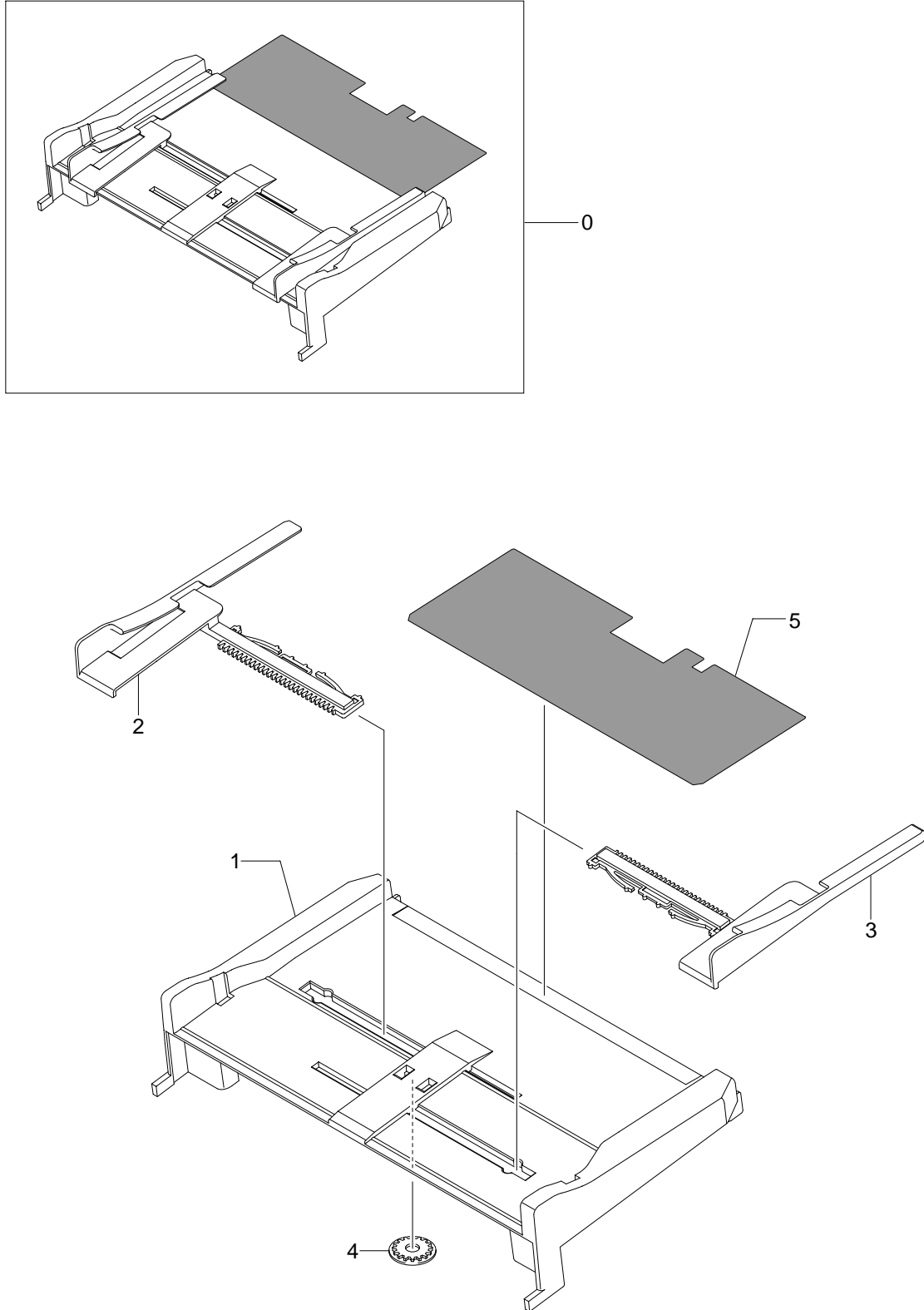
7.9 Fuser Unit Exploded Views
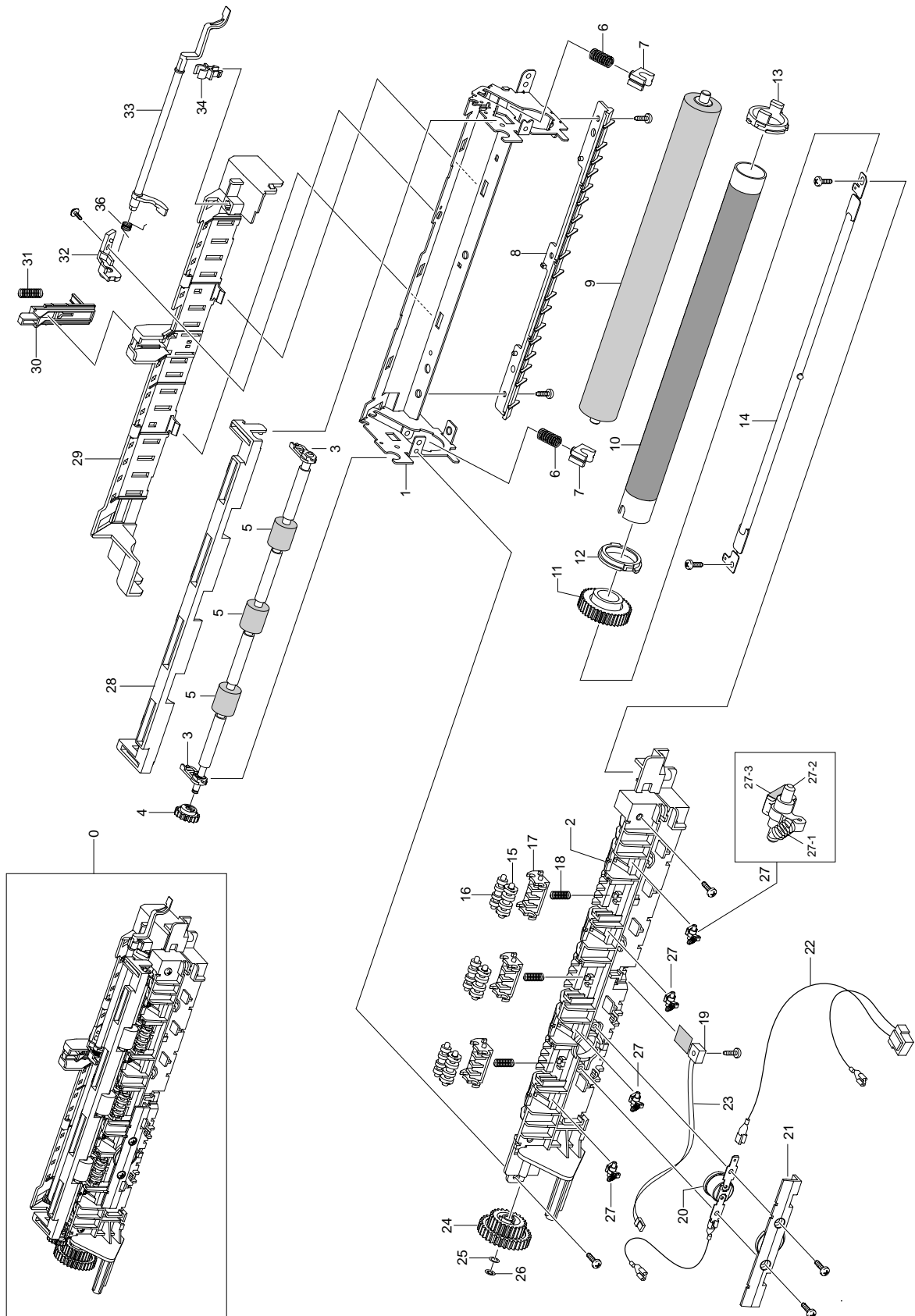
7.10 Paper Path Assembly Exploded Views
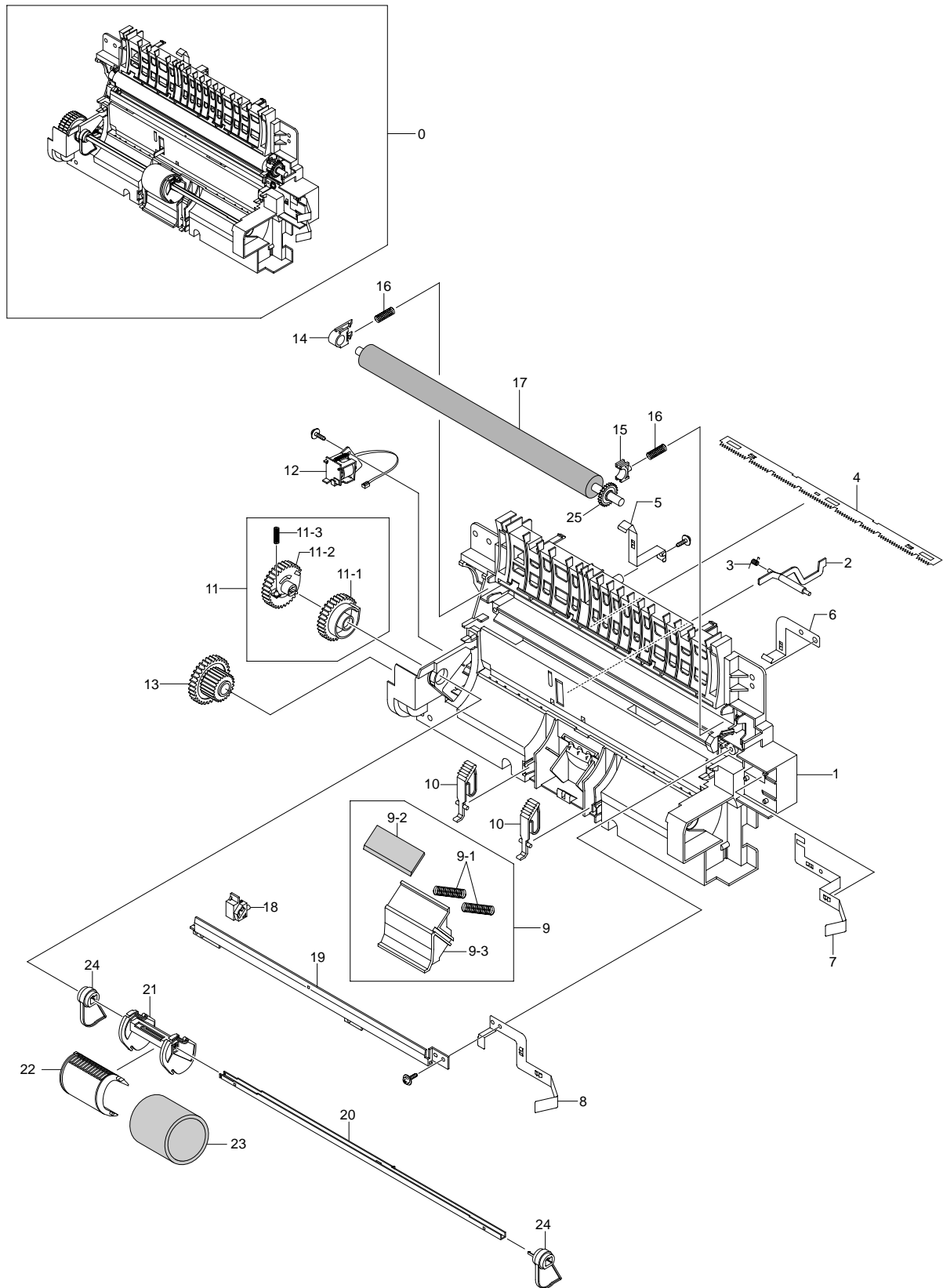
Service Parts List (Model code : SCX-4321/XEV)

SA : SERVICE AVAILABLE   SNA : SERVICE not AVAILABLE   DNA : DELIVERY   not AVAILABLE

Drawer#	SEC-Code	Description & Specification	Location	Service
7.1-1	JC96-03392A	ELA HOU-FRAME LOWER;SCX-4521F,SEC,WHITNE		SA
7.1-2	JC59-00023A	UNIT-LSU;ML-1610,-,-,16,20PPM,1 LIGHT SO	L7012	SA
7.1-3	JC39-00321A	CBF HARNESS-LSU;SF-755P,#26,UL 1061,5/7/		SA
7.1-5	JC96-03415A	ELA HOU-FUSER_220V;SCX-4521F,SEC,-,FUSER		SA
7.1-6	JC63-00664A	SHIELD-P-ENGINE;SCX-4521F,SECC,0.8,306.7		SA
7.1-6-2	JC97-02210A	MEA UNIT-COVER JAM;SCX-4521F,SEC,-,JAM C		SA
7.1-7	JC63-00631A	GROUND-P-HVPS;ML-1610,SUS304CSP 1/2H,0.2	K3232	SNA
7.1-8	JC44-00102A	SMPS-WHITENY+(V2C);SCX-4521F,*,AC/DC,-,2		SA
7.1-10	JC39-00410A	CBF HARNESS-HVPS;SCX-4521F,CBF,UL1061,26		SA
7.1-13	JC96-01672A	ELA UNIT-TERMINAL TR L;ML-6060A,SEC,220V	K3197	SA
7.1-13-1	JC61-00031A	SPRING ETC--HV LARGE;ML-6060A,SUS 304 WP	Z4197	SA
7.1-13-2	JC70-40912A	ICT-SHAFT HV LARGE;ML-5000A,SWCH18A,-,¥÷	S4027	SA
7.1-14	JC61-01170A	PLATE-P-CHANNEL;ML-1610,SECC,1.2,8,12.9,		SA
7.1-15	JC44-00079A	HVPS-SKYLARK;-,24V,21.6V~27.6V,-,MAX 5KV	S7027	SA
7.1-17	JC61-01183A	BRACKET-P-MAIN BOARD;SCX-4521F,SECC,0.8,		SA
7.1-18	JC63-00665A	GROUND-P-MAIN BOARD;SCX-4521F,SUS304CSP,		SA
7.1-19	JC61-01182A	BRACKET-P-PORT;SCX-4521F,SECC,0.8,29.8,1		SA
7.1-20	JC92-01726B	PBA MAIN-WHITNEY_PLUS;SCX-4321,USA,USA,2		SA
7.1-21	JC96-02417A	ELA HOU-FULL SENSOR HARNESS;ML-3550N,SEC		SA
7.1-21-1	0604-001095	PHOTO-INTERRUPTER;TR,90%,150mW,DIP-4,BK	P0013	SA
7.1-21-1	0604-001154	PHOTO-INTERRUPTER;TR,0.2-1.0MA,80MW,DIP,	P0012	SA
7.1-21-2	JC39-00215A	CBF HARNESS-JAM_SENSOR;ML-3550,UL1061AWG		SA
7.1-22	JC63-00649A	COVER-M-SIDE R;SCX-4521F ,ABS,2.5,302.7,		SA
7.1-23-1	JC63-00650A	COVER-M-SIDE L;SCX-4521F ,HIPS,2.5,292.1		SA
7.1-24	JC97-02202A	MEA-COVER FRONT;SCX-4521F,SEC,WHITNEY,CO		SA
7.1-24-1	JC63-00652A	COVER-M-FRONT;SCX-4521F,HIPS,2.5,399.7,1		SA
7.1-24-2	JC63-00617A	TRAY-M-CASSETTE;ML-1610,HIPS,2,277,108,H		SNA
7.1-24-3	JC63-00628A	TRAY-M-EXTENSION LARGE;ML-1610,HIPS ,2,7		SNA
7.1-24-4	JC63-00629A	TRAY-M-EXTENSION SMALL;ML-1610,HIPS ,-,2		SNA
7.1-25	JC96-03387A	ELA HOU-COVER MIDDLE;SCX-4521F,SEC,WHITN		SA
7.1-25-1	JC63-00653A	COVER-M-MIDDLE;SCX-4521F,HIPS,2.5,437.2,		SA
7.1-25-2	JC72-01351A	PMO-M-STACKER;SCX-4521F,HIPS,SOFT WHITE,		SA
7.1-25-3	JC63-00838A	SHEET-FAN;SCX-4521F,PET,T0.188,70.0,46.0		SA
7.1-26	JC97-02241C	MEA UNIT-COVER REAR;SCX-4321,SEC,-,REAR		SA
7.1-26-1	JC63-00651C	COVER-M_REAR;SCX-4321,ABS,2.5,362.5,215.		SA
7.1-26-2-1	JC63-00654A	COVER-M-JAM;SCX-4521F,PC,2.5,224.9,65.0,		SA
7.1-26-2-2	JC63-00655A	COVER-M-JAM DUMMY;SCX-4521F,PET+GF30,2.5		SA
7.1-27	JC96-03389H	ELA HOU-SCAN_XEV;SCX-4321,SEC,XEV,SCAN A		SA
7.1-27-1	JC67-00087A	CAP-M-HINGE;SCX-4521F,POM,2.5,9.6,24.9,W		SA
7.1-28	JC63-00712A	COVER-M_PAPER;SCX-4521F,ABS,2.5,269.97,1		SA
7.1-29	3903-000042	CBF-POWER CORD;DT,EU,FP3/YES,IEC320 C13/	C0022	SA
7.2-0	JC96-03378A	ELA HOU-ADF;SCX-4521F,SEC,-,ADF ASS'Y,-,		SA
7.2-1	JC96-03380A	ELA HOU-ADF LOWER;SCX-4521F,SEC,-,ADF LO		SA
7.2-1-1	JC63-00656A	COVER-M-ADF LOWER;SCX-4521F,ABS,2.5,131.		SA
7.2-1-2	JC96-03379A	ELA HOU-ADF MOTOR;SCX-4521F,SEC,-,ADF MO		SA
7.2-1-2-1	JC66-00458A	GEAR-IDLE 35 ADF;SCX-4216F,POM,M0.6,Z35,		SA
7.2-1-2-2	JC66-00322A	GEAR-CLUTCH 39;SCX-5150,POM,M0.6,Z39,-,W		SA
7.2-1-2-3	JC66-00457A	GEAR-SWING 31/20 ADF;SCX-4216F,POM,M0.6,		SA
7.2-1-2-4	JC66-00455A	GEAR-58/25 ADF;SCX-4216F,POM,M0.6,Z58/25		SA
7.2-1-2-5	JC66-00456A	GEAR-40/21 ADF;SCX-4216F,POM,M0.6,Z40/21		SA
7.2-1-2-6	JC61-01180A	BRACKET-P-MOTOR;SCX-4521F,SECC,0.8,66.1,		SA
7.2-1-2-6	JC61-01449A	BRACKET-P-MOTOR;ML-2010,SECC,2.0,45.6,11		SNA
7.2-1-2-7	JC31-00036A	MOTOR STEP-ADF;M42SP-13NK,SCX-4920N,0.6A		SA

SA : SERVICE AVAILABLE   SNA : SERVICE not AVAILABLE   DNA : DELIVERY   not AVAILABLE

Drawer#	SEC-Code	Description & Specification	Location	Service
7.2-1-2-8	JC66-00556A	IMPELLER-ADF;SCX-4216F,NYLON66,-,-,-,-,V		SA
7.2-1-2-9	JC61-01178A	BRACKET-M-GEAR;SCX-4521F,PC,2.7,110.76,7		SA
7.2-1-3	JC92-01618A	PBA SUB-ADF;SCX-4920N,DELL,-,ADF,-,-,-,1		SA
7.2-1-4	JC63-00667A	GROUND-P-ADF;SCX-4521F,C5210P,0.2,98.1,1		SA
7.2-1-5	JC39-00407A	CBF HARNESS-ADF;SCX-4521F,CBF,UL2835,16P		SA
7.2-1-6	JC66-00560A	ROLLER-DRIVE;SCX-4216F,CR+SUM24L,14,-,-,		SA
7.2-1-7	JB72-00819A	PMO-BUSH;SCX-1110F,POM,NTR,-,-,-,-,-,-		SA
7.2-1-8	JC66-00460A	SHAFT-M-FEED GEAR 38;SCX-4216F,POM,-,D5.		SA
7.2-1-9	6044-000159	RING-C;ID3,OD7,T0.6,PASS,STSC	Z4153	SA
7.2-1-10	JC72-01011A	PMO-ACTUATOR SCAN SENSOR;SCX-4216F,PC,BL		SA
7.2-1-11	6107-001135	SPRING-CS;SUS304 WPB,-,PI0.3,-,L14,-,-,I		SA
7.2-1-12	JC75-00095A	MEC-BRUSH ANTISTATIC;ML-6060A,SEC,NTR	M0022	SA
7.2-1-13	JB61-00076A	SPRING ETC-TORSION DOC (CC2-F);SCX-1110F	Z4274	SA
7.2-1-14	JC61-01179A	PLATE-M_WHITE BAR;SCX-4521F,ABS,2,20.24,		SA
7.2-1-15	JC72-01009A	PMO-ACTUATOR DOC SENSOR;SCX-4114F,ABS,BL		SA
7.2-1-16	JB66-00101A	GEAR-CLUTCH 29;SCX-1110F,POM(DELIN500P),		SA
7.2-1-17	JC72-01010A	PMO-ACTUATOR REGI SENSOR;SCX-4216F,PC,BL		SA
7.2-1-18	JC66-00559A	ROLLER-EXIT;SCX-4216F,CR+SUM24L,14,-,-,-		SA
7.2-2	JC97-02206A	MEA-ADF UPPER;SCX-4521F,SEC,-,ADF UPPER		SA
7.2-2-1	JC63-00657A	COVER-M-ADF UPPER;SCX-4521F,HIPS,2.5,136		SA
7.2-2-2	JC97-01709A	MEA UNIT-HOLDER ADF;SCX-4114F,SEC,-,HOLD		SA
7.2-2-2-1	JC61-00694A	HOLDER-M-ADF;SCX-4114F,POM,-,-,-,BLK,-		SA
7.2-2-2-2	JC63-00243A	SHEET-ADF HOLDER;SCX-4114F,PC SHEET,0.12		SA
7.2-2-2-3	JB73-00052A	RMO-ADF RUBBER;SCX-1110F,SILICON RUBBER,		SA
7.2-2-2-4	JC61-00387A	SPRING ETC-PAD;ML-9400W,SUS304WPB,PI0.5,	S0028	SA
7.2-2-3	JC61-00712A	GUIDE-STACKER SUB;SCX-4216F,PC+ABS,2.5T,		SA
7.2-2-4	JC66-00594A	SHAFT-STACKER;SCX-4114F,SUM24L,31.2,4,-,		SA
7.2-3	JC97-02204A	MEA-COVER OPEN;SCX-4521F,SEC,-,COVER OPE		SA
7.2-3-1	JC63-00658A	COVER-M-ADF OPEN;SCX-4521F,HIPS,2.5,121.		SA
7.2-3-2	JB75-00299A	MEC-ADF ROLLER ASSY;SCX-1110F/XRX,XEROX,		SA
7.2-3-4	JB72-00843A	PMO-GUIDE PAPER;SCX-1110F,HIPS,IV21,-,-,		SA
7.2-3-5	JB75-00300A	MEC-PICK UP ROLLER ASSY;SCX-1110F/XRX,XE		SA
7.2-4	JC97-02205A	MEA-COVER PLATEN;SCX-4521F,SEC,-,COVER P		SA
7.3-1	JC63-00659A	COVER-M-PLATEN;SCX-4521F,HIPS,2.5,433.79		SA
7.3-2	JC63-00209A	SHEET-WHITE SPONGE;SCX-4216F,PC SHEET+SP	Z4175	SA
7.3-3	JB72-01166B	PMO-TX STACKER(SEC);SCX-1150F,HIPS,WHITE	Z5093	SA
7.3-4	JB72-01170B	PMO-DOC GUIDE(R);SCX-1150F,HIPS,WHITE,-	G2174	SA
7.3-5	JB72-01171B	PMO-DOC GUIDE(L);SCX-1150F,HIPS,WHITE,-	G2168	SA
7.3-6	JF70-10616A	IPR-WASHER SPRING CU;CF3400,SUS301-CSP,-		SA
7.3-7	JG66-40003A	GEAR-PINION;SF4000,POM,WHT,M1,Z16	G0035	SA
7.3-8	JC61-00011A	SPRING ETC-FEED;SF-5100,SUS304WPB,0.6,-,		SA
7.3-9	JF70-40521B	ICT-SHAFT PINCH;FX2200,STSC304WPA,-,D2.6		SA
7.3-10	JG72-40663A	PMO-ROLL PINCH;SF5500,POM(DERLIN 500P),B		SA
7.3-11	JC66-00909A	SHAFT-IDLE FEED;SCX-4521F,SUS303F,59.5,2		SA
7.3-12	JC73-00091A	RPR-ROLLER EXIT IDLE;SCX-5100,POM+EPDM,-		SA
7.3-13	JB97-01544B	MEA-TX STACKER(SEC);SCX-1150F,SEC,-,TX S	Z5024	SA
7.4-0	JC96-03384A	ELA HOU-PLATEN;SCX-4521F,SEC,-,PLATEN AS		SA
7.4-1	JC96-03383A	ELA HOU-SCAN LOWER;SCX-4521F,SEC,-,SCAN		SA
7.4-1-1	JC63-00660A	COVER-M-SCAN LOWER;SCX-4521F,HIPS,2.5,43		SA
7.4-1-2	JC96-02655A	ELA HOU-SCAN MOTOR;SCX-4216F,SEC,-,SCAN		SA
7.4-1-2-1	JC61-00698A	BRACKET-M-SCAN MOTOR;SCX-4216F,PC+GF10%,		SA
7.4-1-2-2	JB31-00011A	MOTOR STEP-SCAN;M42SP-4TKC,SCX-1110/XRX,		SA
7.4-1-2-3	JB66-00082A	GEAR-TIMING;SCX-1110/XRX,POM,0.5,75/25,-		SA
7.4-1-2-4	JB72-00764A	PMO-HOLDER BELT;SCX-1110/XRX,-,POM,WHT,-		SA
7.4-1-2-5	6044-000125	RING-E;ID4,OD9,T0.6,PASS,STSC	R0004	SA
7.4-1-2-6	JB66-00083A	GEAR-IDLE;SCX-1110/XRX,POM,0.5,31,-,WHT,		SA
7.4-1-2-7	JB66-00084A	GEAR-REDUCTION;SCX-1110/XRX,POM,0.5,75/2		SA

2

SA : SERVICE AVAILABLE SNA : SERVICE not AVAILABLE DNA : DELIVERY not AVAILABLE

Drawer#	SEC-Code	Description & Specification	Location	Service
7.4-1-3	0609-001223	CONTACT IMAGE SENSOR;216MM,5148DOT,1.5MS		SA
7.4-1-4	JC39-00408A	CBF SIGNAL-CIS FFC;SCX-4521F,12PIN,FFC,8		SA
7.4-1-5	JC66-00838A	SHAFT-CIS;SCX-4521F,SUM,414.3,6,-,-,-		SNA
7.4-1-7	JB72-01136A	PMO-HOLDER BELT;SCX-1105,POM,WHITE,T=2.0		SA
7.4-1-8	JB72-00763A	PMO-PULLEY;SCX-1110/XRX,-,POM,WHT,-,-,-		SA
7.4-1-9	JB61-00109A	SPRING ETC-BELT;SCX-1105,SUS304WPB,¥Õ0.8		SA
7.4-1-12	JB96-01381A	ELA UNIT-CORE;SCX-1100,SAMSUNG,CORE ASS'		SA
7.4-1-14	6602-001067	BELT-TIMING GEAR;HIBER GLASS,T3.2,T80-40		SA
7.4-2	JC97-02207A	MEA-SCAN UPPER;SCX-4521F,SEC,-,SCAN UPPE		SA
7.4-2-1	JC63-00661A	COVER-M-SCAN UPPER;SCX-4521F,HIPS,2.5,43		SA
7.4-2-2	JB68-00644A	LABEL(P)-SHADING;COMMON,YOOPO PAPER ,T0.	Z4177	SA
7.4-2-3	JB01-00001A	GLASS-ADF;246*45,2.85,CLEAR		SA
7.4-2-4	JB01-00002A	GLASS-PLATEN;247*356,2.85,CLEAR	Z4178	SA
7.5-2	JC73-00204A	RUBBER-TONER;SCX-4321,SILICON,51.9*47.8,		SA
7.5-3	JC73-00203A	RUBBER-SCROLL;SCX-4521F,SILICON,184.12*6		SA
7.5-4	JC92-01727B	PBA SUB-WHITNEY_OPE;SCX-4321,SEC,USA,OPE		SA
7.5-5	JC64-00054C	KEY-M_COPY_R2;SCX-4720F,ABS,-,HB,G71335,	K0011	SA
7.5-6	JC63-00076A	COVER-WINDOW SF-530;SF-530,PVC FILM,T0.	M0402	SA
7.5-8	JC64-00058A	KEY-M-TONER SAVE;SCX-4216F,ACRYL,-,HB,MI	K0068	SA
7.5-9	JC64-00157A	KEY-M-SCAN TO;SCX-4720F,ABS,16*16*9,HB,-	K0054	SA
7.5-10	JC64-00187A	KEY-M-STOP;SCX-4521F,ABS,-,HB,SOFT ORANG		SA
7.5-11	JC64-00114A	KEY-M_START;SF-565P,ABS,D28.6,HB,BLUE,-,	K0026	SA
7.5-13	JC64-00056D	KEY-M_SCROLL_R2;SCX-4720F,ABS,-,HB,G7133	K0024	SA
7.5-14	JC39-00412A	CBF HARNESS-OPE;SCX-4521F ,WIRE HARNESS,		SA
7.5-15	JC64-00059C	KEY-M_RESOLUTION_R2;SCX-4720F,ABS,-,HB,G	K0022	SA
7.5-17	JC39-00306A	CBF HARNESS-LCD;CLP-500,WIRE,UL2877,14-1		SA
7.6-0	JC97-02203A	MEA UNIT-PICKUP;SCX-4521F,SEC,-,PICKUP ,		SA
7.6-1	JC66-00839A	SHAFT-M-ADF;SCX-4521F,PC,184.52,6.9,BLAC		SNA
7.6-2	JC72-00744A	PMO-SHAFT PICK UP;SCX-5150,-,ABS,BLK,HB,		SA
7.6-3-1	JC61-01173A	HOUSING-M-PICK_UP B;ML-1610,ABS HB,-,-,3	P2068	SA
7.6-3-2	JC61-01151A	HOUSING-M-PICK_U;ML-1610,POM,-,-,35,NATU	P2067	SA
7.6-3-3	JC73-00211A	RUBBER-PICK_UP;ML-1610,EPDM+IR,MM,-,-,-,	P2148	SA
7.6-4	JC66-00811A	CAM-M-PICK_UP;ML-1610,POM,4,W21*PHI12,NT	P2042	SA
7.6-5	JC96-03592A	ELA UNIT-RX DRIVE;ML-2010,SAMSUNG,-,SNIP	D4033	SA
7.6-5-1	JC61-01465A	BRACKET-P-GEAR_SN;ML-2010,SECC,T1.2,110,		SNA
7.6-5-3	JC66-00804A	GEAR-RDCN 139/83;ML-1610,POM,0.5/0.6,139	G0383	SA
7.6-5-4	JC31-00037D	MOTOR STEP-MAIN;M55SP-2NK,ML-2010,1.2A,7	M2159	SA
7.6-5-5	JC72-00825A	PMO-IMPELLER_DRV;ML-6200,NYLON66,BLK,-,-	K4023	SNA
7.7-1	JC61-01152A	FRAME-M-BASE;ML-1610,ABS(VE-0860P),-,-,B	B0080	SNA
7.7-2	JC97-02218A	MEA UNIT-PLATE KNOCK_UP;ML-1610,SAMSUNG,	K3602	SA
7.7-2-1	JC61-01158A	PLATE-M-KNOCK_UP;ML-1610,HIPS HB,T2,W80,	K5002	SA
7.7-2-2	JC66-00720A	SHAFT-P-CORE;ML-1750,SECC 1.2T,203,-,-,-	P2158	SA
7.7-2-3	JC72-01004A	PMO-IDLE KNOCK UP MP;ML-2150,POM,BLK,-,M	P0041	SA
7.7-2-4	JC74-00011A	MPR-PAD KNOCK UP MP;ML-6060A,CR+CORK,10*	K5007	SA
7.7-3	JC61-01258A	SPRING ETC-TORSION DEVE_L;ML-1610,SUS304	Z4271	SA
7.7-4	JC61-01259A	SPRING ETC-TORSION DEVE_R;ML-1610,SUS304	Z4272	SA
7.7-6	JC97-02327B	MEA UNIT-FRAME PATH;SCX-4521F,SAMSUNG,-,		SA
7.7-7	JC70-00500A	ADJUST-M-CASSETTE_R;ML-1610,ABS,2.5T,120		SA
7.7-8	JC70-00499A	ADJUST-M-CASSETTE_L;ML-1610,ABS,2.5T,120		SA
7.7-10	JC61-00836A	FOOT-FRONT;ML-1750,NBR,D7,-,11.5,-,-	F1011	SA
7.7-11	JC66-00805A	GEAR-RDCN 113/83;ML-1610,POM,0.6/0.6,113	G0381	SA
7.7-12	JC66-00806A	GEAR-OPC DR 76/38/29;ML-1610,POM,0.6/0.8	D4047	SA
7.7-13	JC66-00807A	GEAR-FUSER DR 63/35;ML-1610,POM,0.6/0.8,	F4086	SA
7.7-14	JC66-00808A	GEAR-FEED DR 41;ML-1610,POM,0.8,41,-,WHI	F6076	SA
7.7-15	JC66-00822A	LEVER-M-ACTUATOR_EMPTY;ML-1610,ABS,-,27,	K3816	SA
7.7-17	JC63-00622A	GROUND-P-OPC;ML-1610,SUS304CSP 1/2H,0.2,	D4053	SA
7.7-18	6107-001240	SPRING-CS;SUS304-WPB,GROUND END,PI0.6,D1	D4084	SA

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Drawer#	SEC-Code	Description & Specification	Location	Service
7.7-19	JC67-00110A	CAP-M-MOTOR;ML-1610,HIPS ,2.0,60.5,52.4,	A0003	SNA
7.7-20	JC61-00025A	SPRING ETC-CS-CHARGE APOLLO;SF-5100,SUS	B2030	SNA
7.7-21	JC31-00027A	FAN-DC_HUMMINGBIRD;-,ML-1710,-,-,-	F5019	SA
7.8-0	JC97-02239A	MEA UNIT-MP TRAY;SCX-4521F,SEC,-,MP-TRAY		SA
7.8-1	JC61-01263A	PLATE-M_MP;SCX-4521F,HIPS,2.5,278.2,123,		SA
7.8-2	JC70-00514A	ADJUST-M _MP L;SCX-4521F,HIPS,2.5,127.8,		SA
7.8-3	JC70-00515A	ADJUST-M_MP R;SCX-4521F,HIPS,2.5,127.8,9		SA
7.8-5	JC63-00711A	SHEET-MP;SCX-4521F,PET,T0.188,215.0,60.8	P2162	SA
7.9-1	JC61-01162A	FRAME-P-FUSER;ML-1610,SECC ,-,-,-,1,264.	F2122	SNA
7.9-2	JC63-00615A	COVER-M_FUSER;ML-1610,PET+GF30%,2,72,311	Z2149	SNA
7.9-3	JC61-01177A	HOLDER-M-EXIT R;ML-1610,PC,1.5,10,20,BLK	H4027	SA
7.9-4	JC66-00810A	GEAR-EXIT_DRV17;ML-1610,POM,0.8,17,-,BLK	E4038	SA
7.9-5	JC61-01172A	HOLDER-M-EXIT F/DOWN;ML-1610,PC,T2.0,W18	H4026	SNA
7.9-6	6107-001168	SPRING-CS;PW-2,-,PI0.95,D5.95,L16,-,-,ID	D4085	SA
7.9-7	JC66-10901A	BEARING-PRESSURE/R;ML-165,PPS(RBA313N),-	P6004	SA
7.9-8	JC61-00595A	GUIDE-M-INPUT;ML-1710,PET+GF30%,-,-,-,BL	K3960	SNA
7.9-9	JC66-00600A	ROLLER-PRESSURE;ML-1710,SUM24L+LSR+PFA,2	P6014	SA
7.9-10	JC66-00601A	ROLLER-HEAT;ML-1710,AL 5052+PFA,20.3,247	H2010	SA
7.9-11	JC66-00564A	GEAR-FUSER, Z37;ML-1710,PPS OFL4036,0.8,	F4094	SA
7.9-12	JC61-00589A	BUSH-M-HR L;ML-1710,PPS(RBA313N),-,-,-,-	K2879	SA
7.9-13	JC61-00590A	BUSH-M-HR R;ML-1710,PPS RBA313N,-,-,-,-,	K2880	SA
7.9-14	4713-001202	LAMP-HALOGEN;230V,-,600W,-,-,-,6X284MM		SA
7.9-15	JC66-00824A	ROLLER-M-EXIT MAIN;ML-1610,POM,8.5,L23.6	R1083	SNA
7.9-16	JC66-00934A	ROLLER-M_EXIT FR;ML-1610,TEFLON-NTR,6.5,		SNA
7.9-18	6107-001163	SPRING-CS;SUS304-WPB,-,PI0.4,D3.9,L13,-,	D4086	SA
7.9-19	1404-001337	THERMISTOR-NTC;7KOHM,-,3370K,0.3MW/C,-,-		SA
7.9-20	JC47-00005B	THERMOSTAT-150;ML-1610,-,125/250V,15/10A	K4279	SA
7.9-21	JC67-00085A	CAP-M-THERMO;ML-1610,PET+GF30%,1.2,11.92	H4087	SNA
7.9-22	JC39-00403B	CBF HARNESS-FUSER(220V);ML-1610,WIRE HAR		SA
7.9-23	JC39-00045A	CBF HARNESS-THERMISTOR;SF-5100,#26,UL106		SA
7.9-24	JC66-00801A	GEAR-EXIT_DR38/25;ML-1610,POM,0.8,38/25,	E4039	SNA
7.9-25	6031-001051	WASHER-PLAIN;M4,ID4.1,OD7.0,T0.13,*,POLY	S2004	SNA
7.9-25	6031-000023	WASHER-PLAIN;-,ID5.9,OD10.0,T0.5,BLK,POL	W0001	SNA
7.9-26	6044-000001	RING-CS;ID3,OD3,T0.25,BLACK,SUS304	D4088	SNA
7.9-27-1	JC61-00064A	SPRING ETC-CLAW;ML-5200A,SUS 304 WPB,¥Õ0	B2031	SA
7.9-27-2	JC61-00584A	HOLDER-M-PLATE CLAW;ML-1710,PPS+GF40%,-,	H4031	SA
7.9-27-3	JC61-00605A	PLATE-P-CLAW;ML-1710,SUS304-CSP,0.1,-,-,	H4032	SNA
7.9-28	JC63-00666A	COVER-M-GUIDE EXIT;SCX-4521F,PET+GF30,2.		SA
7.9-29	JC63-00668A	COVER-M-SAFETY FUSER;SCX-4521F,PET+GF30,		SA
7.9-30	JC66-00816A	LEVER-M-ACTUATOR JAM;ML-1610,PC,-,18.5,6	A1013	SA
7.9-31	JC61-00049A	SPRING ETC-TR(KOR);ML-4500,SUS304-WPB,0.		SNA
7.9-32	JC61-01268A	HOLDER-M_ACTUATOR;SCX-4521F,PC+GF20,2.0,		SA
7.9-33	JC66-00906A	LEVER-M_ACT EXIT;SCX-4521F,PC+GF20,5.3,2		SA
7.9-34	JG72-40744A	PMO-BUSHING TX(B4);CF5700,POM,NTR+WHT(DE		SA
7.10-1	JC61-01161A	GUIDE-M-PAPER PATH;ML-1610,ABS HB,-,140,	G2069	SA
7.10-2	JC66-00814A	LEVER-ACTUATOR FEED SENSOR;ML-1610,PC,-,	E7006	SA
7.10-3	JB61-00107A	SPRING ETC-LEVER SENSOR;SF-430,SUS304,0.		SA
7.10-4	JC70-10232A	IPR-PLATE SAW;ML-80,SUS304 CSP 1/2H,-,T0	K3377	SA
7.10-5	JC63-00625A	GROUND-P-VARISTOR;ML-1610,SUS304CSP1/2H,	W3076	SNA
7.10-7	JC63-00623A	GROUND-P-THV;ML-1610,SUS304CSP 1/2H,0.2,	W3078	SNA
7.10-8	JC63-00626A	GROUND-P-SAW;ML-1610,C5210P,0.2,27.9,49.	W3079	SNA
7.10-9	JC97-02217A	MEA UNIT-HOLDER_PAD;ML-1610,SAMSUNG,-,-,	P0015	SA
7.10-9-1	JC61-70911A	SPRING ETC-EXIT ROLL FD;ML-165,SUS304 WP	S0021	SA
7.10-9-2	JC69-00846A	PAD-FRICTION;ML-1610,NBB,1,5,39,-,GRAY,0		SA
7.10-9-3	JC61-01169A	HOLDER-M-PAD;ML-1610,PC,1.7,39.5,33.4,BL	H4029	SA
7.10-10	JC66-00815A	LEVER-M-KICKER P/U;ML-1610,POM,-,10.5,31	R1120	SNA
7.10-11	JC97-02179A	MEA UNIT-PICK UP GEAR;ML-1610,SAMSUNG,-,	P2093	SA

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7.10-11-1	JC66-00803A	GEAR-PICK_UP B;ML-1610,POM,0.8,33,-,WHIT	P2056	SA
7.10-11-2	JC66-00802A	GEAR-PICK_UP A;ML-1610,POM,0.8,33,-,WHIT	P2057	SA
7.10-11-3	6107-001167	SPRING-CS;SUS304-WPB,-,PI0.25,D3.25,L9.6	D4089	SA
7.10-12	JC33-00015B	SOLENOID-MP_R2;-,SCX-4720F,DC24V,-,-,-,-	S8014	SA
7.10-13	JC66-00809A	GEAR-FEED 35/19;ML-1610,POM,0.8/0.8,35/1	F6071	SA
7.10-14	JC61-00588A	BUSH-M-TR L;ML-1710,POM(M90-44),-,-,-,BL	K2886	SA
7.10-15	JC72-00102A	PMO-BUSHING_TR(L);SF-5100,POM (CH-15),BL	K3856	SA
7.10-16	JC61-70940A	SPRING ETC-TR(12);ML-5500,-,4.5,-,12.7,1	Z4277	SA
7.10-17	JC66-00725A	ROLLER-TRANSFER;SCX-4100,NBR+ECO+SUM24L+	T3014	SA
7.10-18	JC61-00583A	HOLDER-PTL;ML-1710,PC,-,-,-,BLK,V0	H4041	SA
7.10-19	JC70-00307A	IPR-P-EARTH TRANSFER;ML-1710,SECC,-,1.0T	K3367	SA
7.10-20	JC66-00829A	SHAFT-P-PICK_UP;ML-1610,SECC,264,T1.2,-,	P2160	SA
7.10-25	JC66-00813A	GEAR-TRANSFER;ML-1610,POM,0.6,24,-,BLK,1	G0448	SA
7.10-26	JC61-01281A	BRACKET-P-BAR_PICK_UP;ML-1610,SECC,T1.0,		SNA
#N/A	JC68-00638A	MANUAL-(CARD)WARRANTY;COMMON,SER,RUSSIAN		SNA
#N/A	JC68-01508A	MANUAL INSTALL-QIG;COMMON,XAA,9 LANGUAGE		SNA
#N/A	JC69-00822H	BOX(P)-MAIN;SCX-4321,SC9,A1,FLEXO,SW,438		SA
#N/A	JC96-03352P	ELA UNIT-DEVE INITIAL;SCX-4521F,SAMSUNG,		SNA
#N/A	JC96-03377C	ELA HOU-COVER_3IN1;SCX-4321,SEC,WHITNEY,		SNA
#N/A	JC96-03523A	ELA HOU-ENGINE;SCX-4321,SEC,-,ENGINE ASS		SNA
#N/A	JC99-01865B	PAA WOOD-MATERIAL(A4);SCX-4521F,SEC,-,MA		SNA
#N/A	JC99-01866G	INA-ACESSORY-XEV;SCX-4321,XEV,RUSSIA,WHI		SNA
#N/A	JC99-01872A	PAA-PACKING;SCX-4521F ,SEA,-,PACKING,-,-		SNA
#N/A	JC99-01873H	PAA-LABEL;SCX-4321,RU,-,LABEL ASS'Y,-,-		SNA
#N/A	0202-001240	SOLDER-WIRE;HSE-01,-,D3,SN/0.5CU/0.03NI/		SNA
#N/A	0202-001492	SOLDER-WIRE FLUX;HSE-02 LFM48 SR-34 S,-,		SNA
#N/A	0203-000007	TAPE-FILAMENT;3M,T0.15,W18,L55M,TRP		SNA
#N/A	0203-001100	TAPE-OPP MASKING;OPP/W75/CLR,T0.05,W75,L		SNA
#N/A	0203-001189	TAPE-ACETATE;#810,T0.05,W12,L65000,TRP,-		SNA
#N/A	0204-000469	THINNER;#4662,-,0.795,-		SNA
#N/A	0204-002978	FLUX;KSP-70L,-,84%,FLUX,SPRAY		SNA
#N/A	0205-000005	GREASE-BEARING;EP56,DIAMOND HYDRO FLUID,		SNA
#N/A	0205-001003	GREASE-BEARING;NYOGEL788,DAMPING GREASE,		SNA
#N/A	0205-001056	GREASE-GRAPHITE;CRS841,WHT,-		SNA
#N/A	0402-000129	DIODE-RECTIFIER;1N4003,200V,1A,DO-41,TP		SA
#N/A	0502-000245	TR-POWER;KSB1151-Y,PNP,1.3W,TO-126,-,16		SA
#N/A	1203-000242	IC-POSI.FIXED REG.;7812,TO-220,3P,-,PLAS		SA
#N/A	2001-000015	R-CARBON(S);0.5OHM,5%,1/2W,AA,TP,2.4X6.4		SA
#N/A	2005-000168	R-WIRE WOUND,NON;0.22ohm,5%,2W,AA,BK,4x1		SA
#N/A	2401-000042	C-AL;100uF,20%,16V,GP,TP,6.3x7,5		SA
#N/A	2401-001185	C-AL;33uF,20%,35V,GP,TP,5x11,5		SNA
#N/A	2801-001136	CRYSTAL-UNIT;18.75MHZ,20PPM,-,20PF,70OHM		SNA
#N/A	2801-001375	CRYSTAL-UNIT;10MHz,20ppm,28-AAA,16pF,45o		SNA
#N/A	3702-000118	CONNECTOR-RIBBON;36P,FEMALE,ANGLE,AU		SNA
#N/A	3708-001408	CONNECTOR-FPC/FFC/PIC;12P,1MM,STRAIGHT,S		SA
#N/A	3711-000225	HEADER-BOARD TO CABLE;1WALL,4P,1R,2.5MM,		SNA
#N/A	3711-002003	HEADER-BOARD TO CABLE;BOX,26P,2R,2mm,STR		SNA
#N/A	3711-002808	HEADER-BOARD TO CABLE;BOX,7P,1R,2mm,STRA		SNA
#N/A	3711-002812	HEADER-BOARD TO CABLE;BOX,11P,1R,2mm,STR		SNA
#N/A	3711-003340	HEADER-BOARD TO CABLE;BOX,16P,2R,2mm,STR		SA
#N/A	3711-003408	HEADER-BOARD TO CABLE;BOX,2P,1R,2mm,STRA		SNA
#N/A	3711-003409	HEADER-BOARD TO CABLE;BOX,3P,1R,2mm,STRA		SNA
#N/A	3711-003410	HEADER-BOARD TO CABLE;BOX,4P,1R,2mm,STRA		SNA
#N/A	3711-003942	HEADER-BOARD TO CABLE;BOX,2P,1R,2MM,STRA		SA
#N/A	3711-003969	HEADER-BOARD TO CABLE;BOX,2P,1R,2.5mm,ST		SNA
#N/A	3722-002303	JACK-USB;4P/1C,AU30U,BLK,ANGLE,B TYPE		SA
#N/A	6001-000568	SCREW-MACHINE;PH,+,M3,L8,NI PLT,SWRCH18A		SA

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#N/A	6002-000440	SCREW-TAPPING;PWH,+,-,2,M3,L8,ZPC(BLK),S		SA
#N/A	6003-000196	SCREW-TAPTITE;PWH,+,B,M3,L10,NI PLT,SWRC	Z4198	SA
#N/A	6003-000261	SCREW-TAPTITE;BH,+,B,M3,L6,ZPC(YEL),SWRC		SNA
#N/A	6003-000269	SCREW-TAPTITE;BH,+,-,S,M3,L6,ZPC(YEL),SW	Z4170	SA
#N/A	6003-000301	SCREW-TAPTITE;BH,+,S,M4,L6,ZPC(YEL),SWRC		SNA
#N/A	6502-001093	CABLE CLAMP;DAWS-3NE,ID11*L34.8,-,NYLON6	C0002	SA
#N/A	6902-000288	BAG PE;LDPE,T0.05,W250,L450,TRP,8,2-		SNA
#N/A	6902-000312	BAG PE;HDPE,T0.015,W1000,L900,TRP,8,4-		SNA
#N/A	6902-000340	BAG PE;HDPE,T0.015,W230,L360,TRP,8,2-		SNA
#N/A	6902-000455	BAG CONDUCTIVE;LDPE,T0.1,W200,L450,BLK,-		SA
#N/A	JB68-00073A	LABEL(R)-BAR CODE;SF-3000,PY,38X6.5,T0.1		SNA
#N/A	JB68-00916A	LABEL RATING-BLANK;SF-340,SEC,TETRON,0.0		SNA
#N/A	JC02-00043A	TONER-GRINDED;ML-1610,TUFTONE YS-4,-,8.8		SNA
#N/A	JC39-00001A	CBF INTERFACE-USB;ML-6100,4,UL2725,1800	K2897	SA
#N/A	JC39-00315A	CBF HARNESS-OPC_FUSE;SF-755P,WIRE HARNES		SNA
#N/A	JC39-00404A	CBF HARNESS-FUSER JOINT;ML-1610,WIRE HAR	H1089	SA
#N/A	JC39-00480A	CBF HARNESS-MAINMOTOR;SCX-4521F,WIRE HAR		SA
#N/A	JC39-00509A	CBF HARNESS-GND ZENER;SCX-4521F,-,UL1007		SA
#N/A	JC46-00251A	S/W APPLICATION-CD;-,SCX-4521F ,DRV,1.00		SNA
#N/A	JC65-00011A	TERMINAL-DEVE KEY;SCX-4521F,STS304WPB,-,		SNA
#N/A	JC66-00823A	DRUM-OPC;ML-1610,AL A30 OR A60,-,24,248,		SNA
#N/A	JC66-00826A	ROLLER-EXIT F/DOWN;ML-1610,SUM22L+EPDM,1	E4159	SA
#N/A	JC68-00407A	LABEL(R)-HV FUSER;ML-6060,PVC,-,220V,-,,	L0006	SNA
#N/A	JC68-00573A	LABEL(R)-BARCODE;ML-4500,PET,T0.05,10mm,		SNA
#N/A	JC68-00638B	MANUAL-REGISTRATION CARD;COMMON,XEV,RUSS		SNA
#N/A	JC68-01493B	MANUAL-DEVE_SHEET;SCX-4521F,SEE,EFGISPRS		SNA
#N/A	JC68-01583F	LABEL(R)-POP_RU;SCX-4321,RUSSIA,PASCAL,-		SNA
#N/A	JC68-01584A	LABEL(P)-BLANK 90*25;CLP-510,SEE,ART 100		SA
#N/A	JC68-10914D	LABEL(P)-SERIAL NO;ML-85,ART,70X15,G100,		SNA
#N/A	JC68-10932B	LABEL(P)-BLANK(YELLOW);ML-1710,-,ART,100		SNA
#N/A	JC68-30928D	LABEL(P)-CAUTION, HOT_FUSER;ML-1210,PET,		SNA
#N/A	JC69-00809A	CUSHION-MAIN;SCX-4521F,EPS,195,466,502,-		SA
#N/A	JC72-01001A	PMO-SUB STACKER;ML-1400,PC,-,32*4.8*25.5	Z5092	SA
#N/A	JC94-00858A	PHANTOM AU JC92-01726B		SNA
#N/A	JC96-03354A	ELA UNIT-DEV KIT 1K;ML-1610,SEC,-,-,INIT		SNA
#N/A	JC96-03382H	ELA HOU-OPE_XEV;SCX-4321,SEC,WHITNEY,OPE		SA
#N/A	JF68-10532B	LABEL(P)-BAR CODE;CLP-500,-,YUPO PAPER,1		SNA
#N/A	0201-001183	ADHESIVE-AA;ARON ALPHA #202F,NTR,100,20G		SNA
#N/A	0201-001235	ADHESIVE-TS;DEH-390D,RED,400,-		SNA
#N/A	0202-001459	SOLDER-CREAM;S3X58-M405,-,D20~38§-,96.5SS		SNA
#N/A	0205-001059	GREASE-BEARING;PETAMO GHV 133,BEIGE,15KG		SNA
#N/A	0205-001067	GREASE-GRAPHITE;NYOGEL 756G,HYDRO CARBON		SNA
#N/A	0205-001088	GREASE-BEARING;NICHIMOLY DM-1770X,PTFE,-		SNA
#N/A	0401-000116	DIODE-SWITCHING;MMSD914T1,100V,200MA,SOD		SNA
#N/A	0401-001090	DIODE-SWITCHING;1SS355,80V,100MA,SOD-323		SA
#N/A	0404-000112	DIODE-SCHOTTKY;RB420D,40V,100MA,SOT-23,T		SA
#N/A	0407-000122	DIODE-ARRAY;KDS226,80V,300mA,C2-3,SOT-23		SA
#N/A	0501-000150	TR-SMALL SIGNAL;2SA1037,PNP,200mW,SOT-23		SA
#N/A	0501-000279	TR-SMALL SIGNAL;KSA1182-Y,PNP,150mW,SOT-		SA
#N/A	0501-000457	TR-SMALL SIGNAL;MMBT2222A,NPN,350MW,SOT-		SA
#N/A	0504-000111	TR-DIGITAL;DTC114YK,NPN,200MW,10K/47K,SO		SA
#N/A	0801-000794	IC-CMOS LOGIC;7S08,AND GATE,SOT-25,5,63M		SA
#N/A	0801-001056	IC-CMOS LOGIC;74VHC32,OR GATE,SOP,14P,15		SA
#N/A	0801-002143	IC-CMOS LOGIC;7S32,OR GATE,SOT-23,5P,63M		SA
#N/A	0801-002446	IC-CMOS LOGIC;74LCX14,SCHMITT INVERTER,T		SNA
#N/A	0801-002567	IC-CMOS LOGIC;74HCT273,D FLIP FLOP,SOP,2		SNA
#N/A	1003-001122	IC-MOTOR DRIVER;TEA3718SFP,SOP,20P,300MI		SA

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Drawer#	SEC-Code	Description & Specification	Location	Service
#N/A	1003-001535	IC-MOTOR DRIVER;A3977SLP,TSSOP,28P,9.6X4		SA
#N/A	1006-001224	IC-LINE TRANSCEIVER;74LVX161284,TSSOP,48		SA
#N/A	1103-001183	IC-EEPROM;24C04,512x8,SOP,8P,5x4mm,2.5/5		SA
#N/A	1105-001464	IC-DRAM;K4S641632,4MX16BIT,TSOP(II),54P,		SA
#N/A	1107-001286	IC-FLASH MEMORY;29LV160,2MX8/1MX16BIT,TS		SNA
#N/A	1202-000164	IC-VOLTAGE COMP.;393,SOP,8P,150MIL,DUAL,		SA
#N/A	1203-001455	IC-POSI.FIXED REG.;1117,DPAK,3P,265MIL,P		SA
#N/A	1203-002220	IC-POSI.ADJUST REG.;LD1117,DPAK,3P,240MI		SA
#N/A	1203-002233	IC-RESET;XC61F,SOT-23,3P,-,PLASTIC,0.7/1		SNA
#N/A	1205-002258	IC-CLOCK GENERATOR;CY25814SC,SOIC,8P,150		SNA
#N/A	1205-002339	IC-CLOCK GENERATOR;CY25811SC,SOIC,8P,150		SA
#N/A	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608		SA
#N/A	2007-000074	R-CHIP;100ohm,5%,1/10W,TP,1608		SA
#N/A	2007-000076	R-CHIP;330ohm,5%,1/10W,TP,1608		SA
#N/A	2007-000077	R-CHIP;470ohm,5%,1/10W,TP,1608		SA
#N/A	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608		SA
#N/A	2007-000084	R-CHIP;4.7Kohm,5%,1/10W,TP,1608		SA
#N/A	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608		SA
#N/A	2007-000091	R-CHIP;12Kohm,5%,1/10W,TP,1608		SA
#N/A	2007-000094	R-CHIP;22Kohm,5%,1/10W,TP,1608		SA
#N/A	2007-000096	R-CHIP;30Kohm,5%,1/10W,TP,1608		SA
#N/A	2007-000097	R-CHIP;47Kohm,5%,1/10W,TP,1608		SA
#N/A	2007-000098	R-CHIP;56Kohm,5%,1/10W,TP,1608		SA
#N/A	2007-000107	R-CHIP;470Kohm,5%,1/10W,TP,1608		SA
#N/A	2007-000113	R-CHIP;33ohm,5%,1/10W,TP,1608		SA
#N/A	2007-000116	R-CHIP;120ohm,5%,1/10W,TP,1608		SA
#N/A	2007-000120	R-CHIP;680ohm,5%,1/10W,TP,1608		SA
#N/A	2007-000123	R-CHIP;1.5Kohm,5%,1/10W,TP,1608		SA
#N/A	2007-000134	R-CHIP;33Kohm,5%,1/10W,TP,1608		SA
#N/A	2007-000402	R-CHIP;150ohm,5%,1/10W,TP,1608		SA
#N/A	2007-000539	R-CHIP;200ohm,5%,1/10W,TP,1608		SA
#N/A	2007-000729	R-CHIP;300ohm,5%,1/10W,TP,1608		SA
#N/A	2007-000730	R-CHIP;300ohm,5%,1/4W,TP,3216		SA
#N/A	2007-000965	R-CHIP;5.1Kohm,5%,1/10W,TP,1608		SA
#N/A	2007-001002	R-CHIP;510ohm,5%,1/10W,TP,1608		SA
#N/A	2007-001044	R-CHIP;56ohm,5%,1/10W,TP,1608		SNA
#N/A	2007-001045	R-CHIP;56ohm,5%,1/4W,TP,3216		SNA
#N/A	2007-001139	R-CHIP;7.5Kohm,1%,1/10W,TP,1608		SA
#N/A	2007-007937	R-CHIP;17.4Kohm,1%,1/10W,TP,1608		SNA
#N/A	2007-008567	R-CHIP;15.4Kohm,1%,1/10W,TP,1608		SNA
#N/A	2011-001011	R-NET;10Kohm,5%,1/16W,L,CHIP,8P,TP,3.2x1		SNA
#N/A	2011-001094	R-NET;39OHM,5%,1/16W,L,CHIP,8P,TP		SA
#N/A	2011-001334	RC-NETWORK;1K/5.1K/39ohm,10%,150pF,-,6V,		SNA
#N/A	2203-000189	C-CER,CHIP;100nF,+80-20%,25V,Y5V,1608		SA
#N/A	2203-000236	C-CER,CHIP;0.1nF,5%,50V,C0G,1608		SA
#N/A	2203-000257	C-CER,CHIP;10nF,10%,50V,X7R,1608		SA
#N/A	2203-000357	C-CER,CHIP;0.15nF,5%,50V,C0G,1608		SA
#N/A	2203-000384	C-CER,CHIP;0.015nF,5%,50V,C0G,1608		SA
#N/A	2203-000440	C-CER,CHIP;1nF,10%,50V,X7R,1608		SA
#N/A	2203-000626	C-CER,CHIP;0.022nF,5%,50V,C0G,1608		SA
#N/A	2203-000783	C-CER,CHIP;0.33nF,5%,50V,C0G,1608		SA
#N/A	2203-000815	C-CER,CHIP;0.033nF,5%,50V,C0G,1608		SA
#N/A	2203-000975	C-CER,CHIP;47nF,10%,25V,X7R,TP,1608,-		SA
#N/A	2203-001222	C-CER,CHIP;0.82NF,10%,50V,X7R,TP,1608		SA
#N/A	2203-001607	C-CER,CHIP;0.22nF,5%,50V,NP0,1608		SA
#N/A	2203-001683	C-CER,CHIP;0.068nF,5%,50V,NP0,1608		SA
#N/A	2203-002392	C-CER,CHIP;220nF,+80-20%,50V,Y5V,2012		SA

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#N/A	2203-002398	C-CER,CHIP;22nF,10%,50V,X7R,1608		SA
#N/A	2203-005249	C-CER,CHIP;100nF,10%,50V,X7R,1608		SNA
#N/A	2203-005819	C-CER,CHIP;1000nF,+80-20%,16V,Y5V,-,1608		SNA
#N/A	2402-001042	C-AL,SMD;100uF,20%,16V,GP,TP,6.6x6.6x5.4		SA
#N/A	2402-001106	C-AL,SMD;33UF,20%,50V,WT,TP,8.3X8.3X6.3M		SA
#N/A	2402-001178	C-AL,SMD;10uF,20%,16V,WT,TP,4.3x4.3x5.8m		SA
#N/A	3301-000317	BEAD-SMD;120ohm,2012,TP,-,-		SNA
#N/A	3301-001635	CORE-FERRITE;-,24X17X6MM,1500,2800GAUSS		SNA
#N/A	6003-000282	SCREW-TAPTITE;BH,+,-,B,M3,L8,ZPC(BLK),SW	Z4169	SA
#N/A	JC13-00021A	IC ASIC-CHORUS2;S3C46Q0X,SF-531P,208P,+1		SA
#N/A	JC39-00482A	CBF HARNESS-MICRO SW;ML-2010,WIRE HARNES		SA
#N/A	JC41-00303A	PCB-WHINTEY_PLUS;SCX-4521F,FR-4,2L,-,1.6		SNA
#N/A	JC61-00060A	SPRING ETC-TS BLADE;ML-6060,SUS304 WPB,0		SNA
#N/A	JC62-00145A	SEAL-SUPPLY;ML-1610,CHLOROPRENE RUBBER		SNA
#N/A	JC62-00149A	SEAL-CAP DEVE;ML-1610,POLYURETHANE FOAM,		SNA
#N/A	JC62-00150A	SEAL-SUS BLADE;ML-1610,POLYURETHANE FOAM		SNA
#N/A	JC62-00151A	SEAL-DEVE L;ML-1610,PTFE FELT+MICRO URET		SNA
#N/A	JC62-00165A	SEAL-FILM REAR;ML-1610,PET,-,T0.075,9,22		SNA
#N/A	JC63-00663H	COVER-M_OPE_XEV;SCX-4321,HIPS,2.5,88.9,4		SA
#N/A	JC63-00873A	SHEET-PATH;ML-1610,PET,T0.188,8.6,16,BLA		SNA
#N/A	JC66-00817A	GEAR-AGITATOR;ML-1610,POM,0.6,24,-,NTR,2		SNA
#N/A	JC66-00818A	GEAR-RDCN;ML-1610,POM,0.8/0.6,-,-,NTR,-,		SNA
#N/A	JC66-00819A	GEAR-SUPPLY;ML-1610,POM,0.6/0.6,20/19,-,		SNA
#N/A	JC66-00820A	GEAR-DEVE;ML-1610,POLYKETONE,0.8,14,-,NT		SNA
#N/A	JC66-00825A	ROLLER-SUPPLY;ML-1610,SILICON FOAM,D11.5		SNA
#N/A	JC66-00827A	SHAFT-RDCN;ML-1610,SUS303,L24,D3,NTR,-,-		SNA
#N/A	JC66-00828A	ROLLER-CHARGE;ML-1610,NBR+ECO,D12,L230,N		SNA
#N/A	JC66-00851A	ROLLER-DEVE;ML-1610,CONDUCTIVE NBR,D14.0		SNA
#N/A	JC67-00080A	CAP-M-SPACER_R;ML-1610,ABS,-,12,22.5,BLK		SNA
#N/A	JC70-00153A	IPR-ELECTRODE CHARGE;ML-4500,SUS301,-,8.		SNA
#N/A	JC72-00083A	PMO-HOLDER CR;SF-5100,POM,BLK,-,-,-,-,-,		SNA
#N/A	JC72-00672A	PCT-LCD WINDOW;SF-535E,PC SHEET T0.38,-,		SNA
#N/A	JC72-01349A	PPR-SPACER SR_L;ML-1610,PET OR PC,NTR,T0		SNA
#N/A	JC72-40232A	PMO-CAP AGITATOR;ML-80,PP,BLK,-,-		SA
#N/A	JC72-40332A	PMO-BUSHING_CHARGE;ML-80,POM,BLK,HB,-		SNA
#N/A	JC97-02152A	MEA UNIT-WTB;ML-1610,SEC,-,ASSY-WTB,-,-,		SNA
#N/A	JC97-02153A	MEA UNIT-OPC;ML-1610,SEC,-,DRUM24,EARTH,		SNA
#N/A	JC97-02154A	MEA UNIT-PLATE_L;ML-1610,SEC,-,ASSY-PLAT		SNA
#N/A	JC97-02155A	MEA UNIT-PLATE_R;ML-1610,SEC,-,ASSY-PLAT		SNA
#N/A	JC97-02182A	MEA ETC-SUS BLADE;ML-1610,SEC,SEC,SUS BL		SNA
#N/A	JC97-02183A	MEA UNIT-FRAME INT;ML-1610,SEC,-,ASSY-FR		SNA
#N/A	0201-001162	ADHESIVE-CYA;LOCTITE403,NTR,1250,20G		SNA
#N/A	0203-001266	TAPE-DOUBLE FACE;3M9448HK,T0.16,W4,L280,		SNA
#N/A	0203-001267	TAPE-DOUBLE FACE;3M9448HK,T0.16,W8,L280,		SNA
#N/A	0205-001080	GREASE-BEARING;NYOGEL 774H,NOISE DAMPING		SNA
#N/A	3301-001742	CORE-FERRITE;AD,32X35X7.75MM ,-,-		SNA
#N/A	JC07-00003A	LCD-DISPLAY(XEV);VHX1620BHRC9,SCX-5312F/		SA
#N/A	JC61-00930A	HOLDER-M_CIS;SCX-4100,POM,-,-,-,BLK,HB		SNA
#N/A	JC61-01163A	FRAME-M-DEVE LOWER;ML-1610,ABS,-,HB,BLK,		SNA
#N/A	JC61-01166A	BRACKET-P-SUS BLADE;ML-1610,SPCC+NI,1.2T		SNA
#N/A	JC61-01167A	PLATE-M-DEVE_L;ML-1610,PC,2,62.4,88,BLK,		SNA
#N/A	JC61-01168A	PLATE-M-DEVE_R;ML-1610,ABS,2,62.4,87.7,B		SNA
#N/A	JC61-01181A	BRACKET-M-CIS;SCX-4521F,PC/ABS,2.5,42,22		SA
#N/A	JC61-01184A	FRAME-M_WTB INITIAL;SCX-4521F,ABS+GF20,-		SNA
#N/A	JC61-01464A	BLADE-P_SUS;ML-2010,SUS301-CSP 1/2H T0.0		SNA
#N/A	JC62-00146A	SEAL-SUPPORT L;ML-1610,MICRO URETHANE,-,		SNA
#N/A	JC62-00147A	SEAL-SUPPORT R;ML-1610,MICRO POLYURETHAN		SNA

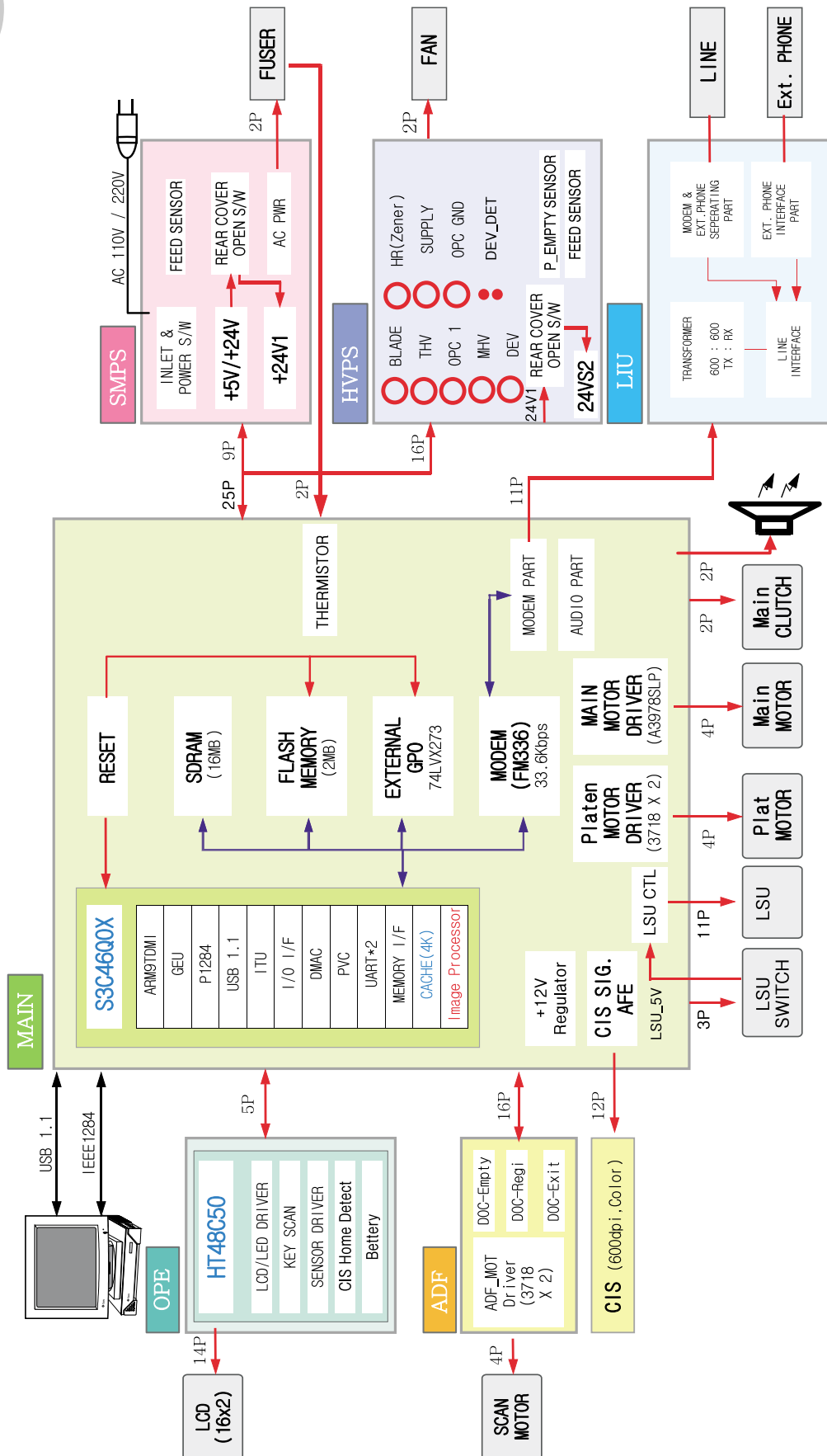SA : SERVICE AVAILABLE SNA : SERVICE not AVAILABLE DNA : DELIVERY not AVAILABLE

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#N/A	JC62-00148A	SEAL-CAP SIDE;ML-1610,POLYURETHANE FOAM,		SNA
#N/A	JC62-00153A	SEAL-BRKT CLEANING;ML-1610,POLYURETHANE		SNA
#N/A	JC62-00154A	SEAL-OPC CLEAN_L;ML-1610,PTFE FELT+URETH		SNA
#N/A	JC62-00155A	SEAL-OPC CLEAN_R;ML-1610,PTFE FELT+URETH		SNA
#N/A	JC62-00156A	SEAL-BOSS_R;ML-1610,CR,BLACK,T5,-,D7.5,-		SNA
#N/A	JC64-00185A	HANDLE-M-DEVE;ML-1610,HIPS,T1.5,110,125.		SNA
#N/A	JC66-00310A	GEAR-AGITATOR-2;SCX-5100,POM(M90-44),0.6		SNA
#N/A	JC66-00821A	GEAR-OPC_L;ML-1610,PC+PTFE,0.8,30,-,BLK,		SNA
#N/A	JC66-00840A	SLIDER-M_CIS L;SCX-4521F,POM,3,13.5,37.4		SNA
#N/A	JC66-00904A	SLIDER-M_CIS R;SCX-4521F,POM,3,13.5,37.4		SNA
#N/A	JC67-00081A	CAP-M-HOUSING INITIAL;ML-1610,ABS,T1.5,6		SNA
#N/A	JC67-00083A	CAP-M-WTB;ML-1610,ABS,T1.5,29,250.3,BLK,		SNA
#N/A	JC68-01551A	LABEL(P)-WARNING;COMMON,SEC,ART100G,-,65		SNA
#N/A	JC70-00483A	ELECTRODE-P_SR(M);SCX-4100,SUS301-CSP T0		SNA
#N/A	JC70-00501A	ELECTRODE-P-DEVE KEY;ML-1610,SUS304CSP1/		SNA
#N/A	JC71-00009A	NPM-BUSHING DEV R;ML-6060,BRONZE,D7*12,-		SNA
#N/A	JC72-01350A	PPR-FILM OPC;ML-1610,URETHANE SHEET,NTR,		SNA
#N/A	JC72-41105A	PMO-BUSHING DEV;ML-5000,POM,NTR,-,-,-,-		SNA
#N/A	JC73-10017A	RPR-SEAL_BLOCK;ML-80,POLYURETHANE FOAM,T		SNA
#N/A	JC75-00043A	MEC-GEAR OPC R;SF-5100,SEC,-,-,BLK,-,-,-		SNA
#N/A	JC75-00044A	MEC-BUSHING AGI L;SF-5100,SEC,POM+SANTOP		SNA
#N/A	JC94-00860A	PHANTOM AU JC92-01727B		SNA
#N/A	JC97-01900B	MEA UNIT-AGITATOR_B;ML-1610,SEC,SKYLARK,		SNA
#N/A	JC97-02181A	MEA ETC-BLADE CLEANING;ML-1610,SEC,SEC,B		SNA
#N/A	0601-001830	LED;SMD,GRN,1.6x0.8x0.4mm,570nm,1.6x0.8x		SA
#N/A	0801-002469	IC-CMOS LOGIC;74HC14,SCHMITT INVERTER,TS		SA
#N/A	1003-001102	IC-MOTOR DRIVER;TEA3718DP,DIP,16P,300MIL		SA
#N/A	2001-001031	R-CARBON;91KOHM,5%,1/8W,AA,TP,1.8X3.2MM		SA
#N/A	2007-000033	R-CHIP;0ohm,5%,1/4W,TP,3216		SA
#N/A	2007-000075	R-CHIP;220ohm,5%,1/10W,TP,1608		SA
#N/A	2011-000660	R-NET;1Kohm,5%,1/16W,L,CHIP,8P,TP,3.2x1.		SA
#N/A	2203-000998	C-CER,CHIP;0.047nF,5%,50V,C0G,1608		SA
#N/A	2402-001049	C-AL,SMD;10uF,20%,16V,GP,TP,3.3x3.3x5.4		SA
#N/A	2802-001069	RESONATOR-CERAMIC;7.37MHz,0.5%,TP,4.7x4.		SNA
#N/A	3301-001413	CORE-FERRITE;AD,33x12x7mm,1500,2800Gauss		SA
#N/A	JB13-00004A	IC ASIC-OPE;SF-3100,HT48C5,SSOP,48P,16.1		SA
#N/A	JB61-70904A	SPRING ETC-CLUTCH;AMUNDSEN,SWRS82A,D11.4		SNA
#N/A	JB66-00102A	GEAR-PICK UP IDEL 38;SCX-1110F,POM(DELIN		SA
#N/A	JB66-00103A	GEAR-ADF 38;SCX-1110F,POM(DELIN500P),0.6		SA
#N/A	JB66-00104A	GEAR-ADF IDLE 34;SCX-1110F,POM(DELIN500P		SA
#N/A	JB66-00105A	GEAR-PICK UP 26;SCX-1110F,POM(DELIN500P)		SA
#N/A	JB68-00705A	LABEL(R)-DOUBLE CORE;COMMON,-,-,-,-,COMP		SNA
#N/A	JB70-00070A	IPR-WASHER WAVE;SF-4750C,SUS301,-,0.1T,-		SA
#N/A	JB70-00168A	ICT-PIN ADF;SCX-1110F,STS303,D2.0,-,-,-,	I0001	SA
#N/A	JB72-00817A	PMO-ADF CLUTCH;SCX-1110F,POM,WHT,-,-,-,-		SA
#N/A	JB72-00821A	PMO-ADF COLAR;SCX-1110F,POM,NTR,-,-,-,-,		SA
#N/A	JB72-00844A	PMO-WHITE CLUTCH SUB 29;SCX-1110F,POM(F2		SA
#N/A	JB72-00845A	PMO-PICK UP CLUTCH SUB;SCX-1110F,POM(F20		SA
#N/A	JC41-00304B	PCB-4321_OPE;SCX-4321,FR-1,1L,-,1.6T,340		SNA
#N/A	JC61-01165A	BRACKET-P-CLEANING;ML-1610,SECC,1.2T,-,2		SNA
#N/A	JC62-00002A	HEAT SINK-(4500);ML-4500,BRONZE,0.5,9.3,		SA
#N/A	JC66-00012A	GEAR-OPC R;SF-5100,POM(M90-44),BLK,M0.6,		SA
#N/A	JC66-00454A	LINK-M-SWING ADF;SCX-4216F,DELIN 500CL,-		SA
#N/A	JC71-00002A	NPR-EARTH OPC APOLLO;SF-5100,C5210P-H,0.		SNA
#N/A	JC72-00081A	PMO-BUSHING AGI L;SF-5100,POM,BLK,-,-,-,		SNA
#N/A	JC72-00734A	PMO-COVER ADF;SCX-5100,HIPS,WHT,-,-,HB,-		SA
#N/A	JC72-01317A	PPR-FILM AGITATOR SUB;ML-2550,PET SHEET		SNA

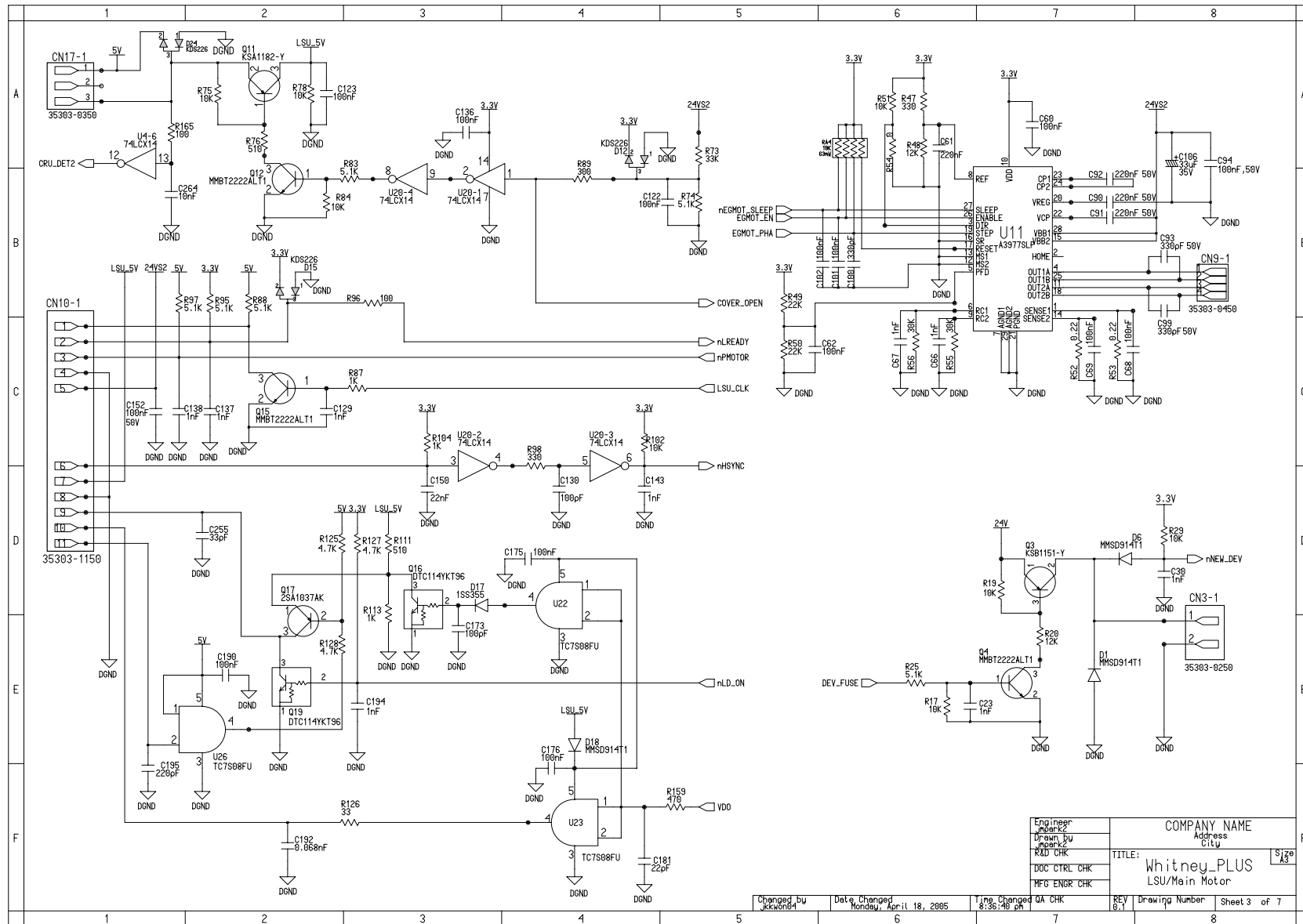SA : SERVICE AVAILABLE SNA : SERVICE not AVAILABLE DNA : DELIVERY not AVAILABLE

Drawer#	SEC-Code	Description & Specification	Location	Service
#N/A	JC72-01329A	PMO-AGITATOR_DOUBLE;ML-6060,ABS+GF20%,BL		SNA
#N/A	JC72-10924A	PPR-FILM AGITATOR;ML-5000,PET T0.1,NTR,-		SA
#N/A	JC72-10925A	PPR-FILM SUPPORT AGI;ML-5000,PET T0.3,NT		SNA
#N/A	JC72-41191A	PMO-BEARING SHAFT;ML-6000,POM,WHT,-,M90-		SA
#N/A	JC73-00201A	REX-BLADE CLEANING;ML-1610,POLYURETHANE		SNA
#N/A	JC73-40906A	RMO-SEAL AGITATOR;ML-5000,SANTOPRENE,-,-		SNA
#N/A	JC94-00712A	PHANTOM AU JC92-01618A		SNA
#N/A	2001-000111	R-CARBON;150OHM,5%,1/4W,AA,TP,2.4X6.4MM		SA
#N/A	2001-000429	R-CARBON;1KOHM,5%,1/8W,AA,TP,1.8X3.2MM		SA
#N/A	2001-000490	R-CARBON;200OHM,5%,1/8W,AA,TP,1.8X3.2MM		SA
#N/A	2001-000626	R-CARBON;300OHM,5%,1/4W,AA,TP,2.4X6.4MM		SA
#N/A	2001-000864	R-CARBON;56KOHM,5%,1/8W,AA,TP,1.8X3.2MM		SA
#N/A	2005-000419	R-WIRE WOUND,NON;0.33ohm,1%,1W,AA,TP,4.3		SNA
#N/A	2201-000119	C-CERAMIC,DISC;100NF,+80-20%,50V,Y5V,TP,		SA
#N/A	2201-000391	C-CERAMIC,DISC;0.022NF,5%,50V,SL,TP,5X3M		SA
#N/A	2201-001057	C-CERAMIC,DISC;0.82NF,10%,50V,Y5P,TP,5X3		SNA
#N/A	2202-000630	C-CERAMIC,MLC-AXIAL;100nF,10%,50V,X7R,TP		SA
#N/A	2401-002300	C-AL;47uF,20%,50V,GP,TP,6.3x11,5		SA
#N/A	JB72-00822A	PMO-SLEEVE ADF;SCX-1110F,-,POM,BLK,-,-,-		SA
#N/A	JB72-00823A	PMO-SLEEVE PICK UP;SCX-1110F,-,POM,BLK,-		SA
#N/A	JB73-00054A	RMO-ADF ROLLER;SCX-1110F/XRX,EPDM RUBBER		SNA
#N/A	JB73-00055A	RMO-PICKUP ROLLER;SCX-1110F/XRX,EPDM RUB		SNA
#N/A	JC39-40511A	CBF HARNESS;ML-80,JUMPER,AWG22,52mm,SILV		SA
#N/A	JC41-00193B	PCB-ADF ROCKY2;SCX-4720F,FR-1,1L,V1.0,1.		SNA

8. Block Diagram

8.1 System Block Diagram

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9. Connection Diagram

10. Schematic Diagrams

10.1 Main Board (1/12)

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Main Board (2/12)

Main Board (3/12)

Main Board (4/12)

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Main Board (5/12)

Main Board (6/12)

Main Board (7/12)
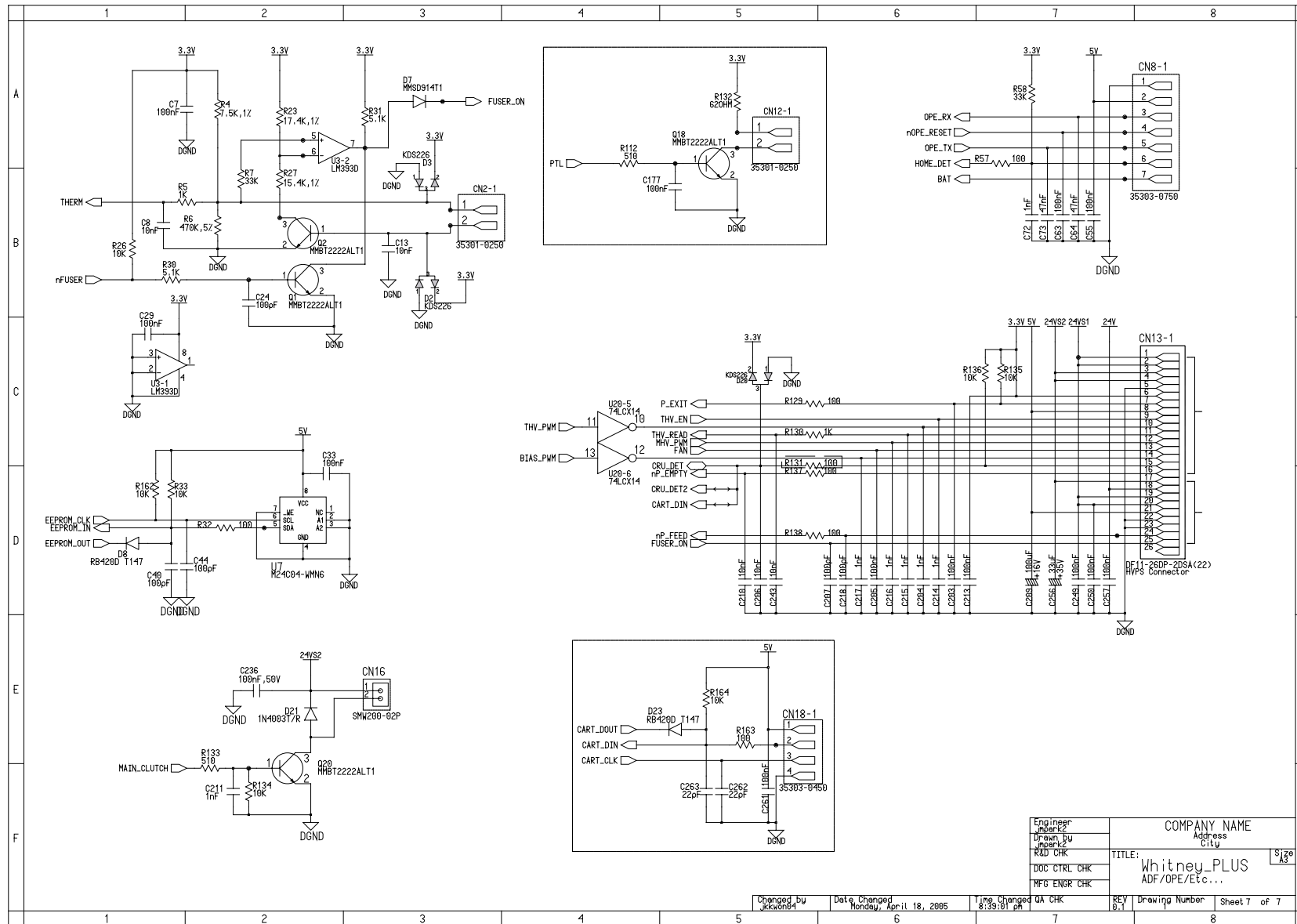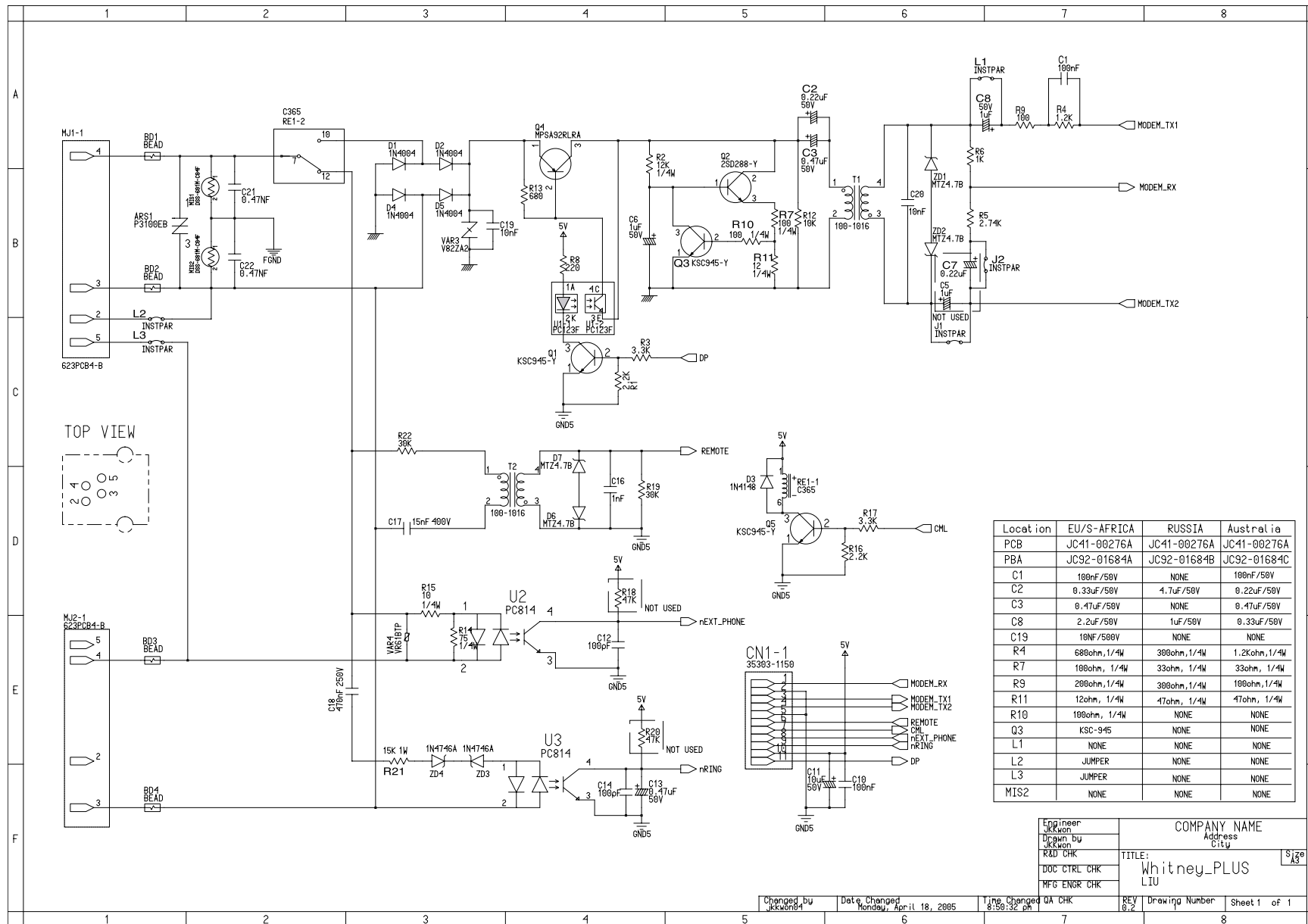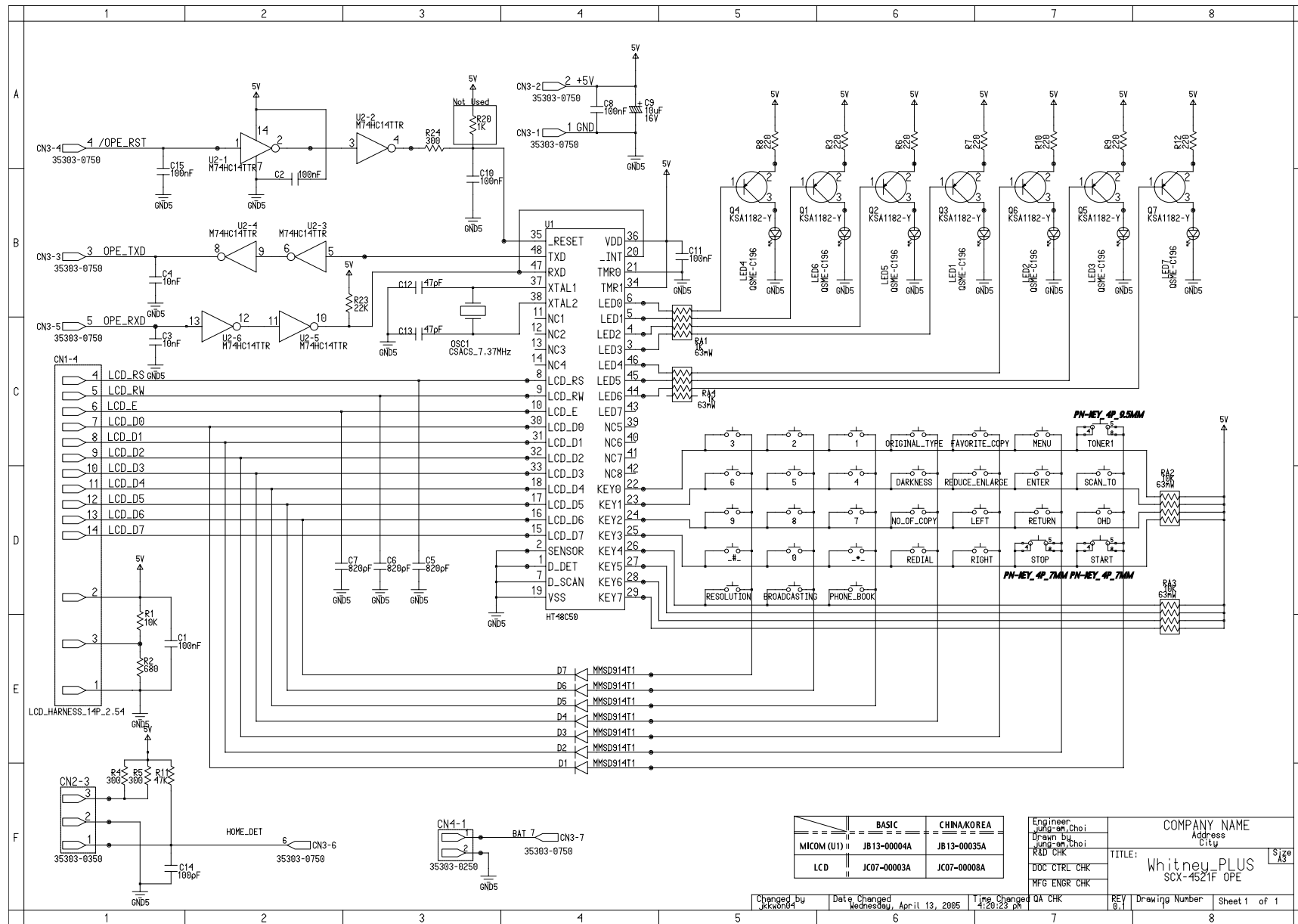
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Main Board (8/12)

Location	EU/S-AFRICA	RUSSIA	Australia
PCB	JC41-00276A	JC41-00276A	JC41-00276A
PBA	JC92-01684A	JC92-01684B	JC92-01684C
C1	100nF/50V	NONE	100nF/50V
C2	0.33uF/50V	4.7uF/50V	0.22uF/50V
C3	0.47uF/50V	NONE	0.47uF/50V
C8	2.2uF/50V	1uF/50V	0.33uF/50V
C19	10NF/500V	NONE	NONE
R4	680ohm,1/4W	300ohm,1/4W	1.2Kohm,1/4W
R7	100ohm, 1/4W	33ohm, 1/4W	33ohm, 1/4W
R9	200ohm, 1/4W	300ohm,1/4W	100ohm,1/4W
R11	12ohm, 1/4W	47ohm, 1/4W	47ohm, 1/4W
R10	100ohm, 1/4W	NONE	NONE
Q3	KSC-945	NONE	NONE
L1	NONE	NONE	NONE
L2	JUMPER	NONE	NONE
L3	JUMPER	NONE	NONE
MIS2	NONE	NONE	NONE

Engineer		COMPANY NAME
JKKwon		Address
Drawn by		City
JKKwon		
R&D CHK	TITLE:	Size A3
DOC CTRL CHK	Whitney_PLUS	
MFG ENGR CHK	LIU	

Changed by	Date Changed	Time Changed	QA CHK	REV	Drawing Number	Sheet 1 of 1
Jkkwon04	Monday, April 18, 2005	8:50:32 pm		0.2		

Main Board (9/12)

Samsung Electronics

Main Board (10/12)

Samsung Electronics

Main Board (11/12)

Main Board (12/12)

SMPS (1/2)

WHITNEY PLUS-V1

CON1

CON2-01 +24VS2
CON2-02 +24V
CON2-03 +24VS1
CON2-04 +24VS1
CON2-05 +5V
CON2-06 DGND
CON2-07 DGND
CON2-08 P_REGI
CON2-09 FUESR_ON

NO MARKING RESISTOR 1/8W-J(5%)

Title	WHITNEY PLUS-V1	
SUN-KOREA ELECTRONIC CO.,LTD	Drw.No SMPS	Rev.
DESIGNED CHECKED APPROVED		.rev.
	Ref. No	
	Size A3 Date 2005/04/19	1 of 1

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SMPS (2/2)

WHITNEY PLUS-V2C

Samsung Electronics

HVPS (1/3)

SKYLARK-HVPS

HVPS (2/3)

SKYLARK-HVPS

HVPS (3/3)

SKYLARK-HVPS
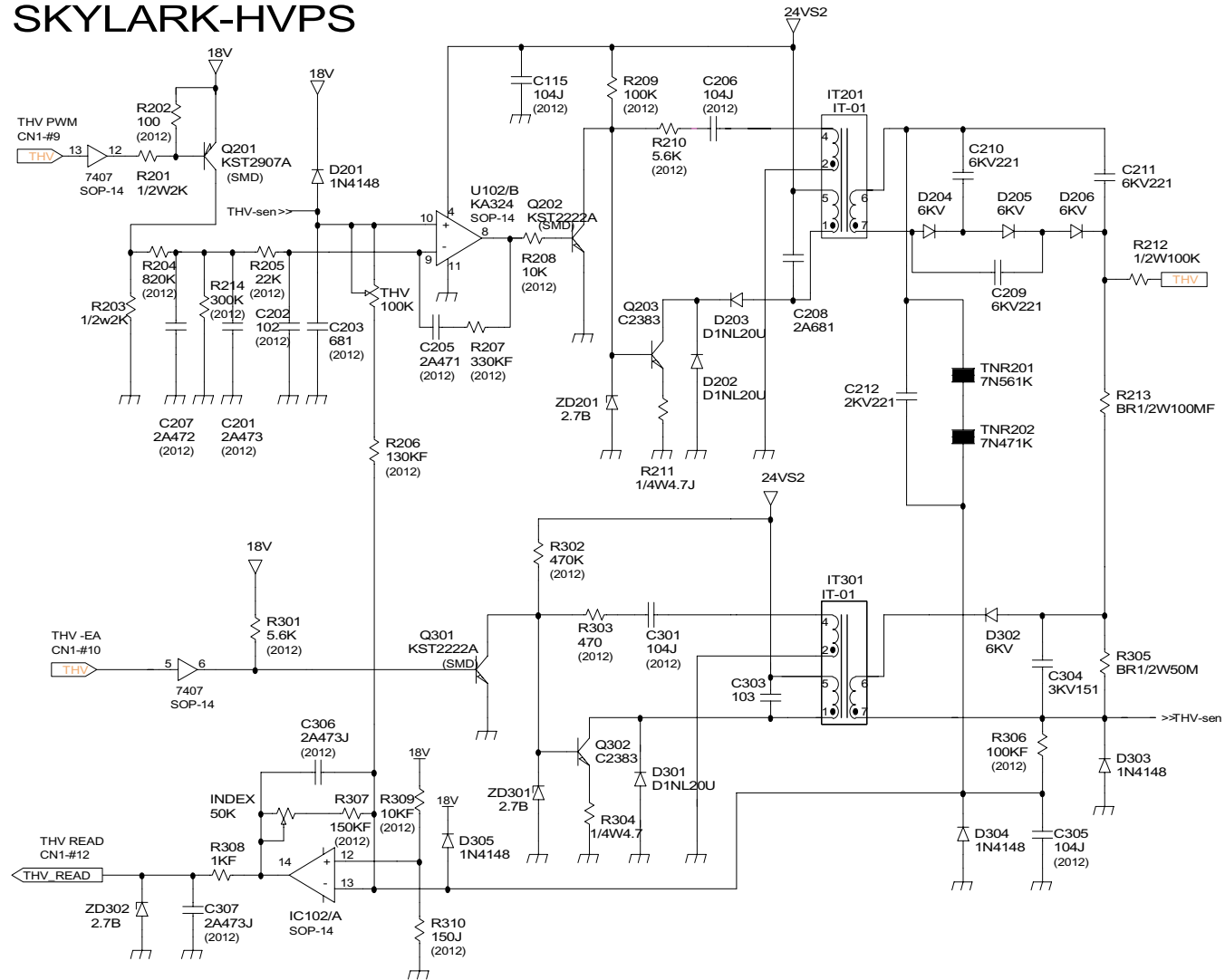
Samsung Electronics
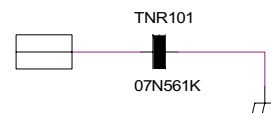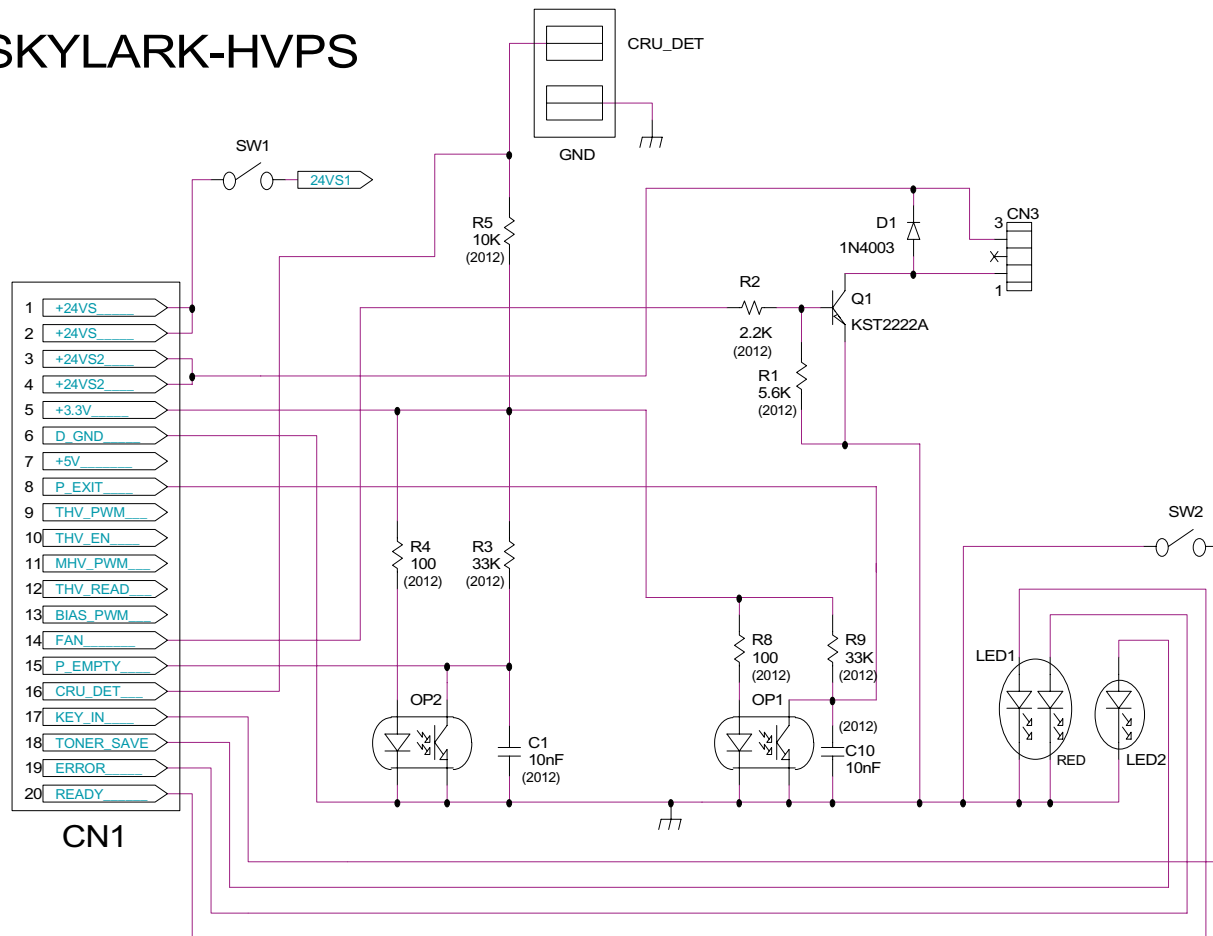
LD B'd (1/1)
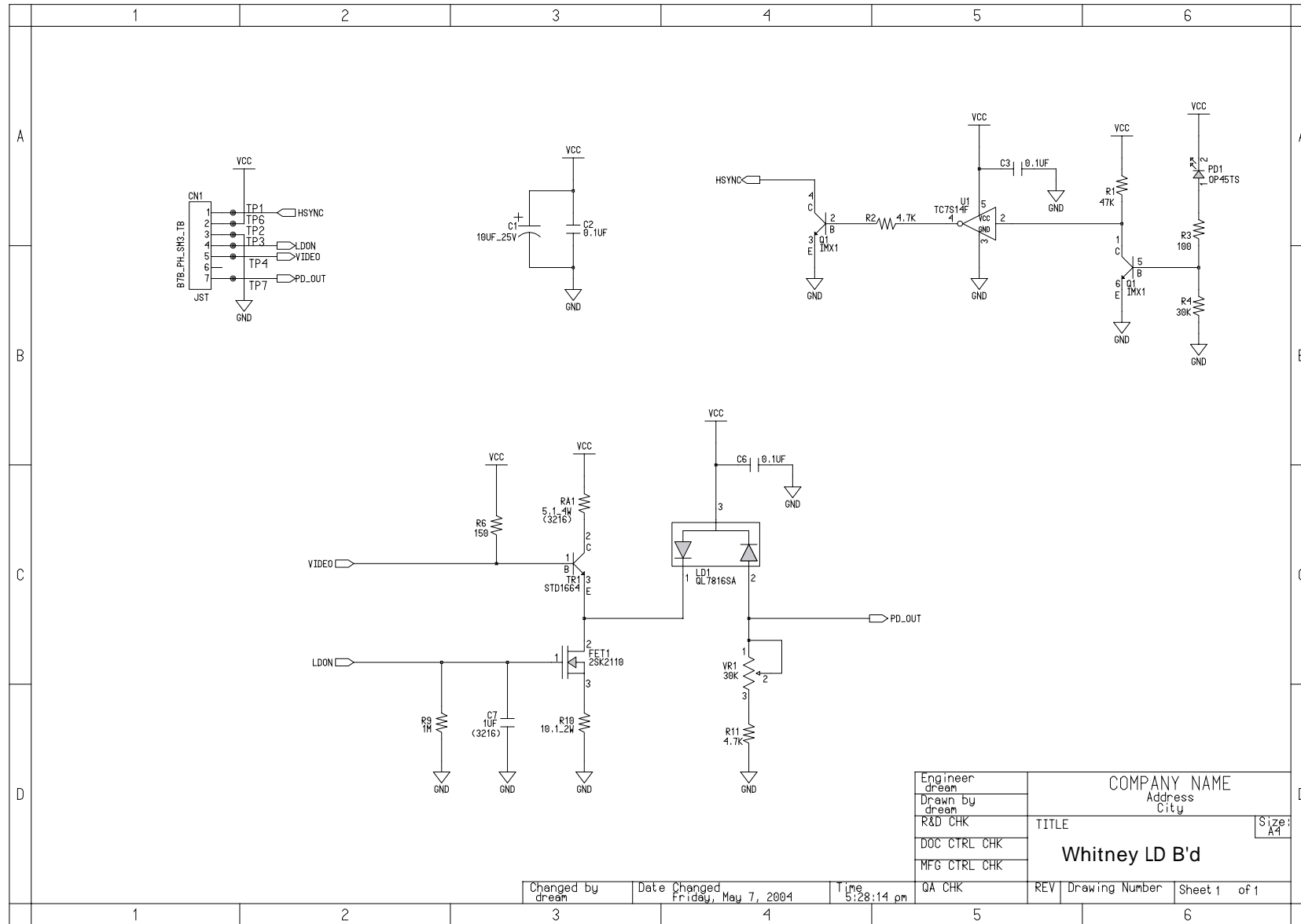
11. Reference Information

This chapter describes the reference information for applying this training manual, and it is consist-ed of the tool list, the abbreviation table, the outline of model, and so on.

11.1 Troubleshooting Tool

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.
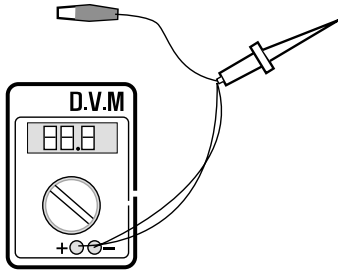
- **Driver**
  Standard : "-" type, "+" type (M3 long, M3 short, M2 long, M2 short).
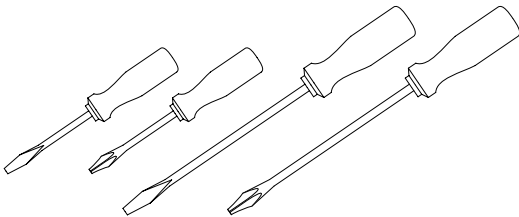
- **Tweezers**
  Standard : For general home use, small type.

- **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.
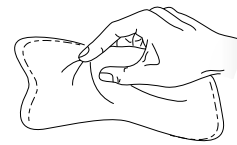
- **Vacuum Cleaner**
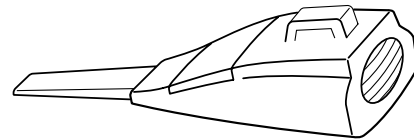
- **Spring Hook**
  Standard : For general use

- **Software (Driver) installation CD ROM**
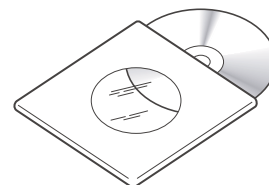
11.2 Acronyms and Abbreviations(1)

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.

Abbreviations	Explanation
AP	Access Point
AC	Alternating Current
APC	Auto Power Control
ASIC	Application Specific Integrated Circuit
ASSY	assembly
BIOS	Basic Input Output System
BLDC	Brush-less Direct Current
CMOS	Complementary Metal Oxide Semiconductor
CN	connector
CON	connector
CPU	Central Processing Unit
dB	decibel
dbA	decibel A
dBM	decibel milliwatt
DC	direct current
DCU	Diagnostic Control Unit
DPI	Dot Per Inch
DRAM	Dynamic Random Access Memory
DVM	Digital Voltmeter
ECP	Enhanced Capability Port
EDC	Embedded Diagnostic control
EEPROM	Electronically Erasable Programmable Read Only Memory
EMI	Electro Magnetic Interference
EP	electrophotographic
EPP	Enhanced Parallel Port
FPOT	First Printout Time
F/W	firmware
GDI	graphics device interface
GND	ground
HBP	Host Based Printing
HDD	Hard Disk Drive
H/H	High temperature and high marshy place
HV	high voltage
HVPS	High Voltage Power Supply
I/F	interface
I/O	Input and Output
IC	integrated circuit
IDE	Intelligent Drive electronics or Imbedded Drive Electronics

Acronyms and Abbreviations(2)

Abbreviations	Explanation
IEEE	Institute of Electrical and Electronics Engineers. Inc
IPA	Isopropy Alcohol
IPM	Images Per Minute
LAN	local area network
lb	pound(s)
LBP	Laser Beam Printer
LCD	Liquid Crystal Display
LED	Light Emitting Diode
L/L	Low temperature and low marshy place
LSU	Laser Scanning Unit
MB	megabyte
MHz	megahertz
MPF	Multi Purpose Feeder
NIC	Network Interface Card
N/N	Normal temperature and normal marshy place
NVRAM	nonvolatile random access memory
OPC	Organic Photo Conductor
OPE	Operate Panel Equipment
PBA	Printed Board Assembly
PCL	Printer Command Language , Printer Control Language
PDL	Page Discription Language
PPM	Page Per Minute
PPS	Pulse Per Second
PS	Post Script
PTL	Pre-Transfer Lamp
PWM	Pulse Width Modulation
Q-PID	Quick Printer Initiating Device
Q'ty	quantity
RAM	Random Access Memory
ROM	Read Only Memory
SCF	Second Cassette Feeder
SMPS	Switching Mode Power Supply
SPGP	Samsung Printer Graphic Processor
SPL	Samsung Printer Language
Spool	Simultaneous Peripheral Operation Online
SW	switch
sync	synchronous or synchronization
USB	Universal Serial Bus
WECA	Wireless Ethernet Compatibility Alliance

11.3 Selecting printer locations

• 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
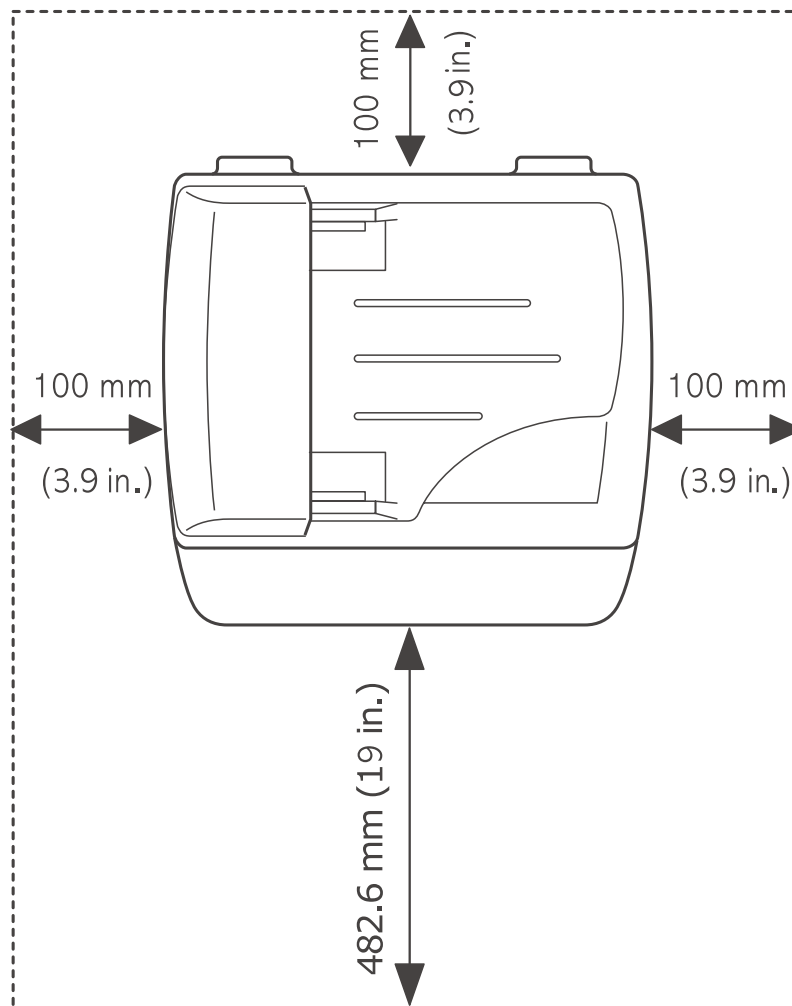
11.4 Sample Tests Patterns

The sample patterns shown below are the standard test patterns used in the factory.
The life of the toner cartridge, developer cartridge and printing speed are measured with the pattern shown below. The A4 ISO 19752 standard pattern samples are reproduced reduced to 70% of the actual A4 size.

A4 ISO 19752 Standard Patterns

ABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789ABCDEFGHIJKLMNOPQRSTUVWXY

Stephen J. Singel
Labanda Sinpat Abarress
Tendar, BSF
URANGLE

23 January 2004

Jonathan Q. Maderia

Inpert Mampem Abaress
2343 Stantin Dawer Lank
Benhibe, SDF

Mr.Maderia:

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Singabet,

Stephen J. Singel
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FINAL

ABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789ABCDEFGHIJKLMNOPQRSTUVWXY

System Overview

SCX-4517F is made of Main Control part, Operation Panel part, PC Interface part, Scan part, Line Interface part, Power part.

Each part is independent with each other and the design concept is common use/standard design rule.

Chorus2 ASIC which is made for only printer is used in the Main Control part, and another Micom which can communicate with Chorus2 through UART for Key-Scan, LCD display, LED control, etc.. is used for OPE Panel part.

PC Interface control part - USB 1.1 and IEEE1284 - is comprised in the Chorus2 Main Controller ASIC and Image processor and CIS Interface part is comprised in the Chrous2 too.

Modem chip, FM336 which make a function of FACSIMILE can the machine communicate with the other FAX machine on the speed of 33.6Kbps and the LIU(Line Interface Unit) supports the line connection with PABX or PSTN line.

Power part which made of two part - SMPS and HVPS - supplies Voltage source to the controller part and high voltage to the printing image developing process.

1. Engine H/W Specification

1) Recording Method : LSU(Laser Scanning Unit)
2) Printing Speed   : 16ppm
        (In continuing printing base A4, printing pages from 2nd to last during 1min)
3) Recording Density: 600 dpi
4) Cassette Capa.   : Cassette ; 150sheets(75g/㎡ Base),
   1-sheet Feeding :   N/A((DRIVE Selection : Paper, OHP, Envelop - 1 sheet)
5) Manual Tray : All paper 1 sheet
6) Paper Size : Cassette ,Manual; Width = 76 ~ 216mm, Length = 125mm ~
                 356mm
7) Effective recording size
    - A4   : 202 x 291 mm
    - Letter : 208 x 273 mm
    - Legal : 208 x 350 mm
    - Folio : 208 x 325 mm
    - Top Margin : 2 ± 2 mm
    - Left, Right Margin : 2 ± 2 mm
 8) CRU(Toner Cartridge)Life : 3,000pages Printing(A4, ISO 5% Pattern Printing)
 9) First Print Out Time   : within 11sec (Standby)
 10) Warming up time   : within 35sec (Ambient : 25℃)

2. Main Board Control Part

Main control part of SCX-4517F is made of ASIC(CPU, Image processor, PC I/F part include,
Scan interface part, FAX Modem part and Printing process I/F part.
CPU handles the BUS control, I/O interface, scan interface, PC interface
and other miscellaneous driver circuit.

1) Main Board
   Main Board has a function of sending Current Image Video Data to LSU of the machine, controlling motor Driving Circuit and monitoring Paper Exit Sensor, Cover Open switch, OPE Panel Inputs.

2) Main Controller

   -CPU : Chorus2 is the main CPU and is made up on the 16/32bit RISC architecture using ARM7TDMI core.
   Main CPU controls the whole system according to the program code which stored in the Flash-ROM memory.

   -Summary of the Key Function Block:
   ▶ 1.8V for internal Core, 3.3V for I/O Pad with 4KByte Cache.
   ▶ Image Processor included.
   ▶ On-Chip clock generator with PLL.
   ▶ Memory and External Bank Control.
   ▶ DMA Control (5-Channel)
   ▶ Interrupt Control.
   ▶ 2-port USB Host/1-port USB device(ver 1.1) interface control.
   ▶ Parallel interface control.
   ▶ UART(2-Channel)
   ▶ Synchronous Serial Interface Control.
   ▶ A/D Converter(10-bit, 2channel).
   ▶ General I/O Port control.
   ▶ Tone Generator.
   ▶ RTC with calendar function.
   ▶ S/W Assistant function(Rotator)

   -Flash Memory : Stores system program and can be updated to the newer system program code through the PC interface.
   It stores the FAX Journal List, One Touch dial number, speed dial number, and machine configuration setup data.
   .Capcity   : 2 Mbyte
   .Access Time : 70 nsec

-SDRAM : SDRAM is used for Print Buffer, Scan buffer when scanning, ECM
    Buffer when FAX Receiving, and system working memory.
        .Capacity   : 16 Mbyte
        .Access Time : 66MHz based on system bus clock.
        .Data Backup : 48 Hours
        .Backup Battery Charging Time : 100hours when completely discharged.

3. Scan Part

   1) Image Signal Input Part
Image Signal from CIS has a level of about 1.2V and is goes to ADC of Chorus2.
After ADC, CIS analog signal will be converted to 8-bit Digital signal.
   2) Image Processing
On the surface of the original paper, the light from the CIS LED reflected and goes
to the CIS Sensor. Then the light is converted to the appropriate voltage suitable for
ADC input.
Analog signal from CIS sensor is used for ADC input then is converted to 8-bit
digital data.
Image processor of the Chorus2 will do the Shading correction function at first, then
Gamma correction function next.
After then, the data goes to different module according to the copy or FAX
resolution mode.
When Text mode, the image data goes to LAT module, when Photo mode, the
image data goes to Error Diffusion module, when PC-Scan mode, the image data
goes directly to the PC through DMA access.

   ◇ Summary of the Image sensor interface is as below;
      ① Minimum Scan Line Time : 1.5ms
      ② Scan Resolution : 600*600 dpi
      ③ Scan Width : 208mm
      ④ function
        - White Shading Correction
        - Gamma Correction
        - CIS   Interface
        - 256 Gray Scale
   3) CIS Driving Part
        - CIS Supply Voltage : +3.3V
        - CIS Max frequency : 5MHz
        - CIS Line time
            Fax/Copy - 1.5ms
            PC-Scan - 4.5ms
        - White output volt. : Max 0.8V
   4) ADF Driving Part : Driving ADF Stepper motor, and the maximum motor speed is
                2000PPS.
            - MOTOR DRIVER : A3978(Allegro)
            - Driving Voltage : 24V DC

- Phase   : 2-2 Phase 2000PPS at Quick Scan,
                                       2-2 Phase 1000PPS AT Fine Scan,
                                       2-2 Phase 667PPS AT Super Fine Scan

4. Fax Modem Part

   1) Modem Part

   The modem part is consist of FM336(FAX Modem chip), LIU(Line Interface
   Unit) and modem analog front end(AFE) functional part.

   * The feature of the SFM336 modem chip is as below;

   ① Communication Mode : Half Duplex
   ② Modem Method
    - GROUP 3   : ITU-T V34, V17, V29, V27ter
    - Tonal Signal   : ITU-T T.30
    - Binary Signal   : ITU-T V.21, T.30
   ③ Image Transmission Time : 3sec (ITU-T NO.1 CHART/Memory Tx/ECM)
   ④ Data Compress   : MH, MR, MMR, JPEG
   ⑤ Modem Speed   : 33600 / 28800 / 14400 / 12000 / 9600 / 7200 / 4800 / 2400
   bps
   ⑥ Receive Level   : 0 ~ -48dBm
   ⑦ Output Level
       - Adjustable   : -6 ~ -15dBm (1dBm Step)
       - Initial Setting : -12dBm
   ⑧Receive dynamic range:
       -. 0 dBm to -43 dBm for V.17, V.29, V.27 ter and V.21
       -. -9 dBm to -43 dBm for V.34 halfduplex

   2) The Gain of the Line signal can be adjusted by setting the register value of
   the FAX modem chip ,Tx and Rx path is almost directly connected to the impedance
   matching transformer of the LIU.
   - Adjust Tx Level within Setting Level+0,-2dB range.
   - Adjust Rx Level that has the same level as the TIMS out level if possible, and
     must not exceed the TIMS out level.
       3) Speaker Driving Part
   Analog Switch(MC14053BD) makes a path for FAX Tone, Ring, Key click sound
   and   Analog MUX (MC14051) makes a different signal level so that the the
   Speaker driver chip(MC34119) can driving the Speaker with different sound volume.

5. Printing Process Part

   Printing Process part is made of PC-Interface part, PVC(Priter Video Controller), LSU
   control part, High Voltage control part and Fuser Unit control part.
   PC-interface core is included in the Chorus2 ASIC and controls the PC-interface.
   LSU control part controls the LSU polygon motor, Laser diode, video data output so
   that the printing image can be made up on the OPC Drum.

6. Line Interface Part

       Line interface part helps the machine connect to the PSTN or PABX Line and is made of almost primary circuit.

       Its main function is Line connection, Line state monitoring and TAD interface that enables a extension telephone or TAD machine to connect to the SCX-4517F machine.

7. Engine Paper Feeding

    1) Feeding Type   : MP Cassette Type

    2) Feeding Standard : Center Loading

    3) Feeding Qty: Cassette 150 sheets (75g/m^2, 20lb paper standard)

    4) 1 sheet (Paper, OHP, Envelope etc.)

    5) Separating Type: Cassette - Friction Pad Type

    6) Manual Tray : 1 sheet

    7) Driver Type : Driving by Gearing from Main Motor

    8) Pick_up Roller Driver : Solenoid

    9) Pick up Roller Rubber Material : EPDM+IR μ=1.3 or more

    10) Pick up Velocity : 94.8731mm/Sec (Process : 93.0667mm/sec)

    11) Paper detecting Sensor : Photo Sensor

    12) Paper Size Sensor : None

    13) Paper Separating Pad Material : NBB 52°, μ=0.8~1.2

    14) Separating Pad Pressure : TBD 150 gf

    15) Pick_up Roller RPM : 47.683 RPM

    16) Feeding Pressure (Same as Transfer Roller)

       : TBD 150~200 gf (SPRING H mm, based on 1sheet)

         TBD 150~200 gf (SPRING H mm, based on 150sheets)

    17) Paper Exit Type : Face Down

    18) Feed Roller Force : TBD Kg.f or more.

    19) Spring Feed Tensile Force : TBD gf

    20) Feed roller Velocity : mm/sec

    21) Feed Roller Material : -

    22) Exit Sensor : Photo Sensor

8. Deverope Process

▶ Developing Method : Non magnetic 1 element contacting method

▶ Toner : Non magnetic 1 element shatter type toner

▶ Toner Qty : 35 gf / 60gf (1k / 3k)

▶ The life span of toner   1k/3k sheets (ISO 5% Coverage)

▶ Toner Residual Sensor : None

▶ OPC Cleaning : Use the conventional cleaning blade

▶ Handling of wasted toner : Discard by collecting waste-toner at waste-toner bin.

▶ OPC Drum Protecting Shutter : None

▶ Classifying device for toner cartridge: ID is classified by interruption of the frame channel.

▶ Development Roller type : conductive elastic roller

▶ Doctor BLADE Type : Regulating toner layer by pressure

▶ Charge Roller Type : Conductive Roller Contact-Charge

9. Sanner Part

600dpi Color CIS Module for Flat bed, SCX-4517F uses the CIS scanning method

1) CIS SPEC

▶ Scanning size : 216 mm (width for letter-size)
▶ Light source : LED
▶ Scanning sensor: CIS 600/300 dpi
▶ Scanning mode : Color SCAN / Mono SCAN
▶ MTF   : 30% (300 dpi Chart)
▶ CIS interface : Analog output
▶ Power supply   : 3.3V
▶ Clock Frequency: 5.5MHz max.
▶ Number of output : 1
▶ LED Current   : Green/Blue : 50mA,   Red : 60mA
▶ Clamp Level   : 1.4V
▶ Connection   : 12 pin FFC connector (pitch 1.0mm)

2) Scan Resolution

(a) Translation

▶ Normal : Vertial: 3.85 Line/mm, Horizontal: 8 Pels/mm :203 x 98dpi
▶ Fine   : Vertial: 7.7 Line/mm, Horizontal: 8 Pels/mm   :203 x 196dpi
▶ Super Fine : Vertial: 11.8 Line/mm, Horizontal: 11.8 Pels/mm ;300 x 300dpi

(b) When Copy :   Vertial: 11.8 Line/mm, Horizontal: 23.6 Pels/mm   :600x300dpi(ADF)

                           Vertial: 23.6 Line/mm, Horizontal: 23.6 Pels/mm   :600x600dpi(Platen)

3) Half Tone (Gray Scale) : 256 Levels

4) Scan Line Time

  (a) Tx

      ▶ Normal   : 1.5 ms/Line

      ▶ Fine   : 1.5 ms/Line

      ▶ Super Fine : 1.5 ms/Line

  (b) Copy   : 1.5 ms/Line

  (c) Scan

      ▶Color   : 4.5msec/line

      ▶Gray   : 4.5msec/line

      ▶Mono   : 4.5msec/line

5) Scanning Width

      ▶MAX SCAN WIDTH :   216 mm (8.5 inches)

      ▶Effective Scan Width :   208 mm

6) ADF Motor

 (a) Motor Spec

      ▶ 정격전압   : 24V DC

      ▶ 정격전류   : 0.6A(Peak)

7) Motor Driver speed & method

  (a) FAX Transmission

      ▶ Normal Mode   : 2000 pps, 2-2

      ▶ Fine Mode   : 1000 pps, 2-2

      ▶ Super Fine Mode :   667 pps, 2-2

  (b) Copy Job :   667 pps, 2-2

           ▶ max(30sheets) : 50gf

           ▶ min(1sheets) : 20gf

 8) Document Detect sensor

     (a) Type   : Photo interrupt

     (c) LED   - max current   : 30mA

             - max voltage   : 3.3V

     (d) Output   - Logic "H"   : Not Paper

             - Logic "L"   : Paper

     (e) Lever-Sensor DOC   : ADF Lower Torsion Spring

 9) Regi Detect sensor

     (a) Type   : Photo interrupt

     (b) Position   : ADF PBA

     (c) LED   - max current   : 50mA

             - max voltage   : 3.3V

     (d) Output   - Logic "H"   : Not Paper

             - Logic "L"   : Paper

     (e) Lever-Sensor DOC   : ADF Lower Torsion Spring

10) Document Scan sensor
    (a) Type   : Photo interrupt
    (b) Position   : ADF PBA
    (c) LED   :   - Max current   : 50mA
                   - Max Voltage   : 3.3V
    (d) Output   - Logic "H"   : Off(No Position),No Paper
                 - Logic "L"   : On (Doc Position),Paper
    (e) LEVER-SENSOR SCAN   : Scan Lower Torsion Spring

10. OPE(Operational Panel Equipment)

1) Ope Panel

OPE Panel has a MICOM Chip on it and communicates with Main CPU using Serial communication Line(SIO).

OPE Panel consists of Micom, Key Matrix Part, LED Driving Part and LCD Part.

2) Key Description

No	Part	Feature	Function
1	Common	3*4Key	Dialing and Option Input
		Start	Starting Fax/Copy Job
		Stop/Clear	Cancel Current Job/Return to default
		Menu	Option select
		Upper Level	Return to upper level menu
		Enter	Option select/Execute
		▶	Next menu or Next option item
		◀	Previous menu or Previous option item
2	Save	Toner Save	TONER SAVE MODE select
3	Copy	Reduce/Enlarge	Select ZOOM ratio when copy
		No.of Copies	Select the number of copies
		Original Type	Change Copy Modes(Text,Text/Photo,Photo)
		Darkness	Change the Darkness of the Copied image (Light/Normal/Dark)
		Template	Select one of the predefined Copy templates.
4	Fax	Resolution	STANDARD>FINE>SUPER FINE>PHOTO>COLOR
		Phone Book	Search the user defined Phone number.
		Broadcasting	When sending FAX data to many place in the same time.
		On Hook Dial	On Hook Dial
		Redial / Pause	Last number Redial / Pause
5	Scan	Scan to	select [scan to PC], [scan to FAX], [scan to E-mail] function.

3) LCD Part
   -Number of Characters : 16 Characters x 2 line
   ▶ Clock, Date display
   ▶ System Status display
   ▶ Alarm, Error Message display
   ▶ Function Dialog Message display