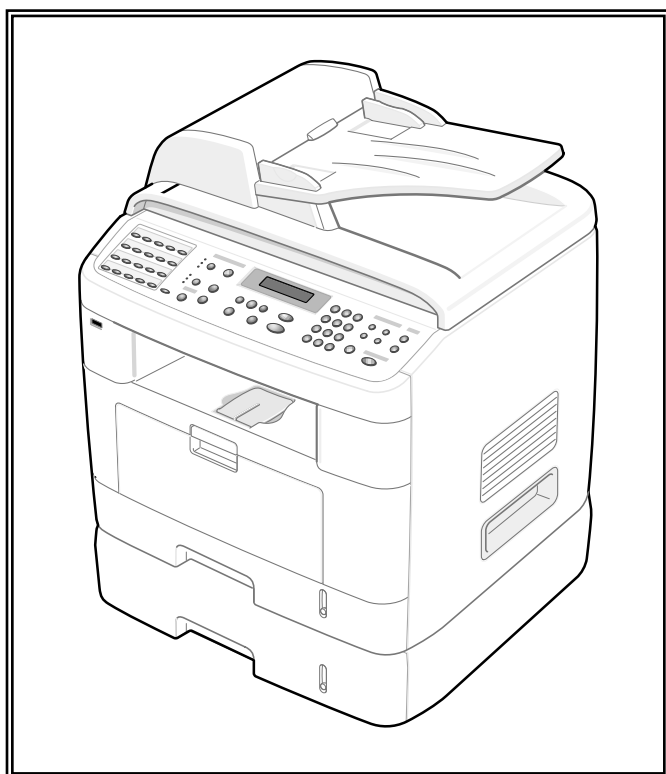


**SAMSUNG**

**DIGITAL LASER MFP**  
**SCX-4720F Series**  
**SCX-4720F**  
**SCX-4520**

# ***SERVICE*** *Manual*

## **DIGITAL LASER MFP**



## **CONTENTS**

1. Precautions
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5. Disassembly and Reassembly
6. Alignment and Adjustments
7. Troubleshooting
8. Exploded Views and Parts List
9. Block Diagram
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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 GEFFNET.  
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 INVISIBLE CUANDO SE ABRE.  
EVITAR EXPONERSE AL RAYO.

ADVARSEL - USYNLIG LASERSTRÅLING VED ÅBNING, N R  
SIKKERHEDSBRYDERE ER UDE AF FUNKTION.  
UNDG UDSETTELSE FOR STRÅLING.

ADVARSEL - USYNLIG LASERSTRÅLING N R DEKSEL  
PÅNES. STIRR IKKE INN I STRÅLEN.  
UNNG EKSPONERING FOR STRÅLEN.

VARNING - OSYNLIG LASERSTRÅLING N R DENNA DEL  
R PÅNAD OCH SPÄRREN R URKOPPLAD.  
BETRAKTA EJ STRÅLEN. STRÅLEN R FARLIG.

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

注 意 - 严禁揭开此盖, 以免激光泄露灼伤

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

## 1.2 Caution for safety

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### 1.2.1 Toxic material

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

### 1.2.4 Assembly / Disassembly Precautions

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

- (1) Check the contents of the machine memory and make a note of any user settings. These will be erased if the mainboard or network card is replaced.
- (2) Ensure that power is disconnected before servicing or replacing any electrical parts.
- (3) Disconnect printer interface cables and power cables.
- (4) Only use approved spare parts. Ensure that part number, product name, any voltage, current or temperature rating are correct.
- (5) When removing or re-fitting any parts do not use excessive force, especially when fitting screws into plastic.
- (6) Take care not to drop any small parts into the machine.
- (7) Handling of the OPC Drum
  - The OPC Drum can be irreparably damaged if it is exposed to light. Take care not to expose the OPC Drum either to direct sunlight or to fluorescent or incandescent room lighting. Exposure for as little as 5 mins can damage the surface'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 the OPC Drum Unit. If the green surface of the Drum Cartridge is scratched or touched the print quality will be compromised.



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## 1.2.5 Disregarding this warning may cause bodily injury

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**(1) Be careful with the high temperature part.**

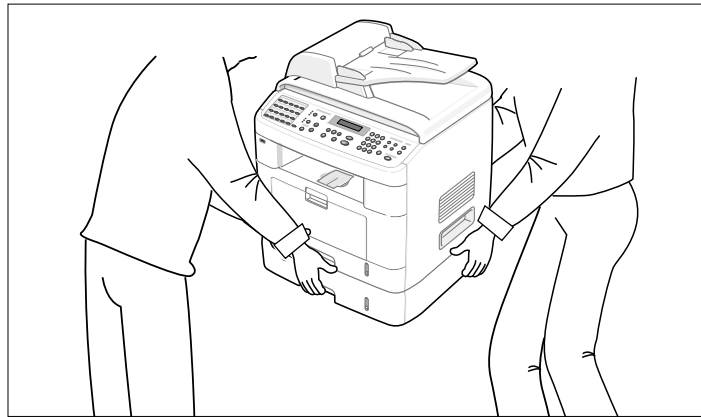
The fuser unit works at a high temperature. Use caution when working on the printer. Wait for the fuser to cool down before disassembly.

**(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 15.6kg including toner cartridge and cassette. Use safe lifting and handling techniques. Use the lifting handles located on each side of the machine. Back injury could be caused if you do not lift carefully.



**(4) Ensure the printer is installed safely.**

The printer weighs 15.6Kg, 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. | 3. Super capacitor or Lithium batteries contain toxic substances and should not be opened, crushed, or burned for disposal. |
| 2. Be sure to replace the battery with the same or equivalent type recommended by the manufacturer.  | 4. Dispose of used batteries according to the manufacture's instructions.   |

## 2. Reference Information

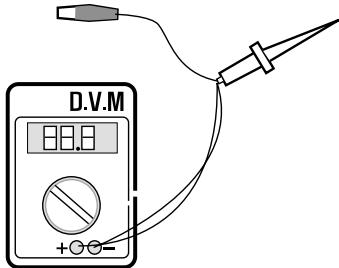
This chapter contains the tools list, list of abbreviations used in this manual, and a guide to the location space required when installing the printer. A definition of test pages and Wireless Network information definition is also included.

### 2.1 Tool for Troubleshooting

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

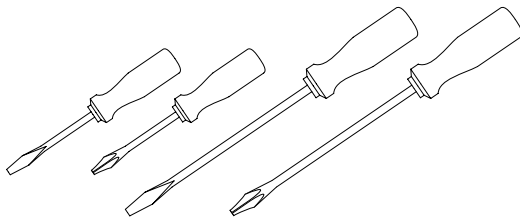
- **DVM (Digital Volt Meter)**

Standard : Indicates more than 3 digits.



- **Driver**

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



- **Tweezers**

Standard : For general home use, small type.



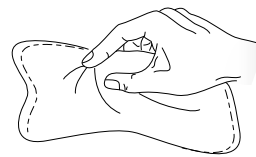
- **Cotton Swab**

Standard : For general home use, for medical service.

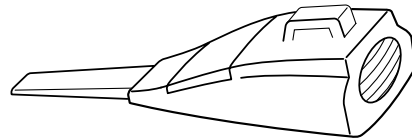


- **Cleaning Equipments**

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



- **Vacuum Cleaner**

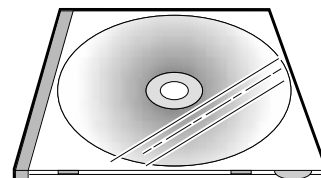


- **Spring Hook**

Standard : For general use



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



## 2.2 Acronyms and Abbreviations

The table in the below explains abbreviations used in this service manual.

The contents of this service manual are declared with abbreviations in many parts. Please refer to the table.

AC	Alternating Current	IC	integrated circuit
ADF	Automatic Document Feeder	IDE	Intelligent Drive electronics or Imbedded Drive Electronics
ASIC	Application Specific Integrated Circuit	IEEE	Institute of Electrical and Electronics Engineers. Inc
ASSY	assembly	IPA	Isopropyl Alcohol
BIOS	Basic Input Output System	IPM	Images Per Minute
CCD	Charge Coupled Device	LAN	local area network
CMOS	Complementary Metal Oxide Semiconductor	lb	pound(s)
CN	connector	LBP	Laser Beam Printer
CON	connector	LCD	Liquid Crystal Display
CPU	Central Processing Unit	LED	Light Emitting Diode
CRUM	Customer Replaceable Unit Memory	LSU	Laser Scanning Unit
dB	decibel	MB	Megabyte
dbA	decibelampere	MFP	Multi-Functional Product
dBm	decibel milliwatt	MHz	Megahertz
DC	direct current	NVRAM	Nonvolatile random access memory
DCU	Diagnostic Control Unit	OPC	Organic Photo Conductor
DPI	Dot Per Inch	PBA	Printed Board Assembly
DRAM	Dynamic Random Access Memory	PCL	Printer Command Language , Printer Control Language
DVM	Digital Voltmeter	PDL	Page Discription Language
ECP	Enhanced Capability Port	PPM	Page Per Minute
EEPROM	Electronically Erasable Programmable Read Only Memory	PTL	Pre-Transfer Lamp
EMI	Electro Magnetic Interference	Q'ty	Quantity
EP	electrophotographic	RAM	Random Access Memory
EPP	Enhanced Parallel Port	ROM	Read Only Memory
FCOT	First Copy Out Time	SCF	Second Cassette Feeder
FW	firmware	SMPS	Switching Mode Power Supply
GDI	graphics device interface	SPGP	Samsung Printer Graphic Processor
GND	ground	SPL	Samsung Printer Language
HBP	Host Based Printing	Spool	Simultaneous Peripheral Operation Online
HDD	Hard Disk Drive	SW	Switch
HV	high voltage	Sync	Synchronous or synchronization
HVPS	High Voltage Power Supply	TBD	To Be Determined
I/F	interface	USB	Universal Serial Bus
I/O	Input and Output		

## 2.3 The Sample Pattern for the Test

The sample pattern shown in below is the standard pattern used in the factory.

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

(The image is 70% of the actual A4 size).

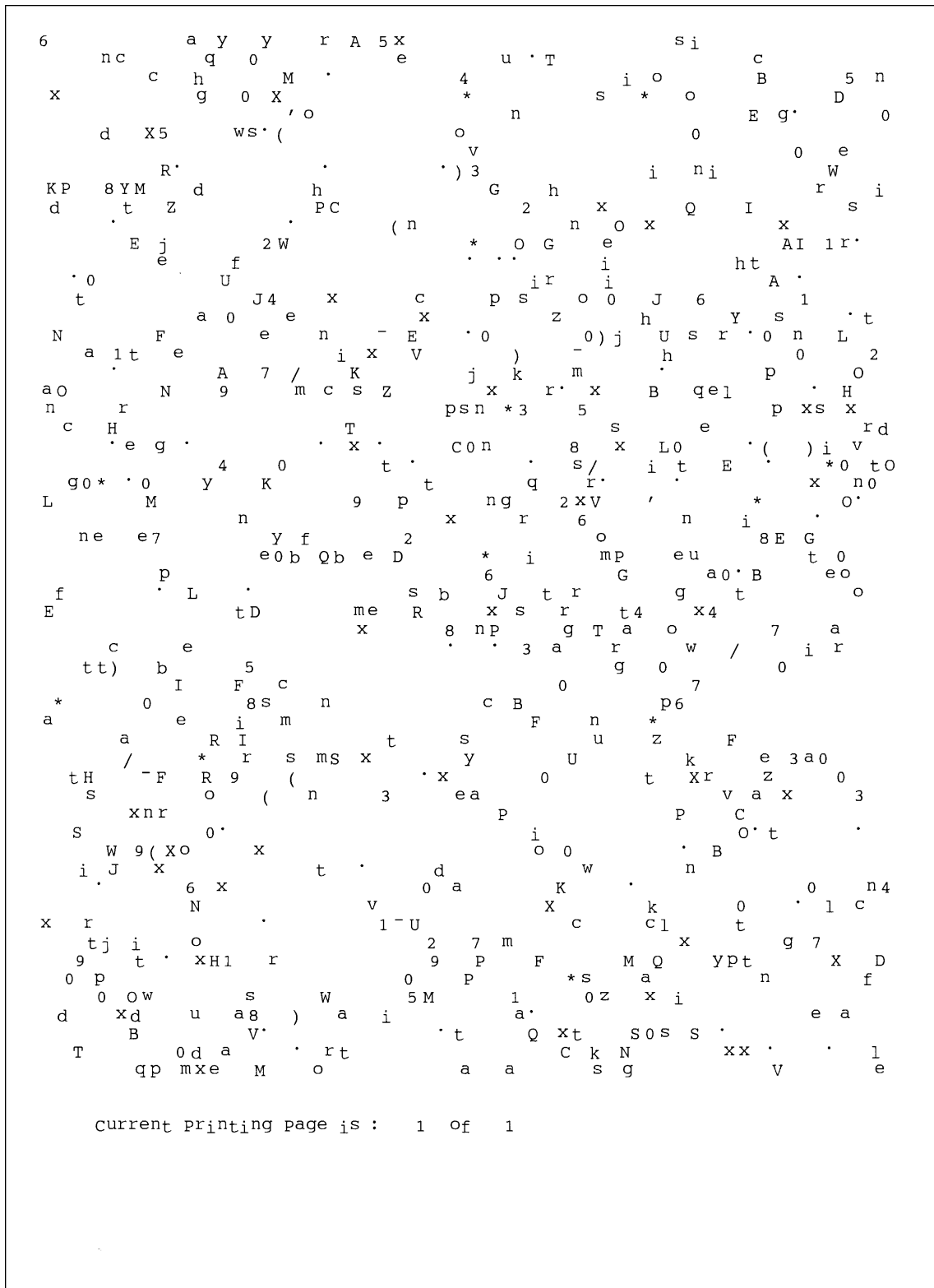
### 2.3.1 A4 5% Pattern

```

i o o e / A K O6 cs hh r m E ei *.0 Y s r a i
r a) ( Y b S lM* s g .3 A A4 r n
t Leyi RS . s d u xo o lg P t f l
N l 0t f ' t psF ott O 2 ux-s o i t Anvp N 0 tQ
tl ti uso w i ag' l u p o . n X0t li at
L ey OH m m n N: lc T c hrry x i t
ia* X 0 t' utst- N*Qir ep n b pepa we t
eo t s IT' i 'e dn o S b* te * G * srX is n
. auo s t s e l A cko o 9 0 gs
ne 3 o n l* r a/n i op r r i * ee
s o aeocs p * * ke'0 sn*s z eo cr o o ma go
FPT sonm da t s l xopr a r p . o - u
ac-n * / sac Y t e (ty* mlaI p b t2 (l
i edu ar -o l DPR e Dse ag c e sa6g p p'
*/mn0ov p se* W a o r * gm o p p r P00
n t*n su n h*xv ri tp' o rg co ine s v0 -0 1 T
y 01 m ' (lo M ' u/ r ne o p e
ob d t nu e n e lA apro iotre
s o e d o u' I si ESC o i X' ee
pe e t i md OPC e Letyo aoi t nn l tm e B
x i Xlo ) c aicn fern i) x i p n* n oi e u in D W
X y Xr eo 001 dE bs PB teo * Ro H g u*K
d s Fxr rCF a bh s p g s le r roJ n e pp
a p tr ps(s oadrr la s p z uis n oa
.m d t E *F i* opn E h i rudc r s o
a petya b d e v" d t.e.p) . ro .h n s t
n p t e v t ho *f0x*a o ic o em i a c4 FA0
i2q n/ s8' i ) BZ P cd~ pso o 30a Or y*h
dr -e tu9 t F iet3 rhp * e mo dt x De
wTpp xix n m( wd lAacc a -0 z)l i i n e
5 e * sn o Pd .Xl o ic sa y x Pk
i- p00 p h yb olo) C e ( w sco"o o ynn !Xnj
i va3 AC H a C Xt0rp ow ( ersico s lo a
Plplae a tid ep/tF t )s pn F't g(ed e
so ss w l0h yxt os p) Dno- o
*dynM o u ii TP nly ne' l c X s(seo o'c
i 08 BW ouch ue k EX t2' i Sonnn * op
isl n g ir r Q o x gr ny* tu o mxsar uj*
a 0/* p 8 ur f o t a ip p no e
es pn .i* i .t) .t W 5A * iyn t l O stn rtx
n t e' s ev s n x ( Xen e0 Xw td l' -
Ui c i7 e )SPX m uros3*is s .n n M o l L-g
at *sUr n2 7e u l X o o tH-res c p eo W
5* oe o( Q F0p nN * em'r*ud e t MM c iox5
iog s- a o( os on d b so'6p s 6At eo . n s
Hist 0 J t R 6 ei T rJ iil ' i o ank'
p r e r0 F Bui op MM e0M 0 00 1Ee u e B u
q t i o XB iO *hn t r i a ses " t X t t s n
m) g p d G F I soy Ors fE*0 o Ie hd e n
p t E oo gno' t H r s nZE e iea p * t - p/4e l
d X er s t o t idt *o s o' p e t ll/R
XX i g i e fg s p C . m x h te c g os ta e
Pa(o0 n/t00' ozdI dno x .p O W ae or R t icF
(l xa B co o s )r s 8Y*x toe' ie t o ah
r B o rlr d t .l Ei et0Da h n s7
c - s oolo t ga 'r FM *d i*s 0 x o pe *
```

current Printing page is : 1 of 1

## 2.3.2 A4 2% Pattern

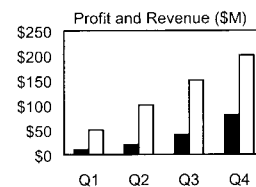


### 2.3.3 A4 IDC 5% Patten

#### INTEROFFICE MEMORANDUM

**TO:** Cathy Scott  
**FROM:** Lane Wolters  
**SUBJECT:** The Typical Printed Page  
**DATE:** 07/14/09

What does the typical laser printer document look like? Well, across the diverse business community it would be impossible to capture all aspects of printing style within a single page document. However, if attention is focused on the majority of printing volume, text and simple business graphics would stand out as the most prevalent output from laser printers. This



sample memo represents a reasonable example of the typical business document. This memo covers approximately 5% of a letter or A4-sized piece of paper. This number (5%) has historically been called the "average" page coverage by laser printer manufacturers. It may seem to the naked eye that there is much more than 5%, but in fact, alphanumeric characters rely on a large portion of white space for their composition.

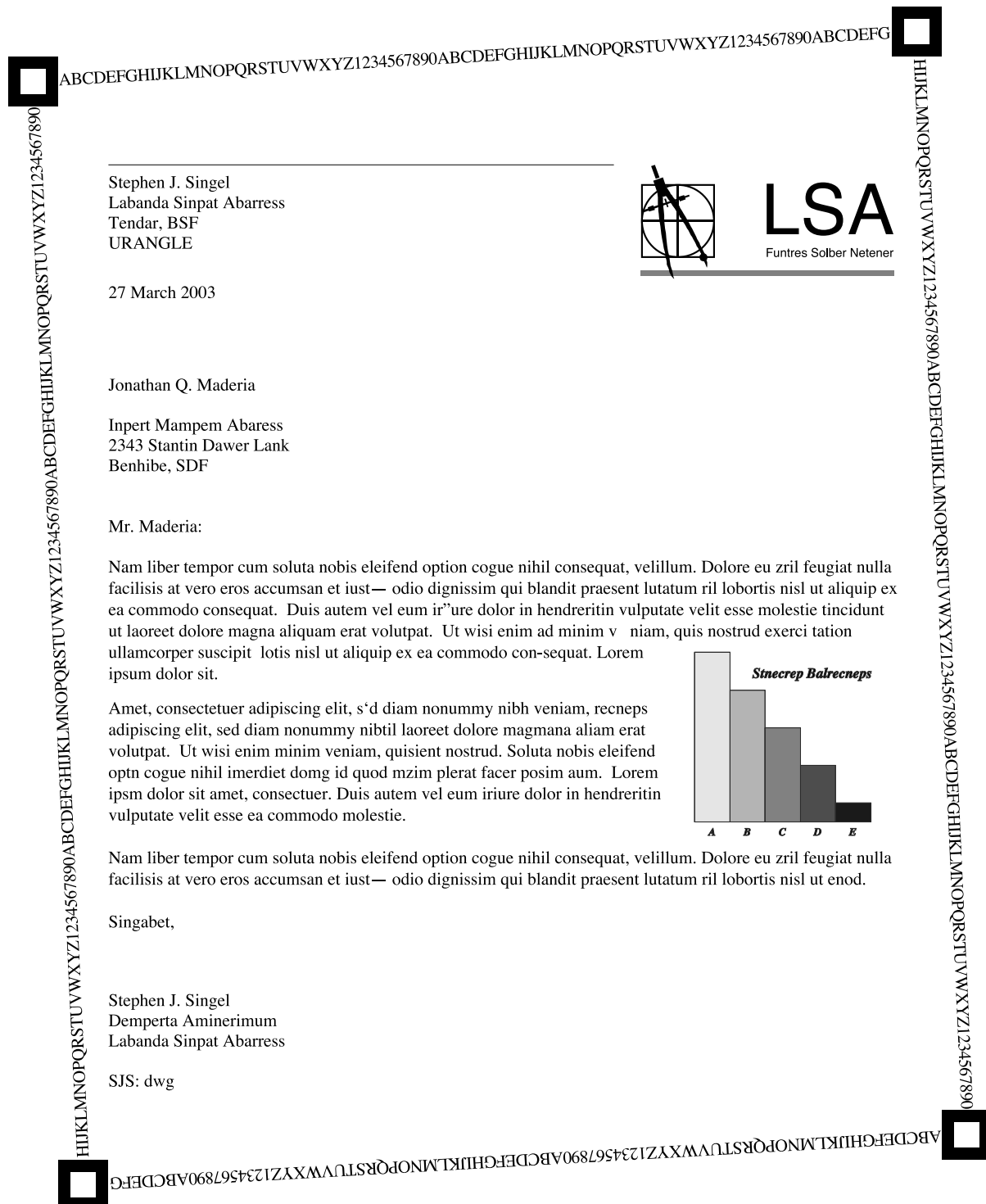
Mileage Chart

City	London	Los Angeles	New York	Tokyo
London	--	5456	3453	5975
Los Angeles	5456	--	2468	5451
New York	3453	2468	--	6736
Tokyo	5975	5451	6736	--

There are many factors that can influence the actual page coverage of a document as well as the page-yield of a toner cartridge. Testing parameters such as font size and style, internal printer settings, print environment, paper stock, sample size, job length and criteria for determining "end of life", can all influence how long a toner cartridge will last. The best competitive analysis of printer page yield should occur under similar conditions using industry standards for the variables listed above.

## 2.3.4 A4 ISO 19752 Standard Pattern

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





## 2.4 Wireless LAN

- This product uses a printing function with a wireless LAN, which is an option.
  - The wireless LAN function uses a frequency instead of connecting LAN cable to connect data to an access point for print.
  - For a wireless LAN connection, an AP is needed, It is possible to use wireless LAN onnection with wired LAN. Also, if AP is installed in an office or at home, the wireless LAN function can be simply used.
- Types of desk top PC (or Lap top) that uses the wireless LAN.

Division	Basic type	Recommend type
CPU	Over PENTIUM 233M	PENTIUM 300MHz
MEMORY	Over 64MB	Over 128MB
VIDEO CARD	Over 800X600	Over 1024X768
OS	Over WINDOWS 98	Over WINDOWS ME
INTERFACE CARD	A product has a certificated mark of Wi-Fi™	

- **About the certificated mark of Wi-Fi™**



- The Wi-Fi™ is a registered trademark of WECA (Wireless Ethernet Compatibility Alliance). Over 50 of a wireless LAN companies are member of it. The most of main wireless networking companies are attending and the main companies are Lucent technologies, Cisco, Intel/Symbol, 3Com, Enterasys (Cabletron), Compaq, IBM, Nokia, Dell, Philips, Samsung electronic, Sony, Intersil, and so on. This mark certifies mutual compatibility among product has Wi-Fi™ (IEEE 802.1) and it is certified as a standard of a wireless LAN market.

*MEMO*



## 3. Specifications

Specifications are correct at the time of printing. Product specifications are subject to change without notice. See below for product specifications.

### 3.1 General Specifications

Items			SCX-4520	SCX-4720F
Major Features			Copier, Print, Scan, ADF, Scan-to-Email (Through Smar Thru S/W) Direc Print, Scan-to-USB Memory	Fax, Copier, Print, Scan, ADF, Scan-to-Email (Through Smar Thru S/W) Direc Print, Scan-to-USB Memory
Size (W*D*H) w/o Hand Set			450mmx423mmx456mm (17.7x16.7x18")	
Net Weight(Inc. Toner Cartridge)			15.6kg	
Net Weight(exc. Toner Cartridge)			14.8kg	
Gross Weight(with package)			20.4kg	
LCD			16*2 Char	
I/O Interface			USB2.0 (High Speed)	
MPU			SPGPm / 166MHz	
Power Consumption	Printing Operation		370W	
	Sleep Mode		30 W Energy Star Compliant	
	Power Switch		Yes	
Power Supply	Input Voltage		Low Voltage : 110 ~ 127VAC	
			High Voltage : 220 ~ 240VAC	
Noise	Input Frequency		50 / 60Hz(+/- 3Hz)	
	Printing		54dBA	
	Copy		55dBA	
Warm Up Time	Standby		33dBA	
	from Cold Status		Less than 42 seconds	
Machine Life	Max. Monthly	Print	15,000pages	
	Volume	Scan	1,000pages	
	(Duty Cycle)	ADF	1,000pages	
	Average Monthly Print Volume		1,500pages	
	Machine Life		150,000pages	

Items			SCX-4520	SCX-4720F
Periodic Replacing Parts	Pickup Roller		150,000 Pages	
	Pad Unit(Tray)		150,000 Pages	
	Pad Unit (ADF)		20,000 Pages	
	Transfer Roller		60,000 Pages	
	Fuser Unit		80,000 Pages	
Environmental	Temperature	Operating	10~32°C	
		Non Operating	-20~40°C	
	Humidity	Operating	20~80%	
		Non Operating	10~90%	
	Altitude		Max 8,200ft	
EMI Approval			Class B	
Device Memory	Standard / Max.		32MB/160MB(Std./Max) 12MB(PS) + 4MB(FAX) + 2MB (System) + 2MB(Scan) = 20MB	
	Type		SDRAM	
	Expand Memory Slot Type		SDRAM DIMM	- Option DIMM : 16, 32, 64, 128MB (SDRAM) - 100Pin SDRAM DIMM (Use only Samsung Memory parts made Specifically for this printer)
	Compression Technology		YES	

## 3.2 Print Specification

Items		SCX-4520	SCX-4720F
PRINT	Print Speed	Up to 22ppm/Ltr, 20ppm/A4 (600 dpi)	
	Print Emulation	GDI, PCL6, PCL5e PostScript Level3(opt.) *Korea (KS / KSSM / KSC5895)	
	Auto Emulation Sensing	YES	
	Font	Type	45 Scalable, 1 Bitmap
		Number	N/A
	Power Save	Yes(5/10/15/30/45min.)	
	Resolution	Normal	600x600dpi
		RET	Yes (1200x1200dpi)
	Toner Save	Yes (No dedicated button on CP)	
	Memory	16MB	
	FPOT	From Stand by	Approx. 10 seconds (From LSU 'ON', A4)
		From Cold Status	Less than 50 seconds
	Duplex Print	N.A	
Printable Area		208 x 273 mm (Letter)	
Halftone(Gray Scale)		128levels	

### 3.3 Scan Specification

Items			SCX-4520	SCX-4720F	
SCAN	Scan Method		Color CCD		
	Scan Speed through ADF	Linearity	Approx. 75sec (USB 1.1)	*USB 1.1, 300dpi, Letter Size, Pentium 41.xGHz, 128MB RAM	
		Gray	Approx. 75sec (USB 1.1)		
		Color	Approx. 150sec (USB 1.1)		
	Scan Speed through Platen	Linearity	Approx.75sec (USB 1.1)		
		Gray	Approx. 75sec (USB 1.1)		
		Color 75dpi/300dpi	Approx. 150sec (USB 1.1)		
	Resolution	Optical	600*1200dpi		
		Enhanced	4800dpi*4800dpi		
	Halftone		256level		
	Scan Size	Max. Document Width	Max.216mm(8.5")		
		Effective Scan Width	Max 208mm(8.2inch)		
	Scan-to		E-mail, Image, OCR, FAX, WEB --> through PC Direct Scan-to-USB Memory(Std.)		
	Scan Depth	Color	24 bit		
Mono		1bit for Lineart, 8 Bit for Gray scale			

### 3.4 Copy Specification

Items			SCX-4520	SCX-4720F
COPY	Copy Quality Selection or Original Image type selection Mode	Text	600x300dpi	
		Text/Photo	600x300dpi	
		Photo	600x600dpi for Platen	
		Other	N/A	
	FCOT	Stand by	Approx. 10 seconds:Platen Approx. 15 seconds:ADF	
		From Cold Status	50 seconds	
	Copy Speed / Letter	SDMC at all mode	22cpm/Ltr, 20cpm/A4	
		MDMC at Text, (600x300dpi)	14cpm	
		MDMC at Photo Mode (600x600dpi)	8cpm	
	Origin Alignment	Platen	REAR LEFT	
		ADF	Center	
	Resolution		Scan:600x300dpi, 600*600dpi Print:600*600dpi	
	Zoom Range		25% to 400% for Platen 25% to 100% for ADF	
	Multi Copy		1~99	
	Preset		Yes	
	Darkness Control		3 level(by LED)	
	Copy Mode(=Quality)		Text, Mixed, Photo	
	Collation Copy		600x300dpi : Yes	
	Auto return to default mode		Yes (Time can be changeable 15, 30, 60, 180sec, Off)	
	Changeable Default mode		Contrast, Image, Reduce/Enlarge, No. of Copies	
	Special Copy	N-up copy	2-up, 4-up	
		Collation Copy	Yes(ADF only)	
		AutoFit Copy	Yes(Platen only)	
		2-side Copy	Yes(Platen only) * Copy 2-side printed original document into one page (ex. ID Card Copy)	
		Clone	Yes(Platen only)	
		Poster	Yes(Platen only)	

Items			SCX-4520	SCX-4720F
TELEPHONE	Handset		No	No
	On hook Dial		No	Yes
	Search		No	Yes (Phone Book)
	1-Touch Dial		No	40EA (20 x shift) *20 x 2 Dedicated keys
	Speed Dial		No	200 locations(00~199) include 1-touch dials
	TAD I/F		No	Yes
	Tone/Pulse		No	Selectable in Technical Mode
	Pause		No	Yes
	Auto Redial		No	Yes
	Last Number Redial		No	Yes
	Distinctive Ring		No	Yes
	Caller ID		No	No
	External Phone Interface		No	Yes
	Report & List Print out	Tx/Rx Journal	No	Yes
		Confirmation	No	Yes
		Help List	No	No
		Auto Dial List	No	Yes
		System Data List	No	List all user setting
	Sound Control	Ring Volume	No	Yes(Off, Low, MED, HIGH)
		Key Volume	No	Yes(On, Off)
		Alarm Volume	No	Yes(On, Off)
		Speaker	No	Yes(On, Off, Comm)



### 3.5 Fax Specification

Items		SCX-4520	SCX-4720F
Fax	Compatibility	No	ITU-T G3
	Communication System	No	PSTN/PABX
	Modem Speed	No	33.6Kbps
	TX Speed	No	3sec
	Compression	No	MH/MR/MMR/JPEG
	Color Fax	No	Yes(Send Only)
	ECM	No	Yes
	Resolution	Std	203*98dpi
		Fine	203*196dpi
		S.Fine	300*300dpi
	Scan Speed	Std	2.5 sec/ LTR
	(ADF)	Fine/S.Fine	5 sec/ LTR
	Rx fax duplex print out	No	No
	Multiple page scan speed	No	14ppm/LTR, Std mode
	Receive Mode	No	Fax, TEL, Ans/Fax, DRPD
	Memory	Capacity	4MB
		Optional Memory	No
		Max locations to store to 1 Group Dial	199 locations
		Fax Forward	Yes(On/Off)
		Broadcasting	up to 209 locations
		Cover page	Yes
		Delayed fax	Yes
		Memory RX	Yes
	Functions	Voice Request	No
		TTI	Yes
		RTI	Yes
		Polling	No
		Earth/Recall	No
		Auto Reduction	Yes
		F/W Remote upgrade	Yes
	Junk Fax barrier	No	Yes
	Secure Receive	No	Yes
	Memory Back-up	No	Yes, Max. 43hours

### 3.6 Other Specification

Items			SCX-4520	SCX-4720F
Network	Option		Yes (Standard)	
	Protocol		SPX/IPX, TCP/IP, Ethertalk, SNMP, HTTP 1.1, DLC/LLC	
	Operating System		MS Windows 98/2000/XP/NT/Me, MAC (English only, no status monitor, web download only)	
Paper Handling	Capacity( 20lbs)	Main Tray	250sheets	
		Bypass	50 Sheet	
	Optional Cassette		250sheets	
	Output Capacity		Face Down: 150Sheets/20lb Face Up: 1Sheet	
	Output Control		Face down/Face up	
Paper Handling (Continued)	Paper Size	Main Tray	A4, Letter, Legal, Folio, Executive, B5	
		Bypass	Bypass:Envelope 63/4, 73/4, #9, #10, DL, C5, B5	
	Paper Weight	Main Tray	16~24 lb.	
		Bypass	16~43 lb.	
	Paper Path	Standard output	Bottom to Middle Front (FIFO)	
		Straight Through	Face up, Single Sheet	
	Paper Size	Max	216 x 356mm (8.5"x14")	
		Min	76 x 127mm (3"x5")	
	ADF	Paper Weight	12.5 ~ 28lb	
		Capacity	50 sheets	
		Document Size Width	142mm - 216mm (5.6" - 8.5")	
		Document Size Length	148 mm - 356mm (5.8" - 14.0")	
	Jam Rate	Cassette, 2nd Feeder	1/2000	
		ADF	1/1000	
	Multi_Feeding Rate	Cassette, 2nd Feeder	1/1000	
		ADF	1/500	
	Printing Skew	Top	1.5/177.8mm (1st Tray) 2.0/177.8 (2nd Tray)	
		Side	2/243.5mm (1st Tray) 2.5/243.5mm (2nd Tray)	
	Copy Skew	Top	2.5/190mm (1st Tray) 3.0/190mm (2nd Tray)	
		Side	3.5/277mm (1st Tray) 4.0/277mm (2nd Tray)	

Items			SCX-4520	SCX-4720F
Software	Compatibility	DOS	No	
		Win 3.x	No	
		Win 95	No	
		Win 98	Yes	
		Win ME	Yes	
		Win NT 4.0	Yes	
		Win 2000	Yes	
		Win XP	Yes	
		Mac	English only web version	
		Linux	No	
	WHQL	MFP	Yes for 2000 & XP	
	Driver	Printer	GDI, PCL6, PCL5e (Std.), PostScript Level3 (Std.)	
		TWAIN	Yes	
		WIA	Yes	
		RCP	Yes	
		PC-FAX	Yes (through PC modem and Fax S/W)	
Consumables	Type		One Piece Type	
	How to install		Front door open and front loading	
	Toner	Life	Initial 3Kpages (5% ISO Test Pattern) running Standard 3Kpages High yield : 5K pages	
		Level Sensor	No	
	Toner Count		Yes (Dot Counter)	

*MEMO*

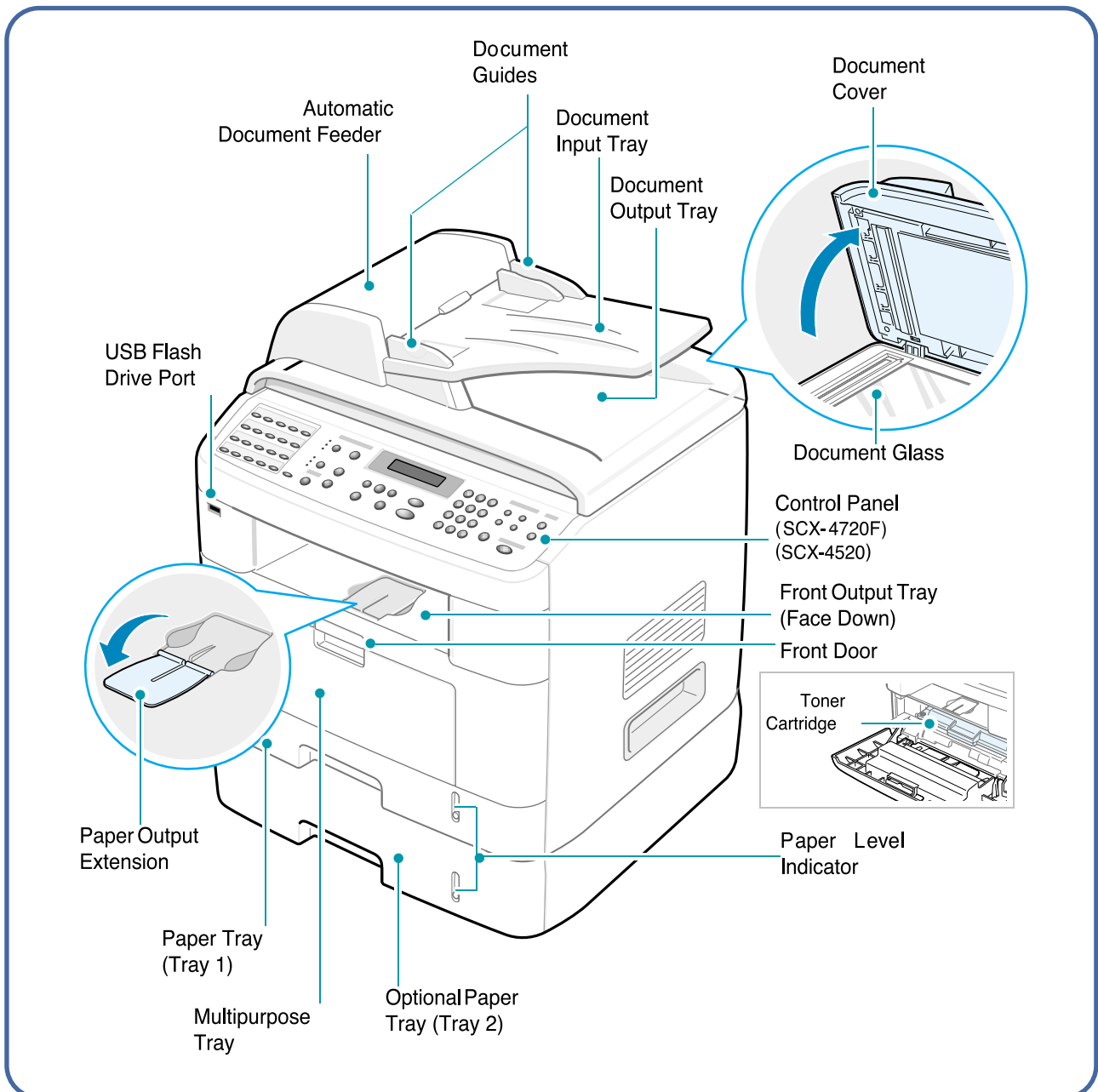


## 4. Summary of Product

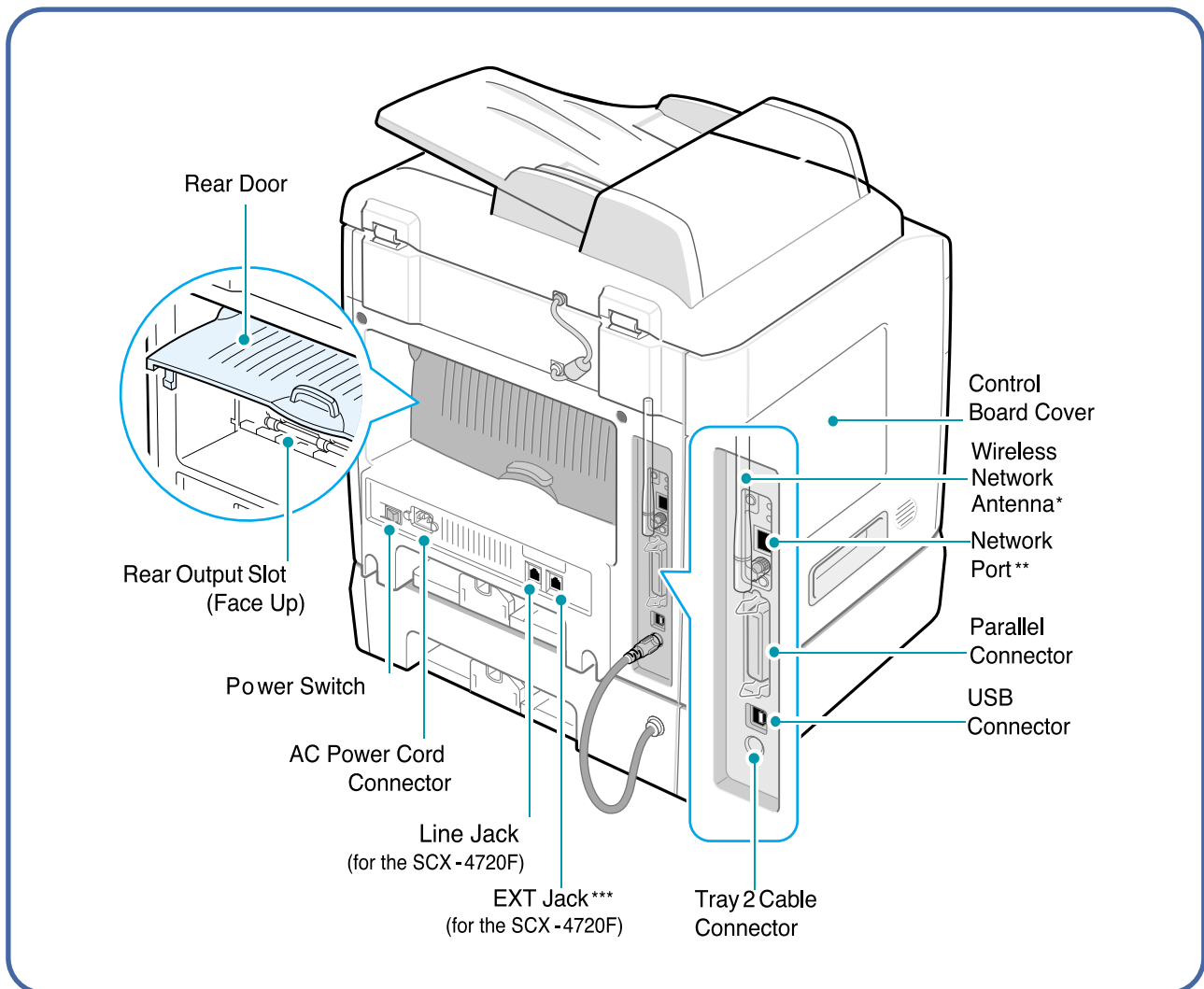
This chapter describes the functions and operating principal of the main components.

### 4.1 Printer Components

#### 4.1.1 Front View



## 4.1.2 Rear View

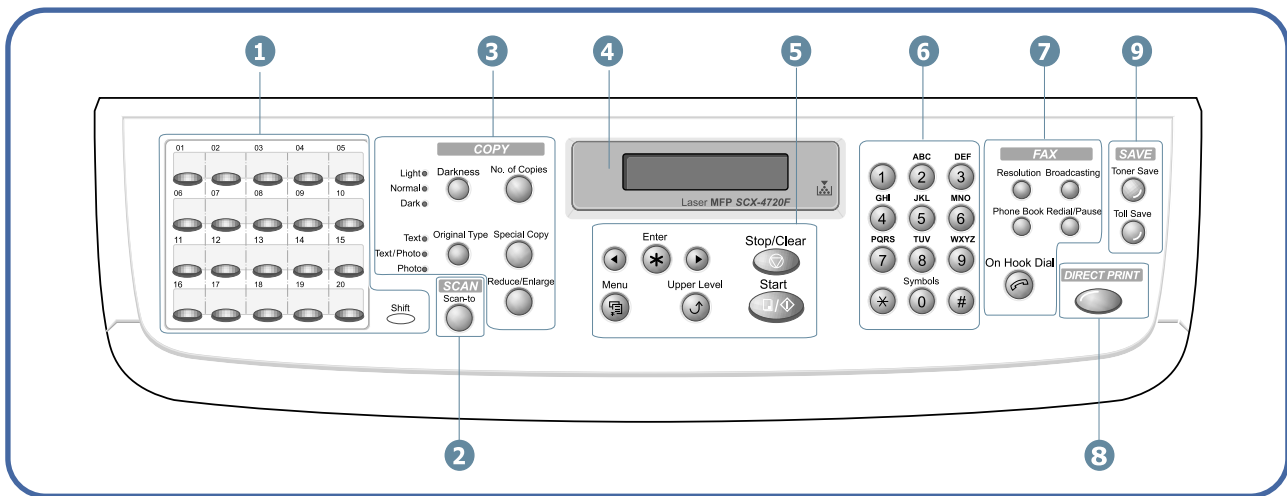


\* This wireless network antenna is not supplied with the machine. It is an option that must be purchased and installed separately. (Option Function)















\*\* The network port is not fitted as standard on the machine. You can purchase an optional Network Card and install it separately.

\*\*\* If your country has a different telephone connection system, this socket may be blocked.

### 4.1.3 Control Panel (SCX-4720F)

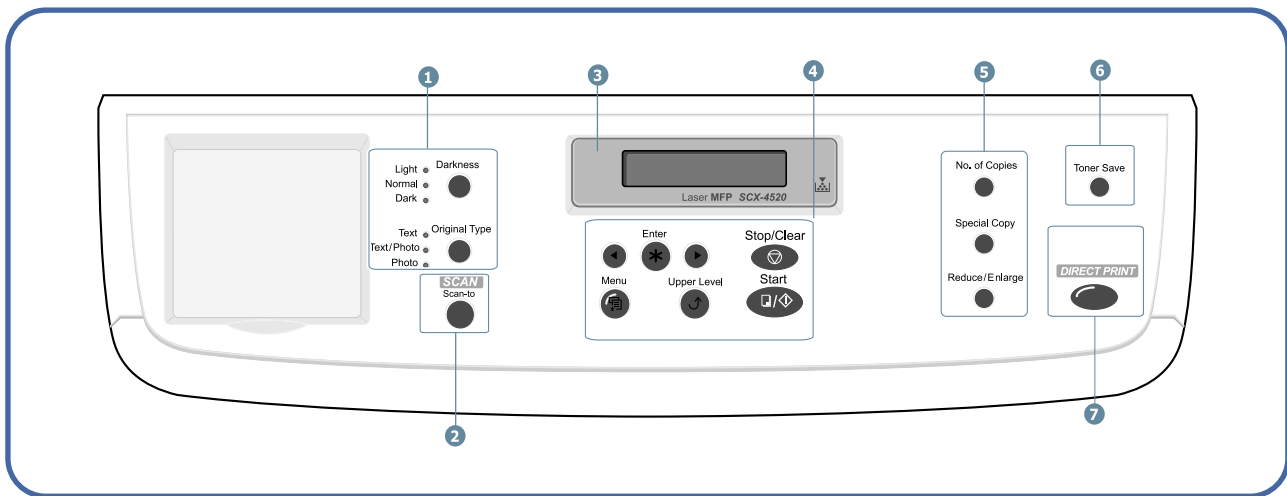


1		Allows you to store frequently-dialed fax numbers and dial them with the touch of a few buttons.
		Allows you to shift the one-touch buttons to the numbers 21 through 40.
2 S C A N		Allows you to access a list of your PC software programs that an image can be scanned to. You must create the scan list using the Samsung software (Printer Setting Utility) provided with this machine. Also allows you to scan and save documents in a USB flash drive, and manage it when it is inserted into the USB port of your machine. See User Guide Chapter 10, Installing a USB Flash Drive.
3 C O P Y		Adjusts the brightness of the documents for the current copy job.
		Selects the document type for the current copy job.
		Selects the number of copies.
		Allows you to use special copy features, such as Clone, Collation, Auto Fit, 2Sides on 1pg, 2/4 Up (multiple pages on a sheet), and Poster copying.
		Makes a copy smaller or larger than the original.
4		Displays the current status and prompts during an operation.
		Turns on when the toner cartridge is empty.
5		Uses to scroll through the available options for the selected menu item.








5		Confirms the selection on the display.
		Enters Menu mode and scrolls through the menus available.
		Sends you back to the upper menu level.
		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.
		Starts a job.
6		Dials a number or enters alphanumeric characters.
7 F A X		Adjusts the resolution of the documents for the current fax job.
		Allows you to send a fax to multiple destinations.
		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.
		In Stand by mode, redials the last number or in Edit mode, inserts a pause into a fax number .
		Engages the telephone line.
8		Allows you to directly print files stored on a USB flash drive when it is inserted into the USB port in the front of your machine.
9 S A V E		Allows you to save on toner by using less toner to print a document.
		Allows you to save on call costs by sending a fax at a preset toll-saving time. Using this feature, you can take advantage of lower long distance rates at night, for example.



## Control Panel (SCX-4520)



1		Adjusts the brightness of the documents for the current copy job.
		Selects the document type for the current copy job.
2 S C A N		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 Setting Utility) provided with this machine. Also allows you to scan and save documents in a USB flash drive, and manage it when it is inserted into the USB port of your machine. See User Guide Chapter 10, Installing a USB Flash Drive.
3		Displays the current status and prompts during an operation.
		Turns on when the toner cartridge is empty.
4		Uses to scroll through the available options for the selected menu item.
		Confirms the selection on the display.
		Enters Menu mode and scrolls through the menus available.
		Sends you back to the upper menu level.

4	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.
	Start 	Starts a job.
5	No. of Copies 	Selects the number of copies.
	Special Copy 	Allows you to use special copy features, such as Clone, Collation, Auto Fit, 2Sides on 1pg, 2/4 Up (multiple pages on a sheet), and Poster copying.
	Reduce/Enlarge 	Makes a copy smaller or larger than the original.
6	Toner Save 	Allows you to save on toner by using less toner to print a document.
7	DIRECT PRINT 	Allows you to directly print files stored on a USB flash drive when it is inserted into the USB port in front of your machine.

## 4.2 System Layout

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The SCX-4720F/4520 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 composed of 2 CPU and 1 Board. Scanner part is composed of ADF and Platen and is connected with Main by Harness.

### 4.2.1 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: Universal Cassette Type
- Feeding Standard: Center Loading
- Feeding Capacity: Cassette-250 sheets (75g/m<sup>2</sup>, 20lb paper standard)  
Manual 1 sheet (Paper, OHP, Envelop, etc.)
- Paper detecting sensor: Photo sensor
- Paper size sensor: None

### 4.2.2 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 60,000 sheets (at 15~30°C)

### 4.2.3 Driver Ass'y

---

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

### 4.2.4 Fixing Part(Fuser)

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- 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.

#### 4.2.4.1 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.

#### 4.2.4.2 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.

#### 4.2.4.3 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.

#### 4.2.4.4 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.

#### 4.2.4.5 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.

### 4.2.5 Scanner

This image is read using a photosensitive sensor. It consists of a CCD module, Connection board, ADF board, AFE (Analog Front End), Image Processor (Located in CPU), platen glass and ADF mechanism.

#### • CCD Module Specification

1. Resolution: 600dpi/A4
2. Maximum scan wide: 8.5"
3. Color filter: Red, Green, Blue
4. Output channel: 3 channels (R, G, B)
5. Effective pixel: 5,400 pixel \*3
6. Voltage: 24V & 5V
7. Pre-heating time: Maximum 30 seconds (70% of lighting output reached)
8. The life span of a lamp: 30,000 hours (25°C)

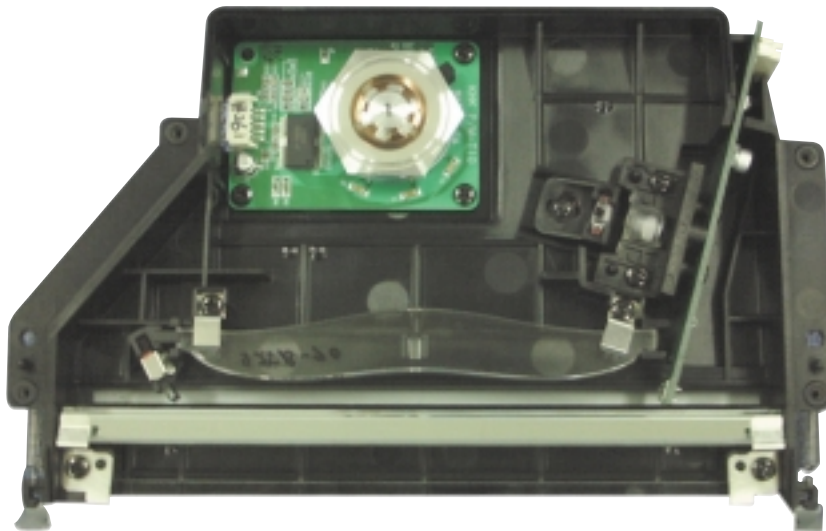
#### • Image Processor Specification

1. Operating frequency: 66MHz
2. Image sensor interface: 200/300/600 dpi CIS or CCD
3. Line time: Copy, FAX, Binary (Lineart, Halftone) PC Scan: 1.5ms/Line Color PC Scan (Grey, 256 Color, True Color): 4.5ms/Line
4. A/D conversion: 10bit conversion

## 4.2.6 LSU (Laser Scanner Unit)

This is the core of the laser printer. It converts the video data received from the computer into an electrostatic latent image on the surface of the OPC drum. This is achieved by controlling the laser beam and exposing the surface of the OPC drum to the laser light. A rotating polygon mirror reflects the laser light onto the OPC and each side of the mirror is one scan line. The OPC drum turns as the paper feeds to scan the image down the page.

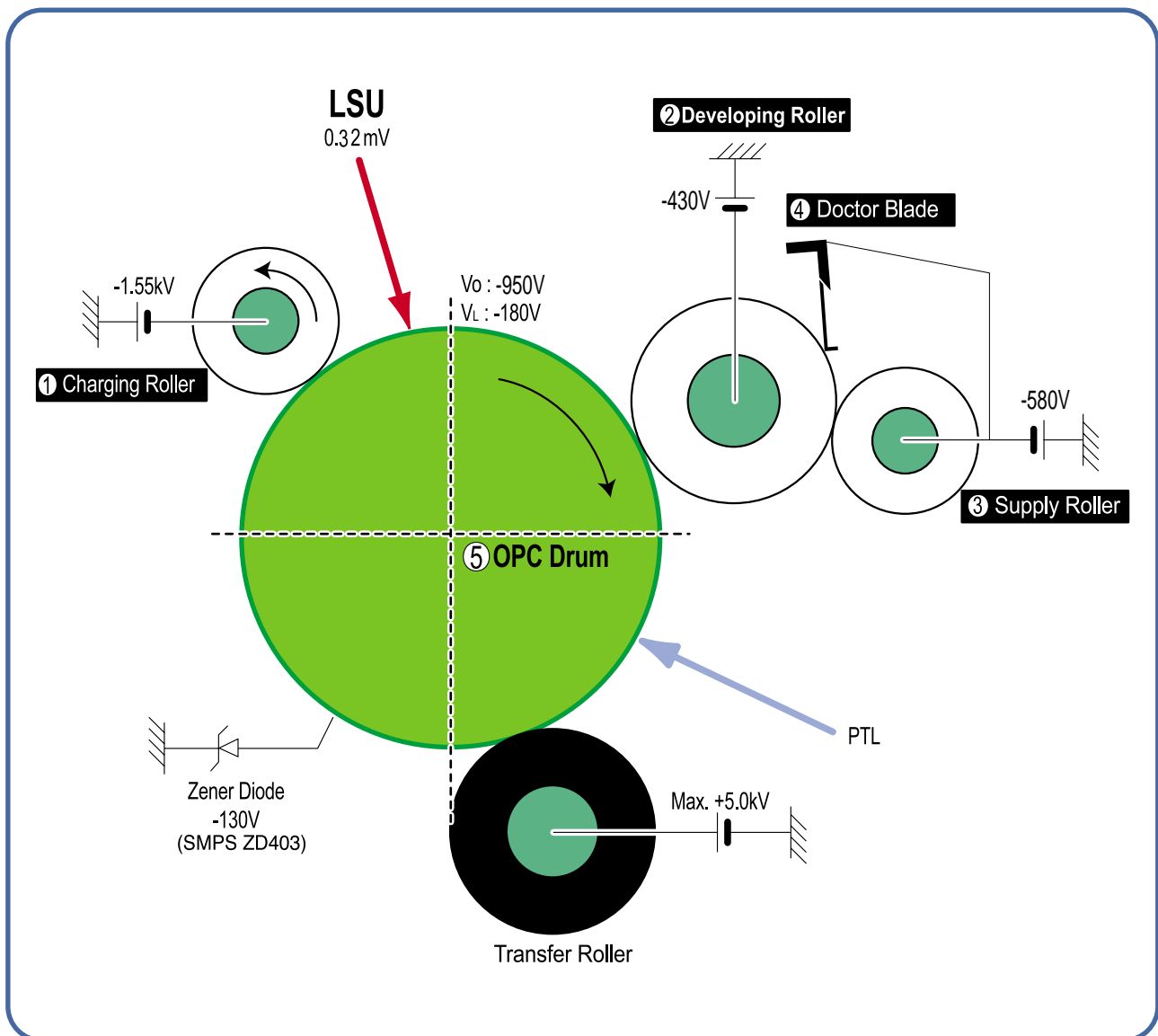
The /HSYNC signal is created when the laser beam from LSU reaches the end of the polygon mirror and this signal is sent to the controller. The controller detects the /HSYNC signal to adjust the vertical line of the image on paper. In other words after the /HSYNC signal is detected the image data is sent to the LSU to adjust the left margin on the paper.



## 4.2.7 Toner Cartridge

The toner cartridge is an integral unit containing the OPC unit and toner unit. The OPC unit consists of the OPC drum and charging roller, and the toner cartridge unit consists of the toner, supply roller, developing roller, and blade (Doctor blade)

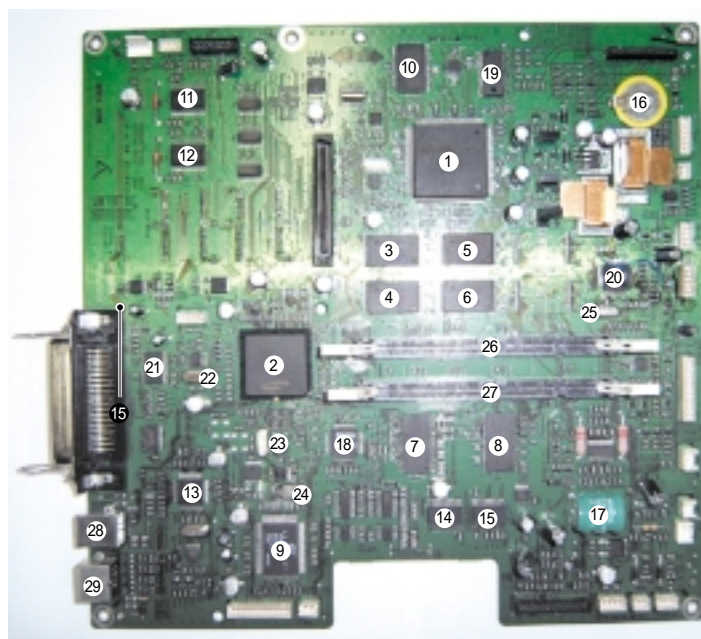
- Developing Method: Non magnetic 1 element contacting method
- Toner: Non magnetic 1 element shatter type toner
- The life span of toner: 3,000 sheets (IDC Pattern/A4 standard)
- Toner remaining amount detecting sensor: Yes
- OPC Cleaning: Electrostatic process
- Management of waste toner: Collect the toner using a Cleaning Blade
- OPC Drum protecting Shutter: Yes
- Classifying device for toner cartridge: ID is classified by interruption of the frame channel



## 4.3 Main PBA

The Engine Board and Controller Board have been integrated into a single PBA. This consists of the CPU, printer scanner and line control functions. The CPU functions as the bus controller, I/O handler, motor driver and PC inter-face. The main board sends the Current Image Video data to the LSU and manages the Electrophotographic printing process. Circuits on the PBA drive include the main motor (paper feed, cartridge, fuser), clutch driver, pre-transfer lamp driver, heat-lamp driver, CCD driver, scan motor driver, modem and fan driver.

The signals from the paper feed jam sensor and paper empty sensor are inputted to the main board from the power supply PBA..



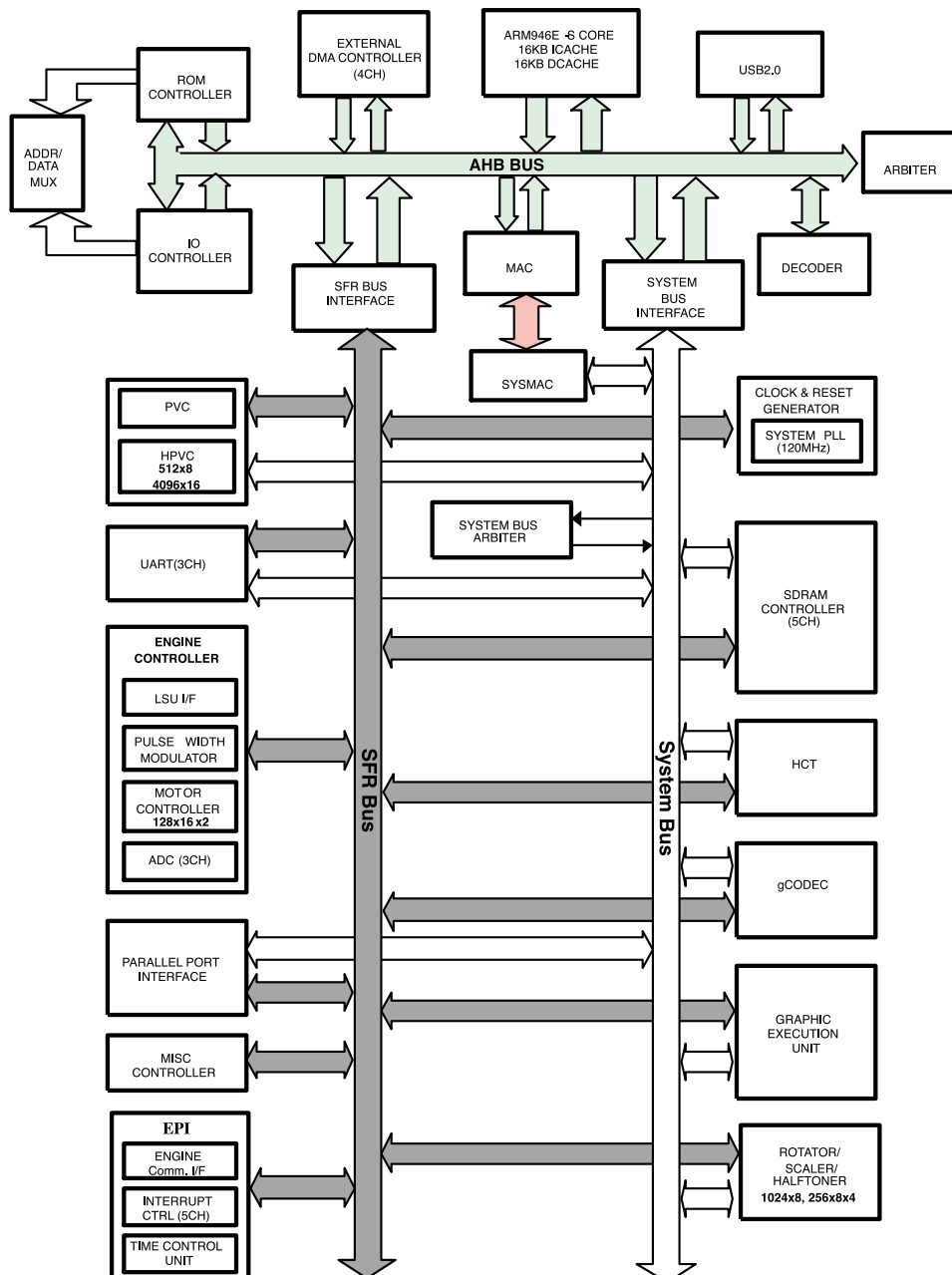
1	IMAGE PROCESSOR(CIP4E) U10	11	MOTOR DRIVER(TEA3718S) U5	21	LINE TRANSCEIVER (74LVX161284) U36
2	PROCESSOR ASIC(SPGPm) U35	12	MOTOR DRIVER(TEA3718S) U9	22	VEDIC X-TAL(19.6MHz) OSC3
3	FLASH MEMORY CODE- HIGH(29LV160DB) U23	13	USB 2.0(NET 2272) U50	23	CPU X- TAL(12MHz) OSC8
4	FLASH MEMORY CODE- LOW(29LV160DB) U30	14	CMOS- LOGIC(74HCT273) U58	24	MODEM X- TAL(28.224MHz) OSC6
5	FLASH MEMORY PCL6- HIGH(29LV160DB) U24	15	CMOS- LOGIC(74HCT273) U59	25	USB HOST X- TAL(6MHz) OSC9
6	FLASH MEMORY PCL6- LOW(29LV160DB) U31	16	PANASONIC(3V) BAT 2	26	PS3 DIMM CN10
7	SDRAM(K4S281632E) U45	17	VARTA(3.6V) BAT1	27	RAM DIMM CN12
8	SDRAM(K4S281632E) U46	18	FPGA(EX64- FTQ64) U44	28	JACK USB J1
9	MODEM(FM336) U62	19	A/D CONVERTER(AFE- CIP4E) U3	29	JACK DIN CN17
10	SRAM(K6R1016VID) U2	20	USB HOST(TDOTG242) U148	30	

### 4.3.1 ASIC

Use 32Bit RISC Processor, ARM946ES, which is exclusive controller to execute Printer & FAX Function and to execute operation block by flash memory within system program, and to control whole system.

#### • Main function block

- Completely Integrated System for Embedded Applications,
- 32 Bit Risc Architecture, Efficient and Powerful ARM9 Core.
- LSU Interface Module for Interfacing PVC or HPVC with LSU
- 2 Channel General Purpose DMA Controller for High Speed I/O
- Dual Memory Bus Architecture
- Operation Frequency : AHB Bus: 60MHz, Internal System Bus: 120MHz
- Operation Voltage : 3.3V
- POWER ON RESET TIME : Below 5.6ms





### 4.3.2 Memory

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The SCX-4720F/4520 has Flash ROM and DRAM memory units. There are 2 SODIMM sockets to enable extra DRAM or FlashROM (Postscript Option) to be fitted.

On Domestic 9Korean) models additional Mask ROM is also fitted: to store domestic Fonts such as PCL Font and KS5895, KSSM etc.

- Capacity : 32MByte
- Access Time : 100nsec

### 4.3.3 Flash Memory

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Record System Program, and download System Program by PC INTERFACE.  
FAX for Journal List, and Memory for One Touch Dial, Speed Dial List.

- size : 4M Byte
- Access Time : 70 nsec

### 4.3.4 SDRAM

---

SDRAM is used as Swath Buffer in Printing, Scan Buffer in Scanning, ECM Buffer in FAX receiving, and System Working Memory Area

- size 32MB : 32Mbyte(Basic).
- Max Frequency : 133MHz
- store Fax Receive Memory Data by using Battery

### 4.3.5 Battery Backup (SCX-4720F only)

---

Backup power is provided by a 3.6V rechargeable Lithium battery. It provides power to the SD-RAM to retain any faxes in memory when main power is lost. Typically backup power will last up to 43 hours. The battery requires 48 hours to charge from empty.

### 4.3.6 Sensor input circuit

#### 1) Paper Empty Sensor

The Paper Empty sensor (Photo Interrupter) on the SMPS/HVPS PBA (CON2-2) is monitored by the CPU on signal (nP\_EMPTY). When the cassette is empty the printer displays a message on the LCD panel.

#### 2) MP Sensing

Presence of paper in the MP tray is detected by operation of the MP Sensor (Photo Interrupter) on the SMPS/HVPS PBA (CON2-14). The CPU monitors signal(MP\_EMPTY) to recognize paper in the MP, and paper is fed from MP if there is paper present.

#### 3) Paper Feed Sensor, (Toner Cartridge Sensor)

When paper passes the actuator on the feed sensor (CON2-1), it is detected by the Photo interrupter. signal(nP\_FEED) monitored by the CPU and this signal starts the process of creating the image after certain delay time. If the feed sensor is not detected within 1 sec. after paper is fed, a paper Jam0 occurs. (Displayed on the LCD panel).

When a toner cartridge is inserted it also operates the Paper Feed sensor. A message is displayed on the LCD if no cartridge is detected.

#### 4) Paper Exit Sensor

This detects that paper exits cleanly from the Machine using an exit sensor (CON2-24) on the engine board and actuator on the frame. The monitors signal (P\_EXIT) and detects the on/off time of the exit sensor and if jam status is detected then JAM2 is displayed on the LCD panel.

#### 5) Cover Open Sensor

The Cover open sensor actuator is located on the front cover and the sensor is in the main frame. When the front cover is opened the +24V supplies to the DC fan, solenoid, main motor, polygon motor part of LSU, HVPS that are cut off. The CPU monitors signal (COVER\_OPEN) to recognize when the cover is opened.

#### 6) DC FAN / SOLENOID Driving

It is driven by a transistor and controlled by signal (FAN (SMPS, CON2-23)) bit of the CPU.

When it is high the fan is activated by turning on the TR, and it is off when the sleep mode is selected.

There are two solenoids and these are driven by the Paper Pick-up and MP signals. The drive time is 300ms. The diode protects the driving TR from the Back-EMF pulse which is generated when the solenoid is de-energized.

#### 7) Motor Driving

The motor driving circuit is activated when the Driver IC is enabled. An A3977 (Motor driver IC) is used in this case. The resistance Rs value of sensing and the voltage value of the V reference can be changed by the motor driving voltage value.

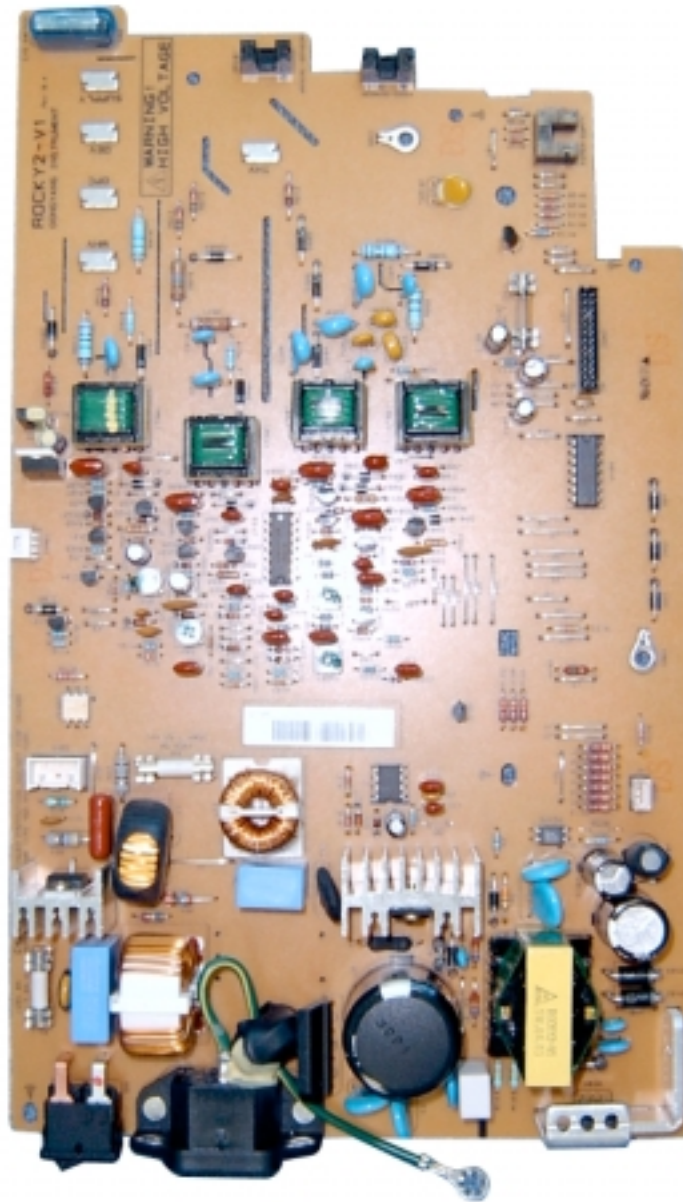
## 4.4 SMPS & HVPS

The SMPS and HVPS are on one integrated board.

The SMPS supplies the DC power to the system. It takes either 110V or 220V and outputs the +5V, +12V and +24V supplies to the main and other PBAs.

The HVPS creates the high voltage of THV/MHV/Supply/Dev and supplies it to the toner cartridge. The CPU is used to modify some of these voltage settings to provide the ideal voltages to create the image.

The HVPS part uses the 24V and outputs the high voltage for THV/MHV/BIAS and the outputted high voltage is supplied to the toner, OPC cartridge and transfer roller.



## 4.4.1 HVPS(High Voltage Power Supply)

### 1) Transfer High Voltage (THV+)

- Function : It is this voltage that transfers toner from the OPC Drum to the paper.
- Output voltage : +1300V DC $\pm$ 20V
- Error : IF THV (+) is not present, low density printing occurs due to toner on the OPC Drum not being transferred to the paper. It is possible that waste toner over-flow can occur if this condition persists. Ghost images may appear which repeat at 76mm intervals.

### 2) Charge Voltage (MHV)

- Function : It is this voltage that charges the surface of the OPC to -900V ~ -1000V.
- Output voltage : -1550V DC  $\pm$  50V
- Error : IF MHV is not present toner then since the OPC drum surface has no charge toner is attracted to the whole OPC surface. A black page is printed out when this happens.

### 3)Cleaning Voltage (THV-)

- Function : It removes toner contamination from the rear side of the paper by sending (-) polarity to the transfer roller forcing toner to transfer back to the to OPC drum.
- Output Voltage : -1200V, +300V/-150V
- Error : Smudges and toner contamination on the reverse side of the printed page.

### 4) Developing Voltage (DEV)

- Function: It is this voltage that develops toner with on to the section of the OPC drum surface exposed by the LSU (Laser Scanning Unit).
- \* When printing the exposed voltage on the OPC is -180V, unexposed is -900~-1000V, and the exposing voltage on the DEV is -430V. Therefore toner with (-) polarity is developed onto an exposed section of the OPC.
- Output voltage: -430V DC  $\pm$  20V
- Error: a) If DEV is GND, print density gets extremely low.  
b) When DEV is floating due to poor connection between the frame and cartridge contacts etc., print density gets extremely high.

### 5) Supply Voltage (SUP)

- Function: It is this voltage that supplies toner to the developing roller.
- Output voltage: : -580V DC  $\pm$  50V (Use ZENER, DEV Gear)
- Error: a) When SUP is GND print density gets extremely low.  
b) If SUP is floating due to poor connection between the frame and cartridge contacts etc. density gets extremely low such that it is hard to see toner with the eyes

### 6) OPC Ground ZENER Voltage

- Function: It is this voltage that prevents image contamination under low temperature and low humidity environment conditions.
- When a set prints without an output voltage, -130V DC  $\pm$  15V is maintained on OPC ground. (-103V ZENER diode is connected to OPC ground)
- Error type: a) When the ZENER diode is - 0V there is no serious image problem in general environment, but in low temperature and low humidity environments it is possible that contamination can occur on the entire image  
b) When the ZENER diode is disconnected a blank page is printed out. (It is the same when a ZENER diode is disconnected from OPC ground.)

## 4.4.2 SMPS (Switching Mode Power Supply)

This is the power source for the whole system. It is an independent module so that it is possible to use it for common use. It is mounted at the bottom of the set.

It consists of the SMPS section, which supplies the DC power to drive the system, and the AC heater control part, which supplies the power to the fuser. The SMPS has four output channels (+5V, +24V and 24VS).

There are three kinds of power, 120V exclusive (America), 220V exclusive (Europe), and 220V for China (nations with unstable power supply).

### 1) AC Input

- > Input Rated Voltage : AC 220V ~ 240V AC 120V / AC 220V(EXP version)
- > Input Voltage fluctuating range : AC 198V ~ 264V AC 90V ~ 135V / AC 198V ~ 264V
- > Rated Frequency : 50/60 Hz
- > Frequency Fluctuating range : 47 ~ 63 Hz
- > Input Current : Under 5.0Arms / 2.5Arms (When the fuser lamp is off and input / output voltages are in range)

### 2) Rated Output Power

NO	ITEM	CH2	CH3	Remark
1	CHANNEL NAME	+5V	+24.0V	
2	CONNECTOR PIN	CON 23 5V PIN: 3, 4 GND PIN: 5, 6, 7	CON 23 24V PIN:11,12,13 GND PIN:9,10, 18	
3	Rated Output	+5V & 5% (4.75 to 5.25V)	+24V & 10% (21.6 to 26.4V)	
4	Max. Output Current	0.14 A	2.0 A	
5	Peak Loading Current	0.14 A	2.5 A	1ms
6	RIPPLE NOISE Voltage	100mVp-p	Under 500mVp-p	
7	Maximum Output Power	0.35W	48W	
8	Peak Output Power	0.7W	60W	1ms
9	Protection for short circuit and current overload		-	

### 3) Power Consumption

NO	ITEM	CH2 (+5V)	CH3 (+24V)	Remark
1	Stand-By	0.07A	0.4 A	AVG:55 Wh
2	PRINTING	0.14A	2.0 A	AVG 350 Wh
3	Sleep-Mode	0.01A	0.4A	AVG : 20 Wh

4) Length of Power Cord : 1830 ± 50mm

5) Power Switch : Fitted

**6) Feature**

- Summary of Product
- Insulation resistance : over 50M  $\Omega$  (at DC500V)
- Insulating retest pressure : Must be no problem within 1min. (at 1500Vzc, 10mA)
- Leakage current : under 3.5mA
- Operating current : under 40A peak (at 25°C, Cold start) Under 60A peak (in other conditions)
- Rise Time : Within 2Sec
- Fall Time : Over 20ms
- Surge : Ring Wave 6KV-500A (Normal, Common)

**7) Environment Condition**

- Operating temperature range : 0°C ~ 40°C
- Storage temperature range : -25°C ~ 85°C
- Storage humidity range : 30% ~ 90% RH
- Operating atmospheric pressure range : 1

**8) EMI Requirement : CISPR ,FCC, CE, MIC, C-Tick,****9) Safety Requirement**

- IEC950, C-UL, TUV,Semko,iK,CB, CCC, EPA,

**4.4.3 Fuser AC Power Control**

The Fuser (HEAT LAMP) is heated using AC power. The AC power is controlled by a Triac (THY1), a semiconductor switch. 'On/Off control' is achieved when the gate of the Triac is turned on/off by a Photo triac (PC1), this is an insulting part.

In the other words the AC control part is a passive circuit. It turns the heat lamp on/off by taking a signal from the engine control section. When the 'HEATER ON' signal is activated by the engine the LED of PC1 (Photo Triac) flashes. The flashing light causes the Triac (PC1) to switch and a voltage is supplied to the gate of Triac THY1. As a result AC current flows in the heat lamp, and heat is produced.

On the other hand, when the signal is off, PC1 is off, the voltage is cut off at the gate of Triac THY1, this Triac is therefore off, and thus the heat lamp is turned off.

**1) Triac (THY1) feature**

- 12A, 600V SWITCHING

**2) Phototriac Coupler (PC3)**

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

## 4.5 Engine F/W

### 4.5.1 Feeding

If feeding from the cassette the drive of the pickup roller is controlled by controlling the pick-up solenoid. The on/off of the solenoid is controlled by controlling the general output port or the external output port. If feeding from the manual feeder the set decides to feed the paper according to the operation of the manual sensor, and by driving the main motor, insert the paper in front of the feed sensor. When paper moves the occurrence of a paper jam is judged as below.

#### 4.5.1.1 Jam 0 – Jam in Feed area

- After a page was picked up, paper did not enter the unit due to a paper misfeed.
- After a page was picked up, paper entered but it did not reach the feed sensor in certain time due to slip, etc.
- After a page was picked up, if the feed sensor is not on try to pick up again. After retrying if the feed sensor is still not on after certain time, it is Jam 0.
  - this indicates that the leading edge of the paper doesn't pass the feed sensor within a certain time.
- Even though the paper reaches the feed sensor, the feed sensor does not turn on.
  - this indicates that the leading edge of the paper already passed the feed sensor or that the sensor is faulty.

#### 4.5.1.2 Jam 1 – Jam inside the print engine

- After the leading edge of the paper passes the feed sensor, the trailing edge of the paper does not pass the feed sensor within certain time. (During this time the feed sensor cannot be Off)
- After the leading edge of the paper passes the feed sensor, the paper does not reach the exit sensor within certain time. (The exit sensor cannot be On during this time)
  - There is already paper between the feed sensor and the exit sensor.

#### 4.5.1.3 Jam 2 – Jam in the Exit area

- After the trailing edge of the paper passes the feed sensor the trailing edge of the paper does not pass the exit sensor within certain time.

### 4.5.2 Drive

The main motor drives the paper feed, developing unit and the Fuser. It is driven by software which controls the acceleration, constant speed and deceleration profiles. The Motor is managed with an A3977 driver IC and controlled by step and enable signals from the CPU.

### 4.5.3 Transfer

The charging voltage, developing voltage and the transfer voltage are controlled by PWM (Pulse Width Modulation). Each output voltage is changeable according to the PWM duty cycle. The transfer voltage used when the paper passes the transfer roller is decided by environment recognition. The resistance value of the transfer roller changes due to the surrounding environment in the room or within the set, this change in resistance in turn changes the value of the voltage due to loading. This voltage is fed back into the set through the A/D converter. Based on this fed back value the PWM cycle is changed to maintain the required transfer voltage.

## 4.5.4 Fusing

The temperature of the heat roller's surface is detected according to the resistance value of the thermistor. The thermistor resistance is measured using the A/D converter and thus the CPU can determine the temperature of the heat roller. The AC power is controlled by comparing the target temperature to the value from the thermistor. If the value from the thermistor is out of the controlling range while controlling the fusing process, the error stated in the table occurs. (For the domestic model, the Q-PID method has been applied.)

### 4.5.4.1 Error Type

Error	Description
Open heat error	When warming up, it has been lower than 68 °C over 25 sec
Lower heat error	<ul style="list-style-type: none"> <li>• Standby: It has been lower than 100°C over 25 sec</li> <li>• Printing:               <ul style="list-style-type: none"> <li>- 2 consecutive pages: it has been lower than 145°C over 5 sec</li> <li>- 3 consecutive page: it has been 40°C lower than the fixed fusing temperature over 4 seconds.</li> </ul> </li> </ul>
Over heat error	It has been higher than 220°C over 3 seconds

## 4.5.5 LSU

The LSU consists of the LD (Laser Diode) and the polygon motor control. When the printing signal occurs, the LD is turned on and the polygon motor is enabled. When the light sensor detects the beam, Hsync occurs. When the polygon motor speed becomes a normal, LReady occurs. If these two conditions are satisfied, the status bit of the LSU controller register becomes 1 and the LSU is judged to be ready. If the two conditions are not satisfied, the error shown in the table below occurs.

Error	Description
Polygon motor error	When the polygon motor's speed doesn't become a normal
Hsync error	The polygon motor's speed is normal, but the Hsync signal is not created.



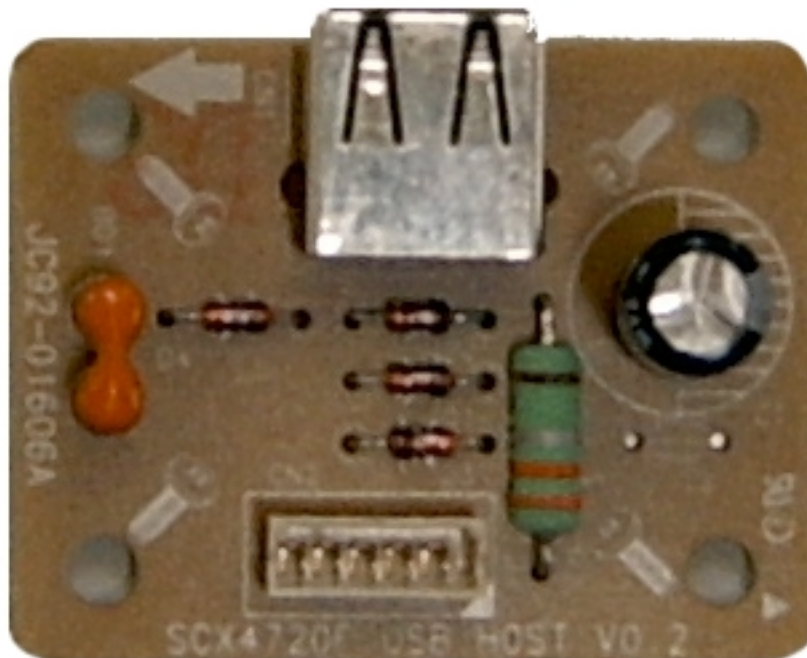
## 4.6 OPE PBA

The OPE board consists of various function keys and an LCD to display set status and operator messages. A MICOM (HOLTEC HT48R50) drives the LEDs and LCD. Communication between the OPE and the CPU on the main board is serial (related signals are /Reset, TXD, and RXD).



## 4.7 USB Host

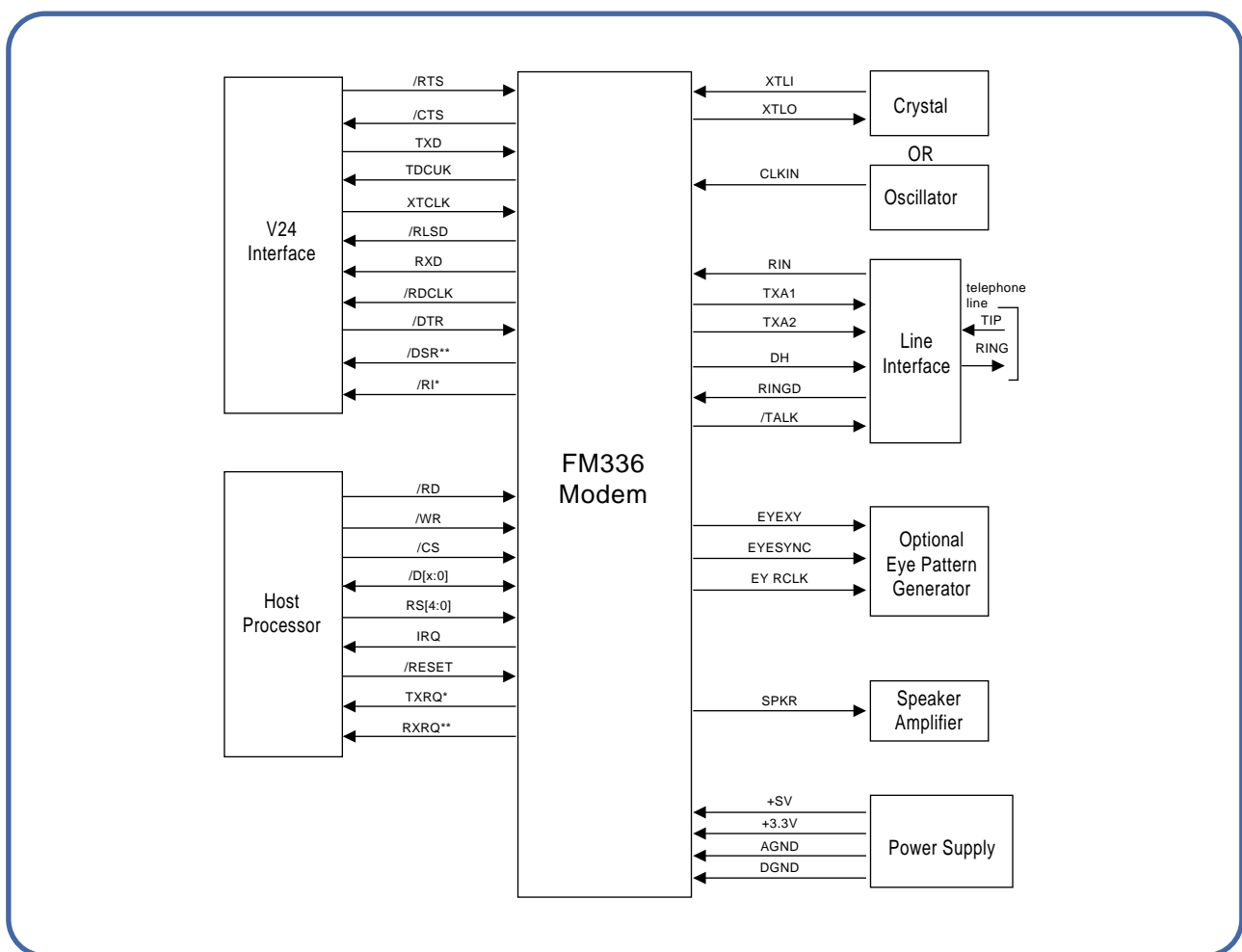
The USB Host PBA provides power to the USB connector to enable a USB Memory drive to be used in conjunction with the USB Direct printing and Scan to USB functions.



## 4.8 Fax Section

### 4.8.1 Modem

- Group3 Facsimile Modem (Entire FM336/314 Family)
- External Handset Support (not implemented on SCX4720F)
- Requires Discrete Line Interface Unit (LIU )
- V.34 Half-Duplex Mode
- V.90 PCM/V.34 Duplex Data Modes

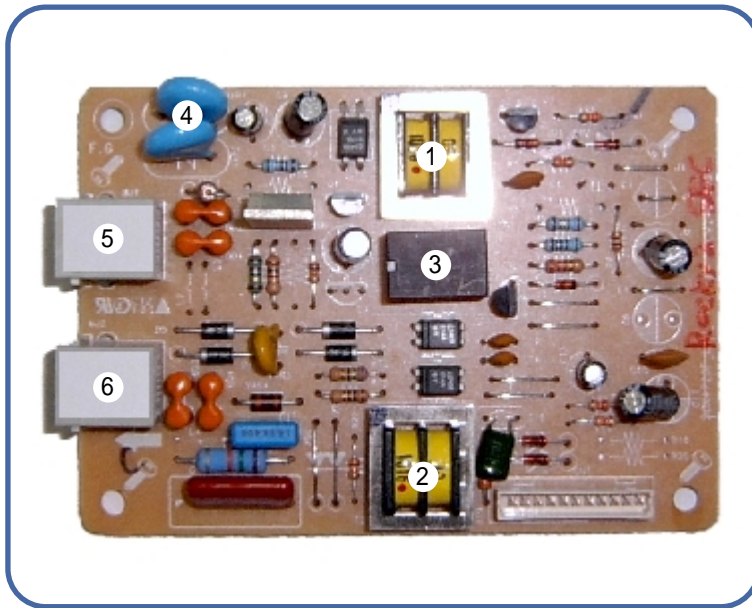


## 4.8.2 LIU PBA

The LIU board is the Line interface unit. It consists of a Tel\_line Interface circuit and Telephone circuit.

The Tel\_Line circuit consists of a matching transfer to conform to the impedance of the receiving telephone line and a circuit to isolate the fax machine from the PSTN, and a surge absorber to protect against lightning strike surges on the incoming line.

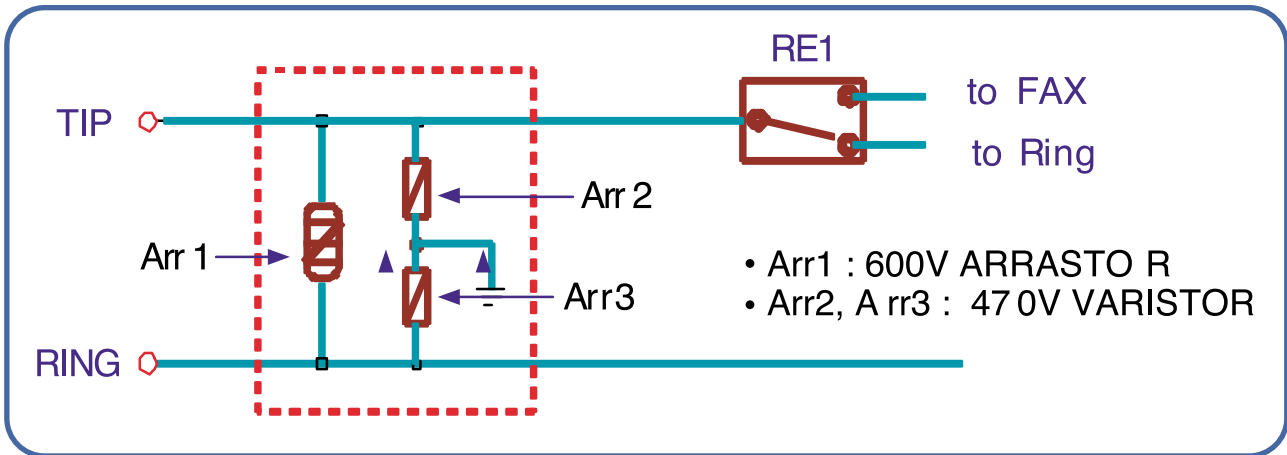
The Telephone circuit is consists of ring detection circuit, speech circuit, external hook detection circuit, and recall circuit.



1	TRANS MATCHING T1
2	TRANS MATCHING T2
3	RELAY RE1
4	VARISTOR VAR1/VAR2
5	JACK MODULAR(TEL) MJ1
6	JACK MODULAR(EXT) MJ2

### 4.8.3 Tel-Line Connection Circuit

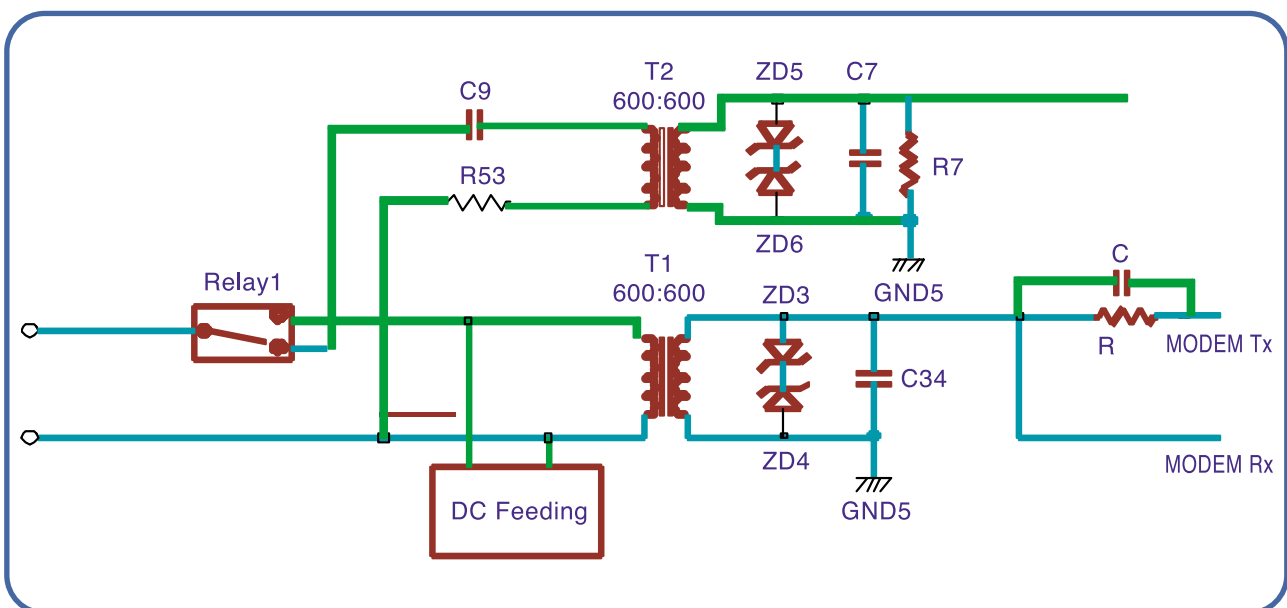
- The Tel-Line Connection Circuit connects the fax machine to the PSTN using Tip and Ring terminals.
- Use Modular Plug : RJ-11C



- Arr1, Arr2 and Arr3 are protection components to prevent damage due to overvoltage surges, e.g. lightning.

### 4.8.4 Transformer Circuit

- The Transformer circuit is a line impedance matching circuit which matches the internal impedance of the fax machine to the external -48Volt DC impedance of the PSTN system.
- The Transformer circuit insulates the fax machine electrically from the PSTN.



### 4.8.5 On Hook State

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- DC10V ~ DC100V, DC Resistance : 5M $\Omega$  and over
- DC150V ~ DC200V, DC Resistance : 30K $\Omega$  and over
- Ring Sensitivity
  - Ring detection voltage : 40Vrms ~ 150Vrms
  - Ring detection frequency : 15.3Hz ~ 68Hz
  - Ring detection current : 20mA ~ 100mA
- Pseudo Ring Sound
  - Ring frequency : 750Hz + 1020Hz
  - Ring Interrupt period : Mark/Space controlled by CPU/Modem

### 4.8.6 Off Hook State

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- DC Resistance
  - DP Dial Mode (DC 30mA) : 50 ~ 220  $\Omega$
  - DTMF Dial Mode (DC 20mA) : 50 ~ 300  $\Omega$
  - DTMF Dialing (DC 20mA) : 50 ~ 540  $\Omega$
- Matching (Input AC Impedance) : 600  $\Omega \pm 30\%$  for 300Hz ~ 3.4KHz
- Minimum Line Current detecting Off Hook : 20mA(Handset Hook Off)  
15mA(external Handset Hook Off)
- Minimum Line Current for DP Dial transmission : 20mA ~ 120mA  
Product Margin : 20mA and over

## 4.8.7 Signal

- Input Signal Level Range : - 0dBm ~ - 48dBm
- DP (Dial Pulse) Dial
  - Make / Brake Ratio : 40 : 60
  - Pulse Speed :  $10 \pm 0.8$  pps, Minimum Pause : above 60 msec
- DTMF Signal
  - Coding Format

L \ H	1209 Hz	1336 Hz	1477 Hz
697 Hz	1	2	3
770 Hz	4	5	6
852 Hz	7	8	9
941 Hz	*	0	#

- Transmission Level

L \ H	Level	Typical
High	- $6 \pm 2$ dBm	- 6.7dBm
Low	- $8 \pm 2$ dBm	- 8.7 dBm
Twist	$\pm 2$ dBm	2.0

*MEMO*



## 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.

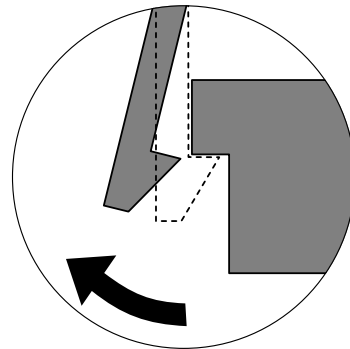
#### **Whenever servicing the machine, you must perform as follows:**

1. Check to verify that documents are not stored in memory.
2. Be sure to remove the toner cartridge before you disassemble any parts.
3. Unplug the power cord.
4. Use a flat and clean surface.
5. Replace only with authorized components.
6. Do not excessive force on components made of plastic, they may break.
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.

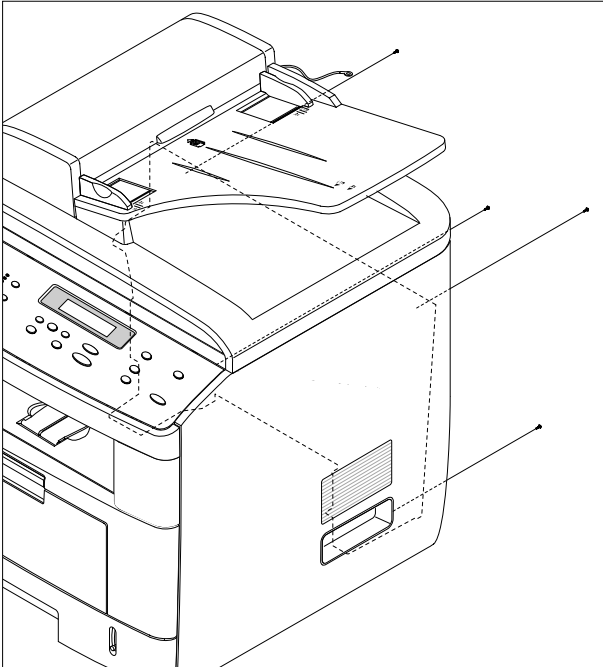
To remove such parts, press the hook end of the latch away from the part to which it is latched.



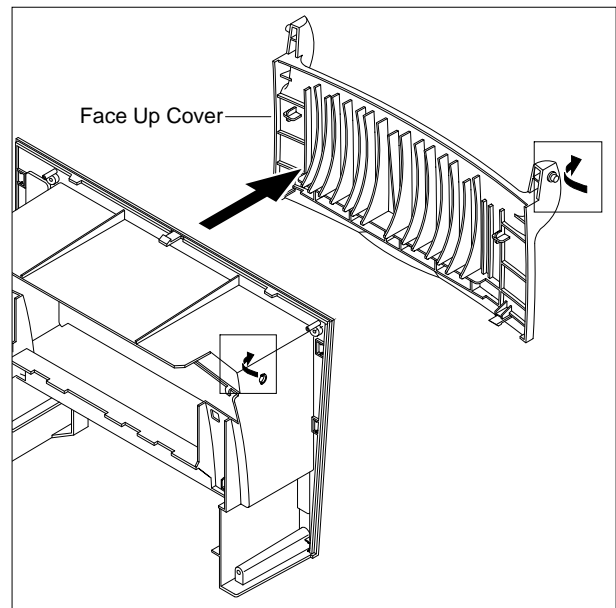


## 5.2 Rear Cover

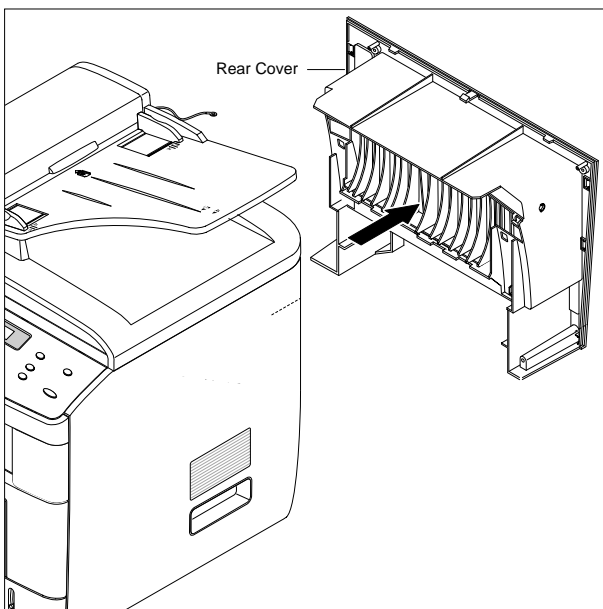
1. Remove the four screws securing the Rear Cover.



3. Unclip the Face Up Cover from the Rear cover, as shown below. Then lift the Face Up Cover out.



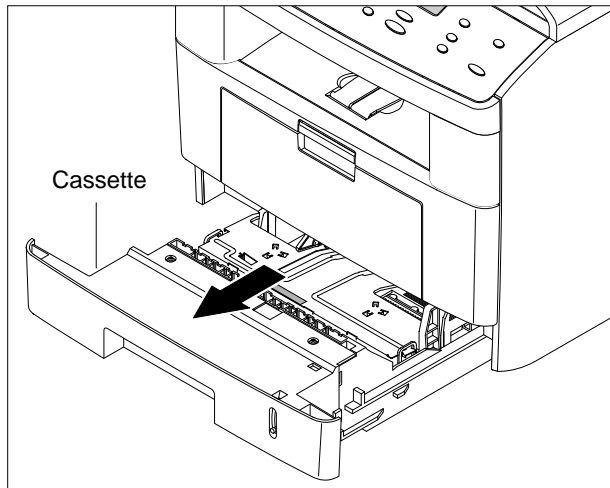
2. Remove the Rear Cover from the Frame Ass'y and Scanner Ass'y.



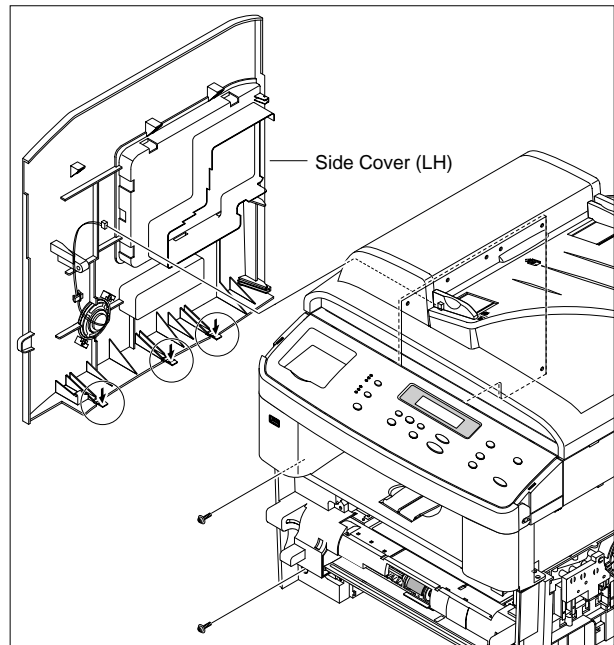
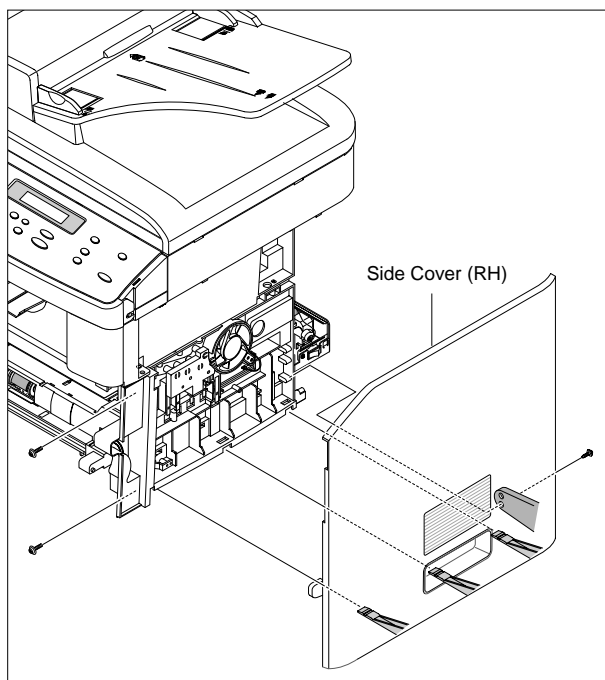
## 5.3 Side Cover (LH, RH)

1. Before you remove the Side Cover (LH, RH), you should remove:
  - Rear Cover (see page 5-2)

2. Take out the Cassette.

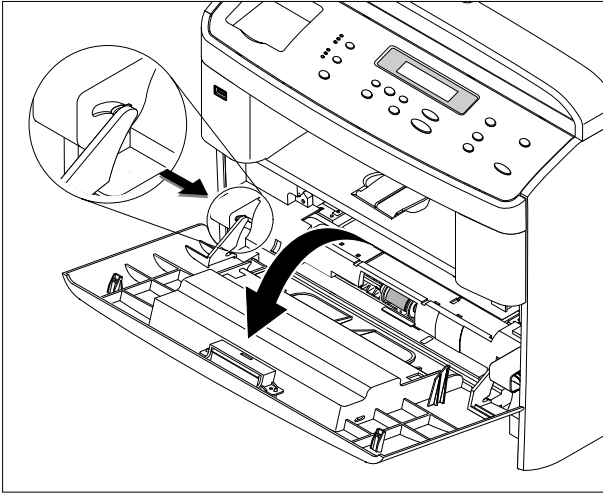


3. Open the front cover and remove 2 screws on the front and 1 screw on the back. Release 3 clips underneath, ease the rear screw bracket over its locating pin and pull the RH side cover to the right, taking care not to damage the clips, to remove it from the Frame Assembly.

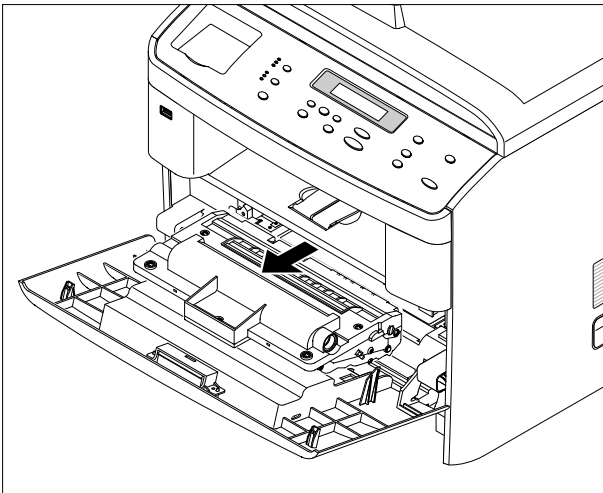


## 5.4 Front Cover

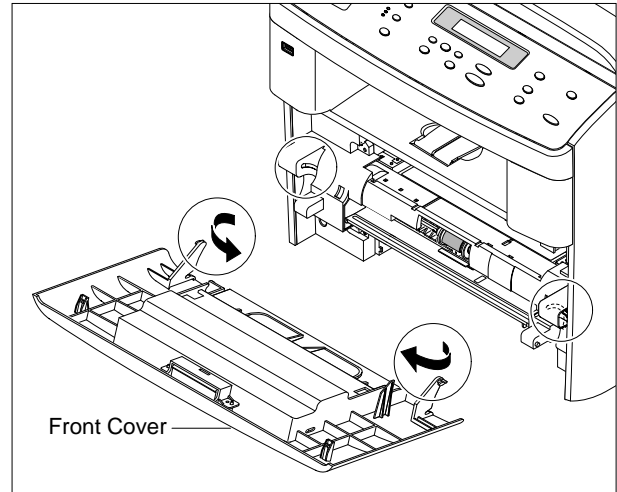
1. Open the Front Cover.



2. Remove the Toner Cartridge.



3. Unclip the Front Cover from the Frame Ass'y. Then remove the Front Cover, as shown below.

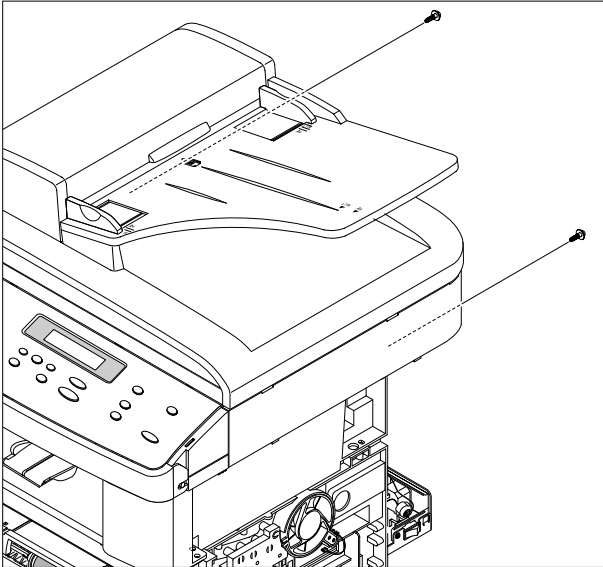


## 5.5 Scanner Ass'y

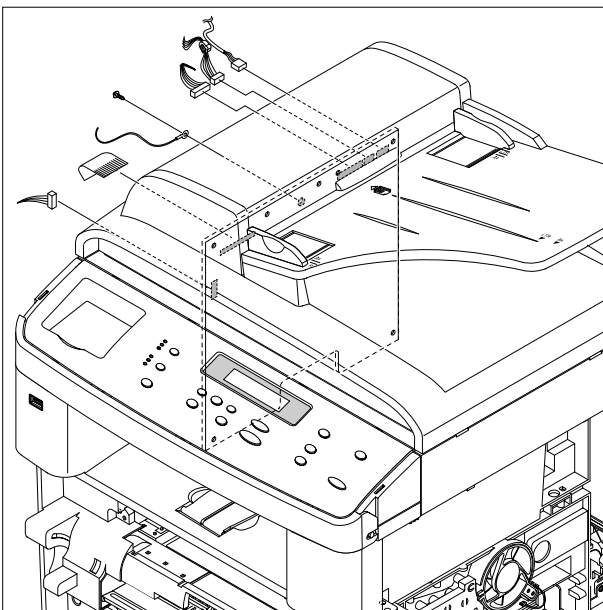
1. Before you remove the Scanner Ass'y, you should remove:

- Rear Cover (see page 5-2)
- Side Cover (LH, RH) (see page 5-3)

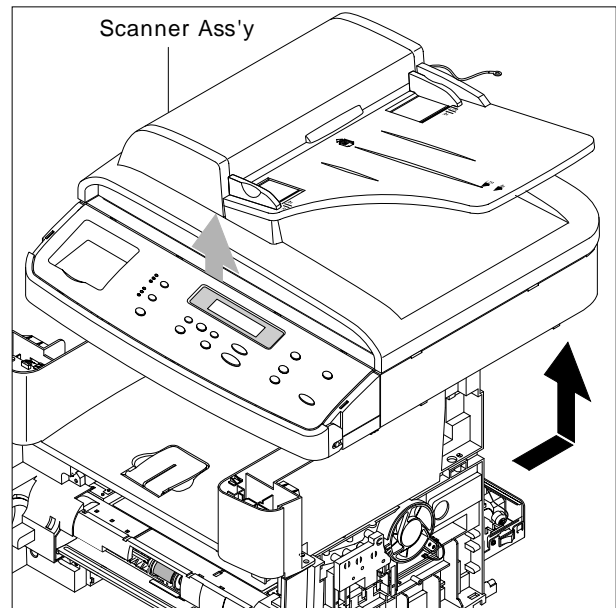
2. Remove the 2 screws securing the Scanner Ass'y, as shown below.



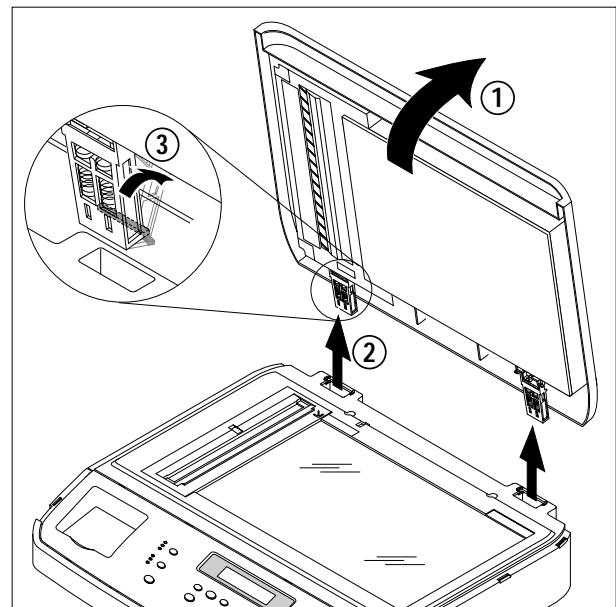
3. Remove the 5 connectors and the ground wire screw from the main PBA as shown below.



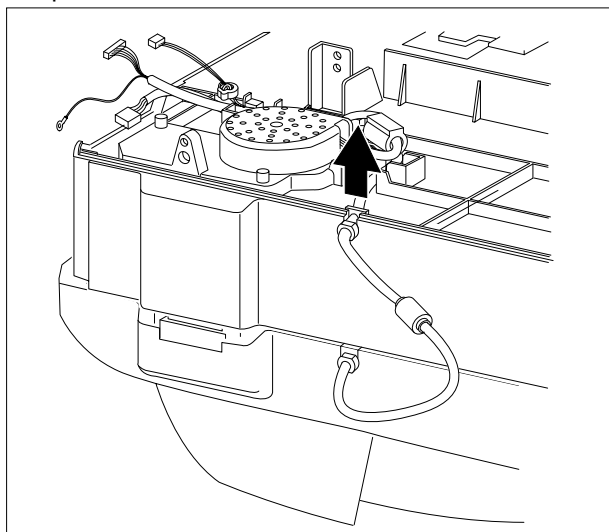
4. Pull up the Scanner Ass'y, as shown below.



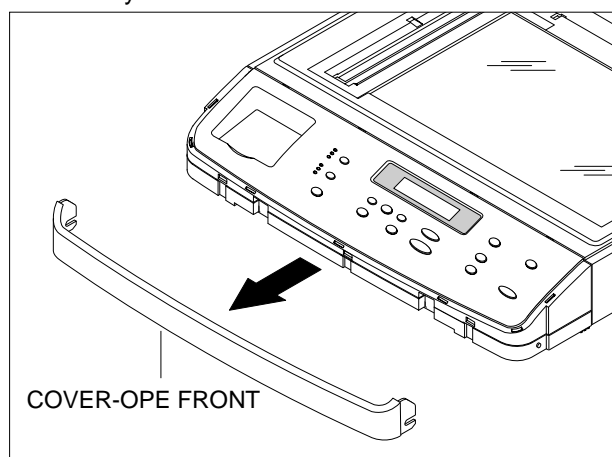
5. SCX4520 only. Lift the Platen Cover upward to remove it.



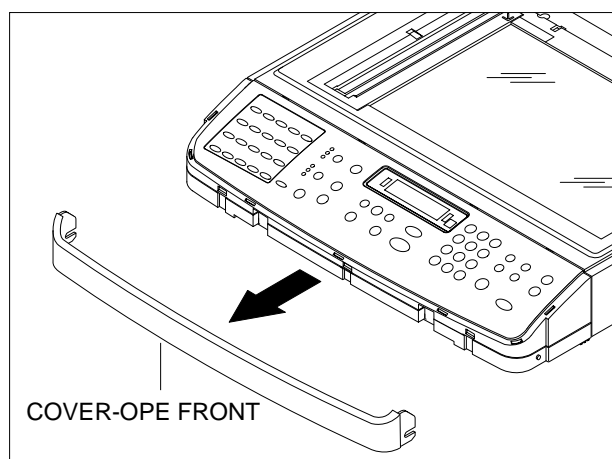
6. SCX4720F. Free the Scanner Cable Harness from the clips underneath the scanner and release it from the frame.



7. Lift the front part of the COVER-OPE FRONT to release the hook connecting the cover with the scan assembly.

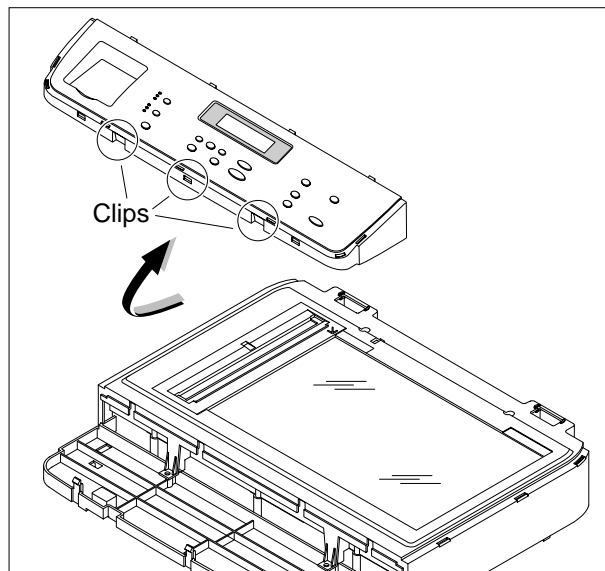


<SCX-4520>

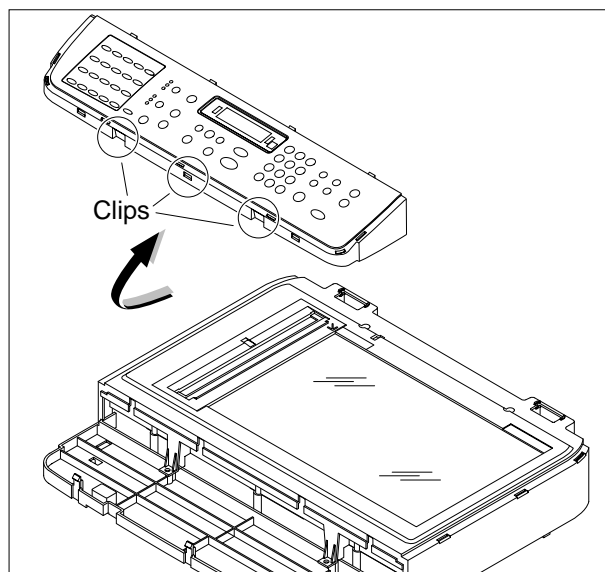


<SCX-4720F>

8. Release the 3 clips on the front of the OPE unit and remove the OPE unit as shown below, taking care to thread the cable harness through the frame

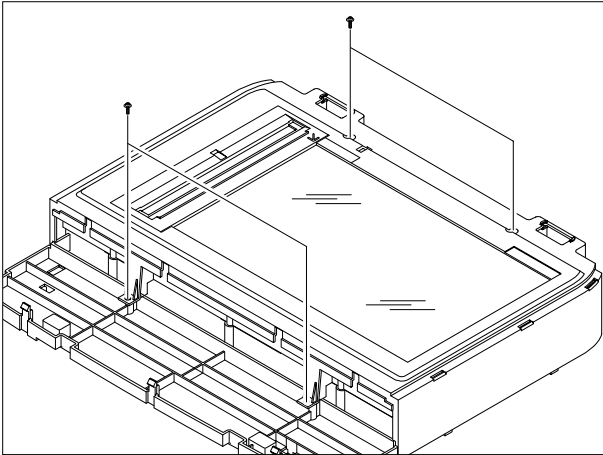


<SCX-4520>

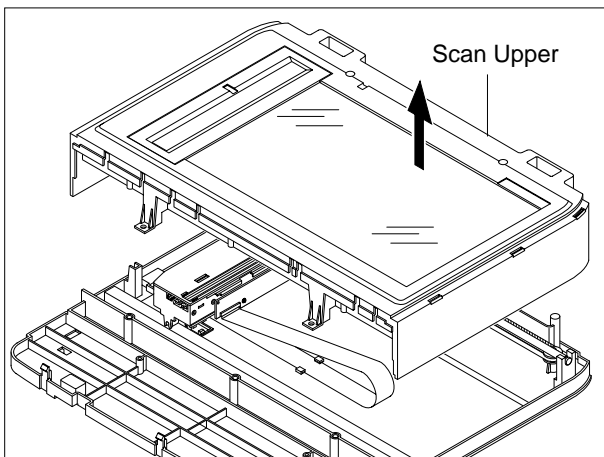


<SCX-4720F>

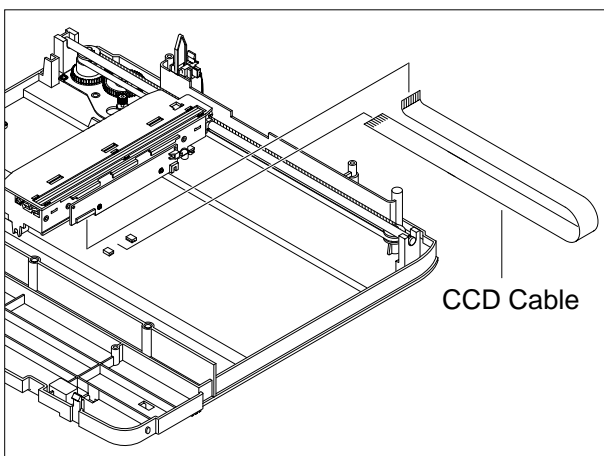
9. Remove the 4 screws securing the Scan Upper.



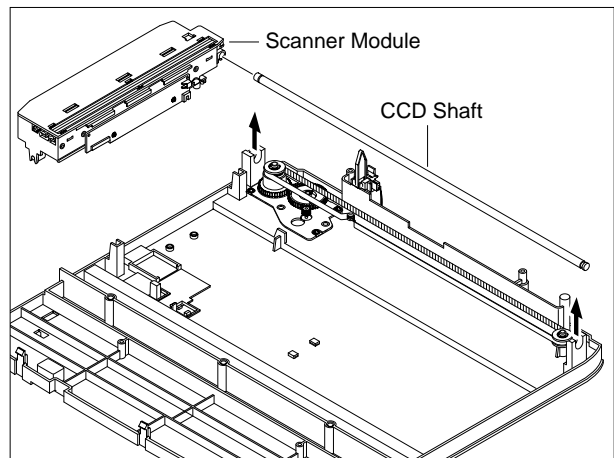
10. Unclip the Scan Upper from the Scan Ass'y by releasing 2 clips on each side then pull the Scan Upper upward and remove it.



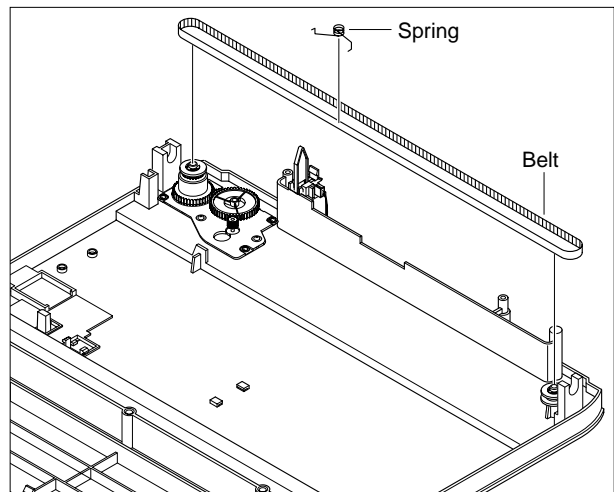
11. Remove the CCD Cable, as shown below.



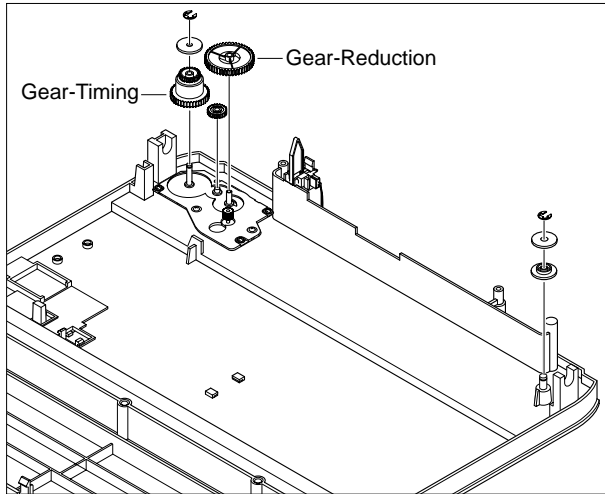
12. Pull up the CCD Shaft and take out the Scanner Module.



13. Squeeze the spring to release the tension in the Belt and lift from the pulleys as shown below.



14. Remove the Reduction Gear and Idle Gear, as shown below.

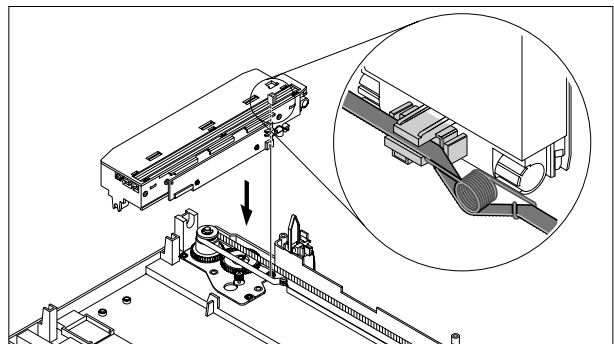


**Caution.** Reassembling Scanner Module

1. When re-fitting the scanner belt and belt spring take care to relocate the tension spring as close to the right hand side of the scanner module as is possible, as shown on the right.
2. When refitting the Scan Upper cover take care to ensure that the cover open switch is not trapped.

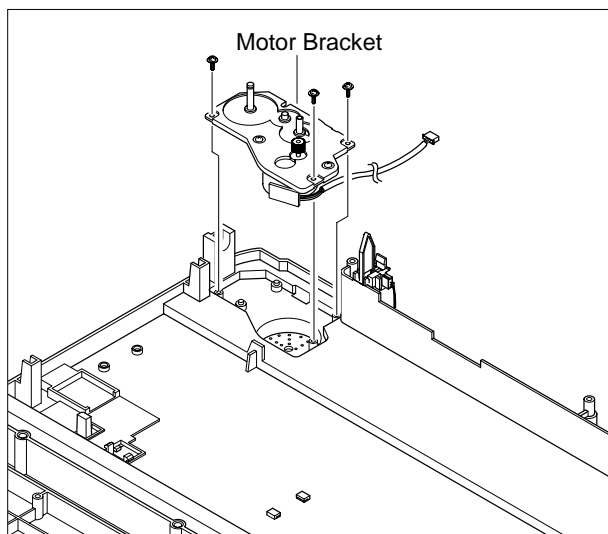
**Caution**

**Assembling Scanner Module** When re-assembling the scanner module, belt and belt spring take care to relocate the tension spring as close to the right hand side of the scanner module as is possible, as shown on the right.

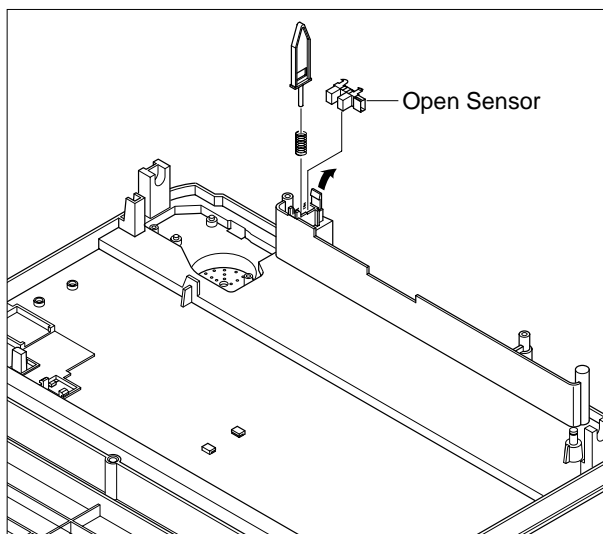




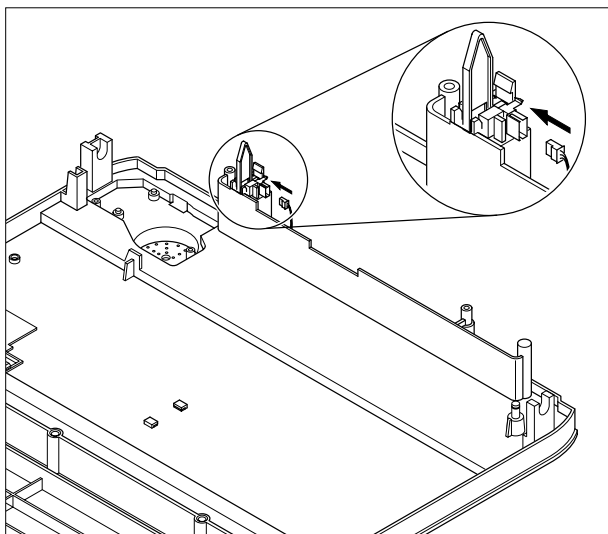
15. Remove the 3 screws and take out the Motor Bracket.



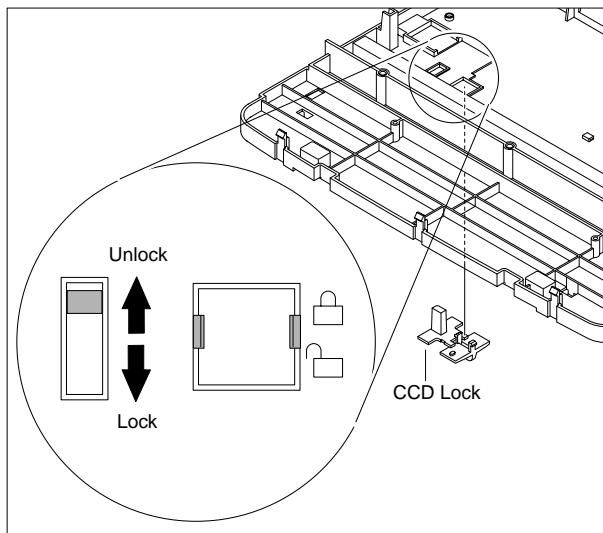
17. Unlatch the Open Sensor and remove it, as shown below.



16. Unplug the connector from the Open Sensor Ass'y.



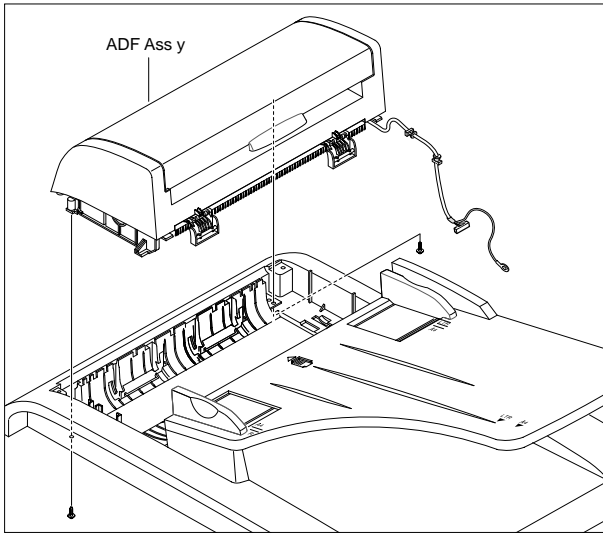
18. Remove the CCD lock



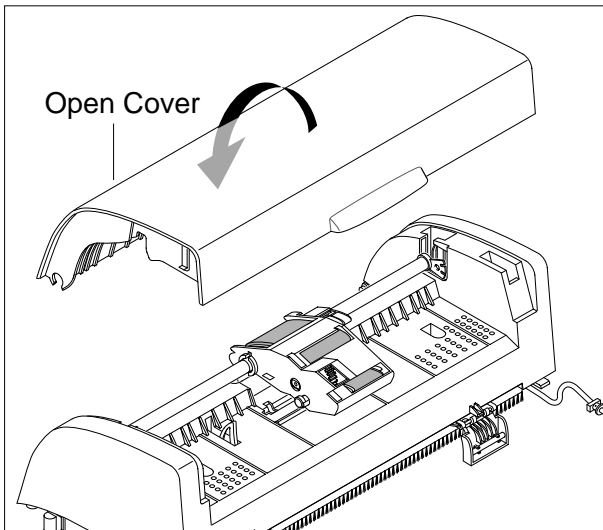


## 5.6 ADF Motor Ass'y

- Before you remove the ADF Motor Ass'y, you should remove:
  - Rear Cover (see page 5-2)
  - Side Cover (LH, RH) (see page 5-3)
  - Scanner Ass'y (see page 5-5)
- Unclip the harness from the platen cover. Remove the 2 screws securing the ADF Ass'y and remove it, taking care to thread the harness through the frame.

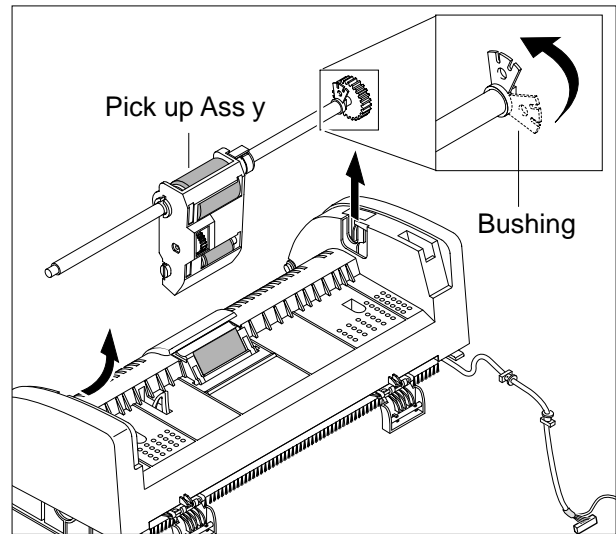


- Remove the Open Cover, as shown below.

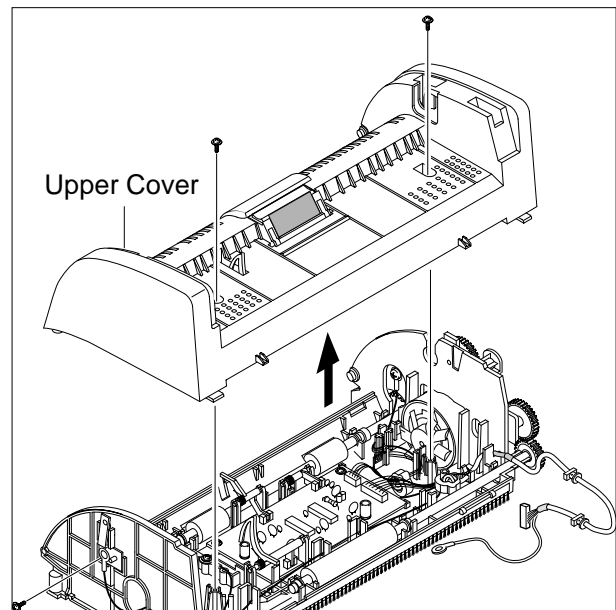


**Caution.** When working on the ADF Motor Ass'y take care not to contaminate any of the rubber surfaces with grease.

- Release the Bush and rotate it until it reaches the slot, as shown below. Then lift the Pick-Up Ass'y out.

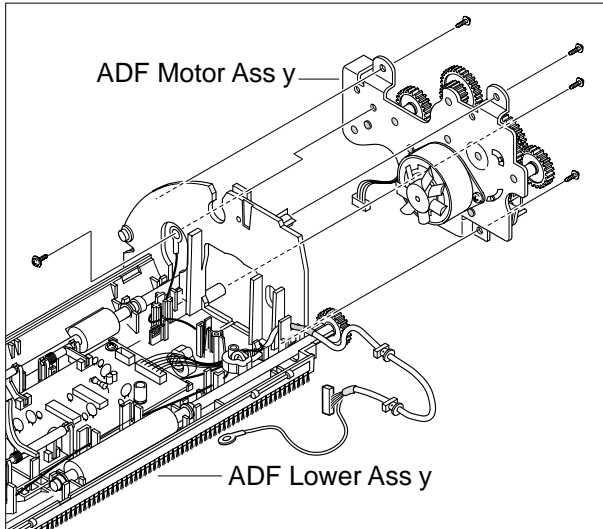


- Remove the 2 screws securing the Upper Cover and remove it, as shown below.



**Caution.** Before removing the ADF Motor Ass'y take great care to note the position of the ferrite core and the motor harness routing. When refitting the ADF Motor Ass'y ensure that the harness and ferrite are properly located and are clear of the motor fan and white bar clip.

6. Unplug the one connector and remove 5 screws securing the ADF Motor Ass'y. Then take out the ADF Motor Ass'y.

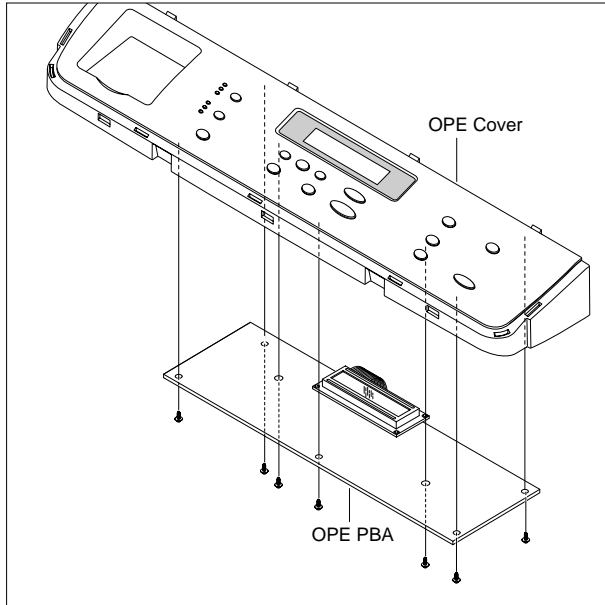


**Note.** It is not necessary to disassemble the ADF unit in order to change the ADF separator pad. Simply open the ADF cover and remove the Pickup Ass'y (step 4 page 5.10). Then, using a pair of tweezers or a small flat-bladed screwdriver, release the clips on each side of the ADF Separator Pad Ass'y.

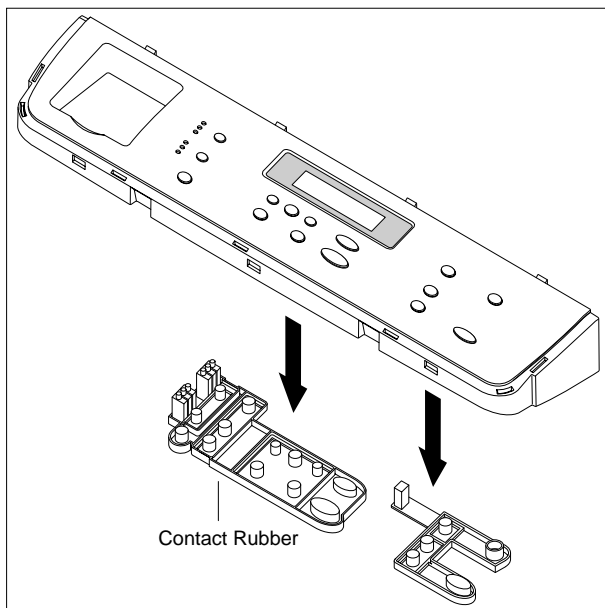
## 5.7 OPE Unit(SCX-4520)

1. Before you remove the OPE Unit, you should remove:
  - Rear Cover (see page 5-2)
  - Side Cover (LH, RH) (see page 5-3)
  - Scanner Ass'y (see page 5-5)

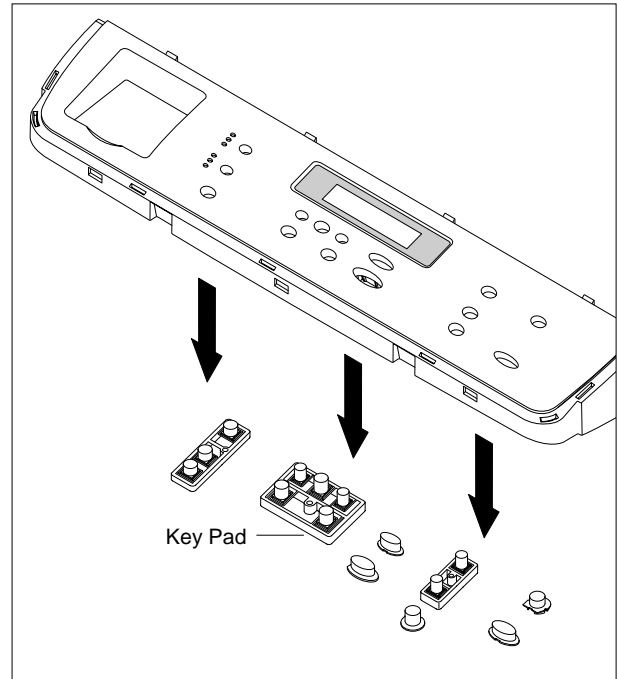
2. Remove the 7 screws securing the OPE PBA from to the OPE Cover.



3. Remove the Contact Rubber from the OPE Cover.



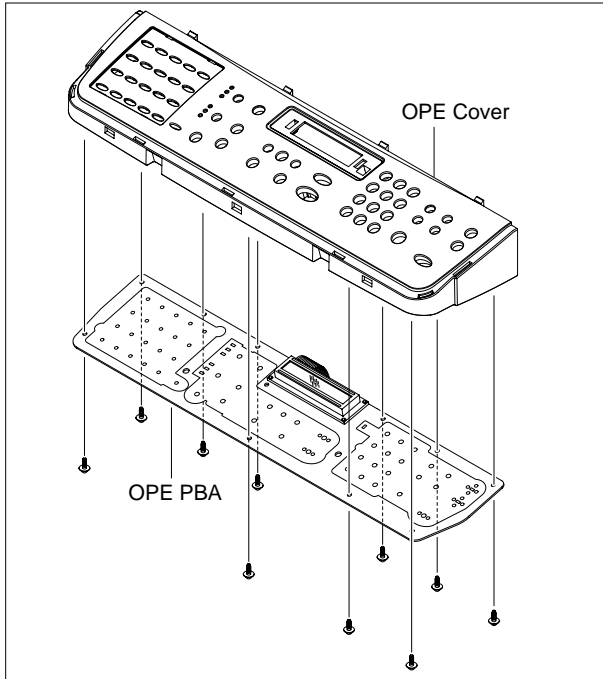
4. Remove the Key Pad from the OPE Cover.



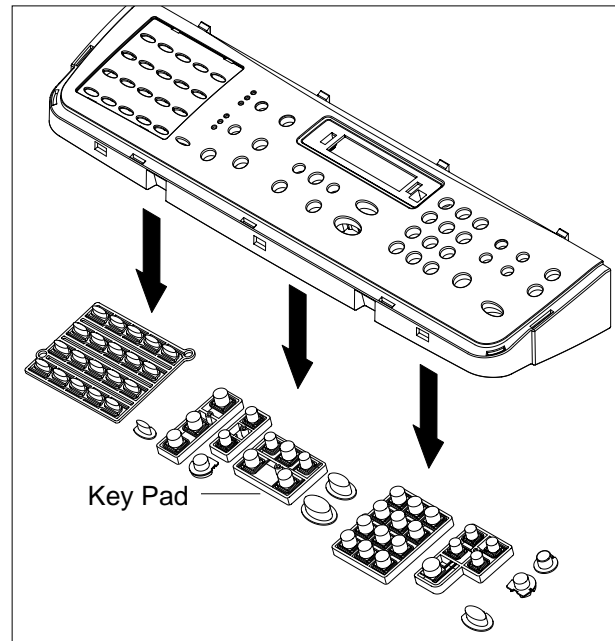
## OPE Unit(SCX-4720F)

1. Before you remove the OPE Unit, you should remove:
  - Rear Cover (see page 5-2)
  - Side Cover (LH, RH) (see page 5-3)
  - Scanner Ass'y (see page 5-5)

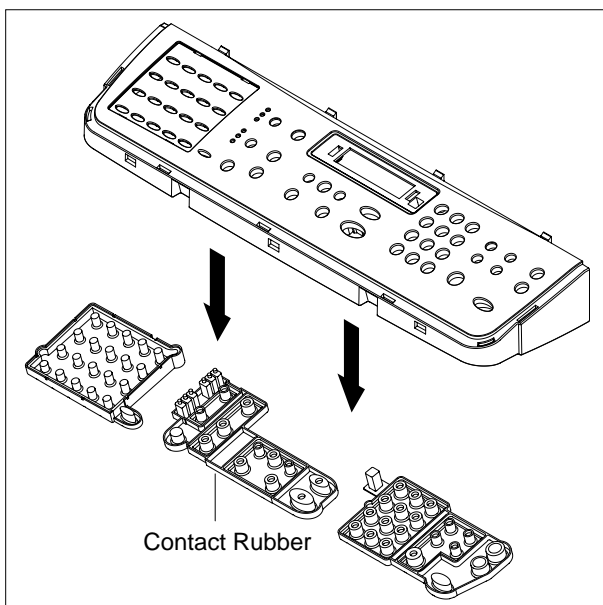
2. Remove the 10 screws securing the OPE PBA from to the OPE Cover.



4. Remove the Key Pad from the OPE Cover.



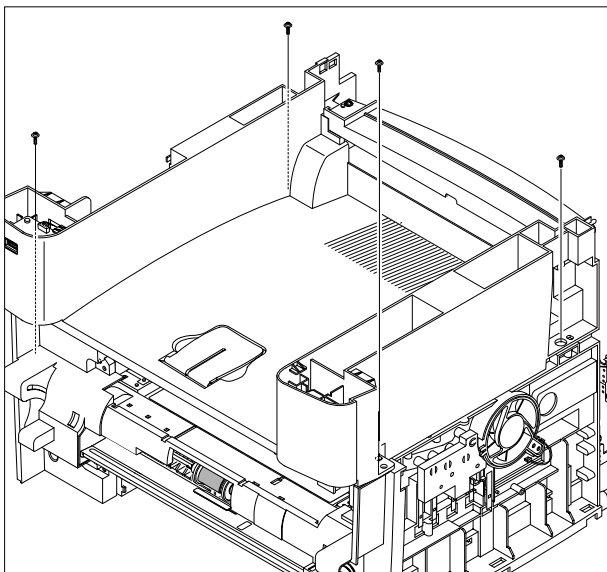
3. Remove the Contact Rubber from the OPE Cover.



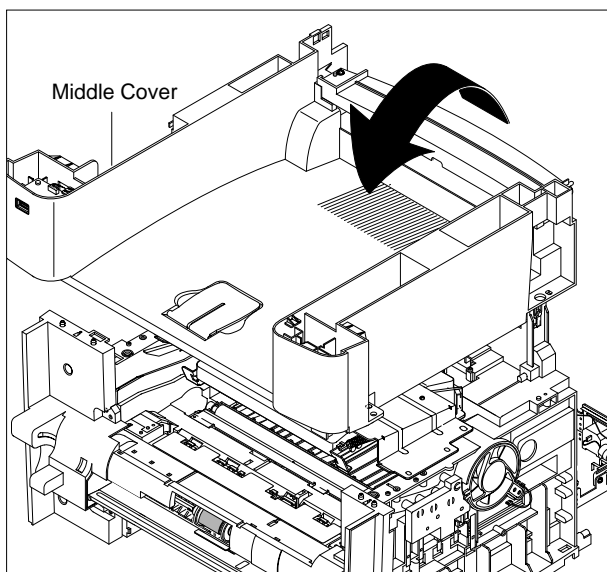
## 5.8 Middle Cover & Exit Roller

1. Before you remove the Middle Cover and Exit Roller, you should remove:
  - Rear Cover (see page 5-2)
  - Side Cover (LH, RH) (see page 5-3)
  - Scanner Ass'y (see page 5-5)

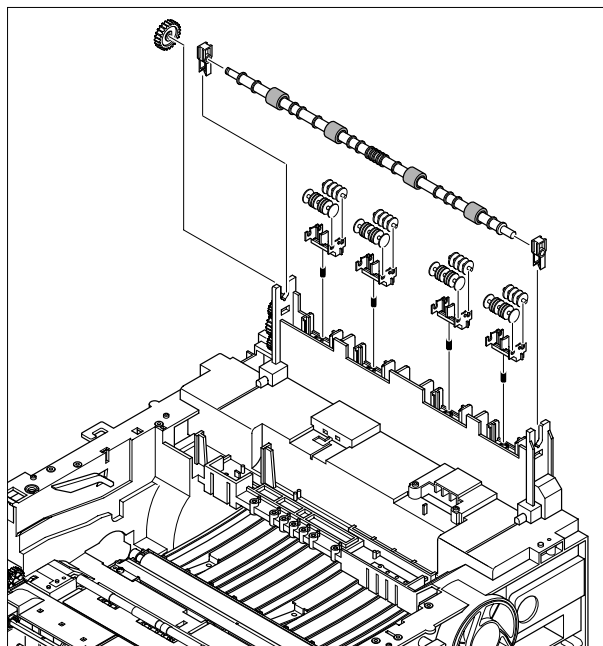
2. Remove the 4 screws securing the Middle Cover and remove it.



3. Remove 2 screws securing the Controller Shield Ass'y to the Middle Cover. Unclip the Middle Cover from the Frame Ass'y, as shown below. Take care to release the Shield Ass'y locating pegs and lift the Top Cover out.

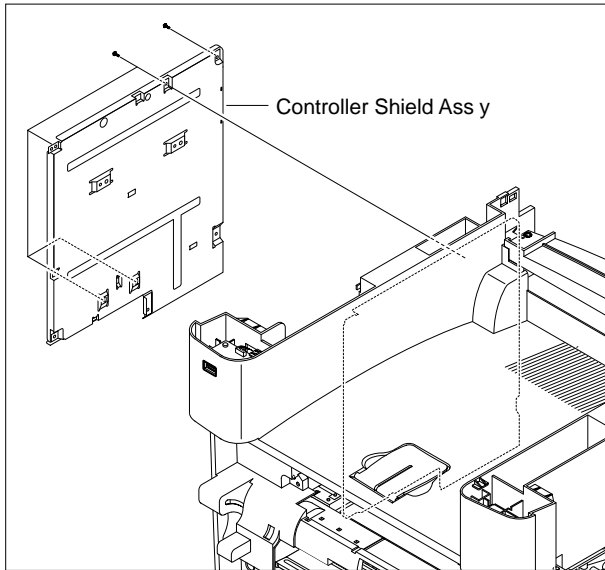


4. Remove the Exit Gear and Bearing, as shown below.

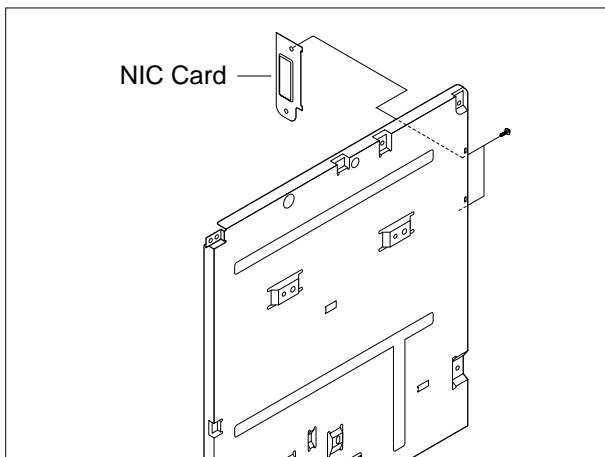


## 5.9 Controller Shield Ass'y

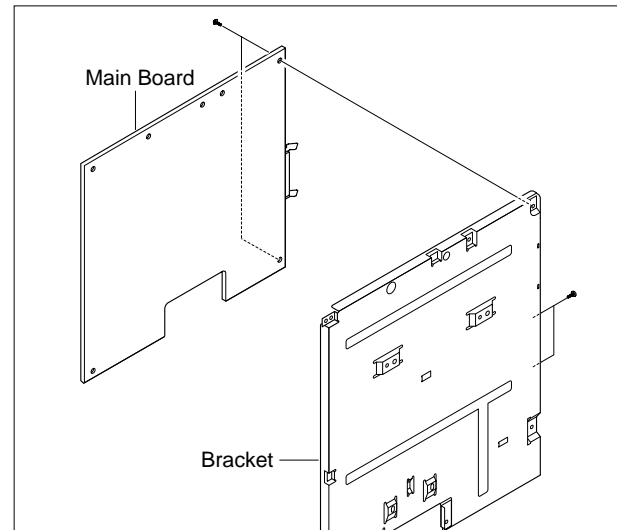
1. Before you remove the Main PBA, you should remove:
  - Rear Cover (see page 5-2)
  - Side Cover(LH, RH) (see page 5-3)
2. Remove all of the connectors and the 5 screws connecting the Controller Shield Assembly to the Middle Cover and frame and remove the assembly.



3. If fitted remove the 2 screws connecting the NIC card to the Controller Shield Assembly and remove the card.



4. Remove 3 screws to remove the bracket from the main board.

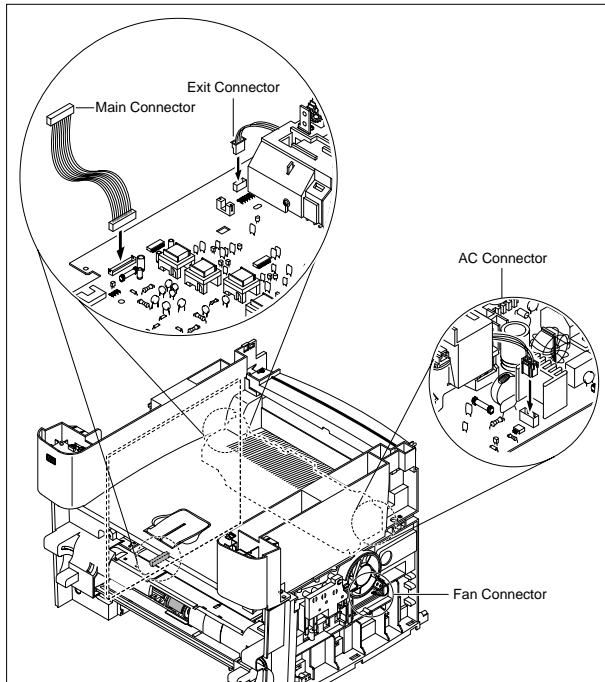


## 5.10 Engine Shield Ass'y & Exit Board

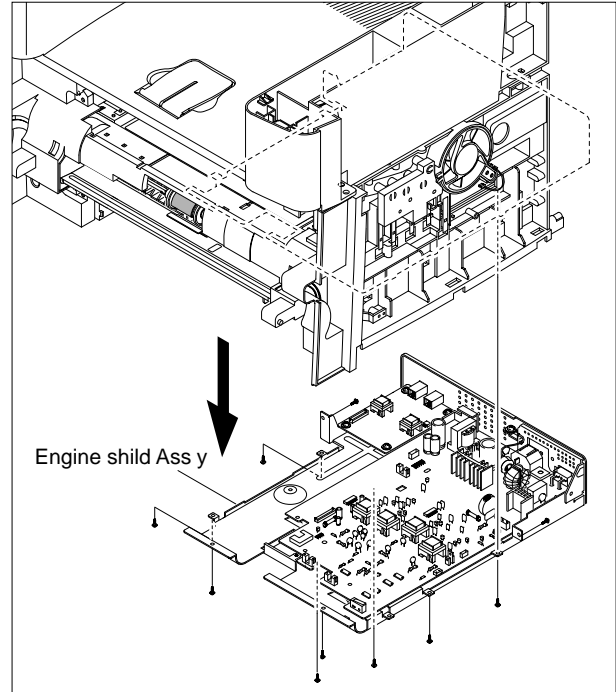
1. Before you remove the Engine Shield Ass'y, you should remove:

- Rear Cover (see page 5-2)
- Side Cover(LH, RH) (see page 5-3)
- Scanner (see page 5-5)

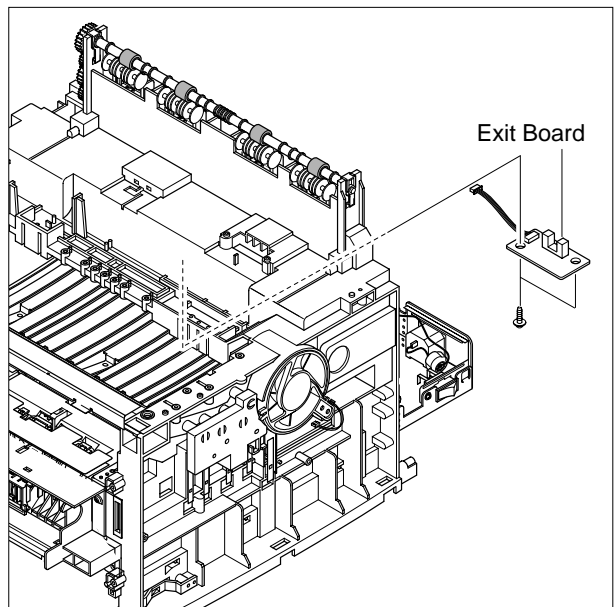
2. Unplug the Exit, AC and Fan connectors. Unplug the LIU connector if fitted.



3. Remove the 11 screws securing the Engine Shield Ass'y and tilt to one side. Then unplug the all the HVPS/SMPS harness before removing the ass'y.



4. Remove the 2 screws to remove the exit board.



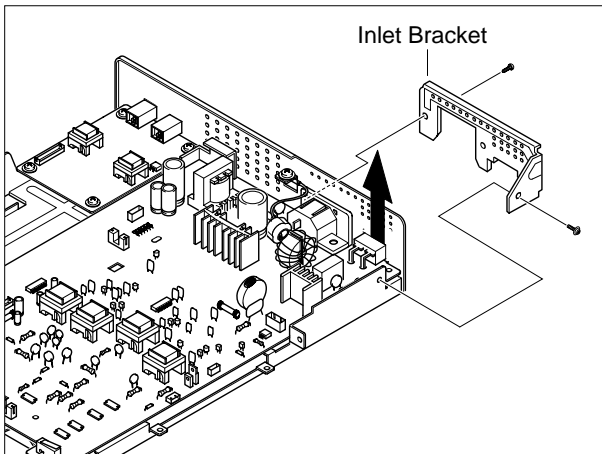


## 5.11 SMPS and LIU

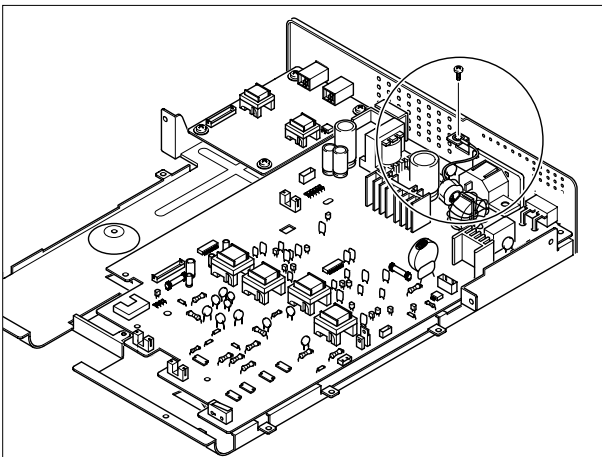
1. Before you remove the SMPS, you should remove:

- Rear Cover (see page 5-2)
- Side Cover(LH, RH) (see page 5-3)
- Scanner Ass'y (see page 5-5)
- Engine Shield Ass'y(see page 5-16)

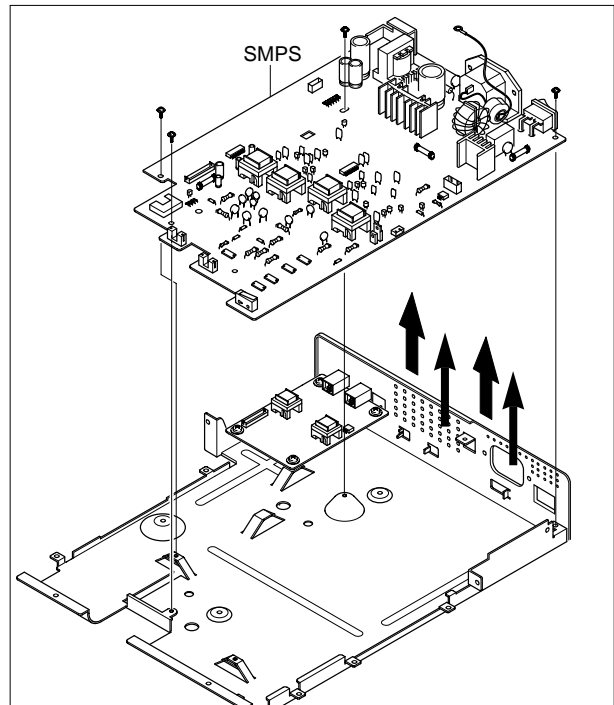
2. Remove the 2 screws securing the Inlet Bracket and remove it



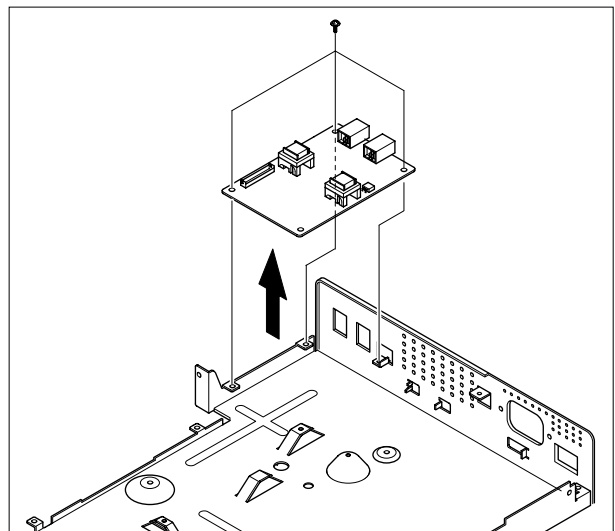
3. Remove the one screw securing the Engine Shield ground wire



4. Remove the 3 screws securing the SMPS. Then lift the SMPS out, as shown below.



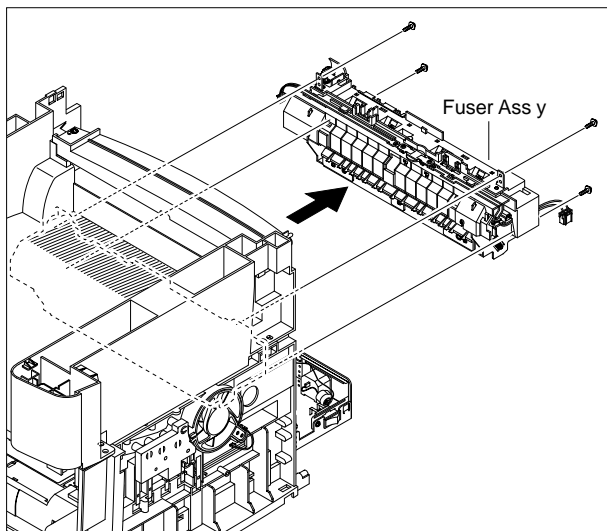
5. Remove the 3 screws securing the LIU. Then lift the LIU out, as shown below.



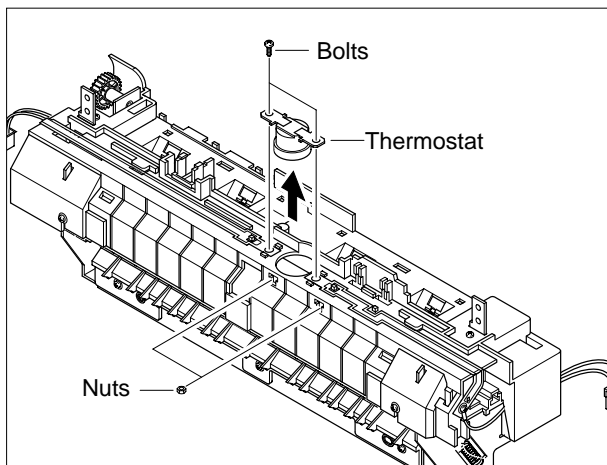


## 5.12 Fuser Ass'y

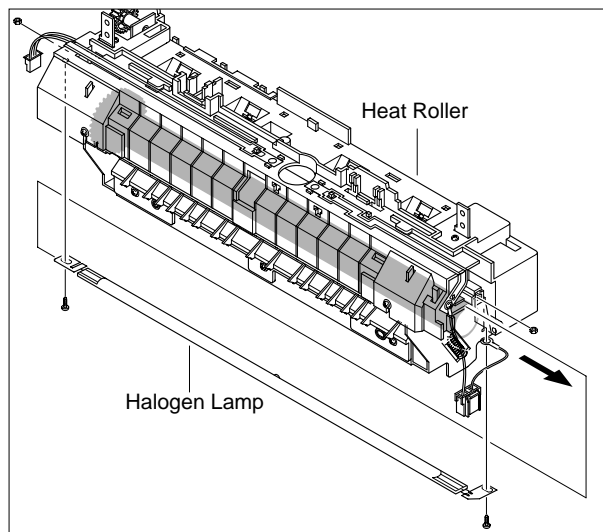
- Before you remove the Fuser Ass'y, you should remove:  
- Rear Cover (see page 5-2)
- Unplug the two connectors from the Main PBA and SMPS, as shown below. Then remove the 4 screws securing the Fuser Ass'y and remove it.



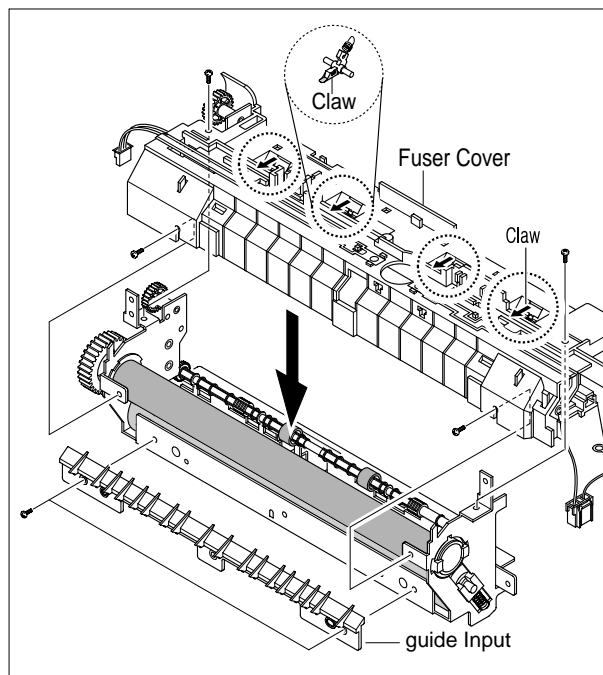
- Remove the 2 bolts securing the Thermostat. Then lift the Thermostat out taking care not to loose the 2 nuts.



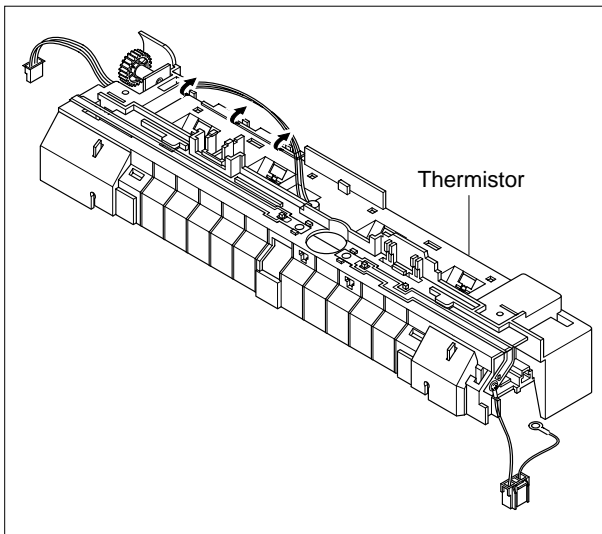
- Remove the 2 screws securing the Halogen Lamp. Then take out the Halogen Lamp from the Heat Roller.



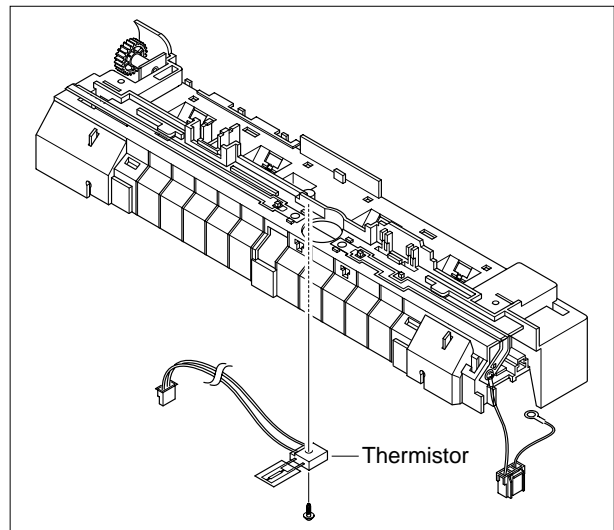
- Remove 4 screws to remove the fuser cover as below. Remove 2 screws to remove the guide input.



6. Unwrap the Thermistor Harness, as shown below.



7. Remove the one screw securing the Thermister and remove it, as shown below.

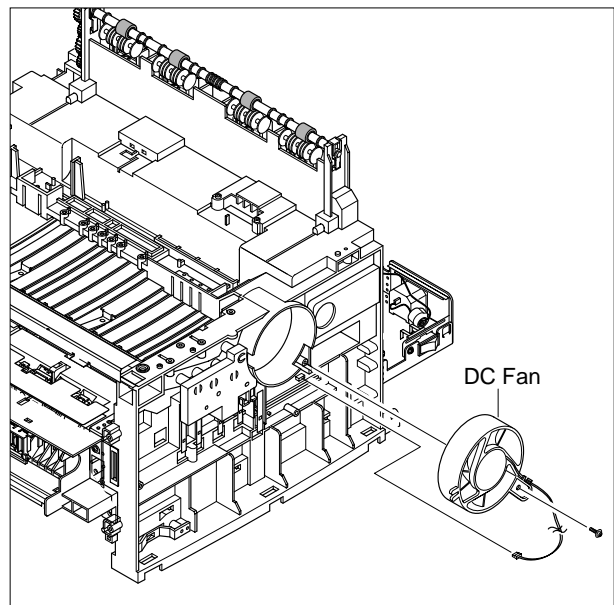


## 5.13 Fan

1. Before you remove the Fan, you should remove:

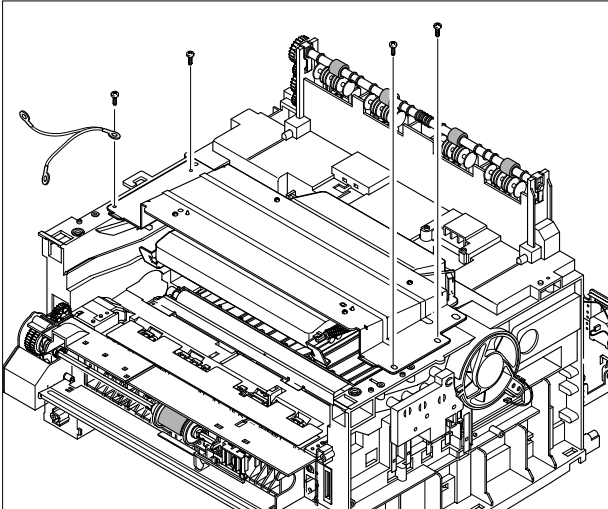
- Rear Cover (see page 5-2)
- Side Cover (RH) (see page 5-3)

2. Unplug the connector from the SMPS and remove the one screw. Then take out the Fan.

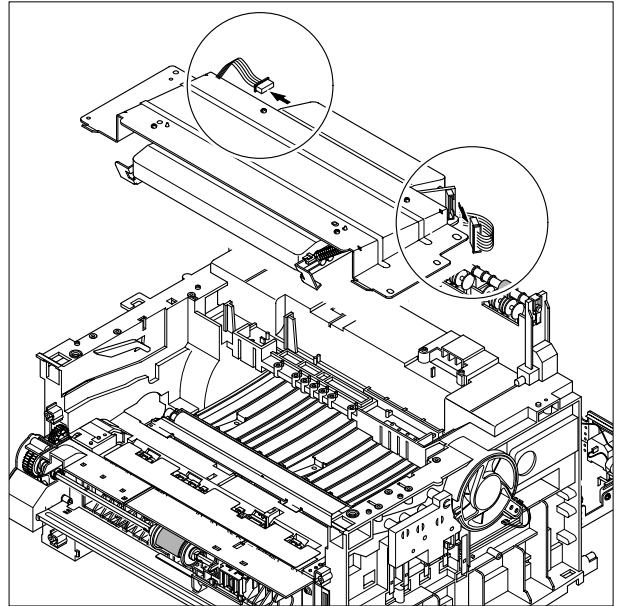


## 5.14 LSU

- Before you remove the LSU, you should remove:
  - Rear Cover (see page 5-2)
  - Side Cover (LH, RH) (see page 5-3)
  - Scanner Ass'y (see page 5-5)
  - Front Cover (see page 5-4)
  - Middle Cover (see page 5-14)
- Remove the 4 screws securing the LSU and remove it.

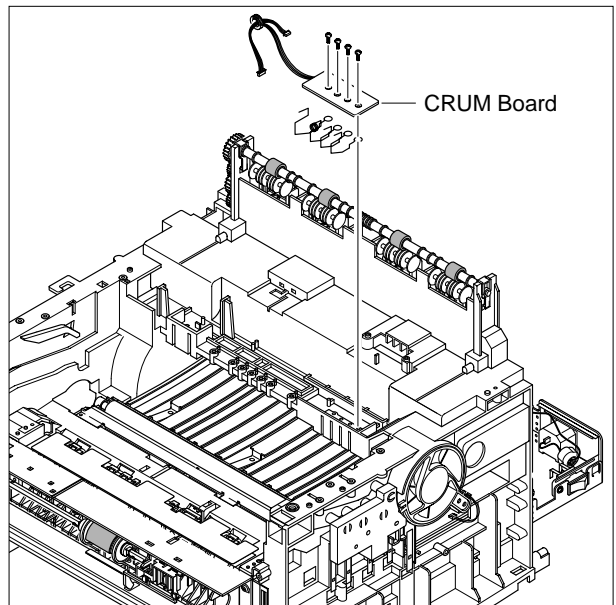


- Unplug the two connectors.



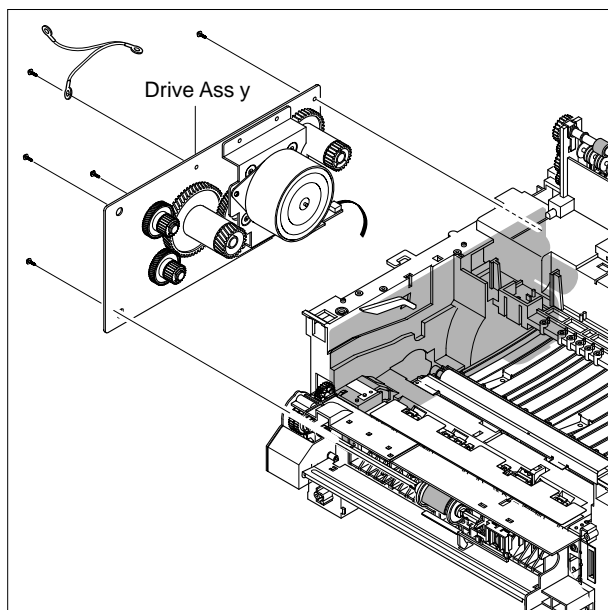
## 5.15 CRUM Board

- Before you remove the CRUM Board, you should remove:
  - Rear Cover (see page 5-2)
  - Side Cover (LH, RH) (see page 5-3)
  - Scanner Ass'y (see page 5-5)
  - Front Cover (see page 5-4)
  - Middle Cover (see page 5-14)
  - LSU (see page 5-20)
- Remove the 4 screws to separate the CRUM board from the main frame as below, taking care not to loose the springs.

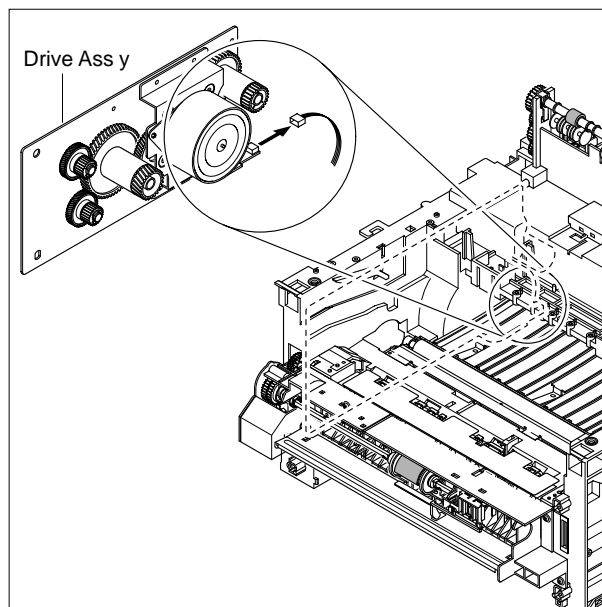


## 5.16 Drive Ass'y

- Before you remove the Drive Ass'y, you should remove:
  - Rear Cover (see page 5-2)
  - Side Cover (LH) (see page 5-3)
  - Shield Controller Ass'y (see page 5-9)
- Remove the 5 screws securing the Drive Ass'y.



- Take out the Drive Ass'y, then unplug the connector from the Motor PBA, as shown below.

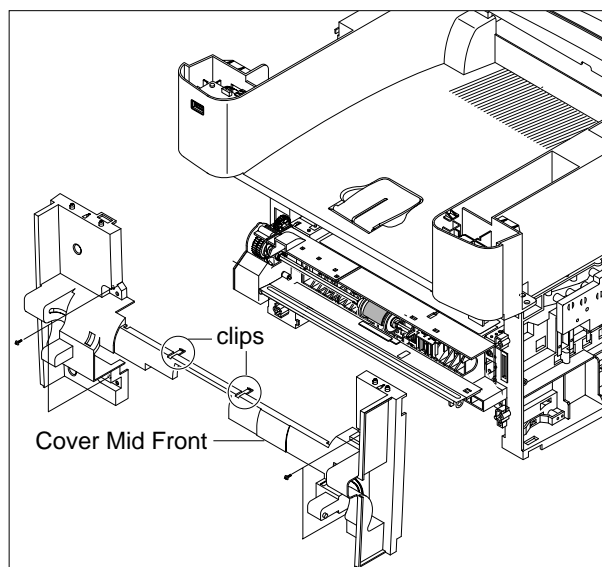


**Caution.** The six screws have numbers stamped into the Drive Ass'y base plate. When refitting the Drive Ass'y tighten the screws the order they are numbered. Only screws numbered 1 to 5 are fitted at this stage. Screw 6 is fitted when the Shield Controller Ass'y is refitted

## 5.17 Cover Mid Front

- Before you remove the Cover Mid Front, you should remove:
  - Rear Cover (see page 5-2)
  - Side Cover (LH, RH) (see page 5-3)
  - Middle Cover (see page 5-14)

- Remove the 4 screws securing the Cover Mid Front and release 2 clips in the center. This cover is fragile take care when removing it.

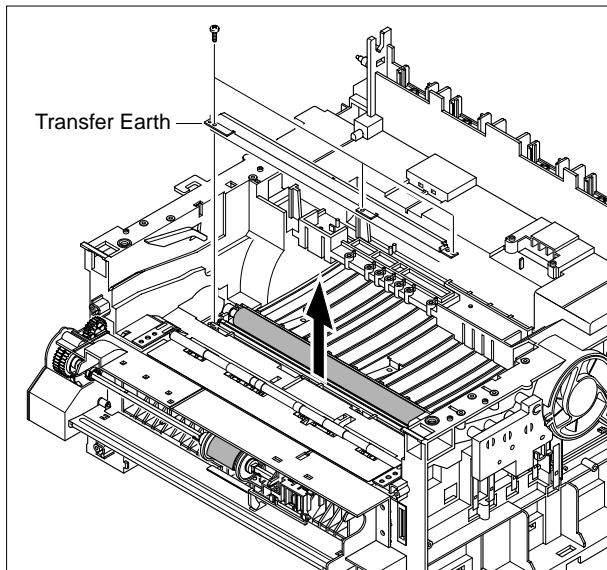


## 5.18 Transfer Ass'y

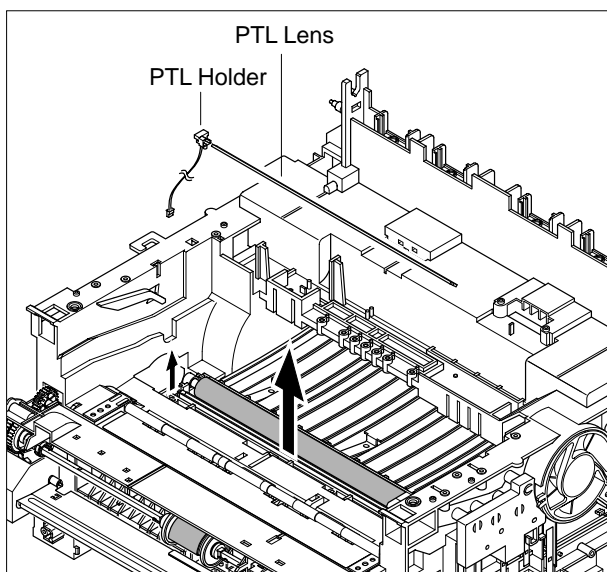
1. Before you remove the Transfer Ass'y, you should remove:

- Rear Cover (see page 5-2)
- Side Cover (LH, RH) (see page 5-3)
- Scanner Ass'y (see page 5-5)
- Front Cover (see page 5-4)
- Middle Cover (see page 5-14)
- LSU (see page 5-20)
- Cover Mid Front (see page 5-22)

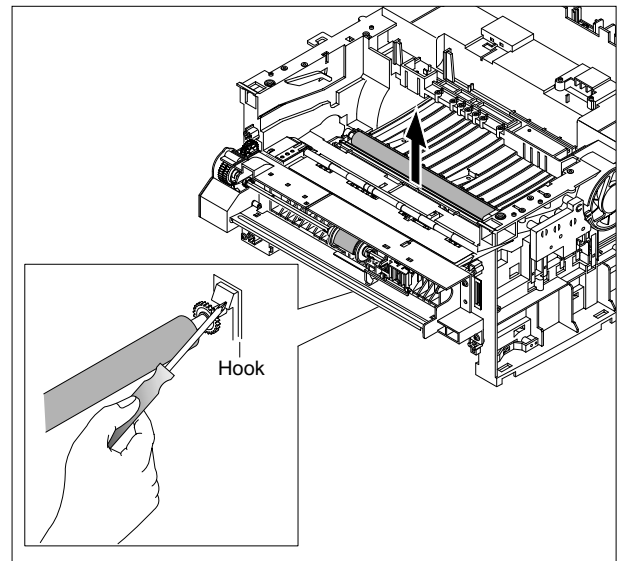
2. Remove the 3 screws securing the Transfer Earth and remove it.



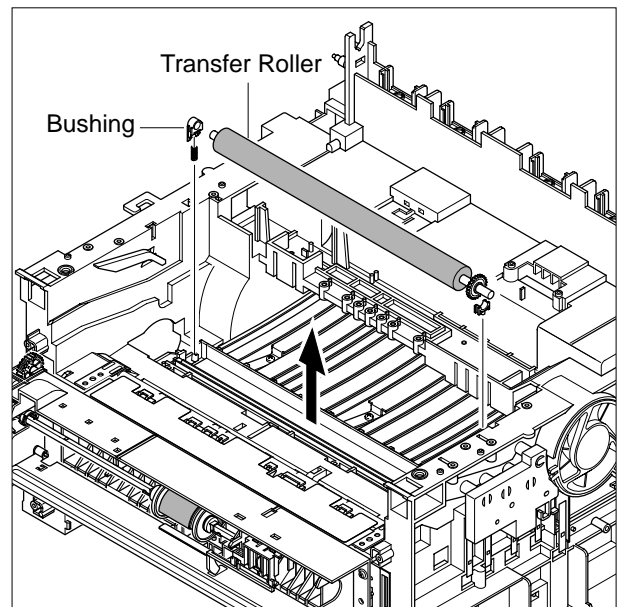
3. Unplug the PTL Holder connector, then remove the PTL Holder and PTL Lens, as shown below.



4. Remove the transfer roller by pressing the hook securing the roller to the right using a tool.



5. Unlatch the Bushing and remove it. Then lift the Transfer Roller out, as shown below.



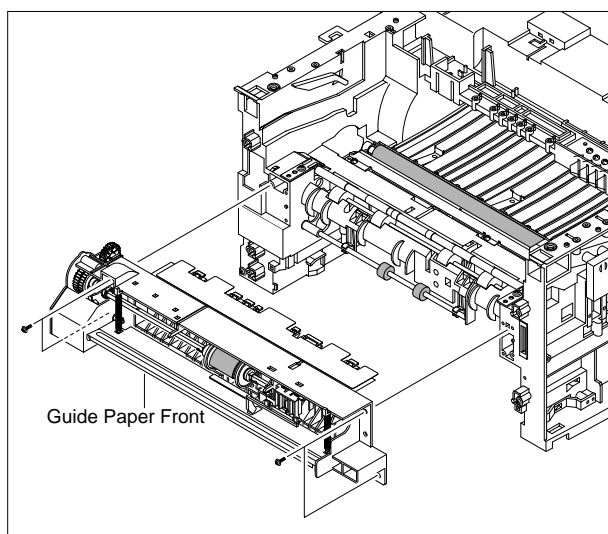


## 5.19 Feed Ass'y

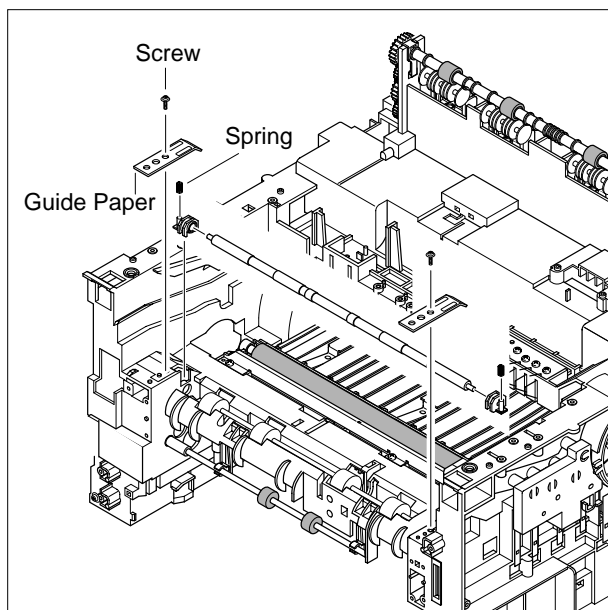
1. Before you remove the Feed Ass'y, you should remove:

- Rear Cover (see page 5-2)
- Side Cover (LH, RH) (see page 5-3)
- Front Cover (see page 5-4)
- Scanner Ass'y (see page 5-5)
- Middle Cover (see page 5-14)
- Controller Shield Ass'y (see page 5-15)
- Drive Ass'y (see page 5-20)

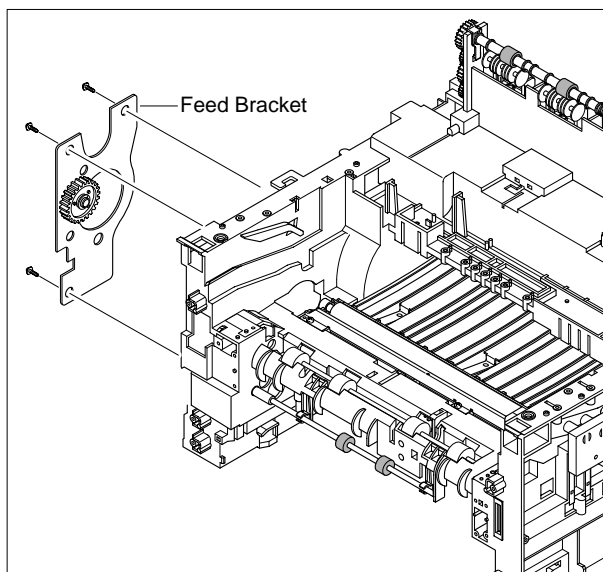
2. Remove the 4 screws securing the Guide Paper Front and remove it.



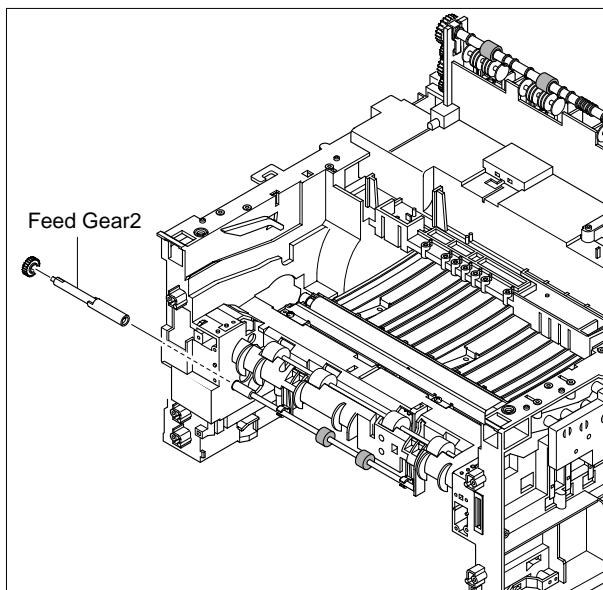
3. Remove the screws on the right and left sides of the guide paper to remove the guides and the spring as shown below.



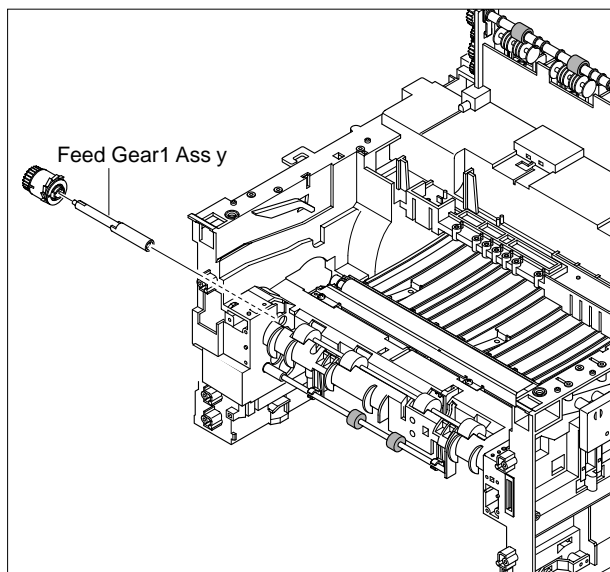
4. Remove the 3 screws securing the Feed Bracket and remove it.



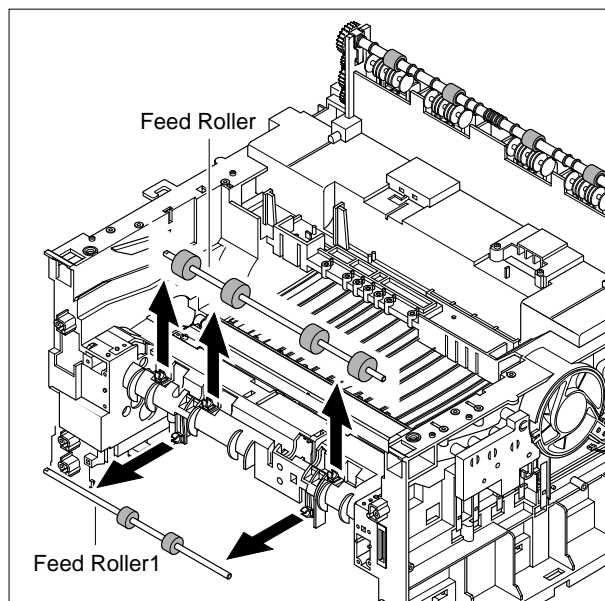
5. Remove the Feed Gear2.



6. Remove the Feed Gear1 Ass'y.



7. Pull up the Feed Roller and Feed Roller1.

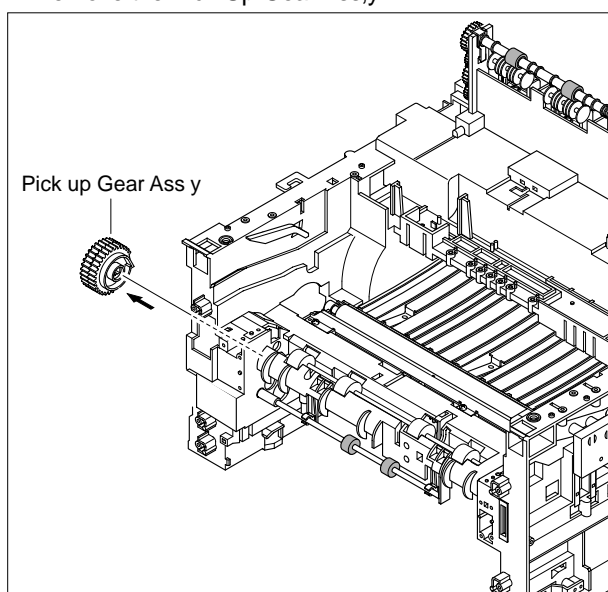


## 5.20 Pick-Up Ass'y & Solenoid

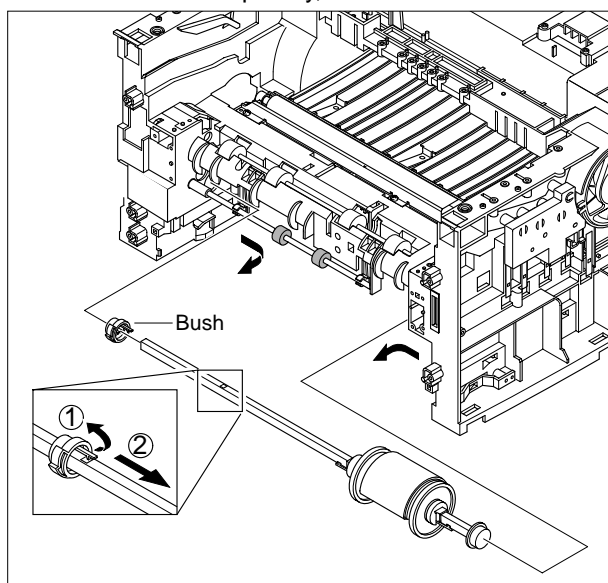
1. Before you remove the Pick-Up Ass'y, you should remove:

- Rear Cover (see page 5-2)
- Side Cover (LH, RH) (see page 5-3)
- Front Cover (see page 5-4)
- Scanner Ass'y (see page 5-5)
- Middle Cover (see page 5-14)
- Controller Shield Ass'y (see page 5-15)
- Engine Shield Ass'y (see page 5-16)
- Drive Ass'y (see page 5-20)
- Feed Ass'y (see page 5-23)

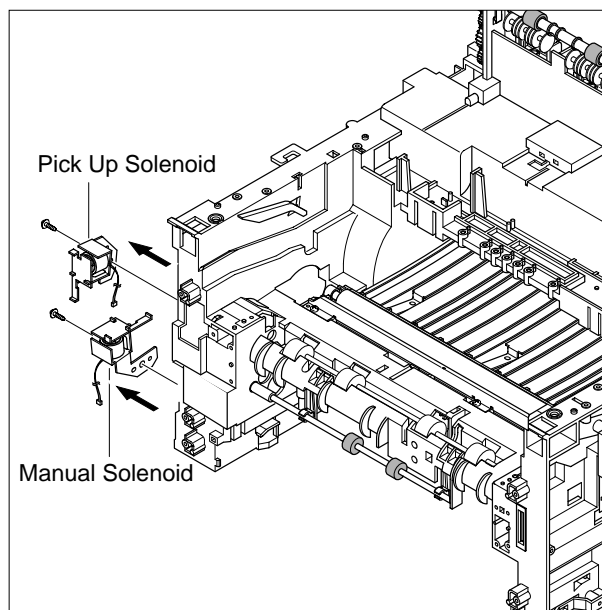
2. Remove the Pick-Up Gear Ass'y.



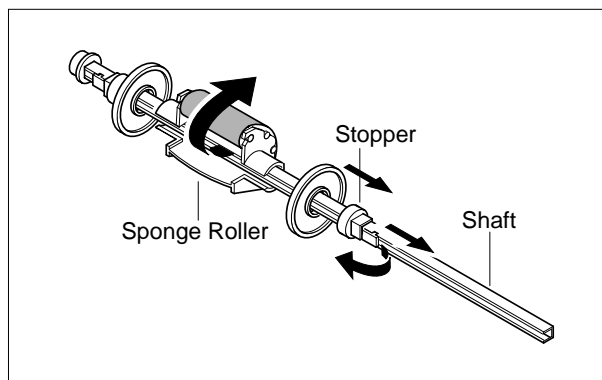
3. Take out the Pick-Up Ass'y, as shown below.



4. Remove the 2 screws securing the Manual Solenoid and Pick-Up Solenoid. Then remove Manual Solenoid and Pick-Up Solenoid.



5. To replace the pick up roller, move the stopper securing the sponge-roller to the right and then turn the sponge-roller to remove it from the shaft.



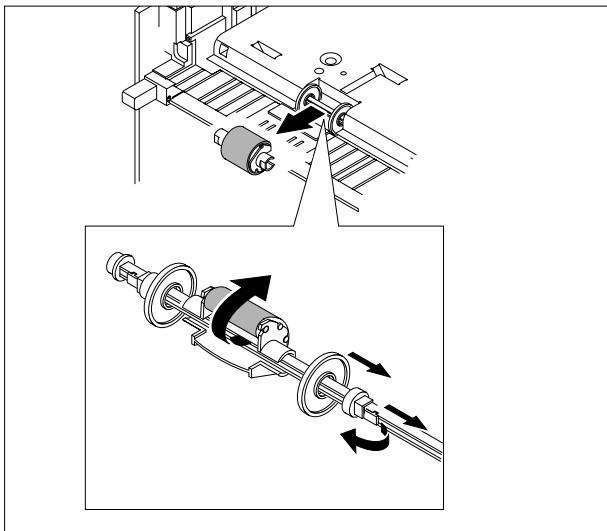
When replacing either the MP pick up roller or main cassette pick up roller only, it is possible to do this by turning the set over after removing the cassette and the processor. See page 5-26



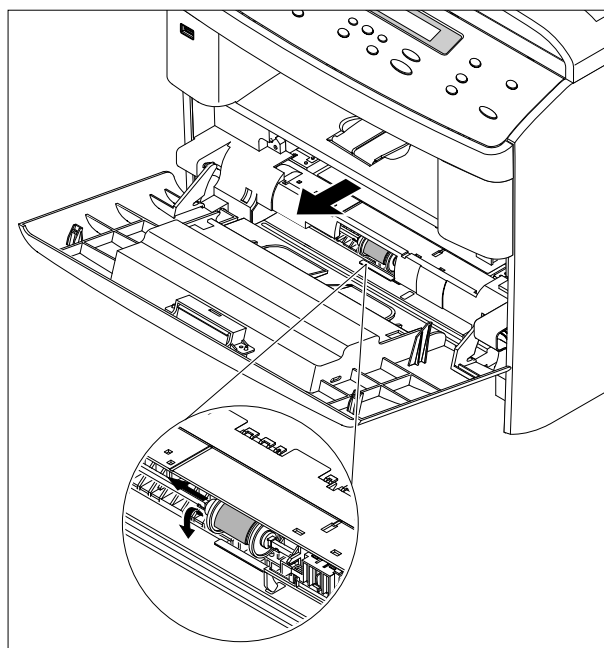
6. It is a simple matter to replace the MP Pickup Roller and the main cassette Pickup Roller without dismantling the set.

In both cases first remove the main paper cassette, toner cartridge and front cover.

- a) In order to replace the main cassette Pickup Roller
- 1) Turn the set upside down
  - 2) Release the white catch and slide the locking piece as far to the side as possible.
  - 3) Slide the white collar as far to the side as possible.
  - 4) Slide the Pickup Roller as far as possible to the side, until it is free from the white collar on the other end.
  - 5) Rotate the Pickup Roller around the drive shaft until it can be removed.



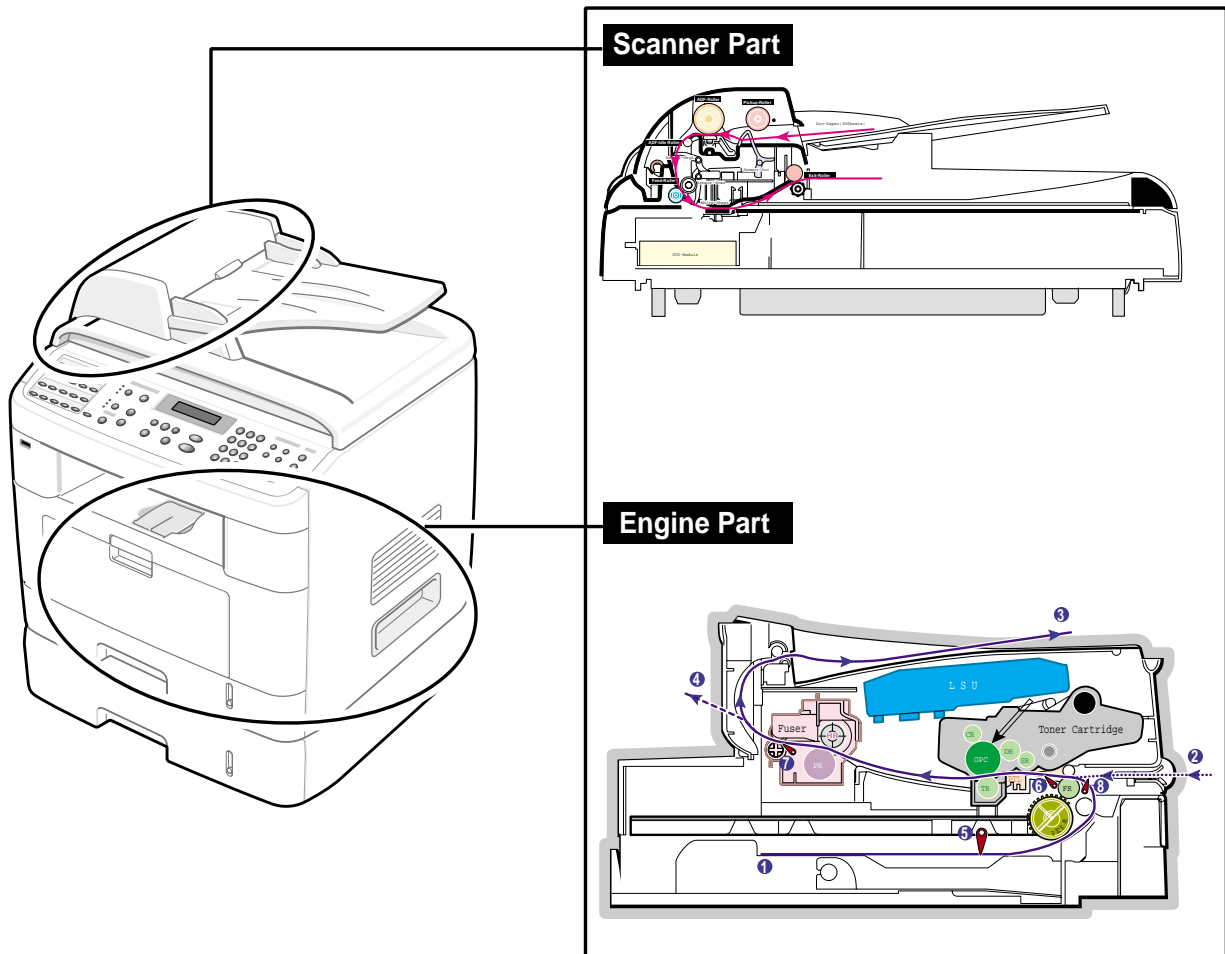
- b) In order to replace the MP Pickup Roller
- 1) Release the white catch and slide the locking piece as far to the side as possible.
  - 2) Slide the white collar as far to the side as possible.
  - 3) Slide the Pickup Roller as far as possible to the side, until it is free from the white collar on the other end.
  - 4) Rotate the Pickup Roller around the drive shaft until it can be removed.



## 6. Alignment and Adjustments

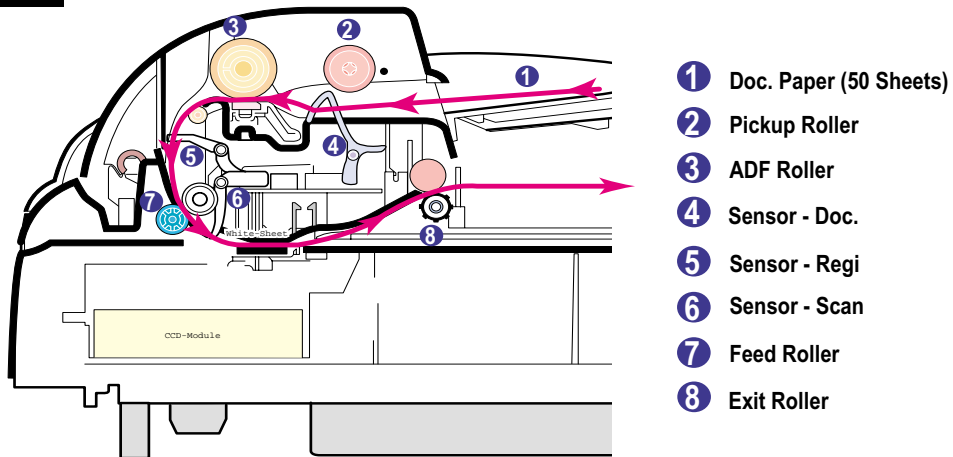
This chapter describes some of the main service procedures including:  
Using the EDC mode; Clearing paper jam and test patterns.  
Much of this chapter is also included in the user's guide.

### 6.1 Paper path



### 6.1.1 Copy & Scan Document Path

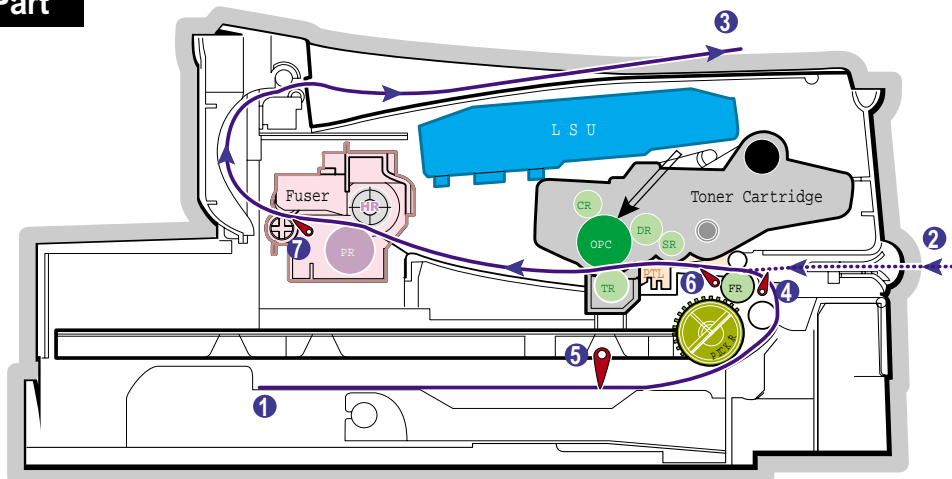
#### Scanner Part



### 6.1.2 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)

#### Engine Part



## 6.2 Clearing Paper Jams

Occasionally, paper can be jammed during a print job. Some of the causes include:

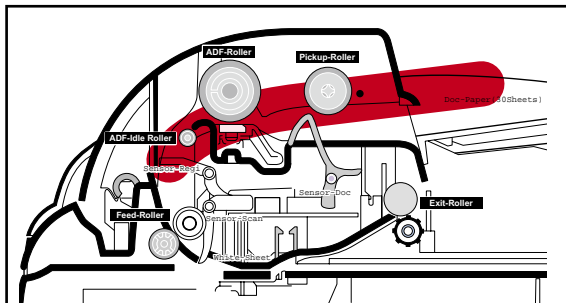
- The tray is loaded improperly or overfilled.
- The tray has been pulled out during a print job.
- The front cover has been opened during a print job.
- Paper was used that does not meet paper specifications.
- Paper that is outside of the supported size range was used.

If a paper jam occurs an error message appears in the LCD display. Find and remove the jammed paper.

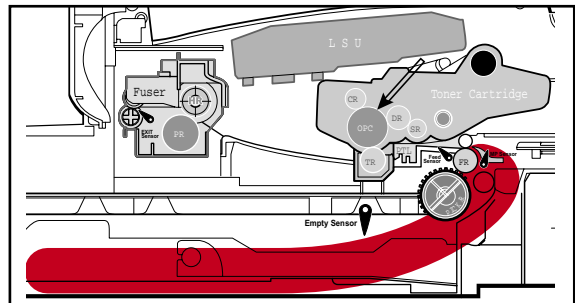
If you don't see the paper, open the covers.

Do not use a tweezers, pincers or other metal tools when clearing a paper jam.

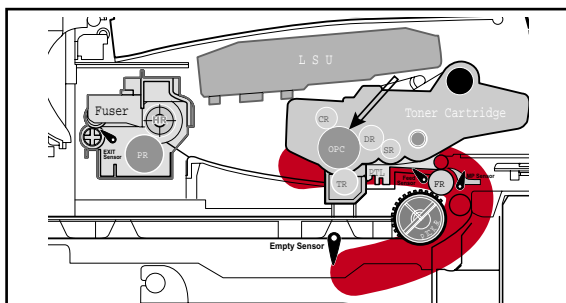
This could damage the internal mechanism causing print quality problems or possibly electrical shock.



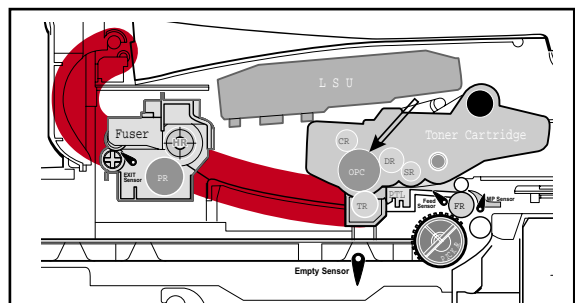
**Document Jam**  
(in the ADF area)



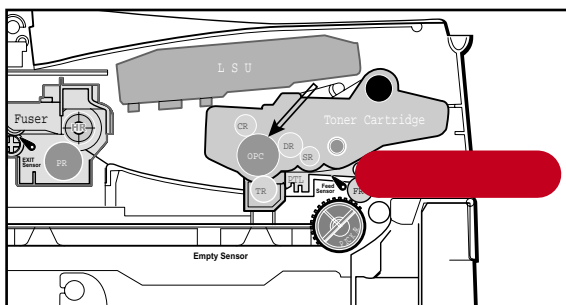
**Paper Jam0**  
(in the paper feed area)



**Paper Jam1**  
(in the fuser area or around the toner cartridge)



**Paper Jam2**  
(in the paper exit area)



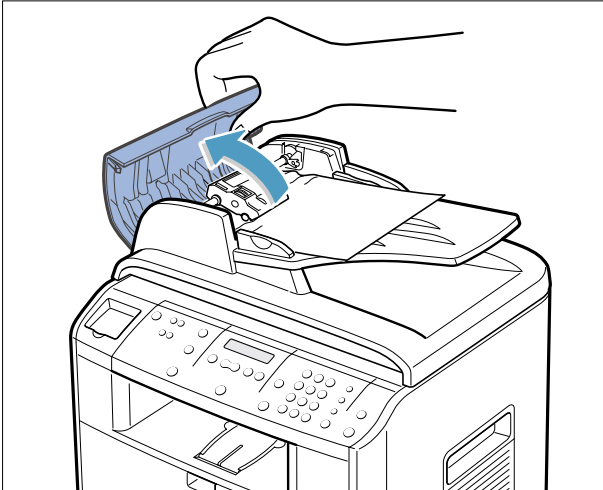
**MP Tray Jam**  
(in the manual feed area)

## 6.2.1 Clearing Document Jams

If a document jams while it is feeding through the ADF (Automatic Document Feeder), "DOCUMENT JAM" appears on the display.

### 6.2.1.1 ADF Input Misfeed

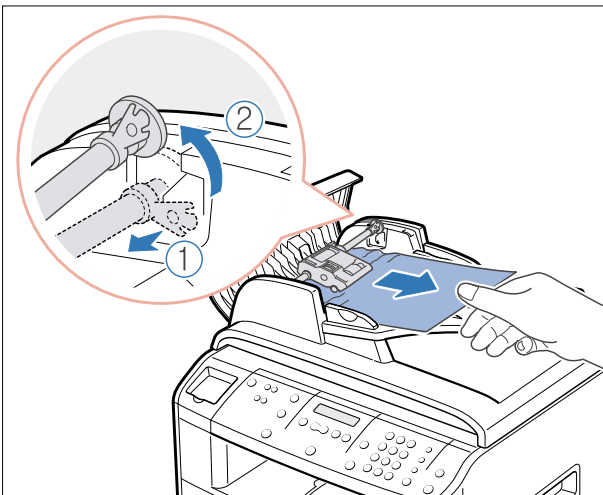
1) Open the ADF top cover.



3) Close the ADF top cover. Then load the documents back into the ADF.

**NOTE :** To prevent document jams, use the document glass for the thick, thin or mixed documents.

2) Pull the document gently to the right and out of the ADF.

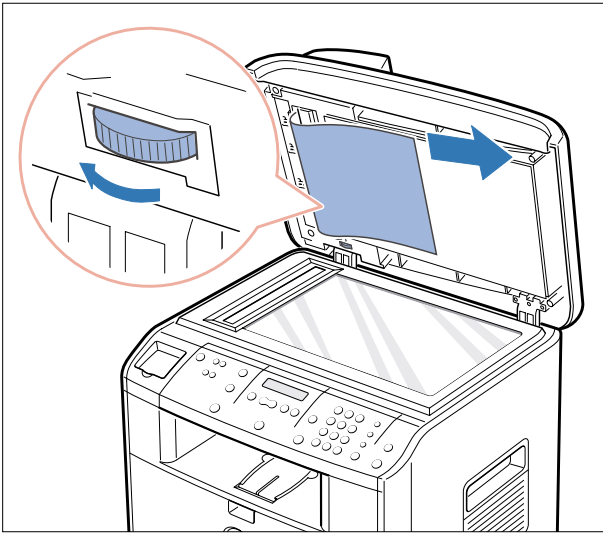


### 6.2.1.2 ADF Exit Misfeed

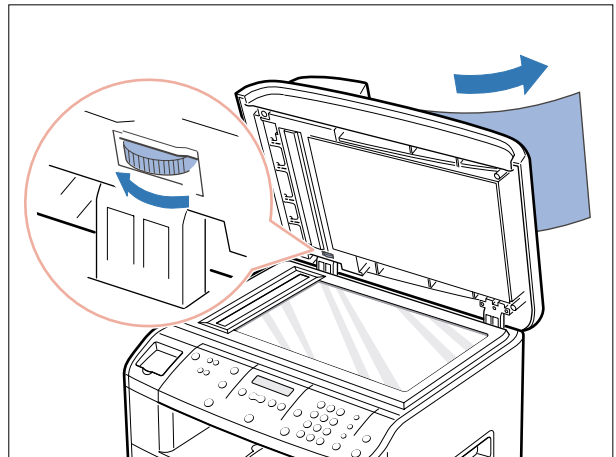
- 1) Open the document cover and turn the release knob to remove the misfed documents from the exit area.
- 2) Close the document cover. Then load the documents back into the ADF.

### 6.2.1.3 ADF Roller Misfeed

- 1) Open the document cover.



- 2) Turn the release knob so that you can easily remove the misfed document, and remove the document from the ADF or the feed area by carefully pulling it towards the right by using both hands.

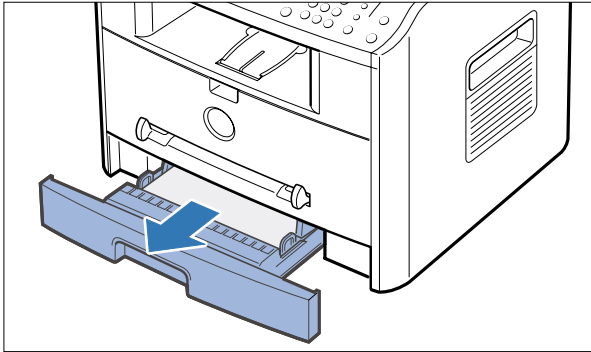


- 3) Close the document cover. Then load the documents back into the ADF.

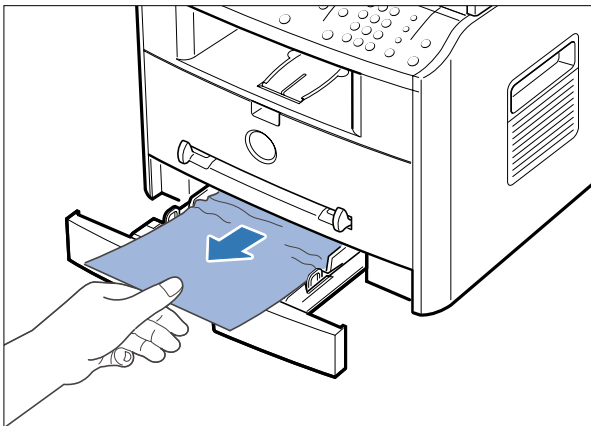
## 6.2.2 JAM0 (In the Paper Feed Area)

- 1) Open and close the front cover. The jammed paper automatically exits the machine.  
If the paper does not exit, continue to Step 2.

2 Pull the paper tray open.

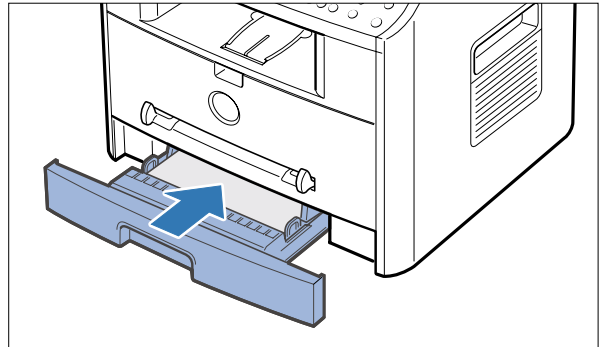


- 3) Remove the jammed paper by gently pulling it straight out.



If there is any resistance and the paper does not move when you pull or if you cannot see the paper in this area, skip to the fuser area around the toner cartridge.

- 4) Insert the paper tray into the machine until it snaps into place.

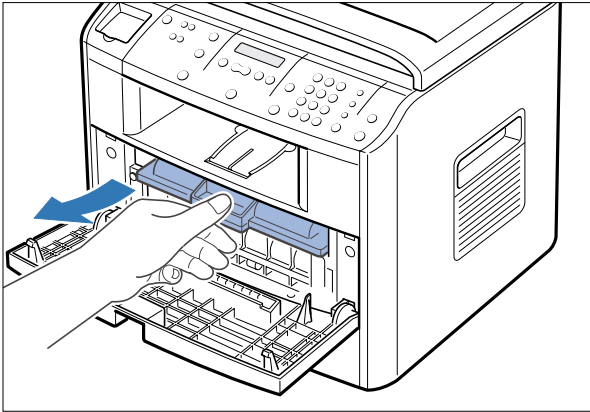


- 5) Open and close the front cover to resume printing.

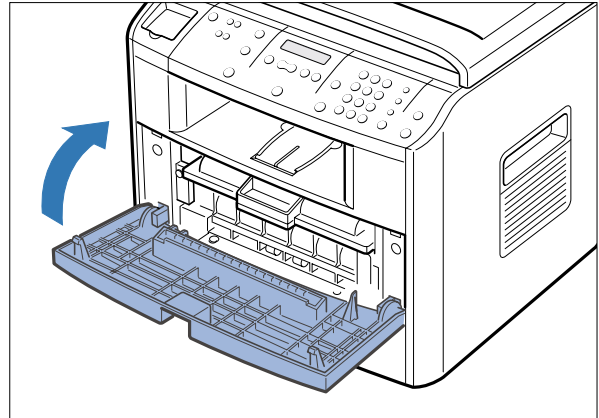
### 6.2.3 JAM1 (In the Fuser Area or Around the Toner Cartridge Area)

NOTE : The fuser area is hot. Be careful when removing paper from the machine.

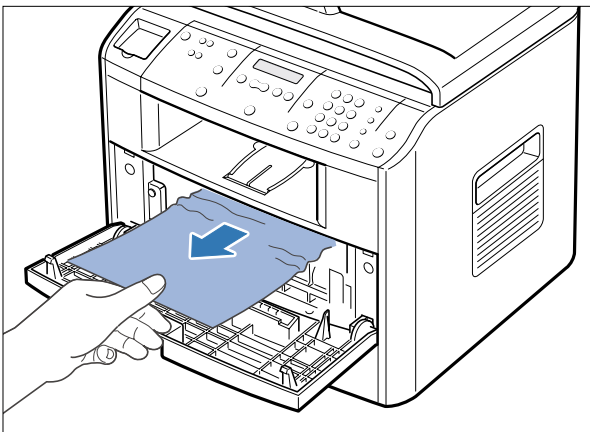
1) Open the front cover and remove the toner cartridge.



3) Replace the toner cartridge and close the front cover. Printing automatically resumes.



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

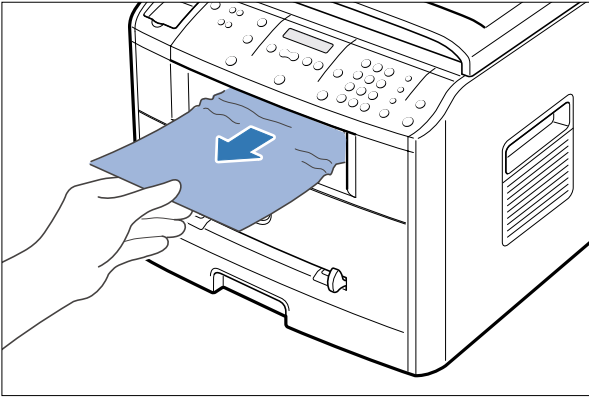




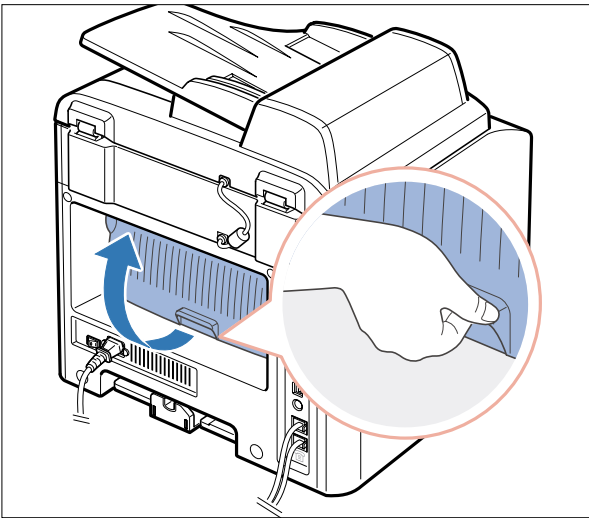
## 6.2.4 JAM 2 (In the Paper Exit Area)

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

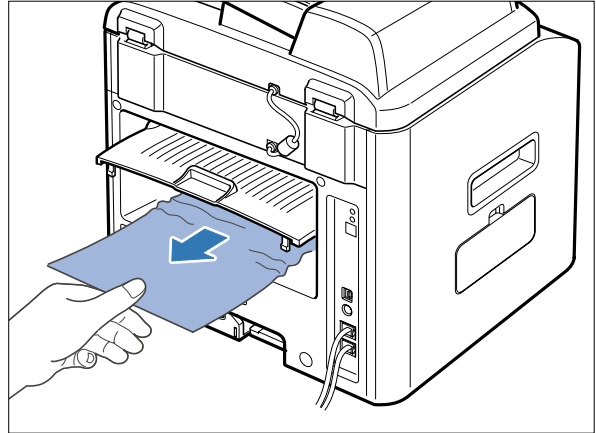
2) Gently pull the paper out of the front output tray.



3) If there is any resistance when you pull the paper or the paper is not seen in the front output tray, open the rear cover.



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



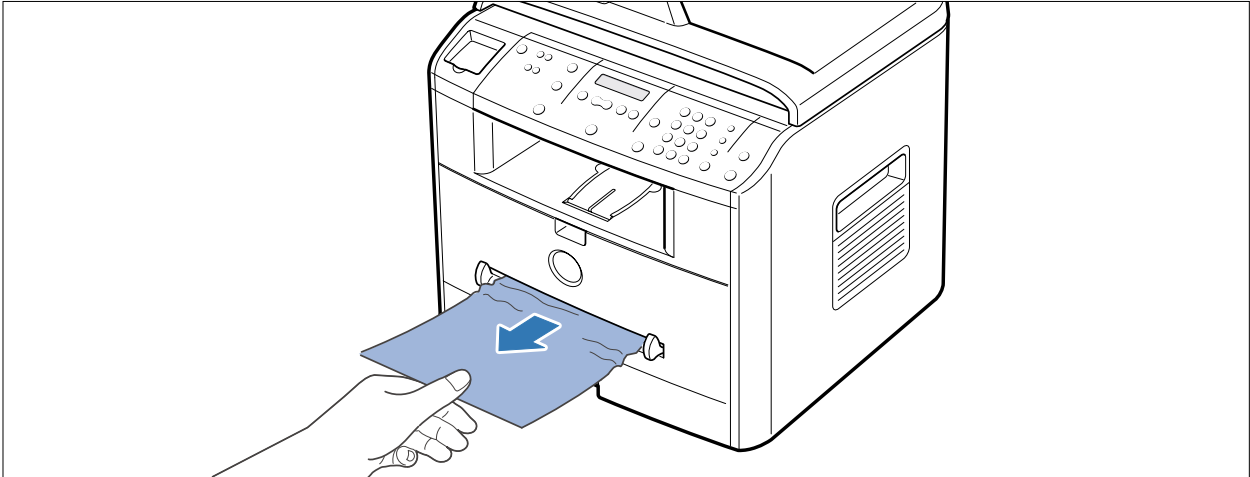
5) Close the rear cover.

6) Open and close the front cover to resume printing.

### 6.2.5 MP-Tray Jam (In the Bypass Tray)

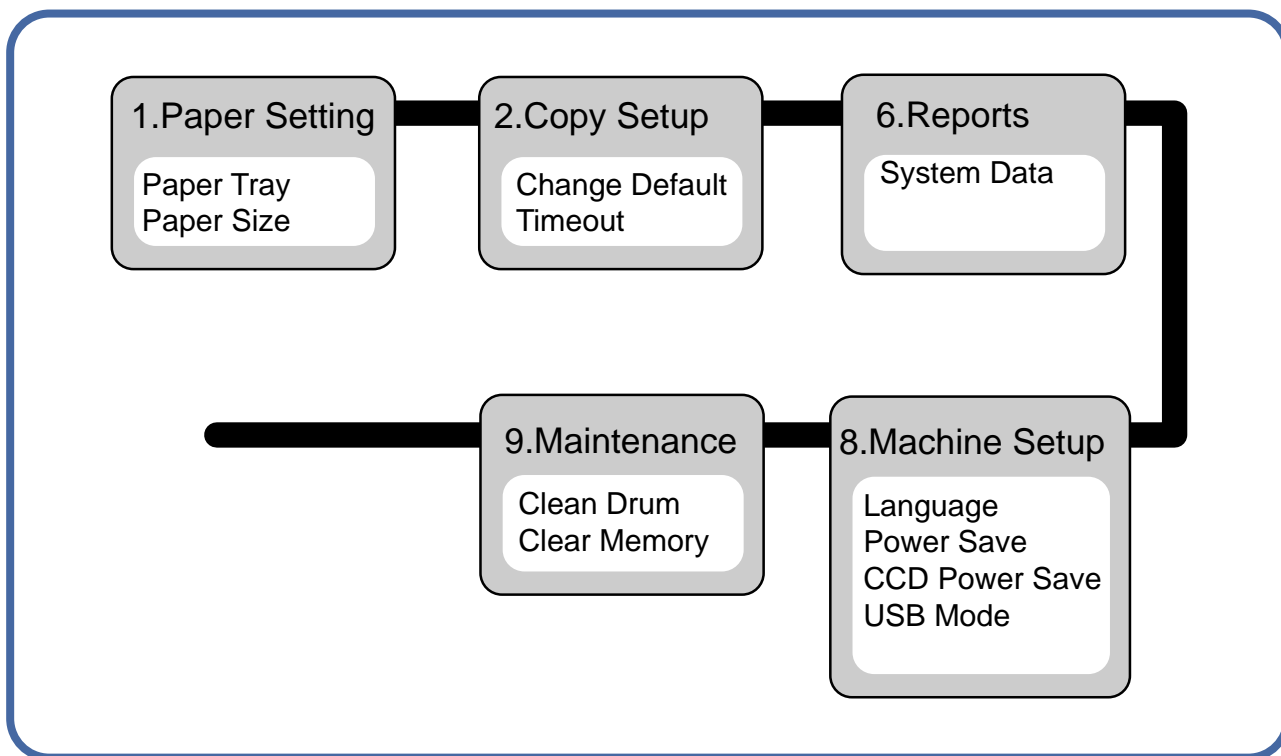
“MP Tray Jam” appears on the display when you try to print using the manual feeder and the machine does not detect paper, due to no paper or improper paper loading.

The error message may also occur when the paper is not properly fed into the machine through the manual feeder. In that case, pull the paper out of the machine.



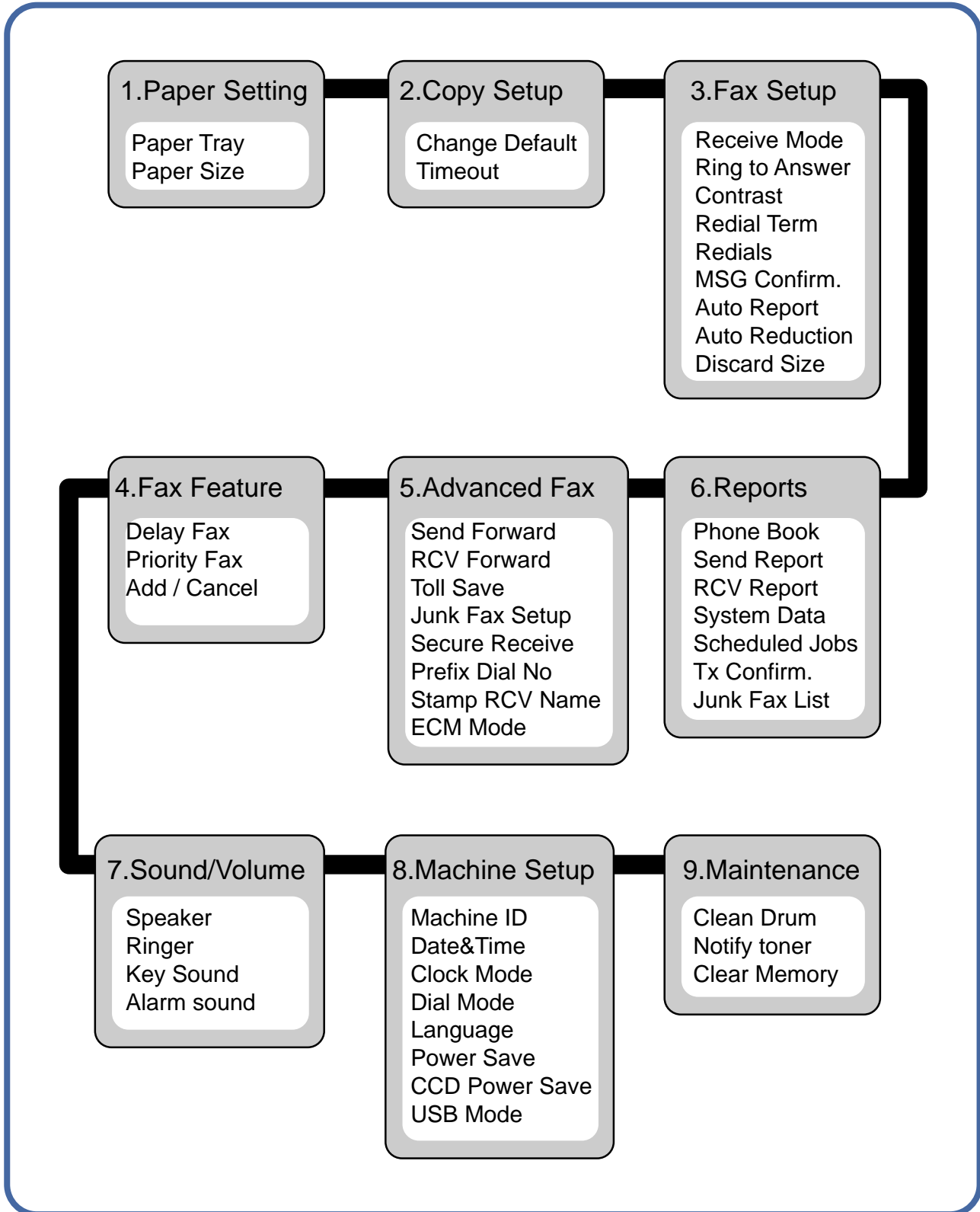
## 6.3 User Mode(SCX-4520)

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.



## 6.3 User Mode(SCX-4720F)

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.



## 6.4 Tech Mode







### 6.4.1 How to Enter Tech Mode

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

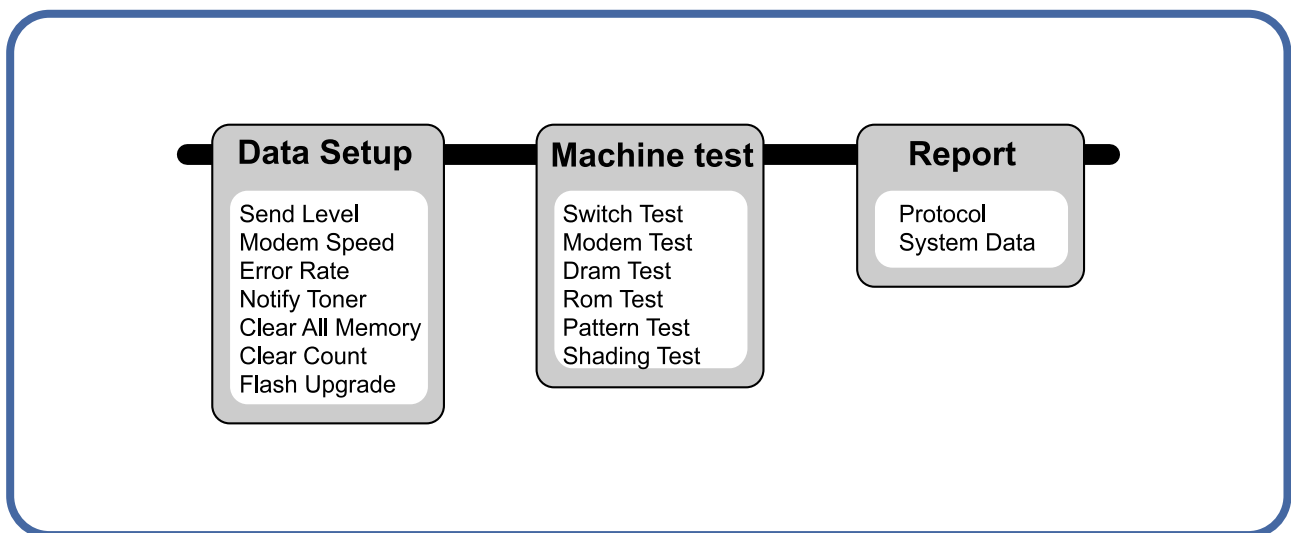
When in Tech mode the machine still performs all normal operations.

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

#### To enter the Tech mode

To enter the Tech mode press  →  →  →  →  →  in sequence and the LCD briefly displays 'TECH', the machine has entered service (tech) mode.

### 6.4.2 Setting-up System in Tech Mode



## 6.4.3 Data Setup

### SEND LEVEL

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

**Caution :** The Send Fax Level is set to the best condition during manufacture. Never change settings arbitrarily.

### DIAL MODE

This function can choose the dialing method.

\*Default : Dial (Dial/Pulse)

### MODEM SPEED

You can set the maximum modem speed.

When the fax establishes communication with a remote set the value of the maximum modem speed is checked for both transmitter and receiver. The lowest value is used. It is best set at 33.6Kbps, the default setting.

### ERROR RATE

When the error rate is about exceed the set value, the Baud rate automatically adjusts to 2400 bps.

This ensures that the error rate remains below the set value.

You can select the rate between 5% and 10%.

### CLEAR ALL MEMORY

The function resets the system to factory default settings.

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

#### < Method >

1. Select the [MEMORY CLEAR] in TECH MODE.
2. Push the ENTER button.
3. Select your country. (There are four country groups. Refer to the table below.)
4. Push the ENTER button then it will clear all memory.

**NOTICE :** Always perform a memory clear after replacing the main board, otherwise the system may not operate properly.

Country Group	USA/Canada	UK	Russia	Southafrica
Country	USA/Canada	UK	Russia	South Africa
	Mexico	Germany	India	
	Brazil	France	Oman	
		Italy	Poland	
		Spain	Bangladesh	
			Kuwait	
		Netherlands	Moroco	
		Belgium	Algeria	
		Portugal	Pakistan	
		Sweden	UAE	
		Norway	Bahrain	
		Denmark	Srilanka	
		Finland	Saudi Arabia	
		Switzerland	Chile	
		Greece	Peru	
		Ireland	Argentina	
		Turkey	Hungary	
			Romania	
			Bulgaria	
			Czech	

## 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)  
**fprt "rom file"**
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 to 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.

## 6.4.4 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.

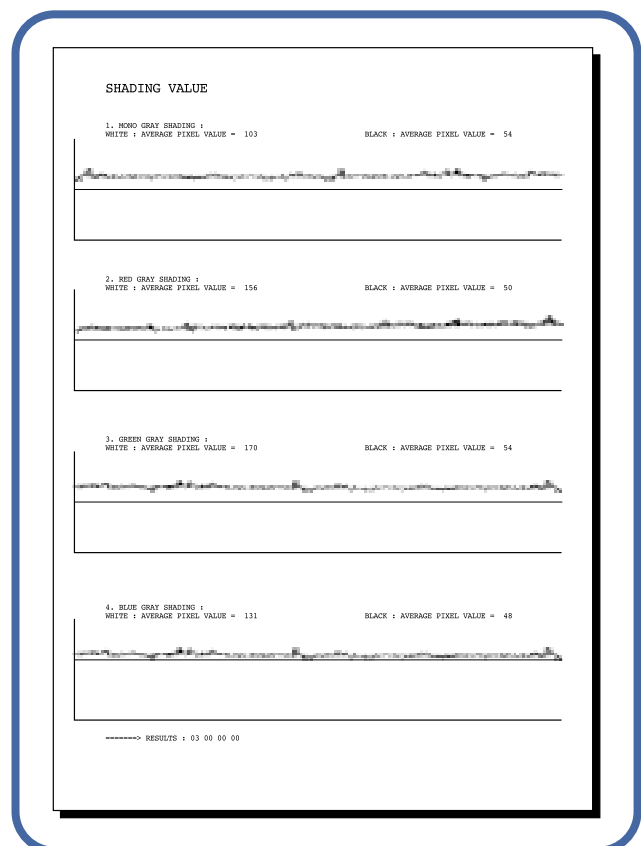
### SHADING TEST

The function is used to set the optimum scan quality determined by the specific characteristics of the CCD (Charge Coupled Device). If copy image quality is poor perform this function to check the condition of the CCD 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 CCD SHADING PROFILE will be print out.
4. If the printed image is different to the sample image shown the CCD is defective.

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





## 6.4.5 Report

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### 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.

## 6.5 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.

### 6.5.1 To enter the Engine Test Mode

#### To enter the Engine Test mode

Press  →  →  →  →  →  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)

### 6.5.2 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)

### 6.5.3 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.

## 6.6 Identify Sale Date

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This function confirms the date that the consumer bought the product and used the product for the first time. When the consumer first operates the machine, it will start the scan and page counters. The time the machine was first used is also displayed.

These settings are remembered after memory delete (Clear All Memory).

### < Method >

Press MENU, #, 1, 9, 3, # in sequence. The Firmware version is displayed on the LCD.

Press 1( in the number keypad) : The LCD display shows "Updated date"

Press 2( in the number keypad) : The LCD display shows "Product first use date"

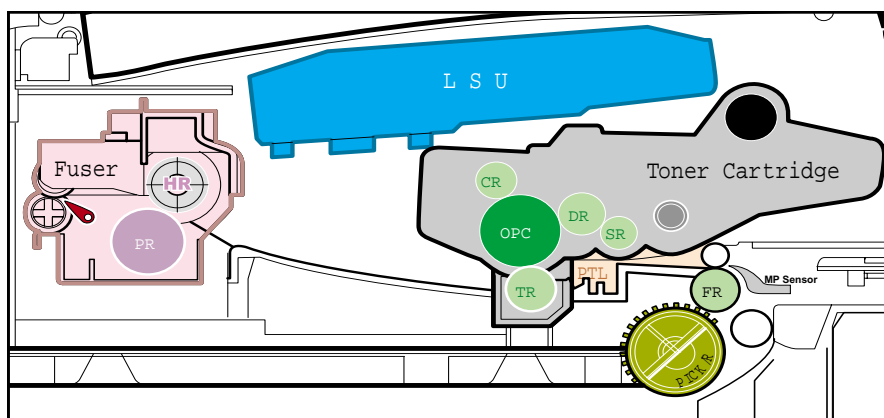
## 6.7 Consumables and Replacement Parts

The life cycle outlined below is a general guideline for maintenance purposes and is for reference only. Environmental conditions (temperature, humidity, dust etc.) and actual use can cause these figures to vary.

COMPONENT	REPLACEMENT CYCLE
ADF Rubber	20,000 Pages
Pick-up Roller	150,000 Pages
Friction Pad	60,000 Pages
Transfer Roller	60,000 Pages
Fuser Unit	80,000 Pages
Toner Cartridge	3,000 Pages (A4 ISO 5% Pattern)

## 6.8 Abnormal Image Printing and Defective Roller

If a mark or other printing defect occurs at regular intervals down the page it may be caused by a damaged or contaminated roller. Measure the repetition interval and refer to the table below to identify the roller concerned.



- |                     |                   |
|---------------------|-------------------|
| ① OPC Drum          | ⑤ Transfer Roller |
| ② Charge Roller     | ⑥ Heat Roller     |
| ③ Supply Roller     | ⑦ Pressure Roller |
| ④ Developing Roller |                   |

No	Roller	Abnormal image period	Kind of abnormal image
1	OPC Drum	75.5mm	White spot, Block spot
2	Charge Roller	37.7mm	Black spot
3	Supply Roller	44.9mm	Horizontal density band
4	Develop Roller	35.2mm	Horizontal density band
5	Transfer Roller	47.1mm	Black side contamination/transfer fault
6	Heat Roller	77.8mm	Black spot and fuser ghost
7	Pressure Roller	75.4mm	Black side contamination

## 6.9 Error Messages

The front panel displays the printer's status or error messages. Refer to the list below for an explanation of these messages and how to clear problems. The messages and their meanings are listed in alphabetical order, with numbered messages following.

### **MP Tray Jam [Door Open]**

Meaning: A paper jam has occurred in the manual feeder or the multi-function printer detects improper feeding from the manual feeder.

Solution: Clear the paper jam. Load paper in the manual feeder correctly.

### **Cancel ? 1. Yes 2. No (Only SCX-4720F)**

Meaning: While storing the document in memory the memory has become full.

Solution: To cancel the fax job, press the '1' button to accept "Yes." If you want to send the pages that were stored press the '2' button to accept "No." This will send ONLY the pages stored. The remaining pages should be sent later when more memory becomes available.

### **[COMM. Error] (Only SCX-4720F)**

Meaning: The multi-function printer has a communication problem.

Solution: Ask the sender to try again.

### **Low Heat Error / Open Heat Error**

Meaning: There is a problem in the fuser unit.

Solution: Check thermostat, thermister contact point & Heating Lamp.

### **[Over Heat]**

Meaning: The printer has overheated.

Solution: Your unit will automatically return to the standby mode when it cools down to normal operating temperature. If failure persists, check the ELA HOU-FUSER.

### **Delayed Function Full (Only SCX-4720F)**

Meaning: The delayed fax job list or memory space is full.

Solution: Cancel any unnecessary delayed fax jobs.

### **Document Jam**

Meaning: The loaded document has jammed in the Automatic Document Feeder (ADF).

Solution: Clear the document jam.

### **[Door Open]**

Meaning: The front or rear cover is not securely latched.

Solution: Close the cover until it locks into place.

### **Enter Again**

Meaning: You entered an unavailable item.

Solution: Enter the correct item again.

### **Function Impossible**

Meaning: You have tried to use a combination of printer functions that can not be used at the same time.

Solution: Reduce the number of selected functions or use only one function at a time.

### **Group Not Available (Only SCX-4720F)**

Meaning: You have tried to select a group location number where only a single location number can be used, such as when adding locations for a broadcasting operation.

Solution: Use a speed dial number or dial the number manually using the number keypad.

**[LSU Error]**

Meaning: A problem has occurred in the Laser Scanning Unit (LSU).

Solution: Use TECH mode to test LSU. Replace the LSU

**Invalid Cartridge or No Cartridge**

Meaning: You have used an unauthorized cartridge.

Solution: You must use a Samsung approved cartridge.

**[Line Error] (Only SCX-4720F)**

Meaning: Your machine cannot connect with the remote machine or has lost contact because of a problem with the phone line.

Solution: Try again. If the problem persists, wait an hour or so for the line to clear and try again. Or, turn the ECM on.

**Memory Full (Only SCX-4720F)**

Meaning: The memory is full.

Solution: Delete any unnecessary documents (delayed transmission, broadcast or polling jobs) or retransmit after more memory becomes available. This can also be caused when a large complex document with many pages is being sent, try splitting the job into more than one operation.

**[No Answer] (Only SCX-4720F)**

Meaning: The remote fax machine has not answered after several redial attempts.

Solution: Try again. Verify the number to make sure a fax can be received.

**No. Not Assigned (Only SCX-4720F)**

Meaning: The speed dial location you tried to use has no number assigned to it.

Solution: Dial the number manually using the number keypad or assign the number.

**No. Not Available (Only SCX-4720F)**

Meaning: You have tried to delete the number for a delayed fax job.

Solution: Verify the number to be deleted and try again.

Or Delete the number after the delayed fax job is completed or deleted.

**[No Paper] Add Paper**

Meaning: The paper in the paper tray has run out.

Solution: Load paper in the paper tray.

**Operation Not Assigned (Only SCX-4720F)**

Meaning: You are performing an Add / Cancel operation, but there are no jobs waiting.

Solution: Check the display to see if there are any scheduled jobs. The display should indicate if any scheduled jobs are in Standby mode, for example, Delay Fax.

**[Paper Jam 0] Open/Close Door**

Meaning: Paper has jammed in the feeding area of the paper tray.

Solution: Clear the jam.

**[Paper Jam 2] Check Inside**

Meaning: Paper has jammed in the paper exit area.

Solution: Clear the jam.

**[Power Failure]**

Meaning: The power has been turned off and then on and the printer's memory has not been saved.

Solution: The printer's memory was not saved due to a power failure. The job will need to be started over.



**Registered**

Meaning: The group dial location is already registered with another speed dial number.

Solution: Select another group dial location.

**[Retry Redial?] (Only SCX-4720F)**

Meaning: The multi-function printer is waiting for a specified time interval to redial a previously busy station.

Solution: You can press <Select> to immediately redial, or <Cancel> to cancel the redial operation.

**[Toner Low]**

Meaning: The toner is almost empty.

Solution: Take out the toner cartridge and gently shake it. By doing this, you can temporarily reestablish printing operations.

Or Replace the toner cartridge with a new one for the best print quality.

**Priority Fax Function Full (Only SCX-4720F)**

Meaning: The priority fax job queue is full.

Solution: Cancel any unnecessary priority fax jobs.

**[Incompatible] (Only SCX-4720F)**

Meaning: The remote machine did not have the requested feature, such as a sending a color fax.

This message also occurs if the remote machine does not have enough memory space to complete the operation you are attempting.

Solution: Reconfirm the remote machine's features.

**[Jam 1] or [No Cartridge]**

Meaning: Paper has jammed in the paper exit area. Or, the toner cartridge is not installed.

Solution: Clear the jam. Or, install the toner cartridge.

**[Line Busy] (Only SCX-4720F)**

Meaning: The receiving party did not answer or the line is already engaged.

Solution: Try again after a few minutes.

**Load Document**

Meaning: You have attempted to set up a copy or fax operation with no document loaded into the ADF.

Solution: Load a document into the ADF and try again.

**Scanner Locked**

Meaning: The scanner module is locked

Solution: Unlock the scanner and press Stop/Clear.

**[Stop Pressed]**

Meaning: The Stop/Clear button has been pressed during a copy or fax operation.

Solution: Try again.

**[Toner Empty] Replace Toner**

Meaning: The toner cartridge has run out. The machine stops printing.

Solution: Replace the toner cartridge with a new one.

**[Retry Redial?] (Only SCX-4720F)**

Meaning: The machine is waiting for a specified time interval to redial a previously busy station.

Solution: You can press Enter to immediately redial, or Stop/Clear to cancel the redial operation.

# 7. Troubleshooting

## 7.1 Paper Feed problems – Causes and Solutions

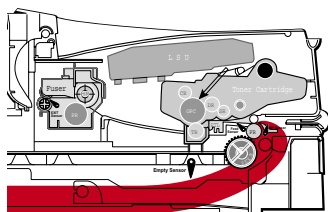
### 7.1.1 Wrong Print Position

- **Description** Printing begins when the paper is in the wrong position.

Check and Cause	Solution
A defective feed sensor actuator can cause incorrect timing.	Replace the defective actuator

### 7.1.2 JAM 0

- **Description**
  1. Paper does not exit from the cassette.
  2. Jam-0 occurs when the paper feeds into the printer.

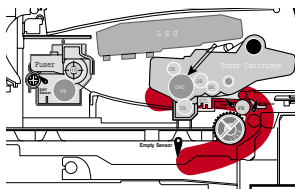


Check and Cause	Solution
1. Check the Solenoid by using Tech Mode.	1. Replace the solenoid.
2. Check cassette/MP knock-up plate and springs.	2. Repair / replace as required
3. Check paper separator pad	3 Clean with soft cloth dampened with IPA (Isopropyl Alcohol) or water. Replace if required.
4. Check the pick up roller for contamination and correct assembly.	4. Clean with soft cloth dampened with IPA (Isopropyl Alcohol) or water. Replace if required
5. If continuous clusters occur, check all rollers between pickup and registration sensor.	5. Ensure all rollers are clean and free to operate correctly.
6 If the paper feeds into the printer and Jam 0 occurs, perform Tech Mode to check feed sensor.	6. Check the SMPS PBA, Main PBA and all connections. Replace any faulty parts or the

### 7.1.3 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**

1. If the recording paper is jammed in front of or inside the fuser.
2. If the recording paper is stuck in the discharge roller and the fuser just after passing through the Actuator-Feed, Feed Actuator may be defective.

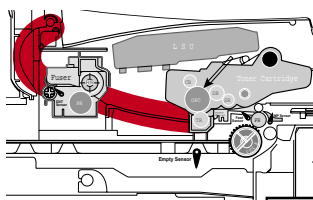
**Solution**

1. Replace the SMPS.
2. Reassemble the Actuator-Feed and Spring-Actuator if the return is bad.

### 7.1.4 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**

1. If the paper is completely fed out of the printer, but Jam 2 occurs: The Exit sensor may be defective.
  - After the paper is completely discharged the Exit sensor actuator should return to its original position to shut the photo-sensor. It may stick open or return only slowly due to contamination by paper debris or foreign objects.
2. If the paper is rolled in the Fuser Roller:
  - This occurs when a Guide claw is broken away, damaged or deformed.
  - It occurs when the Spring of a Guide claw is broken or damaged.
  - It occurs when the Heat-Roller or Pressure-Roller is seriously contaminated with toner.

**Solution**

1. Check if the exit sensor actuator is defective.
  - Check if the actuator exit is deformed (Check if the lever part is deformed).
  - Check whether burrs occur in the assembly part of the exit actuator and if the actuator operates smoothly.
  - Check if foreign objects or paper debris are preventing the correct operation of the actuator.
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. Check all ribs, claws and springs.

### 7.1.5 Multi-Feeding

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

Check and Cause	Solution
1. Check that the paper size guides are set correctly (cassette and MPF tray).	1. Adjust paper guides.
2. Solenoid malfunction (the solenoid does not work properly).	2. Replace the solenoids or PBA as appropriate.
3. Friction Pad is contaminated.	3. Clean the friction pad rubber with a soft cloth dampened with IPA (Isopropyl Alcohol) or water.
4. Paper has a rough surface texture.	4. Use paper with a smoother surface finish.

### 7.1.6 Paper rolled in the fuser

- **Description** Paper rolled around fuser rollers or 'Concertina' jam

Check and Cause	Solution
1. Contamination of the pressure roller or heat roller.	1. After disassembling the fuser, clean contamination from between the heat roller and the thermistor and also clean contamination from the pressure roller. Clean the surface of the rollers with IPA or water
2. Damaged or deformed ribs, claws or springs.	2. Check for damage or deformation of the print claws and the holder plate claws, and repair or replace as appropriate.

### 7.1.7 Paper rolled on the OPC Drum

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

Check and Cause	Solution
<ol style="list-style-type: none"> <li>1. Paper is too thin.</li> <li>2. The face of paper is curled.</li> </ol>	<ol style="list-style-type: none"> <li>1. Use paper that conforms to the printer specification.</li> <li>2. Ensure paper is stored properly to prevent curl.</li> </ol> <p><b>Note.</b> To remove paper rolled in the OPC.</p> <ul style="list-style-type: none"> <li>• Remove the toner cartridge from the set, taking care not to touch the green surface. Use the gearwheel at the side to rotate the OPC drum and pull the paper from the cassette.</li> <li>• Clean fingerprints on the OPC gently with soft tissue, taking care not to scratch the surface.</li> </ul>

### 7.1.8 Defective ADF

- **Description** ADF (Automatic document Feeder) does not operate correctly.

Check and Cause	Solution
<ol style="list-style-type: none"> <li>1. Check if the ADF rubber or HOLDER rubber are damaged or contaminated.</li> <li>2. Check if the ADF Ass'y document sensors (3 paper sensors) are working correctly.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace the contaminated or damaged part.</li> <li>2. If you cannot confirm the damaged part with the</li> </ol>

## 7.2 Set Malfunction – Causes and Solutions

### 7.2.1 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. (see page 6-18)  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.

### 7.2.2 Defective OPE Keypad

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

Check and Cause	Solution
1. Clear the memory. (See page 6-18).  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.

### 7.2.3 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 EDC Mode to test the fuser.  Replace Fuser unit Replace SMPS or Main PBA as appropriate.

### 7.2.4 Paper Empty

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

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

### 7.2.5 Paper Empty without indication

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

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

## 7.2.6 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 Switch and main PBA.	3. Replace the Main Control board or Cover Open S/W as necessary.

## 7.2.7 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 Switch and main PBA.	2. Replace the Main Control board or Cover Open S/W as necessary.



## 7.2.8 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.  <b>Note</b> Check motor operation using EDC Mode.

## 7.2.9 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 panel.

## 7.2.10 Printed Vertical Lines become curved

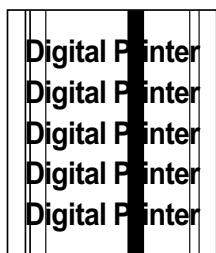
- **Description** When printing, vertical lines are not straight.

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.

## 7.3 Paper Feed Problems – Causes and Solutions

### 7.3.1 Wrong Print Position

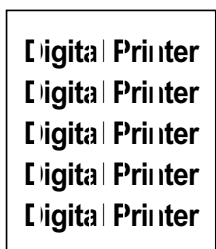
- **Description** Printing begins when the paper is in the wrong position.



Check and Cause	Solution
A defective feed sensor actuator can cause incorrect timing.	Replace the defective actuator

### 7.3.2 Vertical White Line

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



Check and Cause	Solution
1. Contamination of the window or internal lenses of LSU mirror.	1. Clean the LSU window with recommended cleaner (IPA) Clean the window with a clean cotton swab. If dirt is inside the LSU – replace LSU.
2. Foreign object inside the toner cartridge or low toner.	2. Replace the toner cartridge.
3. Foreign object, contamination or burr on the edge of the toner cartridge window.	3. Clean the exposure window.
4. If the fuser is defective, voids occur periodically at the top of a black image.	4. Open the front cover and check the ribs that correspond to the position of the voids. Remove if found.
5. Contamination of the OPC drum.	5. If the problems are not solved, replace the toner cartridge.
6. Depression or deformation of the surface of the transfer roller	6. Replace the transfer roller.

### 7.3.3 Horizontal Black Bands

• Description

1. Dark or blurry horizontal stripes occur in the printing periodically.  
(These may occur at regular intervals down the page.)

Digital Printer  
Digital Printer  
Digital Printer  
Digital Printer  
Digital Printer

Check and Cause	Solution
<ol style="list-style-type: none"> <li>1. Bad contacts on the toner cartridge high voltage terminals.</li> <li>2. The rollers in the toner cartridge may be contaminated.  Charge roller = 37.7 mm  Supply roller = 44.9 mm  Develop roller = 35.2 mm  Transfer roller = 47.1 mm</li> </ol>	<ol style="list-style-type: none"> <li>1. Clean all HV terminals on the cartridge and on the set frame. Ensure all toner or paper dust particles are removed.</li> <li>2. Clean the right Gear that has relatively small tooth gap on the OPC.</li> <li>3. If the problem persists replace the toner cartridge.</li> </ol>

### 7.3.4 Black/White Spot

• Description

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

Digital Printer  
Digital Printer  
Digital Printer  
Digital Printer  
Digital Printer

Check and Cause	Solution
<ol style="list-style-type: none"> <li>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)</li> <li>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.</li> <li>3. If a black image is partially broken, the transfer voltage is abnormal or the transfer roller's life has expired.</li> </ol>	<ol style="list-style-type: none"> <li>1. Print several OPC cleaning Mode Prints and then run the Self-test 2 or 3 times.</li> <li>2. 75.5 mm repetition: Examine the surface of the OPC drum and carefully clean with a soft, lint free cloth. If unsuccessful replace the cartridge.  37.7mm repetition: Replace the toner cartridge</li> <li>3. The transfer roller guarantees 60,000 sheets printing. If the roller's life is expired, replace it.</li> </ol> <p><b>Note.</b> Cleaning the inside of the set to remove excess toner particles or paper dust will reduce the occurrence of this problem..</p>

### 7.3.5 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. Toner Save mode enabled	1. Ensure the Toner Save mode is off. Check set and driver settings.
2. Develop roller is contaminated or the toner cartridge is almost empty.	2. Replace the toner cartridge and try to print out again.
3. Ambient temperature is below than 10°C.	3. Wait 30 minutes after printer is powered on before you start printing.
4. Bad contact caused by dirty terminals on the toner cartridge or set.	4. Clean the cartridge and set contacts. Generally clean dirt from inside the set.
5. Abnormal output from the HVPS. (Run EDC mode – see sections 6.5.1 and 6.5.3)	5. Replace the HVPS if the problems are not solved by the above four instructions.

### 7.3.6 Dark Image or a Black

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



Check and Cause	Solution
1. No charge voltage in the engine board.	1. Check the state of the connector which connects the engine board and HVPS.
2. Charge voltage fault due to bad contact between toner cartridge and set contacts.	2. Clean the high voltage charge terminals. <b>Note</b> if 1 and 2 do not resolve the problem and the problem persists replace the HVPS.
3. VD0 signal of the Main PBA is Low state.	3. Replace the LSU Unit or Main PBA.

### 7.3.7 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 holders are damaged.	1. Replace both the left and right bush and spring assemblies.
2. The life of the Toner cartridge has expired.	2. Replace the toner cartridge and try to print out
3. The toner level is not even on the toner cartridge roller due to the damaged blade or low toner.	3. Gently shake the toner cartridge and try printing again. If the problem persists replace the toner cartridge.

### 7.3.8 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. Printing large quantities of low coverage (2%) pages or the printer has not been used for a long time.	1. The toner cartridge is basically designed to print 3,000 sheets with 5% image. If it prints more than 3,600 sheets with 2% coverage, a background can occur.
2. Is a recycled toner cartridge be used?	2. The A/S is not guaranteed if using a recycled toner cartridge.  <b>Note</b> try shaking the toner cartridge gently from side to side. If the problem persists replace the toner cartridge.
3. Has the life span of the toner cartridge ended?	3. Replace the toner cartridge when its life is expired.
4. Is the movement(Up and Down) of the transfer roller smooth?	4. Clean the transfer roller bushes.
5. Is the HVPS normal?	5. Clean the high voltage charge terminals. If this does not resolve the problem replace the HVPS.

### 7.3.9 Ghost (1)

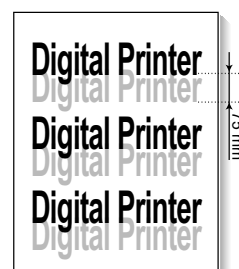
- **Description** Ghost occurs at 75.5 mm intervals of the OPC drum in the whole printing.



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 Toner cartridge.	1 and 2. Clean all HV contacts, If problem persists replace the HVPS.  If problem still persists replace the Main PBA
2. Bad contacts caused by contamination from toner particles between high voltage terminal in the main body and the one in the HVPS board.	
3. The life of toner cartridge is expired.	3. Replace the toner cartridge and try to print out.
4. Transfer roller life (60,000 sheets) has expired.	4. Check the transfer roller lifetime and replace it.
5. Low ambient temperature (below 10°C).	5. Wait about 30 minutes after power on before using printer.
6. Damaged cleaning blade in the toner cartridge.	6. Replace the toner cartridge and try to print out again

### 7.3.10 Ghost (2)

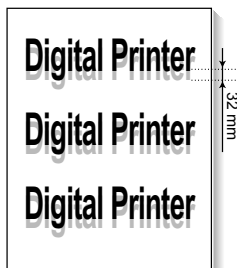
- **Description** Ghost occurs at 75 mm intervals of the OPC drum in the whole printing. (When printing on card stock or transparencies using manual feeder)



Check and Cause	Solution
When printing on card stock, thicker than normal paper or transparencies, such as OHP, a higher transfer voltage is required.	Ensure that the correct paper type is selected in the printer driver or application software. Remember to set back to normal paper after use.

### 7.3.11 Ghost (3)

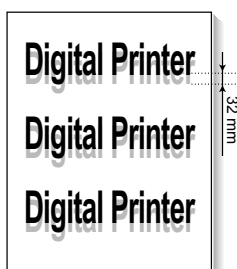
- **Description** Ghost occurs at 66.3 or 75.5 mm intervals.



Check and Cause	Solution
Fuser contamination.	1. Disassemble the fuser and remove any contamination on the rollers. Clean any contamination from between the Thermistor and the Heat roller. (Caution: Take care not to deform the rollers.)

### 7.3.12 Ghost (4)

- **Description** A White ghost occurs in a black image printing at 32 mm intervals.



Check and Cause	Solution
1. The life of the developer may be expired.	1. Problem in the toner cartridge, replace the toner cartridge and try to print out again.
2. Abnormal output from the HVPS. (Run EDC mode – see sections 6.5.1 and 6.5.3)	2. Check the HVPS supply voltage. Clean all HV terminals on the cartridge and on the set. Replace the HVPS if the problem persists.

### 7.3.13 Stains on the Face of the Page

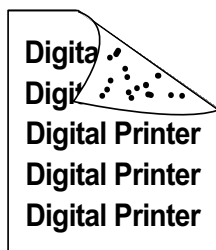
- **Description** The background on the face of the printed page is stained.



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

### 7.3.14 Stains on Back of Page

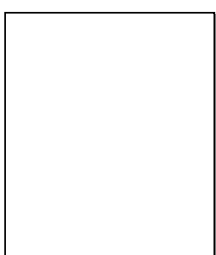
- **Description** The back of the page is stained at 47.1 or 75.4 mm intervals.



Check and Cause	Solution
1. 47.1mm : Transfer roller is contaminated.	1. Perform the OPC Cleaning Mode Print 2 or 3 times. Run Self-Test to remove the contamination from the transfer roller.  <b>Note.</b> Replace the transfer roller if  contaminated severely.
2. 75.4mm : Pressure roller is contaminated.	2. Disassemble the fuser and clean the H/R(Heat Roller) and P/R(Pressure roller). Check and clean the area between the H/R and the Thermistor. (Caution: Take care not to deform the rollers.)

### 7.3.15 Blank Page Print out (1)

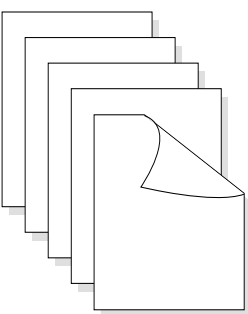
- **Description** Blank page is printed.



Check and Cause	Solution
Bad ground contacts in OPC and/or toner cartridge.	1. Check if the Ground-OPC or the OPC Ground Zener diode are defective or open circuit. (set inside left side).  2. Remove contamination of the terminals on the toner cartridge and the unit.

### 7.3.16 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. Abnormal solenoid.	1. Perform the engine self test using TECH Mode to check if the Solenoid is normal. If the problem persists replace the main PBA



## 7.4 Fax & Phone Problems

### 7.4.1 No Dial Tone

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

Check and Cause	Solution
<ol style="list-style-type: none"> <li>1. Check that the telephone line cord supplied with the set is connected to TEL LINE correctly.</li> <li>2. Listen for a CLICK sound when the OHD key is pressed.</li> <li>3. Check the connection of the HARNESS between the LIU and the Main B'd.</li> <li>4. Check that the SPEAKER is connected correctly.</li> </ol>	<ol style="list-style-type: none"> <li>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.</li> <li>2. If you cannot hear the OHD CLICK sound, the OPE Ass'y may be defective. Replace the OPE Ass'y.</li> <li>3. Check the Speaker connection and the harness between the LIU and the Main PBA, replace as necessary.</li> <li>4. Use Tech mode / Modem Test to check that the speaker and amplifier are working. Replace the Main B'd.</li> </ol>

### 7.4.2 Defective MF DIAL

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

Check and Cause	Solution
<ol style="list-style-type: none"> <li>1. Check that the telephone line cord supplied with the set is connected to TEL LINE correctly.</li> <li>2. Listen for a CLICK sound when the keKEY is pressed.</li> <li>3. Check the connection of the HARNESS between the LIU and the Main B'd.</li> <li>4. Check that the SPEAKER is connected correctly.</li> </ol>	<ol style="list-style-type: none"> <li>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.</li> <li>2. If you cannot hear the OHD CLICK sound, the OPE Ass'y may be defective. Replace the OPE Ass'y.</li> <li>3. Check the Speaker connection and the harness between the LIU and the Main PBA, replace as necessary.</li> <li>4. Use Tech mode / Modem Test to check that the speaker and amplifier are working. Replace the LIU and Main B'd in sequence</li> </ol> <p><b>Notes:</b> Product supports MF DIAL type only.</p>

### 7.4.3 Defective FAX FORWARD/RECEIVE

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

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

### 7.4.4 Defective FAX FORWARD

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

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

### 7.4.5 Defective FAX RECEIVE (1)

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

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

### 7.4.6 Defective FAX RECEIVE (2)

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

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

### 7.4.7 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.

### 7.4.8 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..

### 7.4.9 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.

## 7.5 Copy Problems

### 7.5.1 White Copy

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

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

### 7.5.2 Black Copy

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

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

### 7.5.3 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.

### 7.5.4 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.

## 7.6 Scanning Problems – Causes and Solutions

### 7.6.1 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 CCD Ass'y and try again.

### 7.6.2 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 (see page 6.15) and examine the waveform printout.	1. If the CCD waveform form is abnormal replace the CCD 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.

## 7.7 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.

### 7.7.1 Precautions on Safe-keeping of Toner Cartridge

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

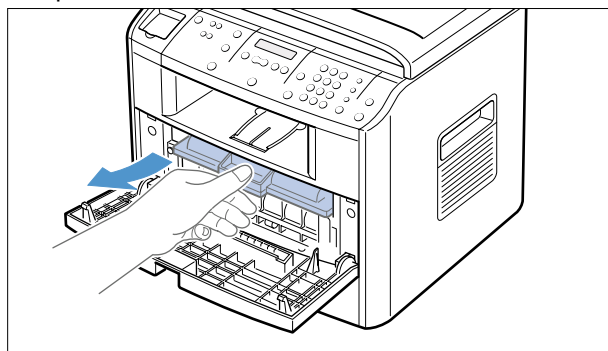
### 7.7.2 Service for the Life of Toner Cartridge

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.

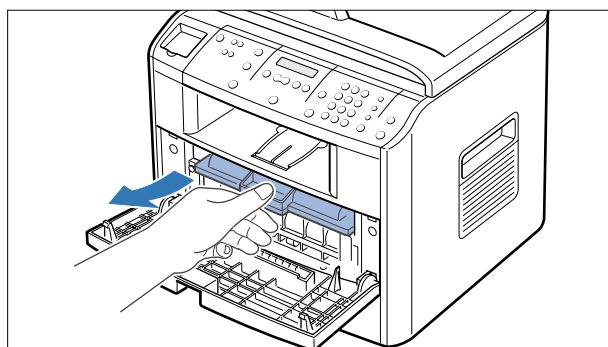
#### 7.7.2.1 Redistributing Toner

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.

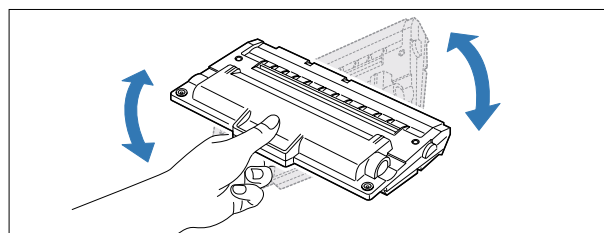
1. Open the Front Cover.



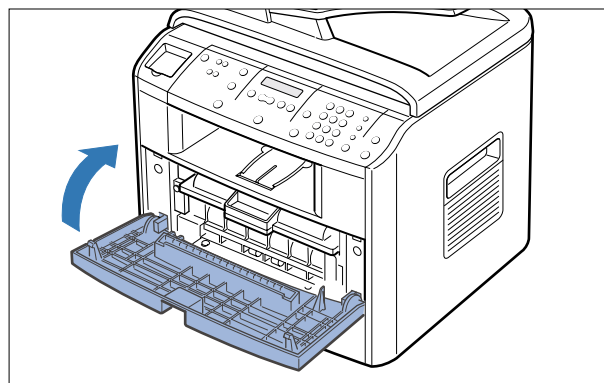
2. Lightly pushing the used cartridge down, pull it out.



3. Unpack the new toner cartridge and gently shake it horizontally four or five times to distribute the toner evenly inside the cartridge.



4. Save the box and the cover for shipping. Slide the new toner cartridge in until it locks into place.



*Note : Help the environment by recycling your used toner cartridge. Refer to the recycling brochure packed with the toner cartridge for details.*



### 7.7.3 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.

### 7.7.4 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.

#### 7.7.4.1 Toner Low

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

#### 7.7.4.2 Toner Empty

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

#### 7.7.4.3 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.

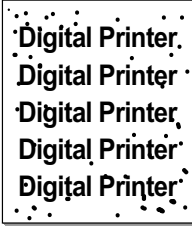
When this message occurs there are approximately 1,000 pages left.

#### 7.7.4.4 Replace Drum

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

## 7.7.5 Signs and Measures of Poor toner cartridge

Fault	Signs	Cause & Check	Solution
<b>Light image and partially blank image (Cartridge life is ended.)</b> 	<ul style="list-style-type: none"> <li>• The printed image is light or dirty and untidy.</li> <li>• Parts of the image are not printed.</li> <li>• Periodically a "tick tick" noise occurs.</li> </ul>	<ol style="list-style-type: none"> <li>1. If the image is light or dirty and untidy - Shake the toner cartridge and then recheck. OK: Lack of toner, so the life is nearly expired.</li> <li>2. Some part of image is not printed - Shake the toner cartridge and then recheck. (1)NG: clean the LSU window with a cotton swab, then recheck. (2)OK: Lack of toner, so the life is nearly closed.</li> <li>3. Periodically a noise like "tick tick" occurs - Measure the time between ticks.</li> <li>4. White vertical stripes on the whole or part of the page : Shake the toner cartridge and then recheck. OK: Lack of toner, so the life is nearly expired</li> </ol>	<ol style="list-style-type: none"> <li>1. All of 1, 2, 3 If image quality improves by shaking, replace with a new toner cartridge. Perhaps up to 100 pages left before out of toner.</li> <li>2. For item 2- If image quality improves after cleaning the LSU window then the toner cartridge is normal. (Contamination on the LSU window has caused image quality problems.)</li> <li>3. For item 3- If the time between ticks is about 2 seconds, the toner inside the toner cartridge is almost exhausted. ( Purchase and replace with a new toner cartridge. Perhaps up to 200 pages left before out of toner)</li> <li>4. For item 3- This is a phenomenon caused by lack of toner, so replace the toner cartridge.</li> </ol>
<b>Toner Contamination</b>	<ul style="list-style-type: none"> <li>• Toner contamination of the printed page at regular intervals down the page.</li> <li>• Random Toner contamination over the whole or large parts of the paper surface.</li> </ul>	<ol style="list-style-type: none"> <li>1. Contamination at regular intervals. (a)Check the distance between contamination marks. (b)Check the appearance of both ends of the toner cartridge OPC drum.</li> <li>2. Random page contamination. (a) Check that the terminals (contact points) of the toner cartridge and the set are clean. (b) Check that the terminals (contact points) of the toner cartridge and the set are not damaged.</li> </ol>	<ol style="list-style-type: none"> <li>1.(a) Refer to section 7.6 1.(b) If both ends of the OPC drum are contaminated with toner: Check no. of pages printed using this cartridge – perhaps waste toner collector is full.</li> <li>2. Clean all HV contacts. If the problem persists replace the cartridge.</li> </ol>

Fault	Signs	Cause & Check	Solution
<b>White Black spot</b> 	<ul style="list-style-type: none"> <li>• Light or dark black dots on the image occur periodically.</li> <li>• White spots occur in the image periodically.</li> </ul>	<ol style="list-style-type: none"> <li>1. If light or dark black dots occur at regular intervals this is because the toner cartridge rollers are contaminated with foreign substance or paper particles. (1)38mm interval : Charge roller (2)95mm interval : OPC cycle</li> <li>2. If white spots occur in a black image at intervals of 95mm, or black spots occur elsewhere, the OPC drum is damaged or foreign substance is stuck to the surface.</li> <li>3. If a black and white or graphic image is partially broken at irregular intervals, the transfer roller's life has been expired or the transfer voltage is abnormal.</li> </ol>	<ol style="list-style-type: none"> <li>1. For item 1 - Run OPC Cleaning Mode Print 4-5 times repeatedly to remove excess toner. Especially check for foreign substances on the OPC surface Clean with a clean gauze moistened with IPA (Isopropyl Alcohol) take care not to damage the OPC surface. ▲ Never use other forms of alcohol.</li> <li>2. For Item 2 - If running OPC Cleaning Mode Print 4-5 times does not resolve the problem : at intervals of 37.7mm - place the toner cartridge. : at intervals of 75.5mm – clean OPC drum.</li> <li>3. For item 3 - Change the transfer roller because the life of the transfer roller has expired. (Check the transfer voltage and readjust if necessary.)</li> </ol>
<b>Recycled product</b>	<ul style="list-style-type: none"> <li>• Poor appearance of the toner cartridge.</li> <li>• Dirty or rough printouts.</li> <li>• Bad background in the image.</li> </ul>	<ol style="list-style-type: none"> <li>1. Poor appearance of the toner cartridge. (a)Check for damage to label and if different materials are used. (b)Check the appearance of parts of the toner cartridge, such as frame, hopper, screws</li> <li>2. Unclean and rough printouts. (a)Check that the terminals (contact point) of the toner cartridge and the set are clean. (b)Check that the terminals (contact point) of the toner cartridge and the set are not damaged.</li> </ol>	<ol style="list-style-type: none"> <li>1. For Item 1 the cartridge is judged to be a recycled product - (a) If there is any evidence of disassembling the toner cartridge. (b) If materials other than normal parts of the toner cartridge are added or substituted.</li> <li>2. Clean all HV contacts. If the problem persists replace the cartridge.</li> </ol> <p><b>Note</b> If the cartridge is judged to be recycled then these types of problems can occur when the toner cartridge is recycled over 2 times.</p> <p>If 'nearly empty' cartridges are collected for re-use this is judged as recycling the toner cartridge.</p>

Fault	Signs	Cause & Check	Solution
<b>Ghost &amp; Image Contamination</b>	<ul style="list-style-type: none"> <li>• The printed image is too light or dark, or partially contaminated black.</li> <li>• Totally contaminated black. (Black image printed out)</li> <li>• The density of printouts is too dark and ghost occurs.</li> </ul>	<ol style="list-style-type: none"> <li>1. The printed image is too light or dark, or partially contaminated black.               <ol style="list-style-type: none"> <li>(a) Check if foreign substance or toner are stuck to the terminals (point of contact) of the toner cartridge or set.</li> <li>(b) Check if the terminal assembly is normal.</li> </ol> </li> <li>2. Totally contaminated black. (Black image printed out)               <ol style="list-style-type: none"> <li>(a) Check if foreign substances are stuck to the terminal (point of contact) of the toner cartridge or set.</li> <li>(b) Check if the terminal assembly is normal. (Especially check the charge roller terminal.)</li> </ol> </li> <li>3. The printed image is dark and ghost occurs.               <ol style="list-style-type: none"> <li>(a) Check if foreign substances are stuck to the terminal (point of contact) of the toner cartridge or set.</li> <li>(b) Check if the terminal assembly is normal. (Especially check the developer roller terminal.)</li> </ol> </li> </ol>	<ol style="list-style-type: none"> <li>1. All of Items 1, 2, 3               <ol style="list-style-type: none"> <li>(a) Clean the contacts on the toner cartridge.</li> <li>(b) Clean the contact points on the set.</li> <li>(c) If the terminal assembly is damaged repair or replace the terminals in the set or replace the cartridge</li> </ol> </li> <li>2. In Item 2 This is particularly related to problems with the charge roller contact. Pay close attention to the charge roller contacts.</li> <li>3. In Item 3 This is particularly related to problems with the developer bias voltage contact. Pay close attention to the charge roller contacts.</li> </ol>

## 7.8 Software Problems – Causes and Solutions

### 7.8.1 The printer is not working (1)

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

Check and Cause	Solution
<p>1. Run Self-Test Mode: using the menu buttons print the test page. (Menu, Enter, Enter).</p> <p>2. Check that the PC and the printer are properly connected and that the toner cartridge installed correctly.</p> <p>3. Printing is not working in the Windows.</p> <p>4. Check that the printer cable is directly connected to the printer.</p>	<p>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.</p> <p>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)</p> <p>3. Check that the connection between PC and printer port are correct. If you use windows, check that the printer driver in the controller is set up correctly set up, the correct port is selected and 'Use On-line' is selected in the driver. If the printer driver is properly set up try printing a test page from the driver properties. Check in which program printing is not working. Try opening 'Memo 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.</p> <p>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.</p>

## 7.8.2 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.

### 7.8.3 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.

## 7.8.4 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.



## 7.9 Network Problem Troubleshooting

### 7.9.1 General Problems

Problem	Solution
Incorrect setup can cause network errors.	Possibly the parameters in PortThru (the network card) are corrupted. Restart the system and reset the printer network settings to factory defaults using the printer front panel or by using SyncThru on your computer.
SNMP Manager cannot access the printer.	Using the SNMP manager computer try pinging the printer. If it does not succeed there must be a problem with network connectivity between the SNMP manager computer and PortThru. If ping succeeds verify that community names entered into the PortThru settings are spelled correctly and have sufficient permissions.
The printer does not obtain an IP address from a BOOTP, RARP or DHCP server.	If there is an IP address server on your network ensure that there are no VLAN, Access Control Lists or other network settings preventing communication. Remember these protocols are generally not routable unless specifically setup in a router. Where no address server exists use SyncThru or the control panel on the printer to select "Static" IP Address Assignment Method" in TCP/IP tab. You should set IP address, Subnet Mask and Default Gateway in the printer using SyncThru, printer control panel or browser methods (see the user guide).
Print server does not print using TCP/IP protocol.	<ol style="list-style-type: none"> <li>1. Check that TCP/IP protocol is installed and properly configured in your PC.</li> <li>2. Check whether your PC is on the same network with print server (IP addresses and subnet masks must be properly set in the PC AND in the printer).</li> </ol>
Unable to print in a NetWare environment.	Use SyncThru to see if PortThru indicates that queue is serviceable. If not, the login permissions may have changed or the configuration information for queues, printers and print servers may have been changed. Verify using PCONSOLE and NWADMIN that the configuration is correct and check the job queue to see if the print job exists. Check that NetWare is enabled on PortThru. Check that the Check Job very is configured on PortThru.
The name of printer is not displayed when adding a port and the printer doesn't function.	<ol style="list-style-type: none"> <li>1. Check that the protocol settings on your computer are correct.</li> <li>2. Assign an IP Address to PortThru using the front panel, SyncThru or browser methods (see the user guide).</li> </ol>

## 7.9.2 Windows Problems

Problem	Solution
After installing PortThru the print server name is not displayed under New Print Server in SyncThru.	<ol style="list-style-type: none"> <li>1. Verify that the printer power switch is turned on and the 'READY' message is displayed on the printer front panel.</li> <li>2. Verify that the LAN cable is plugged into the PortThru card.</li> <li>3. There are 2LEDs on the PortThru card. One should flash irregularly and the other should be on. If this is not the case ensure that the network card is properly installed and the PCB and cable connectors make a good connection. If the problem continues check the network cable / socket by using a different cable or socket. If the problem continues replace the network card.</li> <li>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.</li> </ol>
The print server name is displayed, but the test page is not printed.	Using the front panel menus print the Network configuration. If the Network menu is not displayed or the configuration page is not printed turn off the printer, ensure the network card is properly fitted then turn it back on and try again. If the problem continues replace the network card.
SyncThru indicates that firmware upgrade is complete but when the network configuration is printed the software version has not changed.	Before attempting to upgrade firmware ensure that computer and printer can communicate using a Ping command.
SyncThru is unable to automatically detect the printer.	<ol style="list-style-type: none"> <li>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.</li> <li>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.</li> <li>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.</li> <li>4. Ensure that the network cable and wall socket are functioning correctly.</li> <li>5. Ensure that the version of SyncThru is the same as or newer than the version supplied with the printer.</li> <li>6. Ensure that there is no router between the printer and the computer as SyncThru will not work through a router.</li> <li>7. Ensure there are no Switch or Router VLAN or Access Control Lists which are blocking communication between the printer and the computer.</li> </ol> <p><b>Note</b> Windows XP does not support DLC/LLC protocols.</p>
The printer does not print via a network connection.	<ol style="list-style-type: none"> <li>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</li> <li>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.</li> </ol>

### 7.9.3 SyncThru Installation Problems

Problem	Solution
"File Transfer Error" message appears during the Installation process.	<ol style="list-style-type: none"><li>1. Make sure that any previously installed version of SyncThru is uninstalled. Restart your PC after uninstalling previous versions.</li><li>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.</li></ol>
'Unable to add the Port list of Samsung ports' message appears when you add a port.	Verify that your PC restarts after installing SyncThru.

# 8. Exploded Views and Parts List

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8.11 SCF(Optional Cassette Frame) Exploded view .....	page(8-25)

- Exploded drawings and service parts lists are given for items which may be expected to have a higher failure rate.
- Where a failure occurs you can identify the part in the exploded diagram and, using the parts cross reference number, refer to the appropriate parts list to identify the part number.

Note : Parts numbers given here are correct at the time of publication.

When ordering parts please use the on-line ordering system to check if there have been any changes to part numbers.

## 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 )		

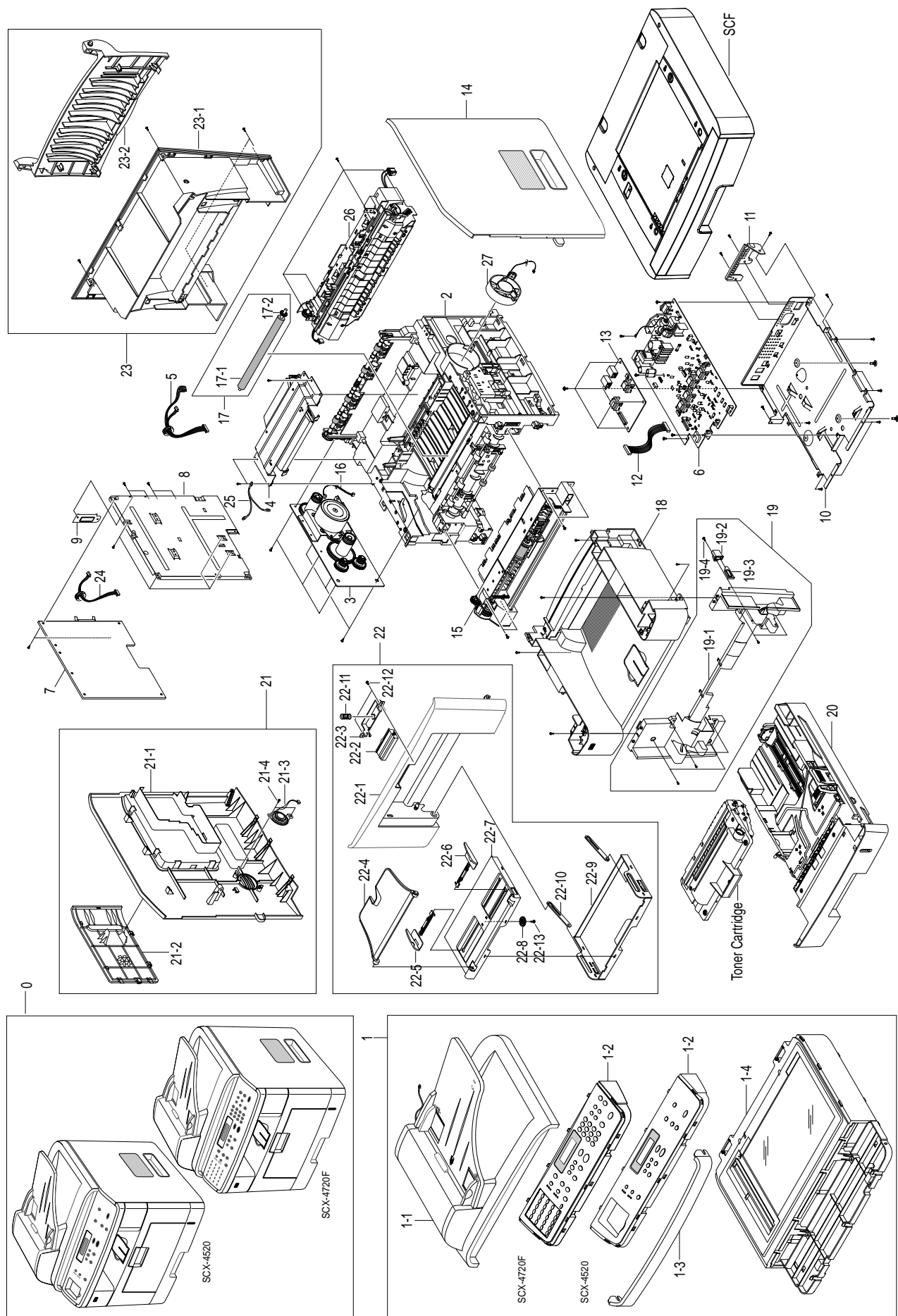
**Type 1** : This format is used throughout Samsung on all product ranges. Typically it is used for small components and electronic parts.

**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)

## 8.1 Main Assembly



## Main Assembly Parts List

SA : Service Available

O : Service available X : Service not available

No.	Description	SEC.Code	Q'ty	SA	Remark
0	SCX-4520				
	SCX-4720F				
1	ELA HOU-SCAN	JC96-03181A	1	X	SCX-4520
	ELA HOU-SCAN	JC96-03184A	1	X	SCX-4720F
1-1	ELA HOU-ADF	JC96-03169A	1	O	
1-2	ELA HOU-OPE	JC96-03183A	1	O	SCX-4520
	ELA HOU-OPE	JC96-03174A	1	O	SCX-4720F
1-3	COVER-M-OPE FRONT	JC63-00496A	1	O	
1-4	ELA HOU PLATEN	JC96-03172A	1	O	
2	FRAME-M-BASE	JC61-00906A	1	X	
3	ELA UNIT-RX DRIVE	JC96-03078A	1	O	
4	UNIT-HUMMINGBIRD LSU	JC59-00018B	1	O	
5	CBF HARNESS-LSU	JC39-00395A	1	O	
6	SMPS-V1	JC44-00070A	1	O	⚠ 110V
	SMPS-V2	JC44-00071A	1	O	⚠ 220V
7	PBA MAIN-MAIN CONTROLLER	JC92-01597A	1	O	SCX-4720F
	PBA MAIN-MAIN CONTROLLER	JC92-01598A	1	O	SCX-4520
8	SHIELD-P-CONTROLLER	JC63-00508A	1	X	
9	BRACKET-P-DUMMY CTRL	JC61-00679A	1	X	
10	MEA UNIT-SHIELD ENGINE	JC97-01943A	1	X	
11	BRACKET-P-INLET	JC61-00693A	1	X	
12	CBF HARNESS-HIGH LIU	JC39-00325A	1	O	
13	PBA SUB-LIU	JC92-01599A	1	O	RUSSIA
	PBA SUB-LIU	JC92-01599B	1	O	EU/SER
	PBA SUB-LIU	JC92-01599C	1	O	AUSTRALIA
14	COVER-M-SIDE R	JC63-00499A	1	O	
15	ELA UNIT-MP	JC96-03132B	1	O	
16	CBF HARNESS-MOTOR	JC39-00355A	1	O	
17	MEA ETC TR	JC97-01917A	1	O	
17-1	ROLLER-TRANSFER R2	JC66-00703A	1	X	
17-2	GEAR-TRANSFER	JC66-00395A	1	X	
18	ELA HOU-COVER MIDDLE	JC96-03247A	1	O	
19	MEA-COVER MID FRONT	JC97-02043A	1	O	
19-1	COVER-M-MID FRONT	JC63-00497A	1	O	
19-2	CAP-M-SUB ACTUATOR	JC67-00068A	1	X	
19-3	PMO-M-SUB ACTUATOR	JC72-01339A	1	X	
19-4	SCREW-TAPTITE	6003-000196	1	X	

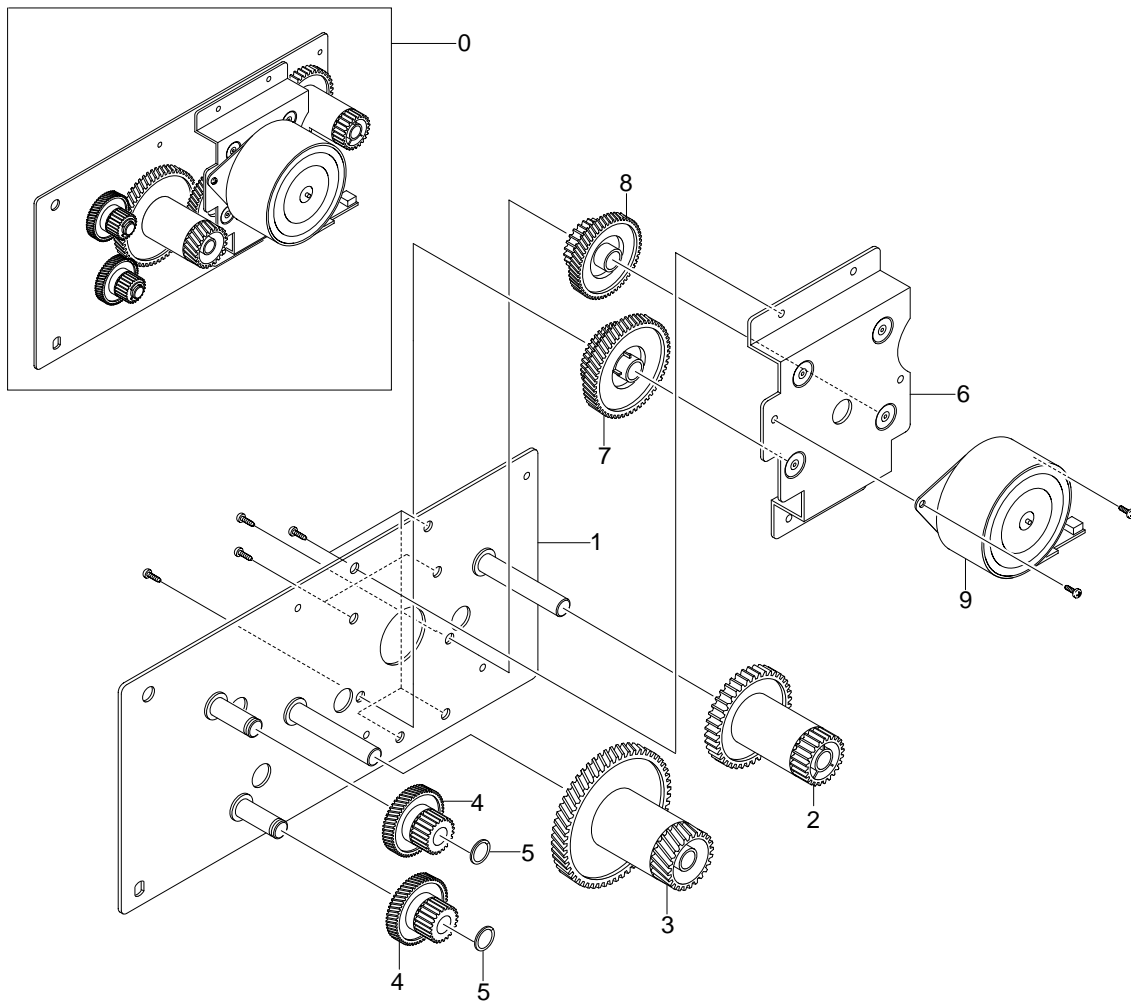
## Main Assembly Parts List

SA : Service Available

O : Service available X : Service not available

No.	Description	SEC.Code	Q'ty	SA	Remark
20	MEA UNIT-CASSETTE	JC97-02020A	1	O	
21	ELA HOU-COVER SIDE L	JC96-03185A	1	O	
21-1	COVER-SIDE L	JC63-00500A	1	X	
21-2	COVER-DIMM	JC63-00501A	1	X	
21-3	SPEAKER	3001-001591	1	O	
21-4	SCREW-TAPTITE	6003-000264	2	X	
22	MEA-COVER FRONT	JC97-02019A	1	O	
22-1	COVER-M-FRONT	JC63-00505A	1	O	
22-2	KNOB-M-LOCKER	JC64-00154A	1	X	
22-3	HOLDER-M-LOCKER	JC61-00953A	1	O	
22-4	TRAY-M-EXIT-MP	JC63-00447A	1	X	
22-5	ADJUST-M-MP L	JC70-00478A	1	X	
22-6	ADJUST-M-MP R	JC70-00479A	1	X	
22-7	TRAY-M-COVER_MP	JC63-00446A	1	X	
22-8	GEAR-PINION	JG66-40003A	1	O	
22-9	TRAY-M-CASE_MP	JC63-00506A	1	X	
22-10	TRAY-M-LINK_MP	JC63-00444A	2	X	
22-11	SPRING-CIS(2)	JG61-70549A	1	X	
22-12	SCREW-TAPTITE	6003-000196	2	X	
22-13	SCREW-TAPTITE	6003-000264	1	X	
23	MEA -COVER REAR	JC97-02018A	1	O	
23-1	COVER-M-REAR	JC63-00503A	1	O	
23-2	COVER-FACE UP	JC63-00504A	1	O	
24	CBF HARNESS ENGINE	JC39-00240C	1	O	
25	CBF HARNESS-LSU GND	JC39-00375A	1	O	
26	ELA HOU-FUSER 110V	JC96-03210A	1	O	⚠ 110V
	ELA HOU-FUSER 220V	JC96-03260A	1	O	⚠ 220V
27	FAN-DC	JC31-00025A	1	O	

## 8.2 RX Drive Assembly



### RX Drive Assembly Parts List

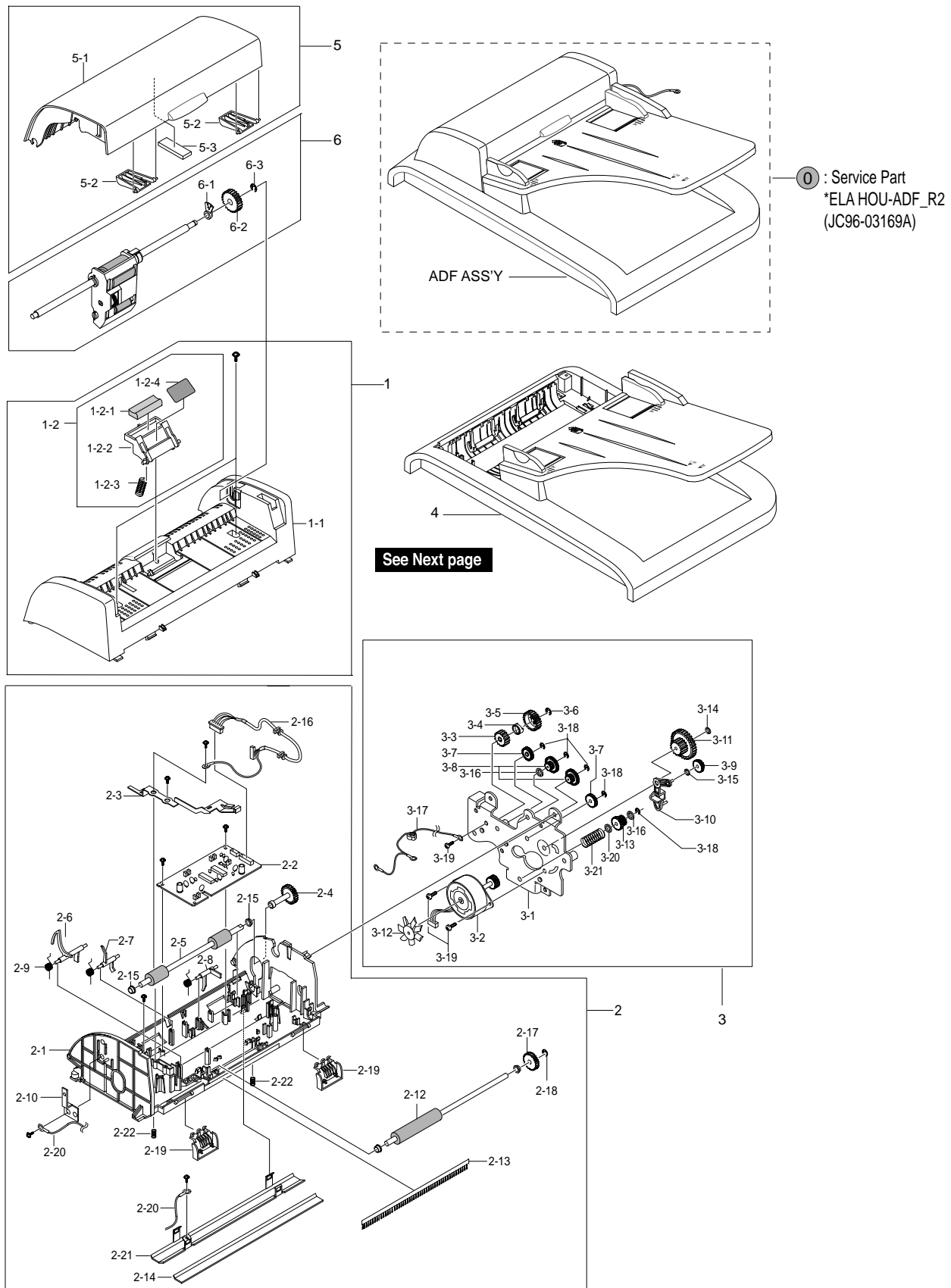
SA : Service Available

O : Service available X : Service not available

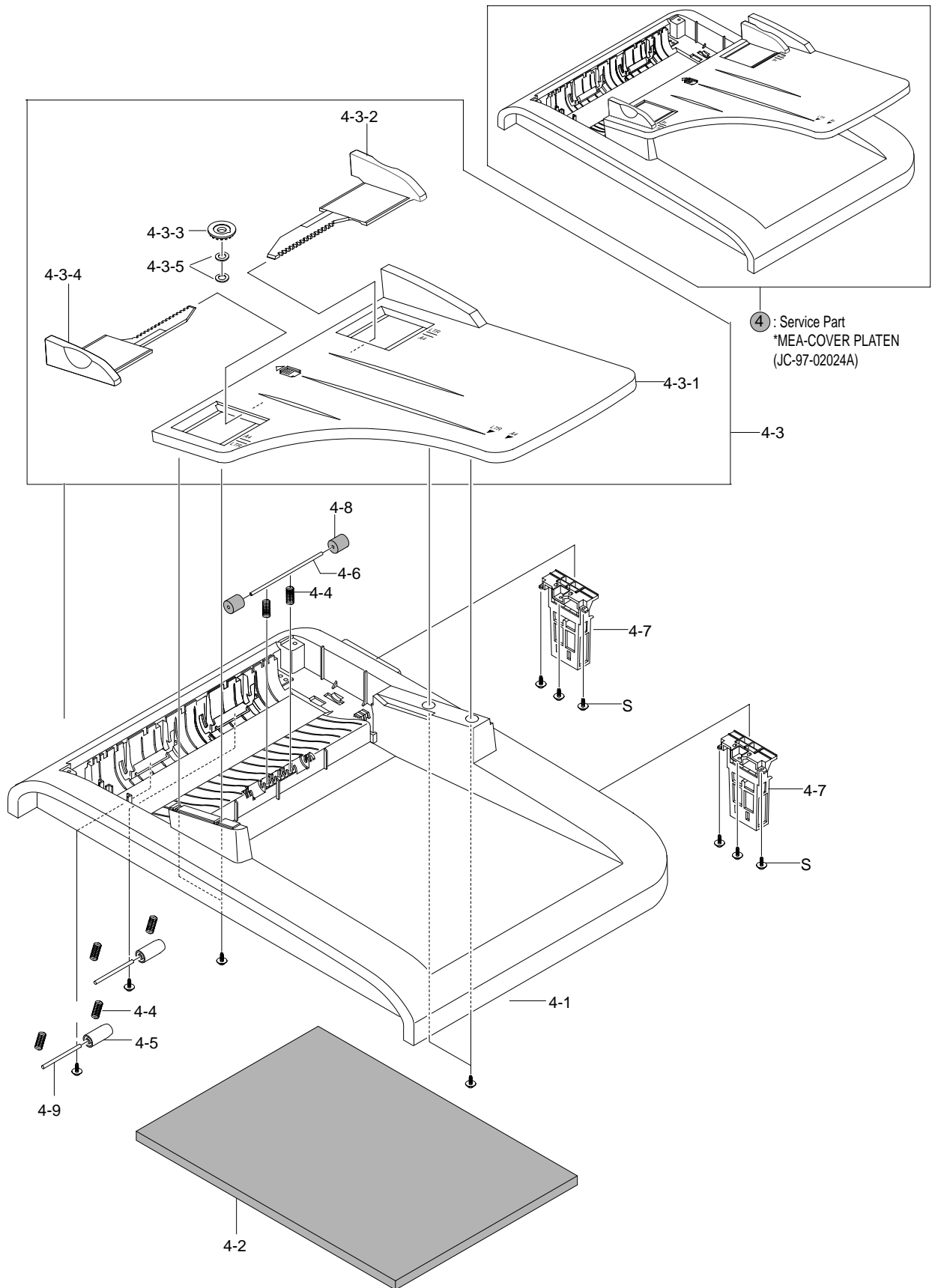
No.	Description	SEC.Code	Q'ty	SA	Remark
0	ELA UNIT-RX DRIVE	JC96-03078A	1	O	
1	BRACKET-GEAR MAIN	JC61-00891A	1	X	
2	GEAR-RDCN 53/26	JC66-00388A	1	O	
3	GEAR-RDCN 113/33	JC66-00706A	1	X	
4	GEAR-RDCN 57/18	JC66-00389A	2	O	
5	WASHER-PLAIN	6031-000023	2	X	
6	BRACKET-MOTOR MAIN R2	JC61-00916A	1	X	
7	GEAR-RDCN 103/41	JC66-00390A	1	O	
8	GEAR-RDCN 90/31	JC66-00392A	1	O	
9	MOTOR STEP-MAIN	JC31-00037A	1	O	



## 8.3 ADF Assembly



# ADF Assembly Continued.



## ADF Assembly Parts List

SA : Service Available  
 O : Service available X : Service not available

No.	Description	SEC.Code	Q'ty	SA	Remark
①	ELA HOU-ADF-R2	JC96-03169A	1	O	
1	MEA UNIT-ADF UPPER	JC97-02022A	1	X	
1-1	COVER-ADF UPPER R2	JC63-00450A	1	O	
1-2	MEA-HOLDER PAD ADF	JC97-02137B	1	O	
1-2-1	RMO-ADF RUBBER	JB73-00052A	1	X	
1-2-2	HOLDER-PAD ADF	JC61-00893A	1	X	
1-2-3	SPRING ETC-PAD	JC61-00387A	1	X	
1-2-4	SHEET-ADF HOLDER	JC63-00373A	1	X	
2	ELA HOU-ADF LOWER	JC96-03171A	1	X	
2-1	COVER-M-ADF LOWER R2	JC63-00370B	1	O	
2-2	PBA SUB-ADF	JC92-01618A	1	O	
2-3	GROUND-P-ADF R2	JC63-00372A	1	X	
2-4	SHAFT-M-FEED GEAR 38	JC66-00460A	1	X	
2-5	ROLLER-DRIVE	JC66-00560A	1	X	
2-6	PMO-ACT EMPTY ADF	JC72-01320A	1	O	
2-7	PMO-ACTUATOR REGI SENSOR	JC72-01010A	1	O	
2-8	PMO-ACTUATOR SCAN SENSOR	JC72-01011A	1	O	
2-9	SPRING ETC-TORSION DOC (CC2-F)	JB61-00076A	3	X	
2-10	IPR-GROUND_ROLLER	JC70-10467A	1	X	
2-12	ROLLER-EXIT	JC66-00559A	1	X	
2-13	MEC-BRUSH ANTISTATIC	JC75-00095A	1	X	
2-14	PPR-WHITE BAR SHEET	JC72-00752A	1	X	
2-15	PMO-BUSH	JB72-00819A	4	X	
2-16	CBF HARNESS-ADF	JC39-00351A	1	O	
2-17	GEAR-AGITATOR-2	JC66-00310A	1	X	
2-18	RING-C	6044-000159	1	X	
2-19	GUIDE-STACKER SUB	JC61-00712A	2	X	
2-20	CBF HARNESS ADF ROLLER GND	JC39-00187A	1	X	
2-21	IPR-BRKT WHITE BAR	JC70-00225A	1	X	
2-22	SPRING ETC WHITE BAR	JC61-00548A	2	X	
3	ELA HOU-ADF MOTOR	JC96-03065A	1	O	
3-1	BRACKET-GEAR ADF	JC61-00892A	1	X	
3-2	MOTOR STEP-ADF	JC31-00036A	1	X	
3-3	GEAR-CLUTCH 29	JB66-00101A	1	X	
3-4	PMO-WHITE CLUTCH SUB 29	JB72-00844A	1	X	
3-5	GEAR-CLUTCH 39	JC66-00322A	1	X	
3-6	RING-C	6044-000159	1	X	
3-7	GEAR-IDLE 35 ADF	JC66-00458A	2	X	
3-8	GEAR-40/21 ADF	JC66-00456A	1	X	

## ADF Assembly Parts List(cont.)

SA : Service Available

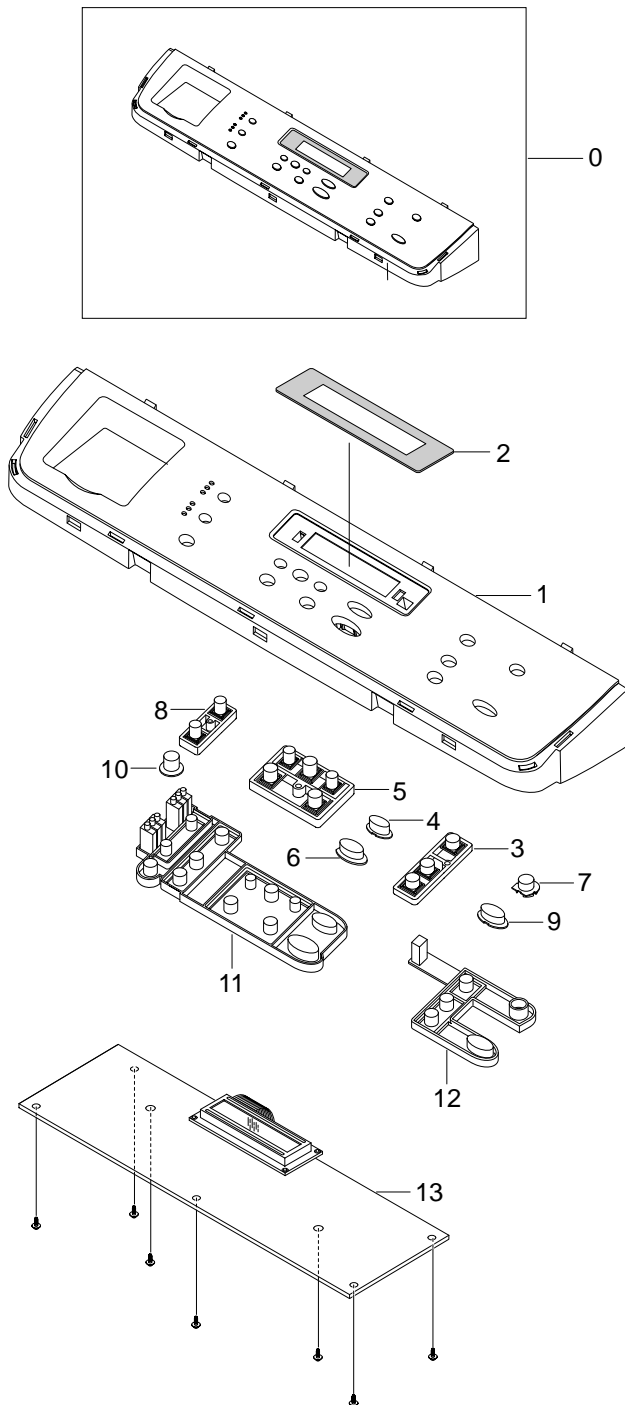
O : Service available X : Service not available

No.	Description	SEC.Code	Q'ty	SA	Remark
3-9	GEAR-SWING 31/20 ADF	JC66-00457A	1	X	
3-10	LINK-M-SWING ADF	JC66-00454A	1	X	
3-11	GEAR-58/25 ADF	JC66-00455A	1	X	
3-12	IMPELLER-ADF	JC66-00556A	1	X	
3-13	GEAR-REMOVE ADF	JC66-00557B	1	X	
3-14	WASHER PLAIN	6031-000023	1	X	
3-15	IPR-WASHER WAVE	JB70-00070A	1	O	
3-16	WASHER-PLAIN	6031-000019	2	X	
3-17	CBF HARNESS-ADF GND	JC39-00363A	1	X	
3-18	RING-E	6044-000125	6	X	
3-19	SCREW-TAPTITE	6003-000269	3	X	
3-20	WASHER-PLAIN	6031-001511	1	X	
3-21	SPRING ETC PAD	JC61-00387A	1	X	

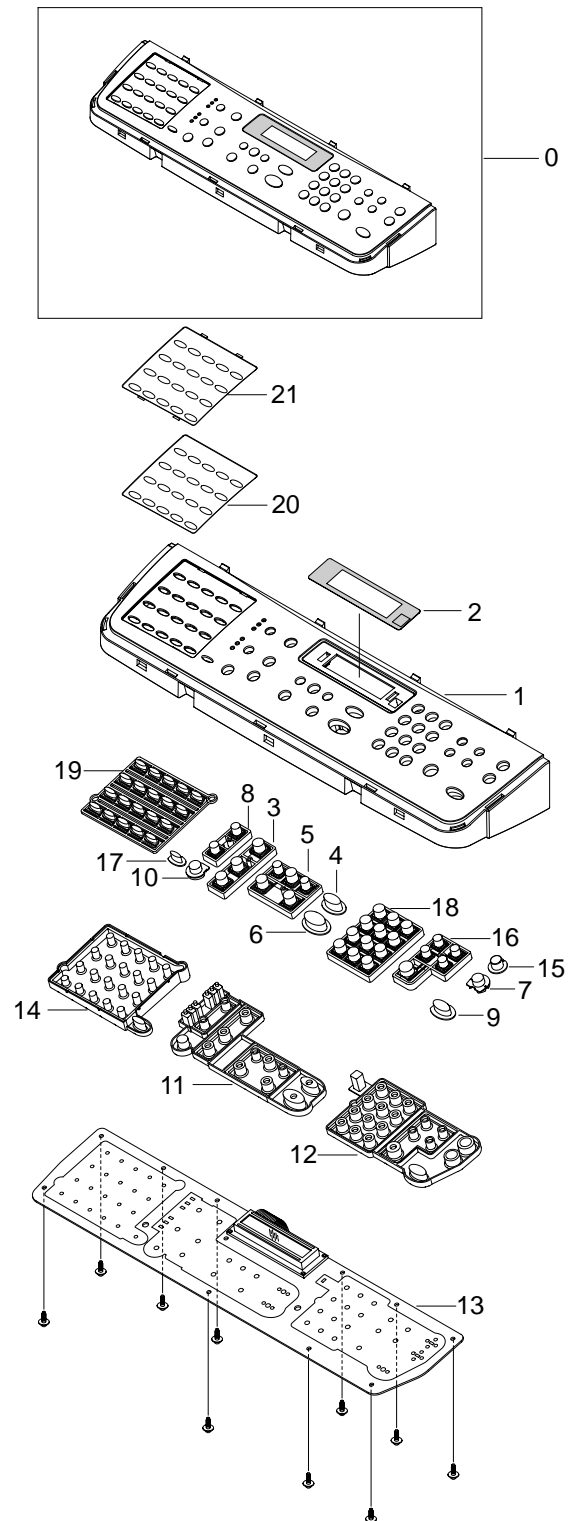
No.	Description	SEC.Code	Q'ty	SA	Remark
④	MEA-COVER PLATEN	JC97-02024A	1	O	
4-1	COVER-M-PLATEN R2	JC63-00374B	1	O	
4-2	SHEET-WHITE SPONGE	JC63-00209A	1	O	
4-3	MEA-TX STACKER	JC97-01544B	1	O	
4-3-1	PMO-TX STACKER	JB72-01166B	1	O	
4-3-2	PMO-DOC GUIDE(L)	JB72-01171B	1	X	
4-3-3	GEAR-PINION	JG66-40003A	1	O	
4-3-4	PMO-DOC GUIDE(R)	JB72-01170B	1	X	
4-3-5	IPR-WASHER SPRING CU	JF70-10616A	2	X	
4-4	SPRING ETC-FEED	JC61-00011A	6	X	
4-5	PMO-ROLL PINCH	JG72-40663A	2	X	
4-6	ICT-SHAFT PINCH	JF70-40521B	1	X	
4-7	MEA UNIT-HINGE	JC97-01707A	2	O	
4-8	RPR-ROLLER EXIT IDLE	JC73-00091A	2	O	
4-9	SHAFT-IDLE FEED	JC66-00558A	2	O	
5	MEA-COVER OPEN R2	JC97-02023A	1	X	
5-1	COVER-M-ADF OPEN	JC63-00498A	1	O	
5-2	PMO-GUIDE PAPER	JB72-00843A	2	X	
5-3	DAMPER-PICKUP ADF	JC66-00726A	1	X	
6	MEA UNIT-PICKUP	JC97-01962A	1	O	
6-1	STOPPER-M-PICKUP ADF	JC61-00963A	1	X	
6-2	GEAR-ADF 38	JB66-00103A	1	X	
6-3	RING-C	6044-000159	1	X	

## 8.4 OPE Unit Assembly

(SCX-4520)



(SCX-4720F)



## OPE Unit Assembly Parts List

SA : Service Available

O : Service available X : Service not available

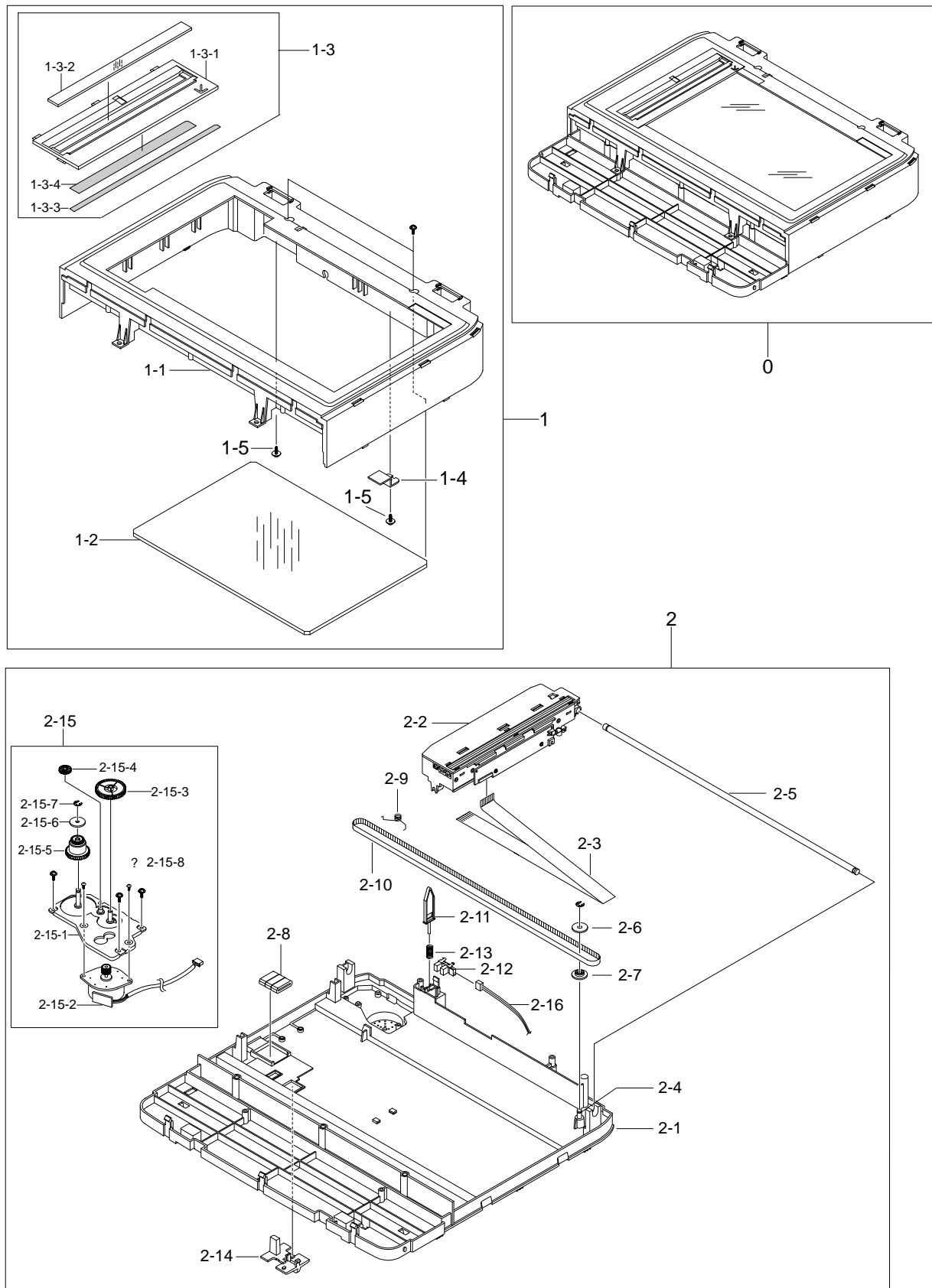
### [SCX-4520 ]

No.	Description	SEC.Code	Q'ty	SA	Remark
0	ELA HOU-OPE 3IN1	JC96-03174A	1	O	
1	COVER-M-OPE (3IN1)	JC63-00496A	1	O	
2	WINDOW-LCD_R2_SEC2	JC64-00171B	1	X	
3	KEY-M_COPY(3IN1)	JC64-00054C	1	X	
4	KEY-M-STOP	JC64-00055A	1	X	
5	KEY-M_SCROLL_R2	JC64-00056D	1	X	
6	KEY-M-START(3IN1)	JC64-00057B	1	X	
7	KEY-M-TONER SAVE	JC64-00058A	1	X	
8	KEY-M_RESOLUTION_R2	JC64-00059C	1	X	
9	KEY-M-DIRECT PRINT	JC64-00155A	1	X	
10	KEY-M-SCAN TO	JC64-00157A	1	X	
11	RUBBER-COPY/SCROLL	JC73-00189A	1	X	
12	RUBBER-COPY_3IN1	JC73-00192A	1	X	
13	PBA SUB-OPE	JC92-01625A	1	O	
S	SCREW-TAPTITE	6003-000196	7	X	

### [SCX-4720F ]

No.	Description	SEC.Code	Q'ty	SA	Remark
0	ELA HOU-OPE 4IN1	JC96-03174A	1	O	
1	COVER-M-OPE SEC	JC63-00495A	1	X	
2	WINDOW-LCD_R2_SEC	JC64-00171A	1	X	
3	KEY-M_COPY_R2	JC64-00054C	1	X	
4	KEY-M-STOP	JC64-00055A	1	X	
5	KEY-M_SCROLL_R2	JC64-00056D	1	X	
6	KEY-M-START	JC64-00057E	1	X	
7	KEY-M-TOLL SAVE	JC64-00061A	1	X	
8	KEY-M_RESOLUTION_R2	JC64-00059C	1	X	
9	KEY-M-DIRECT PRINT	JC64-00155A	1	X	
10	KEY-M-SCAN TO	JC64-00157A	1	X	
11	RUBBER-COPY/SCROLL	JC73-00189A	1	X	
12	RUBBER-TELL/FAX_SEC	JC73-00191A	1	X	
13	PBA SUB-OPE_4720F	JC92-01625A	1	O	
14	RUBBER-ONE TOUCH	JC73-00190A	1	X	
15	KEY-M-TONER SAVE	JC64-00058A	1	X	
16	KEY-M_FAX_R2	JC64-00060C	1	X	
17	KEY-M-SHIFT	JC64-00156A	1	X	
18	KEY-M_TEL_R2	JC64-00053D	1	X	
19	PMO KEY OT	JC72-00275B	1	X	
20	LABEL(P)-ONE TOUCH	JC68-00651G	1	X	
21	MPR-COVER ADDRESS	JG74-10543A	1	X	
S	SCREW-TAPTITE	6003-000196	10	X	

## 8.5 Scanner Assembly



## Scanner Assembly Parts List

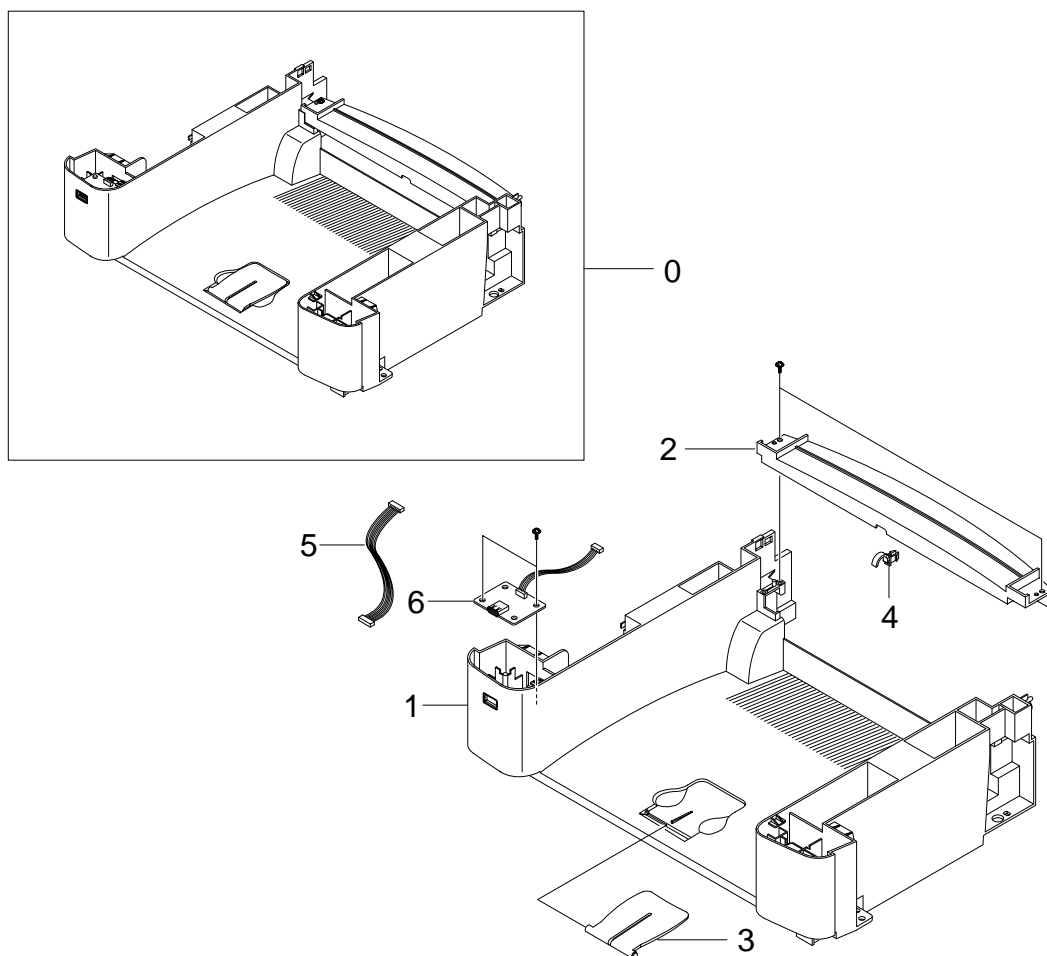
SA : Service Available

O : Service available X : Service not available

No.	Description	SEC.Code	Q'ty	SA	Remark
0	ELA HOU-PLATEN	JC96-03172A	1	O	
1	MEA UNIT-SCAN UPPER	JC97-02025A	1	O	
1-1	COVER-SCAN UPPER	JC63-00494A	1	X	
1-2	GLASS-SCAN	JC01-00001A	1	O	
1-3	MEA-SCAN DUMMY	JC97-02026A	1	X	
1-3-1	COVER-M-SCAN DUMMY R2	JC63-00152E	1	X	
1-3-2	MCT-GLASS ADF	JC74-00021A	1	X	
1-3-3	TAPE-DOUBLE FACE	0203-001266	1	X	
1-3-4	LABEL(P)-SHADING	JB68-00644A	1	X	
1-4	IPR-HOLDER GLASS	JB70-00148A	2	X	
1-5	SCREW-TAPPING	6002-00175	2	X	
2	ELA HOU-SCAN LOWER	JC96-03173A	1	X	
2-1	COVER-SCAN LOWER	JC63-00493A	1	O	
2-2	ELA HOU-CCD MODULE	JC96-02759B	1	O	
2-3	CBF SIGNAL-CCD FFC	JC39-00367A	1	X	
2-4	ICT-INSERT SHAFT	JB70-00154A	1	X	
2-5	ICT-SHAFT CCD	JB70-00145A	1	X	
2-6	PMO-HOLDER BELT	JB72-00764A	1	X	
2-7	PMO-PULLEY	JB72-00763A	1	X	
2-8	ELA UNIT-CORE	JB96-01381A	3	X	
2-9	SPRING ETC-BELT	JB61-00059A	1	X	
2-10	BELT-TIMING GEAR	6602-001067	1	O	
2-11	PMO-LEVER SENSOR	JC72-00755A	1	X	
2-12	PHOTO-INTERRUPTER	0604-001095	1	O	
2-13	SPRING-CS	6107-001135	1	X	
2-14	HOLDER-CCD	JC61-00894A	1	X	
2-15	ELA HOU-SCAN MOTOR	JC96-03069A	1	O	
2-15-1	BRACKET-SCAN MOTOR R2	JC61-00895A	1	X	
2-15-2	MOTOR STEP-SCAN	JB31-00011A	1	X	
2-15-3	GEAR-REDUCTION	JC66-00530A	1	X	
2-15-4	GEAR-IDLE	JB66-00083A	1	X	
2-15-5	GEAR-TIMING	JC66-00531A	1	X	
2-15-6	PMO-HOLDER BELT	JB72-00764A	1	X	
2-15-7	RING-E	6044-000125	1	X	
2-16	CBF-HARNESS-PLATEN	JC39-00362A	1	X	



## 8.6 Middle Cover Assembly



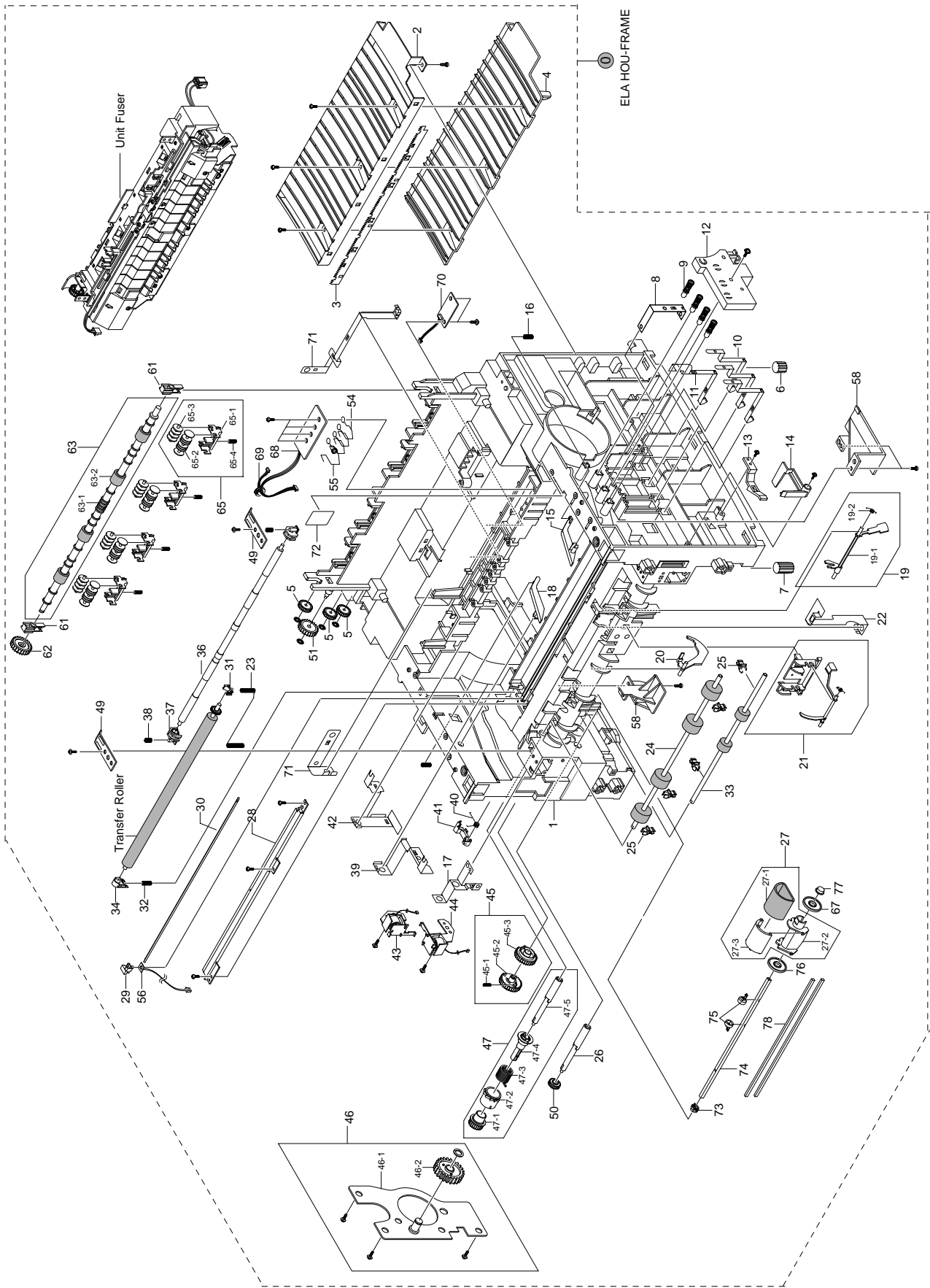
### Middle Cover Assembly Parts List

SA : Service Available

O : Service available X : Service not available

No.	Description	SEC.Code	Q'ty	SA	Remark
0	ELA HOU-COVER MIDDLE	JC96-03247A	1	O	
1	COVER-M-MIDDLE R2	JC63-00502A	1	O	
2	COVER-REAR UPPER	JC63-00388B	1	O	
3	PMO-STACKE_RX	JC72-00973A	1	O	
4	BUSH-F/DOWN R2	JC61-00902A	1	X	
5	CBF HARNESS-OPE	JC39-00350A	1	O	
6	PBA SUB-USB HOST	JC92-01636A	1	O	

# 8.7 Frame Assembly



## Frame Assembly Parts List

SA : Service Available

O : Service available X : Service not available

No.	Description	SEC.Code	Q'ty	SA	Remark
①	ELA HOU-FRAME 110V	JC96-03186A	1	X	⚠ 110V
	ELA HOU-FRAME 220V	JC96-03187A	1	X	⚠ 220V
1	FRAME-BASE R2	JC61-00906A	1	X	
2	GUIDE-P-TR	JC61-00607A	1	O	
3	PLATE-P-SAW	JC61-00604B	1	X	
4	GUIDE-M-TR RIB	JC61-00594A	1	O	
5	PMO-GEAR_EXIT_DRV16	JC72-00143A	3	X	
6	FOOT-BACK	JC61-00835A	2	X	
7	FOOT-FRONT	JC61-00836A	2	O	
8	GROUND-GUDIE TR R2	JC63-00397A	1	X	
9	MEC-TERMINAL	JC75-00049A	4	O	
10	PLATE-TERMINAL CON R2	JC61-00903A	3	X	
11	PLATE-TERMINAL CR R2	JC61-00904A	1	X	
12	HOUSING-TERMINAL R2	JC61-00911A	1	X	
13	PMO-LOCKER CST	JC72-00983A	2	O	
14	PMO-ACTUATOR CVR OPEN	JC72-00974A	1	O	
15	PMO-PLATE GUIDE DEVE_R	JC72-00985A	1	O	
16	SPRING ETC-GUIDE DEVE	JC61-70932A	2	O	
17	GROUND-PUSH BUSHING	JC63-00401A	1	X	
18	PMO-PLATE GUIDE DEVE_L	JC72-00984A	1	O	
19	PMO-ACT FEED R2	JC72-01323A	1	X	
20	PMO-ACTUATOR EMPTY	JC72-00975A	1	O	
21	PMO-ACT MANUAL R2	JC72-01324A	1	O	
22	GROUND-EARTH TR R2	JC63-00395A	1	X	
23	GROUND-TERMINAL TR	JC63-00403A	1	X	
24	ROLLER-FEED ROLLER 1	JC66-00526A	1	O	
25	PMO-BUSHING FEED	JC72-00382B	5	X	
26	SHAFT-FEED	JC66-00398A	1	O	
27	MEA UNIT-PICKUP	JC97-01926A	1	O	
27-1	SPONGE-ROLLER PICK_UP	JC72-01231A	1	O	
27-2	HOUSING-PICK UP_R2	JC61-00909A	1	O	
27-3	HOUSING-PICK UP2_R2	JC61-00910A	1	O	
28	IPR-P-EARTH TRANSFER	JC70-00307A	1	O	
29	HOLDER-PTL R2	JC61-00907A	1	O	
30	LENS-PTL	JC67-00027A	1	O	
31	PMO-BUSHING_TR(L)	JC72-00102A	1	O	
32	SPRING ETC-TR L HAWK	JC61-00047A	1	O	
33	ROLLER-FEED	JC66-00598A	1	O	

## Frame Assembly Parts List(Cont.)

SA : Service Available

O : Service available X : Service not available

No.	Description	SEC.Code	Q'ty	SA	Remark
34	BUSH-M-TR L	JC61-00588A	1	O	
36	SHAFT-FEED IDLE	JC66-00527A	1	O	
37	BUSH-M-FEED IDLE	JC61-00585A	2	O	
38	SPRING ETC-TR	JC61-70958A	2	X	
39	GROUND-DRIVE2 R2	JC63-00398A	1	X	
40	SPRING-TS	6107-001170	1	X	
41	CAM-M-PICK_UP	JC66-00377A	1	O	
42	GROUND-DRIVE R2	JC63-00394A	1	O	
43	SOLENOID-FEED ROCKY2	JC33-00014A	1	O	
44	SOLENOID-HB (MANUAL)	JC33-00010A	1	O	
45	MEA UNIT-GEAR PICKUP	JC97-01929A	1	O	
45-1	GEAR-PICK UP B_R2	JC66-00705A	1	X	
45-2	GEAR-PICK UP A_R2	JC66-00704A	1	X	
45-3	SPRING-CS	6107-001167	1	X	
46	MEA UNIT-BRACKET FEED	JC97-01925A	1	O	
46-1	BRACKET-FEED R2	JC61-00913A	1	O	
46-2	GEAR-Z35 IDLE	JC66-00690A	1	X	
47	MEA UNIT-CLUTCH	JC97-01788A	1	O	
47-1	GEAR-FEED 1	JC66-00393A	1	O	
47-2	PMO-COLLAR_SPRING	JC72-00978A	1	O	
47-3	SPRING-TS	6107-001171	1	O	
47-4	PMO-HUB CLUTCH	JC72-00981A	1	X	
47-5	SHAFT-FEED	JC66-00398A	1	O	
49	PLATE-PUSH BUSHING	JC61-00914A	2	X	
50	GEAR-FEED 2	JC66-00394A	1	O	
51	GEAR-IDLE 23	JC66-00396A	1	O	
52	SPRING-TS	6107-001164	1	X	
53	SPRING-TS	6107-001165	1	X	
54	IPR-P-TERMINAL DEVE KEY	JC70-00340A	3	X	
55	GROUND-TERMINAL DEVE	JC63-00458A	1	X	
56	PBA SUB-PTL	JC92-01620A	1	O	
58	HOLDER-TERMINAL R2	JC61-00908A	1	X	
59	HOLDER-ACT MANUAL R2	JC61-00912A	1	X	
61	HOLDER-BEARING EXIT F/DOWN	JC61-00829A	2	X	
62	GEAR-EXIT F/DOWN	JC66-00038A	1	O	
63	ROLLER-EXIT F/DOWN	JC66-00378A	1	O	
64	RMO-RUBBER EXIT	JC73-40915A	4	O	

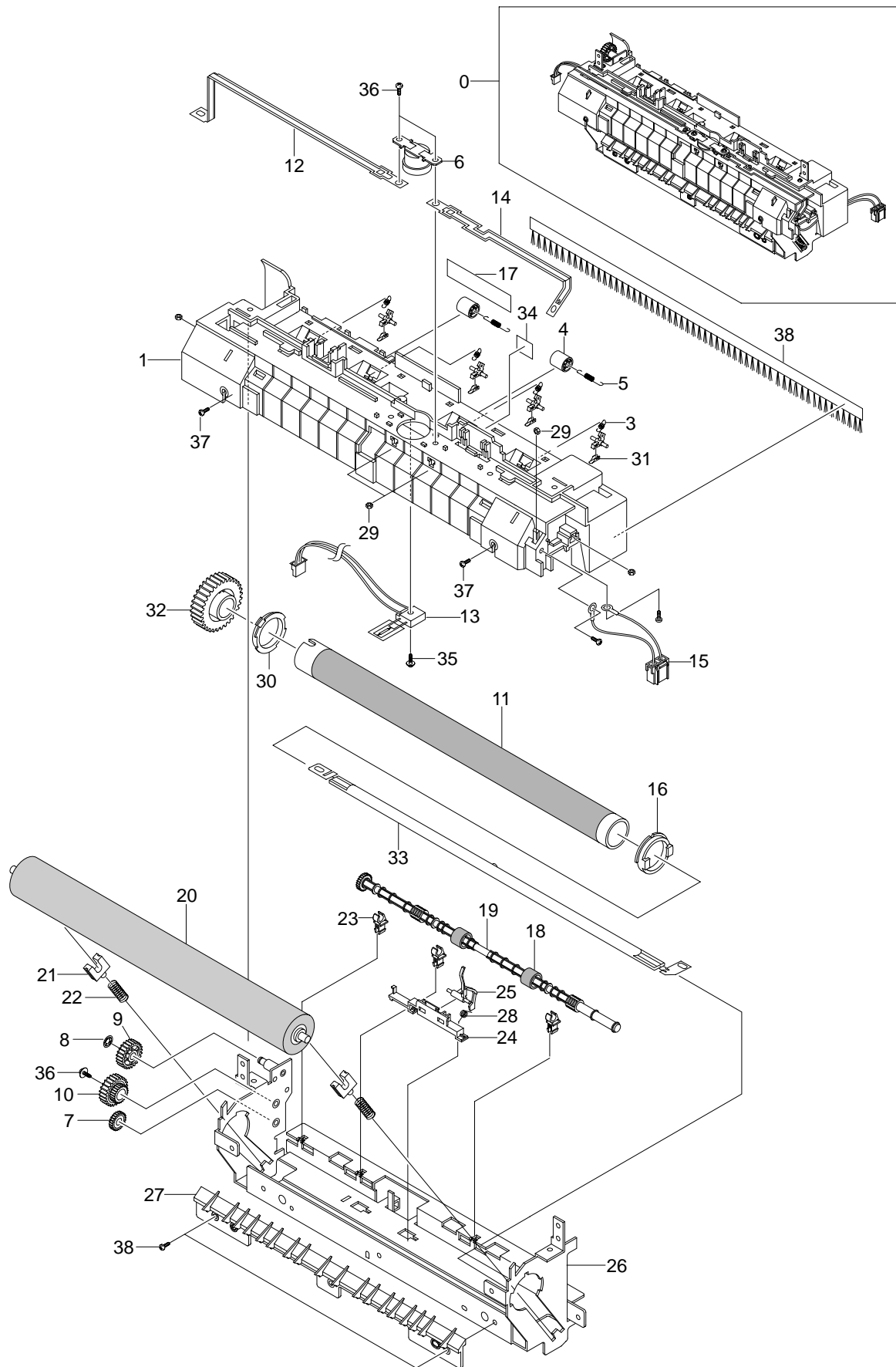
## Frame Assembly Parts List(Cont.)

SA : Service Available

O : Service available X : Service not available

No.	Description	SEC.Code	Q'ty	SA	Remark
65	MEA RACK-EXIT ROLLER	JC97-01034A	4	X	
65-1	PMO-HOLDER EXIT ROLL	JC72-41006A	1	X	
65-2	PMO-ROLLER FD F	JC72-41007A	1	X	
65-3	PMO-ROLLER FD R	JC72-41008A	1	X	
65-4	SPRING ETC-EXIT ROLL FD	JC61-70911A	1	X	
66	GUIDE-SUB FRONT	JC61-00917A	1	X	
68	PBA-SUB-CRUM	JC92-01605A	1	O	
69	CBF HARNESS CRUM2	JC39-00356A	1	X	
70	PBA SUB-EXIT SENSOR	JC92-01604A	1	O	
71	GROUND-SHIELD R2	JC63-00402A	1	X	
72	LABEL(R)-HOT CAUTION,KME	JC68-00317A	1	X	
73	BUSH-M-PICK_UP L	JC61-00586A	1	O	
74	SHAFT-P-PICK_UP	JC66-00399A	1	O	
75	STOPPER-PICK UP_R2	JC61-00915A	2	X	
76	PMO-IDLE PICK_UP	JC72-00982A	2	X	
77	BUSH-M-PICK_UP R	JC61-00587A	1	O	
78	SHAFT-CORE	JC66-00720A	2	X	

## 8.8 Fuser Assembly



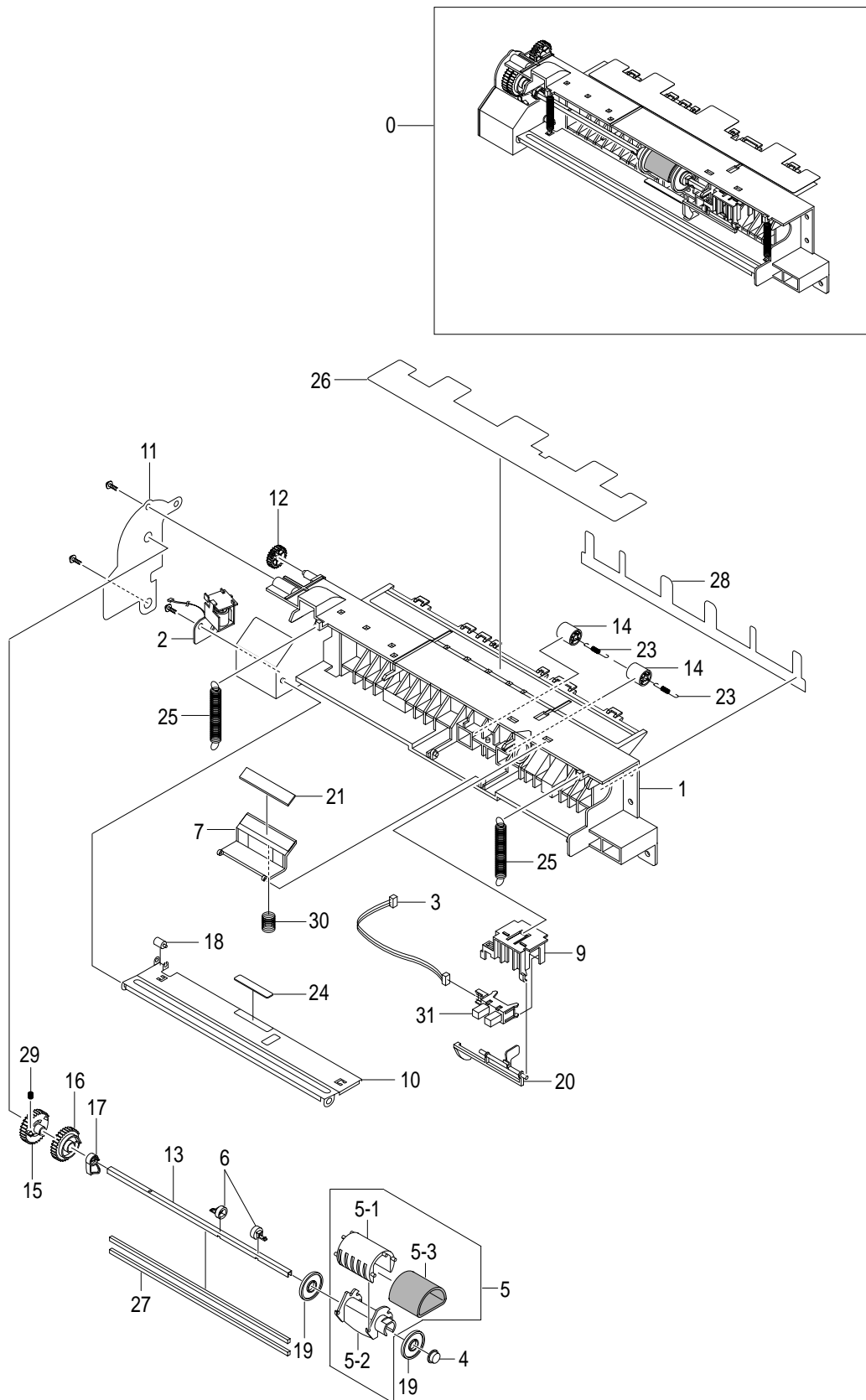
## Fuser Assembly Parts List

SA : Service Available

O : Service available X : Service not available

No.	Description	SEC.Code	Q'ty	SA	Remark
0	ELA HOU-FUSER 110V	JC96-03210A	1	O	⚠ 110V
	ELA HOU-FUSER 220V	JC96-03260A	1	O	⚠ 220V
1	COVER-FUSER R2	JC63-00363A	1	X	
2	HOLDER-PLATE CLAW R2	JC61-00886A	4	X	
3	SPRING ETC-CLAW	JC61-00064A	4	X	
4	PMO-ROLLER_EXIT	JC72-40361A	2	X	
5	SPRING ETC-FUSER EXIT	JC61-70976A	2	X	
6	THERMOSTAT-150	JC47-00005A	1	O	
7	PMO-GEAR_EXIT_DRV16	JC72-00143A	1	X	
8	GEAR-IDLE 23	JC66-00396A	1	O	
9	RING-E	6044-000125	1	X	
10	GEAR-RDCN 25/15	JC66-00397A	1	O	
11	ROLLER-HEAT_210	JC66-00729B	1	X	
12	ELECTRODE-LFET R2	JC70-00473A	1	X	
13	THERMISTOR-NTC	1404-001337	1	X	
14	ELECTRODE-RIGHT R2	JC70-00472A	1	X	
15	CBF HARNESS-FUSER 110V	JC39-00353A	1	X	WHITE
	CBF HARNESS-FUSER 220V	JC39-00354A	1	X	BLACK
16	BUSH-HR R_R2	JC61-00887A	1	X	
17	LABEL(P)-CAUTION, HOT_FUSER	JC68-30928D	1	X	
18	RMO-RUBBER_EXIT	JC73-00017A	2	X	
19	ROLLER-M-EXIT F/UP	JC66-00380A	1	O	
20	ROLLER-PRESSURE	JC66-00600B	1	O	
21	BEARING-PRESSURE/R	JC66-10901A	2	X	
22	SPRING-CS	6107-001168	2	X	
23	PMO-BUSHING TX	JC72-00382A	3	X	
24	HOLDER-ACTUATOR	JC61-00581A	1	X	
25	PMO-ACTUATOR EXIT R2	JC72-01319A	1	X	
26	FRAME-FUSER R2	JC61-00890A	1	X	
27	GUIDE-INPUT R2	JC61-00889A	1	X	
28	SPRING-TS	6107-001165	1	X	
29	NUT-HEXAGON	6021-000222	5	X	
30	BUSH-HR L_R2	JC61-00888A	1	X	
31	PLATE-P-CLAW	JC61-00605A	4	X	
32	GEAR-FUSER R2	JC66-00695A	1	X	
33	LAMP-HALOGEN 110V	4713-001182	1	O	⚠ 110V
	LAMP-HALOGEN 220V	4713-001183	1	O	⚠ 220V
34	LABEL(R)-LV FUSER	JC68-00408A	1	X	
35	SCREW-TAPTIEE	6003-000196	1	X	
36	SCREW-ASS'Y MACH	6006-001193	6	X	
37	SCREW-TAPTIEE	6003-000269	6	X	
38	BRUSH-ANTISTAIC	JC75-00095A	1	X	

## 8.9 MP Assembly





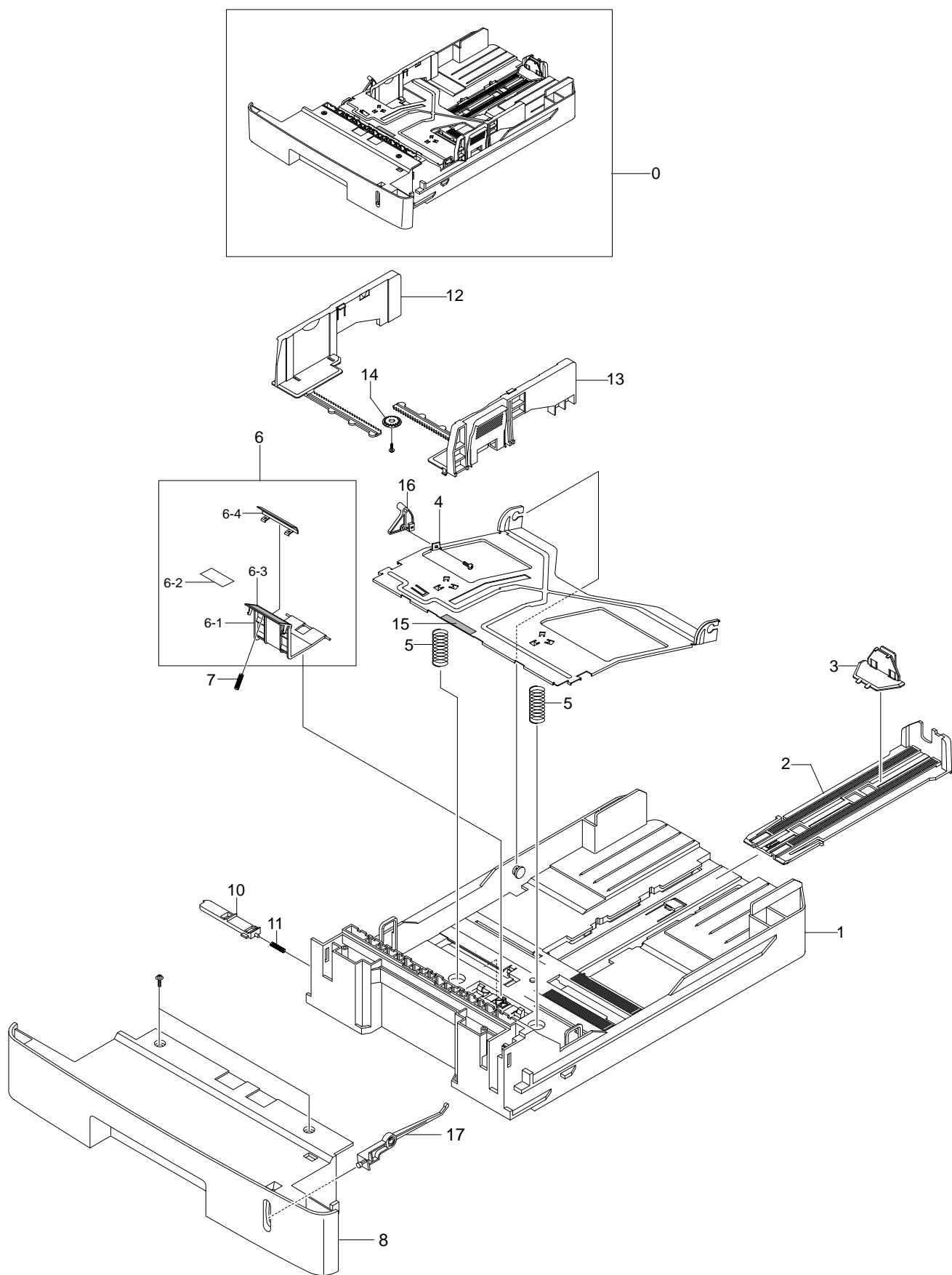
## MP Assembly Parts List

SA : Service Available

O : Service available X : Service not available

No.	Description	SEC.Code	Q'ty	SA	Remark
0	ELA UNIT-MP	JC96-03132B	1	O	
1	FRAME-17-MP	JC61-00923A	1	X	
2	SOLENOID-MP	JC33-00015B	1	X	
3	CBF HARNESS-MPF SEN	JC39-00365B	1	X	
4	BUSH-M-PICK-UP R	JC61-00587A	1	O	
5	MEA UNIT-PICK UP	JC97-02034A	1	O	
5-1	HOUSING-M-PICK UP2_R2	JC61-00909A	1	O	
5-2	HOUSING-M-PICK UP_MP	JC61-00925A	1	X	
5-3	RUBBER-PICK UP_MP	JC73-00194A	1	X	
6	STOPPER-M-PICK UP_R2	JC61-00915A	2	X	
7	HOLDER-M-PAD_MP	JC61-00924A	1	O	
9	HOLDER-M-SENSOR_MP	JC61-00926A	1	X	
10	PLATE-P-KNOCK UP_MP	JC61-00927A	1	X	
11	BRACKET-P-PICK UP_MP	JC61-00932A	1	X	
12	GEAR-IDLE 23	JC66-00396A	1	O	
13	SHAFT-P-PICK_UP	JC66-00399A	1	O	
14	ROLLER-M-IDLE FEED	JC66-00529A	2	O	
15	GEAR-M-PICK UP_MP	JC66-00710A	1	X	
16	GEAR-M-HOLDER_MP	JC66-00709A	1	X	
17	CAM-M-PICK UP_MP	JC66-00711A	1	X	
18	PMO-ROLLER CAM_MP	JC72-00761A	1	X	
19	PMO-IDLE PICK UP	JC72-00982A	2	X	
20	PMO-M-ACT EMPTY MP	JC72-01338A	1	X	
21	RPR-FRICTION PAD	JC73-00140A	1	O	
23	SPRING-ETC-EXIT ROLL FD	JC61-70911A	2	X	
24	RPR-PAD CASSETTE	JC73-00141A	1	X	
25	SPRING-ES	6107-001237	2	X	
26	SHEET GUIDE PAPER R2	JC63-00545A	1	X	
27	SHAFT-P-CORE	JC66-00720A	2	X	
28	SHEET GUIDE MP	JC63-00448A	1	X	
29	SPRING-CS	6107-001167	1	X	
30	SPRING-ES	6107-001047	1	X	
31	PHOTO INTERRUPTER	0604-001095	1	O	

# 8.10 Cassette Assembly



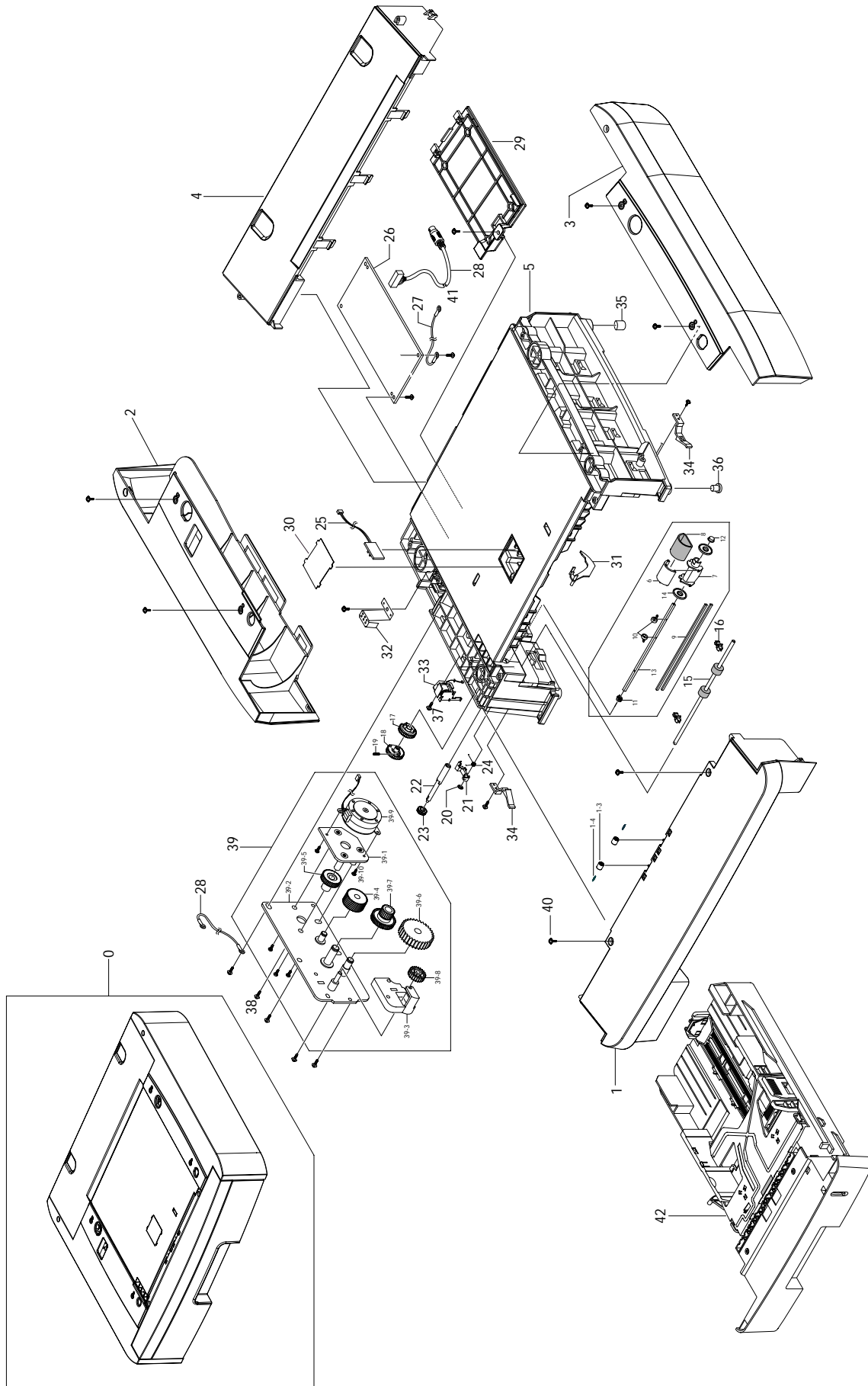
## Cassette Assembly Parts List

SA : Service Available

O : Service available X : Service not available

No.	Description	SEC.Code	Q'ty	SA	Remark
0	MEA-CASSETTE	JC97-02020A	1	O	
1	FRAME-M-CASSETTE	JC61-00876D	1	O	
2	GUIDE-M-EXTENSION LARGE	JC61-00918B	1	X	
3	PMO-EXTENSION SMALL	JC72-00971A	1	O	
4	PLATE-P-KNOCK_UP	JC61-00603A	1	X	
5	SPRING-CS	6107-001166	2	X	
6	MEA UNIT-HOLDER PAD	JC97-01931A	1	O	
6-1	HOLDER-M-PAD	JC61-00580A	1	O	
6-2	SHEET-HOLDER PAD R2	JC63-00407A	1	X	
6-3	RPR-FRICTION PAD	JC73-00140A	1	O	
6-4	IPR-PLATE PAD	JC70-00314A	1	O	
7	SPRING ETC-EXIT ROLL FD	JC61-70911A	1	X	
8	COVER-M-SUB CASSETTE R2	JC63-00490A	1	X	
10	PMO-PLATE_LOCKER	JC72-00972A	1	O	
11	SPRING ETC-LOCKER,PLATE	JG61-70531A	1	O	
12	ADJUST-M-CASSETTE_L	JC70-00300A	1	O	
13	ADJUST-M-CASSETTE_R	JC70-00301A	1	O	
14	GEAR-PINION	JG66-40003A	1	O	
15	RPR-PAD CASSETTE	JC73-00141A	1	X	
16	CAM-KNOCK UP	JC66-00719A	1	X	
17	INDICATOR-CST PAPER	JC64-00143A	1	X	

## 8.11 SCF(Optional Cassette Frame) Exploded view



## SCF(Optional Cassette Frame) Assembly Parts List

SA : Service Available

O : Service available X : Service not available

No.	Description	SEC.Code	Q'ty	SA	Remark
0	ELA UNIT-SCF R2	JC96-03132B	1	O	
1	COVER-M-FRONT SCF R2	JC63-00505A	1	O	
2	COVER-M-SIDE L SCF	JC63-00500A	1	X	
3	COVER-M-SIDE R SCF	JC63-00499A	1	O	
4	COVER-M-REAR SCF R2	JC63-00503A	1	O	
5	FRAME-M_SCF	JC61-00877A	1	X	
6	HOUSING-M-PICKUP_R2	JC61-00909A	1	O	
7	HOUSING-M-PICKUP2_R2	JC61-00910A	1	O	
8	SPONGE -ROLLER PICK_UP	JC72-01231A	1	O	
9	SHAFT-P-CORE	JC66-00720A	2	X	
10	PMO-BUSHING FEED	JC72-00382B	2	O	
11	BUSH-M-PICK_UP L	JC61-00586A	1	O	
12	BUSH-M-PICK_UP R	JC61-00587A	1	O	
13	SHAFT-P-PICK_UP	JC66-00399A	1	O	
14	PMO-IDLE PICK_UP	JC72-00982A	2	X	
15	ROLLER -FEED	JC66-00598A	1	O	
16	PMO-BUSHING TX	JC72-00382B	2	O	
17	PMO-GEAR PICK_UP A	JC72-00979A	1	X	
18	PMO-GEAR PICK_UP B	JC72-00980A	1	X	
19	SPRING-CS	6107-001167	1	X	
20	RING-CS	6044-000001	1	X	
21	CAM-M-PICK_UP	JC66-00377A	1	O	
22	SHAFT-FEED	JC66-00527A	1	O	
23	GEAR -FEED 2	JC66-00394A	1	O	
24	SPRING-TS	6107-001170	1	X	
25	PCB-SENSOR	JC41-00247A	1	X	
26	PBASUB-SCF	JC92-01614A	1	O	
27	CBF HARNESS -SCF GND	JC39-00366A	1	X	
28	CBF HARNESS -SCF	JC39-00357A	1	X	
29	COVER-M-SIMM R2	JC63-00492A	1	X	
30	SHEET-COVER SENSOR	JC63-00369A	1	X	
31	PMO-ACTUATOR EMPTY	JC72-00975A	1	O	
32	IPR-GND TOP	JC70-11028A	1	X	
33	SOLENOID-HB(MANUAL)	JC33-00010A	1	X	
34	PMO-LOCKER CST	JC72-00983A	1	O	
35	FOOT-BACK	JC61-00835A	1	O	
36	FOOT-FRONT	JC61-00836A	2	O	
37	SCREW-ASS'Y TAPT	6006-001078	1	X	

## SCF(Optional Cassette Frame) Assembly Parts List

SA : Service Available

O : Service available X : Service not available

No.	Description	SEC.Code	Q'ty	SA	Remark
38	SCREW-TAPTITE	6003-000196	10	X	
39	ELA HOU-MOTOR SCF	JC96-03003A	1	O	
39-1	BRKT-P-MOTOR SCF	JC61-00879A	1	X	
39-2	BRKT-P-GEAR SCF	JC61-00881A	1	X	
39-3	BRKT-M-FEED SCF	JC61-00878A	1	X	
39-4	GEAR 61/47 IDLE	JC66-00688A	1	X	
39-5	GEAR 59 IDLE	JC66-00689A	1	X	
39-6	GEAR 35 IDLE	JC66-00690A	1	X	
39-7	GEAR-RDCN 57/18	JC66-00389A	1	X	
39-8	GEAR-IDLE 23	JC66-00396A	1	X	
39-9	MOTOR STEP(SCF)	JC31-00009A	1	O	
39-10	SCREW-MACHINE	6001-000131	5	X	
39-11	CORE-FERRITE	3301-001635	1	X	
39-12	CABLE TIE	6501-000004	1	x	
40	BUSH CABLE	JC61-00804A	1	X	
41	SCREW-TAPTITE	6003-000196	1	X	
42	MEC-CASSETTE	JC97-02020A	1	X	

*MEMO*



## Appendix (Parts code)

Update: 9/10/04

NO.	Buyer-Model Code	ELA HOU-SCAN	ELA HOU-OPE	PBA SUB-LIU
1	SCX-4720F/XAA SCX-4520/XAA	JC96-03184A JC96-03181A	JC96-03174A JC96-03183A	JC92-01599A
2	SCX-4720F/XEC SCX-4520/XEC	JC96-03184B JC96-03181B	JC96-03174B JC96-03183B	JC92-01599B
3	SCX-4720F/XEF SCX-4520/XEF	JC96-03184C JC96-03181C	JC96-03174C JC96-03183C	JC92-01599B
4	SCX-4720F/XEG SCX-4520/XEG	JC96-03184D JC96-03181D	JC96-03174D JC96-03183D	JC92-01599B
5	SCX-4720F/XEP SCX-4520/XEP	JC96-03184J JC96-03181J	JC96-03174J JC96-03183J	JC92-01599B
6	SCX-4720F/XET SCX-4520/XET	JC96-03184E JC96-03181E	JC96-03174E JC96-03183E	JC92-01599B
7	SCX-4720F/XEU SCX-4520/XEU	JC96-03184A JC96-03181A	JC96-03174A JC96-03183A	JC92-01599B
8	SCX-4720F/XIL SCX-4520/XIL	JC96-03184F JC96-03181F	JC96-03174F JC96-03183F	JC92-01599A
9	SCX-4720F/XSG SCX-4520/XSG	- JC96-03181A	- JC96-03183A	-
10	SCX-4720F/XEV SCX-4520/XEV	JC96-03184G JC96-03181G	JC96-03174G JC96-03183G	JC92-01599A
11	SCX-4720F/XSA SCX-4520/XSA	-	-	-
12	SCX-4720F/XIP	JC96-03184A	JC96-03174A	JC92-01599A

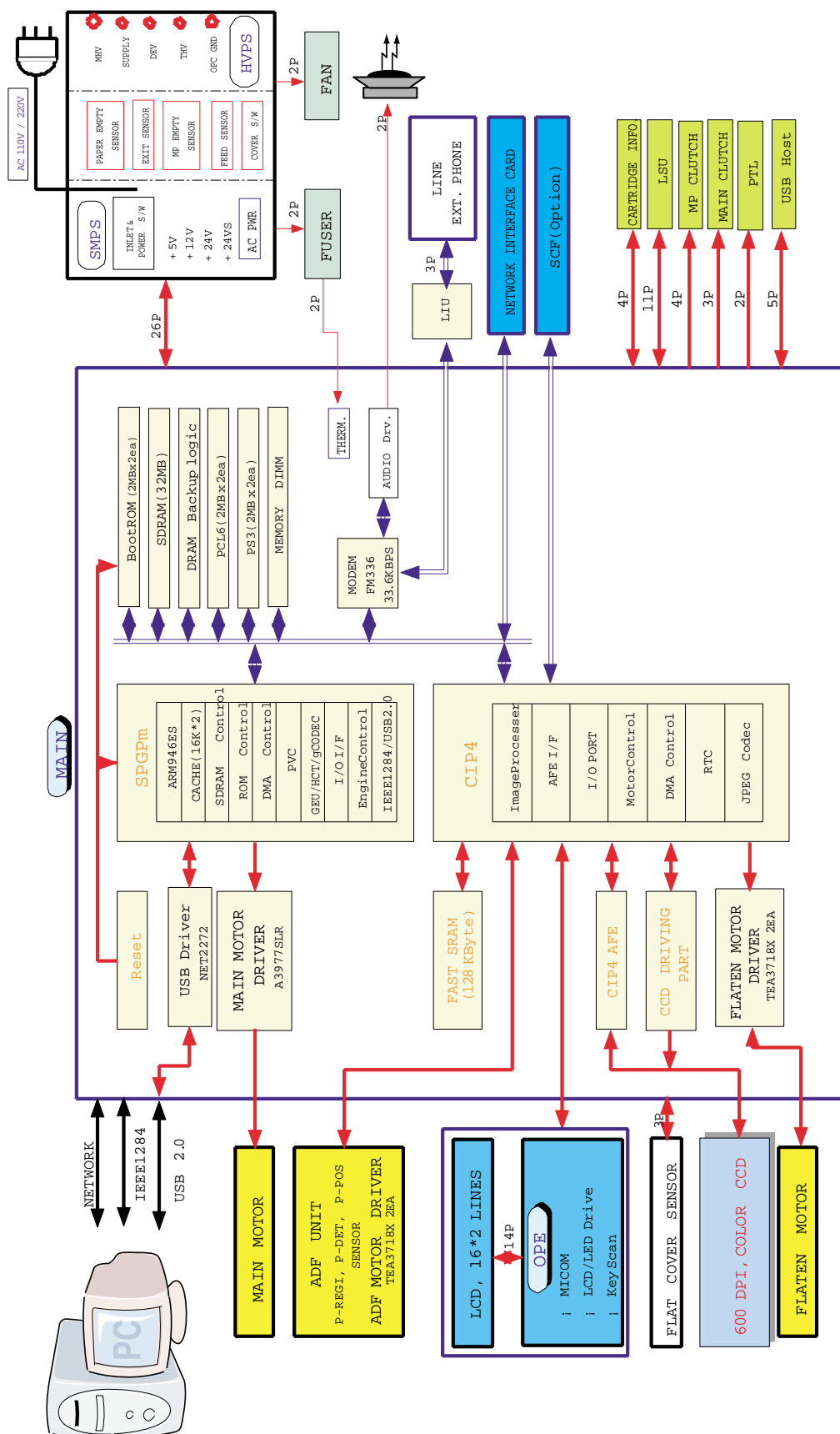


## Appendix (Parts code)

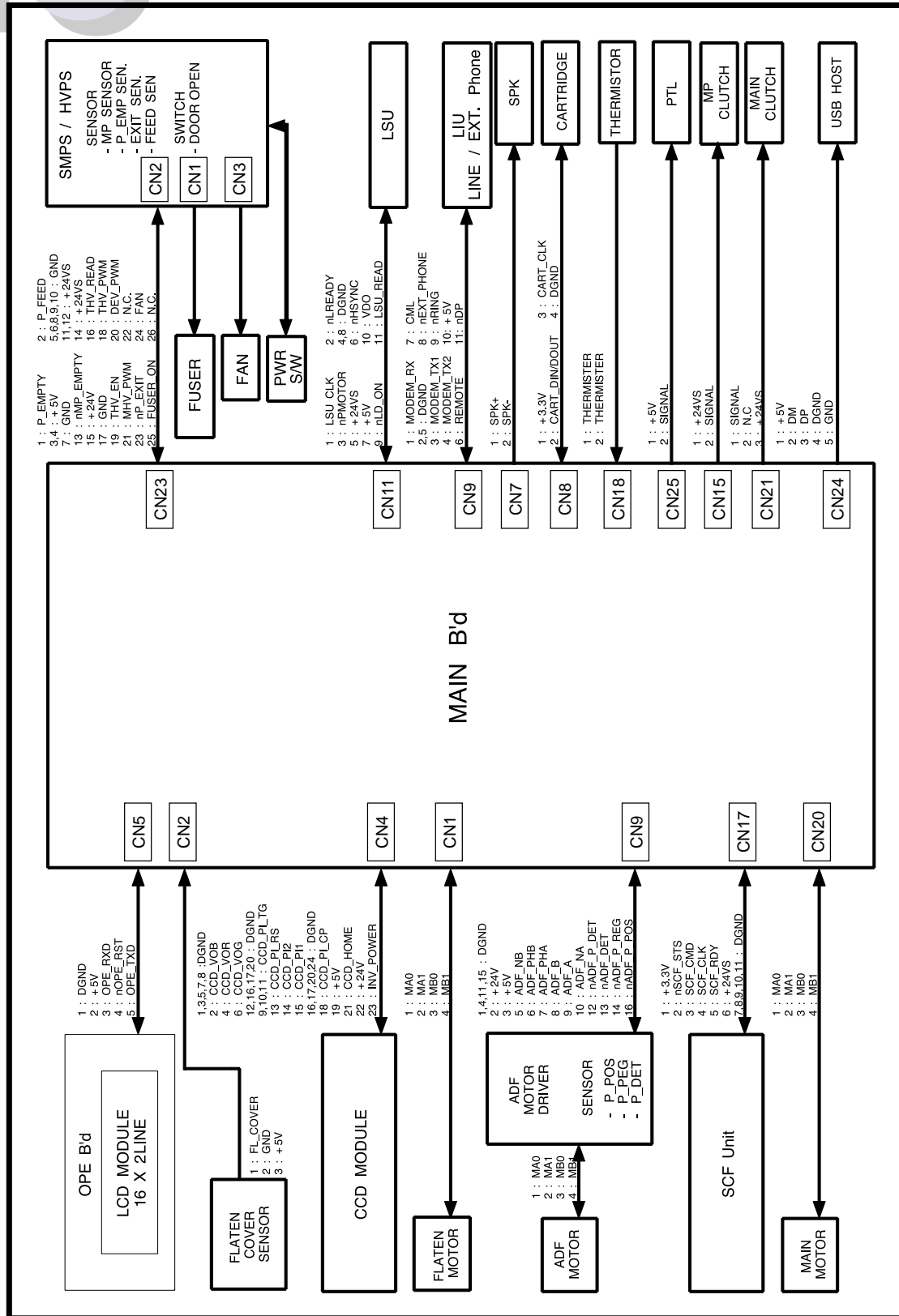
Update: 9/10/04

NO.	Buyer-Model Code	ELA HOU-SCAN	ELA HOU-OPE	PBA SUB-LIU
1	SCX-4720F/XAA SCX-4520/XAA	JC96-03184A JC96-03181A	JC96-03174A JC96-03183A	JC92-01599A
2	SCX-4720F/XEC SCX-4520/XEC	JC96-03184B JC96-03181B	JC96-03174B JC96-03183B	JC92-01599B
3	SCX-4720F/XEF SCX-4520/XEF	JC96-03184C JC96-03181C	JC96-03174C JC96-03183C	JC92-01599B
4	SCX-4720F/XEG SCX-4520/XEG	JC96-03184D JC96-03181D	JC96-03174D JC96-03183D	JC92-01599B
5	SCX-4720F/XEP SCX-4520/XEP	JC96-03184J JC96-03181J	JC96-03174J JC96-03183J	JC92-01599B
6	SCX-4720F/XET SCX-4520/XET	JC96-03184E JC96-03181E	JC96-03174E JC96-03183E	JC92-01599B
7	SCX-4720F/XEU SCX-4520/XEU	JC96-03184A JC96-03181A	JC96-03174A JC96-03183A	JC92-01599B
8	SCX-4720F/XIL SCX-4520/XIL	JC96-03184F JC96-03181F	JC96-03174F JC96-03183F	JC92-01599A
9	SCX-4720F/XSG SCX-4520/XSG	- JC96-03181A	- JC96-03183A	-
10	SCX-4720F/XEV SCX-4520/XEV	JC96-03184G JC96-03181G	JC96-03174G JC96-03183G	JC92-01599A
11	SCX-4720F/XSA SCX-4520/XSA	-	-	-
12	SCX-4720F/XIP	JC96-03184A	JC96-03174A	JC92-01599A

# 9. Block Diagram

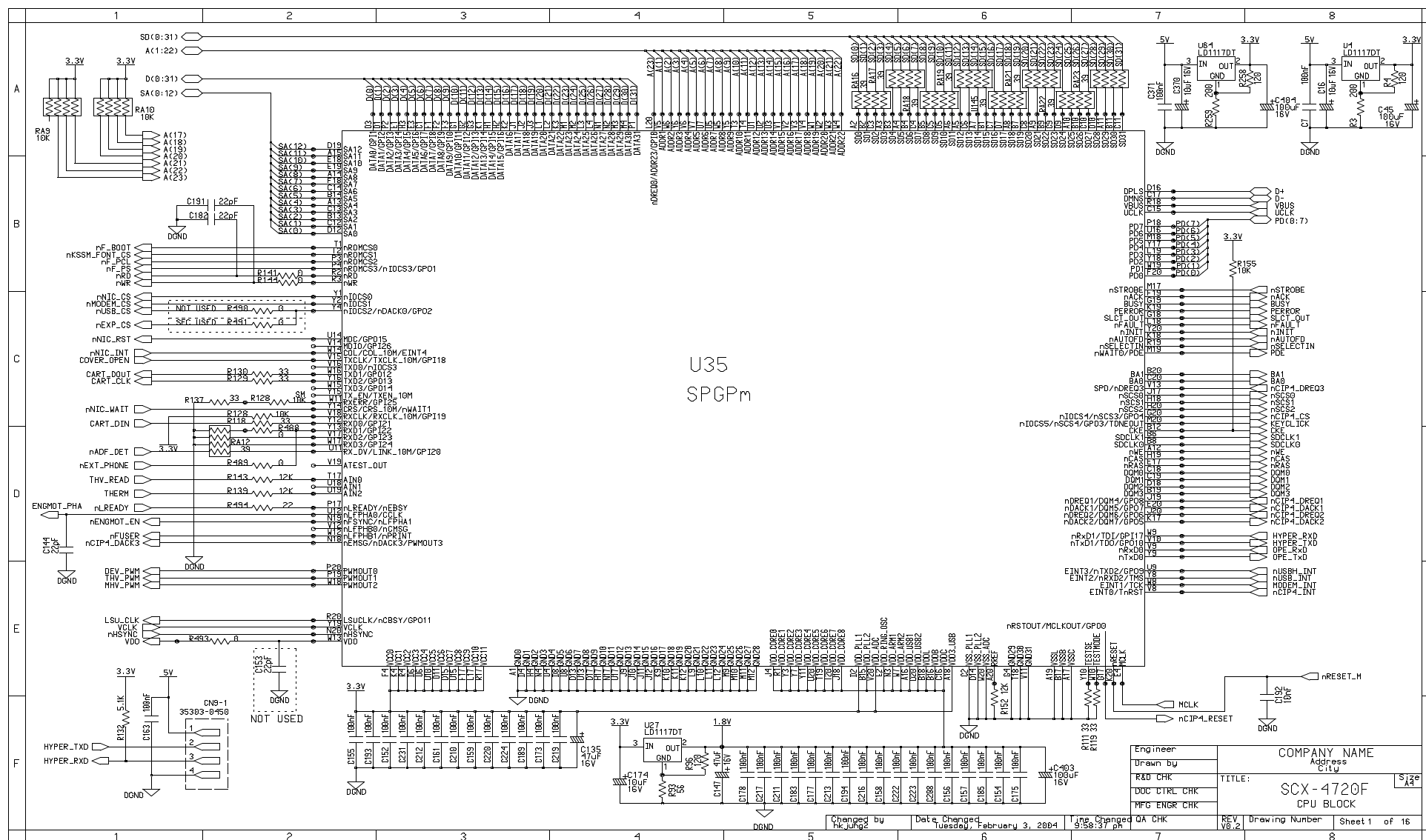


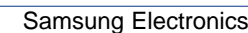
# 10. Connection Diagram

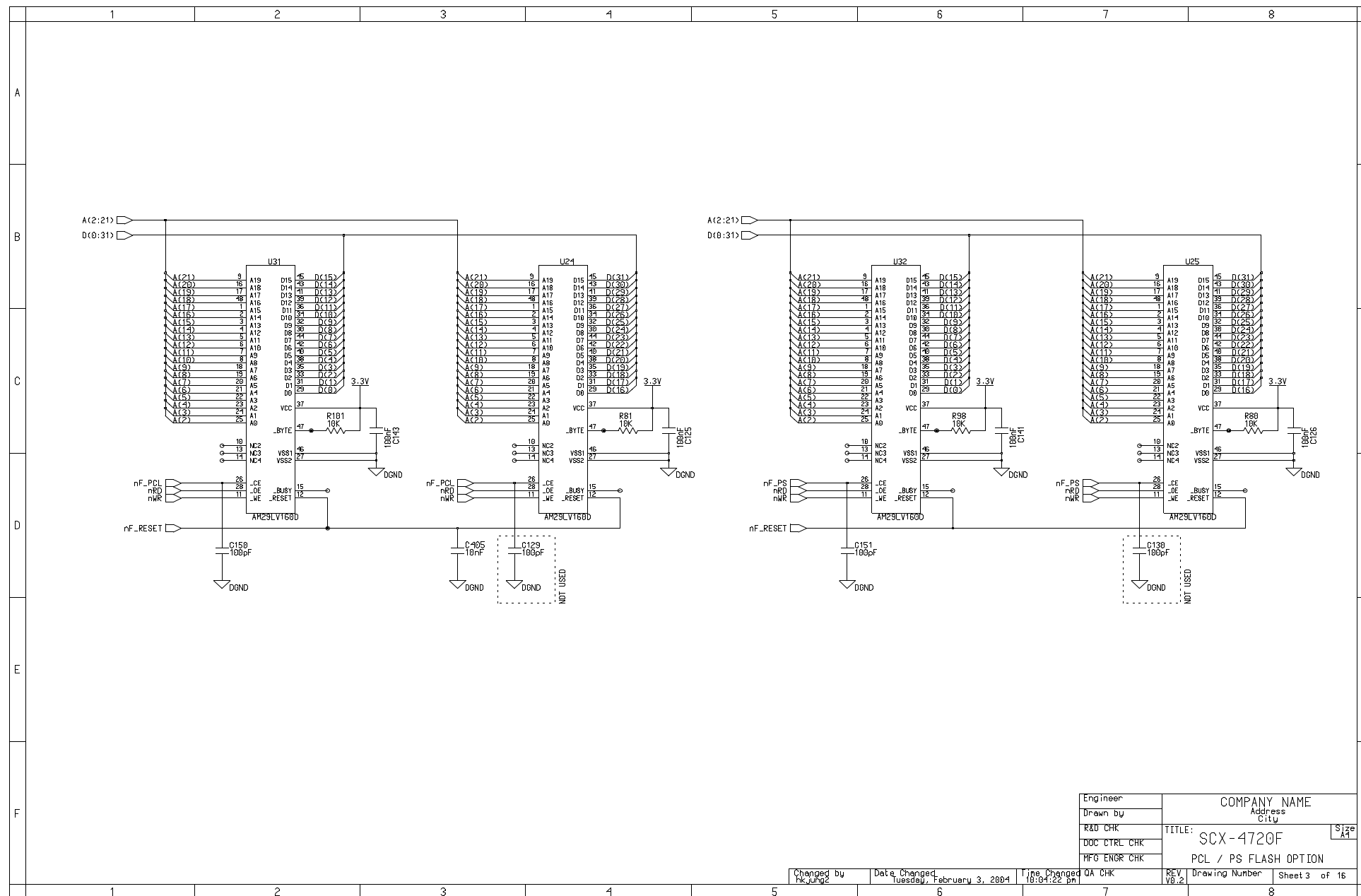


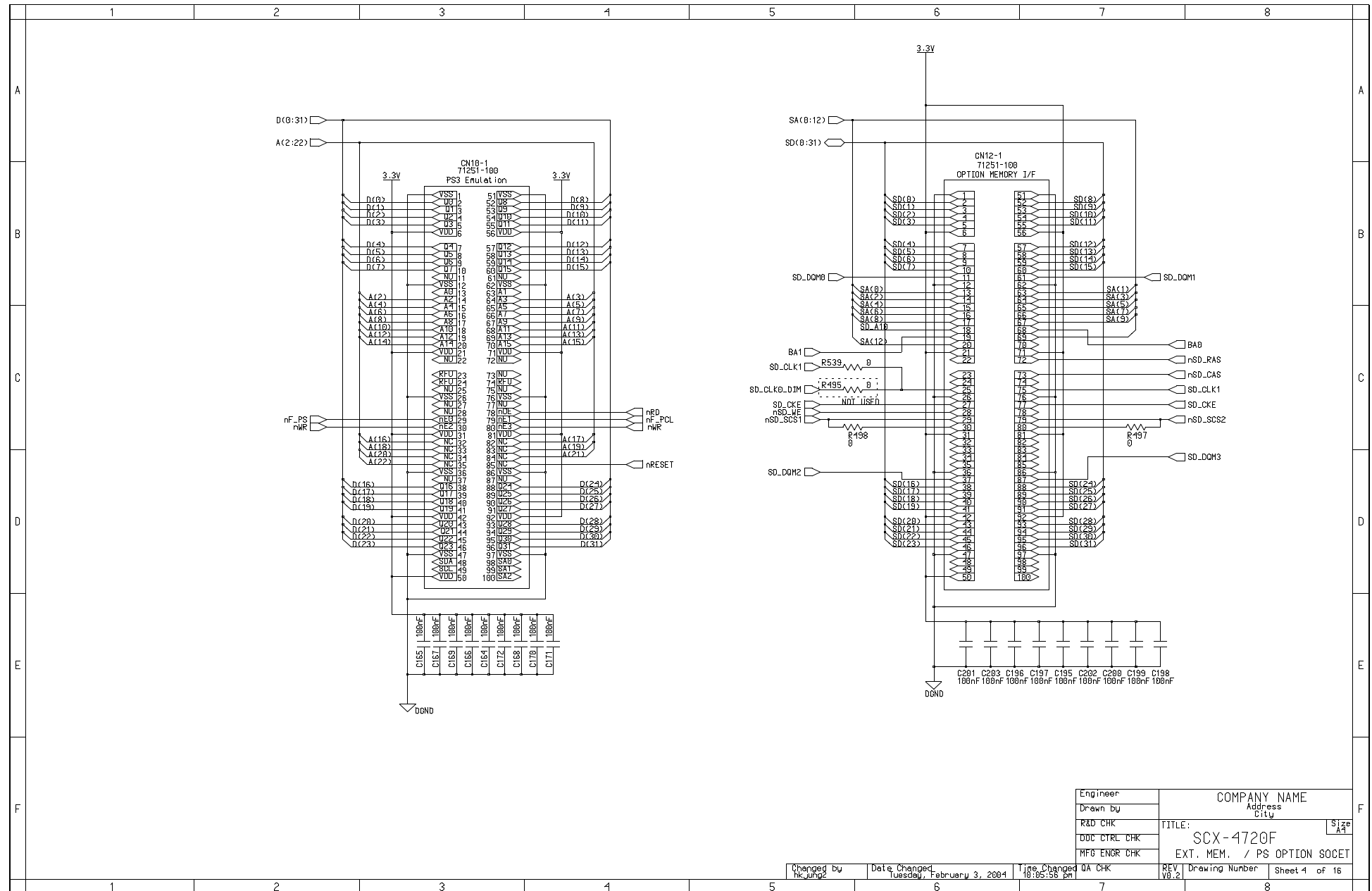
# 11. Schematic Diagrams

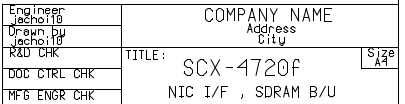
## 11.1 Main Board(1/16)



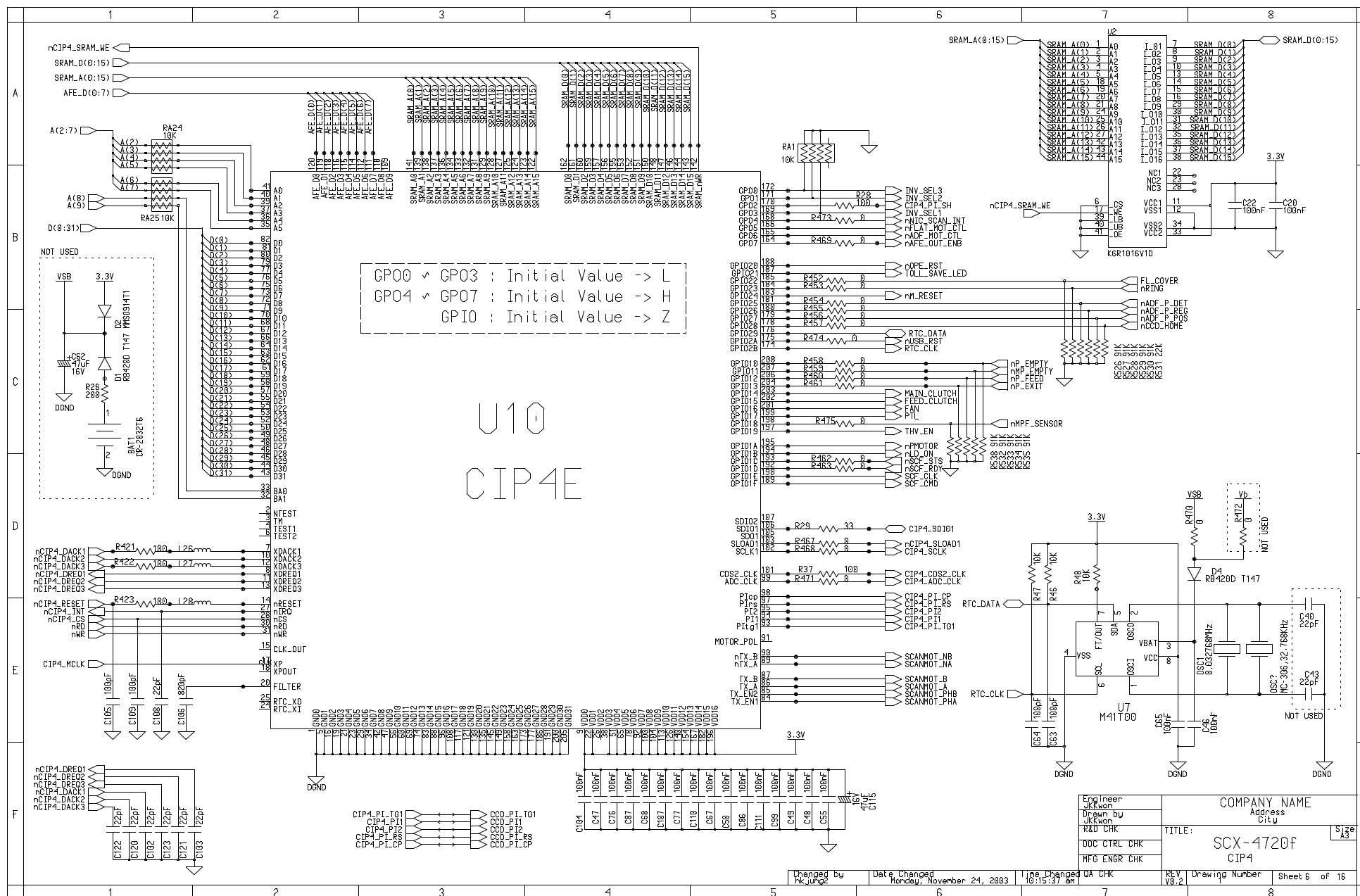


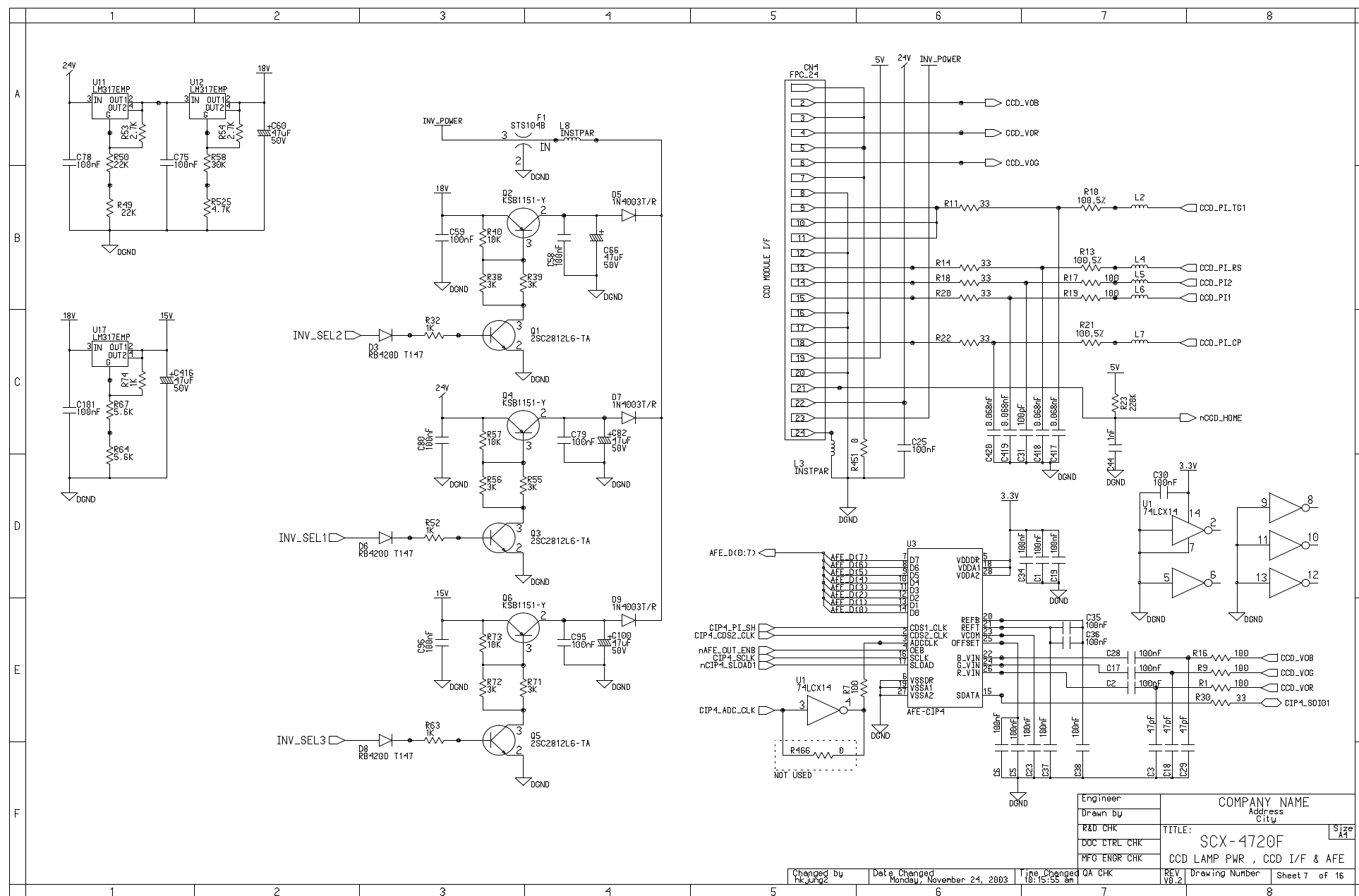


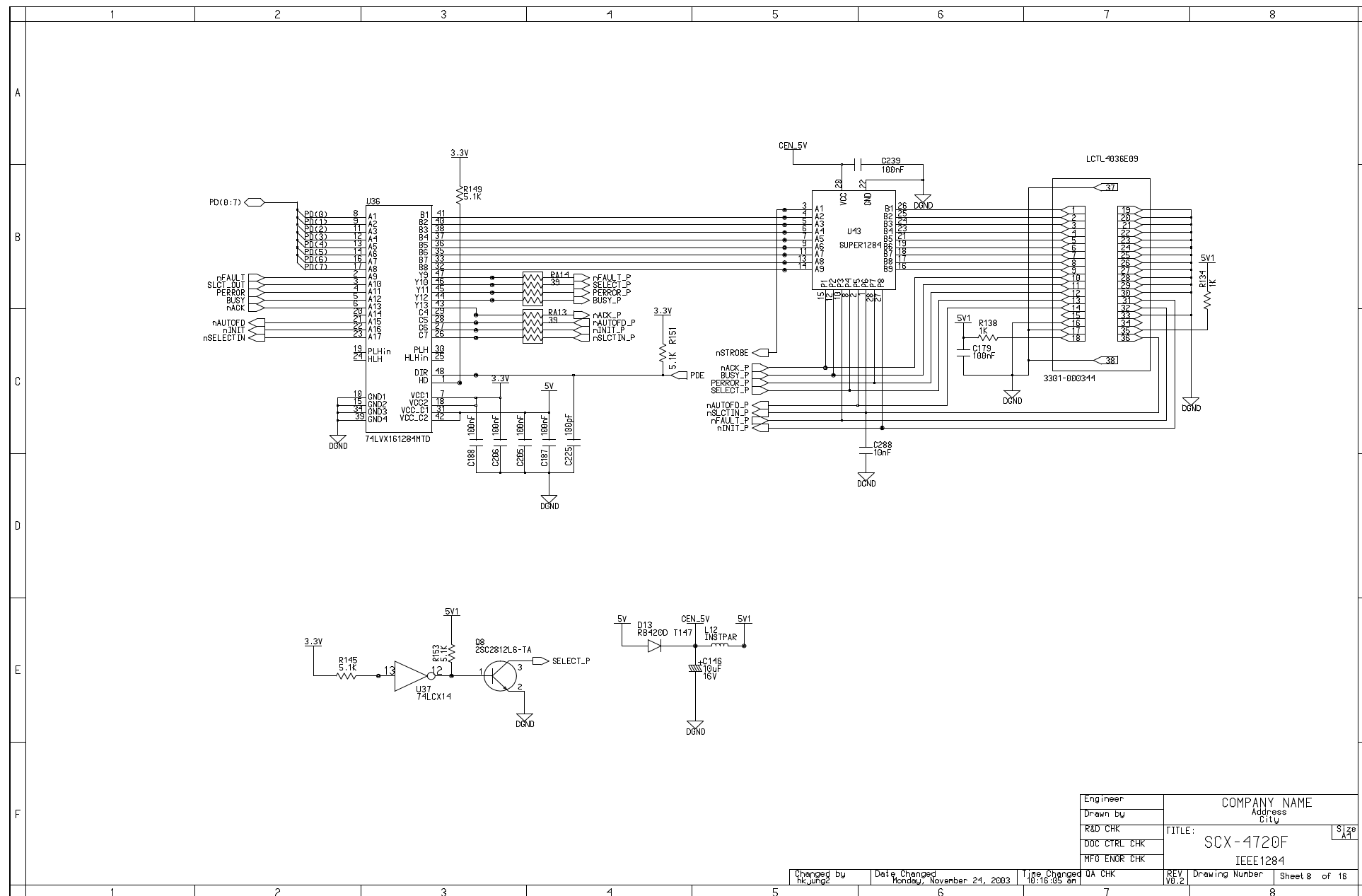


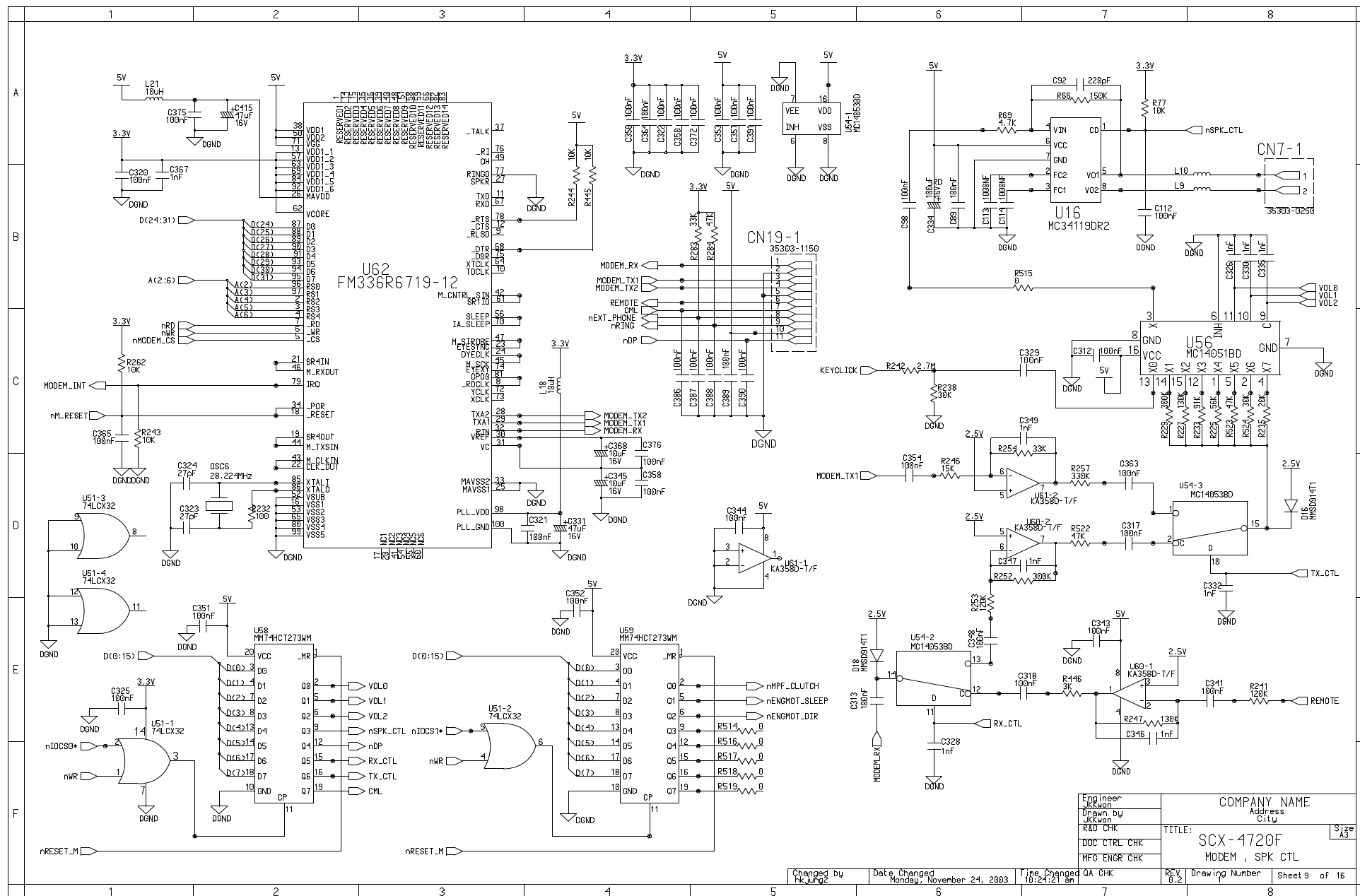






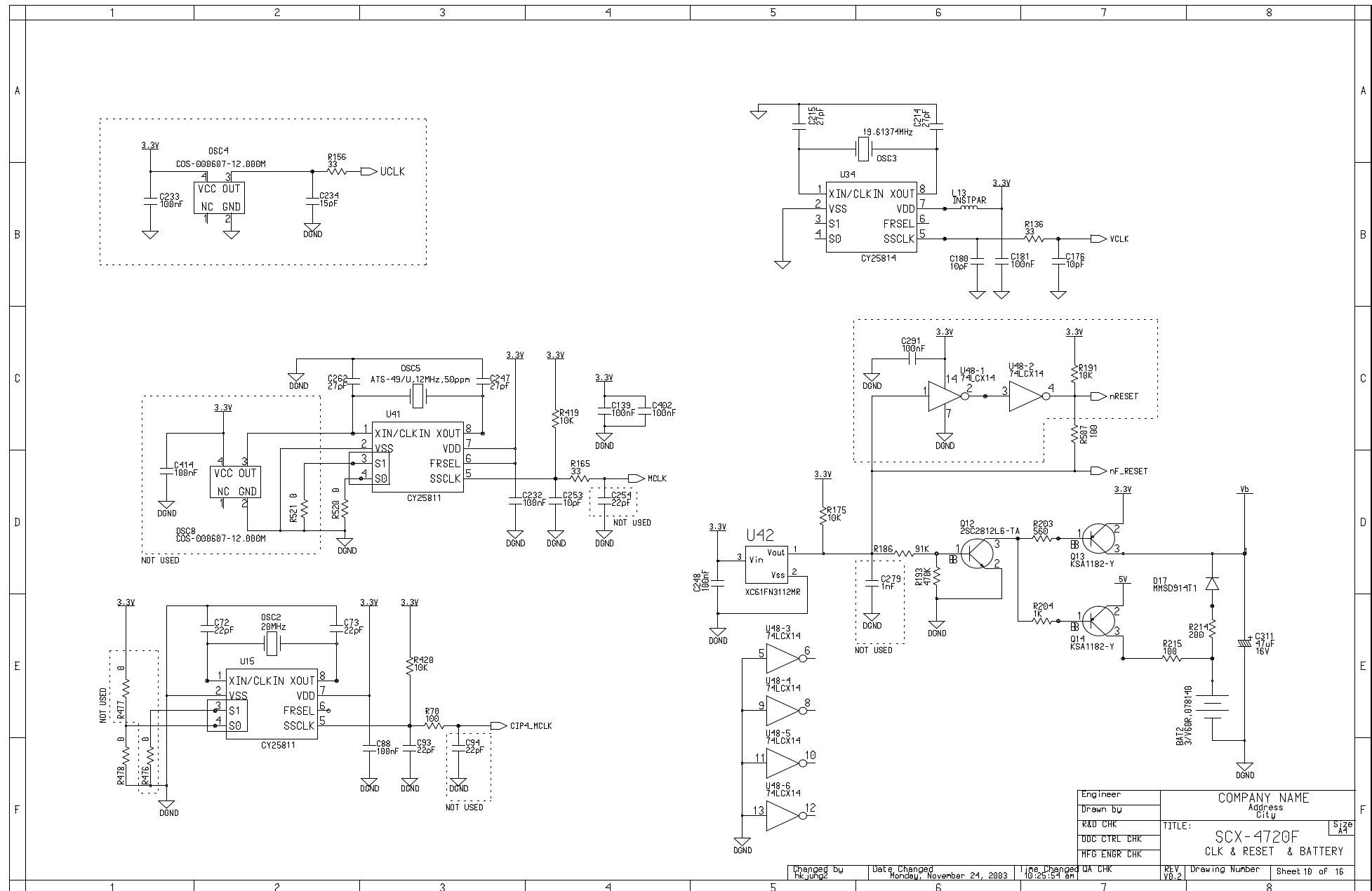


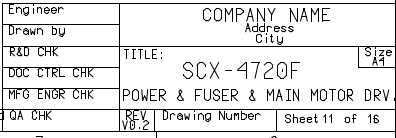


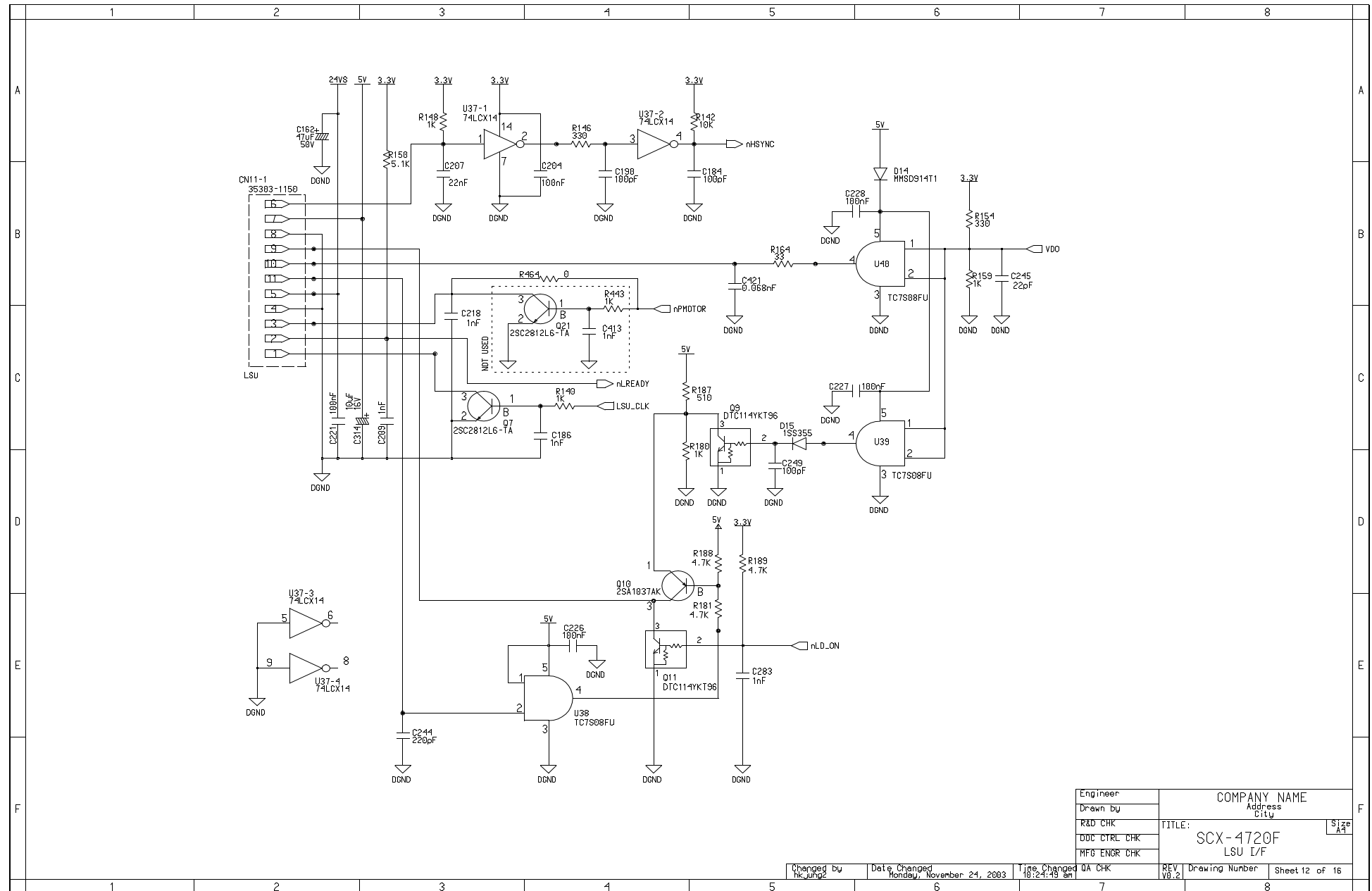


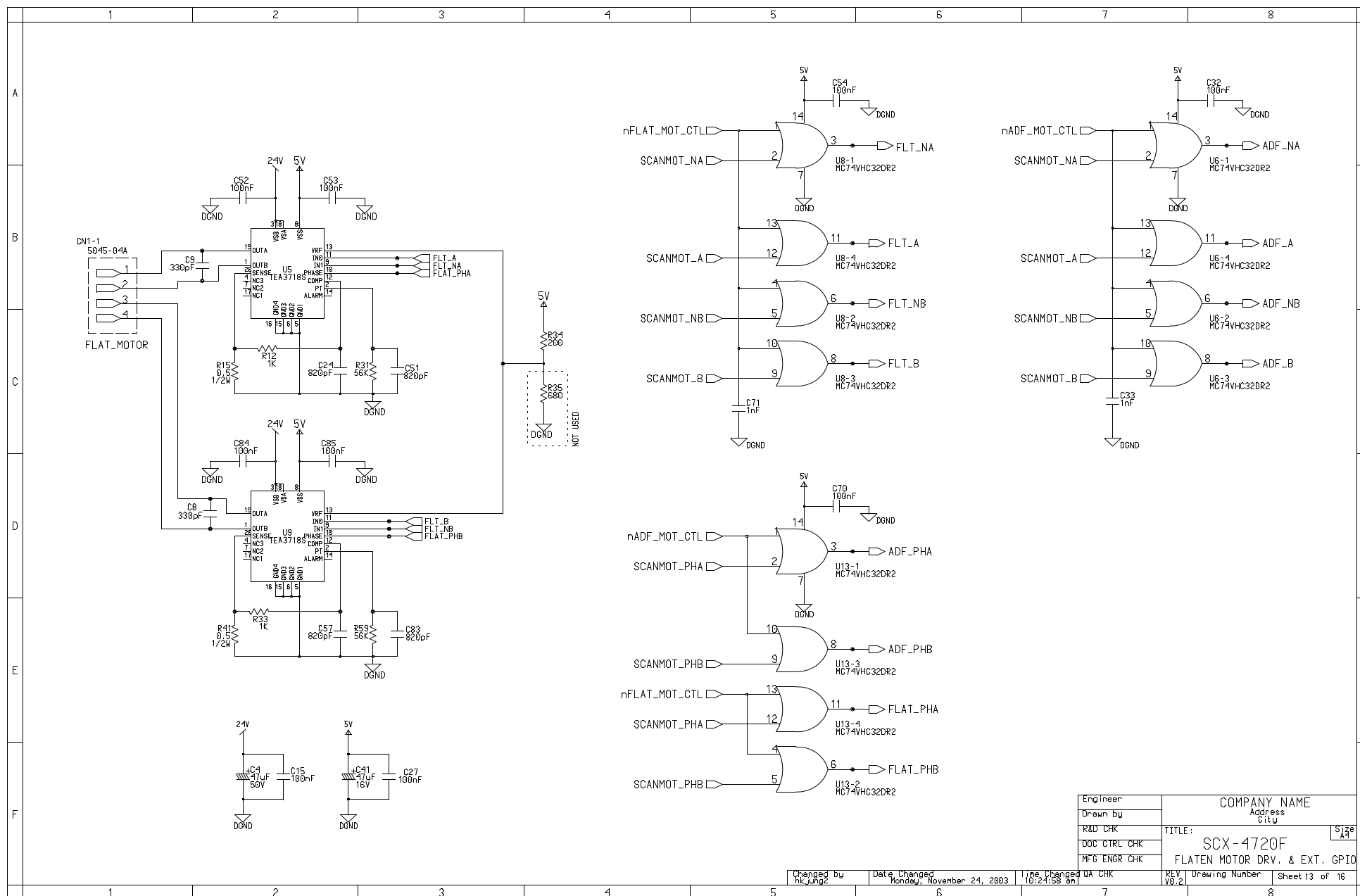
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Drawn by	JKwon	Address
Rev	0.2	City
DOC CTRL CHK		TITLE: SCX-4720F
MFG ENGR CHK		MODEM , SPK CTL

Changed by	Date Changed	Time Changed	QA CHK	REV	Drawing Number	Sheet 9 of 16
nk_jung	Monday, November 24, 2003	10:24:21 am		0.2		

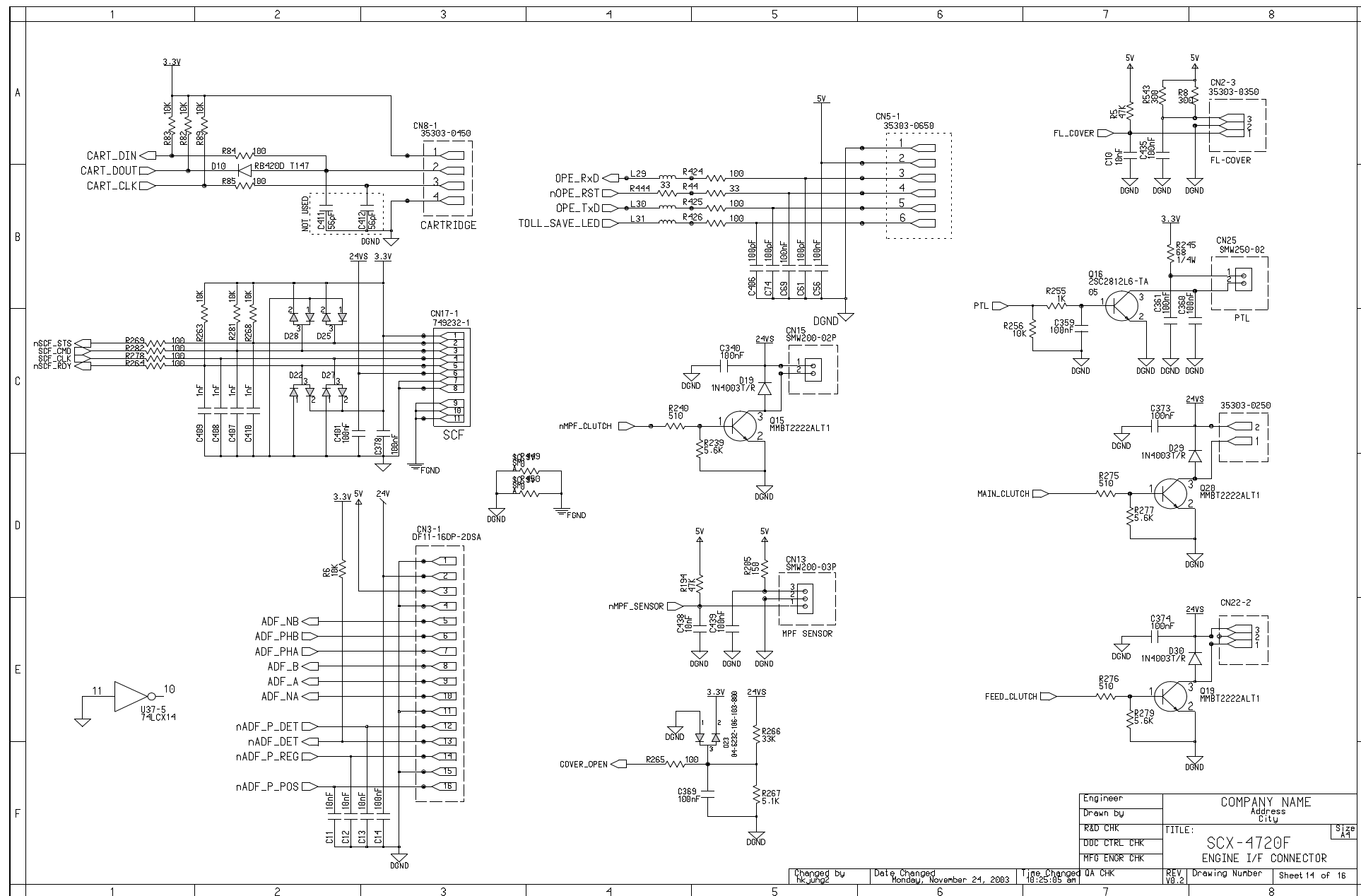


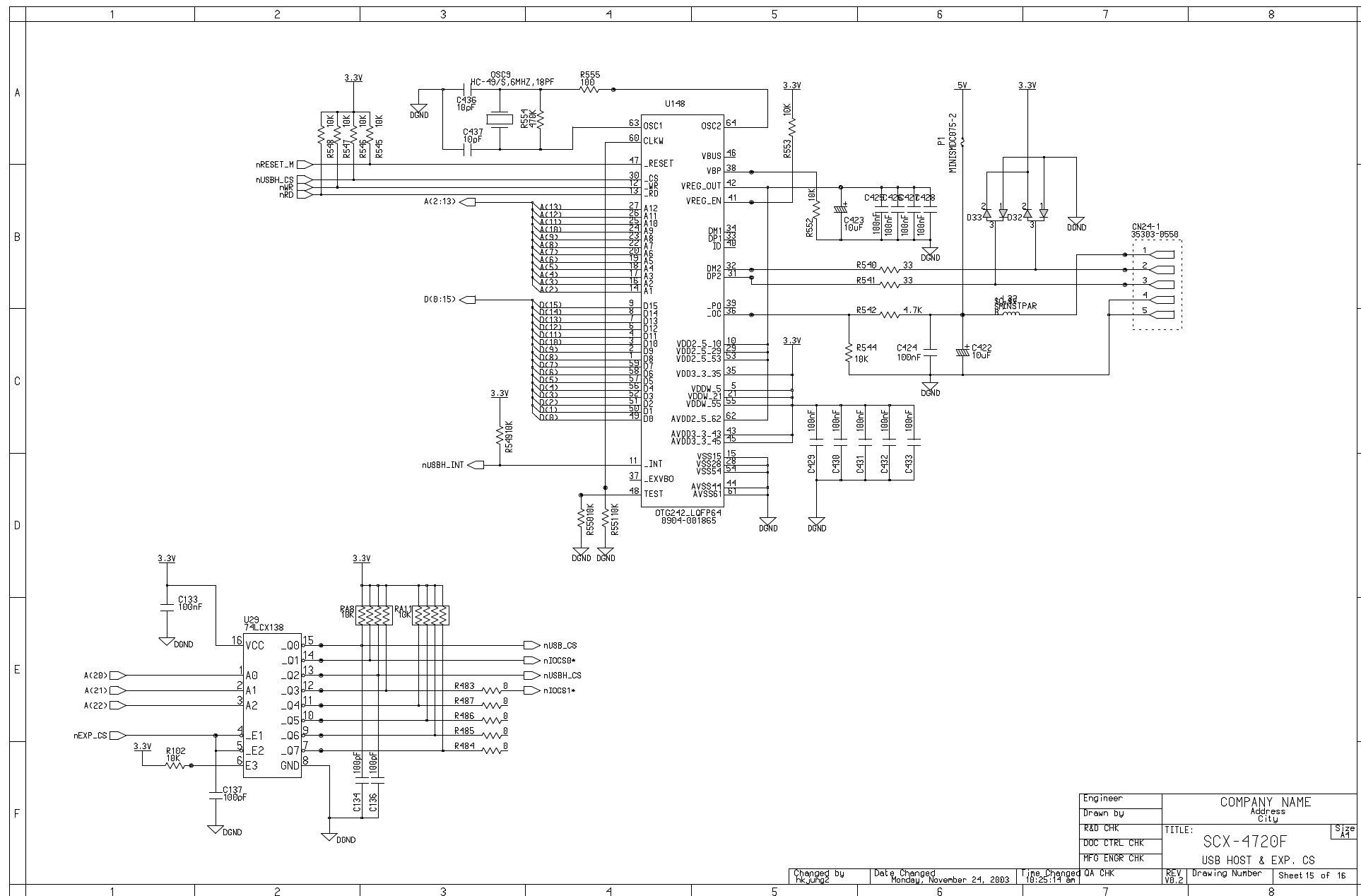


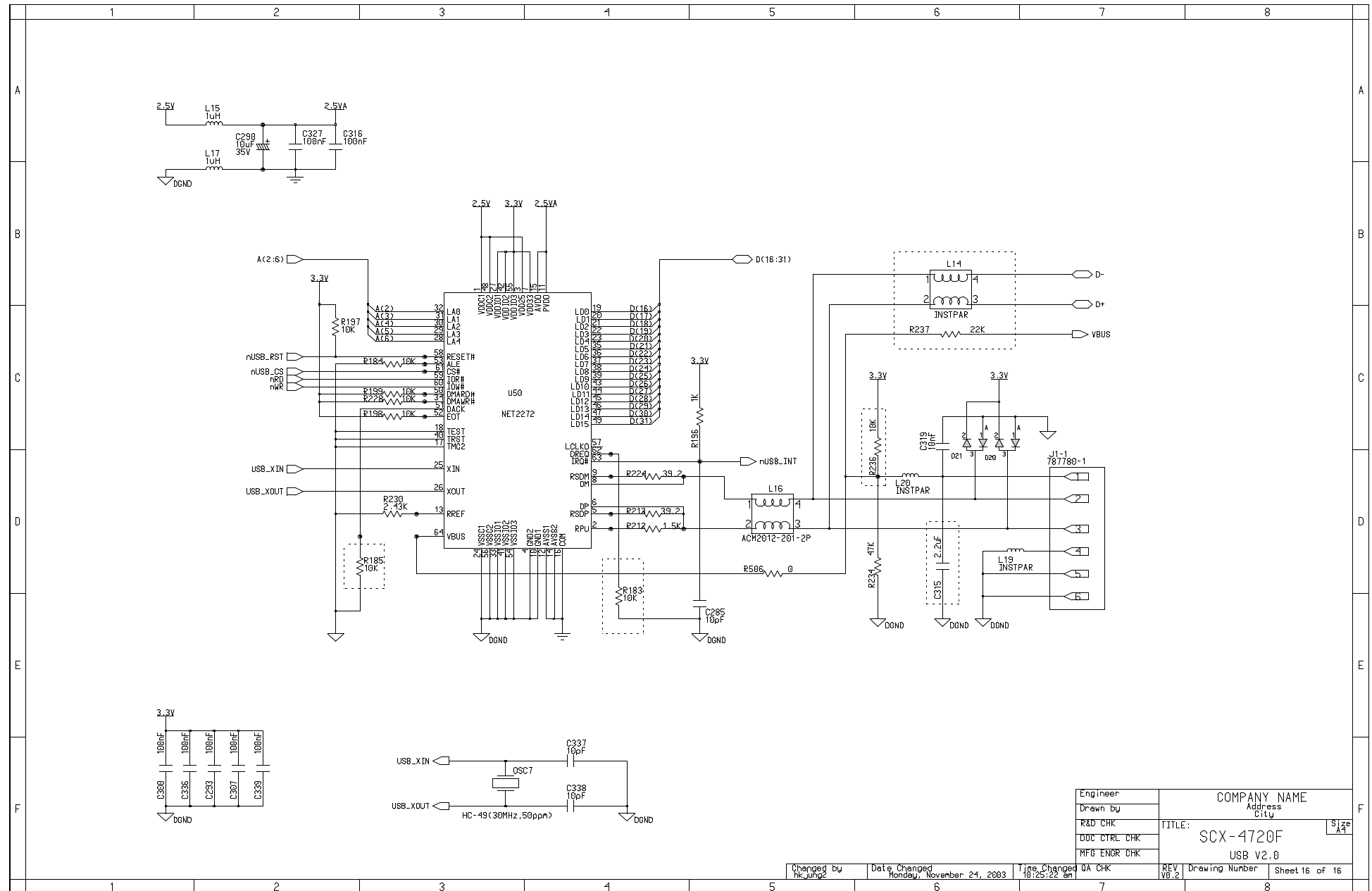




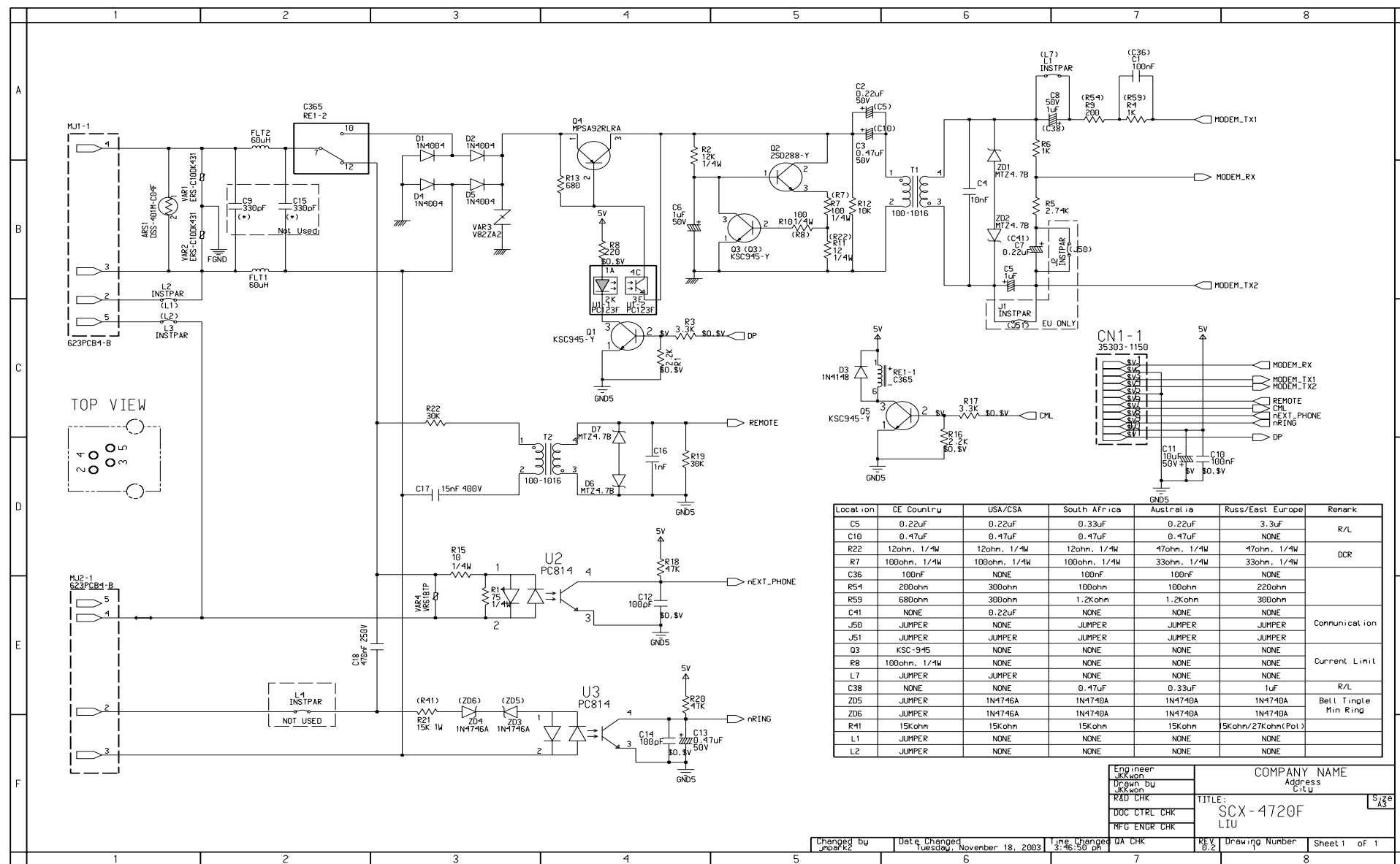




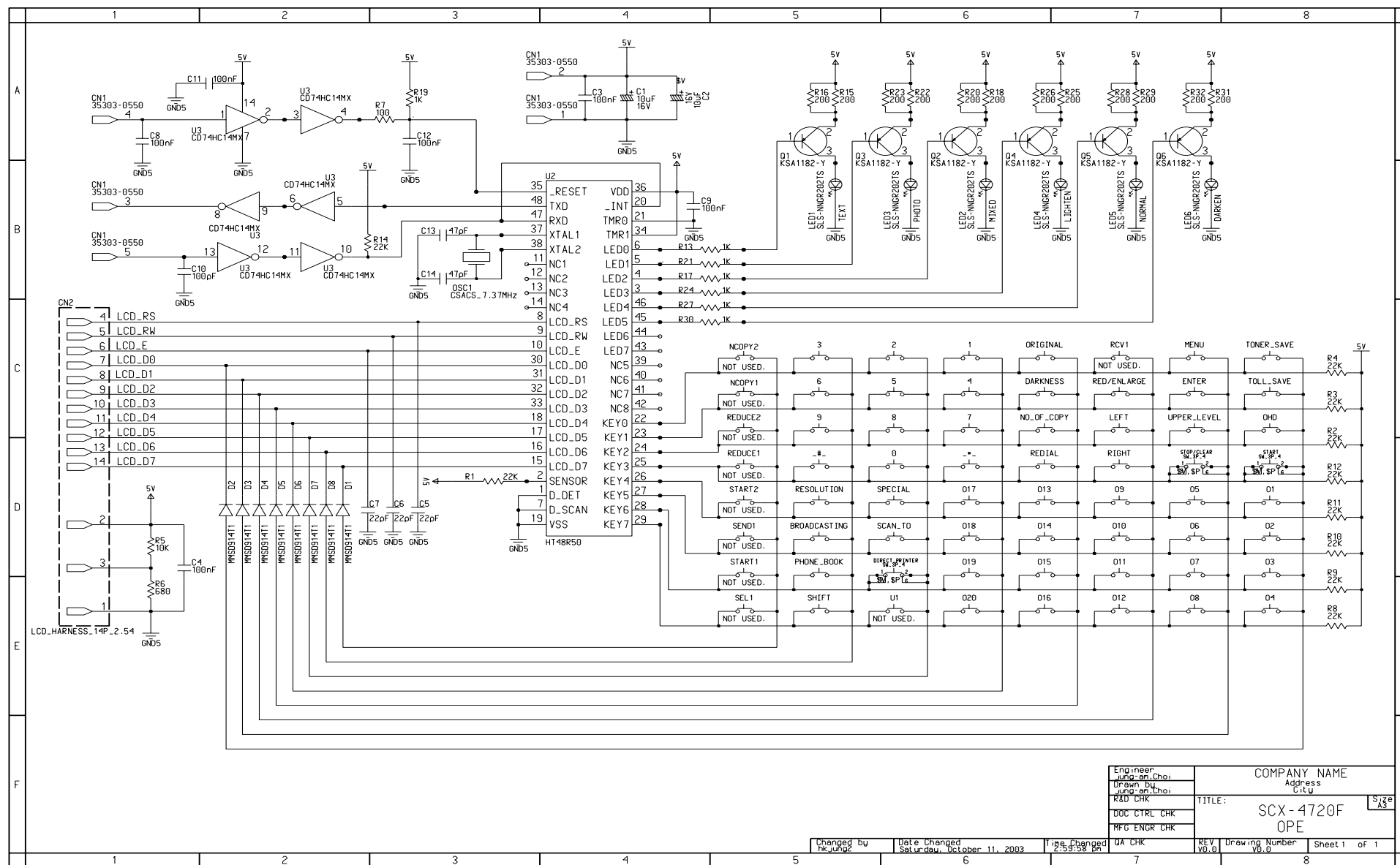




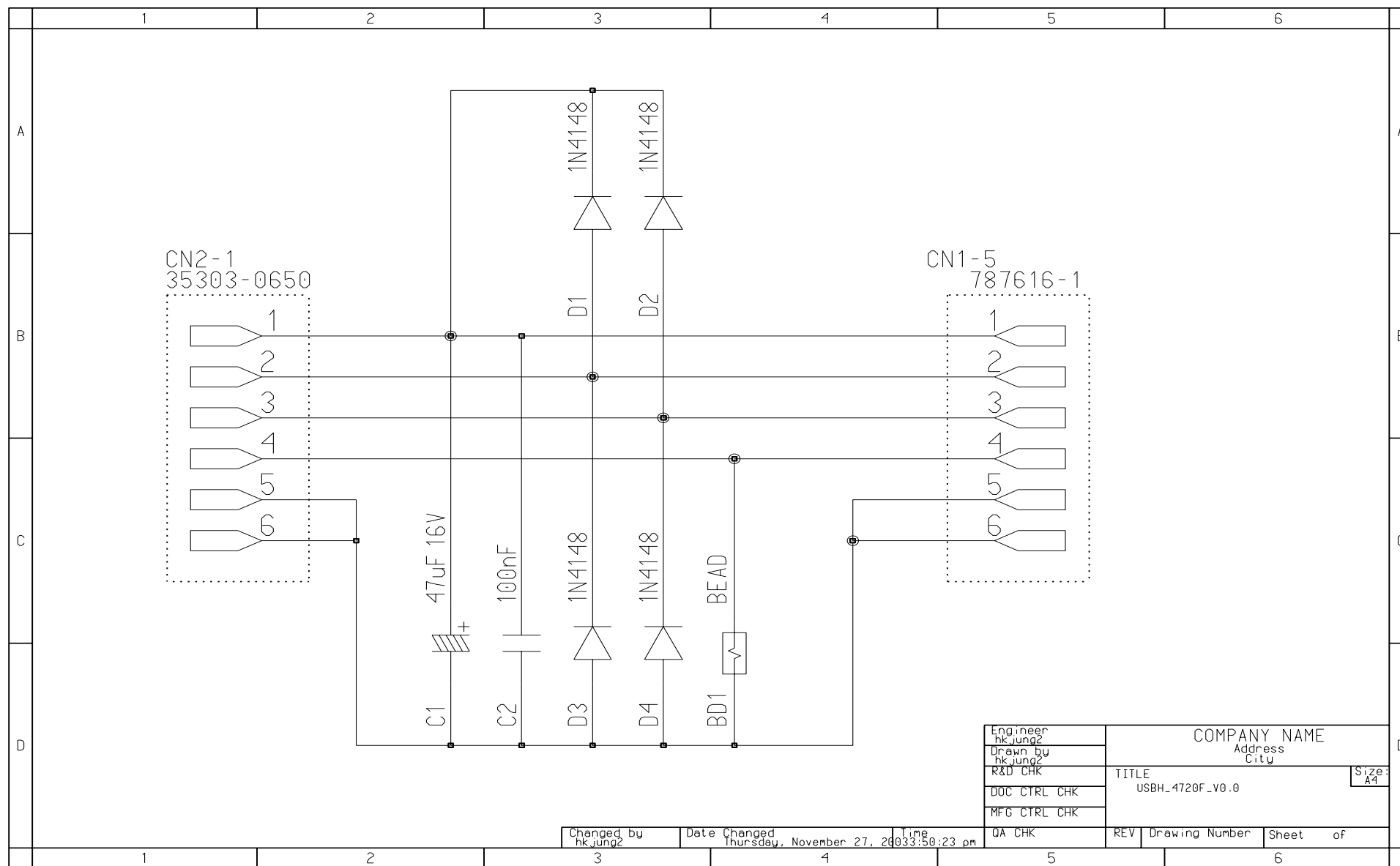
## 11.2 LIU Board



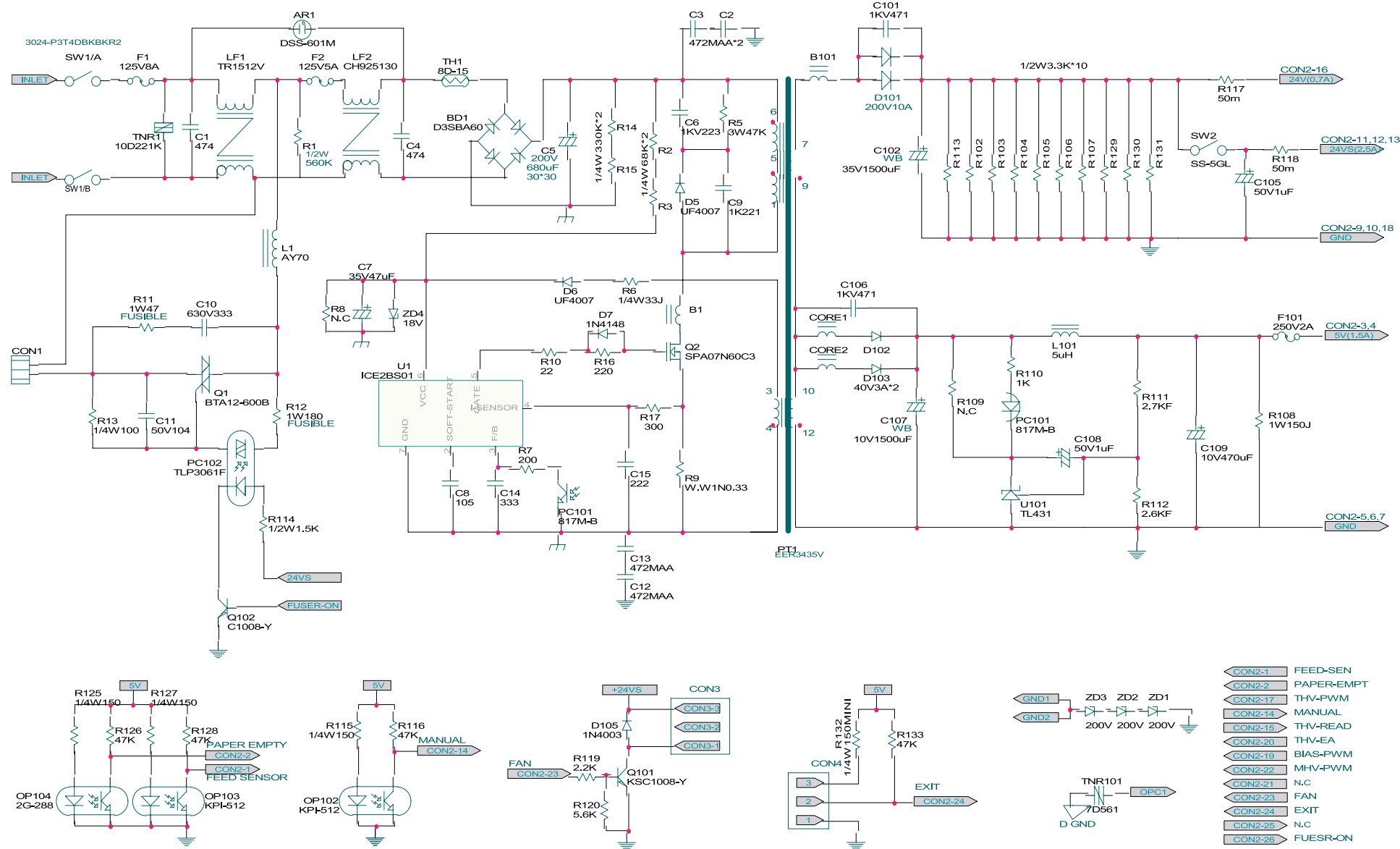
## 11.3 OPE Board



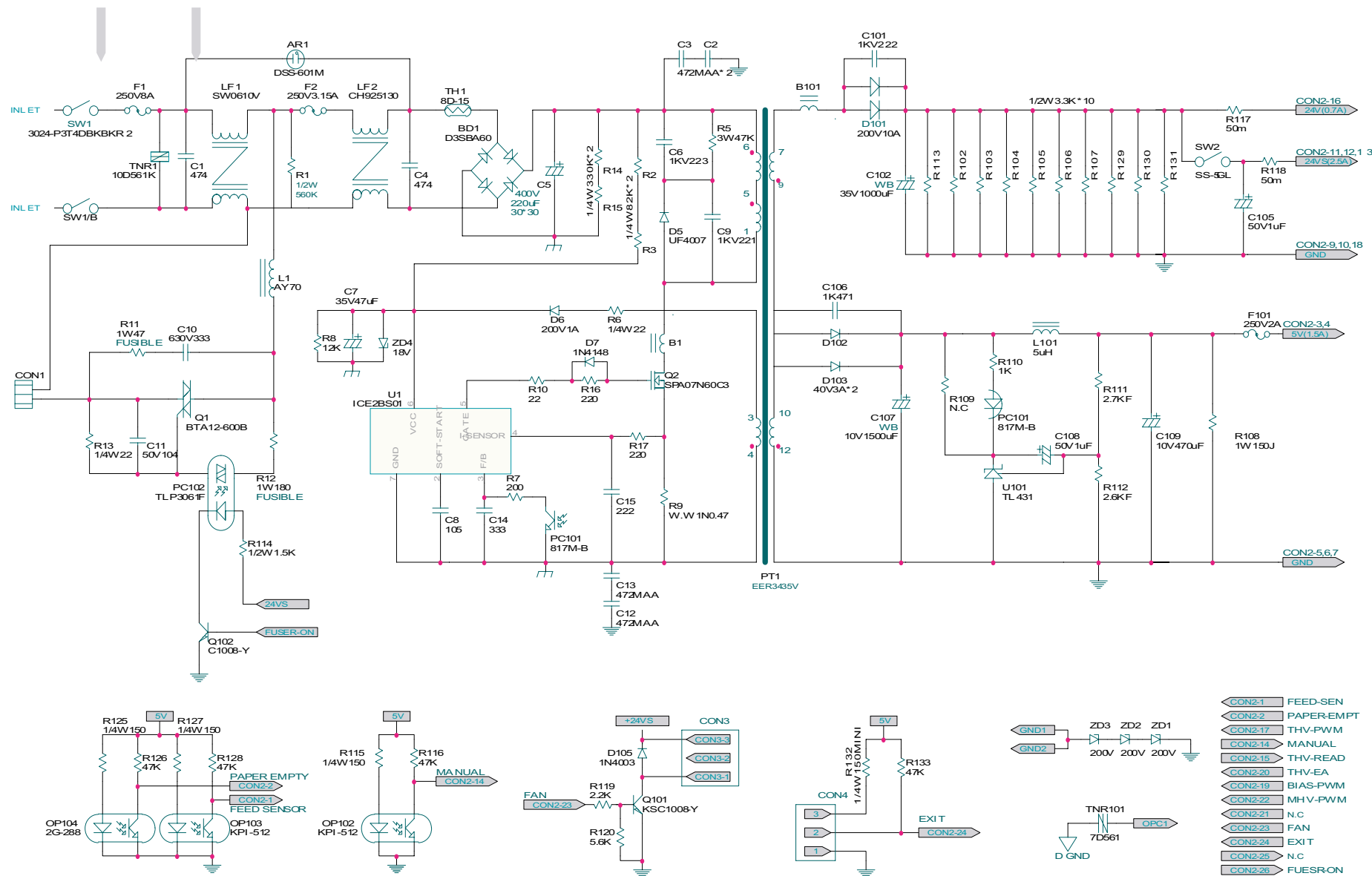
## 11.4 USB Host Board



# 11.5 SMPS\_110V



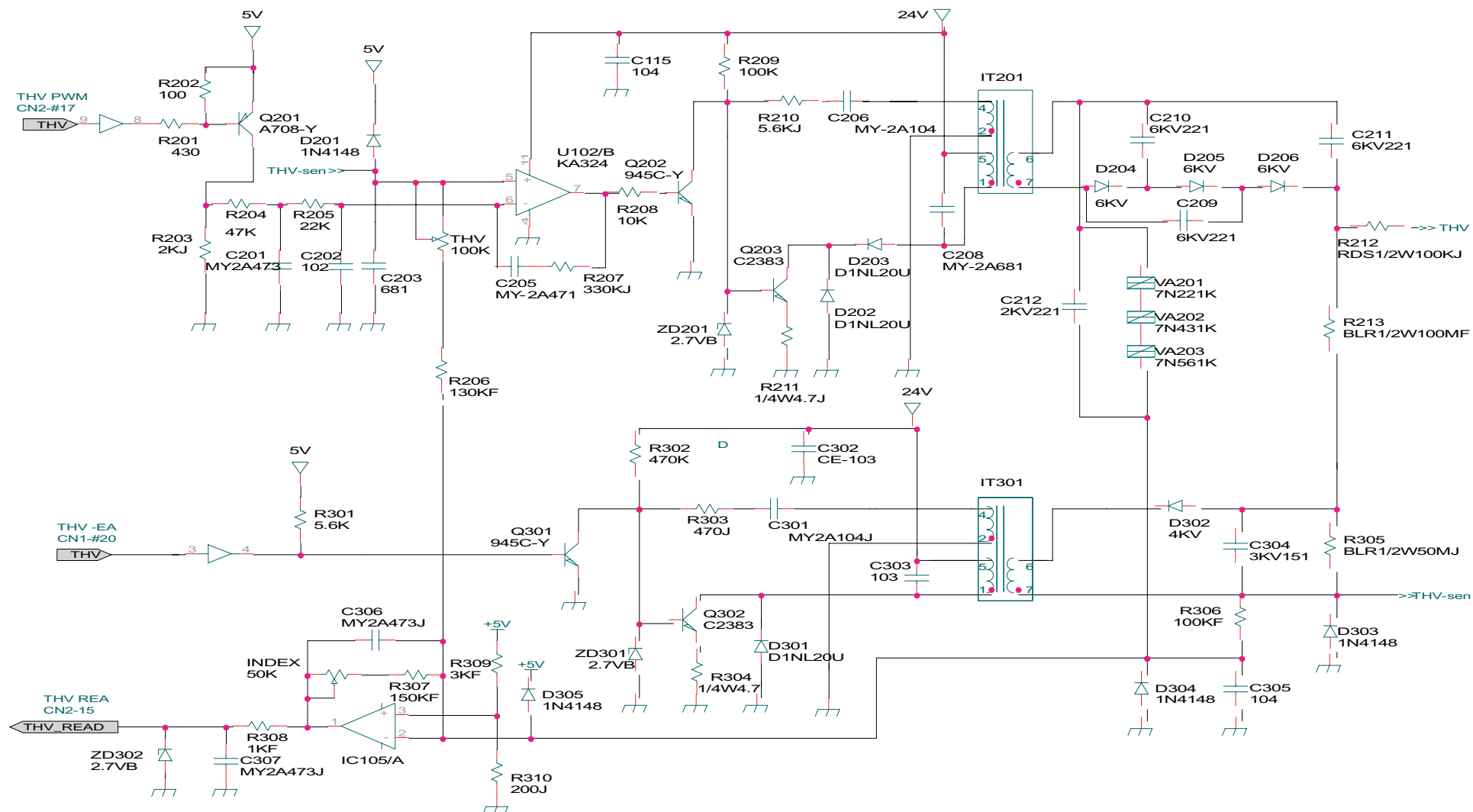
## 11.6 SMPS\_220V



- CON2-1 FEED-SEN
- CON2-2 PAPER-EMPTY
- CON2-17 THV-PWM
- CON2-14 MANUAL
- CON2-15 THV-READ
- CON2-20 THV-EA
- CON2-19 BIAS-PWM
- CON2-22 MHV-PWM
- CON2-21 N.C
- CON2-23 FAN
- CON2-24 EXIT
- CON2-25 N.C
- CON2-26 FUESRON



## 11.7 HVPS





This service manual is also provided on the web,  
the ITSELF system Samsung Electronics Co., Ltd.  
<http://itself.sec.samsung.co.kr>

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