SAMSUNG

Service Manual

Digital Laser MFP

SCX-8030ND / 8040ND series

1. Print / Copy speed
   • SCX-8030ND : 30 ppm (A4)
   • SCX-8040ND : 40 ppm (A4)

2. 800 MHz CPU

3. 250GB HDD

4. 512 MB Memory (Max. 1GB)

5. 8.9 inch color graphic touch-screen LCD

6. Various option units
   • 3K Booklet finisher, 1K Standard finisher
     DCF, HCF, Punch unit , Multi fax etc.

ELECTRONICS

GSPN (Global Service Partner Network)

Area	Web Site
Europe,MENA, CIS, Africa	https://gspn1.samsungcsportal.com
E.Asia, W.Asia, China, Japan	https://gspn2.samsungcsportal.com
N.America, S.America	https://gspn3.samsungcsportal.com

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1. Warning and caution for safety

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

1.1 Safety Warning

(1) Only to be serviced by appropriately qualified service technician.
   High voltages and lasers inside this product are dangerous. This printer should only be serviced by a qualified service technician.

(2) Use only Samsung replacement parts.
   There are no user serviceable parts inside the printer. Do not make any unauthorized changes or additions to the printer as these could cause the printer to malfunction and create an 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 personal injury.

CAUTION	- CLASS 3B. INVISIBLE LASER RADIATION WHEN OPEN. AVOID EXPOSURE TO THE BEAM.
DANGER	- INVISIBLE LASER RADIATION WHEN OPEN. AVOID DIRECT EXPOSURE TO BEAM.
DANGER -	KLASSE 3B. UNSICHTBARE LASERSTRAHLUNG, WENN OFFEN. STRAHLENAUSSETZUNG VERMEIDEN.
VORSICHT -	UNSICHTBARE LASERSTRAHLUNG KLASSE 3 B, WENN ABDECKUNG GEÖFFNET. NICHT DEM STRAHL AUSSETZEN.
ATTENZIONE -	CLASSE 3B. RADIZIONI LASER INVISBILI CON IL DISPOSITIVO APERTO. EVITARE L'ESPOSIZIONE AL RAGGIO.
PRECAUCIÓN -	RADIACIÓN LÁSER INVISIBLE DE CLASE 3B PRESENTE AL ABRIR. EVITE LA EXPOSICIÓN AL HAZ.
PERIGO -	CLASSE 3B. RADIAÇÃO LASER INVISÍVEL AO ABRIR. EVITE EXPOSIÇÃO DIRECTA AO FEIXE.
GEVAAR -	KLASSE 3B. ONZICHTBARE LASERSTRALING INDIEN GEOPEND. VERMIJD BLOOTSTELLING AAN DE STRAAL.
ADVARSEL -	KLASSE 3B. USYNLIG LASERSTRÅLING VED ÅBNING. UNDGÅ UDSÆTTELSE FOR STRÅLING.
ADVARSEL. -	KLASSE 3B. USYNLIG LASERSTRÅLING NÅR DEKSEL ÅPNES. UNNGÅ EKSPONERING FOR STRÅLEN.
VARNING -	KLASS 3B OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD. STRÅLEN ÄR FARLIG.
VAROITUS -	LUOKAN 3B NÄKYMÄTTÖMÄLLE LASER-SÄTEILYÄ AVATTUNA. VÄLTÄ ALTISTUMISTA SÄTEELLE.
注　意 -	CLASS 3B。严禁打开，以免被不可见激光辐射泄漏灼伤
주　의 -	열리면 등급 3B 비가시 레이저 방사선 이 방출됩니다. 광선에 노출을 피하십시오.

1.2 Caution for safety

1.2.1 Toxic material

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

(1) If the LCD control panel is damaged it is possible for the liquid inside to leak. This liquid is toxic. Contact with the skin should be avoided. Wash any splashes from eyes or skin immediately and contact your doctor. If the liquid gets into the mouth or is swallowed see a doctor immediately.

(2) Please keep Drum cartridge and Toner cartridge away from children. The toner powder contained in the Drum cartridge and Toner Cartridge may be harmful and if swallowed you should contact a doctor.

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. When removing the power connector, grip it firmly and pull. The power connector must be inserted completely, otherwise a poor contact could cause overheating possibly leading to a fire.

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

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

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

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

(11) Do not position the 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 product.

(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, shock or fire hazard.
(4) Do not install the machine in areas with high dust or moisture levels, beside on open window or close to a humidifier or heater. Damage could be caused to the printer in such areas.
(5) Do not place candles, burning cigarettes, etc on the printer, These could cause a fire.
(6) When reinstalling the imaging unit or ITB unit at power off, perform the OPC-ACR surely.

1.2.4 Assembly / Disassembly Precautions

Replace parts carefully and always use Samsung parts. Take care to note the exact location of parts and 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 main board 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, voltage, current and temperature rating are correct.
(5) When removing or re-fitting any parts do not use excessive force, especially when fitting screws into plastic.
(6) Take care not to drop any small parts into the machine.
(7) Handling of the OPC Drum
   - The OPC Drum can be irreparably damaged if it exposed to light.
     Take care not to expose the OPC Drum either to direct sunlight or to fluorescent or incandescent room lighting. Exposure for as little as 5 minutes can damage the surface of the photoconductive properties and will result in print quality degradation. Take extra care when servicing the printer. Remove the OPC Drum and store it in a black bag or other lightproof container. Take care when working with the Covers (especially the top cover) open as light is admitted to the OPC area and can damage the OPC Drum.
   - Take care not to scratch the green surface of OPC Drum Unit.
     If the green surface of the Drum Cartridge is scratched or touched the print quality will be compromised.

1.2.5 Disregarding this warning may cause bodily injury

(1) Be careful with high temperature components.
   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 fingers or hair into the rotating parts.
   When operating a printer, keep your hands and hair away form the rotating parts (Paper feeding entrance, motor, fan, etc.).

(3) When moving the printer :

- When transporting/installing the equipment, employ four people and be sure to hold the lifting handles.
- Be sure not to hold the movable parts or units (e.g. the control panel, DADF) when transporting the equipment.
- Be sure to use a dedicated outlet with 110V/220V power input.
- The equipment must be grounded for safety.
- Select a suitable place for installation. Avoid excessive heat, high humidity, dust, vibration and direct sunlight.
- Provide proper ventilation since the equipment emits a slight amount of ozone.
- The equipment must be installed near the socket outlet and must be accessible.
-Be sure to fix and plug in the power cable securely after the installation so that no one trips over it.
-If you are moving the machine a short distance, you should separate the finisher.
  (e.g : same building through elevator)
 - If you are moving the machine a long distance, you should remove toner & imaging unit, lock scan carrier & staple unit, tape and disassemble all trays. (e.g : moved by truck or so)

1.3 ESD Precautions

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

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

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

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

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

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

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

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

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

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

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

2. Product description

2.1 Specifications

General Specifications

Item	SCX-8030ND	SCX-8040ND
Printing Speed (A4)	30 ppm	40 ppm
FCOT	< 7 sec	< 5.5 sec
Warm-up Time	< 25 sec	
Duplex Printing Speed	30 ppm	40 ppm
Scanning Speed (A4) (Color)	40 ipm @ 600 dpi 60 ipm @ 300 dpi	
Memory	512MB (Max.1GB)	
HDD	250GB	
CPU	SPGPv4 800MHz	

Resolution	• Optical : 600 x 600 dpi
	• Enhanced : Draft 600 x 600 x 1bit
	                   Default 600 x 600 x 2 bit
	                   Up to 600 x 600 x 4 bit	

Gradation	256	
Size (W x D x H)	677.5 x 742.8 x 924 mm (26.7 x 29.2 x 36.4 inches)	
Weight	Approx. 113Kg (250lb) (Including consumables and tray)	
Noise (dB)	• Ready mode : 37 dB(A) • Printing mode : 54 dB(A) • Copying mode : 57 dB(A)	
Power consumption	• Average operating mode : Less than 1,100 W • Ready mode : Less than 250 W • Low Power mode : Less than 40 W • Power Save mode : Less than 7 W • Power off mode : 0 W	
Power requirement	AC 110-127V , 50/60 Hz or AC 220-240V , 50/60 Hz Note - See the Rating label on the machine for the correct voltage, frequency (hertz) and type of current.	
Power output rating for heating wire in DCF/HCF	AC 110-127V , 50/60 Hz or AC 220-240V , 50/60 Hz Note - See the Rating label on the machine for correct voltage, frequency (hertz) and type of current. The voltage rating of heating wire is the same as the machine's voltage rating.	

Printer Specifications

Item	SCX-8030ND	SCX-8040ND
Printing method	laser beam printing	
Printing speed	Up to 30 ppm (A4), 30 ppm (Letter)	Up to 40 ppm (A4), 40 ppm (Letter)
Duplex printing speed	Up to 30 ipm (A4), 30 ipm (Letter)	Up to 40 ipm (A4), 40 ipm (Letter)
First print out time (from ready)	< 9 sec	< 8 sec
Print resolution	• Default : Up to 2,400 x 600 dpi effective output(600x600x2 dpi) • Max : Up to 9,600 x 600 dpi effective output(600x600x2 dpi)	
Printer language	PCL5e, PCL6, PostScript 3, PDF 1.7+, TIFF, PJL	
OS compatibility	• Windows: 2000 ,XP,2003 ,Vista ,2008 ,Win7 • Various Linux OS • Macintosh: Mac OS X 10.5~10.6	
Interface	• High speed USB 2.0 • Ethernet 10/100/1000 Base TX (embedded type) • FDI (optional)	

Copier specifications

Item	SCX-8030ND	SCX-8040ND
Copy Speed	Up to 30 cpm (A4), 30 cpm (Letter)	Up to 40 cpm (A4), 40 cpm (Letter)
Duplex copy speed	Simplex to Duplex (1-1,1-2) : Up to 30 ipm in A4 (30 ipm in Letter) Duplex to Duplex (2-1.2-2) : Up to 18 ipm in A4 (18 ipm in Letter)	Simplex to Duplex (1-1,1-2) : Up to 40 ipm in A4 (40 ipm in Letter) Duplex to Duplex (2-1.2-2) : Up to 24 ipm in A4 (24 ipm in Letter)
First copy out time	< 7 sec	< 5.5 sec
Copy resolution	• Platen : 600 x 600 dpi • Document feeder: Up to 600 x 600 dpi	
Zoom range	• Platen : 25% to 400% • Document feeder: 25% to 400%	

Scanner specifications

Item		SCX-8030ND	SCX-8040ND
Compatibility		TWAIN standard (network)	
Scanning method		Color CCD	
Resolution	TWAIN standard	Up to 600 x 600 dpi (Up to 4,800 x 4,800 dpi by software enhancement)	
	Scan to USB	100, 200, 300, 400, 600 dpi	
	Scan to Email	100, 200, 300, 400, 600 dpi	
	Scan to Server	100, 200, 300, 400, 600 dpi	
Network Scan File format		PDF, TIFF, JPEG	
Effective scanning length		Max. 432 mm (17 inches)	
Effective scanning width		Max. 297 mm (11.7 inches)	
Color bit depth		Internal: 30 bit External: 24 bit	
Mono bit depth		1 bit for lineart & halftone 8 bit for gray scale	

Fax Specifications

Item	SCX-8030ND	SCX-8040ND
Compatibility	Super G3	
Applicable line	Public Switched Telephone Network (PSTN) or behind PABX	
Data coding	MH/MR/MMR/JBIG/JPEG	
Modem speed	33.6kbps	
Transmission speed	Up to 3 seconds/page	
Maximum document length	432 mm (17 inches)	
Resolution	• Standard : 203 x 98 dpi • Fine : 203 x 196 dpi • Super Fine : 300 x 300 dpi • Ultra Fine : 600 x 600 dpi	
Memory	HDD Backup	
Auto dialer	up to 500 numbers	

Paper Specifications

Item	SCX-8030ND	SCX-8040ND
Input Paper Capacity	• Standard : 1,040 (Cassette 1 & 2) + 100 (MP Tray) • Maximum : 1,040 (Cassette 1 & 2) + 2,000 (High Capacity Feeder) + 100 (MP Tray) Note – The SCX-8025ND not supports the Tray(DCF,HCF) and the Finisher	
Output Paper Capacity	• Standard : 500 (Center Output Tray) • Maximum : 3,250 (Booklet Finisher) + 125 (Job Separator)	
Paper Size	• Cassette : 148 x 210 mm (5.83" x 8.27") ~ 305 x 457 mm (12" x 18") • MP Tray : 98 x 148 mm(3.8" x 5.8") ~ 305 x 1200 mm (12" 47") • High Capacity Feeder : A4 / Letter	
Paper Type	• Cassette : Plain Paper, Thin Paper, Thick Paper, Bond, Punched, Pre-Printed, Recycled, Letterhead, Cotton, Colored, Archive, CardStock, Label • MP Tray : Plain Paper, Thin Paper, Thick Paper, Bond, Punched, Pre-Printed, Recycled, Letterhead, Cotton, Colored, Archive, CardStock, Label, Transparency, Envelope • High Capacity Feeder : Plain Paper, Thin Paper, Thick Paper, Bond, Punched, Pre-Printed, Recycled, Cotton, Colored, CardStock	
Paper Weight	• Cassette : 60 ~ 163 gsm (16lb Bond ~ 90lb Index) • MP Tray : 60 ~ 216 gsm (16lb Bond ~ 90lb Cover) • High Capacity Feeder : 60 ~ 163 gsm (16lb Bond ~ 90lb Index)	
Original Capacity for DADF	100 sheets	
Original Size for DADF	• Full supported Size : 140 X 140mm ~ 297 x 432mm (5.5" x 5.5" ~ A3/Ledger) • Auto-detected Size : A3, B4, B4 SEF, A4, A4 SEF, B5, B5 SEF, A5, A5 SEF	
Original Weight for DADF	• Simplex : 42 ~ 163 gsm (30lb Book ~ 90lb Index) • Duplex : 50 ~ 128 gsm (30lb Book ~ 34lb Bond)	

Consumables

Product	Model name	Life **	SCX-8030ND	SCX-8040ND
Toner Cartridge	MLT-K606S	35K pages	X*	O
	MLT-K607S	20K pages	O	O
Imaging unit	MLT-R607K	100K pages	O	O
Waste Toner Container	MLT-W606	300K pages	O	O

* American 35K Toner can be used for SCX-8030ND
** Declared yield value in accordance with 6% coverage.

Option Unit

Option Unit	Model name	Remark
Stand	CLX-DSK10T/SEE	
Dual Cassette Feeder	CLX-PFP000/SEE	520 Sheet Tray x 2
HCF (High Capacity Feeder)	CLX-HCF102/SEE CLX-HCF102/XAA	2,000 Sheets (LTR, A4)
Job Separator	SCX-JST000/SEE	125 Pages
Bridge Unit	CLX-BRG200/SEE	
Standard Finisher	CLX-FIN40S/SEE	1,250 Stacking, Stapling (5 Pos)
Booklet Finisher	CLX-FIN40L/SEE	3,250 Stacking, Stapling (5 Pos), Booklet
Punch Kit	CLX-HPU000/XAA	2-3 Holes (NA)
	CLX-HPU001/SEE	2-4 Holes (EU)
Working Table	CLX-WKT000/SEE	
512MB Memory	SCX-MEM300/SEE	512MB
FDI Kit	CLX-KIT10F/SEE	Serial Port
Fax Kit	CLX-FAX150/SEE CLX-FAX150/XEE CLX-FAX150/XEG CLX-FAX150/XEU	G3, T.37/38, PC Fax SW, Fax Manual Softcopy
Fax Multiline Kit	CLX-FAX250/SEE CLX-FAX250/XEE CLX-FAX250/XEG CLX-FAX250/XEU	G3
SmarThru Workflow		Document Distribution Solution
CounThru		Counter/cost Management Solution
Advanced Scan Kit	CLX-KIT10D/SEE	Searchable PDF, Barcode, etc.
Heating wire for Cassette, HCF, DCF	CLX-DHK11C	110V, 10W (equipped by service person at field, voltage rating of Heating Wire is the same as the machine's voltage rating)
	CLX-DHK12C	220V, 10W (equipped by service person at field, voltage rating of Heating Wire is the same as the machine's voltage rating)
Heating wire for Scan	CLX-DHK11S	110V, 5W and 10W (equipped by service person at field, voltage rating of Heating Wire is the same as the machine's voltage rating)
	CLX-DHK12S	220V, 5W and 10W (equipped by service person at field, voltage rating of Heating Wire is the same as the machine's voltage rating)

SAMSUNG ELECTRONICS
Version 0.05

Option unit configuration

Job Separator
(SCX-JST000)

Working Table
(CLX-WKT000)

1,250-sheet standard finisher
(CLX-FIN40S)

Duplex Automatic Document Feeder

Bridge kit
(CLX-BRG200)

2/3 hole Punch kit
(CLX-HPU000)
2/4 hole Punch kit
(CLX-HPU001)

3,250-sheet booklet finisher
(CLX-FIN40L)

Main unit

Fax kit
(CLX-FAX150)

Fax multi-line kit
(CLX-FAX250)

Stand
(CLX-DSK10T)

Optional tray
(CLX-PFP000)

High capacity feeder
(CLX-HCF102)

FD I kit
(CLX-KIT10F)

Expansion memory module 512M
(SCX-MEM300)

Cassette / Scanner Heating cable
(CLX-DHK11C/12C/11S/12S)

2.2 System configuration

Front view 1
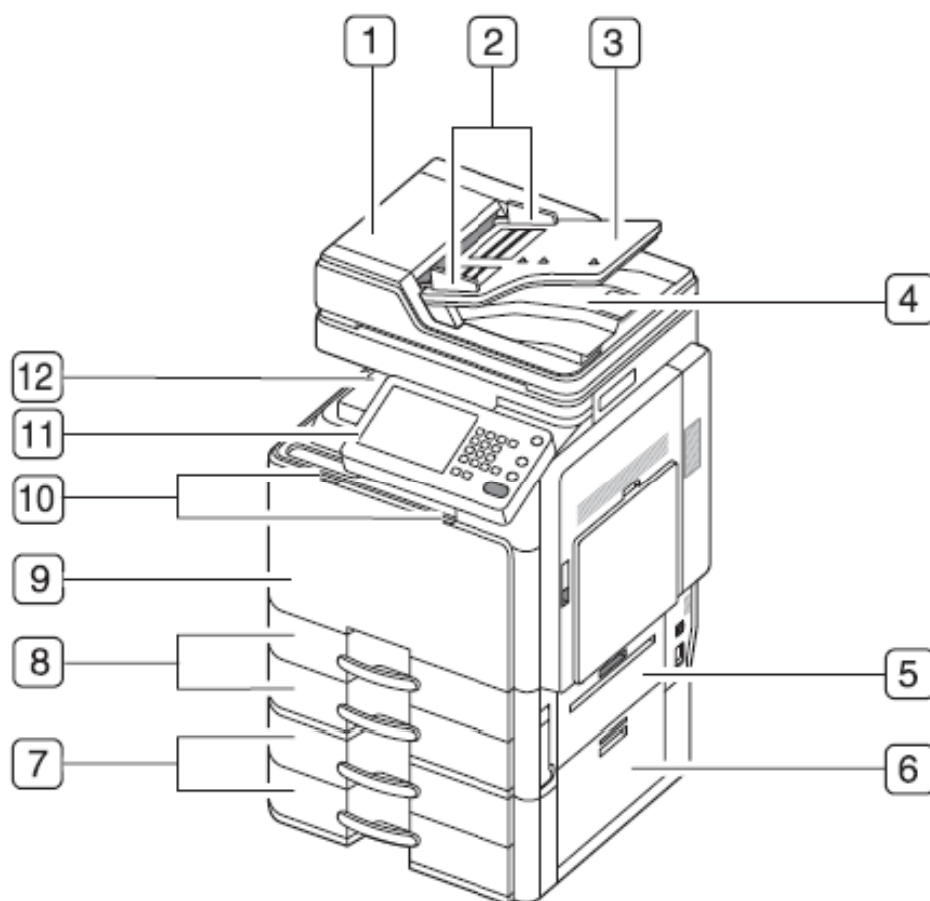
1	DADF Cover	**7**	DCF (tray3, tray4)*
2	DADF width guides	**8**	Standard tray (tray1, tray2)
3	DADF input tray	**9**	Front door
4	DADF output tray	**10**	Front door handle
5	Standard tray right bottom door	**11**	Control panel
6	DCF right bottom door	**12**	Center tray

* Optional device

Front view 2
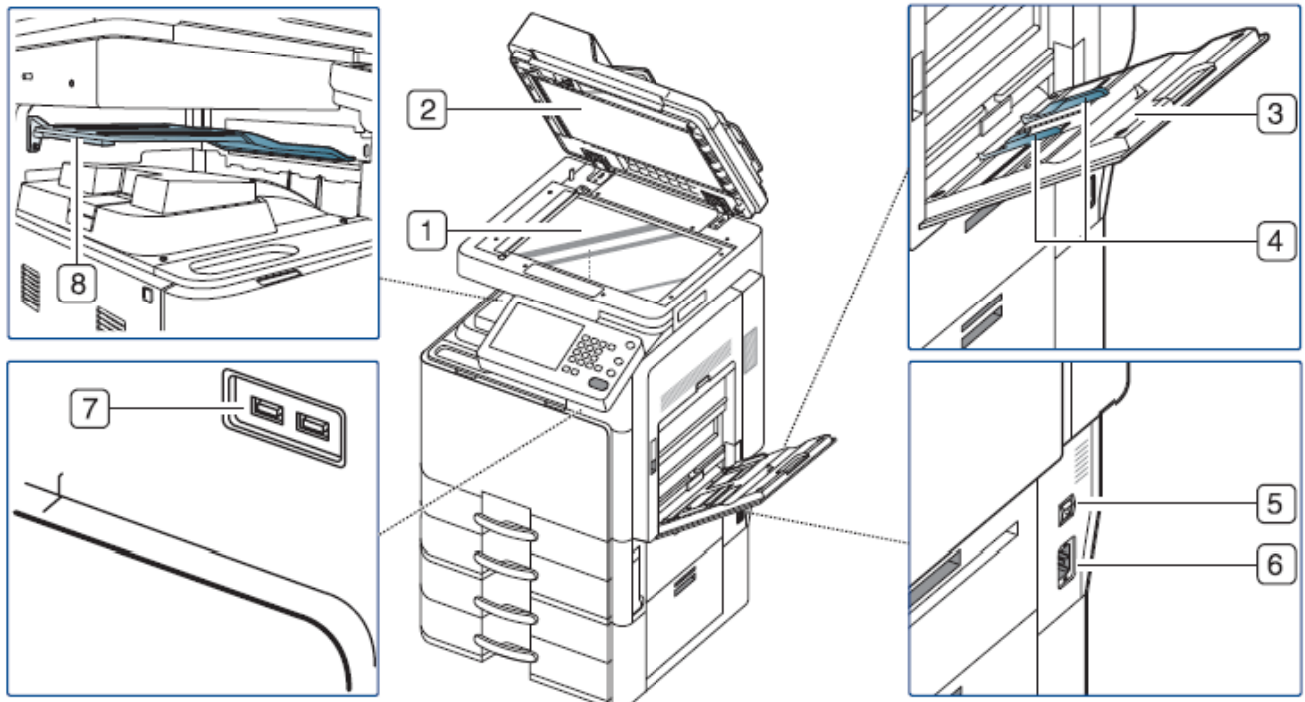
1	Scanner glass	5	Power-switch
2	White sheet	6	Power receptacle
3	Multi-purpose tray	7	USB port (2 EA)
4	Multi-purpose tray width guide	8	Job separator*

* Optional device

Rear view
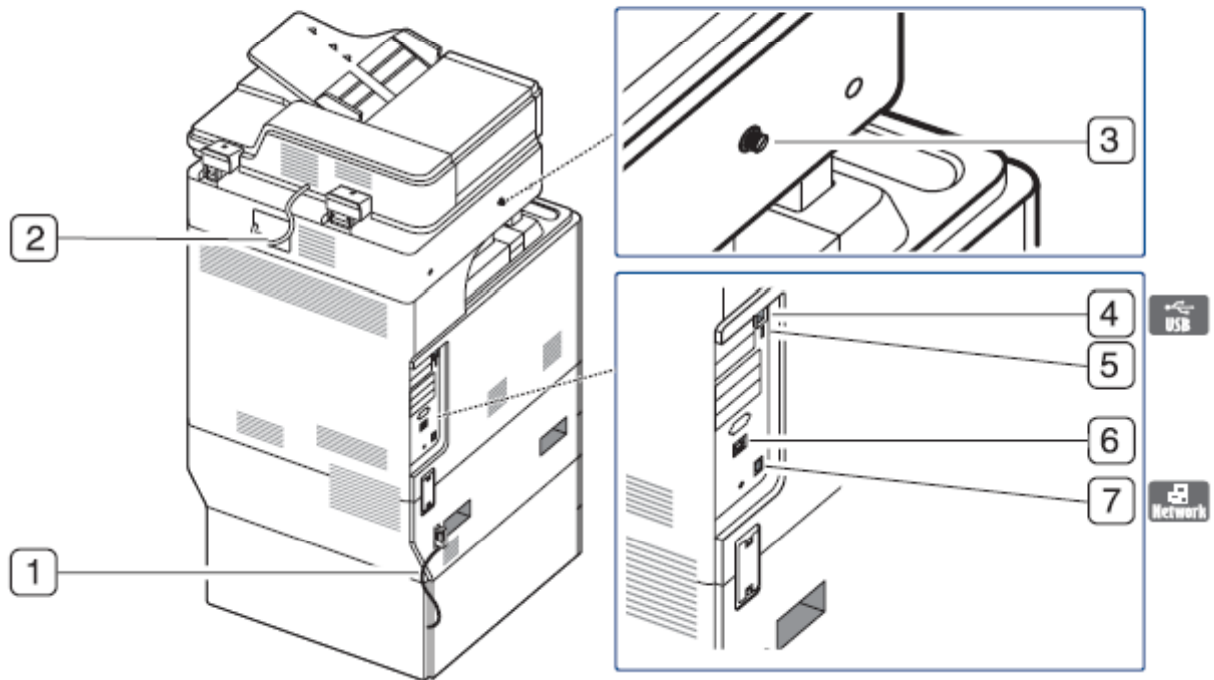
1	DCF cable	**5**	USB host port
2	DADF cable	**6**	Finisher connector
3	Scanner locking screw	**7**	Network port
4	USB port (Connection port to computer)		

Inner view
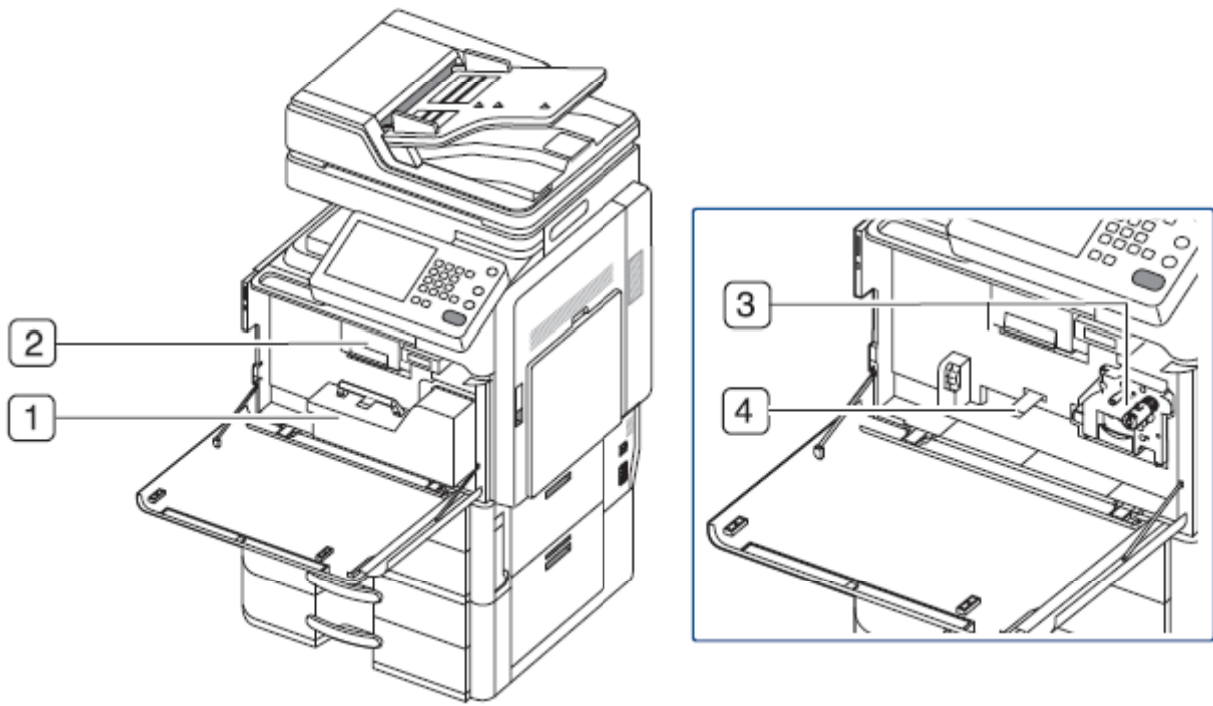
1	Waste toner container	**3**	Imaging unit
2	Toner cartridge	**4**	Locking lever

NOTE
If you want to see the imaging unit, you need to remove the waste toner container. Lift the locking lever upward. Then remove the waste toner container.

View with standard finisher (optional)
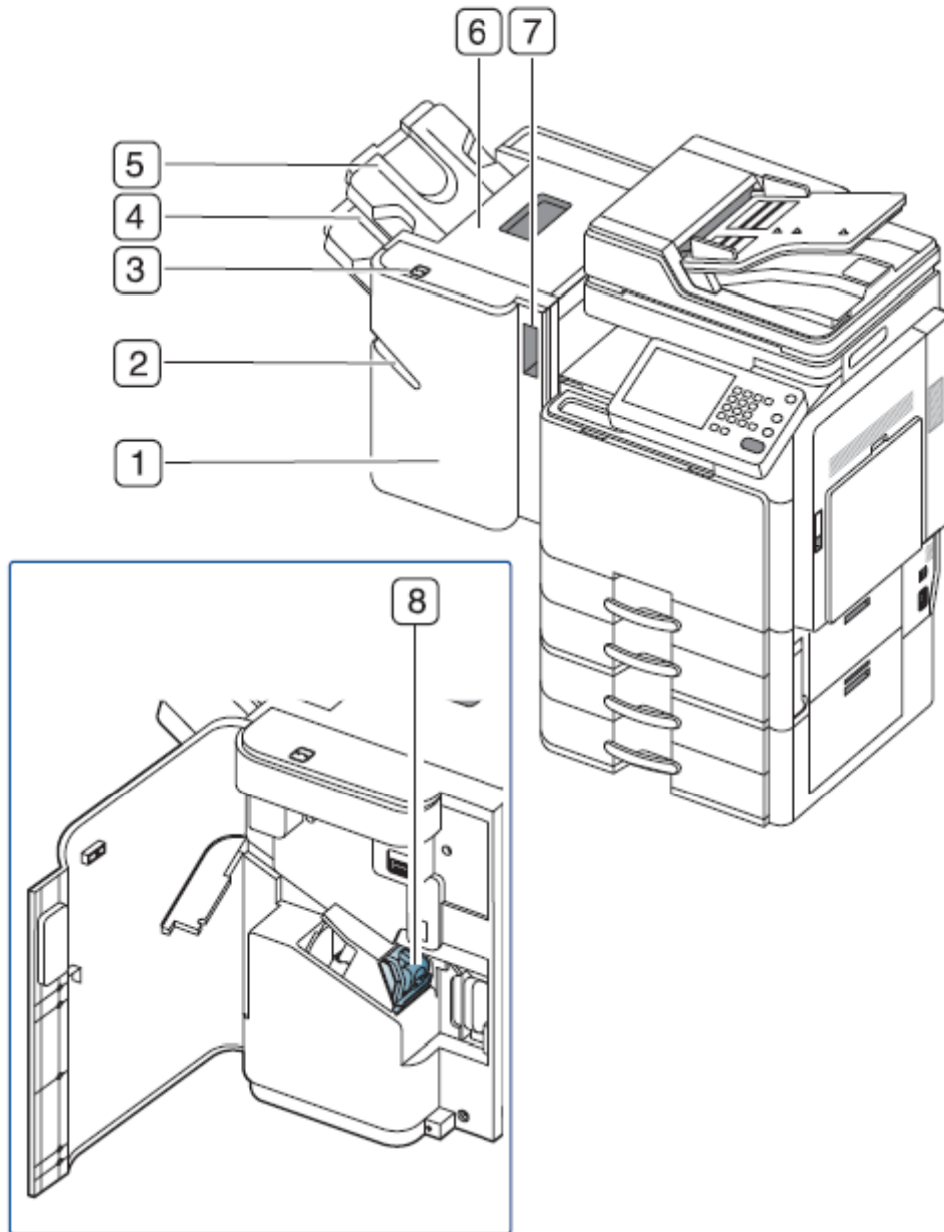
1	Standard finisher front door	**5**	Top tray
2	Manual stapler	**6**	Top door
3	Manual stapler button	**7**	Standard finisher Front door handle
4	Finishing tray	**8**	Staple

View with booklet finisher1 (optional)
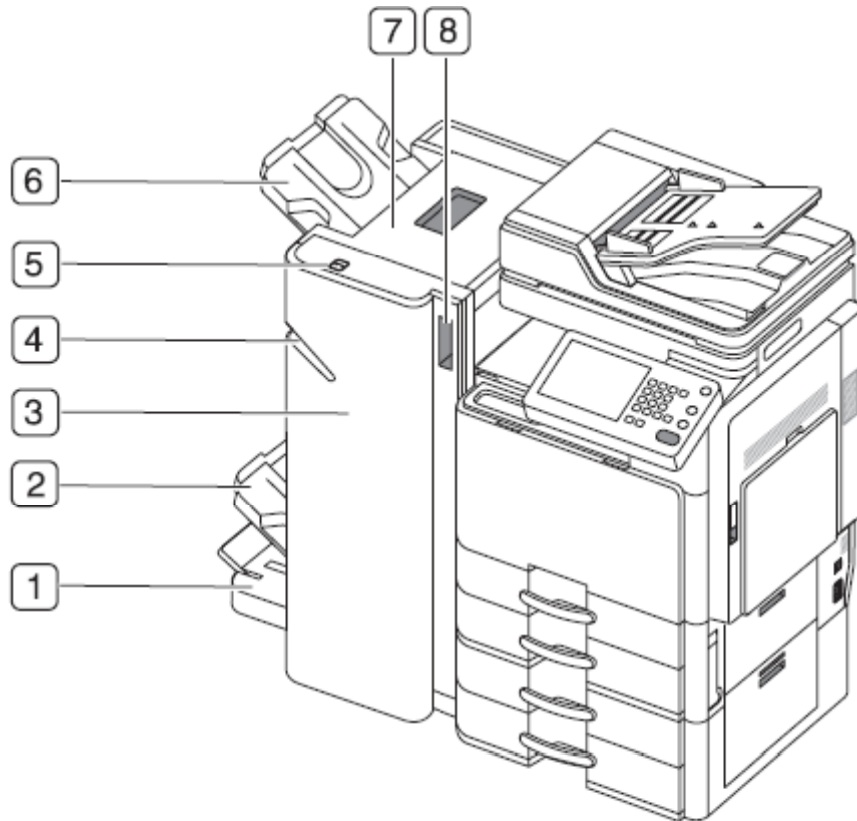
1	Booklet tray	**5**	Manual stapler button
2	Finishing tray	**6**	Top tray
3	Booklet finisher front door	**7**	Top door
4	Manual stapler	**8**	Booklet finisher front door handle

View with booklet finisher2 (optional)
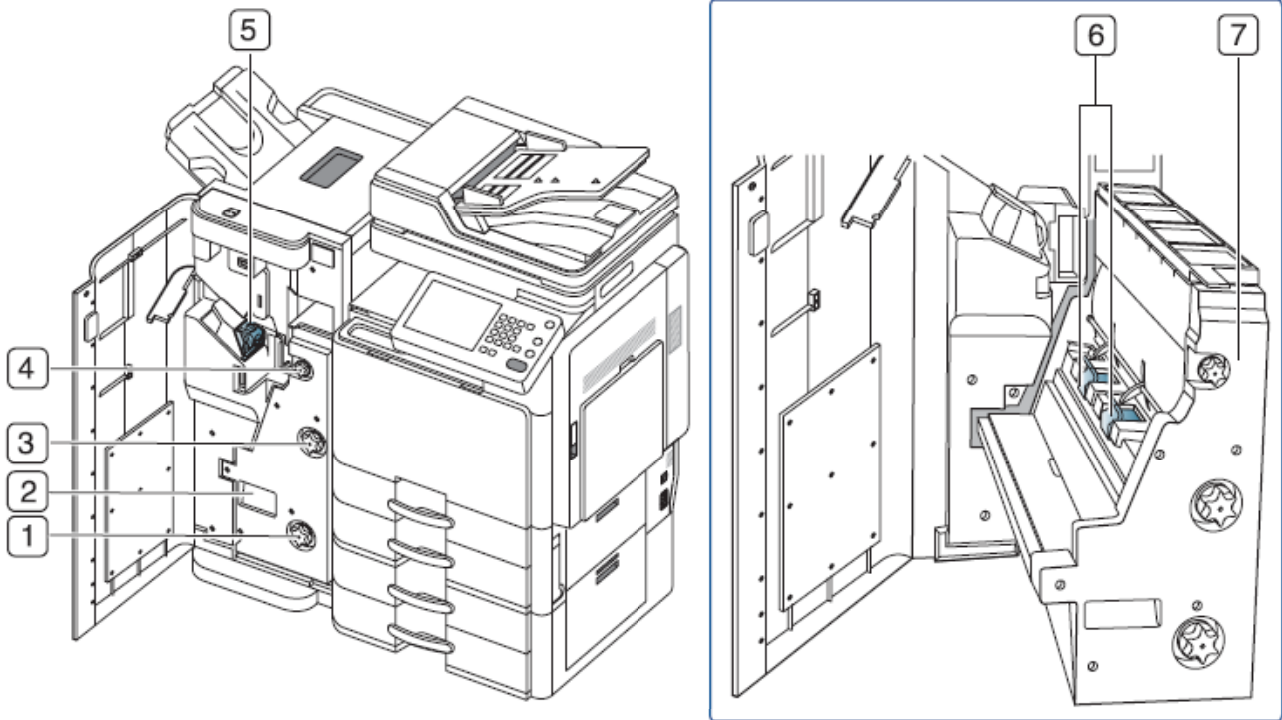
1	Knife wheel	**5**	Staple
2	Booklet maker handle	**6**	Booklet Staple (2 EA)
3	Fold wheel	**7**	Booklet maker cover
4	Booklet jam removal wheel		

Note
If you want to open the booklet maker, hold the booklet maker handle and pull it out.

Layout
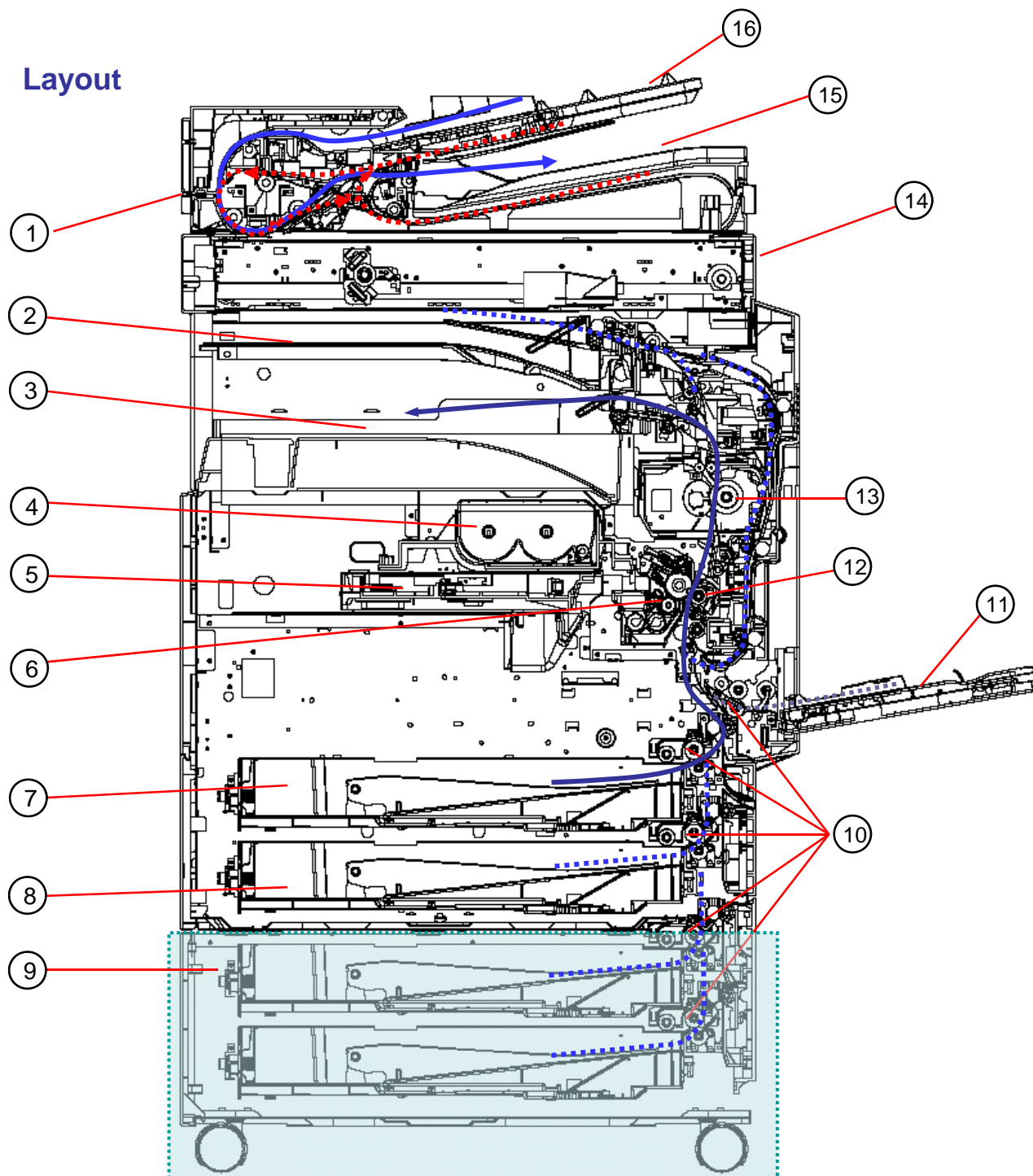
1	DADF	7	1st tray	13	Fuser unit
2	Job separator output tray	8	2nd tray	14	Flatbed scanner
3	Face down output tray	9	Optional tray (Stand / HCF / DCF)	15	Document output tray
4	Toner cartridges	10	Pick up rollers	16	Document input tray
5	Laser scanning unit	11	MP tray		
6	Imaging units	12	Transfer roller unit		

Paper Path

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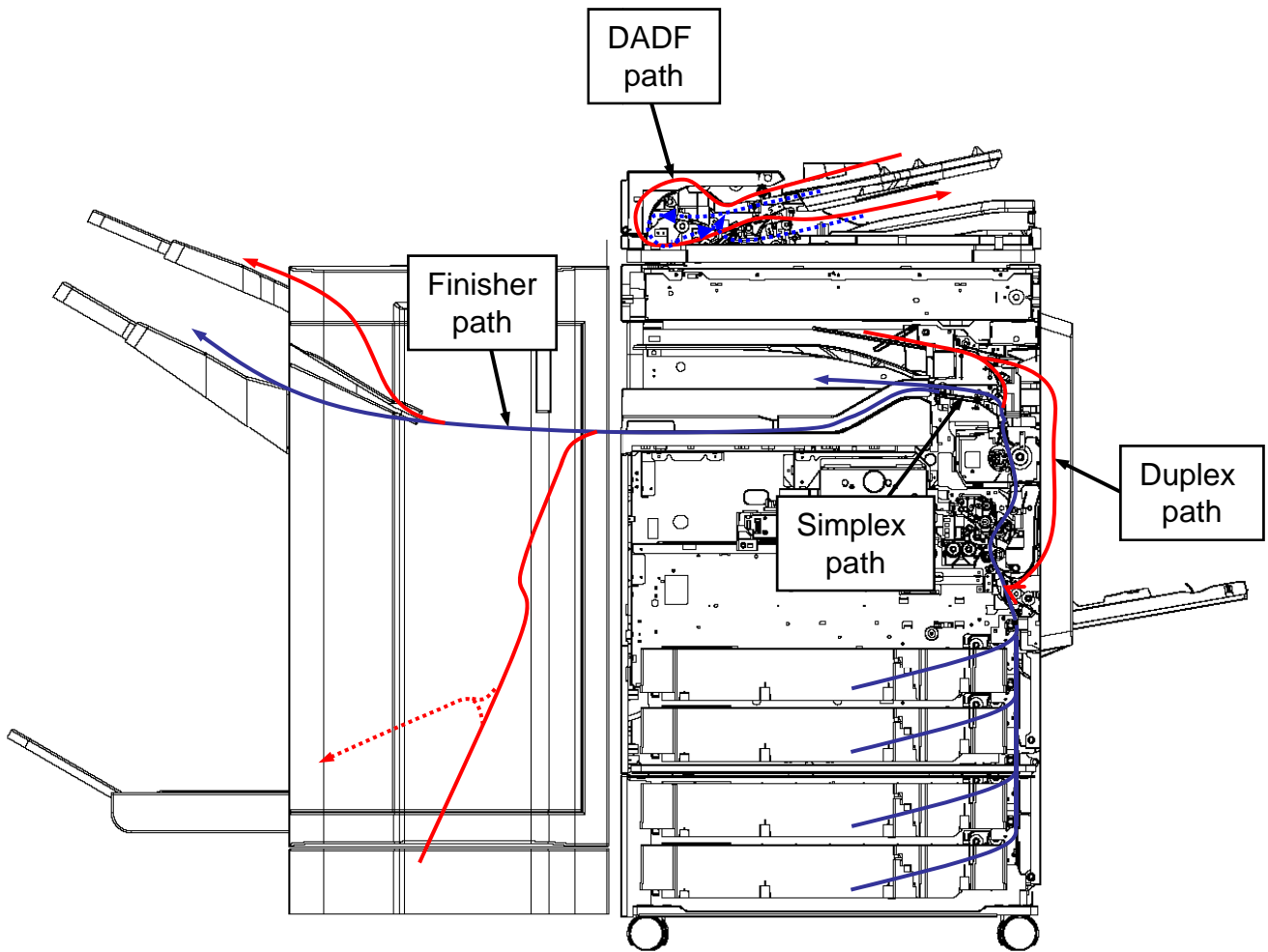
2.3 Sensor location

The following diagrams display the printer sensor locations.
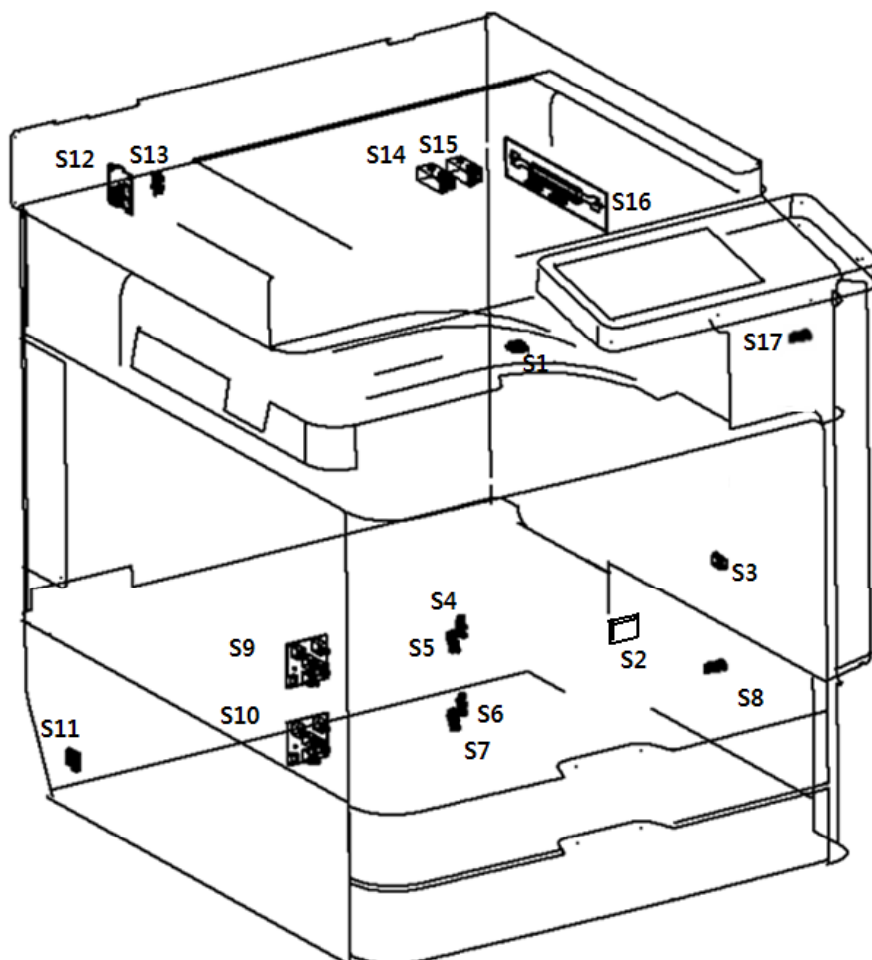
Ref.	Description	Part Number	Controller PCB	Relative Error Code
S1	SENSOR-HUMIDITY	JC32-00005A	PBA-ENGINE SCX-8030ND : JC92-02302A SCX-8040ND : JC92-02221A	A3-3211 / A3-3212
S2	PBA-WASTE SENSOR RX	JC92-02159A		C7-1130 C7-1110
S3	SWITCH FRONT COVER	JC32-00012A		S2-4210
S4	PHOTO-INTERRUPTER	0604-001393		M1-4111
S5	PHOTO-INTERRUPTER	0604-001393		M1-4111
S6	PHOTO-INTERRUPTER	0604-001393		M1-4211
S7	PHOTO-INTERRUPTER	0604-001393		M1-4211
S8	PHOTO-INTERRUPTER	0604-001393		C7-1311
S9	SENSOR-PAPER SIZE	JC32-00013A		M1-4111
S10	SENSOR-PAPER SIZE	JC32-00013A		M1-4211
S11	SENSOR-HUMIDITY	JC32-00005A		A3-3311 / A3-3312

Ref.	Description	Part Number	Controller PCB	Relative Error Code
S12	PBA-COVER OPEN SENSOR	JC92-02143A	PBA-SCAN JOINT (JC92-02144A)	Cover Open Sensor 1, 2
S13	PHOTO-INTERRUPTER	0604-001393		Home Position Sensor
S14	PHOTO-INTERRUPTER	0604-001370	PBA-SCAN (JC92-02170A)	SCAN PAPER SIZE
S15	PHOTO-INTERRUPTER	0604-001370		SCAN PAPER SIZE
S16	CCD	0605-001158	PBA-CCDM (JC92-02171A)	S3-3121
S17	PHOTO-INTERRUPTER	0604-001381	PBA-ENGINE	U1-2115
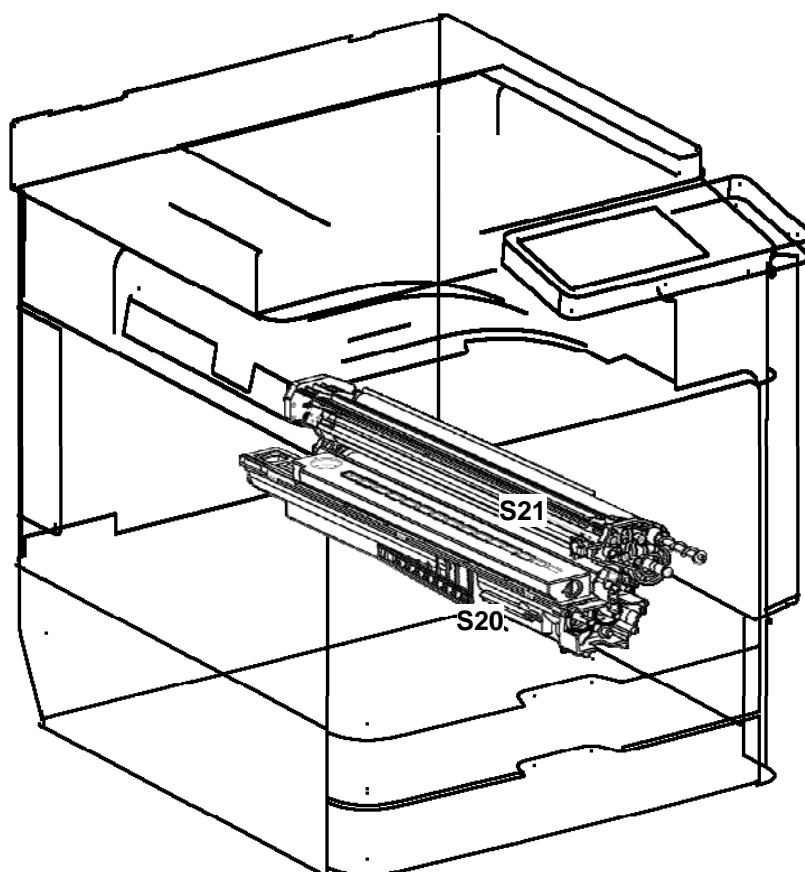
Ref.	Description	Part Number	Controller PCB	Relative Error Code
S20	Charger Clean SNR	JC32-00010A	PBA-ENGINE SCX-8030ND : JC92-02302A SCX-8040ND : JC92-02221A	C3-5212
S21	Toner SNR	3405-001094		C3-5422
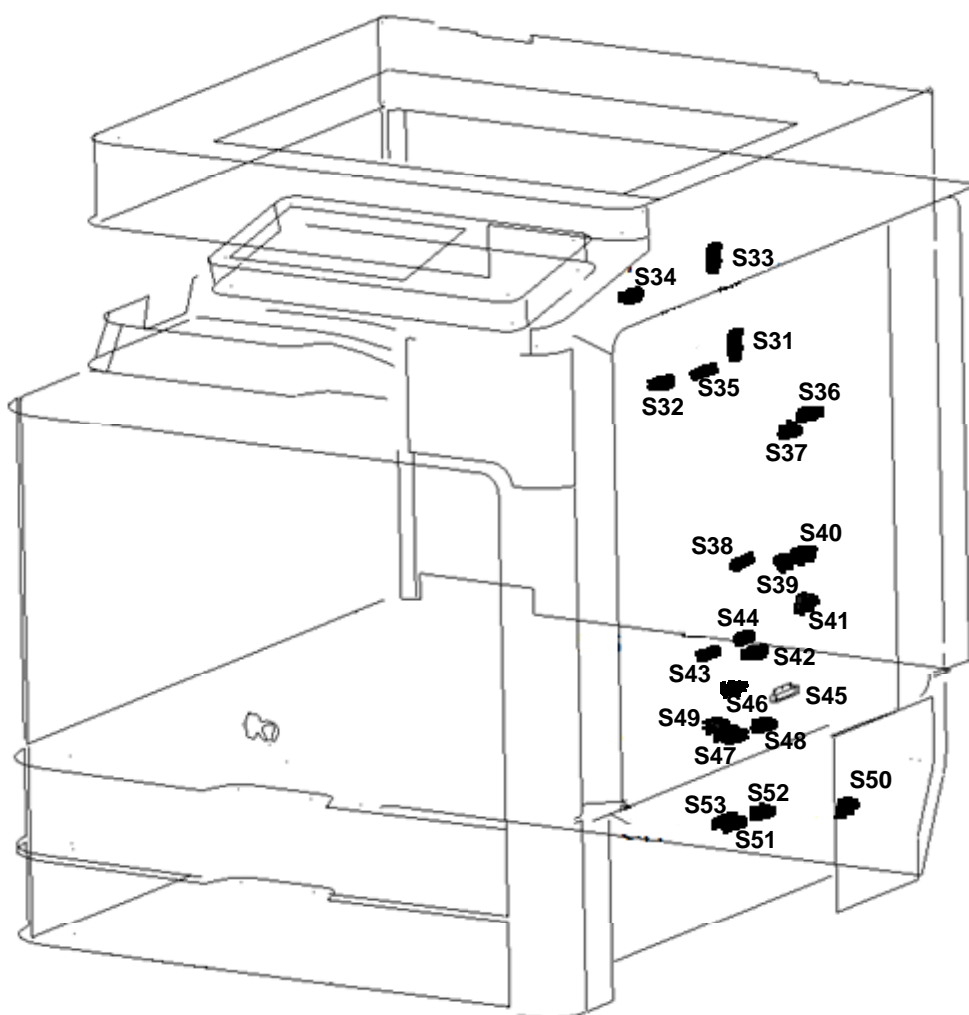
Ref.	Description	Part Number	Controller PCB	Relative Error Code
S31	PHOTO-INTERRUPTER	0604-001393	PBA-ENGINE (JC92-02221A)	M3-2230
S32	PHOTO-INTERRUPTER	0604-001393		M3-1211 M3-1213 M3-1214
S33	PHOTO-INTERRUPTER	0604-001393		M3-2430
S34	PHOTO-INTERRUPTER	0604-001393		M3-1411 M3-1413 M3-1414
S35	PHOTO-INTERRUPTER	0604-001381		M2-2411 M2-2413 M2-2414
S36	PHOTO-INTERRUPTER	0604-001393		M2-1331 M2-1333 M2-1334

Ref.	Description	Part Number	Controller PCB	Relative Error Code
S37	PHOTO-INTERRUPTER	0604-001393		M2-2111 M2-2113 M2-2114
S38	PHOTO-INTERRUPTER	0604-001393		M2-1324 M2-1325 M2-1321
S39	PHOTO-INTERRUPTER	0604-001393		Curl Sensor 1
S40	PHOTO-INTERRUPTER	0604-001393		Curl Sensor 2
S41	PHOTO-INTERRUPTER	0604-001393		MP Long Size
S42	PHOTO-INTERRUPTER	0604-001393		M2-2213 M2-2215 M2-2216
S43	PHOTO-INTERRUPTER	0604-001381		M2-1213 M2-1214 M2-1211
S44	PHOTO-INTERRUPTER	0604-001399		OHP Sensor
S45	VR-SLIDE	2102-001020	PBA-ENGINE (JC92-02221A)	MP Size Sensor
S46	PHOTO-INTERRUPTER	0604-001393		M1-1610
S47	PHOTO-INTERRUPTER	0604-001381		M1-1113 M2-1124 M2-1125 M2-1121
S48	PHOTO-INTERRUPTER	0604-001393		M1-1113 M1-5112
S49	PHOTO-INTERRUPTER	0604-001393		M1-4111
S50	PHOTO-INTERRUPTER	0604-001393		S2-4A10
S51	PHOTO-INTERRUPTER	0604-001381		M1-1213 M2-1134 M2-1135 M2-1131
S52	PHOTO-INTERRUPTER	0604-001393		M1-1213 M1-5212
S53	PHOTO-INTERRUPTER	0604-001393		M1-4211

2.4 Paper handling section

This section describes how the system picks up paper from the Paper tray or Multi-Purpose (MP) tray and transports it to the transfer position. The paper feeding system mainly consists of the Pickup roller, Forward roller, Retard roller, Transport roller, Registration roller, MP Paper sensor, Paper Empty sensor, Tray Paper Stock sensor, MP Feed sensor, Tray Feed sensor, Registration sensor, and Drive system for these components. The Transport motor is used to drive all of these rollers.

2.4.1 Overview

The following diagrams display the positions of the paper path rollers.

2ND Exit tray paper full detection

2ND EXIT (OPTION)

2ND Exit tray jam detection

1st Exit tray paper full detection

1st Exit tray jam detection

Return

Return transport path detection

Return path solenoid

Exit

Duplex jam detection1

Paper jam detection

Fuser

Duplex

Paper curl detection

OPC

Duplex jam detection2

Duplex clutch

Regi

Paper regi. time detection

Transparency detection

MPF

MPF clutch

Tray1 paper remaining quantity detection

Tray1 upper limit detection

MPF solenoid

MPF paper empty detection

Tray1 paper empty detection

Paper tray

Tray1 paper size detection

Tray1 lift motor

Pick Up

MPF media size detection (Long media)

MPF media size detection

Tray1 transport detection

Tray2 paper empty detection

Tray2 lift motor

Tray2 transport detection

Tray2 paper size detection

Tray2 paper remaining quantity detection

Tray2 upper limit detection

Name	Function	Connector & pin information
Tray1 paper size detection	Detects tray1 paper size (installation)	CN16@ Cassette Joint PBA, 4Pin
Tray1 paper remaining quantity detection	Detects tray1 paper remaining quantity	CN11@ Cassette Joint PBA, 6Pin
Tray1 paper empty detection	Detects tray1 paper empty	CN12@ Cassette Joint PBA, 3Pin
Tray1 upper limit detection	Detects tray1 upper limit	CN12@ Cassette Joint PBA, 3Pin
Tray1 transport detection	Detects tray1 paper pass	CN12@ Cassette Joint PBA, 3Pin
Tray1 Lift Motor	Lifting knock up plate	CN15@ Cassette Joint PBA, 3Pin
Tray2 paper size detection	Detects tray1 paper size (installation)	CN16@ Cassette Joint PBA, 4Pin
Tray2 paper remaining quantity detection	Detects tray2 paper remaining quantity	CN11@ Cassette Joint PBA, 6Pin
Tray2 paper empty detection	Detects tray2 paper empty	CN13@ Cassette Joint PBA, 3Pin
Tray2 upper limit detection	Detects tray2 upper limit	CN13@ Cassette Joint PBA, 3Pin
Tray2 transport detection	Detects tray2 paper pass	CN13@ Cassette Joint PBA, 3Pin
Tray2 Lift Motor	Lifting knock up plate	CN15@ Cassette Joint PBA, 3Pin
Paper regi. time detection	Detects paper regi. Time	CN10@ Engine PBA, 3Pin
Transparency detection	Detects transparency	CN10@ Engine PBA, 3Pin
Paper curl detection	Detects paper position	CN3@ SIDE JOINT PBA, 6Pin
Paper jam detection	Detects fuser jam	CN5 @ SIDE JOINT PBA, 3Pin
1st Exit tray jam detection	Detects 1st exit tray jam	CN7@ BOTTLE Joint PBA, 3Pin
1st Exit tray paper full detection	Detect paper full	CN7@ BOTTLE Joint PBA, 3Pin
2nd Exit tray jam detection	Detects 2nd exit tray jam	CN29 @ Engine PBA, 3Pin
2nd Exit tray paper full detection	Detects paper full	CN29 @ Engine, 3Pin
Return transport path detection	Detects return(2nd exit tray) paper pass	CN7@ BOTTLE Joint PBA, 3Pin
Return path solenoid	Change paper path	CN7@ Engine PBA, 2Pin
Duplex jam detection 2	Detects duplex jam 2	CN4 @ SIDE JOINT PBA, 3Pin
Duplex jam detection 1	Detects duplex jam 1	CN5 @ SIDE JOINT PBA, 3Pin
Duplex clutch	Duplex driving control	CN6 @ SIDE JOINT PBA, 2Pin
MPF solenoid	MPF pick up roller up/down	CN2 @ SIDE JOINT PBA, 2Pin
MPF clutch	MPF driving control	CN2 @ SIDE JOINT PBA, 2Pin
MPF media size detection	Detects MPF paper size	CN7 @ SIDE JOINT PBA, 3Pin
MP media size detection (Long media)	Detects MPF paper size	CN7 @ SIDE JOINT PBA, 3Pin
MPF Paper empty detection	Detects MPF paper empty	CN2 @ SIDE JOINT PBA, 3Pin

2.4.2 Components

The following diagrams display the positions of the printer components
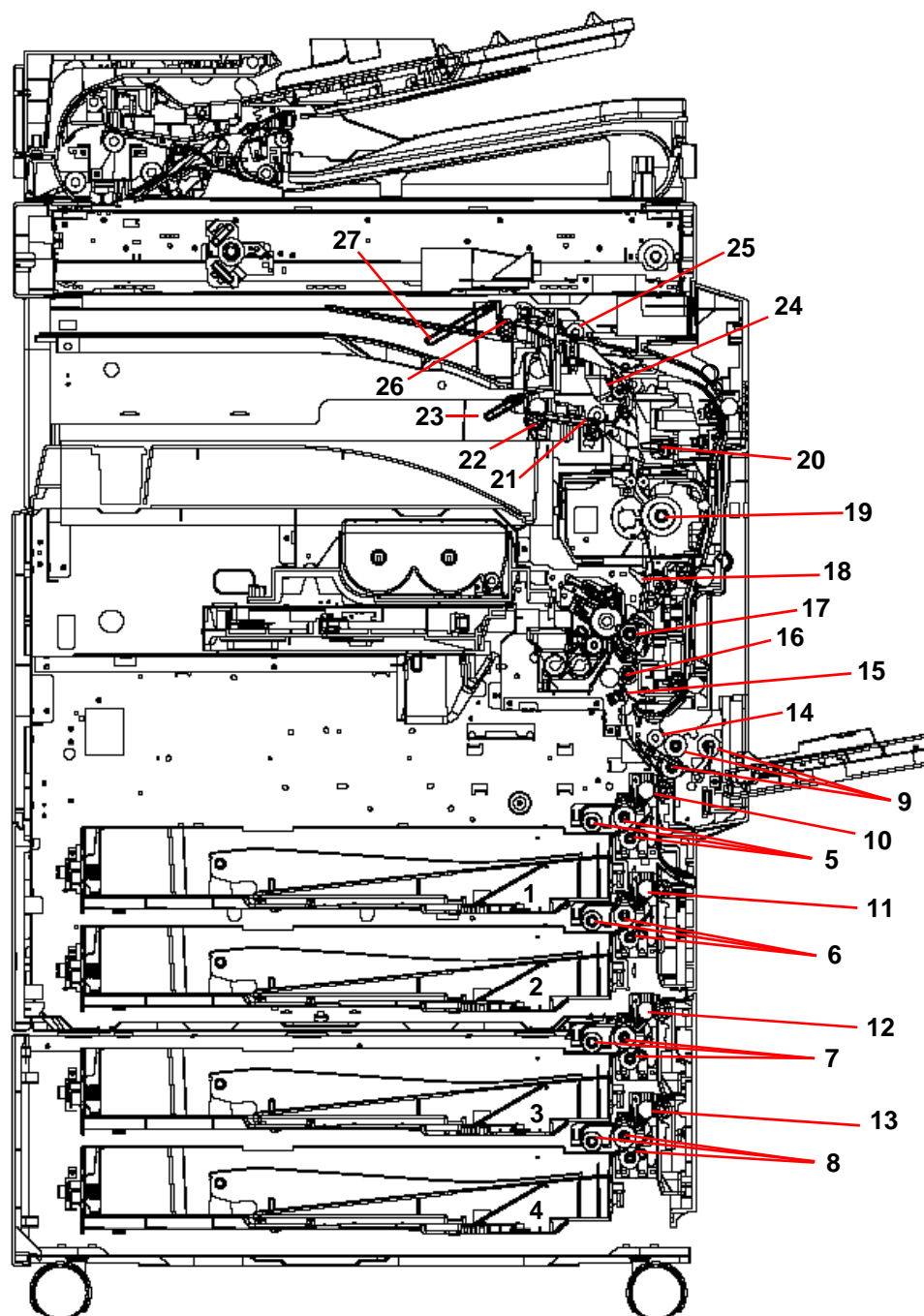
1	Tray 1 Paper tray
2	Tray 2 Paper tray
3	Tray 3 Paper tray
4	Tray 4 Paper tray
5	Tray 1 pick up / retard / forward rollers
6	Tray 2 pick up / retard / forward rollers
7	Tray 3 pick up / retard / forward rollers
8	Tray 4 pick up / retard / forward rollers
9	MP Tray pick up / retard / forward rollers
10	Tray 1 feed roller
11	Tray 2 feed roller
12	Tray 3 feed roller
13	Tray 4 feed roller
14	Bypass feed roller
15	Sensor registration
16	Roller registration
17	Roller transfer
18	Sensor paper curl
19	Roller fuser
20	Sensor fuser out
21	Roller exit
22	Roller face down exit
23	Actuator face down bin full
24	Sensor duplex return
25	Roller duplex return
26	Roller 2nd exit
27	Actuator 2nd Exit bin full

2.4.3 Functions

This section describes the functions of the paper handling components.

Pickup Roller (paper tray and MP tray)
This roller moves up and down and draws out the paper from the bypass tray or drawer and transports it to the feed roller.

Forward Roller (paper tray and MP tray)
This roller is placed against the Retard roller. It transports the paper from the pickup roller to the transport roller.

Retard roller (paper tray and MP tray)
This roller is placed against the feed roller. When two sheets of paper or more are transported from the pickup roller, the load of the torque limiter of the Retard roller is heavier than the frictional force between the sheets. As a result, the Retard roller is stopped and the lower paper does not advance any further. When only one sheet is transported from the pickup roller, the Retard roller rotates following the feed roller.

Transport Roller (paper tray and MP tray)
This roller transports the paper sent from the feed roller to the registration roller.

Registration Roller
Paper transported from the transport roller is pushed against the registration roller which aligns the leading edge of the paper. Then, the registration rollers rotate to transport the paper to the transfer unit.

MP tray Paper Sensor
This sensor detects whether paper is set in the bypass tray. When it is, MP tray always comes before drawer feeding.

Empty Sensor (Tray 1 / Tray 2)
This is a transmissive-type sensor and it detects the availability of paper in the drawer by using an actuator. When there is no paper in the drawer, the actuator blocks the light path of the sensor, and the sensor determines that there is no paper.

Paper Stock Sensor

This is a transmissive-type sensor which detects the amount of remaining paper in the drawer using an actuator. When the remaining paper is consumed and approximately 100 sheets remain, the actuator blocks
the light path for the transmissive-type sensor to detect that there is less paper.

Feed Sensor
This sensor detects if the leading edge or trailing edge of the paper has passed the feed roller. It also detects jamming such as missfeeding.

Registration Sensor
This sensor detects that the leading edge of the paper has reached the registration roller and that the trailing edge of the paper has passed the registration roller.

2.4.4 Paper tray

The paper trays consist of the Main trays, Optional trays (DCF,HCF), and one Multi-Purpose (MP) tray.
The MP tray is located on the right side of the machine and allows feeding of specialty media stock, envelopes, and custom size paper.
Paper size is set using the Size Guides in each tray. Adjust the Front, Rear, and End Guides to match the paper size.
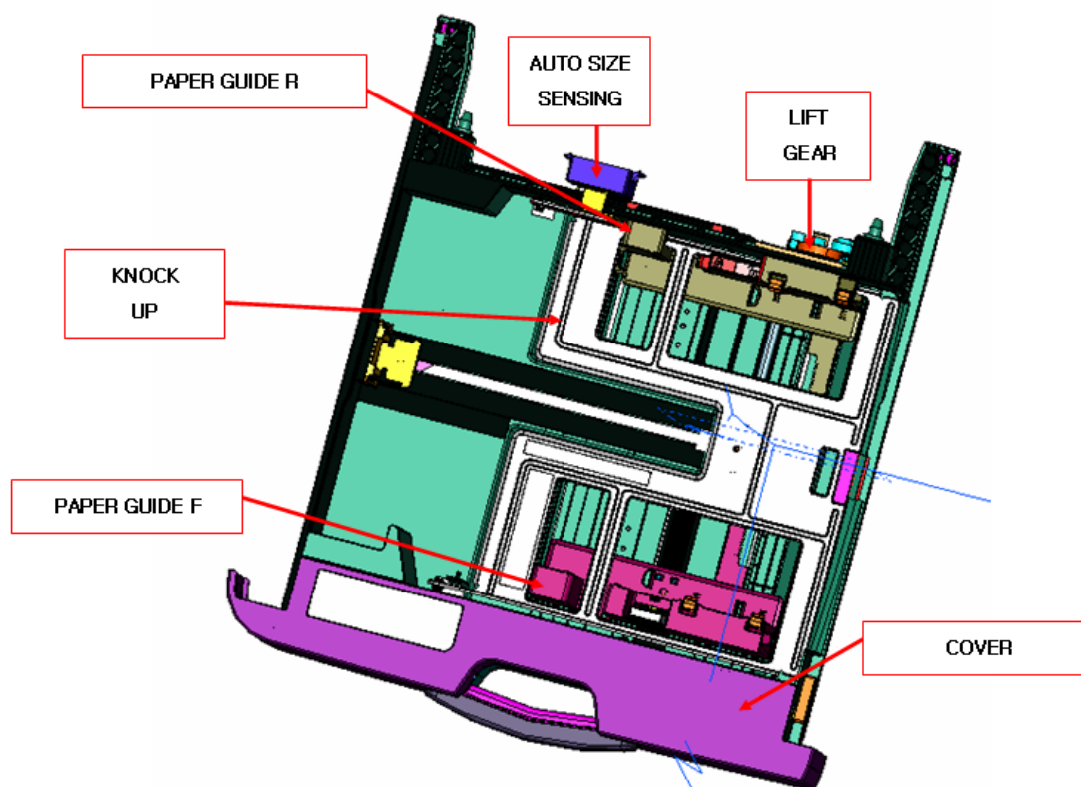

Specification

• Structure : Paper tray Type, Auto Paper Size

• Capacity : 520 Sheets (80g/㎡ standard Xerox Premium)

• Paper :

    -. Plain paper : A5, A4, A3, B5, B4, Letter, 11"×17"(Ledger), Statement, Legal

    -. Special Paper : 12"×18", Label (Label : 50 sheets)

• Weight : plain paper 60 ~ 163 g/㎡

• Plate knock up Lift type : Lift Motor + Up Limit Sensor

2.4.5 Pick up unit

When pickup takes place, the pickup roller moves down to come into contact with the surface of the paper. The pickup roller moves down when the pickup solenoid is activated. The forward roller and the separation roller serve to make sure that a single sheet of paper is moved to the paper path, and the paper is moved as far as the registration roller by the work of the vertical path roller. The following is a diagram of the pickup roller:
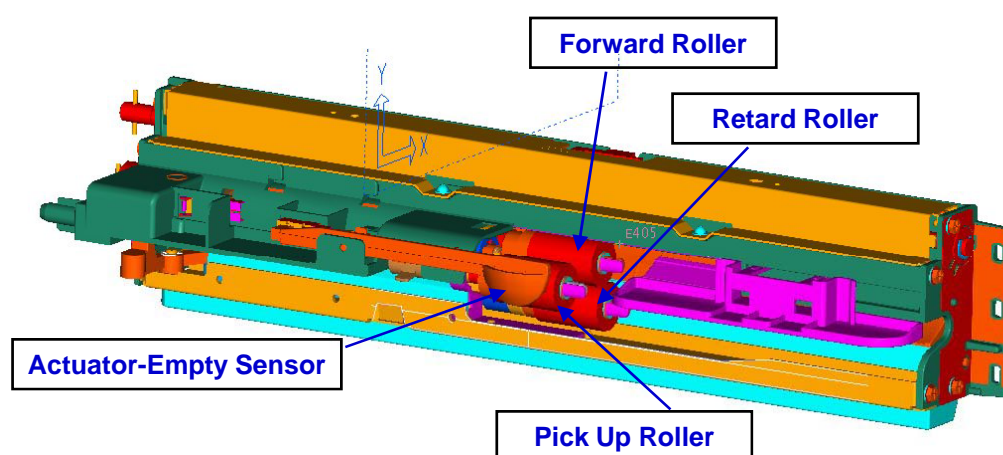
2.4.6 Registration unit

The registration roller is driven by the registration multi motor. The registration clutch (CL6) is located between the registration roller and the registration multi motor, and it controls ON/OFF of the registration roller in order to match paper and an image on the drum at the predetermined registration point.
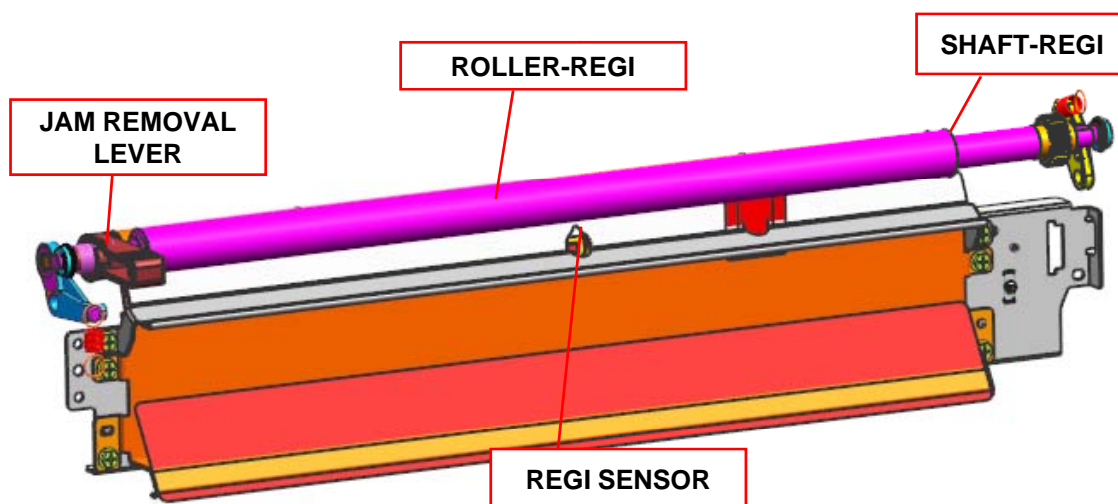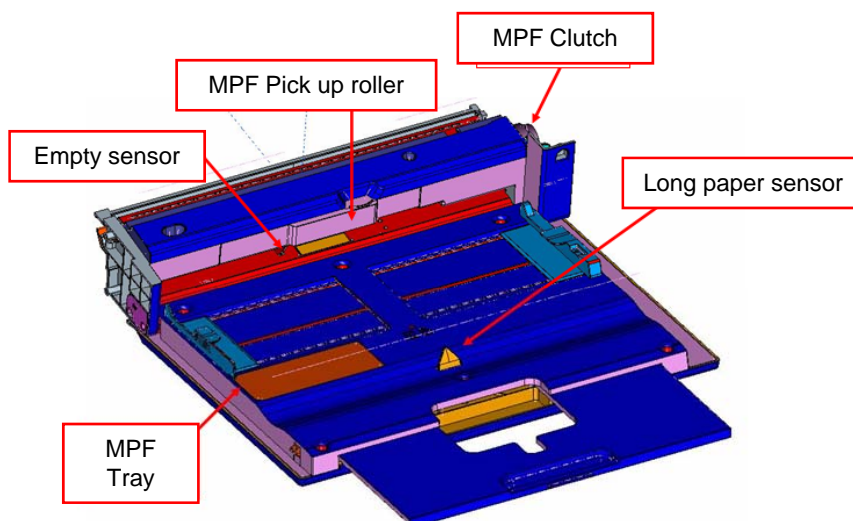

Specification

- Skew in Simplex
    - -. Top Skew : 2.0mm/241.3mm (Option : 2.5mm/241.3mm)
    - -. Side Skew : 1.5mm/180.5mm (Option : 2.0mm/180.5mm)
- Skew in Duplex
    - -. Top Skew : 3.0mm/241.3mm (Option : 3.5mm/241.3mm)
    - -. Side Skew : 2.3mm/180.5mm (Option : 2.5mm/180.5mm)
- Dog Ear, Trees, Nicks, Wrinkling
    - -. Plain Paper   : 1/5,000
    - -. Special Media : 1/1,000
- Margin
    - -. Top Margin   : 4.23 ± 2 mm (Tray3, 4, HCF : 4.23 ± 2.5 mm)
    - -. Left / Right Margin : 3 ± 2 mm (Tray3, 4, HCF : 3 ± 2.5 mm)
    - -. Duplex Top Margin   : 4.23 ± 2.5 mm (Tray3, 4, HCF : 4.23 ± 3.0 mm)
    - -. Duplex Side Margin   : 3 ± 2.5 mm (Tray3, 4, HCF : 3 ± 3.0 mm)

2.4.7 MPF unit

The following is a diagram of the MFP unit:

```
            MPF Clutch
  MPF Pick up roller
Empty sensor
                        Long paper sensor

  MPF
  Tray
```

Specification

- Tray capacity : 100 sheets (80g/㎡ standard Xerox Preminum)
- Media Size : Max 12"×18" (305×457㎜) / Min 3.87"×5.82" (98×148㎜)
- Media weight : Plain paper 60 ~ 216 g/㎡
- Feeding speed : 40 ppm (SCX-8040ND), 30 ppm (SCX-8030ND) in Letter/A4 LEF (Long Edge Feeding)
- Auto size sensing : A6 SEF, Statement SEF, B5 SEF, A4 SEF, A5 LEF, B4 B5(JIS) LEF, 11x17,
                        LTR(Letter) LEF, A3, A4 LEF

Paper Separation

When the by-pass paper detection [A] sensor detects paper and the machine gets a by-pass printing job, the by-pass solenoid [B] drops the pick-up roller [C] onto the top of the paper stack on the by-pass tray.

After that, the pick-up roller moves one sheet of paper to the feed roller.

This machine uses an FRR (Feed and Reverse Roller) system for feeding paper.

There is friction between the feed roller [E] and Retard roller [D]. This friction separates the top sheet of paper from the stack.
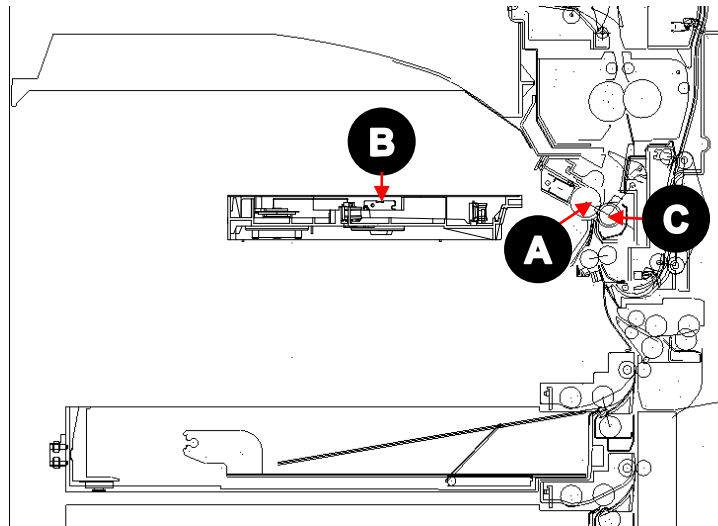
```
    [A]    [B]
                    [C]



    [E]


        [D]
```
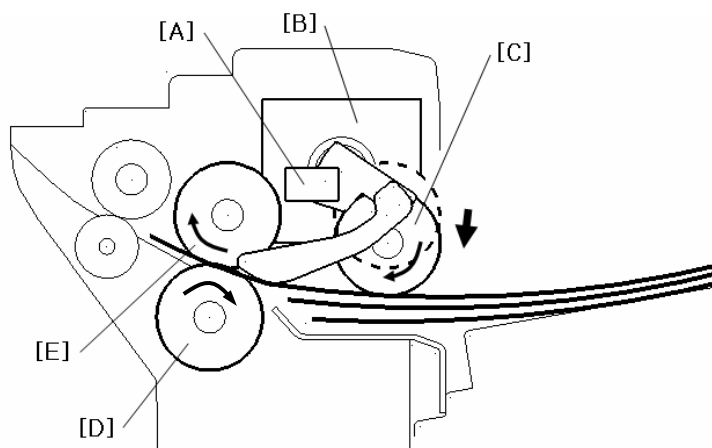
2.5 Image creation

This section describes the image creation process used by the printer.

2.5.1 Printing process overview

This mono printing system includes the LSU with a laser beams, a imaging unit and transfer unit.

This machine uses single Imaging unit and dual laser beams for mono printing. The Imaging unit consists of Drum unit and Development unit. The Drum unit has an OPC drum, a scorotron (which charges the OPC), a light-guide (which transfers the LED's light in the machine) and cleaning blade.

The OPC drum[A] is charged with a negative voltage by the scorotron and is exposed by the light from the LSU (Laser Scanning unit)[B]. The light produced by a laser creates a latent image by discharging on the surface of the OPC drum. The negatively charged toners are attracted to the latent image due to and electric filed. The toners(real image) on the OPC drum are moved to the transfer media by the positive bias applied to the transfer roller[c].

1. **Charging the OPC drum:** The scorotron gives the drum negative charges.

2. **Laser exposure**: Light produced by a laser diode irradiates the charged OPC through the lens and mirrors .

3. **Development:** This machine uses a dual-component development system . The magnetic roller carries negatively charged toner to the latent image on the drum surface.

4. **Transfer:** The transfer rollers opposite the OPC drums transfer toner from the drums to the transfer media (e.g. paper, OHP film, etc).

5. **Cleaning for OPC drum**: The cleaning blade removes remaining toners on the drum surface after image transfer to the paper.

6. **Quenching for OPC drum:** Quenching is done by illuminating the whole area of the drum with the LED lamps at the end of every job.

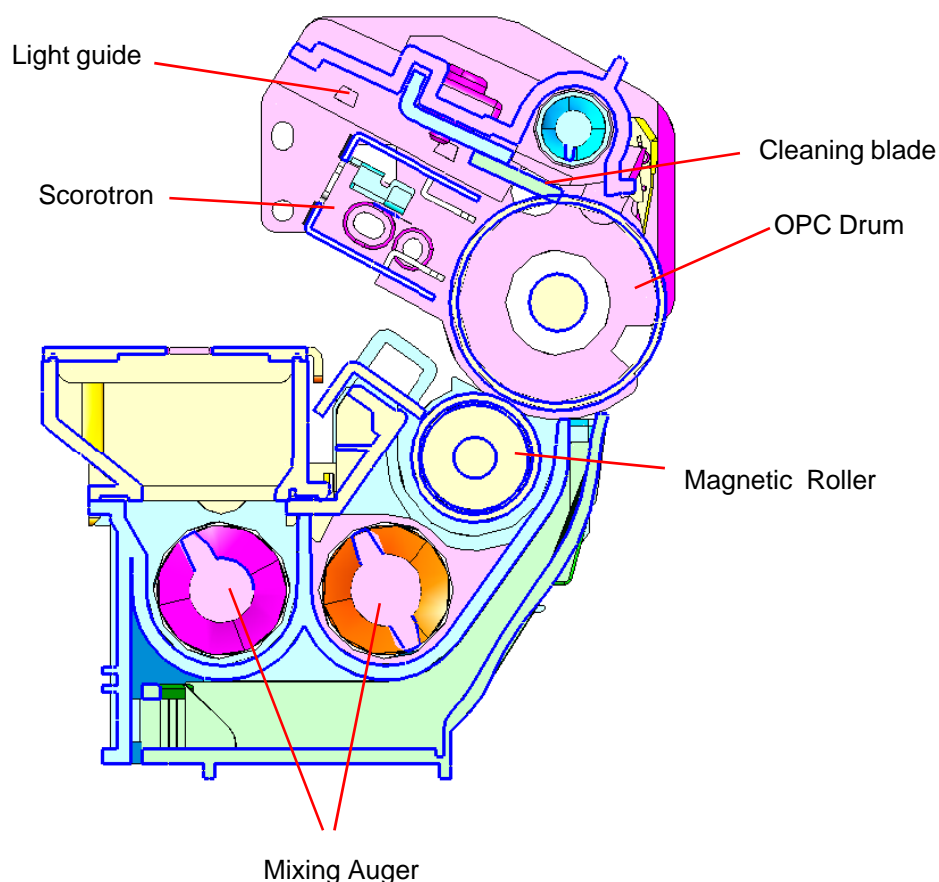# 2.5.2 Imaging unit

2.5.2.1 Imaging unit overview

The imaging unit consists of OPC drum unit and the development unit. The OPC drum unit has an OPC drum, a scorotron which charges the OPC, a light-guide (which transfers the LEDs light in the machine) and cleaning blade. The development unit has a magnetic roller, two mixing augers, developer, a Dr-blade and a TC (Toner Concentration) sensor.

The diameter of the drum is 30 mm (circumference: about 94.2 mm).

The developing gap between a drum and the corresponding magnetic roller cannot be adjusted because they assembled as one Imaging unit in the factory.

The cleaning blade removes remaining toner on the drum surface after image transfer to the transfer belt.

The CRUM chip in the image unit stores the data about the Imaging unit.

2.5.2.2 Drum drive

OPC and Mag Roller is driven by a motor. The OPC Drum and Mag roller are supplied with power from the coupling.
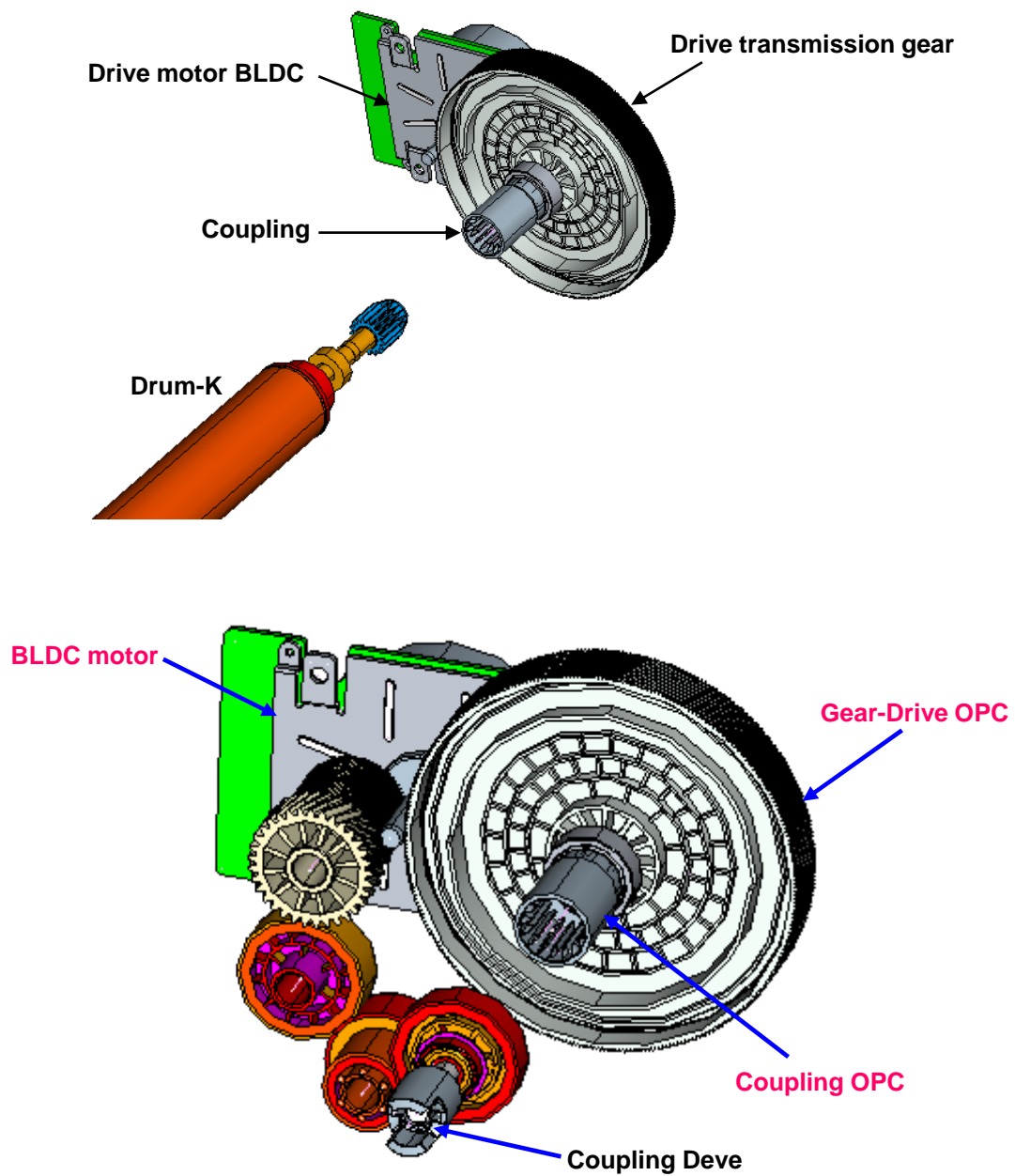
2.5.2.3 Development

This machine uses a dual-component development system and has an imaging unit (which includes the drum unit and development unit). A new unit contains 345g of toner. The developer in the unit is supplied to the magnetic roller [A] by the two mixing augers [B] and is attracted onto the surface of the OPC drum. The diameter of the magnetic roller is 18mm.

An imaging unit has a TC (Toner concentration) sensor[C]. The TC sensor [C] in the imaging unit is used for controlling the operating range of toner density. The imaging unit is equipped with a CRUM in which some information about the imaging unit is stored.

[A] Magnetic Roller

[B] Mixing Auger

[C] TC Sensor
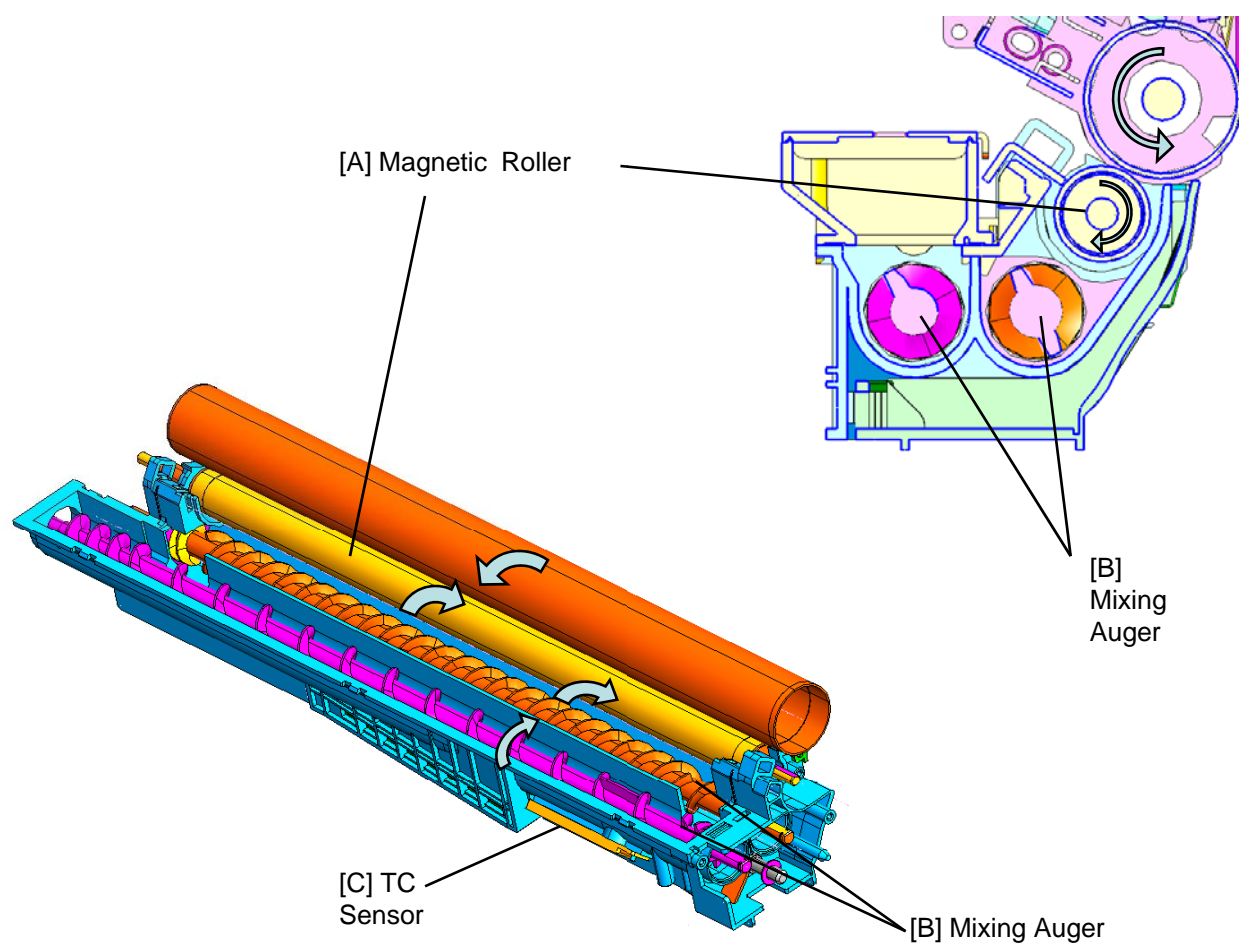
[B] Mixing Auger

Two mixing augers [A] circulate the developers (which are mixtures of carriers and toners) forward and backward to agitate the developer in order to mix the carriers and toners well.

This occurs at the following times:

• During TC calibration
• During development.

Filters [B] on the top of the development unit ensure that the internal pressure does not become too high. During the operating , this prevents contamination of the imaging unit by the toner.

[B] Filter

[A] Auger
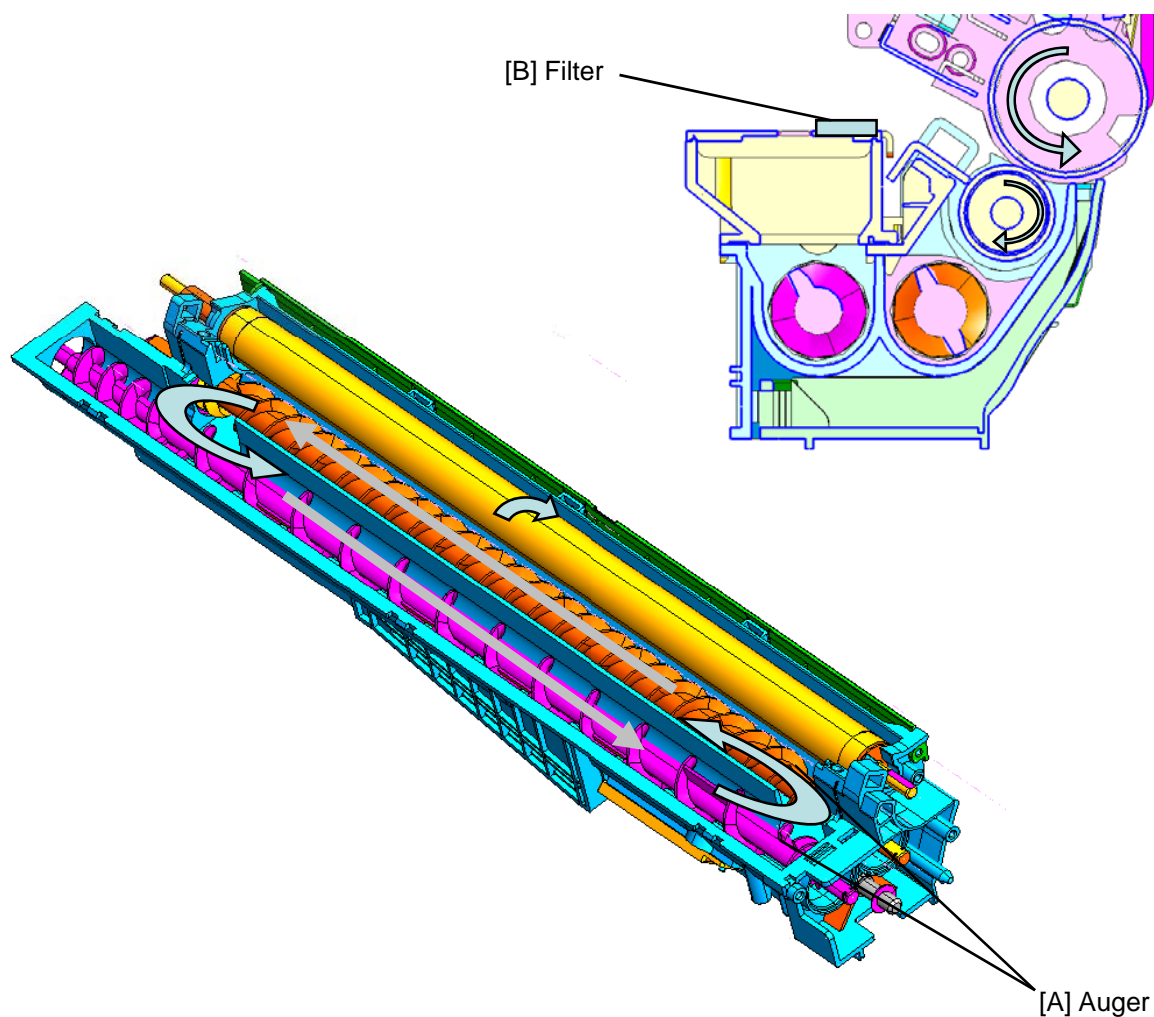
2.6 Fuser unit

This section describes the image fusing process used by the printer.

2.6.1 Fuser unit overview

An instant fusing system is used. This has a faster warm-up time than a conventional fusing and pressure roller system.

The drum-fuser belt is made of 3 thin layers, so is heated quickly by halogen lamp inside.
Pressure roller is made of soft silicone rubber, which flattens slightly, increasing the fusing nip.
The drum-fuser belt contains two fusing lamps (one lamp, center heating lamp, heats the center and the other lamp, side heating lamp, heats the ends in the axial direction).

NC sensors (non-contact type thermistors), located near the center and the rear end of the drum-fuser belt, control the temperature of the drum-fuser belt at the center and the ends, respectively. Two NTC thermistors and two thermostats, located at the center and the side, protect the fusing system from overheating by the heating lamps.
Temperature is normally controlled by turning on and off the center heating lamp and side heating lamp, respectively, corresponding to predetermined target temperatures.

Drum-Fuser Belt

Thermistor
Center : 0.5mm-1.0mm distance
Side : Contact

Thermostat

NC Sensor

Pressure Roller
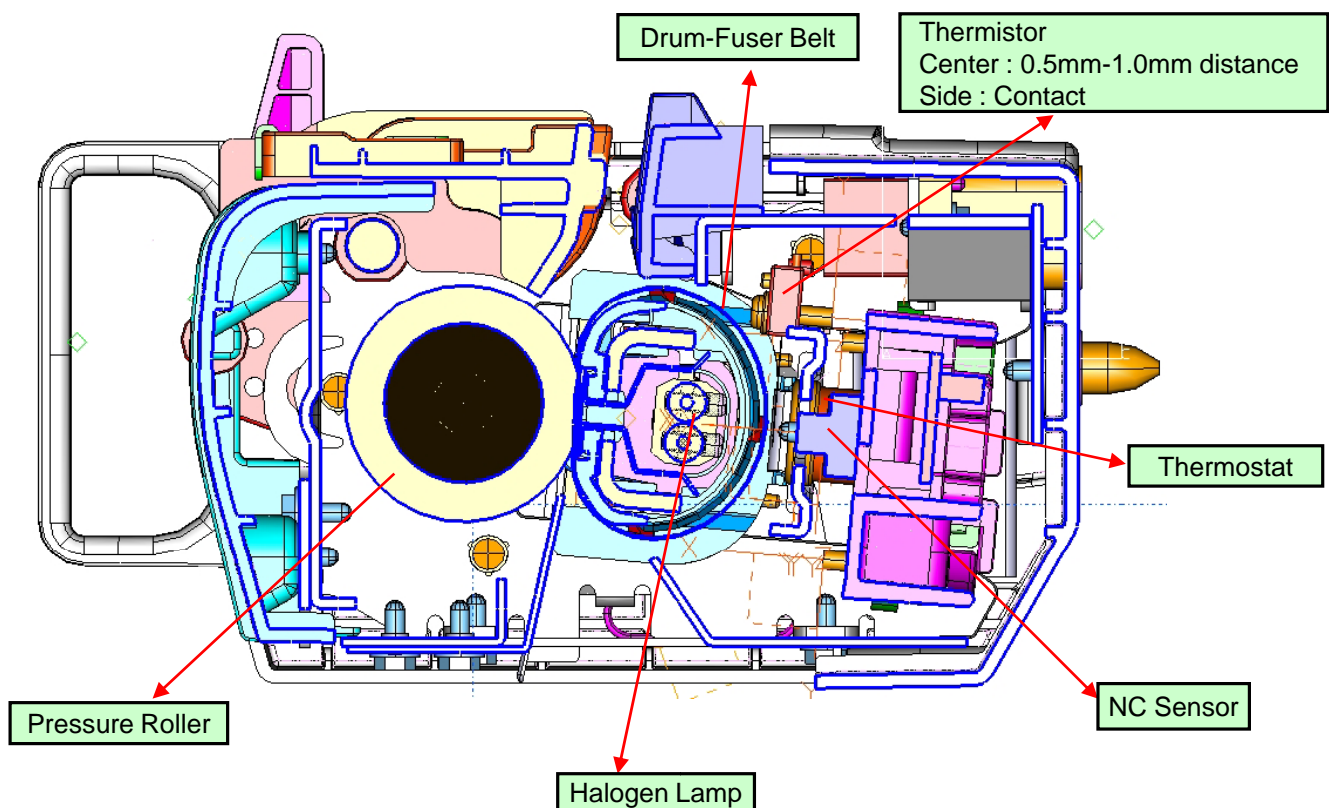
Halogen Lamp

2.6.2 Fuser unit components

The Fuser unit includes the following components:

1. Center heater lamp (LAMP1) / Side heater lamp (LAMP2)

These halogen lamps heat the drum-fuser belt. The center heater lamp (LAMP1) and the side heater lamp (LAMP2) are lit alternately to heat the drum-fuser belt.
Each heater lamp has its coil in a different location. The coil of the center heater lamp (LAMP1) is in the center, those of the side heater lamp (LAMP2) are on both sides. The heater lamps are fixed inside of the drum-fuser belt so that they will not rotate separately.

2. Drum-fuser belt

It receives heat from halogen lamp inside and conducts heat to toner and paper. The thin fuser belt reduces warming up time and mode changing time. To prevent the fuser belt from adhering to the toner, the surface of the fuser belt is fluorinated. Rigid assembly located inside the fuser belt contacts inner surface of the fuser belt at nip and is pressed on the pressure roller by springs in order to ensured proper nip between fuser belt and pressure roller.

3. Pressure roller

The pressure roller is a rubber roller which ensures proper nip width between the pressure roller and fuser belt. It is driven by external driving mechanism and drives fuser belt by pressure.

4. NC sensors

NC sensors detect the surface temperature of the center and the rear end of the fuser belt which controls the heater lamps.

5. Thermistor (Center : 0.5mm-1.0mm distance, Side : Contact)

Thermistors, located at the center and rear end(non image position), protect the fusing system from overheating.

6. Thermostat

These thermostats cut off the power supply to the heater lamps by opening the circuit when the fuser belt becomes abnormally hot as a result of problems such as a NC sensor malfunction.
These thermostats are used to prevent abnormal operation. When the thermostat is triggered, it must be replaced (as well as the other damaged parts in the fuser unit).

2.6.3 Fuser unit drive

The fusing/paper exit motor [A] drives the pressure roller [B] through the gear train. The fuser belt [C] is driven by pressure with the pressure roller [B].

Exit Motor [A]

Fuser Belt [C]

Pressure Roller [B]
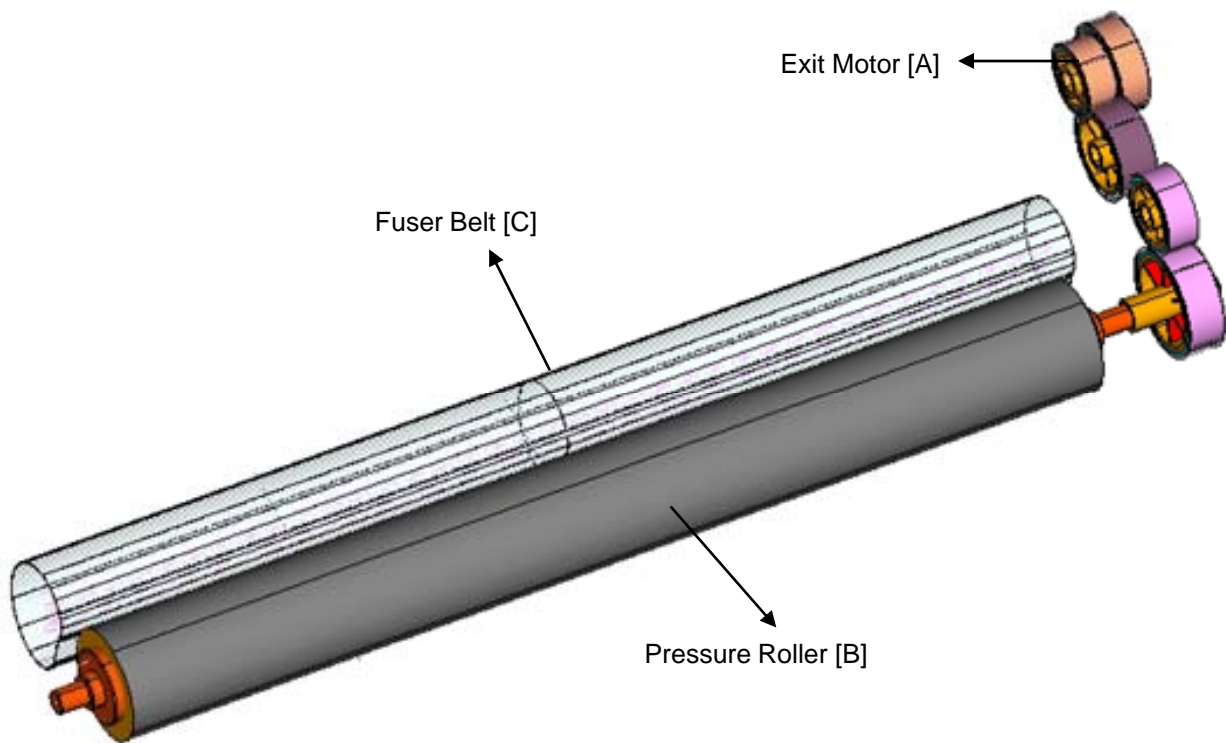
2.6.4 Temperature control

When the main switch turns on, the CPU turns on the fusing lamp. The lamp stays on until the NC sensors detect the standby temperature. Then the CPU raises the temperature to the printing temperature.
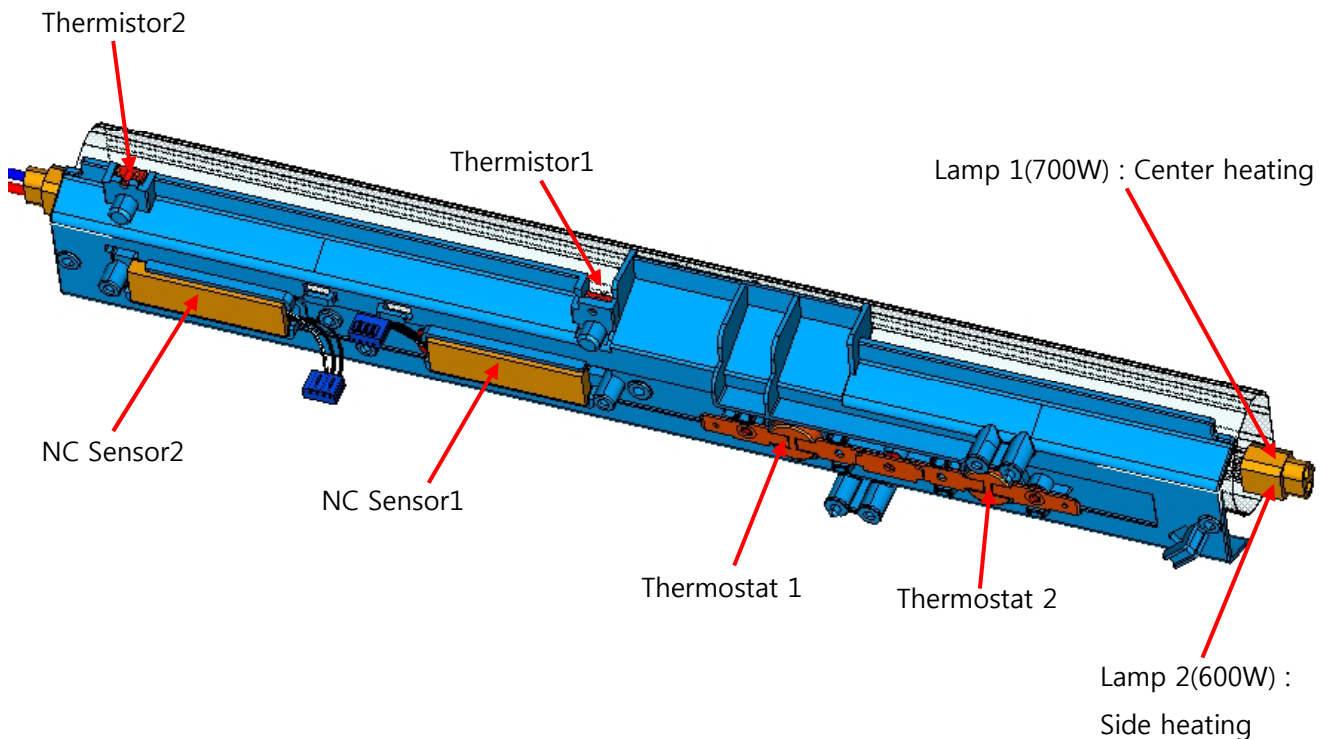
Overheat Protection

The CPU cuts power to the fusing lamp in the following cases:

• The fuser belt temperature detected by the NC sensors becomes higher than 198℃.

• The fuser belt temperature detected by the thermistors becomes higher than 210℃

The following components are used if thermistor overheat protection fails.

• Two thermostats for the fuser belt get into line with the common ground line of the fusing lamp.

• If one of the thermostat temperatures becomes higher than 170°C, it opens and cuts power to the fusing lamp. If the other thermostat temperature becomes higher than 170°C, it also opens and cuts power to the fusing lamp.

2.7 Laser Scanning Unit

2.7.1 Laser Scanning Unit Overview

The Laser Scanning Unit (LSU) consisted of 1 polygon motor and 1 LD unit, forms a latent image on the surface of 1 OPC drum. For this process, there are collimator lens, cylindrical lens and F-Theta Lens on optical path. Also, LSU has the cover glass device to protect the LSU from the contamination. For interface with set, LSU has the LD PBA on front side.

Scan direction

● **Information**

Part Code : JC97-03700A [LSU]

1	LD PBA
2	P/Mirror Motor
3	F1 Lens
4	F2 Lens
5	Cover glass
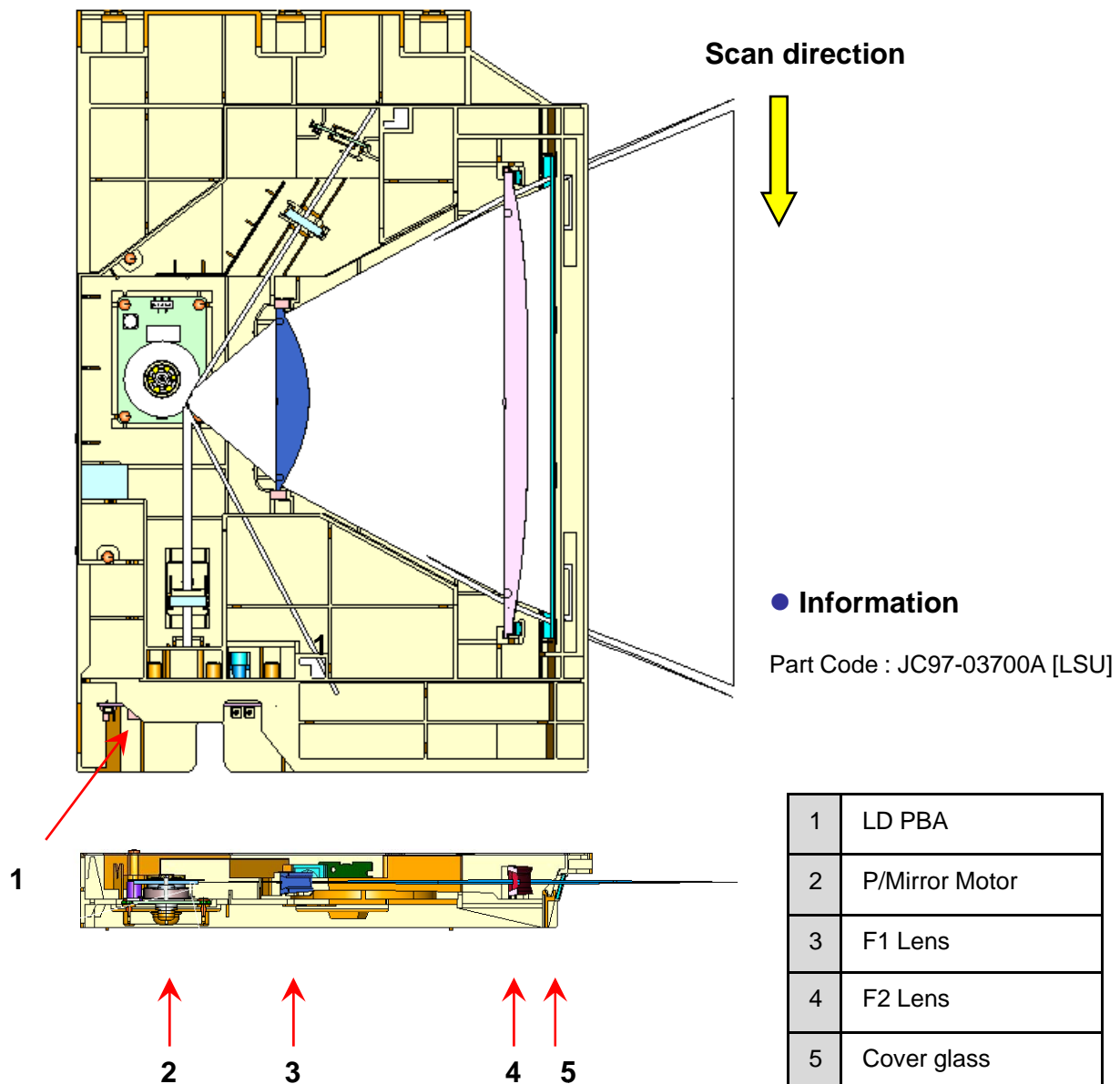
2.7.2 Laser Scanning Optical path
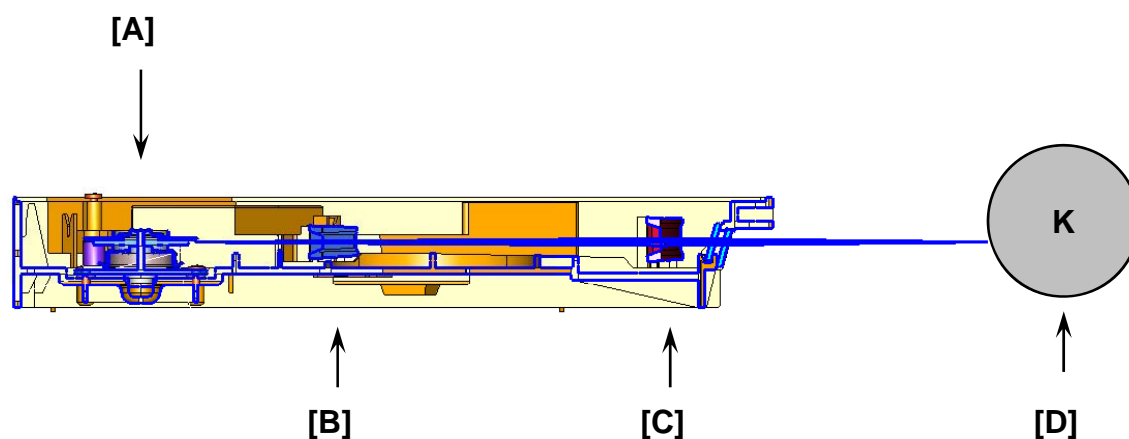
The laser beam is emitted directly from a polygon motor [A] to OPC [D]. F1 Lens [B] and F2 Lens [C] determine the scanning line and image position. This is adjusted at the factory.
The LSU has 2 types depending on printing speed. The difference between the 2 models is shown below.

Mode	SCX-8040 (40 ppm)	SCX-8030 (30 ppm)	Remarks
LD Unit	Laser Diode : Dual Beam driving IC : for Dual LD PCB : 40/30 ppm common use	Laser Diode : Dual Beam driving IC : for Dual LD PCB : 40/30 ppm common use	
P/Motor speed	22,677 rpm	16,299 rpm	
Process Speed	192 mm/sec	138 mm/sec	

H/W interface	Harness : 22 Pin
	              (Interface with set)
		Harness : 22 Pin
		              (Interface with set)	

2.7.3 Laser synchronizing detectors

The machine has a beam detector sensor board (BD PBA). It is located on the corner (mark "A")
The BD board detects the point of scanning start.

Main Scan Start Detection

A beam is detected by the BD PBA at the scanning start point and creates the horizontal sync signal
(Hsync).
The picture below shows the data scanning direction.

[A]
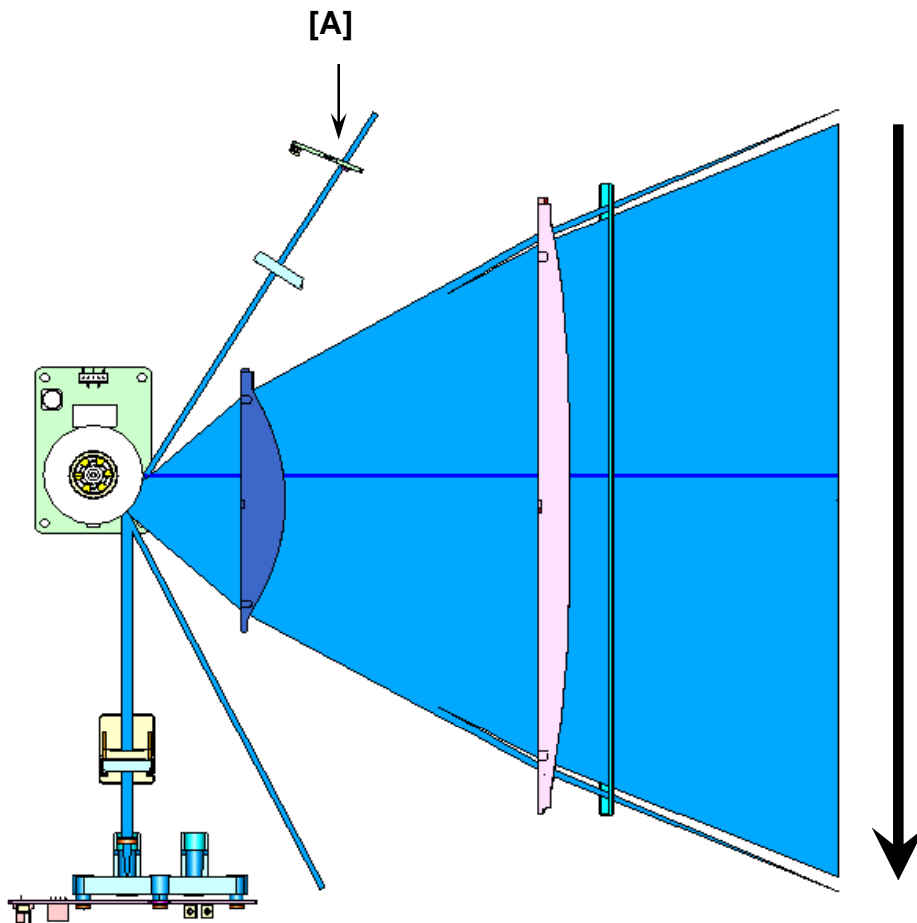
2.8 Printer Drive system

This section describes the printer drive system parts and process.

2.8.1 Drive Motors

The following diagram displays the locations of the printer drive motors.
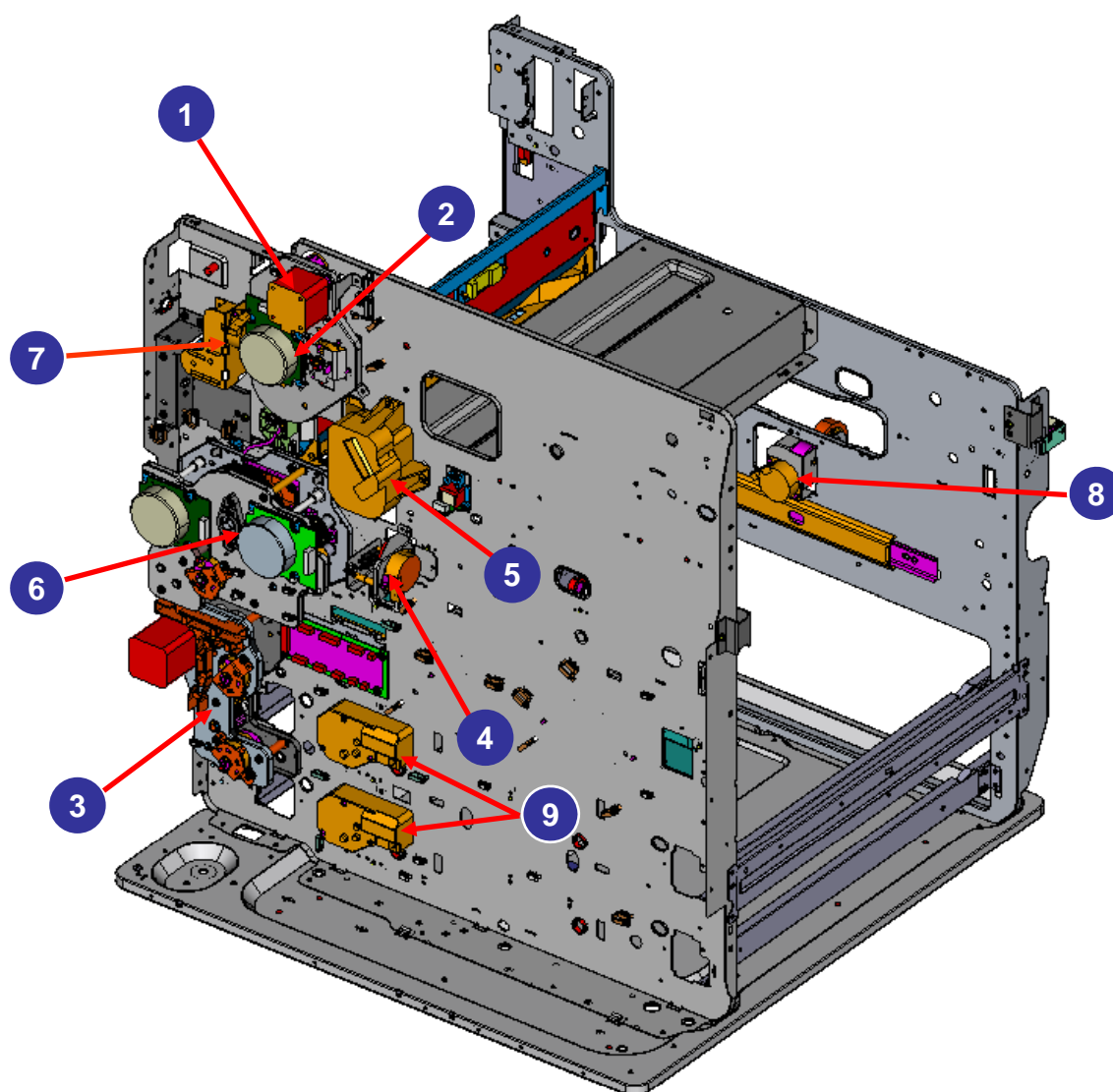
The following table list the descriptions for the tagged drive locations.

No.	ITEM	Type	Qty	Function	Related error
1	Duplex Return	HB-STEP	1	Duplex return driving	-
2	Fuser/Exit	BLDC	1	Fuser/Exit driving	-
		E-CLT	1	Exit driving	-

No.	ITEM	Type	Qty	Function	Related error
3	Pick-Up	HB-STEP	1	Pick-Up Roll driving	-
		E-CLT	2	1st, 2nd Pick up	-
4	Duct	PM-STEP	1	Toner Duct driving	-
5	Toner supply gear box	DC	1	Toner transfer in Toner Bottle driving Duct	-
6	MP / Regi / Duplex	BLDC	1	MP / Regi / Duplex driving	-
		E-CLT	3	MP / Regi / Duplex control	-
	OPC / DEVE	BLDC	1	OPC/DEVE	-
7	PR Release	PM-STEP	1	PR Release driving	-
8	WTB	PM-STEP	1	Waste Tank leveling	-
9	CST Lift	DC	2	1st , 2nd CST Lift	-

2.8.2 Main drive unit (OPC, DEVE, MP, REGI, DUPLEX)

Front View

BLDC (MP/REGI/DUP)

BLDC (OPC/Dev)

Regi Control Clutch

Rear View

OPC Coupling

Deve (Auger) Coupling

REGI Drive Gear

Duplex Drive Gear

MP Drive Gear
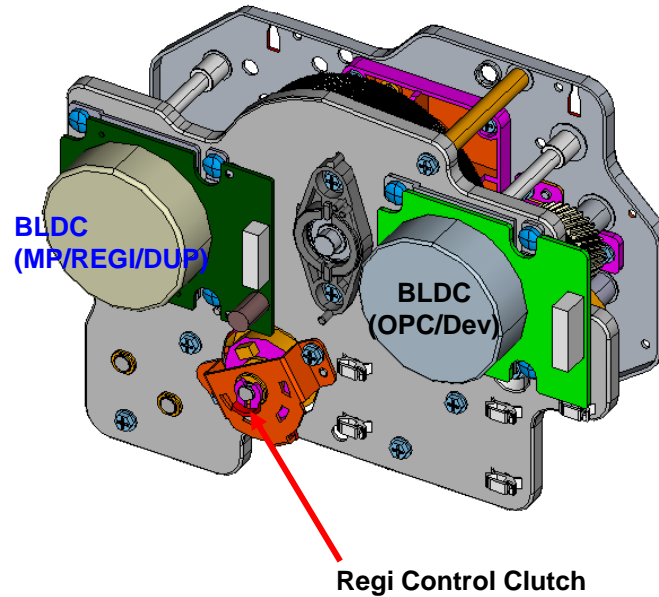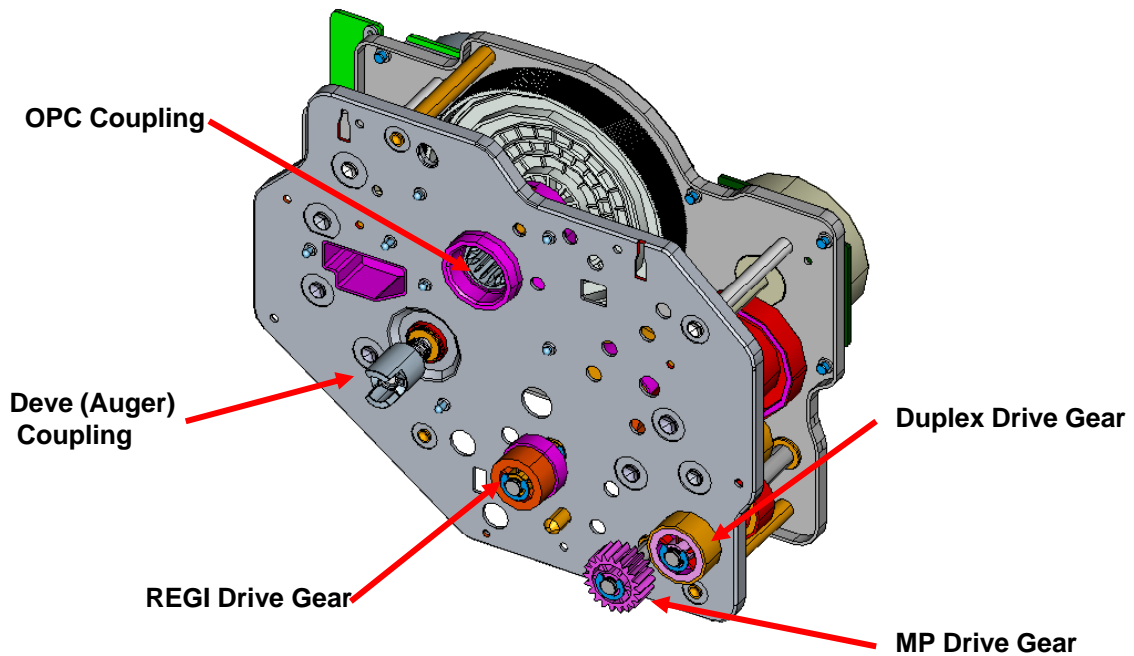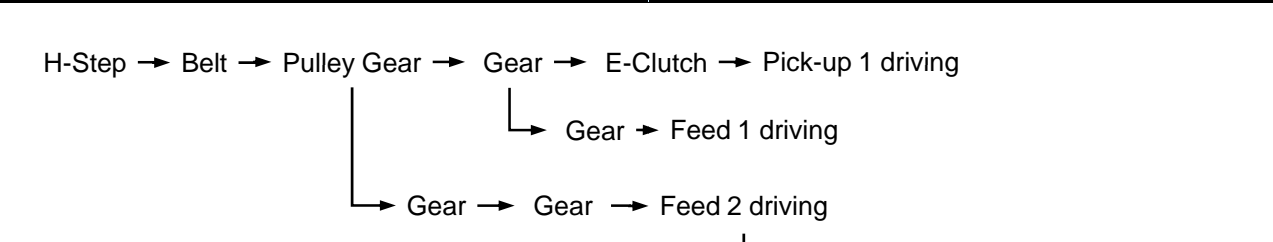
● **Information**

Part Code : JC93-00118A [DRIVE MAIN]

2.8.3 Pick-up Drive

The following is a diagram of the Pick-up drive:

Micro-Clutch

Coupling

Feed

Pick-up

Feed

Pick-up

● **Information**

Part Code : JC93-00065A [DRIVE-PICK UP]

Power Train	Pick-up : Same H-Step motor is Rising 2 tray by e-clutch
H-Step → Belt → Pulley Gear → Gear → E-Clutch → Pick-up 1 driving 　　　　　　　　　　　　　　└→ Gear → Feed 1 driving 　　　　　　└→ Gear → Gear → Feed 2 driving 　　　　　　　　　　　　　└→ Gear → E-Clutch → Pick-up 2 driving	

2.8.4 Fuser/Exit Drive

The following is a diagram of the drives that power the Fuser, Exit systems:

- HB-Step
- Duplex Return Drive
- BLDC
- Micro-Clutch
- Exit Drive
- Fuser Drive
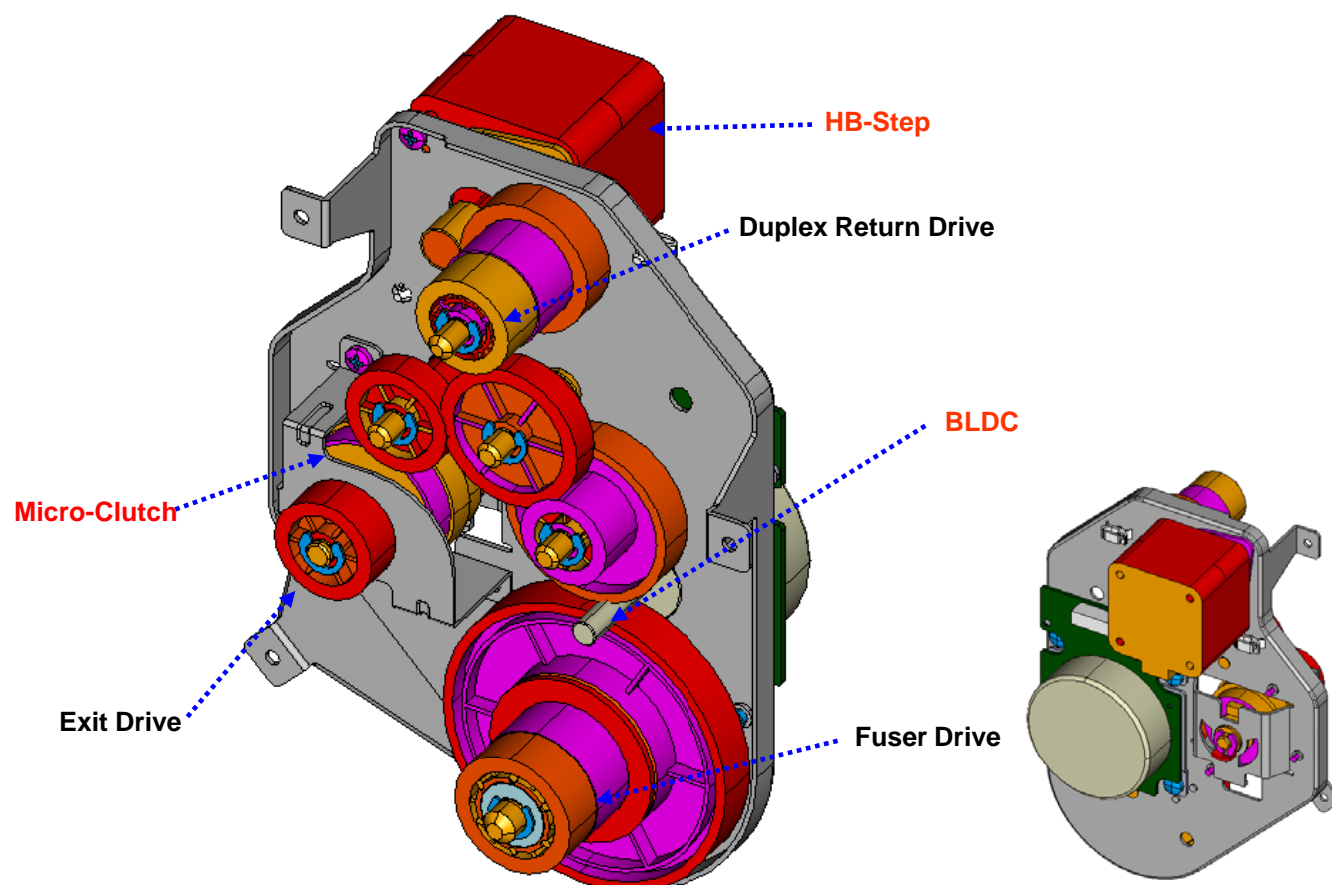
● **Information**

Part Code : JC93-00119A [DRIVE-EXIT]

Power Train	-**Fuser/Exit :** BLDC is interlocked. -**Duplex Return :** HB-Step is interlocked.
1. BLDC → FUSER A/B → Fuser Roll driving └→ EXIT RDCN → EXIT IDLE A → EXIT IDLE B → Clutch-E → Exit Roll driving 2. H-Step → DUP RDCN → Duplex Return driving	

2.8.5 Toner Duct drive

The following is a diagram of the Toner Duct drive:

GEAR DUCT RDCN

PM Step

Photo Interrupter

● **Information**

Part Code : JC93-00121A [DRIVE-DUCT]
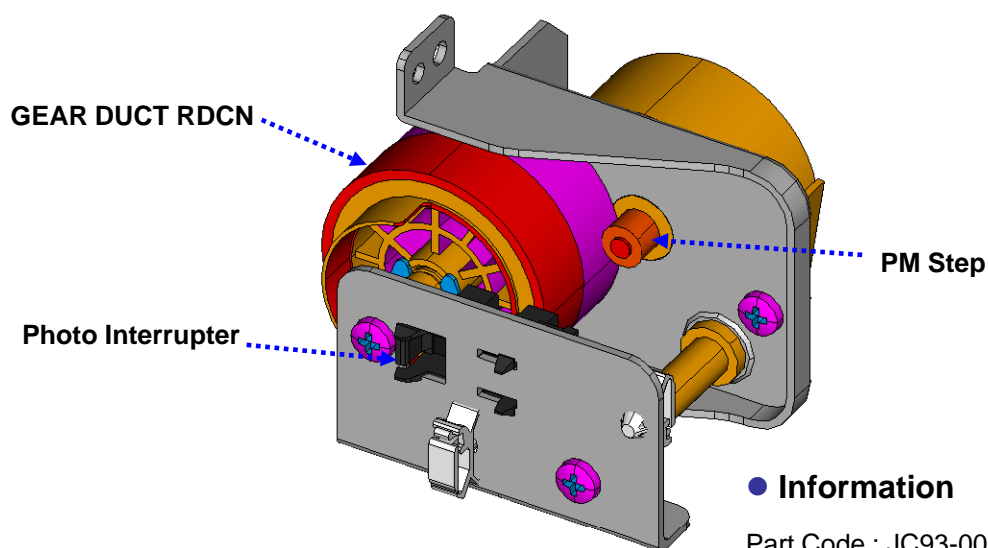
Power Train	PM Step motor : Toner Duct driving
Step (PM) ⟶ GEAR DUCT RDCN ⟶ Toner Duct Driving	

2.8.6 Drive of Toner Supply

The following photo displays the location of the Toner Supply drive:

Bottle Coupling
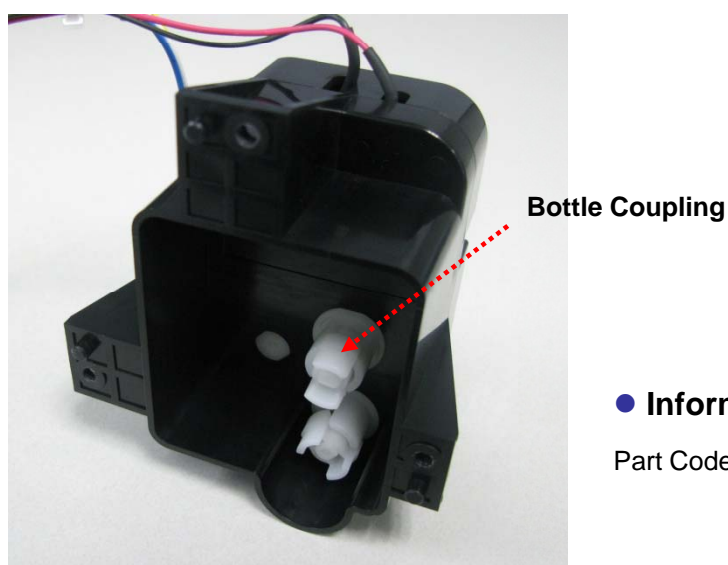
● **Information**

Part Code : JC31-00124A
          [MOTOR GEARED-T_SUPPLY]

2.8.7 WTB leveling drive

GEAR WTB RDCN

Worm (PM Step)

WTB Gear

GEAR WTB IDLE A

● **Information**

Part Code : JC93-00067A
[DRIVE WTB]
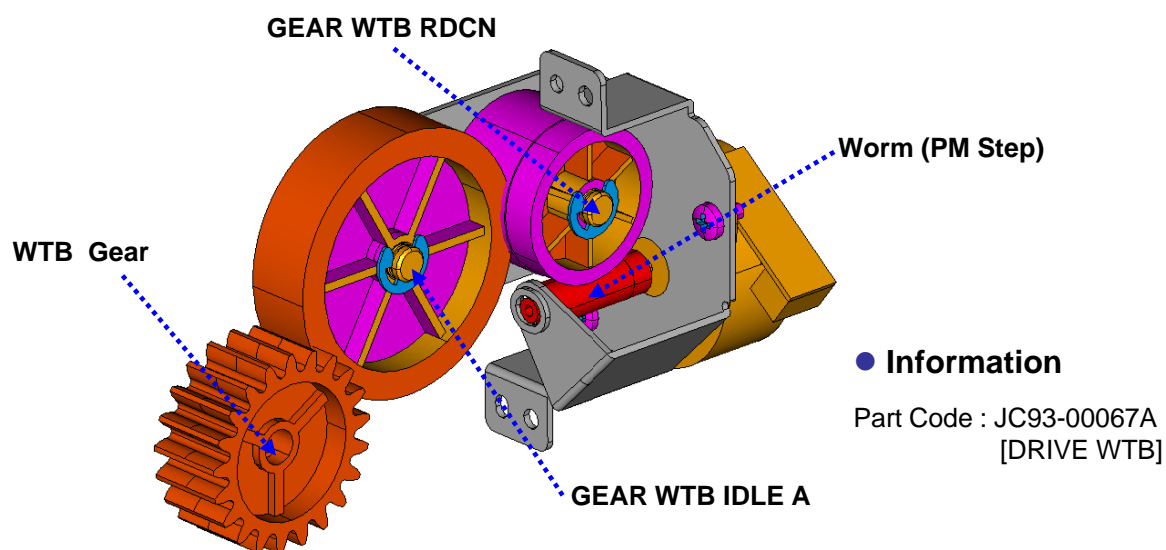
Power Train	PM Step motor & Worm : WTB Leveling driving
Step (PM) → Worm → GEAR WTB RDCN → GEAR WTB IDLE A → WTB Leveling driving	

2.8.8 PR Release drive

GEAR WORM WHEEL

Worm (PM Step)

GEAR ENCODER

GEAR PR RDCN

● **Information**

Part Code : JC93-00120A
[DRIVE RELEASE]
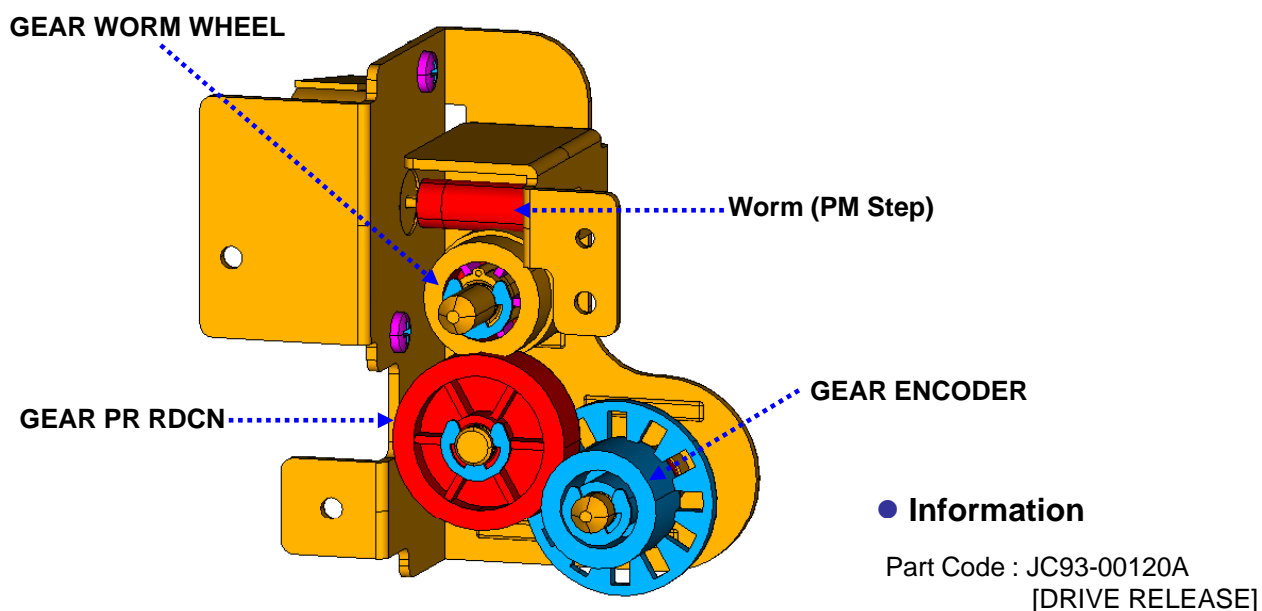
Power Train	PM Step motor & Worm : PR Release Driving
Step (PM) → GEAR WORM WHEEL → GEAR PR RDCN → GEAR ENCODER → PR Release Driving	

2.9 Scanner system

This section describes the printer scanner system parts and processes.

2.9.1 Scanner System Overview

During the scanning process, the surface of a document is exposed to direct light. The light reflected from the paper is led through mirrors, a lens, and a slit to a CCD where optical-to-electrical conversion is performed, converting the optical image data into an electrical (analog) signal. This analog signal is changed to a digital signal, which then undergoes various corrective processes necessary for image formation. After that, arithmetic operations are performed on the digital signal, which is then transmitted to the data writing processor.

In this printer, a reduction-type CCD for color processing is used. How this CCD differs from black and white CCDs is that its devices are arranged in 3 lines and covered with color filters (Red, Green, and Blue). These lines are composed with 3-line color devices and a black-and-white device with no filter.
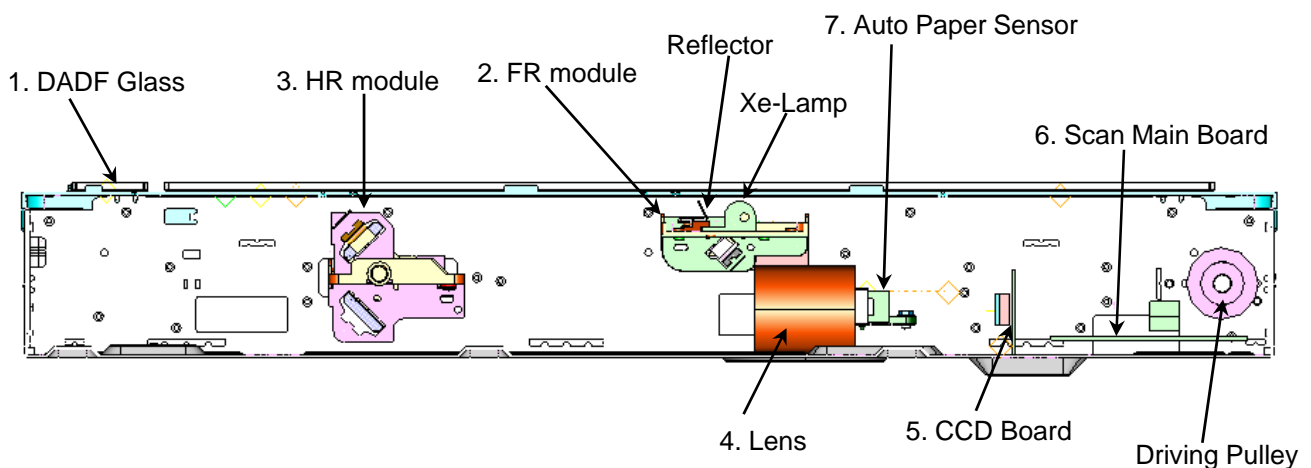
2.9.2 Scanning System Components

The following shows the construction and purpose of the scanning system:

1. DADF glass

The DADF glass is used when a document is read by the Automatic Document Feeder. The document is placed on this glass. The light from the Xe-lamp shines on the Document through this glass.
The document is transported to the DADF glass by the Dual Automatic Document Feeder (DADF), and then the transported documents are read under the DADF glass by the carriage.

Do not use such solvents, as alcohol when cleaning the surface of the DADF glass, as it is coated so as not to be scratched by Document.

2. FR(Full Rate)-Carriage

FR-Carriage consists of the Xe-lamp (EXP), reflector, mirror-1, etc. It is driven by the scan motor (HB Step Motor) and scans the document located on the glass.
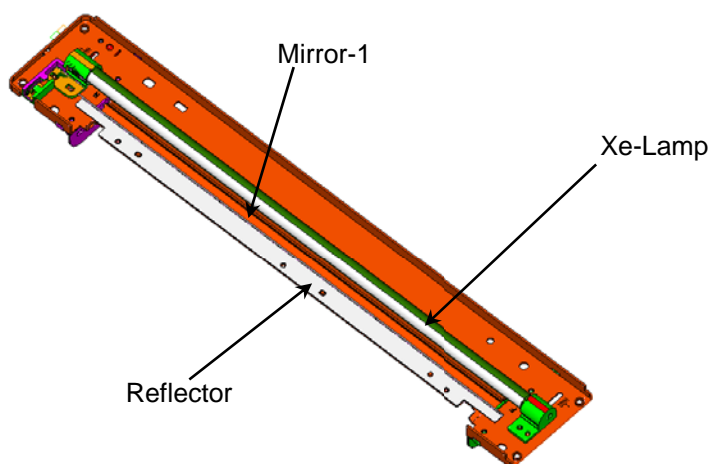
- Xe-lamp
  This lamp is the light source to expose the original document on the glass. (One 26 W xenon lamp)

- Reflector
  This is a plate to efficiently direct the light from the Xe-lamp to the surface of the
   Document on the glass.

- Mirror-1
  This mirror directs the light reflected from the Document to the mirror-2 (described later).

3. HR(Half Rate)-Carriage

HR-Carriage mainly consists of the mirror-2, mirror-3, etc., and it directs the reflected light from the mirror-1 through the mirrors-2 and -3 to the lens. This carriage is driven by the same scan motor as that of the FR-carriage at half the scanning speed of the FR-carriage (The scanning distance is also half that of the FR-carriage).
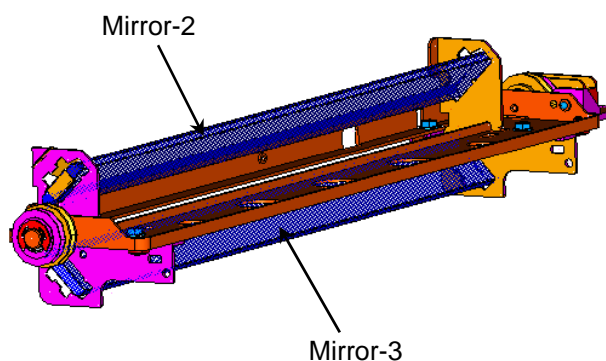
Mirror-2

Mirror-3

4. Lens unit

The light reflected from the mirror-3 is led to the CCD placed at the focal point of the lens which is fixed in a position.

5. CCD board

Processes such as signal amplification, signal integration, and A/D conversion are applied on the electrical signal which was converted by the CCD.

6. Scan Main board

This is a board to perform image correction, such as shading correction and Image Enhancement.

7. Auto Paper Sensor

The size of an original placed on the glass is instantly detected using the Auto Paper Sensor fixed on the Align-frame.

2.10 Duplex Automatic Document Feeder(DADF) System

This section describes the DADF system parts and processes.

2.10.1 DADF System Overview

The following diagram and table include locations and descriptions of the DADF system.
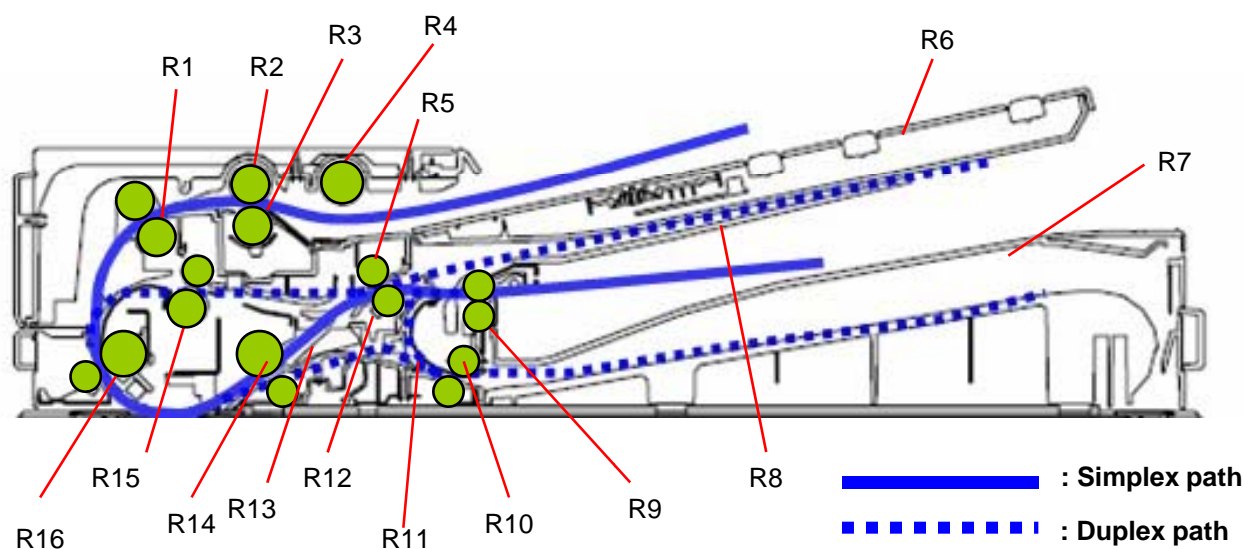
Symbol	Part Name	Function
R1	Simplex registration roller	Aligns paper and transfers it to the paper path in simplex mode.
R2	Retard roller	Separates an original from the tray and transfers it to the paper path.
R3	Retard roller	Prevents multi-feeding.
R4	Pick up roller	Picks up an original from the tray.
R5	Duplex reverse gate	Roller for duplex reverse path.
R6	Original document tray	Tray for multiple page scanning.
R7	Exit tray	Area where the paper exits.
R8	Duplex reverse tray	Tray for reverse in duplex mode
R9	Exit roller	Sends an original to the exit tray.
R10	Exit turn roller	Turns a original direction for collate exit after duplex scan.
R11	Exit turn gate	Changes the paper path for collate exit after duplex scan.
R12	Duplex reverse roller	Reverses an original in Duplex Mode after scanning a page.
R13	Junction gate	Divides the path direction into either simplex or duplex.
R14	Feed out roller	Ejects a scanned original.
R15	Duplex registration roller	Aligns paper and transfers it to the paper path in duplex mode.
R16	Feed in roller	Feeds an original before scanning.

2.10.2 Electric parts layout

The following diagram and table include locations and descriptions of the electrical components of the DADF.
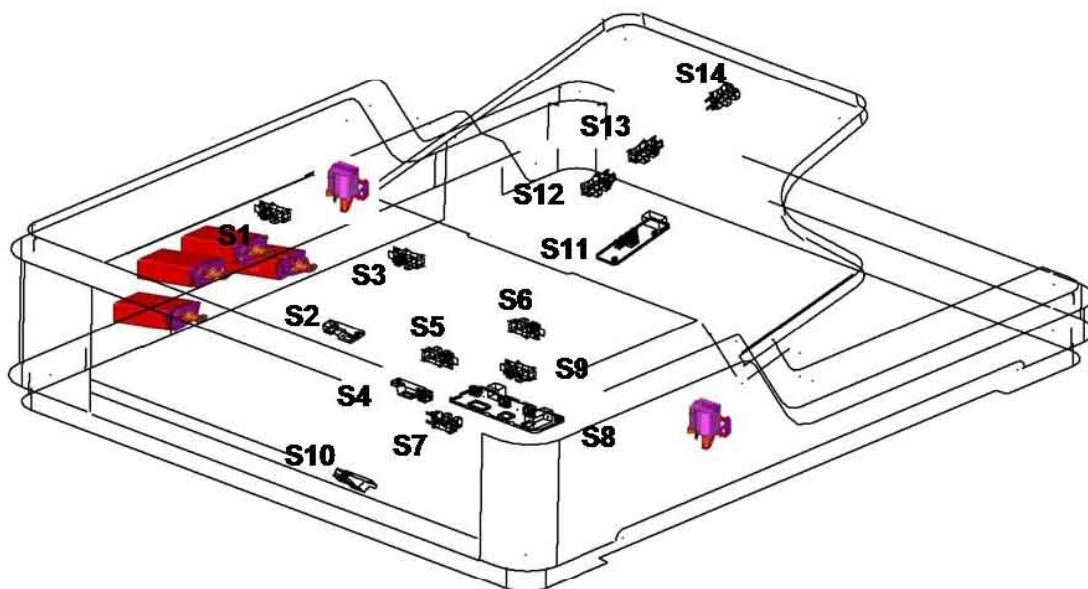
Ref.	Description	Part Number	DC controller PCB	Jam code/error code
S1	PHOTO-INTERRUPTER (Cover)	0604-001393	PBA-ADF	U3-4210
S2	PHOTO-INTERRUPTER (Regi)	0604-001381	PBA-ADF	U3-3211, U3-3213 U3-3214
S3	PHOTO-INTERRUPTER (Pick Up Check)	0604-001393	PBA-ADF	U3-4411
S4	PHOTO-INTERRUPTER (Duplex Regi)	0604-001381	PBA-ADF	U3-3411, U3-3413 U3-3414
S5	PHOTO-INTERRUPTER (Feed)	0604-001393	PBA-ADF	U3-3111, U3-3113 U3-3114
S6	PHOTO-INTERRUPTER (Detect)	0604-001393	PBA-ADF	-
S7	PHOTO-INTERRUPTER (Exit Turn)	0604-001393	PBA-ADF	U3-3711, U3-3713 U3-3714
S8	PBA-MIXED SENSOR	JC92-02166A	PBA-ADF	-
S9	PHOTO-INTERRUPTER (Exit)	0604-001393	PBA-ADF	U3-3611, U3-3613 U3-3614
S10	PHOTO-INTERRUPTER (Scan Read)	0604-001381	PBA-ADF	U3-3311, U3-3313, U3-3314, U3-3511, U3-3513, U3-3514
S11	PBA-WIDTH SENSOR	JC92-02167A	PBA-ADF	-
S12	PHOTO-INTERRUPTER	0604-001393	PBA-ADF	-
S13	PHOTO-INTERRUPTER	0604-001393	PBA-ADF	-
S14	PHOTO-INTERRUPTER	0604-001393	PBA-ADF	U3-4210

2.10.3 DADF Drive System

The DADF drive system consists of 4 sections.

1. Pick up motor drive section

   This motor picks up an original and transfers it to the registration roller. When the leading edge of the original document reaches the registration roller, the pick-up motor stops and the original document is moved to the next position on the DADF roller.

2. Regi motor drive section

   This motor aligns the leading edge of the original during both simplex and duplex modes. Then it transports the original to the scan motor so that the registration motor repeats rotation and stops for alignment of the original.

3. Feed motor drive section

   The scan motor transports the original to the reading area. When this motor rotates in optimum conditions, an optimum image can be printed. So, the scan motor rotates continually during scan operation.

4. Exit motor drive section

   The exit motor transports the original to the exit tray. When the direction of the original is changed during duplex mode, it transports the original to the Regi motor.

Pick up motor drive section

Regi motor drive section

Exit motor drive section

Feed motor drive section
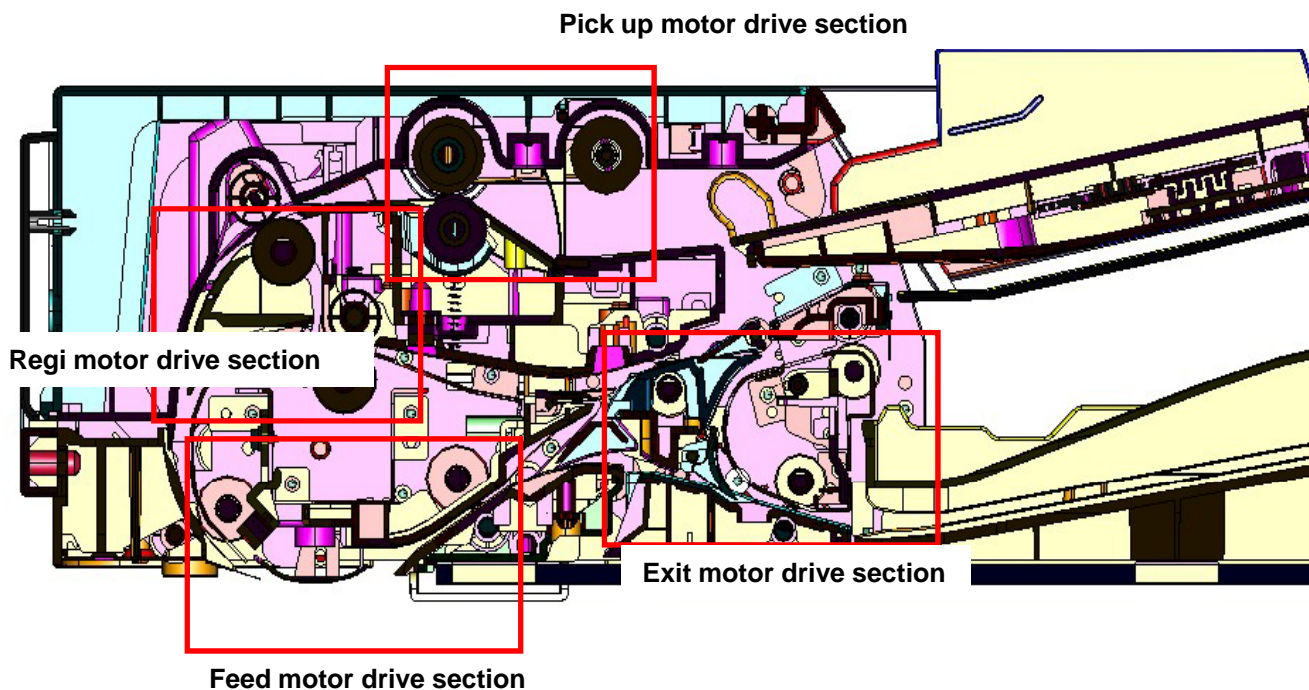
2.10.3.1 DADF Original Drive Assembly

The pick-up motor provides the driving power to the DADF roller by using a belt and a gear. The DADF and pick-up rollers are connected with the belt which provides the driving power. The pick-up motor also drives the stopper. When it rotates forward, the original is picked up. When it rotates in reverse, the stopper operates.

The Gear-ADF 20 and pick-up motor are connected by a clutch-spring. When picking up forward, the clutch-spring is wound. When driving the DADF in reverse, the clutch-spring loosens. When the lift sensor detects a signal, the pick-up motor stops, the stopper operation finishes and the printer enters stand-by status.

The DADF roller receives the driving power until the original reaches the Regi roller. When the pick-up roller stops, the Regi motor rotates, and the DADF roller becomes idle.

The following steps are performed during the normal operation of the DADF Original Drive assembly:

1. When the original is setting up, the detect-sensor is activated and the pick-up motor rotates forward. Then, the pick-up roller moves down and contacts an original in the tray.
2. When receiving a "next job" command, the pick-up motor rotates forward and supplies an original until the job is completed.
3. When all originals are fed and the tray is empty, the pick-up motor rotates in reverse and the stopper moves down. The printer enters stand-by status.

Pick up motor

Pick up roller

ADF roller
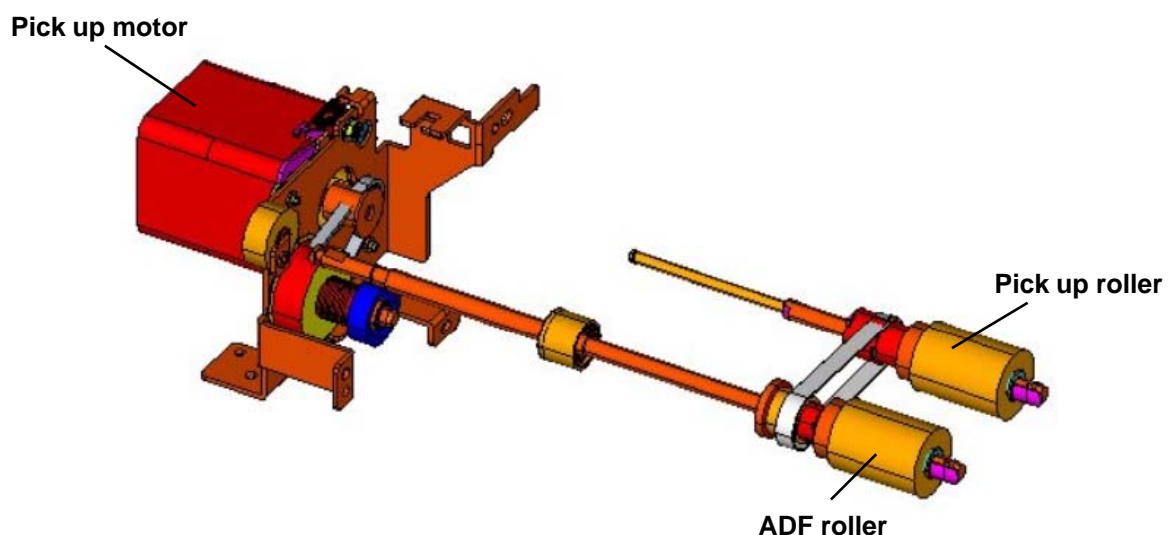
2.10.3.2 DADF Original Registration (Regi) Drive Assembly
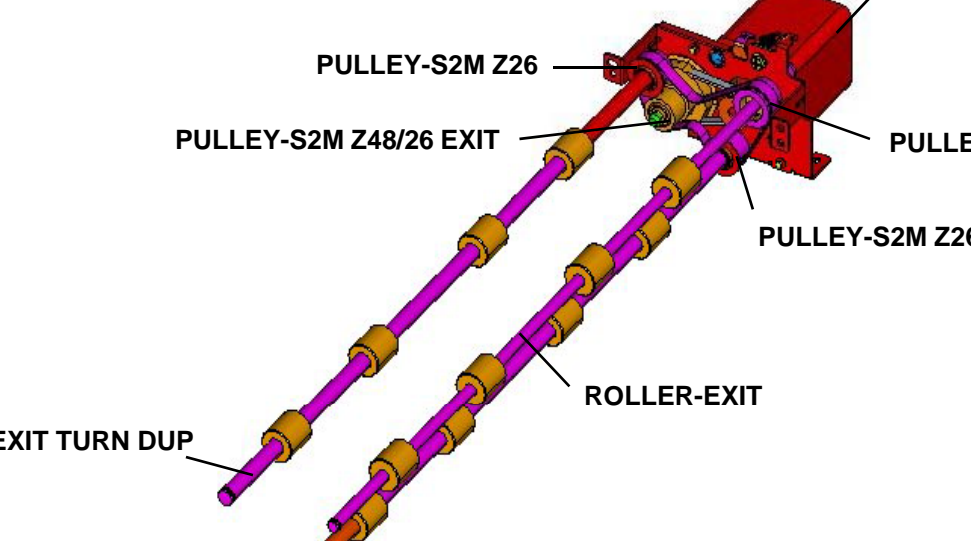
The registration (Regi) motor provides the driving power by using a belt attached to the regi roller. It transports the original by using the idle roller connecting to the feed roller. The feed roller is fixed to a ball bearing and oil-less bearing and rotates. The idle roller creates feeding force using spring pressure. The registration motor that is interlocked with the registration roller aligns the leading edge of the original. When the leading edge of the original is placed in the Nip, the motor rotates to align the original. The registration motor repeats rotation and stopping to align each original.
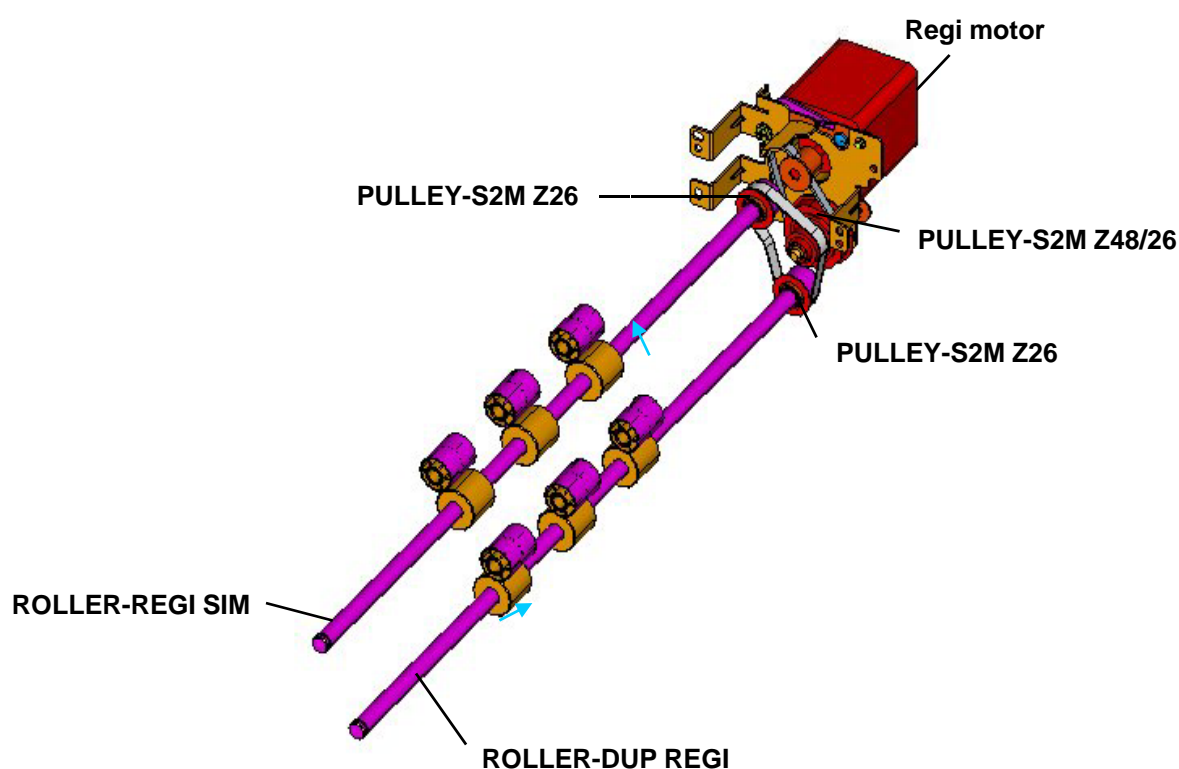
2.10.3.3 DADF Original Feed Drive Assembly

The feed motor provides the driving power by using a belt attached to the registration roller. It transports the original by using the idle roller connecting to the feed roller. The feed roller is fixed by the ball bearing and rotates as fixed. The idle roller creates feeding force by spring pressure. The feed motor that is interlocked with the roller-feed transports the original. The feed motor rotates continually during scan operation. As a result, optimum scan quality is achieved.
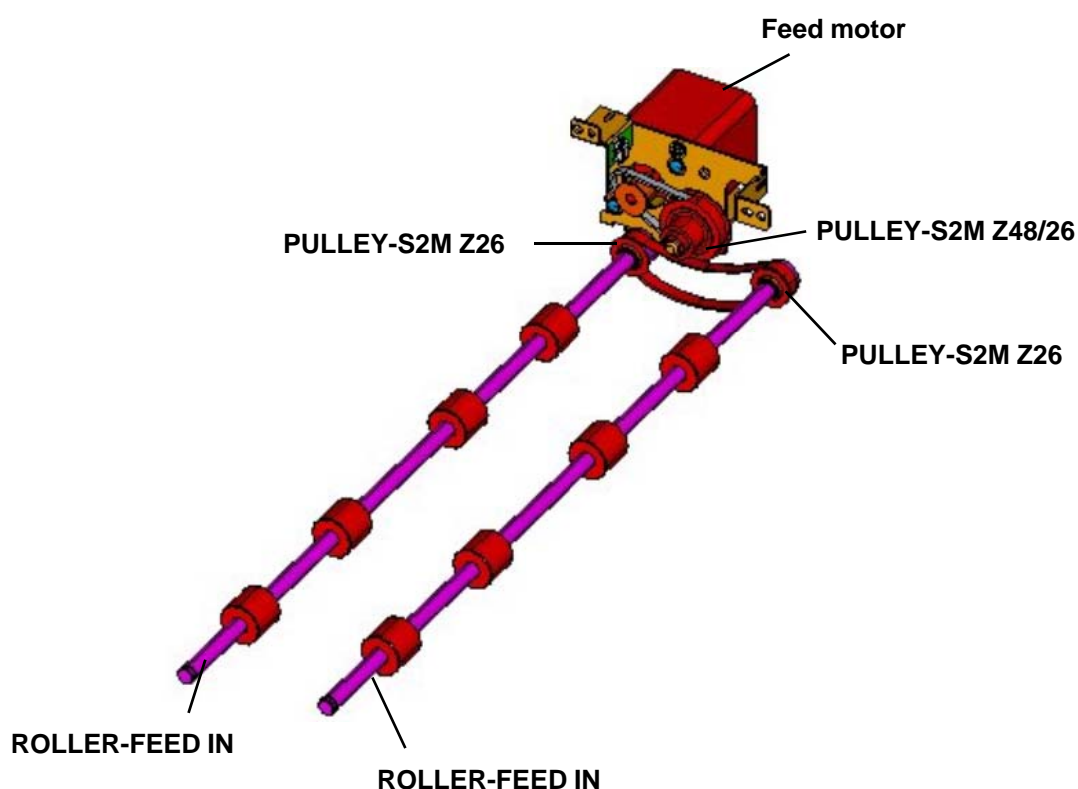
Feed motor

PULLEY-S2M Z26

PULLEY-S2M Z48/26

PULLEY-S2M Z26

ROLLER-FEED IN

ROLLER-FEED IN

2.10.3.4 DADF Exit Drive Assembly

The exit motor provides driving power to the exit roller by using a belt. The idle roller connected to the exit roller ejects the original. The exit motor drives 3-rollers using a connecting belt. The fixed feed roller rotates. The idle roller creates feeding force by using spring pressure.

2.10.3.5 DADF Gate Drive Assembly

The gate operates only in duplex mode. In simplex mode, it is off and the solenoid cannot operate.

The guide-gate junction is connected with the solenoid and has as on and off position. In the on position, it opens to the direction of the exit-turn after completing a duplex scan. In the off position, it opens to the direction of the reverse path for 2-side scanning in duplex mode.

The guide-gate simplex is connected with the solenoid and has on and off positions. In the on position, it opens to the direction of reverse path for 2-side scanning. In the off position, it opens to the direction of the simplex exit section.

Solenoid-R

GUIDE-GATE-SIMPLEX

Solenoid-F

GUIDE-GATE-JUNCTION
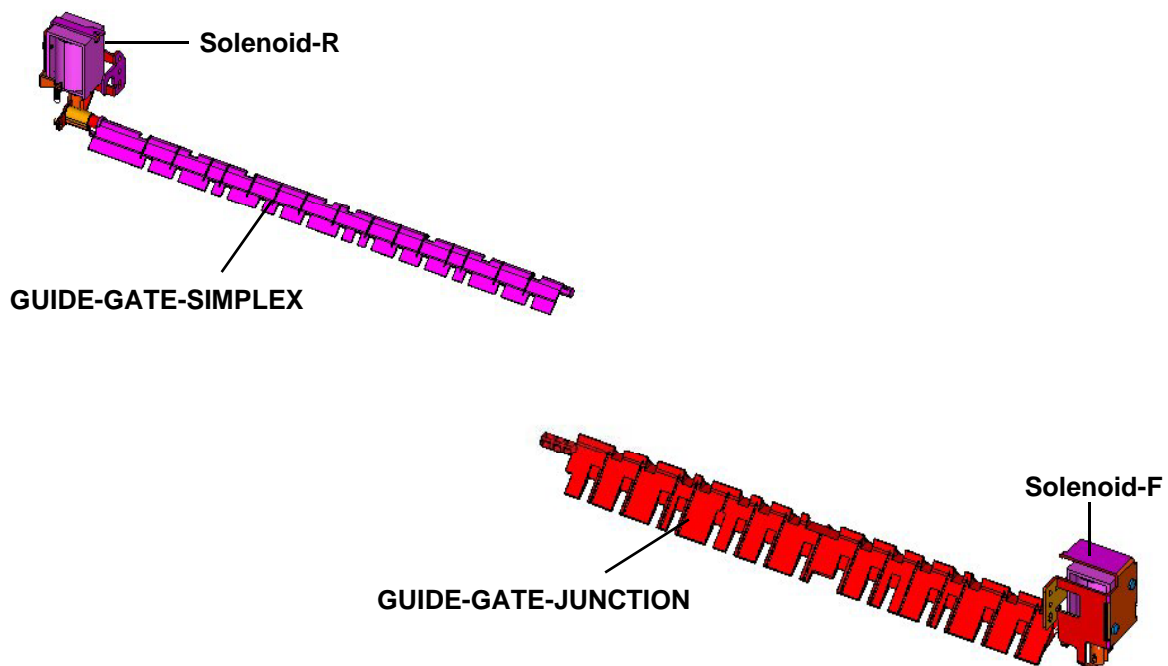
2.11 Hardware configuration

The SCX-80x0 series Electrical Circuit System consists of the following:

• Video Controller
• Engine Controller
• Scan Controller
• DADF Controller
• OPE Controller
• USB HUB Controller
• HVPS
• SMPS

Diagram of the SCX-80x0 Series Electrical Circuit
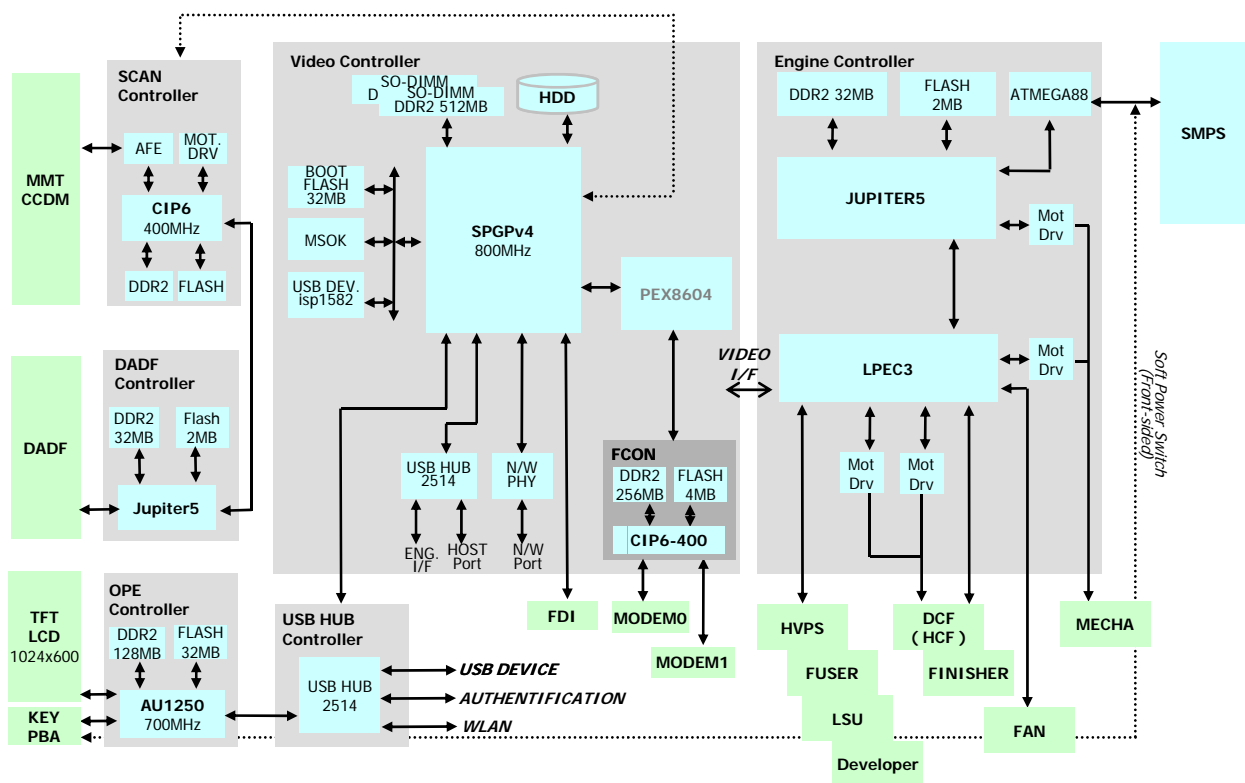
The Engine Controller controls all modules required to print, that is, LSU, HVPS, FAN, Fuser, etc. The Engine Controller communicates with the Video Controller through the USB Bus to communicate the printing status, and interfaces all video synchronization signals to print the video data from the Video Controller. The Video Controller receives print data from the host through network or USB Port and it receives copy data from the Scan Controller. It takes this information and generates printable video bitmap data, and then transfers the data to the Engine Controller.

The Fax Controller (FCON) is used to control all faxing jobs and transceiving fax data to and from the Video Controller through the PCIe high speed bus.

The Video Controller adopts the SPGPv4 800Mhz, 512MB Memory and a 250GB HDD to perform these jobs successfully. The Video Controller also communicates with the OPE Controller through the USB HUB Controller to display some of the system information.

The USB HUB Controller interfaces with the Video Controller, the OPE Controller, and some USB Devices such as USB memory sticks and Authentication devices such as Common Access Card readers.

The OPE Controller displays the status of the system using WSVGA TFT LCD in response to user actions or the Video controller.

The Scan Controller scans images using the Platen or the DADF.

The DADF Controller controls some mechanisms required to scan by feeder continuously and communicates with the Scan Controller to synchronize the scanning timing. The Scan Controller transfers the scanning data to the Video Controller through the PCIe high speed bus.

A MICOM at the Engine Controller activates each Controller's power and turns off power according to an optimized energy-saving algorithm for optimal efficiency. The soft Power Switch in the OPE Controller left-side is used to safely shut down the system power. It is controlled by the MICOM.

Circuit Board Locations

The following diagrams show the locations of the printer circuit boards:
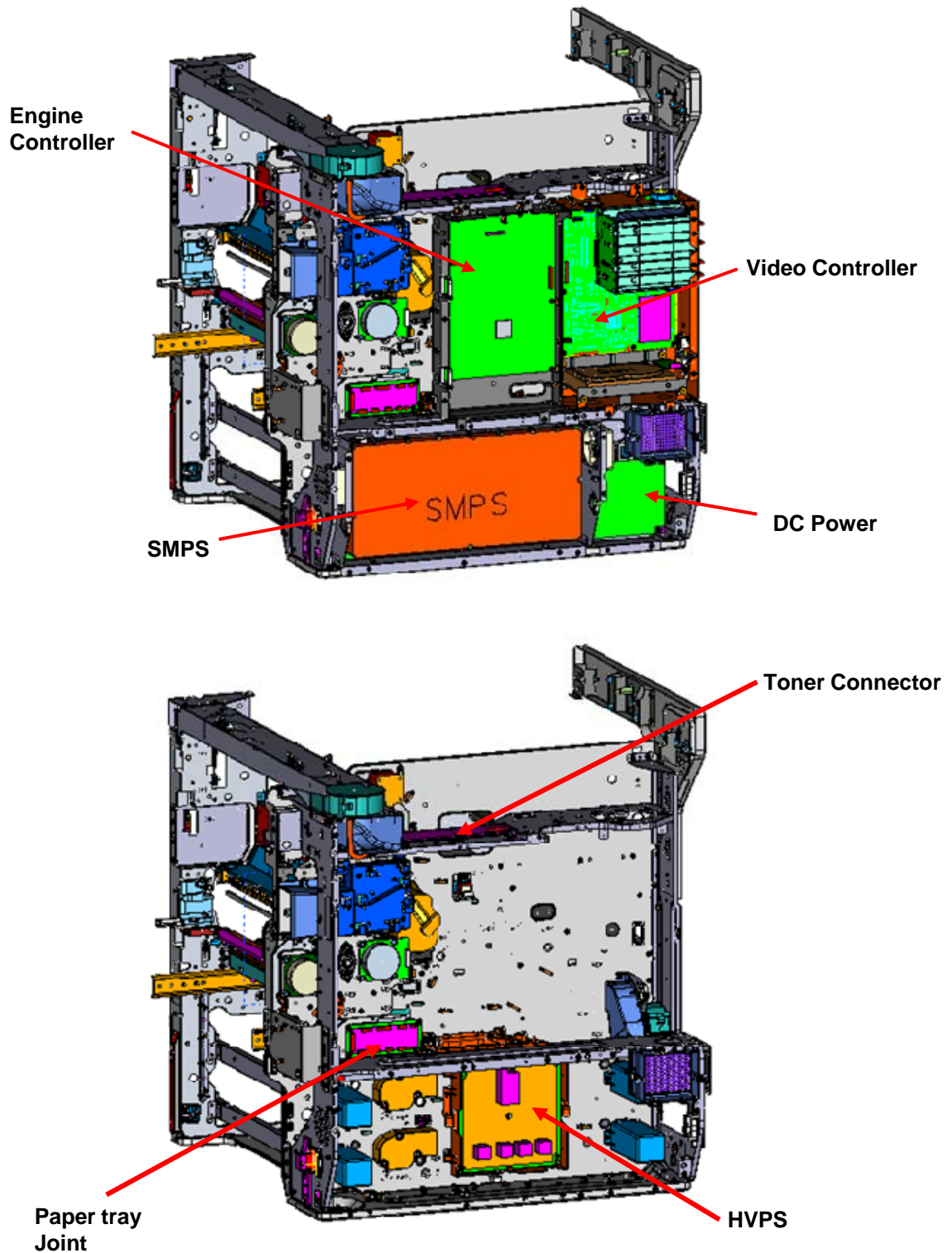
2.11.1 Video controller

The Video Controller which is used to generate the printable video data, is comprised of a Main Processor (SPGPv4). The Controller has adopted the DDR2 SO-DIMM as the system memory, a SATA PHY to access the HDD, and a PCIe bus to interface between the Main Processor and the other controller chips (Scan Controller and the FAX Controller), and 2 USB blocks to interface with the Engine Controller, Host Port via HUB Controller in the PBA and the OPE Controller through the HUB Controller PBA.
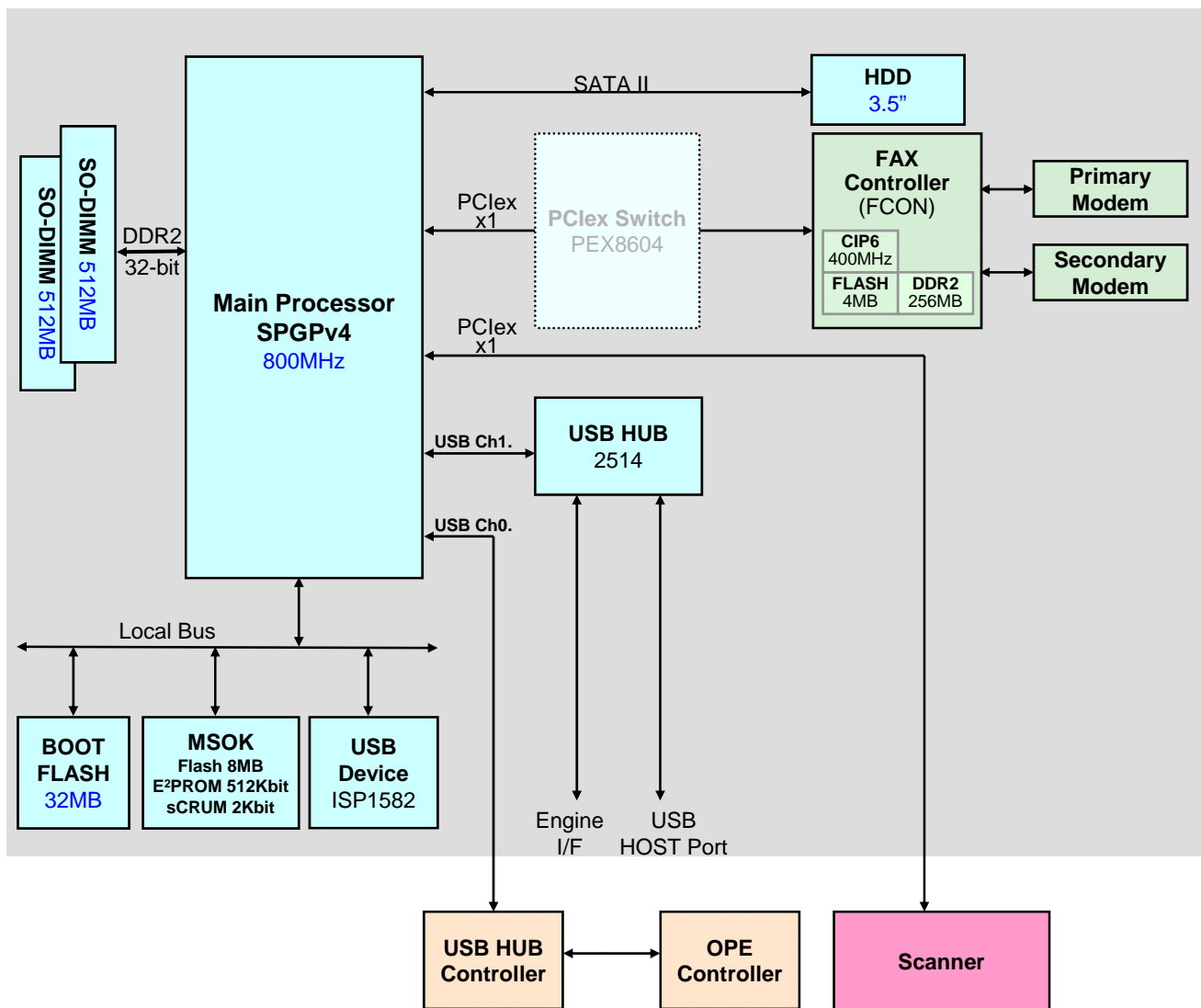
[Video Controller Diagram]

Video Controller Printed Circuit Board Assembly
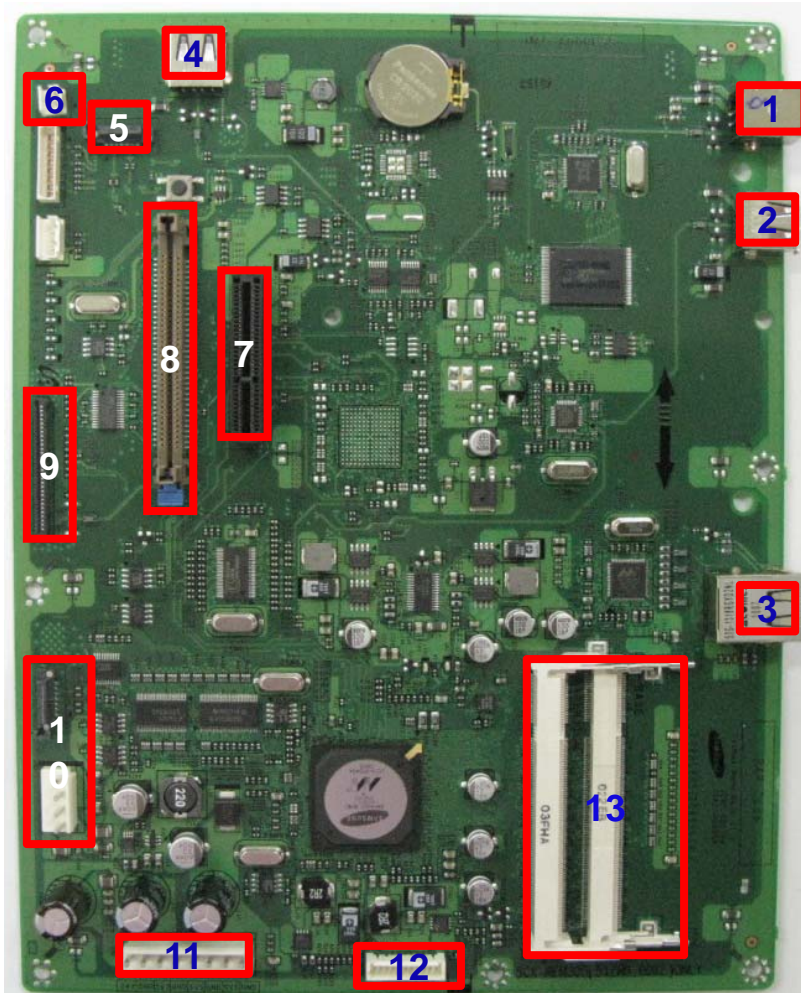
● Connection

1	USB DEVICE PORT
2	USB HOST PORT (Back-Sided)
3	NETWROK PORT
4	USB HUB CONTROLLER PBA I/F PORT
5	SCAN CONTROLLER I/F CONNECTOR
6	SPEAKER CONNECTOR
7	CON-JOINT I/F PBA CONNECTOR
8	MSOK PBA I/F CONNECTOR
9	ENGINE CONTROLLER I/F CONNECTOR
10	HDD I/F CONNECTOR
11	POWER CONNECTOR
12	FDI CONNECTOR
13	SODIMM CONNECTOR

● Information

SEC-CODE : JC92-02218A
PBA Name : PBA-MAIN

2.11.1.1 SO-DIMM PBA

The SO-DIMM PBA is the system Memory module of the Video Controller. It is used for the operating system, some system application programs, and it stores some print data from the USB and Network port (scanned images, copy data, fax data and printable video data, etc.). The SO-DIMM PBA includes the following features:

• 512 MB capacity (expandable to 1 GB)
• 32-bit non ECC DDR2 266MHz speed.

CAUTION
Only this memory module is available on this video controller. The general-purpose memory can't be used.

● **Information**

    SEC-CODE : JC92-02087C
    PBA Name : PBA-RAM DIMM

2.11.1.2 MSOK

The MSOK PBA is used to store all system information. It is composed of a Non-Volatile Flash Memory, two EEPROMs, and a secured EEPROM. The Flash Memory (8 MB size) and two EEPROMs (256K-bit each) are used for all system operation information (system parameter, device status, tech information, and service information). The secured EEPROM is for the system security information and is 2K-bit. When a Video Controller PBA needs to be exchanged, the MSOK PBA should be re-installed to the new Video Controller PBA to retain the system information.

● **Information**

    SEC-CODE : JC92-02267A
    PBA Name : PBA-MSOK

2.11.1.3 CON JOINT PBA

The Con-Joint PBA is used for interfacing between the Video Main Controller PBA and FCON PBA and Modem cards. The Interface method of PBA is PCI express except FCON and Modem cards.
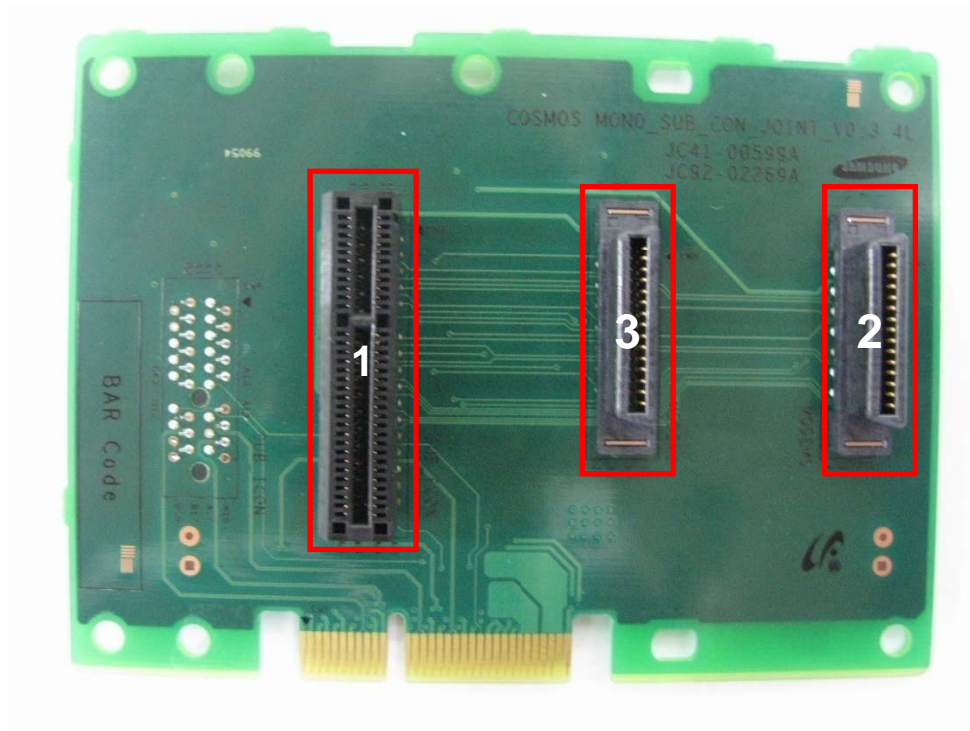
● Information

SEC-CODE : JC92-02269A
PBA Name : PBA-FAX JOINT

● Connection

1	FCON PBA I/F CONNECTOR
2	Primary MODEM CARD I/F CONNECTOR
3	Secondary MODEM CARD I/F CONNECTOR

2.11.1.4 FAX Controller (FCON) - Optional

The optional FAX Controller PBA (FCON), which is used to control FAX transmission and receiving, is composed of a CPU (CIP6, 400 MHz, PCI interface), a PCIe express Bridge chip, 256 MB DDR2 Memory, 4 MB Flash Memory, and Audio control chips. The FCON is connected to the Con-Joint PBA and controls the Dual MODEM CARDs also connected to the Con-Joint PBA.

● **Information**

SEC-CODE : JC92-02148A
PBA Name : PBA-DUAL FAX CONTROL

2.11.1.5 Primary Modem Card - Optional

There are two types of modem cards in the SCX-80x0 series. The Primary Modem Card is used to transfer and receive FAX data through a telephone line. This PBA is controlled by the FCON PBA and has two connectors, one for the telephone line connection and the other for an external phone connection.
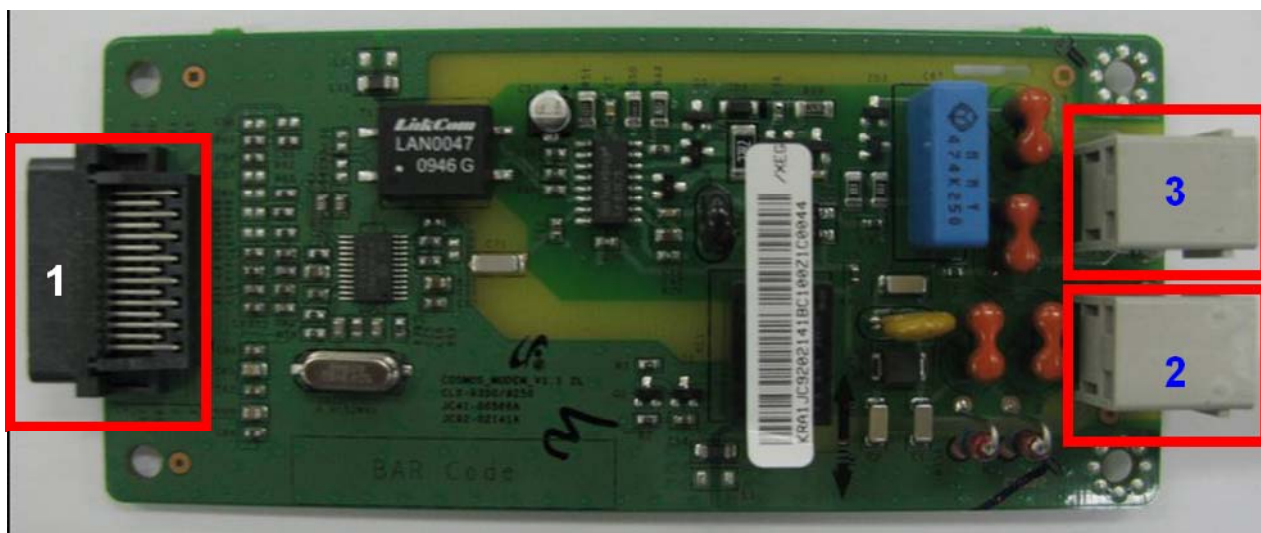
● **Information**

> **FAX-Kit model name : CLX-FAX150**
> **SEC-CODE : JC92-02141B**
> **PBA Name : PBA-FAX CARD**

● **Connection**

1	CON JOINT I/F CONNECTOR
2	TEL LINE I/F CONNECTOR
3	EXTERNAL PHONE I/F CONNECTOR

2.11.1.6 Secondary Modem Card - Optional

The Secondary Modem card is used for FAX processing with FCON as the second FAX number. When this card is installed, a customer can use another fax line. If the primary modem card is busy, then fax data is processed using this card. The secondary modem card has only a Tel line connector, no external phone connector.
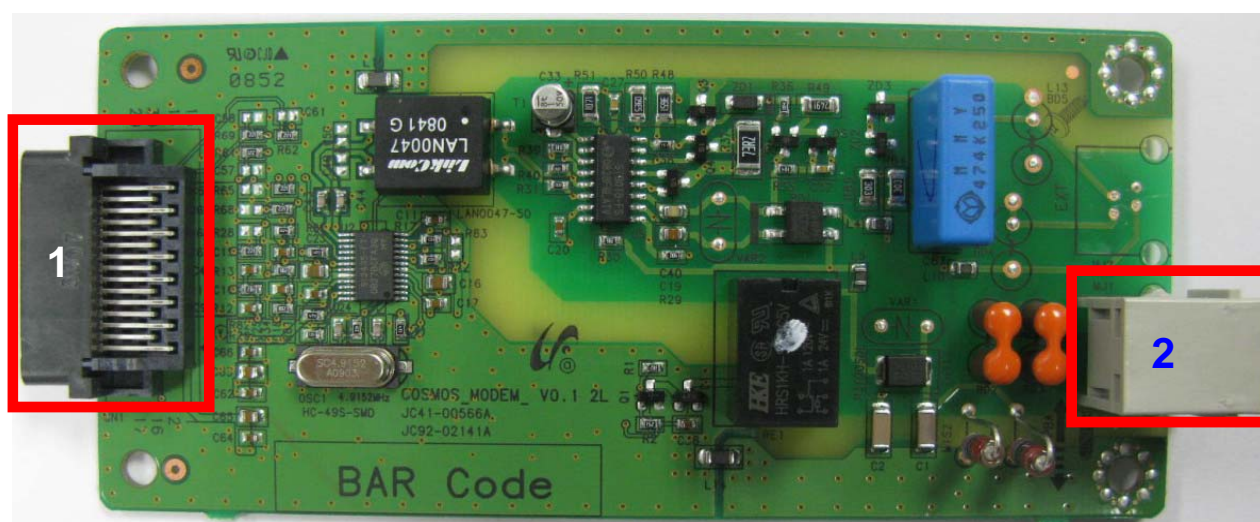
● **Information**

> FAX-Kit model name : CLX-FAX250
> SEC-CODE : JC92-02250A
> PBA Name : PBA-SECOND FAX CARD

● **Connection**

1	CON JOINT I/F CONNECTOR
2	TEL LINE I/F CONNECTOR

2.11.1.7 Foreign Device Interface(FDI) – Optional

The FDI Module as a Option is used to track machine usage such as the number of print or copy pages for some special users. The Module interfaces to the Video Controller.
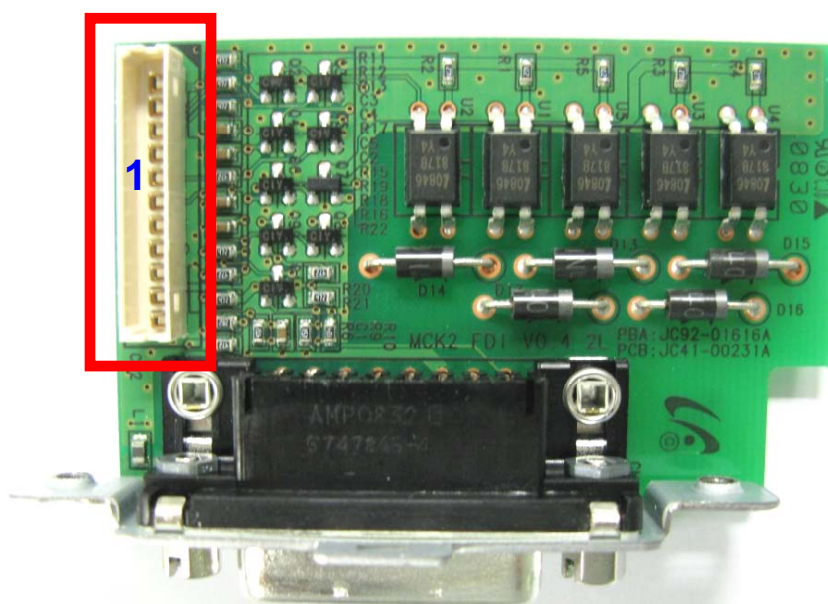
● **Information**

SEC-CODE : JC92-01616A
PBA Name : PBA SUB-FDI

● **Connection**

1	CONNECTOR TO VIDEO CONTROLLER

2.11.2 OPE Controller

The Main OPE Controller is composed of an SOC (RMI Alchemy Au1250-700MHz navigation processor), 128 MB DDR2 memory, 32 MB Flash Memory, and an 8.9 inch touchscreen LCD (1024 x 600). The Au1250 is used to interface with users through the LCD display, which can support the touch screen, some Keys, and some LEDs. A received command is delivered to the Video Main Controller through the USB interface of the HUB Controller PBA.

Diagram of OPE Controller
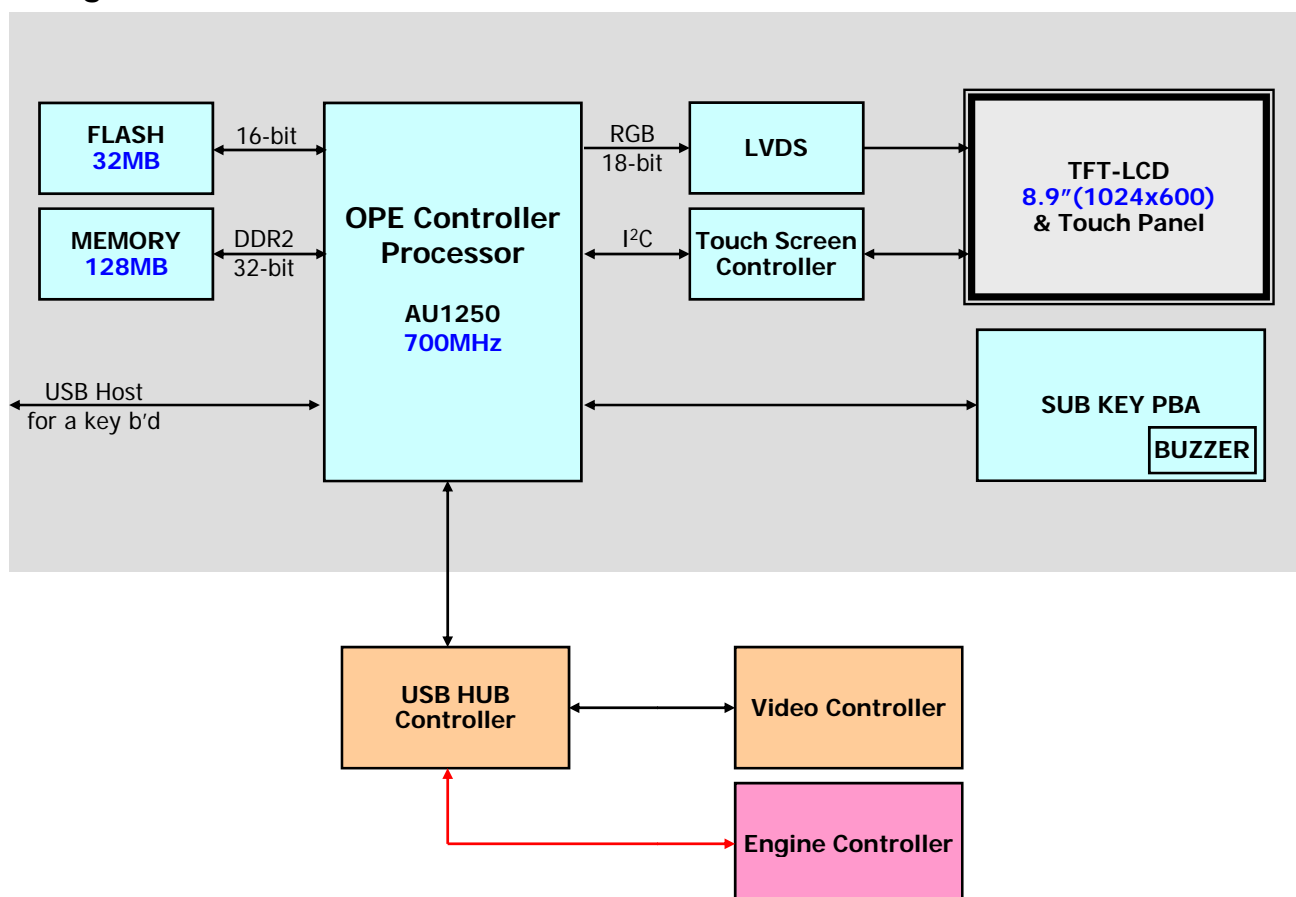
OPE Controller PBA

● **Information**

SEC-CODE : JC92-02140A
PBA Name : OPE MAIN

● **Connection**

1	KEY PBA I/F CONNECTOR
2	HUB PBA I/F CONNECTOR
3	LCD I/F CONNECTOR
4	USB HOST PORT FOR KEY BOARD

2.11.2.1 Sub Key PBA
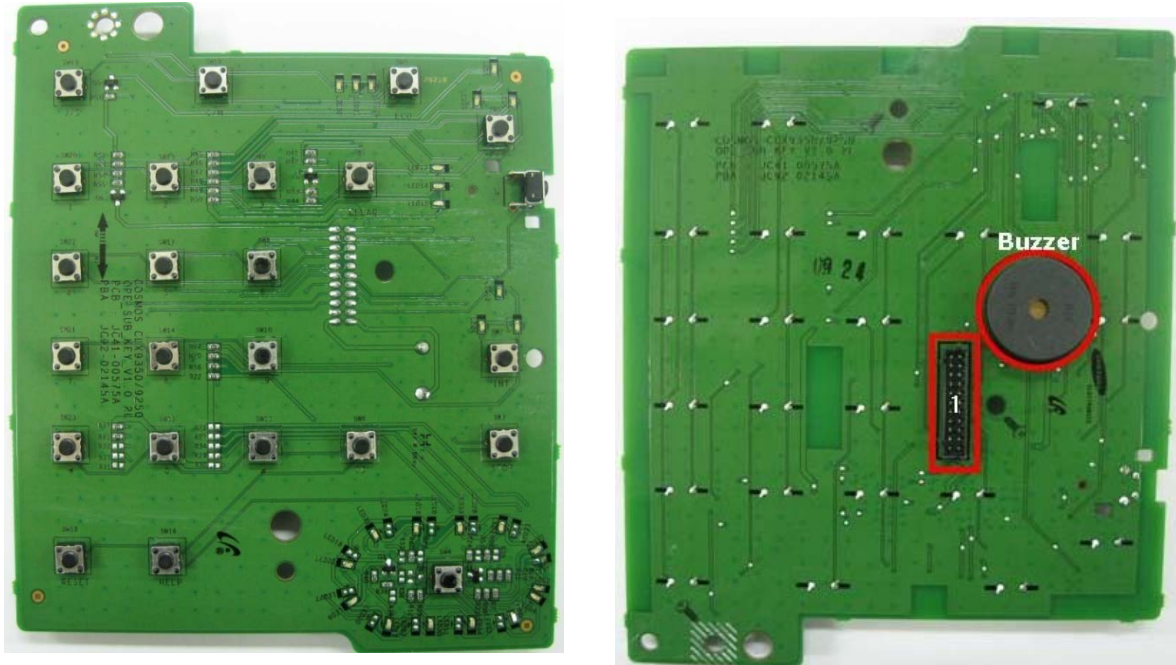
● **Information**

> SEC-CODE : JC92-02266A
> PBA Name : SUB KEY

● **Connection**

1	INTERFACE CONNECTOR TO OPE MAIN

2.11.2.2 USB HUB CONTROLLER PBA
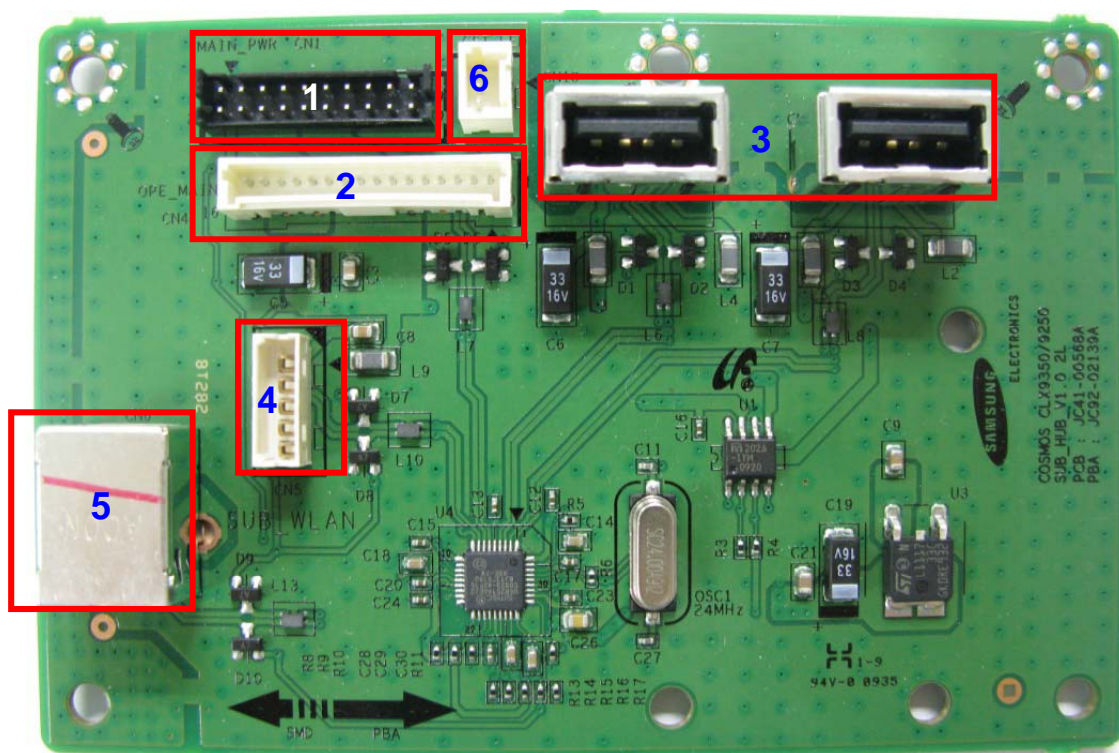
● **Information**

   SEC-CODE : JC92-02265A
   PBA Name : SUB_HUB

● **Connection**

1	MAIN PWR CONNECTOR FROM THE ENGINE CONTROLLER
2	OPE MAIN PWR CONNECTOR TO THE OPE MAIN PBA
3	USB HOST PORT FOR INTERFACE EXT.DEVICES
4	WLAN I/F CONNECTOR
5	USB UPSTREAM PORT TO THE VIDEO MAIN PBA
6	CASSETTE Indicating LED

2.11.3 Engine controller

The Engine Controller is composed of an ARM-based CPU (J5E), engine control SoCs (LPEC3) DDR2 SDRAM and Serial Flash memories, and other drivers for mechanical elements. The Engine Controller manages an Electro-photography system, controls the Video Data of printing images from Main Board to LSU, provides high-voltages and PWMs, adjusts temperature in the fusing system, and reads sensor signals. The Engine Controller also includes communication control units for optional DCF,HCF and Finisher.

[Engine controller diagram]

[Engine Controller Connection Diagram]

Engine Controller PBA

- **Information**

    - SEC-CODE : JC92-02221A (SCX-8040ND) , JC92-02302A (SCX-8030ND)
    - PBA Name : PBA-ENGINE

- **Connection**

1	PANEL	14	DUCT STEP
2	DEBUG	15	DEVE&MAIN BLDC
3	VIDEO I/F	16	EXIT2
4	LSU	17	PAPER REGI/OHP
5	FINISHER I/F	18	SIDE DRAWER
6	HCF_DCF I/F	19	FUSER DRAWER
7	POWER 5V	20	CRUM I/F
8	POWER 24V	21	BOTTLE POWER
9	SMPS I/F	22	BOTTLE JOINT FFC
10	HVPS	23	SCAN I/F
11	PICKUP/LSU FAN	24	OPE I/F
12	CASSETTE JOINT	25	NVRAM
13	WASTE STEP		

2.11.3.1 Engine MSOK

The Engine MSOK PBA is used to store CRUM information. It is comprised of one EEPROM. When an Engine Controller PBA is exchanged, the Engine MSOK PBA should be re-installed to the new PBA to retain the system information.
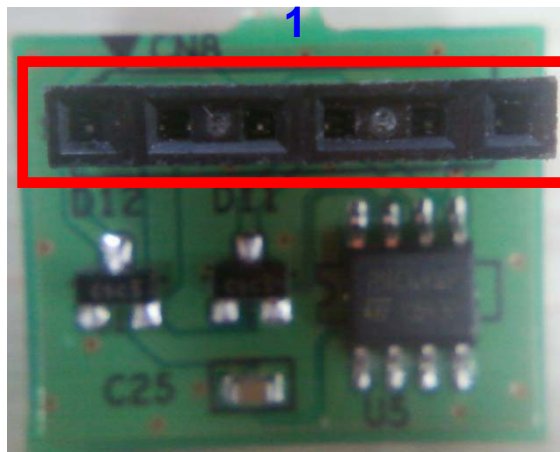
● **Information**

SEC-CODE : JC92-02263A
PBA Name : PBA-MSOK

● **Connection**

1	CONNECTOR TO ENGINE CONTROLLER

2.11.4 Scan Controller

The Scan PBA includes an ARM-based SOC (CIP6), DDR2 and Flash memories, and other drivers for electro-mechanical elements. The Scan PBA manages the Electro-photography system, controls the Image Data of scanned images between CCD PBA to Scan PBA, provides PWMs and control signals for motor CTL & FAN CTL, and reads sensor signals. The Scan PBA also includes control units for DADF with UART. It also includes a communication channel with the Main PBA, and PCI to PCIe bridge.
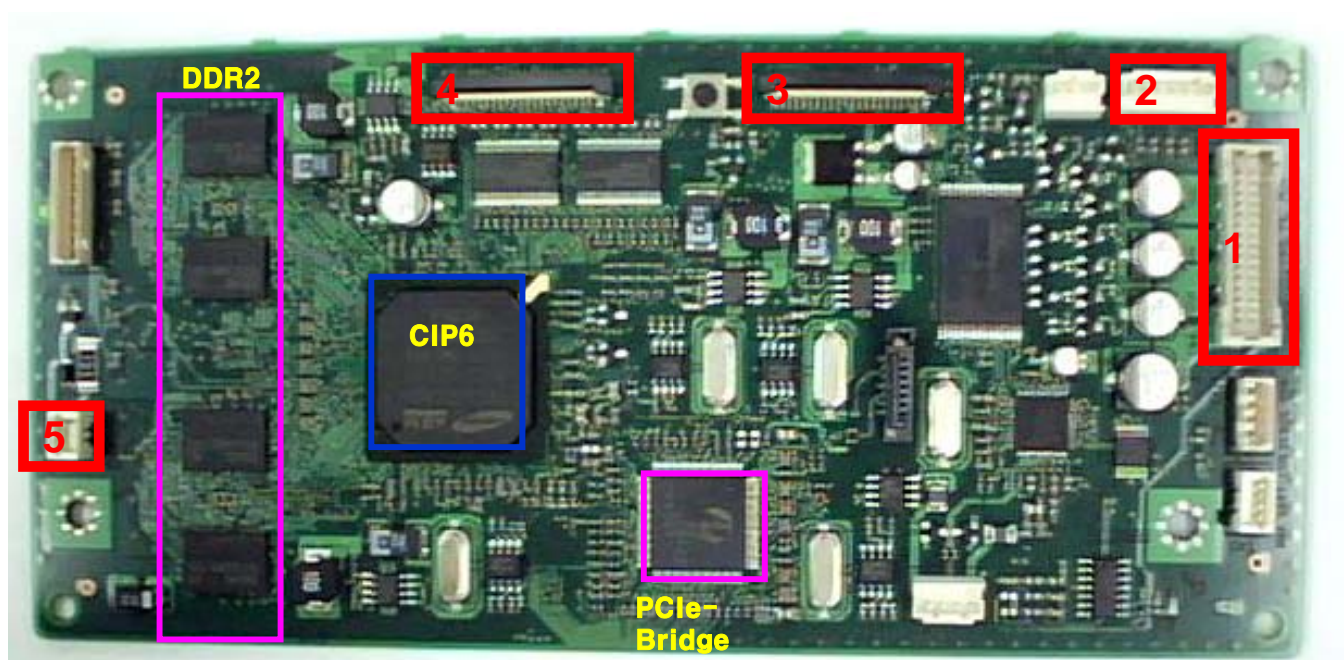
● **Information**

SEC-CODE : JC92-02170A
PBA Name : PBA-SCAN

● **Connection**

1	SCAN JOINT PBA
2	APS SENSOR
3	CCDM PBA
4	CCDM PBA
5	LED PANEL PBA

2.11.5 DADF Controller

The DADF PBA controls the 4 stepping motors, 2 solenoids, and 19 sensors, by using an ARM926 32-bit RISC (360MHz core frequency). The DADF PBA supports a maximum of 100 sheets of documents automatically. SCX-80x0 has a DADF module as a option, and also, the DADF supports up to 60% Duplex speed.
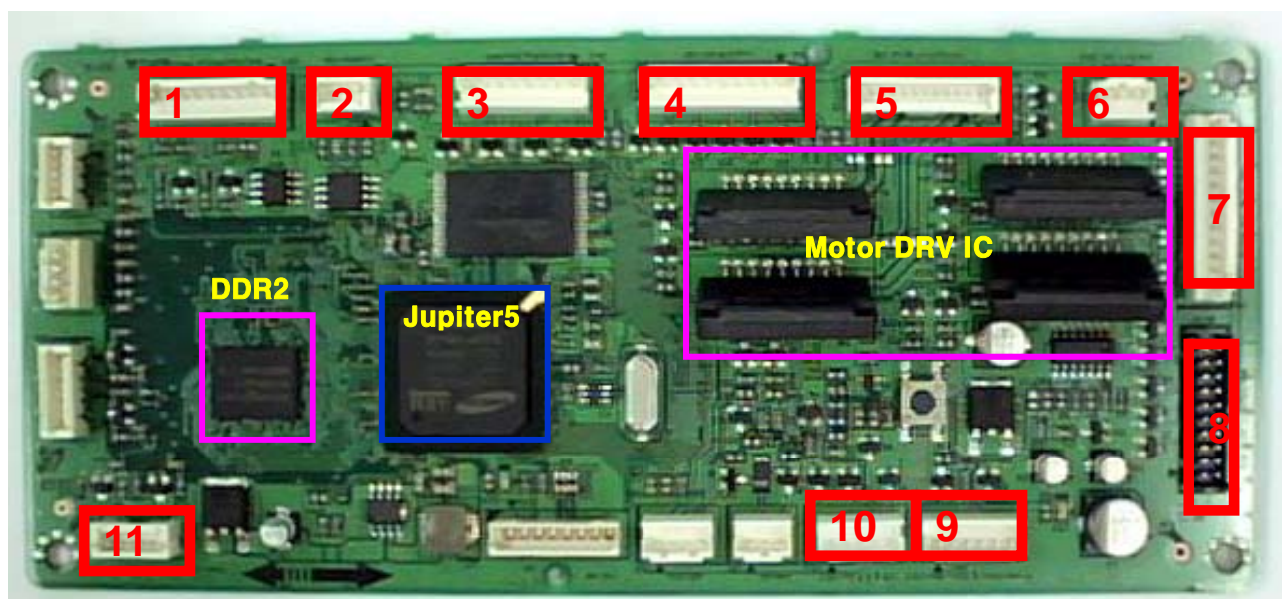
● **Information**

   SEC-CODE : JC92-02165A
   PBA Name : PBA-ADF

● **Connection**

1	REGI/FEED/DETECT SENSOR
2	SCAN READ SENSOR
3	MIXED SENSOR PBA
4	LENGTH SENSOR PBA
5	PLATEN/EXIT MOTOR
6	REAR SOLENOID
7	PICKUP/REGI MOTOR
8	SCAN JOINT PBA
9	PICKUP CHECK/ COVER OPEN SENSOR
10	LED PANEL PBA/ FRONT SOLENOID
11	EXIT/ EXIT TURN SENSOR

2.11.6 Interface Part

The CLX-80x0 series provides clear interface specifications of all components and modules in the system, due to the design strategy for common-use and standardization. The main interface between the Main Controller and the Engine Controller uses two pairs of drawer type board-to-board connectors, which makes it possible to have a sliding connection to the Main Controller. The Main Controller and the IP Controller use a PCIe interface to achieve high performance. In the connection of mechanical parts, standard harnesses are used to reduce manufacturing costs and to allow convenient maintenance.

2.11.7 Connection Part

Controllers require connections to all of the system units such as the BLDC motor, Stepping Motor, Clutch, Solenoid, Sensor, and other PBAs. The Engine Controller contains various types of connectors, to deliver electronic signals through signal wires. The signal wires provide electronic control signals that are used for starting and stopping the motors, operating clutches, activating solenoids, sensing the unit state, etc.

2.11.8 SMPS Board

The SMPS (Switching Mode Power Supply) Board supplies electric power to the Main Board and other boards through a Main Controller. The voltage provided includes +5V, and +24V from a 110V/220V power input. It has safety protection modes for over current and overload.
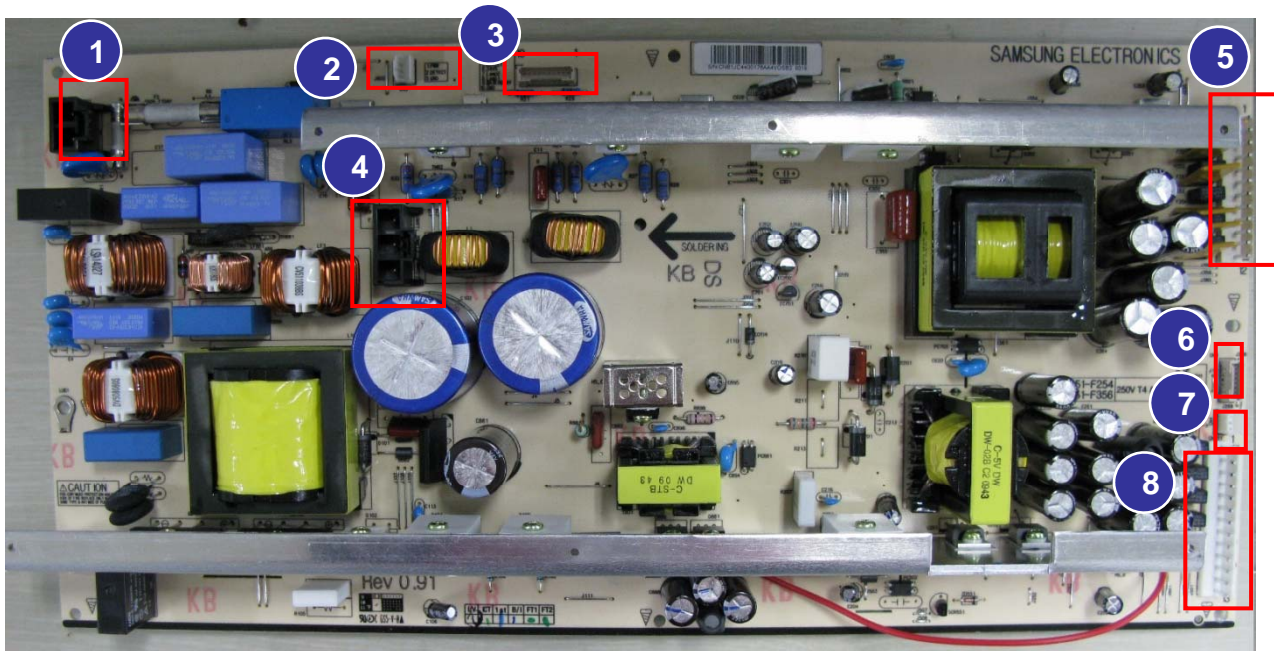
● **Specification**

General Input/Output Voltage
1) AC 110V (90V ~ 135V)
2) AC 220V (180V ~ 270V)
3) Input Current: 13.7A (110V)
                  6.8A (220V)
4) Output Power: 1500W
DC 5V   : 55W
DC 5VS : 30W
DC 24V : 432W

● **Information**

	110V	220V
SEC CODE	JC44-00175A	JC44-00176A
PBA NAME	SMPS V1	SMPS V2

● **Connection**

1	INPUT_AC
2	SMPS FAN OUT
3	SMPS Control Signal1 (from Engine PBA)
4	Fuser_AC Output
5	OUTPUT_24V1/2/3/4/5/6 (to DC POWER PBA)
6	SMPS Control Signal2 (from Engine PBA)
7	SMPS FAN IN
8	OUTPUT_5V1/2/3/4/S1/S2 (to DC POWER PBA)

◆ **Input / Output connector**

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

DC Output Connector(CN351)		
Description	PIN NAME	PIN ASSIGN
Power	+24V1	1
24V Ground	GND	2
Power	+24V2	3
24V Ground	+GND	4
Power	+24V3	5
24V Ground	GND	6
Power	+24V4	7
24V Ground	GND	8
Power	+24V5	9
24V Ground	GND	10
Power	+24V6	11
24V Ground	GND	12

DC Output Connector(CN251)		
Description	PIN NAME	PIN ASSIGN
Power	+5V2	1
5V Ground	GND	2
Power	+5V3	3
5V Ground	GND	4
Power	+5V4	5
5V Ground	GND	6
Power	+5V5	7
5V Ground	GND	8
Power	+5VS	9
5V Ground	GND	10
Power	+5VS	11
5VS Ground	GND	12
-	-	13

AC Input Connector(CN2)		
PIN ASSIGN	PIN NO	Description
1	Lamp1	Heat Lamp Center
2	Lamp2	Heat Lamp Side
3	Common	Common

SMPS FAN 2(CN3)		
Description	PIN NAME	PIN ASSIGN
FAN Control	pwm_fan2	1
FAN Control	nDetect_fan2	2
FAN Control	GND	3

SMPS FAN 1(CN4)		
Description	PIN NAME	PIN ASSIGN
FAN Control	pwm_fan1	1
FAN Control	nDetect_fan1	2
FAN Control	GND	3

Signal Connector2(CN5)		
Description	PIN NAME	PIN ASSIGN
Fuser Control	zero_cross	1
Ground	gnd	2
Fuser Control	on_fuser_relay	3
FAN Control	pwm_fan2	4
FAN Control	nDetect_fan2	5
Fuser Control	fuser_24v	6
Fuser Control	lamp2	7
Fuser Control	lamp1	8
Temperature	smps_temp	9
Ground	gnd	10

Signal Connector1(CN6)		
Description	PIN NAME	PIN ASSIGN
FAN Control	pwm_fan1	1
FAN Control	nDetect_fan1	2
Power Control	24v_on/off	3
Power Control	5vr	4
Power Control	5v_on/off	5
Power Control	24/5v off Relay	6
Ground	gnd	7

2.11.9 HVPS Board

The CLX-80x0 series contains a High Voltage Power Supply(HVPS) board.
This board generates high-voltage channels which includes Transfer, CORONA, GRID, DEVE AC, DEVE DC, Fuser-bias and SAW.
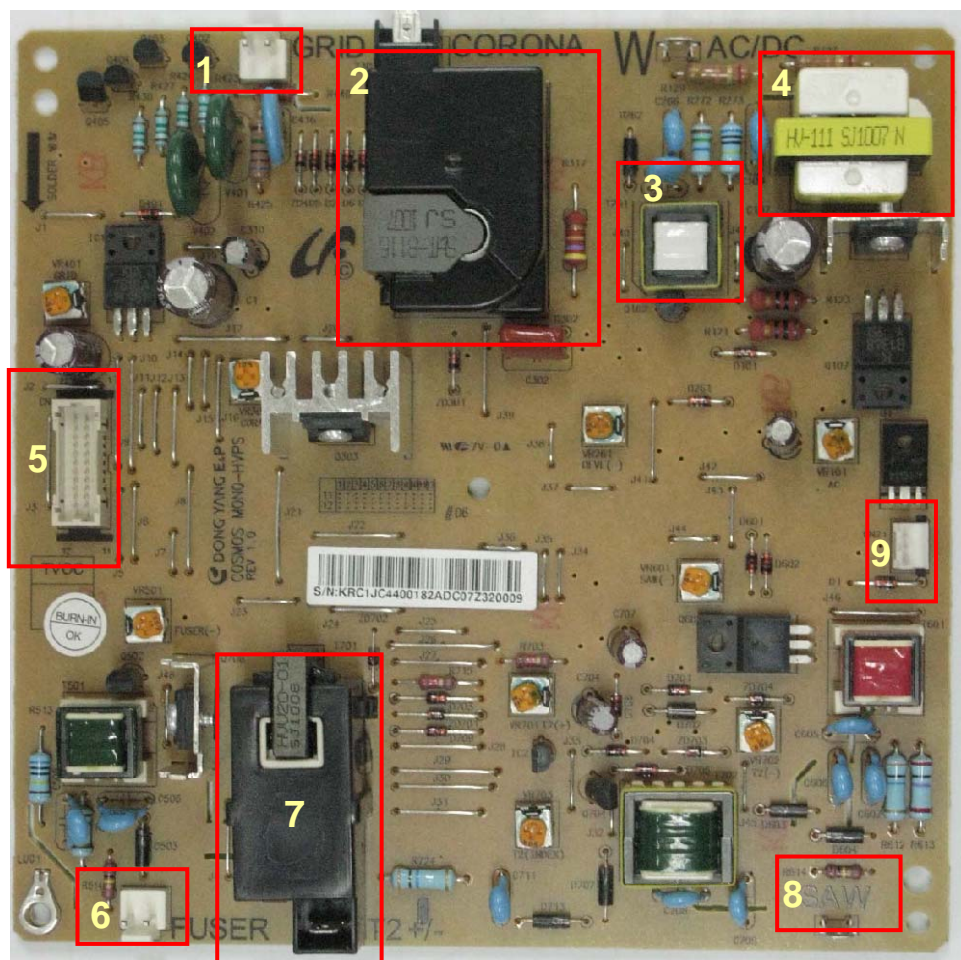
● **Connection**

1	GRID
2	CORONA
3	Deve AC
4	Deve DC
5	HVPS I/F
6	Fuser Bias
7	T2 (Transfer)
8	SAW Plate
9	OZONE FAN

● **Information**

SEC-CODE : JC44-00182A
PBA Name : HVPS MONO

Output Channel	Measuring Point	Output Voltage
GRID K	1	-700V(@ADC 230 & 7.4Mohm load)
CORONA K	2	-700uA(@ADC 166 & 7.4Mohm load) *static current
FUSER BIAS	6	-460V(@ADC 128 & 50Mohm load)
SAW	8	-1000V(@ADC 118 & 25Mohm load)
T2+	7	40uA(@ADC 95 & 70Mohm load) *static current
T2-		-1300V(@80Mohm load) *Enable
DEVE DC	10	-450V(@ADC 141 & no load)
DEVE AC		209V(@ADC 128 & 100pF)

2.11.10 Eraser PBA

Eraser PBA is comprised of 18 LED components. Each LED is used for erasing negative charges on the surface of the drum after printing.

1- BLACK : GND
2- GRAY   : 24V
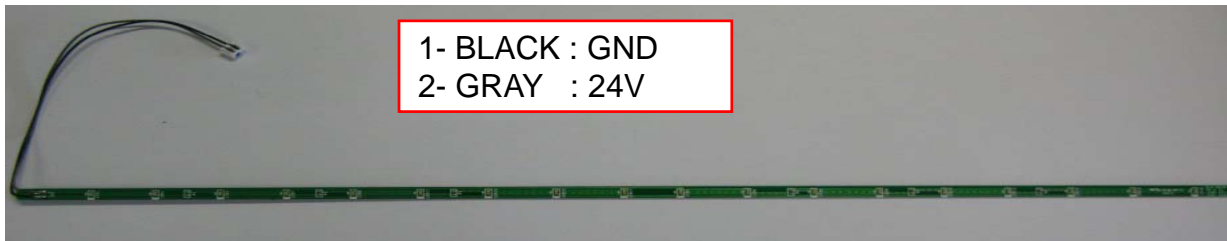
● **Information**

SEC-CODE : JC92-02244A
PBA Name : Eraser

2.11.11 DC Power PBA

The DC Power PBA distributes DC power to the Engine Controller and Video Controller. It also provides 24V of power interlock function for safety (cuts off the unit power when the driving unit is exposed) when using the power control relay.
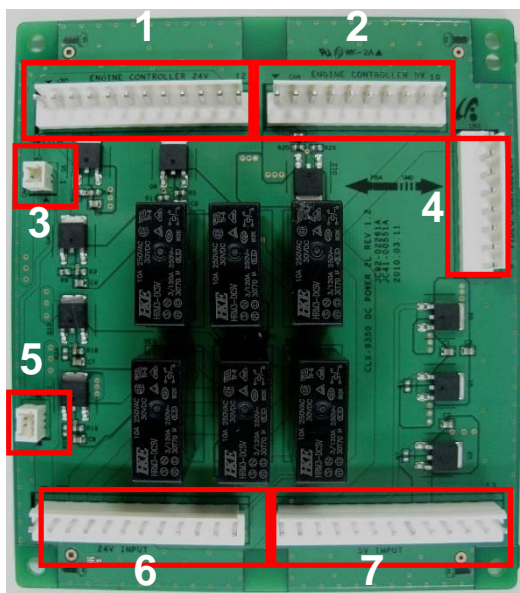
● **Information**

SEC-CODE : JC92-02261A
PBA Name : DC POWER

● **Connection**

1	24V to Engine	5	Relay Control
2	5V to Engine	6	24V INPUT
3	Micro Switch	7	5V INPUT
4	5V/24V to Video	-	-

2.11.12 Cassette Joint PBA

This is the interface PBA between the Paper tray unit and the Engine Controller. The Paper tray Joint PBA provides a connection interface for the clutches, sensors, and Paper tray lift DC motors.
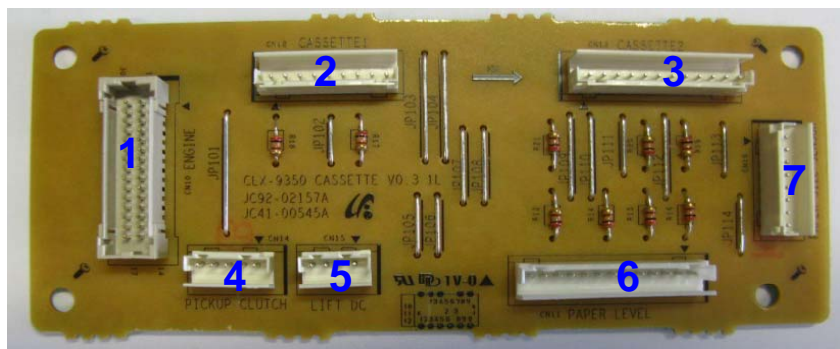
● **Connection**

1	CASSETTE JOINT I/F	5	Lift DC Motor
2	CASSETTE1	6	Paper label sensor
3	CASSETTE2 and TAKE AWAY SEN	7	Paper Size Sensor
4	Pickup Clutch	-	-

● **Information**

SEC-CODE : JC92-02157B
PBA Name : CASSETTE JOINT

2.11.13 Side Joint PBA

This is the interface PBA between the side unit and the Engine Controller. The Side Joint PBA provides a connection interface for clutches, sensors, and solenoid
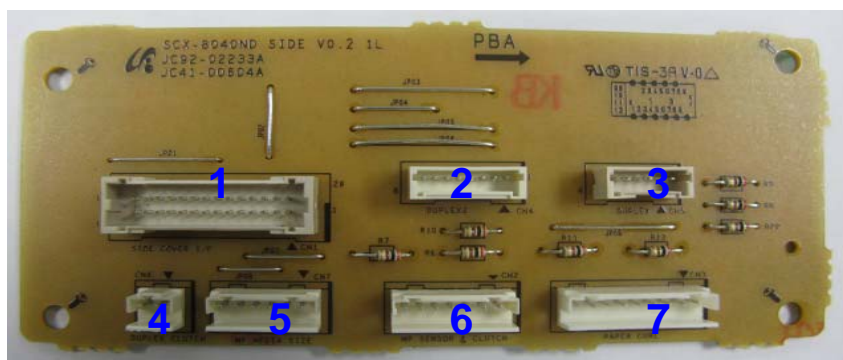
● **Connection**

1	SIDE JOINT I/F	5	MP MEDIA SIZE
2	DUPLEX 2, ID SENSOR	6	MP SENSOR, CLUTCH
3	DUPLEX, FUSER OUT SENSOR	7	PAPER CURL SENSOR
4	DUPLX CLUTCH	-	-

● **Information**

SEC-CODE : JC92-02233A
PBA Name : SIDE JOINT

2.11.14 Toner Connector PBA

The Toner Connector PBA includes Step Motor Drive ICs for the Exit Step motor and is an interface connector for the bottle CRUM, clutch, sensor, BLDC motor, FET for control toner supply DC motor and fan control TR for Duplex / Fuser Out Fan.
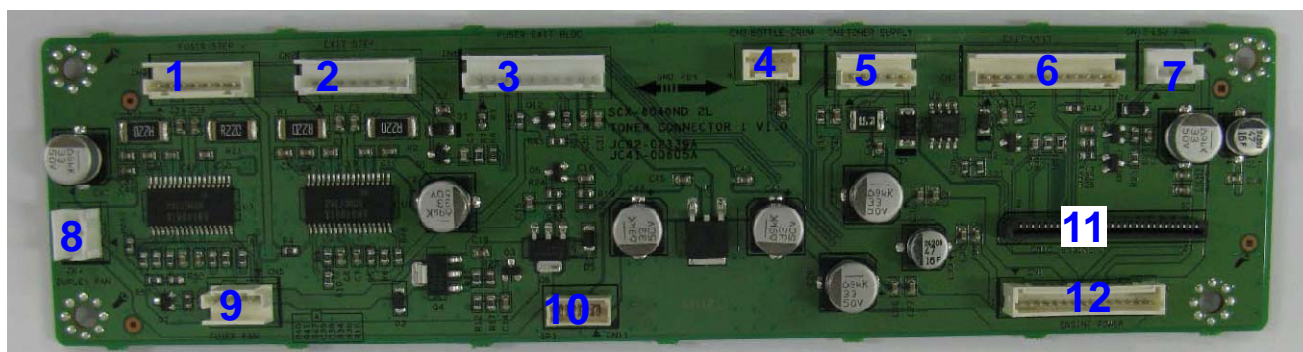
● **Connection**

1	FUSER STEP
2	EXIT STEP
3	FUSER EXIT BLDC
4	BOTTLE CRUM
5	TONER SUPPLY
6	EXIT UNIT
7	LSU FAN(NC)
8	DUPLEX FAN
9	FUSER FAN
10	SPI I/F
11	TONER CONNECTOR I/F
12	TONER CONNECTOR POWER

● **Information**

SEC-CODE : JC92-02339A
PBA Name : TONER CONNECTOR

2.11.15 Crum PBA
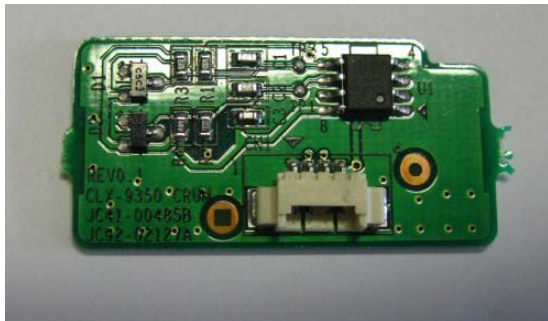
The Crum PBA includes CRU memory for Deve and Bottle Unit Life Cycle counting.

● **Information**

   SEC-CODE : JC92-02127A
   PBA Name : TONER CRUM

2.11.16 Development Crum Interface PBA
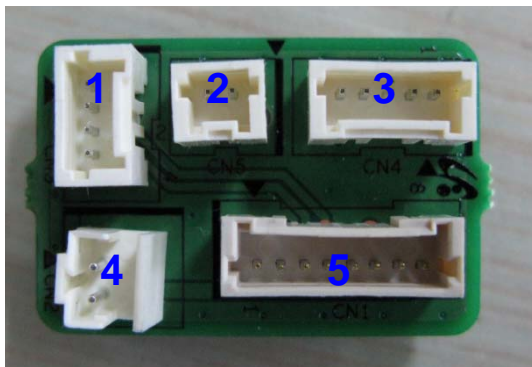
This is the interface PBA between the deve unit and the Engine Controller (located inside deve). The Deve Crum IF PBA provides the connection interface for the eraser, crum, and tc sensors.

● **Information**

   SEC-CODE : JC92-02172A
   PBA Name : DEVE CRUM I/F

● **Connection**

1	TC SENSOR	4	ERASER
2	OPC CLEAN SENSOR	5	DEVE CRUM I/F
3	DEVE CRUM I/F	-	-

2.11.17 Deve Crum Joint PBA

The Deve Crum Joint PBA is the interface PBA between the Developer Unit and the system.

● **Information**
   SEC-CODE : JC92-02163A
   PBA Name : DEVE CRUM JOINT

2.11.18 Toner Crum Joint PBA

The Deve Crum Joint PBA is the interface PBA between the Developer Unit and the system.

● **Information**
   SEC-CODE : JC92-02164A
   PBA Name : TONER CRUM I/F

2.11.19 Fuser PBA
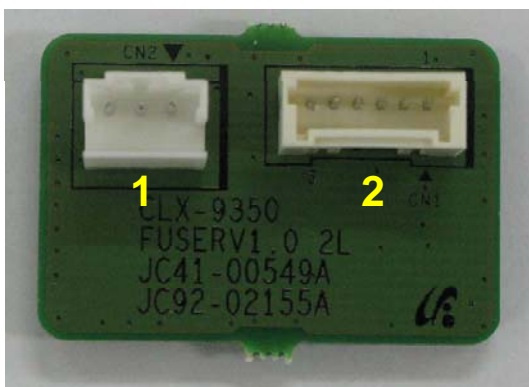
The Fuser PBA includes CRU memory (Using 34c02) for Fuser Unit Life Cycle counting. It also provides a connection interface for the Fuser Step Motor position detecting sensor.

● **Connection**

1	Fuser EEPROM, Pressure Sensor I/F
2	Pressure Sensor

● **Information**

   SEC-CODE : JC92-02155A
   PBA Name : FUSER

2.11.20 Waste Sensor PBA
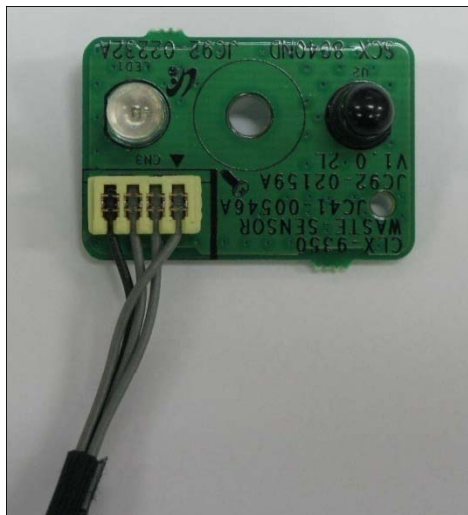
The Waste Sensor PBA detects the waste toner level inside the waste toner bottle.

● **Information**

SEC-CODE : JC92-02232A
PBA Name : WASTE SENSOR RX

2.11.21 LED Panel PBA

The LED Panel PBA includes 2 Yellow Color LED components for indicating the Paper tray unit status (paper empty, paper low, and paper lifting).

● **Information**

SEC-CODE : JC92-02158A
PBA Name : LED PANEL

2.11.22 Scan Joint PBA

The Scan Joint PBA includes 1 Step Motor Drive IC (for the scan motor) and is an interface connector for the Scan PBA and the fan control TR for the CCD fan, DADF I/F Port , Xe-Lamp Power, and CTL connector. It also provides a connector connecting the HP/Cover open1,2 sensor and the 24V, 5V power connectors from the Engine Control board.
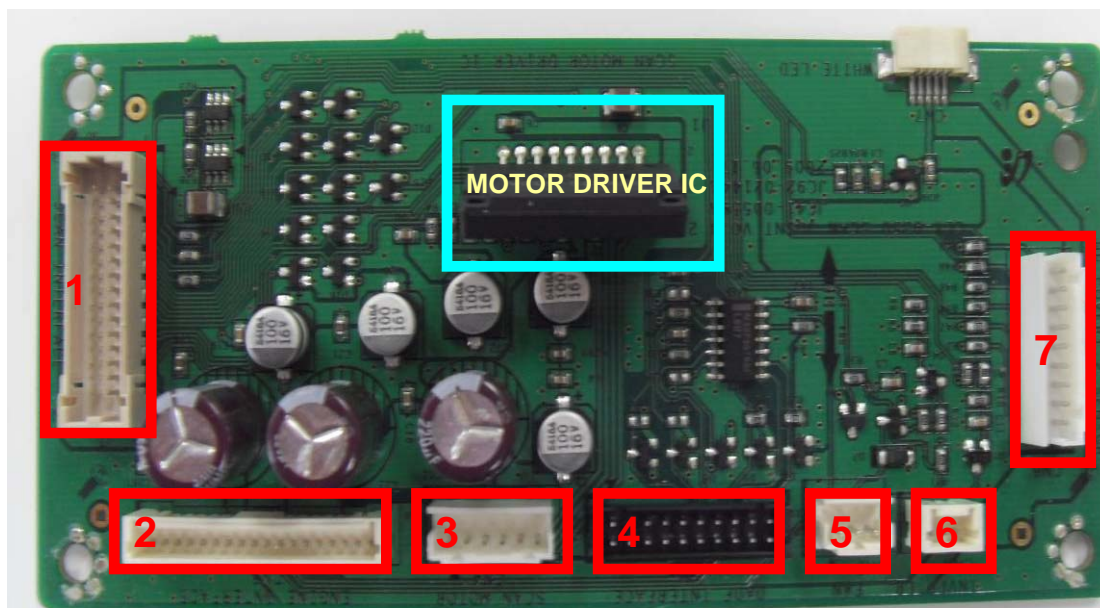
● **Information**

SEC-CODE : JC92-02144A
PBA Name : PBA-SCAN JOINT

● **Connection**

1	SCAN PBA
2	ENGINE PBA
3	SCAN MOTOR
4	ADF PBA
5	FAN
6	INVERTER
7	COVER OPEN SENSOR PBA, HOME POSITION SENSOR

2.11.23 CCDM PBA

This is the CCD board used in the Scanner unit. The function of this board is to convert the reflected light from an original document to electrical signals. It includes the CCD, ADC, Logic IC, etc. The CCD converts the reflected light from an original document to three-color analog signals; red, green, blue. ADC converts each analog signal to digital. And for high speed data transmission, the digital data signal is converted to LVDS format with serialization.
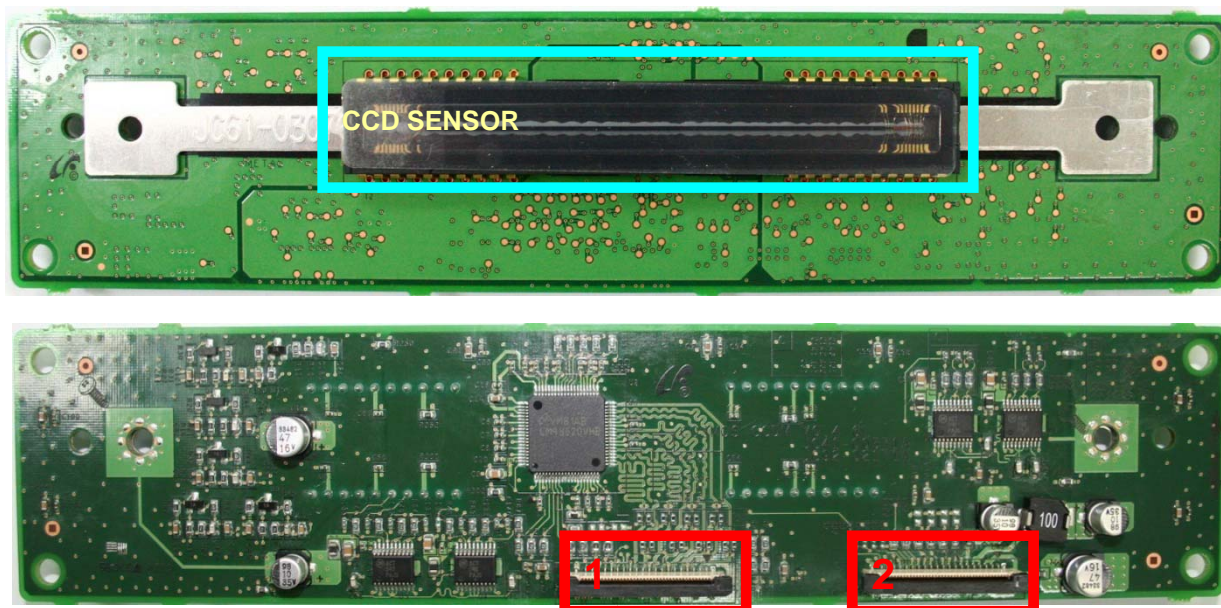
● **Information**

SEC-CODE : JC92-02271A
PBA Name : PBA-CCDM

● **Connection**

1	SCAN PBA
2	SCAN PBA

2.11.24 Scan Cover Open Sensor PBA
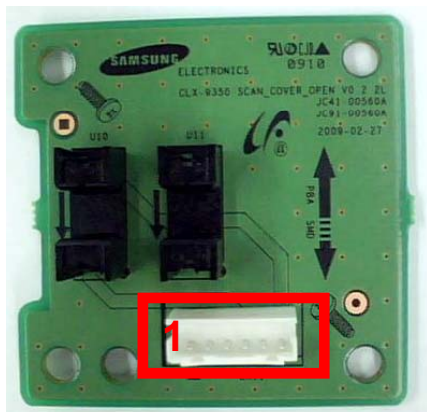
The Scan cover open 1,2 PBA includes 2 photo interrupt sensors. The connector between the two sensors is connected to the scan joint.

Cover open1 detects "cover open."
Cover open2 detects "cover closed."

● **Information**

SEC-CODE : JC92-02143A
PBA Name : PBA-COVER OPEN SENSOR

● **Connection**

1	SCAN JOINT PBA

2.11.25 DADF Length Sensor PBA

The DADF Length Sensor PBA includes 3 connectors. These connectors are for the DADF page length sensor, DADF page width sensor, and the interface with the DADF.
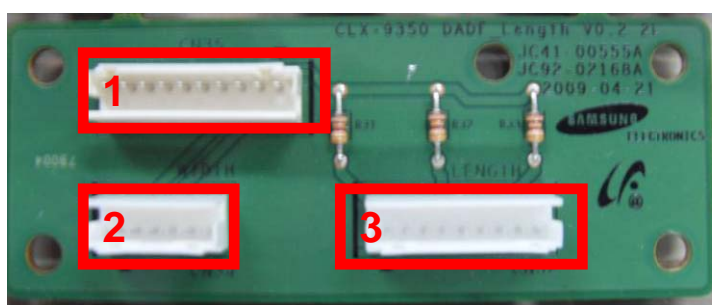
● **Information**

SEC-CODE : JC92-02168A
PBA Name : PBA-LENGTH SENSOR

● **Connection**

1	ADF PBA
2	WIDTH SENSOR PBA
3	LENGTH SENSOR 1,2,3

2.11.26 DADF Width Sensor PBA

The DADF Width PBA includes 3 Photo sensors. The document width in the DADF is detected by the combination of these 3 sensors.

● **Information**

SEC-CODE : JC92-02167A
PBA Name : PBA-WIDTH SENSOR

● **Connection**

1	LENGTH SENSOR PBA

2.11.27 DADF Mixed Sensor PBA

The DADF Mixed PBA includes 3 photo interrupt sensors. It uses these sensors to detect the document width

● **Information**

SEC-CODE : JC92-02166A
PBA Name : PBA-MIXED SENSOR

● **Connection**

1	DUPLEX REGI SENSOR
2	ADF PBA

2.11.28 DADF LED Panel PBA

The DADF LED PBA includes 10 Green/Red LEDs. When it detects a document, the Green LED is on. When a document input problem occurs, the Red LED is on.

● **Information**

SEC-CODE : JC92-02169A
PBA Name : PBA-LED PANEL

● **Connection**

1	ADF PBA

2.11.29 Exit LED Panel PBA

The Exit LED Panel PBA includes 3 White LEDs. When a page is printed out during a copying job, the LEDs turn on for a moment.
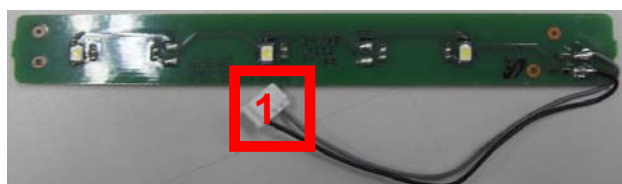
● **Information**

SEC-CODE : JC92-02185A
PBA Name : PBA-LED PANEL

● **Connection**

1	SCAN PBA

2.12 Heating Cables

This section contains information about the printer's heating cable assemblies.

2.12.1 Cassette Heating Cable

The Cassette Heating cable is located at the bottom of the cassette where it improves paper handling quality and print quality by heightening internal cassette temperature in very humid environments.

2.12.2 Scan Heating Cable

Scanner Heating cables are placed under the scanner and align cover, and are used to prevent dew from forming on the glass and the mirrors by heightening internal scanner temperature in very cold environments.

3. Replacement procedure

3.1 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 the following:

1. Check to verify that documents are not stored in memory.
2. Be sure to remove the toner cartridge before you disassemble parts.
3. Unplug the power cord.
4. Use a flat and clean surface.
5. Replace only with authorized components.
6. Do not force plastic-material components.
7. Make sure all components are in their proper position.

3.2 Cover

This section describes the procedures for removing and replacing the printer covers.

3.2.1 Front cover

Perform the following procedure to remove the front cover:

1. Open the front cover [A].

2. Remove 2 screws [B] and 2 pins [C].
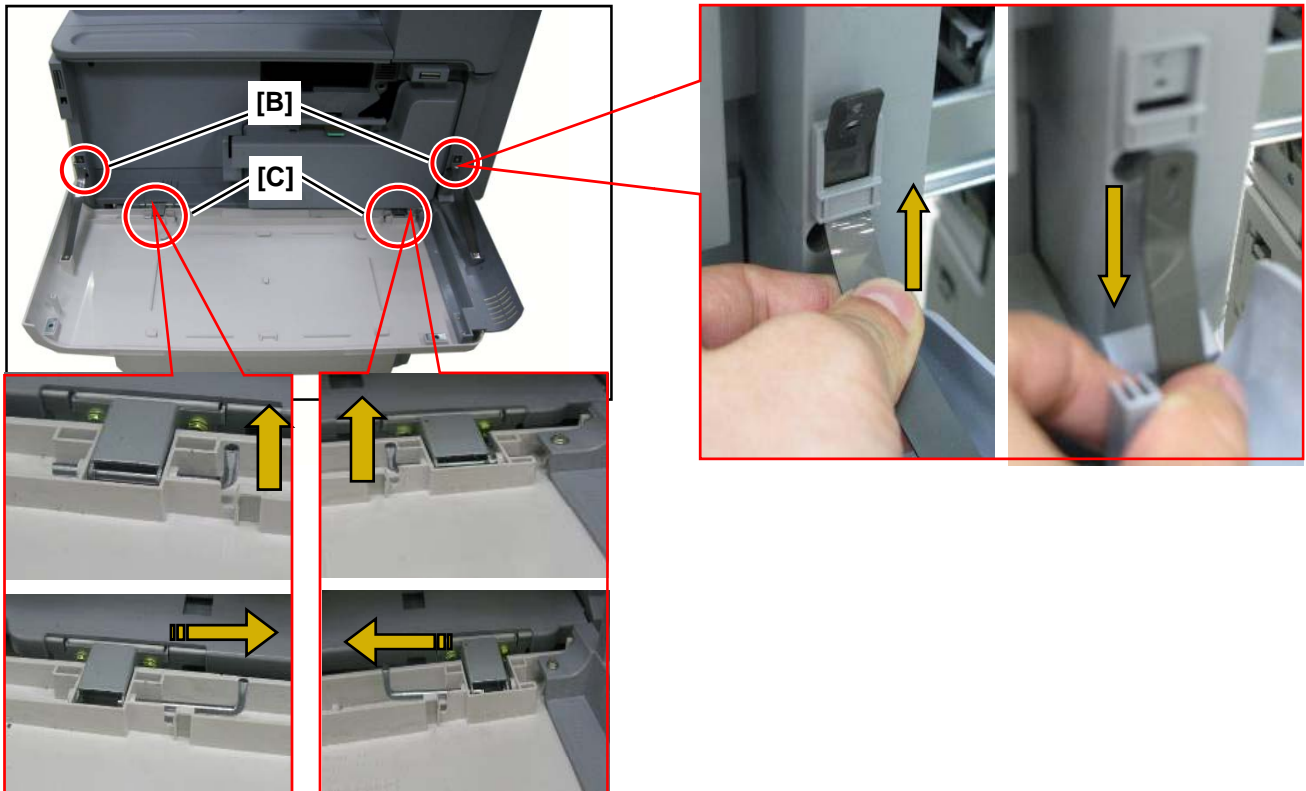
3.2.2 Left cover

Perform the following procedure to remove the Left Cover.

1. Remove Plate-Shield [A] after removing 1 screw.
2. Remove the ozone filter [B].
3. Remove the left upper cover [C] after removing 4 screws.

4. Remove the left lower cover [D] after removing 4 screws.
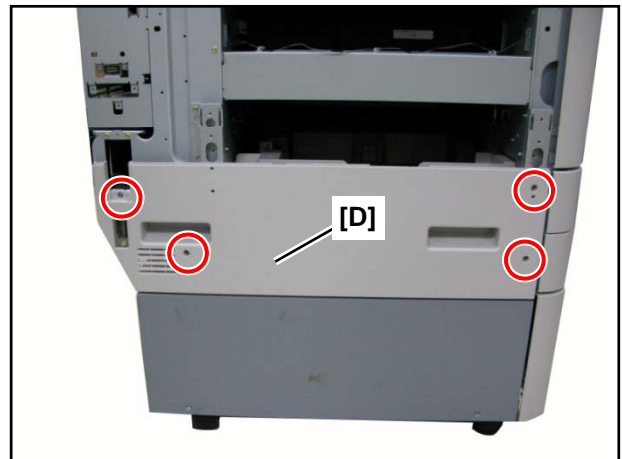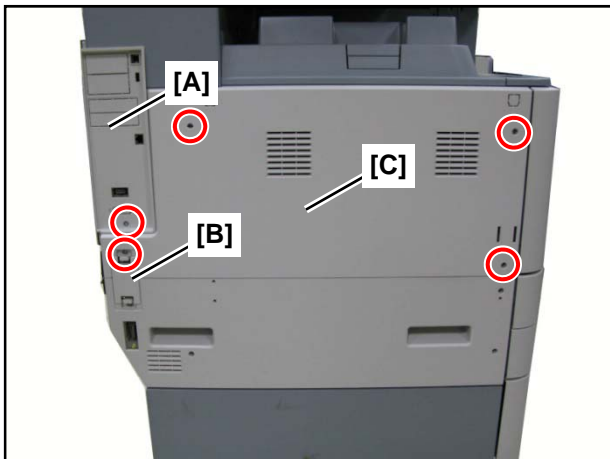
3.2.3 Rear cover

1. Remove the rear upper cover [A] after removing 7 screws.

2. Remove the rear lower cover [B] after removing 5 screws
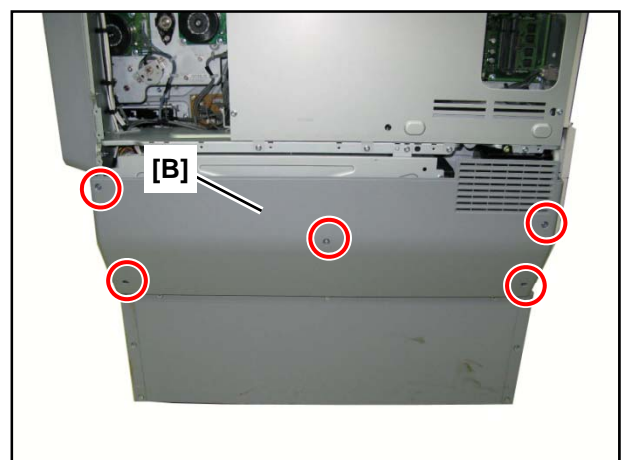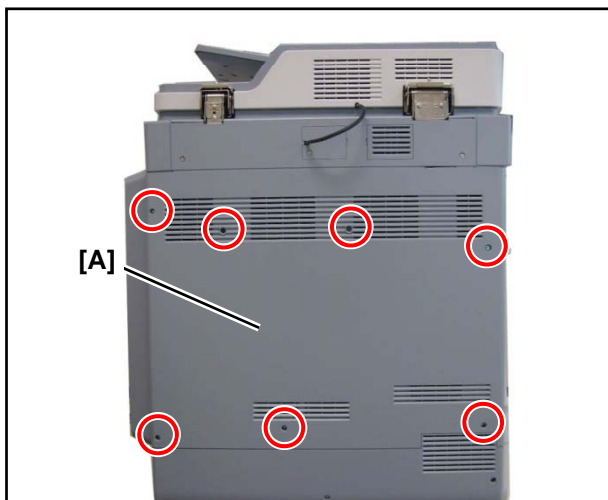
3.2.4 Right cover

1. Remove the right lower cover [A] after removing 2 screws.
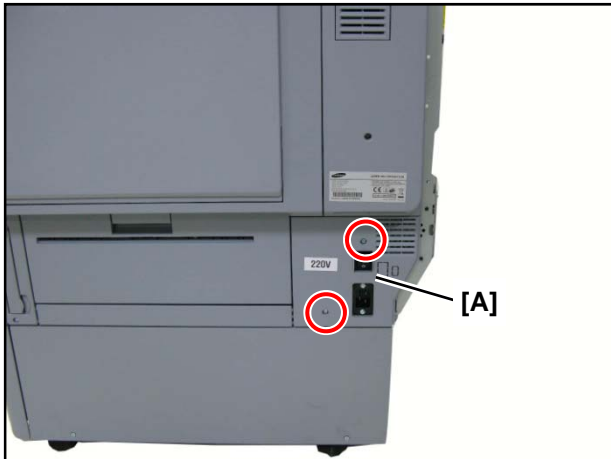
2. Remove 2 screws.
3. Remove the right cover [B] after opening the side door.
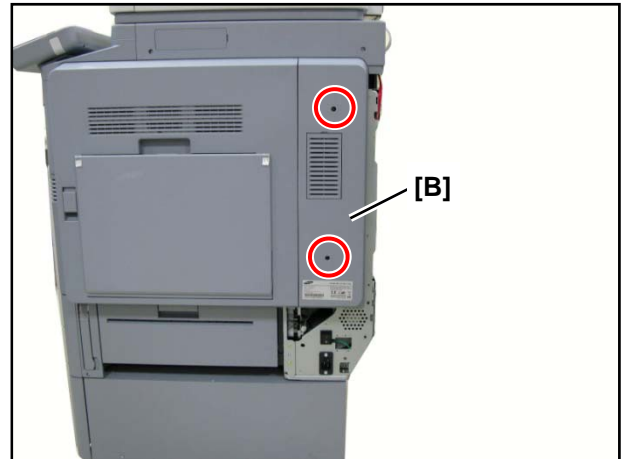
3.3 OPE unit

This section contains the procedures for disassembling the components of the printer OPE Unit.

3.3.1 OPE assembly

1. Open the side unit.

3. Remove the USB cover.
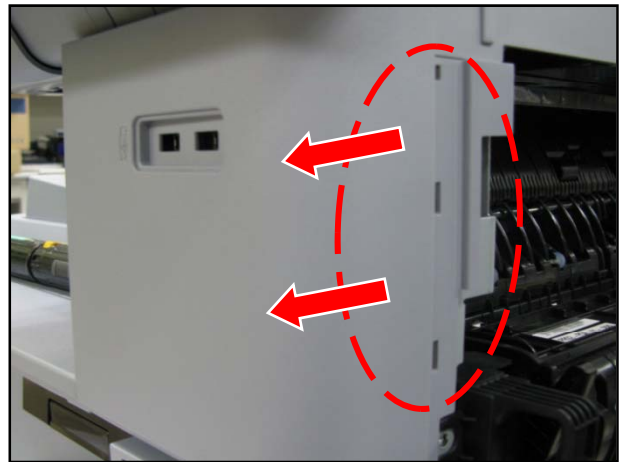
2. To remove the USB cover, remove 1 screw.

[A]
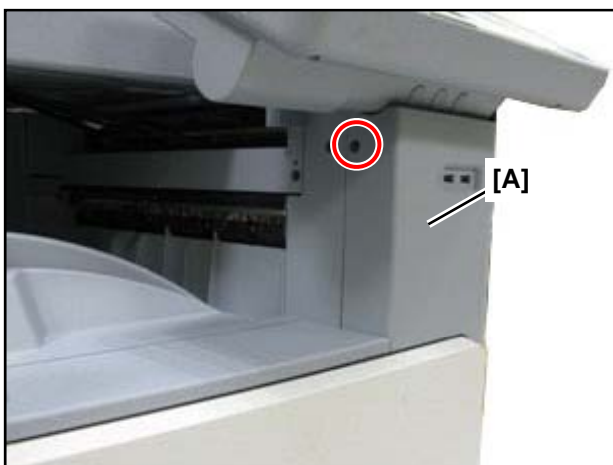
4. Remove 3 rubbers screw covers.
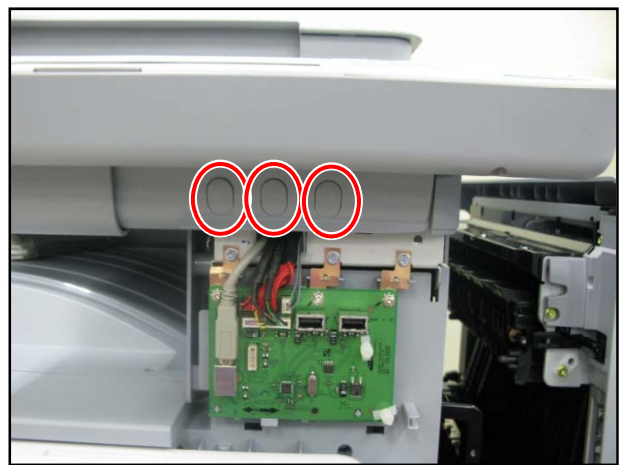
5. Remove 3 screws.
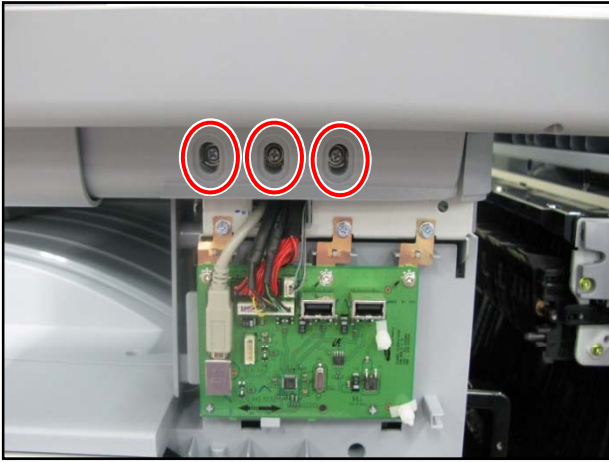
7. Pull out the connector from the holder hole.
8. Take off the OPE assembly.

6. Unplug the connector.

3.3.2 OPE PBA and LCD panel

Perform the following procedure to remove the OPE PBA and LCD panel from the OPE assembly.

1. Remove the Rail cover after removing 1 screw.
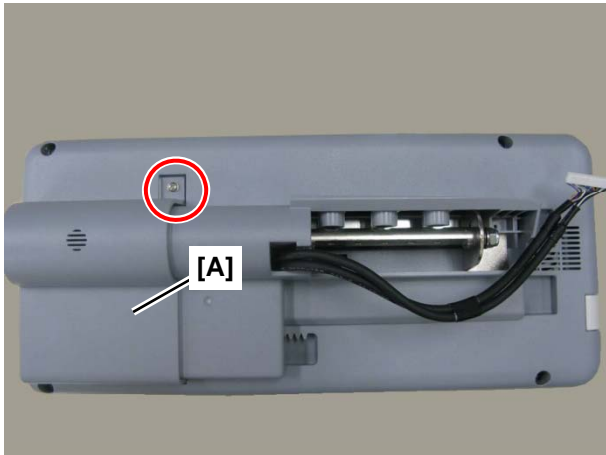
3. Remove 2 screws, and shift the cover-rail [B] in the direction of the arrow.
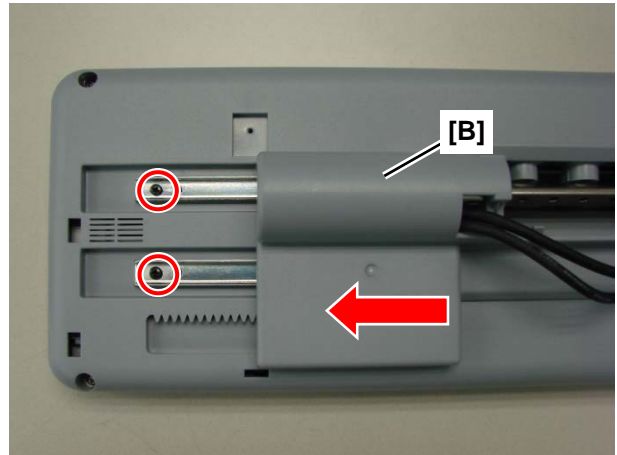
2. Remove 4 screws, and then shift the cover-rail [B] in the direction of the arrow.
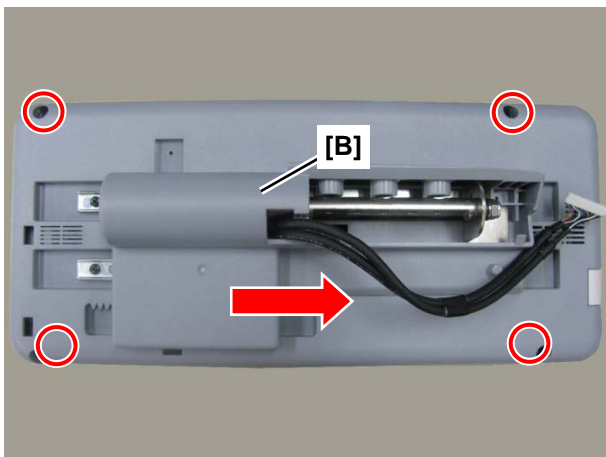
4. Remove 2 screws.
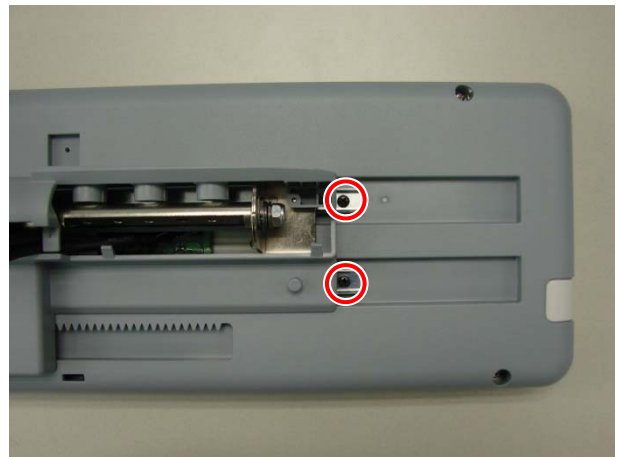
5. Take off the cover-rail [B].

7. Remove the OPE main PBA after removing 6 screws and 3 cables.
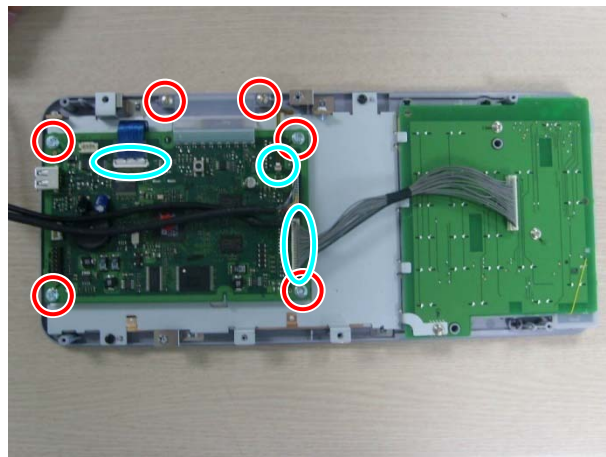
CAUTION
Be careful not damage in FFC cable.

6. Remove the bracket-rear [C] after removing 5 screws.
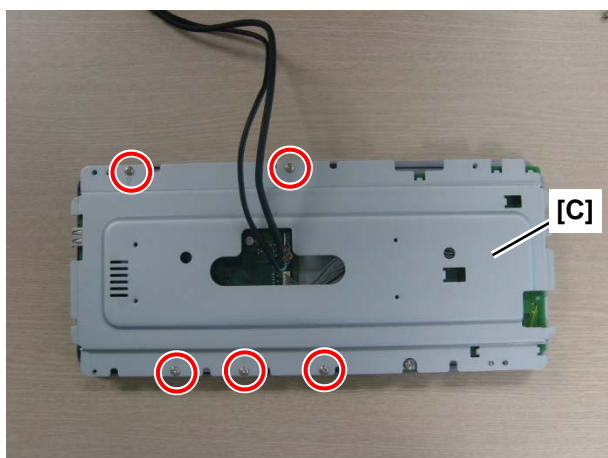
8. Remove the bracket-LCD [D] after removing 3 screws.
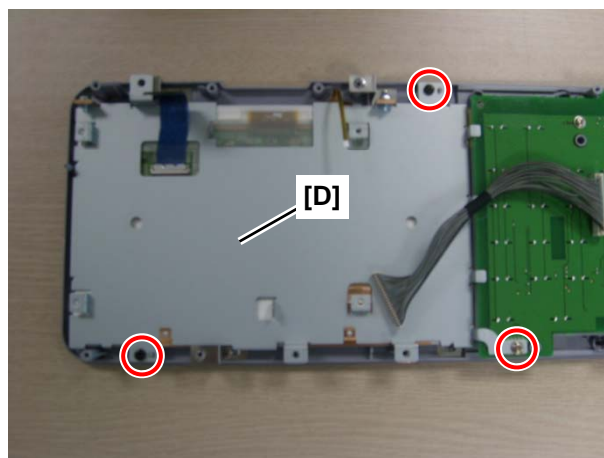
9. Take off the LCD panel assembly [E].
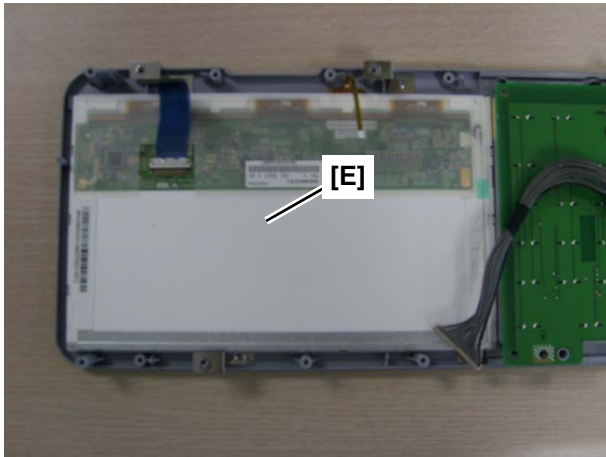
10. Remove the Key-PBA [F] after removing 2 screws.
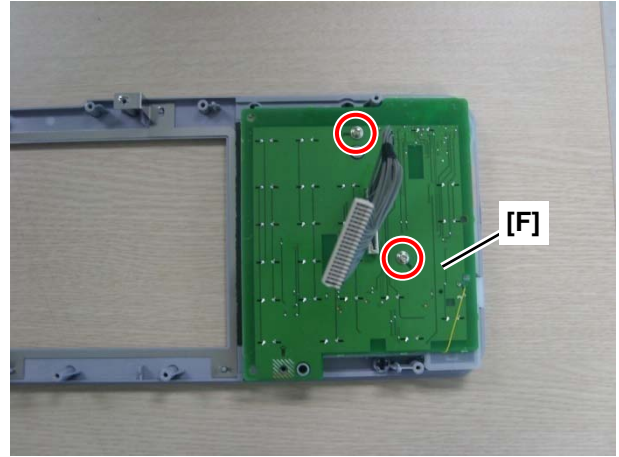
3.3.3 Key buttons

1. Remove the rubber-key [A].
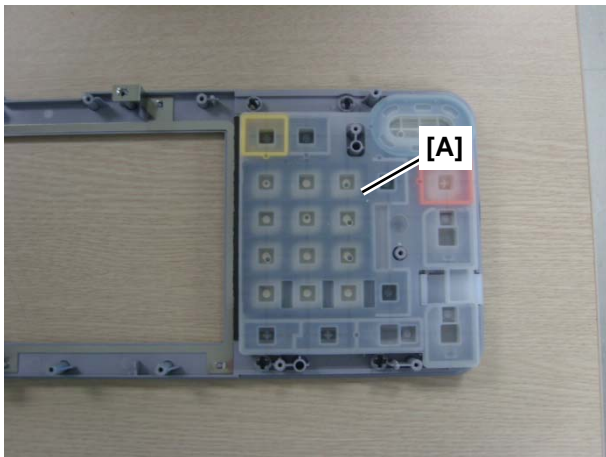
2. Remove the key buttons.

3.4 Scan unit

This section contains the procedures for disassembling the components of the printer Scan Unit.

NOTE
Perform the followings after replacing specified scanner part.
Before replacing any parts, turn off the machine.

• Scanner Geometry Compensation
• Evaluate copy quality

Scanner Geometry Compensation

Refer to Scan Area Adjustment in chapter 4. Service Mode.

Evaluate copy quality after replacing the specified scanner part

NOTE
Specified Scanner Part : Scan Main PBA , Scan Glass

Pass Criteria

1) 4mm Line should be printed at least in (①, ②, ③)

2) Difference of Edge line value of (②, ③) should not be over 2.6mm

Evaluation Chart : Samsung Test Chart A3
(JC81-08430A)

3.4.1 Scan glass

Perform the following procedure to remove the Scan glass from the Scan Unit.

1. Remove the front cover [A] after removing 2 screws.
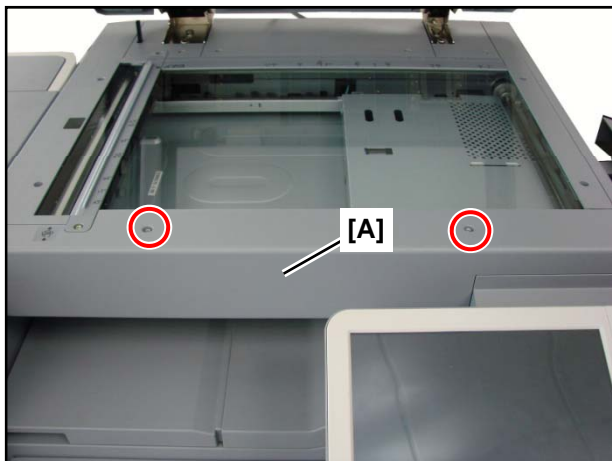
3. Remove the Cover scan glass [C] after removing 2 screws.
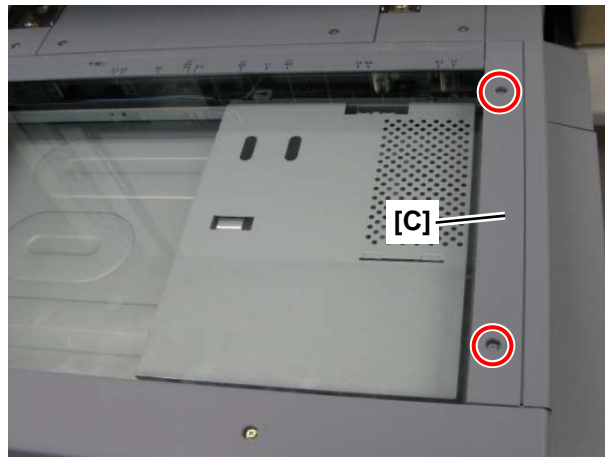
2. Remove the glass scan ADF [B] after removing 2 screws.
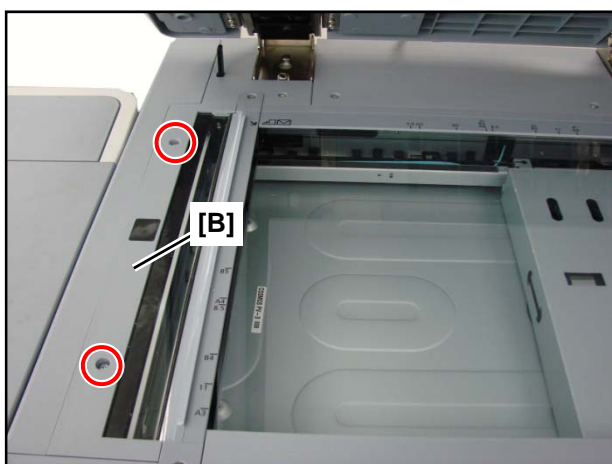
4. Remove the glass scan [D] after removing 2 screws.
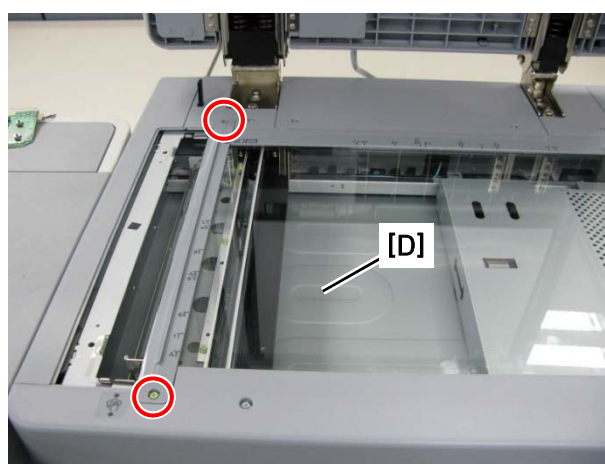
3.4.2 Scan Main PBA

Perform the following procedure to remove the Scan Main PBA from the Scan Unit.

1. Remove the Scan glass. (3.4.1)
2. Remove the align cover [A] after removing 4 screws.

[A]

CAUTION
Observe precautions
For handling
Electrostatic
Sensitive
Devices
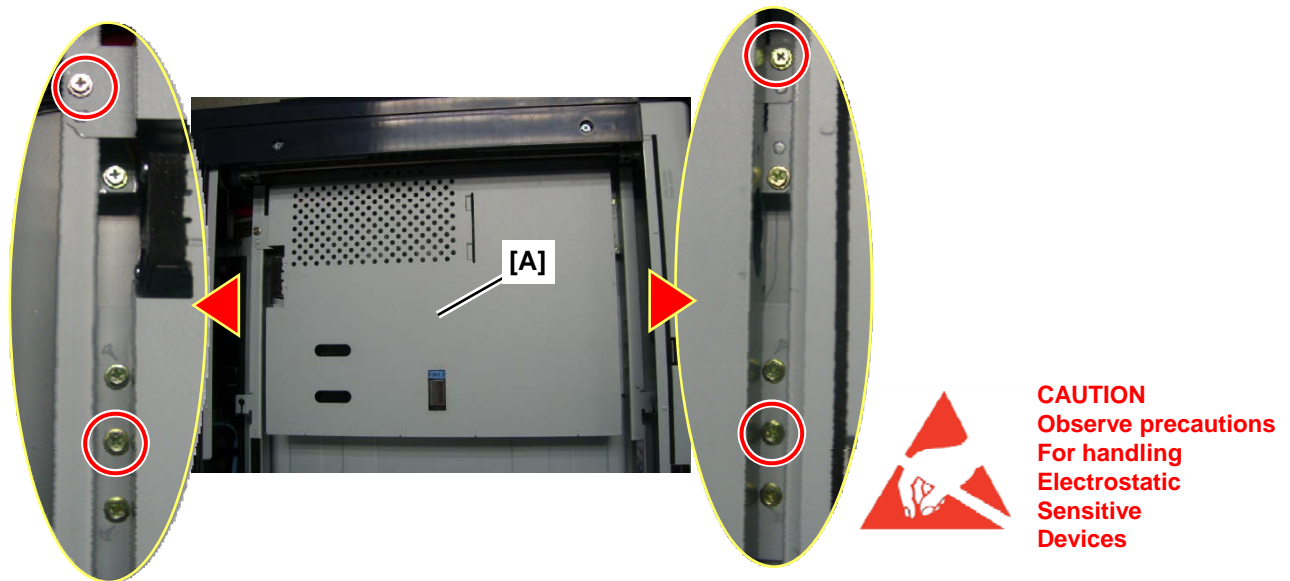
3. Remove the Scan Main PBA after removing 3 screws.
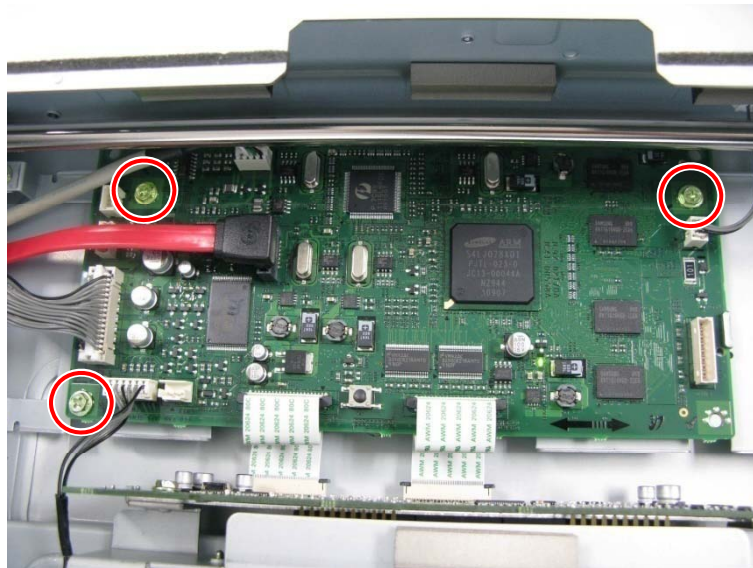
3.4.3 Lamp

Perform the following procedure to remove the Lamp from the Scan Unit.
To replace the lamp, you must first remove the scan glass (3.4.1).

1. Remove the 3 screws.
2. Remove the connector cover [A]. Remove 1 screw (ground harness). And unplug the connector.
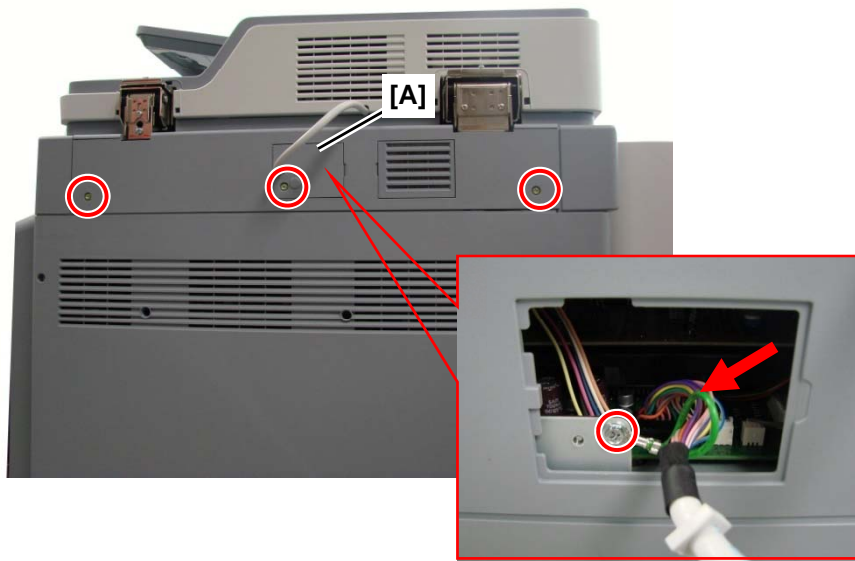
3. Remove 2 screws.
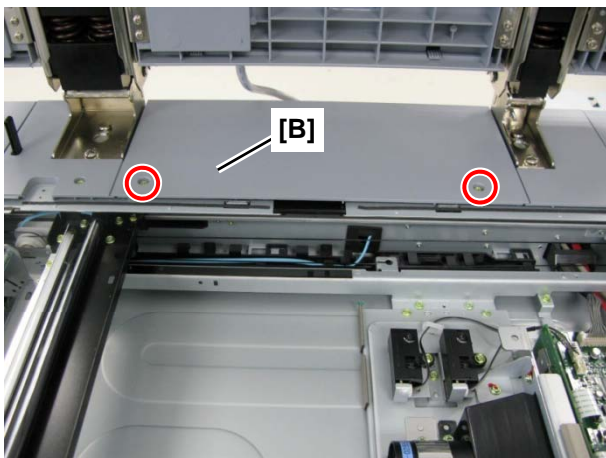
4. Remove the rear cover [B] by slightly lifting up and push back.
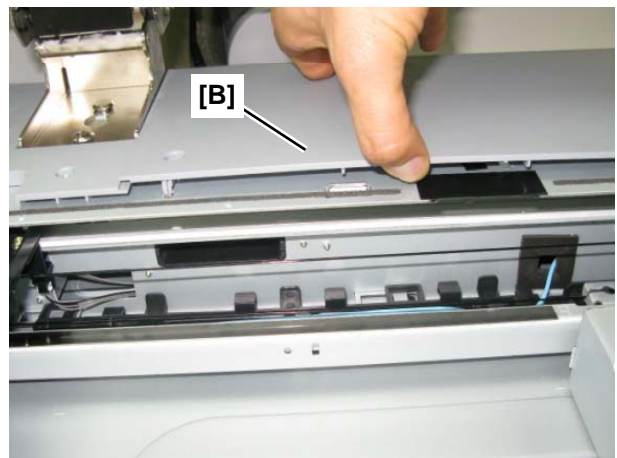
5. Shift the lamp unit to the center. Remove 2 screws. And take off the lamp.
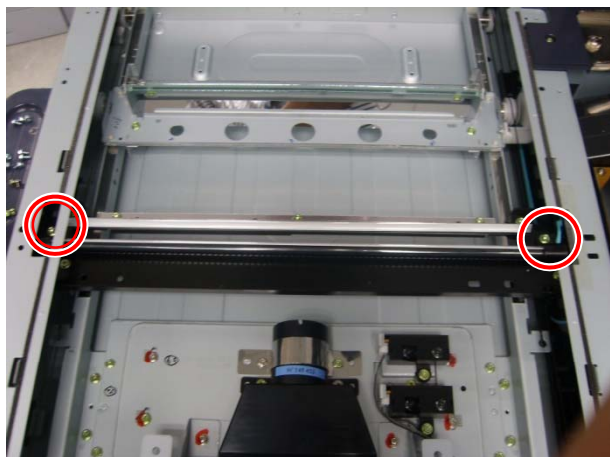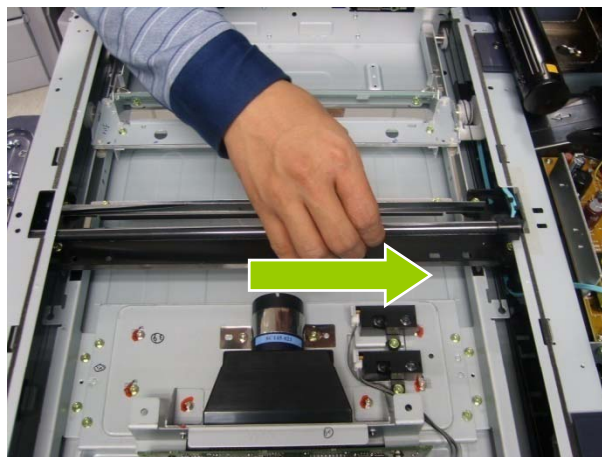
6. Unplug the connector. Release it from harness holder.

7. Take off the lamp.
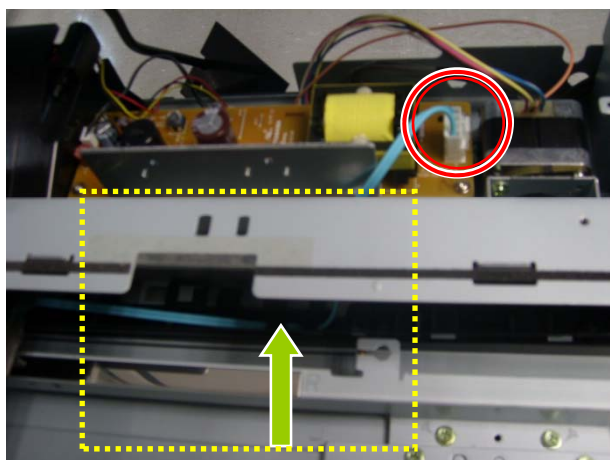
8. Check the Wire position in assembled status.
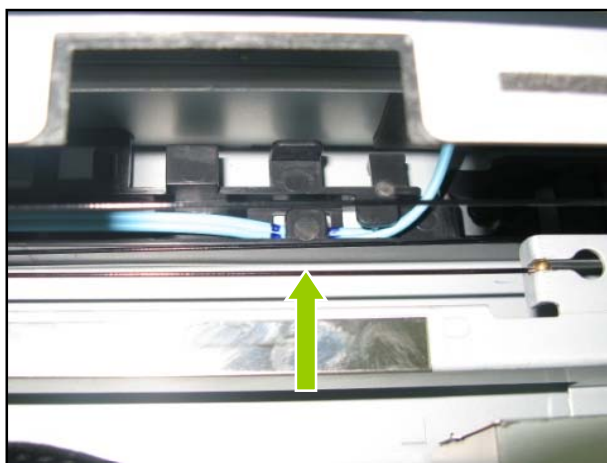
9. Refer the marking position of Wire.
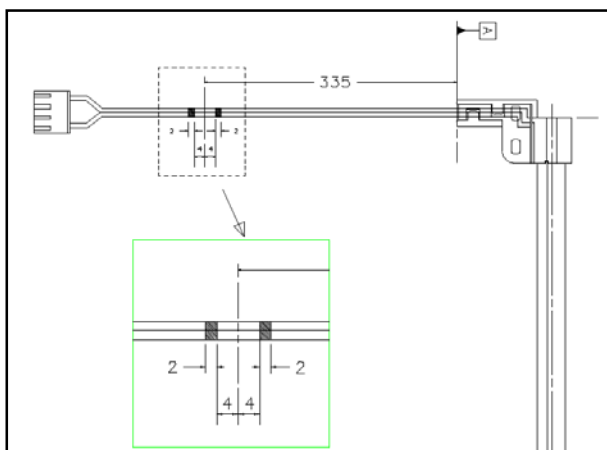
3.4.4 Original size detection sensor

Perform the following procedure to remove the Original Size Detection Sensor from the Scan Unit.

1. Remove the Scan glass and align cover. (3.4.1 ~ 3.4.2)
2. Remove paper detection sensor [A] after removing screw and harness.
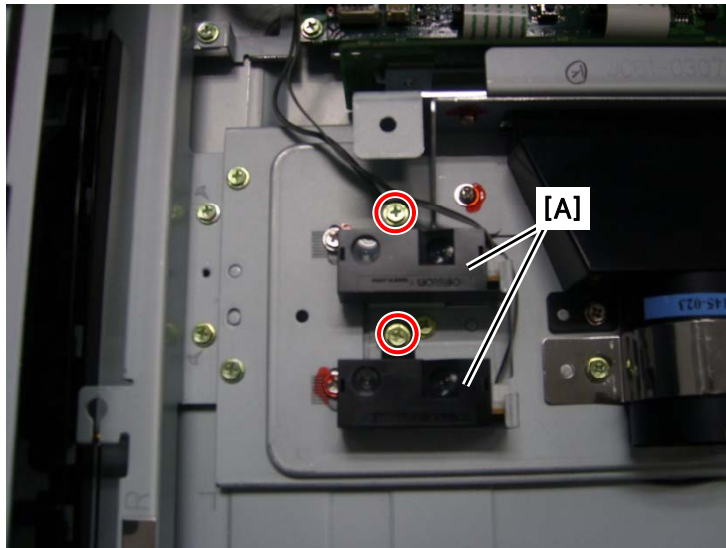
3.4.5 Joint PBA

Perform the following procedure to remove the Joint PBA from the Scan Unit.

1. Remove the rear cover. (3.4.3)
2. Remove 5 screws and unplug 2 connectors.
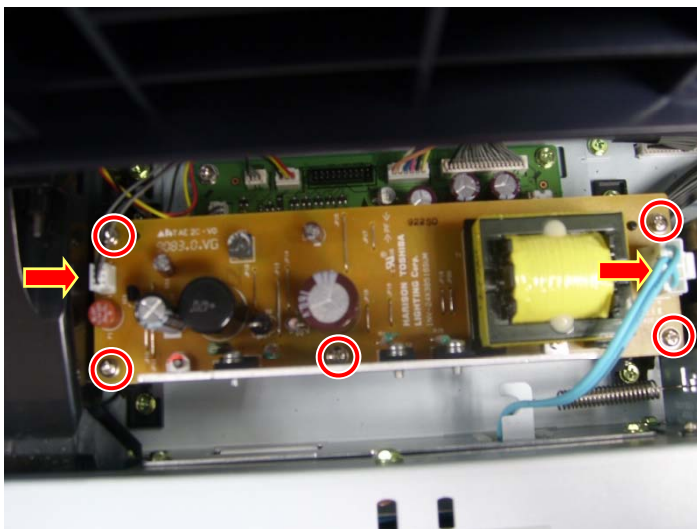
3.4.6 Joint sub PBA

Perform the following procedure to remove the Joint Sub PBA from the Scan Unit

1. Remove the rear cover. (3.4.3)
2. Remove the holder with Joint PBA after removing 4 screws and 2 connectors.

3. Remove 3 screws.
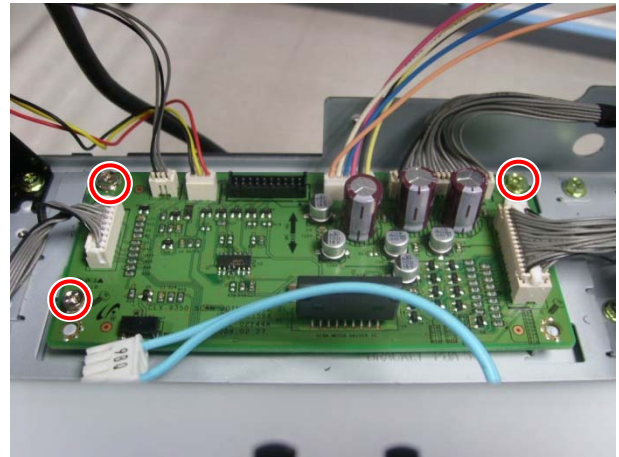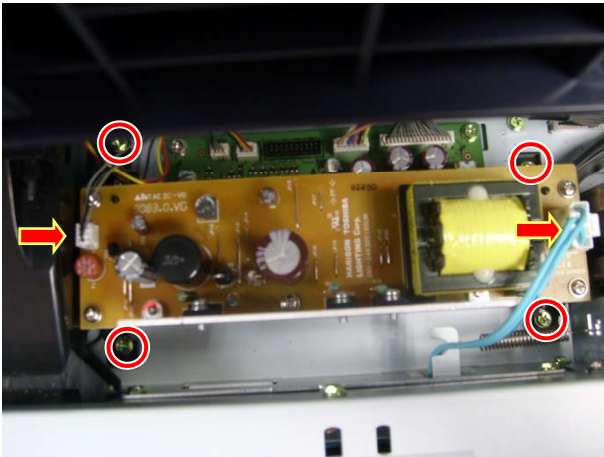
3.4.7 FAN

Perform the following procedure to remove the Fan from the Scan Unit.

1. Remove the rear cover. (3.4.3)
2. Remove the holder with Joint PBA (3.4.6 2.)
3. Remove the Fan housing [A] after removing 3 screws.
4. Remove the FAN (with long-shaped tool like screw driver) after removing 4 screws and 1 connector.
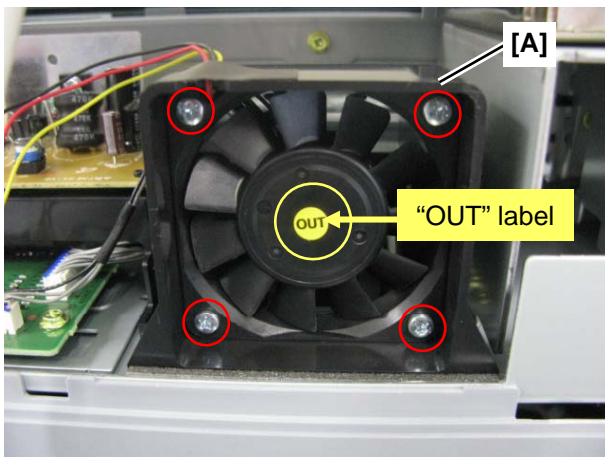
[A]

"OUT" label

CAUTION
Please attach "OUT" label on the replacement FAN to match the direction and location on the original fan.

3.4.8 Pulley-belt

Perform the following procedure to remove the Pulley-Belt from the Scan Unit.

1. Remove the rear cover. (3.4.3)
2. Remove the E-Ring [A] with tweezers, and remove the Pulley-belt [B].
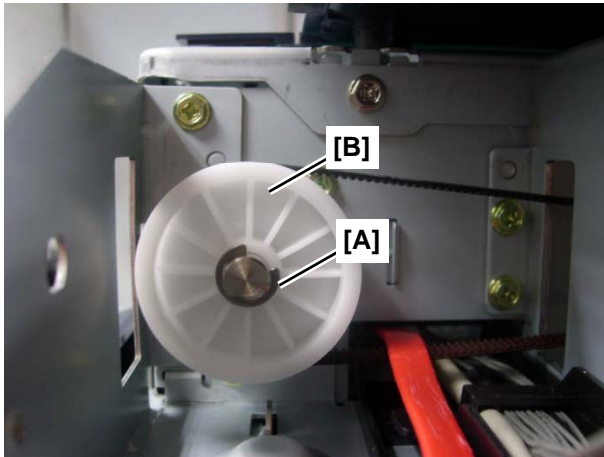
NOTE
Remove cover [A] (see below), this allows you to easily remove the scan gear and gear belt.
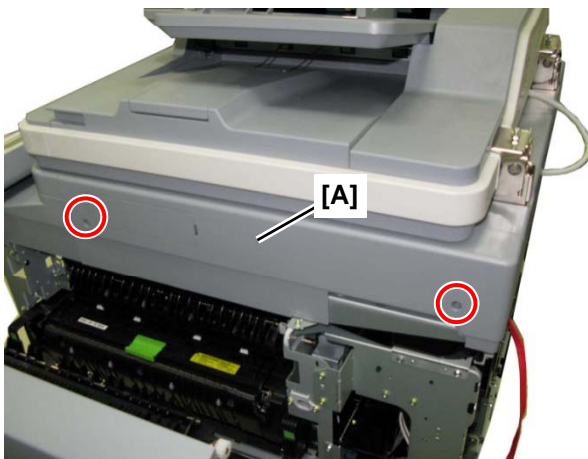
3.4.9 Scan motor and gear belt

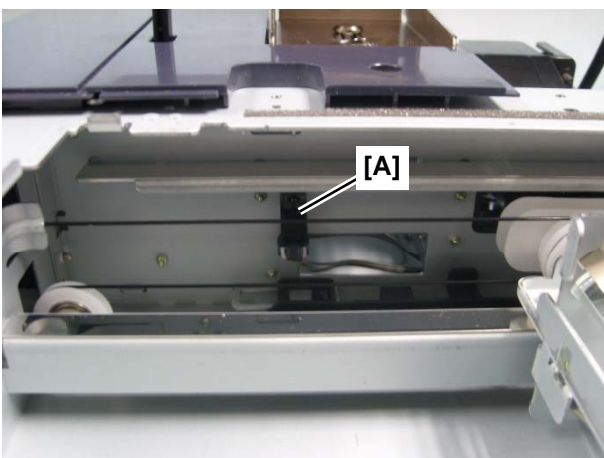Perform the following procedure to remove the Scan motor and Gear belt from the Scan Unit.

1. Remove the Spring [A].
2. Remove 3 screws.
3. Release the gear belt from the gear. Remove the Scan Motor [C].
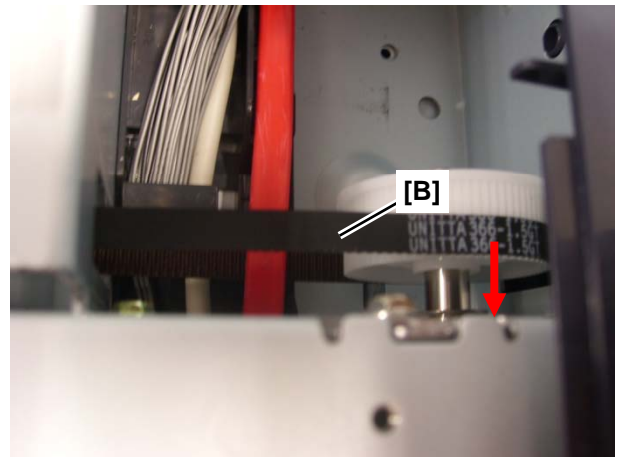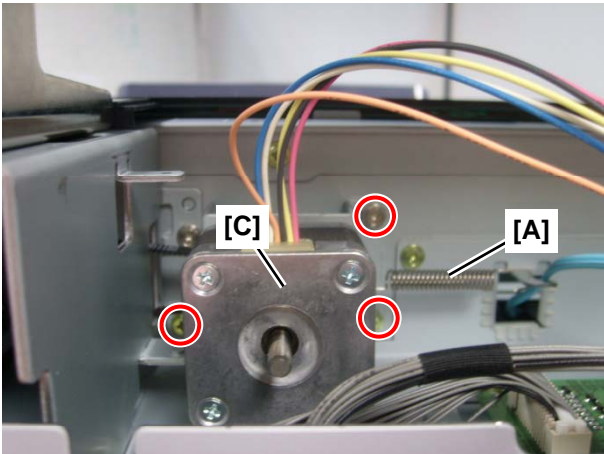
3.4.10 Home sensor

Perform the following procedure to remove the Home Sensor from the Scan Unit.

1. Remove the scan glass(3.4.1) and rear cover(3.4.3).
2. Release the home sensor [A] by pushing sensor hinge from the rear.

3.4.11 Scanner heating cable

Perform the following procedure to remove the Scanner Heating cable from the Scan Unit.

1. Remove the Scan glass. (refer to 3.4.1)
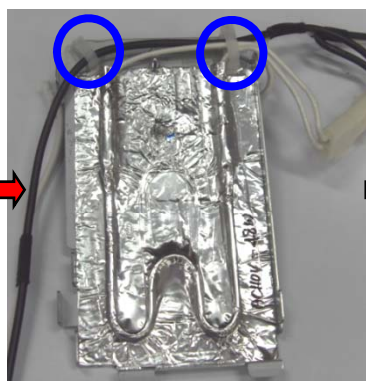2. Remove the align cover [A] after removing 4 screws.

[A]
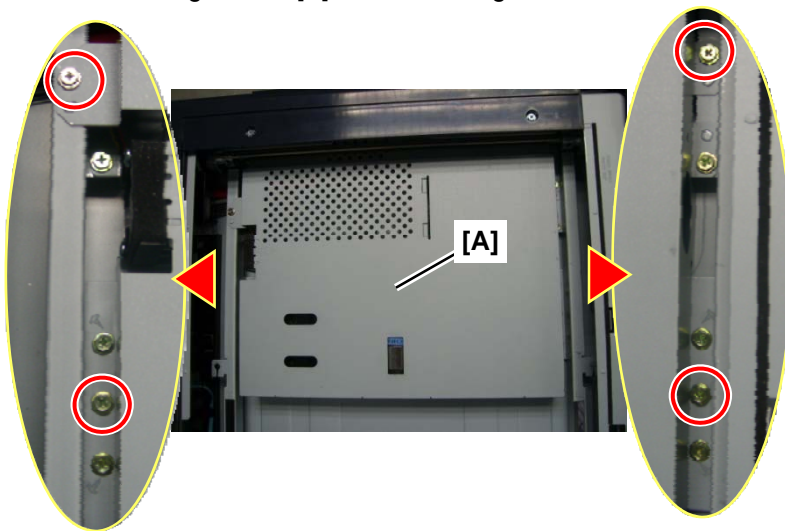
**CAUTION
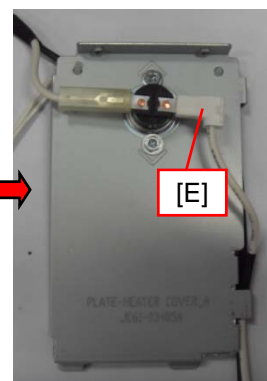Observe precautions
For handling
Electrostatic
Sensitive
Devices**

3. Assemble the Heater-a[B] and Scan_heater2 harness in the below order.

Heater-a

PLATE-HEATER COVER_A
JC61-03405A

[C]   [D]   [E]

[F]

<Scan_heater2 harness>   [G]

[C]   [D]

[E]
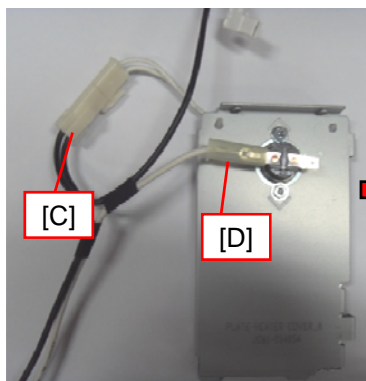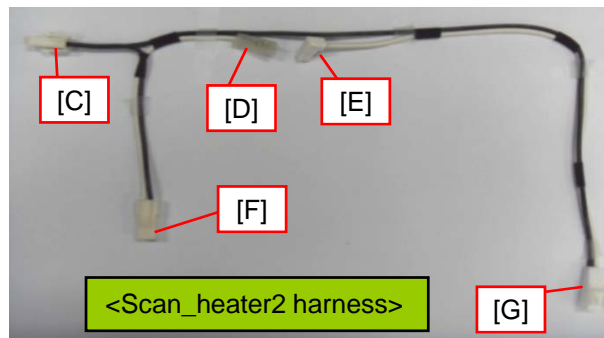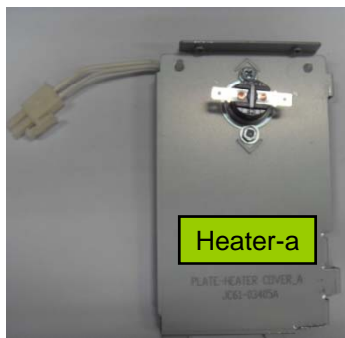
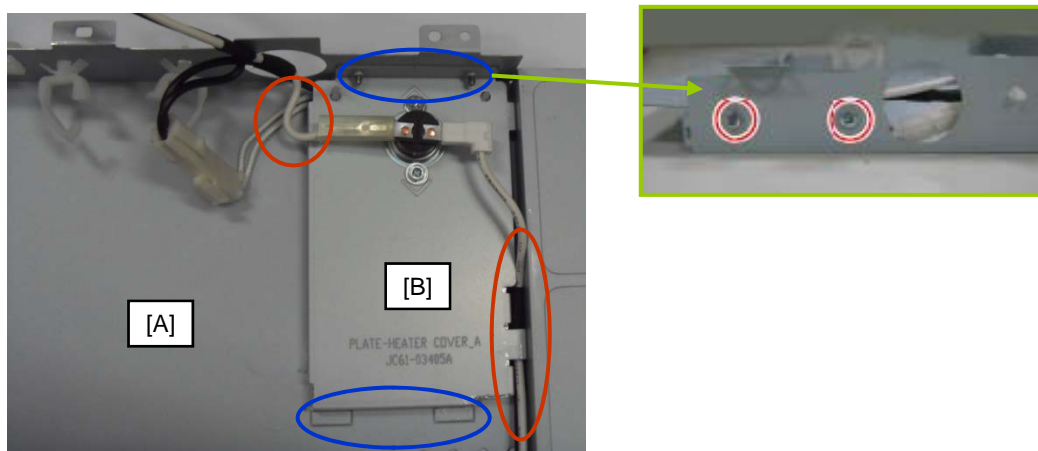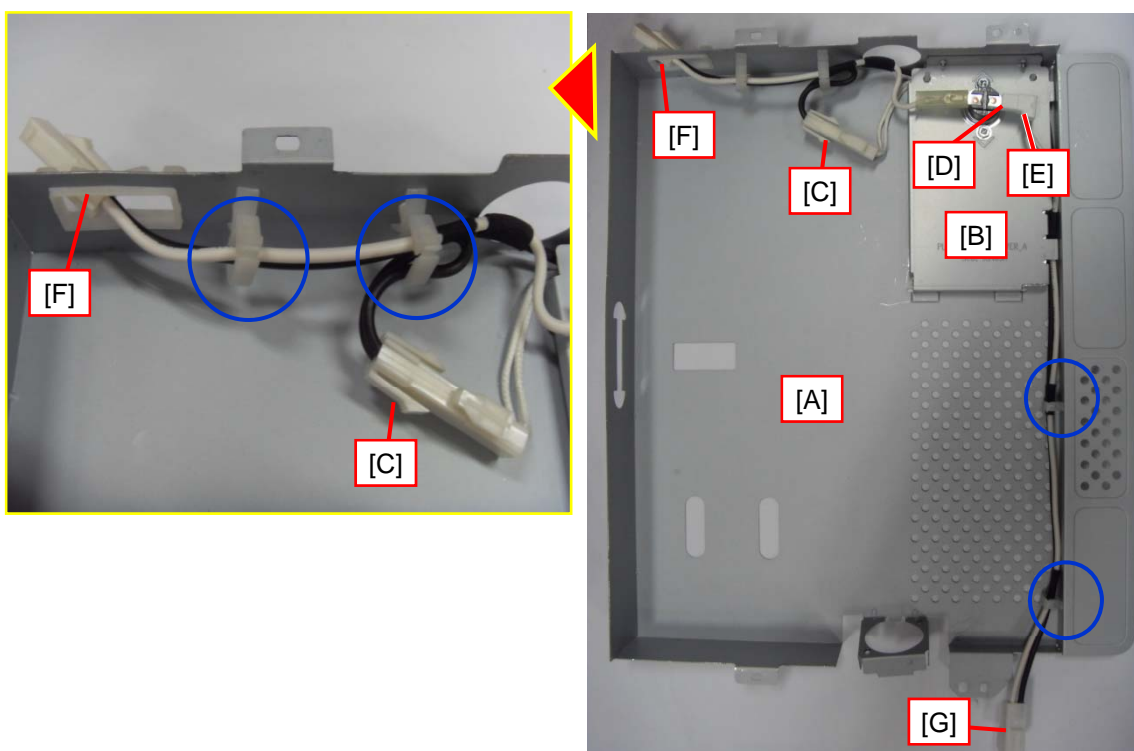| Connect [C], [D] as shown above. | Fix the black wire with the clamp. | Connect [E] as shown above. |

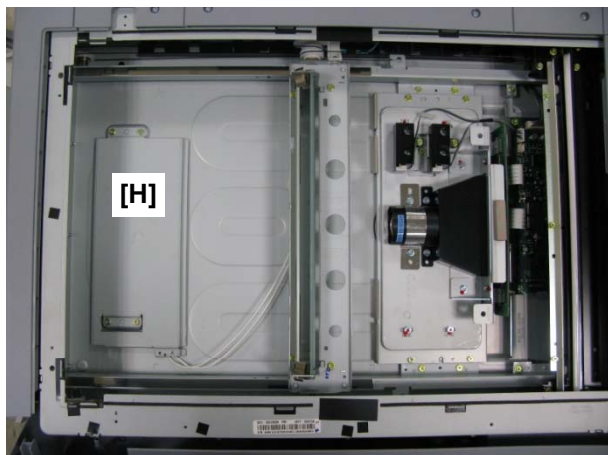4. Insert 2 bars of the heater-a [B] to the align cover [A]'s slits and screw up 2 points.

CAUTION
Please be careful of the harness is not caught between Align cover[A] and heater-a[B].
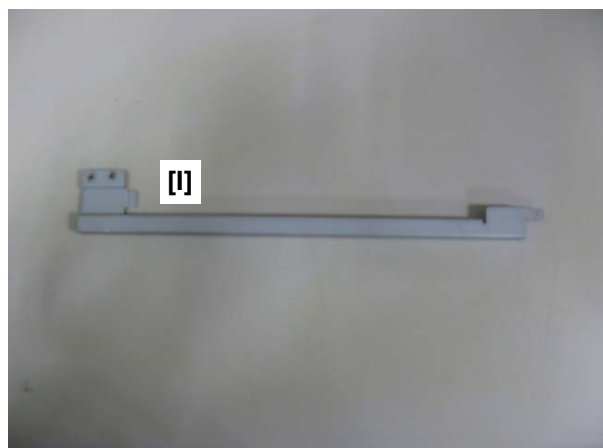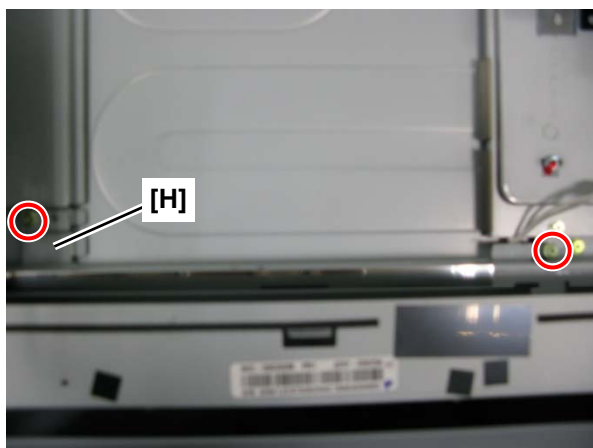
5. Insert harness to clamps.

6. Shift the lamp unit to the right side
7. Put the heater-f [H] on the frame base of scanner and screw up 4 points.
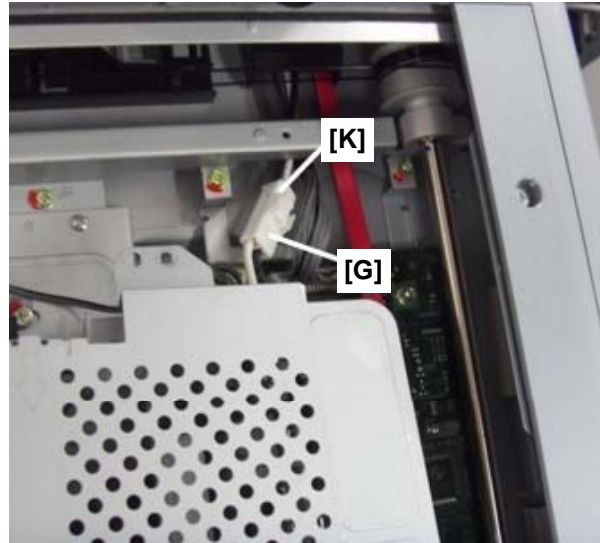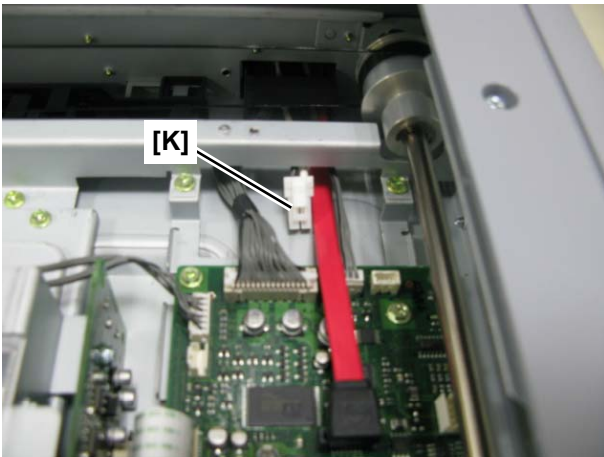

CAUTION
Please be careful of the harness is not caught between heater and frame base.

8. Shift the lamp unit to the left side
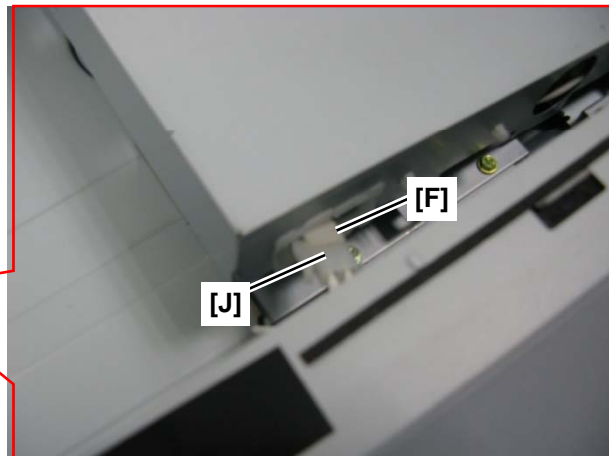9. Cover the harness of the heater-f[H] with bracket [I] and screw up 2 points.

10. Connect the connector [K] with the connector [G] of Scan_heater2 harness.

11. Put the align cover on the scanner and connect the connector [J] of heater-f.
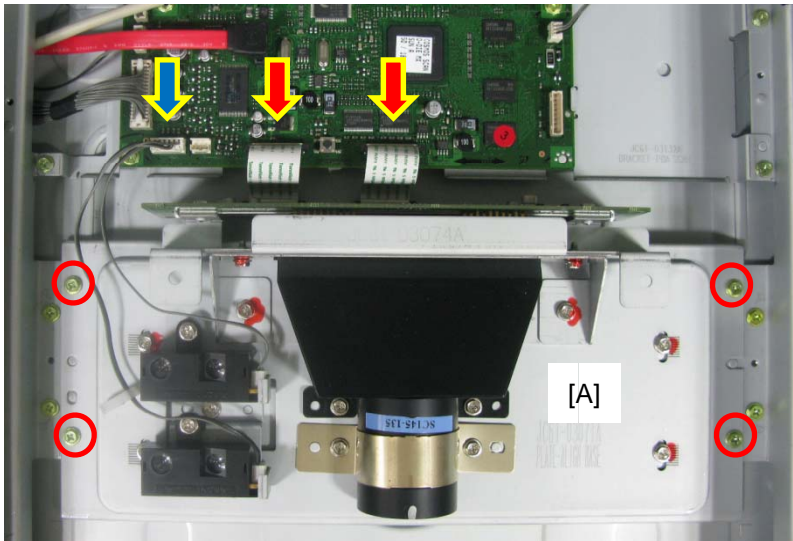12. Put the connector [J], [F] in the align cover .

13. The assembly is reverse order of disjointing.

3.4.12 Align set

Perform the following procedure to remove the Align set from the Scan Unit.

1. Remove the Scan glass and align cover. (Refer to 3.4.1~3.4.2)
2. Remove the Align set [A] after removing 4 screws and unplugging 3 connectors.

CAUTION
Connectors for FFC of CCD are very fragile.

3.5 Fuser unit

This section contains the procedures for disassembling the components of the printer Fuser Unit.
Perform the following procedure to remove the Align set from the Scan Unit.

CAUTION
The temperature gets high in the vicinity of the fuser unit. When replacing it, you may get burned. Before replacing it, make sure that fuser unit has cooled.

1. Open the Cover-Side.
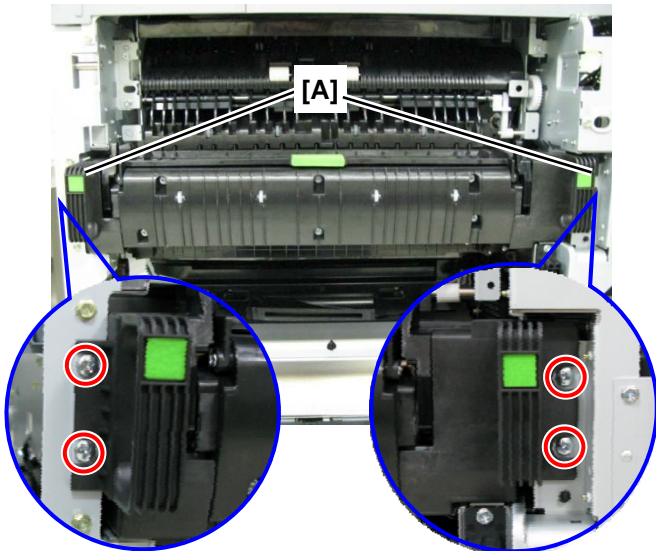
2. Remove 4 screws from the left/right.
3. Remove the fuser unit by holding the handles [A].

3.5.1 Fuser unit disassembly
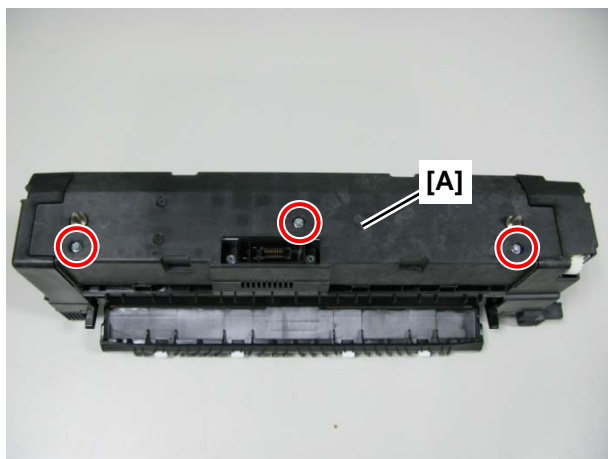
1. Lift the Frame fuser top [A] after removing 3 screw.
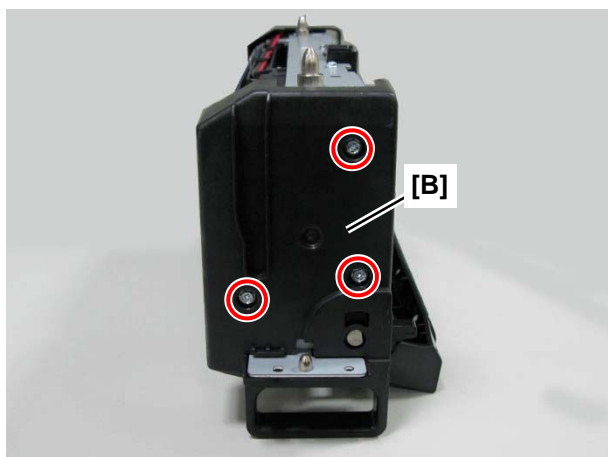
2. Release the left cover [B] after removing 3 screws.
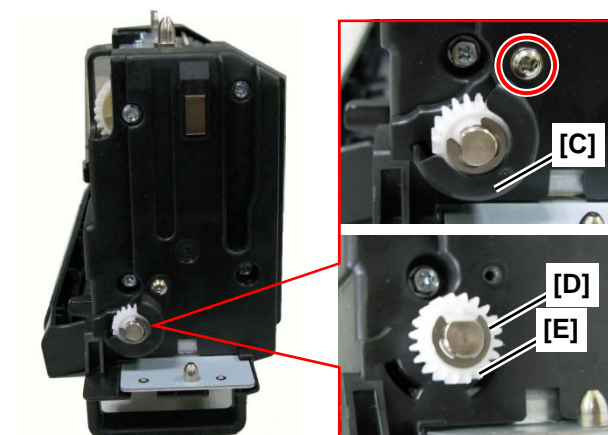
3. Release the gear cover [B] after removing 1 screw. Remove the E-ring [C] and gear [D].
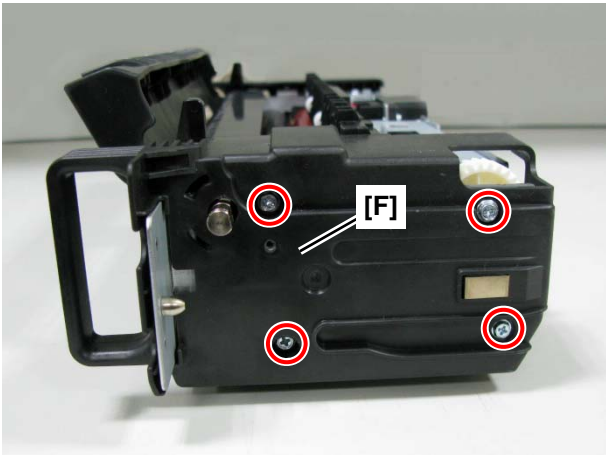
4. Release the right cover [F] after removing 4 screws.
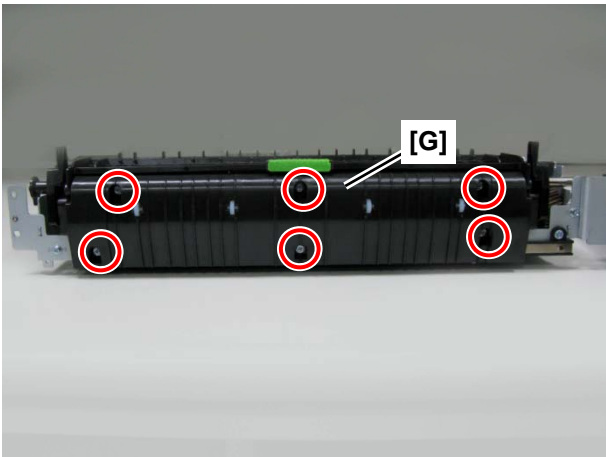
5. Release the cover [G] after removing 6 screws.
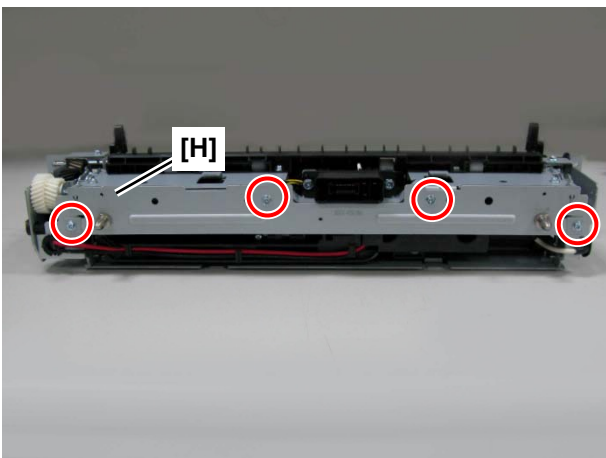
6. Release the bracket [H] after removing 4 screws.
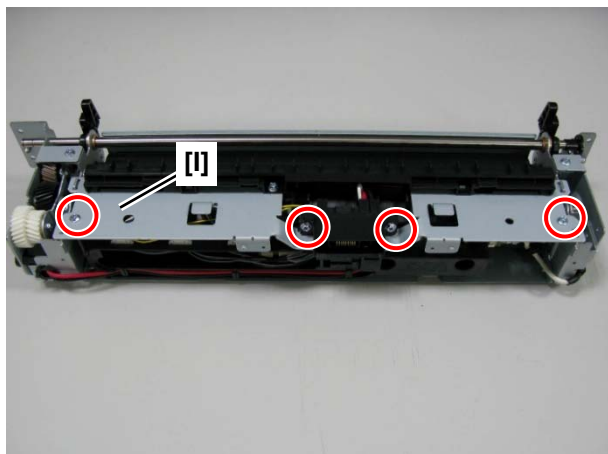
7. Release the bracket [I] after removing 4 screws.
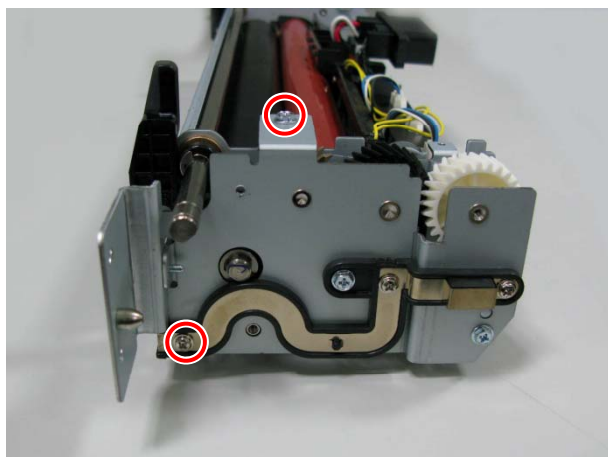
8. Remove 2 screws.
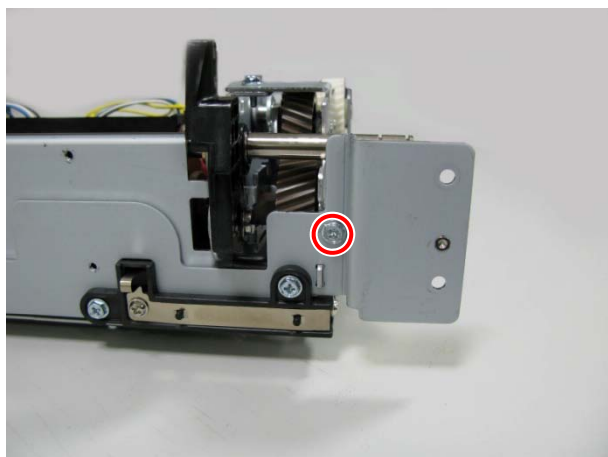
9. Remove 1 screw.
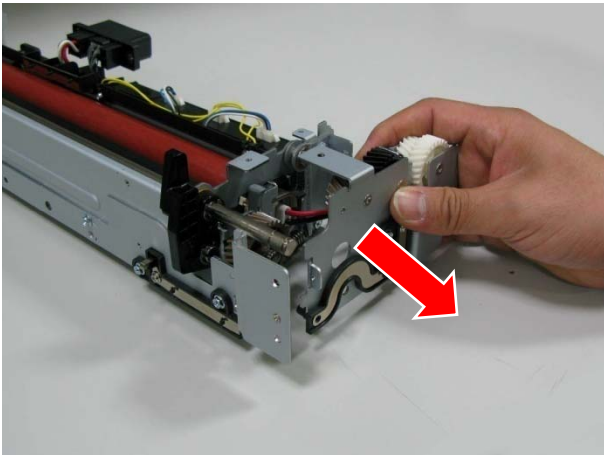
10. Release the gear bracket assy.

11. Open the harness clamp. Unplug the thermostat connector.
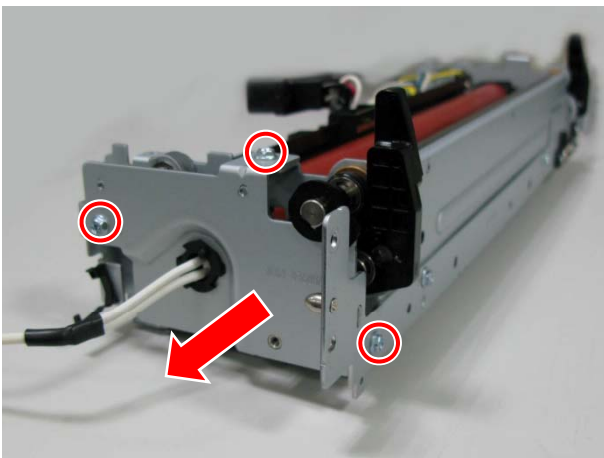
12. Release the bracket after removing 3 screws.

13. Release the pin connector with tweezers.

White	
Black	Blue/ Red
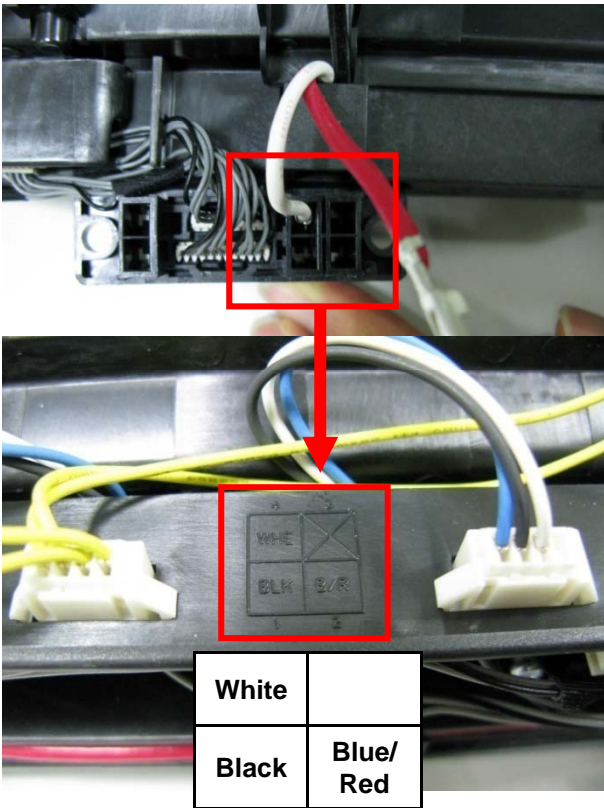
CAUTION
When reassembling the pin connector, make sure the colors are positioned as shown the left mark.
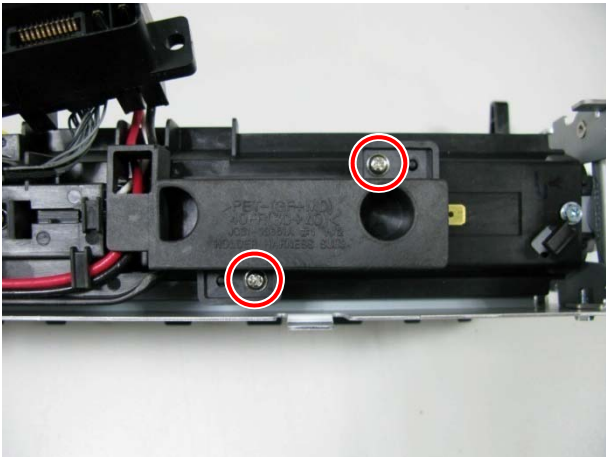
14. Release the holder harness after removing 2 screws.
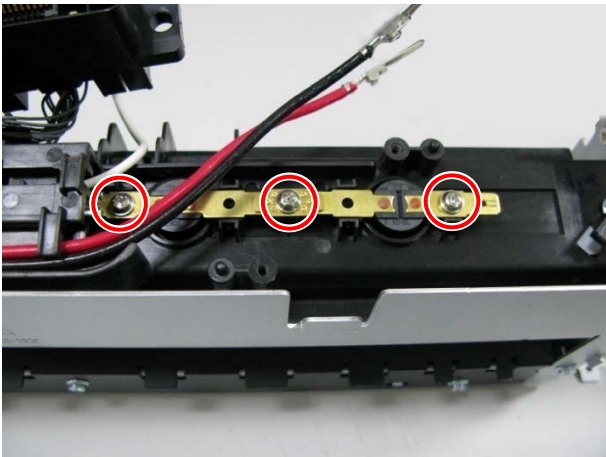
15. Remove the thermostat after removing 3 screws.
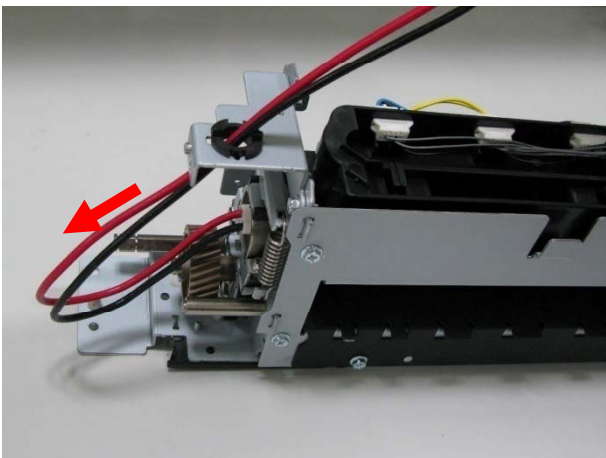
16. Release the lamp connector from the hole.

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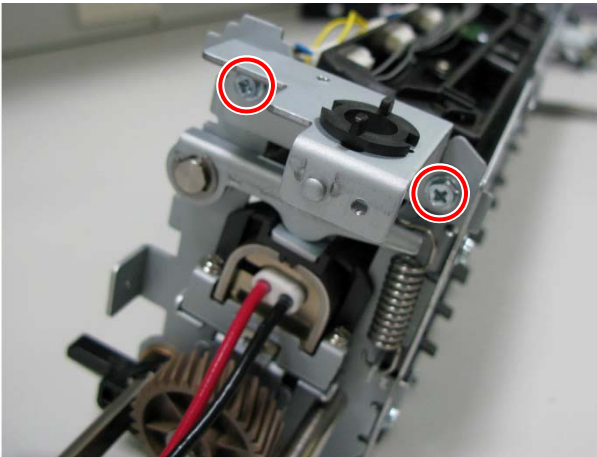
17. Release the bracket after removing 2 screws.
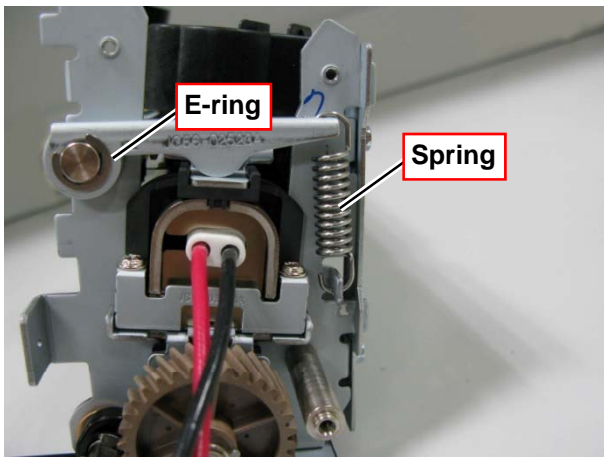
E-ring

Spring

18. Remove the E-ring and spring.
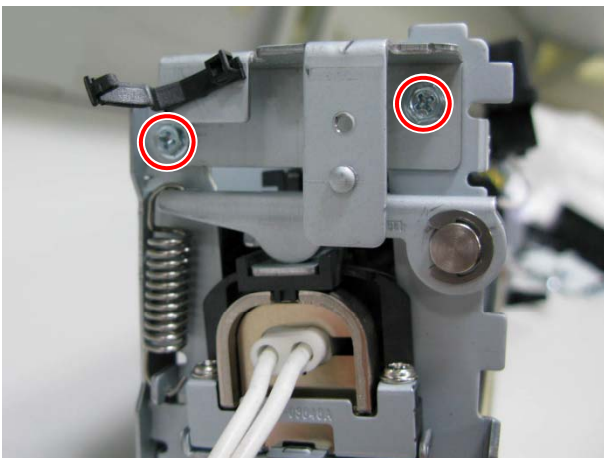
19. In the opposite side, release the bracket after removing 2 screws.

20. Lift the NC thermistor assy.
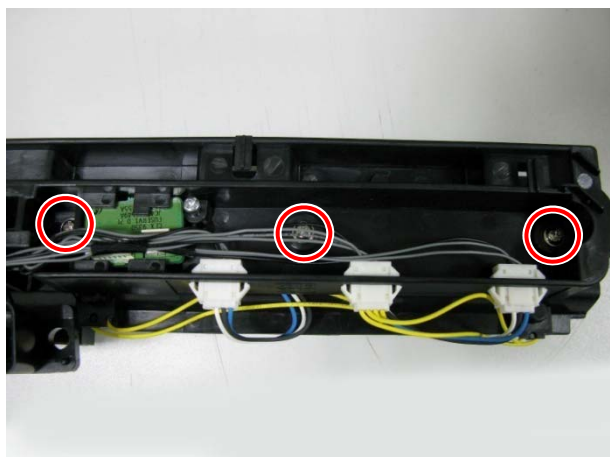
21. Remove 3 screws.

22. Release the NC thermistor after unplugging its connector.

23. Lift up the lamp and belt assy.
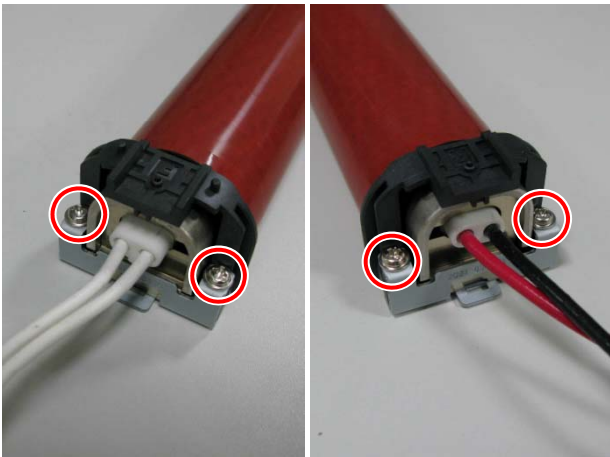
24. Remove 4 screws from both sides.
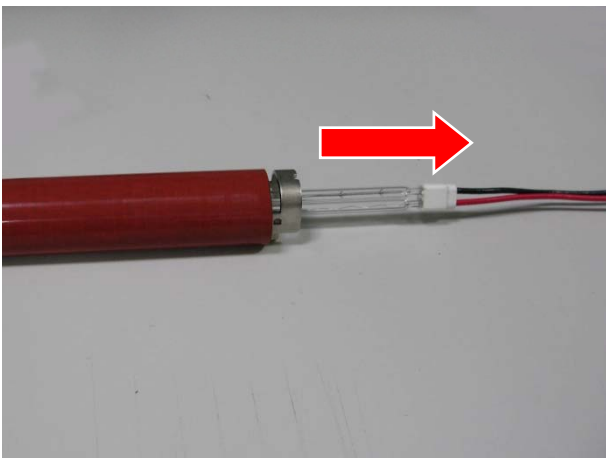
25. Pull the halogen lamp to the direction of arrow.

26. Release the belt.
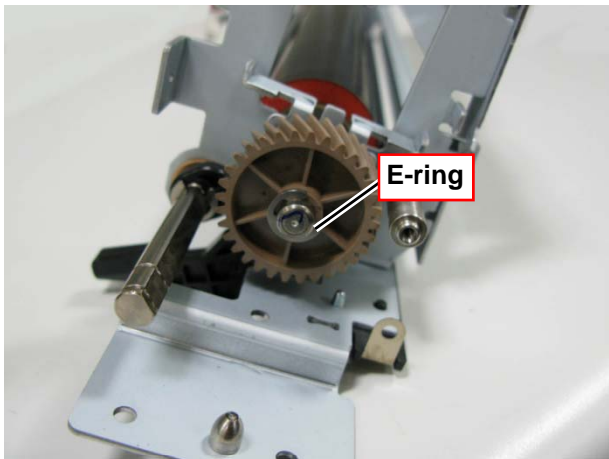
E-ring

27. Remove the E-ring and gear.

28. Remove 3 screws.

29. Lift up the pressure roller.

3.6 Side Unit

This section contains the procedures for disassembling the side unit of the printer.

1. Open the side door.
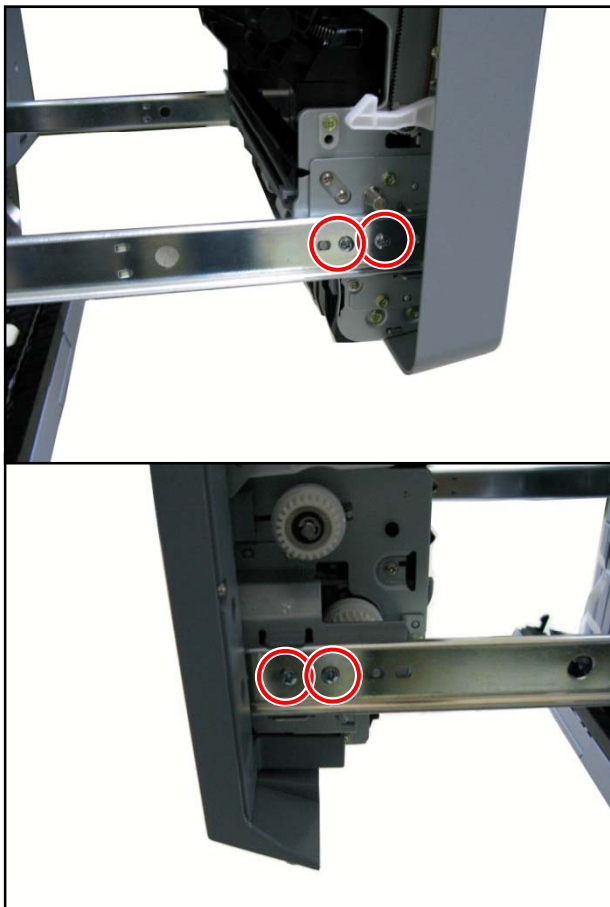
2. Remove 4 screws from both sides.
3. Remove the Side unit.

CAUTION
When removing 4 screws. hold the side unit not to drop it.

3.6.1 Duplex sensors

1. Remove 2 screws. Release 2 hooks.

Hook

Hook
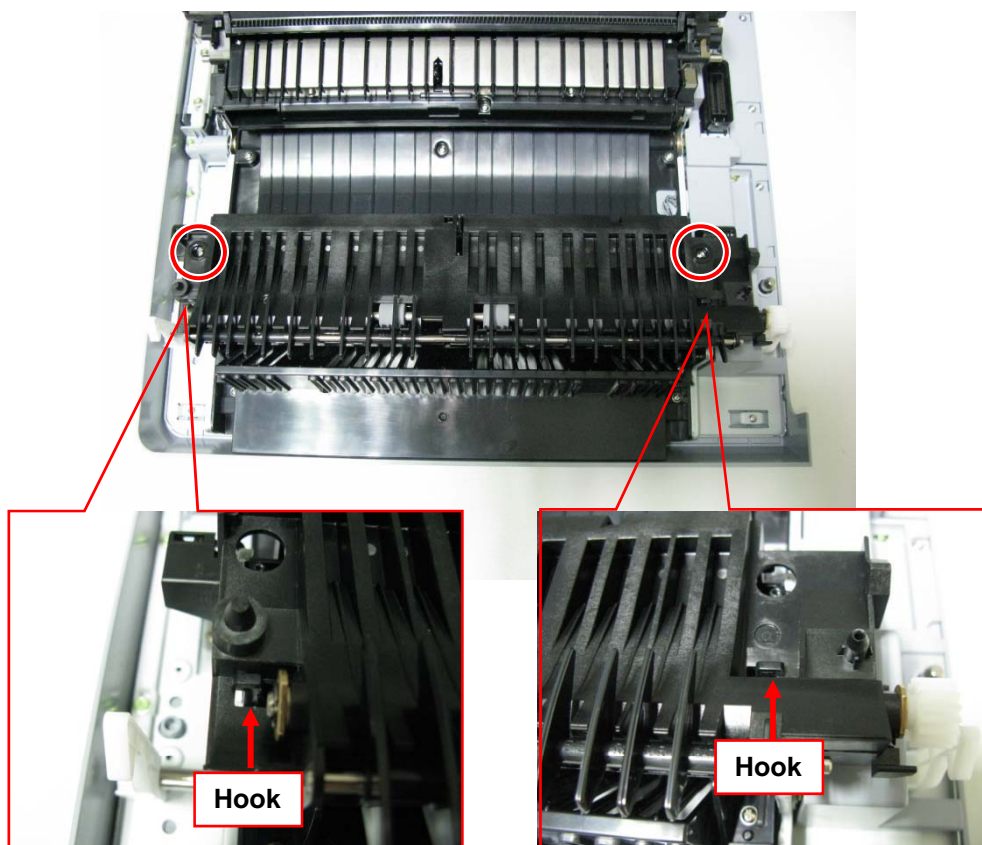
2. Turn the Side-Duplex Entrance up. Release the defective sensor after removing 1 screw.
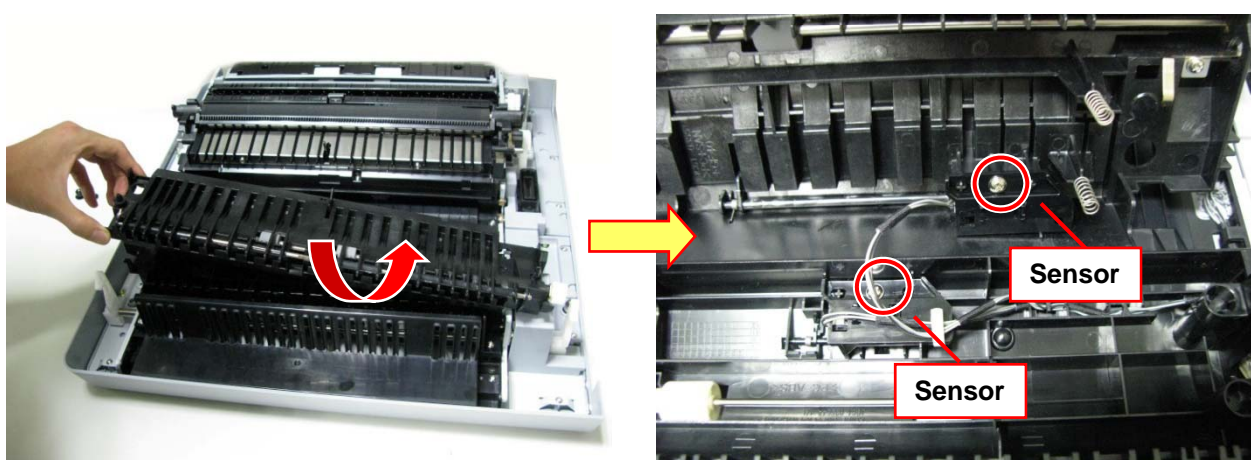
Sensor

Sensor

3.6.2 Transfer sensors
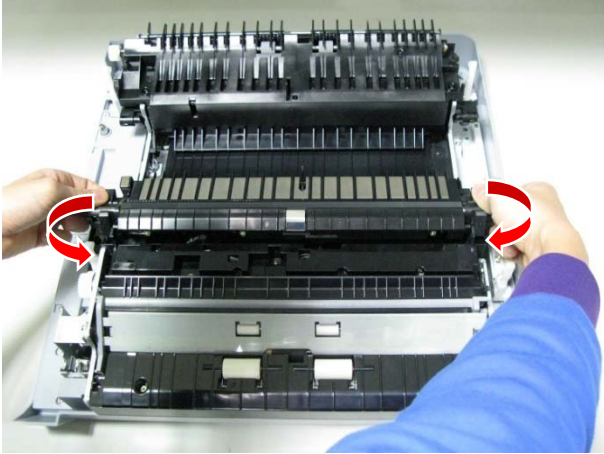
1. Release the transfer roller assy.
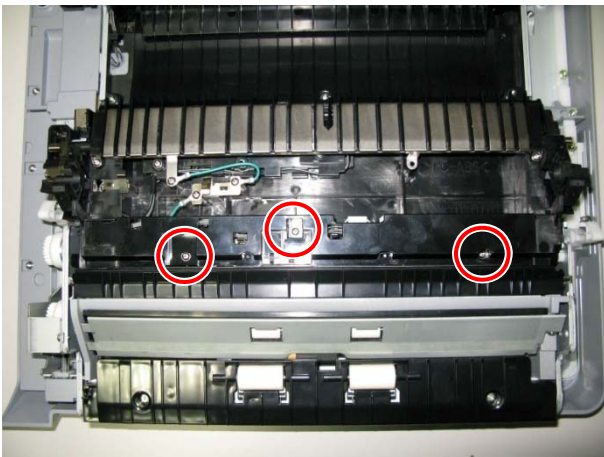
2. Remove 3 screws.
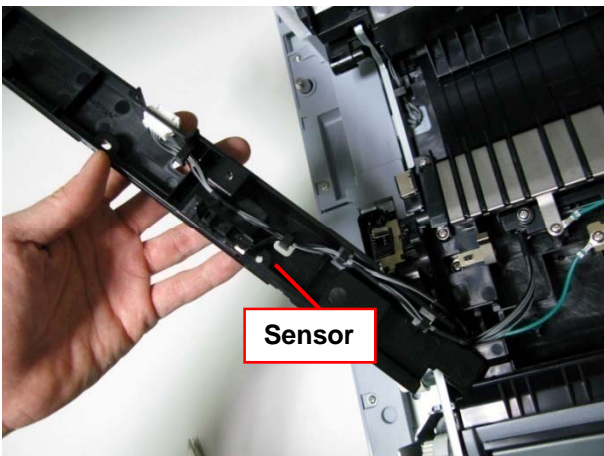
Sensor

3. Lift up the Cover-Guide Feed.
4. Remove a sensor from the Cover-Guide Feed.

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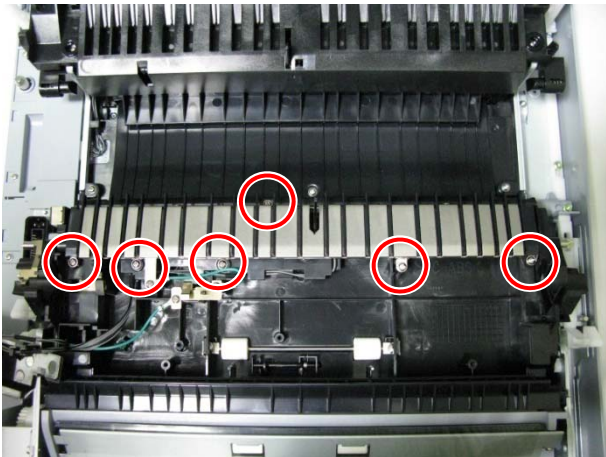
5. Remove the Guide-TR Upper after removing 6 screws.
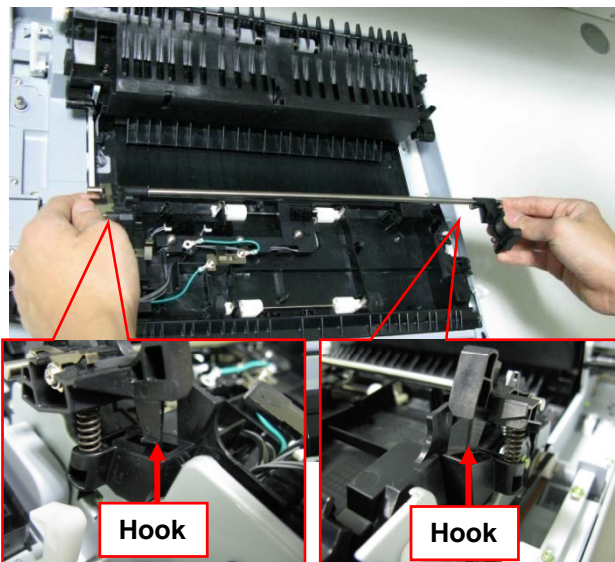
Hook

Hook

6. Remove the shaft after unhooking both holders.
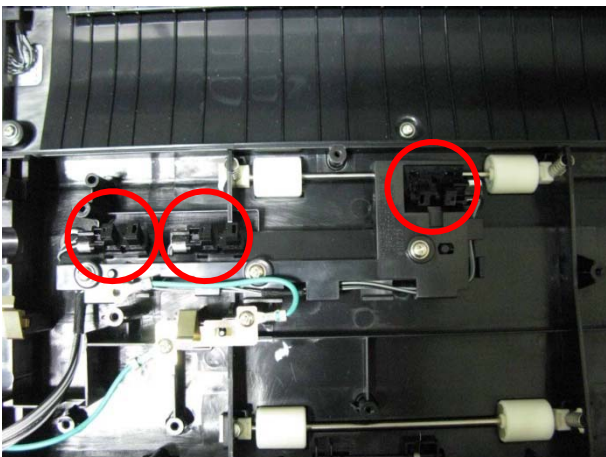
7. There are 3 sensors. Remove it after unplugging the connector.

3.6.3 MP unit

1. Open the MP tray. Remove 1 screw.
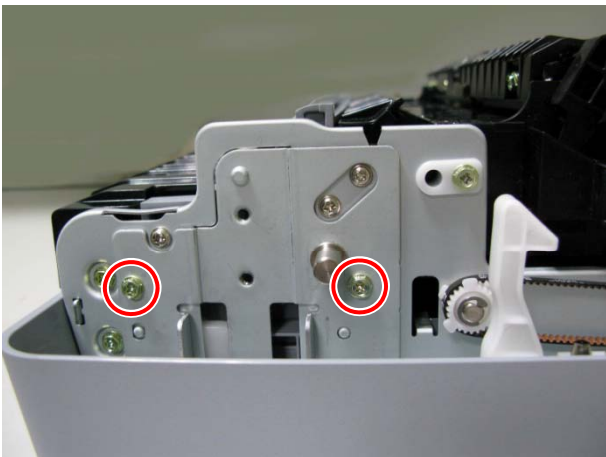
2. Remove 2 screws.
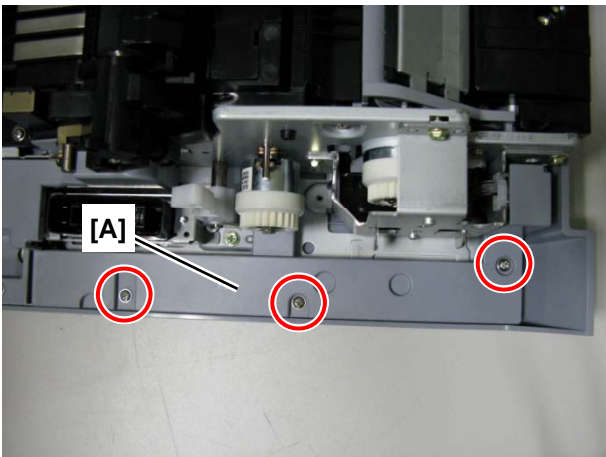
3. Remove the connector-cover [A] after removing 3 screws.

[A]
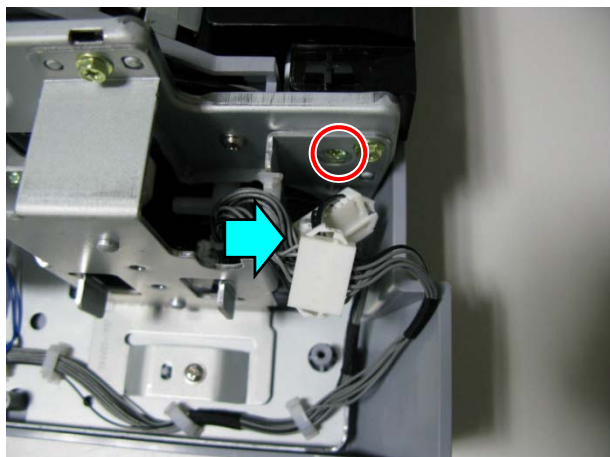
4. Unplug 2 connectors and remove 1 screw.

5. Remove the MP tray.

3.6.3.1 MP Solenoid
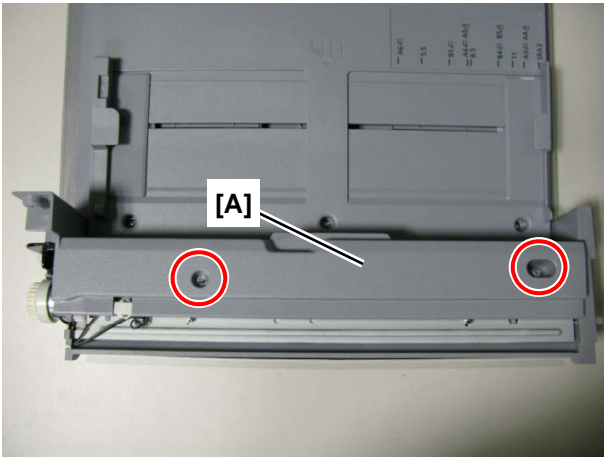
1. Remove the Cover-Top MP [A] after removing 2 screws.
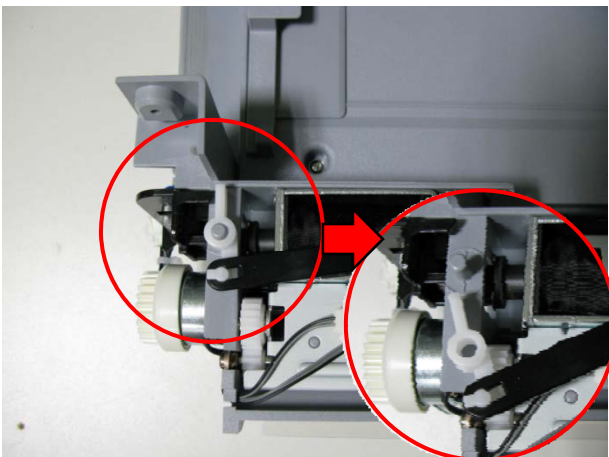
2. Release the linker.
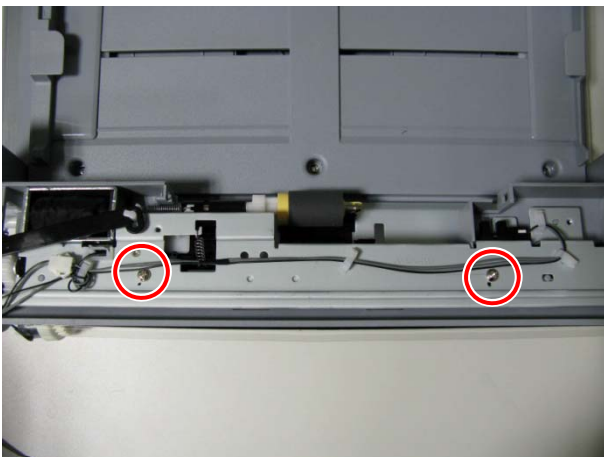
3. Remove 2 screws.
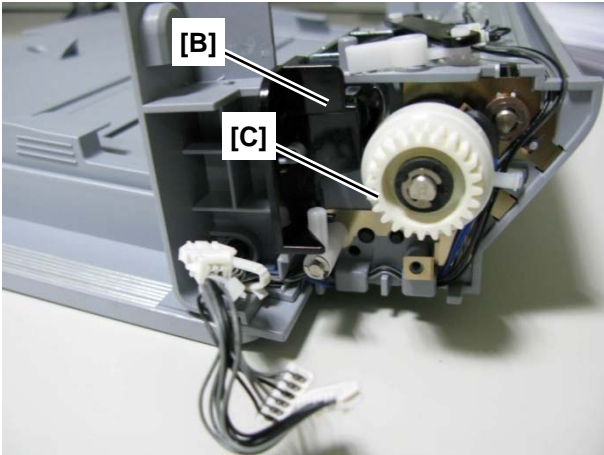
4. Remove the Link-Solenoid [B].
5. Remove the Clutch [C] after removing the E-ring.
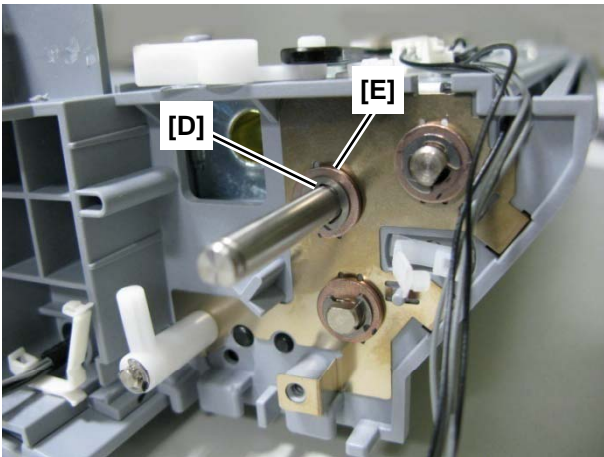
6. Remove 3 E-rings [D] and 3 Bushes [E].
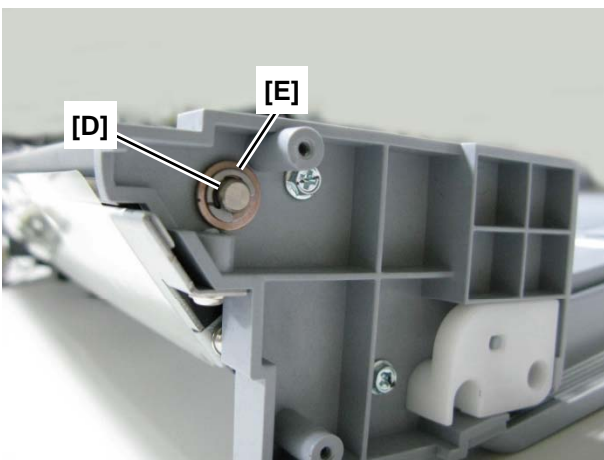
7. Remove the E-ring [D] and Bush[E].
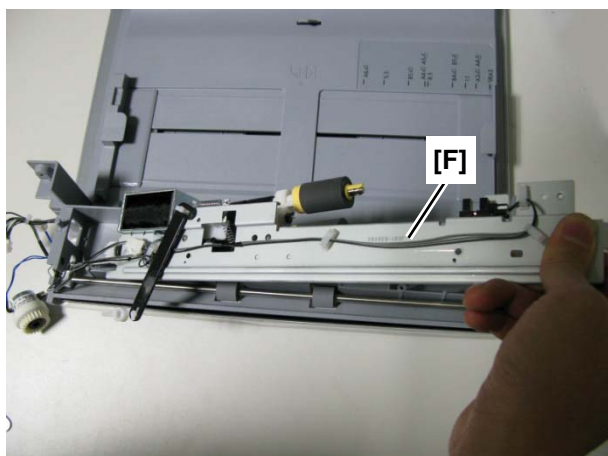
8. Remove the MP-Bracket Pick Up [F].
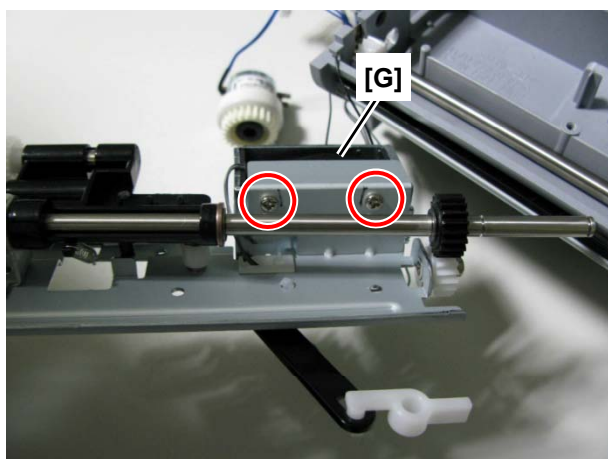
9. Remove the MP Solenoid [G] after removing 2 screws.

3.7 Electrical components

This section contains the procedures for disassembling the electrical components of the printer.

3.7.1 Engine controller

Perform the following procedure to remove the Engine Controller PBA from the printer.

1. Remove the rear upper cover [A] after removing 7 screws.
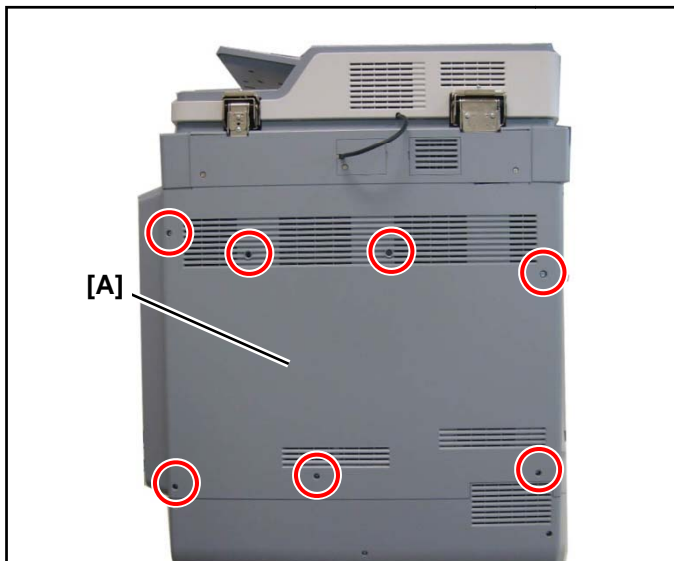
**CAUTION
Observe precautions
For handling
Electrostatic
Sensitive
Devices**

2. Slightly release 6 screws. It is not necessary to remove the screw completely.
Move the rear shield [B] in the direction of the arrow (yellow). Remove it.
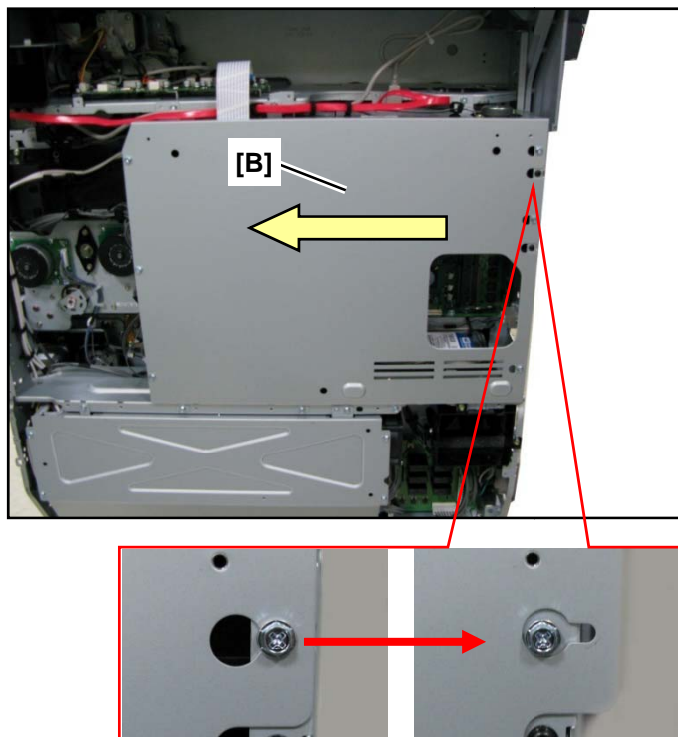
3. Take off the engine controller after removing 6 screws and all connectors.
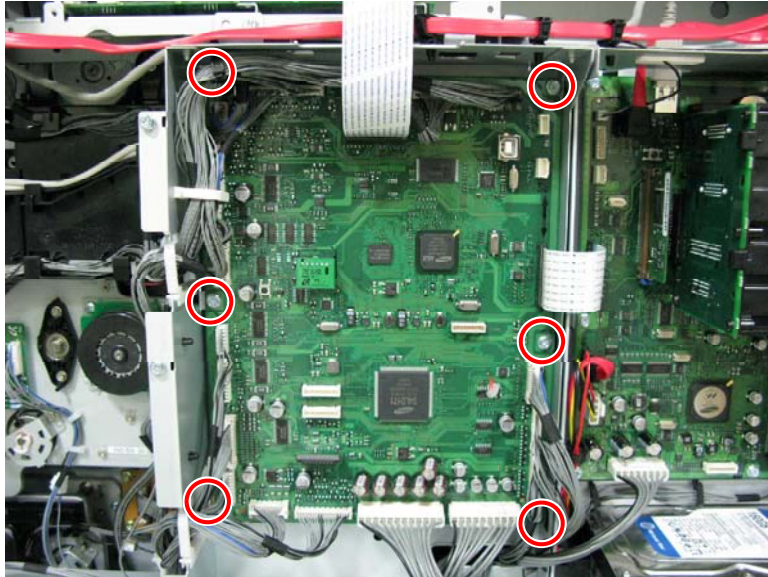
CAUTION
Observe precautions
For handling
Electrostatic
Sensitive
Devices

CAUTION
When replacing the engine board,
you must insert the MSOK and
Memory on new engine board.

3.7.2 Hard Disk Drive (HDD)

To remove the HDD from the printer, remove 4 screws and the cable.
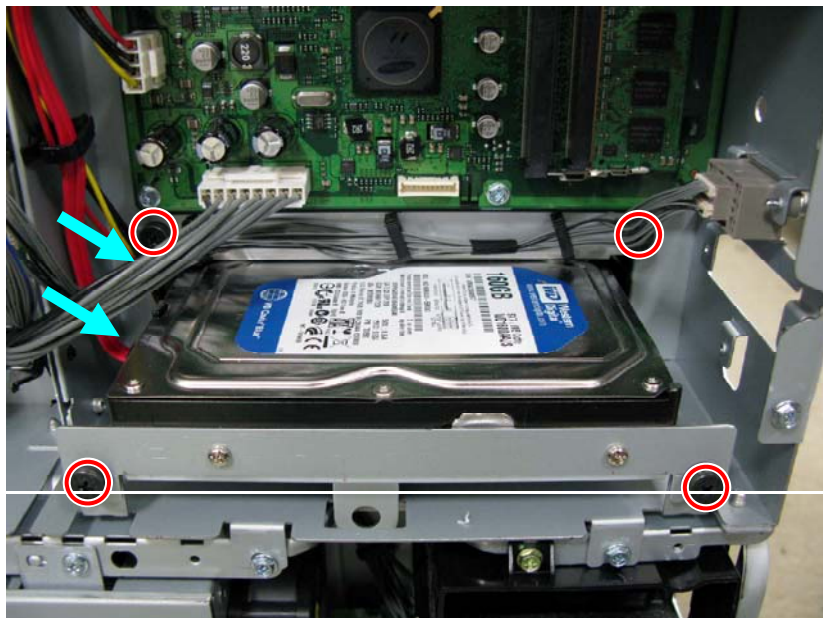
3.7.3 Video controller

Perform the following procedure to remove the Video Controller PBA from the printer.

1. Remove the Rear cover and Rear shield.
2. Take off the Top Slot [A] after removing 5 screws.
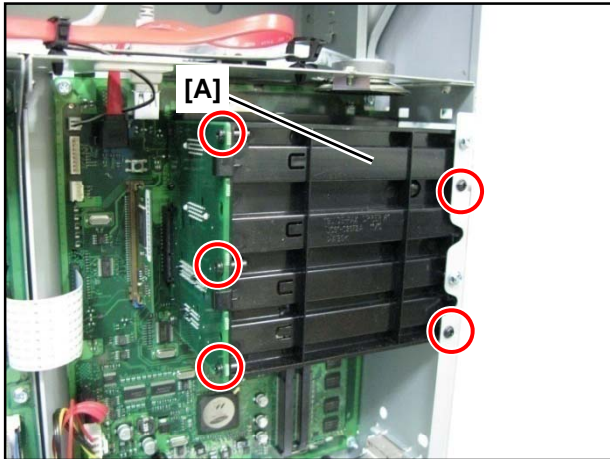
CAUTION
Observe precautions
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Electrostatic
Sensitive
Devices

3. Take off the Bottom Slot [B] after removing 2 screws.

4. Take off the video controller after removing 7 screws and all connectors.

MSOK

CAUTION
When replacing the Video board, you must insert the MSOK and Memory on the new video PBA.
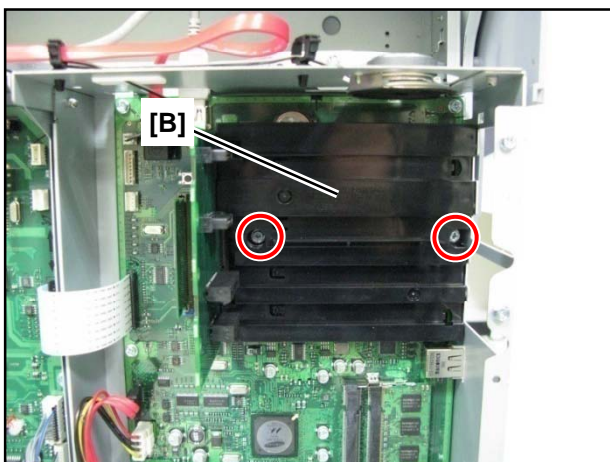
3.7.4 Joint PBA

To remove the Joint PBA from the printer, remove 4 screws and all of the connectors.
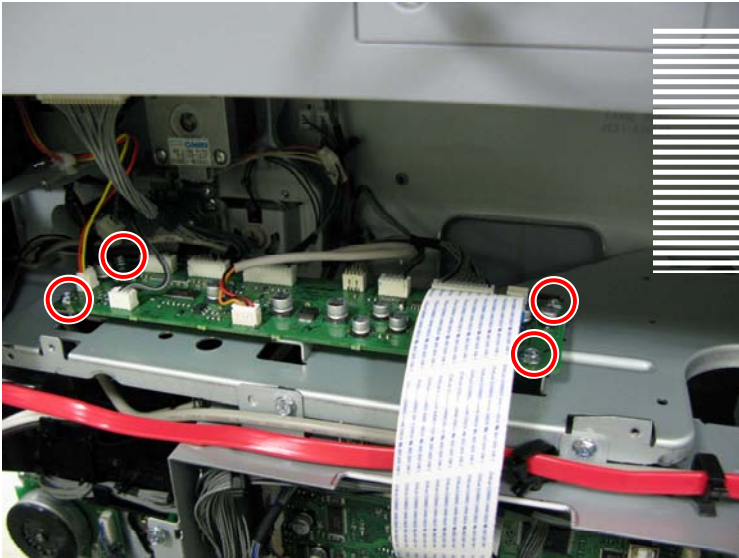
CAUTION
Observe precautions
For handling
Electrostatic
Sensitive
Devices

NOTE

You will need a short screwdriver.

3.7.5 Toner PBA

Perform the following procedure to remove the Toner PBA from the printer.

1. Unplug the flat cable and remove 4 screws.
2. Open the engine shield.

3. To remove a Toner PBA, remove 1 screw and 1 connector.
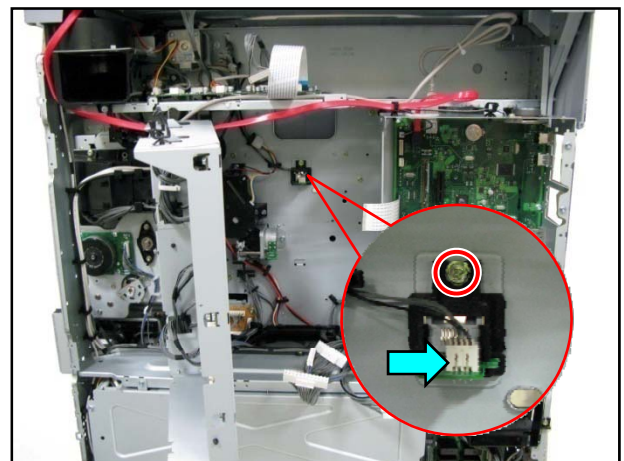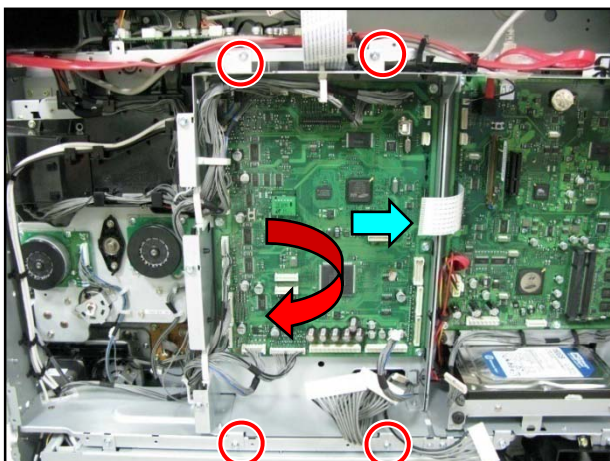
3.7.6 Toner Motor

Perform the following procedure to remove the Toner Motor from the printer.

1. Unplug the flat cable and remove 4 screws.
2. Open the engine shield.

3. To remove a Toner motor, remove 3 screws and 1 connector.
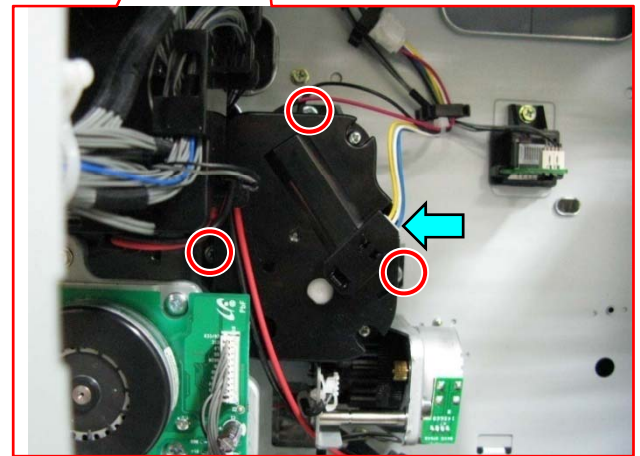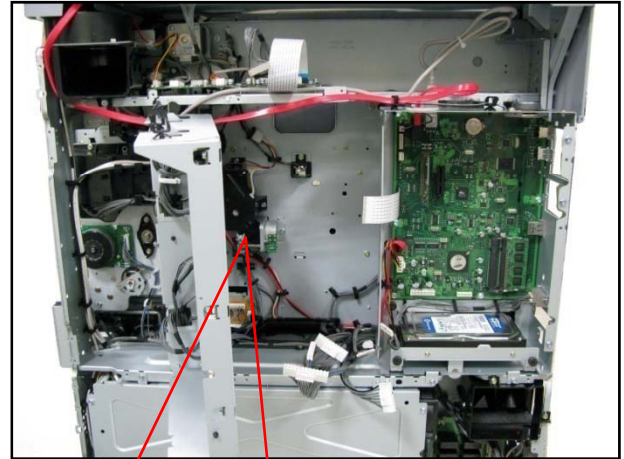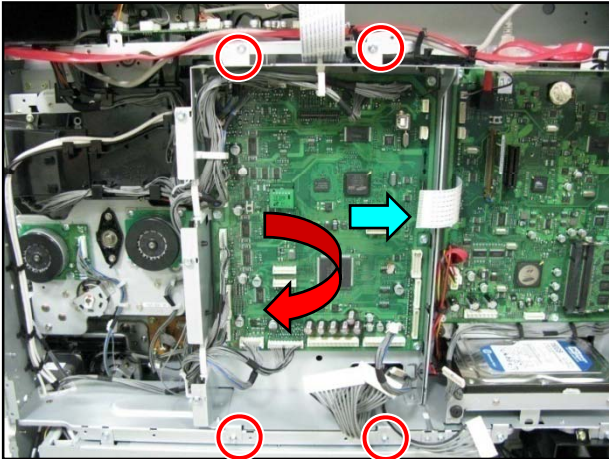
3.7.7 DC Power PBA

Perform the following procedure to remove the DC Power PBA from the printer.
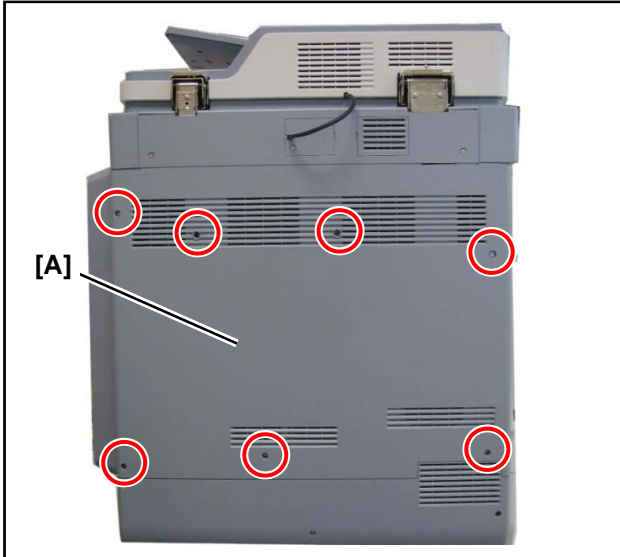
1. Remove the Upper Rear Cover [A] after removing 7 screws.
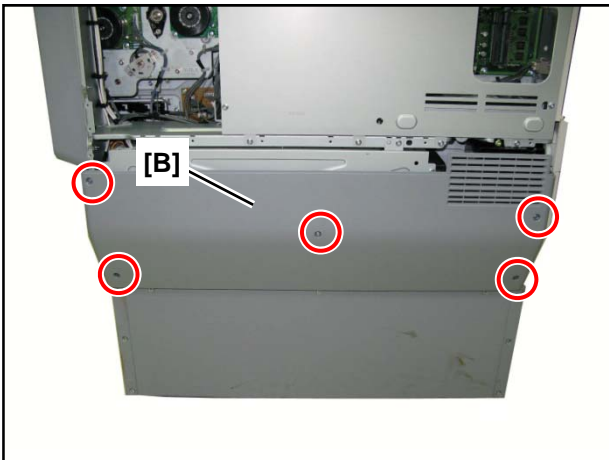
2. Remove the Lower Rear Cover [B] after removing 5 screws.
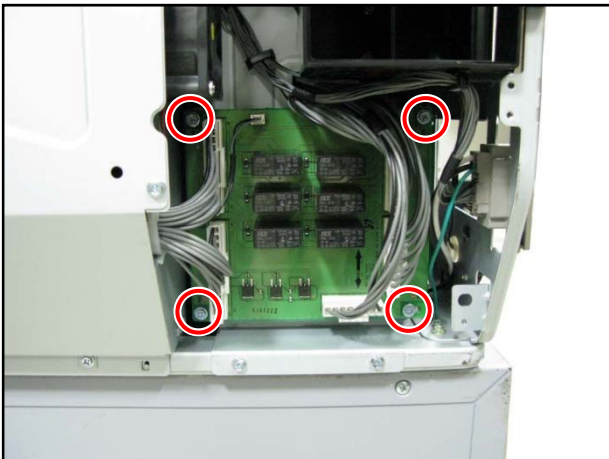
3. Unplug all of the connectors, remove 4 screws, and remove the DC Power PBA.

CAUTION
Observe precautions
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Sensitive
Devices

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3.7.8 High Voltage Power Supply (HVPS) PBA

Perform the following procedure to remove the HVPS PBA from the printer.

1. Remove the Lower Rear Cover [A] after removing 5 screws.
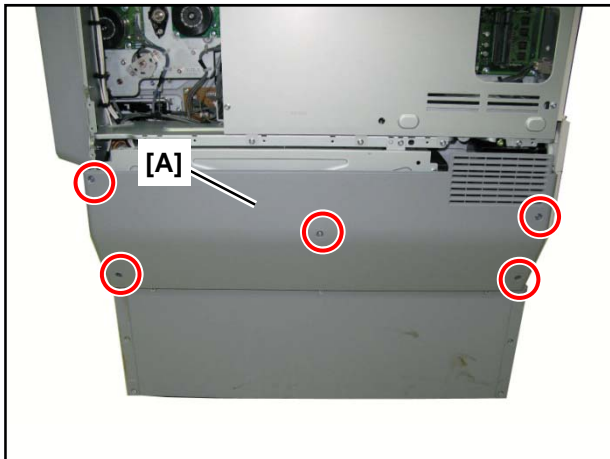
3. Remove 5 screws.
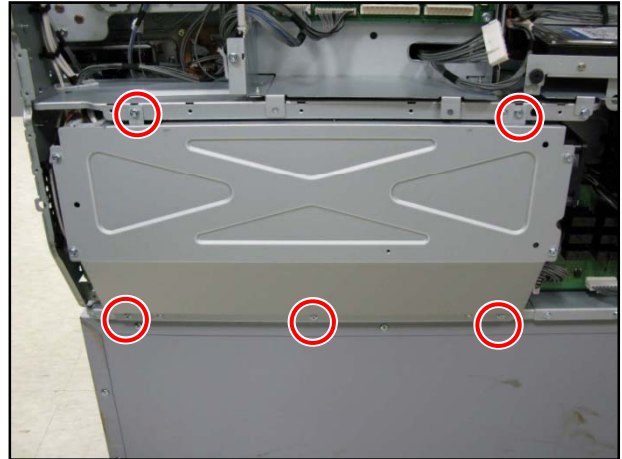
2. Unplug 2 connectors.

4. Put the SMPS box [B] down as shown below.
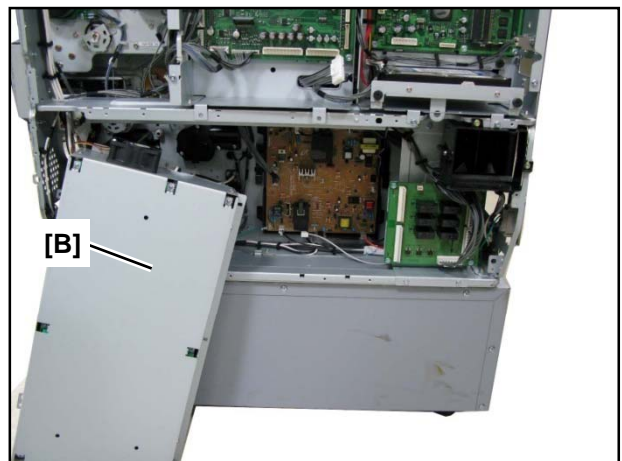
CAUTION
Observe precautions
For handling
Electrostatic
Sensitive
Devices

CAUTION
When unplugging this connector, be careful not to get hurt yourself.

5. Remove the HVPS board after removing 5 screws and all of the connectors.
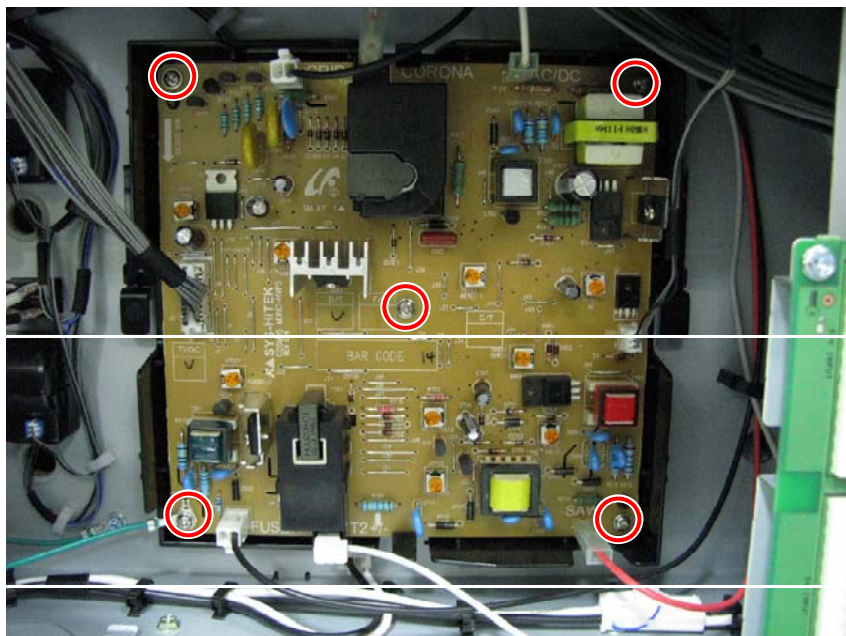
3.7.9 Lift motor

Perform the following procedure to remove the 2 Lift Motors from the printer.

There are 2 identical lift motors. To remove a lift motor, remove 3 screws and 1 connector.
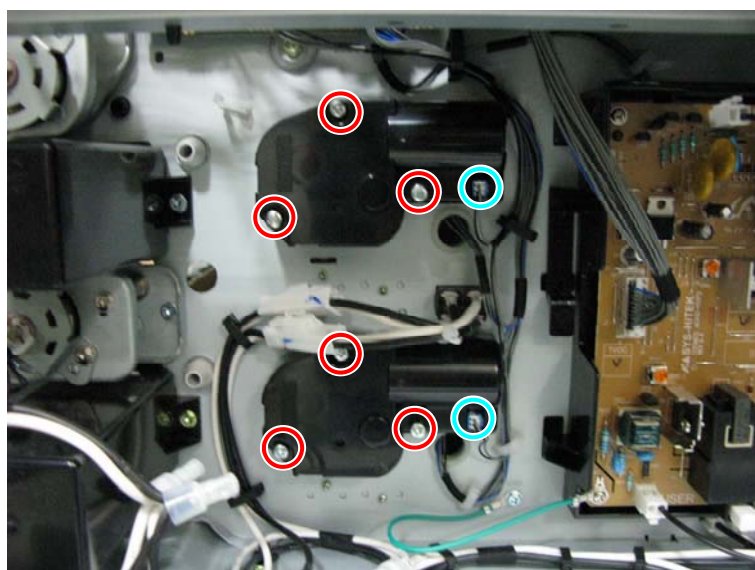
3.7.10 SMPS PBA

Perform the following procedure to remove the MPS PBA from the printer.

1. Remove the rear cover. (refer to 3.2.3)
2. Remove the 6 screws from the SMPS box.

3. Take off the SMPS board after removing 8 screws and all connectors.
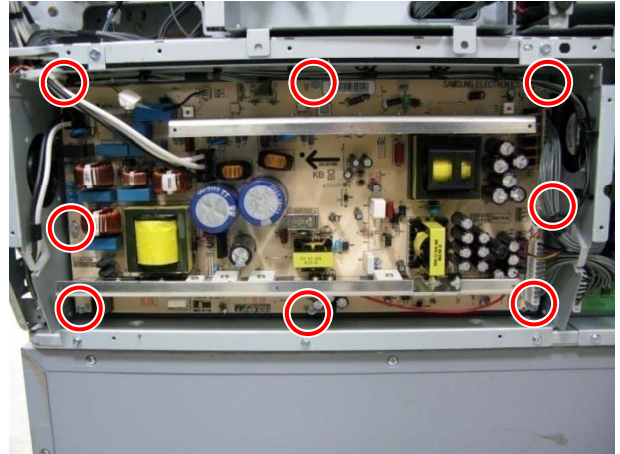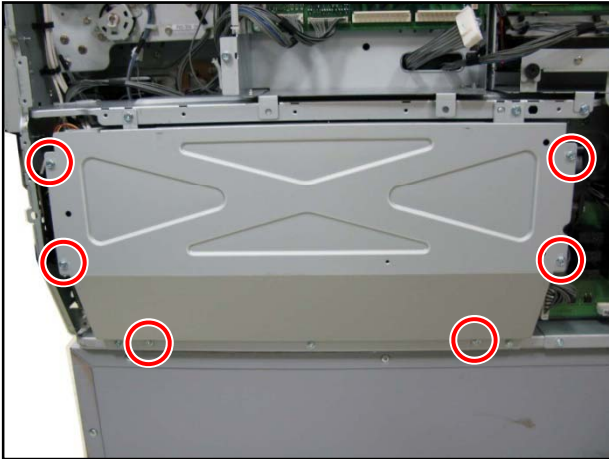
3.7.11 SMPS Fan

Perform the following procedure to remove the SMPS Fan from the printer.
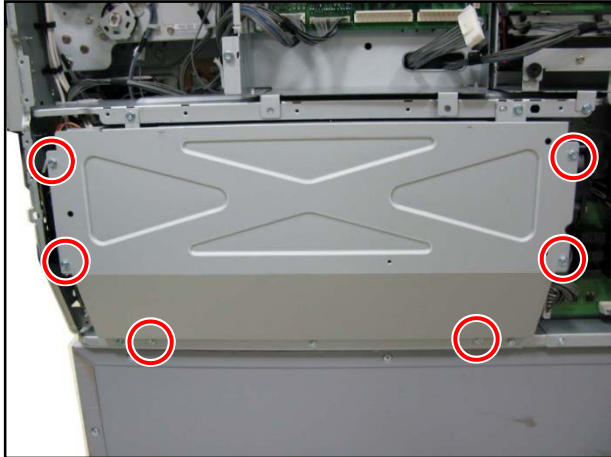
1. Remove the rear cover. (refer to 3.2.3)
2. Remove the 6 screws from the SMPS box.
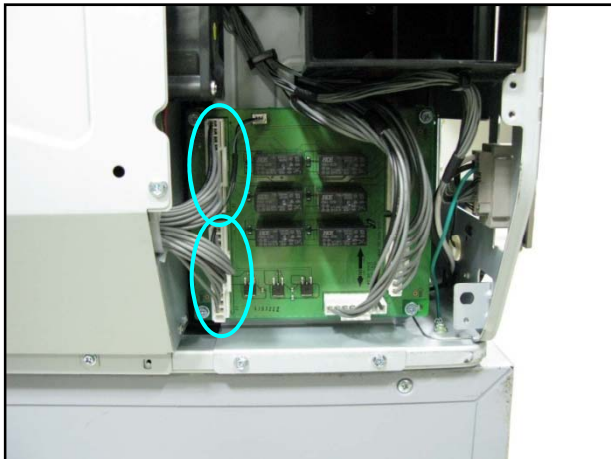
3. Unplug 2 connectors from DC power PBA.
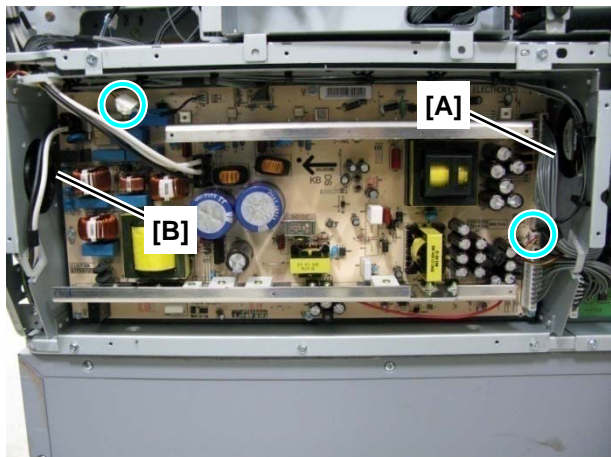
4. Unplug the connector from the fan you want to replace.
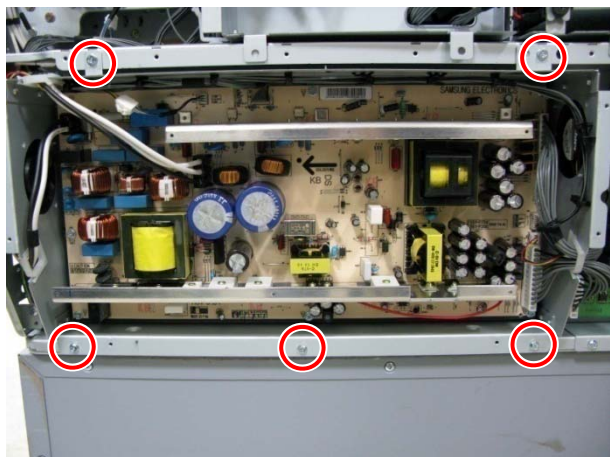
5. Take off the SMPS box after removing 5 screws.
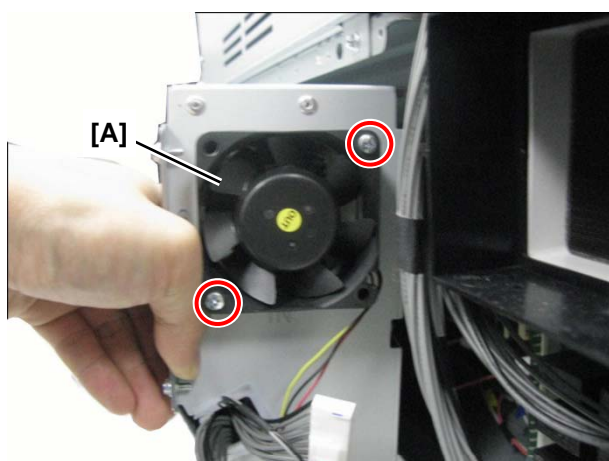
6. Remove Fan A or Fan B from the SMPS box after removing 2 screws.

CAUTION
Please attach "OUT" label on the replacement FAN to match the direction and location on the original fan.

[A]

[B]

220V
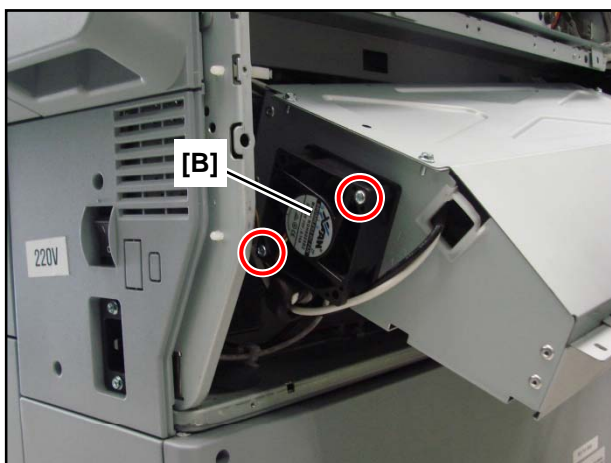
3.7.12 Ozone filter Fan

1. Remove the video controller shield after removing 4 screws.
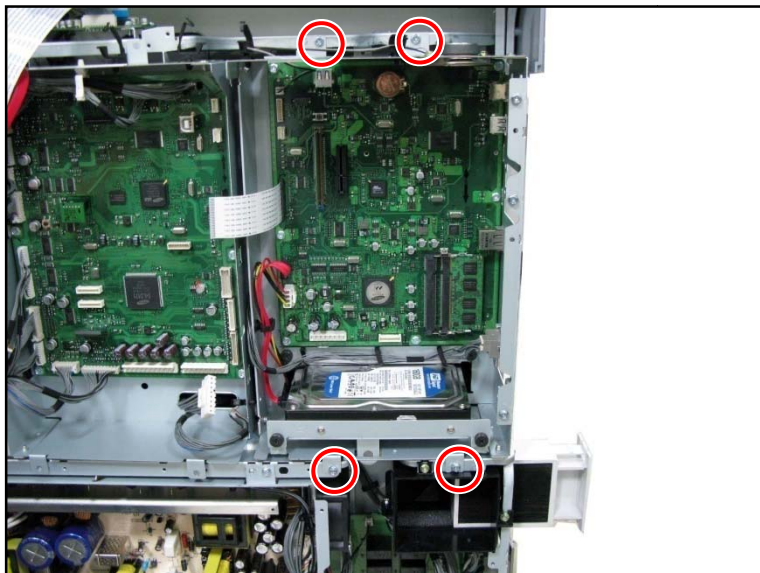
2. Remove the Ozone filter [A].
3. Remove the 5 screws.
4. Release the harness from the holder and Unplug the connector.
5. Remove the Ozone Filter Fan.
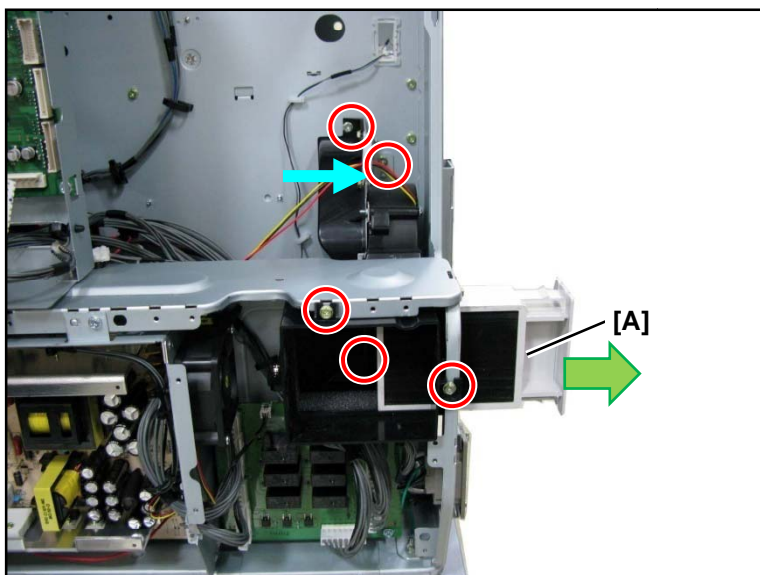
3.7.13 Side joint PBA

Perform the following procedure to remove the Side joint PBA from the printer.

1. Open the side unit.
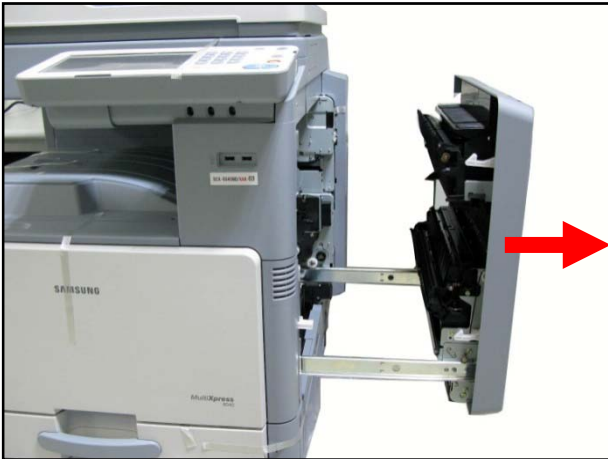
2. Release the side joint board cover after removing 2 screws.

Push !
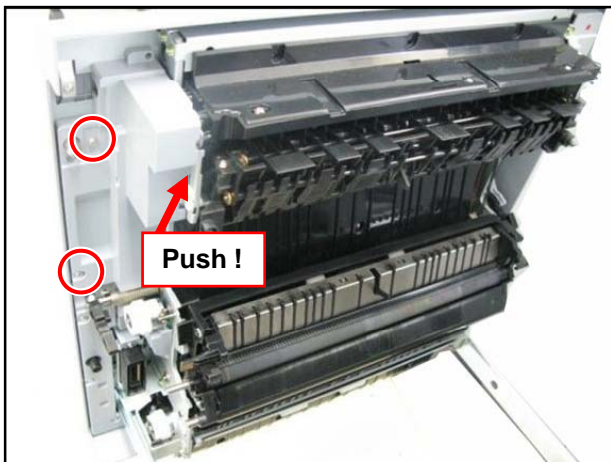
3. Unplug all connectors.
4. Remove 4 screws.
5. Release the side joint board.
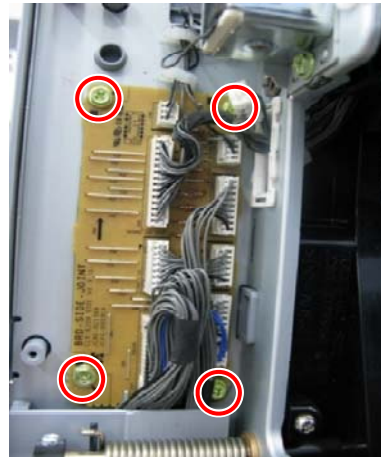
CAUTION
When you reassemble the side joint board to the side unit, make sure the harness arrangement is correct.
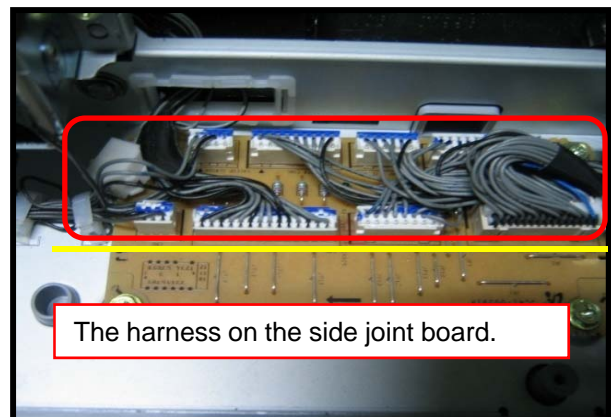
The harness on the side joint board.
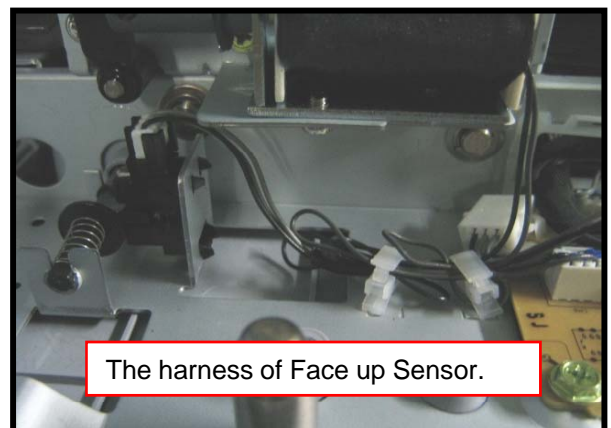
The harness of Face up Sensor.

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3.7.14 Eraser lamp

To remove the eraser lamp. first, remove the toner cartridge, imaging unit and inner cover. Refer to the step 1~12 of the 3.14 LSU disassembly.

1. Remove 1 screw.

2. Unplug the connector and remove the eraser lamp.
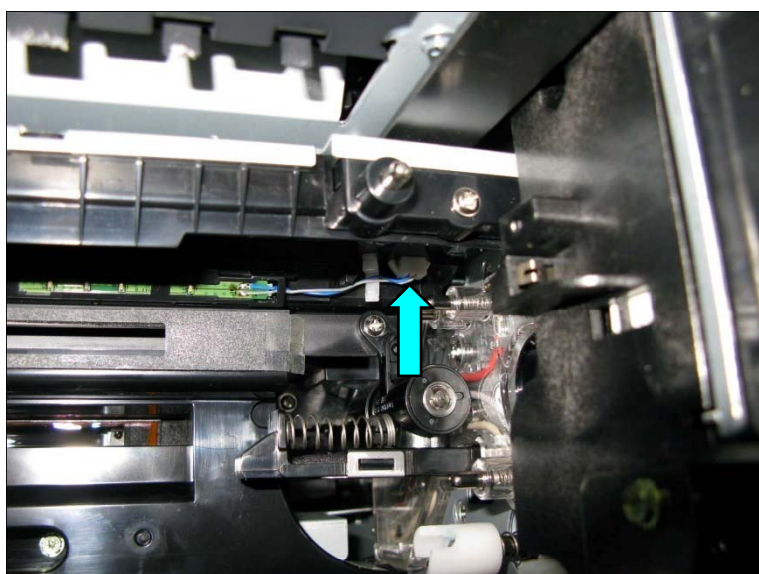
3.7.15 Waste sensor PBA

To remove the waste sensor PBA. first, remove the toner cartridge, imaging unit and inner cover.
Refer to the step 1~12 of the 3.14 LSU disassembly.

Remove the waste sensor PBA after removing 1 screw and connector.
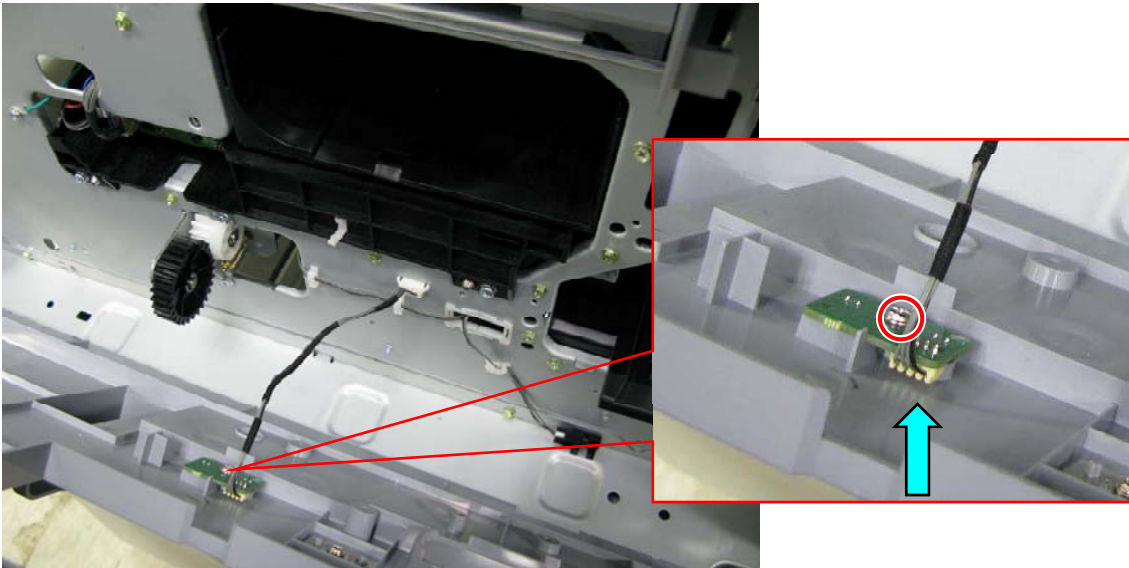
3.7.16 Temperature sensor

3.7.16.1 Outer Temperature sensor

1. Remove the left cover. (Refer to 3.2.2 Left cover.)
2. Remove the outer temperature sensor after removing 1 screw and connector.
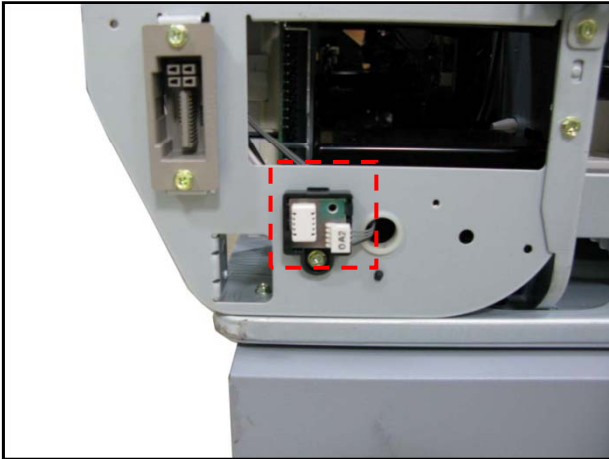
3.7.16.2 Inner Temperature sensor

1. Open the Cover-Side and remove the fuser unit. (Refer to 3.5 Fuser unit)
2. Remove the sensor cover after removing 3 screw.
3. Unplug the connector and release the temperature sensor.
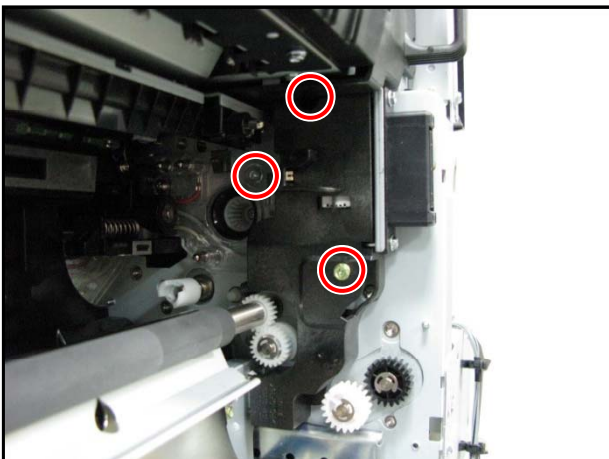
3.8 Main drive unit

This section contains the procedures for disassembling the Main Drive Unit of the printer.
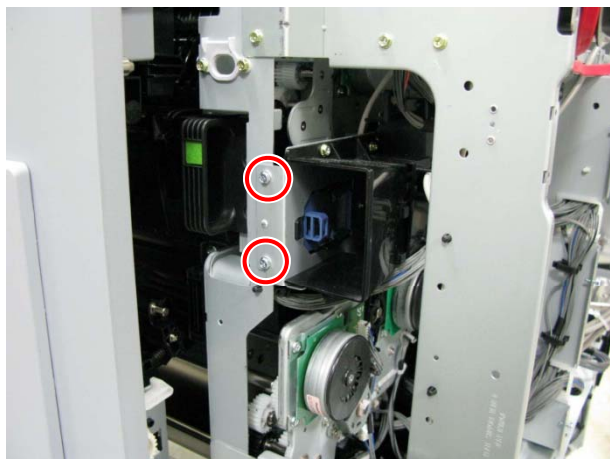
1. Remove 2 screws.
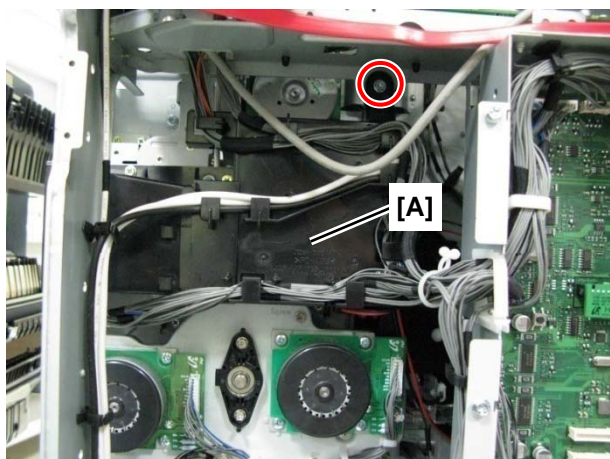
2. Release the harness from the holder.
3. Remove the harness holder after removing 1 screws.
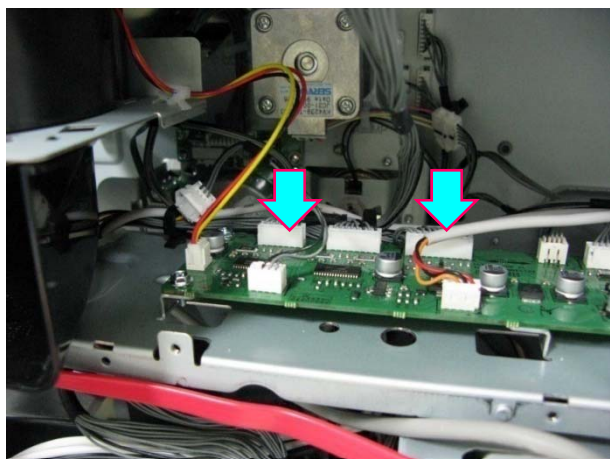
4. Unplug 2 connectors.

5 . Remove the Main Drive unit after removing 5 screws.
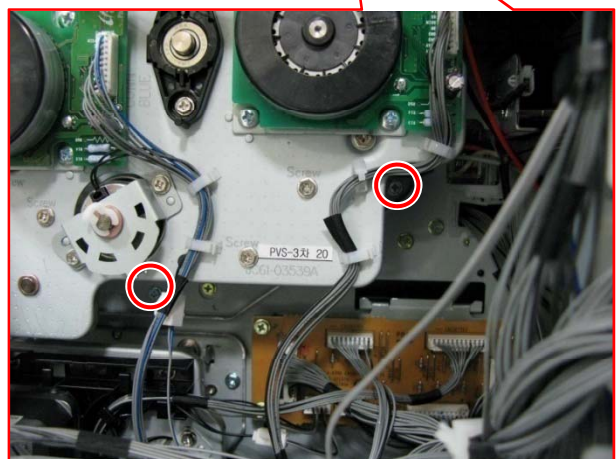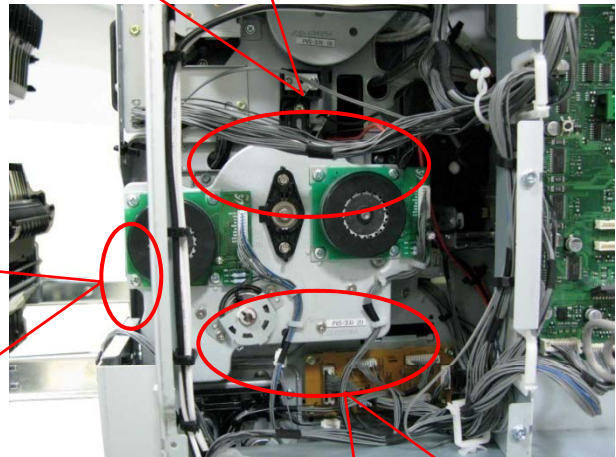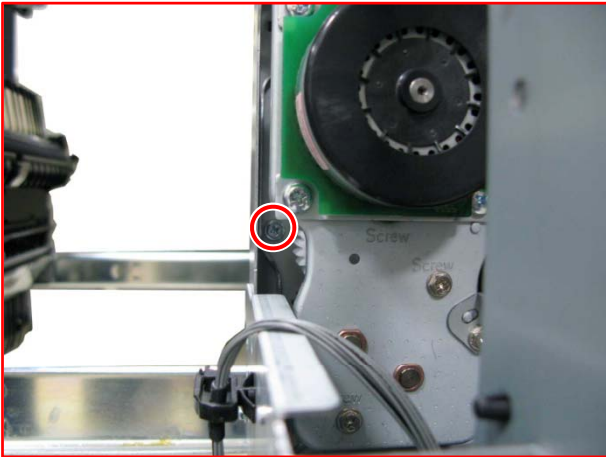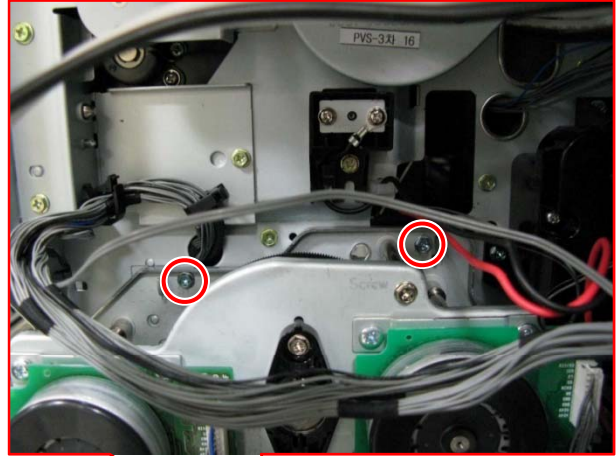
3.8.1 Main drive motor

There are 2 identical motors in the main drive unit.
To remove a motor, remove 4 screws and 1 connector.
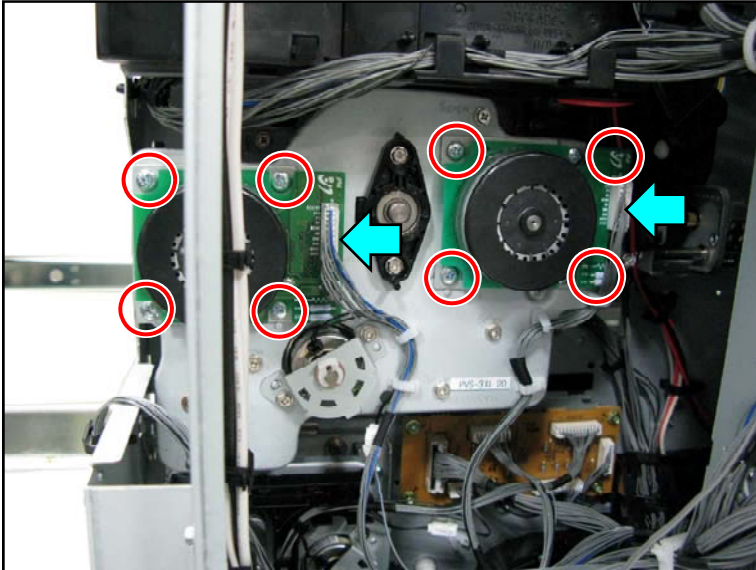
CAUTION
Be careful not to change the two connectors.
The arrows indicate the proper connector for each motor (Grey/Black for right side motor, Grey/Blue for left side motor)

3.8.2 Main drive clutch

1. Remove the bracket after removing 2 screws and the Fixer.

2. Remove the clutch after unplugging the connector and E-ring.
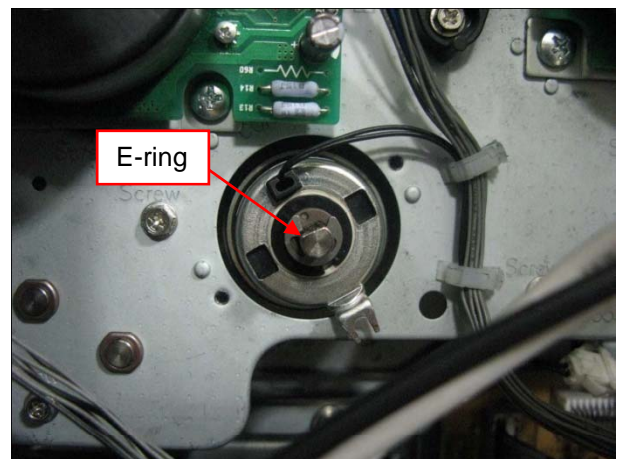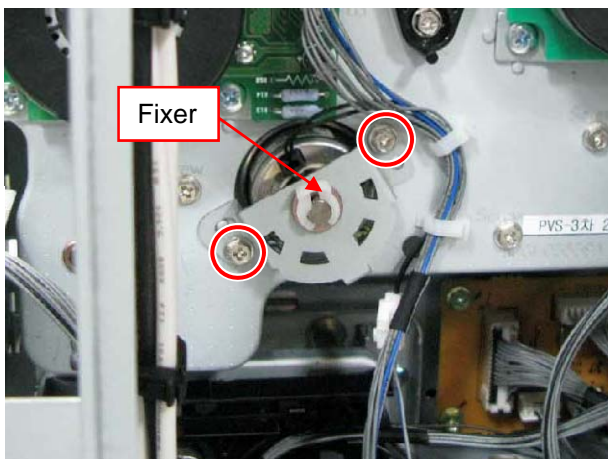
3.9 Exit drive unit

This section contains the procedures for disassembling the Exit Drive Unit components of the printer.
To remove the Exit Drive Unit, perform the following procedure.

1. Remove the engine controller shield.
2. Remove fuser out fan and duplex fan after removing 4 screws.
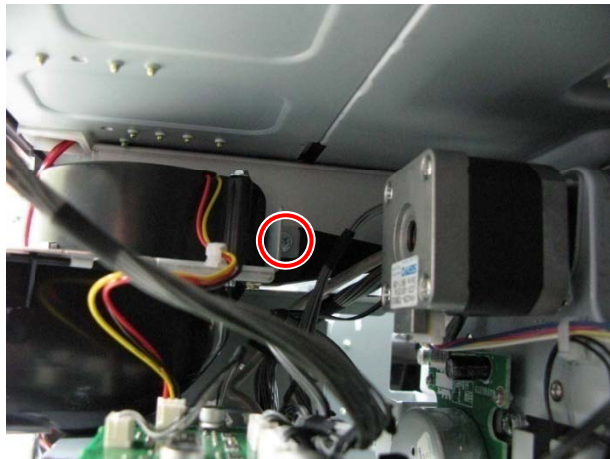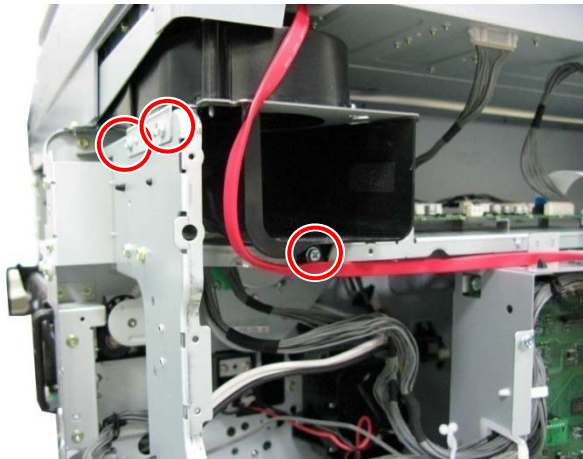
3. Remove exit drive unit after removing 3 screws and all of the connectors.
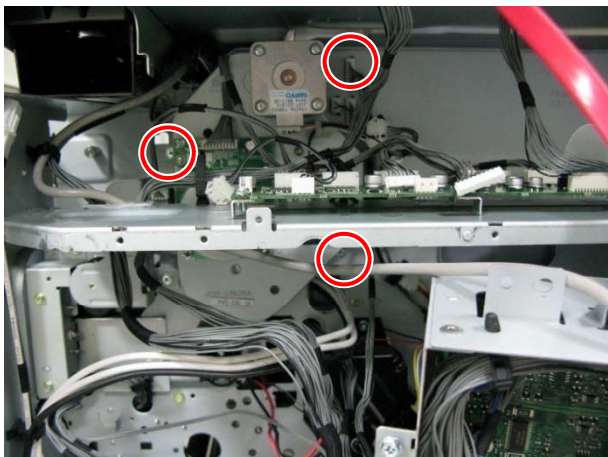
3.9.1 Exit drive motor

1. Remove the Exit drive unit. (refer to 3.9)
2. To remove the motor, remove 4 screws and 1 connector.
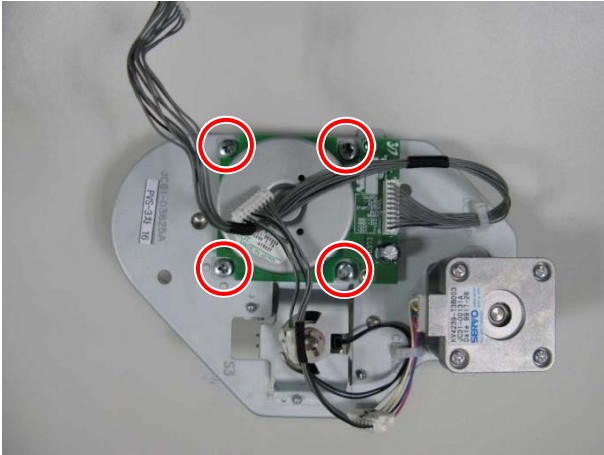
3.10 Toner Duct Drive unit

Perform the following procedure to remove the Toner Duct Drive unit from the printer.

1. Unplug the flat cable and remove 4 screws.
2. Open the engine shield.

3. To remove a Toner motor, remove 2 screws.
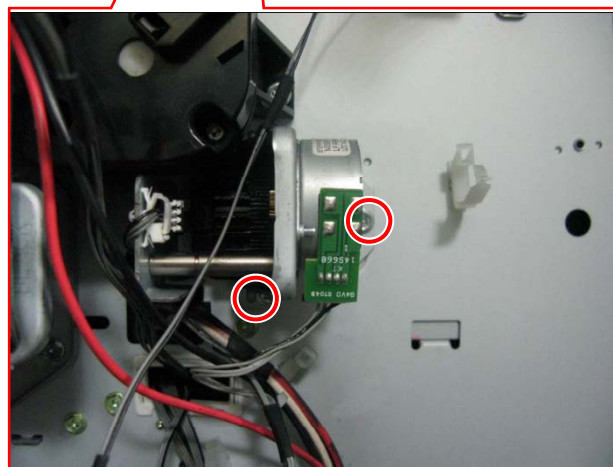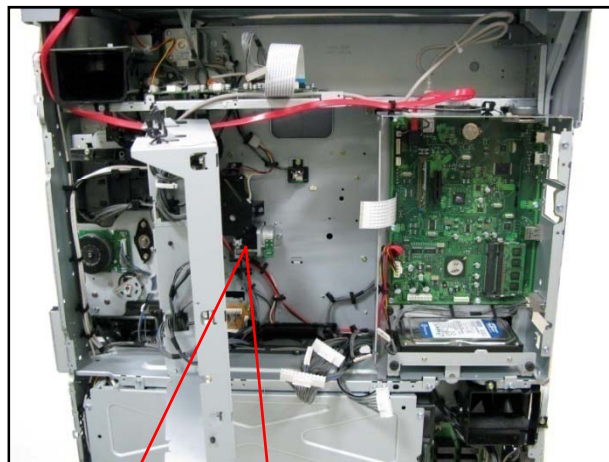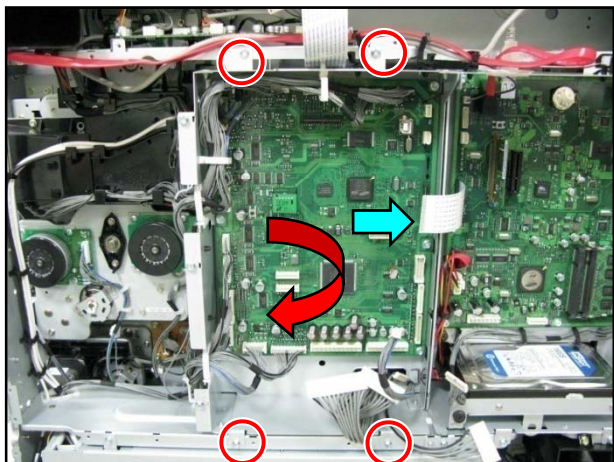
3.11 PR Release Drive unit

Perform the following procedure to remove the PR Release Drive Unit.

1. Remove the Main Drive unit and Exit Drive unit. (Refer to 3.8~3.9.1)
2. Remove the PR Release Drive unit after removing 3 screws and 1 connector.
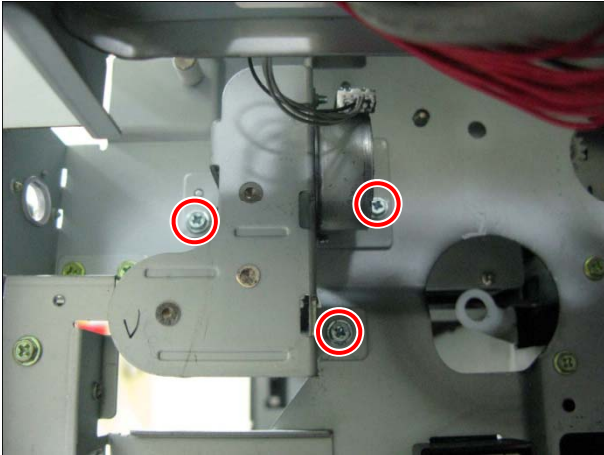
3.12 Pick-up drive unit

This section contains the procedures for disassembling the Pick-up Drive Unit components of the printer. Perform the following procedure to remove the Pick-up Drive Unit.

1. Remove the SMPS box.
2. Remove Pickup Drive Unit after removing 3 screws and all connectors
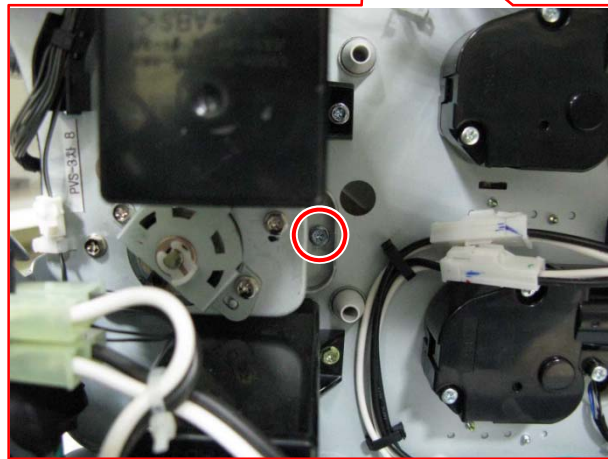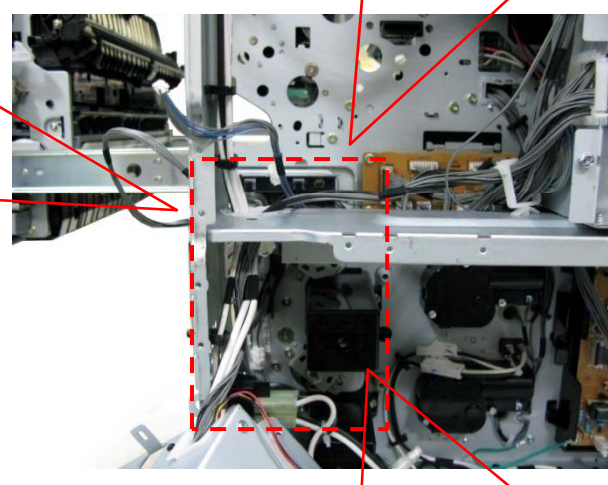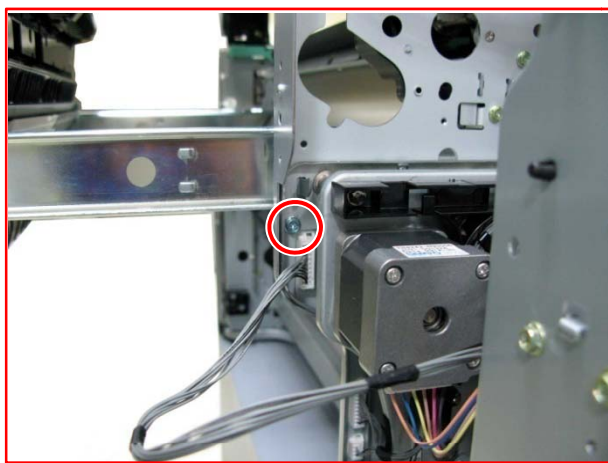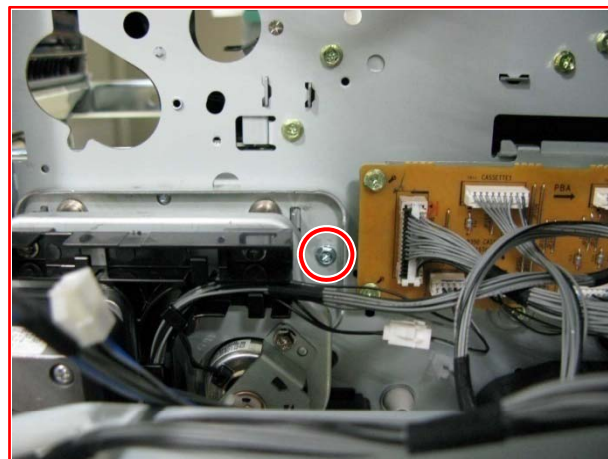
3.13 WTB leveling drive unit

1. Open the front cover.
2. Remove the waste toner container [A].
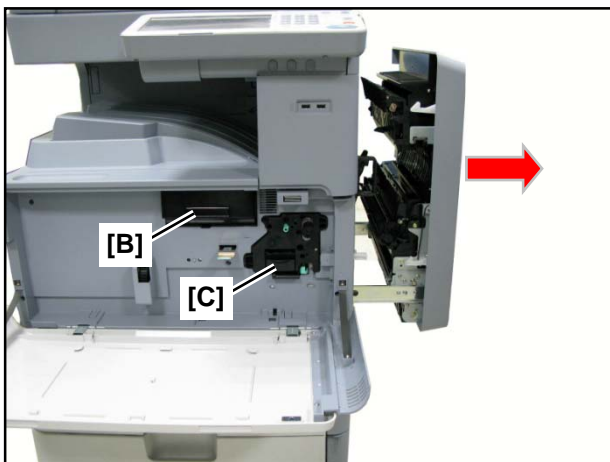
3. Open the side door.
4. Remove the toner cartridge [B] and the imaging unit [C].

CAUTION
Be careful not to scratch the surface of the imaging unit.

To prevent damage, do not expose the imaging unit to light for more than a few minutes. Cover it with a piece of paper to protect it if necessary.
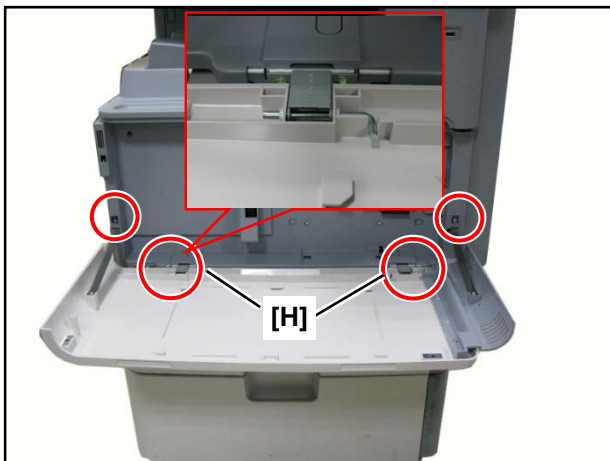
5. Remove 2 screws and 2 pins [H].
6. Remove the front cover.
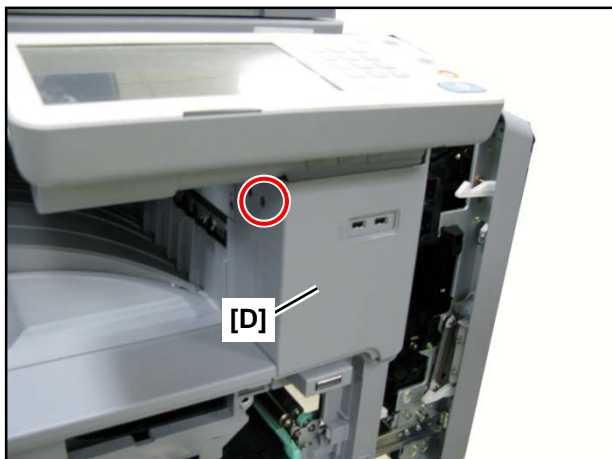
7. Remove the OPE hinge cover [D] after removing 1 screw.
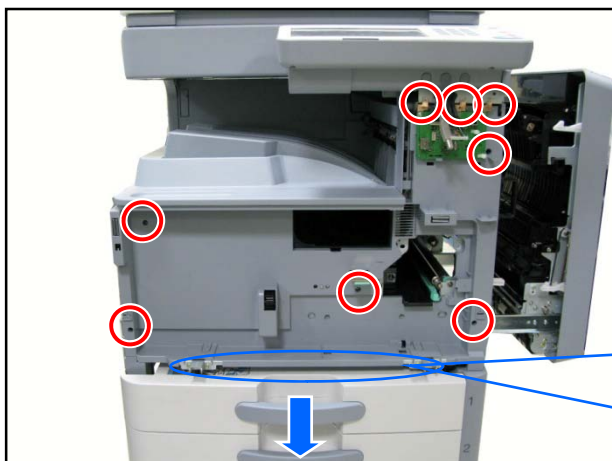
8. Remove 8 screws.
9. Remove the tray1 cassette.
10. Remove the inner cover by pushing 2 hooks.
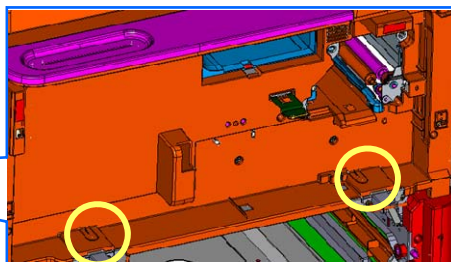
11. Open the harness holder.

CAUTION
When reassembling the inner cover, do not forget to place the harness in its holder.
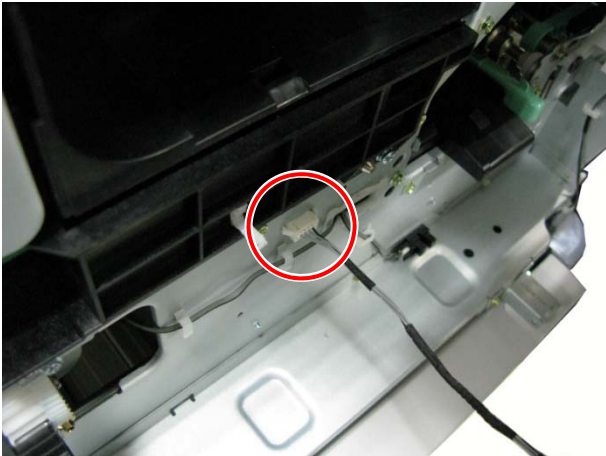
12. Unplug the connector.

CAUTION
When reassembling the inner cover, do not forget to plug the connector.
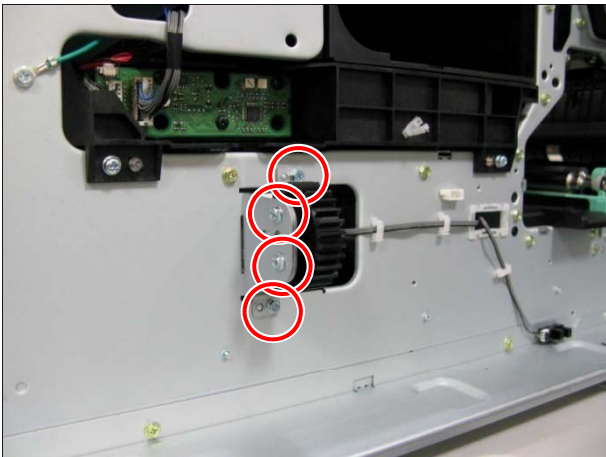
13. Remove the WTB leveling drive unit after removing 4 screws.

3.14 LSU (Laser Scanning Unit)

1. Open the front cover.
2. Remove the waste toner container [A].
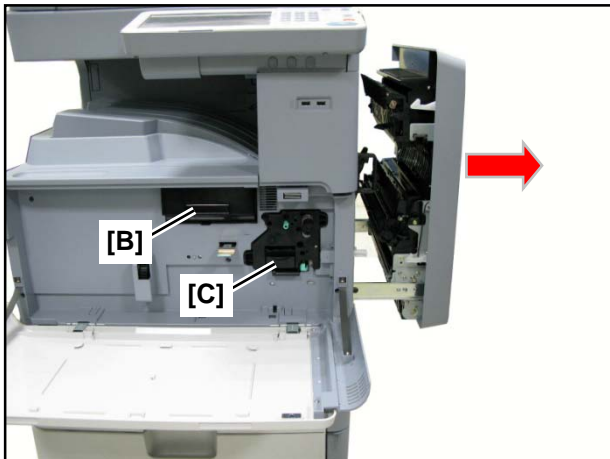
3. Open the side door.
4. Remove the toner cartridge [B] and the imaging unit [C].

CAUTION
Be careful not to scratch the surface of the imaging unit.

To prevent damage, do not expose the imaging unit to light for more than a few minutes. Cover it with a piece of paper to protect it if necessary.
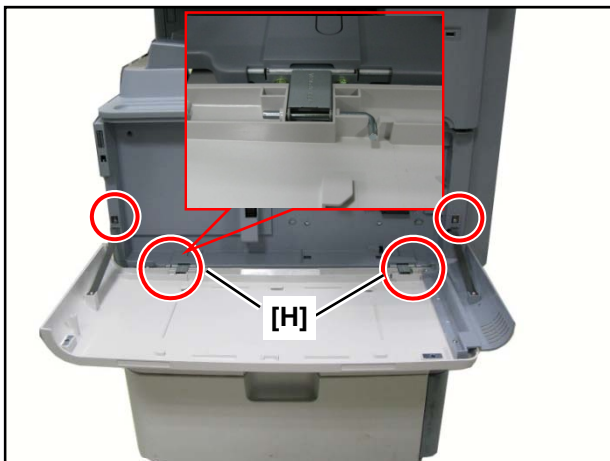
5. Remove 2 screws and 2 pins [H].
6. Remove the front cover.
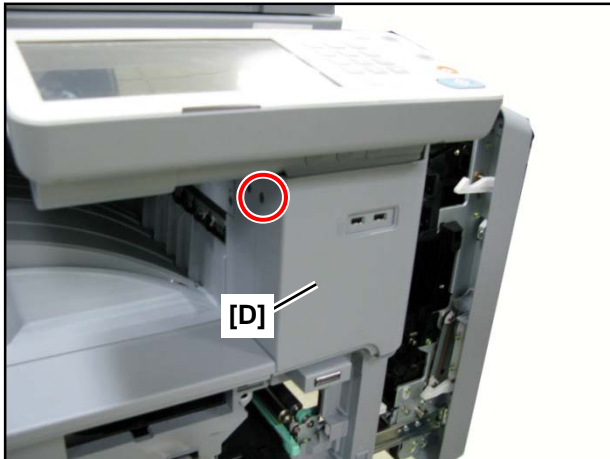
7. Remove the OPE hinge cover [D] after removing 1 screw.
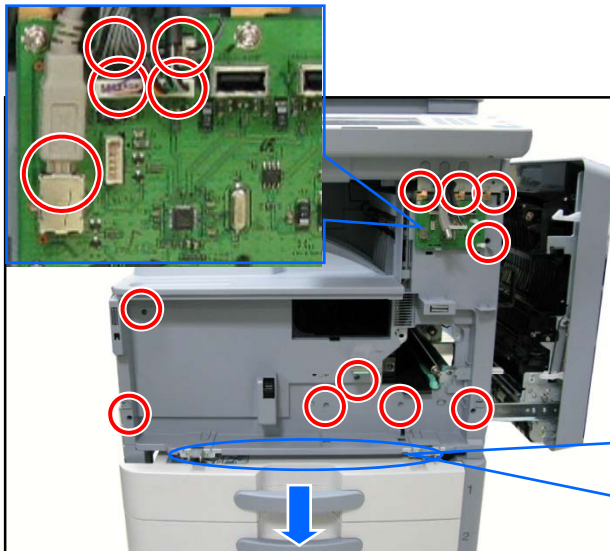
8. Remove 10 screws and unplug the connectors.

CAUTION
When reassembling the OPE cover, do not forget to plug the connectors.

9. Remove the tray1 cassette.
10. Remove the inner cover by pushing 2 hooks.
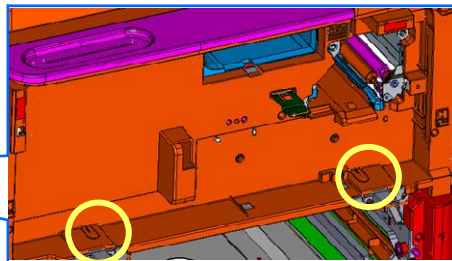
11. Open the harness holder.

CAUTION
When reassembling the inner cover, do not forget to place the harness in its holder.
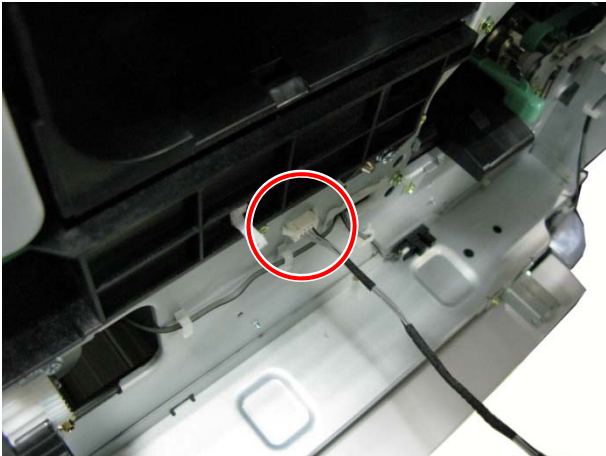
12. Unplug the connector.

CAUTION
When reassembling the inner cover, do not forget to plug the connector.
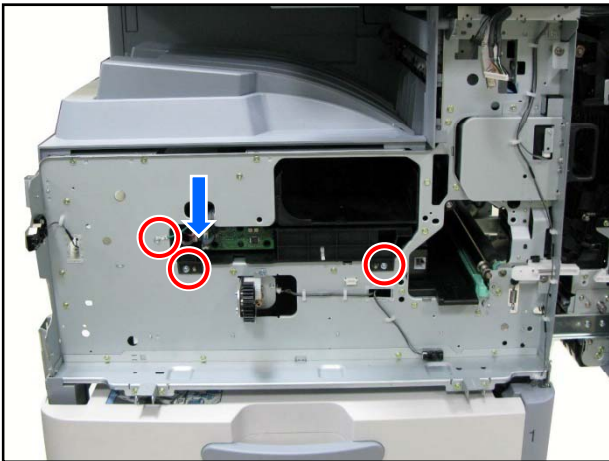
13. Remove 3 screws and 1 connector.

CAUTION
Be careful not to touch the LSU window.
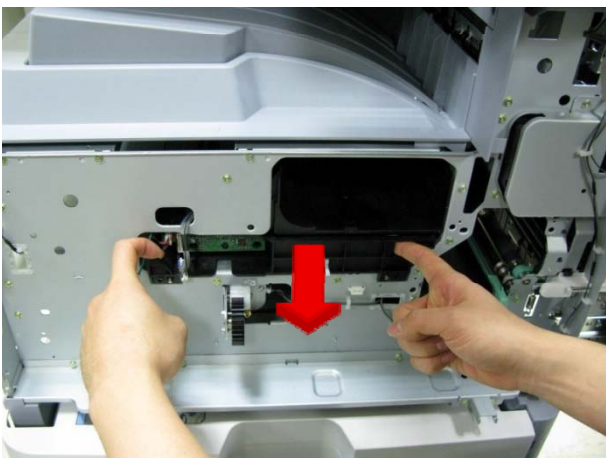
14. Take out the LSU.

3.15 Frame-Duct

To remove the Frame-Duct. first, remove the toner cartridge, imaging unit and side-unit. Refer to the step 1~10 of the 3.14 LSU disassembly.
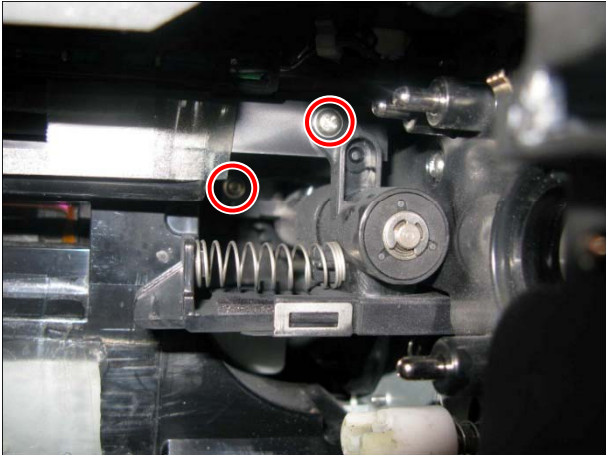
1. Remove 2 screws.
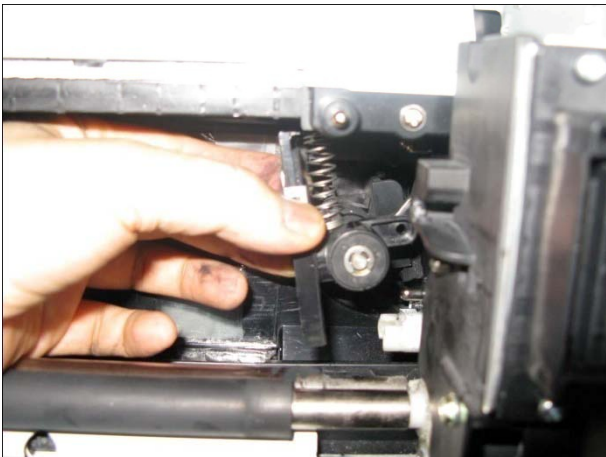
2. Remove the Frame-Duct.

3.16 DADF unit

This section contains the procedures for disassembling the DADF Unit components of the printer.
To remove the DADF Unit, perform the following procedure.

1. Remove the left/right hinge cover.
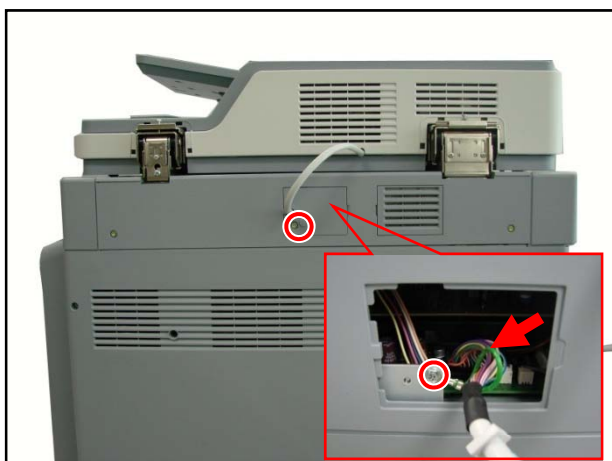
2. Remove 1 screw.
3. Open the connector cover. Remove 1 screw. And unplug the connector.
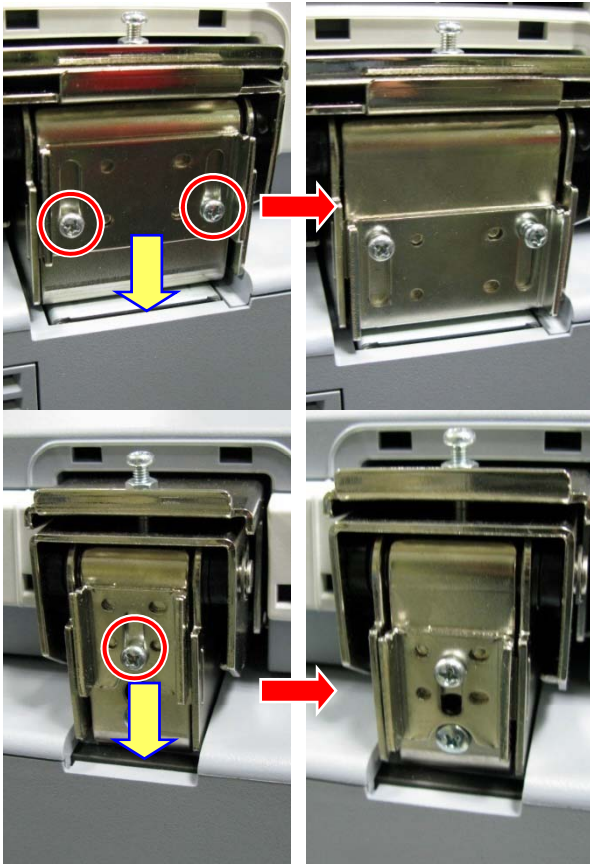
4. Loosen 3 screws.
5. Pull down the stoppers and tighten 3 screws.

6. Open the DADF.
7. Take off the sponge-sheet.
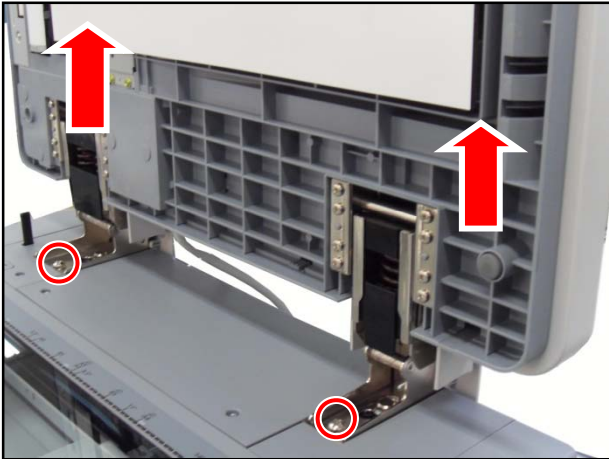
8. Remove 2 screws.
9. Lift up and release the DADF.

*See illustration for rear side view of DADF

Reassembling the DADF whole unit

To reassemble the DADF, perform the following procedure.
1. Lift the DADF, and put in the DADF brackets to the machine as shown below.
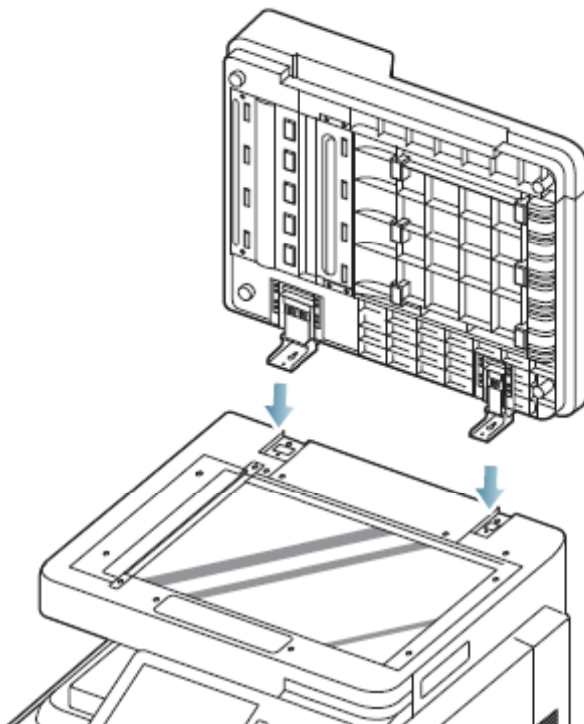
2. Loosely tighten the two handle hinges for fixing the DADF.
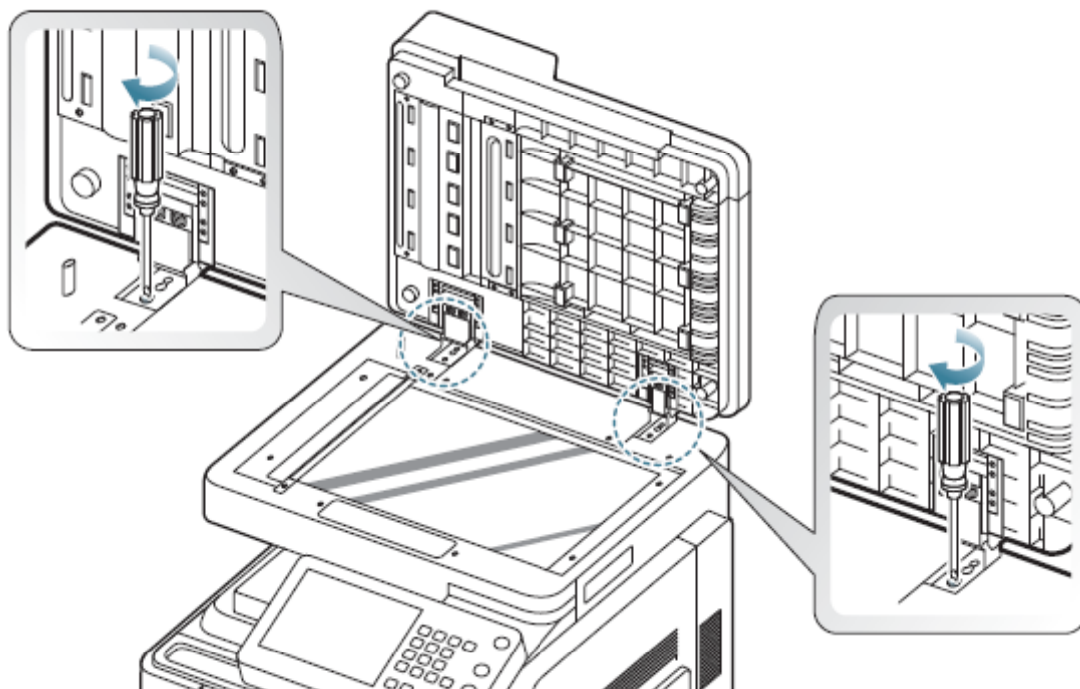
3. Fix the steel plate on the longest scale mark using the handle hinge. A scale mark is approximately 0.5 mm.
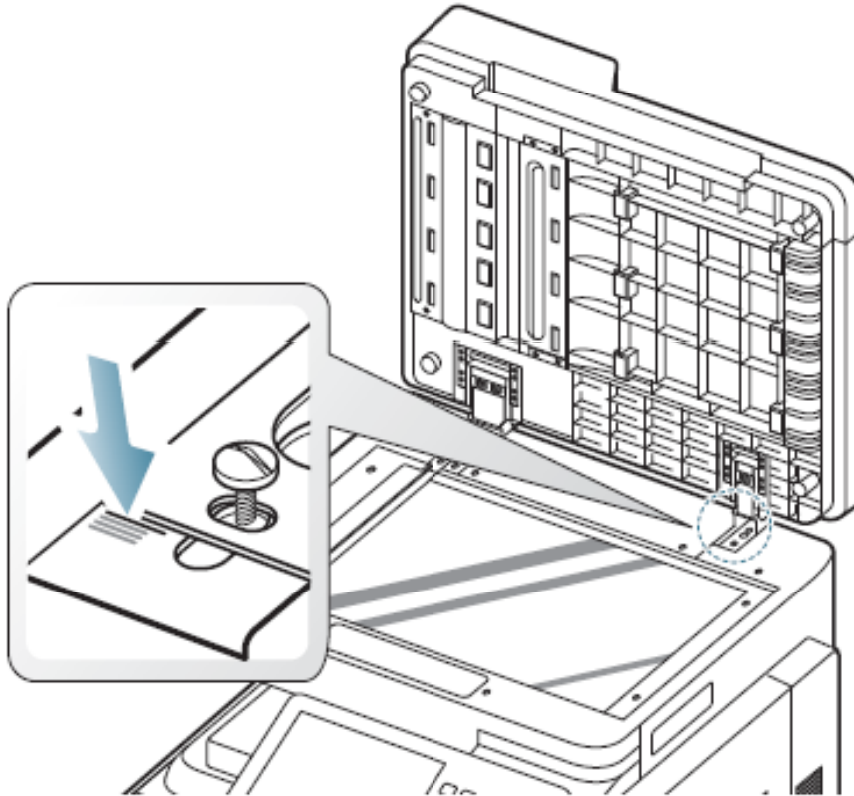
NOTE - You can locate the scale mark by handling it back and forth while tightening or loosening the screw at the backside.
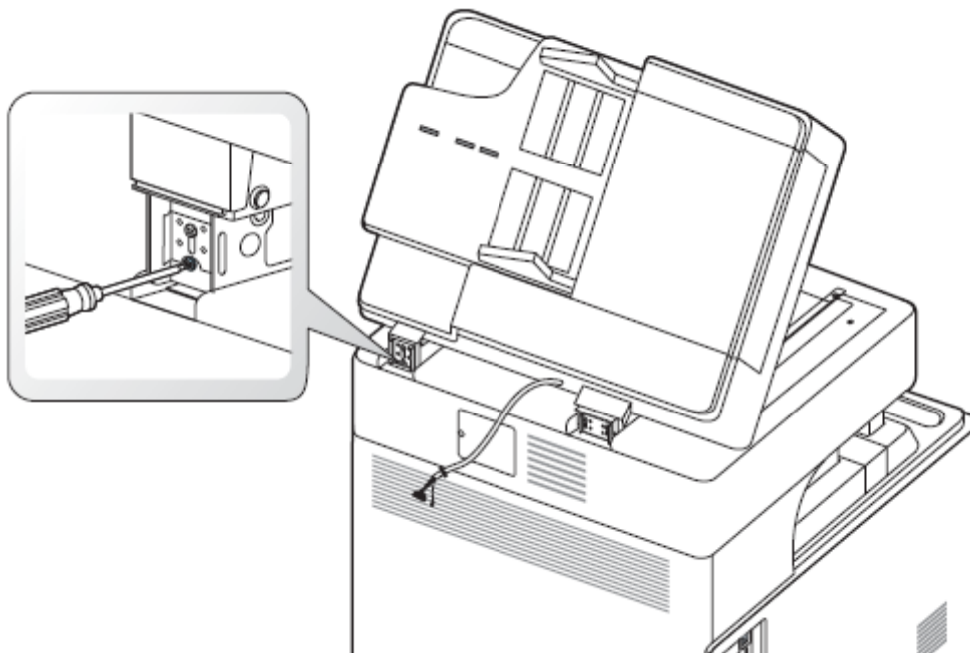
4. Tighten the two handle hinges for fixing the DADF.
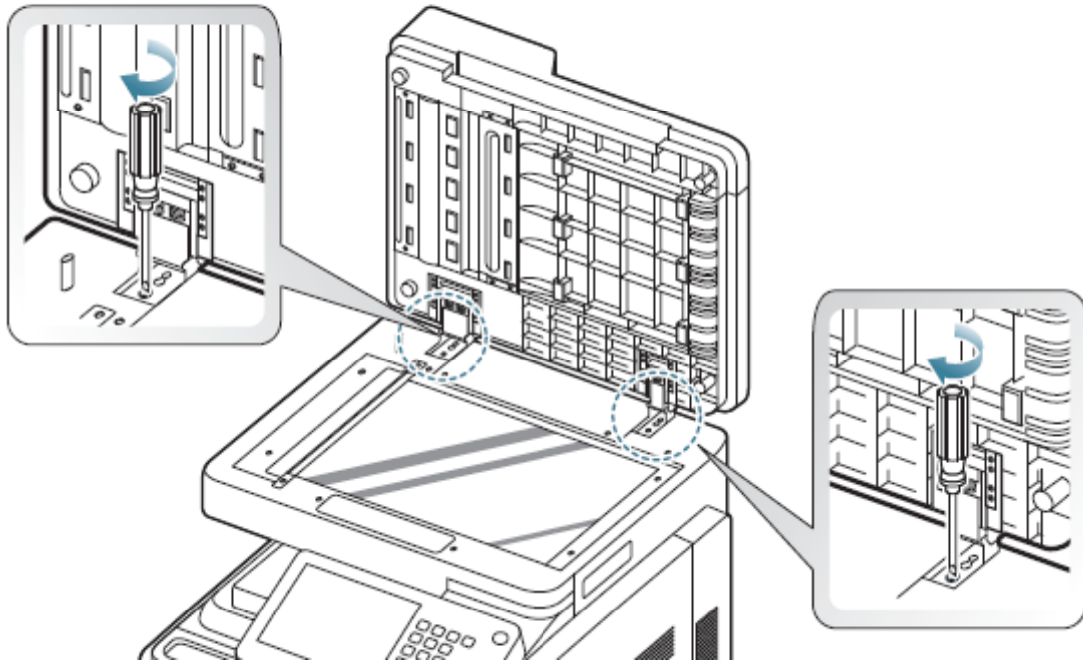
5. Close the DADF.
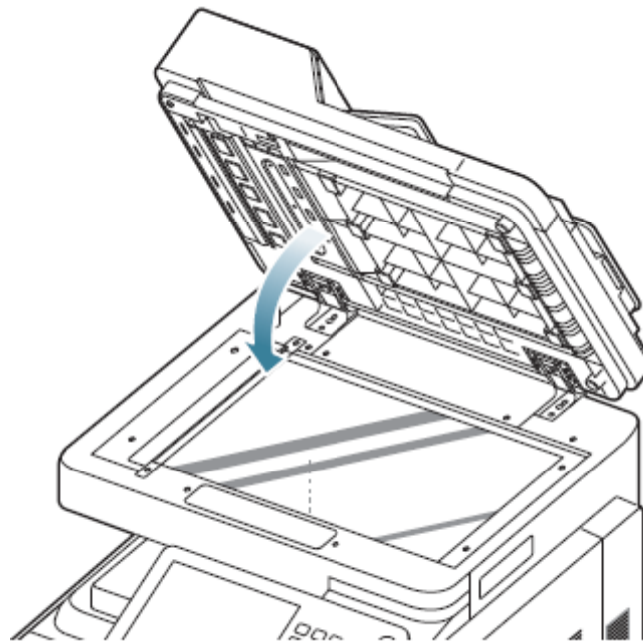
6. Push up the steel frames, and tighten the three screws.
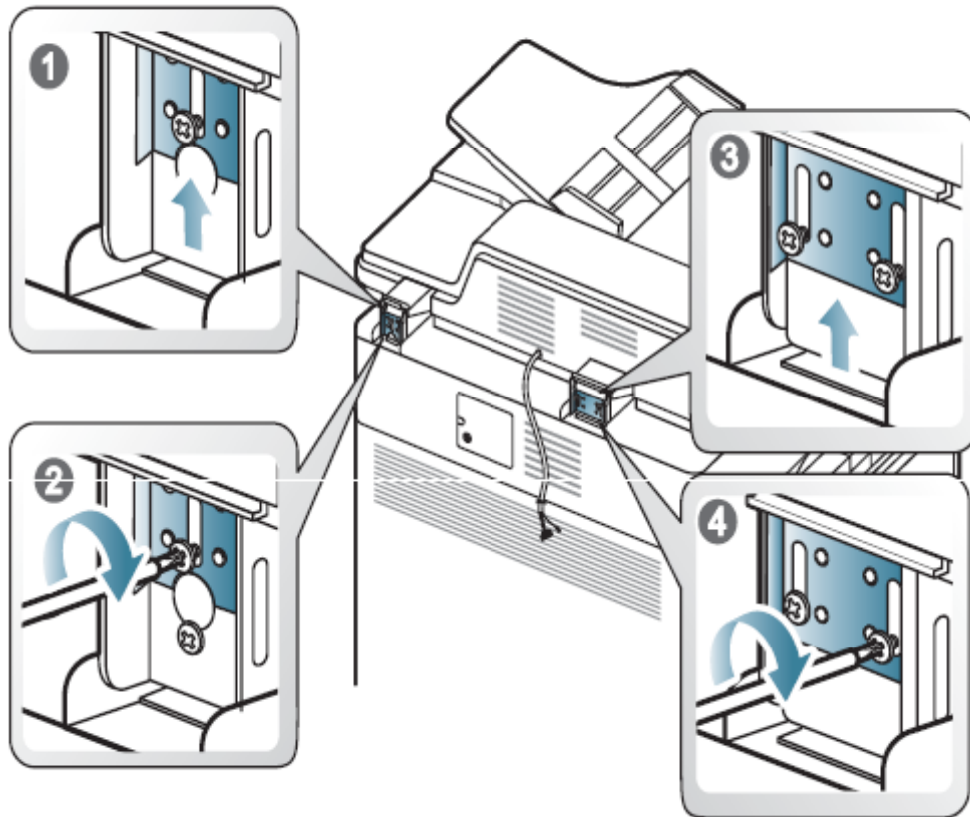
7. Make sure the two rubber pads (left side) and two plastic projections (right side) on the bottom of the DADF on both sides touch the top of the machine as shown below.

CAUTION - If you skip this step, it could cause originals to jam.
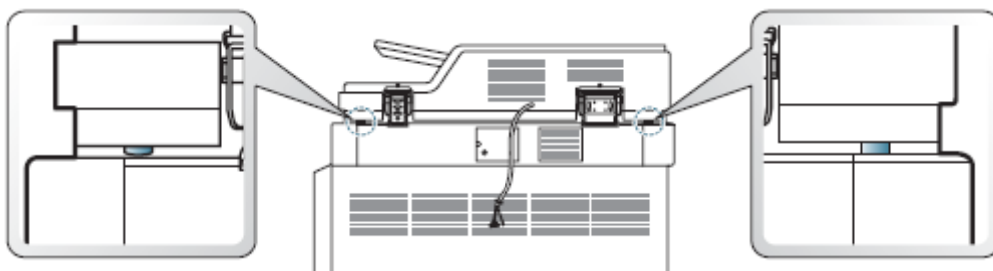
CAUTION - If the gap is more than 0.5 mm (0.02 inch), adjust the screw on both sides as shown below until the gap is smaller 0.5 mm (0.02 inch). You have to check all rubber pads and plastic projections.
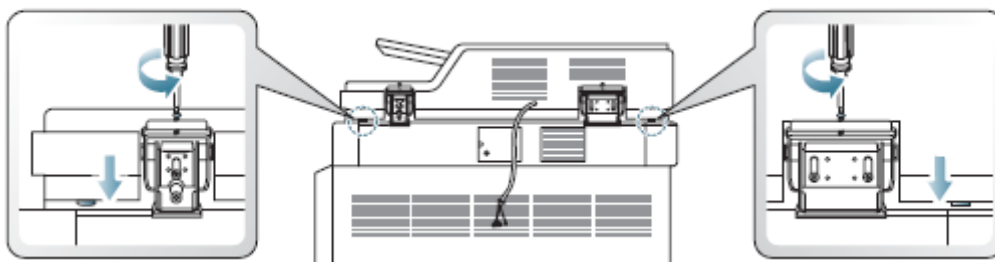
8. Fit the plastic covers in the both hinges of the DADF.
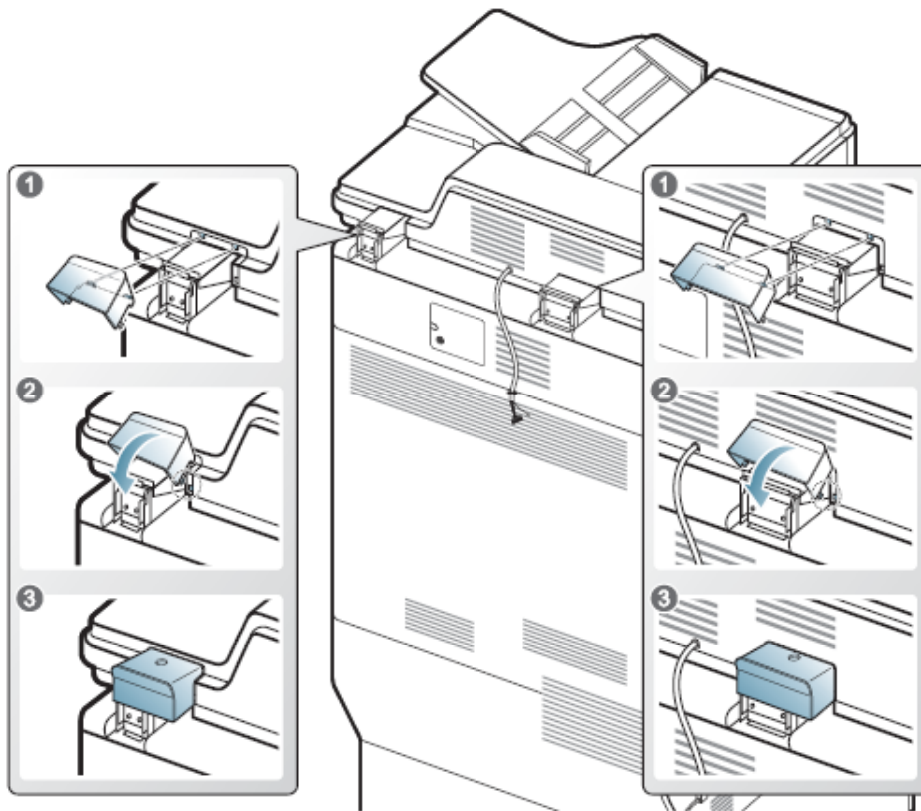
9. Plug the DADF interface cable into the connector. Tighten the screw to ground the ground wire.
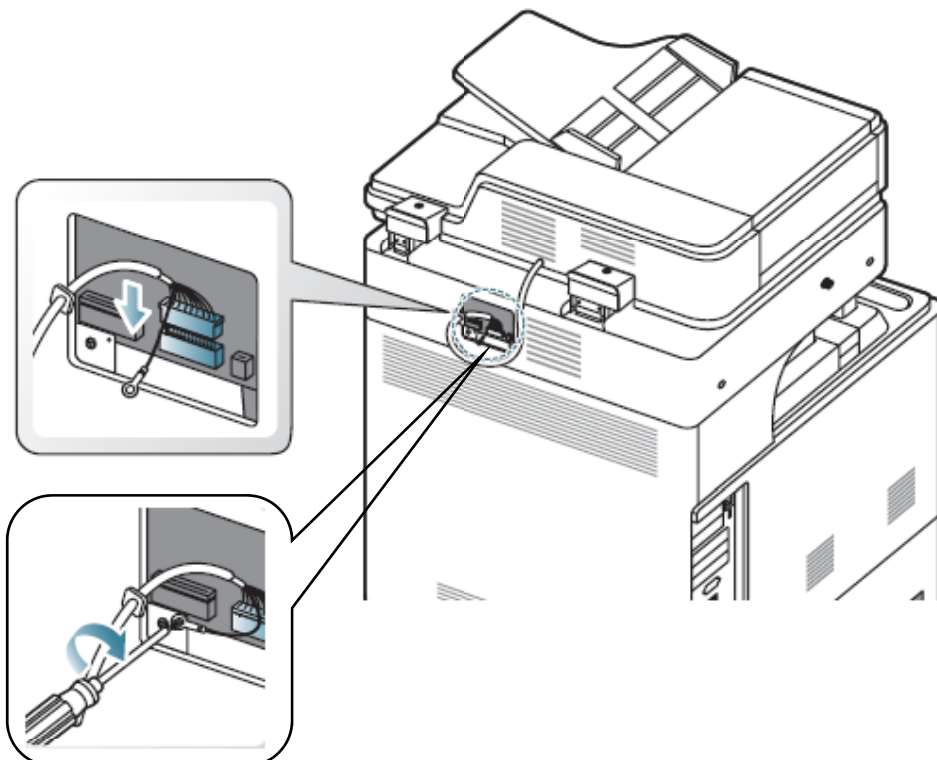
10. Put in the supporting rubber into the DADF cable cover. Assemble the DADF cable cover. And tighten the screw.
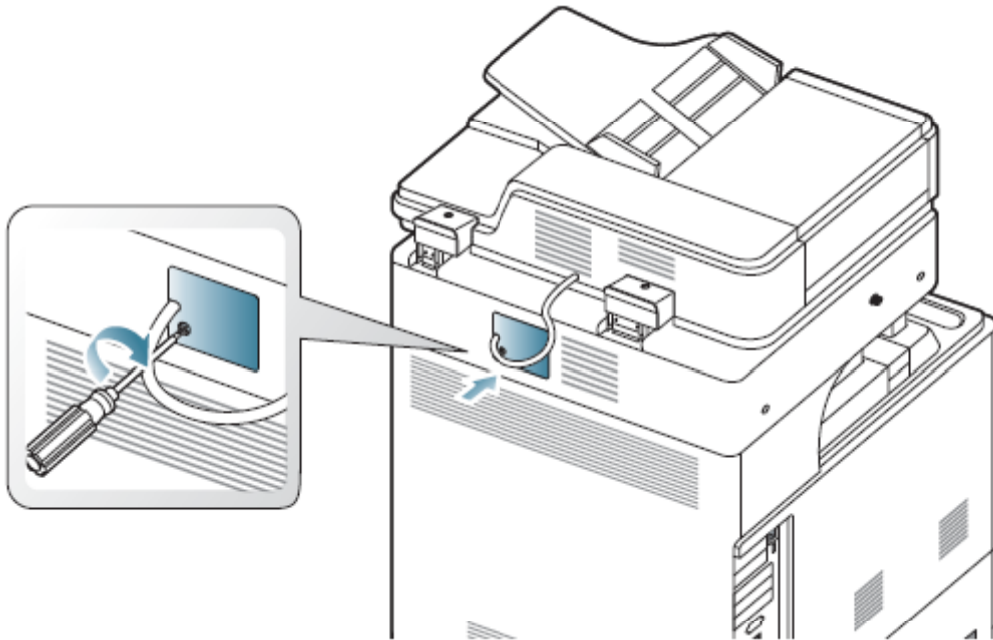
11. Open the DADF and place the white sheet. White side should be faced down on the scanner glass and aligned it with the registration guide at the top left corner of the glass.
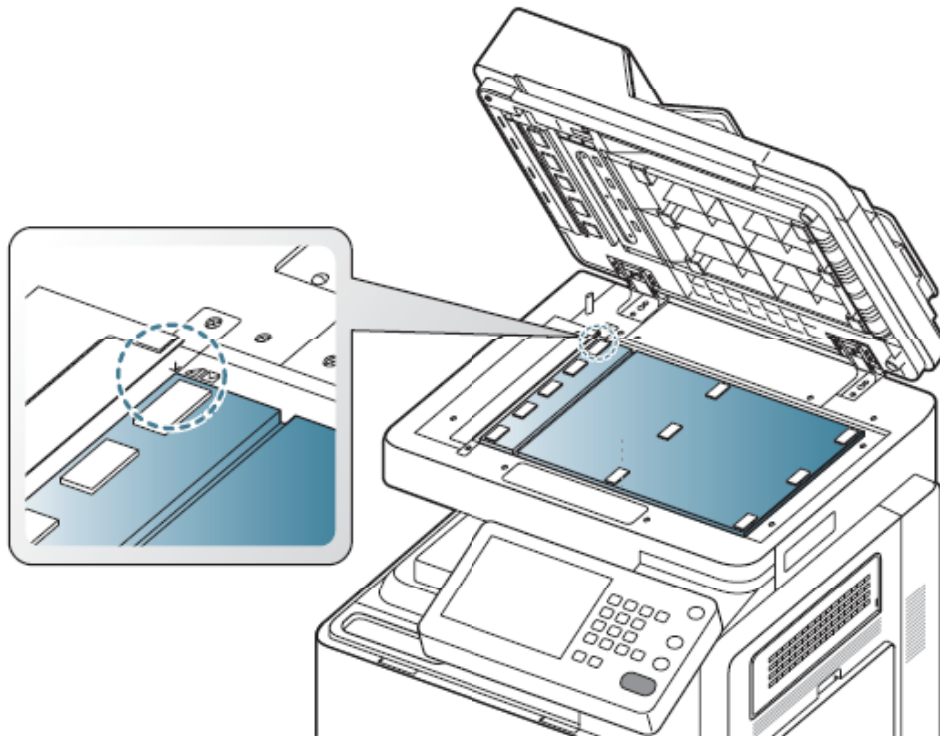
12. Carefully close the DADF. The white sheet will be attached to the DADF. If the white sheet is not attached properly when the DADF is opened, stick the white sheet on the DADF properly using the stickers.

3.16.1 Width / Length sensor PBA

Perform the following procedure to remove the Width/Length Sensor PBAs from the DADF Unit.
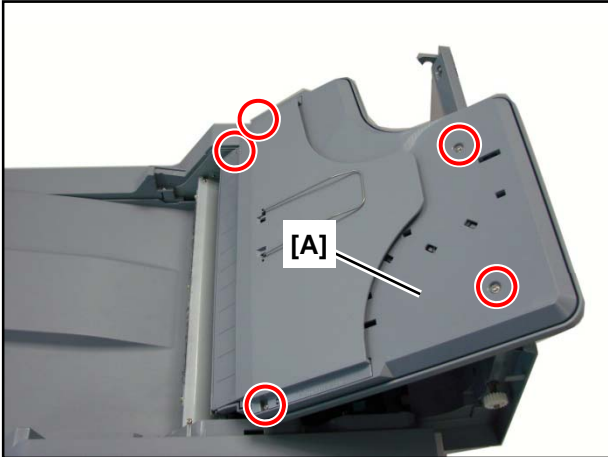
1. Open the DADF cover and stacker.
2. Remove 5 screws.
3. Take off the lower Stacker [A].
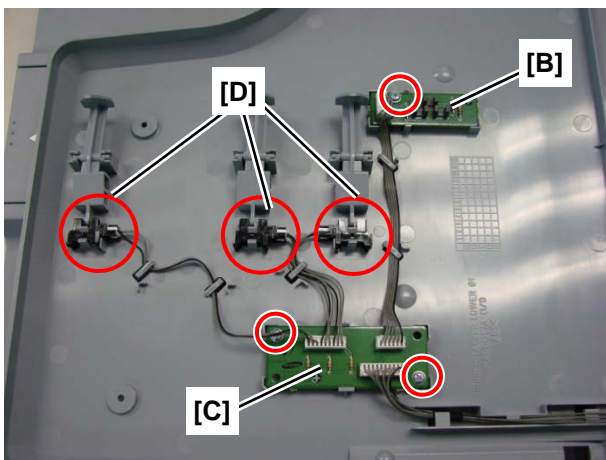
4. Release the width sensor PBA [B] after removing 1 screw.
5..Remove the length sensor PBA [C] after removing 2 screws.
6. Release the photo sensor [D] after unplugging the connector.

3.16.2 DADF Main PBA

Perform the following procedure to remove the DADF Main PBA from the DADF Unit.
1. Remove the hinge cover. Release the DADF whole unit (refer to 3.16).
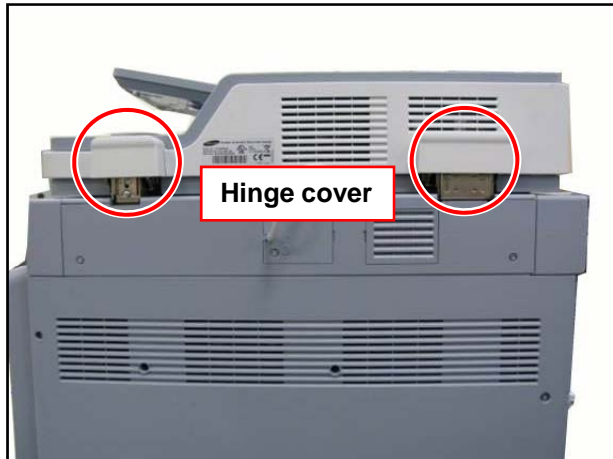
2. Remove 3 screws.
3. Push and release the hook from the bottom.
4. Take off the DADF right side cover [D].
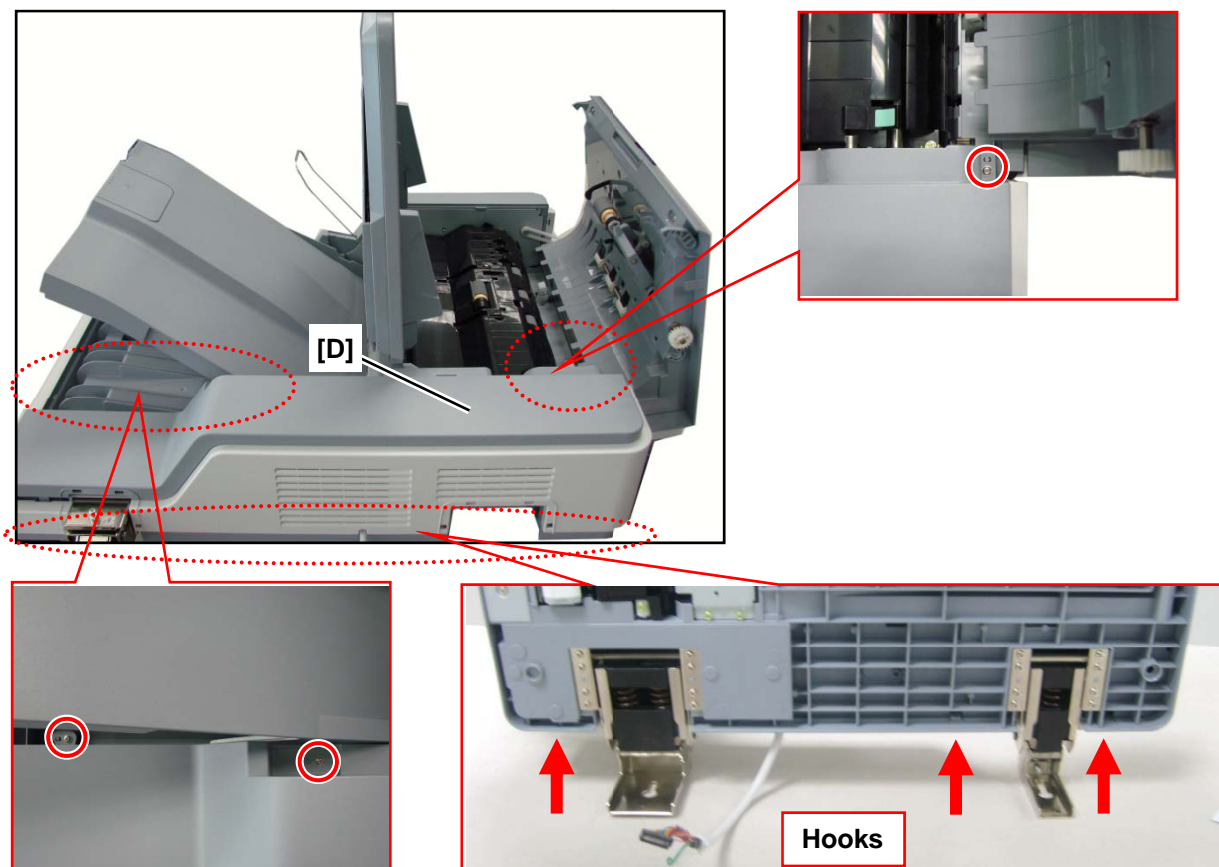
5. Remove the DADF Main PBA after removing 4 screws and all of the connectors.
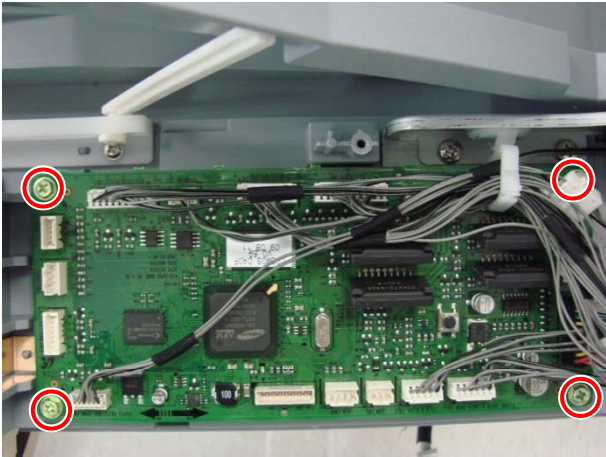
CAUTION
Observe precautions
For handling
Electrostatic
Sensitive
Devices

3.16.3 DADF motors

Perform the following procedure to remove the 4 DADF Motors from the DADF Unit.
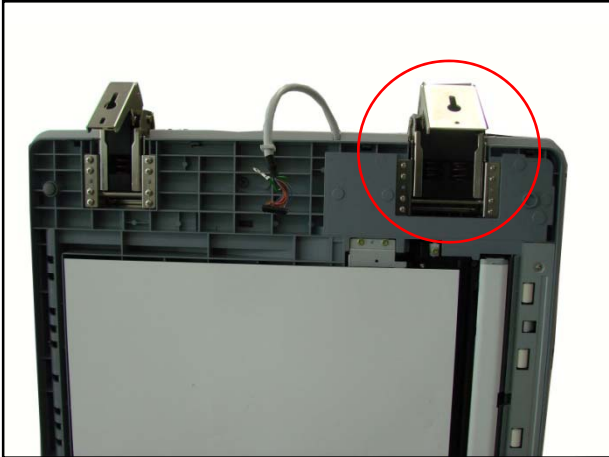
1. Remove the DADF right side cover [D].
   (Refer to 3.16.2)

2. Remove 8 screws securing the hinge unit.
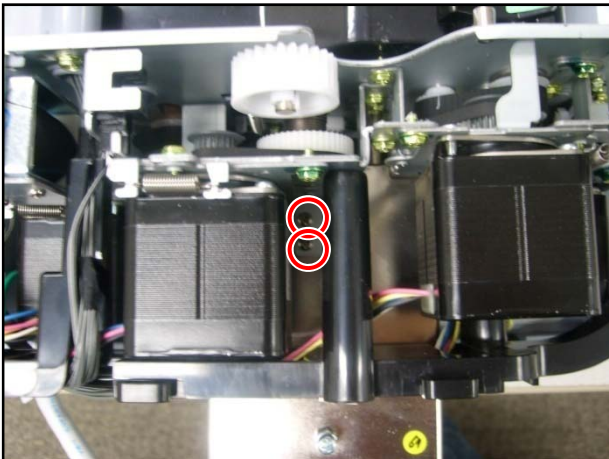
3. Take off the hinge unit after removing 2 screws.
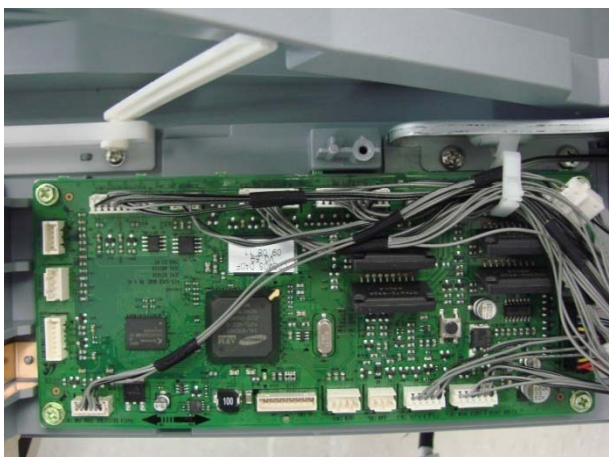
4. Unplug all connectors on the DADF main PBA.

CAUTION
Observe precautions
For handling
Electrostatic
Sensitive
Devices
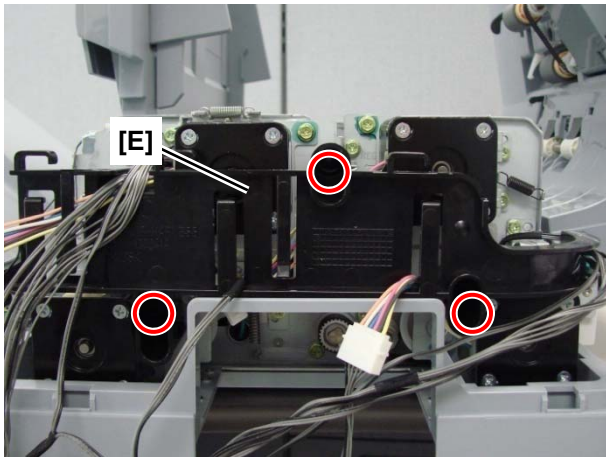
5. Take off the holder-harness [E] after removing 3 screws.

CAUTION
When reassembling the holder-harness, make sure the harness wiring is routed correctly.
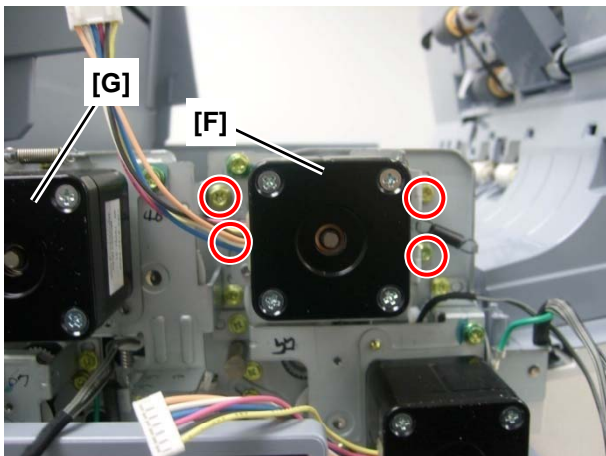
6. Remove the Top Right Motor [F] after removing 4 screws.
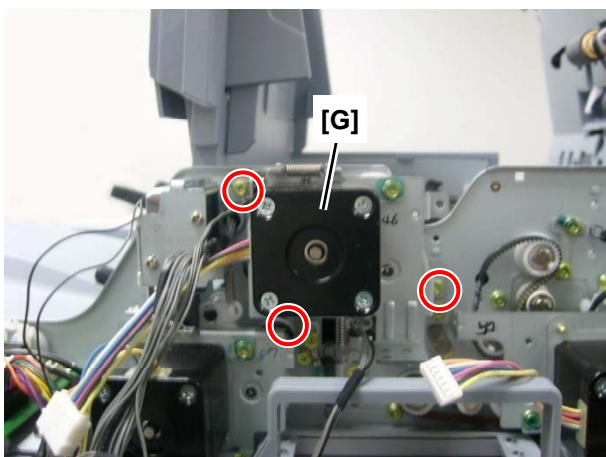
7. Remove the Top Left Motor [G] after removing 3 screws.

NOTE
To remove the Top Left Motor [G], first remove the Top Right Motor [F].

CAUTION
When reassembling the Motor [G], be careful not to lose the washer.

Washer
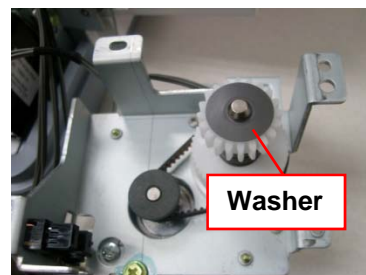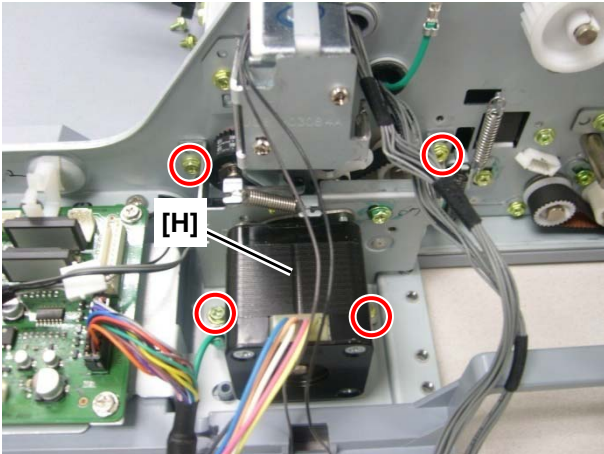
8. Remove the Bottom Left Motor [H] after removing 4 screws.
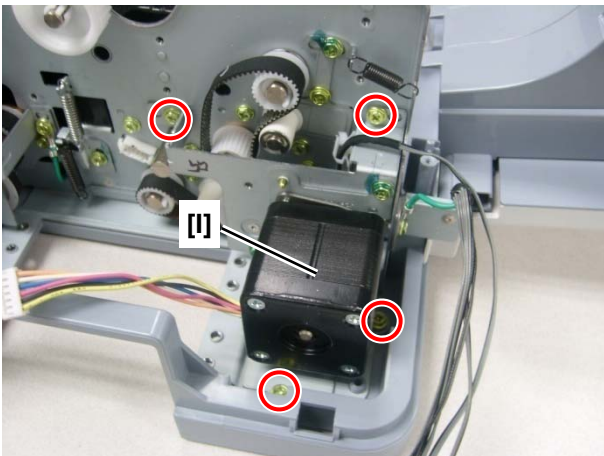
9. Remove the Bottom Right Motor [I] after removing 4 screws.

3.16.4 DADF Cover Open Sensor

Perform the following procedure to remove the DADF Cover Open Sensor from the DADF Unit.

1. Remove the DADF right side cover [D].
   (Refer to 3.16.2)
2. Remove the Linker.

Linker
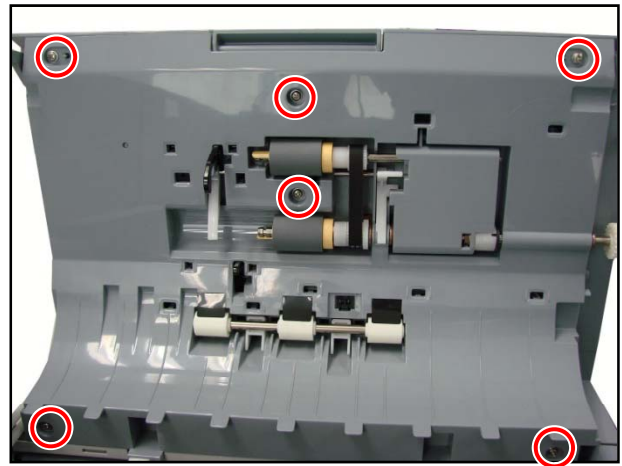
3. Remove 1 screw.
4. Release the DADF Cover Open.

5. Remove 6 screws.

6. If the sensor is defective, replace it.

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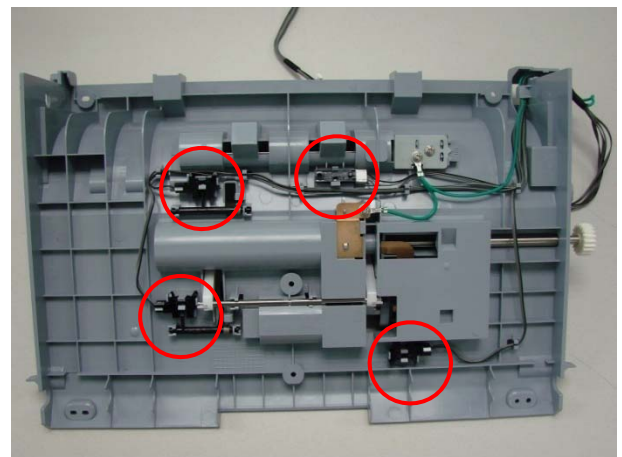
3.16.5 Pick-Up Guide Sensor PBA

Perform the following procedure to remove the Pick-up Guide Sensor PBA from the DADF Unit.

1. Remove 2 screws.
2. Push and release 4 hooks from the bottom.
3. Remove DADF Left Side Cover [J].
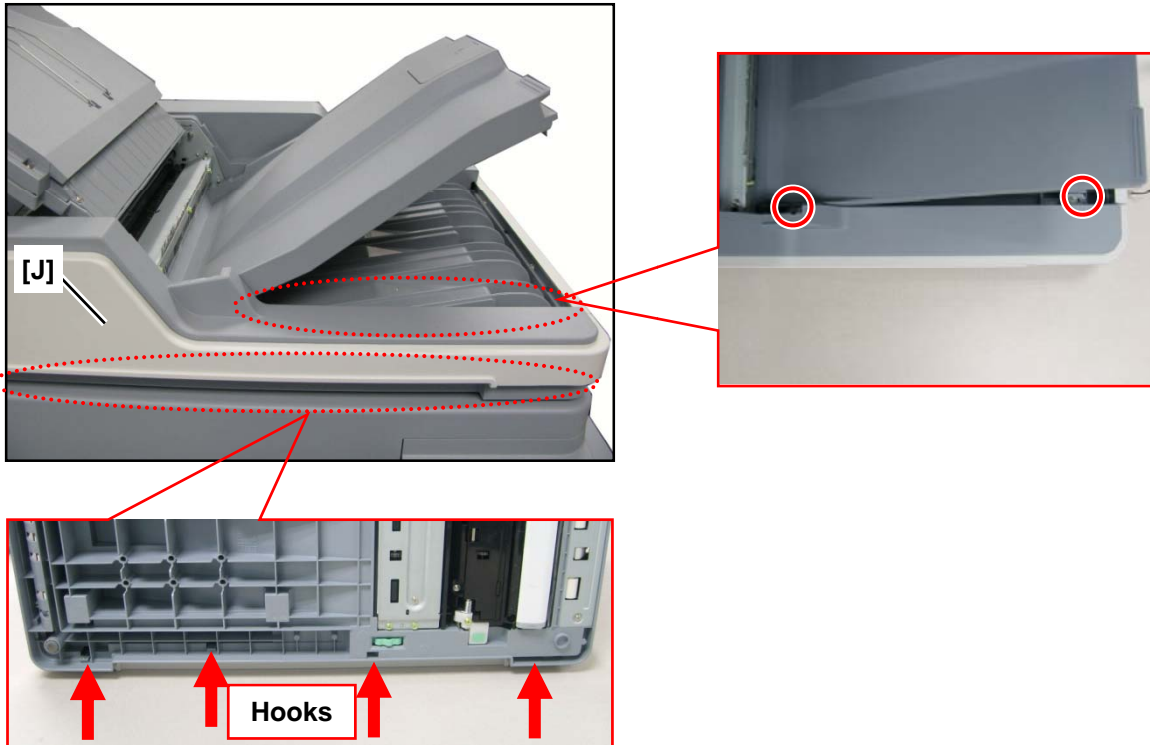
4. Release the holder-damper after removing 2 screws.
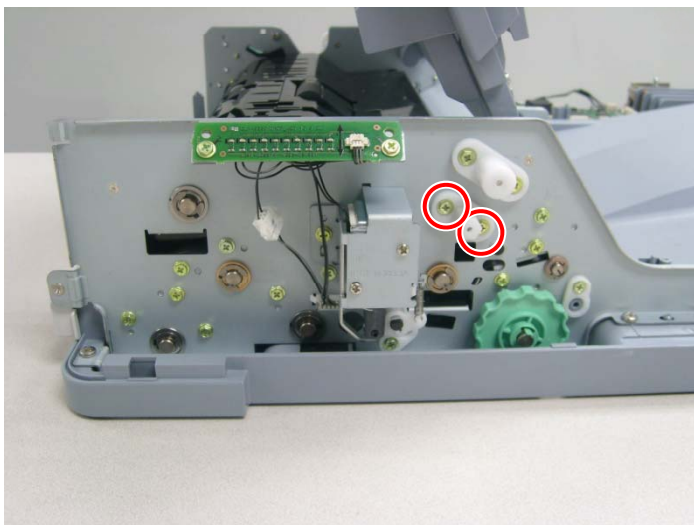
5. Turn over the Pick-up Guide.
6. Remove the Upper Pick-Up Guide [K] after removing 4 screws.
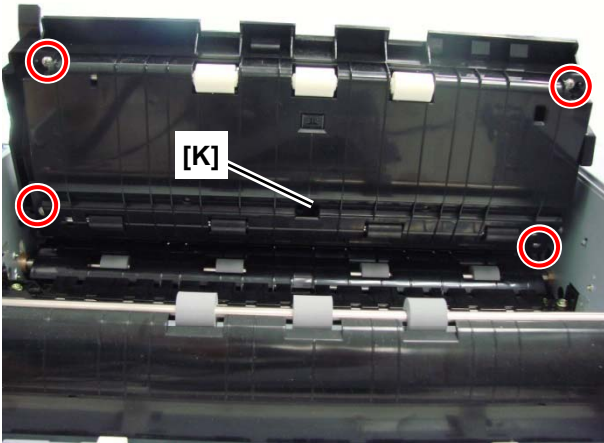
7. Unplug & remove the Pick-up Guide Sensor PBA[L] or photo sensor.
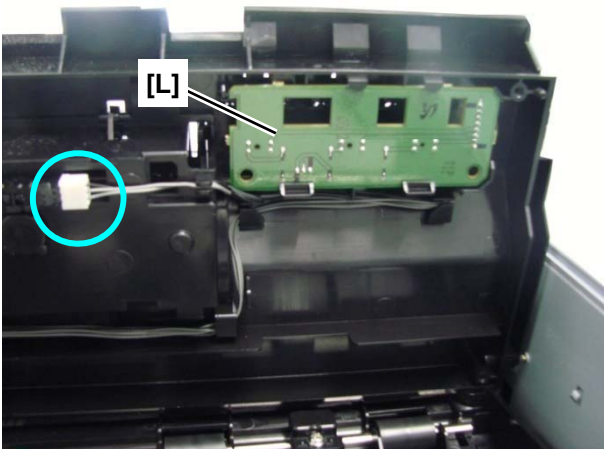
3.16.6 DADF Solenoid
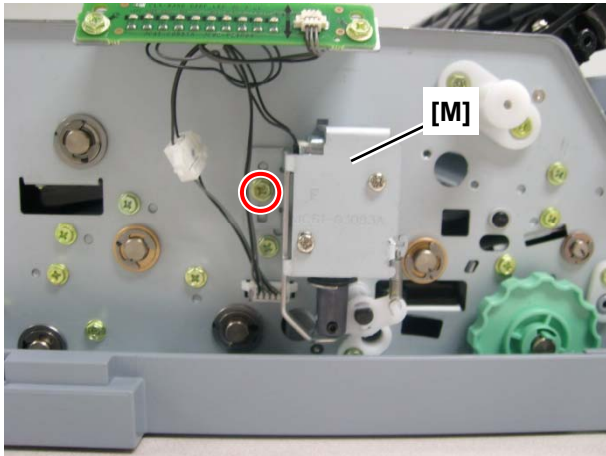
1. Remove the DADF left side cover [J].
   (Refer to 3.16.5)

2. Take off the Exit Turn Gate solenoid [M] after removing 1 screw.
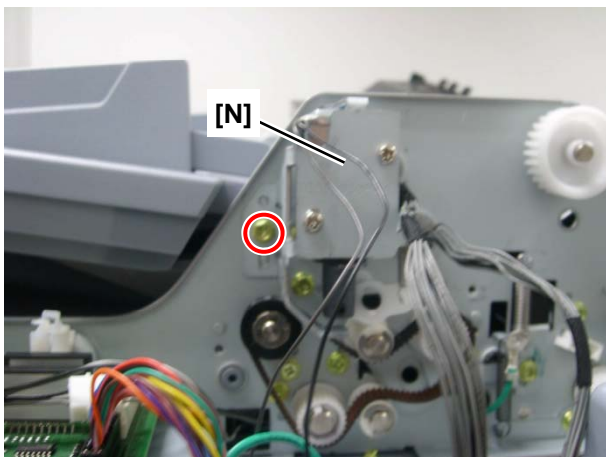
3. Remove all DADF motors. (Refer to 3.16.3)

4. Take off the Duplex Reverse Gate solenoid after removing 1 screw.

3.17 Exit Unit

Perform the following procedure to remove the Exit Unit from the printer.

1. Open the Cover-Side.
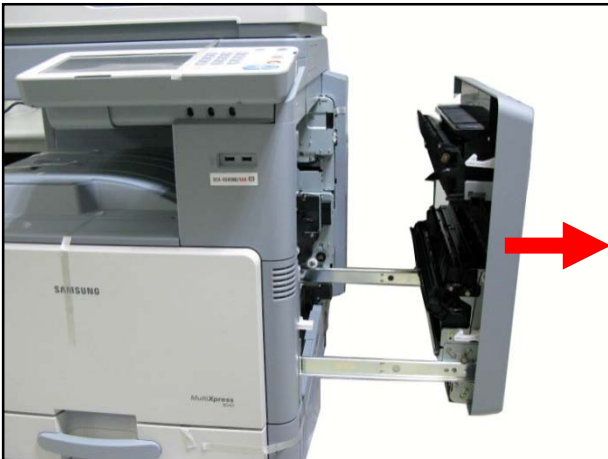
4. Remove 1 screw and Exit cover [B].
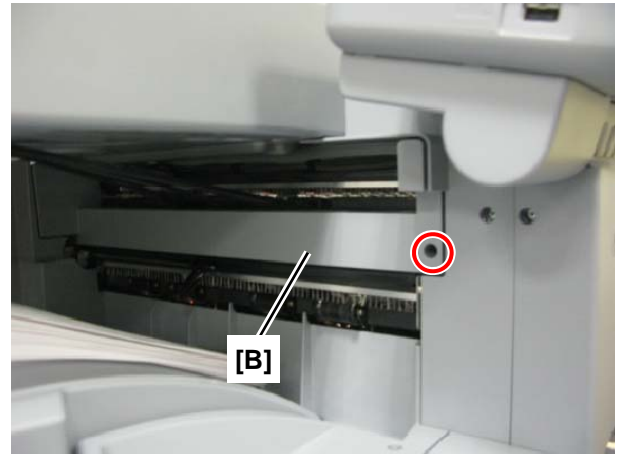
2. Remove 4 fuser locking screws.
3. Remove the Fuser unit by holding the handles [A].
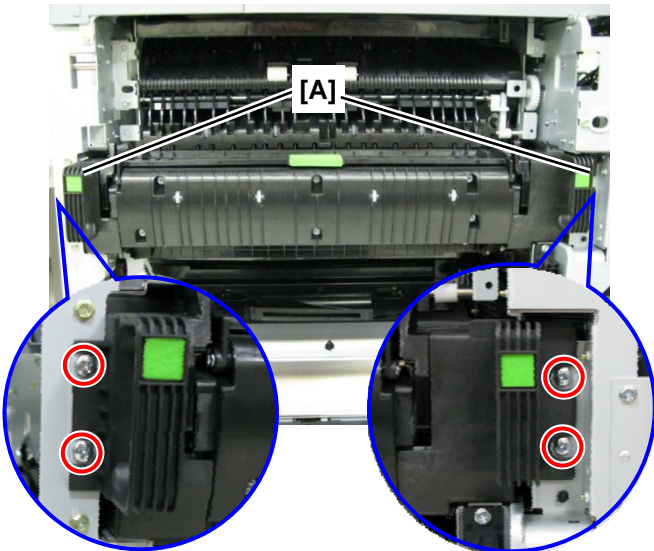
5. Unplug 2 connectors.
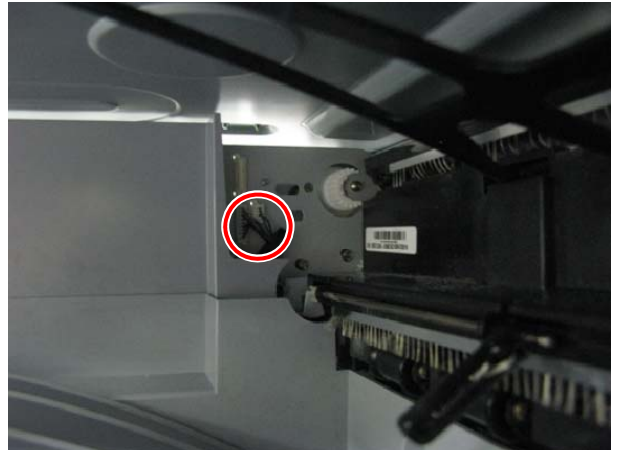
6. Remove 2 screws on left side of Exit Unit.
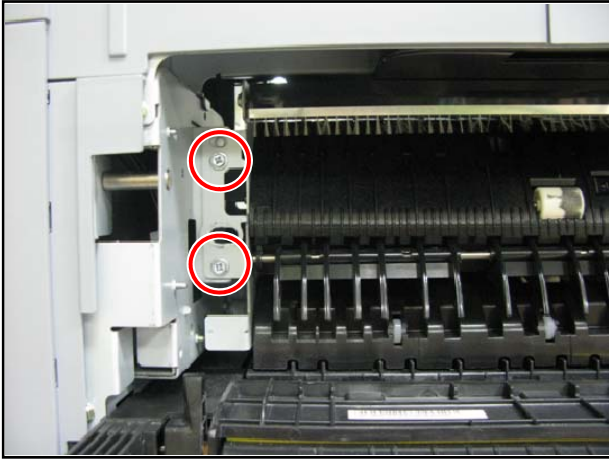
8. Remove the Exit Unit.

7. Remove 1 screw on right side of Exit Unit.
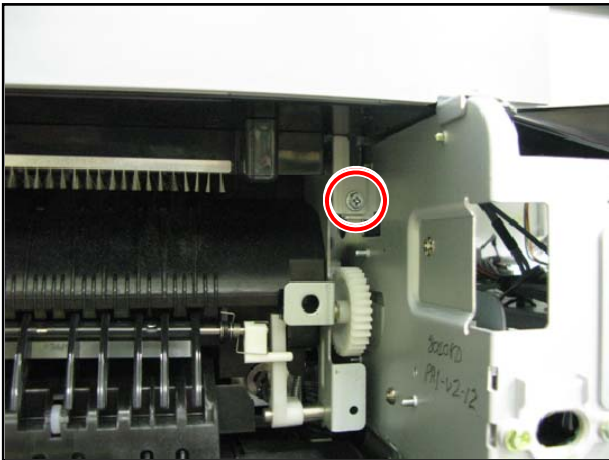
3.18 Regi. Unit

Perform the following procedure to remove the Regi. Unit from the printer.

1. Open the Cover-Side.

3. Remove the Regi Bracket Assembly after removing 3 screws and Disconnect one connector.

2. Remove 3 screws and Harness cover [B].

[B]
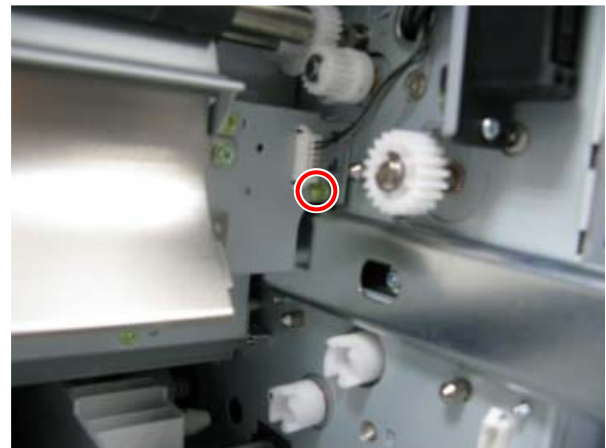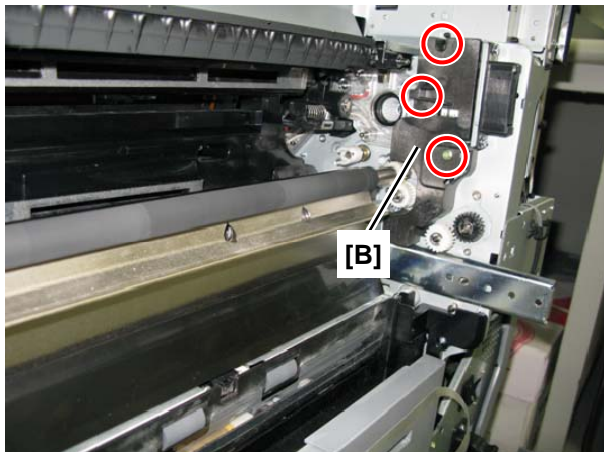
4. Remove 6 screws, and remove Bracket-Regi [C], and Bracket-Base Regi [D].
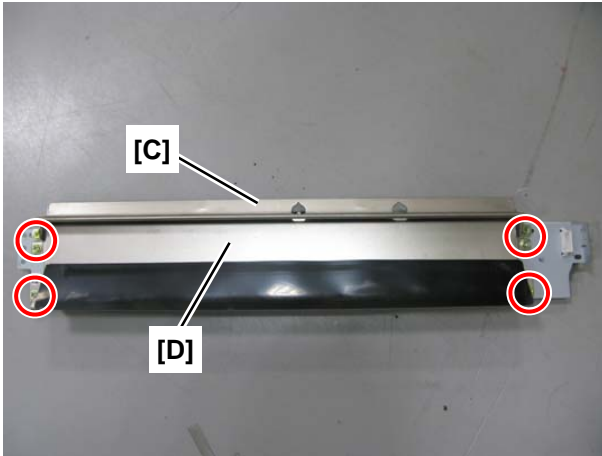
5. Regi Sensor[E] : Remove 1 screw.
6. OHP sensor[F] : Release hook from the bracket.
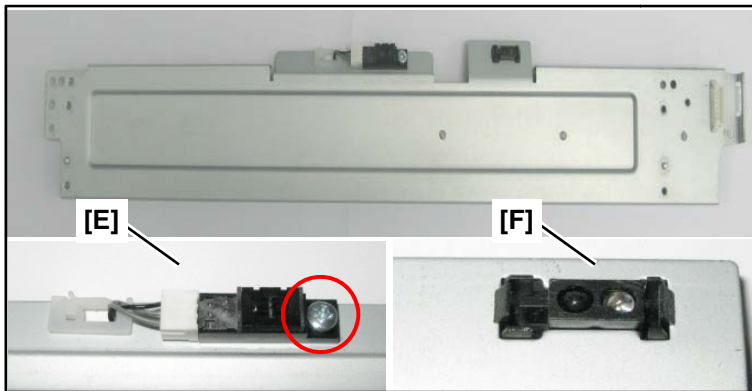
3.19 Pick-Up Unit

Perform the following procedure to remove the Pick-up Unit from the printer.

1. Open the Tray1 [A], Tray2 [B] and Side Cover [C].

3. Remove the pickup unit and unplug the connectors.
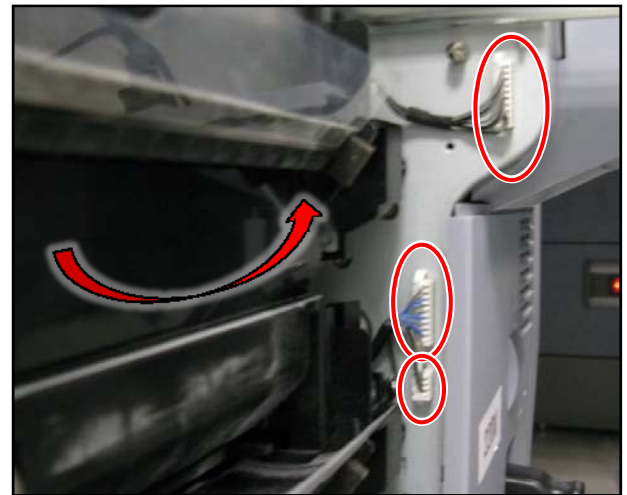
2. Remove 7 screws [D] and Harness Cover [E].
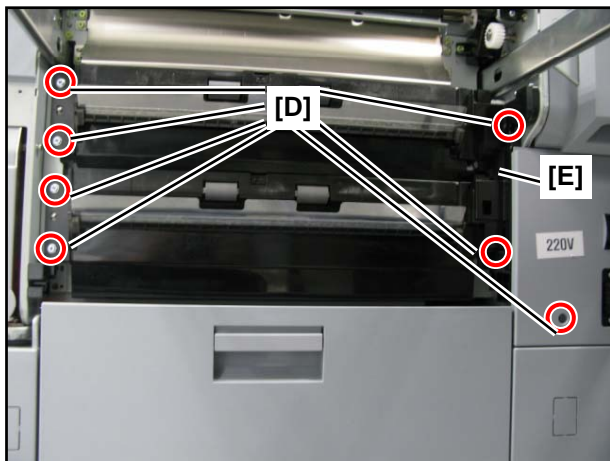
4. Change Upper-limit Sensor [A], Empty Sensor [B] and Take-away open sensor [C].
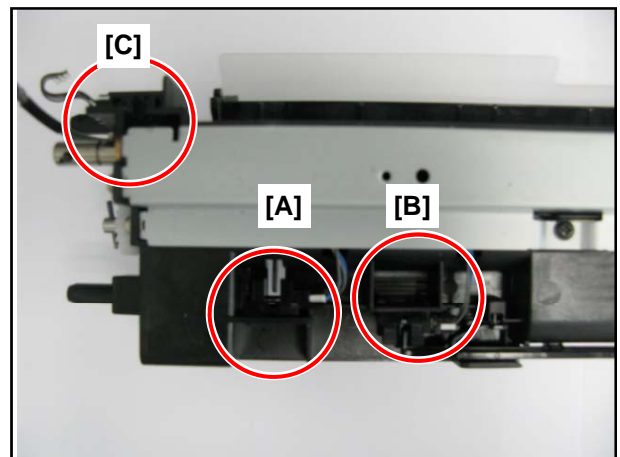
5. Remove the upper bracket [D] after removing 6 screws.

6. Remove 2 screws.

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Version 0.05
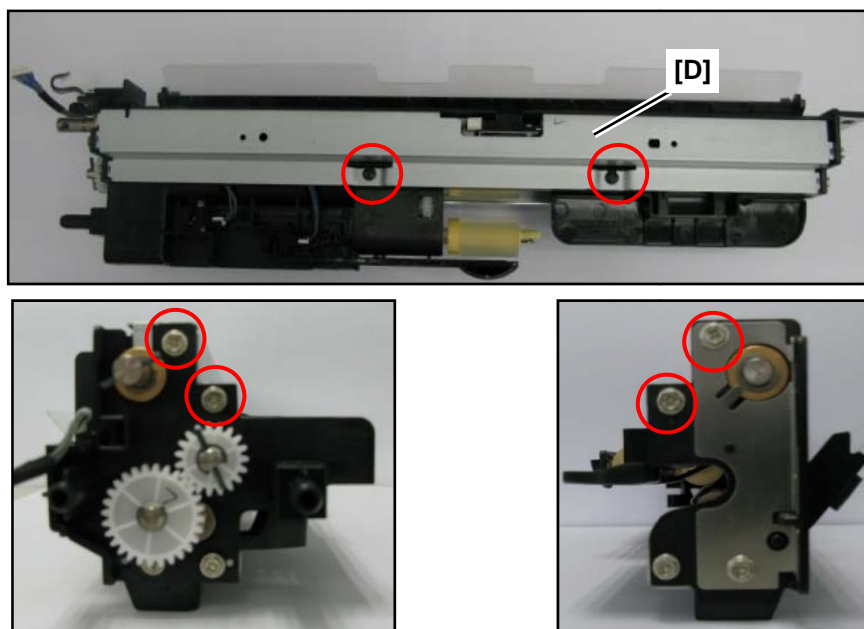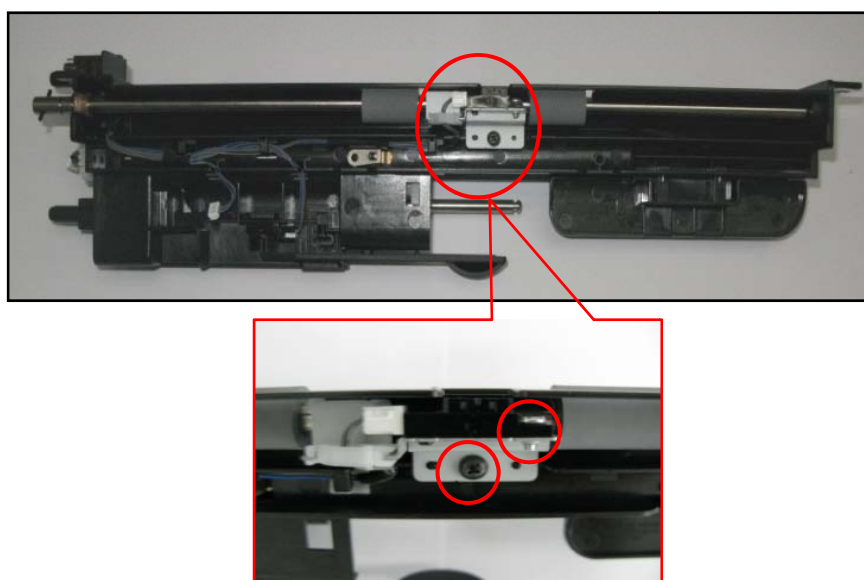
3.20 Cassette heating cable

1. Remove 2 cassettes.

2. Remove 1 screw.

NOTE

You will need a short screwdriver.

3. Disconnect the Heating Cable connector and remove the old Heating Cable Assembly.
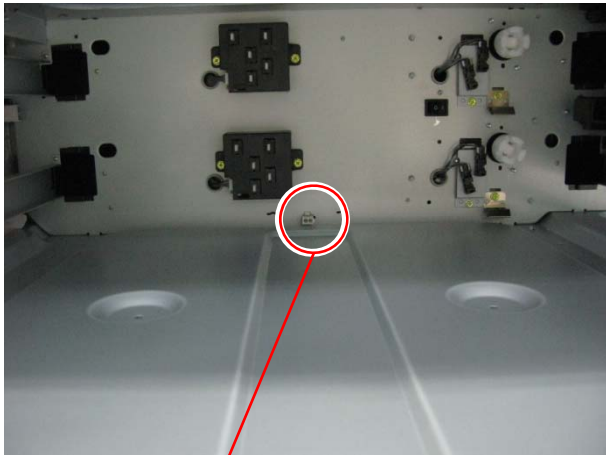
4. Connect the new Heating Cable Assembly connector [A] to printer connector [B].

[B]   **[A]**
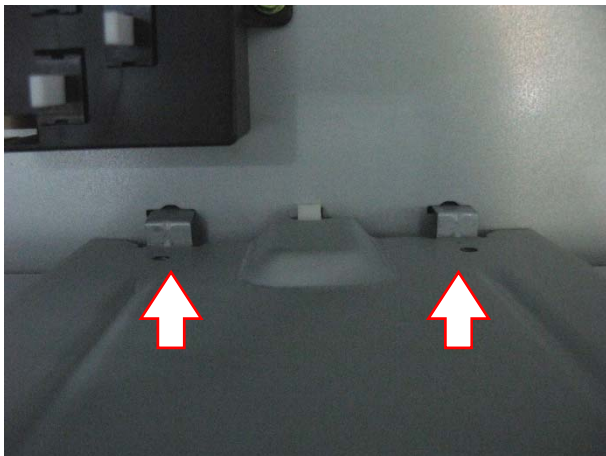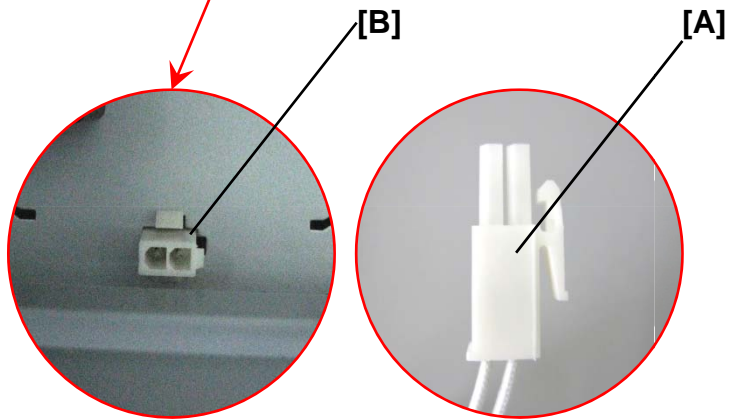
5. Insert 2 new heating cable assemblies in the frame slits.

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6. Install 1 screw using a short screwdriver.

NOTE

You will need a short screwdriver.

4. Service Mode

4.1. Entering/Exiting Service Mode

To enter the service mode, press 1,2,3 number keys simultaneously. When the password dialog box appears, enter "1934" and press the "OK" button.

To exit the service mode, press the "Exit Service" button at the right upper corner of the display.

Selecting "Yes" in "Reboot Copier "will reboot the set.

Selecting "Yes" in "Reset Counter "will clear the count of "Information > General > Printed Impressions since Last Call".
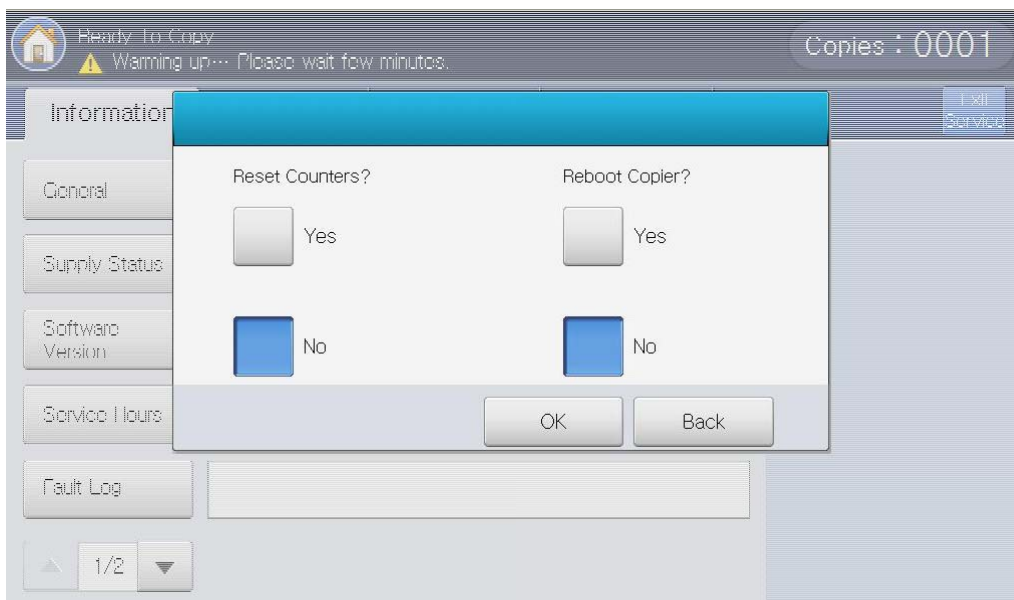
Picture 1-1

4.2. Service Mode Menu Tree

4.2.1. Information Tab

Menu				Page
Information	General	Machine Serial Number		P. 4-6
		Network IP Address		
		Printed Impressions since Last Call		
		Service Started Date		
	Supply Status	Customer Replacement Unit	Toner	P. 4-6
		Field Replacement Unit	Imaging Unit	
			Waste Toner Container	
			Finisher	
			Fuser	
			Roller	
			Filter	
			DADF Roller	
			Scanner	
	Software Version	System Firmware Version		P. 4-8
		Main Firmware Version		
		Portability Version		
		XOA Framework Version		
		Engine Firmware Version		
		Scan Firmware Version		
		Image Converter Version		
		Fax Firmware Version		
		UI Firmware Version		
		ADF/ DADF Version		
		DCF Version		
		HCF Version		
		Finisher Version		
		Booklet Firmware Version		
		Hole Puncher Firmware Version		
		Print CMS Version		
		Copy CMS Version		
		Scan CMS Version		
		IEM Version		
		Power Firmware Version		
		PCL5E Version		
		PCLXL Version		

Menu			Page
Information	Software Version	PostScript / PDF / XPS Version	P.4 -8
		Scan Driver Version	
		Fax Driver Version	
		Boot Rom Version	
		Boot Rom Boot Loader Version	
		Boot Rom OS Version	
		Boot Rom File System Version	
		File System Version	
	Service Hours	Power On Hours	P. 4-8
		Power Save Hours	
	Fault Log		P. 4-8
	Print Reports	Supplies Information	P. 4-8
		Usage Counter Report	
		Fax Protocol Dump List	
		Error Information Report	
		Maintenance Report	

Table 2-1

4.2.2. Maintenance Counts Tab

Menu				Page
Maintenance Counts	Fault Counts			P. 4-9
	Jam Count	Print Jam	Pick-up Jam	P. 4-10
			Feed Jam	
			Duplex Jam	
			Exit Jam	
			Finisher Jam	
			Booklet Jam	
		Scan Jam	Feed Jam	P. 4-11
			Regi Jam	
			Scan Jam	
			Exit Jam	
			Duplex Regi Jam	
			Duplex Scan Jam	
			Duplex Exit Jam	
	Part Replacement Count	Toner Cartridge		P. 4-12
		Imaging Cartridge		
		Fuser		
		Roller		
		Filter		
		DADF Roller		
		Fan Filter		

Table 2-2

4.2.3. Diagnostics Tab

Menu			Page
Diagnostics	Engine Diagnostics	Engine NVM Read/Write	P.4-13
		Engine Test Routines	P.4-16
	Fax Diagnostics	Fax NVM Read/Write	P.4-22
		Fax Test Routines	P.4-23
	Scanner Diagnostics	Shading Test	P.4-25
		Scanner/DADF NVM Read/Write	P.4-25
		Scanner/DADF Test Routines	P.4-26
	Adjustment	Print Adjustment	P.4-28
		Copy Adjustment	P.4-30
		Scan Area Adjustment	P.4-31
		DADF Adjustment	P.4-33
		Finisher Adjustment	P.4-35
	ACS		P.4-38
	Color Management	Auto Tone Adjustment	P.4-39

Table 2-3

4.2.4. Service Functions

Menu		Page
Service Functions	Main Memory Clear	P.4-40
	Hard Disk Maintenance	P.4-40
	Debug Log	P.4-40
	Port	P.4-41
	Capture Log	P.4-41
	Toner Save	P.4-41
	Count Setting of Large Count	P.4-41
	System Recovery	P.4-41
	User Data Management	P.4-42
	TR Control Mode	P.4-43

Table 2-4

4.3 Information

4.3.1. General

• **Information > General**

This menu displays the machine's serial number, assigned IP address, printed impressions since last call, and the day of first service.

4.3.2. Supply Status

4.3.2.1. Customer Replacement Unit (CRU)

• **Information > Supply Status > Customer Replacement Unit**

This menu displays the machine's customer replacement unit status. Users can select one item in the list to check the information of the selected unit.

4.3.2.2. Field Replacement Unit (FRU)

• **Information > Supply Status > Field Replacement Unit**

This menu displays the machine's field replacement unit status. Users can select one item in the list to check the information of the selected unit.

In the CRU and FRU list, there are four columns : items, status, current, max life.
• Item : Refer to the table below.
• Status : This shows the current status of the selected item.
> • OK : The current count is smaller than the default warning value
> • Check : The current count is bigger than default warning value
> • Off : The current count exceeds the max life.
• Count : This shows the current count of the selected item.
• Max. life : This shows the max capacity of the selected item.

Users can edit the default warning value within the given threshold.
Selecting some items will enable the reset button to reset the current count to 0 after replacing the unit.

Unit	Item	Max. Life	Default Warning Value	Threshold
Toner Cartridge	Black	35K 20K	10%	5 ~ 30%
Imaging Unit	Black	100K	10%	5 ~ 30%

Unit	Item	Max. Life	Default Warning Value	Threshold
Waste Toner Container	Waste Toner Container	300K	Near Full	NA
Finisher	Finisher Stapler Cartridge	NA	Near Empty	NA
	Booklet Stapler Cartridge	NA	Near Empty	NA
	Punch Waste Hopper	NA	Full	NA
Fuser	Fuser	150K (PM Count)	10%	5% ~ 20%
Roller	P/up Roller MP	150K (PM Count)	10%	5% ~ 20%
	P/up Roller Kit-tray1	200K (PM Count)	10%	5% ~ 20%
	P/up Roller Kit-tray2	200K (PM Count)	10%	5% ~ 20%
	P/up Roller Kit-tray3	200K (PM Count)	10%	5% ~ 20%
	P/up Roller Kit-tray4	200K (PM Count)	10%	5% ~ 20%
	P/up Roller HCF	200K (PM Count)	10%	5% ~ 20%
Filter	Ozone Filter	150K (PM Count)	10%	5% ~ 20%
	Dust Filter	150K (PM Count)	10%	5% ~ 20%
DADF Roller	Assembly ADF Roller	200K (PM Count)	10%	5% ~ 20%
Scanner	Fan Filter	180 days	10%	5% ~ 10%

Table 3-1

4.3.3. Software Version

• **Information > Software Version**

This menu displays all the version of the software installed in the system in detail. The following software version will be shown in the menu.

- System Firmware
- Main Firmware
- Portability
- XOA Framework
- Engine Firmware
- Scan Firmware
- Image Converter Firmware
- Fax Firmware
- UI Firmware
- ADF/DADF Firmware
- DCF
- HCF
- Finisher Firmware
- Booklet Firmware

- Hole Puncher Firmware
- Print CMS
- Copy CMS
- Scan CMS
- IEM
- Power Firmware
- PCL 5E
- PCL XL
- PS3 / PDF / XPS
- Scan Driver
- Fax Driver
- Boot ROM
- File System

4.3.4. Service Hours

• **Information > Service Hours**

This menu displays two items, "Power on Hours" and "Power Save Hours".

- Power on Hours : It indicates the hours of system power on since the first booting of the system.
- Power Save Hours : It indicates the hours of system power save since the first booting of the system.

4.3.5. Fault Log

• **Information > Fault Log**

This menu displays faults occurred while the system was operating.
Pressing clear button will clear all the save fault log of the system.

4.3.6. Print Reports

• **Information > Print Reports**

This menu displays reports which that can be printed from the system. The following reports will be available to print.

- Supplies Information
- Usage Counter Report
- Fax Protocol Dump List
- Error Information Report
- Maintenance Report

4.4. Maintenance Counts

4.4.1. Fault Count

• Maintenance Counts > Fault Count

This menu displays the fault Counts of the system. Users can select one fault group and press "OK" to see detailed fault descriptions. The detailed fault description window displays engine diagnostic code and descriptions of the fault along with the number of occurrences.

The following list shows the group of the faults defined for the system.

- 11 Print Resource Management
- 12 Print Job Management
- 13 Print Channel Management
- 21 Copy Resource Management
- 22 Copy Job Management
- 31 Scan Resource Management
- 32 Scan Job Management
- 33 Scan Channel Management
- 34 Scan ScanToMail Service
- 34 Scan ScanToFile Service
- 34 Scan Network Scan
- 41 Fax Resource Management
- 42 Fax Job Management
- 43 Fax Channel Management
- 51 Graphic User Interface Service
- 52 User Interface (Non Graphic) Service
- 53 User Preference Service
- 54 Job Management (Retention) Service
- 55 Authentication Service
- 56 Address Book Service
- 61 Diagnostics Service
- 62 Cloning Service
- 63 Network Service
- 64 Alert Management Service
- 65 Software Update Service

- A1 Motor
- A2 Fan
- A3 Sensor
- C1 Toner Cartridge Unit
- C3 Imaging Unit
- C7 Fusing unit
- H1 Input (Trays) System
- H2 Output (Bins) System
- H3 Duplex Feeder System
- H4 Finisher System
- H5 Finisher's Booklet System
- M1 Input (Trays) System
- M2 Media Path System
- M3 Output (Bins) System
- M4 Auto Document Feeder System
- P1 Payment Interface System
- P2 Foreign Device Interface System
- S1 Video System
- S2 Engine System
- S3 Scan System
- S4 Fax System
- S5 UI System
- S6 Network System
- S7 HDD System
- U1 Fusing Unit
- U2 LSU Unit

4.4.2. Jam Count

• **Maintenance Counts > Jam Count**

This menu displays the jam Counts of the system. Users can select one jam group, which indicates the location of jams, and press "OK" to see a detailed jam location along with the occurrence of the jam.

The following table shows the jam groups defined for the system :

Jam Group		Jam Location	Error Code
Print Jam	Pick-up Jam	Jam Bypass	M1-1615
		Jam 0 Tray 1	M1-1113
		Jam 0 Tray 2	M1-1213
		Jam 0 Tray 3 (DCF)	H1-1313
		Jam 0 Tray 4 (DCF)	H1-1323
		Jam 0 Tray 3 (HCF)	H1-1123
	Feed Jam	Jam Feed 1	M2-1114
		Jam Feed 2	M2-1124
		Jam Feed 3 (DCF)	H1-1333
		Jam Feed 4 (DCF)	H1-1343
		Jam Feed 3 (HCF)	H1-1133
		Jam Registration	M2-1213
		Jam Fuser Out	M2-1333
	Duplex Jam	Jam Duplex 1	M2-2113
		Jam Duplex 2	M2-2215
		Jam Duplex Registration	M2-2313
		Jam Duplex Return	M2-2413
	Exit Jam	Jam Exit In	M3-1213
		Jam Exit Out	M3-1214
	Finisher Jam	Finisher Jam 1	H2-2001
		Finisher Jam 2	H2-2002
		Finisher Jam 3	H2-2003
		Finisher Jam 4	H2-2005
		Finisher Jam 5	H2-2008
		Finisher Jam 6	H2-2009
		Finisher Jam 7	H2-2010
		Finisher Jam 8	H2-2012
		Finisher Jam 9	H2-2014
	Booklet Jam	Finisher Jam 10	H2-3002
		Finisher Jam 11	H2-3005
		Finisher Jam 12	H2-3007
		Finisher Jam 13	H2-3194

Jam Group	Jam Location		Error Code
Scan Jam	Feed Jam	Feed In Jam	U3-3113
		Feed Out Jam	U3-3114
		Feed Idle Jam	U3-3111
	Regi Jam	Regi In Jam	U3-3213
		Regi Out Jam	U3-3214
		Regi Idle Jam	U3-3211
	Scan Jam	Scan In Jam	U3-3313
		Scan Out Jam	U3-3314
		Scan Idle Jam	U3-3311
	Exit Jam	Exit In Jam	U3-3613
		Exit Out Jam	U3-3614
		Exit Idle Jam	U3-3611
	Duplex Regi Jam	Duplex Regi In Jam	U3-3413
		Duplex Regi Out Jam	U3-3414
		Duplex Regi Idle Jam	U3-3411
	Duplex Scan Jam	Duplex Scan In Jam	U3-3513
		Duplex Scan Out Jam	U3-3514
		Duplex Scan Idle Jam	U3-3511
	Duplex Exit Jam	Duplex Exit In Jam	U3-3713
		Duplex Exit Out Jam	U3-3714
		Duplex Exit Idle Jam	U3-3711

Table 4-1

4.4.3. Part Replacement Count

• **Maintenance Counts > Part Replacement Count**

This menu displays the replacement Counts for the system parts. Users can select one part group and press "OK" to see the exact name of the part along with the occurrence of the replacement.

The following table shows groups of the replaceable parts of the system.

Unit	Item	Sensing Method
Toner Cartridge	Toner (Black)	Auto Sensing
Imaging Cartridge	Imaging Unit (Black)	Auto Sensing
Fuser	Fuser	Auto Sensing
Roller	P/up Roller MP	Count Clear
	P/up Roller Kit-tray1	Count Clear
	P/up Roller Kit-tray2	Count Clear
	P/up Roller Kit-tray3	Count Clear
	P/up Roller Kit-tray4	Count Clear
	P/up Roller HCF	Count Clear
Filter	Ozone Filter	Count Clear
	Dust Filter	Count Clear
DADF Roller	Assembly ADF Roller	Count Clear
Scanner	Scanner Fan Filter	Count Clear

Table 4-2

4.5. Diagnostics

4.5.1. Engine Diagnostics

4.5.1.1. NVM Read/Write

• Diagnostics > Engine Diagnostics > NVM Read/Write

Purpose	To change a configuration value for engine firmware.
Operation Procedure	When the main "NVM Read/Write" window displays, users can navigate through the list of codes with descriptions and saved values. Users can also input a code to the text box to find a configuration value directly. After selecting one value, pressing "Edit" button will open an interface for user input.
Verification	N/A
Specification	N/A
Reference	Table 5-1

Code	NVM Description	Meaning	Default	Max/Min
105-0200	Charger Clean Reference Cycle for Enviroment0	Reference Cycle to clean charger in Environment 0 • Environment 0~1 : LL Condition (Low Temp (~18℃/64°F), Low Humidity(~20%))	120000	10,000/300,000
105-0210	Charger Clean Reference Cycle for Enviroment1	Reference Cycle to clean charger in Environment 1 •Environment 0~1 : LL Condition (Low Temp (~18℃/64°F), Low Humidity (~20%))	120000	10,000/300,000
105-0220	Charger Clean Reference Cycle for Enviroment2	Reference Cycle to clean charger in Environment 2 • Environment 2~3 : NL Condition (Normal Temp (~28℃/82°F), Low Humidity(~31%))	120000	10,000/300,000
105-0230	Charger Clean Reference Cycle for Enviroment3	Reference Cycle to clean charger in Environment 3 • Environment 2~3 : NL Condition (Normal Temp (~28℃/82°F), Low Humidity(~31%))	120000	10,000/300,000
105-0240	Charger Clean Reference Cycle for Enviroment4	Reference Cycle to clean charger in Environment 4 • Env4~6 : NN Condition (Normal Temp (~28℃/82°F), Normal Humidity(~73%))	120000	10,000/300,000

Code	NVM Description	Meaning	Default	Max/Min
105-0250	Charger Clean Reference Cycle for Enviroment5	Reference Cycle to clean charger in Environment 5 • Environment 4~6 : NN Condition (Normal Temp (~28℃/82℉), Normal Humidity(~73%))	90000	10,000/300,000
105-0260	Charger Clean Reference Cycle for Enviroment6	Reference Cycle to clean charger in Environment 6 •Environment 4~6 : NN Condition (Normal Temp (~28℃/82℉), Normal Humidity(~73%))	60000	10,000/300,000
105-0270	Charger Clean Reference Cycle for Enviroment7	Reference Cycle to clean charger in Environment 7 • Environment 7~8 : HH Condition (High Temp (more than 28℃/82℉), High Humidity(more than 73%))	60000	10,000/300,000
105-0280	Charger Clean Reference Cycle for Enviroment8	Reference Cycle to clean charger in Environment 8 • Environment 7~8 : HH Condition (High Temp (more than 28℃/82℉), High Humidity(more than 73%))	60000	10,000/300,000
109-0010	Stand-By Temperature Offset	Target Temperature during standby mode.	0	2/-2
109-0020	Low Power Temperature Offset	Target Temperature during Power save mode.	0	2/-2
109-0030	Thin(60~70gsm) Temperature offset	Target Temperature for thin paper.	0	2/-2
109-0040	Plain(70~90gsm) Temperature offset	Target Temperature for plain paper.	0	2/-2
109-0050	Thick(90~105gsm) Temperature offset	Target Temperature for thick paper.	0	2/-2
109-0060	Heavy(106~175gsm) Temperature offset	Target Temperature for heavy paper.	0	2/-2
109-0070	Extra Heavy1 (176~216gsm) Temperature offset	Target Temperature for extra heavy1 paper.	0	2/-2
109-0080	Extra Heavy2 (217~253gsm) Temperature offset	Target Temperature for extra heavy2 paper.	0	2/-2
109-0090	Recycled paper(70~90gsm) Temperature offset	Target Temperature for Recycled paper.	0	2/-2
109-0150	Transparency Temperature offset	Media type offset for fuser roll temperature.	0	2/-2
109-0170	Envelopes Temperature Offset	Media type offset for fuser roll temperature.	0	2/-2

Code	NVM Description	Meaning	Default	Max/Min
109-0180	Labels Temperature offset	Media type offset for fuser roll temperature.	0	2/-2
109-0190	Thin(60~70gsm) Pressure Offset	Fusing nip pressure offset for thin paper	0	2/-2
109-0200	Envelopes Pressure Offset	Fusing nip pressure offset for envelopes	0	2/-2
109-0210	Fuser Bias Offset	Fuser bias offset	0	2/0

Table 5-1

4.5.1.2. Engine Test Routines

• **Diagnostics > Engine Diagnostics > Engine Test Routines**

Purpose	To perform test routines for the engine.
Operation Procedure	When the main Engine Test Routines window displays, users can navigate through the list of routines that display along with their descriptions. Users can also directly input an EDC code to the text box to find a routine. Users can select a maximum of 3 routines at the same time. After selecting one or multiple routines, pressing the "OK" button will open the test window that lists selected routines. Users can start/stop a desired test routine.
Verification	N/A
Specification	N/A
Reference	Table 5-2

Code	Displayed Name	Meaning
100-0010	Tray1 feed motor (Main feed motor)	Tray1 feed motor on/off
100-0030	Tray3 feed motor (Option feed motor)	Tray3 feed motor on/off
100-0070	Tray1 elevating motor	Tray1 elevate motor on/off
100-0080	Tray2 elevating motor	Tray2 elevate motor on/off
100-0090	Tray3 elevating motor	Tray3 elevate motor on/off
100-0100	Tray4 elevating motor	Tray4 elevate motor on/off
100-0170	Duplex motor forward	Duplex motor forward on/off
100-0210	Exit2 motor forward	Exit2 motor forward running/stop
100-0220	Exit2 motor backward	Exit2 motor backward running/stop
100-0250	Duplex motor Half Speed	Duplex motor Half Speed on/off
100-0260	Main motor	Main motor is on/off
100-0300	Black OPC/DEV motor	Black OPC/DEV motor is on/off
100-0410	Toner supply motor black	Toner dispense(supply) motor on/off * Toner must not be installed.
100-0420	Waste toner motor	Waste toner motor on/off
100-0440	Fuser motor	Fuser motor forward on/off
100-0460	Fuser gap motor	Fuser press control motor on/off
100-5070	Black OPC/DEV motor ready	Detect if black OPC/DEV motor runs at normal speed
100-5160	Fuser motor ready	Detect if fuser motor runs at normal speed
100-5200	LSU motor1 run ready	Detects if LSU motor1 runs at normal speed
101-0010	Tray1 pick up clutch	Engages drive to pick up a paper from tray1

Code	Displayed Name	Meaning
101-0020	Tray2 pick up clutch	Engages drive to pick up a paper from tray2.
101-0030	Tray3 pick up clutch	Engages drive to pick up a paper from tray3
101-0040	Tray4 pick up clutch	Engages drive to pick up a paper from tray4.
101-0070	Bypass pick up clutch	Bypass Pickup clutch(MP Tray)
101-0130	Exit Clutch	Exit Clutch on/off
101-0150	Registration clutch	Registration clutch
101-0160	Duplex clutch	Duplex clutch
101-5010	Duplex gate solenoid	Duplex gate solenoid on/off
102-0020	Tray1 paper empty sensor	Detect when paper is in tray1
102-0100	Tray1 feed sensor	Detect when a paper is at feed sensor
102-0130	Tray2 paper empty sensor	Detect when paper is in tray2
102-0210	Tray2 feed sensor	Detect when a paper is at tray2 feed sensor (optional)
102-0240	Tray3 paper empty sensor	Detect when paper is in tray3
102-0320	Tray3 feed sensor	Detect when a paper is at tray3 feed sensor (optional)
102-0350	Tray4 paper empty sensor	Detect when paper is in tray4
102-0440	Tray4 feed sensor	Detect when a paper is at tray4 feed sensor (optional)
102-0460	Bypass paper empty sensor	Detects when paper is in bypass tray (MP tray)
102-0580	Regi. sensor	Detect when a paper is at Regi. sensor
102-0590	Exit sensor	Detect when a paper is at exit sensor
102-0600	Duplex jam1 sensor	Detect when a paper is at duplex jam1 sensor
102-0610	Duplex jam2 sensor	Detect when a paper is at duplex jam2 sensor
102-0620	Duplex return sensor	Detect when a paper is at duplex return Sensor
102-0630	Fuserout sensor	Detect when a paper is at fuser out
102-0640	OHP sensor	Detect whether a paper is OHP
102-0650	Inner Tray	Detect Inner Tray(Option)
102-0690	Out-Bin1 full sensor	Detect outbin full status of expander
102-0700	Out-Bin2 full sensor	Detect outbin2 full status of expander
102-0710	Main tray feed Cover	Detect when main tray is closed
102-0720	Option tray feed Cover	Detect when option tray is closed
102-5000	Tray1 paper size number	Detect size enum of paper in tray1
102-5010	Tray2 paper size number	Detect size enum of paper in tray2
102-5020	Tray3 paper size number	Detect size enum of paper in tray3
102-5030	Tray4 paper size number	Detect size enum of paper in tray4
102-5040	Bypass paper size number	Detect size enum of paper in bypass tray(MP tray)
105-0040	Black MHV bias	Black MHV bias voltage on at normal drive level

Code	Displayed Name	Meaning
105-5030	Black charger cleaning sensor	Detect cleaning sensor
106-0040	Black Dev bias	Black Dev bias voltage on at normal drive level
107-0040	Black THV bias	Black THV bias voltage on at normal drive level
107-0150	Detach bias	Detach(Saw) bias voltage on at normal drive level
109-0080	Fuser gap home sensor	Detect if the fuser press is located Home position
109-0130	Fuser bias	Fuser bias voltage on at normal drive level
109-5000	Fuser temperature A	Detects what the temperature A is on fuser
109-5010	Fuser temperature B	Detects what the temperature B is on fuser
110-0040	LSU LD4 power	LSU LD4 power on/off (black)
111-0020	Waste toner Install sensor	Detect if the waste toner is installed or not
111-5030	Black toner sensor	TC sensor in developer tank
111-6000	Waste toner Led sensor	Detect waste toner Led is on/off
116-0010	Finisher hardware version	Detect paper at bride entrance
116-0020	Fnsh Entrance motor	Run/Stop entrance motor
116-0030	Fnsh EXIT motor	Run/Stop exit motor
116-0040	Fnsh Bridge Motor	Run/Stop bridge motor
116-0050	Fnsh Paddle motor	Run/Stop paddle motor
116-0060	Fnsh Tamp front motor	Run/Stop tamp front motor
116-0070	Fnsh Tamp rear motor	Run/Stop tamp rear motor
116-0080	Fnsh Staple clinch motor	Run/Stop staple clinch motor
116-0090	Fnsh Staple main position motor	Run/Stop staple main position motor
116-0100	Fnsh Staple sub possition motor	Run/Stop staple sub position motor
116-0110	Fnsh Eject motor	Run/Stop eject motor
116-0120	Fnsh Finger motor	Run/Stop finger motor
116-0130	Fnsh Clamp motor	Run/Stop clamp motor
116-0140	Fnsh Stack motor	Run/Stop stack motor
116-0170	Fnsh Green LED	on/off greenLED
116-0180	Fnsh Red LED	on/off red LED
116-0190	Fnsh Punch Module Dip switch 1	on/off Punch Module Dip switch 1
116-0200	Fnsh Punch Module Dip switch 2	on/off Punch Module Dip switch 2
116-0210	Fnsh Punch Scan motor	Run/Stop Scan motor
116-0220	Fnsh Punch motor	Run/Stop Punch motor
116-0230	Fnsh Booklet Maker dip switch1	on/off Booklet Maker dip switch1
116-0240	Fnsh Booklet Maker dip switch2	on/off Booklet Maker dip switch2
116-0250	Fnsh Booklet Maker dip switch3	on/off Booklet Maker dip switch3

Code	Displayed Name	Meaning
116-0260	Fnsh Booklet Maker dip switch4	on/off Booklet Maker dip switch4
116-0270	Fnsh Feed motor	Run/Stop Feed motor
116-0280	Fnsh Fold motor	Run/Stop Fold motor
116-0290	Fnsh Gate motor	Run/Stop Gate motor
116-0300	Fnsh Guide motor	Run/Stop Guide motor
116-0310	Fnsh Knife motor	Run/Stop Knife motor
116-0320	Fnsh Paddle motor	Run/Stop Paddle motor
116-0330	Fnsh Stacker motor	Run/Stop Stacker motor
116-0340	Fnsh Staple motor	Run/Stop Staple motor
116-0350	Fnsh Stopper motor	Run/Stop Stopper motor
116-0360	Fnsh Front tamper motor	Run/Stop Front tamper motor
116-0370	Fnsh Rear tamper motor	Run/Stop Rear tamper motor
116-5010	Fnsh Bridge entrance sensor	Detect paper at bride exit
116-5020	Fnsh Bridge exit sensor	Detect paper at finisher entrance
116-5030	Fnsh entrance sensor	Detect paper at finisher top tray
116-5040	Fnsh r top exit sensor	Detect paper at compile exit
116-5050	Fnsh compile exit sensor	Detect paper at compile
116-5060	Fnsh Subset thickness sensor	Detect thickness of paper
116-5070	Fnsh Manual staple paper sensor	Detect paper at manual staple area
116-5080	Fnsh Manual staple button sensor	Detect manual staple button is on/off
116-5090	Fnsh Staple prime sensor	Detect paper at prime staple area
116-5100	Fnsh Staple not low sensor	Detect staple low
116-5110	Fnsh Full stack sensor	Detect quantity of paper at stack
116-5120	Fnsh Over stack sensor	Check Stack if paper is over
116-5130	Fnsh Stack upper limit switch	Check Stack if paper is full
116-5140	Fnsh Power supply sensor	Check power supply status
116-5150	Fnsh Door open sensor	Detect door status
116-5160	Fnsh Cover open sensor	Detect cover status
116-5180	Fnsh DIP switch 2	Check DIP switch 2 status
116-5190	Fnsh DIP switch 3	Check DIP switch 3 status
116-5200	Fnsh DIP switch 4	Check DIP switch 4 status
116-5210	Fnsh Bridge unit detect	Detect bridge unit
116-5220	Fnsh Punch unit detect	Detect punch unit
116-5230	Fnsh Booklet unit detect	Detect booklet unit
116-5300	Fnsh Diverter position sensor	Detect divert position

Code	Displayed Name	Meaning
116-5310	Fnsh Paddle home sensor	Detect paddle home position
116-5320	Fnsh Tamp front home sensor	Detect tamp front home position
116-5330	Fnsh Tamp rear home sensor	Detect tamp rear home position
116-5340	Fnsh Stapler main home sensor	Detect stapler main home position
116-5350	Fnsh Stapler clinch home sensor	Detect clinch home position
116-5360	Fnsh Stapler clinch position sensor	Detect clinch position position
116-5370	Fnsh Stapler sub home sensor	Detect staple sub home position
116-5380	Fnsh Stapler safety position sensor	Detect stapler safety position
116-5390	Fnsh Ejector home sensor	Detect eject home position
116-5400	Fnsh Ejector encoder sensor	Detect ejector Encoder
116-5410	Fnsh Support finger home sensor	Detect support-finger home position
116-5420	Fnsh Clamp home sensor	Detect clamp home position
116-5430	Fnsh Clamp reverse sensor	Detect clamp reverse position
116-5460	Fnsh Punch Scan home sensor	Check scan home
116-5470	Fnsh Punch Scan Edge 1 sensor	Check Scan Edge 1
116-5480	Fnsh Punch Scan Edge 2 sensor	Check Scan Edge 2
116-5490	Fnsh Punch Scan Edge 3 sensor	Check Scan Edge 3
116-5500	Fnsh Punch home sensor	Check Punch home
116-5510	Fnsh Punch position A sensor	Check Punch position A
116-5520	Fnsh Punch position B sensor	Check Punch position B
116-5530	Fnsh Punch Encoder sensor	Check Punch Encoder
116-5540	Fnsh Punch Hopper set sensor	Check Hopper set
116-5550	Fnsh Feed entrance sensor	Check Feed entrance
116-5560	Fnsh Feed exit sensor	Check Feed exit
116-5570	Fnsh Tray paper sensor	Check Tray paper
116-5580	Fnsh Fold exit sensor	Check Fold exit
116-5590	Fnsh Fold motor ready	Check Fold motor ready
116-5600	Fnsh Knife home sensor	Check Knife home
116-5610	Fnsh Knife motor ready	Check Knife motor ready
116-5620	Fnsh Gate home sensor	Check Gate home
116-5630	Fnsh Guide home sensor	Check Guide home
116-5640	Fnsh Booklet Maker Paddle home sensor	Check Booklet Maker Paddle home
116-5650	Fnsh Stacker full sensor	Check Stacker full
116-5660	Fnsh Stapler home sensor	Check Stapler home
116-5670	Fnsh Low staple 1 sensor	Check Low staple 1

Code	Displayed Name	Meaning
116-5680	Fnsh Low staple 2 sensor	Check Low staple 2
116-5690	Fnsh Stopper home sensor	Check Stopper home
116-5700	Fnsh Front tamper home sensor	Check Front tamper home
116-5710	Fnsh Rear tamper home sensor	Check Rear tamper home
122-0010	Duplex fan1 run	Start/Stop duplex fan1 run
122-0100	Fuser out fan run	Start/Stop fuser out fan
122-0110	SMPS In fan run	Start/Stop SMPS in fan
122-0120	SMPS out fan run	Start/Stop SMPS out fan
122-0140	Ozone suction fan run	Start/Stop ozone suction fan
122-0160	OPC In fan run	Start/Stop OPC in fan
122-5000	Dupelx fan1 run ready	Detects if duplex fan1 runs at normal speed
122-5090	Fuser out fan run ready	Detects if fuser-out fan runs at normal speed
122-5100	SMPS In fan run ready	Detects if SMPS-in fan runs at normal speed
122-5110	SMPS out fan run ready	Detects if SMPS-out fan runs at normal speed
122-5130	Ozone suction fan run ready	Detects if ozone suction fan motor runs at normal speed
122-5150	OPC In fan run ready	Detects if OPC-in fan motor runs at normal speed
123-0010	Fuser center temperature	Display fuser center temperature
123-0020	Fuser side temperature	Display fuser side temperature
123-0040	Inner temperature	Display temperature in Machine
123-0050	Inner humidity	Display humidity in Machine
123-0060	Outter temperature	Display outter temperature
123-0070	Outter humidity	Display outter humidity

Table 5-2

4.5.2. Fax Diagnostics

4.5.2.1. Fax NVM Read/Write

• **Diagnostics > Fax Diagnostics > Fax NVM Read/Write**

Purpose	To change a configuration value for fax firmware.
Operation Procedure	When the main "NVM Read/Write" window displays, users can navigate through the list of configuration values that display along with description. Users can also input a code to the text box to find a configuration value directly. After selecting one value, pressing "Edit" button will open an interface for user input.
Verification	N/A
Specification	N/A
Reference	Table 5-3

Code (Line 1)	Code (Line 2)	Displayed Name	Default
20-200	21-200	Pause Dial Time	1
20-210	21-210	Dial Pulse M/B ratio	0
20-220	21-220	Auto Dial Start Pause Time	1
20-300	21-300	Ring On Time	170
20-310	21-310	Ring Off Time	560
20-320	21-320	Ring Detection Freq	1
20-400	21-400	DTMF High-Freq Level	8
20-410	21-410	DTMF Low-Freq Level	11
20-420	21-420	DTMF Timing	5
20-520	21-520	Error Rate	2
20-530	21-530	Dial Tone Detect	0
20-540	21-540	Loop Current Detect	0
20-550	21-550	Busy Signal Detect	0
20-700	21-700	Line Monitor Setting	0
20-800	21-800	Modem Speed	7
20-810	21-810	Fax Transmission Level	12
20-830	21-830	Auto Dial Timeout	55
20-999	21-999	Fax Line Setting	

Table 5-3

4.5.2.2. Fax Test Routines

• **Diagnostics > Fax Diagnostics > Fax Test Routines**

Purpose	To perform test routines for the fax machine.
Operation Procedure	When the main Fax Test Routines window displays, users can navigate through the list of routines that display along with description. Users can also input a code to the text box to find a routine directly. After selecting one routine, pressing "OK" button will open the test window that lists selected routine. Users can start/stop a desired test routine.
Verification	N/A
Specification	N/A
Reference	Table 5-4

Code (Line 1)	Code (Line 2)	Displayed Name
20-012	21-012	Single Tone 110 Hz
20-014	21-014	Single Tone 1650 Hz
20-015	21-015	Single Tone 1850 Hz
20-016	21-016	Single Tone 2100 Hz
20-020	21-020	DMTF # Line
20-021	21-021	DMTF * Line
20-022	21-022	DMTF 0 Line
20-023	21-023	DMTF 1 Line
20-024	21-024	DMTF 2 Line
20-025	21-025	DMTF 3 Line
20-026	21-026	DMTF 4 Line
20-027	21-027	DMTF 5 Line
20-028	21-028	DMTF 6 Line
20-029	21-029	DMTF 7 Line
20-030	21-030	DMTF 8 Line
20-031	21-031	DMTF 9 Line
20-040	21-040	V.21 300 bps
20-041	21-041	V.27ter 2400 bps
20-042	21-042	V.27ter 4800 bps
20-043	21-043	V.29 7200 bps
20-044	21-044	V.29 9600 bps
20-045	21-045	V.17 7200 bps

Code (Line 1)	Code (Line 2)	Displayed Name
20-046	21-046	V.17 9600 bps
20-047	21-047	V.17 12000 bps
20-048	21-048	V.17 14400 bps
20-049	21-049	V.34 2400 bps
20-050	21-050	V.34 4800 bps
20-051	21-051	V.34 7200 bps
20-052	21-052	V.34 9600 bps
20-053	21-053	V.34 12000 bps
20-054	21-054	V.34 14400 bps
20-055	21-055	V.34 16800 bps
20-056	21-056	V.34 19200 bps
20-057	21-057	V.34 21600 bps
20-058	21-058	V.34 24000 bps
20-059	21-059	V.34 26400 bps
20-060	21-060	V.34 28800 bps
20-061	21-061	V.34 31200 bps
20-062	21-062	V.34 33600 bps

Table 5-4

4.5.3. Scanner Diagnostics

4.5.3.1. Shading Test

• **Diagnostics > Scanner Diagnostics > Shading Test**

Purpose	To check quality of scanned images, especially defect in optical devices, including lens, mirror, lamp, and etc, are suspected.
Operation Procedure	Press "Share and Print report" to see if the current shading value is correct. Mono, red, green, blue gray shading values will be shown on the printed report. When the previous shading value is needed, press "Print Last Shade Report".
Verification	N/A
Specification	N/A
Reference	N/A

4.5.3.2. Scanner/DADF NVM Read/Write

• **Diagnostics > Scanner Diagnostics > Scanner/DADF NVM Read/Write**

Purpose	To read and/or write values in the scanner and DADF memory.
Operation Procedure	When the main "NVM Read/Write" window displays, users can navigate through the list of codes with descriptions and saved values. Users can also directly input a code to the text box to find a NVM. After selecting a code, the "Edit" button will be enabled only if the code is writable. If the selected code is writable and the "Edit" button is enabled, press the button to configure the desired value for the code.
Verification	N/A
Specification	N/A
Reference	Table 5-5

Code	NVM Description	Meaning	Access
05-0000	Pick up Count	Pick up Roller Life Count	Read Only
05-0010	Document Duplex Reverse Point	Document Duplex Reverse Point	Read/Write
05-0020	Document Exit Turn Reverse Point	Document Exit Turn Reverse Point	Read/Write

Table 5-5

4.5.3.3. Scanner/DADF Test Routines

• **Diagnostics > Scanner Diagnostics > Scanner/DADF Test Routines**

Purpose	To perform test routines for the scanner and DADF.
Operation Procedure	When the main scanner/DADF Test Routines window displays, users can navigate through the list of routines that display along with description. Users can also input a code to the text box to find a routine directly. After selecting one routine, pressing "OK" button will open the test window that lists selected routine. Users can start/stop a desired test routine.
Verification	N/A
Specification	N/A
Reference	Table 5-6

Code	NVM Description	Meaning	Access
05-0000	Document Length .1 Sensor	Document Length .1 Sensor	High/Low
05-0001	Document Length .2 Sensor	Document Length .2 Sensor	High/Low
05-0002	Document Length .3 Sensor	Document Length .3 Sensor	High/Low
05-0010	Document Mixed.1 Sensor	Document Mixed.1 Sensor	High/Low
05-0011	Document Mixed.2 Sensor	Document Mixed.2 Sensor	High/Low
05-0012	Document Mixed.3 Sensor	Document Mixed.3 Sensor	High/Low
05-0020	Document Cover Open Sensor	Document Cover Open Sensor	High/Low
05-0030	Document Lift Sensor	Document Lift Sensor	High/Low
05-0040	Document Detect Sensor	Document Detect Sensor	High/Low
05-0050	Document Feed Sensor	Document Feed Sensor	High/Low
05-0060	Document Simplex Registration Sensor	Document Simplex Registration Sensor	High/Low
05-0070	Document Scan Read Sensor	Document Scan Read Sensor	High/Low
05-0080	Document Exit Sensor	Document Exit Sensor	High/Low
05-0090	Document Duplex Registration Sensor	Document Duplex Registration Sensor	High/Low
05-0100	Document Exit Turn Sensor	Document Exit Turn Sensor	High/Low
05-0110	Document Junction Gate Solenoid	Document Junction Gate Solenoid	On/Off
05-0120	Document Simplex Gate Solenoid	Document Simplex Gate Solenoid	On/Off
05-0130	Document Pick up Motor Forward	Document Pick up Motor Forward	Running/Stop

Code	NVM Description	Meaning	Access
05-0140	Document Pick up Motor Backward	Document Pick up Motor Backward	Running/ Stop
05-0150	Document Registration Motor Forward	Document Registration Motor Forward	Running/ Stop
05-0160	Document Registration Motor Backward	Document Registration Motor Backward	Running/ Stop
05-0170	Document Scan Motor Forward	Document Scan Motor Forward	Running/ Stop
05-0180	Document Scan Motor Backward	Document Scan Motor Backward	Running/ Stop
05-0190	Document Exit Motor Forward	Document Exit Motor Forward	Running/ Stop
05-0200	Document Exit Motor Backward	Document Exit Motor Backward	Running/ Stop
06-0000	Scanner Original Size Detecting Sensor 1	Scanner Original Size Detecting Sensor 1	High/Low
06-0001	Scanner Original Size Detecting Sensor 2	Scanner Original Size Detecting Sensor 2	High/Low
06-0010	Scanner Cover Open/Close Sensor 1	Scanner Cover Open/Close Sensor 1	High/Low
06-0011	Scanner Cover Open/Close Sensor 2	Scanner Cover Open/Close Sensor 2	High/Low
06-0020	Scanner Platen Motor Forward	Scanner Platen Motor Forward	Start/Stop
06-0030	Scanner Platen Motor Backward	Scanner Platen Motor Backward	Start/Stop

Table 5-6

4.5.4. Adjustment

4.5.4.1. Print Adjustment

・ **Diagnostics > Adjustment > Print Adjustment > Automatic Adjustment**

Purpose	To correct image position of print-outs automatically.
Operation Procedure	1. Press "Paper Supply" button and select a tray. 2. Press "Paper Size" button and select a paper size of the previously selected tray. 3. Press "Print" button. A test pattern will be printed out. 4. Press "Next" button. The system ask to locate the test pattern. 5. Locate the front side of Scanner A/S Chart at the scanner glass . Note that ADF cannot be used. 6. Press "OK" button. Automatic scanning will occur . 7. Locate the back side of Scanner A/S Chart at the scanner glass again and press "OK" button once more. 8. The system will automatically calculate the proper value based on scanning result of the test pattern. 9. The new value s are set to the system.
Verification	Print out and check if all the position of scale marks (ⓐ,ⓑ,ⓔ,ⓕ) in the image are located within the specified limit.
Specification	ⓐ,ⓑ,ⓔ,ⓕ : 10mm, ± 1.5mm
Reference	Figure 5-1, 5-2

Figure 5-1 Front Side

Figure 5-2 Back Side

• **Diagnostics > Adjustment > Print Adjustment > Magnification**

Purpose	To correct magnification of print-outs manually.
Operation Procedure	1. Press "Vertical Magnification" or "Horizontal Magnification" 2. Vertical magnification (c,g) : If the current value is smaller than the specification, press"+". Otherwise, press "-". 3. Horizontal magnification(d,h) : If the current value is smaller than the specification, press"+". Otherwise, press "-". Table below
Verification	Print out and measure if the length of vertical (400mm) and horizontal line (277mm) in the print-out are correct.
Specification	ⓒ,ⓖ : 400mm, ± 1.5mm (A3) ⓓ,ⓗ : 277mm, ± 1.5mm (A3)
Reference	Figure 5-1, 5-2

Example Cases	Vertical Adjustment	Horizontal Adjustment
ⓒ or ⓖ = 398.0 mm	+20	
ⓒ or ⓖ = 402.5 mm	-25	
ⓓ or ⓗ = 275.3 mm		+17
ⓓ or ⓗ = 278.9 mm		-19

• **Diagnostics > Adjustment > Print Adjustment > Image Position**

Purpose	To correct image position of print-outs manually.
Operation Procedure	1. Select a tray required adjustment. 2. Change the adjustment value with arrow button. "+" value will move to Tail-Edge while "-" value will move to Lead-Edge. Table below
Verification	Print out and check if all the position of scale marks (ⓐ,ⓑ,ⓔ,ⓕ) in the image are located within the specified limit.
Specification	ⓐ,ⓑ,ⓔ,ⓕ : 10mm, ± 1.5mm
Reference	Figure 5-1, 5-2

Example Cases	Simplex Leading Edge	Simplex Side Edge	Duplex Leading Edge	Duplex Side Edge
ⓐ = 8.5 mm	+15			
ⓑ = 11.6 mm		-16		
ⓔ = 8.0 mm			+20	
ⓕ = 13.0 mm				-30

4.5.4.2. Copy Adjustment

• **Diagnostics > Adjustment > Copy Adjustment > Image Position**

Purpose	To correct image position of copied images manually.
Operation Procedure	1. Select a tray required adjustment. 2. Change the adjustment value with arrow button. "+" value will move to Tail-Edge while "-" value will move to Lead-Edge. <table><tr><td>Example Cases</td><td>Simplex Leading Edge</td><td>Simplex Side Edge</td><td>Simplex Leading Edge</td><td>Simplex Side Edge</td></tr><tr><td>ⓐ = 11.5 mm</td><td>-15</td><td></td><td></td><td></td></tr><tr><td>ⓑ = 8.4 mm</td><td></td><td>-16</td><td></td><td></td></tr><tr><td>ⓔ = 12.0 mm</td><td></td><td></td><td>-20</td><td></td></tr><tr><td>ⓕ = 7.0 mm</td><td></td><td></td><td></td><td>+30</td></tr></table>
Verification	1. Copy the Scanner A/S Chart . Scanning must be occur at the scanner glass . 2. Check if all the position of scale marks (ⓐ,ⓑ, ⓔ,ⓕ) in the image are located within the specified limit.
Specification	ⓐ,ⓑ,ⓔ,ⓕ : 10mm, ± 1.5mm
Reference	Figure 5-1, 5-2

4.5.4.3. Scan Area Adjustment

• **Diagnostics** > **Adjustment** > **Scan Area Adjustment** > **Automatic Adjustment**

Purpose	To correct image position and magnification of scanned images automatically.
Operation Procedure	1. Locate the Scanner A/S Chart at the scan glass . Note that "Lead Edge" arrows need to head to the left side of scan glass and to be placed face down. Also note that the Scanner A/S Charts come in two sizes, A4 and Letter . Choose one size to meet your primary size of use. 2. Press "OK" button. Automatic scanning will occur ,and the system will automatically calculate the proper value based on scanning result of the chart . 3. The new value set to the table.
Verification	1. Scan the Scanner A/S Chart and send it to a PC. Scanning must be occur from the scan glass. 2. To check the image position, compare the position of scale marks (ⓐ,ⓑ) of the chart to the copy. 3. To check the magnification, compare the length of line ⓒ of the chart to the copy.
Specification	ⓐ,ⓑ : 10 , ± 1.5mm ⓒ : 190 , ± 1.5mm
Reference	Figure 5-3

Figure 5-3, A4 Scanner A/S Cart

• **Diagnostics > Adjustment > Scan Area Adjustment > Manual Adjustment**

Purpose	To correct image position and magnification of scanned images manually. This function is used when a result of automatic adjustment does not satisfy the expectation.

Operation Procedure	1. Choose one item from the table. There are three items to choose.
	    • Image Position - Leading Edge
	    • Image Position - Side Edge
	    • Magnification - Vertical Direction
	2. Select one item and press the "Edit" button.
	3. Change the adjustment value with arrow button.
	4. Image Position (ⓐ, ⓑ) : If the current value is smaller than the specification, press "+". Otherwise, press "-".
	5. Magnification (ⓒ) : If the current value is smaller than the specification, press "-". Otherwise, press "+".
	6. Press the "OK" button to apply the new value to the system.
	
	<table><tr><th>Example Cases</th><th>Leading Edge</th><th>Side Edge</th><th>Vertical Direction Adjustment</th></tr><tr><td>ⓐ = 11.0 mm</td><td>-10</td><td></td><td></td></tr><tr><td>ⓑ = 9.0 mm</td><td></td><td>+10</td><td></td></tr><tr><td>ⓒ = 191.7 mm</td><td></td><td></td><td>+0.8% (-3.4mm)</td></tr><tr><td>ⓒ = 188.1 mm</td><td></td><td></td><td>-0.4% (near +1.8mm)</td></tr></table>
	* Note that value of magnification adjustment needs to be calculated based on A3 size, 420mm ((190mm + 10mm*2)*2) if the used Scanner A/S Chart is A4 size.

Verification	1. Scan the Scanner A/S Chart and send it to a PC. Scanning must be occur from the scan glass. 2. To check the image position, compare the position of scale marks (ⓐ,ⓑ) of the chart to the copy. 3. To check the magnification, compare the length of line ⓒ of the chart to the copy .
Specification	ⓐ,ⓑ : 10 , ± 1.5mm ⓒ : 190 , ± 1.5mm Image Position Unit: mm, Scale: 0.1, Min/Max: -6/+6 Magnification Unit: %, Scale: 0.1(0.42mm), Min/Max: 99/101
Reference	Figure 5-3

4.5.4.4. DADF Adjustment

• **Diagnostics > Adjustment > DADF Adjustment > Automatic Adjustment**
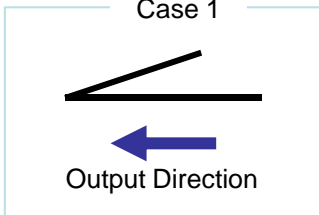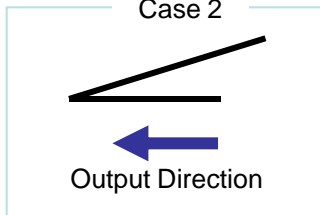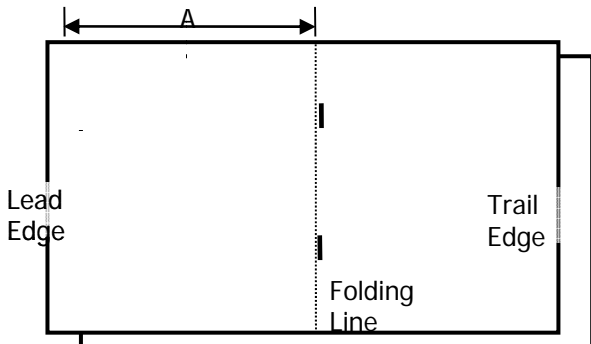
Purpose	To correct image position and magnification of scanned images via DADF automatically.
Operation Procedure	1. Locate the Scanner A/S Chart at the DADF. Note that "Lead Edge" arrows need to head to feeding direction and to be placed face up. Also note that the Scanner A/S Charts come in two size, A4 and Letter . Choose one size to meet your primary size of use. 2. Press "OK" button. Automatic scanning will occur ,and the system will automatically calculate the proper value based on scanning result of the chart . 3. The new values are set to the table.
Verification	1. Copy the Scanner A/S Chart. Scanning must be occur from the DADF. 2. To check the image position, compare the position of scale marks (ⓐ,ⓑ) of the chart to the copy. 3. To check the magnification, compare the length of line ⓒ of the chart to the copy .
Specification	ⓐ,ⓑ : 10 $\pm$, 1.5mm ⓒ : 190 $\pm$, 1.5mm
Reference	Figure 5-3

· **Diagnostics > Adjustment > DADF Adjustment > Manual Adjustment**

Purpose	To correct image position and magnification of scanned images via DADF manually. This function is used when a result of automatic adjustment does not satisfy the expectation.
Operation Procedure	1. Choose one item from the table. There are three items to choose. 　　· Image Position - Simplex Leading Edge 　　· Image Position – Simplex Side Edge 　　· Magnification – Vertical Direction 2. Select one item and press the "Edit" button. 3. Change the adjustment value with arrow button. 4. Image Position (Simplex Leading Edge, ⓐ) : If the current value is smaller than the specification, press "+". Otherwise, press "-". 5. Image Position (Simplex Side Edge, ⓑ) : If the current value is smaller than the specification, press "-". Otherwise, press "+". 6. Magnification (ⓒ) : If the current value is smaller than the specification, press "-". Otherwise, press "+". 7. Press the "OK" button to apply the new value to the system. | Example Cases	Leading Edge	Side Edge	Vertical Direction Adjustment
---	---	---	---
ⓐ = 11.5 mm	-15		
ⓑ = 8.8 mm		-12	
ⓒ = 191.3 mm			+0.6% (near -2.6mm)
ⓒ = 188.0 mm			-0.5% (near +2.0mm)	 * Note that value of magnification adjustment needs to be calculated based on A3 size, 420mm ((190mm + 10mm*2)*2) if the used Scanner A/S Chart is A4 size.
Verification	1. Copy the Scanner A/S Chart. Scanning must be occur from the DADF. 2. To check the image position, compare the position of scale marks (ⓐ,ⓑ) of the chart to the copy. 3. To check the magnification, compare the length of line ⓒ of the chart to the copy .
Specification	ⓐ,ⓑ : 10 , ± 1.5mm ⓒ : 190 , ± 1.5mm Image Position Unit: mm, Scale: 0.1, Min/Max: -6/+6 Magnification Unit: %, Scale: 0.1(0.42mm), Min/Max: 99/101
Reference	Figure 5-3

4.5.4.5. Finisher Adjustment

• **Diagnostics > Adjustment > Finisher Adjustment > Booklet Folding Position**
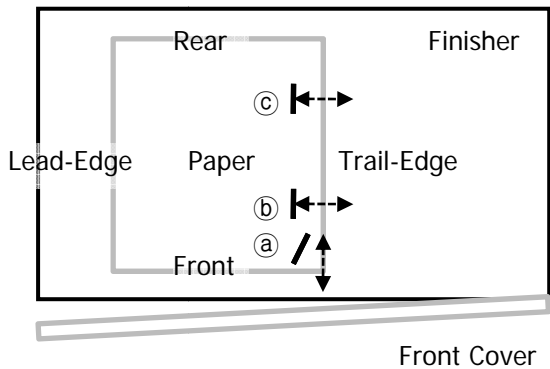
Purpose	To correct folding position of the booklet. Only available with Booklet finishers.
Operation Procedure	1. Choose one item from the table. There are four items to choose. • Booklet Folding Position – Group 1 (Sheet Length < 288.0 mm) • Booklet Folding Position – Group 2 (288.0mm <= Sheet Length <358.5mm) • Booklet Folding Position – Group 3 (358.5mm <= Sheet Length <426.0mm) • Booklet Folding Position – Group 4 (426.0mm <= Sheet Length) 2. Select one item and press the edit button. 3. Change the adjustment value with arrow button. Input + value in "Case 1" shown below. Input – value in "Case 2" shown below. 4. Press the "OK" button to apply the new value to the system.
Verification	Print out a booklet and check the folding position is located at the center.
Specification	

Group	Paper Size		'A' Dimension
I	LT	216 x 279	139.5 ± 1.5 mm
II	A4	210 x 297	148.5 ± 1.5 mm
	8.5 x 13	216 x 330	165.1 ± 1.5 mm
III	8.5 x 14	216 x 356	178.0 ± 1.5 mm
	A3	297 x 420	210.0 ± 1.5 mm
IV	LEDGER	279 x 432	216.0 ± 1.5 mm
	12 x 18	304.8 x 457.2	228.5 ± 1.5 mm

Reference	
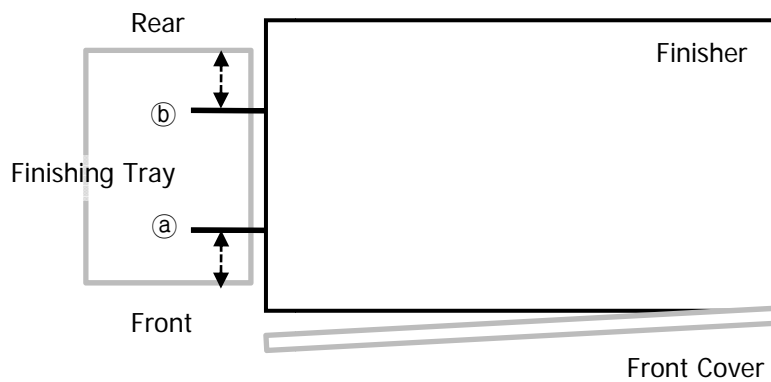
• **Diagnostics** > **Adjustment** > **Finisher Adjustment** > **Punch Hole Position**

Purpose	To correct hole punching position. Only available when punch kit is installed.
Operation Procedure	1. Choose one item from the table. There are two items to choose. • Punch Hole DOF Position – Direction of feeding position • Punch Hole STS Position – Side to side position. That is perpendicular to DOF position 2. Select one item and press the edit button. 3. Change the adjustment value with arrow button. + value moves the position to lead edge, while - value moves the position to trail edge. 4. Press the "OK" button to apply the new value to the system.
Verification	Print out with punch hole and check the punch hole position is located as adjusted.
Specification	DOF Position Unit: mm, Scale: 0.1, Min/Max: ±50mm STS Position Unit: mm, Scale: 0.1, Min/Max: ±50mm
Reference	N/A

• **Diagnostics** > **Adjustment** > **Finisher Adjustment** > **Staple Position**

Purpose	To correct stapling position.
Operation Procedure	1. Choose one item from the table. There are three items to choose. • Staple STS Position (ⓐ) • Front Dual Staple DOF Position (ⓑ) • Rear Dual Staple DOF Position (ⓒ) 2. Select one item and press the edit button. 3. Change the adjustment value with arrow button. + value moves the position to lead edge or rear position, while - value moves the position to trail edge or front position. 4. Press the "OK" button to apply the new value to the system.
Verification	Print out with stapling and check the stapling position is located as adjusted.
Specification	Staple STS Position Unit: mm. Scale: 0.1, Min/Max: ±50mm DOF Position Unit: mm, Scale: 0.1, Min/Max: ±50mm STS Position Unit: mm, Scale: 0.1, Min/Max: ±50mm
Reference	

• **Diagnostics > Adjustment > Finisher Adjustment > Tamper Position**

Purpose	To correct alignment of print out stack at finishing tray. Note that use of this function would be very rare and would be required if the size of paper is not standardized.
Operation Procedure	1. Choose one item from the table. There are two items to choose. • Front Tamper Position (ⓐ) • Rear Tamper Position (ⓑ) 2. Select one item and press the edit button. 3. Change the adjustment value with arrow button. + value moves the position to rear position, while - value moves the position to front position. 4. Press the "OK" button to apply the new value to the system.
Verification	Print out and check the stack of paper is aligned correctly.
Specification	Front Tamper Position Unit: mm, Scale: 0.1, Min/Max: ±50mm Rear Tamper Position Unit: mm, Scale: 0.1, Min/Max: ±50mm
Reference	

4.5.5. ACS
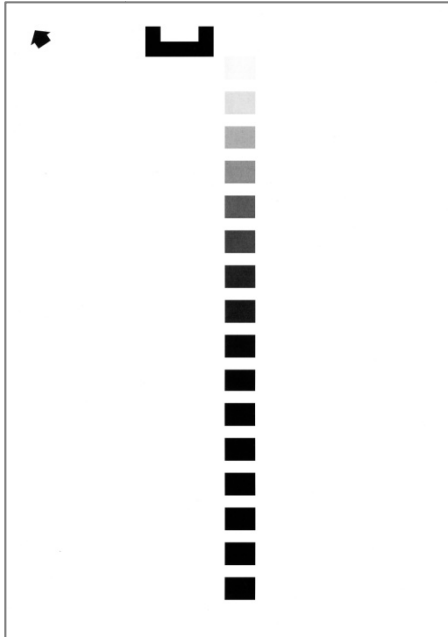
• **Diagnostics** > **ACS**

Purpose	To set the color sensing level of auto color mode in scan function.				
Operation Procedure	Change the level from 1 to 5. While the level 1 is the most color sensitive, the level 5 is the most monochrome sensitive.				
Verification	N/A				
Specification		Level 1	Level 2	Level 3	Level 4	Level 5
	Color Coverage	0.1 %	0.4 %	1.0 %	1.5 %	2.0 %
Reference	N/A				

4.5.6. Color Management

4.5.6.1. Scan CTD

• **Diagnostics** > **Color Management** > **Auto Tone Adjustment** > **Scan CTD**

Purpose	To correct image quality when density of the image is poor. This function needs to be performed after density of color is changed from "Machine Setup > General Settings > Color > Density Adjustment " by administrators.
Operation Procedure	1. Run Scan CTD 2. Print out a test pattern. Note that the test pattern is designed for A3 or ledger size. Make sure that required media size is loaded in a tray. 3. When the test pattern is printed out, locate the pattern on the scanner. 4. The arrow in left top of the test pattern need s to head to the left-top side of scan glass and to be placed face down. 5. Run the pattern scanning by pressing "OK" button. 6. Exit Scan CTD mode.
Verification	Print out a test job and make sure the image quality has recovered.
Specification	N/A
Reference	N/A

4.6. Service Functions

4.6.1. Main Memory Clear

• Service Functions > Main Memory Clear

This function resets the main memory of the system to the factory default setting. It can be used to reset the system to the initial value when the product is functioning abnormally. All the user configured values return to the default values.
To clear the main memory, users need to select the country of the system locates, and rebooting of the system is required.

4.6.2. Hard Disk Maintenance

• Service Functions > Hard Disk Maintenance > Device Configuration Data Clear

This function formats all device configuration data, for example, user profile, address book, and devices settings, on the hard disk

• Service Functions > Hard Disk Maintenance > Temporary and Spool Data Clear

This function formats all temporary and spool data saved on the hard disk.

• Service Functions > Hard Disk Maintenance > User Saved Data and Log Data Clear

This function formats all the user data, for example, box data, pending secure jobs, font, form, macro, data related applications, and job log, on the hard disk.

• Service Functions > Hard Disk Maintenance > All Saved Data Clear

This function formats all the data that can be erased with 3 functions above. The function will NOT format the hard disk entirely.

• Service Functions > Hard Disk Maintenance > Hard Disk Check

This function checks a bad sector in the hard disk. If a bad sector is found, the system will display an error message and send an email notification to the system administrator.

4.6.3. Debug Log

• Service Functions > Debug Log

This function sets the system log message level. Users can select three options.

• Off : This option disables the logging option.
• Job Status: This option only enables the logging option of user created jobs.
• Details : This option enables all the logging options of the running tasks of the system. Note that this option might create a trade-off of performance in certain system operation. Use this option when the system behaves abnormally, and engineers need to investigate problems.

4.6.4. Port

• Service Functions > Port

This function enables/disables remote connections to the system via telnet, OSGI command shell, and SMB(samba) protocol.
This function can be used when there is a problem that requires developers to access the system or when there is a need for developers to upload applications for a test.
Since enabling those ports can creates a risk of damaging data stored in the device, agreement of the administrator of the customer site is necessary. The user must log in as the administrator to enable/disable the services.

4.6.5. Capture Log

• Service Functions > Capture Log

This function copies all the saved log in the system to a UBS memory as a zip file. To use this function, a USB memory needs to be plugged into the system. Note that the size of system log could reach up to 1GB. If the system log size become considerably huge, it will take longer time to copy to the plugged memory.

4.6.6. Toner Save

• Service Functions > Toner Save

This function reduces the use of toner up to 30% and only applies to monochrome printing.

4.6.7. Count Setting of Large Page

• Service Functions > Count Setting of Large Page

This function sets count of large page, such as A3 and ledger size, to 1 count or 2 count of the total count. For example, the total use of 100 A4 impressions and 100 A3 impressions will become 200 impressions if the configuration is set to "1 Count Up" while the total will be 300 impression if the configuration is set to "2 Count Up".

4.6.8. System Recovery

• Service Functions > System Recovery

This function repairs or format the HDD of the system. To use this function, a HDD image need to be saved in a USB memory, and that USB memory needs to be plugged in the system before the execution.

From the system recovery UI, Choose "SYS" to recover only the system partition of the HDD or "ALL" to recover all the partition of the HDD.
When the system recovery UI is appeared after reboot, choose "HDD Repair" to repair any corrupted data in the selected partition or choose "HDD Format" to format the data in the selected partition.
The password of this mode is 1934.

4.6.9. User Data Management
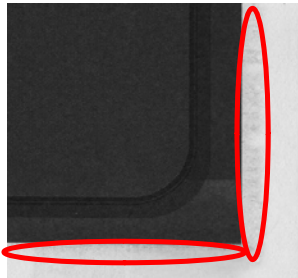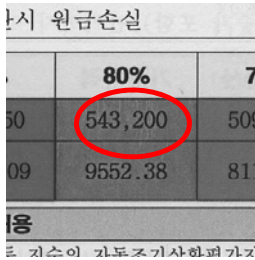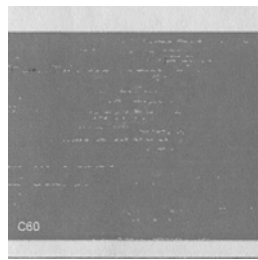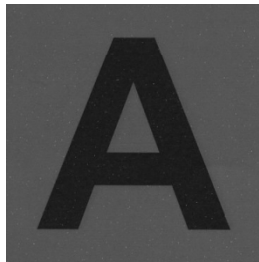
• **Service Functions > User Data Management**

This function backup or restore user data stored in the hard disk. The purpose of this function is to backup user data before format of the hard disk and store back to the hard disk after format. Note that hard dist format will be performed when the data encryption option is enabled by administrators.

To use this function users need to prepare a USB hard disk that its size is larger than 100GB.

4.6.10. TR Control Mode

· Service Functions > TR Control Mode

Purpose	To correct transfer related problems. This function can be used to change the transfer value to optimize image quality to a certain type of paper.

Operation Procedure	1. TR Control Mode
	• Choose the paper group, paper side, and paper direction.
	• Adjust PWM value based on the problem type.
	    ▪ Blur : Increase PWM value
	    ▪ Poor Transfer : Increase PWM value
	    ▪ Re-transfer : Decrease PWM value
	    ▪ White Spot : Decrease PWM value
	    ▪ OPC Cyclic Ghost : Decrease PWM value
	
	Blur **Poor Transfer** **Retransfer**
	
	White Spot **OPC Cyclic Ghost**
	
	2. Blur Upgrade Mode : Turn on the mode when black lines becomes blur.
	3. OHP Upgrade Mode : Turn on the mode when transfer on OHP becomes poor. Note that this option needs to be turned on only if there is a transfer problem in OHP printing. Most of OHP types can be used without this option turned on.

Verification	Print out a test job and make sure the transfer problem has resolved.
Specification	N/A
Reference	N/A

5. Updating Firmware

This chapter includes instructions for updating the printer firmware.
You have to update the firmware after replacing the video board or engine board or OPE board.
You can update the printer firmware by using one of the following methods:

- Update the firmware by using the printer control panel
- Update the firmware by using the network.

5.1 Updating from the Printer Control Panel

WARNING: Failure to follow these instructions could lead to corruption issues and prevent the proper operation of this printer. Follow all of the instructions carefully.

1. Download the firmware file from the Global Service Partner Network (GSPN) website.
2. Unzip the firmware file to a folder on your PC.
3. Copy the firmware file (*.hds) only to the root level of a USB flash drive.
   Note: A3 firmware files may be up to 500 MB in size. USB flash drive size must be a minimum of 2GB.
4. Plug the USB flash drive into one of the two front USB ports (located below the control panel).
5 . Once the machine successfully accesses the USB drive, the USB button will be enabled on the Home Screen. Press the **[Machine Setup]** button.
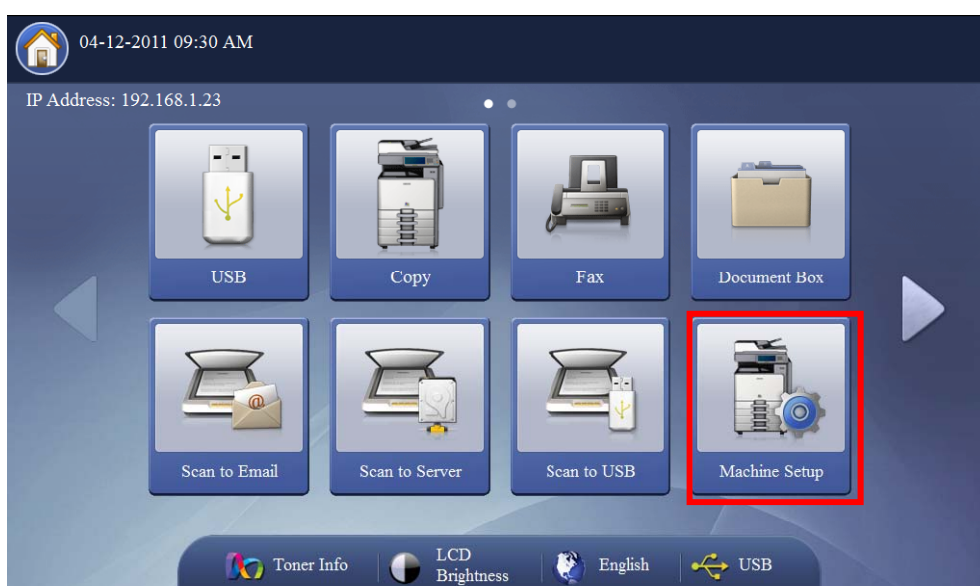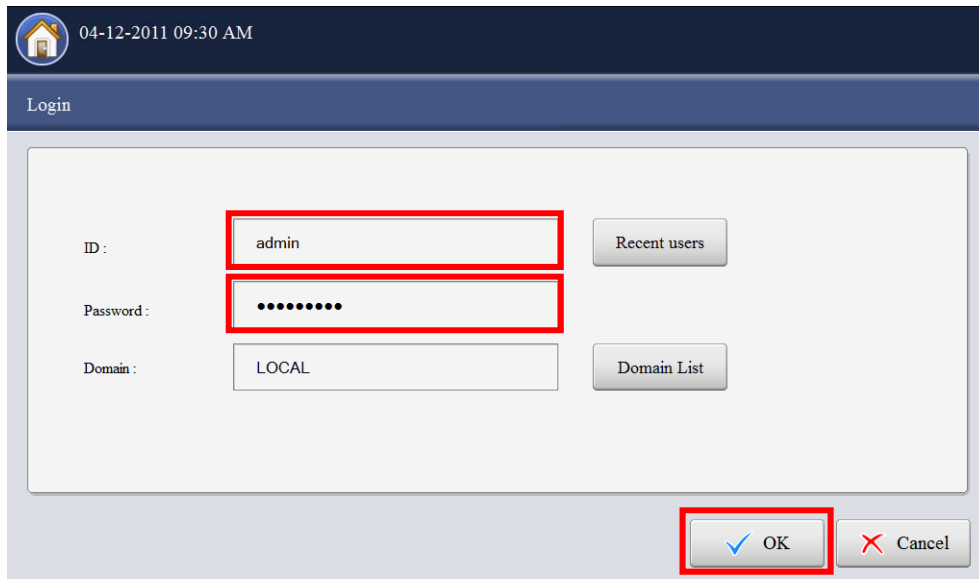
6. On the Machine Setup screen, press the **[Application Management]** button.
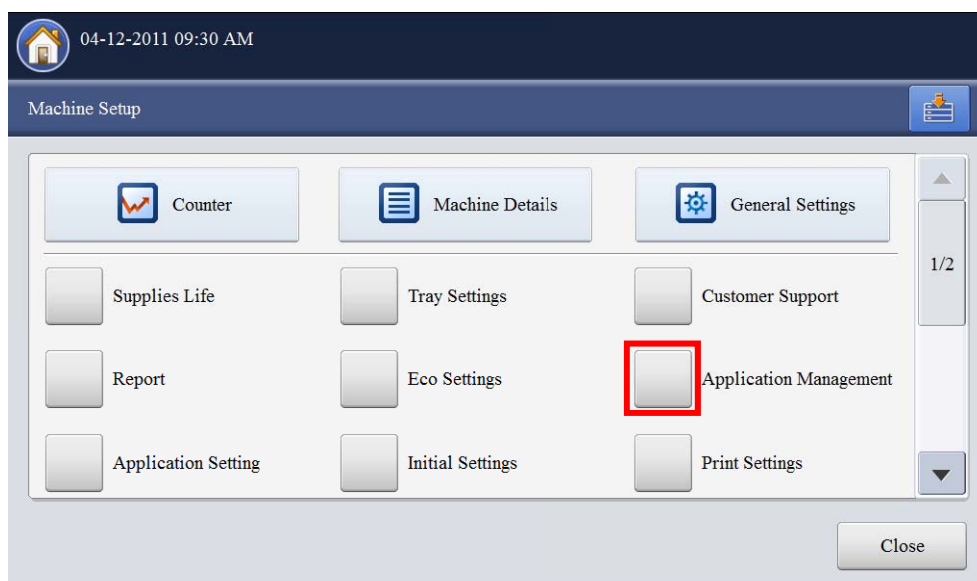
7. Enter an Administrator ID and Password, and then press the **[OK]** button.
   Note: The default Administrator ID and Password was created when the machine was first installed.
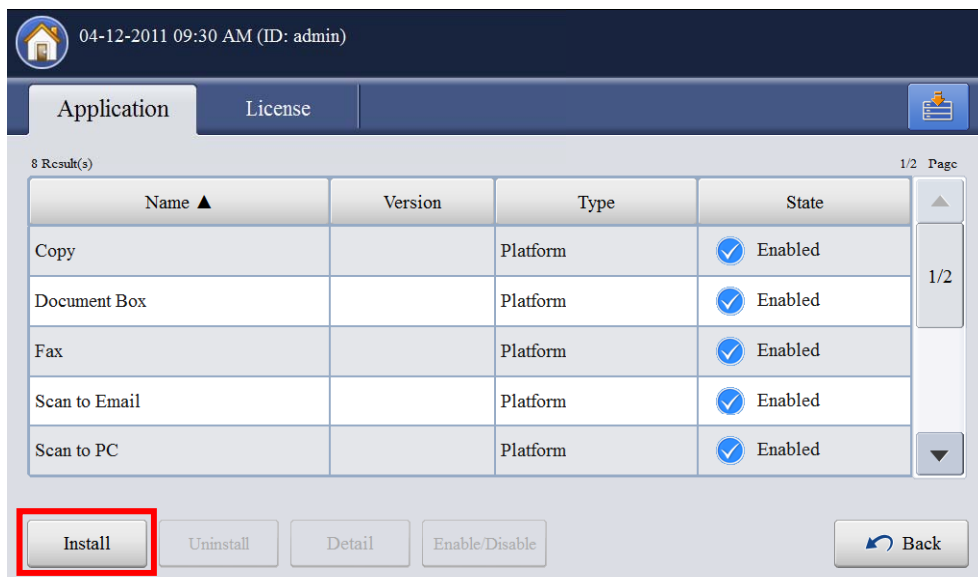
8. On the Application tab, press the **Install** button.

9. The Installation window will list the files on the USB drive. Touch the name of the firmware file to select it, and then press the **[OK]** button.
   *Note: Firmware file format type is *.hds or *.par*
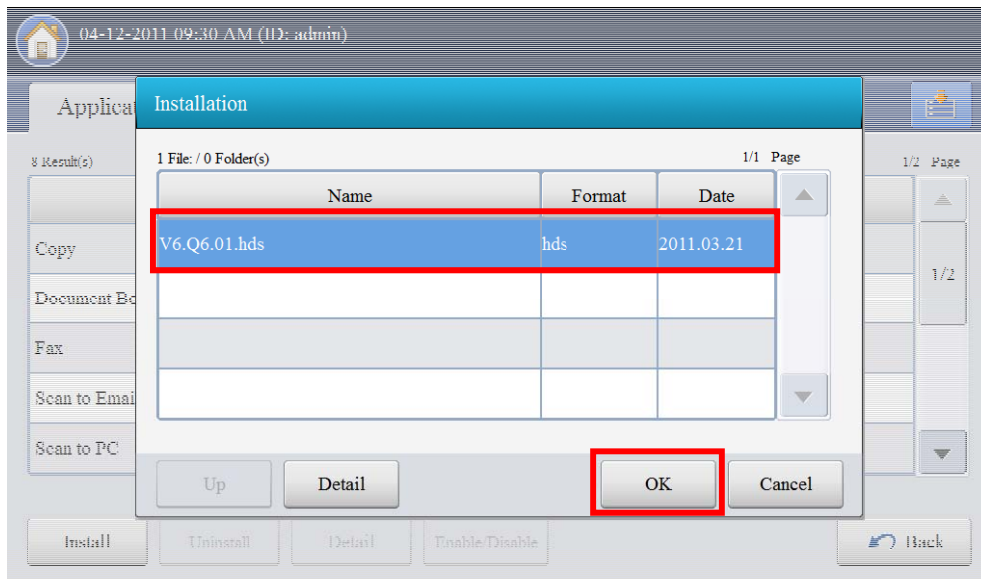
10. The machine will analyze the firmware file to ensure the file is not corrupt and that it is the correct file for the machine. Wait for analysis to finish. The process will take a few minutes.
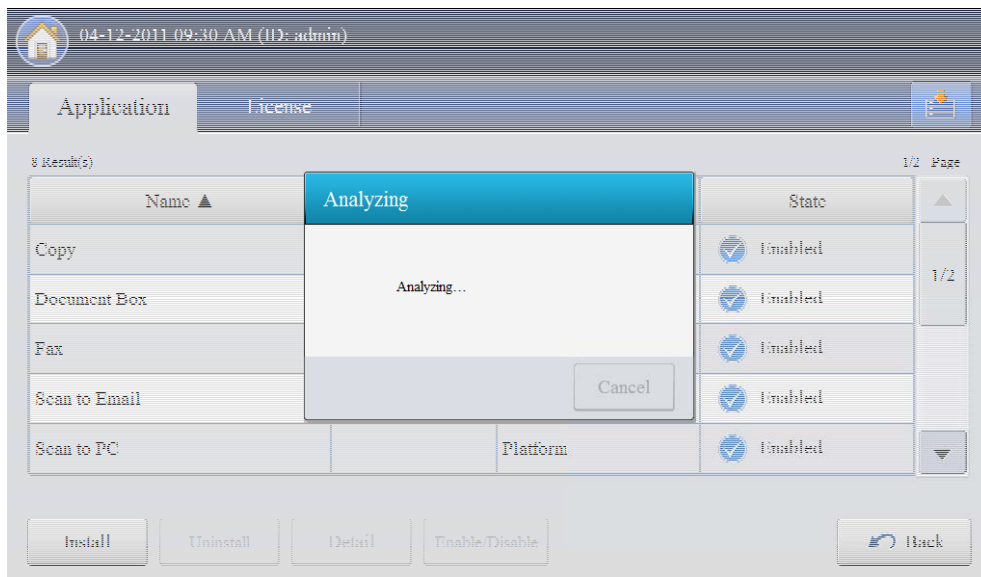
11. Once analysis is complete, the Validation Info window displays. Press the **OK** button to begin the firmware upgrade process
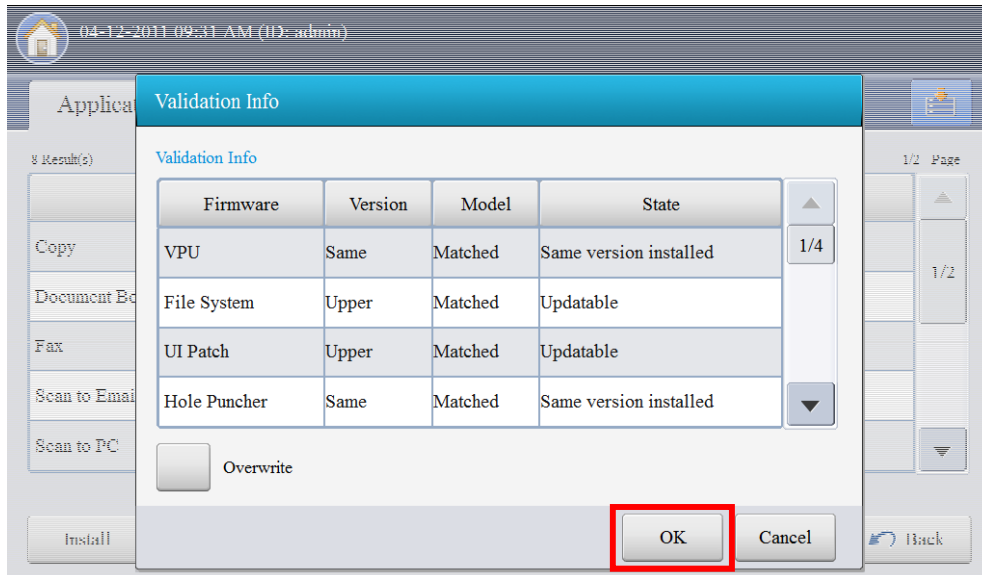
Validation Info

Item	Description
Firmware	Machine component to be updated
Version	Comparison of the firmware upgrade file version and the installed firmware *Upper = Higher level firmware version* *Lower = Lower level firmware version* *Same = Same firmware version*
Model	Check of firmware file model and machine model *Matched = File model and machine model are correct* *Unmatched = File model and machine model are not correct*
State	Upgrade status *Updatable = Component will be upgraded* *Same version installed = Component will not be upgraded*
Overwrite	Allows a technician to override upgrade logic and force the machine to install the firmware file on the USB drive regardless of version

12. Once the firmware upgrade process begins, the F/W Update Progress window will display. This window displays the current progress and time remaining. Wait for the firmware upgrade process to complete.

    Note: Depending on the firmware file size, the general upgrade process may take about 10~15 minutes to complete. However, the full upgrade process may take up to 25 minutes to complete. Do not turn off the power while the firmware is being updated.
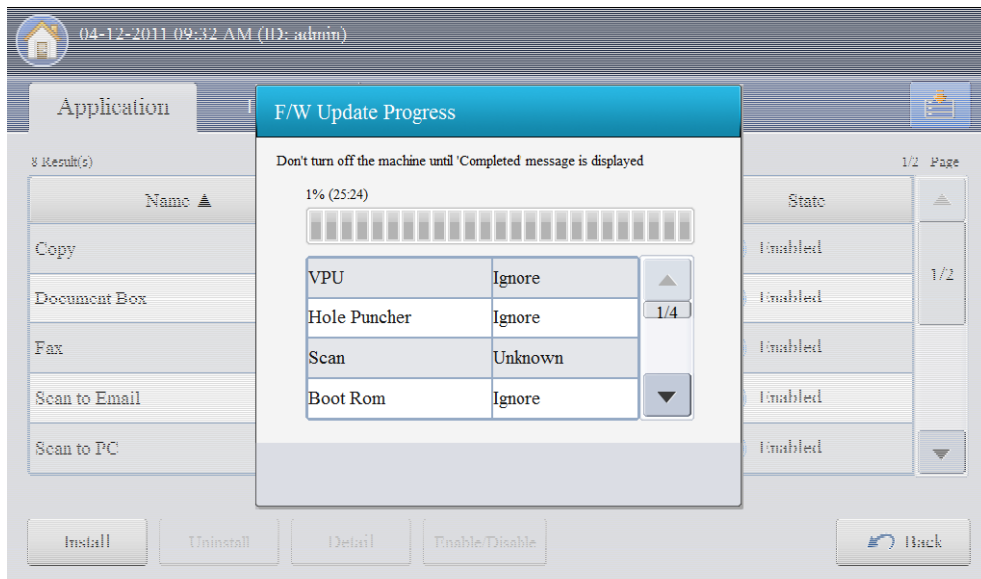
13. Once the firmware upgrade process is complete, the F/W Update Result window will display. This window displays the results of the firmware upgrade, and indicates that the firmware process completed successfully. Press the **Close** button. The machine will reboot completing the firmware upgrade process.
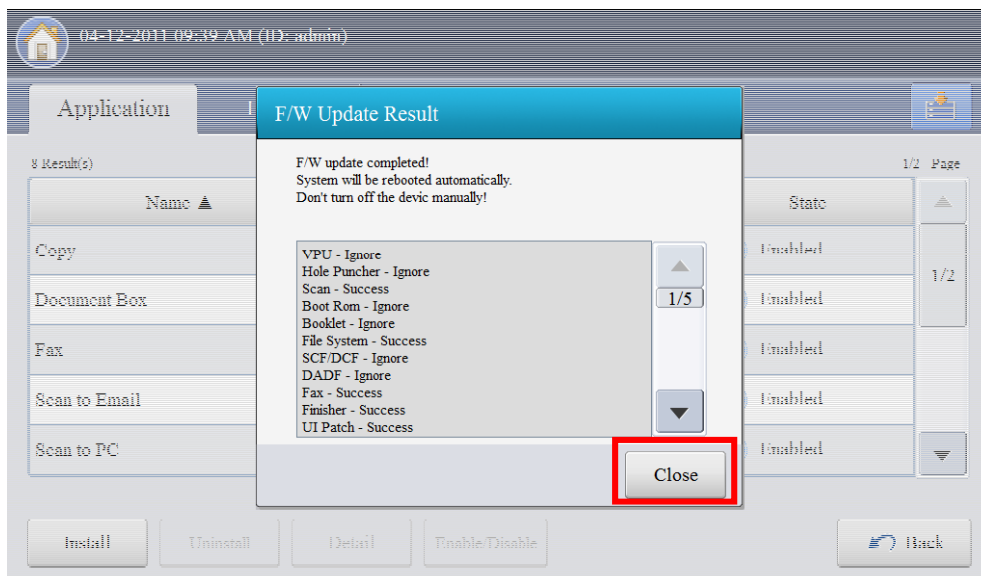
14. Press [Machine Setup]> [Machine Details] > [Software Versions], If you wish to check your firmware version.

5.2 Updating from the Network

WARNING: Failure to follow these instructions could lead to corruption issues and prevent the proper operation of this printer. Follow all of the instructions carefully.

Perform the following procedure to update the printer firmware from the network.

1. Go to the SyncThru Web Service (SWS) main home page, clicks the [Maintenance].
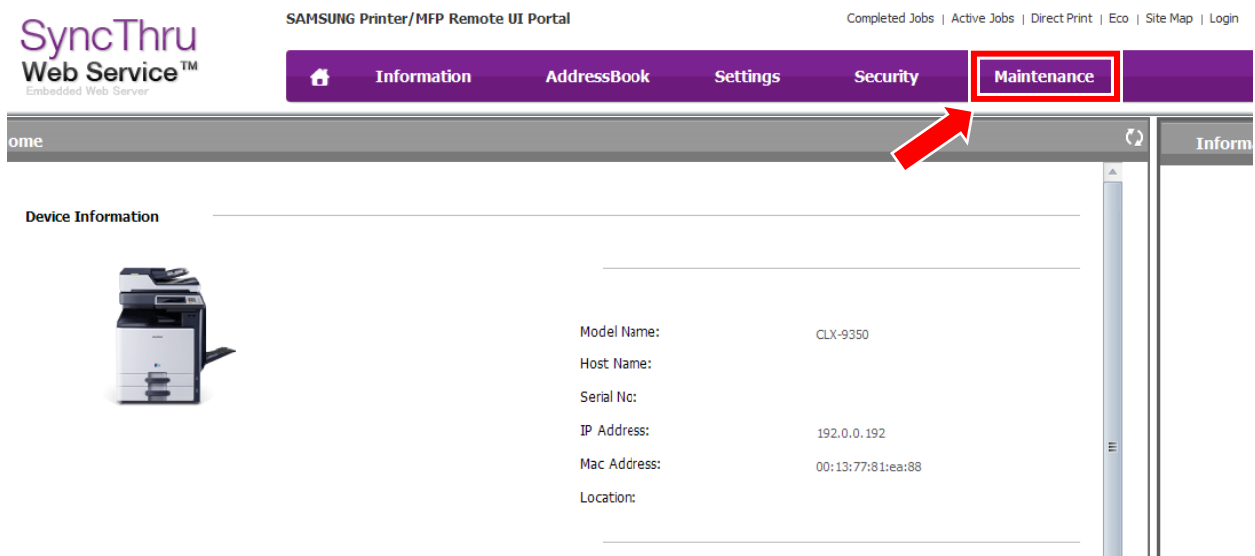
2. On the left menu tab, click [Application Management]. You must check or print out the current firmware versions of each unit and software. You should compare the version after the firmware update is finished.
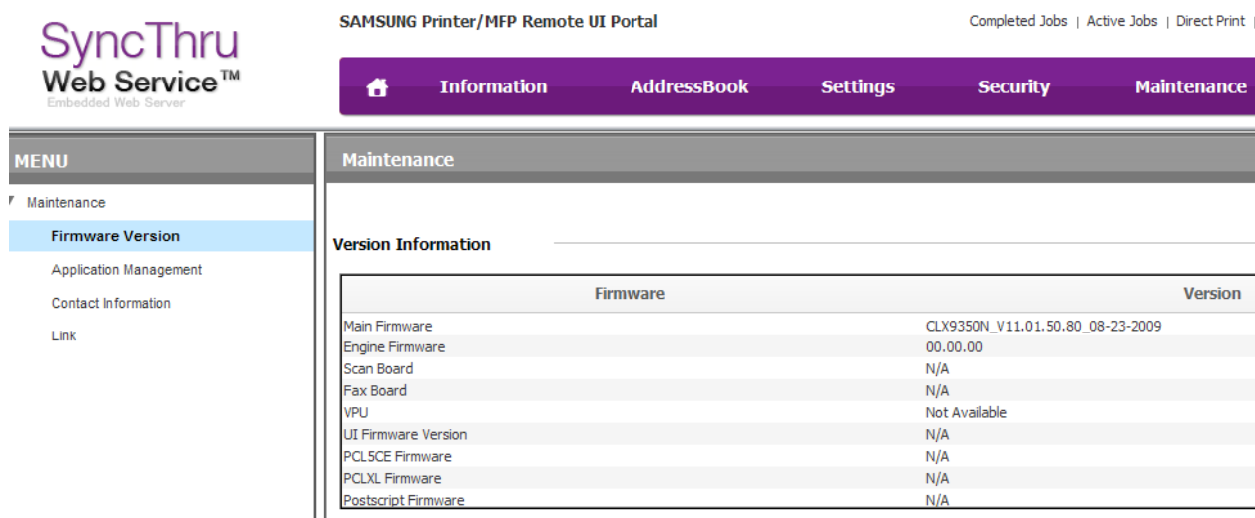
3. For firmware updating , click [login] to access as default administrator as shown in the picture below. See 5-2 page "Login as Administrator" for administrator's password and other information.
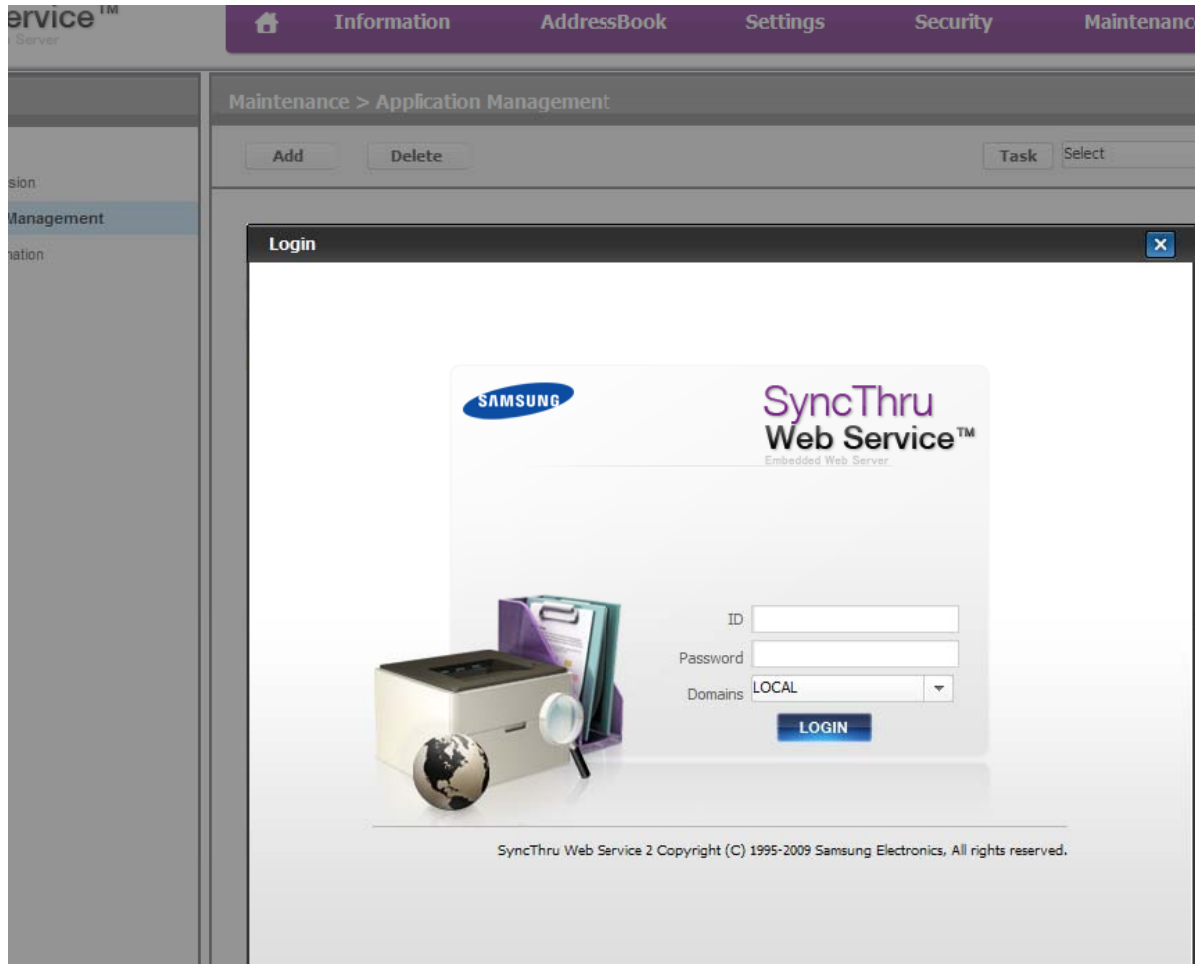
4. Go to [Maintenance] and [Application Management], Click the [Add] button for installing applications.

5. Choose installation file by browsing file system.
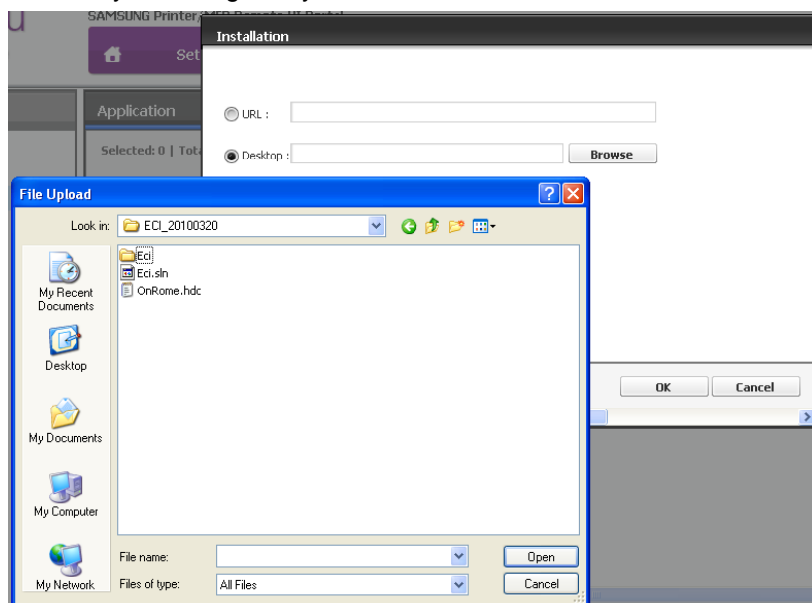
6. If the PAR file is valid, the MFP device will display the PAR package details.

[Version] shows compare result with currently installed version.

[Model] indicates whether firmware model is matched with the MFP device.

[N: Same Version] means the device will not update firmware because it has already same version.

[N: Option] means the MFP device will not update firmware because option is not equipped.

[N: System] means the MFP device will not update firmware because model is unmatched to MFP device.

[Y: Updatable] means the MFP device is ready to update firmware.
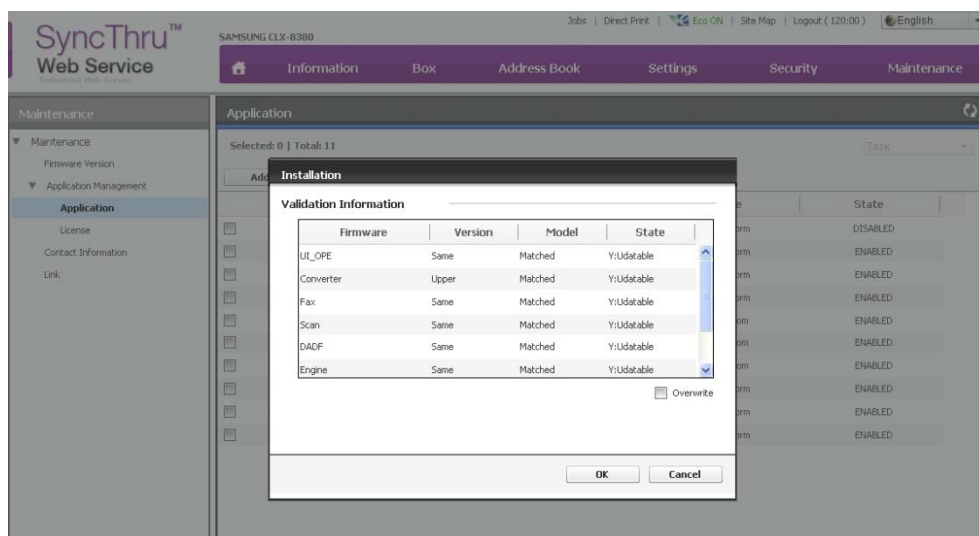
※ For updating firmware, even if firmware is same version or unmatched model, check [Overwrite] box.

7. Press the [OK] button to start update. The MFP device will attempt to install the PAR file by providing status messages.

8. Once the installation is complete, the MFP device will provide final result.

9. Once the installation is complete, MFP device power-off and power-on automatically. In normal case, Firmware update takes around 10~15 min. And, full set firmware takes around 30 min at maximum.

7. Press the [OK] button to start update. The MFP device will attempt to install the PAR file by providing status messages.

8. Once the installation is complete, the MFP device will provide final result.

9. Once the installation is complete, MFP device power-off and power-on automatically. In normal case, Firmware update takes around 10~15 min. And, full set firmware takes around 30 min at maximum.

6. Preventive Maintenance (PM)

This chapter includes instructions and examples you can use to perform preventative maintenance tasks on the printer.

Some of the printer's parts have shorter life spans than other printer hardware. Preventive maintenance (PM) allows you to maintain the functionality of the printer by periodically inspecting and cleaning the hardware and by replacing parts that have reached their useable limit.

PM kits packaged for each unit or group of parts with the same replacement number of output pages, allows you to carry out efficient parts replacement.

To extend the life of equipment, overhauling is required when a specified number of pages have been printed or when a specified period of time has passed, regardless of the number of output pages.

6.1 PM Supplies

This section contains information about PM supplies and PM schedules. PM Supplies include the following:

- PM Parts
- PM Kits

6.1.1 PM Parts

The following tables contain the names of the PM parts and the scheduled time for cleaning (C) or replacing (R).

Toner cartridge

	Part code	20K	35K
High Yield Toner cartridge	MLT-K606S		R
Standard Yield Toner cartridge	MLT-K607S	R	

Imaging unit

	Part code	50K	100K	150K	200K	250K	300K
Imaging Unit	MLT-R607K		R		R		R
Charge scorotron	-	C	C	C	C	C	C
Toner pipe surrounding	-		C		C		C

Waste Toner Container

	Part code	50K	100K	150K	200K	250K	300K
Waste Toner Container	MLT-W606		R		R		R
WTB surrounding	-		C		C		C

Paper Path

	Part code	50K	100K	150K	200K
Pick Up Roller (Tray 1,2, DCF, HCF)	JC93-00175A	C	C	C	R
Retard Roller (Tray 1,2, DCF, HCF)	JC93-00175A	C	C	C	R
Forward Roller (Tray 1,2, DCF, HCF)	JC93-00175A	C	C	C	R
MP Pick Up Roller	JC90-00989A	C	C	R	C
MP Retard Roller	JC90-00989A	C	C	R	C
MP Forward Roller	JC90-00989A	C	C	R	C
Paper Dust Remover	JC93-00078B	C	C	C	C
Registration Roller	JC66-02414A	C	C	C	C
Feed Roller	JC66-02312A	C	C	C	C
Transport route,Guide	-	C	C	C	C
Sensor	-	C	C	C	C
Duplex Roller	JC66-02535A ~ JC66-02360A	C	C	C	C

DADF

	Part code	50K	100K	150K	200K
DADF Pick-up Roller	JC97-03779A	C	C	C	R
DADF ADF Roller	JC97-03779A	C	C	C	R
DADF Retard Roller	JC97-03630A	C	C	C	R
DADF Retard Rubber Pad	JC73-00323A	C	C	C	C

Fuser Unit

	Part code	50K	100K	150K	200K	250K	300K
Fuser Unit (110V)	JC91-00951A			R			R
Fuser Unit (220V)	JC91-00952A			R			R

Transfer Roller Unit

	Part code	50K	100K	150K	200K	250K	300K
Transfer Roller Unit	JC95-01134A			R			R

Frame

	Part code	50K	100K	150K	200K	250K	300K
Ozone Filter	JC29-00001A	C	C	R	C	C	R

6.1.2 PM KIT

The following tables contain the names of the PM kits and the scheduled time for replacing.

Model Code	Kit components	Life	Qty	Remark
CLX-PMK11C	Pick up roller Retard roller Forward roller	200K	1 1 1	Tray 1,2, DCF, HCF
CLX-PMK12C	Pick up roller ADF roller Retard roller	200K	1 1 1	DADF
CLX-PMK13C	Pick up roller Retard roller Forward roller	150K	1 1 1	MP Tray
SCX-PMK10K	Ozone filter	150K	1	
	Scanner Fan Filter	150K	1	
	Transfer roller Unit	150K	1	

6.2 PM Procedures

This section contains the procedures you use to perform preventative maintenance on the printer.

6.2.1 Toner cartridge

1. Open the front door.

2. Pull the toner cartridge out from the machine.
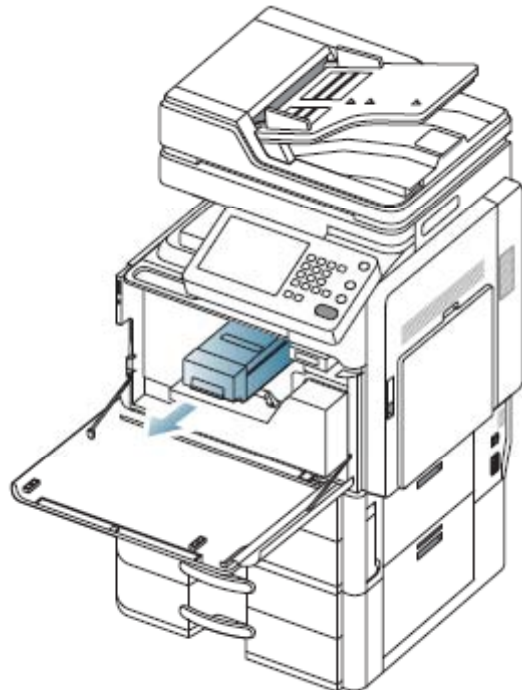
3. Remove the new toner cartridge from the its bag.
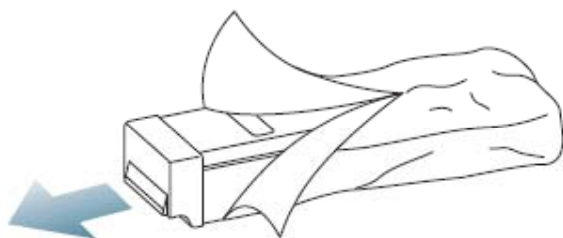
4. Carefully pull the seal tape out of the toner cartridge.
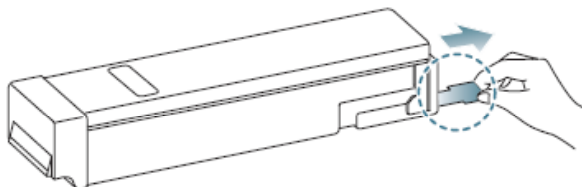
5. Thoroughly roll the cartridge five or six times to distribute the toner evenly inside the cartridge.
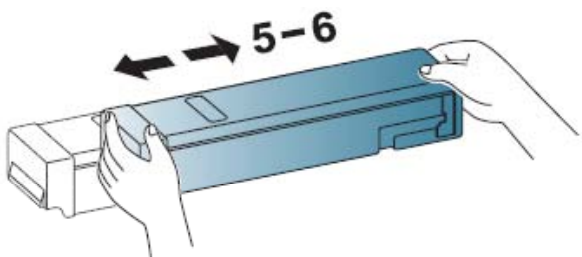
NOTE – If toner gets on your clothing, wipe it off with a dry cloth and wash clothing in cold water. Hot water sets toner into fabric.

6. Hold the toner cartridge and align it with the slot inside the machine. Insert it back into its slot until locks in place.
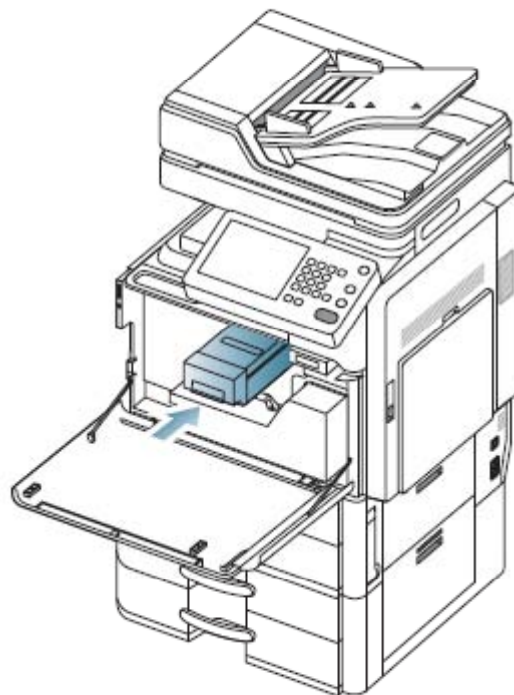
7. Close the front door. Ensure that the door is securely closed.

NOTE – If the front door is not completely closed, the machine will not operate.

6.2.2 Imaging unit

1. Open the front door.

3. Open the right door.
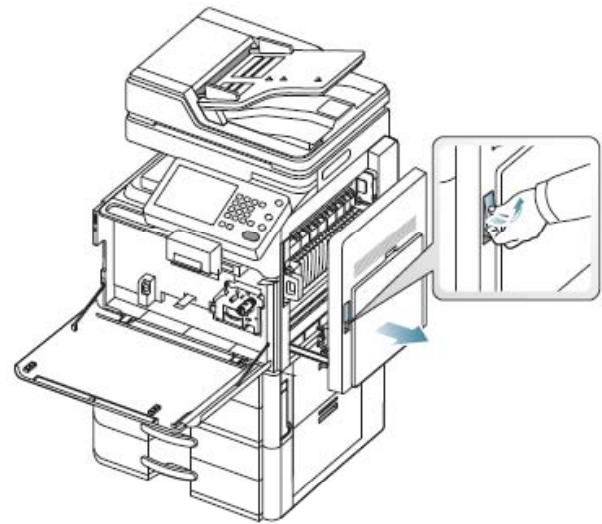
2. Lift the locking lever upward. Then remove the waste toner container.
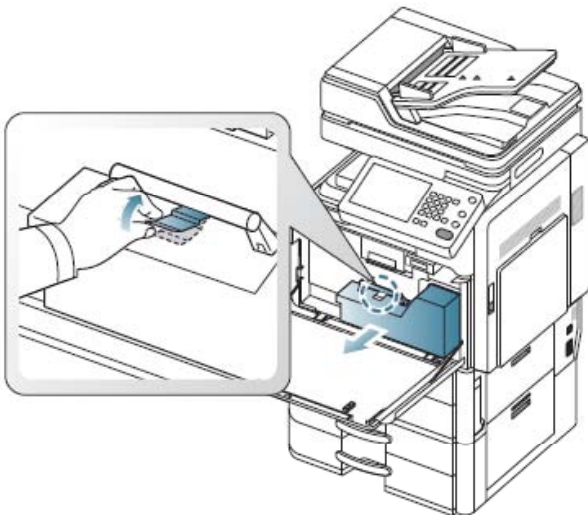
4. Pull the imaging unit out from the machine.
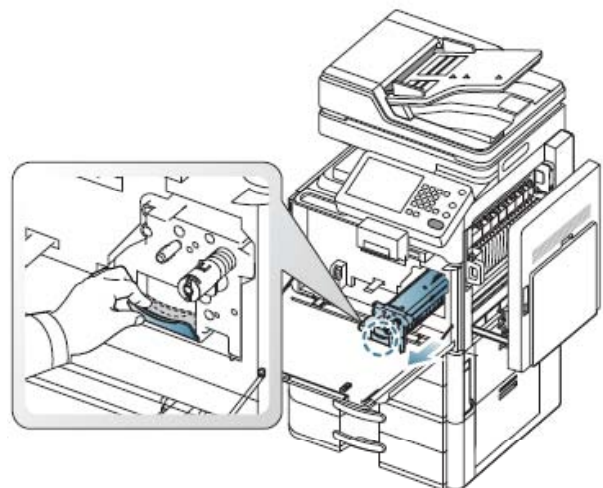
5. Remove the new imaging unit from its package.
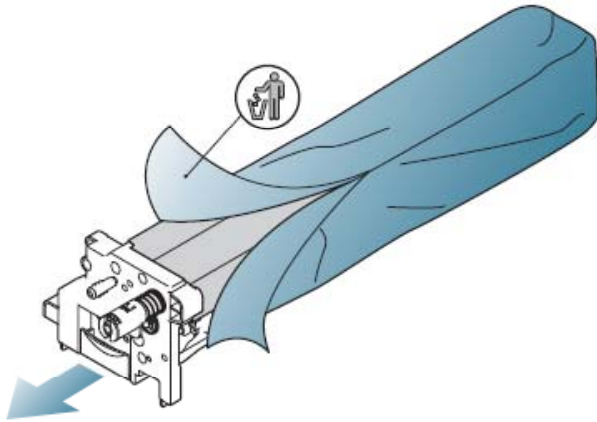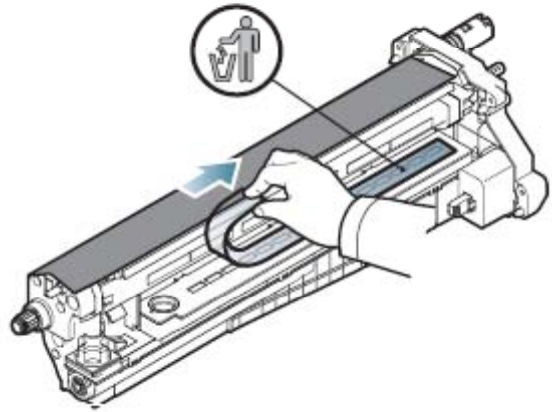
CAUTION
Do not use sharp objects, such as a knife or scissors, to open the imaging unit package. You could damage the surface of the imaging unit.

6. Pull out the OPC protecting pad.

NOTE
If toner gets on your clothing, wipe it off with a dry cloth and wash clothing in cold water. Hot water sets toner into fabric.

CAUTION
Be careful not to scratch the surface of the imaging unit.
To prevent damage, do not expose the imaging unit to light for more than a few minutes. Cover it with a piece of paper to protect it if necessary.

7. Remove the tape.
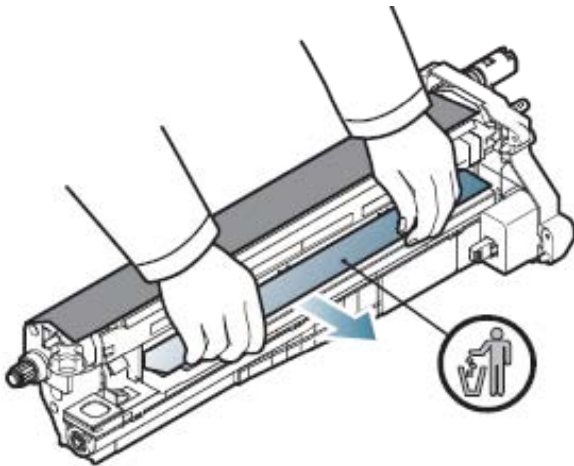
8. Pull out the rubber stopper.

9. Remove the paper protecting the surface of the imaging unit.
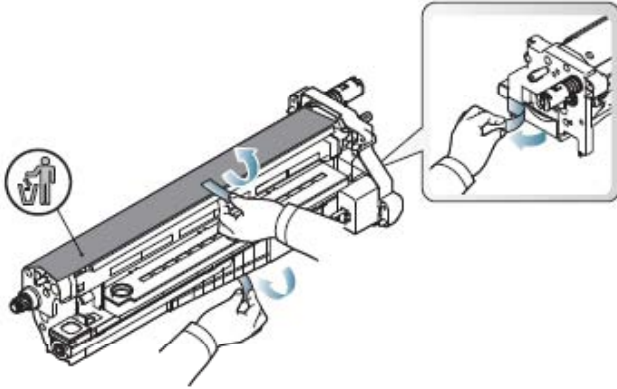
11. Close the right door.
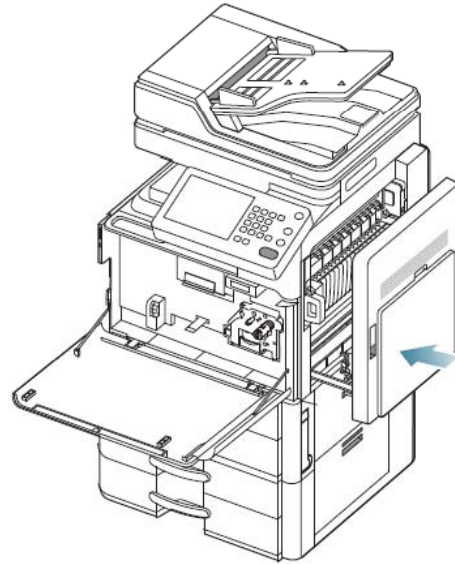
10. Hold the handles on the new imaging unit, and push the imaging unit until it locks into place.
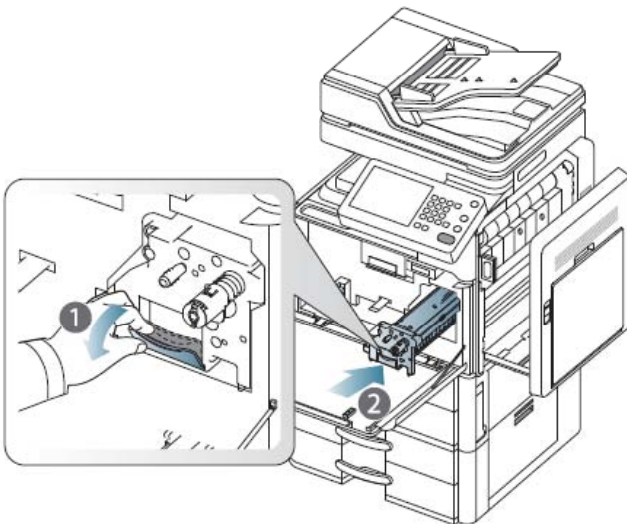
12. Insert the waste toner container until it locks in place.
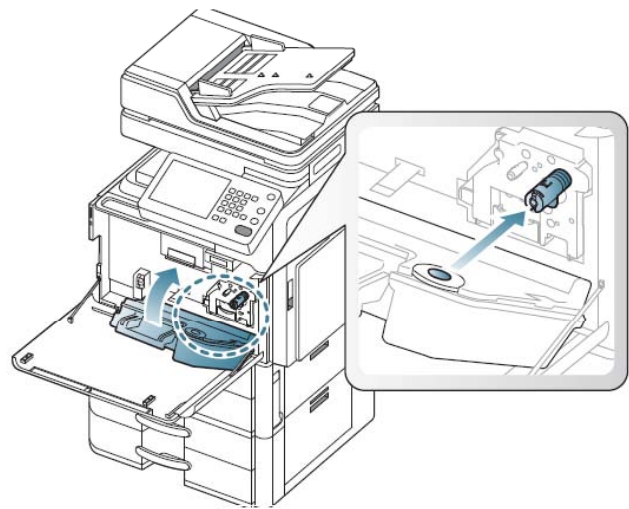
13. Close the front door. Ensure that the door is securely closed.

NOTE
If the front door is not completely closed, the machine will not operate.

6.2.3 Transfer roller Unit
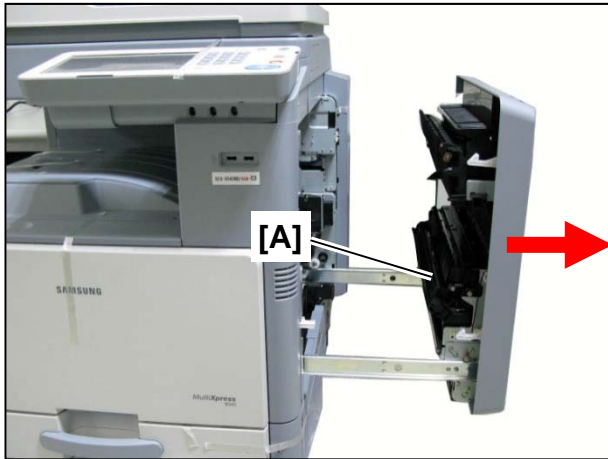
1. Open the Cover-Side to remove the 2nd transfer roller [A].

2. Pull both holders in the direction of the arrows. And lift up the transfer roller unit.

CAUTION
Please don't touch the surface of the transfer roller.
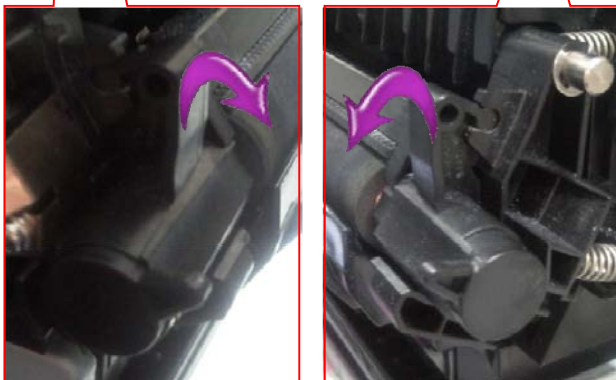
6.2.4 Fuser unit

CAUTION
The temperature gets high in the vicinity of the fuser unit. When replacing it, you may get burned. Before replacing it, make sure that fuser unit has cooled.

1. Open the Cover-Side.
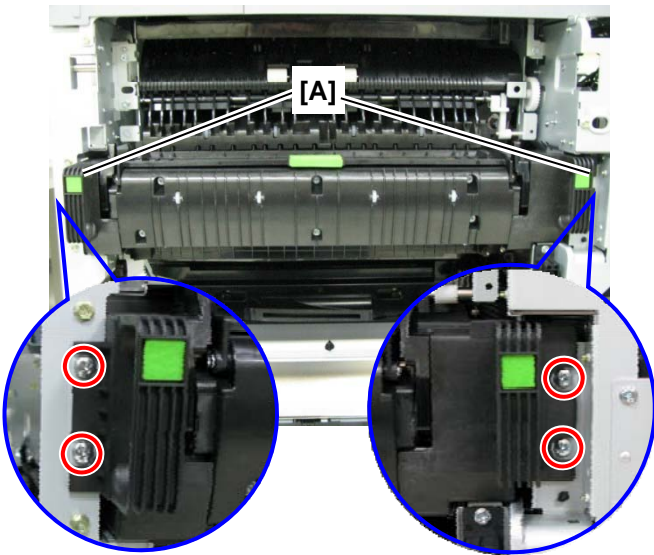
2. Remove 4 screws from the left/right.
3. Remove the fuser unit by holding the handles [A].

6.2.5 Pick up / Retard / Forward roller
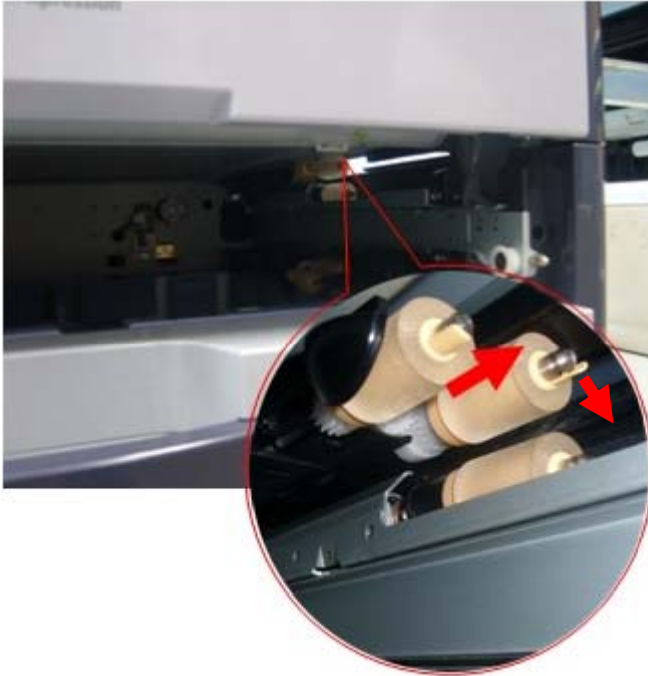
1. Open the Side-Cover.
2. Remove the Cassette.
3. Lift small tap, remove the pick up /retard/ forward roller.

NOTE
When replacing the pick up roller, it is recommended that you replace all three rollers at the same time.

CAUTION
Be careful not to hurt yourself by the drawer rail.

6.2.6 Ozone filter
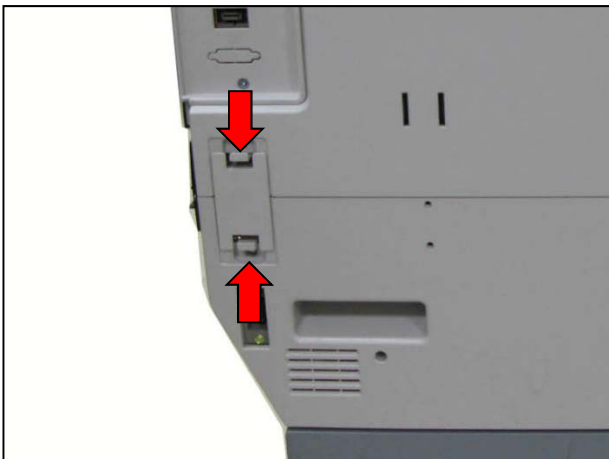
1. Squeeze the retainer clips holding the Ozone Filter.
2. Pull to remove the Ozone Filter from the left side of the printer.

6.2.7 DADF Rollers (Pick up/ ADF/ Retard)

NOTE
When replacing DADF rollers, Samsung recommends that three rollers should be replaced at once.

1. Open the DADF cover.

2. Remove and replace the Pick up/ ADF roller.

CAUTION
When replacing DADF rollers, be careful not to break or bend the actuator.
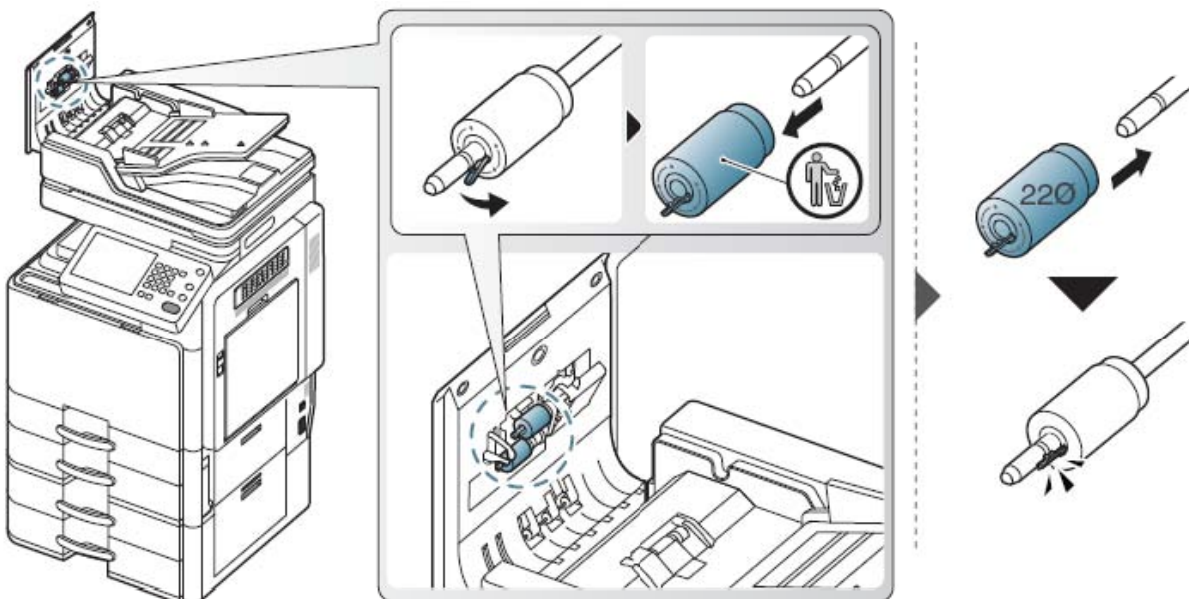
3. Remove the original document retard roller cover.
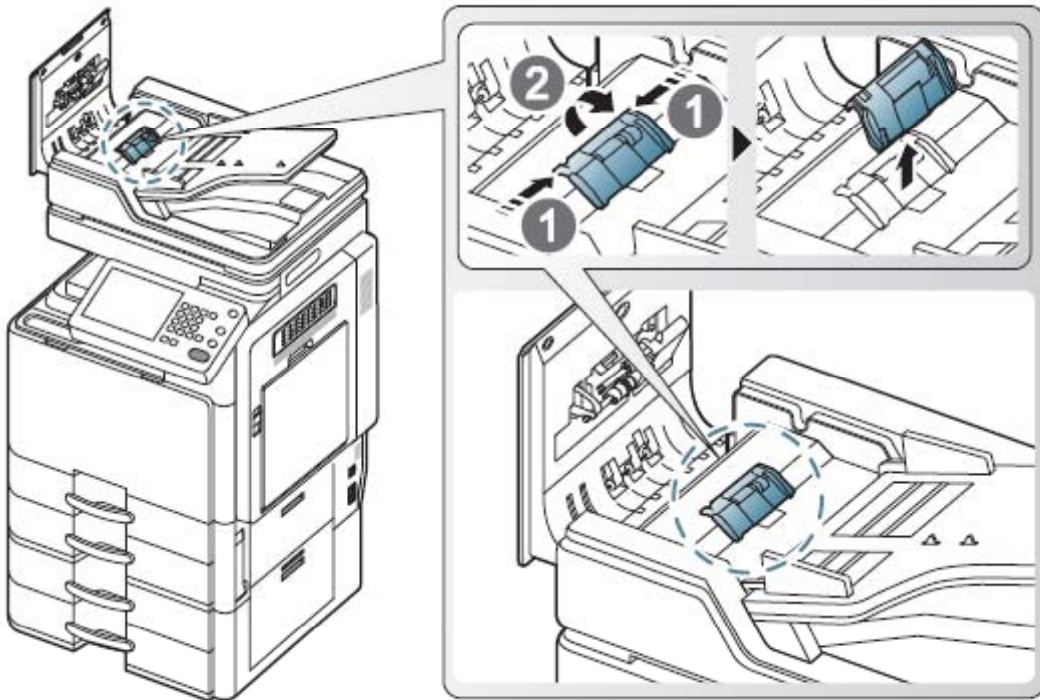
4. Remove the retard roller assy.
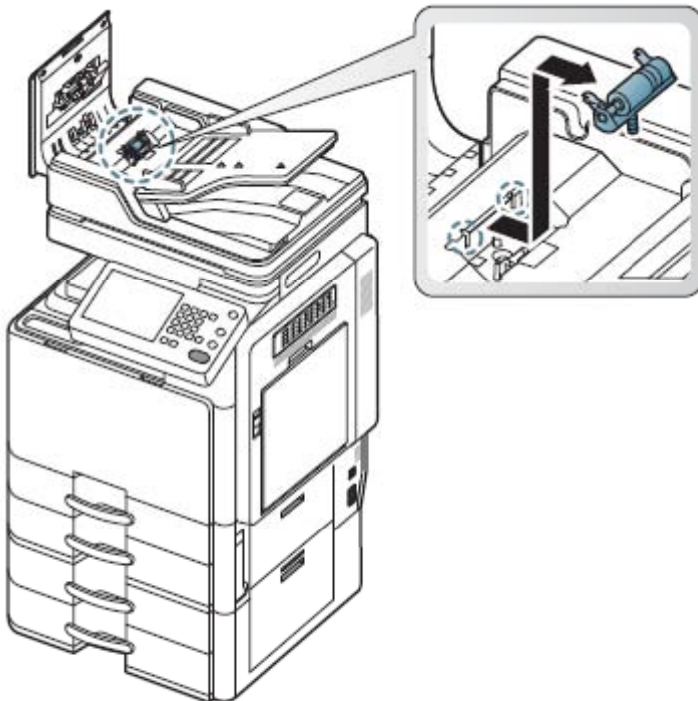
5. Remove the E-ring. And remove the retard roller.
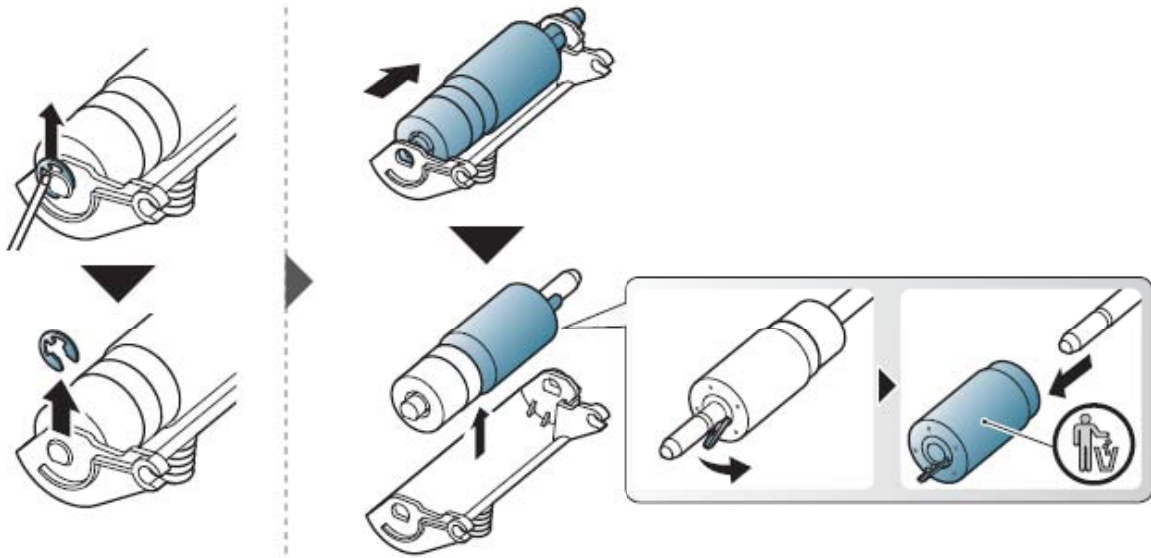
6. Install the new retard roller. And assemble the E-ring.
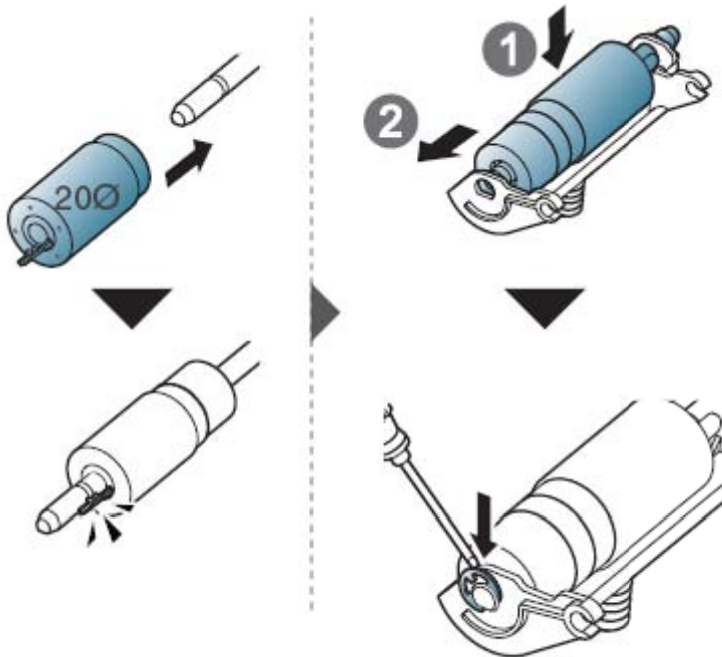
7. Assemble the retard roller assy.
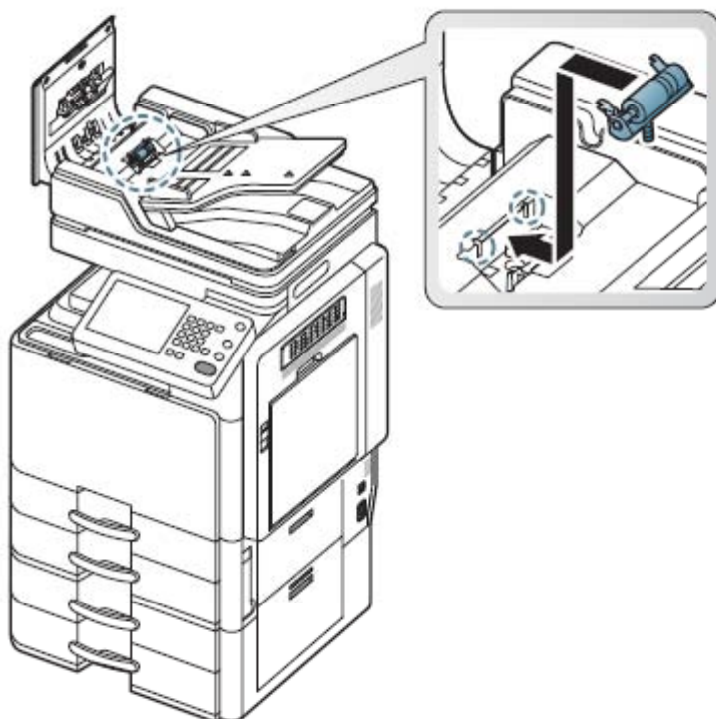
8. Assemble the original document retard roller cover.
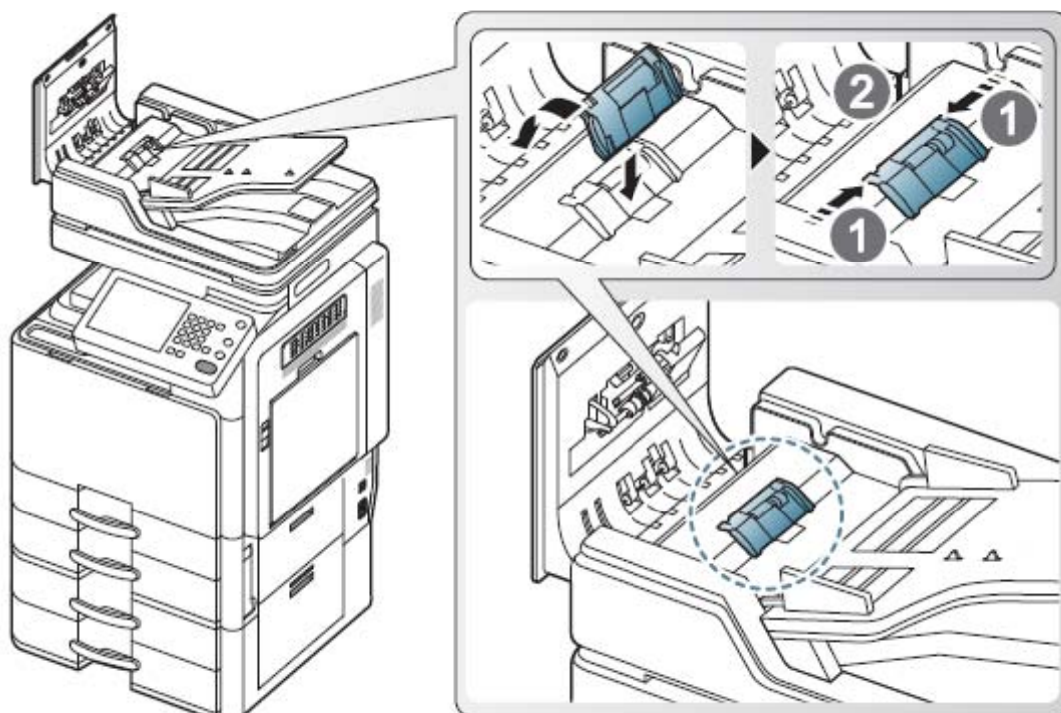
9. Close the DADF cover.
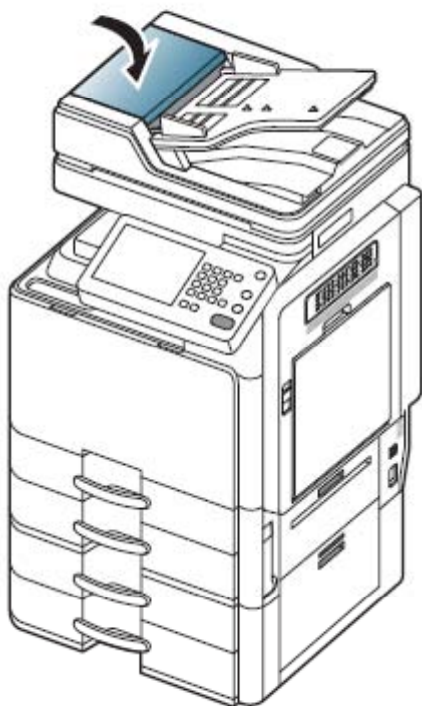
6.2.8 MP Pick up / Retard / Forward roller

1. Open the MP Tray.
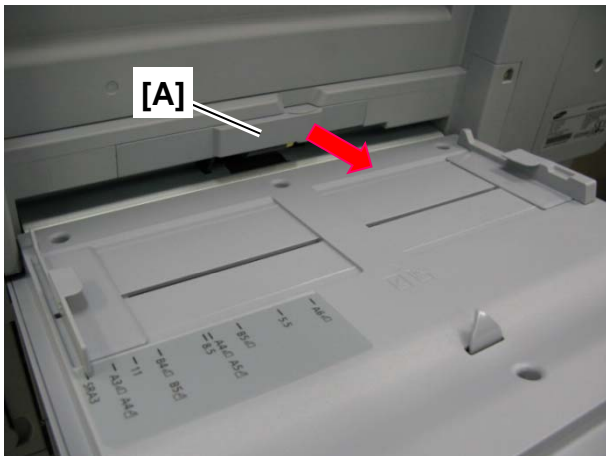
2. Remove the Front Cover [A].

3. Remove the pick up roller.

NOTE
When replacing pick up roller, Samsung recommands that three rollers should be replaced at once.
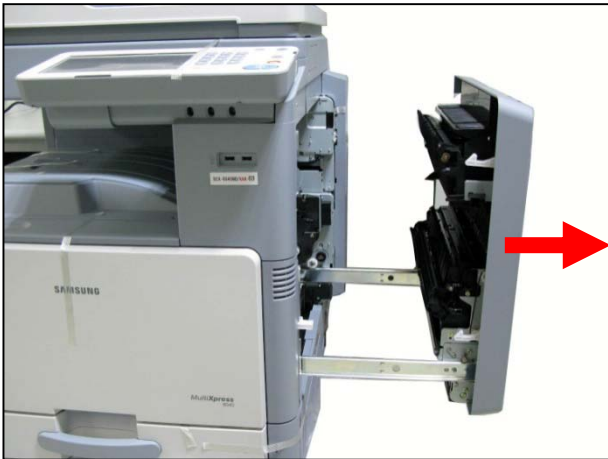
4. Open the Cover-Side.

[B]
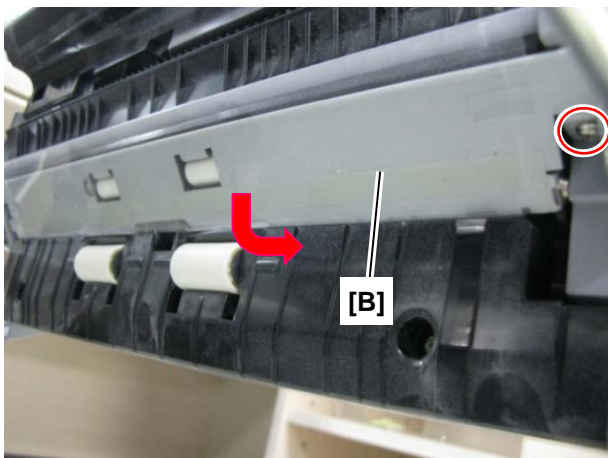
5. Remove the Screw.
6. Remove the Guide Lower A'ssy [B].

7. Remove the Retard / Forward roller.

NOTE
When replacing pick up roller, Samsung recommends that three rollers should be replaced at once.

6.2.9 Scanner Fan Filter

1. Unbolt the screw that assembles the scanner fan cover.
2. Separate the scanner fan cover from the copier.
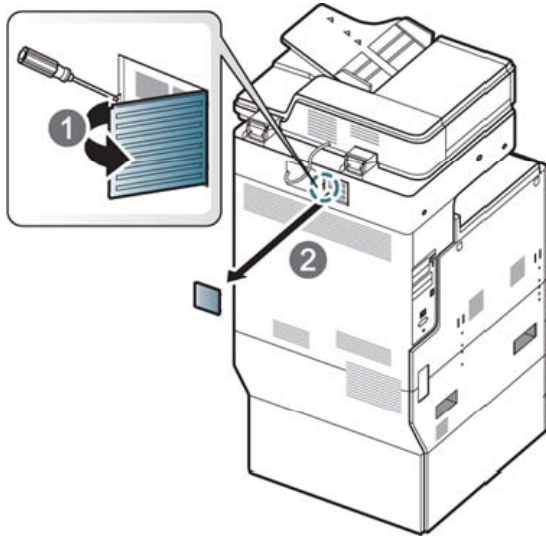
3. Remove the old scanner fan filter from scanner fan cover.
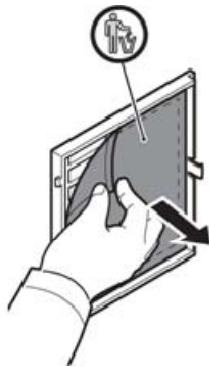
4. Remove the released paper from new scanner fan filter.
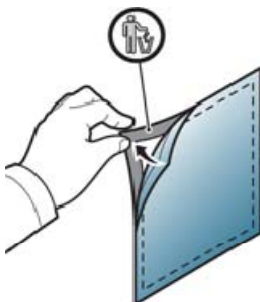
5. Attach new scanner fan filter to the scanner fan cover.

6. Assemble the scanner fan cover into the copier.
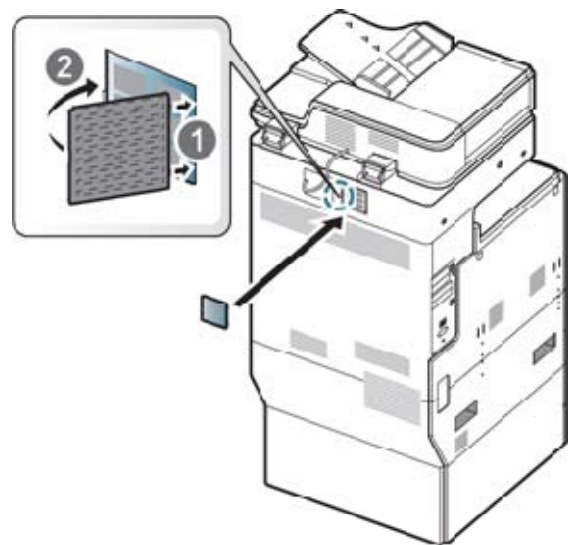
6.3 Cleaning the PM parts

6.3.1 Cleaning the charge scorotron
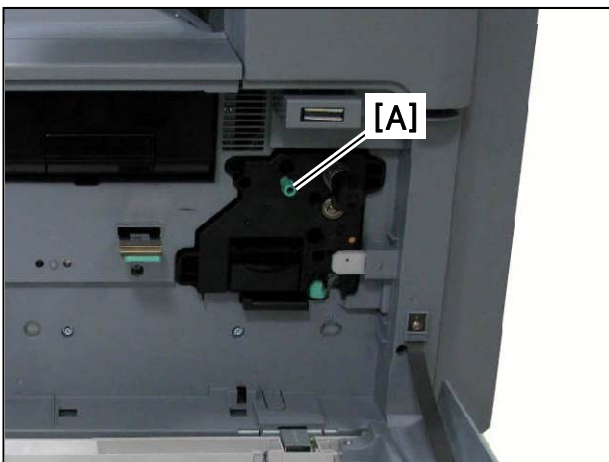
1. Open the front cover.
2. Remove the waste toner box.
3. Slowly pull out and push the cleaning tool [A].
4. Repeat step 3 at least 5 times.

6.3.2 Cleaning the pick up roller
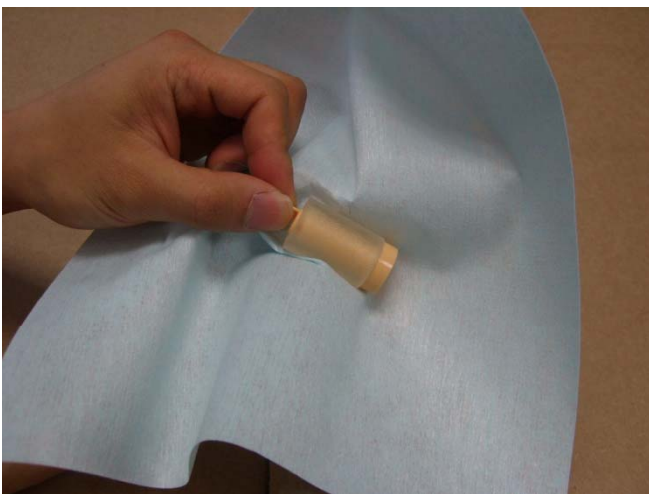
1. Clean the pick up roller which was removed from the pick up unit using a micro fiber cloth. (Refer to 6.2.5)

6.3.3 Cleaning the Regi roller
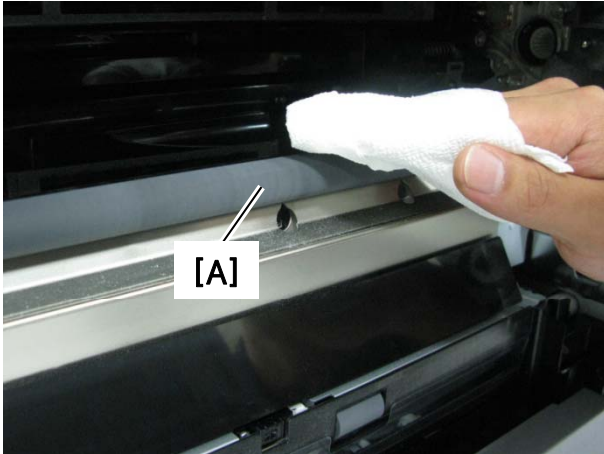
1. Open the Cover-Side
2. Clean the regi roller[A] by using a cleaning pad with alcohol.

6.3.4 Cleaning the tray1 feed roller
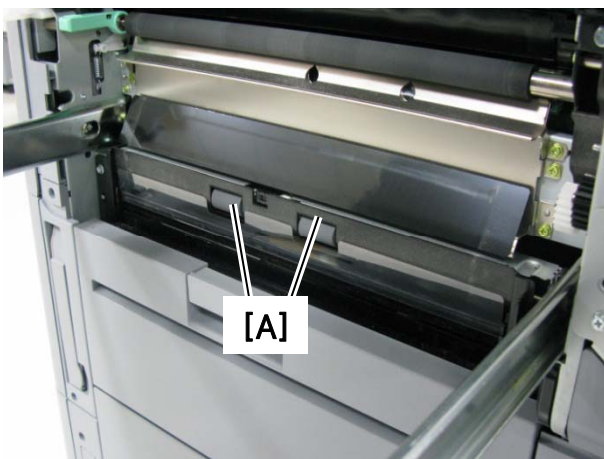
1. Open the Cover-Side
2. Clean the Tray1 Feed roller[A] by using a cleaning pad with alcohol.

6.3.5 Cleaning the tray2 feed roller
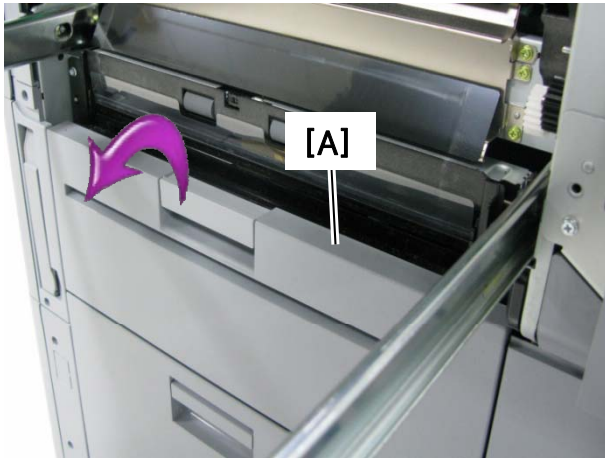
1. Open the Cover-Side.
2. Open the Tray2 rear cover [A].
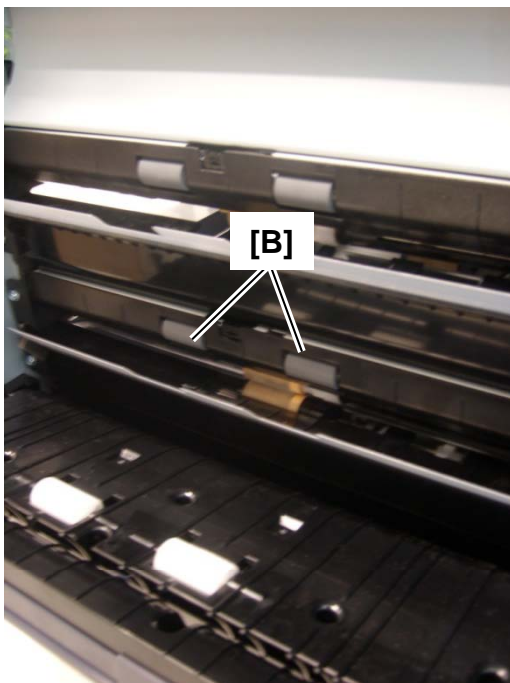
3. Clean the Tray2 Feed roller [B] by using a cleaning pad with alcohol.

6.3.6 Cleaning the DADF retard rubber pad

1. Open the DADF cover.
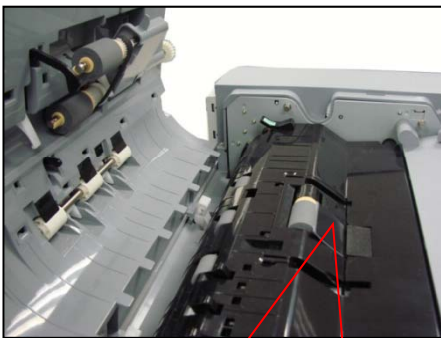
2. Clean the DADF retard rubber pad by using a soft cloth.

6.3.7 Cleaning the DADF rollers

1. Open the DADF cover.
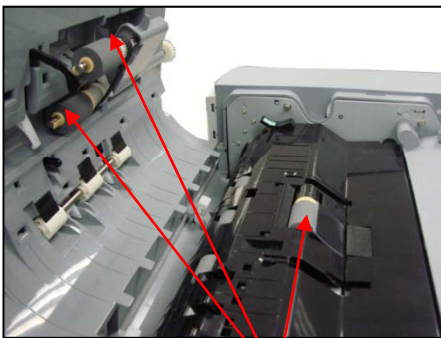
2. Remove the DADF pick up/ Retard / Forward roller.

NOTE
For disassembling the rollers, refer to 6.2.7.

3. Clean the rollers which was removed from the DADF unit using a micro fiber cloth.

6.3.8 Cleaning the ADF glass

1. Open the DADF unit.
2. Wipe away paper dirt and spot on ADF glass with micro fiber cloth.
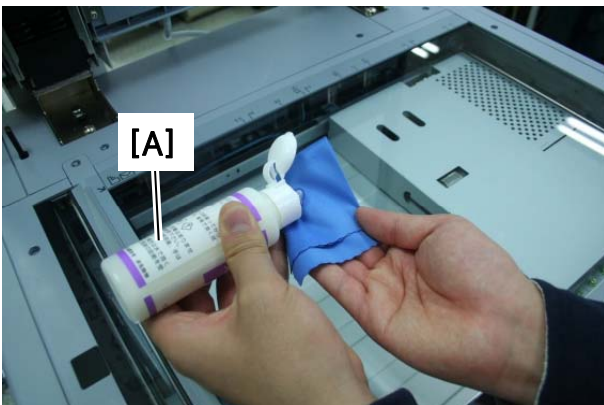
3. Squeeze small amount of COATING-GLASS[A] to micro fiber cloth.

CAUTION
Please don't squeeze much amount of COATING-GLASS.
If too much COATING-GLASS is used, too much drying time is needed.

4. Spread the COATING-GLASS evenly on ADF glass, especially on the smudge or spot.
5. Rub surface of ADF glass until all stain is removed.

7. Troubleshooting

7.1 Procedure for checking symptoms

This chapter describes how to troubleshooting the printer. Troubleshooting is explained using two approaches:

■ A step-by-step verification procedure that systematically confirms that particular components of the printer are properly functioning until a problem is found.

■ An error code detail table shows the error codes, their possible causes, and troubleshooting.

7.1.1 System power-up sequence

The following lists the chain of events that occur when you turn on the printer.
You can follow this list as one means of determining whether the printer is operating correctly.
When the power switch is turned on, these events occur:

. The engine control board checks its RAM.
. All the engine fans are turned on to ensure they work properly.
. The fuser heater (a halogen lamp) is activated to heat up the heated roller.
. The position of each toner cartridge is checked to ensure they are in their parked positions.
. A print engine checks to see that the imaging unit, the paper feeder and the transfer unit are installed.
. The engine motors are rotated to ensure that their rotation sensors are detected.
. The transparency film sensor and the image density sensors are "tuned" for the amount of infrared light they each emit.
. A check is made to determine whether any paper is jammed in the printer.
. The print engine checks the level of toner in each toner cartridge.
. After the fuser reaches its idle temperature, a color correction cycle is performed.
. The printer is placed on line in its READY state.
. The print engine is initialized. If the startup page feature has not been disabled and no error occurred with the printer, the printer prints a startup page.

7.1.2 Pre-troubleshooting check list

Environment

1.Check if the machine is installed on a solid, LEVELED surface.
2.Check if the machine is exposed to direct sunlight.
3.Check if the power supply plug inserted in the product and directly to the wall outlet.
4.Check if the power supply voltage within $\pm$ 10 volts of the specified power source.

Media

1.Check if the media is supported within specifications.
2.Ensure that the paper size in the printer driver settings matches the paper selection in the software application settings you use.
3.Check if the media is curled, folded.

Component

1.Check if the toner cartridges and imaging units are installed correctly.
2.Check if the Fuser unit and cartridge transfer unit are installed correctly.
3.Check if the front cover and side cover are closed.

7.2 Error code and Troubleshooting

7.2.1 Error code and error message

Error Code	Error Message	Troubleshooting Page
A1-1113	Actuator Motor Failure #A1-1113: Turn off then on.	7-12
A1-1211	Actuator Motor Failure: #A1-1211. Please open/close door.	7-13
A1-1213	Actuator Motor Failure: #A1-1213. Please open/close door.	7-13
A1-2111	Actuator Motor Failure #A1-2111: Call for service if the problem persists.	7-14
A1-2113	Actuator Motor Failure #A1-2113: Call for service if the problem persists.	7-14
A1-5113	Actuator Motor Failure : #A1-5113. Call for service if the problem persists.	7-15
A1-5610	Actuator Motor Failure : #A1-5610. Call for service if the problem persists.	7-16
A1-7113	Actuator Motor Failure #A1-7113: Turn off then on.	7-17
A2-1310	Actuator Fan Failure : #A2-1310. Please open/close door.	7-18
A2-1311	Actuator Fan Signal Failure : #A2-1311. Please open/close door.	7-18
A2-1410	Actuator Fan Failure : #A2-1410. Please open/close door.	7-18
A2-1411	Actuator Fan Signal Failure : #A2-1411. Please open/close door.	7-18
A2-1510	Actuator Fan Failure : #A2-1510. Please open/close door.	7-18
A2-1511	Actuator Fan Signal Failure : #A2-1511. Please open/close door.	7-18
A2-2310	Actuator Fan Failure : #A2-2310. Please open/close door.	7-18
A2-2311	Actuator Fan Signal Failure : #A2-2311. Please open/close door.	7-18
A2-2810	Actuator Fan Failure : #A2-2810. Please open/close door.	7-18
A2-2811	Actuator Fan Signal Failure : #A2-2811. Please open/close door.	7-18
A2-2910	Actuator Fan Failure : #A2-2910. Please open/close door.	7-18
A2-2911	Actuator Fan Signal Failure : #A2-2911. Please open/close door.	7-18
A3-2210	Actuator Sensor Failure : #A3-2210. Please open/close door.	7-19
A3-3111	Actuator Sensor Failure : #A3-3111. Please open/close door.	7-20

Error Code	Error Message	Troubleshooting Page
A3-3112	Actuator Sensor Failure : #A3-3112. Please open/close door.	7-20
A3-3113	Actuator Sensor Failure : #A3-3113. Please open/close door.	7-20
A3-3114	Actuator Sensor Failure : #A3-3114. Please open/close door.	7-20
A3-3211	Actuator Sensor Failure : #A3-3211. Please open/close door.	7-21
A3-3212	Actuator Sensor Failure : #A3-3212. Please open/close door.	7-21
A3-3311	Actuator Sensor Failure : #A3-3311. Please open/close door.	7-22
A3-3312	Actuator Sensor Failure : #A3-3312. Please open/close door.	7-22
A3-3411	Actuator Sensor Failure : #A3-3411. Please open/close door.	7-23
A3-3412	Actuator Sensor Failure : #A3-3412. Please open/close door.	7-23
A4-1111	Actuator Sensor Failure : #A4-1111. Please turn off then on	7-24
C1-1110	Prepare new toner cartridge	7-25
C1-1130	End of life, Replace with new toner cartridge	7-25
C1-1140	Replace with new toner cartridge.	7-25
C1-1311	Toner Cartridge Failure: #C1-1311. Install toner cartridge again.	7-26
C1-1411	Toner cartridge is not installed. Install the cartridge.	7-27
C1-1512	Toner cartridge is not compatible. Check user's guide	7-28
C3-1110	Prepare new imaging unit.	7-29
C3-1130	Replace with new imaging unit.	7-29
C3-1140	End of life, Replace with new imaging unit.	7-29
C3-1211	Imaging Unit Failure:#C3-1211. Please turn off then on.	7-30
C3-1312	Imaging Unit Failure: #C3-1312. Install imaging unit again.	7-30
C3-1411	Imaging unit is not installed. Install the unit.	7-31
C3-1422	Imaging uint requires charger's cleaning. Clean the unit.	7-32
C3-1512	Imaging unit is not compatible. Check user's guide.	7-33
C6-1110	Prepare new fuser unit.	7-34
C6-1120	Replace with new fuser unit.	7-34
C6-1311	Fuser unit is not installed correctly. Install it.	7-35
C6-1412	Fuser unit is not compatible. Check user's guide.	7-36
C7-1110	Waste toner container is almost full. Order new one.	7-37

Error Code	Error Message	Troubleshooting Page
C7-1130	Waste toner container is full. Replace it	7-37
C7-1311	Waste toner container is not installed. Install it.	7-37
C9-2220	Transfer Roller Failure: #C9-2220. Install transfer roller again.	7-38
H1-1311	Paper jam in Tray 3	7-39
H1-1312	Paper jam in Tray 3.	7-39
H1-1317	Paper jam in Tray 3.	7-39
H1-1318	Paper jam in Tray 3	7-39
H1-1322	Tray 3 cassette is pulled out. Insert it properly.	7-40
H1-1351	Paper is low in Tray 3. Load paper.	7-41
H1-1352	Paper is empty in Tray 3. Load paper.	7-42
H1-1353	Input System Failure : #H1-1353. Pull Tray 3 out and insert it.	7-43
H1-1411	Paper jam in Tray 4	7-39
H1-1412	Paper jam in Tray 4	7-39
H1-1417	Paper jam in Tray 4.	7-39
H1-1418	Paper jam in Tray 4	7-39
H1-1422	Tray 4 cassette is pulled out. Insert it properly.	7-40
H1-1451	Paper is low in Tray 4. Load paper.	7-41
H1-1452	Paper is empty in Tray 4. Load paper.	7-42
H1-1453	Input System Failure : #H1-1453. Pull Tray 4 out and insert it.	7-43
H1-3330	HCF Failure : #H1-3330. Check the HCF connection.	7-44
H1-5330	DCF Failure : #H1-5330. Check internal DCF connection.	7-44
H2-2001	Paper jam at exit of finisher bridge.	Refer to Finisher SM
H2-2002	Paper jam inside of finisher.	Refer to Finisher SM
H2-2003	Paper jam inside of finisher.	Refer to Finisher SM
H2-2005	Paper jam at entrance of finisher bridge.	Refer to Finisher SM
H2-2008	Paper jam at entrance of finisher.	Refer to Finisher SM
H2-2009	Paper jam at exit of finisher.	Refer to Finisher SM
H2-2010	Paper jam at exit of finisher.	Refer to Finisher SM
H2-2012	Paper jam inside of finisher bridge.	Refer to Finisher SM
H2-2014	Paper jam around puncher of finisher.	Refer to Finisher SM
H2-2129	Finisher Error #H2-2129. Please open/close door.	Refer to Finisher SM

Error Code	Error Message	Troubleshooting Page
H2-2193	Finisher Error #H2-2193. Please open/close door.	Refer to Finisher SM
H2-2257	Finisher Error #H2-2257. Please open/close door.	Refer to Finisher SM
H2-2193	Finisher Error #H2-2193. Please open/close door.	Refer to Finisher SM
H2-2257	Finisher Error #H2-2257. Please open/close door.	Refer to Finisher SM
H2-2322	Finisher Error #H2-2322. Please open/close door.	Refer to Finisher SM
H2-2386	Finisher Error #H2-2386. Please open/close door.	Refer to Finisher SM
H2-2449	Finisher Error #H2-2449. Please open/close door.	Refer to Finisher SM
H2-2453	Finisher Error #H2-2453. Please open/close door.	Refer to Finisher SM
H2-2463	Finisher Error #H2-2463. Please open/close door.	Refer to Finisher SM
H2-2513	Finisher Error #H2-2513. Please open/close door.	Refer to Finisher SM
H2-2522	Finisher Error #H2-2522. Please open/close door.	Refer to Finisher SM
H2-2577	Finisher Error #H2-2577. Please open/close door.	Refer to Finisher SM
H2-2581	Finisher Error #H2-2581. Please open/close door.	Refer to Finisher SM
H2-2589	Finisher Error #H2-2589. Please open/close door.	Refer to Finisher SM
H2-2705	Finisher Error #H2-2705. Please open/close door.	Refer to Finisher SM
H2-2713	Finisher Error #H2-2713. Please open/close door.	Refer to Finisher SM
H2-2775	Booklet maker Error #H2-2775. Please open/close door.	Refer to Finisher SM
H2-2778	Booklet maker Error #H2-2778. Please open/close door.	Refer to Finisher SM
H2-2779	Finisher Error #H2-2779. Please open/close door.	Refer to Finisher SM
H2-3002	Paper jam at entrance of booklet maker.	Refer to Finisher SM
H2-3005	Paper jam inside of booklet maker.	Refer to Finisher SM
H2-3007	Paper jam before booklet folding.	Refer to Finisher SM
H2-3257	Booklet maker Error #H2-3257. Please open/close door.	Refer to Finisher SM
H2-3321	Booklet maker Error #H2-3321. Please open/close door.	Refer to Finisher SM
H2-3385	Booklet maker Error #H2-3385. Please open/close door.	Refer to Finisher SM
H2-3449	Booklet maker Error #H2-3449. Please open/close door.	Refer to Finisher SM
H2-3578	Booklet maker Error #H2-3578. Please open/close door.	Refer to Finisher SM
H2-3641	Booklet maker Error #H2-3641. Please open/close door.	Refer to Finisher SM
H2-3705	Booklet maker Error #H2-3705. Please open/close door.	Refer to Finisher SM
H2-3769	Booklet maker Error #H2-3769. Please open/close door.	Refer to Finisher SM

Error Code	Error Message	Troubleshooting Page
M1-1113	Paper jam in tray 1.	7-45
M1-1213	Paper jam in tray 2.	7-45
M1-1610	Paper jam in MP Tray.	7-46
M1-3121	Tray 1 is not installed. Install the tray.	7-47
M1-3122	Tray 1 cassette is pulled out. Insert it properly.	7-40
M1-3221	Tray 2 is not installed. Install the tray.	7-40
M1-3222	Tray 2 cassette is pulled out. Insert it properly.	7-47
M1-4111	Input System Failure : #M1-4111. Pull tray 1 out and insert it.	7-43
M1-4211	Input System Failure : #M1-4211. Pull tray 2 out and insert it.	7-43
M1-5111	Paper is low in tray 1. Load paper.	7-41
M1-5112	Paper is empty in tray 1. Load paper.	7-42
M1-5211	Paper is low in tray 2. Load paper.	7-41
M1-5212	Paper is empty in tray 2. Load paper.	7-42
M2-1121	Paper jam inside of machine.	7-48
M2-1124	Paper jam inside of machine.	7-48
M2-1125	Paper jam inside of machine.	7-48
M2-1131	Paper jam inside of machine.	7-48
M2-1134	Paper jam inside of machine.	7-48
M2-1135	Paper jam inside of machine.	7-48
M2-1211	Paper jam inside of machine.	7-49
M2-1213	Paper jam inside of machine.	7-49
M2-1214	Paper jam inside of machine.	7-49
M2-1221	Paper jam inside of machine.	7-49
M2-1321	Paper jam inside of machine.	7-50
M2-1324	Paper jam inside of machine.	7-50
M2-1325	Paper jam inside of machine.	7-50
M2-1331	Paper jam inside of machine.	7-50
M2-1333	Paper jam inside of machine.	7-50
M2-1334	Paper jam inside of machine.	7-50
M2-2111	Paper jam at the top of duplex path.	7-51
M2-2113	Paper jam at the top of duplex path.	7-51

Error Code	Error Message	Troubleshooting Page
M2-2114	Paper jam at the top of duplex path	7-51
M2-2213	Paper jam at the inside of duplex path.	7-52
M2-2215	Paper jam at the inside of duplex path.	7-52
M2-2216	Paper jam at the inside of duplex path	7-52
M2-2411	Paper jam at the return of duplex path.	7-53
M2-2413	Paper jam at the return of duplex path.	7-53
M2-2414	Paper jam at the return of duplex path.	7-53
M3-1211	Paper Jam in exit area	7-54
M3-1213	Paper Jam in exit area	7-54
M3-1214	Paper Jam in exit area	7-54
M3-1411	Paper Jam in exit area	7-54
M3-1413	Paper Jam in exit area	7-54
M3-1414	Paper Jam in exit area	7-54
M3-1510	Paper jam in exit area or finisher bridge..	7-54
M3-2230	Output tray(face down) is full. Remove printed media.	7-55
M3-2430	Output tray(inner) is full. Remove printed media.	7-55
S1-1113	Video System Failure #S1-1113:Turn off then on.	7-56
S1-1114	Video System Failure #S1-1114: Turn off then on.	7-56
S1-1213	Video System Failure #S1-1213:Turn off then on.	7-57
S1-1214	Video System Failure #S1-1214: Turn off then on.	7-57
S1-1313	The clock became initial time. Set a time again.	7-58
S1-1411	Video System Failure #S1-1411: Turn off then on.	7-59
S1-1413	Video System Failure #S1-1413: Turn off then on.	7-60
S1-2111	Video System Failure #S1-2111: Turn off then on.	7-61
S1-2411	HDD System Failure #S1-2411: Turn off then on.	7-62
S1-2421	HDD System Failure #S1-2421: Turn off then on.	7-62
S1-2422	HDD System Failure #S1-2422:Turn off then on.	7-62
S1-2433	HDD System Failure # S1-2433 : Call for service.	7-64
S1-2434	HDD is almost full_1. Check user's guide.	7-63
S1-2435	HDD is almost full_2. Check user's guide.	7-63
S1-2436	HDD is almost full_3. Check user's guide.	7-63
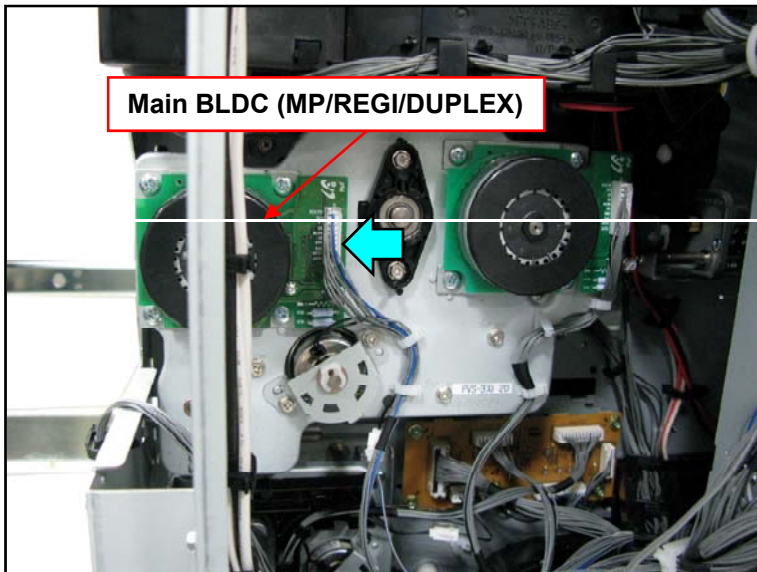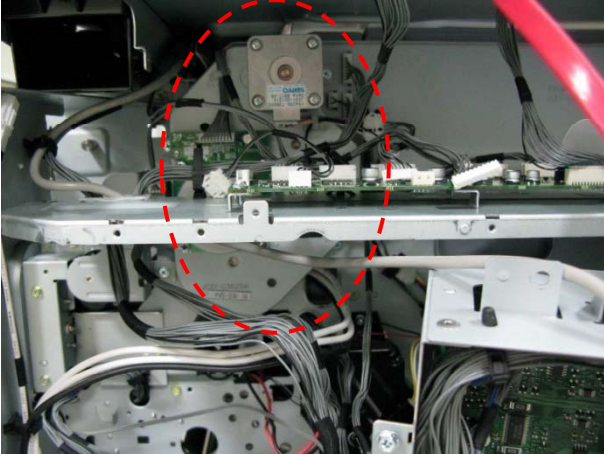
Error Code	Error Message	Troubleshooting Page
S1-2437	HDD is almost full_4. Check user's guide.	7-63
S1-2438	HDD is almost full_5. Check user's guide.	7-63
S1-2439	HDD is almost full_6. Check user's guide.	7-63
S1-2443	HDD System Failure #S1-2443 : Call for service.	7-64
S1-2444	HDD System Failure #S1-2444 : Call for service.	7-64
S1-2445	HDD System Failure #S1-2445 : Call for service.	7-64
S1-2446	HDD System Failure #S1-2446 : Call for service.	7-64
S1-2447	HDD System Failure #S1-2447 : Call for service.	7-64
S1-2448	HDD System Failure #S1-2448 : Call for service.	7-64
S1-2449	HDD System Failure #S1-2449 : Call for service.	7-64
S1-2510	MSOK System Failure #S1-2510:Turn off then on.	7-65
S1-2511	MSOK System Failure #S1-2511:Turn off then on.	7-66
S1-3110	Video System Failure #S1-3110: Turn device off then on.	7-67
S1-4111	Video System Failure #S1-4111:Turn off then on.	7-68
S1-4311	Video System Failure #S1-4311:Turn off then on.	7-69
S1-5321	Fax modem card is not installed. Install the card.	7-70
S1-5421	Second fax modem card is not installed. Install the card.	7-71
S1-5521	FDI device is not installed. Install the device.	7-72
S1-5621	ICON device is not installed. Install the device.	7-73
S2-1211	Engine System Failure #S2-1211:Turn off then on.	7-74
S2-1511	Engine System Failure #S2-1511:Turn off then on.	7-75
S2-2211	#S2-2211 Call for service	7-76
S2-2311	Engine System Failure: #S2-2311. Please open/close door.	7-77
S2-3110	Engine System Failure #S2-3110:Turn off then on.	7-78
S2-4210	Front door is open. Close it.	7-79
S2-4410	Right door is open. Close it.	7-79
S2-4A10	Feed door is opened. Close it.	7-79
S2-4B10	Option Feed door is opened. Close it.	7-80
S3-3111	Scan System Failure #S3-3111:Turn off then on.	7-81
S3-3121	Scanner locking screw is locked or another problem occurred.	7-82
S3-3211	Scan System Failure #S3-3211:Turn off then on.	7-83
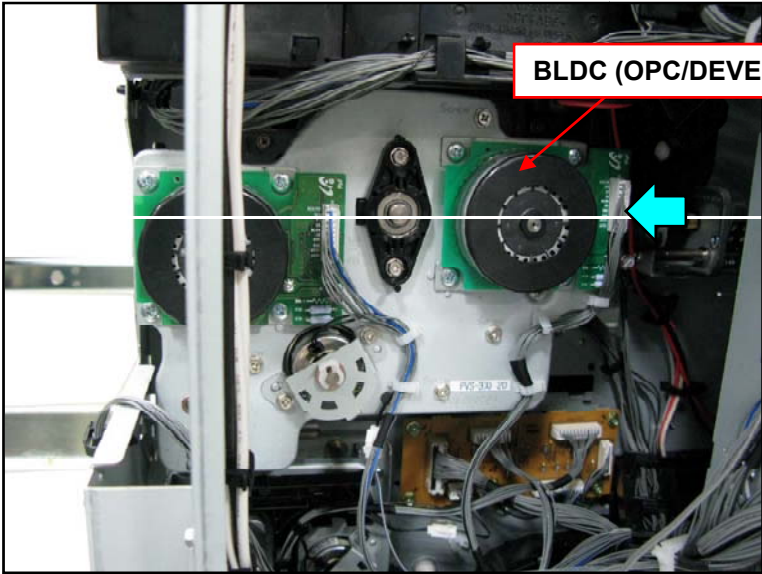
Error Code	Error Message	Troubleshooting Page
S3-3213	Scan System Failure. #S3-3213:Turn off then on.	7-84
S3-3214	Scan System Failure. #S3-3214:Turn off then on.	7-85
S3-3215	Scan System Failure. #S3-3215:Turn off then on.	7-86
S3-3216	Scan System Failure. #S3-3216:Turn off then on.	7-87
S3-3217	Scan System Failure. #S3-3217:Turn off then on.	7-88
S4-3111	Fax System Failure #S4-3111:Turn off then on.	7-89
S5-3111	UI System Failure #S5-3111:Turn off then on.	7-90
S6-3122	Network cable is disconnected. Check it	7-91
U1-2113	Fuser Unit Failure : #U1-2113. Turn off then on.	7-92
U1-2115	Fuser Unit Failure : #U1-2115. Turn off then on.	7-93
U1-2119	Fuser Unit Failure : #U1-2119. Turn off then on.	7-92
U1-2131	Fuser Unit Failure : #U1-2131. Turn off then on.	7-94
U1-2132	Fuser Unit Failure : #U1-2132. Turn off then on.	7-95
U1-2134	Fuser Unit Failure : #U1-2134. Turn off then on.	7-94
U1-2135	Fuser Unit Failure : #U1-2135. Turn off then on.	7-95
U1-2141	Fuser Unit Failure : #U1-2141. Turn off then on.	7-96
U1-2142	Fuser Unit Failure : #U1-2142. Turn off then on.	7-96
U2-1111	LSU Unit Failure: #U2-1111. Turn off then on.	7-97
U2-1113	LSU Unit Failure: #U2-1113. Turn off then on.	7-98
U2-1114	LSU Failure: #U2-1114. Turn off then on.	7-97
U2-6111	LSU Unit Failure : #U2-6111. Please open/close door.	7-99
U3-1310	Actuator Fan Failure #U3-1310: Turn off then on.	7-18
U3-1311	Actuator Fan Failure #U3-1311. Turn off then on.	7-18
U3-3111	Original paper jam in front of scanner.	7-100
U3-3113	Original paper jam in front of scanner.	7-100
U3-3114	Original paper jam in front of scanner.	7-100
U3-3211	Original paper jam in front of scanner.	7-101
U3-3213	Original paper jam inside of scanner.	7-101
U3-3214	Original paper jam in front of scanner.	7-101
U3-3311	Original paper jam inside of scanner.	7-102
U3-3313	Original paper jam inside of scanner.	7-102
U3-3314	Original paper jam inside of scanner.	7-102

Error Code	Error Message	Troubleshooting Page
U3-3411	Original paper jam inside of scanner.	7-103
U3-3413	Original paper jam inside of scanner.	7-103
U3-3414	Original paper jam inside of scanner.	7-103
U3-3511	Original paper jam inside of scanner.	7-104
U3-3513	Original paper jam inside of scanner.	7-104
U3-3514	Original paper jam inside of scanner.	7-104
U3-3611	Original paper jam in exit area of scanner.	7-105
U3-3613	Original paper jam in exit area of scanner.	7-105
U3-3614	Original paper jam in exit area of scanner.	7-105
U3-3711	Original paper jam in exit area of scanner.	7-106
U3-3713	Original paper jam in exit area of scanner.	7-106
U3-3714	Original paper jam in exit area of scanner.	7-106
U3-4210	Top door of scanner is open.	7-107
U3-4411	Pick Up Cam Error. ADF Cover open and close. Call for service if the problem persists.	7-108

7.2.2 Error Code Details

● Code : A1-1113	● Error message : Actuator Motor Failure #A1-1113: Turn off then on.
● Symptom / Cause : Main BLDC motor does not operate.	

● Troubleshooting method :

1. Enter the diagnostic mode. Select the test routine.
   Execute the Main BLDC motor test. If the motor does not work, turn the machine off.

2. Remove the rear cover.

3. Check if the main drive motor connector is connected properly. Reconnect it.
   If the problem persists, replace the main drive motor.

Main BLDC (MP/REGI/DUPLEX)

● Replacement part

- JC31-00123B (MOTOR BLDC)

● Code : A1-1211 A1-1213	● Error message : Actuator Motor Failure #A1-1211: Turn off then on. Actuator Motor Failure #A1-1213: Turn off then on.

● **Symptom / Cause :**

Fuser motor does not operate.

Fuser motor is operating but is recognized as stop status.

● **Troubleshooting method :**

1. Turn the machine off. Check if there is any foreign matter around the fuser unit.

2. Remove the fuser unit and reinstall it.

3. Turn the machine on. Is the problem solved?
   If not, go to the next.

4. Turn the machine off.
   Open the engine/video shield door.
   Check if the fuser/exit motor connector is connected properly.
   If the problem persists, replace the fuser/exit drive motor.

5. If the problem persists, replace the fuser unit.

● **Replacement part**

- JC31-00123B (MOTOR BLDC)

● Code : **A1-2111** **A1-2113**	● Error message : Actuator Motor Failure #A1-2111: Call for service if the problem persists. Actuator Motor Failure #A1-2113: Call for service if the problem persists.

● **Symptom / Cause :**

1. OPC BLDC motor is broken.
2. The relative connector is disconnected.
3. Deve joint board and main board are defective.

● **Troubleshooting method :**

1. Enter the diagnostic mode. Select the test routine.
   Execute the OPC BLDC motor test. If the motor does not work, turn the machine off.

2. Remove the rear cover.

3. Check if the OPC drive motor connector is connected properly. Reconnect it.
   If the problem persists, replace the OPC BLDC motor in the main drive unit.

BLDC (OPC/DEVE)

4. If the problem persists, replace the imaging unit.

5. Replace the toner connector board or Engine board.

● **Replacement part**
JC31-00123A : MOTOR BLDC
JC92-02302A : PBA-ENGINE (SCX-8030ND)
JC92-02221A : PBA-ENGINE (SCX-8040ND)
JC92-02339A : PBA-TONER CONNECTOR

● **Code :**	● **Error message :**
A1-5113	Actuator Motor Failure : #A1-5113. Call for service if the problem persists.

● **Symptom / Cause :**

1. Toner motor is broken.
2. The relative connector is disconnected.
3. Deve joint board and main board are defective.

● **Troubleshooting method :**

1. Specially when toner cartridge is initial install time (total printed pages is under 1,000 page), check if the seal of toner cartridge is removed.

2. Enter the diagnostic mode. Select the test routine.
   Execute the toner motor test. If the motor works, check the connection.

3. If the problem persists, remove the rear cover.

4. Open the engine board shield.

5. Check if the toner motor connector is connected properly. Reconnect it.
   If the motor doesn't work, replace it.

6. Replace the Deve joint board or Engine board.

● **Replacement part**

JC31-00124A : MOTOR GEARED-T_SUPPLY
JC92-02302A : PBA-ENGINE (SCX-8030ND)
JC92-02221A : PBA-ENGINE (SCX-8040ND)
JC92-02339A : PBA-TONER CONNECTOR

● Code : **A1-5610**	● **Error message :** Actuator Motor Failure : #A1-5610. Please open/close door.

● **Symptom / Cause :**

1. Duct motor is broken.
2. The relative connector is disconnected.
3. Deve joint board and main board are defective.

● **Troubleshooting method :**

1. Enter the diagnostic mode. Select the test routine.
   Execute the duct motor test. If the motor works, check the connection.

2. If the problem persists, remove the rear cover.

3. Open the engine board shield.

4. Check if the toner motor connector is connected properly. Reconnect it.
   If the motor doesn't work, replace it.

5. Replace the Deve joint board or Engine board.

● **Replacement part**

JC31-00110A : MOTOR STEP
0604-001393 : PHOTO-INTERRUPTER
JC92-02302A : PBA-ENGINE (SCX-8030ND)
JC92-02221A : PBA-ENGINE (SCX-8040ND)

● Code : A1-7113	● Error message : Actuator Motor Failure : #A1-7113. Please open/close door.

● Symptom / Cause :

Waste toner motor does not work properly.

● Troubleshooting method :

1. Turn the machine off. Check if there is any obstacles around waste toner bottle.

2. Remove the waste toner bottle and reinstall it again.

3. Try to test print without the waste toner bottle.
    If the same error occurs, replace the waste toner motor and controller.
    If not, replace the waste toner bottle.

● Replacement part

JC31-00110C MOTOR-STEP

● Code :	● Error message :
A2-1310	Actuator Fan Failure : #A2-1310. Please open/close door.
A2-1311	Actuator Fan Signal Failure : #A2-1311. Please open/close door.
A2-1410	Actuator Fan Failure : #A2-1410. Please open/close door.
A2-1411	Actuator Fan Signal Failure : #A2-1411. Please open/close door.
A2-1510	Actuator Fan Failure : #A2-1510. Please open/close door.
A2-1511	Actuator Fan Signal Failure : #A2-1511. Please open/close door.
A2-2310	Actuator Fan Failure : #A2-2310. Please open/close door.
A2-2311	Actuator Fan Signal Failure : #A2-2311. Please open/close door.
A2-2810	Actuator Fan Failure : #A2-2810. Please open/close door.
A2-2811	Actuator Fan Signal Failure : #A2-2811. Please open/close door.
A2-2910	Actuator Fan Failure : #A2-2910. Please open/close door.
A2-2911	Actuator Fan Signal Failure : #A2-2911. Please open/close door.
U3-1310	Actuator Fan Failure : #U3-1310. Turn off then on.
U3-1311	Actuator Fan Failure : #U3-1311. Turn off then on.

● **Symptom / Cause :**

Fan does not operate.
 - Fan overheats.
 - There is any foreign matter around the fan.

A2-1310 / A2-1311 : SMPS In Fan
A2-1410 / A2-1411 : SMPS Out Fan
A2-1510 / A2-1511 : Duplex Fan
A2-2310 / A2-2311 : FUSER Fan
A2-2810 / A2-2811 : OZONE Fan
U3-1310 / U3-1311 : Scan Fan

● **Troubleshooting method :**

1. Remove the foreign matter around the fan.
2. Turn the machine off and on.
3. Check the circuit related the fan.

●**Replacement part**

A2-1310 / A2-1311 : JC31-00129A
A2-1410 / A2-1411 : JC31-00129A
A2-1510 / A2-1511 : JC31-00130A
A2-2310 / A2-2311 : JC31-00130A
A2-2810 / A2-2811 : JC31-00130A
U3-1310 / U3-1311 : JC31-00127A

● Code : **A3-2210**	● Error message : Actuator Sensor Failure : #A3-2210. Please open/close door.

● **Symptom / Cause :**

Calibration for density sensor is failed

● **Troubleshooting method :**

1. Check if the driving section of the developer is operated properly.

2. Enter the diagnostic mode. Check the TC value.
   (Diagnostics > Engine Diagnostics > Engine Test Routines > 111-5000 / 5010 / 5020 / 5030)

3. If TC value is not proper range. (TC Value : 80~120)
   - Replace the imaging unit.

● **Replacement part**

MLT-R607K : Imaging unit

● Code :	● Error message :
A3-3111	Actuator Sensor Failure #A3-3111: Please open/close door.
A3-3112	Actuator Sensor Failure #A3-3112: Please open/close door.
A3-3113	Actuator Sensor Failure #A3-3113: Please open/close door.
A3-3114	Actuator Sensor Failure #A3-3114: Please open/close door.

● **Symptom / Cause :**

Thermistor sensor is shorted or opened. ADC value is under 10 or over 4000.

● **Troubleshooting method :**

Replace the fuser unit.

CAUTION
The temperature gets high in the vicinity of the fuser unit. When replacing it, you may get burned.
Before replacing it, make sure that fuser unit has cooled.

1. Open the Cover-Side.
2. Remove 4 screws from the left/right.
3. Remove the fuser unit by holding the handles [A].

● **Replacement part**

- JC91-00952A : FUSER (220V)
- JC91-00951A : FUSER (110V)
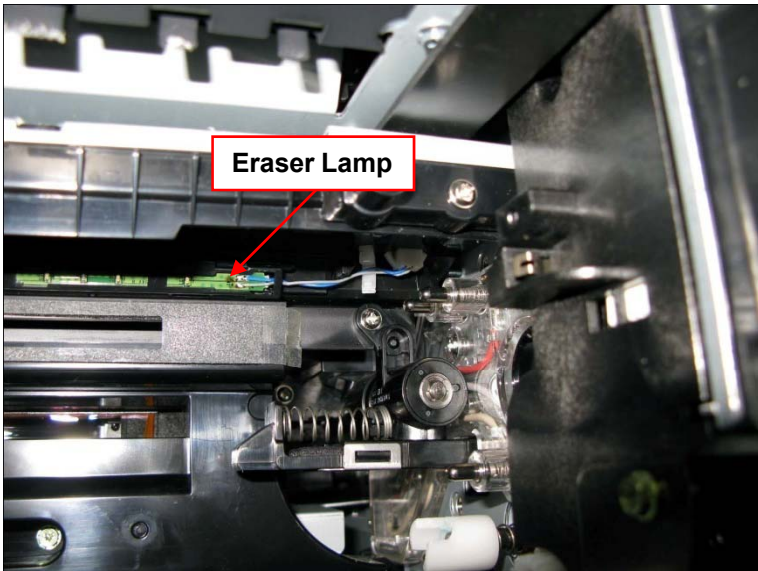
● Code : **A3-3211** **A3-3212**	● Error message : Actuator Sensor Failure #A3-3211: Turn off then on. Actuator Sensor Failure #A3-3212: Turn off then on.

● **Symptom / Cause :**

Inner temperature sensor is short or open.

The output of the Inner temperature sensor is more than max. or less than min.

● **Troubleshooting method :**

1. Turn the machine off and on.

2. Check the output of the inner temperature sensor. (Refer to 3.7.16 in the chapter 3)

3. Check the engine board.

Inner temperature sensor

● **Replacement part**

- JC32-00005A : SENSOR-HUMIDITY
- JC92-02302A : PBA-ENGINE (SCX-8030ND)
- JC92-02221A : PBA-ENGINE (SCX-8040ND)
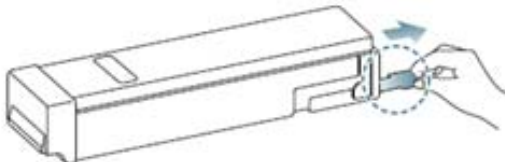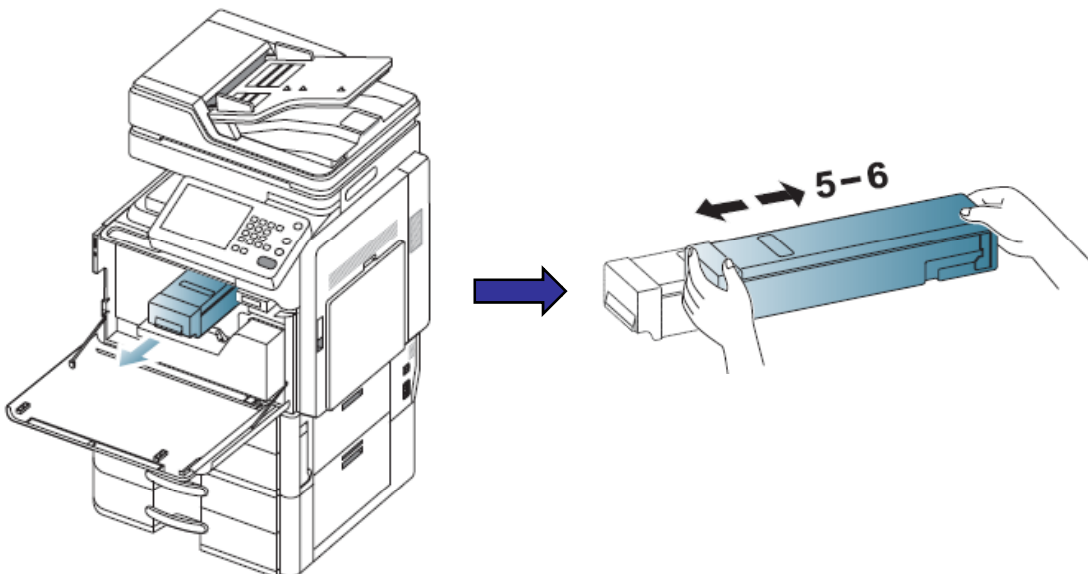
● Code : **A3-3311** **A3-3312**	● **Error message :** Actuator Sensor Failure #A3-3311: Turn off then on. Actuator Sensor Failure #A3-3312: Turn off then on.

● **Symptom / Cause :**

Outer temperature sensor is short or open.
The output of the outer temperature sensor is more than max. or less than min.

● **Troubleshooting method :**

1. Turn the machine off and on.

2. Check the output of the outer temperature sensor.

3. Check the engine board.

Outer temperature sensor

● **Replacement part**

- JC32-00005A : SENSOR-HUMIDITY
- JC92-02302A : PBA-ENGINE (SCX-8030ND)
- JC92-02221A : PBA-ENGINE (SCX-8040ND)

● Code : **A3-3411** **A3-3412**	● Error message : Actuator Sensor Failure #A3-3411: Turn off then on. Actuator Sensor Failure #A3-3412: Turn off then on.

● **Symptom / Cause :**

The humidity sensor is short or open.
The output of the outer temperature sensor is more than max. or less than min.

● **Troubleshooting method :**

1. Turn the machine off and on.

2. Check the output of the humidity temperature sensor.

3. Check the engine board.

● **Replacement part**

- JC32-00005A : SENSOR-HUMIDITY
- JC92-02302A : PBA-ENGINE (SCX-8030ND)
- JC92-02221A : PBA-ENGINE (SCX-8040ND)

● Code : A4-1111	● Error message : Actuator Sensor Failure : #A4-1111. Please turn off then on

● Symptom / Cause :

The eraser circuit is short or open.

● Troubleshooting method :

1. Turn the machine off and on.

2. Check if the eraser lamp connector is connected properly. Reconnect it.

3. If the problem persists, replace the eraser lamp. (Refer to 3.7.14 in the chapter 3.)

Eraser Lamp

● Replacement part

- JC92-02244A : PBA-ERASER

● **Code :** **C1-1110** **C1-1130** **C1-1140**	● **Error message :** Prepare new toner cartridge End of life, Replace with new toner cartridge Replace with new toner cartridge.

● **Symptom / Cause :**

Toner remained is 5 ~ 30% of its life. (C1-1110)
The toner cartridge is at the end of its life.

● **Troubleshooting method :**

1. Turn the machine off and turn it on again.

2. Print the supply information report.

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

● **Replacement part**

MLT-K606S (SCX-8040ND) : Toner Cartridge
MLT-K607S (SCX-8030ND) : Toner Cartridge

● Code : **C1-1311**	● **Error message :** Toner Cartridge Failure: #C1-1311. Install toner cartridge again.

● **Symptom / Cause :**

Toner supply is not enough.

● **Troubleshooting method :**

1. Specially when toner cartridge is initial install time (total printed pages is under 1,000 page), check if the seal of toner cartridge is removed.

2. Thoroughly roll the cartridge five or six times to distribute the toner evenly inside the cartridge.

3. Check if the pipe for toner supply is blocked.

4. Check if the toner supply shutter in the imaging unit is operating properly.
   Check if the toner supply piper in the imaging unit is blocked.
   If the imaging unit has any problem, replace it.

● **Replacement part**

MLT-R607K : Imaging Unit
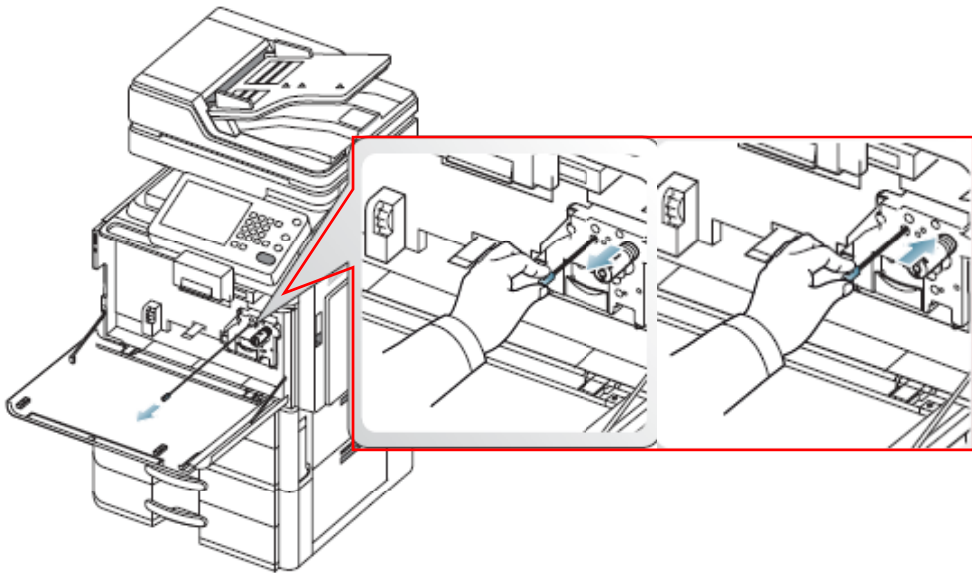
● Code : **C1-1411**	● Error message : Toner cartridge is not installed. Install the cartridge.

● **Symptom / Cause :**

The data of CRUM is not detected.

1. Toner cartridge is not placed in the set.

2. Physical obstacle is jamming the electronic signal through the modular jack.

3. The signal from set is not proper.

● **Troubleshooting method :**

1. Open the front cover.

    Remove the waste toner container.

2. Is the toner cartridge placed in the set or not?

    YES!   NO! → Place the toner cartridge in the set.

    ↓

    Pull out the imaging unit and check the modular jack.

    Is there any contaminations or obstacles?

    YES!   NO! → Is the modular jack fixed in proper position?

    ↓   YES!   NO! → Replace the toner cartridge with new one.

    ↓   ↓

    ↓   Check whether the electronic signal is proper or not.

    ↓

    Sweep the contaminations or remove the obstacles.

    Install the toner cartridge and do the reverse of No.1.

    Is there the error message?

    YES!   NO! → It's done.

    ↓

    Check whether the electronic signal is proper or not. Check the connector and engine board.

● **Replacement part**

- JC92-02302A : PBA-ENGINE (SCX-8030ND)
- JC92-02221A : PBA-ENGINE (SCX-8040ND)

● Code : **C1-1512**	● **Error message :** Toner cartridge is not compatible. Check user's guide

● **Symptom / Cause :**

Toner cartridge is not compatible. You can't print.

● **Troubleshooting method :**

1. Check information of the toner cartridge.

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

● **Replacement part**

MLT-K606S (SCX-8040ND) : Toner Cartridge
MLT-K607S (SCX-8030ND) : Toner Cartridge

● **Code :** **C3-1110** **C3-1130** **C3-1140**	● **Error message :** Prepare new imaging unit. Replace with new imaging unit. End of life, Replace with new imaging unit.

● **Symptom / Cause :**

The imaging unit is at the end of its life.

● **Troubleshooting method :**

1. Turn the machine off and turn it on again.

2. Print the supply information report.

   Check the life remaining of the imaging unit.
   If its life is at the end, turn the machine off and replace the imaging unit with new one.

● **Replacement part**

MLT-R607K : Imaging Unit

● Code : **C3-1211** **C3-1312**	● Error message : Imaging Unit Failure:#C3-1211. Please turn off then on. Imaging Unit Failure: #C3-1312. Install imaging unit again.

● **Symptom / Cause :**

1. The machine could not detect the imaging unit.
2. TC sensor Read Error
3. Temporary hard stop.

● **Troubleshooting method :**

1. Remove the Imaging Unit.
   Clean the terminal of the imaging unit and re-install it.

2. Check TC sensor unit and TC sensor harness.
   Check Deve-Clutch (in Main Drive unit) unit.

3. Print the supply information report and check the life remaining of imaging unit.
   If the life has reached the end, replace with a new imaging unit.

● **Replacement part**

MLT-R607K : Imaging Unit

● Code : C3-1411	● Error message : Imaging unit is not installed. Install the unit.

● Symptom / Cause :

The data of CRUM is not detected.
1. Imaging Unit is not placed in the set.
2. Physical obstacle is jamming the electronic signal through the modular jack.
3. The signal from set is not proper.

● Troubleshooting method :

1. Open the front cover.
   Remove the waste toner container.

2. Is the imaging unit placed in the set or not?
   YES!   NO! → Place the imaging unit in the set.
   ↓
   Pull out the imaging unit and check the modular jack.
   Is there any contaminations or obstacles?
   YES!   NO! → Is the modular jack fixed in proper position?
   ↓   YES!   NO! → Replace the imaging unit with new one.
   ↓   ↓
   ↓   Check whether the electronic signal is proper or not.
   ↓
   Sweep the contamination or remove the obstacles.
   Install the imaging unit and do the reverse of No.1.
   Is there the error message?
   YES!   NO! → It's done.
   ↓
   Check whether the electronic signal is proper or not. Check the connector and engine board.

● Replacement part

- JC92-02302A : PBA-ENGINE (SCX-8030ND)
- JC92-02221A : PBA-ENGINE (SCX-8040ND)

● **Code :** **C3-1422**	● **Error message :** Imaging unit requires charger's cleaning. Clean the unit.

● **Symptom / Cause :**

The charger of imaging unit need to clean after the specified number of paper is printed out.

● **Troubleshooting method :**

1. Open the front door.
2. Remove the waste toner container.
3. Pull and push the corresponding charger cleaner completely as shown below.

CAUTION
Do not strongly pull the charger cleaner to prevent it from separating from the machine. It can cause damage to the machine.

4. Repeat step 3 and 4 three or four times.

● **Replacement part**
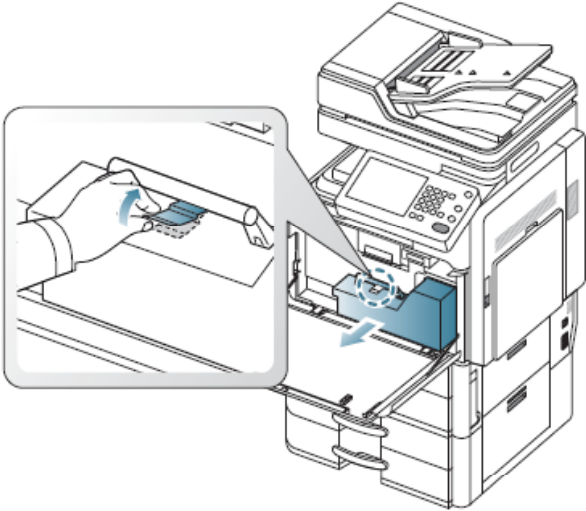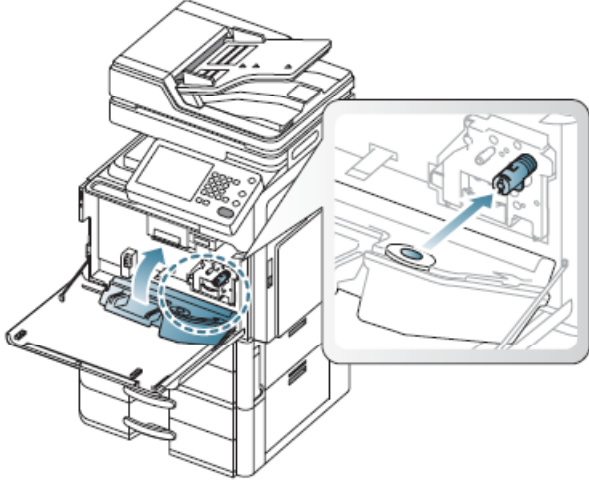
● Code : C3-1512	● Error message : Imaging unit is not compatible. Check user's guide.

● Symptom / Cause :

Imaging unit is not compatible. You can't print.

● Troubleshooting method :

1. Print the supply information report.
   Check information of the imaging unit.

2. If the imaging unit is not a Samsung genuine imaging unit, replace with new one.

● Replacement part

MLT-R607K : Imaging Unit

● **Code :**	● **Error message :**
C6-1110	Prepare new fuser unit.
C6-1120	Replace with new fuser unit.

● **Symptom / Cause :**

The fuser unit is at the end of its life (150K).

● **Troubleshooting method :**

1. Turn the machine off and turn it on again.

2. Print the supply information report and check the fuser unit life.

3. Replace the fuser unit.

CAUTION
The temperature gets high in the vicinity of the fuser unit. When replacing it, you may get burned.
Before replacing it, make sure that fuser unit has cooled.

1. Open the Cover-Side.
2. Remove 4 screws from the left/right.
3. Remove the fuser unit by holding the handles [A].

● **Replacement part**

- JC91-00952A : FUSER (220V)
- JC91-00951A : FUSER (110V)

● **Code :**	● **Error message :**
C6-1311	Fuser unit is not installed correctly. Install it.

● **Symptom / Cause :**

The fuser unit is not installed properly.

The connector of fuser unit is not connected properly.

● **Troubleshooting method :**

1. Turn the machine off.

2. Open the side door and check if the fuser unit is installed properly.

3. If the fuser unit is installed, check the following :

  A. Check if the both handle lockers are locked properly.
  B. Check the draw connector between the fuser unit and the machine.
  C. Check if the draw connector is disconnected.

4. Remove the fuser unit and re-install it.

5. Turn the machine on.

6. If the problem persists, replace the fuser unit.

● **Replacement part**

- JC91-00952A : FUSER (220V)
- JC91-00951A : FUSER (110V)

● Code : **C6-1412**	● Error message : Fuser unit is not compatible. Check User's Guide.

● **Symptom / Cause :**

1. The fuser unit could not detect the EEPROM.
2. EEPROM information is different from machine information.
3. Fuser unit is not compatible with this machine.

● **Troubleshooting method :**

1. Turn the machine off and turn it on again.

2. If the problem persists, check the following :

  A. Turn the machine off.
  B. Open the side-cover and remove the fuser unit.
  C. Remove the support-lever belt on the front of the fuser unit.
  D. Remove the frame-fuser front.
  E. Check if the EEPROM connector is disconnected.
  F. Check if the EEPROM is broken or deformed.
  G. Re-install the fuser unit.
  H. Turn the machine on.
  I. If the problem persists, replace the fuser unit.

3. Print the supply information report, if printing is possible.
   Check if EEPROM information is correct.

● **Replacement part**

- JC91-00952A : FUSER (220V)
- JC91-00951A : FUSER (110V)

● Code : **C7-1110** **C7-1130** **C7-1311**	● Error message : Waste toner container is almost full. Order new one. Waste toner container is full. Replace it Waste toner container is not installed. Install it

● Symptom / Cause :

The Waste toner container is full.

The waste toner container is not installed.

● Troubleshooting method :

1. Open the front cover. If the waste toner container is not installed, install it.
2. Lift the locking lever upward. Then remove the waste toner container.

3. Remove the new waste toner container from its package.
4. Insert the new waste toner container until it locks in place.

5. Close the front door.

● Replacement part : MLT-W606 (Waste Toner Container)

● Code : **C9-2220**	● **Error message :** Transfer Roller Failure : #C9-2220. Install Transfer Roller again.

● **Symptom / Cause :**

The transfer roller is not installed or the High voltage circuit has some problem.

● **Troubleshooting method :**

1. Remove and reinstall the transfer roller unit.

2. If the problem persists, check the followings.

    a. Replace the transfer roller unit.
    b. Check the HVPS board and transfer harness.
    c. Check if the HVPS output is normal.

● **Replacement part**

JC95-01134A : COVER-SIDE TR ROLLER
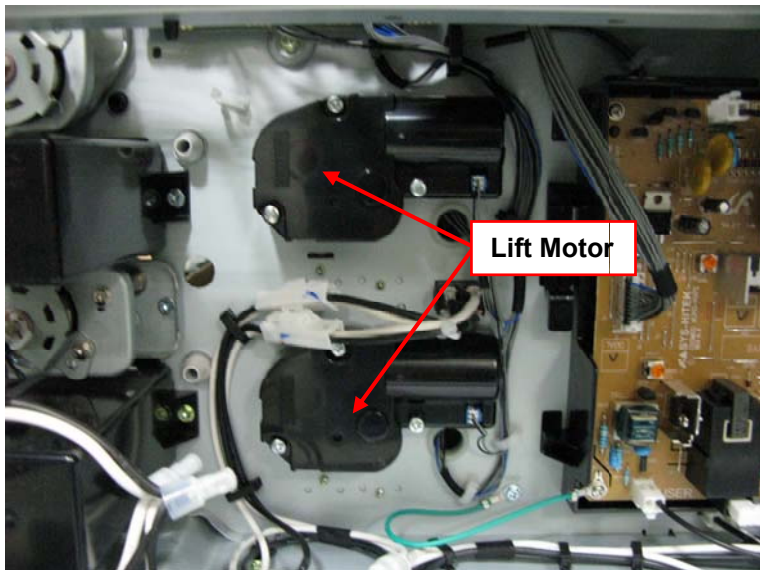
● Code :	● Error message :
H1-1311	Paper jam in Tray 3
H1-1312	Paper jam in Tray 3
H1-1317	Paper jam in Tray 3
H1-1318	Paper jam in Tray 3
H1-1411	Paper jam in Tray 4
H1-1412	Paper jam in Tray 4
H1-1417	Paper jam in Tray 4
H1-1418	Paper jam in Tray 4

● **Symptom / Cause :**

Paper transport jam (paper Input section)

- The paper has not reached the tray3,4 feed sensor within normal time after pick up.

● **Troubleshooting method :**

1. Open the side & take away door. Remove the jammed paper.

   Close the Side door. After warm up, if same jam occurs, check the following.

2. Install the Pick up (forward, retard) roller correctly.

3. If the pick up roller is worn out or contaminated, replace it.

4. Check if paper in the cassette are curled, replace the paper or stretch to remove curling.

5. Check if the wall connector of tray3,4 pick up unit is connected properly. Reconnect the connector.

6. If the problem persists, remove the pick up unit and check the following.

  A. If the spring at the bottom of the pick up unit breaks away or is broken, replace the spring.

     If the assembly mold part with spring is broken, replace it.

  B. If the compression spring of the guide-forward pick up breaks away, reassemble or replace it.

  C. If the error message displays despite paper empty in the cassette, check the empty actuator and photo

     interrupt. Reassemble the empty actuator or replace the photo interrupter.

In case that the actuator is broken, check the following :

1. Does the pick up (forward) roller rotate?

  A. Check if the clutch connector of the pick up drive unit is connected properly. Reconnect it.

  B. Enter the diagnostic mode. Execute "clutch test" . If it is defective, replace it.

  C. If the timing belt of the pick up drive unit breaks away or is broken, replace it.

  D. Check if the motor connector of the pick up drive unit is connected properly. Reconnect it.

  E. Enter the diagnostic mode. Execute "motor test" . If it is defective, replace it.

2. Replace the engine controller.

● **Replacement part**

 - JC93-00175A (FRAME MAIN-PICK UP RUBBER)
 - JC93-00070A (FRAME MAIN-PICK UP)

● Code :	● Error message :
H1-1322	Tray 3 is pulled out. Insert it properly.
H1-1422	Tray 4 is pulled out. Insert it properly.
M1-3122	Tray 1 is pulled out. Insert it properly.
M1-3222	Tray 2 is pulled out. Insert it properly.

● **Symptom / Cause :**

Tray No. LED is on.
- Tray 1 (2,3,4) is pulled out or the auto size sensor connector is not connected or broken.

● **Troubleshooting method :**

1. Insert the corresponding cassette perfectly.

2. If the cassette is not locked or pulled out without holding the locking lever, reassemble the cassette.

3. Check if the auto size sensor is connected properly. Reconnect or replace it.

4. Check if the connector on the Joint PBA is connected properly. Reconnect or replace it.

5. Replace the engine controller PBA.

● **Replacement part**

- JC92-02302A : PBA-ENGINE (SCX-8030ND)
- JC92-02221A : PBA-ENGINE (SCX-8040ND)

● Code :	● Error message :
H1-1351	Paper is low in tray 3. Load paper
H1-1451	Paper is low in tray 4. Load paper
M1-5111	Paper is low in tray 1. Load paper
M1-5211	Paper is low in tray 2. Load paper

● **Symptom / Cause :**

When the paper in the cassette is less than 10% of specification or the photo interrupter is broken, this message will be displayed.

● **Troubleshooting method :**

1. Take out Tray 1(2,3,4) cassette.
2. Load the paper.
3. Adjust the paper align guide.
4. Insert Tray 1(2,3,4) cassette.

If paper is loaded but error message is not disappeared, check the following.

1. If there is any contamination in photo interrupter, clean the sensor.

2. If the photo interrupter is broken, replace it.

● **Replacement part**

- 0604-001393 : PHOTO-INTERRUPTER

● Code : **H1-1352** **H1-1452** **M1-5112** **M1-5212**	● Error message : Paper is empty in tray 3. Load paper Paper is empty in tray 4. Load paper Paper is empty in tray 1. Load paper Paper is empty in tray 2. Load paper	Version 0.05

● Symptom / Cause :

Tray No. LED is on.

- Paper is empty in tray or the actuator empty is broken.

● Troubleshooting method :

1. Take out Tray 1(2,3,4) cassette.
2. Load the paper.
3. Adjust the paper align guide.
4. Insert Tray 1(2,3,4) cassette.

If paper is loaded but error message is not disappeared, check the following.

1. Check if the actuator empty of the pick up unit is broken or broken away.
   Reassemble or reconnect the actuator empty.

2. Check if the empty sensor connector of the pick up unit is connected properly.
   Reconnect it.

3. Check if the junction connector of the pick up unit is connected properly.
   Reconnect or replace it.

4. Check if the Joint PBA connector is connected properly.
   Reconnect it or replace the Joint PBA.

5. Check if the paper REGI. connector on the engine controller is connected properly. Reconnect it.

6. Replace the engine controller PBA.

● Replacement part

- 0604-001393 : PHOTO-INTERRUPTER
- JC92-02233A : SIDE JOINT
- JC92-02302A : PBA-ENGINE (SCX-8030ND)
- JC92-02221A : PBA-ENGINE (SCX-8040ND)

● Code : **H1-1353** **H1-1453** **M1-4111** **M1-4211**	● Error message : Input System Failure : #H1-1353. Pull Tray 3 out and insert it. Input System Failure : #H1-1353. Pull Tray 3 out and insert it. Input System Failure : #M1-4111 : Pull tray 1 out and insert it. Input System Failure : #M1-4211 : Pull tray 2 out and insert it.

● **Symptom / Cause :**

Lift motor unit is broken.

● **Troubleshooting method :**

1. Take out Tray 1(2,3,4) cassette.

2. Insert Tray 1(2,3,4) cassette.

3. If the problem persists, turn the machine off.
   Remove the SMPS box. (refer to 3.7.10)
   And then replace the lift motor.

Lift Motor

● **Replacement part**

JC31-00137A : MOTOR GEARED-LIFT 500

● Code : **H1-3330** **H1-5330**	● Error message : Input System Failure : #H1-3330. Check the HCF connection. Input System Failure : #H1-5330. Check the DCF connection.

● **Symptom / Cause :**

The communication error between the optional tray and the main machine has occurred.

● **Troubleshooting method :**

1. Check if the optional tray connector is connected to the machine properly.
   Reconnect it.

2. Turn the machine off.
   Check if the HCF/DCF connector on the engine board is connected properly.

● **Replacement part**

JC81-08295A : AS-HARNESS-IF UPPER

● Code : **M1-1113** **M1-1213**	● Error message : Paper jam in tray 1. Paper jam in tray 2.

● **Symptom / Cause :**

Paper transport jam (paper Input section)

- The paper has not reached the tray1,2 feed sensor within normal time after pick up.

● **Troubleshooting method :**

1. Open the Side door. If there is a jammed paper, remove it.
   Close the Side door. After warm up, if same jam occurs, check the following.

2. Install the Pick up (forward, retard)roller correctly.

3. If the pick up roller is worn out or contaminated, replace it.

4. Check if paper in the cassette are curled, replace the paper or stretch to remove curling.

5. Check if the wall connector of tray1 pick up unit is connected properly. Reconnect the connector.

6. If the problem persists, remove the pick up unit and check the following.
   A. If the spring at the bottom of the pick up unit breaks away or is broken, replace the spring.
      If the assembly mold part with spring is broken, replace it.
   B. If the compression spring of the guide-forward pick up breaks away, reassemble or replace it.
   C. If the error message displays despite paper empty in the cassette, check the empty actuator and photo
      interrupt. Reassemble the empty actuator or replace the photo interrupter.

In case that the actuator is broken, check the following :

1. Does the pick up (forward) roller rotate?
   A. Check if the clutch connector of the pick up drive unit is connected properly. Reconnect it.
   B. Enter the diagnostic mode. Execute "clutch test" . If it is defective, replace it.
   C. If the timing belt of the pick up drive unit breaks away or is broken, replace it.
   D. Check if the motor connector of the pick up drive unit is connected properly. Reconnect it.
   E. Enter the diagnostic mode. Execute "motor test" . If it is defective, replace it.

2. Replace the engine controller.

● **Replacement part**

 - JC93-00175A (FRAME MAIN-PICK UP RUBBER)
 - JC93-00070A (FRAME MAIN-PICK UP)

● Code : M1-1610	● Error message : Paper jam in MP tray.

● Symptom / Cause :

Paper transport jam (paper Input section)

- The paper has not reached the regi sensor within normal time after MP pick up.

● Troubleshooting method :

1. Remove the jammed paper from the MP tray.

2. Open the side door. Remove the jammed paper.
   Close the Side door. After warm up, if same jam occurs, check the following.

3. Install the Pick up (forward, retard)roller correctly.

4. If the pick up roller is worn out or contaminated, replace it.

5. Check if papers in the MP tray are curled, replace the paper or stretch to remove curling.

6. Open the side door and remove the lower cover from the rear of the side unit. Check if the connector of the MP tray unit and the connector of the joint PBA are connected properly. Reconnect the connector.

7. If the problem persists, remove the MP unit from the side unit and check the following.
   A. If the spring at the bottom of the MP unit breaks away or is broken, replace the spring.
      If the assembly mold part with spring is broken, replace it.
   B. If the spring of the guide to fix the pick up roller in MP unit breaks away, reassemble or replace it.
   C. If the error message displays despite paper empty in the cassette, check the empty actuator and photo interrupt. Reassemble the empty actuator or replace the photo interrupter.
   D. If the driving gear breaks away or is broken, reassemble or replace it.

In case that the actuator is broken, check the following :

1. Does the pick up (forward) roller rotate?
   A. Check if the MP clutch connector is connected properly. Reconnect it.
   B. Enter the diagnostic mode. Execute "MP clutch test" . If it is defective, replace it.
   C. Check if the motor connector of the MP drive unit is connected properly. Reconnect it.
   D. If MP solenoid on but pick up roller moves down, check for each link, part missing, part defect. And reassemble it.
   E. Enter the diagnostic mode. Execute "MP drive motor test" . If it is defective, replace it.

2. Replace the engine controller.

● Replacement part

JC90-00989A : MP-PICK UP RUBBER

● Code : **M1-3121** **M1-3221**	● Error message : Tray 1 is not installed. Install the tray. Tray 2 is not installed. Install the tray.
● Symptom / Cause : The tray is not installed properly.	
● Troubleshooting method : Remove the tray and then insert it again.	
● Replacement part JC90-00927A : CASSETTE	

● Code :	● Error message :
M2-1121	Paper jam inside of machine.
M2-1124	
M2-1125	
M2-1131	
M2-1134	
M2-1135	

● **Symptom / Cause :**

Paper transport jam (paper Input section)

- The paper from the tray2 (3,4) has not reached to the tray1,2 feed sensor within a regular time after passing the tray2 (3,4) feed sensor.

- When opening and closing the side door, the paper jam has occurred at tray1,2 feed sensor.

● **Troubleshooting method :**

1. Open the side & take away door. Remove the jammed paper.
   Close the Side door. After warm up, if same jam occurs, check the following.

2. Open the side & take away. Remove the jammed paper between the feed roller of the tray2 pick up unit and tray1 feed roller. If there is any defective part in this area, replace it.

3. If the white idle roller of the take away door breaks away, release the inner cover and reassemble the idle roller.

4. Check if the wall connector of tray1 pick up unit is connected properly. Reconnect the connector.

5. Enter the diagnostic mode, and check the feed sensor test of the tray1,2 pick up unit.
   If the paper is contacting the sensor and "Without paper" message is displayed, replace the sensor.

6. Check if the connector of the tray1,2 pick up unit on the pick up drive unit is connected properly. Reconnect it.

7. Replace the engine controller.

● **Replacement procedure**

- JC95-01034A (COVER-TAKE AWAY)
- JC93-00070A (FRAME MAIN-PICK UP)
- JC93-00174A (FRAME MAIN-PICK UP SECOND)

● Code : **M2-1211** **M2-1213** **M2-1214** **M2-1221**	● Error message : Paper jam inside of machine.

● **Symptom / Cause :** Paper transport jam (paper Input section)

- At warm up, the registration sensor has detected the paper.
- The paper has not reached the registration sensor within normal time after passing the tray1 feed sensor.
- When opening and closing the side door, the paper jam has occurred at regi. sensor.

● **Troubleshooting method :**

1. Open the side (take away) door. Remove the jammed paper.
   Close the side (take away) door. After warm up, if same jam occurs, check the following.

2. If there is any obstacles between the tray1 feed roller and the regi roller, remove it.

3. Check if the idle roller on bottom of the side unit is fixed correctly. If or not, disassemble the Guide and reassemble the idle roller. .

In case of the electrical part problem, check the following :

1. Check if the reflective connector, junction connector on the middle of regi roller are connected properly. Reconnect the connector.

2. Enter the diagnostic mode, and check the reflective sensor test.
   If the paper is at sensor and "Without paper" message is displayed, replace the sensor.

3. Enter the diagnostic mode, and check the motor test of the pick up drive unit.
   If the motor is broken, replace it.

4. Check if the regi connector of engine controller is connected properly. Reconnect it.

5. Replace the engine controller.

● **Replacement part**

JC31-00132A : MOTOR STEP (Pick up motor)
JC92-02302A : PBA-ENGINE (SCX-8030ND)
JC92-02221A : PBA-ENGINE (SCX-8040ND)

● Code : M2-1321 M2-1324 M2-1325 M2-1331 M2-1333 M2-1334	● Error message : Paper jam inside of machine.

● Symptom / Cause :

- At warm up, the Fuser In/Out sensor has detected the paper.

- The paper has not reached to the Fuser In/Out sensor within a regular time after passing the registration sensor.

● Troubleshooting method :

1. Open the side door. Remove the jammed paper.
   Close the side door. After warm up, if same jam occurs, check the following.

2. If there is any obstacles between the tray1 feed roller and the regi roller, remove it.

3. If the 2nd transfer roller or assembly is damaged, replace it.

4. If the problem persists, separate the side unit from set. And check the following.

5. If Cam, lever, spring of the 2nd transfer roller engage device are damaged, replace them.

6. If the actuator-fuser out, guide-face up exit are damaged, replace them.

7. Enter the diagnostic mode, and execute the fuser out sensor test.
   Fix the actuator and be the paper at sensor. If "Without paper" message is displayed, replace the sensor.

8. Check if the fuser out sensor connector is connected properly. Reconnect the connector.

9. Replace the Joint PBA of the side unit.

10. Replace the harness of the side unit.

11. Check if the connector of the engine controller is connected properly. Reconnect the connector.

12. Replace the engine controller PBA.

● Replacement part
JC31-00132A : MOTOR STEP (Pick up motor)
JC92-02302A : PBA-ENGINE (SCX-8030ND)
JC92-02221A : PBA-ENGINE (SCX-8040ND)

● Code : M2-2111 M2-2113 M2-2114	● Error message : Paper jam at the top of duplex path.

● **Symptom / Cause :**

-The paper has not reached to the duplex jam 1 sensor within normal time after passing the duplex sensor entrance section.

-When opening and closing the side door, the paper jam has occurred at duplex jam 1 sensor.

● **Troubleshooting method :**

1. Open the side door. Remove the jammed paper.
   Close the side door. After warm up, if same jam occurs, check the following.

2. Check if the gate on duplex path of the side unit is operated properly. When you lift the gate and put
   down, if it doesn't come down automatically, replace or reassemble it.

3. If there is any obstacles on duplex path, remove it.

4. If the feed roller is broken away, reassemble it.

5. Make the duplex 1 jam sensor be pushed by pushing duplex gate and pulling down the timing belt.
   Close the side door.
   Enter the diagnostic mode, and execute the duplex 1 jam sensor test.
   Be the paper is at sensor. If "Without paper" message is displayed, replace the sensor or the actuator.

6. Enter the diagnostic mode, execute the duplex clutch test.
   If there is no operation sound, reconnect the connector or replace the clutch.

7. Enter the diagnostic mode, execute the MP motor test.
   If there is no operation sound, reconnect the connector or replace the clutch.

8. Enter the diagnostic mode, execute the duplex solenoid test.
   If there is no operation sound, reconnect the solenoid connector or replace the solenoid.

9. If the solenoid works but paper folded jam occurs, check the return spring and link. Reassemble or
   replace it. For this, you have to remove the Cover-PCB of the side unit.

10. Check if the Joint PBA connector is connected properly. If there is any problem, reconnect the
    connector or replace the Joint PBA.

● **Replacement part**
- JC92-02233A : SIDE JOINT

● Code : M2-2213 M2-2215 M2-2216	● Error message : Paper jam at the inside of duplex path.

● **Symptom / Cause :**

-The paper has not reached the duplex jam 2 sensor within a regular time after passing the duplex jam 1 sensor.
- When opening and closing the side door, the paper jam has occurred at duplex jam 2 sensor.

● **Troubleshooting method :**

1. Open the side door. Remove the jammed paper.
   Close the side door. After warm up, if same jam occurs, check the following.

2. If there is any obstacles on duplex path, remove it.

3. If the feed roller is broken away, reassemble it.

4. Make the duplex 2 jam sensor be pushed by pushing duplex gate and pulling down the timing belt.
   Close the side door.
   Enter the diagnostic mode, and execute the duplex 2 jam sensor test.
   Be the paper at sensor. If "Without paper" message is displayed, replace the sensor or the actuator.

5. Check if the Joint PBA connector is connected properly. If there is any problem, reconnect the connector
   or replace the Joint PBA.

● **Replacement part**

- JC92-02233A : SIDE JOINT

● Code : M2-2411 M2-2413 M2-2414	● Error message : Paper jam at the return of duplex path.

● Symptom / Cause :

- The paper has not reached the return sensor within normal time after passing the fuser out sensor.
- When opening and closing the side door, the paper jam has occurred at jam 1 sensor.

● Troubleshooting method :

1. Open the side door. Remove the jammed paper.
   Close the side door. After warm up, if same jam occurs, check the following.

2. If the idle roller of the exit unit is damaged or not assembled, reassemble it properly.

3. If there is any obstacles on return path of the exit unit, remove it.

4. Enter the diagnostic mode, and execute the return sensor test.
   Be the paper at sensor. If "Without paper" message is displayed, replace the reflect type sensor or the actuator.

5. Close the side door. Enter the diagnostic mode, execute the exit solenoid on/off of the actuator test.
   If there is no operation sound, reconnect or replace the solenoid connector.

6. Check if the return gate of the exit unit is assembled with torsion spring on the rear of set properly.
   Reassemble or replace the spring. (Solenoid spring is the same)

7. Reconnect the exit unit wall connector and close the side door.

8. If the problem persists, disassemble the exit unit and check the following.
   If any part is damaged, replace it.
   A. Check if the gate return is damaged or deformed.
   B. Check if the reflect type sensor connector is connected properly.

9. Check if the exit connector on engine controller. Reconnect it.

10. Replace the engine controller PBA.

● Replacement part

JC90-00967A : EXIT

● **Code :**	● **Error message :**
M3-1211	Paper jam in exit area.
M3-1213	Paper jam in exit area.
M3-1214	Paper jam in exit area.
M3-1411	Paper jam in exit area.
M3-1413	Paper jam in exit area.
M3-1414	Paper jam in exit area.
M3-1510	Paper jam in exit area or finisher bridge.

● **Symptom / Cause :**

- The paper has not reached the exit sensor or inner tray exit sensor within normal time after passing the fuser out sensor.

- When opening and closing the side door, the paper jam has occurred at exit sensor or inner tray exit sensor..

● **Troubleshooting method :**

1. Open the side door. And remove the jammed paper.
   Close the side door. After warm up, if same jam occurs, check the following.

2. If the idle roller of the exit unit is damaged or not assembled, reassemble it properly.

3. If there is any obstacles on paper path of the exit unit, remove it.

4. Enter the diagnostic mode, and execute the exit sensor test.
   Be the paper at sensor. If "Without paper" message is displayed, replace the sensor.

5. Check if the return gate of the exit unit is assembled with torsion spring on the rear of set properly.
   Reassemble or replace the spring. (Solenoid spring is the same)

6. Reconnect the exit unit wall connector and close the side door.

7. If the problem persists, disassemble the exit unit and check the following.
   If any part is damaged, replace it.
   A. Check if the gate return is damaged or deformed.
   B. Check if the idle roller, holder in the exit unit is damaged.
   C. Check if the actuator exit sensor is damaged.
   D. Check if the photo interrupter is damaged or the connector is connected properly.

8. Check if the exit connector on engine controller. Reconnect it.

9. Replace the engine controller PBA.

● **Replacement part**
JC90-00967A : EXIT

● Code : **M3-2230** **M3-2430**	● Error message : Output tray (face down) is full. Remove printed media. Output tray (inner) is full. Remove printed media.

● **Symptom / Cause :**

Too much paper in output bin tray (paper out put section)
- The bin full sensor actuator or sensor is defective.

● **Troubleshooting method :**

1. Remove the exit unit from the set. And replace the face down antistatic brush.

2. Enter the diagnostic mode, and execute the face down bin full sensor test.
   When lifting the bin full actuator, if "without paper" is displayed, replace the photo interrupter or reconnect the connector.

3. If the photo interrupter is broken away from the exit unit, remove the exit unit and reassemble the photo interrupter.

4. Check if the photo interrupter connector, junction connector are connected properly.
   If the connector is unplugged, remove exit unit and reconnect the connector.

5. Check if the regi connector on the engine controller is connected properly.
   Reconnect it.

6. Replace the engine controller PBA.

● **Replacement part**

JC90-00967A ∶ EXIT
JC92-02302A ∶ PBA-ENGINE (SCX-8030ND)
JC92-02221A ∶ PBA-ENGINE (SCX-8040ND)

● Code : **S1-1113** **S1-1114**	● **Category : Video controller** Video System Failure #S1-1113 : Turn off then on. Video System Failure #S1-1114 : Turn off then on.

● **Symptom / Cause :**

The system has some problems due to CPU overheating.

● **Troubleshooting method :**

Check that system is working properly after replacing the video board.

CAUTION
When replacing the Video board, you must insert the MSOK and Memory on the new video PBA.

● **Replacement part**

JC92-02218A : PBA-MAIN

● Code : **S1-1213** **S1-1214**	● Error message : Video System Failure #S1-1213 : Turn off then on. Video System Failure #S1-1214 : Turn off then on.

● Symptom / Cause :

The error has occurred when you use Security device.
TPM chip operation error has occurred.

● Troubleshooting method :

1. Did you replace the HDD/Video board?
   Yes : Update the firmware for the new board.
        (Refer to chapter5. Firmware update)

2. Does the problem occur after updating the firmware?
   Yes :
        A. Print the configuration report and check the firmware version.
        B. If all software versions are not normal, update the firmware again.
        C. If the problem persists, replace the defective device. (HDD / Video board)

3. If the problem persists, replace the Video board.

CAUTION
When replacing the Video board, you must insert the MSOK and Memory on the new video PBA.

● Replacement part

JC92-02218A : PBA-MAIN

● Code : S1-1313	● Error message : The clock became initial time. Set a time again.

● **Symptom / Cause :**

Saved time is invalid

● **Troubleshooting method :**

1. Set up the time and reboot the MFP. Is the setting time stored?
   Yes : Status is normal.

2. Check if the battery is normal.
   A. Remove the rear cover.
   B. Check if the power of battery on Video board is 3.3V.
   C. If the battery is dead, replace it.

3. If the problem persists, replace the Video board.

CAUTION
When replacing the Video board, you must insert the MSOK and Memory on the new video PBA.

● **Replacement part**

4301-001042 : BATTERY-LI
JC92-02218A : PBA-MAIN

● Code : **S1-1411**	● **Error message :** Video System Failure #S1-1411 : Turn off then on.

● Symptom / Cause :

Communication error between Main CPU and Video process chip on video board.

● Troubleshooting method :

1. Did you replace the HDD / Video board?
   Yes : Update the firmware for the new board.
        (Refer to chapter 5. Firmware update)

2. Does the problem occur after updating the firmware?
   Yes :
        A. Print the configuration report and check the firmware version.
        B. If all software versions are not normal, update the firmware again.
        C. If the problem persists, replace the defective device. (HDD / Video board)

3. Replace the Video board.

CAUTION
When replacing the Video board, you must insert the MSOK and Memory on the new video PBA.

● Replacement part

JC92-02218A : PBA-MAIN

● Code : **S1-1413**	● Error message : Video System Failure #S1-1413 : Turn off then on.

● Symptom / Cause :

Printed image has a defect.

● Troubleshooting method :

1. When printing an engine test pattern, there is a image defect on page.
   Yes : Replace the engine board.

2. Check the connection between Engine board and Video board.
   Reconnect or replace the harness.

3. Did you replace the HDD / Video board?
   Yes : Update the firmware for the new board.
        (Refer to chapter 5. Firmware update)

4. Does the problem occur after updating the firmware?
   Yes :
      A. Print the configuration report and check the firmware version.
      B. If all software versions are not normal, update the firmware again.
      C. If the problem persists, replace the defective device. (HDD / Video board)

5. Replace the Video board.

CAUTION
When replacing the Video board, you must insert the MSOK and Memory on the new video PBA.
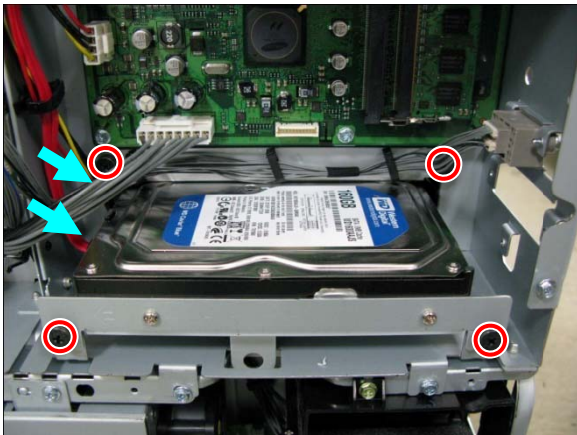
● Replacement part

JC92-02218A : PBA-MAIN
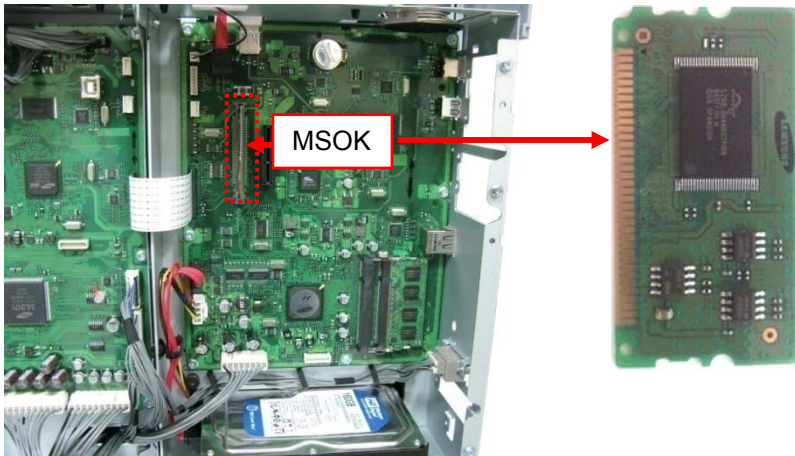
● Code : **S1-2111**	● **Error message :** Video System Failure: #S1-2111. Turn off then on.

● **Symptom / Cause :**

Memory failure on video board.

● **Troubleshooting method :**

1. Reinstall DIMM module

2. Replace DIMM Module

3. Replace the video board.

CAUTION
When replacing the Video board, you must insert the MSOK and Memory on the new video PBA.

● **Replacement part**

JC92-02087C : PBA-RAM DIMM
JC92-02218A : PBA-MAIN
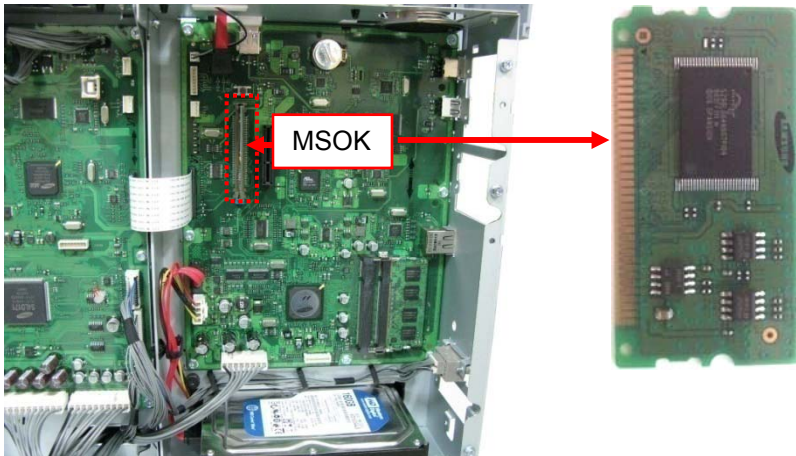
● Code : S1-2411 S1-2421 S1-2422	● Error message : HDD System Failure #S1-2411 : Turn off then on. HDD System Failure #S1-2421 : Turn off then on. HDD System Failure #S1-2422 : Turn off then on.

● **Symptom / Cause :**

HDD is operating but it has some problems. HDD error will occur within 24 hours.

● **Troubleshooting method :**

1. Replace the HDD.

2. Format the HDD.

NOTE
For further information, refer to chapter 9. System recovery.

● **Replacement part**

JC59-00031A : HDD

● Code : **S1-2433** **S1-2443** **S1-2444** **S1-2445** **S1-2446** **S1-2447** **S1-2448** **S1-2449**	● Error message : HDD System Failure # S1-2433 : Call for service. HDD System Failure # S1-2443 : Call for service. HDD System Failure # S1-2444 : Call for service. HDD System Failure # S1-2445 : Call for service. HDD System Failure # S1-2446 : Call for service. HDD System Failure # S1-2447 : Call for service. HDD System Failure # S1-2448 : Call for service. HDD System Failure # S1-2449 : Call for service.

● **Symptom / Cause :**

S1-2433 : HDD ROOT partition is full.

S1-2443 : HDD ROOT partition is corrupted.

S1-2444 : HDD SYS partition is corrupted.

S1-2445 : HDD DOC partition is corrupted.

S1-2446 : HDD SECURE partition is corrupted

S1-2447 : HDD DOC SPOOL partition is corrupted

S1-2448 : HDD DOC SWAP partition is corrupted

S1-2449 : HDD DOC PRINT partition is corrupted

● **Troubleshooting method :**

1.   Select the system recovery menu. Execute the hard disk format /Firmware re-installation.

   Note – Before starting format, back up the data by using the User Data Management in service mode.

2.   If the problem persists, replace the hard disk drive with new one.

● **Replacement part**

 - JC59-00031A : HDD

● Code : **S1-2434** **S1-2435** **S1-2436** **S1-2437** **S1-2438** **S1-2439**	● Error message : HDD is almost full_1. Check user's guide. HDD is almost full_2. Check user's guide. HDD is almost full_3. Check user's guide. HDD is almost full_4. Check user's guide. HDD is almost full_5. Check user's guide. HDD is almost full_6. Check user's guide.

● **Symptom / Cause :**

S1-2434 : HDD SYS partition is full.

S1-2435 : HDD DOC partition is full.

S1-2436 : HDD SECURE partition is full.

S1-2437 : HDD DOC SPOOL partition is full.

S1-2438 : HDD DOC SWAP partition is full.

S1-2439 : HDD DOC PRINT partition is full.

● **Troubleshooting method :**

Memory is almost full. Please remove following data :

S1-2434 : Addresses in Address book / User data in User profile

S1-2435 : Documents in Document box / Jobs in Secure job list / Fonts / Forms

S1-2436 : System Logs

Memory is almost full. Please print or remove pending print jobs and received fax jobs.

S1-2437/3438/3439 : Printing Error / No Paper in Tray

● **Replacement part**

 - JC59-00031A : HDD

● Code : **S1-2510**	● **Error message :** MSOK System Failure #S1-2510 : Turn off then on.

● **Symptom / Cause :**

Communication error between data storage device of MSOK and Video board.

● **Troubleshooting method :**

1. Is the MSOK installed properly?
   No : Install the MSOK properly.

MSOK

2. Is there a issue related to this problem on latest firmware list?
    Yes : Update the latest firmware.

3. If the problem persists, replace the Video board.

CAUTION
When replacing the Video board, you must insert the MSOK and Memory on the new video PBA.

● **Replacement part**

JC92-02218A : PBA-MAIN

● Code : S1-2511	● Error message : MSOK System Failure #S1-2511 : Turn off then on.

● Symptom / Cause :

Communication error between EEPROM and Video board.

● Troubleshooting method :

1. Is the MSOK installed properly?
   No : Install the MSOK properly.

2. If the problem persists, replace the Video board.

CAUTION
When replacing the Video board, you must insert the MSOK and Memory on the new video PBA.

● Replacement part

JC92-02218A : PBA-MAIN

● Code : **S1-3110**	● **Error message :** Video System Failure #S1-3110: Turn device off then on. Contact to service if the problem persists.

● **Symptom / Cause :**

Video System is not responding over 3 minutes.

● **Troubleshooting method :**

1. Turn device off then change the USB cable between UI board and Video System.

2. Turn it on again.

3. Change the HDD if the problem is persists.

4. Install the f/w in recovery menu.

5. Turn it on again.

● **Replacement part**

 - JC59-00031A : HDD

● Code : **S1-4111**	● **Error message :** Video System Failure #S1-4111 : Turn off then on.

● Symptom / Cause :

There is no response from network chip. Network can not be connected.

● Troubleshooting method :

1. When connecting the network cable, is the LED turning on?
   Yes : Reboot the MFP and check it again.

2. Replace the Video board.

CAUTION
When replacing the Video board, you must insert the MSOK and Memory on the new video PBA.

● Replacement part

JC92-02218A : PBA-MAIN

● Code : **S1-4311**	● Error message : Video System Failure #S1-4311 : Turn off then on.

● Symptom / Cause :
Communication error between Engine board and Video board.
Hardware defect , Signal quality problem between PC and Printer , USB port defect.

● Troubleshooting method :

1. Check if the cable between printer and PC is connected properly. Reconnect the cable.
2. Check if the PC is working properly. Reboot the PC.
3. Check if the copier is working properly. Reboot the copier.
4. Select the following menu . (My Computer → Hardware → Device Manager → Universal Serial Bus Controller) Can you see "USB Printing Support" ?
    Yes :
        A. Check the 'USB Printing support' .
        B. When the cable is unplugged, USB printing support disappears?
          When the cable is reconnected, USB printing support appears?
    No :
        A. Can you see : Universal Host controller / Open host controller / Enhanced Host controller?
        B. Check the operation for another USB device.
        C. Check that USB in BIOS menu is enabled.
5. Check if the OS driver is installed correctly.
    Yes : Re-install the latest driver after checking the firmware version.
    No : Install the latest driver.
6. Is there a Hub between Printer and PC?
    Yes :
        A. Connect the cable directly without Hub.
        B. Connect the cable to another port of the Hub.
        C. Connect another USB device to the Hub port and check if it is working correctly.
        D. Remove all cables from the Hub and connect the printer cable only.
          Check if it is working correctly.
        E. If Hub power is not supplied, connect the power cord to the Hub.
7. Is using the USB extension cable or 5M cable?
    Yes : Connect the 2M cable to PC and Printer.
8. Is the USB cable connected to front port of PC?
    Yes : Connect the cable to rear port of PC.
9. Replace the cable.
10. Is the problem occurring after updating the firmware?
    Yes :
        A. Print the configuration report and check the firmware version.
        B. If all software versions are not normal, update the firmware again.
        C. If the problem persists, replace the defective device. (HDD / Video board / Engine board)
11. Replace the Video board.

● Replacement part
JC92-02218A : PBA-MAIN

● Code : S1-5221	● Error message :

● **Symptom / Cause :**

Communication error has occurred.

● **Troubleshooting method :**

1. Did you replace the HDD / Video board ?
   Yes : Update the firmware for the new board.

2. Does the problem occur after updating the firmware?
   Yes :
      A. Print the configuration report and check the firmware version.
      B. If all software versions are not normal, update the firmware again.
      C. If the problem persists, replace the defective device. (HDD / Video board)

3. Check the connection between HUB board and Video board.
   No : Reconnect or replace the cable.
   Yes : Replace the HUB board.

4. If the problem persists, replace the Video board.

● **Replacement part**

● Code : **S1-5321**	● **Error message :** Fax modem card is not installed. Install the card.

● **Symptom / Cause :**

The MFP could not detect the primary fax modem.

● **Troubleshooting method :**

1. Was the primary modem removed after installation?
   Yes : Select "primary modem device uninstall" on UI menu.

2. Did you replace the FCON card?
   Yes : Update the firmware for the new board.

3. Does the problem occur after updating the firmware?
   Yes :
      A. Print the configuration report and check the firmware version.
      B. If all software versions are not normal, update the firmware again.
      C. If the problem persists, replace the defective device. (HDD or Video board or FCON card)

4. Check the connection between primary modem card and Video board.
   Remove the primary modem card and re-install it.

5. Replace the primary modem card.

6. If the problem persists, replace the FCON card.

7. Replace the video card.

● **Replacement part**

-JC92-02148A : PBA-DUAL FAX CONTROL(FCON card)
-JC92-02218A : PBA-MAIN

● Code : **S1-5421**	● **Error message :** Second fax modem card is not installed. Install the card.

● **Symptom / Cause :**

The MFP could not detect the secondary fax modem.

● **Troubleshooting method :**

1. Was the secondary modem removed after installation?
   Yes : Select "secondary modem device uninstall" on UI menu.

2. Did you replace the FCON card?
   Yes : Update the firmware for the new board.

[FCON card]

3. Does the problem occurred after updating the firmware?
   Yes :
      A. Print the configuration report and check the firmware version.
      B. If all software versions are not normal, update the firmware again.
      C. If the problem persists, replace the defective device. (HDD or Video board or FCON card)

4. Check the connection between secondary modem card and Video board.
   Remove the secondary modem card and re-install it.

[Secondary modem card]

5. Replace the secondary modem card.

6. If the problem persists, replace the FCON card.

7. Replace the video card.

● **Replacement part**

- JC92-02250A : PBA-SECOND FAX CARD
- JC92-02148A : PBA-DUAL FAX CONTROL(FCON card)

● Code : **S1-5521**	● **Error message :** FDI device is not installed. Install the device.

● **Symptom / Cause :**
The MFP could not detect the FDI device

● **Troubleshooting method :**

1. Was the FDI device removed after installation?
   Yes : Select "FDI device uninstall" on UI menu.

2. Did you replace the HDD / Video board / FDI device?
   Yes : Update the firmware for the new board.

3. Does the problem occur after updating the firmware?
   Yes :
   A. Print the configuration report and check the firmware version.
   B. If all software versions are not normal, update the firmware again.
   C. If the problem persists, replace the defective device. (HDD or Video board or FDI device)

4. Check the connection between FDI device and Video board.
   Remove the FDI device and re-install it.

[FD I Device]

5. Replace the FDI device

6. If the problem persists, replace the Video board.

● **Replacement part**

- JC92-01616A : PBA SUB-FDI

● Code : S1-5621	● Error message : ICON device is not installed. Install the device.

● Symptom / Cause :

The MFP could not detect the secondary fax modem.

● Troubleshooting method :

1. Was the secondary modem removed after installation?
   Yes : Select "secondary modem device uninstall" on UI menu.

2. Did you replace the FCON card?
   Yes : Update the firmware for the new board.

[FCON card]

3. Does the problem occurred after updating the firmware?
   Yes :
       A. Print the configuration report and check the firmware version.
       B. If all software versions are not normal, update the firmware again.
       C. If the problem persists, replace the defective device. (HDD or Video board or FCON card)

4. Check the connection between secondary modem card and Video board.
   Remove the secondary modem card and re-install it.

[Secondary modem card]

5. Replace the secondary modem card.

6. If the problem persists, replace the FCON card.

7. Replace the video card.

● Replacement part

JC92-02250A : PBA-SECOND FAX CARD
JC92-02148A : PBA-DUAL FAX CONTROL(FCON card)
JC92-02218A : PBA-MAIN
JC59-00031A : HDD

● Code : **S2-1211**	● Error message : **Engine** System Failure: #S2-1211. Turn off then on.

● **Symptom / Cause :**

MICOM (SMPS), It can't recognize at initial booting time
Communication error with the power Micom chip or version information error.
The soft power button does not operate.

● **Troubleshooting method :**

Replace the engine board.

CAUTION
When replacing the engine board, you must insert the MSOK and Memory on new engine board.

● **Replacement part**

JC92-02302A : PBA-ENGINE (SCX-8030ND)
JC92-02221A : PBA-ENGINE (SCX-8040ND)

● Code : **S2-1511**	● Error message : Engine System Failure #S2-1511 : Turn off then on.

● **Symptom / Cause :**

LPEC3 chip is not recognized.
Copy/Print/Fax function can't be executed.

● **Troubleshooting method :**

Replace the engine board.

CAUTION
When replacing the engine board, you must insert the MSOK and Memory on new engine board.

● **Replacement part**

JC92-02302A : PBA-ENGINE (SCX-8030ND)
JC92-02221A : PBA-ENGINE (SCX-8040ND)

● Code : **S2-2211**	● **Error message :** #S2-2211 Call for service

● **Symptom / Cause :**

PPM information from the engine board is different from it in Flash.

● **Troubleshooting method :**

Replace the engine board.

CAUTION

When replacing the engine board, you must insert the MSOK and Memory on new engine board.
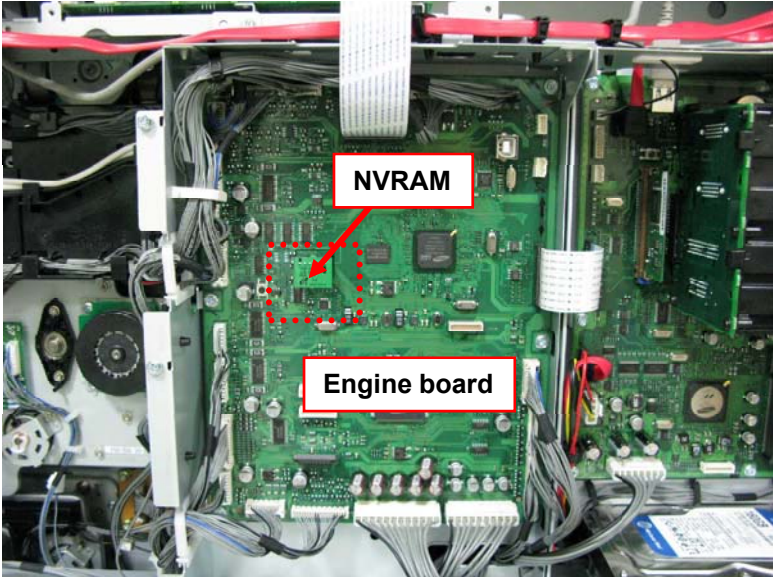
● **Replacement part**

JC92-02302A : PBA-ENGINE (SCX-8030ND)
JC92-02221A : PBA-ENGINE (SCX-8040ND)

● Code : **S2-2311**	● Error message : Engine System Failure: #S2-2311. Please open/close door.

● **Symptom / Cause :**

EEPROM memory on engine board does not operate.

● **Troubleshooting method :**

1. Reinstall the NVRAM PBA.
2. Replace the engine board.

CAUTION

When replacing the engine board, you must insert the MSOK and Memory on new engine board.

● **Replacement part**

- JC92-02302A : PBA-ENGINE (SCX-8030ND)
- JC92-02221A : PBA-ENGINE (SCX-8040ND)
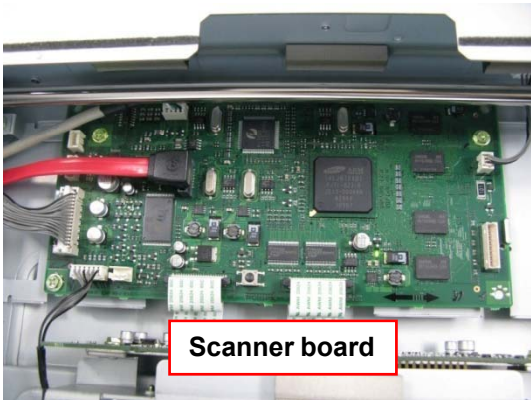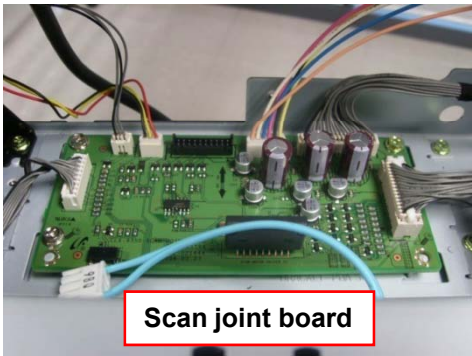
● Code : **S2-3110**	● Error message : Engine System Failure: #S2-3110. Please open/close door.

● Symptom / Cause :

Communication error between video system and engine system

● Troubleshooting method :

1. Check if the engine-video I/F FFC cable is connected properly.
2. If the FFC cable is defective, replace it.
3. Replace the engine board.

CAUTION

When replacing the engine board, you must insert the MSOK and Memory on new engine board.

● Replacement part

- JC92-02302A : PBA-ENGINE (SCX-8030ND)
- JC92-02221A : PBA-ENGINE (SCX-8040ND)
- JC39-01253A : FLAT CABLE
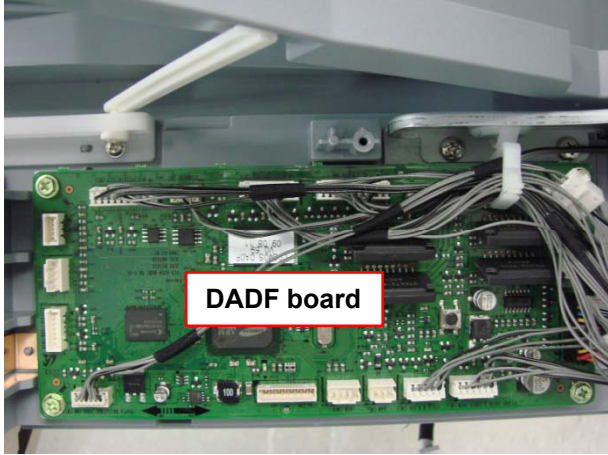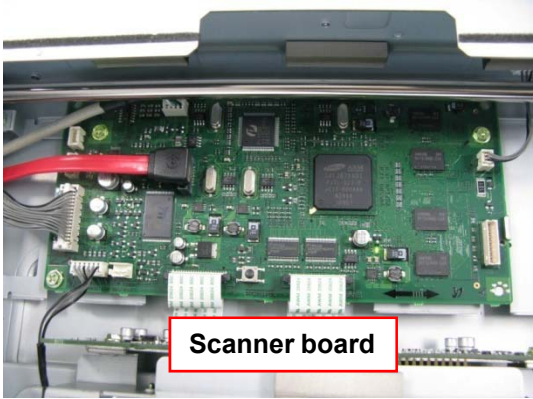
● Code :	● Error message :
S2-4210	Front door is open. Close it.
S2-4410	Right door is open. Close it.
S2-4A10	Feed door is opened. Close it.
S2-4B10	Option Feed Door is opened. Close it.

● Symptom / Cause :

Door is open.

● Troubleshooting method :

Close the corresponding door.

● Replacement part

● **Code :** **S2-4B10**	● **Error message :** Option Feed door is open. Close it.

● **Symptom / Cause :**

Option Feed door is open.

● **Troubleshooting method :**

1. Check if the option feed door is closed perfectly.

2. Check if the HCF/DCF connector is connected to the machine properly. Reconnect it.

3. If the problem persists, turn the machine off.
   Remove rear cover . Check if the HCF/DCF connector on engine board is connected properly.

● **Replacement part**

- JC92-02129A : PBA-ENGINE
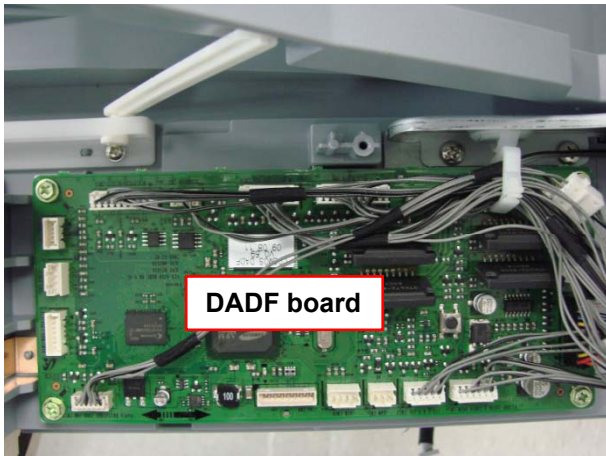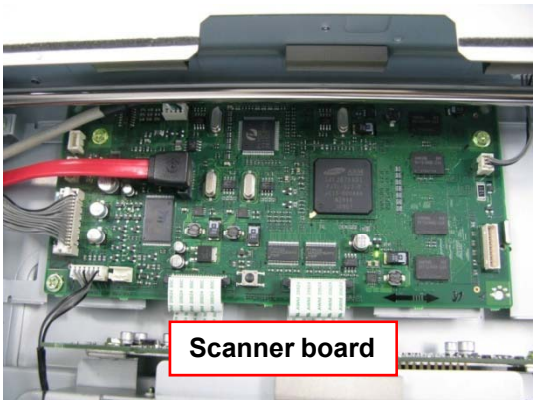
● Code : S3-3111	● Error message : Scan System Failure : #S3-3111. Turn off then on.

● Symptom / Cause :

The MFP could not execute the copy and scan functions. (Communication error with scanner board.)

● Troubleshooting method :

1. Is the MFP in lock up status?
   Reboot the MFP.

2. Is the power supplied to the scan board?
   Check the LED on the scan board.

3. Check the connection between Scanner and Main board.
   Is it connected properly?
   Yes : Replace the Scanner board.
   No : Reconnect the SATA cable between scanner and Main board.

4. If the message does not disappeared after replacing the scanner board, replace the Main board.

● Replacement part

JC92-02170A : PBA-SCAN
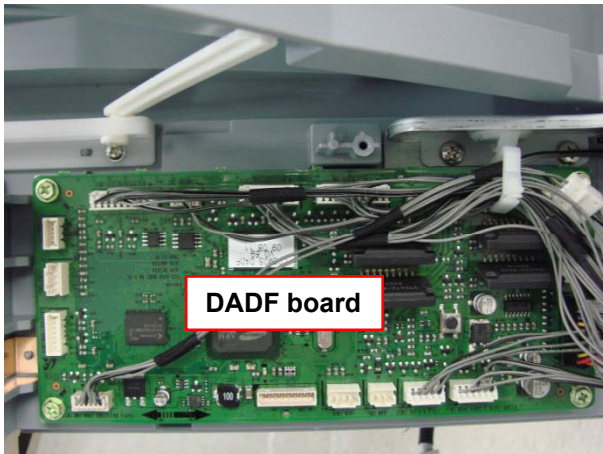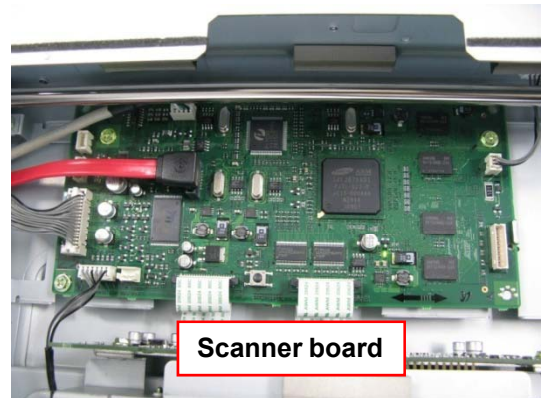
● Code : **S3-3121**	● Error message : Scanner locking screw is locked or another problem occurred

● **Symptom / Cause :**

The scanner is locked by the Handle fixer.

When moving the scanner, an abnormal home position checking of the sensor is occurred.

Home position could not be checked because of abnormal symptoms or stop of scan motor stall.

● **Troubleshooting method :**

1. Check if the scanner is locked by the handle fixer.
   Remove the handle fixer.

2. Check if the scanner is working properly when the cover open sensor lever is on/off.
   In case of normal status, when you push the cover open sensor, it moves to the left (home position direction). When you take off the cover open sensor, it moves to the right (paper detection position direction).

3. After turning power on, if the scan motor works properly, check the cover open sensor.
   A. Replace the cover open sensor board.
   B. Replace the sensor harness.

4. Check if the scan motor is working properly.
   If there is any problem, please follow directions below :
   A. Replace the motor.
   B. Replace the Scan joint board.
   C. Replace the harness between scan board and joint board.
   D. Replace the Scan board.

Scanner board

Scan joint board

5. Check if the home sensor is in the right position.
   Replace the Sensor.

● **Replacement part**

-JC92-02170A : PBA-SCAN

- JC92-02144A : PBA-SCAN JOINT

● Code : **S3-3211**	● Error message : Scan System Failure #S3-3211 : Turn off then on.

● **Symptom / Cause :**

At system booting, the MFP could not detect the DADF.

DADF could not detect the paper. (The green LED of DADF external is off.)

● **Troubleshooting method :**

1. Reboot the MFP.

   Check the initial operation of DADF (whether the motor is working or not)

2. Is power supplied to the DADF board?

   Check the LED on the DADF board.

3. Check the connection between DADF board and Scan board.

   Is it connected properly?

   Yes : Replace the DADF board.

DADF board

Scanner board

4. Is power supplied to the Scan board?

   Check the LED on the Scan board.

5. Check the connection between Scanner and Main board.

   If the connection is OK, replace the Scanner board.

● **Replacement part**

- JC92-02170A : PBA-SCAN
- JC92-02165A : PBA-ADF

● Code : **S3-3213**	● Error message : Scan System Failure #S3-3213 : Turn off then on.

● Symptom / Cause :

At system booting, the MFP could not detect the DADF.

DADF could not detect the paper. (The green LED of DADF external is off.)

● Troubleshooting method :

1. Reboot the MFP.
   Check the initial operation of DADF (whether the motor is working or not)

2. Is power supplied to the DADF board?
   Check the LED on the DADF board.

3. Check the connection between DADF board and Scan board.
   Is it connected properly?
   Yes : Replace the DADF board.

DADF board

Scanner board

4. Is power supplied to the Scan board?
   Check the LED on the Scan board.

5. Check the connection between Scanner and Main board.
   If the connection is OK, replace the Scanner board.

● Replacement part

- JC92-02170A : PBA-SCAN
- JC92-02165A : PBA-ADF

● Code : S3-3214	● Error message : Scan System Failure #S3-3214 : Turn off then on.

● Symptom / Cause :

At system booting, the MFP could not detect the DADF.

DADF could not detect the paper. (The green LED of DADF external is off.)

● Troubleshooting method :

1. Reboot the MFP.

   Check the initial operation of DADF (whether the motor is working or not)

2. Is power supplied to the DADF board?

   Check the LED on the DADF board.

3. Check the connection between DADF board and Scan board.

   Is it connected properly?

   Yes : Replace the DADF board.

DADF board

Scanner board

4. Is power supplied to the Scan board?

   Check the LED on the Scan board.

5. Check the connection between Scanner and Main board.

   If the connection is OK, replace the Scanner board.

● Replacement part

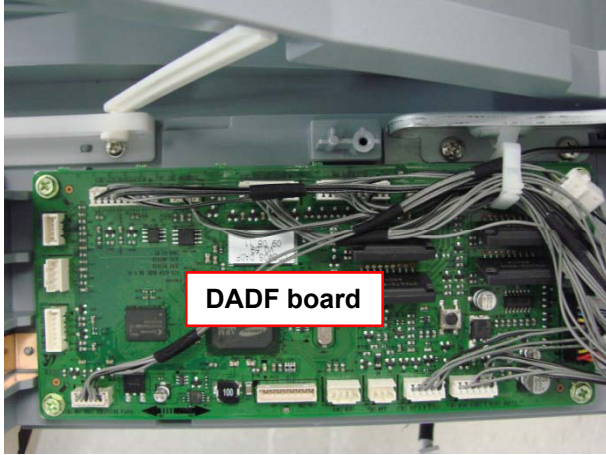- JC92-02170A : PBA-SCAN
- JC92-02165A : PBA-ADF

● Code : **S3-3215**	● Error message : Scan System Failure #S3-3215 : Turn off then on.

● Symptom / Cause :

At system booting, the MFP could not detect the DADF.

DADF could not detect the paper. (The green LED of DADF external is off.)

● Troubleshooting method :

1. Reboot the MFP.

   Check the initial operation of DADF (whether the motor is working or not)

2. Is power supplied to the DADF board?

   Check the LED on the DADF board.

3. Check the connection between DADF board and Scan board.

   Is it connected properly?

   Yes : Replace the DADF board.

4. Is power supplied to the Scan board?

   Check the LED on the Scan board.

5. Check the connection between Scanner and Main board.

   If the connection is OK, replace the Scanner board.

● Replacement part

- JC92-02170A : PBA-SCAN
- JC92-02165A : PBA-ADF
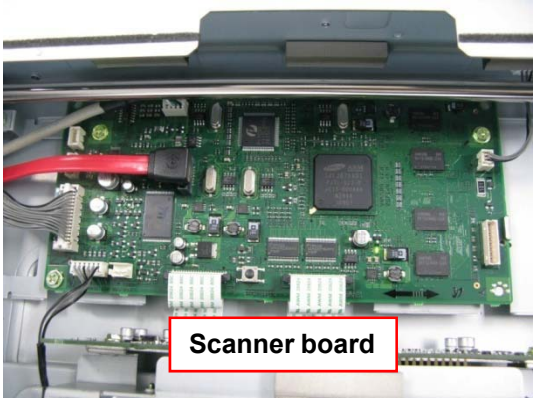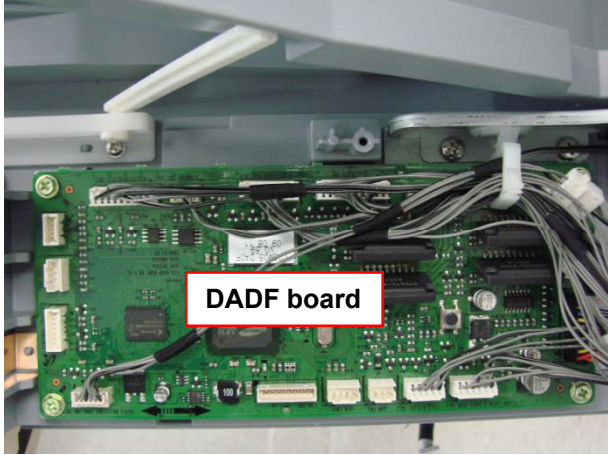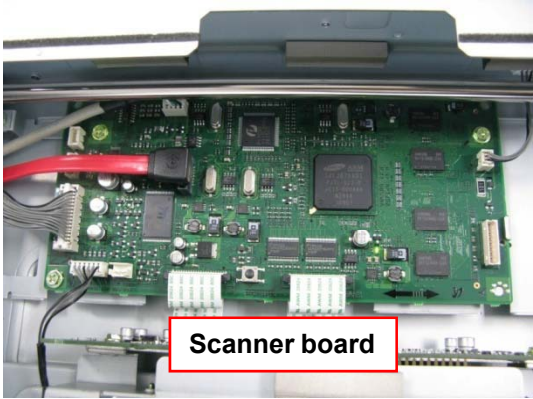
● Code : **S3-3216**	● Error message : Scan System Failure #S3-3216 : Turn off then on.

● Symptom / Cause :

At system booting, the MFP could not detect the DADF.

DADF could not detect the paper. (The green LED of DADF external is off.)

● Troubleshooting method :

1. Reboot the MFP.

   Check the initial operation of DADF (whether the motor is working or not)

2. Is power supplied to the DADF board?

   Check the LED on the DADF board.

3. Check the connection between DADF board and Scan board.

   Is it connected properly?

   Yes : Replace the DADF board.

DADF board

Scanner board

4. Is power supplied to the Scan board?

   Check the LED on the Scan board.

5. Check the connection between Scanner and Main board.

   If the connection is OK, replace the Scanner board.

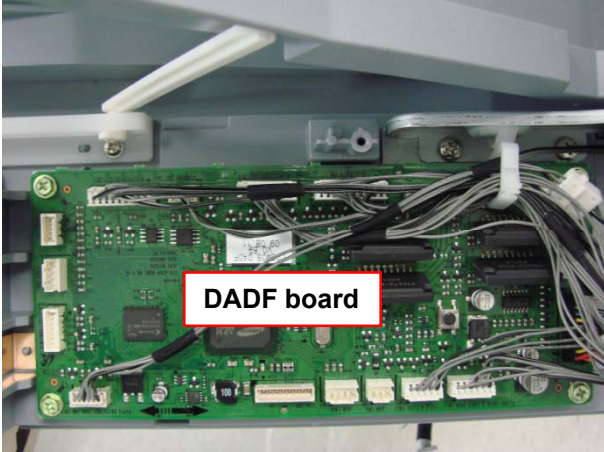**● Replacement part**

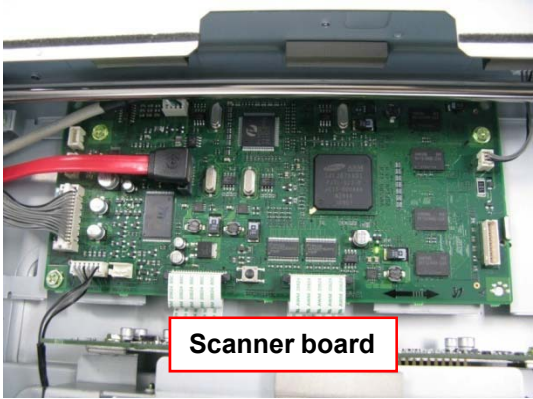- JC92-02170A : PBA-SCAN
- JC92-02165A : PBA-ADF

● Code : **S3-3217**	● Error message : Scan System Failure #S3-3217 : Turn off then on.

● Symptom / Cause :

At system booting, the MFP could not detect the DADF.

DADF could not detect the paper. (The green LED of DADF external is off.)

● Troubleshooting method :

1. Reboot the MFP.

   Check the initial operation of DADF (whether the motor is working or not)

2. Is power supplied to the DADF board?

   Check the LED on the DADF board.

3. Check the connection between DADF board and Scan board.

   Is it connected properly?

   Yes : Replace the DADF board.

DADF board

Scanner board

4. Is power supplied to the Scan board?

   Check the LED on the Scan board.

5. Check the connection between Scanner and Main board.

   If the connection is OK, replace the Scanner board.

● Replacement part

- JC92-02170A : PBA-SCAN
- JC92-02165A : PBA-ADF

● Code : **S4-3111**	● Error message : Fax System Failure #S4-3111 : Turn off then on.

● Symptom / Cause :

Communication error between FCON card and Video board has occurred.

● Troubleshooting method :

1. Is the FCON card removed after installation?
   Yes : Select "Fax device uninstall" on UI menu.

2. Did you replace the HDD / Video board / FCON card?
   Yes : Update the firmware for the new board.

[FCON card]

3. Does the problem occur after updating the firmware?
   Yes :
       A. Print the configuration report and check the firmware version.
       B. If all software versions are not normal, update the firmware again.
       C. If the problem persists, replace the defective device. (HDD / Video board / FCON Card)

4. Check the connection between FCON card and Video board.
   Remove the FCON card and re-install it.

5. Replace the FCON card.

6. If the problem persists, replace the Video board.

● Replacement part

- JC92-02148A : PBA-DUAL FAX CONTROL(FCON card)
- JC92-02218A : PBA-MAIN (Video board)

● Code : **S5-3111**	● Error message : UI System Failure #S5-3111 : Turn off then on.

● **Symptom / Cause :**

USB communication error between OPE and Main board of SET.

● **Troubleshooting method :**

1. Did you replace the HDD/Video/Engine board?
   Yes : Update the firmware for the new board. (Refer to chapter 5. Firmware upgrade)

2. Is the problem occurred after updating the firmware?
   Yes :
       A. Print the configuration report and check the firmware version.
       B. If all software version are not normal, update the firmware again.
       C. If the problem persists, replace the defective device. (HDD / Video board / Engine board)

3. Check that the Main FW is normal.
   A. If printing is unresponsive after executing network printing, go to No.5
   B. If printing is normal, check that you can connect Web UI.
   C. If you can connect Web UI, go to No. 4.
   D. If you can't connect Web UI, go to No. 5.

4. Check the connection between OPE and Video board.
   A. Replace the connector between Video board and USB Hub board.
   B. Replace the USB Hub board.
   C. Replace the OPE board.

5. Replace the Video board.

● **Replacement part**

JC92-02218A : PBA-MAIN (Video board)
JC92-02302A : PBA-ENGINE (SCX-8030ND)
JC92-02221A : PBA-ENGINE (SCX-8040ND)
JC59-00031A : HDD

● Code : S6-3122	● Error message : Network cable is disconnected. Check it.
● Symptom / Cause : Network cable is disconnected.	

● Troubleshooting method :

Connect the network cable properly.

● Replacement part

● Code : **U1-2113** **U1-2119**	● **Error message :** Fuser Unit Failure #U1-2113 : Turn off then on. Fuser Unit Failure #U1-2119 : Turn off then on.

● **Symptom / Cause :**

Fuser Unit is transferred Power. (Center)
Fuser Unit is transferred Power. (Side)

● **Troubleshooting method :**

1. Turn the machine off and turn it on again.

2. Check the following :

  A. Check the power voltage of the fuser unit. (110V, 220V)
  B. Check if the Heat lamp is broken.
  C. Check if the AC connection of Heat lamp is disconnected or contaminated.
  D. Check if the drawer latches have been correctly pulled back.
  E. Check if the thermostat is blown.
  F. Check if there is any jammed paper in fuser unit.
  G. Check if the resistance value of NC sensor is normal.
  H. Check if the power voltage is normal. (Is the voltage during the operation $\pm 10\%$ of the rated voltage?)

3. If the problem persists, replace the fuser unit.

4. If the problem persists after replacing the fuser unit, replace the engine board or fuser control board or SMPS.

● **Replacement part**

- JC91-00952A : FUSER (220V)
- JC91-00951A : FUSER (110V)
- JC44-00176A : SMPS

● Code : **U1-2115**	● Error message : Fuser Unit Failure #U1-2115 : Turn off then on.

● **Symptom / Cause :**

The toner on printed page is not fixed perfectly. (Fuser pressure error)
It is difficult to remove a jammed paper or paper tears easily.

● **Troubleshooting method :**

1. Turn the machine off and turn it on again.

2. When you open and close the side door, check if there is a sound of the fuser pressure motor.

3. Enter the diagnostic mode. Execute the fuser pressure motor test.

4. If the problem persists, check the following :

  A. Turn the machine off.
  B. Remove the fuser unit from the machine.
  C. Remove the Frame-fuser rear of the fuser unit.
  D. Check the connection of the fuser pressure motor.
  E. Rotate the warm gear located in the left of pressure motor.
     Check if the position of pressure roller moves and gears related to pressure rotates.
  F. Check if the fuser pressure motor is defective.

5. If the problem persists, replace the fuser unit.

● **Replacement part**

- JC91-00952A : FUSER (220V)
- JC91-00951A : FUSER (110V)

● Code : **U1-2131** **U1-2134**	● Error message : Fuser Unit Failure #U1-2131 : Turn off then on Fuser Unit Failure #U1-2134 : Turn off then on

● Symptom / Cause :

The Fuser(Center) is being diagnosed for Low Heat Error.
The Fuser(Side) is being diagnosed for Low Heat Error.

● Troubleshooting method :

1. Turn the machine off and turn it on again.

2. Check the following :

  A. Check the power voltage of the fuser unit. (110V, 220V)
  B. Check if the Heat lamp is broken.
  C. Check if the AC connection of Heat lamp is disconnected or contaminated.
  D. Check if the drawer latches have been correctly pulled back.
  E. Check if the thermostat is blown
  F. Check if there is any jammed paper in fuser unit.
  G. Check if the resistance value of NC sensor is normal.
  H. Check if the power voltage is normal. (Is the voltage during the operation $\pm$10% of the rated
     voltage?)

3. If the problem persists, replace the fuser unit.

4. If the problem persists after replacing the fuser unit, replace the engine board or fuser control
   board or SMPS.

● Replacement part

- JC91-00952A : FUSER (220V)
- JC91-00951A : FUSER (110V)

● **Code :** **U1-2132** **U1-2135**	● **Error message :** Fuser Unit Failure #U1-2132 : Turn off then on Fuser Unit Failure #U1-2135 : Turn off then on

● **Symptom / Cause :**

▶ U1-2132(Center), U1-2135 (Side)
1. FSA error
2. At warm up, the fuser temperature has not reached its normal temperature within the regular time.

● **Troubleshooting method :**

1. Turn the machine off and turn it on again.

2. Check the following :

  A. Check the power voltage of the fuser unit. (110V, 220V)
  B. Check if the Heat lamp is broken.
  C. Check if the AC connection of Heat lamp is disconnected or contaminated.
  D. Check if the drawer latches have been correctly pulled back.
  E. Check if the thermostat is blown
  F. Check if there is any jammed paper in fuser unit.
  G. Check if the resistance value of NC sensor is normal.
  H. Check if the power voltage is normal. (Is the voltage during the operation ±10% of the rated
     voltage?)

3. If the problem persists, replace the fuser unit.

4. If the problem persists after replacing the fuser unit, replace the engine board or fuser control
   board or SMPS.

● **Replacement part**

- JC91-00952A : FUSER (220V)
- JC91-00951A : FUSER (110V)

● Code : **U1-2141** **U1-2142**	● Error message : Fuser Unit Failure #U1-2141 : Turn off then on Fuser Unit Failure #U1-2142 : Turn off then on

● **Symptom / Cause :**

The Fuser(Center) is being diagnosed for Over Heat Error.
The Fuser(Side) is being diagnosed for Over Heat Error.

● **Troubleshooting method :**

1. Turn the machine off and turn it on again.

2. Check the following :

 A. Check the power voltage of the fuser unit. (110V, 220V)
 B. Check if there is any jammed paper in fuser unit.
 C. Check if the resistance value of NC sensor is normal.
 D. Check if the power voltage is normal. (Is the voltage during the operation $\pm$10% of the rated
   voltage?)

3. If the problem persists, replace the fuser unit.

4. If the problem persists after replacing the fuser unit, replace the engine board or SMPS.

● **Replacement part**

- JC91-00952A : FUSER (220V)
- JC91-00951A : FUSER (110V)

● Code : **U2-1111** **U2-1114**	● **Error message :** LSU Unit Failure #U2-1111 : Turn off then on. LSU Unit Failure #U2-1114 : Turn off then on.

● **Symptom / Cause :**

LSU Lready Error has occurred.
LSU is not operated but Lready signal is detected.

● **Troubleshooting method :**

1. Turn the machine on and turn it off again.
   Has the error message disappeared?

2. If the problem persists, check the following :
   A. Check if the Motor connector on Joint PBA of the LSU unit is connected correctly.
   B. Remove the LSU unit from the machine. Check if the LSU Motor connector
      is connected correctly.
   C. Enter the diagnostic mode. Execute LD test. Check if L-Ready occurs.

3. If the problem persists, replace the LSU unit.

Caution
Never remove the LD PBA.
Never remove the LSU cover.

● **Replacement part**

JC97-03700A : LSU

● Code : **U2-1113**	● Error message : LSU Unit Failure #U2-1113 : Turn off then on.

● Symptom / Cause :

LSU Hsync Error has occurred.
1. LD is broken.
2. LD harness is not connected correctly.

● Troubleshooting method :

1. Turn the machine on and turn it off again.
   Has the error message disappeared?

2. If the problem persists, check the following :
   A. Check if the Motor connector on Joint PBA of the LSU unit is connected correctly.
   B. Remove the LSU unit from the machine. Check if the LSU Motor connector
       is connected correctly.
   C. Enter the diagnostic mode. Execute LD test. Check if Hsync occurs.

3. If the problem persists, replace the LSU unit.

Caution
Never remove the LD PBA.
Never remove the LSU cover.

● Replacement part

JC97-03700A : LSU

● Code : **U2-6111**	● **Error message :** LSU Unit Failure #U2-6111 : Turn off then on.

● Symptom / Cause :

Step motor is not working.

● Troubleshooting method :

1. Open the side cover and close it.

2. Turn the machine on and turn it off again.

3. Enter the diagnostic mode. Execute shutter motor test. Is it working?

4. If the problem persists, check the following :
  A. Remove the LSU unit. Check if the shutter is moving manually.
  B. Enter the diagnostic mode. Execute shutter motor test. Is it working?
  C. Check the sounds carefully from LSU Unit.
    if sounds are smoothie.
     - No Problem in Motor Unit
    if sounds have some noise
     - Motor Unit or sliding have problem.

5. If the problem persists, replace the shutter motor assembly.

● Replacement part

● Code :	● Error message :
U3-3111	Original paper jam in front of scanner
U3-3113	Original paper jam in front of scanner
U3-3114	Original paper jam in front of scanner

● **Symptom / Cause :**

During a DADF job, the document on stacker does not feed or doesn't reach the feed sensor within a normal time.

● **Troubleshooting method :**

1. Check if the DADF pick up motor is working.

2. Open the DADF cover.

3. Remove the document on the Guide-Pick up Assy.

4. Check if there is any contamination on surface of pick-up / ADF / Retard roller.
   Clean or replace the contaminated roller.

5. Check if the one-way bearing is assembled correctly.
   The letter should be shown in external.

6. Find some obstruction in feeding path.

7. Close the DADF cover.

● **Replacement part**

- JC97-03779A : DADF Pick up/ ADF Roller
- JC97-03630A : DADF Retard Roller

● Code :	● Error message :
U3-3211	Original paper jam in front of scanner
U3-3213	Original paper jam in front of scanner
U3-3214	Original paper jam in front of scanner

● **Symptom / Cause :**

During a DADF job, the document doesn't reach the simplex regi sensor in normal time.

● **Troubleshooting method :**

1. Check if the DADF pick up motor is working.

2. Open the DADF cover.

3. Remove the document on the Guide-Pick up Assy.

4. Check if there is any contamination on surface of pick-up / ADF / Retard roller.
   Clean or replace the contaminated roller.

5. Check if the one-way bearing is assembled correctly.
   The letter should be shown in external.

6. Find some obstruction in feeding path.

7. Close the DADF cover.

● **Replacement**

- JC97-03779A : DADF Pick up/ ADF Roller
- JC97-03630A : DADF Retard Roller

● Code :	● Error message :
U3-3311	Original paper jam inside of scanner
U3-3313	Original paper jam inside of scanner
U3-3314	Original paper jam inside of scanner

● **Symptom / Cause :**

During a DADF job, the document doesn't reach the scan read sensor in normal time.

● **Troubleshooting method :**

1. Open the DADF cover.

2. Check if there is any contamination on surface of simplex regi roller.

3. Remove the document on the Guide-Pick up Assy.

4. Check if the simplex regi idle roller is working properly.

5. Find some obstruction in feeding path.

6. Close the DADF cover.

● **Replacement part**

● Code : **U3-3411** **U3-3413** **U3-3414**	● Error message : Original paper jam inside of scanner Original paper jam inside of scanner Original paper jam inside of scanner

● Symptom / Cause :

During a DADF job, the document doesn't reach the duplex regi sensor in normal time.

● Troubleshooting method :

1. Open the DADF cover.

2. Open the Guide-Pick up Assy.

3. Remove the document on duplex path.

4. Check if there is any contamination on surface of duplex reverse roller.

5. Check if the duplex reverse roller is working properly.

6. Find some obstruction in feeding path.

7. Close the Guide-Pick up Assy.

8. Close the DADF cover.

● Replacement part

● Code :	● Error message :
U3-3511	Original paper jam inside of scanner
U3-3513	Original paper jam inside of scanner
U3-3514	Original paper jam inside of scanner

● Symptom / Cause :

During a DADF job, the document doesn't reach the scan sensor in normal time after duplex scan.

● Troubleshooting method :

1. Open the DADF cover.

2. Open the Guide-Pick up Assy.

3. Check if there is any contamination on surface of duplex regi roller.

4. Remove the document on duplex path.

5. Check if the duplex regi roller is working properly.

6. Find some obstruction in feeding path.

7. Close the Guide-Pick up Assy.

8. Close the DADF cover.

● Replacement part

● Code :	● Error message :
U3-3611	Original paper jam in exit area of scanner
U3-3613	Original paper jam in exit area of scanner
U3-3614	Original paper jam in exit area of scanner

● Symptom / Cause :

During a DADF job, the document doesn't pass the exit turn sensor in normal time.

● Troubleshooting method :

1. If there is a document in the Feed Out Assy, open the Feed Out Assy. Pull and remove the jammed document.

2. Close the Feed Out Assy.

3. If there is a document in the Exit turn section, open the Cover-Exit tray and remove the jammed document.

4. Close the Cover-Exit Tray.

5. If there is a document between the Exit Turn and Exit roller, transfer the document by rotating the Knob. Remove the document.

● Replacement part

● Code : **U3-3711** **U3-3713** **U3-3714**	● Error message : Original paper jam in exit area of scanner Original paper jam in exit area of scanner Original paper jam in exit area of scanner

● Symptom / Cause :

During a DADF job, the document doesn't pass or reach the exit sensor in normal time.

● Troubleshooting method :

1. Open the Cover-Open.
2. Open the Stacker-TX Assy.
3. Pull and remove the document.
4. Close the Stacker-TX.
5. Check the Exit sensor
6. Close the Cover-Open.

● Replacement part

● Code : **U3-4210**	● **Error message :** Top door of scanner is open.
● Symptom / Cause : Top door of scanner is open.	
● Troubleshooting method : 1. Close the Top Cover of DADF. 2. Check that all DADF sensors are working properly. 3. Replace the Photo Sensor. 4. Check harness path from sensor to DADF PBA. 5. Replace the DADF PBA. 	
● Replacement part - JC92-02165A : PBA-ADF 	

● Code : **U3-4411**	● Error message : Pick Up Cam Error. ADF Cover open and close. Call for service if the problem persists.

● **Symptom / Cause :**

The pick up roller could not work after a scanning job.

● **Troubleshooting method :**

1. Check if the DADF pick up motor is working.

2. Open the DADF cover.

3. Remove the document on the Guide-Pick up Assy.

4. Check if there is any contaminated lamination on surface of pick-up / ADF / Retard roller.
   Clean or replace the roller.

5. Check if the one-way bearing is assembled correctly.
   The letter should be shown in external.

6. Find some obstruction in feeding path.

7. Close the DADF cover.

● **Replacement part**

- JC97-03779A : DADF Pick up/ ADF Roller
- JC97-03630A : DADF Retard Roller

7.3 Image quality problems and solutions

■ Print-Quality Problems Overview

Print-quality defects can be attributed to printer components, consumables, media, internal software, external software applications and environmental conditions. To successfully troubleshoot print-quality problems, as many variables as possible must be eliminated. The first step is to generate prints using printable pages embedded in the printer on laser paper. The paper should be from an unopened ream that has been acclimated to room temperature and you should ensure that genuine Samsung Toner is installed in the printer.

7.3.1 Vertical Lines

A. Typical faulty images
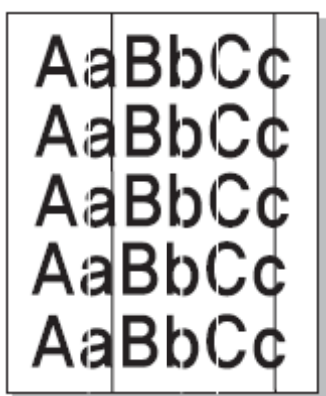
B. Troubleshooting procedure

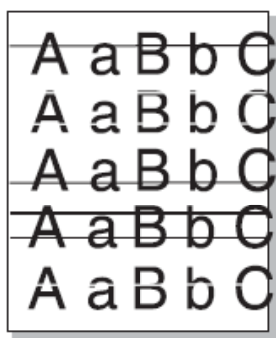| Step	Section	Check item	Result	Action
1	LSU	The surface of the LSU window is dirty.	Yes	Clean the LSU window.
2	Imaging unit	The surface of the OPC drum is scratched.	Yes	Change imaging unit.
3		Contact terminals make good connection between imaging unit and machine.	No	Clean contact terminals.
4		Developing bias contact terminal makes good connection.	No	Clean contact terminal and check terminal position.
5	Scanner	Original is damaged or dirty.	Yes	Change original.
6		Scanner glass white sheet is dirty.	Yes	Clean or replace the pad.
7		Original glass is dirty.	Yes	Wipe the surface clean with a soft cloth.
8		Mirror is dirty. Lamp is dirty. Reflectors are dirty.	Yes	Clean the contaminated part. **Caution** Fragile parts!
9		Remove the lens cover by undoing 2 screws. Check CCD lens surface against contamination or foreign objects.	Yes	Clean the contaminated part. **Caution** Fragile parts!

7.3.2 Horizontal Lines

A. Typical faulty images

B. Troubleshooting procedure

Step	Section	Check item	Result	Action
1	Image check	A white line or black in main scan direction is sharp.	Yes	Clean contact terminals.
2	Imaging unit	The surface of the OPC drum is scratched.	Yes	Change imaging unit.
3		Dirty on the outside.	Yes	Clean.
4		Contact terminals make good connection between each imaging unit and machine.	No	Clean contact terminals.
5		Developing bias contact terminal makes good connection.	No	Clean contact terminal and check terminal position.
6	LSU	The surface of the LSU window is dirty.	Yes	Clean the LSU.
7		The problem has been eliminated through the checks of steps up to 6.	No	Change LSU.
8	Scanner	Original is damaged or dirty.	Yes	Change original.
9		DADF pad is dirty.	Yes	Clean or replace the pad.
10		Original glass is dirty.	Yes	Wipe the surface clean with a soft cloth.
11		Remove lens cover by undoing 2 screws. Check CCD lens surface against contamination or foreign objects.	Yes	Clean the contaminated part. **Caution** Fragile parts!

7.3.3 White spot

A. Typical faulty images

B. Troubleshooting procedure

Step	Section	Check item	Result	Action
1	Image check	There are void areas at the front side or high density section.	Yes	1. Change paper to one just
2		There is void area at the rear side section.	Yes	unwrapped from its package.
				2. Print the image on recycled paper mode.
3	Imaging unit	Developing bias contact terminal makes good connection	No	Clean contact terminal and check terminal position.
4		The surface of the OPC drum is scratched or contaminated.	Yes	Change imaging unit.
5		Dirty on the outside.	Yes	Clean.
6	Toner cartridge	Foreign matter or caked toner in the toner cartridge.	Yes	Remove foreign matter.
7	Transfer roller unit	Transfer roller is dirty or scratched.	Yes	Change 2nd image transfer roller unit.
8	Paper path	There is foreign matter on paper path.	Yes	Remove foreign matter.
9	HV terminal	HV output is abnormal.	Yes	Change the HVPS board.
10	DADF	DADF pad is dirty.	Yes	Clean.
11	Original glass	Original glass is dirty.	Yes	Wipe the surface clean with a soft cloth.

7.3.4 Color or Black background

A. Typical faulty images

B. Troubleshooting procedure

Step	Section	Check item	Result	Action
1	Imaging unit	HV terminal of imaging unit is dirty.	Yes	Clean the terminal.
2		Dirty on the outside due to scattered toner	Yes	Replace imaging unit with new one
3	Original	Original is damaged or dirty.	Yes	Change original.
4	DADF	DADF does not lie flat.	Yes	Change DADF if it is deformed or hinges are broken.
5	Original glass	Original glass is dirty.	Yes	Wipe the surface clean with a soft cloth.
6	Shading sheet	Shading sheet Glass is dirty.	Yes	Wipe the surface clean Glass with a soft cloth
7	Mirror, lens, exposure lamp, and reflectors	Mirror is dirty.	Yes	Clean.
8		Lens is dirty.	Yes	Clean.
9		Exposure lamp is dirty.	Yes	Clean.
10		Reflectors are dirty.	Yes	Clean.
11	Basic screen quality/ density	The problem is eliminated when the image is produced in the manual exposure setting.	No	Try another exposure level in manual.
12		The problem has been eliminated through the checks of steps up to 10.	No	Scan the Chart and check the image quality again

7.3.5 Blurred image

A. Typical faulty images
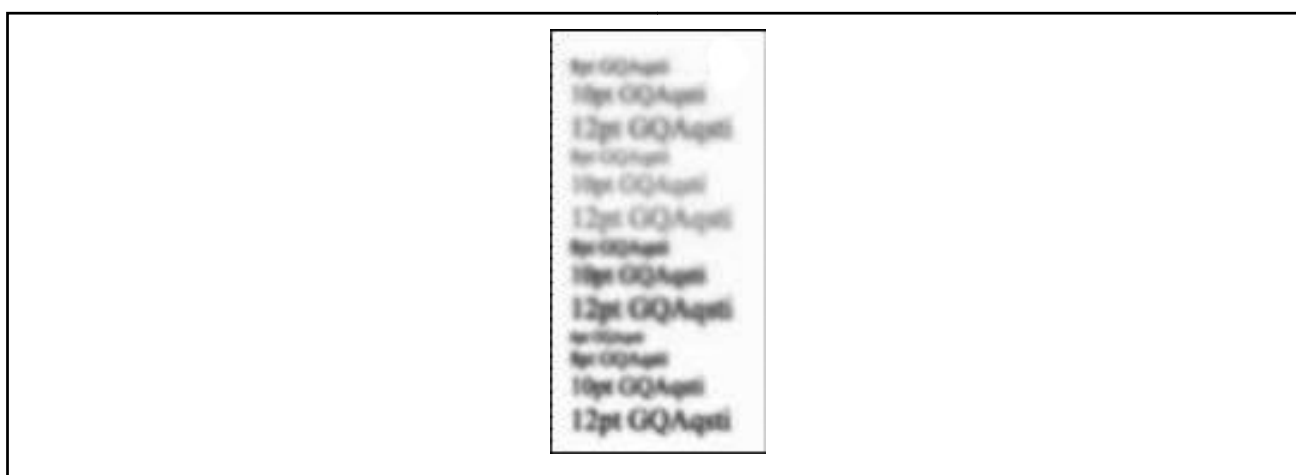
B. Troubleshooting procedure

Step	Section	Check item	Result	Action
1	Image check	There is Blurred area at the Front side section.	Yes	1.Change paper to one just unwrapped from its package.
2		There is Blurred area at the rear side section.	Yes	2. Print the image on Thin paper mode.
3	LSU	The surface of the LSU window is dirty.	Yes	Clean
4	Imaging unit	Dirty on the outside.	Yes	Clean
5		The problem has been eliminated through the checks of steps up to 4.	No	Change imaging unit. → Change LSU.
5	Scanner	Original does not lie flat.	Yes	Change original.
6		DADF does not lie flat.	Yes	Change DADF if it is deformed or hinges are broken. (Refer to 3.12 DADF unit)
7		Remove lens cover by undoing 2 screws. Check CCD lens surface against contamination or foreign objects.	Yes	Clean the contaminated part. **Caution** Fragile parts!

7.3.6 Uneven pitch and jitter image

A. Typical faulty images

Paper feeding direction ⟵
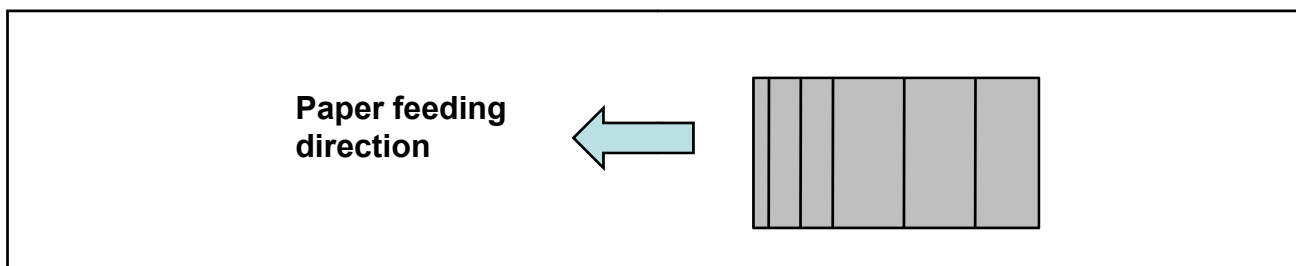
B. Troubleshooting procedure

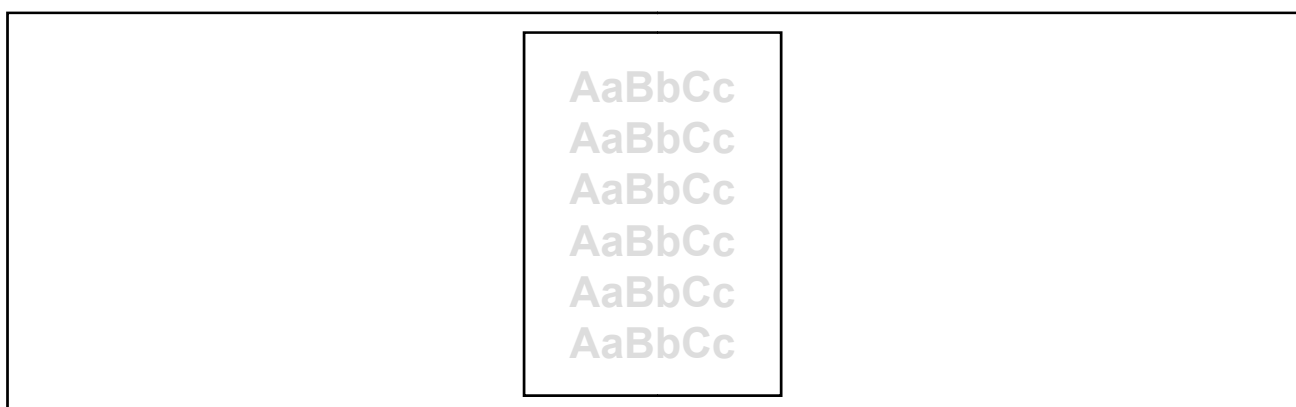| Step	Section	Check item	Result	Action
1	Test Printing	Print the halftone pattern. Check if the jitter has occurred.	Yes	Follow next steps.
2	Imaging unit	1.35mm or 2.0mm or 2.3mm or 2.7 mm periodic jitter has occurred.	Yes	Replace the imaging unit.
3	Main Drive Unit	0.77mm or 1.1mm periodic jitter has occurred.	Yes	Replace the Main Drive unit.
4	Laser Scanning Unit	0.508mm or 0.65mm periodic jitter has occurred.	Yes	Replace the Laser Scanning Unit (LSU).
5	Regi roll Gear	1.25 or 2.5mm periodic jitter has occurred.	Yes	Replace the Regi Roll Gear in main unit.
6	Imaging unit	94mm periodic jitter has occurred.	Yes	Replace the imaging unit.
7	Main Drive Unit	After replacing the imaging unit, 94 mm periodic jitter or band has occurred.	Yes	Replace the Main Drive unit.
8	Imaging unit	35mm or 62mm or 43mm periodic jitter or band has occurred.	Yes	Replace the imaging unit.
9	Main Drive Unit	After replacing the imaging unit, 35 mm periodic jitter or band has occurred.	Yes	Replace the Main Drive unit.
10	Transfer roller	55~56mm periodic band has occurred.	Yes	Replace the Transfer roller.

7.3.7 Skewed image

A. Typical faulty images
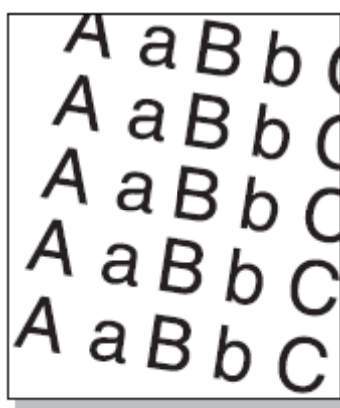
B. Troubleshooting procedure

Step	Section	Check item	Result	Action
1	Cassettes	Is the cassette properly installed?	No	Reinstall the drawer or LCF properly.
2		Is too much paper loaded in the cassettes?	No	Reduce paper to 550 sheets or less. (2500 sheets or less/stack for HCF)
3		Are the cassette side guides properly set?	No	Adjust the side guides.
4	Paper feed roller	Is the surface of paper feed roller dirty?	Yes	Clean the roller surface with alcohol, or replace the roller.
5	DADF	Is the DADF installed and adjusted properly?	No	Before ADF replacement perform mechanical ADF levelling steps) Reassembling DADF. Retest. If no better then replace ADF assy. Please include mechanical ADF levelling guide. After above refer to 7.3.14
6	Image Transfer Belt (ITB)	Is the transfer belt unit installed properly?	No	Reseat it.

7.3.8 Low image density

A. Typical faulty images

AaBbCc
AaBbCc
AaBbCc
AaBbCc
AaBbCc
AaBbCc

B. Troubleshooting procedure

Step	Section	Check item	Result	Action
1	Toner Cartridge	Toner is empty or toner exhaust section is blocked.	Yes	Change toner cartridge.
2	LSU	One of 2 beams is fail.	Yes	Change the LSU.
3	HVPS	The output from the HVPS is abnormal. The HVPS terminal is contaminated.	Yes	Clean the HVPS terminal or Change it.
3	Imaging Unit	Toner carriers and toner level is too low in imaging unit.	Yes	Check the high voltage terminal. Replace the imaging unit.
4	Toner supply device	Connectors are loose.	Yes	Reconnect.
5		Motor is defective.	Yes	Change the toner supply motor.

7.3.9 Blank copy , Black copy

A. Typical faulty images

Blank copy

Black copy
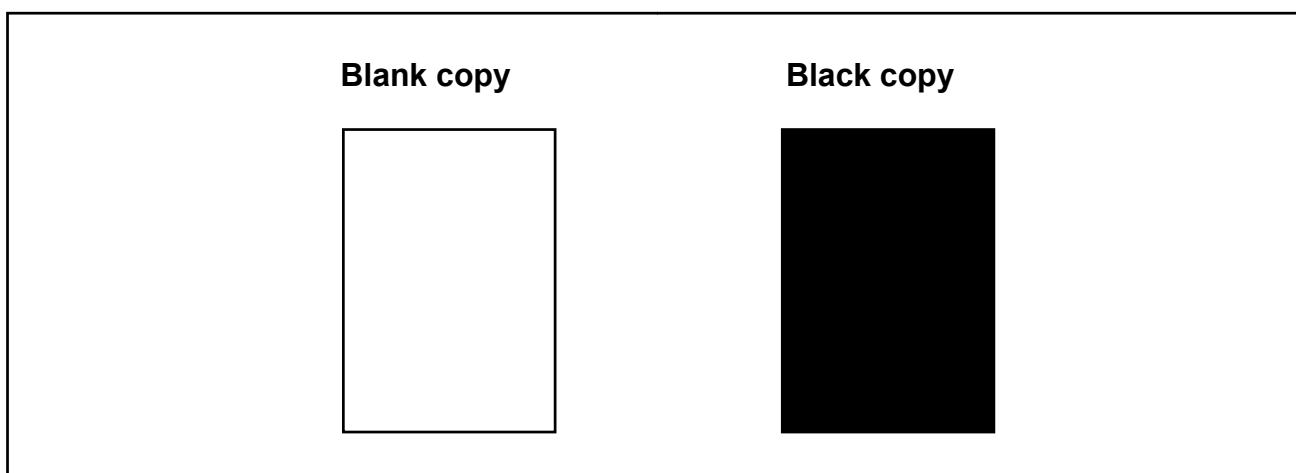
B. Troubleshooting procedure

Step	Section	Check item	Result	Action
1	Image check	A blank copy occurs.	Yes	Check LSU connector for proper connection.
		A black copy occurs	Yes	Check HVPS connector for proper connection, especially, Corona Charger and Grid Voltage
2	Imaging unit	Coupling of imaging unit drive mechanism is installed properly.	No	Check and correct drive transmitting coupling. Change imaging unit.
3		The OPC drum charge corona voltage contact of OPC drum ground contact of the imaging unit is connected properly.	No	Check, clean, or correct the contact.
4	High voltage unit	Connector is connected properly.	No	Reconnect.
5	Main controller	Connector is connected properly	No	Reconnect the cable between video control board and engine control board
6		The problem has been eliminated through the check of step 5.	No	Change high voltage unit. → Change printer control board → Change LSU.

Step	Section	Check item	Result	Action
7	Cable connecting scanner and printer	Connector is connected properly with no pins bent.	No	Reconnect.
8	Scanner	Connectors on the scanner board are connected properly.	No	Reconnect.
9		Connectors of the CCD unit are connected properly.	No	Reconnect.
10		The problem is eliminated as checked with the image on a test pattern produced.	No	Change I/F connection cable.
11		The problem is eliminated after the I/F connection cable has been changed.	No	Change the scanner board.

7.3.10 Uneven density in sub scan direction (Horizontal Band)

A. Typical faulty images

AaBbCc
AaBbCc
AaBbCc
AaBbCc
AaBbCc
AaBbCc
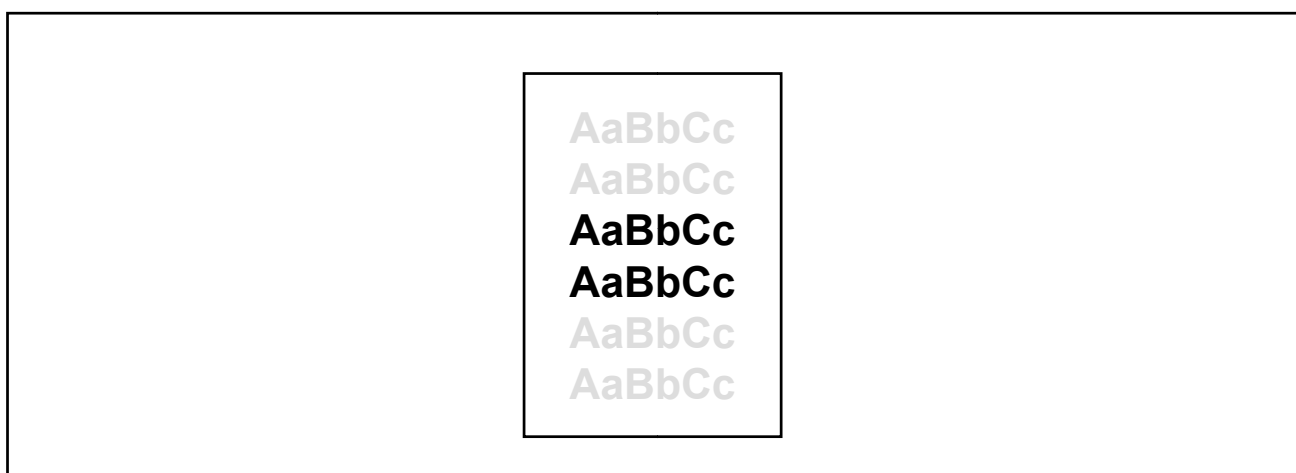
B. Troubleshooting procedure

Step	Section	Check item	Result	Action
1	Image Check	The periodic 35 mm band has occurred. (Magnetic Roll)	Yes	Change imaging unit.
2	Imaging unit	The surface of the OPC drum is scratched.	Yes	Change imaging unit.
3		Dirty on the outside.	Yes	Clean.
4		The problem has been eliminated through the checks of steps up to 4.	No	→ Change LSU. → Change HVPS board.

7.3.11 Uneven density in main scan direction (Vertical Band)

A. Typical faulty images

AaBbCc
AaBbCc
AaBbCc
AaBbCc
AaBbCc
AaBbCc
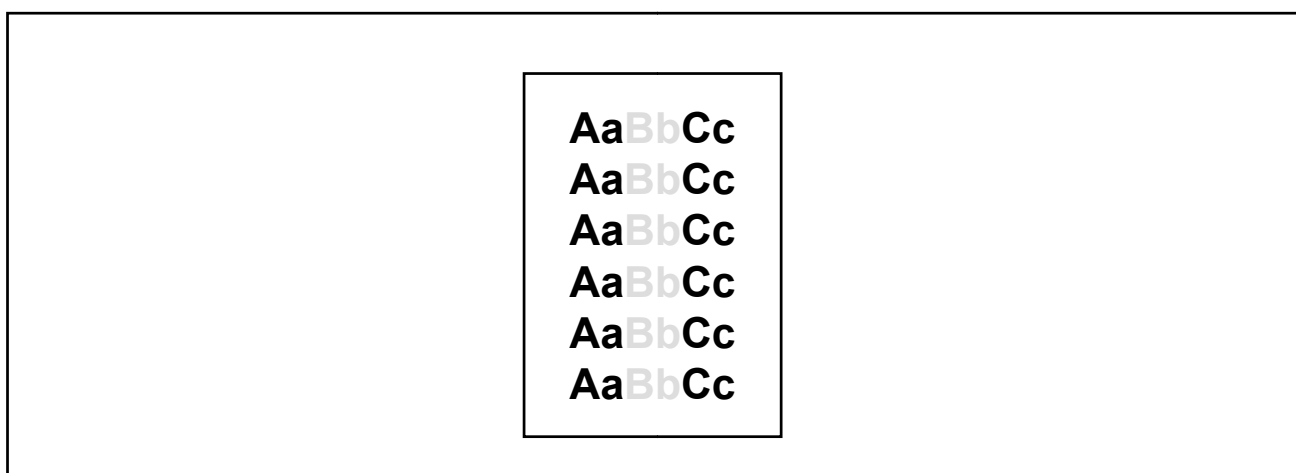
B. Troubleshooting procedure

Step	Section	Check item	Result	Action
1	Imaging unit	The surface of the OPC drum is scratched.	Yes	Change imaging unit.
2		Dirty on the outside.	Yes	Clean.
3	LSU	The surface of the LSU window is dirty.	Yes	Clean.
4	Transfer roller	Check that the spring does not come of during the pressure operation of the transfer roller.	No	Correct. Change transfer roller unit.
5		The problem has been eliminated through the checks of steps up to 4.	No	Change imaging unit. → Change LSU. → Change HVPS board.

7.3.12 Poor fusing performance

A. Typical faulty images
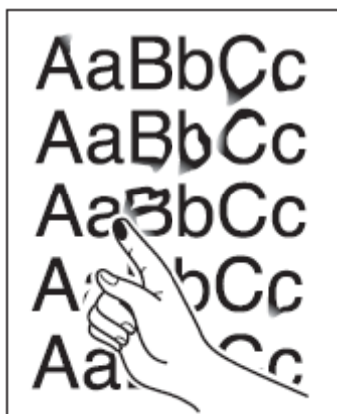
B. Troubleshooting procedure

Step	Section	Check item	Result	Action
1	Paper	Check the paper type.	No	Set the paper type on control panel.
2		Check if the recommended paper is used.	No	Use the recommended paper.
3	Fuser Unit	The fuser unit is worn out.(150K)	Yes	Replace the fuser unit.
4		Check if the surface of the fuser belt & pressure roller is scratched.	Yes	Replace the fuser unit.
5		1. Check the pressure roller is abnormal. 2. Does fuser pressure (NIP) motor operate when opening or closing side cover. Listen to motor sound.	No	Change the fuser pressure motor.
6		Check if the heat roller control temperature is too high or low.	No	Check the NC Sensor.
7		Check resistance of both heating lamps.	Yes	Change the heating lamp.

7.3.13 Stain on the paper back side

A. Typical faulty images
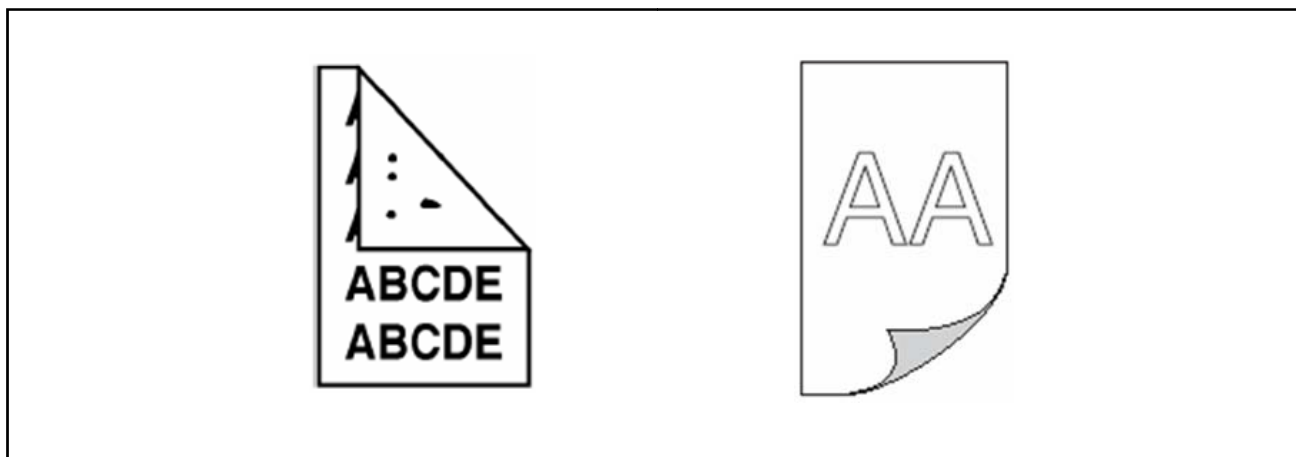
B. Troubleshooting procedure

Step	Section	Check item	Result	Action
1	Image adjustment	Is the margin adjustment of image correct?	No	Adjust the margin and magnifications
2	Paper feeding	Does the size of paper in the drawer or DCF/HCF correspond to the setting?	No	Use the appropriate paper size or correct the size setting.
3	Transfer roller	Are the feed roller and transfer roller dirty or worn out?	Yes	Clean or replace the rollers.
4	Fuser unit	Are the fuser belt and pressure roller dirty?	Yes	Clean the fuser belt and pressure roller.
5		Is the rib of transport guide dirty?	Yes	Clean the rib.

7.3.14 DADF skew testing

After re-installing the DADF, you need to conduct the DADF skew test using the DADF test chart which supplied with DADF.

1. Load the A4 (or LTR) DADF test chart face up into the DADF.
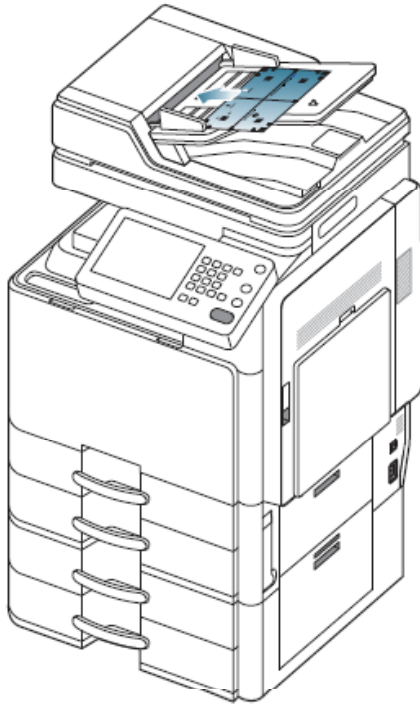
2. Adjust the document width guides to the paper size.
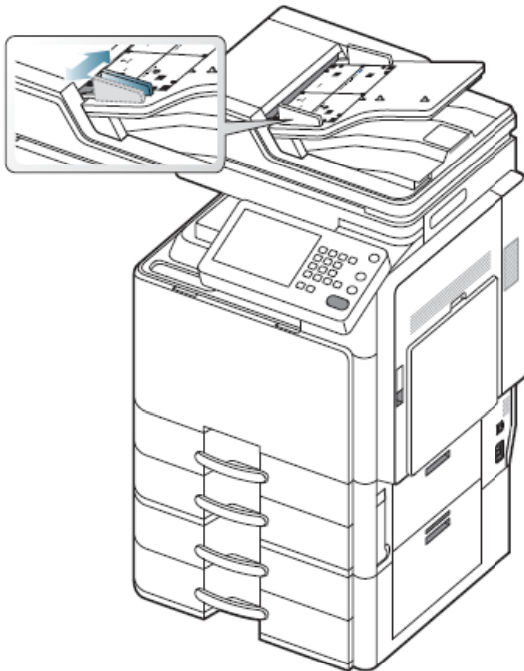
3. Press **Copy** from the display screen.

4. Press **Start** from the control panel to begin copying.

5. Compare the condition of the printout with the DADF test chart.
For example, the length of scale marks in the circles is equivalent (acceptable range by less or more than 0.5 mm), it means the DADF was installed well.
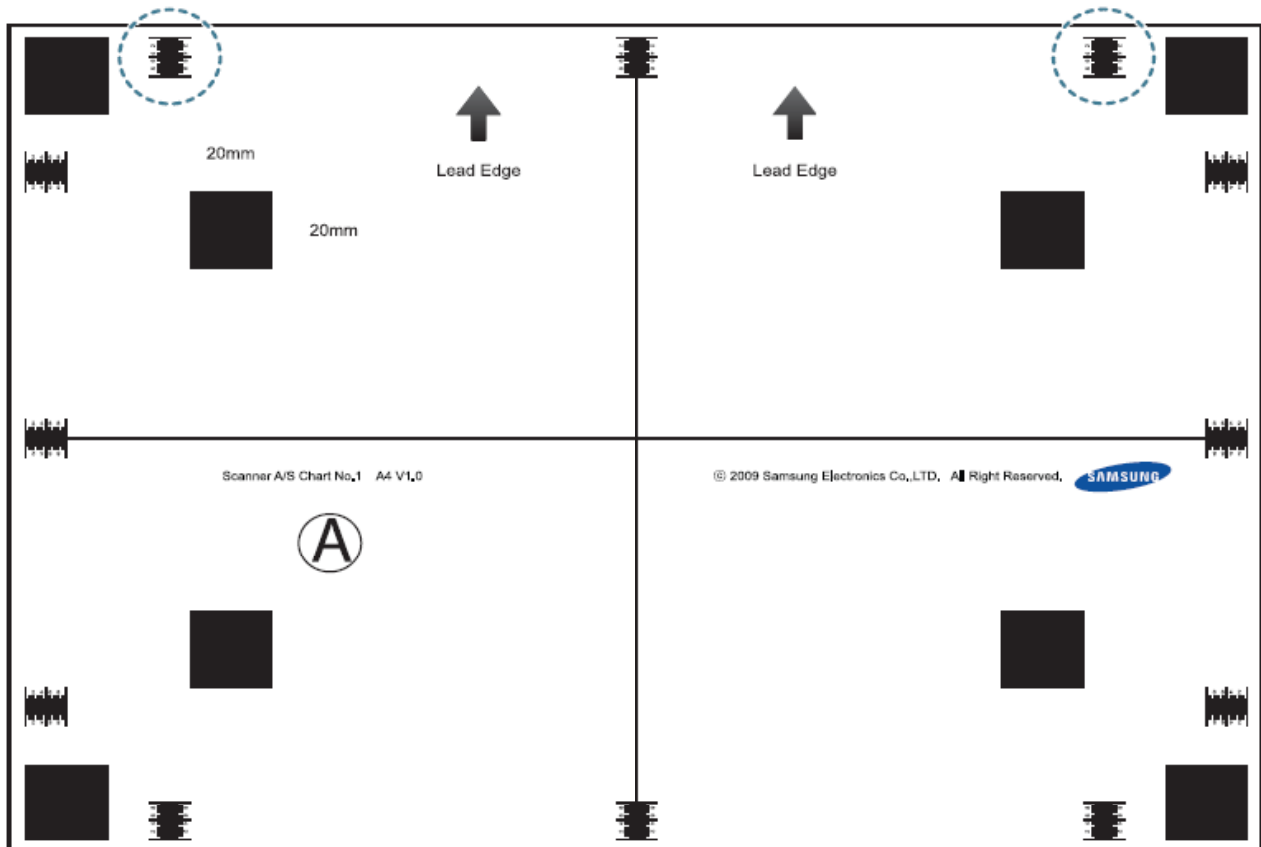
Otherwise, adjust the DADF using the screw at the backside and handle hinge as shown by the examples below. For example, the length of scale on the left side is 1mm shorter than that of right side, move the steel plate toward the rear side by two scale marks using the screw at the backside and handle hinge. A scale mark is approximately 0.5 mm.
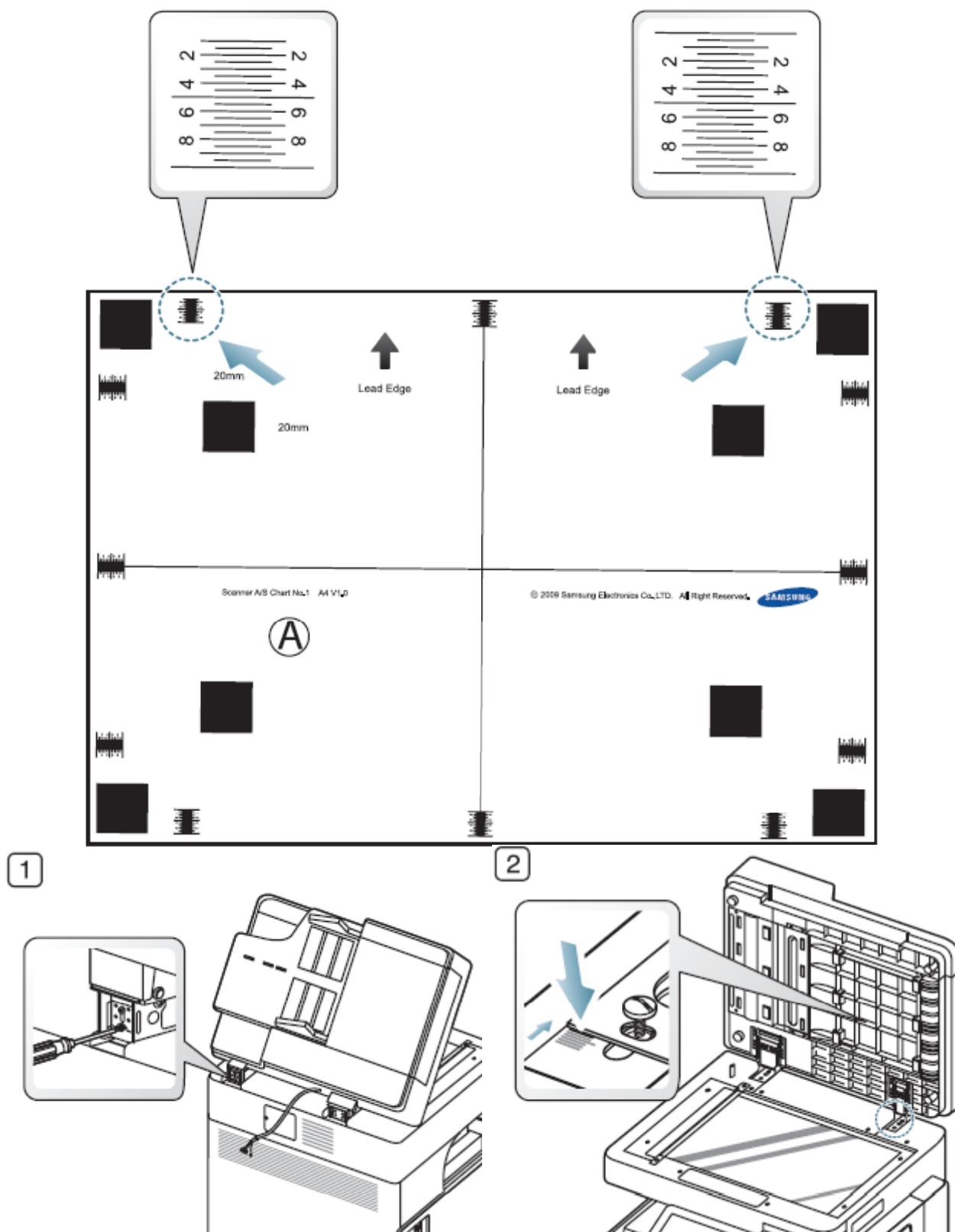
For example, the length of scale on the left side is 1mm longer than that of right side, move the steel plate toward the front side by two scale marks using the screw at the backside and handle hinge. A scale mark is approximately 0.5 mm.
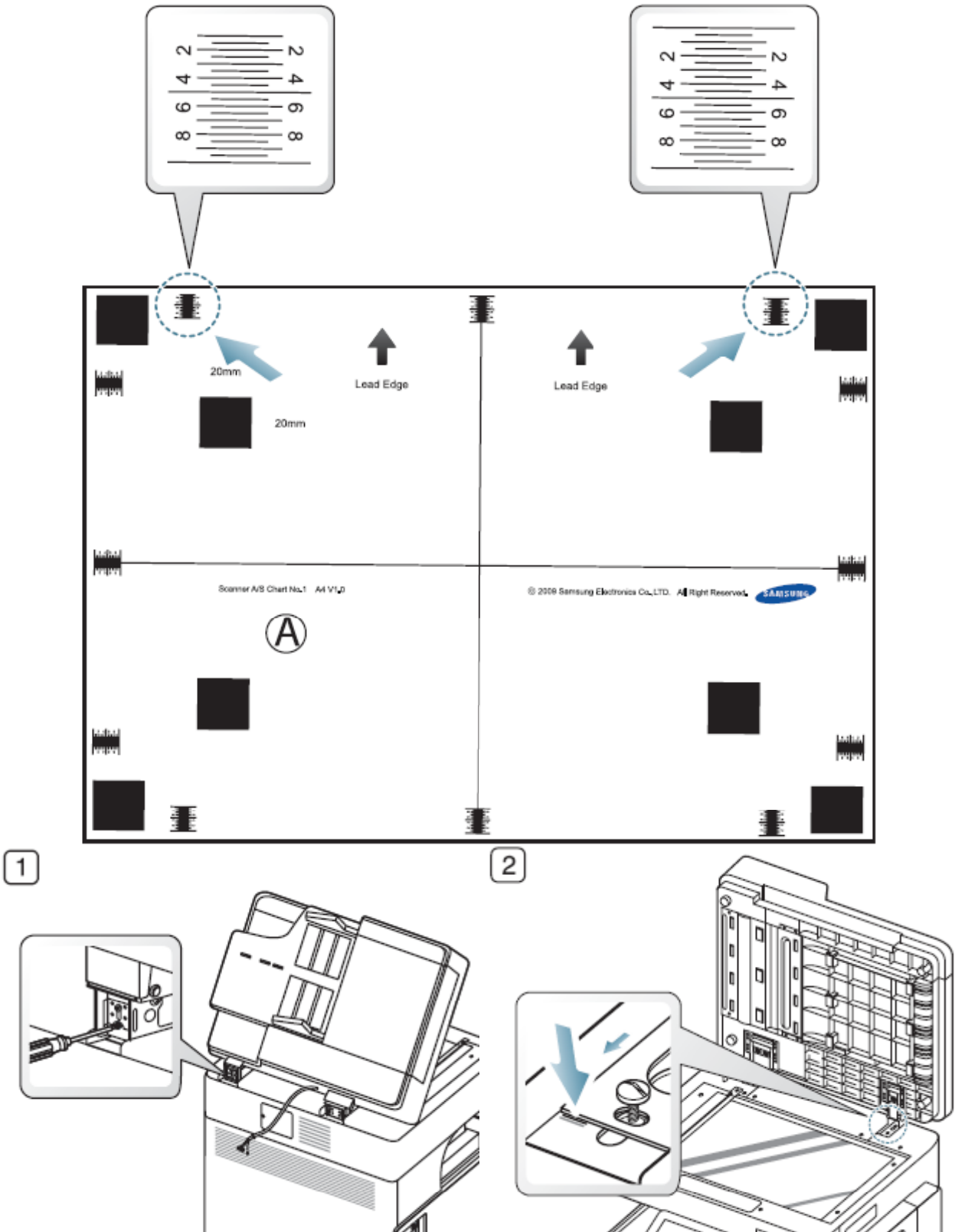
7.4 Other errors

7.4.1 OPE problem

● **Symptom**

The LCD panel does not display anything on.

● **Possible cause**

1. Power is not supplied to OPE.
2. OPE is defective.

● **Troubleshooting method :**

1. Is power supplied to OPE?

　Yes :　If there is any problem, check if power is supplied to HUB PBA.
　　　　Check if power is supplied to engine controller.

　　　　- CN4 : Pin No.9,12 , Check the voltage by DVM. (Normal value : 5V)
　　　　- U2 : Pin No.2 , Check the voltage by DVM. (Normal value : 3.3V)
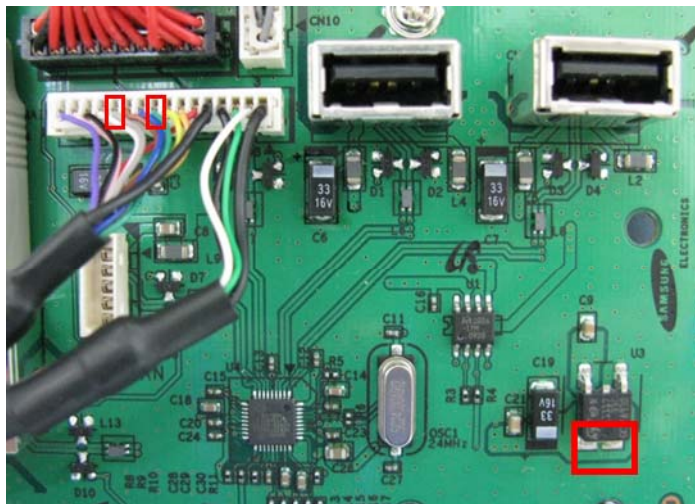
　　Replace the SMPS board.

　No : Replace the OPE board.

● **Symptom**

The touch screen does not work.

● **Possible cause**

1. OPE is defective.

● **Troubleshooting method :**

Replace the OPE. Re-check the operation.

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● **Symptom**

Touch screen does not operate properly.

● **Possible cause**

The linearity value for touch panel has changed due to using a machine long hours or surroundings.

● **Troubleshooting method :**

1. Turn off the machine.
2. While pressing the number 0 on numeric keys, turn on the machine. Wait until the calibration screen appears.
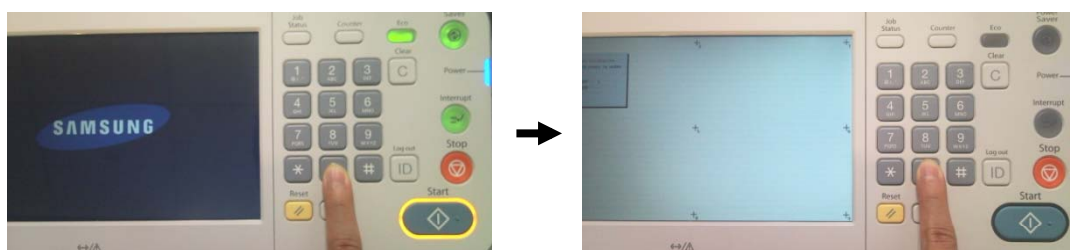
3. Press centre of mark + following order 1-9. Use stylus. Perform 2 times.
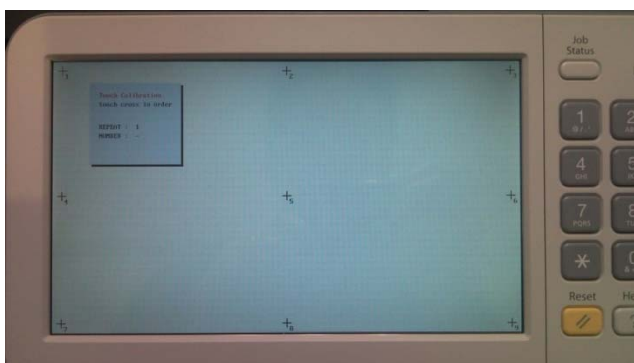
4. If there is no problem, "Complete" will appear on LCD and reboot the machine.
   When making a mistake, start again from the step 1.

● **Symptom**

The keyboard does not operate.

● **Possible cause**

1. Keyboard is defective.
2. OPE is defective.
3. HUB PBA is not supplied with power.

● **Troubleshooting method :**

1. Replace the keyboard. Check its operation again.
2. Replace the OPE. Check its operation again.
3. Check if power is supplied to the HUB PBA.
4. Replace the engine controller.
5. Replace the DC relay PBA.

7.4.2 USB port problem

● **Symptom**

USB port on front side does not work.

● **Possible cause**

1. HUB PBA is defective.
2. Power is not supplied to HUB PBA.

● **Troubleshooting method :**

1. Replace the HUB PBA. Check its operation again.
2. Check if power is supplied to the HUB PBA.
3. Replace the engine controller.
4. Replace the DC relay PBA.

● **Symptom**

1. USB port on back side does not work.
2. USB device port does not work.
3. Wired network does not work.

● **Possible cause**

Video controller is defective.

● **Troubleshooting method :**

Replace the video controller.

7.4.3 FDI device problem

● **Symptom**

FDI device does not work.

● **Possible cause**

1. FDI interface card is defective.
2. Video controller is defective.

● **Troubleshooting method :**

1. Replace the FDI interface card. Check its operation again.
2. Replace the video controller.

8. System Diagram

8.1 ENGINE 1
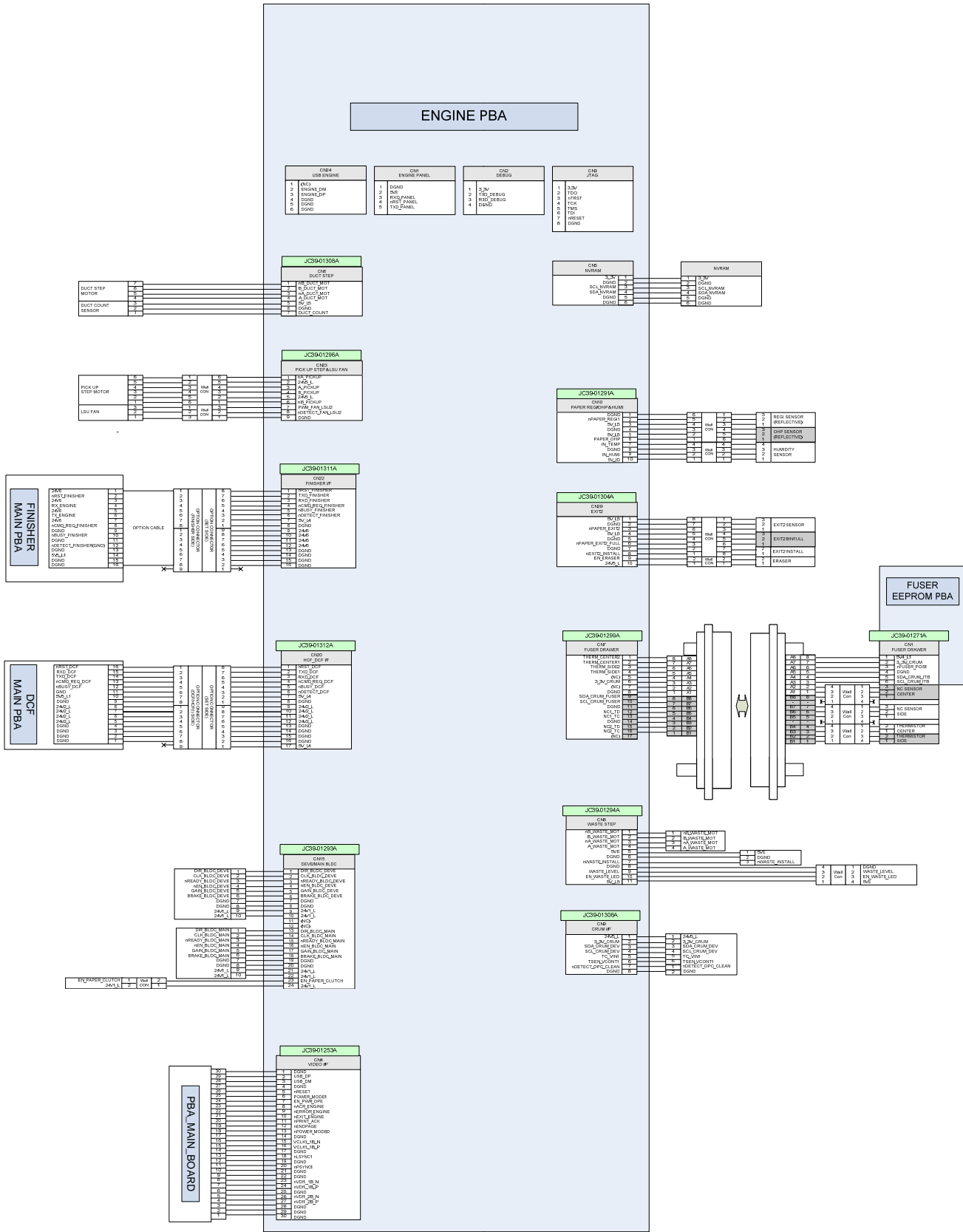
8.2 ENGINE 2

8.3 MAIN BOARD & OPE

8.9" LCD / Touch Panel

SUB HUB PBA

OPE MAIN PBA

SUB KEY PBA

SCAN PBA

BUZZER

MAIN PBA

SPEAKER

ENGINE PBA

HDD
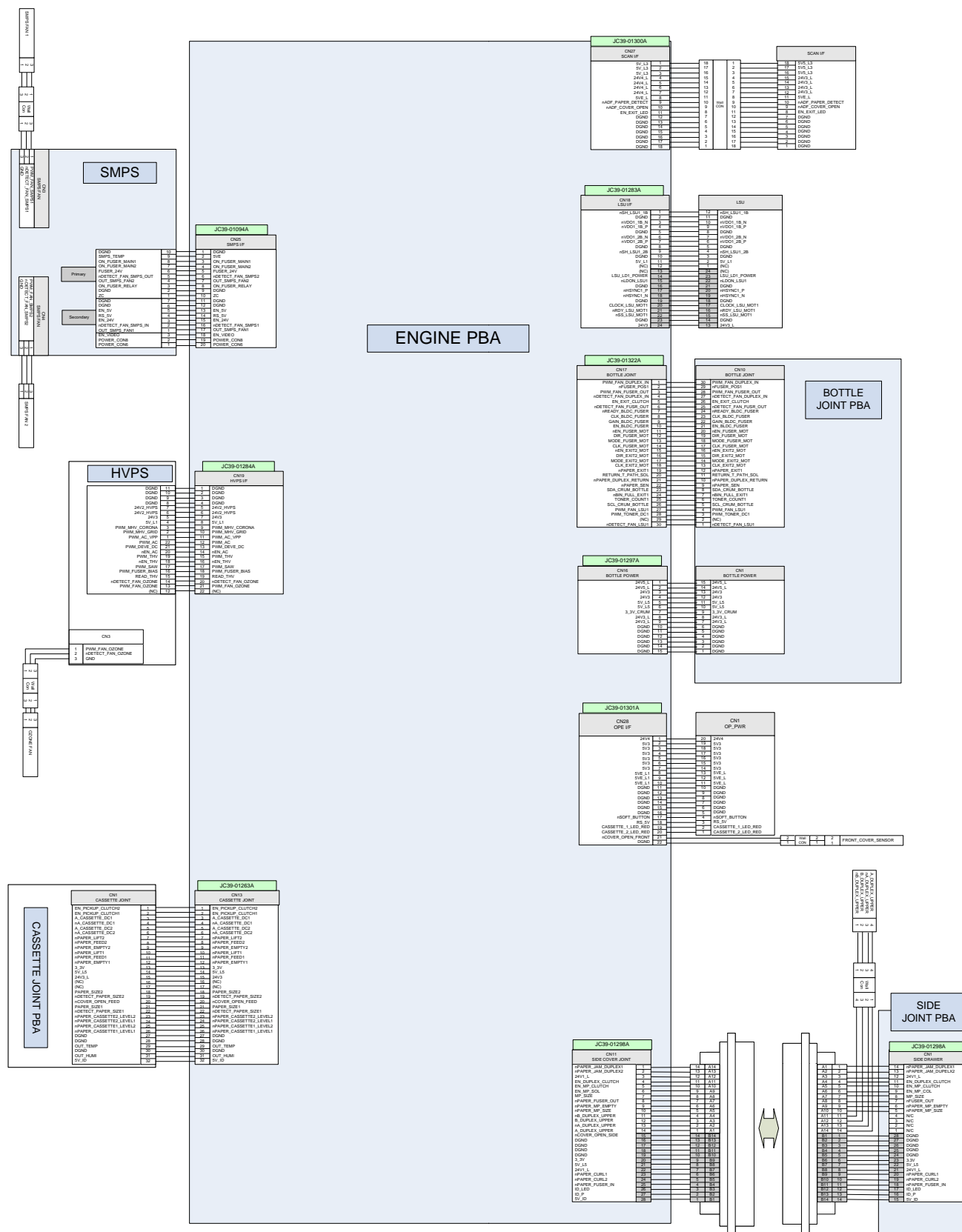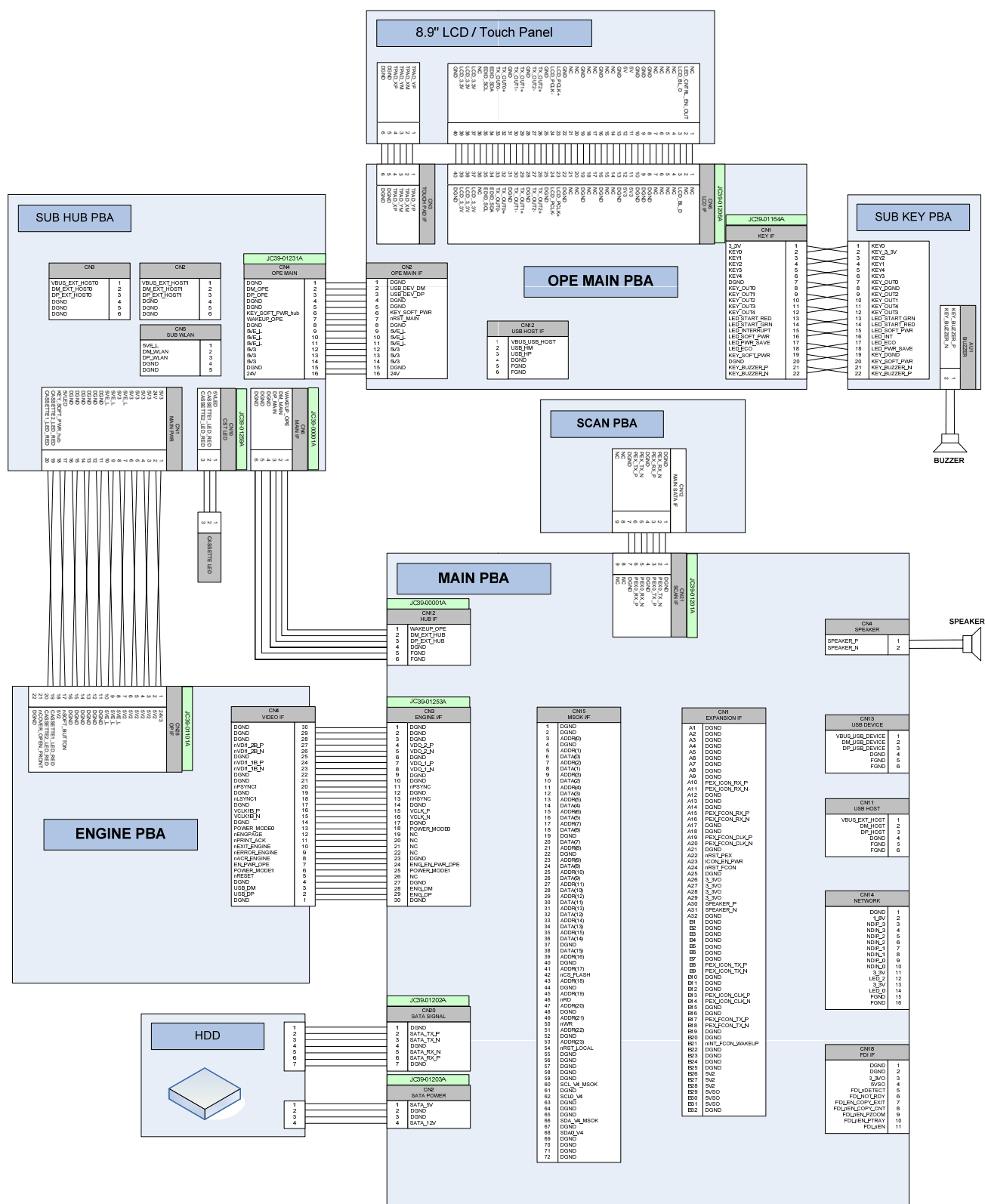
8.4 SCAN & DADF
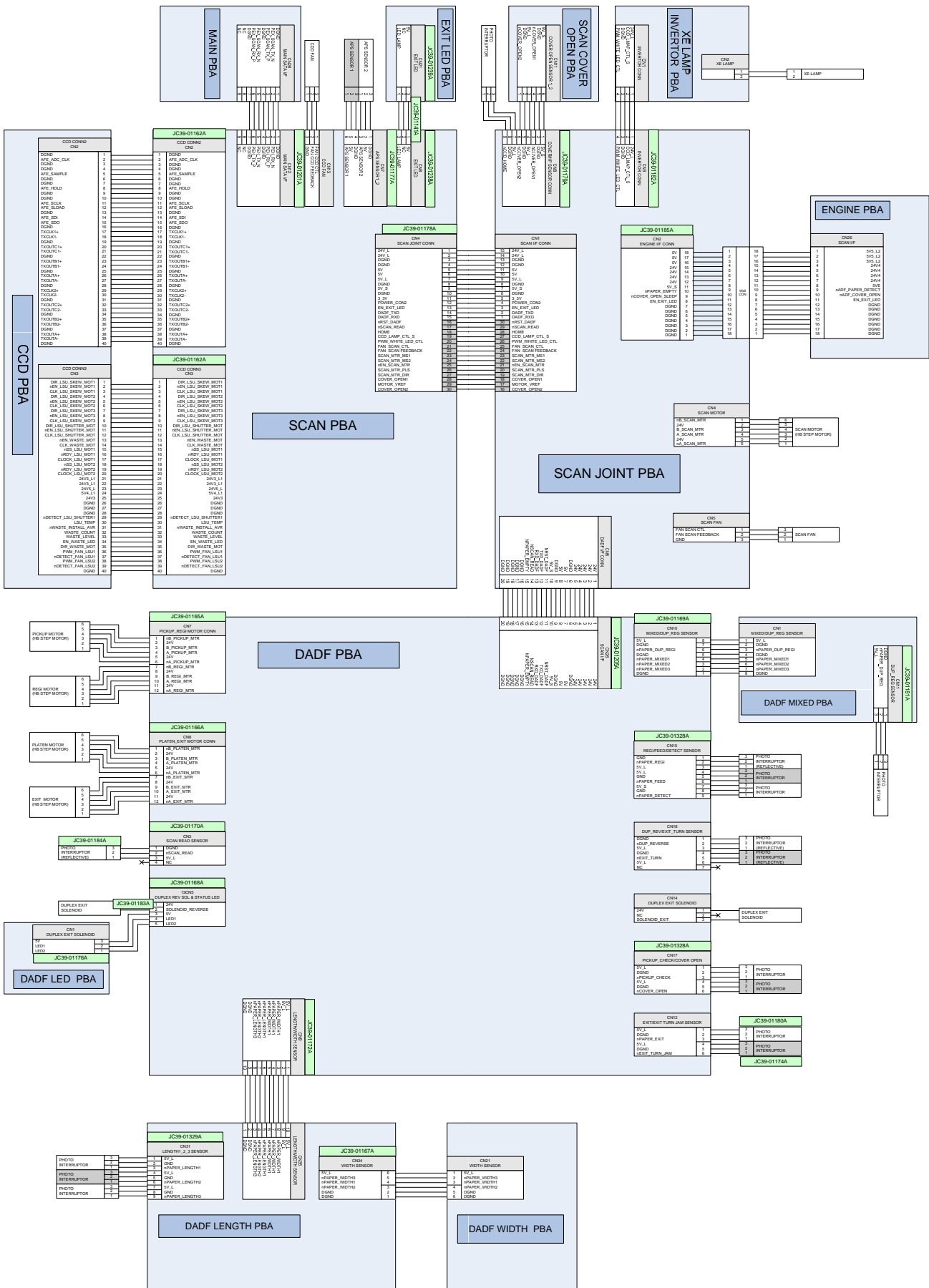
8.5 BOTTLE JOINT BOARD & SIDE JOINT BOARD

BOTTLE JOINT PBA

SIDE JOINT PBA

ENGINE PBA

ENGINE PBA

ENGINE PBA
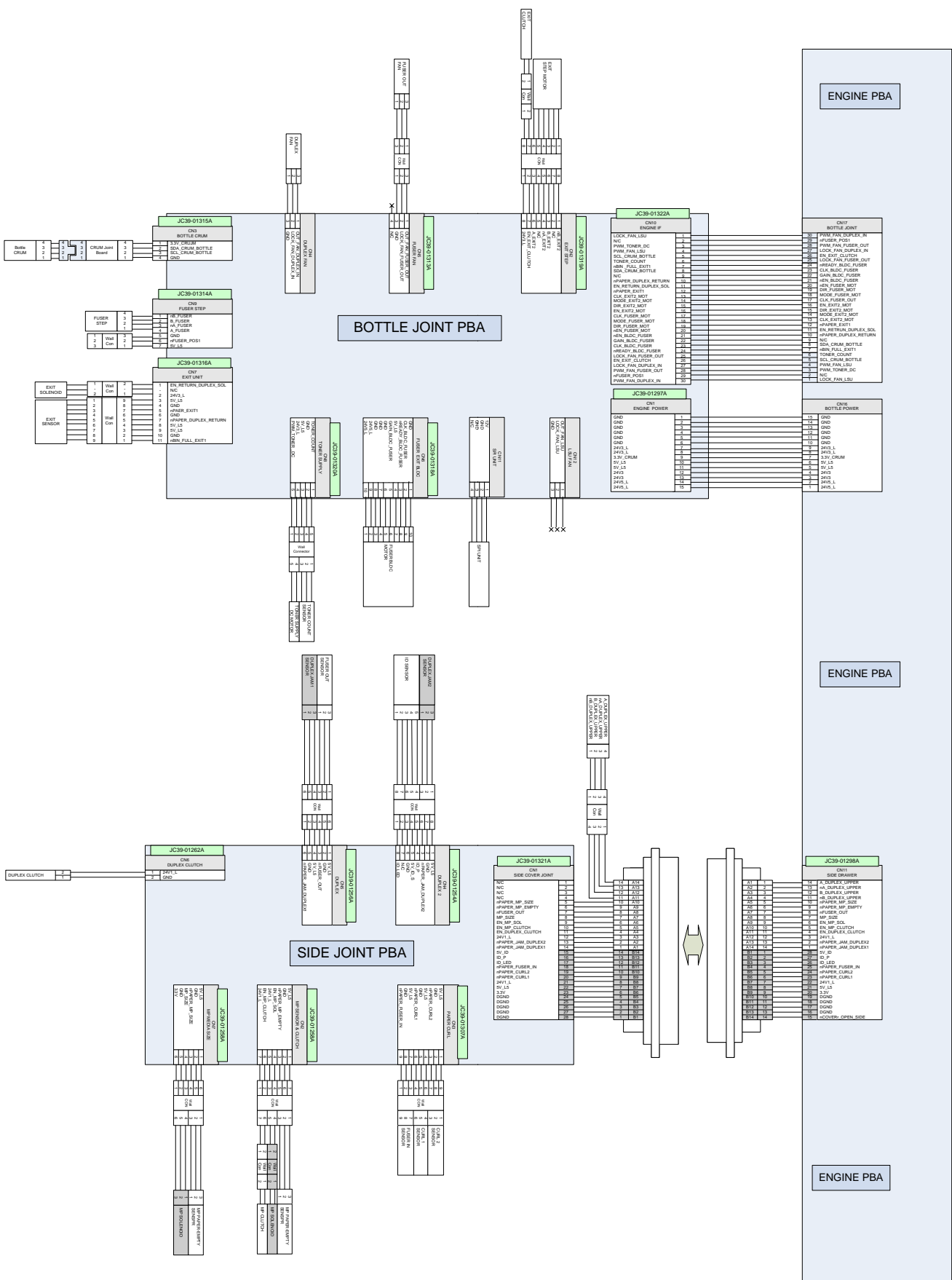
8.6 DC CONTROL BOARD

8.7 Cassette Joint Board
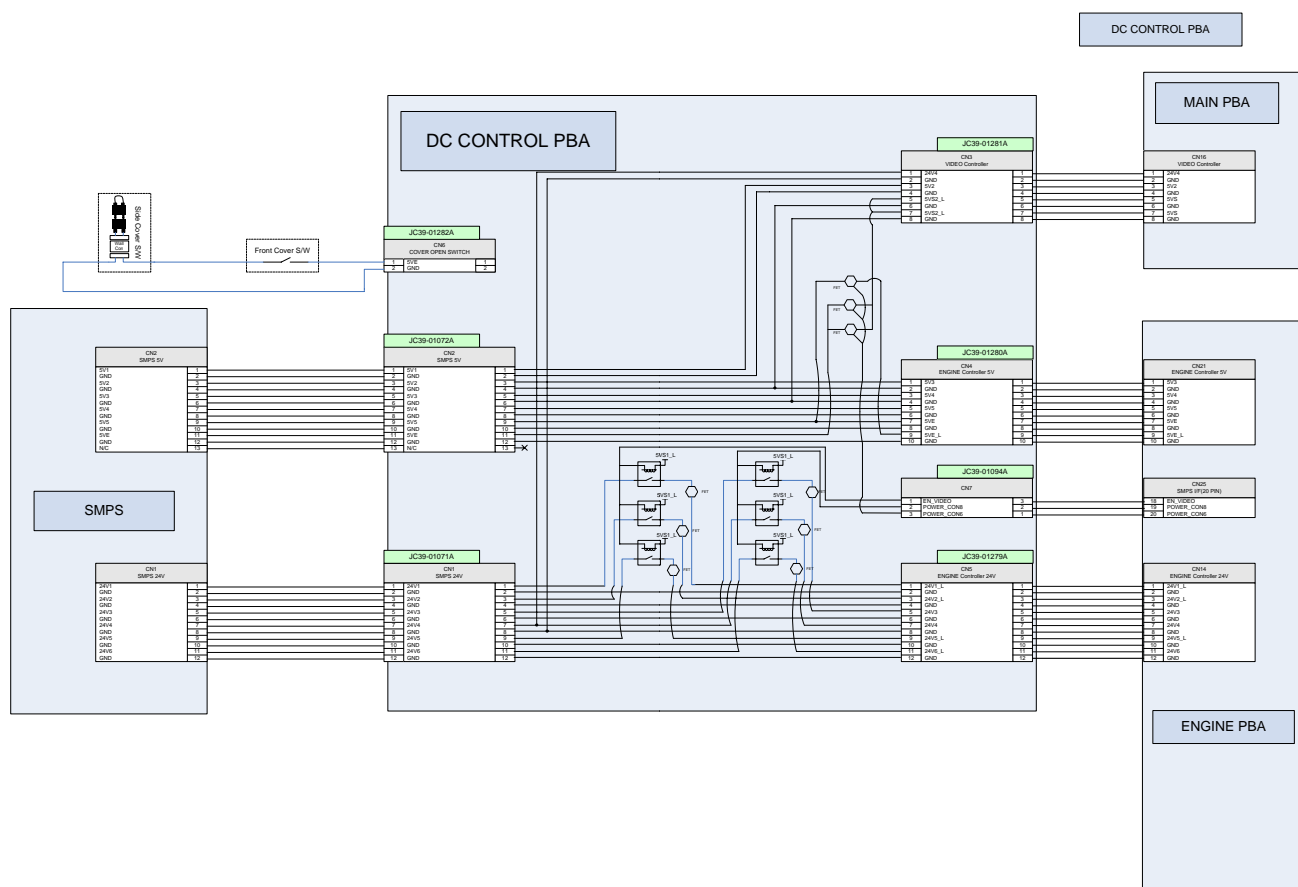
8.8 HEATER & FUSE
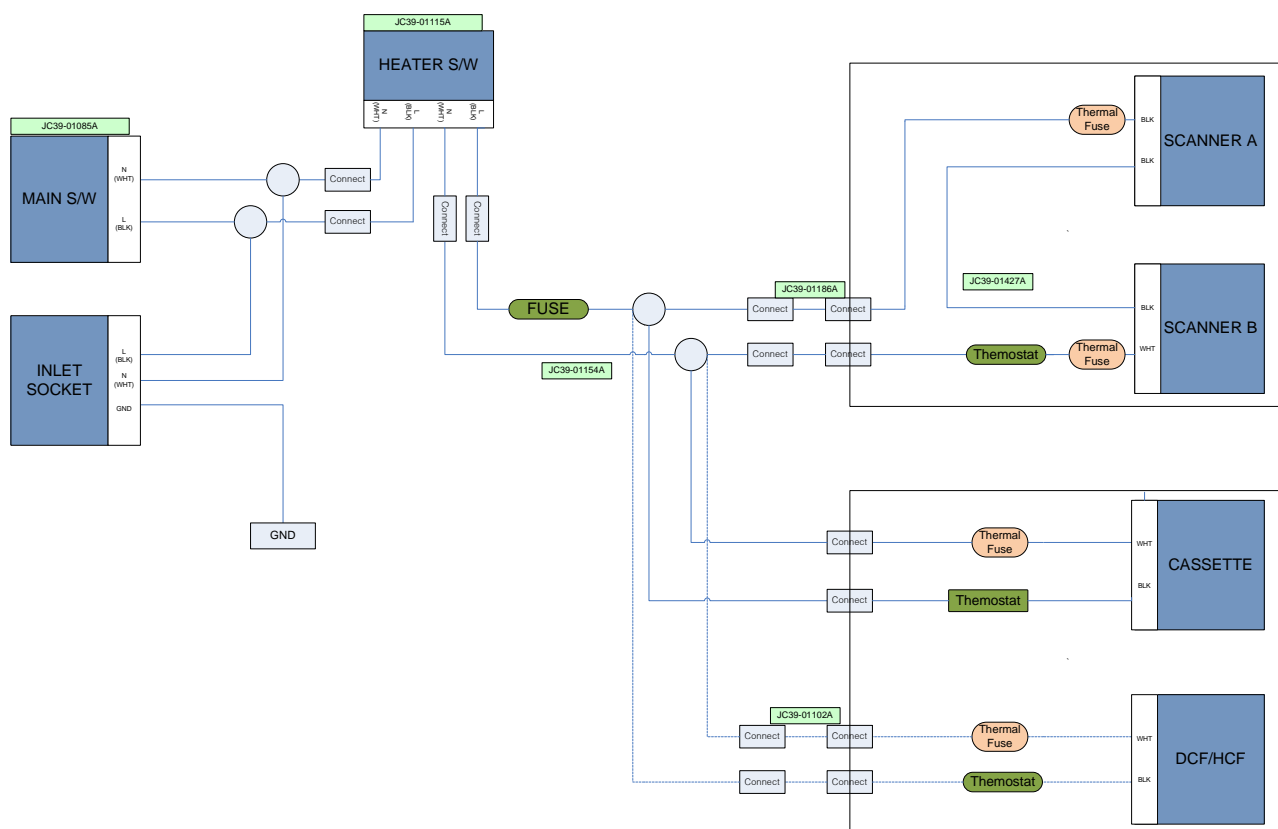
9. System Recovery

This Application allows administrator to recover the system to factory default state if a Hard Disk failure occurs. This application will primarily be used by Device Administrator.

9.1 Entry Point

The entry point for the application is login page along with an option to select the recovery method. The UI displays the below page when System failure happens during boot up.
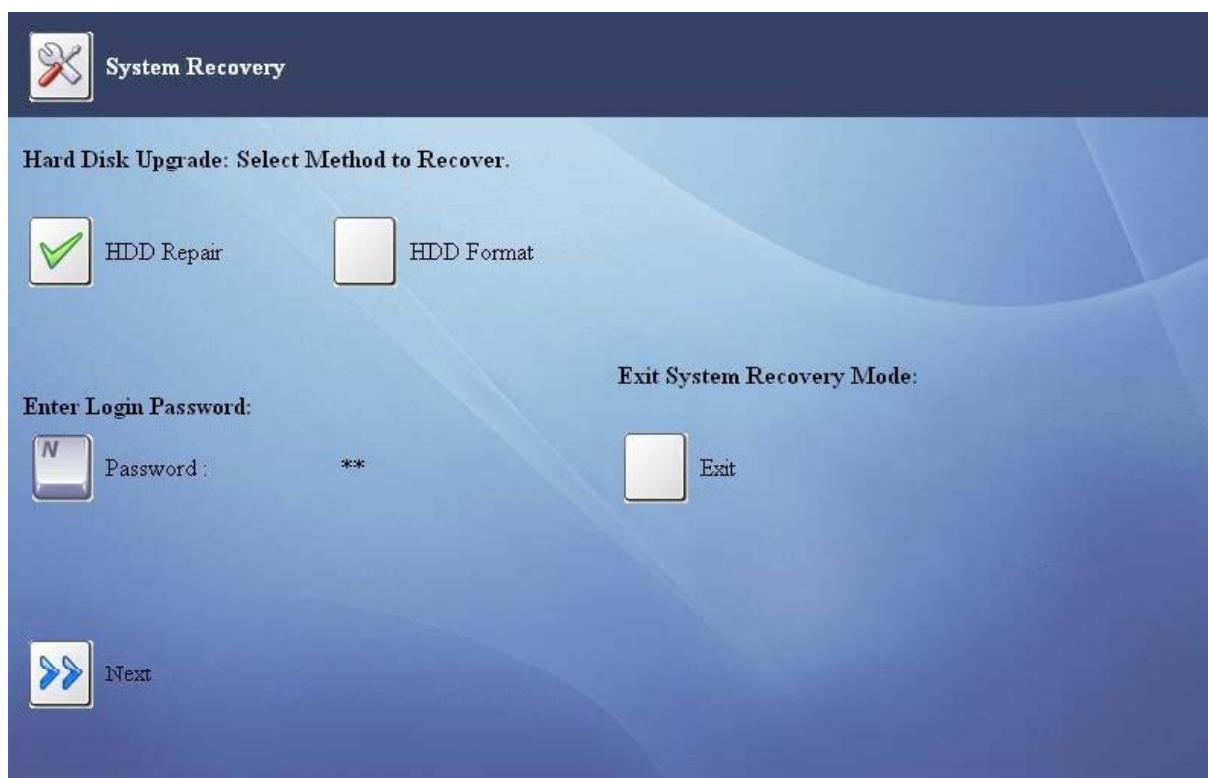
9.1.1 Select Recovery Method

User can select any one of the following options depending upon the recovery method.

1) HDD Format:
        a) Hidden Partition
        b) USB
        c) Network
2) HDD Repair

9.1.2 Login Details

User enters the Password details for performing authentication through the UI control provided on the login page. The password will be 1934 as the factory setting password.

9.1.3 Next button

The Next button is pressed for starting the authentication process.

On successful authentication:
- The user will be directed to the USB page, Network page or HDD repair page depending upon selection of USB option or Network option respectively or Repair option.
- The user will be directed to the Confirmation page if there is no error or to *Error page* (section 3.5) with appropriate error message when Hidden Partition option is selected.

On authentication failure:
- The *Error page* (section 3.5) will be displayed along with the failure message.

9.2 USB

It is the basic screen when user selects the USB option from the login page.

9.2.1 Next button
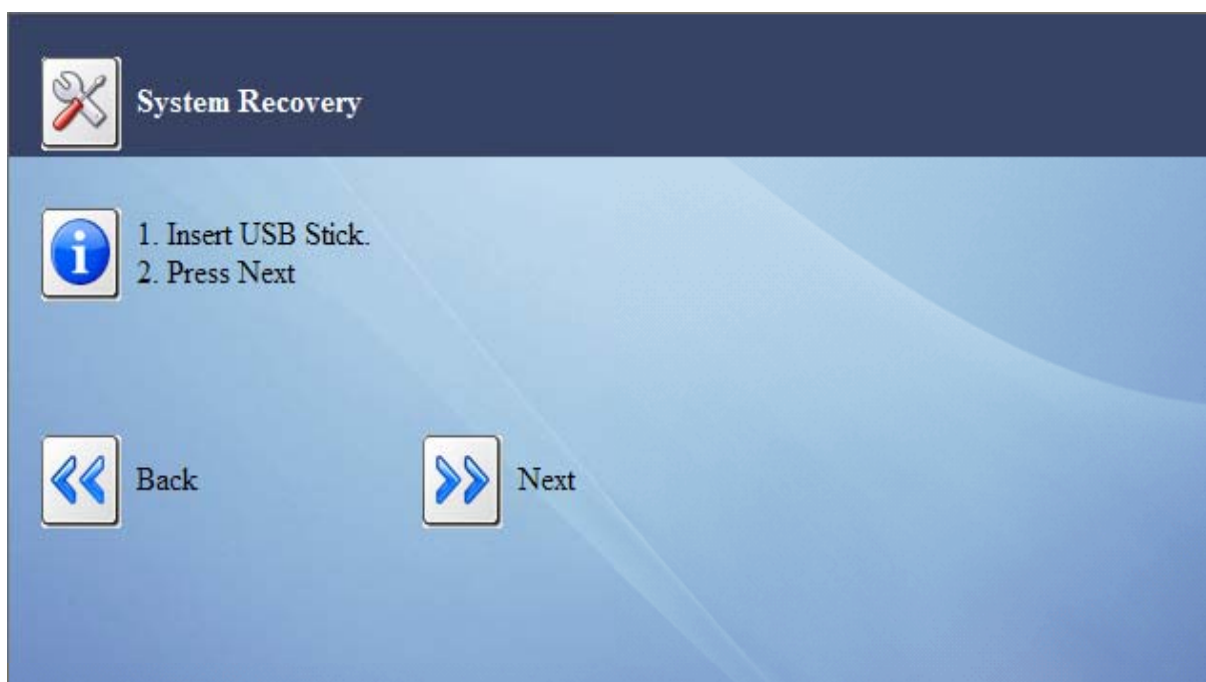
The Next button is pressed after inserting the USB stick.
The system will check for the required packages in the USB stick. If all the packages are present in the USB stick then the system will be directed to the confirmation page otherwise an Error page will be displayed with an appropriate error message.

Caution - Use min 2GB USB stick or bigger for HDD Recovery.
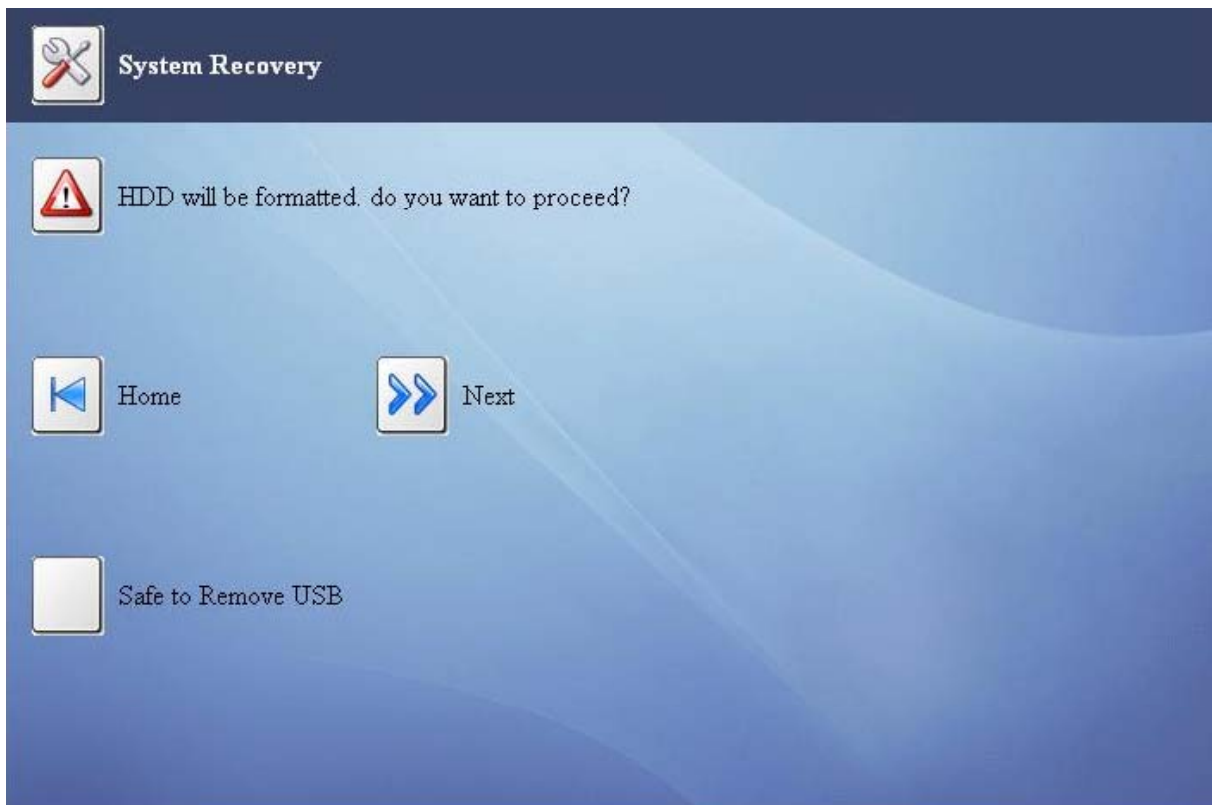
9.2.2 Back button

The Back button is pressed if any point of time the user wants to go back to the login page. The Safe to remove USB button will safely remove the USB device and goes to the previous page.

9.3 Network

This page contains two sections :

1. Configure device IP address
2. Configure samba settings

9.3.1 Configure device IP address

This section provides following configurable options:
      1. Device IP: IP address for the device
      2. Gateway IP: Gateway IP address for the device
      3. Subnet Mask: Network Subnet Mask for the device

9.3.2 Configure samba settings

This section provides following options to configure the settings for the server, which will be accessed by the device to recover the system:
      1. Server IP : IP address of the server.
      2. User ID : user ID of the server to login into the server system
      3. Password : password of the server system
      4. Shared folder : name of the shared folder on the server, where the packages for the system
                recovery are present.

9.3.3 Next button

The Next button is pressed after providing the above information.
The system will establish the provided IP to the device and try to connect to the server and check for the available packages on the server.
If Network is establish and all the packages are present in the shared folder of the server then the system will be directed to the Confirmation page otherwise an Error page will be displayed with an appropriate error message.

9.3.4 Back button

The Back button is pressed if any point of time the user wants to go back to the login page.

9.4 Confirmation Page

This is the confirmation page, which will display a message "HDD will be formatted. Do you want to proceed?"
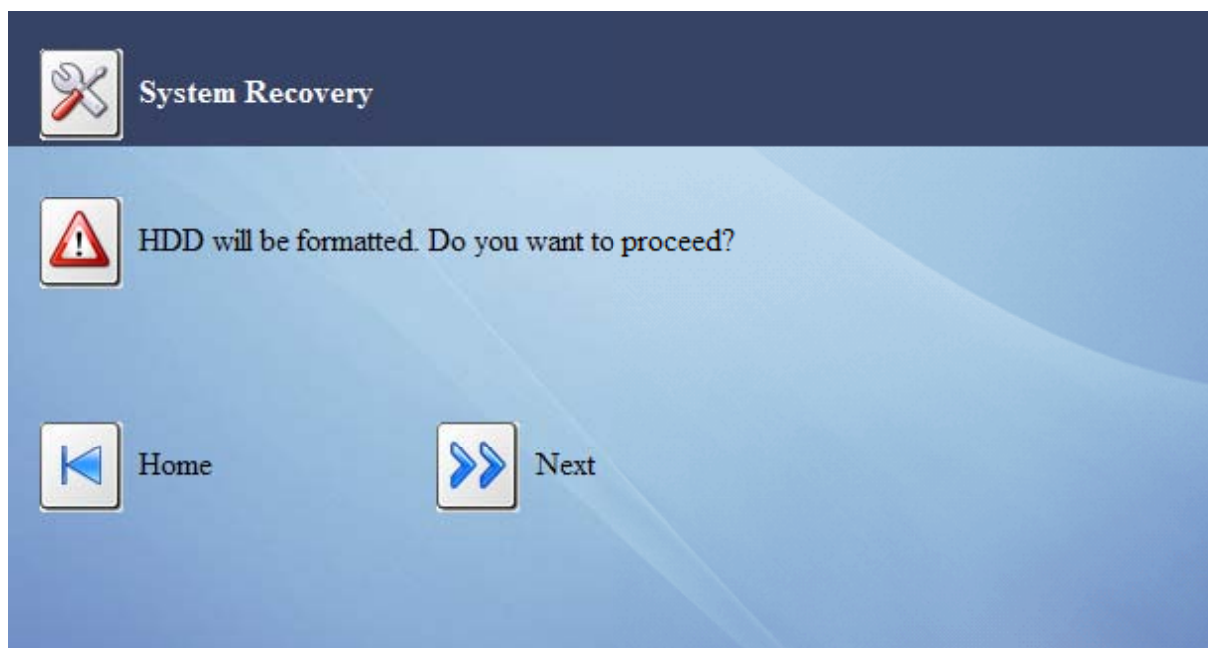
9.4.1 Next button

When the user clicks Next button then the actual recovery of the system will take place.
The user will be directed to the Progress page.

9.4.2 Home button

The Home button is pressed if any point of time the user wants to go back to the login page.

9.5 Error Page

This is the Error page, which will display an appropriate message depending upon the type of error occurred.
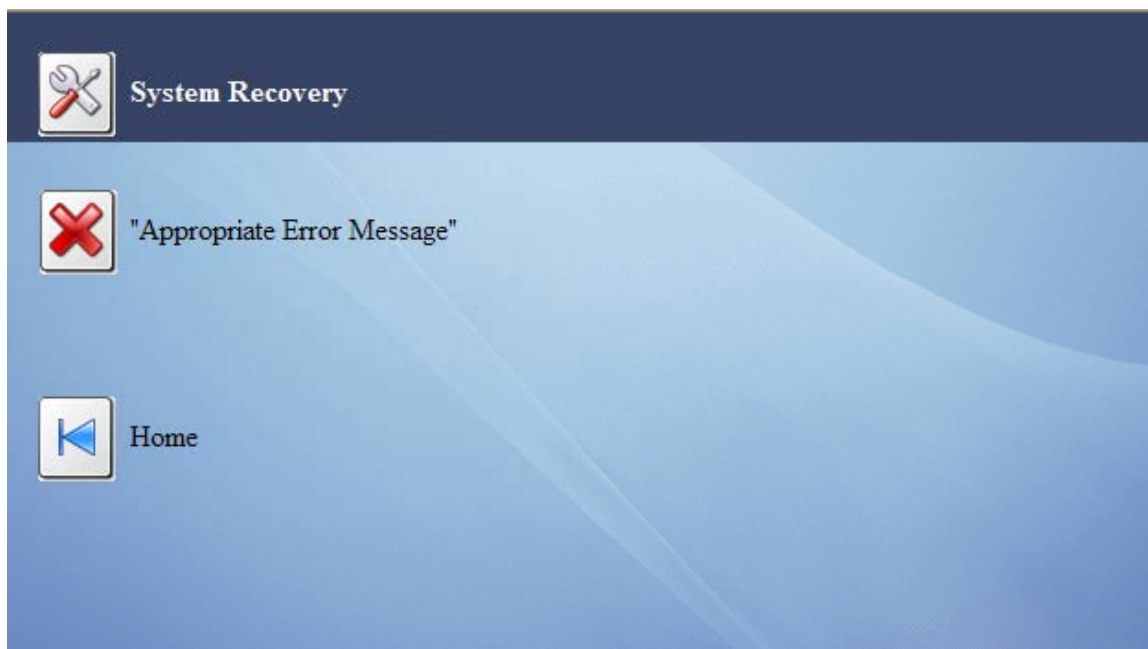
9.5.1 Home button

The Home button is provided to go back to the Login page.

9.6 Progress Page

This page provides the progress information in percentage.
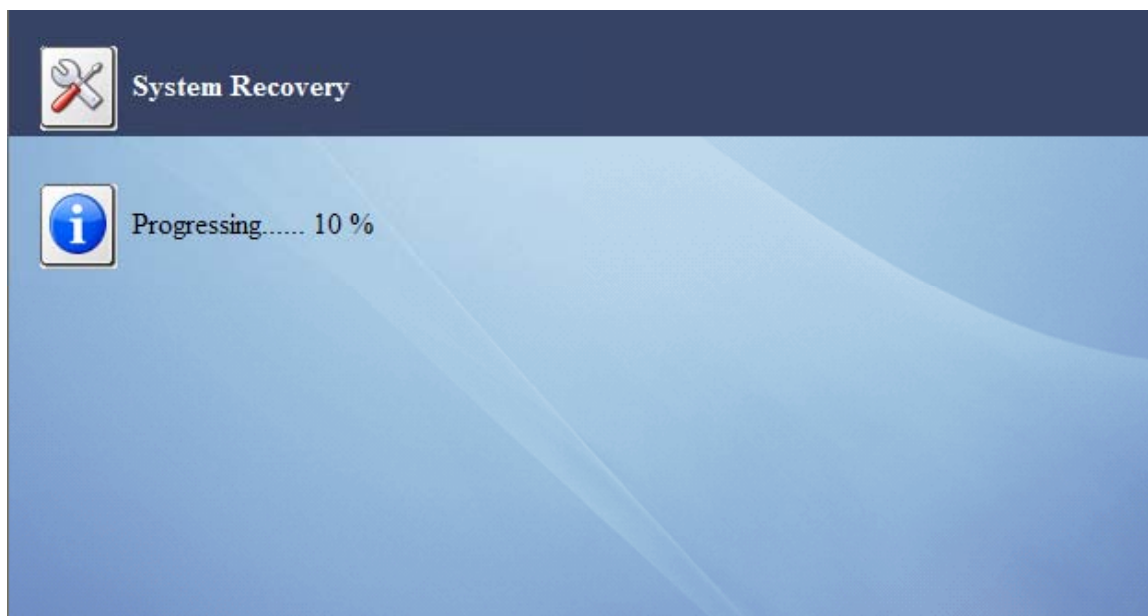
After every second the progress information is displayed till the progress reaches 100%. The system will be rebooted after the recovery. So the following page needs to be displayed.
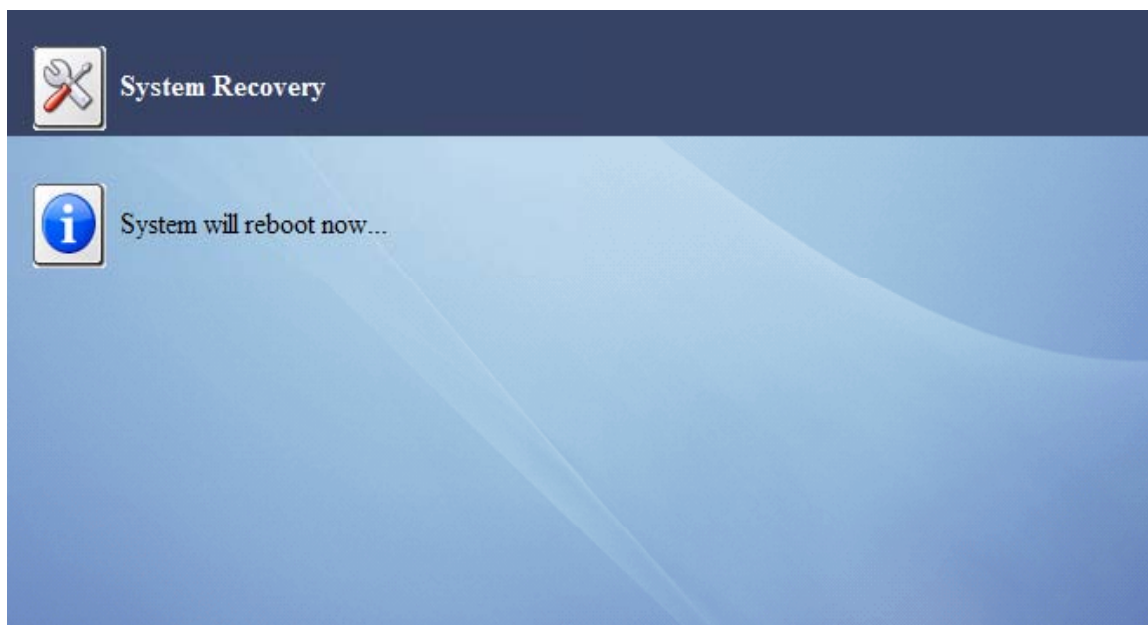
9.7 Error List

9.7.1 Authentication

In case authentication fails, UI should display an error message "Login Failed: Enter Login details again".

9.7.2 Package error

When the packages are not found then the UI should display the error message corresponding to the missing packages in case of Hidden Partition, USB and Network.

9.7.3 Network error

When the network is not established or samba settings are failed then the UI should display the corresponding error message related to network failure.

9.8 HDD Repair

Hard disk file system check can be done by HDD repair feature.
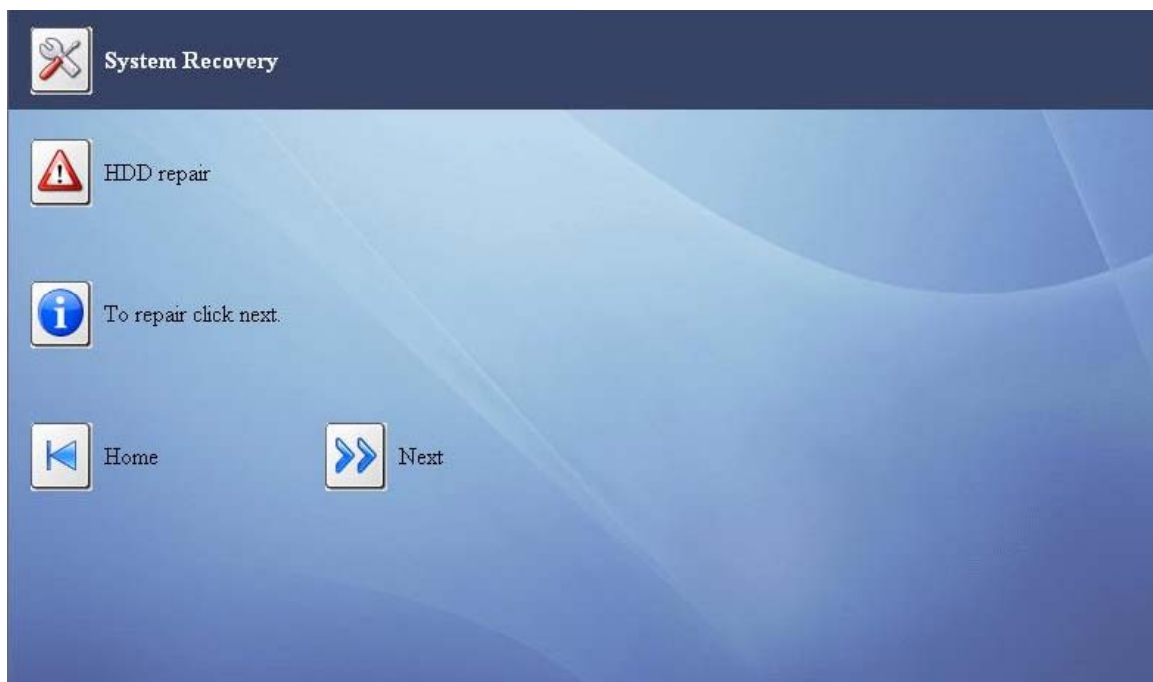
9.8.1 Next button

When the user clicks Next button then the HDD repair of the system will take place.
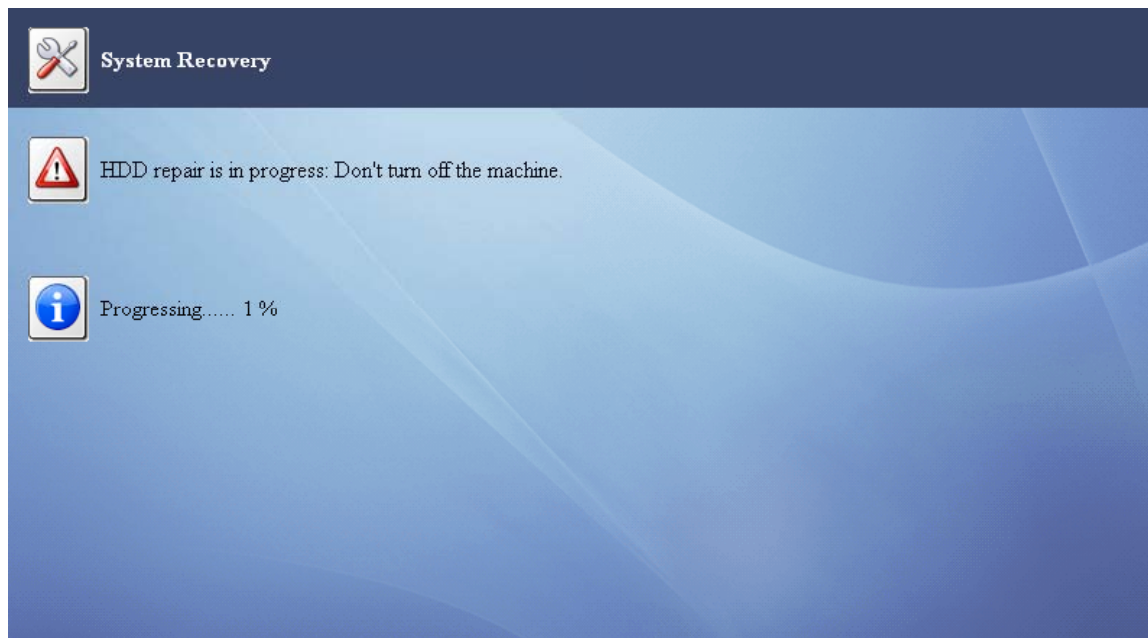
Once the HDD repair successfully the system will reboot and boot via HDD by running the Everest binary.
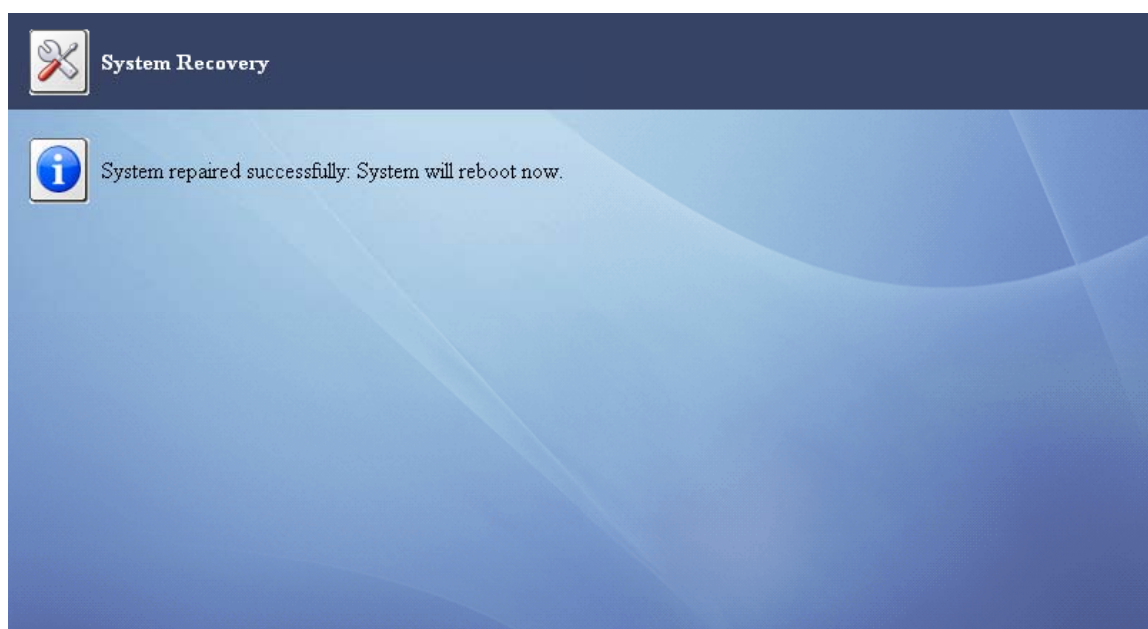
9.9 HDD Failure

In case of Hard disk failure, the system will display the below message, Please ensure that the HDD cables are properly connected and then turn OFF and then turn ON the machine once. If the machine doesn't boot normally please refer to troubleshooting for error code.
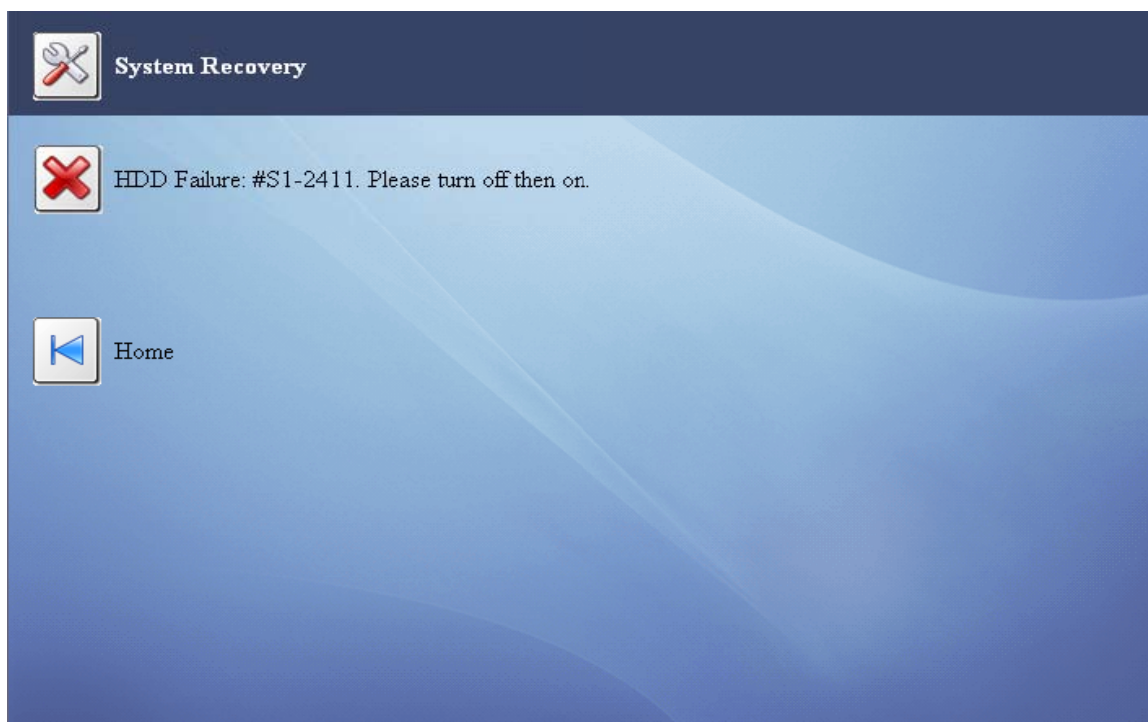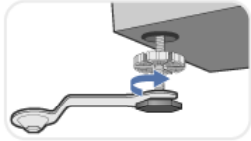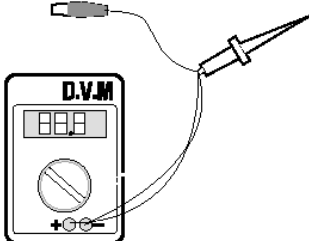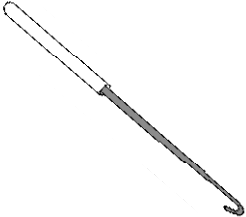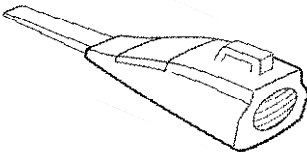
10. Reference Information

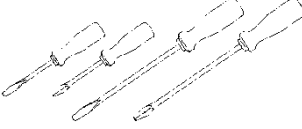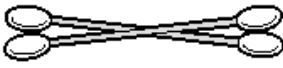This chapter contains the tools list, list of abbreviations used in this manual.

10.1 Tools for Troubleshooting

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

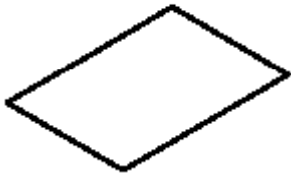| Tool	Image	Use	Remark
1.Spanner (More than 15mm)		When installing the desk wheel.	Installation
2.Hand DVM (More than 3 digits)		Checking the fuser lamp. Checking the SMPS fuse.	Service
3.Spring hook (More than 3mm)		When disassembling the spring.	Service
4. Small vacuum		To remove the toner and contamination inside of the machine .	Service

Tool	Image	Use	Remark
5. Driver (M3 long, M3 short, M2 long, M2 short)		To tighten screws. To remove the hinge of the cover. To adjust a finisher dip switch. ON 1 2 3 4 5 6 7 8	Service
6. Tweezers (small type)		To unplug the pin connector of the fuser unit. To remove the E-ring.	Service
7. Cotton Swab		When cleaning rollers. - Transfer roller - Regi roller	Service
8. Soft cloth		To clean the frame and scan glass.	Service
10. Black cloth		To cover the OPC of the imaging unit.	Service
10. Measuring tape		To check the installation space	Installation

Tool	Image	Use	Remark
11. Install guide, Reference guide		When installing the machine.	Installation
12. Software CD		When installing the machine.	Installation
13. Test chart (A4 image, A3 image, Skew)		To check the image quality	Service
14. Spare kit (Screw, E-Ring)		To fix the unit or parts	Service
15. Clamp		To form the harness	Service
16. Grease		To remove the noise by gear. 1. G-8050 : JC81-08663A (200g) For fuser unit 2. SPY272 : JC81-08664A (100g) For feeding section (Pick up, MP, Duplex)	Service

10.2 Abbreviations

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

ADC	Analog to digital convert
AMS	Application Management System
BD PBA	Beam Detector PBA
CCD	Charge-Coupled Device
CMS	Color Management System
CRUM	Customer Replaceable Unit Module
DADF	Duplex Automatic Document Feeder
DCF	Double Cassette Feeder
DDR2	Double Data Rate 2
DIMM	Dual Inline Memory Module
ECP	Enhanced Capability Port
EEPROM	Electrically Erasable Programmable Read-Only Memory
ESD	Electrostatically Sensitive(ES) Devices
FCON PBA	FAX Controller Board
FCOT	First Copy Output Time
FDI	Foreign Device Interface
FFC	Flexible Flat Cable
FRR	Feed and Reverse Roller
HCF	High Capacity Feeder
HCF	High Capacity Feeder
HR	Heat roller
HVPS	High Voltage Power Supply
ICON PBA	Image Controller Board
IPM	Images Per Minutes
IPP	Internet Printing Protocols
ITB	Imaging transfer belt
LCD	liquid crystal display
LPEC3	LBP ENGINE CONTROL ASIC (LPEC3)
MSOK	Master System Operator Key
NIC	Network Interface Card

NTC thermistor	Negative temperature coefficient thermistor
NVM	Non-Volatile Memory
PCI	Peripheral Component Interconnect
PDF	Portable Document Format
PM	Preventive Maintenance
PWM	Pulse Width Modulation
RISC	reduced instruction set computer
SMPS	Switched-mode power supply
SNMP	Simple Network Management Protocol
SWS	Samsung Web Services
SWS	Safety Warning System
SyncThru	Samsung network sync management program
TCP/IP	Transmission Control Protocol/Internet Protocol
TFT	Thin-Film Transistor
TIFF	(Adobe & Aldus) Tagged Image File Format
TRC Control	Tone Reproduction Curve Cotrol
UART	Universal Asynchronous Receiver and... Receiver and Transmitter
UI	User Interface
VPU	Visual Processing Unit
WNPC	Wireless LAN Module supports Network Card
XOA	Extensible Open Architecture
XPS	X-ray Photoelectron Spectroscopy