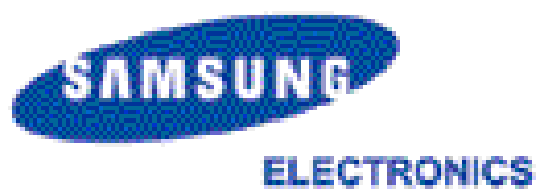# SAMSUNG

Service Manual

Digital Color Laser MFP

CLX-9250ND / 9350ND

The keynote of Product

- Print/Copy speed
  - CLX-9250ND : 25/25 ppm (A4)
  - CLX-9350ND : 35/35 ppm (A4)

- 1Ghz CPU (9350) / 800Mhz (9250)

- 250 GB HDD

- 1GB Memory (Max. 2GB)

- 8.9 inch color graphic touch-screen LCD

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

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Service Manual

Service Manual

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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.

1-1

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.

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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	CLX-9250		CLX-9350
Printing Speed (A4) (Color / Mono)	25 ppm/ 25 ppm		35 ppm/ 35 ppm
FCOT (Color / Mono)	< 10.6 sec / < 9.0 sec		< 8.5 sec / < 7.5 sec
Warm-up Time	< 45 sec from Power Save		
Duplex Printing Speed	Same as rated engine speed		
Scanning Speed (A4)	60 ipm @ 300 dpi 40 ipm @ 600 dpi		60 ipm @ 300 dpi 40 ipm @ 600 dpi
Memory (Std / Max)	1 GB / 2 GB		
HDD	250 GB		
CPU	PowerPC 800 Mhz		PowerPC 1.0 Ghz
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		256
Size (W x D x H)	675.5 x 722 x 1153 mm (26.6 x 28.4 x 45.4 inches)		
Weight	96.71 Kg (213.21 lbs.) (without consumables and options) 110 Kg (242.5 lbs.) (including consumables without options)		
Noise (dB)	• Low Power mode : 34 dB(A) • Ready mode : 43 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 50 W • Power save mode : Less than 11 W • Power off mode : Less than 0 W		
Power requirement	AC 110-127 V , 50/60 Hz or: AC 220-240 V , 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 110-127 V , 50/60 Hz or AC 220-240 V , 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	CLX-9250	CLX-9350
Printing method	Color laser beam printing	
Printing speed	Up to 25 ppm (A4), 25 ppm (Letter)	Up to 35 ppm (A4), 35 ppm (Letter)
Duplex printing speed	Up to 25 ipm (A4), 25 ipm (Letter)	Up to 35 ipm (A4), 35 ipm (Letter)
First print out time (Color / Mono)	< 12.2 sec / < 10.6 sec	< 10.5 sec / < 9.5sec
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	PCL5Ce, PCL6C, PostScript 3, PDF 1.5+, TIFF, PJL, XPS	
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	CLX-9250	CLX-9350
Copy Speed	Up to 25 cpm (A4), 25 cpm (Letter)	Up to 35 cpm (A4), 35 cpm (Letter)
Duplex copy speed	Simplex to Duplex (1-2) : Up to 25 ipm in A4 (25 ipm in Letter) Duplex to Duplex (2-2) : Up to 8 ipm in A4 (8 ipm in Letter) @ normal mode	Simplex to Duplex (1-2) : Up to 35 ipm in A4 (35 ipm in Letter) Duplex to Duplex (2-2) : Up to 22 ipm in A4 (22 ipm in Letter) @ normal mode
First copy out time	• Black & white: 9.0 seconds (from ready) • Color: 10.6 seconds (from ready)	• Black & white: 7.5 seconds (from ready) • Color: 8.5 seconds (from ready)
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		CLX-9250	CLX-9350
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	CLX-9250		CLX-9350
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	356 mm (14 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		

Consumables

Product	Model name		Life	CLX-9250	CLX-9350
	N.A / KOR	ELS			
Black Toner	CLT-K606S	CLT-K6062S	25K pages	O	O
Cyan Toner	CLT-C606S	CLT-C6062S	20K pages	X (Not Available)	O
	CLT-C607S	CLT-C6072S	15K pages	O	O
Magenta Toner	CLT-M606S	CLT-M6062S	20K pages	X (Not Available)	O
	CLT-M607S	CLT-M6072S	15K pages	O	O
Yellow Toner	CLT-Y606S	CLT-Y6062S	20K pages	X (Not Available)	O
	CLT-Y607S	CLT-Y6072S	15K pages	O	O
Black Imaging Unit	CLT-R607K		75K pages	O	O
Cyan Imaging Unit	CLT-R607C		75K pages	O	O
Magenta Imaging Unit	CLT-R607M		75K pages	O	O
Yellow Imaging Unit	CLT-R607Y		75K pages	O	O
Waste Toner Container	CLT-W606		75K images	O	O

* Declared yield value in accordance with 6% pattern
** Image counts are based on one color on each page. If you print a document in full color (Yellow, Magenta, Cyan, Black), the number of image is 4 images.

PM Kit

Model Code	Kit components	Life	Qty	Remark
CLX-PMK10C	Cartridge transfer cleaner Transfer roller (T2) Ozone filter LSU filter	150,000	1 1 1 2	
CLX-PMK11C	Pick up roller Retard roller Forward roller	225,000	1 1 1	Tray 1,2,3,4, HCF
CLX-PMK12C	Pick up roller ADF roller Retard roller	225,000	1 1 1	DADF
CLX-PMK13C	MP Pick up roller MP Retard roller MP Forward roller	150,000	1 1 1	MP Tray

Paper Specifications

Item	CLX-925xND	CLX-935xND
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)	
Output Paper Capacity	• Standard : 500 (Center Output Tray) + 150 (Job Separator) • Maximum : 3,250 (Booklet Finisher) + 150 (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") ~ 320 x 1200 mm (12.6" 47") • High Capacity Feeder : A4 / Letter	

Paper Type	• Cassette : Plain Paper, Thin Paper, Bond, Punched, Pre-Printed, Recycled,
	          Label, CardStock, Letterhead, Thick, Cotton, Colored, Archive, Glossy
	
	• MP Tray : Printer Default, Plain Paper, Thick Paper, Thin Paper, Bond Paper,
	         Color Paper, CardStock, Labels, Transparency, Envelope, Preprinted,
	         Letterhead, Recycled Paper, Cotton, Archive, Glossy
	
	• High Capacity Feeder : Plain Paper, Thin Paper, Bond, Punched, Pre-Printed,
	         Recycled, Letterhead,Thick paper	

Paper Weight	• Cassette : 60 ~ 216 gsm (16lb Bond ~ 90lb Index) • MP Tray : 60 ~ 253 gsm (16lb Bond ~ 90lb Cover) • High Capacity Feeder : 60 ~ 120 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)	

National Kit

Model Code	Kit components	Qty	Remark
VAL-K016DE/ELS	OPE DUMMY FRONT Quick Install Guide Quick Reference Guide	40 40 40	GERMANY
VAL-K016IT/ELS	OPE DUMMY FRONT Quick Install Guide Quick Reference Guide	40 40 40	ITALY
VAL-PC20UK/XEU	POWER CORD	60	UK

Option Unit

Option Unit	Model name	Remark
Stand	CLX-DSK10T	
Dual Cassette Tray	CLX-PFP000	520 Sheet Tray x 2
HCF (High Capacity Feeder)	CLX-HCF102	2,000 Sheets (LTR, A4)
Face-up output tray	CLX-STK110	100 Pages, In 9250 series, this is optional.
Bridge Unit	CLX-BRG200	
Standard Finisher	CLX-FIN40S	1,250 Stacking, Stapling (4 Pos)
Booklet Finisher	CLX-FIN40L	3,250 Stacking, Stapling (4 Pos), Booklet
Punch Kit	CLX-HPU000	2-3 Holes (NA)
	CLX-HPU001	2-4 Holes (EU)
Working Table	CLX-WKT000	
1 GB Memory	CLX-MEM300	1 GB
Foreign Device Interface (FDI) Kit	CLX-KIT10F	Serial Port
Fax Kit	CLX-FAX150	G3, T.37/38, PC Fax SW, Fax Manual Softcopy
Fax Multiline Kit	CLX-FAX250	G3
SmarThru Workflow		Document Distribution Solution
CounThru2		Counter and Cost Management Solution
Advanced PDF Kit		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)

Option unit configuration

Bridge kit
(CLX-BRG200)

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

Working Table
(CLX-WKT000)

Duplex Automatic Document Feeder

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

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

Face-up output tray
(CLX-STK110)
*In CLX-9250 series,
this is optional.

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 1G
(CLX-MEM300)

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

2.2 System configuration

Front view 1
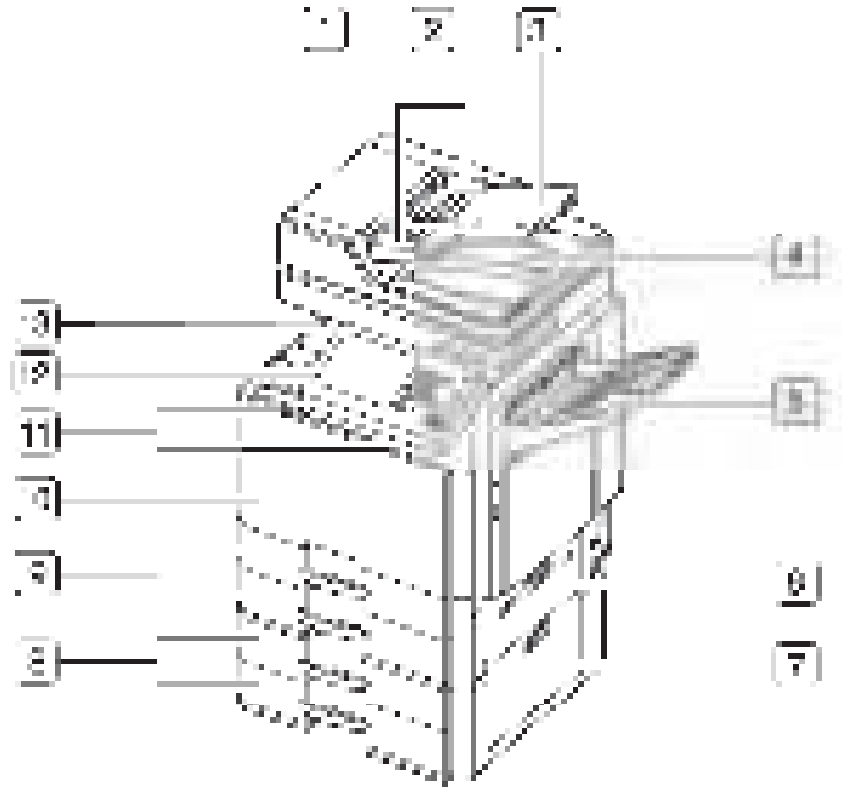
* In CLX-9250 Series, the face-up tray is optional device.

1	DADF cover	8	Optional dual cassette feeder (tray3, tray4)
2	DADF width guides	9	Standard tray (tray1, tray2)
3	DADF input tray	10	Front door
4	DADF output tray	11	Front door handle
5	Face-up tray*	12	Control panel
6	Standard tray right bottom door	13	Face-Down tray
7	Optional dual cassette feeder right bottom door		

Front view 2
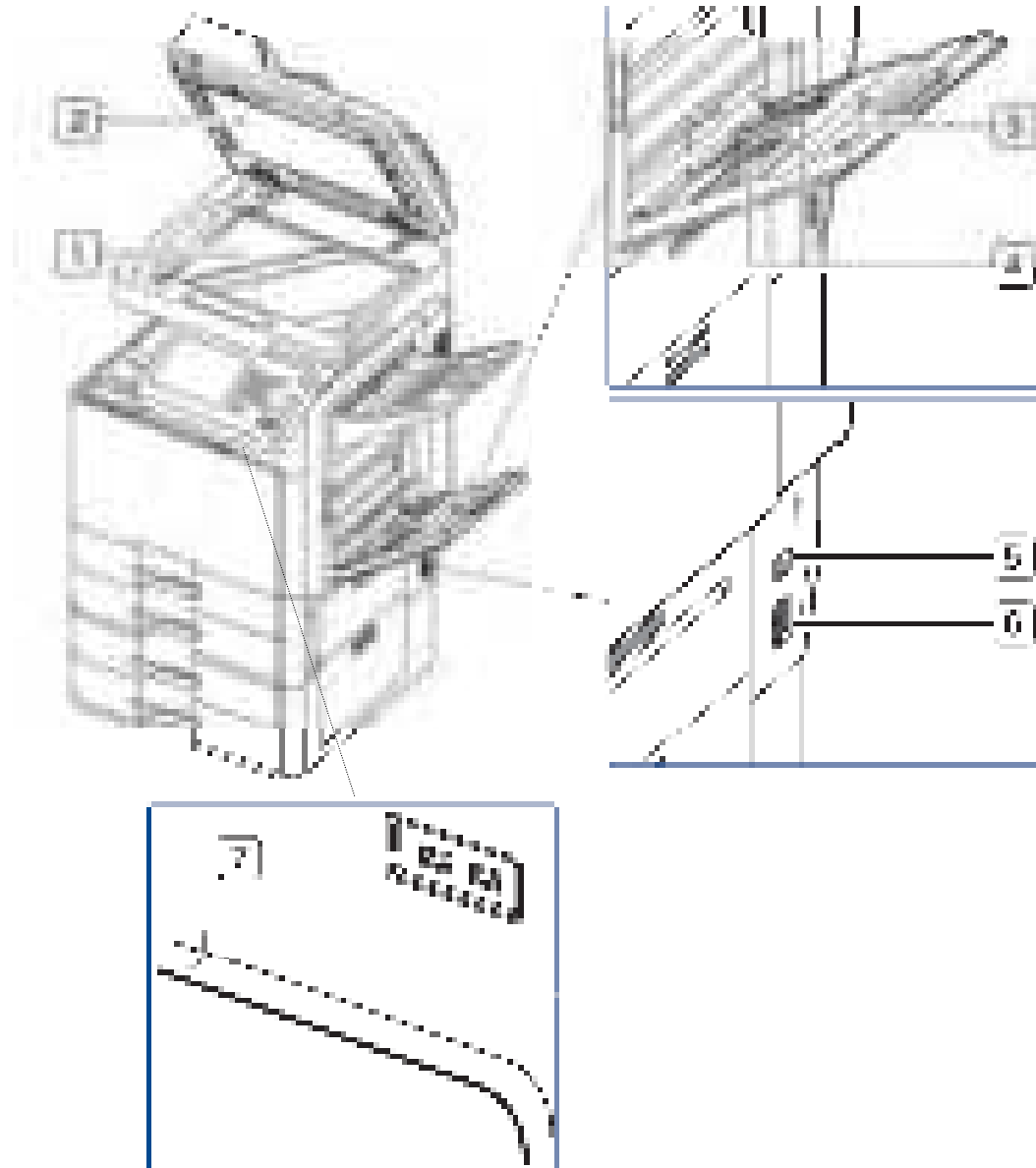
1	Scanner glass	5	Power-switch
2	Sponge-sheet	6	Power receptacle
3	Multi-purpose tray	7	USB port (2 EA)
4	Multi-purpose tray paper width guide		

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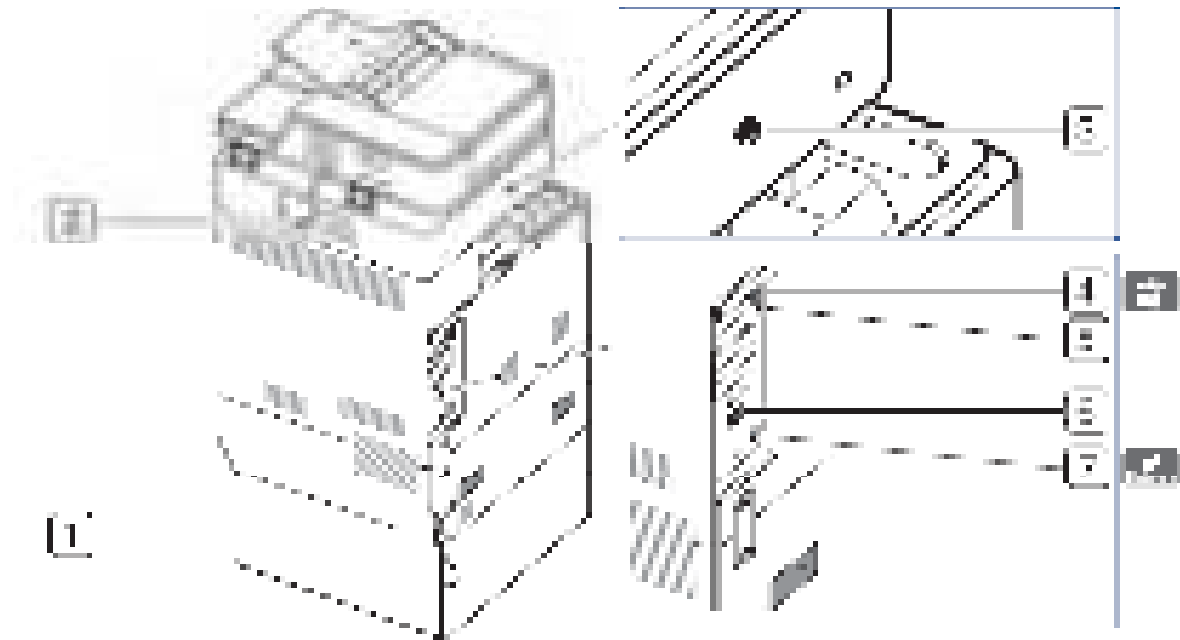
1	Optional dual cassette feeder cable	5	USB host port
2	DADF cable	6	Finisher connector
3	Scanner locking screw	7	Network port
4	USB port (Connection port to computer)		

Inner view
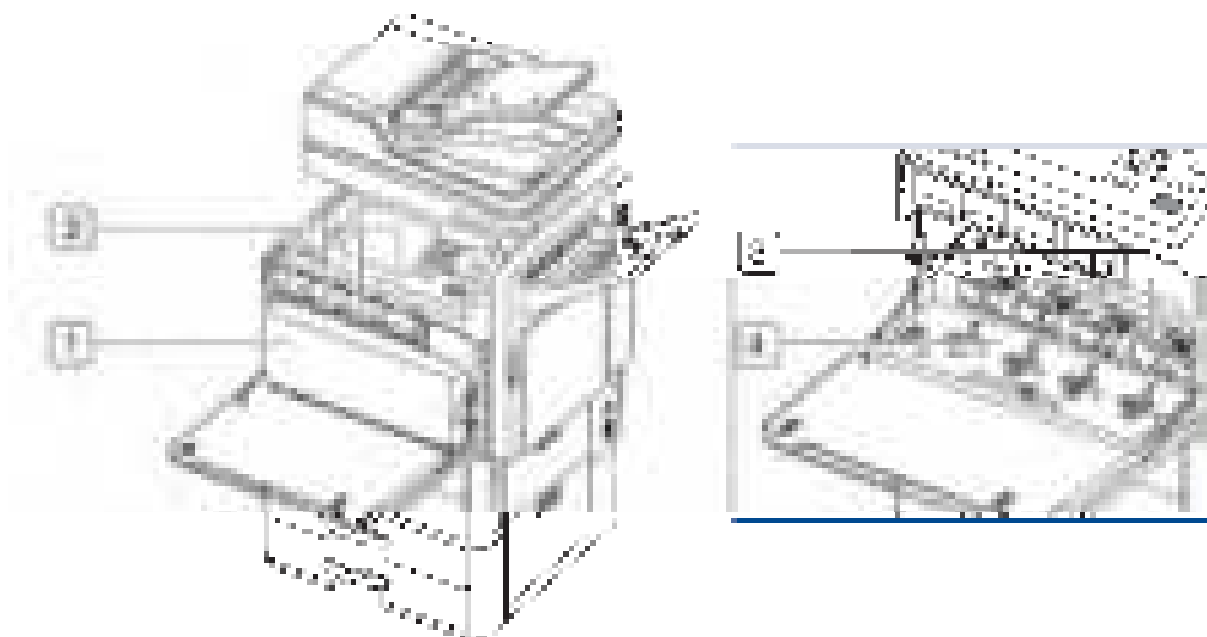
1	Waste toner container	3	Imaging units
2	Toner cartridge	4	Inner cover

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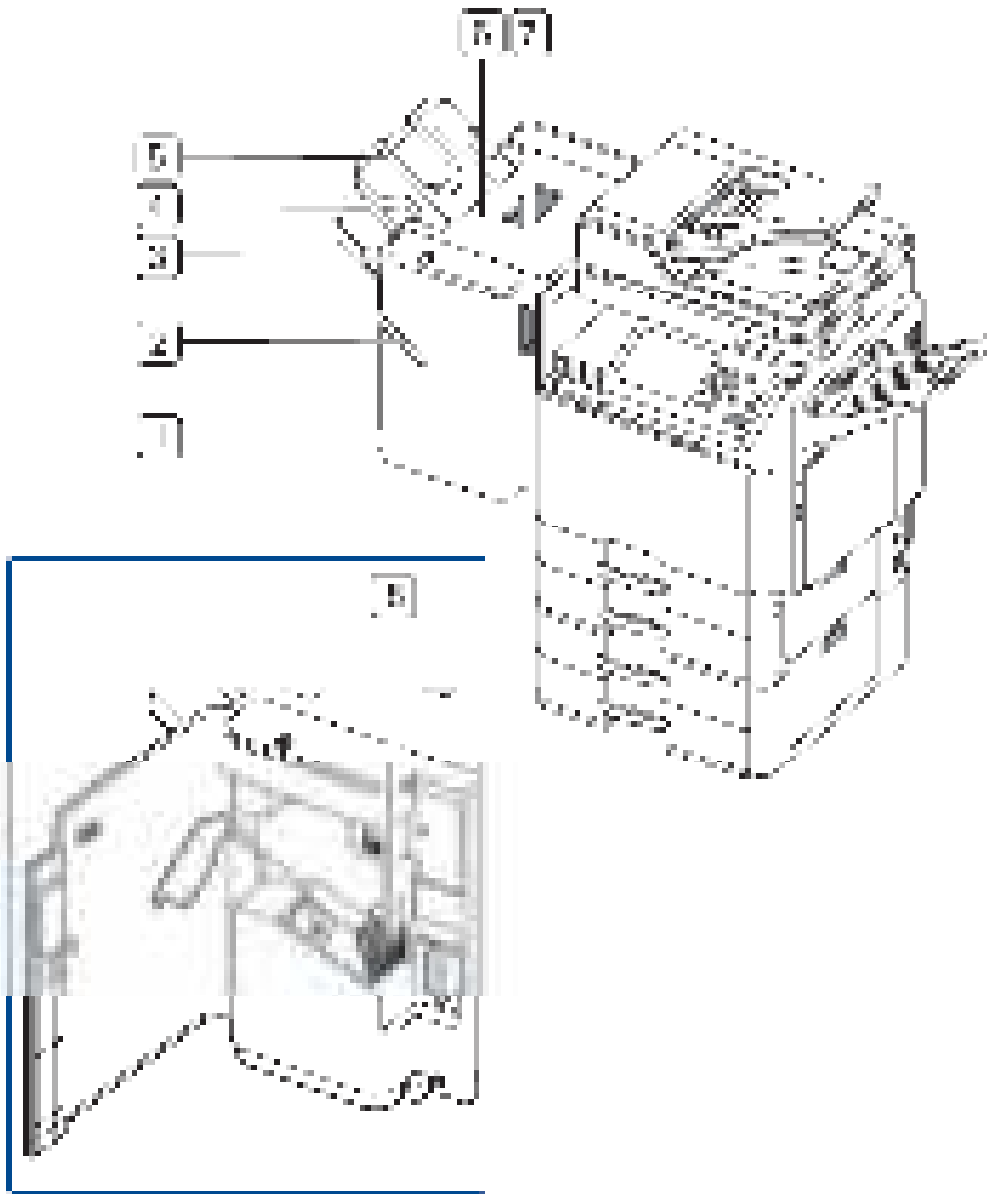
1	Standard finisher front door	5	Top tray
2	Manual stapler	6	Top door
3	Manual stapler button	7	Standard finisher Front door handle
4	Finishing tray	8	Staple

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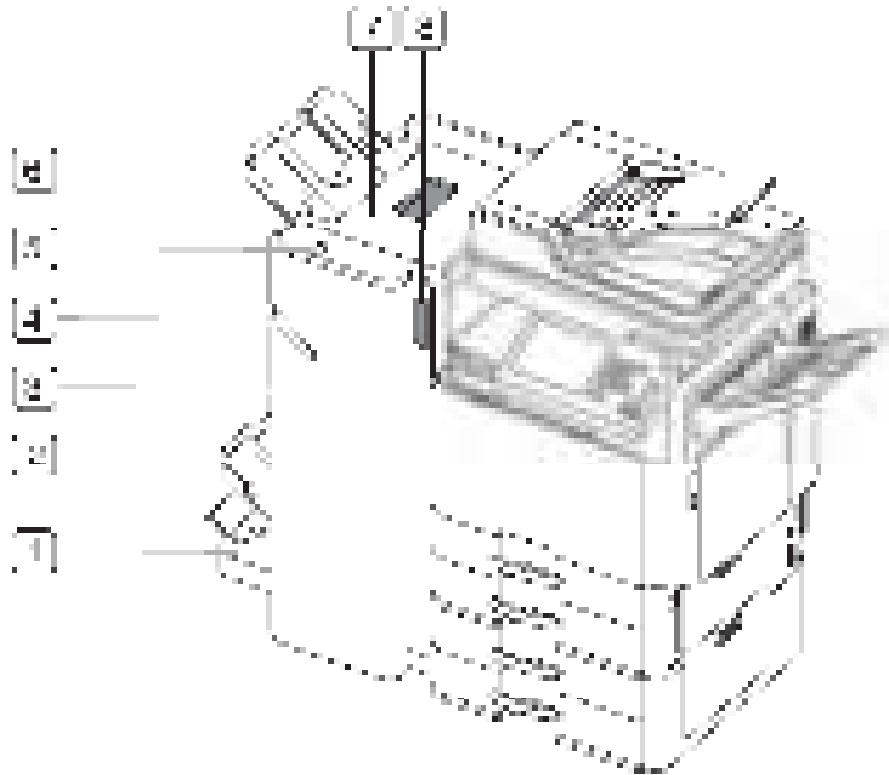
1	Booklet tray	5	Manual stapler button
2	Finishing tray	6	Top tray
3	Booklet finisher front door	7	Top door
4	Manual stapler	8	Booklet finisher front door handle

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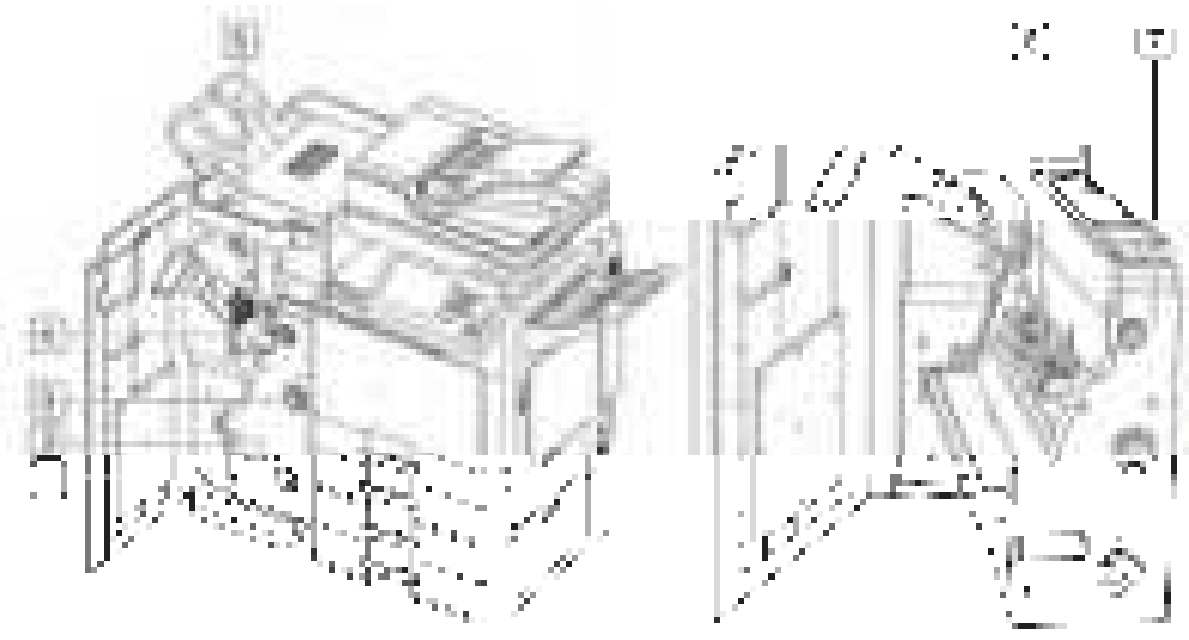
1	Knife wheel	5	Staple
2	Booklet maker handle	6	Booklet Staple (2 EA)
3	Fold wheel	7	Booklet maker cover
4	Booklet jam removal wheel		

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Layout
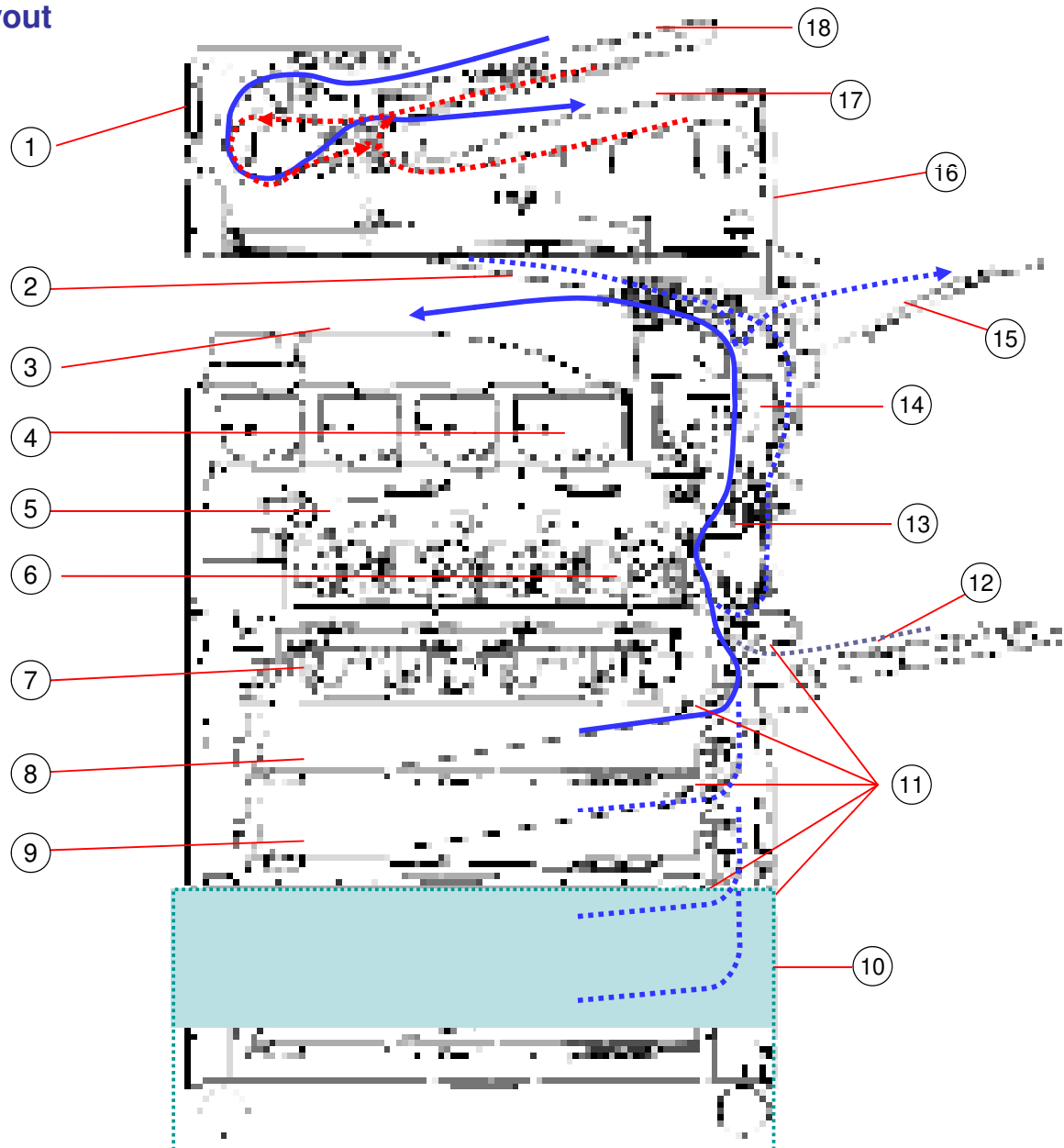
1	DADF	**7**	Laser scanning unit	**13**	2nd transfer roller unit
2	Duplex guide	**8**	1st tray	**14**	Fuser unit
3	Face down output tray	**9**	2nd tray	**15**	Face up output tray
4	Toner cartridges	**10**	Optional tray (Stand / HCF / DCF)	**16**	Flatbed scanner
5	Image Transfer Belt (ITB) unit	**11**	Pick up / Retard / Forward rollers	**17**	Document output tray
6	Imaging units	**12**	MP tray	**18**	Document input tray

Paper Path

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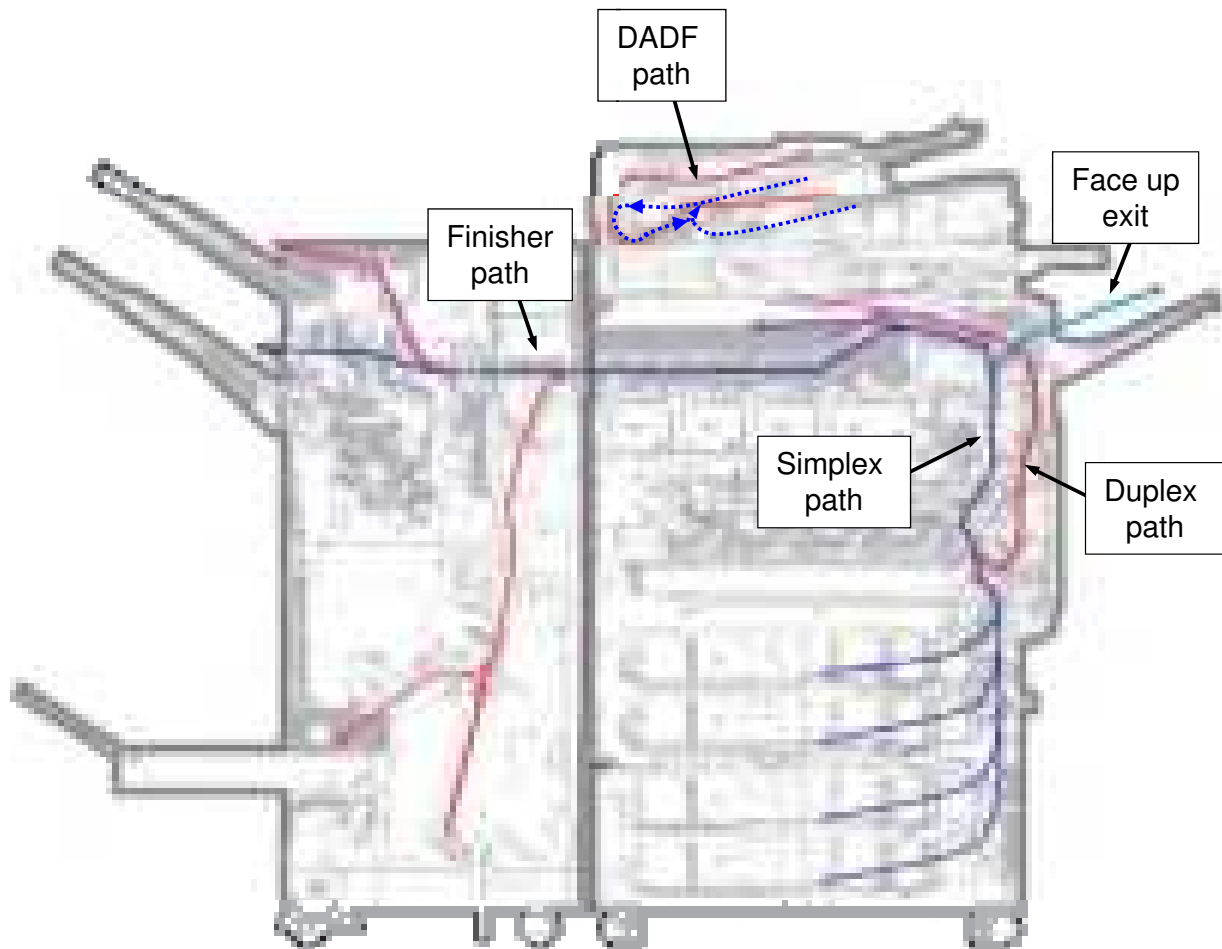
2.3 Sensor location

The following diagrams display the printer sensor locations.
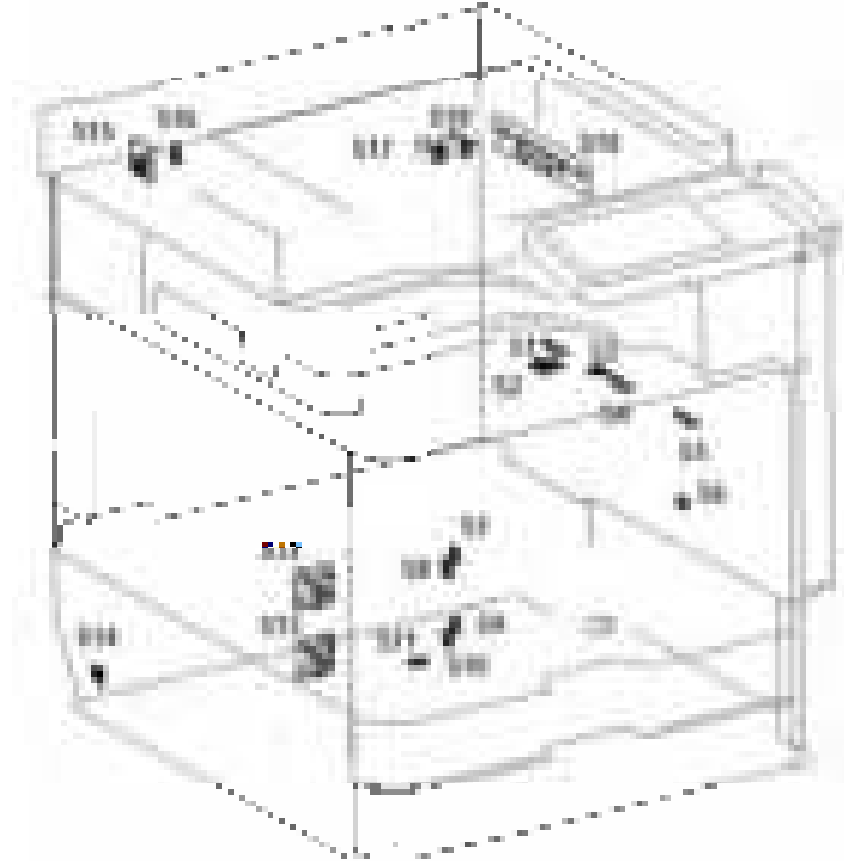
Ref.	Description	Part Number	Controller PCB	Relative Error Code
S1	PBA SENSOR ACR	JC32-00012A		S2-3114 / S2-3115
S2	PBA ENCODER ITB	JC92-02160A		-
S3	SENSOR-HUMIDITY	JC32-00005A		A3-3211 / A3-3212
S4	PBA SENSOR ACR	JC32-00012A		S2-3114 / S2-3115
S5	PBA SENSOR ACR	JC32-00012A	PBA-ENGINE	S2-3114 / S2-3115
S6	SWITCH FRONT COVER	JC32-00012A	CLX-9350ND	S2-4210
S7	PHOTO-INTERRUPTER	0604-001393	: JC92-02129A	-
S8	PHOTO-INTERRUPTER	0604-001393	CLX-9250ND	-
S9	PHOTO-INTERRUPTER	0604-001393	: JC92-02239A	-
S10	PHOTO-INTERRUPTER	0604-001393		-
S11	PHOTO-INTERRUPTER	0604-001393		M1-3122 / M2-3222
S12	SENSOR-PAPER SIZE	JC32-00013A		M1-4111

Ref.	Description	Part Number	Controller PCB	Relative Error Code
S13	SENSOR-PAPER SIZE	JC32-00013A	PBA-ENGINE CLX-9350ND : JC92-02129A CLX-9250ND : JC92-02239A	M1-4211
S14	SENSOR-HUMIDITY	JC32-00005A		A3-3311 / A3-3312
S15	PBA-COVER OPEN SENSOR	JC92-02143A	PBA-SCAN JOINT (JC92-02144A)	U3-4210
S16	PHOTO-INTERRUPTER	0604-001393		S3-3121
S17	PHOTO-INTERRUPTER	0604-001370	PBA-SCAN (JC92-02170A)	-
S18	PHOTO-INTERRUPTER	0604-001370		-
S19	CCD	0605-001158	PBA-CCDM (JC92-02171A)	-
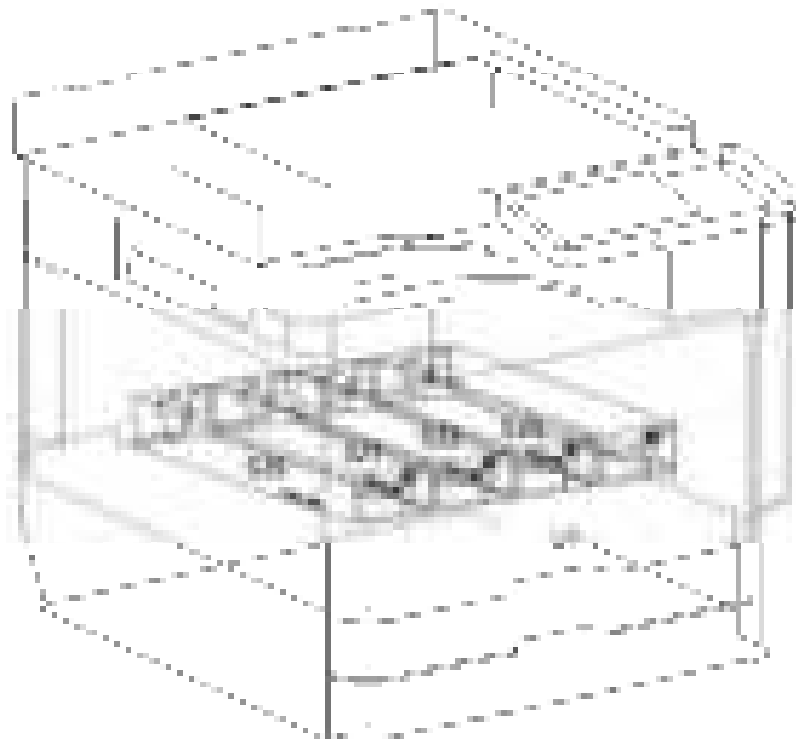
Ref.	Description	Part Number	Controller PCB	Relative Error Code
S20	SENSOR-DEVELOPER	JC32-00010A	PBA-ENGINE CLX-9350ND : JC92-02129A CLX-9250ND : JC92-02239A	C3-2422
S21	SENSOR-DEVELOPER	JC32-00010A		C3-3422
S22	SENSOR-DEVELOPER	JC32-00010A		C3-4422
S23	SENSOR-DEVELOPER	JC32-00010A		C3-5444

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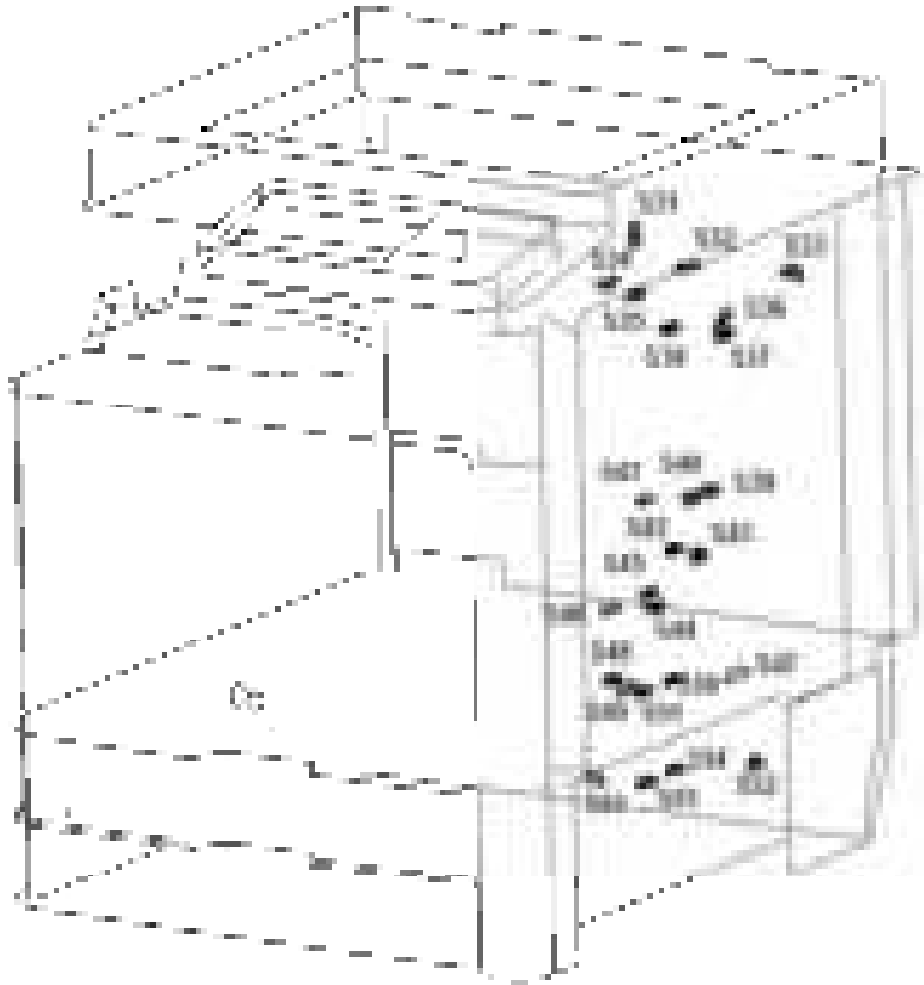
Ref.	Description	Part Number	Controller PCB	Relative Error Code
S31	PHOTO-INTERRUPTER	0604-001393		M3-2220
S32	PHOTO-INTERRUPTER	0604-001393	PBA-ENGINE	M3-1313
S33	PHOTO-INTERRUPTER	0604-001393	CLX-9350ND : JC92-02129A	M3-1313
S34	PHOTO-INTERRUPTER	0604-001393		M2-1333
S35	PHOTO-INTERRUPTER	0604-001381	CLX-9250ND : JC92-02239A	M2-2215
S36	PHOTO-INTERRUPTER	0604-001393		M2-2113
S37	PHOTO-INTERRUPTER	0604-001393		M3-2320

Ref.	Description	Part Number	Controller PCB	Relative Error Code
S38	PHOTO-INTERRUPTER	0604-001393		M3-1313 M3-1314
S39	PHOTO-INTERRUPTER	0604-001393		-
S40	PHOTO-INTERRUPTER	0604-001393		-
S41	PHOTO-INTERRUPTER	0604-001393		-
S42	PHOTO-INTERRUPTER	0604-001393		-
S43	PHOTO-INTERRUPTER	0604-001393		C5-1551
S44	PHOTO-INTERRUPTER	0604-001393		M2-2251
S45	PHOTO-INTERRUPTER	0604-001399	PBA-ENGINE	-
S46	PHOTO-INTERRUPTER	0604-001381	CLX-9350ND : JC92-02129A	M1-1615 M2-12133 M2-2313
S47	VR-SLIDE	2102-001020	CLX-9250ND : JC92-02239A	-
S48	PHOTO-INTERRUPTER	0604-001393		M1-5612
S49	PHOTO-INTERRUPTER	0604-001381		
S50	PHOTO-INTERRUPTER	0604-001393		M2-1114
S51	PHOTO-INTERRUPTER	0604-001393		M1-4111
S52	PHOTO-INTERRUPTER	0604-001393		M1-5112
S53	PHOTO-INTERRUPTER	0604-001381		S2-4A10
S54	PHOTO-INTERRUPTER	0604-001393		M2-1123
S55	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 2nd 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.

Return transport path detection

Return

Face up path solenoid

Exit2 tray path solenoid

Exit tray2 paper full detection

Face Up

Face down tray paper full detection

Face down tray jam detection

Face up jam detection

Face up tray installation detection

Return path solenoid

Exit

Paper jam detection

Duplex jam detection1

Duplex

Fuser

Paper curl detection

ITB

T2

Duplex jam detection2

Regi

Duplex clutch

Paper regi. time detection

Transparency detection

MPF

MPF clutch

Tray1 paper remaining quantity detection

Tray1 upper limit detection

MPF media size detection (Long media)

Tray1 paper empty detection

Paper tray

Tray1 lift motor

MPF solenoid

MPF paper empty detection

MPF media size detection

Tray1 paper size detection

Pick Up

Tray1 transport detection

Tray2 paper empty detection

Tray2 transport detection

Tray2 paper size detection

Tray2 lift motor

Tray2 upper limit detection

Tray2 paper remaining quantity detection

Name	Function	connector & pin information
Tray1 paper size detection	Detects tray1 paper size (installation)	CN2@ Cassette Joint PBA, 4Pin
Tray1 paper remaining quantity detection	Detects tray1 paper remaining quantity	CN8@ Cassette Joint PBA, 6Pin
Tray1 paper empty detection	Detects tray1 paper empty	CN4@ Cassette Joint PBA, 3Pin
Tray1 upper limit detection	Detects tray1 upper limit	CN3@ Cassette Joint PBA, 3Pin
Tray1 transport detection	Detects tray1 paper pass	CN3@ Cassette Joint PBA, 3Pin
Tray2 paper size detection	Detects tray2 paper size (installation)	CN2@ Cassette Joint PBA, 4Pin
Tray2 paper remaining quantity detection	Detects tray2 paper remaining quantity	CN8@ Cassette Joint PBA, 6Pin
Tray2 paper empty detection	Detects tray2 paper empty	CN4@ Cassette Joint PBA, 3Pin
Tray2 upper limit detection	Detects tray2 upper limit	CN3@ Cassette Joint PBA, 3Pin
Tray2 transport detection	Detects tray2 paper pass	CN3@ Cassette Joint PBA, 3Pin
Paper regi. time detection	Detects paper regi. Time	CN18@ Engine PBA, 3PIN
Transparency detection	Detects transparency	CN18@ Engine PBA, 3PIN
Paper curl detection	Detects paper position	CN5@ SIDE JOINT PBA, 6PIN
Paper jam detection	Detects fuser jam	CN5 @ SIDE JOINT PBA, 3PIN
Face down tray jam detection	Detects exit jam	CN18@ Engine PBA, 3PIN
Face down tray paper full detection	Detect paper full	CN18@ Engine PBA, 3PIN
Return transport path detection	Detects return(Exit2 tray) paper pass	CN18@ Engine PBA, 3PIN
Face up path solenoid	Change paper path	CN6 @ SIDE JOINT PBA, 3PIN
Exit2 tray path solenoid	Change paper path	CN8 @ SIDE JOINT PBA, 3PIN
Return path solenoid	Change paper path	CN18@ Engine PBA, 3PIN
MPF solenoid	MPF pick up roller up/down	CN2 @ SIDE JOINT PBA, 3PIN
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 clutch	MPF driving control	CN2 @ SIDE JOINT PBA, 2PIN
Duplex clutch	Duplex driving control	CN4 @ SIDE JOINT PBA, 2PIN
Duplex jam detection 2	Detects duplex jam 2	CN6 @ SIDE JOINT PBA, 3PIN
Duplex jam detection 1	Detects duplex jam 1	CN6 @ SIDE JOINT PBA, 3PIN
Face Up jam detection	Detects exit jam	CN9 @ SIDE JOINT PBA, 3PIN
Exit tray 2 paper full detection	Detects exit tray2 paper full	CN6 @ SIDE JOINT PBA, 3PIN
MPF Paper empty detection	Detects MPF paper empty	CN7 @ SIDE JOINT PBA, 3PIN
Face up tray installation detection	Detects face up tray install	CN9 @ SIDE JOINT PBA, 3PIN
Tray1 Lift Motor	Lifting knock up plate	CN4@ Cassette Joint PBA, 3Pin
Tray2 Lift Motor	Lifting knock up plate	CN4@ Cassette Joint PBA, 3Pin

2.4.2 Components

The following diagrams display the positions of the printer components
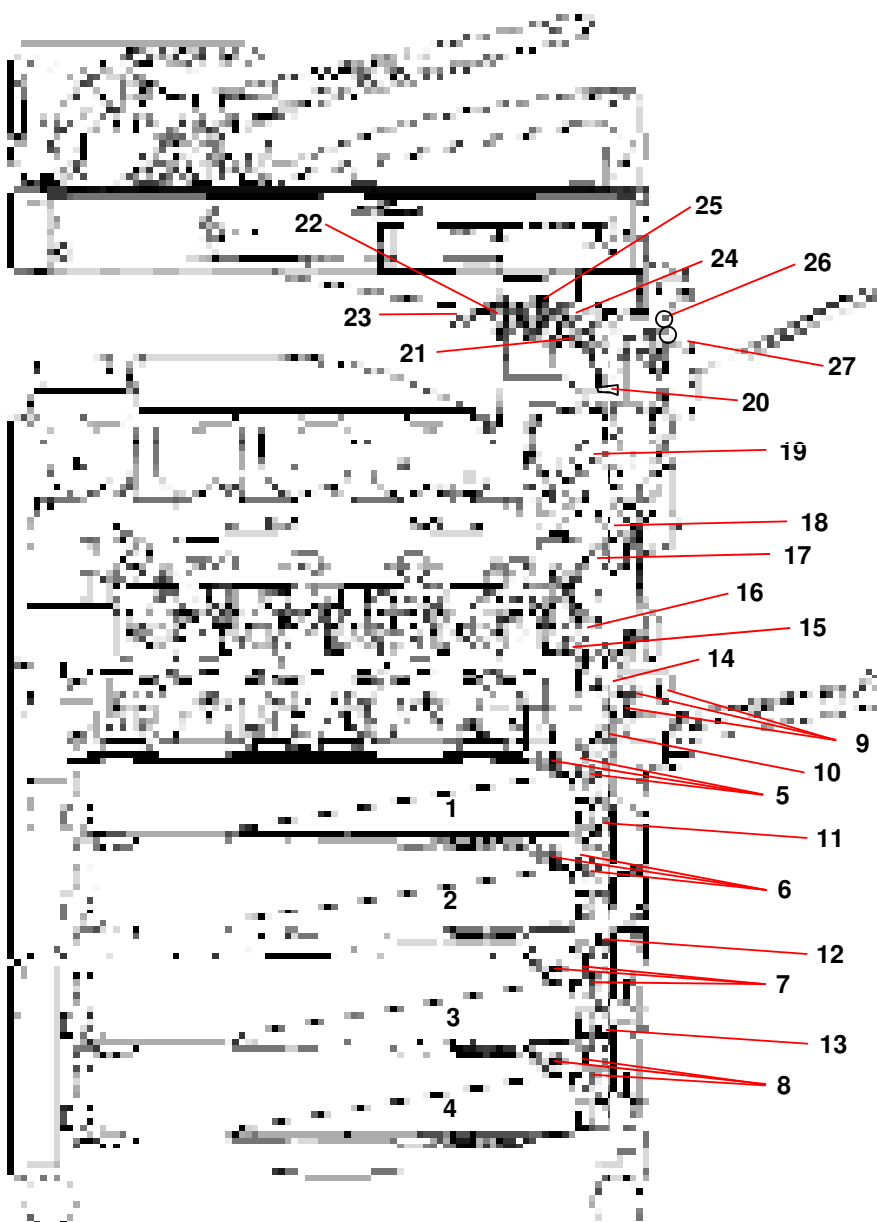
1	Tray 1 Paper tray
2	Tray 2 Paper tray
3	Tray 3 Paper tray
4	Tray 4 Paper tray
5	Tray 1 pick up / retard / forward rollers
6	Tray 2 pick up / retard / forward rollers
7	Tray 3 pick up / retard / forward rollers
8	Tray 4 pick up / retard / forward rollers
9	MP Tray pick up / retard / forward rollers
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 2nd transfer
18	Sensor fuser in
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 face up exit
27	Actuator face up bin full

2.4.3 Functions

This section describes the functions of the paper handling components.

Pickup Roller (paper tray and bypass feed)
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 bypass feed)
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 bypass feed)
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.

Conveying Roller (paper tray and bypass feed)
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.

Bypass Paper Sensor
This sensor detects whether paper is set in the bypass tray. When it is, bypass feeding 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.
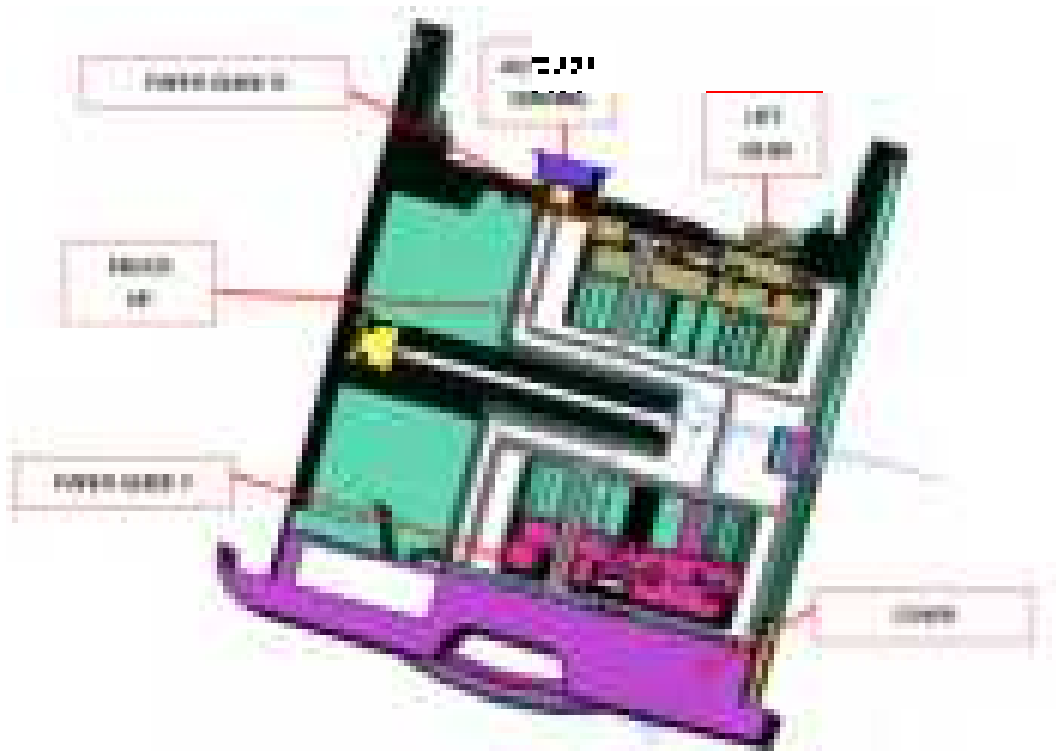
Specification

• Structure : Paper tray Type, Auto Paper Size

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

• Paper :

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

    -. Special Paper : 12"×18", Label, Card stock

                (Label : 50 sheets, Thick Cardstock [170~216 g/㎡ : 350 sheets)

• Weight : plain paper 60 ~ 216g/㎡

• 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 retard 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:

Forward Roller

Retard Roller

Actuator-Empty Sensor

Pick Up Roller
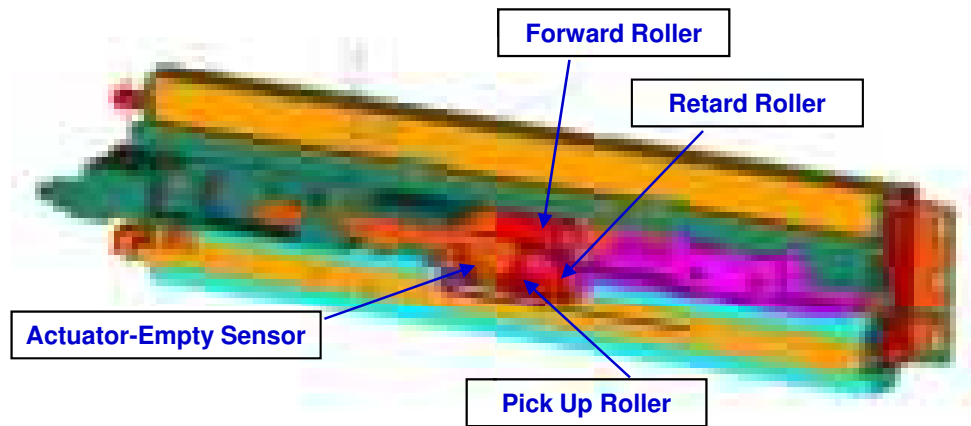
2.4.6 Registration unit

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.
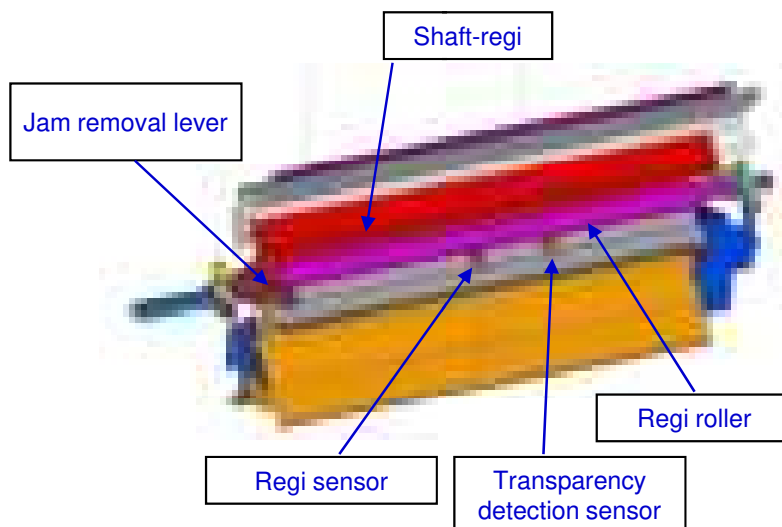
■ Specification

1) Skew in Simplex
   -. Top Skew : 1.5 mm
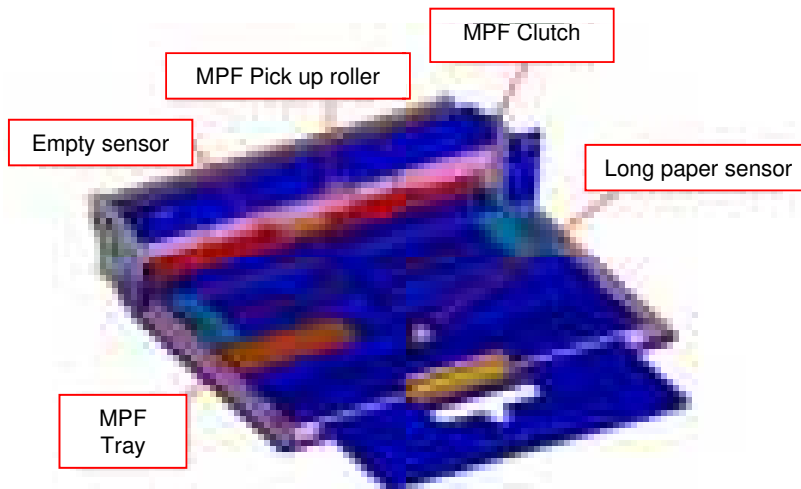   -. Side Skew : 2.0 mm
2) Dog Ear, Trees, Nicks, Wrinkling
   -. Special Media : 1/500
3) Margin
   -. Top Margin   : 4.23 ± 1.5 mm (Tray3, 4, HCF : 4.23 ± 2.0 mm)
   -. Side Margin : 4.23 ± 1.5 mm (Tray3, 4, HCF : 4.23 ± 2.0 mm)
   -. Duplex Top Margin   : 4.23 ± 2.0 mm (Tray3, 4, HCF : 4.23 ± 2.0 mm)
   -. Duplex Side Margin   : 4.23 ± 2.0 mm (Tray3, 4, HCF : 4.23 ± 2.0 mm)

2.4.7 MPF unit

The following is a diagram of the MFP unit:

Specification

- Tray capacity : 100 sheets (80g/㎡ standard Xerox Preminum)
- Media Size : Max 12.6"×17.7" (320.6×450㎜) / Min 3.87"×5.8" (98×148㎜)
- Media weight : Plain paper 60 ~ 253g/㎡
- Feeding speed : 30 ppm (CLX-9350ND), 20 ppm (CLX-9250ND) 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.

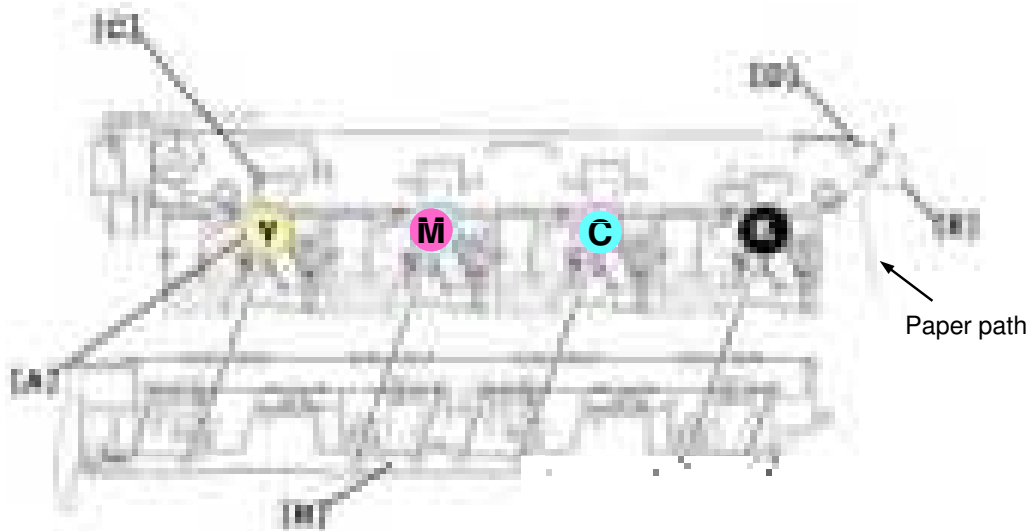This machine uses an FRR (Feed and Reverse Roller) system for feeding paper.

There is friction between the feed roller [E] and retard roller [D]. This friction separates the top sheet of paper from the stack.
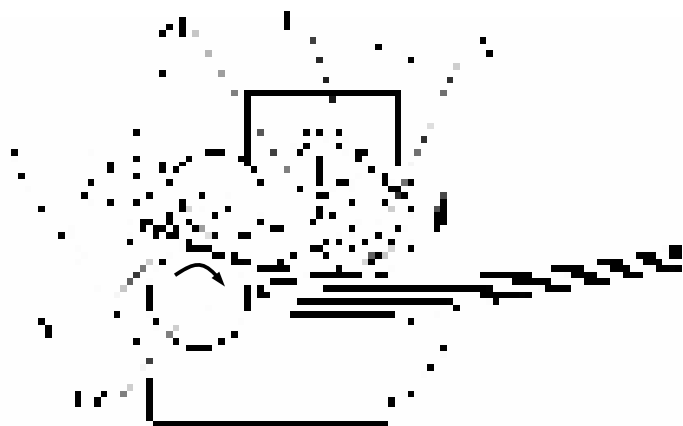
2.5 Image creation

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

2.5.1 Printing process overview

Paper path

This color printing system includes the LSU with four laser beams, four imaging units, ITB unit and transfer unit. The 4 imaging units are: Yellow, Magenta, Cyan and Black (from left to right as shown in the diagram).

This machine uses four Imaging units, and four laser beams for color printing. Each Imaging unit consists of a Drum unit and Development unit. Each Drum unit has an OPC drum, Charge Scorotron, Eraser and Cleaning blade. From the left, the Imaging unit stations are: yellow, cyan, magenta, and black.

The OPC drum [A] is charged with a negative voltage by the Charge Scorotron and is exposed by the light from the LSU (Laser Scanning unit) [B]. The light produced by the laser creates a latent image by discharging on the surface of the OPC drum. The negatively charged toner is attracted to the latent drum image due to an electric field. The toner (real image) on each OPC drum is moved to the transfer belt by the positive bias applied to the first transfer roller [C]. All four toners (color image) are transferred to the paper by a positive charge applied to the second transfer roller [E].

Process Steps

1. OPC drum charge: The Charge Scorotron gives the drum a negative charge.

2. Laser exposure: Light produced by a laser diode hits 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. This machine uses four independent imaging units (one for each color).

4. Transfer:
     a. First transfer: The first transfer rollers opposite the OPC drums transfer toner from the drums to the transfer belt. Four toner images are super-imposed onto the belt.

     b. Second transfer: The transfer roller transfers the toner from the transfer belt to the media.

5. Cleaning for OPC drum: The cleaning brush and blade remove remaining toner 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 laser at the end of every job.

7. Cleaning and quenching for transfer belt: The cleaning brush and blade clean the belt surface. The grounding roller inside the transfer belt unit removes the remaining charge on the belt.
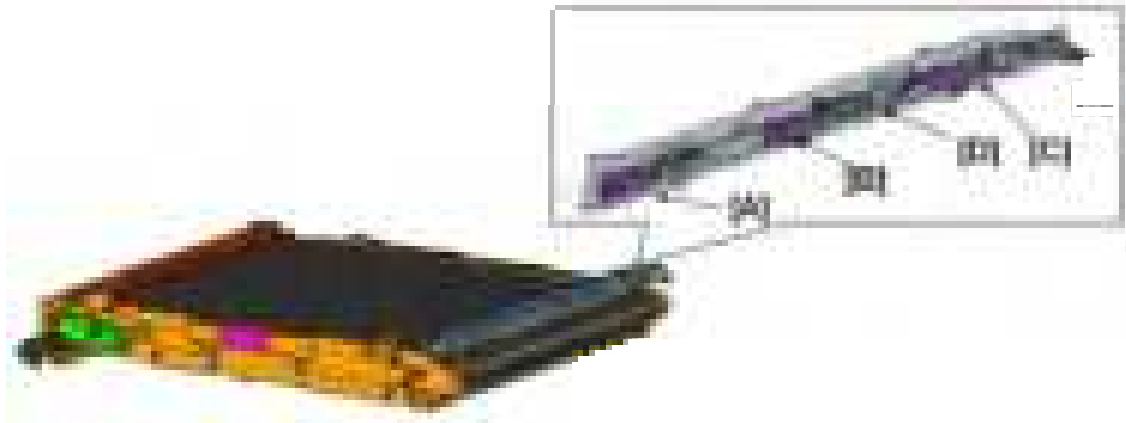
8. ID sensors: The ID sensors detect the density of ID sensor patterns on the transfer belt. Three ID sensors for the line position adjustment (front, center, and rear) and process control.

> [A]: Line position adjustment (front)
>
> [B]: Line position adjustment (center) & process control
>
> [C]: Line position adjustment (rear)
>
> [D]: Humidity Sensor (Internal).

The ID sensor output is used for the following:

> - Process control and for automatic line position
>
> - Skew correction
>
> - Color registration adjustments for the latent image.

2.5.2 Imaging unit

2.5.2.1 Imaging unit overview

Each Imaging Unit consists of the OPC drum unit and the development unit. The OPC drum unit has an OPC drum, Charge Scorotron, Eraser, and Cleaning blade. The development unit has a magnetic roller, two mixing augers, developer, and a TD sensor. Four color Imaging Units contain identical components (drum unit, development unit, etc.), however, the Imaging Units are not interchangeable.

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 are assembled as one Imaging unit at the factory.

The cleaning blade removes excess toner from the drum surface after image transfer to the transfer belt.

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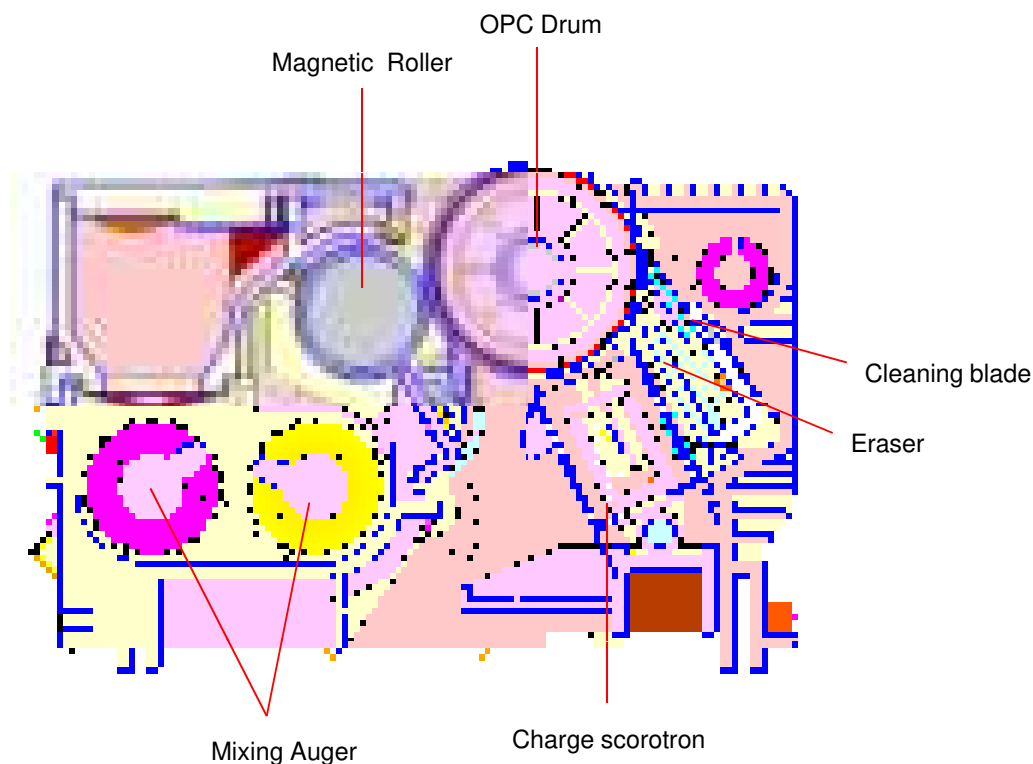
2.5.2.2 Drum drive

Each color OPC and Mag Roller is driven by each color motor. The OPC Drum and Mag roller are supplied with power from the coupling. A micro clutch in the drive path can cut the power to the Mag roller. This means that the Mag roller can be stopped while the OPC is in operation.

Phase sync for each OPC runout prints the pattern on the ITB and is adjusted by the data automatically.

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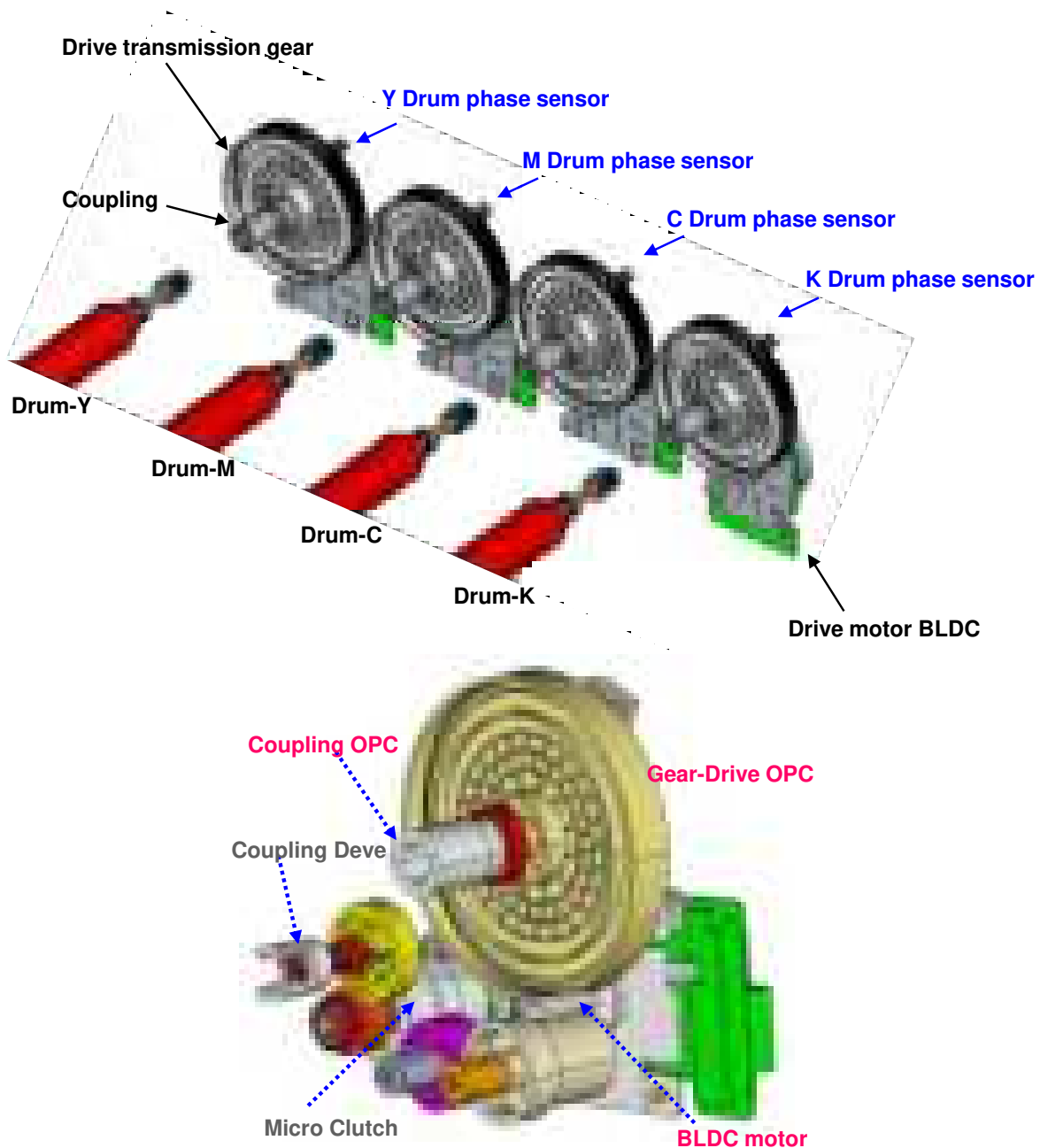
2.5.2.3 Phase Control Mechanism

The printer uses the drum gear position sensors to detect whether the drum motors are rotating. Diagnostic mode shows when it detects that the drum motor is not moving. These sensors also help the printer to initialize the relative positions of the gears when the main switch is turned on, and during initializing. This prevents phase fluctuation between printouts caused by incorrect gear meshing at the start of the job.

There is an interrupter on each drum gear. The drum gear position sensors detect the positions of these interrupters. This mechanism makes sure that output quality does not vary.

Immediately after the printer power turns on, recovers from the energy saver mode, or the front door is opened and closed, the printer executes the drum phase adjustment if one of the following conditions occurs:

• When a new imaging unit is installed.
• When a new cartridge transfer belt unit is installed.

Also, when the printer detects a shift in the drum positions during the line position adjustment, the printer executes the drum phase adjustment.

2.5.2.4 Development

[A] Development Roller
[C] TD Sensor
[B] Mixing Auger
[B] Mixing Auger
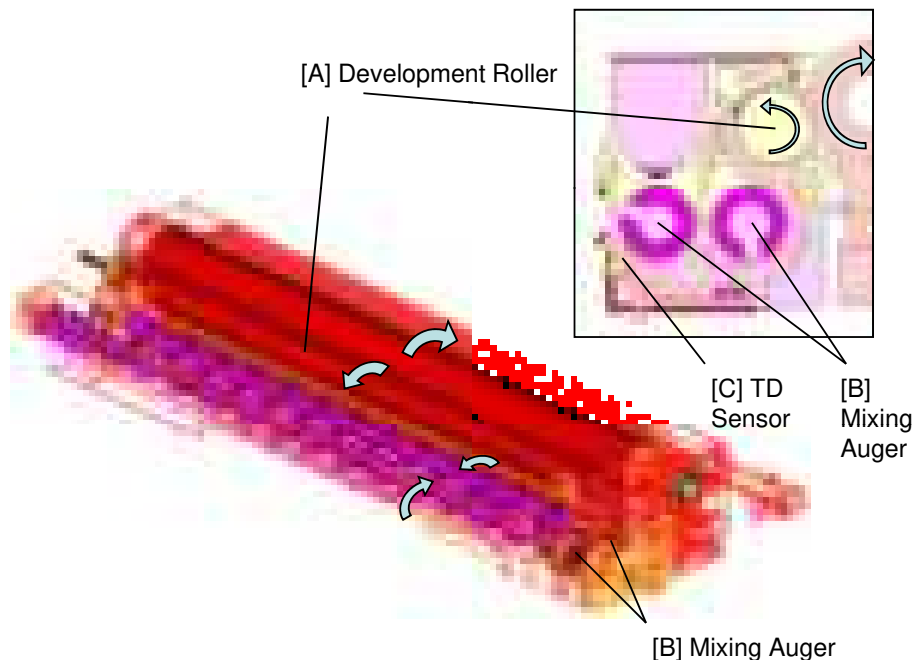
This printer uses a dual-component development system and has four imaging units (which are included in the drum units; one for each color). Each new unit contains 330g of magnetic toner carrier. The developer in each unit is supplied to the magnetic roller [A] by the two mixing augers [B] and is attracted onto the surface of the roller. The diameter of the magnetic roller is 18 mm.

Each imaging unit has a TD(Toner Developer) sensor [C]. The TD 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.

Two mixing augers [A] circulate the developer forward and backward to agitate the developer in order to mix the developer and toner well.

This occurs at the following times:

• During TD 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
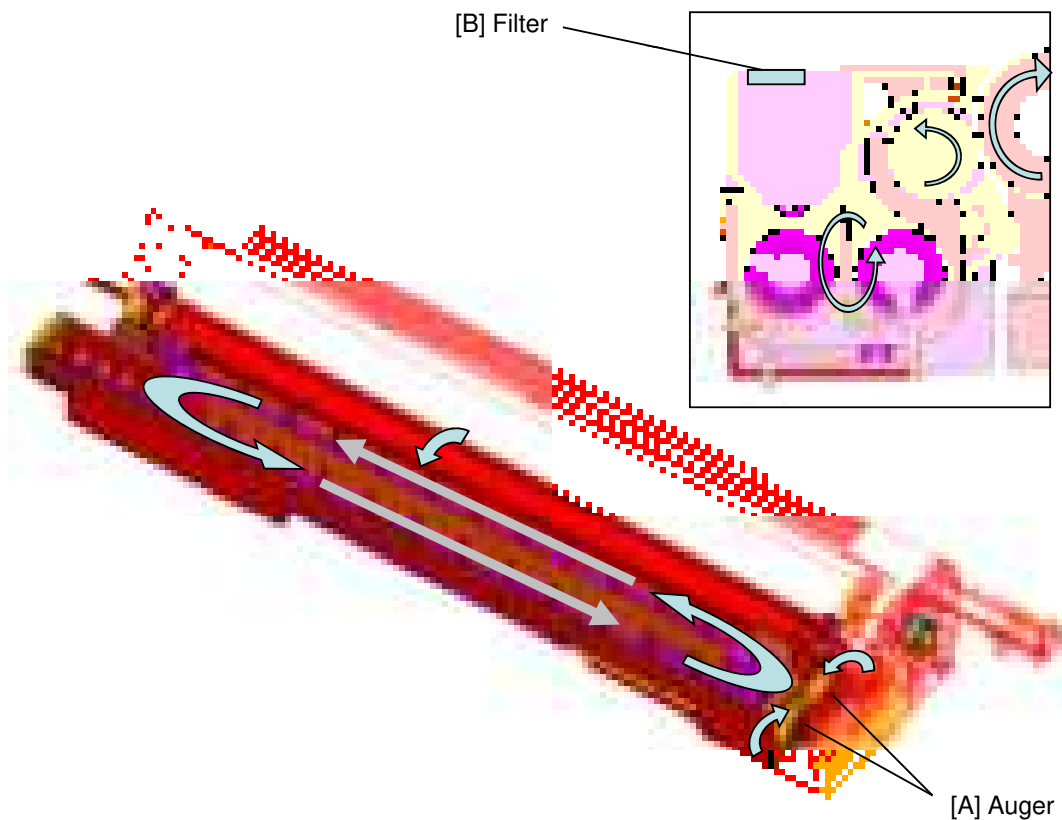
2.5.3 Cartridge Transfer unit

2.5.3.1 Cartridge Transfer unit overview

The toner is moved from the four drums to the ITB by the four image transfer rollers. This is done with one rotation of the ITB (four toner images are super-imposed onto the belt). The arrow above the C and M drums on the diagram shows the direction of ITB rotation. The ITB drive roller then moves the four-color toner image from the transfer belt to the paper. The paper transfer roller is an idle roller. The cleaning unit in the transfer unit cleans the belt surface with the cleaning blade and tension roller. The used toner collected from the belt is transported to the toner collection bottle. There are three ACR sensors. Two of them are for the line position adjustment. The other is for process control. There is a cleaning EEPROM at the Cleaning Unit and there is an ITB EEPROM in the main frame. It is therefore, possible to check the status of the cleaning unit and ITB.
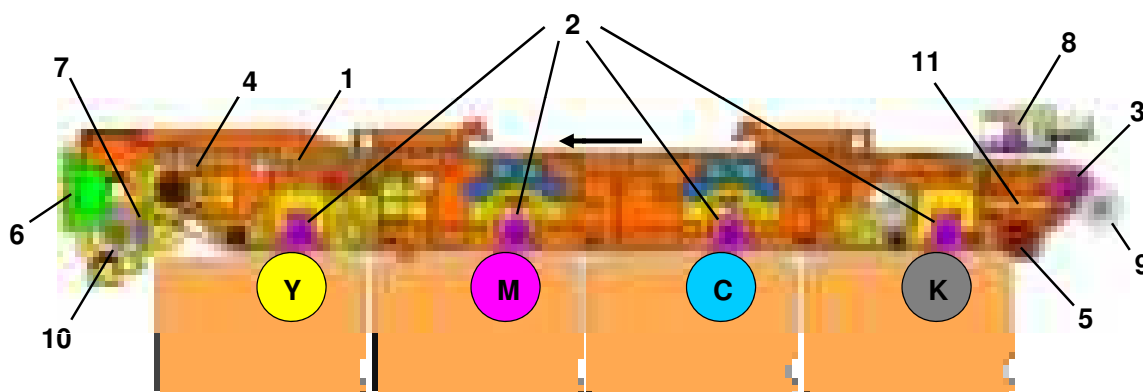
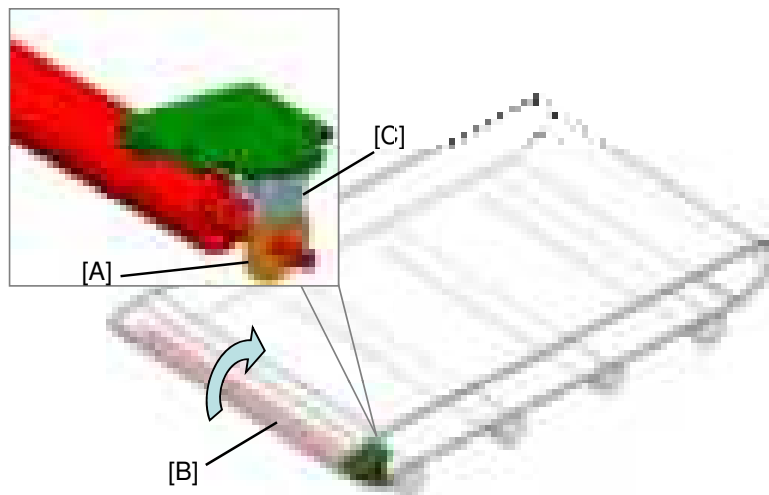| 1	Image Transfer Belt (ITB)
2	Image Transfer Roller (Primary transfer)
3	ITB Drive Roller
4	Tension Roller
5	Rotation Encoder
6	Cleaning EEPROM
7	Cleaning Blade
8	ACR Sensor
9	Paper Transfer Roller
10	Toner Collection Auger
11	ITB Belt EEPROM

2.5.3.2 Transfer belt drive

The ITB drive motor [A] drives the image transfer belt [B] and the Cleaning unit by using gears and the ITB drive roller [C]. The speed of ITB drive depends on the process line speed.
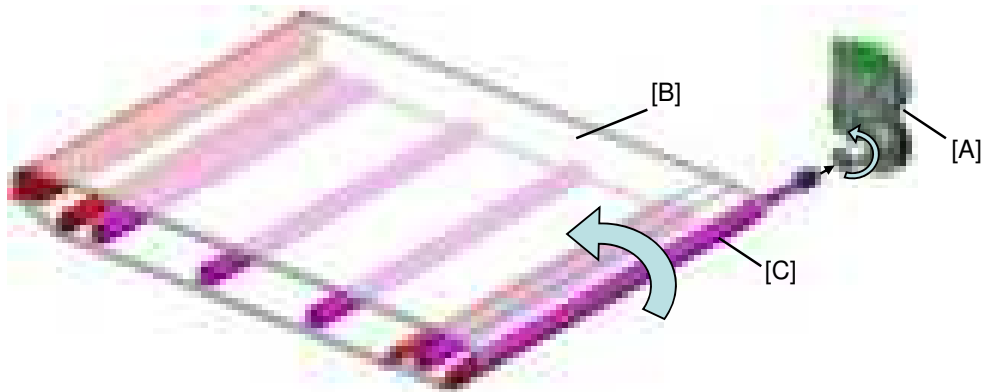
This printer uses the rotation encoder to control the transfer belt speed. The encoder [A] is on one of the guide rollers [B]. This encoder checks the rotation speed of the image transfer belt. The controller analyzes the signals from the encoder. Then it adjusts the rotation speed of the image transfer belt.

The encoder contains a disk that has 550 notches on its surface. These notches are read by the sensor [C]. The controller counts the number of notches that the sensor has read in the unit of time. If the sensor has read an unusually large number of notches or an unusually small number of notches, the controller ignores such unusual signals. Therefore, an incorrect reading does not affect the rotation speed.

2.5.3.3 Transfer belt cleaning

The ITB-cleaning unit removes toner (during printing) and the ACR sensor patterns (during process control or automatic line position adjustment) on the belt. Belt cleaning is completed while the image transfer belt makes one rotation. The ITB drive motor drives the ITB-cleaning unit.

The cleaning blade [A] in the cleaning unit always contacts the image transfer belt [B], and removes used toner from the belt. Then the toner collection auger [C] transports the toner towards the waste toner container.

The Film [D] on the Cleaning Unit protects against toner contamination. The driving power from the drive roller is transferred to the tension roller [E]. The Gear [F] drives the Gear [G].
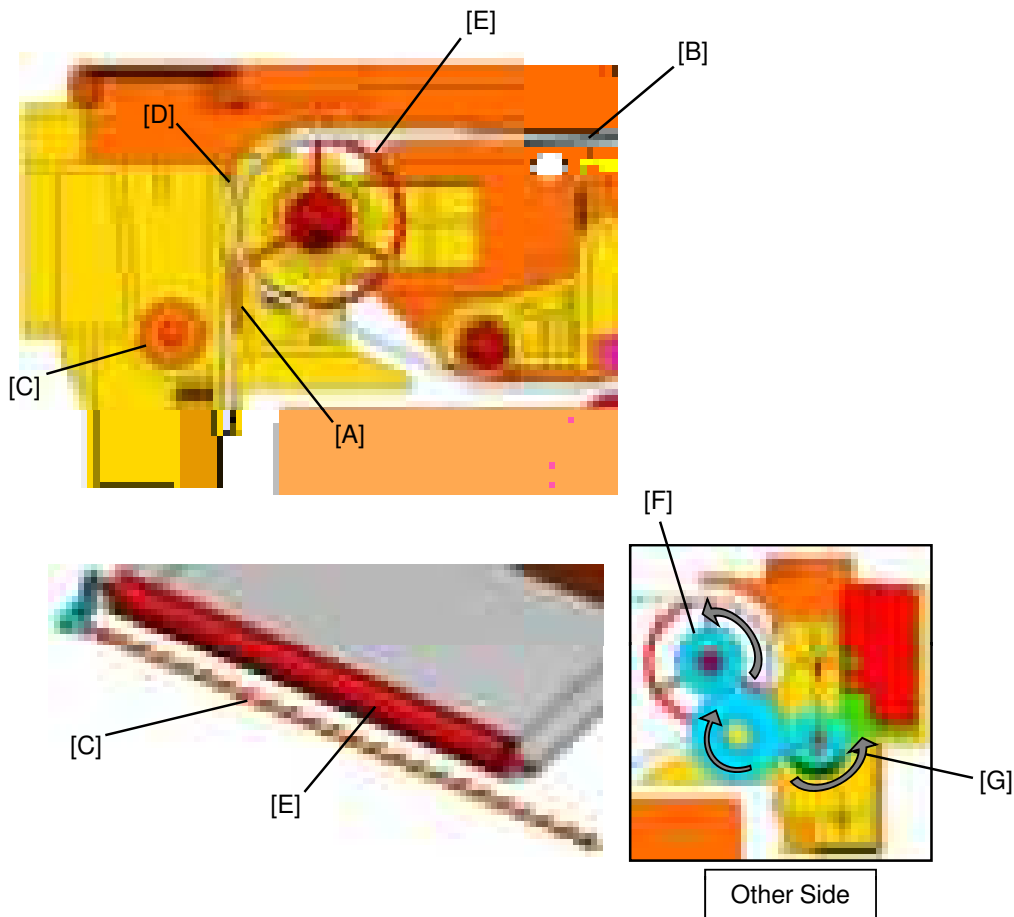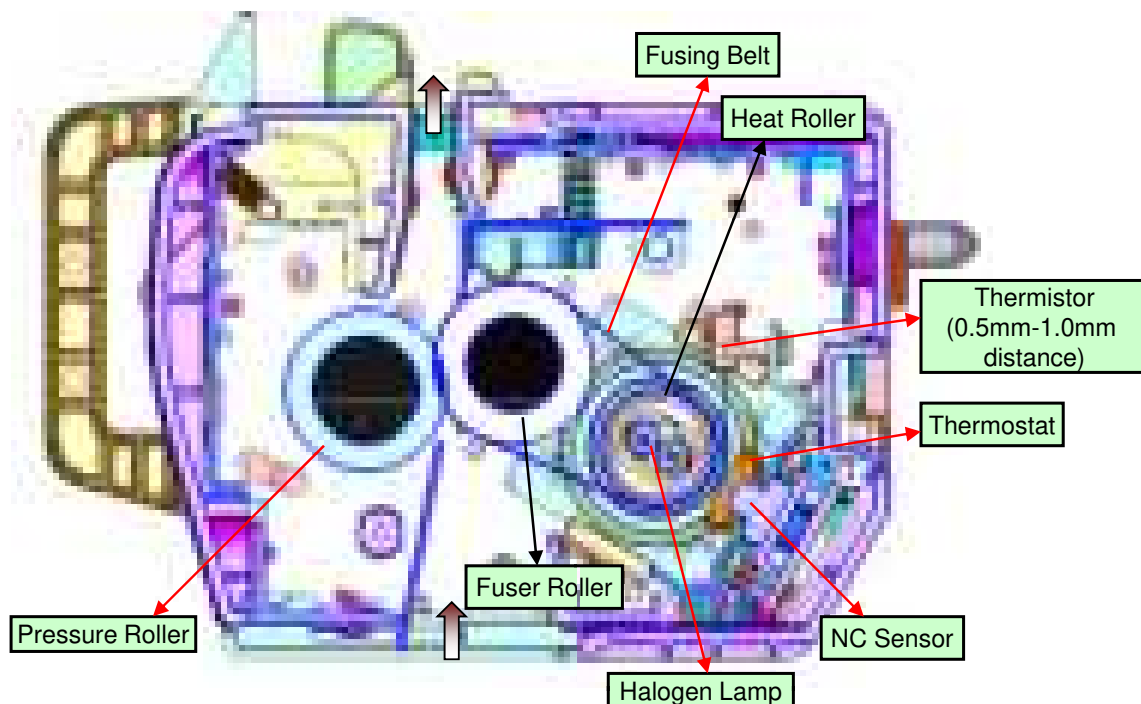
2.6 Fuser unit

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

2.6.1 Fuser unit overview

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

The heating roller is made of a thin steel pipe to quickly increase the temperature of the fusing belt. The fusing roller and pressure roller are made of soft silicone rubber, which flatten slightly, increasing the fusing nip. These rollers do not contain a fusing lamp. The heating roller 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 heating roller, control the temperature of the fusing belt just above the heating roller at the center and the ends, respectively.

Two NTC thermistors and two thermostats, located at the center and the front end, 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.

2-39

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 heat roller. The center heater lamp (LAMP1) and the side heater lamp (LAMP2) are lit alternately to heat the heat roller. 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 heat roller so that they will not rotate separately.

2. Heat roller

The heat roller is a steel roller which conducts heat generated by the heater lamp to the fuser belt. The heat roller in this equipment is a thin roller which enhances heat conduction, and thus the warming-up time is shortened.

3. Fuser belt

The fuser belt couples the heat roller with the fuser roller. It conducts heat from the heat roller to the fuser roller 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.

4. Fuser roller

The fuser roller is pressed against the pressure roller with the fuser belt in-between. By this pressure between the fuser roller and pressure roller, the heat conduction to the paper is enhanced so that toner belts easier. The melted toner is soaked into the paper. To improve the fusing ability, a fuser roller with soft rubber is employed to expand the nip width.

5. Pressure roller

The pressure roller is a rubber roller which ensures proper nip width between the pressure roller and fuser roller / fuser belt, and it is pressed on the fuser roller / fuser belt by springs in order to fuse toner effectively to the paper.

6. Thermistor (0.5mm-1.0mm distance)

NC sensors detect the surface temperature of the center and the rear end of the fuser belt/ heat roller which controls the heater lamps. Thermistors, located at the center and front end, protect the fusing system from overheating.

7. 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).
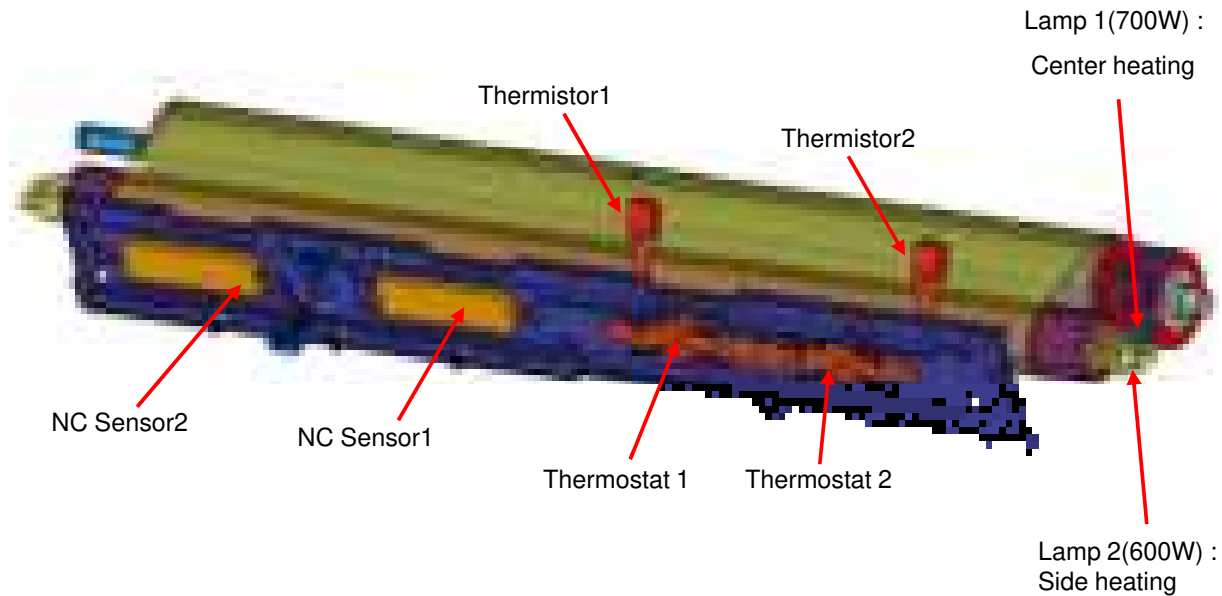
2.6.3 Fuser unit drive

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

Exit Motor [A]

Fuser Belt [E]

Heat Roller [D]

Pressure Roller [B]

Fuser Roller [C]

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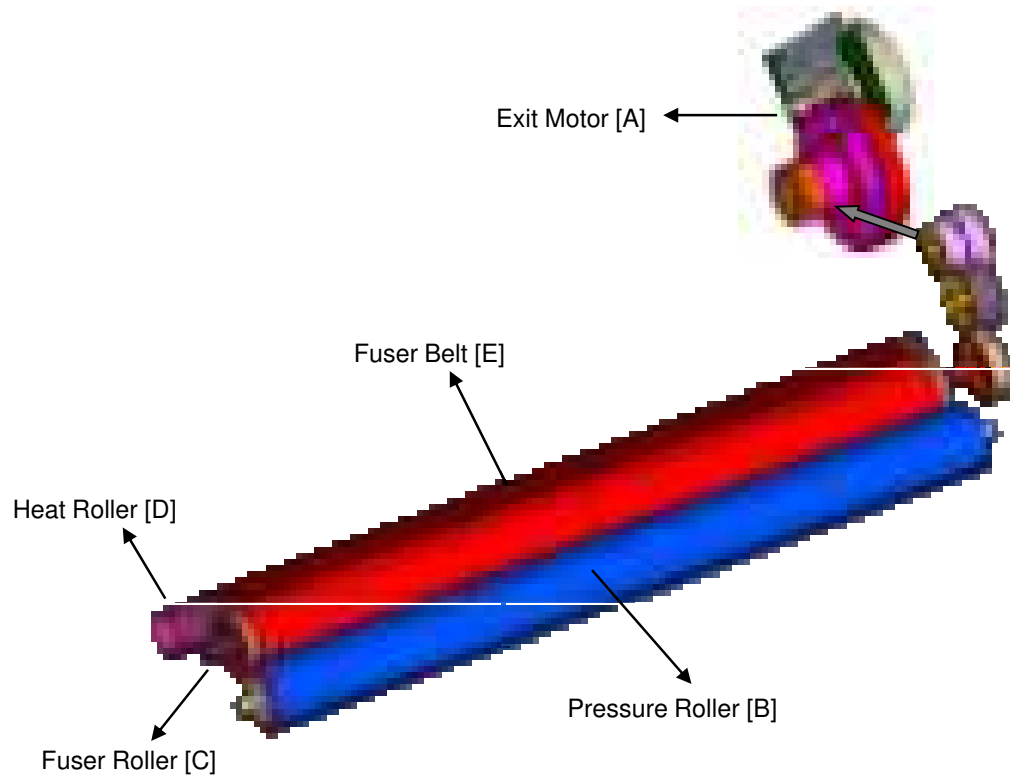
2.6.4 Temperature control

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 up to the printing temperature.

Thermistor1

Thermistor2

Lamp 1(700W) :
Center heating

NC Sensor2

NC Sensor1

Thermostat 1   Thermostat 2

Lamp 2(600W) :
Side heating

Overheat Protection

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

• The heating roller temperature detected by the NC sensors becomes higher than 198℃.

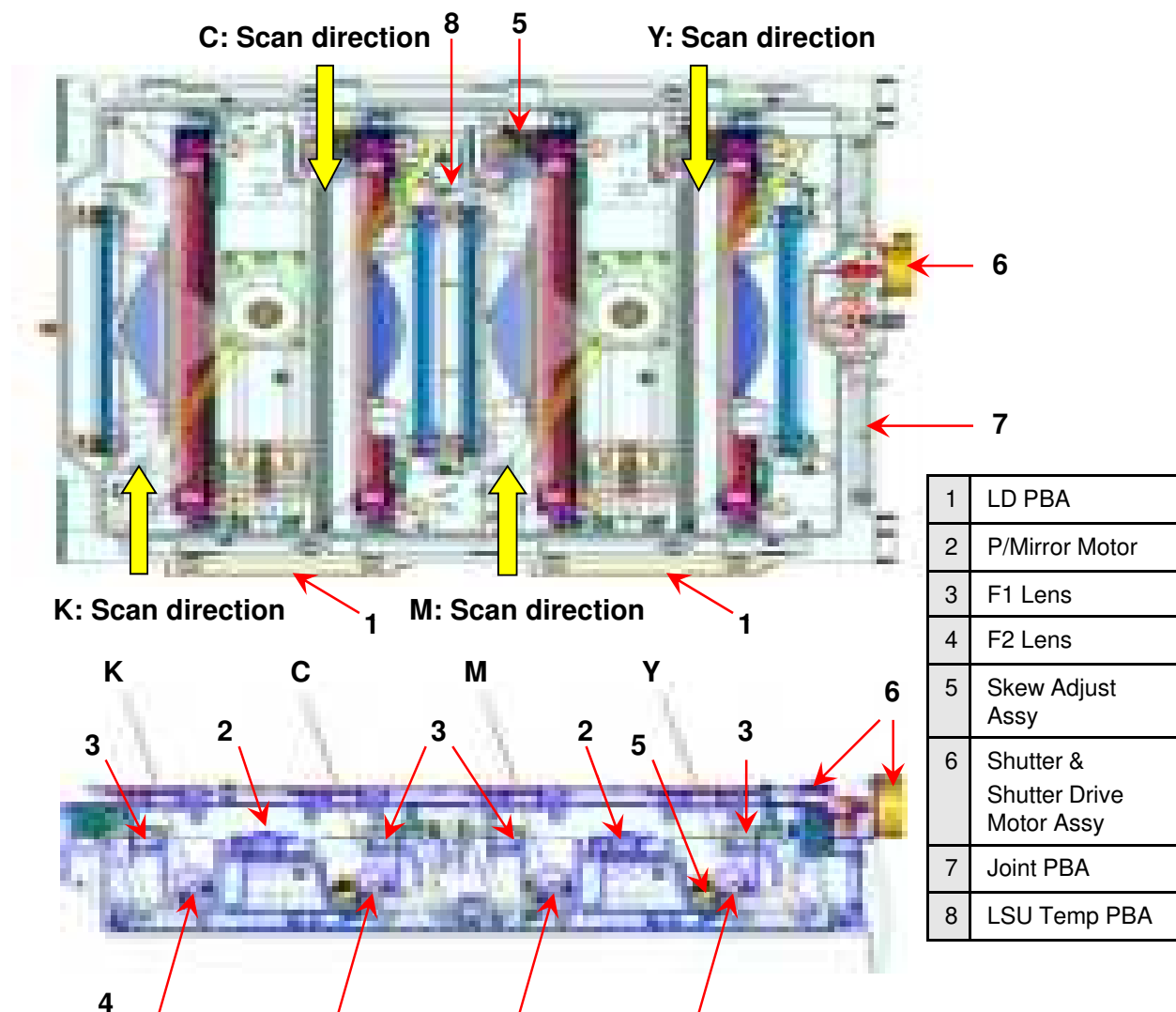• The heating roller temperature detected by the thermistors becomes higher than 210℃.

The following components are destroyed when thermistor overheat protection fails:

• Two thermostats for the heating roller 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.
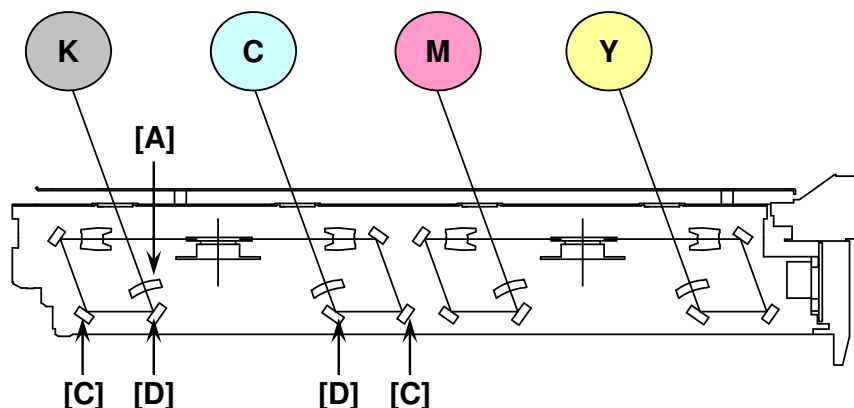
2.7 Laser Scanning Unit

2.7.1 Laser Scanning Unit Overview

The Laser Scanning Unit (LSU) consists of 2 polygon motors and 2 LD units and forms a latent image on the surface of 4 OPC drums. For this process, there is a collimator lens, cylindrical lens, 2 F-Theta Lens, 3 reflective mirrors on optical path for each color. K Color and M Color scan the laser beam from the rear to the front, C Color and Y Color scan the laser beam from the front to the rear. Also, the LSU has a skew adjustment function which adjusts the scanning line automatically and the shutter & shutter driving device to protect the glass on the LSU surface from contamination. To interface with the printer, the LSU has a joint PBA on right side.

C: Scan direction   8   5   Y: Scan direction

K: Scan direction   1   M: Scan direction   1

K   C   M   Y

6

1	LD PBA
2	P/Mirror Motor
3	F1 Lens
4	F2 Lens
5	Skew Adjust Assy
6	Shutter & Shutter Drive Motor Assy
7	Joint PBA
8	LSU Temp PBA

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2.7.2 Laser Scanning Optical path

The laser beam from the LSU is placed at intervals of 104mm for each color. All colors use the same polygon motors. F2 Lens [A] determines the slope of the primary scanning line and the image position of the secondary scanning direction. This is adjusted at the factory. The primary scanning line slope by the SET difference is adjusted by Skew adjustment in the LSU. Reflecting mirrors [C], [D] for each color adjust the primary scanning. The LSU has 2 types depending on printing speed. The difference between the two printer models is shown in the table below:

Mode	CLX-9250ND(25ppm)	CLX-9350ND(35ppm)	Remarks
LD Unit	Laser Diode : Single Beam driving IC : for Single LD	Laser Diode : Dual Beam driving IC : for Dual LD	
P/Motor speed	19,016 rpm	27,165 rpm	
Process Speed	115 mm/sec	161 mm/sec	
H/W interface	KC Harness : 26 Pin MY Harness : 24 Pin Interface with set : 40 Pin	KC Harness : 34 Pin MY Harness : 32 Pin Interface with set : 40 Pin	

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# 2.7.3 Laser synchronizing detectors

The machine has four beam detector sensor boards (BD PBA). There is one at each corner of the laser optics-housing unit. The four BD boards detect the following:

- [A]: Scanning start position for black
- [B]: Scanning start position for cyan
- [C]: Scanning start position for magenta
- [D]: Scanning start position for yellow.

The printer recognizes each color from the time that they are detected.

Main Scan Start Detection

4 beams are detected by the BD PBA at the scanning start point and create the horizontal sync (Hsync) signal. The following diagram shows the data scanning direction for each color. Black (& Magenta) and Cyan (& Yellow) use the same polygon motors scanning in opposite directions.

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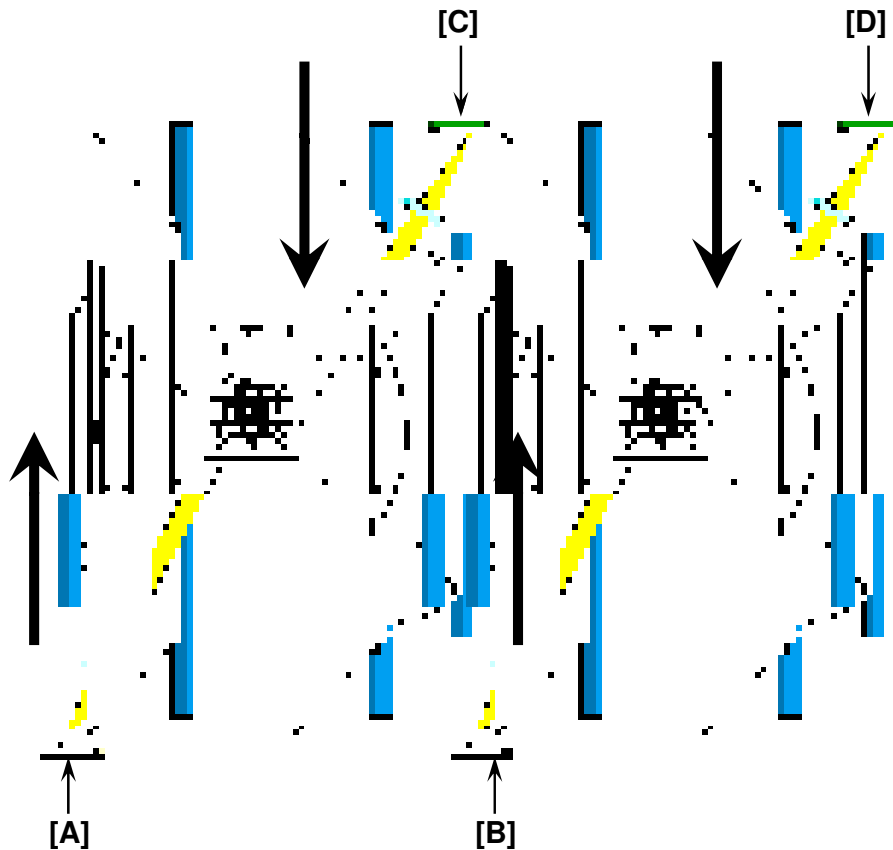
2.7.4 Automatic line position adjustment

During automatic line position adjustment, line patterns are created eight times on the transfer belt. The spaces between the lines (KK, CC, MM, YY, KC, KM, KY) are measured by the front, center, and rear ID sensors. The controller takes the average of the spaces, then adjusts the following positions and magnification:

• Sub scan line position for CMY
• Main scan line position for CMY
• Magnification ratio for CMY
• Skew for CMY

The transfer belt-cleaning unit cleans the transfer belt after the patterns are measured.
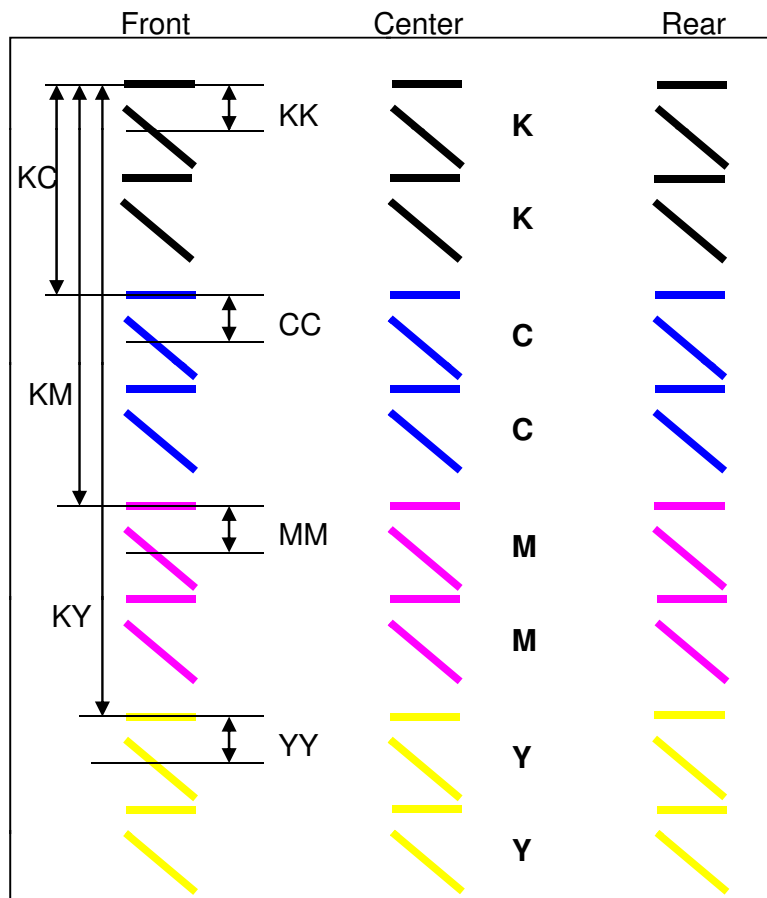
KK, CC, MM, YY: Spaces between two lines of the same color.
KC, KM, KY: Spaces between a black line and each color line.

2.7.4.1 Sub Scan Line Position for CMY

The adjustment of the sub-scan line position for CMY is based on the line position for K (color registration). The printer measures the gaps between the lines of each color in the pattern on the transfer belt. When the gaps for a color are not correct, the printer moves the image of the color up or down the sub scan axis. To do this, it changes the laser write timing for that color.

2.7.4.2 Main Scan Line Position for CMY

When the printer detects that the image is out of position in the main scan direction, it changes the laser write start timing for each scan line.

2.7.4.3 Magnification Adjustment for CMY

When the printer detects that magnification adjustment is necessary, it changes the LD clock frequency for the required color.

2.7.4.4 Skew for CMY

The adjustment of the skew for CMY is based on the line position for K.

2.7.4.5 Adjustment Conditions

Line position adjustment can be turned on or off. However, it is normally recommended to turn on this function.
Line position adjustment timing depends on several settings. These settings include the following:

- Δt = Elapsed Time.
- ΔT = Temperature change of LSU (Laser Scanning Unit) between the temperature of the previous line
-      position adjustment and the current temperature.
- Pages = Total printed pages after previous line position adjustment.

2.7.4.6 Initial Adjustments

Line position adjustment starts automatically after warming up when the power is turned on, or when the printer recovers from energy saver mode. Line position adjustment is automatically performed when one of these conditions occurs:

- Δt (Power On) > Time threshold (default: 10 minutes)
- Δt (Wakeup) > Time threshold (default: 18 minutes)

2.7.4.7 Interval During Print Job

Line position adjustment interrupts printing and then starts automatically when one of these conditions occurs when the machine checks at the sheet interval. Line position adjustment is automatically done when one of these conditions occurs:

• ΔT > Temperature threshold (LSU temperature: [default: 3°C])
• Pages > Output threshold for all outputs (default: 1000 pages)

2.7.4.8 Waste Toner Container Not-Installed / Installed

Line position adjustment starts automatically when waste toner container is not-installed/installed. This is triggered after removing the Imaging Unit or when changing Imaging Unit. When the machine detects a new Imaging Unit, line position adjustment is automatically performed.

2.7.4.9 Printer Magnification Changes

Line position adjustment starts automatically when magnification is changed in the printer adjustment menu.

2.7.4.10 Main Scan Skew Adjustment

Skew adjustment assembly [A] consists of the step motor, worm, and worm gear. At ACR, it detects and adjusts the scanning line slope automatically. The F2 lens positioning motors [A] for magenta, cyan, and yellow adjust the angle of the F2 lens [B] respectively, based on the F2 lens position for black. This mechanism corrects main scan skew.
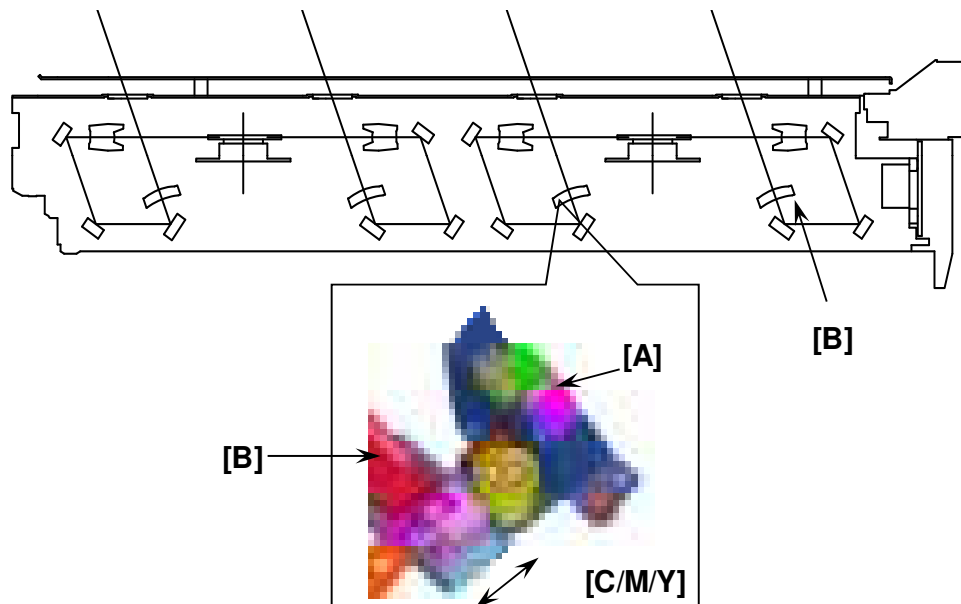
2.7.5 Shutter Mechanism

The laser optics housing unit is equipped with a shutter. As a result, toner and dust do not fall on the glass of the laser optics housing. The shutter motor [A] moves the shutter [B] in the direction of the arrow with the idle gear [C] (open = black arrow direction, close = white arrow direction).

When detecting the printing job, the drive motor [A] spins and it turns the idle gear [C] drive. The rib below the idle gear moves from the photo sensor [D] and makes the shutter move to position. When the printing job is finished, the drive motor [A] works until the rib below the idle gear [C] blocks the photo sensor [D] and the shutter is switched off.

- **Shutter on**: Shutter door is opened for Printing and the rib below the idle gear [C] does not block the photo sensor [D].
- **Shutter off**: Shutter door is closed and the rib below the idle gear [C] blocks the photo sensor [D].

When there is no printing job, the shutter is off and a printing job cannot be executed. When the shutter is not on at printing, the "LSU Unit Failure #U2-5113: Turn off then on" error message will display.
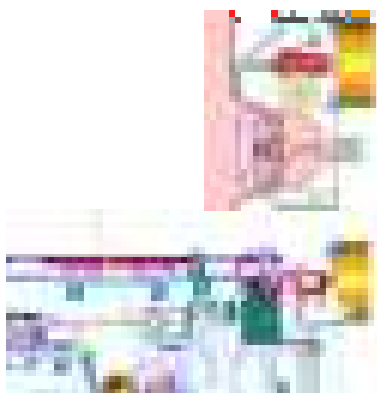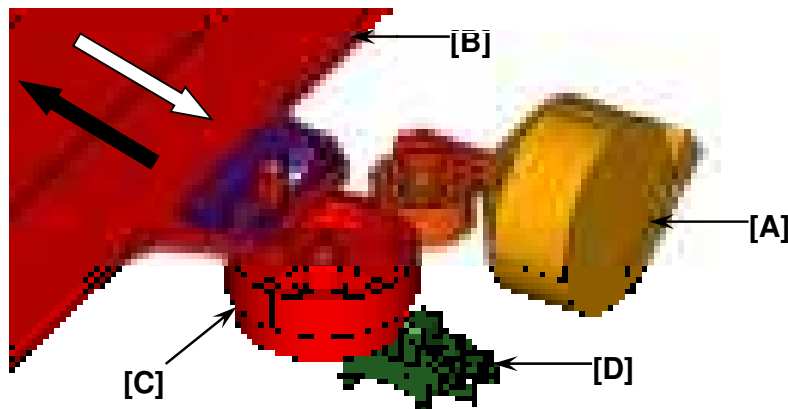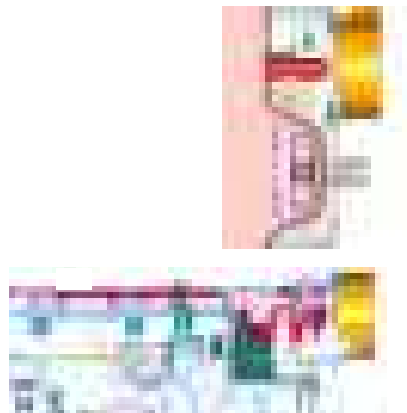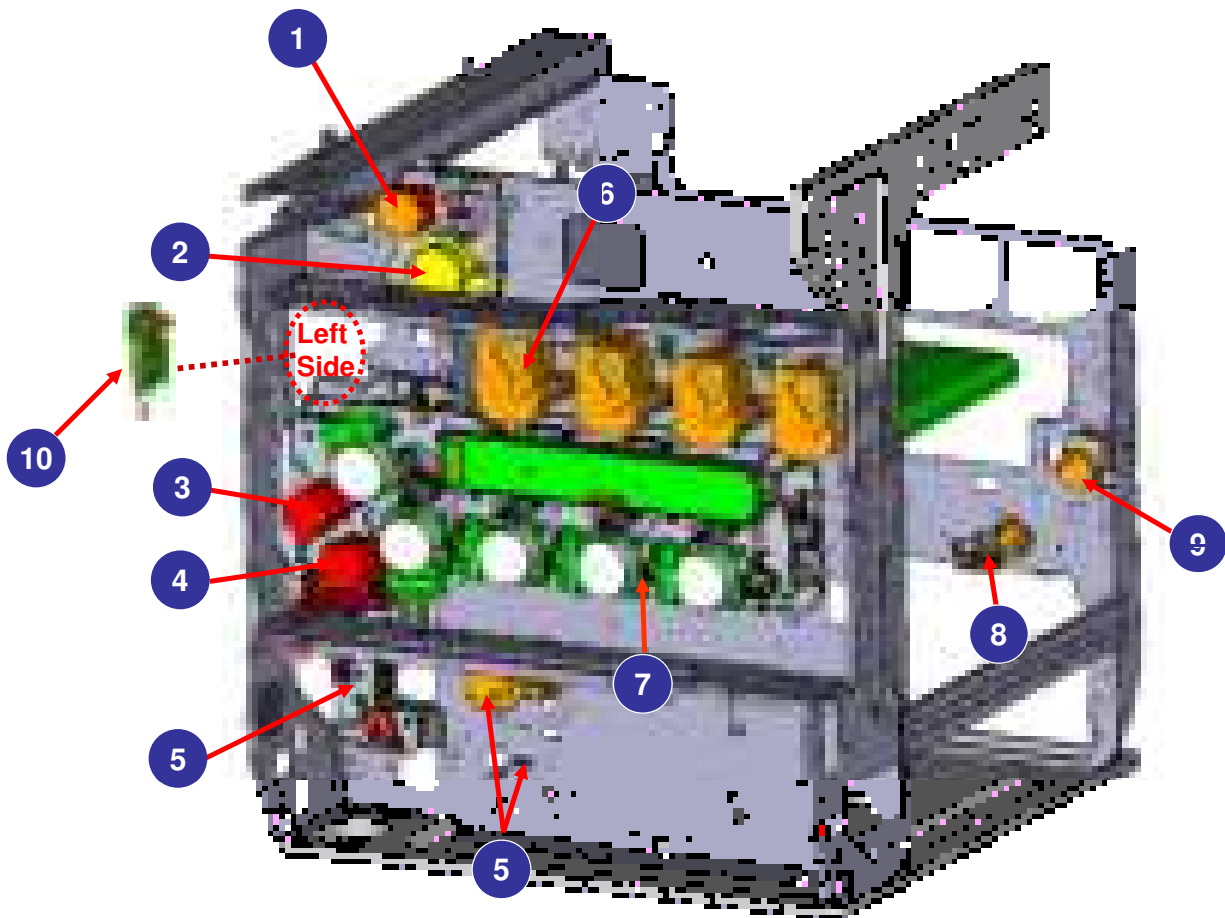
[Shutter open]   [Shutter closed]

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.

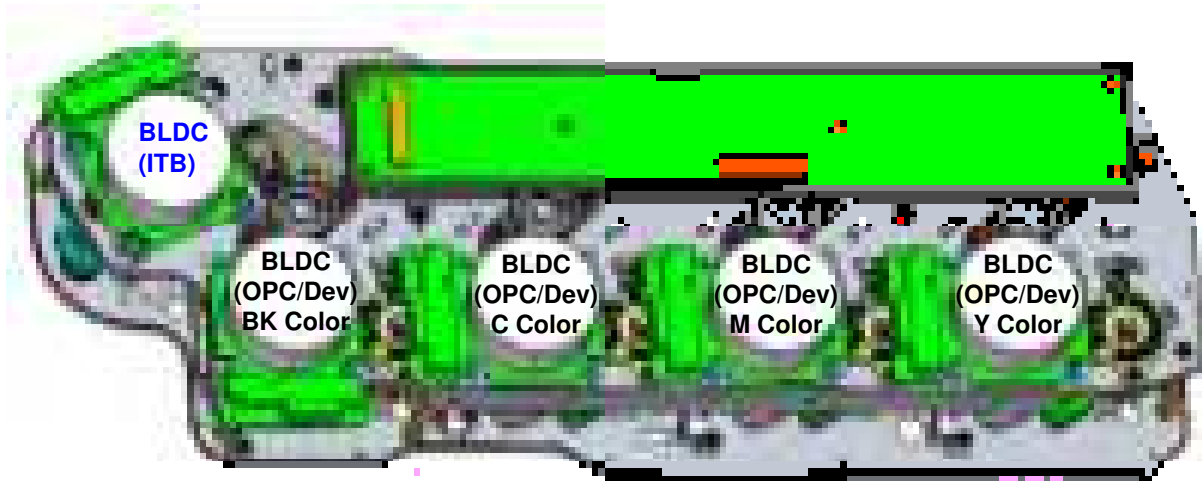The following table list the descriptions for the tagged drive locations.

No.	ITEM	Type	Qty	Function	Related error
1	Duplex Return	HB-STEP	1	Return driving at Duplex	-
2	Fuser / Exit	BLDC	1	Fuser / Exit driving	A1-1213
		E-CLT	1	Exit driving control	A1-6110
		PM-STEP	1	Fuser pressure Mode	A1-6111

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No.	ITEM	Type	Qty	Function	Related error
3	MP/DUP	HB-STEP	1	MP / Dup / F-up driving (return driving at F-up)	-
		E-CLT	2	MP / Dup driving control	-
4	Regi.	HB-STEP	1	Regi. Roll driving	-
5	Pick-Up	HB-STEP	1	Pick-Up Roll driving	-
		DC	2	CST Lift	-
		E-CLT	2	Pick-Up 1,2 driving control	-
6	Toner supply gear box	DC	4	Toner transfer in Toner Bottle driving Duct	Y : A1-5213 M : A1-5313 C : A1-5413 K : A1-5513
7	OPC / DEVE	BLDC	4	OPC/DEVE	Y : A1-2211 M : A1-2311 C : A1-2411 K : A1-2511
		E-CLT	4	DEVE control	Y : A1-2212 M : A1-2312 C : A1-2412 K : A1-2512
	ITB	BLDC	1	ITB	-
	T1 Dis/En	PM-STEP	1	T1 Dis/Engage	A1-4111
8	LSU Shutter	PM-STEP	1	LSU shutter driving	U2-6111
9	Waste Toner Container	PM-STEP	1	Waste Toner Container leveling	-
10	T2 Dis/Eng	DC	1	T2 Dis/Engage	-

2.8.2 Main drive unit (OPC, DEVE, ITB, T1 DIS/ENG)

Front View

BLDC (ITB)

BLDC (OPC/Dev) BK Color

BLDC (OPC/Dev) C Color

BLDC (OPC/Dev) M Color

BLDC (OPC/Dev) Y Color

Rear View

T1 HV

T1 Dis/Engage Coupling

ITB Connector

ITB Coupling

OPC Coupling

MagR HV

Grid HV

Scorotron HV

Imaging unit Connector

Deve (Auger) Coupling
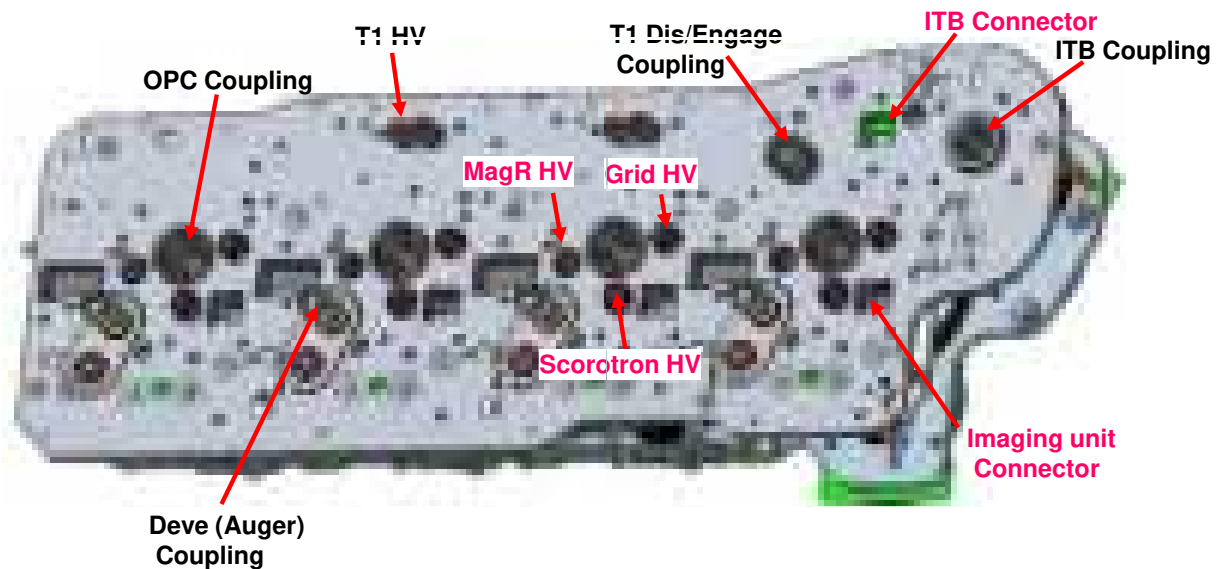
● **Information**

SEC-CODE : JC93-00044A
Part Name : DRIVE-MAIN

2.8.3 Pick-up Drive

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

Micro-Clutch

Feed

Pick-up

Coupling

Feed

Pick-up

● **Information**

SEC-CODE : JC93-00065A
Part Name : DRIVE-PICK UP

Power Train	Pick-up drive : Same H-Step motor is raising 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 MP, Regi, and Duplex Drive

The following is a diagram of the drives that power the MP, Regi, and Duplex systems:

Duplex Drive
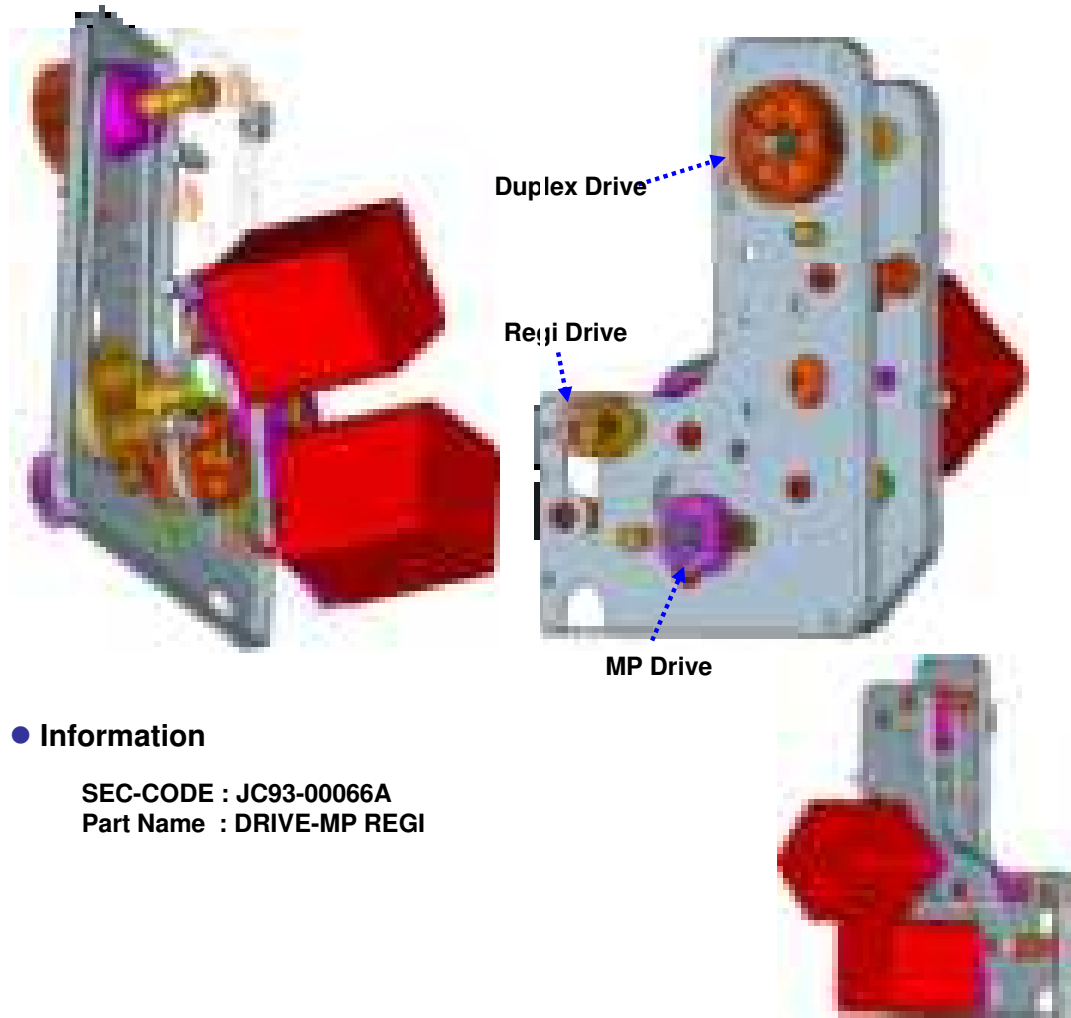
Regi Drive

MP Drive

● **Information**

      SEC-CODE : JC93-00066A
      Part Name : DRIVE-MP REGI

Power Train	**Regi drive** .: 1 H-Step drives independently. **Duplex and MP drives** : 1 H-Step rising by E-Clutch

H-Step → Belt → Pulley Gear → Regi. driving

H-Step → Belt → Pulley Gear → E-Clutch → MP driving

                  ↳ Pulley Gear → Belt → Pulley Gear → E-Clutch → DUP driving

2.8.5 Fuser Exit and Duplex Return Drives

The following diagram displays the locations of the Fuser and Duplex Return drives:

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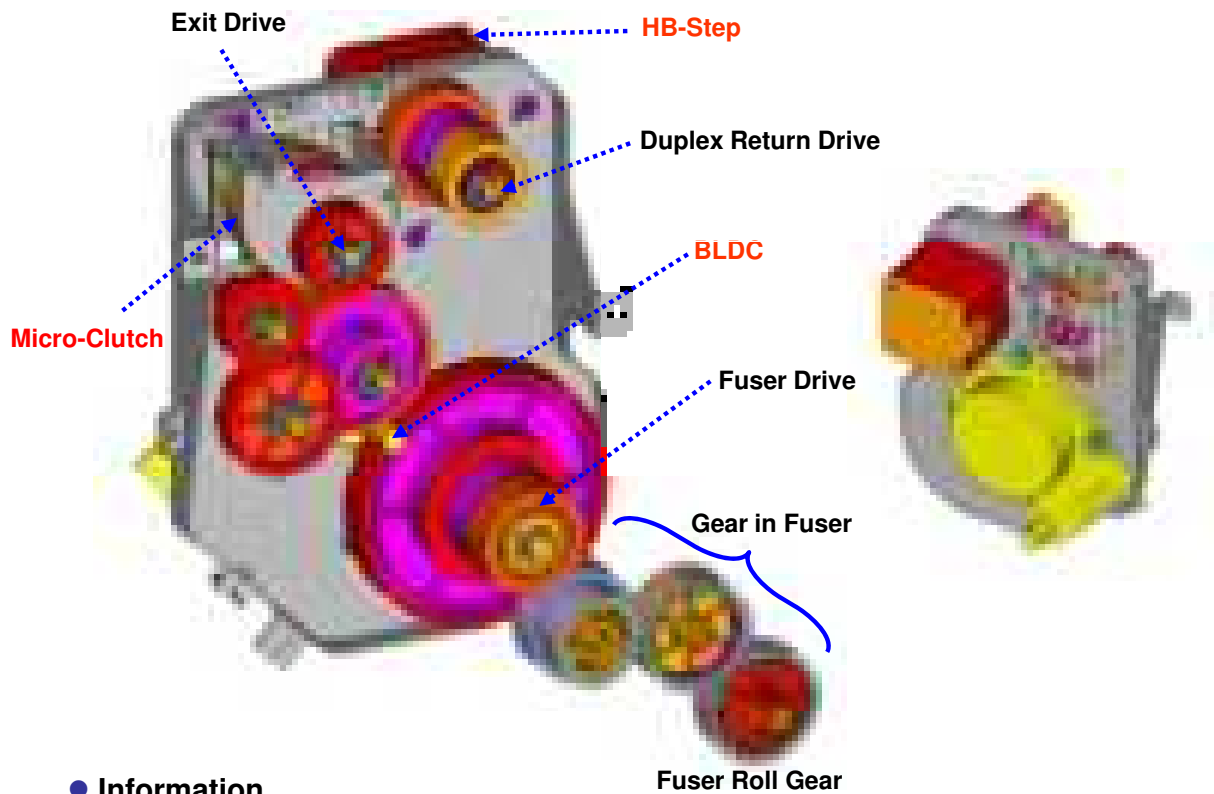
● **Information**

     SEC-CODE : JC93-00057A
     Part Name : DRIVE EXIT

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

2.8.6 LSU Shutter Drive

The following diagram displays the location of the LSU Shutter drive assembly:

Position control sensor

● **Information**

SEC-CODE : JC93-00068A
Part Name : DRIVE-LSU SHUTTER

Worm (PM Step)

GEAR SHUTTER IDLE A
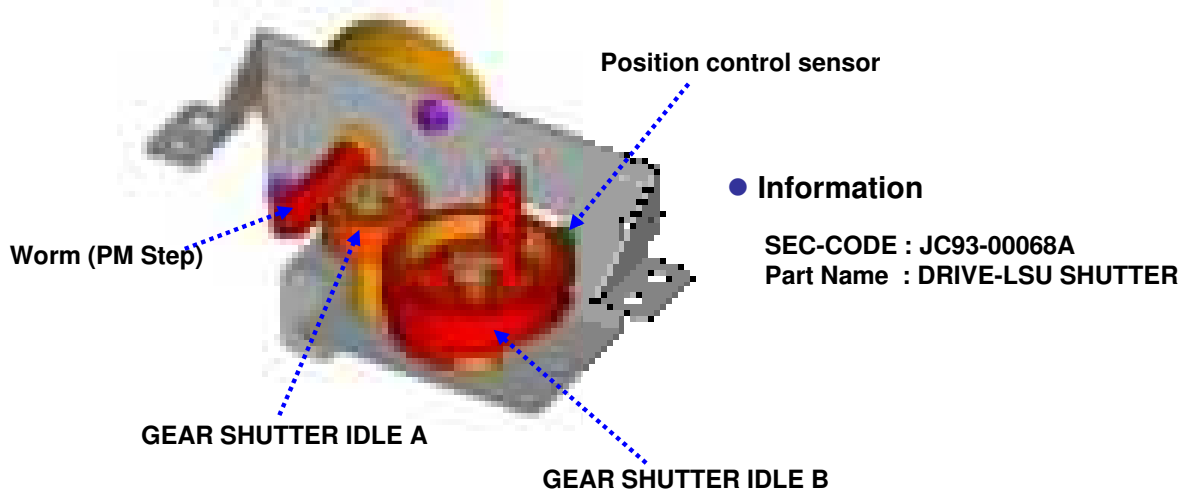
GEAR SHUTTER IDLE B

Power Train	PM Step motor & Worm : LSU Shutter driving

Step (PM) ➔ Worm ➔ GEAR SHUTTER IDLE A ➔ GEAR SHUTTER IDLE B ➔ LSU Shutter Driving

2.8.7 WTB Leveling Drive

The following diagram displays the WTB Leveling drive:

GEAR WTB RDCN

● **Information**

SEC-CODE : JC93-00067A
Part Name : DRIVE-WTB

WTB Gear

Worm (PM Step)
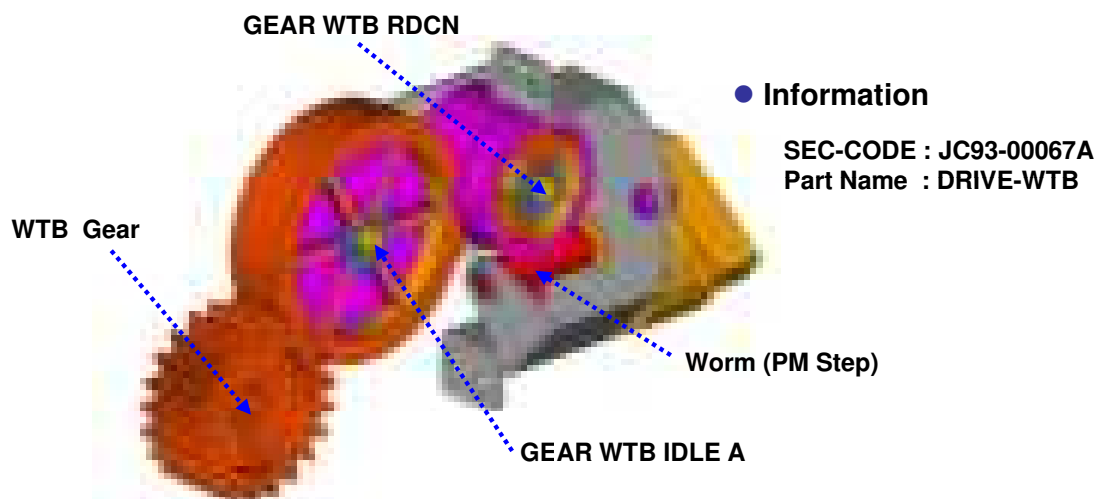
GEAR WTB IDLE A

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 Toner Supply Drive

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

Bottle Coupling

Duct Coupling
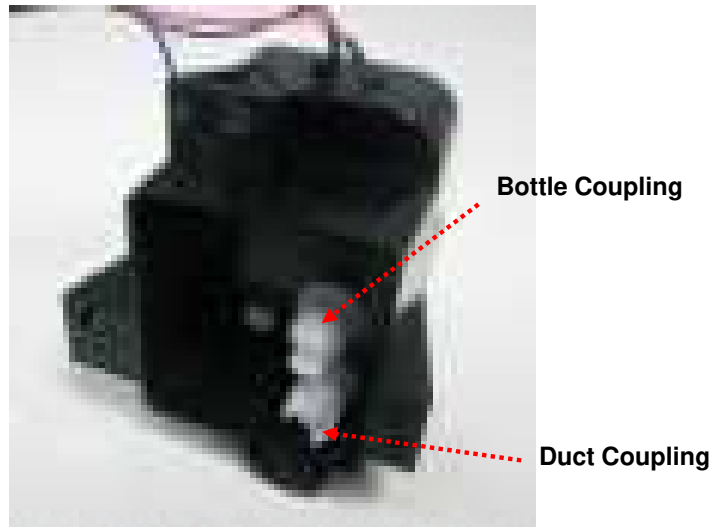
● **Information**

    SEC-CODE : JC31-00124A
    Part Name : MOTOR GEARED-T_SUPPLY

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.
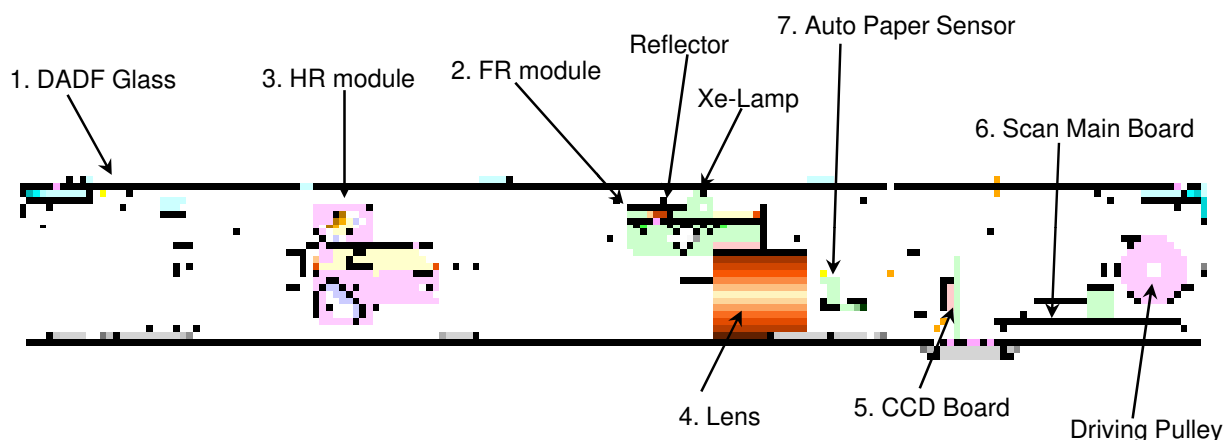
2.9.2 Scanning System Components

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.
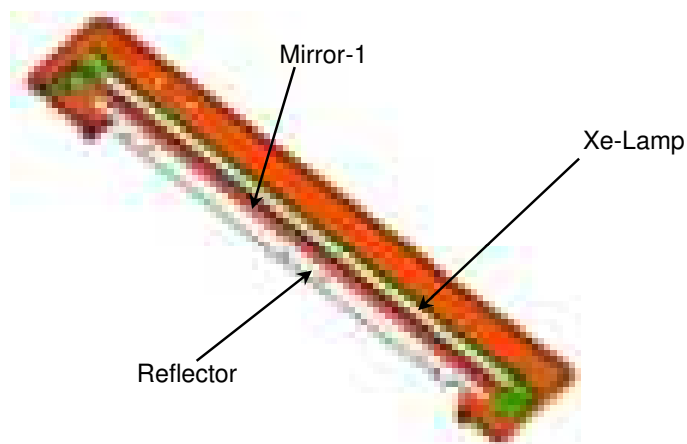
- Xe-lamp
  This lamp is the light source to expose the original document on the glass. (One 26 W xenon lamp)

- 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).
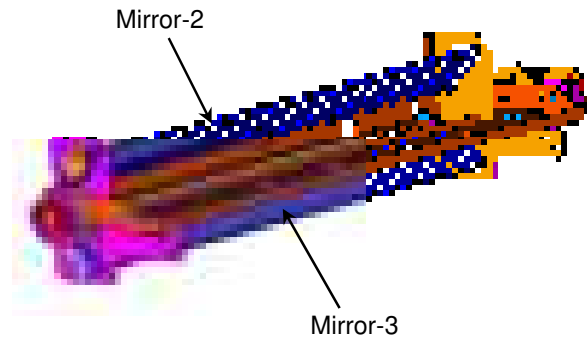
Mirror-2

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.
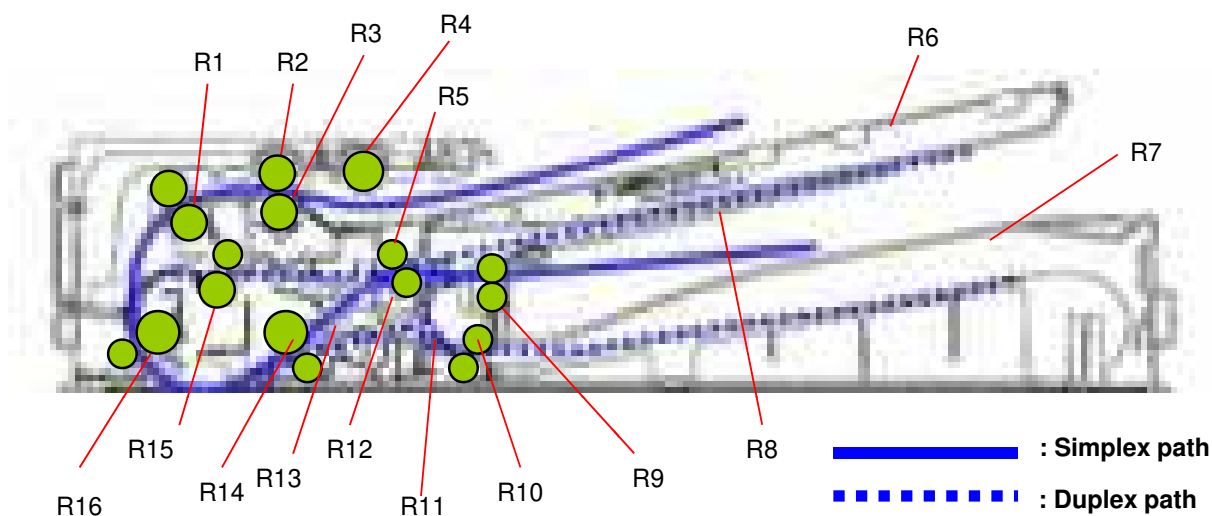
Symbol	Part Name	Function
R1	Simplex registration roller	Aligns paper and transfers it to the paper path in simplex mode.
R2	Forward roller	Separates an original from the tray and transfers it to the paper path.
R3	Retard roller	Prevents multi-feeding.
R4	Pick up roller	Picks up an original from the 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.

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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

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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
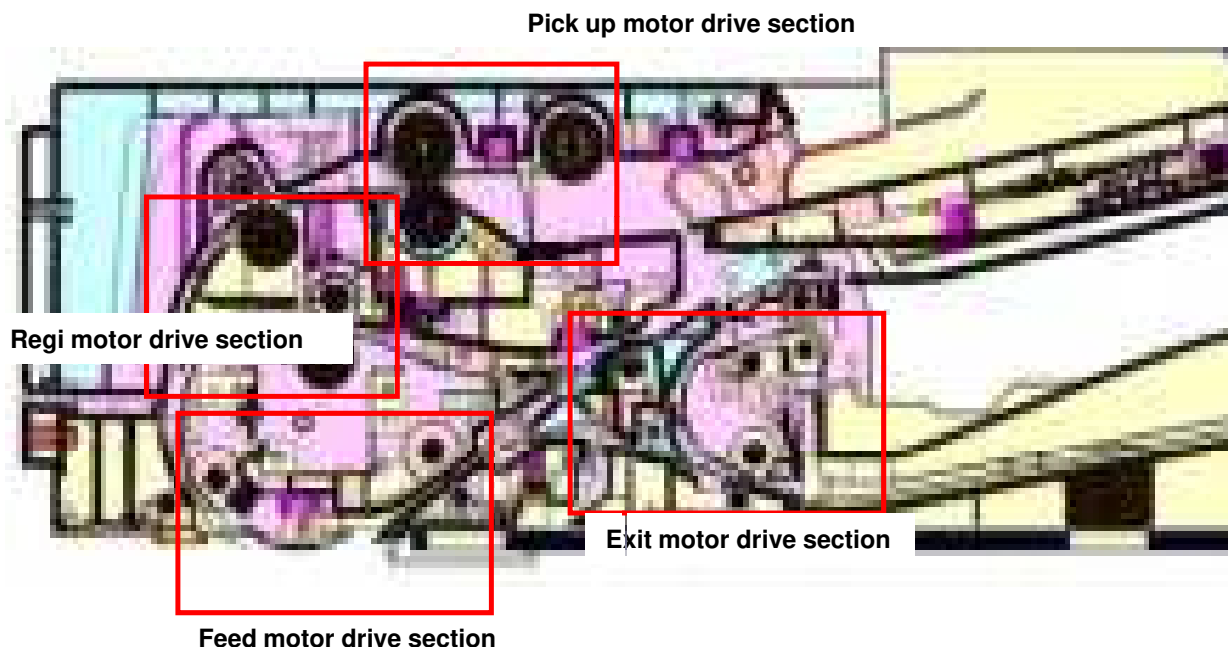
2.10.3.1 DADF Original Drive Assembly

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.
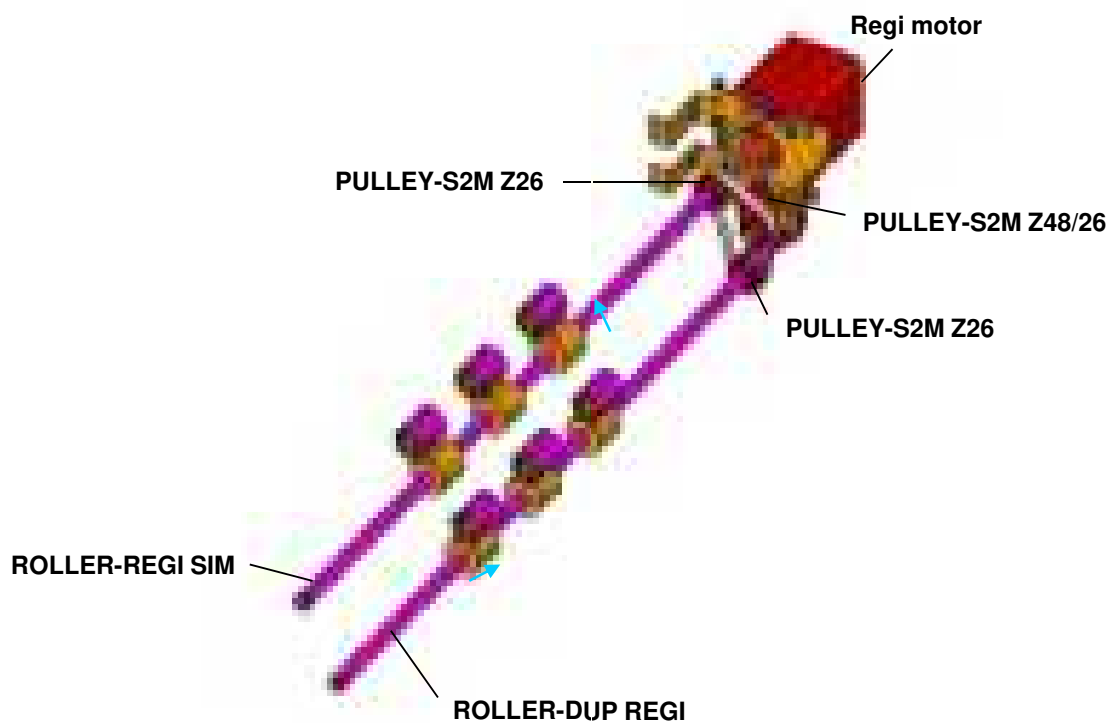
2.10.3.3 DADF Original Feed Drive Assembly

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
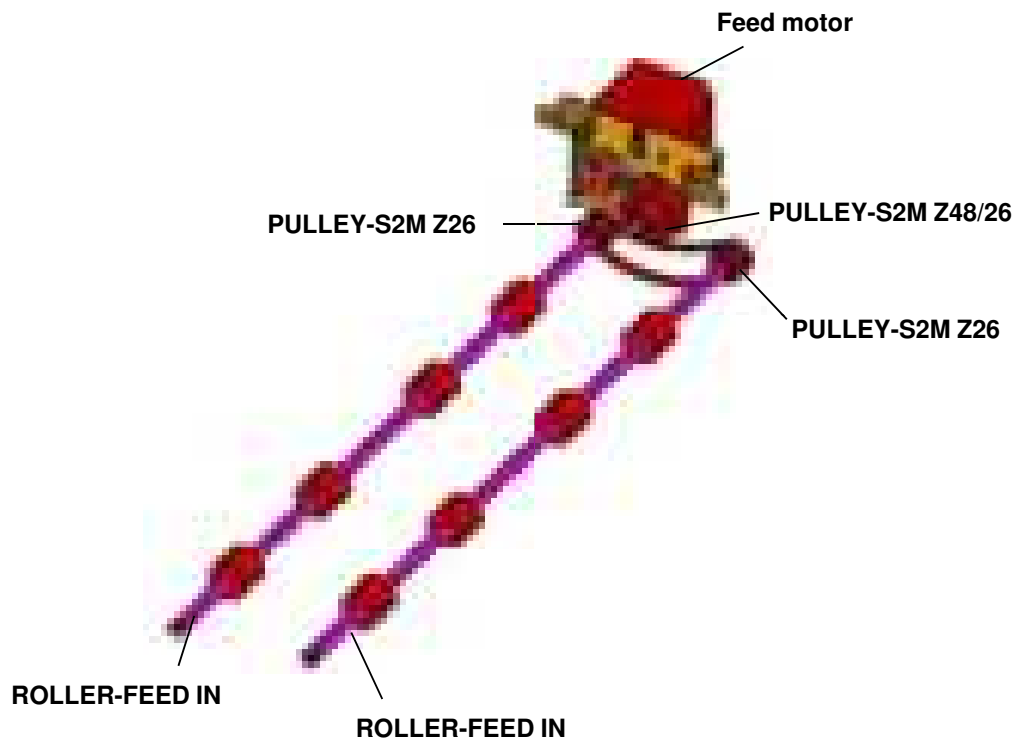
2.10.3.4 DADF Exit Drive Assembly

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.
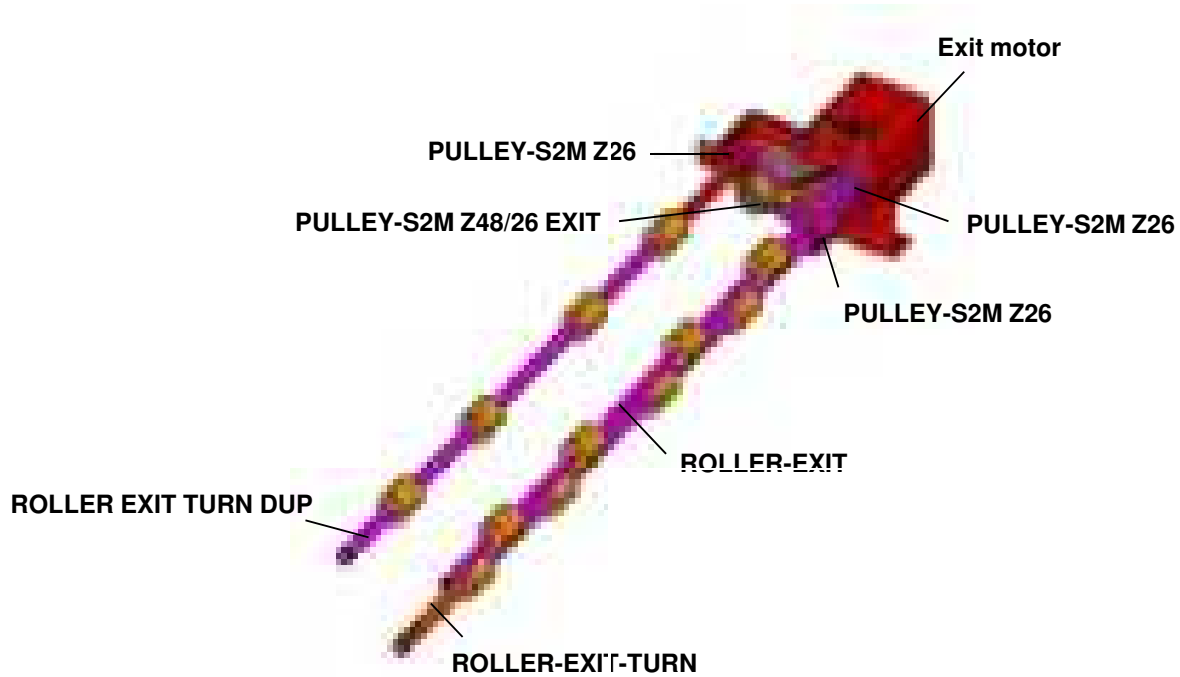
2.10.3.5 DADF Gate Drive Assembly

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

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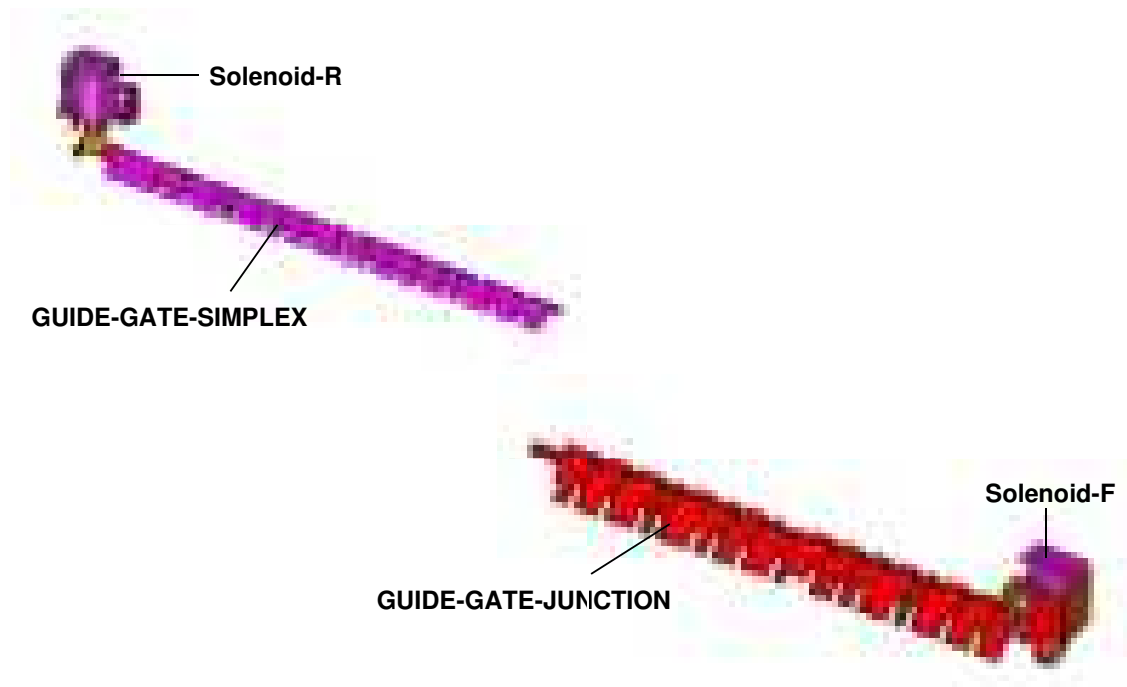
2.11 Printer Electronics Configuration

The CLX-9x50 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 CLX-9000 Series Electrical Circuit
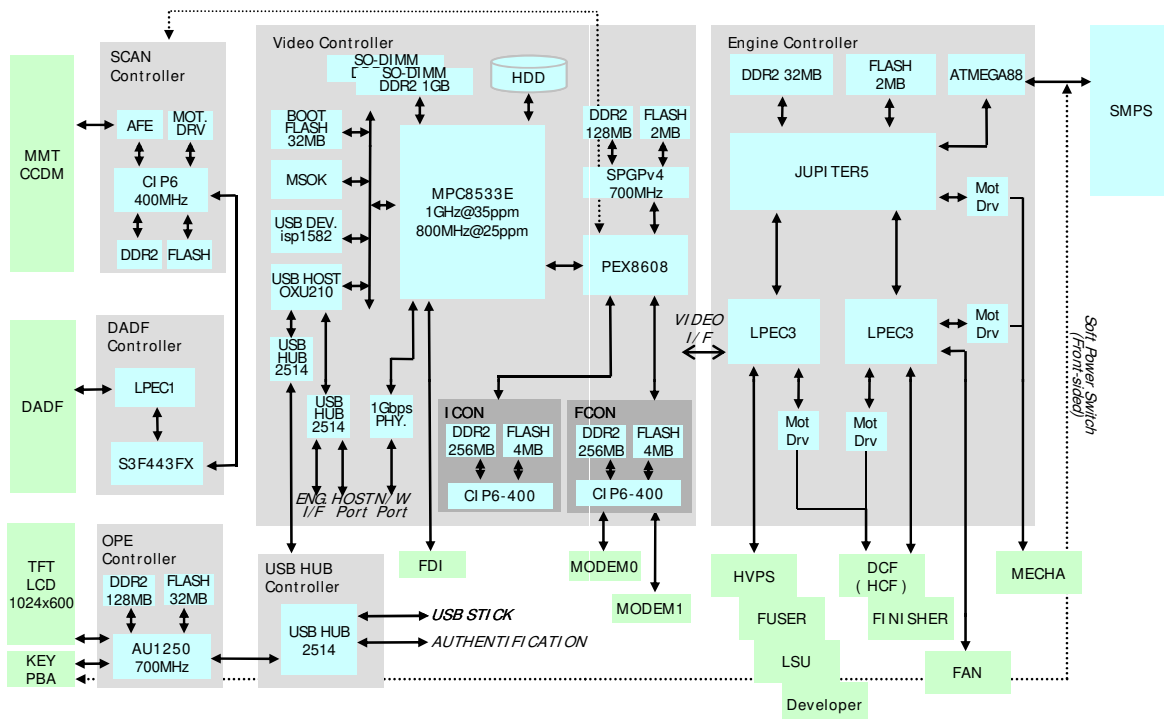
The Engine Controller controls all modules required to print, that is, LSU, HVPS, FAN, Fuser, etc.
The Engine Controller communicates with the Video Controller through the USB bus to communicate the printing status, and interfaces all video synchronization signals to print the video data from the Video Controller. The Video Controller receives print data from the host through the 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 Image Controller (ICON) is used to compress and decompress images for enhancing performance of images processing and transceiving relevant data to and from the Video Controller through the PCIe. The Video Controller uses the PowerPC 1GHz, 1GB 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 by using the 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:

Engine Controller

Video Controller

SMPS

DC Power

Toner Connector

Deve joint

HVPS2

HVPS1

Paper tray Joint

2-71
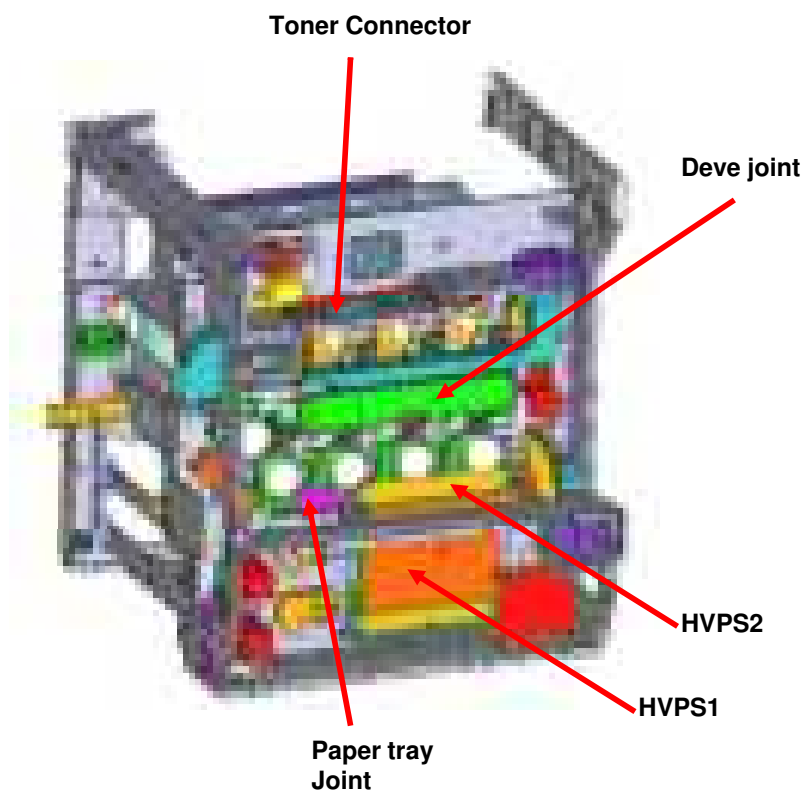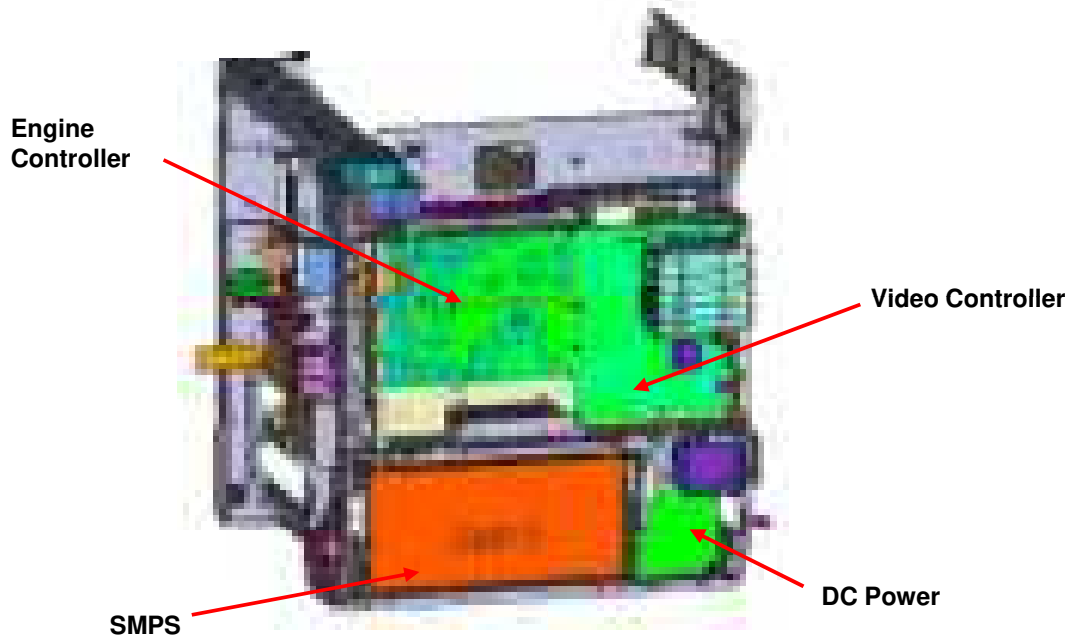
2.11.1 Video controller

The Video Controller, which is used to generate the printable video data, is comprised of a Main Processor (MPC8533E) and a Video Processor (SPGPv4). The Video Controller has adopted the DDR2 SO-DIMM as the system memory, a SATA Bridge to access the hard drive (HDD), and a PCIe bus to interface between the Main Processor and the other controller chips (SPGPv4, Scan Controller and the FAX Controller), and a USB Controller to interface with the Engine Controller and the OPE Controller through the HUB Controller PBA.
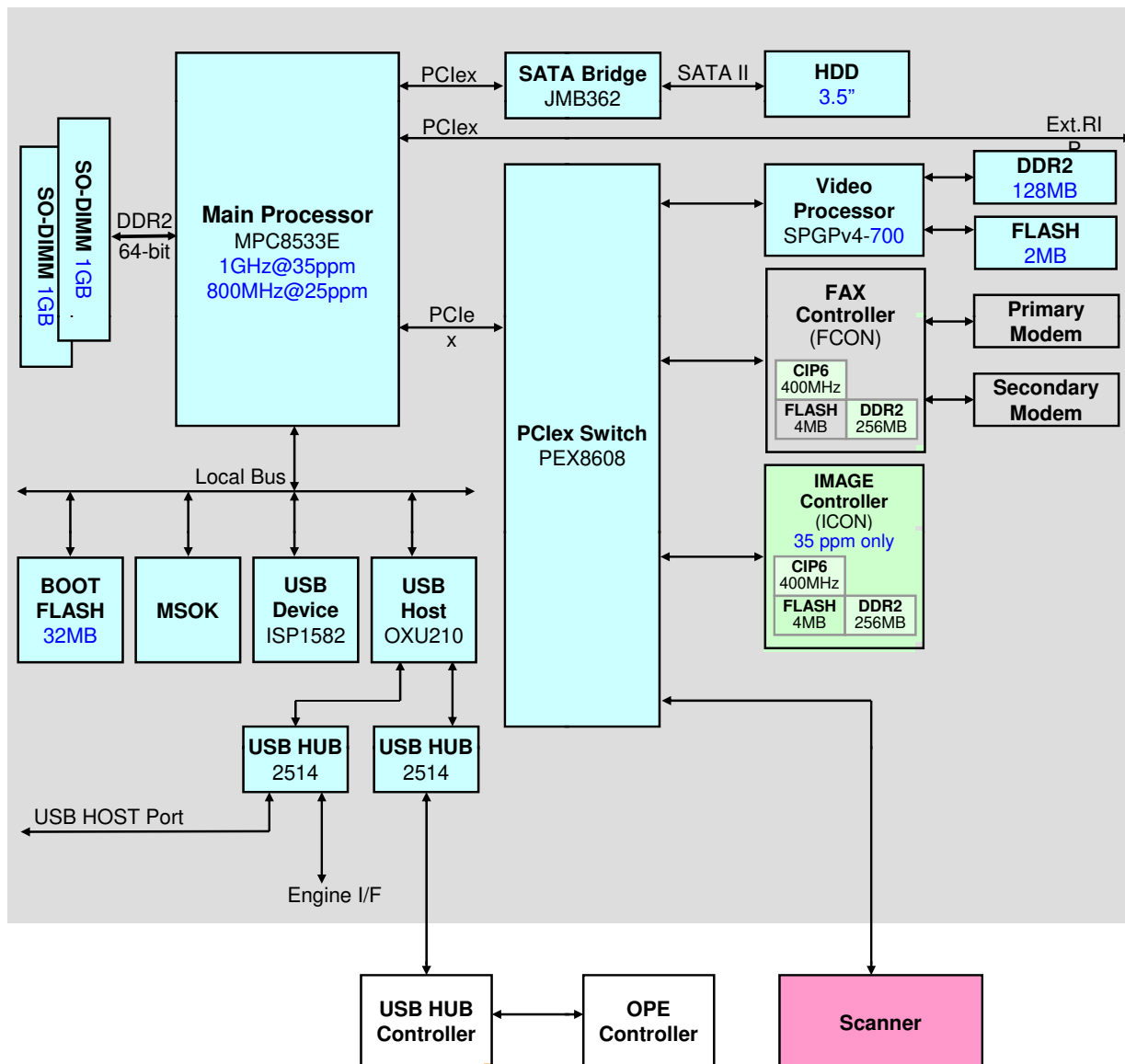
[Video Controller diagram]

Video Controller Printed Circuit Board Assembly
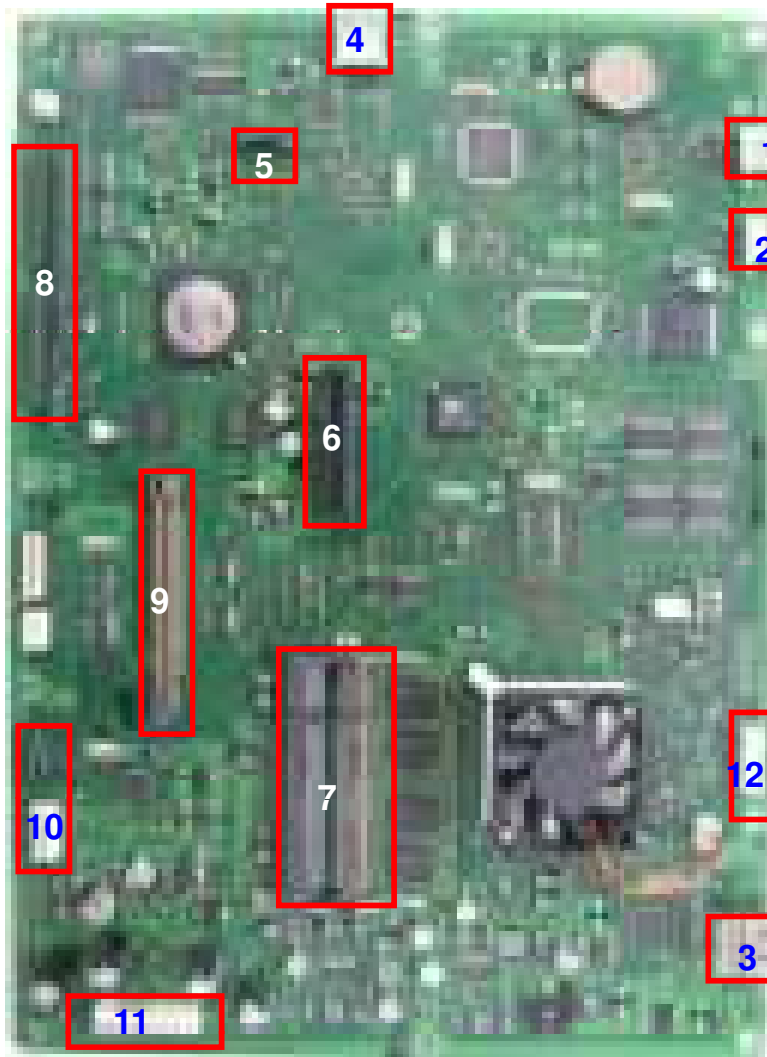
● Connection

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	CON-JOINT I/F PBA CONNECTOR
7	SODIMM CONNECTOR
8	ENGINE CONTROLLER I/F CONNECTOR
9	MSOK PBA I/F CONNECTOR
10	HDD I/F CONNECTOR
11	POWER CONNECTOR
12	FDI CONNECTOR

● Information

• SEC-CODE
  CLX-9350ND : JC92-02150A
  CLX-9250ND : JC92-02235A

• **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:

- 1 GB capacity (expandable to 2 GB)
- 64-bit non ECC DDR2 200MHz speed.

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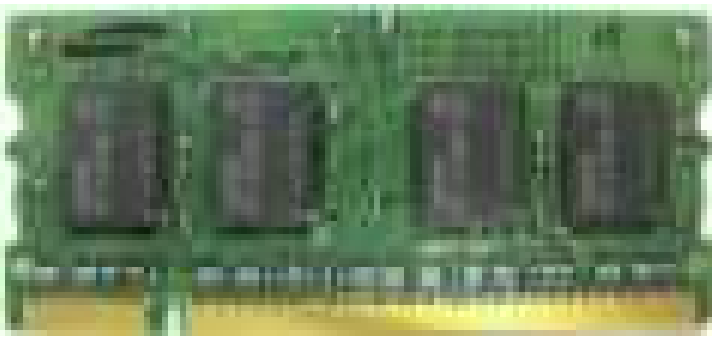
● **Information**

   SEC-CODE : JC92-02193A
   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.
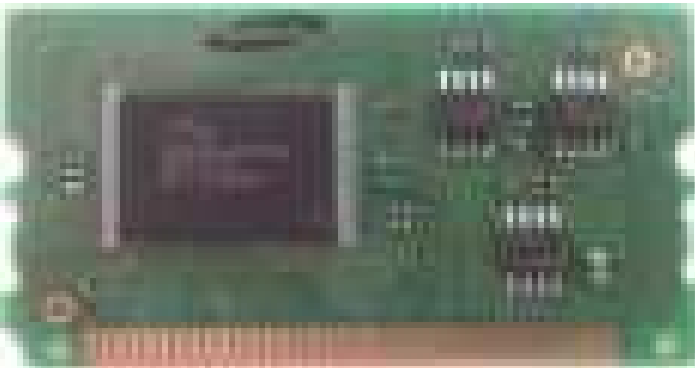
● **Information**

   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, the External RIP PBA, the ICON PBA, and the FCON PBA. The Interface method of this PBA is PCI express except the FCON and Modem PBAs.
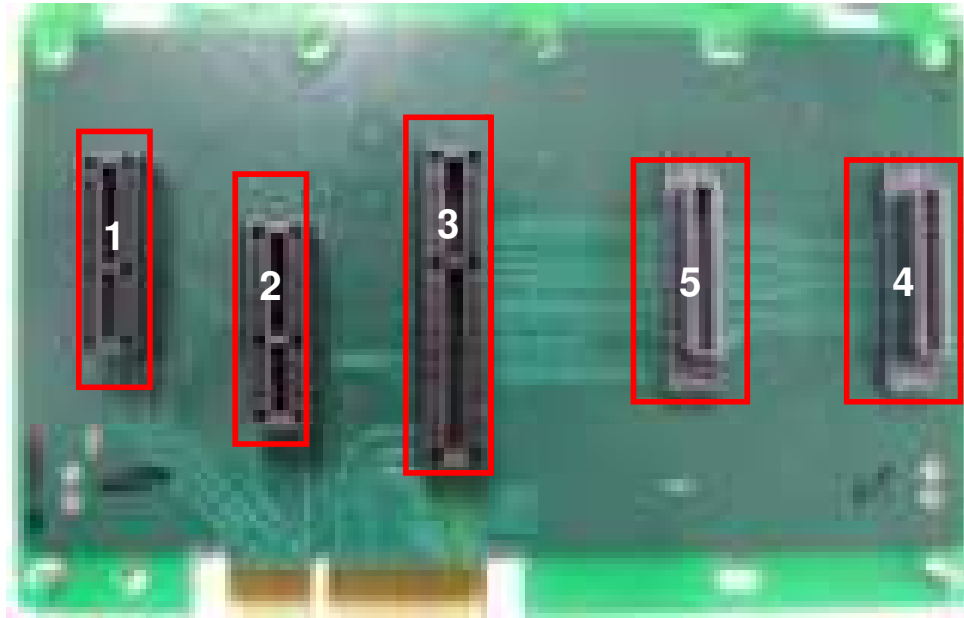
● **Information**

> **SEC-CODE : JC92-02268A**
> **PBA Name : PBA-FAX JOINT**

● **Connection**

1	Ext. RIP PBA I/F CONNECTOR (For Future)
2	ICON PBA I/F CONNECTOR
3	FCON PBA I/F CONNECTOR
4	Primary MODEM CARD I/F CONNECTOR
5	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**

FAX-Kit model name : CLX-FAX150
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 CLX-9350ND. 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

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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.
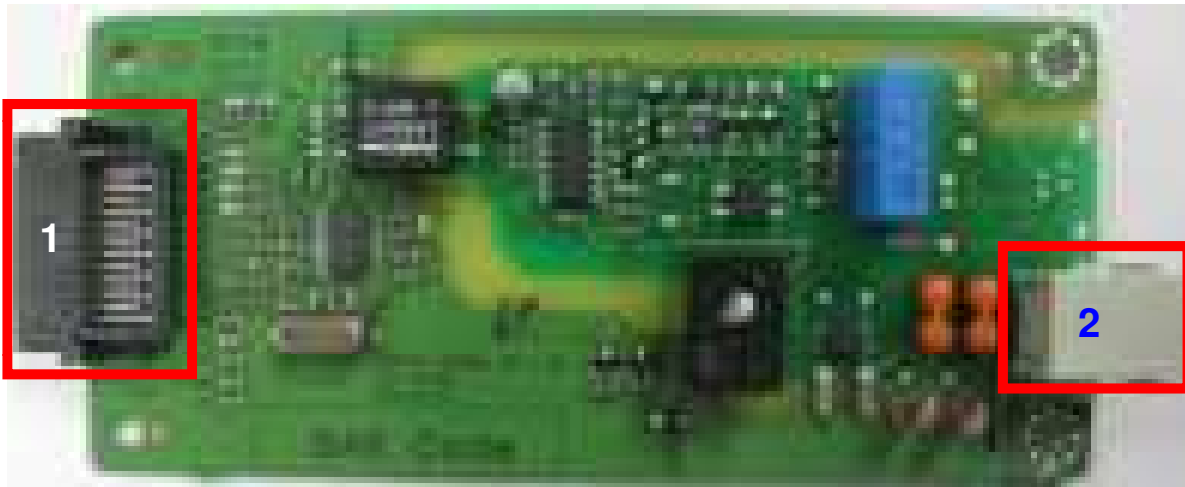
● **Information**

> **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

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2.11.1.7 Image Controller (ICON) – CLX-9350ND Only

The Image Controller (ICON) PBA is used to control and manipulate some scanned and stored image.
The ICON PBA is comprised of a CPU (CIP6,400MHz,PCI interface), a PCIe express Bridge chip, 256MB
DDR2 Memory and 4MB Flash Memory .

● **Information**

    SEC-CODE : JC92-02149A
    PBA Name : PBA-IMAGE COPROCESSOR

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2.11.1.8 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.
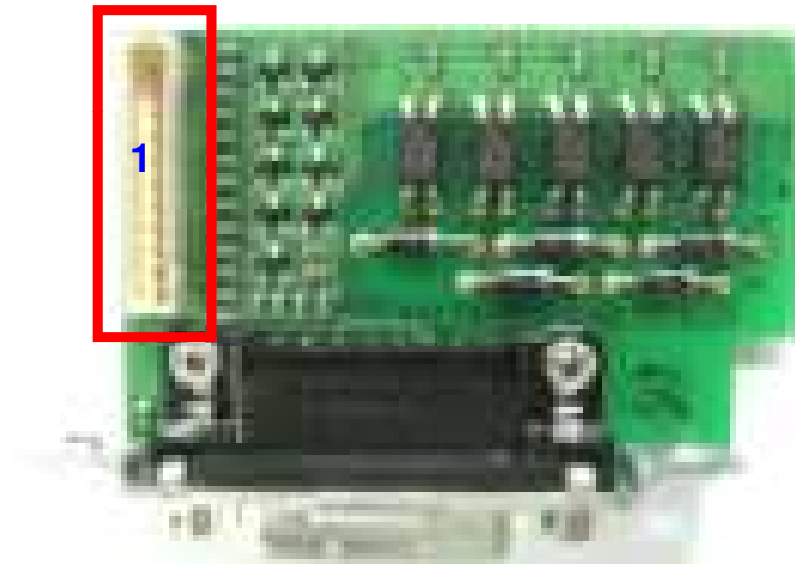
● **Information**

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
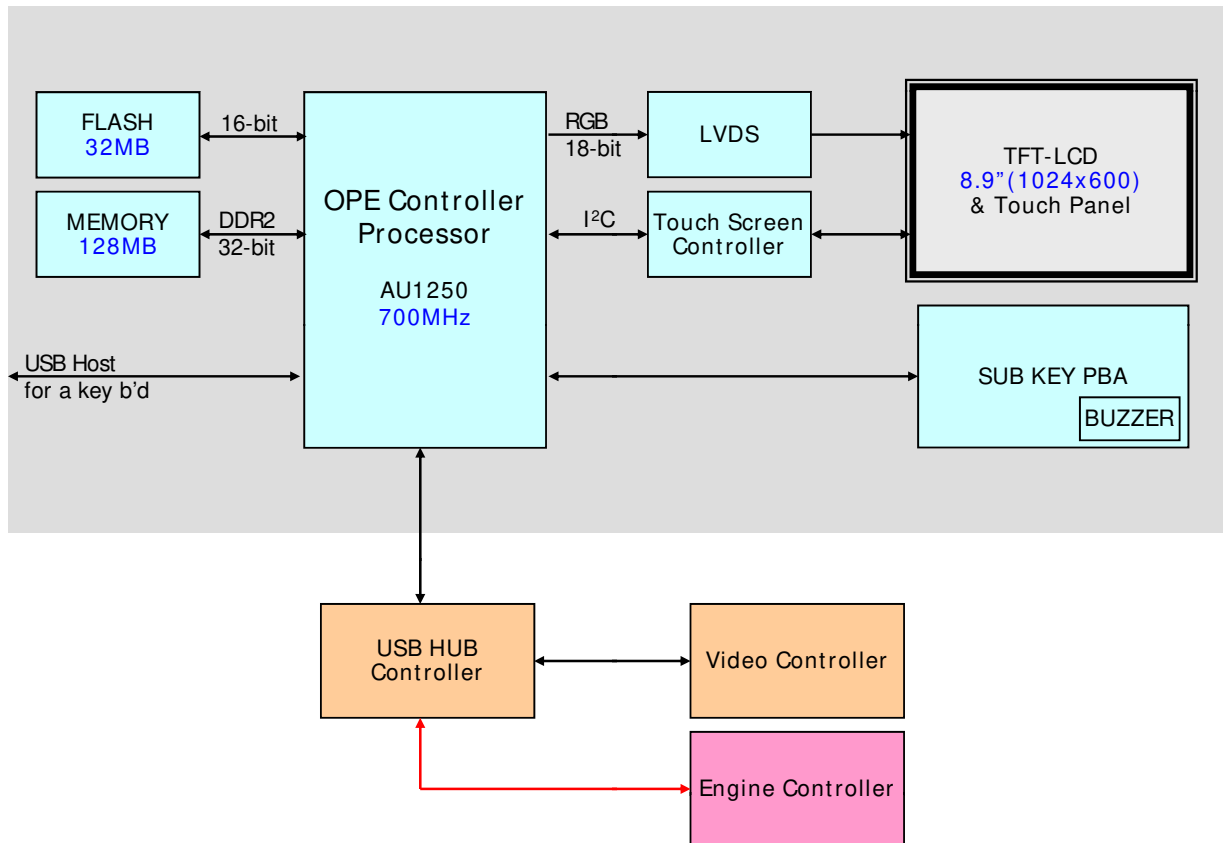
OPE Controller PBA
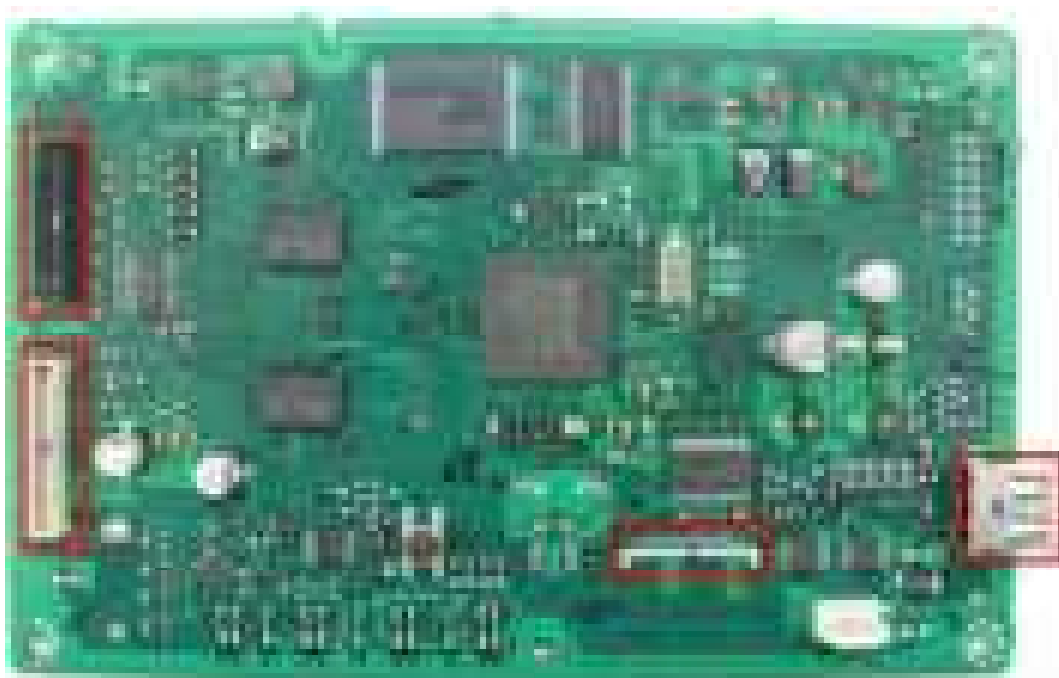
● **Information**

> **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
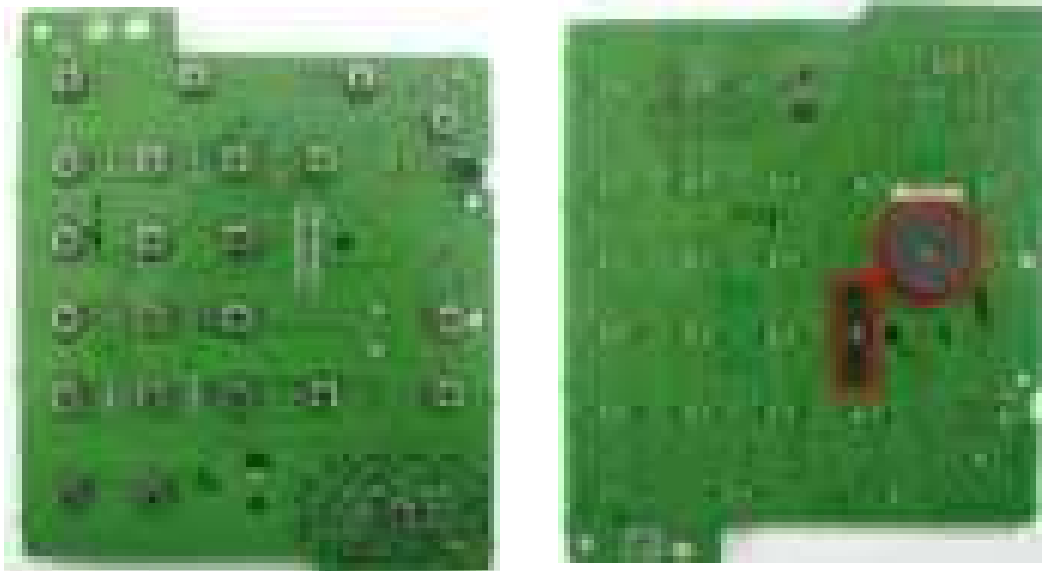
● **Information**

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

● **Connection**

1	INTERFACE CONNECTOR TO OPE MAIN

2.11.2.2 USB HUB CONTROLLER PBA
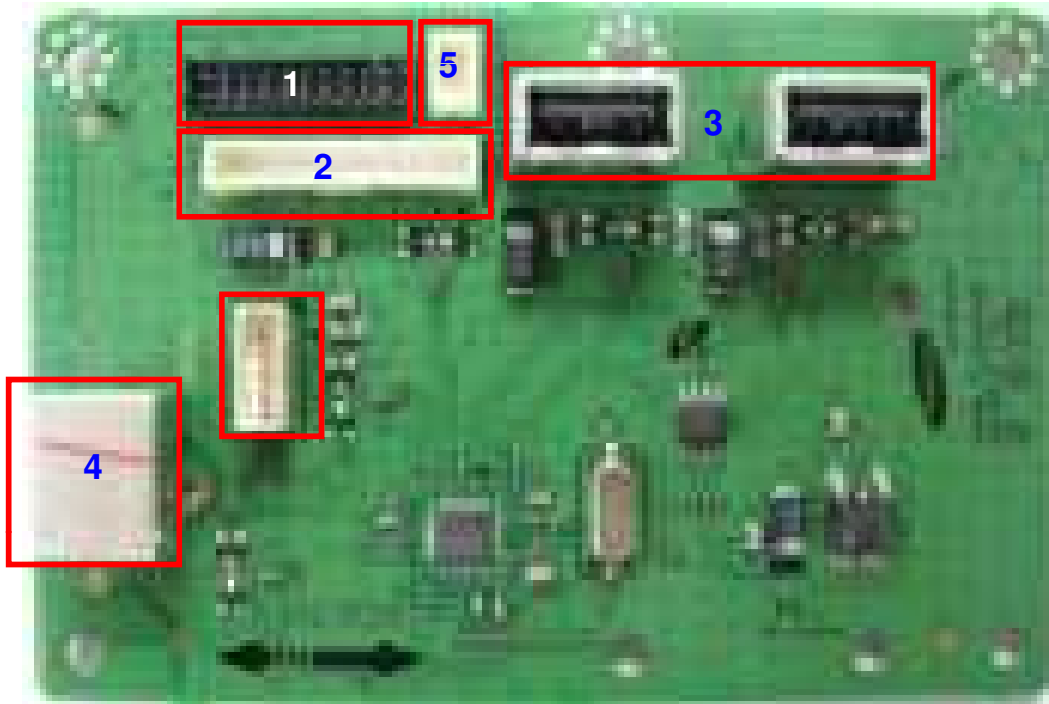
● **Information**

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	USB UPSTREAM PORT TO THE VIDEO MAIN PBA
5	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, 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 Finishers.

Diagram of Engine Controller
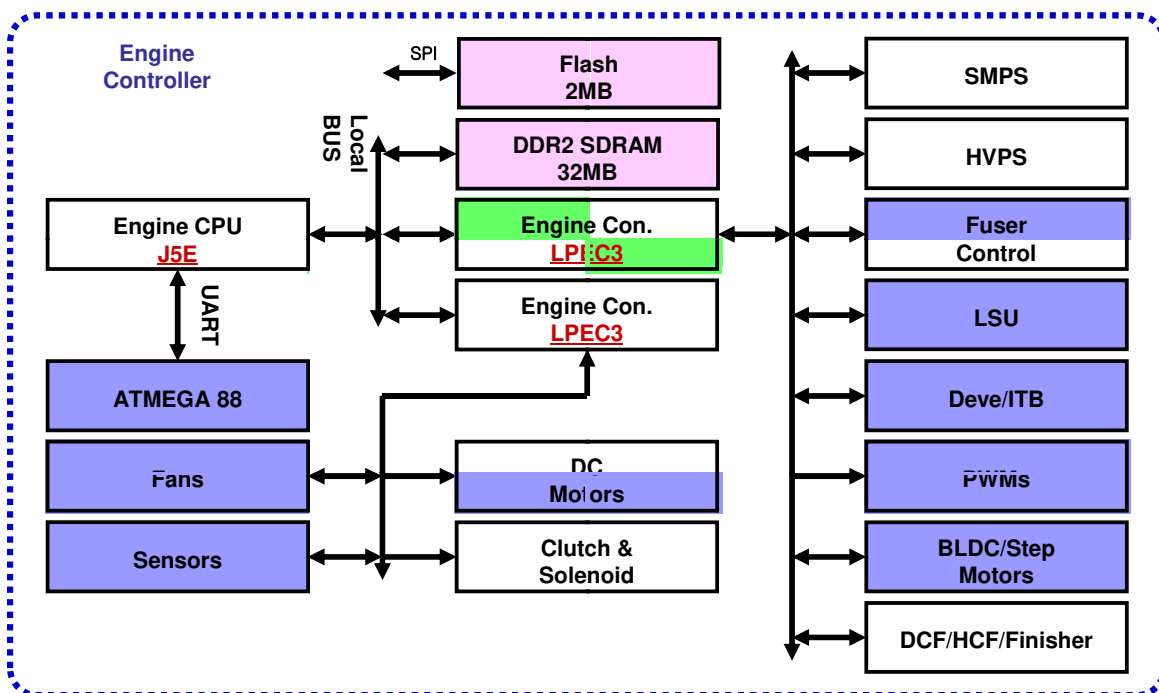
Engine Controller PBA
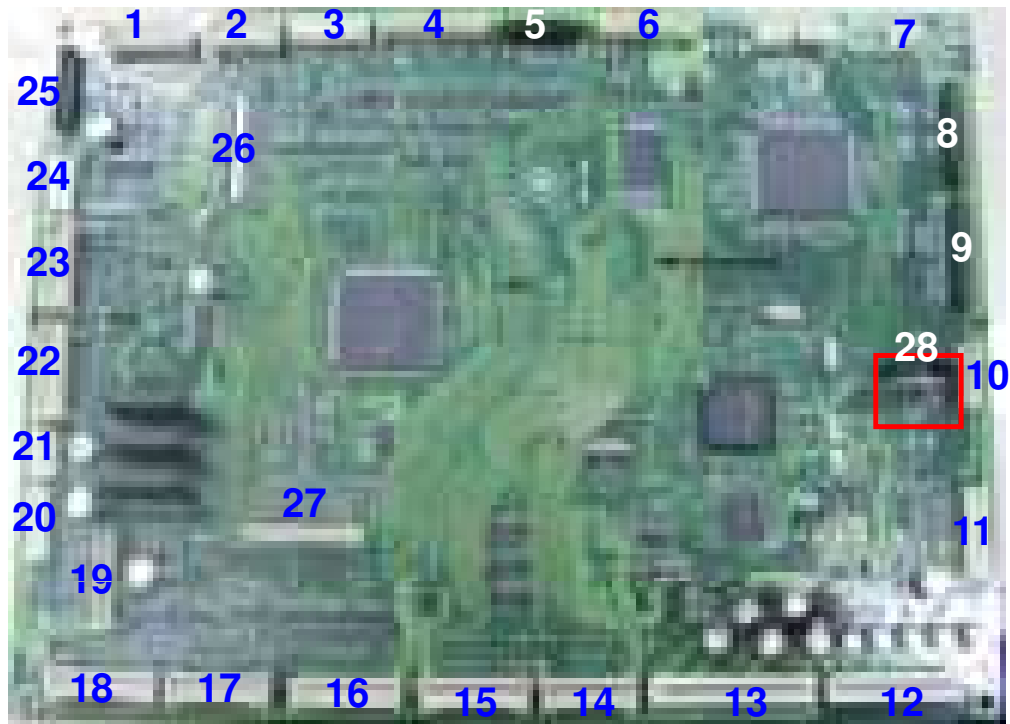
- **Information**

  - SEC-CODE : JC92-02129A(35PPM), JC92-02239A(25PPM)
  - PBA Name : PBA-ENGINE

- **Connection**

1	BOTTLE JOINT		15	HVPS I/F (1 / 2)
2	FUSER DRAWER		16	LSU I/F
3	EXIT SENSOR, RETURN SOL		17	LSU YM
4	ID SENSOR		18	LSU CK
5	OP I/F		19	DCF I/F
6	SCAN I/F		20	PAPER STEP
7	HDD FAN		21	PICK UP STEP
8	VIDEO I/F(1/2)		22	CASSETTE JOINT
9	VIDEO I/F(2/2)		23	SIDE DRAWER
10	JTAG		24	PAPER REGI
11	FINISHER		25	DRIVE POWER
12	POWER 5V		26	DRIVE JOINT
13	POWER 24V		27	SMPS I/F
14	HVPS I/F (2 / 2)		28	MSOK I/F

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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.
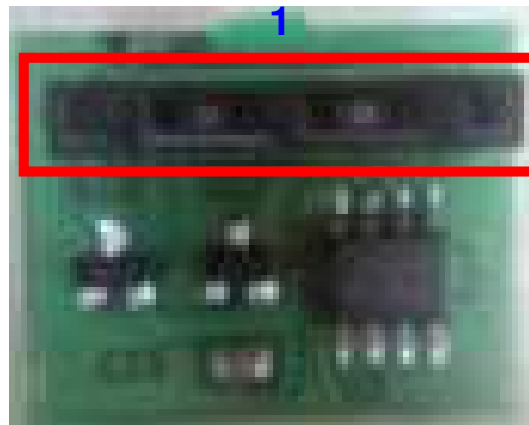
● **Information**

> **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.
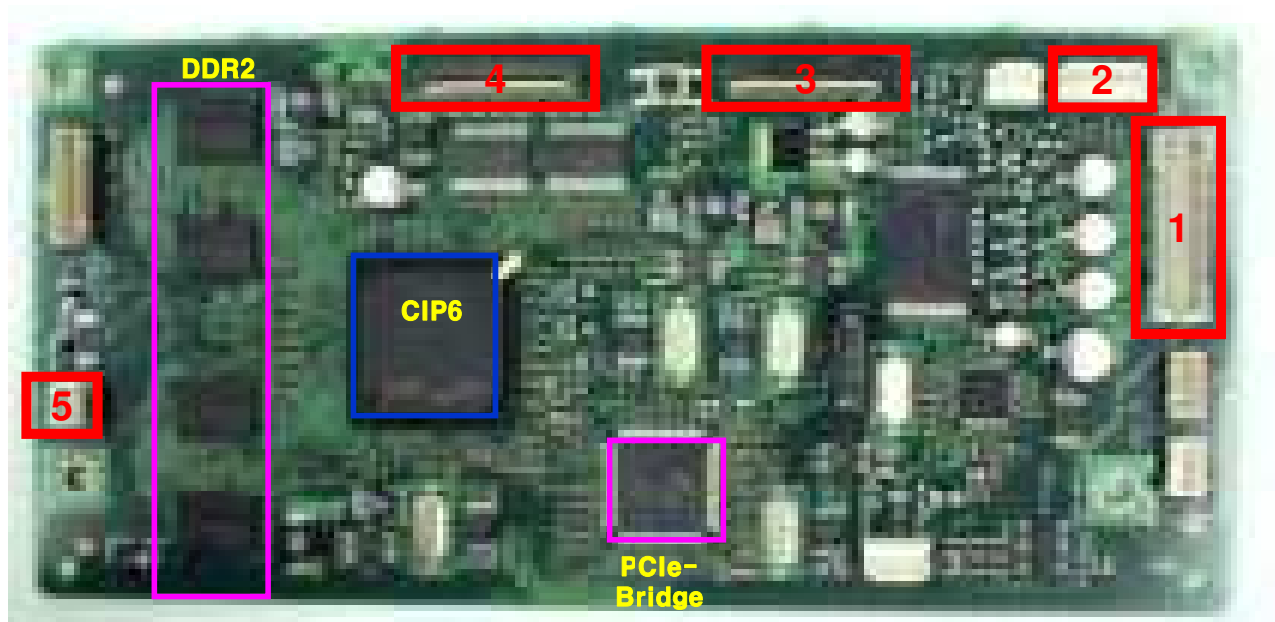
● **Information**

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

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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. DADF supports up to 60% Duplex speed.
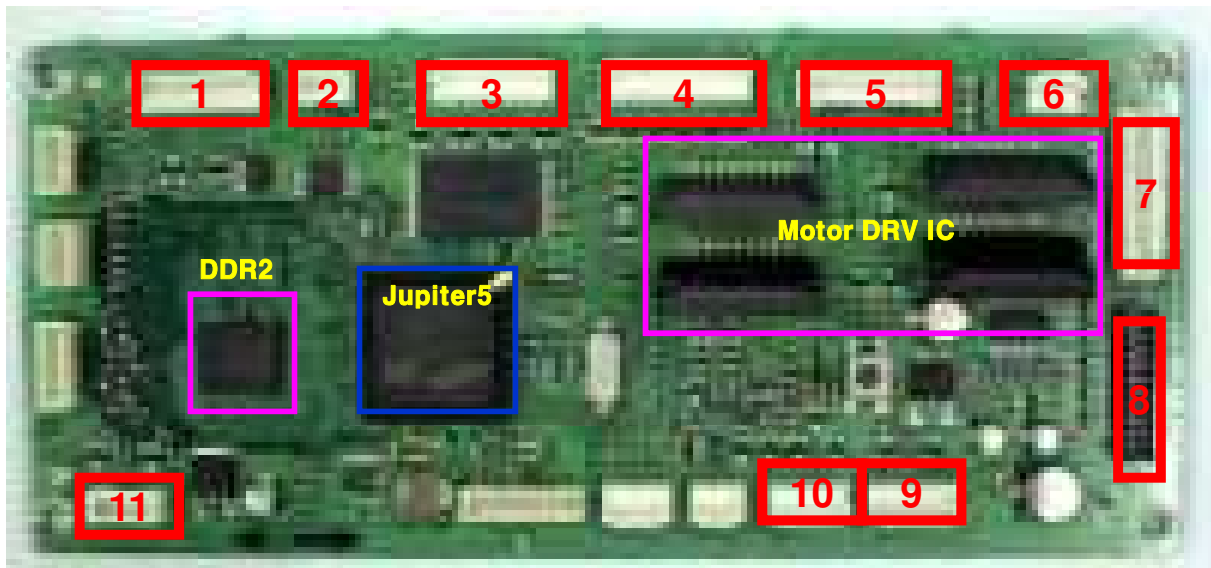
● **Information**

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-9x50 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	

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

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

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

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

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-9x50 series contains two High Voltage Power Supply (HVPS) boards. These two PBAs generate 24 high-voltage channels, which include: T1(4), T2+/-(2), CORONA(4), GRID(4), DEVE AC(4), DEVE DC(4), FB, and SAW.

HVPS1 supplies High Voltage power for Charging (corona/grid), second transfer (t2 roller), fuser bias, and saw plate.
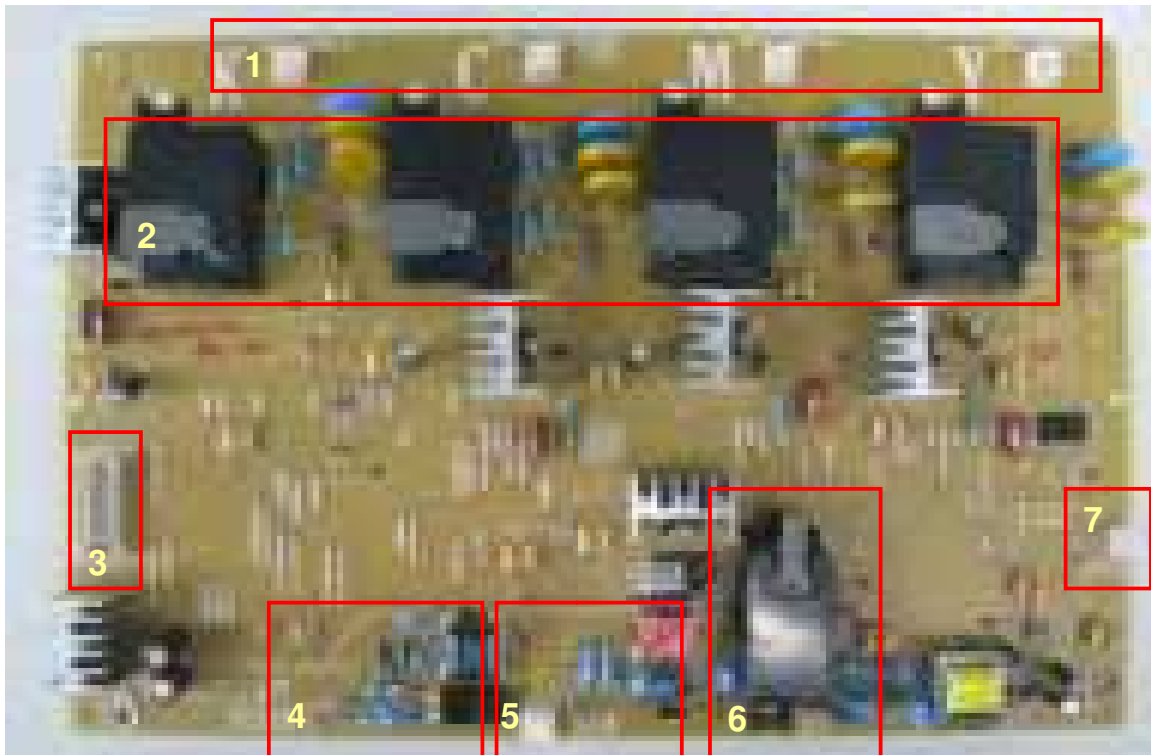
● **Connection**

1	GRID Y/M/C/K
2	CORONA Y/M/C/K
3	HVPS 1 I/F
4	Fuser Bias
5	SAW Plate
6	T2+ and T2- (duplicated in 1output channel)
7	Ozone FAN

● **Information**

SEC-CODE : JC44-00173A
PBA Name : HVPS1

● **Measuring Point**
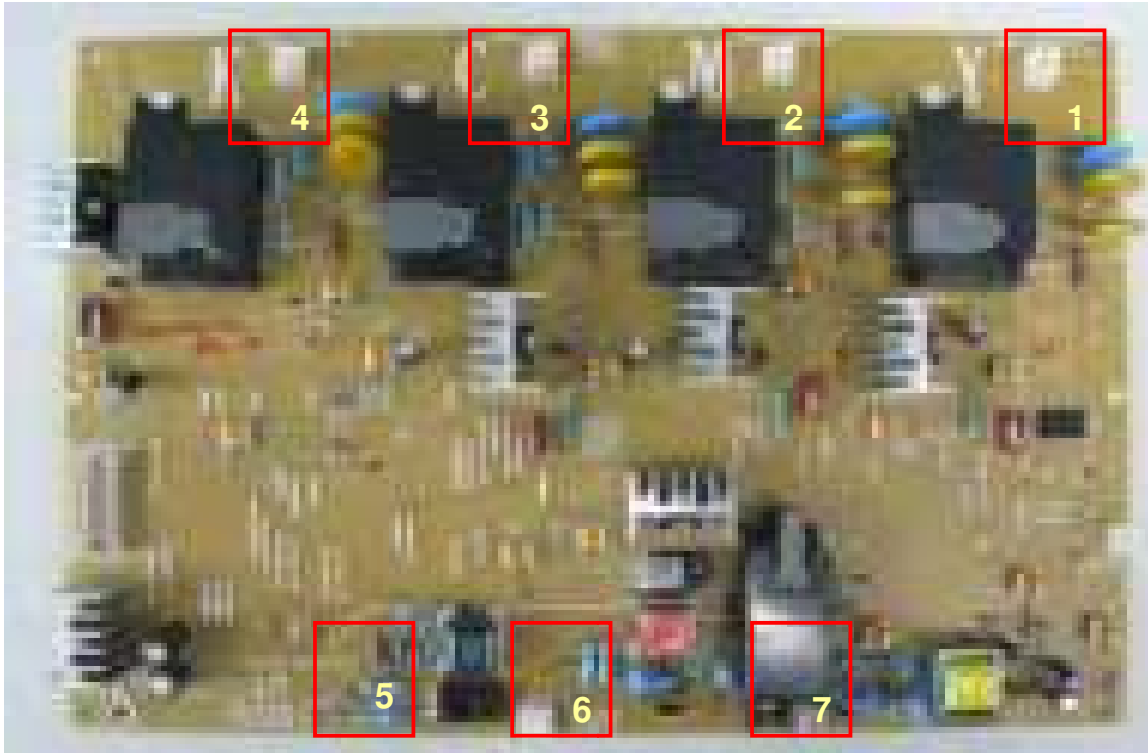
Output Channel	Measuring Point	Output Voltage
CORONA Y	1	-700uA(@ADC 166 & 7.4Mohm load) *static current
CORONA M	2	-700uA(@ADC 166 & 7.4Mohmload) *static current
CORONA C	3	-700uA(@ADC 166 & 7.4Mohm load) *static current
CORONA K	4	-700uA(@ADC 166 & 7.4Mohm load) *static current
GRID Y	1(duplicated in 1output)	-700V(@ADC 230 & 7.4Mohm load)
GRID M	2(duplicated in 1output)	-700V(@ADC 230 & 7.4Mohm load)
GRID C	3(duplicated in 1output)	-700V(@ADC 230 & 7.4Mohm load)
GRID K	4(duplicated in 1output)	-700V(@ADC 230 & 7.4Mohm load)
FUSER BIAS	5	1000V(@ADC 171 & 50Mohm load)
SAW	6	-1000V(@ADC 117 & 25Mohm load)
T2+	7	15uA(@ADC 38 & 56Mohm load) *static current
T2-	7(duplicated in 1output)	-1300V(@56Mohm load) *Enable

HVPS2 supplies high voltage power for the developer (deve ac/dc), and transfer (t1 Y/M/C/K) circuits.
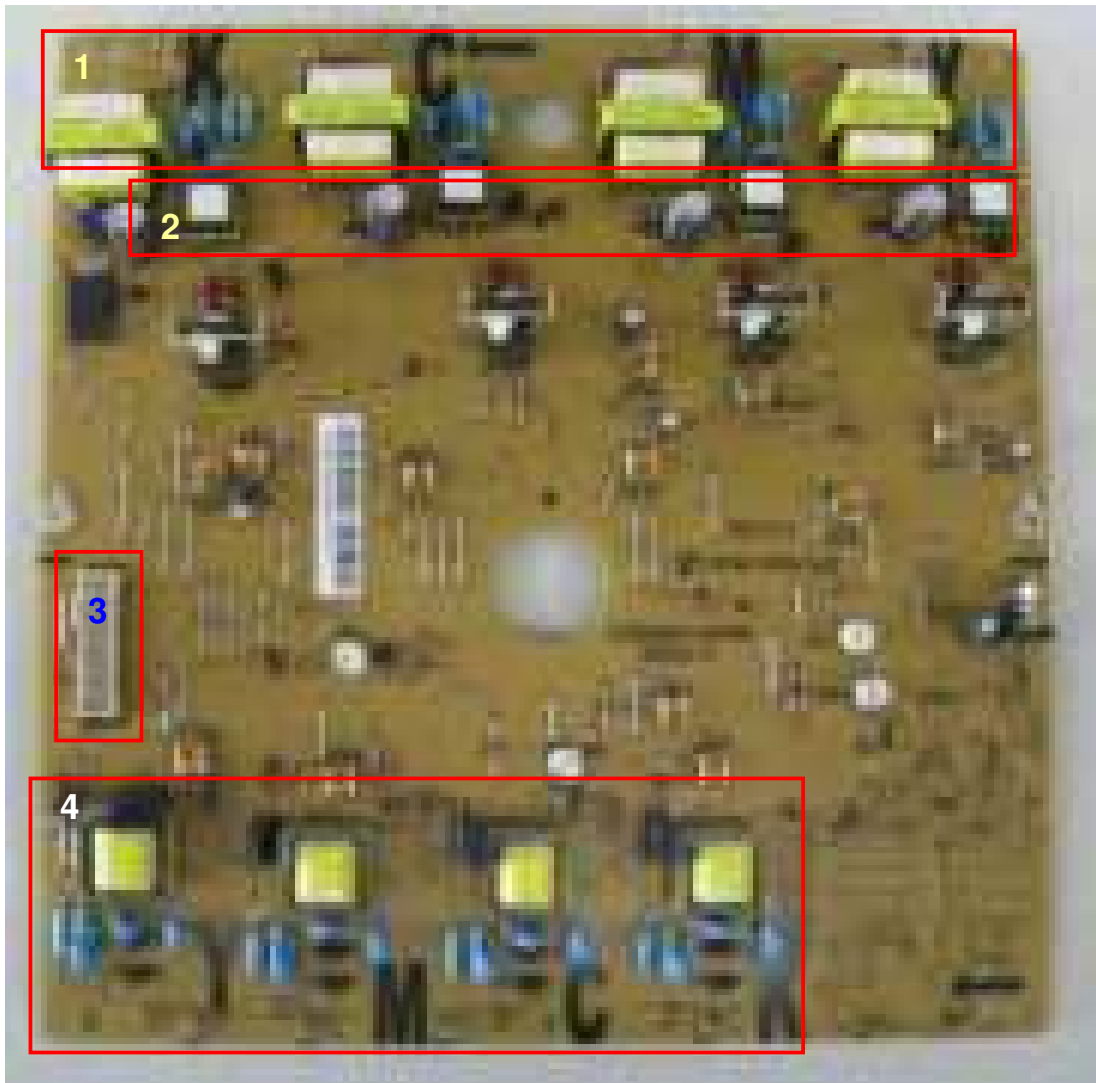
● **Connection**

1	Deve AC Y/M/C/K
2	Deve DC Y/M/C/K
3	HVPS 2 I/F
4	T1 Y/M/C/K

● **Information**

SEC-CODE : JC44-00174A
PBA Name : HVPS2

● **Measuring Point**
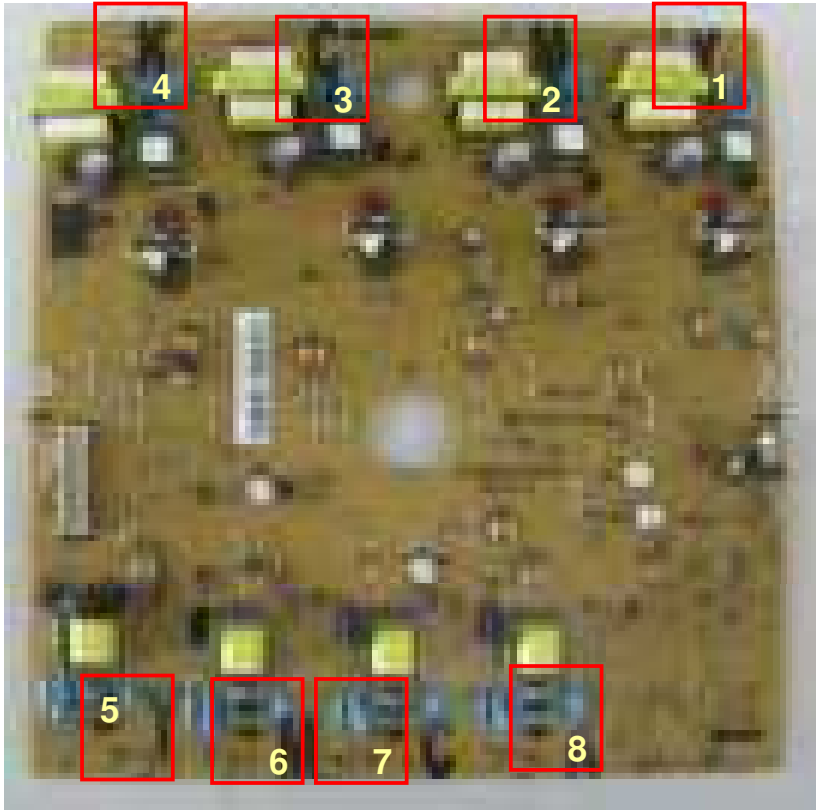
Output Channel	Measuring Point	Output Voltage
DEVE AC Y	1	-1000KVpp(@ADC 128 & 100pF load, Frequency 4Khz) *AC
DEVE AC M	2	-1000KVpp(@ADC 128 & 100pF load, Frequency 4Khz) *AC
DEVE AC C	3	-1000KVpp(@ADC 128 & 100pF load, Frequency 4Khz) *AC
DEVE AC K	4	-1000KVpp(@ADC 128 & 100pF load, Frequency 4Khz) *AC
DEVE DC Y	1(duplicated in 1output)	-600V(@ADC 181 & No load)
DEVE DC M	2(duplicated in 1output)	-600V(@ADC 181 & No load)
DEVE DC C	3(duplicated in 1output)	-600V(@ADC 181 & No load)
DEVE DC K	4(duplicated in 1output)	-600V(@ADC 181 & No load)
T1 Y	5	15uA(@ADC 59 & 41Mohm load) *static current
T1 M	6	15uA(@ADC 59 & 41Mohm load) *static current
T1 C	7	15uA(@ADC 59 & 41Mohm load) *static current
T1 K	8	15uA(@ADC 59 & 41Mohm load) *static current

2.11.10 LSU2/LSU3

The LSU2 PBA includes five Step Motor Drive ICs (for the LSU Skew motor Y/M/C, LSU shutter motor, and waste toner motor), and it is the interface connector for the LSU Unit and the fan control TR for LSU fan1/2.
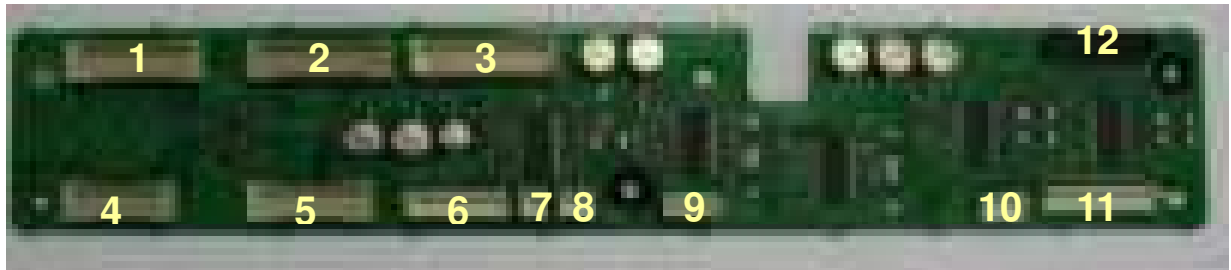
● **Connection**

1	LSU YM – INPUT
2	LSU CK – INPUT
3	LSU JOINT I/F
4	LSU YM – OUTPUT(35ppm – 32pin , 25ppin – 24pin)
5	LSU CK – OUTPUT(35ppm – 34pin , 25ppin – 28pin)
6	LSU Motor
7	LSU TEMP
8	LSU SHUTTER SENSOR
9	LSU FAN
10	LSU SHUTTER MOTOR
11	LSU SKEW MOTOR Y,M,C
12	WASTE

● **Information**

< CLX-9350ND >
SEC-CODE : JC92-02153A
PBA Name : LSU2

< CLX-9250ND >
SEC-CODE : JC92-02220A
PBA Name : LSU3

2.11.11 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, and fan control TR for Duplex / Ozone Fan. It also includes drive ICs for the toner supply DC motor Y/M/C/K.
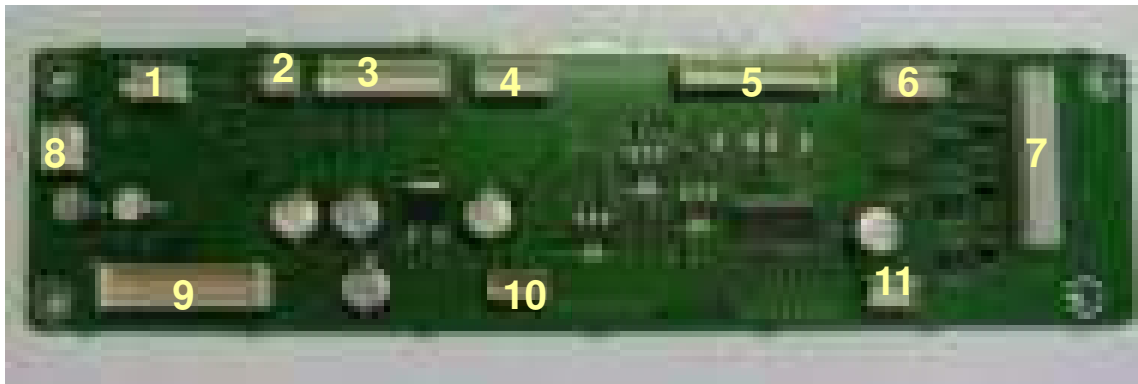
● **Connection**

1	FUSER OUT FAN
2	EXIT CLUTCH
3	EXIT BLDC
4	EXIT STEP
5	Bottle Crum
6	Toner Supply Motor K
7	Toner Supply Motor Y,M,C
8	DUPLEX FAN
9	Toner Connector I/F
10	SPI I/F
11	NC

● **Information**

> **SEC-CODE : JC92-02151A**
> **PBA Name : Toner Connector**

2.11.12 Deve Joint PBA

The Deve Joint PBA includes Step Motor Drive ICs for the ITB Engine Step motor, and it is the interface connector for the deve, crum, clutch, sensor, and BLDC motor.
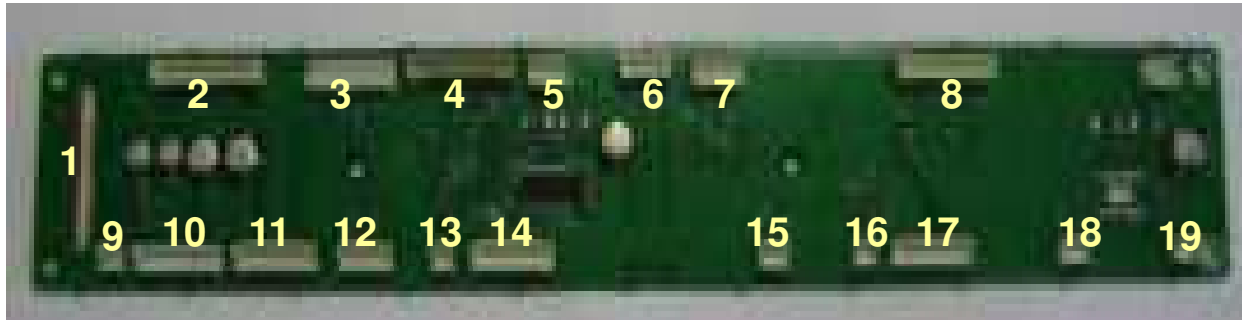
● **Connection**

1	DEVE JOINT I/F	11	DEVE BLDC C
2	DEVE JOINT POER	12	OPC ENCODER C,K
3	ITB BLDC	13	DEVE CLUTCH C
4	CRUM CK	14	DEVE BLDC M
5	T1 STEP	15	OPC ENCODER M
6	CRUM ITB	16	DEVE CLUTCH M
7	T1 POSITION SENSOR	17	DEVE BLDC Y
8	CRUM YM	18	OPC ENCODER Y
9	DEVE CLUTCH K	19	OPC CLUTCH Y
10	DEVE BLDC K		

● **Information**

SEC-CODE : JC92-02152A
PBA Name : DEVE JOINT

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2.11.13 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
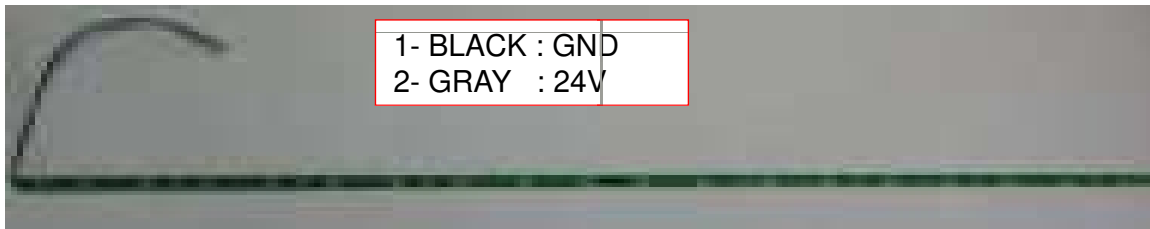
● **Information**

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

2.11.14 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.
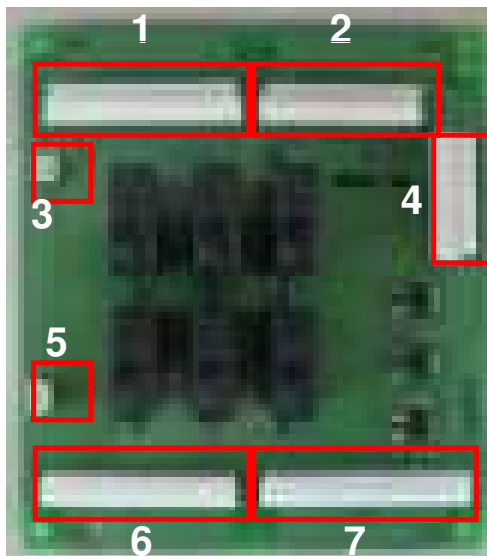
● **Information**

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	-	-

2.11.15 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.
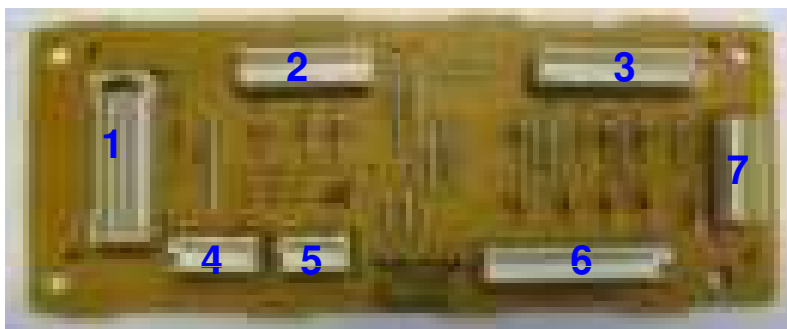
● **Connection**

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

2.11.16 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
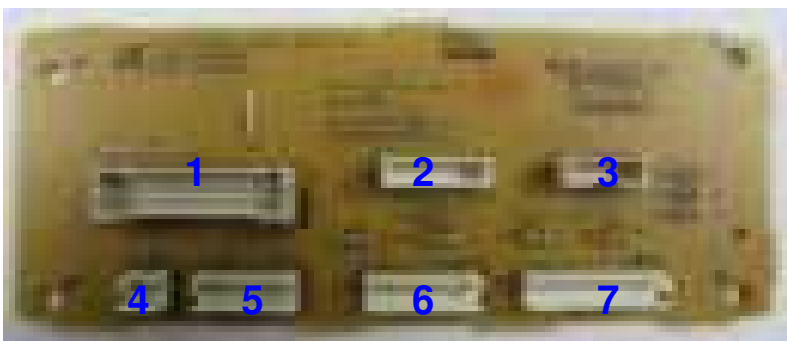
● **Connection**

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

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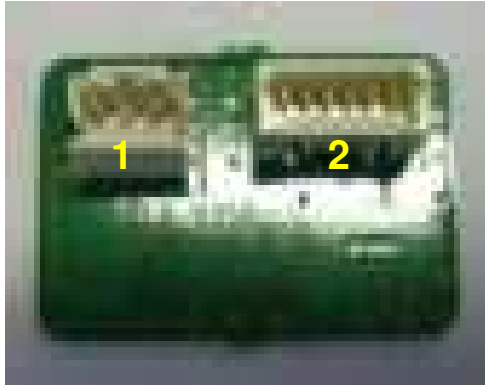
The Fuser PBA includes CRU memory (Using 34c02) for Fuser Unit Life Cycle counting. It also provides a connection interface for the Fuser Step Motor position detecting sensor.

● **Connection**

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

● **Information**

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

2.11.18 Waste Sensor PBA

The Waste Sensor PBA detects the waste toner level inside the waste toner container.

● **Information**

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

2.11.19 LED Panel PBA

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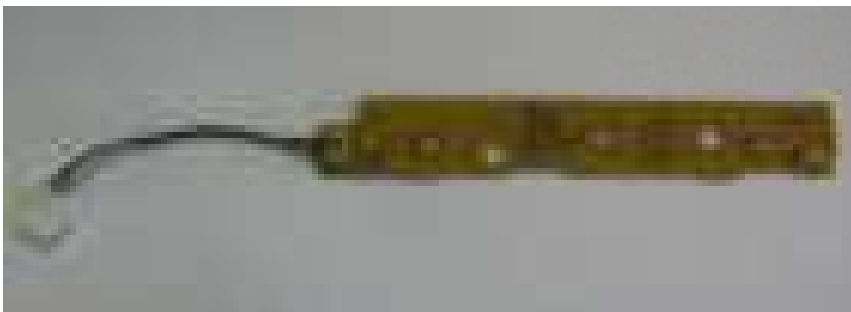
● **Information**

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

2.11.20 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

2.11.21 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	-	-

2.11.22 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

2.11.23 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

2.11.24 ITB Joint1 PBA

The ITB Joint PBA is the interface PBA between the ITB Unit and the system.

● **Information**
   SEC-CODE : JC92-02162A
   PBA Name : ITB JOINT 1

2.11.25 ITB Encoder PBA

The ITB Encoder PBA includes the CRU memory (Using 34c02) for ITB Unit Life Cycle counting. It also provides ITB Belt rotating speed information by using a specific photo interrupt sensor (Encoder Sensor).

● **Information**

SEC-CODE : JC92-02160A
PBA Name : ITB ENCODER

● **Connection**

1	ITB ENCODER I/F
2	ITB EEPROM

2.11.26 ITB Joint2 PBA

The ITB Joint2 PBA includes CRU memory (Using 34c02) used for counting the ITB Cleaning Unit Life Cycle.

● **Information**

SEC-CODE : JC92-02173A
PBA Name : ITB JOINT 2

2.11.27 ITB Joint3 PBA
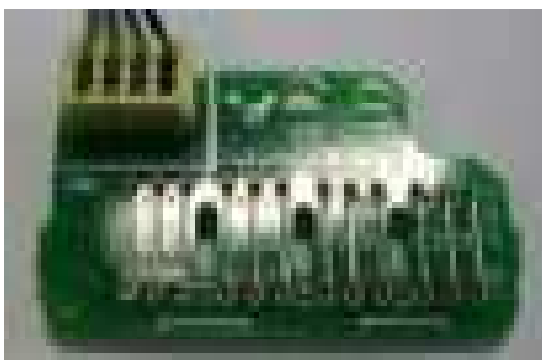
This is the interface PBA between the ITB EEPROM (located in the ITB Cleaning Ass'y) and the Engine Controller.

● **Information**

SEC-CODE : JC92-02174A
PBA Name : ITB JOINT 3

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2.11.28 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.
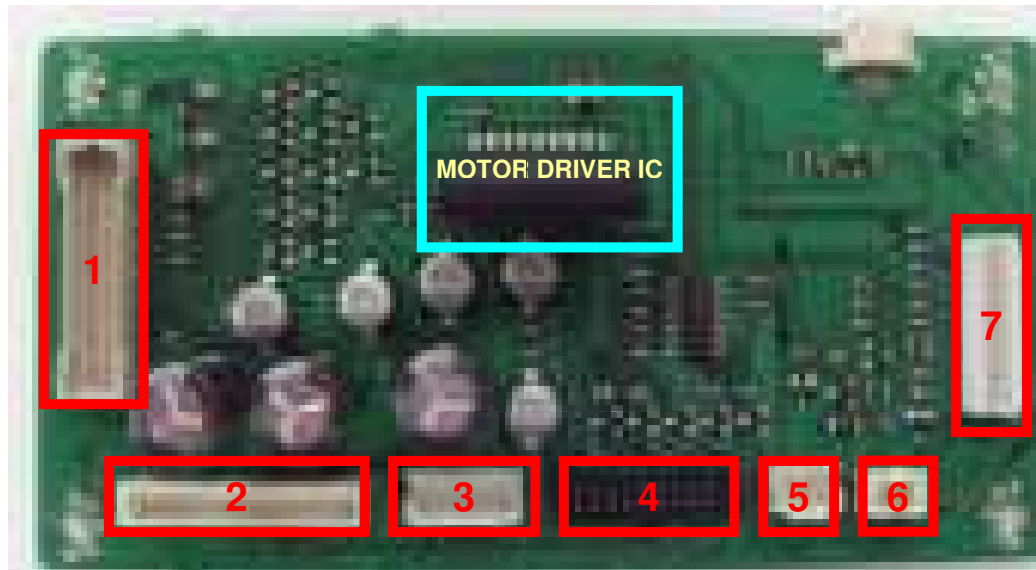
● **Information**

    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

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2.11.29 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.
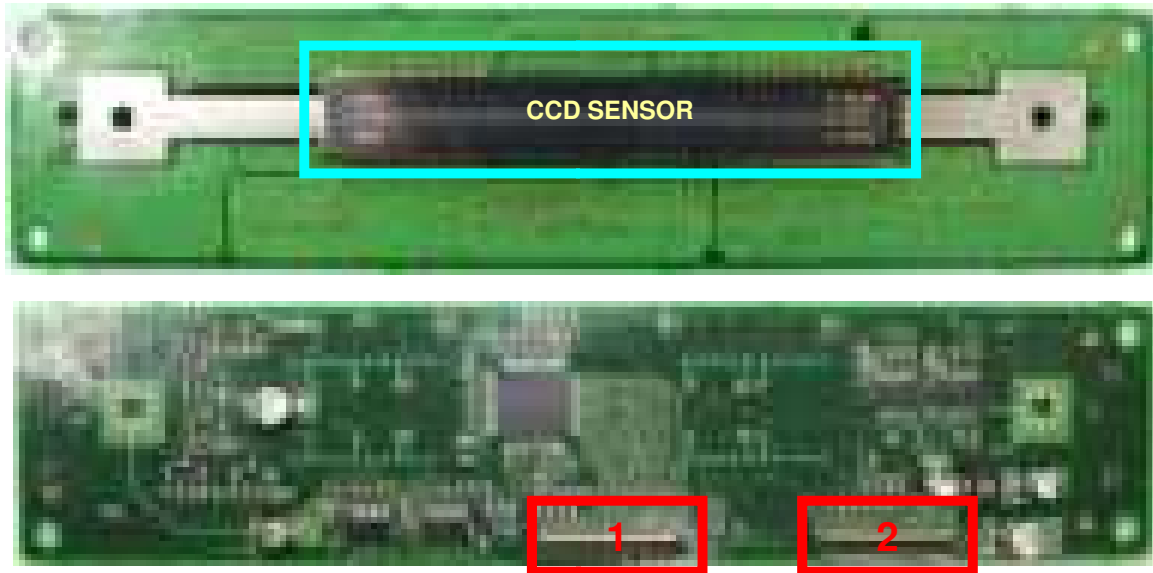
● **Information**

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

● **Connection**

1	SCAN PBA	
2	SCAN PBA	

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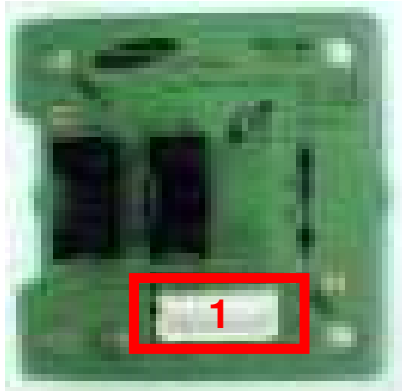
The Scan cover open 1,2 PBA includes 2 photo interrupt sensors. The connector between the two sensors is connected to the scan joint.

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

2.11.31 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.
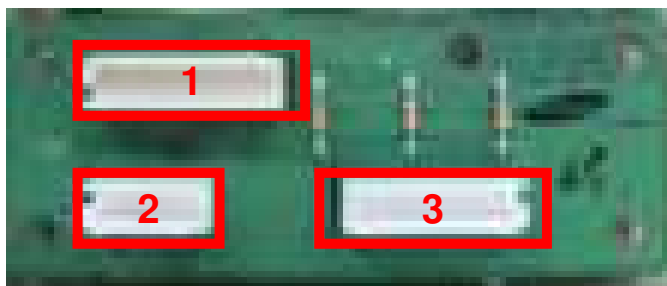
● **Information**

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

● **Connection**

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

2.11.32 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.
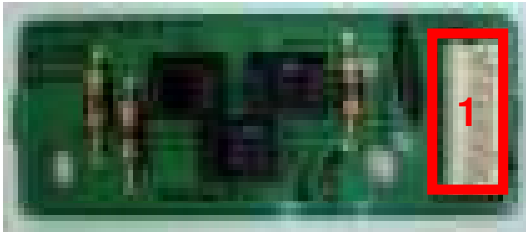
● **Information**

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

● **Connection**

1	LENGTH SENSOR PBA

2.11.33 DADF Mixed Sensor PBA

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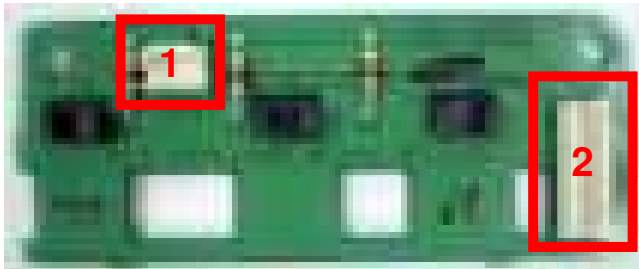
● **Information**

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

● **Connection**

1	DUPLEX REGI SENSOR
2	ADF PBA

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2.11.34 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

2.11.35 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.
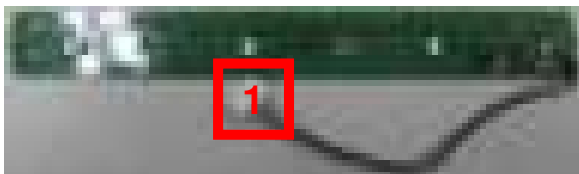
● **Information**

> 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.
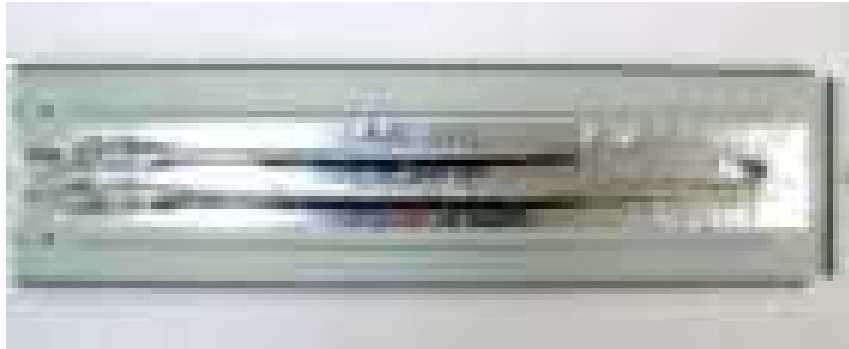
2.12.2 Scanner Heating Cable

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 procedures

This chapter includes procedures for replacing serviceable parts on the printer.

3.1 General Disassembly Procedure Precautions

When you disassemble and reassemble components in the printer, you must use extreme caution. The close proximity of cables to moving parts makes proper routing very important. When you remove components, make sure that any cables disturbed by the procedure are restored as close as possible to their original positions. Before removing any component from the machine, note the cable routing and surrounding part configurations.

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].

[A]
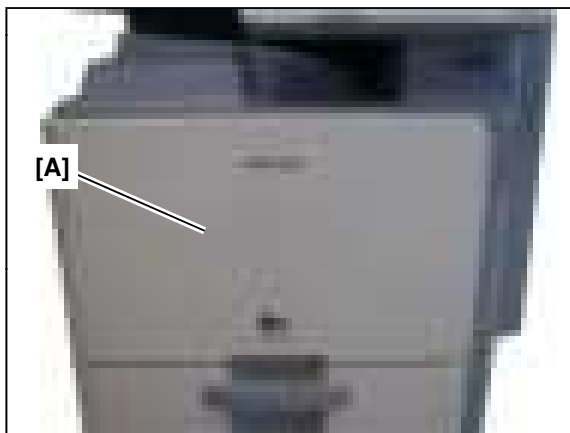
3. Remove 2 pins [C].

[C]

2. Remove the waste toner container [B]

[B]

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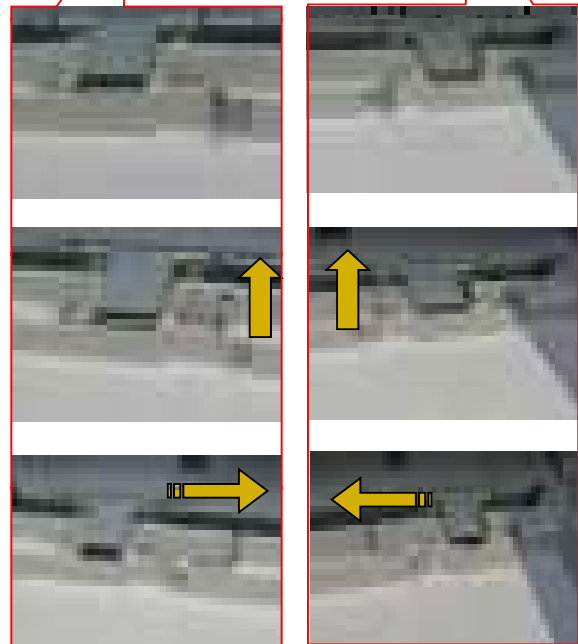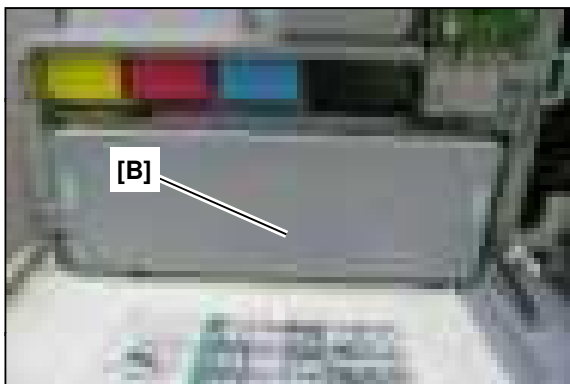
4. Remove the both screws.
5. Remove the both ties.
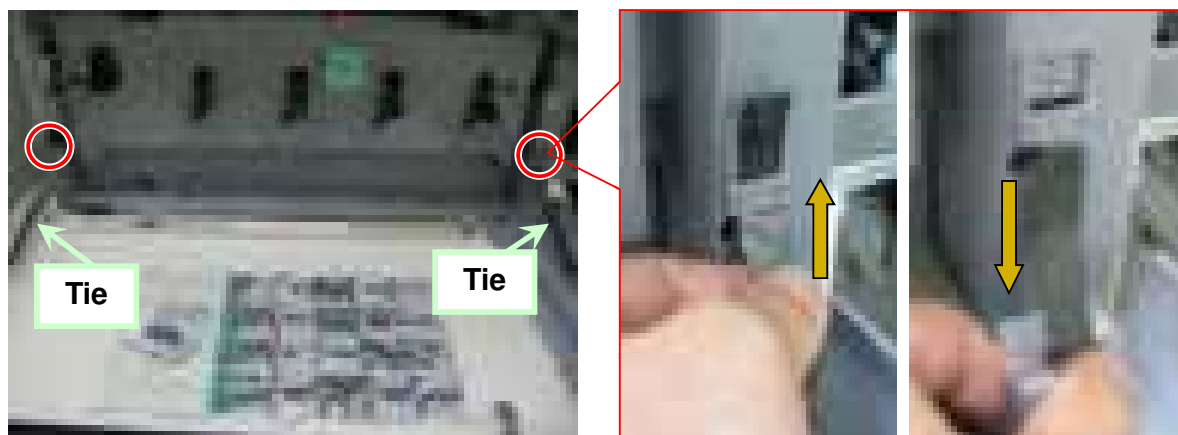
3.2.2 Inner cover

Perform the following procedure to remove the Inner Printer Cover.

1. Open the side unit.
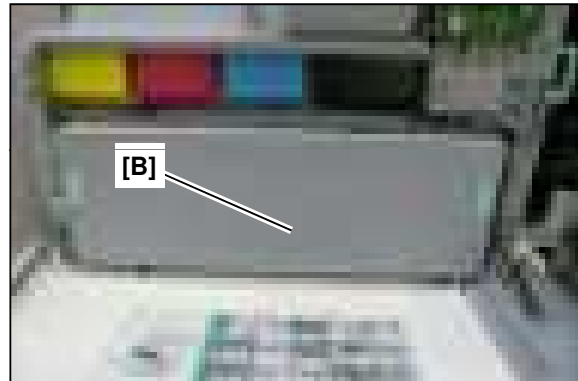
2. Remove the USB cover [A] after removing 1 screw.

3. Open the front cover. Remove the waste toner container [B].
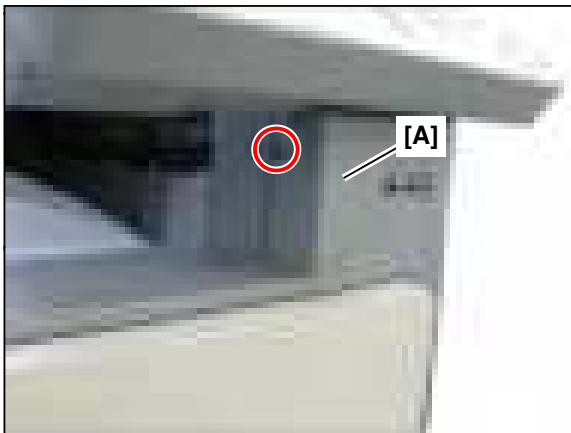
4. Remove the front cover [C]. (refer to 3.2.1).
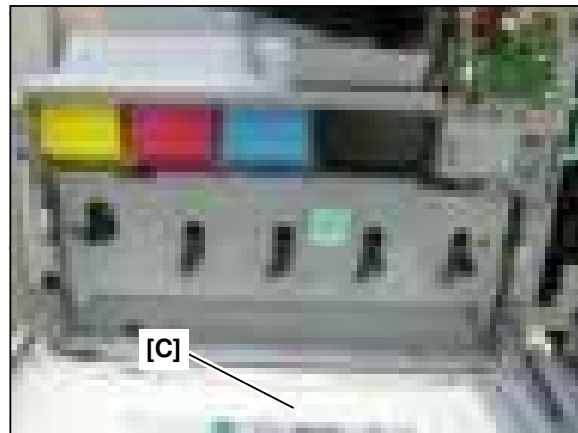
5. Remove the toner cartridges. Open the Frame cover.

Toners

Frame Cover
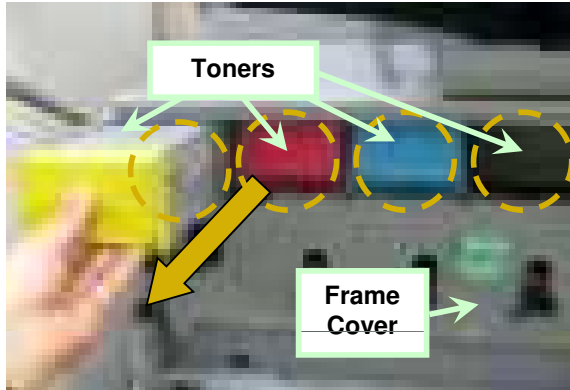
7. Remove the ITB.
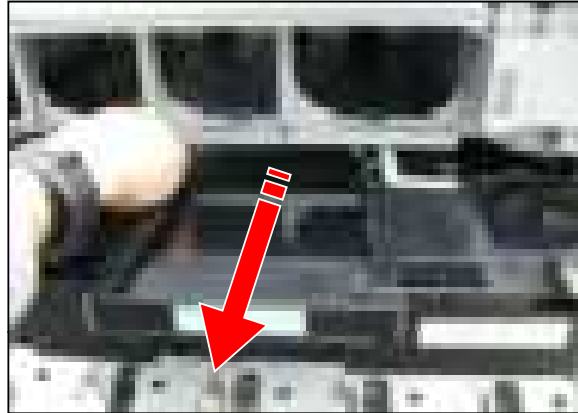
6. Loosen the 3 screws locking the ITB.

8. Remove 10 screws.

Left Cover

3-5
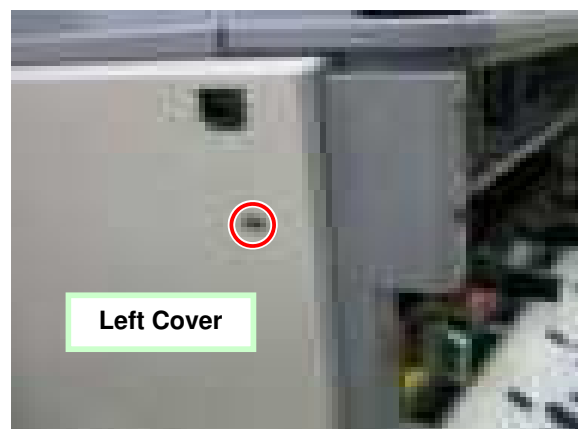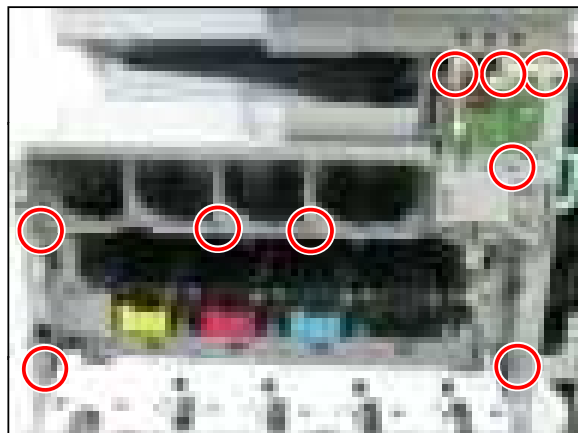
9. Remove the inner cover by following these steps.

Unplug the connector.

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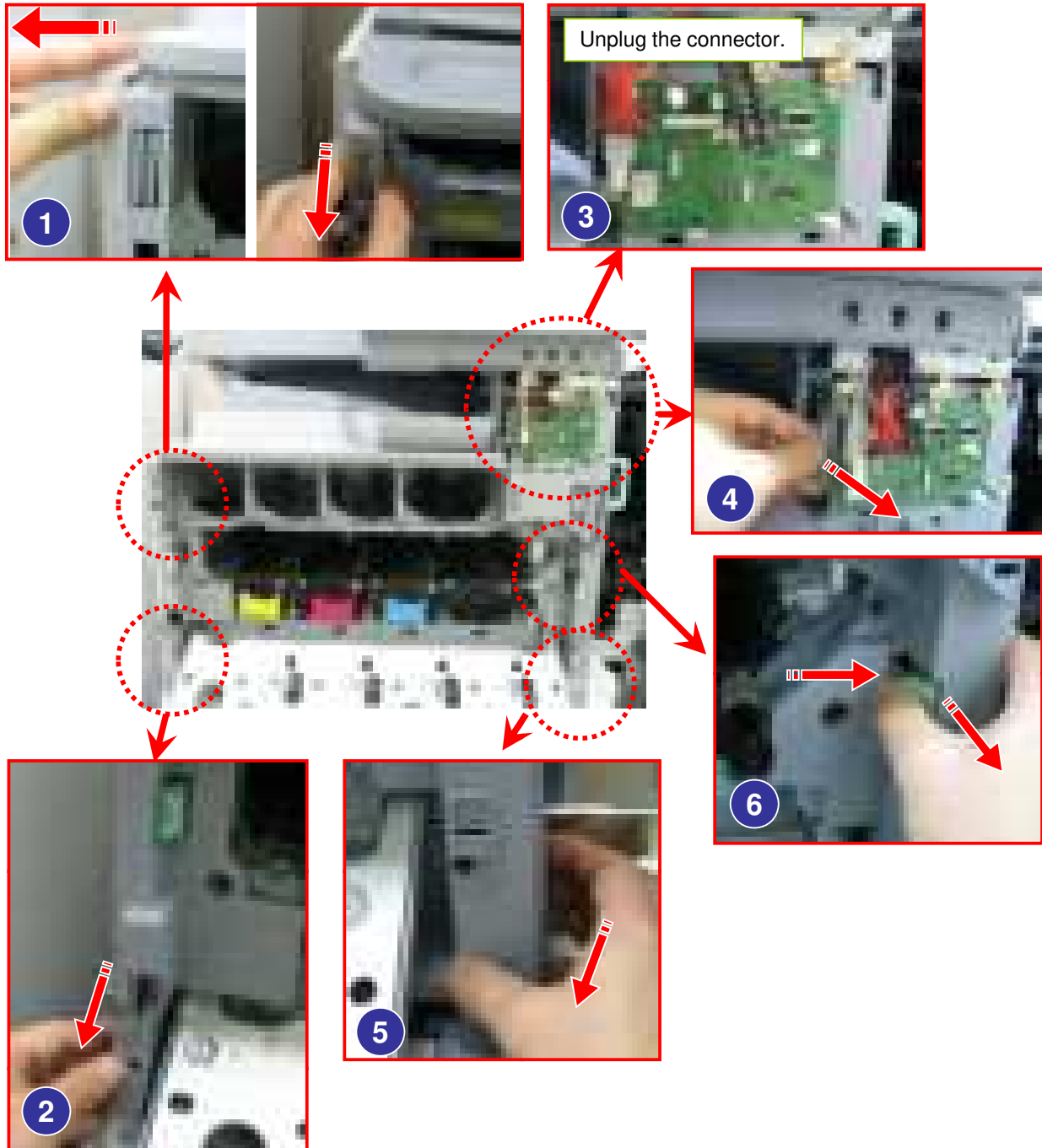
CAUTION
When assembling the Inner Cover the harness can be damaged! Please pay attention.
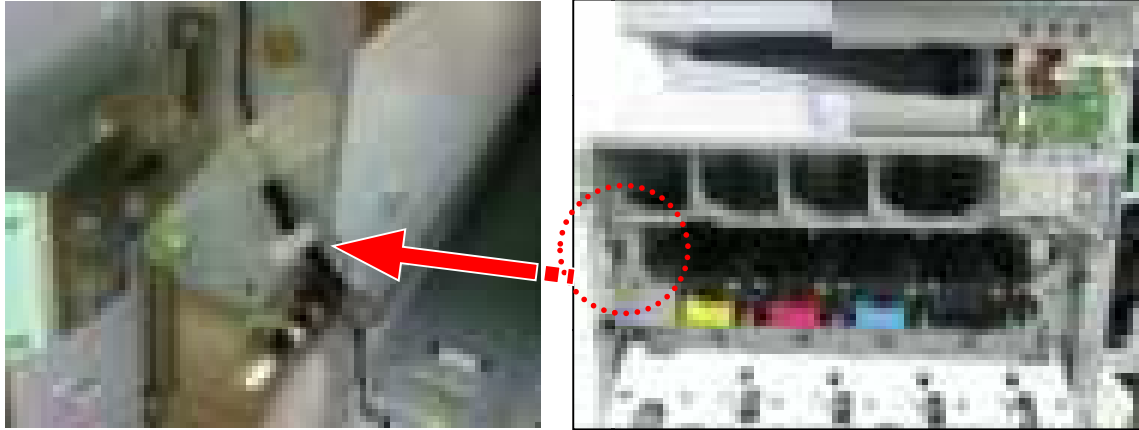
3.2.3 Left cover

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 dust filter cover [C].

4. Remove the left upper cover [D] after removing 6 screws.
5. Remove the left lower cover [E] after removing 4 screws.
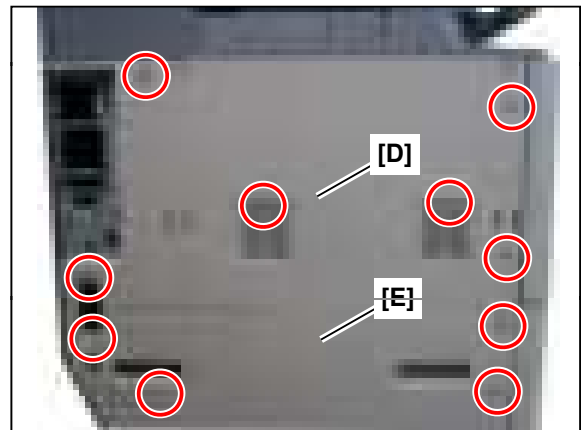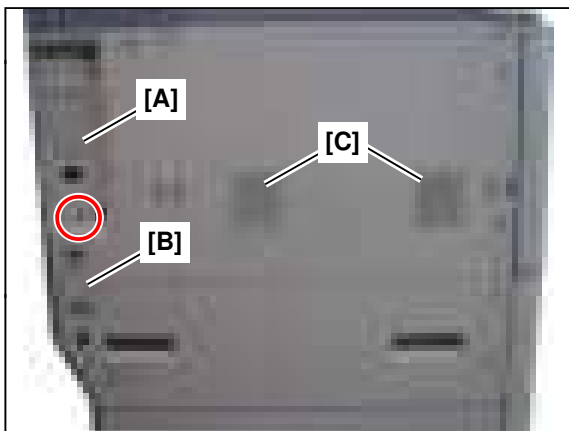
3.2.4 Rear cover

1. Remove the rear upper cover [A] after removing 7 screws.
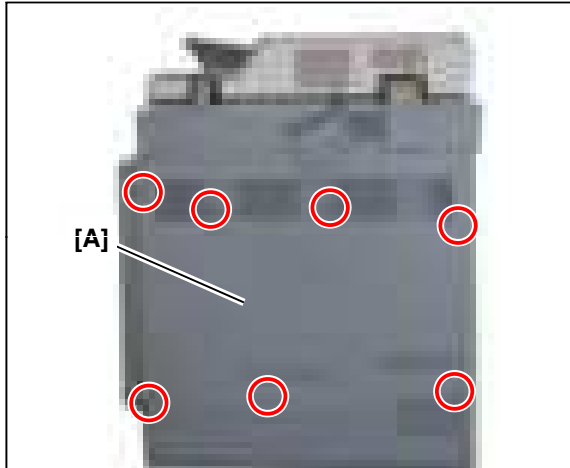
2. Remove the rear lower cover [B] after removing 5 screws
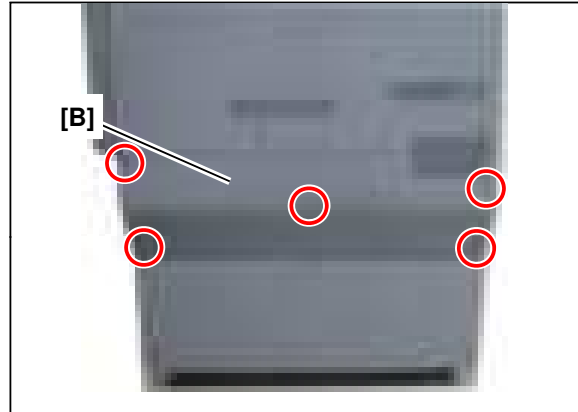
3.2.5 Right cover

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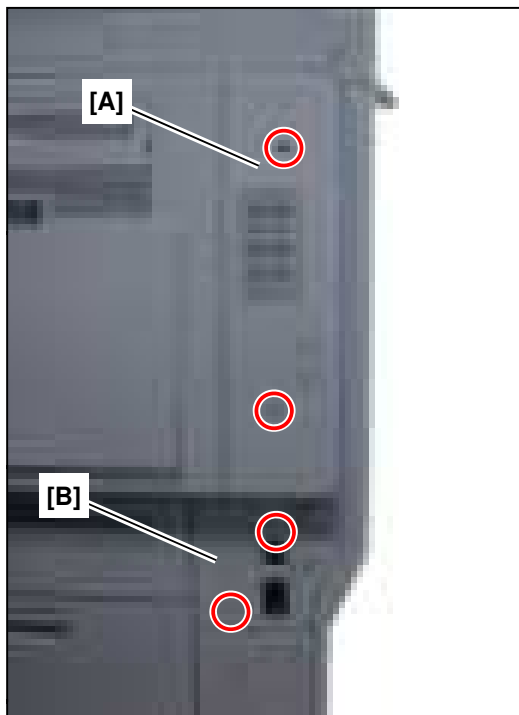
3.3 OPE unit

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

3.3.1 OPE assembly

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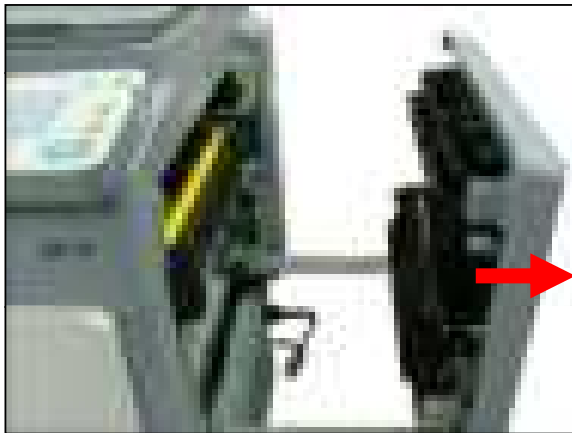
3. Remove the USB cover.
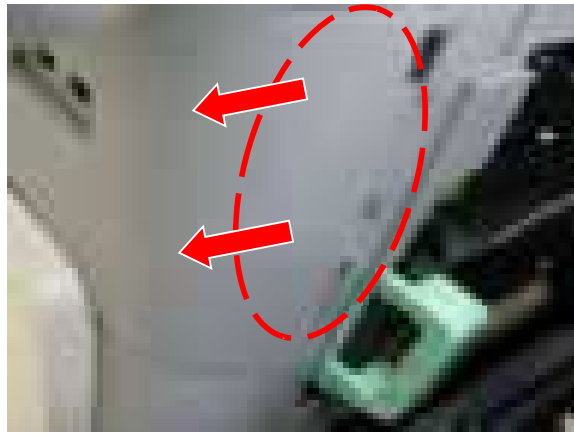
2. To remove the USB cover, remove 1 screw.

[A]
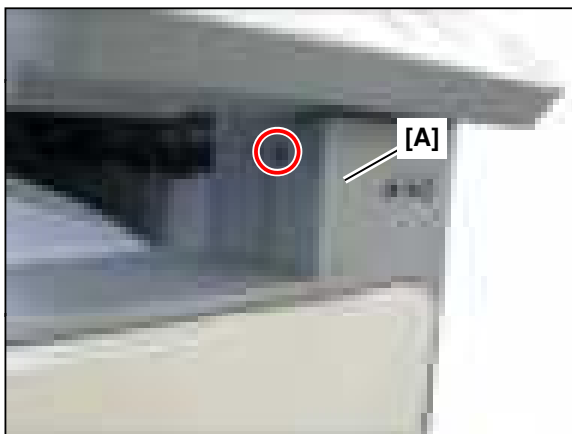
4. Remove 3 rubbers screw covers.

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5. Remove 3 screws.

7. Pull out the connector from the holder hole.
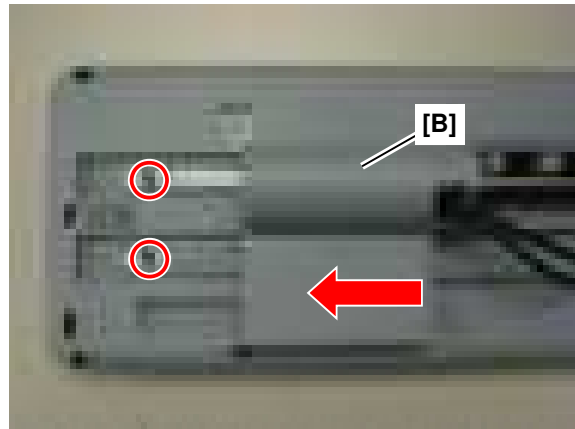8. Take off the OPE assembly.

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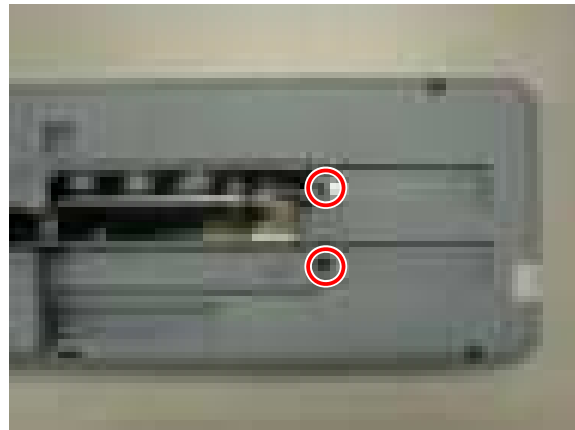
1. Remove the Rail cover after removing 1 screw.
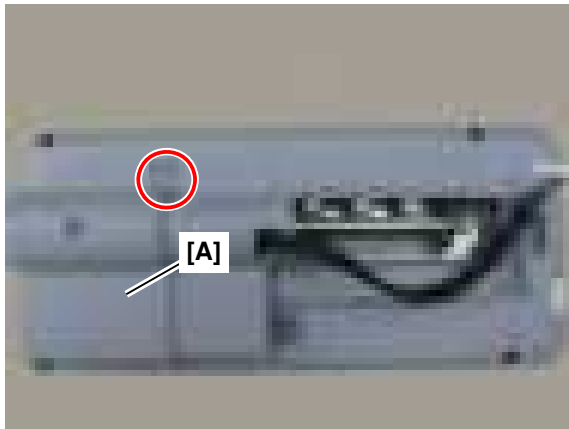
3. Remove 2 screws, and shift the cover-rail [B] in the direction of the arrow.
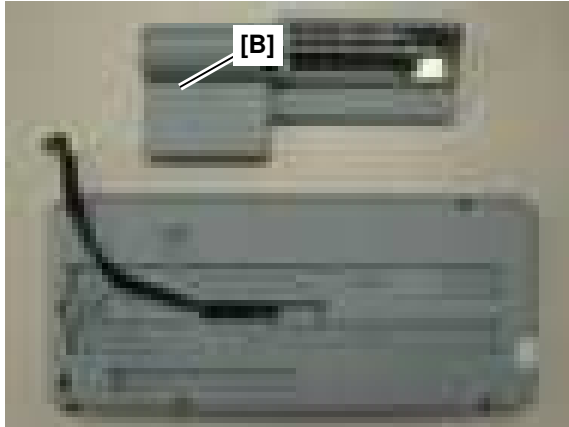

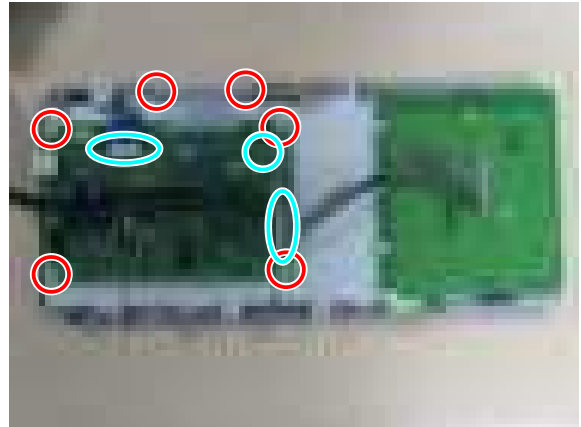2. Remove 4 screws, and then shift the cover-rail [B] in the direction of the arrow.
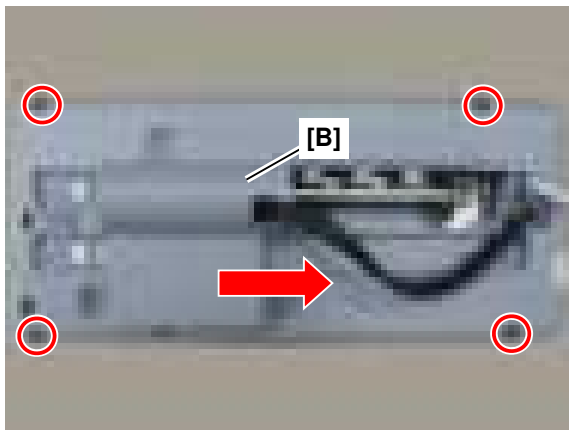
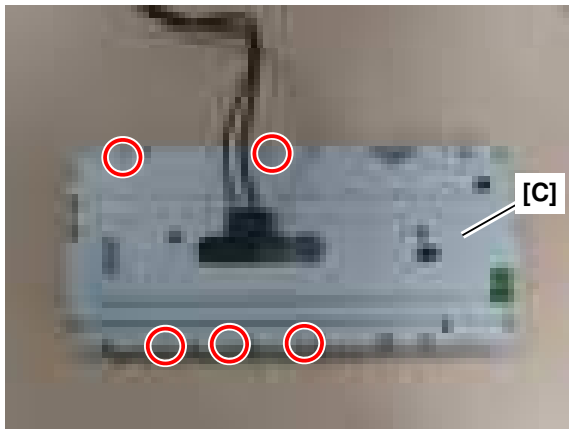4. Remove 2 screws.

5. Take off the cover-rail [B].

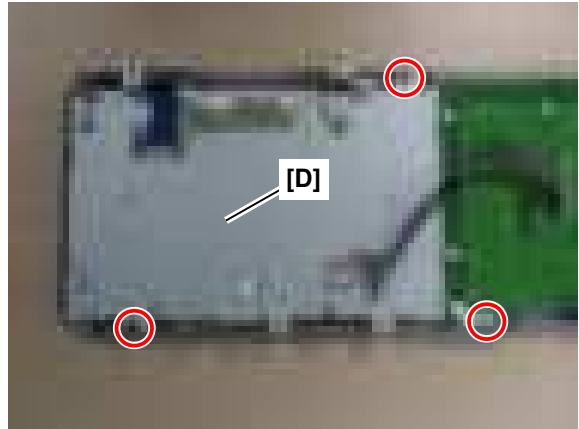7. Remove the OPE main PBA after removing 6 screws and 3 cables.

CAUTION
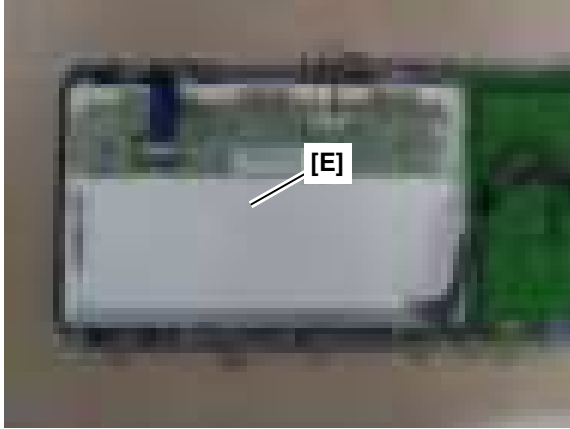Be careful not damage in FFC cable.

6. Remove the bracket-rear [C] after removing 5 screws.

8. Remove the bracket-LCD [D] after removing 3 screws.

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9. Take off the LCD panel assembly [E].
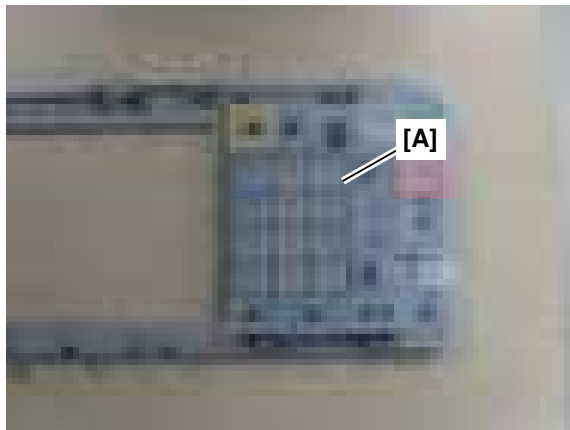

10. Remove the Key-PBA [F] after removing 2 screws.
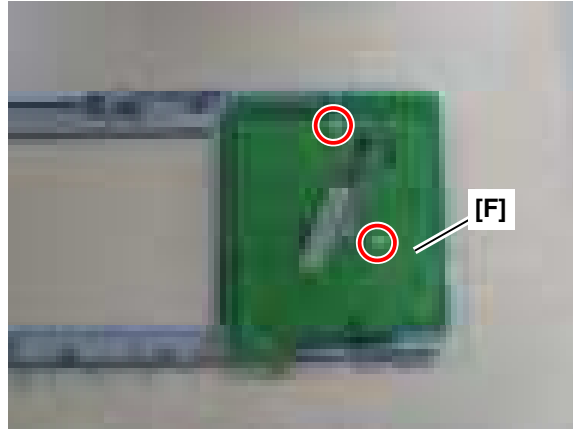
3.3.3 Key buttons

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.

• 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
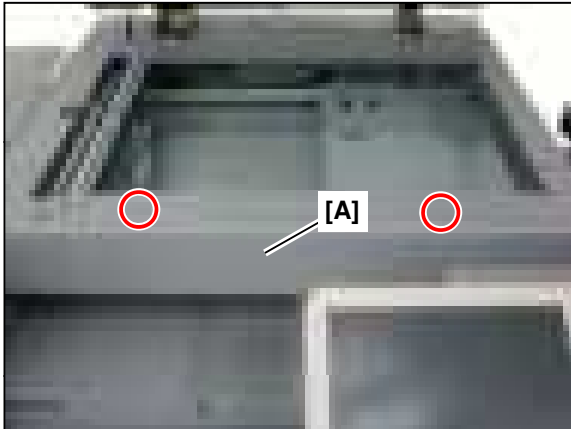Specified Scanner Part : Scan Main PBA , Scan Glass

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)
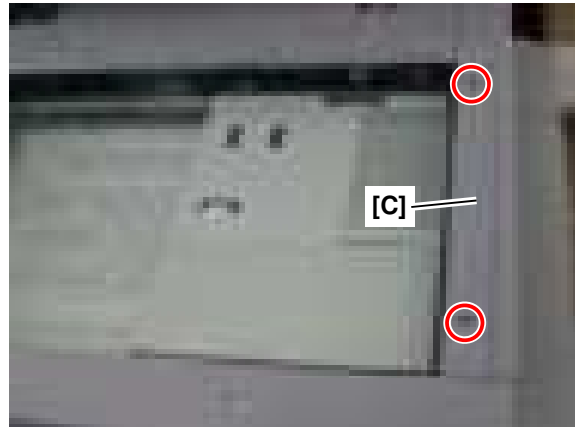
3.4.1 Scan glass

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.
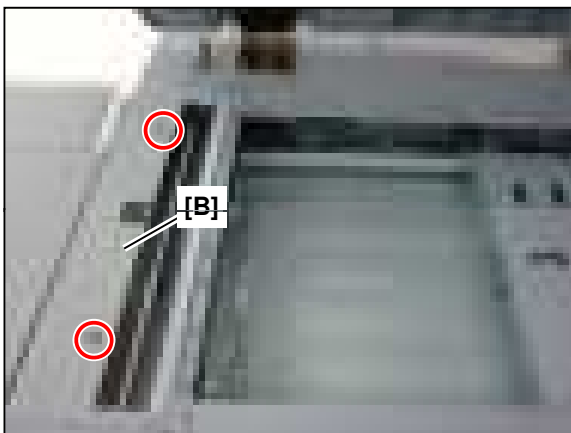
4. Remove the glass scan [D] after removing 2 screws.

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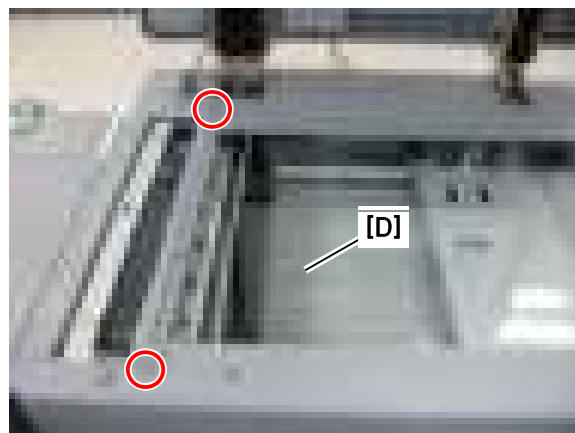
3.4.2 Scan Main PBA

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**
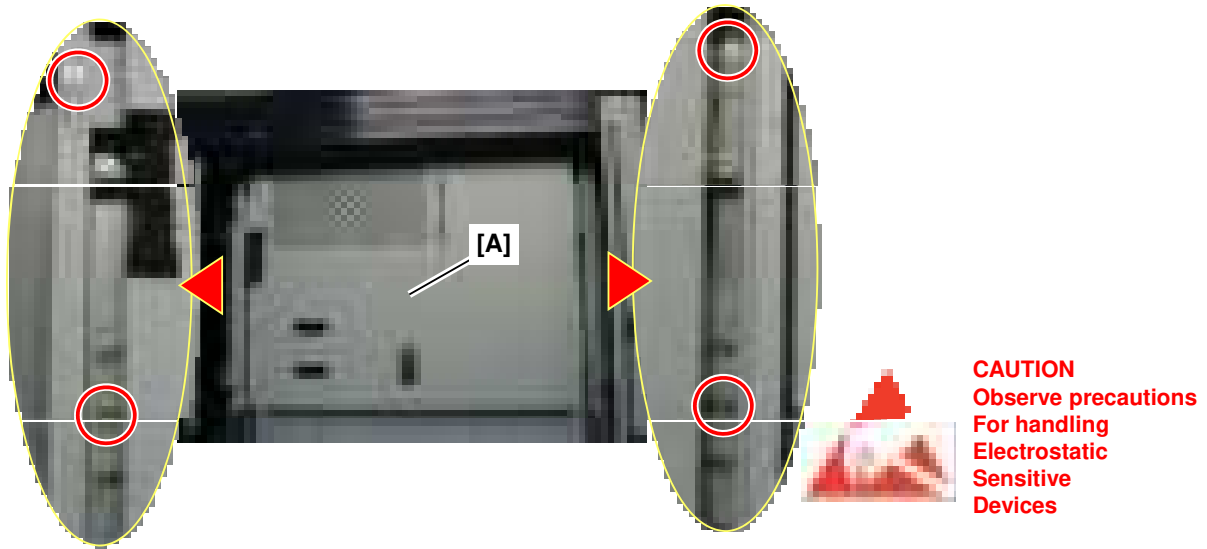
3. Remove the Scan Main PBA after removing 3 screws.
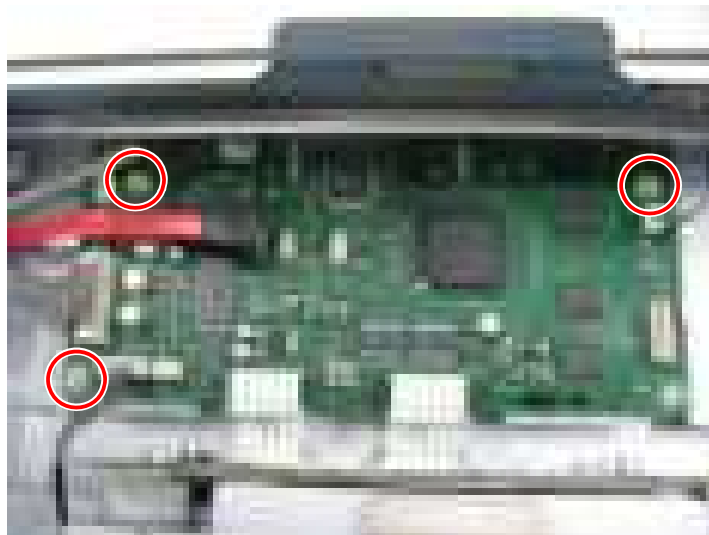
3.4.3 Lamp

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.
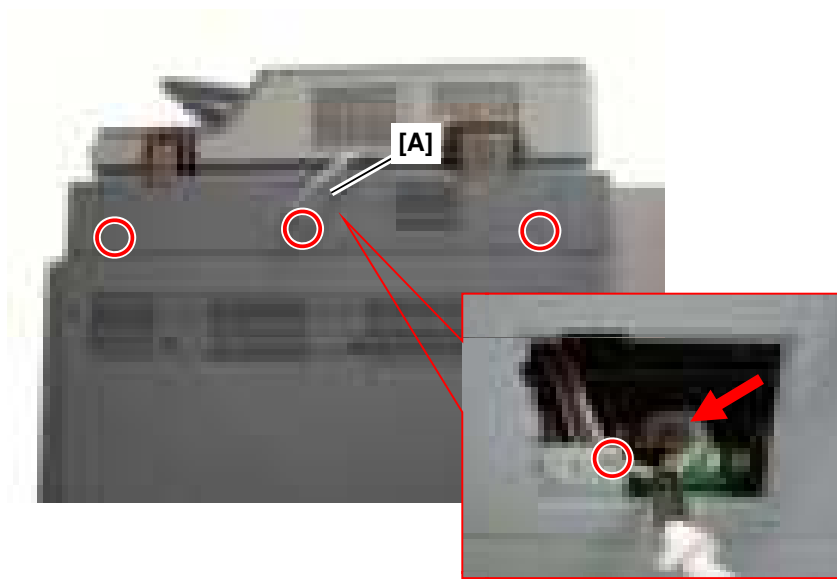
3. Remove 2 screws.
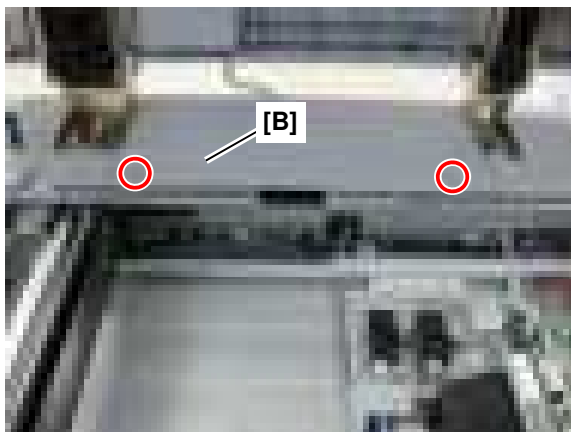
4. Remove the rear cover [B] by slightly lifting up and push back.
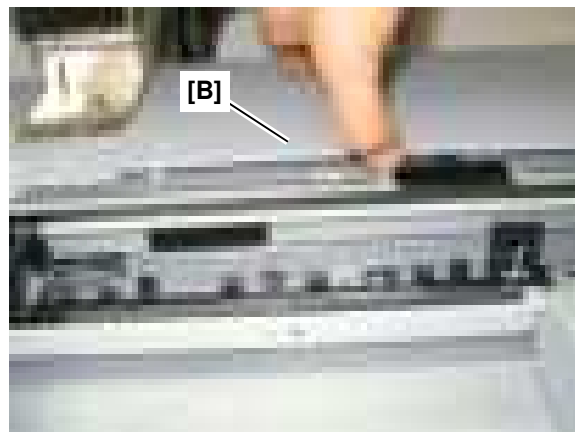
5. Shift the lamp unit to the center. Remove 2 screws. And take off the lamp.

7. Take off the lamp.

6. Unplug the connector. Release it from harness holder.
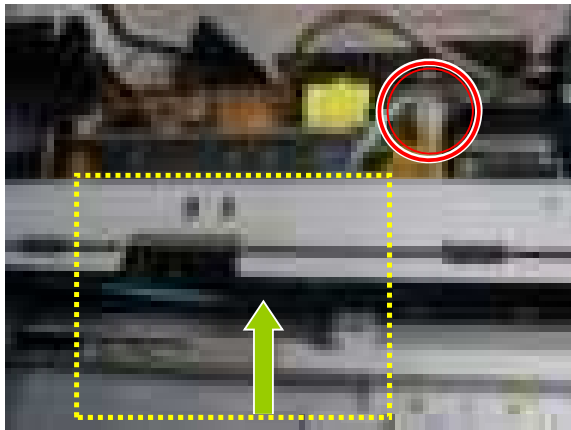
8. Check the Wire position in assembled status.
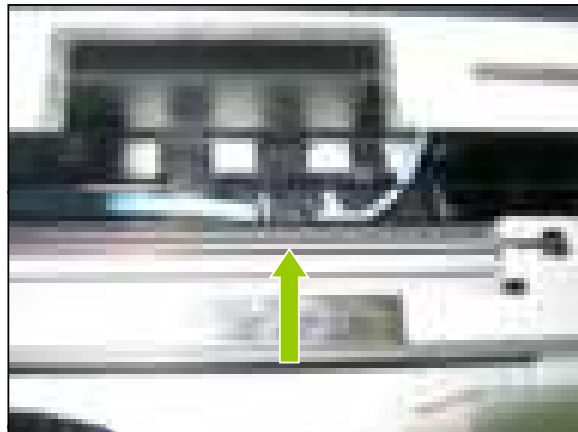
9. Refer the marking position of Wire.

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.
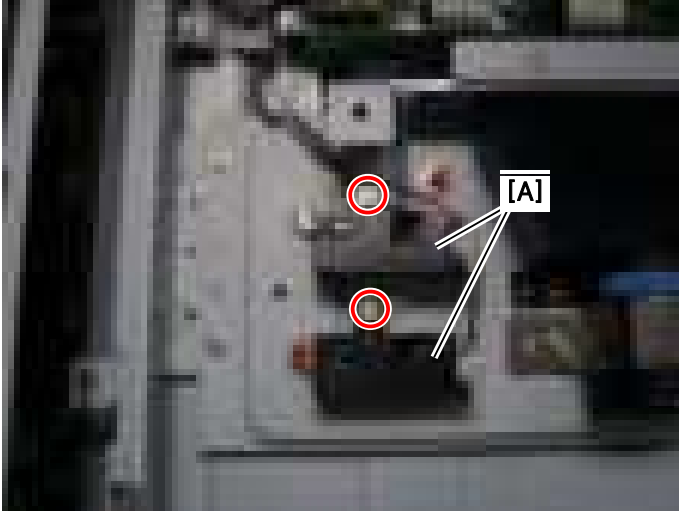
3.4.5 Joint PBA

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.

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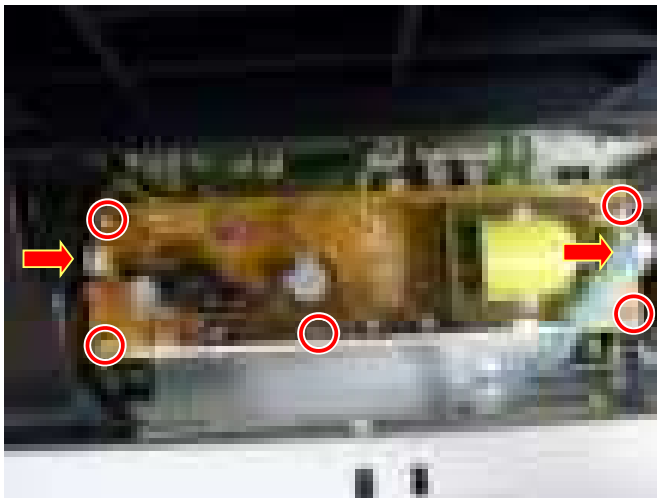
3.4.6 Joint sub PBA

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.
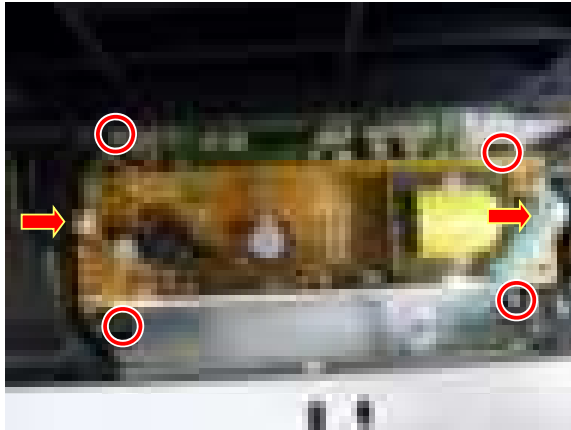
3.4.7 FAN

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.
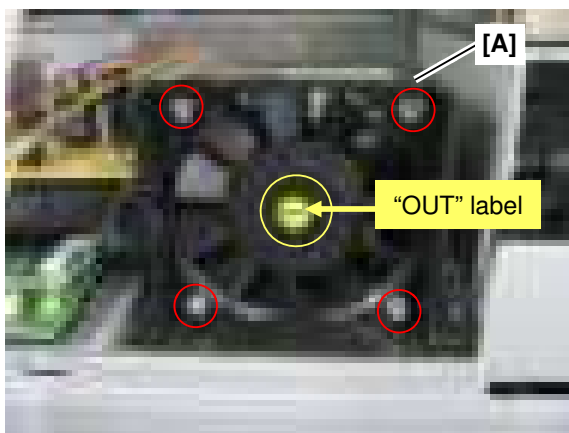
[A]

"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].
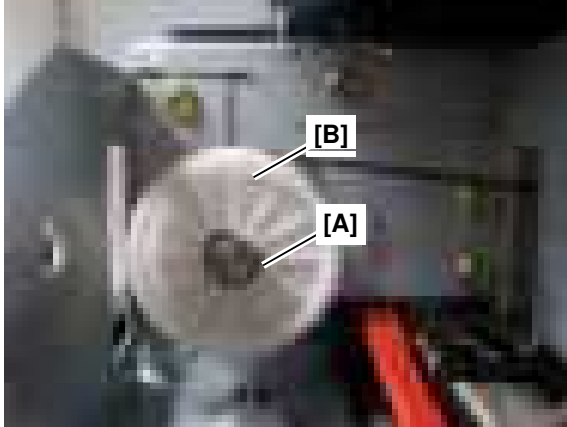
NOTE
Remove cover [A] (see below), this allows you to easily remove the scan gear and gear belt.

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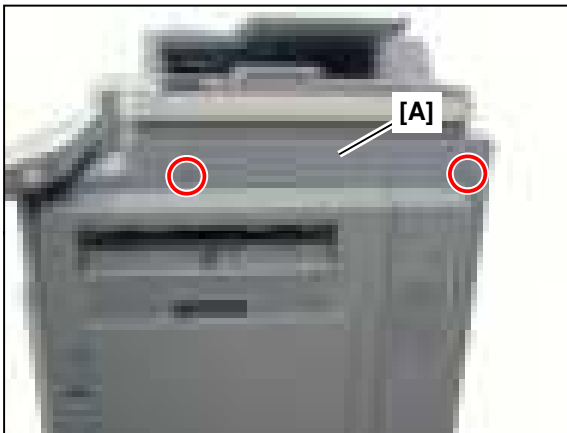
3.4.9 Scan motor and gear belt

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].
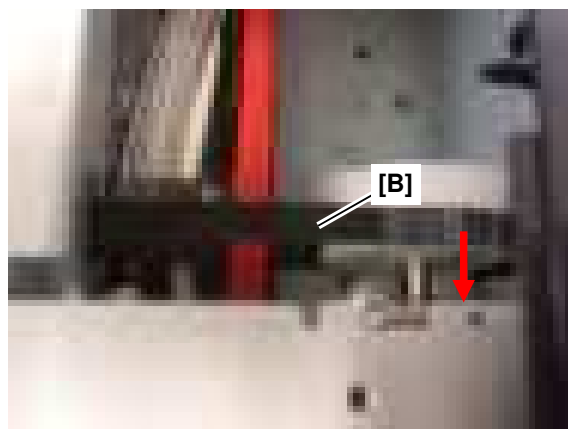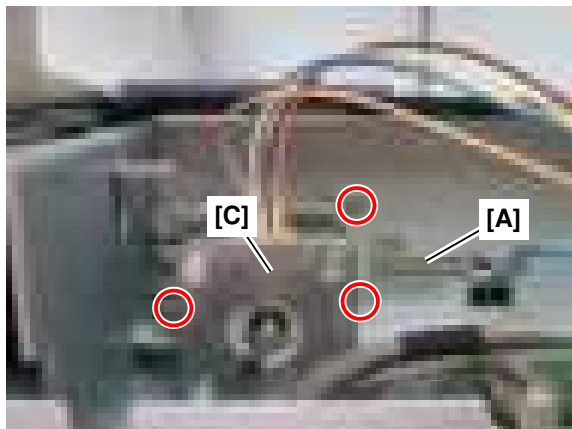
3.4.10 Home sensor

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.

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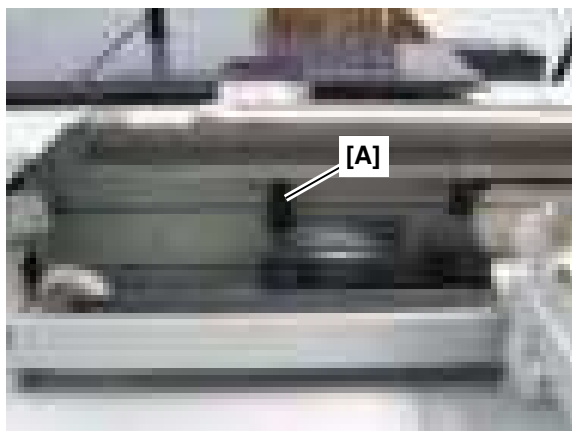
3.4.11 Scanner heating cable

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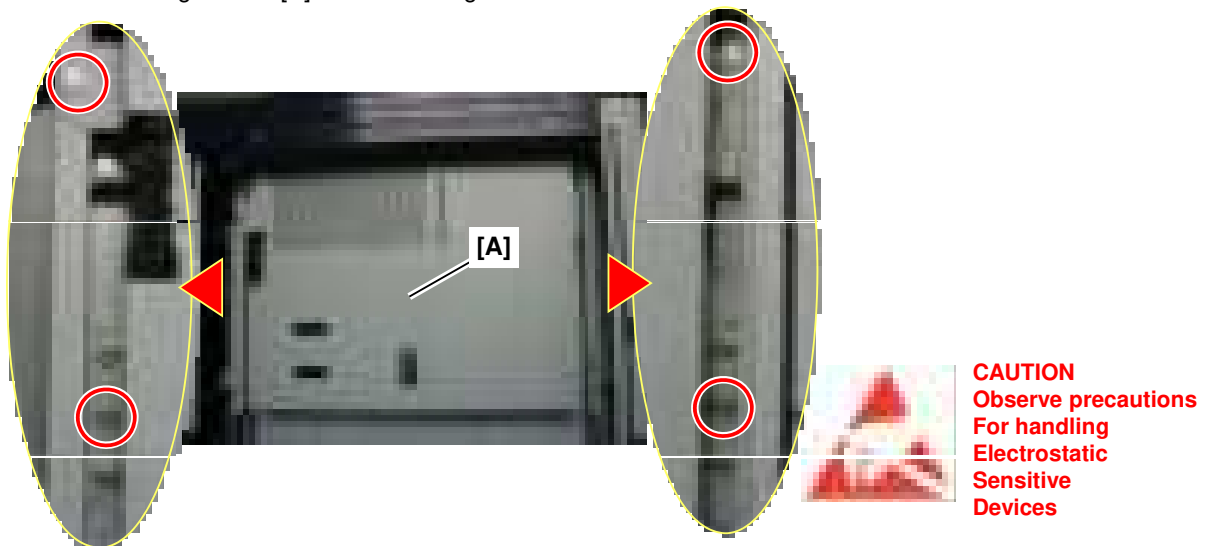
3. Assemble the Heater-a[B] and Scan_heater2 harness in the below order.

Heater-a

[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. |
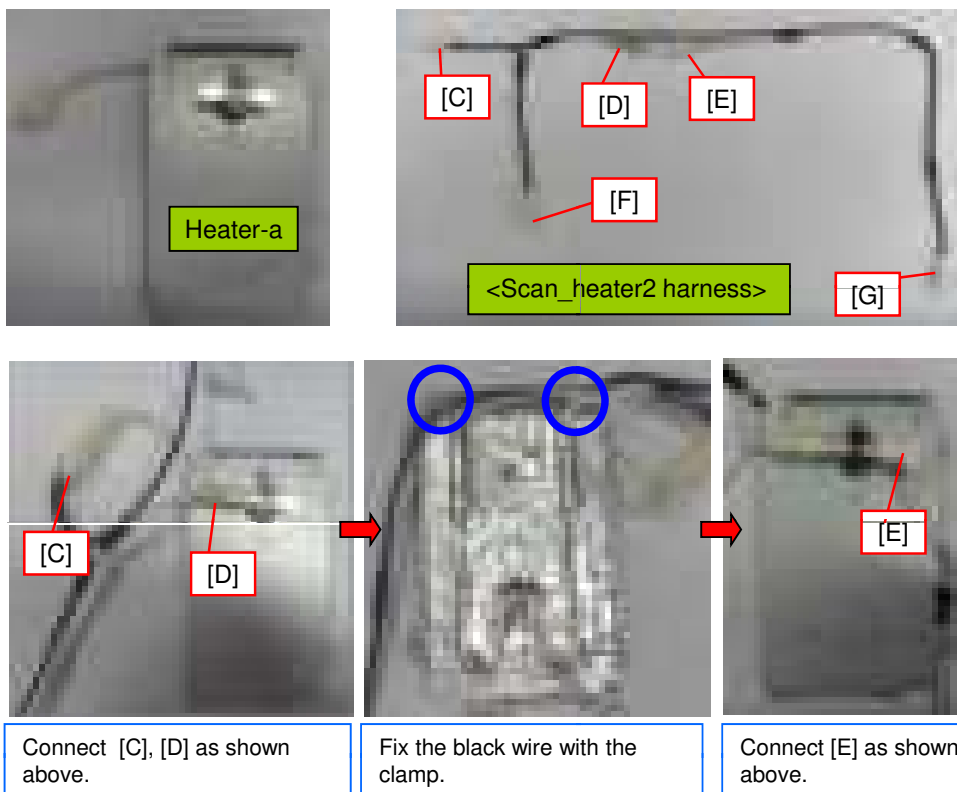
4. Insert 2 bars of the heater-a [B] to the align cover [A]'s slits and screw up 2 points.
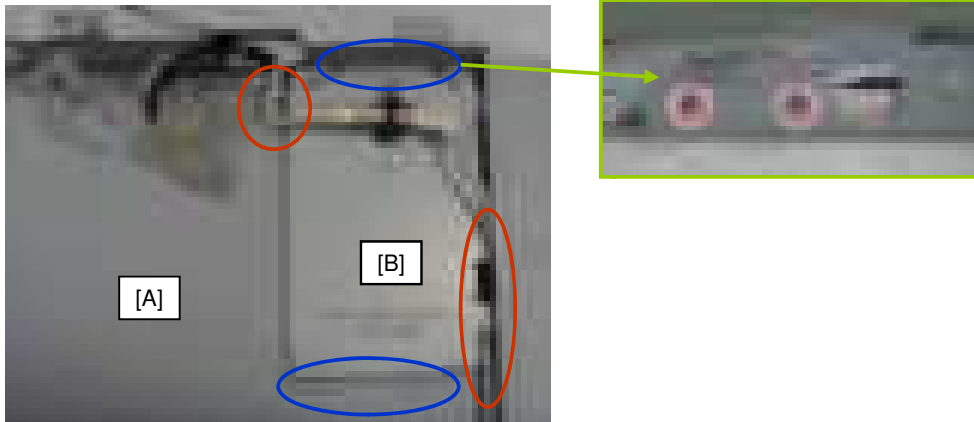
CAUTION
Please be careful of the harness is not caught between Align cover[A] and heater-a[B].

5. Insert harness to clamps.
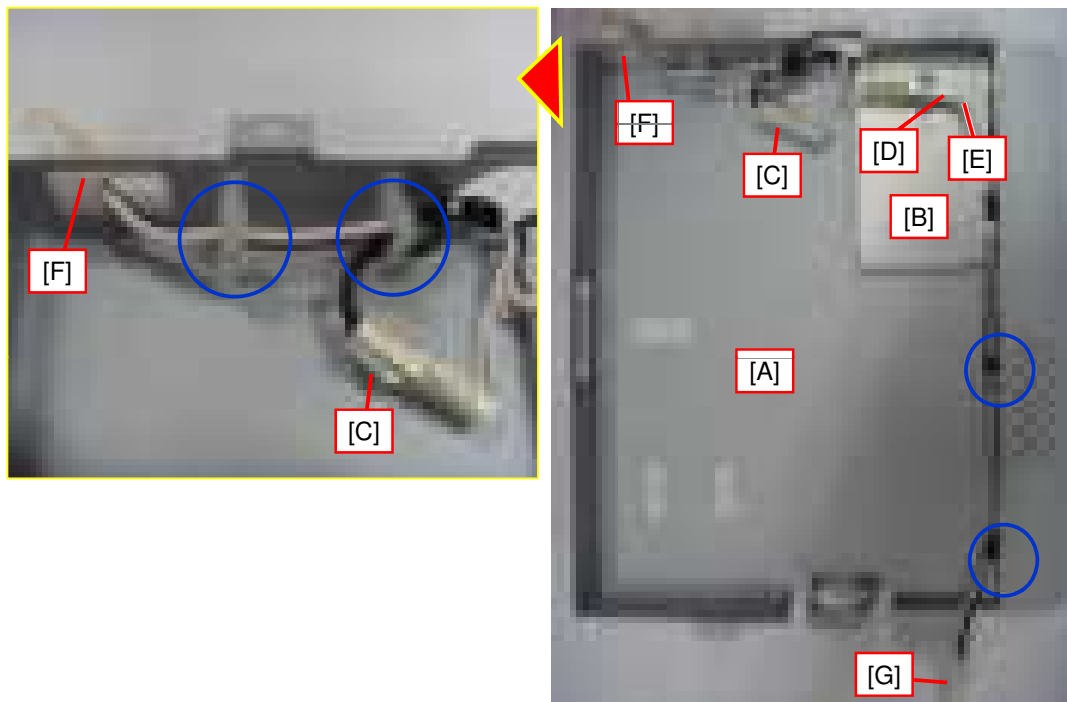
6. Shift the lamp unit to the right side
7. Put the heater-f [H] on the frame base of scanner and screw up 4 points.
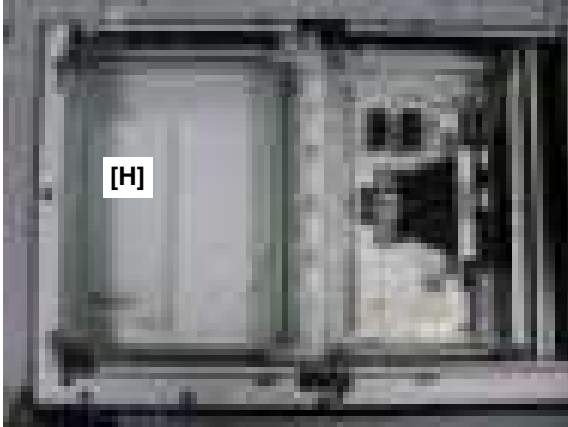
CAUTION
Please be careful of the harness is not caught between heater and frame base.

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.
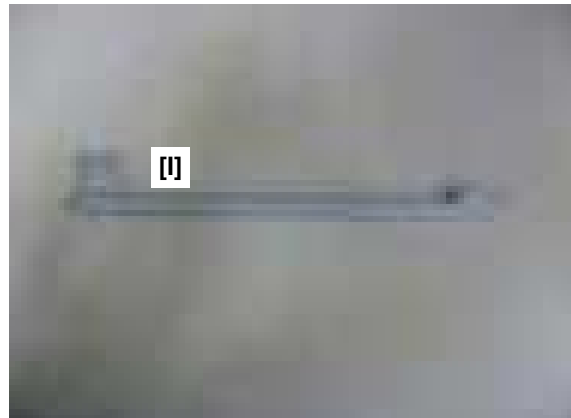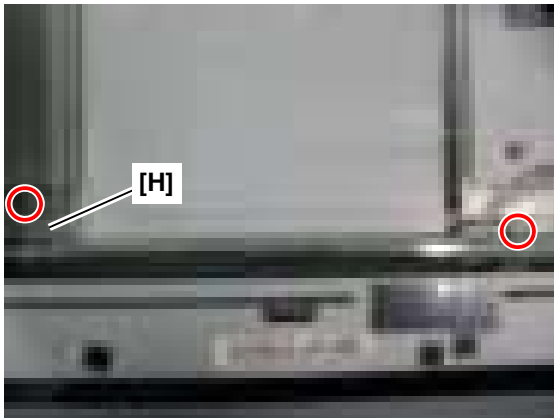
10. Connect the connector [K] with the connector [G] of Scan_heater2 harness.
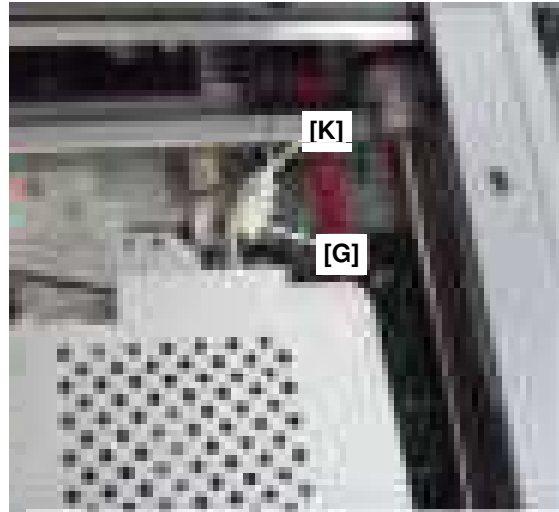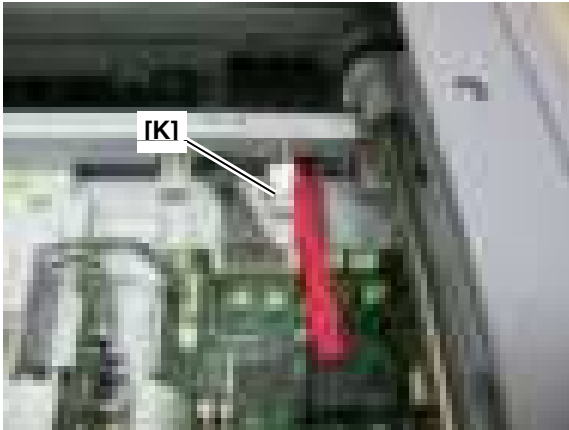
11. Put the align cover on the scanner and connect the connector [J] of heater-f.
12. Put the connector [J], [F] in the align cover .
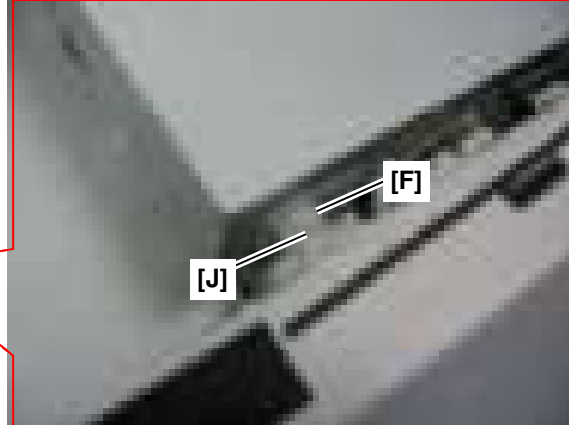
13. The assembly is reverse order of disjointing.

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.

[A]
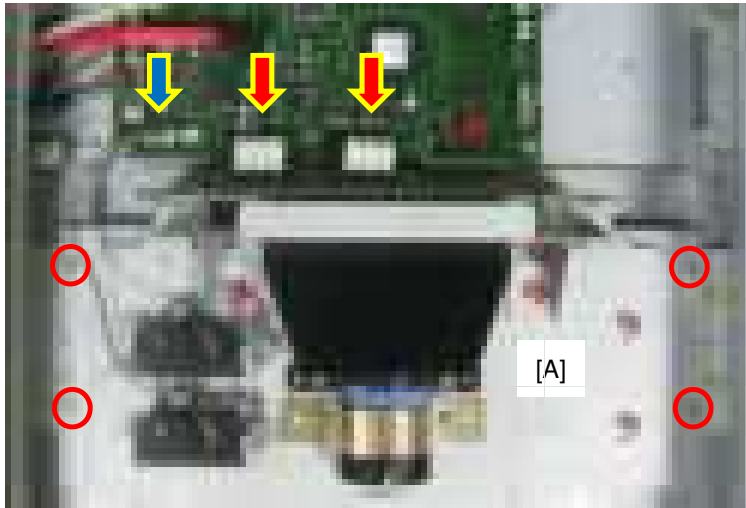
CAUTION
Connectors for FFC cables of CCD are very fragile.

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.
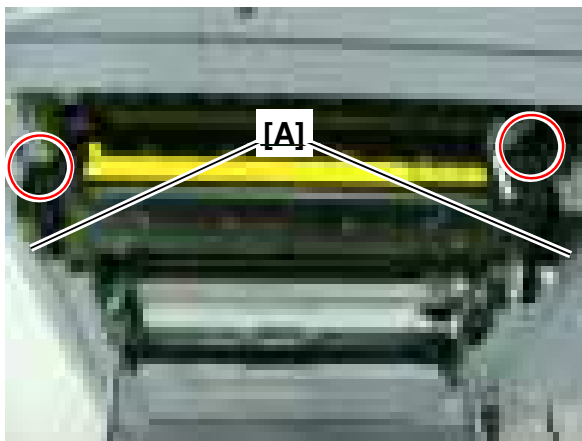
2. Remove 2 fuser locking screws.
3. Remove the Fuser unit by holding the handles [A].

CAUTION
The fuser unit weighs about 6 kg. When removing it, be careful!.

When removing the fuser unit, please hold both handles, If holding only one handle, it may be damaged.
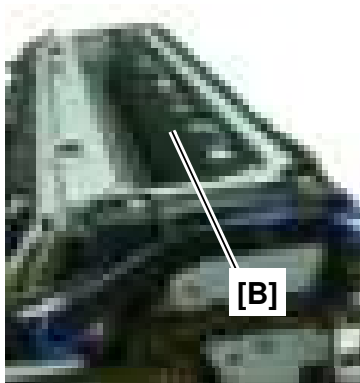
CAUTION
1. Before this disassembling the fuser unit, remove the Bracket inlet guide [B]. If it is damaged or bent, it may make a paper jam.

2. To remove Bracket inlet guide [B], remove 3 screws. When replacing it, be careful not to be damaged to the belt/pressure roller.

NOTE
The shape or color of some parts can be changed without notice.

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3.5.1 NC thermistor and thermostat

Perform the following procedure to remove the NC Thermistor and Thermostat from the Fuser Unit.

1. Lift the Frame fuser top [A] after removing 1 screw.
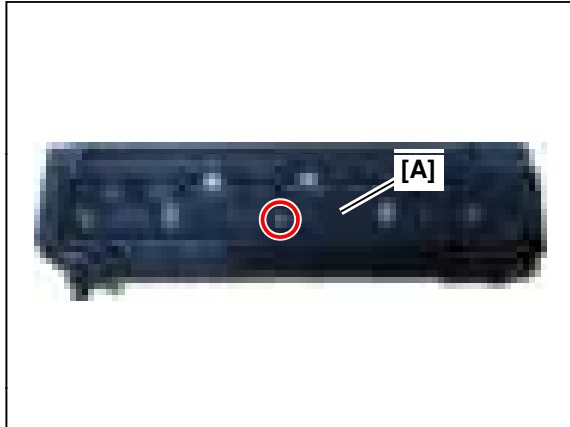
3. Release the NC thermistor [C] from the holder [B].

CAUTION
Observe precautions
For handling
Electrostatic
Sensitive
Devices

2. Take off the NC thermistor holder [B] after removing 5 screws and 2 connectors.
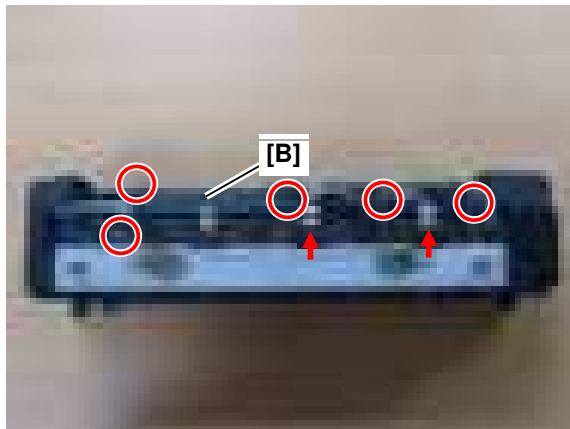
4. Unplug the harness from both sides of the thermostat .
5. Remove 3 screws.

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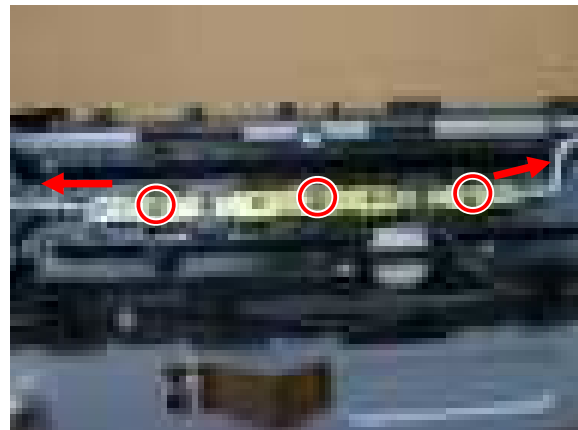
3.5.2 Thermistor

Perform the following procedure to remove the Thermistor from the Fuser Unit.

1. Take off the Bracket fuser top [A] after removing 4 screws.
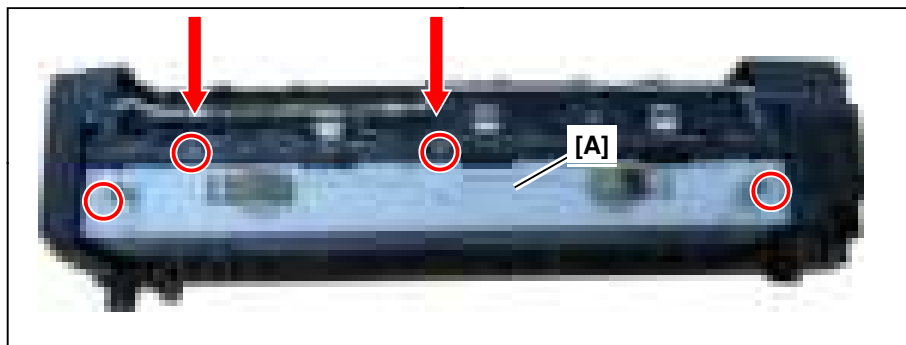
CAUTION
When removing 2 screws pointed by the arrow, be careful not to damage in harness

2. Take off the thermistor assembly after removing 2 screws.
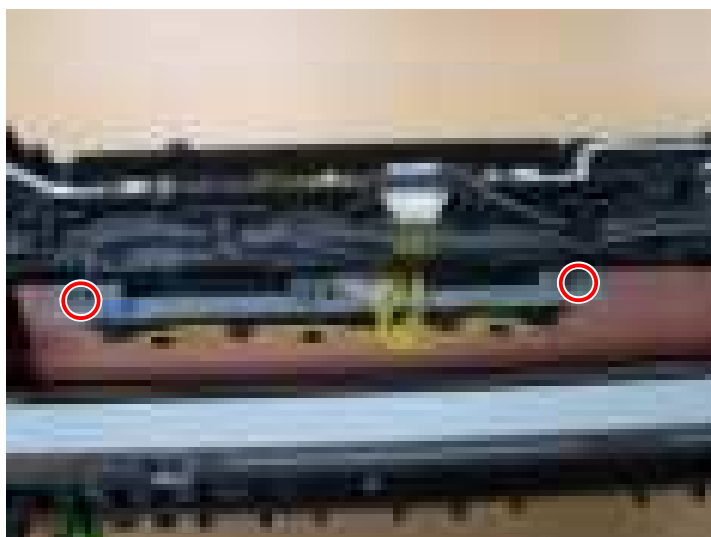
CAUTION
Observe precautions
For handling
Electrostatic
Sensitive
Devices

CAUTION
Be careful not to bend the thermistor.

NOTE
Contact type NTC thermistors work in NON-CONTACT conditions. They must not touch fuser belt surface.

3.5.3 Fuser NIP motor

1. Remove 2 screws from the fuser right. Take off the harness holder [A].

[A]
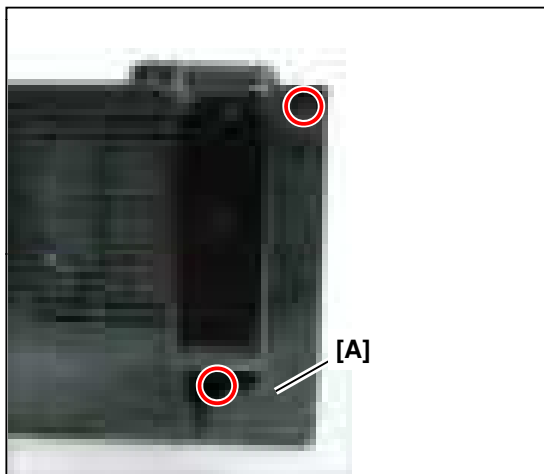
CAUTION
When reassembling this, be careful not to damage in harness.

2. Release the pin connector with the tweezers.

Red
/Blue
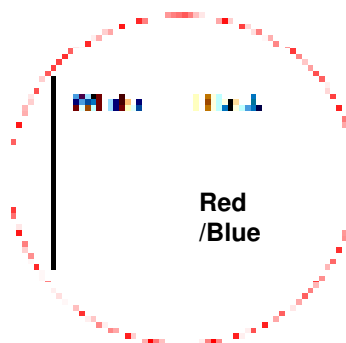
CAUTION
When reassembling the pin connector, make sure the colors are positioned as shown above.

Check the connector assembly status.
If there is a wrong connection, a operation error or a fire can happen.

Be careful not to bend the connector.
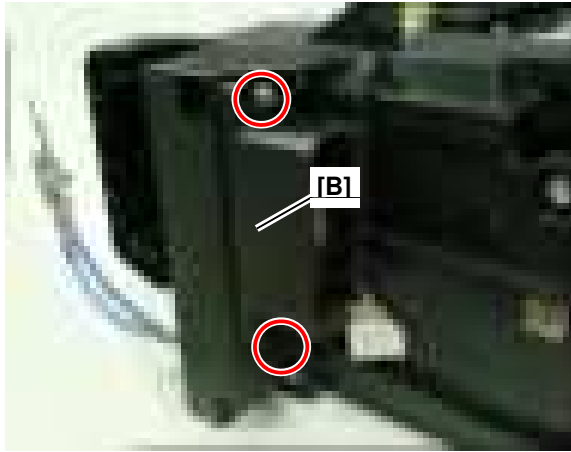
3. Remove 2 screws.

4. Remove the Fuser Inside Lamp harness [B above] after removing connectors
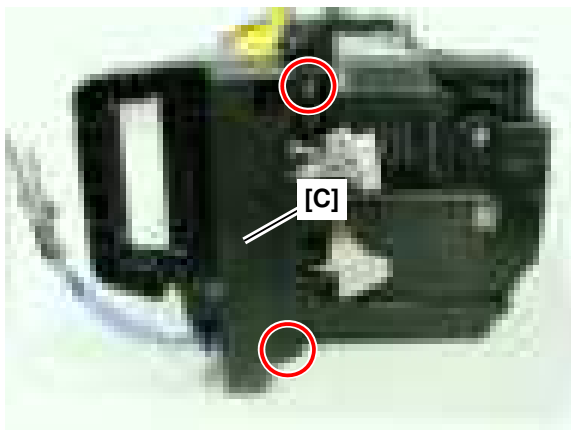
5. Remove the support connector [C] after removing 2 screws.
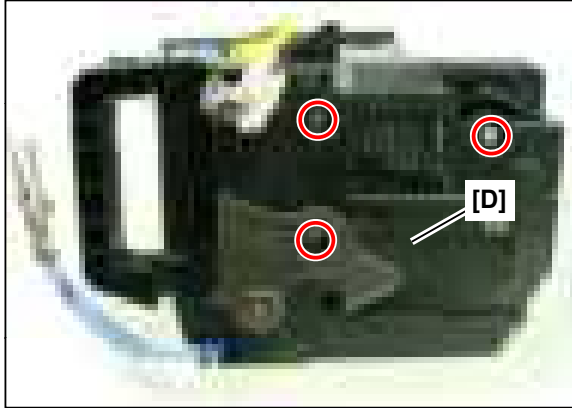
6. Remove the Fuser side frame [D] after removing 3 screws.

CAUTION
Be careful not to hurt yourself.
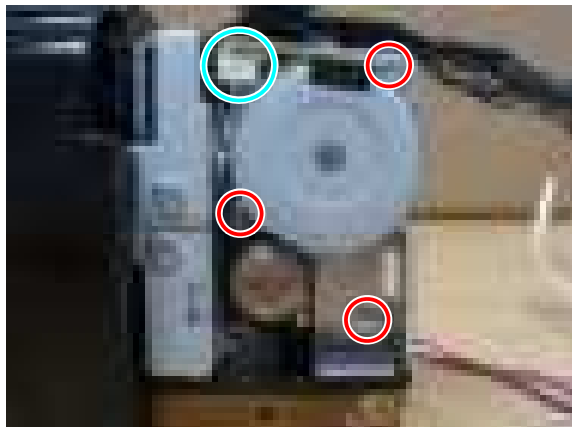
7. Remove the Motor assembly after removing 3 screws and 1 connector.

3.5.4 Halogen Lamp

Perform the following procedure to remove the Halogen lamp from the Fuser Unit.
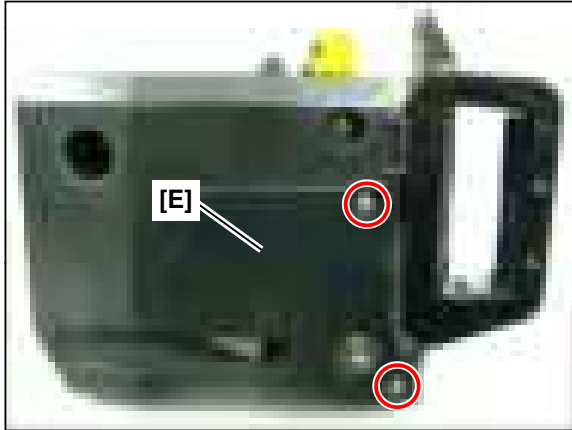
1. Remove the Fuser top, NC thermistor holder (refer to 3.5.1) and Motor (refer to 3.5.3)
2. Take off the support lever belt [E] after removing 2 screws.
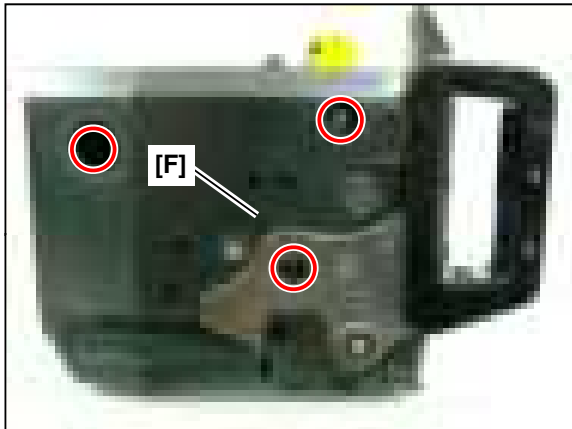
3. Take off the frame fuser front [F] after removing 3 screws.
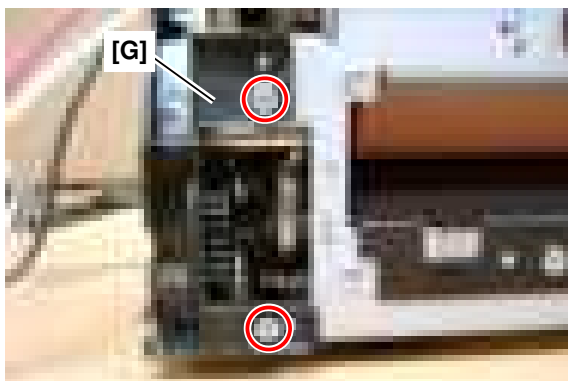
4. Remove the holder harness [G] rear after removing 2 screws.
5. After 4 step, release the harness from the holder harness.

CAUTION
Be careful not to damage in harness.
The damage of the harness can make a fire caused by a short circuit.

5. Unplug the connector connecting the thermostat.

CAUTION
Be careful not to damage in harness.
The damage of the harness can make a fire caused by a short circuit.

[H]
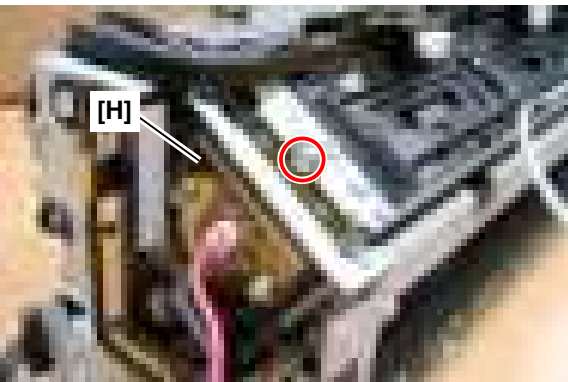
6. Take off the holder lamp [H] after removing 1 screws.
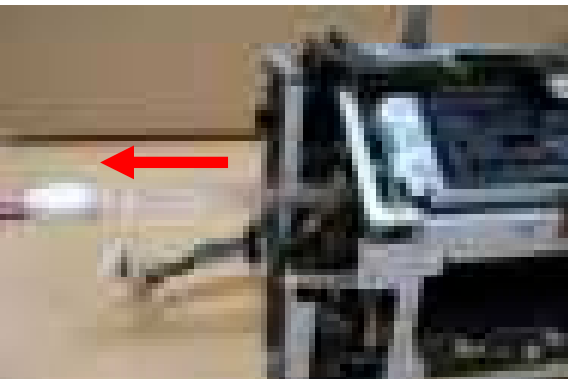
7. Pull the halogen lamp in the direction of arrow.

CAUTION
When replacing the lamp, please be careful of the lamp connector direction.

DO NOT touch halogen lamp with your bare fingers.

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3.5.5 Fuser Bias / Fuser Bias Terminal

Perform the following procedure to remove the Fuser Bias / Fuser Bias Terminal from the Fuser Unit.

1. Remove the guide duplex after removing 6 screws.
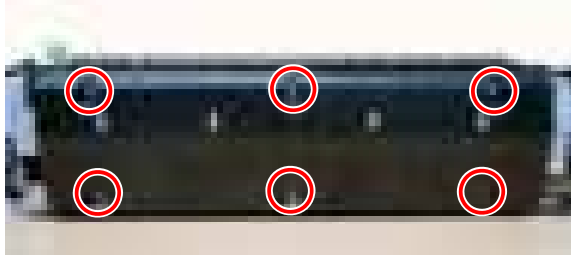
2. Remove the Fuser bias [A] and the Fuser bias terminal [B] after removing 3 screws.
   When removing [B], slide it to the direction of arrow.

[A]

[B]
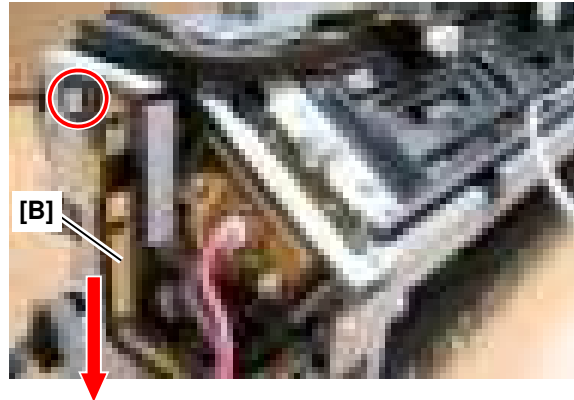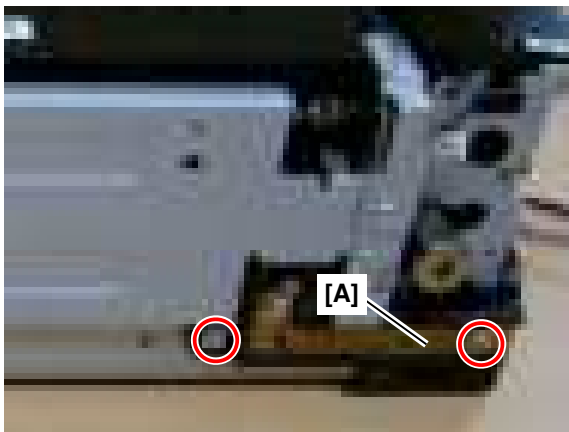
NOTE
When you are only replacing the Fuser Bias Terminal [B], you do not need to remove the Duplex guide.

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3.5.6 EEPROM and photo sensor

Perform the following procedure to remove the EEPROM and Photo Sensor from the Fuser Unit.

1. Remove the Fuser front. (Refer to 3.5.3 step 2~3)
2. Remove the EEPROM[A] after removing 2 connectors, 1 screw and opening the wire saddle.
3. Remove the photo sensor shield after removing 1 screw.
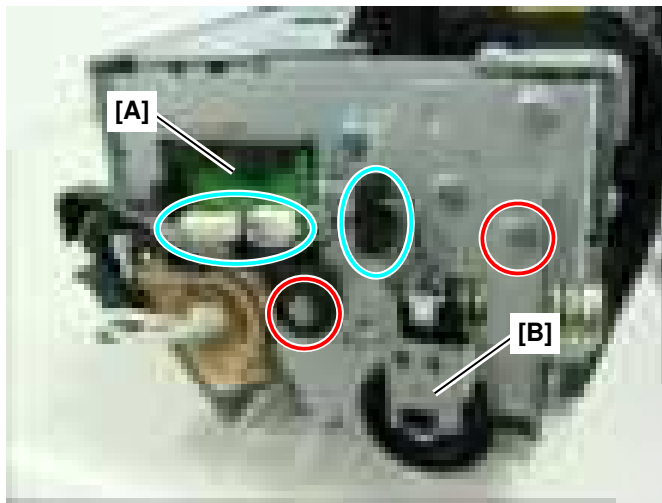
CAUTION
Be careful not to damage in harness.
The damage of the harness can make a fire caused by a short circuit.

The EERPROM can be damaged by a electrical or physical shock.

4. Remove the photo sensor [C] from the shield [B].
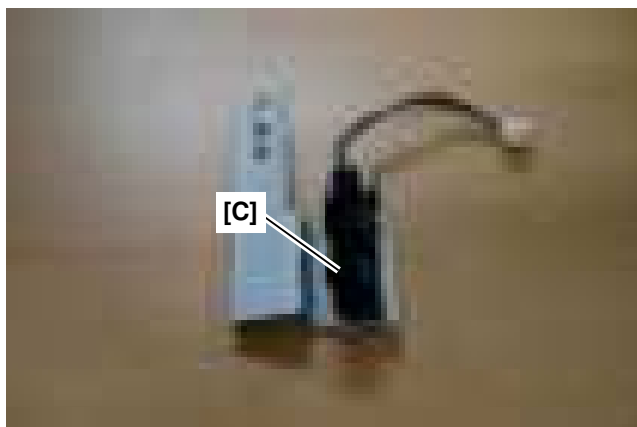
3.5.7 Gear

Perform the following procedure to remove the Gear from the Fuser Unit.
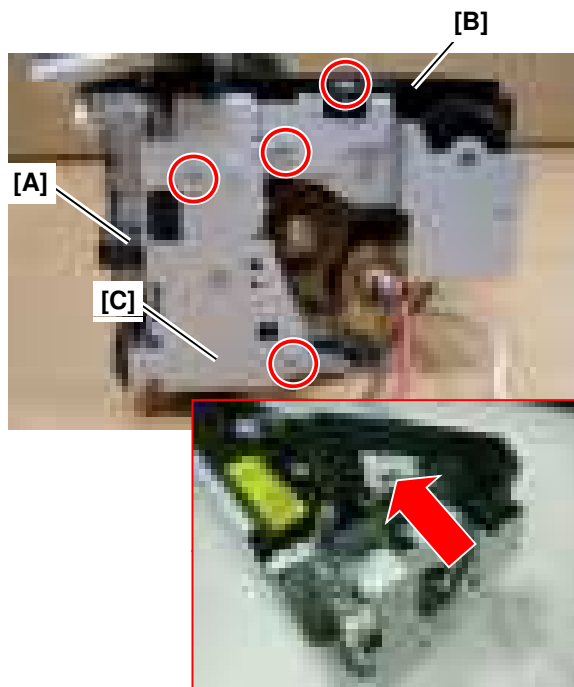
1. Remove the motor (Refer to 3.5.3)
2. Remove the shaft PR screw [A].
3. Push and release the DC Harness holder [B] in the direction of arrow after removing 1 screw.
4. Remove the bracket [C] after removing 3 screws.
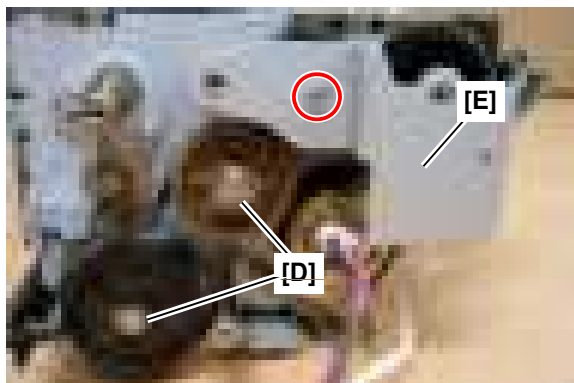
5. Remove the Gear Holder after removing 1 screw.
6. Remove the gears.
7. Remove the Gear after removing the E-ring with the tweezers.

3.5.8 Heat roller

Perform the following procedure to remove the Heat Roller from the Fuser Unit.

1. Remove the Halogen lamp (Refer to 3.5.4)
2. Remove the shaft PR screw [A], 4 screws, and connector on EEPROM.
3. Release the Holder EEPROM[E] after removing 1 screw.
4. Remove the Bracket [B].
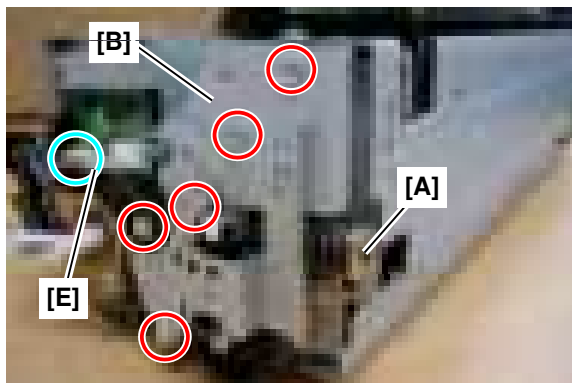
6. Remove the Holder lamp [C] after removing 3 screws.
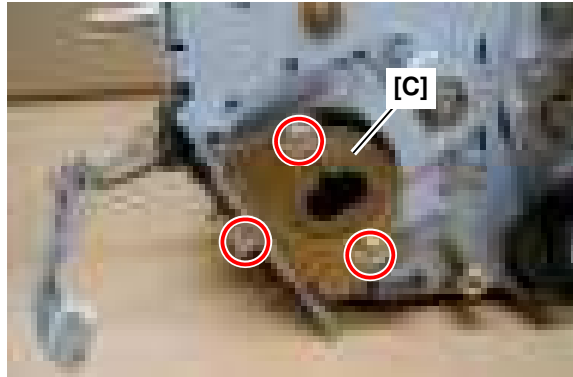
5. Remove the bracket [F] after removing 1 screw.
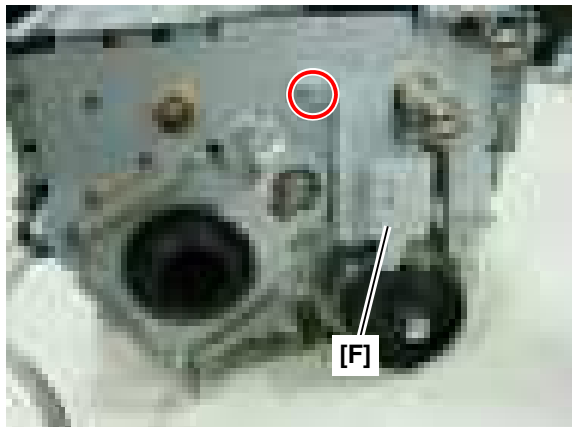
7. Remove 2 screws and 2 springs.
8. Remove the bracket [D].
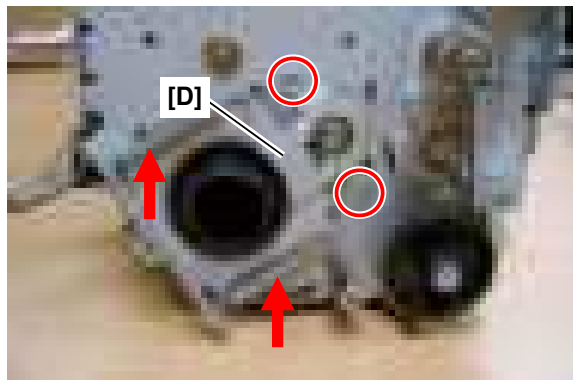
CAUTION
The ends of springs is sharp. Be careful not hurt yourself.

Do not pull the spring by too strong. If the spring is damaged, the heat roller can not rotate. It can damage the belt, overheat and make a fire.

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9. Remove 2 screws and 2 springs from the opposite sides.
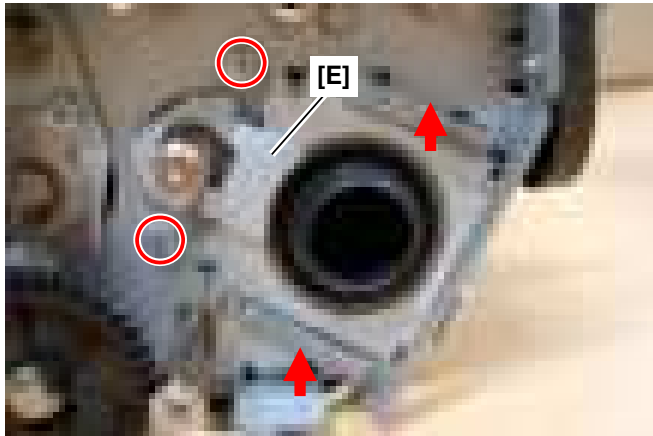
10. Remove 2 screws, and remove the bracket bearing HR[F] from both sides.

11. Remove the BUSH-HR [G]. Remove the Heat roller [H] from the opposite side.

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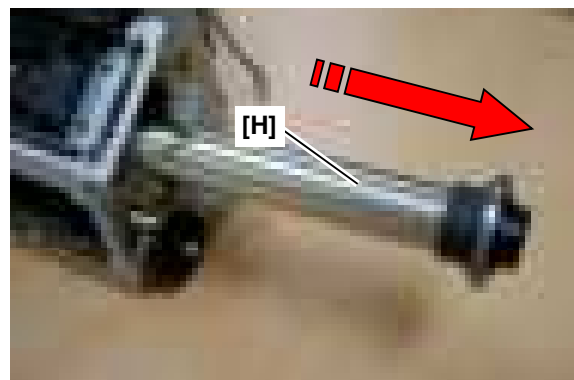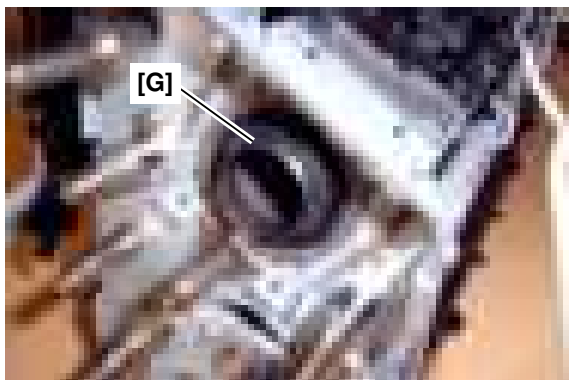
3.5.9 Fuser Belt

Perform the following procedure to remove the Fuser Belt from the Fuser Unit.
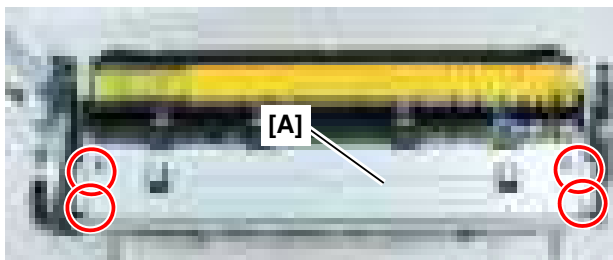
1. Remove the Heat roller (Refer to 3.5.8)
2. Remove the Bracket rear [A] after removing 4 screws.

[A]
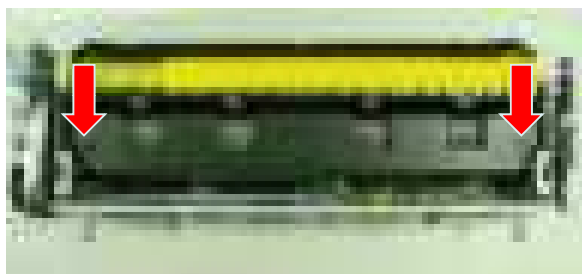
3. Remove 2 baffle springs.

CAUTION
Be careful not to lose the springs. They are easily released.

4. Remove the Bracket top assembly [B] after removing 3 screws and 3 connectors.

[B]

[B]

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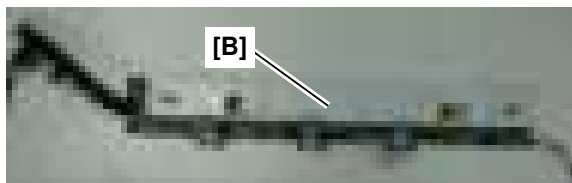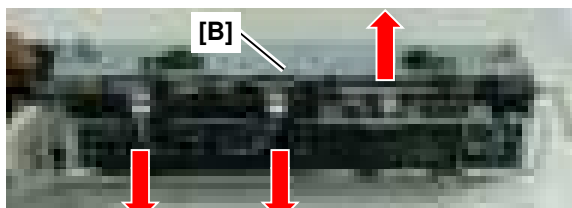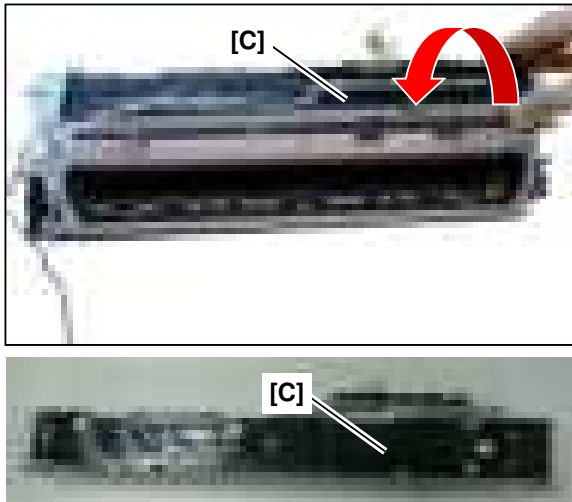
5. Remove the Bracket HR[C].

CAUTION
Be careful not to bend the Bracket HR.
If it is bent, the bearing can be released easily.
It can damage the belt, overheat and make a fire.

6. Remove 2 bearings [D] (one on each end)
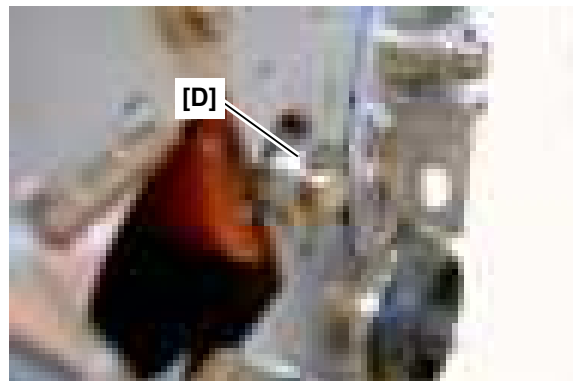
7. Remove the Fuser Roller and Belt.

3.5.10 Pressure roller and pressure roller bearing

1. Remove the fuser roller and belt. (Refer to 3.5.9)
2. Remove the bracket assembly [A] after removing 4 screws.
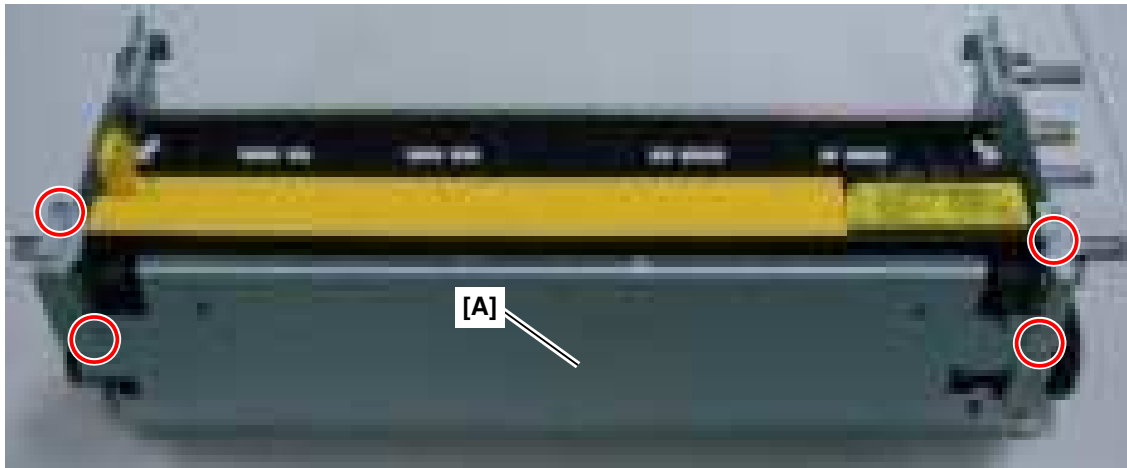
3. Release the bracket lever after removing the E-ring.
   On the opposite side, remove it in the same way.
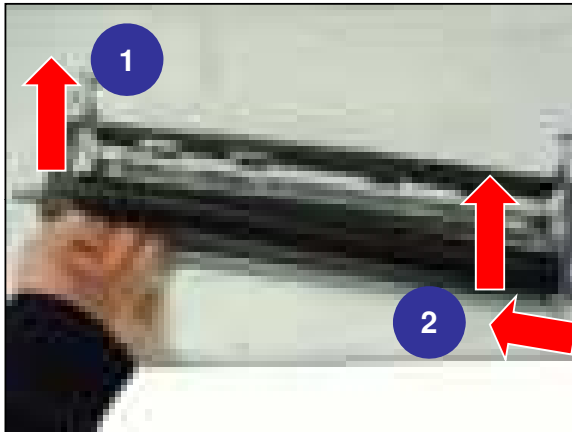
4. Lift up the left side of the pressure roller then release it from the frame perfectly.
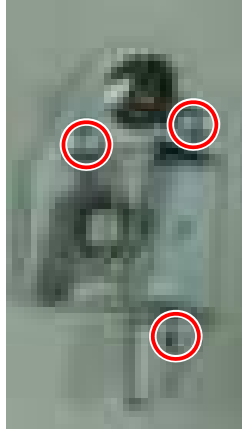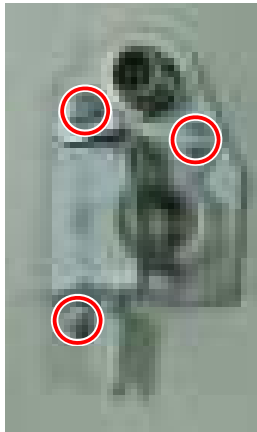
5. Separate the bracket after removing 3 screws. Remove the opposite bracket in the same way.

CAUTION
When removing screws, remove it while the assembly is fixed. The assembly can rotate instead of screws.

6. Release the bearing from the bracket lever.

3.5.11 CAUTIONs for reassembly

CAUTION
The fuser unit is sensitive unit related to the customer safety. Basically, reassembly is in reverse order of the disassembly. But for some items, please check out the followings.

Check the Spring hook direction.

Check the Bracket assembly status.

Check the Bearing assembly status.

Apply grease on the Bearing and shaft.

Check the Bracket assembly status.
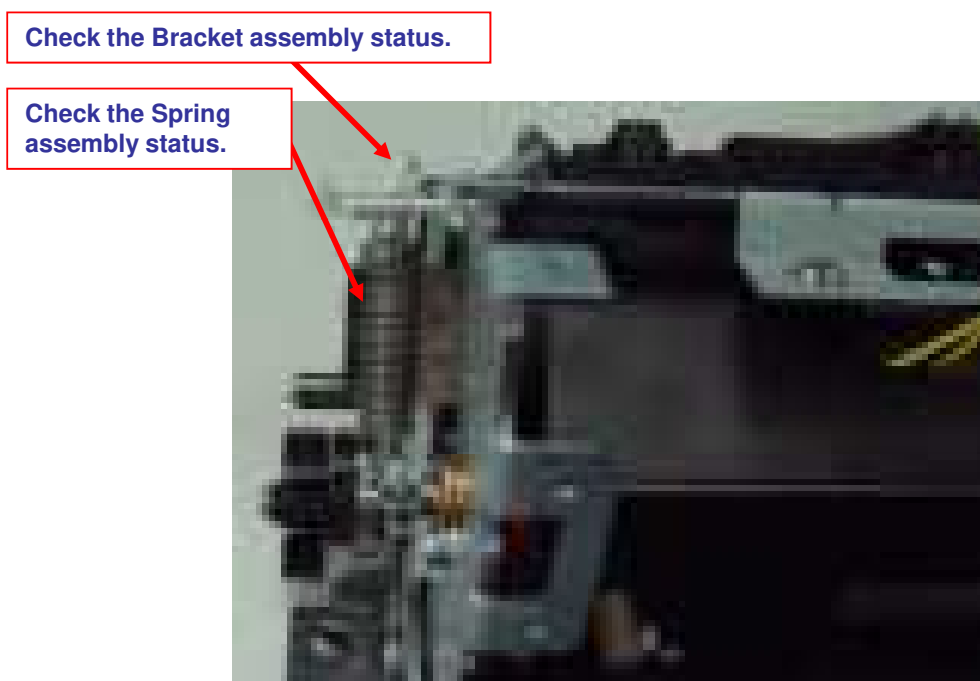
Check the Spring assembly status.
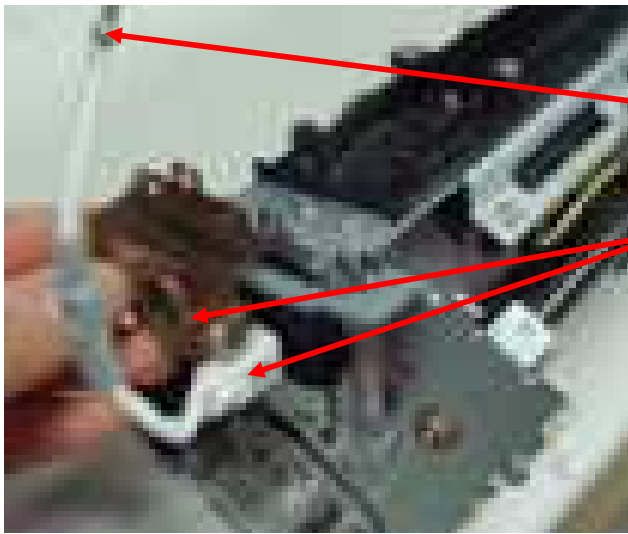
Check the. Lamp terminal direction.

Check the Lamp insulator direction.
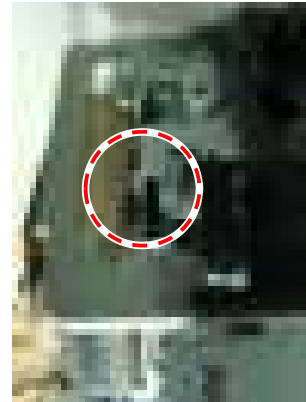
Example for bad assembly
- The bracket is not assembled properly.

Check the Lamp holder assembly status.

Check the Lamp assembly status.

Check if the Lamp harness is fixed properly.

Bad
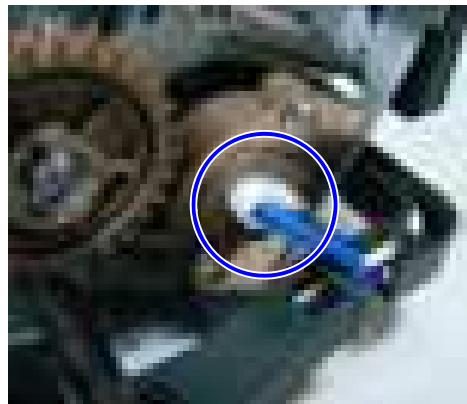
Good

Check the tension status of the heater assembly.
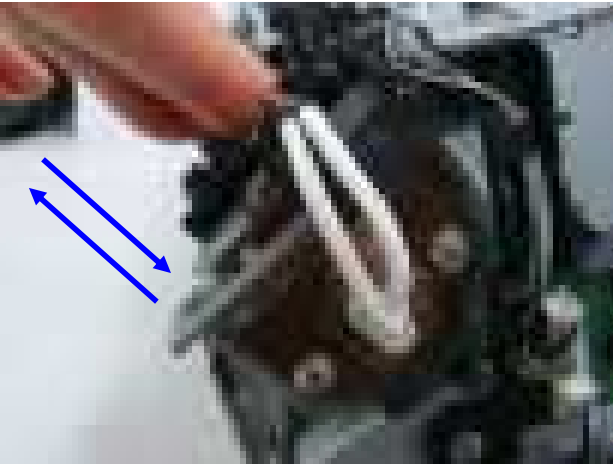
Push the heat roller assembly to check the tension of spring.

Check the Lamp harness.

For 100V unit

Black	White
Blue	✕

For 220V unit

Black	White
Red	✕
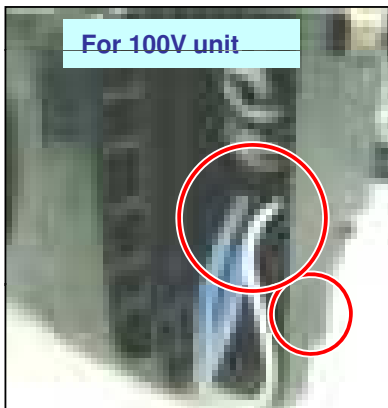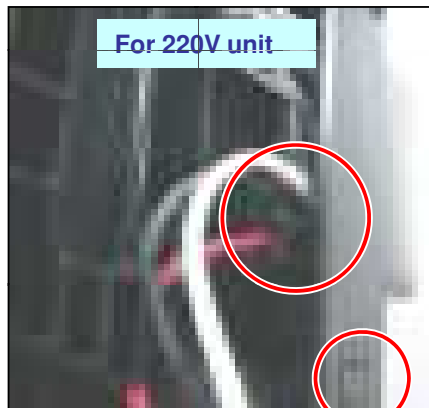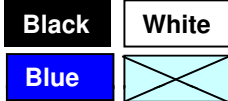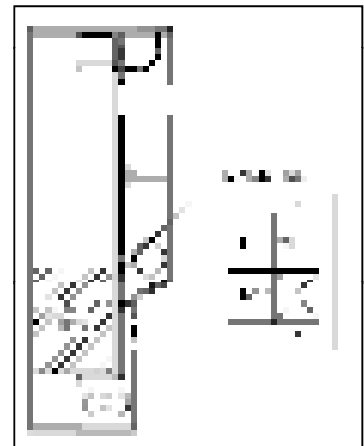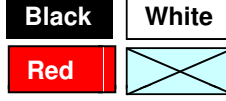
Marking on support connector
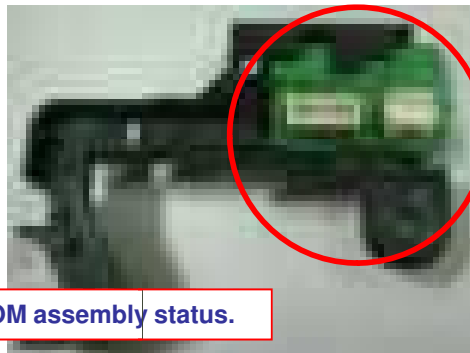
Check the EEPROM assembly status.

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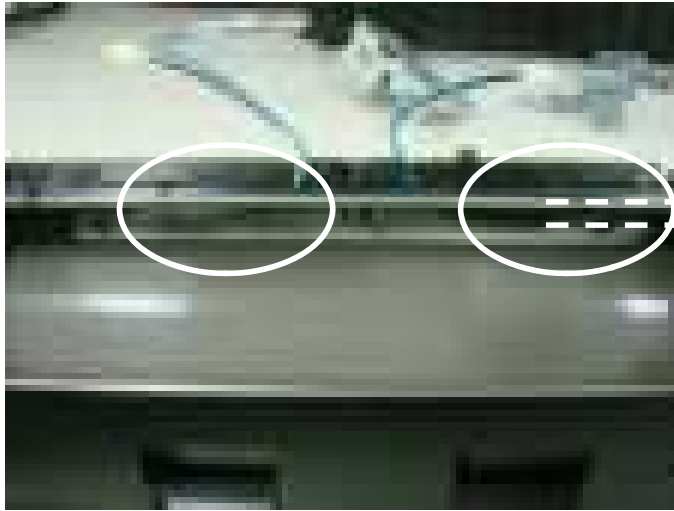
Check the gap between the NC sensor and the belt.

Spec. : 5.5 ±0.3mm
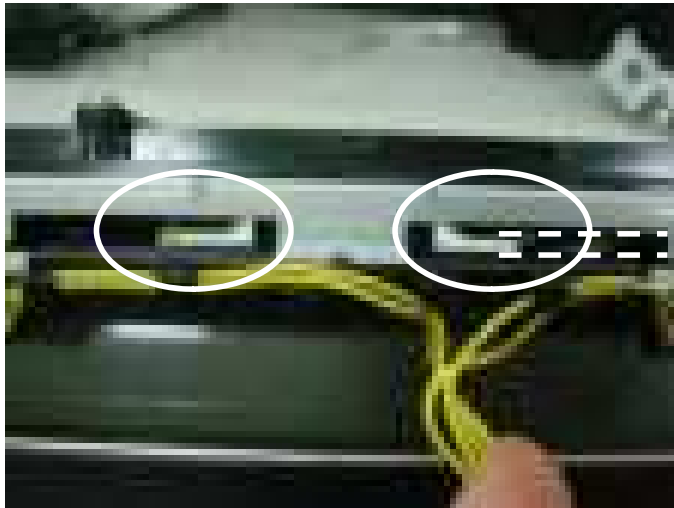
Check the gap between the Thermostat and the belt.

Spec. : 2.4±0.3mm

Check the gap between the Thermistor and the belt.

Spec. : 0.5 ~ 1.0mm

Check the thermostat assembly status.
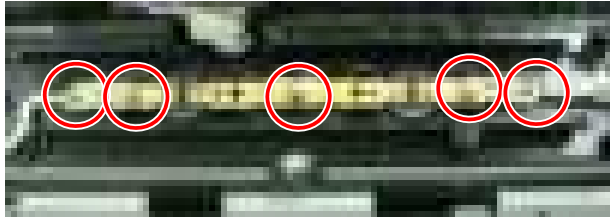
- Check if the thermostat is fixed properly.
- Check if both harness are connected properly.

CAUTION
If Thermostat or harness connection is not stable, overheating/fire can occur because the overheat-protective function can not be performed properly.

Check the NC thermistor assembly status.
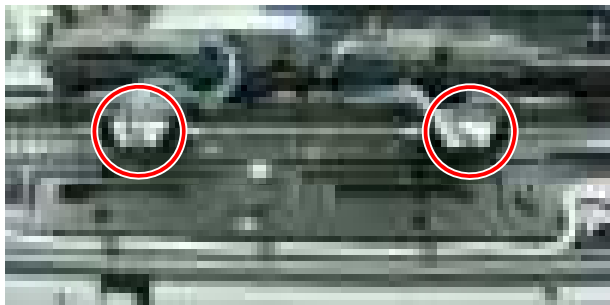
- Check if the NC thermistors are fixed properly.
- Check if the NC thermistor connectors are connected properly.

CAUTION
If the NC thermistor connector is not connected properly, overheating/fire can occur.

Check the harness/connector assembly status.
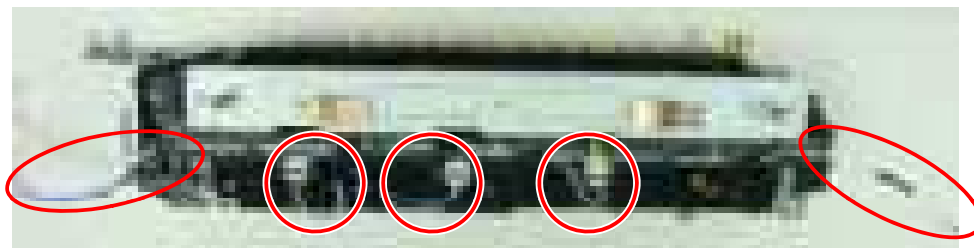
CAUTION
If the connector is not connected properly, overheating/fire can occur.
Check the assembly position, connection status.

After the fuser repair, check the following.

- The fuser unit weighs about 6 kg. Be careful not to drop it.

- When installing fuser unit, hold the both side handles.

- When installing fuser unit, do not apply force.

- Check if the both handles are locked properly.

- Fix 2 screws.

- Close the side cover and check if the machine is operated properly.

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3.6 Cartridge Transfer Unit

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

NOTE – Refer to maintenance chapter for disassembling the whole Cartridge Transfer Unit.

3.6.1 Cartridge Transfer Belt

Perform the following procedure to remove the Cartridge Transfer Belt from the Cartridge Transfer Unit.

1. Remove the Cleaner Unit.
   (refer to maintenance chapter)

   1-1. Loosen one screw.
   1-2. Remove the Cleaner Unit. (Arrow direction)
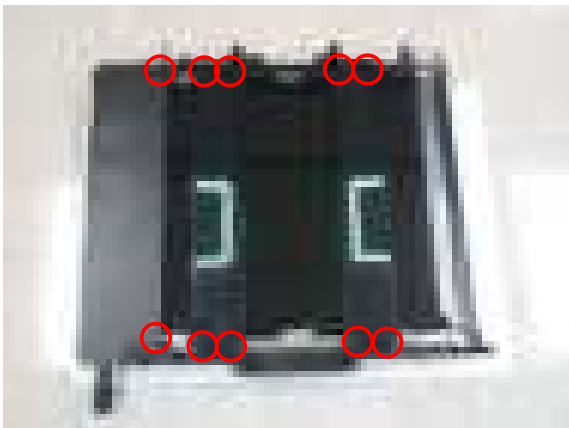
2. Remove 10 screws.
   (Cover Left x 4 , Cover Right x 4, Cover Top x 2)

   CAUTION
   When removing screws, be careful not to drop something into the inside.

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 NOTE
When you remove the cover top, make sure you remove the harness wires from the wire guides.

CAUTION
When removing the harness wires, be careful not to be broken.

3. Unplug the connector.

4. Turn the cartridge transfer unit over.
5. Remove the Paper Guide Bracket [A] after removing 2 screws.
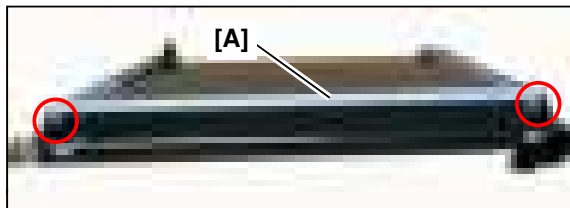
6. Remove 2 E-rings (gear, shaft)
7. Remove the gear [B], gear [C].
8. Remove the shaft [D] from the opposite side.
9. Remove the spring [E] from both sides.
10. Remove the left/right bracket [F] after removing 2 screws from each bracket.
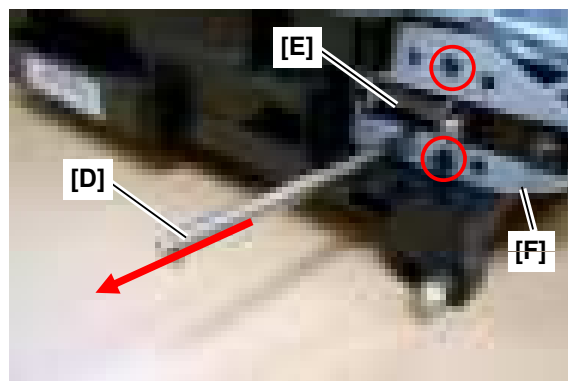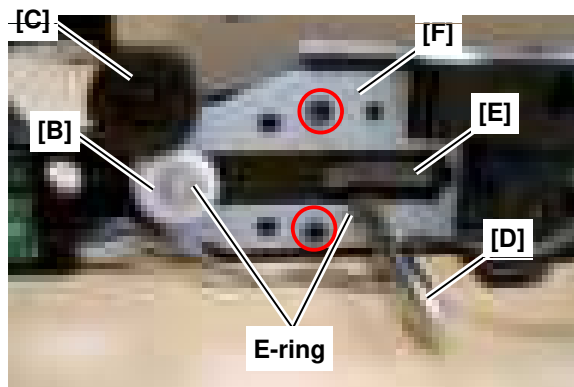
NOTE

When removing the springs, pull it with the tweezers to the direction of arrow.
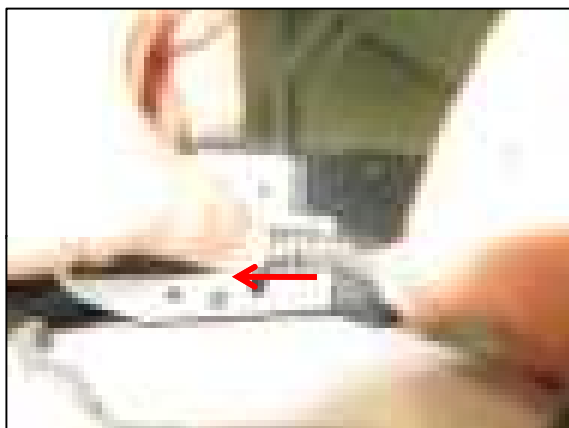
NOTE

When reassembling the springs, put its left side. Then put its right side with tweezers.

Before reassembling the spring, align the CAM position as shown below.

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11. Release the guide tension F[G] / R[H] slightly.

CAUTION
If you remove the guide tension F/R completely, the tension roller will drop down and the belt surface will be damaged.
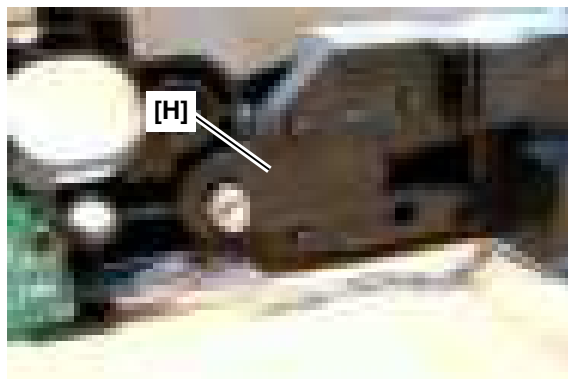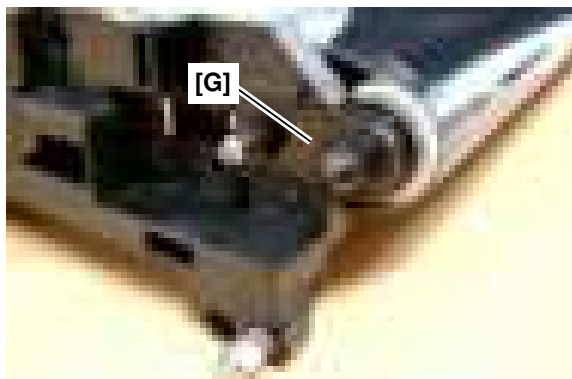
12. Take off the tension roller [I].

CAUTION

When removing the tension roller from the ITB unit, be careful not to drop both bush-bearings in the belt.

13. Lift the cartridge transfer frame up slowly to separate the transfer belt [J].
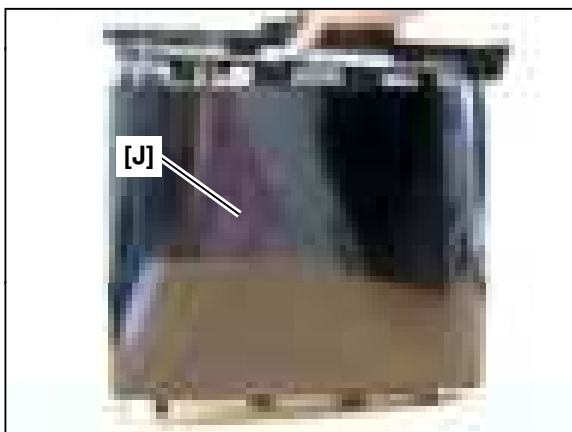
NOTE

In case of using the ITB Frame Install JIG, install the frame on the JIG and remove the belt to the direction of arrow.

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Reassembling the cartridge transfer unit

1. Install the ITB frame on the Frame Install JIG(A). Install the Belt Guide JIG(B). And assemble the belt from top and bottom.
NOTE – Belt Serial No. must be toward the bottom.

Belt Guide JIG(B)

Frame Install JIG(A)

Belt Serial No.

(Inside of the Belt)
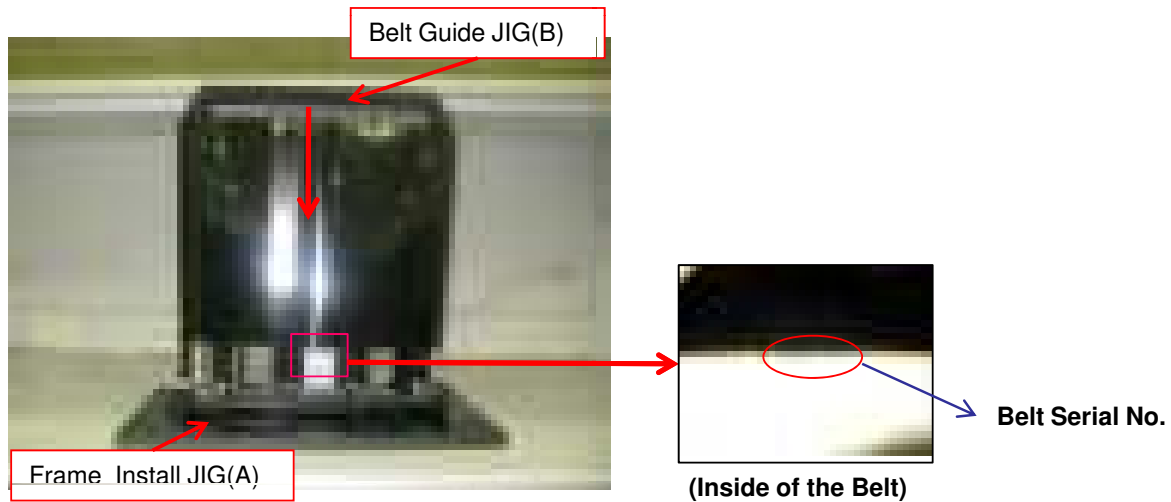
NOTE
1. Before assembling the belt, clean the frame roller (Drv, Tension,Guide A,Guide B,Bk Nip) by using the air spray and alcohol.
2. When reassembling the belt, be careful not to be stabbed or contaminated.

2. Assembling is reverse order of the disassembling.

Note
After assembling the belt, check the inside Rib position of the belt.
Both Ribs must be located below of the Drive roller, Tension roller.

OK Example

NG Example

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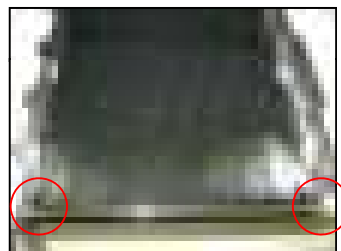
3. Lift up the scatter-protective film over the belt.

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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.
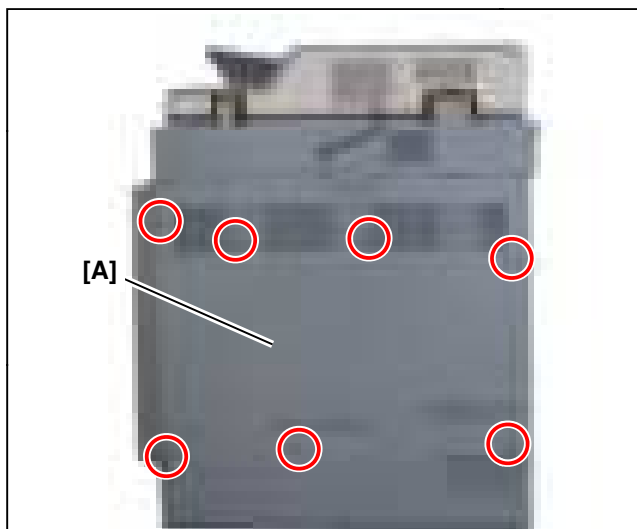
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2. Slightly release 6 screws. It is not necessary to remove the screw completely.
Move the rear shield [B] in the direction of the yellow arrow and remove it.

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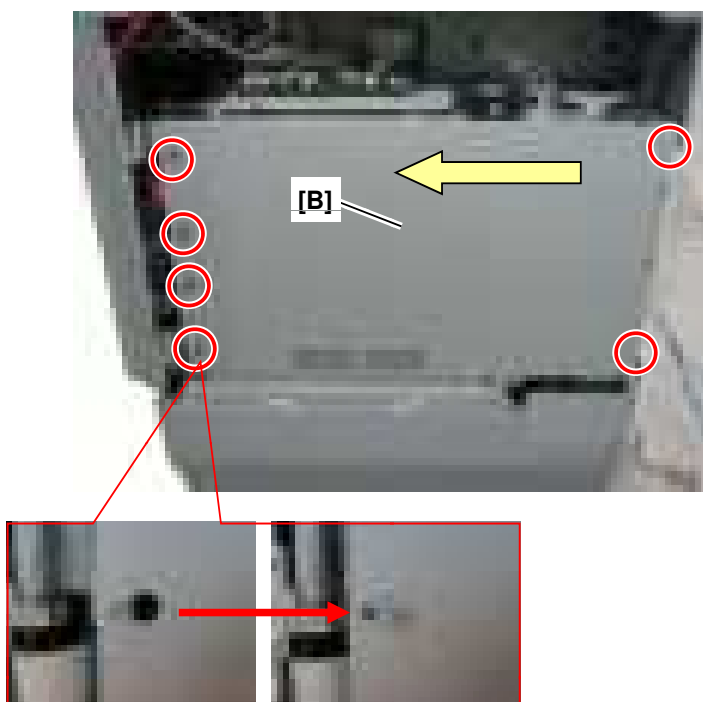
3. Remove the engine controller after removing 4 screws and all connectors.
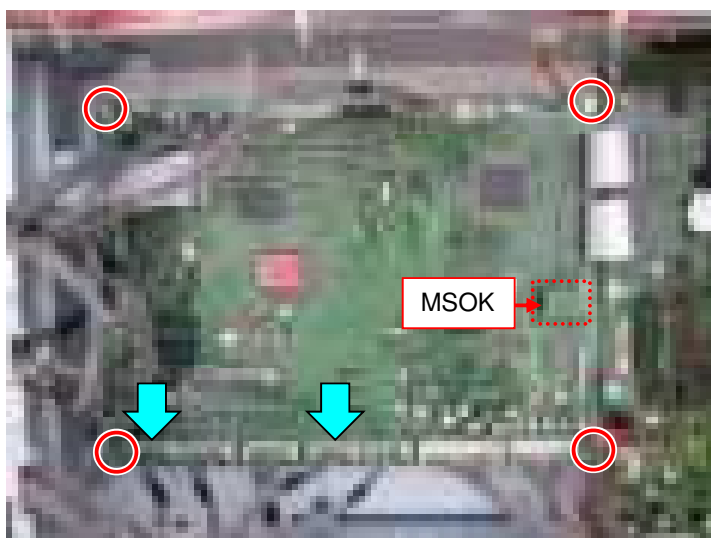
CAUTION
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CAUTION
When replacing the engine board, you must insert the MSOK and Memory on new engine board.

Be careful not to change the two connectors are indicated by the arrows

MSOK

3.7.2 Hard Disk Drive (HDD)

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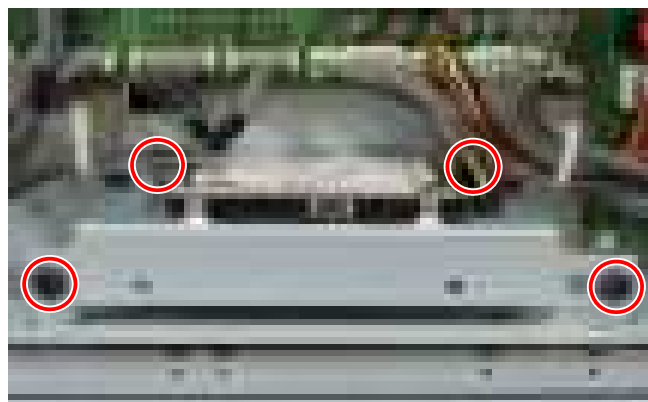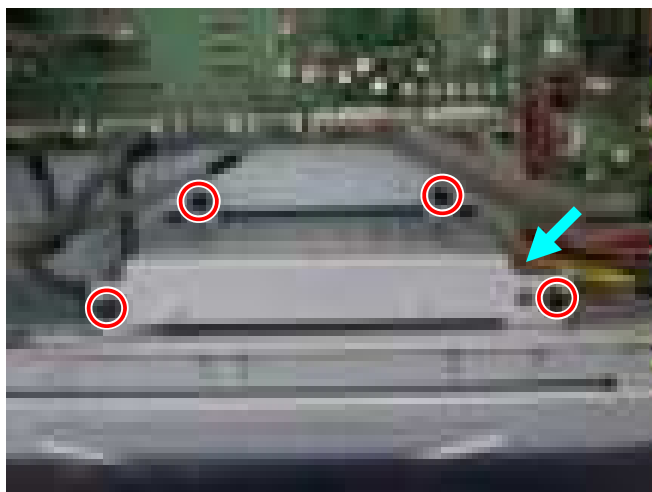
3.7.3 Video controller PBA

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.

4. Take off the video controller after removing 8 screws and all connectors.
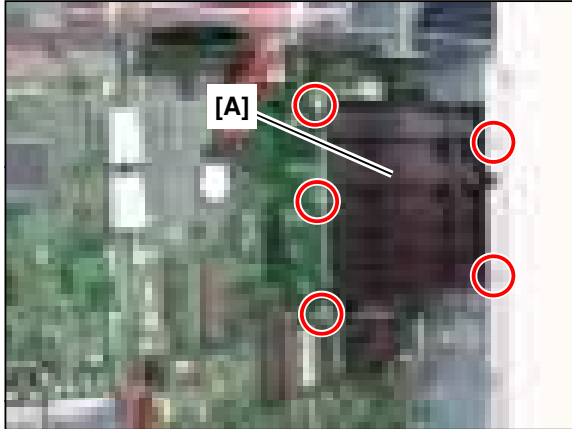
[A]

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MSOK

3. Take off the Bottom Slot [B] after removing 2 screws.
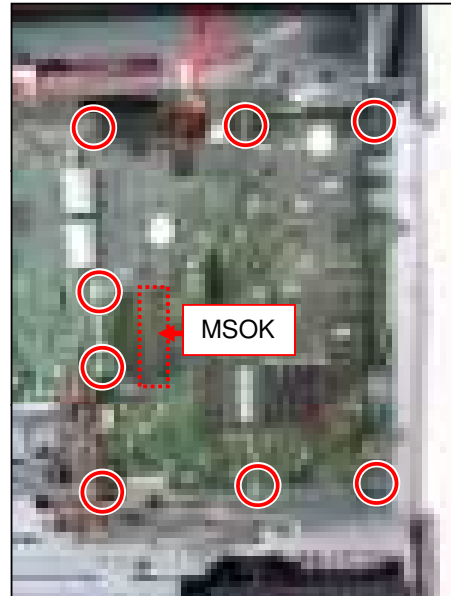
CAUTION
When replacing the Video board, you must insert the MSOK and Memory on the new video PBA.

[B]
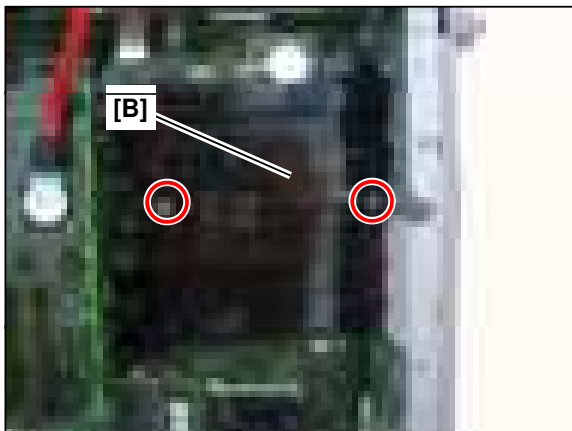
3.7.4 Joint PBA

To remove the Joint PBA from the printer, remove 4 screws and all of the connectors.
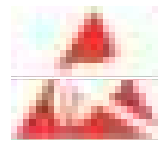
CAUTION
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3.7.5 Engine/video shield door FAN

1. Unplug the connector from the engine controller.
2. Open the shield door. Remove the FAN after removing 2 screws.
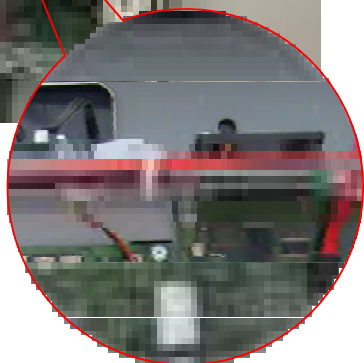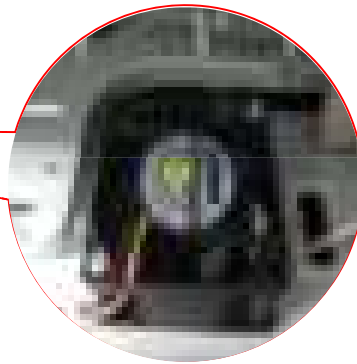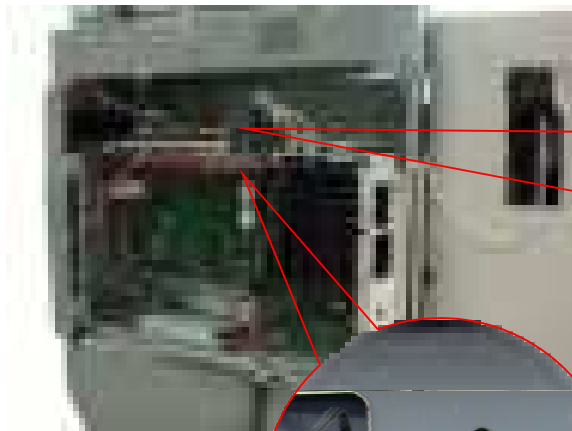
CAUTION
Please attach "OUT" label on the FAN after
assemble equally with existing fan's direction.

3.7.6 Toner PBAs

Perform the following procedure to remove the 4 Toner PBAs from the printer.

1. Unplug the 3 connectors.
2. Release the unplugged connectors from the holder.

4. There are 4 identical Toner PBAs. To remove a Toner PBA, remove 1 screw and 1 connector.

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3. Open the video/engine shield door.
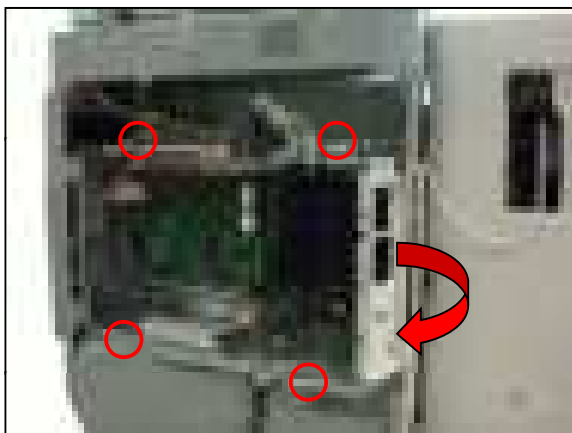
CAUTION
When replacing a toner PBA, it is easy to drop the screw into the case. To avoid dropping the screw, use a magnetic driver.

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3.7.7 Toner Motors

The machine contains 4 identical Toner motors.
To remove a Toner motor, remove 3 screws and connector.
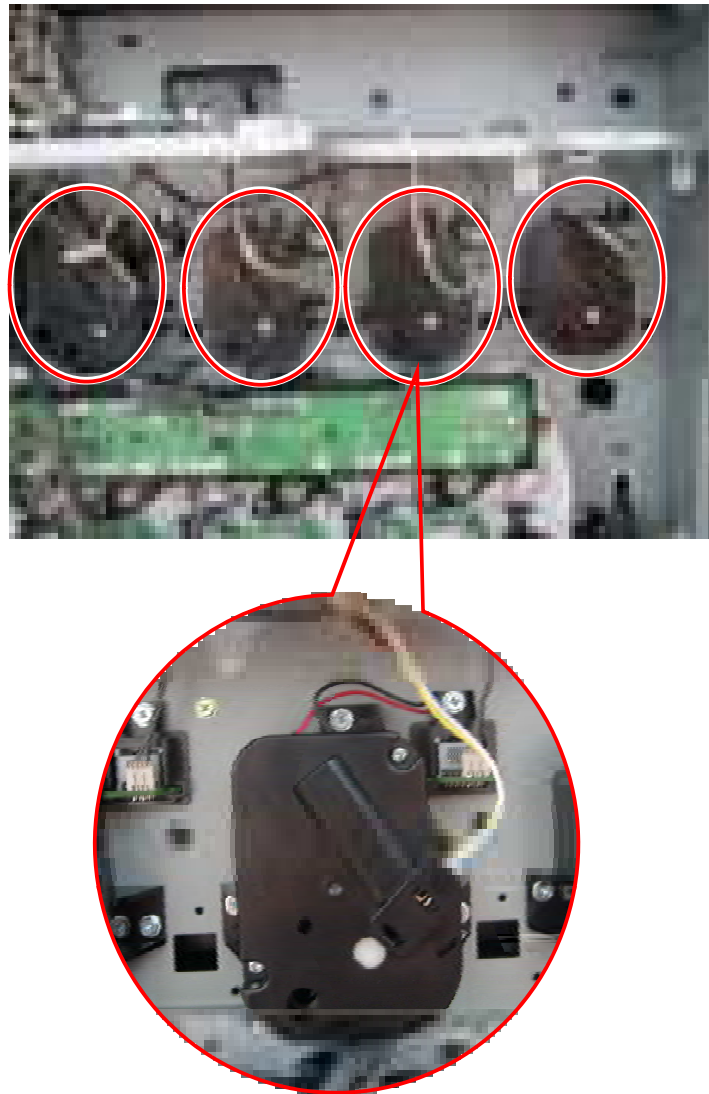
3.7.8 DC Power PBA

Perform the following procedure to remove the DC Power PBA from the printer.
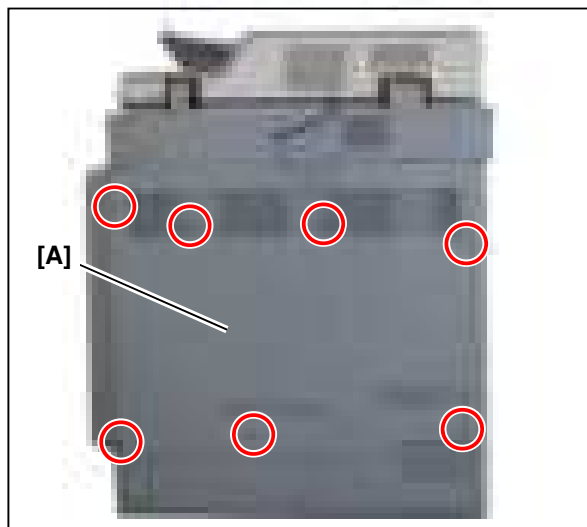
1. Remove the Upper Rear Cover [A] after removing 7 screws.

[A]
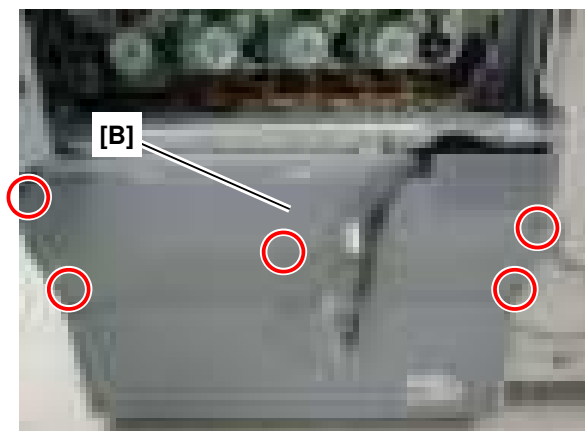
2. Remove the Lower Rear Cover [B] after removing 5 screws.

[B]
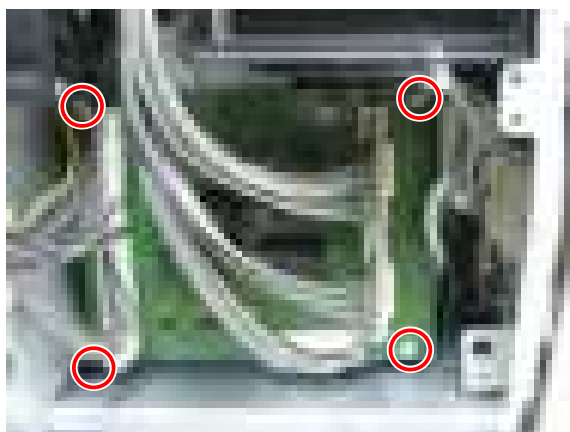
3. Unplug all of the connectors, remove 4 screws, and remove the DC Power PBA.

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3.7.9 High Voltage Power Supply (HVPS) PBA

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

NOTE – This model has 2 HVPS boards.

1. Open the video/engine shield door.
2. Remove the Lower Rear Cover after removing 5 screws.

4. Remove 5 screws.
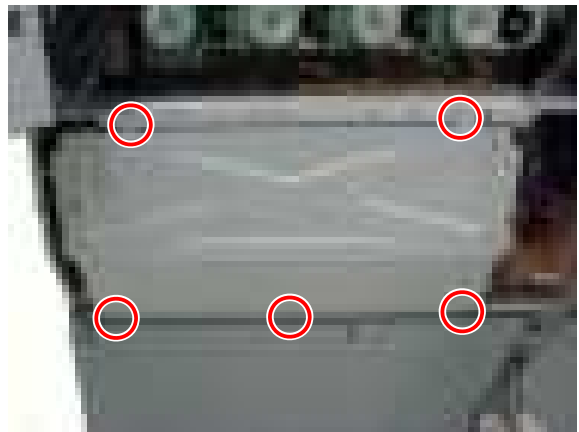
3. Unplug 2 connectors.
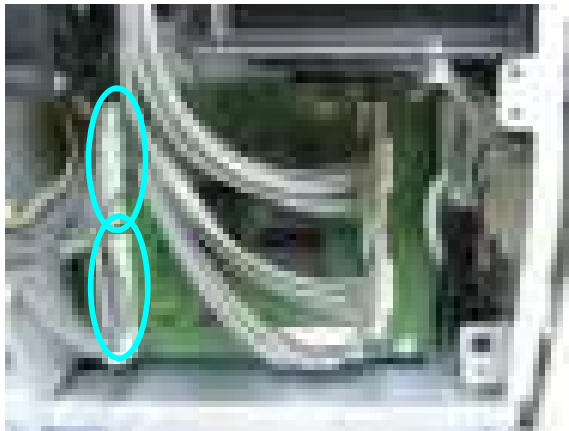
5. Put the SMPS box [A] down as shown below.

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

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6. Remove 3 screws and 1 connector.
7. Release 2 harness holders.
8. Remove the DC control PBA shield [B].
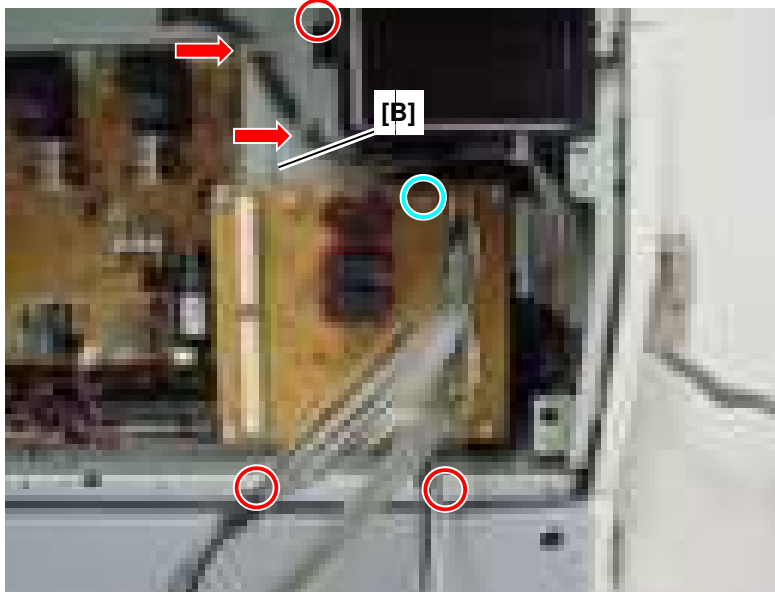
9. Remove the HVPS board (front) after removing 4 screws and all of the connectors.
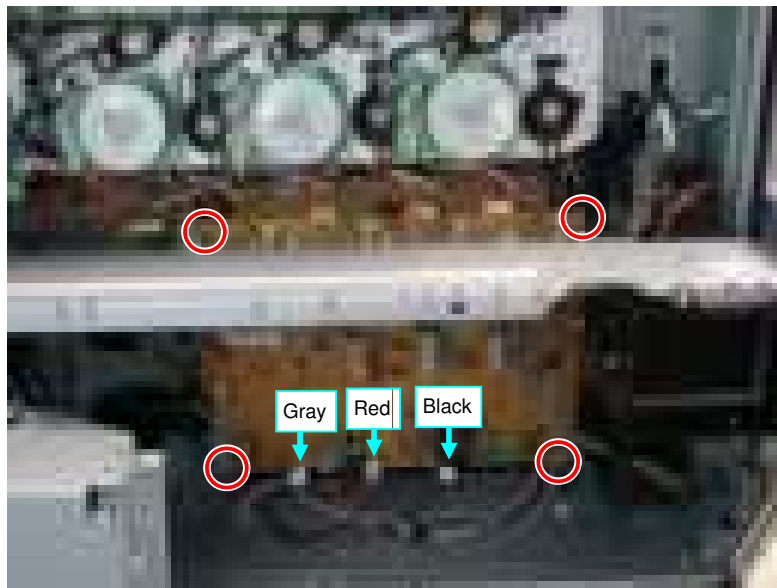
CAUTION
When reassembling the connectors from top/bottom of the Front HVPS PBA, make sure that the wire colors match the photo above.

10. Remove the HVPS PBA (back) after removing 9 screws and all of the connectors.

Gray | Red | Gray | Black
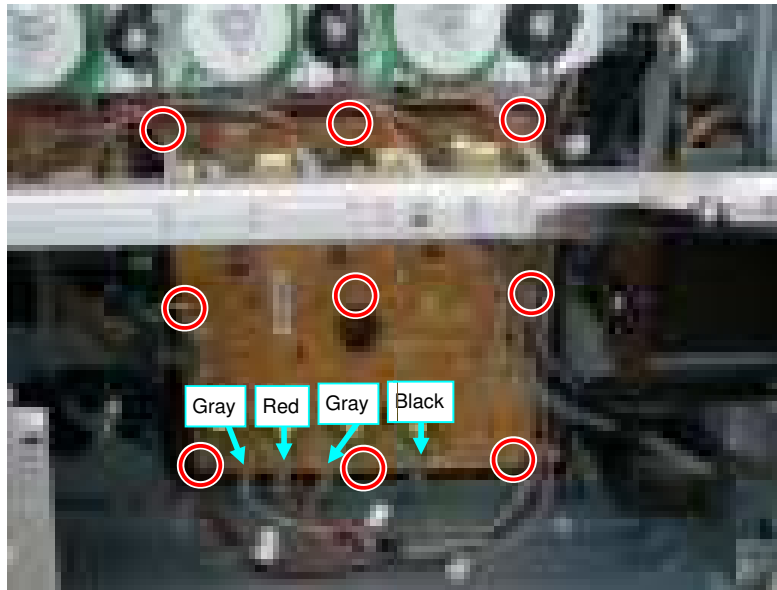
CAUTION
When reattaching the connectors to the top/bottom of the Rear HVPS PBA, make sure that the wire colors match the photo above.

3.7.10 Lift motor

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

1. Remove the HVPS board (front). (refer to 3.7.9)
2. There are 2 identical lift motors. To remove a lift motor, remove 3 screws and 1 connector.
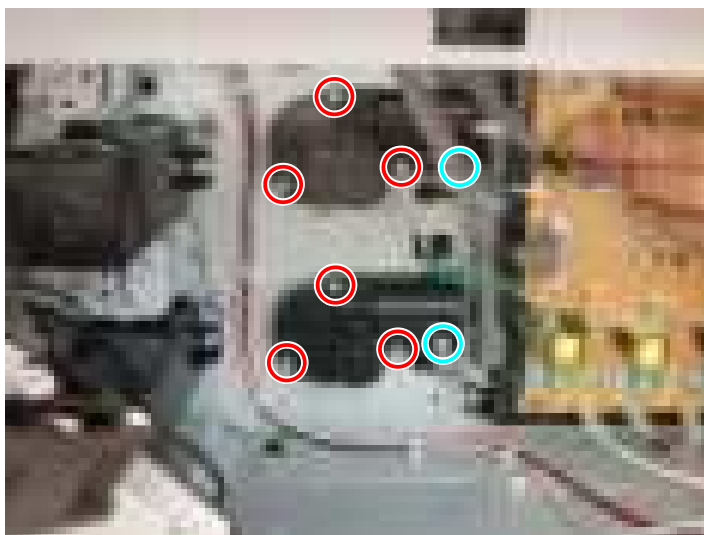
3.7.11 SMPS PBA

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

1. Remove the rear cover. (refer to 3.2.4)
2. Remove the 6 screws from the SMPS box.

3. Take off the SMPS board after removing 7 screws and all connectors.

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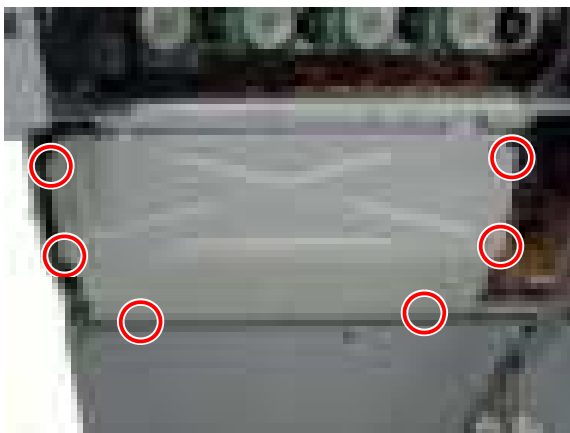
3.7.12 SMPS Fan

Perform the following procedure to remove the SMPS Fan from the printer.
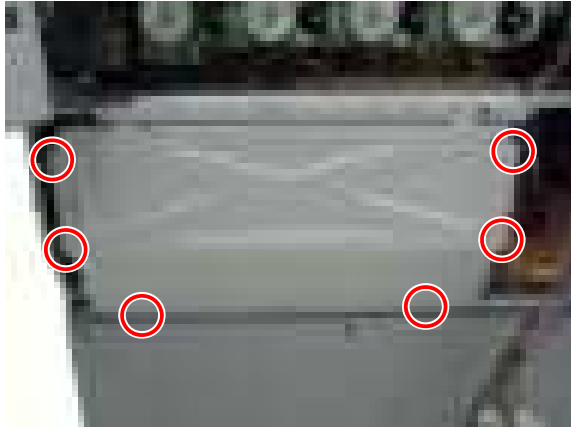
1. Remove the rear cover. (refer to 3.2.4)
2. Remove the 6 screws from the SMPS box.

3. Unplug 2 connectors from DC power PBA.
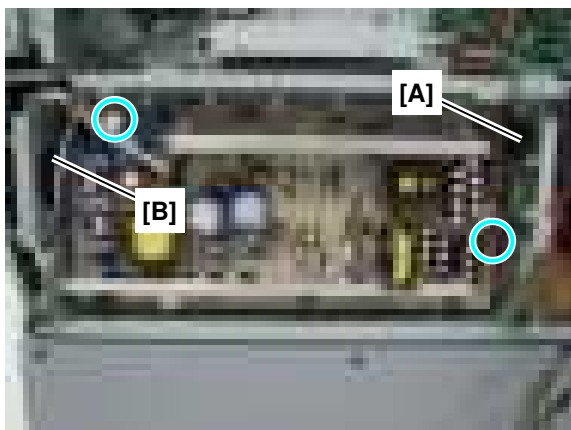
4. Unplug the connector from the fan you want to replace.

[A]

[B]

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5. Take off the SMPS box after removing 5 screws.
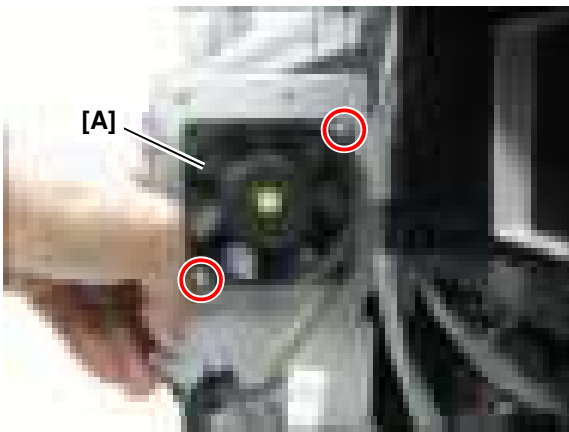
6. Remove Fan A or Fan B from the SMPS box after removing 2 screws.

[A]

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

[B]
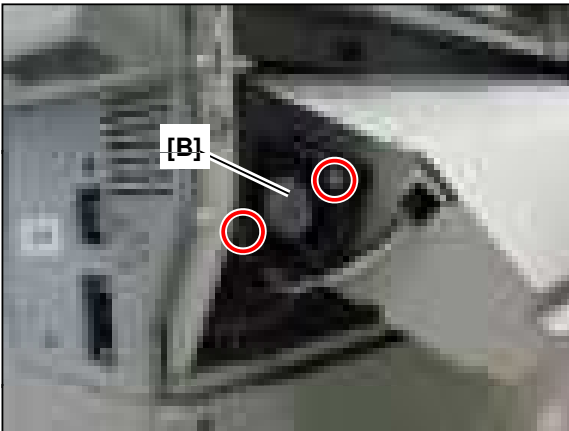
3.7.13 Ozone filter Fan

Perform the following procedure to remove the Ozone Filter Fan from the printer.

1. Remove the DC control board shield. (Refer to 3.7.9)
2. Take off the Ozone filter [A].
3. Remove the 4 screws.
4. Release the harness from the holder.
5. Take off the ozone filter fan.
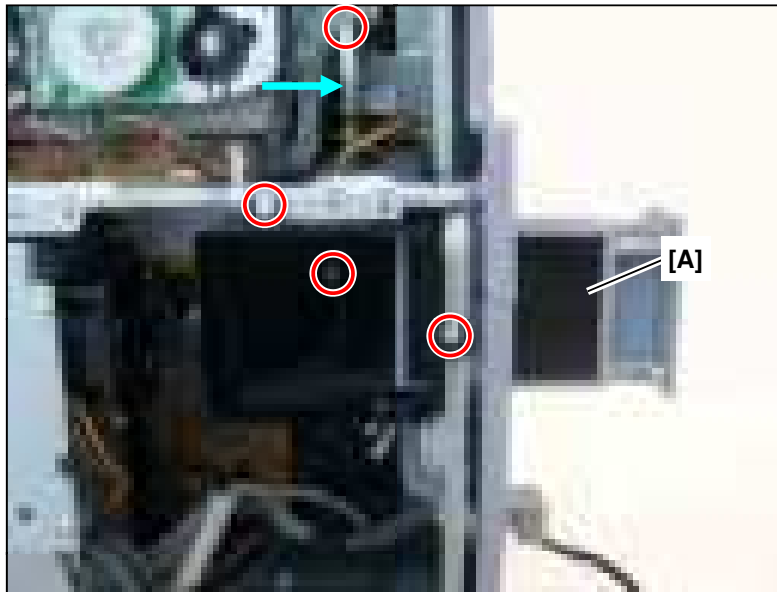
3.7.14 Side joint PBA

Perform the following procedure to remove the Ozone Filter Fan from the printer.

1. Open the side unit.

2. Release the side joint board cover after removing 2 screws.

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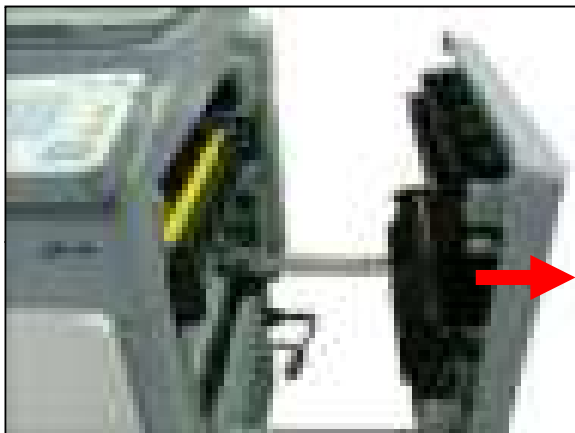
3. Unplug all connectors.
4. Remove 4 screws.
5. Release the side joint board.
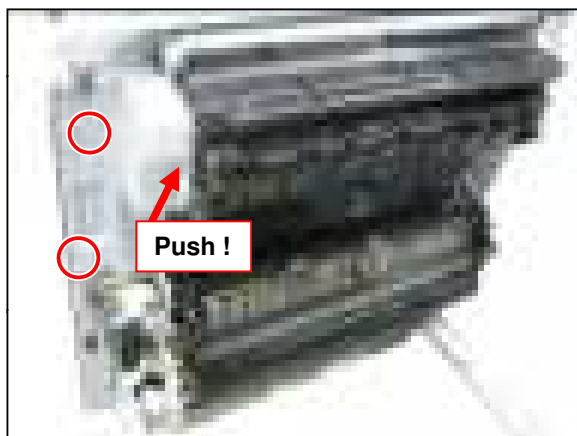
CAUTION
When you reassemble the side joint board to the side unit, make sure the harness arrangement is correct.

The harness on the side joint board.

The harness of Face up Sensor.
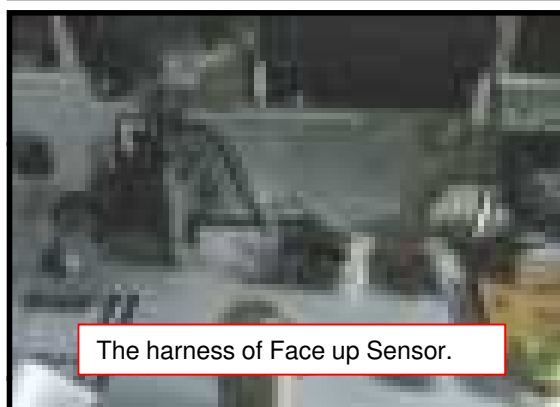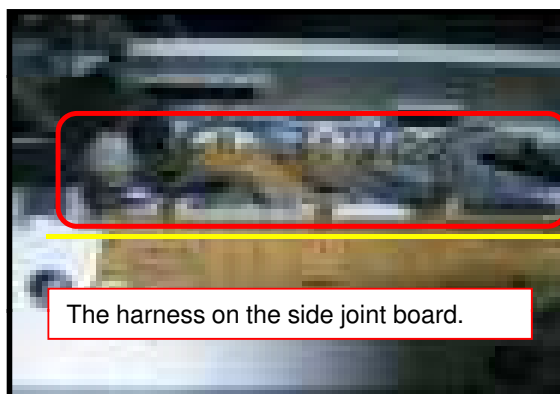
3.8 Main drive unit

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

1. engine/video shield door.
2. Remove the SMPS box and DC control PBA shield. (Refer to 3.7.9 HVPS step 1~8)
3. Remove all the connectors.
4. Remove the Main drive unit after removing 9 screws.

3.8.1 Main drive PBA

Perform the following procedure to remove the Main Drive PBA from the Main Drive Unit.
1. Open the engine/video shield door.
2. Take off the main drive PBA after removing 5 screws and all connectors.

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3.8.2 Main drive motor

There are 5 identical motors in the main drive unit.
Perform the following procedure to remove the 5 Main Drive Motors from the Main Drive Unit.
To remove a motor, remove 4 screws and 1 connector.

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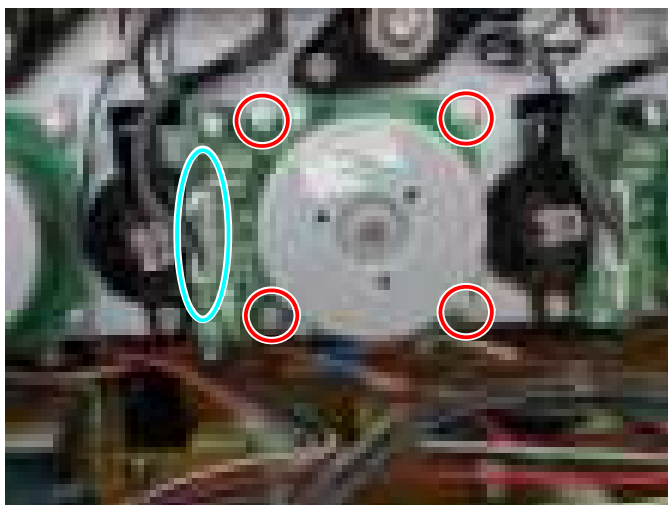
3.8.3 Main drive clutches

Perform the following procedure to remove the 4 Main Drive Clutches from the Main Drive Unit.

1. There are 4 identical clutches in the main drive unit.
   To remove a clutch, remove the motor on the clutch you want to replace.
2. Turn the clutch in a clockwise direction after removing 1 screw and 1 connector.
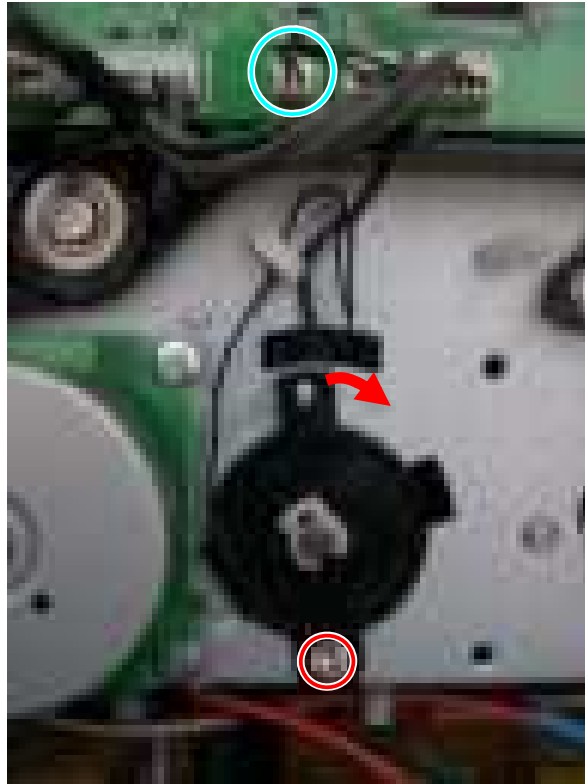
3. Release the clutch.

3.8.4 Main drive sensors

Perform the following procedure to remove the 4 Main Drive Sensors from the Main Drive Unit.

1. Remove the Main Drive PBA holder after removing 4 screws and all of the connectors.
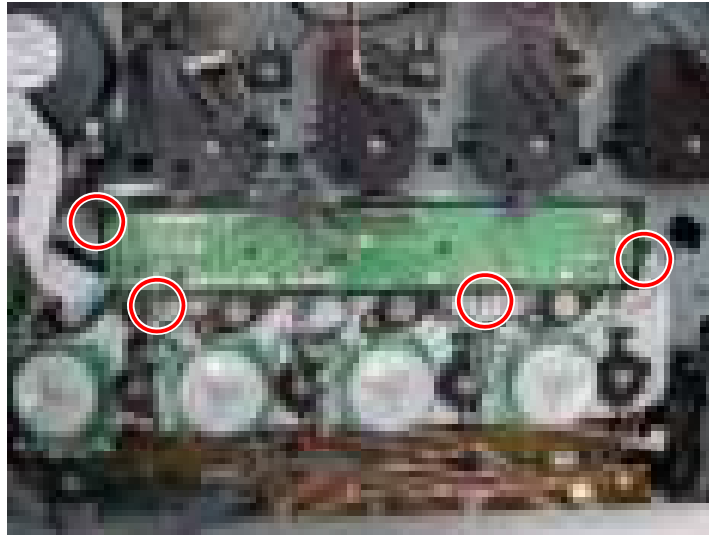
2. There are 4 identical sensors.
   Remove the sensor that you want to replace by pushing the hook to release the sensor from the holder and remove the connector.
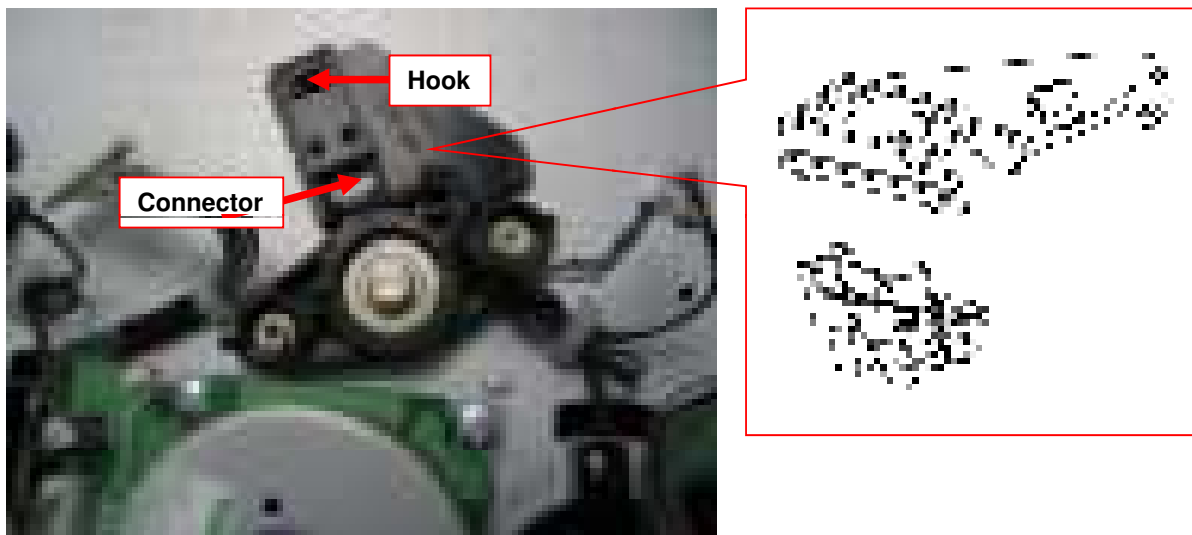
3.9 Pick-up drive unit

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 2 cover cassette rails after removing 2 screws.
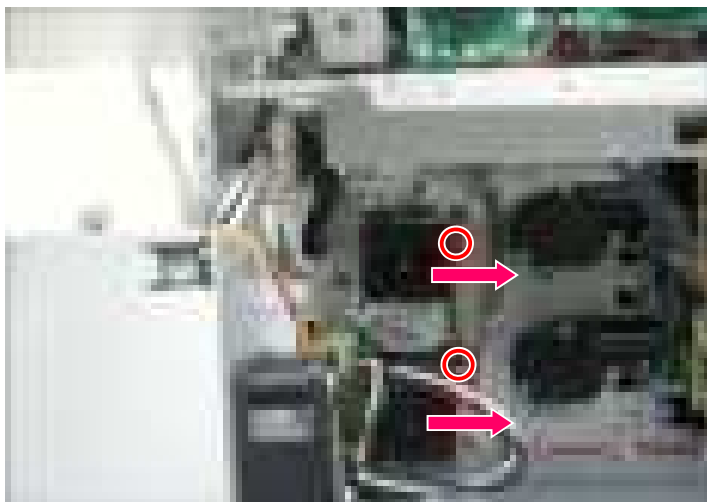
3. Remove Pickup Drive Unit after removing 4 screws and all connectors.

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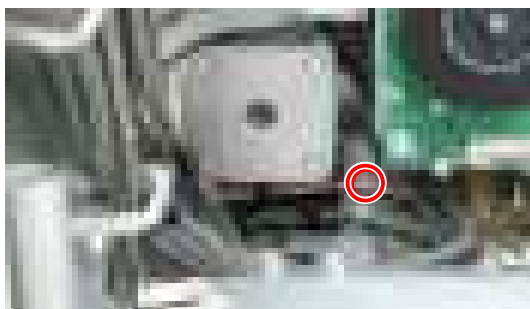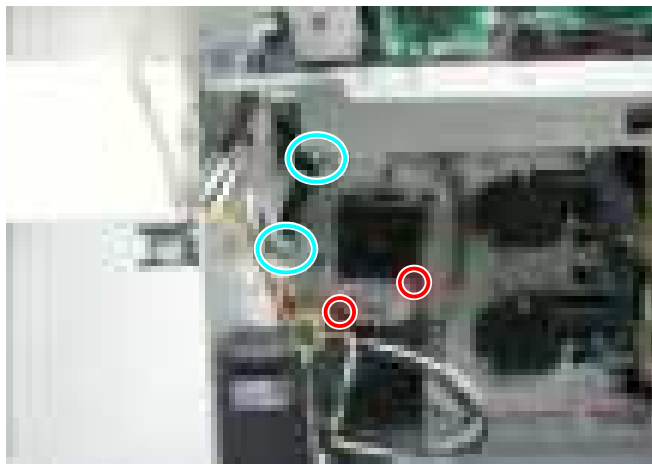
3.9.1 Pickup drive clutch

There are identical 2 clutches in the pickup drive unit.
Perform the following procedure to remove the 2 Pick-up Drive Clutches from the Pick-up Drive Unit.
To remove a Clutch from the Pick-up Drive Unit, remove the Clutch Holder after removing 2 screws.
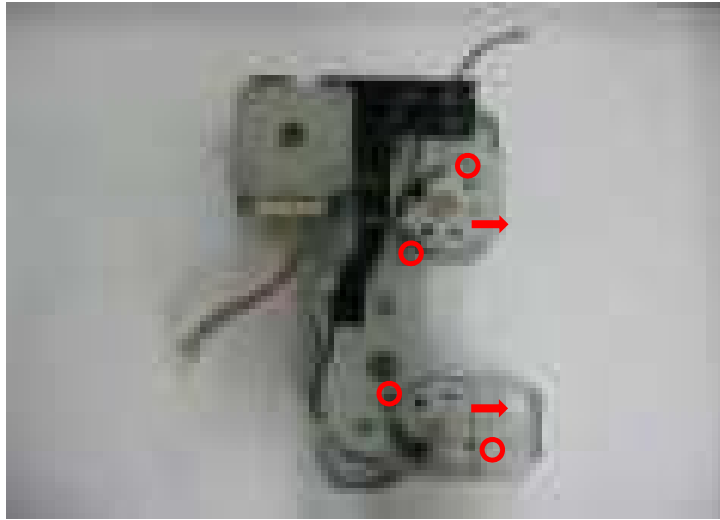
3.9.2 Pickup drive motor

Perform the following procedure to remove the 2 Pick-up Drive Motors from the Pick-up Drive Unit.
Remove 2 screws.

3.10 MP/Regi drive unit

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

1. Open the engine/video shield door.
2. Remove MP/Regi drive unit after removing 4 screws and all connectors.

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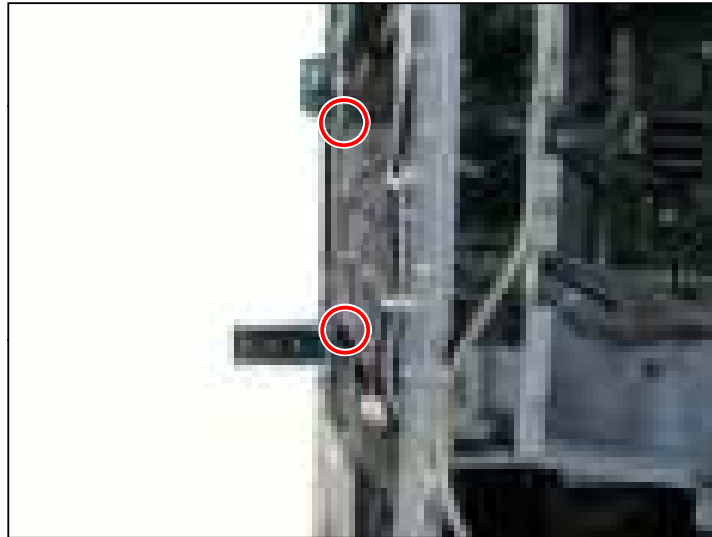
3.10.1 MP/Regi drive motor

There are 2 identical motors in the MP/Regi drive unit.
Perform the following procedure to remove the 2 MP/Regi Drive Motors from the MP/Regi Drive Unit.
To remove a motor, remove 2 screws.

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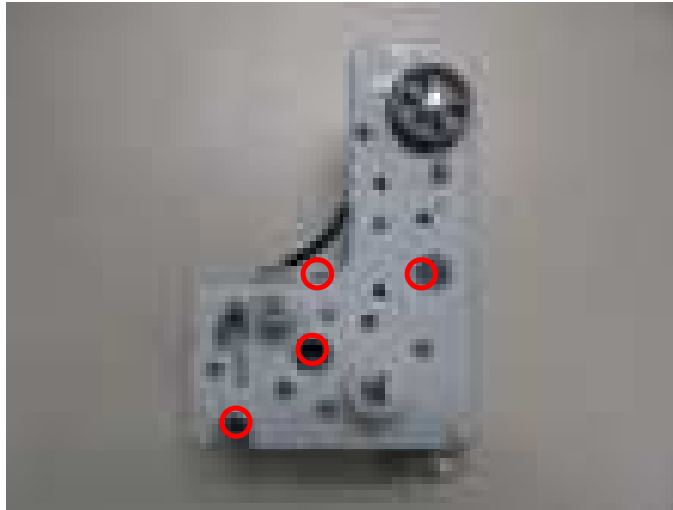
3.11 Exit drive unit

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. Open the engine/video shield door.
2. Remove fuser out fan and duplex fan.
3. Remove exit drive unit after removing 3 screws and all connectors.
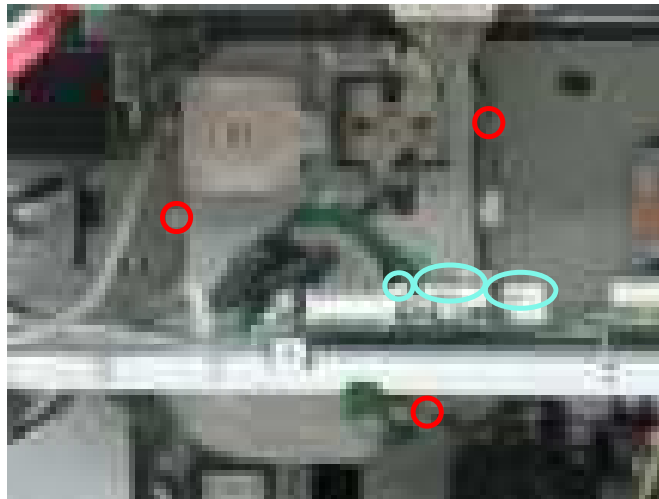
3.11.1 Fuser/Exit drive motor

Perform the following procedure to remove the Fuser/Exit Drive Motor from the Exit Drive Unit.
To remove the motor, remove 4 screws and 1 connector.

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3.11.2 Duplex return drive motor

Perform the following procedure to remove the Duplex Return Drive Motor from the Exit Drive Unit.
To remove the motor, remove 2 screws.

3.11.3 Exit drive clutch

Perform the following procedure to remove the Exit Drive Clutch from the Exit Drive Unit.

1. Remove 3 gears after removing 3 e-rings.

3. Remove holder clutch after 3 screws.

2. Remove 3 gears after removing 3 e-rings.

3.12 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.
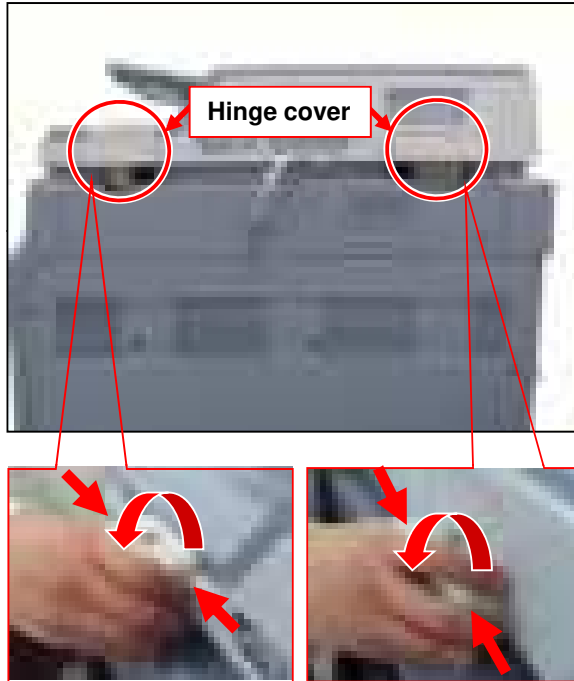
1. Remove the left/right hinge cover.
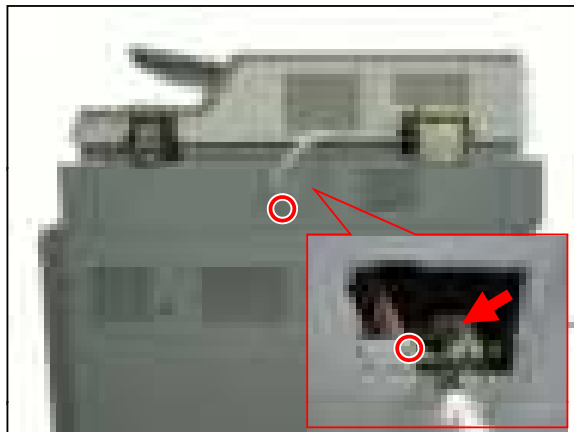
2. Remove 1 screw.
3. Open the connector cover. Remove 1 screw. And unplug the connector.

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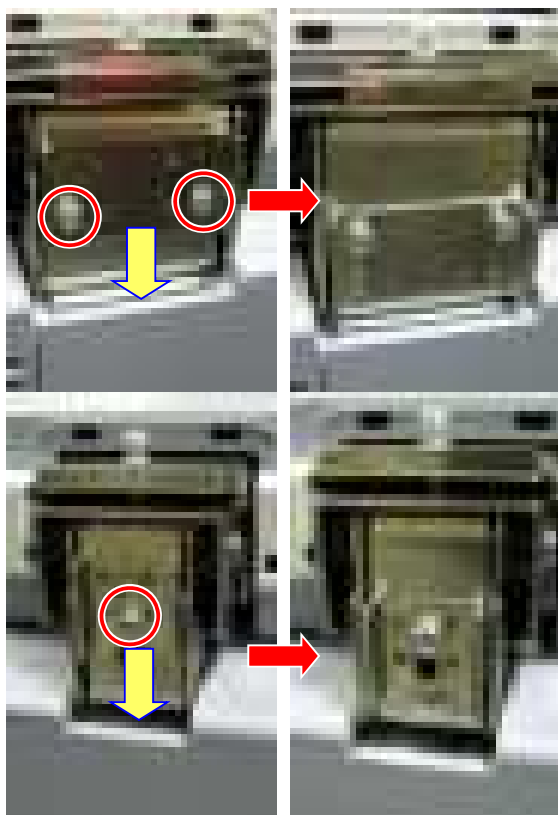
4. Loosen 3 screws.
5. Pull down the stoppers and tighten 3 screws.

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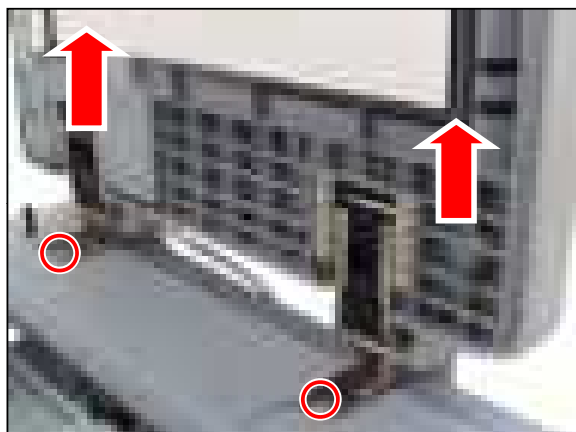
8. Remove 2 screws.
9. Lift up and release the DADF.

*See illustration for rear side view of DADF

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Reassembling the DADF

To reassemble the DADF, perform the following procedure.
1. Lift the DADF, and put in the DADF brackets to the machine as shown below.
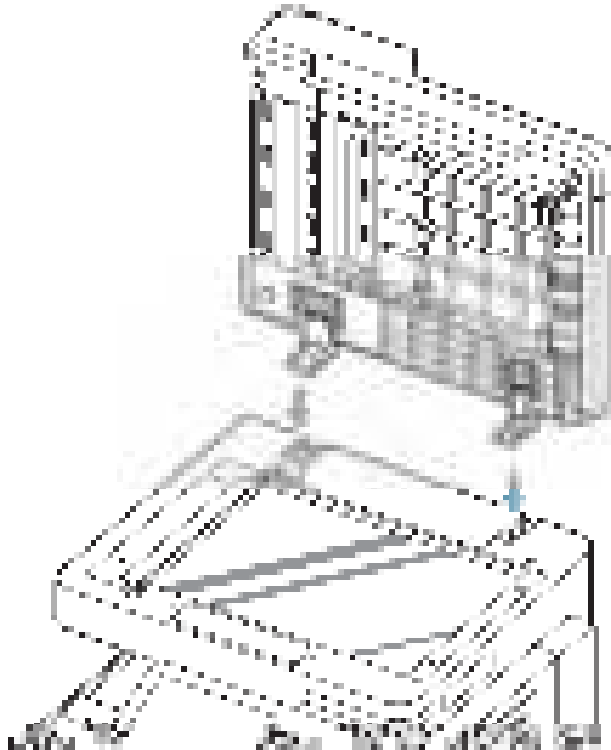
2. Loosely tighten the two handle hinges for fixing the DADF.
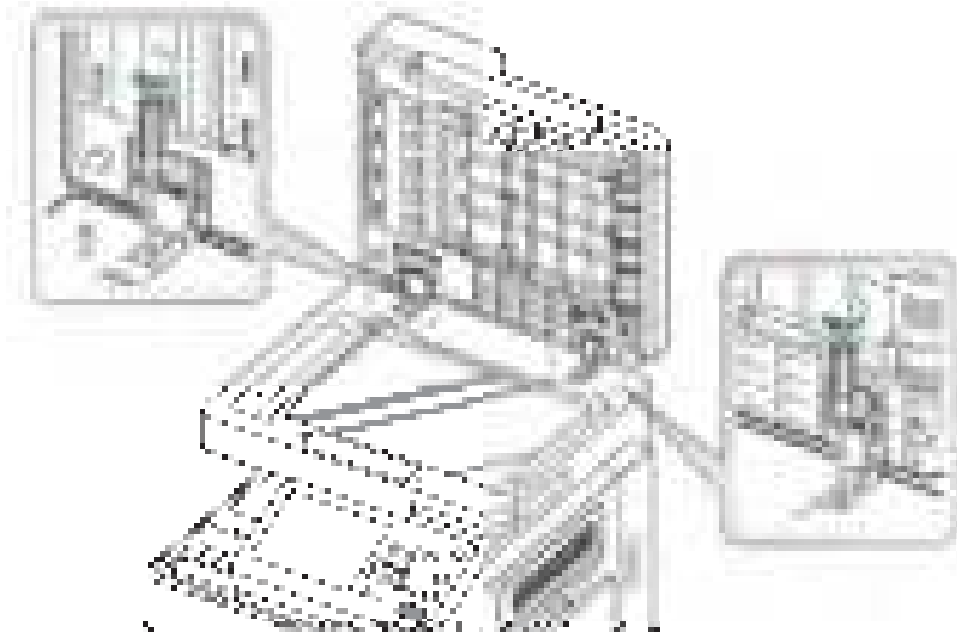
3. Fix the steel plate on the longest scale mark using the handle hinge. A scale mark is approximately 0.5 mm.
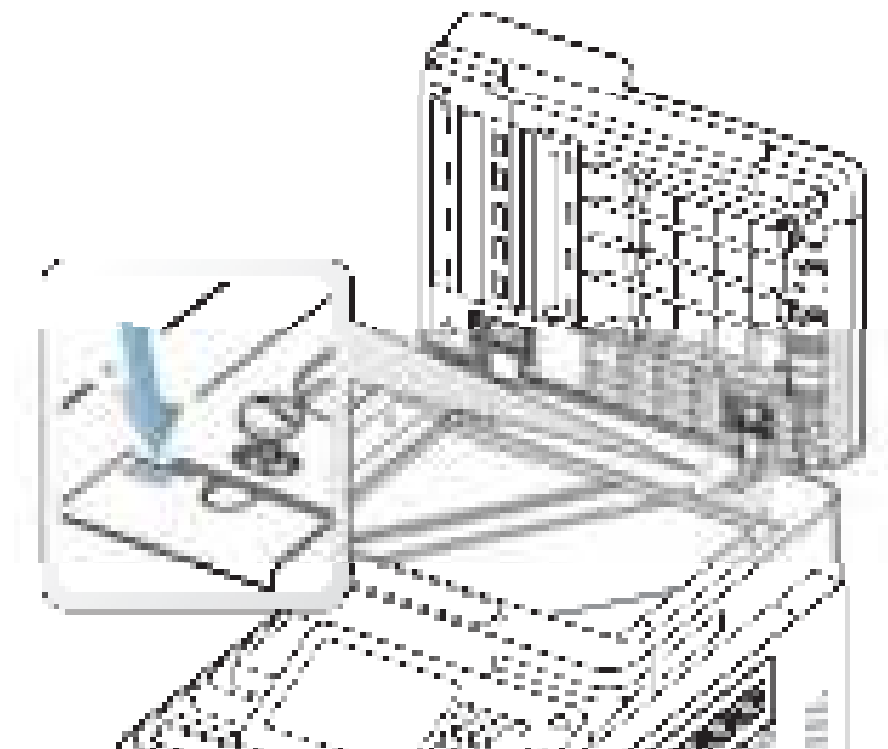
NOTE - You can locate the scale mark by handling it back and forth while tightening or loosening the screw at the backside.

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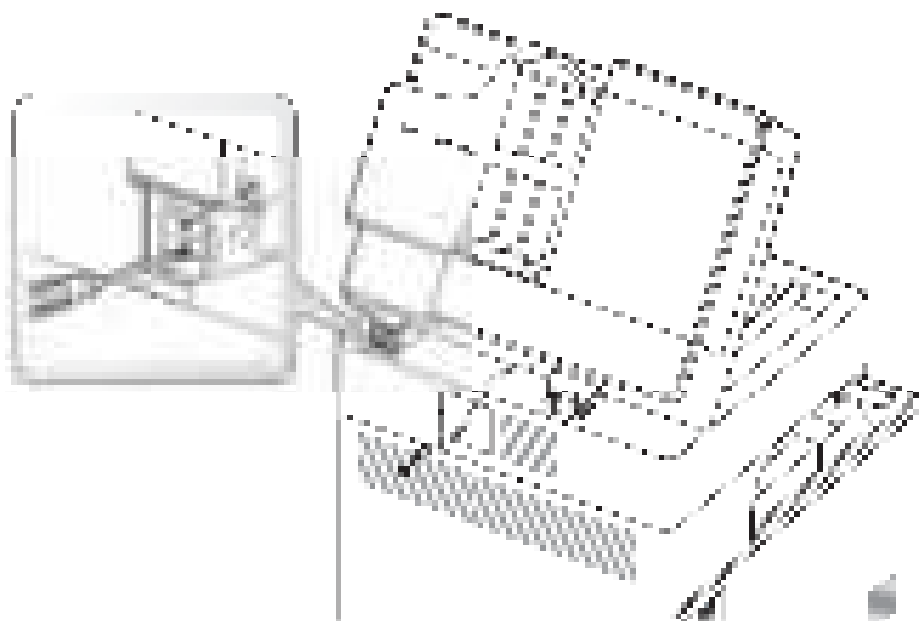
4. Tighten the two handle hinges for fixing the DADF.
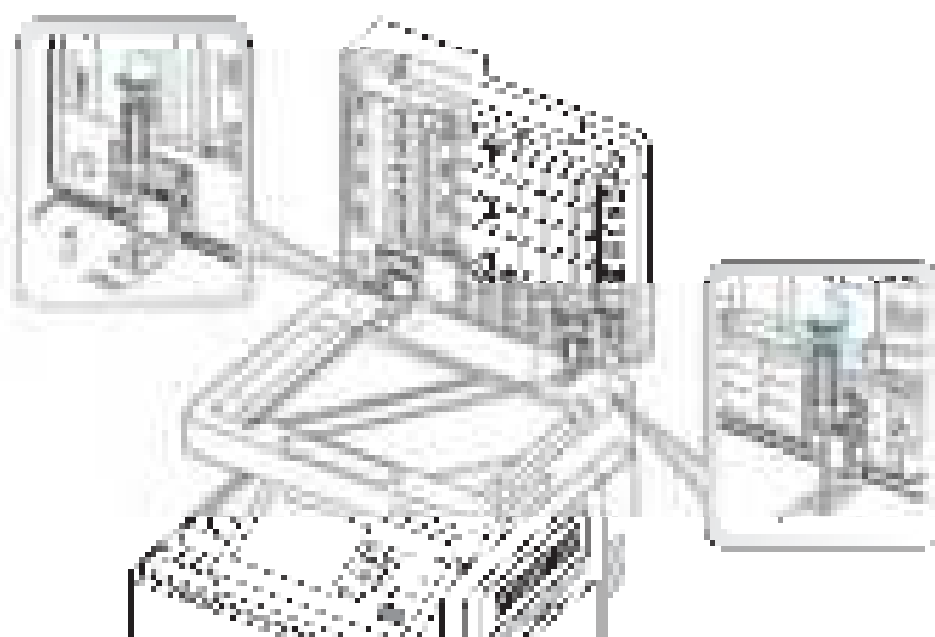
5. Close the DADF.

6. Push up the steel frames, and tighten the three screws.
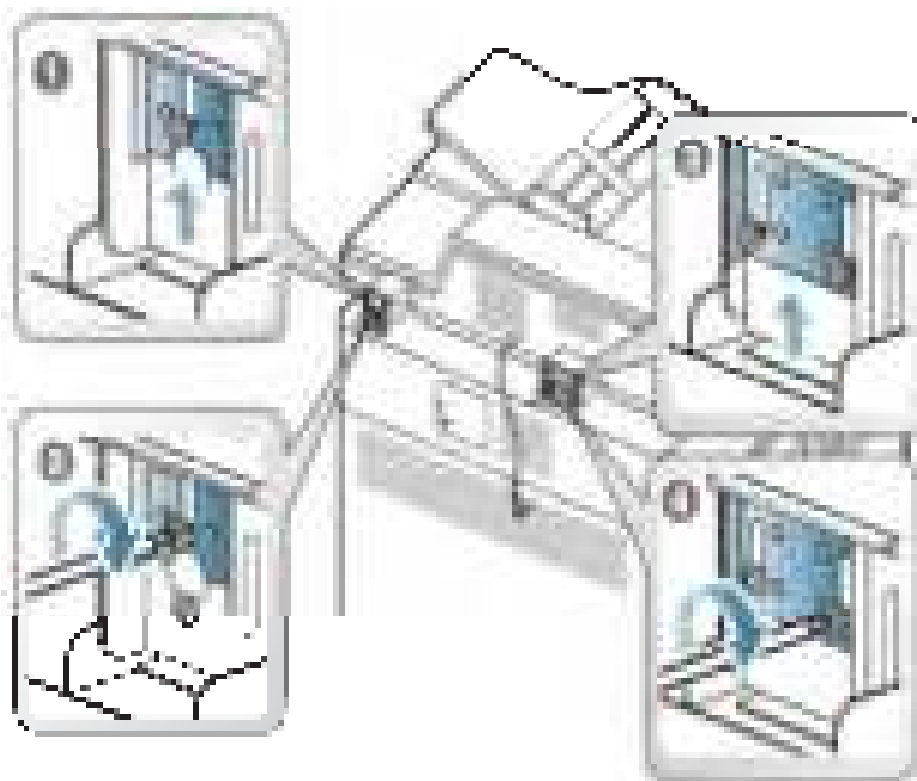
7. Make sure the two rubber pads (left side) and two plastic projections (right side) on the bottom of the DADF on both sides touch the top of the machine as shown below.

CAUTION - If you skip this step, it could cause originals to jam.
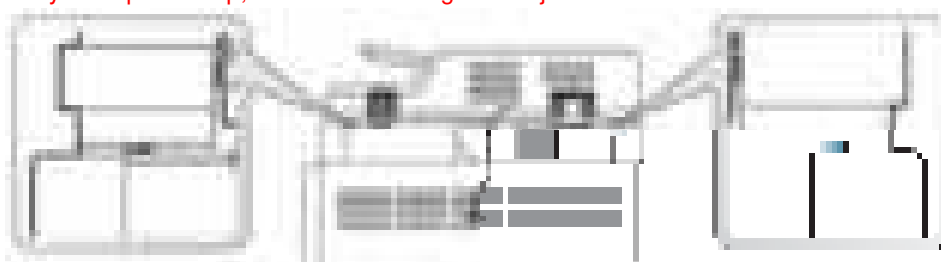
CAUTION - If the gap is more than 0.5 mm (0.02 inch), adjust the screw on both sides as shown below until the gap is smaller 0.5 mm (0.02 inch). You have to check all rubber pads and plastic projections.

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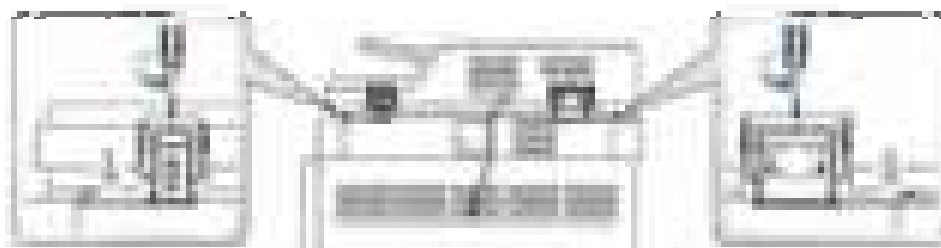
8. Fit the plastic covers in the both hinges of the DADF.
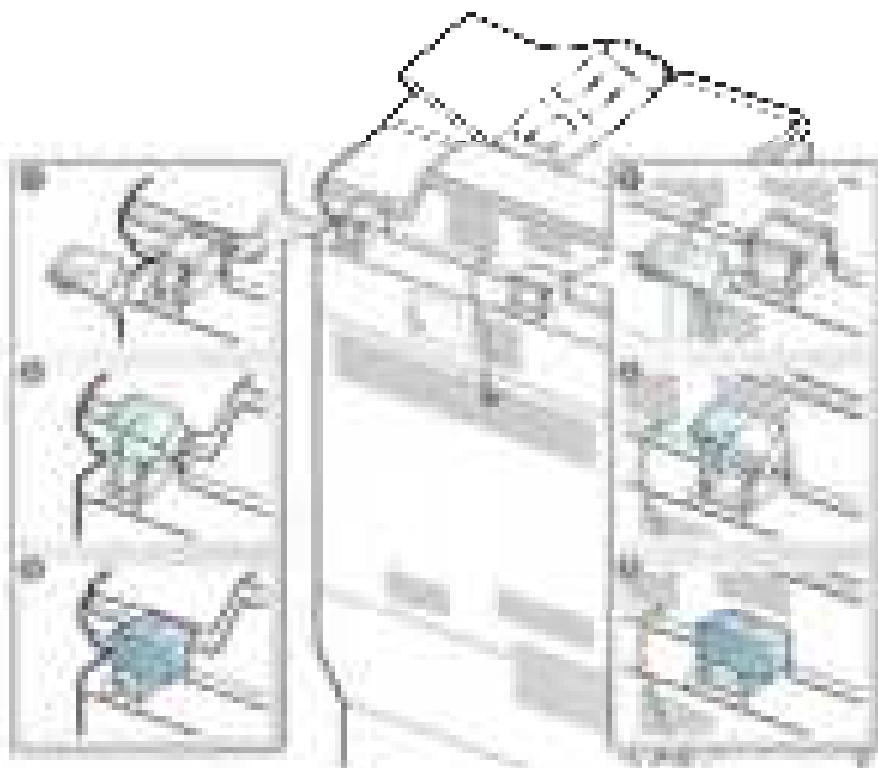
9. Plug the DADF interface cable into the connector. Tighten the screw to ground the ground wire.

SAMSUNG ELECTRONICS
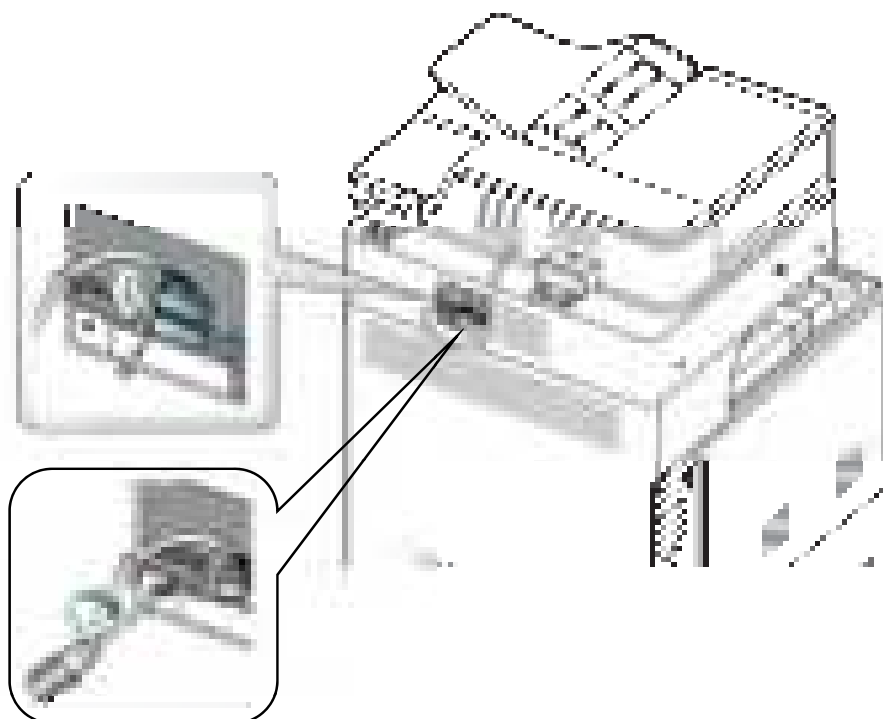
10. Put in the supporting rubber into the DADF cable cover. Assemble the DADF cable cover. And tighten the screw.
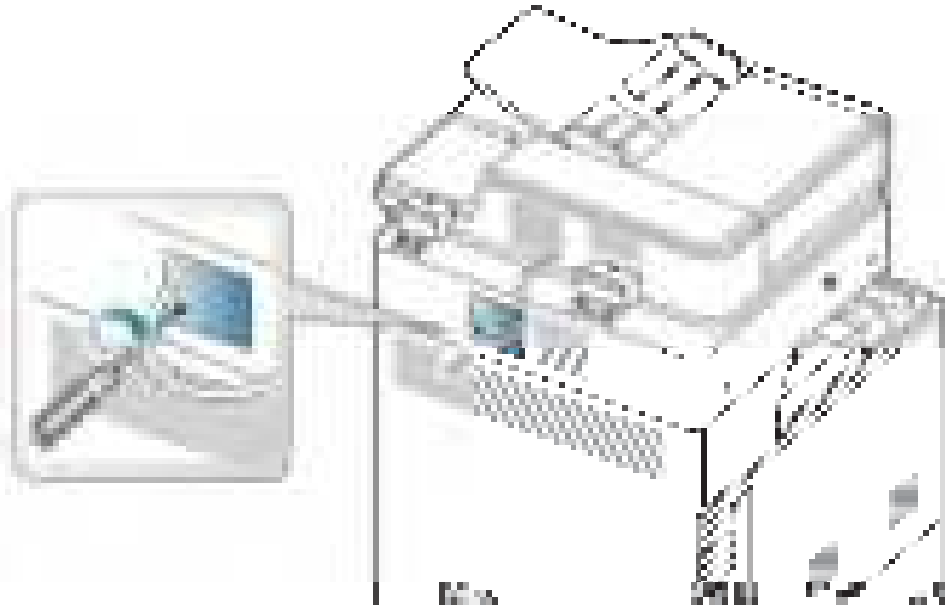
11. Open the DADF and place the white sheet. White side should be faced down on the scanner glass and aligned it with the registration guide at the top left corner of the glass.
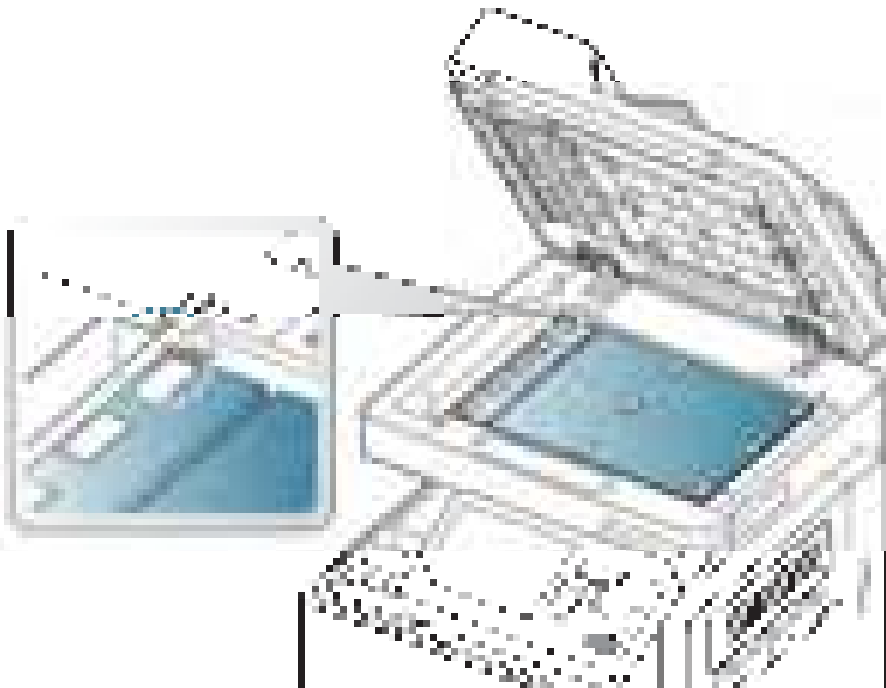
12. Carefully close the DADF. The white sheet will be attached to the DADF. If the white sheet is not attached properly when the DADF is opened, stick the white sheet on the DADF properly using the stickers.

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3.12.1 Width / Length sensor PBA

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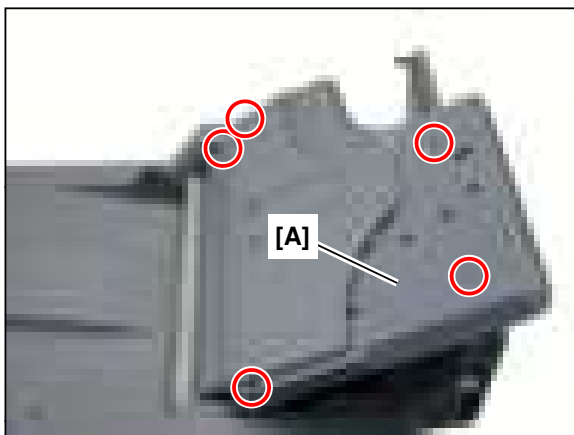
1. Open the DADF cover and stacker.
2. Remove 5 screws.
3. Take off the lower Stacker [A].
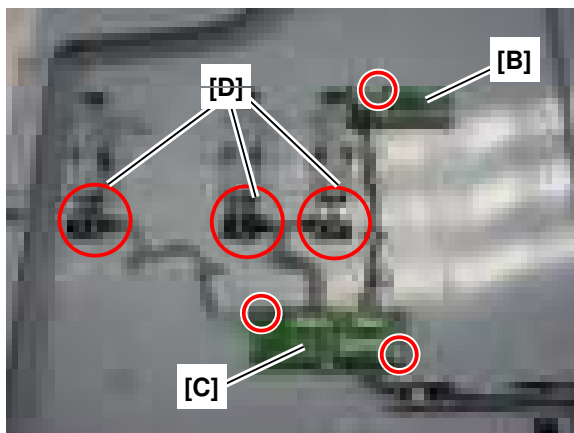
4. Release the width sensor PBA [B] after removing 1 screw.
5. .Remove the length sensor PBA [C] after removing 2 screws.
6. Release the photo sensor [D] after unplugging the connector.

3.12.2 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 3.12).

Hinge cover
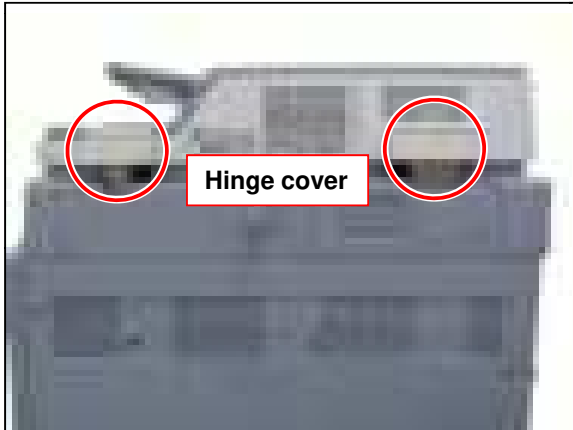
2. Remove 3 screws.
3. Push and release the hook from the bottom.
4. Take off the DADF right side cover [D].

[D]

Hooks

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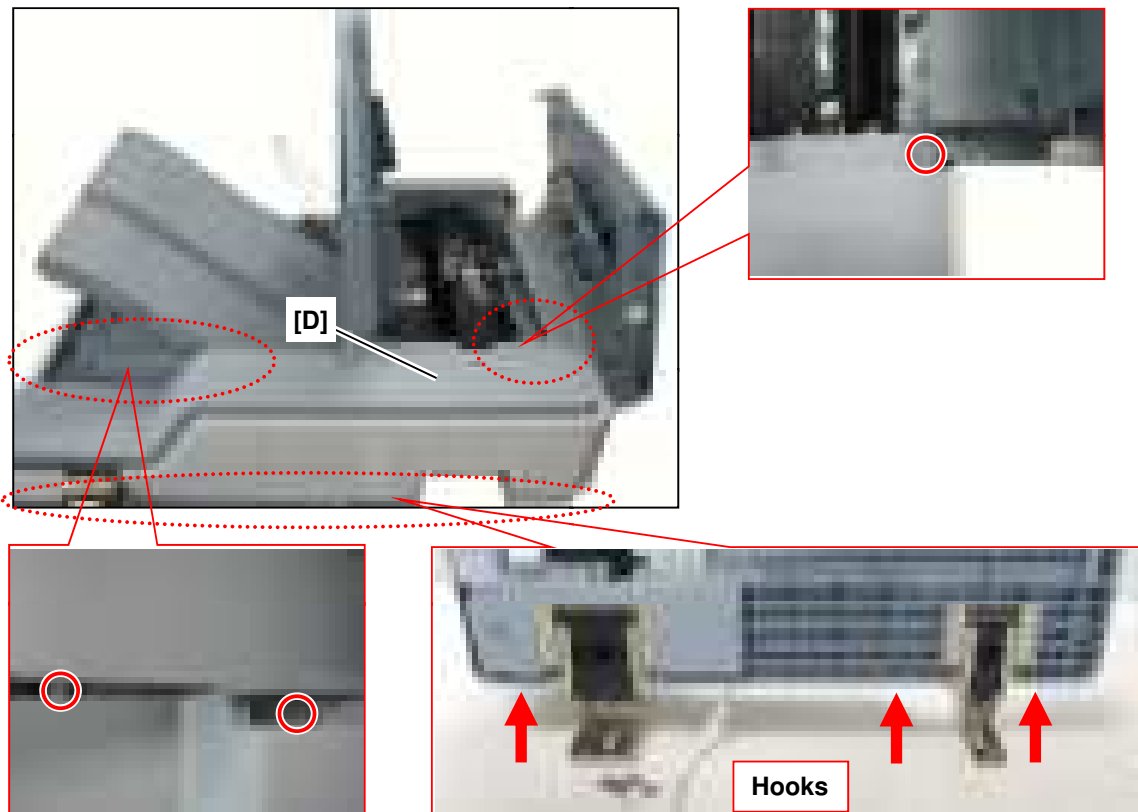
5. Remove the DADF Main PBA after removing 4 screws and all of the connectors.

CAUTION
Observe precautions
For handling
Electrostatic
Sensitive
Devices

3.12.3 DADF motors

Perform the following procedure to remove the 4 DADF Motors from the DADF Unit.
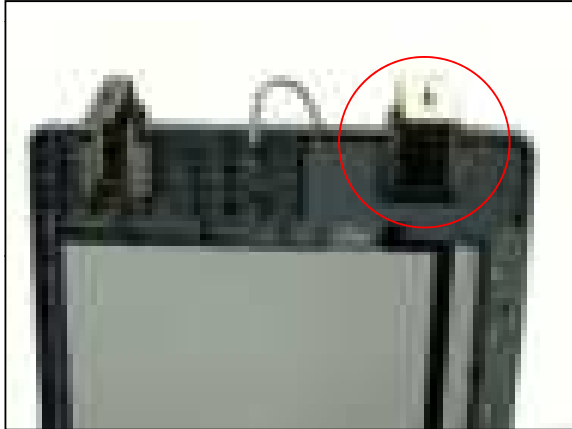
1. Remove the DADF right side cover [D]. (Refer to 3.12.2)

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
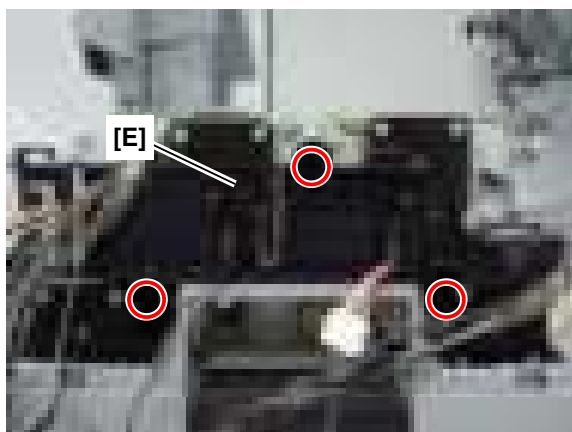
5. Take off the holder-harness [E] after removing 3 screws.

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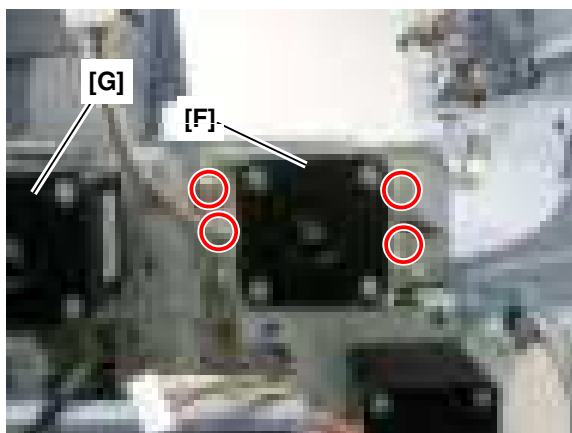
6. Remove the Top Right Motor [F] after removing 4 screws.
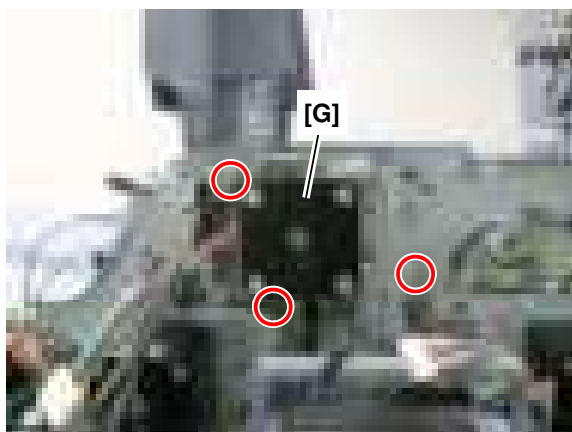
7. Remove the Top Left Motor [G] after removing 3 screws.

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

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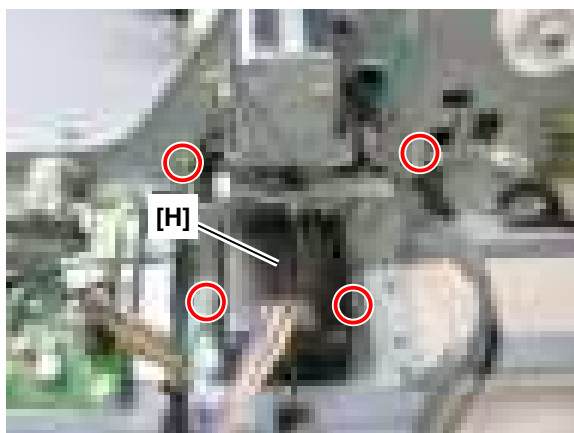
8. Remove the Bottom Left Motor [H] after removing 4 screws.
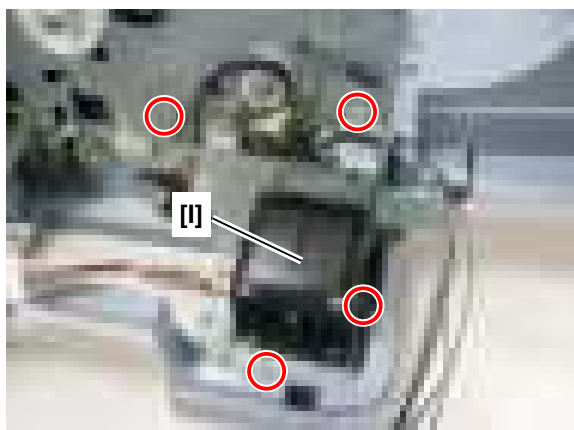
9. Remove the Bottom Right Motor [I] after removing 4 screws.

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3.12.4 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 3.12.2)
2. Remove the Linker.

5. Remove 6 screws.
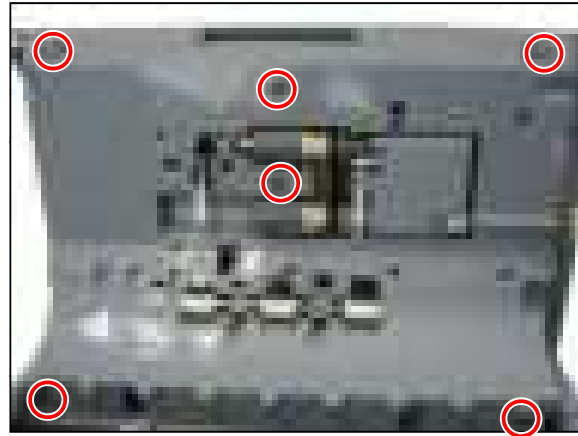
3. Remove 1 screw.
4. Release the DADF Cover Open.

6. If the sensor is defective, replace it.

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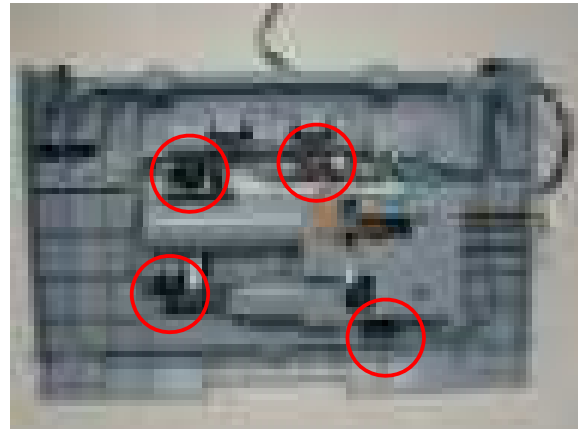
3.12.5 Pick-Up Guide Sensor PBA

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].
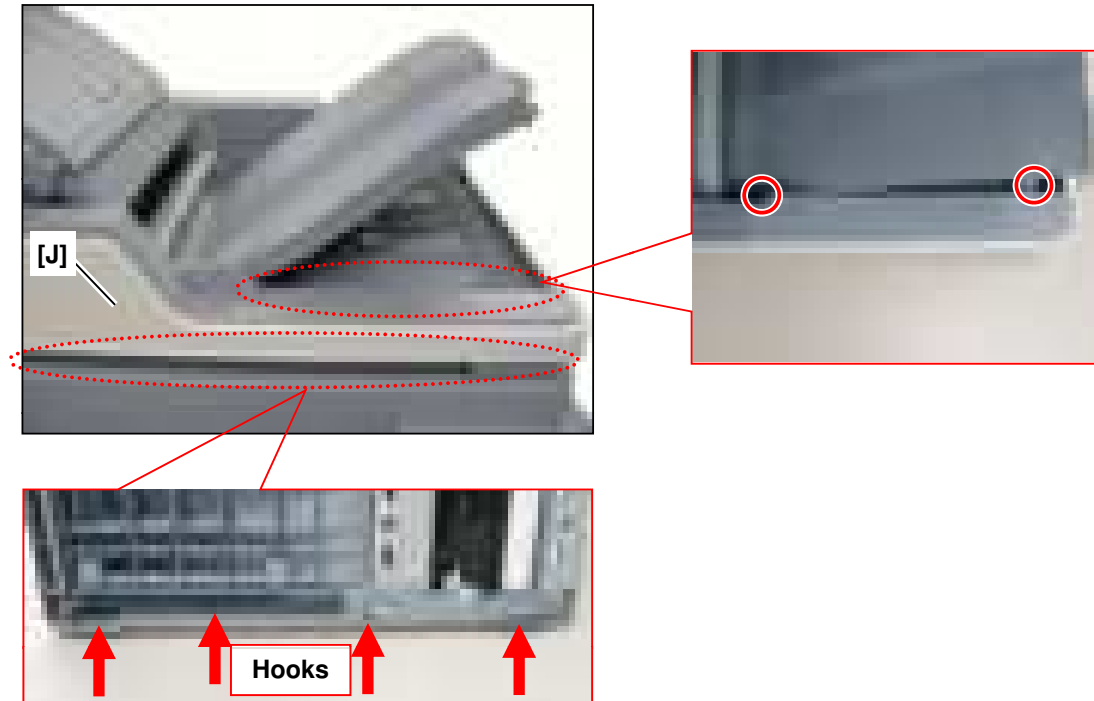
4. Release the holder-damper after removing 2 screws.

5. Turn over the Pick-up Guide.
6. Remove the Upper Pick-Up Guide [K] after removing 4 screws.
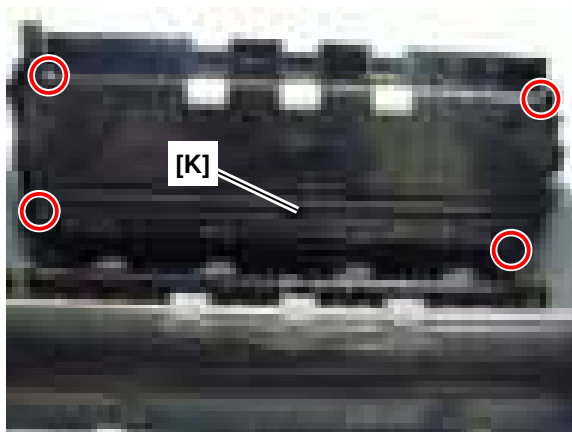
7. Unplug & remove the Pick-up Guide Sensor PBA[L] or photo sensor.

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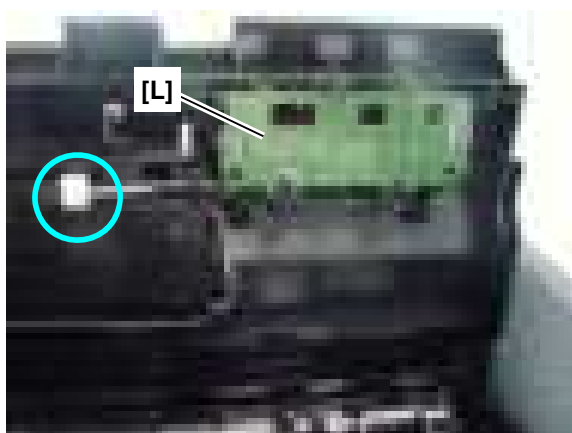
3.12.6 DADF Solenoid
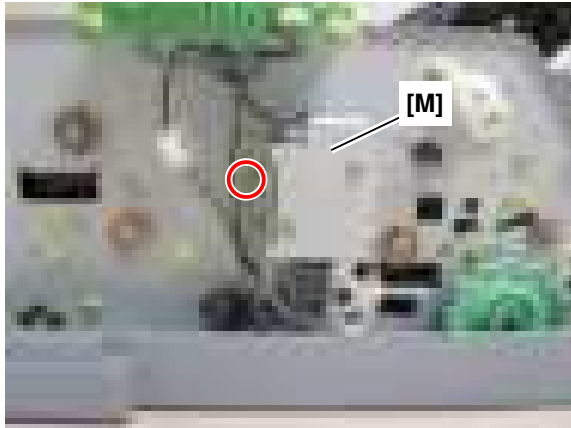
1. Remove the DADF left side cover [J].
   (Refer to 3.12.5)

2. Take off the Exit Turn Gate solenoid [M] after removing 1 screw.
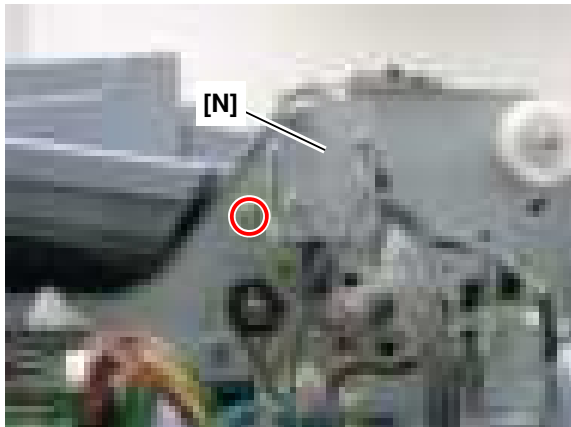
3. Remove all DADF motors. (Refer to 3.12.3)

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

3.13 Paper handling section

This section contains the procedures for disassembling the Paper Handling components of the printer.

3.13.1 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.
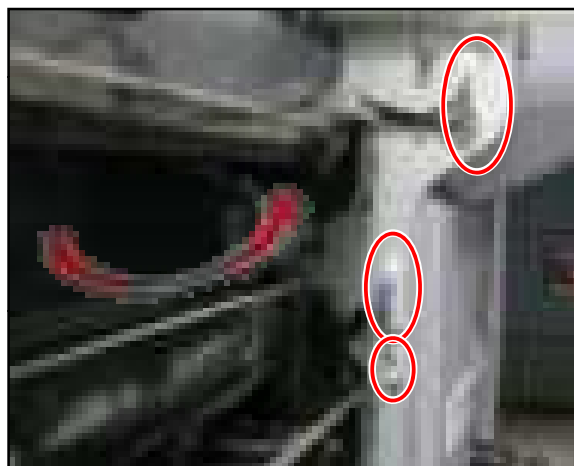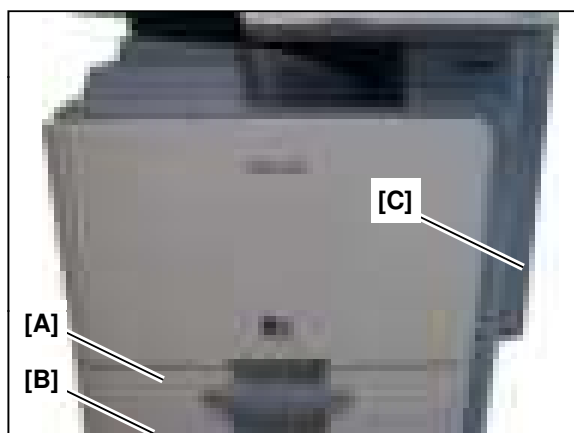
2. Remove 7 screws [D] and Harness Cover [E].
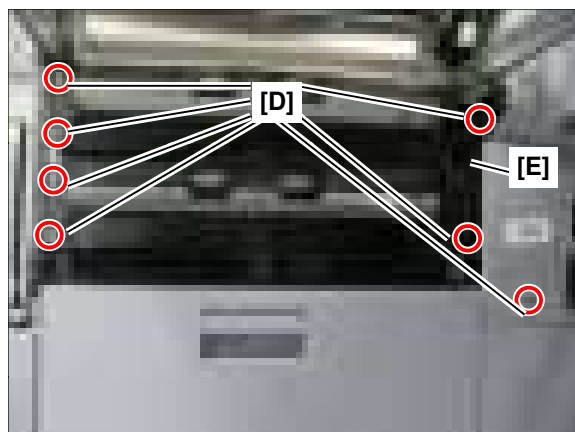
4. Change Upper-limit Sensor [A], Empty Sensor [B] and Take-away open sensor [C].
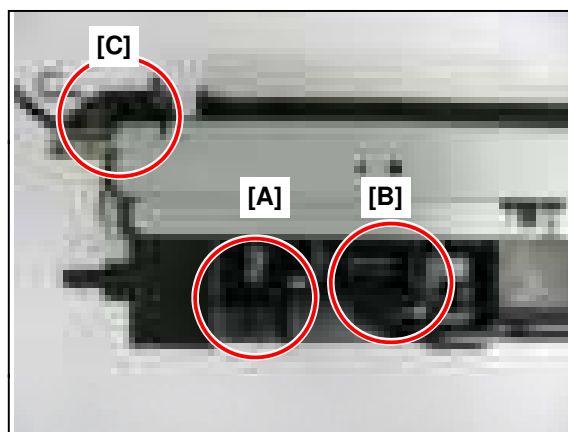
5. Remove the upper bracket [D] after removing 6 screws.
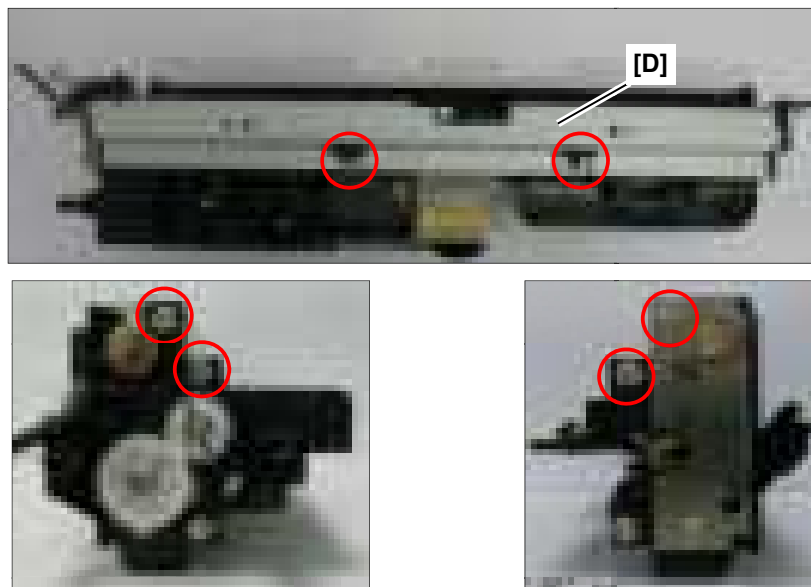
6. Remove 2 screws.
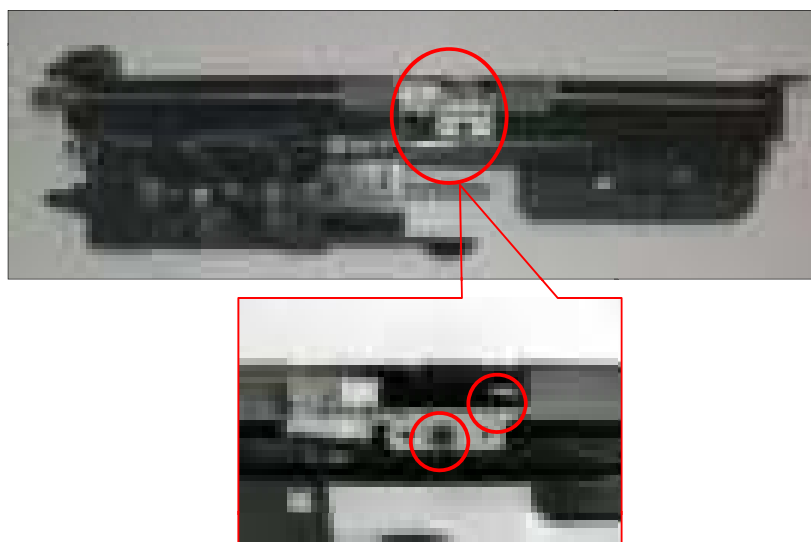
3.13.2 Regi Bracket Assembly and Sensors

Perform the following procedure to remove the Regi Bracket Assembly and Sensors from the printer.

1. Open the Side Cover[A].

2. Unplug connector after removing 2 screws and Harness cover [B].
3. Remove the Regi Bracket Assembly after removing 3 screws.

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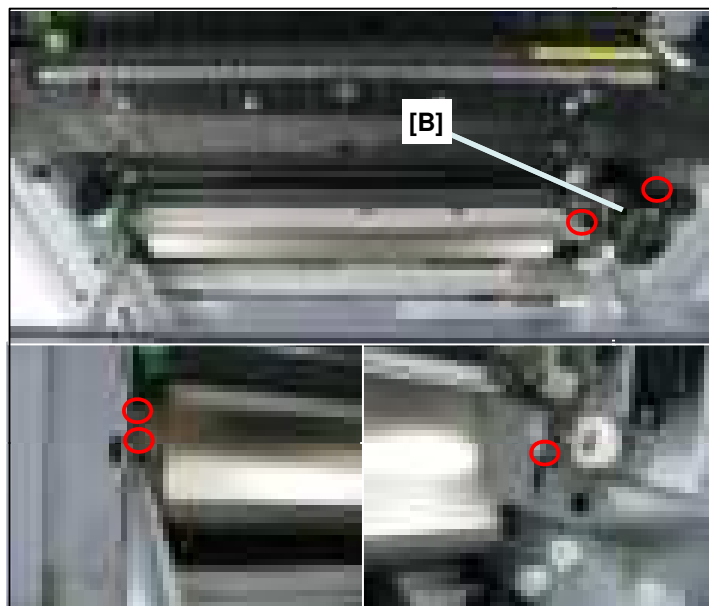
4. Remove 6 screws, and remove Bracket-Regi [C], and Bracket-Base Regi [D].
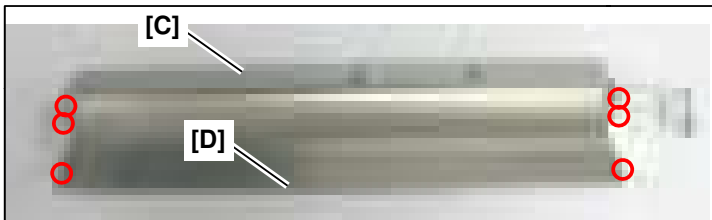
5. Regi Sensor[E] : Remove 1 screw.
6. OHP sensor[F] : Release hook from the bracket.
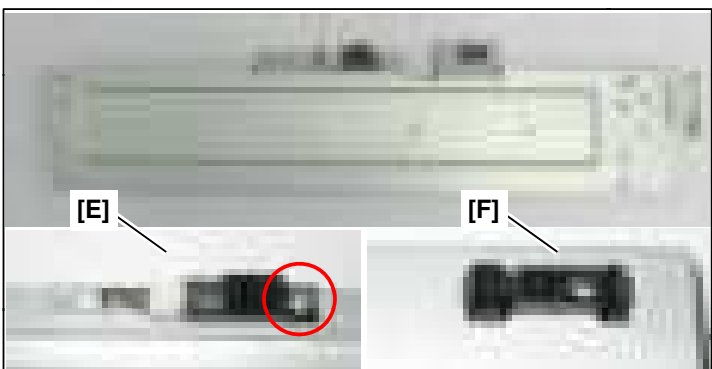
3.13.3 Cover-Side unit

Perform the following procedure to remove the Cover-Side Unit from the printer.

1. Open the Cover-Side.
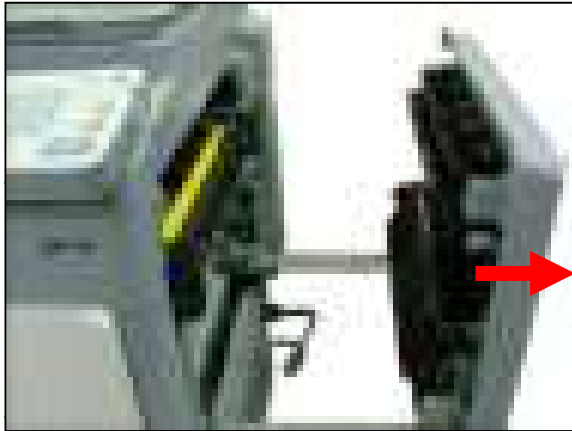
3. Lift up and release the Cover-Side unit.

2. Remove 4 screws from the both sides of the Cover-Side Unit

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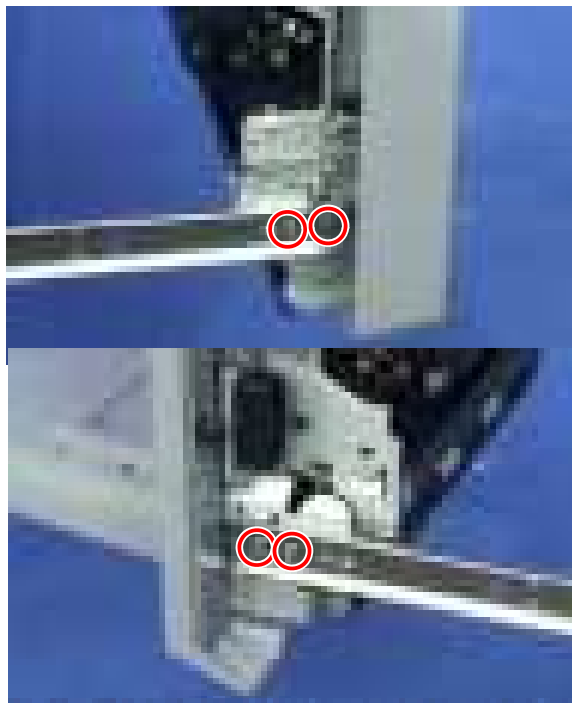
3.13.3.1 Duplex unit

Perform the following procedure to remove the Duplex Unit from the Cover-Side.

1. Remove 1 screw and the stopper [A].
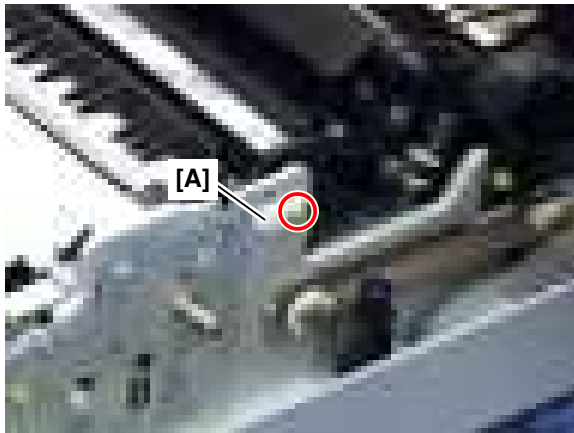
3. Remove 1 screw and unplug the connector.
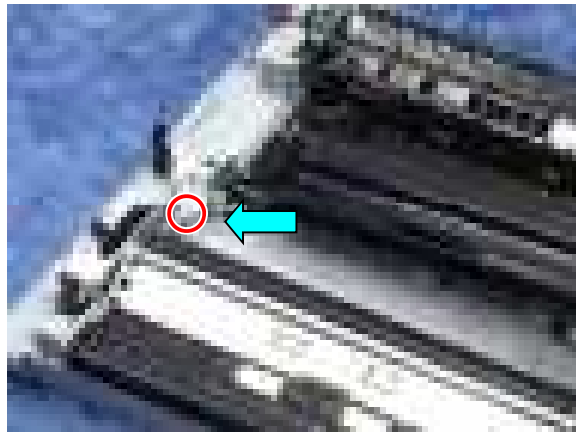
2. Lift up and pull the duplex unit in the direction of arrow.
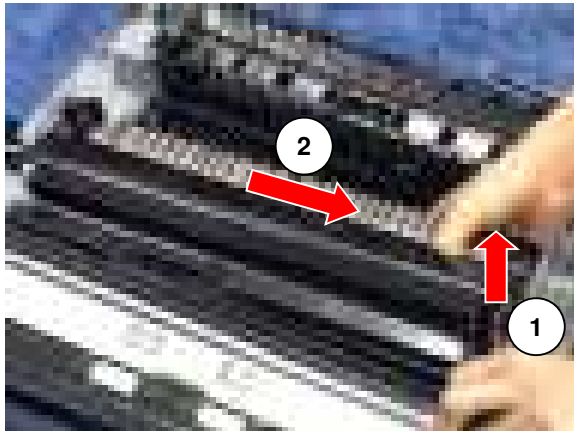
3.13.3.2 MP tray

Perform the following procedure to remove the MP tray from the Cover-Side.

1. Remove the harness cover [A] after removing 3 screws.
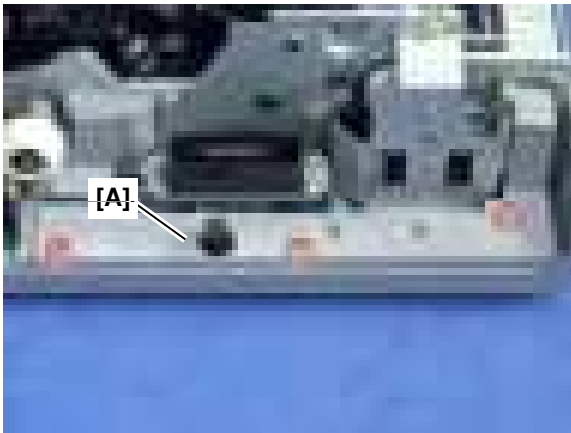
3. Remove 2 screws and unplug the connector.
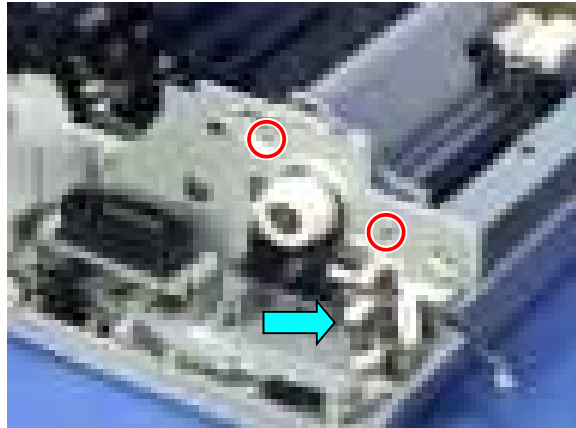
2. Remove the bracket [B] after removing 4 screws and unplugging the connectors.
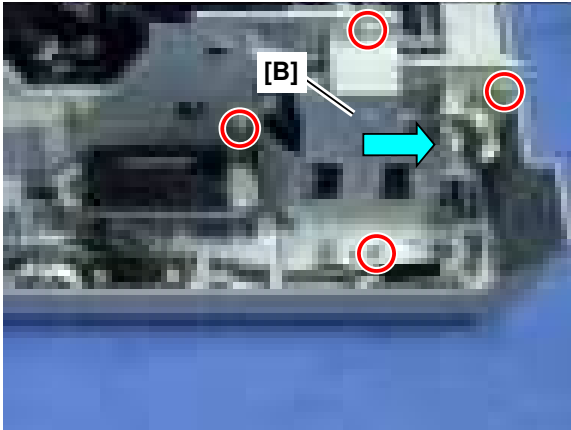
4. Remove 3 screws.
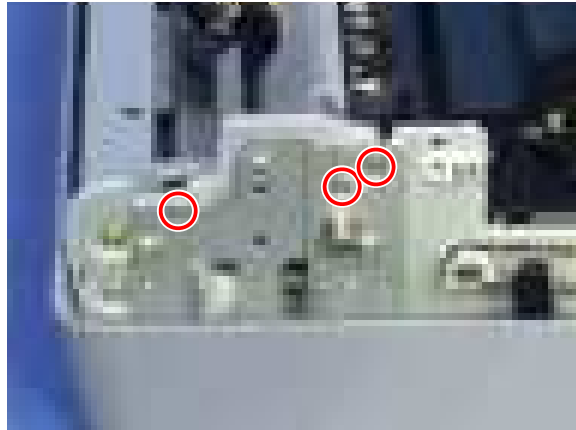
5. Open the MP tray.
6. Remove 1 screw and the front cover [C].
7. Pull the MP tray in the direction of arrow.
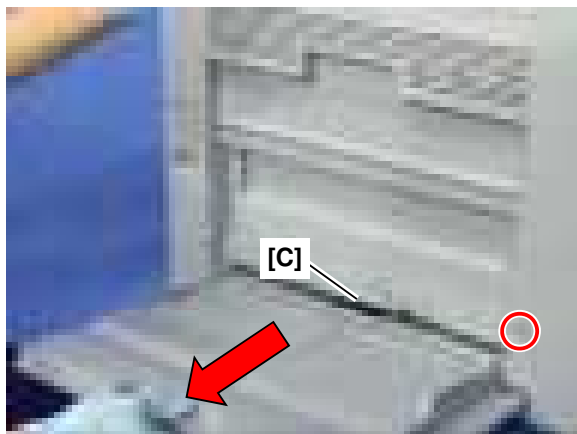
3.13.3.3 Face Up Exit Lower

Perform the following procedure to remove the Face Up Exit Lower from the Cover-Side.

1. Remove the side joint PBA cover [A] after removing 3 screws.
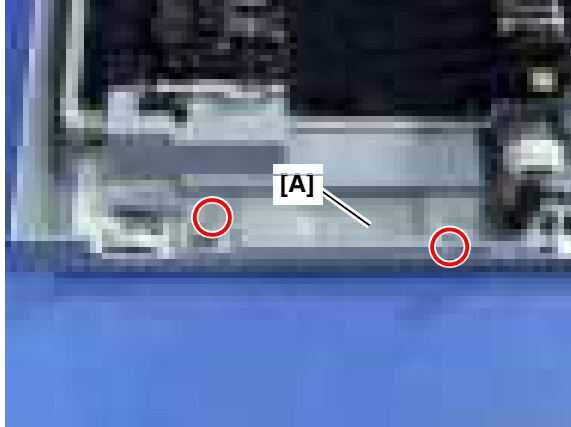
3. Remove 1 screw and the stopper [B].
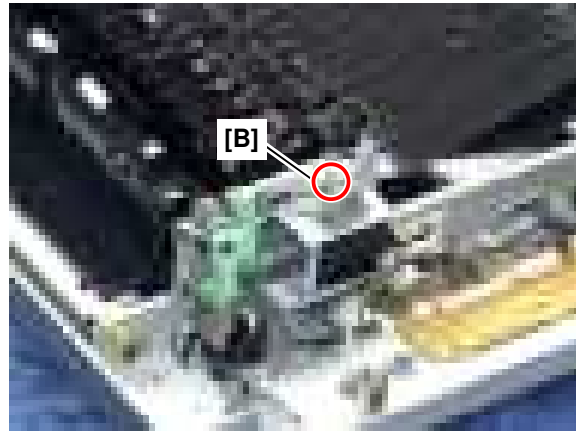
2. Remove 2 screws and the stopper [B].
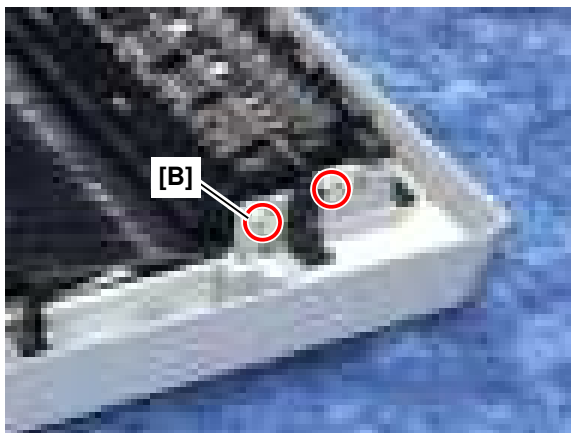
4. Lift up the Face Up Exit Lower and unplug the connector.

3.13.3.4 Solenoid

Perform the following procedure to remove the 2 Side Unit Solenoids from the printer.

1. Remove harness cover [A],[B] after removing 5 screws
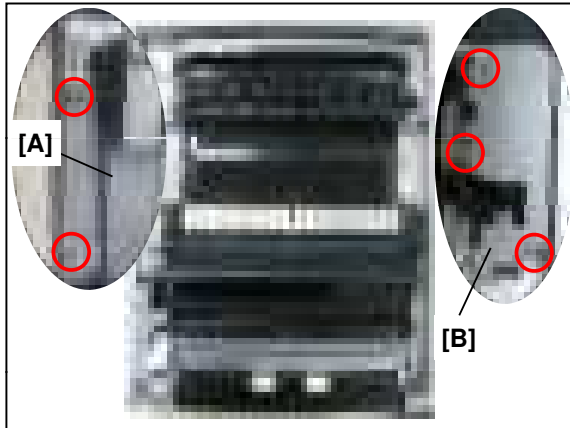
3. Unplug connector [C] and removing 3 screws.
4. Take off solenoid.
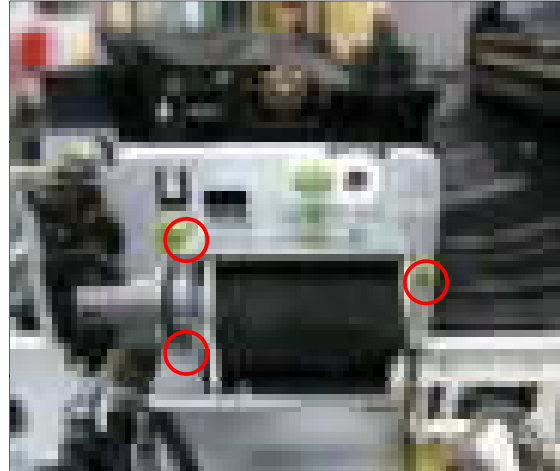
2. Unplug connector [C] after removing 2 screws and removing solenoid [E].

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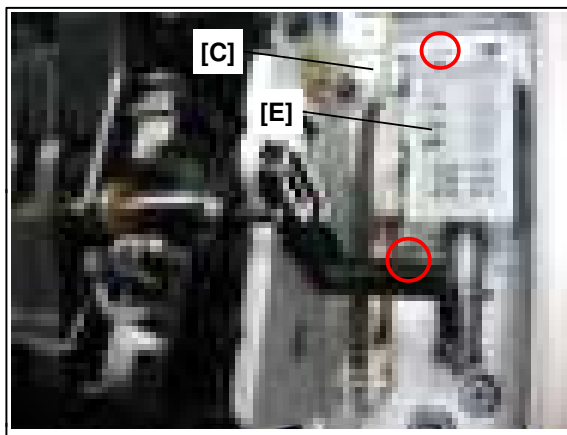
3.13.4 Exit unit

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.
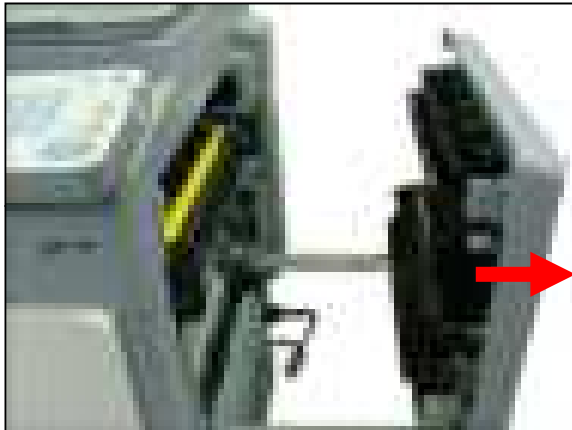
1. Open the Cover-Side.
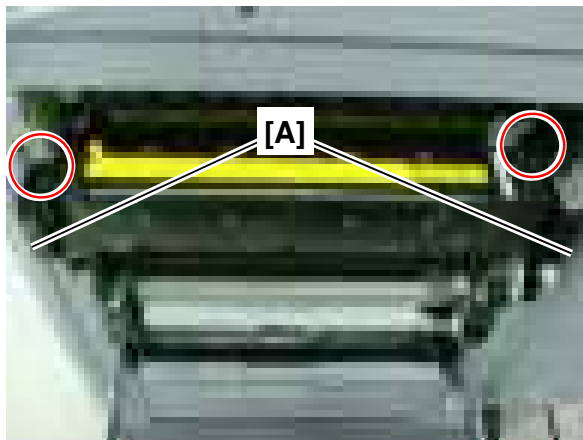
2. Remove 2 fuser locking screws.
3. Remove the Fuser unit by holding the handles [A].
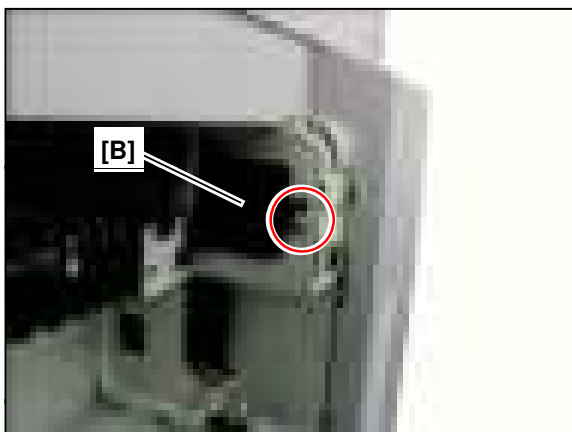
4. Remove 1 screw and harness cover [B].

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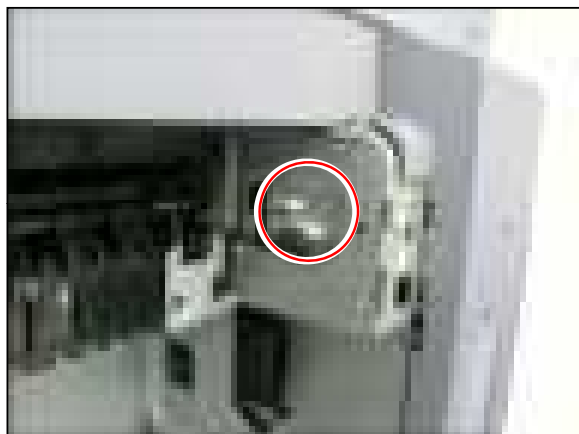
5. Disconnect two connectors .
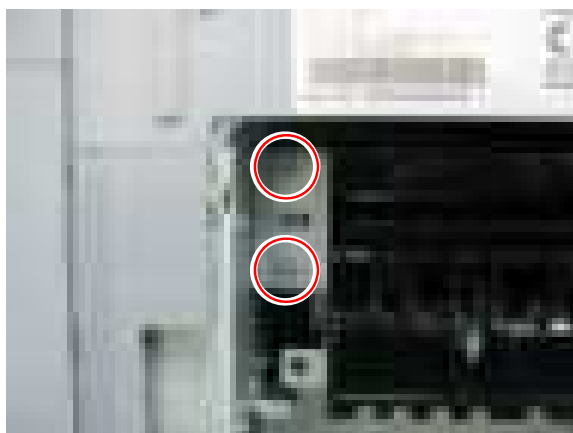
6. Remove 2 screws on left side of Exit Unit .

7. Remove 1 inner screw on left side of Exit Unit.

CAUTION

Be careful not to drop the screw inside the printer.

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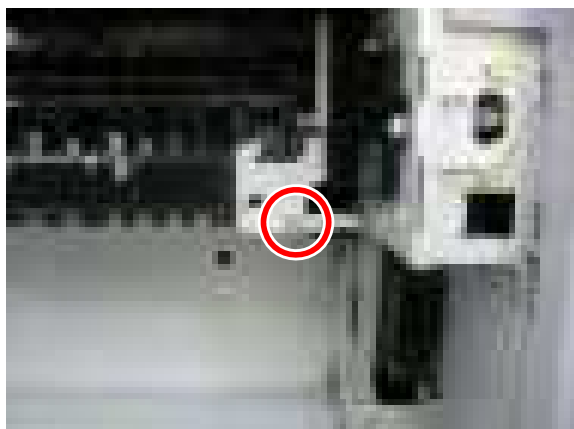
8. Remove 1 screw on right side of Exit Unit

9. Remove the Exit Unit while pushing to left.

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3.14 Laser Scanning Unit (LSU)

Perform the following procedure to remove the LSU from the printer.
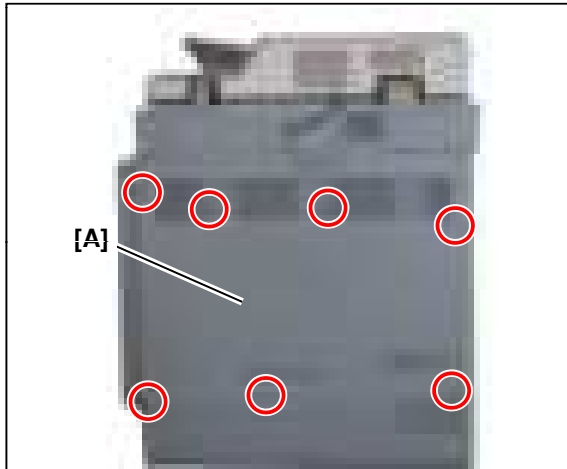
1. Remove the rear upper cover [A] after removing 7 screws.
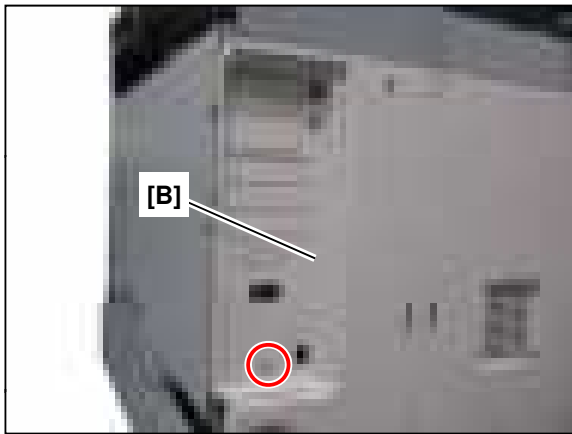
2. Remove the Plate-Shield [B] after removing 1 screw.
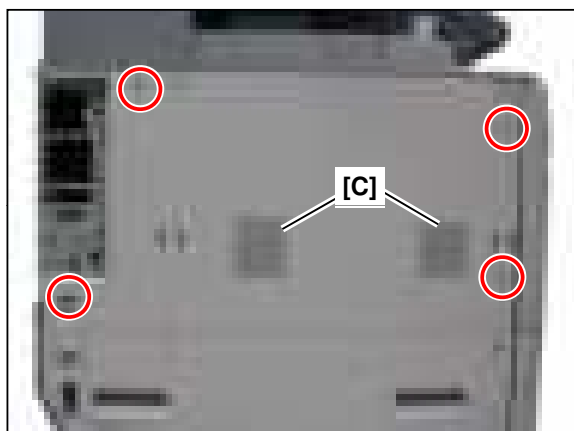
3. Remove 4 screws securing the Left Side Cover.

4. Remove 2 filter covers [C].
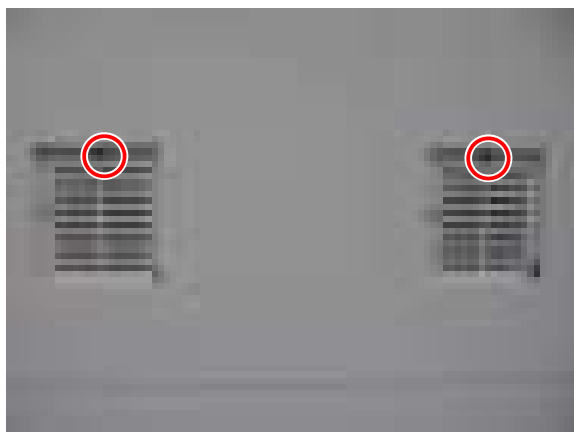
5. Remove 2 screws.
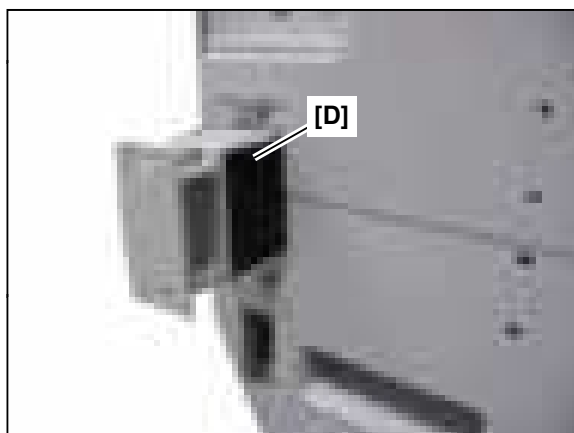
6. Remove the Ozone Filter Holder [D].

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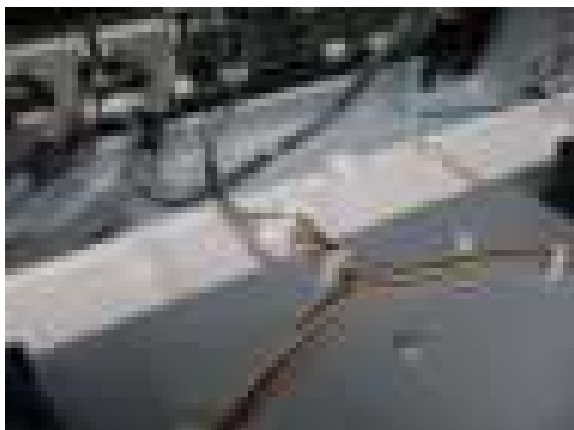
7. Open the left cover and disconnect 2 internal fan connector.

8. Remove 4 screws and remove the left lower cover.

9. Remove 2 screws linked ground.

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10. Disconnect 3 connectors of LSU joint board.

11. Disconnect a connector of LSU joint board.
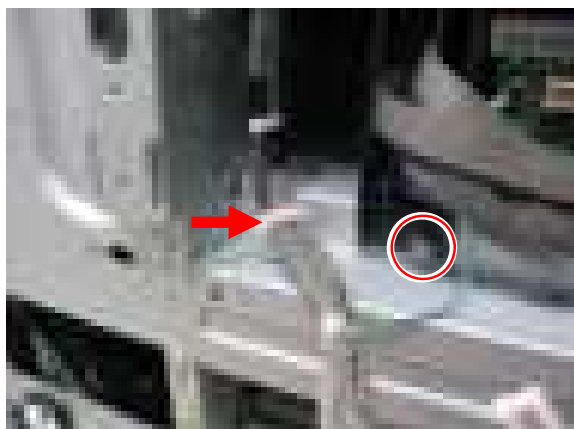
12. Open 2 cable clamps and remove 2 screws.

13. Remove the LSU.

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3.15 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.

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4. Connect the new Heating Cable Assembly connector [A] to printer connector [B].

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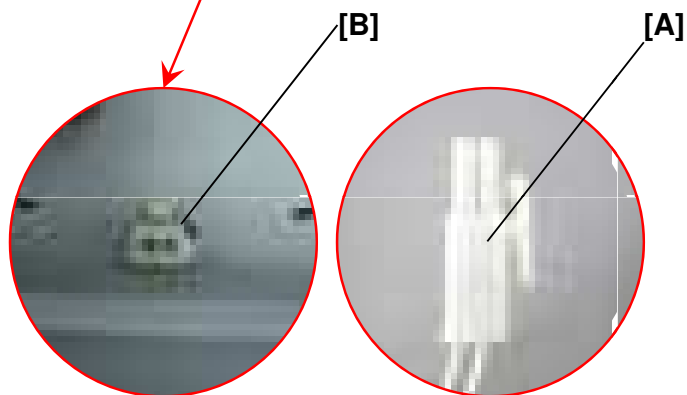
5. Insert 2 new heating cable assemblies in the frame slits.

6. Install 1 screw using a short screwdriver.

NOTE

You will need a short screwdriver.

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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	
			ITB	
			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		
		VPU 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		
		PCL5C Version		
		PCLXL Version		

Menu			Page
Information	Software Version	PostScript / PDF / XPS Version	P.4-8
		Scan Driver Version	
		Fax Driver Version	
		VPU Driver Version	
		Boot Rom Version	
		Boot Rom Bootloader 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
		Fax Protocol Dump List	
		Auto Color Registration Result	
		TRC Control History	
		OPC ACR Report	
		Usage Counter Report	

Table 2-1

4.2.2. Maintenance Counts Tab

Menu				Page
Maintenance Counts	Fault Counts			P.4-10
	Jam Count	Printer	Pick-up Jam	P.4-11
			Feed Jam	
			Duplex Jam	
			Exit Jam	
			Finisher Jam	
			Booklet Jam	
		Scanner	Feed Jam	
			Regi Jam	
			Scan Jam	
			Exit Jam	
			Duplex Regi Jam	
			Duplex Scan Jam	
			Duplex Exit Jam	
	Part Replacement Count	Toner Cartridge		P.4-13
		Imaging Cartridge		
		ITB		
		Fuser		
		Roller		
		Filter		
		DADF Roller		
		Scanner		

Table 2-2

4.2.3. Diagnostics Tab

Menu			Page
Diagnostics	Engine Diagnostics	Engine NVM Initialization	
		Engine NVM Read/Write	P. 4-14
		Engine Test Routines	P. 4-17
	Fax Diagnostics	Fax NVM Read/Write	P. 4-24
		Fax Test Routines	P. 4-25
	Scanner Diagnostics	Shading Test	P. 4-27
		Scanner/DADF NVM Read/Write	P. 4-27
		Scanner/DADF Test Routines	P. 4-28
	Adjustment	Print Adjustment	P. 4-30
		Copy Adjustment	P.4-32
		Scan Area Adjustment	P. 4-33
		DADF Adjustment	P.4-35
		Finisher Adjustment	P.4-37
	ACS		P. 4-40
	Color Management	Auto Color Registration	P. 4-41
		Full Color Registration	P. 4-42
		Auto Color Tone Adjustment	P. 4-43
	Print Test Patterns	Skew Pattern	

Table 2-3

4.2.4. Service Functions

Menu			Page
Service Functions	Main Memory Clear		P. 4-46
	Hard Disk Maintenance	Device Configuration Data Clear	P. 4-46
		Temporary & Spool Data Clear	
		User Saved Data & Log Clear	
		All Saved Data Clear	
		Hard Disk Check	
	Debug Log		P. 4-46
	Port		P. 4-47
	Capture Log		P. 4-47
	Toner Save		P.4-47
	Count Setting of Large Count		P.4-47
	TR Control Mode		P.4-48

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	Yellow	20K / 15K	10%	5 ~ 30%
	Magenta	20K / 15K	10%	5 ~ 30%
	Cyan	20K / 15K	10%	5 ~ 30%
	Black	25K	10%	5 ~ 30%
Imaging Unit	Yellow	75K	10%	5 ~ 30%
	Magenta	75K	10%	5 ~ 30%
	Cyan	75K	10%	5 ~ 30%
	Black	75K	10%	5 ~ 30%

Unit	Item	Max. Life	Default Warning Value	Threshold
Waste Toner Container	Waste Toner Container	75K	Near Full	NA
Finisher	Finisher Stapler Cartridge	NA	Near Empty	NA
	Booklet Stapler Cartridge	NA	Near Empty	NA
	Punch Waste Hopper	NA	Full	NA
ITB	ITB	300K (PM Count)	5%	2% ~ 10%
	ITB Cleaner	150K (PM Count)	5%	3% ~ 10%
	T2 Roller	150K (PM Count)	5%	3% ~ 10%
Fuser	Fuser	150K (PM Count)	10%	5% ~ 20%
Roller	P/up Roller MP	150K (PM Count)	10%	5% ~ 20%
	P/up Roller Kit-tray1	225K (PM Count)	10%	5% ~ 20%
	P/up Roller Kit-tray2	225K (PM Count)	10%	5% ~ 20%
	P/up Roller Kit-tray3	225K (PM Count)	10%	5% ~ 20%
	P/up Roller Kit-tray4	225K (PM Count)	10%	5% ~ 20%
	P/up Roller HCF	225K (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	225K (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
• VPU Firmware
• ADF/DADF Firmware
• DCF
• HCF
• Finisher Firmware
• Booklet Firmware

• Hole Puncher Firmware
• Print CMS
• Copy CMS
• Scan CMS
• IEM
• Power Firmware
• PCL 5C
• PCL XL
• PS3 / PDF / XPS
• Scan Driver
• Fax Driver
• VPU 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
• Fax Protocol Dump List
• Auto Color Registration Result
• TRC Control History
• OPC ACR Report
• Usage Counter Report

4.3.6.1. Auto Color Registration Result

• Information > Print Reports > Auto Color Registration Result

This report lists last 10 Auto Color Registration results.
If there is color registration problem , and execution of Auto Color Registration does not solve the problem, service engineers can print out this report and check "Succeeded or Failed for ACR" field.

Result	Meaning
0	Success
100	Sensor LED calibration failure
200	Pattern storage failure in register
301	Out of normal range in rear pattern width
302	Out of normal range in front pattern width
304	Out of normal range in center pattern width
308	Number of sensed pattern is lager than normal number (check ITB scratch)
316	Number of sensed pattern is smaller than normal number
e.g.) 323	Multiple errors. For example 301, 302, 304, 316 error occur at the same time. In that case, the sum of last two digit appears as result
480	Corrected value exceeds the limit of correction

Table 3-2

4.3.6.2. TRC Control History

• Information > Print Reports > TRC Control History

This report shows history of execution of TRC control. TRC control preserves color consistency against changes in supplies resulting from long-time use and environmental change. The purpose of the history report is to check if TRC control works normally.

• If TRC control performs normally, "Pass" count must be non-zero value and "Fail" count must be zero.
• If "Fail" count is not zero, there is a cell that contains non-zero value at "Er(Y,M,C,K)" column and/or "Loc(L,C,R)" column .
• If a value of certain color at "Er" column is non-zero, the image density sensor needs to be checked.
• If "LED" value is lager than 1600, it indicates that shutter that cleans the image density sensor is not working normally, and it has to be checked as well.

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
• C2 Toner Cartridge Unit (Drum + Toner)
• C3 Imaging Unit
• C4 Developer Unit
• C5 PTB
• C6 ITB
• C7 Fusing unit
• H1 Input (Trays) System
• H2 Output (Bins) System
• H3 Duplex Feeder System
• H4 Finisher System
• H5 Finisher's Booklet System
• H6 Finisher's Mailbox
• 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

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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	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
	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
	Jam Duplex 1	M2-2113
	Jam Duplex 2	M2-2215
	Jam Duplex Registration	M2-2313
	Jam Duplex Return	M2-2413
	Jam Exit In (Face Down)	M3-1213
	Jam Exit Out (Face Down)	M3-1214
	Jam Exit In (Face Up)	M3-1313
	Jam Exit Out (Face Up)	M3-1314
	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
	Finisher Jam 10	H2-3002
	Finisher Jam 11	H2-3005
	Finisher Jam 12	H2-3007
	Finisher Jam 13	H2-3194

The Jam Location column is grouped as follows: Pick-up Jam (Jam Bypass through Jam 0 Tray 3 (HCF)), Feed Jam (Jam Feed 1 through Jam Fuser Out), Duplex Jam (Jam Duplex 1 through Jam Duplex Return), Exit Jam (Jam Exit In (Face Down) through Jam Exit Out (Face Up)), Finisher Jam (Finisher Jam 1 through Finisher Jam 9), Booklet Jam (Finisher Jam 10 through Finisher Jam 13).

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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 (Yellow)	Auto Sensing
	Toner (Magenta)	Auto Sensing
	Toner (Cyan)	Auto Sensing
	Toner (Black)	Auto Sensing
Imaging Cartridge	Imaging Unit (Yellow)	Auto Sensing
	Imaging Unit (Magenta)	Auto Sensing
	Imaging Unit (Cyan)	Auto Sensing
	Imaging Unit (Black)	Auto Sensing
ITB	ITB	Auto Sensing
	ITB Cleaner	Auto Sensing
	T2 Roller	Count Clear
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	N/A

Code	NVM Description	Meaning	Default	Max/Min
105-0200	Charger Clean Reference Cycle for Enviroment0	Reference Cycle to clean charger in Enviroment 0 • Environment 0~1 : LL Condition (Low Temp (~18℃/64℉), 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℉), Low Humidity (~20%))	120000	10,000 /300,000
105-0220	Charger Clean Reference Cycle for Enviroment2	Reference Cycle to clean charger in Enviroment 2 • Environment 2~3 : NL Condition (Normal Temp (~28℃/82℉), Low Humidity(~31%))	120000	10,000/ 300,000
105-0230	Charger Clean Reference Cycle for Enviroment3	Reference Cycle to clean charger in Enviroment 3 • Environment 2~3 : NL Condition (Normal Temp (~28℃/82℉), Low Humidity(~31%))	120000	10,000 /300,000
105-0240	Charger Clean Reference Cycle for Enviroment4	Reference Cycle to clean charger in Enviroment 4 • Env4~6 : NN Condition (Normal Temp (~28℃/82℉), 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
109-0180	Labels Temperature offset	Media type offset for fuser roll temperature.	0	2/-2

Code	NVM Description	Meaning		Default	Max/Min
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
112-0150	Manual Color Regi X-offset Yellow	Distant from hsync to lsync (multi-hsync) for yellow		100	200/0
112-0160	Manual Color Regi X-offset Magenta	Distant from hsync to lsync (multi-hsync) for Magenta		100	200/0
112-0170	Manual Color Regi X-offset Cyan	Distant from hsync to lsync (multi-hsync) for Cyan		100	200/0
112-0180	Manual Color Regi X-offset Black	Distant from hsync to lsync (multi-hsync) for Black		100	200/0
112-0190	Manual Color Regi Y-offset Yellow	Distant from psync to Image area for yellow		100	200/0
112-0200	Manual Color Regi Y-offset Magenta	Distant from psync to Image area for Magenta		100	200/0
112-0210	Manual Color Regi Y-offset Cyan	Distant from psync to Image area for Cyan		100	200/0
112-0220	Manual Color Regi Y-offset Black	Distant from psync to Image area for Black		100	200/0
112-0270	Manual Color Regi Left Width Yellow	Image Area Left Width for Yellow		610	1610/0
112-0280	Manual Color Regi Right Width Yellow	Image Area Right Width for Yellow		610	1610/0
112-0290	Manual Color Regi Left Width Magenta	Image Area Left Width for Magenta		610	1610/0
112-0300	Manual Color Regi Right Width Magenta	Image Area Right Width for Magenta		610	1610/0
112-0310	Manual Color Regi Left Width Cyan	Image Area Left Width for Cyan		610	1610/0
112-0320	Manual Color Regi Right Width Cyan	Image Area Right Width for Cyan		610	1610/0
112-0330	Manual Color Regi Left Width Black	Image Area Left Width for Black		610	1610/0
112-0340	Manual Color Regi Right Width Black	Image Area Right Width for Black		610	1610/0
113-0020	Page Count For Quick TRC	Page count for Quick TRC		200	65536/0
113-0030	Page Count For Full TRC	Page count for Full TRC		1000	65536/0
113-0040	Environment For TRC	Environment offset for Normal TRC		3	8/0

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	N/A

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
100-0130	Bypass motor	Bypass motor(MP motor) full speed running/stop
100-0140	Regi motor	Registration motor full speed running/stop
100-0190	Duplex Return motor forward	Duplex exit motor forward running/stop
100-0200	Duplex Return motor backward	Duplex exit motor backward running/stop
100-0230	T1 engage motor	T1 engage motor on/off
100-0240	T2 engage motor	T2 engage motor on/off
100-0270	Yellow OPC/DEV motor	Yellow OPC/DEV motor is on/off
100-0280	Magenta OPC/DEV motor	Magenta OPC/DEV motor is on/off
100-0290	Cyan OPC/DEV motor	Cyan OPC/DEV motor is on/off
100-0300	Black OPC/DEV motor	Black OPC/DEV motor is on/off
100-0380	Toner supply motor yellow	Toner dispense(supply) motor on/off * Toner must not be installed.
100-0390	Toner supply motor magenta	Toner dispense(supply) motor on/off * Toner must not be installed.
100-0400	Toner supply motor cyan	Toner dispense(supply) motor on/off * Toner must not be installed.
100-0410	Toner supply motor black	Toner dispense(supply) motor on/off * Toner must not be installed.

Code	Displayed Name	Meaning
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
100-0490	LSU motor1 forward	LSU yellow, magenta motor forward on/off
100-0500	LSU motor2 forward	LSU cyan, black motor forward on/off
100-0530	LSU shutter motor forward	The LSU shutter motor forward on/off
100-5000	T1 engage sensor1	Detect if the T1 engage sensor1 is on or off.
100-5010	T1 engage sensor2	Detect if the T1 engage sensor2 is on or off.
100-5020	T2 engage sensor	Detect if the T2 engage sensor1 is on or off.
100-5040	Yellow OPC/DEV motor ready	Detect if yellow OPC/DEV motor runs at normal speed
100-5050	Magenta OPC/DEV motor ready	Detect if magenta OPC/DEV motor runs at normal Speed
100-5060	Cyan OPC/DEV motor ready	Detect if cyan OPC/DEV motor runs at normal speed
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
100-5170	ITB motor ready	Detect if ITB motor runs at normal speed
100-5200	LSU motor1 run ready	Detects if LSU motor1 runs at normal speed.
100-5210	LSU motor2 run ready	Detects if LSU motor2 runs at normal speed.
100-5220	LSU Shutter Sensor	Detect if the LSU Shutter motor is on or off
101-0010	Tray1 pick up clutch	Engages drive to pick up a paper from tray1.
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).
101-0160	Duplex clutch	Duplex clutch
101-0210	Yellow Dev clutch	Engages drive to color, motor dev
101-0220	Magenta Dev clutch	Engages drive to color, motor dev
101-0230	Cyan Dev clutch	Engages drive to color, motor dev
101-0240	Black Dev clutch	Engages drive to color, motor dev
101-5010	Duplex gate solenoid	Duplex gate solenoid on/off
101-5020	Duplex solenoid	Duplex solenoid on/off
101-5040	Face up gate solenoid	Face up 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)

Code	Displayed Name		Meaning
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 fuserout .
102-0640	OHP sensor		Detect whether a paper is OHP
102-0700	Out-Bin2 full sensor		Detect when a paper is at duplex ready sensor.
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).
105-5000	Yellow charger cleaning sensor		Detect cleaning sensor
105-5010	Magenta charger cleaning sensor		Detect cleaning sensor
105-5020	Cyan charger cleaning sensor		Detect cleaning sensor
105-5030	Black charger cleaning sensor		Detect cleaning sensor
107-0150	Detach bias		Detach(Saw) bias voltage on at normal drive level
107-0200	Yellow Color eraser		Yellow color eraser lamp on/off
107-0210	Margenta Color eraser		Magenta color eraser lamp on/off
107-0220	Cyan Color eraser		Cyan color eraser lamp on/off
107-0230	Black Color eraser		Black color eraser lamp on/off
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.
110-0010	LSU LD1 power		LSU LD1 power on/off (yellow)
110-0020	LSU LD2 power		LSU LD2 power on/off (magenta)

Code	Displayed Name	Meaning
110-0030	LSU LD3 power	LSU LD3 power on/off (cyan)
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.
111-5000	Yellow toner sensor	TC sensor in developer tank.
111-5010	Magenta toner sensor	TC sensor in developer tank.
111-5020	Cyan toner sensor	TC sensor in developer tank.
111-5030	Black toner sensor	TC sensor in developer tank.
111-6000	Waste toner Led sensor	Detect waste toner Led is on/off
113-0010	ID1 sensor	Start ID sensor1 sensing on/off (TRC/ACR for Cosmos)
113-0020	ID2 sensor	Start ID sensor2 sensing on/off (TRC/ACR for Cosmos)
113-0030	ID3 sensor	Start ID sensor3 sensing on/off (TRC/ACR for Cosmos)
113-5000	Read ID1 sensor	Display ID sensor1 reading value (TRC/ACR for Cosmos)
113-5010	Read ID2 sensor	Display ID sensor2 reading value (TRC/ACR for Cosmos)
113-5020	Read ID3 sensor	Display ID sensor3 reading value (TRC/ACR for Cosmos)
116-0010	Finisher hardware version	Detect paper at bride entrance
116-0020	Entrance motor	Run/Stop entrance motor
116-0030	EXIT motor	Run/Stop entrance motor
116-0040	Bridge Motor	Run/Stop bridge motor
116-0050	Paddle motor	Run/Stop paddle motor
116-0060	Tamp front motor	Run/Stop tamp front motor
116-0070	Tamp rear motor	Run/Stop tamp rear motor
116-0080	Staple clinch motor	Run/Stop staple clinch motor
116-0090	Staple main position motor	Run/Stop staple main position motor
116-0100	Staple sub position motor	Run/Stop staple sub position motor
116-0110	Eject motor	Run/Stop eject motor
116-0120	Finger motor	Run/Stop finger motor
116-0130	Clamp motor	Run/Stop clamp motor
116-0140	Stack motor	Run/Stop stack motor
116-0160	Stapler safety interlock switch	Control safety interlock switch on/off
116-0170	Green LED	on/off green LED
116-0180	Red LED	on/off red LED
116-0190	Punch Module Dip switch 1	on/off Punch Module Dip switch 1

Code	Displayed Name		Meaning
116-0200	Punch Module Dip switch 2		on/off Punch Module Dip switch 2
116-0210	Scan motor		Run/Stop Scan motor
116-0220	Punch motor		Run/Stop Punch motor
116-0230	Booklet Maker dip switch1		on/off Booklet Maker dip switch1
116-0240	Booklet Maker dip switch2		on/off Booklet Maker dip switch2
116-0250	Booklet Maker dip switch3		on/off Booklet Maker dip switch3
116-0260	Booklet Maker dip switch4		on/off Booklet Maker dip switch4
116-0270	Feed motor		Run/Stop Feed motor
116-0280	Fold motor		Run/Stop Fold motor
116-0290	Gate motor		Run/Stop Gate motor
116-0300	Guide motor		Run/Stop Guide motor
116-0310	Knife motor		Run/Stop Knife motor
116-0320	Paddle motor		Run/Stop Paddle motor
116-0330	Stacker motor		Run/Stop Stacker motor
116-0340	Staple motor		Run/Stop Staple motor
116-0350	Stopper motor		Run/Stop Stopper motor
116-0360	Front tamper motor		Run/Stop Front tamper motor
116-0370	Rear tamper motor		Run/Stop Rear tamper motor
116-5010	Bridge entrance sensor		Detect paper at bride exit
116-5020	Bridge exit sensor		Detect paper at finisher entrance
116-5030	Finisher entrance sensor		Detect paper at finisher top tray
116-5040	Finisher top exit sensor		Detect paper at compile exit
116-5050	Finisher compile exit sensor		Detect paper at compile
116-5060	Subset thickness sensor		Detect thickness of paper
116-5070	Manual staple paper sensor		Detect paper at manual staple area
116-5080	Manual staple button sensor		Detect manual staple button is on/off
116-5090	Staple prime sensor		Detect paper at prime staple area
116-5100	Staple not low sensor		Detect staple low
116-5110	Full stack sensor		Detect quantity of paper at stack
116-5120	Over stack sensor		Check Stack if paper is over
116-5130	Stack upper limit switch		Check Stack if paper is full
116-5140	Power supply sensor		Check power supply status
116-5150	Door open sensor		Detect door status
116-5160	Cover open sensor		Detect cover status
116-5170	Power charge sensor		Check power charge
116-5180	DIP switch 2		Check DIP switch 2 status

Code	Displayed Name		Meaning
116-5190	DIP switch 3		Check DIP switch 3 status
116-5200	DIP switch 4		Check DIP switch 4 status
116-5210	Bridge unit detect		Detect bridge unit
116-5220	Punch unit detect		Detect punch unit
116-5230	Booklet unit detect		Detect booklet unit
116-5250	Compile paper sensor		Check hardware version
116-5300	Diverter position sensor		Detect divert position
116-5310	Paddle home sensor		Detect paddle home position
116-5320	Tamp front home sensor		Detect tamp front home position
116-5330	Tamp rear home sensor		Detect tamp rear home position
116-5340	Stapler main home sensor		Detect stapler main home position
116-5350	Stapler clinch home sensor		Detect clinch home position
116-5360	Stapler clinch position sensor		Detect clinch position position
116-5370	Stapler sub home sensor		Detect staple sub home position
116-5380	Stapler safety position sensor		Detect stapler safety position
116-5390	Ejector home sensor		Detect eject home position
116-5400	Ejector encoder sensor		Detect ejector Encoder
116-5410	Support finger home sensor		Detect support-finger home position
116-5420	Clamp home sensor		Detect clamp home position
116-5430	Clamp reverse sensor		Detect clamp reverse position
116-5440	Stack encoder sensor		Check stack encoder
116-5460	Scan home sensor		Check scan home
116-5470	Scan Edge 1 sensor		Check Scan Edge 1
116-5480	Scan Edge 2 sensor		Check Scan Edge 2
116-5490	Scan Edge 3 sensor		Check Scan Edge 3
116-5500	Punch home sensor		Check Punch home
116-5510	Punch position A sensor		Check Punch position A
116-5520	Punch position B sensor		Check Punch position B
116-5530	Punch Encoder sensor		Check Punch Encoder
116-5540	Hopper set sensor		Check Hopper set
116-5550	Feed entrance sensor		Check Feed entrance
116-5560	Feed exit sensor		Check Feed exit
116-5570	Tray paper sensor		Check Tray paper
116-5580	Fold exit sensor		Check Fold exit
116-5590	Fold motor ready		Check Fold motor ready
116-5600	Knife home sensor		Check Knife home

Code	Displayed Name		Meaning
116-5610	Knife motor ready		Check Knife motor ready
116-5620	Gate home sensor		Check Gate home
116-5630	Guide home sensor		Check Guide home
116-5640	Booklet Maker Paddle home sensor		Check Booklet Maker Paddle home
116-5650	Stacker full sensor		Check Stacker full
116-5660	Stapler home sensor		Check Stapler home
116-5670	Low staple 1 sensor		Check Low staple 1
116-5680	Low staple 2 sensor		Check Low staple 2
116-5690	Stopper home sensor		Check Stopper home
116-5700	Front tamper home sensor		Check Front tamper home
116-5710	Rear tamper home sensor		Check Rear tamper home
122-0010	Duplex fan1 run		Start/Stop duplex fan1 run
122-0070	LSU fan1 run		Start/Stop LSU fan run
122-0080	LSU fan2 run		Start/Stop LSU sub fan 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
122-0150	HDD fan run		Start/Stop HDD fan
122-5000	Dupelx fan1 run ready		Detects if duplex fan1 runs at normal speed.
122-5060	LSU fan1 run ready		Detects if LSU fan motor runs at normal speed.
122-5070	LSU fan2 run ready		Detects if LSU sub fan motor 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.
122-5140	HDD fan run ready		Detects if HDD fan motor runs at normal speed.
123-0010	Fuser center temperature		Display fuser center temperature
123-0020	Fuser side temperature		Display fuser side temperature
123-0030	LSU temperature		Display laser scan Unit 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	N/A

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	N/A

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><tr><td>Example Cases</td><td>Vertical Adjustment</td><td>Horizontal Adjustment</td></tr><tr><td>ⓒ or ⓖ = 398.0 mm</td><td>+20</td><td></td></tr><tr><td>ⓒ or ⓖ = 402.5 mm</td><td>-25</td><td></td></tr><tr><td>ⓓ or ⓗ = 275.3 mm</td><td></td><td>+17</td></tr><tr><td>ⓓ or ⓗ = 278.9 mm</td><td></td><td>-19</td></tr></table>
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

• 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><tr><td>Example Cases</td><td>Simplex Leading Edge</td><td>Simplex Side Edge</td><td>Duplex Leading Edge</td><td>Duplex Side Edge</td></tr><tr><td>ⓐ = 8.5 mm</td><td>+15</td><td></td><td></td><td></td></tr><tr><td>ⓑ = 11.6 mm</td><td></td><td>-16</td><td></td><td></td></tr><tr><td>ⓔ = 8.0 mm</td><td></td><td></td><td>+20</td><td></td></tr><tr><td>ⓕ = 13.0 mm</td><td></td><td></td><td></td><td>-30</td></tr></table>
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

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

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4.5.4.4. DADF Adjustment

• Diagnostics > Adjustment > DADF Adjustment > Automatic Adjustment
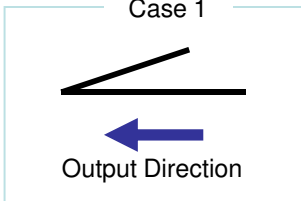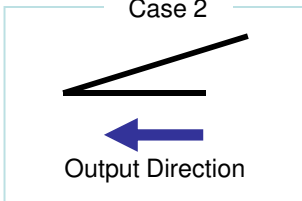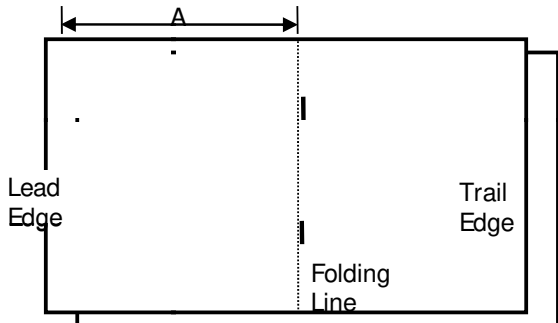
Purpose	To correct image position and magnification of scanned images via DADF automatically.
Operation Procedure	1. Locate the Scanner A/S Chart at the DADF. Note that "Lead Edge" arrows need to head to feeding direction and to be placed face up. Also note that the Scanner A/S Charts come in two size, 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 ±, 1.5mm ⓒ : 190 ±, 1.5mm
Reference	Figure 5-3 CLX-9250/9350 Series Service Manual, Chapter 7.3.17 DADF skew testing

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• 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.
	
	<table><tr><td>Example Cases</td><td>Leading Edge</td><td>Side Edge</td><td>Vertical Direction Adjustment</td></tr><tr><td>ⓐ = 11.5 mm</td><td>-15</td><td></td><td></td></tr><tr><td>ⓑ = 8.8 mm</td><td></td><td>-12</td><td></td></tr><tr><td>ⓒ = 191.3 mm</td><td></td><td></td><td>+0.6% (near -2.6mm)</td></tr><tr><td>ⓒ = 188.0 mm</td><td></td><td></td><td>-0.5% (near +2.0mm)</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. 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 CLX-9250/9350 Series Service Manual, Chapter 7.3.17 DADF skew testing

4.5.4.5. Finisher Adjustment
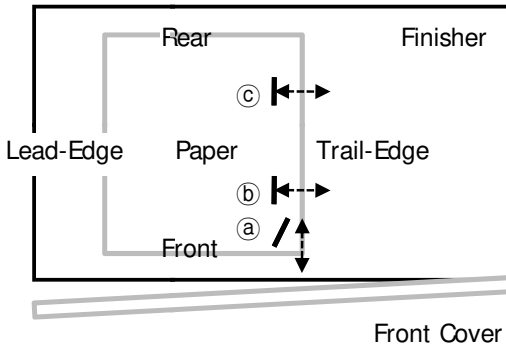
• Diagnostics > Adjustment > Finisher Adjustment > Booklet Folding Position

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. Case 1 — Output Direction Case 2 — Output Direction 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

Lead Edge   Trail Edge

Folding Line

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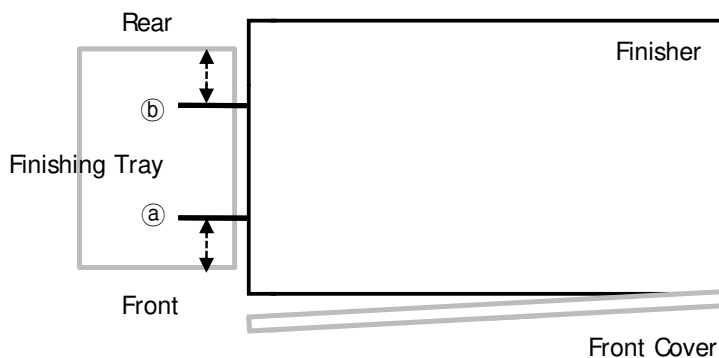
• Diagnostics > Adjustment > Finisher Adjustment > Punch Hole Position

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	Rear Finisher ⓒ Lead-Edge Paper Trail-Edge ⓑ ⓐ Front Front Cover

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• 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 (Auto Color Sensing)

• Diagnostics > ACS

Purpose	To set the color sensing level of auto color mode in copy 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	
Reference	N/A

	Level 1	Level 2	Level 3	Level 4	Level 5
Color Coverage	0.1 %	0.4 %	1.0 %	1.5 %	2.0 %

4.5.6. Color Management

4.5.6.1. Auto Color Registration

• Diagnostics > Color Management > Auto Color Registration

Purpose	To correct color registration of the system when it shows color shift between the original and a copy.
Operation Procedure	Change execution condition(s) of the Automatic Color Registration. • Page Condition : The system executes ACR based on the count of printed pages since the last ACR execution. • Inner Temperature : The system executes ACR when inner temperature of the device increases or decreases by the configured value since the last ACR execution. • LSU Temperature : The system executes ACR when LSU temperature of the device increases or decreases by the configured value since the last ACR execution. Note that ACR execution occurs when one of the ACR option meets the condition. Also note that pressing "Execute Now" performs an immediate ACR execution.
Verification	Compare the original with a copy after an execution of Auto Color Registration.
Specification	

	Default	Min. Value	Max. Value
Page Condition	1000	200	5000
Inner Temperature	0	1	100
LSU Temperature	4	1	100

Reference	CLX-9250/9350 Series Service Manual, Chapter 7.3.6 Incorrect Color Registration CLX-9250/9350 Series Service Manual, Chapter 7.3.17 White Halo
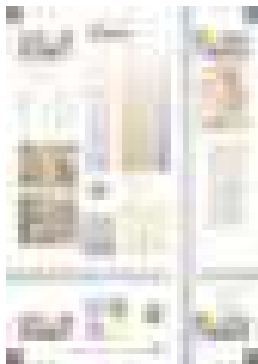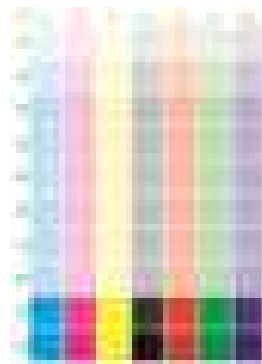
4.5.6.2. Full Color Registration (OPC-ACR)

• Diagnostics > Color Management > Full Color Registration

Purpose	To correct color registration of the system when it shows color shift. Note that the system will perform Full Color Registration when toner cartridge, imaging unit, or ITB is re-installed or replaced. Note that this function is also described as "OPC-ACR" in many contents. Incorrect Color Registration White Halo (white gap between text and background)
Operation Procedure	Selecting "On" option sets the systems to perform the Full Color Registration in booting. Pressing "Execute Now" performs an immediate Full Color Registration execution.
Verification	Compare the original with a copy after an execution of Full Color Registration.
Specification	N/A
Reference	CLX-9250/9350 Series Service Manual, Chapter 7.3.6 Incorrect Color Registration CLX-9250/9350 Series Service Manual, Chapter 7.3.17 White Halo

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4.5.6.3. Auto Color Tone Adjustment

• Diagnostics > Color Management > Auto Color Tone Adjustment > Normal TRC Control

Purpose	To correct image quality when density of the image is poor. Normal TRC Control is recommended to be performed after changing a unit, such as toner cartridge, imaging unit, and ITB, and reboot.
	Low Image Density Gradation Reproduction Failure
Operation Procedure	Change execution condition(s) of Normal TRC Control. • Page Count: The system executes Normal TRC Control based on the count of printed pages since the last execution. • Time Left Alone: The system executes Normal TRC Control when the system returns from a power save mode and the rest time exceeds the configured value. Users can also execute the function by pressing "Execute Now" button.
Verification	Print out a test job and make sure the image quality has recovered.
Specification	
Reference	CLX-9250/9350 Series Service Manual, Chapter 7.3.9 Low Image Density CLX-9250/9350 Series Service Manual, Chapter 7.3.13 Gradation Reproduction Failure

	Default	Min. Value	Max. Value
Page Count	1000	500	1500
Time Left Alone	180	0	360

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• Diagnostics > Color Management > Auto Color Tone Adjustment > Quick TRC Control

Purpose	To correct image quality when density of the image is poor. This function performs when temperature and/or humidity in the room changes suddenly. Note that Quick TRC control takes a little more than 10 seconds to run while Normal TRC control takes approximately 40 seconds.
Operation Procedure	Change execution condition of Quick TRC Control. • Page Count: The system executes Quick TRC Control based on the count of printed pages since the last execution. Users can also execute the function by pressing "Execute Now" button.
Verification	Print out a test job and make sure the image quality has recovered.
Specification	<table><tr><td></td><td>Default</td><td>Min. Value</td><td>Max. Value</td></tr><tr><td>Page Count</td><td>200</td><td>100</td><td>300</td></tr></table>
Reference	CLX-9250/9350 Series Service Manual, Chapter 7.3.9 Low Image Density CLX-9250/9350 Series Service Manual, Chapter 7.3.13 Gradation Reproduction Failure

• Diagnostics > Color Management > Auto Color Tone Adjustment > ID Sensor Calibration

Purpose	To minimize difference in image quality between sets
Operation Procedure	1. Run ID Sensor Calibration 2. Print out a test pattern for sensor calibration. 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 a 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. After scanning, run Normal TRC by pressing "OK" button. 7. Exit ID Sensor Calibration mode.
Verification	Print out a test job and make sure the difference in image quality between sets has disappeared.
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.
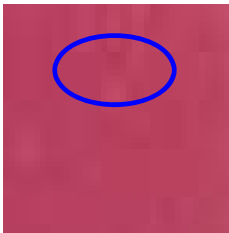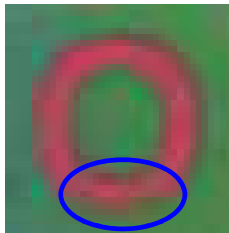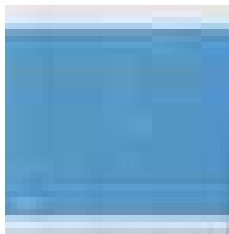
4.6.7. Count Setting of Large Page

• 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. 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. T1 Control Problems
	• Choose the process speed (Full, Half, Lower) based on the type of paper to be used.
	• Adjust T1 PWM value based on the problem type.
	  ▪ Gray Spot : Increase T1 PWM value of the issued color
	  ▪ Non Cyclic White Line : Decrease T1 PWM value of the issued color
	  ▪ OPC Cyclic Ghost : Decrease T1 PWM value of the issued color
	
	 Gray Spot Non Cyclic White Line OPC Cyclic Ghost
	2. T2 Control Problems
	• Choose the paper group, paper side, and paper direction.
	• Adjust T1 PWM value based on the problem type.
	  ▪ Blur : Increase T1 PWM value
	  ▪ Poor Transfer : Increase T1 PWM value
	  ▪ Re-transfer : Decrease T1 PWM value
	  ▪ White Spot : Decrease T1 PWM value
	
	 Blur Poor Transfer White Spot
	3. Blur Upgrade Mode : Turn on the mode when black lines becomes blur.
	4. 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

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5. Updating Firmware

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

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

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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.
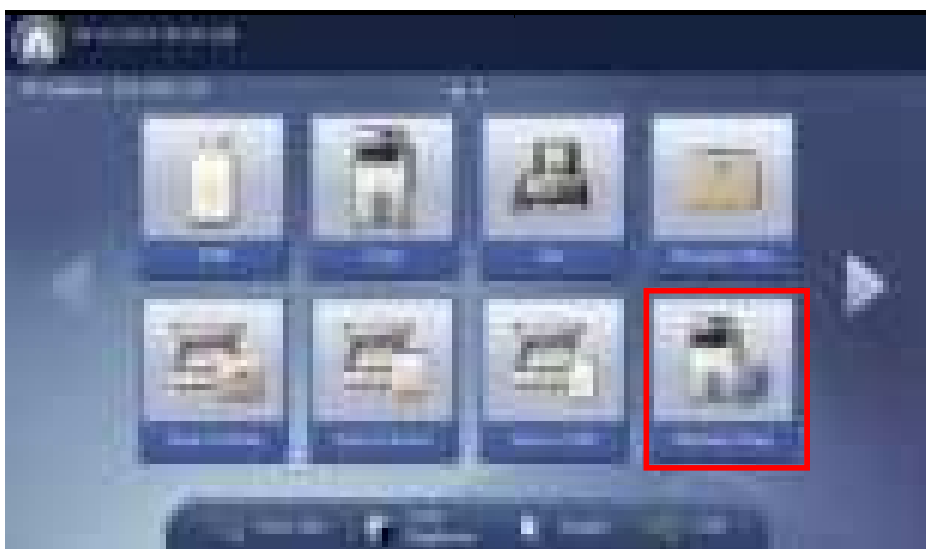
6. On the Machine Setup screen, press the **[Application Management]** button.
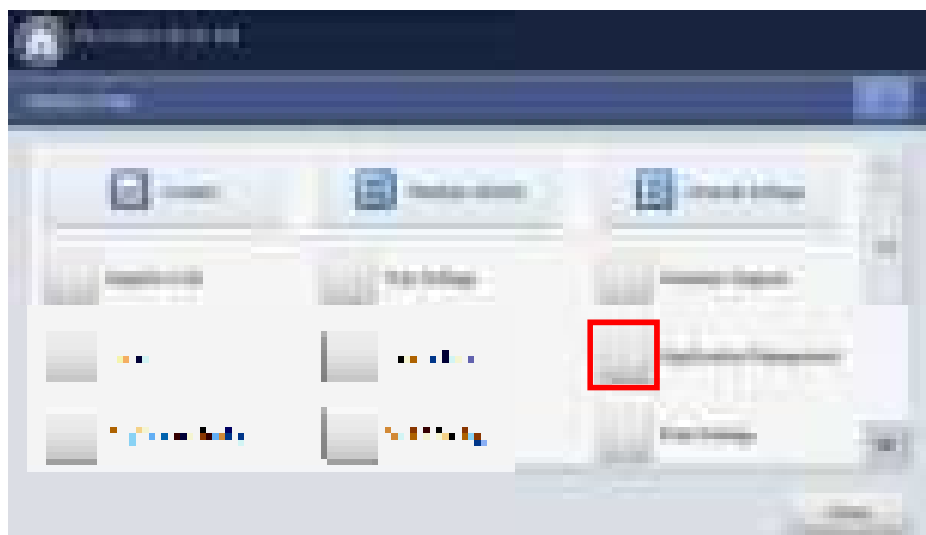
7. Enter an Administrator ID and Password, and then press the **[OK]** button.
Note: The default Administrator ID and Password was created when the machine was first installed.
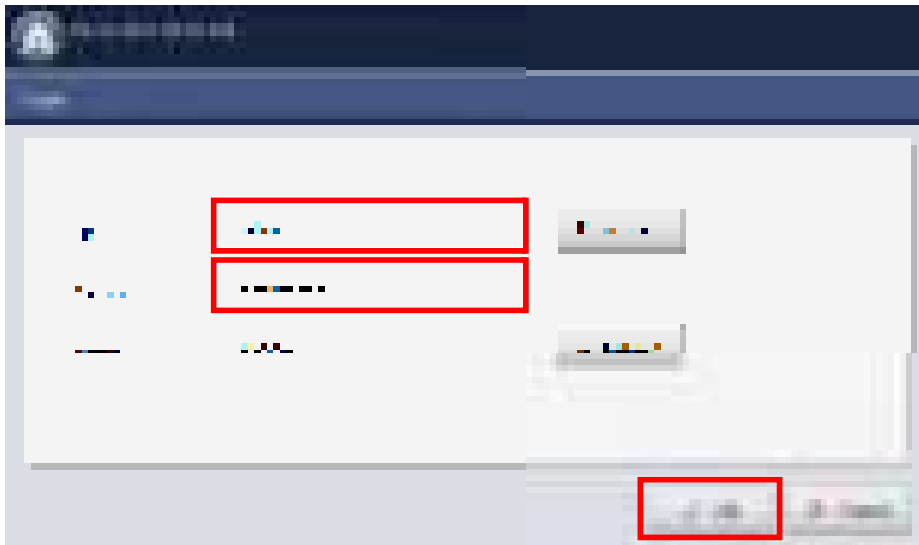
8. On the Application tab, press the **Install** button.

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*
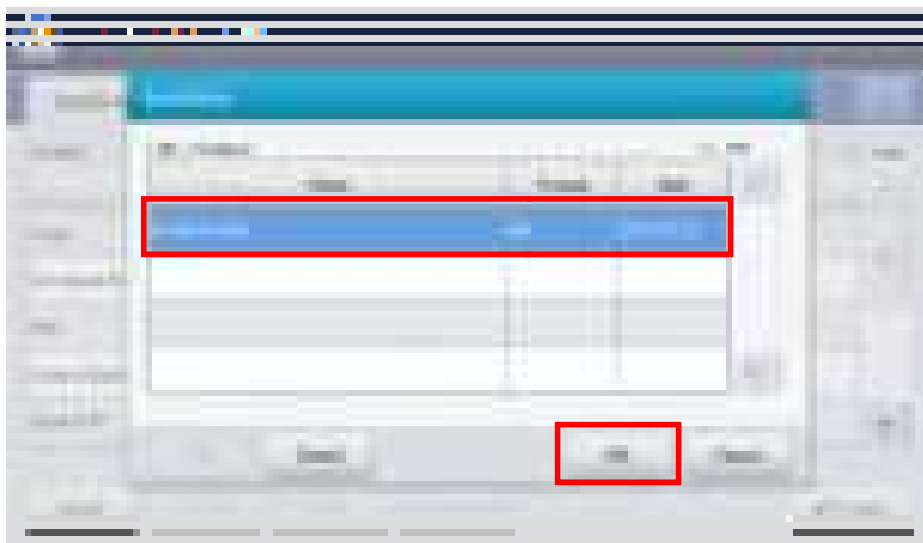
10. The machine will analyze the firmware file to ensure the file is not corrupt and that it is the correct file for the machine. Wait for analysis to finish. The process will take a few minutes.

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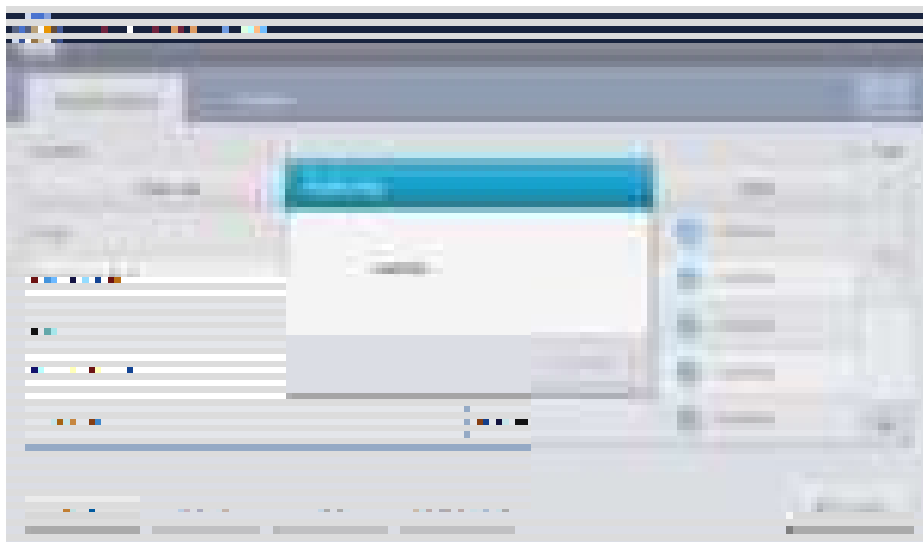
11. Once analysis is complete, the Validation Info window displays. Press the **OK** button to begin the firmware upgrade process
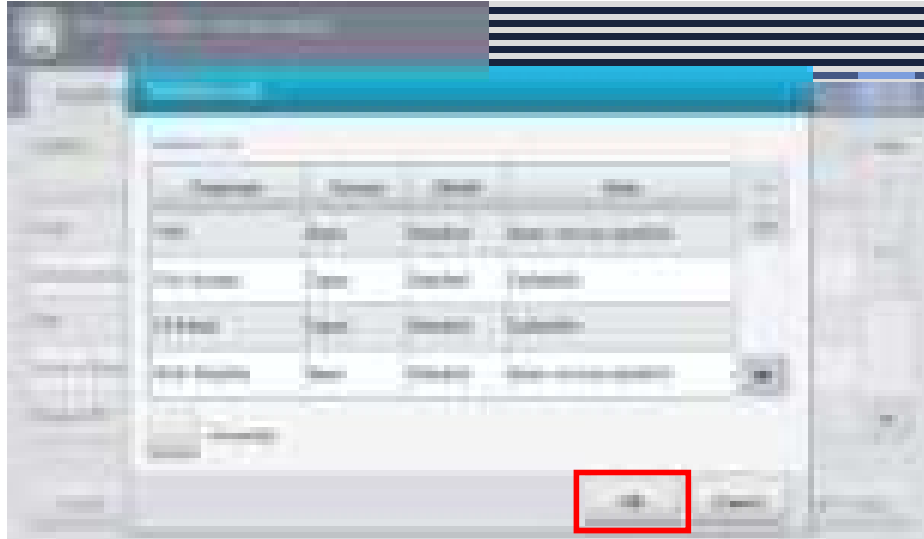
Validation Info

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.
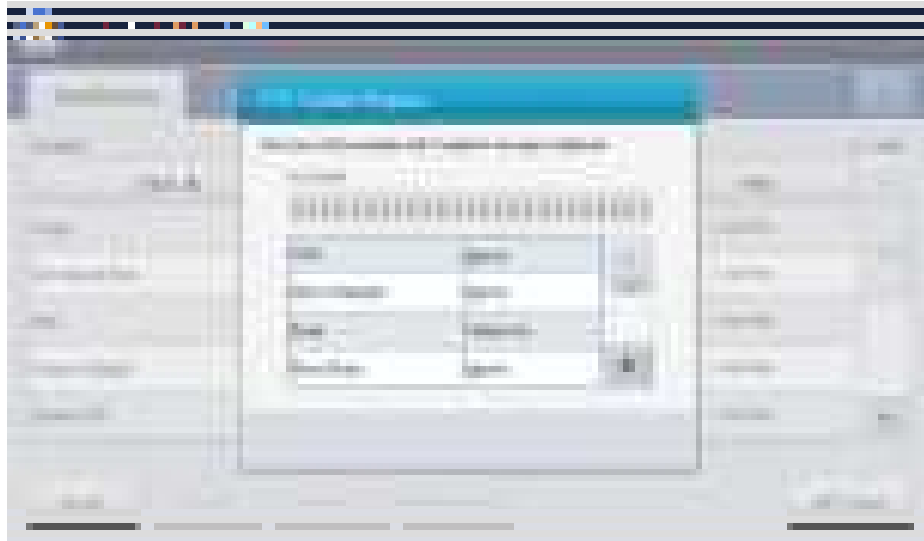
13. Once the firmware upgrade process is complete, the F/W Update Result window will display. This window displays the results of the firmware upgrade, and indicates that the firmware process completed successfully. Press the **Close** button. The machine will reboot completing the firmware upgrade process.
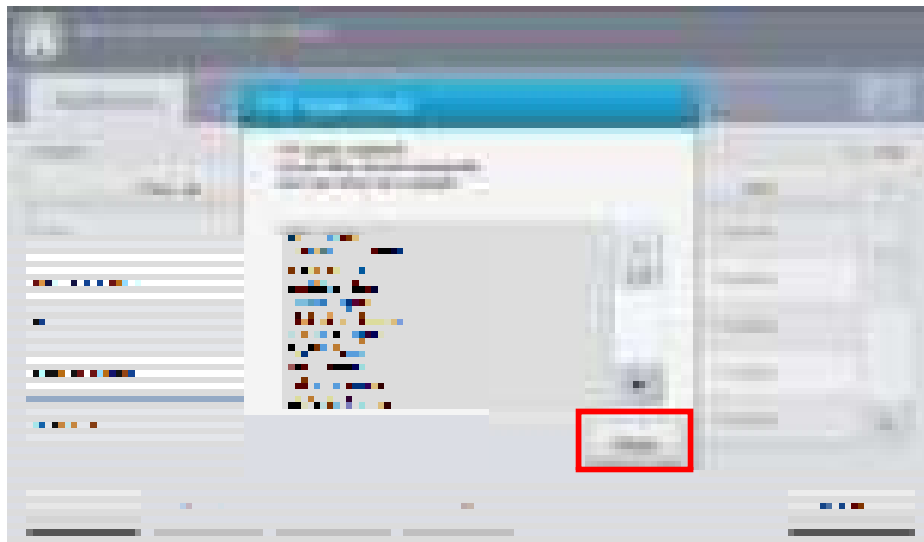
14. Press [Machine Setup]> [Machine Details] > [Software Versions], If you wish to check your firmware version.

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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].
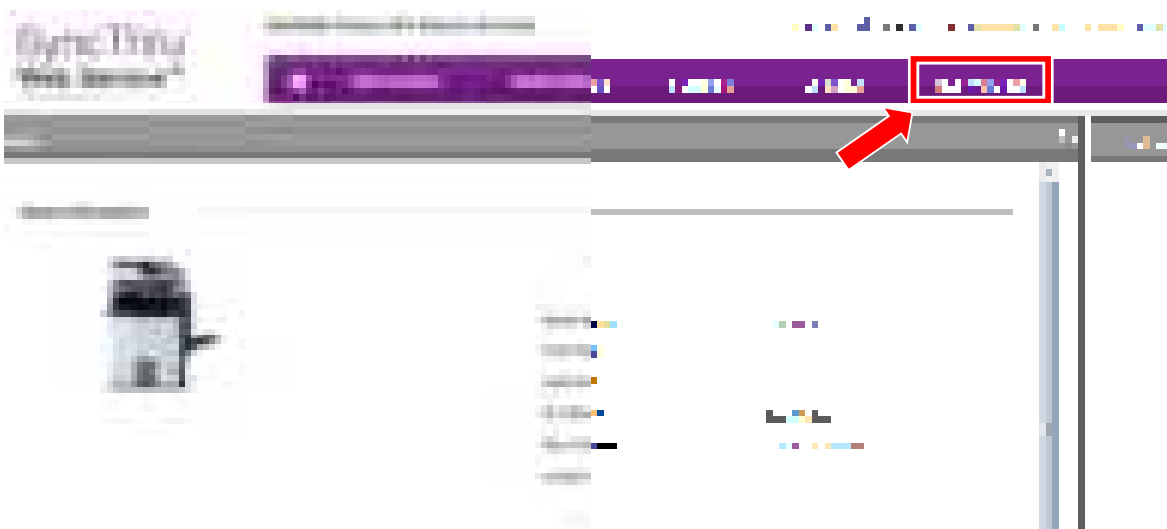
2. On the left menu tab, click [Application Management]. You must check or print out the current firmware versions of each unit and software. You should compare the version after the firmware update is finished.

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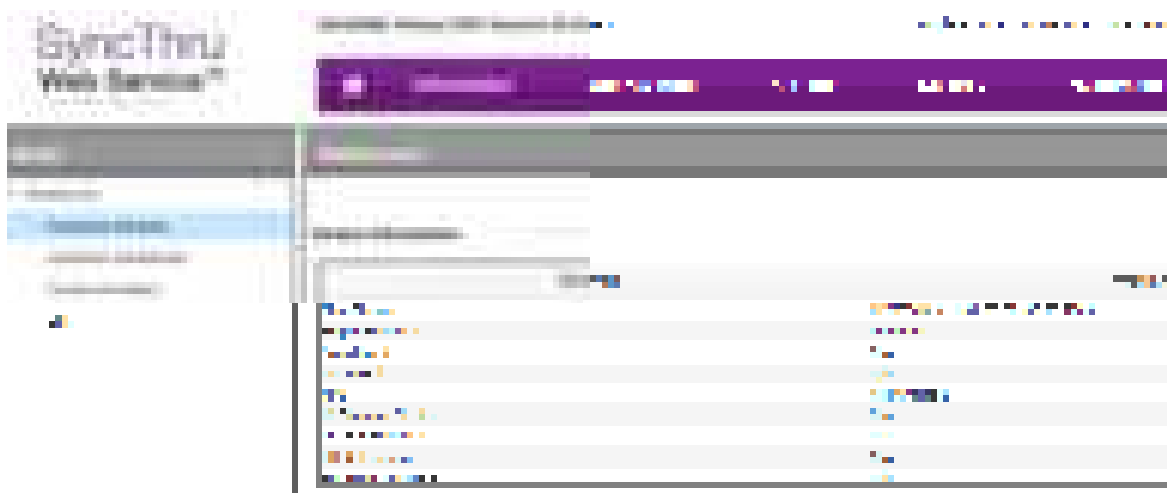
3. For firmware updating , click [login] to access as default administrator as shown in the picture below.

Note - Login using the Administrator ID and Password established during initial machine setup.
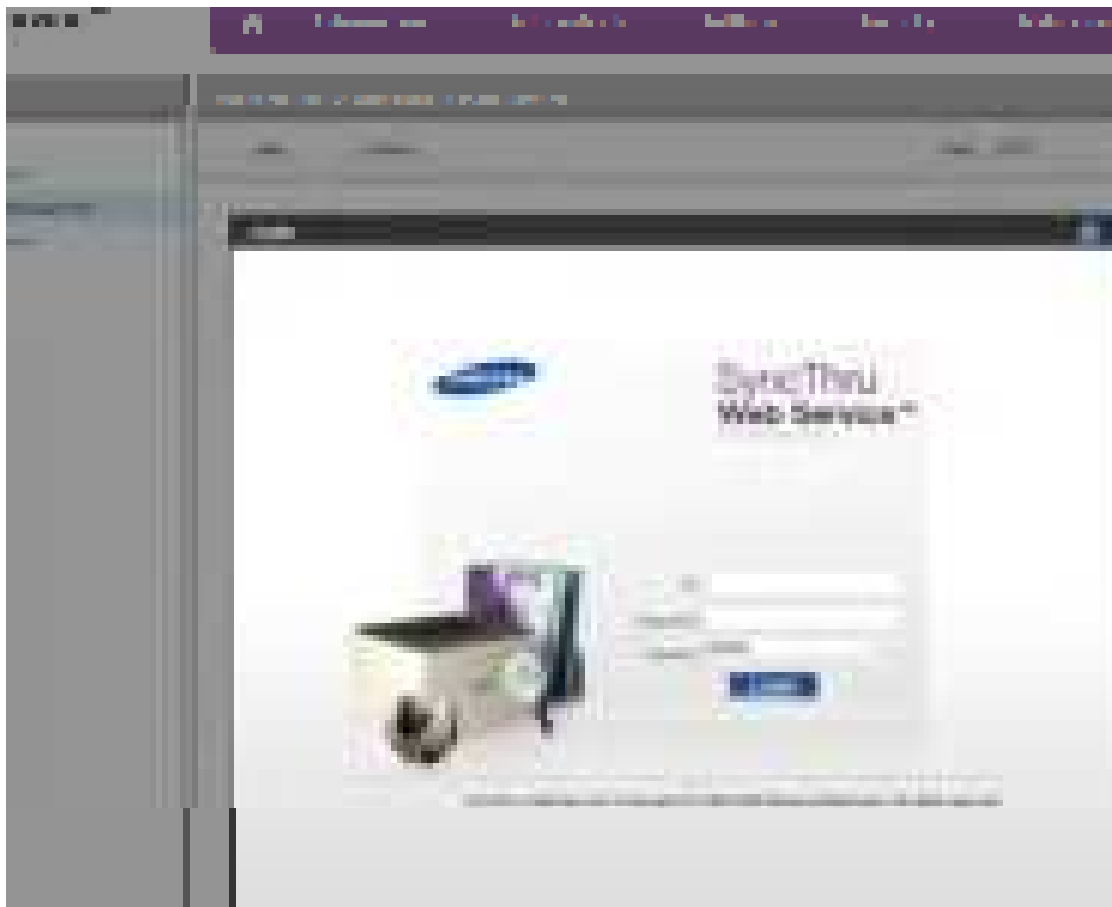
4. Go to [Maintenance] and [Application Management], Click the [Add] button for installing applications.
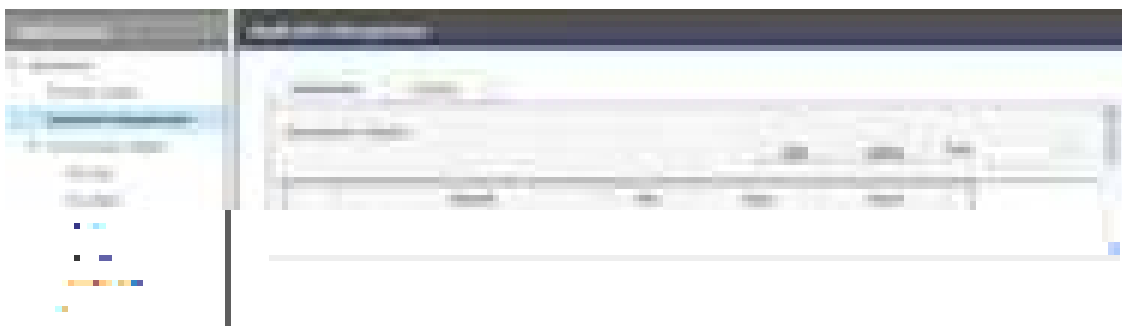
5. Choose installation file by browsing file system.
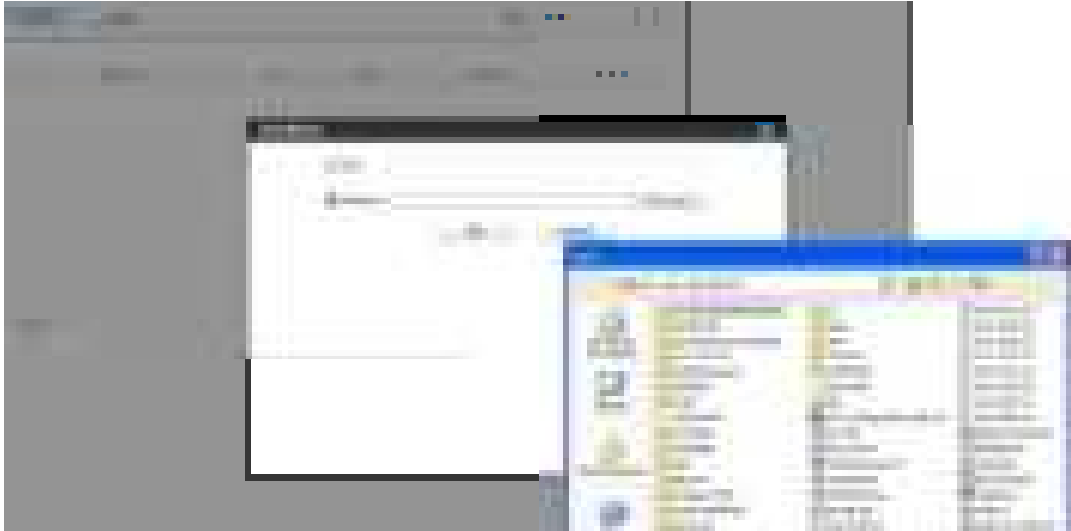
6. If the PAR file is valid, the MFP device will display the PAR package details.

[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.

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7. Press the [OK] button to start update. The MFP device will attempt to install the PAR file by providing status messages.
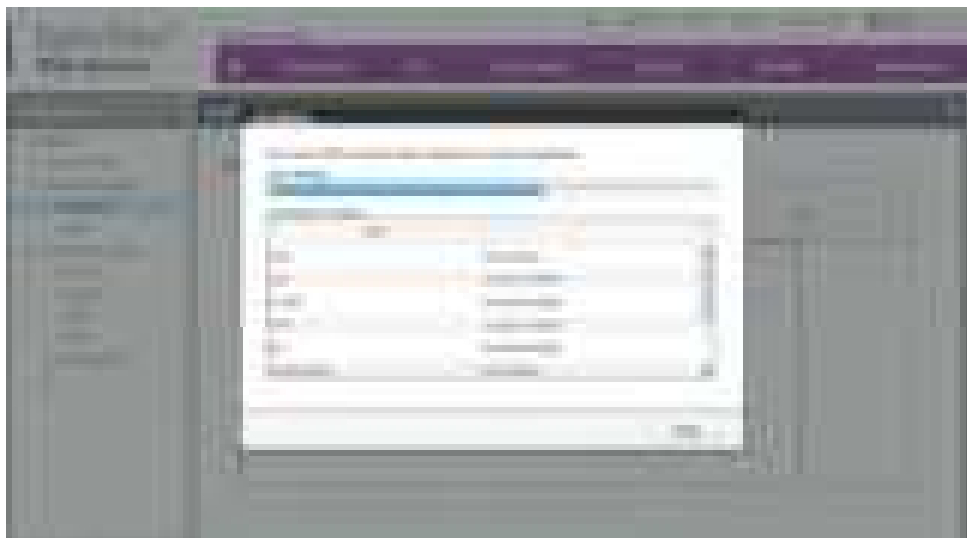
8. Once the installation is complete, the MFP device will provide final result.

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

	Model name		Life		
	N.A / KOR	ELS	15K	20K	25K
Toner cartridge Bk (C25/C35)	CLT-K606S	CLT-K6062S			R
Toner cartridge Y,M,C (C35)	CLT-Y606S CLT-M606S CLT-C606S	CLT-Y6062S CLT-M6062S CLT-C6062S		R	
Toner cartridge Y,M,C (C25/C35)	CLT-Y607S CLT-M607S CLT-C607S	CLT-Y6072S CLT-M6072S CLT-C6072S	R		

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Imaging unit

	Part code	75K	150K	225K	300K
Imaging unit Y,M,C,K	CLT-R607Y CLT-R607M CLT-R607C CLT-R607K	R	R	R	R
Toner pipe surrounding	-		C		C

Waste Toner Container

	Part code	75K	150K	225K	300K
Waste Toner Container	CLT-W606	R	R	R	R
WTB surrounding	-		C		C

Paper Path

	Part code	75K	150K	225K	300K
Pick Up Roller (Tray 1,2,3,4, HCF)	JC93-00175A	C	C	R	C
Retard Roller (Tray 1,2,3,4, HCF)	JC93-00175A	C	C	R	C
Forward Roller (Tray 1,2,3,4, HCF)	JC93-00175A	C	C	R	C
MP Pick Up Roller	JC90-00989A	C	R	C	R
MP Retard Roller	JC90-00989A	C	R	C	R
MP Forward Roller	JC90-00989A	C	R	C	R
Paper Dust Remover	JC93-00078A	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	JC66-02359A ~ JC66-02360A	C	C	C	C

Frame

	Part code	75K	150K	225K	300K
Dust Filter (LSU side)	JC62-00641A		R		R
Ozone Filter	JC29-00001A	C	R	C	R
LSU Window	-				

Fuser Unit

	Part code	75K	150K	225K	300K
Fuser Unit (110V)	JC91-00930A		R		R
Fuser Unit (220V)	JC91-00931A		R		R

DADF

	Part code	75K	150K	225K	300K
DADF Pick-up Roller	JC97-03779A	C	C	R	C
DADF ADF Roller	JC97-03779A	C	C	R	C
DADF Retard Roller	JC97-03630A	C	C	R	C
DADF Retard Rubber Pad	JC73-00323A	C	C	C	C

Transfer Unit

	Part code	75K	150K	225K	300K
Cartridge Transfer Unit	JC96-05661A				R
Cartridge Transfer Cleaner	JC96-05690A		R		R
Transfer Roller (T2)	JC95-01038A		R		R

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6.1.2 PM Kits

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

Model Code	Kit components	Part Code	Life	Qty	Remark
CLX-PMK10C/SEE	Cartridge transfer cleaner Transfer roller (T2) Ozone filter LSU filter	JC96-05690A JC95-01038B JC29-00001A JC63-02704A	150K	1 1 1 2	
CLX-PMK11C/SEE	Pick up roller Retard roller Forward roller	JC93-00175A JC93-00175A JC93-00175A	225K	1 1 1	Tray 1,2,3,4, HCF
CLX-PMK12C/SEE	Pick up roller ADF roller Retard roller	JC97-03779A JC97-03779A JC97-03778A	225K	1 1 1	DADF
CLX-PMK13C/SEE	MP Pick up roller MP Retard roller MP Forward roller	JC90-00989A JC90-00989A JC90-00989A	150K	1 1 1	MP tray

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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.
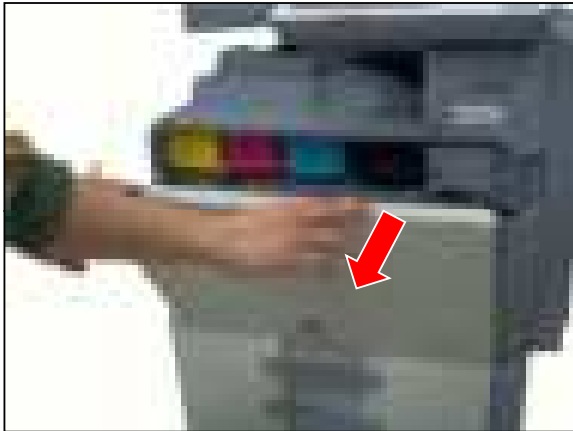
3. Remove the new toner cartridge from its bag.

2. Pull the corresponding toner cartridge out from the machine.
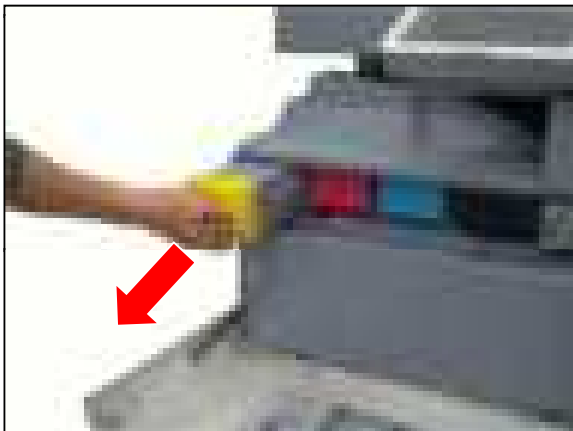
4. Carefully pull the seal tape out of the toner cartridge.

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 corresponding slot inside the machine. Insert it back into its slot until locks in place.
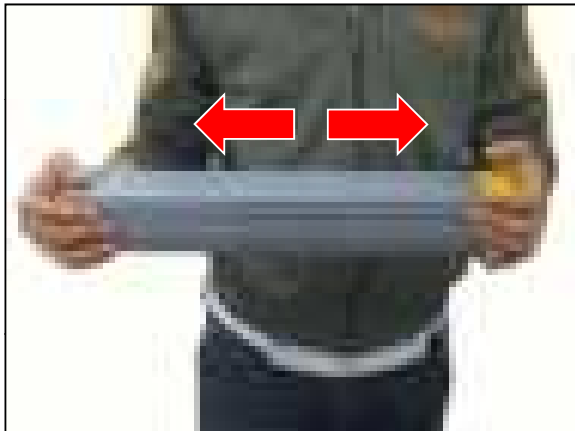
7. Close the front door. Ensure that the door is securely closed.

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

6 6
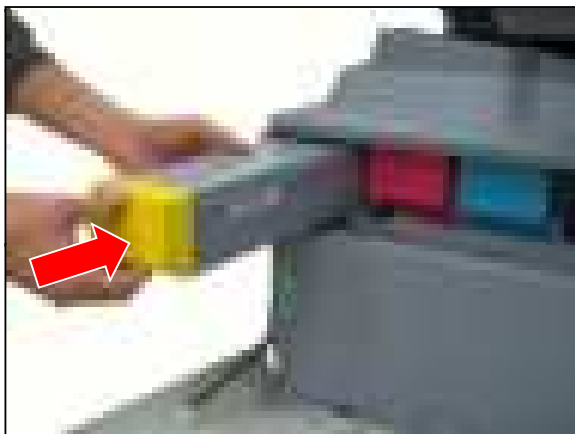
6.2.2 Imaging unit

1. Open the front door.
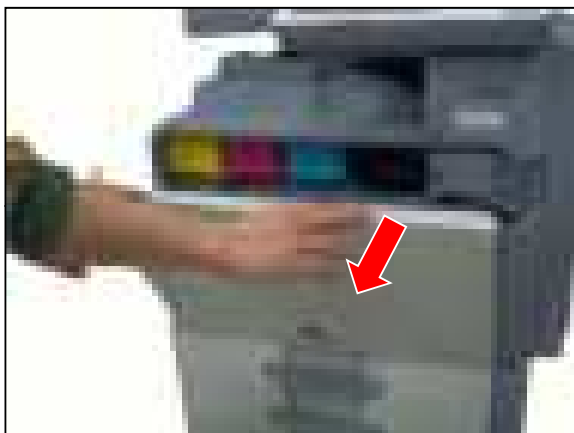
3. Hold and push down the lever, and open the inner cover.

2. Hold the left/right locking levers and push outward at the same time. Then remove the waste toner container.

4. Pull the corresponding imaging unit out from the machine.
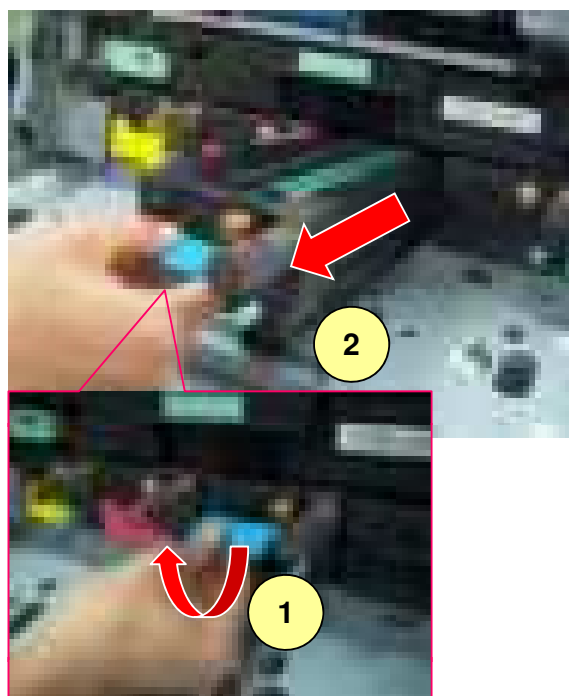
5. Remove the new imaging unit from its package.

CAUTION
Do not use sharp objective, such as a knife or scissors, to open the imaging unit package. You could damage the surface of the imaging unit.

6. Remove the paper protecting the surface of the imaging unit.

7. Remove the tape on the handle.

8. Pull the rubber stopper out of the developer.
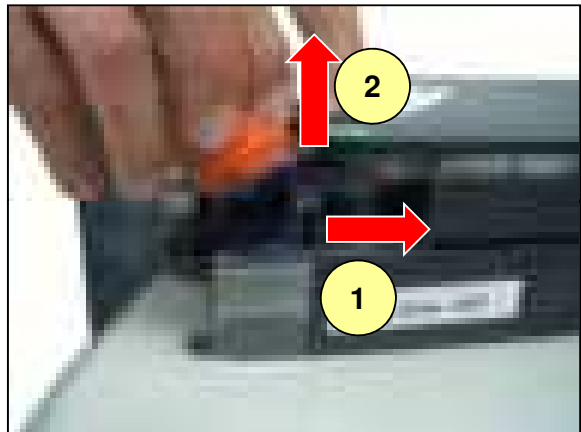
9. Remove the tape wrapped around the developer.

10. Remove the tape on the imaging unit.

11. 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.

12. Hold the handles on the new imaging unit, and push the imaging unit until it locks into place.
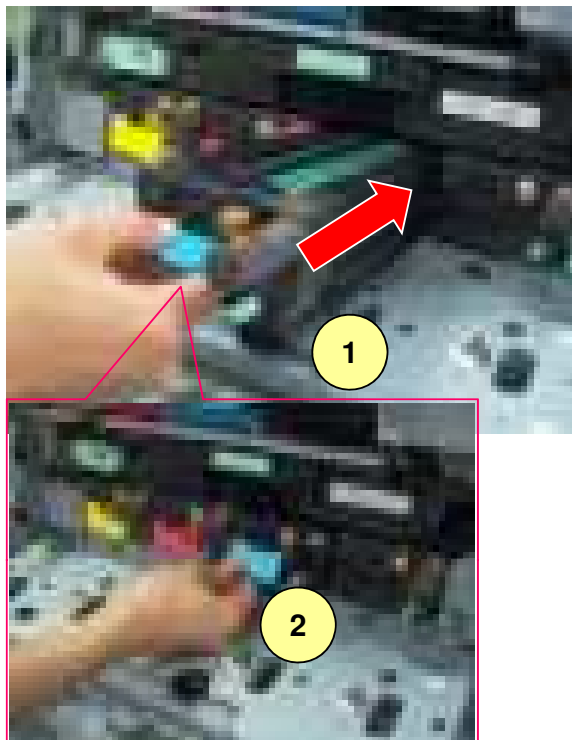
13. Close the inner cover.

14. Take out the LSU window cleaning Jig[A].

15. Insert the LSU window cleaning Jig to the hole. Slowly pull out and push the cleaning Jig. Repeat step 4 at least 5 times.

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16. Insert the waste toner container until it locks in place.

17. Close the front door. Ensure that the door is securely closed.

6.2.3 Cartridge transfer unit / cartridge transfer cleaner

6.2.3.1 Cartridge transfer unit

[A]
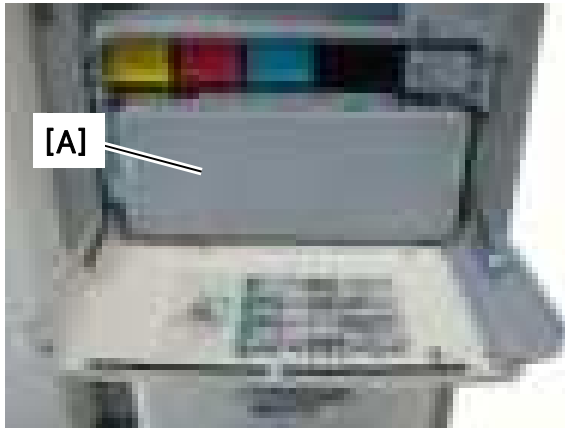
1. Open the front cover.
2. Remove the waste toner container [A].

CAUTION
Be careful not to hurt yourself while removing the waste toner container.

[B]
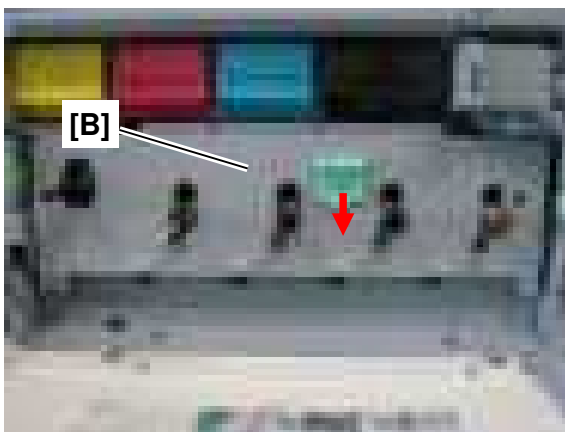
3. Open the inner front cover [B] by pushing the handle.
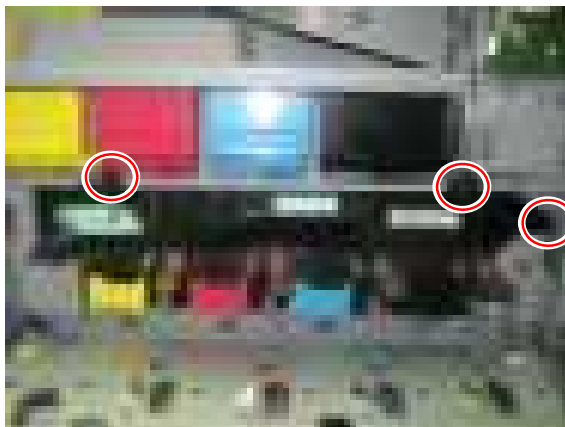
4. Remove two Fixers and one screw.

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5. Take out the Cartridge Transfer unit until the green handle is shown.
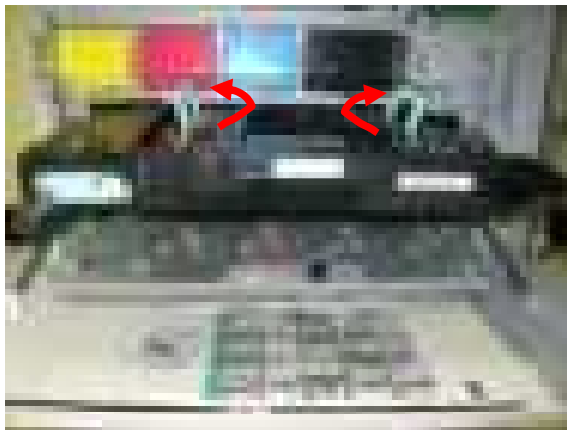
6. Stand the green handle up. Take out the Cartridge transfer unit while holding the handle.

NOTE

1. Before re-installing the Cartridge Transfer Unit, align the CAM position as shown below.
2. When re-installing the Cartridge Transfer Unit, install it along the Transfer Unit Install Guide.

Transfer Unit Install Guide

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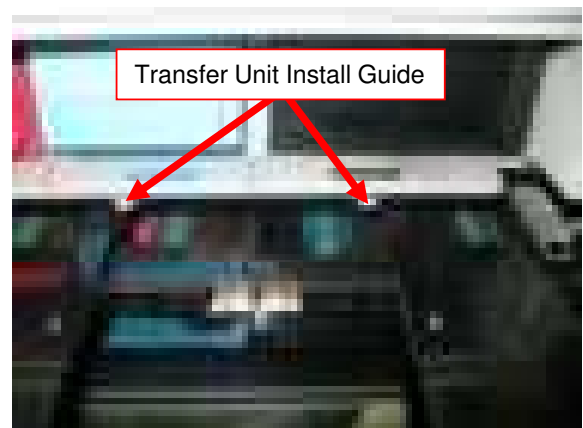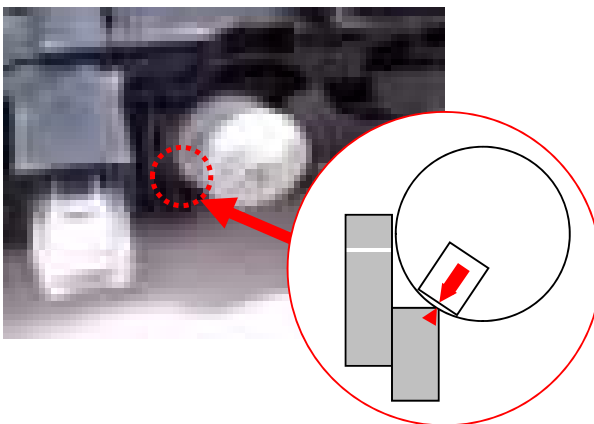
6.2.3.2 Cartridge transfer cleaner

1. Open the front cover.
2. Remove the waste toner container [A].
3. Open the inner front cover [B] by pushing the handle.

4. Remove one fixer.

5. Take out the cartridge transfer cleaner while holding the green handle.

Transfer Cleaner Install Guide

NOTE

When re-installing the Cartridge Transfer Cleaner, install it along the Transfer Cleaner Install Guide.

6.2.4 2nd Transfer roller
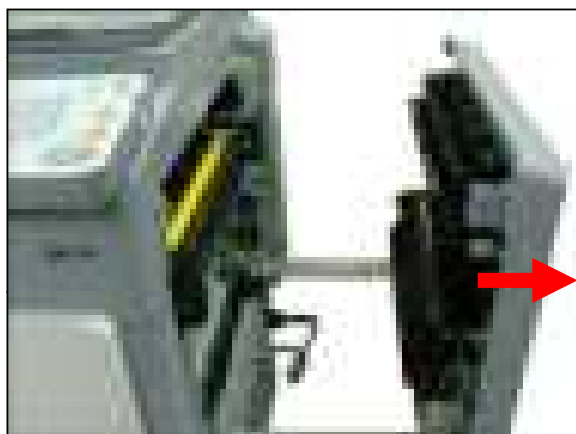
1. Open the Cover-Side to remove the 2nd transfer roller [A].

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

CAUTION
Do not touch the surface of the transfer roller.

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6.2.5 Fuser unit

CAUTION
The temperature gets hot around the Fuser Unit. To prevent burns, make sure the Fuser Unit area is cool before performing this procedure.
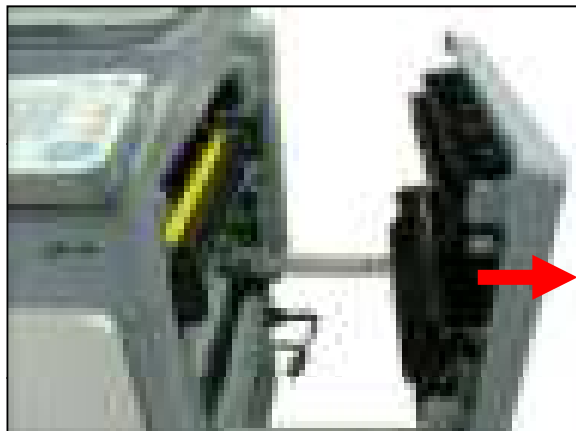
1. Open the Cover-Side.
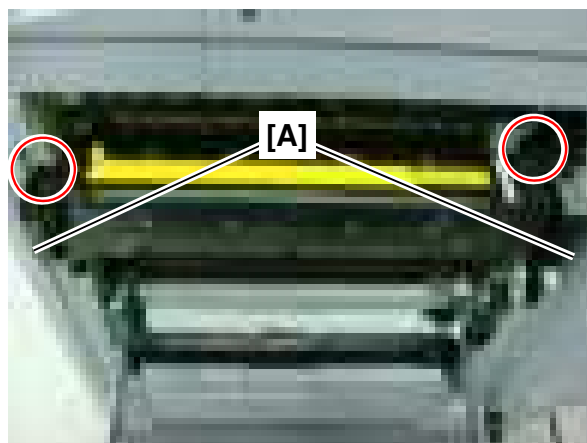
2. Remove 2 fuser locking screws.
3. Remove the Fuser unit by holding the handles [A].

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6.2.6 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.

6.2.7 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- 17
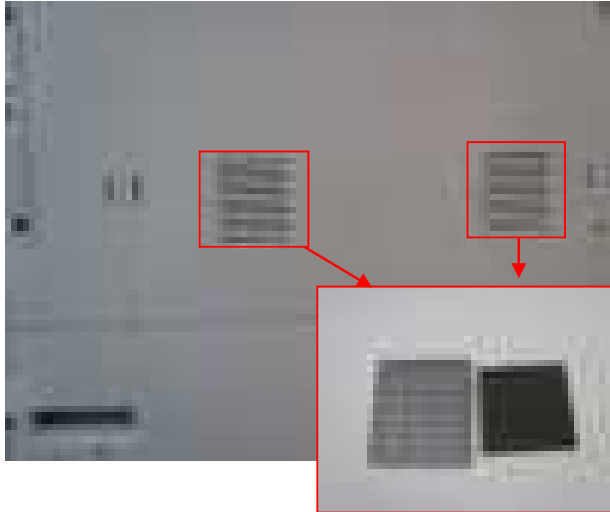
6.2.8 Dust filters

1. Carefully remove the two retainer vents holding the Dust Filters.

NOTE
In case that the finisher is installed, first remove it then replace the filter.

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6.2.9 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.

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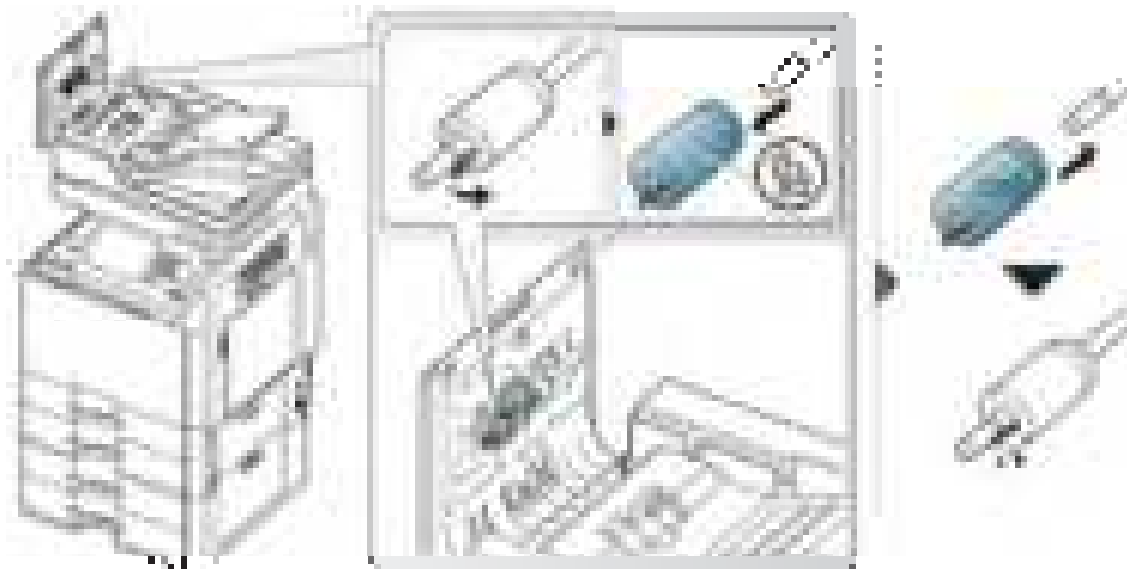
3. Remove the original document retard roller cover.
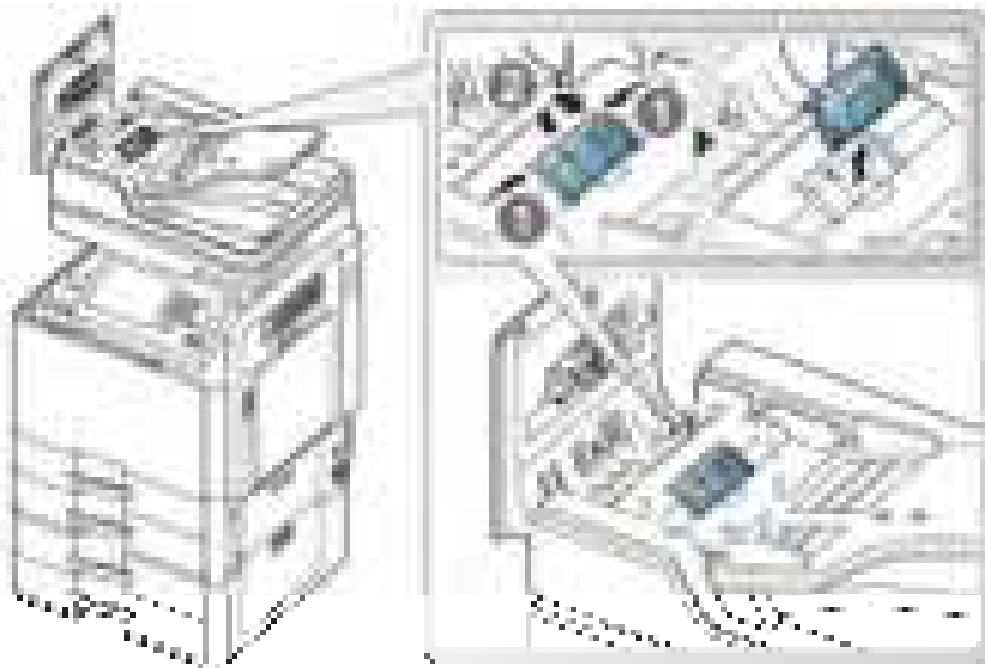
4. Remove the retard roller assy.

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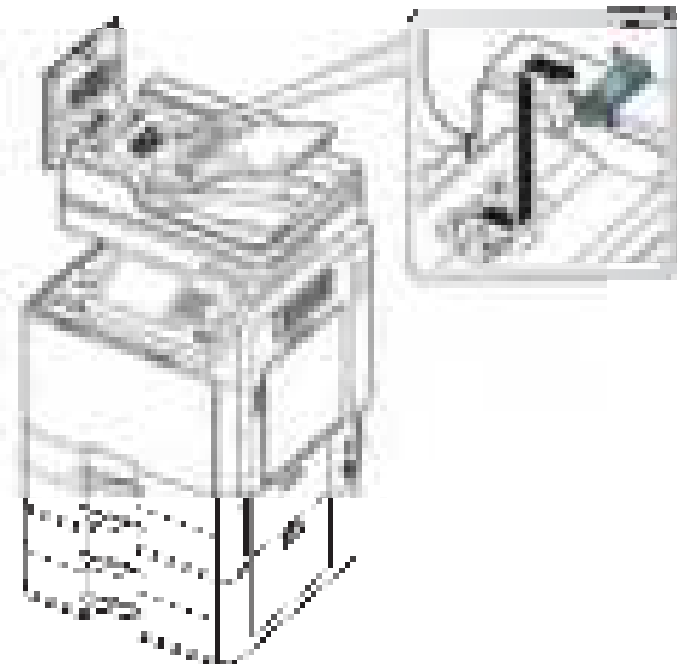
5. Remove the E-ring. And remove the retard roller.
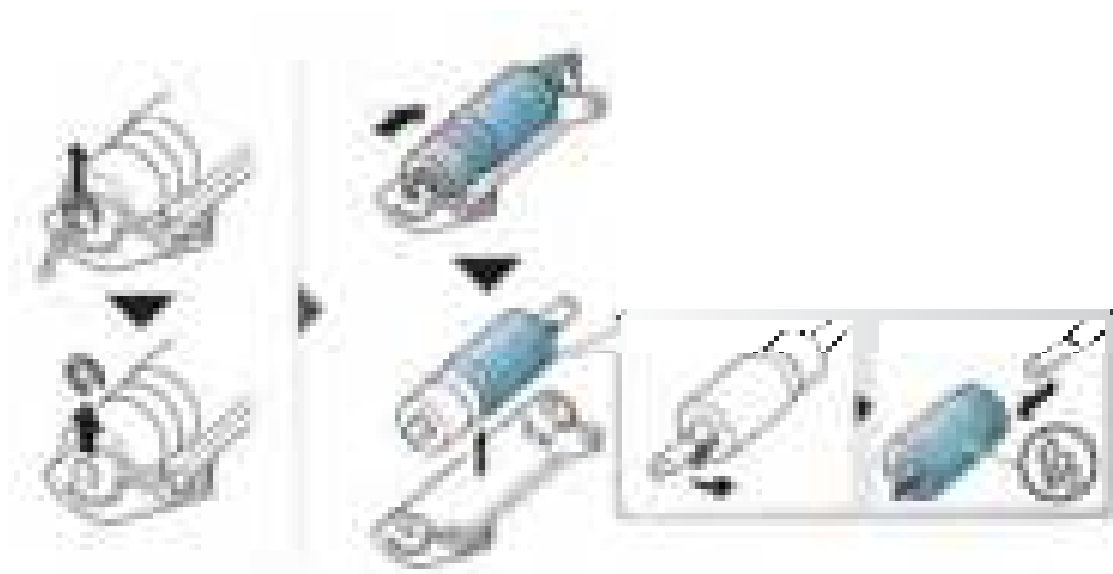
6. Install the new retard roller. And assemble the E-ring.

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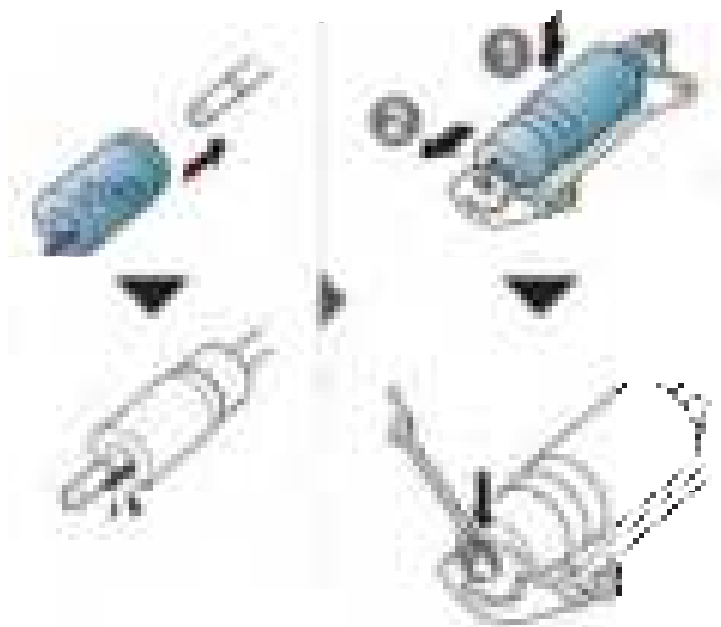
7. Assemble the retard roller assy.
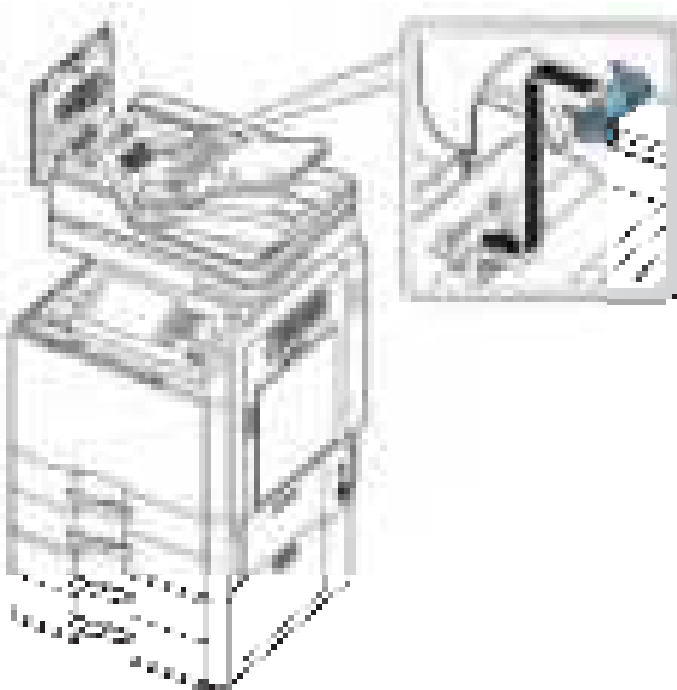
8. Assemble the original document retard roller cover.

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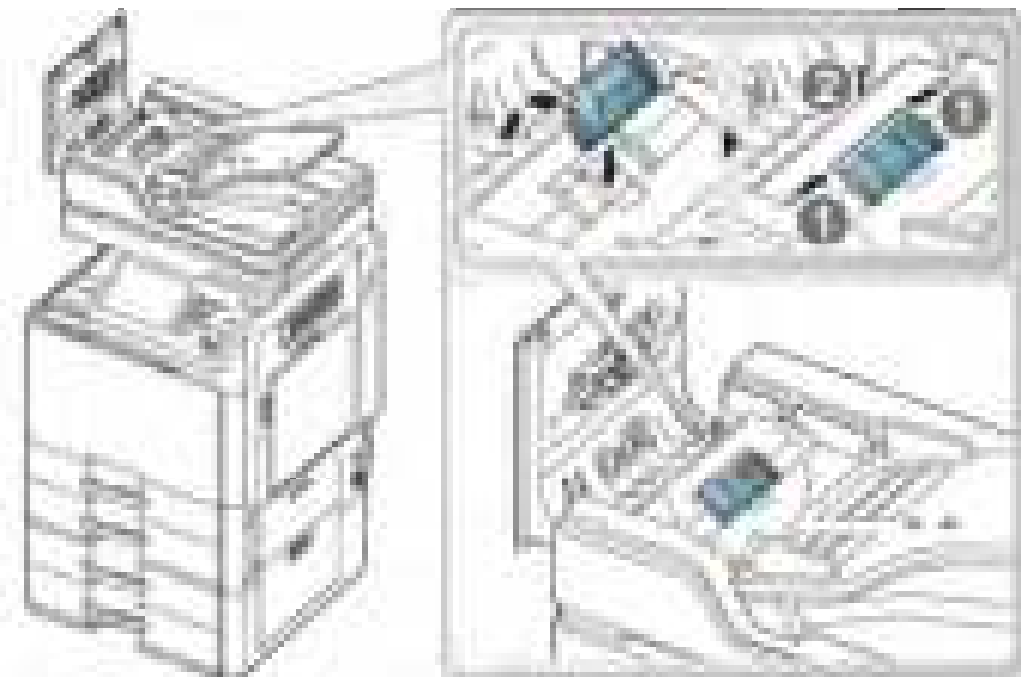
9. Close the DADF cover.

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6.2.10 MP Pick up / Retard / Forward roller

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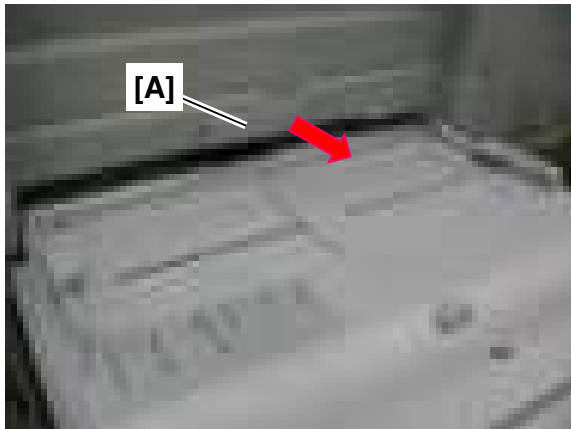
2. Remove the Front Cover [A].

[A]

3. Remove the pick up roller.

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

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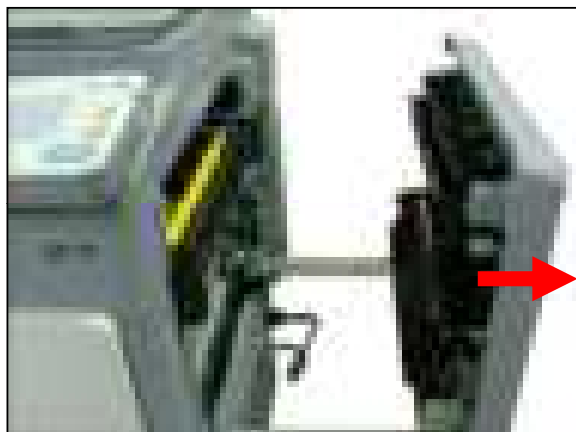
4. Open the Cover-Side.
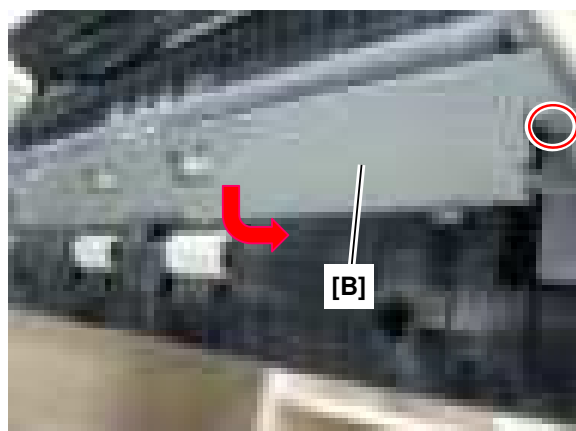
5. Remove the Screw.
6. Remove the Guide Lower A'ssy [B].

[B]

7. Remove the Retard / Forward roller.

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

6.3 Cleaning the PM parts

NOTE
The cleaning alcohol is the Isopropyl alcohol.

6.3.1 Cleaning the charge scorotron
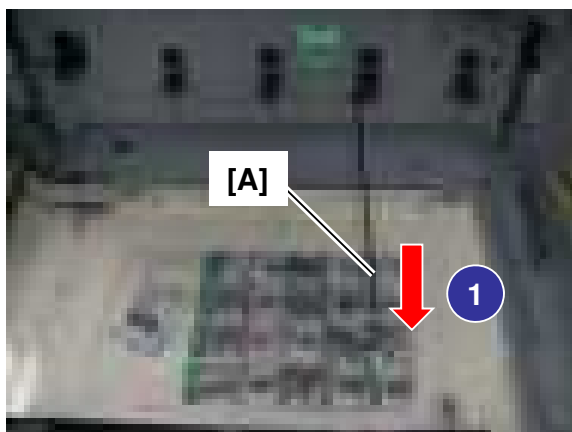
1. Open the front cover.

2. Remove the waste toner container.

3. Open the inner front cover.

4. Pull and push the corresponding charger cleaner [A] completely as shown the left picture.

5. Repeat step 4 at least 5 times for each charge scorotron.
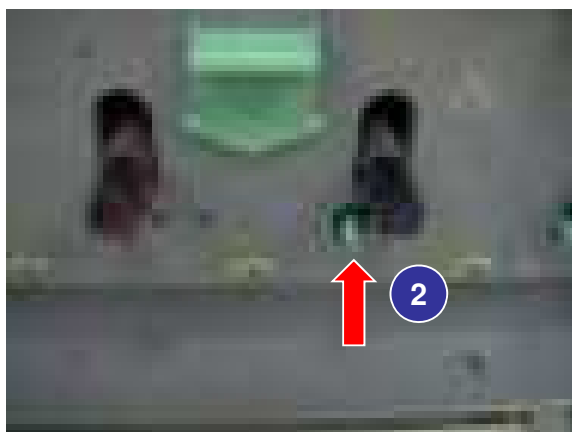
6.3.2 Cleaning the pick up roller

1. Remove the Cassette.
2. Lift small tap, remove the pick up roller.
   (Pick up/ Retard/ Forward)
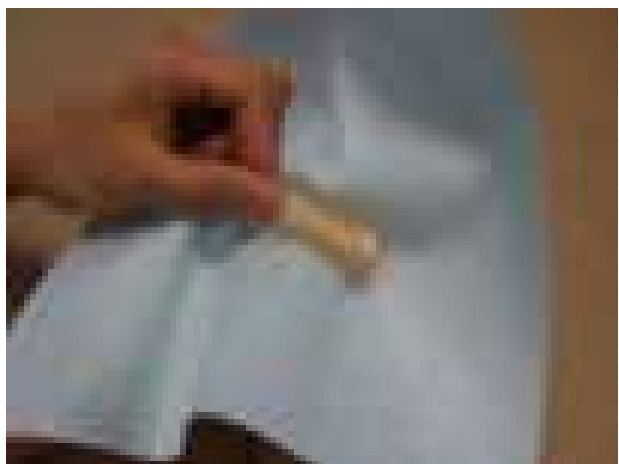
3. Clean the pick up roller which was removed from the pick up unit using a micro fiber cloth.

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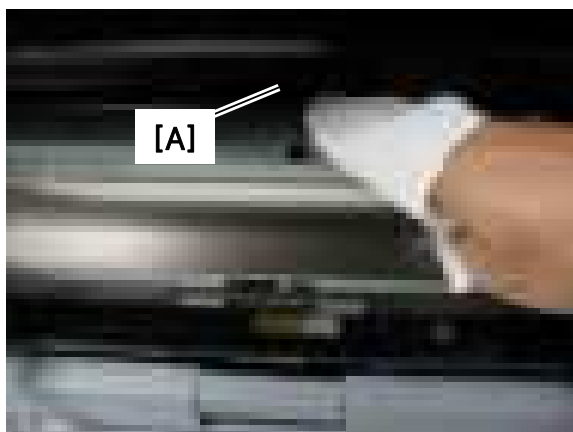
1. Open the Cover-Side
2. Clean the regi roller[A] by using a cleaning pad with alcohol.

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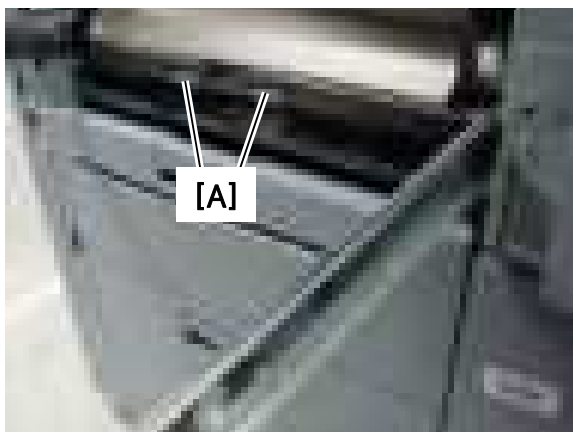
1. Open the Cover-Side
2. Clean the Tray1 Feed roller[A] by using a cleaning pad with alcohol.

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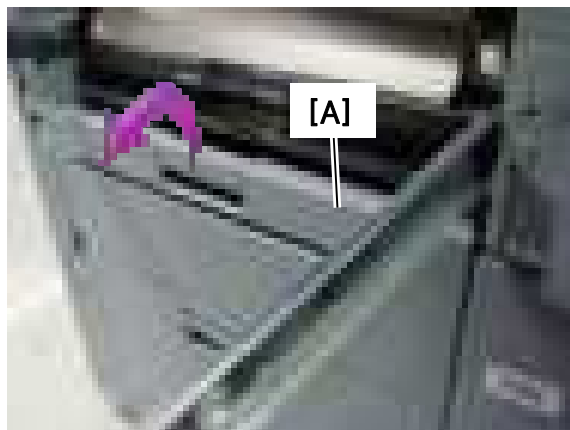
1. Open the Cover-Side.
2. Open the Tray2 rear cover [A].
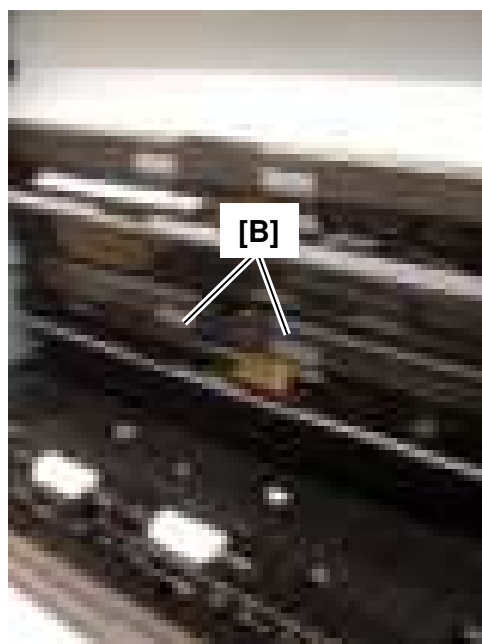
3. Clean the Tray2 Feed roller [B] by using a cleaning pad with alcohol.

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6.3.6 Cleaning the LSU window
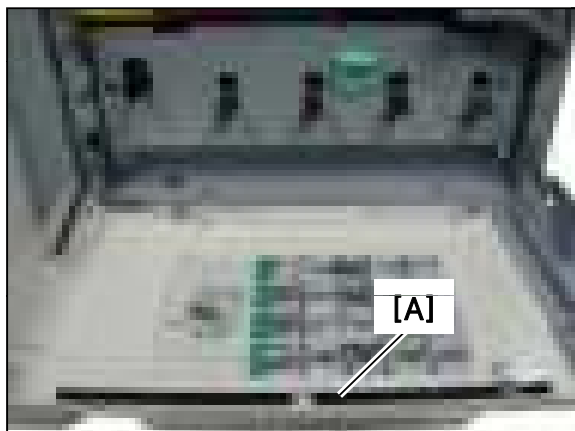
1. Open the front cover.
2. Take out the LSU window cleaning Jig[A].

[A]

3. Insert the LSU window cleaning Jig to the hole.
4. Slowly pull out and push the cleaning Jig.
5. Repeat step 4 at least 5 times for each LSU window.

6.3.7 Cleaning the DADF retard rubber pad

1. Open the DADF cover.
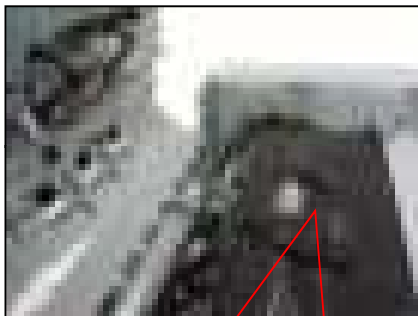
2. Clean the DADF retard rubber pad by using a soft cloth.
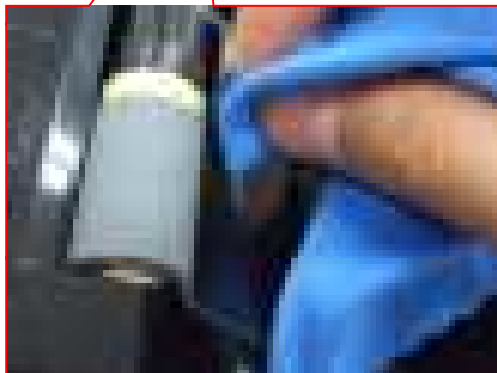
6.3.8 Cleaning the DADF rollers
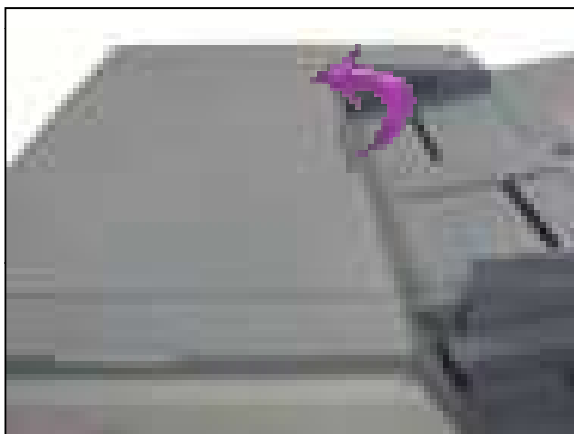
1. Open the DADF cover.
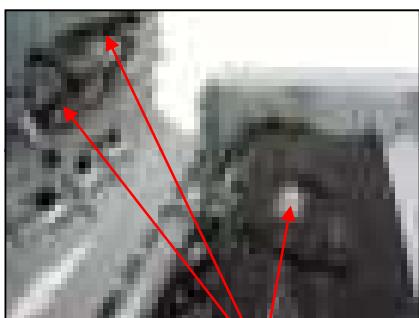
2. Remove the DADF pick up/ Retard / Forward roller.

NOTE
For disassembling the rollers, refer to 6.2.9.

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

6.3.9 Cleaning the feed sensor

Note
The feed sensor contamination may make the jam error.
Please clean the feed sensor reqularly. (Approx. 150K)
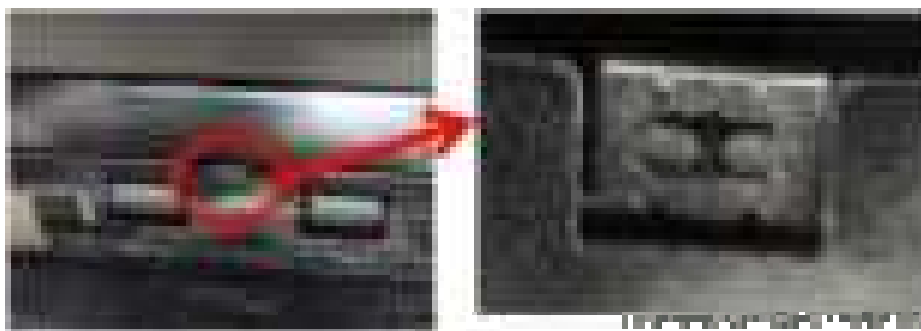
[Contaminated Sensor]

1. Open the side cover.
2. Clean the sensor with the soft cloth or cotton swab.

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
A1-1211	Actuator Motor Failure #A1-1211: Please open/close door.	7-15
A1-1213	Actuator Motor Failure #A1-1213: Please open/close door.	7-15
A1-1613	Actuator Motor Failure #A1-1613: Please open/close door.	7-16
A1-2211	Actuator Motor Failure #A1-2211: Please open/close door.	7-17
A1-2213	Actuator Motor Failure #A1-2213: Please open/close door.	7-18
A1-2311	Actuator Motor Failure #A1-2311: Please open/close door.	7-19
A1-2313	Actuator Motor Failure #A1-2313: Please open/close door.	7-18
A1-2411	Actuator Motor Failure #A1-2411: Please open/close door.	7-20
A1-2413	Actuator Motor Failure #A1-2413: Please open/close door.	7-18
A1-2511	Actuator Motor Failure #A1-2511: Please open/close door.	7-21
A1-2513	Actuator Motor Failure #A1-2513: Please open/close door.	7-18
A1-4111	Actuator Motor Failure #A1-4111: Please open/close door.	7-22
A1-5213	Actuator Motor Failure #A1-5213: Please open/close door.	7-23
A1-5313	Actuator Motor Failure #A1-5313: Please open/close door.	7-23
A1-5413	Actuator Motor Failure #A1-5413: Please open/close door.	7-23
A1-5513	Actuator Motor Failure #A1-5513: Please open/close door.	7-23
A2-1310	Actuator Fan Failure : #A2-1310. Please open/close door.	7-24
A2-1311	Actuator Fan Signal Failure : #A2-1311. Please open/close door.	7-24
A2-1410	Actuator Fan Failure : #A2-1410. Please open/close door.	7-24
A2-1411	Actuator Fan Signal Failure : #A2-1411. Please open/close door.	7-24
A2-1510	Actuator Fan Failure : #A2-1510. Please open/close door.	7-24
A2-1511	Actuator Fan Signal Failure : #A2-1511. Please open/close door.	7-24
A2-1810	Actuator Fan Failure : #A2-1810. Please open/close door.	7-24
A2-1811	Actuator Fan Signal Failure : #A2-1811. Please open/close door.	7-24

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Error Code	Error Message	Troubleshooting Page
A2-2310	Actuator Fan Failure : #A2-2310. Please open/close door.	7-24
A2-2311	Actuator Fan Signal Failure : #A2-2311. Please open/close door.	7-24
A2-2410	Actuator Fan Failure : #A2-2410. Please open/close door.	7-24
A2-2411	Actuator Fan Signal Failure.#A2-2411:Please open/close door.	7-24
A2-2510	Actuator Fan Failure : #A2-2510. Please open/close door.	7-24
A2-2511	Actuator Fan Signal Failure : #A2-2511. Please open/close door.	7-24
A2-2810	Actuator Fan Failure : #A2-2810. Please open/close door.	7-24
A2-2811	Actuator Fan Signal Failure : #A2-2811. Please open/close door.	7-24
A2-2910	Actuator Fan Failure : #A2-2910. Please open/close door.	7-24
A2-2911	Actuator Fan Signal Failure : #A2-2911. Please open/close door.	7-24
A3-2110	Actuator Sensor Failure #A3-2110: Turn off then on.	7-25
A3-2111	Actuator Sensor Failure #A3-2111: Please open/close door.	7-26
A3-2112	Actuator Sensor Failure #A3-2112: Please open/close door.	7-26
A3-2210	Actuator Sensor Failure #A3-2210: Turn off then on.	7-27
A3-2211	Actuator Sensor Failure #A3-2211:Turn off then on.	7-27
A3-3111	Actuator Sensor Failure #A3-3111: Turn off then on.	7-28
A3-3112	Actuator Sensor Failure #A3-3112:Turn off then on.	7-28
A3-3113	Actuator Sensor Failure #A3-3113: Turn off then on.	7-28
A3-3114	Actuator Sensor Failure #A3-3114:Turn off then on.	7-28
A3-3211	Actuator Sensor Failure #A3-3211: Turn off then on.	7-29
A3-3212	Actuator Sensor Failure #A3-3212: Turn off then on.	7-29
A3-3311	Actuator Sensor Failure #A3-3311:Turn off then on.	7-30
A3-3312	Actuator Sensor Failure #A3-3312: Turn off then on.	7-30
A3-3411	Actuator Sensor Failure #A3-3411: Turn off then on.	7-31
A3-3412	Actuator Sensor Failure #A3-3412: Turn off then on.	7-31
C1-2110	Prepare new yellow toner cartridge.	7-32
C1-2130	End of life, Replace with new yellow toner cartridge.	7-33
C1-2140	End of life, Replace with new yellow toner cartridge.	7-33
C1-2311	Yellow Toner Cartridge Failure #C1-2311: Please open/close door.	7-34
C1-2411	Yellow toner cartridge is not installed. Install it.	7-35
C1-2413	Shake yellow toner cartridge.	7-36
C1-2512	Yellow toner cartridge is not compatible. Check user's guide.	7-37
C1-2514	Cyan imaging unit is not compatible. Check user's guide.	7-38

Error Code	Error Message	Troubleshooting Page
C1-3110	Prepare new magenta toner cartridge.	7-32
C1-3130	End of life, Replace with new magenta toner cartridge.	7-33
C1-3140	End of life, Replace with new cyan toner cartridge.	7-33
C1-3311	Magenta Toner Cartridge Failure #C1-3311: Please open/close door.	7-34
C1-3411	Magenta toner cartridge is not installed. Install it.	7-35
C1-3413	Shake magenta toner cartridge.	7-36
C1-3512	Magenta toner cartridge is not compatible. Check user's guide.	7-37
C1-3514	Cyan imaging unit is not compatible. Check user's guide.	7-38
C1-4110	Prepare new cyan toner cartridge.	7-32
C1-4130	End of life, Replace with new cyan toner cartridge.	7-33
C1-4140	End of life, Replace with new cyan toner cartridge.	7-33
C1-4311	Cyan Toner Cartridge Failure #C1-4311: Please open/close door.	7-34
C1-4411	Cyan toner cartridge is not installed. Install it.	7-35
C1-4413	Shake cyan toner cartridge.	7-36
C1-4512	Cyan toner cartridge is not compatible. Check user's guide.	7-37
C1-4514	Cyan imaging unit is not compatible. Check user's guide.	7-38
C1-5110	Prepare new black toner cartridge.	7-32
C1-5130	End of life, Replace with new black toner cartridge.	7-33
C1-5140	End of life, Replace with new black toner cartridge.	7-33
C1-5311	Black Toner Cartridge Failure #C1-5311: Please open/close door.	7-34
C1-5411	Black toner cartridge is not installed. Install the cartridge.	7-35
C1-5413	Shake cyan toner cartridge.	7-36
C1-5512	Black toner cartridge is not compatible. Check user's guide.	7-37
C1-5514	Toner cartridge is not compatible. Check user's guide.	7-38
C3-1422	Imaging unit requires charger's cleaning. Clean the unit.	7-39
C3-2110	Prepare new yellow imaging unit.	7-40
C3-2130	End of life, Replace with new yellow imaging unit.	7-41
C3-2140	Replace with new yellow imaging unit.	7-41
C3-2211	Yellow Imaging Unit Failure #C3-2211:. Turn off then on.	7-42

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Error Code	Error Message	Troubleshooting Page
C3-2312	Yellow Imaging Unit Failure #C3-2312:Please open/close door.	7-43
C3-2313	Yellow Imaging Unit Failure #C3-2313: Install yellow imaging unit again.	7-44
C3-2321	Yellow Imaging Unit Failure #C3-2321:Turn off then on.	7-45
C3-2411	Yellow imaging unit is not installed. Install it.	7-46
C3-2422	Yellow imaging unit requires charger's cleaning. Clean the unit.	7-39
C3-2512	Yellow imaging unit is not compatible. Check user's guide.	7-47
C3-2514	Yellow imaging unit is not compatible. Check user's guide.	7-47
C3-3110	Prepare new magenta imaging unit.	7-40
C3-3130	End of life, Replace with new magenta imaging unit.	7-41
C3-3140	Replace with new magenta imaging unit.	7-41
C3-3211	Magenta Imaging Unit Failure #C3-3211: Turn off then on.	7-42
C3-3312	Magenta Imaging Unit Failure #C3-3312: Turn off then on.	7-43
C3-3313	Magenta Imaging Unit Failure #C3-3313: Install magenta imaging unit again.	7-44
C3-3321	Magenta Imaging Unit Failure #C3-3321:Turn off then on.	7-45
C3-3411	Magenta imaging unit is not installed. Install it.	7-46
C3-3422	Magenta imaging unit requires charger's cleaning. Clean the unit.	7-39
C3-3512	Magenta imaging unit is not compatible. Check user's guide.	7-47
C3-3514	Magenta imaging unit is not original Samsung. Check user's guide.	7-47
C3-4110	Prepare new cyan imaging unit.	7-40
C3-4130	End of life, Replace with new cyan imaging unit.	7-41
C3-4140	Replace with new cyan imaging unit.	7-41
C3-4211	Cyan Imaging Unit Failure #C3-4211: Turn off then on.	7-42
C3-4312	Cyan Imaging Unit Failure #C3-4312: Turn off then on.	7-43
C3-4313	Cyan Imaging Unit Failure #C3-4313 : Install cyan imaging unit again.	7-44
C3-4321	Cyan Imaging Unit Failure #C3-4321: Turn off then on.	7-45
C3-4411	Cyan imaging unit is not installed. Install it.	7-46
C3-4422	Cyan imaging unit requires charger's cleaning. Clean the unit.	7-39
C3-4512	Cyan imaging unit is not compatible. Check user's guide.	7-47

Error Code	Error Message	Troubleshooting Page
C3-4514	Cyan imaging unit is not compatible. Check user's guide.	7-47
C3-5110	Prepare new black imaging unit.	7-40
C3-5130	Replace with new black imaging unit.	7-41
C3-5140	Replace with new black imaging unit.	7-41
C3-5211	Black Imaging Unit Failure #C3-5211:Turn off then on.	7-42
C3-5312	Black Imaging Unit Failure #C3-5312: Install black imaging unit again.	7-43
C3-5313	Black Imaging Unit Failure #C3-5313: Install black imaging unit again.	7-44
C3-5321	Black Imaging Unit Failure #C3-5321: Turn off then on.	7-45
C3-5411	Black Imaging unit is not installed. Install it.	7-46
C3-5422	Black imaging unit requires charger's cleaning. Clean the unit.	7-39
C3-5512	Black imaging unit is not original Samsung. Check user's guide.	7-47
C3-5514	Black imaging unit is not original Samsung. Check user's guide.	7-47
C5-1110	Prepare new transfer belt unit.	7-48
C5-1120	Replace with new transfer belt unit.	7-49
C5-1231	ITB Unit Failure #C5-1231:Turn off then on.	7-50
C5-1232	ITB Unit Failure #C5-1232:Turn off then on.	7-51
C5-1311	Transfer belt is not installed. Install it.	7-52
C5-1412	Transfer belt is not compatible. Check user's guide.	7-53
C5-1414	Image transfer belt unit is not original Samsung. Check user's guide.	7-53
C5-1521	ITB Unit Failure #C5-1521: Turn off then on.	7-54
C5-1531	ITB Unit Failure #C5-1531: Turn off then on.	7-55
C5-1541	ITB Unit Failure #C5-1541:Turn off then on.	7-54
C5-1551	ITB Unit Failure #C5-1551:Turn off then on.	7-56
C5-1621	ITB Unit Failure #C5-1621: Turn off then on.	7-57
C5-1631	ITB Unit Failure #C5-1631: Turn off then on.	7-57
C5-1641	ITB Unit Failure #C5-1641: Turn off then on.	7-57
C5-1651	ITB Unit Failure #C5-1651: Turn off then on.	7-57
C5-2110	Prepare new transfer belt cleaning unit.	7-58
C5-2120	Transfer belt cleaning unit is worn. Replace with new one.	7-58
C5-2311	Transfer belt cleaning unit is not installed. Install it.	7-59
C5-2412	Transfer belt cleaning is not compatible. Check user's guide.	7-60

Error Code	Error Message	Troubleshooting Page
C5-3110	Prepare new Transfer roller.	7-61
C5-3120	Replace with new Transfer roller.	7-61
C6-1110	Prepare new fuser unit.	7-62
C6-1120	Replace with new fuser unit.	7-62
C6-1311	Fuser unit is not installed correctly. Install it.	7-63
C6-1412	Fuser unit is not compatible. Check user's guide.	7-64
C7-1110	Waste toner container is almost full. Order new one.	7-65
C7-1130	Waste toner container is full. Replace it	7-65
C7-1311	Waste toner container is not installed. Install it.	7-66
C9-1112	Replace with new Tray1 pickup roller.	7-67
C9-1122	Replace with new Tray2 pickup roller.	7-67
C9-1132	Replace with new Tray3 pickup roller.	7-67
C9-1142	Replace with new Tray4 pickup roller.	7-67
C9-1162	Replace with new MP pickup roller.	7-68
H1-1311	Paper jam in tray 3.	7-69
H1-1312	Paper jam in tray 3.	7-70
H1-1317	Paper jam inside of machine.	7-69
H1-1318	Paper jam in tray 3.	7-69
H1-1322	Tray 3 cassette is pulled out. Insert it properly.	7-71
H1-1351	Paper is low in Tray 3. Load paper.	7-72
H1-1352	Paper is empty in Tray 3. Load paper.	7-73
H1-1353	Input System Failure: #H1-1353. Call for service if the problem persists.	7-74
H1-1411	Paper jam in tray 4.	7-75
H1-1412	Paper jam in tray 4.	7-76
H1-1417	Paper jam inside of machine.	7-75
H1-1418	Paper jam in tray 4.	7-75
H1-1422	Tray 4 cassette is pulled out. Insert it properly.	7-71
H1-1451	Paper is low in Tray 4. Load paper.	7-71
H1-1452	Paper is empty in Tray 4. Load paper.	7-73
H1-1453	Input System Failure: #H1-1453. Call for service if the problem persists.	7-74
H1-3330	Input System Failure: #H1-3330. Check HCF connection.	7-77
H1-5330	Input System Failure: #H1-3330. Check DCF connection.	7-77

Error Code	Error Message	Troubleshooting Page
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
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
H2-3194	Paper jam after booklet folding.	Refer to finisher SM

Error Code	Error Message	Troubleshooting Page
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
M1-1113	Paper jam in tray 1.	7-78
M1-1213	Paper jam in tray 2.	7-79
M1-1610	Paper jam in MP tray.	7-80
M1-3122	Tray 1 cassette is pulled out. Insert it properly.	7-71
M1-3222	Tray 2 cassette is pulled out. Insert it properly.	7-71
M1-5111	Paper is low in tray 1. Load paper.	7-72
M1-5211	Paper is low in tray 2. Load paper.	7-72
M1-5112	Paper is empty in tray 1. Load paper.	7-73
M1-5212	Paper is empty in tray 2. Load paper.	7-73
M1-4111	Input System Failure #M1-4111 : Pull tray 1 out and insert it.	7-74
M1-4211	Input System Failure #M1-4111 : Pull tray 2 out and insert it.	7-74
M2-1121	Paper jam inside of machine.	7-81
M2-1124	Paper jam inside of machine.	7-81
M2-1125	Paper jam inside of machine.	7-81
M2-1131	Paper jam inside of machine.	7-81
M2-1134	Paper jam inside of machine.	7-81
M2-1135	Paper jam inside of machine.	7-81
M2-1211	Paper jam inside of machine.	7-82
M2-1213	Paper jam inside of machine.	7-82
M2-1214	Paper jam inside of machine.	7-82
M2-1221	Paper jam inside of machine.	7-82
M2-1321	Paper jam inside of machine.	7-83
M2-1324	Paper jam inside of machine.	7-83

Error Code	Error Message	Troubleshooting Page
M2-1325	Paper jam inside of machine.	7-83
M2-1331	Paper jam inside of machine.	7-84
M2-1333	Paper jam inside of machine.	7-84
M2-1334	Paper jam inside of machine.	7-84
M2-2111	Paper jam at the top of duplex path.	7-85
M2-2113	Paper jam at the top of duplex path.	7-85
M2-2114	Paper jam at the inside of duplex path.	7-85
M2-2213	Paper jam at the bottom of duplex path.	7-86
M2-2215	Paper jam at the inside of duplex path.	7-86
M2-2216	Paper jam at the inside of duplex path.	7-86
M2-2313	Paper jam at the bottom of duplex path.	7-87
M2-2411	Paper jam at the top of duplex path.	7-88
M2-2413	Paper jam at the return of duplex path.	7-88
M2-2414	Paper jam at the top of duplex path.	7-88
M3-1211	Paper jam in exit area.	7-89
M3-1213	Paper jam in exit area.	7-89
M3-1214	Paper jam in exit area.	7-89
M3-1311	Paper jam in exit area.	7-89
M3-1313	Paper jam in exit area.	7-89
M3-1314	Paper jam in exit area.	7-89
M3-1510	Paper jam in exit area.	7-89
M3-2230	Output tray(face down) is full. Remove printed media.	7-90
M3-2330	Output tray(face up) is full. Remove printed media.	7-91
S1-1113	Video System Failure #S1-1113:Turn off then on.	7-92
S1-1114	Video System Failure #S1-1114: Turn off then on.	7-92
S1-1213	Video System Failure #S1-1213:Turn off then on.	7-93
S1-1214	Video System Failure #S1-1214: Turn off then on.	7-93
S1-1313	The clock became initial time. Set a time again.	7-94
S1-1411	Video System Failure #S1-1411: Turn off then on.	7-95
S1-1413	Video System Failure #S1-1413: Turn off then on.	7-96
S1-2111	Video System Failure #S1-2111: Turn off then on.	7-97
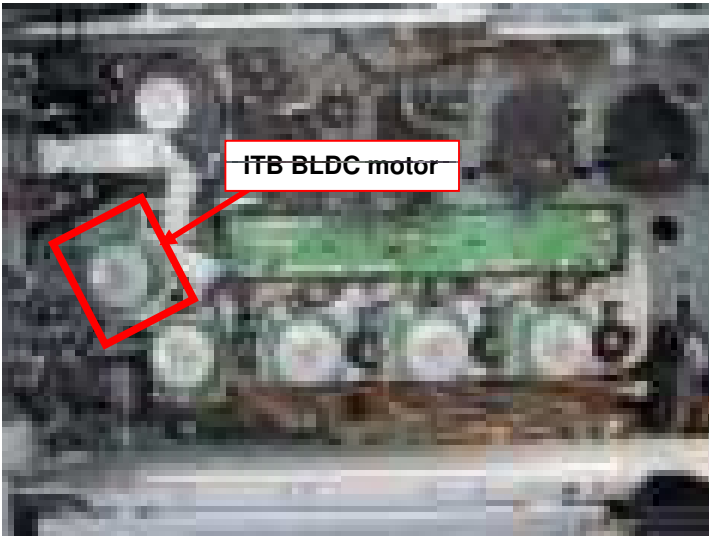
Error Code	Error Message	Troubleshooting Page
S1-2411	HDD System Failure #S1-2411: Turn off then on.	7-98
S1-2421	HDD System Failure #S1-2421: Turn off then on.	7-98
S1-2422	HDD System Failure #S1-2422:Turn off then on.	7-98
S1-2433	HDD System Failure # S1-2433 : Call for service.	7-99
S1-2434	HDD is almost full_1. Check user's guide.	7-100
S1-2435	HDD is almost full_2. Check user's guide.	7-100
S1-2436	HDD is almost full_3. Check user's guide.	7-100
S1-2437	HDD is almost full_4. Check user's guide.	7-100
S1-2438	HDD is almost full_5. Check user's guide.	7-100
S1-2439	HDD is almost full_6. Check user's guide.	7-100
S1-2443	HDD System Failure #S1-2443 : Call for service.	7-99
S1-2444	HDD System Failure #S1-2444 : Call for service.	7-99
S1-2445	HDD System Failure #S1-2445 : Call for service.	7-99
S1-2446	HDD System Failure #S1-2446 : Call for service.	7-99
S1-2447	HDD System Failure #S1-2447 : Call for service.	7-99
S1-2448	HDD System Failure #S1-2448 : Call for service.	7-99
S1-2449	HDD System Failure #S1-2449 : Call for service.	7-99
S1-2510	MSOK System Failure #S1-2510:Turn off then on.	7-101
S1-2511	MSOK System Failure #S1-2511:Turn off then on.	7-102
S1-3110	Video System Failure #S1-3110: Turn device off then on.	7-103
S1-4111	Video System Failure #S1-4111:Turn off then on.	7-104
S1-4311	Video System Failure #S1-4311:Turn off then on.	7-105
S1-5221	System Failure #S1-5221 : Turn off then on.	7-107
S1-5321	Fax modem card is not installed. Install the card.	7-108
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S2-2211	#S2-2211 Call for service	7-114
S2-2311	Engine System Failure #S2-2311:Turn off then on.	7-115
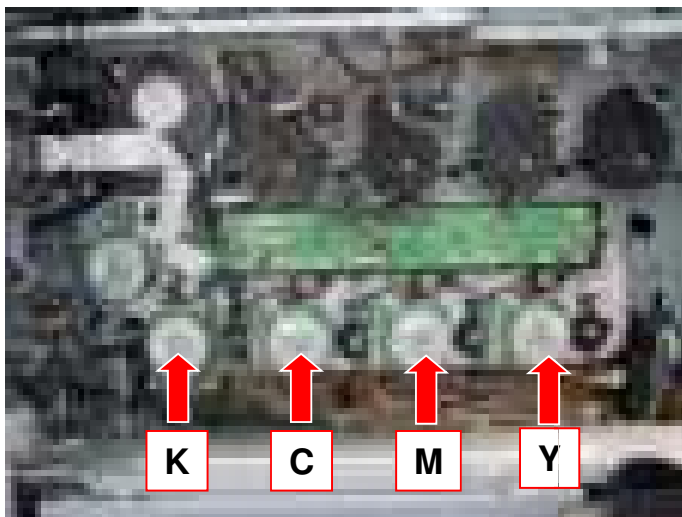
Error Code	Error Message	Troubleshooting Page
S2-3110	Engine System Failure #S2-3110:Turn off then on.	7-116
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U1-2141	Fuser Unit Failure #U1-2141: Turn off then on.	7-131
U1-2142	Fuser Unit Failure #U1-2142: Turn off then on.	7-131
U1-2211	Fuser Unit Failure #U1-2211: Turn off then on.	7-132
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U2-2112	Yellow LSU Unit Failure #U2-2112: Turn off then on.	7-134
U2-2113	Yellow LSU Unit Failure #U2-2113:Turn off then on.	7-135
U2-3111	Magenta LSU Unit Failure #U2-3111: Turn off then on.	7-133
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U2-3113	Magenta LSU Unit Failure #U2-3113:Turn off then on.	7-135
U2-4111	Cyan LSU Unit Failure #U2-4111: Turn off then on.	7-133
U2-4112	Cyan LSU Unit Failure #U2-4112: Turn off then on.	7-134
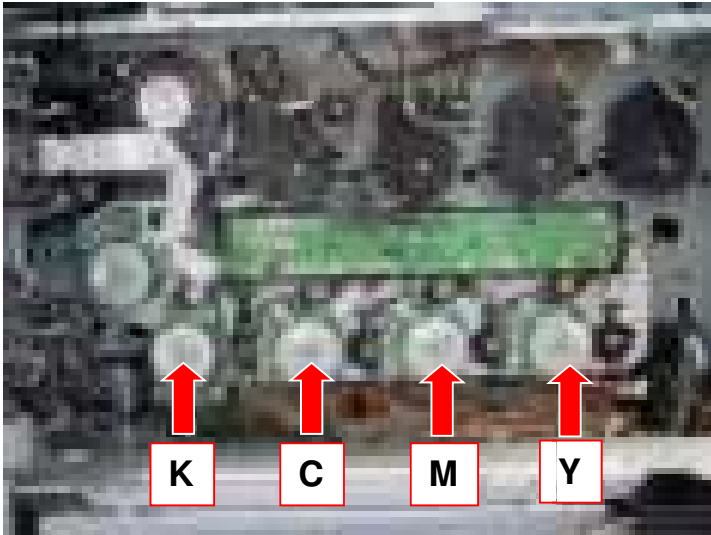
Error Code	Error Message	Troubleshooting Page
U2-4113	Cyan LSU Unit Failure #U2-4113:Turn off then on.	7-135
U2-5111	Black LSU Unit Failure #U2-5111: Turn off then on.	7-133
U2-5112	Black LSU Unit Failure #U2-5112: Turn off then on.	7-134
U2-5113	Black LSU Unit Failure #U2-5113: Turn off then on.	7-135
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U3-1310	Actuator Fan Failure #U3-1310: Turn off then on.	7-24
U3-1311	Actuator Fan Failure #U3-1311: Turn off then on.	7-24
U3-3111	Original paper jam in front of scanner.	7-137
U3-3113	Original paper jam in front of scanner.	7-137
U3-3114	Original paper jam in front of scanner.	7-137
U3-3211	Original paper jam in front of scanner.	7-138
U3-3213	Original paper jam inside of scanner.	7-138
U3-3214	Original paper jam in front of scanner.	7-138
U3-3311	Original paper jam inside of scanner.	7-139
U3-3313	Original paper jam inside of scanner.	7-139
U3-3314	Original paper jam inside of scanner.	7-139
U3-3411	Original paper jam inside of scanner.	7-140
U3-3413	Original paper jam inside of scanner.	7-140
U3-3414	Original paper jam inside of scanner.	7-140
U3-3511	Original paper jam inside of scanner.	7-141
U3-3513	Original paper jam inside of scanner.	7-141
U3-3514	Original paper jam inside of scanner.	7-141
U3-3611	Original paper jam in exit area of scanner.	7-142
U3-3613	Original paper jam in exit area of scanner.	7-142
U3-3614	Original paper jam in exit area of scanner.	7-142
U3-3711	Original paper jam in exit area of scanner.	7-143
U3-3713	Original paper jam in exit area of scanner.	7-143
U3-3714	Original paper jam in exit area of scanner.	7-143
U3-4210	Top door of scanner is open.	7-144
U3-4411	Pick Up Cam Error. ADF Cover open and close. Call for service if the problem persists.	7-145
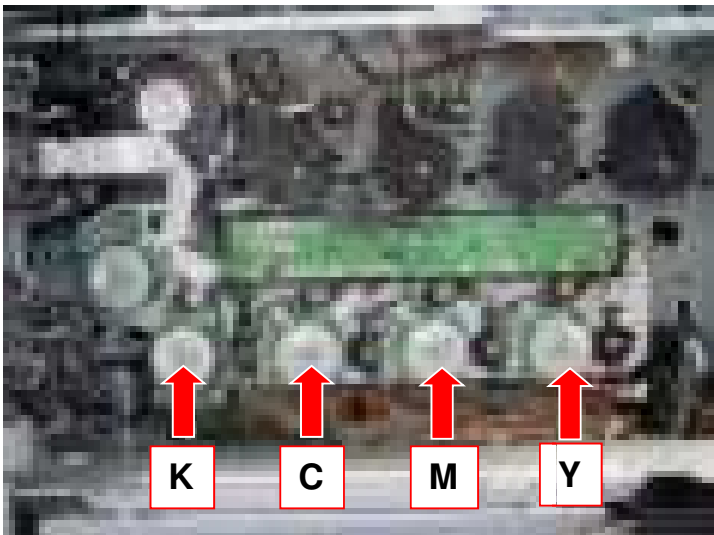
7.2.2 Error Code Details
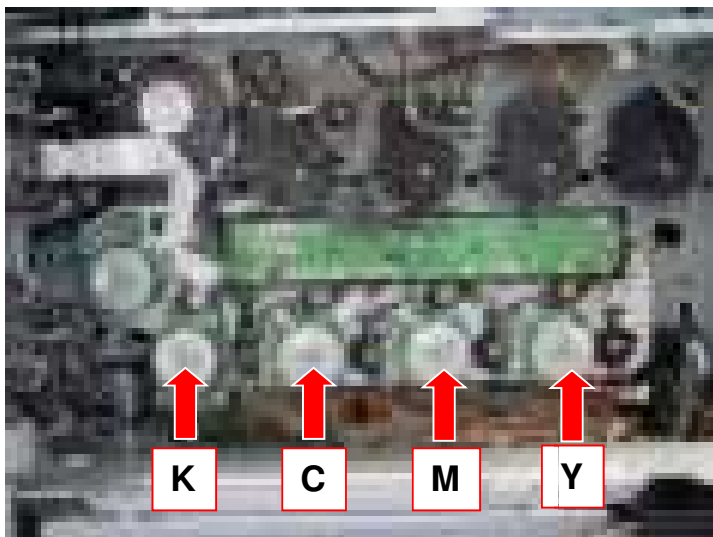
● Code : A1-1113 A1-1213	● Error message : Actuator Motor Failure #A1-1113: Please open/close door. Actuator Motor Failure #A1-1213: Please open/close door.

● **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. (Refer to 3.11.2 of the chapter 3)

Fuser/Exit drive motor

5. If the motor operates normally, replace the fuser unit.

● **Replacement part**

- JC31-00123B (MOTOR BLDC)
- JC91-00931A (FUSER : 220V)
- JC91-00930A (FUSER : 110V)

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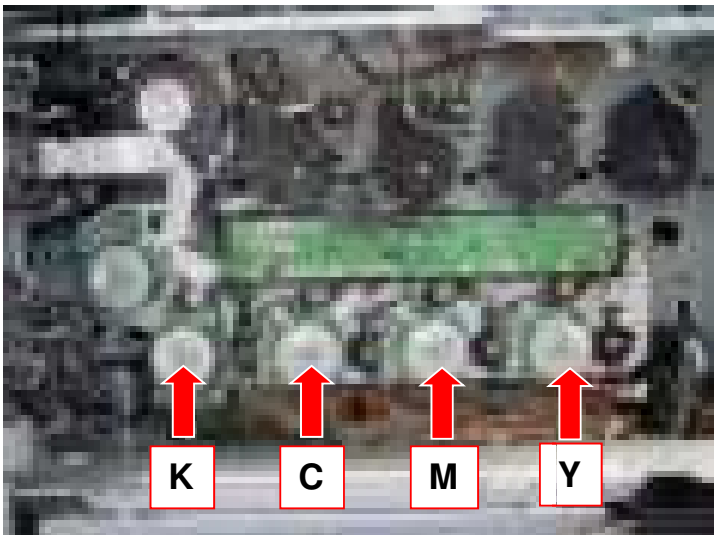
● Code : A1-1613	● Error message : Actuator Motor Failure #A1-1613: Please open/close door.

● Symptom / Cause :

ITB motor does not operate.
ITB 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 ITB unit.

2. Remove the ITB unit and reinstall it.

3. Turn the machine on. Is the problem solved?

4. Turn the machine off.

   Open the engine/video shield door.
   Check if the ITB BLDC motor connector is connected properly.
   If the problem persists, replace the ITB BLDC motor. (Refer to 3.8.2 of the chapter 3)

ITB BLDC motor

5. Replace the motor and controller. If the motor operates normally, replace the ITB unit.

● Replacement part

- JC31-00123A (MOTOR BLDC)
- JC96-05689A : CARTRIDGE-TRANSFER ITB

● Code : A1-2211	● Error message : Actuator Motor Failure #A1-2211: Please open/close door.

● Symptom / Cause :

1. Yellow OPC motor is broken.
2. The relative connector is disconnected.
3. Deve joint board and main board are defective.
4. Even it was ready, it does not working.
5. After starting, it is not reached at ready state.

● Troubleshooting method :

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

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

3. Open the Main board plate.

4. Remove the yellow OPC BLDC motor and one of the OPC BLDC motors.
   Install the removed yellow OPC BLDC motor to OPC BLDC position.
   Execute the yellow OPC BLDC motor test on diagnostic mode.

K   C   M   Y

5. If the motor doesn't work, replace the yellow OPC BLDC motor.
6. If the motor works, check the connection
7. Replace the Deve joint board or engine board.

● Replacement part
- JC31-00123A (MOTOR BLDC)
- JC92-02152A (DEVE-JOINT)
- JC92-02129A : PBA-ENGINE (CLX-9350ND)
- JC92-02239A : PBA-ENGINE (CLX-9250ND)
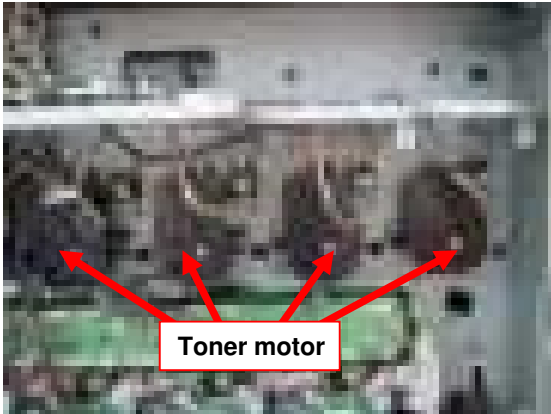
● Code :	● Error message :
A1-2213	Actuator Motor Failure #A1-2213: Please open/close door.
A1-2313	Actuator Motor Failure #A1-2313: Please open/close door.
A1-2413	Actuator Motor Failure #A1-2413: Please open/close door.
A1-2513	Actuator Motor Failure #A1-2513: Please open/close door.

● **Symptom / Cause :**

A1-2213 : Yellow OPC motor does not operate.
A1-2313 : Magenta OPC motor does not operate.
A1-2413 : Cyan OPC motor does not operate.
A1-2513 : Black OPC motor does not operate.

● **Troubleshooting method :**

1. Turn off the machine then on.

2. Enter the diagnostic mode. (Refer to chapter 4. Service Mode)
   Execute the OPC motor test. If any motor is not working, replace the motor.

● **Replacement part**

- JC31-00123A (MOTOR BLDC)

● **Code :** A1-2311	● **Error message :** Actuator Motor Failure #A1-2311: Please open/close door.

● **Symptom / Cause :**

1. Magenta OPC motor is broken.
2. The relative connector is disconnected.
3. Deve joint board and main board are defective.
4. Even it was ready, it does not working.
5. After starting, it is not reached at ready state.

● **Troubleshooting method :**

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

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

3. Open the Main board plate.

4. Remove the Magenta OPC BLDC motor and one of the OPC BLDC motors.
   Install the removed Magenta OPC BLDC motor to OPC BLDC position.
   Execute the Magenta OPC BLDC motor test on diagnostic mode.

5. If the motor doesn't work, replace the Magenta OPC BLDC motor.
6. If the motor works, check the connection
7. Replace the Deve joint board or engine board.

● **Replacement part**
- JC31-00123A (MOTOR BLDC)
- JC92-02152A (DEVE-JOINT)
- JC92-02129A : PBA-ENGINE (CLX-9350ND)
- JC92-02239A : PBA-ENGINE (CLX-9250ND)

7-19

● Code : A1-2411	● Error message : Actuator Motor Failure #A1-2411: Please open/close door.

● Symptom / Cause :

1. Cyan motor is broken.
2. The relative connector is disconnected.
3. Deve joint board and main board are defective.
4. Even it was ready, it does not working.
5. After starting, it is not reached at ready state.

● Troubleshooting method :

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

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

3. Open the Main board plate.

4. Remove the Cyan OPC BLDC motor and one of the OPC BLDC motors.
   Install the removed Cyan OPC BLDC motor to OPC BLDC position.
   Execute the OPC BLDC motor test on diagnostic mode.

5. If the motor doesn't work, replace the Cyan OPC BLDC motor.
6. If the motor works, check the connection
7. Replace the Deve joint board or engine board.

● Replacement part
- JC31-00123A (MOTOR BLDC)
- JC92-02152A (DEVE-JOINT)
- JC92-02129A : PBA-ENGINE (CLX-9350ND)
- JC92-02239A : PBA-ENGINE (CLX-9250ND)

7-20

● Code : A1-2511	● Error message : Actuator Motor Failure #A1-2511: Please open/close door.

● **Symptom / Cause :**

1. Black motor is broken.
2. The relative connector is disconnected.
3. Deve joint board and main board are defective.
4. Even it was ready, it does not working.
5. After starting, it is not reached at ready state.

● **Troubleshooting method :**

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

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

3. Open the Main board plate.

4. Remove the black OPC BLDC motor and one of the OPC BLDC motors.
   Install the removed black OPC BLDC motor to OPC BLDC position.
   Execute the black OPC BLDC motor test on diagnostic mode.

5. If the motor doesn't work, replace the black OPC BLDC motor.
6. If the motor works, check the connection
7. Replace the Deve joint board or engine board.

● **Replacement part**
- JC31-00123A (MOTOR BLDC)
- JC92-02152A (DEVE-JOINT)
- JC92-02129A : PBA-ENGINE (CLX-9350ND)
- JC92-02239A : PBA-ENGINE (CLX-9250ND)

7-21

● Code : **A1-4111**	● **Error message :** Actuator Motor Failure #A1-4111: Please open/close door.

● **Symptom / Cause :**

1. T2 Engage Motor is broken.
2. The gear for T2 engagement is broken.

● **Troubleshooting method :**

1.   Check if the COVER-SIDE DUPLEX FEED ASSY unit is working normally.

2.   Check if the T2 Engage motor is working normally. If it is defective, replace it.

3. If the T2 Engage motor is OK, check the gear. If the gear is worn out or defective, replace it.

● **Replacement part**

JC95-01058A : COVER-SIDE DUPLEX FEED
JC95-01056A : COVER-SIDE MOTOR DC
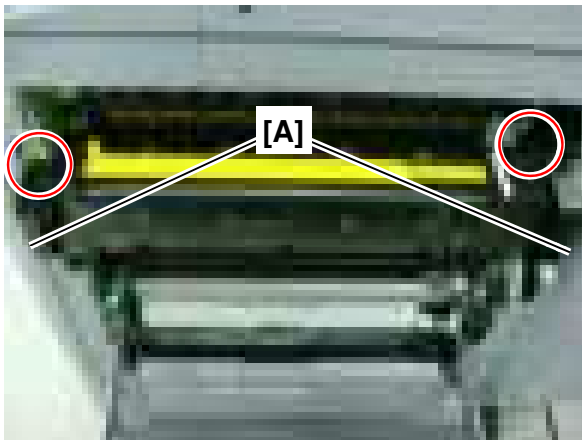
● Code :	● Error message :
A1-5213	Actuator Motor Failure #A1-5213: Turn off then on.
A1-5313	Actuator Motor Failure #A1-5313: Turn off then on.
A1-5413	Actuator Motor Failure #A1-5413: Turn off then on.
A1-5513	Actuator Motor Failure #A1-5513: Turn off then on.

● Symptom / Cause :

1. YMCK 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 yellow/magenta/cyan/black toner motor test. If the motor works, check the connection.

3. If the problem persists, remove the rear cover and open the Main board plate.

4. Remove the yellow/magenta/cyan/black toner motor and one of the toner motors.
   Install the removed yellow/magenta/cyan/black toner motor to toner position.
   Execute the yellow/magenta/cyan/black toner motor test on diagnostic mode.

Toner motor

5. If the motor doesn't work, replace the yellow/magenta/cyan/black toner motor. (Refer to 3.7.7)
6. If the motor works, check the connection
7. Replace the Deve joint board or Main board.

● Replacement part

- JC31-00124A (MOTOR GEARED-T_SUPPLY)
- JC92-02152A (DEVE-JOINT)
- JC92-02129A : PBA-ENGINE (CLX-9350ND)
- JC92-02239A : PBA-ENGINE (CLX-9250ND)

● 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.
A2-1810	Actuator Fan Failure #A2-1810: Please open/close door.
A2-1811	Actuator Fan Signal Failure : #A2-1811. 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.
A2-2410	Actuator Fan Failure #A2-2410: Please open/close door.
A2-2411	Actuator Fan Signal Failure.#A2-2411:Please open/close door.
A2-2510	Actuator Fan Failure #A2-2510: Please open/close door.
A2-2511	Actuator Fan Signal Failure : #A2-2511. 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
A2-1810 / A2-1811 : HDD Fan
A2-2310 / A2-2311 : FUSER FAN
A2-2410 / A2-2411 : LSU FAN 1
A2-2510 / A2-2511 : LSU FAN 2
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 /A2-1410 / A2-1411 /A2-1810 / A2-1811 /A2-2510 / A2-2511 : JC31-00129A
A2-1510 / A2-1511 / A2-2310 / A2-2311 /A2-2410 / A2-2411/A2-2810 / A2-2811 : JC31-00130A
U3-1310 / U3-1311 : JC31-00127A

● Code : A3-2110	● Error message : Actuator Sensor Failure #A3-2110: Turn off then on.

● 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 Service 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

K Imaging Unit : CLT-R607K
C Imaging Unit : CLT-R607C
M Imaging Unit : CLT-R607M
Y Imaging Unit : CLT-R670Y

● Code : **A3-2111** **A3-2112**	● **Error message :** Actuator Sensor Failure #A3-2111: Please open/close door. Actuator Sensor Failure #A3-2112: Please open/close door.

● **Symptom** / **Cause :**
Calibration for density sensor is failed

● **Troubleshooting method :**

Execute the density calibration.

1. Open the door and close it.

2. Turn off the machine then on.

3. Remove the ITB and re-install it.

● **Replacement part**

- JC96-05689A : CARTRIDGE-TRANSFER ITB

● Code : **A3-2210** **A3-2211**	● **Error message :** Actuator Sensor Failure #A3-2210: Turn off then on. Actuator Sensor Failure #A3-2211: Turn off then on.

● Symptom / Cause :

CTD sensor sensing failure.

● Troubleshooting method :

Execute the density calibration.

 1. Open the door and close it.

 2. Turn off the machine then on.

 3. Remove the ITB and re-install it.

● Replacement part

- JC96-05689A : CARTRIDGE-TRANSFER ITB

● Code :	● Error message :
A3-3111	Actuator Sensor Failure #A3-3111: Turn off then on.
A3-3112	Actuator Sensor Failure #A3-3112: Turn off then on.
A3-3113	Actuator Sensor Failure #A3-3113: Turn off then on.
A3-3114	Actuator Sensor Failure #A3-3114: Turn off then on.

● 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 2 fuser locking screws.
3. Remove the Fuser unit by holding the handles [A].

● Replacement part

- 1407-001453 (THERMISTOR-NTC ASSY)
- JC91-00931A (FUSER : 220V)
- JC91-00930A (FUSER : 110V)
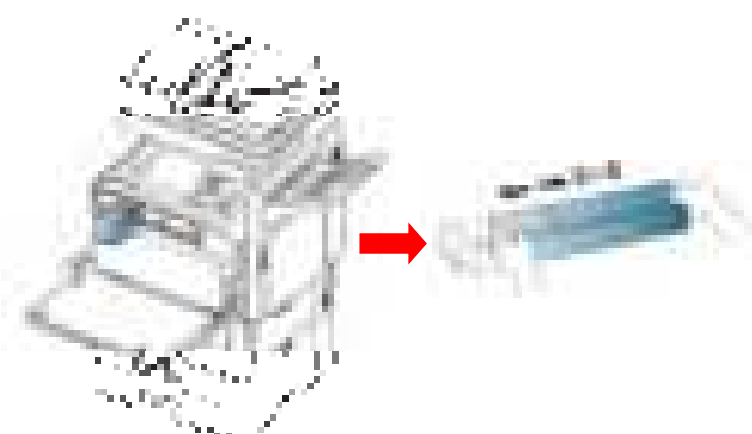
● Code : A3-3211 A3-3212	● Error message : Actuator Sensor Failure #A3-3211: Turn off then on. Actuator Sensor Failure #A3-3212: Turn off then on.

● 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. Enter the Service Mode. (refer to chapter 4. Service Mode)
   Check the output of the inner temperature sensor.
 (Diagnostics > Engine Diagnostics > Engine Test Routines > 123-0040)

3. Check the engine board.

● Replacement part

- JC92-02129A : PBA-ENGINE (CLX-9350ND)
- JC92-02239A : PBA-ENGINE (CLX-9250ND)

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● 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. Enter the Service Mode. (refer to chapter 4. Service Mode)
   Check the output of the outter temperature sensor.
 (Diagnostics > Engine Diagnostics > Engine Test Routines > 123-0060)

3. Check the engine board.

● **Replacement part**

- JC92-02129A : PBA-ENGINE (CLX-9350ND)
- JC92-02239A : PBA-ENGINE (CLX-9250ND)
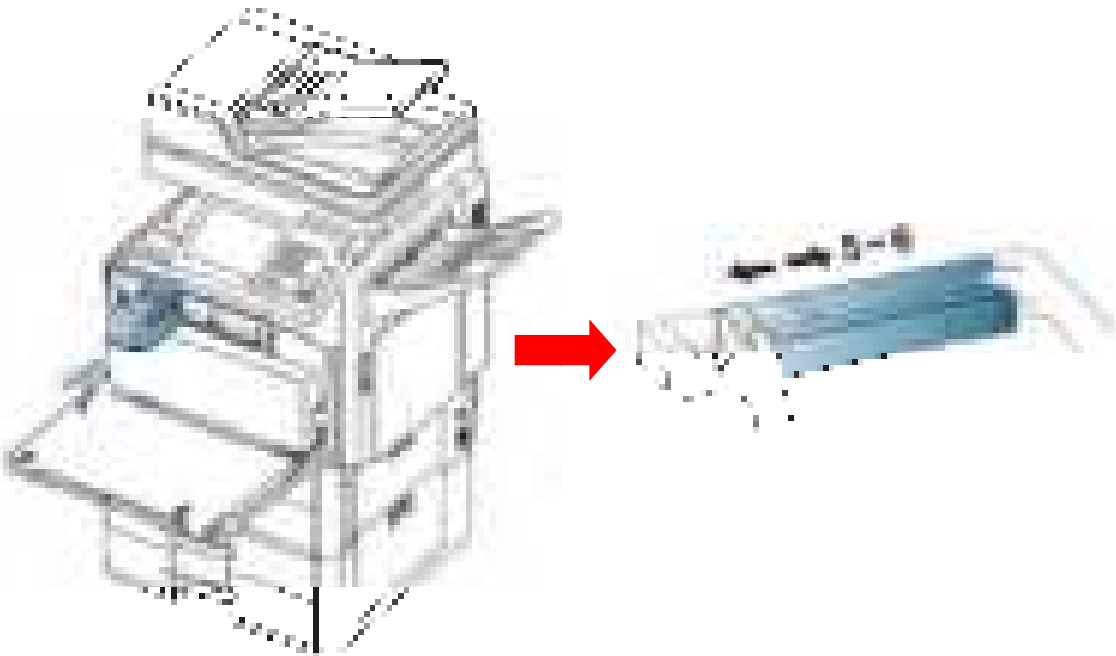
● Code : **A3-3411** **A3-3412**	● Error message : Actuator Sensor Failure #A3-3411: Turn off then on. Actuator Sensor Failure #A3-3412: Turn off then on.

● **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. Enter the Service Mode. (refer to chapter 4. Service Mode)
   Check the output of the humidity temperature sensor.
   (Diagnostics > Engine Diagnostics > Engine Test Routines > 123-0050 / 123-0070)

3. Check the engine board.

● **Replacement part**

- JC92-02129A : PBA-ENGINE (CLX-9350ND)
- JC92-02239A : PBA-ENGINE (CLX-9250ND)
- JC32-00005A : SENSOR-HUMIDITY

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● Code : C1-2110 C1-3110 C1-4110 C1-5110	● Error message : Prepare new yellow toner cartridge. Prepare new magenta toner cartridge. Prepare new cyan toner cartridge. Prepare new black toner cartridge.
● Symptom / Cause : Toner remained is 5 ~ 30% of its life.	
● Troubleshooting method : Please order new toner cartridge because toner cartridge with level of "Low" will be exhausted soon.	
● Replacement part	

● Code :	● Error message :
C1-2130	End of life, Replace with new yellow toner cartridge.
C1-2140	End of life, Replace with new yellow toner cartridge.
C1-3130	End of life, Replace with new magenta toner cartridge.
C1-3140	End of life, Replace with new magenta toner cartridge.
C1-4130	End of life, Replace with new cyan toner cartridge.
C1-4140	End of life, Replace with new cyan toner cartridge.
C1-5130	End of life, Replace with new black toner cartridge.
C1-5140	End of life, Replace with new black toner cartridge.

● Symptom / Cause :

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
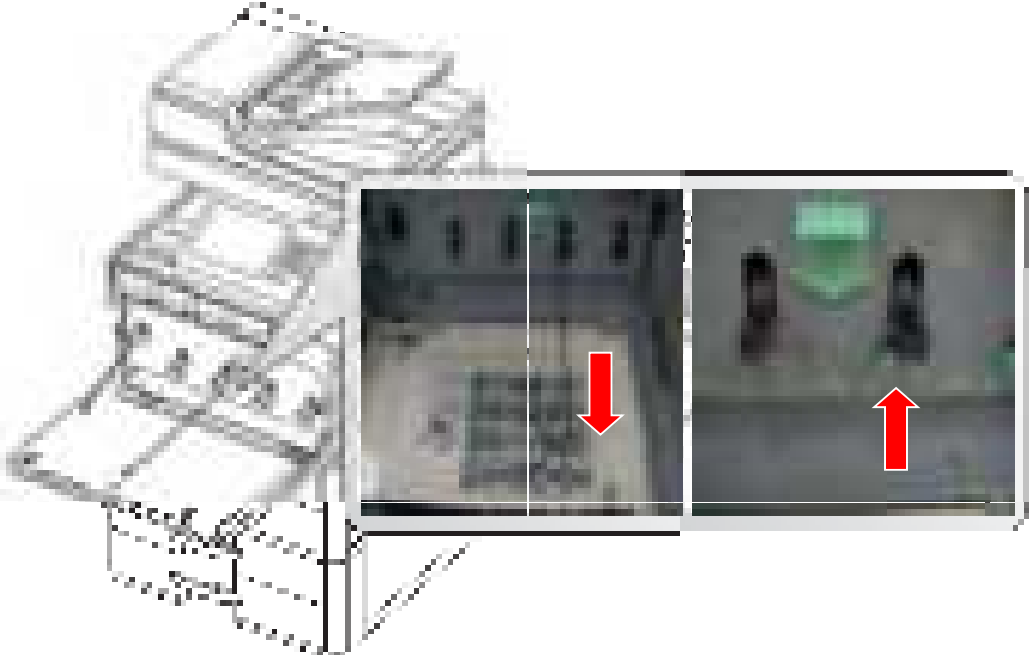
● Code : C1-2311 C1-3311 C1-4311 C1-5311	● Error message : Yellow Toner cartridge Failure #C1-2311 : Please open /close door Magenta Toner cartridge Failure #C1-3311 : Please open /close door Cyan Toner cartridge Failure #C1-4311 : Please open /close door Black Toner cartridge Failure #C1-5311 : Please open /close door

● **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. If the problem persists, check the following.
   a. Check if the pipe for toner supply is blocked.
   a. Check if the toner supply shutter in the imaging unit is operating properly.
   b. Check if the toner supply piper in the imaging unit is blocked.
   c. Check if the output of the T/C sensor is correct.

● **Replacement part**

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● **Code :**	● **Error message :**
C1-2411	Yellow toner cartridge is not installed. Install it.
C1-3411	Magenta toner cartridge is not installed. Install it.
C1-4411	Cyan toner cartridge is not installed. Install it.
C1-5411	Black toner cartridge is not installed. Install it.

● **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.
   Open the inside cover.

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**

- JC92-02129A : PBA-ENGINE (CLX-9350ND)
- JC92-02239A : PBA-ENGINE (CLX-9250ND)
- JC92-02292A : PBA-TONER CONNECTOR
- JC92-02164A : PBA TONER CRUM JOINT
- JC41-00543A : PCB TONER CONNECTOR

● Code : C1-2413 C1-3413 C1-4413 C1-5413	● Error message : Shake yellow toner cartridge. Shake magenta toner cartridge. Shake cyan toner cartridge. Shake black toner cartridge.

● **Symptom / Cause :**

Toner supply is not enough.

● **Troubleshooting method :**

1. Open the front door.
2. Pull the corresponding toner cartridge out from the machine.
3. Thoroughly roll the cartridge five or six times to distribute the toner evenly inside the cartridge.

4. Reinstall the toner cartridge.

● **Replacement part**

● Code :	● Error message :
C1-2512	Yellow toner cartridge is not compatible. Check user's guide
C1-3512	Magenta toner cartridge is not compatible. Check user's guide
C1-4512	Cyan toner cartridge is not compatible. Check user's guide
C1-5512	Black 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**

● Code :	● Error message :
C1-2514	Yellow imaging unit is not compatible. Check user's guide
C1-3514	Magenta imaging unit is not compatible. Check user's guide
C1-4514	Cyan imaging unit is not compatible. Check user's guide
C1-5514	Black 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

K Imaging Unit : CLT-R607K
C Imaging Unit : CLT-R607C
M Imaging Unit : CLT-R607M
Y Imaging Unit : CLT-R670Y

● Code : C3-1422 C3-2422 C3-3422 C3-4422 C3-5422	● Error message : Imaging unit requires charger's cleaning. Clean the unit. Yellow imaging unit requires charger's cleaning. Clean the unit. Magenta imaging unit requires charger's cleaning. Clean the unit. Cyan imaging unit requires charger's cleaning. Clean the unit. Black 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.

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

● **Replacement part**

● Code : C3-2110 C3-3110 C3-4110 C3-5110	● Error message : Prepare new yellow imaging unit. Prepare new magenta imaging unit. Prepare new cyan imaging unit. Prepare new black 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

K Imaging Unit : CLT-R607K
C Imaging Unit : CLT-R607C
M Imaging Unit : CLT-R607M
Y Imaging Unit : CLT-R670Y

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● Code :	● Error message :
C3-2130	End of life, Replace with new yellow imaging unit.
C3-3130	End of life, Replace with new magenta imaging unit.
C3-4130	End of life, Replace with new cyan imaging unit.
C3-5130	End of life, Replace with new black imaging unit.
C3-2140	Replace with new yellow imaging unit.
C3-3140	Replace with new magenta imaging unit.
C3-4140	Replace with new cyan imaging unit.
C3-5140	Replace with new black 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**

● Code : C3-2211 C3-3211 C3-4211 C3-5211	● Error message : Yellow Imaging unit error: #C3-2211. Turn off then on. Magenta Imaging unit error: #C3-3211. Turn off then on. Cyan Imaging unit error: #C3-4211. Turn off then on. Black Imaging unit error: #C3-5211. Turn off then on.

● Symptom / Cause :
Sensor calibration error that detects the toner density for image stabilization control has occurred. - CTD sensor is contaminated by toner. - TRC pattern generation error has occurred.

● Troubleshooting method :

1. Select "Auto Color Tone Adjustment" in control panel.
   (Machine Setup -> General Setting -> Color -> Auto Color Tone Adjustment)
   Select "Menu" and then select "Normal" or "RTC"
 	
2. Print the TRC report. (Machine Setup -> Report -> TRC Report)
   Check the Pass count and Fail count in TRC report.
   Check if the Fail count is 0 and LocR, LocC, LocR are all 0.
   If these values are not 0, it means TRC error is occurred.
 	
3. Check if values of the LedF, LedR, LedC on TRC report are in 400~800 scope.
   If the value is in this scope, it is normal. If or not, the image density sensor is contaminated.
   So, take off the ITB unit and clean the window of the ITB unit with soft cloth.
   Re-install the ITB unit and turn the machine off and turn it on again.
   Execute the image density control.
   If values of the LedF, LedR, LedC are 1675, CTD sensor shutter has any problem. Replace the T2 unit.
 	
4. Print the TRC Test Report. Check if the TRC generation error is occurred.
   If error has occurred, replace the imaging unit.
 	
5. Print the supply information report, check if the temporary hard stop has occurred.
 	
Note : In case that TRC generation error has occurred ,
        - DMA on Magnet roll is low. (Toner is not supplied from toner cartridge.)
        - Image process is abnormal because of sweeping carrier.
        - T1 transfer is defective. So image can't be formed on ITB normally.

● Replacement part
- JC95-01038A : COVER-SIDE TRANSFER ROLLER

SAMSUNG ELECTRONICS

● Code : C3-2312 C3-3312 C3-4312 C3-5312	● Error message : Yellow Imaging unit error: #C3-2312. Turn off then on. Magenta Imaging unit error: #C3-3312. Turn off then on. Cyan Imaging unit error: #C3-4312. Turn off then on. Black Imaging unit error: #C3-5312. Turn off then on.

● 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 if the TC sensor connector is connected properly.
   If the connection is OK, replace the Deve-Clutch.

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

K Imaging Unit : CLT-R607K
C Imaging Unit : CLT-R607C
M Imaging Unit : CLT-R607M
Y Imaging Unit : CLT-R670Y

DEVE CRUM JOINT : JC92-02163A

● Code : C3-2313 C3-3313 C3-4313 C3-5313	● Error message : Yellow Imaging Unit Failure #C3-2313 : Install Yellow imaging unit again. Magenta Imaging Unit Failure #C3-3313 : Install Magenta imaging unit again. Cyan Imaging Unit Failure #C3-4313 : Install Cyan imaging unit again. Black Imaging Unit Failure #C3-5313 : Install Black imaging unit again.

● Symptom / Cause :

Toner is over supplying in imaging unit.

● Troubleshooting method :

1. Install imaging unit again.

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

● Replacement

K Imaging Unit : CLT-R607K
C Imaging Unit : CLT-R607C
M Imaging Unit : CLT-R607M
Y Imaging Unit : CLT-R670Y

DEVE CRUM JOINT : JC92-02163A

● Code :	● Error message :
C3-2321	Yellow Imaging Unit Failure #C3-2321 : Install Yellow imaging unit again.
C3-3321	Magenta Imaging Unit Failure #C3-3321 : Install Magenta imaging unit again.
C3-4321	Cyan Imaging Unit Failure #C3-4321 : Install Cyan imaging unit again.
C3-5321	Black Imaging Unit Failure #C3-5321 : Install Black imaging unit again.

● Symptom / Cause :

Imaging unit is not installed properly.

● Troubleshooting method :

1. Open and close the door or turn off the machine then on.

2. If the problem persists, reinstall the imaging unit.

● Replacement

K Imaging Unit : CLT-R607K
C Imaging Unit : CLT-R607C
M Imaging Unit : CLT-R607M
Y Imaging Unit : CLT-R670Y

DEVE CRUM JOIN : JC92-02163A
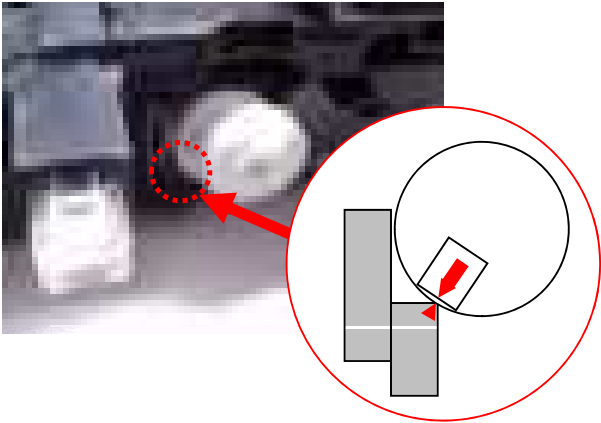
● Code :	● Error message :
C3-2411	Yellow imaging unit is not installed. Install it.
C3-3411	Magenta imaging unit is not installed. Install it.
C3-4411	Cyan imaging unit is not installed. Install it.
C3-5411	Black imaging unit is not installed. Install it.

● **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.

   Open the inside cover.

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**

- K Imaging Unit : CLT-R607K
- C Imaging Unit : CLT-R607C
- M Imaging Unit : CLT-R607M
- Y Imaging Unit : CLT-R670Y
- JC92-02129A : PBA-ENGINE (CLX-9350ND)
- JC92-02239A : PBA-ENGINE (CLX-9250ND)
- JC92-02163A : DEVE CRUM JOINT

● Code :	● Error message :
C3-2512	Yellow imaging unit is not compatible. Check user's guide
C3-3512	Magenta imaging unit is not compatible. Check user's guide
C3-4512	Cyan imaging unit is not compatible. Check user's guide
C3-5512	Black imaging unit is not compatible. Check user's guide
C3-2514	Yellow imaging unit is not compatible. Check user's guide
C3-3514	Magenta imaging unit is not compatible. Check user's guide
C3-4514	Cyan imaging unit is not compatible. Check user's guide
C3-5514	Black imaging unit is not compatible. Check user's guide

● **Symptom / Cause :**

CRUM information has a problem.

● **Troubleshooting method :**

Check imaging unit information. (Model information and status information)
If information is not correct, replace the imaging unit with new one.

● **Replacement part**

K Imaging Unit : CLT-R607K
C Imaging Unit : CLT-R607C
M Imaging Unit : CLT-R607M
Y Imaging Unit : CLT-R670Y

● Code : C5-1110	● Error message : Prepare new transfer belt unit.

● Symptom / Cause :

The Transfer belt unit is at the end of its life (300K).
The Transfer cleaning belt 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.

  Check the life remaining of the transfer belt unit (or transfer belt cleaning unit).
  If its life is at the end, turn the machine off and replace the transfer belt unit (or transfer belt cleaning unit) with new one.

● Replacement part

- JC96-05689A : CARTRIDGE-TRANSFER ITB
- JC96-05690A : CARTRIDGE-TRANSFER ITB CLEAN

● Code : C5-1120	● Error message : End of life, Replace with new transfer belt unit.

● **Symptom / Cause :**

The Transfer belt unit is at the end of its life (300K).

● **Troubleshooting method :**

Replace with new transfer belt unit.

● **Replacement part**

- JC96-05689A : CARTRIDGE-TRANSFER ITB
- JC96-05690A : CARTRIDGE-TRANSFER ITB CLEAN

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● Code : C5-1231	● Error message : ITB Unit Failure #C5-1231:Turn off then on.

● Symptom / Cause :

Input Encoder Signal for ITB FB is over expected range.

● Troubleshooting method :

1. Reinstall ITB Unit
2. Replace ITB Unit. (Refer to chapter 6. Preventive maintenance)

CAUTION
Reassembling the cartridge transfer unit

1. Align the CAM position. (Align 2 arrows)
2. Install the cartridge transfer unit.

● Replacement part

- JC96-05689A : CARTRIDGE-TRANSFER ITB

● Code : C5-1232	● Error message : ITB Unit Failure #C5-1232:Turn off then on.

● Symptom / Cause :

Motor's HZ for ITB FB is over expected range.

● Troubleshooting method :

1. Reinstall ITB Unit
2. Replace ITB Unit

CAUTION
Reassembling the cartridge transfer unit

1. Align the CAM position. (Align 2 arrows)
2. Install the cartridge transfer unit.

● Replacement part

- JC96-05689A : CARTRIDGE-TRANSFER ITB

● Code : C5-1311	● Error message : Transfer belt is not installed. Install it.

● Symptom / Cause :

1. Transfer belt Unit is not placed in the set.
2. Dime screw is not fixed correctly.
3. EEPROM contact of transfer belt unit is defective.

● Troubleshooting method :

1. Check if the transfer unit is installed in the set.
   Take out the transfer unit and re-install it.

2. Fix the Dime screw correctly.

3. Check if the EEPROM contact is contaminated. Clean it.

4. Turn the machine off and replace the transfer unit.

● Replacement part

- JC96-05689A : CARTRIDGE-TRANSFER ITB
- JC92-02162A : ITB JOINT

SAMSUNG ELECTRONICS
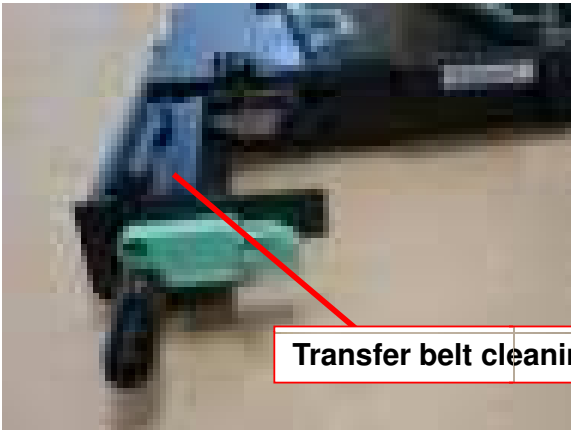
● Code : C5-1412 C5-1414	● Error message : Transfer belt is not compatible for this machine. Check user's guide Image transfer belt unit is not original Samsung. Check user's guide.

● **Symptom / Cause :**

Transfer belt is not compatible with this machine. Information between EEPROM and Transfer belt unit are different from each other.

● **Troubleshooting method :**

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

2. Print the supply information report and check the model name of the transfer belt unit.
   If it is not a Samsung product, replace the transfer belt unit with new one.

● **Replacement part**

- JC96-05689A : CARTRIDGE-TRANSFER ITB

● Code :	● Error message :
C5-1521	ITB Unit Failure #C5-1521: Turn off then on.
C5-1541	ITB Unit Failure #C5-1541: Turn off then on.
C5-1551	ITB Unit Failure #C5-1551: Turn off then on.

● **Symptom / Cause :**

Yellow/Magenta/Cyan/Black iTransfer Unit has some problem.
Machine cannot read the resistance of relative i-transfer roller due to high voltage problem.

● **Troubleshooting method :**

1. Open and close the door. Turn the machine off and on.
2. If the problem persists, replace the ITB unit.

    CAUTION
    Reassembling the cartridge transfer unit

1. Align the CAM position. (Align 2 arrows)
2. Install the cartridge transfer unit.

● **Replacement part**

- JC96-05689A : CARTRIDGE-TRANSFER ITB

● Code : C5-1531	● Error message : ITB Unit Failure #C5-1531: Turn off then on.

● Symptom / Cause :

The machine can not detect the position movement of the transfer roller 2 within the programmed time.

● Troubleshooting method :

1. Check if the Engage Sensor is working normally.

2. If the sensor can not detect the engage operation, check the harness connection.
   If the connection is OK, replace the sensor.

3. If the sensor has no problem, check if the DC motor is working normally.

4. If there is a any motor noise, replace the DC motor Assy.

● Replacement part

JC95-01056A : COVER-SIDE MOTOR DC
0604-001393 : PHOTO-INTERRUPTER

● Code : C5-1551	● Error message : ITB Unit Failure #C5-1551: Turn off then on.

● 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

JC95-01038A : COVER-SIDE TRANSFER ROLLER

● Code : C5-1621 C5-1631 C5-1641 C5-1651	● Error message : ITB Unit Failure #C5-1621: Turn off then on. ITB Unit Failure #C5-1631: Turn off then on. ITB Unit Failure #C5-1641: Turn off then on. ITB Unit Failure #C5-1651: Turn off then on.

● **Symptom / Cause :**

Yellow/Magenta/Cyan/Black iTransfer Unit has some problem.
Machine cannot read the resistance of relative i-transfer roller due to high voltage problem.

● **Troubleshooting method :**

1. Open and close the door. Turn the machine off and on.
2. If the problem persists, replace the ITB unit.

   CAUTION
   Reassembling the cartridge transfer unit

1. Align the CAM position. (Align 2 arrows)
2. Install the cartridge transfer unit.

● **Replacement part**

- JC96-05689A : CARTRIDGE-TRANSFER ITB

● Code : C5-2110 C5-2120	● Error message : Prepare new transfer belt cleaning unit. Transfer belt cleaning unit is worn. Replace with new one.

● Symptom / Cause :

Transfer belt cleaning unit is worn.

● Troubleshooting method :

Replace with new transfer belt cleaning unit.

Transfer belt cleaning unit

● Replacement part

- JC96-05690A : CARTRIDGE-TRANSFER ITB CLEAN

● **Code :** **C5-2311**	● **Error message :** Transfer belt cleaning is not installed. Install it

● **Symptom / Cause :**

1. Transfer belt cleaner is not placed in the set.
2. Dime screw is not fixed correctly.
3. EEPROM contact of transfer belt unit is defective.

● **Troubleshooting method :**

1. Check if the transfer cleaner unit is installed in the set.
   Take out the transfer cleaner unit and re-install it.

2. Fix the Dime screw correctly.

3. Clean the EEPROM contact.

4. Turn the machine off and replace the transfer cleaner unit.

Transfer belt cleaning unit

● **Replacement part**

- JC96-05690A : CARTRIDGE-TRANSFER ITB CLEAN

● Code : C5-2412	● Error message : Prepare new transfer belt cleaning unit. Transfer belt is not compatible for this machine. Check user's guide.

● **Symptom / Cause :**

EEPROM information for transfer belt unit is different from the machine information.

● **Troubleshooting method :**

1. Turn the machine off then on.

2 .If the problem persists, print the supply information report.
   Check the model name and replace it with new one.

Transfer belt cleaning unit

● **Replacement part**

- JC96-05690A : CARTRIDGE-TRANSFER ITB CLEAN

● **Code :** **C5-3110** **C5-3120**	● **Error message :** Prepare new transfer roller. Replace with new transfer roller.

● **Symptom / Cause :**

Transfer roller is worn.

● **Troubleshooting method :**

Replace with new transfer roller.

How to replace the transfer roller

1. Open the side door.
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.

● **Replacement part**

- JC95-01038A : COVER-SIDE TRANSFER ROLLER
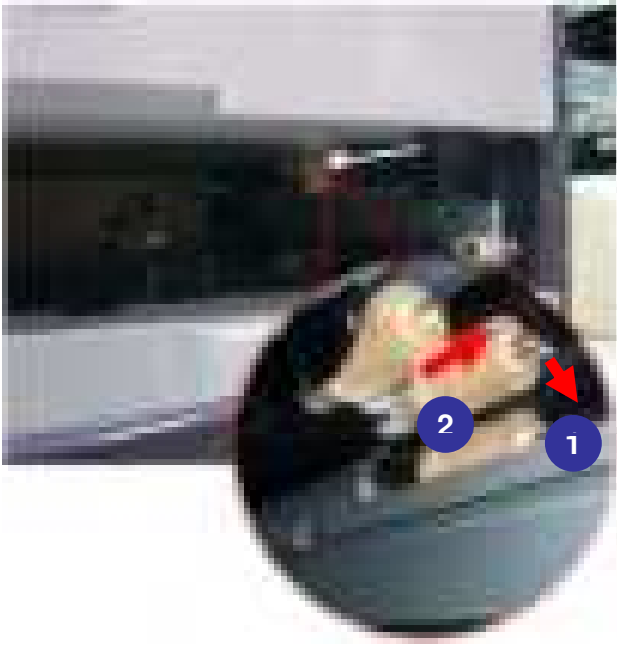
● Code : C6-1110 C6-1120	● Error message : Prepare new fuser unit. Replace with new fuser unit.

● 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.

● Replacement part

- JC91-00931A : FUSER (220V)
- JC91-00930A : FUSER (110V)

● Code : C6-1311	● Error message : 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

- JC91-00931A : FUSER (220V)
- JC91-00930A : 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**

- JC91-00931A : FUSER (220V)
- JC91-00930A : FUSER (110V)

● Code : C7-1110 C7-1130	● Error message : Waste toner container is almost full. Order new one. Waste toner container is full. Replace it

● Symptom / Cause :

The life of the waste toner container expires soon or has expired.

● Troubleshooting method :

1. Open the front cover.
2. Squeeze the left/right locking levers and push outward. 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 : CLT-W606 (Waste toner container)

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● **Code :** C7-1311	● **Error message :** Waste toner container is not installed. Install it

● **Symptom** / **Cause :**

The waste toner container is not installed.

● **Troubleshooting method :**

Install the waste toner container.
If it is already installed, try to reinstall the waste toner container.

1. Open the front cover.
2. Squeeze the left/right locking levers and push outward. 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**

● Code : C9-1112 C9-1122 C9-1132 C9-1142	● Error message : Replace with new Tray1 pick up roller. Replace with new Tray2 pick up roller. Replace with new Tray3 pick up roller. Replace with new Tray4 pick up roller.

● **Symptom / Cause :**

The life of the tray pick up roller expires totally.

● **Troubleshooting method :**

1. Print the supply information report and check the life of the pick up roller.
2. Remove the cassette.
3. Lift small tap, remove the pick up roller. (Refer to chapter 6.)

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

● **Replacement part :** JC93-00175A (FRAME MAIN-PICK UP RUBBER)

● Code : C9-1162	● Error message : Replace with new MP pick up roller.

● Symptom / Cause :

The life of the MP pick up roller expires totally.

● Troubleshooting method :

1. Print the supply information report and check the life of the MP pick up roller.
2. Remove the pick up roller. (Refer to chapter 6.)

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

● Replacement part :
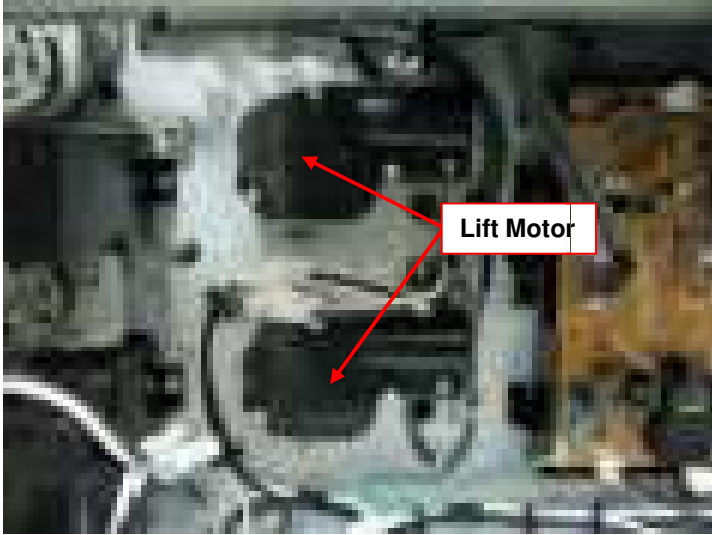
● Code : H1-1311 H1-1317 H1-1318	● Error message : Paper jam inside of machine.

● **Symptom / Cause :**

Paper transport jam (paper Input section)

- The paper from the tray3 has not reached the tray3 feed sensor within normal time after passing the tray4 feed sensor.

- When you open and close the take away (DCF, HCF) door, the paper has jammed at the tray3 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 tray3 pick up unit and tray2 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 tray3 pick up unit is connected properly. Reconnect the connector.

5. Enter the diagnostic mode, and check the feed sensor test of the tray1 pick up unit.
   If the paper is at sensor and "Without paper" message is displayed, replace the sensor.

6. Check if the connector of the tray3 pick up unit on the pick up drive unit is connected properly. Reconnect it.

7. Replace the DCF (or HCF) controller.

● **Replacement part**

- JC95-01034A (COVER-TAKE AWAY)
- JC93-00070A (FRAME MAIN-PICK UP)
- JC93-00174A (FRAME MAIN-PICK UP SECOND)

● Code : H1-1312	● Error message : Paper jam in tray 3

● Symptom / Cause :

Paper transport jam (paper Input section)

- The paper has not reached the tray3 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 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**

- JC92-02129A : PBA-ENGINE (CLX-9350ND)
- JC92-02239A : PBA-ENGINE (CLX-9250ND)

● Code : H1-1351 H1-1451 M1-5111 M1-5211	● Error message : Paper is low in tray 3. Load paper Paper is low in tray 4. Load paper Paper is low in tray 1. Load paper 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 :	● Error message :
H1-1352	Paper is empty in tray 3. Load paper
H1-1452	Paper is empty in tray 4. Load paper
M1-5112	Paper is empty in tray 1. Load paper
M1-5212	Paper is empty in tray 2. Load paper

● 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
- JC92-02129A : PBA-ENGINE (CLX-9350ND)
- JC92-02239A : PBA-ENGINE (CLX-9250ND)

● 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 : H1-1411 H1-1417 H1-1418	● Error message : Paper jam inside of machine.

● Symptom / Cause :
Paper transport jam (paper Input section)
- When you open and close the DCF take away door, the paper has jammed at the tray4 feed sensor.

● Troubleshooting method :

1. Open the DCF take away door. Remove the jammed paper.
   Close the DCF take away door. After warm up, if same jam occurs, check the following.

2. Check if the wall connector of tray4 pick up unit is connected properly. Reconnect the connector.

3. Enter the diagnostic mode, and check the feed sensor test of the tray1 pick up unit.
   If the paper is contacting sensor and "Without paper" message is displayed, replace the sensor.

4. Check if the connector of the tray4 pick up unit on the pick up drive unit is connected properly. Reconnect it.

5. Replace the DCF (or HCF) controller.

● Replacement part

- JC93-00070A (FRAME MAIN-PICK UP)
- JC93-00174A (FRAME MAIN-PICK UP SECOND)

● Code : H1-1412	● Error message : Paper jam in dual capacity feeder.

● **Symptom** / **Cause :**

Paper transport jam (paper Input section)

- The paper has not reached the tray4 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 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)
- JC93-00174A (FRAME MAIN-PICK UP SECOND)

● 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

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● Code : M1-1113	● Error message : Paper jam in tray 1.

● Symptom / Cause :

Paper transport jam (paper Input section)

- The paper has not reached the tray1 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

- JC93-00070A : FRAME MAIN-PICK UP
- JC92-02129A : PBA-ENGINE (CLX-9350ND)
- JC92-02239A : PBA-ENGINE (CLX-9250ND)

● Code : M1-1213	● Error message : Paper jam in tray 2.

● **Symptom / Cause :**

Paper transport jam (paper Input section)
- The paper has not reached the tray2 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 papers in the cassette are curled, replace the paper or stretch to remove curling.

5. Check if the wall connector of tray2 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**

- JC93-00174A : FRAME MAIN-PICK UP SECOND
- JC92-02129A : PBA-ENGINE (CLX-9350ND)
- JC92-02239A : PBA-ENGINE (CLX-9250ND)

● 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**
- JC92-02129A : PBA-ENGINE (CLX-9350ND)
- JC92-02239A : PBA-ENGINE (CLX-9250ND)

● Code : **M2-1121** **M2-1124** **M2-1125** **M2-1131** **M2-1134** **M2-1135**	● **Error message :** Paper jam inside of machine.

● **Symptom / Cause :**

Paper transport jam (paper Input section)

- The paper from the tray3 (or 4) has not reached to the tray2 feed sensor within normal time after passing the tray3 feed sensor.

- When you open and close the take away door, the paper has jammed at the tray2 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 tray3 pick up unit and tray2 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 tray2 pick up unit is connected properly.
   Reconnect the connector.

5. Enter the diagnostic mode, and check the feed sensor test of the tray1 pick up unit.
   If the paper is contacting sensor and "Without paper" message is displayed, replace the sensor.

6. Check if the connector of the tray2 pick up unit on the pick up drive unit is connected properly.
   Reconnect it.

7. Replace the engine controller.

● **Replacement part**

- 0604-001393 : PHOTO-INTERRUPTER
- JC92-02129A : PBA-ENGINE (CLX-9350ND)
- JC92-02239A : PBA-ENGINE (CLX-9250ND)

● **Code :** M2-1211 M2-1213 M2-1214 M2-1221	● **Error message :** Paper jam inside of machine.

● **Symptom / Cause :**

Paper transport jam (paper Input section)
1. The paper has not reached the regi sensor within normal time after passing the tray1 feed sensor.
2. When opening the side door, the paper is detected at the 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
- JC92-02129A : PBA-ENGINE (CLX-9350ND)
- JC92-02239A : PBA-ENGINE (CLX-9250ND)

● Code : M2-1321 M2-1324 M2-1325	● Error message : Paper jam inside of machine.

● **Symptom / Cause :**

1. The paper has not reached to the Fuser In sensor within a regular time after passing the registration sensor.
2. When opening the side door, the paper is detected at the Fuser In 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
- JC92-02129A : PBA-ENGINE (CLX-9350ND)
- JC92-02239A : PBA-ENGINE (CLX-9250ND)

● Code : M2-1331 M2-1333 M2-1334	● Error message : Paper jam inside of machine.

● **Symptom** / **Cause :** Paper transport jam (paper Input section)

- The paper has not reached the fuser out sensor within normal time after passing the regi sensor.
- The fuser out sensor is not off within normal time after the fuser out sensor on.

● **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**

- JC95-01038A : COVER-SIDE TRANSFER ROLLER
- JC92-02233A : SIDE JOINT
- JC92-02129A : PBA-ENGINE (CLX-9350ND)
- JC92-02239A : PBA-ENGINE (CLX-9250ND)

● Code : M2-2111 M2-2113 M2-2114	● Error message : Paper jam at the top of duplex path.

● Symptom / Cause : Paper transport jam (paper Input section)

- The paper has not reached to the duplex jam 1 sensor within normal time after passing the return 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.

8. 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 top of duplex path.

● **Symptom / Cause :**

Paper transport jam (paper Input section)
1. The paper has not reached the duplex jam 2 sensor within a regular time after passing the duplex jam 1 sensor.
2. When opening the side door, the paper is detected at the 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
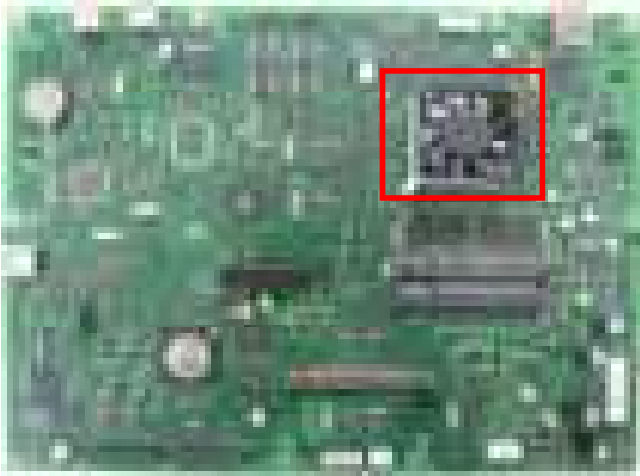
● Code : **M2-2313**	● **Error message :** Paper jam at the inside of duplex path.

● **Symptom / Cause : Paper transport jam (paper Input section)**

- The paper has not reached the regi sensor within normal time after passing the 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 between the duplex feed roller and the regi roller, remove it.

3. Check if the reflective sensor connector, junction connector are connected properly.
   Reconnect it.

4. Enter the diagnostic mode, and execute the reflective sensor test.
   Be the paper at sensor. If "Without paper" message is displayed, replace the sensor.

5. Enter the diagnostic mode, and execute the pick up drive motor test.
   If the motor is not working, replace it.

6. Check if the regi connector on the engine controller is connected properly.
   Reconnect it.

7. Replace the engine controller PBA.

● **Replacement part**

- JC31-00132A : MOTOR STEP
- JC92-02129A : PBA-ENGINE (CLX-9350ND)
- JC92-02239A : PBA-ENGINE (CLX-9250ND)

● Code : M2-2411 M2-2413 M2-2414	● Error message : Paper jam at the return of duplex path.

● Symptom / Cause :

Paper transport jam (paper Input section)

1. The paper has not reached the fuser out sensor within normal time after passing the fuser out sensor.
2. When opening the side door, the paper is detected at the return 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

- JC90-00914A : EXIT (CLX-9350ND)
- JC90-00914B : EXIT (CLX-9250ND)
- JC92-02129A : PBA-ENGINE (CLX-9350ND)
- JC92-02239A : PBA-ENGINE (CLX-9250ND)

● Code : M3-1211 M3-1213 M3-1214 M3-1311 M3-1313 M3-1314 M3-1510	● Error message : Paper jam in exit area.

● **Symptom / Cause :**

Paper transport jam (paper output section)
- The paper has not reached the exit sensor or face up exit sensor within normal time after passing the output 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**
- JC92-02233A : SIDE JOINT

● Code : M3-2230	● Error message : Output tray (face down) 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

- JC90-00914A : EXIT (CLX-9350ND)
- JC90-00914B : EXIT (CLX-9250ND)
- JC92-02129A : PBA-ENGINE (CLX-9350ND)
- JC92-02239A : PBA-ENGINE (CLX-9250ND)

● Code : M3-2330	● Error message : Output tray (face up) 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. If the face up actuator doesn't come down or come down slowly, remove the black cover on the top of the side unit. Reassemble the actuator or replace it.

2. Enter the diagnostic mode, and execute the face up 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 side unit, remove black cover on the top of the side 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. Replace the Side Joint board.

● Replacement part

- JC92-02233A : SIDE JOINT

● 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.
The CPU fan is not working.

● **Troubleshooting method :**

1. Check if the CPU cooling FAN is working properly.

2. Check that system is working properly after replacing the video board.

● **Replacement part**

- JC98-01050A : BOARD-CPU_COOLER
- JC92-02150A : PBA-MAIN (CLX-9350ND)
- JC92-02235A : PBA-MAIN (CLX-9250ND)

● 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.

● **Replacement part**

- JC59-00031A : HDD
- JC92-02150A : PBA-MAIN (CLX-9350ND)
- JC92-02235A : PBA-MAIN (CLX-9250ND)

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● 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.

● Replacement part

- 4301-001042 : BATTERY-LI
- JC92-02150A : PBA-MAIN (CLX-9350ND)
- JC92-02235A : PBA-MAIN (CLX-9250ND)

● 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.

● Replacement part

- JC92-02150A : PBA-MAIN (CLX-9350ND)
- JC92-02235A : PBA-MAIN (CLX-9250ND)
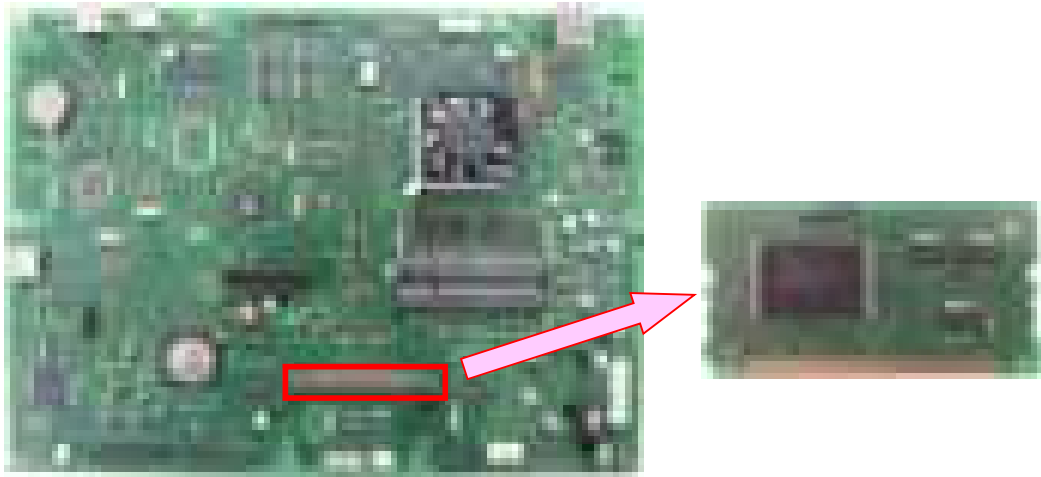
● Code : **S1-1413**	● **Error message :** Video System Failure #S1-1413 : Turn off then on.

● **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.

● **Replacement part**

- JC59-00031A : HDD
- JC92-02150A : PBA-MAIN (CLX-9350ND)
- JC92-02235A : PBA-MAIN (CLX-9250ND)

● 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.

● Replacement part

- JC92-02150A : PBA-MAIN (CLX-9350ND)
- JC92-02235A : PBA-MAIN (CLX-9250ND)
- JC92-02193A : PBA-RAM DIMM

Service Manual
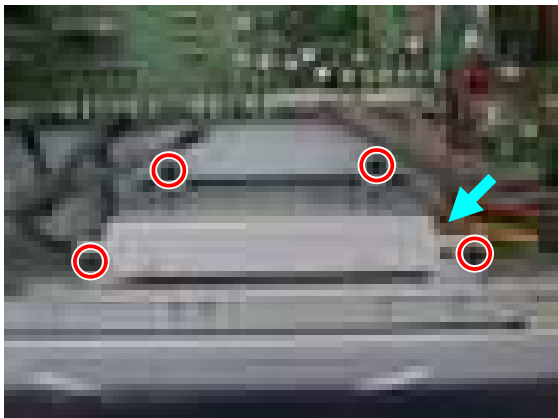*CLX-9250/9350 series*

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● 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 :**

1. Hard Disk is not installed in the machine.
2. Hard Disk cable is not connected correctly.
3. Hard Disk is defective.

● **Troubleshooting method :**

1. Back up the data in the hard disk drive.

2. Replace the hard disk drive with new one.

3. Copy the backup file to the new hard disk drive.

● **Replacement part**

- JC59-00031A : HDD

● Code :	● Error message :
S1-2433	HDD System Failure # S1-2433 : Call for service.
S1-2443	HDD System Failure # S1-2443 : Call for service.
S1-2444	HDD System Failure # S1-2444 : Call for service.
S1-2445	HDD System Failure # S1-2445 : Call for service.
S1-2446	HDD System Failure # S1-2446 : Call for service.
S1-2447	HDD System Failure # S1-2447 : Call for service.
S1-2448	HDD System Failure # S1-2448 : Call for service.
S1-2449	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

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● 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.

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.

● **Replacement part**

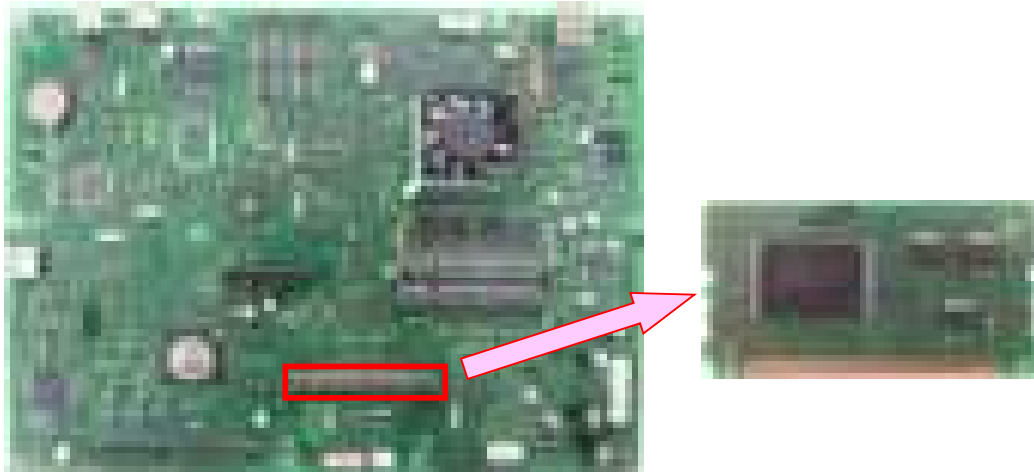- JC92-02150A : PBA-MAIN (CLX-9350ND)
- JC92-02235A : PBA-MAIN (CLX-9250ND)

● Code : **S1-2511**	● **Error message :** MSOK System Failure #S1-2511 : Turn off then on.
● **Symptom / Cause :** Communication error between EEPROM and Video board has occurred.	

● **Troubleshooting method :**

1. Is the MSOK installed properly?
   No : Install the MSOK properly.

2. If the problem persists, replace the Video board.

● **Replacement part**

- JC92-02150A : PBA-MAIN (CLX-9350ND)
- JC92-02235A : PBA-MAIN (CLX-9250ND)

● 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.

● Replacement part

- JC92-02150A : PBA-MAIN (CLX-9350ND)
- JC92-02235A : PBA-MAIN (CLX-9250ND)

● 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.

(To be continued next page.)

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**

- JC92-02150A : PBA-MAIN (CLX-9350ND)
- JC92-02235A : PBA-MAIN (CLX-9250ND)
- JC59-00031A : HDD
- JC92-02129A : PBA-ENGINE(CLX-9350ND)
- JC92-02239A : PBA-ENGINE(CLX-9250ND)

● Code : S1-5221	● Error message : System Failure #S1-5221 : Turn off then on.

● 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

- JC92-02150A : PBA-MAIN (CLX-9350ND)
- JC92-02235A : PBA-MAIN (CLX-9250ND)

● 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**

- JC92-02150A : PBA-MAIN (CLX-9350ND)
- JC92-02235A : PBA-MAIN (CLX-9250ND)
- JC92-02148A : PBA-DUAL FAX CONTROL(FCON card)

● 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
- JC92-02150A : PBA-MAIN (CLX-9350ND)
- JC92-02235A : PBA-MAIN (CLX-9250ND)
- 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
- JC92-02150A : PBA-MAIN (CLX-9350ND)
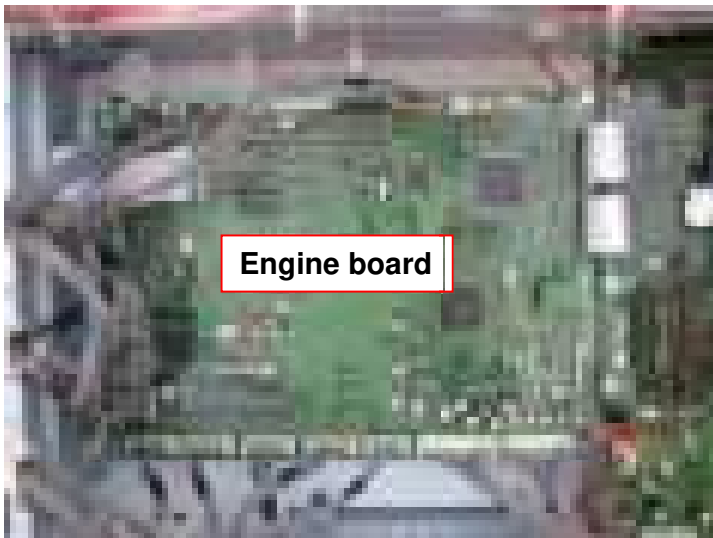- JC92-02235A : PBA-MAIN (CLX-9250ND)

● **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
- JC92-02150A : PBA-MAIN (CLX-9350ND)
- JC92-02235A : PBA-MAIN (CLX-9250ND)
- JC92-02148A : PBA-DUAL FAX CONTROL(FCON card)

● 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.

Engine board

● Replacement part

- JC92-02129A : PBA-ENGINE (CLX-9350ND)
- JC92-02239A : PBA-ENGINE (CLX-9250ND)

● 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.

Engine board

● **Replacement part**

- JC92-02129A : PBA-ENGINE (CLX-9350ND)
- JC92-02239A : PBA-ENGINE (CLX-9250ND)

● Code : S2-2211	● Error message : #S2-2211 Call for service
● Symptom / Cause : At booting, the PPM port information from engine board is different from it in Flash.	
● Troubleshooting method : Replace the engine board. Engine board	
● Replacement part - JC92-02129A : PBA-ENGINE (CLX-9350ND) - JC92-02239A : PBA-ENGINE (CLX-9250ND)	

● Code : **S2-2311**	● Error message : Engine System Failure : #S2-2311. Turn off then on.

● **Symptom / Cause :**

EEPROM memory on engine board does not operate.

● **Troubleshooting method :**

1. Replace the NVRAM PBA
2. Replace the engine board.

Engine board

● **Replacement part**

- JC92-02129A : PBA-ENGINE (CLX-9350ND)
- JC92-02239A : PBA-ENGINE (CLX-9250ND)

● Code : **S2-3110**	● Error message : Engine System Failure #S2-3110 : Turn off then on.

● 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.

FFC Cable

● Replacement part

- JC92-02129A : PBA-ENGINE (CLX-9350ND)
- JC92-02239A : PBA-ENGINE (CLX-9250ND)

● Code : S2-3114	● Error message : Engine System Failure #S2-3114 : Turn off then on.

● **Symptom / Cause :**

ACR error has occurred.

● **Troubleshooting method :**

1. Perform the ACR calibration manually.
2. Check if the ACR sensor is defective and connector is connected properly.
3. Check the image density and the belt.
4. Replace the engine controller.

Engine board

● **Replacement part**

- JC32-00012A : PBA SENSOR ACR
- JC92-02129A : PBA-ENGINE (CLX-9350ND)
- JC92-02239A : PBA-ENGINE (CLX-9250ND)

● Code : **S2-3115**	● **Error message :** Engine System Failure #S2-3115 : Turn off then on.
● **Symptom / Cause :** TRC exceeded the limit time.	

● **Troubleshooting method :**

1. Open and close the front door. Wait until warming up is done.

2. Enter the SVC mode. Execute Color Tone Adjustment (TRC). And check if is does work properly.
   (Refer to 4.5.5.2 Color Density Adjustment)

● **Replacement part**

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● Code : **S2-4210** **S2-4410** **S2-4A10**	● Error message : Front door is open. Close it. Right door is open. Close it. Feed door is open. Close it.

● **Symptom / Cause :**

Front door or right door is open.
Feed door is open.
All door is closed but this error is displayed.

● **Troubleshooting method :**

1. Check if the front door and right door is closed perfectly.
2. Check the harness path.
3. If the harness path is OK, replace the engine board.

● **Replacement part**

- JC92-02129A : PBA-ENGINE

● 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	
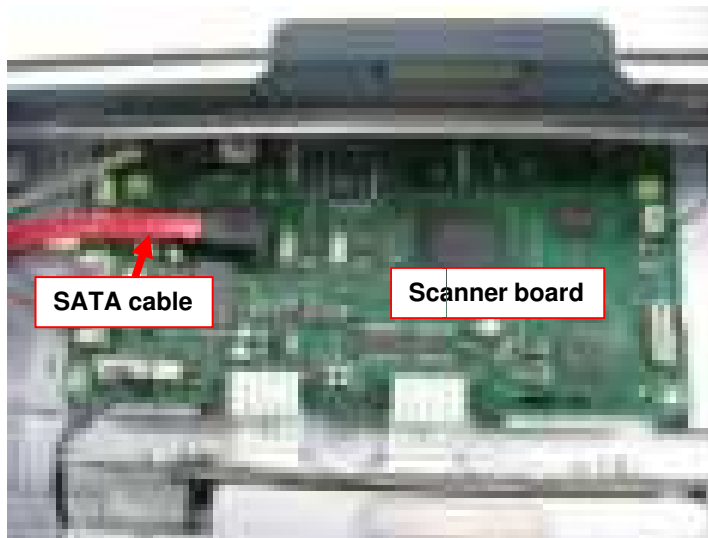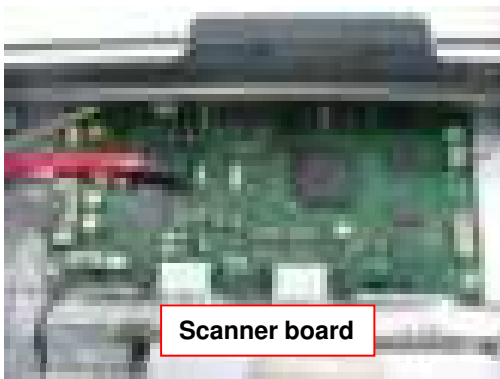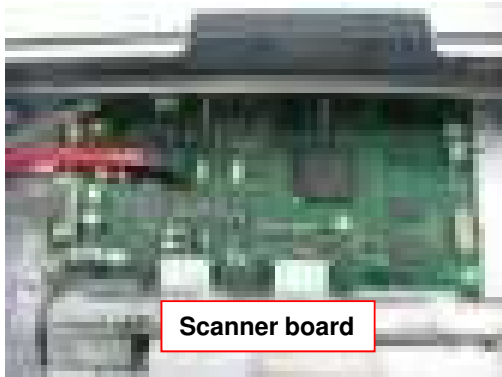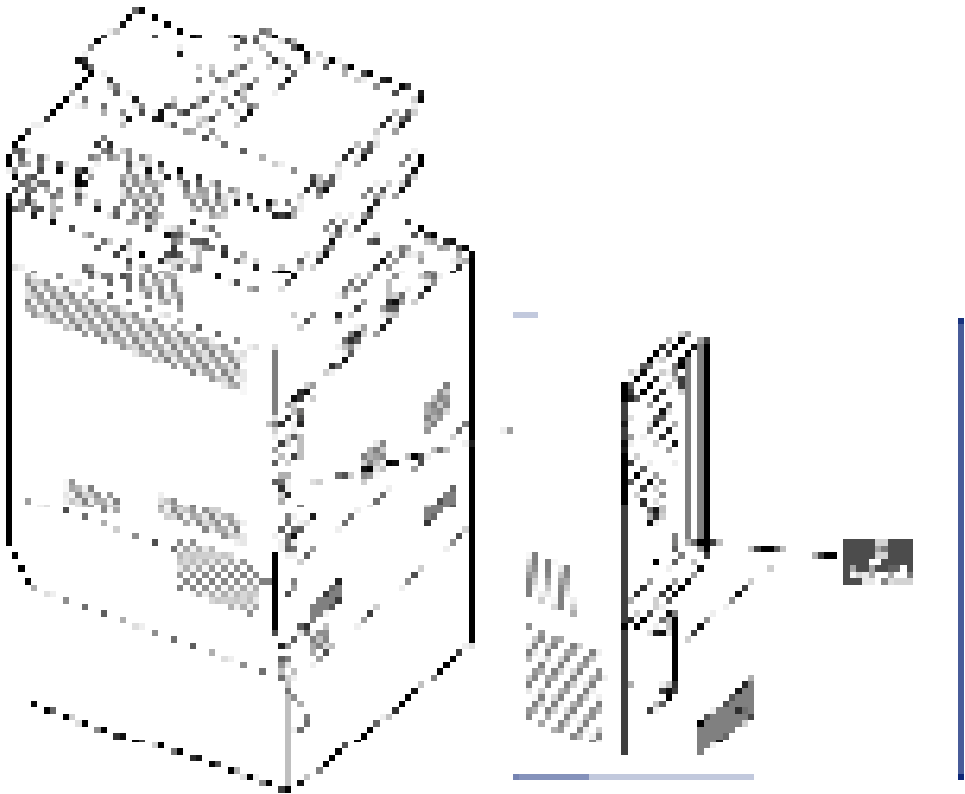
● Code : **S3-3121**	● **Error message :** Scanner locking screw is locked or another problem occurred

● **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
- 0604-001393 : PHOTO-INTERRUPTER

● 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 : 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)
- JC92-02150A : PBA-MAIN (CLX-9350ND)
- JC92-02235A : PBA-MAIN (CLX-9250ND)

● 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

- JC92-02150A : PBA-MAIN (CLX-9350ND)
- JC92-02235A : PBA-MAIN (CLX-9250ND)

● **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 :**	● **Error message :**
U1-2113	Fuser Unit Failure #U1-2113 : Turn off then on.
U1-2119	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**

- JC91-00931A : FUSER (220V)
- JC91-00930A : 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

- JC31-00110B : MOTOR STEP

- JC91-00931A : FUSER (220V)

- JC91-00930A : FUSER (110V)

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● 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. (~300kOhm in room temperature)
  H. Check if the power voltage is normal. (Is the voltage during the operation $\pm10\%$ 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**

- JC91-00931A : FUSER (220V)
- JC91-00930A : FUSER (110V)
- JC92-02129A : PBA-ENGINE (CLX-9350ND)
- JC92-02239A : PBA-ENGINE (CLX-9250ND)

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● 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 $\pm10\%$ 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

- JC91-00931A : FUSER (220V)
- JC91-00930A : FUSER (110V)
- JC92-02129A : PBA-ENGINE (CLX-9350ND)
- JC92-02239A : PBA-ENGINE (CLX-9250ND)

● 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 ±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**

- JC91-00931A : FUSER (220V)
- JC91-00930A : FUSER (110V)
- JC92-02129A : PBA-ENGINE (CLX-9350ND)
- JC92-02239A : PBA-ENGINE (CLX-9250ND)

● Code : **U1-2211**	● **Error message :** Fuser Unit Failure #U1-2211 : Turn off then on

● **Symptom / Cause :**

Fuser unit is not installed.

● **Troubleshooting method :**

1. Check if the fuser unit is installed properly.
2. Turn the machine off. Remove and reinstall the fuser unit.
3. Turn the machine on.

● **Replacement part**

● Code :	● Error message :
U2-2111	Yellow LSU Unit Failure #U2-2111 : Turn off then on.
U2-3111	Magenta LSU Unit Failure #U2-3111 : Turn off then on.
U2-4111	Cyan LSU Unit Failure #U2-4111 : Turn off then on.
U2-5111	Black LSU Unit Failure #U2-5111 : Turn off then on.

● Symptom / Cause :

Yellow LSU occurs Lready Error.
Magenta LSU occurs Lready Error.
Cyan LSU occurs Lready Error.
Black LSU occurs Lready Error.

● 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. If the finisher is installed, remove it.
   B. Remove the left cover.
   C. Check if the Motor connector on Joint PBA of the LSU unit is connected correctly.
   D. Remove the LSU unit from the machine. Remove the left cover and check if the LSU Motor connector
       is connected correctly.
   E. Enter the diagnostic mode. Execute LD test. Check if L-Ready occurs.

3. If the problem persists, replace the LSU unit.

Caution
Never overpower and remove the LD PBA.
Never remove the LSU cover.

● Replacement part

JC97-03605A : LSU (35 ppm)
JC97-03605B : LSU (25 ppm)

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● Code :	● Error message :
U2-2112	Yellow LSU Unit Failure #U2-2112 : Turn off then on.
U2-3112	Magenta LSU Unit Failure #U2-3112 : Turn off then on.
U2-4112	Cyan LSU Unit Failure #U2-4112 : Turn off then on.
U2-5112	Black LSU Unit Failure #U2-5112 : Turn off then on.

● Symptom / Cause :

Yellow LSU does not operate but L-ready signal is detected.
Magenta LSU does not operate but L-ready signal is detected.
Cyan LSU does not operate but L-ready signal is detected.
Black LSU does not operate but L-ready 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. If the finisher is installed, remove it.
   B. Remove the left cover.
   C. Check if the Motor connector on Joint PBA of the LSU unit is connected correctly.
   D. Remove the LSU unit from the machine. Remove the left cover and check if the LSU Motor connector is connected correctly.
   E. Enter the diagnostic mode. Execute LD test. Check if L-Ready not occurs.

3. If the problem persists, replace the LSU unit.

● Replacement part

JC97-03605A : LSU (35 ppm)
JC97-03605B : LSU (25 ppm)

● Code : **U2-2113** **U2-3113** **U2-4113** **U2-5113**	● **Error message :** Yellow LSU Unit Failure #U2-2113 : Turn off then on. Magenta LSU Unit Failure #U2-3113 : Turn off then on. Cyan LSU Unit Failure #U2-4113 : Turn off then on. Black LSU Unit Failure #U2-5113 : Turn off then on.

● **Symptom / Cause :**

- Yellow LSU occurs Hsync Error.
- Magenta LSU occurs Hsync Error.
- Cyan LSU occurs Hsync Error.
- Black LSU occurs Hsync Error.
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. If the finisher is installed, remove it.
   B. Remove the left cover.
   C. Check if the LD connector on Joint PBA of the LSU unit is connected correctly.
   D. Remove the LSU unit from the machine. Remove the left cover and check if the LD connector
       is connected correctly.
   E. Enter the diagnostic mode. Execute LD test. Check if Hsync occurs.

3. If the problem persists, replace the LSU unit.

Caution
Never overpower and remove the LD PBA.
Never remove the LSU cover.

● **Replacement part**

JC97-03605A : LSU (35 ppm)
JC97-03605B : LSU (25 ppm)

● Code : **U2-6111**	● Error message : LSU Unit Failure #U2-5113 : Turn off then on.

● **Symptom / Cause :**

1. Step motor is not working.
2. Shutter is not sliding.

● **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. If the finisher is installed, remove it.
   B. Remove the left cover.
   C. Remove the LSU unit. Check if the shutter is moving manually.
   D. Enter the diagnostic mode. Execute shutter motor test. Is it working?
   E. 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**

JC97-03771A : LSU-SUB SHUTTER

● Code : **U3-3111** **U3-3113** **U3-3114**	● **Error message :** Original paper jam in front of scanner Original paper jam in front of scanner 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.
   (Refer to maintenance chapter)

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

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● 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 : U3-3311 U3-3313 U3-3314	● 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 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

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● Code :	● Error message :
U3-3411	Original paper jam inside of scanner
U3-3413	Original paper jam inside of scanner
U3-3414	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

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● Code :	● Error message :
U3-3711	Original paper jam in exit area of scanner
U3-3713	Original paper jam in exit area of scanner
U3-3714	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

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● Code : U3-4411	● Error message : **Pick Up Cam Error. ADF Cover open and close.** **Call for service if the problem persists.**

● Symptom / Cause :

● 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.

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■ Samsung A/S chart
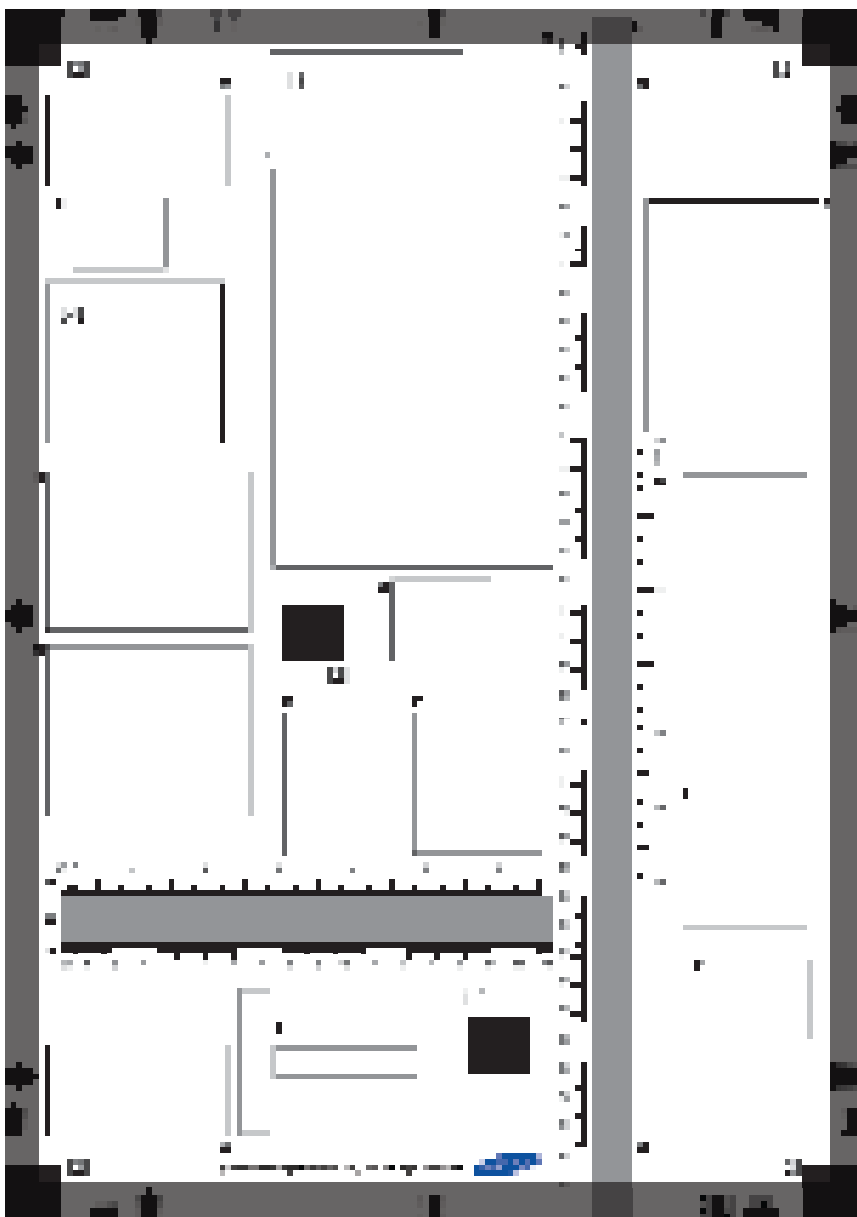
[1] Grid pattern : For adjusting margin and magnification
[2] Black patches : For adusting skew error
[3] Barcode : For checking the reproduction of barcode
[4] Note area : For recording the date, conditions, etc.
[A] Halftone band : For checking banding and jitter (K 50%)
[B, L] Resolution patterns : For checking resolution
[C, D, E] Images : For checking color reproduction
[F] Map image : For checking fine line reproduction
[G] Color patches : For checking color reproduction and uniformity
[H] Gradation pattern : For checking tone reproduction of 7 colors (C, M, Y, K, R, G, B/ 10~100%)
[I] Color/Mono text : For checking the reproduction of color, mono text
[J] Multilingual Feature : For checking the reproduction of small text
[K] White Gap pattern : For checking color to color, color to mono white gap
[M] Rulers : For checking the magnification error (unit : cm)
[N] Rulers : For checking the magnification error (unit : inch)

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7.3.1 Vertical white band / Dark band (in feeding direction)

A. Typical faulty images

Vertical white bands   Vertical color bands
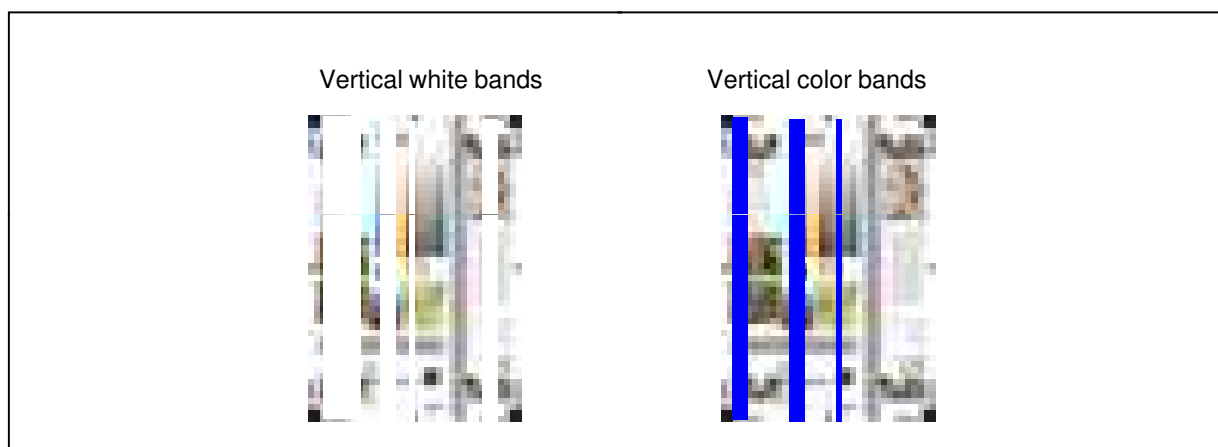
B. Troubleshooting procedure

Step	Section	Check item	Result	Action
1	Image check	A black line in sub scan direction is sharp.	Yes	Clean the charge scorotron.
2		A white line in sub scan direction is sharp.	Yes	Clean the LSU window
3	Imaging unit	The surface of the OPC drum is scratched.	Yes	Change imaging unit.
4		Dirty on the outside.	Yes	Clean.
5		Contact terminals make good connection between each imaging unit and machine.	No	Clean contact terminals.
6		Developing bias contact terminal makes good connection.	No	Clean contact terminal and check terminal position.
7	LSU	The surface of the LSU window is dirty.	Yes	Clean with cleaning jig.
8		The problem has been eliminated through the checks of steps up to 7.	No	Change LSU.

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Step	Section	Check item	Result	Action
9	Scanner	Original is damaged or dirty.	Yes	Change original.
10		Scanner glass white sheet is dirty.	Yes	Clean or replace the pad.
11		Original glass is dirty.	Yes	Wipe the surface clean with a soft cloth.
12		Glass in shading sheet is dirty.	Yes	Wipe the surface clean with a soft cloth.
13		Mirror is dirty. Lamp is dirty. Reflectors are dirty.	Yes	Clean the contaminated part. **Caution** Fragile parts!
14		The adjustment value for [Image Position : Side Edge] falls within the specified range.	No	Readjust.
15		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!
16		ADF scan glass is dirty.	Yes	Clean.
17		ADF scanning guide is dirty or defective.	Yes	Clean.

7.3.2 Horizontal white band / dark band

A. Typical faulty images

Horizontal white band	Horizontal color band
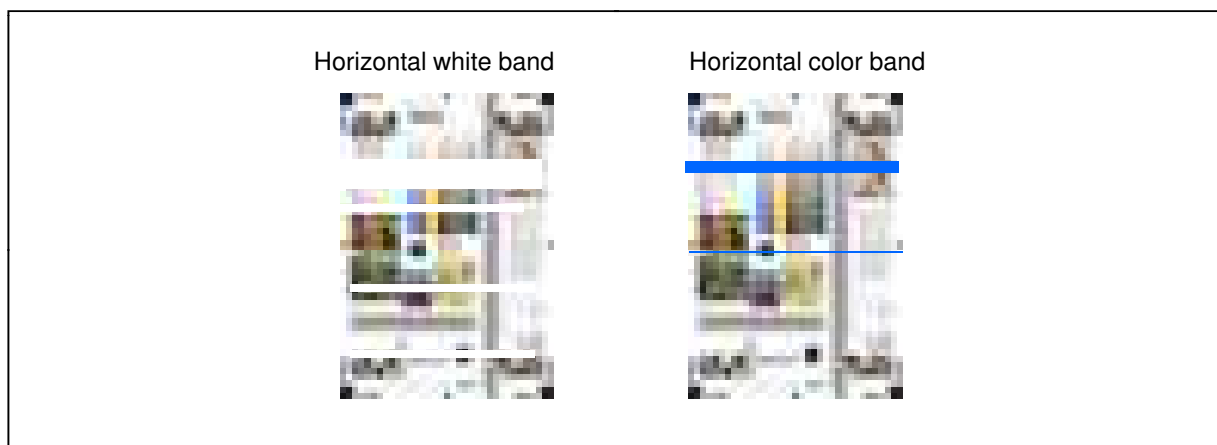
B. Troubleshooting procedure

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.
8	Scanner	Original is damaged or dirty.	Yes	Change original.
9		DADF pad is dirty.	Yes	Clean or replace the pad.
10	Scanner	Original glass is dirty.	Yes	Wipe the surface clean with a soft cloth.
11		The adjustment value for [Image Position : Leading Edge] falls within the specified range.	No	Readjust.
12		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 Color spot

A. Typical faulty images
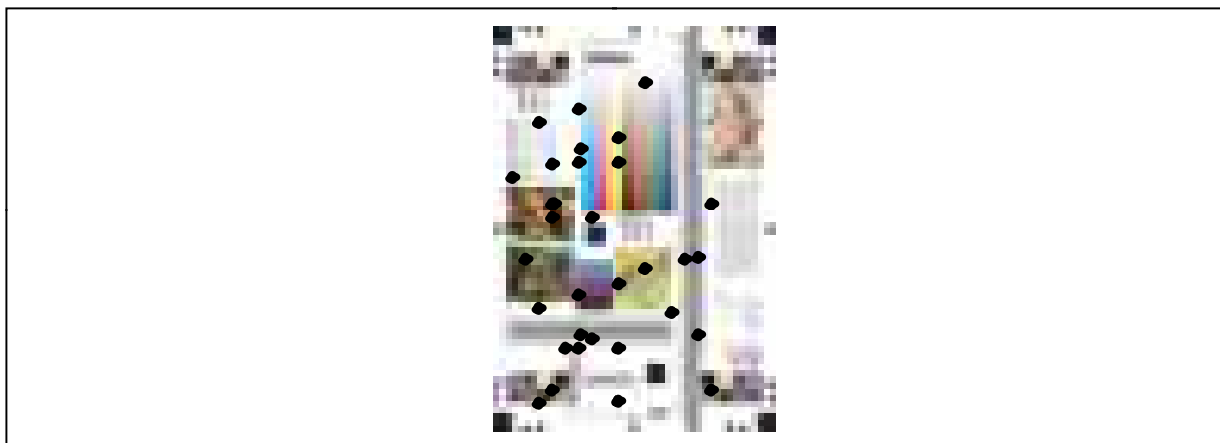
B. Troubleshooting procedure

Step	Section	Check item	Result	Action
1	Imaging unit	Developing bias contact terminal makes good connection	No	Clean contact terminal and check terminal position.
2		The surface of the OPC drum is scratched or contaminated.	Yes	Change imaging unit.
3		Dirty on the outside.	Yes	Clean.
4	Original	Original is damaged or dirty.	Yes	Change original.
5	DADF	DADF pad is dirty.	Yes	Clean.
6	Original glass	Original glass is dirty.	Yes	Wipe the surface clean with a soft cloth.

7.3.4 Foggy background

A. Typical faulty images
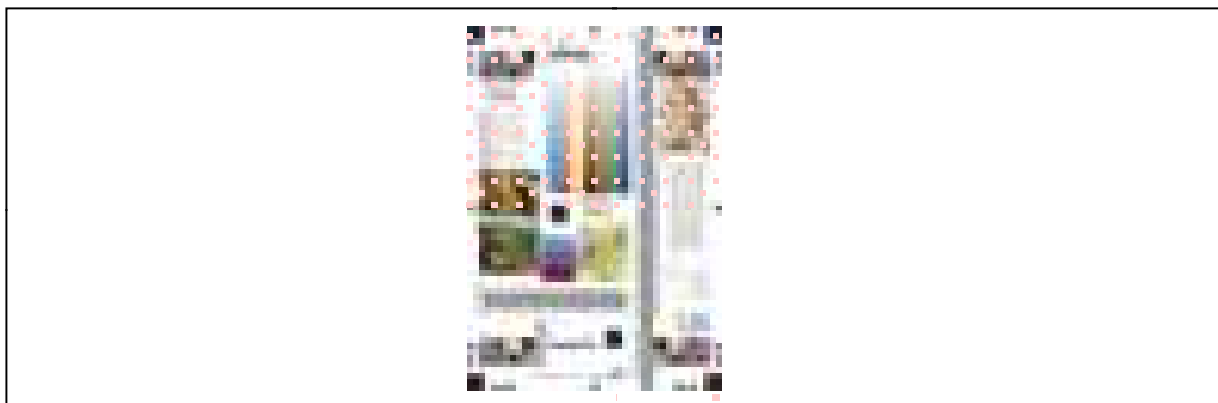
B. Troubleshooting procedure

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
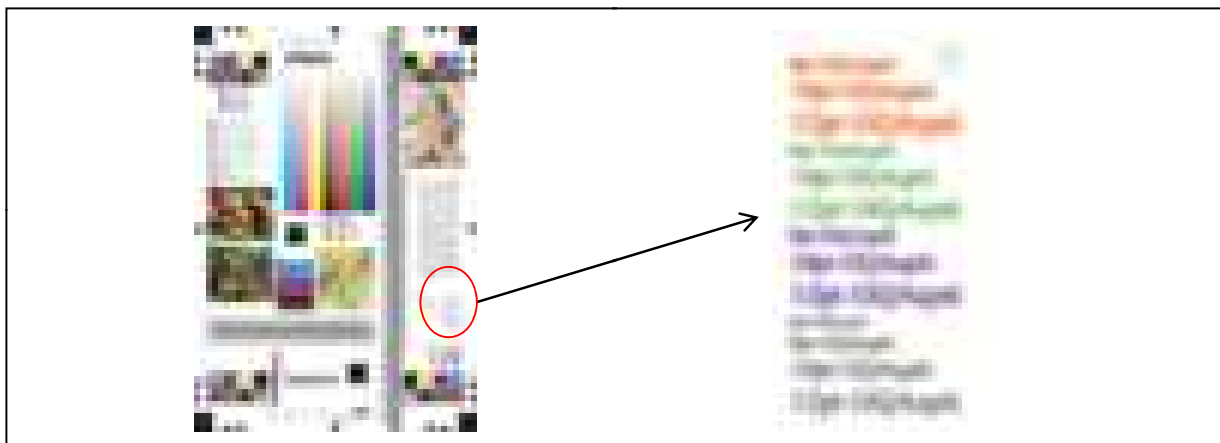
B. Troubleshooting procedure

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 Incorrect color registration

A. Typical faulty images

B. Troubleshooting procedure

Step	Section	Check item	Result	Action
1	Test Printing	Print the Cross Hatch pattern. Check if each color line is aligned with another color line.	Yes	For the following checks
2	OPC-ACR	Perform OPC-ACR. There is still color shift.	Yes	Go to following checks
3	OPC coupling	Check if the OPC couplings of the imaging unit and main drive unit are defective.	Yes	1. If the coupling of the imaging unit is defective, replace the imaging unit. 2. If the coupling of the main unit is defective, replace the main drive unit.
4	Transfer Belt	Deformation or damage of the transfer belt or stains on the transfer belt.	Yes	Clean or replace the transfer belt.

Step	Section	Check item	Result	Action
5	Transfer Belt	Stain or damage of the drive roller	Yes	Replace the transfer belt.
6		Is the belt edge damaged or stained?	Yes	Clean or replace the transfer belt.
7		Peeling of the cleaning blade (Large driving load)	Yes	Replace the transfer belt.
8		Is the transfer belt unit installed normally?	Yes	Check and reseat transfer belt unit correctly. Check fixing screws and tighten up properly.
9		Check if the couplings of the transfer unit and main unit are defective.	Yes	1. If the coupling of the transfer unit is defective, replace the transfer belt. 2. If the coupling of the main unit is defective, replace the main drive unit.
10	Laser Scanning unit	Check the Cross Hatch pattern. Are the lines of the primary scanning direction bent?	YES	Replace the laser scanning unit(LSU).
11	High-voltage transformer	Check the connection of the high voltage supply terminal of the 1st or 2nd transfer rollers.	YES	Replace the HVPS board.
12	OPC-ACR	Perform OPC-ACR.		After finishing service, please perform OPC-ACR and recheck again.

7.3.7 Uneven pitch and jitter image

A. Typical faulty images
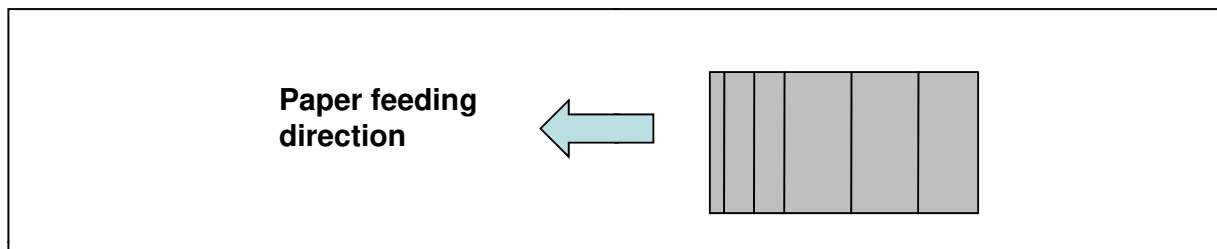
Paper feeding direction

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	1.7mm or 1.2mm or 2.7mm periodic jitter has occurred.	Yes	Replace the imaging unit.
3	Main Drive Unit	0.78mm or 1.1mm periodic jitter has occurred.	Yes	Replace the E-Clutch in Main Drive unit.
4	Main Drive Unit	After replacing the E-Clutch in main drive unit, 0.78mm or 1.1mm periodic jitter has occurred.	Yes	Replace the Main Drive unit.
5	Laser Scanning Unit	0.508mm or 0.65mm periodic jitter has occurred.	Yes	Replace the Laser Scanning Unit (LSU).
6	Regi roll Gear	2.5mm periodic jitter has occurred.	Yes	Replace the Regi Roll Gear in main unit.
7	Imaging unit	94mm periodic jitter has occurred.	Yes	Replace the imaging unit.
8	Main Drive Unit	After replacing the imaging unit, 94 mm periodic jitter or band has occurred.	Yes	Replace the Main Drive unit.
9	Imaging unit	35mm or 62mm or 43mm periodic jitter or band has occurred.	Yes	Replace the imaging unit.
10	Main Drive Unit	After replacing the imaging unit, 35 mm periodic jitter or band has occurred.	Yes	Replace the Main Drive unit.
11	Transfer belt unit	52mm periodic band has occurred.	Yes	Replace the Transfer Belt unit.
12	Transfer 2 roller	55~56mm periodic band has occurred.	Yes	Replace the T2 roller.

7.3.8 Skewed image

A. Typical faulty images
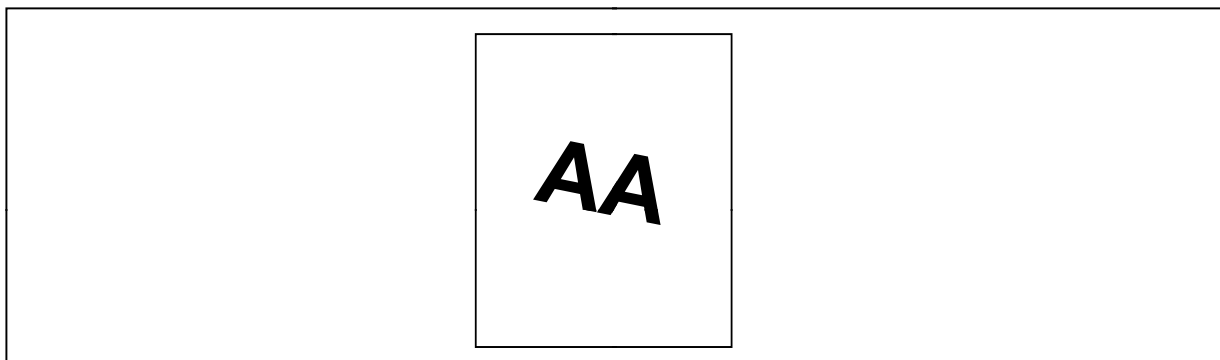
B. Troubleshooting procedure

Step	Section	Check item	Result	Action
1	Cassettes	Is the cassette properly installed?	No	Reinstall the cassette or HCF 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	Re-assemble the DADF. (refer to 7.3.18)
6	Image Transfer Belt (ITB)	Is the transfer belt unit installed properly?	No	Reseat it.

7.3.9 Low image density

A. Typical faulty images

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. Print the S600 pattern and check 1*4 pattern. (Refer to the image of S600 in the next page)	Yes	Change the LSU.
3	Imaging Unit	Toner carriers and toner level is too low in imaging unit. Check weight of imaging unit. If less than 2150g imaging unit needs replacement.	Yes	Check the high voltage terminal. Replace the imaging unit.
4	Transfer belt unit	Transfer belt unit makes positive contact with plates on rails.	No	Check and correct contacts.
5		Is abnormality found in the cam gear?	Yes	Change transfer belt unit.
6	Auto Color Calibration	Execute the Normal TRC Control, Quick TRC Control, or Full TRC Control (Service Mode > Diagnostics > Color Management > Color Tone Adjustment > Normal TRC Control > Execute Now). Then check if the image density is improved.	Yes	Go to next step.

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Step	Section	Check item	Result	Action
7	TRC Report	Print the TRC report (Service Report > Information > Printer Reports > TRC Control History > Print). Please check if there is any error in the report. If any number greater than zero in "Fail" column stands for an error. Also check ErY, ErM, ErC, ErK. LocL, LocC, and LocR column.)	Yes	1. Check if the ITB engage and disengage is operated normally. 2. Replace the Imaging Unit.
8	Toner supply device	Connectors are loose.	Yes	Reconnect.
9		Motor is defective.	Yes	Change the toner supply motor.
10		The problem has been eliminated through the checks of steps up to 9	No	→ Change video board → Change LSU. → Change HVPS board.

Y S600 Pattern

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M S600 Pattern

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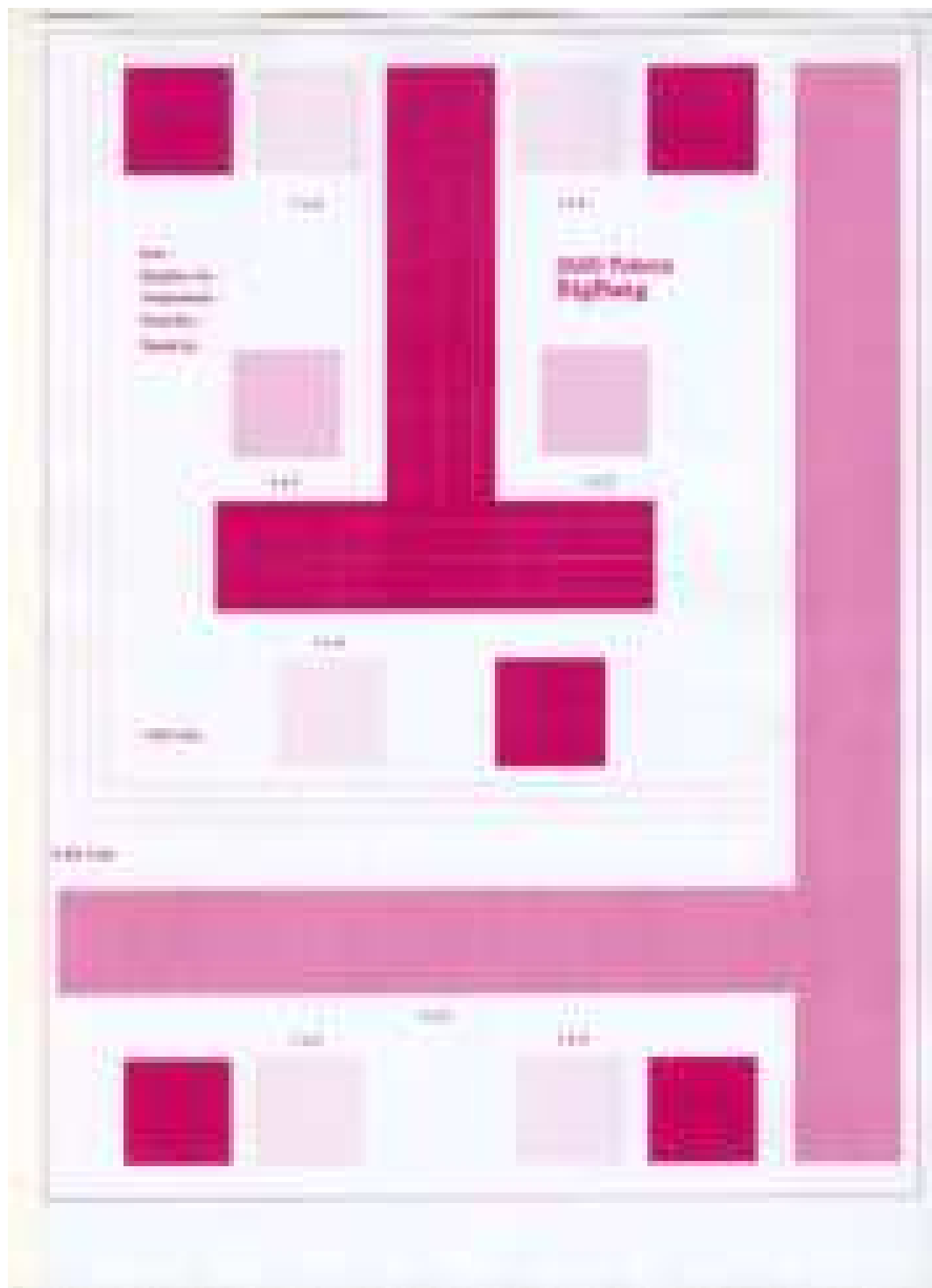
C S600 Pattern

K S600 Pattern

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TRC Report

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7.3.10 Blank copy , Black copy

A. Typical faulty images

Blank copy

Black copy
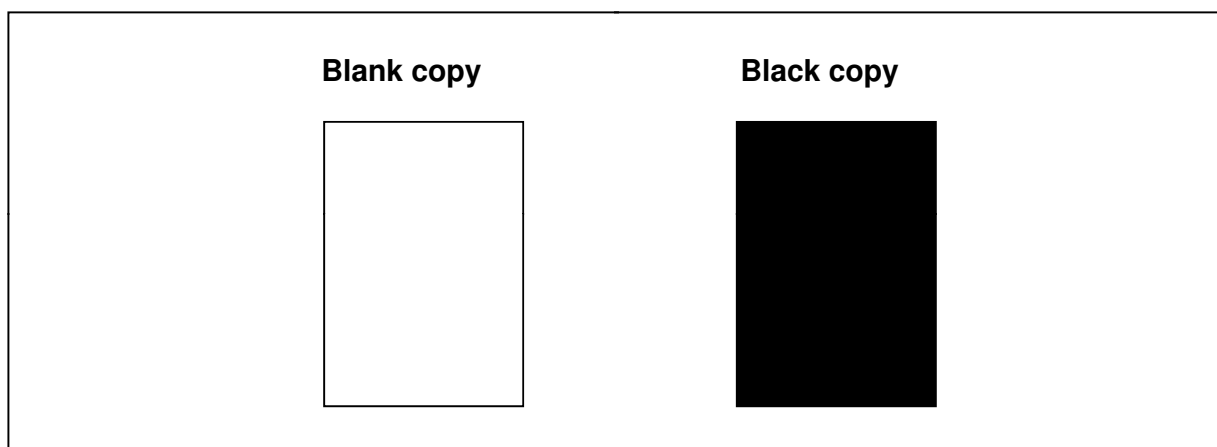
B. Troubleshooting procedure

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.

7.3.11 Uneven density in sub scan direction (Horizontal Band)

A. Typical faulty images
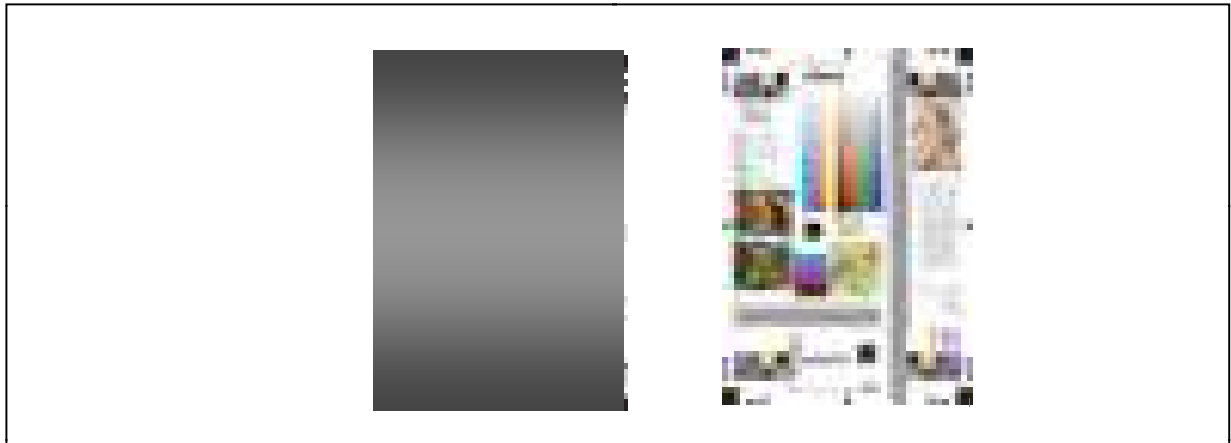
B. Troubleshooting procedure

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	Image transfer belt unit.	Is abnormality found in the cam gear?	Yes	Change transfer belt unit.
5		The problem has been eliminated through the checks of steps up to 4.	No	→ Change LSU. → Change HVPS board.

7.3.12 Uneven density in main scan direction (Vertical Band)

A. Typical faulty images
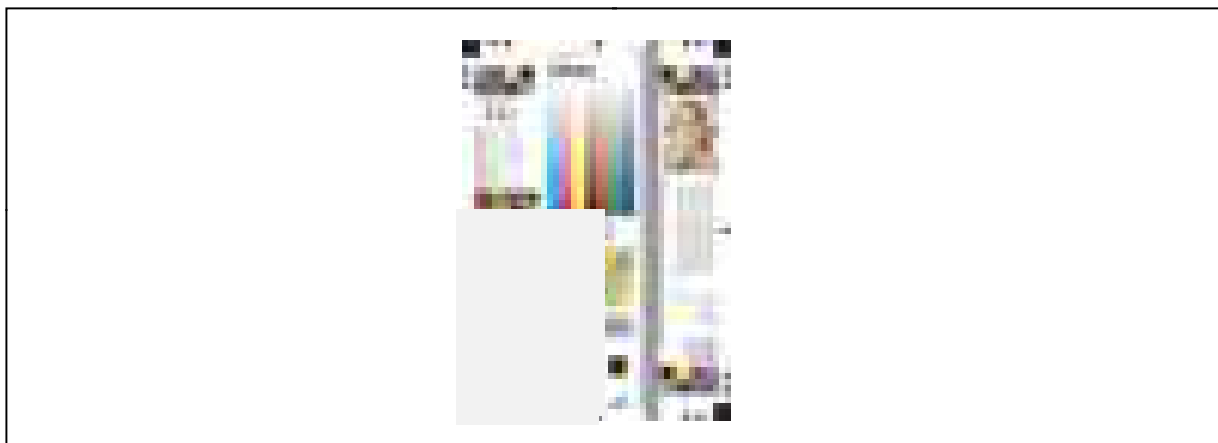
B. Troubleshooting procedure

Step	Section	Check item	Result	Action
1	Machine → LD adjustment → LD lightness balance adjust.	The problem has been eliminated through the LD lightness balance adjust.	No	Go to next step.
2	Imaging unit	The surface of the OPC drum is scratched.	Yes	Change imaging unit.
3		Dirty on the outside.	Yes	Clean.
4	LSU	The surface of the LSU window is dirty.	Yes	Clean with cleaning jig.
5	Transfer roller	Check that the spring does not come of during the pressure operation of the transfer roller.	No	Correct. Change transfer roller unit.
6	Transfer belt unit	Transfer belt unit makes positive contact with plates on rails.	No	Check and correct contacts.
7		Is abnormality found in the cam gear?	Yes	Change transfer belt unit.
8		The problem has been eliminated through the checks of steps up to 6.	No	Change imaging unit. → Change LSU. → Change HVPS board.

7.3.13 Gradation reproduction failure

A. Typical faulty images

B. Troubleshooting procedure

Step	Section	Check item	Result	Action
1	Warning display	The maintenance call mark is displayed on the panel.	Yes	Take action according to the warning code shown on the state confirm screen.
2	Photo / density	Original type and screen pattern are selected properly.	No	Change screen pattern.
3	Imaging unit	Dirty on the outside.	Yes	Clean.
4	LSU	The surface of the LSU window is dirty.	Yes	Clean with cleaning jig.
5	State confirmation → Level history	IDC output value is around 4.3V	No	Clean IDC sensor and execute the image stabilization. Check transfer belt for damage and correct as necessary.
6	Auto Color Calibration	Execute the Normal TRC Control, Quick TRC Control, or Full TRC Control (Service Mode > Diagnostics > Color Management > Color Tone Adjustment > Normal TRC Control > Execute Now). Then check if the image density is improved.	Yes	Go to next step.

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Step	Section	Check item	Result	Action
7	TRC Report	Print the TRC report (Service Report > Information > Printer Reports > TRC Control History > Print). Please check if there is any error in the report. If any number greater than zero in "Fail" column stands for an error. Also check ErY, ErM, ErC, ErK. LocL, LocC, and LocR column.)	Yes	1. Check if the ITB engage and disengage is operated normally. 2. Replace the corresponding Imaging Unit.
8		The problem has been eliminated through the checks of steps up to 7.		Change imaging unit. → Change LSU. → Change HVPS board.

7.3.14 Void areas, white spots

A. Typical faulty images
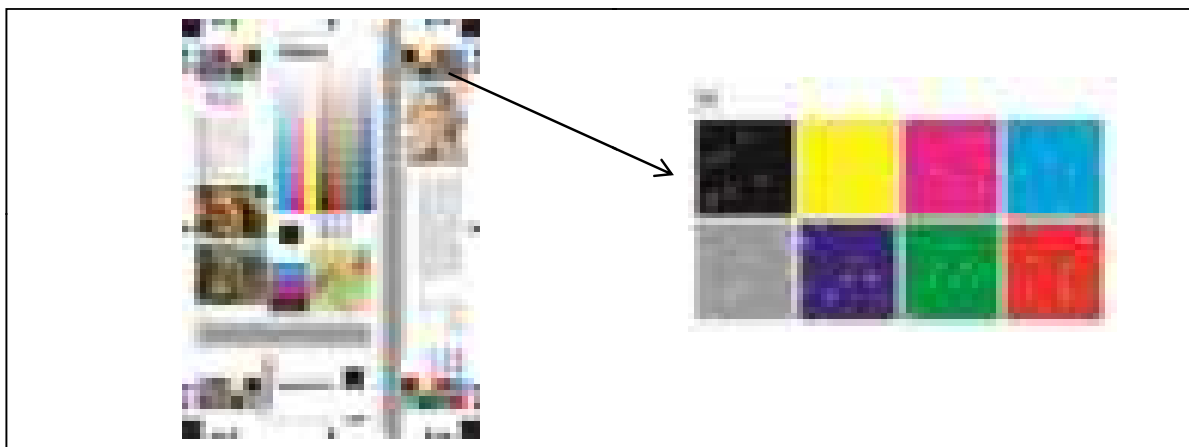
B. Troubleshooting procedure

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 unwrapped from its package.
2		There is void area at the rear side section.	Yes	2. Print the image on recycled paper mode.
3	Imaging unit	The surface of the OPC drum is scratched.	Yes	Change imaging unit.
4		Dirty on the outside.	Yes	Clean.
5	Toner cartridge	Foreign matter or caked toner in the toner cartridge.	Yes	Remove foreign matter.
6	Transfer belt unit	Transfer belt is dirty or scratched.	Yes	Clean dirty belt with a soft cloth. Change transfer belt unit if belt is damaged.
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		Pre-image transfer guide plate is damaged or dirty.	Yes	Clean or change.

7.3.15 Poor fusing performance, offset

A. Typical faulty images
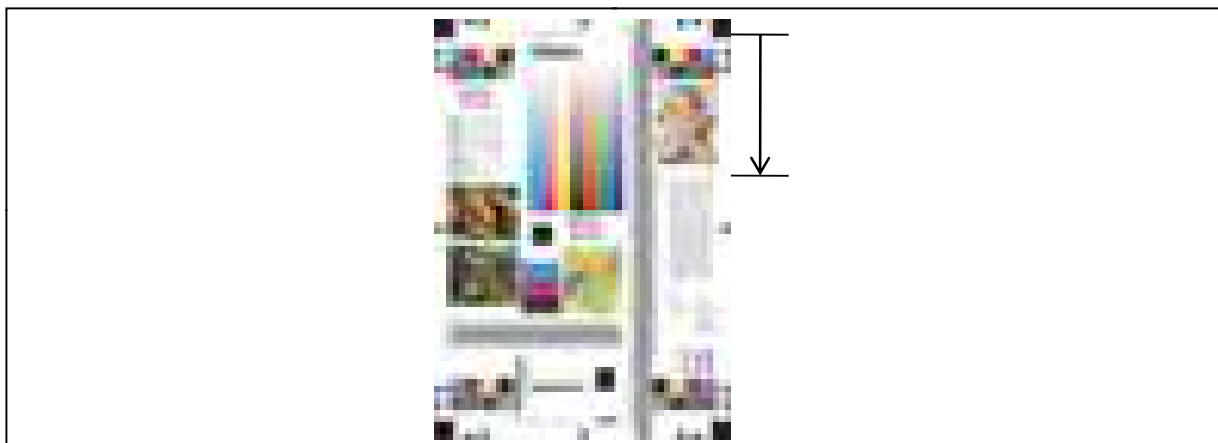
B. Troubleshooting procedure

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.

7.3.16 Stain on the paper back side

A. Typical faulty images
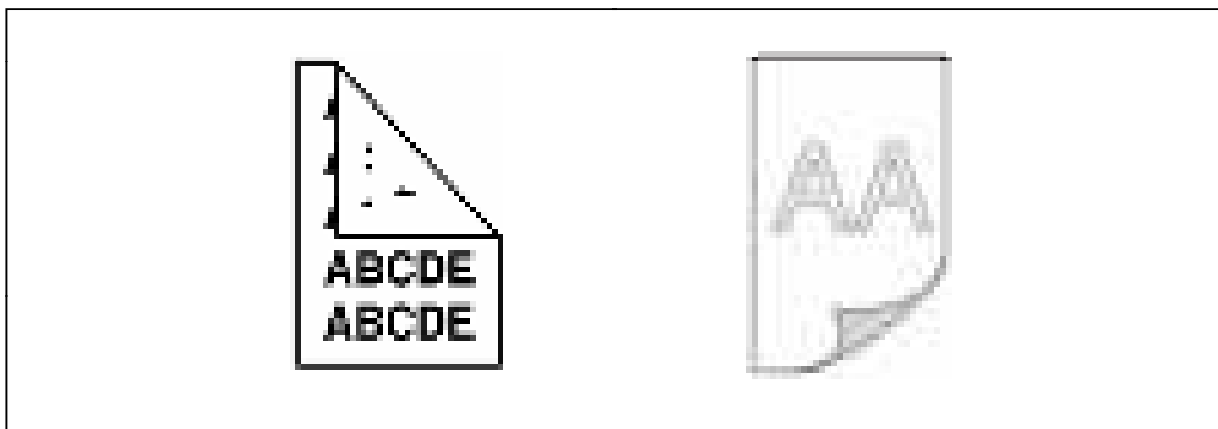
B. Troubleshooting procedure

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 LCF correspond to the setting?	No	Use the appropriate paper size or correct the size setting.
3	2nd Transfer roller	Are the feed roller and 2nd transfer roller dirty or worn out?	Yes	Clean or replace the rollers.
4	Image Transfer Belt (ITB)	Is there any stain caused by a poor cleaning, etc. on the transfer belt?	Yes	Clean the transfer belt.
5		Is the transfer belt cleaning blade in proper contact with the transfer belt?	Yes	Take off the transfer belt and check if the transfer belt cleaning blade pressure spring and the pressure hook are installed properly.
6		Is there any foreign matter or stain on the 2nd transfer roller?	Yes	Clean or replace the roller.
7	Fuser unit	Are the fuser belt and pressure roller dirty?	Yes	Clean the fuser belt and pressure roller.
8		Is the rib of transport guide dirty?	Yes	Clean the rib.

7.3.17 White Halo (White Gap Between Text and Background)

A. Typical faulty images

White Halo   (White Gap Between Text and Background)
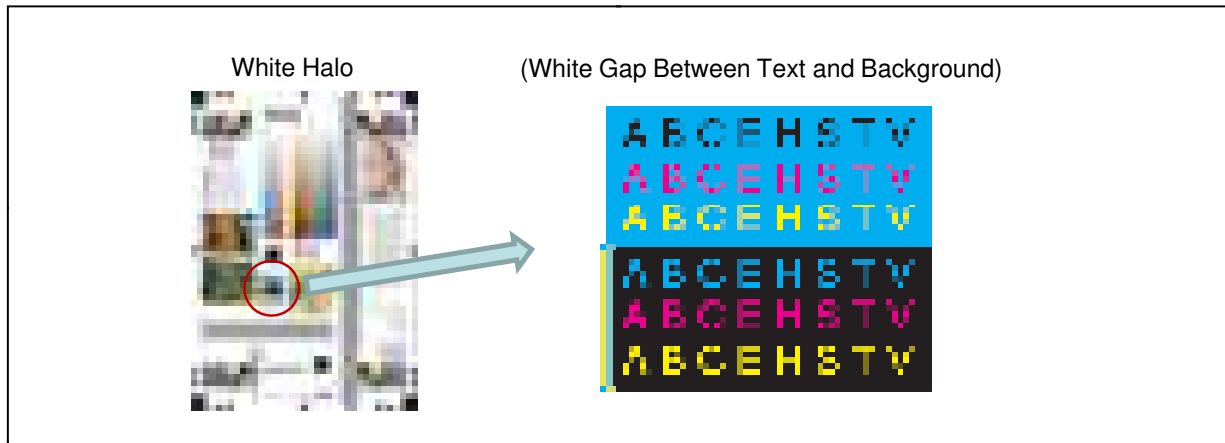
B. Troubleshooting procedure

Step	Section	Check item	Result	Action
1	Image check	There is the white gap between the black line and the gray background	Yes	Go to following checks
2	OPC-ACR	Perform OPC-ACR. There is still white gap.	Yes	Go to following checks
3	UI	Decrease Sharpening Level	No	

Default (Level 5)

7.3.18 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.
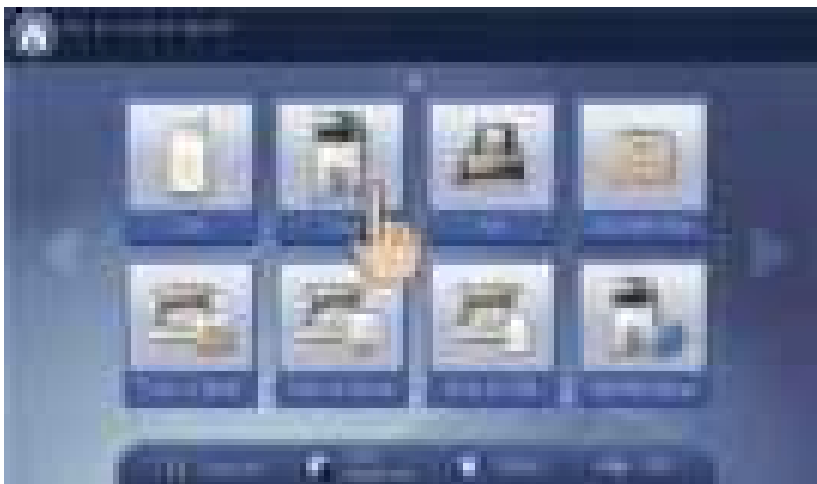
4. Press **Start** from the control panel to begin copying.

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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.

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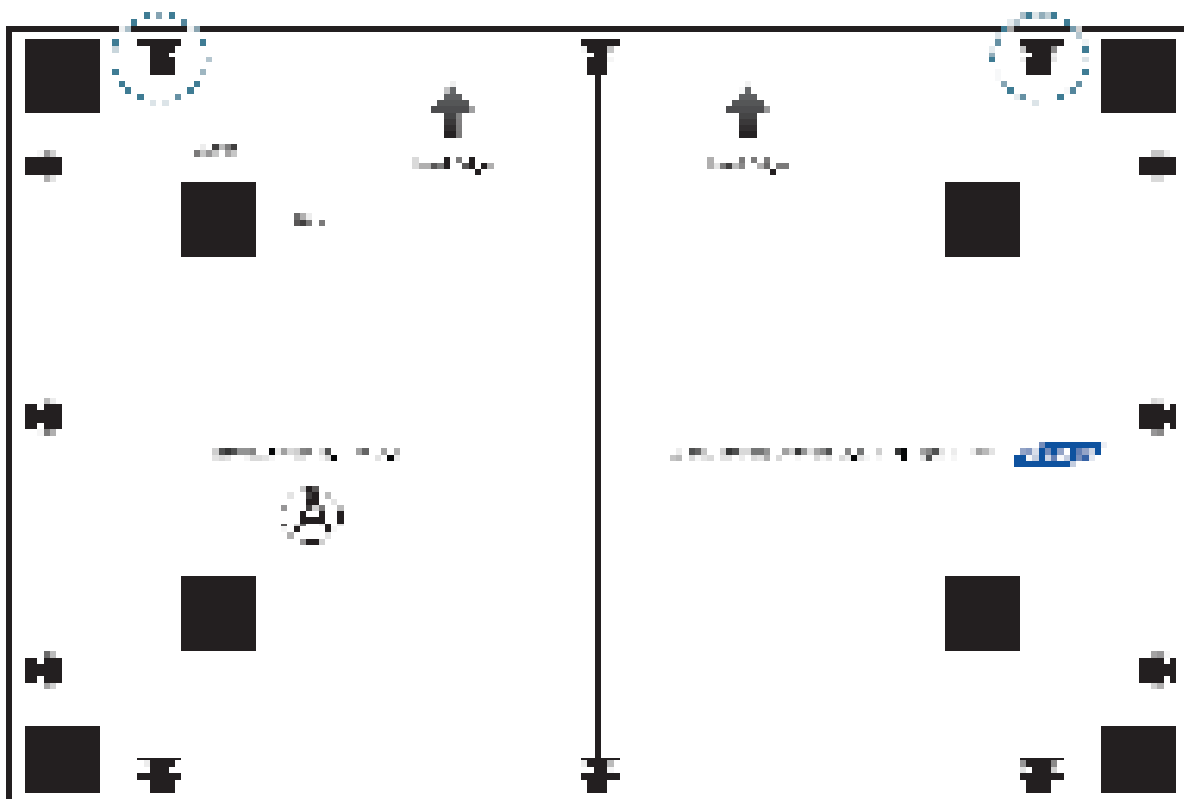
Otherwise, adjust the DADF using the screw at the backside and handle hinge as shown by the examples below. For example, the length of scale on the left side is 1mm shorter than that of right side, move the steel plate toward the rear side by two scale marks using the screw at the backside and handle hinge. A scale mark is approximately 0.5 mm.
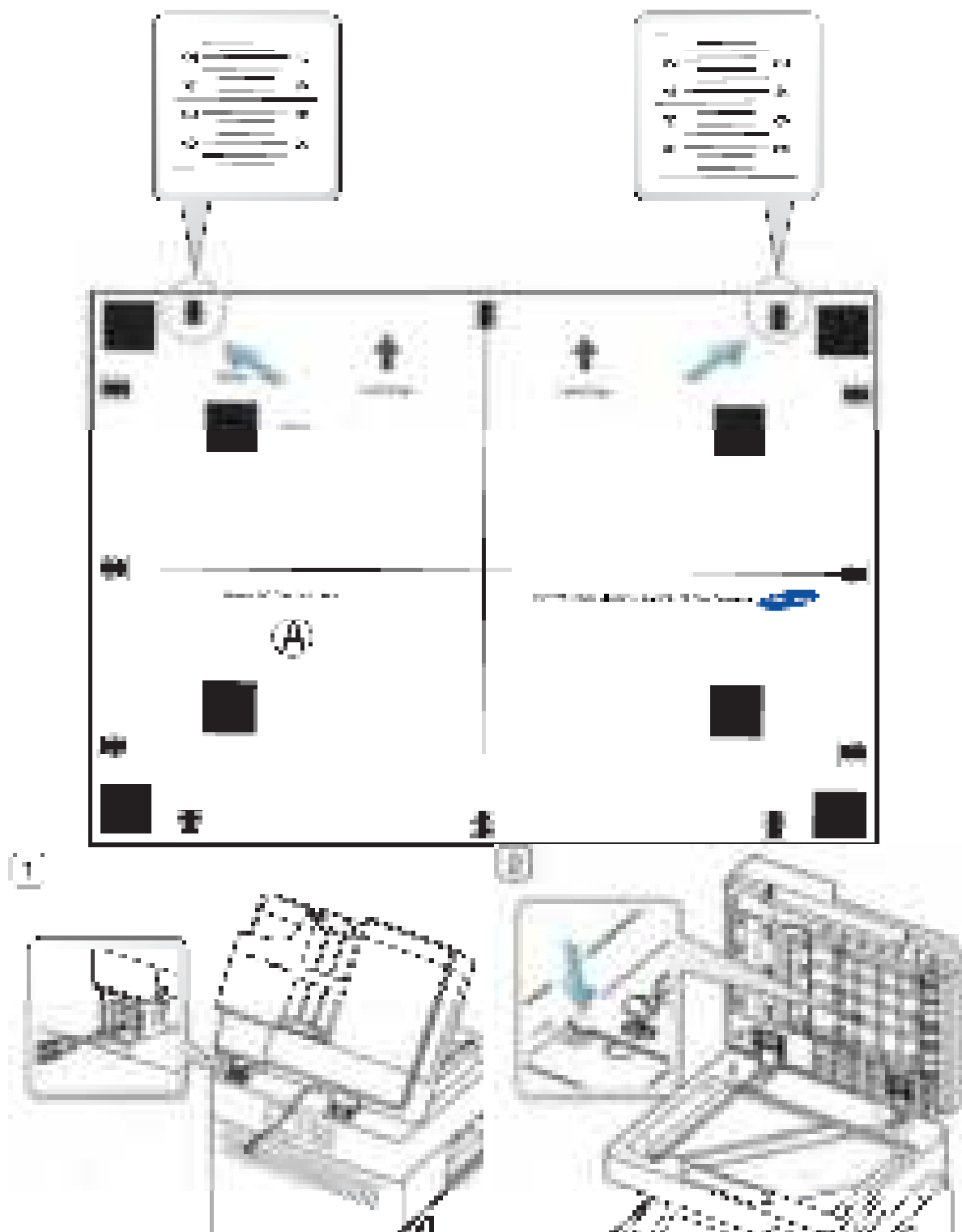
For example, the length of scale on the left side is 1mm longer than that of right side, move the steel plate toward the front side by two scale marks using the screw at the backside and handle hinge. A scale mark is approximately 0.5 mm.

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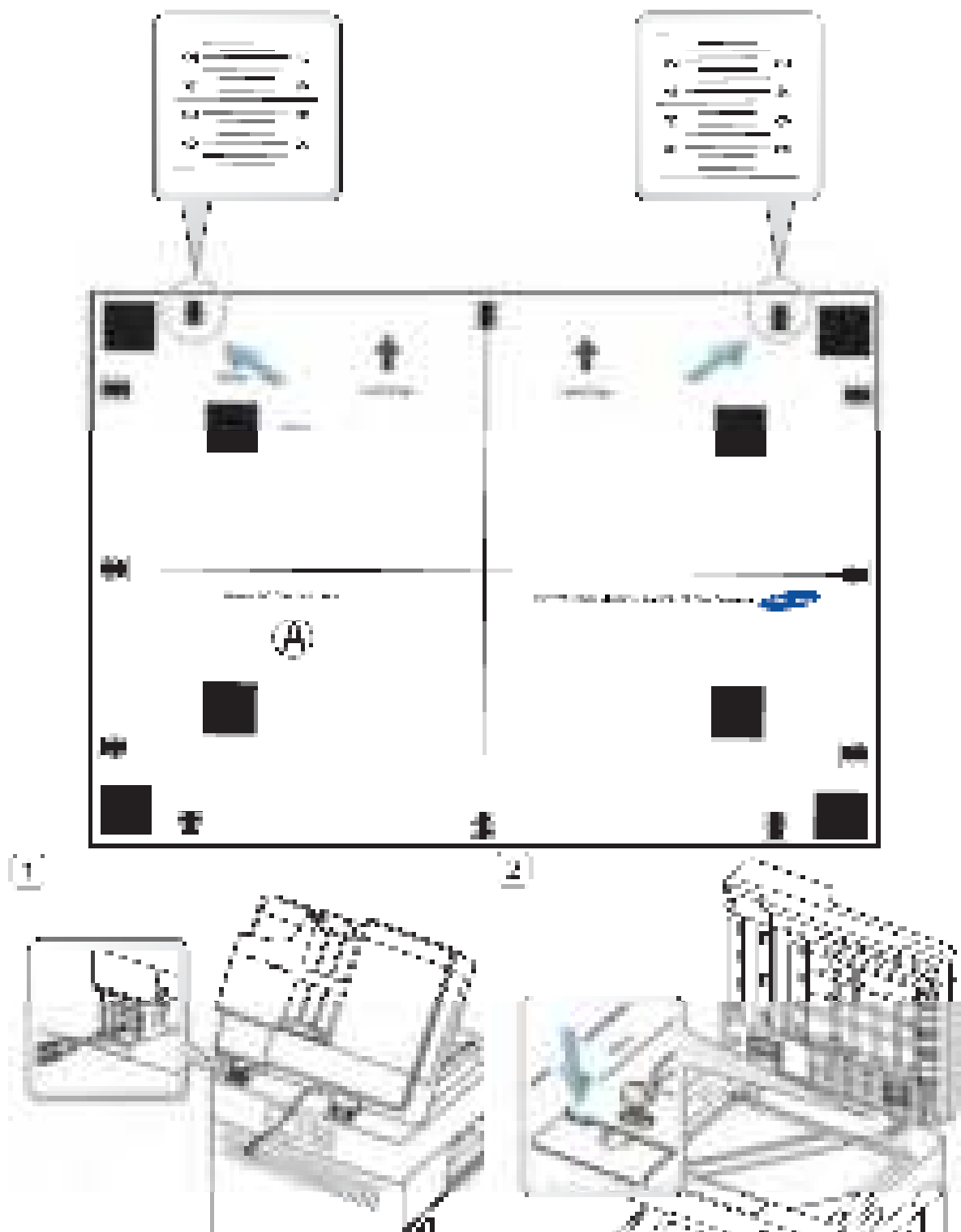
7.4 Other errors

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)
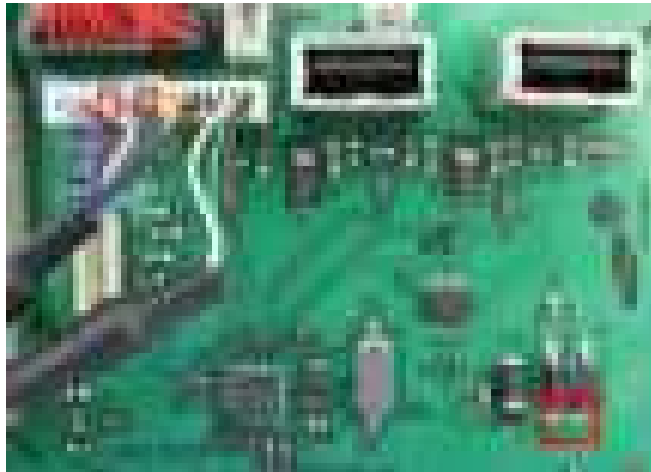
       Replace the SMPS board.

   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.
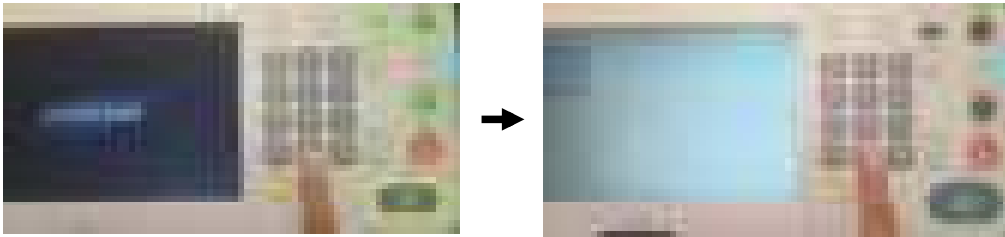
3. Press centre of mark + following order 1-9. Use your finger. Perform 2 times.
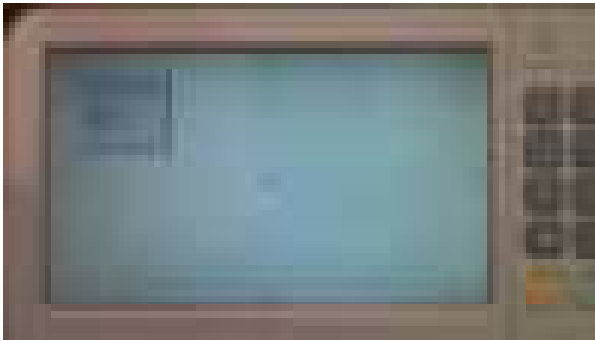
4. If there is no problem, "Complete" will appear on LCD and reboot the machine.
   When making a mistake, start again from the step 1.

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● **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
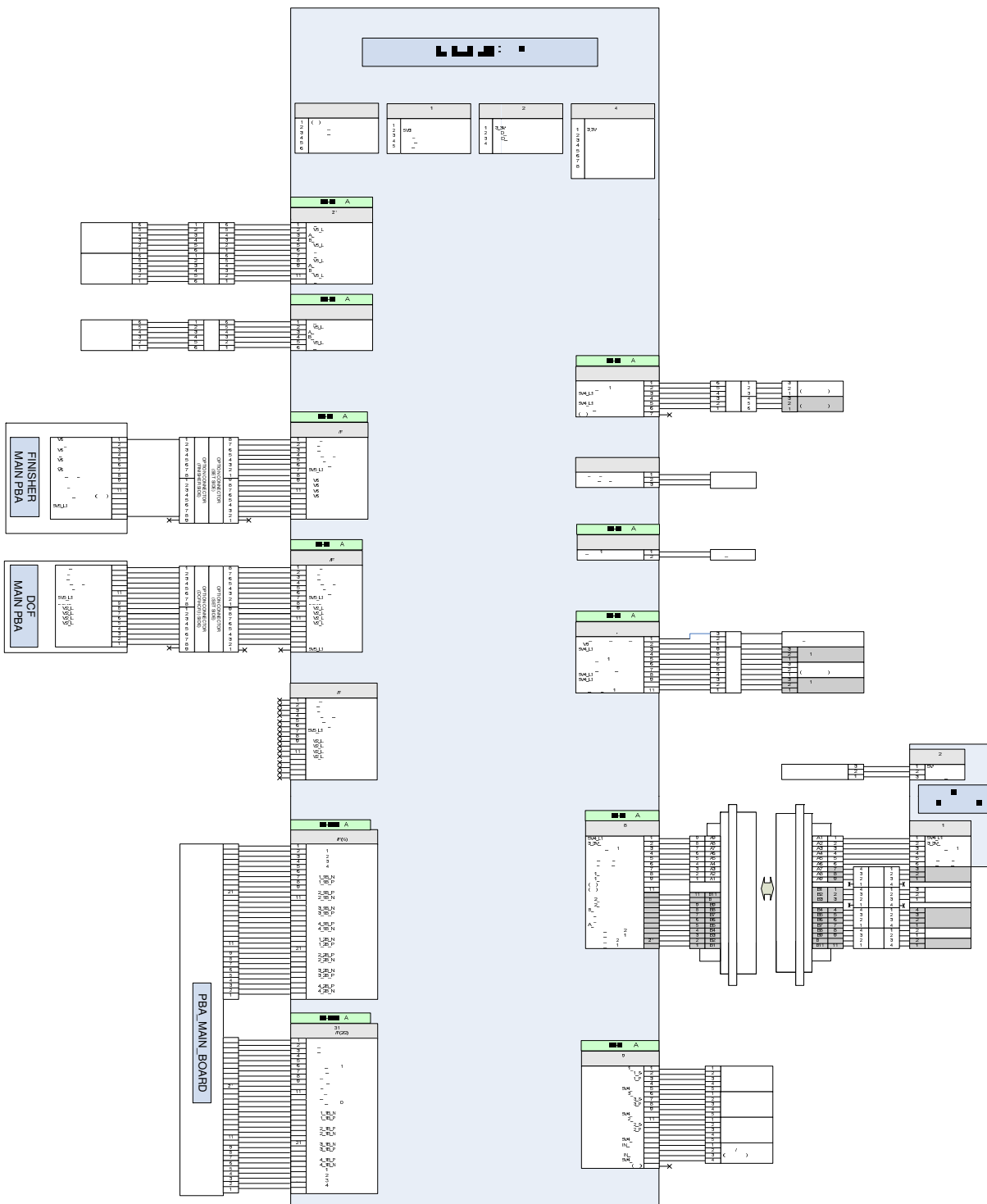
8.2 ENGINE 2

8.3 MAIN BOARD & OPE

8.9" LCD / Touch Panel

SUB HUB PBA

OPE MAIN PBA

SUB KEY PBA

SCAN PBA

MAIN PBA

SPEAKER

ENGINE PBA

HDD
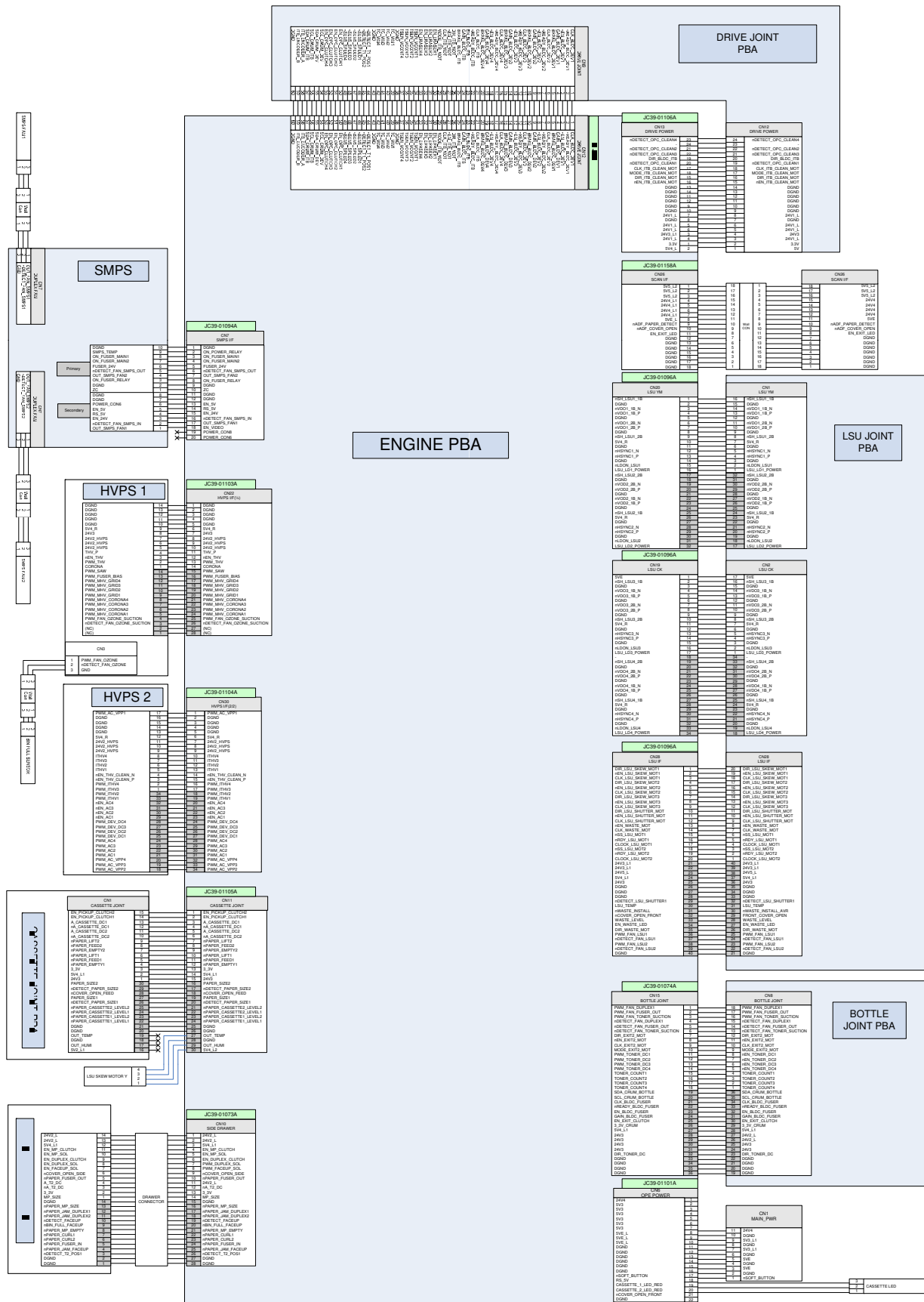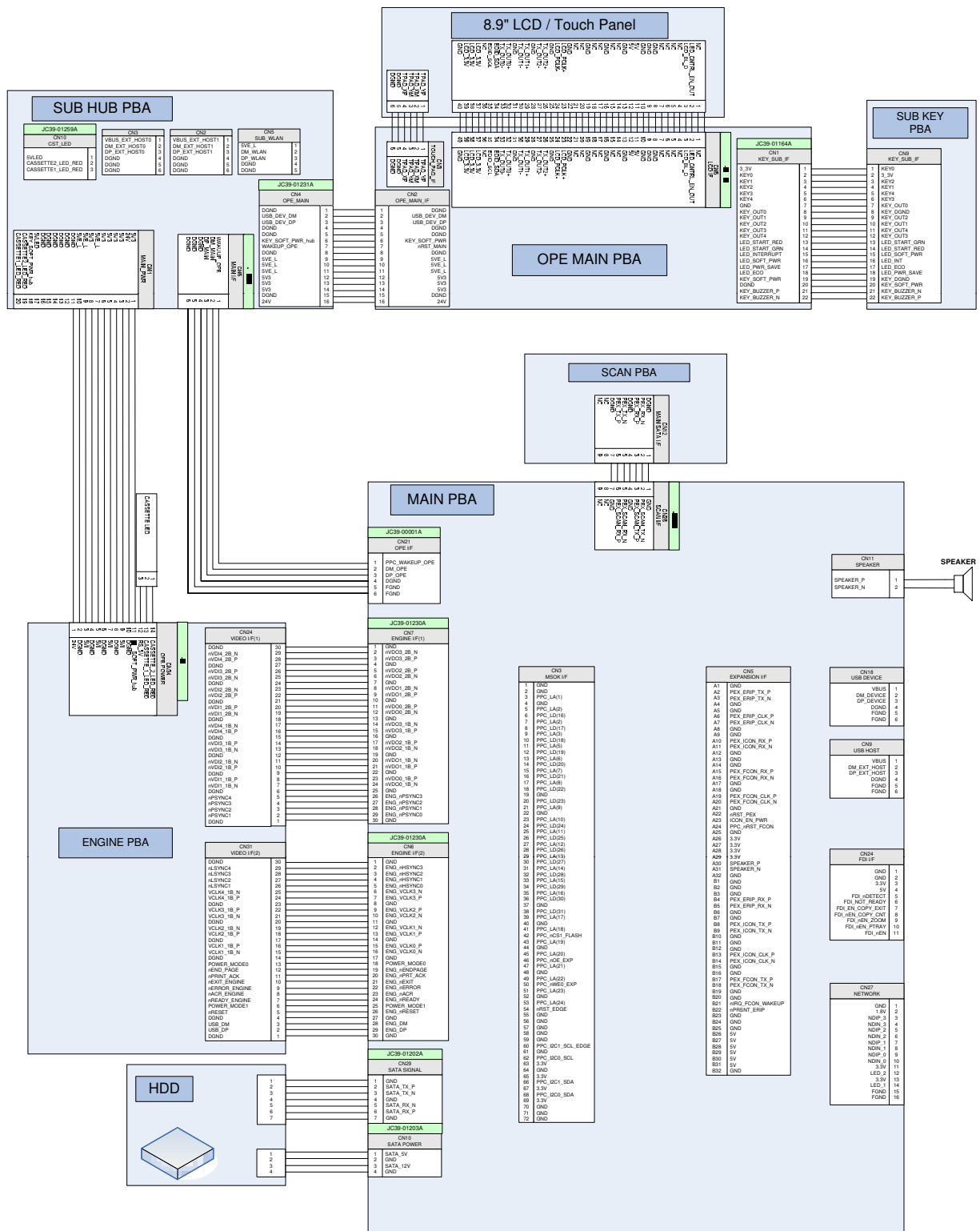
8.4 SCAN & DADF
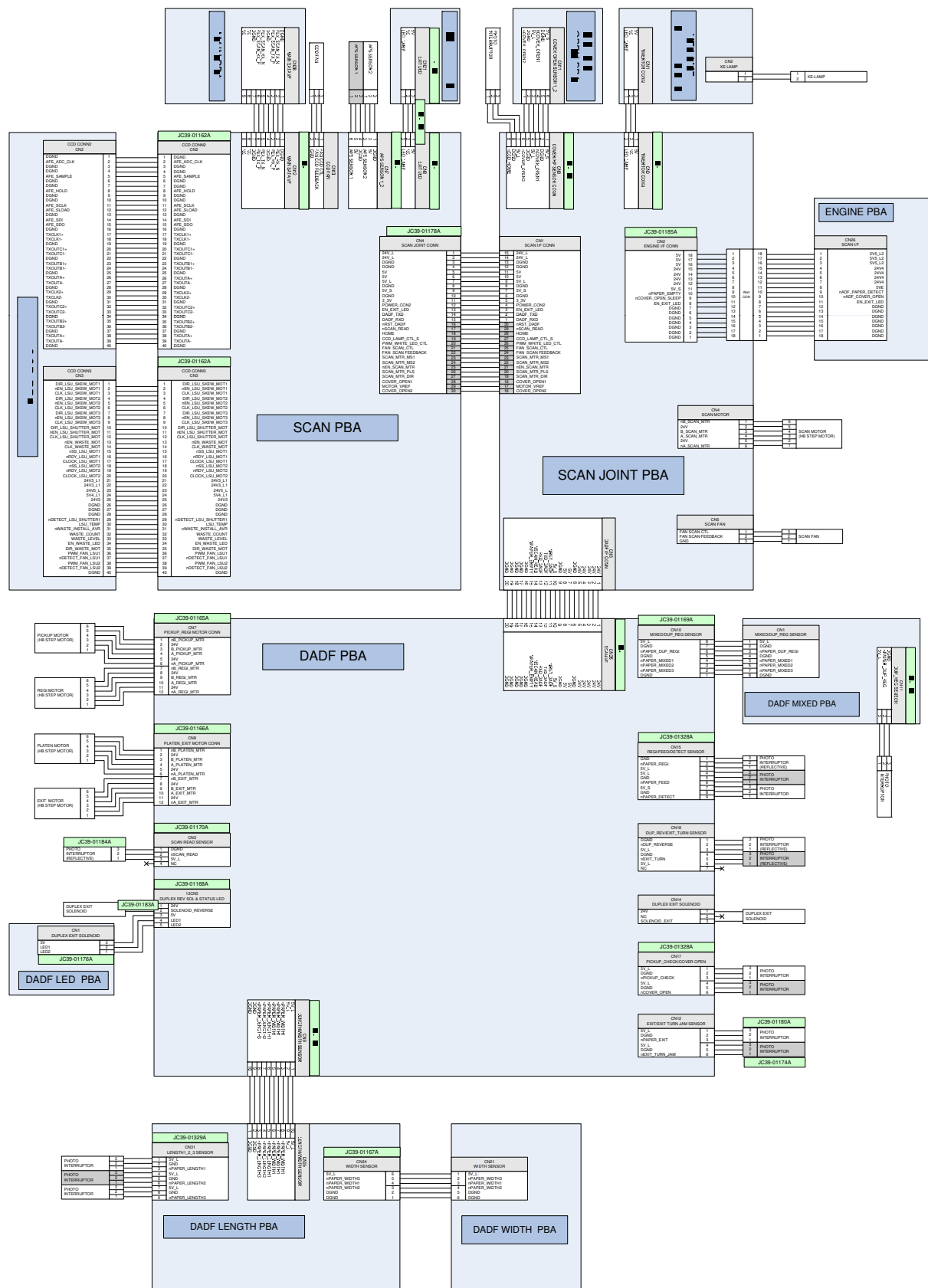
8.5 BOTTLE JOINT BOARD & SIDE JOINT BOARD

SAMSUNG ELECTRONICS
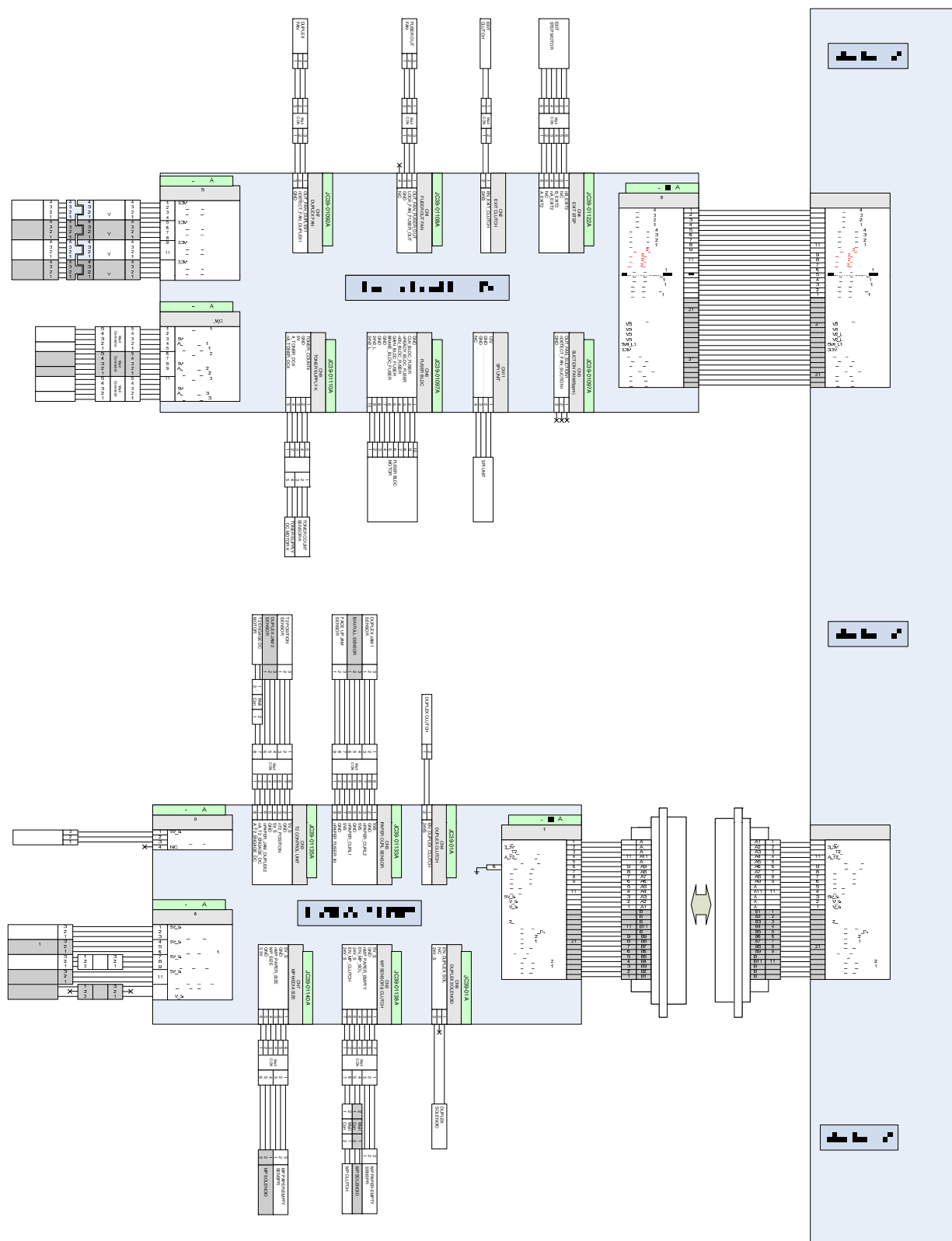
8.6 DC CONTROL BOARD & LSU JOINT BOARD

SAMSUNG ELECTRONICS
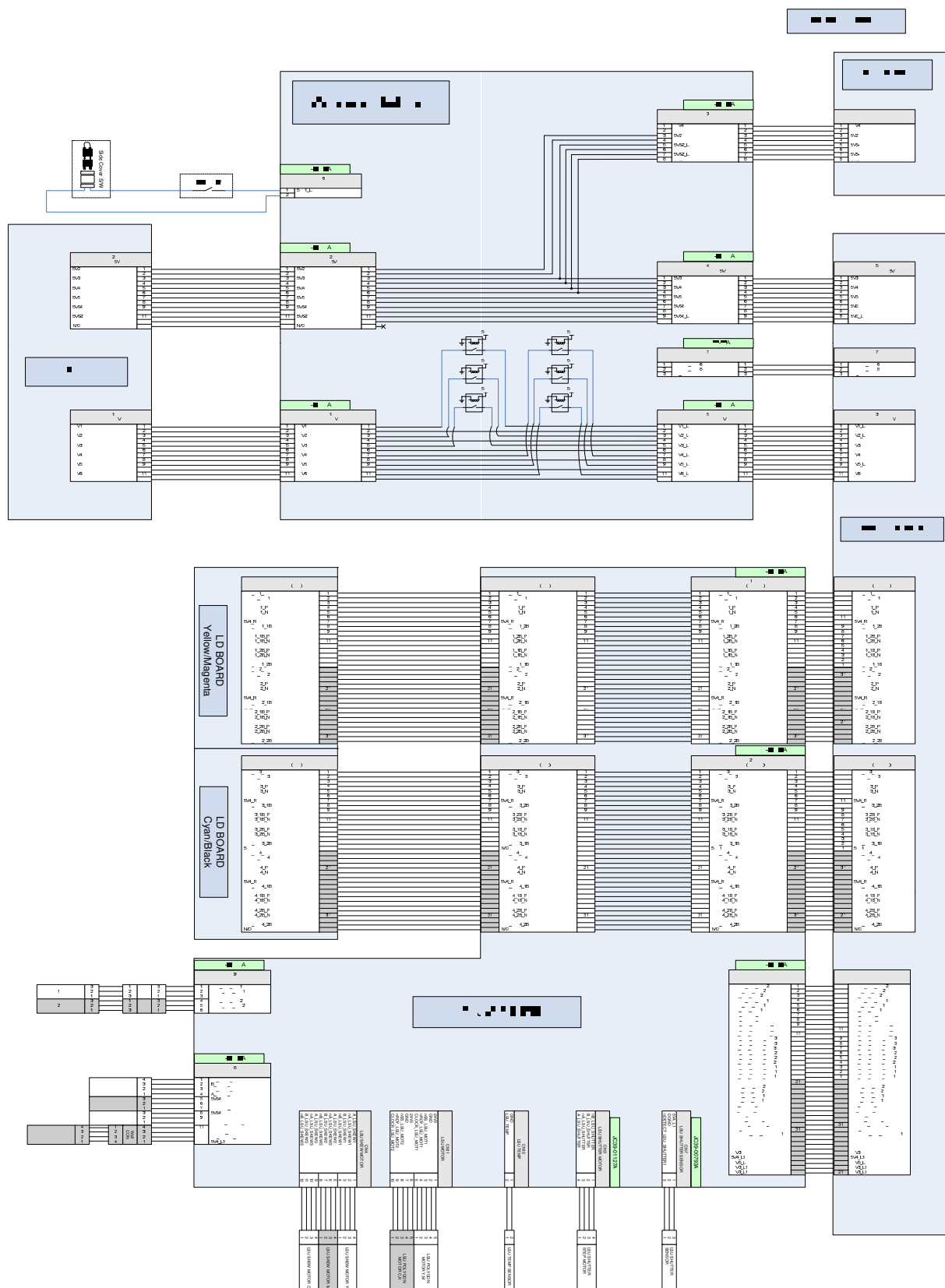
8.7 Cassette Joint Board & Drive Joint Board

CASSETTE JOINT PBA

CASSETTE JOINT PBA

DRIVE JOINT PBA
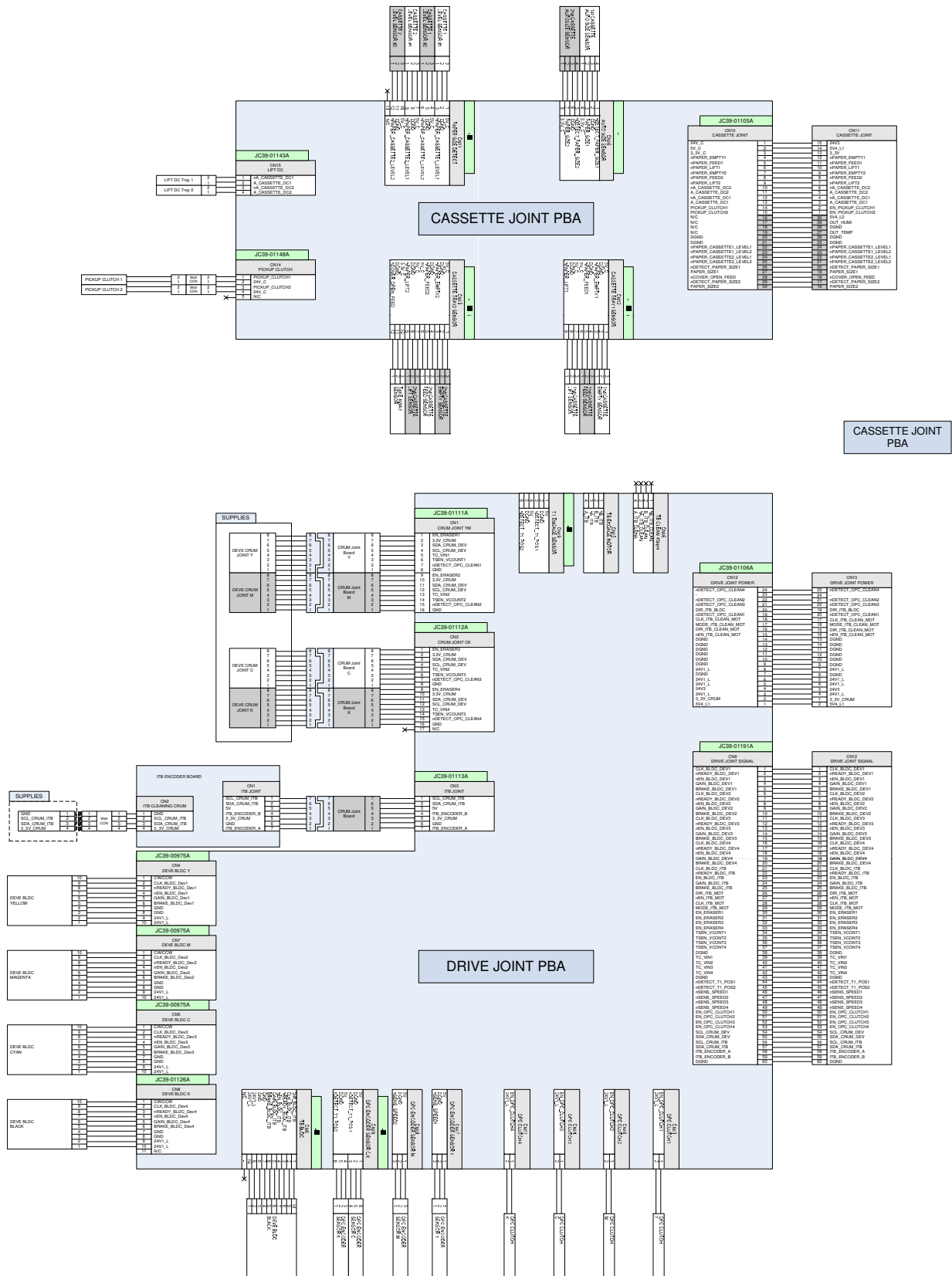
8.8 HEATER
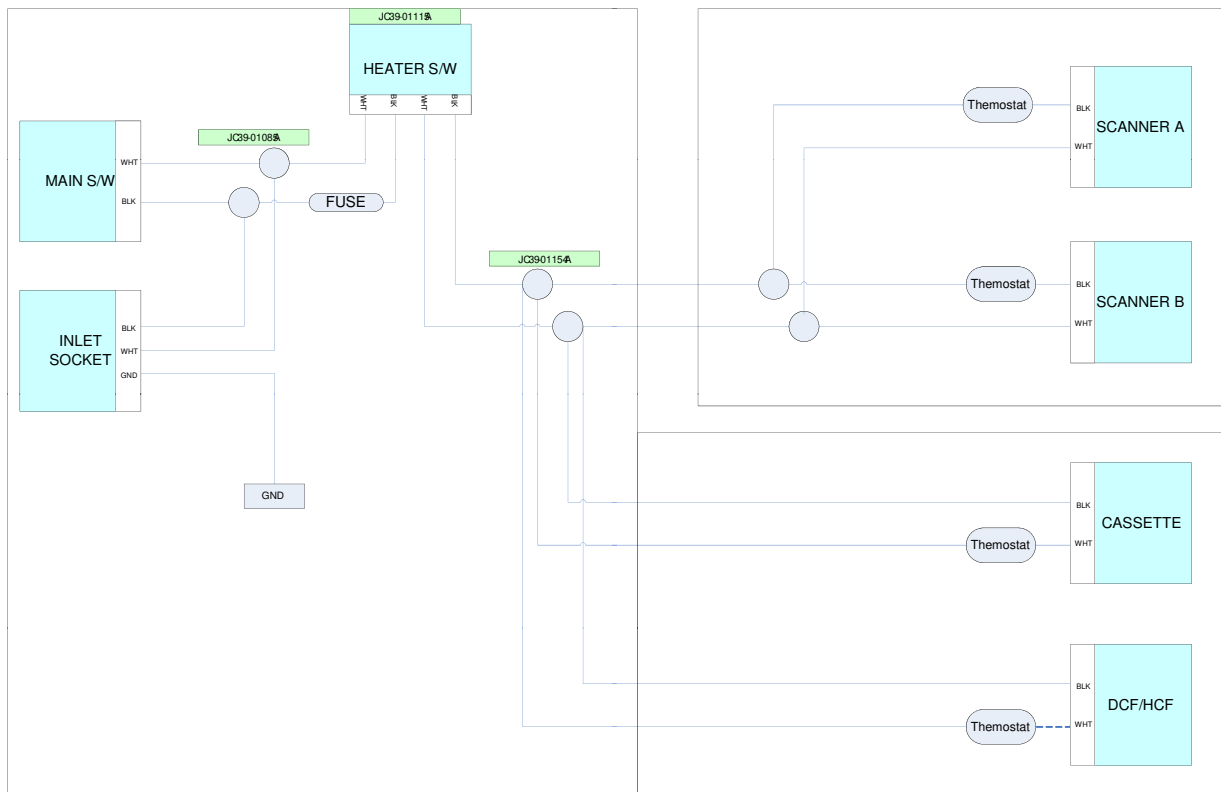
9. System Recovery

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.
 Also, you need a USB stick for HDD back up.

[Preparation]

NOTE - Use min 2GB USB stick or bigger for HDD Recovery.

If you use less than 2**GB USB** stick you'll get a message '**FAIL: Please replace the HDD.**':
During HDD recovery the running process uses USB memory for storing temp files.

Memory stick file system type: FAT16 or FAT32 **not** NTFS.
Memory stick must contain **3 files only: unix script files x2, HDD image file x1**
auto_hdd_format.txt   onerom_version.txt   xxxx.ehd

After successful HDD recovery you need to manually reboot machine by selecting Shutdown or Reboot option.

After reboot system should go to 'System Initialization'.
It does not happen always.
If system will not go to initialization you must perform 'Full memory clear' from SVC Mode otherwise system will not work properly.

Please perform FW update using <u>One ROM FW file</u> **after completion of System Initialization. This is** <u>a must</u> **to even all FW module levels including main FW module restored during HDD recovery procedure.**

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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

- Hidden Partition : This can format and reinstall the only System Binary in HDD.
             User data is not deleted.

- USB : This can format the HDD using USB stick. All data except the stored in MSOK will be deleted.

- Network : This can format the HDD using network. All data except the stored in MSOK will be deleted.

2) HDD Repair : This can restore the internal system by checking the HDD error.
             This is for HDD recovery itself and irrelevant to the user data in device.

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 9.5) with appropriate error message when Hidden Partition option is selected.

On authentication failure:
- The *Error page* (section 9.5) 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
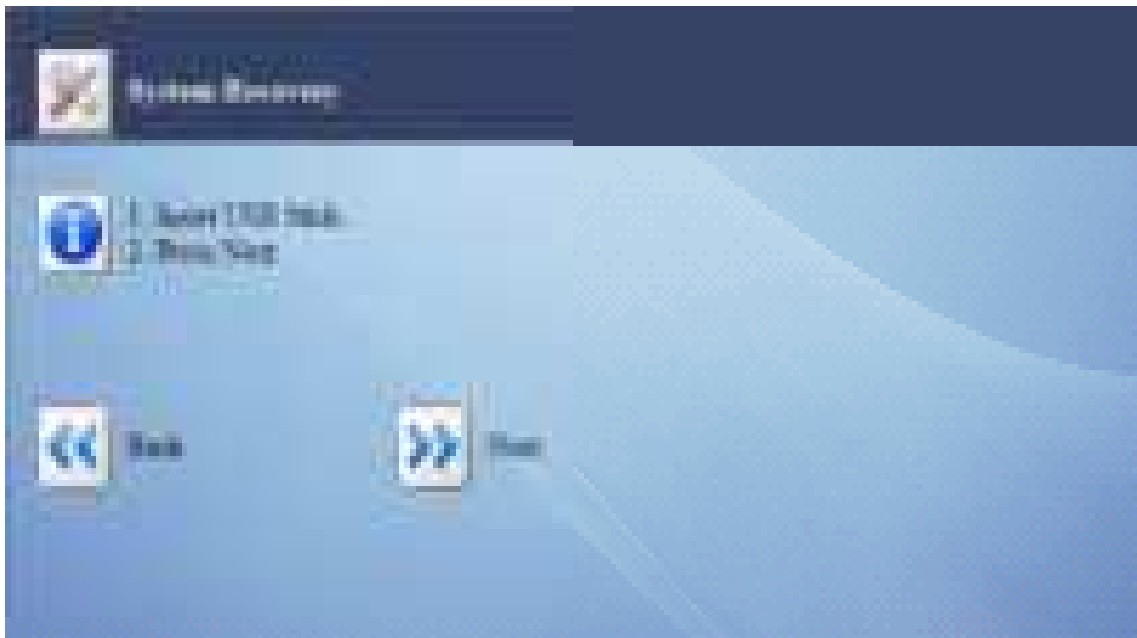
The Next button is pressed after inserting the USB stick.
The system will check for the required packages in the USB stick. If all the packages are present in the USB stick then the system will be directed to the confirmation page otherwise an Error page will be displayed with an appropriate error message.

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.

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9.3 Network

This page contains two sections :

1. Configure device IP address
2. Configure samba settings
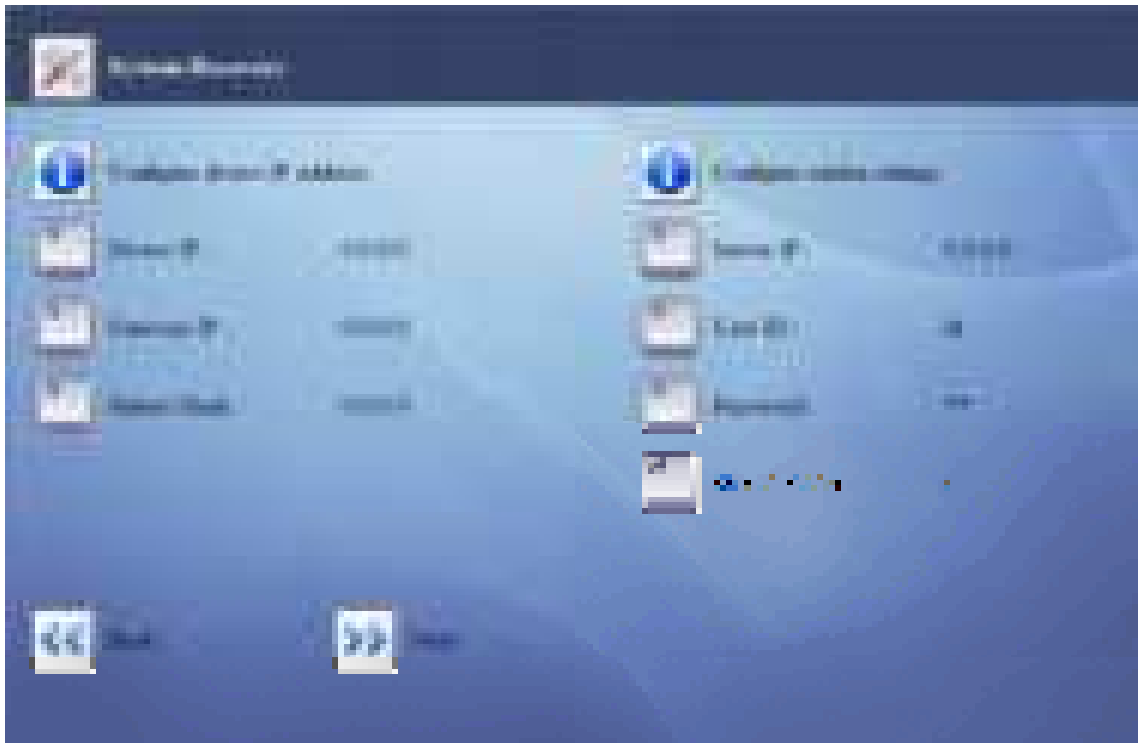
9.3.1 Configure device IP address

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?"
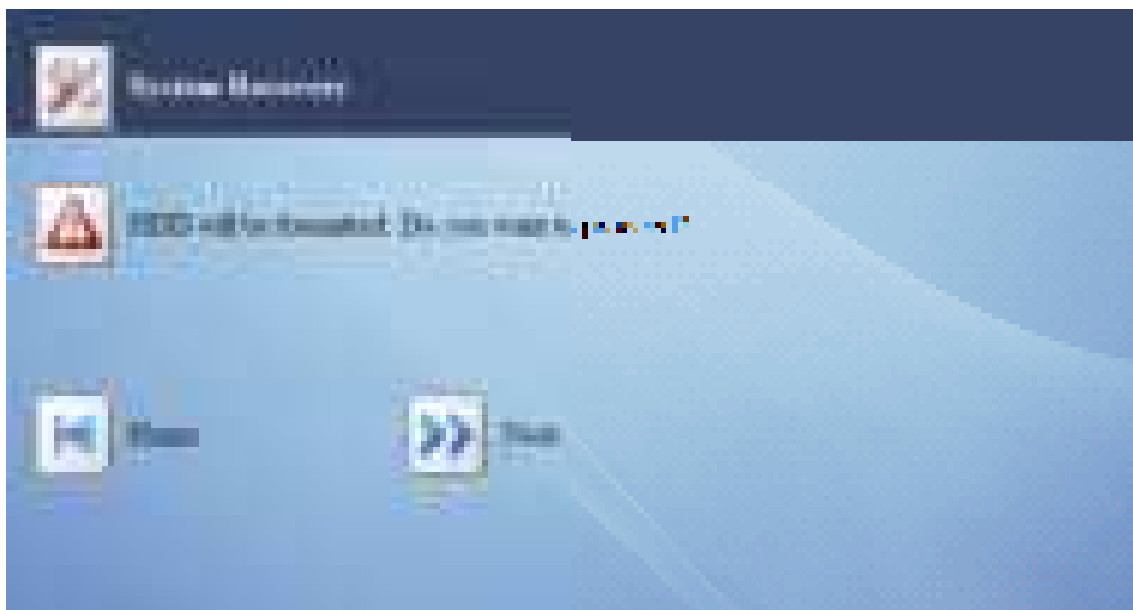
9.4.1 Next button

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.

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9.5 Error Page

This is the Error page, which will display an appropriate message depending upon the type of error occurred.
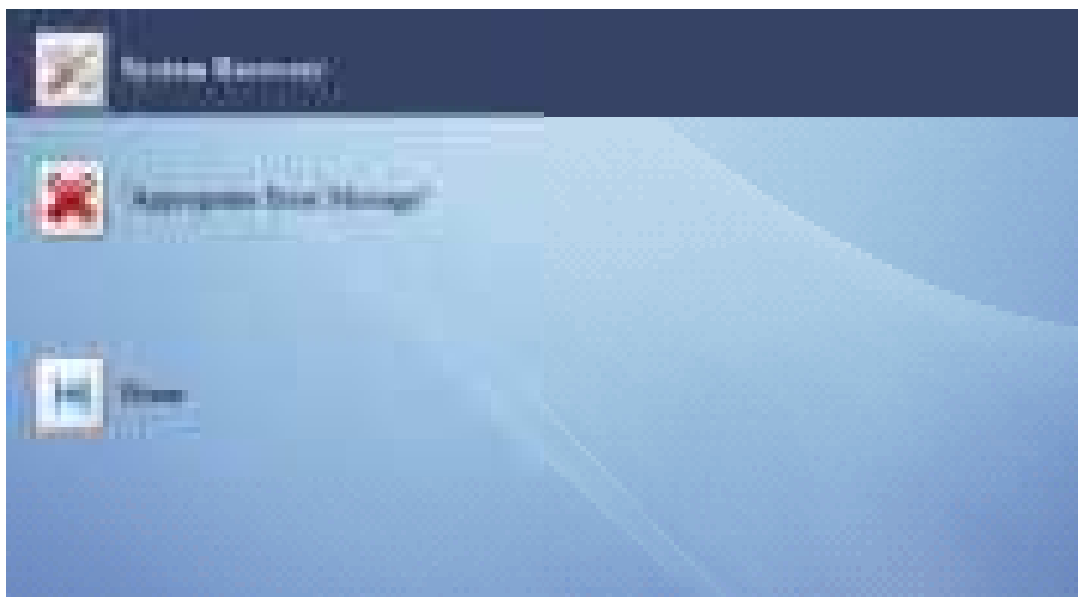
9.5.1 Home button

The Home button is provided to go back to the Login page.

9.6 Progress Page

This page provides the progress information in percentage.
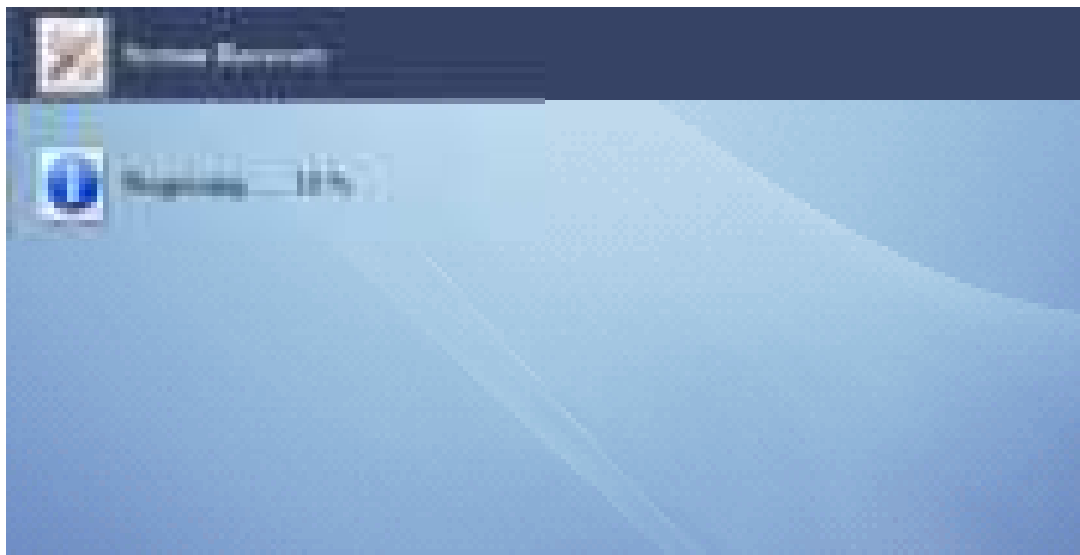
After every second the progress information is displayed till the progress reaches 100%. The system will be rebooted after the recovery. So the following page needs to be displayed.
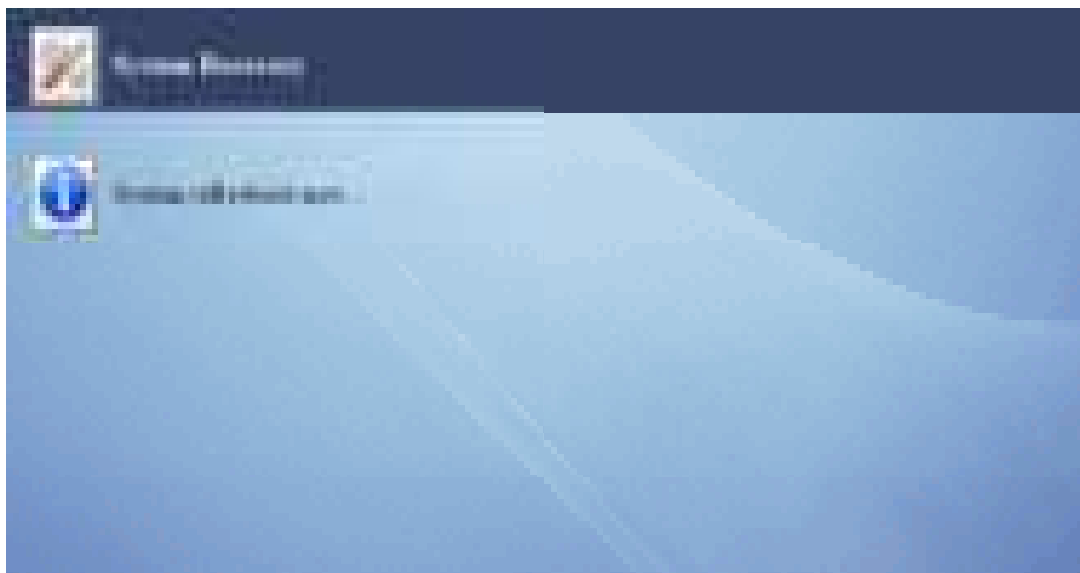
9.7 Error List

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.

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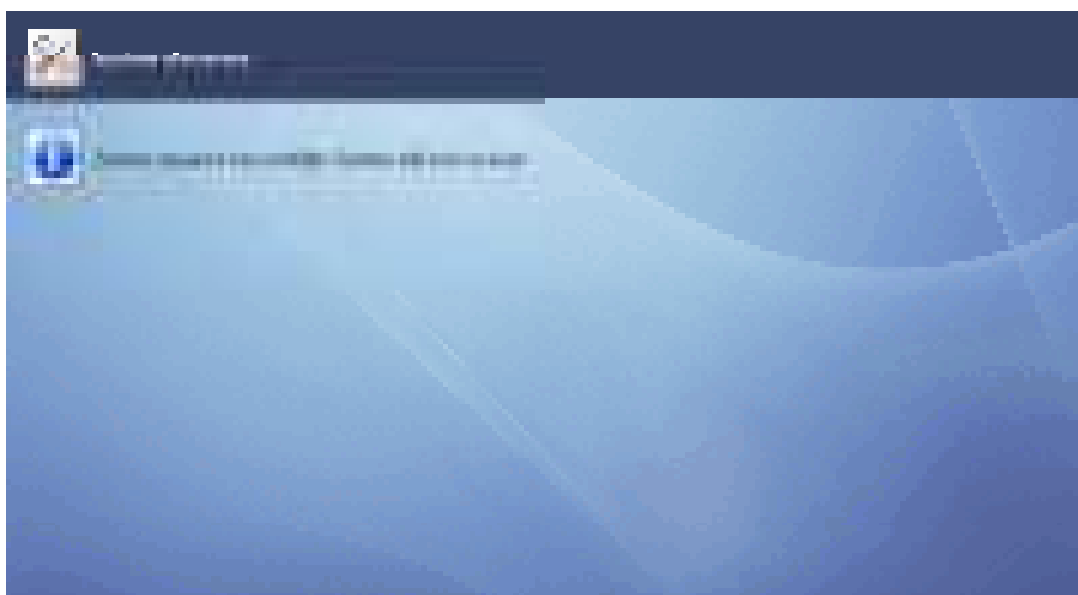
9.9 HDD Failure

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.
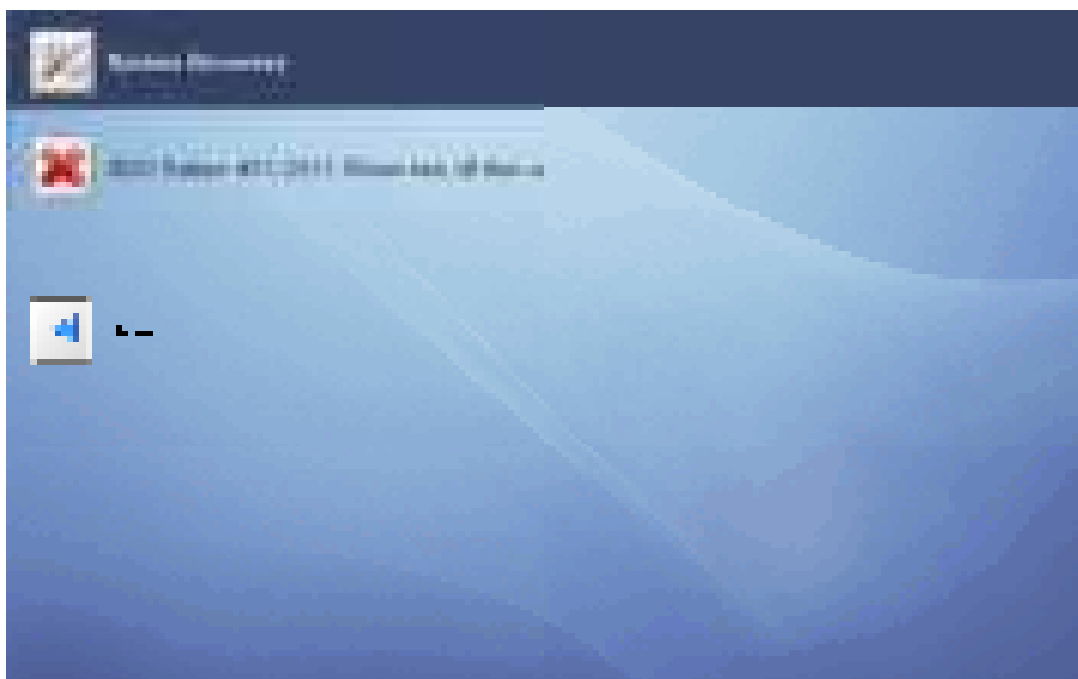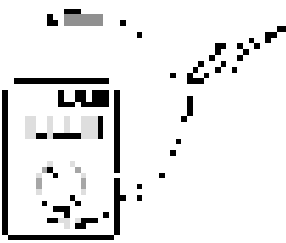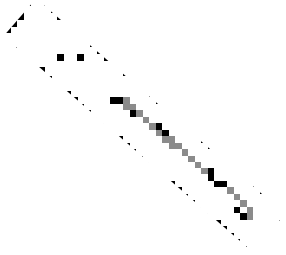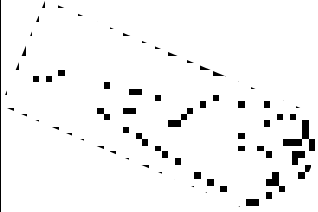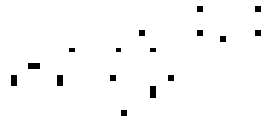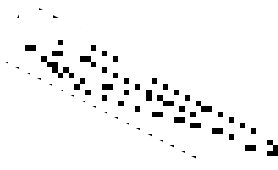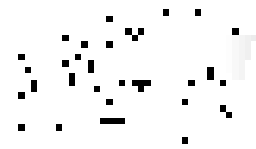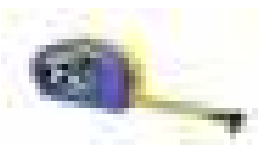
10. Reference Information
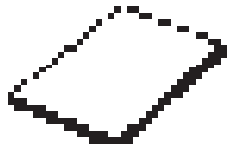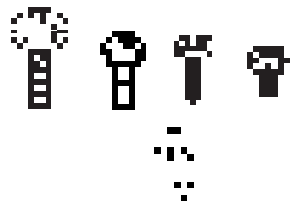
This chapter contains the tools list, list of abbreviations used in this manual.

10.1 Tools for Troubleshooting

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

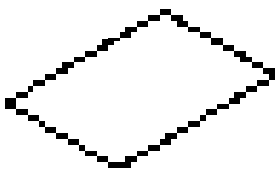| Tool	Image	Use	Remark
1.Spanner (More than 15mm)		When installing the desk wheel.	Installation
2.Hand DVM (More than 3 digits)		Checking the fuser lamp. Checking the SMPS fuse.	Service
3.Spring hook (More than 3mm)		When disassembling the spring.	Service
4. Small vacuum		To remove the toner and contamination 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.	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

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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) 2. SPY272 : JC81-08664A (100g)	Service

10.2 Abbreviations

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

ACR	Auto Color Registration
ADC	Analog to digital convert
AMS	Application Management System
BD PBA	Beam Detector PBA
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
FRR	Feed and Reverse Roller
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	SyncThru Web Services
SWS	Safety Warning System
TCP/IP	Transmission Control Protocol/Internet Protocol
TFT	Thin-Film Transistor
TIFF	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	XML Paper Specification
PCI	Peripheral Component Interconnect