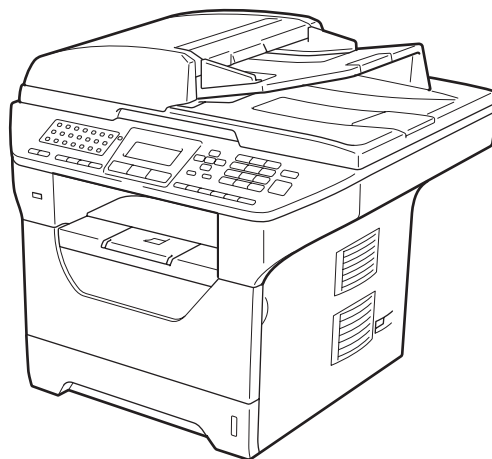




Laser FAX/MFC

SERVICE MANUAL

MODEL:
DCP-8080DN/8085DN
MFC-8480DN/8880DN/8890DW



Read this manual thoroughly before maintenance work.
Keep this manual in a convenient place for quick and easy reference at all times.

January 2009
SM-FAX105

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Specifications are subject to change without notice.

Model	DCP-8080DN	DCP-8085DN	MFC-8480DN	MFC-8880DN	MFC-8890DW
Duplex Print/ Scan	Yes/No	Yes/Yes	Yes/No	Yes/Yes	Yes/Yes
Network	Wired	Wired	Wired	Wired	Wired/ Wireless

PREFACE

This service manual contains basic information required for after-sales service of the Laser Multi-Function Center (hereinafter referred to as "the machine"). This information is vital to the service personnel to maintain the high printing quality and performance of the machine.

This service manual covers the **DCP-8080DN/8085DN, MFC-8480DN/8880DN/8890DW** machines.

This manual consists of the following chapters:

CHAPTER 1: SPECIFICATIONS

Provides specifications of each model, which enables you to make a comparison of the different models.

CHAPTER 2: THEORY OF OPERATION

Gives an overview of the printing mechanisms as well as the sensors, actuators, and control electronics. It aids in understanding the basic principles of operations as well as locating defects for troubleshooting.

CHAPTER 3: ERROR INDICATION AND TROUBLESHOOTING

Details of error messages and codes that the incorporated self-diagnostic function of the machine will display if any error or malfunction occurs. If any error message appears, refer to this chapter to find which parts should be checked or replaced.

The latter half of this chapter provides sample problems that could occur in the main sections of the machine and related troubleshooting procedures.

CHAPTER 4: PERIODIC MAINTENANCE

Details of consumable parts and periodical maintenance parts. This chapter also covers procedures for disassembling and assembling periodical maintenance parts.

CHAPTER 5: DISASSEMBLY/REASSEMBLY

Details of procedures for disassembling and assembling of the machine together with related notes. The disassembly order flow provided enables you to see at a glance the quickest way to get to parts involved.

At the start of a disassembly job, you can check the disassembly order flow that guides you through a shortcut to get to the object parts.

This chapter also covers screw tightening torques and lubrication points to which the specified lubrications should be applied during assembly jobs.

CHAPTER 6: ADJUSTMENTS AND UPDATING OF SETTINGS, REQUIRED AFTER PARTS REPLACEMENT

Details of adjustments and updating of settings, which are required if the main PCB and some other parts have been replaced. This chapter also covers how to update the firmware.

CHAPTER 7: SERVICE MODE

Describes the maintenance mode which is exclusively designed for the purpose of checking the settings and adjustments using the keys on the panel.

This chapter also covers hidden function menus, which activate settings and functions or reset the parts life.

APPENDIX 1: FIRMWARE SWITCHES (WSW)

APPENDIX 2: DELETION OF USER SETTING INFORMATION, etc.

Provides instructions on how to delete such as user setting information recorded in the machine.

APPENDIX 3: SERIAL NUMBERING SYSTEM

APPENDIX 4: SCREW CATALOGUE

APPENDIX 5: REFERENCES

APPENDIX 6: GLOSSARY

Information in this manual is subject to change due to improvement or redesign of the product. All relevant information in such cases will be supplied in service information bulletins (Technical Information).

A thorough understanding of this printer, based on information in this service manual and service information bulletins, is required for maintaining its print quality performance and for improving the practical ability to find the cause of problems.

REGULATION

For Europe and Other countries

■ Radio interference (220 to 240 volt model only)

This machine follows EN55022 (CISPR Publication 22)/Class B.

Before you use this product, make sure that you use one of the following interface cables.

(1) A shielded parallel interface cable with twisted-pair conductors and that it is marked IEEE 1284 compliant.

(2) A USB cable.

The cable must not be more than 2 meters long.

■ IEC 60825-1 specification (220 to 240 volt model only)

This machine is a Class 1 laser product as defined in IEC 60825-1 specifications. The label shown below is attached in countries where it is needed.



This machine has a Class 3B laser diode which produces invisible laser radiation in the laser unit. You should not open the laser unit under any circumstances.

Caution

Use of controls or adjustments or performance of procedures other than those specified in this User's Guide may result in hazardous radiation exposure.

For Finland and Sweden

LUOKAN 1 LASERLAITE

KLASS 1 LASER APPARAT

Varoitus!

Laitteen käyttäminen muulla kuin tässä käyttöohjeessa mainitulla tavalla saattaa altistaa käyttäjän turvallisuusluokan 1 ylittävälle näkymättömälle lasersäteilylle.

Varning

Om apparaten används på annat sätt än i denna Bruksanvisning specificerats, kan användaren utsättas för osynlig laserstrålning, som överskrider gränsen för laserklass 1.

■ **Internal laser radiation**

Maximum radiation power: 5 mW
Wave length: 770 - 810 nm
Laser class: Class 3B

■ **EU Directive 2002/96/EC and EN50419**

(European Union only)

This equipment is marked with the above recycling symbol. It means that at the end of the life of the equipment you must dispose of it separately at an appropriate collection point and not place it in the normal domestic unsorted waste stream. This will benefit the environment for all. (European Union only)



For USA and Canada

■ Federal Communications Commission (FCC) Declaration of Conformity (For USA)

Responsible Party: Brother International Corporation
100 Somerset Corporate Boulevard
P.O. Box 6911
Bridgewater, NJ 08807-0911
USA
Telephone: (908) 704-1700

declares, that the products

Product name: Laser Printer DCP-8080DN/8085DN, MFC-8480DN/8880DN/
8890DW

complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and (2) this device must accept any
interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital
device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide
reasonable protection against harmful interference in a residential installation. This
equipment generates, uses, and can radiate radio frequency energy and, if not installed and
used in accordance with the instructions, may cause harmful interference to radio
communications. However, there is no guarantee that interference will not occur in a
particular installation. If this equipment does cause harmful interference to radio or television
reception, which can be determined by turning the equipment off and on, the user is
encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is
connected.
- Consult the dealer or an experienced radio/TV technician for help.

Important

A shielded interface cable should be used to ensure compliance with the limits for a Class B
digital device. Changes or modifications not expressly approved by Brother Industries, Ltd.
could void the user's authority to operate the equipment.

■ **Industry Canada Compliance Statement (For Canada)**

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

■ **Laser Safety (110 to 120 volt model only)**

This machine is certified as a Class 1 laser product under the U.S. Department of Health and Human Services (DHHS) Radiation Performance Standard according to the Radiation Control for Health and Safety Act of 1968. This means that the machine does not produce hazardous laser radiation.

Since radiation emitted inside the machine is completely confined within protective housings and external covers, the laser beam cannot escape from the machine during any phase of user operation.

■ **FDA Regulations (110 to 120 volt model only)**

The U.S. Food and Drug Administration (FDA) has implemented regulations for laser products manufactured on and after August 2, 1976. Compliance is mandatory for products marketed in the United States. The following label on the back of the machine indicates compliance with the FDA regulations and must be attached to laser products marketed in the United States.

MANUFACTURED: Brother Technology (Shenzhen) Ltd. NO6 Gold Garden Ind., Nanling Buji, Longgang, Shenzhen, China This product complies with FDA performance standards for laser products except for deviations pursuant to Laser Notice No.50, dated July 26, 2001.
--

■ **Internal laser radiation**

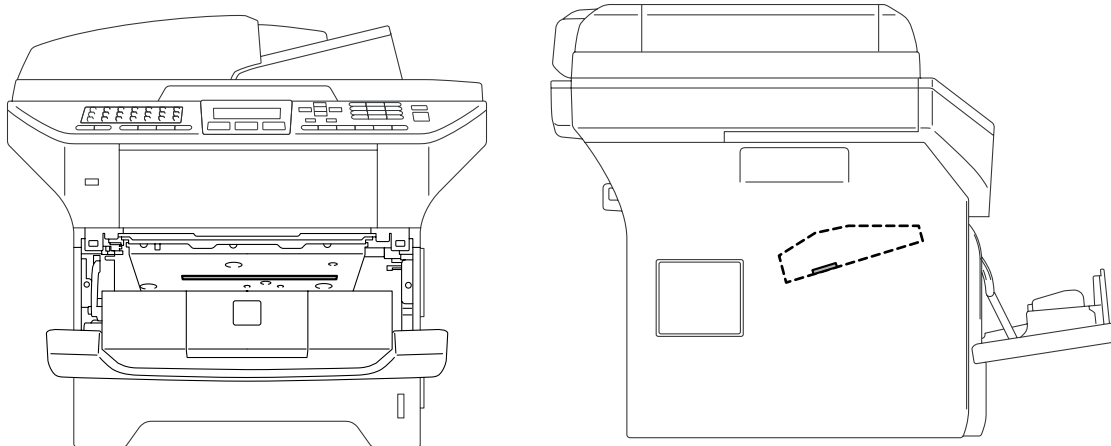
Maximum radiation power:	5 mW
Wave length:	770 - 810 nm
Laser class:	Class 3B

SAFETY INFORMATION

■ Caution for Laser Product (WARNHINWEIS für Laser drucker)

- CAUTION: When the machine during servicing is operated with the cover open, the regulations of VBG 93 and the performance instructions for VBG 93 are valid.
- CAUTION: In case of any trouble with the laser unit, replace the laser unit itself. To prevent direct exposure to the laser beam, do not try to open the enclosure of the laser unit.
- ACHTUNG: Im Falle von Störungen der Lasereinheit muß diese ersetzt werden. Das Gehäuse der Lasereinheit darf nicht geöffnet werden, da sonst Laserstrahlen austreten können.

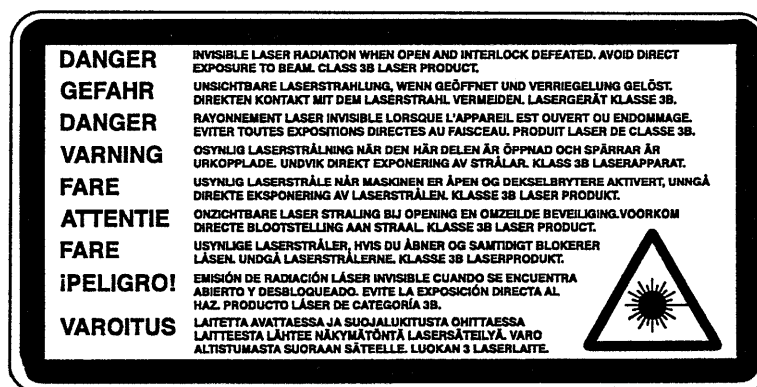
<Location of the laser beam window>



■ ADDITIONAL INFORMATION Additional Information





When servicing the optical system of the printer, be careful not to place a screwdriver or other reflective object in the path of the laser beam. Be sure to take off any personal accessories such as watches and rings before working on the printer. A reflected beam, though invisible, can permanently damage the eyes.

Since the beam is invisible, the following caution label is attached on the laser unit.




■ **Definitions of Warnings, Cautions and Notes**

The following conventions are used in this service manual:

Mark	Contents
	Warnings tell you what to do to prevent possible personal injury.
	Electrical Hazard icons alert you to a possible electrical shock.
	Hot Surface icons warn you not to touch machine parts that are hot.
	Cautions specify procedures you must follow or avoid to prevent possible damage to the machine or other objects.
Note	Note Notes tell you useful tips when servicing the machine.
Memo	Memo Memo tells you bits of knowledge to help understand the machine.

 **WARNING**

Indicates warnings that must be observed to prevent possible personal injury.

 **CAUTION:**

Indicates cautions that must be observed to service the printer properly or prevent damage to the printer.


Note :

- Indicates notes and useful tips to remember when servicing the printer.

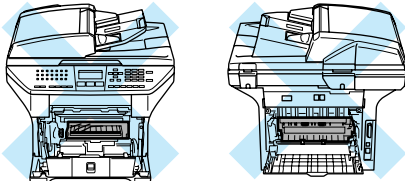
** Listed below are the various kinds of "WARNING" messages included in this manual

 **WARNING**

Always turn off the power switch and unplug the power cord from the power outlet before accessing any parts inside the printer.

 **WARNING**

Some parts inside the printer are extremely hot immediately after the printer is used. When opening the front cover or back cover to access any parts inside the printer, never touch the shaded parts shown in the following figures.



! WARNING

If you analyze malfunctions with the power plug inserted into the power outlet, special caution should be exercised even if the power switch is OFF because it is a single pole switch.

! WARNING

DO NOT use flammable substances, any type of spray or any organic solvent/liquids contains alcohol or ammonia to clean the inside or outside of the machine. Doing this may cause a fire or electrical shock.



CHAPTER 1

SPECIFICATIONS

CHAPTER 1 SPECIFICATIONS

This chapter lists the specifications of each model, which enables you to make a comparison of different models.

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1. COMPONENTS

The equipment consists of the following major components:

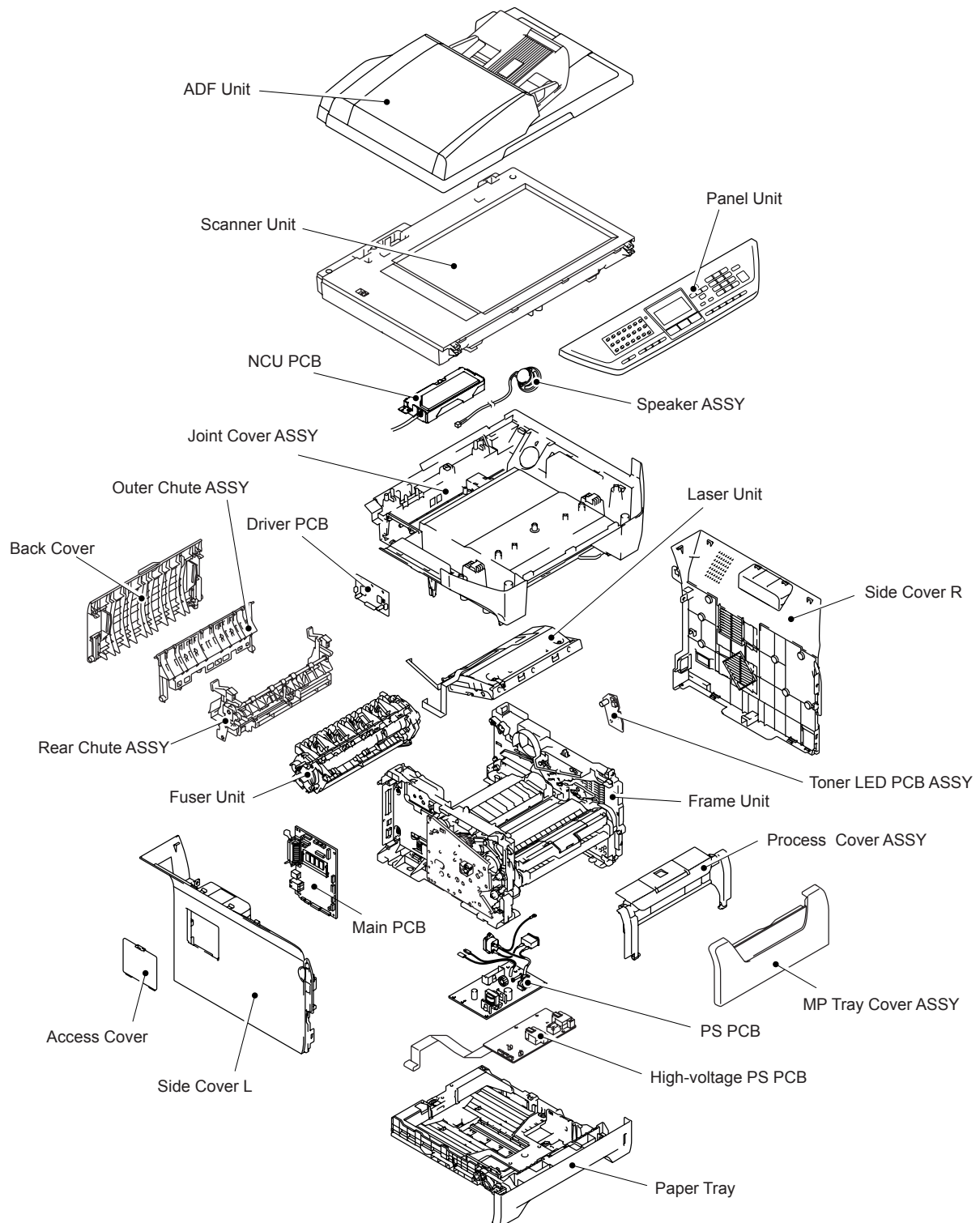


Fig. 1-1

2. SPECIFICATIONS LIST

2.1 Printing

Model		DCP 8080DN	DCP 8085DN	MFC 8480DN	MFC 8880DN	MFC 8890DW
Print method		Electrophotography by semiconductor laser beam scanning				
Laser		Method: 1 polygon motor, 1 laser beam Wavelength: 770 nm - 810 nm Output: 5 mW (Max) Laser class: Class3 B				
Resolution	1200 dpi ^{*1} , HQ1200 (2400x600dpi)	Windows [®] 2000/XP/ XP Professional x64 Edition, Windows Vista [®] , Windows Server [®] 2003/ Windows Server [®] 2003 x 64 Edition, Windows Server [®] 2008, Mac OS [®] X 10.3.9 or greater, Linux				
	600 x 600 dpi	Windows [®] 2000/XP/ XP Professional x64 Edition, Windows Vista [®] , Windows Server [®] 2003/ Windows Server [®] 2003 x 64 Edition, Windows Server [®] 2008, Mac OS [®] X 10.3.9 or greater, DOS, Linux				
Print mode		Normal printing mode Economy printing mode (Toner saving mode)				
Print Speed (A4/Letter)	Standard	Up to 30/32 ppm * When loading A4 or Letter-size paper from the standard paper tray, or the optional lower tray.				
	Duplex	A4: Up to 13 sides per minute (6.5 sheets per minute) Letter: Up to 14 sides per minute (7 sheets per minute)				
Warm-up time ^{*2}		From sleep mode: less than 18 seconds From power off → on: less than 35 seconds				
First print time ^{*2}		Less than 8.5 seconds				
Consumables	Toner cartridge	Life expectancy: Standard: 3,000 pages/cartridge High-capacity: 8,000 pages/cartridge * When printing A4/Letter-size paper in accordance with ISO/IEC 19752. Shelf life: 2 years without opening (6 months after opening)				
	Drum unit	Life expectancy: 25,000 pages/drum unit Life expectancy will vary depending on number of continuous printing pages. * When printing A4/Letter-size paper. Shelf life: 2 years without opening (6 months after opening)				
		The shelf life mentioned above is guaranteed under the normal condition as below; (Temperature) Normal condition: 0 to 40 °C * Storage condition at the temperature of 40 to 50 °C: Up to 5 days * Storage condition at the temperature of -20 to 0 °C: Up to 5 days (Humidity) Normal condition: 35 to 85 % * Storage condition at the humidity of 85 to 95 %: Up to 5 days * Storage condition at the humidity of 10 to 35 %: Up to 5 days				

^{*1} Using 1200 dpi setting (1200 x 1200 dpi) the print speed will be slower.

^{*2} The time may change if the machine is calibrating or registering itself.

Specifications are subject to change without notice.

2.2 Functions

<Controller>

Model		DCP 8080DN	DCP 8085DN	MFC 8480DN	MFC 8880DN	MFC 8890DW
CPU		300 MHz				
Back up Clock		Yes (up to 60 hours)				
Memory	Standard	64 MB				
	Option	1 DIMM slot; expandable up to 576 MB				
Interface		IEEE 1284 Parallel, Hi-Speed USB 2.0, Ethernet 10/100 BASE-TX, USB Host	IEEE 1284 Parallel, Hi-Speed USB 2.0, Ethernet 10/100 BASE-TX, USB Host, External TAD	IEEE 1284 Parallel, Hi-Speed USB 2.0, Ethernet 10/100 BASE-TX, External TAD, Wireless LAN IEEE 802.11b/g		
Emulation		PCL6, BR-Script 3 (PostScript® 3™), IBM Proprinter XL, Epson FX-850				
Network Connectivity	Protocol	TCP/IP(10/100 BASE-TX Ethernet)				
	Management tool	BRAdmin Light, Web BRAdmin, Web Based Management , BRAdmin Professional 3				
Resident fonts	PCL	66 scalable fonts, 12 bitmap fonts, 13 bar codes				
	BR-Script 3 (PostScript® 3™)	66 scalable fonts				

<Software>

Model		DCP 8080DN	DCP 8085DN	MFC 8480DN	MFC 8880DN	MFC 8890DW
Printer driver	Windows®	PCL driver for Windows 2000 Professional, XP Home Edition, XP Professional Edition, XP professional x64 Edition, Server 2003, Server 2003 x64 Edition, Vista, Server 2008				
		BR-Script 3 (PPD file for Windows 2000 Professional, XP Home Edition, XP Professional Edition, XP professional x64 Edition, Server 2003, Server 2003 x64 Edition, Vista, Server 2008)				
	Macintosh®	Macintosh Printer Driver for Mac OS® X 10.3.9 or greater				
		BR-Script 3 (PPD file for Mac OS® X 10.3.9 or greater)				
Linux	Linux printer driver for CUPS printing system (x86, x64 environment)					
	Linux printer driver for LPD/LPRng printing system (x86, x64 environment)					
Utility		N/A	Driver Deployment Wizard			

Download from <http://solutions.brother.com>.

<System requirements>

Computer Platform & Operating System Version		Processor Speed	Minimum RAM	Recommended RAM	Available Hard Disk Space
Windows®	Windows Vista®	Intel® Pentium® 4 or equivalent 64-bit supported CPU	512MB	1GB	50MB
	Windows Server® 2003 x64 Edition	AMD Opteron™ AMD Athlon™ 64 Intel® Xeon™ with Intel® EM64T Intel® Pentium® with Intel® EM64T or equivalent	256MB	512MB	50MB
	Windows® XP Professional x64 Edition	AMDOpteron™ AMD Athlon™ 64 Intel® Xeon® with Intel® EM64T Intel® Pentium® 4 with Intel® EM64T or equivalent	256MB	512MB	50MB
	Windows Server® 2003	Intel® Pentium® III or equivalent	256MB	512MB	50MB
	Windows® XP Home Edition	Intel® Pentium® or equivalent	128MB	256MB	50MB
	Windows® XP Professional		64MB	256MB	50MB
	Windows® 2000 Professional				
Apple® Macintosh®	OS® X 10.3.9 - 10.4.3	Power PC G4/G5, Power PC G3 350MHz	128MB	256MB	80MB
	OS® X 10.4.4 or greater	Power PC G4/G5, Intel® Core™ Processor	512MB	1GB	80MB

2.3 Electronics and Mechanics

Model		DCP 8080DN	DCP 8085DN	MFC 8480DN	MFC 8880DN	MFC 8890DW
Power consumption	Printing	Average 660 W at 25 °C (77 °F)				
	Standby	Average 85 W at 25 °C (77 °F)				
	Sleep	Average 15 W at 25 °C (77 °F)		Average 17 W at 25 °C (77 °F)		Average 18 W at 25 °C (77 °F)
Noise level	Sound Pressure	Printing: 54 dB (A) Standby: 30 dB (A)				
	Sound power	Printing: LWAd = 7.0 Bell (A) Standby: LWAd = 4.6 Bell (A)				
Temperature		Operating: 10 to 32.5°C (50 to 90.5 °F) Non operating: 0 to 40°C (38 to 104 °F) Storage: -20 to 40°C (-4 to 104 °F)				
Humidity		Operating: 20 to 80 % (non condensing) Storage: 10 to 85 % (non condensing)				
Dimensions (W × D × H)		531 × 451 × 475 mm (20.9 × 17.8 × 18.7 in.)				
Weight Without Carton with drum unit and toner cartridge		Approx. 18.1 kg (39.9 lb)	Approx. 18.4 kg (40.6 lb)	Approx. 18.3 kg (40.3 lb)	Approx. 18.6 kg (41.0 lb)	
LCD Size		22 characters x 5 lines (Full Dot) maximum message is 16 characters				
LCD Dimension (W x L)		2.76 x 1.06 inch				
LCD Back-Lit		Yes (1-color) - white				
Secure Function Lock		Yes				

2.4 Network Connectivity

<Ethernet wired network>

Network node type	NC-6800h	
Operating system support	Windows Vista [®] , Windows Server [®] 2003 x64 Edition, Windows [®] XP Professional x64 Edition, Windows Server [®] 2003, Windows [®] XP Home Edition/Professional, Windows [®] 2000 Professional, Mac OS [®] X 10.3.9 or greater	
Protocol support	TCP/IP: IPv4	ARP, RARP, BOOTP, DHCP, APIPA (Auto IP), WINS/NetBIOS name resolution, DNS Resolver, mDNS, LLMNR responder, LPR/LPD, Custom Raw Port/Port9100, IPP/IPPS, FTP Server, TELNET Server, HTTP/HTTPS server, TFTP client and server, SMTP Client, APOP, POP before SMTP, SMTP-AUTH, SNMP v1/v2c/v3, ICMP, LLTD responder, Web Services Print, CIFS Client, SNTP
	TCP/IP: IPv6 ^{*1}	NDP, RA, DNS resolver, mDNS, LLMNR responder, LPR/LPD, Custom Raw Port/Port9100, IPP/IPPS, FTP Server, TELNET Server, HTTP/HTTPS server, TFTP client and server, SMTP Client, APOP, POP before SMTP, SMTP-AUTH, SNMPv1/v2c/v3, ICMPv6, LLTD responder, Web Services Print, CIFS Client, SNTP
Network type	10/100 BASE-TX Ethernet network	
Network printing	Windows Vista [®] , Windows Server [®] 2003, Windows [®] XP and Windows [®] 2000 TCP/IP printing Mac OS [®] X 10.3.9 or greater printing	

^{*1} If you want to use the IPv6 protocol, visit <http://solutions.brother.com> for more information.

Management utility	BRAdmin Professional 3 ^{*2} for Windows (Brother original Windows utility for printer and server management)
	Web BRAdmin ^{*2} for Windows (Server based management utility / Windows IIs (4.0/5.0) mode only)
	Web Based Management (Printer and print server management through web browser) recommend Microsoft Internet Explorer 6.0 (or greater), Fire fox 1.0 (or greater) for Windows Safar: 1.2 (or greater) for Macintosh
	BRAdmin Light for Windows and Macintosh (Printer and print server management through web browser) recommend Microsoft Internet Explorer 6.0 (or greater), Fire fox 1.0 (or greater) for Windows Safar: 1.2 (or greater) for Macintosh

^{*2} BRAdmin Professional 3 and Web BRAdmin are available as a download from <http://solutions.brother.com>.

<Wireless network>

Network node type	NC-7600w	
Operating system support	Windows Vista®, Windows Server® 2003 x64 Edition *2, Windows® XP Professional x64 Edition *1, Windows® 2003, Windows® XP, Windows® 2000, Mac OS® X 10.3.9 or greater	
Protocol support	TCP/IP: IPv4	ARP, RARP, BOOTP, DHCP, APIPA (Auto IP), WINS/NetBIOS name resolution, DNS Resolver, mDNS, LLMNR responder, LPR/LPD, Custom Raw Port/Port9100, IPP/IPPS, FTP Server, TELNET Server, HTTP/HTTPS server, TFTP client and server, SMTP Client, APOP, POP before SMTP, SMTP-AUTH, SNMP v1/v2c/v3, ICMP, LLTD responder, Web Services Print, CIFS Client, SNTP
	TCP/IP: IPv6 *2	NDP, RA, DNS resolver, mDNS, LLMNR responder, LPR/LPD, Custom Raw Port/Port9100, IPP/IPPS, FTP Server, TELNET Server, HTTP/HTTPS server, TFTP client and server, SMTP Client, APOP, POP before SMTP, SMTP-AUTH, SNMPv1/v2c/v3, ICMPv6, LLTD responder, Web Services Print, CIFS Client, SNTP
Network type	IEEE 802.11b/g wireless	
Frequency	2412 - 2472 MHz	
RF channel	US/Canada	1 - 11
	Europe/Oceania	1 - 13
	Japan	1 - 14
Communication mode	Infrastructure, Ad-hoc 802.11 b	
Data rate	802.11 b	11/5.5/2/1 Mbps
	802.11 g	54/48/36/24/18/12/11/9/6 Mbps

*1 A wireless network connection is supported only between the Brother printer and an access point for PC's running Windows Server® 2003 x64 Edition and Windows® XP Professional x64 Edition.

*2 If you want to use the IPv6 protocol, visit <http://solutions.brother.com> for more information.

Link distance	70 m (233 ft.) at lowest data rate (The distance rate will vary upon environment and other equipment location.)
Network security	WEP 64/128, WPA-PSK (TKIP), WPA2-PSK (TKIP & AES), LEAP, EAP-FAST
Management utility	BRAdmin Professional 3 *3 for Windows (Brother original Windows utility for printer and server management)
	Web BRAdmin *3 for Windows (Server based management utility / Windows IIs (4.0/5.0) mode only)
	Web Based Management
	BRAdmin Light for Windows and Macintosh (Printer and print server management through web browser) recommend Microsoft Internet Explorer 6.0 (or greater), Fire fox 1.0 (or greater) for Windows Safar: 1.2 (or greater) for Macintosh

*3 BRAdmin Professional 3 and Web BRAdmin are available as a download from <http://solutions.brother.com>.

2.5 Service Information

These are key service information to maintain the product.

Machine life: 200,000 pages

MTBF (Meantime between failure): Up to 4000 hours

MTTR (Meantime to repair): Average 0.5 hours

Monthly volume: 30,000 pages

Periodical replacement parts:

Parts		Approximate Life (pages)
Fuser unit		100,000
Laser unit		100,000
PF kit	China	MP: 25,000 Tray 1/2: 100,000
	India	MP: 12,000 Tray 1/2: 80,000
	Others	MP: 50,000 Tray 1/2: 100,000

* As for periodical replacement parts, refer to **CHAPTER 4** in the Service Manual.

2.6 Paper

2.6.1 Paper handling

Model		DCP 8080DN	DCP 8085DN	MFC 8480DN	MFC 8880DN	MFC 8890DW
Paper Input *1	Standard tray	250 sheets				
	Multi- purpose tray	50 Sheets (Plain)/ 3 Sheets (Envelope)				
	Option	250 sheets				
	ADF	up to 50 sheets (Xerox4024 20lbs, environment: temp. 20-30C humidity 50-70%)				
Paper Output *1	Face-down	150 sheets				
	Face-up	1 sheet				

*1 Calculated with 80 g/m² (20 lb) paper.

2.6.2 Media specifications

Model		DCP 8080DN	DCP 8085DN	MFC 8480DN	MFC 8880DN	MFC 8890DW
Media type	Paper tray (Standard)	Plain paper, Bond paper, Recycled paper, Transparencies ^{*2} , Thin paper				
	Multi-purpose tray	Plain paper, Thick paper, Bond paper, Recycled paper, Envelope ^{*3} , Label, Transparencies ^{*2} , Thin paper				
	Optional tray	Plain paper, Bond paper, Recycled paper, Thin paper				
Media weight	Paper tray (Standard/Option)	60 to 105 g/m ² (16 to 28 lb)				
	Multi-purpose tray	60 to 163 g/m ² (16 to 43 lb)				
	Duplex	60 to 105 g/m ² (16 to 28 lb)				
Media size	Paper tray (Standard/Option)	U.S.A: A4, Letter, B5 (ISO), A5, A5 (Long Edge), B6 (ISO), Legal ^{*4} , Folio, A6, Executive Europe: A4, Letter, B5 (ISO), A5, A5 (Long Edge), B6 (ISO), A6, Executive				
	Multi-purpose tray	Width: 69.8 to 216 mm (2.75 to 8.50 in.) Length: 116 to 406.4 mm (4.57 to 16 in.)				
	Duplex	U.S.A/Canada: Letter, Legal, Folio Europe: A4				

^{*2} Up to 10 sheets.

^{*3} Up to 3 sheets.

^{*4} Legal is not available in some regions outside the USA and Canada.

2.6.3 Type and size of paper

The printer loads paper from the installed paper tray or the multi-purpose tray. The names for the paper trays in the printer driver as follows;

Paper tray (T1)	Tray 1
Multi-purpose tray	MP tray
Optional lower tray unit	Tray 2
Duplex unit for automatic duplex printing	DX

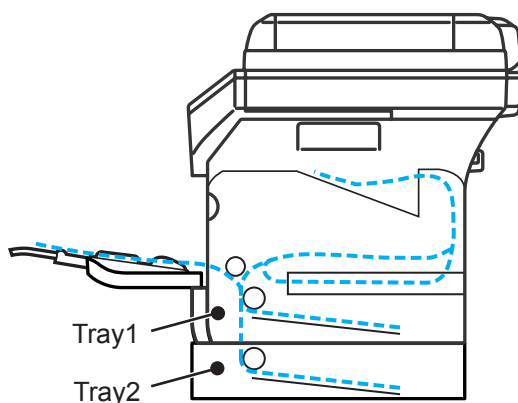


Fig. 1-2

<Media type>

	Tray 1/2	MP Tray	DX	Choose the media type from the printer driver
Plain paper 75 to 105 g/m ² (20 to 28 lb)	Yes	Yes	Yes	Plain paper
Recycled paper	Yes	Yes	Yes	Recycled paper
Bond paper Rough paper- 60 to 161 g/m ² (16 to 43 lb)	Yes 60 to 105 g/m ² (16 to 28 lb.)	Yes 60 to 161 g/m ² (16 to 43 lb.)	N/A	Bond paper
Thin paper 60 to 75 g/m ² (16 to 20 lb)	Yes	Yes	Yes	Thin paper
Thick paper 105 to 163 g/m ² (28 to 43 lb)	N/A	Yes	N/A	Thick Paper or Thicker Paper
Labels	N/A	Yes A4 or Letter	N/A	Thicker Paper
Envelopes	N/A	Yes	N/A	Envelopes, Env. Thin, Env. Thick

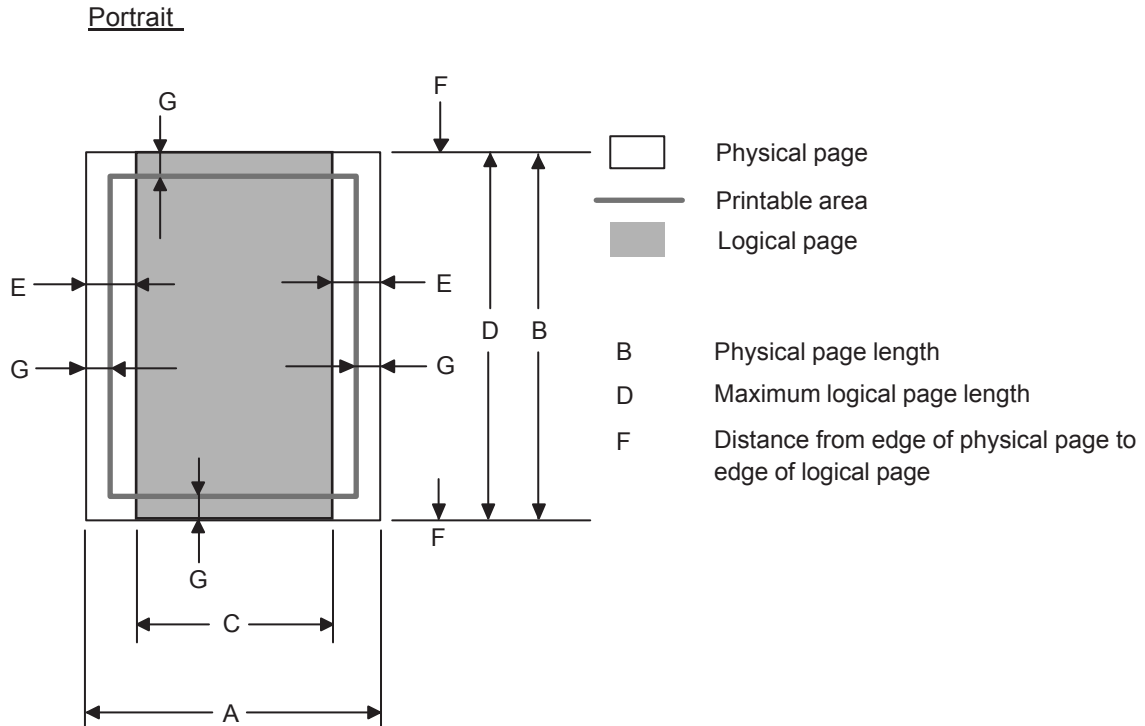
Memo :

- Use paper that is made for plain-paper copying.
- Use papers that is 75 to 90 g/m² (20 to 24 lb).
- Use neutral paper. Do not use acidic or alkaline paper.
- Use long-grain paper.
- This printer can use recycled paper that meets DIN 19309 specifications.
- DO NOT use ink jet paper because it may cause a paper jam or damage your printer.

2.7 Printable Area

■ PCL emulation

When using PCL emulation, the edges of the paper that cannot be printed on are shown below.



Note :

- "Logical page" shows the printable area for a PCL driver.
- "Printable area" shows mechanical printable area of the machine.
- Therefore, the machine can only print within the shaded area when you use a PCL driver.

The table below shows the printable areas when printing on Portrait for each paper size.

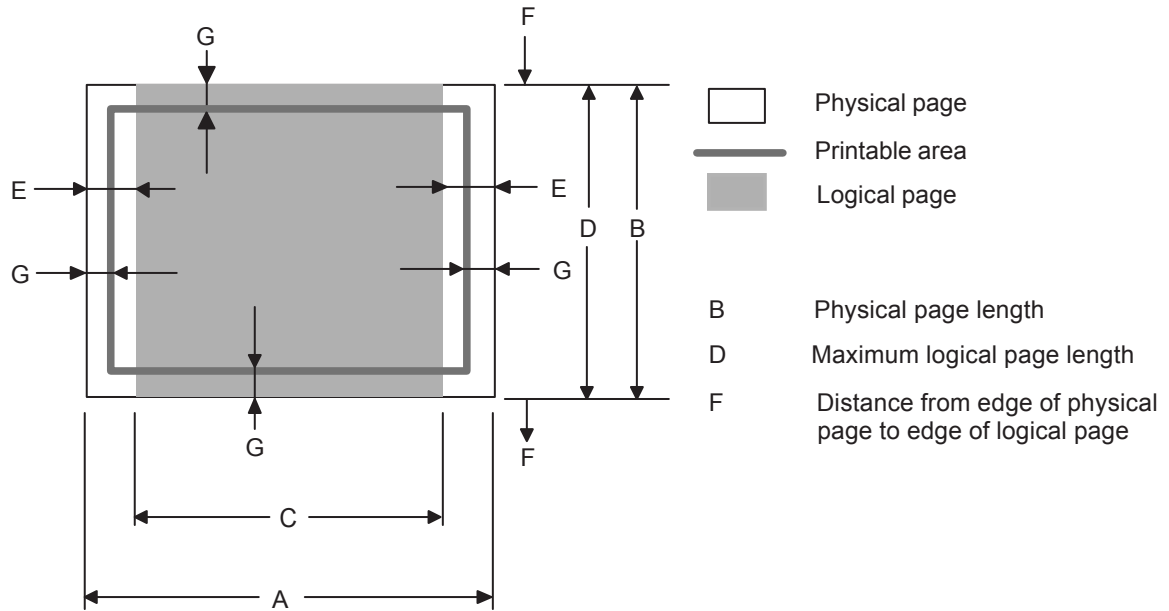
Size	A	B	C	D	E	F	G
Letter	215.9mm 8.5" (2,550dots)	279.4mm 11.0" (3,300dots)	203.2mm 8.0" (2,400dots)	279.4mm 11.0" (3,300dots)	6.3mm 0.2" (75dots)	0mm	4.2mm 0.16" (50dots)
Legal	215.9mm 8.5" (2,550dots)	355.6mm 14.0" (4,200dots)	203.2mm 8.0" (2,400dots)	355.6mm 14.0" (4,200dots)	↑	0mm	4.2mm 0.16" (50dots)
Folio	215.9mm 8.5" (2,550dots)	330.2mm 13.0" (3,900dots)	203.2mm 8.0" (2,400dots)	330.2mm 13.0" (3,900dots)	↑	0mm	4.2mm 0.16" (50dots)
Executive	184.15mm 7.25" (2,175dots)	266.7mm 10.5" (3,150dots)	175.7mm 6.92" (2,025dots)	266.7mm 10.5" (3,150dots)	6.3mm 0.2" (75dots)	0mm	4.2mm 0.16" (50dots)
A 4	210.0mm 8.27" (2,480dots)	297.0mm 11.69" (3,507dots)	198.0mm 7.79" (2,338dots)	297.0mm 11.69" (3,507dots)	6.0mm 0.2" (71dots)	0mm	4.2mm 0.16" (50dots)
A 5	148.5mm 5.85" (1,754dots)	210.0mm 8.27" (2,480dots)	136.5mm 5.37" (1,612dots)	210.0mm 8.27" (2,480dots)	↑	0mm	4.2mm 0.16" (50dots)
A 6	105.0mm 4.13" (1,240dots)	148.5mm 5.85" (1,754dots)	93.0mm 3.66" (1,098dots)	148.5mm 5.85" (1,754dots)	↑	0mm	4.2mm 0.16" (50dots)
B 5 (JIS)	182.0mm 7.1" (2,130dots)	257.0mm 10.11" (3,033dots)	170.0mm 6.69" (2,007dots)	257.0mm 10.11" (3,033dots)	↑	0mm	4.2mm 0.16" (50dots)
B 5 (ISO)	176.0mm 6.93" (2,078dots)	250.0mm 9.84" (2,952dots)	164.0mm 6.46" (1,936dots)	250.0mm 9.84" (2,952dots)	↑	0mm	4.2mm 0.16" (50dots)
B 6 (ISO)	125.0mm 4.92" (1,476dots)	176.0mm 6.93" (2,078dots)	164.0mm 4.44" (1,334dots)	176.0mm 6.93" (2,078dots)	↑	0mm	4.2mm 0.16" (50dots)
Envelope Monarch	98.43mm 3.875" (1,162dots)	190.5mm 7.5" (2,250dots)	85.7mm 3.37" (1,012dots)	190.5mm 7.5" (2,250dots)	6.3mm 0.2" (75dots)	0mm	4.2mm 0.16" (50dots)
Envelope Com-10	104.7mm 4.125" (1,237dots)	241.3mm 9.5" (2,850dots)	92.0mm 3.62" (1,087dots)	241.3mm 9.5" (2,850dots)	↑	0mm	4.2mm 0.16" (50dots)
Envelope DL	110.0mm 4.33" (1,299dots)	220.0mm 8.66" (2,598dots)	98.0mm 3.86" (1,157dots)	220.0mm 8.66" (2,598dots)	6.0mm 0.24" (71dots)	0mm	4.2mm 0.16" (50dots)
Envelope C5	162.0mm 6.38" (1,913dots)	229.0mm 9.01" (2,704dots)	150.0mm 5.9" (1,771dots)	229.0mm 9.01" (2,704dots)	↑	0mm	4.2mm 0.16" (50dots)
HAGAKI	100.0mm 3.94" (1,181dots)	148.0mm 5.83" (1,748dots)	88.0mm 3.46" (1,039dots)	148.0mm 5.83" (1,748dots)	6.0mm 0.24" (71dots)	0mm	4.2mm 0.16" (50dots)
A4 Long	210.0mm 8.27" (2,480dots)	405.0mm 15.94" (4,783dots)	198.0mm 7.79" (2,338dots)	405.0mm 15.94" (4,783dots)	6.0mm 0.24" (71dots)	0mm	4.2mm 0.16" (50dots)

Size	A	B	C	D	E	F	G
DL Long Edge	220.0mm 8.66" (2,598dots)	110.0mm 4.33" (1,299dots)	207.0mm 8.17" (2,450dots)	110.0mm 4.33" (1,299dots)	6.26mm 0.25" (74dots)	0mm	4.2mm 0.16" (50dots)
3X5	76.2mm 3.00" (900dots)	127.0mm 5.00" (1,500dots)	63.5mm 2.50" (750dots)	127.0mm 5.00" (1,500dots)	6.35mm 0.25" (75dots)	0mm	4.2mm 0.16" (50dots)

Note :

- The paper sizes indicated here should confirm to the nominal dimensions specified by JIS except B5 (ISO), B6 (ISO).
- The dot size is based on 300dpi resolution.

Landscape



Note :

- "Logical page" shows the printable area for a PCL driver.
- "Printable area" shows mechanical printable area of the machine.
- Therefore, the machine can only print within the shaded area when you use a PCL driver.

The table below shows the printable areas when printing on Landscape for each paper size.

Size	A	B	C	D	E	F	G
Letter	279.4mm 11.0" (3,300dots)	215.9mm 8.5" (2,550dots)	269.3mm 10.6" (3,180dots)	215.9mm 8.5" (2,550dots)	5.0mm 0.2" (60dots)	0mm	4.2mm 0.16" (50dots)
Legal	355.6mm 14.0" (4,200dots)	215.9mm 8.5" (2,550dots)	345.5mm 13.6" (4,080dots)	215.9mm 8.5" (2,550dots)	↑	0mm	4.2mm 0.16" (50dots)
Folio	330.2mm 13.0" (3,900 dots)	215.9mm 8.5" (2,550dots)	320.0mm 12.6" (3,780dots)	215.9mm 8.5" (2,550dots)	↑	0mm	4.2mm 0.16" (50dots)
Executive	266.7mm 10.5" (3,150dots)	184.15mm 7.25" (2,175dots)	256.6mm 10.1" (3,030dots)	184.15mm 7.25" (2,175dots)	5.0mm 0.2" (60dots)	0mm	4.2mm 0.16" (50dots)
A 4	297.0mm 11.69" (3,507dots)	210.0mm 8.27" (2,480dots)	287.0mm 11.2" (3,389dots)	210.0mm 8.27" (2,480dots)	4.8mm 0.19" (59dots)	0mm	4.2mm 0.16" (50dots)
A 5	210.0mm 8.27" (2,480dots)	148.5mm 5.85" (1,754dots)	200.0mm 7.87" (2,362dots)	148.5mm 5.85" (1,754dots)	↑	0mm	4.2mm 0.16" (50dots)
A 6	148.5mm 5.85" (1,754dots)	105.0mm 4.13" (1,240dots)	138.5mm 5.45" (1,636dots)	105.0mm 4.13" (1,240dots)	↑	0mm	4.2mm 0.16" (50dots)
B 5 (JIS)	257.0mm 10.11" (3,033dots)	182.0mm 7.1" (2,130dots)	247.0mm 9.72" (2,916dots)	182.0mm 7.1" (2,130dots)	↑	0mm	4.2mm 0.16" (50dots)
B 5 (ISO)	250.0mm 9.84" (2,952dots)	176.0mm 6.93" (2,078dots)	240.0mm 9.44" (2,834dots)	176.0mm 6.93" (2,078dots)	↑	0mm	4.2mm 0.16" (50dots)
B 6 (ISO)	176.0mm 6.93" (2,078dots)	125.0mm 4.92" (1,476dots)	166.4mm 6.55" (1,960dots)	125.0mm 4.92" (1,476dots)	↑	0mm	4.2mm 0.16" (50dots)
Envelope Monarch	190.5mm 7.5" (2,250dots)	98.43mm 3.875" (1,162dots)	180.4mm 7.1" (2,130dots)	98.43mm 3.875" (1,162dots)	5.0mm 0.20" (60dots)	0mm	4.2mm 0.16" (50dots)
Envelope Com-10	241.3mm 9.50" (2,850dots)	104.7mm 4.125" (1,237dots)	231.1mm 9.10" (2,730dots)	104.7mm 4.12" (1,237dots)	↑	0mm	4.2mm 0.16" (50dots)
Envelope DL	220mm 8.66" (2,598dots)	110mm 4.33" (1,299dots)	210.0mm 8.26" (2,480dots)	110mm 4.33" (1,299dots)	4.8mm 0.19" (59dots)	0mm	4.2mm 0.16" (50dots)
Envelope C5	229mm 9.01" (2,704dots)	162mm 6.38" (1,913dots)	219.0mm 8.62" (2,586dots)	162mm 6.38" (1,913dots)	↑	0mm	4.2mm 0.16" (50dots)
HAGAKI	148mm 5.83" (1,748dots)	100mm 3.94" (1,181dots)	138mm 5.43" (1,630dots)	100mm 3.94" (1,181dots)	4.8mm 0.19" (59dots)	0mm	4.2mm 0.16" (50dots)
A4 Long	405mm 15.94" (4,783dots)	210mm 8.27" (2,480dots)	395mm 15.55" (4,665dots)	210mm 8.27" (2,480dots)	4.8mm 0.19" (59dots)	0mm	4.2mm 0.16" (50dots)

Size	A	B	C	D	E	F	G
DL Long Edge	110mm 4.33" (1,299dots)	220mm 8.66" (2,598dots)	102mm 4.00" (1,199dots)	220mm 8.66" (2,598dots)	4.0mm 0.16" (50dots)	0mm	4.2mm 0.16" (50dots)
3X5	127mm 5.00" (1,500dots)	76.2mm 3.00" (900dots)	116.8mm 4.60" (1,380dots)	76.2mm 3.00" (900dots)	5.0mm 0.20" (60dots)	0mm	4.2mm 0.16" (50dots)

Note :

- The paper sizes indicated here should confirm to the nominal dimensions specified by JIS except B5 (ISO), B6 (ISO).
- The dot size is based on 300 dpi resolution.

2.8 Print Speeds with Various Settings

Print speed is up to 30 ppm for A4 size and 32ppm for Letter size when loading A4 or Letter size paper from the paper tray in the plain paper mode.

Actual print speed varies depending on the media type or paper size as shown in the tables below;

<A4/Letter size>

Media type setting	Print speed (for all models)
Plain paper, Recycled paper	30/32 ppm
Plain paper thin	30/32 ppm
Thick paper, Envelope, Envelope thin, Label	15/16 ppm
Thicker paper, Bond paper, Envelope thick	3 ppm

<Smaller size than A4 or Letter>

Media type setting	Print speed (for all models)
Plain paper, Recycled paper	0 to 90 second 32 ppm, 90 second or later 15 ppm
Plain paper thin	30/32 ppm
Thick paper, Envelopes, Envelopes thick, Label, HAGAKI	0 to 9 second 16 ppm, 9 second or later 15 ppm
Thicker paper, Bond paper, Envelopes thick	3 ppm

Note :

- The print speed may vary according to conditions, such as paper size and paper tray.
- When a smaller size paper than A4 or Letter is printed, the temperature on both edges of the fuser unit is much higher than the temperature on the center of the unit where the paper is fed depending on the setting or model. Therefore, the print speed is slowed in order to decrease the temperature on the edges after the specified time, it is maximum print speed when you first start printing.
- The actual print speed varies depending on the paper size.

2.9 Telephone

Model	DCP 8080DN	DCP 8085DN	MFC 8480DN	MFC 8880DN	MFC 8890DW
Handset	No				
Chain Dialing	No		Yes		
Automatic Redial	No		Yes		
PBX Feature	No		No (Europe:Yes)		
Speaker Phone	No				
Hold/Mute Key	No				
Music on Hold	No				
Speaker Volume	No		Yes (3 steps + OFF)		
Ring Volume	No		Yes (3 steps + OFF)		
Beeper Volume	Yes (3 steps + OFF)				
One-Touch Dial	No		40 (20 x 2) locations		
Speed Dial	No		300 locations		
Figures of One-Touch & Speed Dial	No		20 digits		
Resister able Number Of Characters	No		15 characters		
Group Dial	No		Yes (up to 20 groups)		
Telephone Index	No		Yes		
Caller ID	No				
Call Waiting Caller ID	No				
Call waiting Ready	No				
Distinctive Ringing	No		Yes		

2.10 Fax

Model	DCP 8080DN	DCP 8085DN	MFC 8480DN	MFC 8880DN	MFC 8890DW
Modem Speed	No		33.600bps		
Transmission Speed	No		Approx. 2sec. (Brother#1 Std resolution, JBIG)		
ITU-T Group	No		Super G3		
Coding Method	No		MH / MR / MMR / JBIG		
Color FAX	No				
Fax/Tel Switch	No		Yes		
Super Fine	No		Yes (TX & RX)		
Gray Scale	No		8bit/256		
Contrast	No		Yes (Auto/Light/Dark)		
Smoothing	No				
Dual Access	No		Yes		
Enhanced Remote Activate	No		Yes		
Station ID	No		Yes (20digits / 20characters)		
Remote Maintenance	No				
Remote Access	No		Yes		
Fax Retrieval	No		Yes		
Paging	No		Yes (US / Canada Only)		
Internet FAX (ITU T.37 simple mode)	No			Yes	
Delayed Timer	No		Yes (up to 50)		
Polled Sending	No		Yes (EUR Secure Polling)		
Multi Transmission	No				
Multi Resolution Transmission	No				
Next-Fax Reservation	No				
Call Reservation Over Auto/Manual TX	No				
Batch Transmission	No		Yes		
Quick-Scan (Memory transmission)			Approx. 2 sec./page (A4 standard)		
Memory Transmission (ITU-T Chart)			up to 500 pages (ITU-T Test Chart, Standard Resolution, JBIG) up to 600 pages (Brother #1Chart, Standard Resolution, JBIG)		
ECM (Error Correction Mode)			Yes		
Error Re-Transmission	No		Yes		
Broadcasting	No		Yes (390 locations)		
Manual Broadcasting	No		Yes (50 locations)		
Fax Forwarding	No		Yes		

Model	DCP 8080DN	DCP 8085DN	MFC 8480DN	MFC 8880DN	MFC 8890DW
Fax Forwarding Broadcast	No		Yes		
Duplex Fax Send	No			Yes	
Dial Restriction	No		Yes		
Easy Receive/Fax Detect	No		Yes		
Polling Receiving	No		Yes		
Auto Reduction	No		Yes		
Duplex Fax Receive	No		Yes		
Out-of-Paper Reception (ITU-T Chart)	No		up to 500 pages (ITU-T Test Chart, Standard Resolution, JBIG) up to 600 pages (Brother #1Chart, Standard Resolution, JBIG)		
Fax Rx Stamp	No		Yes		

2.11 List/Report

Model	DCP 8080DN	DCP 8085DN	MFC 8480DN	MFC 8880DN	MFC 8890DW
Activity Report/Journal Report	No		Yes (up to 200)		
Transmission Verification Report	No		Yes		
Cover page	No		Yes		
Help List	No		Yes		
Call Back Message	No				
Caller ID List	No				
Tel Index List Numeric/Alphabetic	No/No		Yes/Yes		
Memory Status List	No		Yes		
System Setup (User Setting) List	Yes				
Order Form	No		Yes (Europe/Asia Except for China)		

2.12 Copy

Model	DCP 8080DN	DCP 8085DN	MFC 8480DN	MFC 8880DN	MFC 8890DW
Copy Speed Simplex (A4 / LTR)	up to 30/32 cpm				
Copy Speed Duplex (A4 / LTR)	A4: Up to 13 sides per minute (6.5 sheets per minute)				
	Letter: Up to 14 sides per minute (7 sheets per minute)				
First Copy Out Time (From READY mode)	Less than 10.5 sec				
Multi Copy Stack	Yes (up to 99)				
Multi Copy Sort	Yes				
Reduction/ Enlargement (%)	25% - 400% in 1% increments				
Resolution (dpi)	Maximum. 1200 x 600 dpi				
Auto Duplex Scanning Copy	No	Yes	No	Yes	
Manual Duplex Copy	No				
N in 1	Yes				
Poster	No				
Image Enhancement	No				

2.13 Scanner

Model	DCP 8080DN	DCP 8085DN	MFC 8480DN	MFC 8880DN	MFC 8890DW
Color/Mono	Color/Mono				
Resolution (Optical) (Glass)	Maximum 600 x 2400 dpi				
Resolution (Optical) (ADF)	Maximum 600 x 1200 dpi				
Resolution (Interporated)	19,200 x 19,200 dpi				
Scanning Speed Monochrome	2.85 (Letter)/ 3.03 seconds (A4)				
Color	5.44 (Letter)/ 5.79 seconds (A4)				
Gray Scale	8bit/256				
Color Depth (Int. / Ext.)	48 bit / 24 bit				
Custom Scan Profile	No		Yes		
Duplex Scan	No	Yes	No	Yes	
Scan to E-mail	Yes				
Scan to Email Server (I-Fax)	No			Yes	
Scan to Image	Yes				
Scan to OCR	Yes				
Scan to File	Yes				
Scan to FTP	Yes				
Scan to USB	Yes				
Scan to Network	Yes				

2.14 USB Host

Model	DCP 8080DN	DCP 8085DN	MFC 8480DN	MFC 8880DN	MFC 8890DW
PictBridge	No				
Direct Print	Yes				
Media Drive	No				

CHAPTER 2

THEORY OF OPERATION

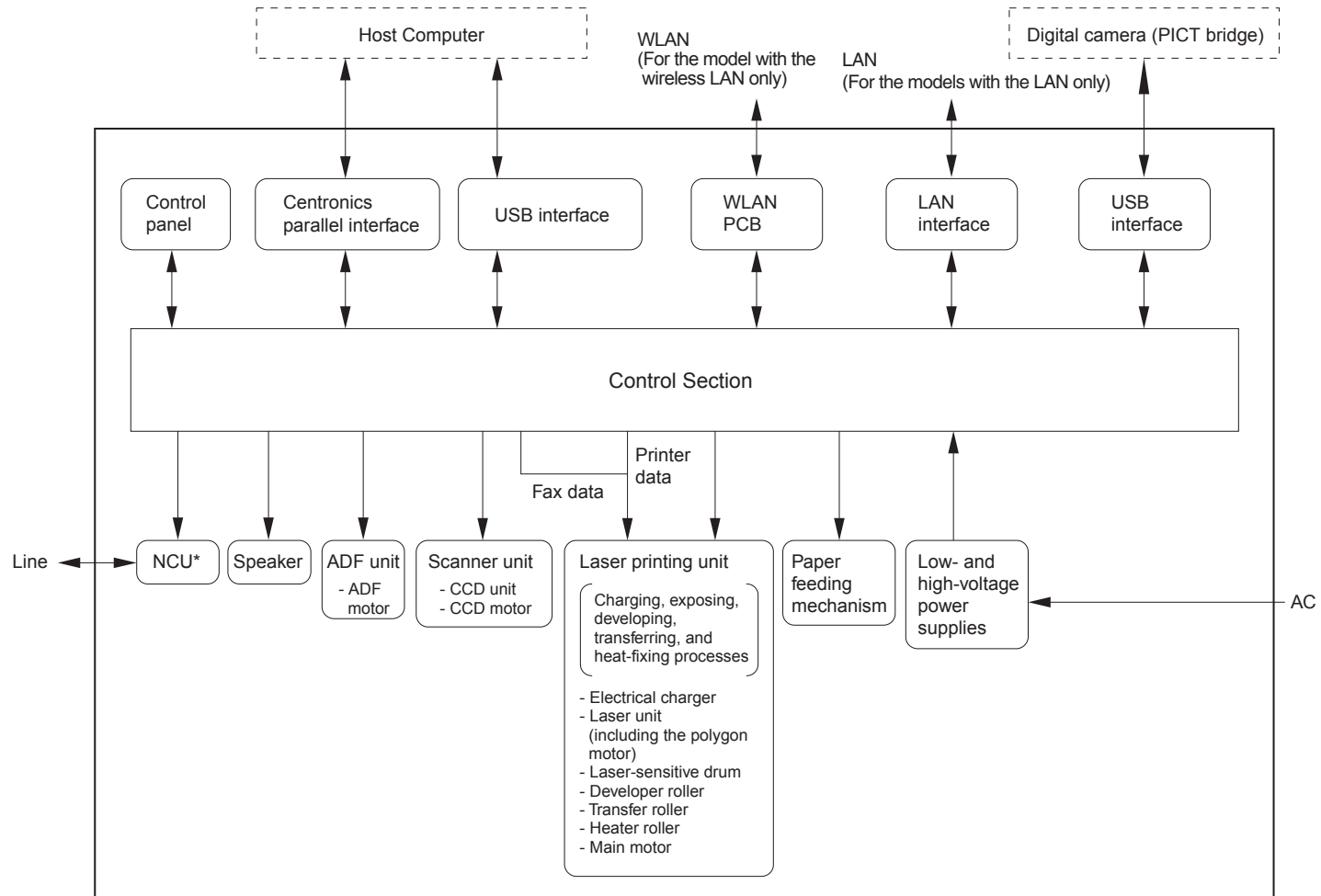
CHAPTER 2 THEORY OF OPERATION

This chapter gives an overview of the scanning and printing mechanisms as well as the sensors, actuators, and control electronics. It aids in understanding the basic principles of operation as well as locating defects for troubleshooting

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1. MECHANICS



*Provided on models supporting facsimile function.

Fig. 2-1

2. ELECTRONICS

2.1 General Block Diagram

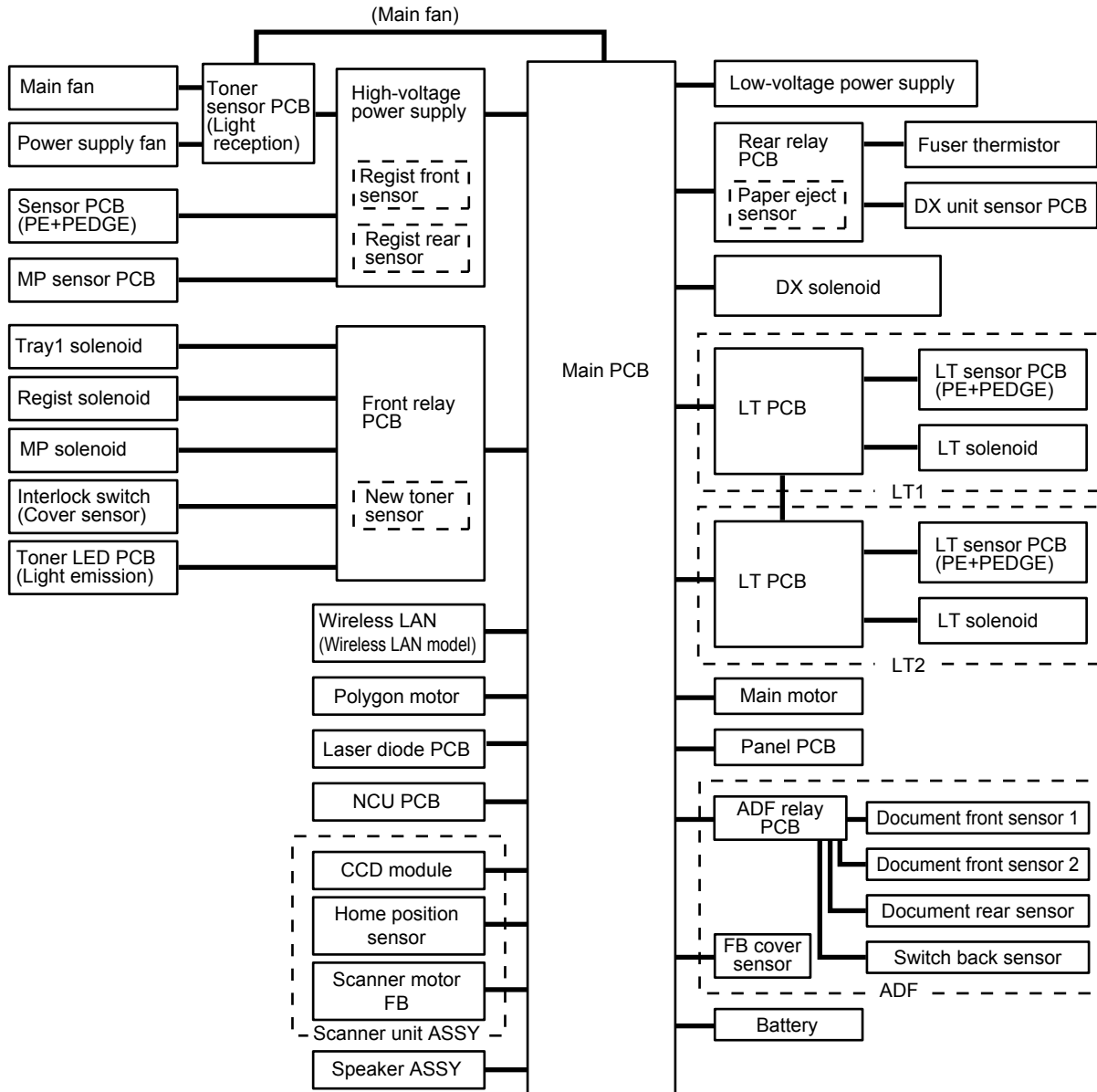


Fig. 2-2

3. MECHANICS

3.1 Cross-section Drawing

- Printer part

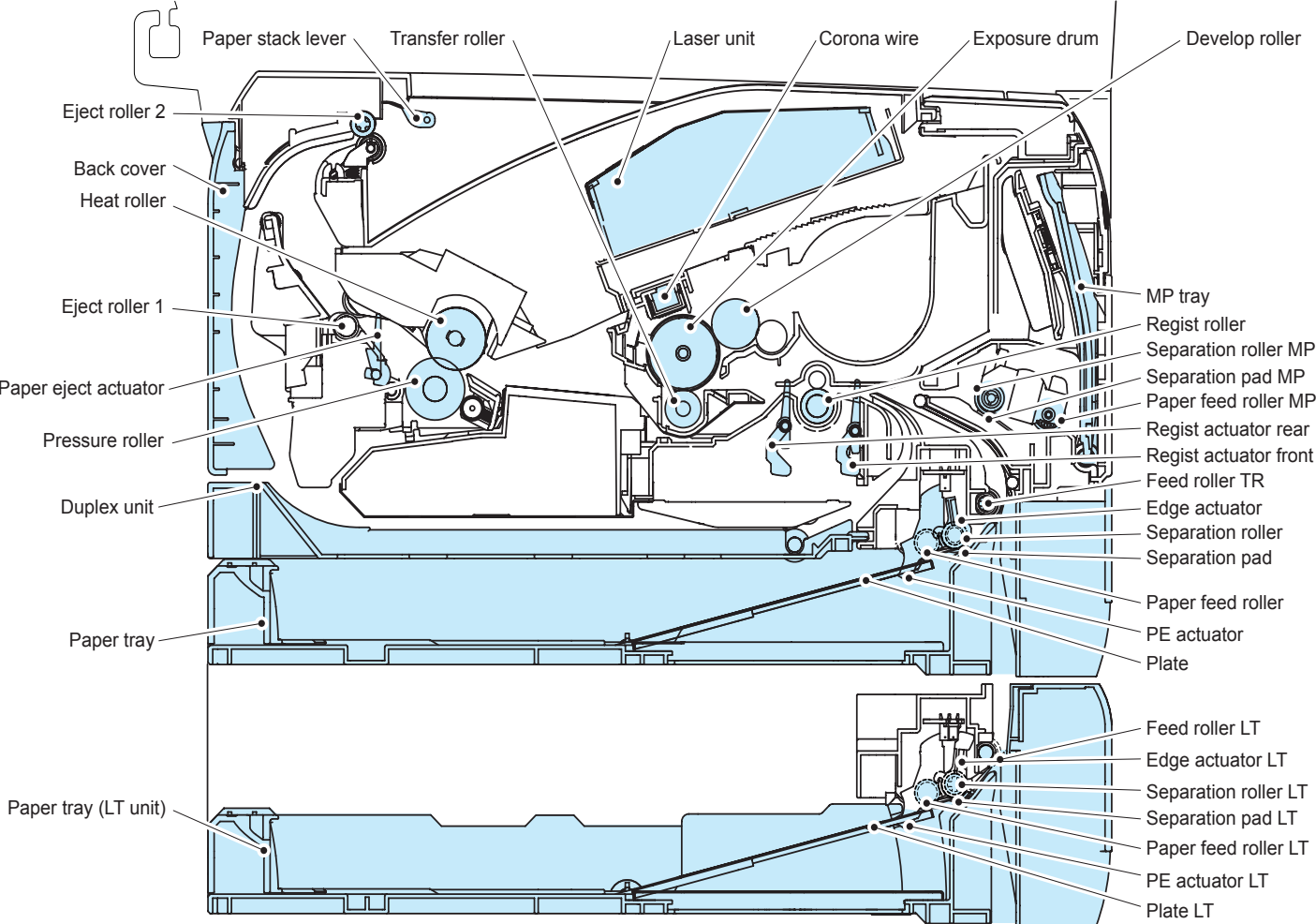


Fig. 2-3

- ADF part

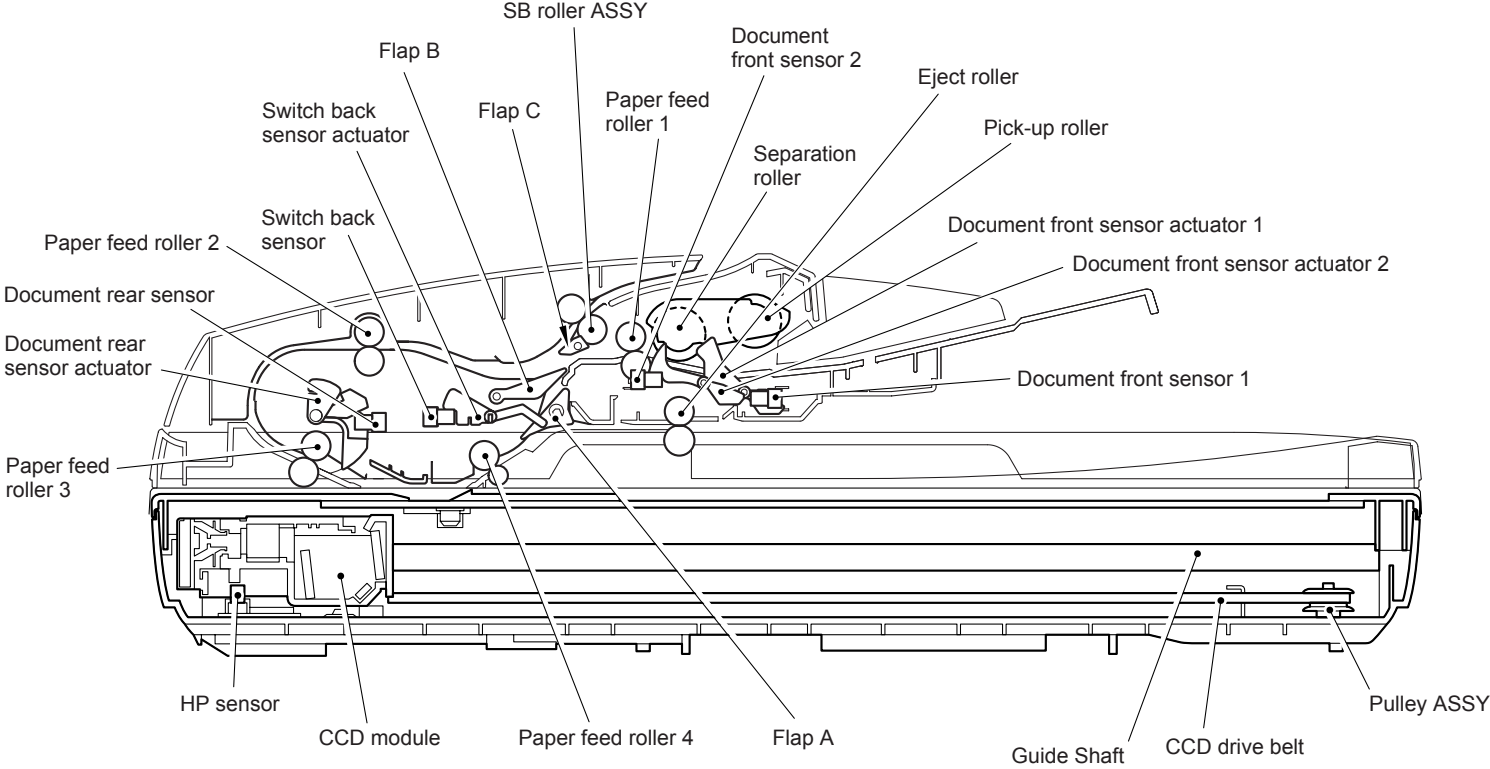


Fig. 2-4

3.2 Scanner Mechanism

This mechanism consists of the document cover, the scanner unit (scanner cover), and the automatic document feeder (ADF).

The scanner unit consists of a scanner top cover, CCD unit and scanner base.

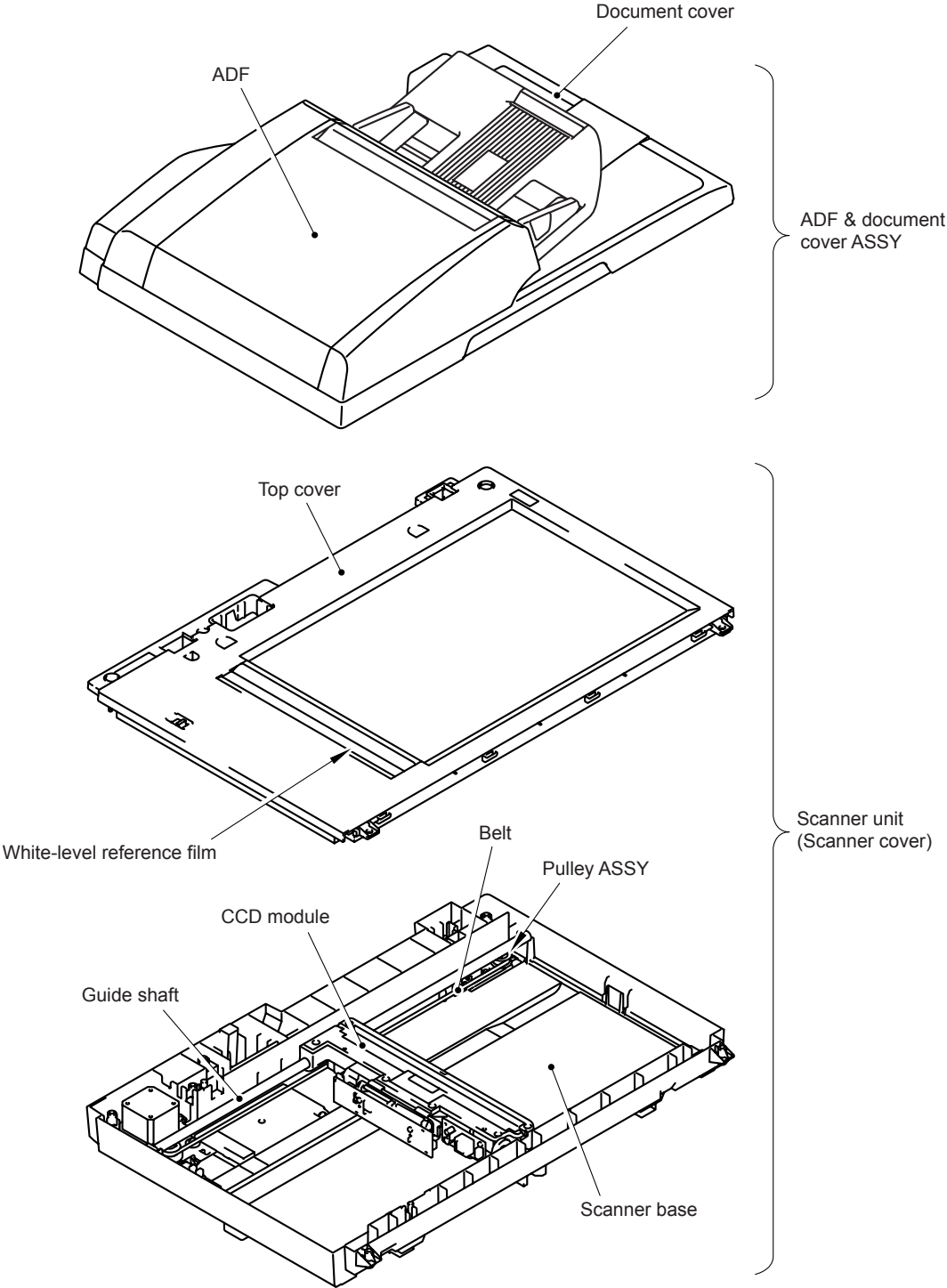


Fig. 2-5

3.2.1 Scanner unit

The scanner unit is equipment which scans the paper using the CCD unit. This machine prints the scanning data (copy) or data is sent by fax (fax transmission).

There are two kinds of scanning method of the scanner unit. One is operation to scan with the scanner unit, the paper is placed on the document glass, the CCD unit moves is the bottom of it, and it scans the paper, and other is operation to scan in connection with the ADF unit, scan the paper which has been sent over the immovable CCD unit.

1. CCD unit

The CCD unit includes the charge coupled device (CCD) sensor (Resolution of horizontal scanning: Max 600dpi, color scanning). The cold cathode fluorescent lamp lights the document, and the reflection from the scanned image data is transferred to the lens by the mirror. The lens reduces the scanned data so that the image is generated on the CCD.

2. Driving of the CCD unit

The CCD unit is supported by the CCD rail and assembled on the CCD drive belt. When the CCD motor is rotated clockwise, the CCD unit on the CCD drive belt scans the document while sliding to the right hand side. In this case, the CCD unit has the capacity to scan at 2,400dpi resolution of sub scanning .

3. CCD unit home position detected (FB home position detected)

The CCD unit is configured at the FB home position to determine the scanning position of the sub scanning direction. Based on the home position, the position performing the white level compensation or the scan lock other than the scanning position is configured.

The FB home position is detected when the CCD unit intercepts the home position sensor in the left side of the inside of the scanner unit.

4. White level compensation

Whenever the variation of the CCD unit by CCD unit, the correction of the time degradation and the value of the while color scans, in order to make them not different.

The white level compensation keeps a fixed value of the white color by scanning the white-level reference film inside the scanner unit with the CCD.

5. Function of scanner lock lever

The CCD unit is fixed so that the CCD unit moves and may not be damaged when product transfer.

6. Scanning operation (The CCD unit moves under the immovable document.)

Open the document cover, place a sheet of the document (or opened book) onto the document glass, and close the document cover. Then, the machine starts scanning by the operation of the panel, and the CCD drive mechanism is started and the scanning operation is started.

The CCD motor is rotated so that its action is transferred to the CCD drive belt through the gear train.

The CCD unit scans the document while sliding to the right hand side.

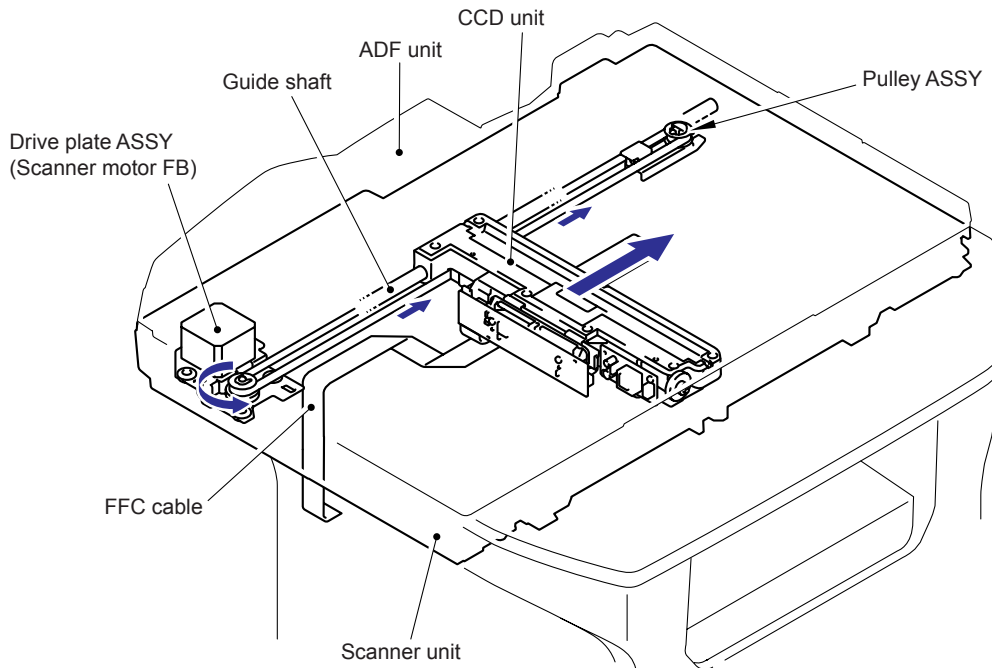


Fig. 2-6

3.2.2 ADF unit

The ADF unit is equipment which sends one document or the document for every plurality to the ADF scanning part of the scanner unit, and performs continuation scanning. As for the ADF of this machine, the duplex scanning is also possible.

Performance of the ADF

- The number of maximum capacity: Up to 50 sheets
- Maximum resolution: Up to 600dpi
- Maximum scanning speed: 32 pages/minute (Letter size) (Simplex scanning)
14 sides/minute (Letter size) (7pages/minute) (Duplex scanning)
- Maximum input media size: Width 148.0mm, Length 148.0mm
- Minimum input media size: Width 215.9mm, Length 355.6mm

1. Function of each roller

- Pick-up roller
Send the document of the inserted ADF to the inside of the ADF.
- Separation roller
Separate the sent document one by one.
- Paper feed roller 1, 2, 3, 4
Send the document.
- SB (switch back) roller ASSY
When the duplex scanning, this motor is rotated by contraries, draws the sent out document to the inside of ADF again.
- Eject roller
Eject the document.

2. Function of each sensor

- Document front sensor 1
Detects whether the document is set in the ADF.
- Document front sensor 2
Detects whether the document is sent by the separation roller.
- Document rear sensor
Detect the timing of the scanning start of the document.
- Switch back sensor
When the duplex scanning, detect the timing of the reversing of the SB roller by the document passed.
- Document cover open sensor
Detects whether the document cover is opened or not. Even if the document is set into the ADF, the machine starts scanning the document glass ignoring the ADF.

3. Function of each motor/solenoid

- ADF motor
Driving source of overall ADF.
- Paper feed solenoid
The paper feed solenoid stops the driving of the pick-up roller and separation roller while the document is drawn in order to prevent that the next document is drawn into the ADF while duplex printing.
- Switch back solenoid
Switches the direction of rotation of the SB roller ASSY.

4. Internal structure

The automatic document feeder (ADF) consists of the pick-up roller, separation roller, paper feed rollers 1/2/3/4, eject roller, ADF motor, switch back sensor, document rear sensor and document front sensors 1/2.

For further details on the sensors, see [3.6 Sensors position](#).

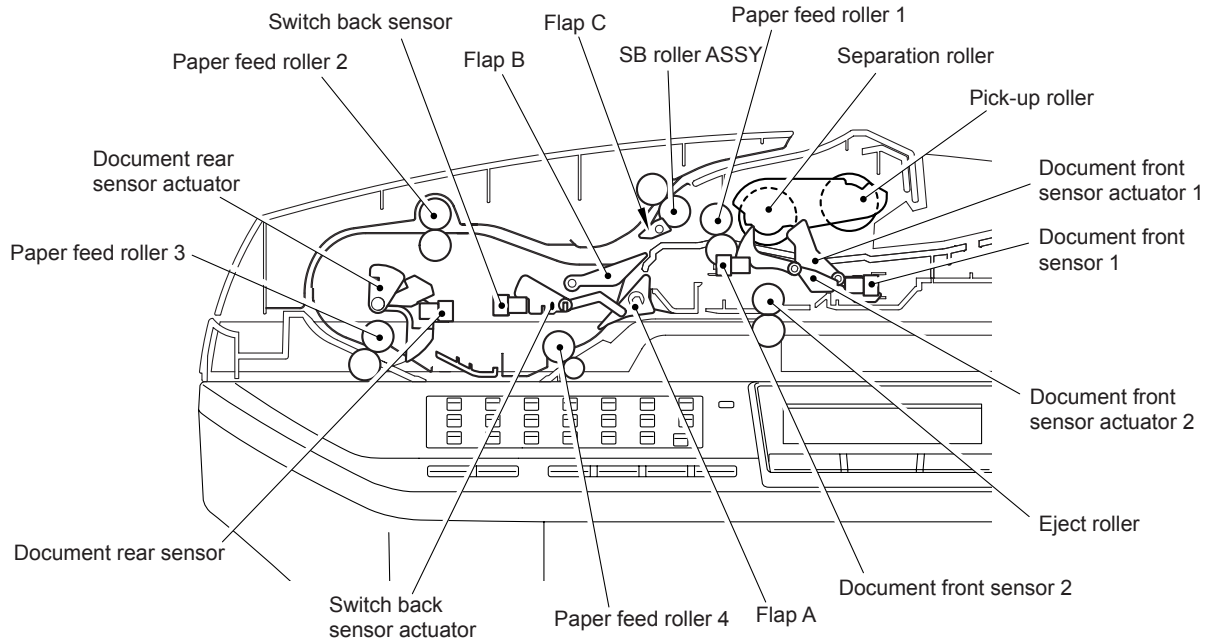


Fig. 2-7

The duplex scanning mechanism allows you to use the following two types of scanning, “ADF scanning” and “document glass scanning”. These two scanning methods are switched depending on whether the document front sensor 1 detects the document or not when starting scanning.

However, there is the case that the “document glass scanning” is given priority to over by a state of the document cover sensor (described later).

5. ADF simplex scanning (The document moves over the immovable CCD unit.)
 - (1) Set the document face up into the document chute. When the machine starts simplex scanning, the ADF motor is rotated clockwise, the pick-up roller draws the document, and the separation roller and separation pad send a sheet of the document to the ADF one by one from the top page of the stacked documents.
 - (2) The document is passed through the paper feed rollers 1, 2 and 3, and is passed over the CCD unit so that the document is scanned. Then, the document is ejected to the document cover LGL by the eject roller.

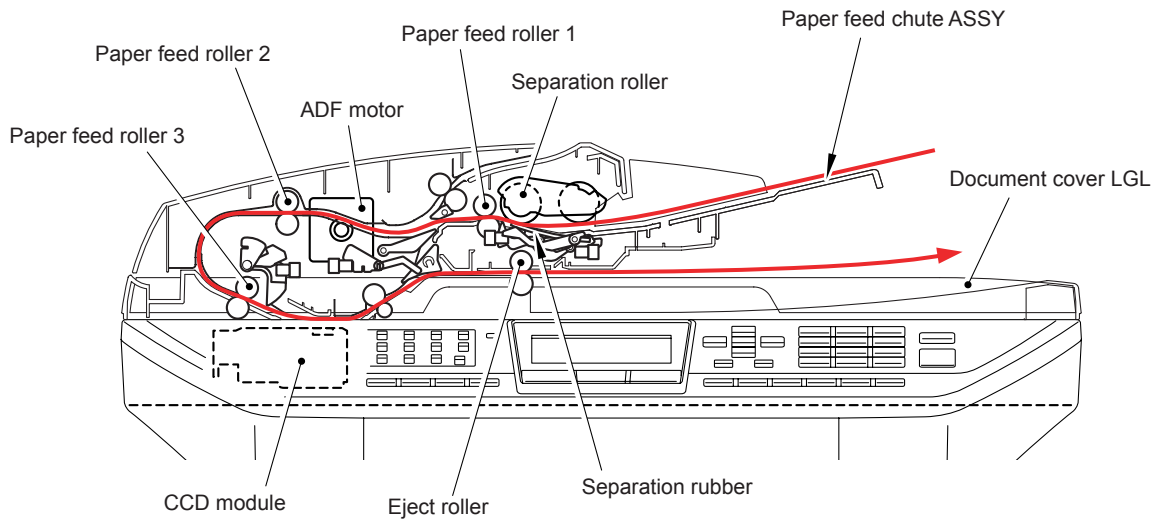


Fig. 2-8

6. ADF duplex scanning (The document moves over the immovable CCD unit.)
 - (1) Set the document face up into the document chute. When the machine starts duplex scanning, the ADF motor is rotated clockwise, the pick-up roller draws the document, and the separation roller and separation pad send a sheet of the document to the ADF one by one from the top page of the stacked documents.
 - (2) The document is passed through the paper feed rollers 1, 2 and 3, and is passed over the CCD unit so that the document is scanned. Then, the document is sent for the specified distance by the SB (switch back) roller ASSY, and the SB (switch back) roller ASSY is turned counter so that the document is drawn again.

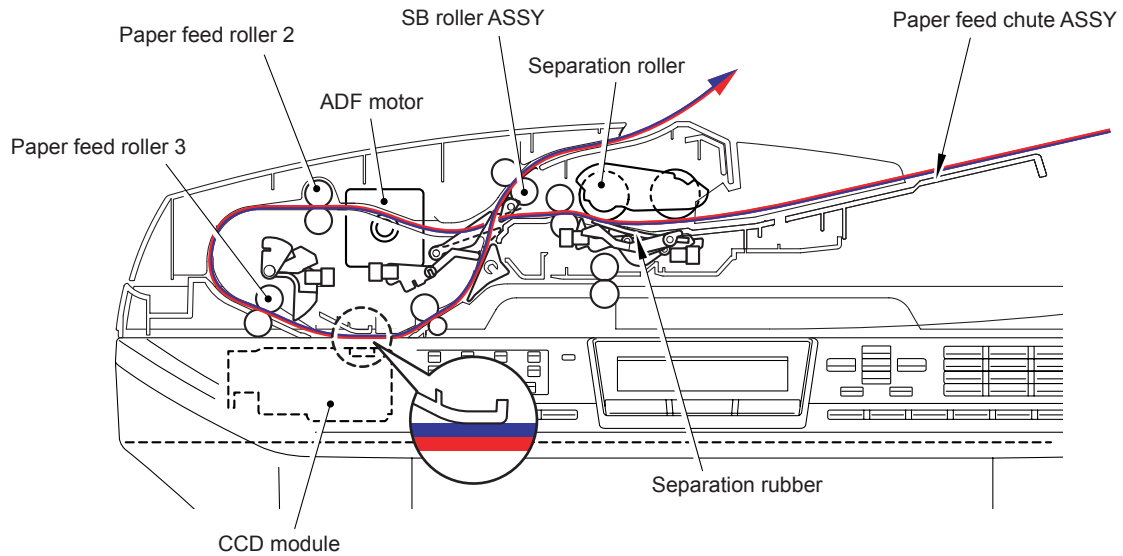


Fig. 2-9

- (3) The drawn document is attached on the flap B and sent to the paper feed rollers 2 and 3. At this time, the opposite side of the document is faced-up so that the backside of the document is scanned. The document is sent to the SB (switch back) roller ASSY again.

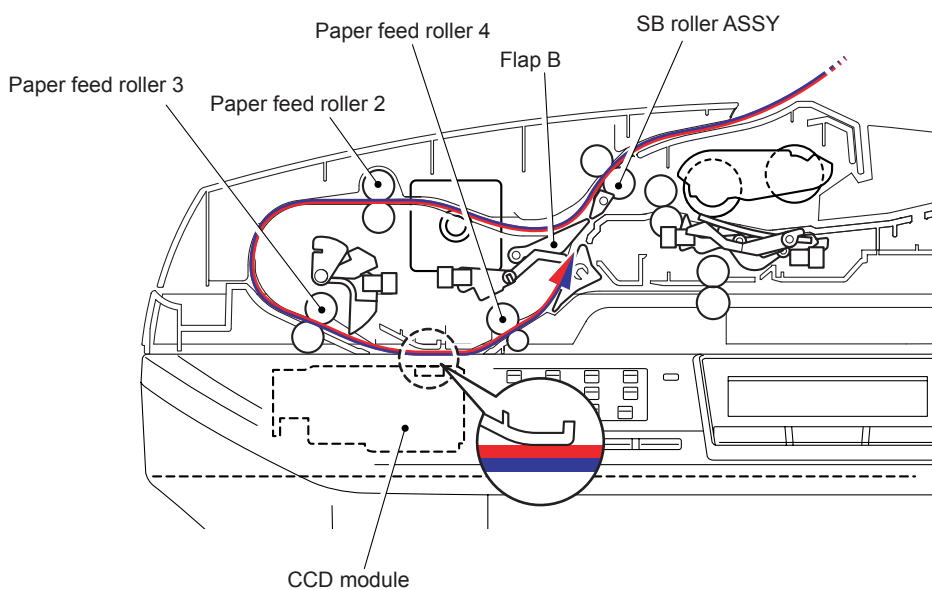


Fig. 2-10

- (4) The SB (switch back) roller ASSY is turned counter again, and the document is drawn again. The document is passed through the paper feed rollers 1, 2 and 3, and ejected to the document cover by the eject roller.

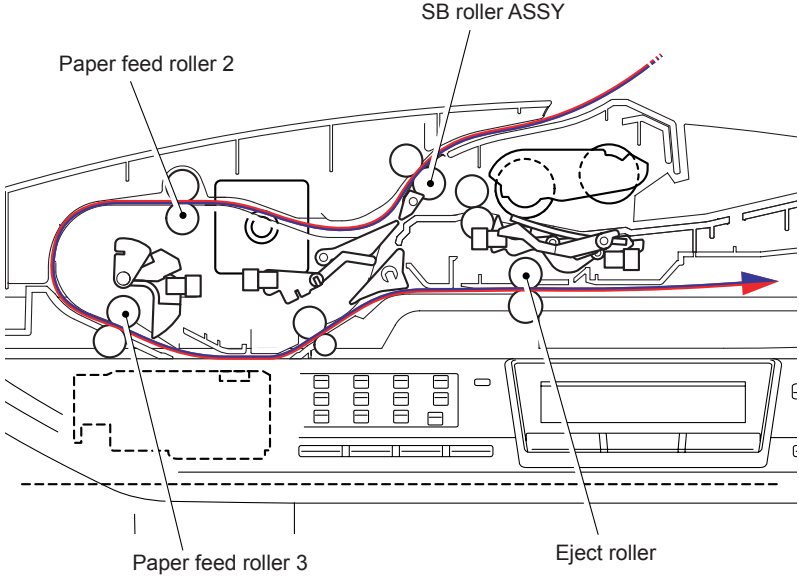


Fig. 2-11

3.3 Paper Feeding

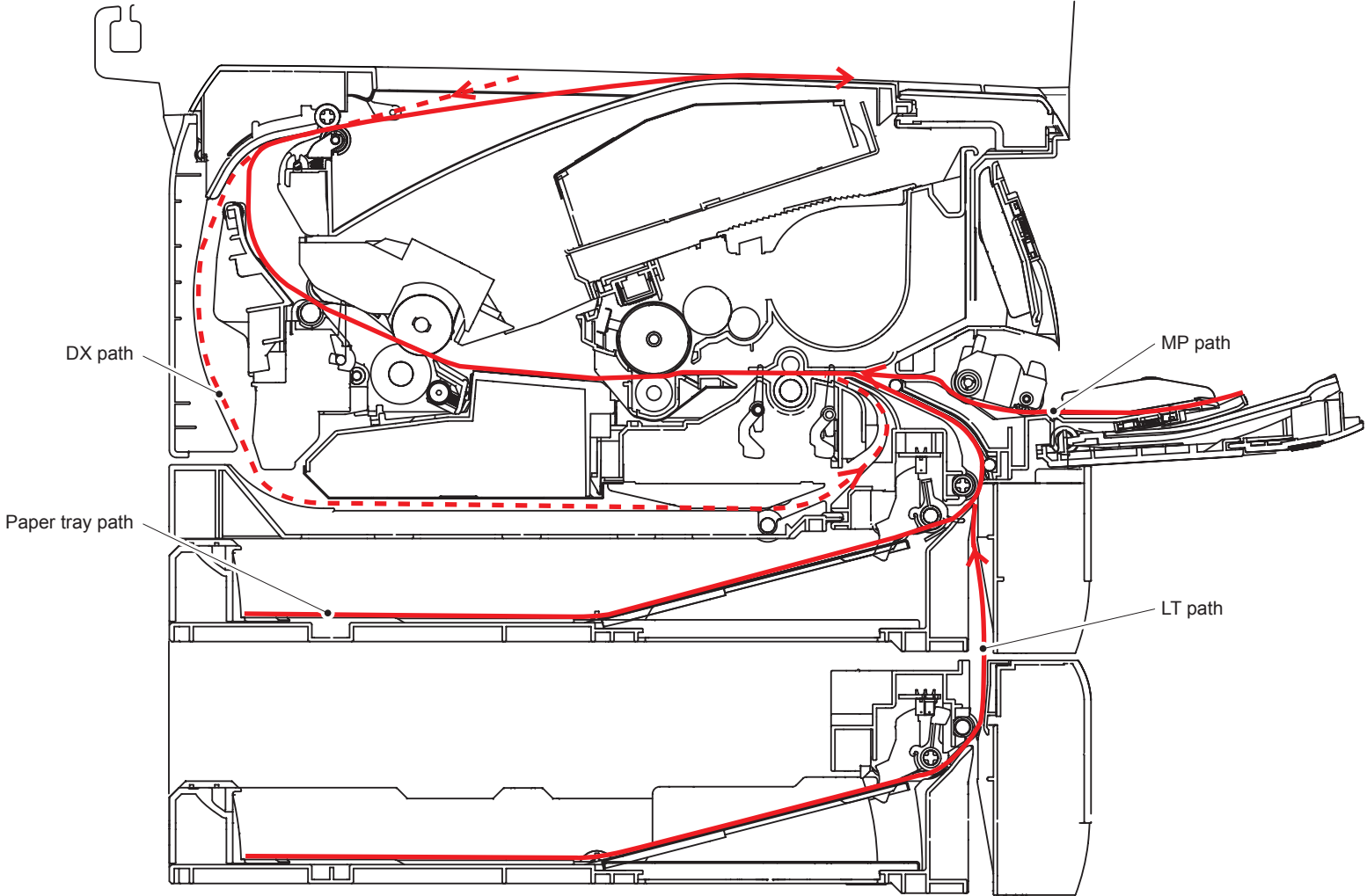


Fig. 2-12

3.3.1 Plate-up Function of the Paper Tray

The plate ASSY in the paper tray is pushed up with the motor drive and not with the spring in order to maintain the constant pressure to the feed roller and to give the paper feeding performance.

When the paper tray (Tray1 cassette) is installed into the printer, the lift gear 46 is rotated, and the motor drive is transmitted to the plate ASSY so that it is pushed up.

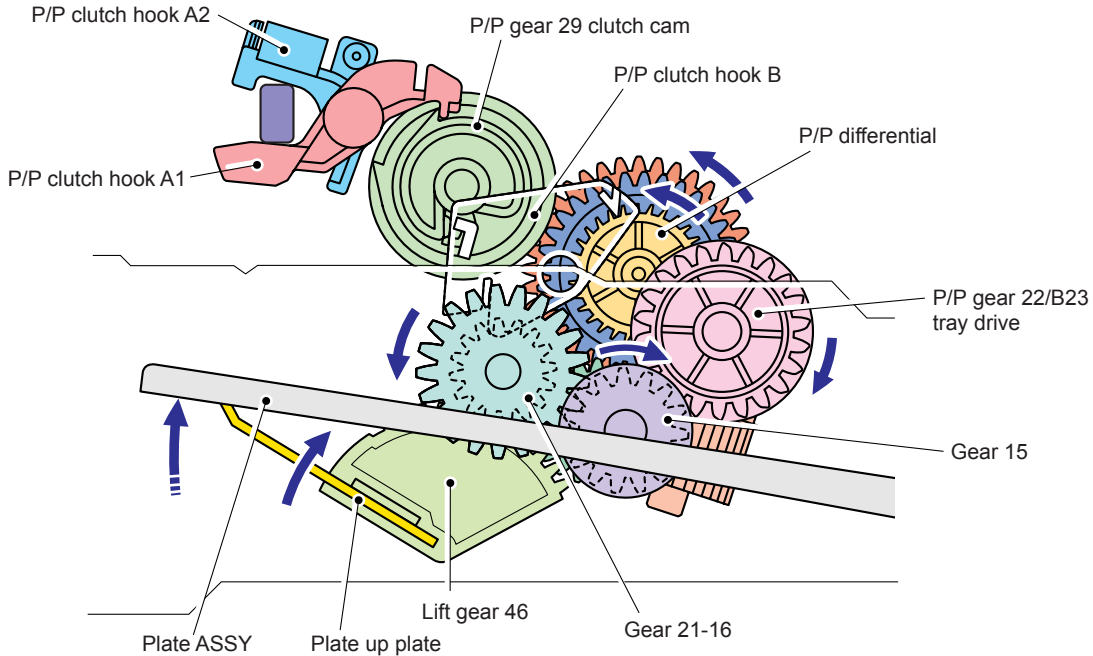


Fig. 2-13

When the feed roller is pushed up, the hook is released by the lift arm, and the rotation of the clutch gear is stopped. Then, the pressure plate is stopped to push up.

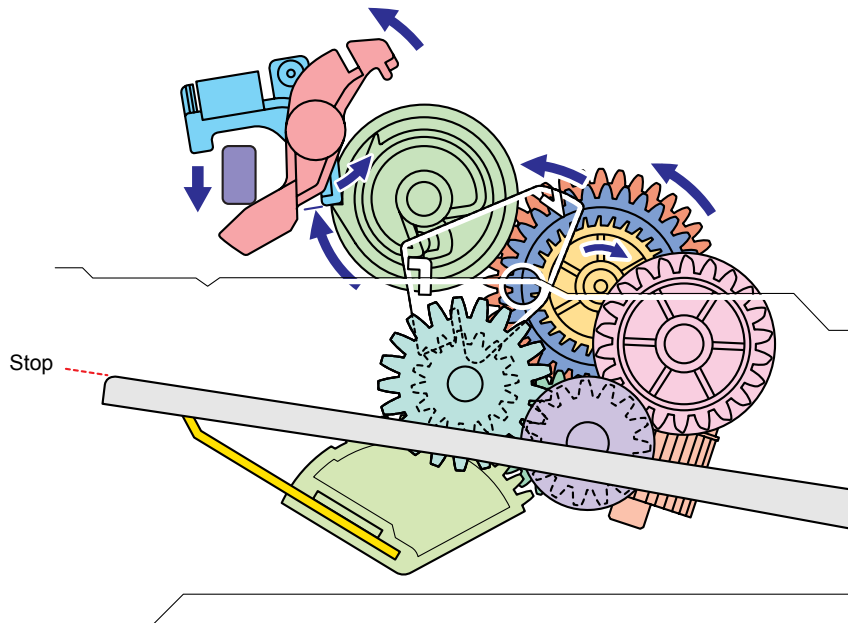


Fig. 2-14

When the tray is pulled out from the printer, the pressure plate is returned to the original position. When the tray is put into the printer, the above operation is performed from the start again.

3.3.2 Paper supply

The feed roller picks up a few sheets or one sheet of paper from the paper tray every time it is rotated and feeds it to the separation roller.

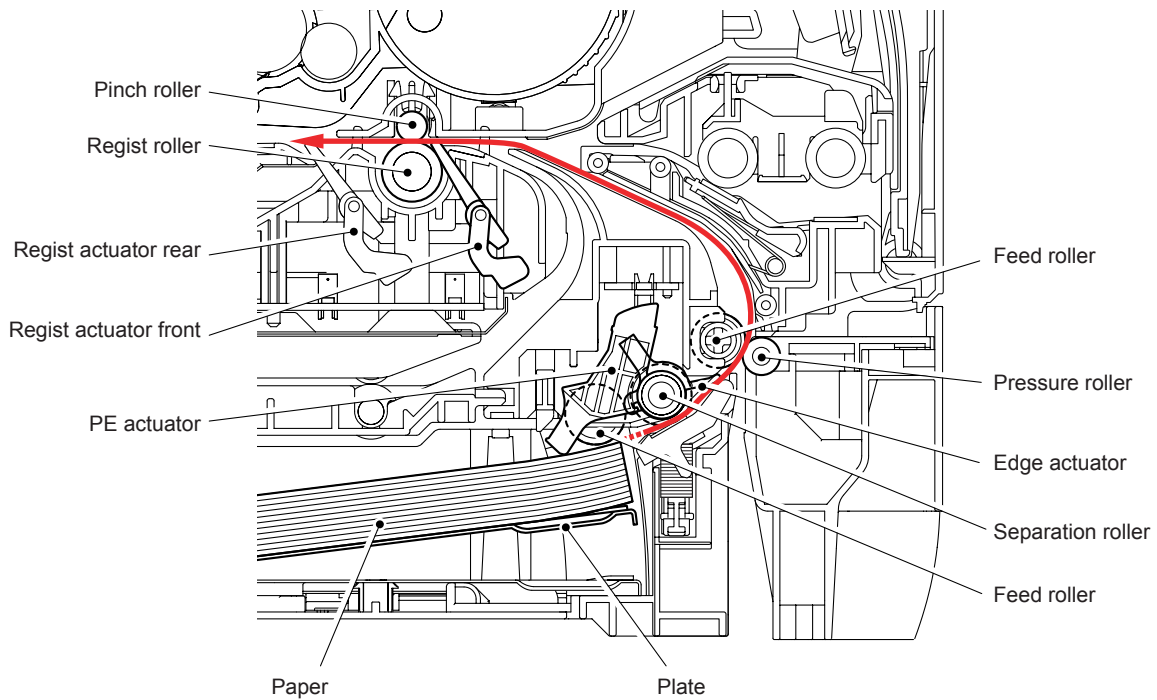


Fig. 2-15

The main motor drive power is transmitted to the gears, and the feed roller and separation roller are rotated. Then, the paper is gripped between the separation roller and separation pad and separated into individual sheets.

The paper drawn out of the paper tray pushes against the regist front actuator, and the absence of paper is detected by the actuator movement. The tail edge actuator detects the end of the paper fed.

3.3.3 Paper registration

After the paper top position is detected by the regist actuator front, the paper, separated into individual sheets by the separation roller, is fed further for a specified time, and the paper top position reaches the regist roller so that the paper skew is adjusted. Then, the regist solenoid is turned on, the regist roller starts turning, and the paper is fed to the transfer roller in the drum/toner ASSY.

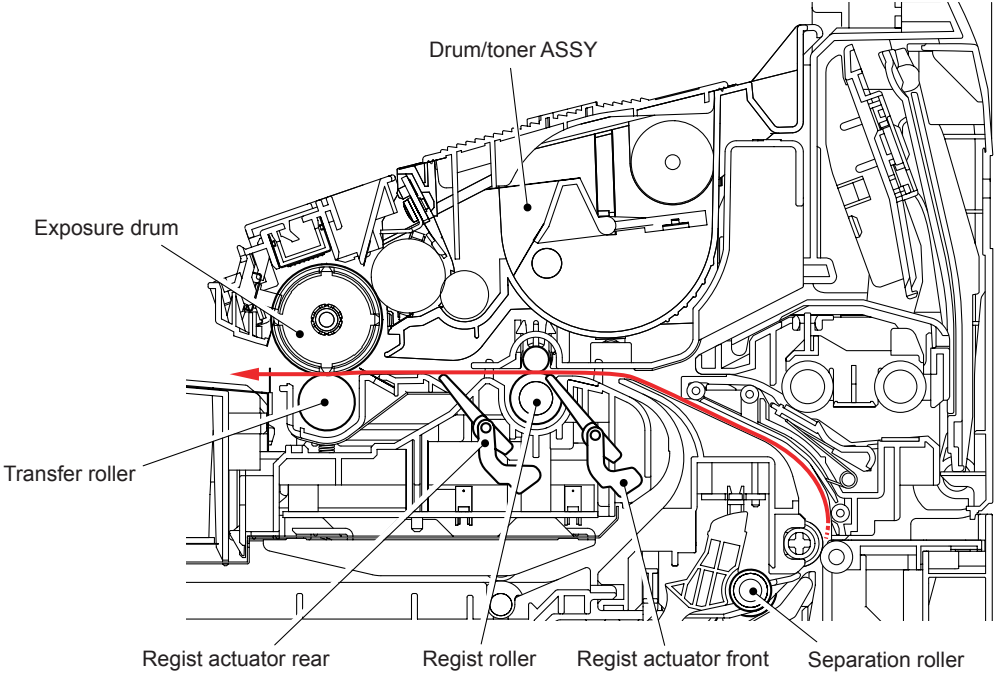


Fig. 2-16

The regist actuator rear in the path from the regist roller to the transfer roller controls the first print position on the paper. The printer starts transferring an image when a definite time passes after the paper is passed through the regist actuator rear.

3.3.4 Paper eject

After the printing image on the exposure drum is transferred onto the paper, the paper is fed to the fuser unit to fix unfixed toner onto the paper by the heat roller and the pressure roller in the fuser unit.

Afterwards, the paper is ejected from the fuser unit. The paper eject actuator detects whether the paper is ejected correctly or not.

After the paper exits from the heat roller, the paper is turned by the back cover and ejected face down into the top output tray through the eject roller.

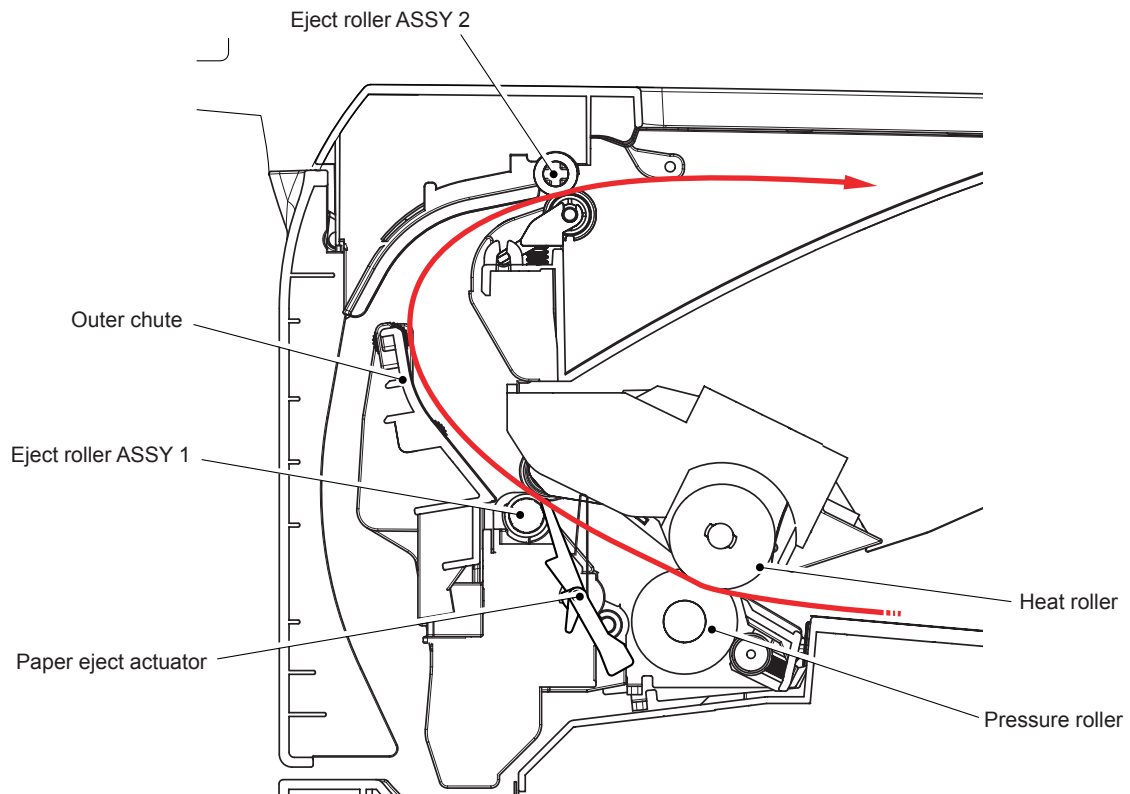


Fig. 2-17

When a paper jam occurs, the main motor rotates conversely to throw out the engagement of the gear. Consequently, the eject roller ASSY 2 is released so that the jammed recording paper is removed easily.

3.3.5 Duplex printing

After the paper exits from the eject roller ASSY with the front of sheet printed, the eject roller ASSY rotates conversely and feeds the paper to the DX unit, where the paper skew is adjusted.

Afterwards, the paper is ejected from the DX unit to the path through the regist roller and the transfer roller to the transfer block in the drum unit again for process of printing on the back of sheet.

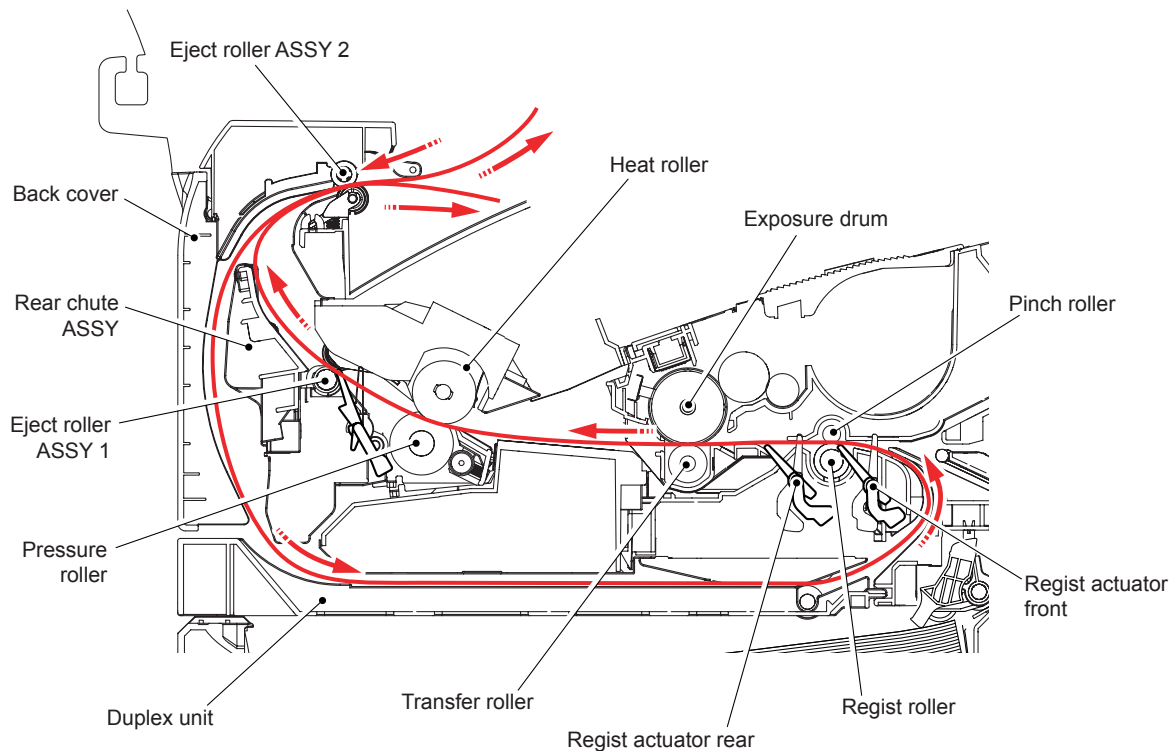


Fig. 2-18

Note :

- The duplex printing prints the 1st page after printing the 2nd page first. For example, when prints the four pages, prints in order to 2nd page to 1st page to 4th page to 3rd page.

3.3.6 Paper feeding from the MP tray

The separation roller MP is connected with the feed roller through the gear in the MP roller holder ASSY. When the separation roller is driven, therefore, the feed roller is also driven. At this time, the recording paper is drawn out of the MP tray by rotation of the paper feed roller MP contacted with the recording paper. The drawn recording paper is separated into individual sheets by the separation roller MP.

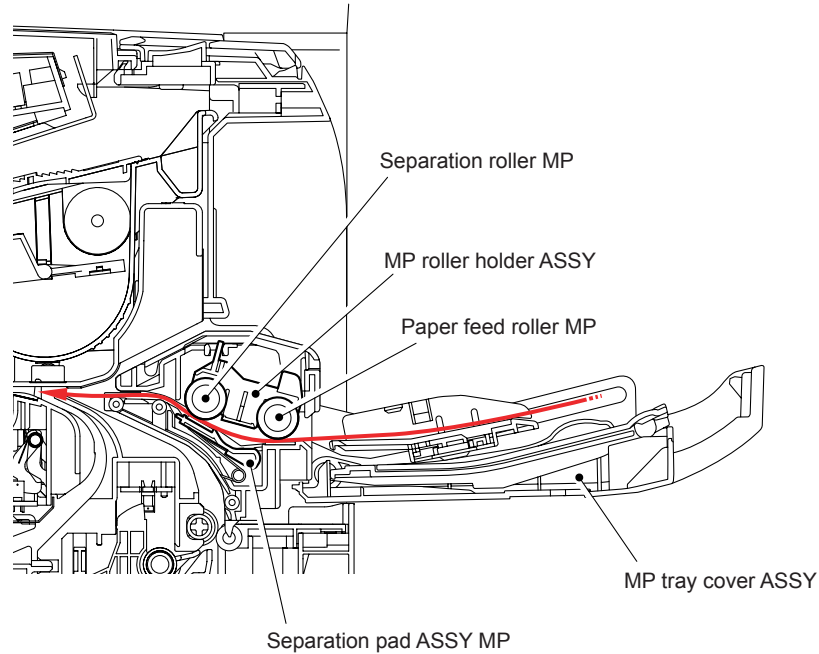


Fig. 2-19

3.3.7 Paper feeding from the LT tray (Tray2)

The motor drive is transmitted to the some gears to rotate the feed roller, then the recording paper is drawn out of the LT tray. The drawn recording paper is separated into individual sheet by the separation roller and the separation pad, and fed to the printer by the feed roller TR.

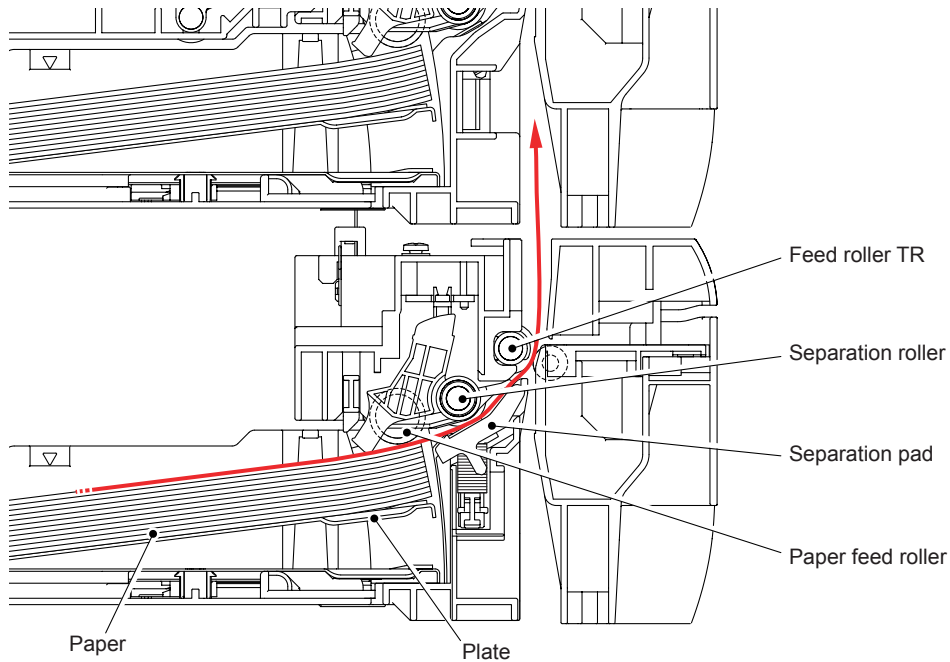


Fig. 2-20

3.4 Toner Cartridge

3.4.1 Methods for Detecting Toner Life

When the machine detects the toner life end, "**Replace Toner**" is displayed. The toner life is displayed through the following two ways. First, such indication is displayed when detection is performed by the toner sensor; second, it is displayed at the time when a rotation rate of the develop roller reaches its upper limit.

(1) Detection by the toner sensor

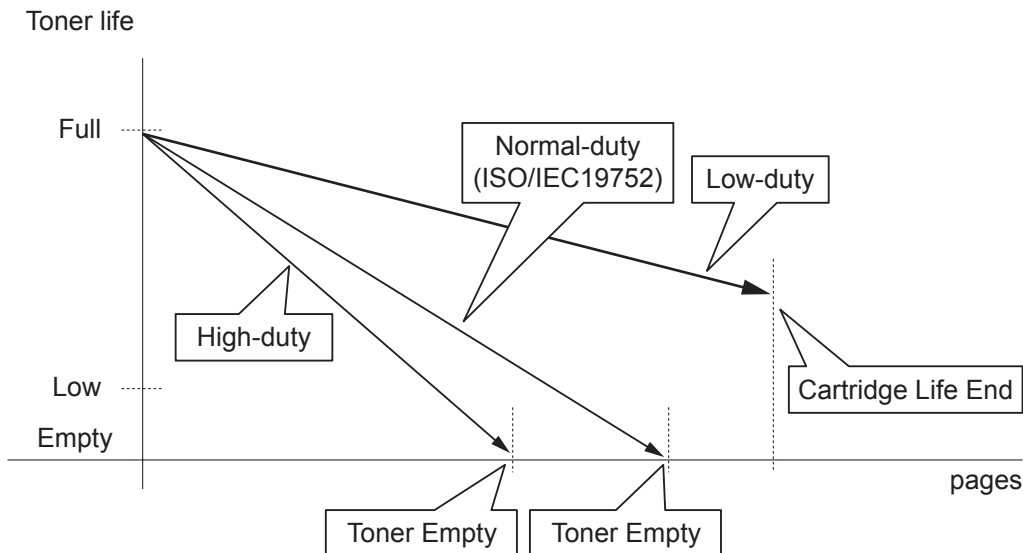
The low amount of toner remaining can be detected by checking the imperviousness to light of the toner in the cartridge by means of the transmissive photosensor.

(2) Detection by means of rotation rates of the develop roller reached its upper limit

The machine counts the accumulated number of the develop roller.

3.4.2 Cartridge life

A new toner cartridge can print approximately 3,000 (standard toner) or approximately 8,000 (high yield toner) A4 or Letter size single-sided pages at normal duty (ISO/IEC19752). In the case of low-duty printing, if the number of printed pages are reached the cartridge life, **"Replace Toner"** message appears on the LCD before the toner runs out because the developer roller surface or other toner sealing is worn out due to a rotation of the rollers.



Memo :

- If reached the cartridge life end, **"Replace Toner"** message appears even if the toner is contained.

<Cartridge Life>

As the deterioration of toner will be less in case of printing more pages continually once time than usual, the more printing pages per job, the more printable pages of toner cartridge.

Table: The relationship between the average printing pages per job and the toner cartridge life

Average printed pages (page/job)	1	2	3	4	5	6	7	8
Cartridge Life (Standard)	3,500	5,274	6,346	7,064	7,579	7,966	8,267	8,508
Cartridge Life (High Yield)	9,500	14,315	17,225	19,174	20,571	21,621	22,439	23,094

Increasing the number of times of power switch ON and warming operation in company with opening or closing cover will also cause the deterioration of toner, so the more frequency those operations be taken, the less pages the toner cartridge can print.

Table: The toner cartridge lives in case of pressing power switch Off/ON before printing.

Average printed pages (page/job)	1	2	3	4	5	6	7	8
Cartridge Life (Standard)	1,925	3,263	4,246	5,000	5,596	6,079	6,478	6,814
Cartridge Life (High Yield)	5,225	8,856	11,526	13,571	15,189	16,500	17,584	18,496

3.4.3 New toner detection

- (1) The main motor will drive gear (4) through the interconnection of other gears.
- (2) When gear (4) is rotated, rib A on that gear will push against the new toner actuator; the new toner sensor will detect the actuator motion, and the toner sensor detects that a new toner cartridge has been installed.
- (3) The standard toner cartridge has Rib A and Rib B on gear (4).
When the toner actuator is pushed twice, the two signals that are generated by the new toner sensor, tell the machine that a standard toner cartridge has been installed.
- (4) The high yield toner cartridge only has Rib A on gear (4).
When the toner actuator is pushed once, the signal that is generated by the new toner sensor, tell the machine that a high yield toner cartridge has been installed.

<Printer side view when a new toner cartridge is installed>

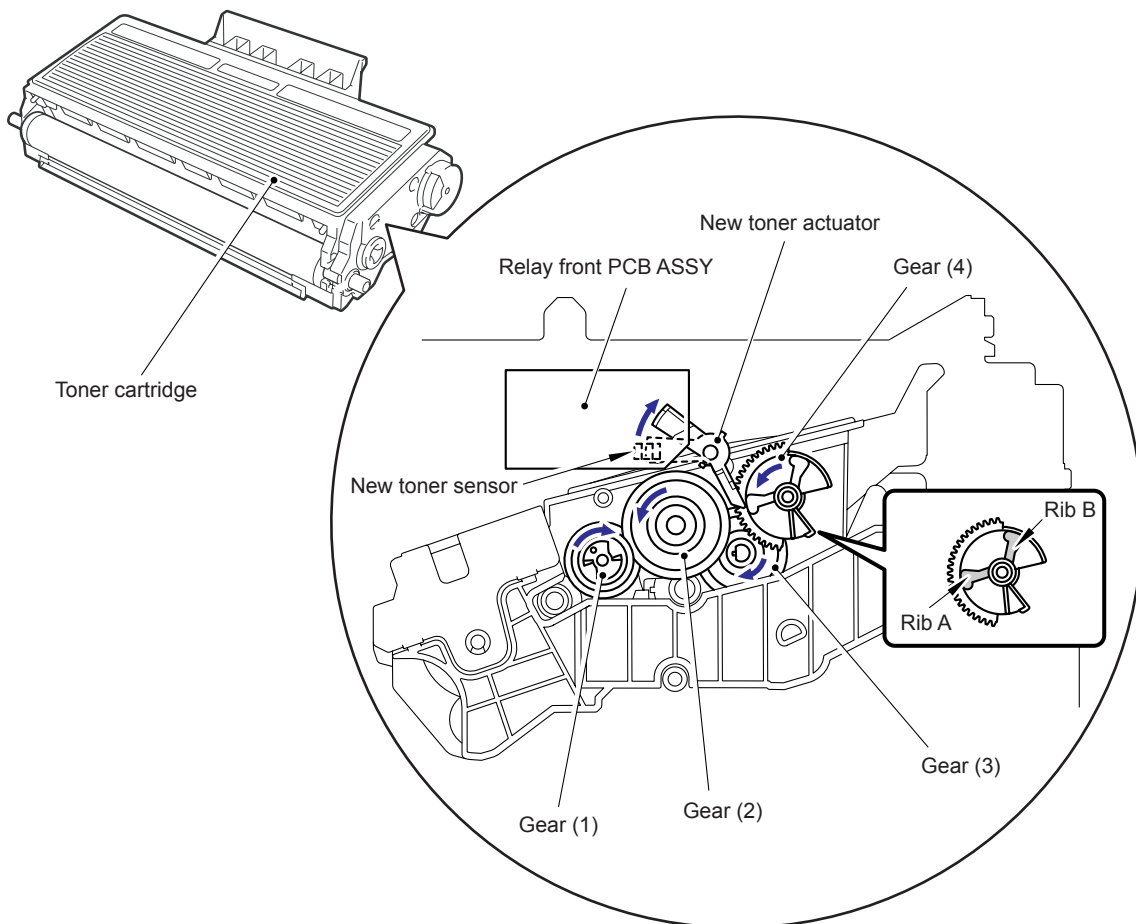
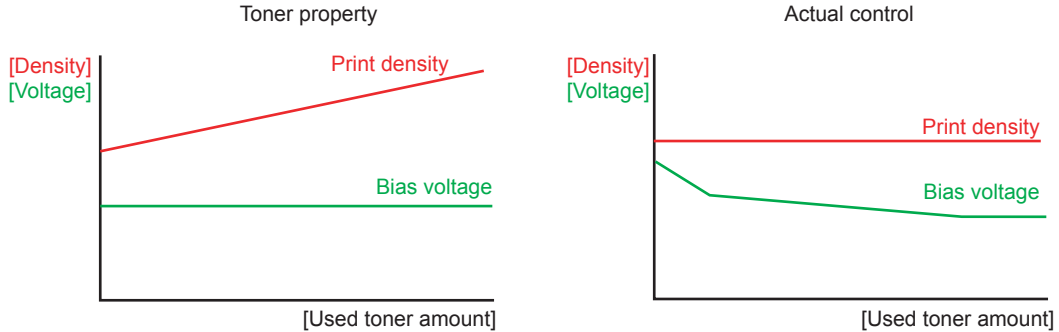


Fig. 2-21

When the new toner detection switch detects that the toner cartridge is replaced with a new one, the developing bias voltage is initialized at the same time.

The toner used for the printer has a property that print density is light first and gradually darker in the course of usage. The developing bias controls the toner property so that the print density is constant from first to last.



To obtain a print result of a constant density all the time, the printer counts the number of print pages immediately after the toner cartridge is replaced and changes the bias voltage according to the accumulated number of prints with the toner cartridge.

The bias voltage is changed with the steps described below:

- (1) When the new toner sensor detects that the toner cartridge is replaced with a new (full) one, the developing bias is set to 400V (initialized).
- (2) After that, the bias voltage is stepped down according to the number of prints. Ultimately, the bias voltage is 300V.

<When a new toner cartridge is inserted after "Replace Toner" is displayed>

Corresponding counter, Setting value	Operation
Counter of toner cartridge changes	+1
Page counter for each toner cartridge	Reset (0)
Coverage for each toner cartridge	Reset (0)
Developing bias voltage	Reset (Initial setting)

<When a toner cartridge in use is inserted after "Replace Toner" is displayed by toner sensor detection *1>

A count value before changes is continuously indicated as a rotation rate of the develop roller. Irrespective of the amount of toner, printing becomes disabled when the rotation rate reaches the upper limit.

Corresponding counter, Setting value	Operation
Counter of toner cartridge changes	No count up
Page counter for each toner cartridge	Continued
Coverage for each toner cartridge	Continued
Developing bias voltage	Reset (Initial setting)*2

*1 Excluding a toner cartridge in use in which there is a little toner remained.

*2 The developing bias voltage is reset to the initial setting once when a toner cartridge in use is inserted.

Note :

- The discrimination between new and secondhand toner cartridges refers to the new toner detection to be hereinafter described.

3.5 Print

3.5.1 Basic Principle

The printing process consists broadly of 5 processes: electrification, exposure, development, transfer and fusing.

- 1. Charging: The surface of an exposure drum is electrically charged.
- 2. Exposure: A printed image is formed on the surface of the drum by applying laser beam.
- 3. Development: Toner is adhered to the surface of the drum.
- 4. Transfer: The toner on the surface of the exposure drum is transferred to paper.
- 5. Fusing: The transferred toner is fused into place on the paper.

After these processes, the image is printed on the paper.

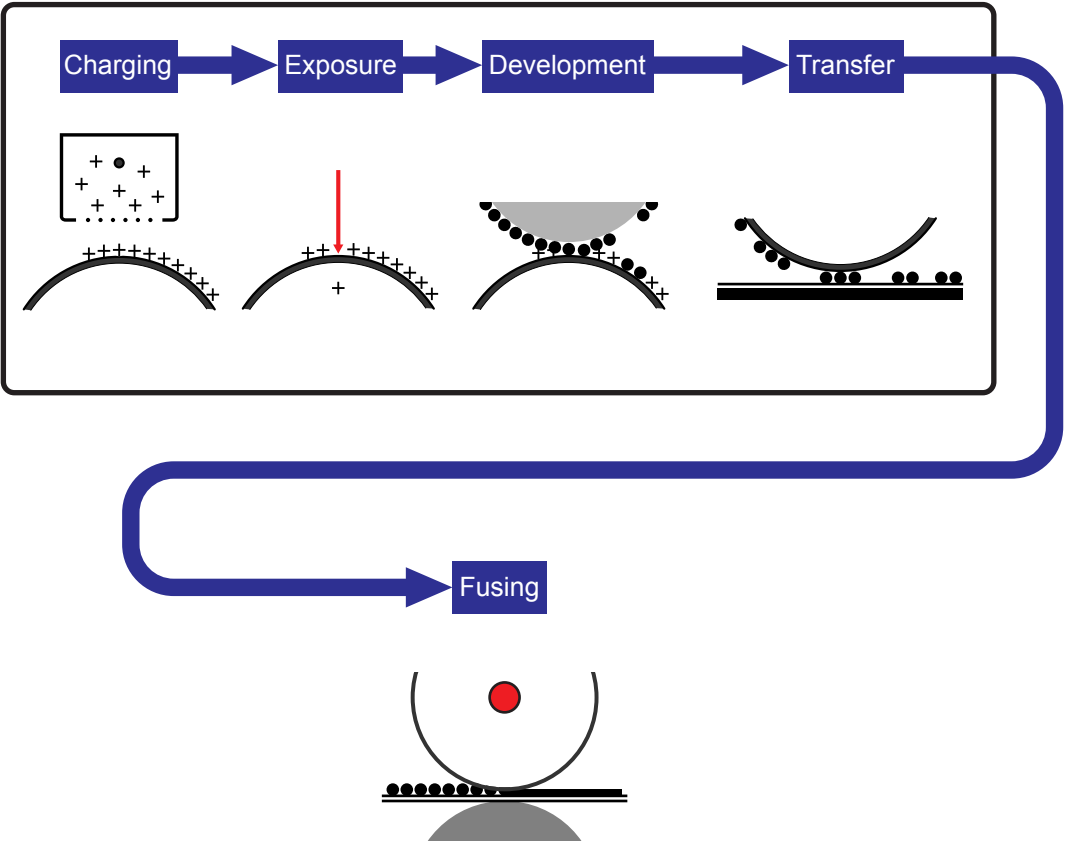


Fig. 2-22

3.5.2 Print Process

(1) Charging

The flow of the ion charge is controlled by constant voltage of the grid 850 V to ensure it is distributed evenly on the drum surface. In order to coat toner on the exposure drum, the drum needs to be evenly electrified. Ions are produced by supplying high-voltage power to the corona wire.

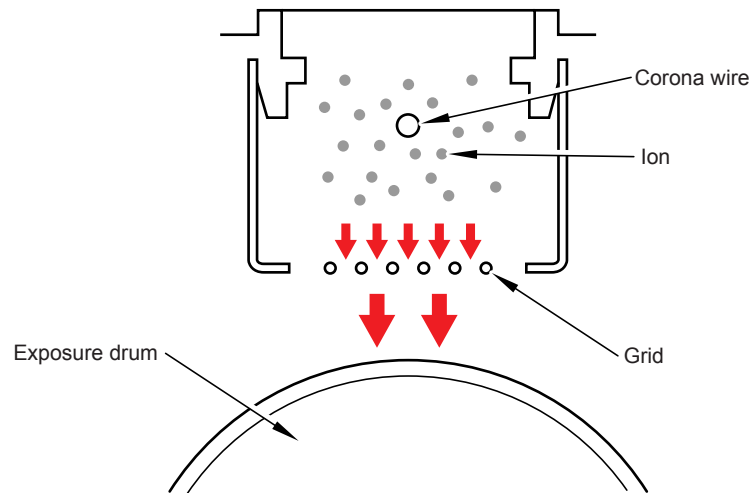


Fig. 2-23

Memo :

- The level of ozone expelled from the machine is less than 3.0 mg/h therefore not harmful to the human body. Applicable safety standards have been complied.

(2) Exposure

The laser beam radiated from a laser diode inside the laser unit is concentrated into a constant width by a slit in the CO lens cell and then reflected by a polygon mirror rotating at high speed. The evenly charged exposure drum is irradiated with reflected light and exposed. Surface potential is lowered by such exposure and a printed image is formed.

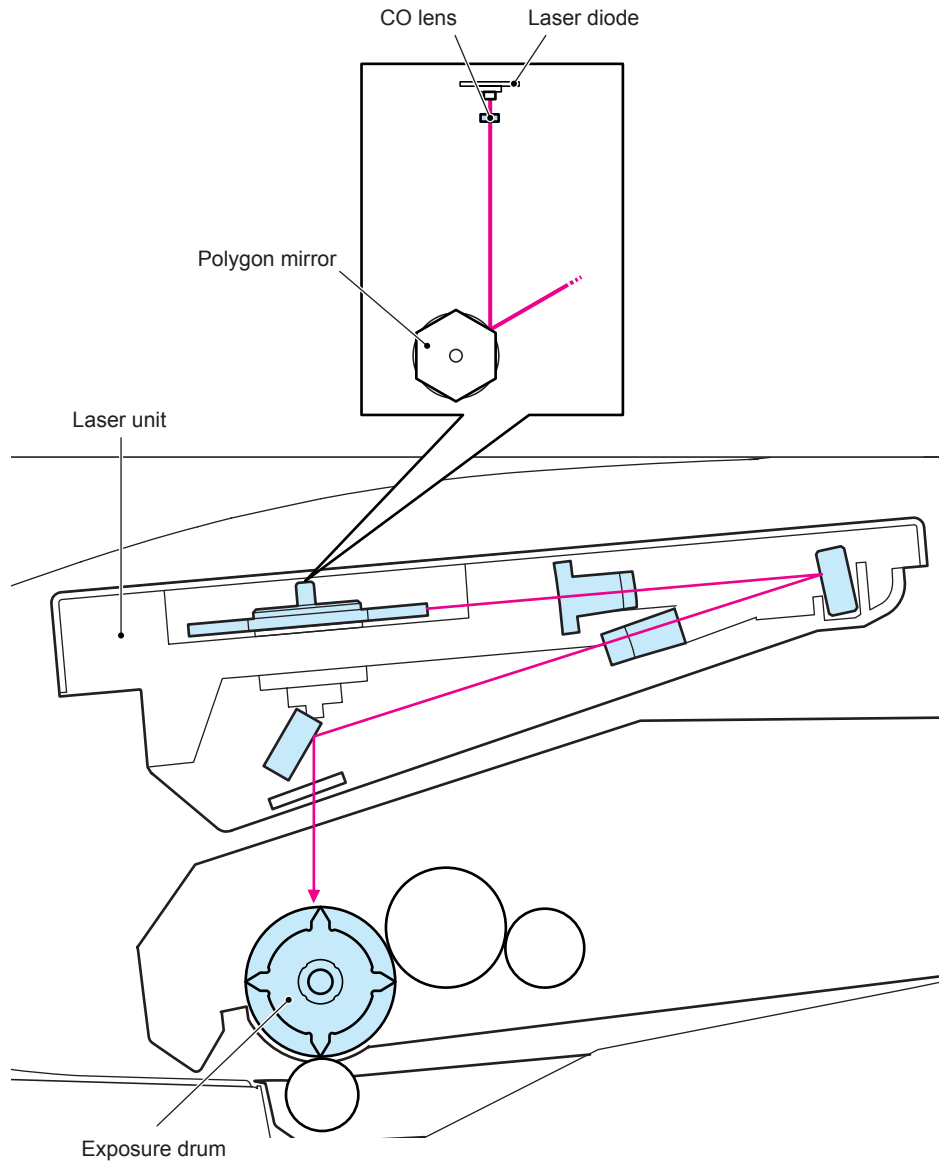


Fig. 2-24

(3) Development

Toner is attracted to a printed-image area on the exposure drum where surface potential is lowered due to exposure.

By controlling developing bias voltage supplied to the develop roller, the amount of toner taken to the drum is adjusted to keep printing density constant.

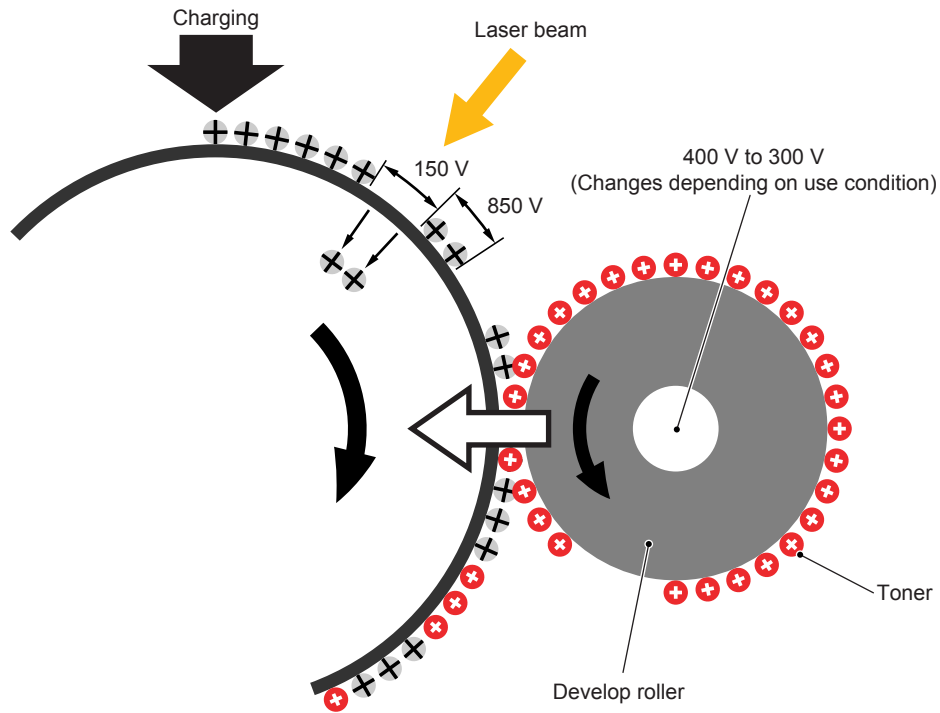


Fig. Ref. 2-25

<Flow up of toner to the development process>

Toner adheres to the charged develop roller. Such adhered toner is adjusted to an even thickness, and is attracted to an exposed area on the exposure drum.

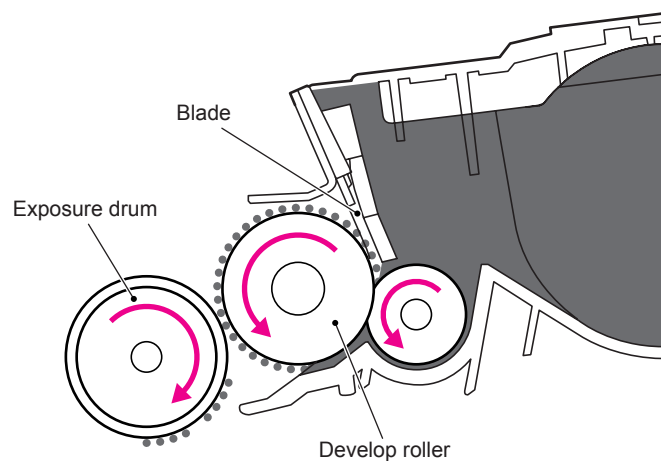


Fig. 2-26

(4) Transfer

By applying a minus charge to the transfer roller, the toner adhered to the exposure drum is transferred to paper.

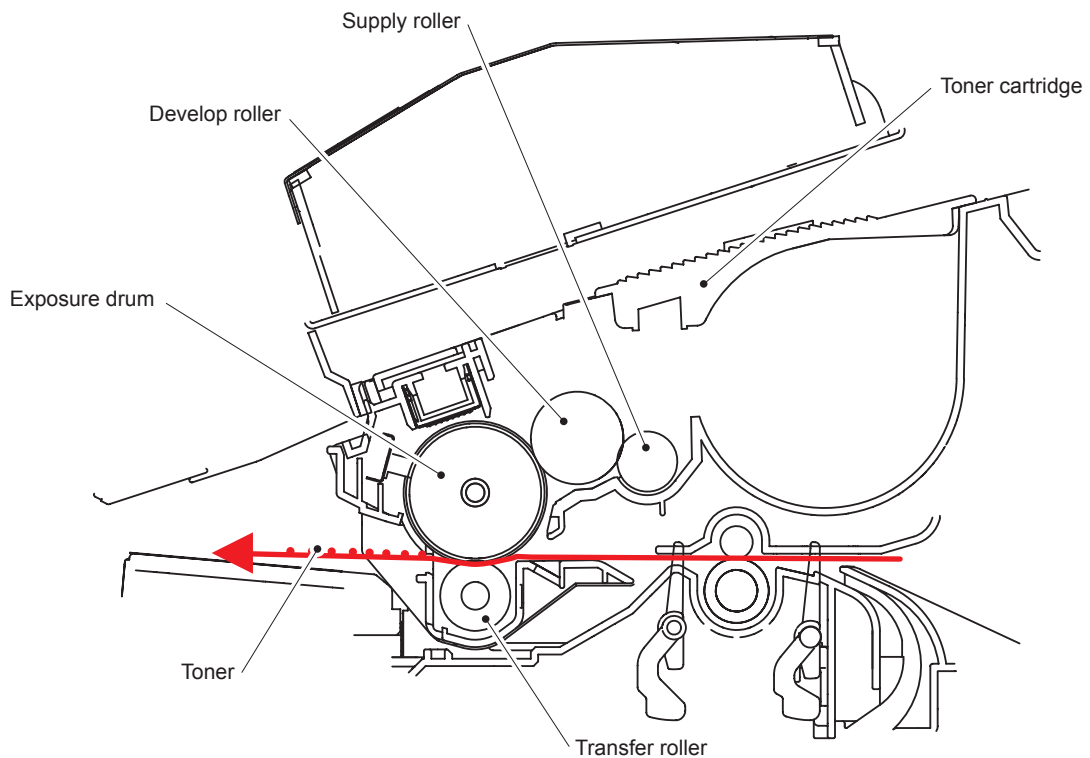


Fig. 2-27

Memo :

- Control of transfer bias

The transfer bias applied in the transfer roller is adjusted according to types and sizes of paper so as to keep excellent image quality.

(5) Fusing

The toner transferred on paper passes between the heat roller and the pressure roller in the fuser unit, being fused by heat and pressure. The thermistor detects surface temperature of the heat roller and turns ON/OFF the halogen heater lamp. The temperature is kept constant.

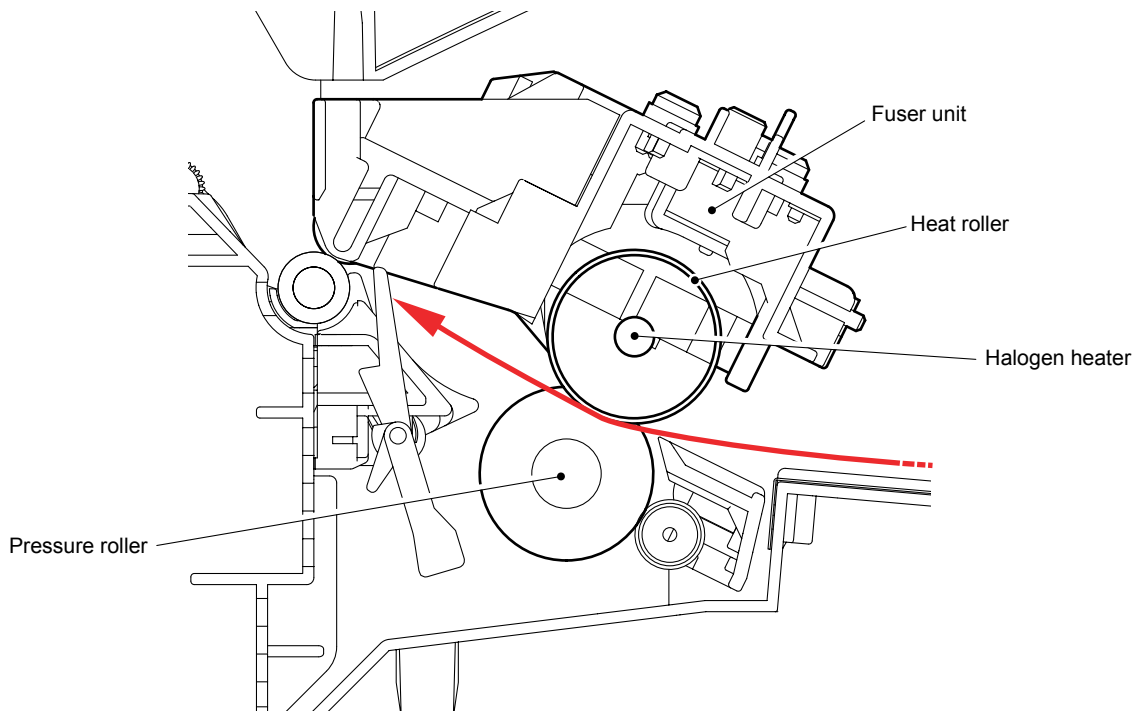


Fig. 2-28

Memo :

- Control of fusing temperature
The fuser unit adjusts such temperature according to types and sizes of paper so as to keep excellent image quality.

3.6 Sensors position

Sensor name	Type	Located on	Function
Regist front sensor	Photo sensor	High-voltage PS PCB	Detect the paper top position or absence of paper.
Regist rear sensor	Photo sensor	High-voltage PS PCB	Control the first print position on the paper.
Paper eject sensor	Photo sensor	Relay rear PCB	Detect whether the paper is ejected.
New toner sensor	Photo sensor	Relay front PCB	Detect whether a new toner cartridge is installed. Detect a new toner cartridge type.
Toner LED PCB (Light emission)	Photo sensor	Frame R	Detect whether the toner cartridge which contains enough toner.
Toner sensor PCB (Light reception)	Photo sensor	Frame L	
Front cover sensor	Mechanical switch	Frame L	Detect the opening and closing of the front cover.
PE sensor	Photo sensor	PE EG sensor ASSY	Detect the absence of the paper in each paper tray.
Edge sensor	Photo sensor	PE EG sensor ASSY	Detect the absence of each paper tray. Detect whether the paper is sent from the tray.
MP PE sensor	Photo sensor	MP PE sensor ASSY	Detect the absence of the paper in the MP tray.
DX tray sensor	Mechanical switch	Relay rear PCB	Detect the opening and closing of the back cover. Detect the absence of the DX unit.
Document front sensor 1	Photo sensor	ADF	Detect the absence of the paper in the ADF unit.
Document front sensor 2	Photo sensor	ADF	Detect whether the paper is drawn.
Document rear sensor	Photo sensor	ADF	Detect the length of the paper.
Switch back sensor	Photo sensor	ADF	When the duplex printing, detect the timing of reversing of the paper.
Document cover sensor	Photo sensor	ADF	Detect the opening and closing of the document cover.
HP sensor	Photo sensor	Scanner unit ASSY	Detect the home position of the CCD unit.

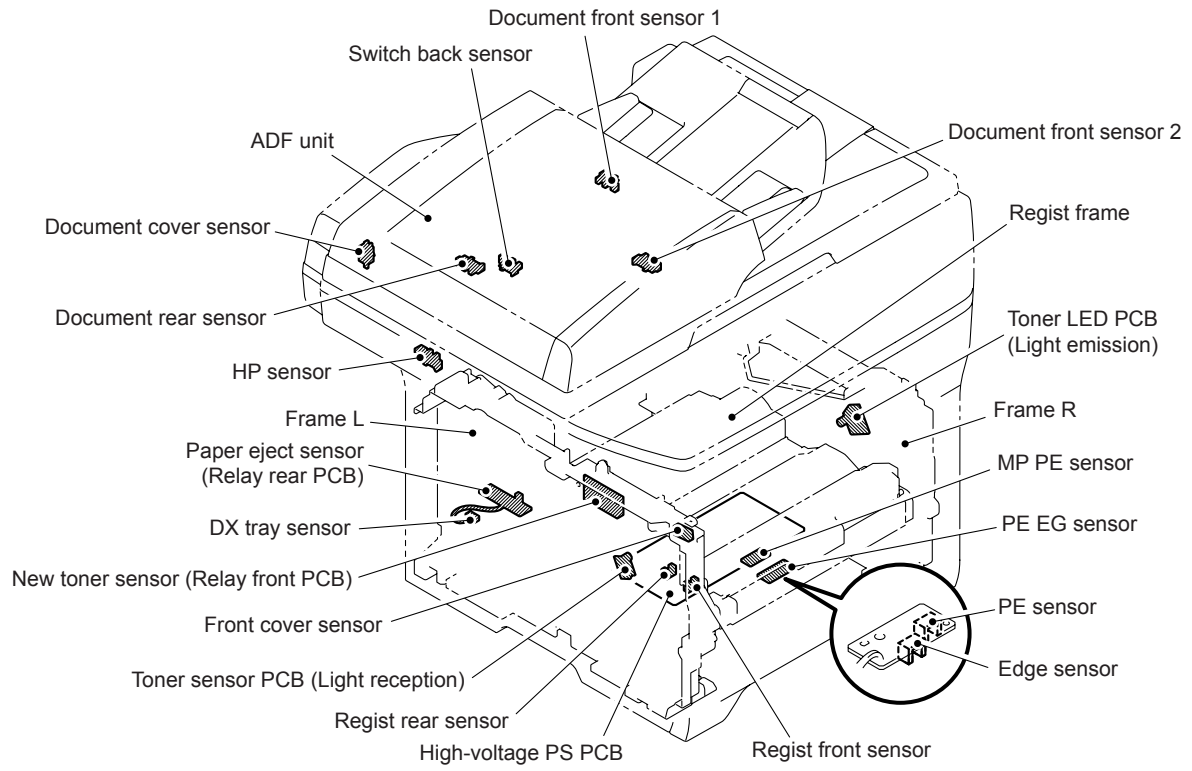


Fig. 2-29

CHAPTER 3

ERROR INDICATION AND TROUBLESHOOTING

CHAPTER 3 PERIODIC MAINTENANCE

This chapter details error messages and codes that the incorporated self-diagnostic functions display if any error or malfunction occurs. If any error message appears, refer to this chapter to find which components should be checked or replaced.

The latter half of this chapter provides sample problems that could occur in the main sections of the machine and related troubleshooting procedures. This will help service personnel pinpoint and repair defective components.

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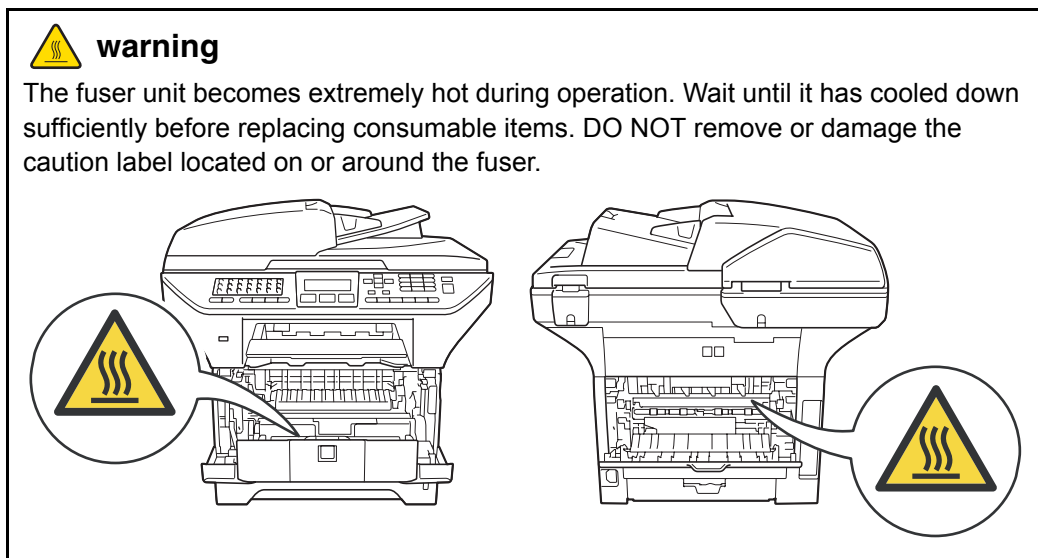
1. INTRODUCTION

Troubleshooting is the countermeasure procedures that the service personnel should follow if an error or malfunction occurs with the machine. It is impossible to anticipate all of the possible troubles which may occur in future and determine the troubleshooting procedures, so this chapter covers some sample troubles. However, those samples will help the service personnel pinpoint and repair other defective elements.

1.1 Precautions

Be sure to observe and follow all the precautions to prevent any secondary problems from happening during troubleshooting.

- (1) Always turn off the power and unplug the power cable before removing any covers or PCBs, adjusting the machine and so on. If you need to take voltage measurements with the power switched on, take the greatest of care not to receive an electric shock.
- (2) When connecting or disconnecting cable connectors, make sure that you hold the connector body and not the cables.
- (3) Electronic devices are sensitive to static build up; make sure that you touch a metal portion of the machine to discharge yourself before accessing the PCBs. Handle PCBs with care when repairing them.
- (4) Follow the warning by all means.



- (5) Verify again that the repaired portion works properly.

1.2 Part names

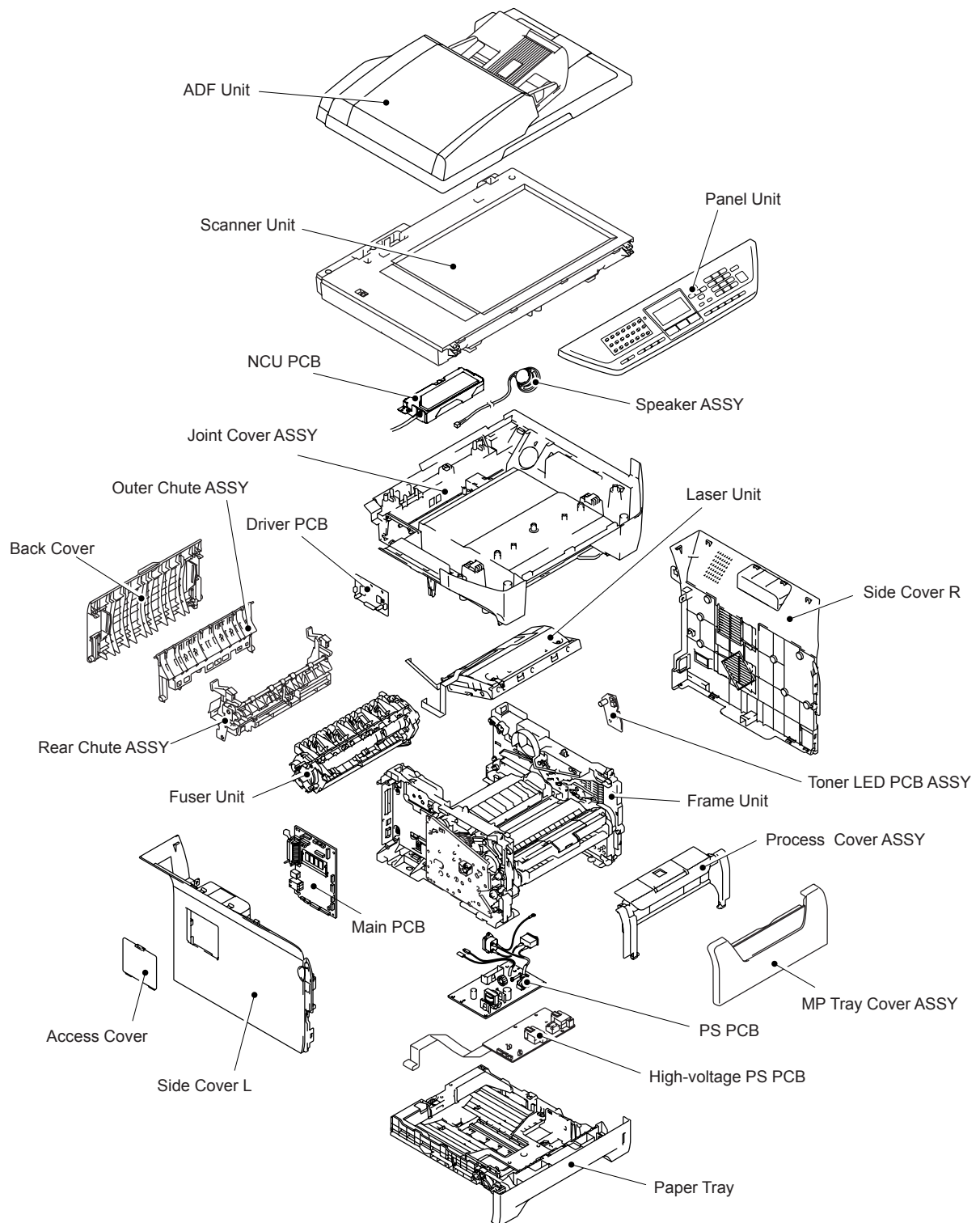


Fig. 3-1

1.3 Initial Check

Check the following items before attempting to repair the machine.

■ Operating Environment

- (1) Put your machine on a flat, stable surface such as a desk that is free of vibration and shocks.
- (2) Use the machine in a well-ventilated room; use the machine within the following ranges of temperature and humidity: temperature between 10°C and 32.5°C (50°F to 90.5°F), and the relative humidity is maintained between 20% and 80%.
- (3) The machine is not exposed to direct sunlight, excessive heat, moisture, or dust.

■ Power Supply

- (1) The AC input power supply described on the rating plate of the machine should be within $\pm 10\%$ of the rated voltage.
- (2) The AC input power supply is within the regulated value.
- (3) The cables and harnesses are connected correctly.
- (4) The fuses are not blown.

■ Paper

- (1) A recommended type of paper is being used.
(Refer to "2.6.2 Media specifications" in Chapter 1.)
- (2) The paper is not damp.
- (3) The paper is not short-grained paper or acid paper.

■ Consumable Parts

- (1) The drum unit (including the toner cartridge) is installed correctly.

■ Others

- (1) Condensation

When the machine is moved from a cold place into a warm room, condensation may occur inside the machine, causing various problems as listed below.


- Condensation on the optical surfaces such as the scanner window, lenses, the reflection mirror and the protection glass may cause the print image to be light.
- If the exposure drum is cold, the electrical resistance of the photosensitive layer is increased, making it impossible to obtain the correct contrast when printing.
- Condensation on the charge unit may cause corona charge leakage.
- Condensation on the plate and separation pad may cause paper feed failures.

If condensation has occurred, leave the machine for at least 2 hours to allow it to reach room temperature.




If the drum unit is unpacked soon after it is moved from a cold place to a warm room, condensation may occur inside the unit which may cause incorrect images. Instruct the end user to allow the unit to come to room temperature before unpacking it. This will take one or two hours.

(2) Cleaning

Use a soft dry cloth.

 **warning**

DO NOT use flammable substances such as alcohol, benzine, thinner or any type of spray to clean the inside or outside of the machine. Doing this may cause a fire or electrical shock.

2. DISTINGUISH ERROR CAUSE

2.1 ERROR INDICATION

To help the user or the service personnel promptly locate the cause of a problem (if any), the facsimile equipment incorporates the self-diagnostic functions which display error messages for equipment errors and communications errors.

For the communications errors, the equipment also prints out the transmission verification report and the communications list.

2.1.1 Error messages appearing on the LCD

Error Message	Type of Error	Action	Refer to
Access Error	The device is removed from the USB direct interface while the data is processing.	Press Stop/Exit . Reinsert the device and try to print with Direct Print.	—
Cartridge Error	The toner cartridge is not installed properly.	Pull out the drum unit, take out the toner cartridge that is indicated on the LCD, and put it back into the drum unit again.	3-34
Replace Parts Drum	The drum unit is the end of its life.	Replace the drum unit.	3-14
	The drum unit counter was not reset when a new drum was installed.	1) Open the front cover, and then press Clear/Back . 2) Press 1 to reset.	
Replace Parts Fuser Unit	It is time to replace the fuser unit.	Replace the fuser unit.	3-15
Replace Parts Laser Unit	It is time to replace the laser unit.	Replace the laser unit.	3-15
Replace Parts PF Kit MP	It is time to replace the paper feeding kit for the MP tray.	Replace the PF Kit MP.	3-14
Replace Parts PF Kit 1	It is time to replace the paper feeding kit for Tray 1.	Replace the PF Kit 1.	3-15
Replace Parts PF Kit 2	It is time to replace the paper feeding kit for Tray 2.	Replace the PF Kit 2.	3-15
Comm.Error	Poor telephone line quality caused a communication error.	Send the fax again or connect the machine to another telephone line.	3-62
Connection Fail	You tried to poll a fax machine that is not in Polled Waiting mode.	Send the fax again.	—

Error Message	Type of Error	Action	Refer to
Cooling Down Wait for a while	The temperature of the drum unit or toner cartridge is too hot. The machine will pause its current print job and go into cooling down mode. During the cooling down mode, you will hear the cooling fan running while the LCD shows Cooling Down, and Wait for a while.	Make sure that you can hear the fan in the machine spinning and that the exhaust outlet is not blocked by something. If the fan is spinning, remove any obstacles that surround the exhaust outlet, and then leave the machine turned on but do not use it for several minutes.	3-20
Cover is Open	The front cover is not closed completely.	Close the front cover of the machine.	3-28
Cover is Open	The fuser cover is not closed completely or paper was jammed in the back of the machine when you turned on the power.	Close the fuser cover of the machine. Make sure paper is not jammed inside the back of the machine, and then close the fuser cover and press Start .	3-16
Disconnected	The other person or other person's fax machine stopped the call.	Try to send or receive again.	3-69
Document Jam	The document was not inserted or fed properly, or the document scanned from the ADF was too long.	Remove the jammed paper from the ADF.	3-29
DR Mode in Use	The machine is set to Distinctive Ring mode. You cannot change the Receive Mode from Manual to another mode.	Set Distinctive Ring to Off.	—
Drum Error	The corona wire on the drum unit needs to be cleaned.	Clean the corona wire on the drum unit.	3-21 3-23
	The drum unit has reached the end of its life.	Replace the drum unit.	
Duplex Disabled	The duplex tray is not installed properly.	Remove the duplex tray and install it again.	3-16
Fuser Error	The temperature of fuser unit does not rise at a specified temperature within specified time.	Do one of the following: Turn the power switch off, wait a few seconds, and then turn it on again. Leave the machine for 15 minutes with the power on.	3-17 3-19 3-20 3-21 3-37
	The fuser unit is too hot.		
Init Unable XX	The machine has a mechanical problem.	Perform processing with the error code.	—
Jam Duplex	The paper is jammed in the duplex tray.	Remove the jammed paper from the duplex tray.	3-16
Jam Rear	The paper is jammed in the back of the machine.	Remove the jammed paper from the back of the machine.	3-24
Jam Inside	The paper is jammed inside the machine.	Remove the jammed paper from the inside of the machine.	3-25

Error Message	Type of Error	Action	Refer to
Jam MP Tray	The paper is jammed in the MP tray of the machine.	Remove the jammed paper from the MP tray.	3-26
Jam Tray 1 Jam Tray 2	The paper is jammed in the paper tray of the machine.	Remove the jammed paper from the tray 1 or 2.	3-26
No Paper	The machine is out of paper or paper is not properly loaded in the paper tray.	Do one of the following: Refill the paper in the paper tray or MP tray. Remove the paper and load it again.	3-28
No Response/ Busy	The number you dialed does not answer or is busy.	Verify the number and try again.	3-69 3-70
No Toner	The toner cartridge or the drum unit and toner cartridge assembly is not installed properly.	Re-install the toner cartridge or the drum unit and toner cartridge assembly.	3-14
No Tray	The paper tray is not completely closed.	Close the paper tray properly.	3-24
Not Registered	You tried to access a One Touch or Speed Dial number that is not programmed.	Set up the One Touch or Speed Dial number.	3-70
Out of Memory	The machine's memory is full.	Fax sending or copy operation in progress Do one of the following: Press Start to send or copy the scanned pages. Press Stop/Exit and wait until the other operations in progress finish, and then try again. Clear the data from the memory. Print operation in process Do one of the following: Reduce print resolution. Clear the faxes from the memory.	3-26
Print Unable XX	The machine has a mechanical problem.	Perform processing with the error code.	3-12 3-13 3-18 3-19 3-20 3-21 3-36 3-37 3-38
Protected Device	The protect switch of the USB Flash memory drive is on.	Turn off the protect switch of the USB Flash memory drive.	3-35
Rename the File	There is already a file on the USB Flash memory drive with the same name as the file you are trying to save.	Change the file name of the file on the USB Flash memory drive or the file you are trying to save.	—

Error Message	Type of Error	Action	Refer to
Replace Toner	The toner cartridge is used up and printing is not possible.	Replace the toner cartridge with a new one.	3-17
Scan Unable XX	The machine has a mechanical problem.	Perform processing with the error code.	—
	Document is too long for duplex scanning.	Press Stop/Exit . Use the suitable size of paper for duplex scanning.	
Scanner Locked	The scanner lock is locked.	Open the document cover, and then release the scanner lock lever. Press Stop/Exit .	3-31
Size mismatch	The paper in the tray is not the correct size.	Load the correct size of paper in the tray and set the "Paper Size".	3-23
Toner Low	If the LCD shows Toner Low, you can still print; however, the machine is telling you that the toner cartridge is near the end of its life.	Order a new toner cartridge now.	3-17
Too Many Files	There are too many files stored on the USB Flash memory drive.	Reduce the number of files stored on the USB Flash memory drive.	—
Too Many Trays	More than one optional tray is installed.	The maximum number of optional trays is one. Remove any additional trays.	—
Unusable Device	An incompatible or broken device has been connected to the USB direct interface.	Remove the USB Flash memory drive from the USB direct interface.	3-35 3-39

3. ERROR CODES

This machine includes a self-diagnosis function. If the machine does not work normally it judges that an error has occurred, and indicates the corresponding error message on the LCD, which in turn helps the end user to quickly find out the problem.

3.1 Error Indication

Error codes	Problem	Refer to:	Error codes	Problem	Refer to:
1E	Replacement time of the drum unit	3-12	59	Fuser unit failure (Detect fuser failure at start-up)	3-17
1F	Two or more optional trays are installed	3-12	63	Replace toner or Toner life end	3-17
24	Internal temperature sensor failure	3-12	67	Toner low	3-17
35	EEPROM of main PCB failure	3-13	68	Temperature rise when heater is off	3-18
36	HVPS PCB during standby failure	3-13	69	Mis-connect center thermistor connector	3-18
3B	Main PCB RAM failure	3-13	6A	Fuser temperature does not detect 60°C within the specified time (center thermistor)	3-19
3C	EEPROM writing error (Not applicable)	3-13	6B	Fuser temperature does not detect 100°C within the specified time (center thermistor)	3-19
3D	EEPROM reading error (Not applicable)	3-13	6C	Detect higher temperature error (center thermistor)	3-19
3E	EEPROM bus error (Not applicable)	3-13	6D	Detect lower temperature error (center thermistor)	3-19
44	No toner cartridge	3-14	6E	Detect non temperature rising error (center thermistor)	3-19
50	Replacement time of the drum unit	3-14	6F	Hardware detects extremely high temperature of the center or side thermistors	3-19
51	Replacement time of the paper feed kit MP	3-14	70	Fuser motor error	3-20
52	Replacement time of the paper feed kit T1	3-15	71	Laser unit polygon mirror failure	3-20
53	Replacement time of the paper feed kit T2	3-15	72	Laser beam emission failure	3-20
54	Replacement time of the fuser unit	3-15	75	Sensor of the inside temperature for detection detected higher than constant temperature	3-20
55	Replacement time of the laser unit	3-15	76	Rapid temperature rising failure (center thermistor)	3-21
56	Back cover opened	3-16	78	Rapid temperature falling failure (center thermistor)	3-21
57	Paper jam (Duplex tray)	3-16	7A	No detection of main motor synchronous signal	3-21
58	Fuser unit failure	3-17	7D	Dirt on charged wire (detect discharge error)	3-21

Error codes	Problem	Refer to:	Error codes	Problem	Refer to:
7F	Fax paper setting mismatch (The setting paper becomes besides the A4/Letter/Legal/Folio) (Not applicable)	3-23	A8	Scanning color parameter matching miss	3-30
80	Fax paper size is incorrect (The paper is smaller 10mm than the letter size (11inch) in Fax List/Report)	3-23	AD	DMA transfer error	3-31
83	Discharge detection error (Unable to print after the discharge detection error until Drum Unit is replaced.) (Discharge detection error occurs when the machine detects the drum discharge with Drum life reaches more than twice the standard Drum Life.)	3-23	AE	CCD unit home position sensor is not turned on.	3-31
84	Paper jam	3-24	AF	CCD unit home position sensor is not turned off.	3-31
85	Tray 1 is not installed into the machine	3-24	B0	Scanning FFC detection error	3-32
86	Tray 2 is not installed into the machine	3-24	B1	Dark level offset data level error for scanning	3-32
88	Paper jam inside the machine	3-25	B2	Gain control data level error for scanning	3-32
89	Incorrect paper size in duplex printing	3-25	B7	A/D converter standard voltage failure; at High side	3-32
8A	Paper jam in Tray 1	3-26	B8	A/D converter standard voltage failure; at Low side	3-32
8B	Paper jam in Tray 2	3-26	B9	Scanning light adjustment error is detected	3-33
8C	Paper jam in MP Tray	3-26	BB	White level data error	3-33
8D	Paper jam near eject tray	3-27	BD	Black level data error	3-33
99	Specified paper size is not supported for duplex printing (DX)	3-27	BF	ADF duplex scanning cannot be implemented due to too long document	3-33
9D	Not used		C0	New toner detection lever failure	3-34
9F	Paper empty	3-28	C7	Run out of memory for data expansion of PC printer	3-34
A1	Front cover opened	3-28	C8	Secure print data full	3-34
A2	During scanning, 90 cm or longer of a document is detected	3-29	C9	DIMM error	3-35
A3	Document rear sensor is not turned on when feeding the document	3-29	CA	Excess current to USB device	3-35
A4	ADF cover opened (Not applicable)	3-29	CD	Drum unit is not installed into the machine	3-35
A5	Fax scanning error (Warning)	3-30	D1	Modem initialization failed	3-36
A6	Fax scanning error (Error)	3-30	DD	Fuser error other than 58, 59, 68, 69, 6A, 6B, 6C, 6D, 6E, 6F, 76, 78, DE and E2 are occurred	3-36
A7	Scanning color parameter file failure	3-30	DE	Central temperature of heat roller detected the temperature that was lower than edge (60°C)	3-36

Error codes	Problem	Refer to:	Error codes	Problem	Refer to:
E0	Program error	3-36	ED	Wireless LAN connection failure	3-38
E1	Program error		EE	Wireless LAN is unable to communicate	3-38
E2	Central temperature of heat roller detected more than 280°C	3-37	EF	LVPS PCB failure	3-38
E6	EEPROM error	3-37	F8	Battery connection error	3-38
EB	E2PROM data laser unit error	3-37	F9	Maintenance mode 74 Non-decision	3-39
EC	Fuser fan performance failure	3-37	FF	Excess current to WLAN PCB error	3-39

3.2 Error Code Cause and Remedy

These errors are recoverable by following the message indicated on the LCD or following the items indicated in User Check.

■ Error code 1E

Drum End Soon

Replacement time of the drum unit.

User Check

- Replace the drum unit with a new one.

■ Error code 1F

Too Many Trays

Two or more optional trays are installed.

User Check

- Install one optional tray.

Step	Cause	Remedy
1	Connector: 54702-1219 failure	Replace the connector: 54702-1219.
2	Main PCB failure	Replace the main PCB ASSY.

■ Error code 24

Print Unable 24
Turn the power off and then back on again.

Internal temperature sensor failure

Step	Cause	Remedy
1	Harness connection failure of internal temperature sensor	Check the harness connection of the internal temperature sensor and reconnect it.
2	Internal temperature sensor failure	Replace the internal temperature sensor.
3	Main PCB failure	Replace the main PCB ASSY.

■ **Error code 35**

Print Unable 35
Turn the power off and then back on again.

EEPROM of main PCB failure

Step	Cause	Remedy
1	Main PCB failure	Replace the main PCB ASSY.

■ **Error code 36**

Print Unable 36
Turn the power off and then back on again.

HVPS PCB during standby failure

Step	Cause	Remedy
1	Main PCB failure	Replace the main PCB ASSY.

■ **Error code 3B**

Print Unable 3B
Turn the power off and then back on again.

Main PCB RAM failure

Step	Cause	Remedy
1	Main PCB failure	Replace the main PCB ASSY.

■ **Error code 3C**

Print Unable 3C
Turn the power off and then back on again.

EEPROM writing error (Not applicable)

Error code 3D

Print Unable 3D
Turn the power off and then back on again.

EEPROM reading error (Not applicable)

Error code 3E

Print Unable 3E
Turn the power off and then back on again.

EEPROM bus error (Not applicable)

Step	Cause	Remedy
1	Main PCB failure	Replace the main PCB ASSY.

■ **Error code 44**

No Toner
Open the Top Cover, then install Toner Cartridge.

No toner cartridge

User Check

- Install a new toner cartridge.

Step	Cause	Remedy
1	Dirt on electrodes on toner cartridge and machine body	Clean both electrodes. (Refer to Fig. 3-2, Fig. 3-3)
2	HVPS PCB unit failure	Replace the HVPS PCB unit.
3	Main PCB failure	Replace the main PCB ASSY.

■ **Error code 50**

Replace Parts
Drum

Replacement time of the drum unit

User Check

- Replace the drum unit with a new one.

■ **Error code 51**

Replace Parts
PF Kit MP

Replacement time of the paper feed kit MP

User Check

- Replace the paper feed kit MP with a new one.

Step	Cause	Remedy
1	Replacement time of the paper feed kit MP	Replace the paper feed kit MP.

■ **Error code 52**

Replace Parts PF Kit 1

Replacement time of the paper feed kit T1

User Check

- Replace the paper feed kit T1 with a new one.

Step	Cause	Remedy
1	Replacement time of the paper feed kit T1	Replace the paper feed kit T1.

■ **Error code 53**

Replace Parts PF Kit 2

Replacement time of the paper feed kit T2

User Check

- Replace the paper feed kit T2 with a new one.

Step	Cause	Remedy
1	Replacement time of the paper feed kit T2	Replace the paper feed kit T2.

■ **Error code 54**

Replace Parts Fuser Unit

Replacement time of the fuser unit

User Check

- Replace the fuser unit with a new one.

Step	Cause	Remedy
1	Replacement time of the fuser unit	Replace the fuser unit.

■ **Error code 55**

Replace Parts Laser Unit

Replacement time of the laser unit

Step	Cause	Remedy
1	Replacement time of the laser unit	Replace the laser unit.

■ **Error code 56**

Cover is Open
Close the Fuser Cover which can be found behind the Back Cover up the machine.

Back cover opened

User Check

- Close the back cover.
- Install the DX unit.

Step	Cause	Remedy
1	Harness connection failure of relay rear PCB ASSY.	Check the harness connection of the relay rear PCB ASSY and reconnect it.
2	Relay rear PCB ASSY failure	Replace the relay rear PCB ASSY.
3	Main PCB failure	Replace the main PCB ASSY.

■ **Error code 57**

Jam Duplex
Pull out the Duplex Tray at the back of the machine and remove the jammed paper.

Paper jam (Duplex tray)

Step	Cause	Remedy
1	DX feed ASSY failure	Replace the X feed ASSY.
2	Main PCB failure	Replace the main PCB ASSY.
3	Plate gear damaged	Replace the main frame L unit.

■ **Error code 58**

Fuser Error
Turn the power off, then on again. Leave the machine for 15 min.

Fuser unit failure

■ **Error code 59**

Self-Diagnostic
Will Automatically Restart within 15 minutes.

Fuser unit failure (Detect fuser failure at start-up)

User Check

- Turn off the power switch, and turn on the power switch again 15 minutes later.

❗ This operation will melt the fuser unit if the heater is hot.
Leave the machine for 15 minutes and perform it after cooling down sufficiently.

Step	Cause	Remedy
1	Fuser unit failure	Replace the fuser unit.
2	Main PCB failure	Replace the main PCB ASSY.

■ **Error code 63**

Replace Toner
Open the Top Cover, replace Toner Cartridge.

Replace toner or Toner life end

User Check

- Replace the toner cartridge with a new one.

Step	Cause	Remedy
1	Toner sensor PCB ASSY failure	Replace the toner sensor PCB ASSY.
2	Relay front PCB ASSY failure	Replace the relay front PCB ASSY.
3	Main PCB failure	Replace the main PCB ASSY.

■ **Error code 67**

Toner Low

Toner of the toner cartridge is low

User Check

- Prepare the toner cartridge with a new one.

■ **Error code 68**

Print Unable 68 Turn the power off and then back on again.

Temperature rise when heater is off

Step	Cause	Remedy
1	Fuser unit failure	Replace the fuser unit
2	Main PCB failure	Replace the main PCB ASSY.

■ **Error code 69**

Print Unable 69 Turn the power off and then back on again.

Mis-connect center thermistor connector

Step	Cause	Remedy
1	Harness connection failure of fuser unit.	Check the harness connection of fuser unit and reconnect it.
2	Harness connection failure of relay rear PCB ASSY.	Check the harness connection of the relay rear PCB ASSY and reconnect it.
3	Fuser unit failure	Replace the fuser unit
4	Main PCB failure	Replace the main PCB ASSY.

■ **Error code 6A**

Print Unable 6A
Turn the power off and then back on again.

Fuser temperature does not detect 60°C within the specified time (center thermistor)

Error code 6B

Print Unable 6B
Turn the power off and then back on again.

Fuser temperature does not detect 100°C within the specified time (center thermistor)

Error code 6C

Print Unable 6C
Turn the power off and then back on again.

Detect higher temperature error (center thermistor)

Error code 6D

Print Unable 6D
Turn the power off and then back on again.

Detect lower temperature error (center thermistor)

Error code 6E

Print Unable 6E
Turn the power off and then back on again.

Detect non temperature rising error (center thermistor)

Error code 6F

Print Unable 6F
Turn the power off and then back on again.

Hardware detects extremely high temperature of the center or side thermistors

Step	Cause	Remedy
1	Fuser unit failure	Replace the fuser unit.
2	Main PCB failure	Replace the main PCB ASSY.

■ **Error code 70**

Print Unable 70
Turn the power off and then back on again.

Fuser motor error

Step	Cause	Remedy
1	Motor failure	Replace the main motor.
2	Main PCB failure	Replace the main PCB ASSY.

■ **Error code 71**

Print Unable 71
Turn the power off and then back on again.

Laser unit polygon mirror failure

Error code 72

Print Unable 72
Turn the power off and then back on again.

Laser beam emission failure

Step	Cause	Remedy
1	Laser scanner unit failure	Replace the laser scanner unit.
2	Main PCB failure	Replace the main PCB ASSY.

■ **Error code 75**

Cooling Down
Wait for a while

Sensor of the inside temperature for detection detected higher than constant temperature

User Check

- Lower the inside temperature.

Step	Cause	Remedy
1	Thermistor ASSY failure	Replace the laser scanner unit.
2	Main PCB failure	Replace the main PCB ASSY.

■ Error code 76

Print Unable 76
Turn the power off and then back on again.

Rapid temperature rising failure (center thermistor)

Error code 78

Print Unable 78
Turn the power off and then back on again.

Rapid temperature falling failure (center thermistor)

Step	Cause	Remedy
1	Fuser unit failure	Replace the fuser unit.
2	Main PCB failure	Replace the main PCB ASSY.

■ Error code 7A

Print Unable 7A
See Troubleshooting and routine maintenance chapter in User's Guide.

No detection of main motor synchronous signal

Step	Cause	Remedy
1	Motor failure	Replace the main motor.
2	Main PCB failure	Replace the main PCB ASSY.

■ Error code 7D

Drum Error
Open the Front Cover and slide the blue tab across the Drum Unit several times.

Dirt on charged wire (detect discharge error)

User Check

- Clean the corona wire in the drum unit.
- Replace the drum unit with a new one.

Step	Cause	Remedy
1	Dirt or dust on drum unit electrodes	Clean the electrodes of the main body and the drum unit. (Refer to Fig. 3-2)
2	Charge HVPS PCB failure	Replace the charge HVPS PCB ASSY.
3	Main PCB failure	Replace the main PCB ASSY.

■ **Electrodes location of the toner/drum unit**

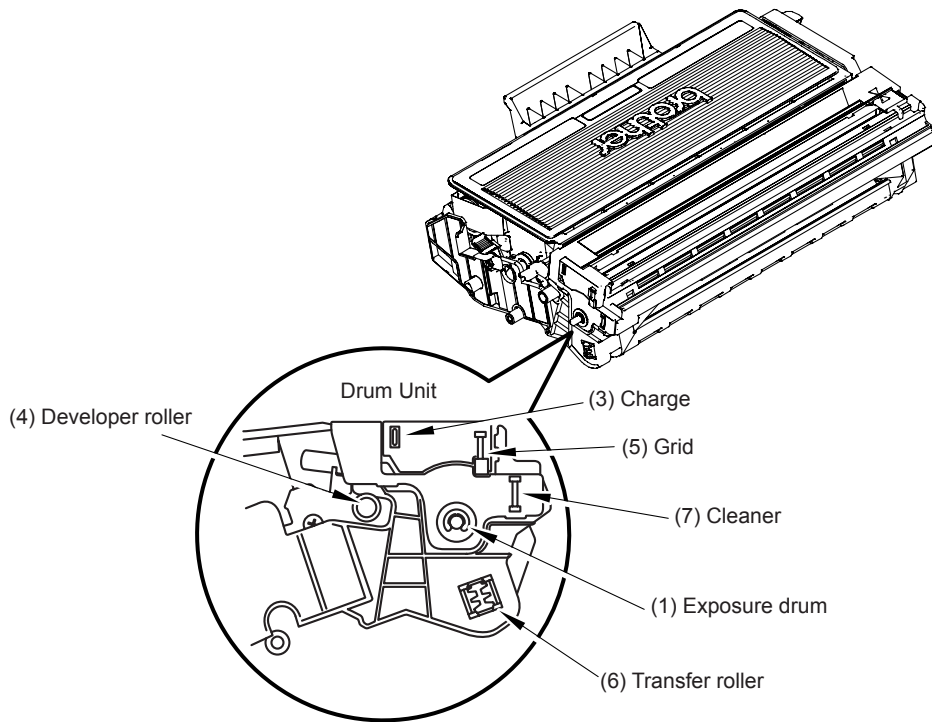


Fig. 3-2

■ **Electrodes location of the machine**

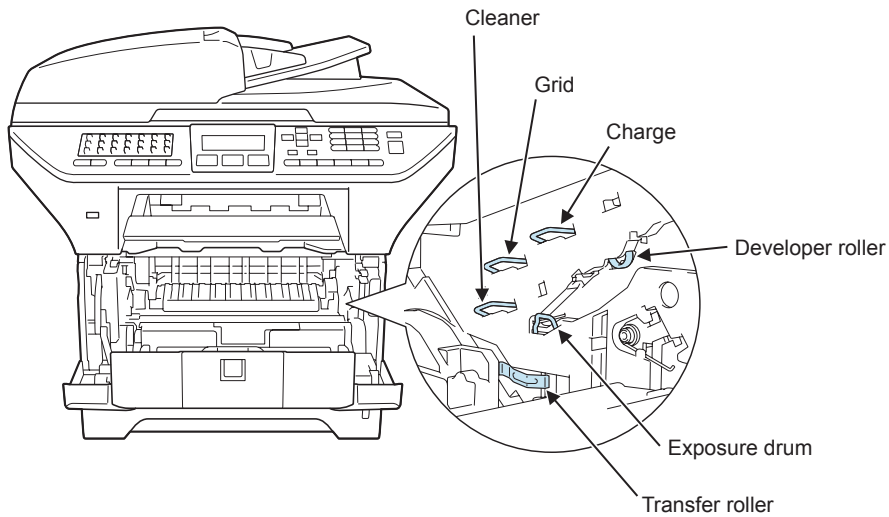


Fig. 3-3

<How to clean the electrodes>

Turn off the power switch. Unplug the machine from the AC power outlet, and leave the machine for a few minutes. Then, wipe the electrodes above carefully with a dry lint-free cloth. Be careful not to change the shapes of the electrodes.

■ **Error code 7F**

Size mismatch
 Fax received. Set correct paper size in menu.

Fax paper setting mismatch (The setting paper becomes besides the A4/Letter/Legal/Folio)
 (Not applicable)

Error code 80

Size mismatch
 Reload correct paper.

Fax paper size is incorrect
 (The paper is smaller 10mm than the letter size (11inch) in Fax List/Report)

User Check

- Set the defined size paper.

Step	Cause	Remedy
1	Registration front actuator catching on some position	Correct catching of the registration front actuator.
2	Main PCB failure	Replace the main PCB ASSY.

■ **Error code 83**

Drum Error
 Open the Front Cover, replace the Drum Unit. Refer to the User's Guide for instructions.

Discharge detection error
 (Unable to print after the discharge detection error until Drum Unit is replaced.)

User Check

- Replace the drum unit.
- * The double counter value of the life is raised after the occurrence of the error 50 (Replacement time of the drum unit). Then the discharge is produced by the dirt of the corona wire, and the error 83 appears by detecting the dirt of the electrification current of the HVPS PCB.
 When the error 83 is appeared, the performance of the drum unit cannot be maintained. Stop use of the drum so that the printing quality deteriorates.

Step	Cause	Remedy
1	Main PCB failure	Replace the main PCB ASSY.

■ Error code 84

Jam Rear
Open the Back Cover and remove the jammed paper, then press Start.

Paper jam

User Check

- Check if the paper is jammed around the opened back cover. If jammed, remove it.

Step	Cause	Remedy
1	Harness connection failure of relay rear PCB ASSY.	Check the harness connection of the relay rear PCB ASSY and reconnect it.
2	Eject actuator catching on some position	Correct catching of the eject actuator.
3	Paper eject sensor PCB failure	Check the sensor performance following the procedure described in "Maintenance mode 32". If any problem occurs, replace the relay rear PCB ASSY.
4	Main PCB failure	Replace the main PCB ASSY.

■ Error code 85

No Tray
A Tray is not detected, install Tray 1.

Tray 1 is not installed into the machine

■ Error code 86

No Tray
A Tray is not detected, install Tray 2.

Tray 2 is not installed into the machine

User Check

- Check if the applicable tray is installed into the machine.
- Check if the paper is jammed in the applicable tray.

Step	Cause	Remedy
1	T1 PE/edge sensor PCB/ T2 PE/edge sensor PCB failure	Check the sensor performance following the procedure described in "Maintenance mode 32". If any problem occurs, replace the T1 PE/edge sensor PCB failure/T2 PE/edge sensor PCB.
2	Harness connection failure of T1 PE/edge sensor PCB/ T2 PE/edge sensor PCB.	Check the harness connection of the T1 PE/edge sensor PCB/T2 PE/edge sensor PCB. and reconnect it.
3	Main PCB failure	Replace the main PCB ASSY.
4	Connector 55533-1219 failure (only Tray 2)	Replace the connector 55533-1219.

■ **Error code 88**

Jam Inside
 Open the Front Cover, pull out the Drum Unit completely and remove the jammed paper.

Paper jam inside the machine

User Check

- Check if the paper is jammed around the removed drum unit. If jammed, remove it.

Step	Cause	Remedy
1	Harness connection failure of registration rear sensor PCB ASSY.	Check the harness connection of the registration rear sensor PCB ASSY and reconnect it.
2	Registration rear actuator catching on some position	Correct catching of the registration rear actuator.
3	Registration rear sensor failure	Check the sensor performance following the procedure described in "Maintenance mode 32". If any problem occurs, replace the registration rear sensor.
4	Main PCB failure	Replace the main PCB ASSY.

■ **Error code 89**

Check Paper size
 Reload correct paper.

Incorrect paper size in duplex printing

User Check

- Use the A4 size or letter size paper.

Step	Cause	Remedy
1	Registration rear sensor failure	Check the sensor performance following the procedure described in "Maintenance mode 32". If any problem occurs, replace the registration rear sensor.
2	Main PCB failure	Replace the main PCB ASSY.

■ **Error code 8A**

Jam Tray 1
Remove the jammed paper from Tray 1.

Paper jam (Tray 1)

Error code 8B

Jam Tray 2
Remove the jammed paper from Tray 2.

Paper jam (Tray 2)

Error code 8C

Jam MP Tray
Remove the jammed paper from Multi Purpose Tray and press Start.

Paper jam (MP tray)

User Check

- Check if the paper is jammed in the appropriate tray. If jammed, remove it.
- Adjust the paper guide corresponding to the paper size.
- Check if too much paper is loaded in the tray.

Step	Cause	Remedy
1	Dirt on edge sensor	Clean the edge sensor.
2	Harness connection failure of registration front sensor PCB ASSY	Check the harness connection of the registration front sensor PCB ASSY in the appropriate tray, and reconnect it.
3	Paper feeding kit worn out (MP/ T1/ T2)	Replace the paper feeding kit of the appropriate tray.
4	Registration front sensor PCB failure (MP/ T1/T2)	(MP/ T1) Check the sensor performance following the procedure described in "Maintenance mode 32". If any problem occurs, replace the front door unit ASSY.
		procedure described in "Maintenance mode 32". If any problem occurs, replace the LT paper feed frame unit.
5	Main PCB failure	Replace the main PCB ASSY.

■ Error code 8D

Cover is Open
Make sure there is no paper jammed inside the machine and close the Back Cover, then press Start.

Paper jam near eject tray

User Check

- Check if the paper is jammed in the back cover. If jammed, remove it.

Step	Cause	Remedy
1	DX sensor failure	Check the sensor performance following the procedure described in "Maintenance mode 32". If any problem occurs, replace the relay rear PCB ASSY.
2	Main PCB failure	Replace the main PCB ASSY.

■ Error code 99

Size mismatch DX
Press Job Cancel. Specify the correct paper and load the same size paper as the Printer driver setting.

Specified paper size is not supported for duplex printing (DX)

User Check

- Remove the jammed paper, and use the A4 size or letter size paper, and load the same size paper as the printer driver setting.

Step	Cause	Remedy
1	Main PCB failure	Replace the main PCB ASSY.

■ **Error code 9F**

No Paper
 Reload paper, then press Start.

Paper empty

User Check

- Replenish the paper in the paper tray.

Step	Cause	Remedy
1	Dirt on PE sensor	Clean the PE sensor.
2	Harness connection failure of PE EG sensor PCB ASSY.	Check the harness connection of the PE EG sensor PCB ASSY and reconnect it.
3	PE actuator catching on some position	Correct catching of the PE actuator.
4	PE sensor failure	Check the sensor performance following the procedure described in "Maintenance mode 32". If any problem occurs, replace the PE PG sensor PCB ASSY.
5	HVPS PCB unit failure	Replace the HVPS PCB unit.
6	Main PCB failure	Replace the main PCB ASSY.

■ **Error code A1**

Cover is Open
 Close the Front Cover.

Front cover open

User Check

- Close the front cover perfectly.

Step	Cause	Remedy
1	Front cover interlock switch failure	Check the sensor performance following the procedure described in "Maintenance mode 32". If any problem occurs, replace the front cover interlock switch ASSY.
2	Harness connection failure of front cover interlock switch ASSY	Check the harness connection of the front cover interlock switch ASSY and reconnect it.
3	Part pressing the front cover interlock switch is broken, which is provided at the left side of the front cover inside.	Replace the front door main or front door unit ASSY.
4	Relay front PCB failure	Replace the relay front PCB ASSY.
5	Main PCB failure	Replace the main PCB ASSY.

■ Error code A2

Document Jam
Clear the scanner jam, then press the Stop Key.

During scanning, 90 cm or longer of a document is detected

User Check

- Check if the document is jammed in the ADF. If it is jammed, remove it.

Step	Cause	Remedy
1	Document rear actuator catching on some position.	Correct catching of the document rear actuator.
2	Document rear sensor failure	Replace the document rear sensor.
3	Main PCB failure	Replace the main PCB ASSY.

■ Error code A3

Document Jam
Clear the scanner jam, then press the Stop Key.

Document rear sensor is not turned on when feeding the document

User Check

- Check if the document is jammed in the ADF. If it is jammed, remove it.

Step	Cause	Remedy
1	Document rear actuator catching on some position.	Correct catching of the document rear actuator.
2	Document rear sensor failure.	Replace the document rear sensor.
3	Main PCB failure	Replace the main PCB ASSY.

■ Error code A4

ADF Cover is Open

ADF cover opened (Not applicable)

■ **Error code A5**

Scan Unable A5
Remove the original document. Turn the power off, then on again.

Fax scanning error (Warning: Scanning unit malfunction of first time)

Step	Cause	Remedy
1	Scanning failure	Turn the power switch off and on. Then, try scanning again.

■ **Error code A6**

Scan Unable A6
See Troubleshooting and routine maintenance chapter in User's Guide.

Fax scanning error (Error: Scanning unit malfunction after second times)

Step	Cause	Remedy
1	Scanning unit failure	Replace the FB unit.
2	Main PCB failure	Replace the main PCB ASSY.

■ **Error code A7**

Scan Unable A7
See Troubleshooting and routine maintenance chapter in User's Guide.

Scanning color parameter file failure

Error code A8

Scan Unable A8
See Troubleshooting and routine maintenance chapter in User's Guide.

Scanning color parameter matching malfunction when recording the image processing

Step	Cause	Remedy
1	Main PCB failure	Replace the main PCB ASSY.
2	CCD unit failure	Replace the CCD unit.

■ **Error code AD**

Scan Unable AD
Remove the original document. Turn the power off, then on again.

DMA transfer error

Step	Cause	Remedy
1	Main PCB failure	Replace the main PCB ASSY.
2	CCD unit failure	Replace the CCD unit.

■ **Error code AE**

Scan Unable AE
See Troubleshooting and routine maintenance chapter in User's Guide.

CCD unit home position sensor is not turned on.

User Check

- Check that the scanner lock lever is unlocked.

Step	Cause	Remedy
1	Drive PCB failure	Replace the drive PCB.
2	Belt broken	Replace the belt.
3	Home position sensor failure	Replace the home position sensor.
4	Tab of CCD unit broken	Replace the CCD unit.
5	Scanner motor failure	Replace the scanner motor.
6	Main PCB failure	Replace the main PCB ASSY.

■ **Error code AF**

Scanner Locked
Open the Document Cover and release Scanner lock lever. Press Stop key.

CCD unit home position sensor is not turned off.

User Check

- Check that the scanner lock lever is unlocked.

Step	Cause	Remedy
1	Drive PCB failure	Replace the drive PCB.
2	Belt broken	Replace the belt.
3	Home position sensor failure	Replace the home position sensor.
4	Scanner motor failure	Replace the scanner motor.
5	Main PCB failure	Replace the main PCB ASSY.

■ **Error code B0**

Scanner Error

Scanning FFC connection malfunction

* This error is indicated on the LCD in the maintenance mode.

Step	Cause	Remedy
1	Harness for CCD unit not connected correctly.	Reconnect the harness for the CCD unit correctly.
2	Scanner harness broken	Replace the FFC cable ASSY.
3	Main PCB failure	Replace the main PCB ASSY.

■ **Error code B1**

Scanner Error

Dark level offset data level error for scanning

* This error is indicated on the LCD in the maintenance mode.

Error code B2

Scanner Error

Gain control data level error for scanning

* This error is indicated on the LCD in the maintenance mode.

Error code B7

Scanner Error

A/D converter standard voltage failure; at High side

* This error is indicated on the LCD in the maintenance mode.

Error code B8

Scanner Error

A/D converter standard voltage failure; at Low side

* This error is indicated on the LCD in the maintenance mode.

Step	Cause	Remedy
1	CCD unit failure	Replace the CCD unit.
2	Main PCB failure	Replace the main PCB ASSY.
3	White tape malfunction	Replace the scanner unit.

■ **Error code B9**

Scanner Error

Scanning light adjustment error is detected.

* This error is indicated on the LCD in the maintenance mode.

Error code BB

Scanner Error

White level data error

* This error is indicated on the LCD in the maintenance mode.

Error code BD

Scanner Error

Black level data error

* This error is indicated on the LCD in the maintenance mode.

Step	Cause	Remedy
1	CCD unit failure	Replace the CCD unit.
2	Main PCB failure	Replace the main PCB ASSY.
3	White tape malfunction	Replace the scanner unit.

■ **Error code BF**

Scan Unable BF
Document is too long for duplex scanning. Press Stop key.

ADF duplex scanning cannot be implemented due to too long document

User Check

- Use the document of the specified size. (A4 or Letter)

Step	Cause	Remedy
1	Document front actuator 2 not operating smoothly or catching in some position.	Correct smooth operation and that there is no catching of the document front actuator 2.
2	Document front sensor 2 failure	Replace the document front sensor 2.
3	Main PCB failure	Replace the main PCB ASSY.

■ Error code C0

Cartridge Error
Put the Toner Cartridge back in.

New toner detection lever failure

User Check

- Install the toner cartridges into the machine properly.

Step	Cause	Remedy
1	Power off or front cover opened while detecting a new toner cartridge	Reset the developing bias voltage and develop roller counter. (Refer to "5.2 Develop Roller / Developing Bias Voltage Counter Reset Function" in Chapter 7.)
2	New toner sensor failure	Replace the relay front PCB.

■ Error code C7

Out of Memory
Press Job Cancel.

Run out of memory for data expansion of PC printer

User Check

- Install more DIMM.
- Lower the resolution.

Step	Cause	Remedy
1	Main PCB failure	Replace the main PCB ASSY.

■ Error code C8

Out of Memory
Secure Print Data is full. Press Cancel and delete the previously stored data.

Secure print data full

User Check

- Delete the stored data.

Step	Cause	Remedy
1	Main PCB failure	Replace the main PCB ASSY.

■ Error code C9

DIMM Error
Make sure that the DIMM is inserted correctly.

The failed DIMM is installed, or the DIMM is not installed correctly.

User Check

- Install the DIMM correctly.

Step	Cause	Remedy
1	Main PCB failure	Replace the main PCB ASSY.

■ Error code CA

Unusable Device
Remove the Device. Turn the power off and back on again.

Host excess current to USB device

User Check

- Remove the USB device from the USB direct interface and turn the power off. Turn it on again after a while.
- Replace the USB device with another one.

Step	Cause	Remedy
1	Harness connection failure of USB host relay PCB ASSY	Check the harness connection of the USB host relay PCB ASSY and reconnect it.
2	USB host relay PCB failure	Replace the USB host relay PCB ASSY.
3	Main PCB failure	Replace the main PCB ASSY.

■ Error code CD

No Toner
Open the Front Cover, then install the Toner Cartridge.

Excess current to USB device

User Check

- Check if the drum unit is installed into the machine.

Step	Cause	Remedy
1	Dirt on electrodes on drum unit and machine body	Clean both electrodes. (Refer to Fig. 3-2, Fig. 3-3)
2	HVPS PCB unit failure	Replace the HVPS PCB unit.
3	Main PCB failure	Replace the main PCB ASSY.

■ **Error code D1**

Machine Error D1

Modem initialization failed

Step	Cause	Remedy
1	Main PCB failure	Replace the main PCB ASSY.

■ **Error code DD**

Fusser Error
Turn the power off, then on again. Leave the machine for 15min.

Fuser error other than 58, 59, 68, 69, 6A, 6B, 6C, 6D, 6E, 6F, 76, 78, DE and E2 are occurred.

Step	Cause	Remedy
1	Fuser unit failure	Replace the fuser unit.
2	Main PCB failure	Replace the main PCB ASSY.
3	LVPS PCB failure	Replace the LVPS PCB ASSY.

■ **Error code DE**

Fusser Error
Turn the power off, then on again. Leave the machine for 15min.

Central temperature of heat roller detected the temperature that was lower than edge (60°C)

Step	Cause	Remedy
1	Relay rear PCB ASSY connection failure	Reconnect the relay rear PCB ASSY connector correctly.
2	Main PCB failure	Replace the main PCB ASSY.

■ **Error code E0**

Print Unable E0
Turn the power off and then back on again.

Program error

Step	Cause	Remedy
1	Program failure	Reinstall the latest firmware.
2	Main PCB failure	Replace the main PCB ASSY.

■ Error code E2

Fuser Error
Turn the power off, then on again. Leave the machine for 15 min.

Central temperature of heat roller detected more than 280°C

Step	Cause	Remedy
1	Fuser unit failure	Replace the fuser unit.
2	Main PCB failure	Replace the main PCB ASSY.

■ Error code E6

Init Unable E6
See Troubleshooting and routine maintenance chapter in User's Guide.

EEPROM error

Step	Cause	Remedy
1	Main PCB failure	Replace the main PCB ASSY.

■ Error code EB

Print Unable EB
Turn the power off and then back on again.

E2PROM data laser unit error

Step	Cause	Remedy
1	Main PCB failure	Replace the main PCB ASSY.

■ Error code EC

Print Unable EC
See Troubleshooting and routine maintenance chapter in User's Guide.

Fuser fan performance failure

Step	Cause	Remedy
1	Main fan failure	Replace the main fan ASSY.
2	Main PCB failure	Replace the main PCB ASSY.

■ Error code ED

Print Unable ED Turn off and on.

Wireless LAN connection failure

Step	Cause	Remedy
1	WLAN PCB failure	Replace the WLAN PCB ASSY.
2	Main PCB failure	Replace the main PCB ASSY.

■ Error code EE

Print Unable EE Turn off and on.

Wireless LAN is unable to communicate

Step	Cause	Remedy
1	WLAN PCB failure	Replace the WLAN PCB ASSY.
2	Main PCB failure	Replace the main PCB ASSY.

■ Error code EF

Print Unable EF Turn the power off and then back on again.

LVPS PCB failure

User Check

- Turn the power off. Turn it on again after a while.

Step	Cause	Remedy
1	LVPS PCB failure	Replace the LVPS PCB ASSY.
2	Main PCB failure	Replace the main PCB ASSY.

■ Error code F8

Machine Error F8

Battery connection error

Step	Cause	Remedy
1	Battery harness connection failure	Reconnect the battery harness.
2	Main PCB failure	Replace the main PCB ASSY.
3	Battery failure	Replace the battery.

■ Error code F9

Machine Error F9

Maintenance mode 74 Non-decision

Step	Cause	Remedy
1	Turn the power off, when the Maintenance mode 74 "PARAMETER INIT" is in progress.	Implement the Maintenance mode 74 again.
2	Main PCB failure	Replace the main PCB ASSY.

■ Error code FF

Unusable Device

Remove the Device. Turn the power off and back on again.

Excess current to WLAN PCB error

Step	Cause	Remedy
1	WLAN PCB failure	Replace the WLAN PCB.
2	Main PCB failure	Replace the main PCB ASSY.

4. PAPER FEEDING PROBLEMS

Problems related to paper feeding are end user recoverable if following the User Check items. If the same problem occurs again, follow each procedure in the order of the number described in the Step column in the tables below.

4.1 No Feeding

Step	Cause	Check	Result	Remedy
1	Dirt on PE sensor	Is there paper powder in the PE sensor?	Yes	Clean the PE sensor.
2	Edge actuator catching on some position	Does the edge actuator move smoothly?	No	Re-assembly the edge actuator.
3	Roller holder ASSY catching on some position	Does the roller holder ASSY move smoothly?	Yes	Re-assembly the roller holder ASSY.
4	Registration front sensor failure	Is the problem solved after replacing the registration front sensor PCB ASSY?	Yes	Replace the registration front sensor PCB ASSY.
5	Separation pad or roller holder ASSY failure	Is the surface of the separation pad or the pickup roller dirty or worn out?	Yes	1) Clean the surface of the separation pad or pickup roller. 2) Replace the separation pad or pickup roller.
6	Pressure plate gear damage	Is the pressure plate gear damaged?	Yes	Replace the paper tray.
7	T1 solenoid failure	Does the T1 solenoid work correctly?	No	Replace the T1 solenoid.
8	T1 solenoid pathway of the high-voltage power supply PCB broken	Is the problem solved after replacing the high-voltage power supply PCB ASSY?	Yes	Replace the high-voltage power supply PCB ASSY.
9	Main PCB failure	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.
10	Main motor failure	Is the problem solved after replacing the drive sub ASSY?	Yes	Replace the drive sub ASSY.

4.2 Double Feeding

Step	Cause	Check	Result	Remedy
1	Separation pad or roller holder ASSY failure	Is the surface of the separation pad worn out?	Yes	Replace the PF kit.

4.3 Paper Jam

■ Paper jam in the paper tray and front cover

Step	Cause	Check	Result	Remedy
1	Dirt on edge sensor	Is there paper powder in the edge sensor?	Yes	Clean the edge sensor.
2	Registration front actuator/edge actuator catching on some position	Does the registration front actuator/edge actuator move smoothly?	No	Re-assemble the registration front actuator/edge actuator.
3	Registration front sensor PCB (registration front actuator/edge actuator failure)	Does the registration front sensor move smoothly? (Check it following the procedure described in "4.10 Sensor Operational Check (Function code 32)" in Chapter 7)	No	Replace the registration front sensor PCB ASSY.
4	Registration solenoid failure	Is the problem solved after replacing the registration solenoid?	Yes	Replace the registration solenoid.
5	Toner LED PCB failure	Is the problem solved after replacing the toner LED PCB ASSY?	Yes	Replace the toner LED PCB ASSY.
6	High-voltage power supply PCB failure	Is the problem solved after replacing the High-voltage power supply PCB ASSY?	Yes	Replace the High-voltage power supply PCB ASSY.
7	Main PCB failure	Is the problem solved after replacing the Main PCB ASSY?	Yes	Replace the Main PCB ASSY.

■ Paper jam in the back cover and paper eject section

Step	Cause	Check	Result	Remedy
1	Foreign object around fuser unit	Is there a foreign object around the fuser unit?	Yes	Remove the foreign object.
2	Paper eject actuator failure	Does the paper eject actuator move smoothly? Is it damaged?	No	Replace the paper eject actuator.
3	Fuser cover ASSY loose	Is the fuser cover ASSY fitted correctly?	No	Fit the fuser cover ASSY correctly.
4	Outer chute ASSY loose	Is the outer chute ASSY fitted correctly?	No	Fit the outer chute ASSY fitted correctly.
5	Eject roller 2 malfunction	Is each pinch roller of the inner chute ASSY attached to each eject roller 2 of top cover ASSY properly?	No	Replace the inner chute ASSY.
6	Paper eject sensor PCB failure	Is the problem solved after replacing the paper eject sensor PCB?	Yes	Replace the paper eject sensor PCB ASSY.

■ **Paper jam in the tray 2**

Step	Cause	Check	Result	Remedy
1	LT edge actuator catching on some position	Does the LT edge actuator move smoothly?	No	Re-assemble the LT edge actuator.
2	LT sensor PCB ASSY failure	Is the problem solved after replacing the LT sensor PCB ASSY?	Yes	Replace the LT sensor PCB ASSY.
3	LT solenoid failure	Is the problem solved after replacing the LT solenoid?	Yes	Replace the LT solenoid.

■ **Paper jam in the DX unit section**

Step	Cause	Check	Result	Remedy
1	DX unit failure	Is the problem solved after replacing the DX unit?	Yes	Replace the DX unit.

4.4 Dirt on Paper

<User Check>

- Check if the paper is loaded into the paper tray correctly.
- Turn over the stack of paper in the paper tray, or try rotating the paper 180° in the paper tray.

Step	Cause	Check	Result	Remedy
1	Fuser unit dirty	Is there dirt around the entrance of the fuser unit?	Yes	Clean the entrance of the fuser unit.
		Is the pressure roller ASSY dirty?	Yes	Clean the pressure roller ASSY.

4.5 Wrinkles or creases

<User Check>

- Check if the paper is loaded into the paper tray correctly.
- Turn over the stack of paper in the paper tray, or try rotating the paper 180° in the paper tray.

Step	Cause	Check	Result	Remedy
1	Fuser unit dirty	Is there dirt around the entrance of the fuser unit?	Yes	Clean the entrance of the fuser unit.
2	Fuser unit failure	Is the problem solved if new fuser unit is replaced?	Yes	Replace the fuser unit.

4.6 Waves in the paper / folds in the paper at the eject roller 2

<User Check>

- Check that the problem is solved if new paper is used.

Step	Cause	Check	Result	Remedy
1	Foreign object around eject roller 2	Is there a foreign object around the eject roller 2?	Yes	Remove the foreign object.
2	Eject roller 2 failure	Is the problem solved after replacing the new eject roller 2?	Yes	Replace the top cover ASSY.

4.7 Curl in the paper



The curl in the left figure.

<User Check>

- Change the paper.

Step	Cause	Check	Result	Remedy
1	Mismatch the setting the paper and the eject roller 1	Is the problem solved by changing the position of the anti-curl lever?	Yes	Change the position of the anti-curl lever.

Slide the lever 2 to the right while pushing up the lever 1 to the direction of the arrow.

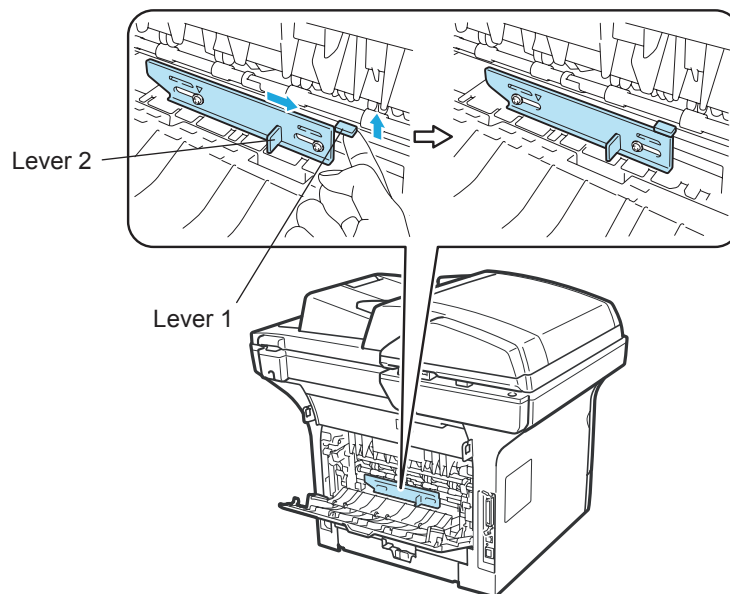


Fig. 3-4

4.8 Prints only single side of the paper when duplex-printing

Step	Cause	Check	Result	Remedy
1	Used small paper	Is the A4/LETTER used?	No	Use the paper of the A4/LETTER.

5. IMAGE DEFECT TROUBLESHOOTING

5.1 Image Defect Examples

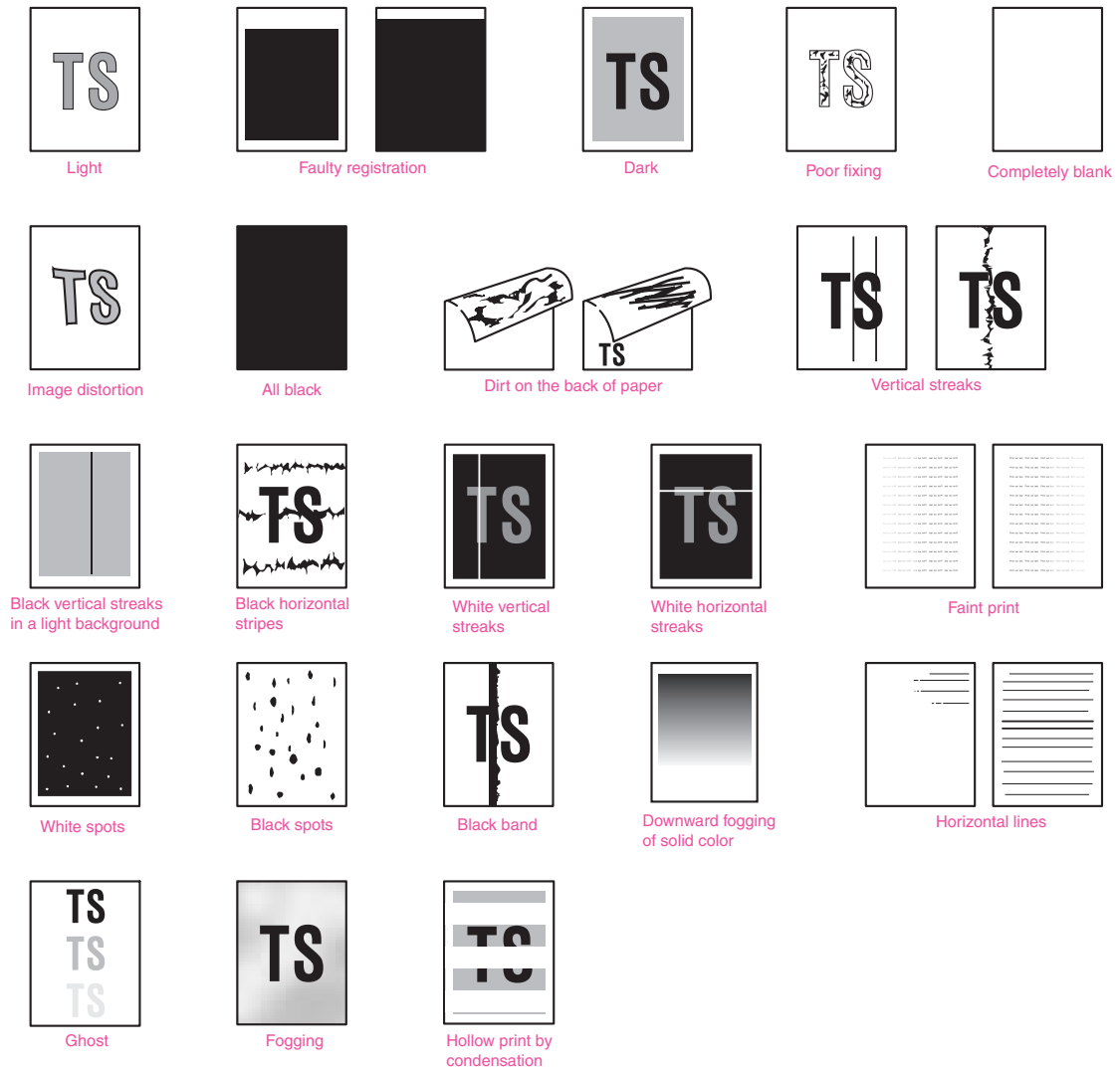


Fig. 3-5

5.2 Diameter of Rollers

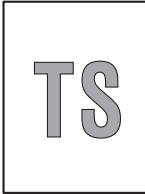
Image defects which appear periodically may be caused by failure of a roller. Specify the cause referring to the diameter of the rollers or pitch which appears in the image as shown in the table below.

No.	Parts name	Diameter	The pitch which appears in the image
1	Develop roller	Ø20.0 mm	42.5 mm
2	Exposure drum	Ø30.0 mm	94.2 mm
3	Heat roller in the fuser unit	Ø25.0 mm	78.5 mm
4	Pressure roller ASSY in the fuser unit	Ø25.0 mm	78.5 mm
5	Registration roller	Ø14.0 mm	44.0 mm
6	Transfer roller	Ø15.2 mm	48.2 mm

5.3 Troubleshooting Image Defect

Image defect related problems are end user recoverable if following the User Check items. If the same problem occurs, follow each procedure in the order of the number described in the Step column in the tables below.

■ Light



<User Check>

- Check the machine's environment. Low temperature and low humidity conditions can cause this problem.
- If the whole page is light, toner save mode may be on.
- Replace the toner cartridge or drum unit with a new one.

Step	Cause	Check	Result	Remedy
1	Dirt on exposure drum electrode	Are the electrodes of the drum unit and machine body dirty?	Yes	Clean both electrodes. (Refer to Fig. 3-2, Fig. 3-3.)
2	Dirt on scanner windows of the laser unit	Is the scanner windows of the laser unit dirty?	Yes	Wipe the dirt off with a soft, clean, lint free cloth. (Refer to Fig. 3-6.)
3	Toner sensor failure	After replacing the toner cartridge with a new one, does the same problem occur even after printing several pages?	No	Replace the toner cartridge.
4		Does the machine start printing even after removing the toner cartridge from the drum unit?	Yes	Clean the toner sensor. (receiving light side / emitting light side) Check the harness connection of the toner LED PCB ASSY. (luminescence side) Replace the toner sensor PCB ASSY or toner LED PCB ASSY.
5	Between the HVPS PCB/Main PCB connection failure	Is the harness of the HVPS PCB ASSY and main PCB ASSY connected correctly?	Yes	Reconnect the harness of the HVPS PCB ASSY and main PCB ASSY.
6	HVPS PCB failure	Is the problem solved after replacing the HVPS PCB ASSY?	Yes	Replace the HVPS PCB ASSY.
7	Main PCB failure	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.
8	Laser unit failure	Is the problem solved after replacing the laser unit?	Yes	Replace the laser unit.

<Location of the leser beam window>

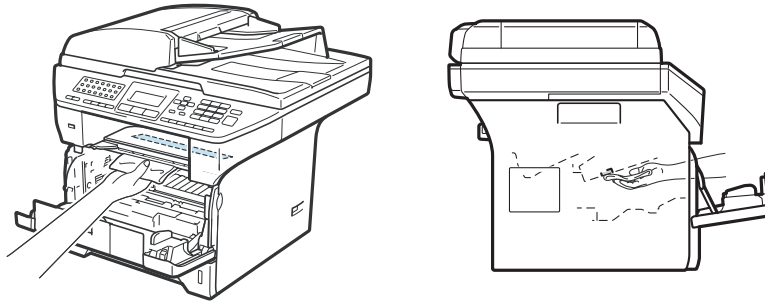


Fig. 3-6

■ **Faulty registration**



<User Check>

- Check that the appropriate media type is selected in the printer driver.

Step	Cause	Check	Result	Remedy
1	Registration rear actuator catching on some position	Does the registration rear actuator move smoothly?	No	Re-assemble the registration rear actuator.
2	Drum unit failure	Is the rotation torque of the drum unit heavy?	Yes	Replace the drum unit.

■ **Dark**

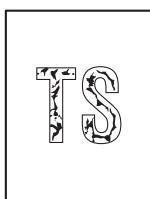


<User Check>

- Check the machine's environment. High temperature and high humidity conditions can cause this problem.
- Replace the drum unit with a new one.
- Replace the toner cartridge with a new one.

Step	Cause	Check	Result	Remedy
1	Drum unit electrode dirty	Is the electrode of the drum unit dirty?	Yes	Clean the electrode.
2	Drum unit failure	Is the problem solved after replacing the drum unit?	Yes	Replace the drum unit.
3	Developing bias malfunction	Is the problem solved after resetting the developer roller counter?	Yes	Reset the developer roller counter.
4	HVPS PCB failure	Is the problem solved after replacing the HVPS PCB ASSY?	Yes	Replace the HVPS PCB ASSY.
5	Main PCB failure	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.

■ Poor fixing

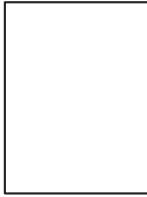


<User Check>

- Replace the drum unit with a new one.
- Replace the toner cartridge with a new one.

Step	Cause	Check	Result	Remedy
1	High pressure of pressure roller in the fuser unit	Is the problem solved by changing the position of the anti-curl lever?	Yes	Change the position of the anti-curl lever.
2	Fuser unit failure	Is the problem solved after replacing the fuser unit?	Yes	Replace the fuser unit.
3	Toner sensor failure	Is the "Toner life End" message indicated on the LCD after replacing the current toner cartridge with a new one?	No	Replace the toner sensor.
4	HVPS PCB failure	Is the problem solved after replacing the HVPS PCB ASSY?	Yes	Replace the HVPS PCB ASSY.
5	Main PCB failure	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.
6	Low-voltage power supply PCB failure	Is the problem solved after replacing the PS PCB unit?	Yes	Replace the PS PCB unit.

■ **Completely blank**

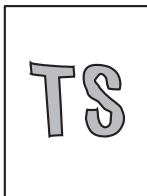


<User Check>

- Replace the drum unit with a new one.
- Replace the toner cartridge with a new one.

Step	Cause	Check	Result	Remedy
1	Developing bias voltage conduction failure	Are the electrodes on the drum unit and machine body dirty?	Yes	Clean both electrodes. (Refer to Fig. 3-2, Fig. 3-3.)
2	Scanner harness of the laser unit connection failure	Is the scanner harness of the laser unit connected securely?	No	Reconnect the scanner harness of the laser unit.
3	Laser unit failure	Is the problem solved after replacing the laser unit?	Yes	Replace the laser unit.
4	HVPS PCB failure	Is the problem solved after replacing the HVPS PCB ASSY?	Yes	Replace the HVPS PCB ASSY.
5	Main PCB failure	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.

■ **Image distortion**



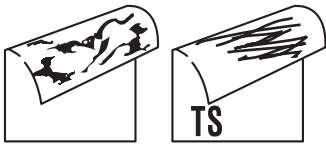
Step	Cause	Check	Result	Remedy
1	Laser unit not assembled correctly	Is the laser unit assembled into the machine securely? (Check if there is no gap.)	No	Assemble the laser unit correctly and secure the screw.
2	Incorrect radiation angle of scanner diode of laser unit. Scanner motor rotation failure	Is the problem solved after replacing the laser unit?	Yes	Replace the laser unit.
3	Main PCB failure	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.

■ All black



Step	Cause	Check	Result	Remedy
1	Corona wire failure	Are the electrodes on the drum unit and machine body dirty?	Yes	Clean both electrodes. (Refer to Fig. 3-2, Fig. 3-3.)
2		Is the corona wire damaged?	Yes	Replace the drum unit.
3	Scanner harness of the laser unit connection failure	Is the scanner harness of the laser unit connected securely?	No	Reconnect the scanner harness of the laser unit.
4	FG harness ASSY connection failure	Is the FG harness ASSY between the laser unit and main PCB ASSY connected securely?	No	Reconnect the FG harness ASSY between the laser unit and main PCB ASSY securely.
5	HVPS PCB failure	Is the problem solved after replacing the HVPS PCB ASSY?	Yes	Replace the HVPS PCB ASSY.
6	Main PCB failure	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.
7	Laser unit failure	Is the problem solved after replacing the laser unit?	Yes	Replace the laser unit.

■ **Dirt on the back of paper**



<User Check>

- This problem may disappear after printing approximately 10 pages of completely blank sheets.

Step	Cause	Check	Result	Remedy
1	Scratch and Dirt on the fuser unit	Is the pressure roller ASSY dirty? Is any other area in the machine dirty?	Yes	Print approximate 10 pages.
			No	Replace the fuser unit.
2	Scratch and Dirt in the paper feed system	Is the paper feed system dirty?	Yes	Wipe dirt off.

■ **Vertical streaks**



<User Check>

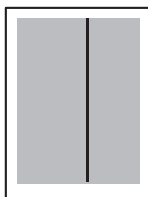
- This problem may occur with noise which is caused by dirt on the corona wire in the drum unit. In this case, clean the corona wire with the wire cleaner.
- Replace the drum unit with a new one.
- Replace the toner cartridge with a new one.

Step	Cause	Check	Result	Remedy
1	Scratch and Dirt in the paper feed system	Is the paper feed system dirty?	Yes	Wipe dirt off.
2	Scratch and Dirt on the exposure drum	Are there scratch and dirt on the surface of the exposure drum?	Yes	Replace the drum unit.
3	Scratch and Dirt on the heat roller	Are there scratch and dirt on the surface of the heat roller?	Yes	Replace the fuser unit.

CAUTION :

- If the machine prints the same pattern, especially including vertical streaks, continuously, black vertical streaks may appear on the paper since the electrostatic performance of the exposure drum is decreased temporarily.

■ **Black vertical streaks in a light background**



<User Check>

- Clean the inside of the machine and the corona wire in the drum unit.
- Replace the toner cartridge with a new one.

Step	Cause	Check	Result	Remedy
1	Drum unit failure	Is the problem solved after replacing the drum unit?	Yes	Replace the drum unit.

■ Black horizontal stripes



<User Check>

- Clean the inside of the machine and the corona wire in the drum unit.
- Replace the drum unit with a new one.

Step	Cause	Check	Result	Remedy
1	Dirt on the charged electrode	Are the electrodes on the drum unit and machine body dirty?	Yes	Clean both electrodes. (Refer to Fig. 3-2, Fig. 3-3.)
2	Paper tray ground terminal provided in the machine body	Is the paper tray ground terminal bent, which is provided in the machine body? (Refer to Fig. 3-7.)	Yes	Correct bending of paper tray ground terminal.
3	Toner attached on the develop roller	Are the horizontal stripes at 42.5 mm (develop roller circumference) intervals?	Yes	This problem will disappear by printing approximate 10 pages. If the same problem occurs, replace the toner cartridge.
4	Scratch and Dirt on the exposure drum	Are the horizontal stripes at 94.2 mm (exposure drum circumference) intervals?	Yes	Replace the drum unit.
5	Scratch and Dirt on the heat roller	Are the horizontal stripes at 78.5 mm (heat roller circumference) intervals?	Yes	Replace the fuser unit.
6	HVPS PCB failure	Is the problem solved after replacing the HVPS PCB ASSY?	Yes	Replace the HVPS PCB ASSY.
7	Main PCB failure	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.

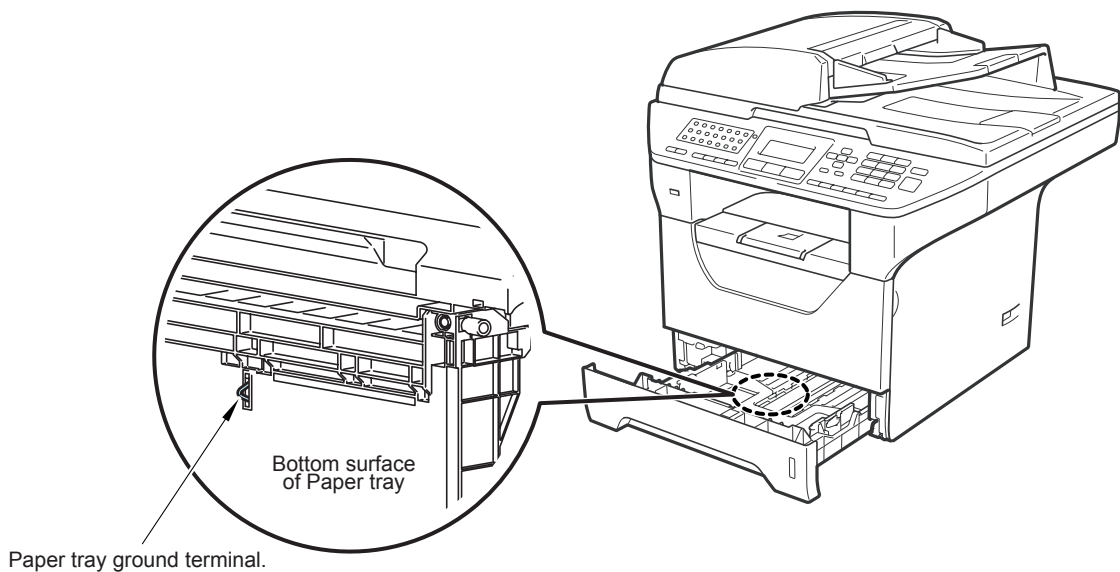


Fig. 3-7

■ White vertical streaks



<User Check>

- Clean the scanner windows of the laser unit with a soft lint-free cloth. (Refer to Fig. 3-6.)
- Replace the toner cartridge with a new one.
- Check the machine's environment. High temperature and high humidity conditions can cause this problem.
- Damp (wet) paper might be used. Try to change to freshly unpacked paper.
- Check if there is no dust in the gap between the toner cartridge and drum frame.

Step	Cause	Check	Result	Remedy
1	Condensation	Has condensation occurred inside the machine?	Yes	Try to print several pages or leave the machine 2 hours to allow it to reach room temperature.
2	Transfer failure	Is the transfer roller scratched?	Yes	Replace the drum unit.
3	Scanner windows of laser unit failure	Is the problem solved after replacing the laser unit?	Yes	Replace the laser unit.

■ White horizontal streaks



<User Check>

- Check that the appropriate media type is selected in the printer driver.
- The problem may disappear by itself. Try printing multiple pages to clear this problem especially if the machine has not been used for a long time.
- The drum unit may be damaged. Replace the drum unit with a new one.

Step	Cause	Check	Result	Remedy
1	Toner cartridge electrode contact failure	Are the electrodes on the toner cartridge and machine body dirty?	Yes	Clean both electrodes. (Refer to Fig. 3-2, Fig. 3-3.)
2	Drum unit electrode contact failure	Are the electrodes on the drum unit and machine body dirty?	Yes	Clean both electrodes. (Refer to Fig. 3-2, Fig. 3-3.)

■ Faint print

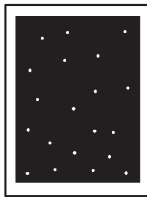


<User Check>

- Check that the machine is installed on a level surface.
- Replace the toner cartridge with a new one.
- Clean the scanner windows of the toner unit with a soft cloth. (Refer to [Fig. 3-6](#).)
- The drum unit may be damaged. Replace the drum unit with a new one.

Step	Cause	Check	Result	Remedy
1	Main PCB failure	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.
2	Laser unit failure	Is the problem solved after replacing the laser unit?	Yes	Replace the laser unit.
3	Toner empty sensor failure	Is the "Toner Life End" message indicated on the LCD after replacing the current toner cartridge with a new one?	No	Replace the toner sensor PCB ASSY.

■ White spots



<User Check>

- Toner may be empty. Replace the toner cartridge with a new one.
- If the problem is not solved after printing a few pages, the drum unit may have glue from label stock on the exposure drum surface. Refer to the [next page](#), and wipe it off gently with a cotton swab.
- The drum unit may be damaged. Replace the drum unit with a new one.

Step	Cause	Check	Result	Remedy
1	Toner attached on the develop roller	Are the horizontal stripes at 42.5 mm (develop roller circumference) intervals?	Yes	This problem will disappear by printing approximate 10 pages. If the same problem occurs, replace the toner cartridge.
2	Scratch and Dirt on the exposure drum	Are the horizontal stripes at 94.2 mm (exposure drum circumference) intervals?	Yes	Replace the drum unit.
3	Drum unit connection failure	Are the electrodes on the drum unit and machine body dirty?	Yes	Clean both electrodes. (Refer to Fig. 3-2 , Fig. 3-3 .)
4	HVPS PCB failure	Is the problem solved after replacing the HVPS PCB ASSY?	Yes	Replace the HVPS PCB ASSY.
5	Main PCB failure	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.

<Clean the drum unit as follows>

If you have print quality problems, clean the drum unit as follows:

- (1) Put the print sample in front of the drum unit, and find the exact position of the poor print.

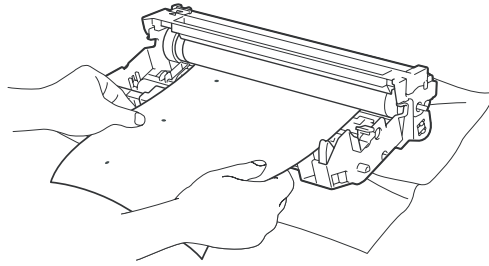


Fig. 3-8

- (2) Turn the drum unit gear to the direction of the arrow of the figure by hand while looking at the surface of the exposure drum.

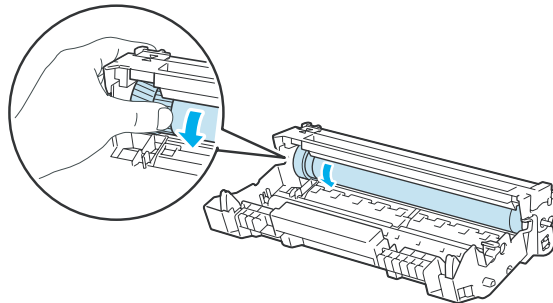


Fig. 3-9

- (3) When you have found the mark on the drum that matches the print sample, wipe the surface of the exposure drum with a dry cotton swab until the dust or glue on the surface comes off.

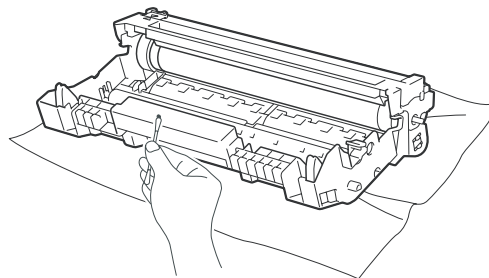
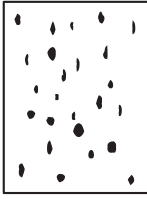


Fig. 3-10

CAUTION :

- DO NOT clean the surface of the photosensitive drum with a sharp object.

■ Black spots



<User Check>

- Damp (wet) paper might be used. Try to change to freshly unpacked paper.
- Toner may be empty. Replace the toner cartridge with a new one.
- If the problem is not solved after printing a few pages, the drum unit may have glue from label stock on the exposure drum surface. Refer to the [previous page](#), and wipe it off gently with a cotton swab.
- The drum unit may be damaged. Replace the drum unit with a new one.

Step	Cause	Check	Result	Remedy
1	Toner attached on the develop roller	Are the horizontal stripes at 42.5 mm (develop roller circumference) intervals?	Yes	This problem will disappear by printing approximate 10 pages. If the same problem occurs, replace the toner cartridge.
2	Scratch and Dirt on the exposure drum	Are the horizontal stripes at 94.2 mm (exposure drum circumference) intervals?	Yes	Replace the drum unit.
3	Drum unit connection failure	Are the electrodes on the drum unit and machine body dirty?	Yes	Clean both electrodes (Refer to Fig. 3-2 , Fig. 3-3 .)
4	Scratch and Dirt on the heat roller	Are the horizontal stripes at 78.5 mm (heat roller circumference) intervals?	Yes	Replace the fuser unit.
5	HVPS PCB failure	Is the problem solved after replacing the HVPS PCB ASSY?	Yes	Replace the HVPS PCB ASSY.
6	Main PCB failure	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.

■ Black band



<User Check>

- Clean the inside of the machine and the corona wire in the drum unit. If the same problem occurs after cleaning, replace the drum unit with a new one.
- The paper tray ground terminal provided in the machine body may be dirty. Clean the contact with a dry cloth.

■ **Downward fogging of solid color**

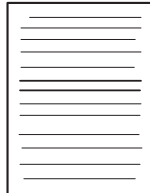


<User Check>

- Toner may be empty. Replace the toner cartridge with a new one.

Step	Cause	Check	Result	Remedy
1	HVPS PCB failure	Is the problem solved after replacing the HVPS PCB ASSY?	Yes	Replace the HVPS PCB ASSY.
2	Main PCB failure	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.

■ **Horizontal lines**



<User Check>

- The paper tray ground terminal provided in the machine body may be dirty. Clean the contact with a dry cloth.

Step	Cause	Check	Result	Remedy
1	Dirt on charged electrode	Are the electrodes on the drum unit and machine body dirty?	Yes	Clean both electrodes. (Refer to Fig. 3-2 , Fig. 3-3 .)
2	Paper tray ground terminal provided in machine body	Is the paper tray ground terminal bent, which is provided in the machine body?	Yes	Correct bending of paper tray ground terminal.
3	Laser unit failure	Is the problem solved after replacing the laser unit?	Yes	Replace the laser unit.

■ **Ghost**



<User Check>

- Check the machine's environment, conditions such as high or low humidity may cause this situation to occur.
- Check that the appropriate media type or size is selected in the printer driver.
- Replace the drum unit with a new one.

Step	Cause	Check	Result	Remedy
1	HVPS PCB failure	Is the problem solved after replacing the HVPS PCB ASSY?	Yes	Replace the HVPS PCB ASSY.
2	Main PCB failure	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.

■ **Fogging**



<User Check>

- Replace the toner cartridge with a new one.
- Replace the drum unit with a new one.
- Do not use acid paper.
- Check if there is dust or paper powder in the machine.

Step	Cause	Check	Result	Remedy
1	Toner sensor failure (Machine body)	Is the toner sensor performed normally by following the procedure in "4.10 Sensor Operational Check (Function code 32)" in Chapter 7.	No	Replace the toner sensor PCB unit ASSY and the toner LED PCB ASSY.
2	HVPS PCB failure	Is the problem solved after replacing the HVPS PCB ASSY?	Yes	Replace the HVPS PCB ASSY.
3	Main PCB failure	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.

CAUTION :

- This problem often occurs when the drum unit or toner cartridge is nearly at the end of life.

■ **Hollow print by condensation**



<User Check>

- Turn the power on and leave the machine for a few minutes.

Step	Cause	Check	Result	Remedy
1	Condensation of drum unit by high humidity environment	Is the problem solved after setting the drum condensation countermeasure mode to ON?	Yes	Drum condensation countermeasure mode is set to ON. (Refer to 5.3 Drum condensation countermeasure mode in Chapter 7)

6. SOFTWARE SETTING PROBLEMS

The machine may not print the data correctly if there are incorrect software settings.

<User Check>

- Check that the parallel cable, USB cable and the network cable is not damaged or broken.
- Check that the correct machine is selected if you have an interface switching device.
- Check the descriptions on the software setting in the user's guide.
- Try resetting the factory settings. (Refer to Users guide.)

Step	Cause	Check	Result	Remedy
1	Failure inside the machine	Does the machine print "Printer Settings" ? ("4.20 Display of the Machine's Log Information (Function code 80)" in Chapter 7.)	No	Identify the error type, and then refer to the specified section of this chapter.
2	Machine connection	For Macintosh, has the product ID been verified?	No	Verify the product ID. Product ID: DCP8080DN 0218h DCP8085DN 021Fh MFC8480DN 0217h MFC8880DN 0216h MFC8890DW 0215h
3	USB host relay PCB failure	Is the problem solved after replacing the USB host relay PCB ASSY?	Yes	Replace the USB host relay PCB ASSY.
4	Main PCB failure	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.

7. NETWORK PROBLEMS

<User Check>

- Check the descriptions in the network user's guide.
- Try resetting the factory settings.

Step	Cause	Check	Result	Remedy
1	Wireless LAN PCB failure (MFC-8890DW)	Is the problem solved after replacing the wireless LAN PCB ASSY?	Yes	Replace the wireless LAN PCB ASSY.
2	Main PCB failure	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.

8. TROUBLESHOOTING OF THE COMMUNICATIONS ERRORS

If a communications error occurs, the facsimile equipment

- (1) Gives the alarm (intermittent bleep) for approximately four seconds.
- (2) Indicates the appropriate error message on the LCD.
- (3) Prints the transmission report during fax transmission.

■ **Definition of error codes on the communications list**

(1) **Calling**

Code 1	Code 2	Causes
10	08	Wrong number called.
11	01	No dial tone detected before start of dialing.
11	02	Busy tone detected before dialing.
11	03	2nd dial tone not detected.
11	05	No loop current detected. *
11	06	Busy tone detected after dialing or called.
11	07	No response from the remote station in sending.
11	10	Unobtainable tone detected after dialing.
17	07	No response from the calling station in receiving.

* Available in German models only.

(2) Command reception

Code 1	Code 2	Causes
20	01	Unable to detect a flag field.
20	02	Carrier was OFF for 200 ms or longer.
20	03	Abort detected ("1" in succession for 7 bits or more).
20	04	Overrun detected.
20	05	A frame for 3 seconds or more received.
20	06	CRC error in answerback.
20	07	Echo command received.
20	08	Invalid command received.
20	09	Command ignored once for document setting or for dumping-out at turn-around transmission.
20	0A	T5 time-out error
20	0B	CRP received.
20	0C	EOR and NULL received.

(3) Communication code compatibility [checking the NSF and DIS]

Code 1	Code 2	Causes
32	01	Remote terminal only with V.29 capability in 2400 or 4800 bps transmission.
32	02	Remote terminal not ready for polling.
32	10	Remote terminal not equipped with password function or its password switch OFF.
32	11	Remote terminal not equipped with or not ready for confidential mailbox function.
32	12	Remote terminal not equipped with or not ready for relay broadcasting function.
32	13	No confidential mail in the remote terminal.
32	14	The available memory space of the remote terminal is less than that required for reception of the confidential or relay broad-casting instruction.
32	18	Remote terminal not equipped with color function.

(4) Instructions received from the remote terminal [checking the NSC, DTC, NSS, and DCS]

Code 1	Code 2	Causes
40	02	Illegal coding system requested.
40	03	Illegal recording width requested.
40	05	ECM requested although not allowed.
40	06	Polled while not ready.
40	07	No document to send when polled.
40	10	Nation code or manufacturer code not correct.
40	13	Polled by any other manufacturers' terminal while waiting for secure polling.
40	17	Invalid resolution selected.
40	20	Invalid full color mode selected.

(5) Command reception [checking the NSF and DIS after transmission of NSS and DCS]

Code 1	Code 2	Causes
50	01	Vertical resolution capability changed after compensation of background color.

(6) ID checking

Code 1	Code 2	Causes
63	01	Password plus "lower 4 digits of telephone number" not coincident.
63	02	Password not correct.
63	03	Polling ID not correct.

(7) DCN reception

Code 1	Code 2	Causes
74		DCN received.

(8) TCF transmission/reception

Code 1	Code 2	Causes
80	01	Fallback impossible.

(9) Signal isolation

Code 1	Code 2	Causes
90	01	Unable to detect video signals and commands within 6 seconds after CFR is transmitted.
90	02	Received PPS containing invalid page count or block count.

(10) Video signal reception

Code 1	Code 2	Causes
A0	03	Error correction sequence not terminated even at the final transmission speed for fallback.
A0	11	Receive buffer empty. (5-second time-out)
A0	12	Receive buffer full during operation except receiving into memory.
A0	13	Decoding error continued on 500 lines or more.
A0	14	Decoding error continued for 10 seconds or more.
A0	15	Time-out: 13 seconds or more for one-line transmission.
A0	16	RTC not found or carrier OFF detected for 6 seconds.
A0	17	RTC found but no command detected for 60 seconds or more.
A0	19	No video data to be sent
A8	01	RTN, PIN, or ERR received at the calling terminal. *
A9	01	RTN, PIN, or ERR received at the called terminal. *
AA	18	Receive buffer full during receiving into memory.

* Available in German models only.

(11) General communications-related

Code 1	Code 2	Causes
B0	02	Unable to receive the next-page data.
B0	03	Unable to receive polling even during turn-around transmission due to call reservation.
B0	04	PC interface error.
BF	01	Communication canceled by pressing the Stop/Exit button before establishment of FAX communication*.
BF	02	Communication canceled by pressing the Stop/Exit button after establishment of FAX communication*.
BF	03	Transmission canceled due to a scanning error caused by no document or document feed problem in ADF scanning in real time transmission.

* Establishment of FAX communication:

FAX communication is established when the calling station receives a DIS (reception capability) signal from the called station and the called station receives a NSS or DCS (communications test) signal from the calling station.

(12) Maintenance mode

Code 1	Code 2	Causes
E0	01	Failed to detect 1300 Hz signal in burn-in operation.
E0	02	Failed to detect PB signals in burn-in operation.

(13) Equipment error

Code 1	Code 2	Causes
FF	<u>XX</u>	Equipment error (For <u>XX</u> , refer to "2.1 ERROR INDICATION")

9. TROUBLESHOOTING OF THE CONTROL PANEL

■ Nothing is displayed on the LCD.

<User Check>

- Verify if the power switch is turned off.

Step	Possible cause	Check	Result	Remedy
1	Connection between main PCB and control panel PCB	Are the main PCB and control panel PCB connected properly?	No	Reconnect the connector properly.
2	Harness between main PCB and control panel PCB	Is the harness damaged?	Yes	Replace the harness with a normal one.
3	Connection between main PCB and PS PCB unit	Are the main PCB and PS PCB unit connected properly?	No	Reconnect the connector properly.
4	Harness between main PCB and PS PCB unit	Is the harness damaged?	Yes	Replace the harness with a normal one.
5	LCD	Is the problem solved after replacing the LCD?	Yes	Replace the LCD.
6	Control panel PCB	Is the problem solved after replacing the control panel PCB?	Yes	Replace the control panel PCB.
7	PS PCB unit	Is the problem solved after replacing the PS PCB unit?	Yes	Replace the PS PCB unit.
8	Main PCB	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.

■ **The control panel does not work.**

<User Check>

- Check whether the function lock is not set.

Step	Possible cause	Check	Result	Remedy
1	Key sticking	Is there a key on the control panel stuck?	Yes	Clean up the panel cover, or remove the burrs from panel cover and panel keys.
2	Connection between main PCB and control panel PCB	Are the main PCB and control panel PCB connected properly?	No	Reconnect the connector properly.
3	Harness between main PCB and control panel PCB	Is the harness damaged?	Yes	Replace the harness with a normal one.
4	Rubber Key	Is the problem solved after replacing the rubber key?	Yes	Replace the rubber Key.
5	Control panel PCB	Is the problem solved after replacing the control panel PCB?	Yes	Replace the control panel PCB.
6	Main PCB	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.

10. TROUBLESHOOTING OF FAX FUNCTIONS

■ FAX can't send it.

<User Check>

- Verify that the telephone cord is securely inserted into the right socket.

Step	Possible cause	Check	Result	Remedy
1	Dialing mode Setting	Does a dialing signal (PB or DP) come out normally in each mode? (Use telephone line emulator.)	Yes	Check the dialing mode setting at customer's again. Check the telephone line cord between machine and socket.
2	Connection between main PCB and NCU PCB	Are the main PCB and NCU PCB connected properly?	No	Reconnect the connector properly.
3	Harness between main PCB and NCU PCB	Is the harness damaged?	Yes	Replace the harness with a normal one.
4	Connection between main PCB and control panel PCB	Are the main PCB and control panel PCB connected properly?	No	Reconnect the connector properly.
5	Harness between main PCB and control panel PCB	Is the harness damaged?	Yes	Replace the harness with a normal one.
6	Contact of rubber key	Does the rubber key work correctly?	No	Replace the rubber Key.
7	NCU PCB	Is the problem solved after replacing the NCU PCB ASSY?	Yes	Replace the NCU PCB ASSY.
8	Control panel PCB	Is the problem solved after replacing the control panel PCB?	Yes	Replace the control panel PCB.
9	Main PCB	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.

■ **Speed dialing and One-touch dialing can't be used.**

Step	Possible cause	Check	Result	Remedy
1	Speed dialing keys or one-touch dialing keys	Can a fax transmission be made using the numeric keys?	Yes	Replace the main PCB ASSY.
2	Dialing mode Setting	Does a dialing signal (PB or DP) come out normally in each mode? (Use telephone line emulator.)	Yes	Check the dialing mode setting at customer's again. Check the telephone line cord between machine and socket.
3	Connection between main PCB and NCU PCB	Are the main PCB and NCU PCB connected properly?	No	Reconnect the connector properly.
4	Harness between main PCB and NCU PCB	Is the harness damaged?	Yes	Replace the harness with a normal one.
5	Connection between main PCB and control panel PCB	Are the main PCB and control panel PCB connected properly?	No	Reconnect the connector properly.
6	Harness between main PCB and control panel PCB	Is the harness damaged?	Yes	Replace the harness with a normal one.
7	Contact of rubber key	Is the problem solved after replacing the rubber key?	Yes	Replace the rubber Key.
8	NCU PCB	Is the problem solved after replacing the NCU PCB ASSY?	Yes	Replace the NCU PCB ASSY.
9	Control panel PCB	Is the problem solved after replacing the control panel PCB?	Yes	Replace the control panel PCB.

■ **FAX can't be received.**

<User Check>

- Verify that the telephone cord is securely inserted into the right socket.

Step	Possible cause	Check	Result	Remedy
1	Receive mode setting	Is the receive mode set to automatic receive mode?	No	Set the receive mode to automatic receive mode.
2	NCU PCB	Is the problem solved after replacing the NCU PCB ASSY?	Yes	Replace the NCU PCB ASSY.
3	Main PCB	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.

■ **No bell ring.**

Step	Possible cause	Check	Result	Remedy
1	Ring delay	Ring delay is set to "0".	Yes	Change the ring delay settings to another value.
2	Ring volume	Ring volume is set to "OFF".	Yes	Change the ring volume setting to another value.
3	Connection between main PCB and NCU PCB	Are the main PCB and NCU PCB connected properly?	No	Reconnect the connector properly.
4	Harness between main PCB and NCU PCB	Is the harness damaged?	Yes	Replace the harness with a normal one.
5	Speaker	Is the problem solved after replacing the speaker?	Yes	Replace the Speaker.
6	NCU PCB	Is the problem solved after replacing the NCU PCB ASSY?	Yes	Replace the NCU PCB ASSY.
7	Main PCB	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.

■ **Speaker is silent during on-hook dialing.**

Step	Possible cause	Check	Result	Remedy
1	Connection between main PCB and speaker	Are the main PCB and speaker connected properly?	No	Reconnect the connector properly.
2	Speaker	Is the problem solved after replacing the speaker?	Yes	Replace the Speaker.
3	Connection between main PCB and NCU PCB	Are the main PCB and NCU PCB connected properly?	No	Reconnect the connector properly.
4	Harness between main PCB and NCU PCB	Is the harness damaged?	Yes	Replace the harness with a normal one.
5	Connection between main PCB and control panel PCB	Are the main PCB and control panel PCB connected properly?	No	Reconnect the connector properly.
6	Harness between main PCB and control panel PCB	Is the harness damaged?	Yes	Replace the harness with a normal one.
7	NCU PCB	Is the problem solved after replacing the NCU PCB ASSY?	Yes	Replace the NCU PCB ASSY.
8	Main PCB	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.

■ **Dialing function does not switch between "tone" and "pulse".**

Step	Possible cause	Check	Result	Remedy
1	Connection between main PCB and NCU PCB	Are the main PCB and NCU PCB connected properly?	No	Reconnect the connector properly.
2	Harness between main PCB and NCU PCB	Is the harness damaged?	Yes	Replace the harness with a normal one.
3	NCU PCB	Is the problem solved after replacing the NCU PCB ASSY?	Yes	Replace the NCU PCB ASSY.
4	Main PCB	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.

11. DOCUMENT FEEDING PROBLEMS

Problems related to paper feeding are end user recoverable if following the User Check items. If the same problem occurs again, follow each procedure in the order of the number described in the Step column in the tables below.

11.1 No Feeding

<User Check>

- Check if the document is inserted correctly to the depths.
- Check whether the document is 50 or less sheets.
- Check if the ADF cover is closed.

Step	Cause	Check	Result	Remedy
1	Document front actuator 1 catching on some position	Does the document front actuator 1 move smoothly?	No	Re-assembly the document front actuator 1.
2	Document front sensor 1 harness connection failure	Is the harness of the document front sensor 1 connected securely?	No	Reconnected the harness of the document front sensor 1.
3	ADF motor harness connection failure	Is the harness of the ADF motor connected securely?	No	Reconnected the harness of the ADF motor.
4	PF solenoid failure	Does the PF solenoid move smoothly? Is it damaged?	No	Replace the PF solenoid.
5	Document front sensor 1 malfunction	Does the document front sensor 1 move smoothly? (Check it following the procedure described in "Maintenance mode 32")	No	Replace the document front sensor 1.
6	Feed roller holder ASSY failure	Though the ADF motor rotates, does the supply roller rotate?	Yes	Replace the feed roller holder ASSY.
7	ADF relay PCB failure	Is the problem solved after replacing the ADF relay PCB?	Yes	Replace the ADF relay PCB.
8	Driver PCB failure	Is the problem solved after replacing the driver PCB?	Yes	Replace the driver PCB.
9	ADF motor failure	Is the problem solved after replacing the ADF motor?	Yes	Replace the ADF motor.
10	Main PCB failure	Is the problem solved after replacing the main PCB?	Yes	Replace the main PCB.

11.2 Double Feeding

<User Check>

- Check whether the document does not use the paper which is thinner than the specification.

Step	Cause	Check	Result	Remedy
1	Feed roller holder ASSY failure	Is the surface of the separation roller worn out?		Replace the feed roller holder ASSY.
2	Separation rubber is abrasion	Is the surface of the separation rubber worn out?	Yes	Replace the separation rubber.

11.3 Paper Jam

■ Paper jam in the ADF cover

<User Check>

- Check if the document is jammed in the insertion part.

Step	Cause	Check	Result	Remedy
1	Foreign object around ADF cover	Is there a foreign object around the ADF cover?	Yes	Remove the foreign object.
2	Document front actuator 2 catching on some position	Does the document front actuator 2 move smoothly?	No	Re-assembly the document front actuator 2.
3	Document front sensor 2 malfunction	Does the document front sensor 2 move smoothly? (Check it following the procedure described in "Maintenance mode 32")	No	Replace the document front sensor 2.

■ Paper jam in the ADF

<User Check>

- Check whether length does not use paper equal to or less than 148 mm.

Step	Cause	Check	Result	Remedy
1	Foreign object inside ADF	Is there a foreign object inside ADF?	Yes	Remove the foreign object.
2	Document rear actuator catching on some position	Does the document rear actuator move smoothly?	No	Re-assembly the document rear actuator.
3	Flap A catching on some position	Does the flap A move smoothly?	No	Re-assembly the flap A.
4	LF4 film catching on some position	Does the LF4 film move smoothly?	No	Replace the LF4 film.
5	Document rear sensor malfunction	Does the document rear sensor move smoothly? (Check it following the procedure described in "Maintenance mode 32")	No	Replace the document rear sensor.
6	Feed roller failure	Does the feed roller move smoothly? Is it damaged?	No	Replace the feed roller.

■ Paper jam in the paper eject section

Step	Cause	Check	Result	Remedy
1	Foreign object around paper eject	Is there a foreign object around paper eject?	Yes	Remove the foreign object.
2	Pinch roller malfunction	Is the pinch roller of the eject roller attached to the eject roller?	No	Re-assembly the pinch roller.
3	Eject roller failure	Does the eject roller move smoothly? Is it damaged?	No	Replace the eject roller.

■ Paper jam at the duplex scanning

<User Check>

- Use the A4 or Letter size.
- Use the document without warpage.
- Use the paper which is not so too thin. (thickness of paper)

Step	Cause	Check	Result	Remedy
1	Foreign object inside ADF	Is there a foreign object inside ADF?	Yes	Remove the foreign object.
2	Switch back sensor actuator catching on some position	Does the switch back sensor actuator move smoothly?	No	Re-assembly the switch back sensor actuator.
3	Each flap catching on some position	Does the each flap move smoothly?	No	Re-assembly the flap.
4	Switch back sensor malfunction	Does the switch back sensor move smoothly? (Check it following the procedure described in "Maintenance mode 32")	No	Replace the switch back sensor.
5	Flap A failure	Does the flap A move smoothly? Is it damaged?	No	Replace the flap A.
6	S/B solenoid ASSY failure	Does the S/B solenoid ASSY move smoothly?	No	Replace the S/B solenoid ASSY.
7	SB roller failure	Does the SB roller move smoothly? Is it damaged?	No	Replace the SB roller.

11.4 Wrinkles

<User Check>

- Check if the document is loaded into the ADF correctly.
- Check whether the document guide matches the document size.
- Check whether the document does not curl.

Step	Cause	Check	Result	Remedy
1	Feed roller positioning section failure	Is each feed roller attached correctly section? (Check the feed roller position in Fig. 5-56)	Yes	Re-assembly each feed roller to the correctly section.

12. SCANNING IMAGE DEFECT TROUBLESHOOTING

12.1 Image Defect Examples

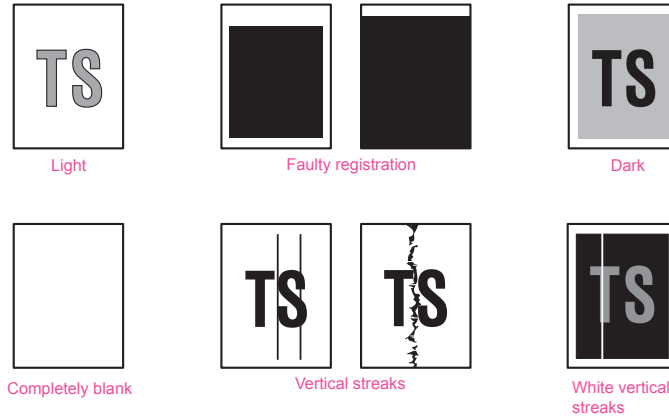


Fig. 3-11

12.2 Troubleshooting Image Defect

Image defect related problems are end user recoverable if following the User Check items. If the same problem occurs, follow each procedure in the order of the number described in the Step column in the tables below.

■ Light on the page

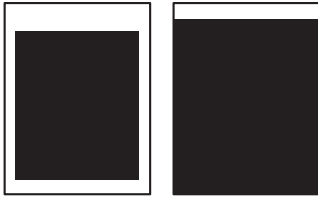


<User Check>

- Check whether the setting of the contrast does not become light.

Step	Cause	Check	Result	Remedy
1	White level data malfunction	Is the problem solved by performing the acquisition of white level data. (Function code 55)	Yes	Perform the acquisition of white level data. (Function code 55)
2	CCD unit failure	Is the problem solved by replacing the CCD unit.	Yes	Replace the CCD unit.
3	Main PCB failure	Is the problem solved by replacing the main PCB.	Yes	Replace the main PCB.

■ **Faulty registration**



1. ADF

Step	Cause	Check	Result	Remedy
1	Document rear actuator catching on some position	Does the document rear actuator move smoothly?	No	Re-assembly the document rear actuator.
2	Fine adjustment of scan start position misalignment	Is the problem solved by performing the fine adjustment of scan start position. (Function code 54)	Yes	Perform the fine adjustment of scan start position. (Function code 54)

2. Document table

Step	Cause	Check	Result	Remedy
1	Fine adjustment of scan start position misalignment	Is the problem solved by performing the fine adjustment of scan start position. (Function code 54)	Yes	Perform the fine adjustment of scan start position. (Function code 54)
2	CCD unit failure	Is the problem solved by replacing the CCD unit.	Yes	Replace the CCD unit.

■ **Dark**

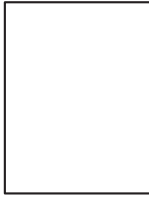


<User Check>

- Check whether the setting of the contrast does not become dark.

Step	Cause	Check	Result	Remedy
1	White level data malfunction	Is the problem solved by performing the acquisition of white level data. (Function code 55)	Yes	Perform the acquisition of white level data. (Function code 55)
2	CCD unit failure	Is the problem solved by replacing the CCD unit.	Yes	Replace the CCD unit.
3	Main PCB failure	Is the problem solved by replacing the main PCB.	Yes	Replace the main PCB.

■ **Completely blank**



Step	Cause	Check	Result	Remedy
1	White level data malfunction	Is the problem solved by performing the acquisition of white level data. (Function code 55)	Yes	Perform the acquisition of white level data. (Function code 55)
2	CCD unit failure	Is the problem solved by replacing the CCD unit.	Yes	Replace the CCD unit.
3	Main PCB failure	Is the problem solved by replacing the main PCB.	Yes	Replace the main PCB.

■ **Vertical streaks**



<User Check>

- Check if the ADF glass or document glass is not stained.

Step	Cause	Check	Result	Remedy
1	CCD unit failure	Is the problem solved by replacing the CCD unit.	Yes	Replace the CCD unit.
2	ADF or document glass failure	Is the problem solved by replacing the scanner unit.	Yes	Replace the scanner unit.

■ **White vertical streaks**



<User Check>

- Check if the ADF glass or document glass is not stained.

Step	Cause	Check	Result	Remedy
1	CCD unit failure	Is the problem solved by replacing the CCD unit.	Yes	Replace the CCD unit.
2	ADF or document glass failure	Is the problem solved by replacing the scanner unit.	Yes	Replace the scanner unit.

13. OTHERS PROBLEMS

■ The machine is not turned on, or the LCD indication does not appear.

Step	Cause	Check	Result	Remedy
1	Harness connection failure of LCD panel PCB	Is the harness of the LCD panel PCB ASSY connected correctly?	No	Reconnect the LCD panel PCB ASSY harness.
2	LCD panel PCB failure	Is the problem solved after replacing the LCD panel PCB ASSY?	Yes	Replace the LCD panel PCB ASSY.
3	LCD panel failure	Is the problem solved after replacing the LCD panel ASSY?	Yes	Replace the LCD panel ASSY.
4	Low-voltage power supply failure	Is the problem solved after replacing the PS PCB unit?	Yes	Replace the PS PCB unit.
5	Main PCB	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.

■ The fan does not work.

(Verify the position of each fan referring to "4.19 Operational Check of Fans (Function code 78)" in Chapter 7.)

Step	Cause	Check	Result	Remedy
1	Harness connection failure of the appropriate fan	Is the harness of the appropriate fan connected correctly?	No	Reconnect the harness of the appropriate fan correctly.
2	Charge HVPS PCB failure	Is the problem solved after replacing the charge HVPS PCB ASSY?	Yes	Replace the charge HVPS PCB ASSY. Replace the fuser unit fan (FU) and air intake fan (AIR).
3	Low-voltage power supply failure	Is the problem solved after replacing the PS PCB unit?	Yes	Replace the PS PCB unit. Replace the LVPS fan (PS).
4	Main PCB	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.

■ Pickup function of paper tray does not work.

Step	Cause	Remedy
1	Link lever not operating smoothly or catching.	Make sure correct movemet of the link lever.
2	Pickup roller holder ASSY not operating smoothly or catching.	Make sure correct movement of the pickup roller holder ASSY.
3	Link lever damaged	Replace the link lever.
4	Roller holder ASSY failure	Replace the roller holder ASSY.
5	Paper feed/belt cleaner motor failure	Replace the paper feed/belt cleaner motor.

■ The new toner is not detected.

Step	Cause	Remedy
1	New toner actuator not operating smoothly or catching.	Make sure correct movement of the new toner actuator of the appropriate color.
2	New toner actuator damaged	Replace the drum unit.
3	Main PCB failure	Replace the main PCB ASSY.
4	Toner sensor PCB (TE/NEW) failure	Replace the toner sensor PCB ASSY (TE/NEW) of the appropriate color.

■ Printing from Macintosh applications fails.

<User Check>

- Check that the printer driver which, is supplied with the product, is installed in Library/Printers, and that the print queue is created.
- Check the connecting end on the printer browser. It must be matched with the connecting end which is actually connected.

Step	Possible cause	Check	Result	Remedy
1	Failure inside the machine	Does the machine print test pattern? (Check it following the procedure described in "4.5 Test Pattern 1 (Function code 09)" in Chapter 7.)	No	Identify the error type, and then refer to the specified section of this chapter.
2	Breakage of main PCB	Does the machine make a print using a correct PC and a USB cable?	No	Replace the main PCB ASSY.

■ USB direct printing does not work.

Step	Cause	Remedy
1	USB host PCB failure	Replace the USB host PCB.
2	Main PCB failure	Replace the main PCB ASSY.

CHAPTER 4

PERIODIC MAINTENANCE

CHAPTER 4 PERIODIC MAINTENANCE

CONTENTS

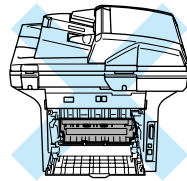
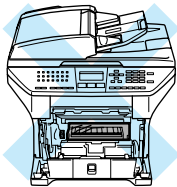
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1. PERIODIC MAINTENANCE PARTS

To avoid creating secondary problems by mishandling, follow the warnings below during maintenance work.

 **WARNING**

- Always turn off the power switch and unplug the power cord from the power outlet before accessing any parts inside the machine.
- When opening the front cover or back cover to access any parts inside the machine, never touch the shaded parts shown in the following figures.
- DO NOT use flammable substances such as alcohol, benzene, thinner or any type of spray to clean the inside or outside of the machine. Doing this may cause a fire or electrical shock.



1.1 Periodical Replacement Parts

Periodical replacement parts are the parts to be replaced periodically to maintain product quality. These parts would affect the product quality greatly if they lost their function even if they do not appear to be damaged or there is no change in their appearance.

The periodical replacement parts listed below should be replaced at the service center referring to the service life.

Parts Name	LCD Message (HL-5380DN)	Qty	Approximate Life ^{*1} (number of prints)	Replacement Procedure
Fuser Unit	REPLACE FUSER	1	100,000 pages	See subscription 1.2.1, Chapter 4
Laser Unit	REPLACE LASER	1	100,000 pages	
PF kit for Tray 1 ^{*3}	REPLACE PF KIT1	1	100,000 pages	See subscription 1.2.2, Chapter 4
PF kit for Tray 2 ^{*3}	REPLACE PF KIT2	1	100,000 pages	
MP PF tray ^{*2}	REPLACE PF KIT MP	1	Except for China/ India: 50,000 pages	See subscription 1.2.3, Chapter 4
			China: 25,000 pages	
			India: 12,000 pages	

To reset the count of each periodical replacement parts, refer to "5.1 Resetting the Periodical Replacement Parts Life" in Chapter 7.

^{*1} At 5% print coverage (A4 or Letter size). The actual number of printed pages will vary depending on the print jobs and paper you use. The number is calculated when simplex printed the normal business document (ISO/IEC19752) on the A4 size.

^{*2} Paper feeding kit MP means the MP roller holder ASSY and the separation pad ASSY MP.

^{*3} Paper feeding kit for Tray 1, Tray 2 and Tray 3 means the roller holder ASSY, the separation pad ASSY and the separation pad spring. Tray 1, Tray 2 and Tray 3 are the same kit.

Note :

- Always turn off the power switch of the printer and unplug the power cord from the power outlet before replacing the periodical replacement parts.
- If the Fuser Unit is replaced after errors related to the Fuser Unit occur, it is necessary to leave the printer power ON for ten minutes after part replacement. This will make the printer to be released from errors.
- After disconnecting flat cables, check that each cable is not damaged at its end or short-circuited.
- When connecting flat cables, do not insert them at an angle. After insertion, check that the cables are not at an angle.

1.2 Procedures to Replace Periodical Replacement Parts

1.2.1 Fuser unit and laser unit

<Uninstalling Procedure>

Check that the following before entering the procedures.

- Make sure that the AC cord is disconnected from the printer.
- Make sure that the Drum/toner ASSY is removed.
- Make sure that the DX feed ASSY or DX blank cover is removed.
- Make sure that the Paper is removed from the Paper tray.

(1) Open the Back cover.

(2) Remove the Pins of the Outer chute from the Back cover.

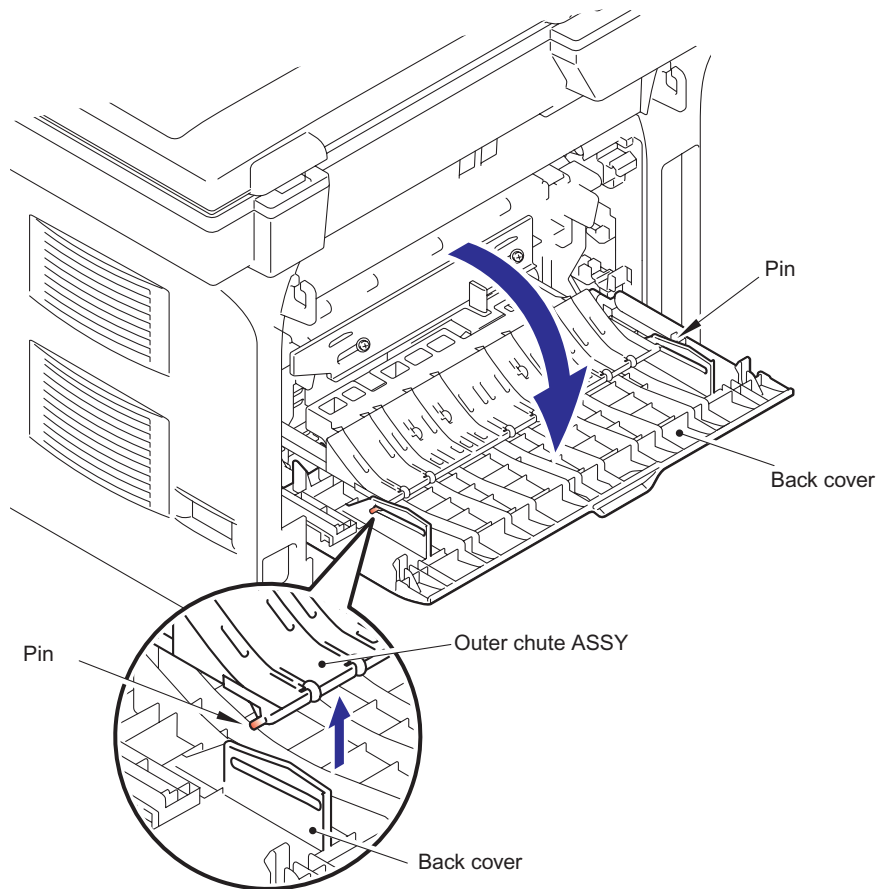


Fig. 4-1

- (3) Remove the Arms of the Back cover from the Pins.
- (4) Remove the Back cover.

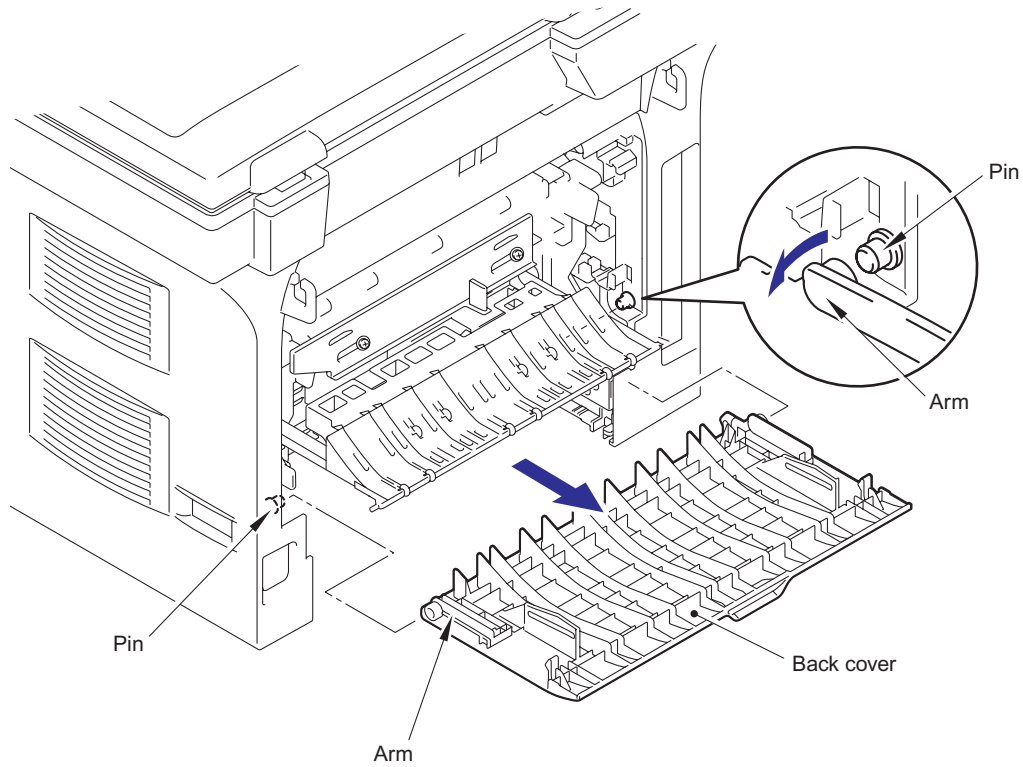


Fig. 4-2

- (5) Hold the Knobs on the Rear chute ASSY and pull down this to your side.
- (6) Remove the Arms of the Rear chute ASSY from the Pins.
- (7) Remove the Rear chute ASSY.

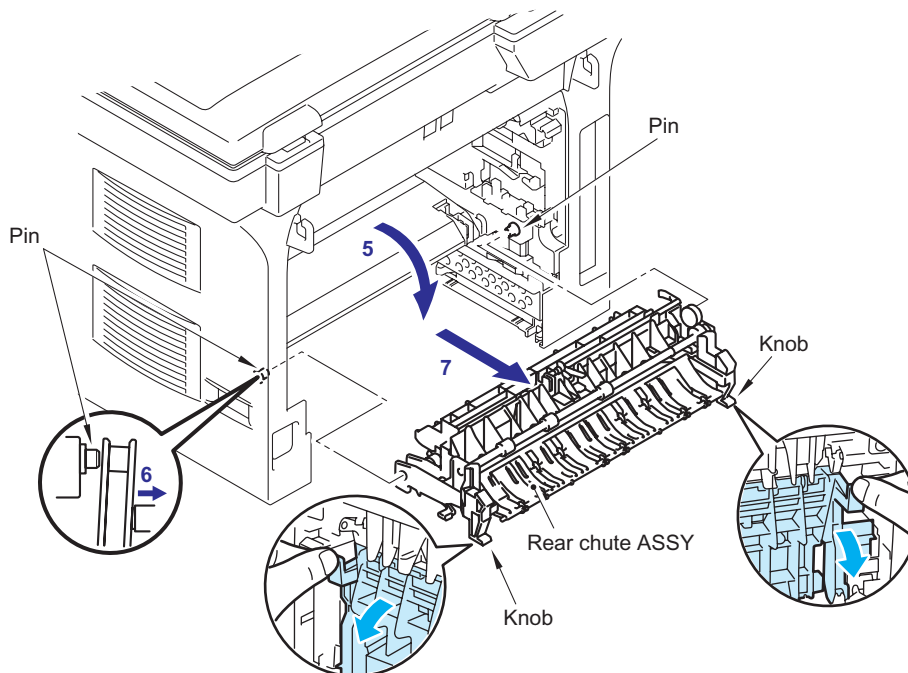


Fig. 4-3

- (8) Remove the pan B M4x20 Taptite screw. Release the Hooks in the order of 8a, 8b and 8c. Remove the FU harness cover 1.

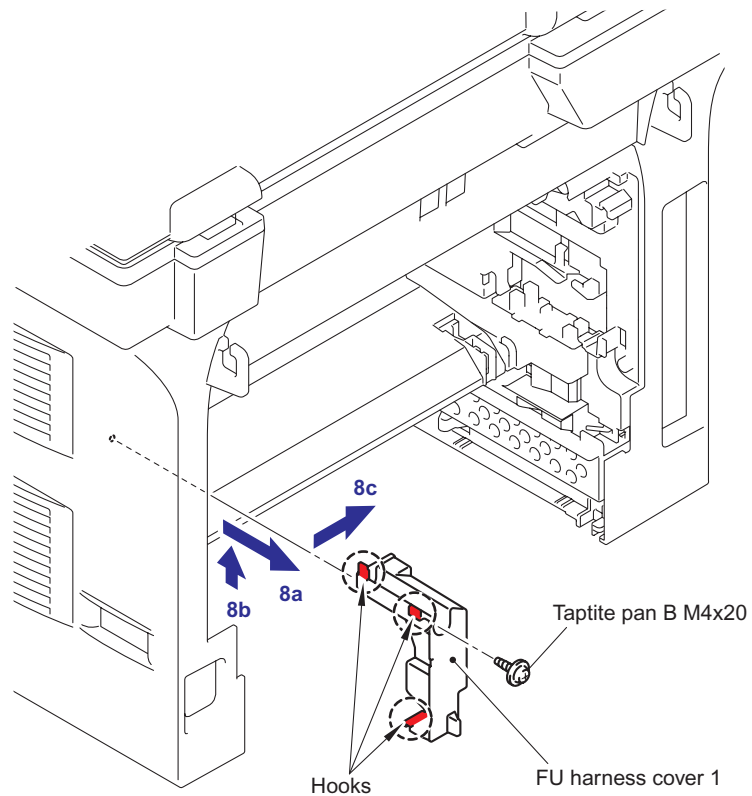


Fig. 4-4

- (9) Disconnect the connector of the Heater terminal while pressing the Hook of the connector of the Fuser unit.

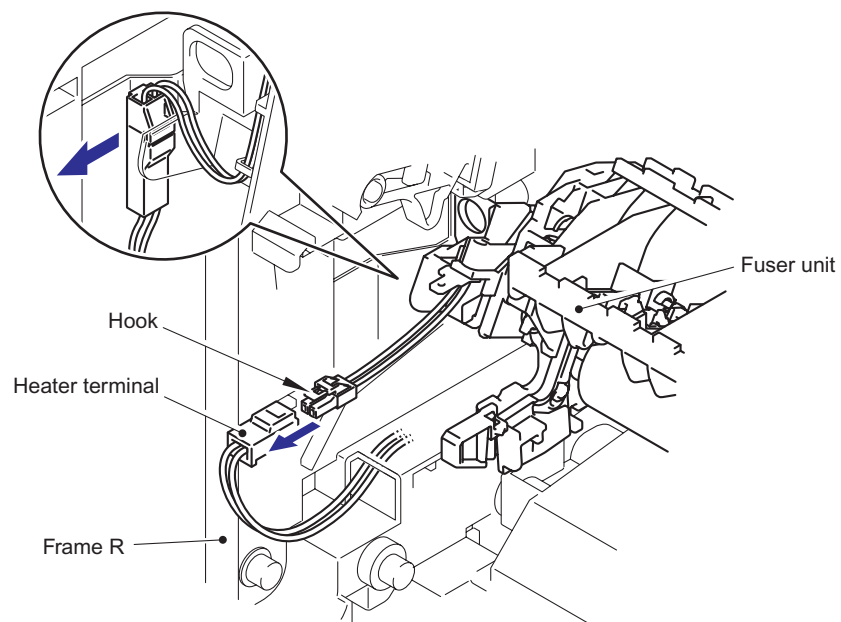


Fig. 4-5

(10) Pull the FU harness cover 2 to the direction of 10a while pressing the Hook and pull out the FU harness cover 2 from the back of the printer.

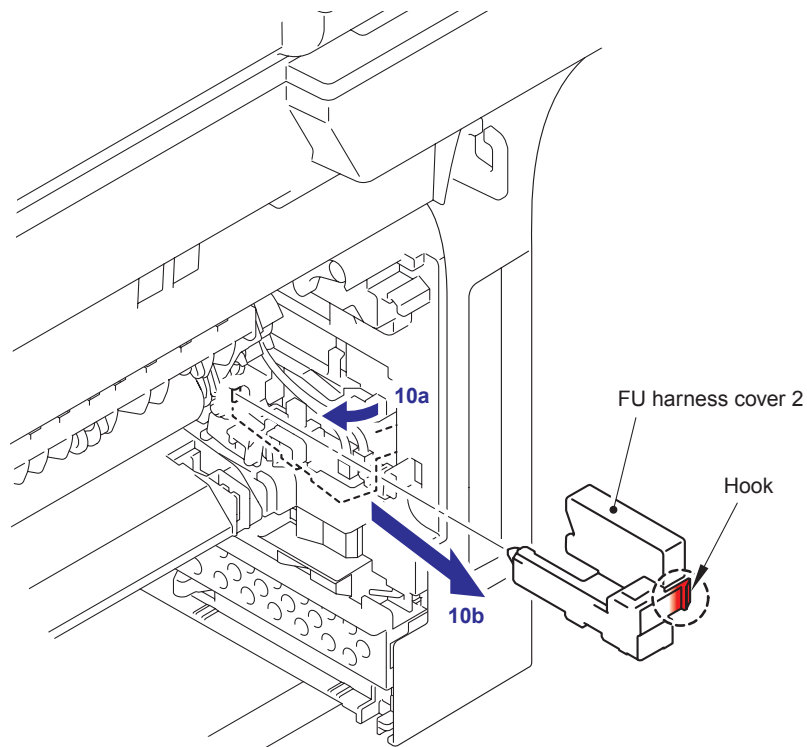


Fig. 4-6

(11) Disconnect the connectors of the Thermistor ASSY M and Thermistor ASSY S from the Relay rear PCB ASSY, and remove the harnesses of these thermistors.

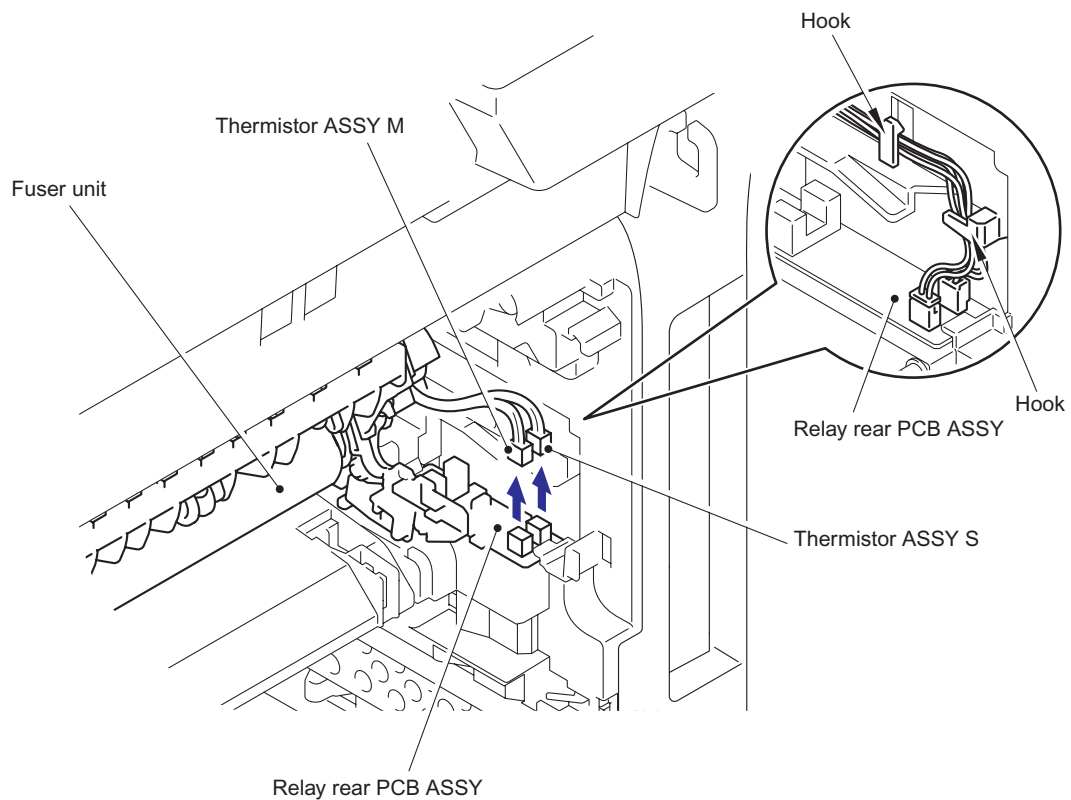


Fig. 4-7

(12) Remove the pan B M4x20 Taptite screw to remove the Fuser unit.

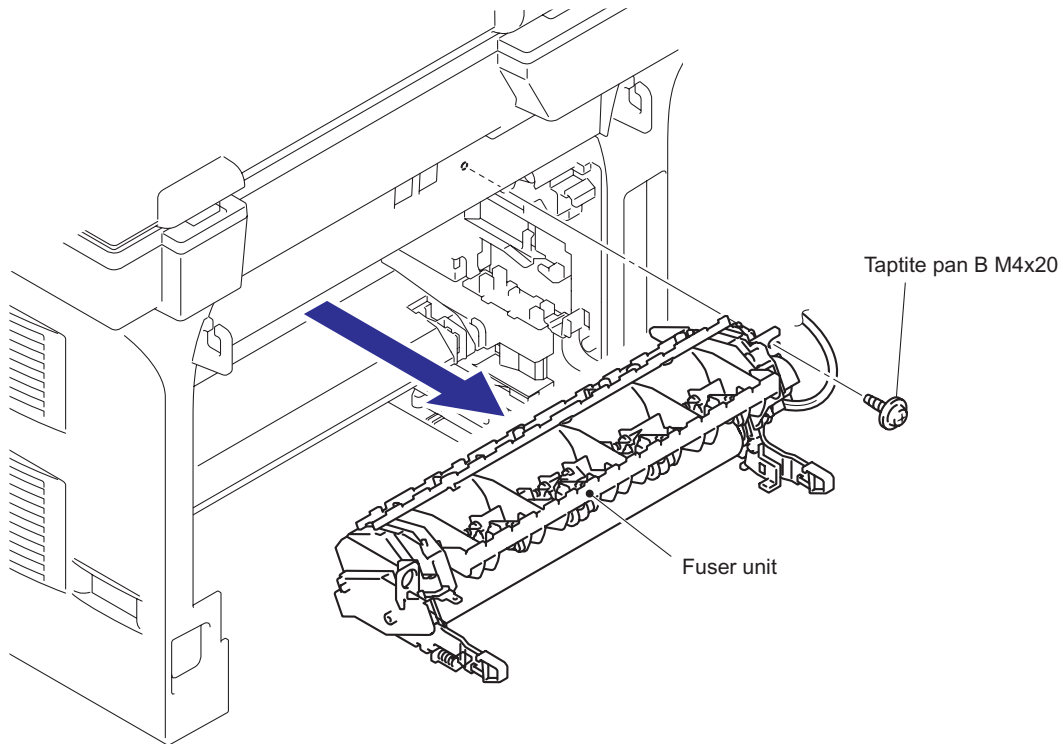


Fig. 4-8

(13) Open the Front cover, remove the two bind B M4x12 Taptite screws, and then remove the Side cover L by releasing the Hooks in the order of 13a to 13d.

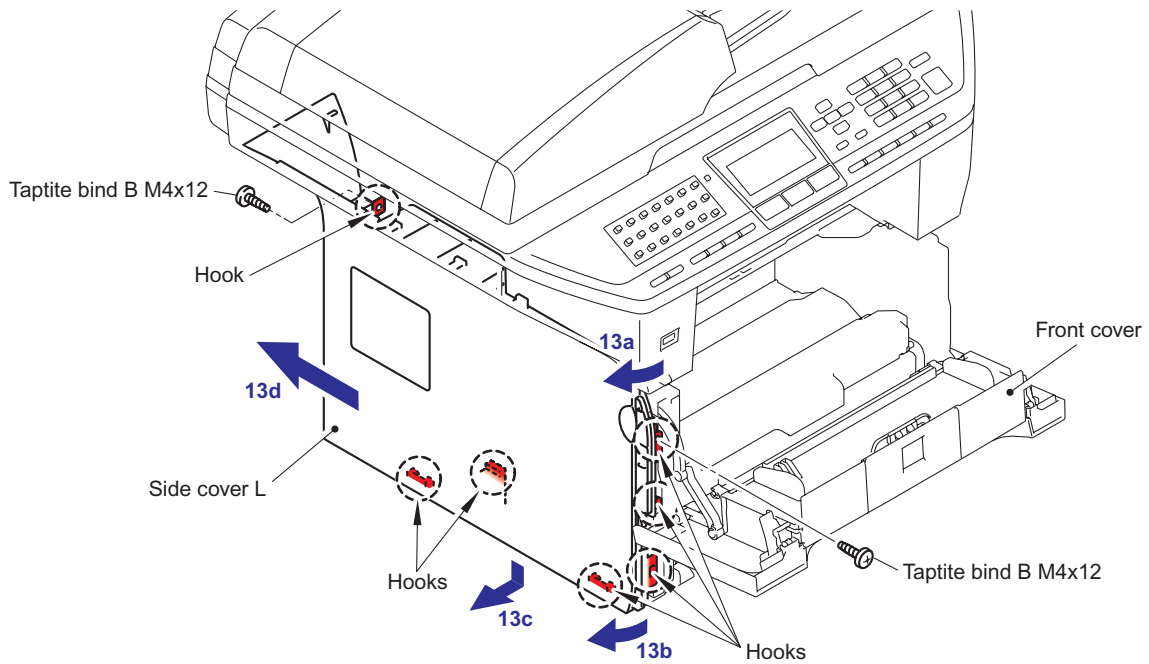


Fig. 4-9

(14) Remove the four cup S M3x6 SR Taptite screws to remove the Shield cover ASSY and the two FG harnesses.

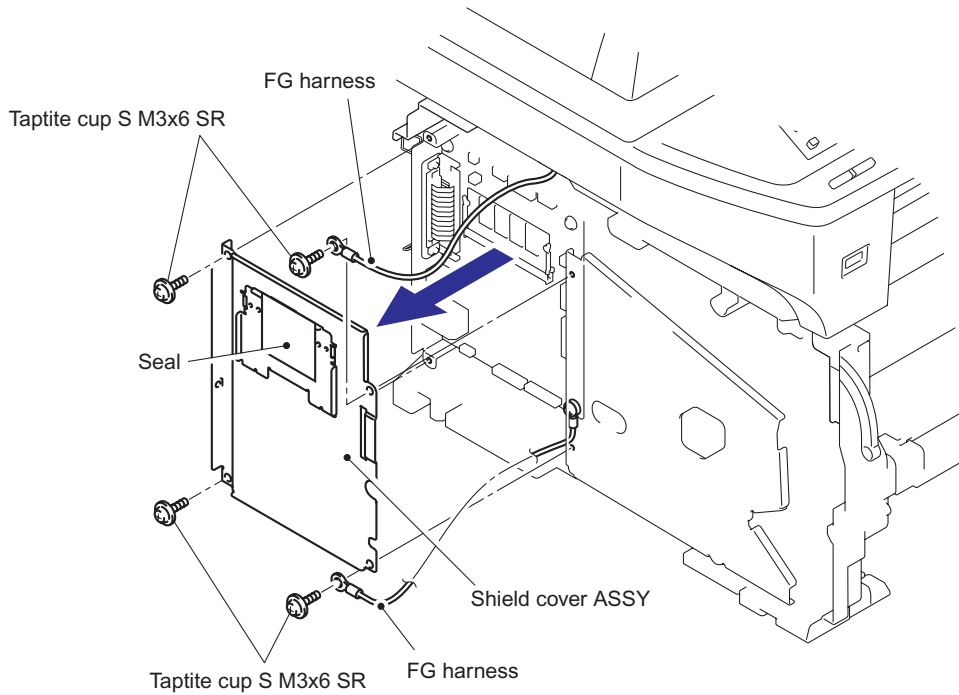


Fig. 4-10

(15) Remove the two bind B M4x12 Taptite screws, and then remove the Side cover R by following the direction from 15a to 15d.

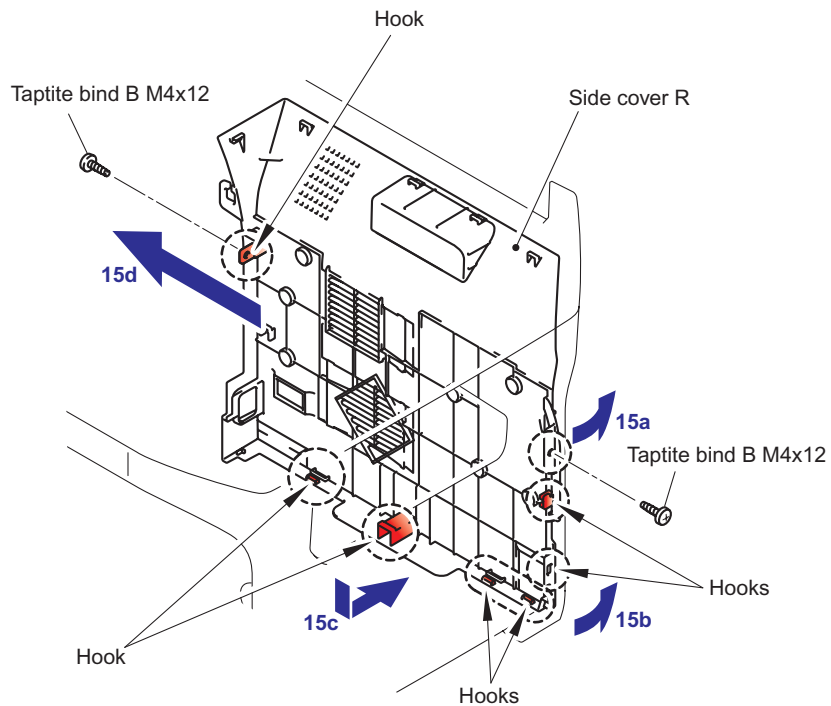


Fig. 4-11

- (16) Remove the cup S M3x6 Taptite screw, remove the ADF FG harness and FB FG harness.
- (17) Disconnect the Connector from the Driver PCB.
- (18) Disconnect the two Connectors from the Main PCB.

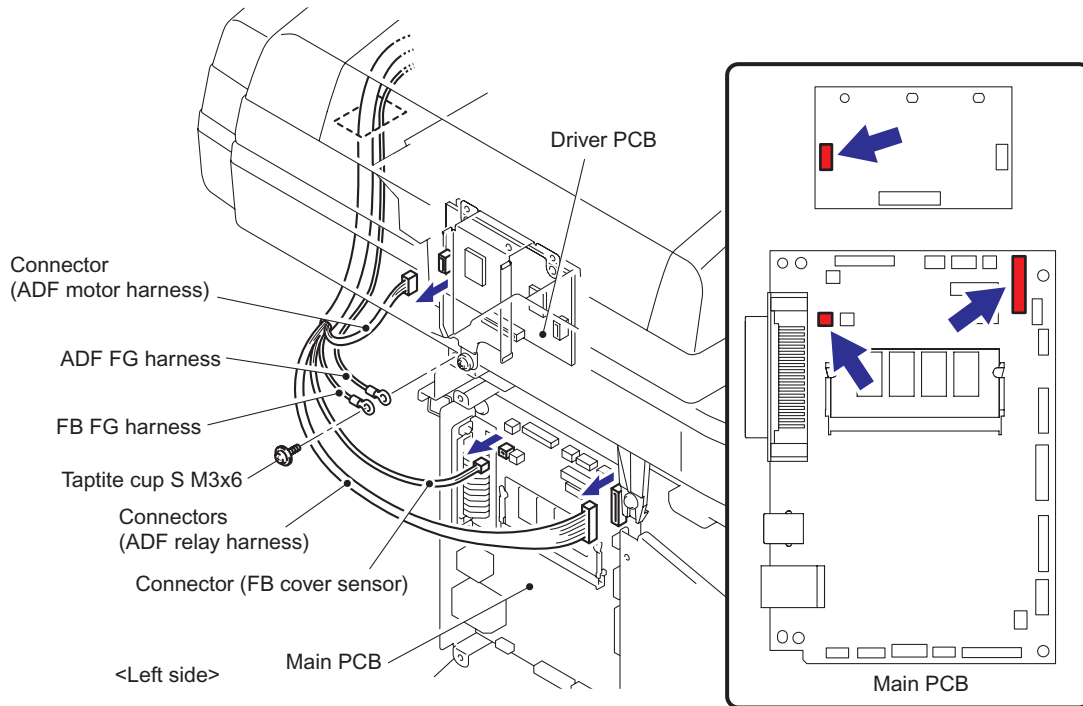


Fig. 4-12

- (19) Disconnect the connector of the Scanner motor harness from the Driver PCB.
- (20) Disconnect the connectors of the Photo interrupter and FFC cable from the Main PCB.

Note :

- After disconnecting flat cable(s), check that each cable is not damaged at its end or short-circuited.

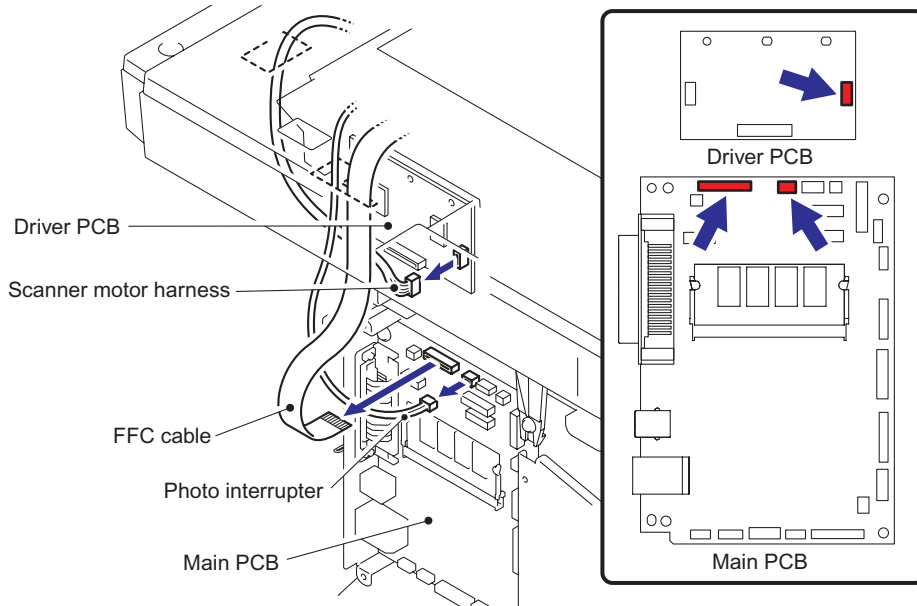


Fig. 4-13

- (21) Disconnect the six connectors of the each harness from the Main PCB.

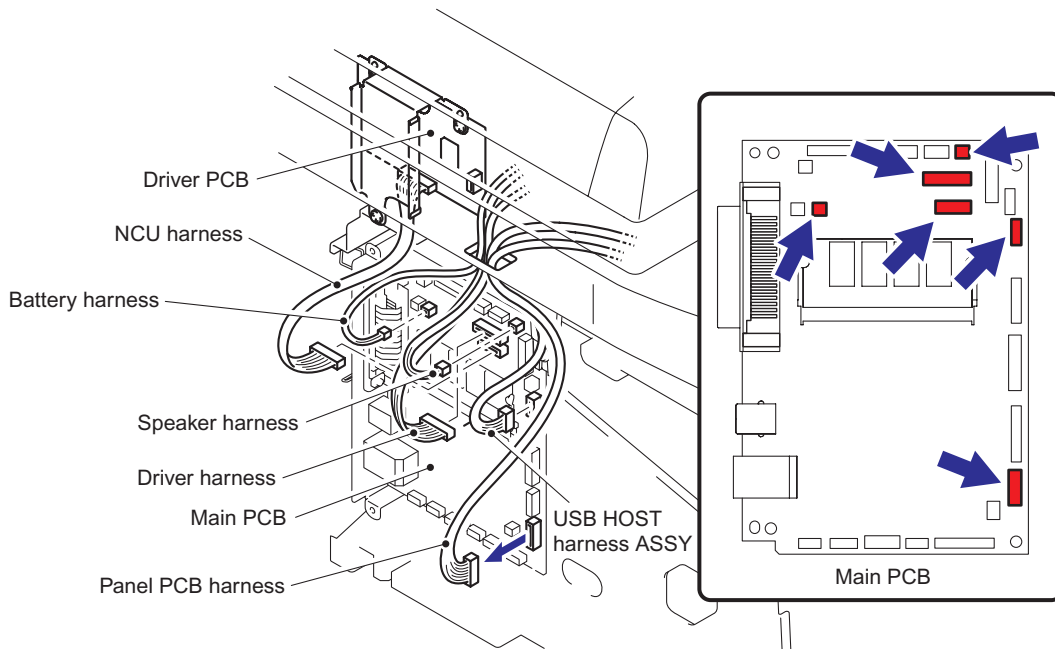


Fig. 4-14

(22) Remove the two bind B M4x12 Taptite screws, and then remove the Document scanner.

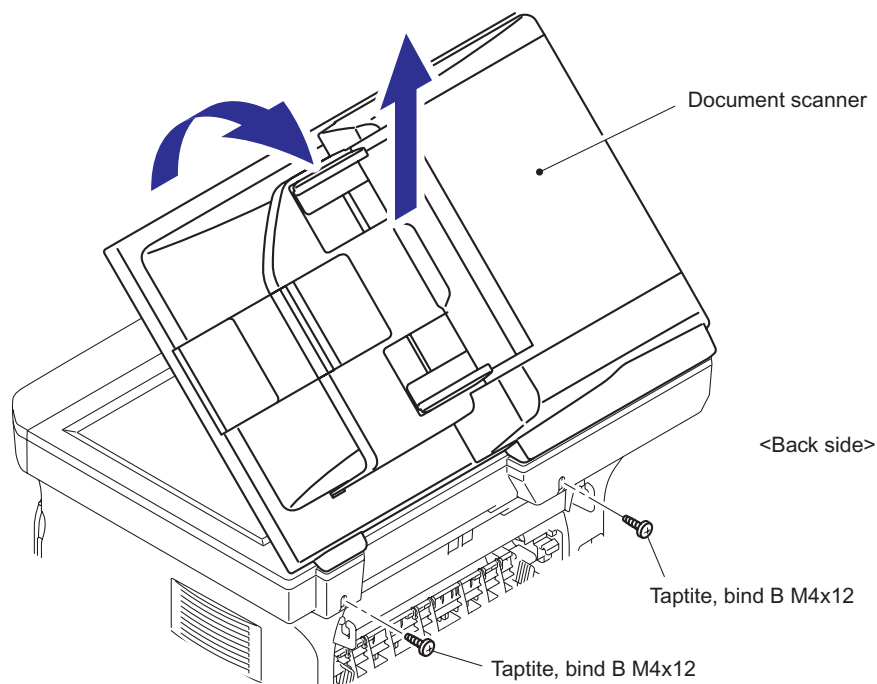


Fig. 4-15

(23) Remove the two cup B M4x20 Taptite screws. Lift up the rear of the Scanner unit slightly and remove the Scanner unit.

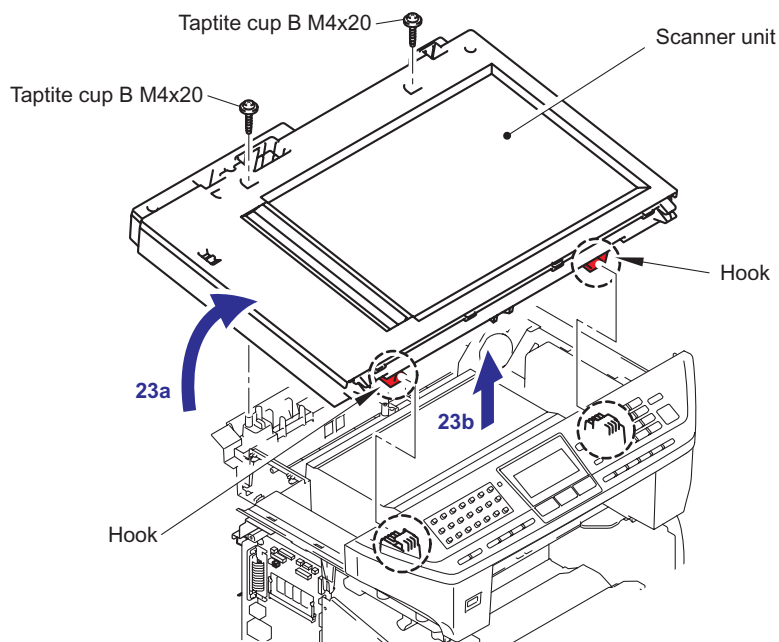


Fig. 4-16

- (24) Remove the cup S M3x6 SR Taptite screw, and remove the Screw pan (S/P washer) M3.5x6 of the NCU FG harness ASSY.

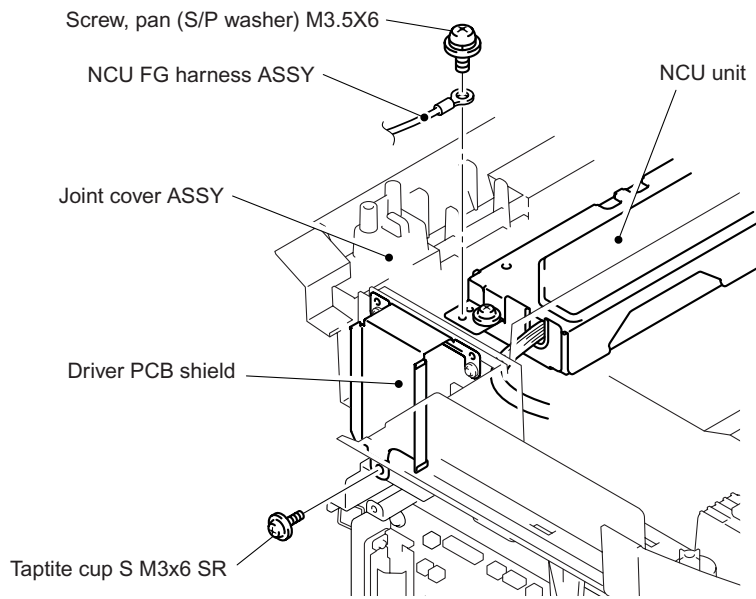


Fig. 4-17

- (25) Remove the four bind B M4x12 Taptite screws from the Joint cover.
- (26) Release all Hooks of the Joint cover and lift up the front side of the Joint cover.
- (27) Pull out the Joint cover to the front side.

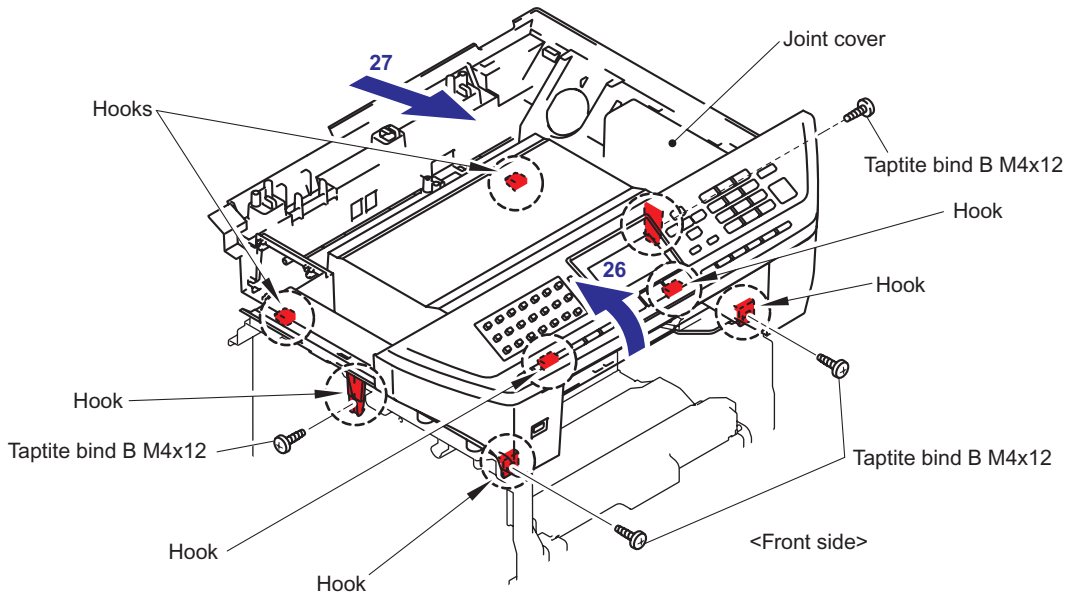


Fig. 4-18

(28) Disconnect the harness of the wireless PCB ASSY.

(29) Slide the Sub duct to the direction of 29b while pressing the Hook to the direction of 29a and remove the Sub duct from the Air duct.

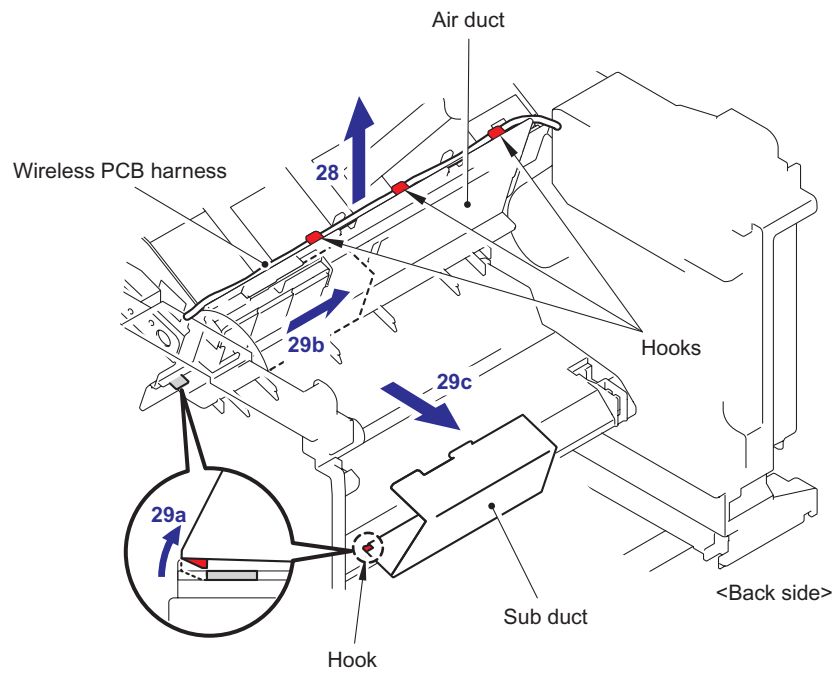


Fig. 4-19

(30) Remove the Filter from the Air duct.

Note :

- The filter is dirt. Be careful when disassembling or assembling it.

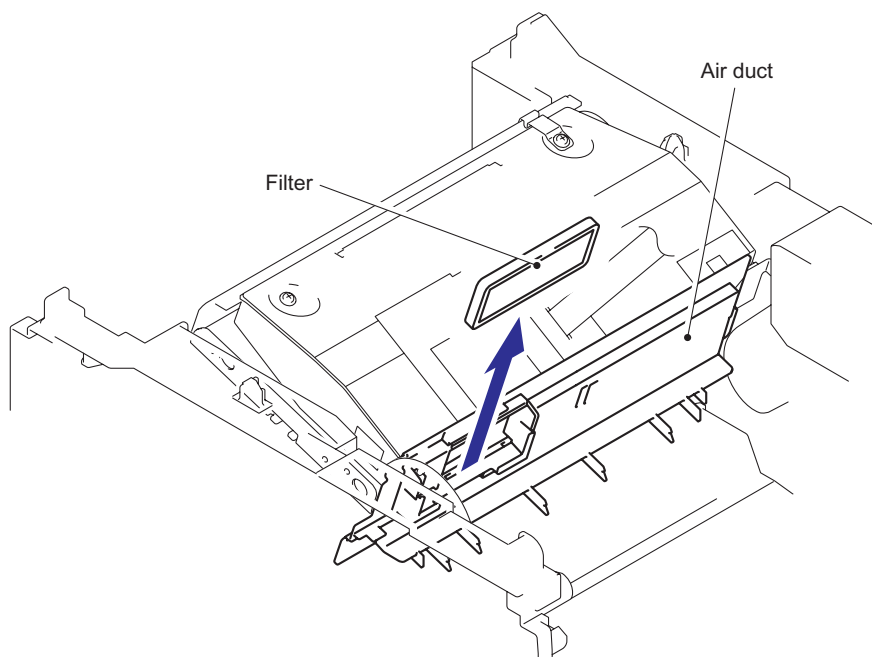


Fig. 4-20

(31) Remove the Pin of the Air duct from the frame. Slide the Air duct to the direction of 31b and remove the Air duct.

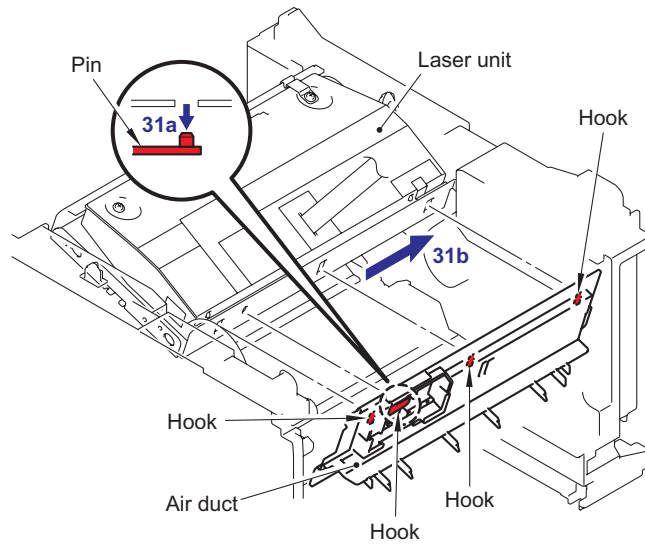


Fig. 4-21

(32) Remove the two Flat cables from the Main PCB.

Note :

- After disconnecting flat cable(s), check that each cable is not damaged at its end or short-circuited.

(33) Remove the six cup S M3x6 Taptite screws.

(34) Remove the Protective film from the Flat cable.

(35) Pull out the two Flat cables from the Core.

(36) Remove the Laser unit.

Note :

- Be careful not to lose the Protective film attached on the flat cable.
- Do not touch the Laser scanner window directly.

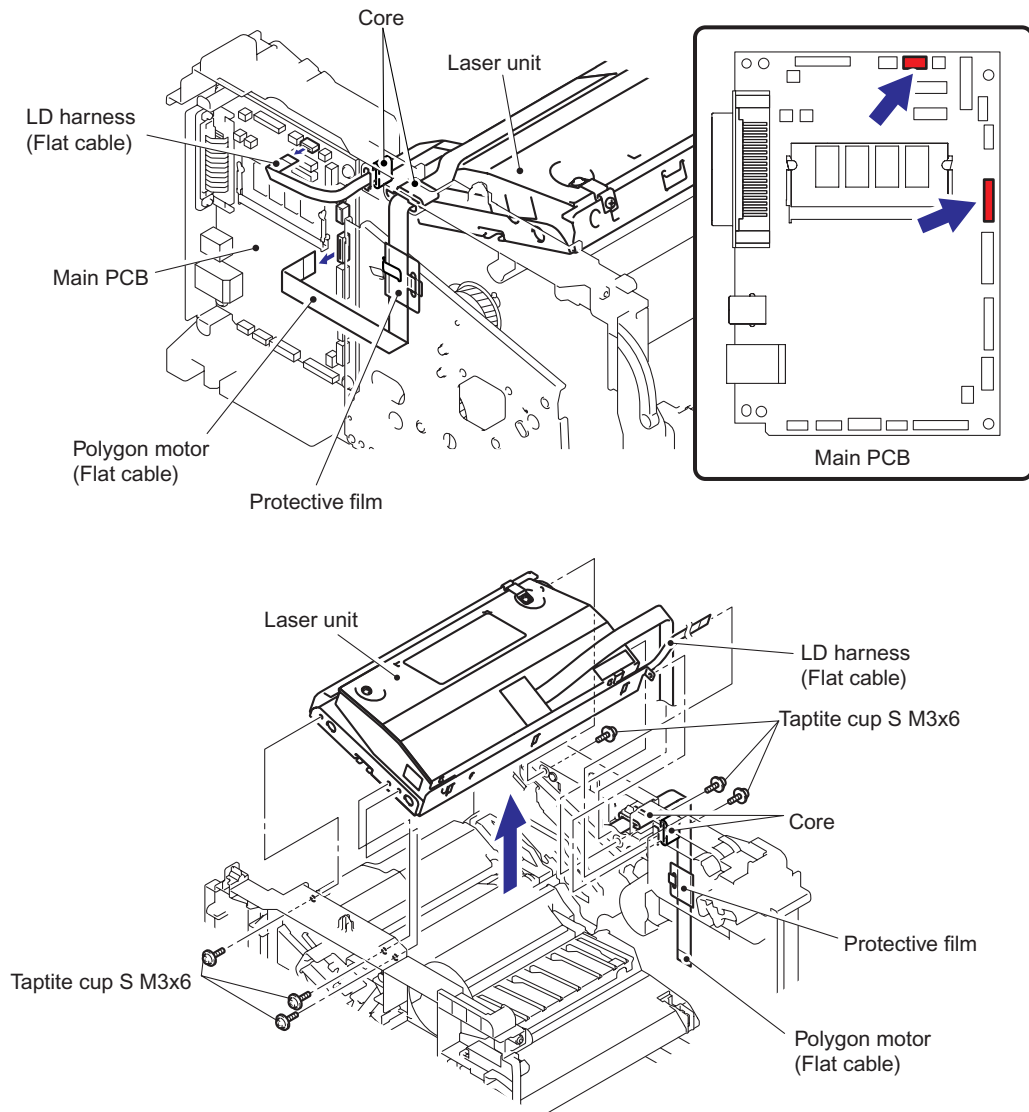


Fig. 4-22

< Installing Procedure >

- (1) Secure the Laser unit with the six cup S M3x6 Taptite screws.
- (2) Put the Flat cable (LD harness connector) through the Core.
- (3) Put the Flat cable (Polygon motor connector) through the Core and Protective film.
(Refer to "7. HARNESS ROUTING" in Chapter 5.)
- (4) Connect the two Flat cables to the Main PCB.

Note :

- When connecting flat cable(s), do not insert them at an angle. After insertion, check that the cables are not at an angle.

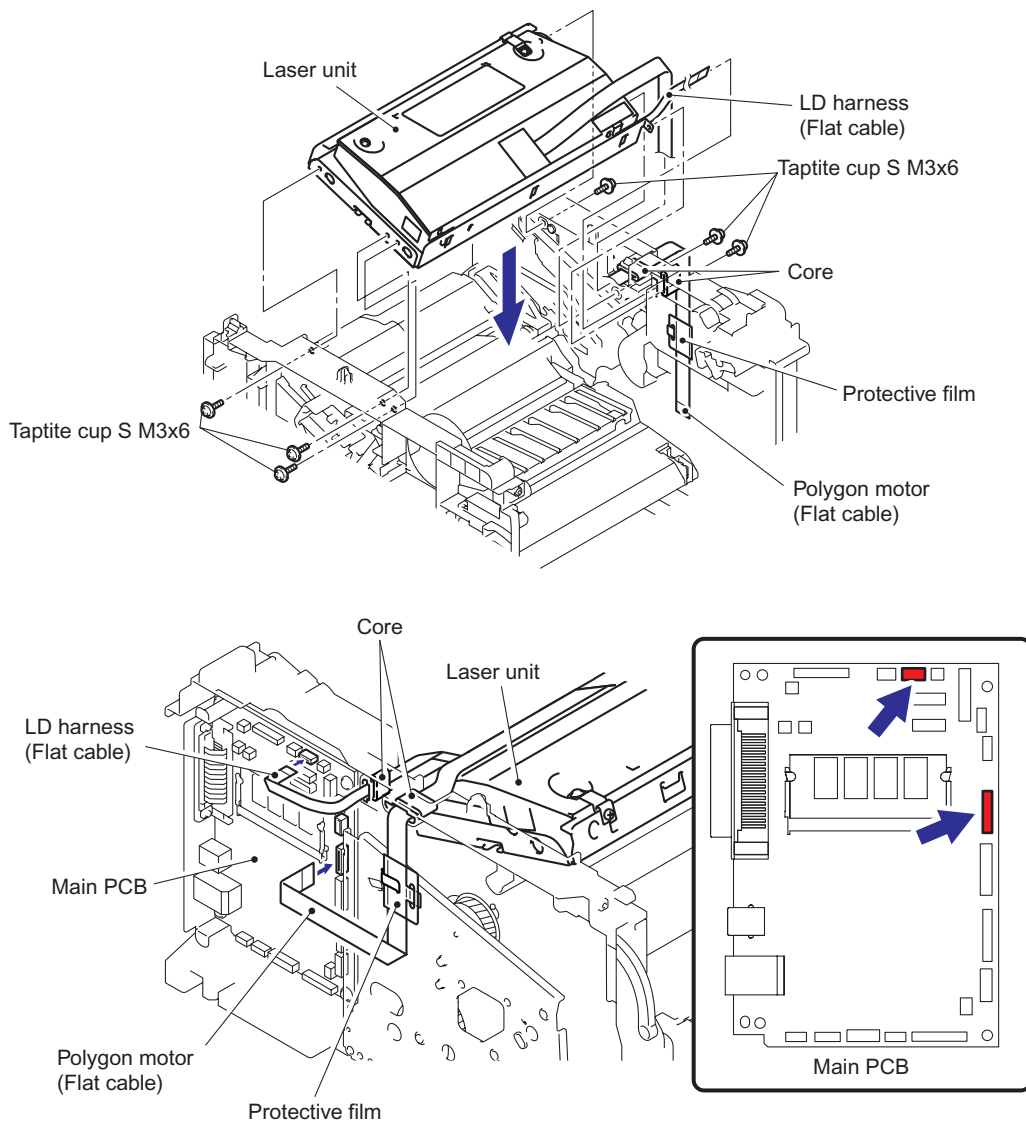


Fig. 4-23

(5) Install the Air duct into the Laser unit.

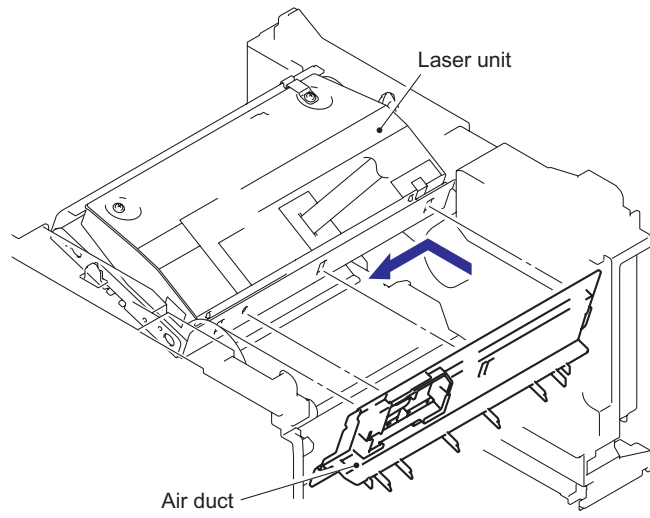


Fig. 4-24

(6) Install the Filter into the Air duct.

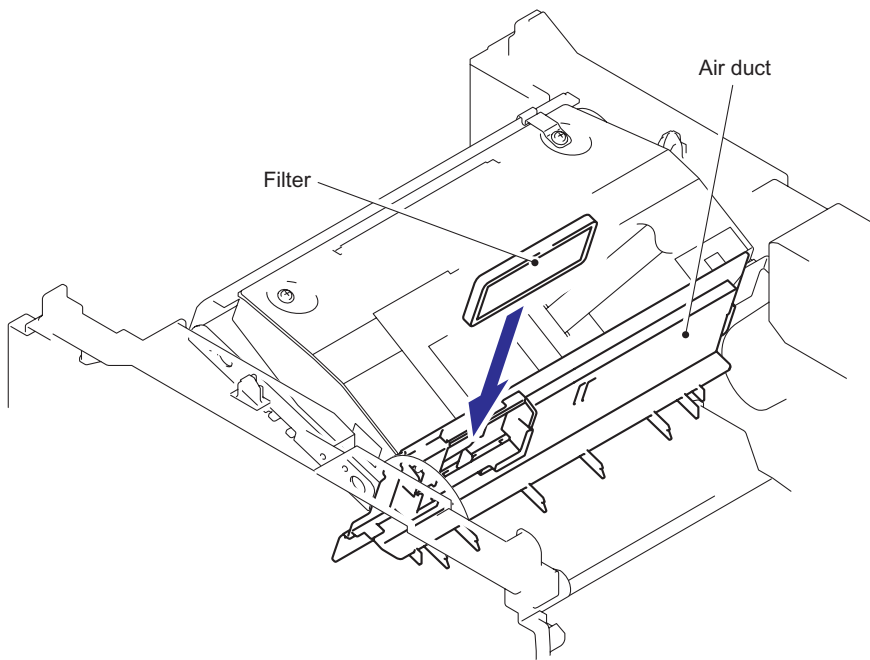


Fig. 4-25

- (7) Install the Sub duct into the Air duct.
- (8) Connect the harness of the wireless PCB ASSY.

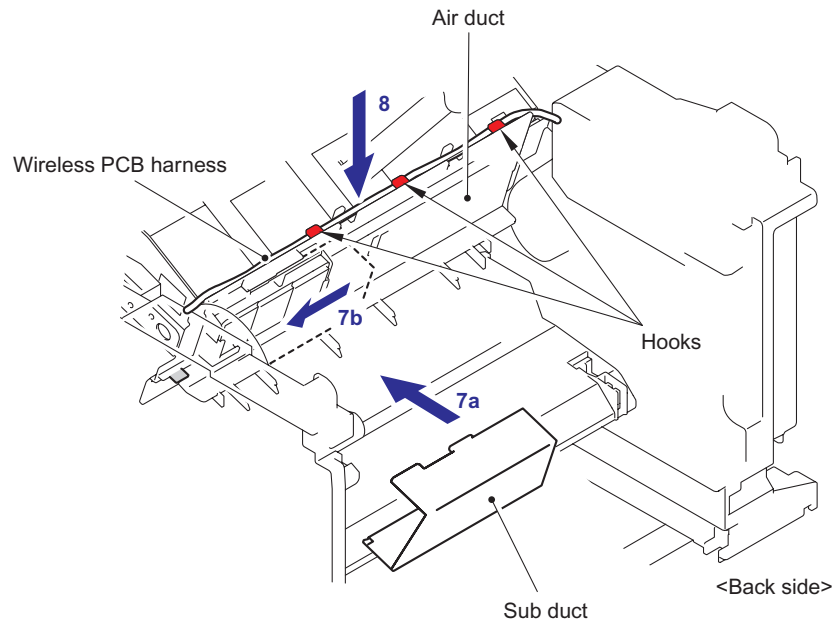


Fig. 4-26

- (9) Secure the Joint cover with the four bind B M4x12 Taptite screws.

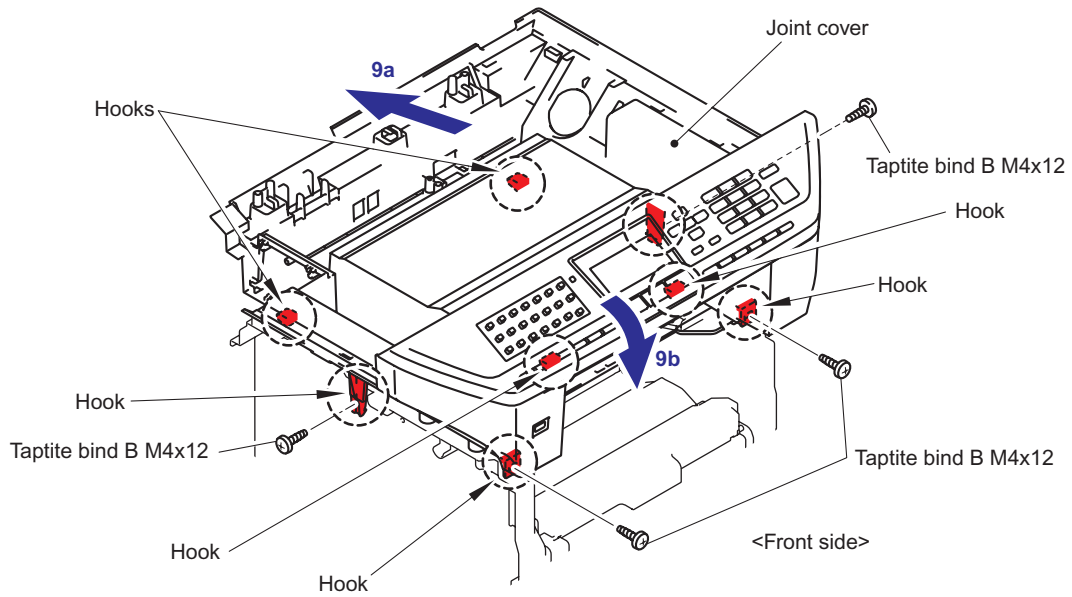


Fig. 4-27

(10) Secure the Screw pan (S/P washer) M3.5x6 of the NCU FG harness ASSY.

(11) Secure the cup S M3x6 SR Taptite screw.

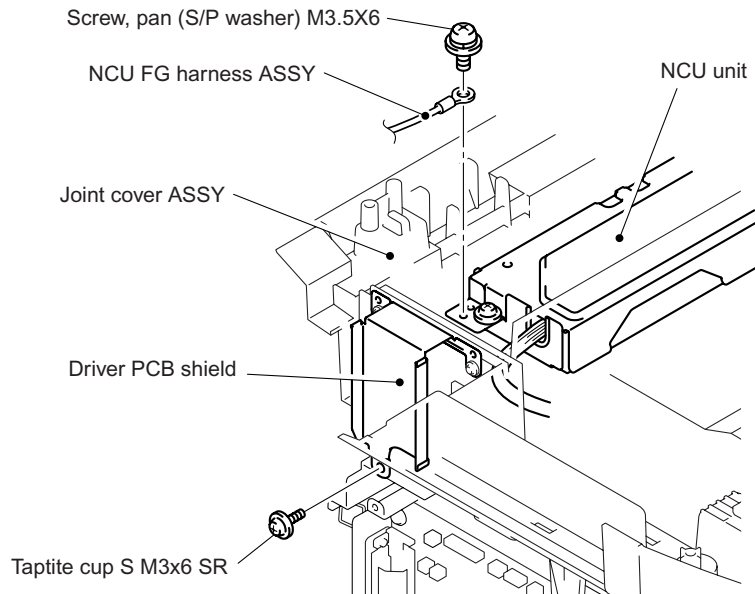


Fig. 4-28

(12) Catch the Hooks of the Scanner unit into the Joint cover and secure the Scanner unit with the two cup B M4x20 Taptite screws.

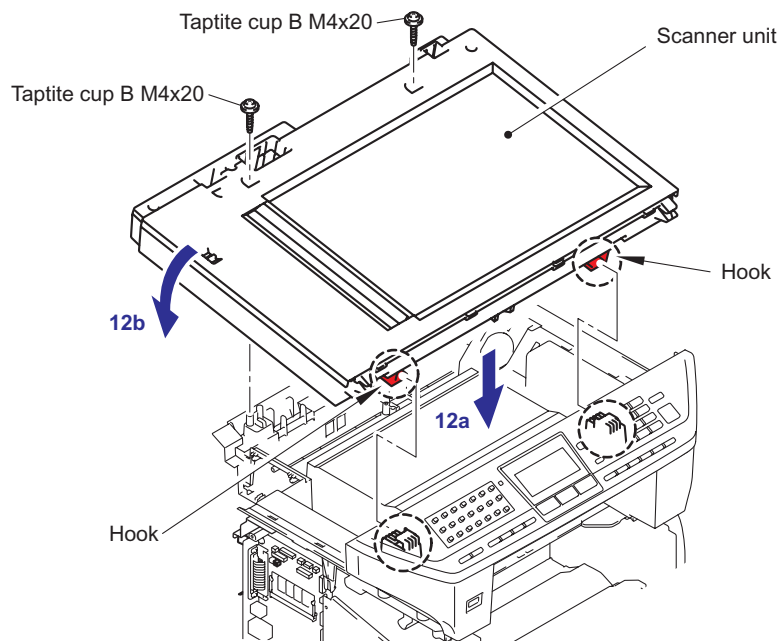


Fig. 4-29

(13) Secure the Document scanner with the two bind B M4x12 Taptite screws.

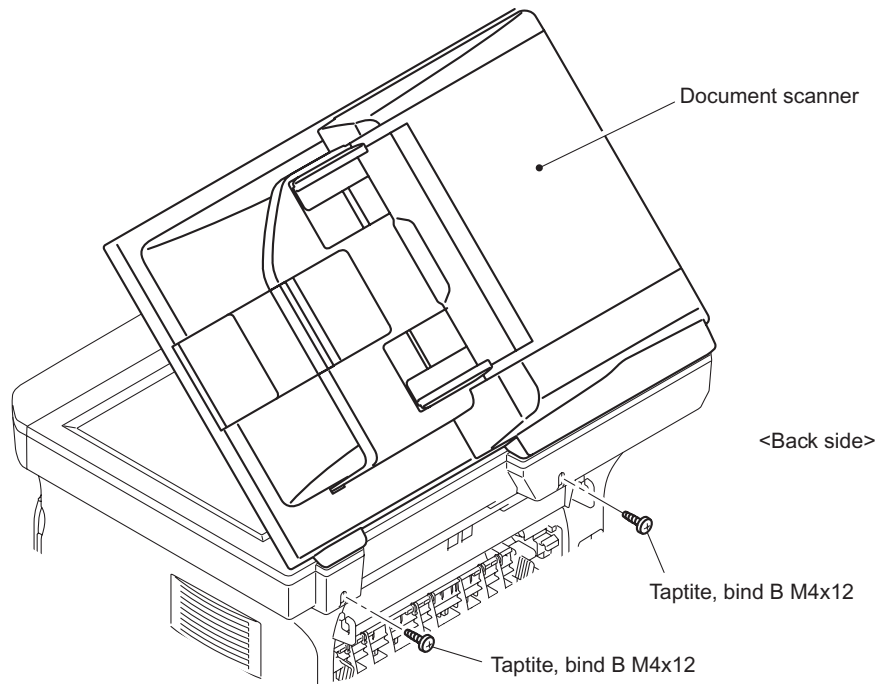


Fig. 4-30

(14) Connect the two Connectors into the Main PCB.

(15) Connect the Connector into Driver PCB.

(16) Secure the ADF FG harness and FB FG harness with the cup S M3x6 Taptite screw.

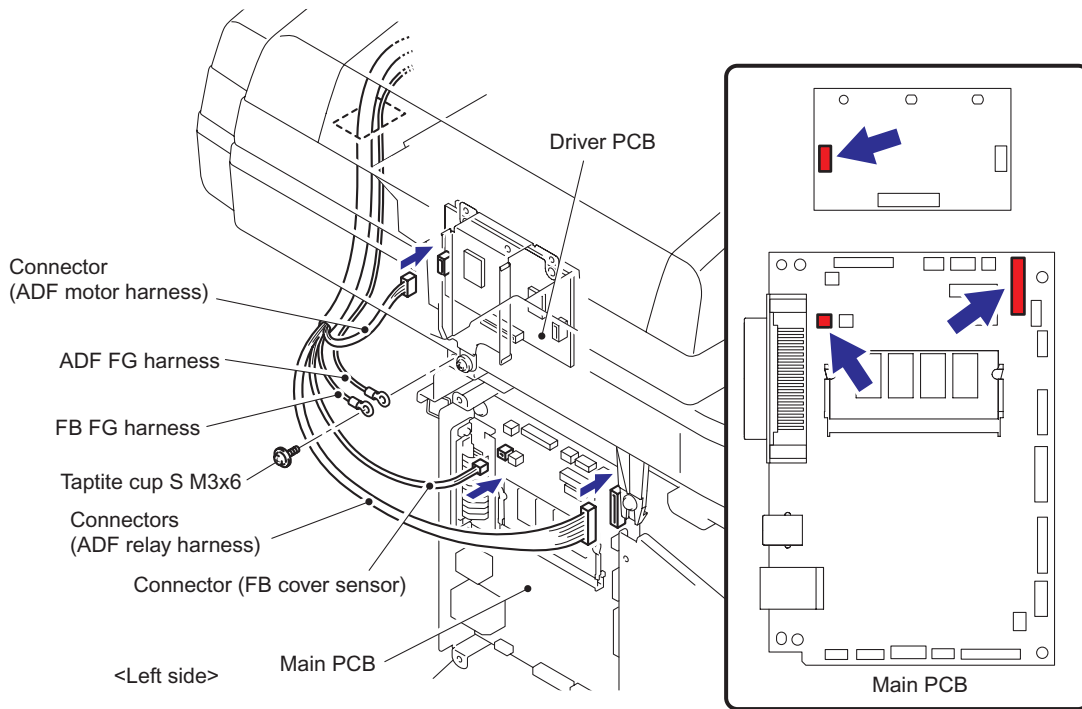


Fig. 4-31

(17) Connect the connectors of the Photo interrupter and FFC cable into the Main PCB.

Note :

- When connecting flat cable(s), do not insert them at an angle. After insertion, check that the cables are not at an angle.

(18) Connect the connector of the Scanner motor harness into the Driver PCB.

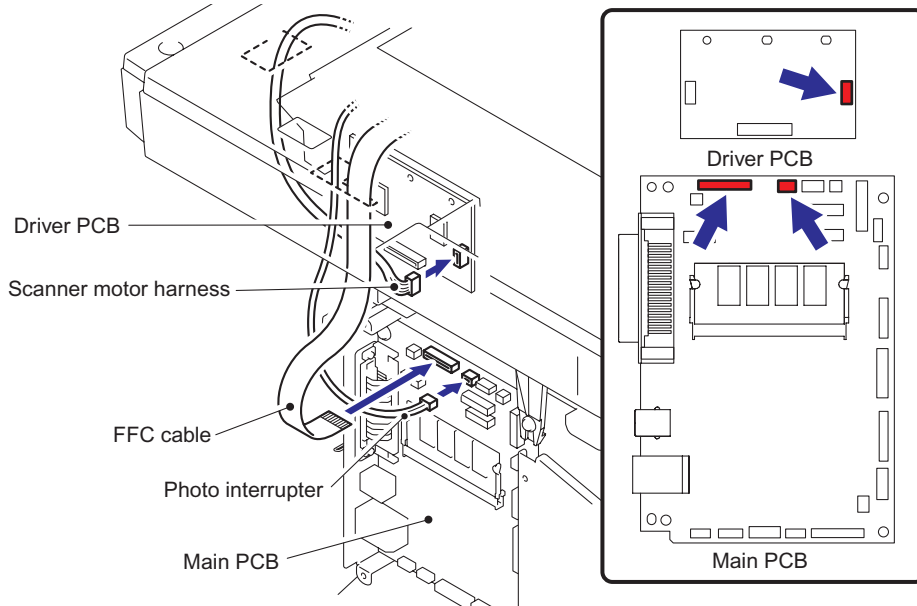


Fig. 4-32

(19) Connect the six connectors of the each harness into the Main PCB.

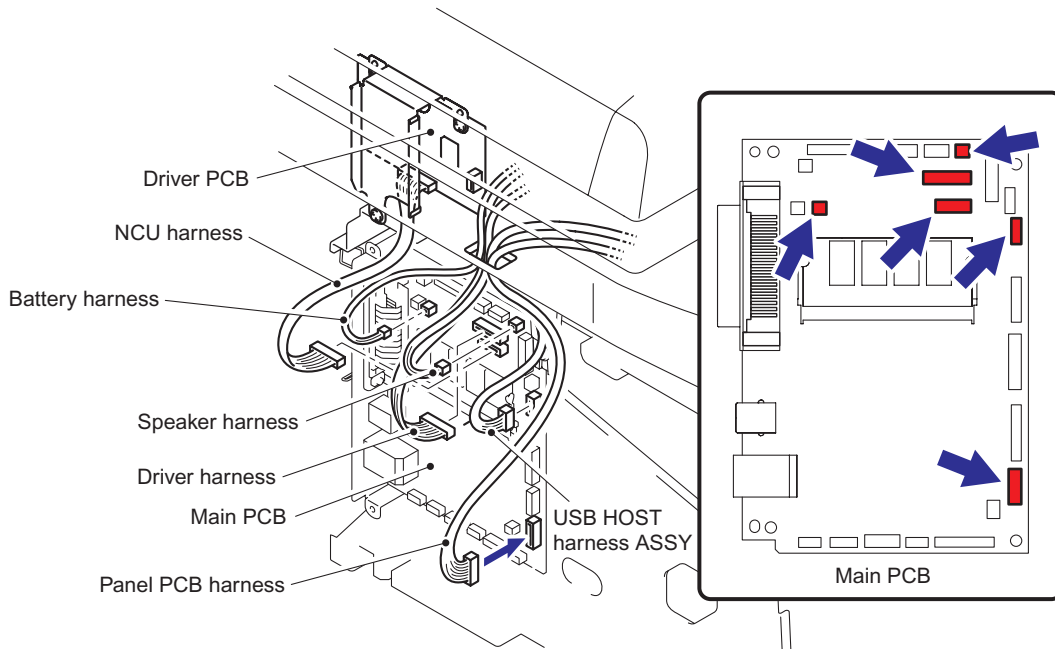


Fig. 4-33

(20) Catch the Hooks in the order of the arrows and secure the Side cover R with the two bind B M4x12 Taptite screws.

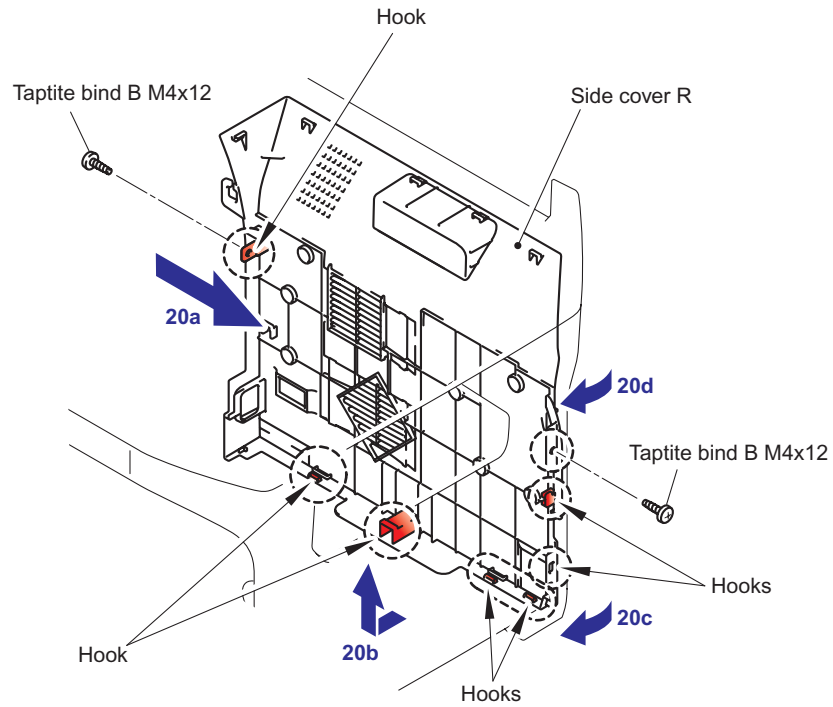


Fig. 4-34

(21) Secure the Shield cover ASSY and two FG harnesses with the four cup S M3x6 SR Taptite screws.

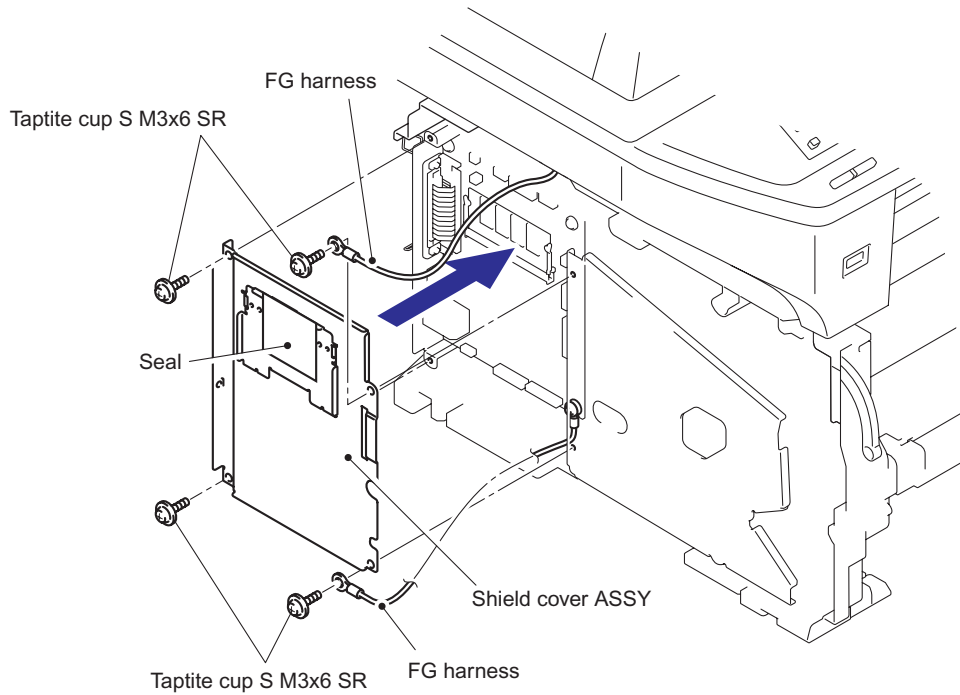


Fig. 4-35

(22) Catch the Hooks in the order of the arrows and secure the Side cover L with the two bind B M4x12 Taptite screws.

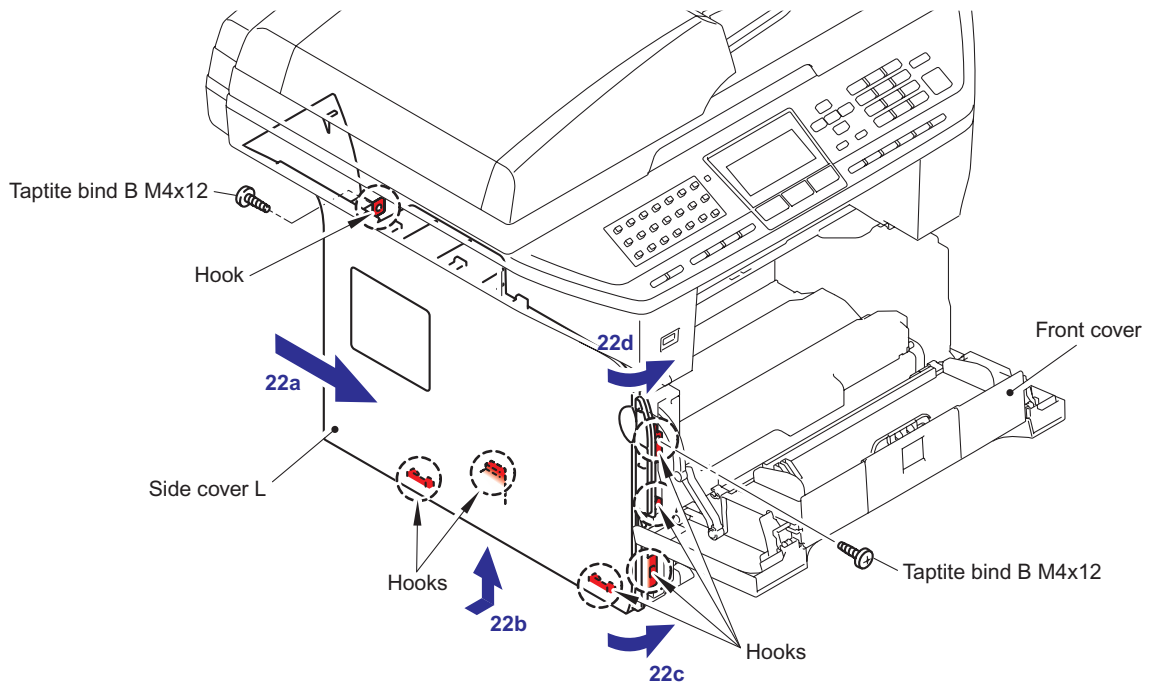
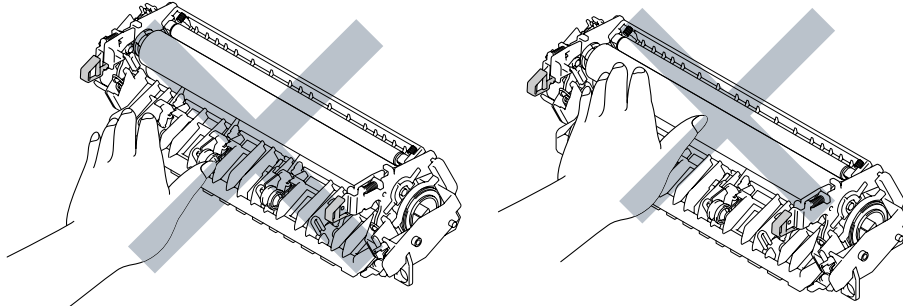


Fig. 4-36

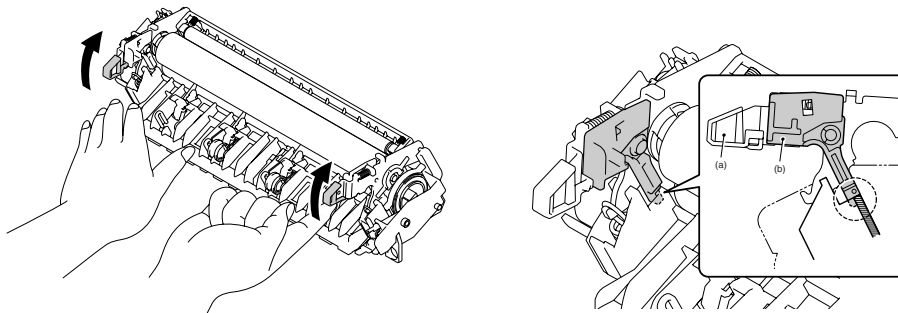
! CAUTION

- DO NOT subject the fuser unit to strong physical shocks or vibrations.
- DO NOT touch the rollers and the electrodes to prevent damage to the fuser unit In the following figures.

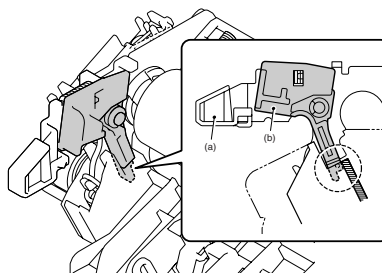


- To prevent the deformation of the pressure roller, the fuser unit spare part is shipped with its pressure roller at low nip pressure. Before installing the fuser unit, turn back the levers to the normal position by following instructions below.

- (1) Put the fuser unit on a flat, horizontal surface. Pull up each of the black tab (a) on the right side and left side.



- (2) Make sure that the black lever (b) is in the position in the illustration below.



(23) Secure the Fuser unit with the pan B M4x20 Taptite screw.

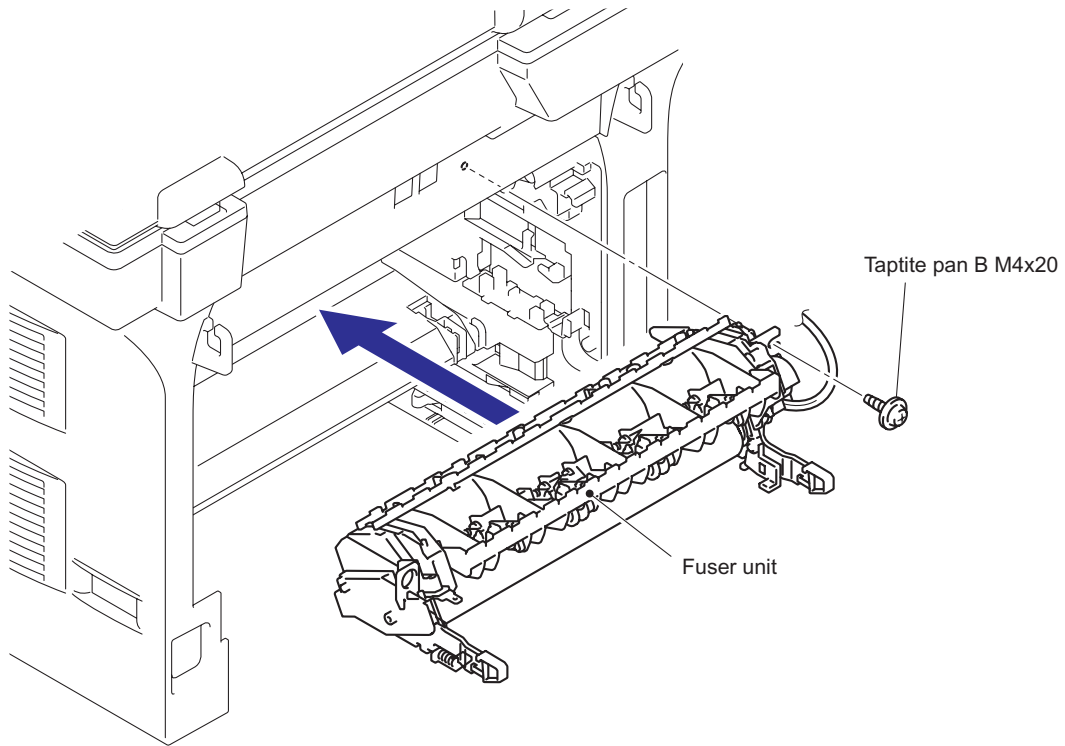


Fig. 4-37

(24) Connect the connectors of the Thermistor ASSY M and Thermistor ASSY S onto the Relay rear PCB ASSY.

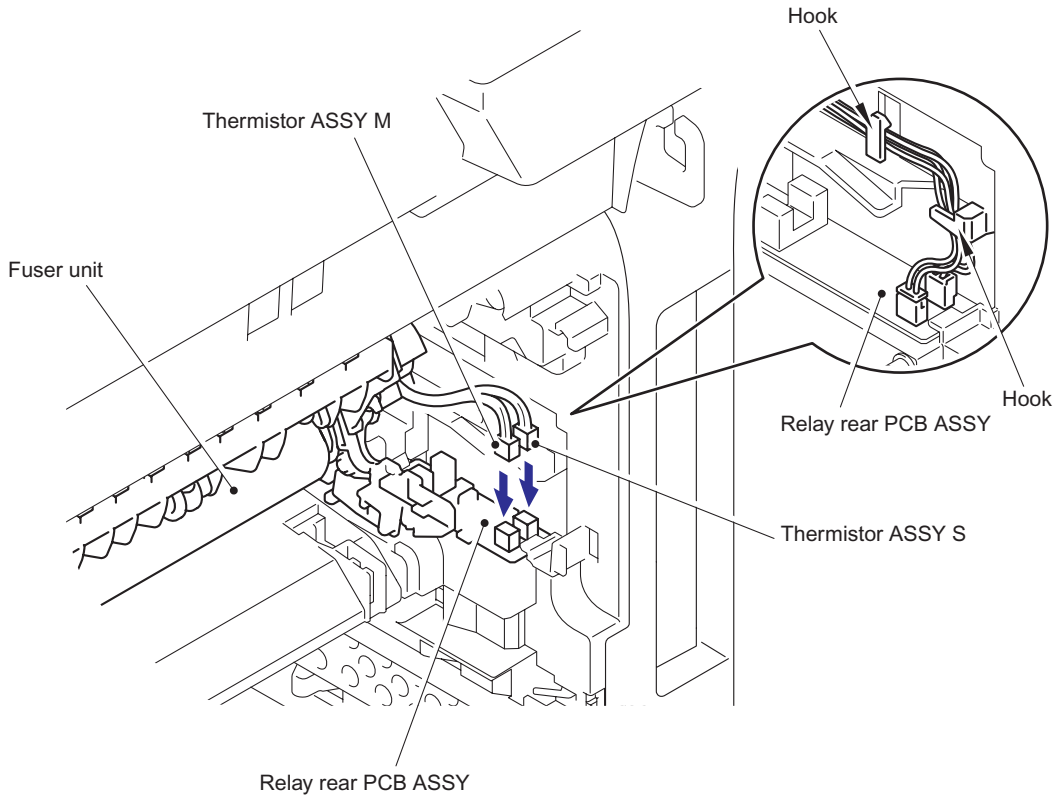


Fig. 4-38

(25) Install the FU harness cover 2.

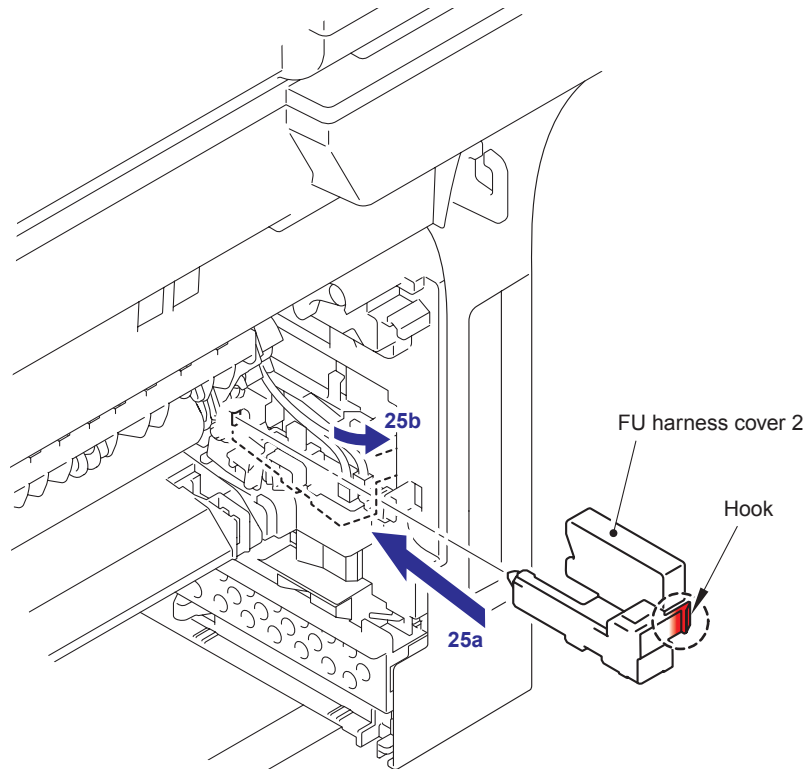


Fig. 4-39

(26) Install the Heater terminal.

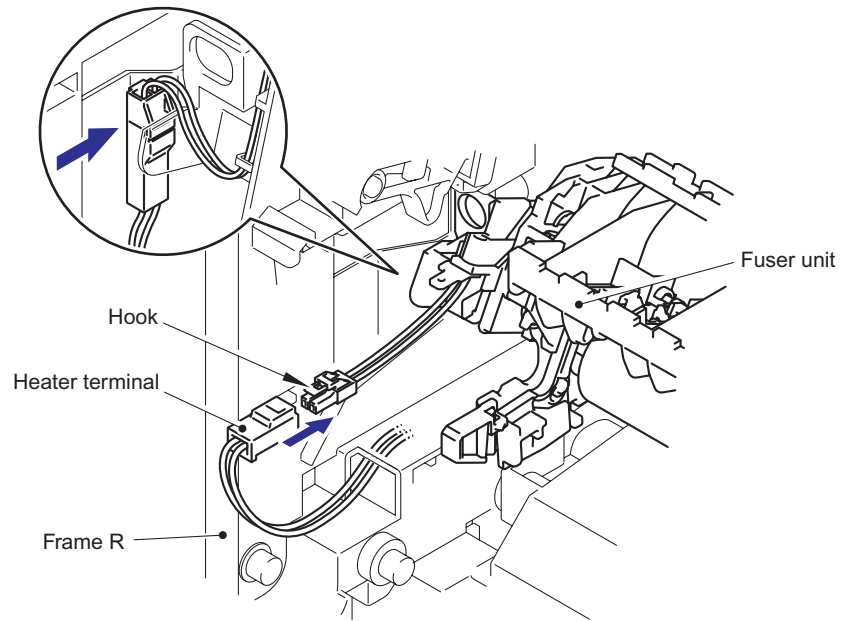


Fig. 4-40

(27) Secure the FU harness cover 1 with the pan B M4x20 Taptite screw.

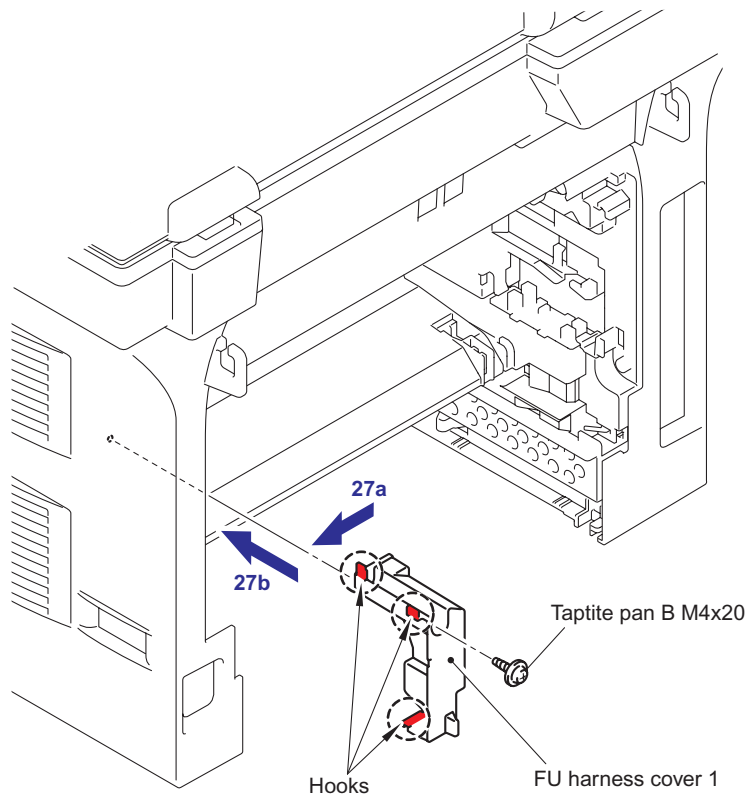


Fig. 4-41

Note :

- Do not sandwich the harness of the heater terminal by the FU harness cover 1.

(28) Catch the Arm of the Rear chute ASSY onto the Pin of the machine body and install the Rear chute ASSY.

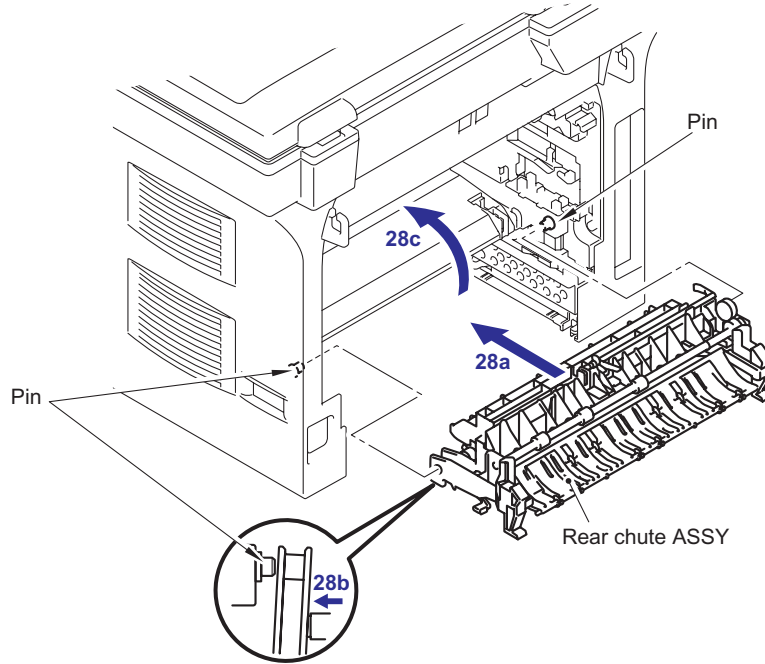


Fig. 4-42

(29) Catch the Arm of the Back cover onto the Pin of the machine body and install the Back cover.

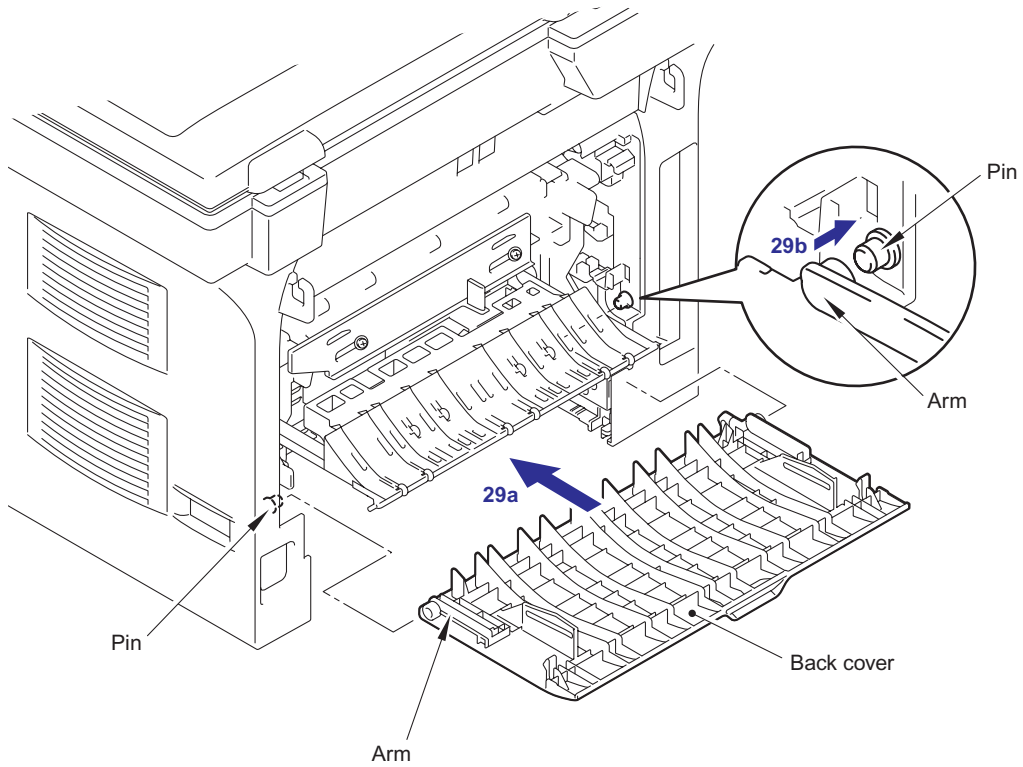


Fig. 4-43

(30) Catch the Pins of the Outer chute onto the Back cover, and close the Back cover.

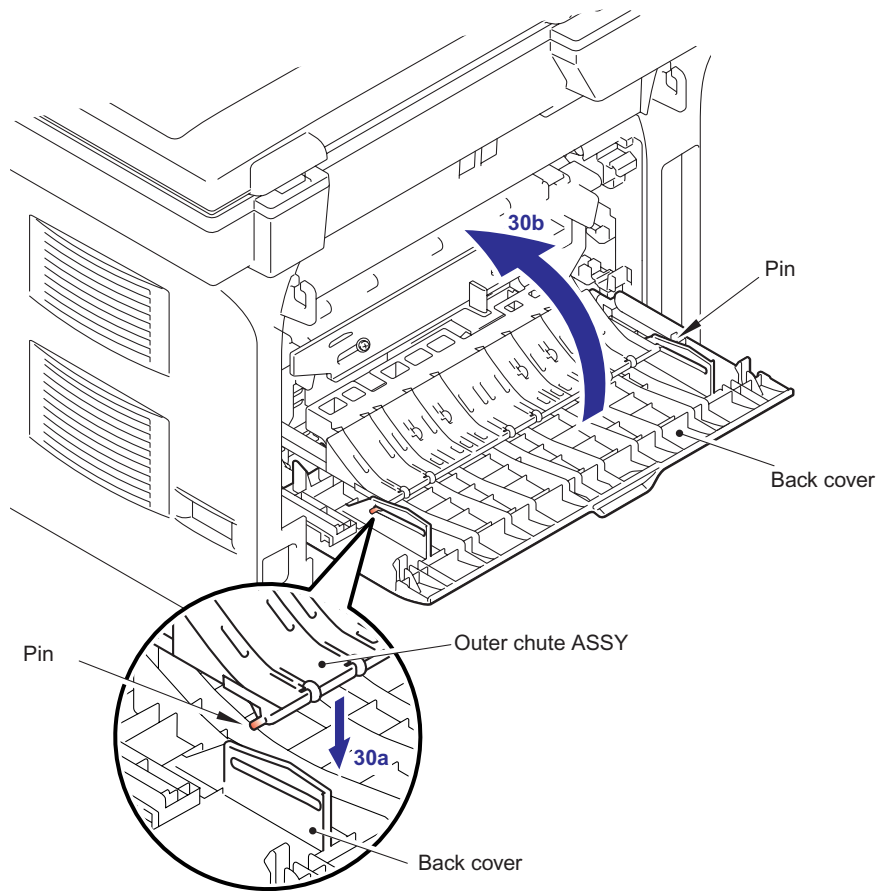


Fig. 4-44

Set the following parts after assembling.

- Set the DX feed ASSY or DX blank cover.
- Install the Drum/toner ASSY into the Printer.
- Put the Paper into the Paper tray.
- Reset the count of the Fuser unit and Laser unit after part replacement.
(Refer to "5.1 Resetting the Periodical Replacement Parts Life" in Chapter7.)

1.2.2 Paper feeding kit for tray 1, 2

< Uninstalling Procedure >

Check that the following before entering the procedures.

- Make sure that the AC cord is disconnected from the printer.
- Make sure that the Drum/toner ASSY is removed.
- Make sure that the DX feed ASSY or DX blank cover is removed.
- Make sure that the Paper is removed from the Paper tray.

- (1) Pull up the back side of the Separation pad ASSY.
- (2) Push the Hooks provided on both sides of the Separation pad ASSY inwards.
- (3) Pull up the Separation pad ASSY.
- (4) Remove the Separation pad spring.

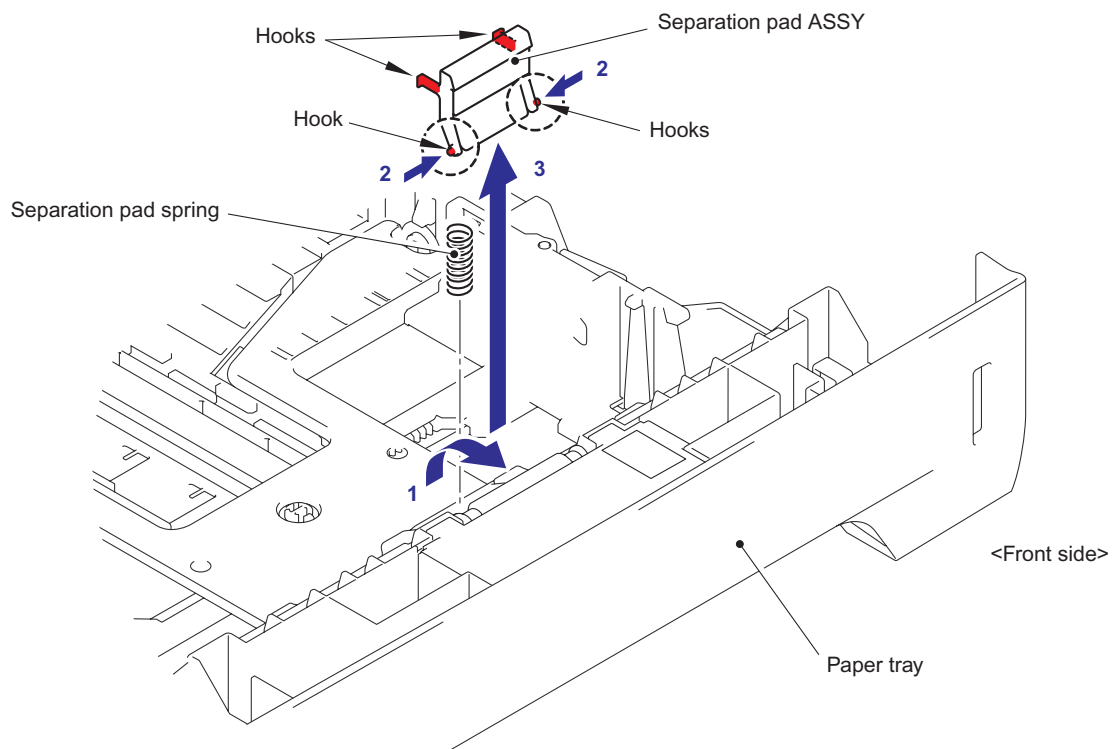


Fig. 4-45

(5) Turn the Printer upside down.

Note :

- Pull out and put into the paper tray so that the Roller holder ASSY is lowered.
- If the Roller holder ASSY is remained up, it cannot be removed.

(6) Push the Lift arm to the direction of the arrow 6a and pull out the pin of the Roller holder ASSY. Then, turn the Roller holder ASSY to the direction of the arrow 6b.

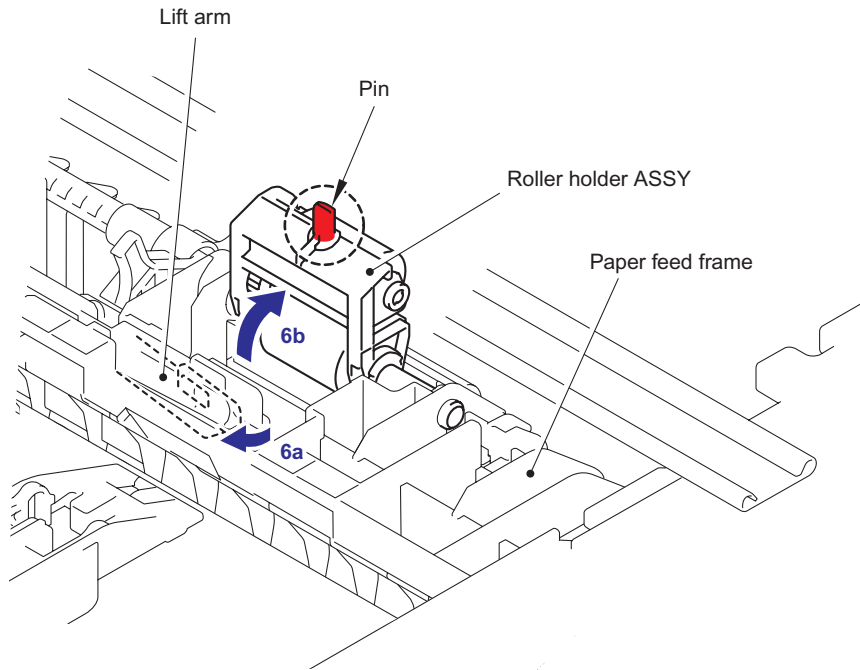


Fig. 4-46

- (7) Slide the Roller holder ASSY to the direction of the arrow 7a. Then, lift up the gear side of the Roller holder ASSY to the direction of the arrow 7b and pull it out to the direction of the arrow 7c to remove.

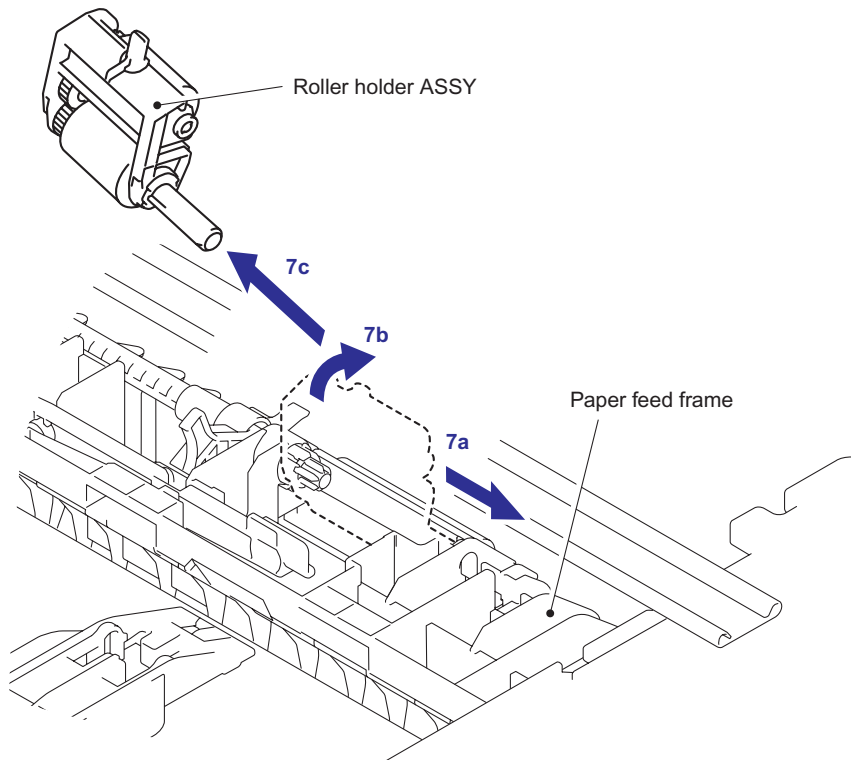


Fig. 4-47

< Installing Procedure >

- (1) Install the Roller holder ASSY.

Note :

- When assembling the roller holder ASSY, align the section "A" on the shaft of the roller holder ASSY with the hole on the paper feed frame.

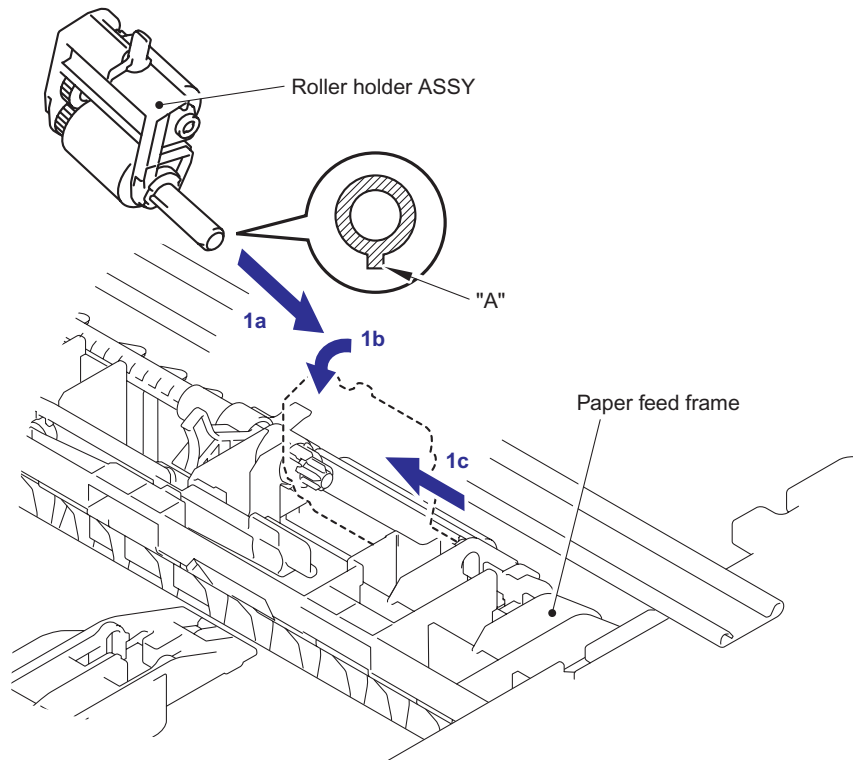


Fig. 4-48

- (2) Assemble the Lift arm onto the Pin of the Roller holder ASSY.
- (3) Place the Printer on its base.

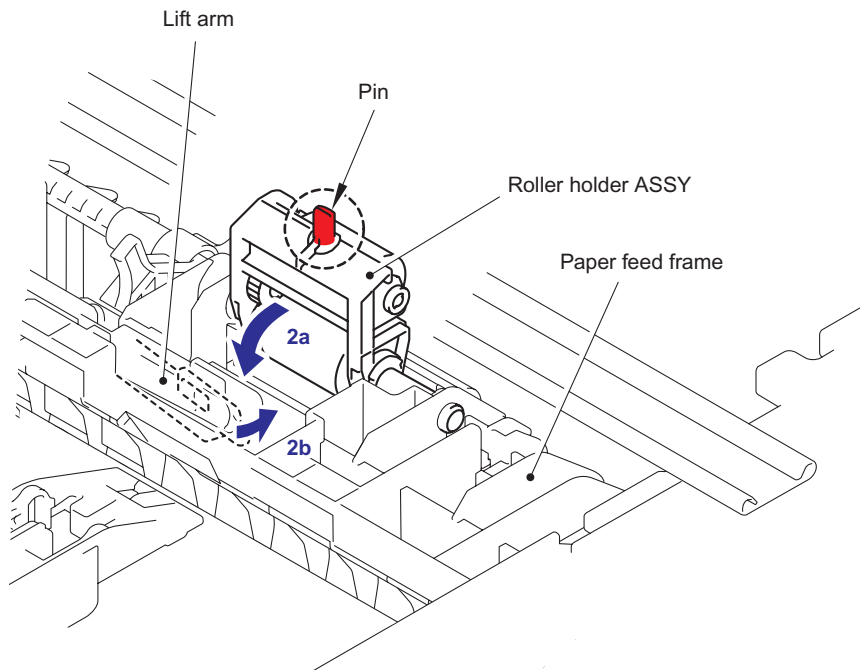


Fig. 4-49

- (4) Install the DX feed ASSY or DX blank cover, and install the Drum/toner ASSY.

- (5) Set the Separation pad spring.
- (6) Put the Hooks of the Separation pad ASSY into the Paper tray, and turn the Separation pad ASSY to the direction of the arrow 6c to catch the Hooks into the Paper tray.

Note :

- Check that the Separation pad spring is assembled correctly.

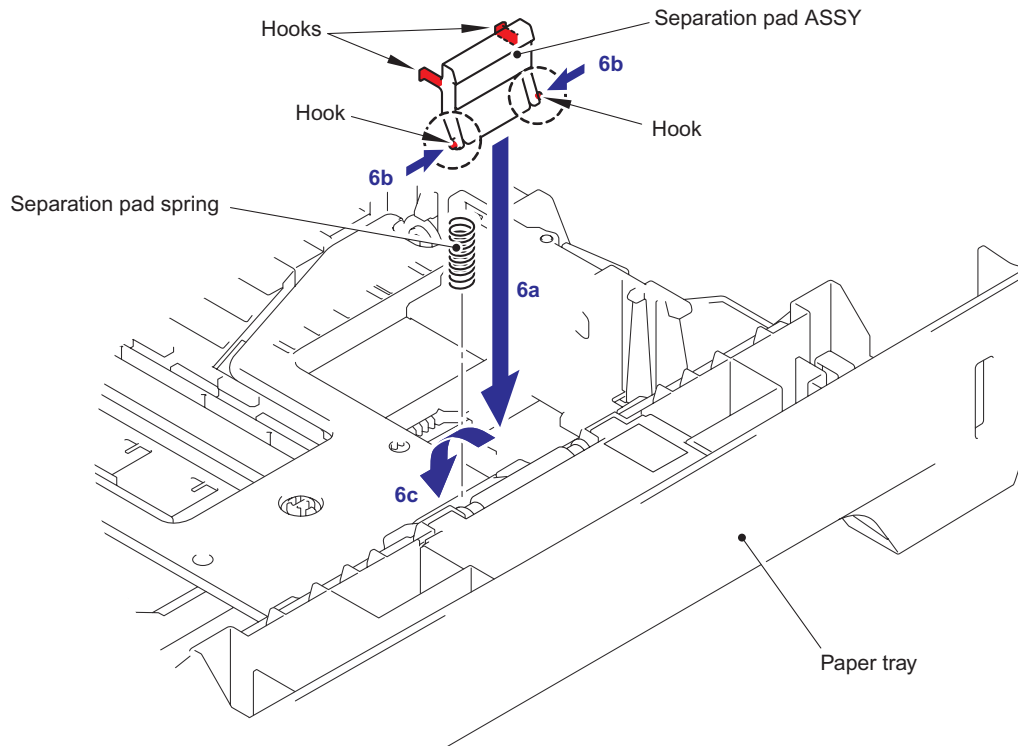


Fig. 4-50

- (7) Put the Paper tray into the Printer.

* Reset the count of the PF Kit after part replacement.

1.2.3 Paper feeding kit for MP tray

< Uninstalling Procedure >

Check that the following before entering the procedures.

- Make sure that the AC cord is disconnected from the printer.
- Make sure that the Drum/toner ASSY is removed.

(1) Open the MP feed frame cover.

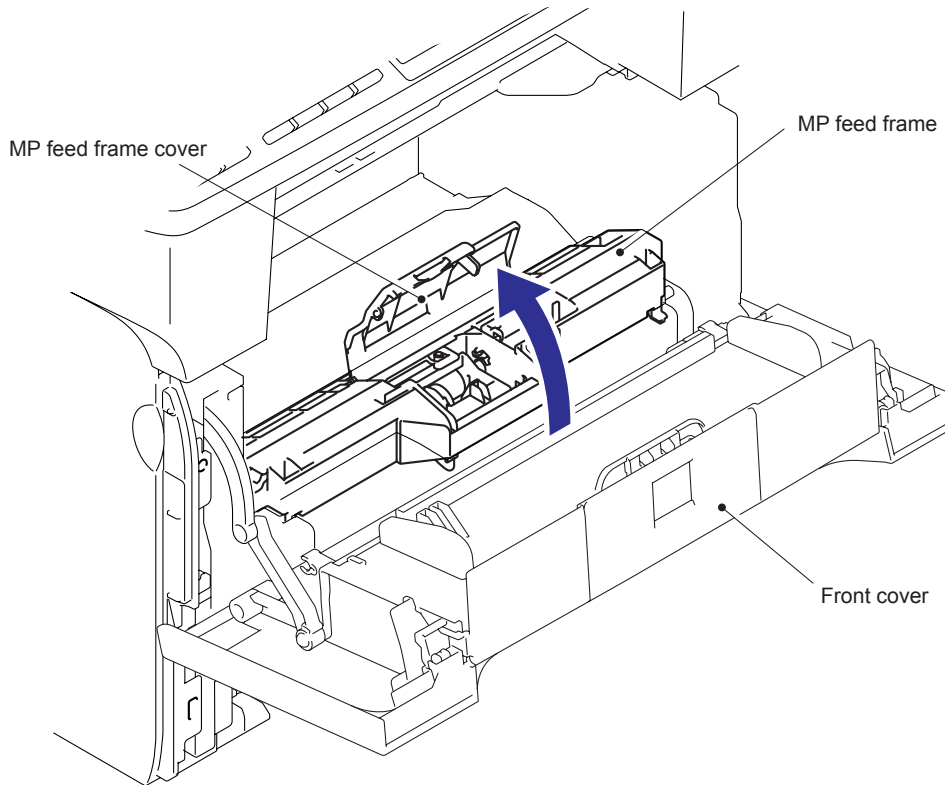


Fig. 4-51

- (2) Remove the Holder bearing MP.

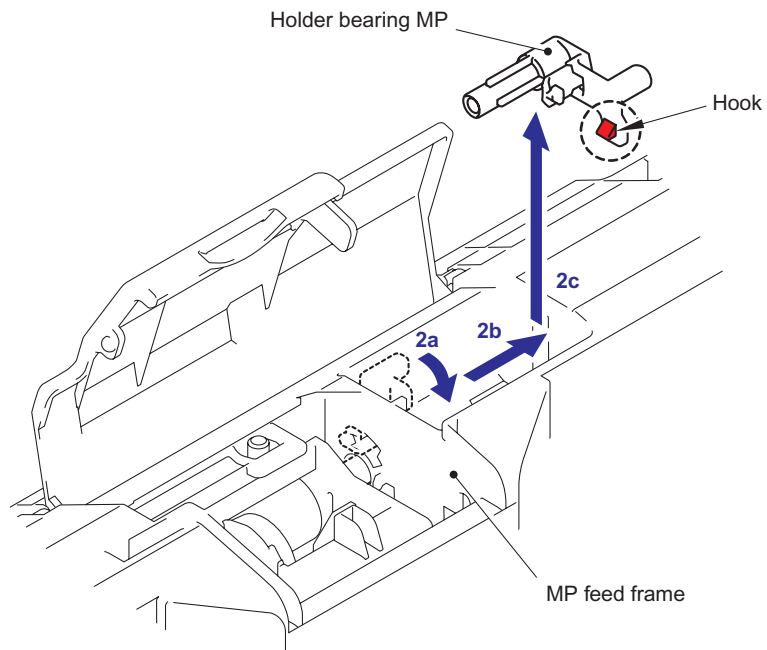


Fig. 4-52

- (3) Lift up the Lift arm MP to release it from the Pin of the MP roller holder ASSY.
- (4) Slide the MP roller holder ASSY to the direction of the arrow 4a and put it up to remove.

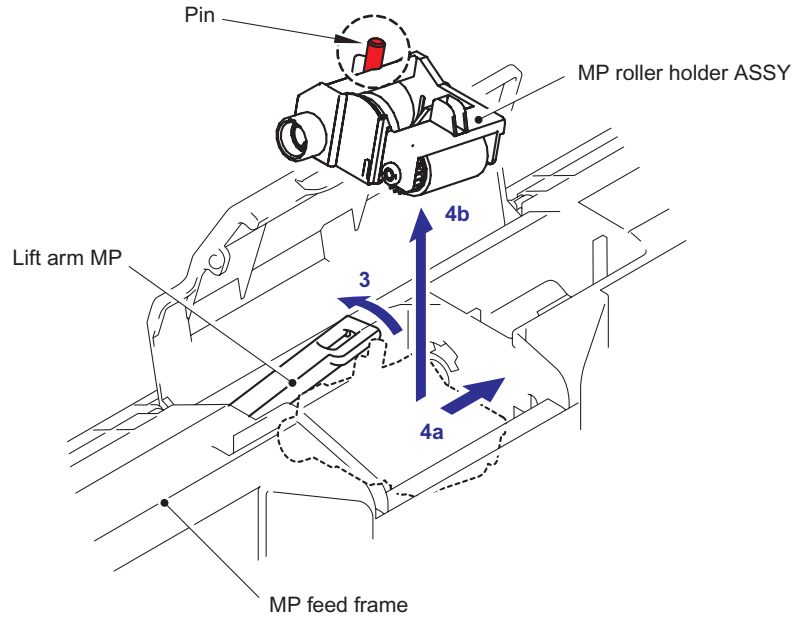


Fig. 4-53

- (5) Turn the back side of the Separation pad ASSY MP to the direction of the arrow 5a and put it up to remove.

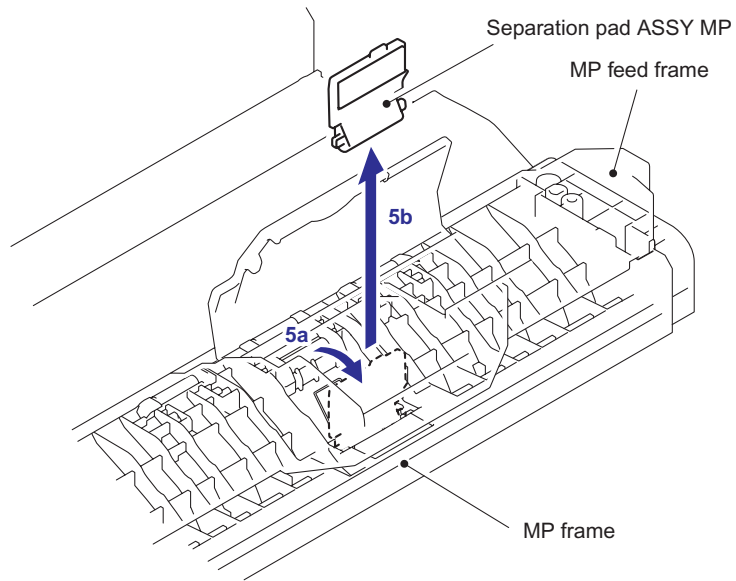


Fig. 4-54

< Installing Procedure >

- (1) Put the Hook of the Separation pad ASSY MP into the MP feed frame and pull down the Separation pad ASSY MP to the direction of the arrow 1b until it is locked.

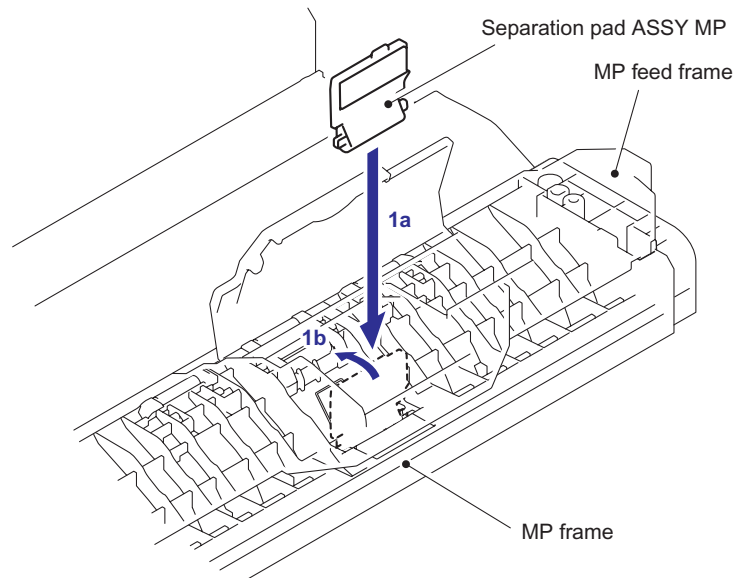


Fig. 4-55

- (2) Lift up the Lift arm MP and put the MP roller holder ASSY into the MP feed frame. Put the Pin of the MP roller holder ASSY into the hole of the Lift arm MP.

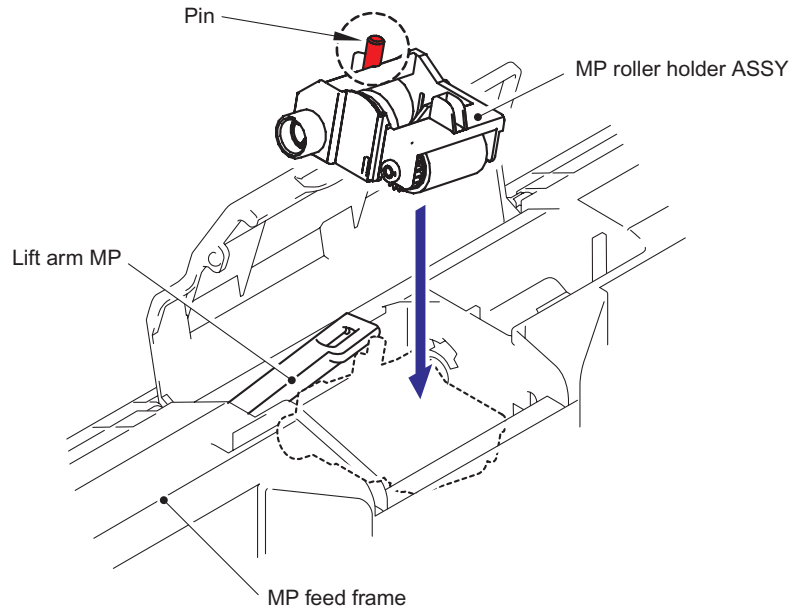


Fig. 4-56

- (3) Put the Holder bearing MP into the MP feed frame and turn the Holder bearing MP to the direction of the arrow 3c to lock.

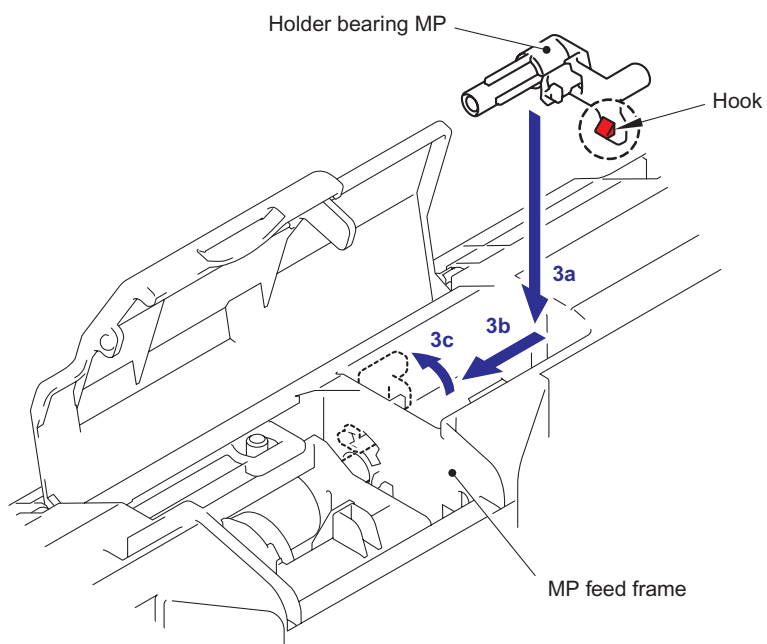


Fig. 4-57

- (4) Close the MP feed frame cover.

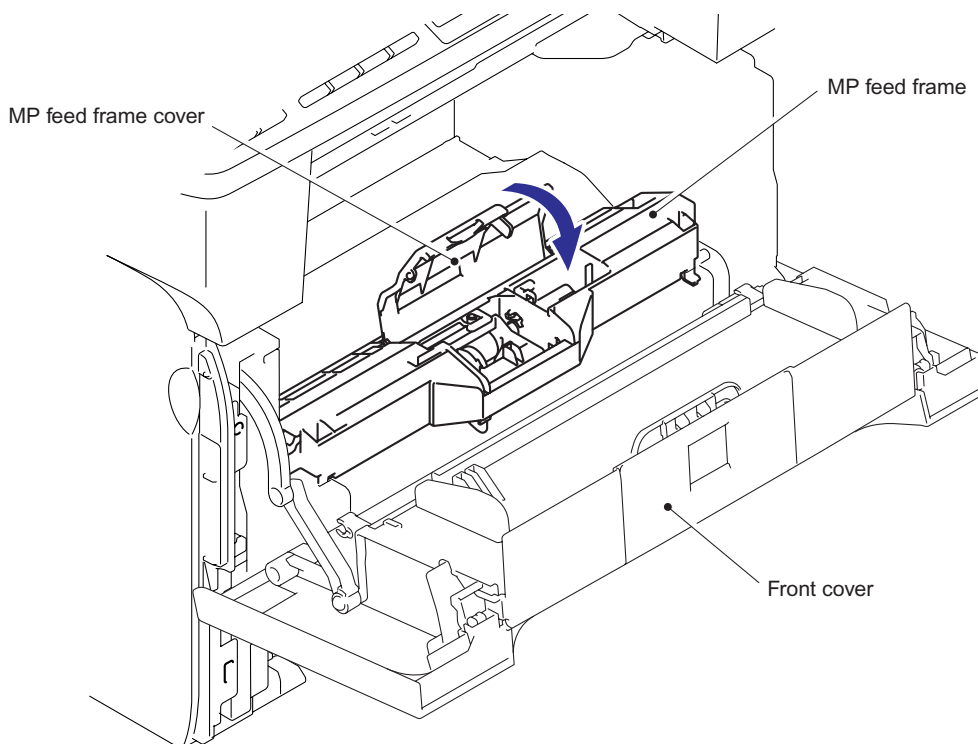


Fig. 4-58

- (5) Install the Drum/toner ASSY into the Printer.
(6) Close the Front cover.

* Reset the count of the PF Kit MP after part replacement.

CHAPTER 5

DISASSEMBLY/REASSEMBLY

CHAPTER 5 PERIODIC MAINTENANCE

This chapter details procedures for disassembling and reassembling the machine together with related notes. The disassembly order flow provided enables you to see at a glance the quickest way to get to component(s) involved.

At the start of a disassembly job, you check the disassembly order flow that guides you through a shortcut to the object components.

This chapter also covers screw tightening torques and lubrication points to which the specified lubricants should be applied during reassembly jobs.

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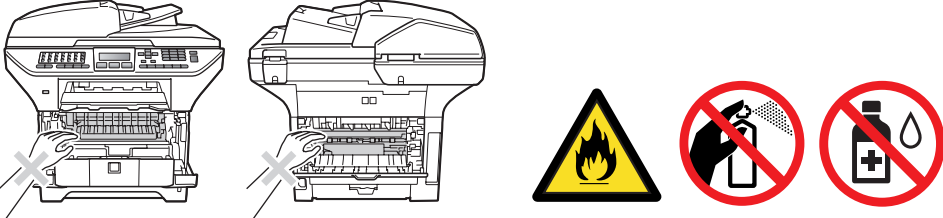
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1. SAFETY PRECAUTIONS

To avoid creating secondary problems by mishandling, follow the warnings and precautions below during maintenance work.

 **WARNING**

- Always turn off the power switch and unplug the power cord from the power outlet before accessing any parts inside the machine.
- When opening the front cover or back cover to access any parts inside the machine, never touch the shaded parts shown in the following figures.
- DO NOT use flammable substances such as alcohol, benzene, thinner or any type of spray to clean the inside or outside of the machine. Doing this may cause a fire or electrical shock.



- Be careful not to lose screws, washers, or other parts removed.
- Be sure to apply grease to the gears and applicable positions specified in this chapter.
- When using soldering irons or other heat-generating tools, take care not to accidentally damage parts such as wires, PCBs and covers.
- Static electricity charged in your body may damage electronic parts. When transporting PCBs, be sure to wrap them in conductive sheets.
- When replacing the PCB and all the other related parts, put on a grounding wrist band and perform the job on a static mat. Also take care not to touch the conductor sections on the flat cables or on the wire harness.
- When connecting or disconnecting cable connectors, hold the connector body, not the cables. If the connector has a lock, release the connector lock first to release it.
- After a repair, check not only the repaired portion but also all connectors. Also check that other related portions are functioning properly before operational checks.
- After disconnecting flat cables, check that each cable is not damaged at its end or short-circuited.
- When connecting flat cables, do not insert them at an angle. After insertion, check that the cables are not at an angle.

2. TRANSFERRING RECEIVED FAX DATA

When the machine at the user site requires to be repaired, unplugging the power cord from the wall socket for sending the machine for repair will lose received FAX data if unprinted and left in the machine.

To prevent such data loss, the service personnel should instruct end users (e.g., by telephone) to transfer data to another facsimile machine using the procedure below.

Note:

- The number of files that can be transferred at a time is 99. To transfer 100 files or more, carry out the following procedure more than one time.

■ Operating Procedure

- (1) Connect the machine to be repaired (that has received data in the memory) to the telephone line.
- (2) Switch the machine on.
- (3) Press the **[Menu]**, **[Start]**, **[Menu]** and **[▲]** buttons in this order.
The "MAINTENANCE 06" appears on the LCD.
- (4) Call up the "MAINTENANCE 53" using the **[▲]** and **[▼]** buttons and press the **[OK]** button.
The "FAX TRANSFER" appears on the LCD.
- (5) To check the number of received files, press the **[1]** key.
The "1.NO. OF JOBS" appears on the LCD.
Press the **[OK]** button, and the number of received files appears, just as "NO. OF JOBS: 10."
- (6) To transfer the activity report only, press the **[2]** key.
The "2.ACTIVITY" appears.
To transfer received files together with the activity report, press the **[3]** key.
The "3.DOCUMENTS" appears. Note that if there is no received file, the "NO DOCUMENTS" appears.
To transfer the communication list for the latest communication, press the **[4]** key.
The "4.COM.LIST (NEW)" appears.
To transfer the communication list for last three errors, press the **[5]** key.
The "5.COM.LIST (ERR3)" appears.

- (7) With the "2.ACTIVITY," "3.DOCUMENTS," "4.COM.LIST (NEW)," or "5.COM.LIST (ERR3)" being displayed, press the [OK] button.

The "ENTER NO. &SET" appears.

- (8) Enter the telephone number of the receiver machine and press the [OK] button again.

Note:

- Be sure to type the telephone number with the numerical keys. No one-touch dialing is allowed in this procedure.

The machine displays the "ACCEPTED" for approx. two seconds and starts dialing to transfer data.

The machine automatically returns to the stand by state.

No station ID will be attached. A cover page and end page as shown on the next page will be automatically attached, instead.

Cover page sample

```

=== FAX TRANSFER COVER PAGE ===
NO. OF JOBS      :001
TOTAL PAGE[S]   :001
NAME            :BROTHER
FAX            :052 824 2330
TEL            :
TIME           :01/02/2004 22:21
8C 5D
B0903261602
U0904221449 VER.0
G09234567890
  
```

← Job number
 ← Total number of page to be transferred
 ← Station ID registered in the sender equipment
 ← FAX number of the sender equipment
 ← Telephone number of the sender equipment
 ← Transfer start date
 ← Model code
 ← Boot ROM info
 ← ROM info
 ← Serial number

End page sample

```

=== FAX TRANSFER END PAGE ===
NO. OF JOBS      :001
TOTAL PAGE[S]   :001
NAME            :BROTHER
FAX            :052 824 2330
TEL            :
MACHINE STATUS 1  AF:0401022216
MACHINE STATUS 2  43:0401022216
MACHINE STATUS 3  48:0401022216
MACHINE STATUS 4  AF:0401022017
MACHINE STATUS 5  43:0401022017
MACHINE STATUS 6  48:0401022017
MACHINE STATUS 7  AF:0401011756
MACHINE STATUS 8  43:0401011756
MACHINE STATUS 9  48:0401011756
  
```

← Job number
 ← Total number of pages transferred
 ← Station ID registered in the sender equipment
 ← FAX number of the sender equipment
 ← Telephone number of the sender equipment
 } Error codes

3. PACKING

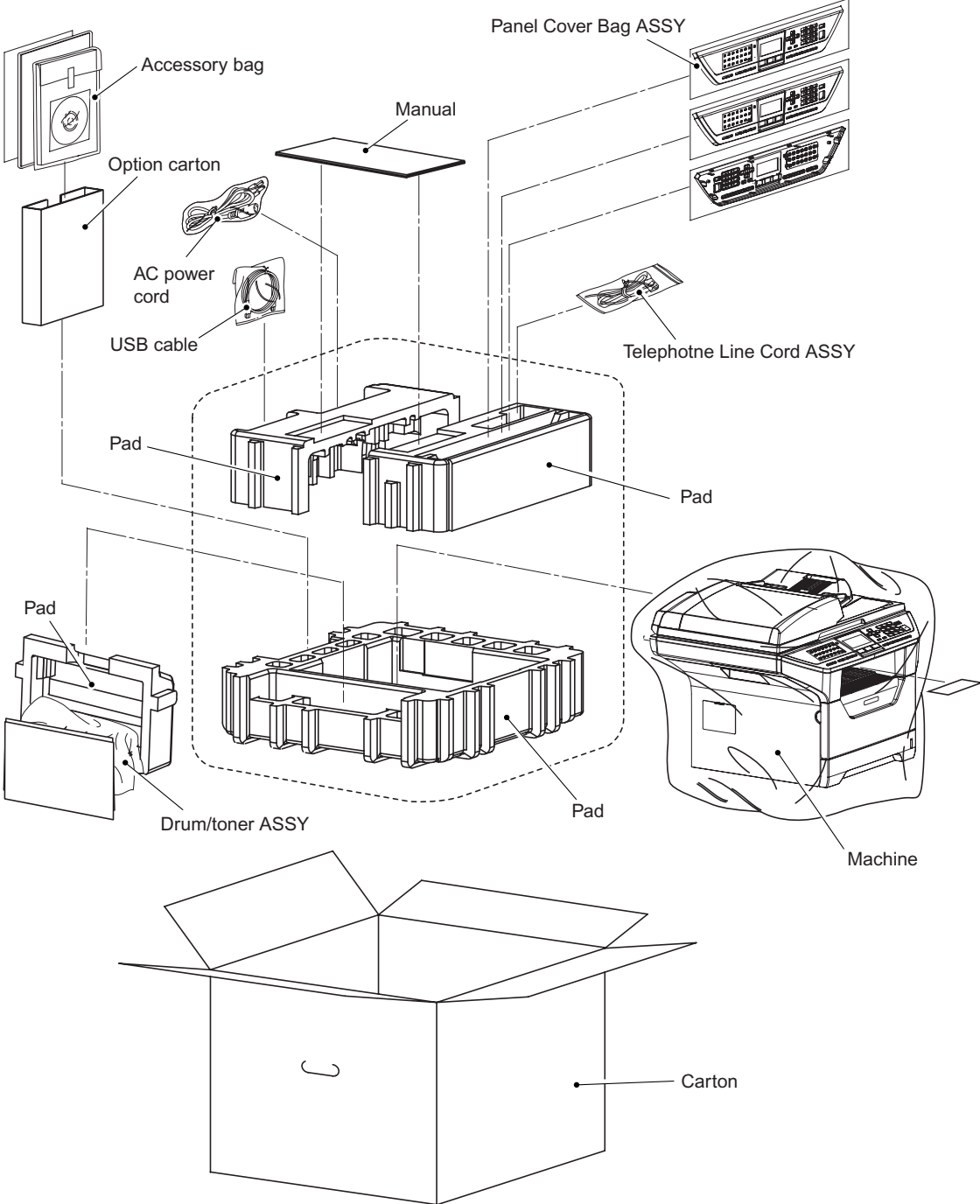


Fig. 5-1

4. SCREW TORQUE LIST

Location of screw	Screw type	Q'ty	Tightening torque N m (kgf · cm)
FU harness cover 1	Taptite pan B M4x20	1	0.7±0.1 (7±1)
Fuser unit	Taptite pan B M4x20	1	0.7±0.1 (7±1)
Process cover stopper	Taptite cup B M4x10	1	0.5±0.1 (5±1)
Emblem cover	Taptite cup B M3x10	2	0.5±0.1 (5±1)
Side cover L	Taptite bind B M4x12	2	0.7±0.1 (7±1)
Shield cover ASSY	Taptite cup S M3x6 SR	4	0.75±0.1 (7.5±1)
ADF FG harness	Taptite cup S M3x6	1	0.7±0.05 (7±0.5)
	Taptite cup S M3x8	1	0.7±0.05 (7±0.5)
Main shield plate ASSY	Taptite cup S M3x6	1	0.9±0.1 (9±1)
	Taptite bind B M4x12	3	0.7±0.1 (7±1)
Hinge base R	Taptite cup B M3x10	2	0.8±0.1 (8±1)
Hinge ASSY L	Taptite cup S M3x12	1	0.8±0.1 (8±1)
	Taptite cup B M3x10	2	0.5±0.1 (5±1)
ADF side cover F	Taptite cup B M3x10	1	0.5±0.1 (5±1)
	Taptite cup S M3x8	1	
ADF side cover R	Taptite cup B M3x10	1	0.5±0.1 (5±1)
Document cover LGL sub ASSY	Taptite bind B M4x12	1	
ADF chute ASSY	Taptite cup B M3x10	4	0.5±0.1 (5±1)
SX chute	Taptite cup S M3x8	2	0.5±0.1 (5±1)
Exit chute cover ASSY	Taptite cup B M3x10	4	0.5±0.1 (5±1)
ADF motor	Screw, pan (S/P washer) M3X6	2	0.7±0.1 (7±1)
Motor frame ASSY	Taptite cup S M3x8	3	0.7±0.05 (7±0.5)
S/B Solenoid ASSY	Taptite cup S M3x8	1	
PF Solenoid ASSY	Taptite cup S M3x8	1	
ADF Relay PCB	Taptite cup S M3x8	1	0.7±0.05 (7±0.5)
Paper feed plate	Taptite cup S M3x8	2	
Paper feed chute ASSY	Taptite cup S M3x8	2	0.7±0.05 (7±0.5)
Separation rubber	Taptite B M3x6	1	0.4±0.05 (4±0.5)
Drive frame sub ASSY DX	Taptite cup B M3x10	3	0.5±0.1 (5±1)
Front frame	Taptite cup B M3x10	3	0.5±0.1 (5±1)
Upper main chute ASSY	Taptite cup B M3x10	4	0.5±0.1 (5±1)
Rear sensor cover	Taptite cup B M3x10	2	0.5±0.1 (5±1)
LF spring	Taptite cup B M3x10	2	0.5±0.1 (5±1)
Scanner unit	Taptite cup B M4x20	2	0.8±0.1 (8±1)
Scanner top cover ASSY	Taptite cup B M4x12	6	0.8±0.1 (8±1)
Lock lever B	Taptite B M3x6	1	0.4±0.05 (4±0.5)
Lock lever A	Taptite B M3x6	2	0.4±0.05 (4±0.5)

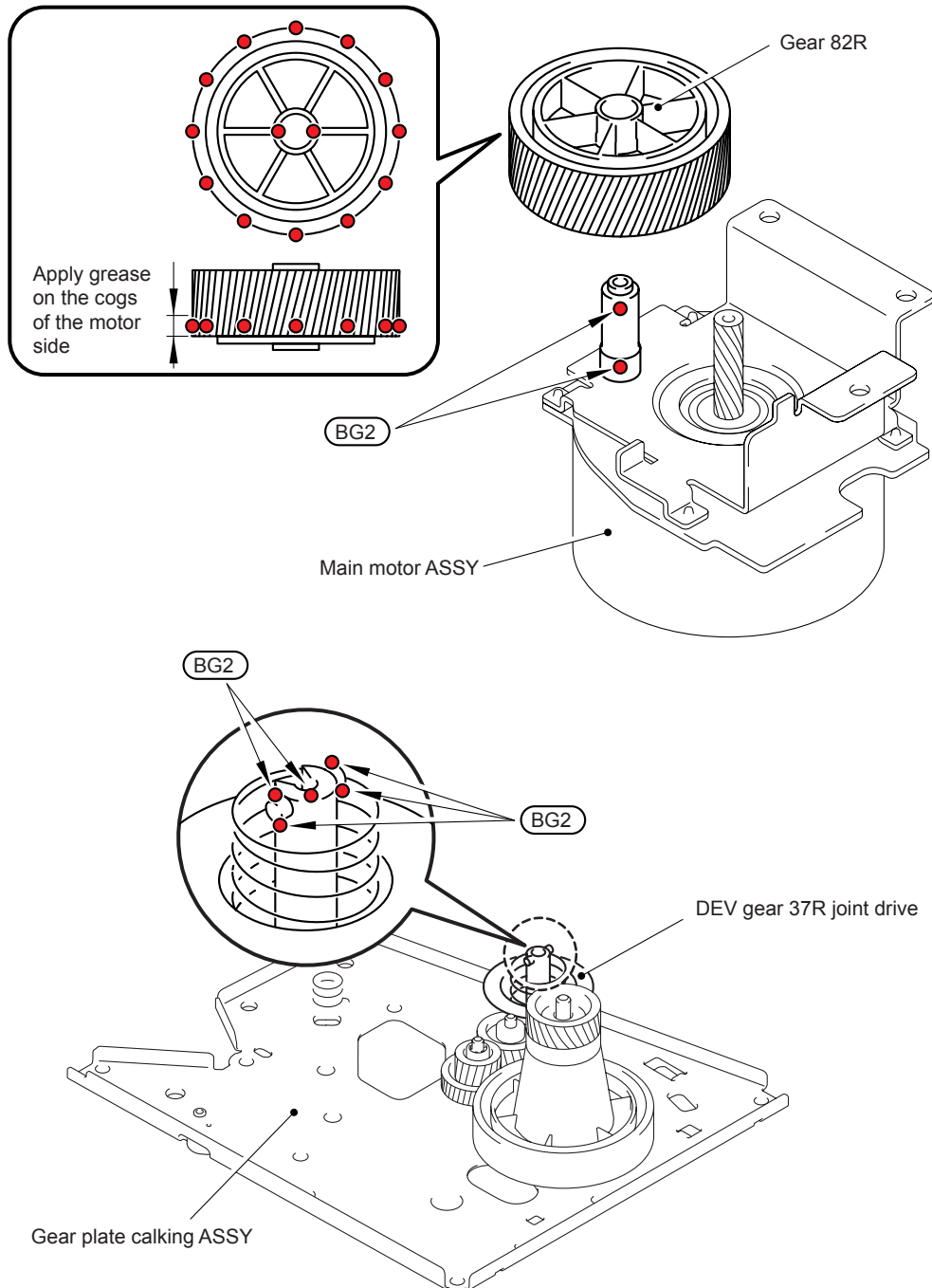
Location of screw	Screw type	Q'ty	Tightening torque N m (kgf · cm)
FB FG harness	Taptite cup S M3x6	1	0.8±0.1 (8±1)
Drive plate ASSY	Taptite B M3x8	4	0.5±0.1 (5±1)
Scanner motor FB	Screw, pan (S/P washer) M3X6	2	0.7±0.1 (7±1)
Pulley ASSY	Taptite B M3x6	2	0.4±0.05 (4±0.5)
Panel unit generic	Taptite cup B M4x12	4	0.7±0.1 (7±1)
Panel cover generic	Taptite cup B M3x10	4	0.5±0.1 (5±1)
NCU FG harness ASSY	Screw, pan (S/P washer) M3.5X7.5 SR	2	0.4±0.05 (4±0.5)
NCU shield plate	Taptite bind B M4x12	2	
NCU shield cover	Screw, pan (S/P washer) M3.5X6	1	
NCU PCB ASSY	Taptite cup S M3x6	2	
Speaker hold spring	Taptite bind B M4x12	1	0.8±0.1 (8±1)
Driver PCB shield	Taptite cup B M3x8	2	0.4±0.05 (4±0.5)
	Taptite cup S M3x6 SR	1	0.75±0.1 (7.5±1)
USB HOST FG harness ASSY	Taptite bind B M4x12	1	
USB PCB holder	Taptite bind B M4x12	1	
USB HOST PCB	Taptite cup S M3x6 SR	1	
Side cover R	Taptite bind B M4x12	2	0.7±0.1 (7±1)
Joint cover ASSY	Taptite bind B M4x12	4	0.8±0.1 (8±1)
Main PCB	Taptite cup S M3x6 SR	4	0.75±0.1 (7.5±1)
	Set screw	2	0.5±0.1 (5±1)
Gear plate calking ASSY	Taptite bind B M4x12	8	0.9±0.05 (9±0.5)
	Taptite cup S M3x6 SR	1	0.7±0.1 (7±1)
Main motor ASSY	Taptite cup S M3x6	4	0.7±0.1 (7±1)
Plate	Taptite bind B M4x12	2	0.8±0.1 (8±1)
Main shield plate ASSY	Taptite bind B M4x12	3	0.9±0.1 (9±1)
	Taptite cup S M3x6	1	0.7±0.1 (7±1)
MP solenoid ASSY	Taptite bind B M3x10	1	0.5±0.05 (5±0.5)
Spring	Taptite cup B M3x8	1	0.4±0.1 (4±1)
T1 solenoid ASSY	Taptite bind B M3x10	1	0.5±0.05 (5±0.5)
Register solenoid ASSY	Taptite bind B M3x10	1	0.5±0.05 (5±0.5)
Ejector solenoid ASSY	Taptite bind B M3x10	1	0.5±0.1 (5±1)
New toner actuator	Taptite cup B M2x6	1	0.13±0.03 (1.3±0.3)
Laser unit	Taptite cup S M3x6	5	0.7±0.1 (7±1)
Base plate LV	Taptite bind B M4x12	5	0.8±0.1 (8±1)
	Screw, pan (S/P washer) M3.5X7.5 SR	1	0.4±0.05 (4±0.5)
LV insulation sheet	Taptite bind B M4x12	1	0.8±0.1 (8±1)
SW holder ASSY	Taptite bind B M4x12	1	1.0±0.1 (10±1)

Location of screw	Screw type	Q'ty	Tightening torque N m (kgf · cm)
Safety louver	Taptite bind B M3x10	1	0.5±0.1 (5±1)
Base plate HV	Taptite bind B M4x12	4	0.8±0.1 (8±1)
HV insulation sheet	Taptite bind B M4x12	1	0.8±0.1 (8±1)
High-voltage PS PCB ASSY	Taptite bind B M4x12	1	0.8±0.1 (8±1)
Toner LED PCB unit ASSY	Taptite pan B M3x8	1	0.5±0.1 (5±1)
Frame L	Taptite bind B M4x12	6	0.8±0.1 (8±1)
Under bar	Taptite bind B M4x12		
MP feed frame	Taptite bind B M3x8	2	0.5±0.1 (5±1)
MP PE sensor ASSY	Taptite bind B M3x8	1	0.5±0.1 (5±1)
MP frame	Taptite bind B M4x12	2	0.7±0.1 (7±1)
PE EG sensor ASSY	Taptite bind B M3x8	1	0.5±0.1 (5±1)
LT front cover	Taptite bind B M4x12	2	
LT rear cover	Taptite cup S M3x6 SR	2	
LT side cover L	Taptite bind B M4x12	1	
	Taptite cup S M3x6 SR	1	
LT side cover R	Taptite bind B M4x12	1	
	Taptite cup S M3x6 SR	1	
LT PCB ASSY	Taptite bind B M4x12	1	
Feed roller ground plate	Taptite cup S M3x6 SR	1	
LT drive unit	Taptite bind B M4x12	4	
LT solenoid ASSY	Taptite bind B M3x10	1	
LT frame L	Taptite bind B M4x12	2	
	Taptite cup S M3x6 SR	4	
LT frame R	Taptite cup S M3x6 SR	2	
LT front beam	Taptite cup B M3x12	2	
LT sensor PCB ASSY	Taptite bind B M3x8	1	

* The parenthesis shows the LCD model.

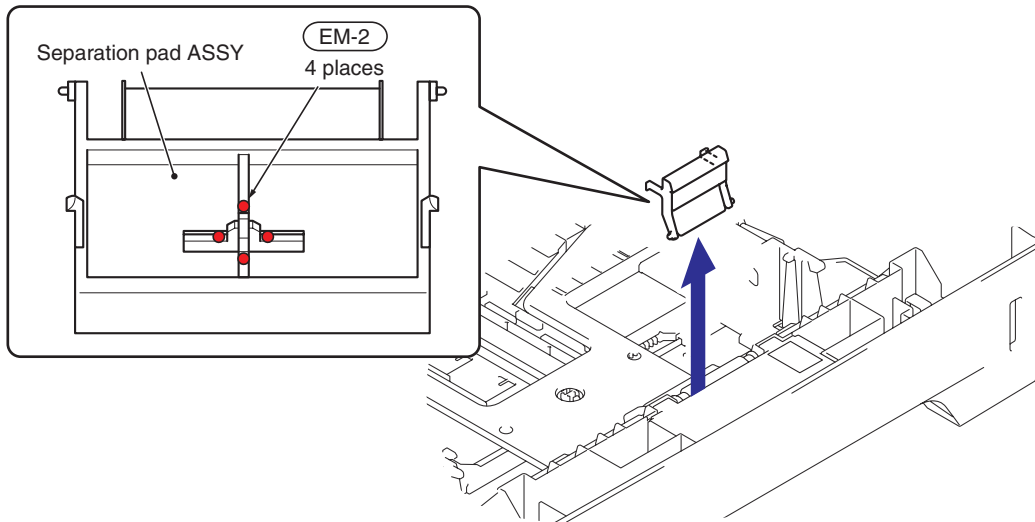
5. LUBRICATION

The kind of the lubricating oil (Maker name)	Lubrication point	Quantity of labrication
BG-MU (Kanto Kasei)	Dev gear 37R joint drive Main motor ASSY Drum gear 82R	2mm dia. ball (BG2)
EM-D110 (MOLYKOTE)	Separation pad	2mm dia. ball (EM2)



* BG2: KANTO KASEI BG- MU (2 mm dia. Ball)

Fig. 5-2



BG2: MOLYKOTE EM-D110 (2 mm ball)

Fig. 5-3

6. GEAR LAYOUT DRAWING

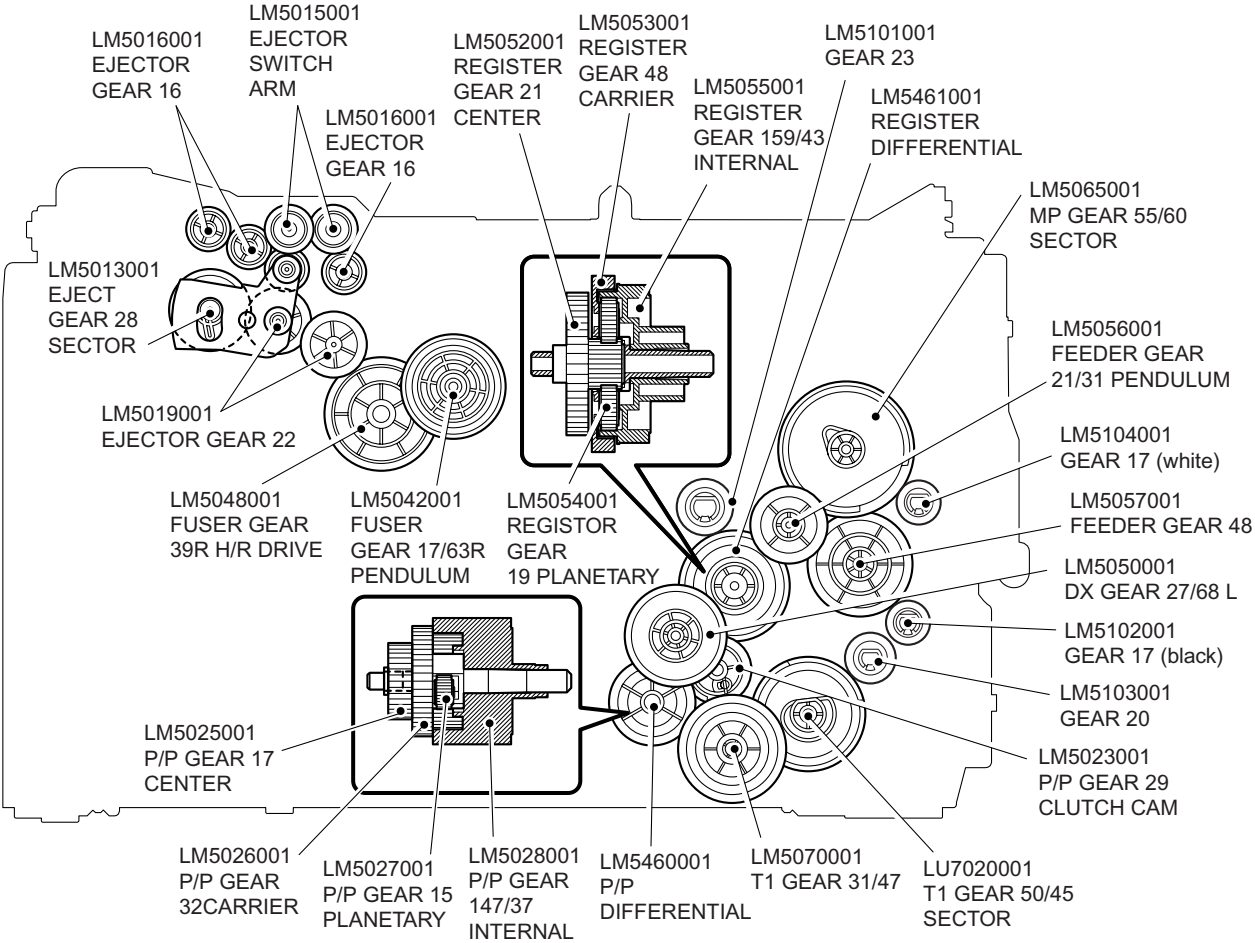
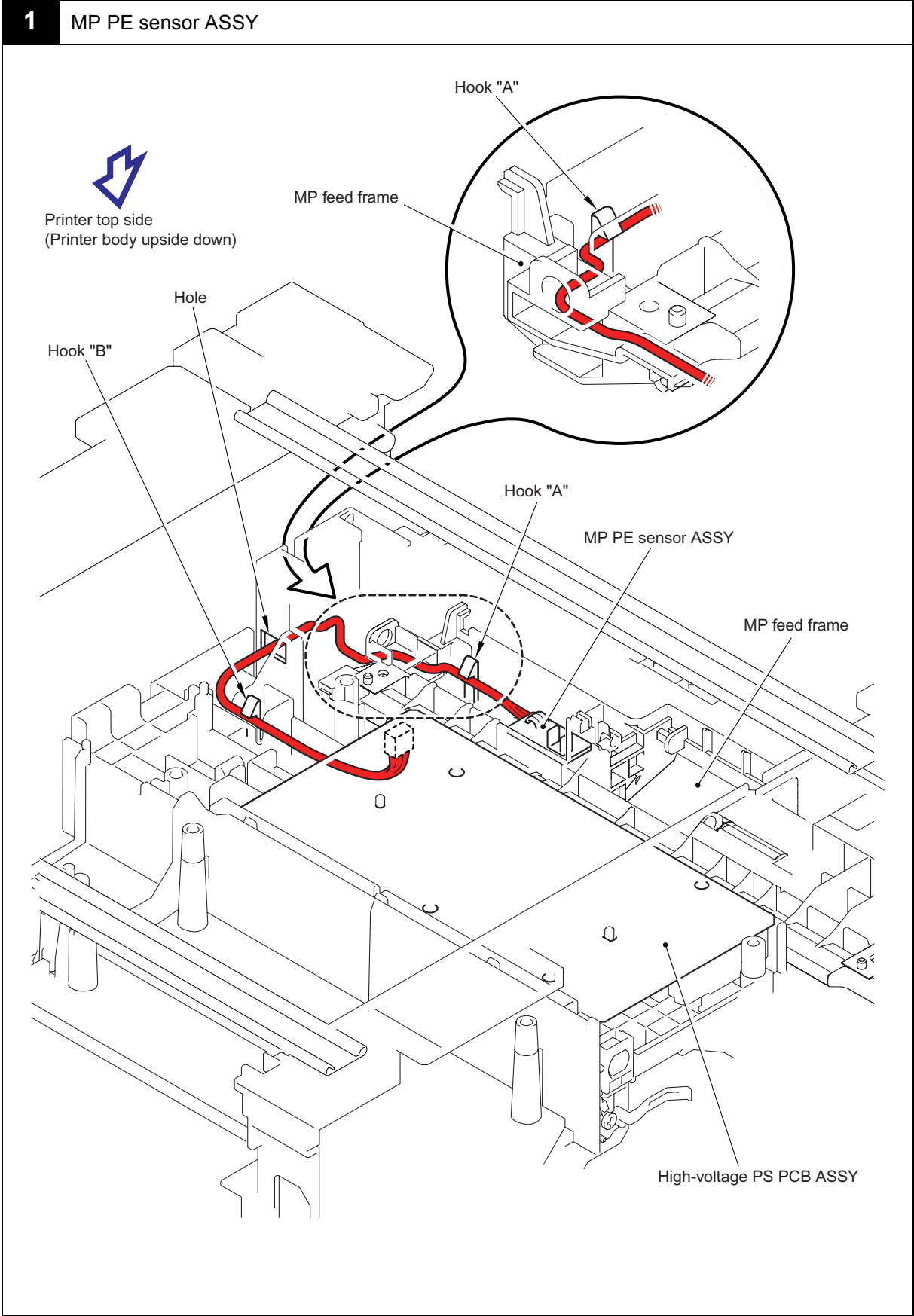
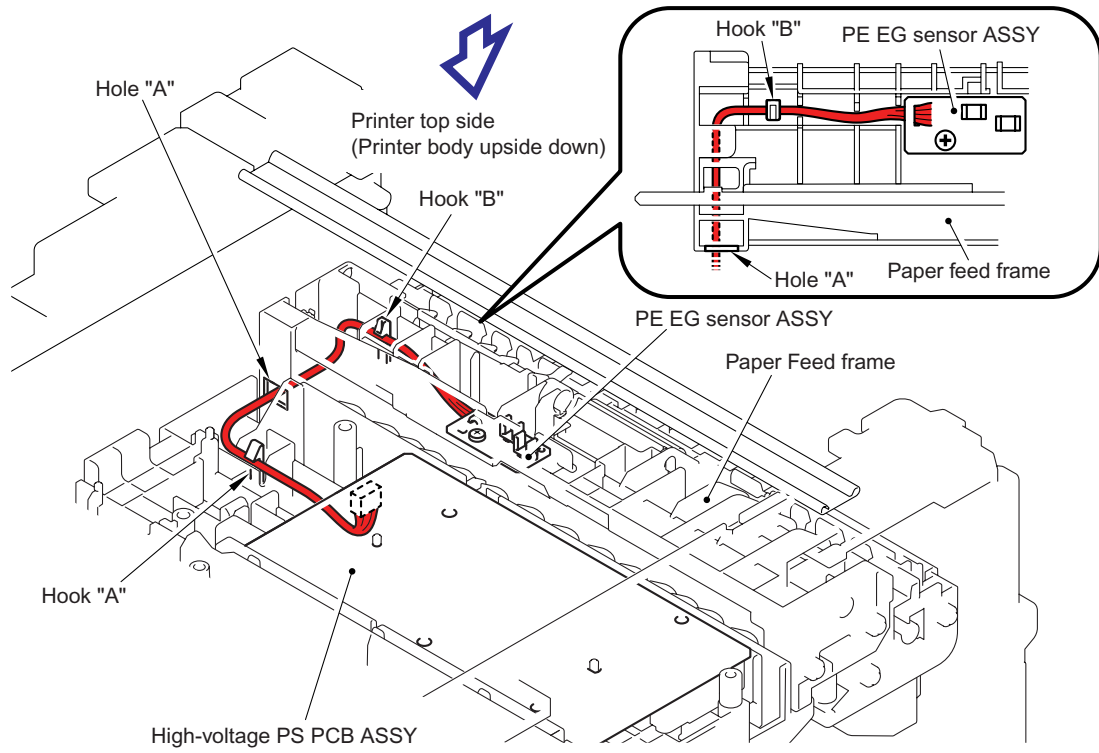


Fig. 5-4

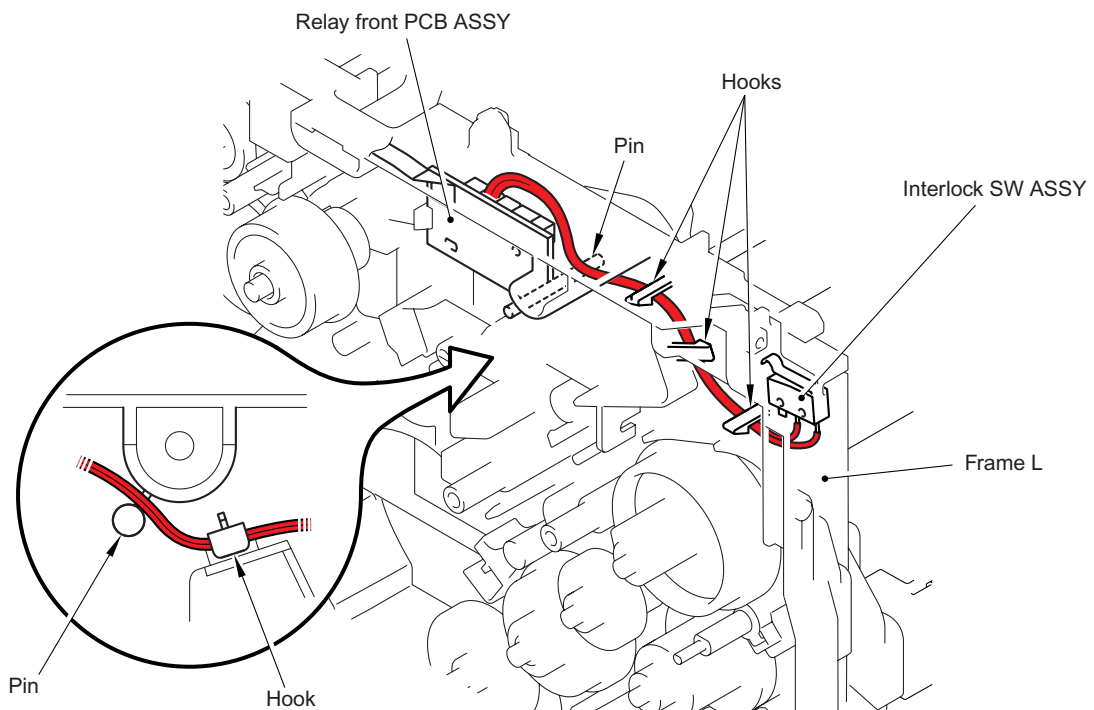
7. HARNESS ROUTING



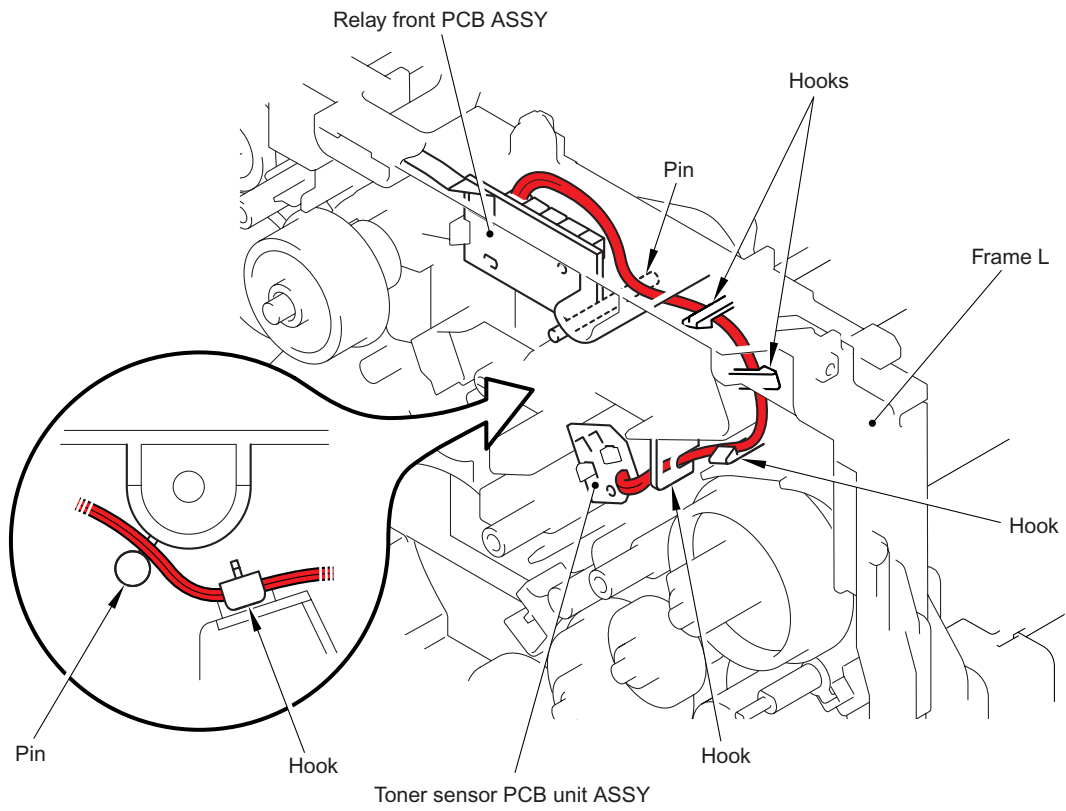
2 PE EG sensor ASSY



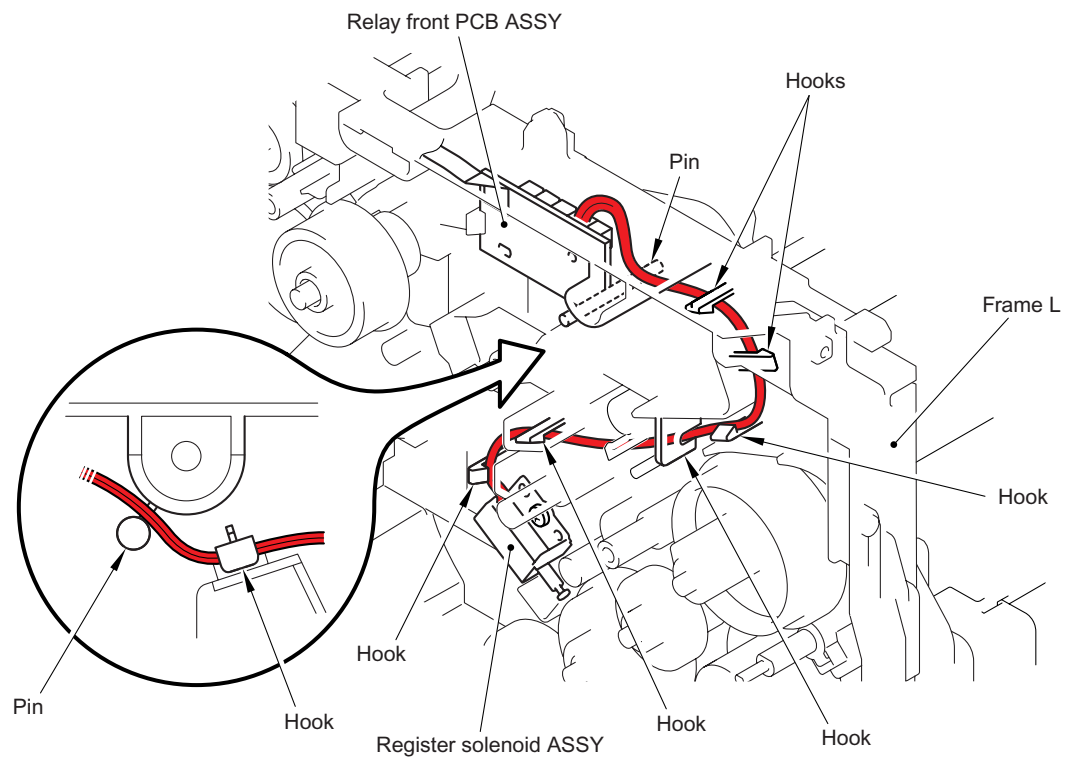
3 Interlock SW ASSY



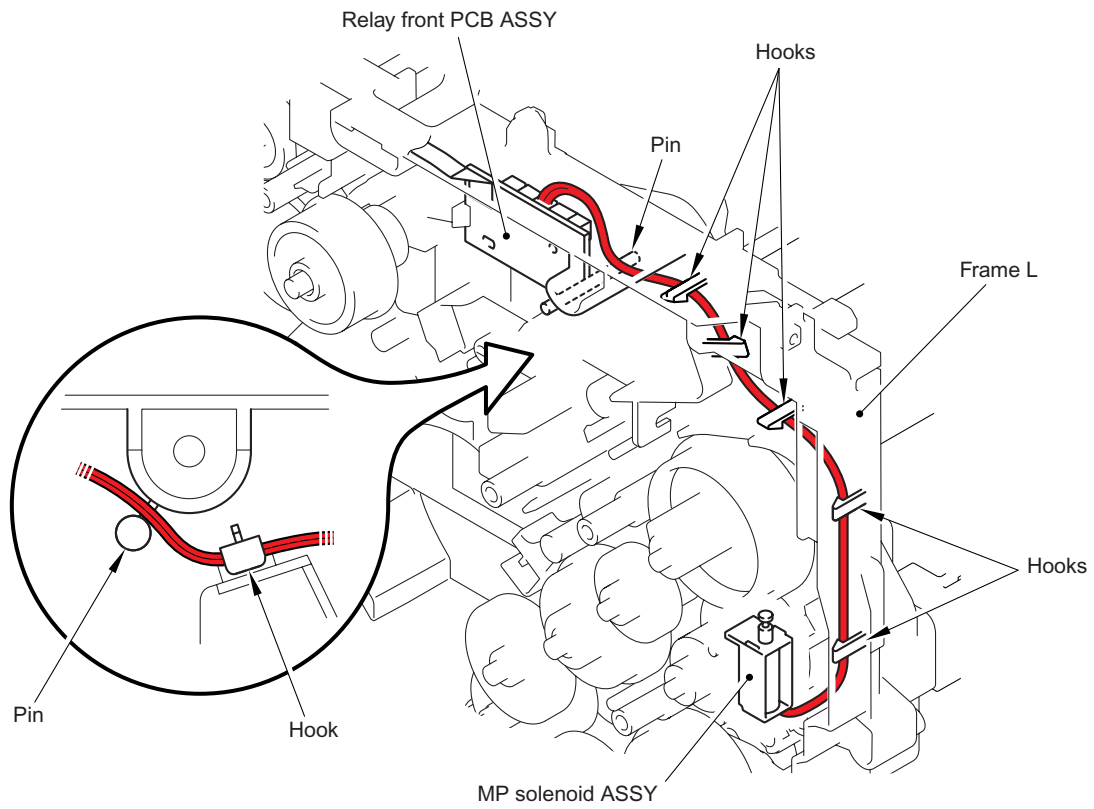
4 Toner sensor PCB unit ASSY



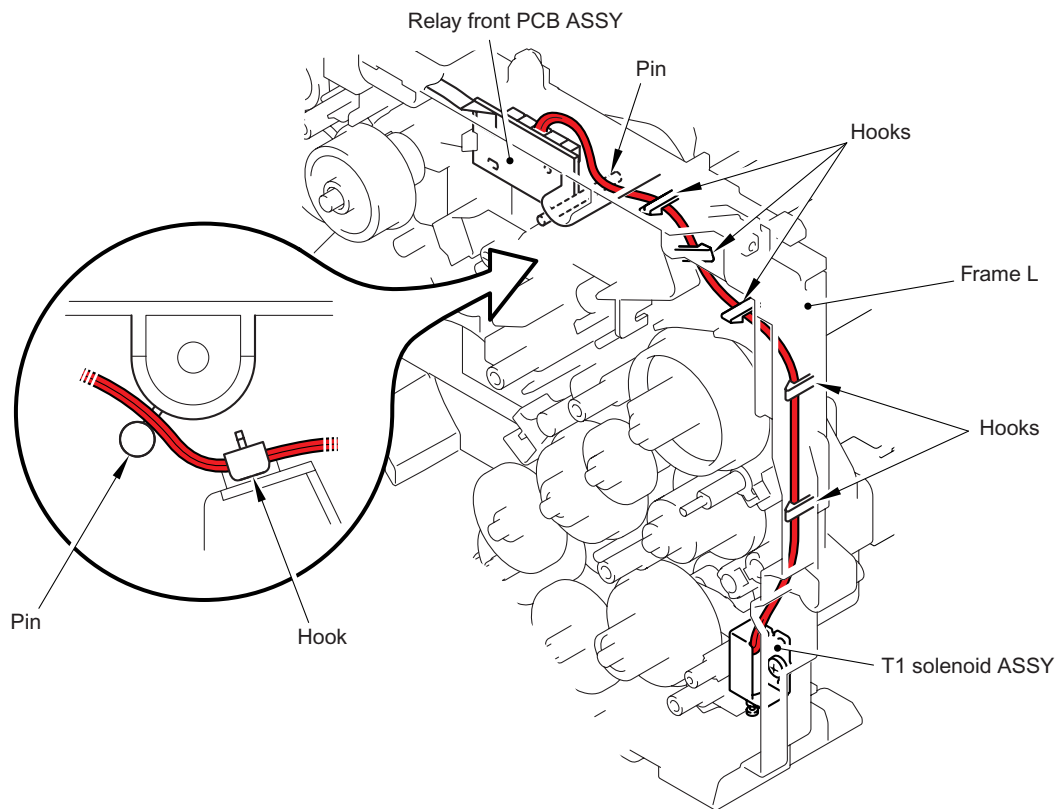
5 Regist solenoid ASSY



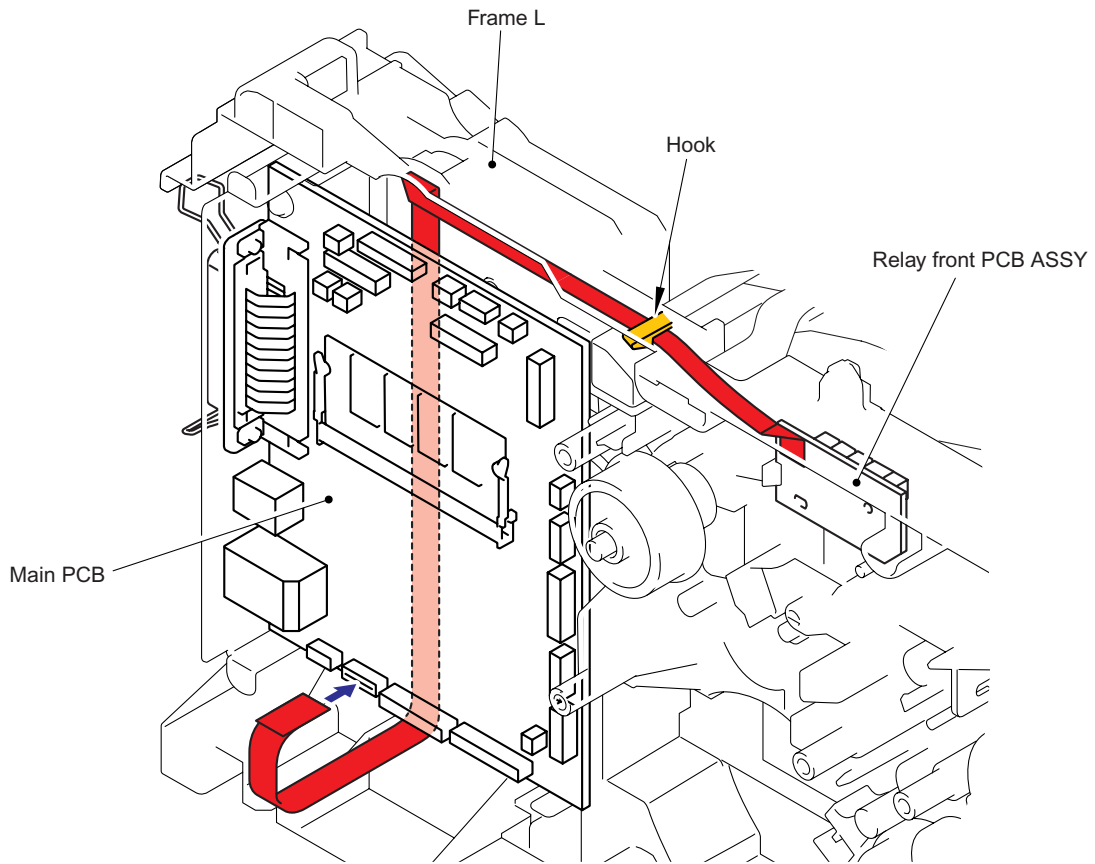
6 MP solenoid ASSY



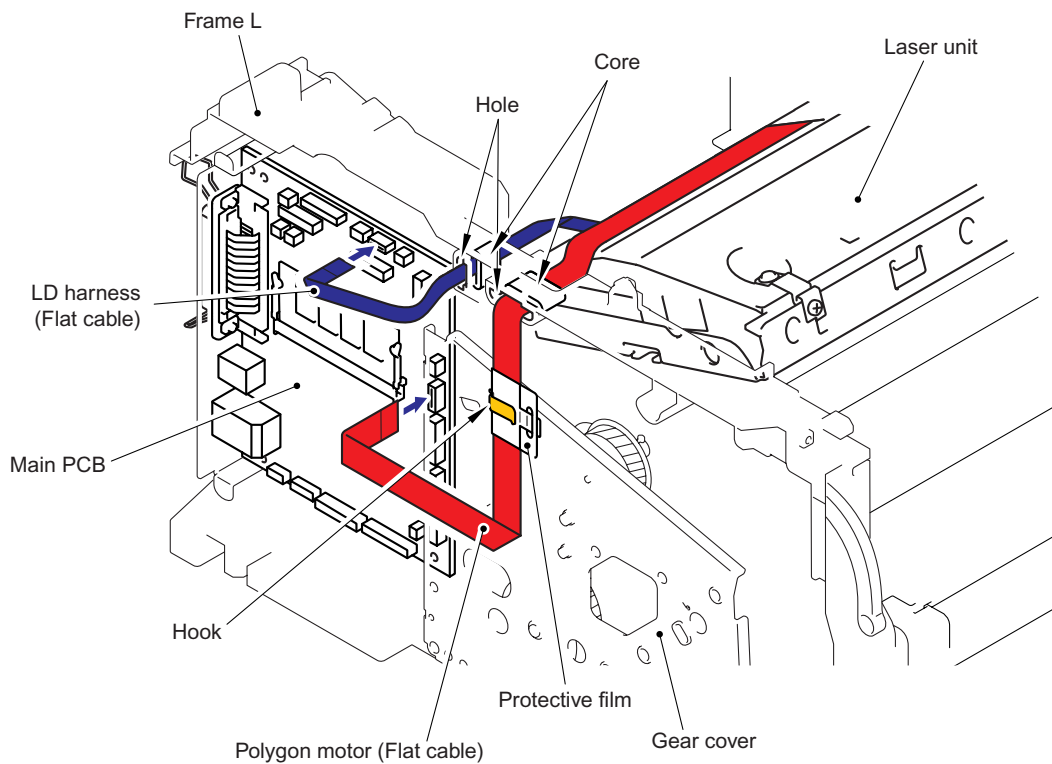
7 T1 solenoid ASSY



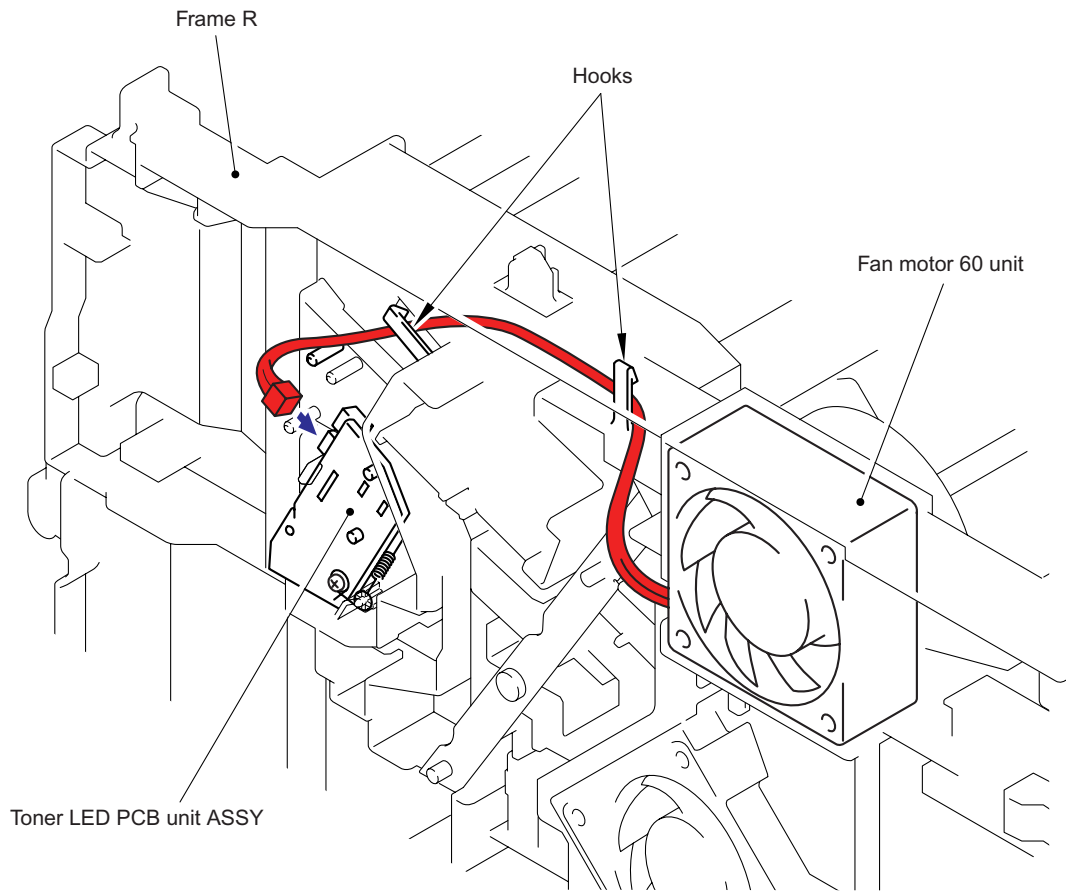
8 Relay front PCB ASSY



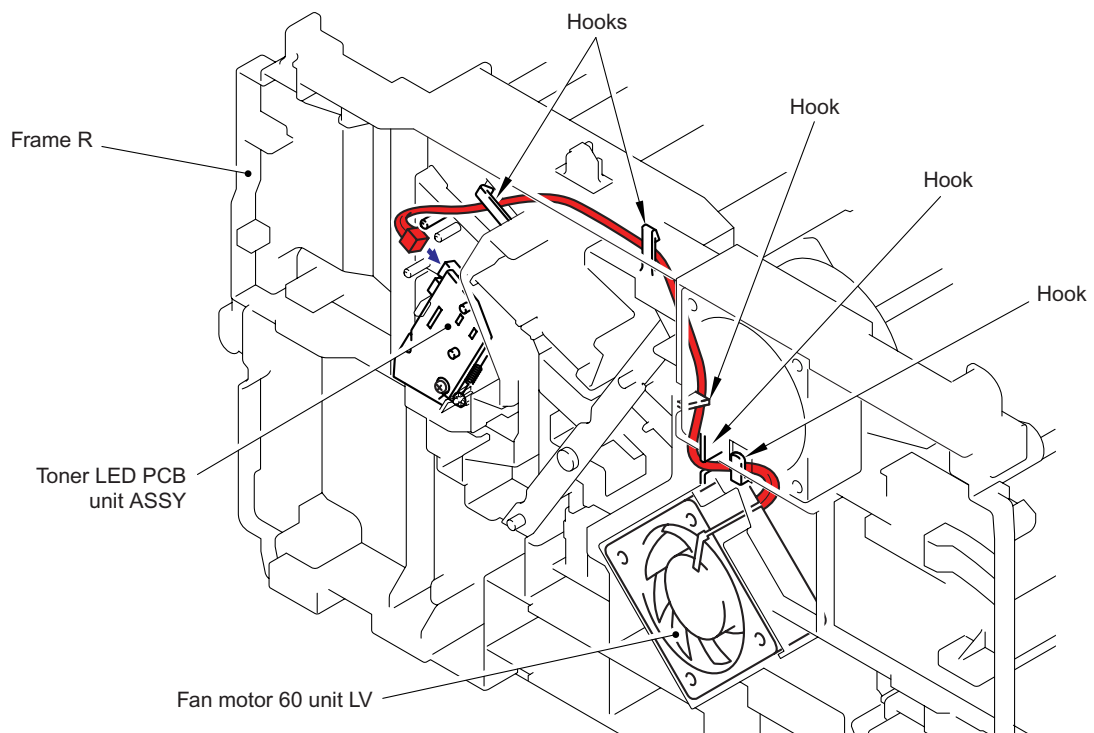
9 Laser unit



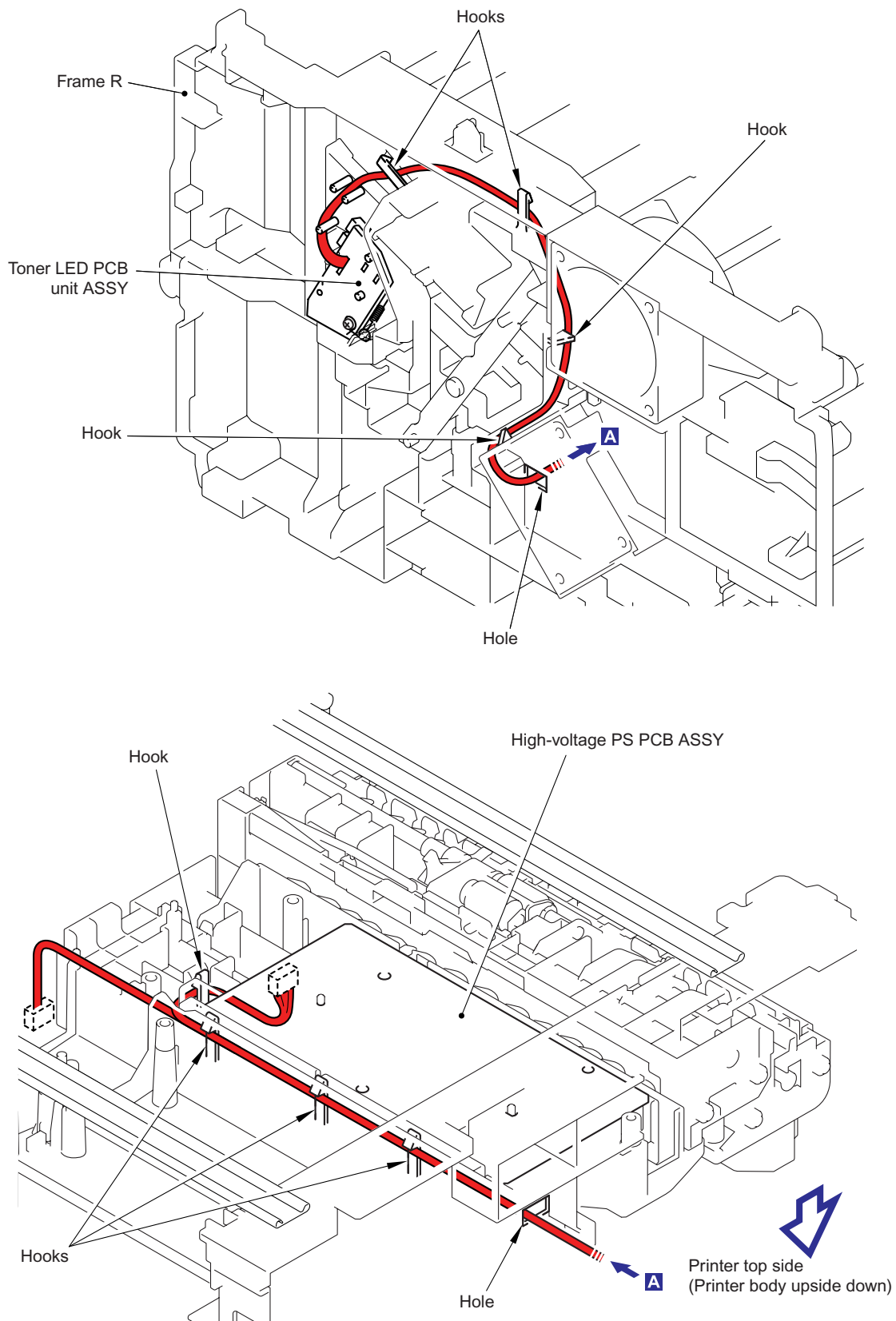
10 Fan motor 60 unit



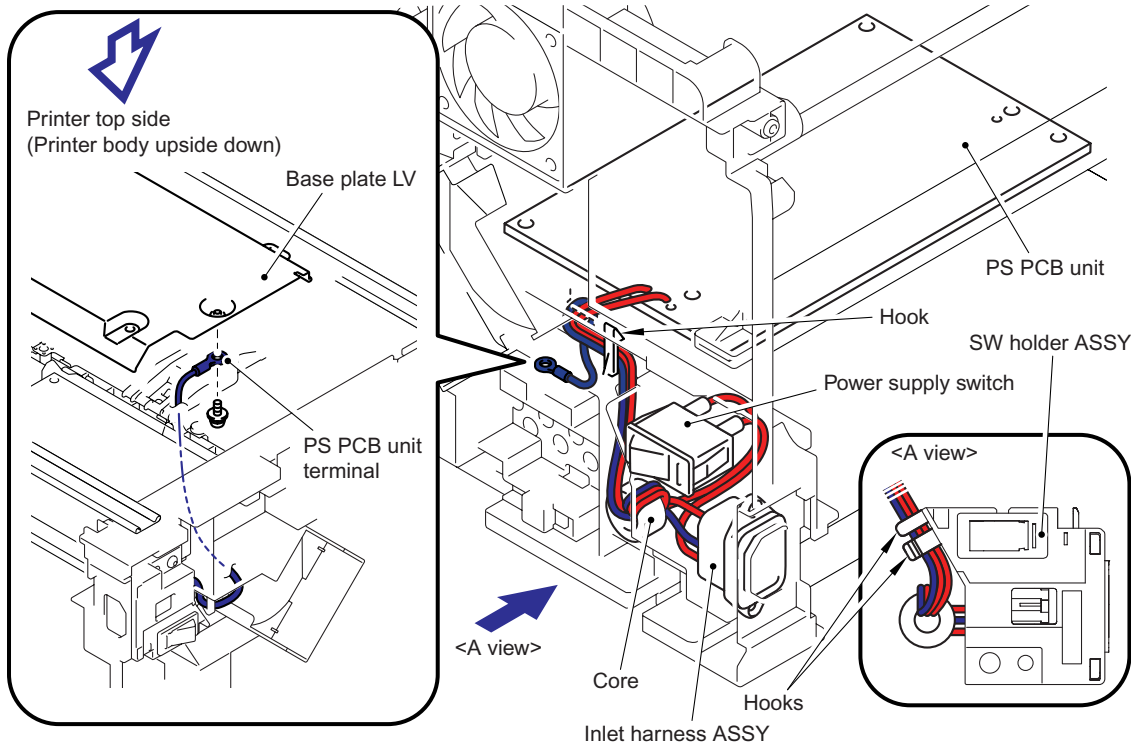
11 Fan motor 60 unit LV



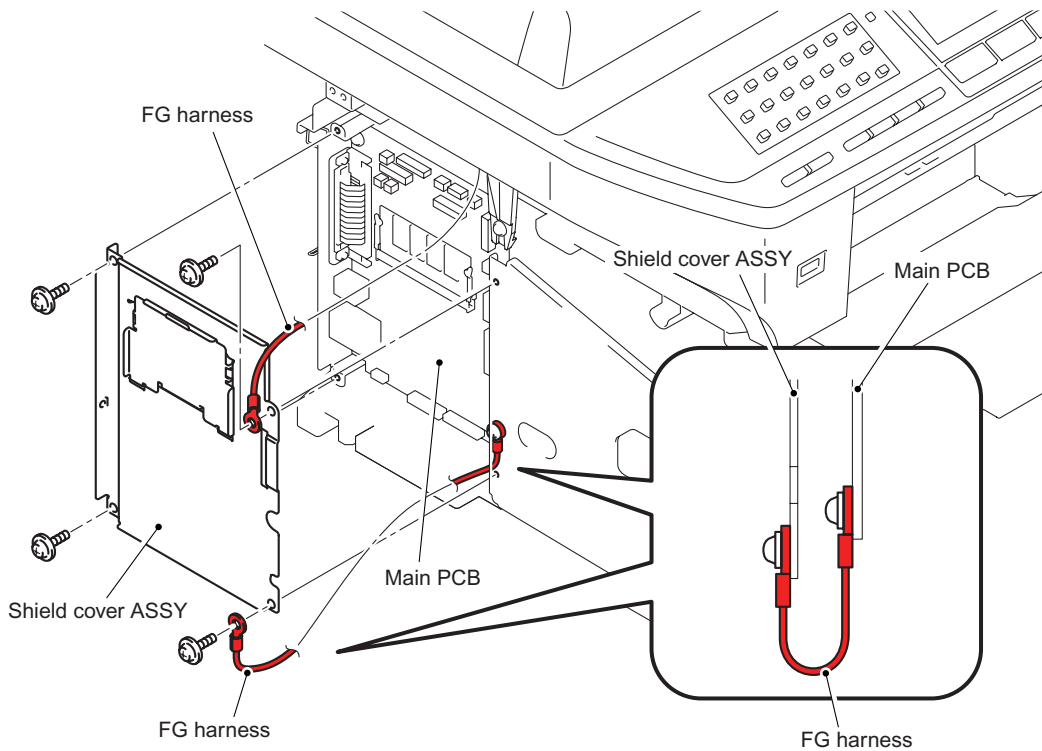
12 Toner LED PCB unit ASSY



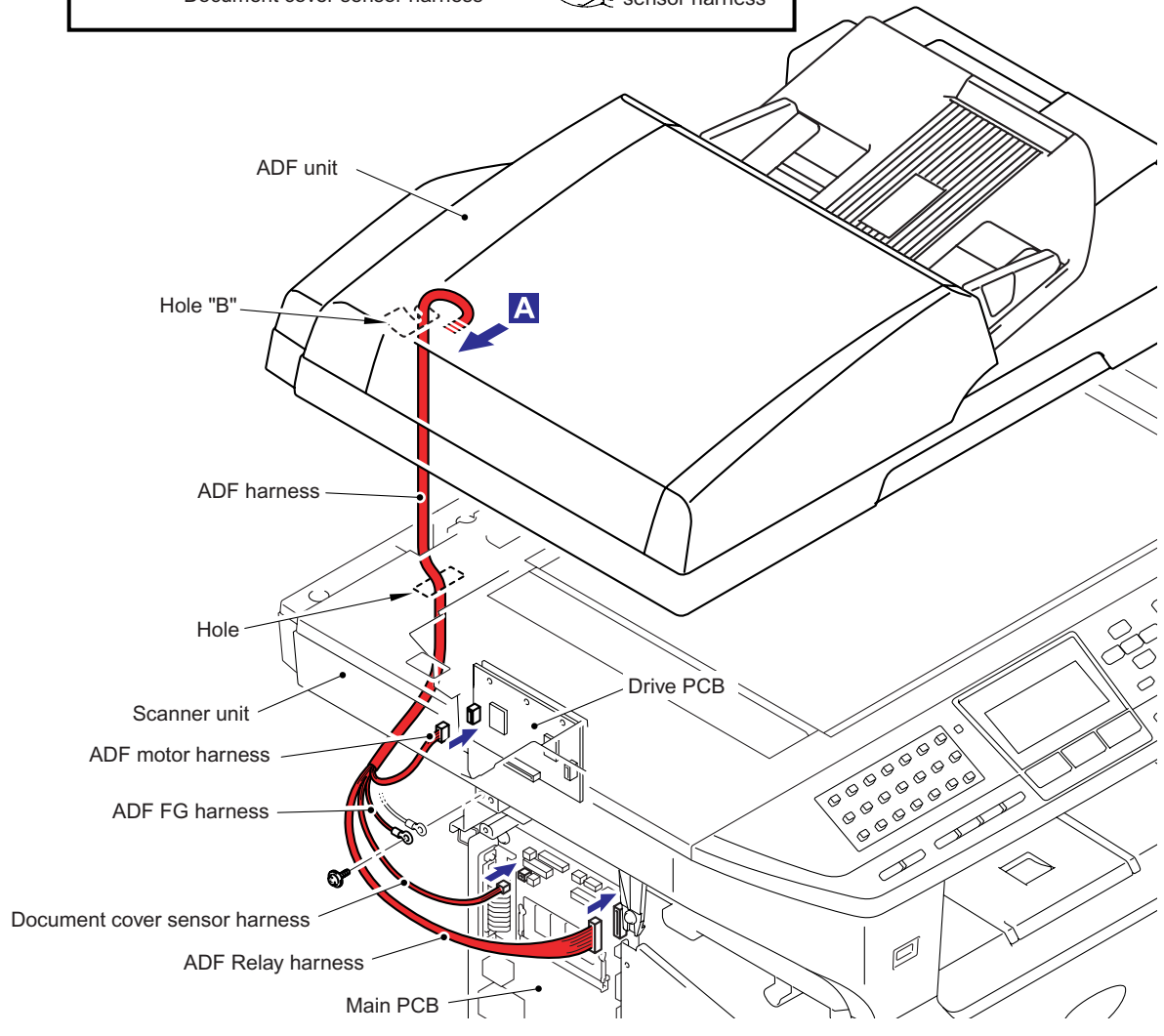
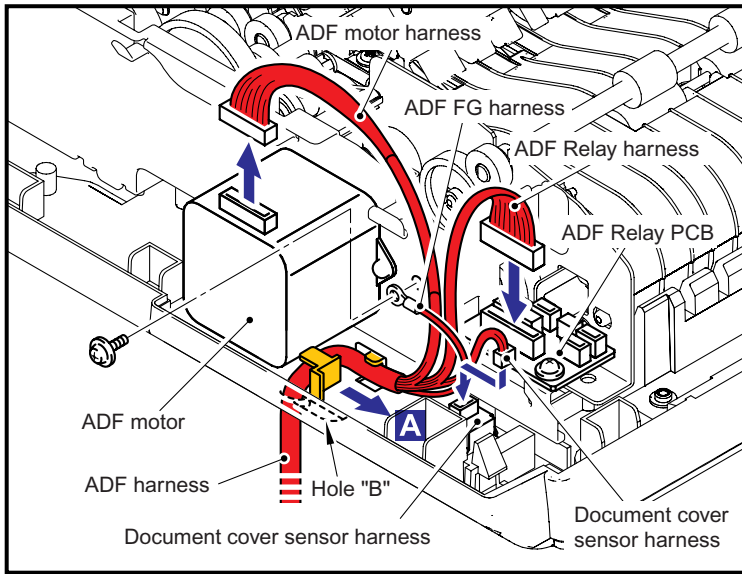
13 PS PCB unit



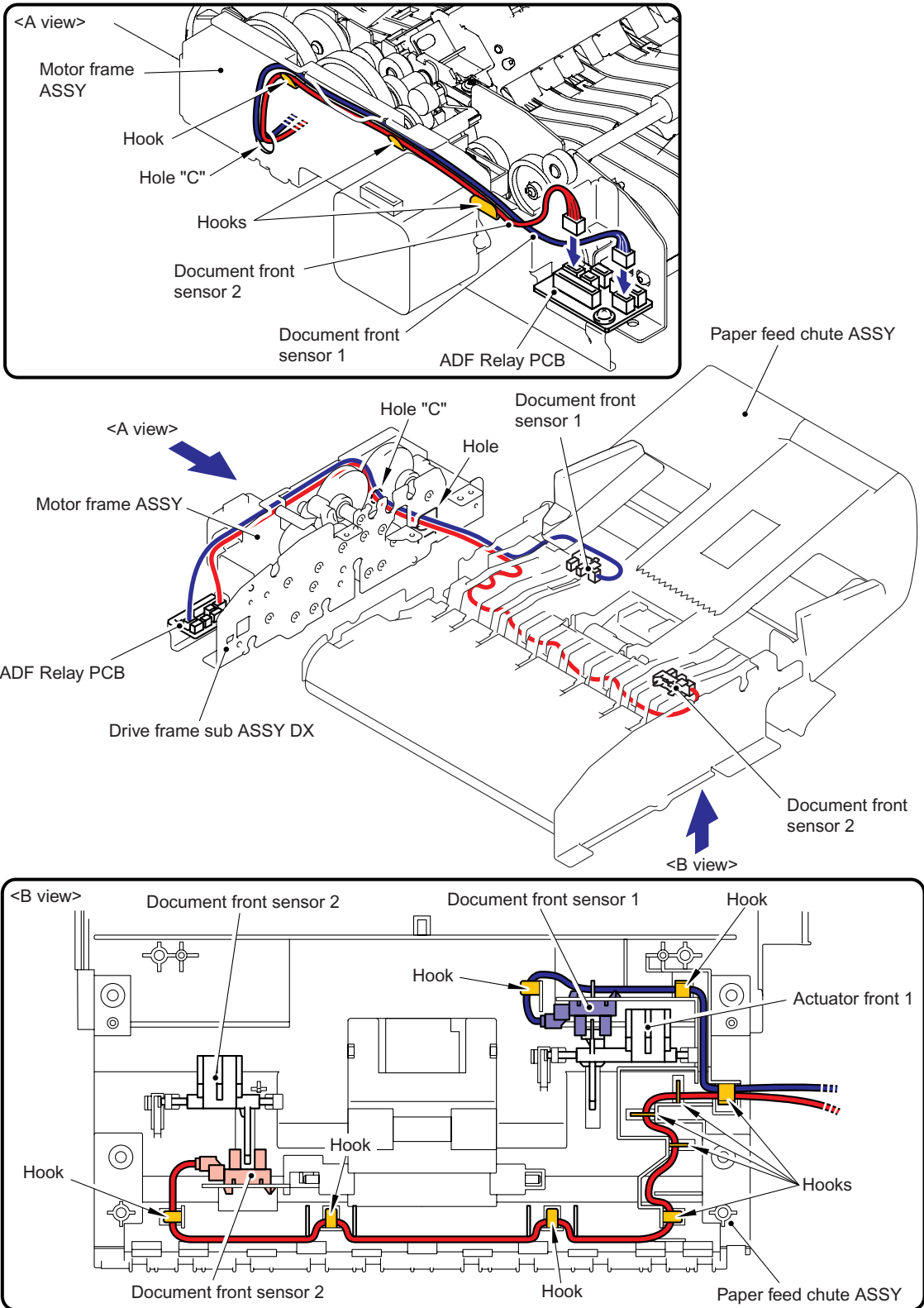
14 FG harness



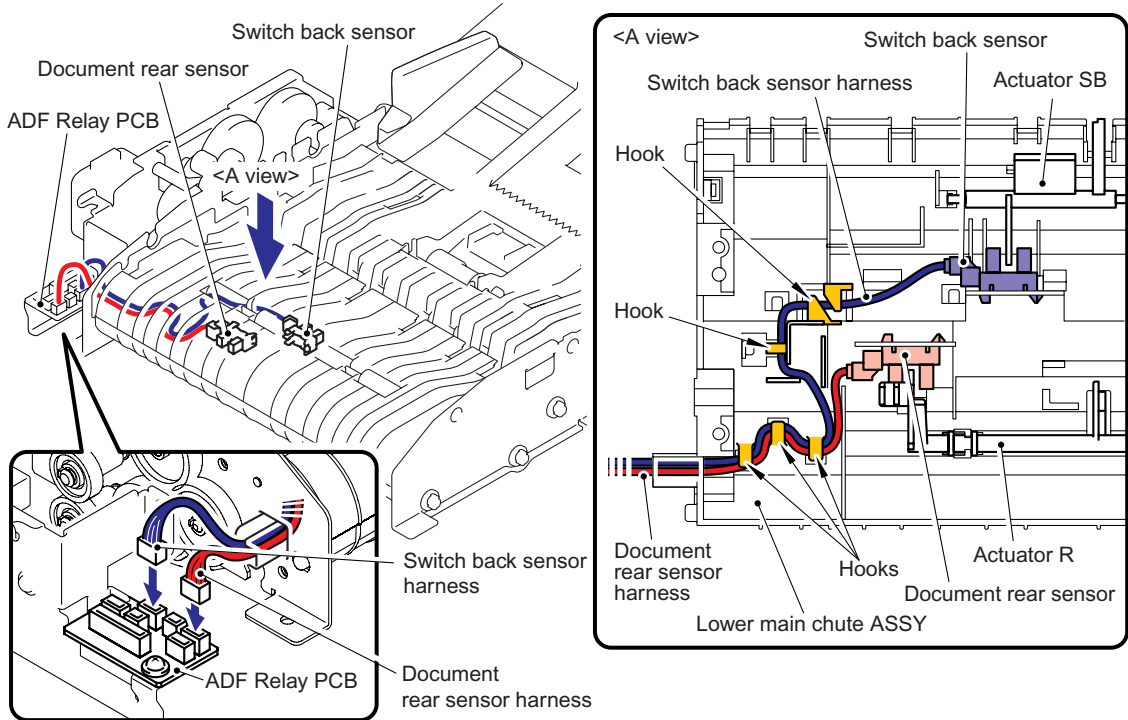
15 ADF unit



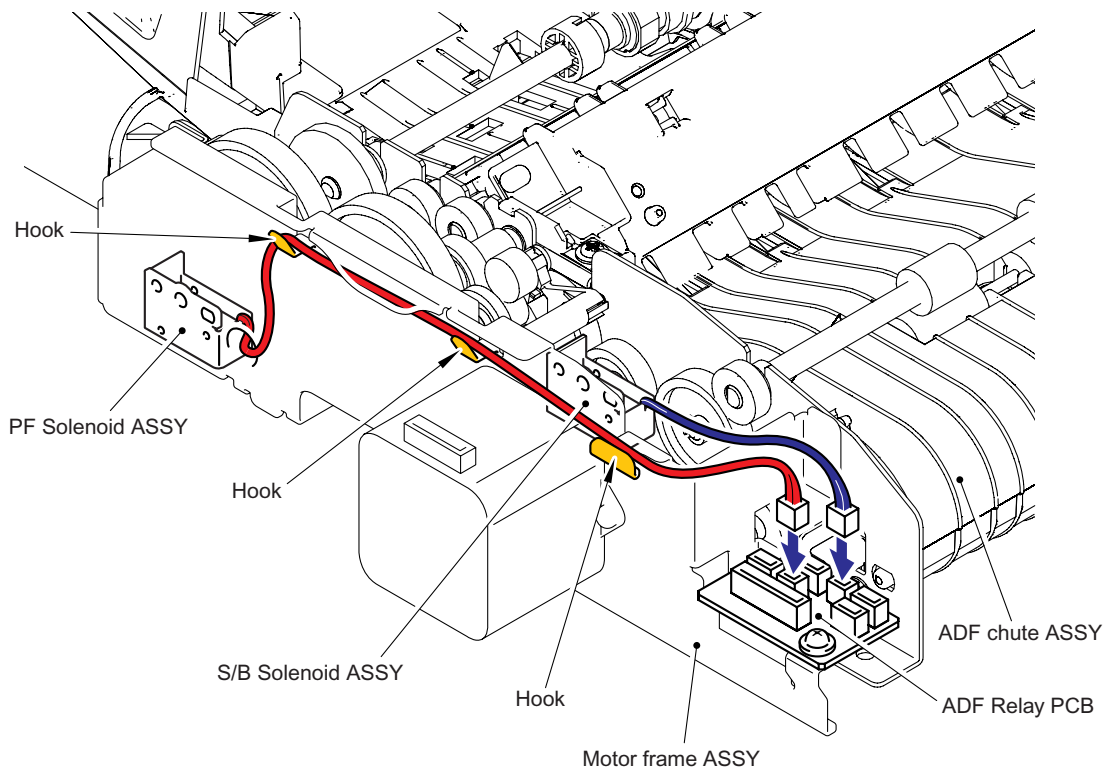
16 ADF unit (Document front sensor 1, Document front sensor 2)



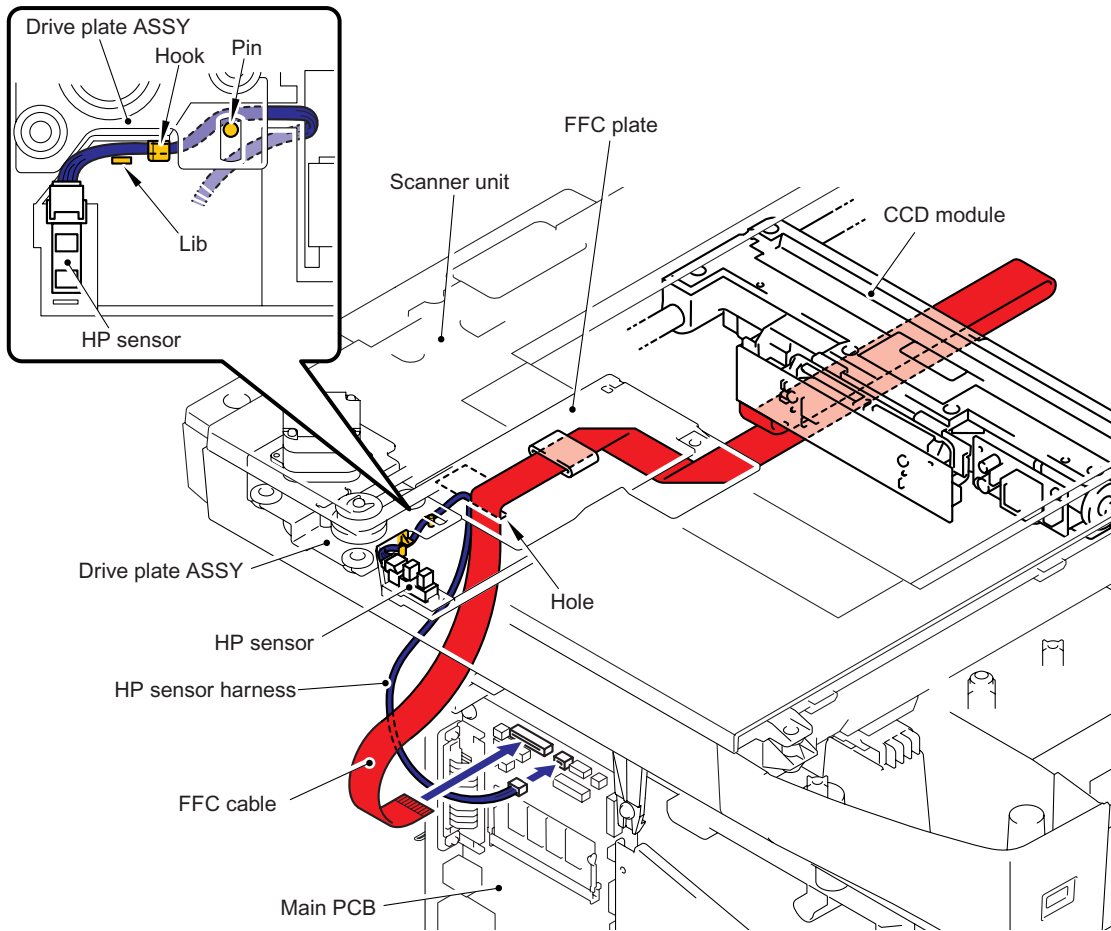
17 ADF unit (Document rear sensor, Switch back sensor)



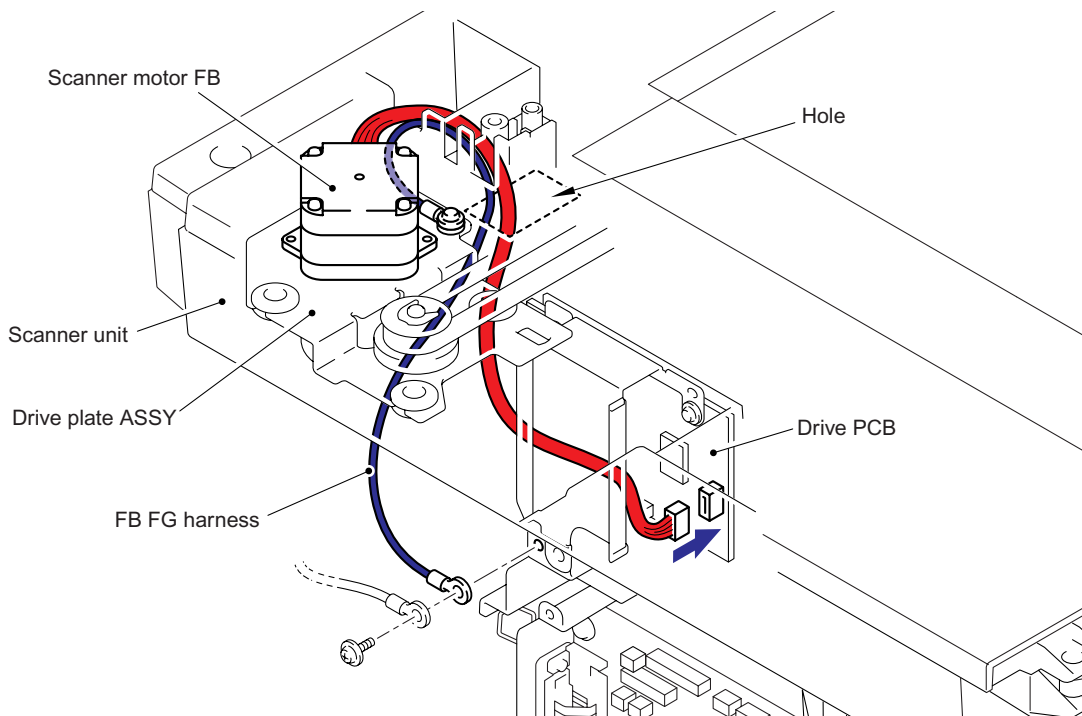
18 ADF unit (S/B solenoid ASSY, PF solenoid ASSY)



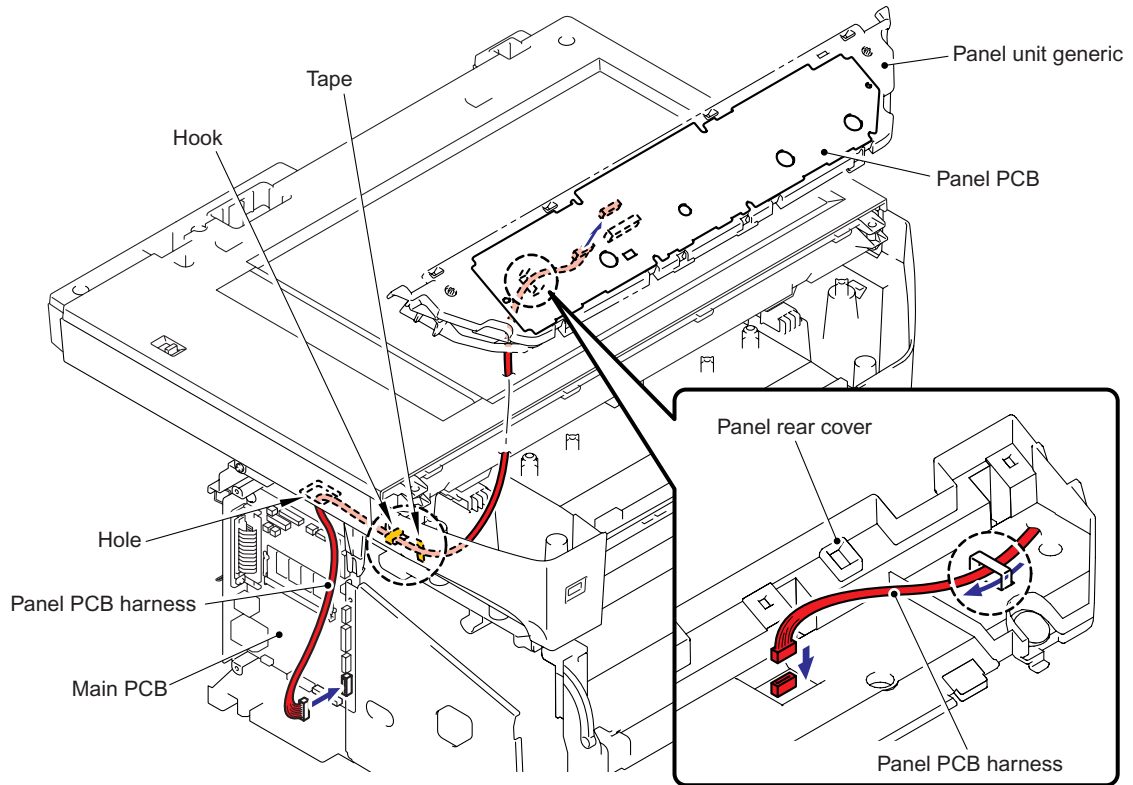
19 Scanner unit (CCD module, HP sensor)



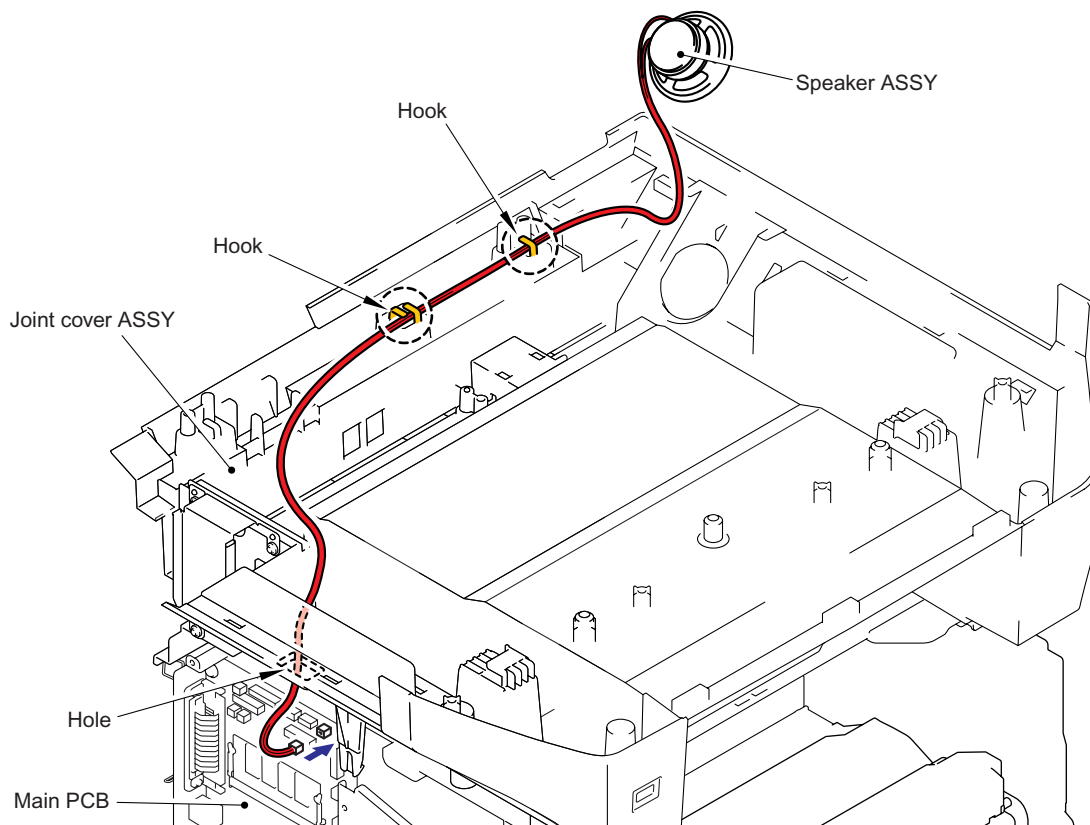
20 Scanner unit (Scanner motor, FB FG harness)



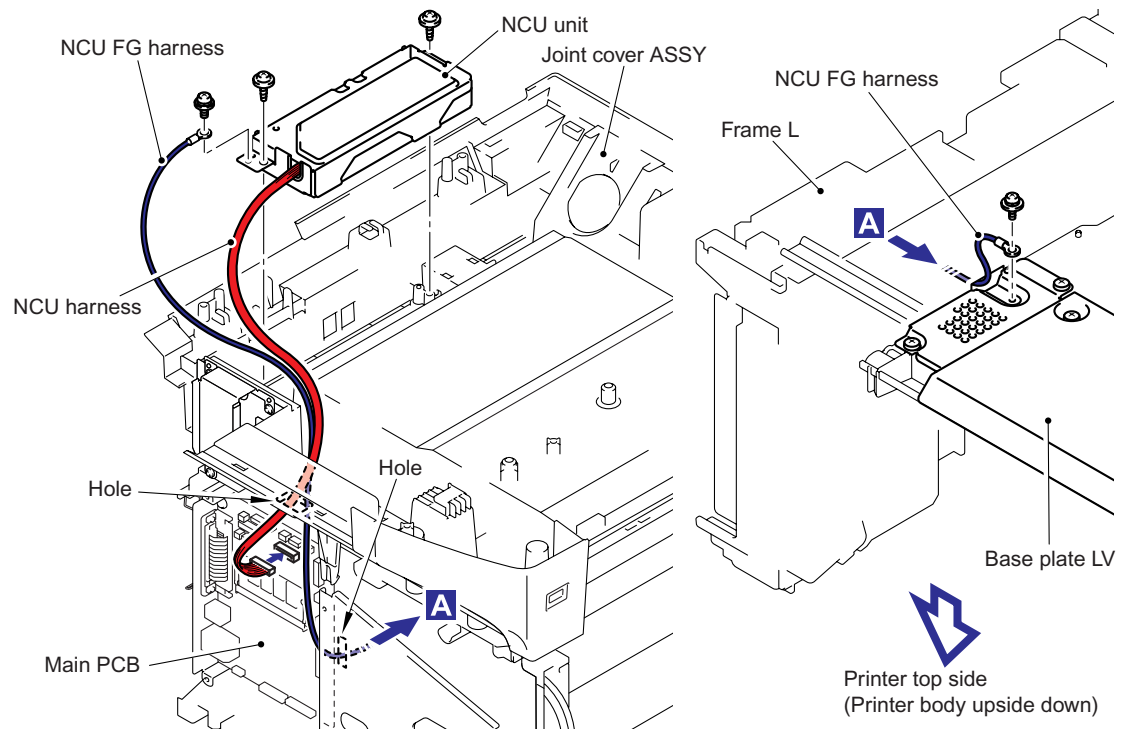
21 Panel unit



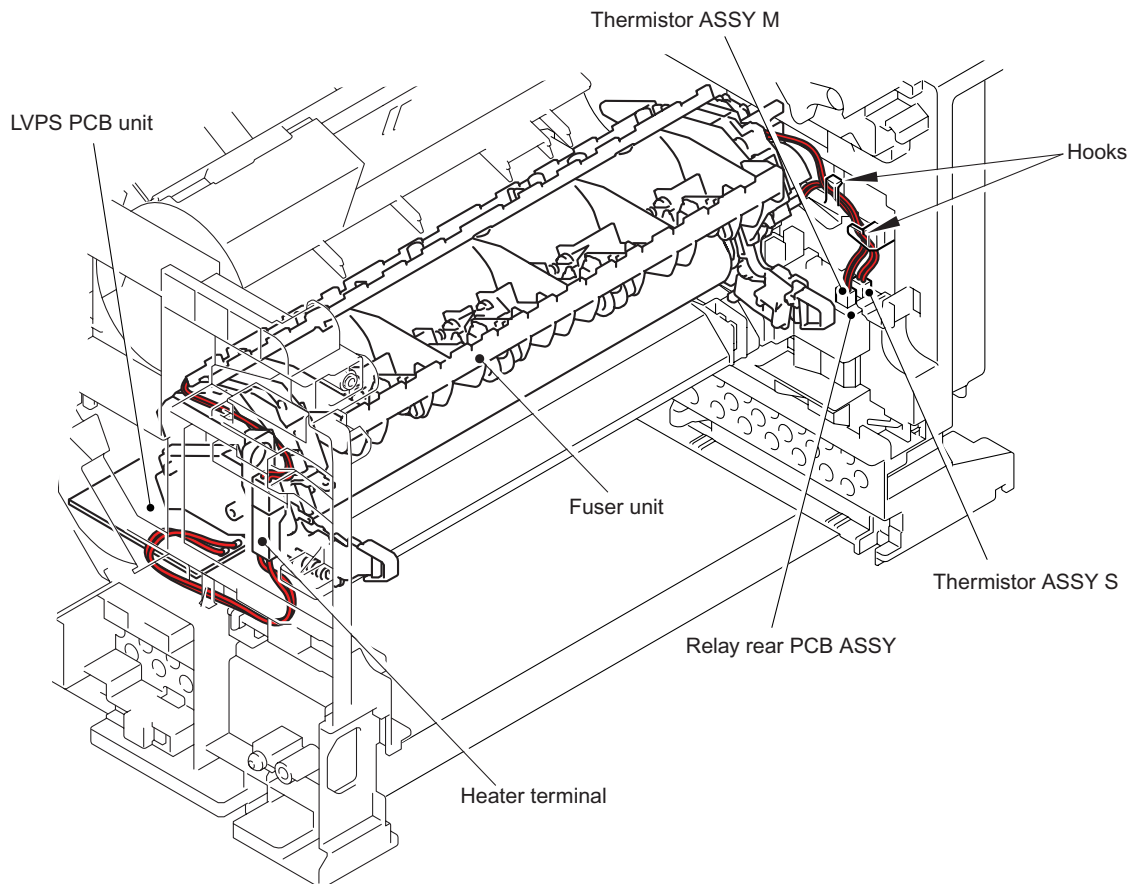
22 Speaker ASSY



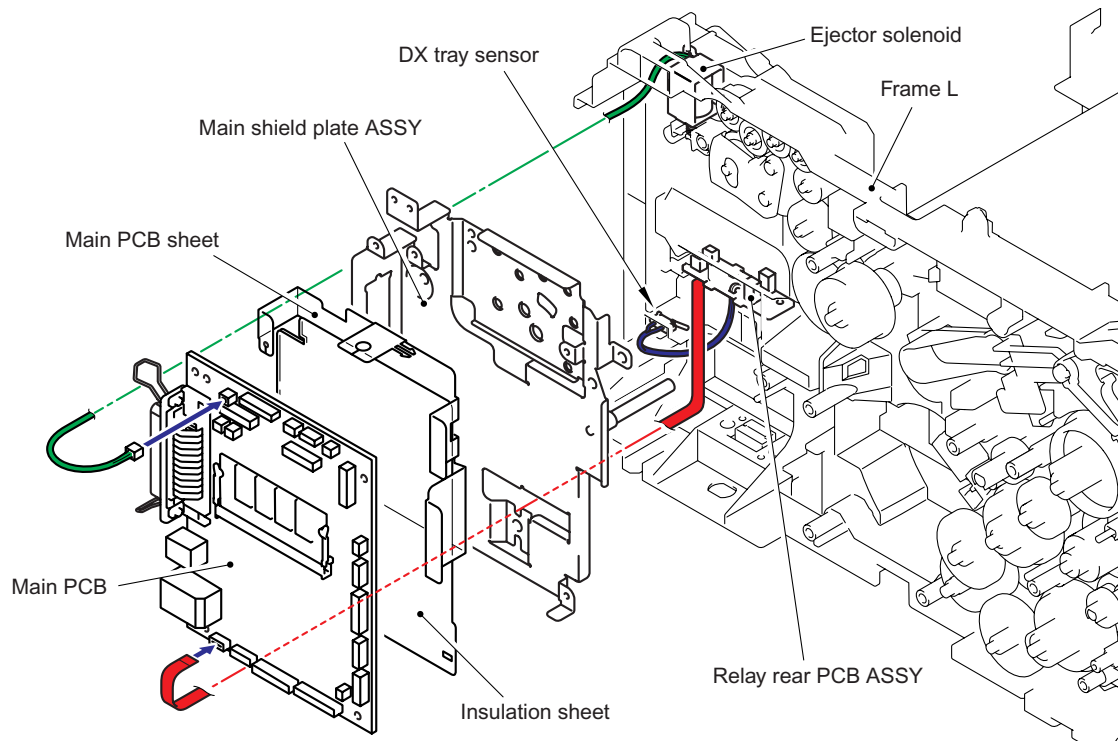
23 NCU unit



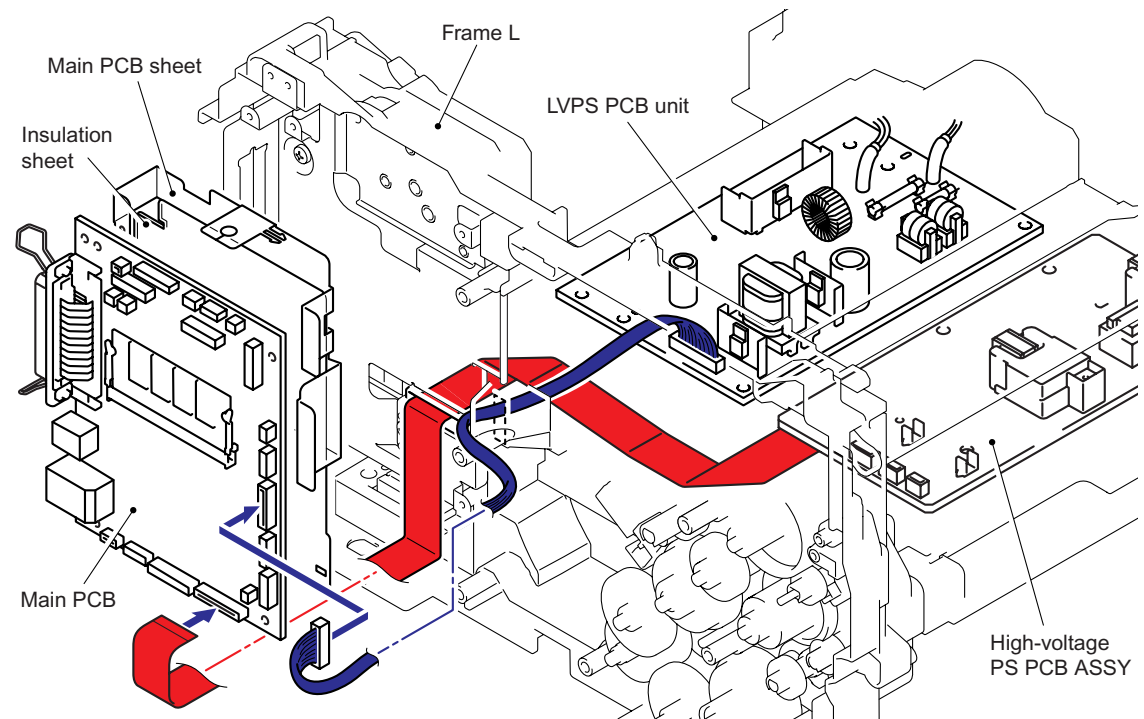
24 Fuser unit



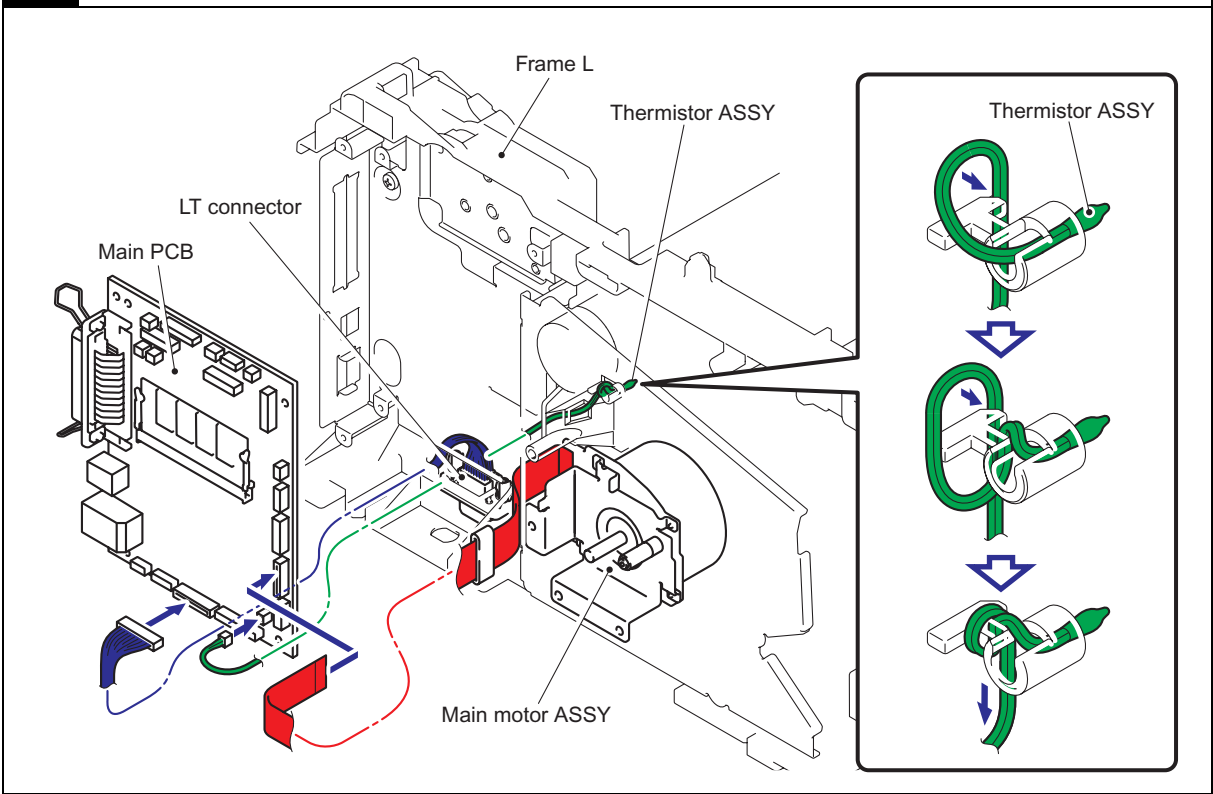
25 Relay rear PCB ASSY, Ejector solenoid (For the models with the DX only)



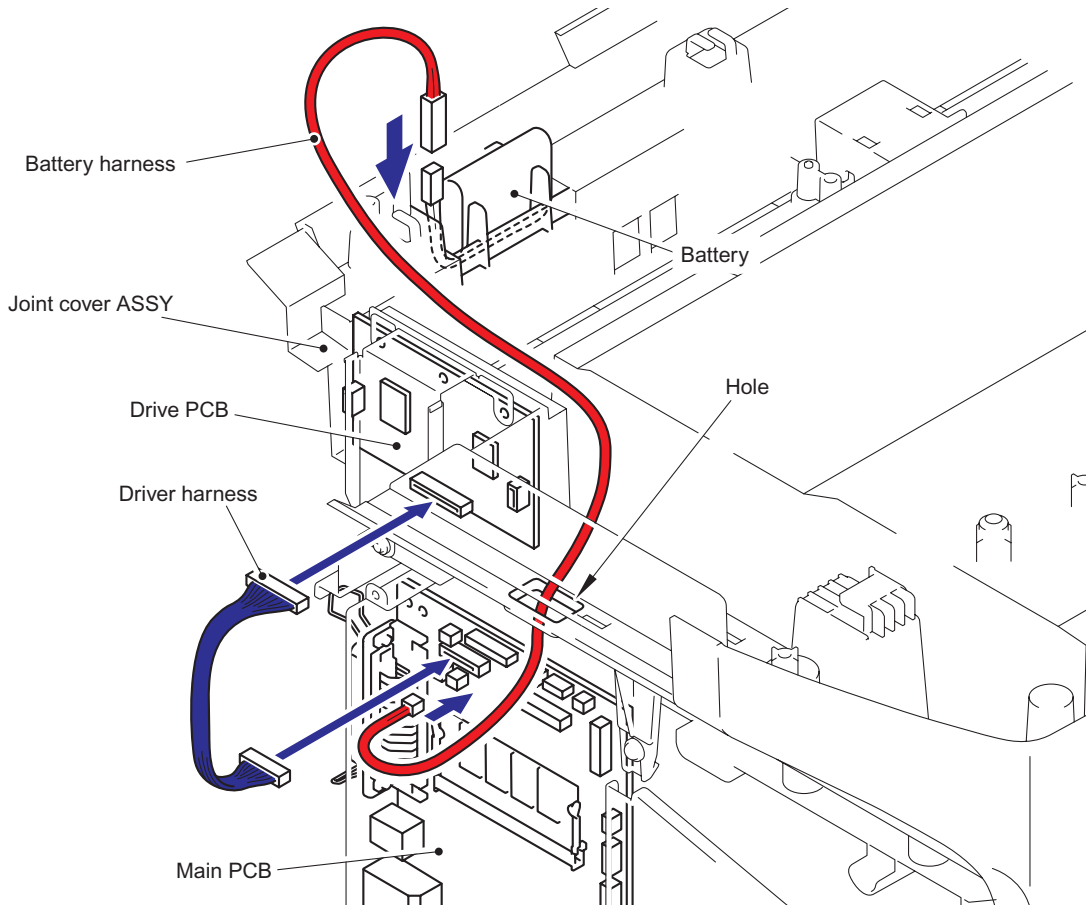
26 PS PCB unit, High-voltage PS PCB ASSY



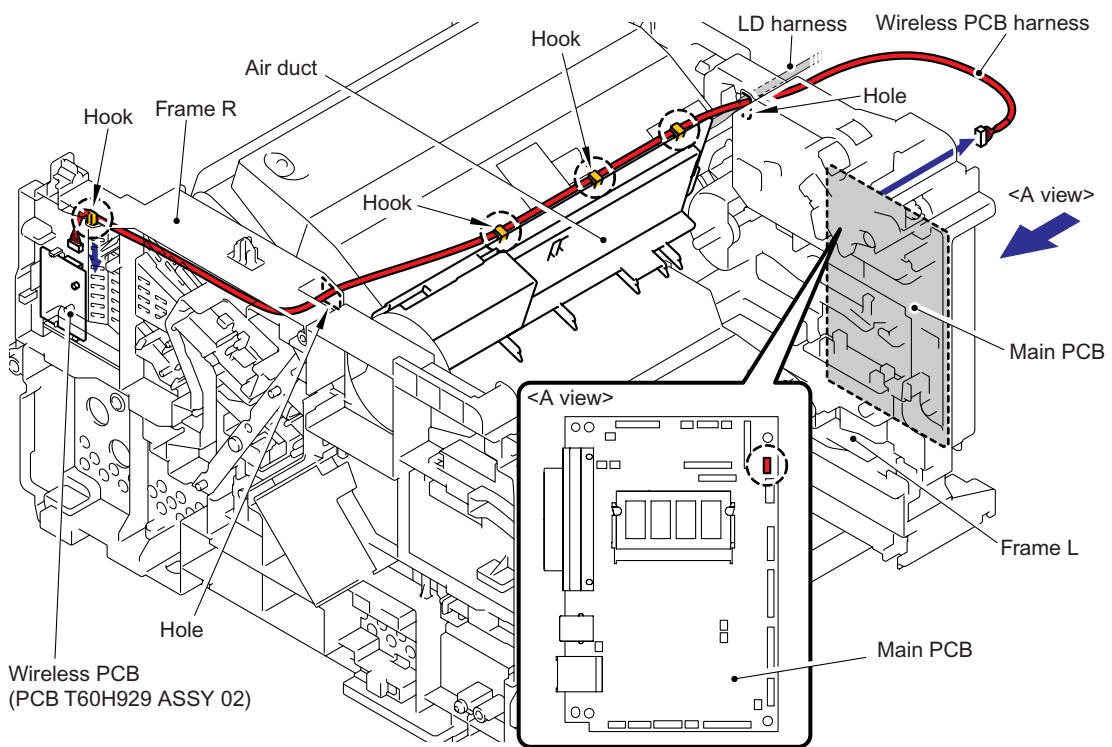
27 Main motor ASSY, Thermistor ASSY, LT connector



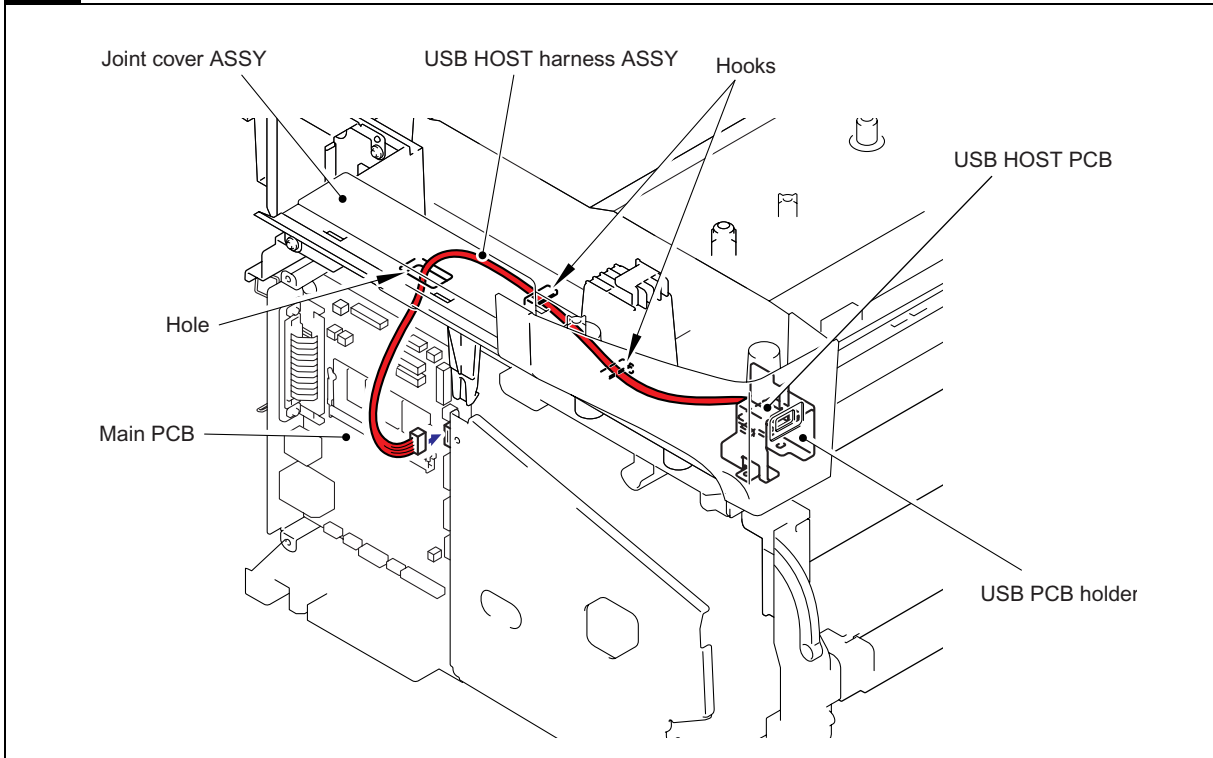
28 Driver PCB, Battery



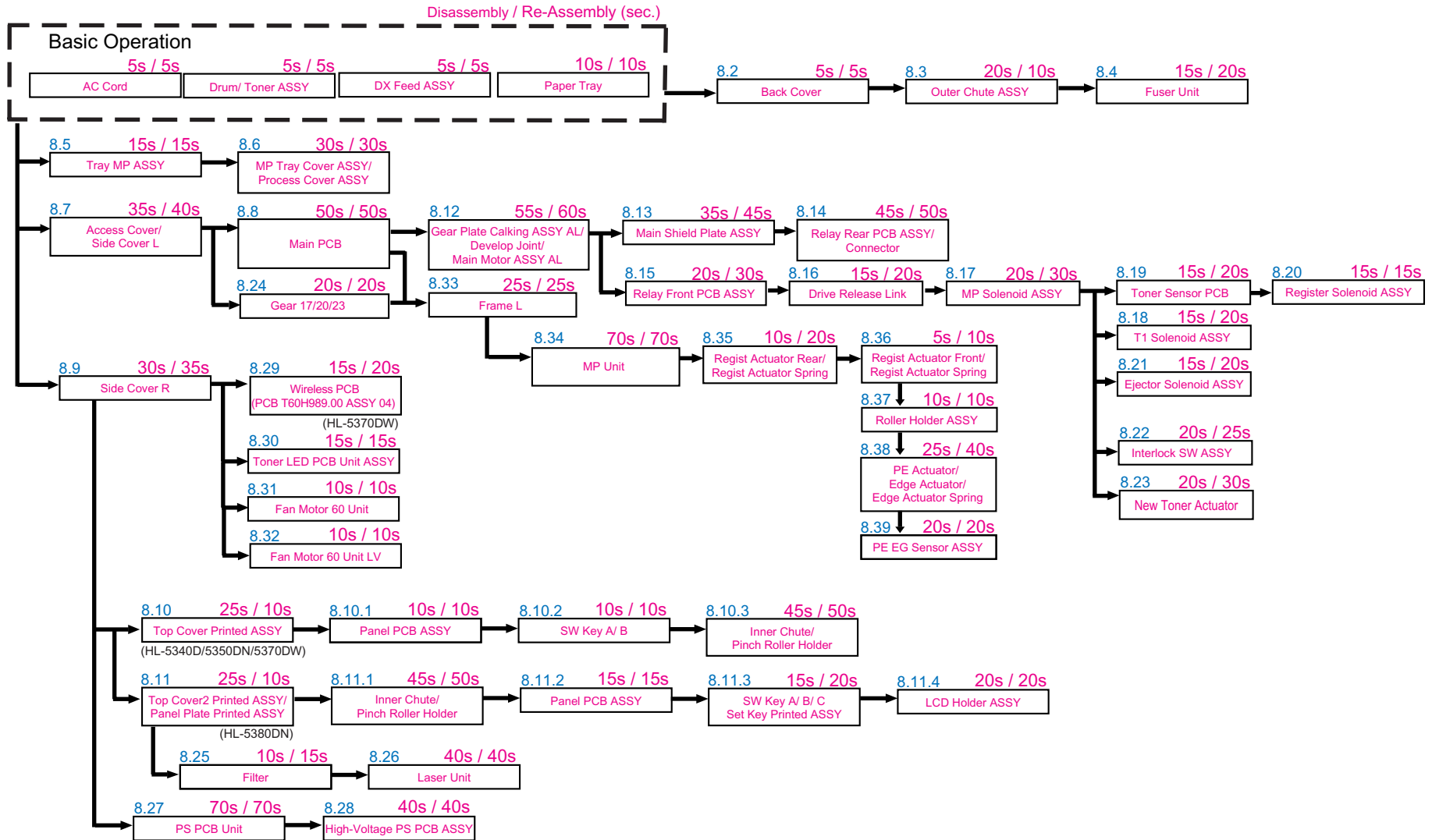
29 Wireless PCB (PCB T60H929.00 ASSY 02)



30 USB HOST PCB



8. DISASSEMBLY FLOW CHART



9. DISASSEMBLY PROCEDURE

■ Preparation

Prior to proceeding with the disassembly procedure,

(1) Unplug

- the AC cord,
- the USB cable, if connected,
- the LAN cable, if connected.

(2) Remove

- the Paper tray,
- the Toner cartridge and Drum unit,
- the DX unit.

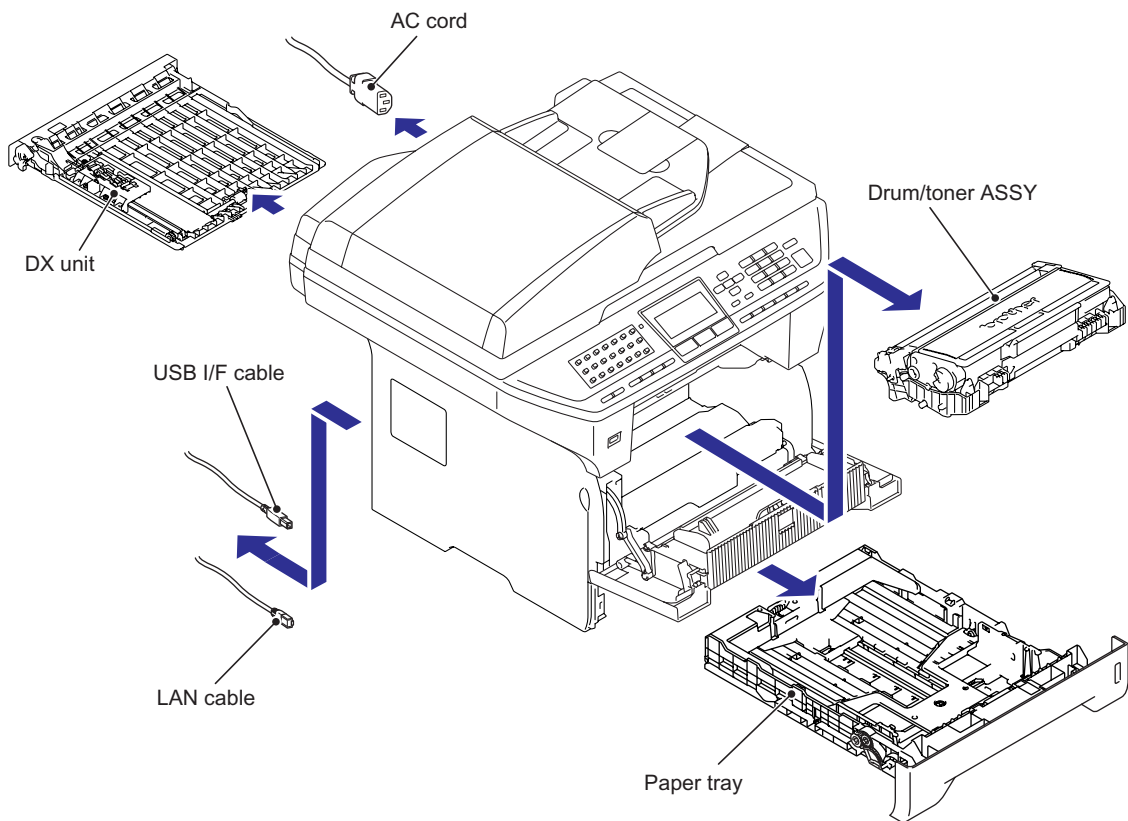


Fig. 5-5

9.1 Paper Tray

- (1) Pull up the back side of the Separation pad ASSY.
- (2) Push the Hooks provided on both sides of the Separation pad ASSY inwards.
- (3) Pull up the Separation pad ASSY.

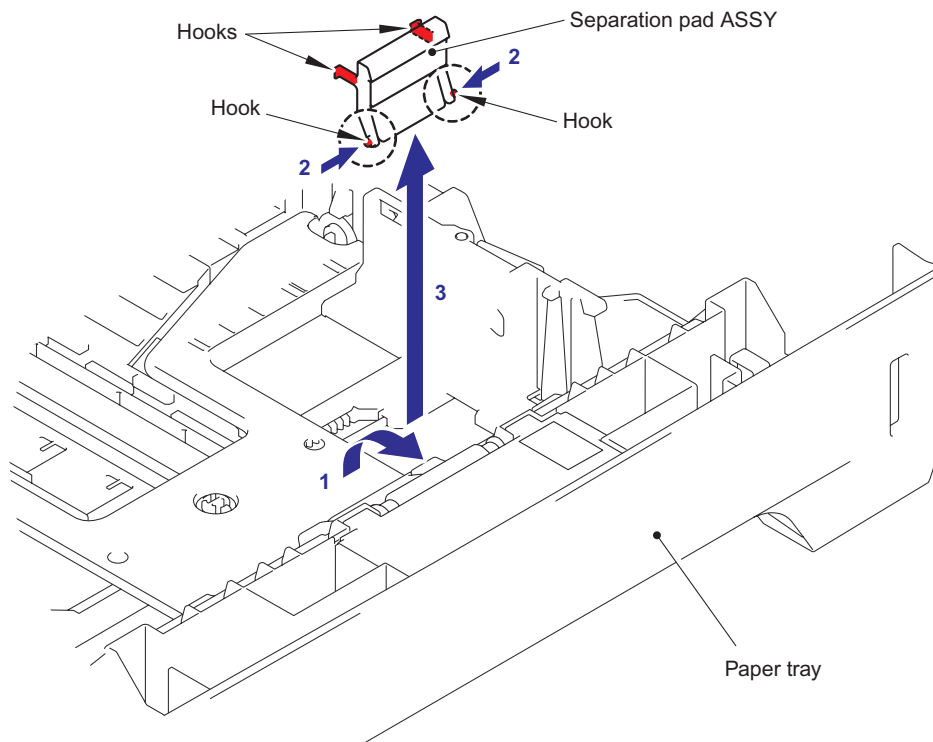


Fig. 5-6

(4) Remove the Separation pad spring.

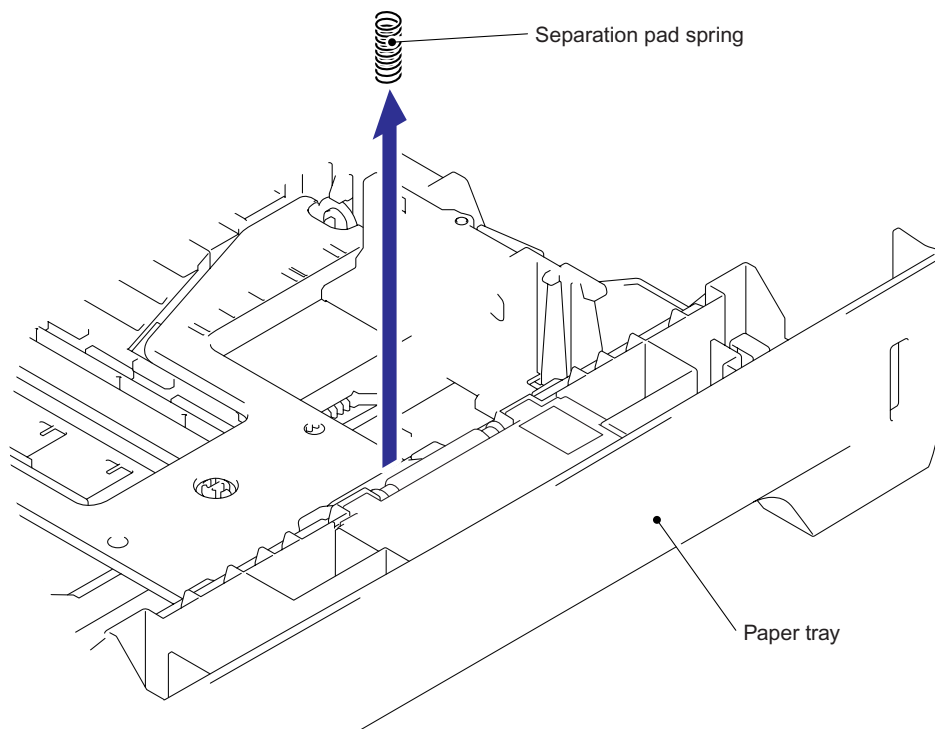


Fig. 5-7

(5) Push the hook of the lift gear 46 while pushing up the plate up plate, and remove the Lift gear 46.

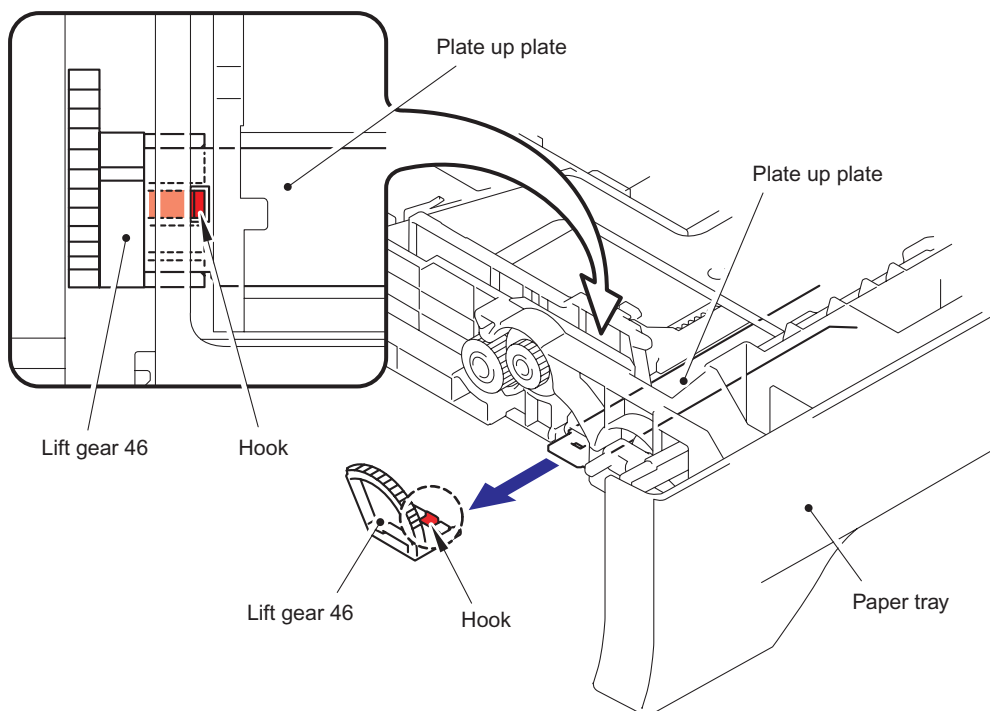


Fig. 5-8

(6) Remove the Gear 21-16.

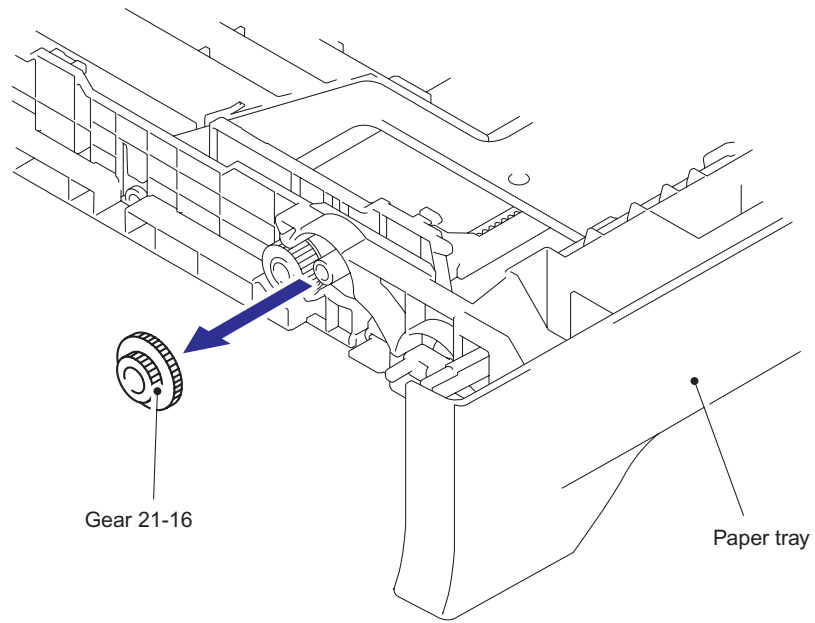


Fig. 5-9

(7) Remove the Gear 15.

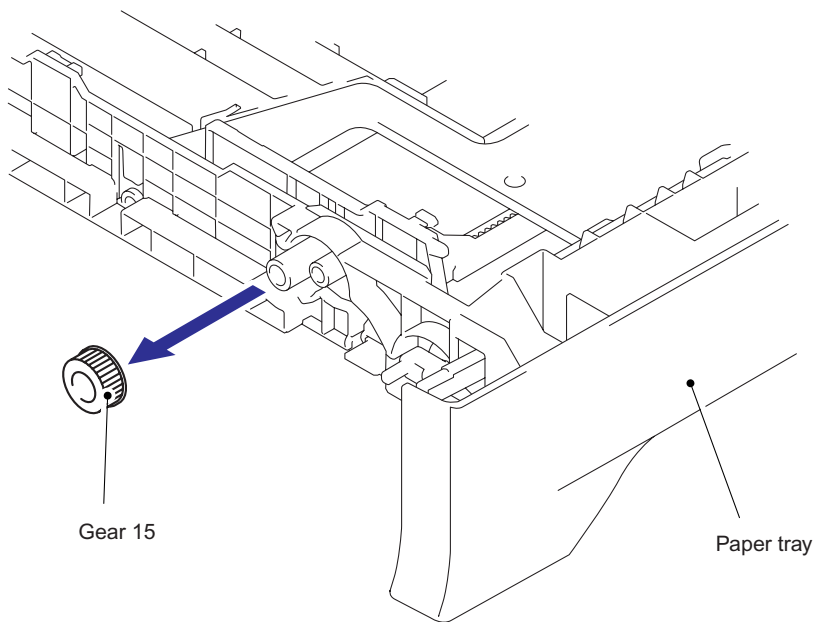


Fig. 5-10

9.2 Back Cover

- (1) Open the Back cover.
- (2) Remove the Pins of the Outer chute from the Back cover.

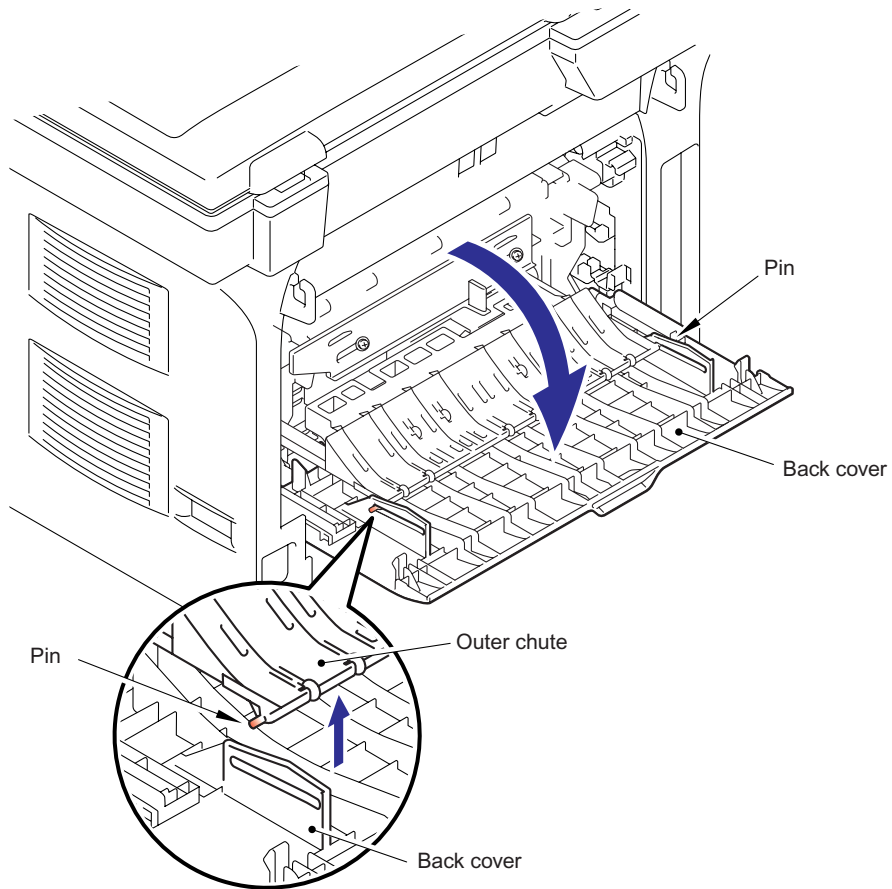


Fig. 5-11

- (3) Remove the Arm of the Back cover from the Pin.
- (4) Remove the Back cover.

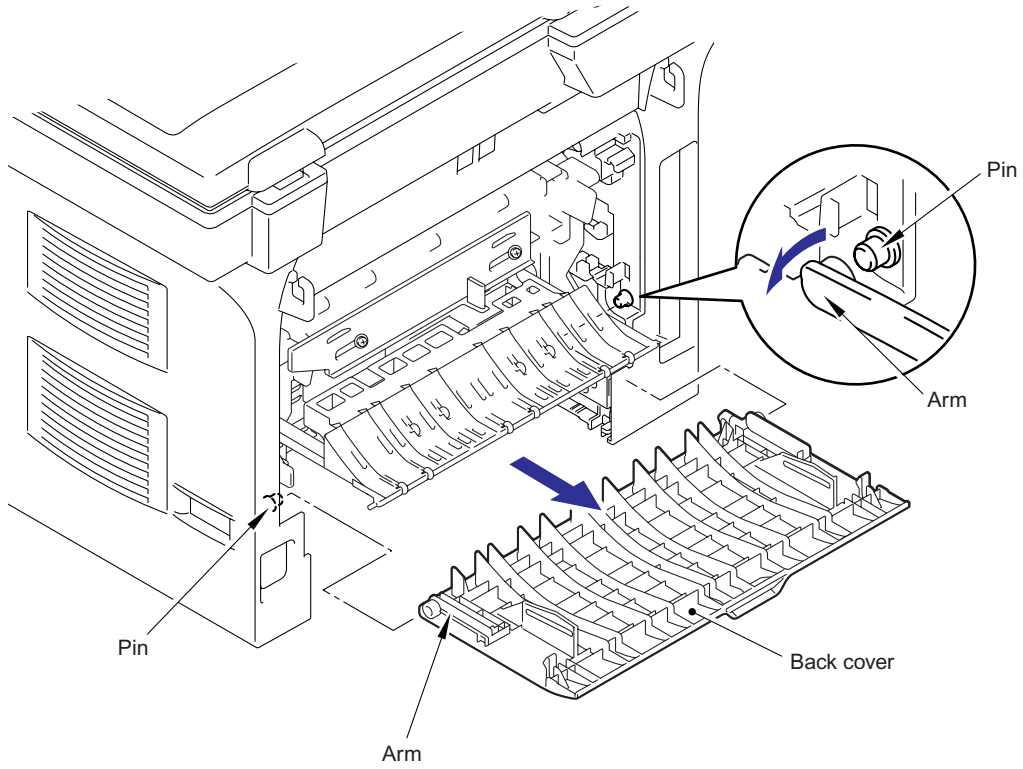


Fig. 5-12

9.3 Rear Chute ASSY

- (1) Hold the Knobs on the Rear chute ASSY and pull down this to your side.
- (2) Remove the Arms of the Rear chute ASSY from the Pins.
- (3) Remove the Rear chute ASSY.

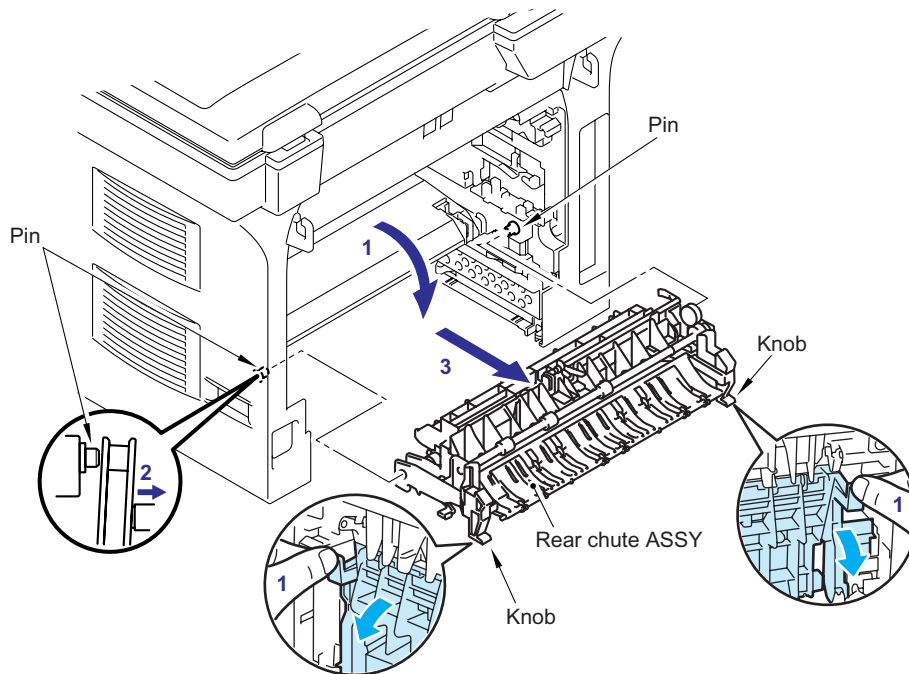


Fig. 5-13

- (4) Remove the Arm of the Outer chute from the Pin of the Rear chute, and remove the Outer chute.

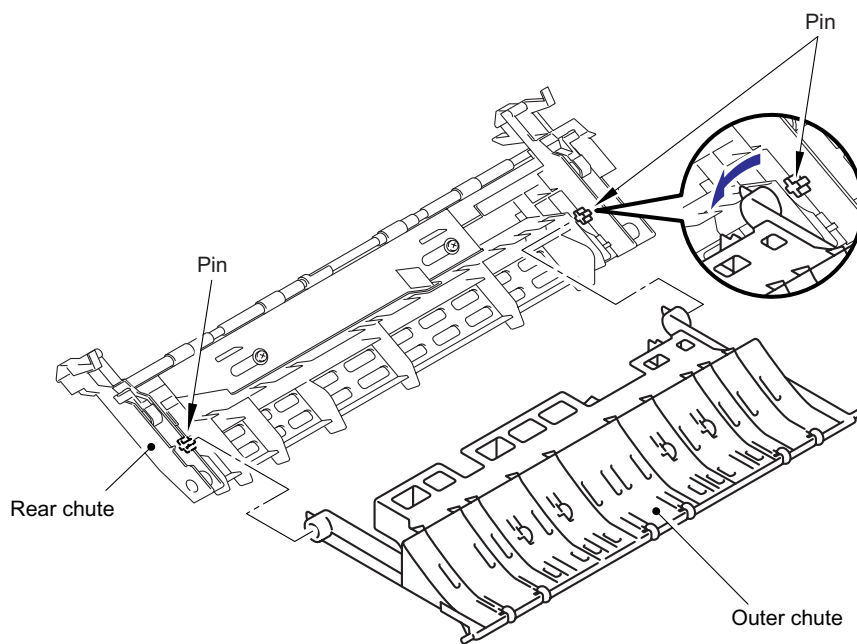


Fig. 5-14

- (5) Push the Hook of the Rear chute (indicated by the arrow 5a), and move the Eject actuator to the direction of 5b.
- (6) Lift up the Eject actuator to remove.
- (7) Remove the Eject actuator spring.

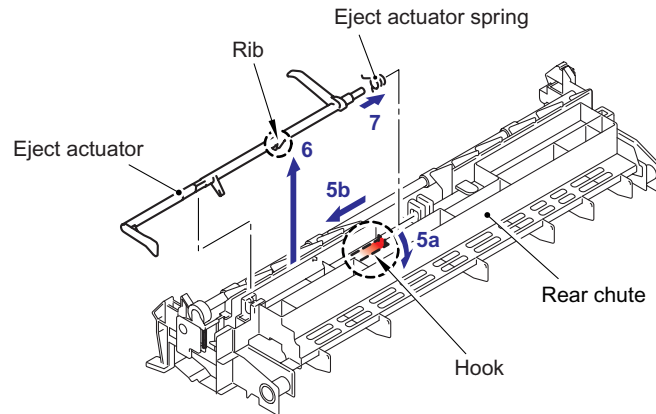


Fig. 5-15

Assembling Note:

- When assembling the Eject actuator spring, ensure that its direction is correct referring to the figure below.

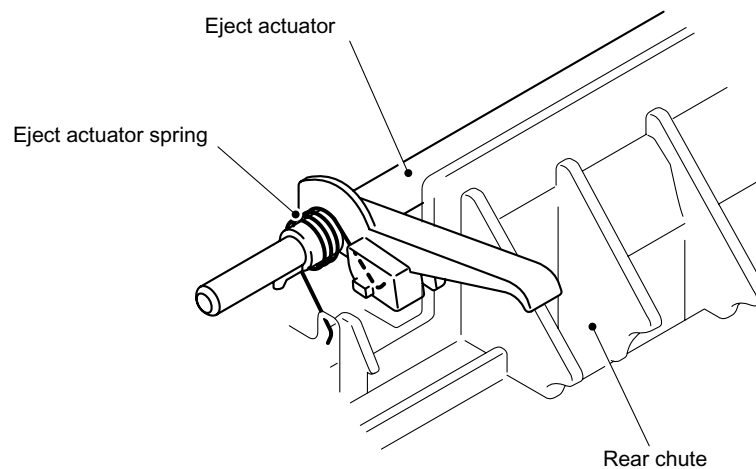


Fig. 5-16

9.4 Fuser Unit

- (1) Remove the pan B M4x20 Taptite screw. Release the Hooks in the order of 1a, 1b and 1c. Remove the FU harness cover 1.

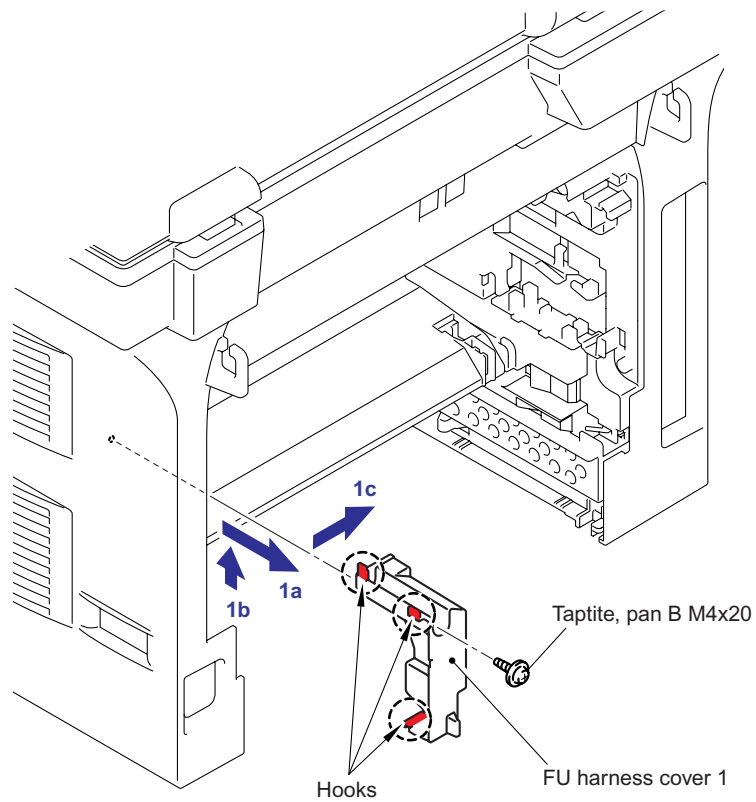


Fig. 5-17

- (2) Disconnect the connector of the Heater terminal while pressing the Hook of the connector of the Fuser unit.

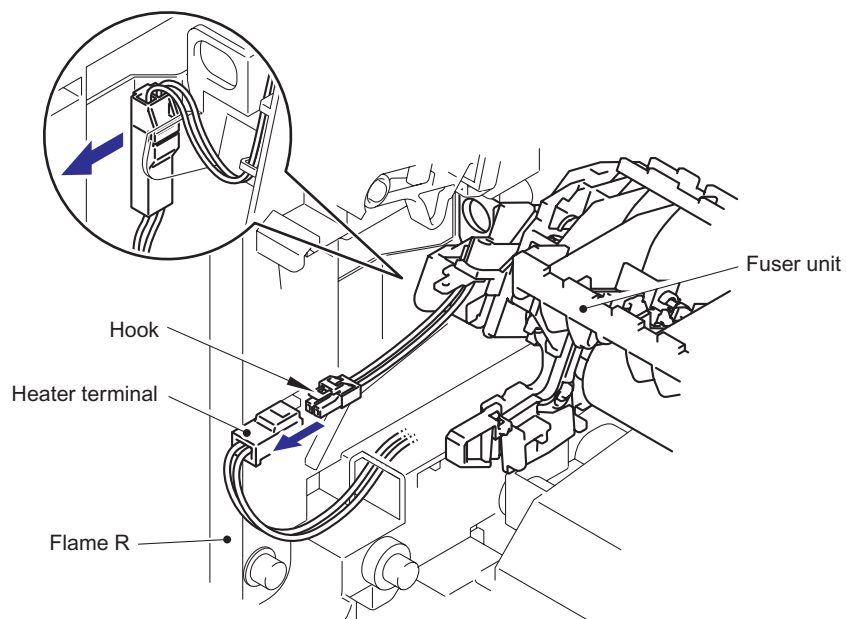


Fig. 5-18

- (3) Pull the FU harness cover 2 to the direction of 3a while pressing the Hook and pull out the FU harness cover 2 from the back of the printer.

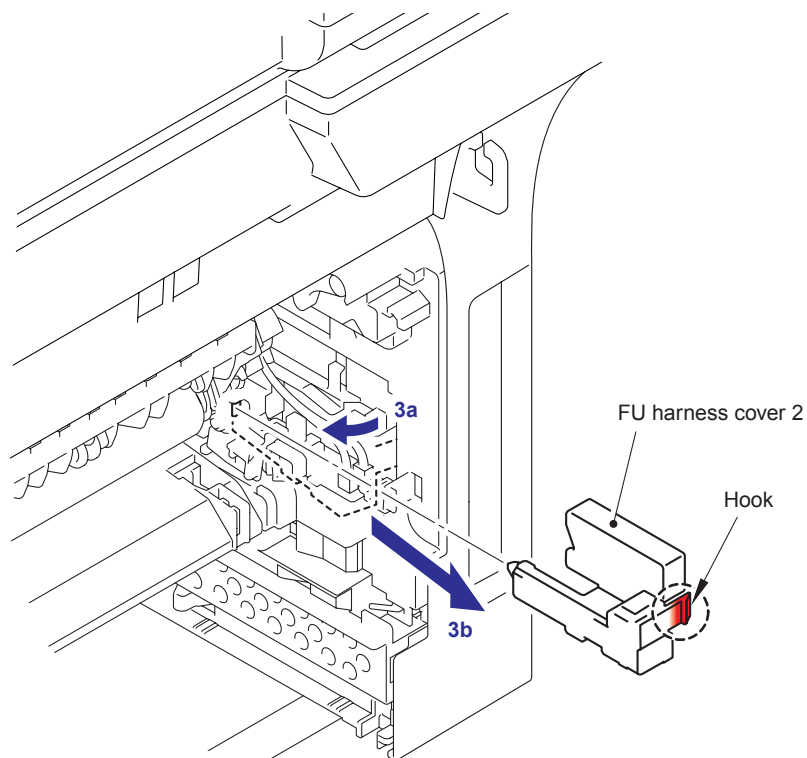


Fig. 5-19

- (4) Disconnect the connectors of the Thermistor ASSY M and Thermistor ASSY S from the Relay rear PCB ASSY, and remove the harnesses of these thermistors.

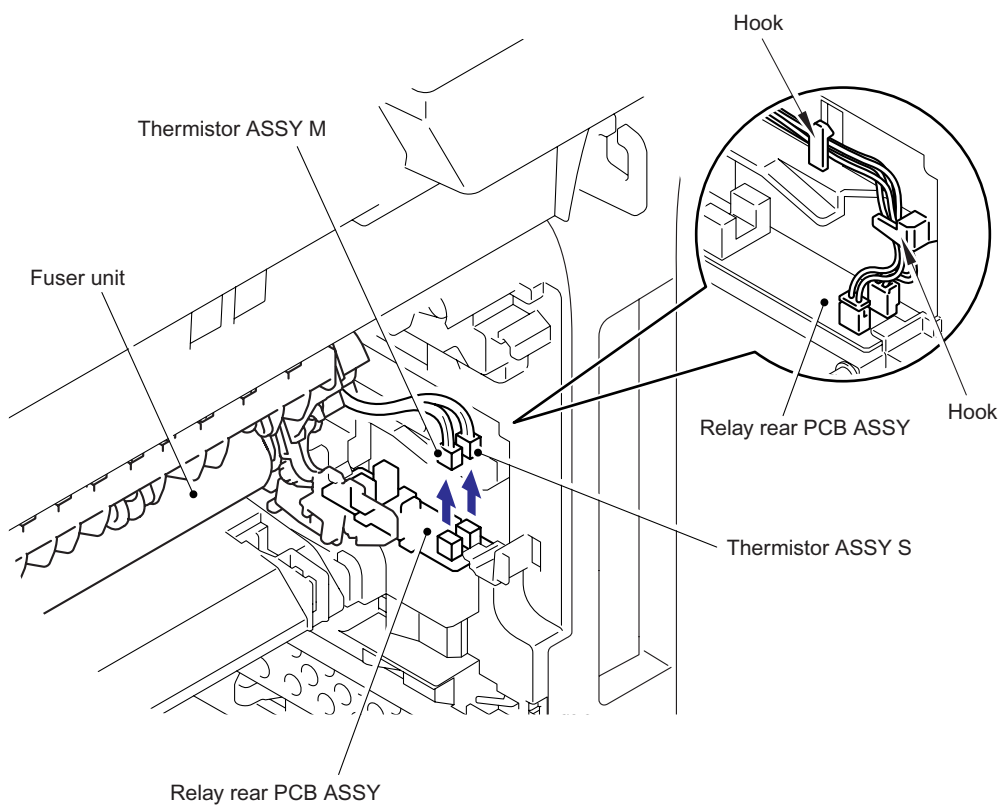
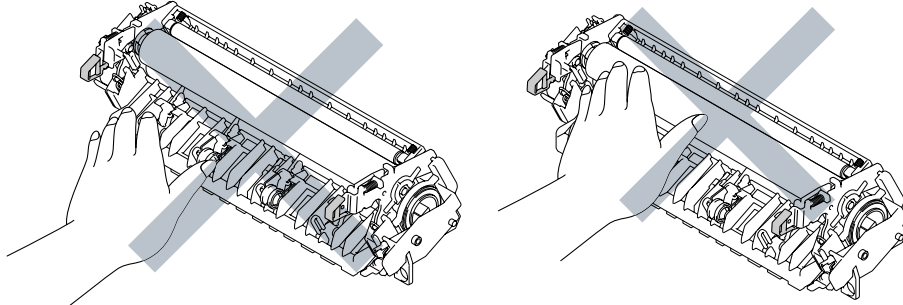


Fig. 5-20

⚠ CAUTION

- DO NOT subject the fuser unit to strong physical shocks or vibrations.
- DO NOT touch the rollers and the electrodes to prevent damage to the fuser unit In the following figures.



(5) Remove the pan B M4x20 Taptite screw, and then remove Fuser unit.

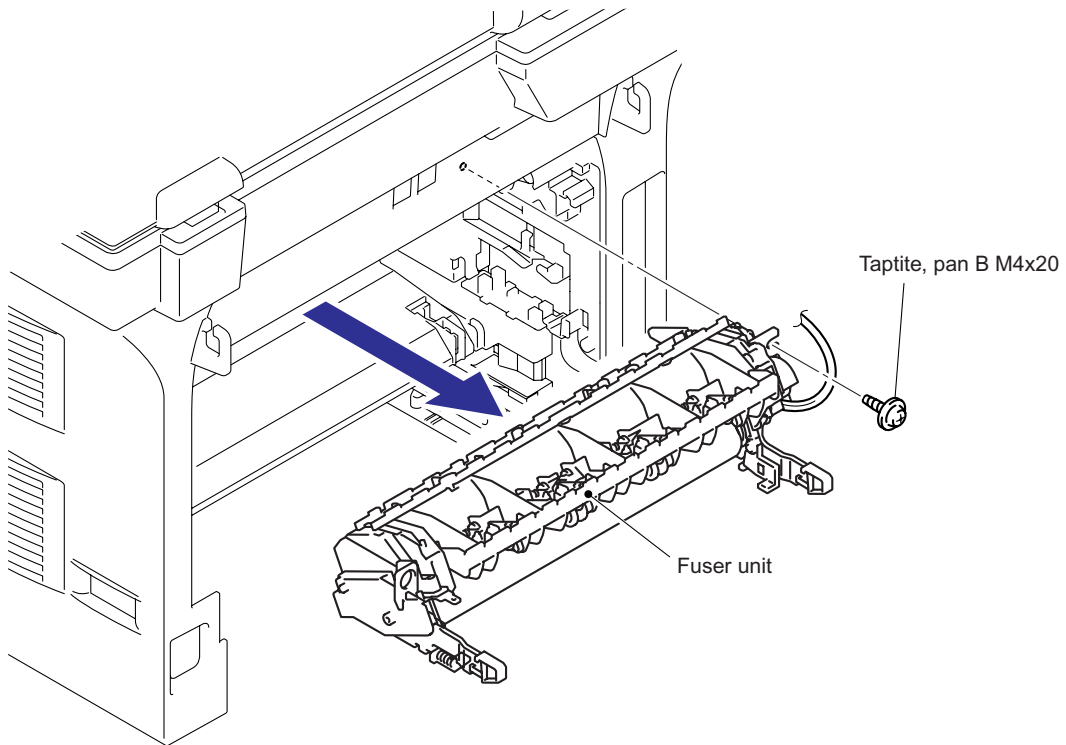


Fig. 5-21

Assembling Note:

- To prevent the deformation of the pressure roller, the fuser unit spare part is shipped with its pressure roller at low nip pressure. Before installing the fuser unit, turn back the levers to the normal position by following instructions below.

- (1) Put the fuser unit on a flat, horizontal surface. Pull up each of the black tab (a) on the right side and left side.

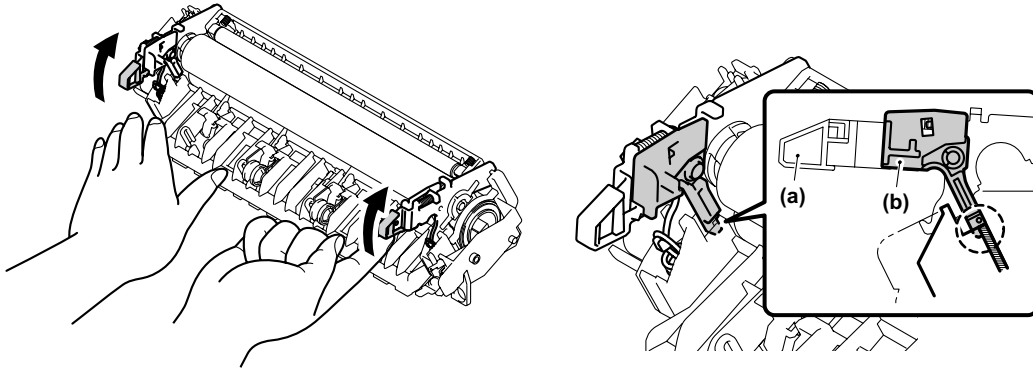


Fig. 5-22

- (2) Make sure that the black lever (b) is in the position in the illustration below.

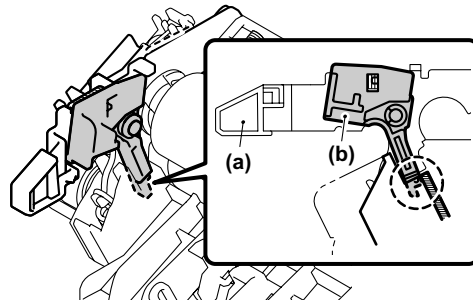


Fig. 5-23

9.5 Tray MP ASSY

- (1) Open the MP tray cover ASSY.
- (2) Release the Pins of the Tray MP ASSY from the MP tray cover ASSY.
- (3) Remove the Tray MP ASSY.

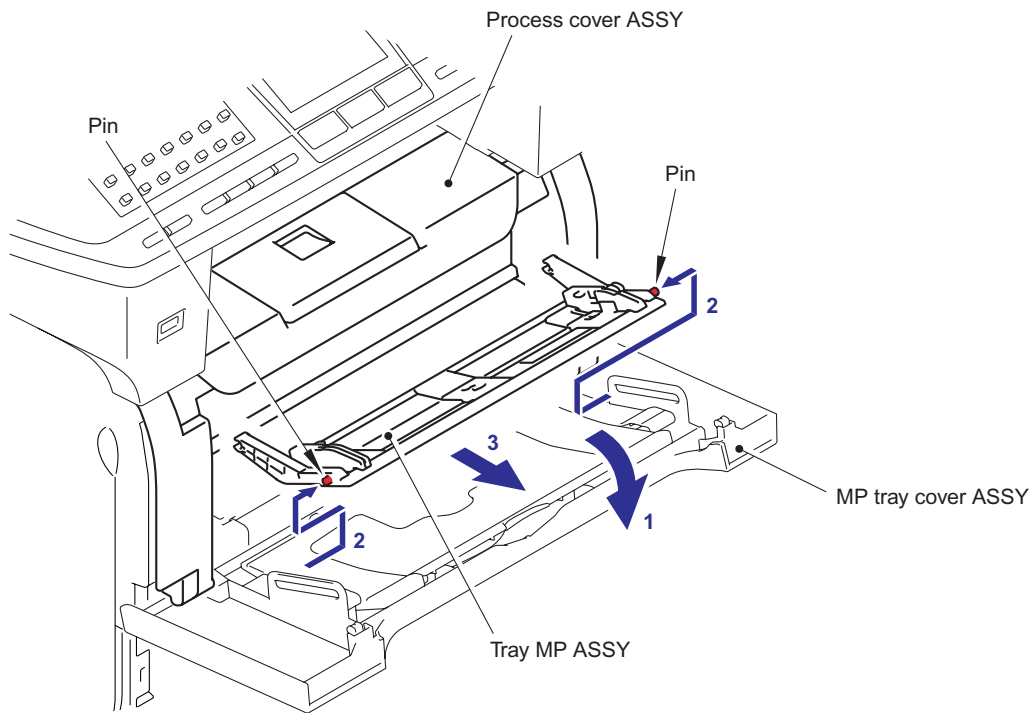


Fig. 5-24

9.6 MP Tray Cover ASSY/Process Cover ASSY/Emblem cover

- (1) Push the front cover release button.
- (2) Open Process cover ASSY.
- (3) Release the Hook to remove the Process cover stopper.

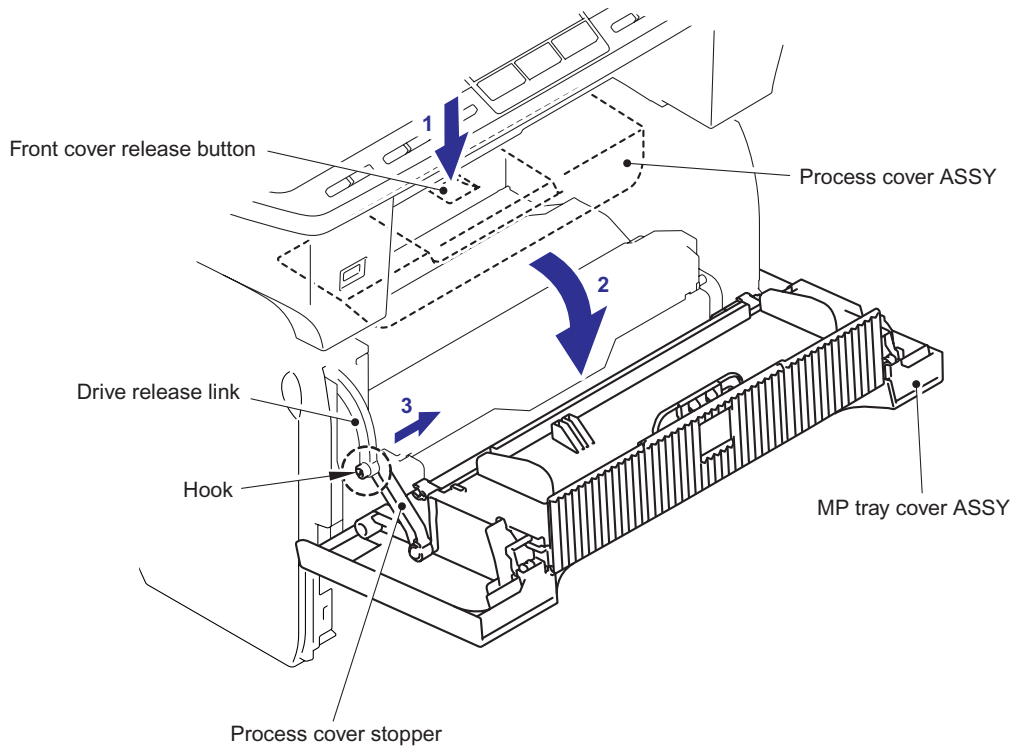


Fig. 5-25

- (4) Remove the MP tray cover ASSY and the Process cover ASSY to the direction of 4a and 4b to release the Pins, and remove them.

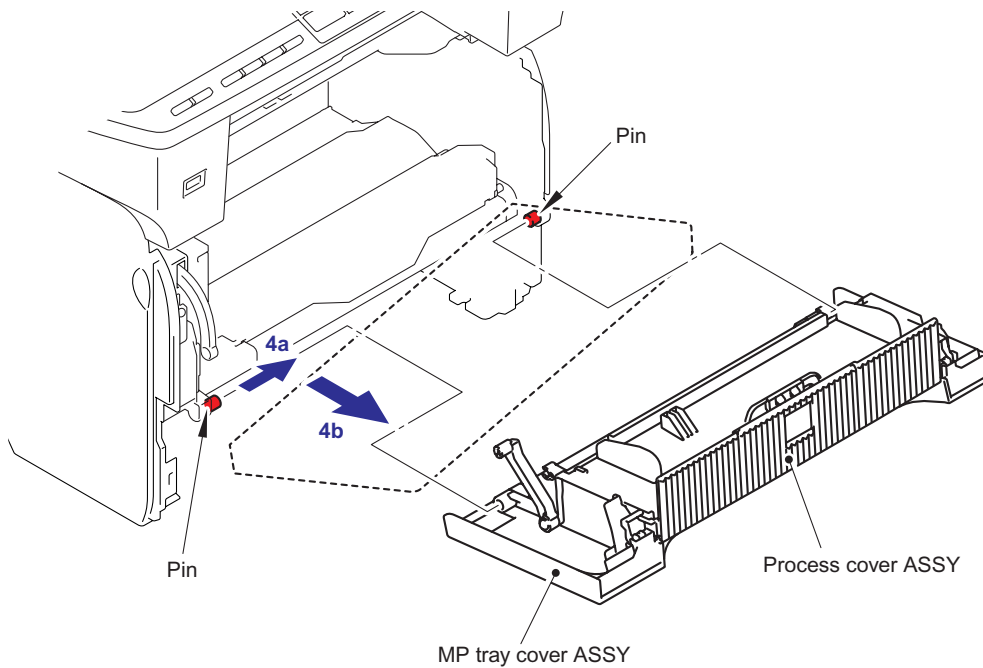


Fig. 5-26

(5) Pull the Arm outwards and remove the Process cover ASSY from the MP tray cover ASSY.

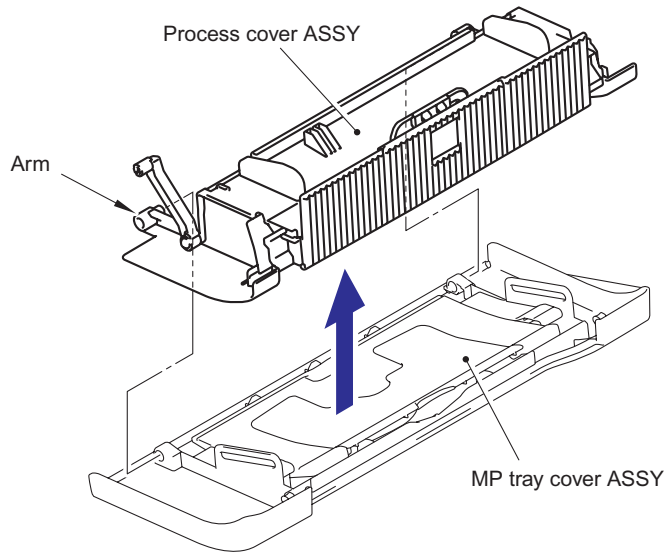


Fig. 5-27

(6) Remove the cup B M4x10 Taptite screw, and then remove the Process cover stopper.

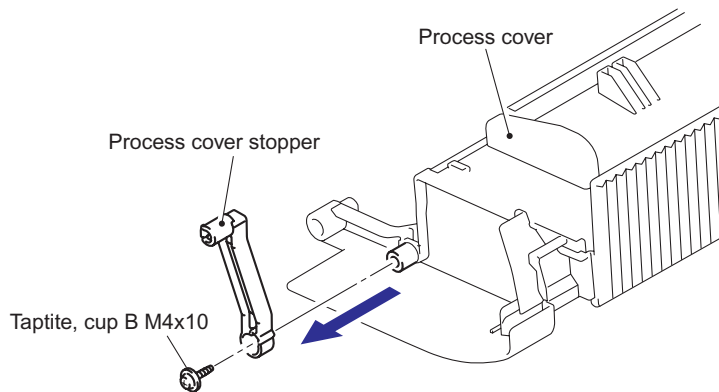


Fig. 5-28

(7) Remove the Support flap 1 from the Process cover.

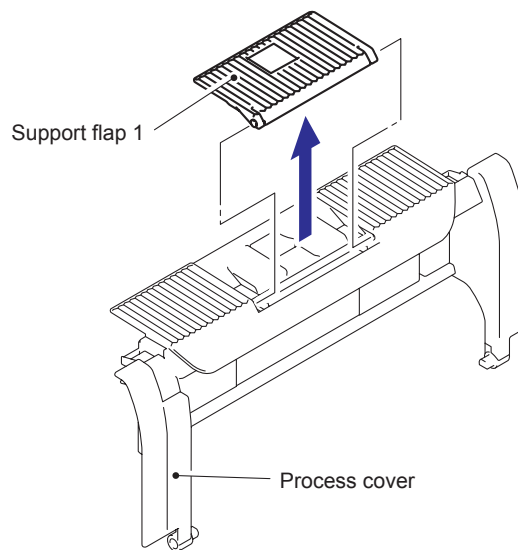


Fig. 5-29

- (8) Remove the Hook of the right side, and then remove the MP tray extension from the MP tray cover ASSY.

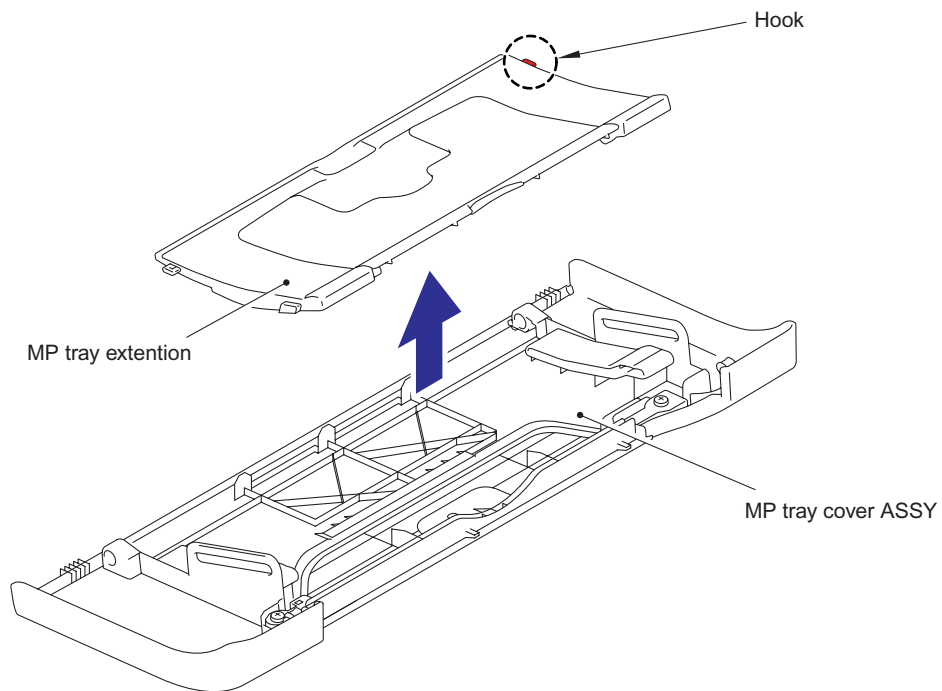


Fig. 5-30

- (9) Remove the two bind B M3x10 Taptite screws, and then remove the Emblem cover from the MP tray cover.

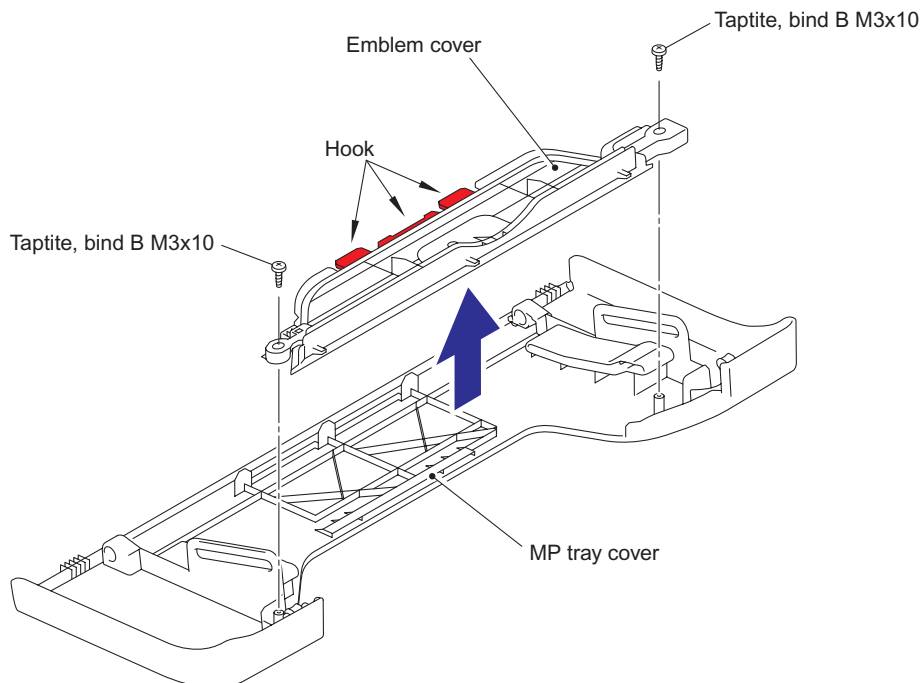


Fig. 5-31

9.7 Access Cover/Side Cover L

- (1) Remove the Access cover.

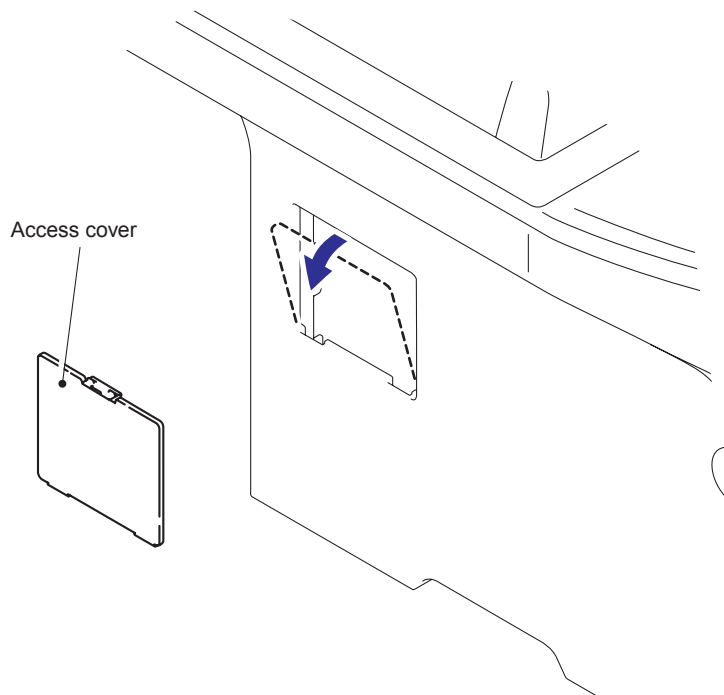


Fig. 5-32

- (2) Remove the two bind B M4x12 Taptite screws, and then remove the Side cover L by releasing the Hooks from 2a to 2d.

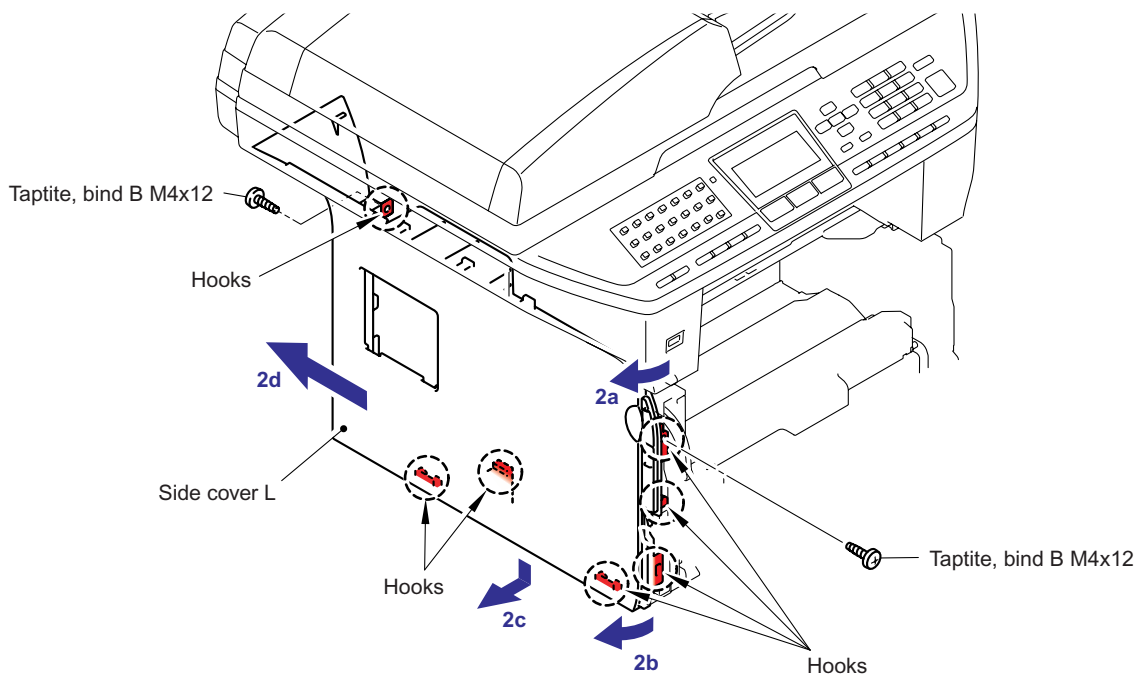


Fig. 5-33

9.8 ADF Unit

- (1) Remove the four cup S M3x6 Taptite screws, remove the two FG harnesses and then remove the Shield cover ASSY.

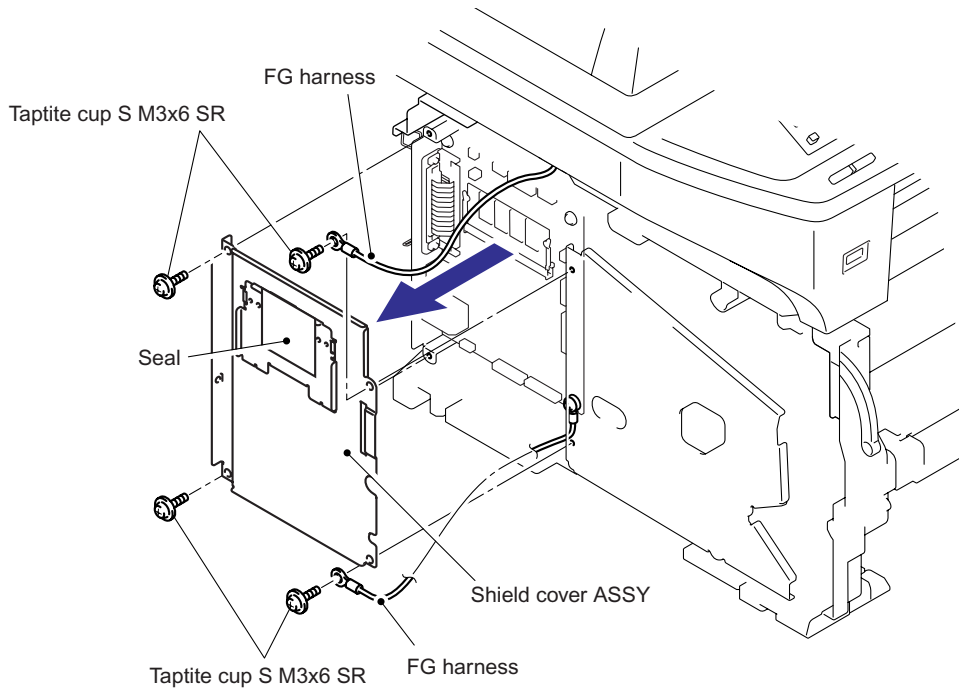


Fig. 5-34

- (2) Remove the cup S M3x6 Taptite screw, remove the ADF FG harness and FB FG harness.
- (3) Disconnect the Connector from the Driver PCB.
- (4) Disconnect the two Connectors from the Main PCB.

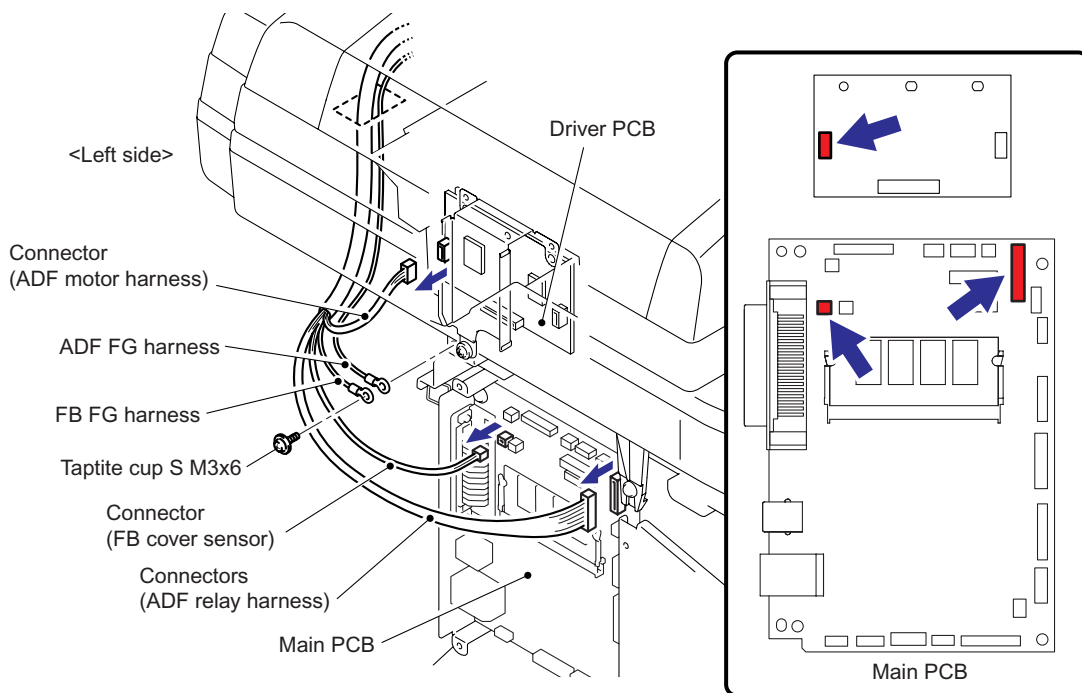


Fig. 5-35

- (5) Remove the two bind B M4x12 Taptite screws, and then remove the Document cover LGL.

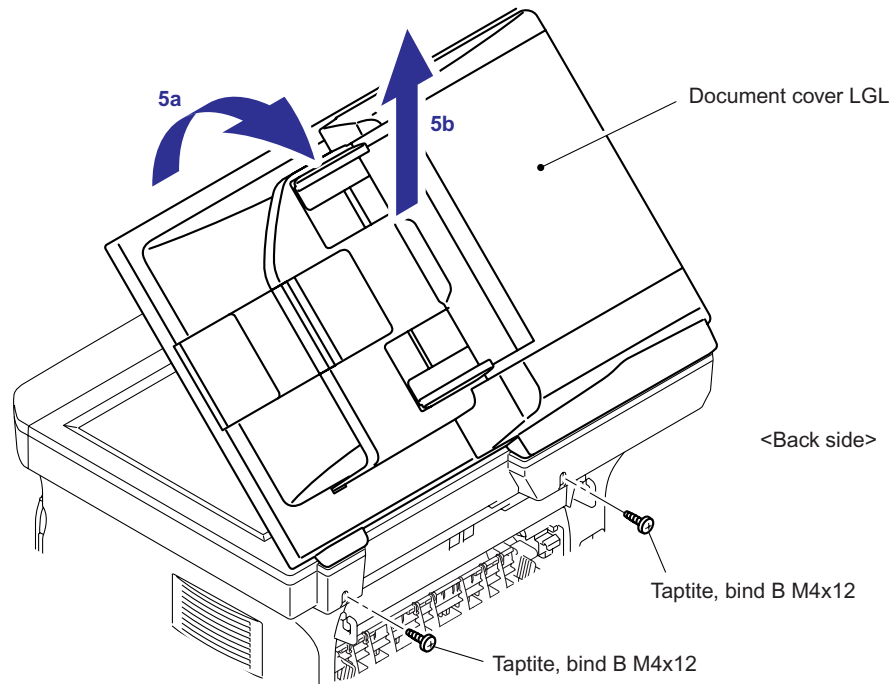


Fig. 5-36

9.9 Hinge Arm R

- (1) Turn the Document cover LGL upside down.
Remove the Hinge arm R from the Hinge base R.

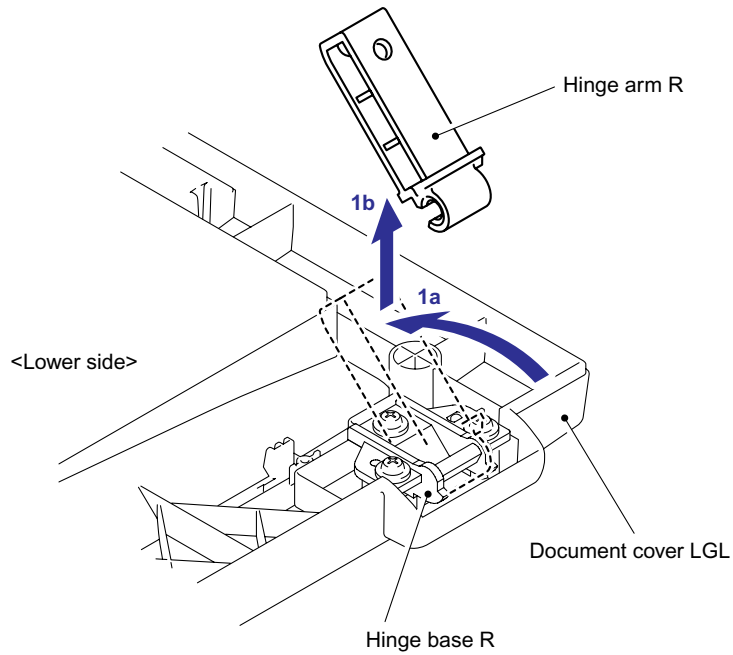


Fig. 5-37

9.10 Hinge Base R

- (1) Remove the three cup B M3x10 Taptite screws, and then remove the Hinge base R.

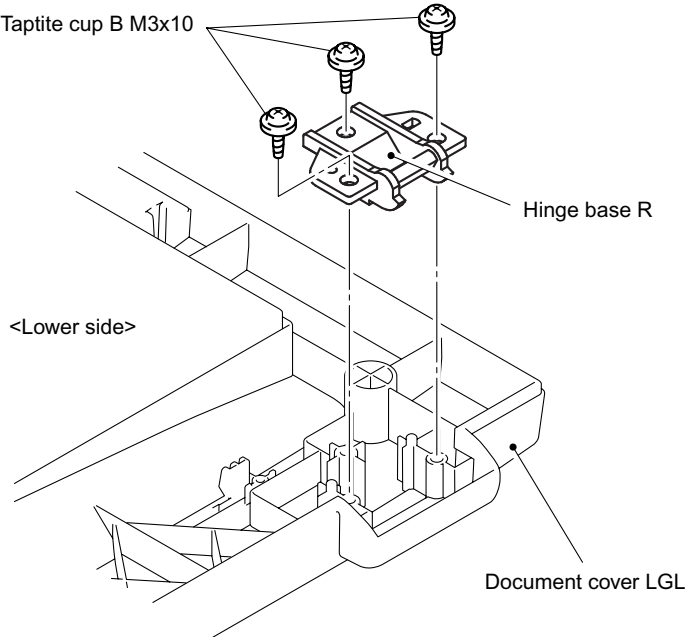


Fig. 5-38

9.11 Hinge ASSY L

- (1) Remove the two cup B M3x10 Taptite screws and the cup S M3x12 Taptite screw, and then remove the Hinge ASSY L.

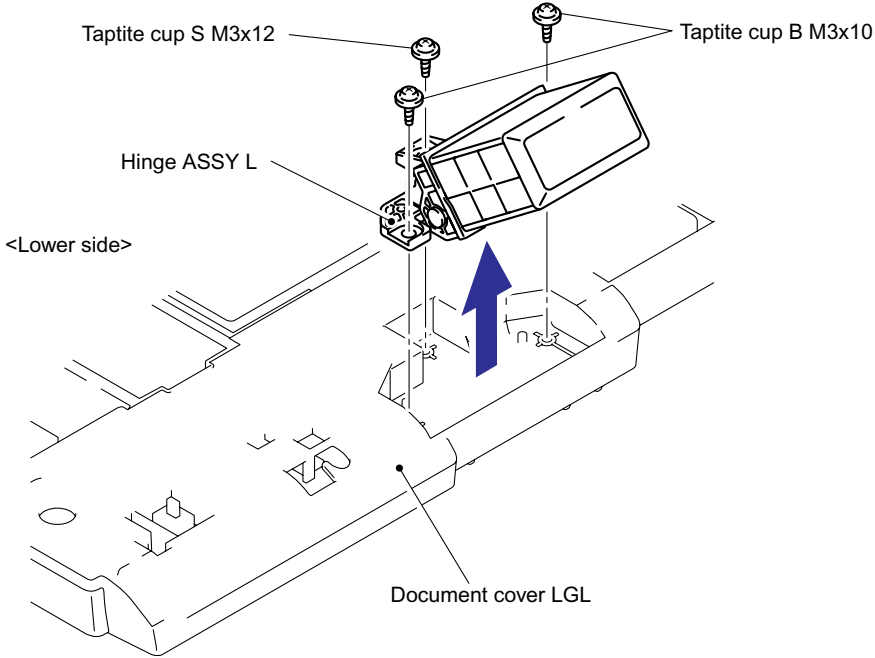


Fig. 5-39

9.12 ADF Cover ASSY

- (1) Turn the Document cover upside down. Remove the ADF cover ASSY from the ADF unit.

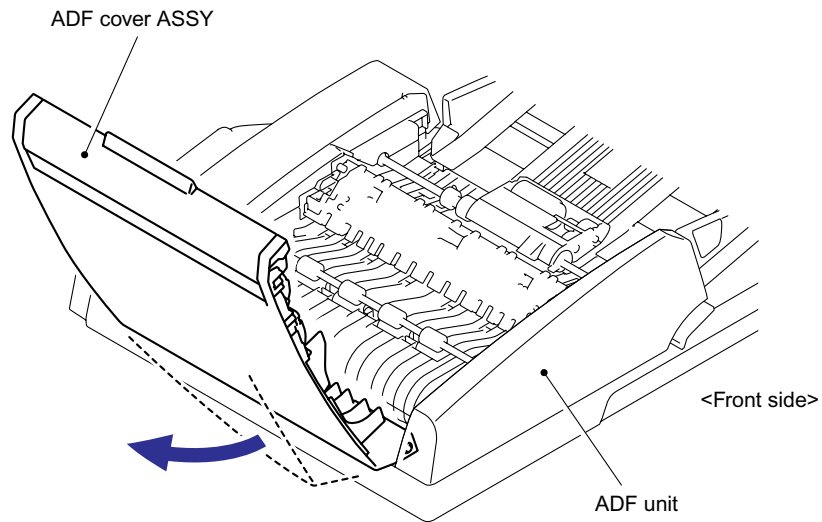


Fig. 5-40

9.13 ADF Side Cover F

- (1) Push the Hook from underneath the ADF unit to release the Latch, and remove the cup S M3x8 Taptite screw and cup B M3x10 Taptite screw from the ADF Side cover F.
- (2) Remove the ADF side cover F from the ADF unit.

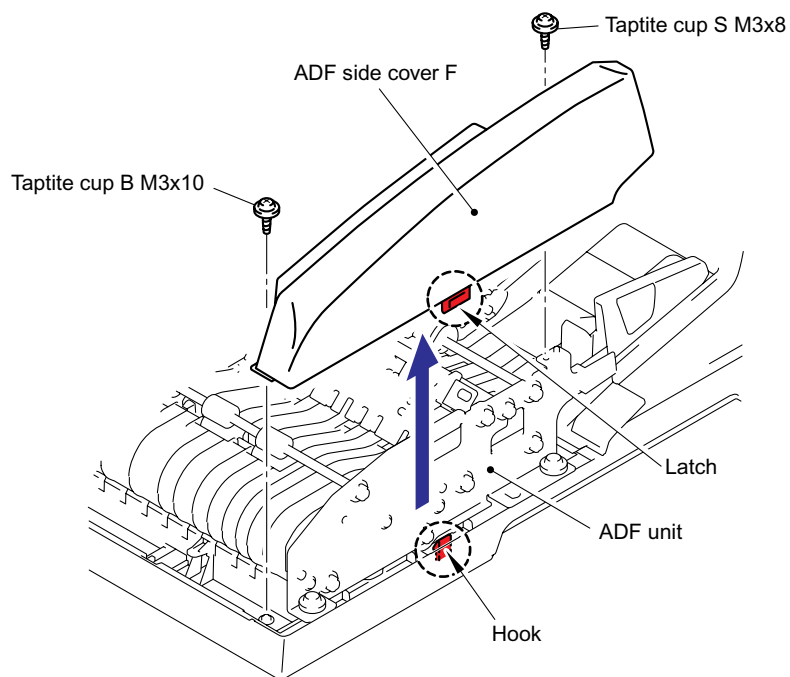


Fig. 5-41

9.14 ADF Side Cover R

- (1) Remove the cup B M3x10 Taptite screw.
- (2) Release the Hook from underneath the ADF unit, and remove the ADF side cover R from the ADF unit.

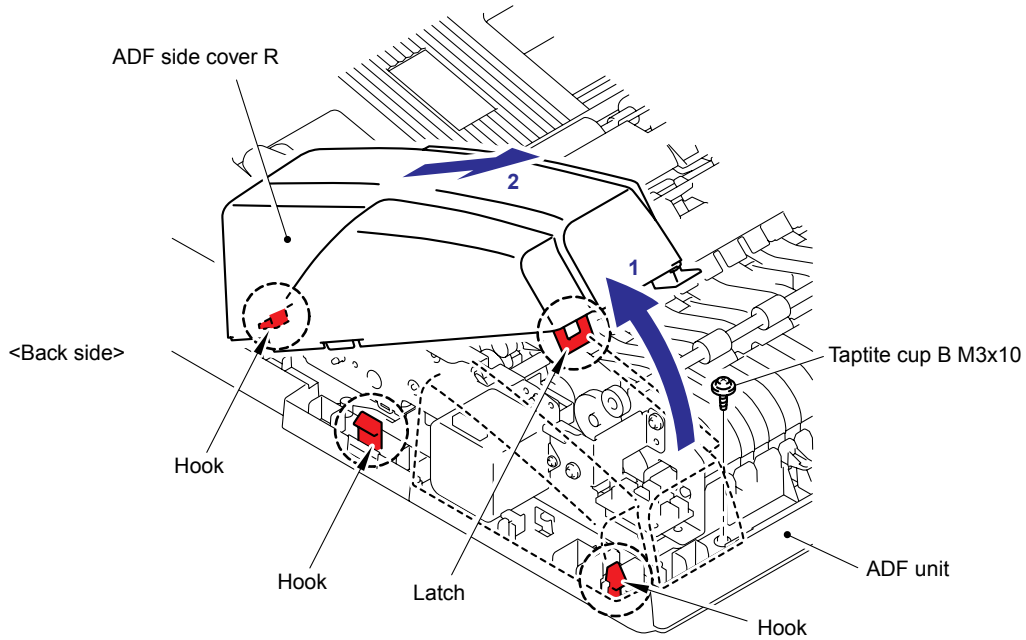


Fig. 5-42

9.15 ADF Chute ASSY

- (1) Disconnect the 7 connectors (for the model supporting the DX tray only) or 3 connectors (for the model supporting no DX tray only) from the ADF relay PCB.
- (2) Disconnect the connector of the ADF motor harness from the ADF motor.
- (3) Remove the cup S M3x8 Taptite screw and ADF FG harness.

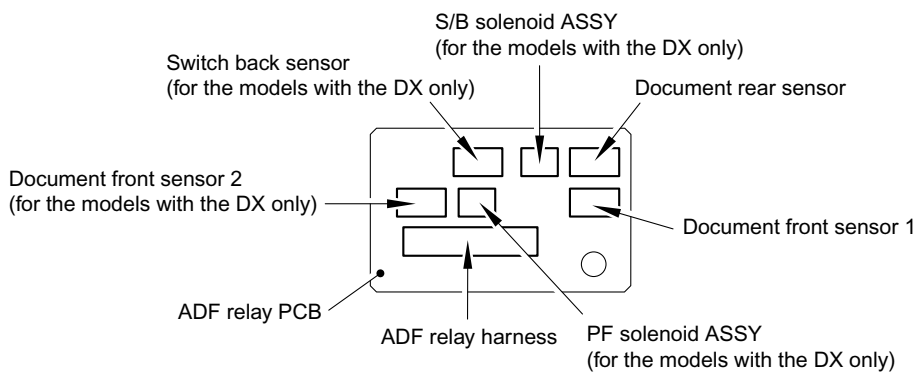
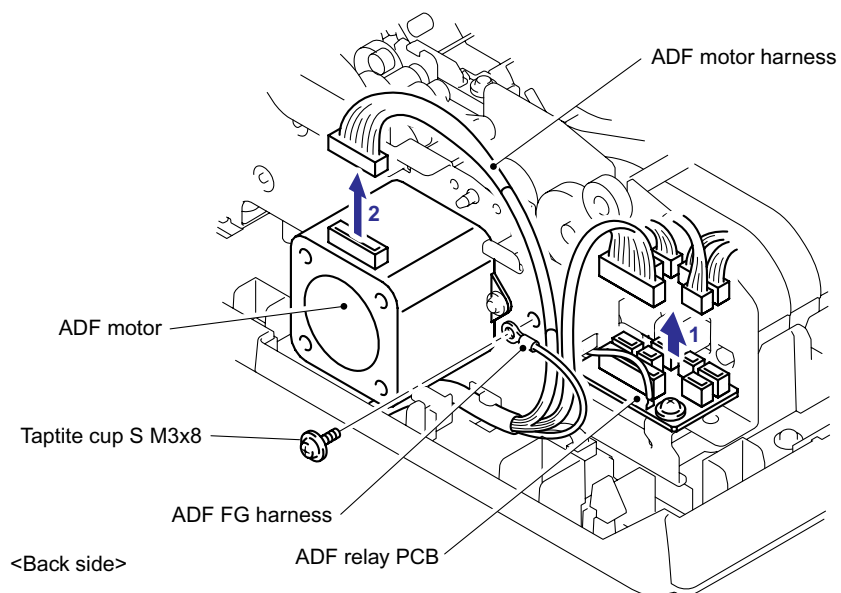


Fig. 5-43

- (4) Turn the Document cover LGL upside down and remove the cup B M3x10 Taptite screw.

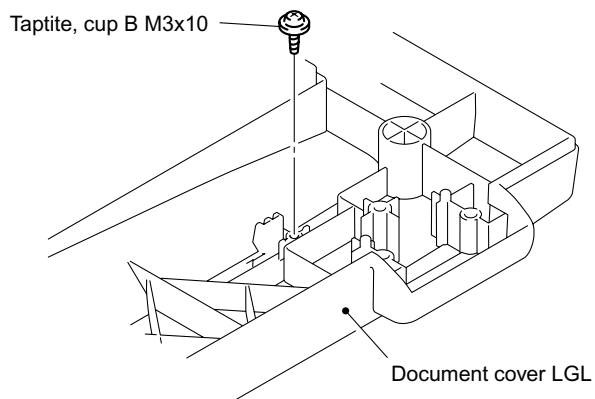


Fig. 5-44

- (5) Turn the Document cover LGL the correct way up and remove the four cup B M3x10 Taptite screws from the ADF chute ASSY.
- (6) Release the hook to remove the ADF chute ASSY from the Document cover LGL.

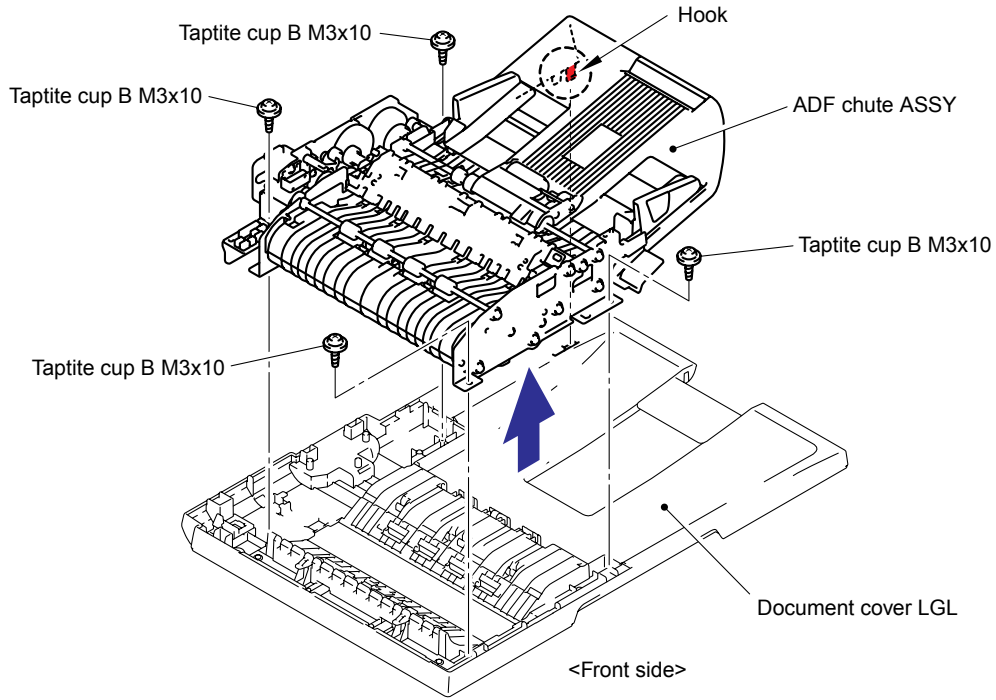


Fig. 5-45

- (7) Turn the ADF chute ASSY upside down and remove the four LF4 films.

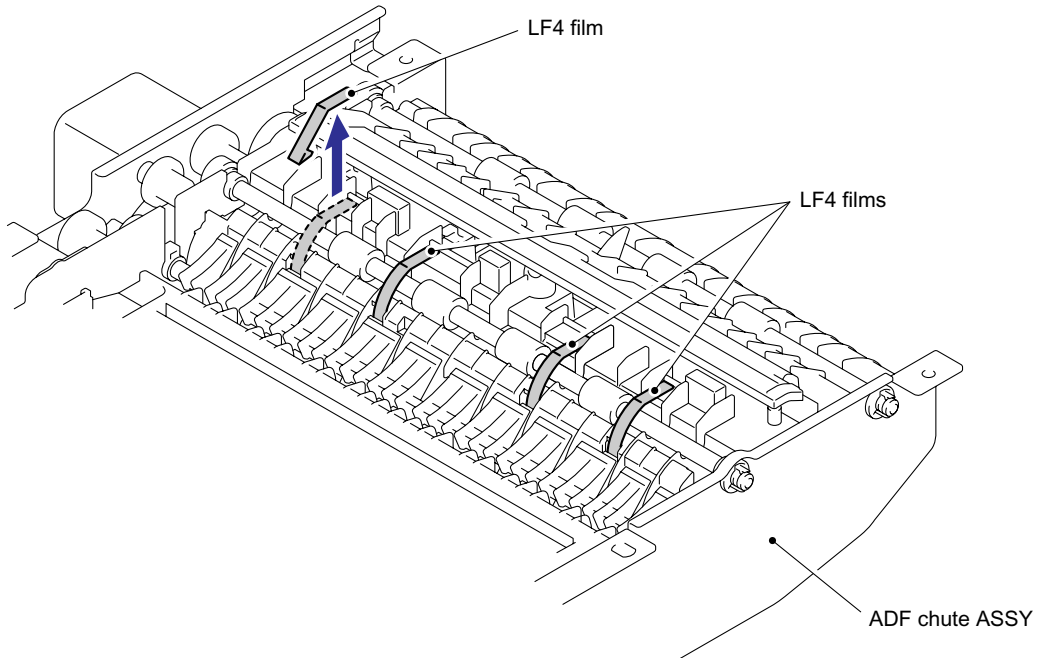


Fig. 5-46

9.16 SB Chute ASSY (For the models with the DX only) / SX Chute (For the models with out the DX only)

- (1) Remove the two cup S M3x8 Taptite screws.
- (2) Remove the SB chute ASSY or SX chute from the ADF chute ASSY.

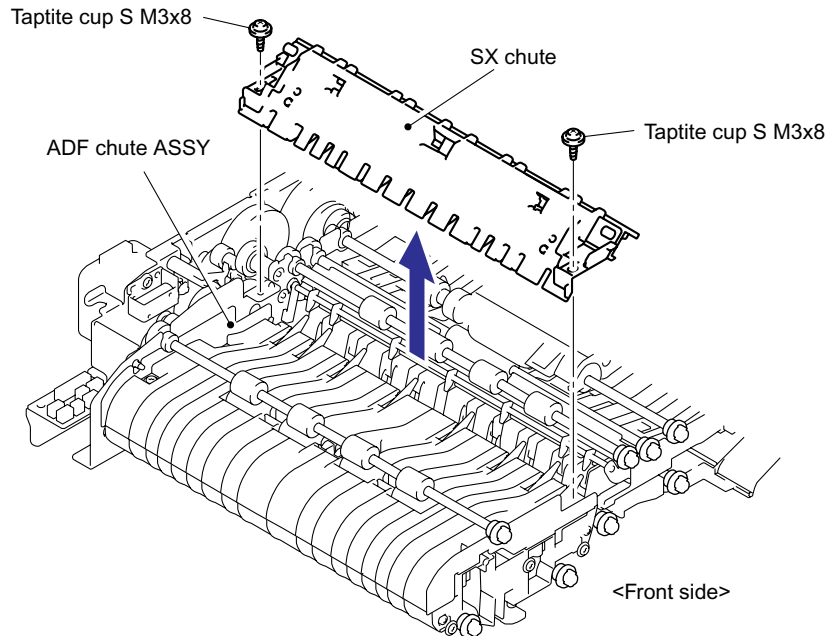


Fig. 5-47

9.17 Exit Chute Cover ASSY

- (1) Turn the ADF chute ASSY upside down and remove the four cup B M3x10 Taptite screws.
- (2) Remove the Exit chute cover ASSY from the ADF chute ASSY.

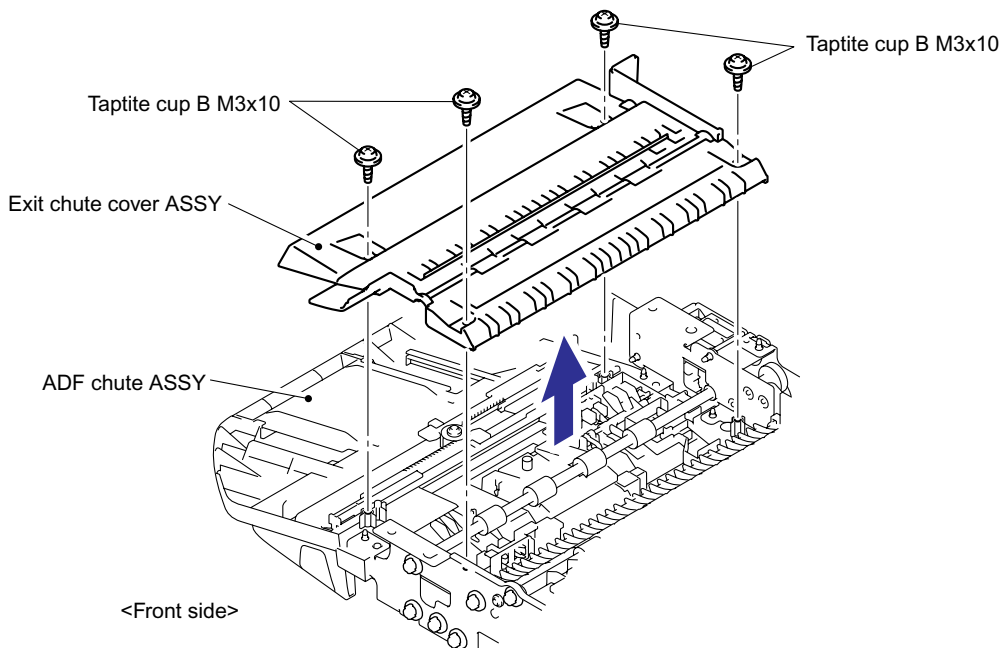


Fig. 5-48

9.18 Earth Spring

- (1) Turn the Exit chute cover ASSY upside down. Remove the Earth spring from the Exit chute cover ASSY.

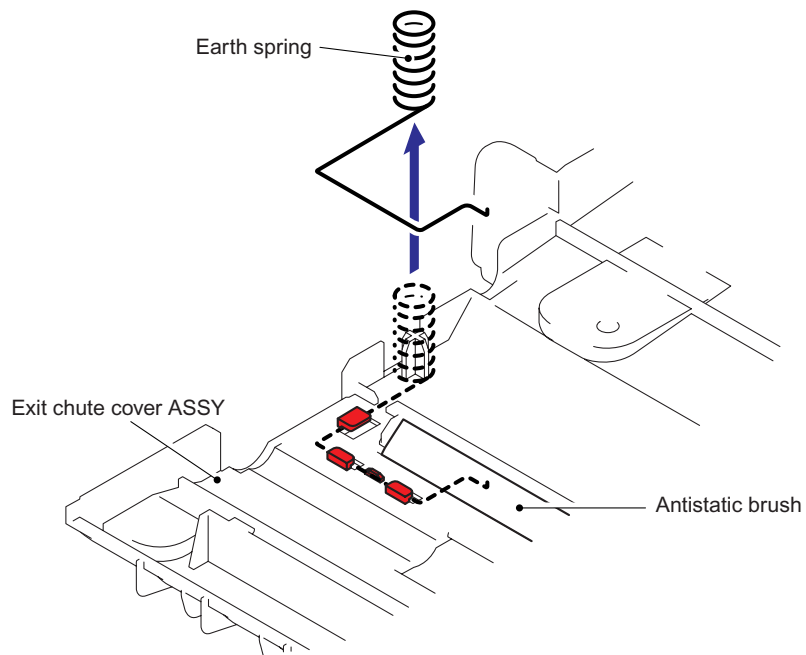


Fig. 5-49

Assembling Note:

- When assembling the Earth spring, ensure that the end of the Earth spring is attached onto the Antistatic brush as shown in the figure below.

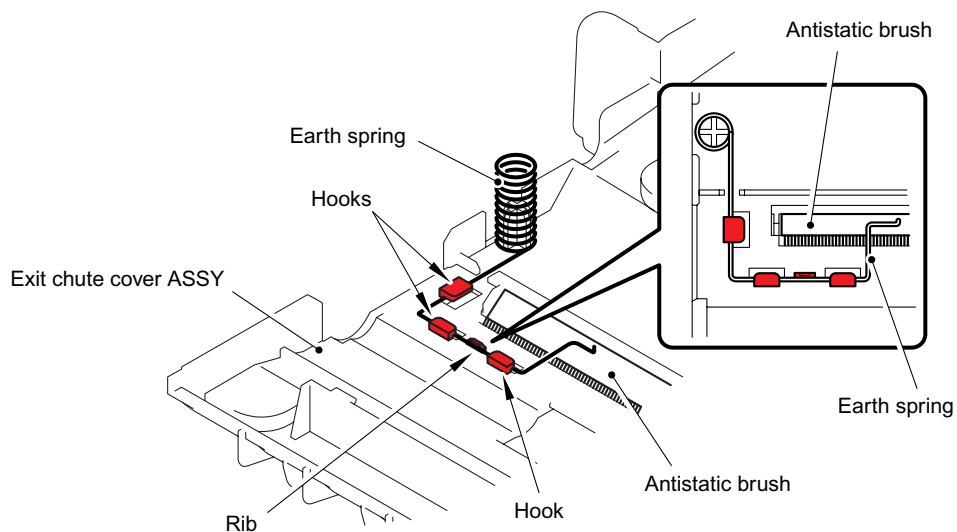


Fig. 5-50

9.19 PF Roller Holder ASSY

- (1) Turn the ADF chute ASSY upside down. Release the Hooks of the Conductive bushing A to remove the Conductive bushing A.
- (2) Remove the Bushing from the ADF chute ASSY, and remove the PF roller holder ASSY from the ADF chute ASSY.

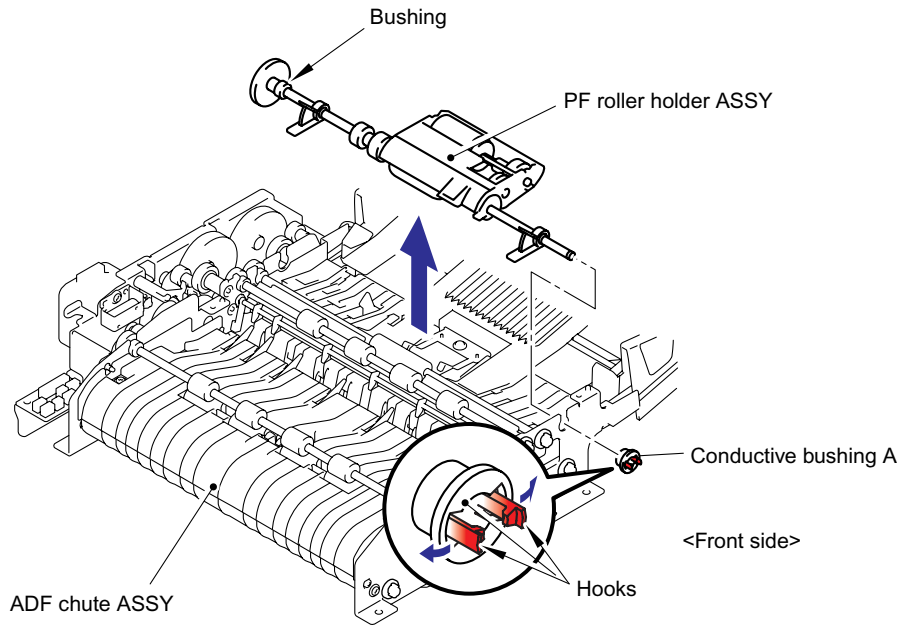


Fig. 5-51

9.20 LF Roller 1 ASSY

- (1) Release the Hooks of the Conductive bushing A to remove the Conductive bushing A.
- (2) Release the Lock lever and then remove the Bushing from the ADF chute ASSY, and remove the LF roller 1 ASSY from the ADF chute ASSY.

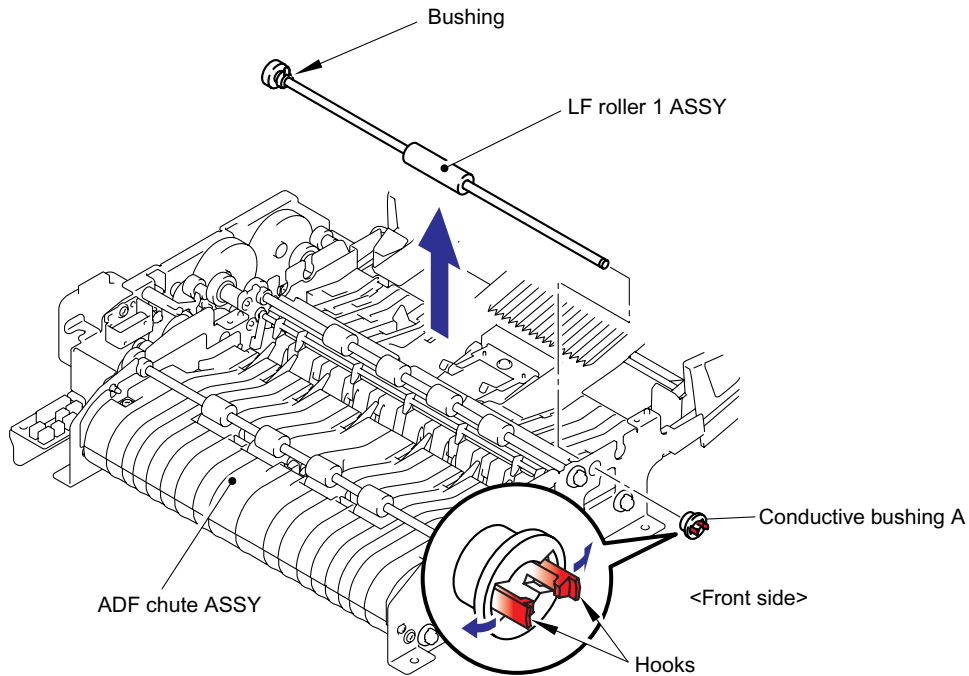


Fig. 5-52

Assembling Note:

- When assembling the LF roller 1 ASSY, assemble the Bushing with aligning the Boss of the Bushing with the notch on the ADF chute ASSY.

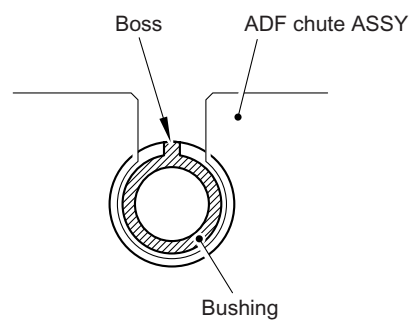


Fig. 5-53

9.21 SB Roller ASSY (For the models with the Reading DX only)

- (1) Release the Hooks of the Conductive bushing A to remove the Conductive bushing A.
- (2) Remove the Bushing from the ADF chute ASSY, and remove the SB roller ASSY from the ADF chute ASSY.

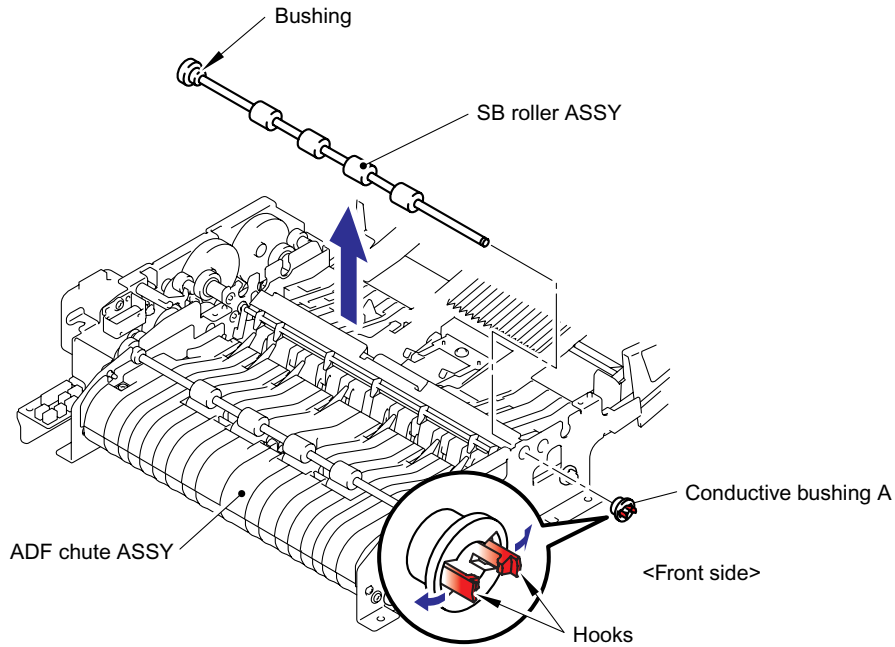


Fig. 5-54

Assembling Note:

- When assembling the SB roller ASSY, assemble the Bushing with aligning the Boss of the Bushing with the notch on the ADF chute ASSY.

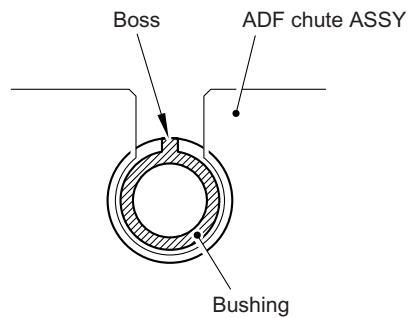


Fig. 5-55

- When assembling each of the SB roller ASSY, LF roller 2/3/4 ASSYs and Exit roller ASSY, make sure to assemble it onto the correct position.
Identify each roller by four shades of the rollers.

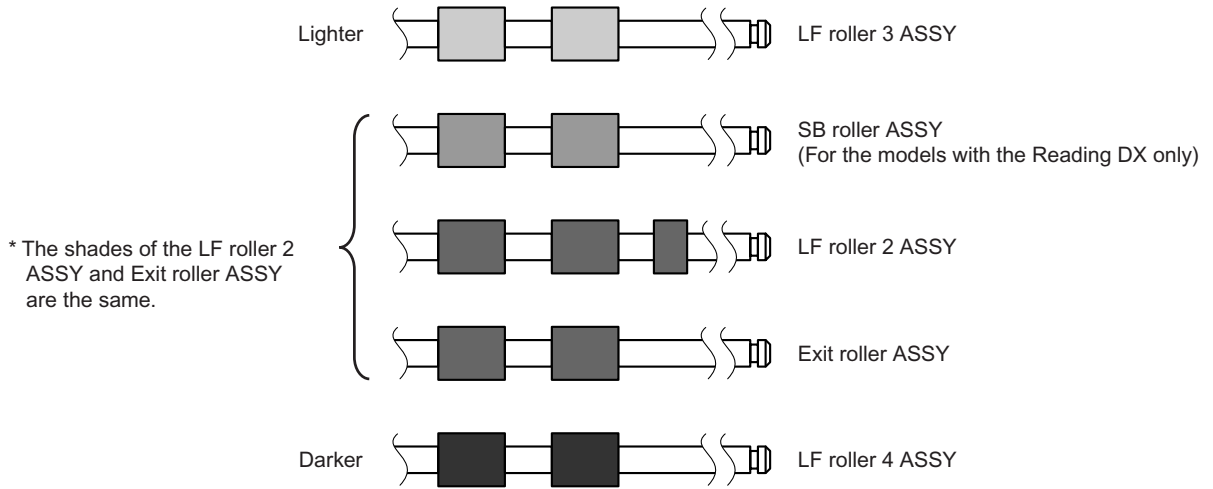


Fig. 5-56

- * It is recommended to mark each of the roller ASSYs when disassembling them.
Failure to assemble each roller ASSY onto the correct position may cause paper jam or stretching image.

9.22 ADF Motor

- (1) Remove the two screw pan (S/P washer) M3x6, and then remove the ADF motor.

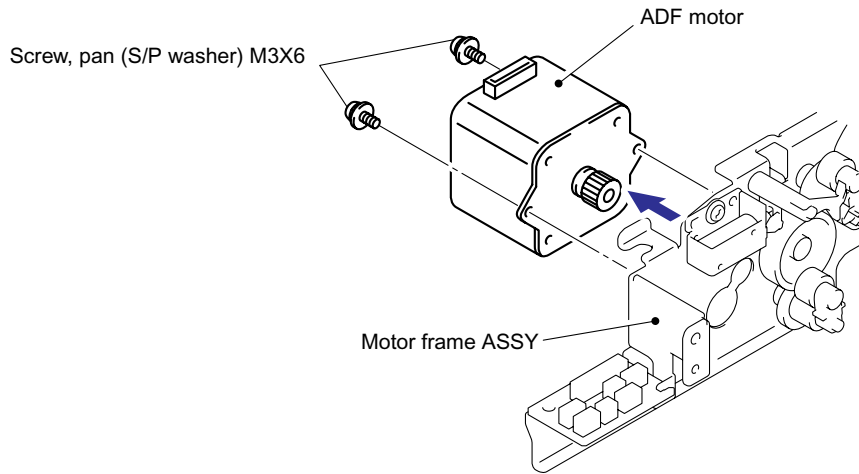


Fig. 5-57

- (2) Remove the three cup S M3x8 Taptite screws, and then remove the Motor frame ASSY.

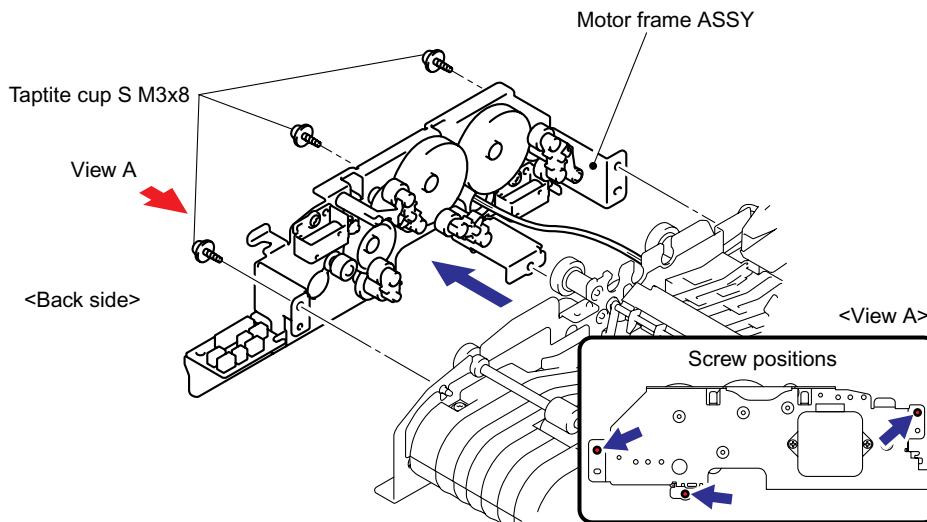


Fig. 5-58

Assembling Note:

- When assembling the Motor frame ASSY, ensure that the gears (indicated with gray) are placed in the positions as shown in the figure below.

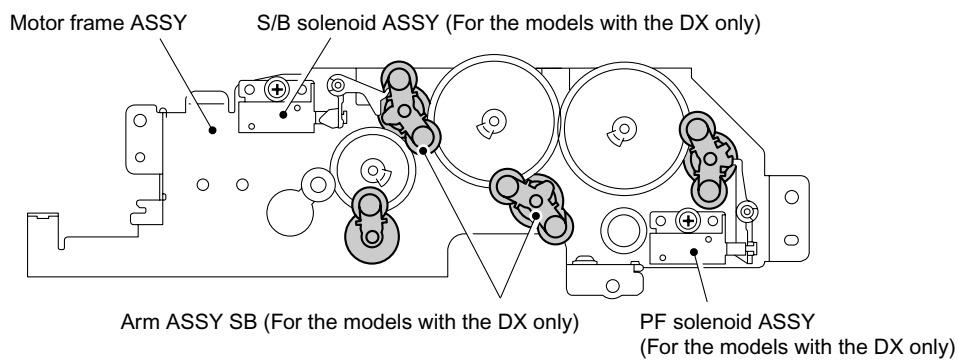


Fig. 5-59

9.23 S/B Solenoid ASSY (For the models with the DX only)

- (1) Remove the cup S M3x8 Taptite screw.
- (2) Remove the S/B solenoid ASSY.

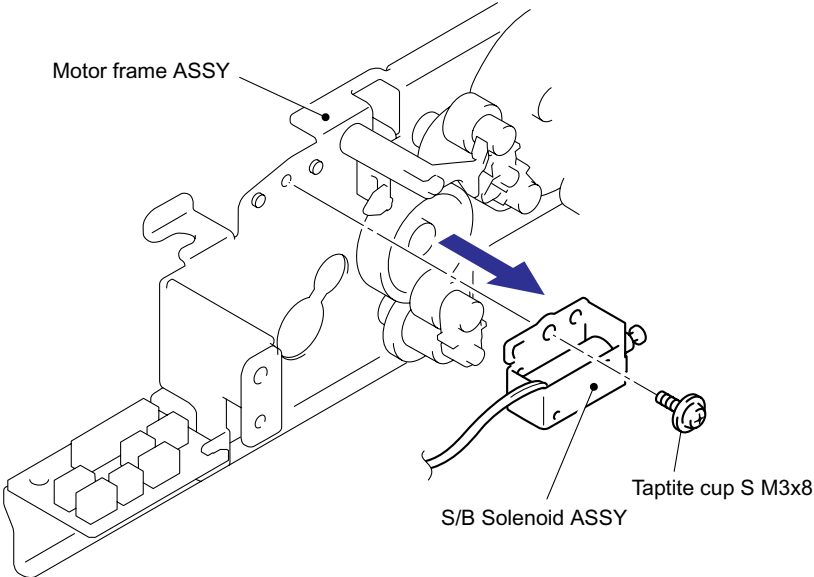


Fig. 5-60

9.24 PF Solenoid ASSY (For the models with the DX only)

- (1) Remove the cup S M3x8 Taptite screw.
- (2) Remove the PF solenoid ASSY.

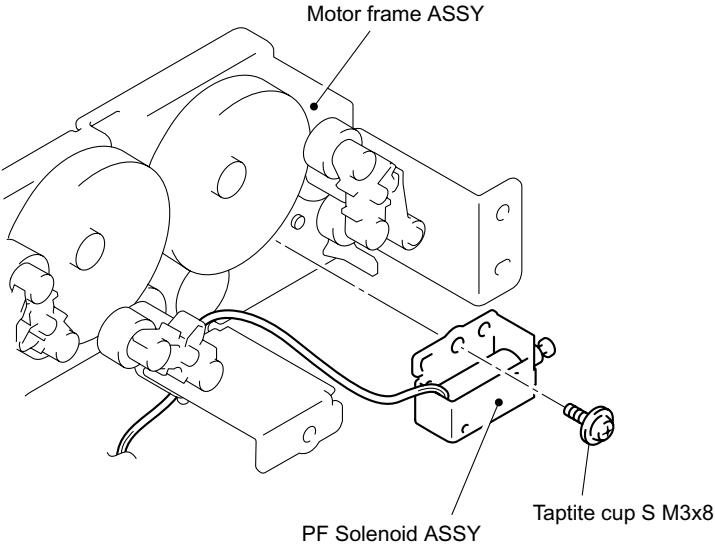


Fig. 5-61

9.25 ADF Relay PCB

- (1) Remove the cup S M3x8 Taptite screw.
- (2) Remove the ADF relay PCB.

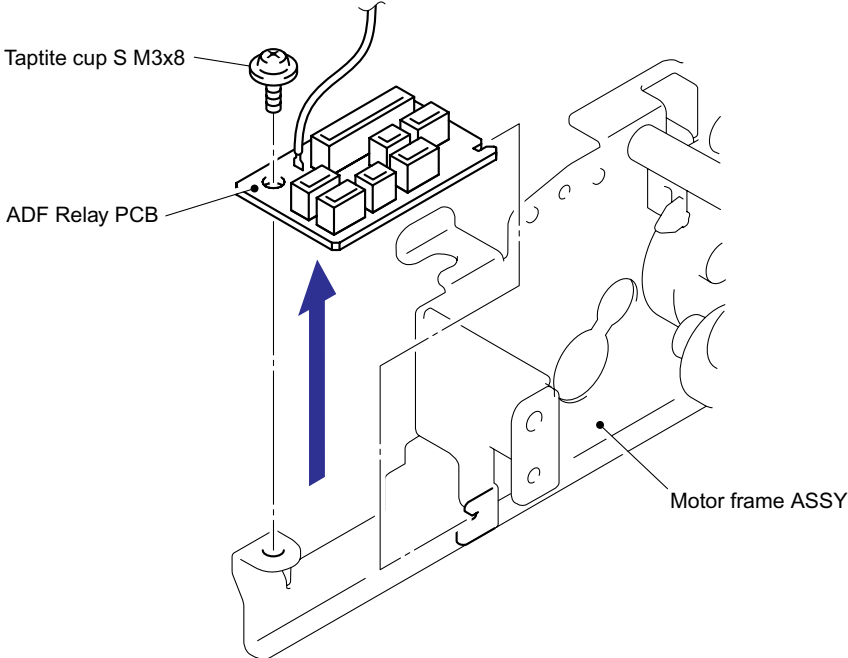


Fig. 5-62

9.26 Paper Feed Chute ASSY

- (1) Remove the two cup S M3x8 Taptite screws.
- (2) Remove the Paper feed plate. (For the models with the DX only)

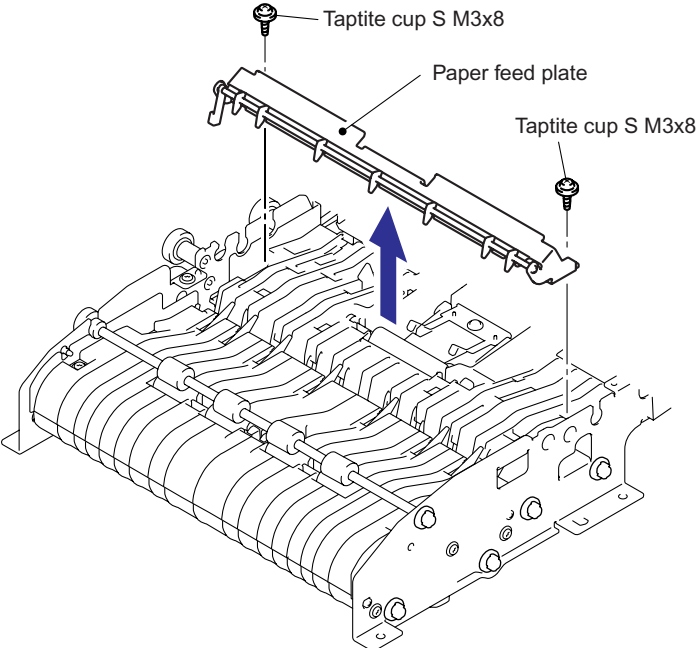


Fig. 5-63

- (3) Remove the two cup B M3x8 Taptite screws.
- (4) Remove the Paper feed chute ASSY.

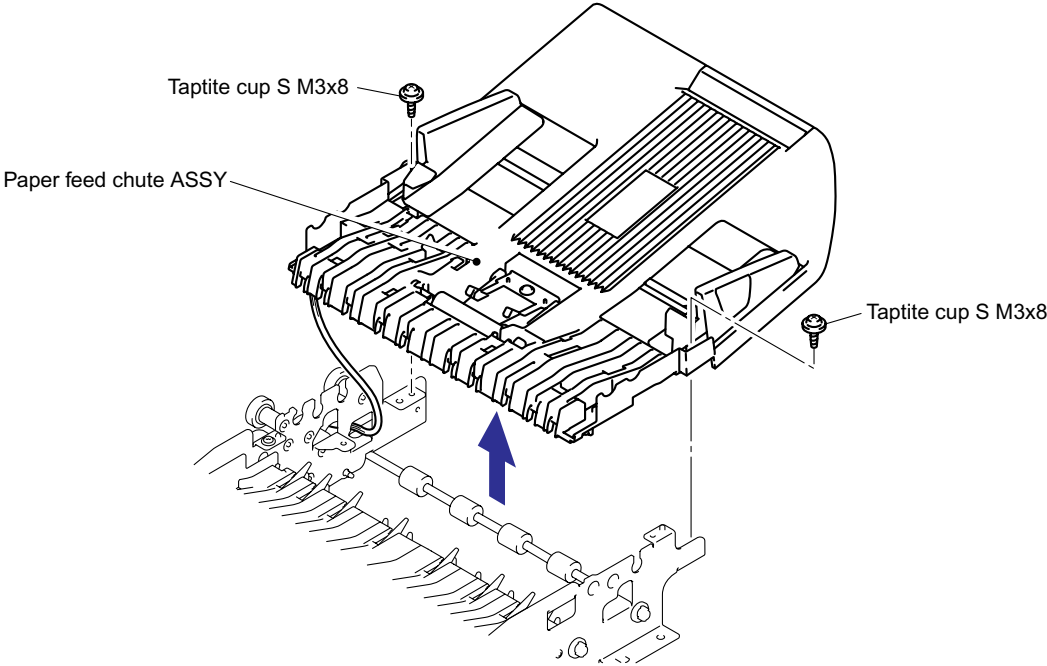


Fig. 5-64

9.27 Actuator Front 1/Photo Interrupter (For the models with the DX only)

- (1) Turn the Paper feed chute ASSY upside down. Release the Hooks of the Photo interrupter to remove the Photo interrupter from the Paper feed chute ASSY.
- (2) Disconnect the Connector from the Photo interrupter.

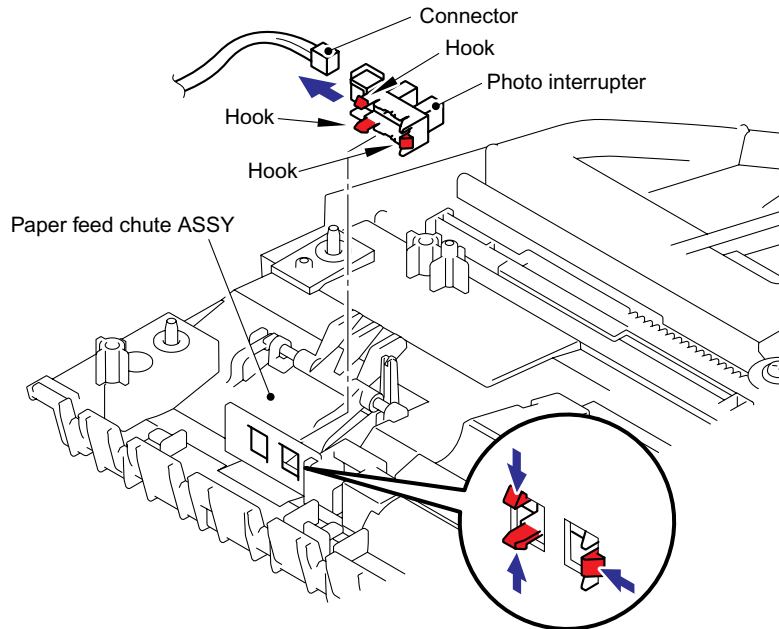


Fig. 5-65

- (3) Push down the Stopper, slide the Actuator front 1 to the stopper side and pull up the Actuator front 1 to remove.

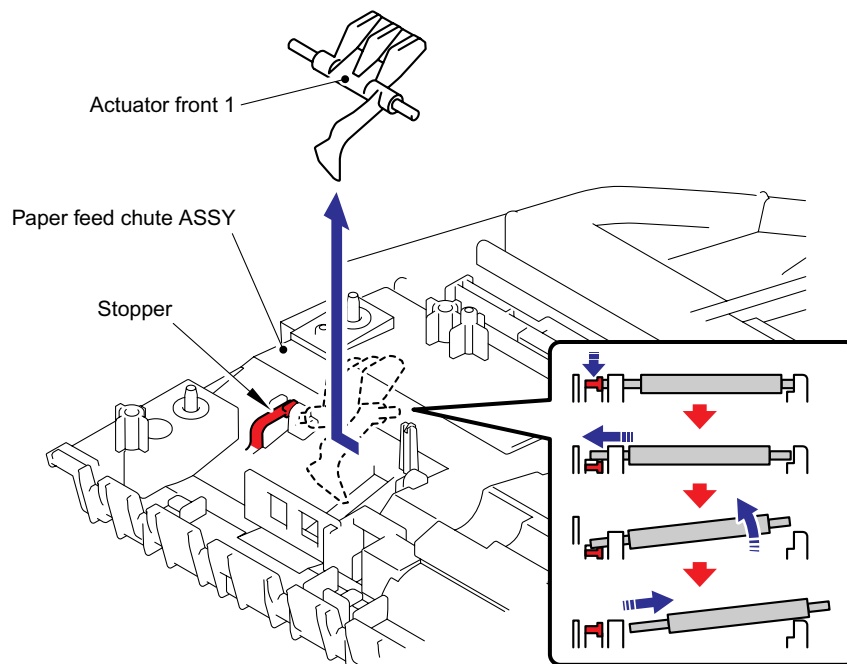


Fig. 5-66

9.28 Actuator Front 2/Photo Interrupter (For the models with the DX only)

- (1) Release the Hooks of the Photo interrupter to remove the Photo interrupter from the Paper feed chute ASSY.
- (2) Disconnect the Connector from the Photo interrupter.

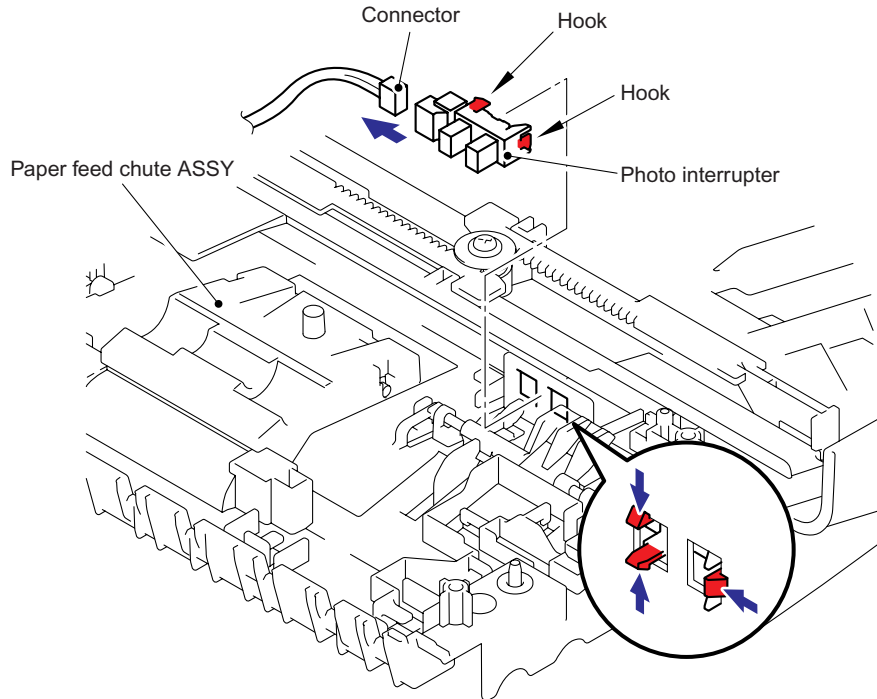


Fig. 5-67

- (3) Push down the Stopper, slide the Actuator front 2 to the stopper side and pull up the Actuator front 2 to remove.

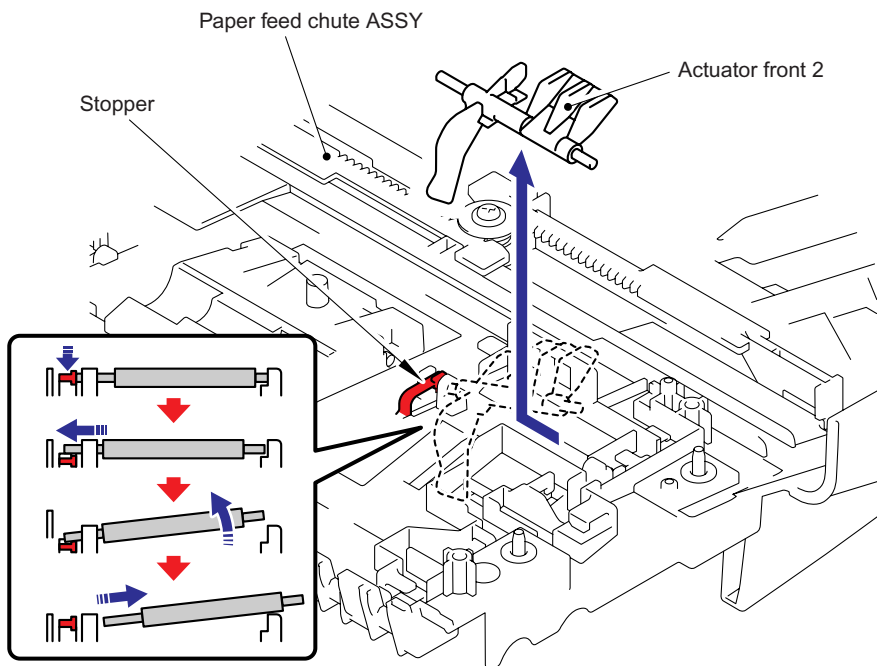


Fig. 5-68

9.29 ADF Film/Spring Plate ADF Front A ASSY/Separation Rubber/Rubber Holder/Separation Spring

- (1) Remove the ADF film.
- (2) Remove the B M3x6 Taptite screw, and then remove the Spring plate ADF front A ASSY.
- (3) Remove the Separation rubber.
- (4) Remove the Rubber holder.
- (5) Remove the Separation spring.

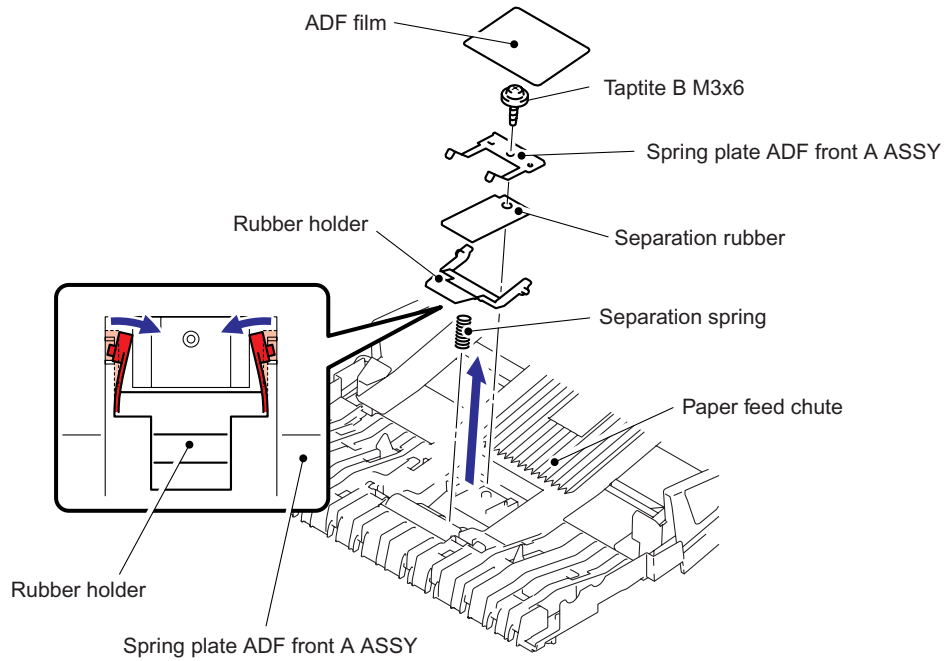


Fig. 5-69

9.30 Presser Roller/LF Spring

- (1) Push the Hook to the direction of the arrow (1a) as shown in the figure below while holding the Presser roller, and remove the Presser roller shaft from the hook.
- (2) Pull the Presser roller shaft out of the Presser roller.
- (3) Remove the two LF springs.

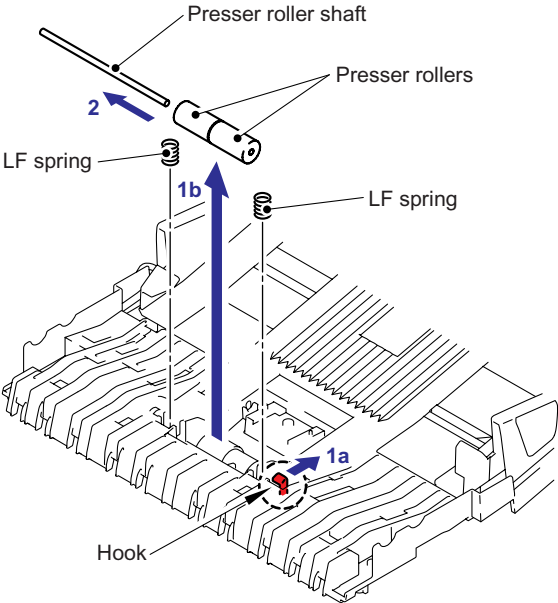


Fig. 5-70

9.31 LF Roller 2 ASSY

- (1) Release the Hooks of the Conductive bushing A to remove the Conductive bushing A.
- (2) Remove the Bushing from the ADF chute ASSY, and remove the LF roller 2 ASSY from the ADF chute ASSY.

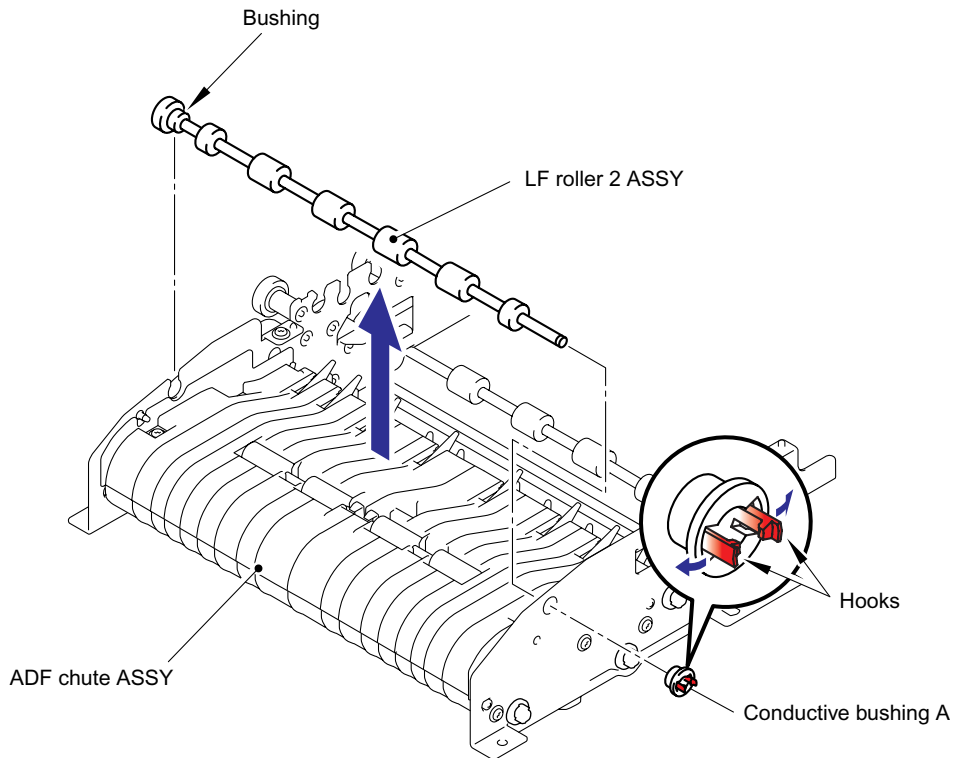


Fig. 5-71

Assembling Note:

- When assembling the LF roller 2 ASSY, assemble the Bushing with aligning the Boss of the Bushing with the notch on the ADF chute ASSY.

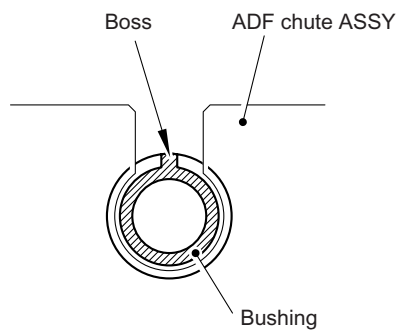


Fig. 5-72

9.32 Exit Roller ASSY

- (1) Release the Hooks of the Conductive bushing A to remove the Conductive bushing A.
- (2) Remove the Bushing from the ADF chute ASSY, and remove the Exit roller ASSY from the ADF chute ASSY.

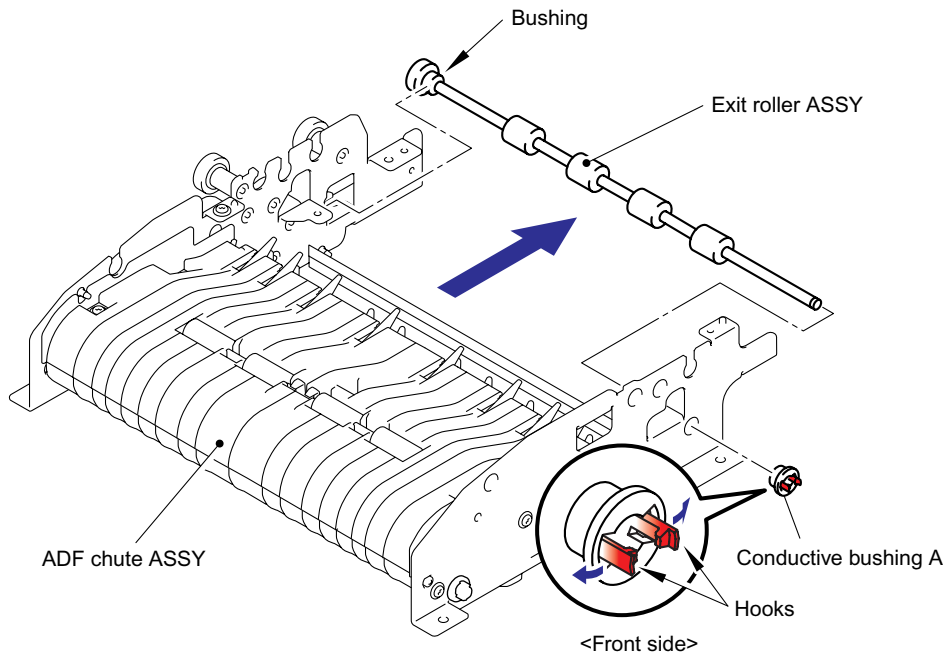


Fig. 5-73

Assembling Note:

- When assembling the Exit roller ASSY, assemble the Bushing with aligning the Boss of the Bushing with the notch on the ADF chute ASSY.

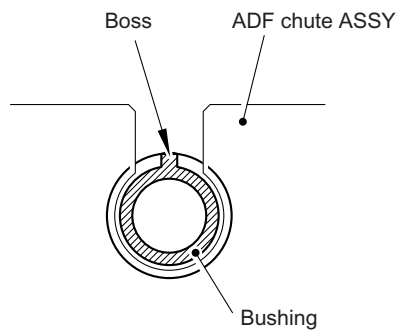


Fig. 5-74

9.33 LF Roller 3 ASSY

- (1) Turn the ADF chute ASSY upside down. Release the Hooks of the Conductive bushing A to remove the Conductive bushing A.
- (2) Remove the Bushing from the ADF chute ASSY, and remove the LF roller 3 ASSY from the ADF chute ASSY.

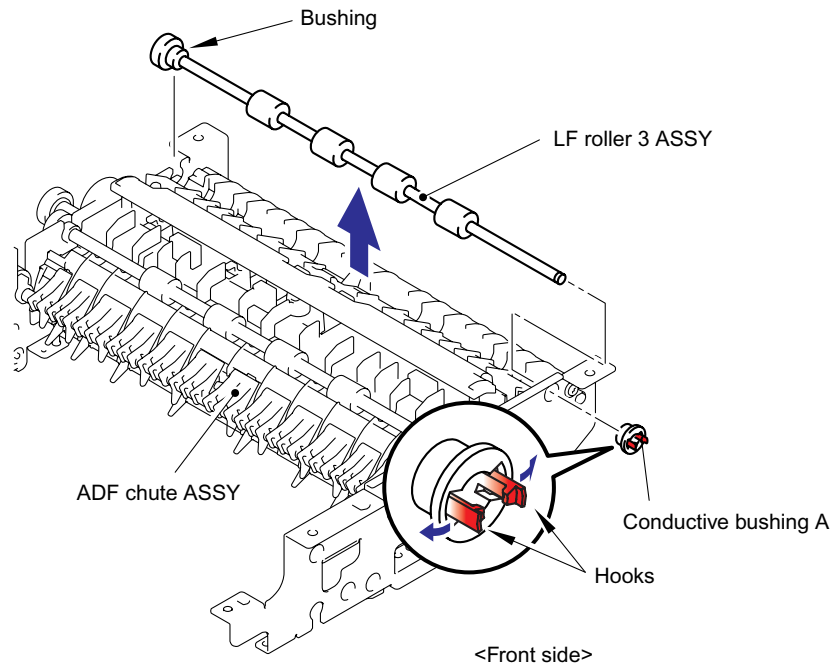


Fig. 5-75

Assembling Note:

- When assembling the LF roller 3 ASSY, assemble the Bushing with aligning the Boss of the Bushing with the notch on the ADF chute ASSY.

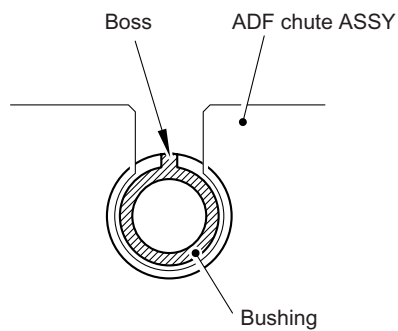


Fig. 5-76

9.34 LF Roller 4 ASSY

- (1) Release the Hooks of the Conductive bushing A to remove the Conductive bushing A.
- (2) Remove the Bushing from the ADF chute ASSY, and remove the LF roller 4 ASSY from the ADF chute ASSY.

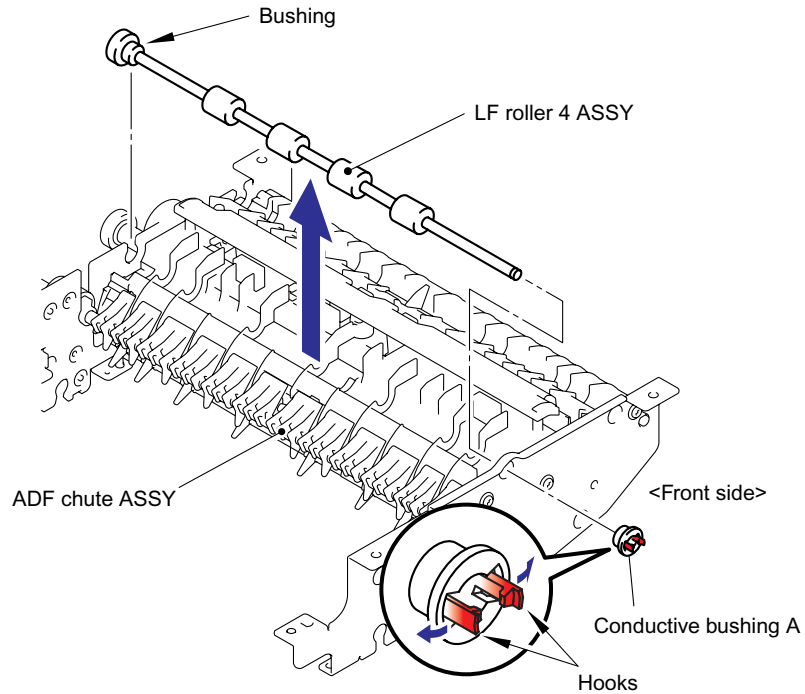


Fig. 5-77

Assembling Note:

- When assembling the LF roller 4 ASSY, assemble the Bushing with aligning the Boss of the Bushing with the notch on the ADF chute ASSY.

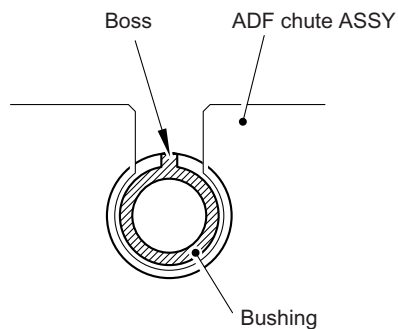


Fig. 5-78

9.35 Flap A ASSY (For the models with the DX only)/ Flap A (For the models with out the DX only)

- (1) Release the Hooks of the Conductive bushing A to remove the Conductive bushing A.
- (2) Remove the Bushing from the ADF chute ASSY, and remove the Flap A ASSY or Flap A from the ADF chute ASSY.

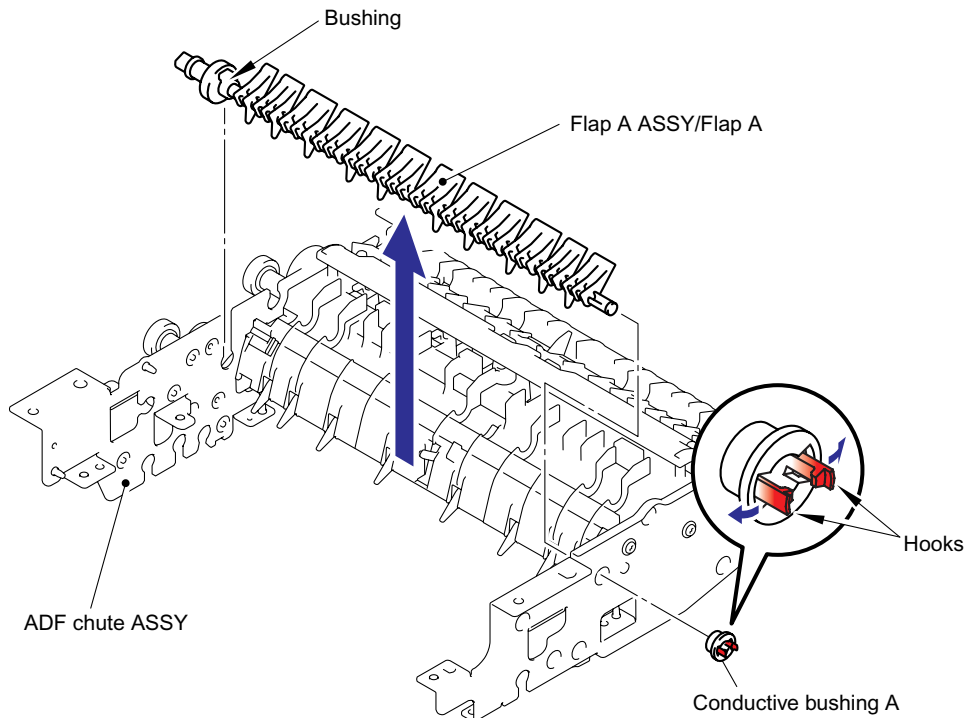


Fig. 5-79

Assembling Note:

- When assembling the Flap A ASSY or Flap A, assemble the Bushing with aligning the Boss of the Bushing with the notch on the ADF chute ASSY.

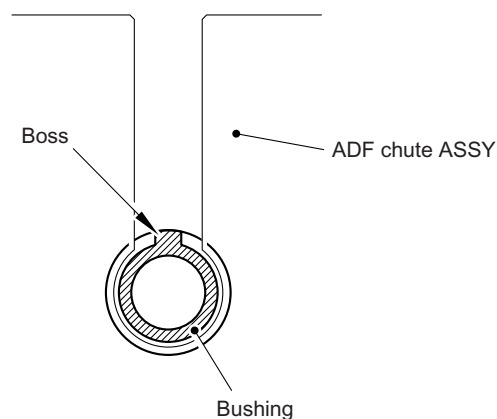


Fig. 5-80

9.36 Document Hold/Document Hold Spring

- (1) Push the Hooks to the direction of the arrows as shown in the figure below to remove the Document hold.
- (2) Remove the Document hold spring gently to prevent it from jumping.

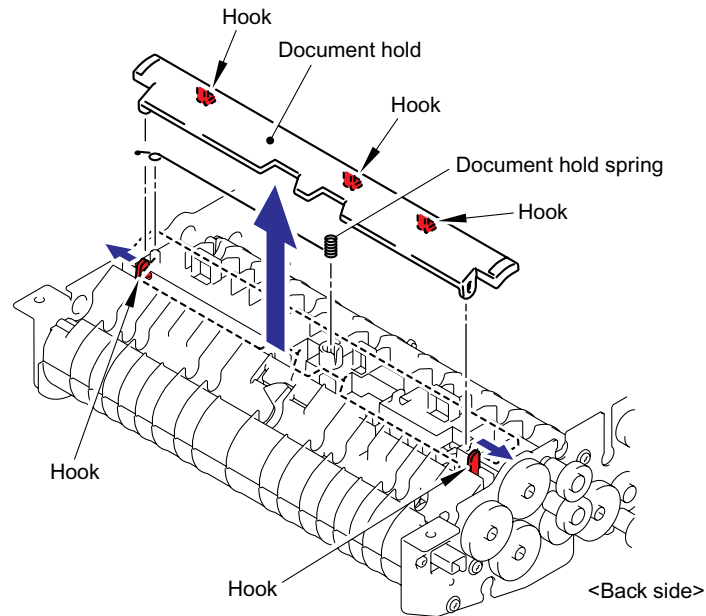


Fig. 5-81

9.37 Upper Main Chute ASSY/Lower Main Chute ASSY

- (1) Turn the ADF chute ASSY upside down. Remove the three cup B M3x10 Taptite screws.
- (2) Remove the Drive frame sub ASSY DX.

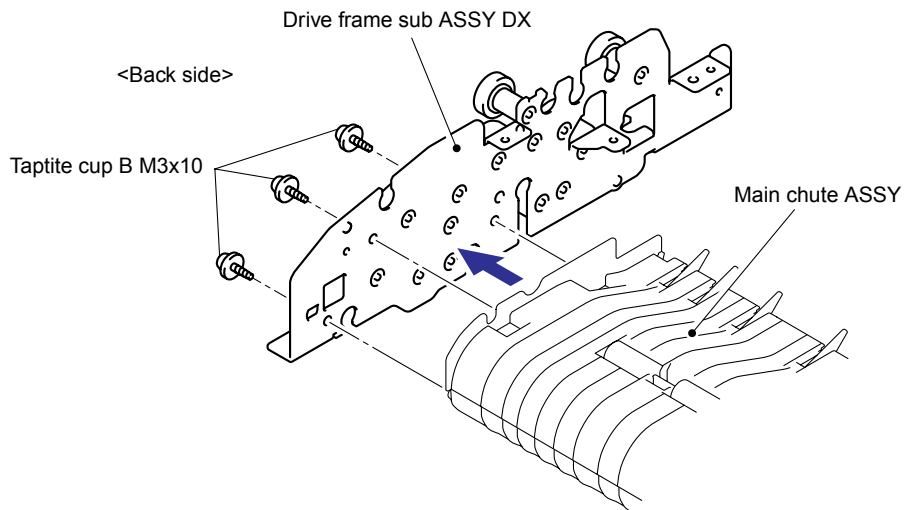


Fig. 5-82

- (3) Remove the three cup B M3x10 Taptite screws.
- (4) Remove the Front frame.

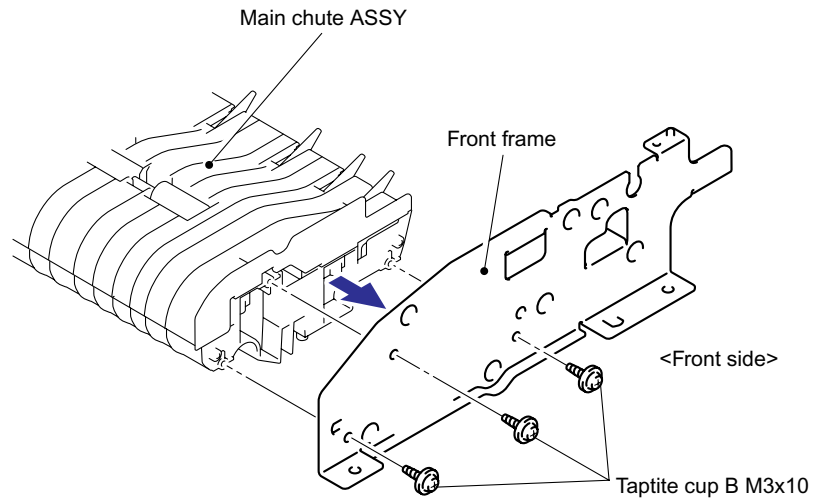


Fig. 5-83

- (5) Remove the four cup B M3x10 Taptite screws.
- (6) Remove the Upper main chute ASSY from the Lower main chute ASSY.

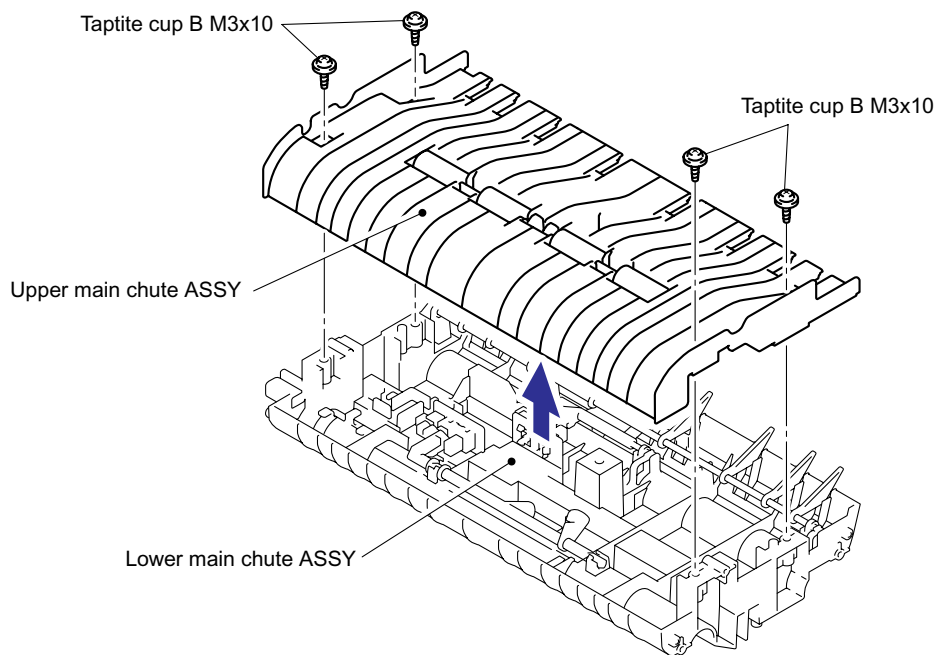


Fig. 5-84

9.38 Actuator R/Photo Interrupter

- (1) Turn the Actuator R to the direction of the arrow 1a and pull it out to the direction of the arrow 1b.

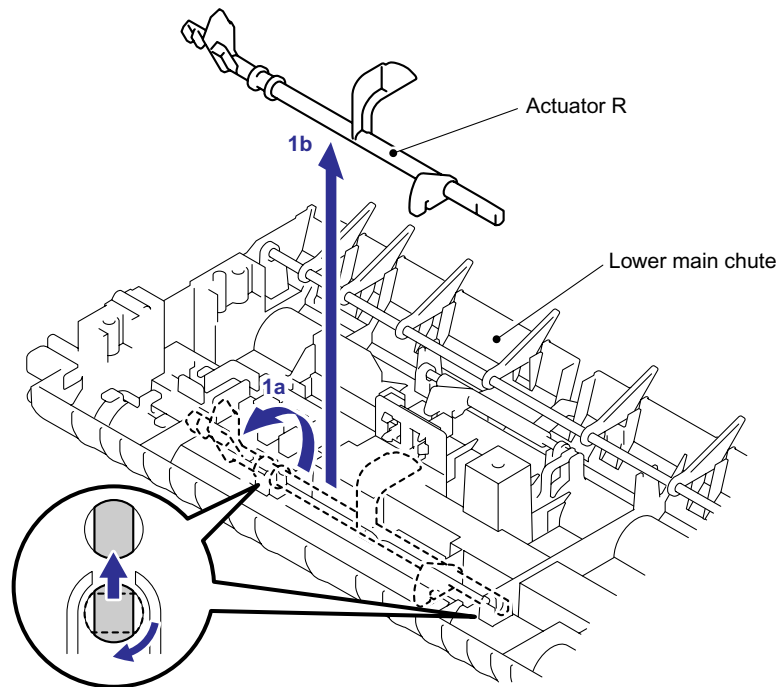


Fig. 5-85

- (2) Release the Hooks of the Photo interrupter to remove the Photo interrupter from the Lower main chute.
- (3) Disconnect the Connector from the Photo interrupter.

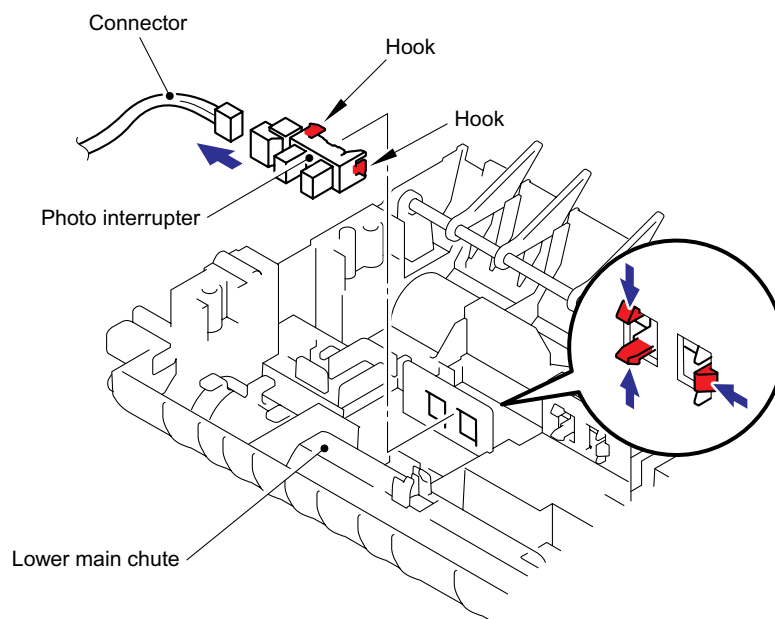


Fig. 5-86

9.39 Flap B

- (1) Remove the Flap B from the Lower main chute.

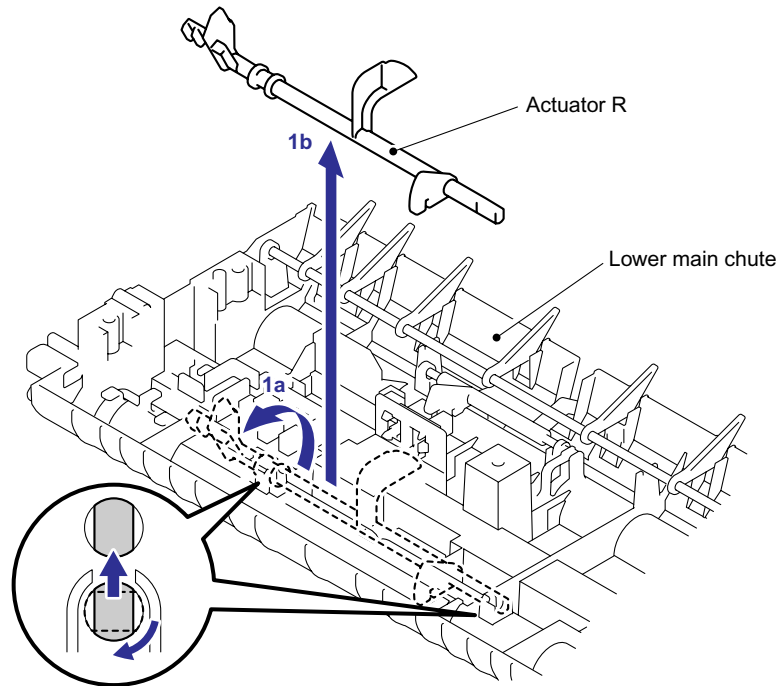


Fig. 5-87

9.40 Actuator SB/Photo Interrupter (For the models with the DX only)

- (1) Push down the Stopper, slide the Actuator SB to the stopper side and pull up the Actuator SB to remove.

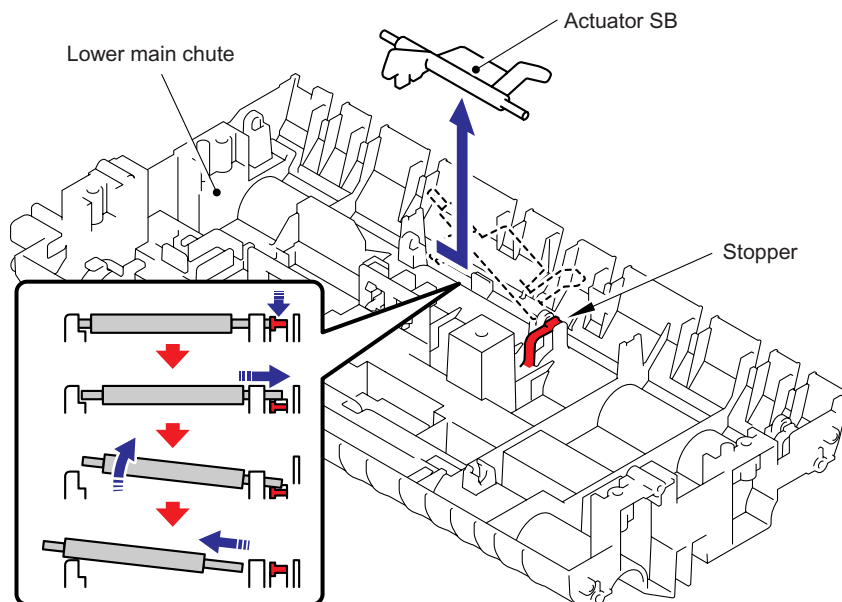


Fig. 5-88

- (2) Release the Hooks of the Photo interrupter to remove the Photo interrupter from the Lower main chute.
- (3) Disconnect the Connector from the Photo interrupter.

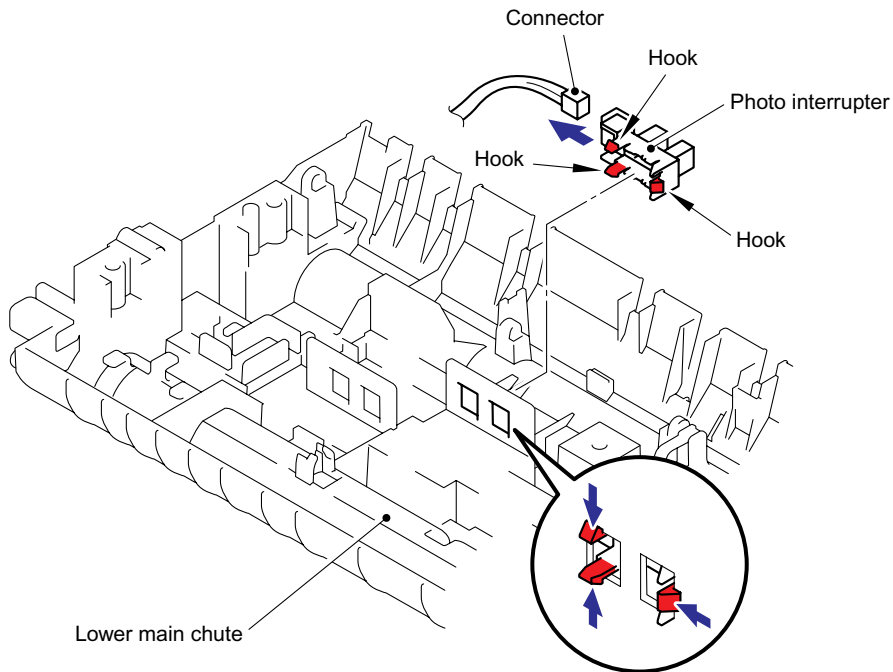


Fig. 5-89

9.41 Document Ejection Tray

- (1) Remove the ADF document output support flap from the Document cover LGL.

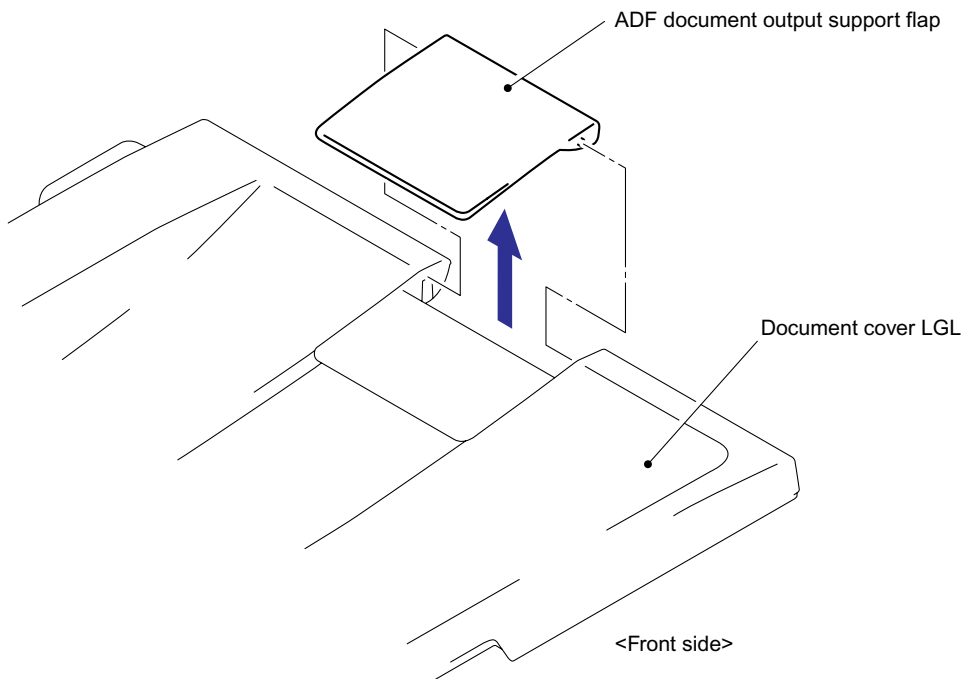


Fig. 5-90

9.42 Document Cover Sensor

- (1) Disconnect the Connector from the Document cover sensor.
- (2) Pull the Document cover sensor downwards to remove it from the Document cover LGL while pressing the Hook of the Document cover sensor.

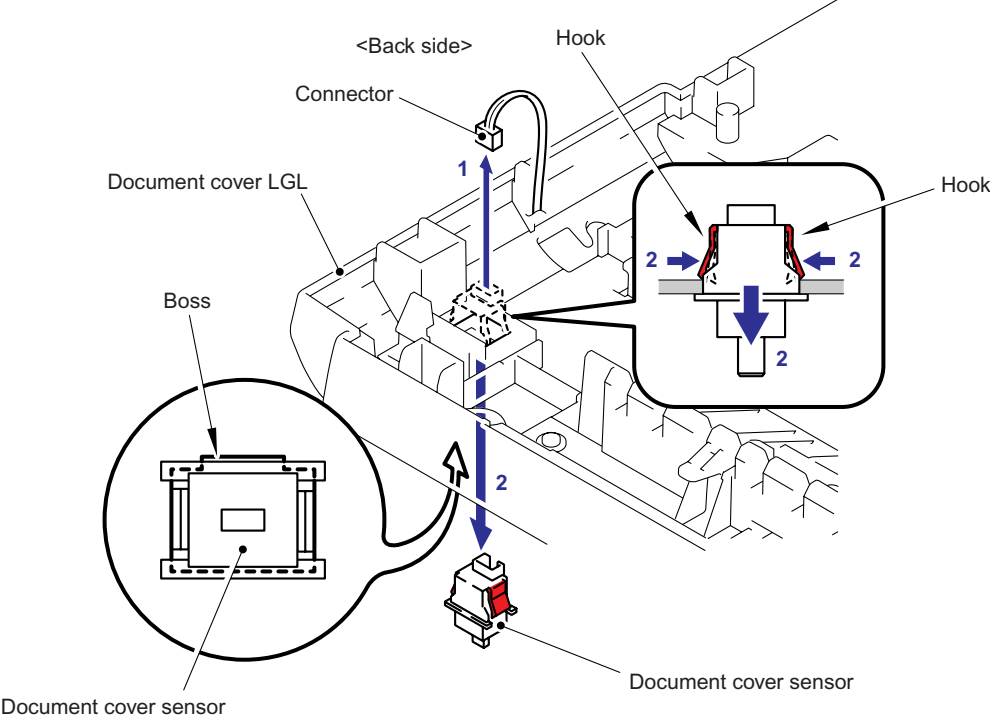


Fig. 5-91

9.43 Eject Roller B4

- (1) Remove the four Eject rollers B4 and two Pressure roller shaft S from the Document cover LGL.

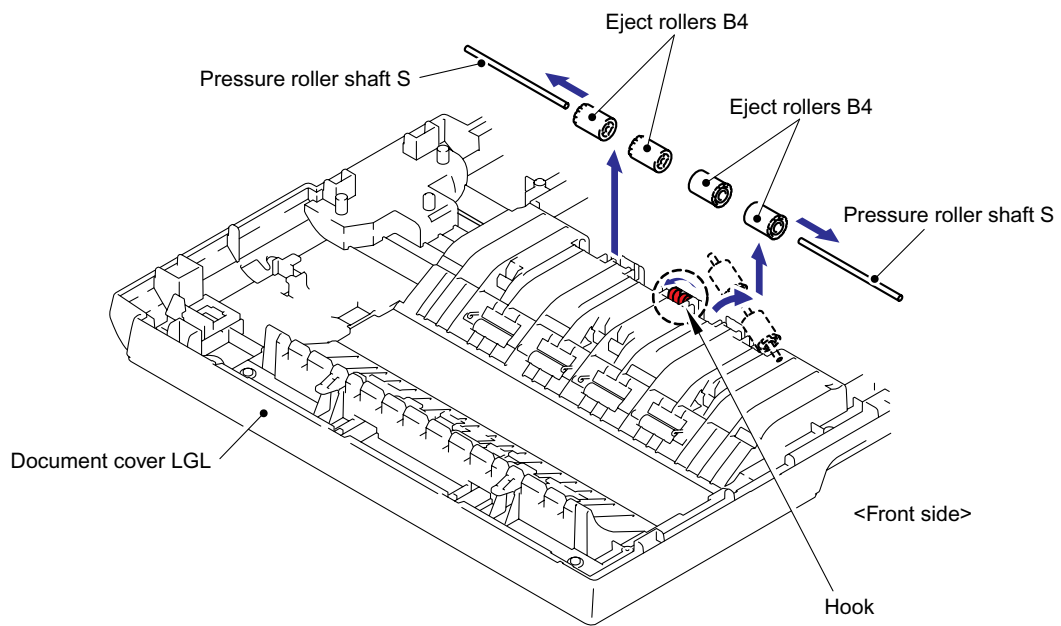


Fig. 5-92

Assembling Note:

- When assembling the Eject rollers B4, ensure that the direction of each roller is correct as shown in the figure above.

9.44 Presser Roller

- (1) Turn the Document cover LGL upside down. Remove the two cup B M3x10 Taptite screws.
- (2) Remove the Rear sensor cover from the Document cover LGL.

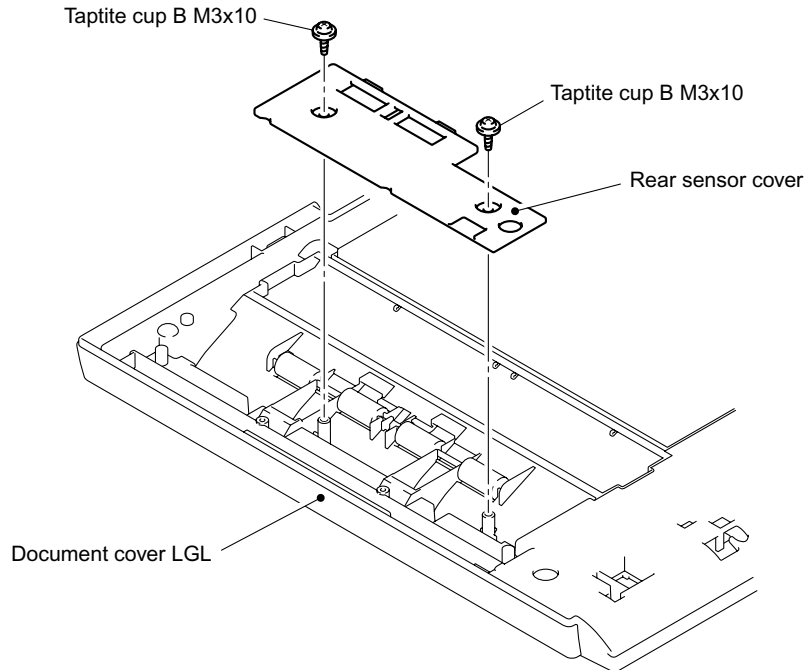


Fig. 5-93

- (3) Remove the two cup B M3x10 Taptite screws, and then remove the two LF springs, four Presser rollers and two Presser roller shafts S.

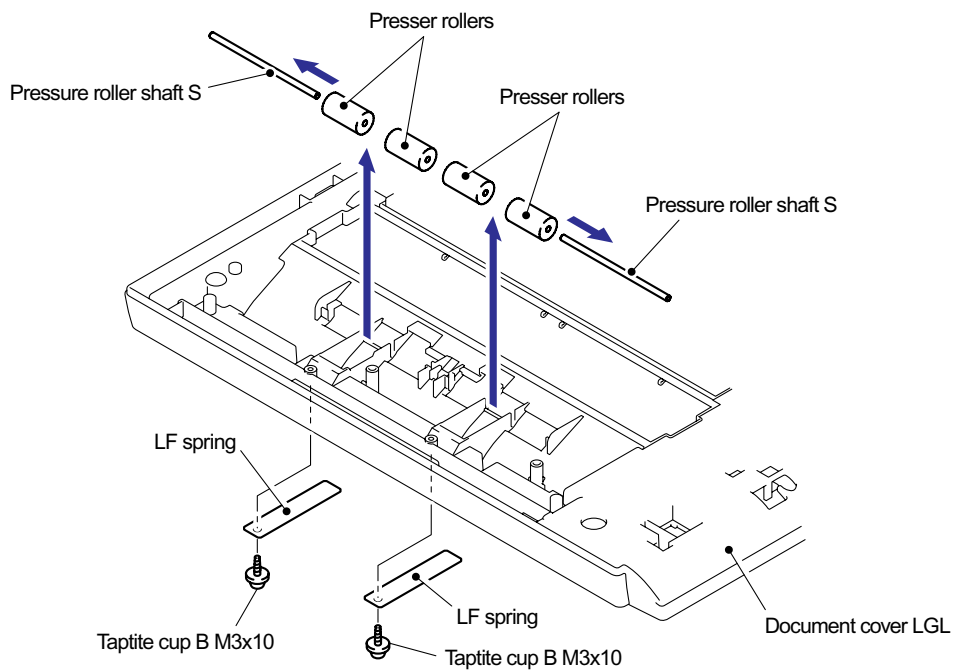


Fig. 5-94

9.45 Panel Cover ASSY

(1) Remove the Panel cover ASSY.

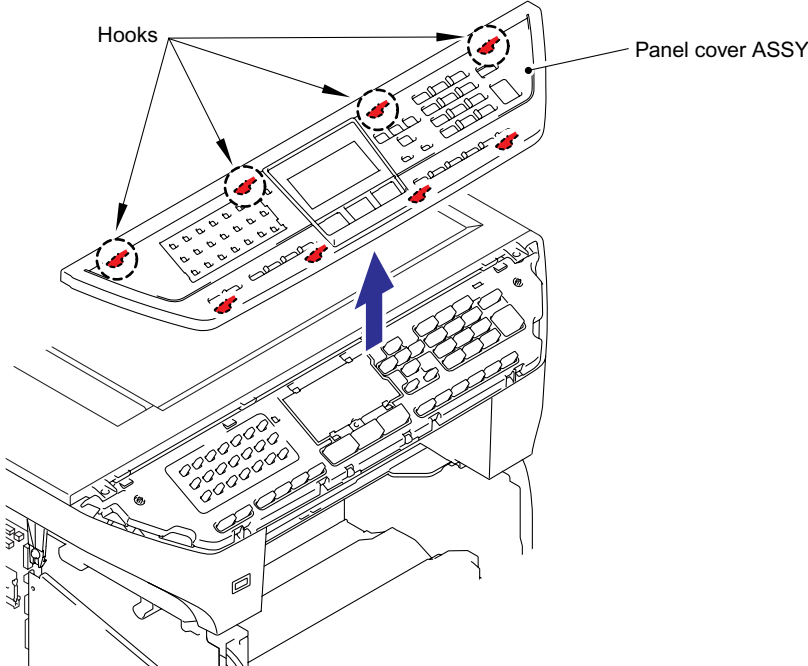


Fig. 5-95

9.46 Scanner Unit ASSY

- (1) Disconnect the connector of the Scanner motor harness from the Driver PCB.
- (2) Disconnect the connector of the Photo interrupter and FFC cable from the Main PCB.

Note:

- After disconnecting flat cable(s), check that each cable is not damaged at its end or short-circuited.
- When connecting flat cable(s), do not insert them at an angle. After insertion, check that the cables are not at an angle.

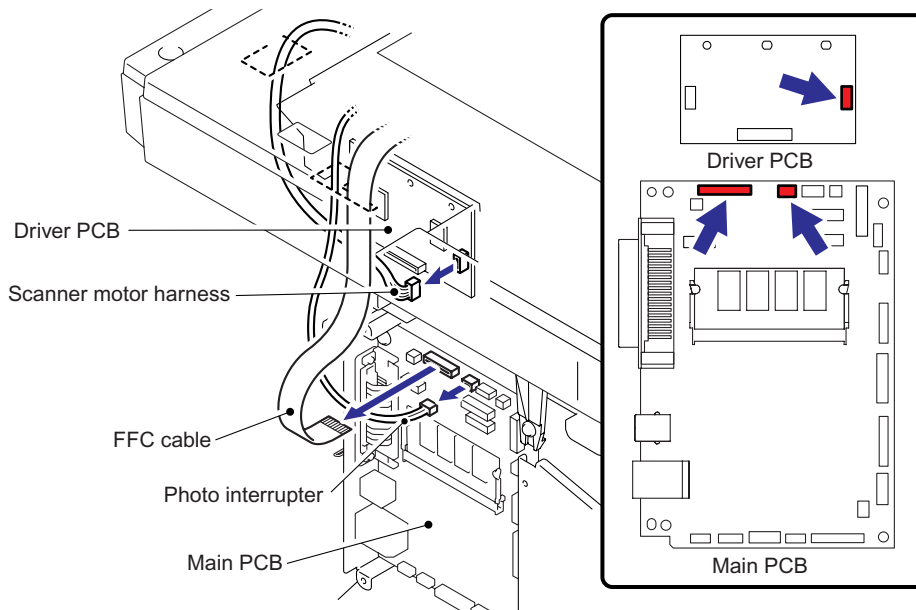


Fig. 5-96

- (3) Remove the two cup B M4x20 Taptite screws. Lift up the rear of the Scanner unit slightly and remove the Scanner unit.

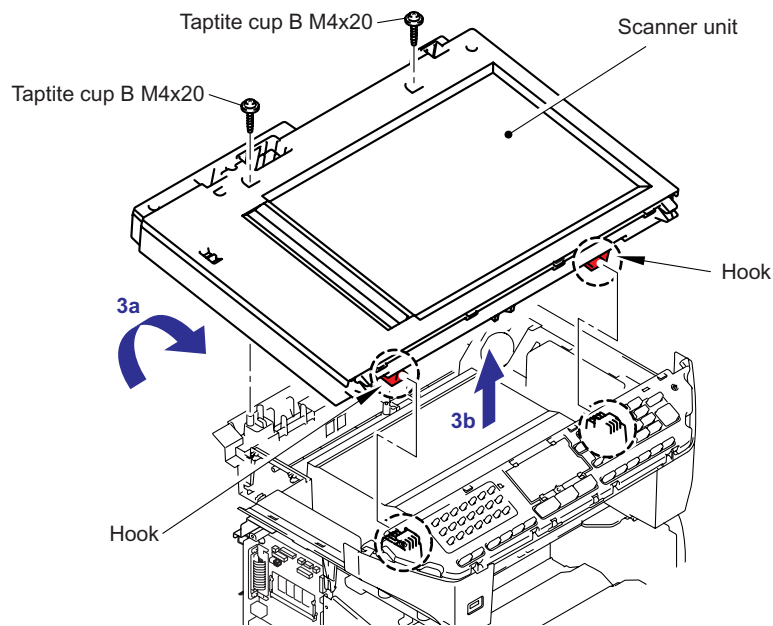


Fig. 5-97

9.47 Top Cover ASSY

Note:

- Be sure not to open the Top cover ASSY in a dusty place.

- (1) Remove the six cup B M4x12 Taptite screws.
- (2) Remove the Top cover ASSY from the Scanner base ASSY.

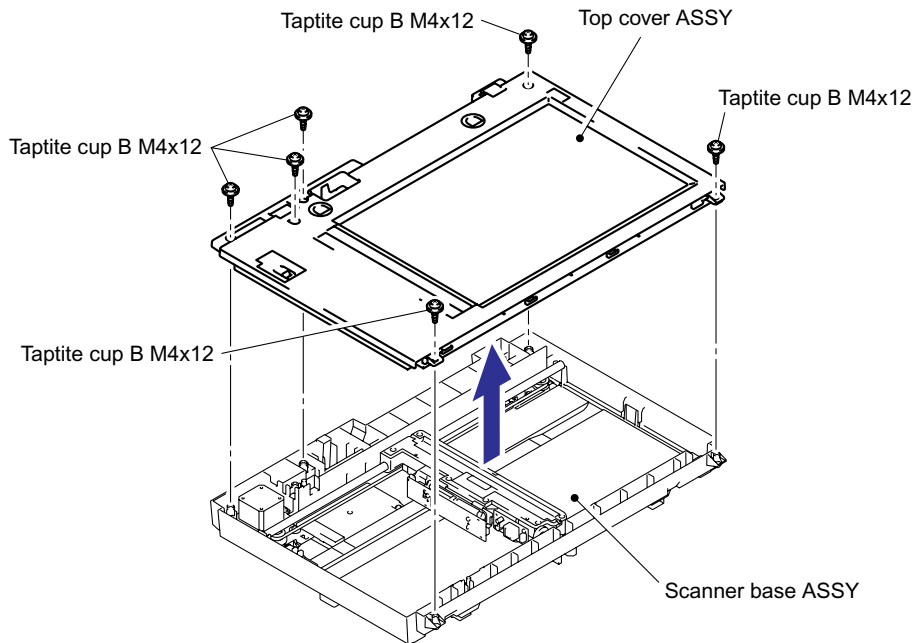


Fig. 5-98

9.48 Lock Lever B/ Lock Lever ASSY

- (1) Remove the cup B M3x6 Taptite screw, and then remove the Lock lever B.
- (2) Remove the two cup B M3x6 Taptite screws, and then remove the Lock lever ASSY.

Assembling Note:

- After moving the Lock lever ASSY to "A" direction, assemble "B" of the Lock lever B that is to the direction of the top cover rib in touch.

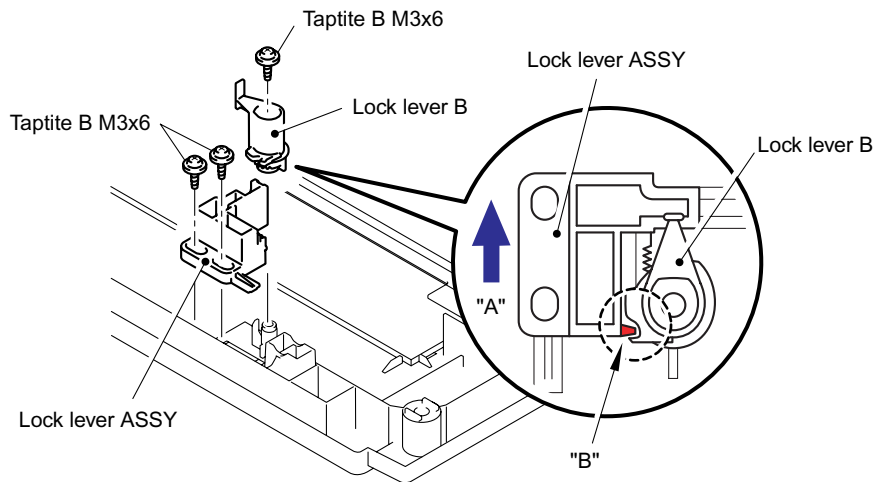


Fig. 5-99

9.49 CCD Module

- (1) Loosen the two B M3x8 Taptite screws, push the Pulley ASSY to the direction of the arrow 1a and remove the Belt.

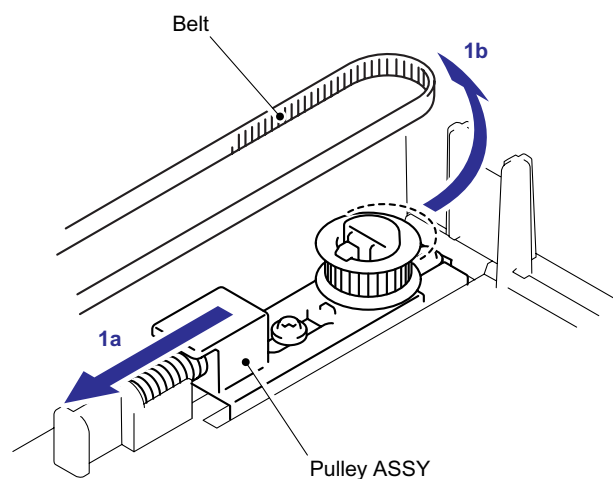


Fig. 5-100

- (2) Lift up the CCD Module and Guide shaft and pull the Guide shaft out of the CCD Module.

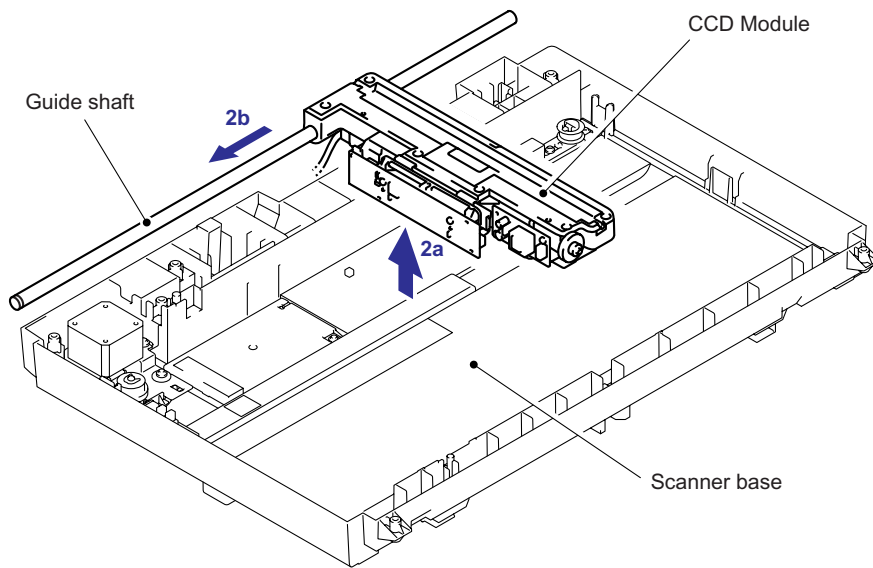


Fig. 5-101

- (3) Remove the Belt support rubber, and then remove the Belt from the CCD module.
- (4) Remove the double-faced adhesive tape which is attached between the FFC cable and CCD module, and disconnect the FFC cable from the CCD module.

Note:

- After disconnecting flat cable(s), check that each cable is not damaged at its end or short-circuited.
- When connecting flat cable(s), do not insert them at an angle. After insertion, check that the cables are not at an angle.

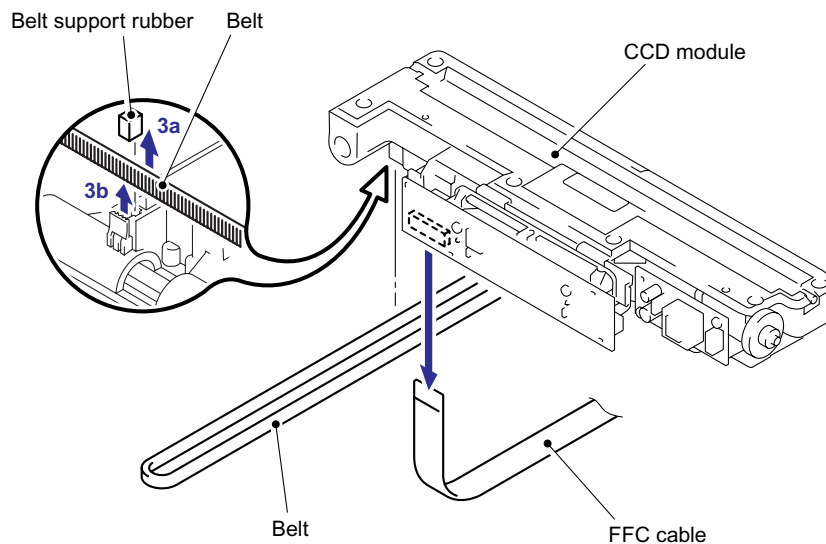


Fig. 5-102

9.50 FFC Cable ASSY

(1) Release the Hooks and remove the FFC plate.

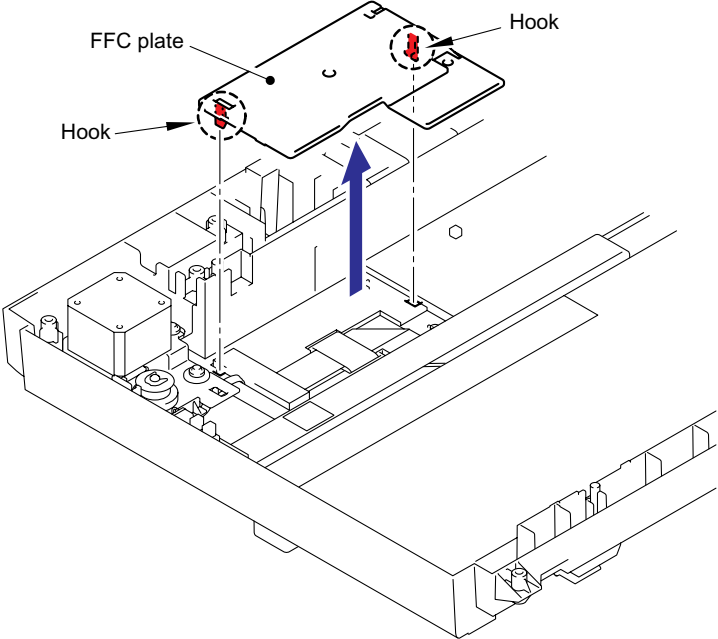


Fig. 5-103

(2) Remove the Shield sponge and FFC cable ASSY.

(3) Remove the Flat core from the FFC cable ASSY.

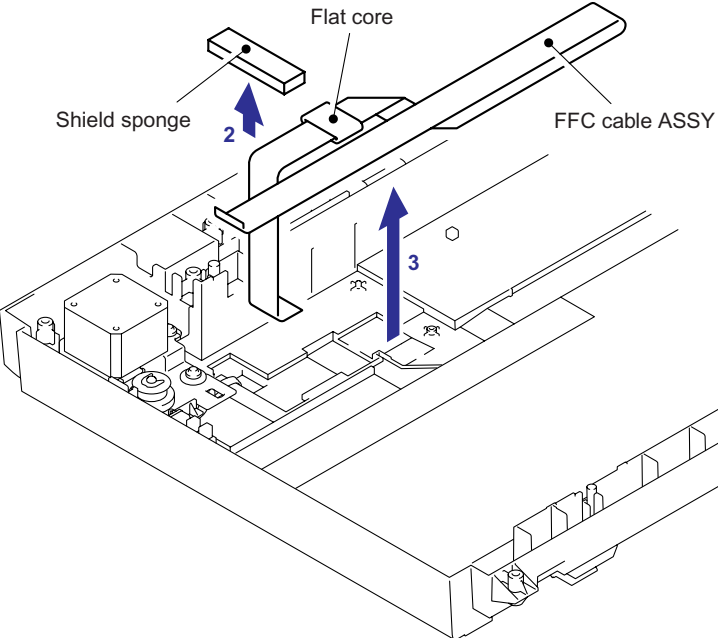


Fig. 5-104

9.51 Scanner Motor FB

- (1) Remove the cup S M3x6 Taptite screw, and then remove the FB FG harness.
- (2) Remove the four pan B M3x8 Taptite screws, and then remove the Drive plate ASSY.

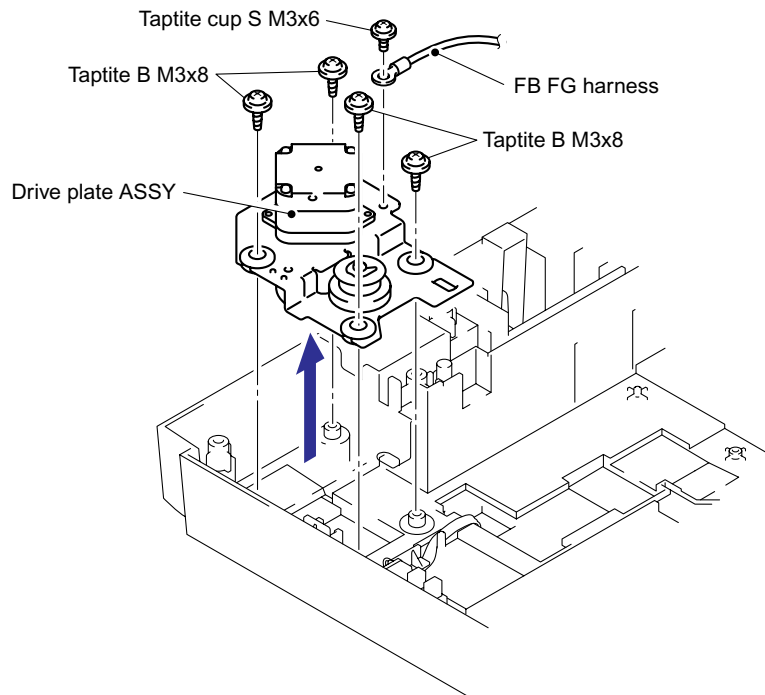


Fig. 5-105

- (3) Remove the two Screws pan (S/P washer) M3x6, and then remove the Scanner motor FB.

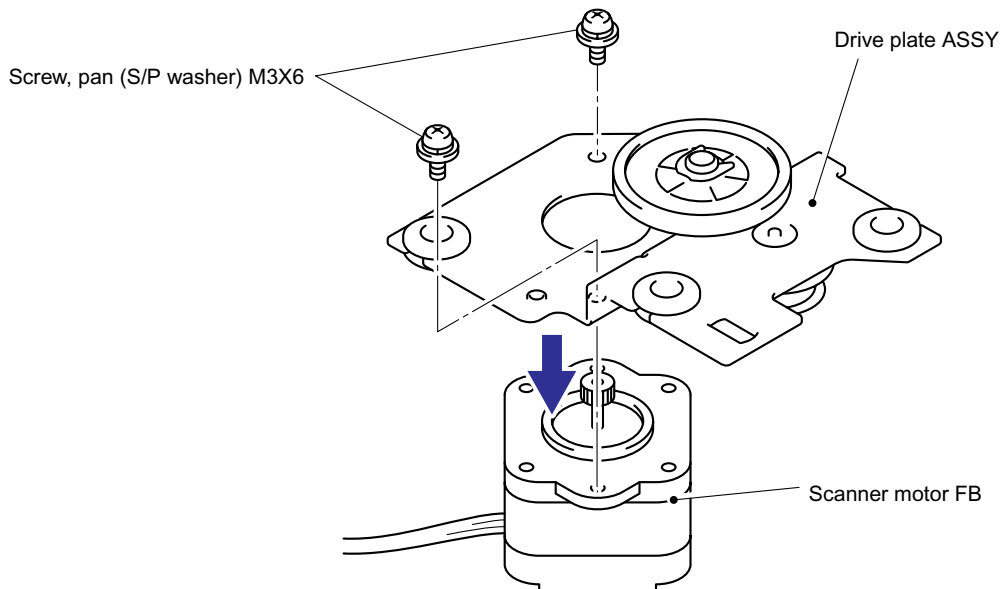


Fig. 5-106

9.52 Pulley ASSY

- (1) Remove the two B M3x6 Taptite screws, and then remove the Pulley ASSY.
- (2) Remove the Pulley spring.

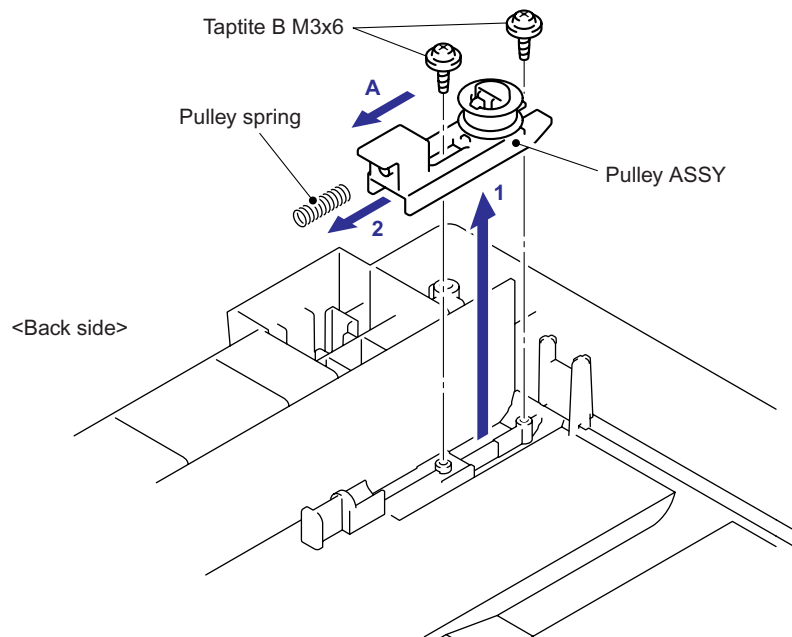


Fig. 5-107

9.53 Photo Interrupter

- (1) Release the Hooks and remove the Photo interrupter.
- (2) Disconnect the Connector from the Photo interrupter.

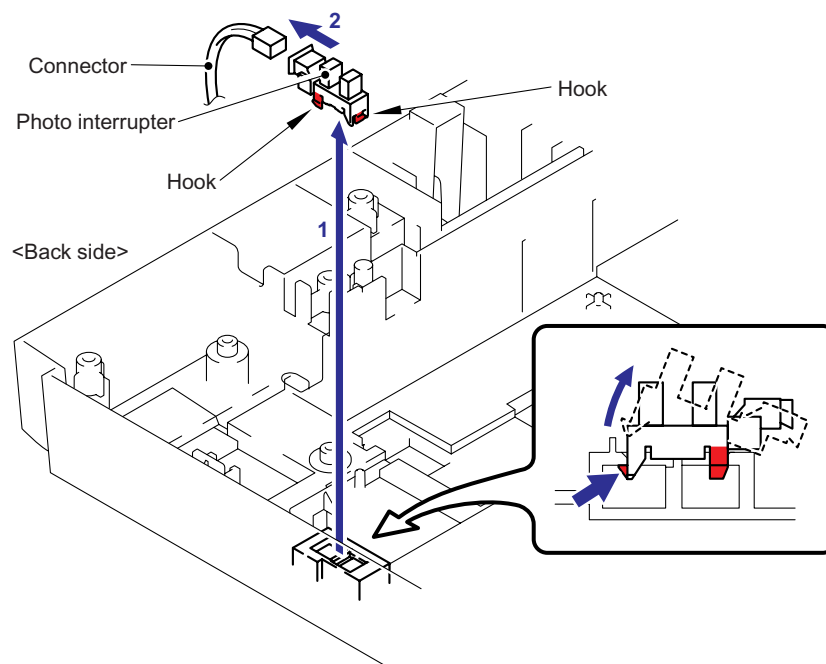


Fig. 5-108

9.54 Panel Unit

- (1) Disconnect the connector of the Panel PCB harness from the Main PCB.

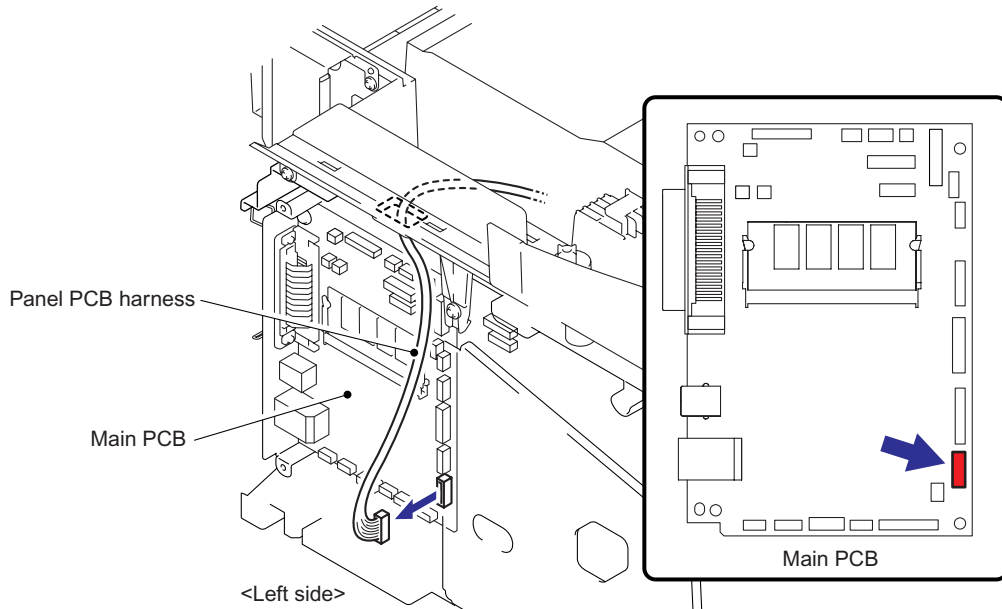


Fig. 5-109

- (2) Remove the four cup B M4x12 Taptite screw.
- (3) Remove the Tape fixing the Panel PCB harness.
- (4) Remove the Panel Unit.

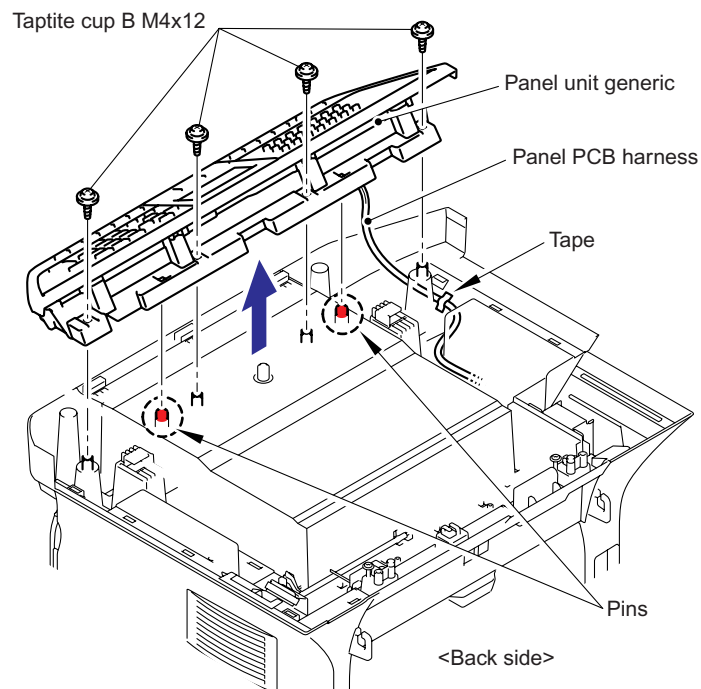


Fig. 5-110

9.55 Panel PCB ASSY

- (1) Disconnect the connector of the Panel PCB harness from the Panel unit.
- (2) Remove the four cup B M3x10 Taptite screws, release the two Hooks and remove the Panel cover.

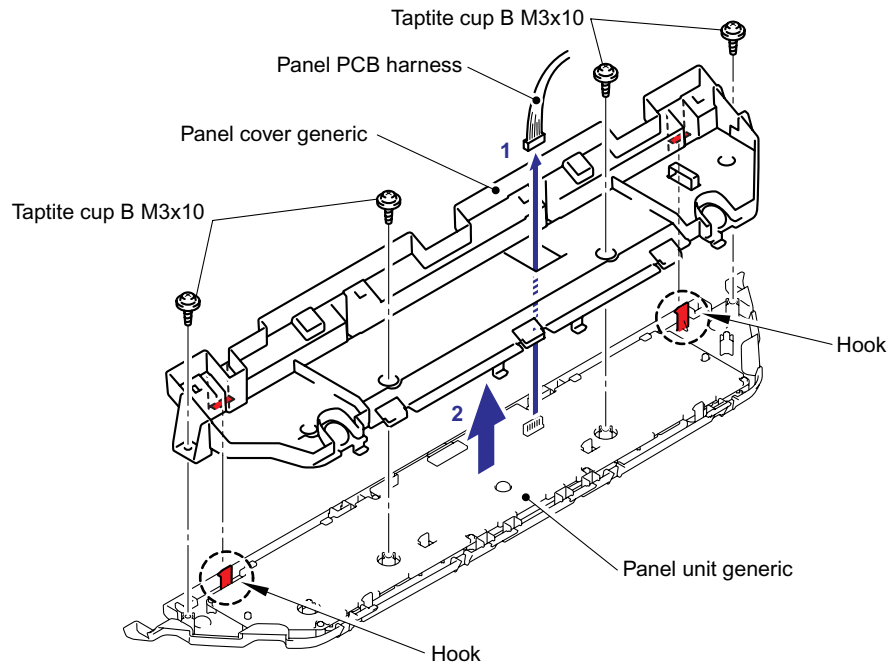


Fig. 5-111

- (3) Disconnect the connector of the Backlight module harness from the Panel PCB ASSY.
- (4) Unlock the lock, and remove the LCD cable from the Panel PCB ASSY.

Note:

- After disconnecting flat cable(s), check that each cable is not damaged at its end or short-circuited.
- When connecting flat cable(s), do not insert them at an angle. After insertion, check that the cables are not at an angle.

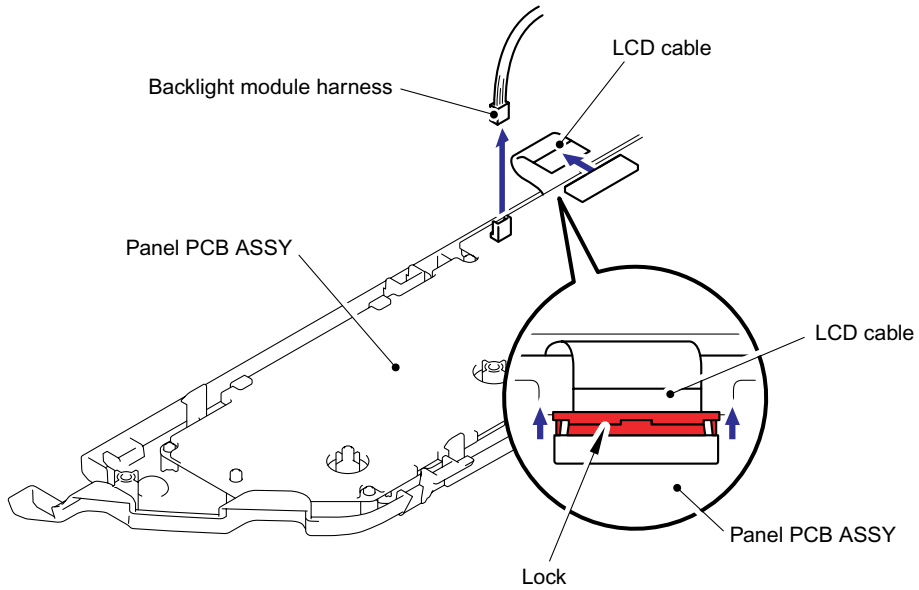


Fig. 5-112

- (5) Release the four Hooks, lift up the Panel PCB ASSY to the direction of the arrow 5a and remove the Panel PCB ASSY.

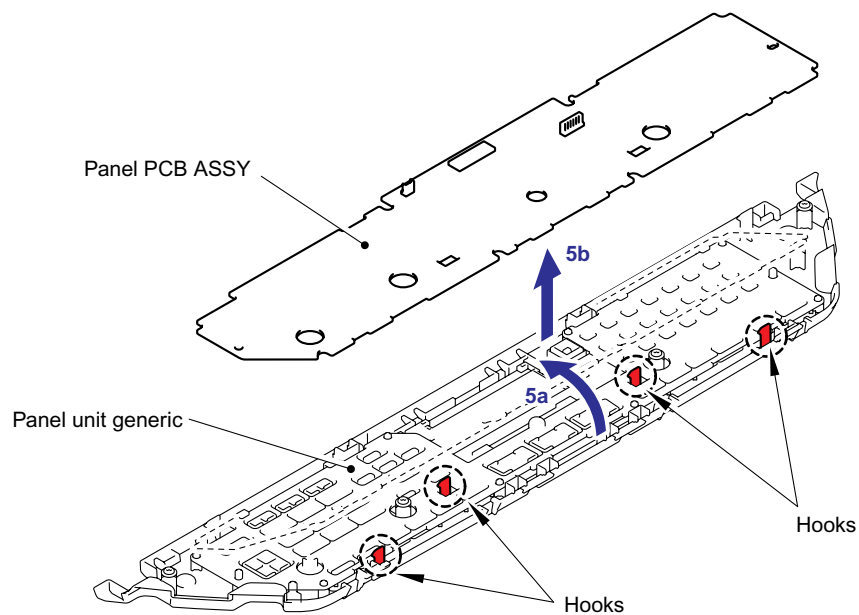


Fig. 5-113

9.56 Printed Rubber Key

(1) Remove the Printed rubber key.

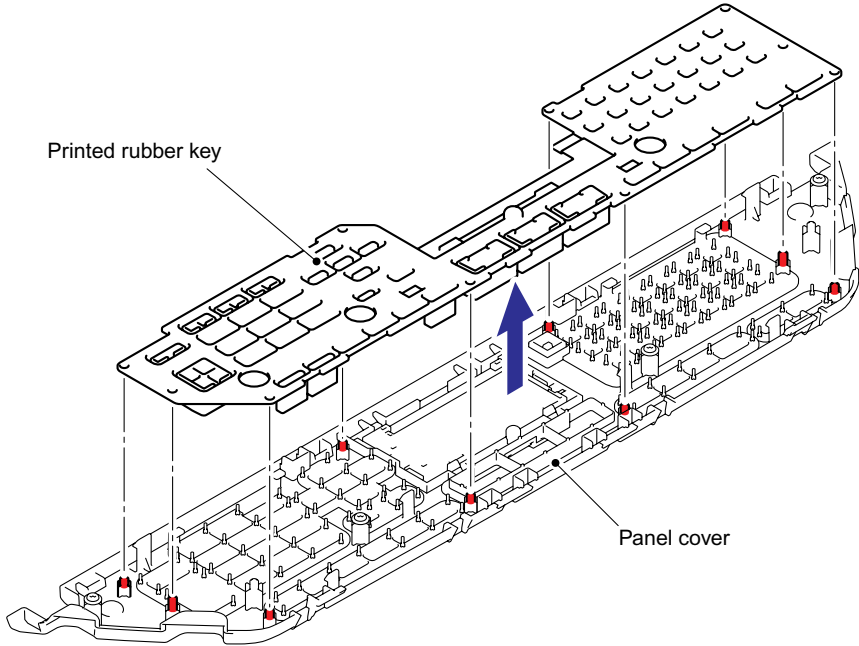


Fig. 5-114

9.57 LCD Cover/Backlight Module/LCD

- (1) Release the Hooks on the Panel cover to the direction of the arrow and remove the LCD cover from the Panel cover.
- (2) Remove the LCD ASSY.

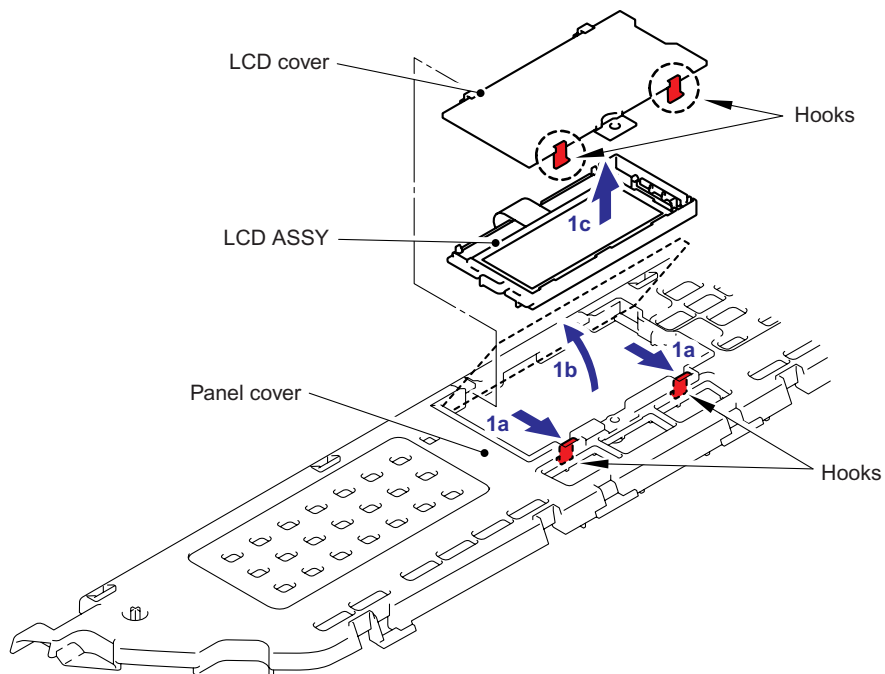


Fig. 5-115

- (3) Remove the LCD from the Backlight module.

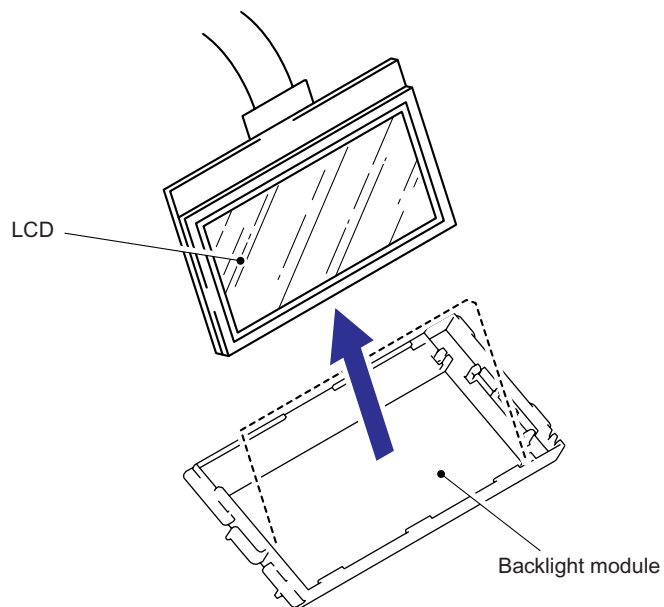


Fig. 5-116

9.58 NCU PCB ASSY (For the models with the NCU only)

(1) Disconnect the connector of the NCU harness from the Main PCB.

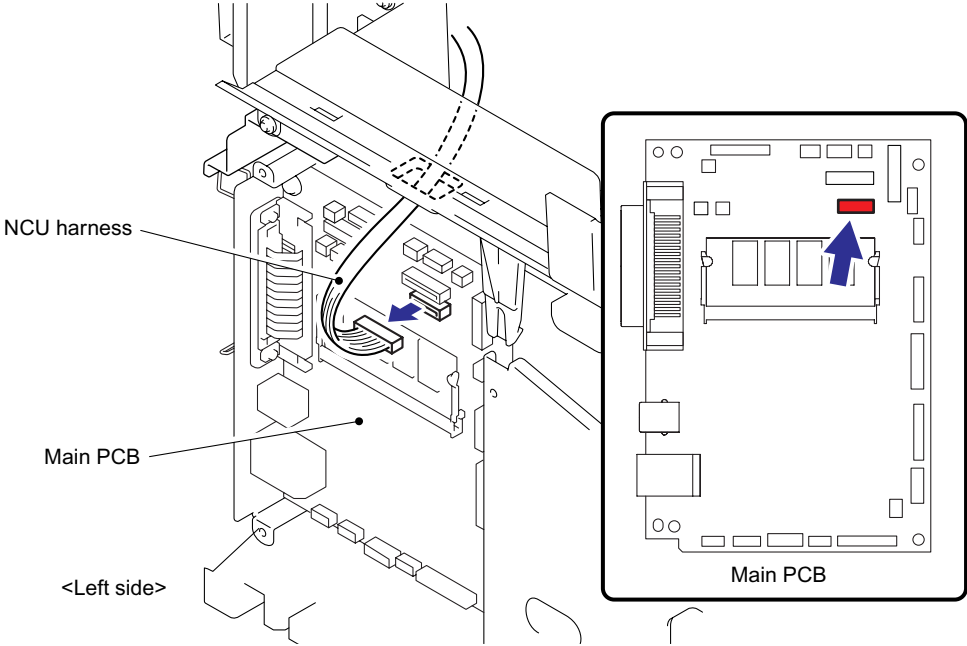


Fig. 5-117

(2) Remove the Screw pan (S/P washer) M3.5x6, and remove the NCU FG harness ASSY.

(3) Remove the two bind B M4x12 Taptite screws, and then remove the NCU unit.

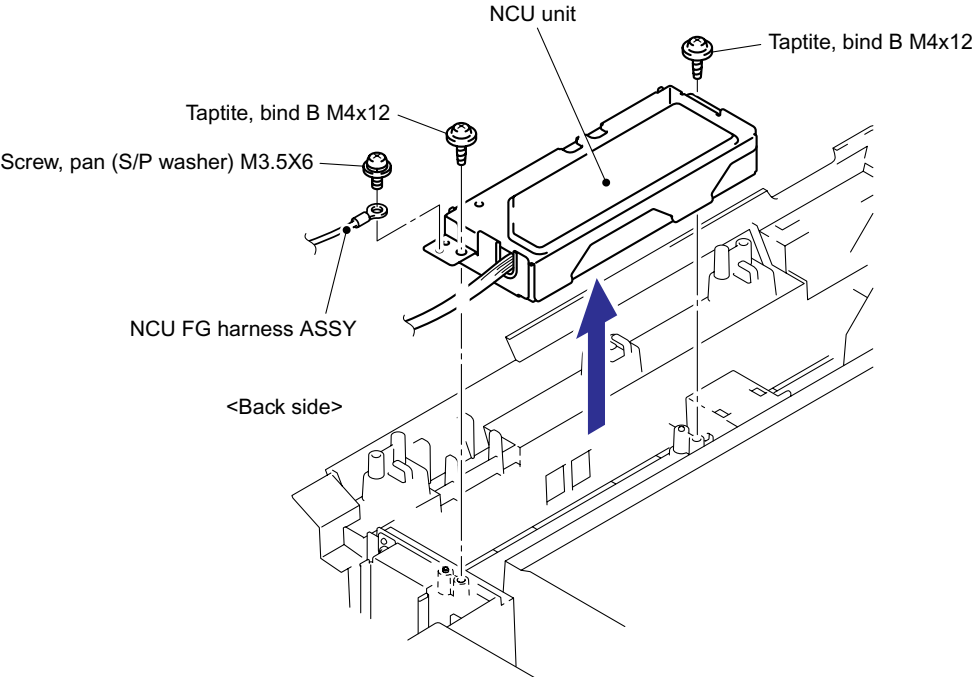


Fig. 5-118

- (4) Remove the Screw pan (S/P washer) M3.5x6 screw, and then remove the NCU shield cover.
- (5) Disconnect the connector of the NCU harness.

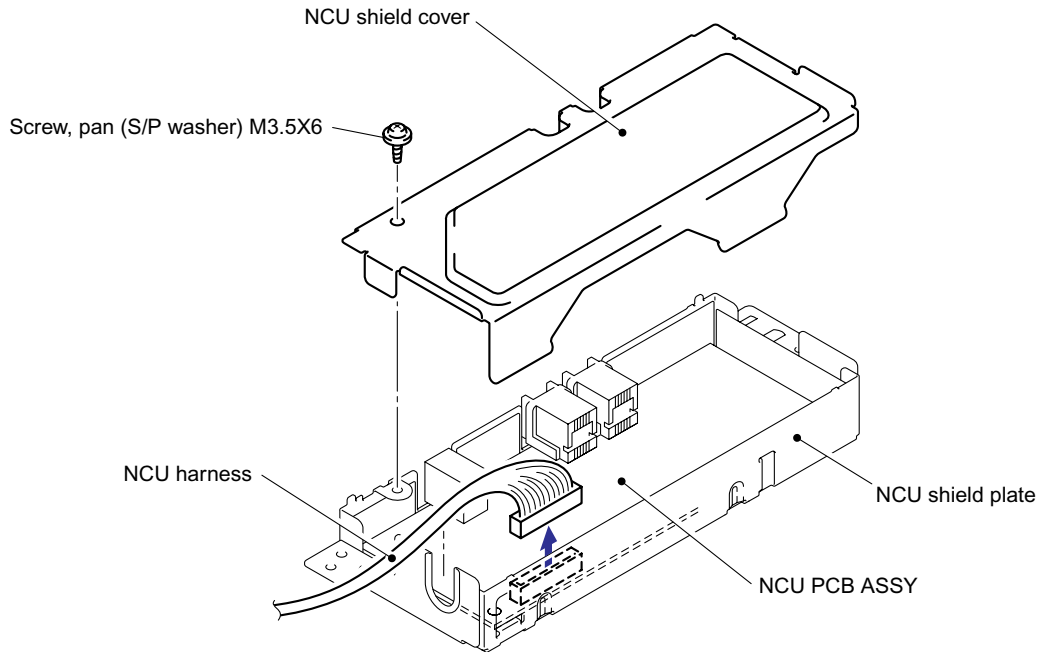


Fig. 5-119

- (6) Remove the two cup S M3x6 Taptite screws, and then remove the NCU PCB ASSY.

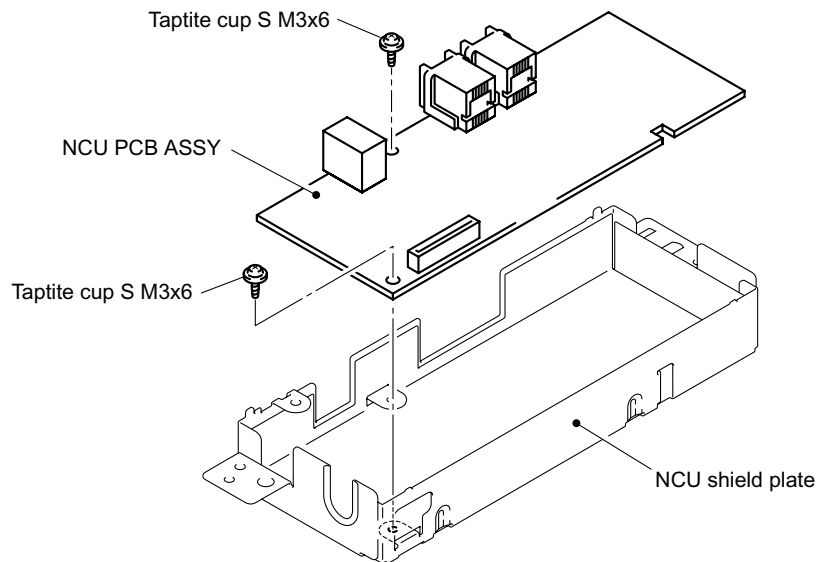


Fig. 5-120

9.59 Speaker ASSY

- (1) Disconnect the connector of the Speaker harness from the Main PCB.

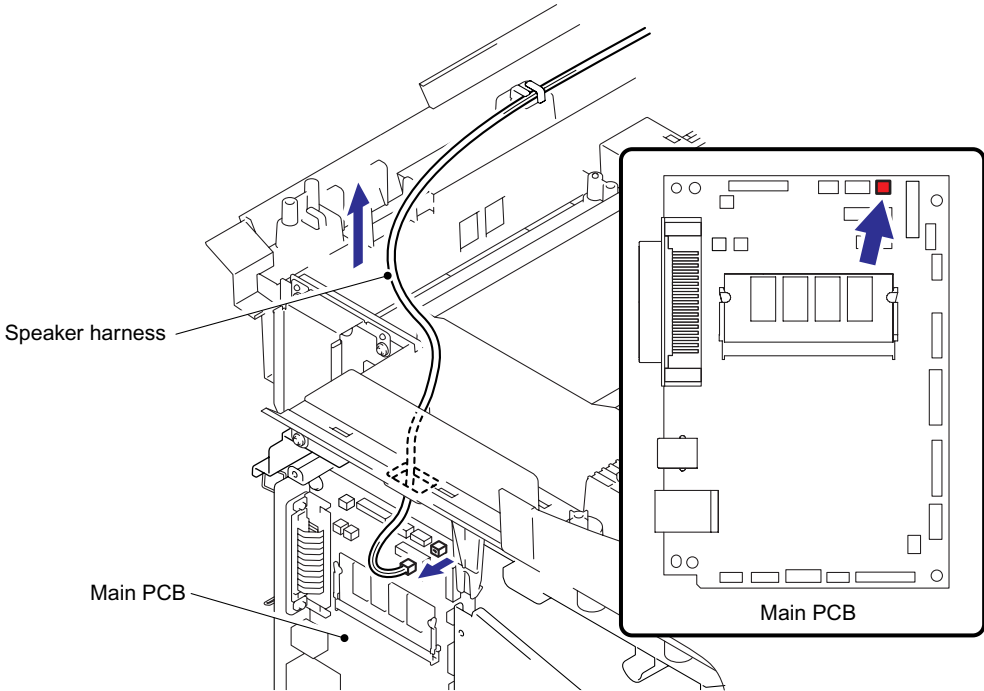


Fig. 5-121

- (2) Remove the bind B M4x12 Taptite screw.
- (3) Remove the Speaker hold spring and Speaker ASSY.

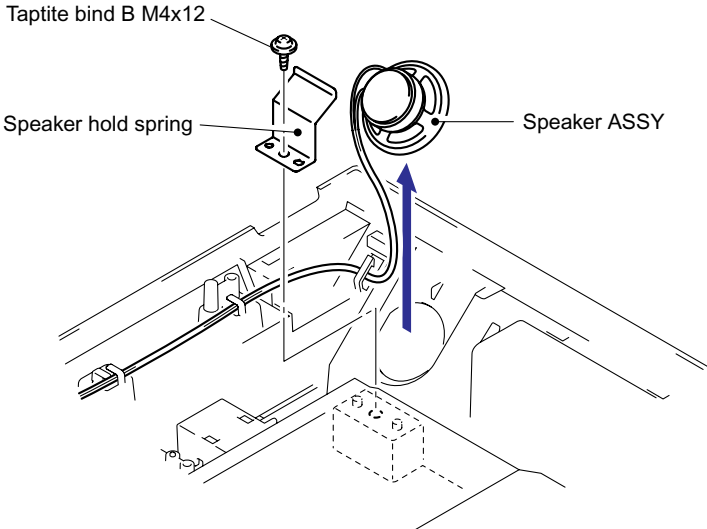


Fig. 5-122

9.60 Driver PCB

- (1) Disconnect the connector of the Driver harness from the Main PCB.

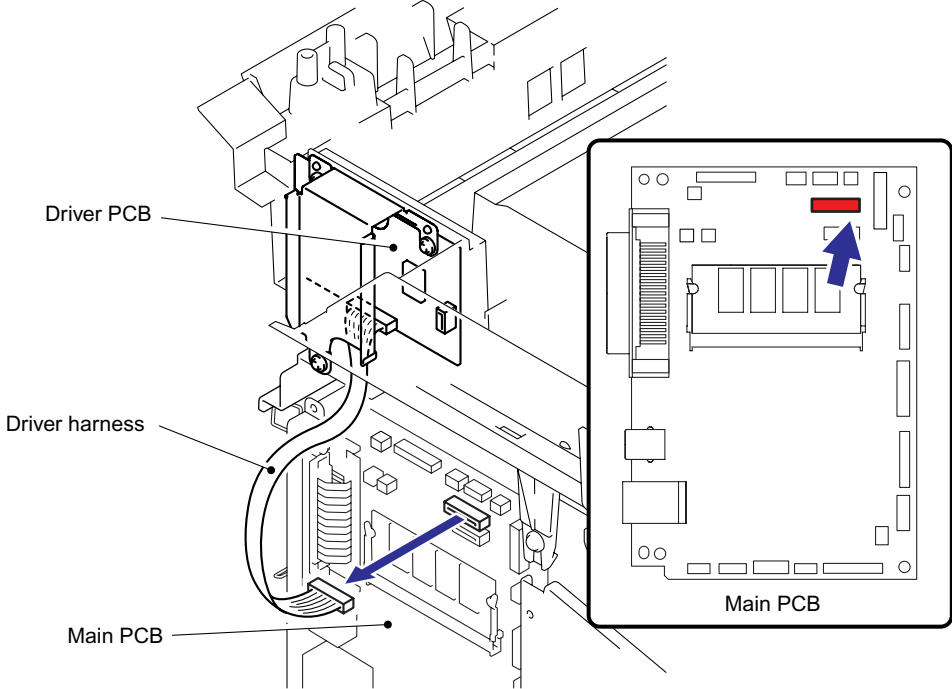


Fig. 5-123

- (2) Remove the cup S M3x6 SR Taptite screw and two cup B M3x8 Taptite screws.
- (3) Remove the Driver PCB shield and Driver PCB from the Joint cover ASSY.
- (4) Disconnect the connector of the Driver harness from the Driver PCB.

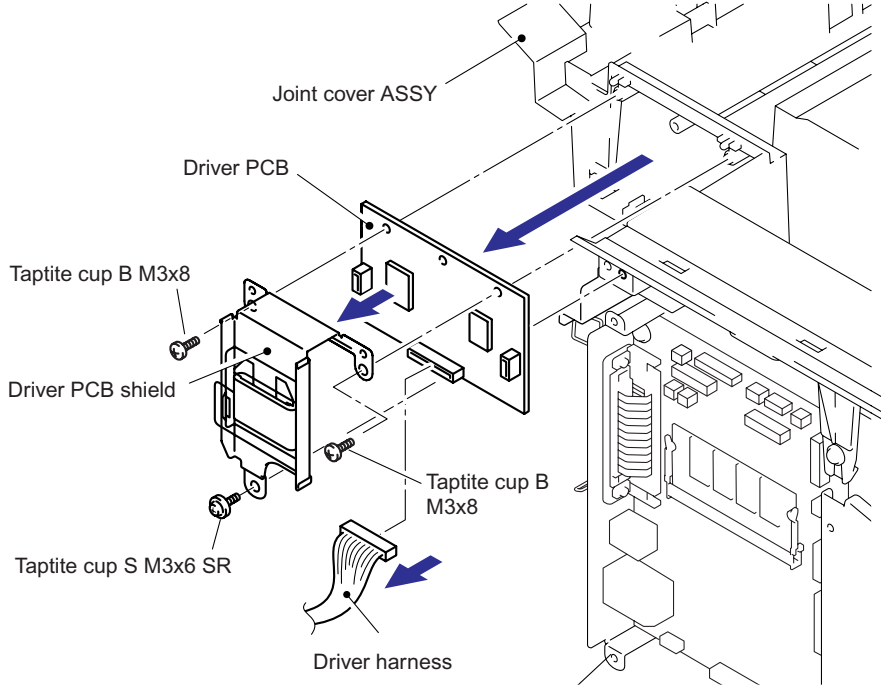


Fig. 5-124

9.61 USB HOST PCB ASSY

- (1) Disconnect the connector of the USB HOST harness ASSY from the Main PCB.

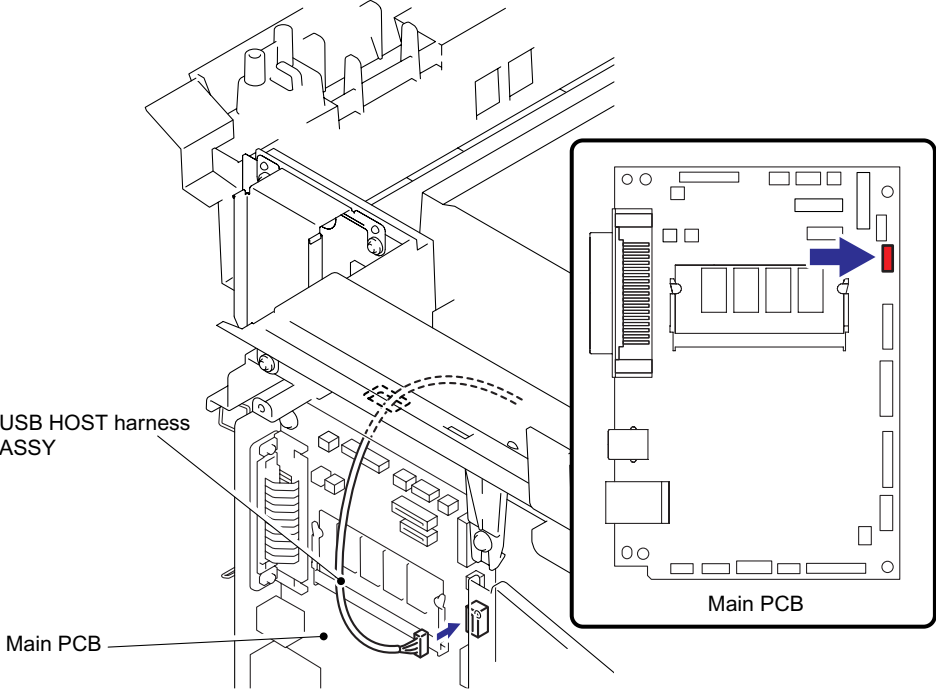


Fig. 5-125

- (2) Disconnect the connector of the USB HOST harness ASSY from the USB HOST PCB ASSY.
- (3) Remove the bind B M4x12 Taptite screw, and remove the USB HOST FG harness.
- (4) Remove the bind B M4x12 Taptite screw, and remove the USB PCB holder from the joint cover ASSY.

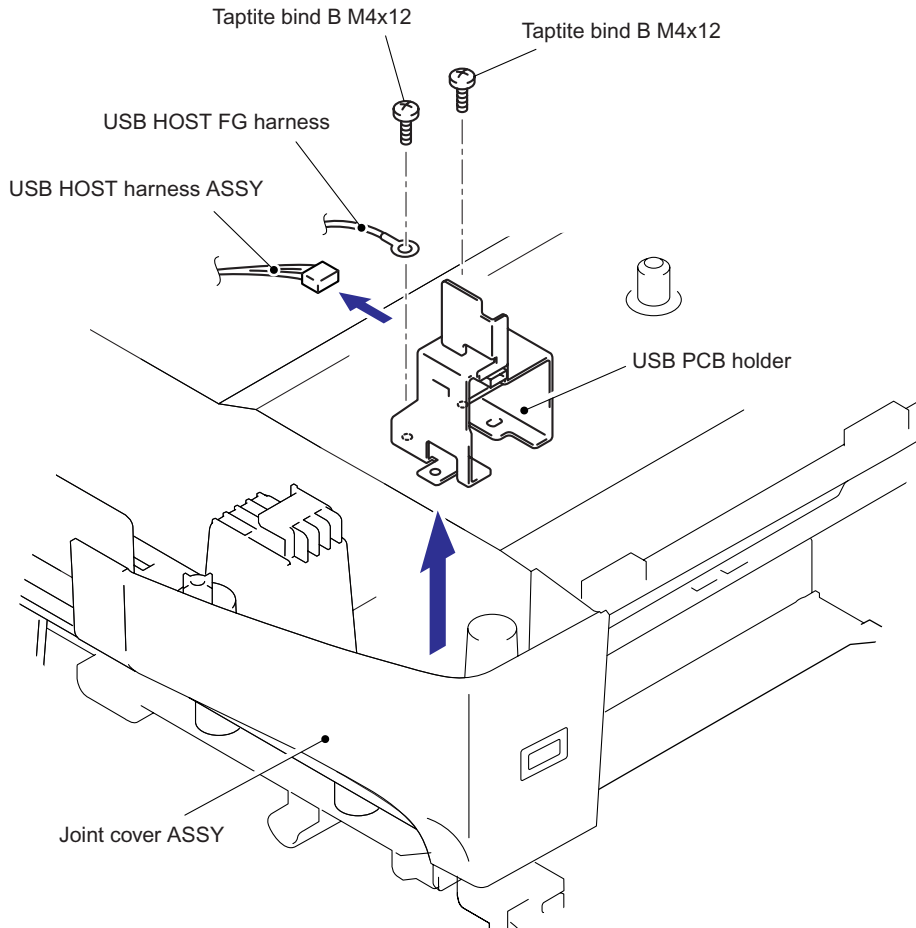


Fig. 5-126

- (5) Remove the cup S M3x6 SR Taptite screw, and remove the USB HOST PCB ASSY from the USB PCB holder.

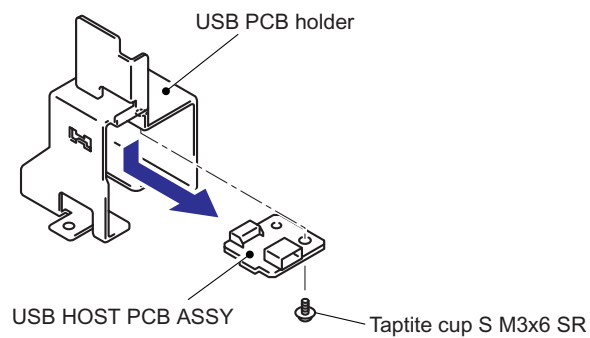


Fig. 5-127

9.62 Side Cover R

- (1) Remove the two bind B M4x12 Taptite screws, and then remove the Side cover R by following the direction from 1a to 1d.

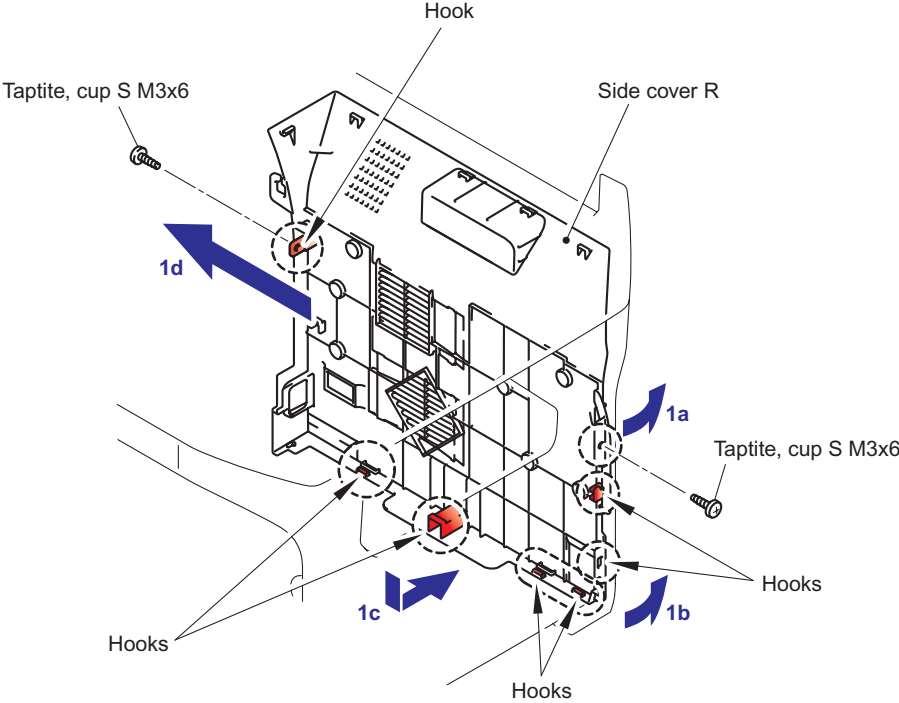


Fig. 5-128

9.63 Joint Cover ASSY

- (1) Remove the Battery. (for the model supporting the Battery only)
- (2) Disconnect the connector of the Battery.
- (3) Disconnect the connector of the Battery harness from the Main PCB, and then remove the Battery harness.

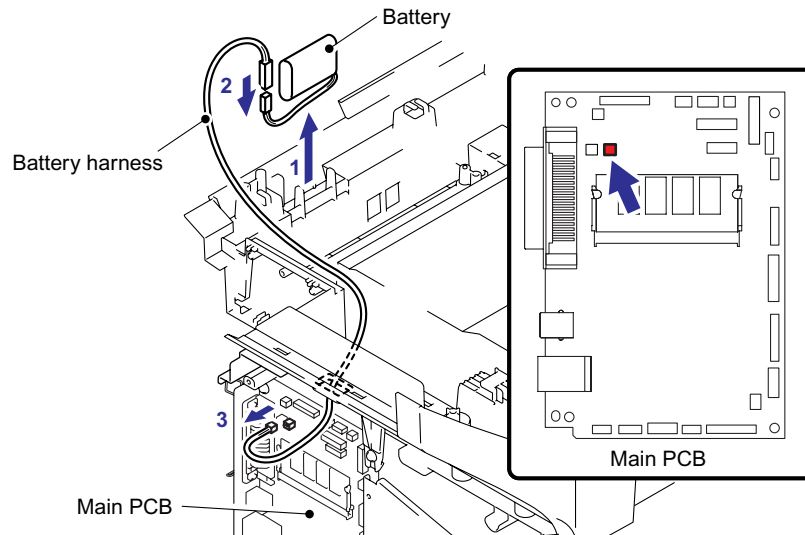


Fig. 5-129

DANGER

- Never disassemble or recharge the battery.
- Never dispose of the battery in fire.

WARNING

- There is a danger of explosion if the battery is incorrectly replaced.
- When replacing the battery, use the spare part authorized by Brother Industries.
- Batteries used should be disposed of in accordance with the local codes and regulations.

GEFAHR

- Die Batterie niemals zerlegen oder wieder aufladen.
- Die Batterie niemals durch Verbrennen entsorgen.

WARNUNG

- Wenn die Batterie inkorrekt ausgetauscht wird, besteht Explosionsgefahr.

- (4) Remove the four bind B M4x12 Taptite screws from the Joint cover ASSY.
- (5) Release all Hooks of the Joint cover and lift up the front side of the Joint cover ASSY.
- (6) Pull out the Joint cover ASSY to the front side.

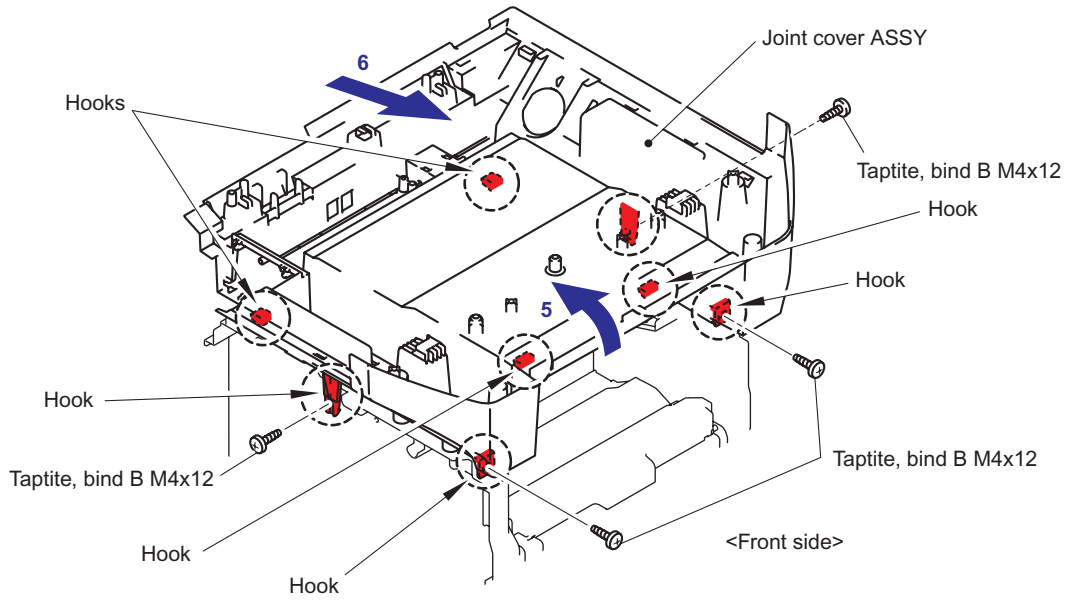


Fig. 5-130

9.64 Main PCB

- (1) Disconnect the 6 connectors and 6 flat cables from the Main PCB.

Caution:

- After disconnecting flat cable(s), check that each cable is not damaged at its end or short-circuited.
- When connecting flat cable(s), do not insert them at an angle. After insertion, check that the cables are not at an angle.

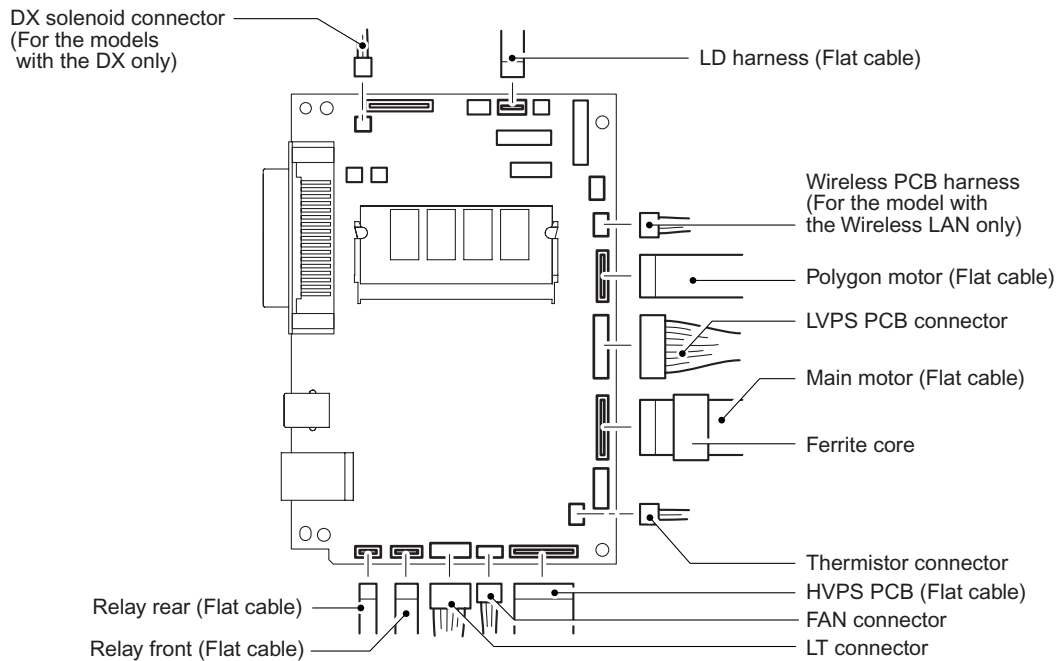


Fig. 5-131

Assembling Note:

- When assembling the Main PCB, ensure to place the Ferrite Core correctly.

(2) Remove the four cup S M3x6 Taptite screws and two Screws to remove the Main PCB.

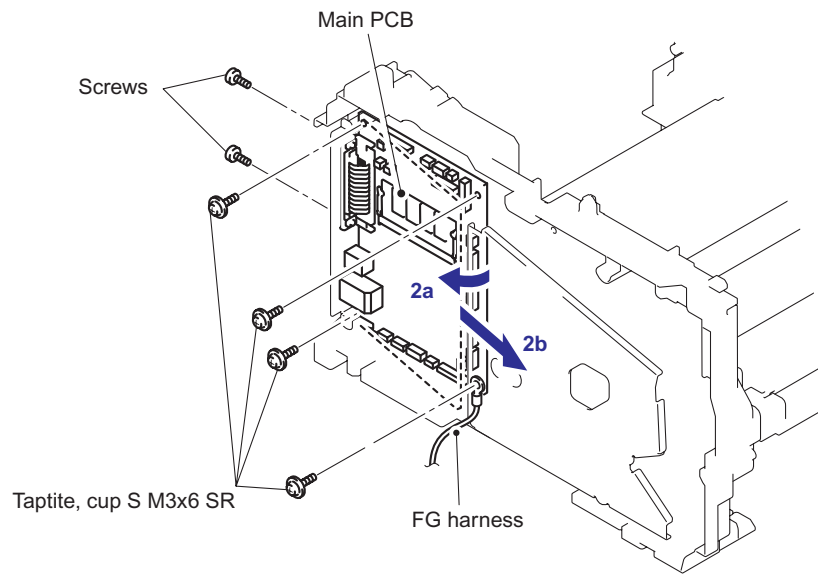


Fig. 5-132

Note:

There are procedures for disassembling Frame L after this procedure.
(9.87 FRAME L ASSY)

9.65 Gear Plate Calking ASSY/Develop Joint/Main Motor ASSY

- (1) Place the printer body so that the Frame L is at the top.
- (2) Remove the eight bind B M4x12 Taptite screws and one cup S M3x6 taptite screw.
- (3) Remove the Gear plate calking ASSY from the Frame L.

Note:

- Be careful not to drop the gear.

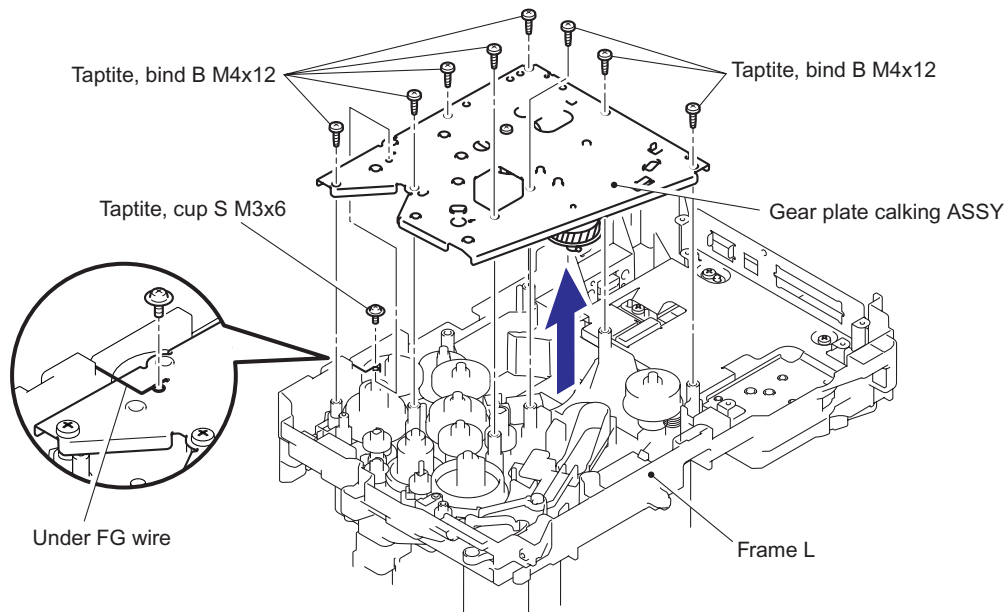


Fig. 5-133

- (4) Remove the four cup S M3x6 Taptite screws, and then remove the Main motor ASSY.

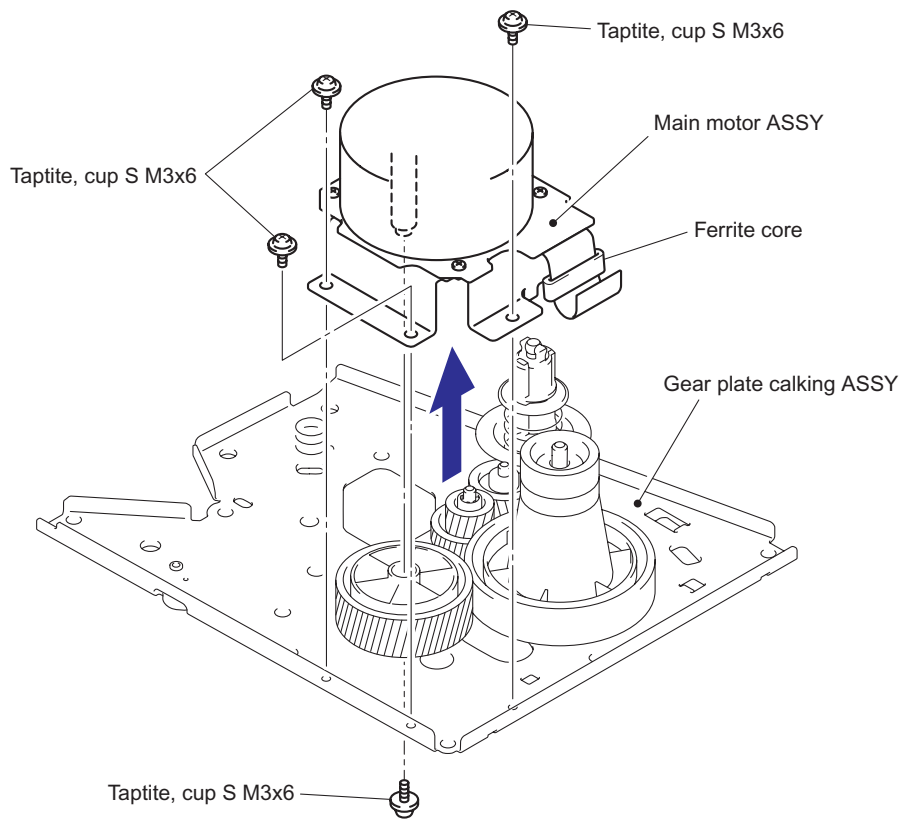


Fig. 5-134

- (5) Remove the Develop joint from the Gear plate calking ASSY.

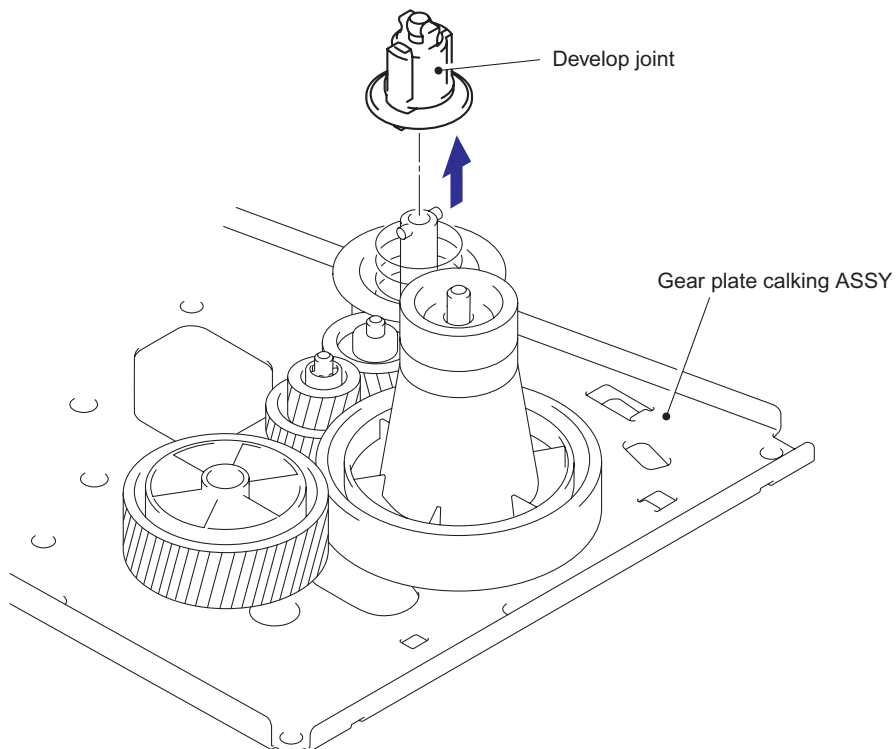


Fig. 5-135

9.66 Main Shield Plate ASSY

- (1) Remove the Insulation sheet.
- (2) Pull out the Flat cable from the Ferrite core.
- (3) Remove the Main PCB sheet.

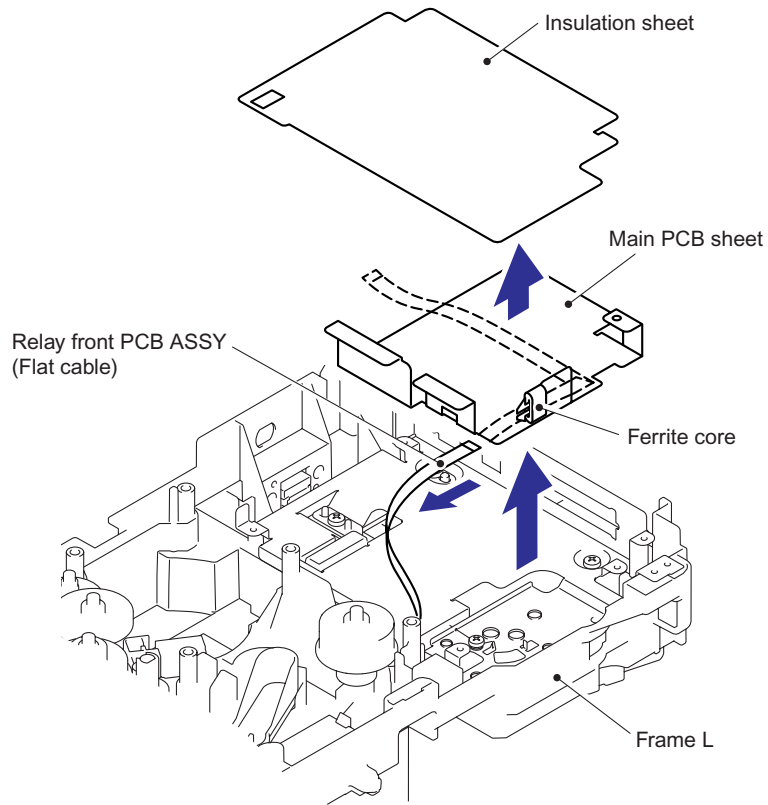


Fig. 5-136

(4) Remove the two bind B M4x12 Taptite screws, and then remove the Plate.

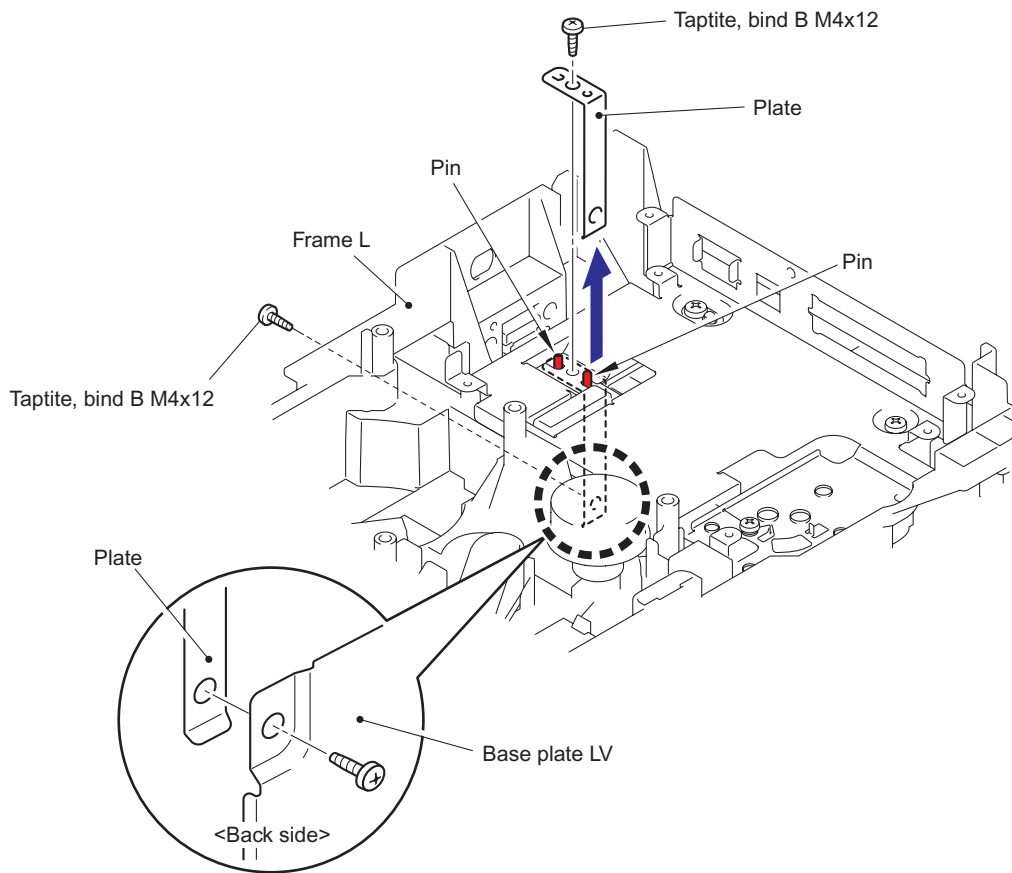


Fig. 5-137

Assembling Note:

- When assembling the Plate, ensure to put the Plate into the base plate LV.
- When assembling the Plate, secure the screw at the Frame L side first, then the screw at the base plate LV side.

- (5) Remove the three bind B M4x12 Taptite screws and cup S M3x6 Taptite screw, and then remove the Main shield plate ASSY.

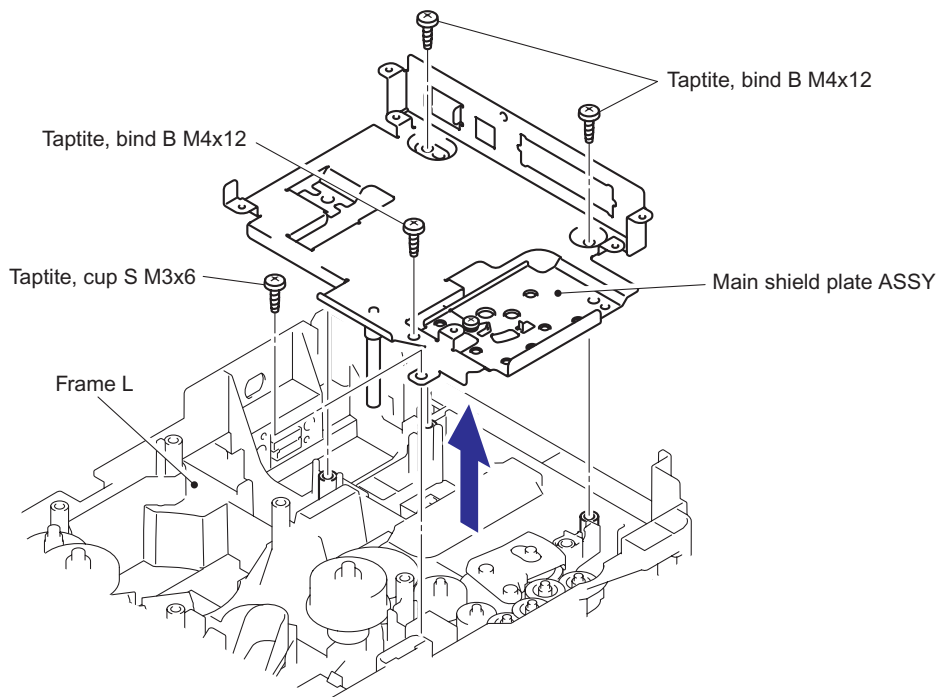


Fig. 5-138

Assembling Note:

- Hang the Tip of the Switch arm spring of the Main shield plate on the Eject gear 28 sector.

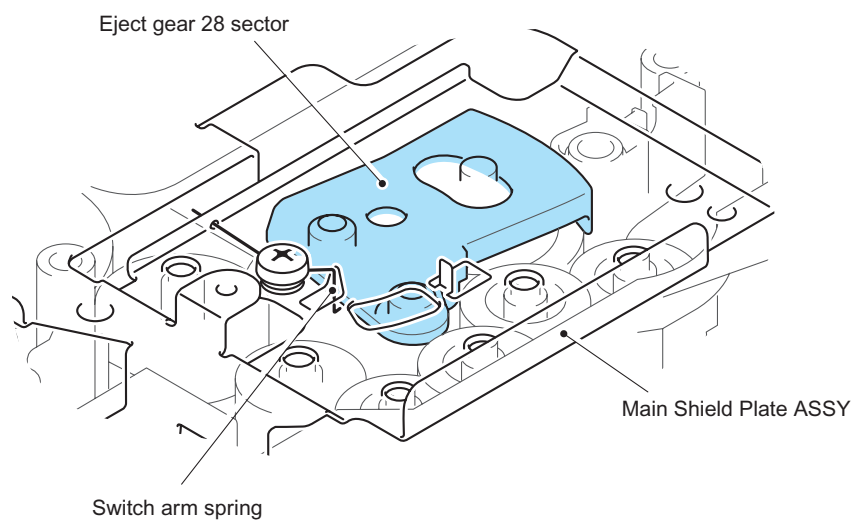


Fig. 5-139

9.67 Relay Rear PCB ASSY/Connector

(1) Remove the Relay rear PCB ASSY (Include the DX sensor).

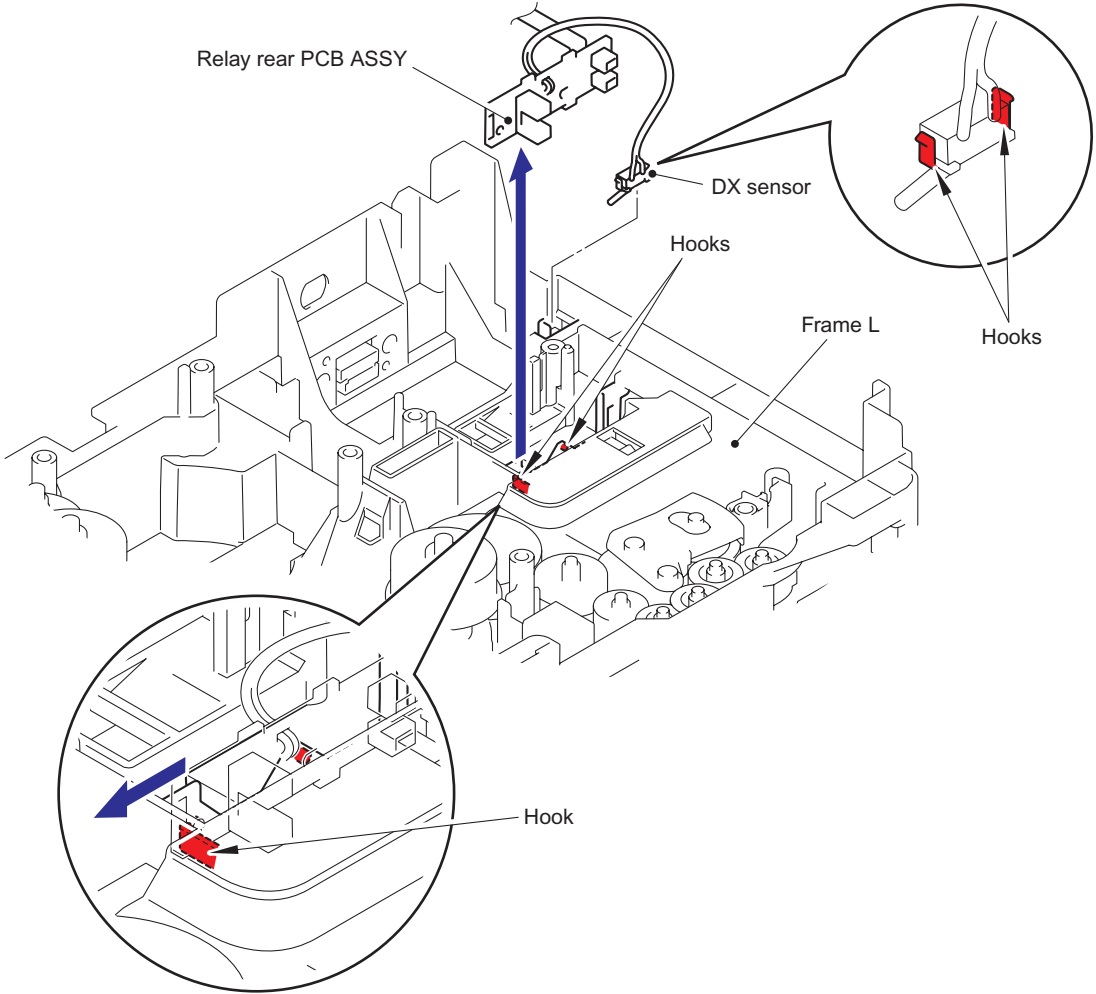


Fig. 5-140

- (2) Remove the Connector harness.
- (3) Disconnect the LT connector while pressing the Hook inwards.

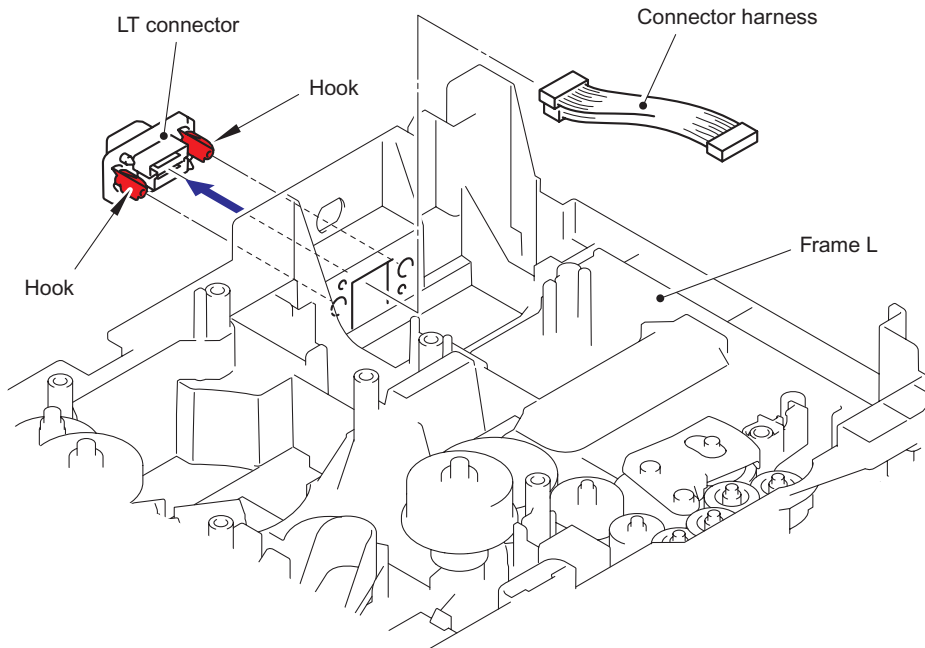


Fig. 5-141

Assembling Note:

- When assembling the LT connector, ensure that its direction is correct referring to the figure below.

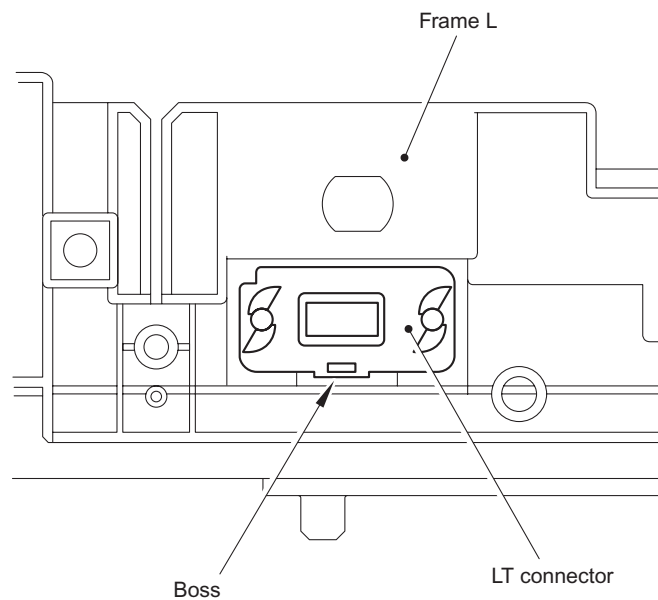


Fig. 5-142

9.68 Relay Front PCB ASSY

- (1) Remove the Relay front PCB ASSY.
- (2) Disconnect the five connectors from the Relay front PCB ASSY.

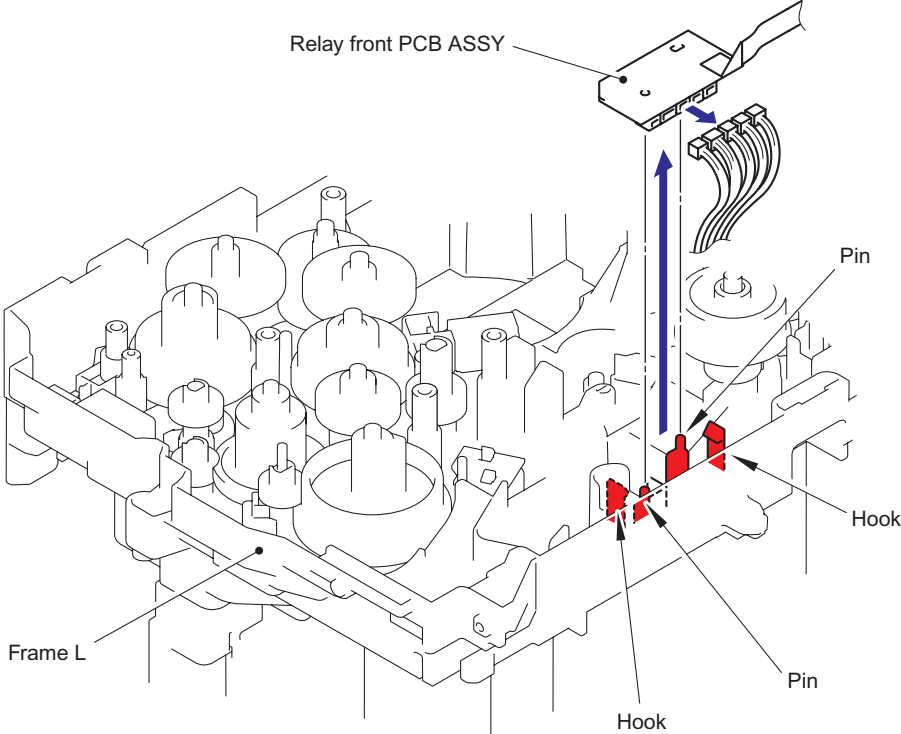


Fig. 5-143

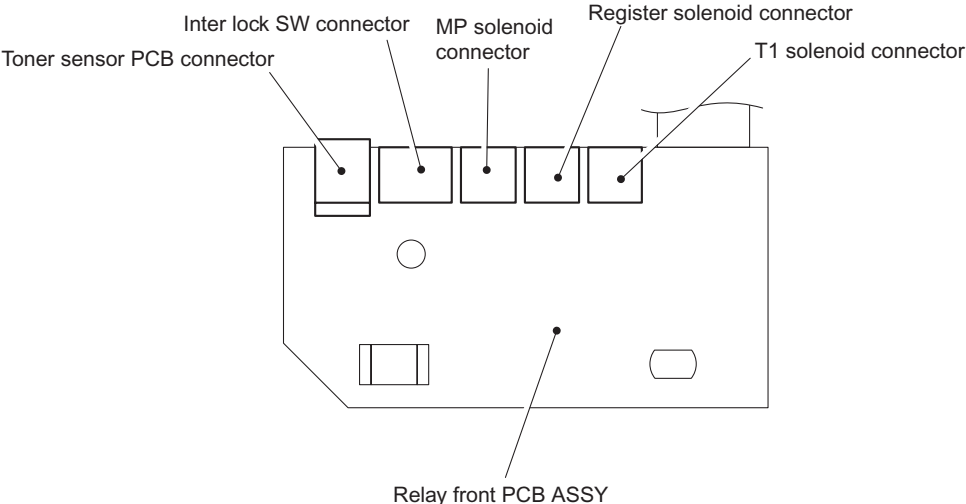


Fig. 5-144

9.69 Drive Release Link

- (1) Remove the bind B M3x10 Taptite screw.
- (2) Lift up the back end of the Drive release cam slightly while lifting up the MP solenoid lever and the MP solenoid ASSY and remove them from the Frame L.
- (3) Turn the Drive release link to the direction of the arrow 3 until the groove of the Drive release link is aligned with the boss of the Frame L.
- (4) Remove the Drive release cam.

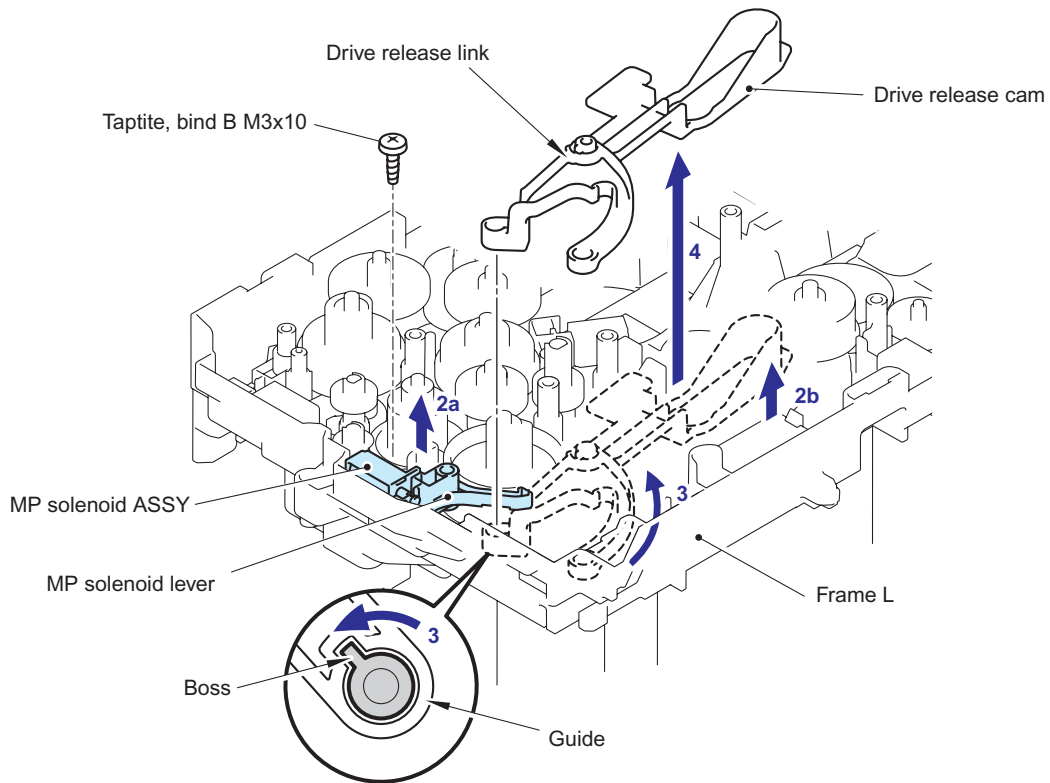


Fig. 5-145

9.70 MP Solenoid ASSY

- (1) Remove the cup B M3x8 Taptite screw, and then remove the Spring.

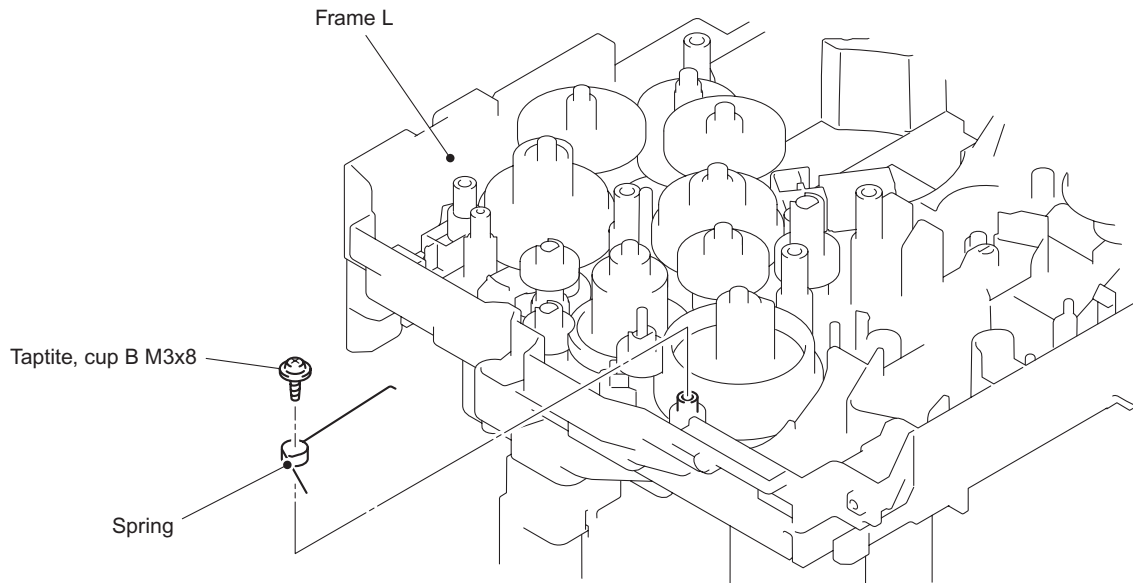


Fig. 5-146

Assembling Note:

- When assembling the Spring, ensure that its direction is correct referring to the figure below.

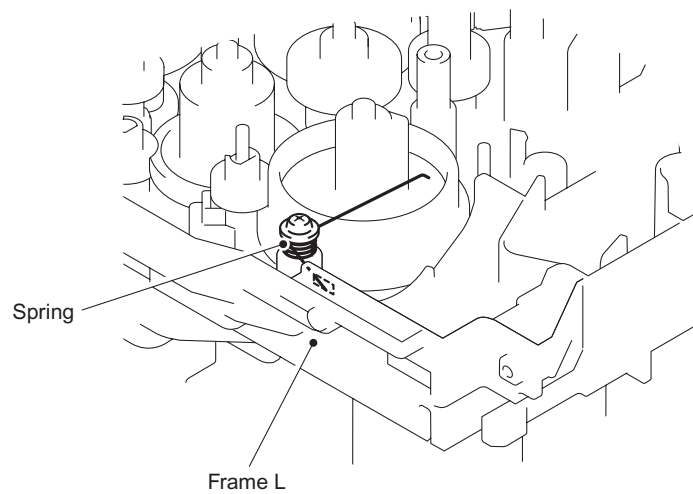


Fig. 5-147

- (2) Remove the MP solenoid ASSY, Solenoid release spring P/R and MP solenoid lever.

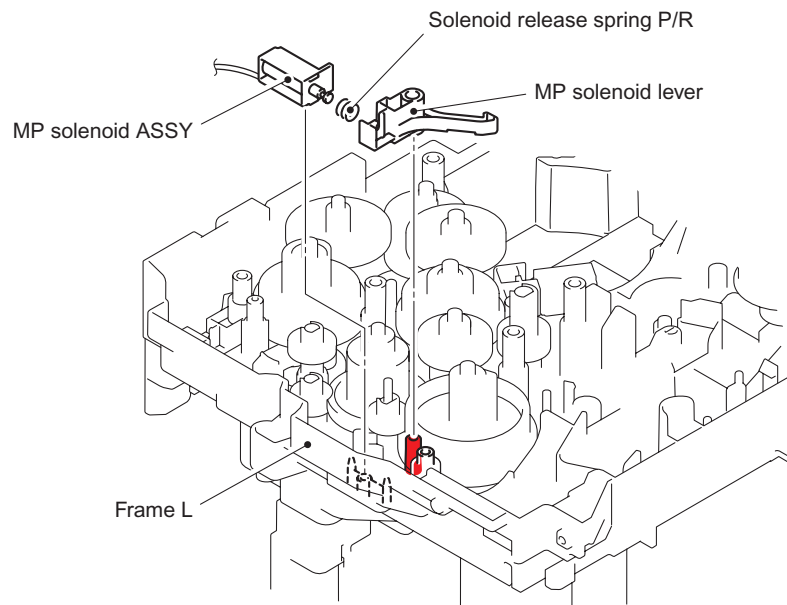


Fig. 5-148

9.71 T1 Solenoid ASSY

- (1) Remove the bind B M3x10 Taptite screw.
(2) Remove the T1 solenoid ASSY and the Solenoid release spring.

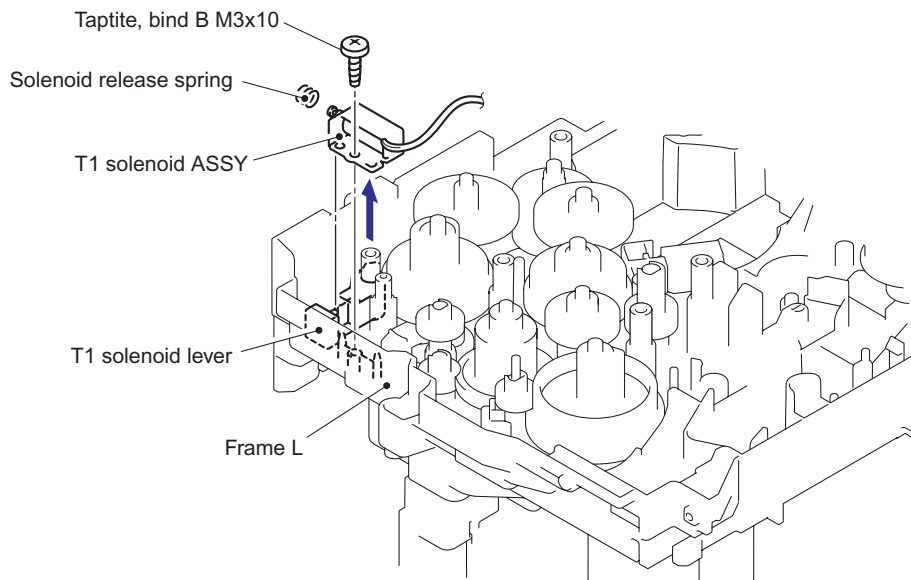


Fig. 5-149

9.72 Toner Sensor PCB

- (1) Remove the Toner sensor PCB unit ASSY from the Frame L.

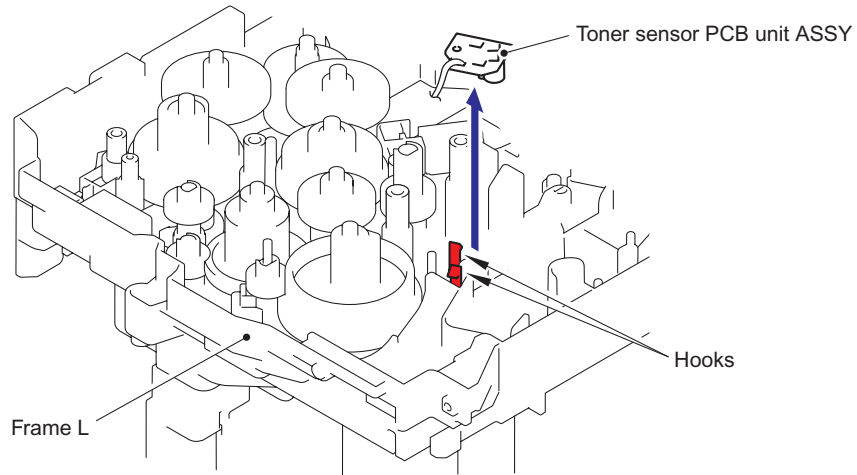


Fig. 5-150

- (2) Remove the PT sensor holder from the Toner sensor PCB ASSY.

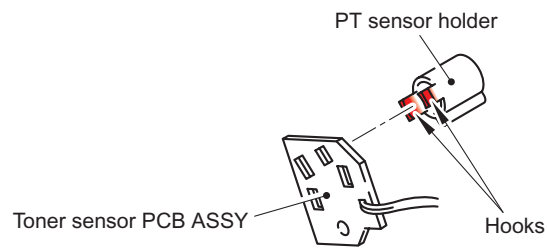


Fig. 5-151

9.73 Register Solenoid ASSY

- (1) Remove the bind B M3x10 Taptite screw.
- (2) Remove the Register solenoid ASSY and the Solenoid release spring.

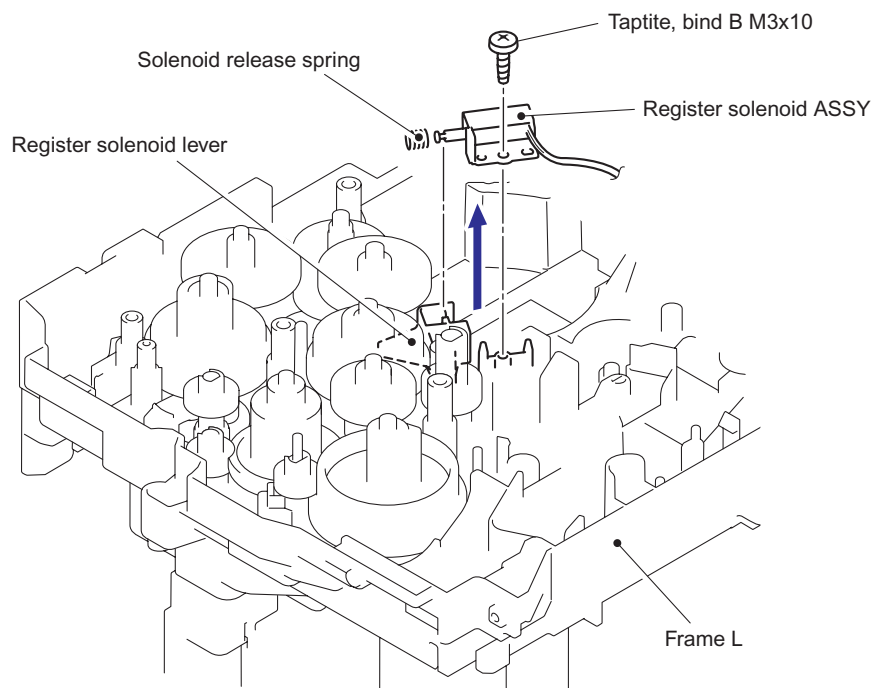


Fig. 5-152

9.74 Ejector Solenoid ASSY

- (1) Remove the bind B M3x10 Taptite screw.
- (2) Remove the Ejector solenoid and the Solenoid release spring.

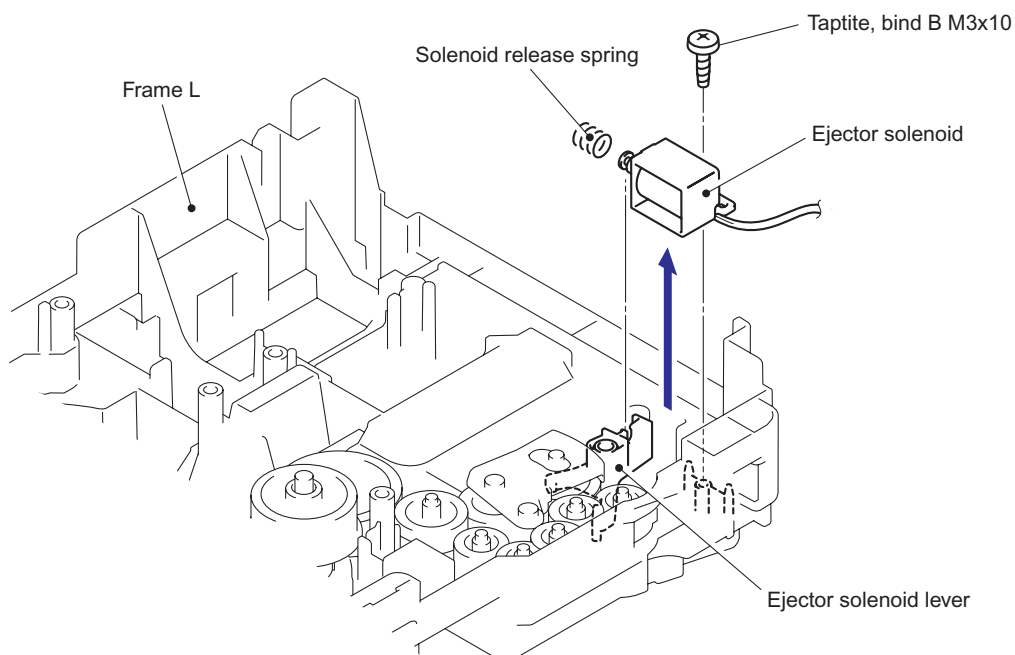


Fig. 5-153

9.75 Interlock SW ASSY

- (1) Remove the Interlock SW ASSY from the Frame L.

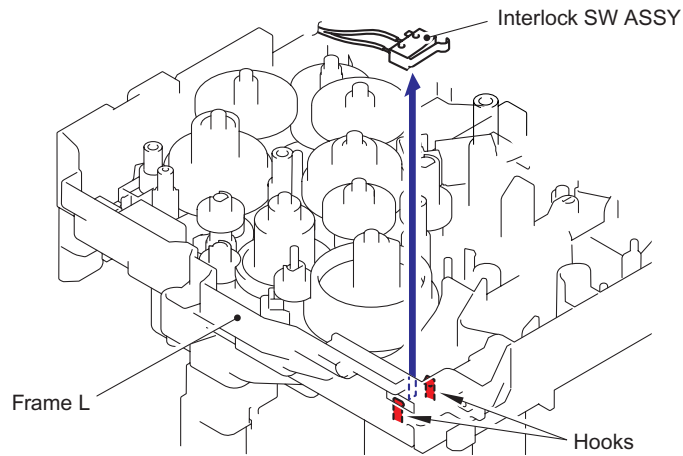


Fig. 5-154

9.76 New Toner Actuator

- (1) Remove the cup B M2x6 Taptite screw.
- (2) Remove the New toner actuator and the New toner actuator spring.

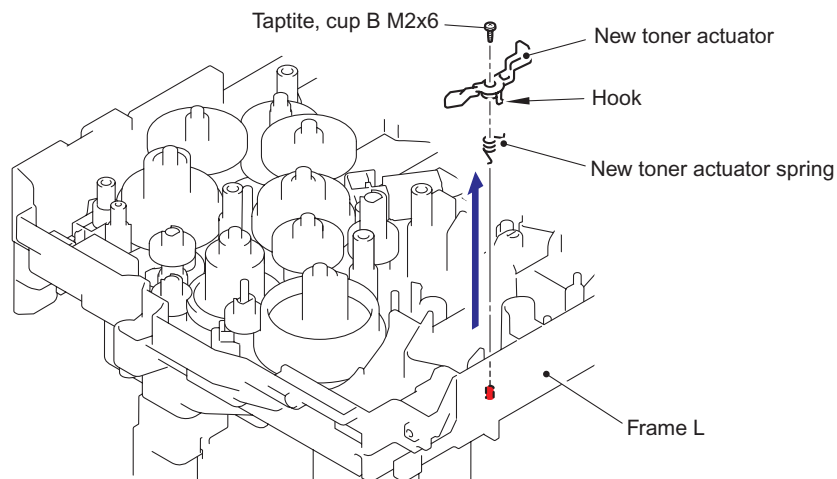


Fig. 5-155

Assembling Note:

- When assembling the New toner actuator spring, ensure that its direction is correct referring to the figure below.

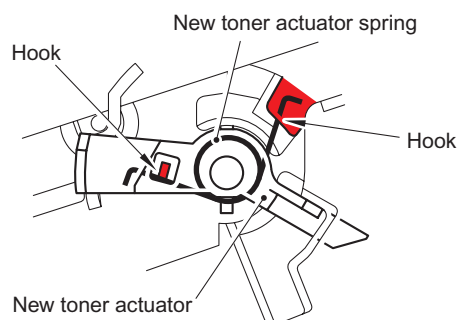


Fig. 5-156

9.77 Gear 17/20/23

(1) Remove the Gear 23.

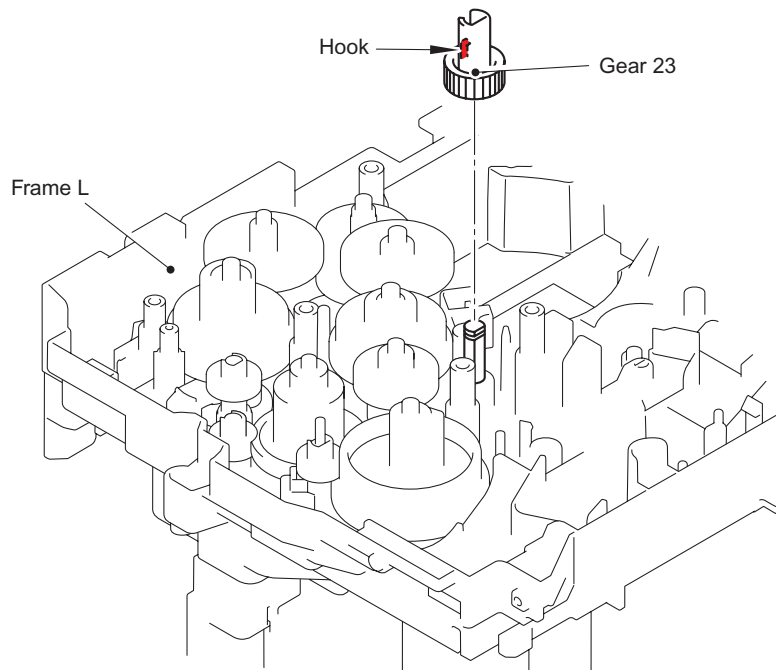


Fig. 5-157

(2) Remove the Gear 20.

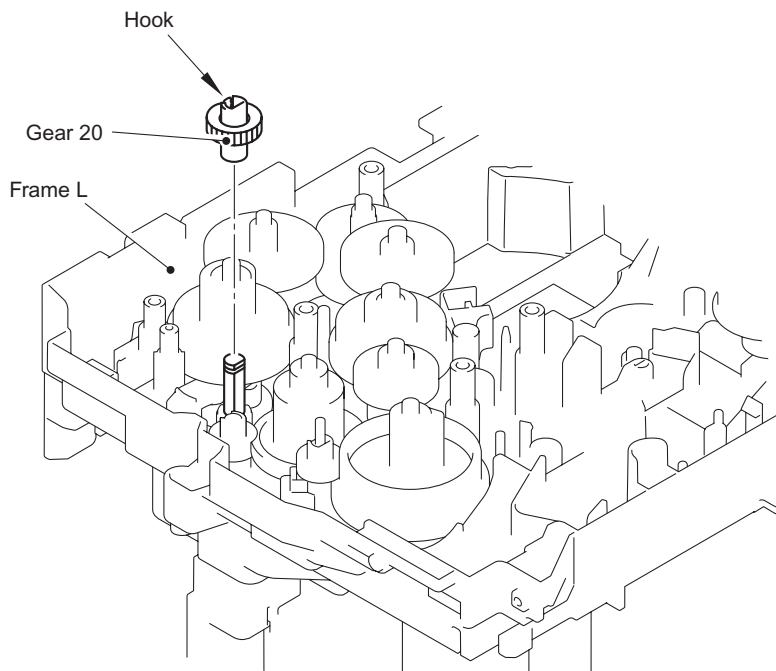


Fig. 5-158

(3) Remove the Gear 17 (black).

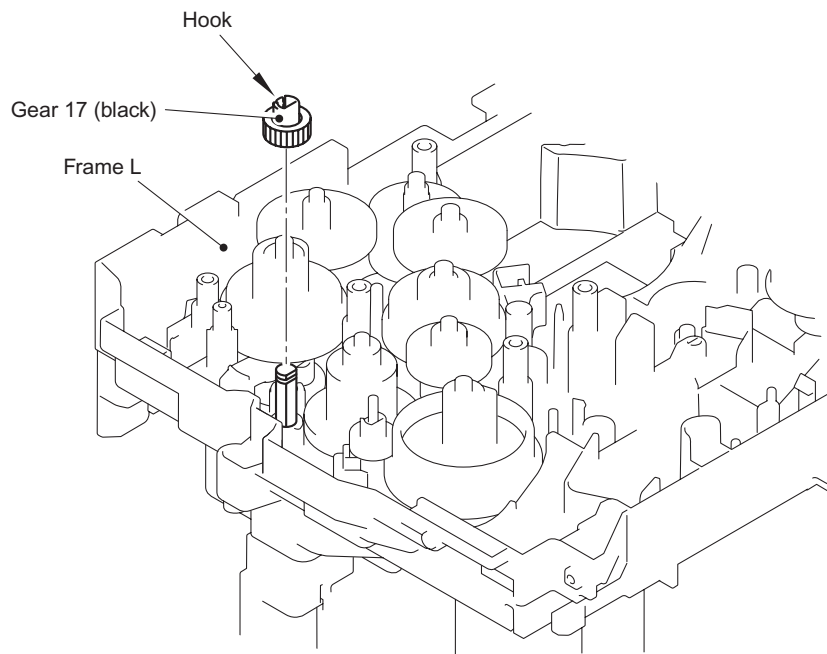


Fig. 5-159

(4) Remove the Gear 17 (white).

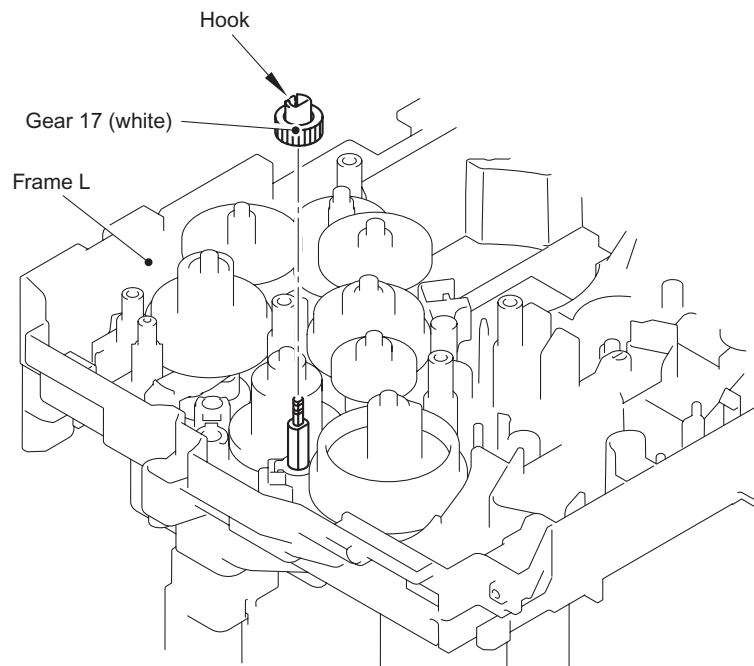


Fig. 5-160

9.78 Thermistor ASSY

(1) Remove the Thermistor ASSY from the Frame L.

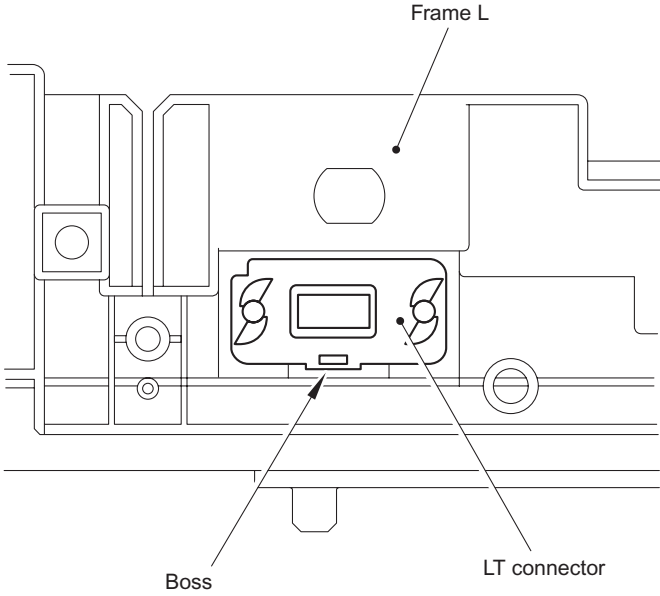


Fig. 5-161

9.79 Filter

- (1) Slide the Sub duct to the direction of 1b while pressing the Hook to the direction of 1a and remove the Sub duct from the Air duct.

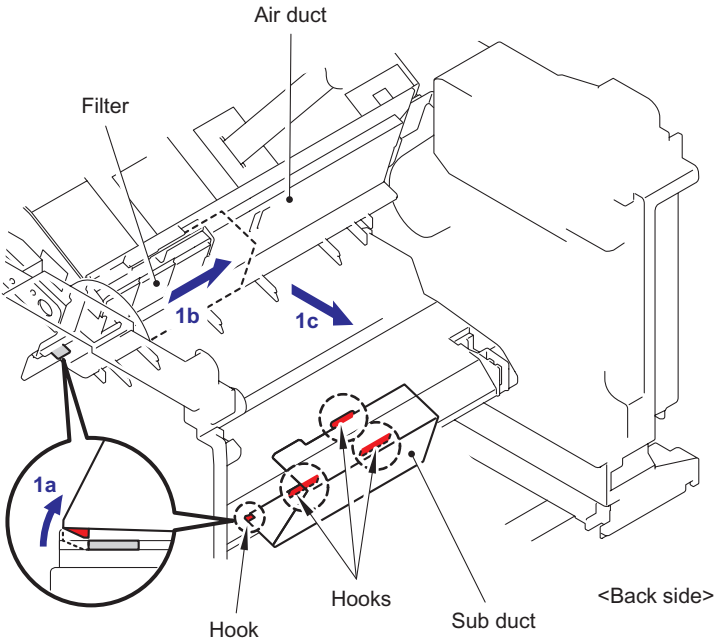


Fig. 5-162

- (2) Remove the Filter from the Air duct.

Note:

- The filter is dirt. Be careful when disassembling or assembling it.

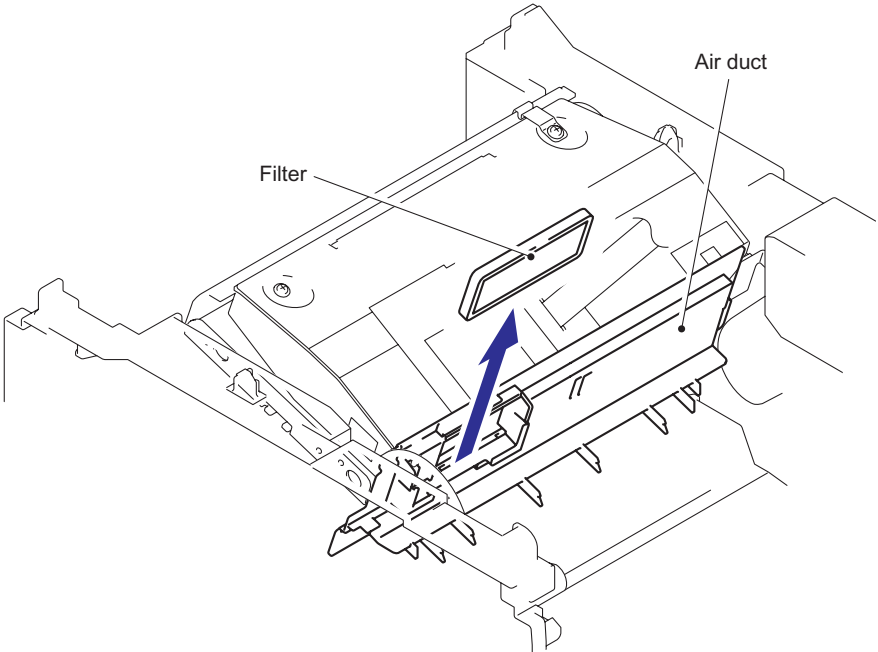


Fig. 5-163

9.80 Laser Unit

- (1) Remove the Hooks of the Air duct from the frame. Slide the Air duct to the direction of 1b and remove the Air duct.

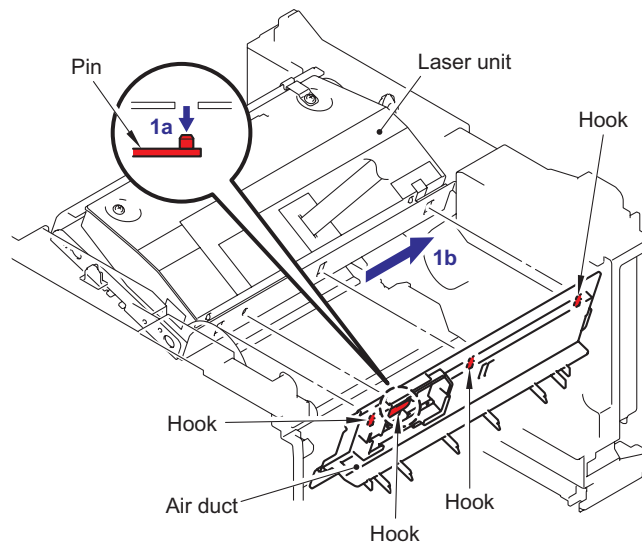


Fig. 5-164

- (2) Remove the five cup S M3x6 Taptite screws.
(The left back screw has already remove at "8.13 Main Shield Plate ASSY")
- (3) Remove the Protective film from the Flat cable.
- (4) Pull out the two Flat cables from the Core.
- (5) Remove the Laser unit.

Note:

- Be careful not to lose the Protective film attached on the flat cable.
- Do not touch the Laser scanner window directly.

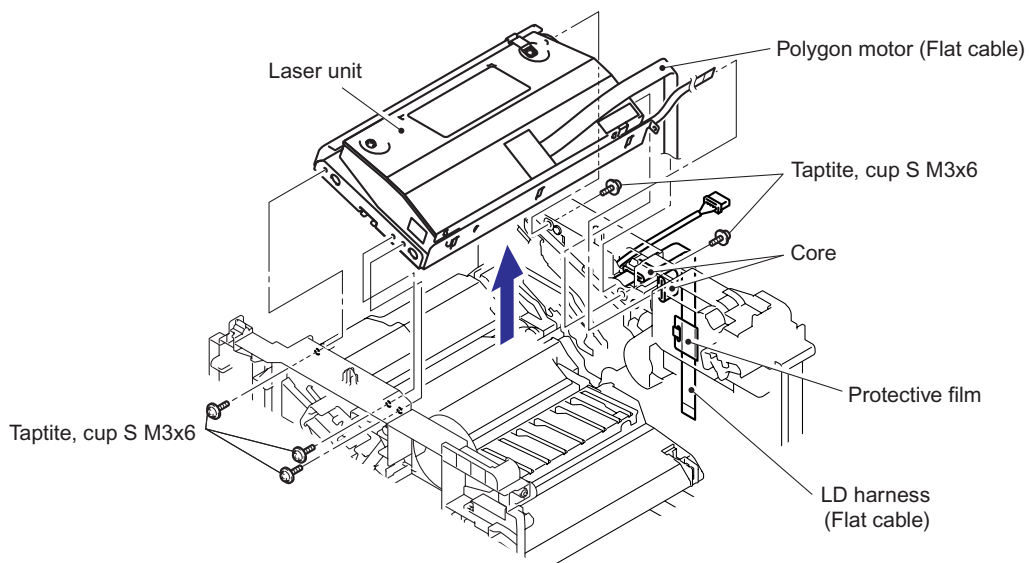


Fig. 5-165

Assembling Note:

- Before assembling the Laser unit, make sure put on the Core.

9.81 PS PCB Unit

- (1) Turn the Printer upside down.
- (2) Remove the Screw pan (S/P washer) M3.5x7.5SR, and remove the NCU FG harness.
- (3) Remove the five bind B M4x12 Taptite screws, and then remove the Base plate LV.
- (4) Remove the Screw pan (S/P washer) M3.5x7.5SR from the Base plate LV to remove the PS PCB unit terminal.

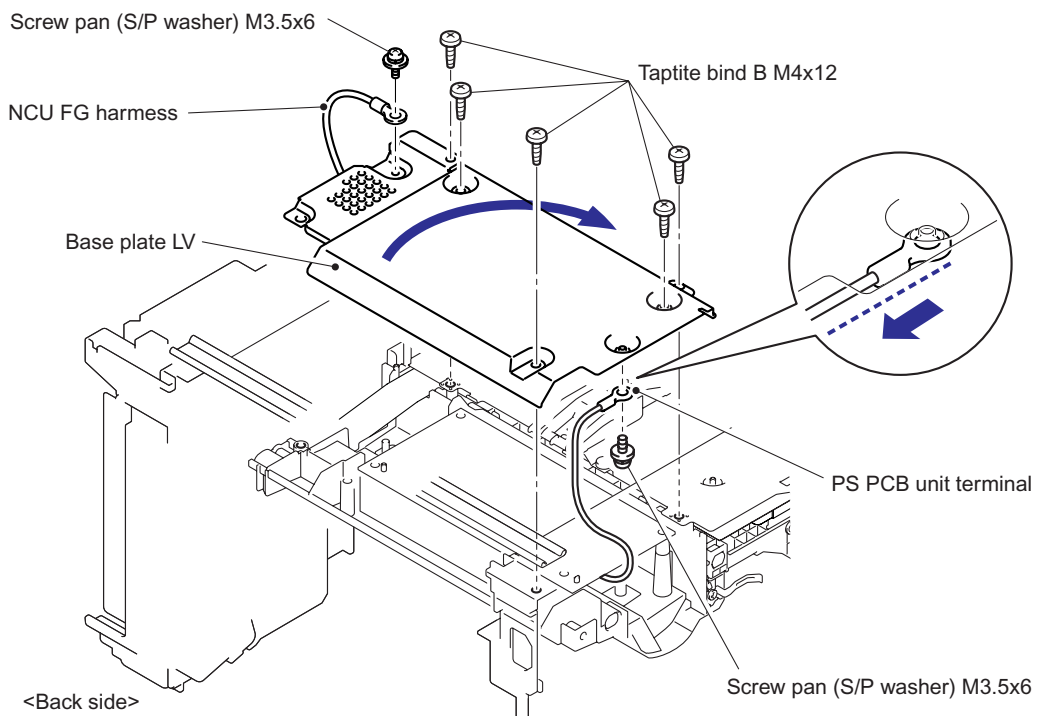


Fig. 5-166

Assembling Note:

- When assembling the Base plate LV, Direct the cable side of the PS PCB unit terminal to the backward, and align parallel the PS PCB unit terminal with the side of the Base plate LV.

- (5) Remove the two bind B M4x12 Taptite screws, and then remove the LV insulation sheet.

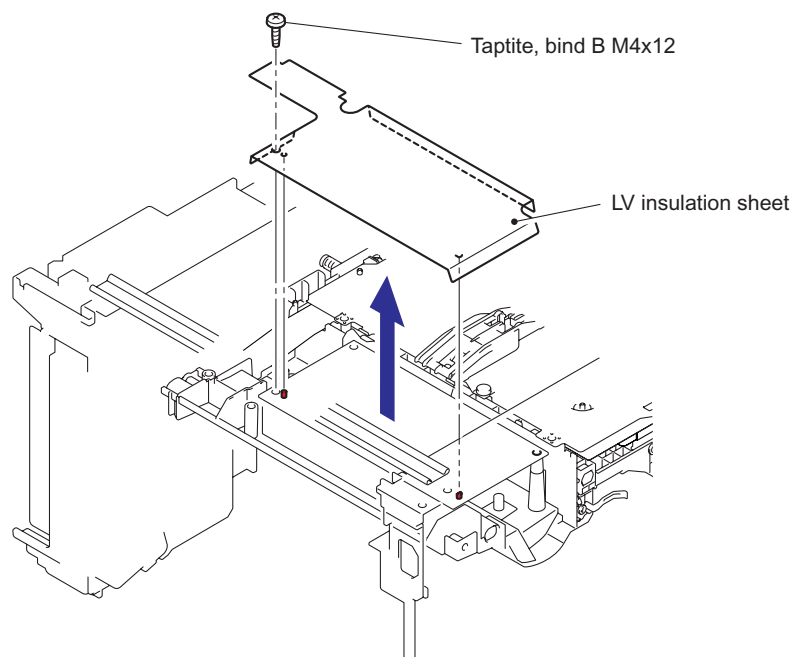


Fig. 5-167

- (6) Remove the bind B M4x12 Taptite screw, and then remove the SW holder ASSY.
- (7) Float the Fan motor 60 unit LV from the Frame R.

Note:

- Do not remove the Fan motor 60 unit LV at the above step.

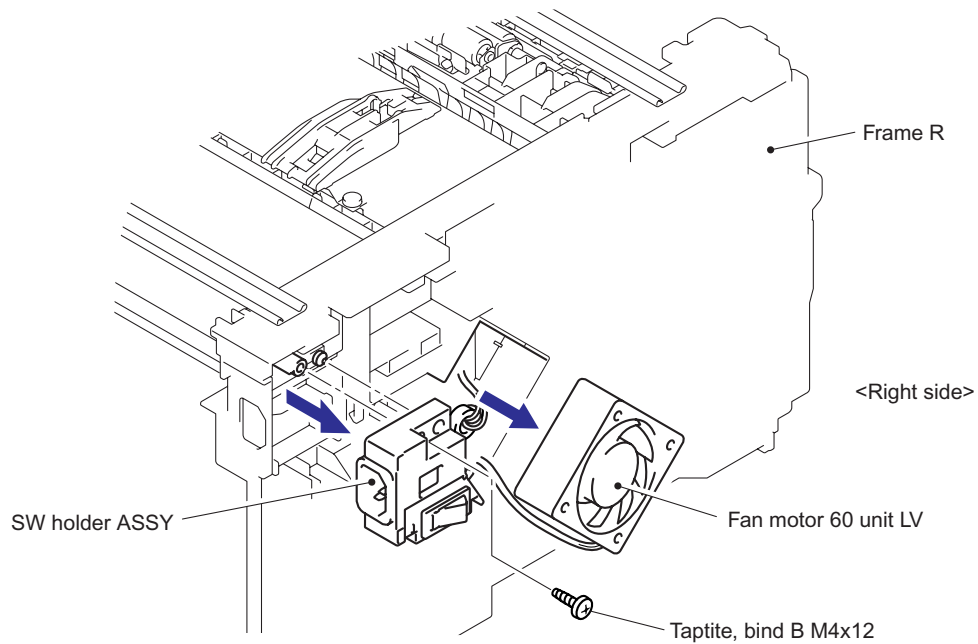


Fig. 5-168

(8) Remove the bind B M3x10 Taptite screw, and remove the Safety louver.

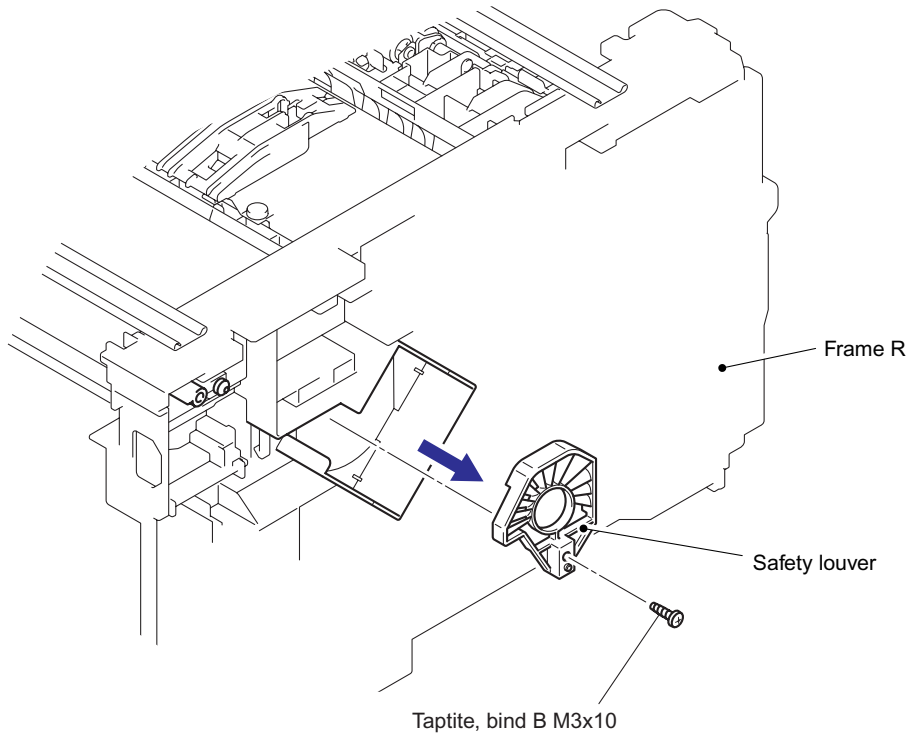


Fig. 5-169

(9) Remove the Inlet harness ASSY from the SW holder.

(10) Press the Hooks on both sides of the Power supply switch, pull out the Power supply switch to the direction of 10a and pull the wire out of the groove on the SW holder.

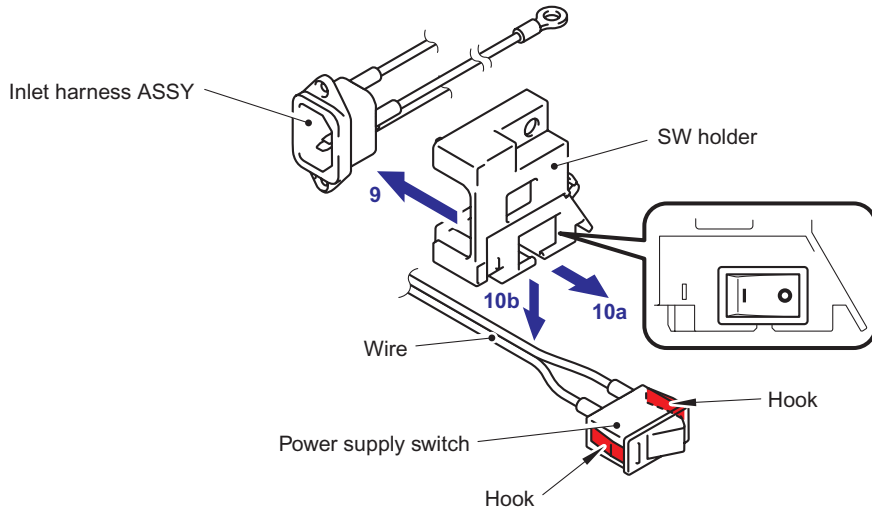


Fig. 5-170

Assembling Note:

- When assembling the power supply switch onto the SW holder, give attention to the direction of the switch.
- Align the “ I ” of the power supply switch with the “ I ” of the SW holder to attach the power supply switch

- (11) Remove the harness of the fuser unit and power supply harness.
- (12) Put each harness through the space where the fan 60 unit is assembled and remove the PS PCB unit.
- (13) Remove the harness from the PS PCB unit.

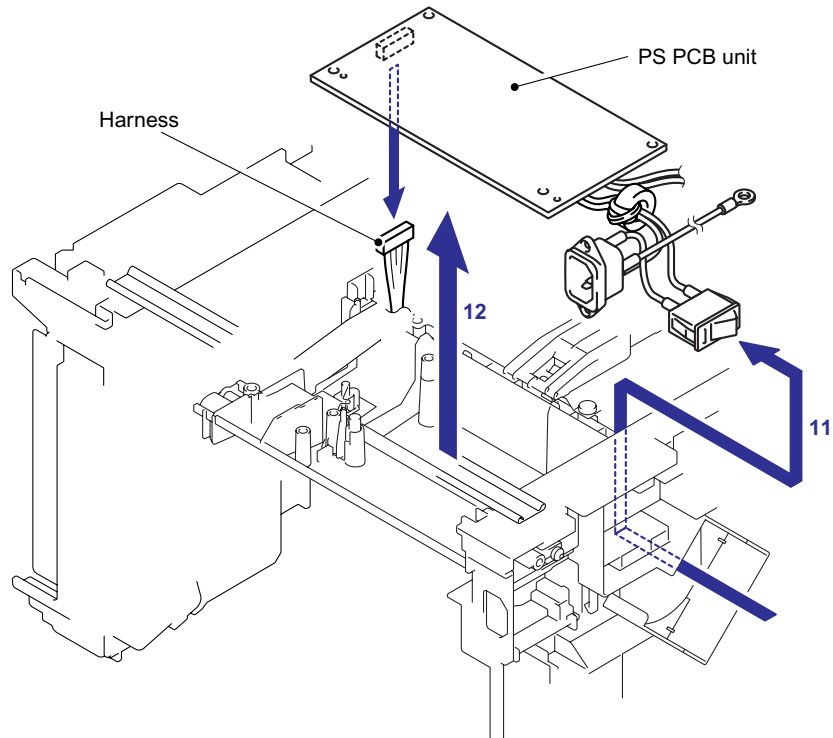


Fig. 5-171

9.82 High-Voltage PS PCB ASSY

(1) Remove the four bind B M4x12 Taptite screws, and then remove the Base plate HV.

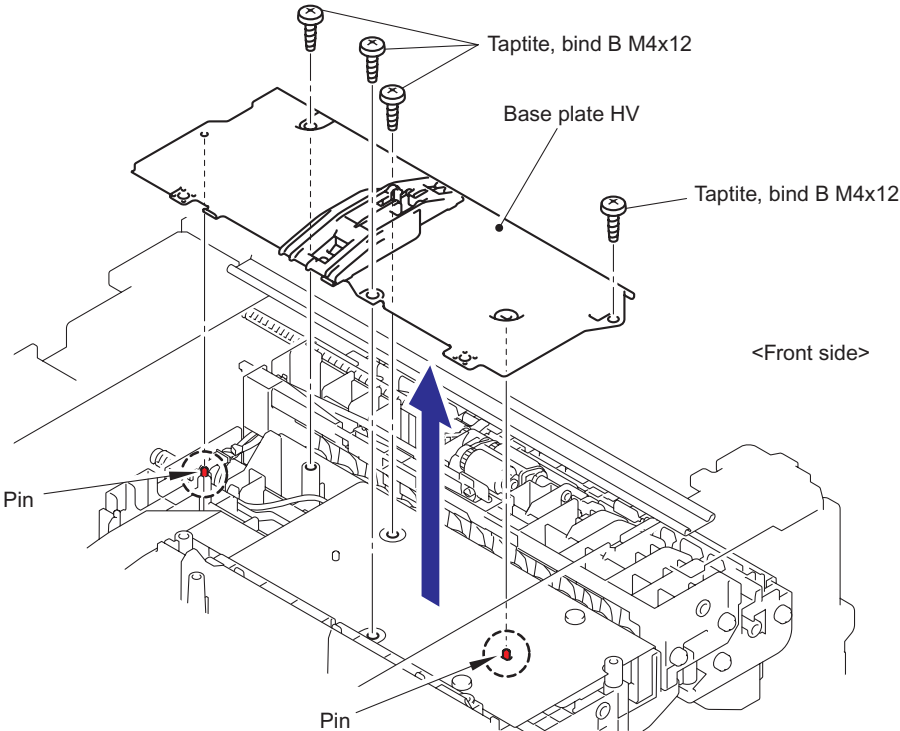


Fig. 5-172

(2) Remove the bind B M4x12 Taptite screw, and then remove the HV insulation sheet.

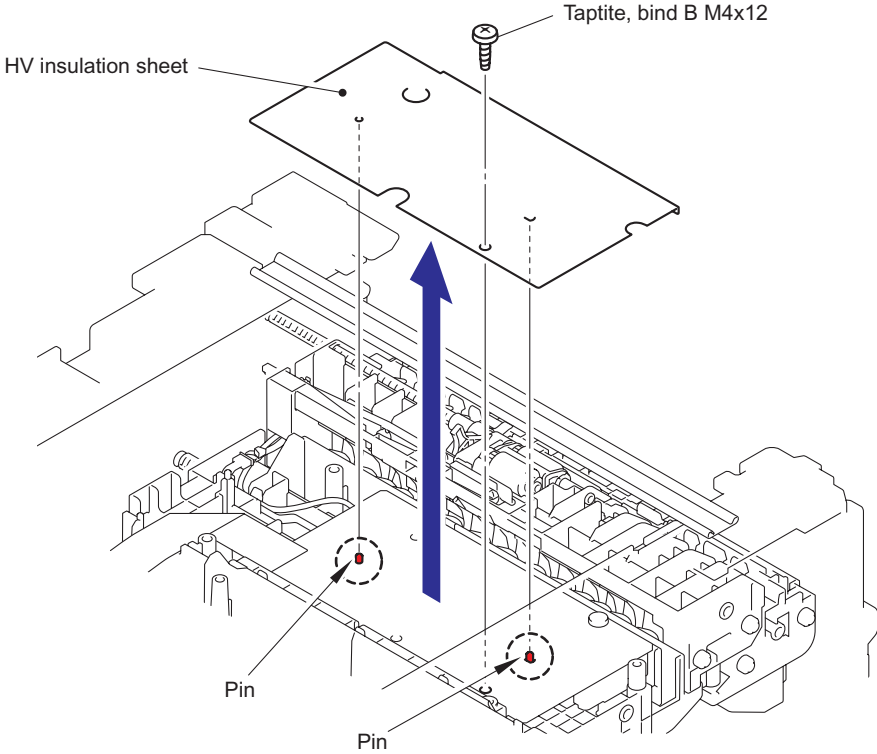


Fig. 5-173

- (3) Remove the bind B M4x12 Taptite screw, and then remove the High-voltage PS PCB ASSY.
- (4) Disconnect the three connectors from the High-voltage PS PCB ASSY.

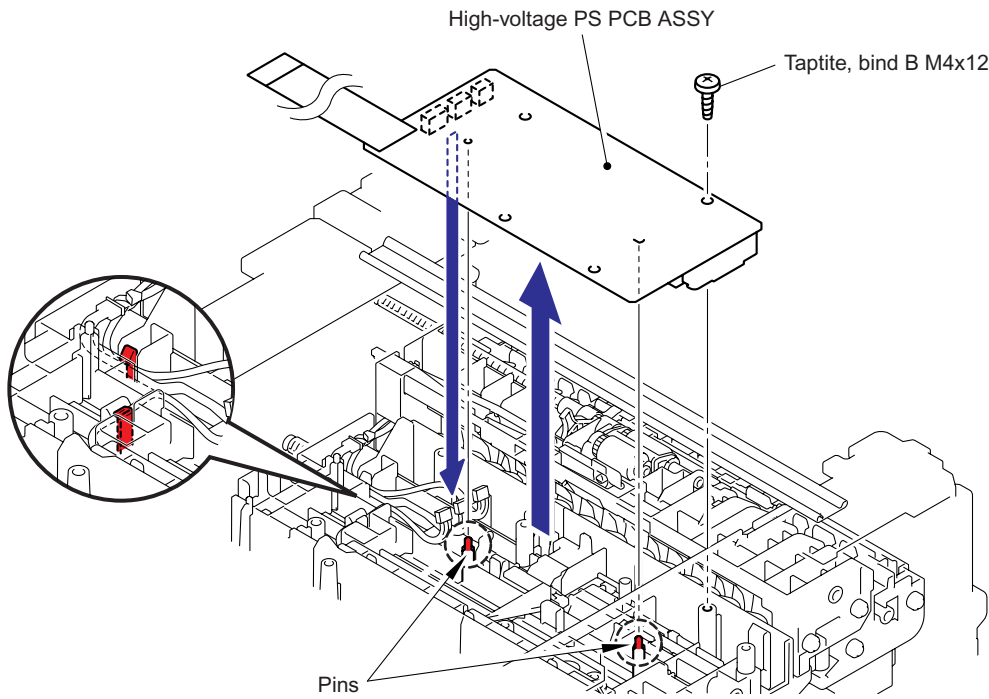


Fig. 5-174

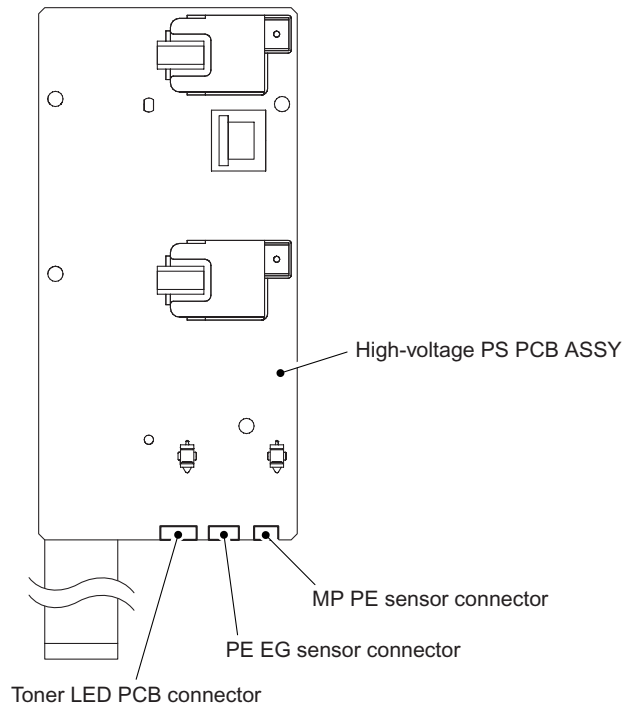


Fig. 5-175

9.83 Wireless PCB (PCB T60H989 ASSY 04) (Wireless LAN model)

- (1) Disconnect the connector from the Wireless PCB harness.
- (2) Remove the Wireless PCB (PCB T60H989 ASSY 04) from the Frame R.

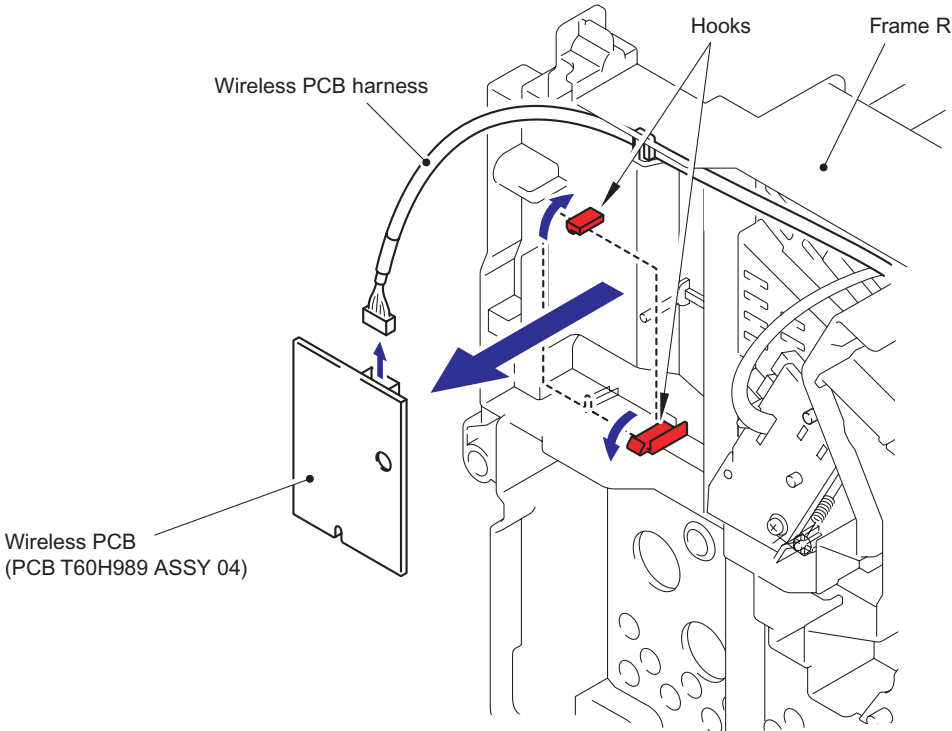


Fig. 5-176

9.84 Toner LED PCB Unit ASSY

- (1) Remove the pan (washer) B M3x8 Taptite screw, and remove the Regist ground spring.
- (2) Remove the Toner LED PCB unit ASSY from the Frame R.

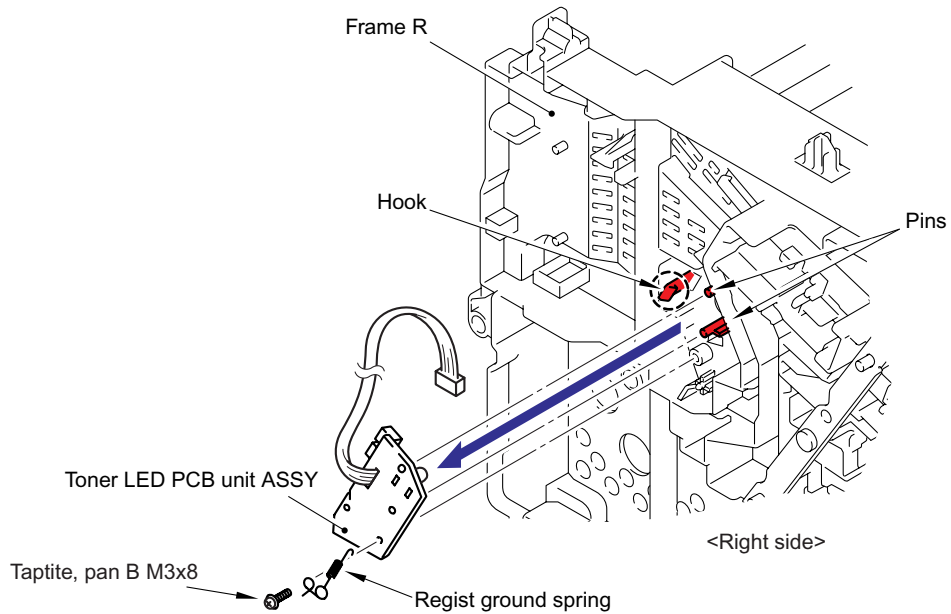


Fig. 5-177

Assembling Note:

- Hang the Hook of the Regist ground spring on the Pinch spring and hang the ring part of the Regist ground spring on the Pin, and secure the end part and the Toner LED PCB unit ASSY to the Frame R with the screw.

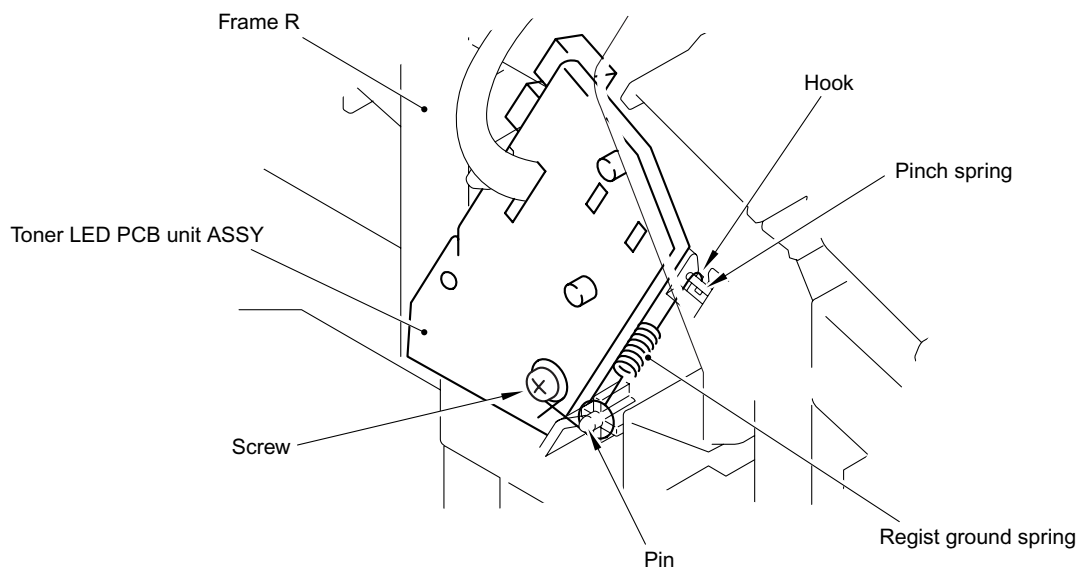


Fig. 5-178

- (3) Disconnect the two connectors from the Toner LED PCB.
- (4) Release the two Hooks to remove the LED holder from the Toner LED PCB.

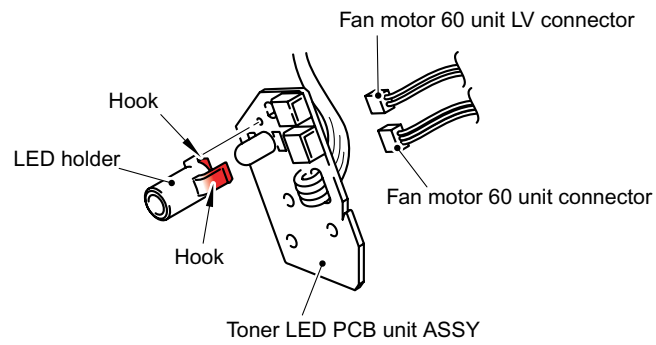


Fig. 5-179

9.85 Fan Motor 60 Unit

- (1) Remove the Fan motor 60 unit from the Frame R.

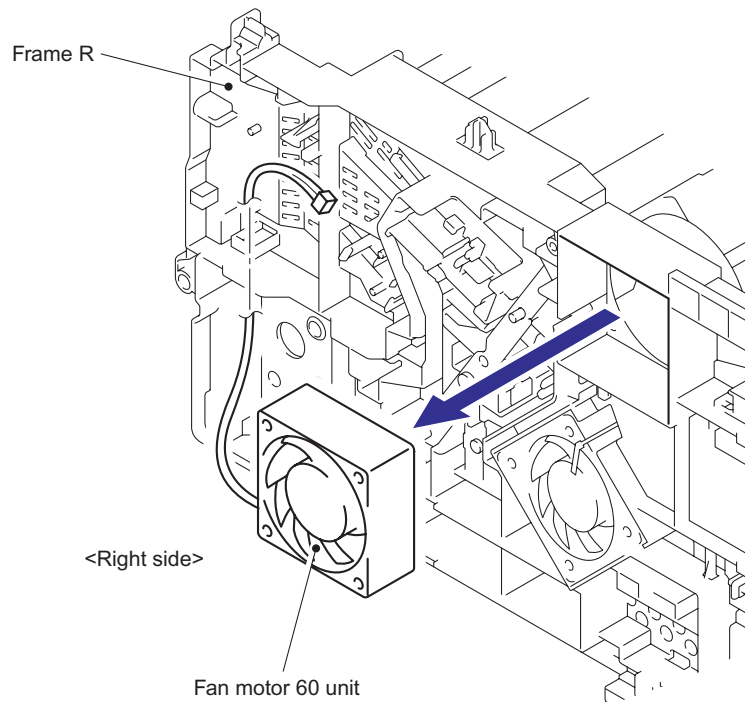


Fig. 5-180

9.86 Fan Motor 60 Unit LV

(1) Remove the Fan motor 60 unit LV from the Frame R.

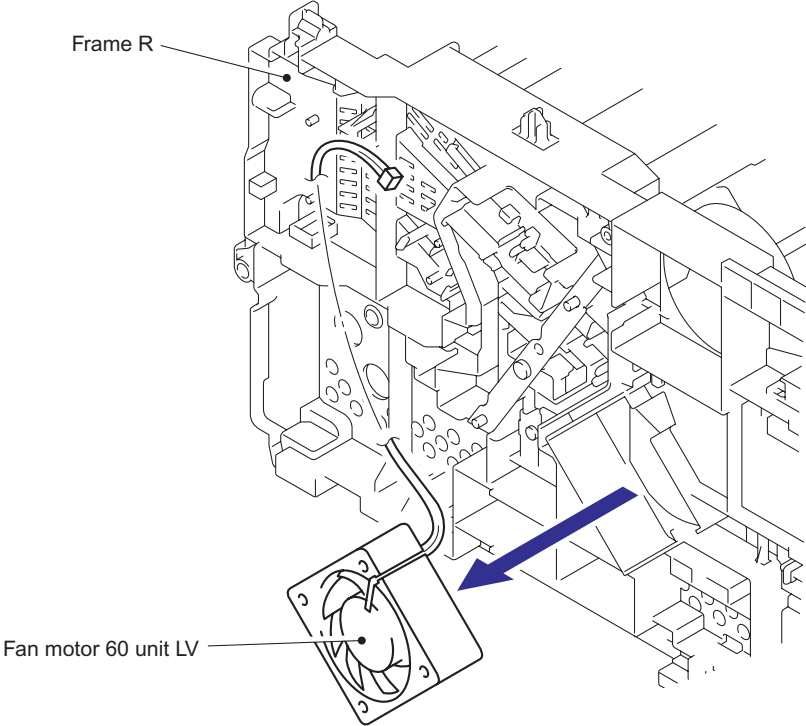


Fig. 5-181

Note:

The procedure for disassembling the Frame L after "9.64 Main PCB" is described below.

9.87 FRAME L ASSY

- (1) Remove the Insulation sheet.
- (2) Pull out the flat cable from the Ferrite core.
- (3) Remove the Main PCB sheet.

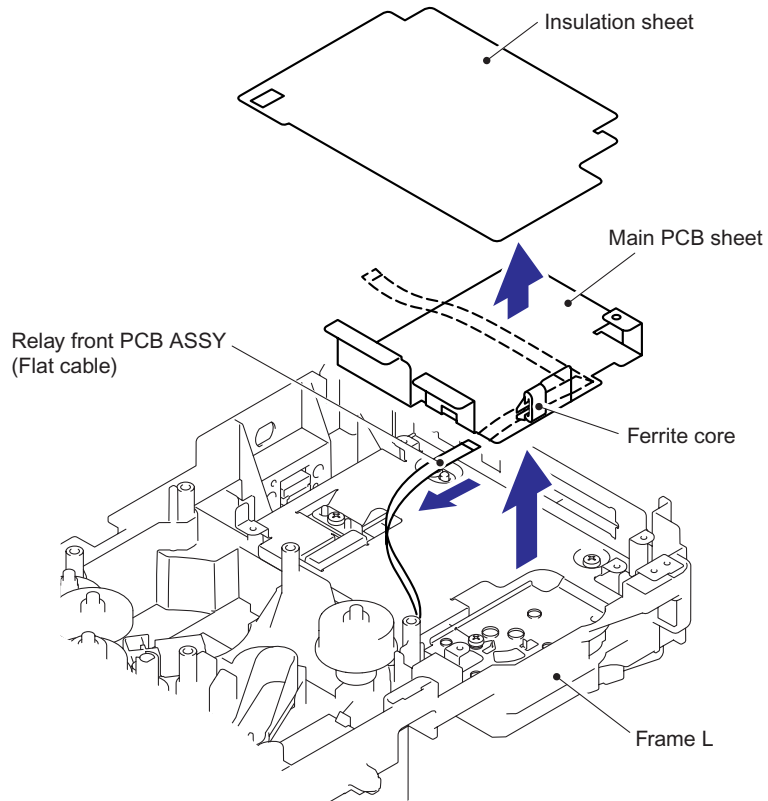


Fig. 5-182

(4) Remove the two bind B M4x12 Taptite screws, and then remove the Plate.

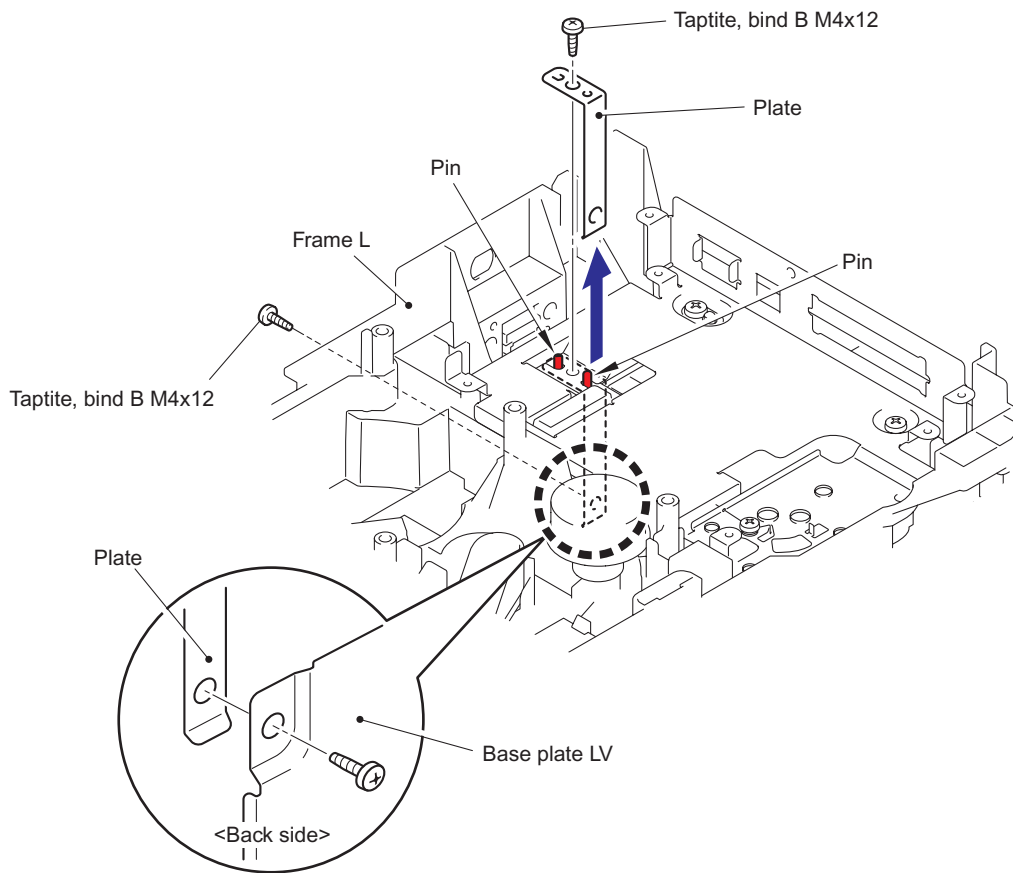


Fig. 5-183

(5) Remove the Gear 23, Gear 17 (white), Gear 17 (black) and Gear 20.

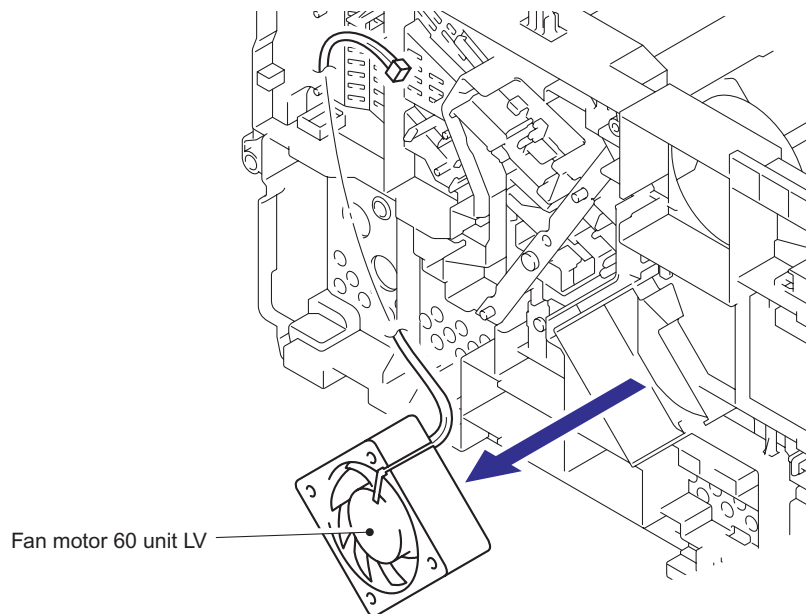


Fig. 5-184

- (6) Remove the six bind B M4x12 Taptite screws and the three cup S M3x6 Taptite screws.
- (7) Remove the Frame L.

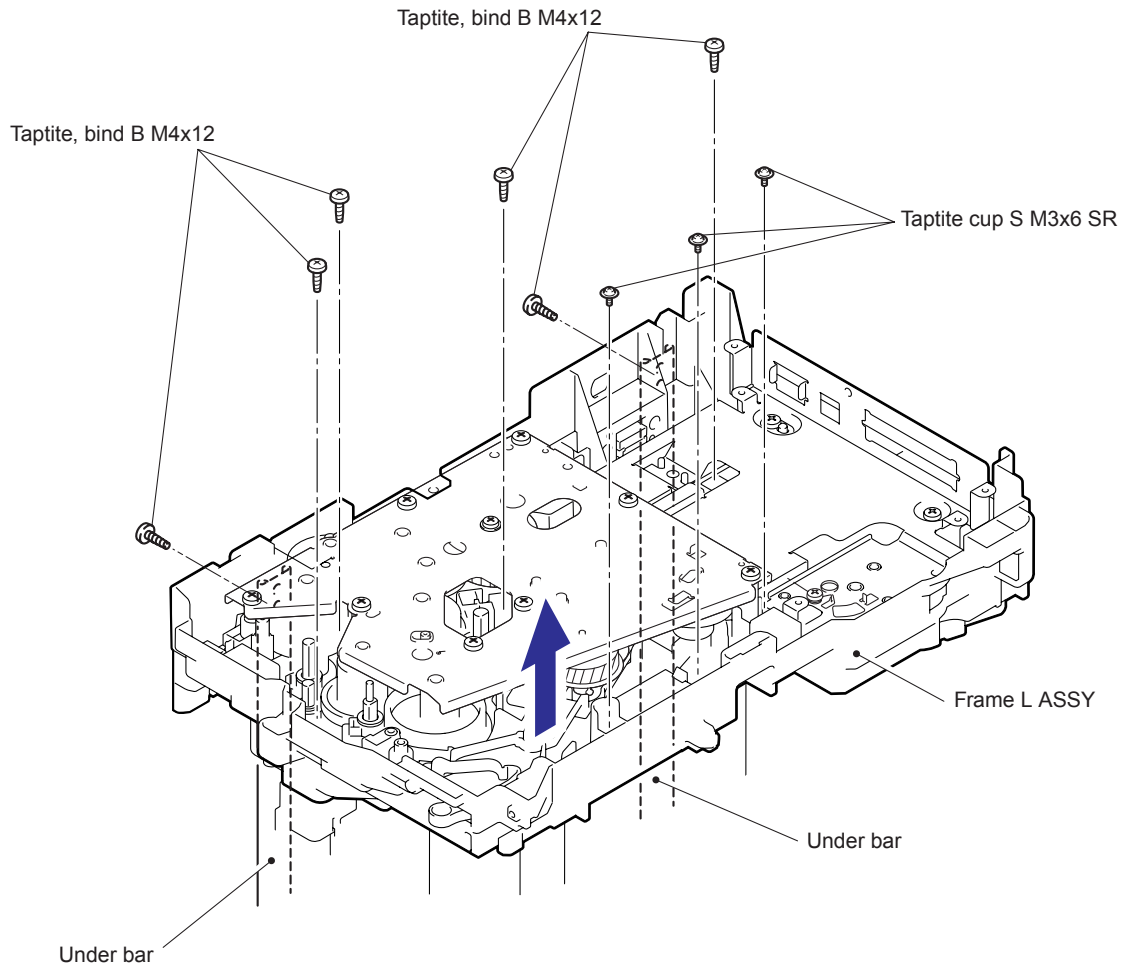


Fig. 5-185

9.88 MP Unit

- (1) Cut the Binder bundling the harnesses with nippers.

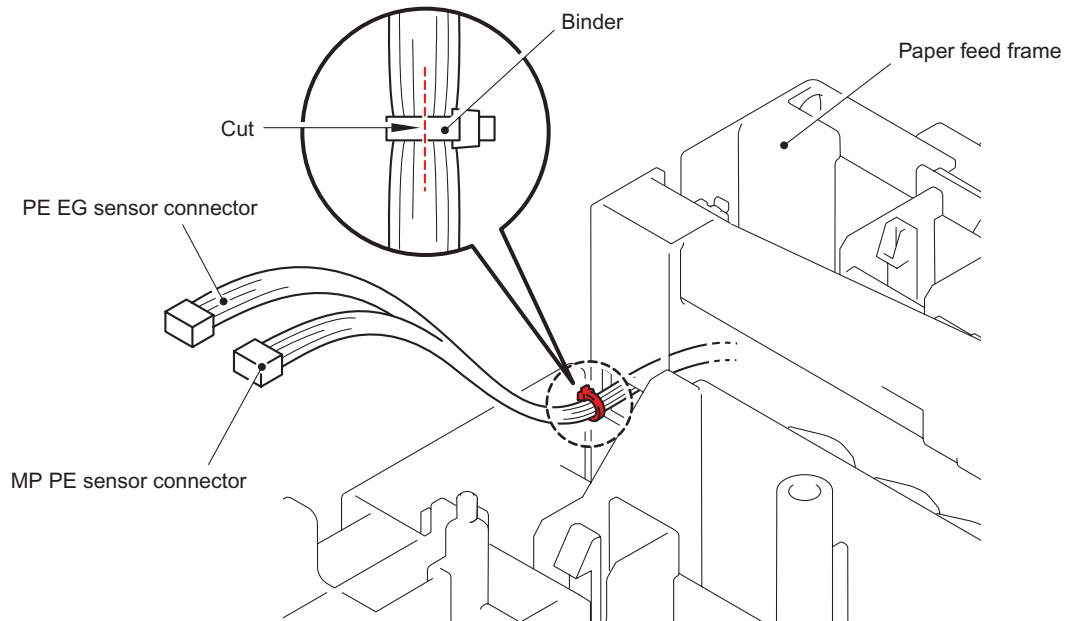


Fig. 5-186

- (2) Remove the two bind B M3x8 Taptite screws.
- (3) Lift up the back side of the MP feed frame and pull up the MP feed frame to remove.

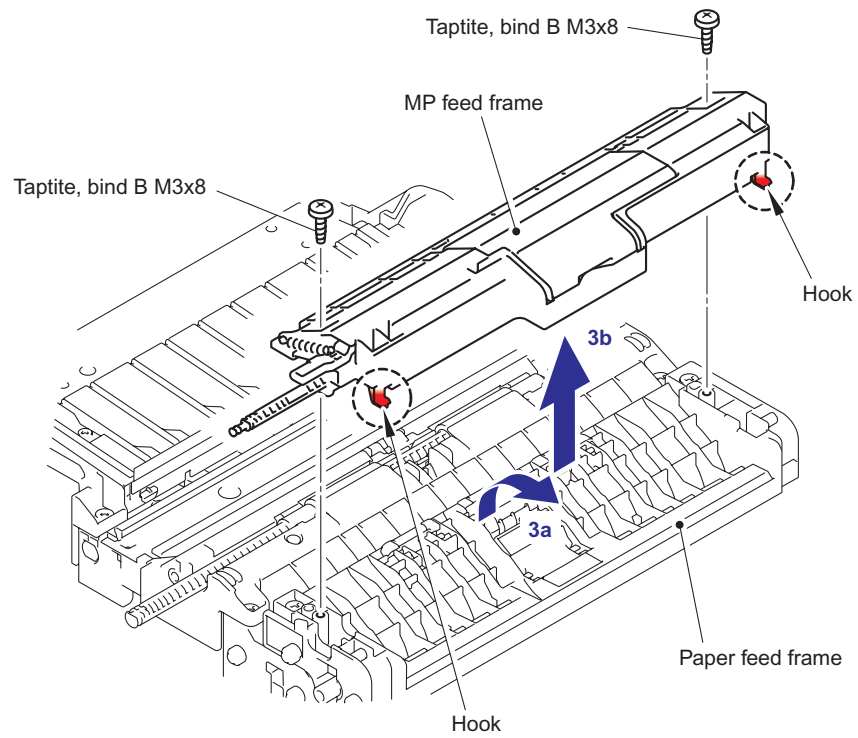


Fig. 5-187

(4) Open the MP feed frame cover.

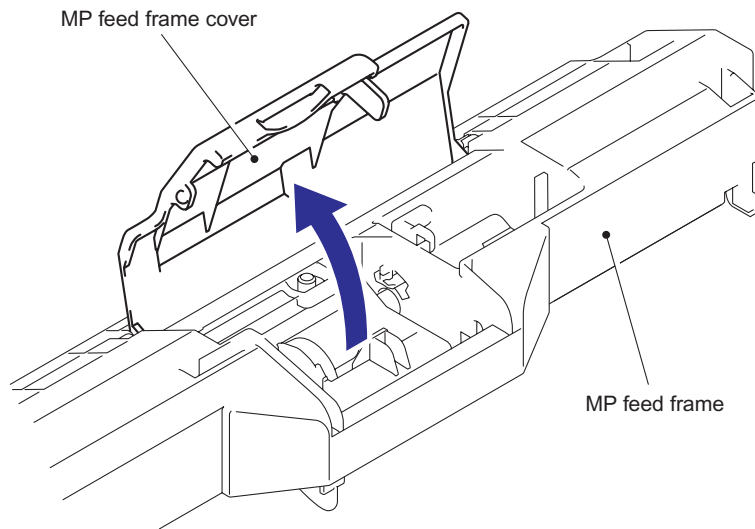


Fig. 5-188

(5) Release the Hook to remove the Holder bearing MP from the MP feed frame.

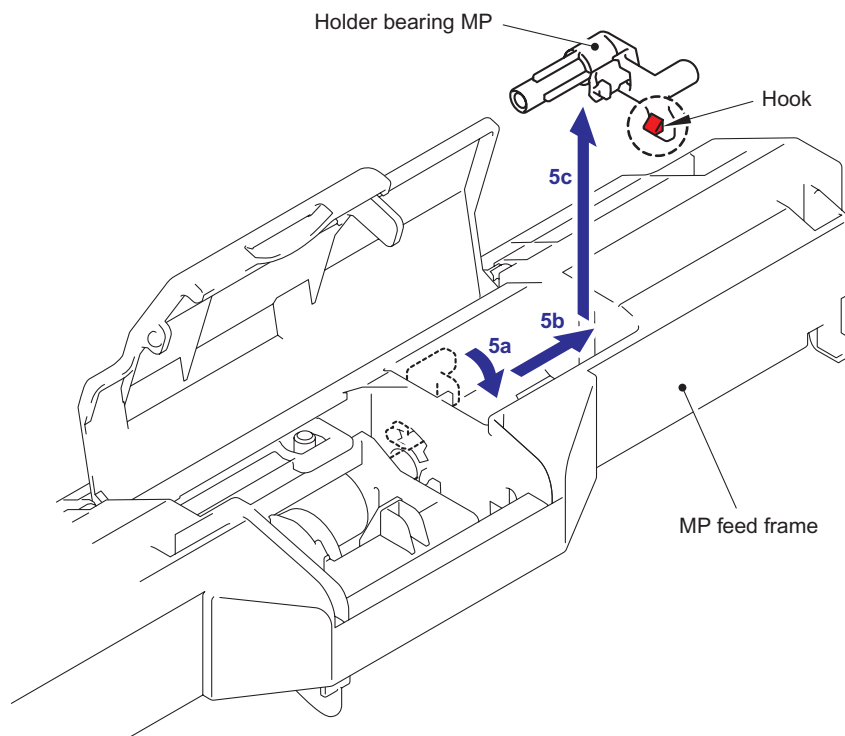


Fig. 5-189

- (6) Slide the MP roller holder ASSY to the direction of 6a and pull it up to remove.

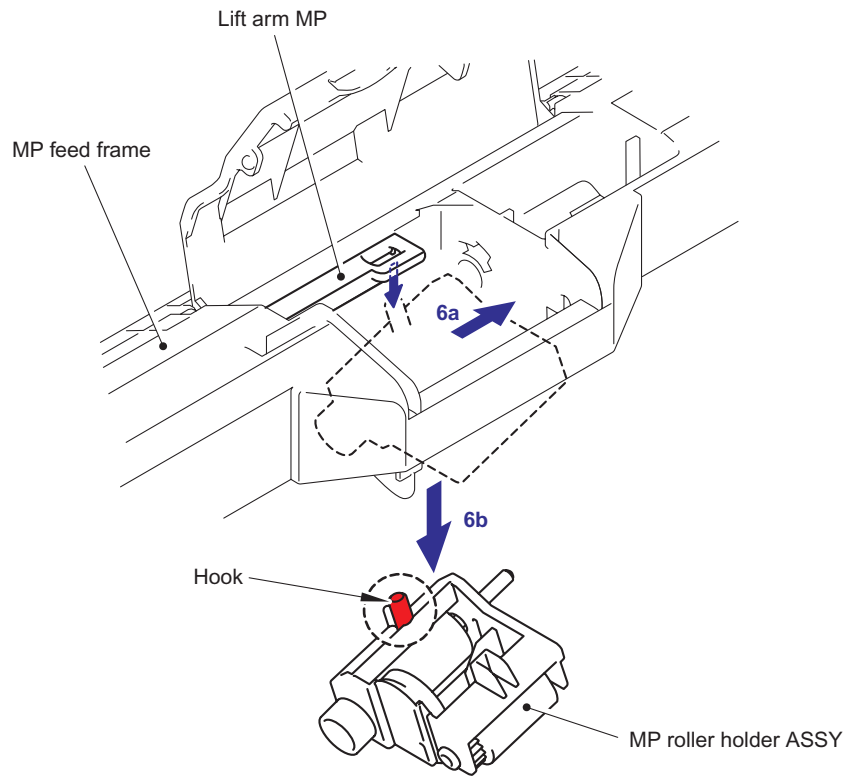


Fig. 5-190

- (7) Turn the MP feed frame upside down.
- (8) Slide the PE actuator MP B to the direction of 8b while pressing the Hook to the direction of 8a, and pull it up to remove.

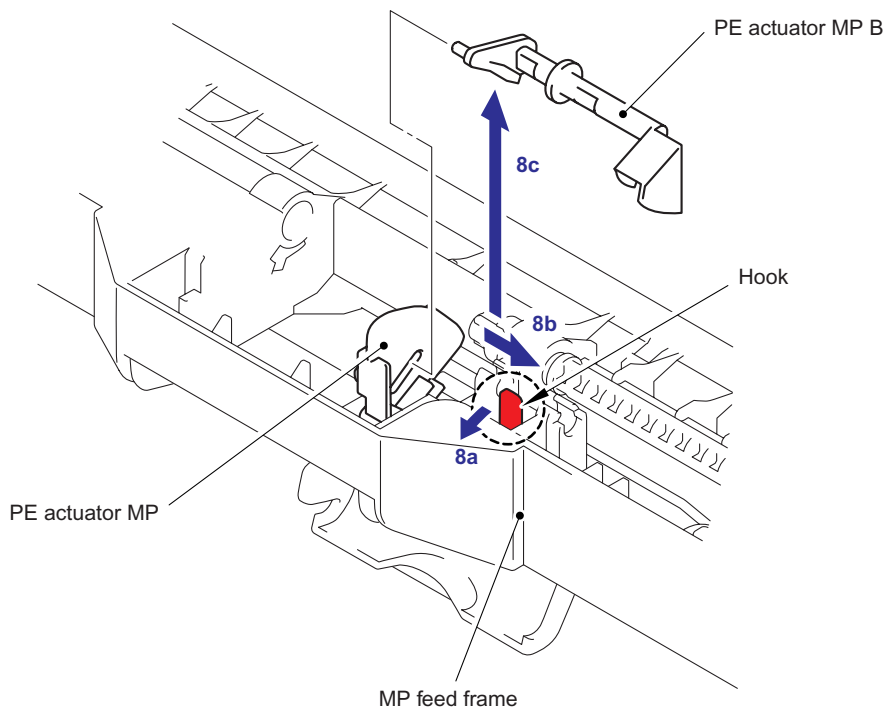


Fig. 5-191

(9) Turn the PE actuator MP to the direction of 9a and pull it up to remove.

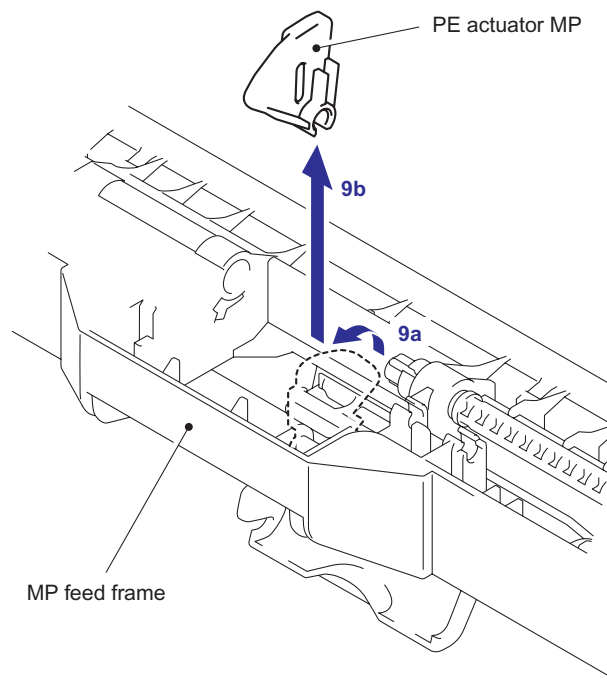


Fig. 5-192

(10) Remove the bind B M3x8 Taptite screw, and then remove the MP PE sensor ASSY.

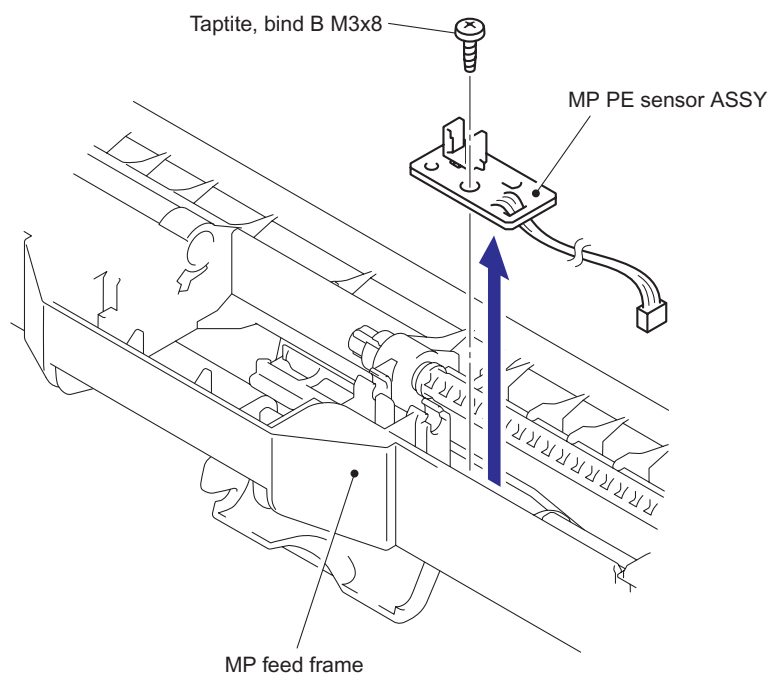


Fig. 5-193

(11) Lift up the back of the Separation pad ASSY MP to the direction of 11a and pull up the Separation pad ASSY MP to remove.

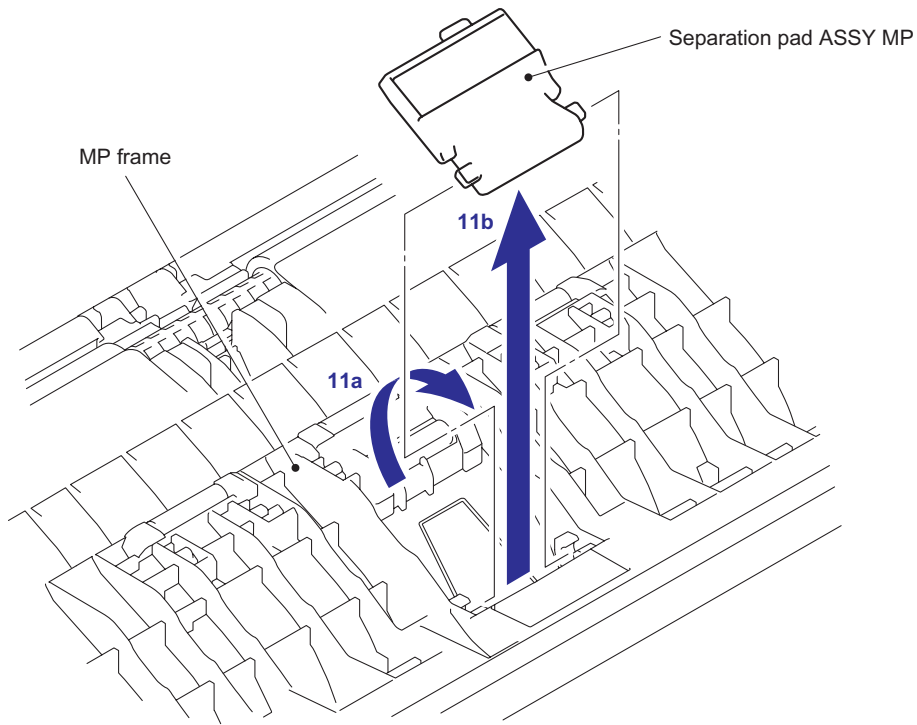


Fig. 5-194

(12) Remove the MP separation spring from the MP frame.

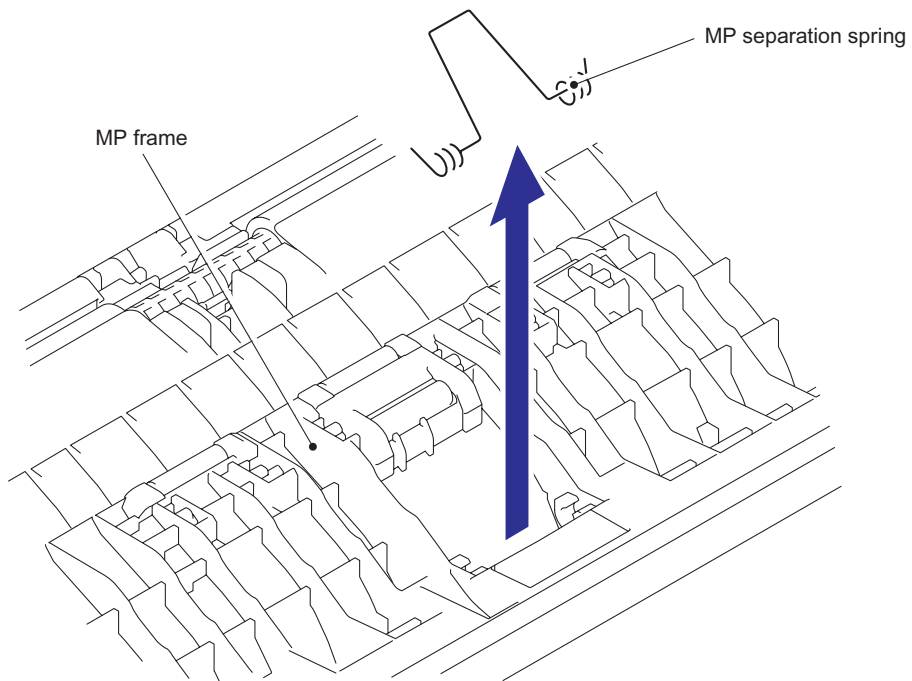


Fig. 5-195

Assembling Note:

- When assembling the MP separation spring, ensure that its direction is correct referring to the figure below.

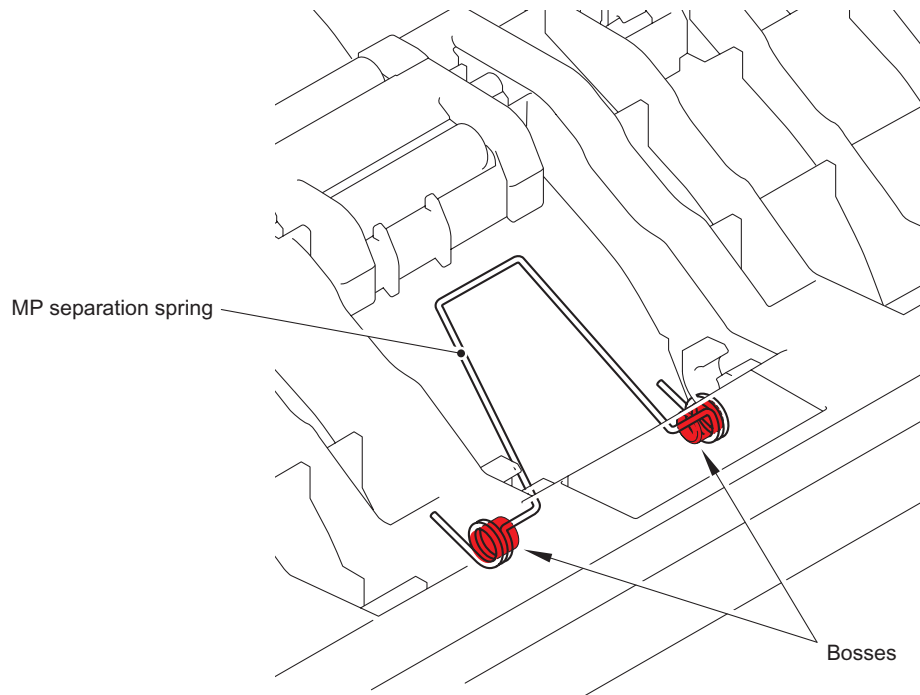


Fig. 5-196

9.89 Regist Actuator Rear/Regist Actuator Spring

- (1) Turn the Paper feed unit upside down.
- (2) Release the Hook A of the Actuator cover to pull up the Actuator cover to remove.

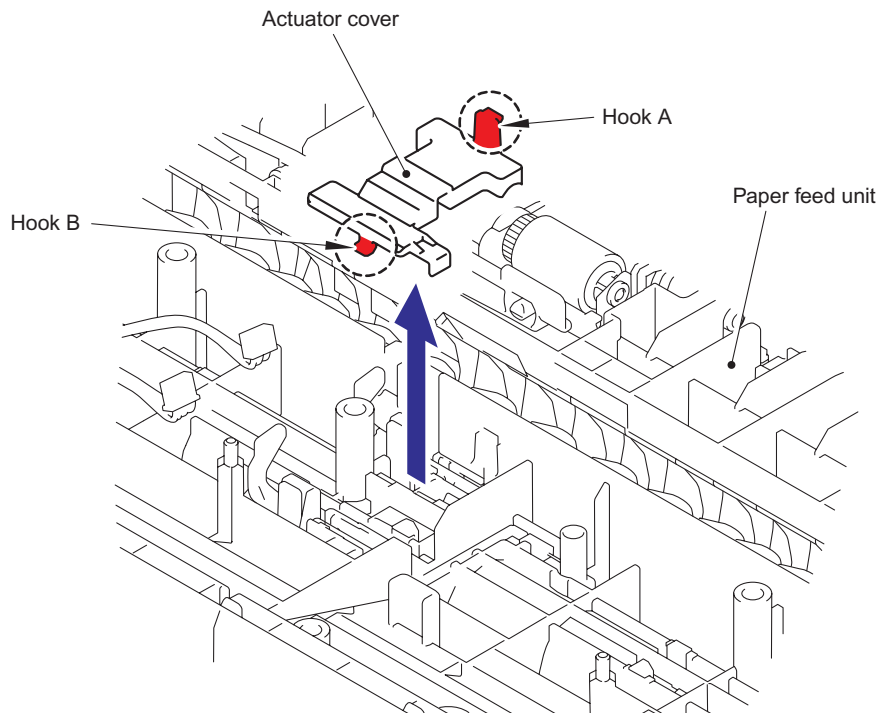


Fig. 5-197

- (3) Slide the Regist actuator rear to the direction of 3b while pressing the Hook to the direction of 3a and pull up the Regist actuator rear to remove. Then, remove the Regist actuator spring from the Regist actuator rear.

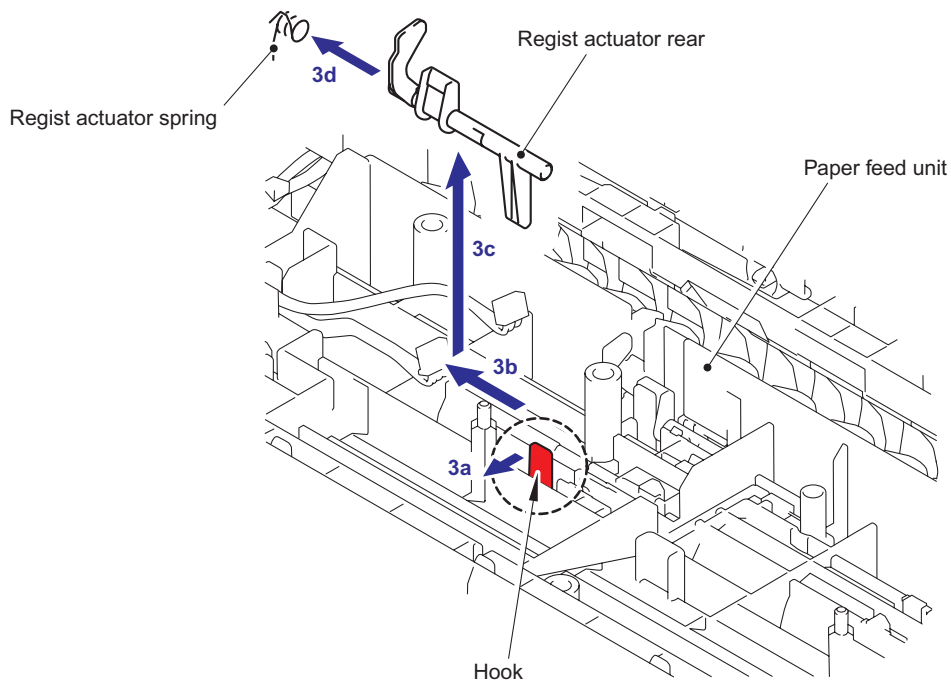


Fig. 5-198

Assembling Note:

- When assembling the Regist actuator spring, ensure that its direction is correct referring to the figure below.

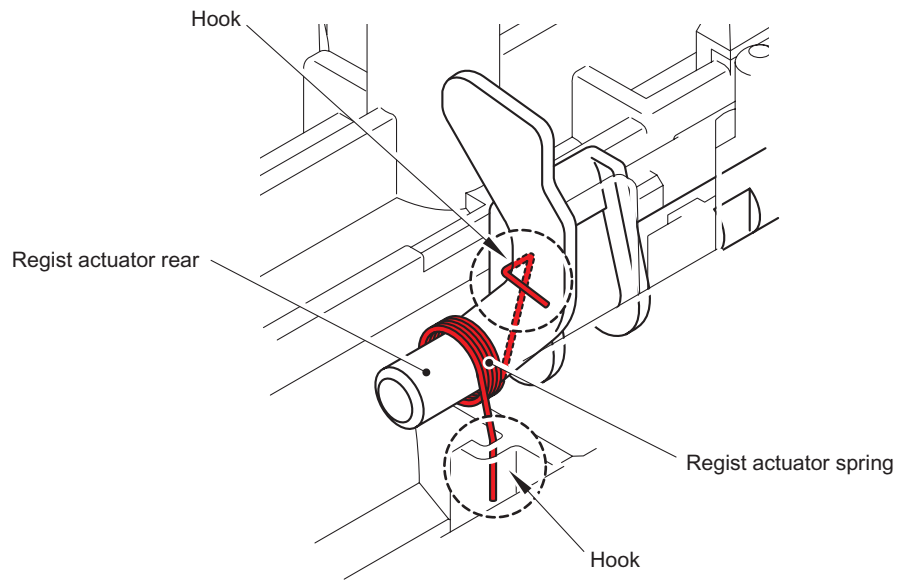


Fig. 5-199

9.90 Regist Actuator Front/Regist Actuator Spring

- (1) Slide the Regist actuator front to the direction of 1b while pressing the Hook to the direction of 1a and pull up the Regist actuator front to remove. Then, remove the Regist actuator spring from the Regist actuator front.

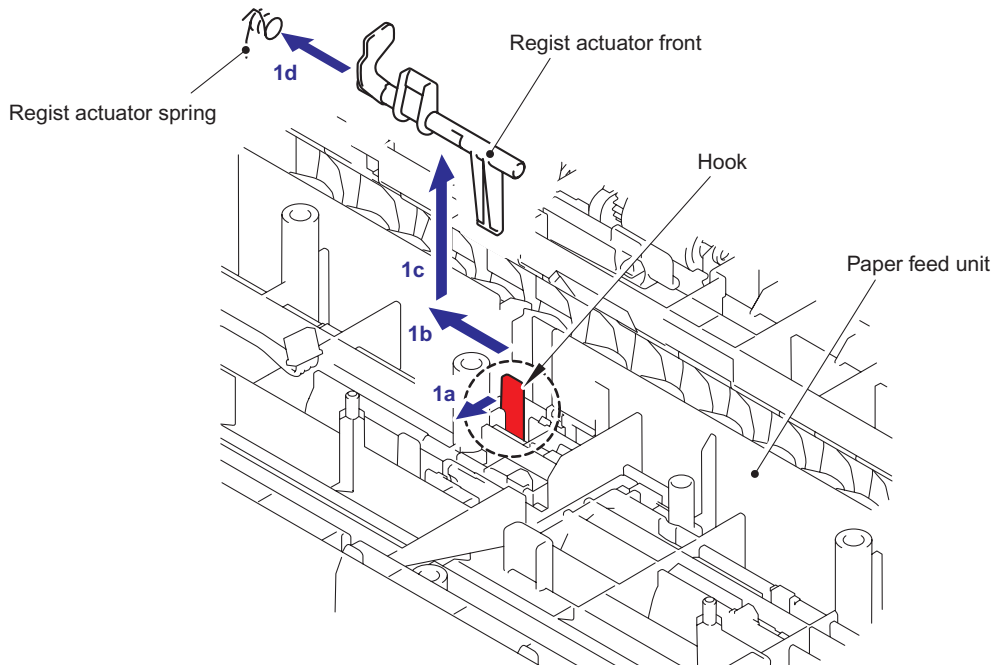


Fig. 5-200

Assembling Note:

- When assembling the Regist actuator spring, ensure that its direction is correct referring to the figure below.

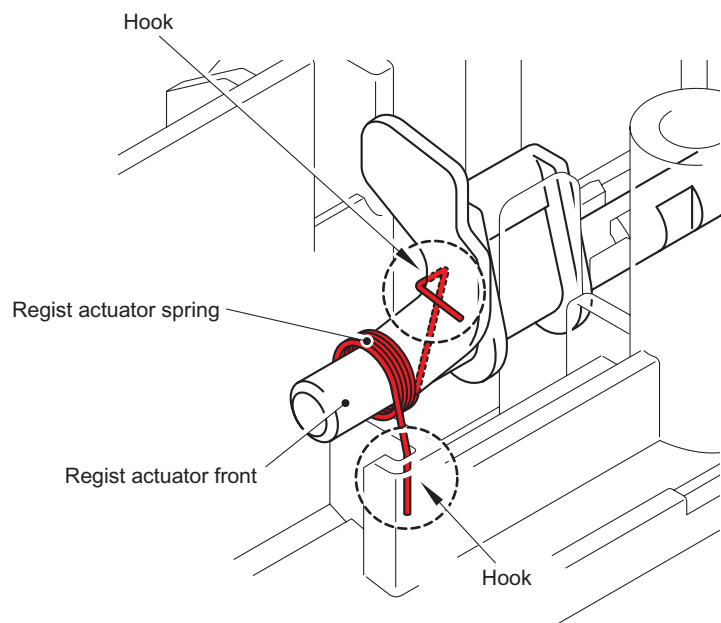


Fig. 5-201

9.91 Roller Holder ASSY

- (1) Push the Lift arm to the direction of 1a and pull out the pin of the Roller holder ASSY. Then, turn the Roller holder ASSY to the direction of 1b.

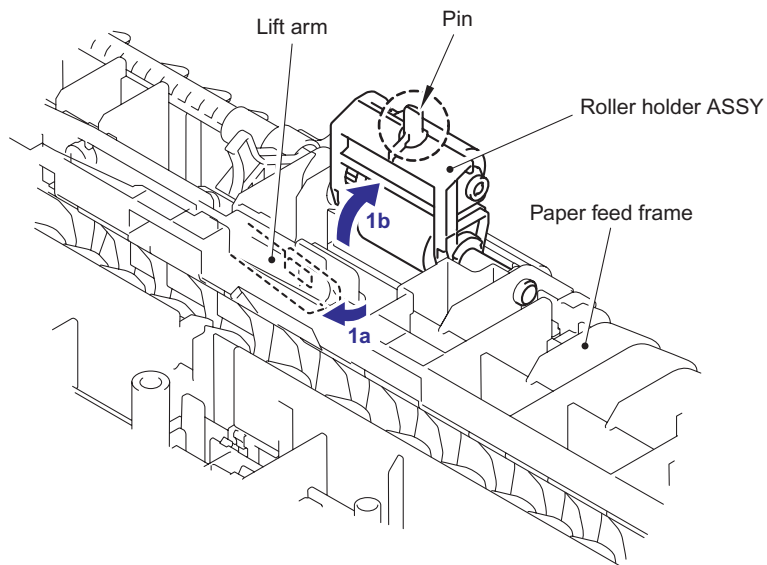


Fig. 5-202

- (2) Slide the Roller holder ASSY to the direction of 2a. Then, lift up the gear side of the Roller holder ASSY to the direction of 2b and pull it out to the direction of 2c to remove.

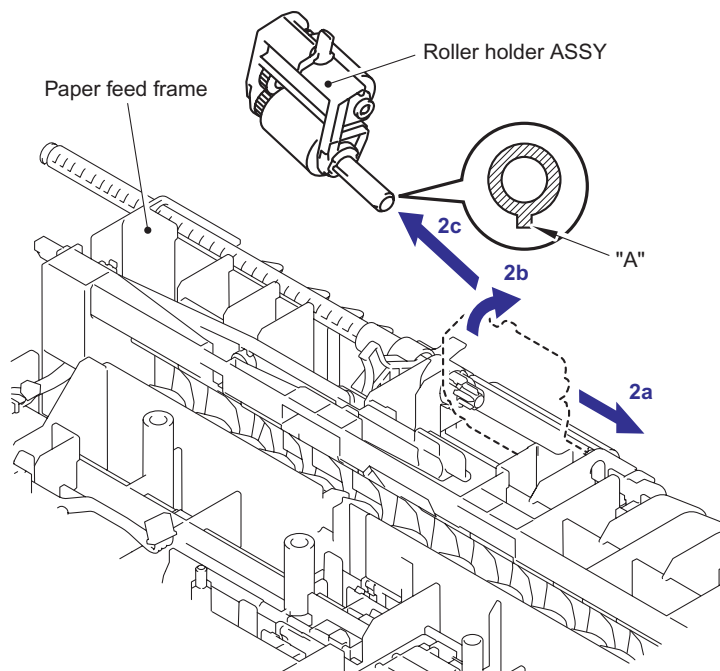


Fig. 5-203

Assembling Note:

- When assembling the roller holder ASSY, align the section "A" on the shaft of the roller holder ASSY with the hole on the paper feed frame.

9.92 PE Actuator/Edge Actuator/Edge Actuator Spring

- (1) Remove the Edge actuator spring.

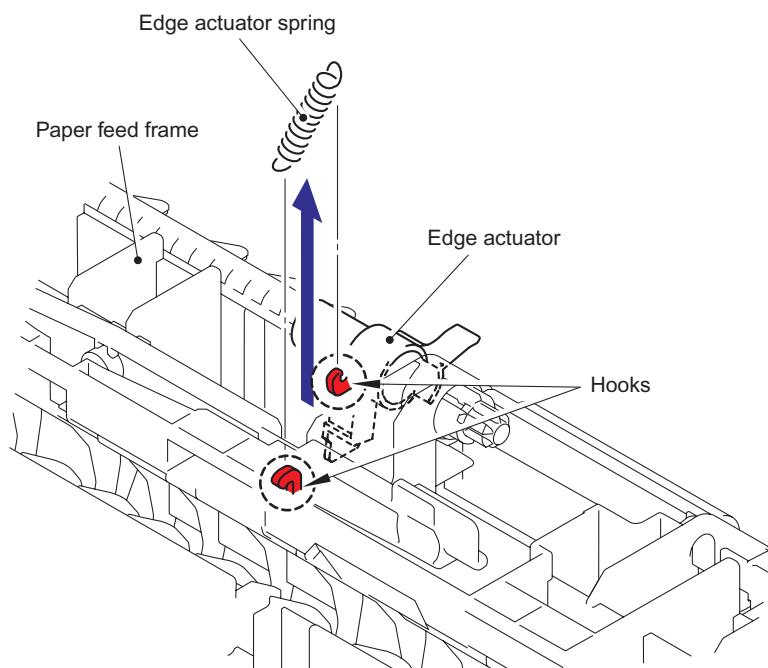


Fig. 5-204

- (2) Release the hook and remove the Separation R shaft bearing.

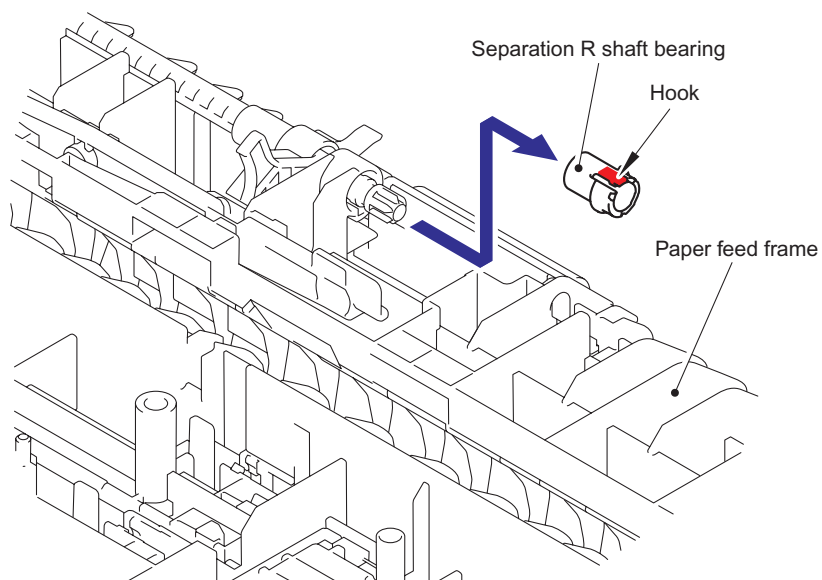


Fig. 5-205

- (3) Pull out the Separation roller drive shaft to the direction of the arrow and remove the Edge actuator and PE actuator.

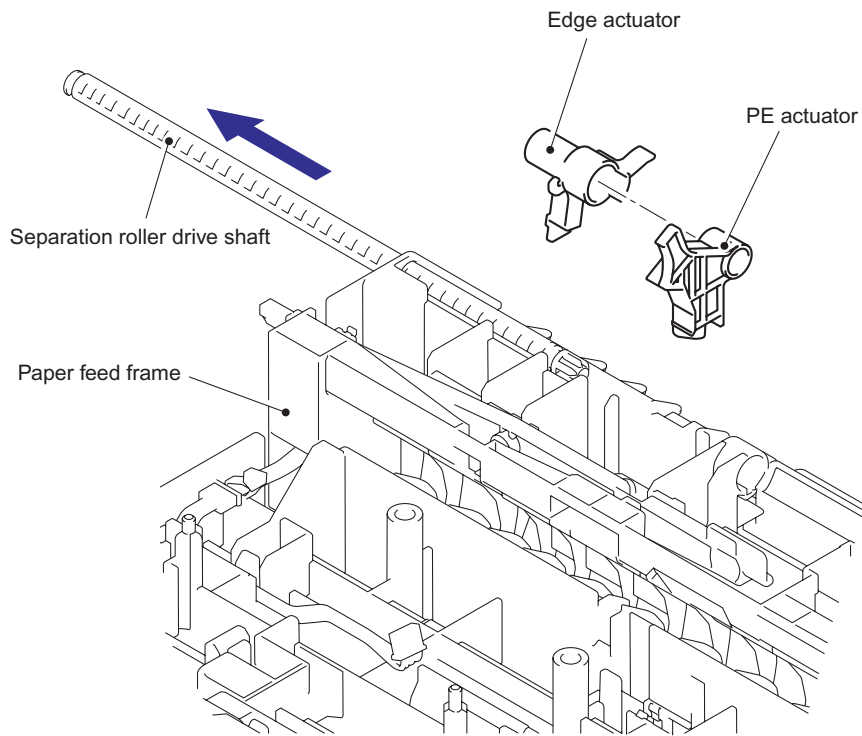


Fig. 5-206

9.93 PE EG Sensor ASSY

(1) Remove the three bind B M4x12 Taptite screws, and remove the MP frame.

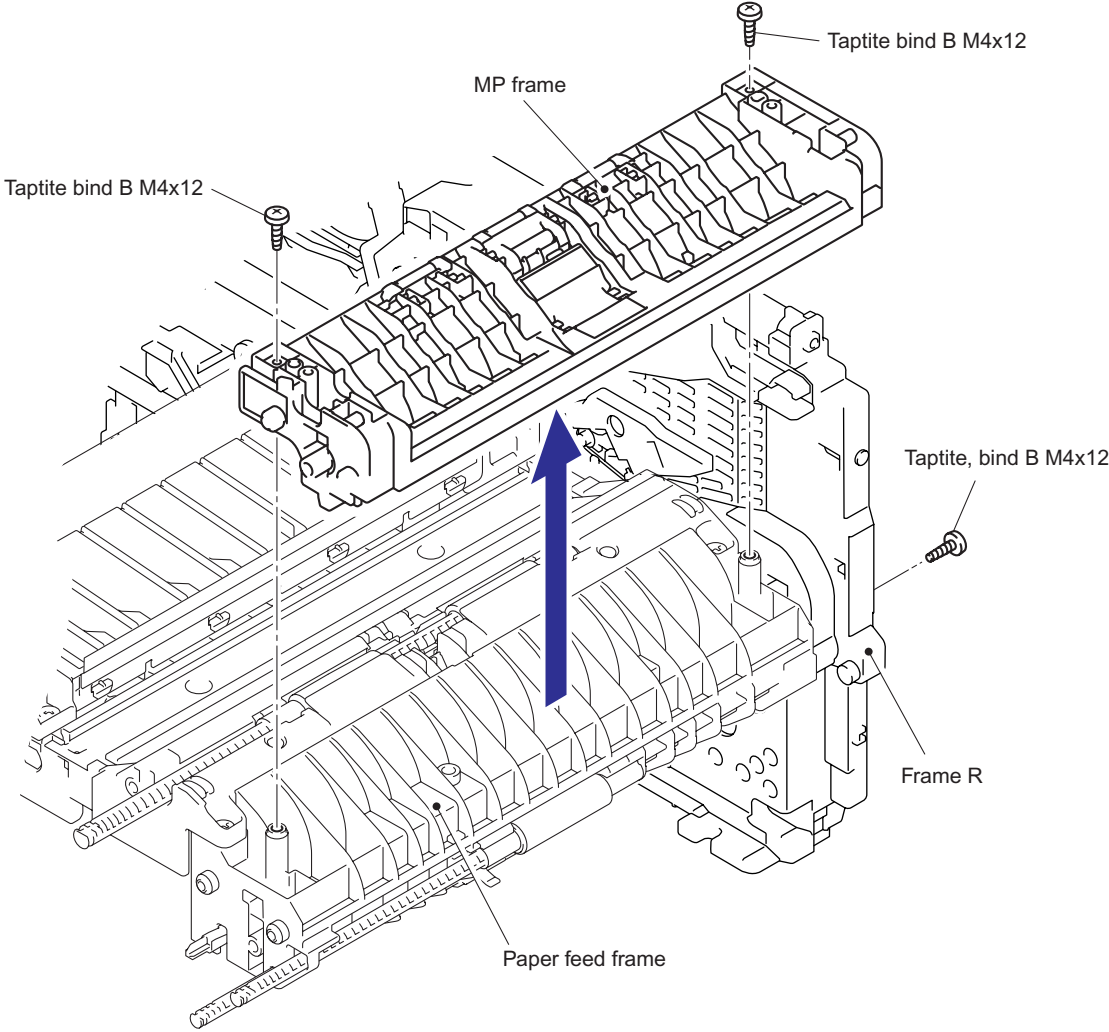


Fig. 5-207

(2) Remove the bind B M3x8 Taptite screw, and then remove the PE EG sensor ASSY.

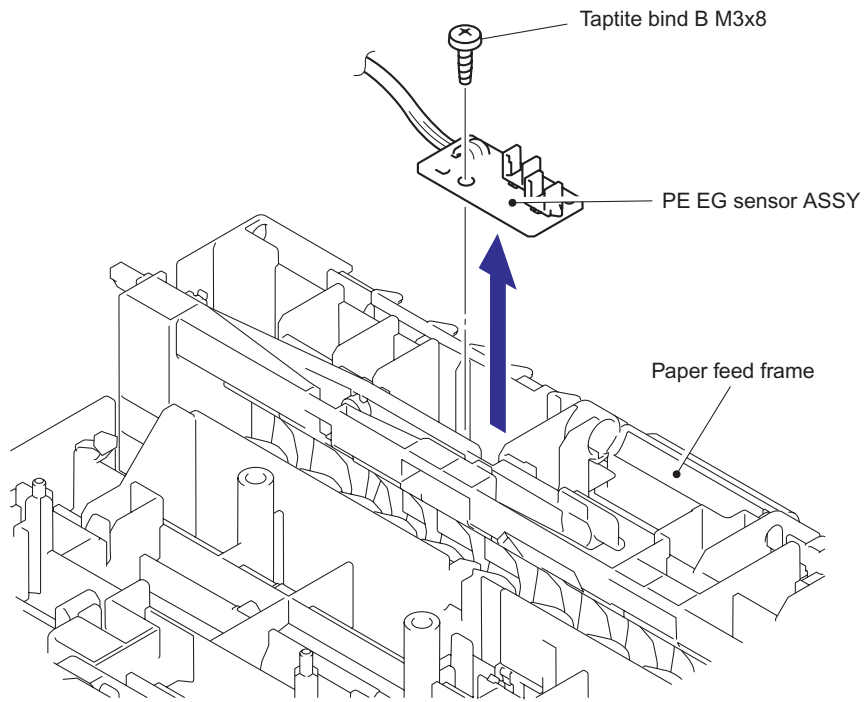


Fig. 5-208

10. DISASSEMBLY PROCEDURE (LT-5300)

10.1 Paper Tray

- (1) Pull out the Paper tray from the LT-5300.

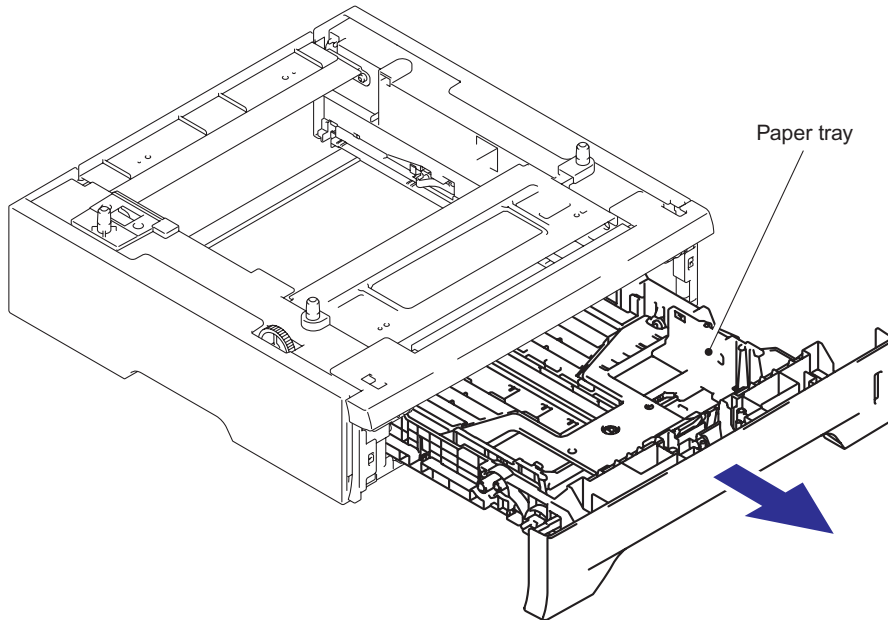


Fig. 5-209

- (2) Pull up the back side of the Separation pad ASSY.
- (3) Push the Hooks provided on both sides of the Separation pad ASSY inwards.
- (4) Pull up the Separation pad ASSY.

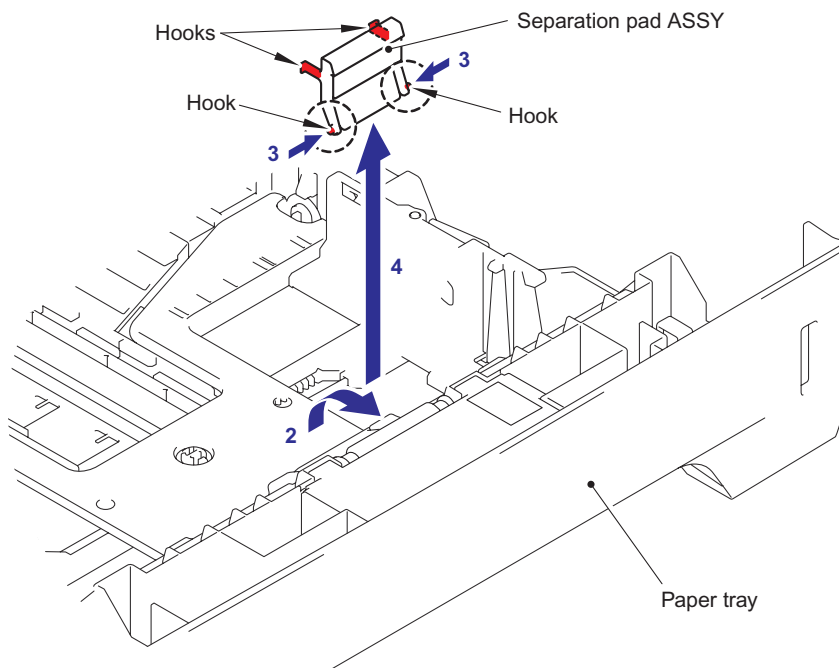


Fig. 5-210

(5) Remove the Separation pad spring.

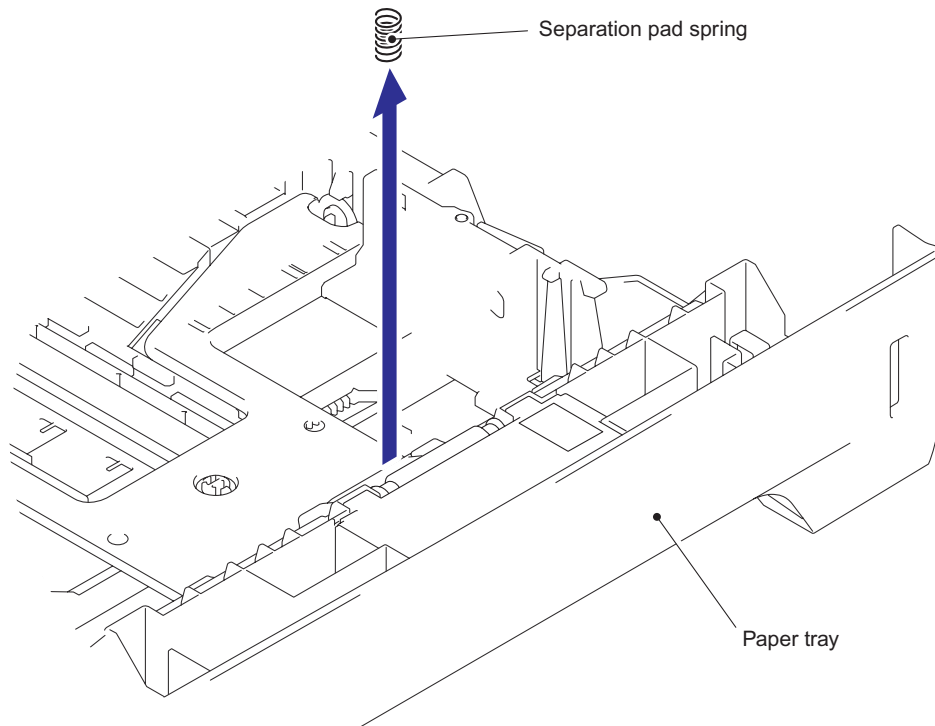


Fig. 5-211

(6) Remove the Lift gear 46.

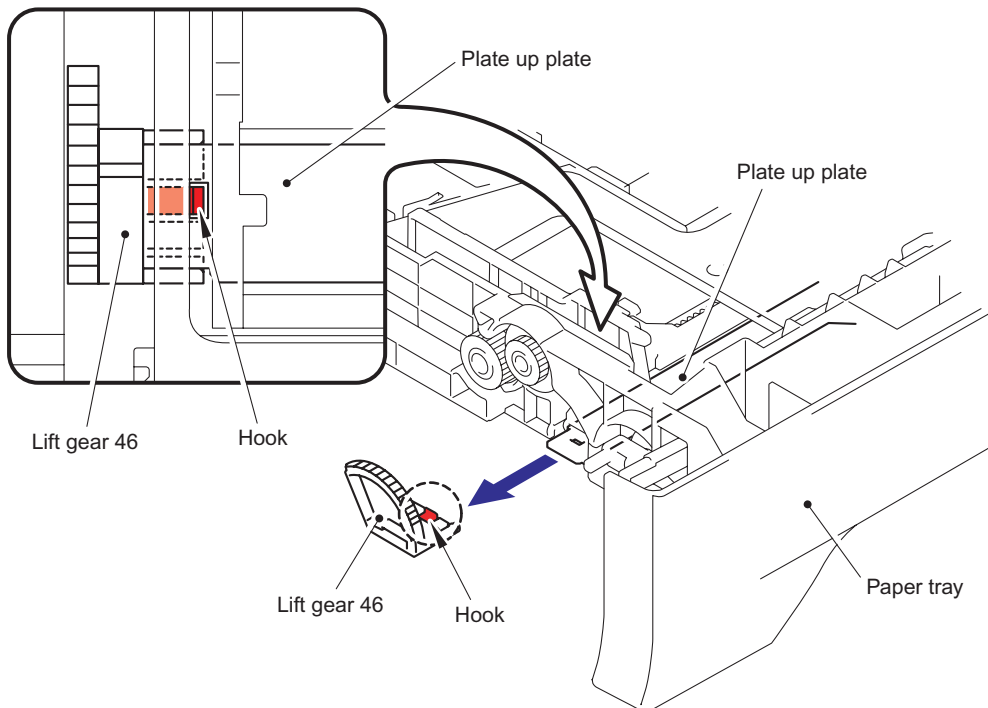


Fig. 5-212

(7) Remove the Gear 21-16.

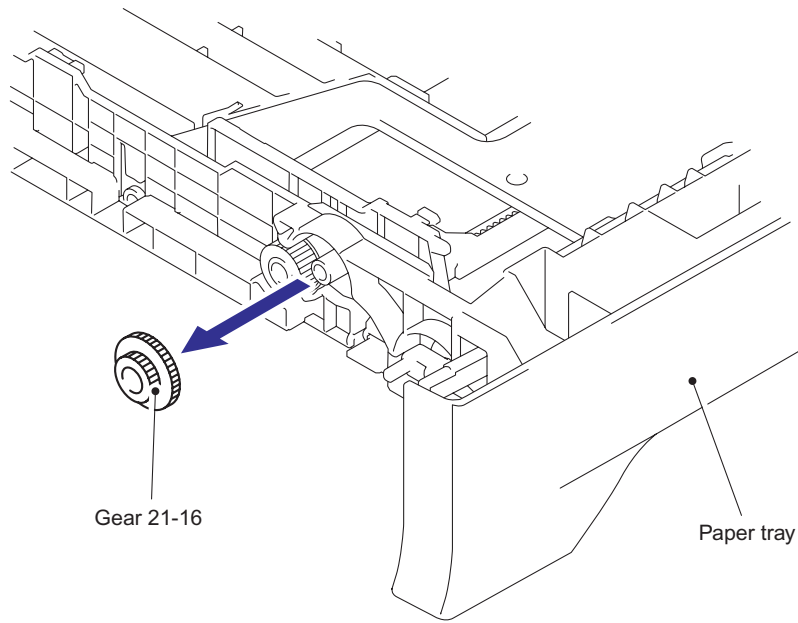


Fig. 5-213

(8) Remove the Gear 15.

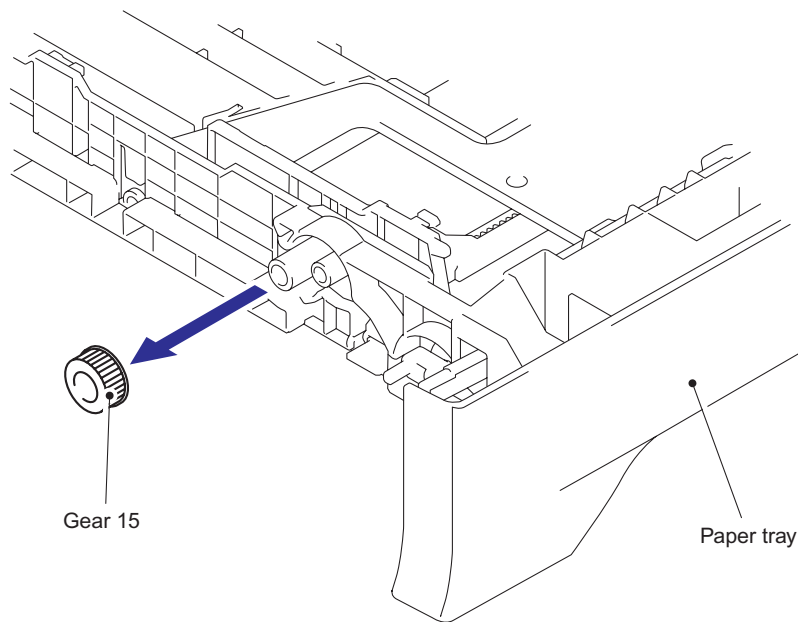


Fig. 5-214

10.2 LT Front Cover ASSY

- (1) Remove the two bind B M4x12 Taptite screws.
- (2) Remove the LT front cover ASSY.

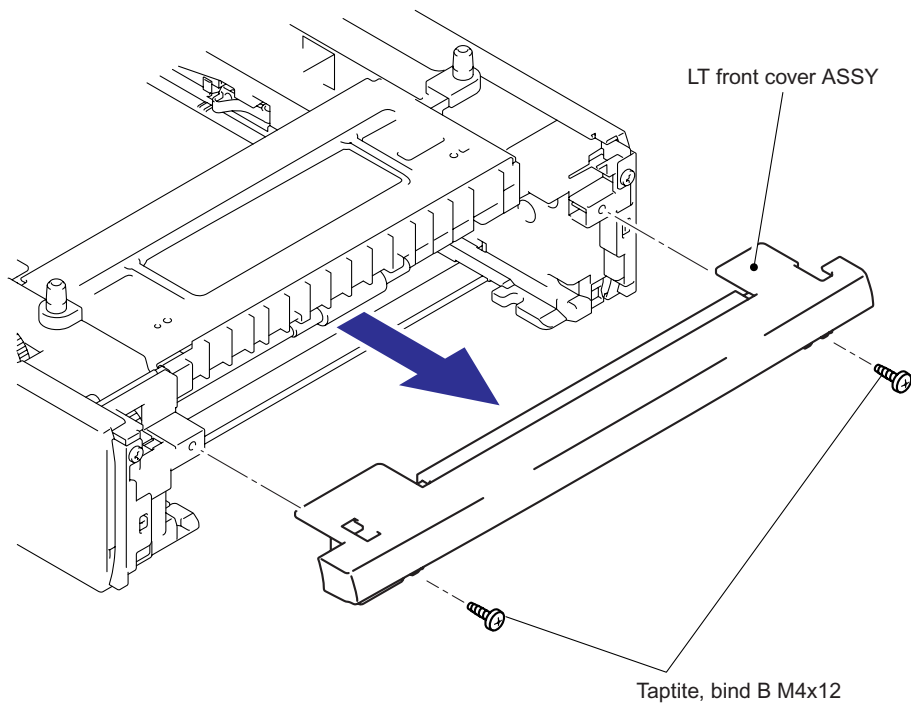


Fig. 5-215

- (3) Remove the LT front paper guide from the LT front cover ASSY while pulling the two hooks inwards.

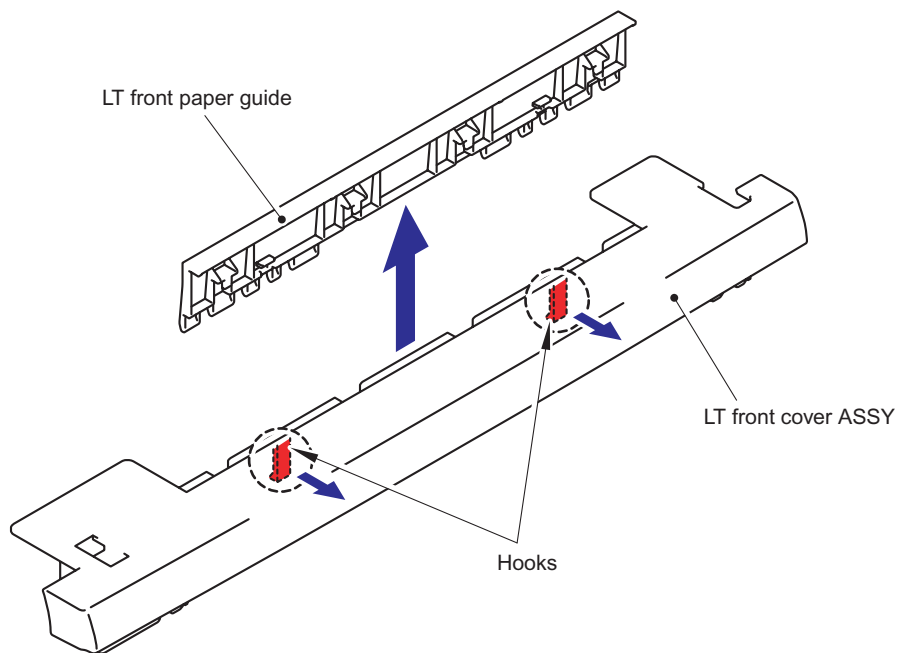


Fig. 5-216

10.3 LT Rear Cover

- (1) Remove the two cup S M3x6 Taptite SR screws.
- (2) Remove the LT rear cover.

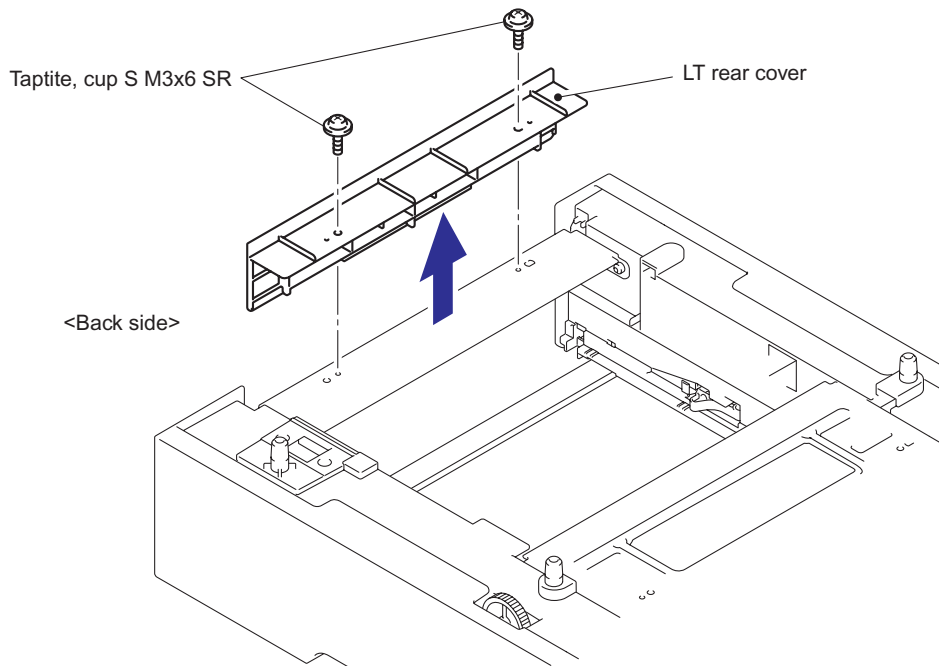


Fig. 5-217

10.4 LT Side Cover L

- (1) Remove the bind B M4x12 Taptite screw.
- (2) Remove the cup S M3x6 Taptite SR screw.
- (3) Release the Hooks in the order of the arrows and remove the LT side cover L.

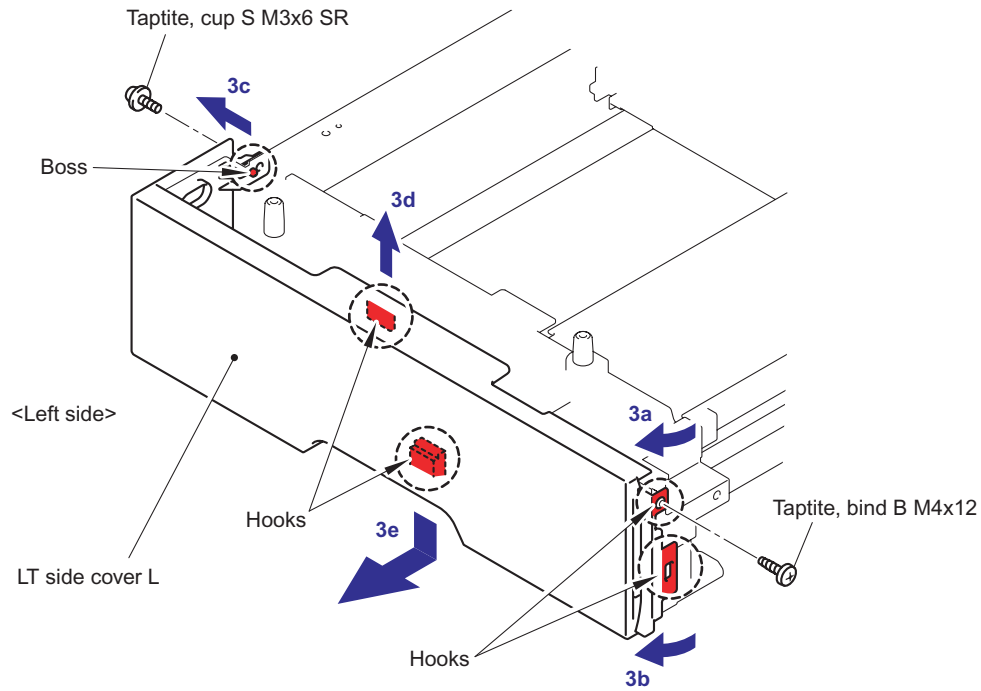


Fig. 5-218

10.5 LT Side Cover R

- (1) Remove the bind B M4x12 Taptite screw.
- (2) Remove the cup S M3x6 Taptite SR screw.
- (3) Release the Hooks in the order of the arrows and remove the LT side cover R.

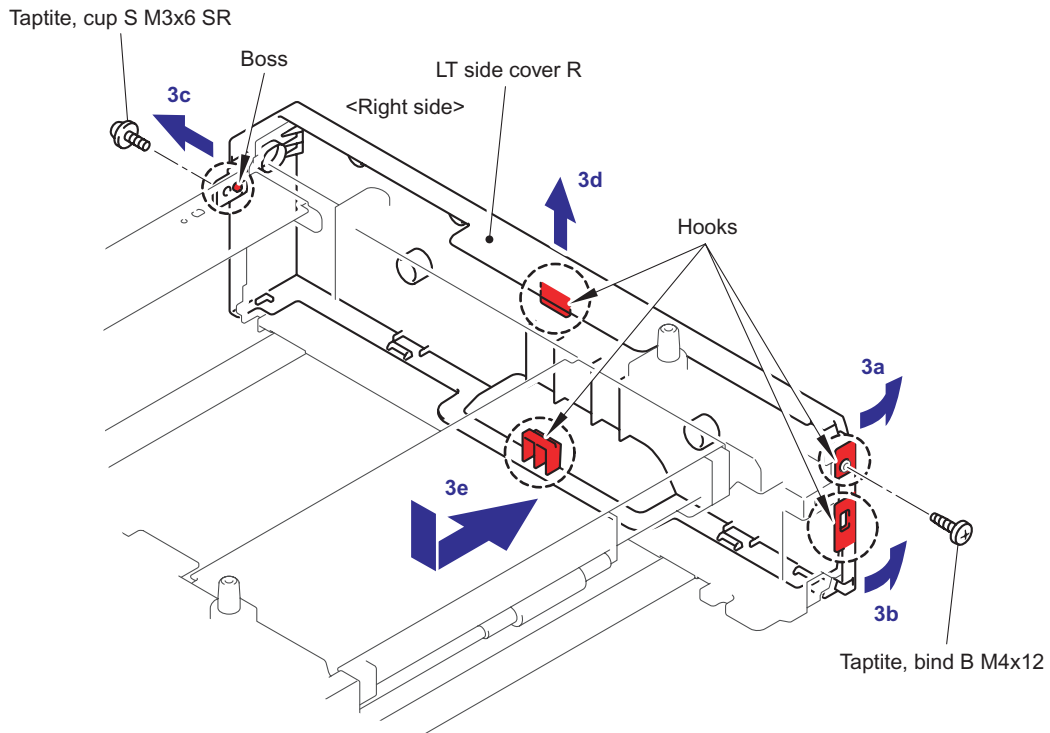


Fig. 5-219

10.6 LT PCB ASSY

- (1) Disconnect the connectors from the LT PCB ASSY.
- (2) Remove the bind B M4x12 Taptite screw, and then remove the LT PCB ASSY.

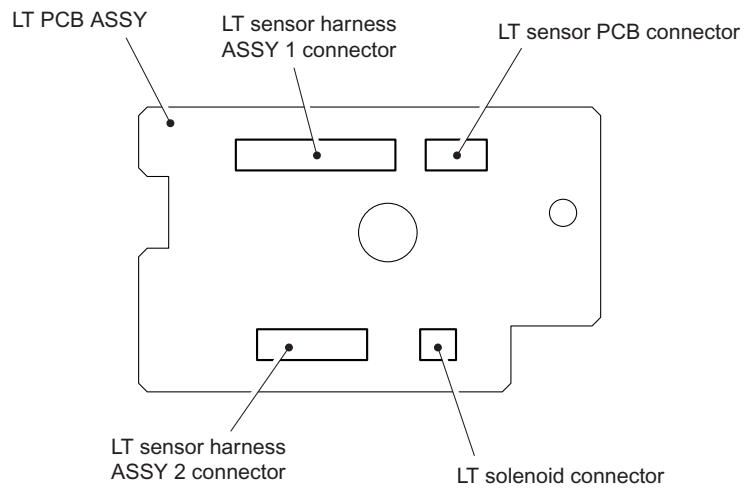
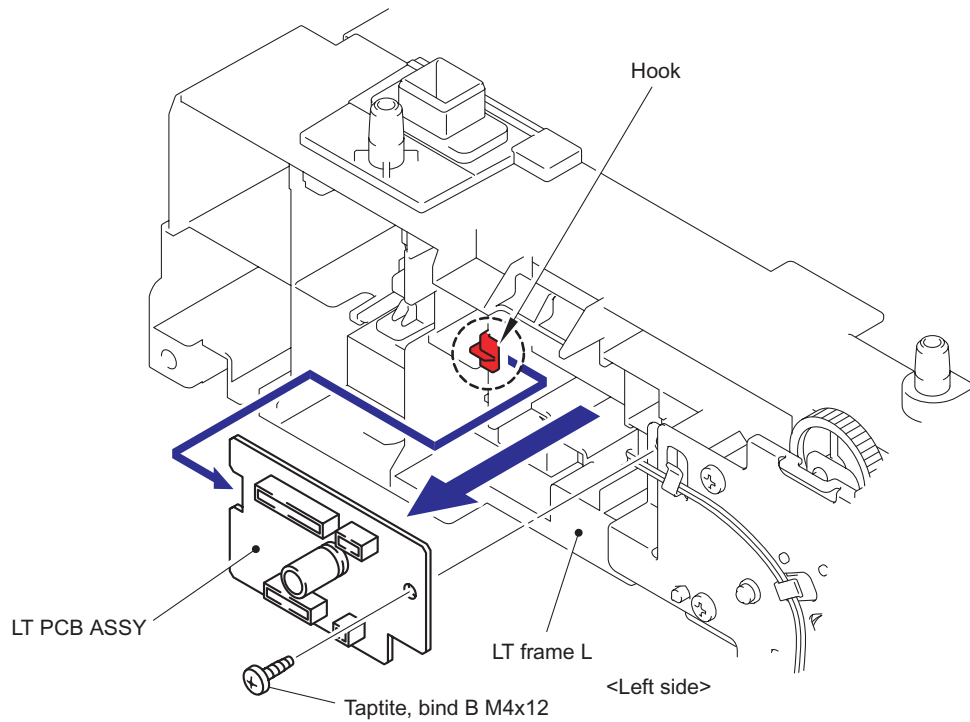


Fig. 5-220

10.7 Connector: 55533-1219

- (1) Remove the LT sensor harness ASSY 1 from the Connector: 55533-1219.
- (2) Disconnect the Connector: 55533-1219 while pressing the Hooks inwards.

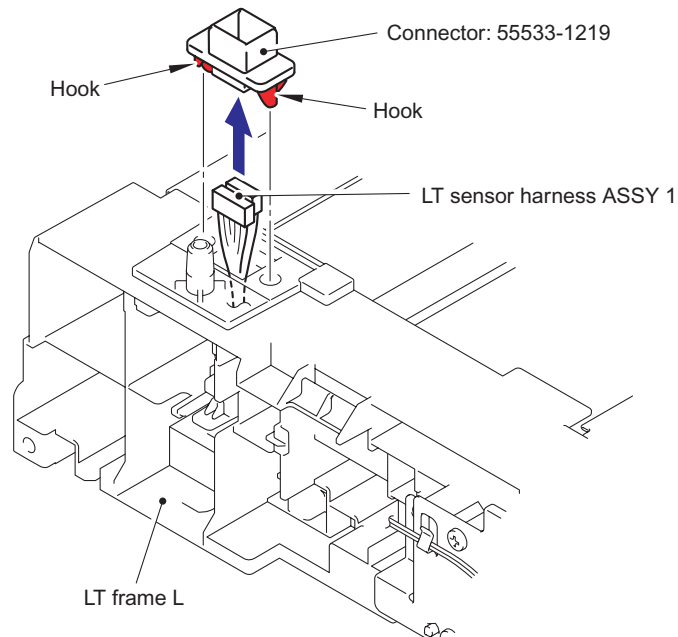


Fig. 5-221

10.8 Connector: 54702-1219

- (1) Remove the LT sensor harness ASSY 2 from the Connector: 54702-1219.
- (2) Disconnect the Connector: 54702-1219 while pressing the Hooks inwards.

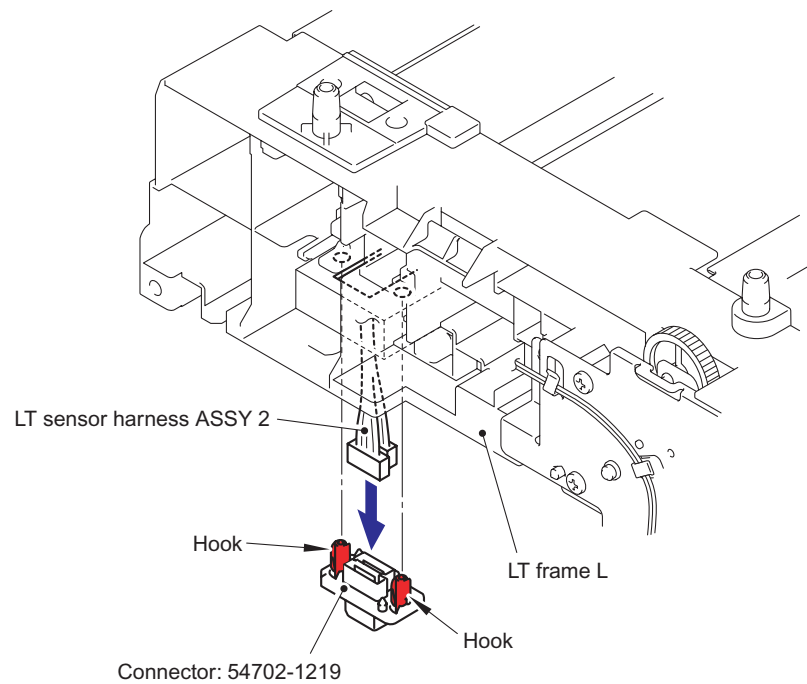


Fig. 5-222

10.9 Gear 24 LT

- (1) Place the LT so that the LT frame L is at the top.
- (2) Release the Hook to remove the Gear 20 T1 roller drive from the LT frame L.

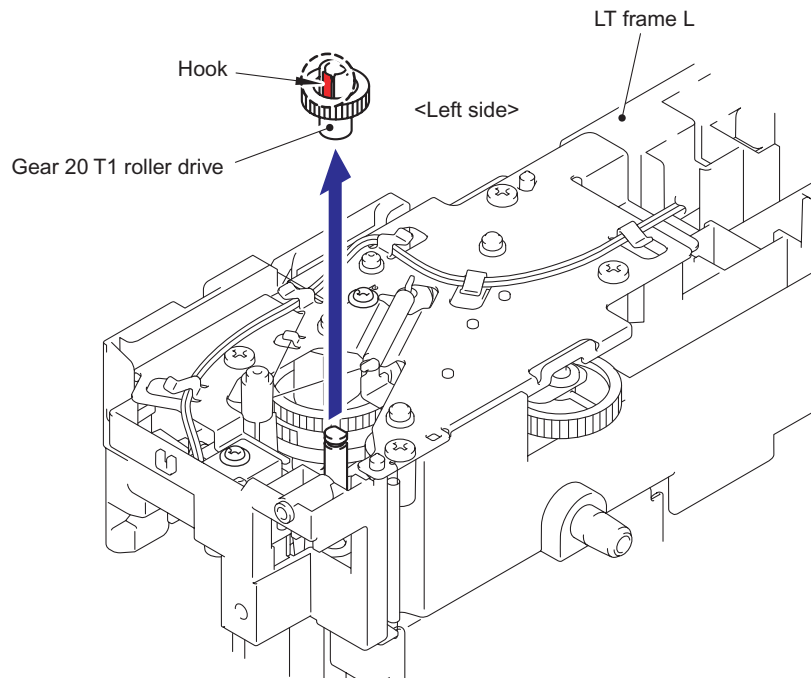


Fig. 5-223

- (3) Remove the Retaining ring E4.
- (4) Remove the Gear 24 LT from the LT frame L.

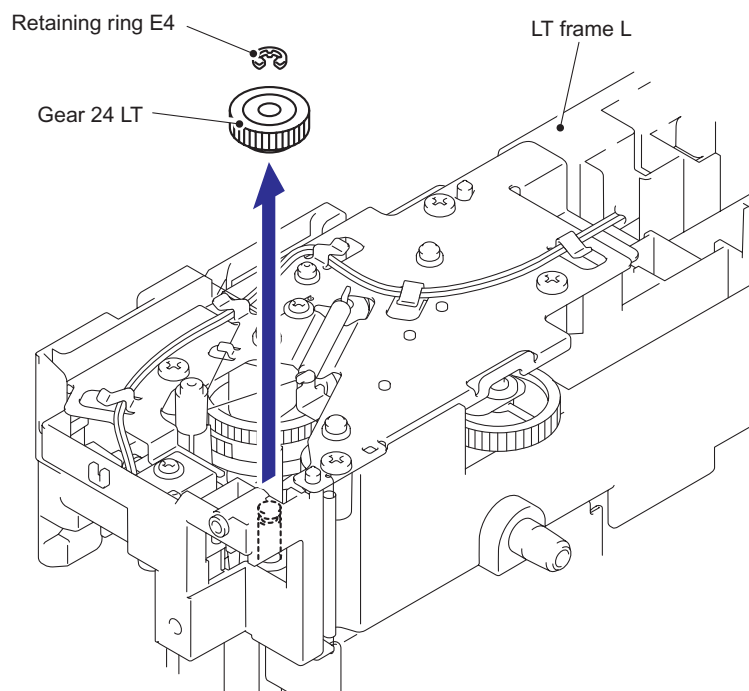


Fig. 5-224

10.10 Collar 6

- (1) Remove the Gear plate ground spring from the LT frame L.

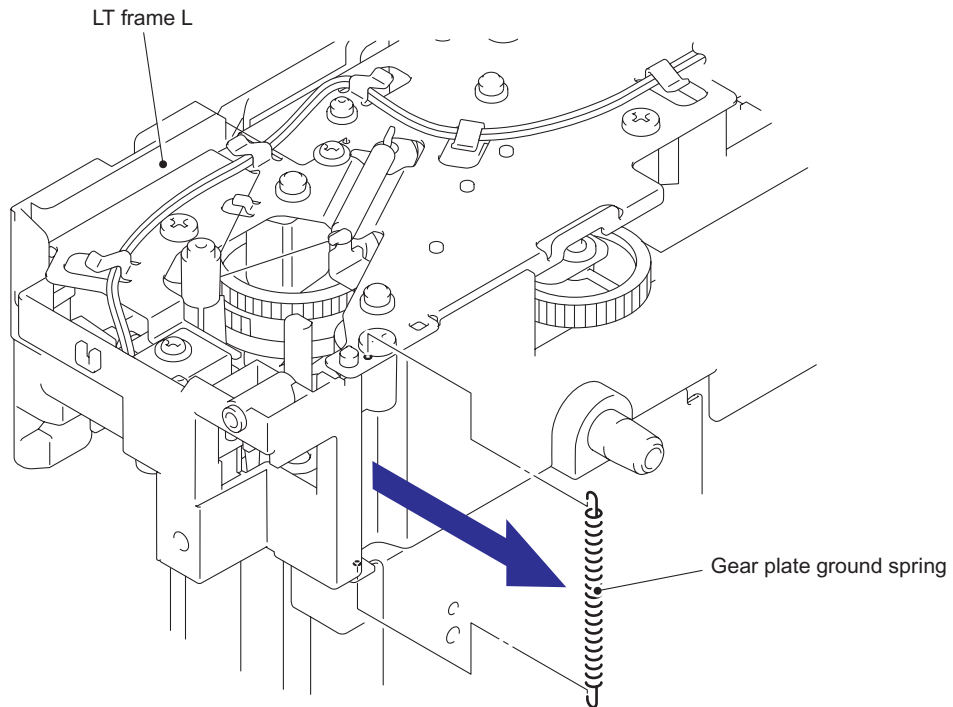


Fig. 5-225

- (2) Remove the cup S M3x6 Taptite SR screw, and then remove the Feed roller ground plate.

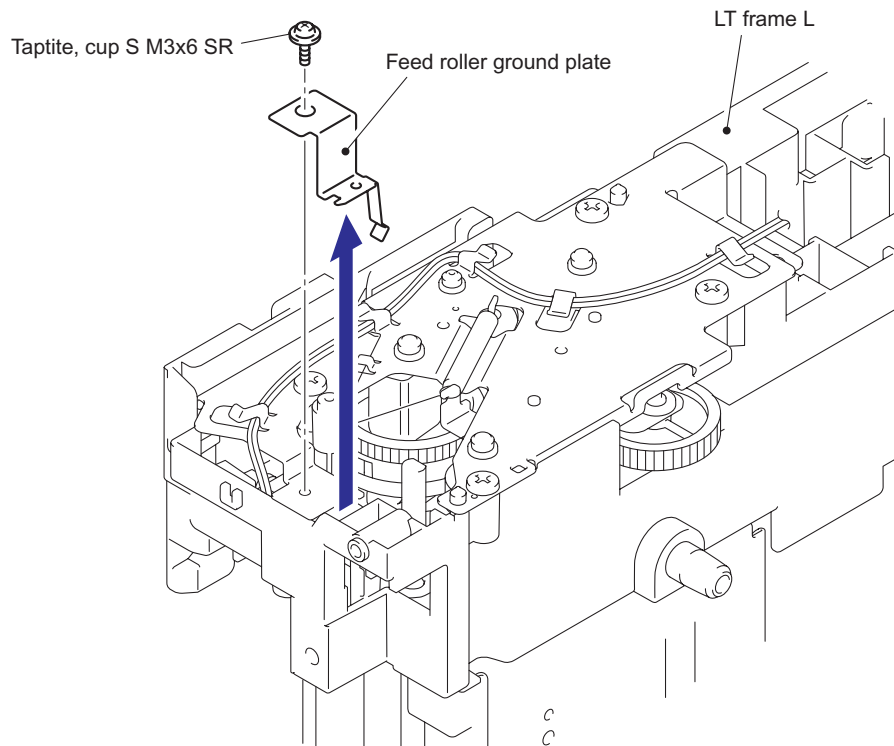


Fig. 5-226

(3) Remove the T1 sector gear spring LT from the LT frame L.

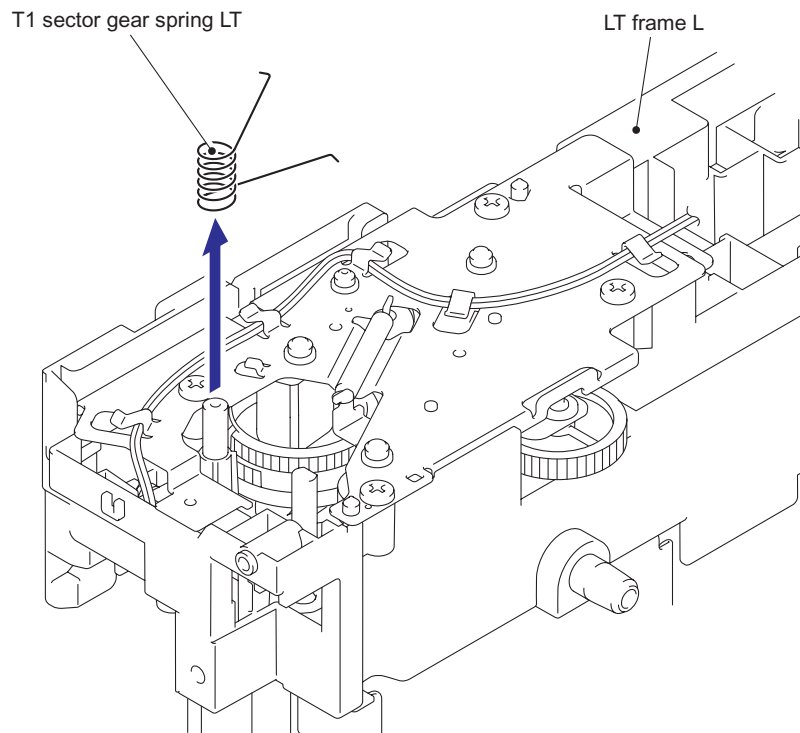


Fig. 5-227

Assembling Note:

- When assembling the T1 sector gear spring LT, ensure that its direction is correct referring to the figure below.

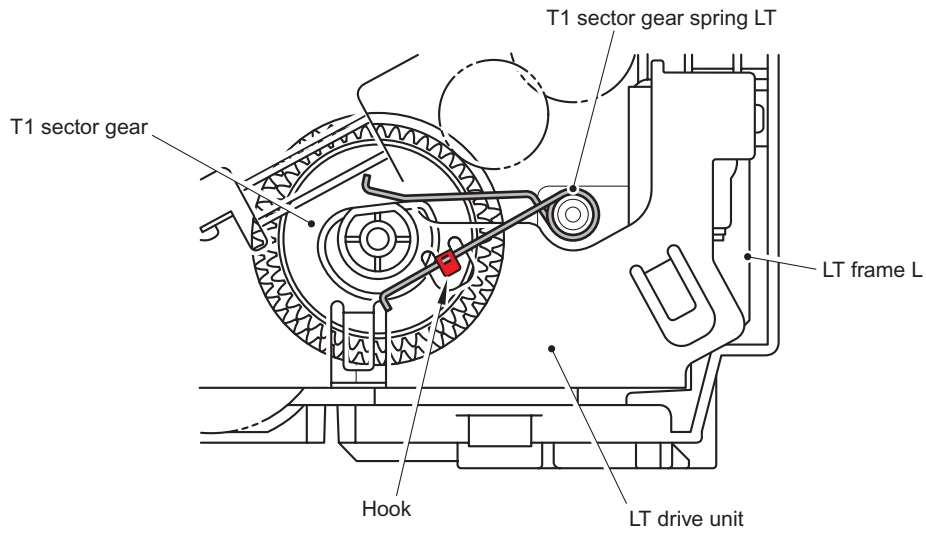


Fig. 5-228

- (4) Remove the LT solenoid harness from the hooks of the LT drive unit.

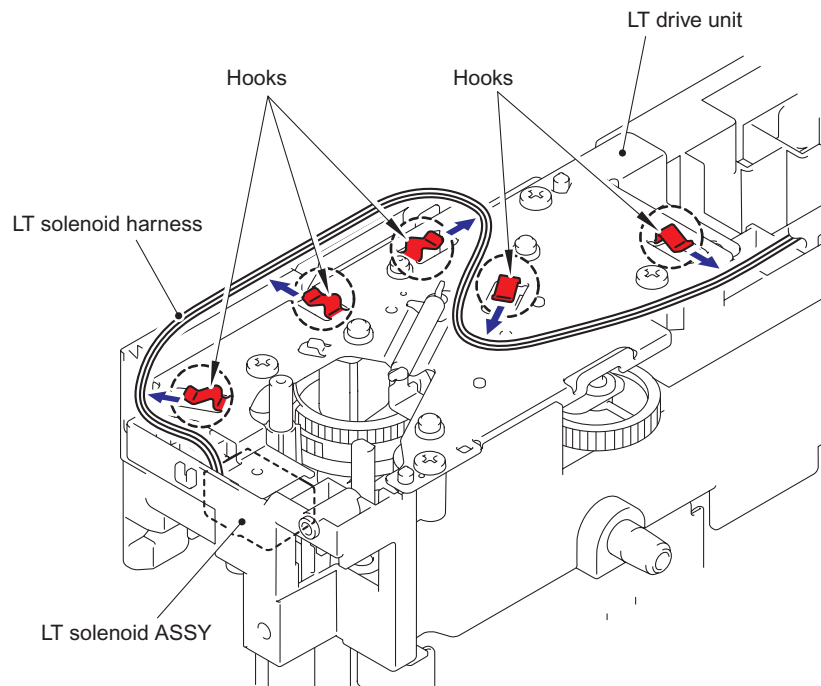


Fig. 5-229

- (5) Remove the cup S M3x6 Taptite screw.
- (6) Remove the four bind B M4x12 Taptite screws, and then remove the LT drive unit.

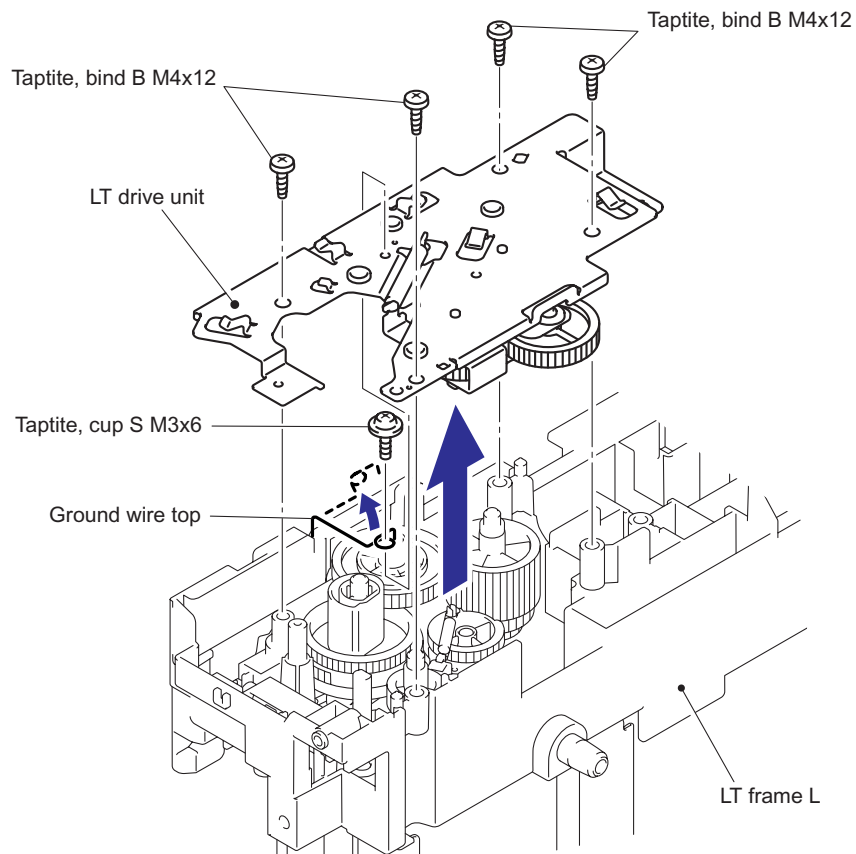


Fig. 5-230

(7) Remove the Clutch spring from the LT drive unit.

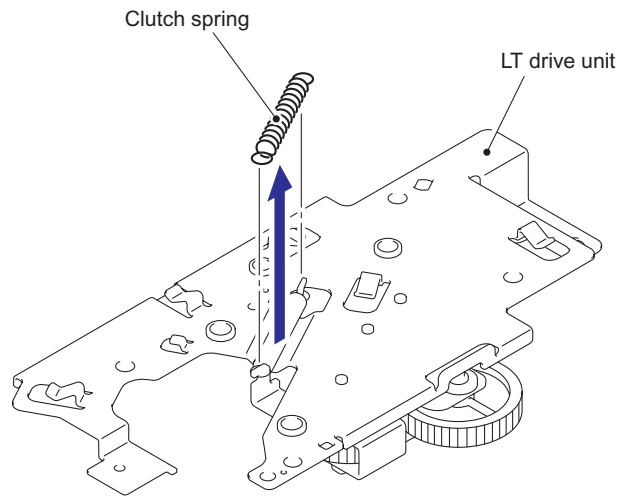


Fig. 5-231

(8) Remove the Collar 6.

(9) Remove the Clutch arm ASSY from the LT drive unit.

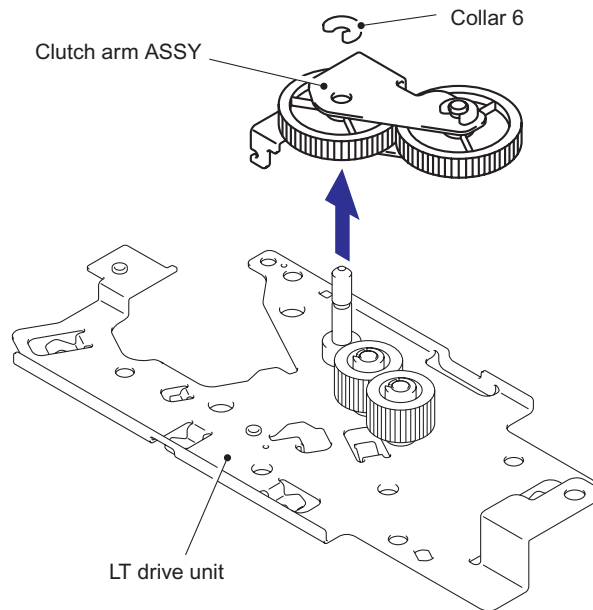


Fig. 5-232

(10) Remove the Collar 6 from the Clutch arm ASSY.

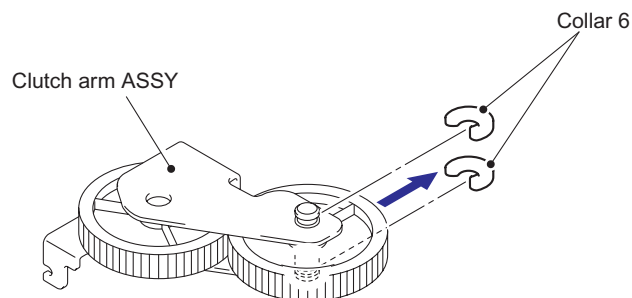


Fig. 5-233

10.11 LT Solenoid ASSY

- (1) Remove the bind B M3x10 Taptite screw, and then remove the LT solenoid ASSY.
- (2) Remove the Solenoid release spring P/R from the LT solenoid ASSY.

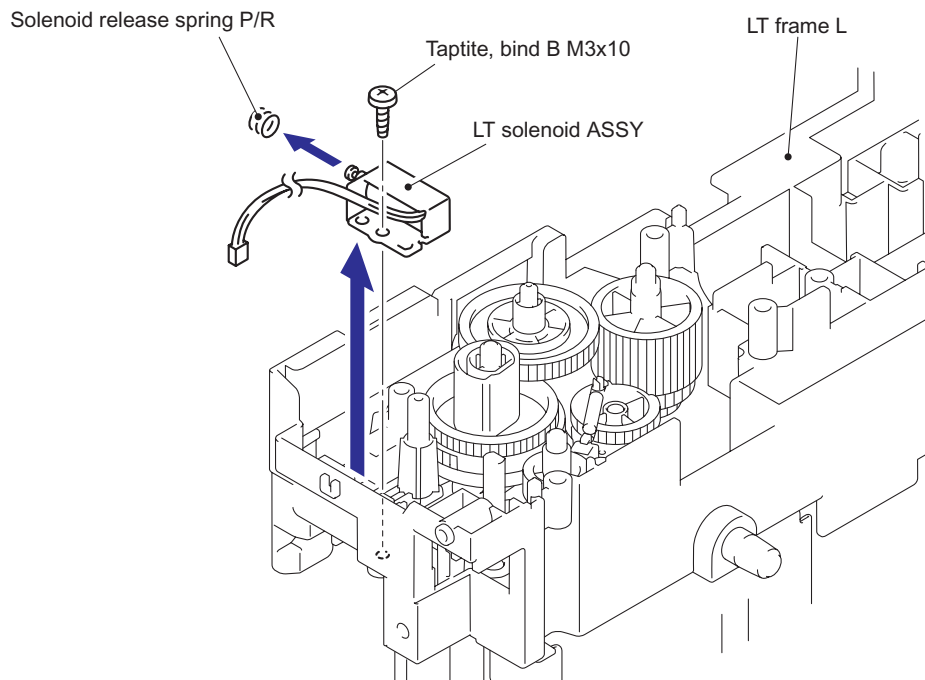


Fig. 5-234

10.12 Roller Holder ASSY

- (1) Push the Lift arm to the direction of the arrow 1a and pull out the pin of the Roller holder ASSY. Then, turn the Roller holder ASSY to the direction of the arrow 1b.

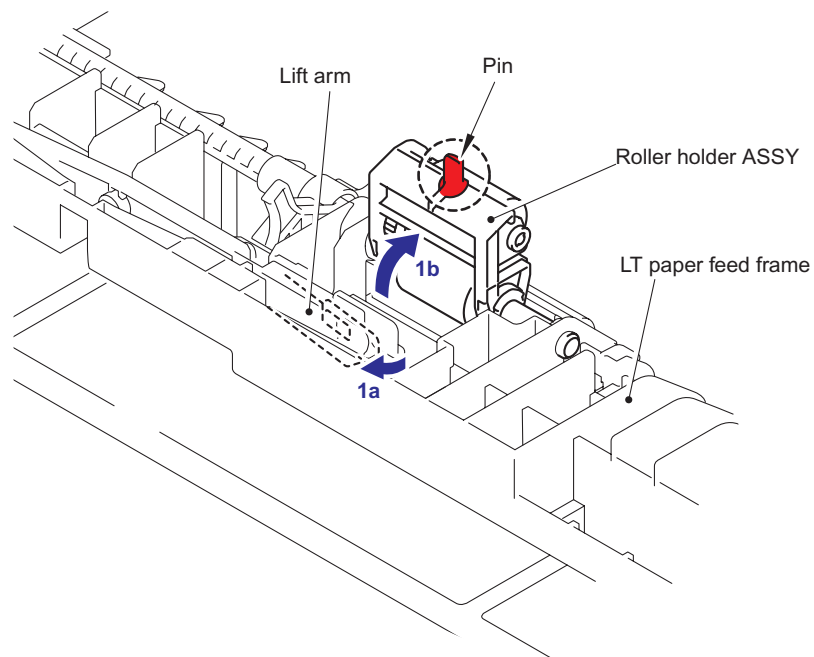


Fig. 5-235

- (2) Slide the Roller holder ASSY to the direction of the arrow 2a. Then, lift up the gear side of the Roller holder ASSY to the direction of the arrow 2b and pull it out to the direction of the arrow 2c to remove.

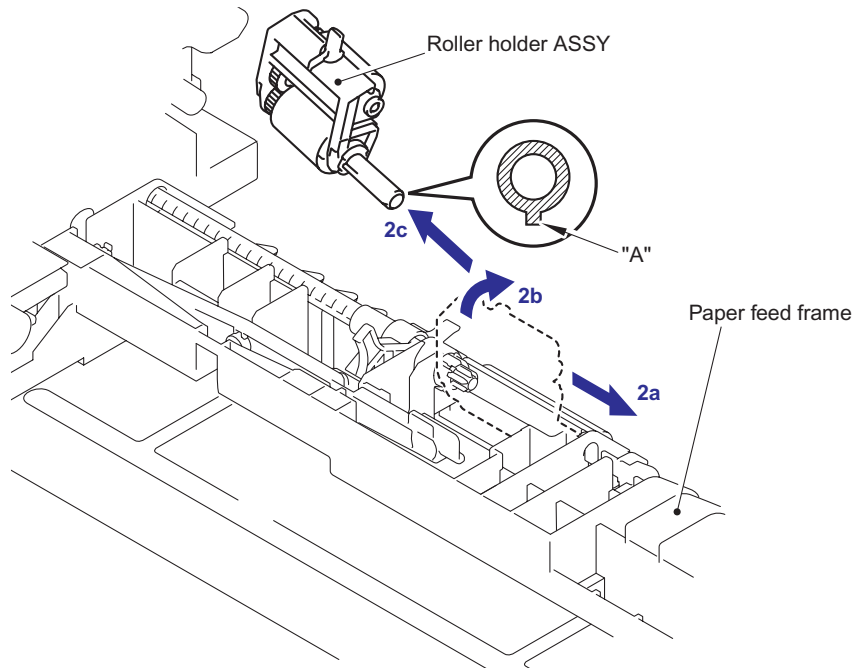


Fig. 5-236

Assembling Note:

- When assembling the roller holder ASSY, align the section "A" on the shaft of the roller holder ASSY with the hole on the paper feed frame.

10.13 Edge Actuator Spring

- (1) Remove the Edge actuator spring.

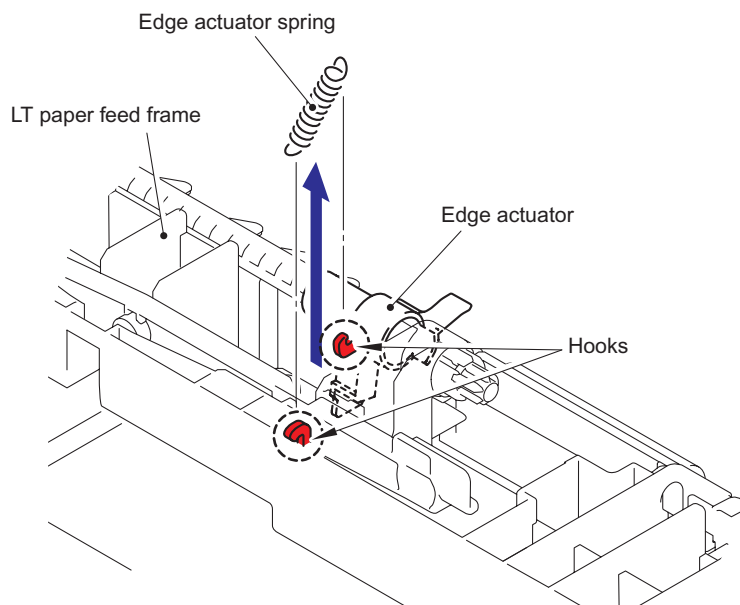


Fig. 5-237

10.14 PE Actuator , Edge Actuator

- (1) Release the Hook and remove the Separation R shaft bearing.

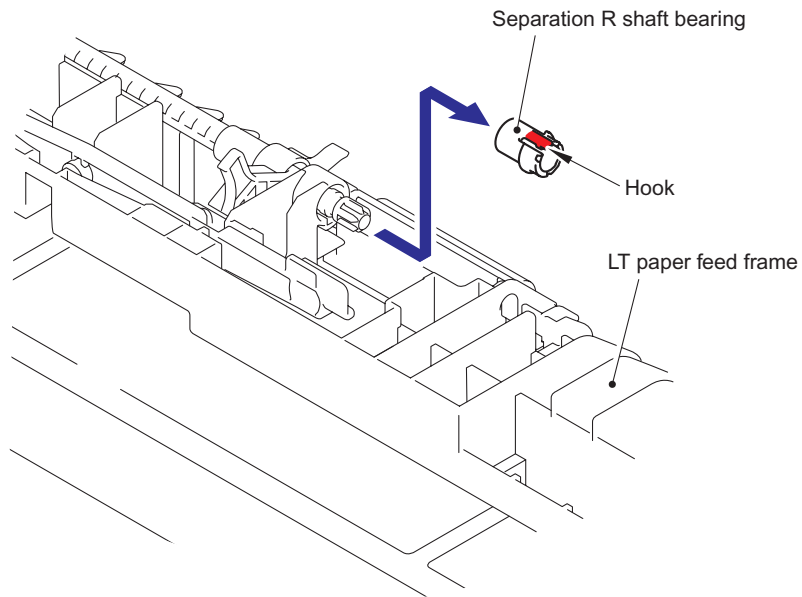


Fig. 5-238

- (2) Pull out the Separation roller drive shaft to the direction of the arrow and remove the Edge actuator and PE actuator.

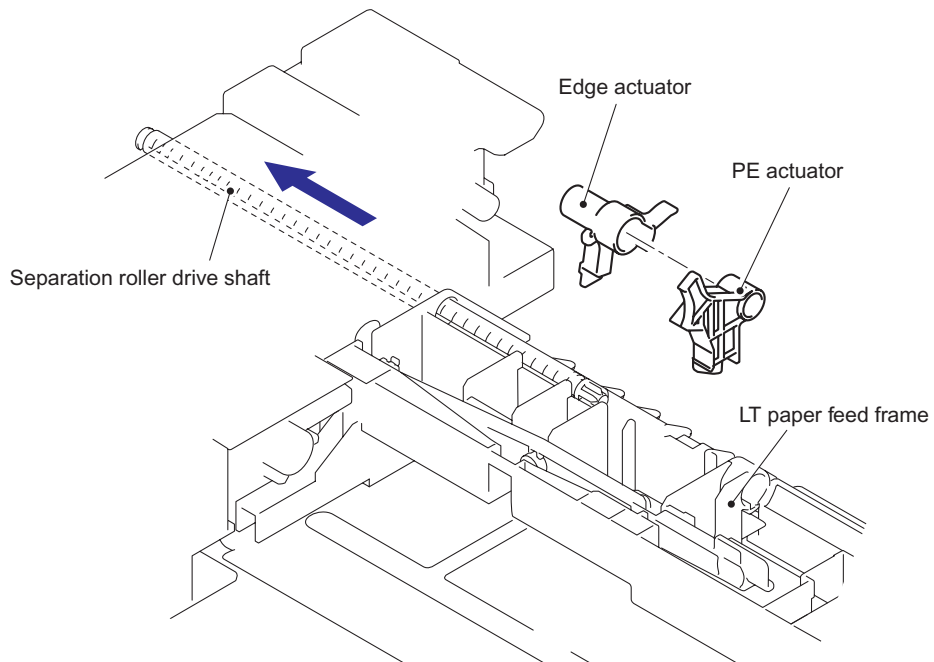


Fig. 5-239

10.15 LT Sensor PCB ASSY

- (1) Remove the two bind B M4x12 Taptite screws.
- (2) Remove the four cup S M3x6 Taptite SR screws, and then remove the LT frame L.

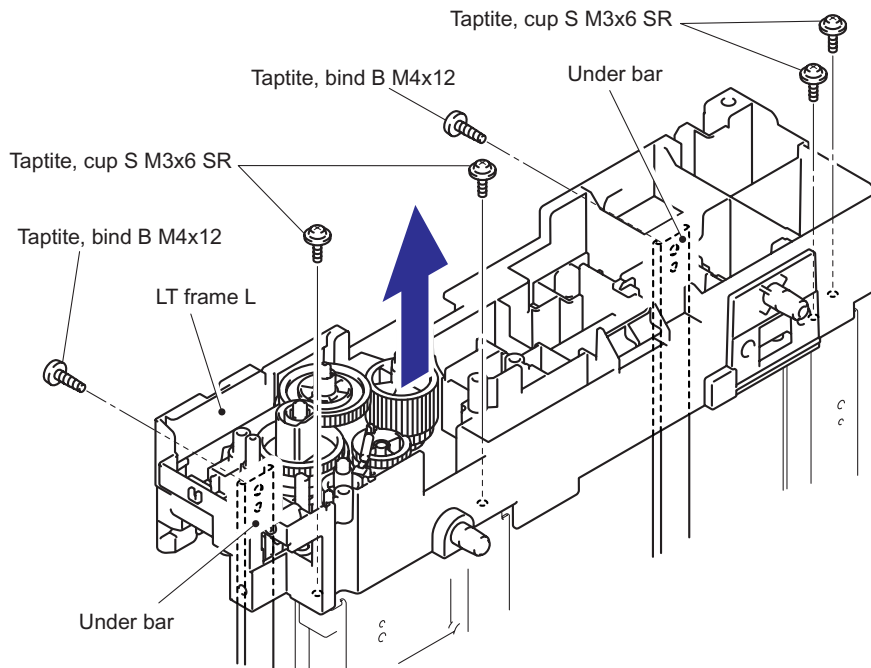


Fig. 5-240

- (3) Remove the two cup S M3x6 Taptite SR screws, and then remove the LT paper feed frame.

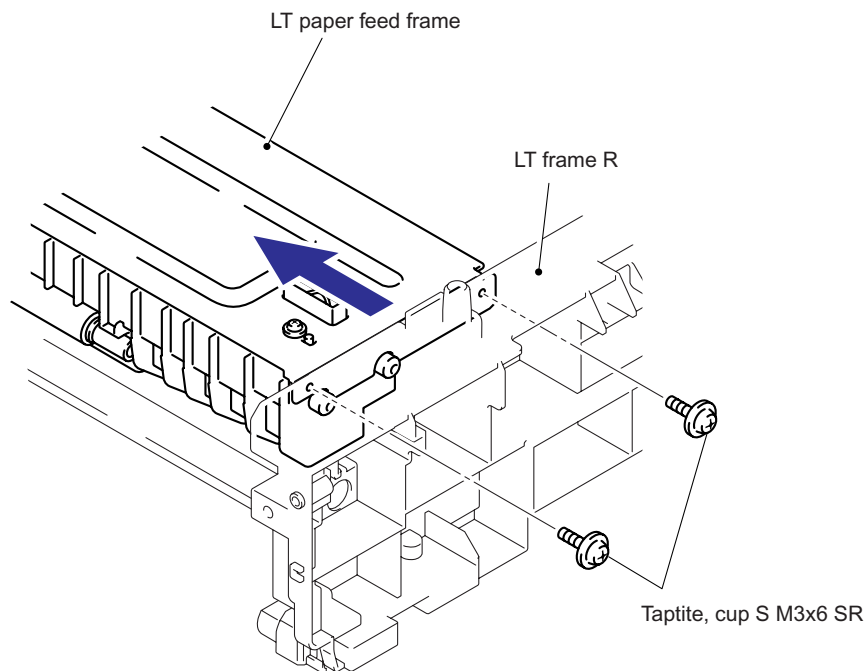


Fig. 5-241

- (4) Remove the two cup B M3x12 Taptite screws, and then remove the LT front beam.

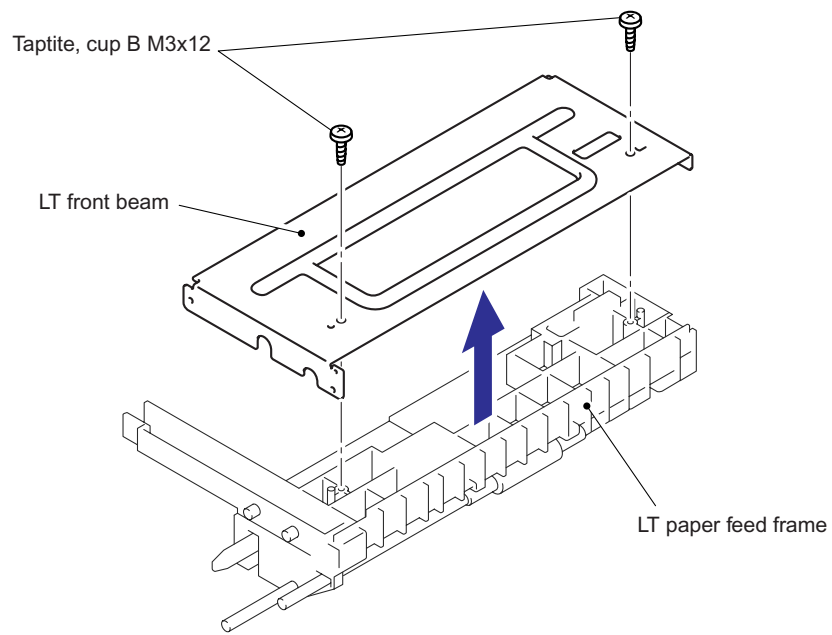


Fig. 5-242

- (5) Remove the bind B M3x8 Taptite screw, and then remove the LT sensor PCB ASSY.

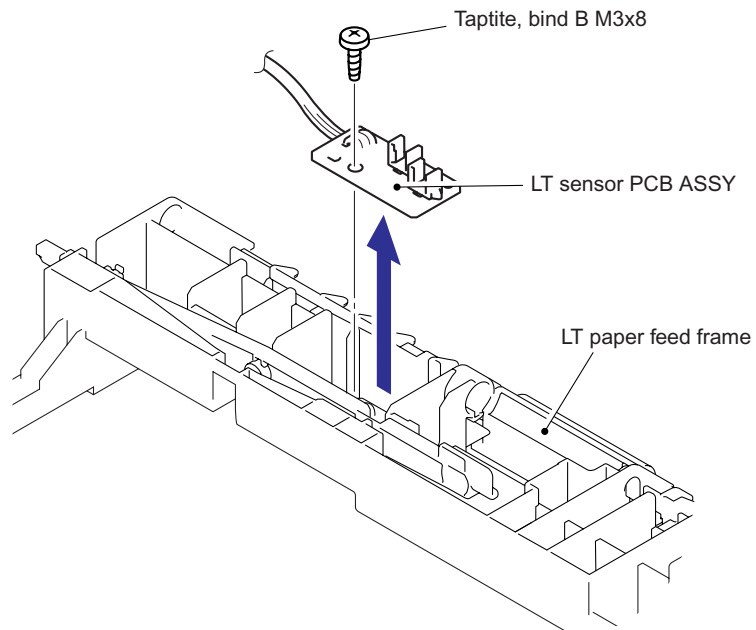


Fig. 5-243

CHAPTER 6

ADJUSTMENTS AND UPDATING OF SETTINGS, REQUIRED AFTER PARTS REPLACEMENT

CHAPTER 6 ADJUSTMENTS AND UPDATING OF SETTINGS, REQUIRED AFTER PARTS REPLACEMENT

This chapter details adjustments and updating of settings, which are required if the head/ carriage unit, main PCB and some other parts have been replaced.

CONTENTS

1. IF YOU REPLACE THE MAIN PCB.....	6-1
2. IF YOU REPLACE THE WIRELESS LAN PCB.....	6-12
3. IF YOU REPLACE THE WIRELESS LAN PCB.....	6-13

1. IF YOU REPLACE THE MAIN PCB

<What to do when replacing the main PCB>

- **Rewriting the Firmware (Main Firmware, Sub Firmware (PCL/PS))**
- **EEPROM Customizing of the Main PCB (Maintenance Mode: Code 74)**
- **EEPROM Parameter Initialization of the Main PCB (Maintenance Mode: Code 01)**
- **Operational Check of Control Panel Button (Maintenance Mode: Code 13)**
- **Operational Check of Sensors (Maintenance Mode: Code 32)**
- **Acquisition of White Level Data and Set the CCD Scanner Area (Maintenance Mode:Code 55)**
- **Setting the Serial Number**
- **Setting the Toner Cartridge Type**
- **Scanning and Printing Check**
- **ROM Version Check (Maintenance Mode: Code 25)**
- **Operational Check of Fans (Maintenance Mode: Code 78)**

<What you need to prepare>

- (1) Computer (Windows®. XP/2000)
Create a folder on the C drive, for example:- (AC FIRMWARE)
- (2) A USB flash memory drive
- (3) The Firmware

Main Firmware: LZXXXX_\$.djf or LZXXXX_\$.upd	LZXXXX_\$.djf or LZXXXX_\$.upd LZXXXX: First six digits are a parts number of the firmware. \$: Alphabet representing the revision of the firmware.
---	---

- (4) The Maintenance Tool (Mainte.EXE)
Copy it into the folder that has been created on the C drive. Extract the copied file and run "brmainte.exe" file by double-clicking it.
- (5) A USB cable
- (6) The Download Utility (FILEDG32.EXE)
Copy it into the folder that has been created in the C drive.
- (7) The Brother Maintenance USB Printer Driver
Copy it into the folder that has been created on the C drive and extract the copied file.

<Procedures>

■ Rewriting the Firmware

- How to rewrite the firmware by using the USB flash memory drive

If you save program files in the USB flash memory drive and plug it into the USB direct interface, you can rewrite the firmware and set the country.

Note;

- Make sure that the USB flash memory drive has enough space to save the program file.
- In order to verify the data list saved in the USB memory, press the [▲] or [▼] button after the message described in Step (4) appears on the LCD, and check the list shown on the LCD.

- (1) Save the necessary program files such as Main firmware (djf file) to rewrite them into the USB flash memory drive.
- (2) Connect the USB flash memory drive to the USB direct interface on the front of the machine.



- (3) "Direct Print" is displayed on the first line of the LCD, and the file names will be shown on the second or lower line of the LCD. Press the [▲] or [▼] button to choose the necessary program file, and press the [OK] button.
- (4) When "Program Update/ Press Start" appears on the LCD, press the [OK] button to start. The "Program Updating/ Do not turn OFF" message appears on the LCD with Status LED on while rewriting the firmware. Do not turn off the machine.
- (5) After completion of firmware rewriting, the machine is rebooted and returns to the Ready state automatically.
- (6) If selecting the necessary program file to rewrite next, then follow the steps from (4) to (6).
- (7) Remove the USB flash memory drive from the USB direct interface once the update have finished.

Note;

- When pressing the [*] and [#] keys at the same time, you can check the firmware version of the the Main Program on the LCD.

- If rewriting the firmware files

If rewriting the firmware using a USB flash memory drive fails in process and an error message appears on the LCD, or no message appears on the LCD, it will be necessary to rewrite the firmware using the "FILEDG32.EXE". Follow the steps below.

< Installing the maintenance driver >

To identify machines connected via USB direct interface, the PC requires the corresponding driver for the virtual USB device. If you connect any number of machines to your PC, the same number of virtual USB devices will be automatically configured on your PC. To prevent many virtual USB devices from being configured, use the unique driver installation procedure described below that enables your PC to identify terminals via one single virtual USB device.

Note;

- Once this installation procedure is carried out for a PC, no more driver/software installation will be required for that PC to identify machines. If the Brother Maintenance USB Printer driver has been already installed to your PC according to this procedure, skip this section.
- Before proceeding to the procedure given below, make sure that the Brother Maintenance USB Printer driver is stored in your PC.

- (1) Check that the power switch of the machine is turned off. Disconnect the USB cable that connects the machine with PC.
- (2) Turn on your PC.
- (3) Turn on the power switch of the machine.
- (4) Press the **[Menu]** and **[Start]** buttons. Next press the button four times to make the machine enter the maintenance mode. (Refer to "1. ENTRY INTO THE MAINTENANCE MODE" in Chapter 7.)

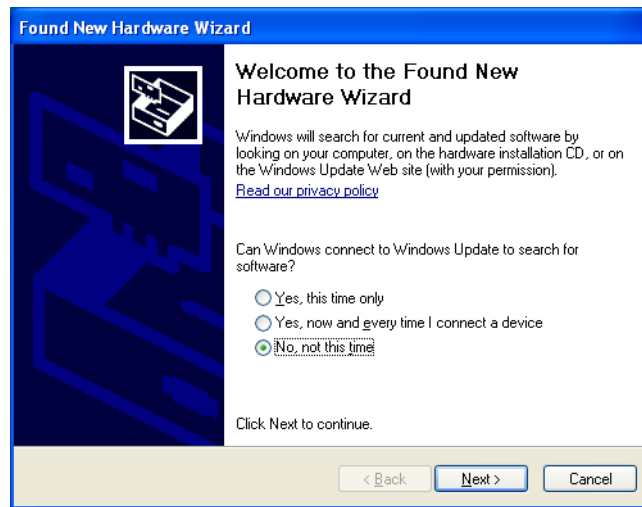
Tip;

- FAX models equipped with numerical keypads can enter the maintenance mode in the same way as conventional models; that is, by pressing the **[Menu]** button, **[*]**, **[2]**, **[8]**, **[6]** and **[4]** keys in this sequence.

- (5) Connect the machine to your PC using the USB cable. The following window appears.



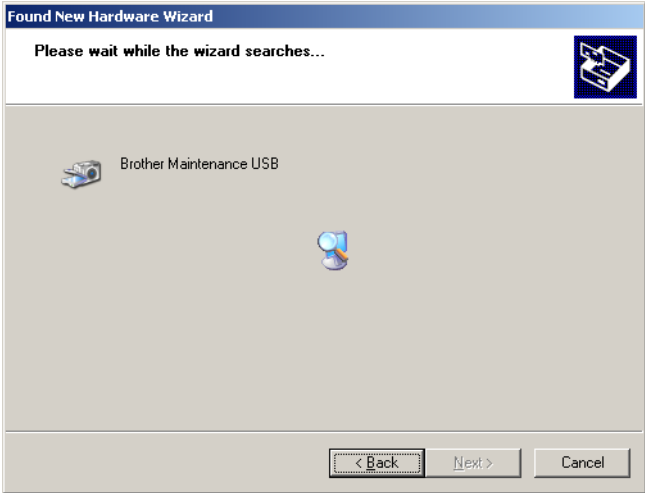
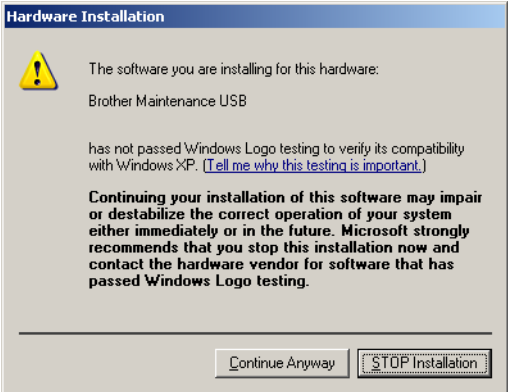
- (6) The following screen appears, indicating the detection of new hardware device by the system. Select “No, not this time.” And click **Next**.



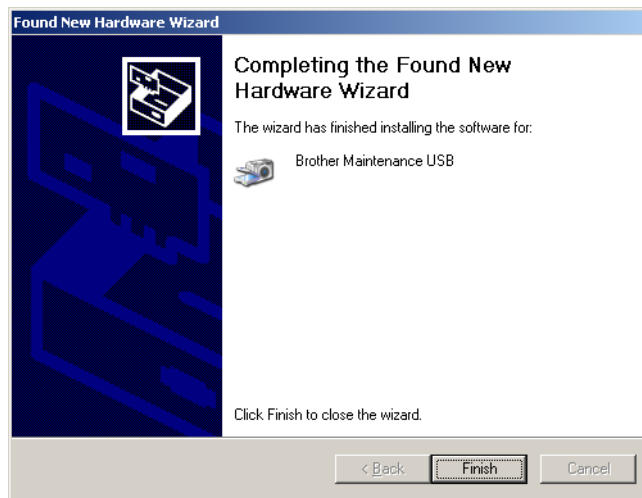
- (7) Select “Install the software automatically (Recommended)” and click Next.



(8) Alert warning message of WHQL appears. Click Continue Anyway to proceed.



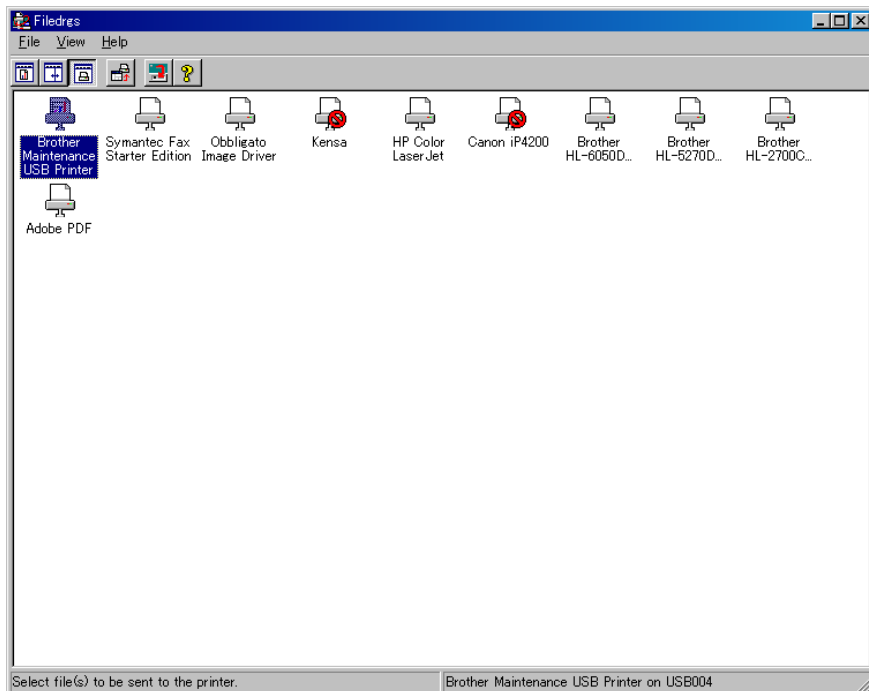
- (9) If the Brother Maintenance USB Printer driver is successfully installed, the following message screen appears. Click Finish to return.



Note;

- In order to check whether the printer driver is successfully installed, click **Start**, **Settings** and **Printers** and select the Printers window. Then, check that the Brother Maintenance USB Printer icon is shown.

- (10) Repeat the steps from (7) to (9) three times, and then complete its installation.



<How to rewrite the firmware>

After the installation procedure of the Brother Maintenance USB Printer driver is completed, refer to the following steps for the detailed procedures to rewrite the program files. If the Brother Maintenance USB Printer Driver has already been installed to your PC according to this procedure, start to rewrite the program files.

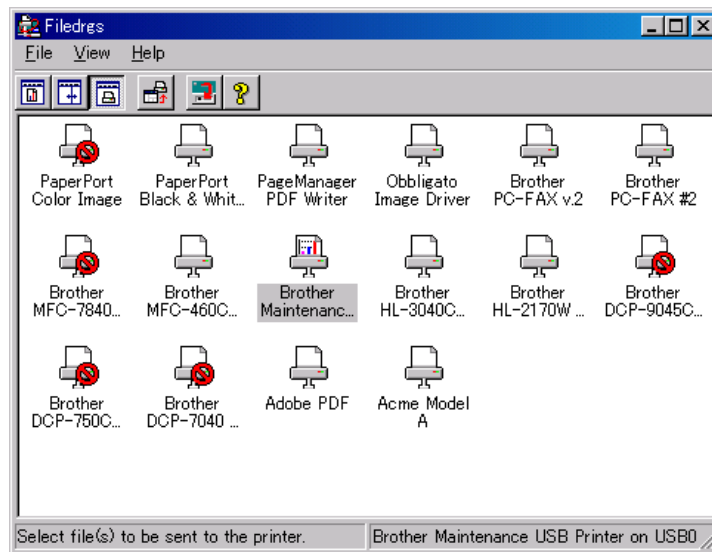
Note;

- DO NOT unplug the power cord of the machine or your PC or disconnect the USB cable while rewriting the program files.
- If you are using the "FILEDG32.EXE", the following firmware files are needed to rewrite the firmware.

Main Firmware: LZXXXX_\$.upd	LZXXXX_\$.upd LZXXXX: First six digits are a parts number of the firmware. \$: Alphabet representing the revision of the firmware.
---------------------------------	--

■ Rewriting the Main Firmware

- (1) Turn power switch of machine off. Then, turn it on while pressing the [5] key. "■■■■■■■■" appears on the LCD.
- (2) Connect the computer to the machine with the USB cable.
- (3) Double-click the "FILEDG32.EXE" to start. The following screen appears.



- (4) Drag the necessary firmware program file such as LZ1092_A.upd and drop it onto the Brother Maintenance USB Printer icon.
- (5) Upon completion of rewriting, the machine is rebooted and returns to the Ready state automatically.

■ **EEPROM Customizing of Main PCB (Maintenance Mode: Code 74)**

Refer to “4.18 EEPROM Customizing” in Chapter 7, and perform the EEPROM Customizing.

For models in France and surrounding countries, Pan-Nordic, Oceania or Iberia, implement the setting for Code 74 in Maintenance mode first. Then, implement more detailed settings for Code 52.

■ **EEPROM Parameter Initialization of Main PCB (Maintenance Mode: Code 01)**

Refer to “4.1 EEPROM Parameter Initialization” in Chapter 7, and perform the EEPROM parameter Initialization of main PCB.

■ **Operational Check of Control Panel Button (Maintenance Mode: Code 13)**

Refer to “4.8 Operational Check of Control Panel PCB” in Chapter 7, and perform the operational check of control panel PCB.

■ **Operational Check of Sensors (Maintenance Mode: Code 32)**

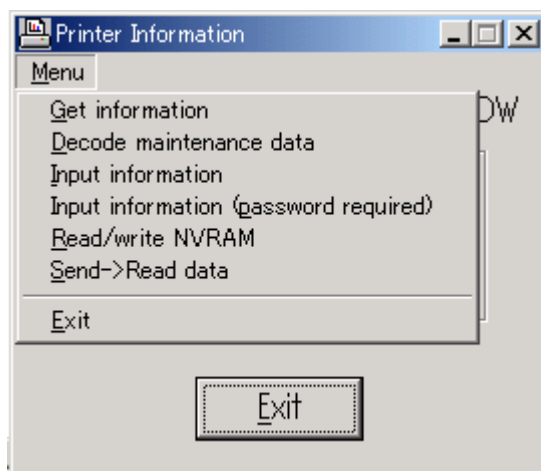
Refer to “4.10 Sensor Operational Check” in Chapter 7, and perform the operational check of sensors.

■ **Acquisition of White Level Data and Set the CCD Scanner Area (Maintenance Mode: Code 55)**

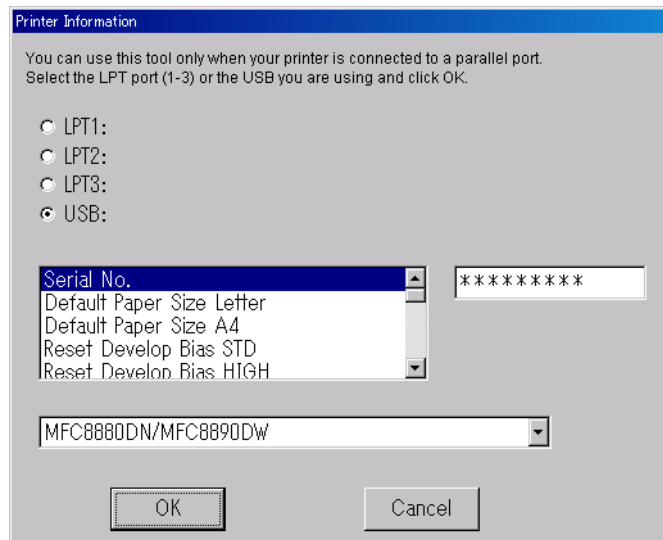
Refer to “4.16 Acquisition of White Level Data and CCD Scanner Area Setting” in Chapter 7, and perform the acquisition of white level data and CCD scanner area setting.

■ **Setting the Serial Number**

- (1) Connect the computer to the machine with the USB cable.
- (2) Double-click the brmainte.exe file (maintenance utility) which has been copied in the folder to start. Select “Input Information” from Menu. Select the applicable model name.



- (3) Check the port (USB) that the machine is connected through and click “Serial No.” in the lower box.
Enter the serial number (the last nine digits) of the machine into the box on the right hand side and click the [OK] button.



A confirmation window opens and shows the serial number. Check that it is correct and click the [OK] button.

Note;

- Refer to " **SERIAL NUMBERING SYSTEM** in Appendix 3" to know how to read the serial number of the machine.

■ Setting the toner cartridge type

The “Toner Life End” message is displayed according to the upper limit value of the developing roller rotation. The upper limit value is different between the starter toner cartridge, standard one and high-capacity one.

Therefore, it is necessary to set the conformable value to the toner cartridge installed in the machine following the steps below.

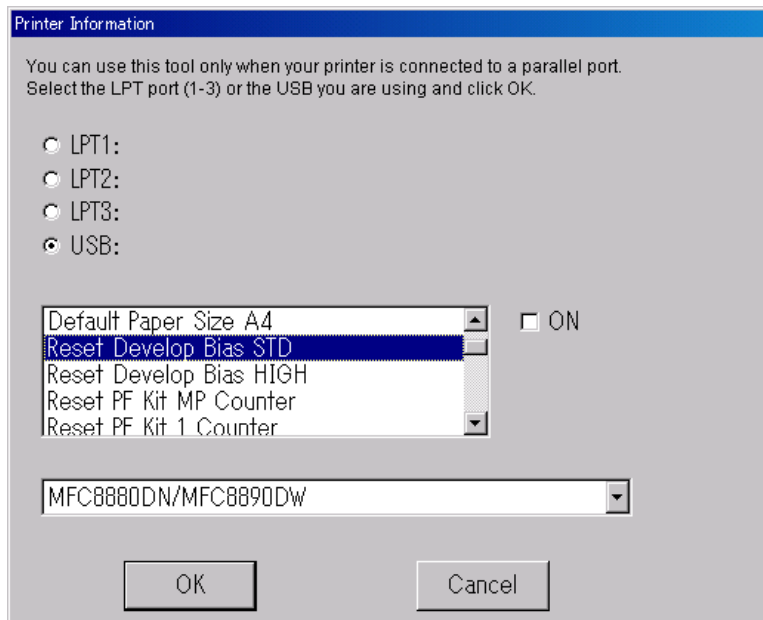
<Procedures>

- (1) Select “Reset Develop Bias STD” or “Reset Develop Bias HIGH” from Menu according as the currently used toner cartridge.

Note;

- It is impossible to set more than two types of the toner cartridge.
- It selecting more than two types, the NG message is displayed.

- (2) Check ON in the check box at the right hand side.
Click the [OK] button in the end. All of the settings are completed.
Turn the power supply of the machine off.



Note;

- If replace the main PCB, be careful not to loose the information of each consumable parts, count of periodical replacement part, error history, communication history and telephone book.
Even if the toner cartridge reaches the end of actual life, the warning display does not appear, the problem may occur in quality of image.

■ **Scanning and Printing Check**

Scan the test chart TC-023 with ADF, and make sure there are no problem of the printed image.

Make sure there are no problem of the ADF, scanner unit and the performance of recording part.

■ **ROM Version Check (Maintenance Mode: Code 25)**

Refer to "4.9 ROM Version Check (Function code 25)" in Chapter 7, check whether it is the most recent ROM.

■ **Operational Check of Fans (Maintenance Mode: Code 78)**

Refer to "4.19 Operational Check of Fans (Function code 78)" in Chapter 7, make sure there are no problem of the operation of the fan.

2. IF YOU REPLACE THE WIRELESS LAN PCB

<What to do when replacing the wireless LAN PCB>

- Backup to the Main PCB of the Wireless LAN PCB Information

<Which parts to use>

WIRELESS LAN PCB ASSY

■ Backup to the Main PCB of the Wireless LAN PCB Information (MFC 8890DW only)

The main PCB stores a part of the information of EEPROM on the wireless LAN PCB. It is necessary to write the information of EEPROM on the wireless LAN PCB.

- (1) Turn the power supply of the machine on while pressing the [▲] and [OK] button at the same time. (Hold on the [▲] and [OK] button while pressing it.) "PLEASE WAIT" is displayed on the LCD. When continue pressing the [▲] and [OK] button, "CHECK START" is displayed on the LCD. AT this time, release the two buttons.
- (2) After having passed for a while, "WLAN MODULE OK" is displayed on the LCD. Turn the power supply of the machine off after two indications are displayed.

3. IF YOU REPLACE THE WIRELESS LAN PCB

<What to do when replacing the FB unit>

- **Acquisition of White Level Data and Set the CCD Scanner Area (Maintenance Mode: Code 55)**

<Procedures>

- **Acquisition of White Level Data and Set the CCD Scanner Area (Maintenance Mode: Code 55)**

Refer to "4.16 Acquisition of White Level Data and CCD Scanner Area Setting" in Chapter 7, and perform the acquisition of white level data and CCD scanner area setting.

- **Scanning and Printing Check**

Scan the test chart TC-023 with ADF, and make sure there are no problem of the printed image.

Make sure there are no problem of the ADF, scanner unit and the performance of recording part.

- **Placement of FB Unit in Position for Transportation (Maintenance Mode: Code 06)**

Perform the "4.3 Placement of FB Unit in Position for Transportation" in Chapter 7, and set the scanner lock lever to the lock position after performing the placement of FB unit in the position for transportation.

CHAPTER 7

SERVICE MODE

CHAPTER 7 SERVICE MODE

The maintenance mode is exclusively designed for the purpose of checks, settings and adjustments using the buttons on the control panel or open/close of the front cover. You can perform operational checks of panel PCB, sensors, perform a print test, display the log information or error codes.

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1. ENTRY INTO THE MAINTENANCE MODE

Press the **[Menu]** and **[Start]** buttons. Next press the **[▲]** button four times to make the machine enter the maintenance mode.

TIP:

- FAX models equipped with numerical keypads can enter the maintenance mode in the same way as conventional models; that is, by pressing the **[Menu]** button, **[*]**, **[2]**, **[8]**, **[6]** and **[4]** keys in this sequence.

The machine beeps for approx. one second and displays "■■■ MAINTENANCE ■■■" on the LCD, indicating that it is placed in the initial stage of the maintenance mode, a mode in which the machine is ready to accept entry from the buttons.

To select one of the maintenance-mode functions listed in "2. LIST OF MAINTENANCE-MODE FUNCTIONS", press the **[▲]** button or **[▼]** button to display any function code on the LCD. Then press the **[OK]** button.

(The details of each maintenance-mode function are described in "4. DETAILED DESCRIPTION OF MAINTENANCE-MODE FUNCTIONS".)

Note:

- To exit from the maintenance mode and switch to standby, press the **[9]** key twice in the initial stage of the maintenance mode.
- Pressing the **[Stop/Exit]** button after entering only one digit restores the machine to the initial stage of the maintenance mode.
- If an invalid function code is entered, the machine resumes the initial stage of the maintenance mode.

2. LIST OF MAINTENANCE-MODE FUNCTIONS

Function Code	Function	Refer to:
01	EEPROM Parameter Initialization	4.1 (7-4)
05	Printout of Scanning Compensation Data	4.2 (7-5)
06	Placement of CIS Unit Position for Transportation	4.3 (7-8)
08	ADF Performance Test	4.4 (7-8)
09	Test Pattern	4.5 (7-9)
10	Worker Switch (WSW) Setting	4.6.1 (7-10)
11	Printout of Worker Switch Data	4.6.2 (7-13)
12	Operational Check of LCD	4.7 (7-14)
13	Operational Check of Control Panel Button	4.8 (7-15)
25	ROM Version Check	4.9 (7-16)
32	Operational Check of Sensors	4.10 (7-17)
43	PC Print Function	4.11 (7-19)
45	Switching the USB Setting	4.12 (7-22)
52	Pan-nordic Select Country	4.13 (7-23)
53	Received Data Transfer Function	4.14 (7-24)
54	Fine Adjustment of Scan Start/End Positions	4.15 (7-26)
55	Acquisition of White Level Data	4.16 (7-28)
67	Paper Feeding and Ejecting Test	4.17 (7-29)
74	EEPROM Customizing	4.18 (7-29)
78	Operational Check of Fans	4.19 (7-31)
80	Display of the Machine's Log	4.20 (7-32)
82	Error Code Indication	4.21 (7-34)
87	Output of Transmission Log to the Telephone Line	4.22 (7-34)
88	Counter Reset After Replacing the Fuser Unit, Laser Unit and Paper Feed Kit	4.23 (7-35)
91	EEPROM Parameter Initialization	4.1 (7-4)
99	Maintenance Mode Finish	4.24 (7-35)
—	Cancellation of the Memory Security Mode (Not applicable to the Japanese model.)	

3. USER-ACCESS TO THE MAINTENANCE MODE

Basically, the maintenance-mode functions listed on the [previous page](#) should be accessed by service personnel only. However, you can allow end users to access some of these under the guidance of service personnel (e.g., by telephone).

The user-accessible functions (codes 06, 09, 10, 11, 12, 25, 45, 53, 54, 80, 82, 87 and 88) are shaded in the table given on the [previous page](#). Function code 10 accesses the firmware switches, each of which has eight selectors. You should not allow end users to access all of those selectors, but you can allow them to access user-accessible selectors which are shaded in the firmware switch tables in [APPENDIX 1](#).

The service personnel should instruct end users to follow the procedure given below.

- (1) Press the **[Menu]**, **[Start]**, **[Menu]**, and **[▲]** buttons in this order.
The "MAINTENANCE 10" appears on the LCD.
- (2) Press the **[▲]** button or **[▼]** button several times to display the desired maintenance code on the LCD.
Then press the **[Menu]** button.
- (3) To switch the machine back to the standby state, press the **[Stop/Exit]** button. When each of the user-accessible functions is completed, the machine automatically returns to the standby state.

4. DETAILED DESCRIPTION OF MAINTENANCE-MODE FUNCTIONS

4.1 EEPROM Parameter Initialization (Function code 01/91)

<Function>

The machine initializes the parameters, user switches, and firmware switches registered in the EEPROM, to the initial values. Entering the function code 01 initializes all of the EEPROM areas, but entering 91 does not initialize some areas, as listed below.

Data item \ Function code	01	91
Maintenance-mode functions User switches Firmware switches	All of these will be initialized.	These will be initialized.
Remote activation code		These will not be initialized.
Station ID data Outside line number Telephone function registration One-touch dialing Speed dialing Group dialing		These will not be initialized.

Note:

- If you replace the main PCB with the one used for any other machine, carry out this procedure and then customize the EEPROM (maintenance-mode function code 74 in [Section 4.18](#)).

<Operating Procedure>

- (1) Press the [0] and [1] keys (or the [9] and [1] keys according to your need) in this order in the initial stage of the maintenance mode.
The "PARAMETER INIT" will appear on the LCD.
- (2) Upon completion of parameter initialization, the machine returns to the initial stage of the maintenance mode.
- (3) Be sure to turn the machine power off. If you press the [9] key twice to exit from the maintenance mode without turning the power off, then the machine will not fully initialize the EEPROM.

4.2 Printout of Scanning Compensation Data (Function code 05)

<Function>

The machine prints out the white and black level data for scanning compensation.

<Operating Procedure>

Implement the operating procedure below after scanning the document once at least, not immediately after the machine is turned on. Since the machine initializes the white and black level data and obtains the standard value for document scanning compensation when starting scanning the document, the correct data for compensation cannot be printed out even if this operation is implemented without scanning the document.

The print result varies depending on whether implementing color scanning or black and white scanning immediately before this operating procedure. Make sure the white and black level data you want to print and implement the operation below.

- (1) For white and black scanning, copy the document. For color scanning, implement color scanning of the document.
- (2) Press the [0] and [5] keys in this order in the initial stage of the maintenance mode. The "WHITE LEVEL 1" will appear on the LCD.
- (3) The equipment prints out the scanning compensation data list containing the following:

■ Black and white scanning

- | | |
|---|----------------------------------|
| a) Dark output adjustment value (CH0) | 1Byte |
| b) Dark output adjustment value (CH1) | 1Byte |
| c) Bright output adjustment value (CH0) | 1Byte |
| d) Bright output adjustment value (CH1) | 1Byte |
| e) Background color compensated data | 1Byte |
| f) Black level data (CH0) | 2Byte |
| g) Black level data (CH1) | 2Byte |
| h) White level data (G) | by previous scanning pixel count |
| i) White level data (B) | by previous scanning pixel count |
| j) White level data (CH2) | by previous scanning pixel count |

■ Color scanning

- | | |
|---------------------------------------|----------------------------------|
| a) Dark output adjustment value (G) | 1Byte |
| b) Dark output adjustment value (B) | 1Byte |
| c) Dark output adjustment value (R) | 1Byte |
| d) Bright output adjustment value (G) | 1Byte |
| e) Bright output adjustment value (B) | 1Byte |
| f) Bright output adjustment value (R) | 1Byte |
| g) Background color compensated data | 1Byte |
| h) Black level data (G) | 2Byte |
| i) Black level data (B) | 2Byte |
| j) Black level data (R) | 2Byte |
| k) White level MIN data (G) | by previous scanning pixel count |
| l) White level MIN data (B) | by previous scanning pixel count |
| m) White level MIN data (R) | by previous scanning pixel count |

■ For color scanning

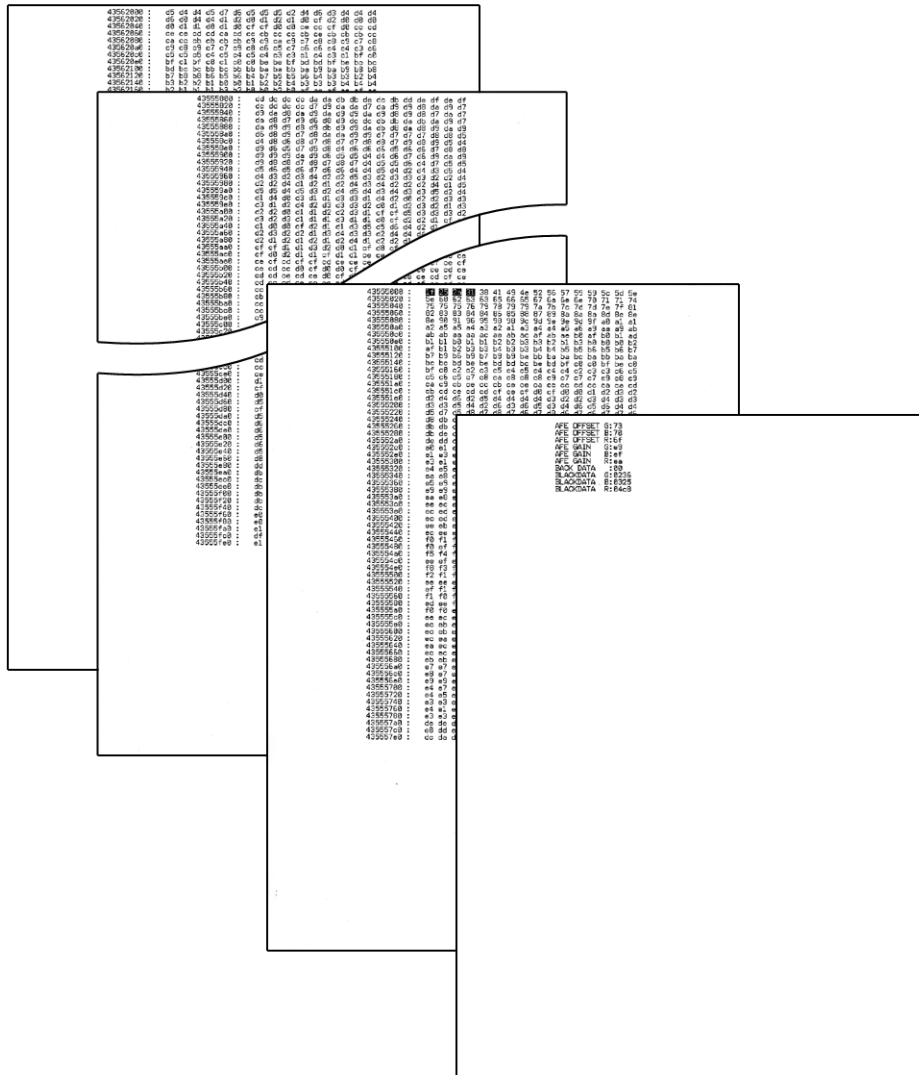


Fig. 7-2

4.3 Placement of FB Unit in Position for Transportation (Function code 06)

<Function>

This function is to move the scanning unit in position for transportation located at the right end.

When you fix the FAX equipment and check its operation, you need to perform this function right before packing and shipping it.

Note:

- Please instruct end users to perform this function if possible before packing and shipping their FAX equipment to a sales agent or a service dealer for the purpose of repair. (For the procedure to allow users to perform maintenance modes, please see [Section 3.](#))

<Operating Procedure>

- (1) Press the [0] and [6] keys in this order in the initial stage of the maintenance mode. The CCD unit moves to the designated position for transportation located at the right end. The "MAINTENANCE 06" is displayed until the CCD unit is placed in position. When the CCD unit is placed in the position, the "PLEASE SCAN LOCK" appears on the LCD.
- (2) Open the document cover, and lock the scanner lock lever at the rear left of the scanner unit. When the scanner lock lever is locked, the "SCAN LOCKED" appears. To terminate this operation, press the [Stop/Exit] button. The machine returns to the initial stage of the maintenance mode. The scanning operation cannot operate after this operation until switch OFF/ON or the "Function 99" is performed.

4.4 ADF Performance Test (Function code 08)

<Function>

The machine counts the documents fed by the automatic document feeder (ADF) and displays the count on the LCD for checking the ADF performance.

<Operating Procedure>

- (1) Set documents. (Allowable up to the ADF capacity.)
The "DOC. READY" will appear on the LCD.
- (2) Press the [0] and [8] keys in this order.
MFC-8880DW/8890DW only
Press the [▲] or [▼] buttons so that the "[▲]: DX, [▼]: SX" is displayed on the LCD. While counting the documents, the machine feeds them in and out, displaying the current count on the LCD as shown below.

ADF CHECK P.01

↑
Current count (1st page in this example)

- (3) To return the machine to the initial stage of the maintenance mode, press the [Stop/Exit] button.

4.5 Test Pattern 1 (Function code 09)

<Function>

This function, much like the copying function, prints out test pattern 1 to allow the service personnel to check for record data missing or print quality.

<Operating Procedure>

Press the [0] and [9] keys in this order in the initial stage of the maintenance mode. The figure below shows test pattern.

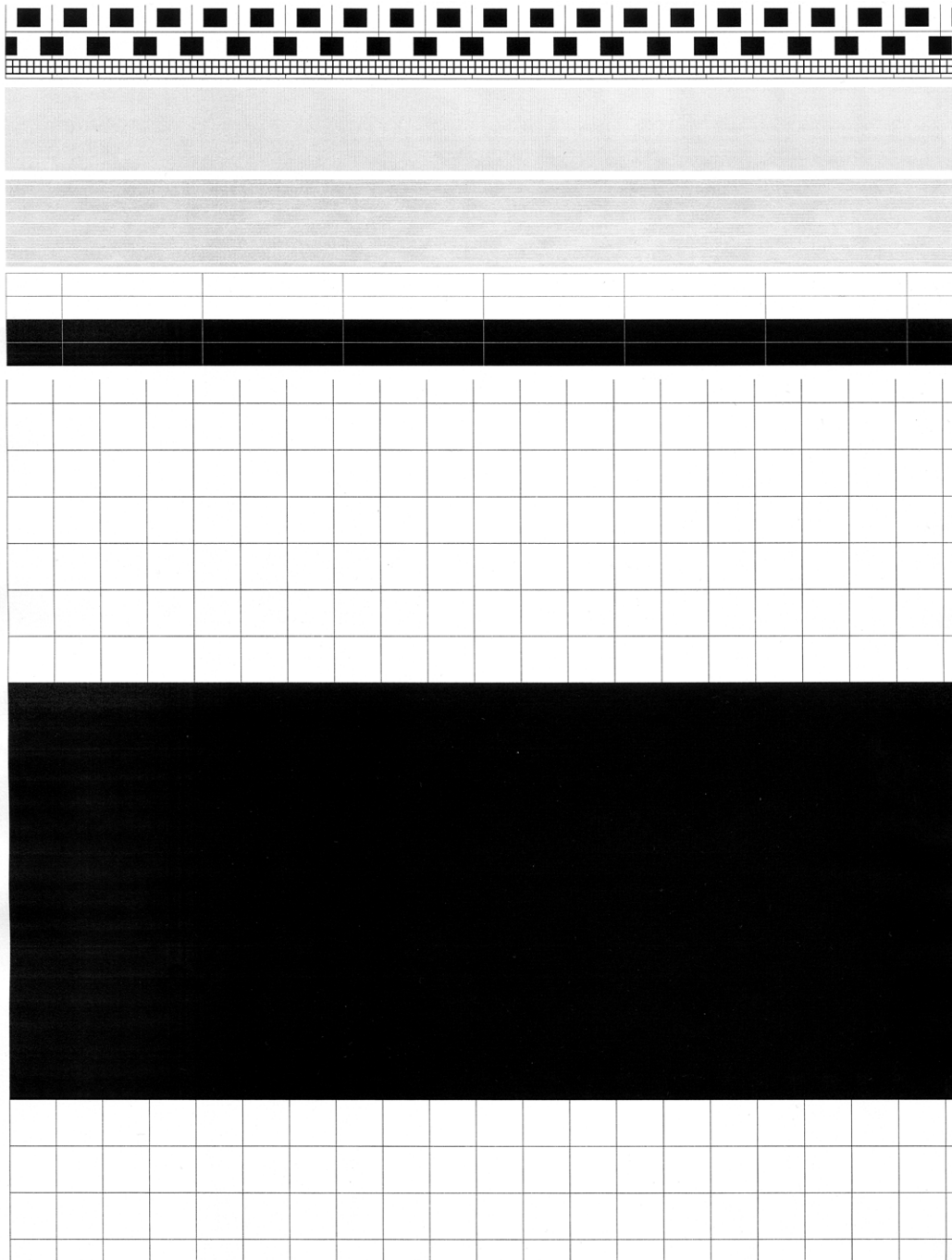


Fig. 7-3

4.6 Firmware Switch Setting and Printout

4.6.1 Firmware switch setting (Function code 10)

<Function>

The machine incorporates the following firmware switch functions which may be activated with the procedures using the control panel keys and buttons.

The firmware switches have been set at the factory in conformity to the communications standards and codes of each country. Do not disturb them unless necessary. Some firmware switches may not be applicable in some versions. The firmware switch data list indicates "Not used." for those inapplicable switches.

■ Firmware Switches (WSW01 through WSW74)

WSW No.	Function	Refer to:
WSW01	Dial pulse setting	App. 1-4
WSW02	Tone signal setting	App. 1-6
WSW03	PABX mode setting	App. 1-7
WSW04	TRANSFER facility setting	App. 1-9
WSW05	1st dial tone and busy tone detection	App. 1-10
WSW06	Redial/Pause button setting and 2nd dial tone detection	App. 1-11
WSW07	Dial tone setting 1	App. 1-13
WSW08	Dial tone setting 2	App. 1-14
WSW09	Protocol definition 1	App. 1-15
WSW10	Protocol definition 2	App. 1-16
WSW11	Busy tone setting	App. 1-17
WSW12	Signal detection condition setting	App. 1-18
WSW13	Modem setting	App. 1-19
WSW14	AUTO ANS facility setting	App. 1-20
WSW15	REDIAL facility setting	App. 1-21
WSW16	Function setting 1	App. 1-22
WSW17	Function setting 2	App. 1-23
WSW18	Function setting 3	App. 1-24
WSW19	Transmission speed setting	App. 1-25
WSW20	Overseas communications mode setting	App. 1-26
WSW21	TAD setting 1	App. 1-27
WSW22	ECM and call waiting caller ID	App. 1-28
WSW23	Communications setting	App. 1-29
WSW24	TAD setting 2	App. 1-30
WSW25	TAD setting 3	App. 1-31
WSW26	Function setting 4	App. 1-32
WSW27	Function setting 5	App. 1-34
WSW28	Function setting 6	App. 1-35
WSW29	Function setting 7	App. 1-36
WSW30	Function setting 8	App. 1-37
WSW31	Function setting 9	App. 1-38
WSW32	Function setting 10	App. 1-39

WSW No.	Function	Refer to:
WSW33	Function setting 11	App. 1-40
WSW34	Function setting 12	App. 1-41
WSW35	Function setting 13	App. 1-42
WSW36	Function setting 14	App. 1-42
WSW37	Function setting 15	App. 1-44
WSW38	V.34 transmission settings	App. 1-45
WSW39	V.34 transmission speed	App. 1-46
WSW40	V.34 modem settings	App. 1-47
WSW41	ON-duration of the scanning light source	App. 1-49
WSW42	Internet mail settings	App. 1-50
WSW43	Function setting 21	App. 1-50
WSW44	Speeding up scanning-1	App. 1-51
WSW45	Speeding up scanning-2	App. 1-52
WSW46	Monitor of power ON/OFF state and parallel port kept at high	App. 1-53
WSW47	Switching between high- and full-speed USB	App. 1-54
WSW48	USB setup latency	App. 1-55
WSW49	End-of-copying beep and print in black	App. 1-56
WSW50	SDAA settings	App. 1-57
WSW51	Function setting 16	App. 1-58
WSW52	Function setting 17	App. 1-59
WSW53	Function setting 18	App. 1-60
WSW54	Function setting 19	App. 1-61
WSW55	Function setting 20	App. 1-62
WSW56	Function setting 21	App. 1-63
WSW57	Function setting 22	App. 1-64
WSW58	Function setting 23	App. 1-65
WSW59	Function setting 24	App. 1-66
WSW60	Not used	App. 1-67
WSW61	Scanning light intensity to judge to be stable 1	App. 1-68
WSW62	Scanning light intensity to judge to be stable 2	App. 1-69
WSW63	Not used	App. 1-70
WSW64	Setting the language / Default paper size	App. 1-71
WSW65	Setting the paper support	App. 1-71
WSW66	Drum life end	App. 1-72
WSW67	Not used	App. 1-72
WSW68	Fuser unit life end	App. 1-72
WSW69	Scanner unit life end	App. 1-73
WSW70	Paper feeding kit life end	App. 1-73
WSW71	Paper feeding kit 2 life end	App. 1-74
WSW72	Paper feeding kit MP life end	App. 1-74
WSW73	Not used	App. 1-74

<Operating Procedure>

- (1) Press the [1] and [0] keys in this order in the initial stage of the maintenance mode. The machine displays the "WSW00" on the LCD and becomes ready to accept a firmware switch number.
- (2) Enter the desired number from the firmware switch numbers (01 through 53). The following appears on the LCD:

Selector 1 Selector 8
 ↓ ↓
WSWXX = 0 0 0 0 0 0 0 0

- (3) Enter a value to be set (0 or 1) using the [0] and [1] keys.
- (4) Press the [OK] button. This operation saves the newly entered selector values onto the EEPROM and readies the machine for accepting a firmware switch number.
- (5) Repeat steps (2) through (5) until the modification for the desired firmware switches is completed.
- (6) Press the [Stop/Exit] button to return the machine to the initial stage of the maintenance mode.

Note:

- To cancel this operation and return the machine to the initial stage of the maintenance mode during the above procedure, press the [Stop/Exit] button.
- If there is a pause of more than one minute after a single-digit number is entered for double-digit firmware switch numbers, the machine will automatically return to the initial stage of the maintenance mode.

■ Details of Firmware Switches

- The details of the firmware switches are described in [APPENDIX 4](#) in which the user-accessible selectors of the firmware switches are shaded.
- Machine w/o fax support some selectors of firmware switches. Those selector numbers are circled.

4.6.2 Printout of firmware switch data (Function code 11)

<Function>

The machine prints out the setting items and contents specified by the firmware switches.

<Operating Procedure>

- (1) Press the [1] key twice in the initial stage of the maintenance mode.
The "PRINTING" will appear on the LCD.
- (2) The machine prints out the configuration list as shown in the figure below.
- (3) Upon completion of printing, the machine returns to the initial stage of the maintenance mode.

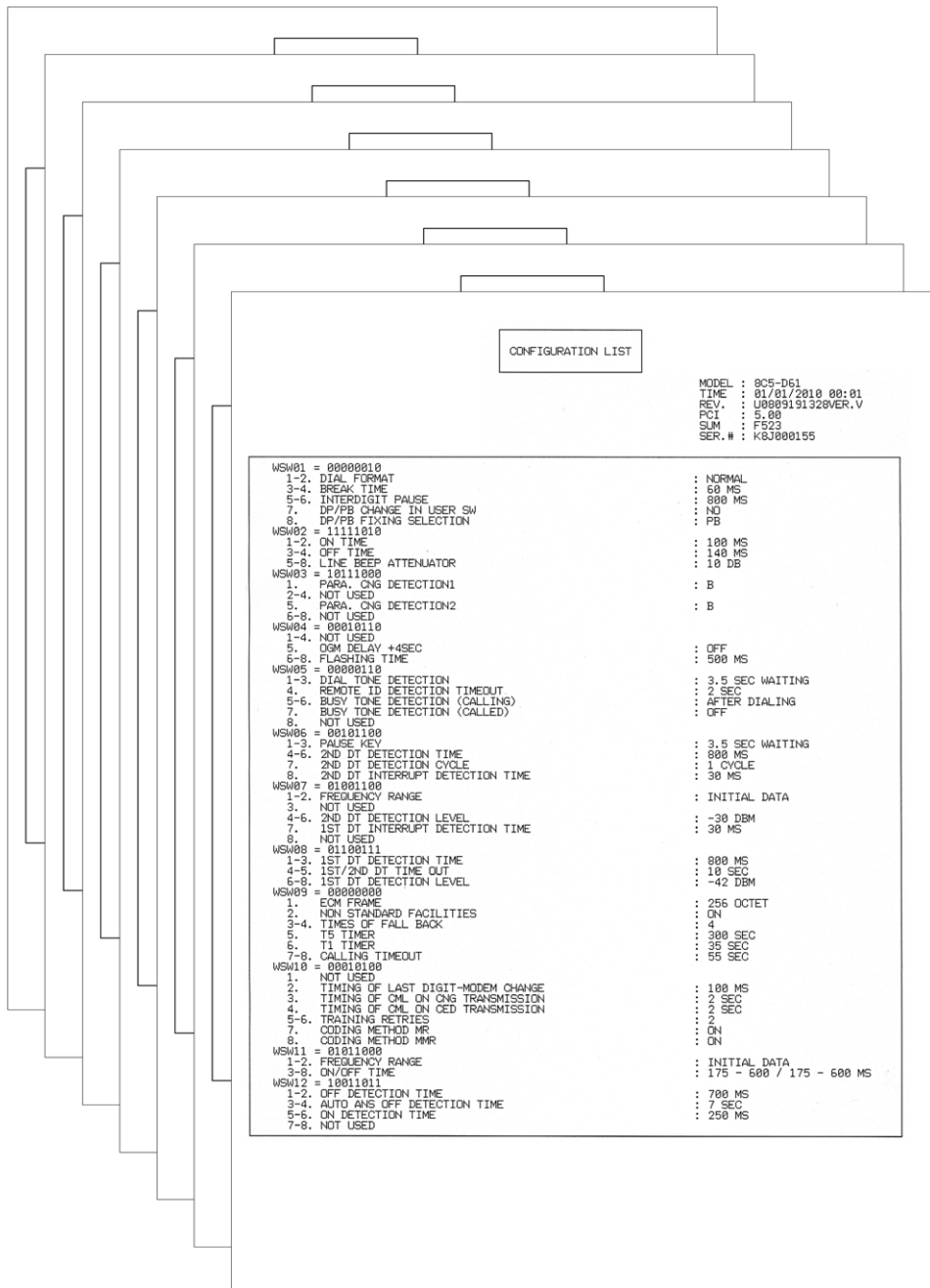


Fig. 7-4

4.7 Operation Check of LCD (Function code 12)

<Function>

This function allows you to check whether the LCD on the control panel works normally.

<Operating Procedure>

- (1) Press the [1] and [2] keys in this order in the initial stage of the maintenance mode. The LCD shows.
- (2) Press the [Start] button. Each time you press the [Start] button, the LCD cycles through the displays shown at right. The Status lamp also changes from orange, red, to green each time you press the [Start] button.
- (3) Press the [Stop/Exit] button in any process of the above display cycle. The machine beeps for one second and returns to the initial stage of the maintenance mode.

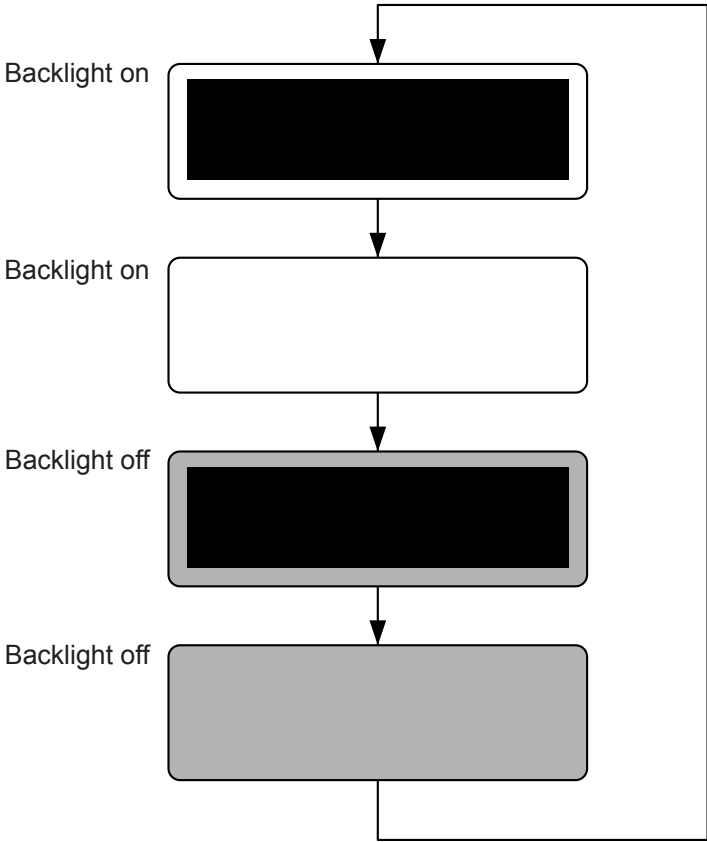


Fig. 7-5

4.8 Operational Check of Control Panel PCB (Function code 13)

<Function>

This function allows you to check the control panel PCB for normal operation.

<Operating Procedure>

- (1) Press the [1] and [3] keys in this order in the initial stage of the maintenance mode.
The "00" will appear on the LCD.
- (2) Press the keys and buttons in the order designated in the illustration shown below.
The LCD shows the corresponding number in decimal notation each time a key or button is pressed. Check that the displayed number is correct by referring to the illustration below.
If a key or button is pressed out of order, the machine beeps and displays the "INVALID OPERATE" on the LCD. To return to the status ready to accept key & button entry for operational check, press the [Stop/Exit] button.
- (3) After the last number key or button is pressed, the machine beeps for one second and returns to the initial stage of the maintenance mode.
To terminate this operation, press the [Stop/Exit] button. The machine returns to the initial stage of the maintenance mode.

■ DCP8080DN/8085DN

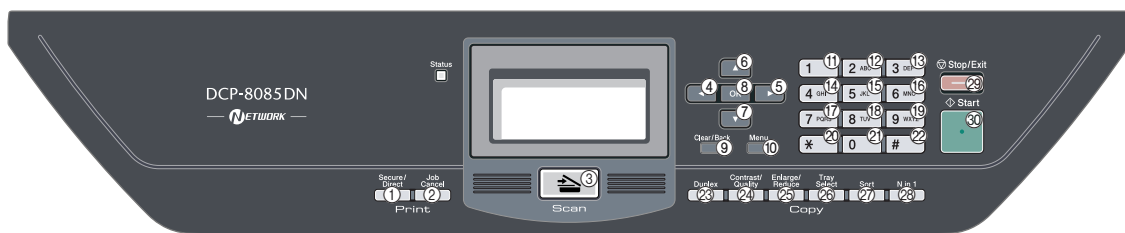


Fig. 7-6

■ MFC8480DN/8880DN/8890DW

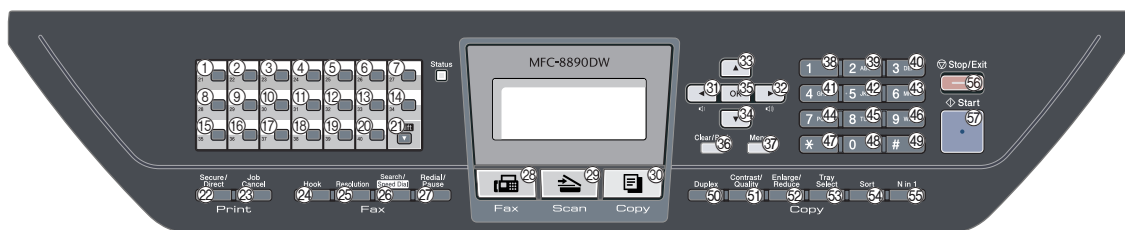


Fig. 7-7

4.9 ROM Version Check (Function code 25)

<Function>

This function allows you to check the management information of the software programs such as version information, check sum.

<Operating Procedure>

- (1) Press the [2] key and [5] key in this order in the initial stage of the maintenance mode. The machine displays each of terms described below on the LCD.
- (2) Press the [▲] or [▼] button to check the next term.

LCD	Description
TOTAL: Ver A*	Main firmware version information (Revision information)
PCL : Ver1.00*	Sub firmware (PCL/PS) version information (ROM size)
NET : Ver1.00	Network version information
PANEL : A08103015	Panel firmware version information
i0802312359: 1234*	
B0808071049:5708*	Boot program creation date & check sum information
U0812271600:7B0A*	Main firmware creation date & check sum information
D0812312359: 1234* *1	Demo program creation date & check sum information
P0812271602:BD40*	Sub firmware (PCL/PS) creation date & check sum information
ROM Check Sum *2	Calculate the check sum information of the main and PCL and display the "OK" if right.

*1 In the case of the model without Demo data, the "D..... :" displayed on the LCD.

*2 The performance of ROM check sum pushes the [OK] button during the "ROM Check Sum" displayed on the LCD. Calculate the check sum information and display the "ROM Check Sum OK" if right, and display the "ROM Check Sum NG" if different.

- How to display the check sum information
Terms displayed with "*" have the check sum information as well. Press the [OK] button when its version information is displayed on the LCD. Press the [OK] button again to go back to the version information display. Press the [▲] or [▼] buttons to check the next term.

Note:

- If you press the [OK] button when each version information of Engine, Network and Panel is displayed on the LCD, you cannot check the check sum information.

- (3) To terminate this operation, press the [Stop/Exit] button. The machine beeps for one second and returns to the initial stage of the maintenance mode.

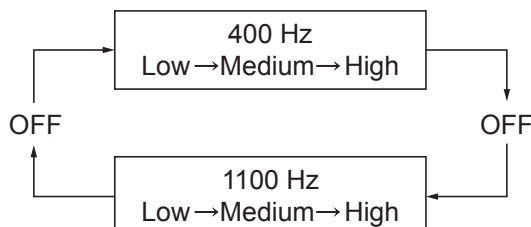
4.10 Sensor Operational Check (Function code 32)

<Function>

This function allows you to check whether the 20 sensors work correctly.

<Operating Procedure>

- Press the [3] and [2] keys in this order in the initial stage of the maintenance mode. The machine beeps 1100 Hz and 400 Hz tones cyclically through the following volumes for testing the speaker. To stop beeping, press the [OK] button.



If the sensing status are as listed below, the LCD will show the following:
 "C1P1C2P2T2T3BC**", "TNMPNTRMRSP0CV" and "DFDRDLDSFCFH****"
 (which can be switched by pressing the [Start] button for machines.)

Given below is the relationship among the LCD indication, sensor names and sensor status.

LCD	Sensors	Sensing status
C1	Tray1 sensor	Tray installed.
P1	Tray1 paper sensor	Recording paper detected.
C2	Tray2 sensor	Tray installed.
P2	Tray2 paper sensor	Recording paper detected.
T2	Tray2 connect sensor	Tray2 connected.
T3	Tray3 connect sensor	Tray3 connected.
BC	Back cover sensor (Used for both standard tray and duplex tray.)	Back cover detected. (Tray detected.)
TN	Toner sensor	Toner detected.
MP	Multi-purpose tray sensor	Recording paper detected.
NT	New toner sensor	New toner detected.
RM	Front registration sensor	No paper detected.
RS	Rear registration sensor	No paper detected.
PO	Paper ejection sensor	No paper detected.
CV	Front cover sensor	Front cover defective.
DF	Document front sensor	No document detected.
DR	Document rear sensor	No document detected.
DL	ADF document separation sensor/Size sensor	Document detected.
DS	ADF document SB sensor	No document detected.
FC	FB cover sensor	Document cover closed.
FH	Document scanner home position sensor	CCD unit home position detected.

- Change the detecting conditions to check that the indication on the LCD changes according to the sensor states. For instance, insert paper through the document front (or rear) sensor or the registration sensor (s), open the front cover or the document cover, remove the toner cartridge, jam paper at the paper outlet, insert paper from the manual feeder, and load a recording paper tray, etc.

(3) Press the **[Stop/Exit]** button. The machine beeps for one second and returns to the initial stage of the maintenance mode.

Note:

- If you have opened and closed the front cover during the above procedure, you need to open and close the front cover again upon completion of the procedure.

■ **Location of sensors**

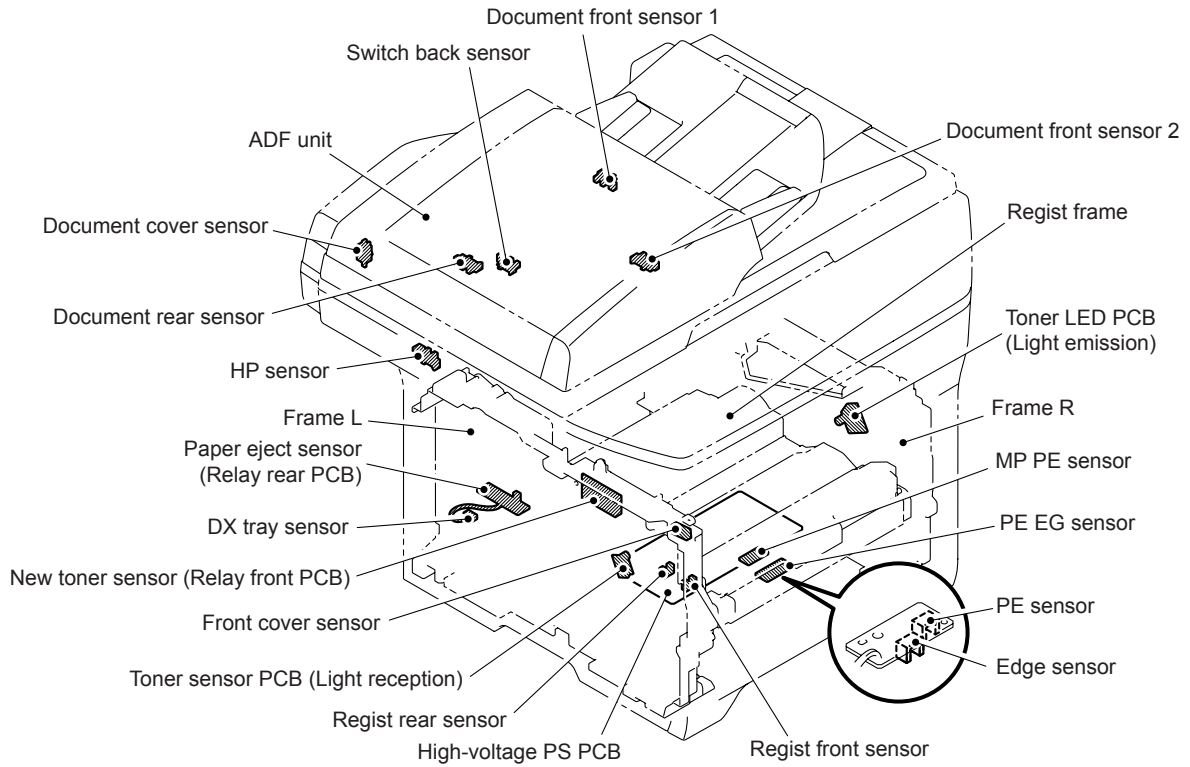


Fig. 7-8

4.11 PC Print Function (Function code 43)

<Function>

This function allows the machine change that the setting of each PC printing function indicated to the following function settings.

<Operating Procedure>

- (1) Press the [4] and [3] keys in this order in the initial stage of the maintenance mode. The "Manual Feed" will appear on the LCD.
- (2) Press the [▲] or [▼] buttons to select the function you want to set and press the [OK] button.
- (3) When select the unchanging (On/Off) parameter, press the [▲] or [▼] button, or change the parameter using the numeric keys. And press the [OK] button.
- (4) If press the [Stop] button, the machine will return to the initial stage of the maintenance mode.

■ Function setting

LCD indication	Description	Set value	Initial value
Manual Feed	Switching of the Manual Feed	On/Off	Off
Resolution	Resolution to print	300/600/1200dpi	600
Toner Save	Switching of the Toner Save	On/Off	Off
Density	Switching of the Density level	-6 to 6	0
Job Cancel TimeOut	Setting of the time until the host time-out at the Job Cancel	2 to 225 (seconds)	4
Sleep Time	Setting of the time until enter the Sleep Mode	0 to 99 (minutes)	5
Pege Protection	Switching of the protection of the page memory	Off/Letter/A4/Legal/Auto	Off
Emulation	Switching of the emulation	Auto/HP/PS	Auto
Auto I/F Time	Switching of the I/F open time	1 to 99 (seconds)	5
Media Type	Switching of the recording paper type	Thin/Plain/Thick/Thicker/Tranparency/Recycled/Bond/Envlopes/EnvThin/EnvThick	Plain
Paper(Size)	Switching of the area of develop the image	Letter/Legal/A4/Executive/B5/JISB5/A5/B6/A6/Monarch/C5/COM10/DL/DLL/A4Long/PostCard/Folio	Letter
Copies	Switching of the print copies	1 to 99 (pages)	1
Orientation	Switching of the print direction	PortLait/Landscape	Portlait
P-Pos X-Offset	Switching of the offset print position of the landscape orientation	-500 to 500 (1/300dpi)	0
P-Pos Y-Offset	Switching of the offset print position of the portrait orientation	-500 to 500 (1/300dpi)	0
AutoFF	Switching of the auto form feed	On/Off	Off

LCD indication	Description	Set value	Initial value
AutoFF Time	Switching of the time-out period of the auto feed	1 to 99 (seconds)	5
FF Surpress	Switching of the FF Surpress	On/Off	Off
- Auto LF	Switching of the auto LF	On/Off	Off
- Auto CR	Switching of the auto CR	On/Off	Off
- Auto WRAP	Switching of the auto CRLF at the print width	On/Off	Off
- Auto SKIP	Switching of the SKIP at the back-end/tip of the recording paper	On/Off	On
- Left Margin	Switching of the margin at the left end	0 to 145 (column)	0
- Right Margin	Switching of the margin at the right end	10 to 155 (column)	80
- Top Margin	Switching of the margin at the upper end	0 to 2.00 (inches)	0.5
- Bottom Margin	Switching of the margin at the bottom end	0 to 2.00 (inches)	0.5
- Lines	Number of the text lines in the page	5 to 128 (lines)	60
- Error Print	Switching of the Error Print of the Post Script	On/Off	On

■ Detail description

LCD indication	Detail description
Manual Feed	Effective for the print from the PC, or for the print of the NetWorkConfig/TestPrint/FontList/Configuration from the panel. When select the tray on the PC, the setting becomes effective. And this setting is ignored.
Resolution	Effective only for the print from the PC. When set the Resolution on the PC, the setting becomes effective. And this setting is ignored.
Toner Save	Effective for all print, and change the setting of the Function Menu. However, as for the Copy, this setting becomes invalid. When set the Toner Save or the PC, the setting becomes effective. And this setting is ignored.
Density	Effective for the print from the PC, or for the print of the NetWorkConfig/TestPrint/FontList/Configuration from the panel. Link the setting of the Toner Save. Judge the both setting, and decide the density. When set the Density or the PC, the setting becomes effective. And this setting is ignored.
Job Cancel TimeOut	Configure the setting for until the host time-out at the Job Cancel. The setting value is the second time scale.
Sleep Time	Configure the setting for the time until shift to the Sleep Time. Change the setting of the Function Menu.
Page Protection	Configure the setting to protect the page memory, when recording in PC. Set in the PCL-Core. There is not the influence of the memory management problem of the MFC.
Emulation	Configure the setting for the Emulation. Change the setting of the Function Menu. When the data include the ENTER LANGUAGE, the setting becomes effective. And this setting is ignored.

LCD indication	Detail description
Auto I/F Time	Configure the setting for the interface open time. The function is in the PC-Print. When the PC-Scan/Remote-SetUp works on the way, the setting becomes invalid.
Media Type	Effective for the print from the PC. When set the type of the recording paper on the PC, the setting becomes effective. And this setting is ignored. The default value is different by the country setting. CHN is the Thin, and others are the Plain.
Paper(Size)	Switching of the area of develop the image. Does not set the Paper Size of the Menu, set the drawing size of the PC-Print. When set the size of the recording paper on the PC, the setting becomes effective. And this setting is ignored. The default value is different by the country setting. US/CAN are the Letter, and others are the A4.
Copies	Effective for the print from the PC. When set the number of the copies on the PC, the setting becomes effective. And this setting is ignored.
Orientation	Configure the switching for the print direction. Effective for the print from the PC.
P-Pos X-Offset	Configure the setting for the offset print position of the landscape orientation. Effective for the print from the PC. When set the X-Offset on the PC, the setting becomes effective. And this setting is ignored.
P-Pos Y-Offset	Configure the setting for the offset print position of the portrait orientation. Effective for the print from the PC. When set the Y-Offset on the PC, the setting becomes effective. And this setting is ignored.
AutoFF	Configure the setting for the ON/OFF of the Auto Form Feed. Effective for the print from the PC.
AutoFF Time	Configure the setting for the Time Out, when the Auto Form Feed is ON.
FF Surpress	Configure the setting for the skip of the blank page. Effective for the print from the PC. The blank data in the Copy/Fax cannot be turned ON/OFF in this setting.
- Auto LF	Configure the setting for the auto line feed.
- Auto CR	Configure the setting for the auto Carriage Return.
- Auto WRAP	Configure the setting for the auto CRLF at the print width.
- Auto SKIP	Configure the setting for the skip at the back-end/tip of the recording paper and add the blank space.
- Left Margin	Configure the setting for the column space at the left end.
- Right Margin	Configure the setting for the column space at the right end.
- Top Margin	Configure the setting for the space at the upper end.
- Bottom Margin	Configure the setting for the space at the bottom end.
- Lines	Configure the setting for the number of the lines in the PCL.
- Error Print	Configure the setting for the Error Print of the BR-Script 3.

4.12 Switching the USB Setting (Function code 45)

<Function>

If connect with the full-speed USB (ver.2.0) in the case of Vista (operation system), as for this function, the operation system does not recognize the serial number of USB device depending on the PC and USB device. When the operation system does not recognize, increase that the device is connected the PC. To solve the problem, the return value of the serial number switch the "0".

- USBNo.=ON: ON: Return to the serial number of the machine.
- USBNo.=OFF: Return to the "0".

<Operating Procedure>

- (1) Press the **[4]** and **[5]** keys in this order in the initial stage of the maintenance mode. The "USBNo.=ON" will appear on the LCD.
- (2) Press the **[OK]** button. and select the "USBNo. = ON" or "USBNo. = OFF" by pressing the **[▲]** or **[▼]** button. And press the **[OK]** or **[Start]** button. The machine beeps for approx. one second, and return to the initial stage of the maintenance mode.

4.13 Pan-nordic Select Country (Function code 52)

<Function>

This function allows users to customize the EEPROM settings such as language, function settings or worker switch settings.

Note:

- This function is applicable to “France and surrounding countries”, “Pan-Nordic”, “Oceania” and “Iberia” areas only.

<Operating Procedure>

- (1) Press the [Menu], [Black Start] and [Menu] buttons in this order in the ready state. The “0” will appear on the LCD.
- (2) Press the [5] and [2] keys in this order. The “Set Country” will appear on the LCD, and the country name will appear on the LCD.

Note:

- The country name indicated on the LCD varies depending on the area (code input in **Function code 74**) as shown in the table below.

France and surrounding countries	Oceania	Pan-Nordic	Iberia
France	Australia	Norge	España
België / Belgique	New Zealand	Suerige	Portugal
Nederland	—	Suomi	—
—	—	Danmark	—
—	—	Others	—

- (3) Press the [▲] or [▼] button to display the country name where the machine is used. Press the [OK] button while the country name is being indicated.
- (4) The “1.Yes, 2.No” will appear on the LCD. Press the [1] key when it is good in the displayed country. The EEPROM is customized, and the machine returns to the ready state. Press the [2] key when it is mistake in the displayed country. Return to the procedure (3) and enter the country again.

4.14 Received Data Transfer Function (Function code 53) (only model with FAX)

<Function>

This function transfers received FAX data to another machine. It is useful when the machine cannot print received data due to the printing mechanism being defective.

Note:

- The number of files that can be transferred at a time is 99. To transfer 100 files or more, carry out the following procedure more than one time.

TIP:

- If there are both color and monochrome data in a file to be transferred, the monochrome data will be transferred first. If the receiver machine does not support the color function, the sender machine cannot transfer color data, resulting in an error.

<Operating Procedure>

- (1) Press the [5] and [3] keys in this order in the initial stage of the maintenance mode. The "FAX TRANSFER" appears on the LCD.
- (2) To check the number of received files, press the [1] key. The "1.NO. OF JOBS" appears on the LCD. Press the [OK] button, and the number of received files appears, just as "NO. OF JOBS: 10."
- (3) To transfer the activity report only, press the [2] key. The "2.ACTIVITY" appears. To transfer received files (together with the activity report), press the [3] key. The "3.DOCUMENTS" appears. Note that if there is no received file, the "NO DOCUMENTS" appears.
- (4) To transfer the communication list for the latest communication, press the [4] key. The "4.COM.LIST (NEW)" appears. To transfer the communication list for last three errors, press the [5] key. The "5.COM.LIST (ERR3)" appears.
- (5) With the "2.ACTIVITY," "3.DOCUMENTS," "4.COM.LIST (NEW)," or "5.COM.LIST (ERR3)" being displayed, press the [OK] button. The "ENTER NO. & SET" appears.
- (6) Enter the telephone number of the receiver machine and press the [OK] button again.

Note:

- Be sure to type the telephone number with the numerical buttons. No one-touch dialing is allowed in this procedure. The machine displays the "ACCEPTED" for approx. two seconds and starts dialing to transfer data. No station ID will be attached. A cover page and end page as shown on the next page will be automatically attached, instead.

■ Cover page sample

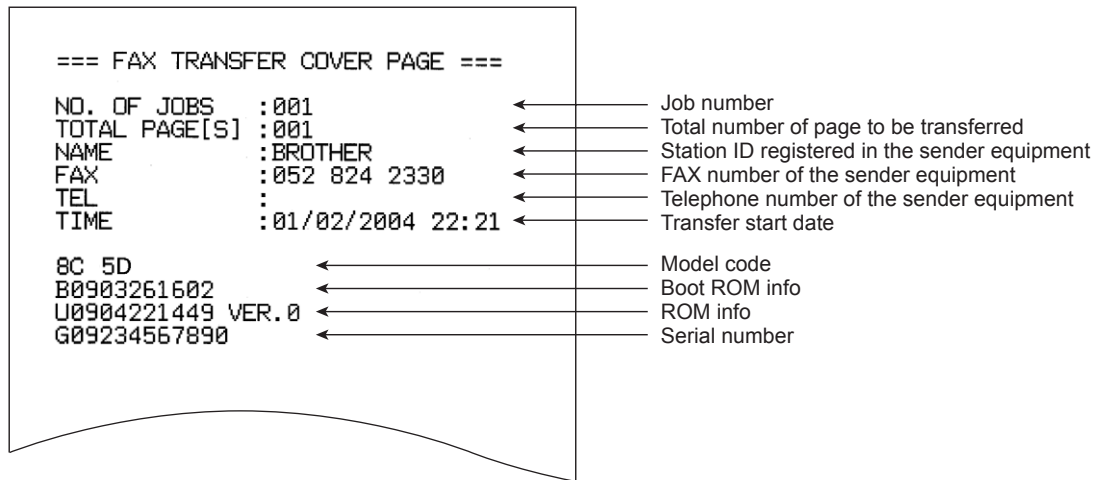


Fig. 7-9

■ End page sample

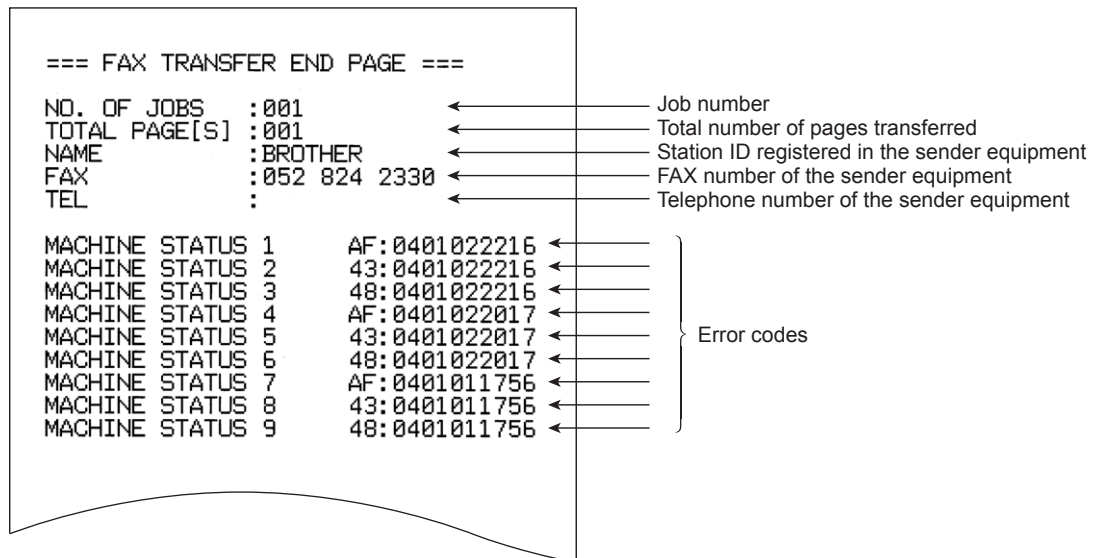


Fig. 7-10

4.15 Fine Adjustment of Scan Start/End Positions (Function code 54)

<Function>

This function allows you to adjust the scanning start and end positions with the ADF and FB unit.

<Operating Procedure>

- (1) Press the [5] and [4] keys in this order in the initial stage of the maintenance mode.
The "SCAN START ADJ." will appear on the LCD.
- (2) The "▲: ADF ▼: FB" will appear after two seconds.
Select one of them that you want to adjust the start position.
If you want to adjust the start position of the ADF, press [▲] button, and if you want to adjust that of the FB unit, press [▼] button.
- (3) Press the [1] or [2] key to display the present compensation level for the start position.
Compensation levels can be adjusted in 11 steps from +5 to -5 (mm).
- (4) Press the [◀] button to increase compensation levels, and the [▶] button to lower them.
Press the [Stop/Exit] button so that the machine beeps for one second and returns to the initial state of the maintenance mode without adjusting compensation levels.
- (5) Set the compensation level and press the [OK] button.
The "ACCEPTED" will appear on the LCD. One second later, the machine "▲: ADF ▼: FB" will appear on the LCD.
- (6) Press the [Stop/Exit] button when finish the adjustment. The machine beeps for one second and returns to the initial state of the maintenance mode.

Note:

- The correlation between the scan start/end positions and compensation levels is shown below.

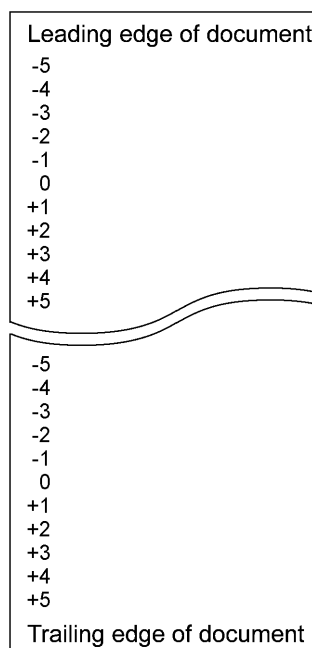


Fig. 7-11

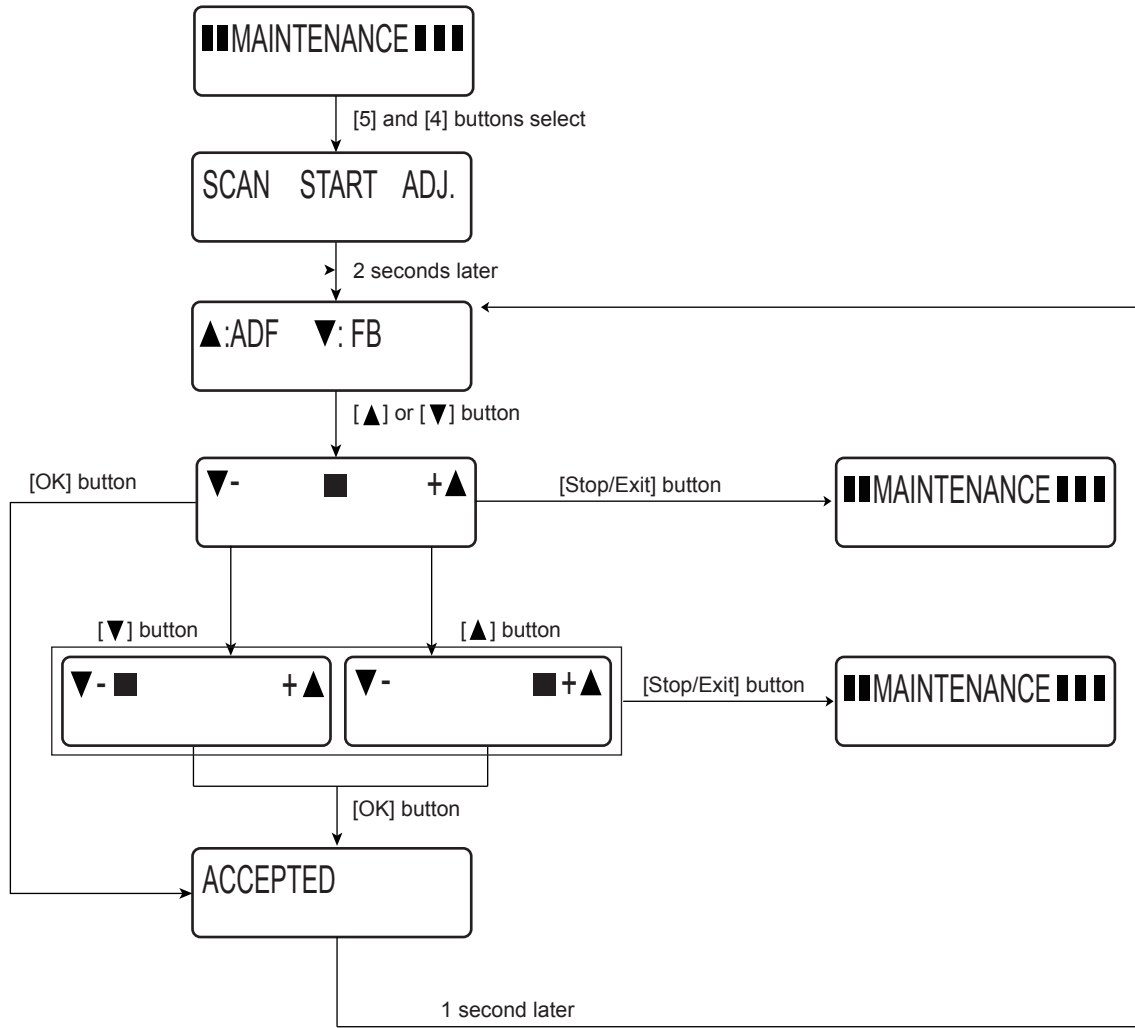


Fig. 7-12

4.16 Acquisition of White Level Data and CCD Scanner Area Setting (Function code 55)

<Function>

This function allows the machine to obtain white level data for the CCD scanner and save it together with the CCD scanner area into the EEPROM on the main PCB.

<Operating Procedure>

- (1) Press the [5] key twice in the initial stage of the maintenance mode.
The "SCANNER AREA SET" will appear on the LCD.
- (2) When setting of the scanner area is completed, a 4-digit number will appear on the LCD.
(e.g., 4723)

* If you press the [Stop/Exit] button at this point, the machine will beep for one second and return to the initial stage of the maintenance mode.

Enter the input data value of a 5-digit number based on the 4-digit number to be displayed referring to the table below. (e.g., 4723 → 47247)

- (3) The machine saves the magnification compensation setting value into the EEPROM, and then it beeps for one second and returns to the initial stage of the maintenance mode.

	Maintenance mode 55 required input data				Input data
1	4610	---	4619	→	46156
2	4620	---	4629	→	46257
3	4630	---	4639	→	46358
4	4640	---	4649	→	46459
5	4650	---	4659	→	46550
6	4660	---	4669	→	46651
7	4670	---	4679	→	46752
8	4680	---	4689	→	46853
9	4690	---	4699	→	46954
10	4700	---	4709	→	47056
11	4710	---	4719	→	47157
12	4720	---	4729	→	47247
13	4730	---	4739	→	47359
14	4740	---	4749	→	47450
15	4750	---	4759	→	47551
16	4760	---	4769	→	47652
17	4770	---	4779	→	47753
18	4780	---	4789	→	47854
19	4790	---	4799	→	47955
20	4800	---	4809	→	48057
21	4810	---	4819	→	48158
22	4820	---	4829	→	48259
23	4830	---	4838	→	48350

4.17 Paper Feeding and Ejecting Test (Function code 67)

<Function>

This function allows you to check that a sheet of paper is fed and ejected correctly by printing the grid pattern on a page, whose interval is 1cm.

<Operating Procedure>

- (1) Press the [6] and [7] keys in this order in the initial stage of the maintenance mode.
The "SELECT: TRAY1" will appear on the LCD. Press the [OK] button.
The "PAPER FEED TEST " will appear on the LCD. The test printing is started, and the grid pattern is printed.
- (2) Press the [Stop/Exit] button so that machine stops printing. Then, it beeps for one second and returns to the initial stage of the maintenance mode.

Note:

- In the case that the front cover is opened, or that there is no paper in the tray during test printing, the test printing is stopped.

4.18 EEPROM Customizing (Function code 74)

<Function>

This function allows you to customize the EEPROM according to language, function settings, and worker switch settings.

Note:

- If you replace the main PCB, be sure to carry out this procedure.

<Operating Procedure>

- (1) Press the [7] and [4] keys in this order in the initial stage of the maintenance mode.
The current customizing code appears.
- (2) Enter the desired customizing code (e.g., MFC-8890DW (US): 0401). The newly entered code appears.
To enter letters "A" through "F", press the [1] through [6] keys while holding down the [#] key respectively.

Note:

- The machine does not work properly when an incorrect code is entered.

- (3) Press the [Start] button.
The machine saves the setting and displays the "PARAMETER INIT" on the LCD. The machine beeps for one second and returns to the initial stage of the maintenance mode.
If you press the [Stop/Exit] button or no buttons are pressed for one minute in the above procedure, the machine stops the procedure, beeps for one second and returns to the initial stage of the maintenance mode.
The modification of the setting data is not saved in this case.

<EEPROM customizing code list>

Destination	DCP-8080DN	DCP-8085DN	MFC-8480DN	MFC-8880DN	MFC-8890DW
US	0001	0101	0201	---	0401
Canada	0002		0202	---	0402
Argentina	0036	0136	0236	---	0436
Chile	---	0136	0236	---	0436
Brazil	0042	0142	0242	---	0442
Germany	---	3104 (3153)	---	2303	2403
UK	---	3104	---	2304	2404
France	---	3105 (3155)	---	2305 (2355)	2405 (2455)
Belgium	---	3108 (3155)	---	2308 (2355)	2408 (2455)
Netherlands	---	3109 (3155)	---	2309 (2355)	2409 (2455)
Switzerland	---	3104	---	2310	2410
Ireland	---	3104	---	2304	2404
Austria	---	3114 (3153)	---	2314	2414
Spain	---	3115 (3165)	---	2315 (2365)	2415 (2465)
Italy	---	3104	---	2316	2416
Portugal	---	3104 (3165)	---	2318 (2365)	2418 (2465)
Pan-nordic	---	3104	---	---	---
Norway	---	---	---	2307 (2357)	2407 (2457)
Sweden	---	---	---	2326 (2357)	2426 (2457)
Finland	---	---	---	2312 (2357)	2412 (2457)
Denmark	---	---	---	2313 (2357)	2413 (2457)
General	---	3104	---	---	---
Czech	---	---	---	2337 (2388)	---
Hungary	---	---	---	2338 (2388)	---
Poland	---	---	---	2339 (2388)	---
Bulgaria	---	---	---	2332 (2388)	---
Romania	---	---	---	2333 (2388)	---
Slovakia	---	---	---	2330 (2388)	---
Other	---	---	---	2350 (2388)	---
South Africa/ Gulf	---	---	---	0341	---
Asia	---	---	---	0340	---
Korea	---	---	---	0340	---
Turkey	---	0104	---	0325	---
Philippines	---	---	---	0340	---
China	---	---	---	0020	---
India	---	---	---	0345	---
Oceania	---	0140	---	---	---
Australia	---	---	---	0306 (0356)	2406 (2456)
New Zealand	---	---	---	0327 (0356)	2427 (2456)
Russia	---	3104	---	2348	---

* If you can determine the country where the customer uses the machine, enter the code outside the brackets. If not, enter the code inside.

4.19 Operational Check of Fans (Function code 78)

<Function>

This function is to check whether each of fans is operating correctly or not. The following fans are checked.

<Operating Procedure>

- (1) Press the [7] and [8] keys in this order in the initial stage of the maintenance mode. The indication will appear on the LCD as shown in the figure below.

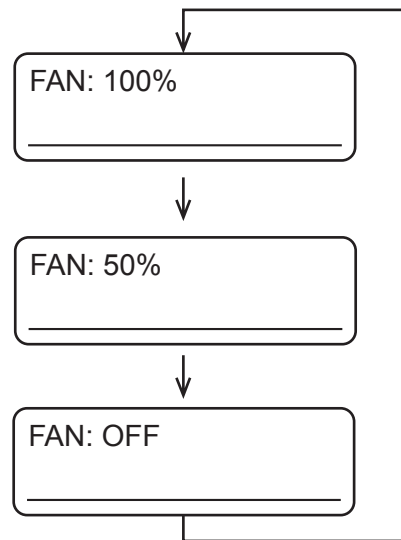


Fig. 7-13

- (2) Press the [Start] button so that the LCD indication is changed in the order shown in the figure above. The fan operation is also changed as indicated on the LCD.
- (3) Press the [Stop/Exit] button so that the machine stops checking the fans, beeps for one second and returns to the initial stage of the maintenance mode.

Note:

- If the air intake fan (AIR) error occurs, the following error message appears on the LCD.
If you press the [Stop/Exit] button, the machine returns to the initial stage of the maintenance mode without recovering from this error. To recover from this error, turn the power switch of the machine off and then turn it on again.

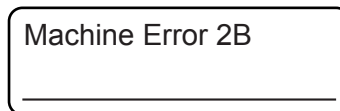


Fig. 7-14

4.20 Display of the Machine's Log Information (Function code 80)

<Function>

The machine may display its log information on the LCD.

<Operating Procedure>

- (1) Press the [8] and [0] keys in this order in the initial stage of the maintenance mode. The USB serial number appears on the LCD.
- (2) Press the [Start] button. Each time the [Start] button is pressed, one of the following information items appears on the LCD. The representative items are given below.
- (3) Press the [Stop/Exit] button so that the machine stops this operation, beeps for one second and returns to the initial stage of the maintenance mode.

*1 When you press the [OK] button while the MACHINE ERR error code is displayed, the last error code is displayed. Each time the [OK] button is pressed, up to the ten error codes are displayed one by one in reverse order.

*2 When you press the [OK] button while the COMEER1 error is displayed, the last error, the previous error, and the second previous error are displayed in turn. The indication changes from COMEER1, COMEER2, to COMEER3.

USB:	Serial number
DRUM:	Drum count
DRUM_PG	Number of printed pages with the drum unit.
DRUM_CH	Number of times the drum unit has been replaced.
KTN_PG1:	Number of printed pages with the Black toner cartridge.
KTN_PG2:	Previous number of printed pages with the Black toner cartridge.
KTN_ERM:	Estimate toner remaining amount
KTN_RRM:	Toner remaining amount in number of development rotations
KTN_CH:	Number of times the Black toner cartridge has been replaced.
WTNR_PG:	Number of printed pages with the waste toner box. *1
WTNR_CH:	Number of times the waste toner box has been replaced. *1
BELT_PG:	Number of printed pages with the belt unit. *1
BELT_CH:	Number of times the belt unit has been replaced. *1
PFMP_PG:	Number of times the MP paper feeding kit has been replaced.
PFMP_CH:	Number of times the MP paper feeding kit has been replaced.
PFK1_PG:	Number of times the T1 paper feeding kit has been replaced.
PFK1_CH:	Number of times the T1 paper feeding kit has been replaced.
PFK2_PG:	Number of printed pages with the LT paper feeding kit.
PFK2_CH:	Number of times the LT paper feeding kit has been replaced.
FUSR_PG:	Number of printed pages with the fuser unit.
FUSR_CH:	Number of times the fuser unit has been replaced.
LASR_PG:	Number of printed pages with the laser unit.
LASR_CH:	Number of times the laser unit has been replaced.
KCVRGUSI:	Coverage with the toner cartridge. (%) *2
KCVRGACC:	Cumulative coverage (%) *2
TTL_PG:	Total number of printed pages

TTLCOPY:	Number of copies made
TTLPCPT:	Number of PC prints made
TTLFAX:	Number of FAX outputs made
TR1_PG:	Number of pages picked up from the T1.
TR2_PG:	Number of pages picked up from the LT.
MP_PG:	Number of pages picked up from the MP.
DX_PG:	Number of pages picked up from the DX.
A4+LTR:	Number of A4/Letter size sheets picked up.
LG+A4L:	Number of LEGAL/A4 LONG size sheets picked up.
B5+EXE:	Number of B5/Executive size sheets picked up.
ENVLOP:	Number of envelopes picked up.
A5:	Number of A5 size sheets picked up.
OTHER:	Number of other-size sheets picked up.
PLTNRE:	Number of Plain/Thin/Recycled sheets made.
TRANSP:	Number of Transparency mode.
TKTRBD:	Number of Thick/Thicker/Bond made.
ENVTYP:	Number of envelopes picked up.
HAGAKI:	Number of HAGAKI
LABEL:	Number of label
ADSX_PG:	Number of pages scanned with the ADF. (Simplex scanning)
ADDX_PG:	Number of pages scanned with the ADF. (Duplex scanning)
FB_PG:	Number of pages scanned with the FB unit.
KDEV_BIAS:	Black developing bias voltage
POWER:	Total energization time
PWRCNT:	Number of power ON
TTL_JAM:	Total number of jams
TR1_JAM:	Number of jams that occurred at the T1.
TR2_JAM:	Number of jams that occurred at the LT.
MP_JAM:	Number of jams that occurred at the MP.
DX_JAM:	Number of jams that occurred at the DX.
IN_JAM:	Number of jams that occurred inside the machine.
RE_JAM:	Number of jams that occurred at the ejecting.
ADSX_JAM:	Number of jams occurred in simplex scanning with the ADF.
ADDX_JAM:	Number of jams occurred in duplex scanning with the ADF.
HODN_ER:	Number of electric discharge error.
FUSR_ER:	Number of fuser error.
MTLK_ER:	Number of motor lock error.
MACHINE_ERR_01 to 10	Last machine error code 01 to 10
COMERR1 to 3	Last communication error code 1 to 3

*1 Not indicated.

*2 Some margin of error must be taken into consideration because coverage for the printable area of A4-size paper is calculated using video signals.

4.21 Error Code Indication (Function code 82)

<Function>

This function displays an error code of the machine on the LCD.

<Operating Procedure>

- (1) Press the [8] and [2] keys in this order in the initial stage of the maintenance mode.
The machine displays "MACHINE ERROR X X" on the LCD.
- (2) Press the [Stop/Exit] button. The machine beeps for one second and returns to the initial stage of the maintenance mode.

4.22 Output of Transmission Log to the Telephone Line (Function code 87)

<Function>

This function outputs the transmission log (that the machine has stored about the latest transmission) to the telephone line. It allows the service personnel to receive the transmission log of the user's machine at a remote location and use it for analyzing problems arising in the user's machine.

<Operating Procedure>

- (1) If the user's machine has a transmission-related problem, call the user's machine at a remote location from your machine.
- (2) If the line is connected, have the user perform the following:
 - 1) Hook up to the external phone.
 - 2) Press the [Menu], [Start], [Menu] buttons in this order.
 - 3) Press the [8] and [7] keys.
The above operation makes the user's machine send CNG to your machine for sending the transmission log.
- (3) If you hear the CNG sent from the user's machine, press the [Start] button of your machine.
Your machine will start to receive the transmission log from the user's machine.

4.23 Counter Reset After Replacing the Fuser Unit, Laser Unit and Paper Feed Kit (Function code 88)

<Function>

The number of replacement is increased by one, and the warning indication "Replace ***" is cleared, with implementing this operation after replacing the fuser unit, laser unit and paper feed Kit (MP, T1, T2).

<Operating Procedure>

- (1) Press the [8] and [8] keys in this order in the initial stage of the maintenance mode.
- (2) The LCD shows the "Parts Replacement".
- (3) Press the [▲] or [▼] button to select the item you want to reset. The LCD shows.
"Reset Fuser ?"
"Reset Laser ?"
"Reset PF KIT MP ?"
"Reset PF KIT T1 ?"
"Reset PF KIT T2 ?"
- (4) Press the [OK] or [Start] button to reset the counter of the selected part. The machine returns to the initial stage of the maintenance mode.
- (5) When pressing the [Stop] button after Step (2), the machine returns to the standby status of the maintenance mode. At this time, the drum counter and page counter are not reset.

4.24 Maintenance Mode Finish (Function code 99)

<Function>

Finish the maintenance mode.

<Operating Procedure>

- (1) Press the [9] key twice in the initial stage of the maintenance mode.
- (2) The maintenance mode is finished, and the machine returns to the standby status.

5. OTHER SERVICE FUNCTIONS

5.1 Resetting the Periodical Replacement Parts Life

■ Resetting the Life Counter of the Fuser Unit

<Function>

This function allows you to reset the page counter of the fuser unit and increase the number of replacement times by one.

<Operating Procedure>

- (1) Press the [3] and [9] keys at the same time in the ready state.
The "Reset Menu" will appear on the LCD.
- (2) Press the [▲] button a few times to select "Fuser".
- (3) Press the [OK] button.
The "1. Reset / 2. Exit" will appear on the LCD.
- (4) Press the [1] key when resetting the life counter of the fuser unit. Press the [2] key if not resetting.
- (5) The "Accepted" will appear on the LCD if pressing the [1] key. The page counter of the fuser unit is reset, and the number of replacement times is increased by one. Then, the machine returns to the ready state. If pressing the [2] key, the machine do not reset the page counter and the "Fuser" will appear on the LCD.

■ Resetting the Life Counter of the Drum Unit

<Function>

This function allows you to reset the page counter of the drum unit and increase the number of replacement times by one.

<Operating Procedure>

- (1) Press the [3] and [9] keys at the same time in the ready state.
The "Reset Menu" will appear on the LCD.
- (2) Press the [▲] button a few times to select "Drum".
- (3) Press the [OK] button.
The "1. Reset / 2. Exit" will appear on the LCD.
- (4) Press the [1] key when resetting the life counter of the drum unit. Press the [2] key if not resetting.
- (5) The "Accepted" will appear on the LCD if pressing the [1] key. The page counter of the drum unit is reset, and the number of replacement times is increased by one. Then, the machine returns to the ready state. If pressing the [2] key, the machine do not reset the page counter and the "Drum" will appear on the LCD.

■ Resetting the Life Counter of the Paper Feeding Kit

<Function>

This function allows you to reset the page counter of the paper feeding kit (1 or 2) and increase the number of replacement times by one.

<Operating Procedure>

- (1) Press the [3] and [9] keys at the same time in the ready state.
The "Reset Menu" will appear on the LCD.
- (2) Press the [▲] button a few times to select "PF Kit 1" or "PF Kit 2".
- (3) Press the [OK] button.
The "1. Reset / 2. Exit" will appear on the LCD.
- (4) Press the [1] key when resetting the life counter of the paper feeding kit. Press the [2] key if not resetting.
- (5) The "Accepted" will appear on the LCD if pressing the [1] key. The page counter of the paper feeding kit is reset, and the number of replacement times is increased by one. Then, the machine returns to the ready state. If pressing the [2] key, the machine do not reset the page counter and the "PF Kit 1" or "PF Kit 2" will appear on the LCD.

■ Resetting the Life Counter of the MP Paper Feeding Kit

<Function>

This function allows you to reset the page counter of the MP paper feeding kit and increase the number of replacement times by one.

<Operating Procedure>

- (1) Press the [3] and [9] keys at the same time in the ready state.
The "Reset Menu" will appear on the LCD.
- (2) Press the [▲] button a few times to select "PF Kit MP".
- (3) Press the [OK] button.
The "1. Reset / 2. Exit" will appear on the LCD.
- (4) Press the [1] key when resetting the life counter of the MP paper feeding kit. Press the [2] key if not resetting.
- (5) The "Accepted" will appear on the LCD if pressing the [1] key. The page counter of the MP paper feeding kit is reset, and the number of replacement times is increased by one. Then, the machine returns to the ready state. If pressing the [2] key, the machine do not reset the page counter and the "PF Kit MP" will appear on the LCD.

■ Resetting the Life Counter of the Laser Unit

<Function>

This function allows you to reset the page counter of the laser unit and increase the number of replacement times by one.

<Operating Procedure>

- (1) Press the [3] and [9] keys at the same time in the ready state.
The “Reset Menu” will appear on the LCD.
- (2) Press the [▲] button a few times to select “Laser”.
- (3) Press the [OK] button.
The “1. Reset / 2. Exit” will appear on the LCD.
- (4) Press the [1] key when resetting the life counter of the laser unit. Press the [2] key if not resetting.
- (5) The “Accepted” will appear on the LCD if pressing the [1] key. The page counter of the laser unit is reset, and the number of replacement times is increased by one. Then, the machine returns to the ready state. If pressing the [2] key, the machine do not reset the page counter and the “Laser” will appear on the LCD.

5.2 Develop Roller / Developing Bias Voltage Counter Reset Function

Since print density is likely to become darker as the toner gets older, the developing bias is lowered by degrees (bias voltage is reduced) according to the number of develop roller rotations so that an almost fixed density can be maintained from the beginning to the end. The developing bias voltage can be verified in the display of log information (Function code 80).

In the case that the toner cartridge is replaced with a new one, the develop roller counter and developing bias voltage are reset at the same time. This function allows you to reset these manually.

Panel Operation	Function
Pressing the [Clear/Back] button while the front cover is being opened.	Menus of the develop roller counter reset

<Operating Procedure>

- (1) Press the [Clear/Back] button while the front cover is being opened.
- (2) The “Replace Drum ?” “1. Yes 2. No” will appear on the LCD. If resetting the counter, press the [1] key. If not, press the [2] key.
- (3) The “1. Yes 2. No” will appear on the LCD. If resetting the counter, press the [1] key. If not, press the [2] key.
- (4) The counter is reset when pressing the [1] key.
- (5) The machine returns to the status that the front cover is opened.

Note:

- If there is no operation for 60 seconds or more, the machine automatically awakes the develop roller / developing bias voltage counter reset function. The “Cover is Open” will appear on the LCD. Then, the machine returns to the ready state.

5.3 Drum condensation countermeasure mode

The printing spots may occur with the condensation of the surface of the drum in the high humidity environment. When the drum condensation countermeasure mode is set to ON to follow the procedure described below, you can remedy the condensation of the surface of the drum in drying by heat of the fuser unit.

<Operating Procedure>

- (1) Open the front cover.
- (2) Press the [**Enlarge/Reduce**] button.
The LCD shows the
“LONG WARMUP MODE
▲ on
▼ off”.
- (3) Select the “ON” or “OFF” by pressing the [▲] or [▼] button, and press the [OK] button.
The LCD shows the “Accepted”, and the machine returns to the standby status.

5.4 Unlocking and Clearing the Password of the Function Lock / Setting Lock

■ How to clear the password

The user's can not clear the password that registered by operation of the panel. Perform the following procedures to clear the registered password.

<Operating Procedure>

- (1) Press the [**Menu**], [**#**], [**2**], [**7**], [**9**], [**0**] and [**0**] button in this order in the ready state.
The “0” will appear on the LCD.
- (2) The registered password is cleared, and the machine returns to the ready state.

5.5 Clearing the Data of the Secure Print

If forgot the password of the Secure Print, turn the power switch off and then turn it on again to clear the printing data.

CHAPTER 8

CIRCUIT DIAGRAMS, WIRING DIAGRAM

CHAPTER 8 CIRCUIT DIAGRAMS, WIRING DIAGRAM

This chapter provides the circuit diagrams of the MJ PCB and power supply PCB and the wiring diagrams that help you understand the connections between PCBs.

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1. CIRCUIT DIAGRAMS.....	8-1
2. WIRING DIAGRAM	8-5

1. CIRCUIT DIAGRAMS

High-voltage Power Supply PCB Circuit Diagram

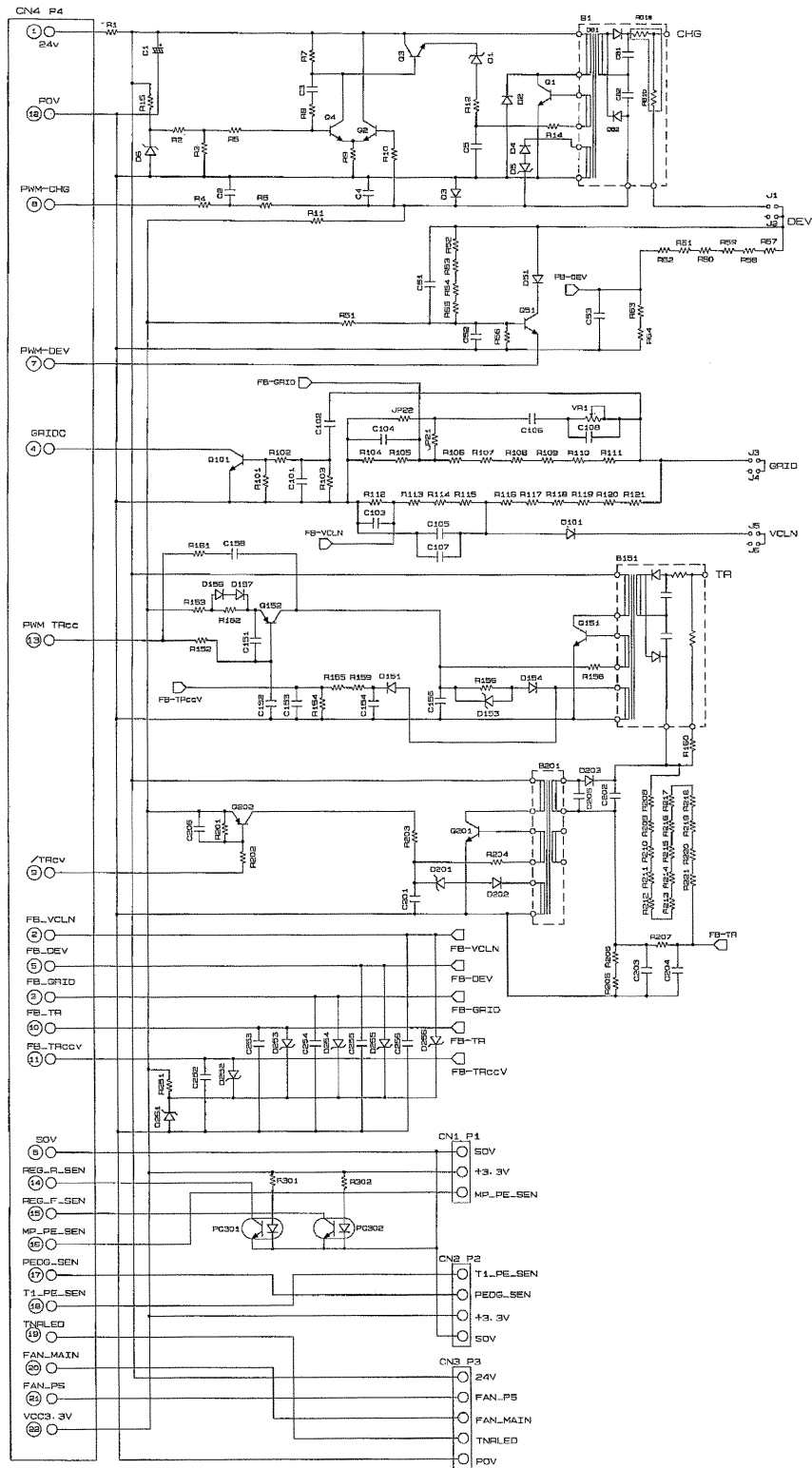
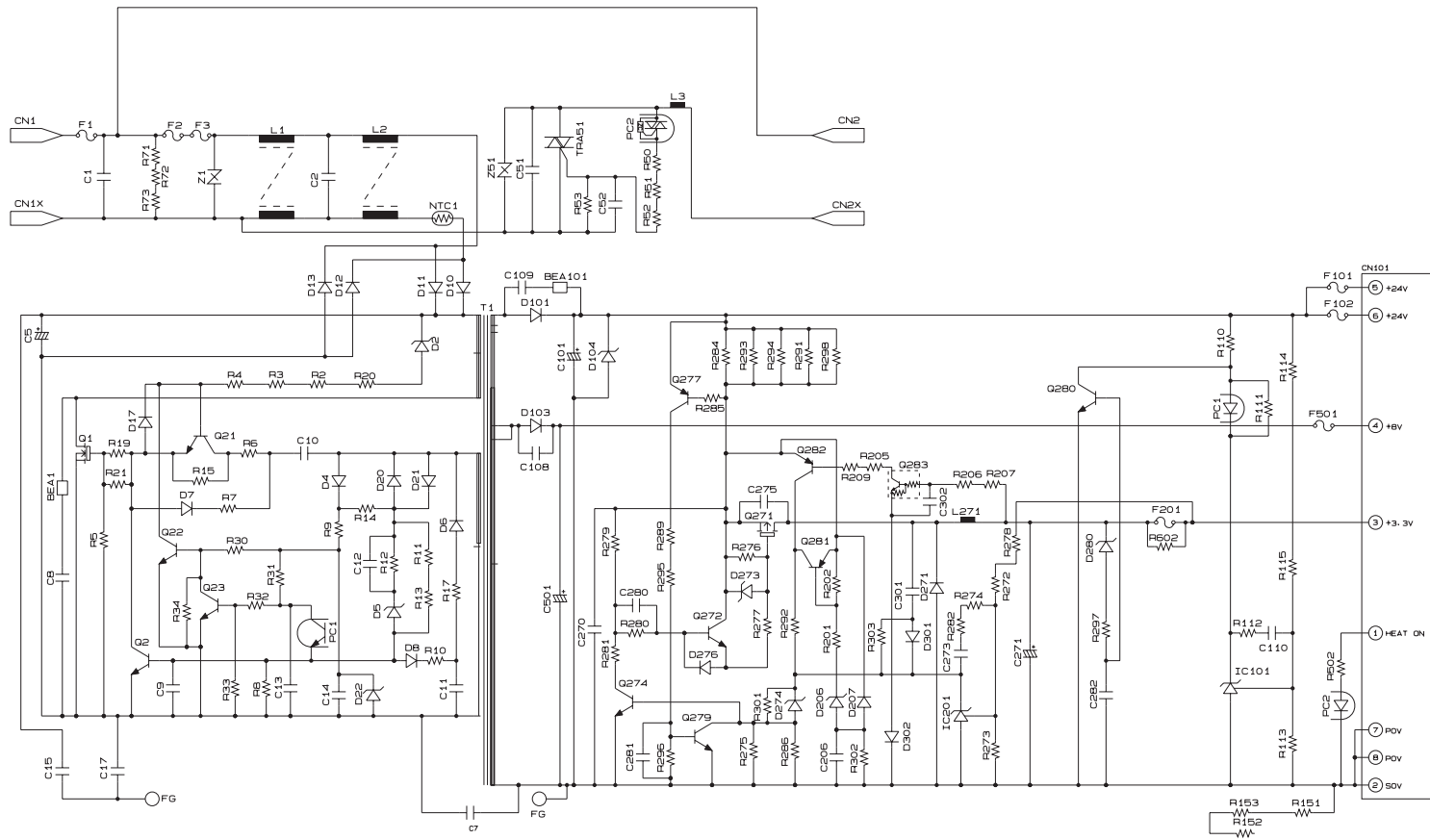


Fig. 8-1

■ LVPS PCB Circuit Diagram (115V)



MPW3044

Fig. 8-3

■ NCU PCB circuit diagram

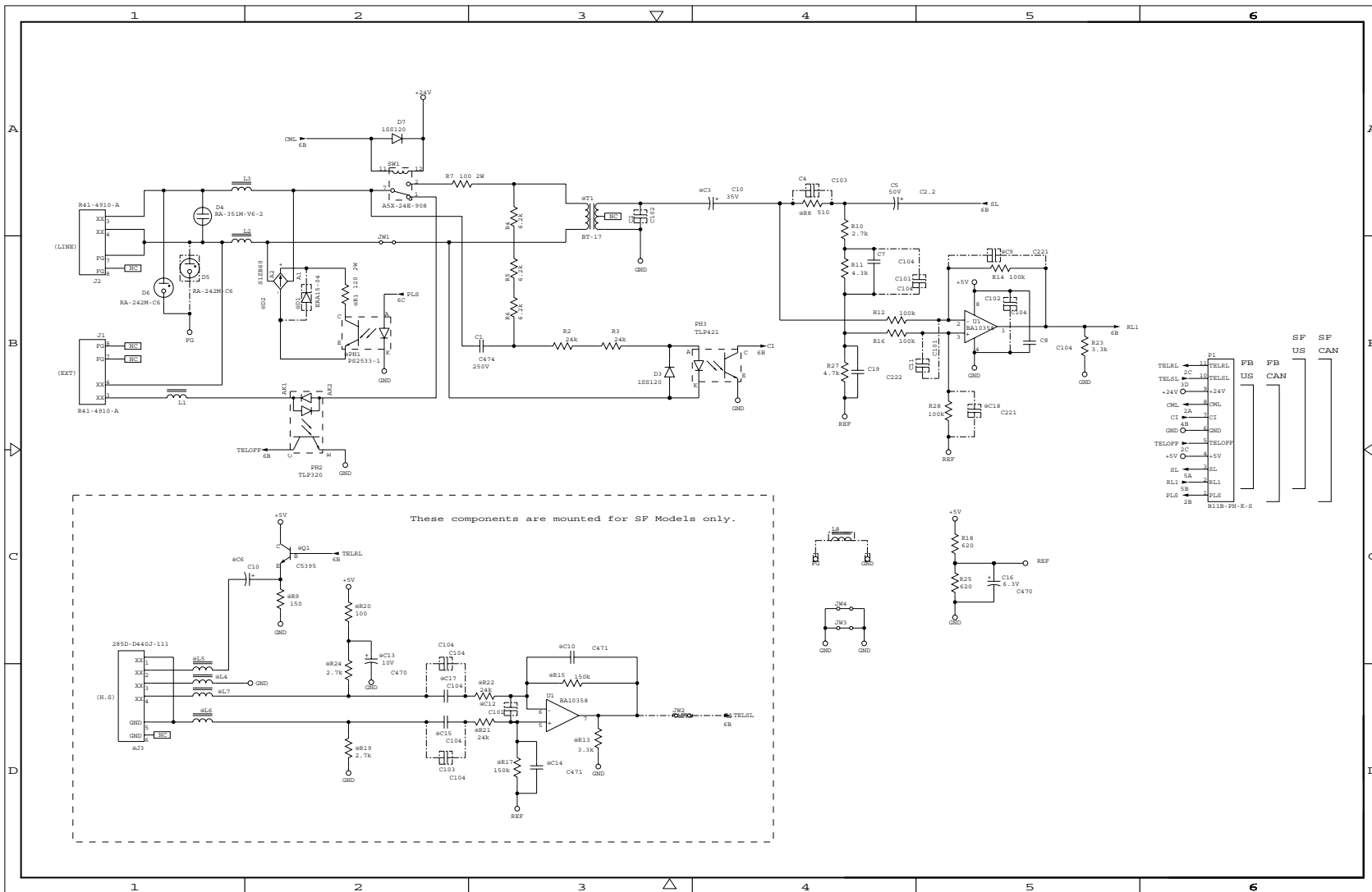


Fig. 8-4

2. WIRING DIAGRAM

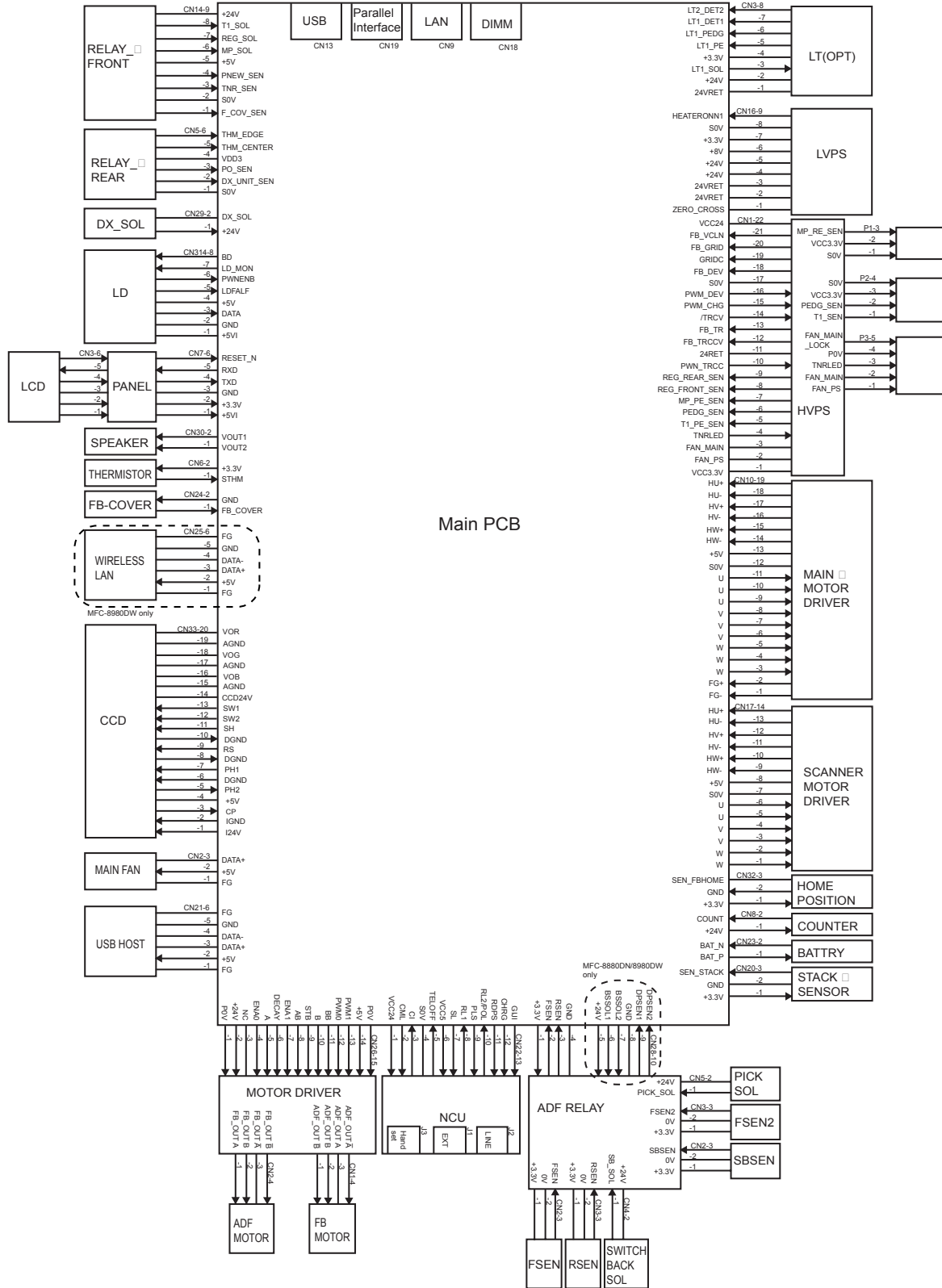


Fig. 8-5

APPENDIX 1

FIRMWARE SWITCHES (WSW)

This appendix describes the functions of the Firmware switches. Use the Firmware switch to match the environmental conditions if the machine malfunctions due to mismatching.

FIRMWARE SWITCHES (WSW)

This appendix describes the functions of the Worker switches, which can be divided into two groups: one is for customizing preferences designed for the shipping destination (Refer to "4.18 EEPROM Customizing (Function code 74)" in Chapter 7) and the other is for modifying preferences that match the machine to the environmental conditions. Use the latter group if the machine malfunctions due to mismatching.

Each switch has eight selectors. However, some of them cannot be set by an end user. Only selectors in the worker switch setting tables of this Appendix that are shaded can be set by an end user.

The worker switch setting procedure is described in "4.6.1 Firmware switch setting (Function code 10)" in Chapter 7.

■ Worker Switch

WSW No.	Function	Refer to:
WSW01	Dial pulse setting	App. 1-4
WSW02	Tone signal setting	App. 1-6
WSW03	PABX mode setting	App. 1-7
WSW04	Transfer facility setting	App. 1-9
WSW05	1st dial tone and busy tone detection	App. 1-10
WSW06	[Redial/Pause] button setting and 2nd dial tone detection	App. 1-11
WSW07	Dial tone setting 1	App. 1-13
WSW08	Dial tone setting 2	App. 1-14
WSW09	Protocol definition 1	App. 1-15
WSW10	Protocol definition 2	App. 1-16
WSW11	Busy tone setting	App. 1-17
WSW12	Signal detection condition setting	App. 1-18
WSW13	Modem setting	App. 1-19
WSW14	AUTO ANS facility setting	App. 1-20
WSW15	Redial facility setting	App. 1-21
WSW16	Function setting 1	App. 1-22
WSW17	Function setting 2	App. 1-23
WSW18	Function setting 3	App. 1-24
WSW19	Transmission speed setting	App. 1-25
WSW20	Overseas communications mode setting	App. 1-26
WSW21	TAD setting 1	App. 1-27
WSW22	ECM and call waiting caller ID	App. 1-28
WSW23	Communications setting	App. 1-29
WSW24	TAD setting 2	App. 1-30
WSW25	TAD setting 3	App. 1-31
WSW26	Function setting 4	App. 1-32
WSW27	Function setting 5	App. 1-34
WSW28	Function setting 6	App. 1-35
WSW29	Function setting 7	App. 1-36

WSW No.	Function	Refer to:
WSW30	Function setting 8	App. 1-37
WSW31	Function setting 9	App. 1-38
WSW32	Function setting 10	App. 1-39
WSW33	Function setting 11	App. 1-40
WSW34	Function setting 12	App. 1-41
WSW35	Function setting 13	App. 1-42
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WSW53	Function setting 18	App. 1-60
WSW54	Function setting 19	App. 1-61
WSW55	Function setting 20	App. 1-62
WSW56	Function setting 21	App. 1-63
WSW57	Function setting 22	App. 1-64
WSW58	Function setting 23	App. 1-65
WSW59	Function setting 24	App. 1-66
WSW60	Not used	App. 1-67
WSW61	Scanning light intensity to judge to be stable 1	App. 1-68
WSW62	Scanning light intensity to judge to be stable 2	App. 1-69
WSW63	Function setting 25	App. 1-70
WSW64	Setting the language / Default paper size	App. 1-71
WSW65	Setting the paper support	App. 1-71
WSW66	Drum life end	App. 1-72
WSW67	Not used	App. 1-72
WSW68	Fuser unit life end	App. 1-72
WSW69	Scanner unit life end	App. 1-73

WSW No.	Function	Refer to:
WSW70	Paper feeding kit life end	App. 1-73
WSW71	Paper feeding kit 2 life end	App. 1-74
WSW72	Paper feeding kit MP life end	App. 1-74
WSW73	Not used	App. 1-74

The functions and settings for each worker switch (WSW) are described below;

<WSW01>

Selector No.	Function	Setting and Specifications
1 2	Dial pulse generation mode	No. 1 2 0 0 : N 0 1 : N+1 1 0 : 10-N 1 1 : N
3 4	Break time length in pulse dialing	No. 3 4 0 0 : 60 ms 0 1 : 67 ms 1 0 : 40 ms 1 1 : 64 ms (for 16 PPS)
5 6	Inter-digit pause	No. 5 6 0 0 : 800 ms 0 1 : 850 ms 1 0 : 950 ms (for 16 PPS) 1 1 : 600 ms (at 106-ms intervals)
7	Switching between pulse and tone dialing, by the function switch	0: Yes 1: No
8	Default dialing mode, pulse (DP) or tone (PB) dialing	0: PB 1: DP

• **Selectors 1 and 2: Dial pulse generation mode**

These selectors set the number of pulses to be generated in pulse dialing.

N: Dialing "N" generates "N" pulses. (Dialing "0" generates 10 pulses.)

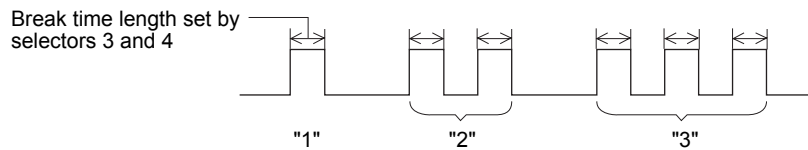
N + 1: Dialing "N" generates "N + 1" pulses.

10 - N: Dialing "N" generates "10 - N" pulses.

• **Selectors 3 and 4: Break time length in pulse dialing**

These selectors set the break time length in pulse dialing.

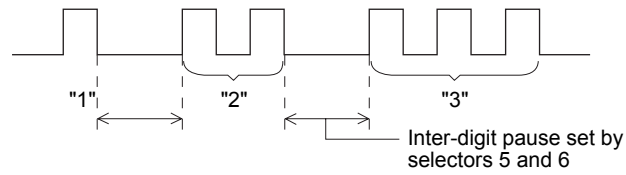
(Example: If "1," "2," and "3" are dialed when N is set by selectors 1 and 2.)



- **Selectors 5 and 6: Inter-digit pause**

These selectors set the inter-digit pause in pulse dialing.

(Example: If "1," "2," and "3" are dialed when N is set by selectors 1 and 2.)



- **Selector 7: Switching between pulse and tone dialing, by the function switch**

This selector determines whether or not the dialing mode can be switched between the pulse (DP) and tone (PB) dialing by using the function switch.

- **Selector 8: Default dialing mode, pulse (DP) or tone (PB) dialing**

This selector sets the default dialing mode (pulse dialing or tone dialing) which can be changed by the function switch. If the user switches it with the function switch when selector 7 is set to "0," the setting specified by this selector will also be switched automatically.

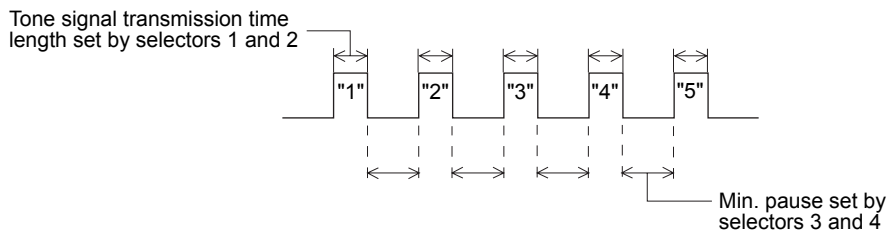
<WSW02>

Selector No.	Function	Setting and Specifications
1 2	Tone signal transmission time length	No. 1 2 0 0 : 70 ms 0 1 : 80 ms 1 0 : 90 ms 1 1 : 100 ms
3 4	Min. pause in tone dialing	No. 3 4 0 0 : 70 ms 0 1 : 80 ms 1 0 : 90 ms 1 1 : 140 ms
5 1 8	Attenuator for pseudo ring backtone to the line (selectable in the range of 0-15 dB, in 1 dB increments)	0: 0 dB 1: 8 dB 0: 0 dB 1: 4 dB 0: 0 dB 1: 2 dB 0: 0 dB 1: 1 dB

• **Selectors 1 through 4: Tone signal transmission time length and Min. pause in tone dialing**

These selectors set the tone signal transmission time length and minimum pause in tone dialing.

(Example: If "1," "2," "3," "4," and "5" are dialed.)



• **Selectors 5 through 8: Attenuator for pseudo ring backtone to the line**

These selectors are used to adjust the sound volume of a ring backtone in the F/T mode, an on-hold sound, or a beep generated as a signal during remote control operation or at the start of ICM recording.

The larger the value specified by these selectors, the greater the attenuation.

<WSW03>

Selector No.	Function	Setting and Specifications
1	CNG detection when sharing a modular wall socket with a telephone	0: A 1: B
2 3 4	Detection time length of PABX* dial tone, required for starting dialing	No. 2 3 4 0 0 0: 50 ms 0 0 1: 210 ms 0 1 0: 500 ms 0 1 1: 800 ms 1 0 0: 900 ms 1 0 1: 1.5 sec. 1 1 0: 2.0 sec. 1 1 1: 2.5 sec
5	CNG detection when sharing a modular wall socket with a telephone	0: A 1: B
6 7	Dial tone detection in PABX*	No. 6 7 0 0 : No detection (3.5 sec. wait) 0 1 : No detection (5 sec. wait) 1 0 : No detection (7 sec. wait) 1 1 : Detection (Frequency only)
8	Not used.	

* PABX: Private automatic branch exchange

Note:

- Selectors 2 through 4, 6 and 7 are not applicable where no PABX is installed.

• **Selectors 1 and 5: CNG detection when sharing a modular wall socket with a telephone**

These selectors determine whether or not the machine detects a CNG signal when a line is connected to a telephone sharing a modular wall socket with the machine. Upon detection of CNG signals by the number of cycles specified by these selectors, the machine interprets CNG as an effective signal and then starts FAX reception.

Selector		Cycle
No. 1	No. 5	
0 (A)	0 (A)	0.5 cycle
0 (A)	1 (B)	1.0 cycle
1 (A)	0 (A)	1.5 cycle
1 (B)	1 (B)	2.0 cycle

• **Selectors 2 through 4: Detection time length of PABX dial tone, required for starting dialing**

Upon detection of the PABX dial tone for the time length set by these selectors, the machine starts dialing. These selectors are effective only when both selectors 6 and 7 are set to "1" (Detection).

- **Selectors 6 and 7: Dial tone detection in PABX***

These selectors activate or deactivate the dial tone detection function which detects a dial tone when a line is connected to the PABX.

Setting both of these selectors to "1" activates the dial tone detection function so that the machine starts dialing upon detection of a dial tone when a line is connected.

Other setting combinations deactivate the dial tone detection function so that the machine starts dialing after the specified WAIT (3.5, 5.0, or 7.0 sec.) without detection of a dial tone when a line is connected.

<WSW04>

Selector No.	Function	Setting and Specifications
1	Earth function in transfer facility (Not used.)	0: Provided 1: Not provided
2 3	Dual tone detection frequency in ICM recording (Not used.)	No. 2 3 0 0: 350 and 440 Hz (A) 0 1: 440 and 480 Hz (B) 1 0: 480 and 620 Hz (C) 1 1: 480 and 620 Hz (C)
4	Dual tone detection sensitivity in ICM recording (Not used.)	0: Normal 1: High
5	Length of time added to time designated by selectors 3 and 4 on the WSW 24 (time between CML ON and pseudo ring backtone return).	0: Not added 1: +4 seconds added
6 1 8	Break time length for flash function	No. 6 7 8 0 0 0: 80 ms 0 0 1: 100 ms 0 1 0: 110 ms 0 1 1: 120 ms 1 0 0: 200 ms 1 0 1: 250 ms 1 1 0: 500 ms 1 1 1: 700 ms

Note:

- Selectors 1 and 5 through 8 are not applicable in those countries where no transfer facility is supported.

• **Selectors 6 and 8: Break time length for flash function**

These selectors set the break time length. This setting is effective only when the flash function is selected for the [Search/Speed Dial] button by using the function switch.

<WSW05>

Selector No.	Function	Setting and Specifications
1 1 3	1st dial tone detection	No. 1 2 3 0 0 0: 3.5 sec. wait 0 0 1: 7.0 sec. wait 0 1 0: 10.5 sec. wait 0 1 1: 14.0 sec. wait 1 0 0: 17.5 sec. wait 1 0 1: 21.0 sec. wait 1 1 0: 24.5 sec. wait 1 1 1: Detection (Without wait)
4	Max. pause time allowable for remote ID code detection	0: 2 sec. 1: 1 sec.
5 6	Busy tone detection in auto-matic sending mode	No. 5 6 0 0: No detection 0 1: Detection only after dialing 1 0: No detection 1 1: Detection before and after dialing
7	Busy tone detection in auto-matic receiving mode	0: Yes 1: No
8	Not used.	

Note:

- Selectors 5 through 7 are not applicable in those countries where no busy tone detection is supported.

• **Selectors 1 through 3: 1st dial tone detection**

These selectors activate or deactivate the 1st dial tone detection function which detects the 1st dial tone issued from the PSTN when a line is connected to the PSTN.

Setting all of these selectors to "1" activates the dial tone detection function so that the machine starts dialing upon detection of a dial tone when a line is connected. (However, in those countries which support no dial tone detection function, e.g., in the U.S.A., setting these selectors to "1" makes the machine start dialing after a WAIT of 3.5 seconds.) For the detecting conditions of the 1st dial tone, refer to WSW07 and WSW08.

Other setting combinations deactivate the dial tone detection function so that the machine starts dialing after the specified WAIT (3.5, 7.0, 10.5, 14.0, 17.5, 21.0, or 24.5 seconds) without detection of a dial tone when a line is connected to the PSTN.

• **Selector 4: Max. pause time allowable for remote ID code detection**

This selector sets the maximum pause time allowable for detecting the second digit of a remote ID code after detection of the first digit in remote reception.

If selector 4 is set to "0" (2 seconds), for instance, only a remote ID code whose second digit is detected within 2 seconds after detection of the first digit will become effective so as to activate the remote function.

• **Selectors 5 and 6: Busy tone detection in automatic sending mode**

These selectors determine whether or not the machine automatically disconnects a line upon detection of a busy tone in automatic sending mode.

Setting selector 6 to "0" ignores a busy tone so that the machine does not disconnect the line. Setting selectors 5 and 6 to "0" and "1," respectively, makes the machine detect a busy tone only after dialing and disconnect the line.

Setting both of selectors 5 and 6 to "1" makes the machine detect a busy tone before and after dialing and then disconnect the line.

• **Selector 7: Busy tone detection in automatic receiving mode**

This selector determines whether or not the machine automatically disconnects the line upon detection of a busy tone in automatic receiving mode.

<WSW06>

Selector No.	Function	Setting and Specifications
1 3	[Redial/Pause] button setting and 2nd dial tone detection	No. 1 2 3 0 0 0: No pause 0 0 1: 3.5 sec. wait 0 1 0: 7 sec. wait 0 1 1: 10.5 sec. wait 1 0 0: 2.8 sec. wait 1 0 1: 2nd dial tone detection both in DP and push-button (PB) dialing system 1 1 0: 2nd dial tone detection only in pulse dialing (DP) system 1 1 1: 2nd dial tone detection both in DP and push-button (PB) dialing system
4 6	Detection of 2nd dial tone	No. 4 5 6 0 0 0: 50 ms 0 0 1: 250 ms 0 1 0: 500 ms 0 1 1: 620 ms 1 0 0: 800 ms 1 0 1: 1.5 sec. 1 1 0: 2.0 sec. 1 1 1: 2.5 sec.
7	No. of 2nd dial tone detection cycles	0: 1 cycle 1: 2 cycles
8	Allowable instantaneous interrupt during reception of 2nd dial tone	0: 30 ms 1: 50 ms

Note:

- Selectors 4 through 8 are not applicable in those countries where no dial tone detection is supported, e.g., U.S.A.

- **Selectors 1 through 3: [Redial/Pause] button setting and 2nd dial tone detection**

Selectors			
1	2	3	
0	0	0	No wait is inserted even if the [Redial/Pause] button is pressed.
0	0	1	If you press the [Redial/Pause] button during dialing, the machine will insert wait as defined in the above table.
0	1	0	If the [Redial/Pause] button is pressed repeatedly, the machine inserts the specified wait multiplied by the number of depressions. It applies also in hook-up dialing.
0	1	1	
1	0	0	
1	0	1	When these selectors are set to "1, 0, 1":
1	1	0	Each time you press the [Redial/Pause] button in dialing, the machine will wait for the 2nd dial tone to be sent via the communications line regardless of pulse dialing or tone dialing.
1	1	1	When these selectors are set to "1, 1, 0": If you press the [Redial/Pause] button in pulse dialing, the machine will first wait for the 2nd dial tone to be sent via the communications line. After that, pressing the [Redial/Pause] button will cause the machine to insert a WAIT of 3.5 seconds. In tone dialing, the machine will insert a WAIT of 3.5 seconds.
			When these selectors are set to "1, 1, 1": If you press the [Redial/Pause] button, the machine will first wait for the 2nd dial tone to be sent via the communications line regardless of pulse dialing or tone dialing. After that, pressing the [Redial/Pause] button will cause the machine to insert a wait of 3.5 seconds. (In those countries where no dial tone detection function is supported, setting these selectors to "1, 0, 1," "1, 1, 0," or "1, 1, 1" inserts a wait of 3.5 seconds.)

- **Selectors 4 through 6: Detection of 2nd dial tone**

Upon detection of the 2nd dial tone for the time length specified by these selectors, the machine starts dialing.

This setting is effective only when the 2nd dial tone detection function is activated by selectors 1 through 3 (Setting 101, 110, or 111).

This function does not apply in those countries where no dial tone detection function is supported.

- **Selector 7: No. of 2nd dial tone detection cycles**

This selector sets the number of dial tone detection cycles required for starting dialing.

- **Selector 8: Allowable instantaneous interrupt during reception of 2nd dial tone**

This selector sets the allowable instantaneous interrupt period that should be ignored during reception of the 2nd dial tone.

<WSW07>

Selector No.	Function	Setting and Specifications
1 2	Dial tone frequency band control	No. 1 2 0 0: Narrows by 10 Hz 0 1: Initial value 1 0: Widens by 10 Hz 1 1: Widens by 10 Hz
3	Line current detection (Not used.)	0: No 1: Yes
4 1 6	2nd dial tone detection level (Z = 600 Ω)	No. 4 5 6 0 0 0: -21 dBm 0 0 1: -24 dBm 0 1 0: -27 dBm 0 1 1: -30 dBm 1 0 0: -33 dBm 1 0 1: -36 dBm 1 1 0: -39 dBm 1 1 1: -42 dBm
7	Allowable instantaneous interrupt during reception of 1st dial tone	0: 30 ms 1: 50 ms
8	Not used.	

Note:

- Selectors 1, 2, 4 through 7 are not applicable in those countries where no dial tone or line current detection is supported, e.g., U.S.A.

• **Selectors 1 and 2: Dial tone frequency band control**

These selectors set the frequency band for the 1st dial tone and busy tone (before dialing) to be detected. This setting is effective only when selectors 1 through 3 on WSW05 are set to "1,1,1."

• **Selectors 4 through 6: 2nd dial tone detection level**

These selectors set the detection level of the 2nd dial tone.

• **Selector 7: Allowable instantaneous interrupt during reception of 1st dial tone**

This selector sets the allowable instantaneous interrupt period that should be ignored during reception of the 1st dial tone.

<WSW08>

Selector No.	Function	Setting and Specifications
1 1 3	1st dial tone detection time length	No. 1 2 3 0 0 0: 50 ms 0 0 1: 250 ms 0 1 0: 500 ms 0 1 1: 620 ms 1 0 0: 800 ms 1 0 1: 1.5 sec. 1 1 0: 2.0 sec. 1 1 1: 2.5 sec.
4 5	Time-out length for 1st and 2nd dial tone detection	No. 4 5 0 0: 10 sec. 0 1: 20 sec. 1 0: 15 sec. 1 1: 30 sec.
6 1 8	Detection level of 1st dial tone and busy tone before dialing	No. 6 7 8 0 0 0: -21 dBm 0 0 1: -24 dBm 0 1 0: -27 dBm 0 1 1: -30 dBm 1 0 0: -33 dBm 1 0 1: -36 dBm 1 1 0: -39 dBm 1 1 1: -42 dBm

Note:

- The WSW08 is not applicable in those countries where no dial tone detection is supported, e.g., U.S.A.

• **Selectors 1 through 3: 1st dial tone detection time length**

Upon detection of the 1st dial tone for the time length set by these selectors, the machine starts dialing. This setting is effective only when selectors 1 through 3 on WSW05 are set to "1,1,1."

• **Selectors 4 and 5: Time-out length for 1st and 2nd dial tone detection**

These selectors set the time-out length for the 1st and 2nd dial tone detection so that the machine waits dial tone input for the specified time length and disconnects itself from the line when no dial tone is inputted.

<WSW09>

Selector No.	Function	Setting and Specifications
1	Frame length selection	0: 256 octets 1: 64 octets
2	Use of non-standard commands	0: Allowed 1: Prohibited
3 4	No. of retries	No. 3 4 0 0: 4 times 0 1: 3 times 1 0: 2 times 1 1: 1 times
5	T5 timer	0: 300 sec. 1: 60 sec.
6	T1 timer	0: 35 sec. 1: 40 sec.
7 8	Timeout for response from the called station in automatic sending mode	No. 7 8 0 0: 55 sec. (in U.S.A. and Canadian models) 60 sec. (in other models) 0 1: 140 sec. 1 0: 90 sec. 1 1: 35 sec.

Note:

- Selectors 1 through 5 are not applicable in those models which do not support ECM.

• **Selector 1: Frame length selection**

Usually a single frame consists of 256 octets (1 octet = 8 bits). For communications lines with higher bit error rate, however, set selector 1 to "1" so that the machine can divide a message into 64-octet frames.

Remarks: The error correction mode (ECM) is a facsimile transmission manner in which the machine divides a message into frames for transmission so that if any data error occurs on the transmission line, the machine retransmits only those frames containing the error data.

• **Selector 2: Use of non-standard commands**

If this selector is set to "0," the machine can use non-standard commands (the machine's native-mode commands, e.g., NSF, NSC, and NSS) for communications. If it is set to "1," the machine will use standard commands only.

• **Selectors 3 and 4: No. of retries**

These selectors set the number of retries in each specified modem transmission speed.

• **Selector 5: T5 timer**

This selector sets the time length for the T5 timer.

• **Selector 6: T1 timer**

This selector sets the time length for the T1 timer.

• **Selectors 7 and 8: Timeout for response from the called station in automatic sending mode**

If the machine (calling station) receives no response (no G3 command) from the called terminal in automatic sending mode for the period specified by these selectors, it disconnects the line.

<WSW10>

Selector No.	Function	Setting and Specifications
1	DPS switching interfacing with CML	0: No 1: Yes
2	Time length from transmission of the last dial digit to CML ON	0: 100 ms 1: 50 ms
3	Time length from CML ON to CNG transmission	0: 2 sec. 1: 4 sec.
4	Time length from CML ON to CED transmission (except for facsimile-to-telephone switching)	0: 0.5 sec. 1: 2 sec.
5 6	No. of training retries	No. 5 6 0 0: 1 time 0 1: 2 times 1 0: 3 times 1 1: 4 times
7	Encoding system (Compression)	MR 0: Allowed 1: Not allowed
8		MMR 0: Allowed 1: Not allowed

• **Selector 2: Time length from transmission of the last dial digit to CML ON**

This selector sets the time length from when the machine transmits the last dial digit until the CML relay comes on.

• **Selector 3: Time length from CML ON to CNG transmission**

This selector sets the time length until the machine transmits a CNG after it turns on the CML relay.

• **Selector 4: Time length from CML ON to CED transmission**

This selector sets the time length until the machine transmits a CED after it turns on the CML relay. This setting does not apply to switching between facsimile and telephone.

• **Selectors 5 and 6: No. of training retries**

These selectors set the number of training retries to be repeated before automatic fallback.

• **Selectors 7 and 8: Encoding system (Compression)**

This selector determines whether or not to allow the use of the MR/MMR coding system.

<WSW11>

Selector No.	Function	Setting and Specifications
1 2	Busy tone frequency band control	No. 1 2 0 0: Narrows by 10 Hz 0 1: Initial value 1 0: Widens by 10 Hz 1 1: Widens by 10 Hz
3		1: 250-750/250-750 ms
4	ON/OFF time length ranges for busy tone (More than one setting allowed)	1: 400-600/400-600 ms
5		1: 175-440/175-440 ms
6		1: 100-1000/17-660 ms
7		1: 110-410/320-550 ms
8		1: 100-660/100-660 ms

Note:

- WSW11 is not applicable in those countries where no busy tone detection is supported.
- The setting of WSW11 is effective only when selectors 5 and 6 on WSW05 are set to "0, 1" or "1, 1" (Busy tone detection).

- **Selectors 1 and 2: Busy tone frequency band control**

These selectors set the frequency band for busy tone to be detected.

- **Selectors 3 through 8: ON/OFF time length ranges for busy tone**

These selectors set the ON and OFF time length ranges for busy tone to be detected. If more than one selector is set to "1," the ranges become wider. For example, if selectors 4 and 5 are set to "1," the ON and OFF time length ranges are from 175 to 600 ms.

<WSW12>

Selector No.	Function	Setting and Specifications
1 2	Min. detection period required for interpreting incoming calling signal (CI) as OFF	No. 1 2 0 0: 1500 ms 0 1: 500 ms 1 0: 700 ms 1 1: 900 ms
3 4	Max. detection period for incoming calling signal (CI) being OFF	No. 3 4 0 0: 6 sec. 0 1: 7 sec. 1 0: 9 sec. 1 1: 11 sec.
5 6	Min. detection period required for acknowledging incoming calling signal (CI) as ON	No. 5 6 0 0: 800 ms (1000 ms*) 0 1: 200 ms 1 0: 250 ms 1 1: 150 ms
7	Line connection timing	0: Ringer-OFF period 1: Ringer-ON period
8	Not used.	

* 1000 ms in Chinese models.

- **Selectors 1 through 4: Min. detection period required for interpreting incoming calling signal (CI) as OFF**
Max. detection period for incoming calling signal (CI) being OFF

If the machine detects the OFF state of a CI signal for the period greater than the value set by selectors 1 and 2 and less than the value set by selectors 3 and 4, it interprets the CI signal as OFF.

- **Selectors 5 and 6: Min. detection period required for acknowledging incoming calling signal (CI) as ON**

These selectors set the period required to make the machine acknowledge itself to be called. That is, if the machine continuously detects a CI signal with the frequency set by selectors 1 through 4 on WSW14 during the period set by these selectors 5 and 6, then it acknowledges the call.

- **Selector 7: Line connection timing**

If a line is connected in a ringer-ON period, FAX models equipped with SDAA circuits may malfunction due to the ringer voltage. To make the line connection stable, this selector should be set to "0" so that a line is connected in a ringer-OFF period.

<WSW13>

Selector No.	Function	Setting and Specifications
1 2	Cable equalizer	No. 1 2 0 0: 0 km 0 1: 1.8 km 1 0: 3.6 km 1 1: 5.6 km
3 4	Reception level	No. 3 4 0 0: -43 dBm 0 1: -47 dBm 1 0: -49 dBm 1 1: -51 dBm
5 1 8	Modem attenuator	No. 5 6 7 8 0 0 0 0: 0 dB 0 0 0 1: 1 dB 0 0 1 0: 2 dB 0 0 1 1: 3 dB 0 1 0 0: 4 dB ⋮ 1 1 1 1: 15 dB

• **Selectors 1 and 2: Cable equalizer**

These selectors are used to improve the pass-band characteristics of analogue signals on a line. Attenuation in the high-band frequency is greater than in the low-band frequency. Set these selectors according to the distance from the telephone switchboard to the machine.

• **Selectors 3 and 4: Reception level**

These selectors set the optimum receive signal level.

• **Selectors 5 through 8: Modem attenuator**

These selectors are used to adjust the transmitting level attenuation of the modem when the reception level at the remote station is improper due to line loss. This function applies for G3 protocol signals.

Setting two or more selectors to "1" produces addition of attenuation assigned to each selector.

If selector 8 on WSW23 is set to "0," this setting is so limited that 10 dB (1 dB in France) or higher setting only is effective.

Note that in Japan and China, 9 dB or higher and 2 dB or higher settings only are effective, respectively, regardless of whether selector 8 on WSW23 is set to "0."

<WSW14>

Selector No.	Function	Setting and Specifications
1 2	Frequency band selection (lower limit) for incoming calling signal (CI)	No. 1 2 0 0: 13 Hz 0 1: 15 Hz 1 0: 23 Hz 1 1: 20 Hz
3 4	Frequency band selection (upper limit) for incoming calling signal (CI)	No. 3 4 0 0: 30 Hz 0 1: 55 Hz 1 0: 70 Hz 1 1: 200 Hz
5 1 8	No. of rings in AUTO ANS mode	No. 5 6 7 8 0 0 0 0: Fixed to once 0 0 0 1: 1 to 6 times 0 0 1 0: 1 to 8 times 0 0 1 1: 2 to 8 times 0 1 0 0: 1 to 2 times 0 1 0 1: 1 to 3 times 0 1 1 0: 1 to 4 times 0 1 1 1: 1 to 5 times 1 0 0 0: 2 to 3 times 1 0 0 1: 2 to 4 times 1 0 1 0: 2 to 5 times 1 0 1 1: 2 to 6 times 1 1 0 0: 1 to 10 times 1 1 0 1: 2 to 10 times 1 1 1 0: 3 to 5 times 1 1 1 1: 4 to 10 times

- **Selectors 1 through 4: Frequency band selection for incoming calling signal (CI)**

These selectors are used to select the frequency band of CI for activating the AUTO ANS facility.

In the French models, if the user sets the PBX to OFF from the control panel, the setting made by selectors 1 and 2 will take no effect and the frequency's lower limit will be fixed to 32 Hz. (Even if the setting made by these selectors does not apply, it will be printed on the configuration list.)

- **Selectors 5 through 8: No. of rings in AUTO ANS mode**

These selectors set the number of rings to initiate the AUTO ANS facility.

<WSW15>

Selector No.	Function	Setting and Specifications
1 2	Redial interval	No. 1 2 0 0: 5 min. 0 1: 1 min. 1 0: 2 min. 1 1: 3 min.
3 1 6	No. of redialings	No. 3 4 5 6 0 0 0 0: 16 times 0 0 0 1: 1 times 0 0 1 0: 2 times 0 0 1 1: 3 times 1 1 1 1: 15 times
7	(Not used.)	
8	CRP option	0: Disable 1: Enable

- **Selectors 1 through 6: Redial interval and No. of redialings**

The machine redials by the number of times set by selectors 3 through 6 at intervals set by selectors 1 and 2.

- **Selector 8: CRP option**

If a command error occurs in the machine (calling station), the machine usually waits for three seconds and then makes a retry three times. This CRP option is a request command that can be sent from the called station for requesting the calling station to retry the failed command immediately.

<WSW16>

Selector No.	Function	Setting and Specifications
1	Not used.	
2	ITU-T (CCITT) superfine recommendation	0: OFF 1: ON
3 1 6	Not used.	
7	Max. document length limitation	0: 400 cm 1: 90 cm
8	[Stop/Exit] button pressed during reception	0: Not functional 1: Functional

- **Selector 2: ITU-T (CCITT) superfine recommendation**

If this selector is set to "1," the machine communicates in ITU-T (CCITT) recommended superfine mode (15.4 lines/mm). If it is set to "0," it communicates in native superfine mode.

- **Selector 7: Max. document length limitation**

This selector is used to select the maximum length of a document to be sent.

- **Selector 8: [Stop/Exit] button pressed during reception**

If this selector is set to "1," pressing the [Stop/Exit] button can stop the current receiving operation. The received data will be lost.

<WSW17>

Selector No.	Function	Setting and Specifications
1 2	Off-hook alarm (Not used.)	No. 1 2 0 0: No alarm 0 1: Always valid 1 0: Valid except when 'call reservation' is selected. 1 1: Valid except when 'call reservation' is selected.
3 4	Not used.	
5	Calendar clock type	0: U.S.A. type 1: European type
6	Not used.	
7	Non-ring reception	0: OFF 1: ON
8	Not used.	

- **Selector 5: Calendar clock type**

If this selector is set to "0" (USA), the MM/DD/YY hh:mm format applies; if it is set to "1" (Europe), the DD/MM/YY hh:mm format applies: DD is the day, MM is the month, YY is the last two digits of the year, hh is the hour, and mm is the minute.

- **Selector 7: Non-ring reception**

Setting this selector to "1" makes the machine receive calls without ringer sound if the number of calling is set to 0.

<WSW18>

Selector No.	Function	Setting and Specifications
1	Addition of registration of station ID for PC-FAX	
2 3	Detection enabled time for CNG and no tone	No. 2 3 0 0: 40 sec. 0 1: 0 sec. (No detection) 1 0: 5 sec. 1 1: 80 sec.
4 5	Not used.	
6	Registration of station ID	0: Permitted 1: Prohibited
7 8	Tone sound monitoring	No. 7 8 0 0: No monitoring 0 1: No monitoring 1 0: Up to phase B at the calling station only 1 1: All transmission phases both at the calling and called stations

• **Selector 1: Addition of registration of station ID for PC-FAX**

The sending state is as follows whether add the station ID in the PC side or not.

The data do not add the station ID in the PC side.

⇒ Follow the Selector 1 in WSW 18, add the station ID or not.

The data add the station ID in the PC side.

⇒ Let it lie in the main body side.

• **Selectors 2 and 3: Detection enabled time for CNG and no tone**

After the line is connected via the external telephone or by picking up the handset of the machine, the machine can detect a CNG signal or no tone for the time length specified by these selectors. The setting specified by these selectors becomes effective only when selector 8 on WSW20 is set to "1."

• **Selector 6: Registration of station ID**

Setting this selector to "0" permits the registration of station ID for Austrian and Czech models.

• **Selectors 7 and 8: Tone sound monitoring**

These selectors set monitoring specifications of the tone sound inputted from the line.

<WSW19>

Selector No.	Function	Setting and Specifications
1 3	First transmission speed choice for fallback	No. 1 2 3 No. 4 5 6 0 0 0: 2,400 bps 0 0 1: 4,800 bps 0 1 0: 7,200 bps 0 1 1: 9,600 bps
4 6	Last transmission speed choice for fallback	1 0 0: 12,000 bps 1 0 1: 14,400 bps 1 1 0: 14,400 bps 1 1 1: 14,400 bps
7	V.34 mode	0: Permitted 1: Prohibited
8	V.17 mode	0: Permitted 1: Prohibited

• **Selectors 1 through 6: First and last choices of transmission speed for fallback**

These selectors are used to set the MODEM speed range. With the first transmission speed choice specified by selectors 1 through 3, the machine attempts to establish the transmission link via the MODEM. If the establishment fails, the machine automatically steps down to the next lowest speed and attempts to establish the transmission link again. The machine repeats this sequence while stepping down the transmission speed to the last choice specified by selectors 4 through 6.

If the MODEM always falls back to a low transmission speed (e.g., 4,800 bps), set the first transmission speed choice to the lower one (e.g., modify it from 12,000 bps to 7,200 bps) in order to deactivate the high-speed MODEM function and reduce the training time for shorter transmission time.

Generally, to save the transmission time, set the last transmission speed choice to a higher one.

• **Selector 7: V.34 mode**

If this selector is set to "0," selectors 5 through 8 on the WSW38 through WSW40 and on WSW41, will become effective.

<WSW20>

Selector No.	Function	Setting and Specifications
1	EP* tone prefix	0: OFF 1: ON
2	Overseas communications mode (Reception)	0: 2100 Hz 1: 1100 Hz
3	Overseas communications mode (Transmission)	0: OFF 1: Ignores DIS once.
4 5	Min. time length from reception of CFR to start of transmission of video signals	No. 4 5 0 0: 100 ms 0 1: 200 ms 1 0: 300 ms 1 1: 400 ms
6 7	At CNG detection, elimination of chattering noise (Not used.)	No. 6 7 0 0: Yes, at both ON/OFF timings 0 1: Yes, at OFF timing 1 0: No 1 1: No
8	Limitation on CNG detection	0: OFF 1: ON

* EP: Echo protection

• **Selector 1: EP tone prefix**

Setting this selector to "1" makes the machine transmit a 1700 Hz echo protection (EP) tone immediately preceding training in V.29 modulation system to prevent omission of training signals.

Prefixing an EP tone is useful when the machine fails to transmit at the V.29 modem speed and always has to fall back to 4800 bps transmission.

The setting made by this selector takes effect only when the Overseas Mode is set to ON.

• **Selectors 2 and 3: Overseas communications mode**

These selectors should be used if the machine malfunctions in overseas communications. According to the communications error state, select the signal specifications.

Setting selector 2 to "1" allows the machine to use 1100 Hz CED signal instead of 2100 Hz in receiving operation. This prevents malfunctions resulting from echoes, since the 1100 Hz signal does not disable the echo suppressor (ES) while the 2100 Hz signal does.

Setting selector 3 to "1" allows the machine to ignore a DIS signal sent from the called station once in sending operation. This operation suppresses echoes since the first DIS signal immediately follows a 2100 Hz CED (which disables the ES) so that it is likely to be affected by echoes in the disabled ES state. However, such a disabled ES state will be removed soon so that the second and the following DIS signals are not susceptible to data distortion due to echoes. Note that some models when called may cause error by receiving a self-outputted DIS.

The setting made by selector 3 takes effect only when the Overseas Communications Mode is set to ON. (The setting made by selector 2 is always effective.)

• **Selectors 8: Limitation on CNG detection**

If this selector is set to "1," the machine detects a CNG signal according to the condition preset by selectors 2 and 3 on WSW18 after a line is connected. If it is set to "0," the machine detects a CNG signal as long as the line is connected.

<WSW21>

Selector No.	Function	Setting and Specifications
1 5	Max. waiting time for voice signal (Not used.)	No. 1 2 3 4 5 0 0 0 0 0: No detection 0 0 0 0 1: 1 sec. 0 0 0 1 0: 2 sec. 0 0 0 1 1: 3 sec. 0 0 1 1 0: 6 sec. (Default) 1 1 1 1 1: 31 sec.
6 7	Taping the call (Not used.)	No. 6 7 0 0: Enable (signaling for (A) U.S.A.) 0 1: Enable (signaling for (B) countries except U.S.A.) 1 0: Enable (without signaling) (C) 1 1: Disable (D)
8	Erasure of message stored in the memory after the message transfer (Not used.)	0: Yes 1: No

<WSW22>

Selector No.	Function	Setting and Specifications	
1	ECM* in sending	0: Valid	1: Invalid
2	ECM* in receiving	0: Valid	1: Invalid
3	Call Waiting Caller ID (Not used.)	0: Displayed 1: Not displayed	
4	Not used.		
5	Acceptable TCF bit error rate (%) (Only at 4800 bps) (Not used.)	0: 0 %	1: 8 %
1		0: 0 %	1: 4 %
8		0: 0 %	1: 1 %

* ECM: Error correction mode

Note:

- Selector 3 is applicable to the American models only.

<WSW23>

Selector No.	Function	Setting and Specifications
1	Starting point of training check (TCF)	0: 0 From the head of a series of zeros 1: From any arbitrary point
2 3	Allowable training error rate	No. 2 3 0 0: 0 % 0 1: 0.5 % 1 0: 1 % 1 1: 2 %
4 5	Decoding error rate for transmission of RTN	No. 4 5 0 0: 16 % 0 1: 14% 1 0: 10 % 1 1: 8 %
6 7	Not used.	
8	Limitation of attenuation level	0: Yes 1: No

Note:

- Selector 8 is not applicable to the French/Japan/China models.

• **Selector 1: Starting point of training check (TCF)**

At the training phase of receiving operation, the called station detects for 1.0 second a training check (TCF) command, a series of zeros which is sent from the calling station for 1.5 seconds to verify training and give the first indication of the acceptability of the line.

This selector sets the starting point from which the called station should start counting those zeros. If this selector is set to "0," the called station starts counting zeros 100 ms after the head of a series of zeros is detected.

If it is set to "1," the called station starts counting zeros upon detection of 10-ms successive zeros 50 ms after the head of a series of zeros is detected. In this case, if the detection of 10-ms successive zeros is too late, the data counting period will become less than 1.0 second, making the called station judge the line condition unacceptable.

• **Selectors 2 and 3: Allowable training error rate**

The called station checks a series of zeros gathered in training (as described in Selector 1) according to the allowable training error rate set by these selectors. If the called station judges the line condition to be accepted, it responds with CFR; if not, it responds with FTT.

• **Selectors 4 and 5: Decoding error rate for transmission of RTN**

The machine checks the actual decoding errors and then transmits an RTN according to the decoding error rate (Number of lines containing an error per page ÷ Total number of lines per page) set by these selectors.

• **Selector 8: Limitation of attenuation level**

Setting this selector to "0" limits the transmitting level of the modem to -10 dB. This setting has priority over the settings selected by WSW02 (selectors 5 through 8) and WSW13 (selectors 5 through 8).

<WSW24>

Selector No.	Function	Setting and Specifications
1 2	Maximum OGM recording time (Not used.)	No. 1 2 0 0: 15 sec. 0 1: 20 sec. 1 0: 30 sec. 1 1: 50 sec.
3 4	Time length from CML ON to start of pseudo ring backtone transmission	No. 3 4 0 0: 4 sec. 0 1: 3 sec. 1 0: 2 sec. 1 1: 1 sec.
5 1 8	Attenuator for playback of ICM/ OGM to the line (Not used.)	0: 0 dB 1: 8 dB 0: 0 dB 1: 4 dB 0: 0 dB 1: 2 dB 0: 0 dB 1: 1 dB

• **Selectors 3 and 4: Time length from CML ON to start of pseudo ring backtone transmission**

These selectors set the length of time from CML-ON up to the start of pseudo ring backtone transmission.

In models with OGM facilities, the settings made by these selectors also apply to the length of time from CML-ON up to the start of OGM transmission.

<WSW25>

Selector No.	Function	Setting and Specifications
1 2	External TAD no-tone detection start delay time	No. 1 2 0 0: 0 sec. 0 1: 8 sec. 1 0: 16 sec. 1 1: 24 sec.
3 4	External TAD no-tone detection level	No. 3 4 0 0: -43 dB (A) 0 1: -46 dB (B) 1 0: -49 dB (C) 1 1: -51 dB (D)
5 1 7	Pause between paging number and PIN (Not used.)	No. 5 6 7 0 0 0: 2 sec. 0 0 1: 4 sec. 0 1 0: 6 sec. 0 1 1: 8 sec. 1 0 0: 10 sec. 1 0 1: 12 sec. 1 1 0: 14 sec. 1 1 1: 16 sec.
8	Not used.	

Note:

- Selectors 5 through 7 are applicable to the U.S.A. models only.

• **Selectors 1 and 2: External TAD no-tone detection start delay time**

Valid only for the external TAD mode. This machine will delay the start of detection for no tone by the length of time set by selectors 1 and 2.

The sum of the detection delay time setting and the waiting time for no-tone detection setting by selectors 1 through 5 of WSW21 must be within 40 seconds or less.

• **Selectors 3 and 4: External TAD no-tone detection level**

These selectors set the no-tone detection level in the external TAD mode.

<WSW26>

Selector No.	Function	Setting and Specifications
1 2	Not used.	
3	Dialing during document reading into the temporary memory in in-memory message transmission	0: Disable 1: Enable
4 5	No. of CNG cycles to be detected (when the line is connected via the external telephone except in the external TAD mode or via the built-in telephone)	In the case of Selector 3=0 in WSW54. No. 4 5 0 0: 0.5 (A) 0 1: 1 (B) 1 0: 1.5 (C) 1 1: 2 (D) In the case of Selector 3=1 in WSW54. No. 4 5 0 0: 2.5 (A) 0 1: 3 (B) 1 0: 3.5 (C) 1 1: 4 (D)
6 7	No. of CNG cycles to be detected (when the line is connected via the external telephone in the external TAD mode, via the built-in telephone in the TAD mode, or via the machine in the automatic reception of the F/T mode)	In the case of Selector 6=0 in WSW58. No. 6 7 0 0: 0.5 (A) 0 1: 1 (B) 1 0: 1.5 (C) 1 1: 2 (D) In the case of Selector 6=1 in WSW58. No. 6 7 0 0: 2.5 (A) 0 1: 3 (B) 1 0: 3.5 (C) 1 1: 4 (D)
8	Not used.	

• **Selector 3: Dialing during document reading into the temporary memory in in-memory message transmission**

If this selector is set to "0," the machine waits for document reading into the memory to complete and then starts dialing. This enables the machine to list the total number of pages in the header of the facsimile message.

• **Selectors 4 and 5: No. of CNG cycles to be detected (when the line is connected via the external telephone except in the external TAD mode or via the built-in telephone)**

The machine interprets a CNG as an effective signal if it detects the CNG by the number of cycles specified by these selectors when the line is connected via the external telephone except in the external TAD mode or via the built-in telephone.

- **Selectors 6 and 7: No. of CNG cycles to be detected (when the line is connected via the external telephone in the external TAD mode, via the built-in telephone in the TAD mode, or via the machine in the automatic reception of the F/T mode)**

The machine interprets a CNG as an effective signal if it detects the CNG by the number of cycles specified by these selectors when the line is connected via the external telephone in the external TAD mode, via the built-in telephone in the TAD mode, or via the machine in the automatic reception of the F/T mode.

<WSW27>

Selector No.	Function	Setting and Specifications	
1	Not used.		
2	Ringer OFF setting	0: Yes	1: No
3	Automatic playback of OGM when switched to the TAD mode (Not used.)	0: No	1: Yes
4	Detection of distinctive ringing pattern	0: Yes	1: No
5	Not used.		
6	Recording quality (Not used.)	0: Normal	1: High
7	Recording time for high recording quality (Not used.)	0: Short (9.6 kbps) 1: Long (8.8 kbps)	
8	Not used.		

Note:

- Selectors 4 and 5 are applicable to the U.S.A. models only.

• Selector 2: Ringer OFF setting

This selector determines whether or not the ringer can be set to OFF.

• Selectors 4: Detection of distinctive ring

If this selector is set to "1," the machine detects only the number of rings; if it is set to "0," the machine detects the number of rings and the ringing time length to compare the detected ringing pattern with the registered distinctive one.

<WSW28>

Selector No.	Function	Setting and Specifications
1 3	Transmission level of DTMF high-band frequency signal	No. 1 2 3 0 0 0: 0 dB 0 0 1: +1 dB 0 1 0: +2 dB 0 1 1: +3 dB 1 0 0: 0 dB 1 0 1: -1 dB 1 1 0: -2 dB 1 1 1: -3 dB
4 6	Transmission level of DTMF low-band frequency signal	No. 4 5 6 0 0 0: 0 dB 0 0 1: +1 dB 0 1 0: +2 dB 0 1 1: +3 dB 1 0 0: 0 dB 1 0 1: -1 dB 1 1 0: -2 dB 1 1 1: -3 dB
7 8	Not used.	

• **Selectors 1 through 6: Transmission level of DTMF high-/low-band frequency signal**

These selectors are intended for the manufacturer who tests the machine for the Standard. Never access them.

<WSW29>

Selector No.	Function	Setting and Specifications
1 3	Compression threshold level for voice signals inputted via the telephone line in the built-in TAD operation (Not used.)	No. 1 2 3 0 0 0: -47.0 dBm (A) 0 0 1: -48.5 dBm (B) 0 1 0: -50.0 dBm (C) 0 1 1: -51.5 dBm (D) 1 0 0: -53.0 dBm (E) 1 0 1: -54.5 dBm (F) 1 1 0: -56.0 dBm (G) 1 1 1: OFF (H)
4 6	Compression threshold level for voice signals inputted via the handset in the built-in TAD operation (Not used.)	No. 4 5 6 0 0 0: -44.0 dBm (A) 0 0 1: -45.5 dBm (B) 0 1 0: -47.0 dBm (C) 0 1 1: -48.5 dBm (D) 1 0 0: -50.0 dBm (E) 1 0 1: -51.5 dBm (F) 1 1 0: -53.0 dBm (G) 1 1 1: OFF (H)
7	Impedance switching control in pulse dialing	0: OFF 1: ON
8	Prompt beep when the memory area for the activity report becomes full	0: No 1: Yes

Note:

- Selectors 7 and 8 are applicable only to the European versions.

• **Selector 8: Prompt beep for activity report**

This selector determines whether or not to beep if the memory area for the activity report becomes full, for prompting you to print out the report. (Printing it out will clear the memory area.)

<WSW30>

Selector No.	Function	Setting and Specifications
1 1 3	Dial tone/busy tone detection level during recording of ICM (Not used.)	No. 1 2 3 0 0 0: -38.0 dBm (A) 0 0 1: -39.5 dBm (B) 0 1 0: -41.0 dBm (C) 0 1 1: -42.5 dBm (D) 1 0 0: -44.0 dBm (E) 1 0 1: -45.5 dBm (F) 1 1 0: -47.0 dBm (G) 1 1 1: -48.5 dBm (H)
4 1 6	Not used.	
7	Scanning magnification adjusting function	0: Enable 1: Disable
8	Not used.	

<WSW31>

Selector No.	Function	Setting and Specifications
1	Not used.	
2	Default reduction rate for failure of automatic reduction during recording	0: 100 % 1: 75 %
3	Not used.	
4	(Do not disturb this selector.)	
5	Minimum ON and OFF duration of ringer signals effective in distinctive ringing	0: 130 ms 1: 90 ms
6	Not used.	
7		
8	Drum life indication	0: No 1: Yes

Note:

- Selector 5 is applicable only to the U.S.A. models.

• **Selector 2: Default reduction rate for failure of automatic reduction during recording**

This selector sets the default reduction rate to be applied if the automatic reduction function fails to record one-page data sent from the calling station in a single page of the current recording paper.

If it is set to "0," the machine records one-page data at full size (100%) without reduction; if it is set to "1," the machine records it at 70% size.

• **Selector 5: Minimum ON and OFF duration of ringer signals effective in distinctive ringing**

The ringer pattern consists of short and long rings, e.g., short-short-long rings. This selector sets the minimum ON and OFF duration of ringer signals that are required for the machine to interpret ringer signals as being ON or OFF. This is to prevent components of a ringer pattern from being misinterpreted due to chattering in distinctive ringing.

The machine monitors ringer signals at 10-ms intervals. If the signal is ON, the machine counts +1; if it is OFF, it counts -1. If the counter increments up to +5 or +13 when this selector is set to "1" (90 ms) or "0" (130 ms), respectively, the machine interprets the current signal as being ON.

If the counter returns to zero, the machine interprets the signal as being OFF.

If the Distinctive Ring is set to OFF, this selector is not effective.

<WSW32>

Selector No.	Function	Setting and Specifications
1 1 4	Not used.	
5 6	Default resolution when FAX scanning	No. 5 6 0 0: Standard 0 1: Fine 1 0: Super fine 1 1: Photo
7 8	Default contrast when FAX scanning	No. 7 8 0 0: Automatic 0 1: Automatic 1 0: Super light 1 1: Super dark

- **Selectors 5 and 6: Default resolution**

These selectors set the default resolution which applies when the machine is turned on or completes a transaction.

- **Selectors 7 and 8: Default contrast**

These selectors set the default contrast which applies when the machine is turned on or completes a transaction.

<WSW33>

Selector No.	Function	Setting and Specifications
1 1 3	Detection threshold level of "no tone" during recording of ICM (Not used.)	No. 1 2 3 0 0 0: -48 dBm (A) 0 0 1: -50 dBm (B) 0 1 0: -52 dBm (C) 0 1 1: -54 dBm (D) 1 0 0: -56 dBm (E) 1 0 1: -58 dBm (F) 1 1 0: -60 dBm (G) (Default) 1 1 1: -62 dBm (H)
4 5	FAX receiving speed to be kept within the transmission speed limit to the PC (Not used.)	No. 4 5 0 0: 14,400 bps 0 1: 12,000 bps 1 0: 9,600 bps 1 1: 7,200 bps
6	Report output of polled transmission requests	0: Yes 1: No
7 8	Comfortable noise level (Not used.)	No. 7 8 0 0: OFF 0 1: Low (A) 1 0: Medium (B) 1 1: High (C)

<WSW34>

Selector No.	Function	Setting and Specifications
1 1 3	Erasing time length of ICM tone recorded preceding the tone detection starting point in the case of automatic line disconnection due to no voice signal received (Not used.)	No. 1 2 3 0 0 0: 0 sec. 0 0 1: 1 sec. 0 1 0: 2 sec. 0 1 1: 3 sec. 1 0 0: 4 sec. 1 0 1: 5 sec. 1 1 0: 6 sec. 1 1 1: 7 sec.
4 5	No. of CNG cycles to be detected (when the line is connected via the external telephone in the external TAD mode or via the machine in F/T mode) (Not used.)	In the case of Selector 6=0 in WSW58. No. 4 5 0 0: 0.5 (A) 0 1: 1 (B) 1 0: 1.5 (C) 1 1: 2 (D) In the case of Selector 6=1 in WSW58. No. 4 5 0 0: 2.5 (A) 0 1: 3 (B) 1 0: 3.5 (C) 1 1: 4 (D)
6 7	Number of DTMF tone signals for inhibiting the detection of CNG during external TAD operation (Not used.)	No. 6 7 0 0: 3 0 1: 2 1 0: 1 1 1: OFF
8	Not used.	

<WSW35>

Selector No.	Function	Setting and Specifications
1 4	Max. detection period of dial tone/busy tone during recording of ICM (Not used.)	No. 1 2 3 4 0 0 0 0: No detection 0 0 0 1: 1 sec. 0 0 1 0: 2 sec. 0 1 0 0: 4 sec. 1 1 1 1: 15 sec.
5 8	Not used.	

<WSW36>

Selector No.	Function	Setting and Specifications
1	ECP mode*	0: ON 1: OFF
2	Recovery from Inactive PC Interface	0: Disable 1: Enable
3	PC Power-off Recognition Time	0: Normal 1: Long
4	Not used.	
5	Escape from phase C	0: Yes 1: No
6 8	Extension of incoming calling signal (CI) frequency band specified by selectors 1 through 4 on WSW14	No. 6 7 8 0 0 0: 0 (Ignored) 0 0 1: 4 (448 Hz) 0 1 0: 8 (244 Hz) 0 1 1: 12 (162 Hz) 1 0 0: 16 (122 Hz) 1 0 1: 20 (97 Hz) 1 1 0: 24 (81 Hz) 1 1 1: 28 (69 Hz)

*ECP (Enhanced Capabilities Port)

Note:

- Selectors 2 and 3 will become operative if selectors 1 and 2 of WSW46 are set to "monitor" the PC power ON/OFF state.

- **Selector 1: ECP mode**

The ECP mode enhances the normal bidirectional communications between the machine and the connected PC for higher transmission speed through the parallel interface.

- **Selector 2: Recovery from Inactive PC Interface**

If the machine recognizes via the STB signal line that the connected PC is powered off through the parallel interface, it will turn the PC interface outputs Low to protect the PC from hazards that could be caused by weak electric current accidentally flown from the machine. This selector determines whether or not the machine should recover from the inactive PC interface to normal interfacing state upon receipt of data from the PC.

- **Selector 3: PC Power-off Recognition Time**

This selector sets the time length from when the machine detects the PC powered off until it recognizes the detected state as power-off.

If selector 2 is set to "0," it is recommended that selector 3 be set to "1"; otherwise, the machine may mistakenly detect PC powered off.

- **Selector 5: Escape from phase C**

This selector determines whether or not the machine will escape from phase C when it detects an RTC (Return to Control) in non-ECM mode or an RCP (Return to Control Partial page) in ECM mode.

- **Selectors 6 through 8: Extension of incoming calling signal (CI) frequency band specified by selectors 1 through 4 on WSW14**

At the start of reception, if the machine detects the frequency of a CI signal specified by selectors 1 through 4 on WSW14, it starts the ringer sounding. However, the machine may fail to detect the CI signal normally due to noise superimposed at the time of reception. To prevent it, use selectors 6 through 8 on WSW36.

If the machine detects higher frequencies than the setting made here, it regards them as noise and interprets the detecting state as being normal, allowing the ringer to keep sounding according to the preset number of ringers (until it starts automatic reception of FAX data in the FAX mode or enters the TAD mode in the TEL mode).

<WSW37>

Selector No.	Function	Setting and Specifications
1	Printout of the stored image data of an unsent document onto an error report	0: No 1: Yes
2	Erasure of the stored image data of an unsent document at the time of the subsequent in-memory message transmission	0: No 1: Yes
3 1 8	Not used.	

- **Selector 1: Printout of the stored image data of an unsent document onto an error report**

This selector determines whether or not to print out the 1st-page image data of a document onto the error report if the document image data stored in the temporary memory cannot be transmitted normally.

- **Selector 2: Erasure of the stored image data of an unsent document at the time of the subsequent in-memory message transmission**

If in-memory message transmission fails repeatedly when selector 1 is set to "1," the temporary memory will be occupied with image data. Setting selector 2 to "1" will automatically erase the stored 1st-page image data of an unsent document at the time of the subsequent in-memory message transmission only when recording paper or toner runs out.

<WSW38>

Selector No.	Function	Setting and Specifications
1 2	Setting of the equalizer	No. 1 2 0 0: Automatic 0 1: Automatic 1 0: Fixed to 4 points 1 1: Fixed to 16 points
3	Sending level of guard tone at phase 2	0: Normal - 7 db 1: Normal
4	Stepping down the transmission speed at fallback each	0: 2,400 bps 1: 4,800 bps
5 6	Automatic control of modem's EQM gain for proper transmission speed choice	No. 5 6 0 0: For higher transmission speed than the current setting 0 1: No change from the current setting 1 0: For lower transmission speed than the current setting 1 1: For further lower transmission than the setting made by 1, 0
7	Redialing when a communications error occurs	0: ON 1: OFF
8	Detection of CED for stopping CNG	0: ON 1: OFF

• **Selectors 1 and 2: Setting of the equalizer**

These selectors set the equalizer's training level to be applied if the machine fails to send training due to weak line connection. If these selectors are set to "0, X," the modem will automatically set the appropriate training level.

• **Selector 3: Sending level of guard tone at phase 2**

This selector sets the sending level of guard tone for 1800 Hz to be sent at Phase 2 in the V. 34 mode.

• **Selector 4: Stepping down the transmission speed at fallback each**

This selector determines how much the modem steps down the transmission speed at fallback when called by the remote station. If this selector is set to "1," the modem may step down the transmission speed from 33600 bps to 28800 bps by one-time fallback.

• **Selectors 5 and 6: Automatic control of modem's EQM gain for proper transmission speed choice**

These selectors determine how the modem controls the EQM (Eye Quality Monitor) gain for proper choice of the transmission speed, which applies if the modem selects higher transmission speed than the possible speed so that it always repeats falling back.

• **Selector 8: Detection of CED for stopping CNG**

If this selector is set to "0," the detection time of CED specified by WSW43, selectors 4 and 5 will apply.

<WSW39>

Selector No.	Function	Setting and Specifications
1 4	First transmission speed choice for fallback	No. 1 2 3 4 No. 5 6 7 8 0 0 0 0: 2,400 bps 0 0 0 1: 4,800 bps 0 0 1 0: 7,200 bps 0 0 1 1: 9,600 bps 0 1 0 0: 12,000 bps 0 1 0 1: 14,400 bps 0 1 1 0: 16,800 bps 0 1 1 1: 19,200 bps 1 0 0 0: 21,600 bps 1 0 0 1: 24,000 bps 1 0 1 0: 26,400 bps 1 0 1 1: 28,800 bps 1 1 0 0: 31,200 bps 1 1 0 1: 33,600 bps 1 1 1 0: 33,600 bps 1 1 1 1: 33,600 bps
5 8	Last transmission speed choice for fallback	

• **Selectors 1 through 8: First and last choices of transmission speed for fallback**

These selectors are used to set the modem speed range. With the first transmission speed choice specified by selectors 1 through 4, the machine attempts to establish the transmission link via the modem. If the establishment fails, the machine automatically steps down to the next highest speed and attempts to establish the transmission link again. The machine repeats this sequence while stepping down the transmission speed to the last choice specified by selectors 5 through 8.

If the modem always falls back to a low transmission speed (e.g., 24,000 bps), set the first transmission speed choice to the lower one (e.g., modify it from 31,200 bps to 26,400 bps) in order to deactivate the high-speed modem function and reduce the training time for shorter transmission time.

WSW39 will be limited by selectors 3 through 8 on WSW40.

<WSW40>

Selector No.	Function	Setting and Specifications			
1	Not used.				
2					
3	Masking of symbol rate(s)	Not masking	Masking		
1		No. 3	0	1	3429 symbols/sec
8		No. 4	0	1	3200 symbols/sec
		No. 5	0	1	3000 symbols/sec
		No. 6	0	1	2800 symbols/sec
		No. 7	-	-	Not used.
	No. 8	0	1	2400 symbols/sec	

Note:

- WSW40 takes effect only when the V.34 mode is permitted (WSW19, selector 7) in models supporting V.34 mode.

• **Selectors 3 through 8: Masking of symbol rate(s)**

These selectors allow you to limit the transmission speed range in V.34 mode by masking the desired symbol rate(s). Transmission speeds assigned to the symbol rates are listed on the next page. The setting made by these selectors will limit the setting made by selectors 1 through 4 on WSW39.

If selector 3 is set to "1" to mask the 3429 symbols/second when the first transmission speed choice is 33600 bps (specified by selectors 1 through 4 of WSW39), for example, then the allowable maximum transmission speed will be limited to 31200 bps. If selector 8 is set to "1" to mask the 2400 symbols/second when the first transmission speed choice is 33600 bps, then the allowable maximum transmission speed remains 33600 bps.

If selector 8 is set to "1" to mask the 2400 symbols/second when the first transmission speed choice is 21600 bps (specified by selectors 1 through 4 on WSW39), then the allowable maximum transmission speed remains 21600 bps but the minimum transmission speed will be limited to 4800 bps.

Symbol rate	Transmission speed (bps)	Symbol rate	Transmission speed (bps)	Symbol rate	Transmission speed (bps)
2400	2,400	3000	4,800	3429	4,800
	4,800		7,200		7,200
	7,200		9,600		9,600
	9,600		12,000		12,000
	12,000		14,400		14,400
	14,400		16,800		16,800
	16,800		19,200		19,200
	19,200		21,600		21,600
	21,600		24,000		24,000
			26,400		26,400
	28,800	28,800			
			31,200	31,200	
				33,600	
2800	4,800	3200	4,800		
	7,200		7,200		
	9,600		9,600		
	12,000		12,000		
	14,400		14,400		
	16,800		16,800		
	19,200		19,200		
	21,600		21,600		
	24,000		24,000		
	24,600		26,400		
	28,800				
	31,200				

<WSW41>

Selector No.	Function	Setting and Specifications
1 3	ON-duration of the scanning light source at room temperature	No. 1 2 3 0 0 0: 16 hours 0 0 1: 24 hours 0 1 0: 12 hours 0 1 1: 8 hours 1 0 0: 4 hours 1 0 1: 2 hours 1 1 0: 1/6 hours 1 1 1: 0 hours
4	I-FAX relay report	0: ON 1: OFF
5 8	Modem attenuator	No. 5 6 7 8 0 0 0 0: -10 dBm 0 0 0 1: -11 dBm 0 0 1 0: -12 dBm 0 0 1 1: -13 dBm 0 1 0 0: -14 dBm 1 1 1 1: -25 dBm

• **Selectors 1 through 3: ON-duration of the scanning light source at room temperature**

If the scanning operation is started when the scanning light source is off, then it will come on for scanning. These selectors determine how long the light source is ON after scanning.

If these selectors are set to "1, 1, 1," the CCD unit goes off for protection of the CCD unit for 10 minutes after the scanning sequence.

• **Selectors 5 through 8: Modem attenuator**

These selectors are used to adjust the transmitting level of the modem when the reception level at the remote station is improper due to line loss. This function applies to super G3 protocol signals.

<WSW42>

Selector No.	Function	Setting and Specifications
1	Access to the incoming mail (POP3) server (Periodical or on-demand) (Not used.)	0: OFF 1: ON
2	Access to the outgoing mail (SMTP) server	0: OFF 1: ON
3	I-FAX relay (Not used.)	0: OFF 1: ON
4	JBIG encoding system	0: Not allowed 1: Allowed
5	Drum discharge detection	0: ON 1: OFF
6		
1	Not used.	
8		

<WSW43>

Selector No.	Function	Setting and Specifications
1	Header for sent mail (Station ID)	0: Yes 1: No
2	Wait time for PC-Fax reception (Class 2) and FPTS command transmission (Not used.)	No. 2 3 0 0: 50 ms
3		0 1: 100 ms 1 0: 150 ms 1 1: 0 ms
4		No. 4 5 0 0: 200 ms 0 1: 300 ms 1 0: 400 ms 1 1: 500 ms
5	Detection time of 2100 Hz CED or ANSam (Not used.)	
6	Not used.	
7	Automatic start of remote maintenance (Not used.)	0: No 1: Yes
8	JPEG coding	0: Disable 1: Enable

- **Selector 1: Header for sent mail (Station ID)**

This selector set whether add the header (Station ID) to the image data of the reading sent mail. (only with LAN model)

- **Selector 8: JPEG coding**

Setting this selector to "0" disables the machine from sending/receiving JPEG color images and from receiving JPEG monochrome images.

<WSW44>

Selector No.	Function	Setting and Specifications
1 5	Copying speed control	No. 1 2 3 4 5 0 0 0 0 0: Max. 0 0 0 0 1: 1cpm 1 1 1 1 1: 31cpm
6 8	Effective time length of the white level compensation data obtained beforehand	No. 6 7 8 0 0 0: Obtained compensation data ineffective 0 0 1: 1 min. 0 1 0: 3 min. 0 1 1: 5 min. 1 0 0: 10 min. 1 0 1: 15 min. 1 1 0: 20 min. 1 1 1: 30 min.

• **Selectors 6 through 8: Effective time length of the white level compensation data obtained beforehand**

These selectors determine how long compensation data obtained beforehand will keep effective.

<WSW45>

Selector No.	Function	Setting and Specifications
1 3	Delay time from when documents are set until the ADF starts drawing them in	No. 1 2 3 0 0 0: No automatic drawing-in 0 0 1: 1 sec. 0 1 0: 2 sec. 0 1 1: 3 sec. 1 0 0: 4 sec. 1 0 1: 5 sec. 1 1 0: 6 sec. 1 1 1: 7 sec.
4 6	Periodical correction intervals of the reference voltage to be applied to white level compensation for document scanning, during standby	No. 4 5 6 0 0 0: No correction of reference voltage during standby 0 0 1: 10 sec. 0 1 0: 30 sec. 0 1 1: 1 min. 1 0 0: 3 min. 1 0 1: 5 min. 1 1 0: 10 min. 1 1 1: 30 min.
7	Standby position of the CCD unit	0: CIS home position 1: Location of the white-level reference film
8	Line polarity reverse detection function	0: No 1: Yes

• **Selectors 1 through 3: Delay time from when documents are set until the ADF starts drawing them in**

These selectors determine how long the ADF will delay automatic drawing-in of documents (to the scanning standby position) after you set them in the ADF, as well as determining whether or not the ADF automatically draws in documents.

• **Selectors 4 through 6: Periodical correction intervals of the reference voltage applied to white level compensation for document scanning, during standby**

These selectors set the correction intervals (in seconds) of the reference voltage to be applied to white level compensation for document scanning during standby, as well as determining whether or not the controller makes the reference voltage correction during standby. (Conventionally, the correction has been made immediately before the start of actual scanning)

This function takes effect in copying. Making the correction during standby may shorten the preparation time for copying.

Note:

- Do not access these selectors.

- **Selector 7: Standby position of the CCD unit**

This selector determines whether the standby position of the CCD unit should be the home position or the location of the white-level reference film (attached to the inside of the scanner top cover). If the location of the reference film is selected, the CCD unit will not return to the home position so as to shorten the travel time, decreasing the preparation time for copying.

- **Selector 8: Line polarity reverse detection function**

Line polarity will be reversed if the phone is hung up at the other end of the line. If this selector is set to "1," the machine will detect the reverse polarity during an answering machine operation and thereby determine that the phone has been hung up.

<WSW46>

Selector No.	Function	Setting and Specifications
1 2	Monitoring the PC ON/OFF state	No. 1 2 0 0: Disable 0 1: Monitor SELECT IN 1 0: Monitor STROBE 1 1: Monitor both SELECT IN and STROBE
3	Parallel port output pins kept at high level (Not used.)	0: Enable 1: Disable
4	Previous filtering parameters for white level compensation	0: Enable 1: Disable
5 1 8	Not used.	

Note:

- Selector 4 is not applicable to models equipped with flat-bed scanners.

- **Selectors 1 and 2: Monitoring the PC ON/OFF state**

For the related functions, refer to WSW36, selectors 2 and 3.

- **Selector 4: Previous filtering parameters for white level compensation**

At the start of scanning operation, the machine usually initializes white and black level data stored in the EEPROM by scanning the white-level reference film attached to the inside of the scanner top cover. After long use of the machine, however, the film may be contaminated with dust or dirt.

Accordingly, incorrect white level data will be set up so that white vertical streaks will be brought on the scanning result.

Setting this selector to "0" (Enabled) will apply previously saved white level data instead of new incorrect compensation.

<WSW47>

Selector No.	Function	Setting and Specifications
1	Handling paper at the occurrence of a paper feed timing error (Not used.)	0: Eject paper w/o print 1: Print on the current paper
2	Reducing to B4 from A4 and sending at the real time sending	0: No 1: Yes
3 4	Delay of FAX line disconnection when switching to the pseudo-ringing external telephone	No. 3 4 0 0: 200 ms 0 1: 400 ms 1 0: 700 ms 1 1: 1000 ms
5	Disable the ringer of external telephone at non-ring reception	0: No 1: Yes
6	Not used.	
7	Disable the ringer of external telephone with CAR signal when caller ID service is available	0: No 1: Yes
8	Switching between high-speed USB and full-speed USB	0: Auto switching between high-speed USB (ver. 2.0) and full-speed USB (ver. 1.1) 1: Fixed to full-speed USB (ver. 1.1)

Note:

- Selector 1 is applicable only to models equipped with flat-bed scanners.
- Selectors 3 and 4 are applicable only to models supporting pseudo-ringing of a connected external telephone.

• **Selectors 3 and 4: Delay of FAX line disconnection when switching to the pseudo-ringing external telephone**

When the machine receives a phone call, it can make the connected external telephone ring (so called pseudo-ringing). During pseudo-ringing, if you pick up the handset of the external telephone, the line might be disconnected due to cut-off of the line current. To hold the line, the machine may supply line current by making use of the pulse generator circuit that forms a parallel loop. This way the FAX line disconnection may be delayed. These selectors determine the delay period.

<WSW48>

Selector No.	Function	Setting and Specifications
1 2	Not used.	
3 5	Number of network TWAIN PCs registered for each application	No. 3 4 5 0 0 0: 25 PCs 0 0 1: 50 PCs 0 1 0: 75 PCs 0 1 1: 100 PCs 1 0 0: 125 PCs 1 0 1: 150 PCs 1 1 0: 175 PCs 1 1 1: 200 PCs
6 8	USB setup latency (Not used.)	No. 6 7 8 0 0 0: Default period (default period without change) 0 0 1: Shorten 1 0 1 0: Lengthen 1 0 1 1: Lengthen 2 1 0 0: Lengthen 3 1 0 1: Lengthen 4 1 1 0: Shorten 2 1 1 1: Shorten 3

<WSW49>

Selector No.	Function	Setting and Specifications
1 2	RAM disc size in PCL/ PS	No. 1 2 0 0: None 0 1: 1MB 1 0: 2MB 1 1: 4MB
3	End-of-copying beep	0: Yes 1: No
4 5	Command flag detection time	No. 4 5 0 0: 150 ms 0 1: 350 ms 1 0: 550 ms 1 1: 750 ms
6 7	CCD unit warm-up time adjustment	No. 6 7 0 0: Not adjusted 0 1: 80 % 1 0: 120 % 1 1: 150 %
8	Print in black (Not used.)	0: No (Default) 1: Yes

- **Selectors 4 and 5: Command flag detection time**

After receiving a command flag, the machine will wait for the command that should follow for the time length specified by these selectors.

<WSW50>

Selector No.	Function	Setting and Specifications
1 2	Percentage voltage for interpreting the external telephone as being hooked up (based on the network's standard voltage) (Not used.)	No. 1 2 0 0: 50 % 0 1: 80 % 1 0: 30 % 1 1: No detection
3	DC mask curve table to be applied when the line is connected (Not used.)	0: Apply the initial value specified by local regulations 1: Apply table DC5 prepared specially
4	AC impedance to be applied when the line is connected (Not used.)	0: 600Ω termination 1: ZR termination
5 6	Current control to be applied immediately after connection of the line (Not used.)	No. 5 6 0 0: Standard 0 1: Increase start-up current for termination 1 0: Fine current control for termination 1 1: Not used. (equal to "0, 0")
7 8	AC voltage threshold for detection of ring (Not used.)	No. 7 8 0 0: 19 V 0 1: 11 V 1 0: 25 V 1 1: 31 V

<WSW51>

Selector No.	Function	Setting and Specifications
1	Output of communications error report when transmission verification report is disabled	0: Enable 1: Disable
2	CR motor torque variation reduction control (Not used.)	0: Yes 1: No
3 4	Cordless handset microphone volume (Not used.)	No. 3 4 0 0: Middle (Default) 0 1: Low 1 0: High 1 1: Very high
5 1 7	Main unit microphone level and echo cancellation ON/OFF function (Not used.)	No. 5 6 7 0 0 0: Microphone level 0 with echo cancellation OFF 0 0 1: Microphone level 1 with echo cancellation ON 0 1 0: Microphone level 2 with echo cancellation ON 0 1 1: Microphone level 3 with echo cancellation ON
8	Support between nearly empty → empty when main unit cover opened after nearly empty detected (Not used.)	0: Empty state detected when main unit cover opened 1: Nearly empty state maintained when main unit cover opened

<WSW52>

Selector No.	Function	Setting and Specifications
1 3	Cordless handset microphone level and echo cancellation ON/OFF (Not used.)	No. 1 2 3 0 0 0: Microphone level 0 with echo cancellation OFF 0 0 1: Microphone level 1 with echo cancellation ON 0 1 0: Microphone level 2 with echo cancellation ON 0 1 1: Microphone level 3 with echo cancellation ON
4 6	External telephone pseudo ringing signal frequency setting (Not used.)	No. 4 5 6 0 0 0: 16 Hz 0 0 1: 20 Hz 0 1 0: 24 Hz 0 1 1: 28 Hz 1 0 0: 32 Hz 1 0 1: 16 Hz 1 1 0: 16 Hz 1 1 1: 16 Hz
7	Caller ID (number display) display after the machine has returned to TEL mode from FAX mode (Not used.)	0: Yes 1: No
8	Dial display during transmission (Not used.)	0: Yes 1: No

<WSW53>

Selector No.	Function	Setting and Specifications
1 2	Not used.	
3 4	Caller ID (number display) FSK receiving timing delay setting (Not used.)	No. 3 4 0 0: 0 ms 0 1: 100 ms 1 0: 150 ms 1 1: 200 ms
5 6	Caller ID (number display) instantaneous interrupt detection time setting (Not used.)	No. 5 6 0 0: 20 ms 0 1: 10 ms 1 0: 30 ms 1 1: 0 ms
7	CNG detection retry after invalid CNG detected	0: Yes 1: No
8	Decompression of JPEG compressed file (Not used.)	0: ASIC 1: Software (Default)

<WSW54>

Selector No.	Function	Setting and Specifications
1 2	PictBridge command delay time (Not used.)	No. 1 2 0 0: 100 ms (default) 0 1: 0 ms 1 0: 50 ms 1 1: 200 ms
3	More CNG detection cycles in user-friendly reception	0: No 1: 2 more cycles
4	Cordless handset ID recovery future (Not used.)	0: Valid 1: Invalid
5 6	Caller ID tone alert detection time length	No. 5 6 0 0: 10 ms (default) 0 1: 20 ms 1 0: 30 ms 1 1: 40 ms
7	Caller ID wet pulse transmission	0: Yes 1: No (default)
8	Switching between DTMF and FSK for caller ID reception	0: DTMF 1: FSK (default)

Note:

- Selectors 5 through 7 are applicable only to models designed for the UK market.
- Selector 8 is applicable only to models designed for the Chinese market.

- **Selector 3: More CNG detection cycles in user-friendly reception**

If CNG detection fails even after adjustment of selectors 4 and 5 on WSW26, try adding 2 more cycles to the permitted number of CNG detection cycles.

- **Selectors 5 and 6: Caller ID tone alert detection time length**

In the event of a false detection of a caller ID tone alert, adjust the detection time length.

- **Selector 7: Caller ID mild pulse transmission**

If a caller ID (number display) cannot be displayed due to mild pulses transmitted after detection of tone alert, use this selector so as to make it impossible to transmit mild pulses.

- **Selector 8: Switching between DTMF and FSK for caller ID reception**

If a caller ID (number display) cannot be received, switch from DTMF to FSK. This operation can also be performed by means of the menu, by switching between DTMF and FSK.

<WSW55>

Selector No.	Function	Setting and Specifications
1 8	Interval of time required for the developing bias voltage correction (hour) (Not used.)	0: The developing bias voltage correction is performed on each print job. 1-72: The developing bias voltage correction is performed when a print job occurs at specified time or later. 73-254: Not allowed to set. 255 (0xFF): The developing bias voltage correction is not performed.

The setting example of the selector number is as follows;

No.1 2 3 4 5 6 7 8

- 0 0 0 0 0 0 0 0 : The developing bias voltage correction is performed on each print job.
- 0 0 0 1 1 0 0 0 : The developing bias voltage correction is performed when a print job occurs after 24 hours (default value) or later.
- 0 0 0 1 0 0 1 0 : The developing bias voltage correction is performed when a print job occurs after 72 hours or later.
- 1 1 1 1 1 1 1 1 : The developing bias voltage correction is not performed.

<WSW56>

Selector No.	Function	Setting and Specifications
1	PS emulation function setting (Not used.)	0: Invalid 1: Valid
2	Switching of the PPT setting	0: Invalid 1: Valid
3	"Last Job Reprint" function setting	0: Invalid 1: Valid
4	Wireless LAN function	0: Enable(default) 1: Disable
5	Switching of the echo suppression improvement during calling	0: Enable 1: Disable
6	Switching of the display for the coverage of toner cartridge	0: The coverage only for the current toner cartridge 1: The coverage for all toner cartridges which had been consumed
7	PCL emulation function setting	0: Invalid 1: Valid
8	Switching of the CPU sleep mode	0: Invalid 1: Valid

- **Selector 3: "Last Job Reprint" function setting**

Setting this selector to "0" makes the machine not to reprint the "Last Job Print" data such as confidential document in order to prevent the misuse.

- **Selector 4: Wireless LAN function**

To disable the wireless LAN (WLAN) functions, set this selector to "1" and turn the machine power off and then on.

- **Selector 5: Switching of the echo suppression improvement during calling**

To suppress the echo during calling, set this selector to "0". The default value is "0:Enable".

- **Selector 6: Switching of the display for the coverage of toner cartridge**

This selector specifies the display for the coverage of toner cartridge. Setting this selector to "0", the machine displays the coverage only for the current toner cartridge. If this selector sets to "1", the machine displays the coverage for all toner cartridge which had been consumed.

- **Selector 7: PCL emulation function setting**

This selector is applicable to models equipped without PCL emulation.

- **Selector 8: Switching of the CPU sleep mode**

This selector specifies the CPU sleep mode ON or OFF.

<WSW57>

Selector No.	Function	Setting and Specifications
1 1 3	Caller ID judgment voltage (to be distinguished from rings) (Not used.)	No. 1 2 3 0 0 0: 0 V 0 0 1: 5 V (Default) 0 1 0: 10 V 0 1 1: 15 V 1 0 0: 20 V 1 0 1: 25 V 1 1 0: 30 V 1 1 1: Max.
4 1 6	Caller ID judgment voltage (to be distinguished from reverse polarity voltages) (Not used.)	No. 4 5 6 0 0 0: 0 V 0 0 1: 5 V (Default) 0 1 0: 10 V 0 1 1: 15 V 1 0 0: 20 V 1 0 1: 25 V 1 1 0: 30 V 1 1 1: Max.
7	Not used.	
8	Base unit [Start] button after cordless handset dialing (Not used.)	0: Invalid (Default) 1: Valid

<WSW58>

Selector No.	Function	Setting and Specifications
1 1 3	Prevention of line interrupt during ICM recording (ratio of guard tone response time to call end tone ON time) (Not used.)	No. 1 2 3 0 0 0: Invalid 0 0 1: 10 % 0 1 0: 20 % 0 1 1: 30 % (Default) 1 0 0: 40 % 1 0 1: 50 % 1 1 0: 60 % 1 1 1: 70 %
4 5	Not used.	
6	Extension of the "No. of CNG cycles to be detected" (which allows two cycles to be added to the cycles specified by selectors 6 and 7 on WSW26 and selectors 4 and 5 on WSW34)	0: No 1: +2 cycles
7 8	No. of busy tone detection cycles	No. 7 8 0 0: -1 cycle 0 1: +0 cycles (default) 1 0: +1 cycle 1 1: +2 cycles

<WSW59>

Selector No.	Function	Setting and Specifications
1	USB serial number (SN) transmission enabled/disabled	0: USB serial number transmitted/ USB serial number not transmitted 1: Frame length selection
2	Extension of the waiting time between ANSam and DIS	0: Enable 1: Disable (default)
3 7	Checking of the specified character code set when displaying or printing the folder/ file names stored in memory cards or USB flash memory drives	No. 34567 00000 : ASC11 (default for U.S.A/ European models) 00001 : Latin1 (CP1252) 00010 : Latin2 (CP1250) 00011 : Cyrillic (CP1251) 00100 : SJIS (CP932) (default for Japanese models) 00101 : Thai (CP874) 00110 : Korean (CP949) 00111 : Traditional Chinese (CP950) 01000 : Simplified Chinese (CP936) (default for Chinese and Asia & Pacific models) 01001 : Arabic (CP1256) 01010 Reserved. 11111
8	Improvement of DTMF detection function (to minimize the effects of momentary power failure or noise)	0: Disable 1: Enable (default)

• **Selector 1: Frame length selection**

This is intended to prevent the problem of a continued increase in USB ports when serial numbers are transmitted from the MFC to a Windows Vista-based PC.

It is intended only to prevent a problem specific to Windows Vista; its default setting is "0: USB SN enabled."

• **Selector 2: Extension of the waiting time between ANSam and DIS**

Setting this selector to "0" extends the waiting time between the ANSam and DIS in order to secure the time required for switching the calling machine's echo suppressor in transmission from a G3 to G4 FAX machine.

- **Selector 3 through 7: Checking of the specified character code set when displaying or printing the folder/file names stored in memory cards or USB flash memory drives**

Setting these selectors to "0, 0, 0, 0, 0" does not check any character code set. When folder/ file names stored in memory cards or USB flash memory drives contain Chinese characters, for example, those characters may get garbled in displaying on the color LCD or printing indexes. If it happens, select the character code set of the language in use with these selectors.

- **Selector 8: Improvement of DTMF detection function (to minimize the effects of momentary power failure or noise)**

Be effective only MFC8480DN/8880DN/8890DW.

<WSW60>

Selector No.	Function	Setting and Specifications
1	Not used.	
1		
8		

<WSW61>

Selector No.	Function	Setting and Specifications
1 4	Change rate of the CCD scanning light intensity to judge to be stable in the long time mode	No. 1 2 3 4 0 0 0 0: 1% (Default) 0 0 0 1: 0.5% 0 0 1 0: 3% 0 0 1 1: 5% 0 1 0 0: 10% 0 1 0 1: 15% 0 1 1 0: 20% 1 1 1 1: 100% * * (Scans immediately after the light source ON)
5 8	Change rate of the CCD scanning light intensity to judge to be stable in the short time mode	No. 5 6 7 8 0 0 0 0: 5% (Default) 0 0 0 1: 1% 0 0 1 0: 3% 0 0 1 1: 10% 0 1 0 0: 15% 0 1 0 1: 20% 0 1 1 0: 30% 1 1 1 1: 100% * * (Scans immediately after the light source ON)

• **Selectors 1 through 8: Change rate of the CCD scanning light intensity to judge to be stable.**

The light intensity of the CCD unit is changed widely immediately after the light source is on, that influences scanning density. Therefore, the first scanning after the light source is off and on is started after the change rate of the CCD light intensity is stabilized in the definite range. These selectors set the change rate to start the scanning operation above. If you want to start scanning immediately even if the image quality is not good, set the rate to high.

Long / short time mode:

The selectors are divided between the long and short time modes depending on the scanning resolution and black and white or color mode. The long time mode is selected in color scanning at 600dpi or more, or in black and white scanning at 1200dpi. The short time mode is selected in other scanning conditions than the above.

<WSW62>

Selector No.	Function	Setting and Specifications					
1 1 4	Change rate of the CCD light intensity for scanning pages compensation	No. 1	2	3	4	Change rate for simple compensation	Change rate for regular compensation
		0	0	0	0:	3%	10% *
		0	0	0	1:	3%	7%
		0	0	1	0:	3%	15%
		0	0	1	1:	3%	20%
		0	1	0	0:	3%	25%
		0	1	0	1:	5%	10%
		0	1	1	0:	5%	15%
		0	1	1	1:	5%	20%
		1	0	0	0:	5%	25%
		1	0	0	1:	7%	15%
		1	0	1	0:	7%	20%
		1	0	1	1:	7%	25%
		1	1	0	0:	10%	15%
1	1	0	1:	10%	20%		
1	1	1	0:	10%	25%		
1	1	1	1:	15%	30%		
* Default							
5 6	Selection of judging function for simple scanning pages compensation	No. 5	6	0 0: Judges according to the change rate 0 1: Not judges 1 0: Judges every page			
7 8	Selection of judging function for regular scanning pages compensation	No. 7	8	0 0: Judges according to the change rate 0 1: Not judges 1 0: Judges every page			

• **Selectors 1 through 4: Change rate of the CCD light intensity for scanning pages compensation**

The light intensity of the CCD unit may be changed (decreased, especially), and difference of density may appear among the scanning pages if continuous copying or scanning is implemented from the ADF for a long time. To prevent the above, in simplex copying or scanning from the ADF, the machine checks the change rate of the light intensity in every page. Then, it takes the compensation data again if the rate is over the set value. These selectors set the change rate of the light intensity to control such operations.

Change rate for simple compensation:

Change rate when compensating the pages using the standard data in the machine memory without moving the CCD unit to the designated position for scanning of the compensation data.

Change rate for regular compensation:

Change rate when compensating the pages with moving the CCD unit to the designated position for scanning of the compensation data and obtaining the data actually.

For duplex scanning, this setting is not used since the machine takes the compensation data of every page again.

- **Selectors 5 and 6 / 7 and 8: Selection of judging function for scanning pages compensation**

These selectors set the condition to control scanning pages compensation. Some operation losses occur in the control of the compensation. If you want to start scanning immediately even if the image quality is not good, set to "01: Not discriminates". If you want to give priority to the image quality even though losses are increased, select one of others ("00: Discriminates depending on the rate of change" or "10: Discriminates every page").

<WSW63>

Selector No.	Function	Setting and Specifications
1 2	Not used	00 : Speed1 01 : Speed2 10 : Speed3 11 : Speed4
3	Clock type	0 : Follow to WSW17 1 : Japanese Type (YMD)
4 1 7	Demo print type (Demo language)	0000 : Other 0001 : English 0010 : USA 0011 : CANADA 0100 : JAPANESE 0101 : EU1 0110 : EU2 0111 : EU3 1000 : EU4 1001-1111 : Reserved
8	Font support for Israel	0: Disable 1: Enable

- **Selector 3: Clock type**

Setting this selector to "1" displays Japanese clock type (YMD). If this selector sets to "0", select USA type (MDY) or European type (DMY) by WSW17 selector 5.

- **Selector 4: Demo print type (Demo language)**

This selector specifies the language for Demo print.

- **Selector 8: Font support for Israel**

To enable the font support for Israel, set this selector to "1".

<WSW64>

Selector No.	Function	Setting and Specifications
1 6	Setting the language	No. 1 2 3 4 5 6 0 0 0 0 0 0: English 0 0 0 0 0 1: French 0 0 0 0 1 0: German 0 0 0 0 1 1: Dutch 0 0 0 1 0 0: Spanish 0 0 0 1 0 1: Italian 0 0 0 1 1 0: Norwegian 0 0 0 1 1 1: Portuguese 0 0 1 0 0 0: Danish 0 0 1 0 0 1: Swedish 0 0 1 0 1 0: Finnish 0 0 1 0 1 1: Czech 0 0 1 1 0 0: Polish 0 0 1 1 0 1: Hungarian 0 0 1 1 1 0: Russian 0 0 1 1 1 1: Bulgarian 0 1 0 0 0 0: Romanian 0 1 0 0 0 1: Slovakian 0 1 0 0 1 0: Brazilian 0 1 0 0 1 1: Turkish 0 1 0 1 0 0: Japanese 0 1 0 1 0 1: Reserve
7 8	Default paper size	No. 1 2 0 0: Letter 0 1: A4 1 0: Reserve 1 1: Reserve

• **Selectors 1 through 6: Setting the language**

Set the language displayed in the LCD.

<WSW65>

Selector No.	Function	Setting and Specifications
1 2	Default media type	No. 1 2 0 0: Plain Paper 0 1: Thin Paper 1 0: Reserve 1 1: Reserve
3	Supporting of BOND paper	0: Disable 1: Enable
4	Supporting of HAGAKI paper	0: Disable 1: Enable
5	Supporting of OHP	0: Disable 1: Enable
6	Supporting of LABEL paper	0: Disable 1: Enable
7 8	Not used	

<WSW66>

Selector No.	Function	Setting and Specifications
1 1 8	Drum life end	$(\text{Life value} - 5000) \div 500 = \text{Set value}$ For example No. 1 2 3 4 5 6 7 8 0 0 0 0 0 0 0 0: Life value 5000 0 0 0 0 0 0 0 1: Life value 5000 0 0 0 0 0 0 1 0: Life value 6000 0 0 0 1 0 1 0 0: Life value 15000

(page)

• **Selectors 1 through 8: K drum life end**

$(\text{Life value} - 5000) \div 500 = \text{Set value}$

Enter the value of each selector in binary number, and then plug it into the set value of the above formula and calculate the life value.

For example, when set the life value to 15000 pages, enter the "00010100" in binary number ("10" in decimal number).

<WSW67>

Selector No.	Function	Setting and Specifications
1 1 8	CMY drum life end (Not used.)	

<WSW68>

Selector No.	Function	Setting and Specifications
1 1 8	Fuser unit life end	$\text{Life value} \div 5000 = \text{Set value}$ For example No. 1 2 3 4 5 6 7 8 0 0 0 0 0 0 0 0: Life value 5000 0 0 0 0 0 0 0 1: Life value 5000 0 0 0 0 0 0 1 0: Life value 6000 0 0 0 1 0 1 0 0: Life value 15000

(page)

• **Selectors 1 through 8: Fuser unit life end**

$\text{Life value} \div 500 = \text{Set value}$

Enter the value of each selector in binary number, and then plug it into the set value of the above formula and calculate the life value.

For example, when set the life value to 15000 pages, enter the "00010100" in binary number ("10" in decimal number).

<WSW69>

Selector No.	Function	Setting and Specifications
1 8	Scanner unit life end	Life value ÷ 5000 = Set value For example No. 1 2 3 4 5 6 7 8 0 0 0 0 0 0 0 0: Life value 5000 0 0 0 0 0 0 0 1: Life value 5000 0 0 0 0 0 0 1 0: Life value 6000 0 0 0 1 0 1 0 0: Life value 15000

(page)

• **Selectors 1 through 8: Scanner unit life end**

Life value ÷ 500 = Set value

Enter the value of each selector in binary number, and then plug it into the set value of the above formula and calculate the life value.

For example, when set the life value to 15000 pages, enter the “00010100” in binary number (“10” in decimal number).

<WSW70>

Selector No.	Function	Setting and Specifications
1 8	Paper feeding kit life end	Life value ÷ 5000 = Set value For example No. 1 2 3 4 5 6 7 8 0 0 0 0 0 0 0 0: Life value 5000 0 0 0 0 0 0 0 1: Life value 5000 0 0 0 0 0 0 1 0: Life value 6000 0 0 0 1 0 1 0 0: Life value 15000

(page)

• **Selectors 1 through 8: Paper feeding kit life end**

Life value ÷ 500 = Set value

Enter the value of each selector in binary number, and then plug it into the set value of the above formula and calculate the life value.

For example, when set the life value to 15000 pages, enter the “00010100” in binary number (“10” in decimal number).

<WSW71>

Selector No.	Function	Setting and Specifications
1 8	Paper feeding kit 2 life end	Life value ÷ 5000 = Set value For example No. 1 2 3 4 5 6 7 8 0 0 0 0 0 0 0 0: Life value 5000 0 0 0 0 0 0 0 1: Life value 5000 0 0 0 0 0 0 1 0: Life value 6000 0 0 0 1 0 1 0 0: Life value 15000

(page)

• **Selectors 1 through 8: Paper feeding kit 2 life end**

Life value ÷ 500 = Set value

Enter the value of each selector in binary number, and then plug it into the set value of the above formula and calculate the life value.

For example, when set the life value to 15000 pages, enter the "00010100" in binary number ("10" in decimal number).

<WSW72>

Selector No.	Function	Setting and Specifications
1 8	Paper feeding kit MP life end	Life value ÷ 5000 = Set value For example No. 1 2 3 4 5 6 7 8 0 0 0 0 0 0 0 0: Life value 5000 0 0 0 0 0 0 0 1: Life value 5000 0 0 0 0 0 0 1 0: Life value 6000 0 0 0 1 0 1 0 0: Life value 15000

(page)

• **Selectors 1 through 8: Paper feeding kit MP life end**

Life value ÷ 500 = Set value

Enter the value of each selector in binary number, and then plug it into the set value of the above formula and calculate the life value.

For example, when set the life value to 15000 pages, enter the "00010100" in binary number ("10" in decimal number).

<WSW73>

Selector No.	Function	Setting and Specifications
1 8	Belt unit life end (Not used.)	

APPENDIX 2

DELETION OF USER SETTING INFORMATION, etc.

This appendix describes how to delete of user setting information, etc.

DELETION OF USER SETTING INFORMATION, etc.

User setting such as wired and wireless network settings in the machine is recorded in the EEPROM and the Flash memory on the Main PCB. Follow the procedure described below to delete this information with a single operation.

- **Your name and telephone number**
- **Telephone directory data**
- **Group dialing data**
- **Dispatch history data**
- **FAX forwarding destination data**
- **Password**
- **Memory data**
- **No transfer of PC-FAX received data**
- **Ready polling data**
- **Timer sending data**
- **Collective sending data**
- **Received calls data**
- **Communication management report**
- **Net-related information**

<Operating Procedure>

- (1) Press the [**MENU**] button.
- (2) Press the [**▼**] or [**▲**] button to display "Reset" on the LCD, and then press the [**OK**] button.
- (3) Press the [**▼**] or [**▲**] button to display "All Setting" on the LCD, and then press the [**OK**] button. "1. Reset or 2. Exit" will appear on the LCD.
- (4) If press the [**1**] key, the user setting information is deleted and the machine will return to the ready state.

APPENDIX 3

SERIAL NUMBERING SYSTEM

This appendix describes the meaning of the serial number and property codes and the location of each label.

SERIAL NUMBERING SYSTEM

Each machine has a serial number label for the machine itself and property labels for some other parts. Refer to the information below for the meaning of the serial number and property codes and the location of each label.

Serial number labels for the machine itself

<How to Read>

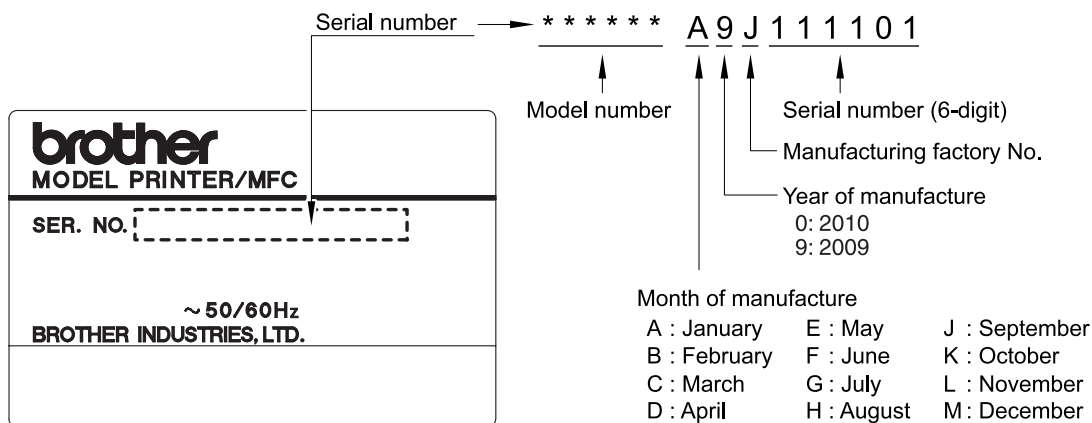


Fig. Ref. 3-1

<Location>

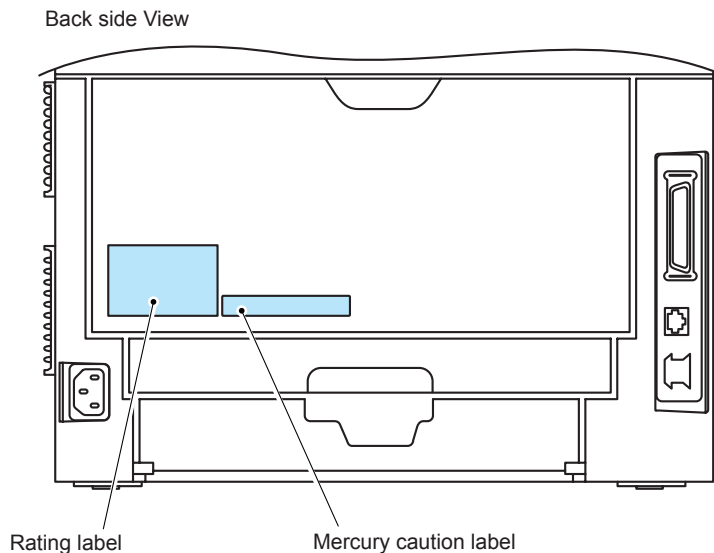


Fig. Ref. 3-2

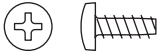
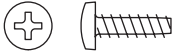

APPENDIX 4

SCREW CATALOGUE








This appendix describes the used all screws in this machine by actual size. Use this appendix when lose the screw type.

SCREW CATALOGUE

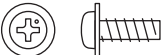
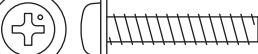
Taptite bind B

Taptite bind B M3x8	
Taptite bind B M3x10	
Taptite bind B M4x12	



Taptite cup B

Taptite cup B M2x6	
Taptite cup B M3x8	
Taptite cup B M3x10	
Taptite cup B M3x12	
Taptite cup B M4x10	
Taptite cup B M4x12	
Taptite cup B M4x20	



Taptite pan (washer)

Taptite pan (washer) B M3x8	
Taptite pan (washer) B M4x20	





Screw pan (S/P washer)

Screw pan (S/P washer) M3x6	
Screw pan (S/P washer) M3.5x7.5 SR	

Taptite B

Taptite B M3x6	
Taptite B M3x8	

Taptite cup S

Taptite cup S M3x6	
Taptite cup S M3x8	
Taptite cup S M3x12	
Taptite cup S M3x6 SR	

Screw

Screw M2x6	
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APPENDIX 5

REFERENCES

This page provides the retrieve information. It is possible to get the instruction of the subject by just clicking on the link next page.

REFERENCES

This page provides reference information. It is possible to get the full instructions of the subjects listed by just clicking on the links below.

1. Error codes

(Refer to ["3. ERROR CODES" in Chapter 3.](#))

2. Error message

(Refer to ["2. DISTINGUISH ERROR CAUSE" in Chapter 3.](#))

3. Diameter of rollers

(Refer to ["5.2 Diameter of Rollers" in Chapter 3.](#))

4. Periodical replacement parts

(Refer to ["1.1 Periodical Replacement Parts" in Chapter 4.](#))

5. Reset parts life

(Refer to ["5.1 Resetting the Periodical Replacement Parts Life" in Chapter 7.](#))

6. Machine specification

(Refer to ["2. SPECIFICATIONS LIST" in Chapter 1.](#))

7. Paper specification

(Refer to ["2.6 Paper" in Chapter 1.](#))

APPENDIX 6

GLOSSARY

This appendix describes the manual specific acronyms and technical terms are used in addition to the generally used ones. The next page contains typical acronyms and technical terms that are used throughout these manuals.

GLOSSARY

■ ACRONYMS AND TECHNICAL TERMS

In this manual and the Service Manual, the manual specific acronyms and technical terms are used in addition to the generally used ones. The table below contains typical acronyms and technical terms that are used throughout these manuals.

APIPA	Automatic Private IP Addressing
ASIC	Application Specific Integrated Circuit
ASSY	Assembly
CN	Connector
CPU	Central Processing Unit
dB	decibel
DEV	Development
DIMM	Dual Inline Memory Module
dpi	dots per inch
DX	Duplex
EEPROM	Electrically Erasable and Programmable Read Only Memory
FR	Feed Roller
FU	Fuser
HEX	Hexadecimal
HUM	Humidity
HV	High Voltage
HVPS	High Voltage Power Supply
IEEE 1284	Institute of Electrical and Electronic Engineers 1284
IF	Interface
IPv4	Internet Protocol Version 4
IPv6	Internet Protocol Version 6
LCD	Liquid Crystal Display
LD	Laser Diode
LED	Light Emitting Diode
LT	Lower Tray
LV	Low Voltage
LVPS	Low Voltage Power Supply
MP	Multi-Purpose
N/A	Not Applicable
NC*	Network Circuit
PF	Paper Feed
PP gear	Pressure Plate gear
ppm	Pages per minute
PU	Pick-Up roller
RAM	Random Access Memory
REGI	Registration
SB	Switch Back

SOL	Solenoid
SP	Spare Parts
SX	Simplex
T1	Tray 1
TE	Toner Empty
THM	Thermal
TN	Toner
TR	Transfer

* Excluding the acronym shown on the wiring diagram or circuit diagram.