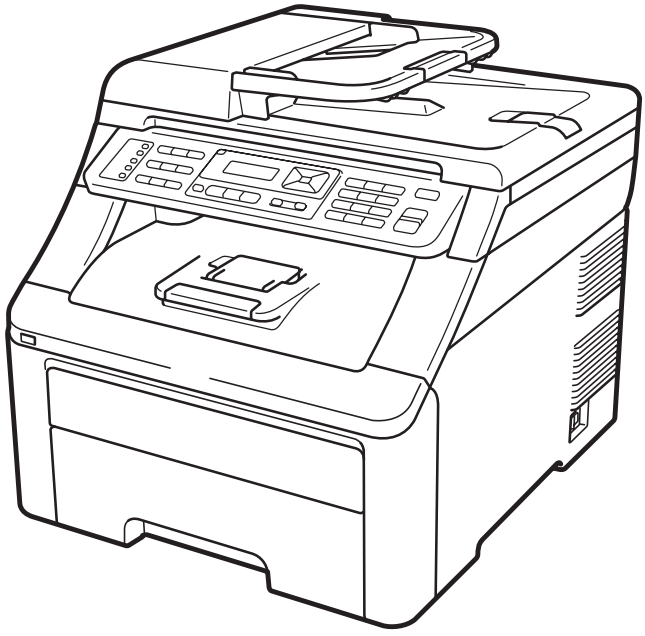
Color FAX/MFC
SERVICE MANUAL

MODEL: DCP-9010CN/MFC-9010CN
MFC-9120CN/MFC-9125CN
MFC-9320CW/MFC-9325CW



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

July 2009
SM-FAX113
8CE203
(4)

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The function comparative table for models as described in this Service manual are shown blow.

Model	DCP-9010CN	MFC-9010CN	MFC-9120CN	MFC-9125CN	MFC-9320CW	MFC-9325CW
LAN	Wired	Wired	Wired	Wired	Wired/ Wireless	Wired/ Wireless
FAX	---	---	√	√	√	√
USB host	---	---	---	---	√	√

Specifications are subject to change without notice.

PREFACE

This service manual contains basic information required for after-sales service of the 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-9010CN, MFC-9010CN/9120CN/9125CN/9320CW/ 9325CW 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: PERIODICAL MAINTENANCE

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

CHAPTER 5: DISASSEMBLY AND ASSEMBLY

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 FUNCTIONS

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

This chapter also covers not-disclosed-to-users function menus, which activate settings and functions or reset the parts life.

CHAPTER 8: CIRCUIT DIAGRAMS & WIRING DIAGRAM

Provides the Circuit Diagrams and Wiring Diagram for the connections of the PCBs.

APPENDIX 1: WORKER SWITCH (WSW)

Describes the functions of the worker switches.

APPENDIX 2: DELETION OF USER SETTING INFORMATION etc.

Provides instructions on how to delete user setting information etc. stored 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 machine, 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 the following interface cable.

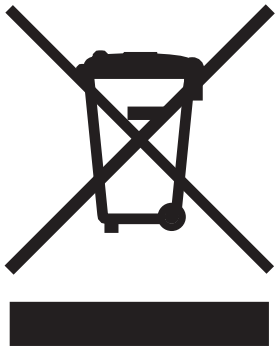
- A USB cable.

The cable must not be more than 2 meters long.

■ EU Directive 2002/96/EC and EN50419

(European Union only)

This equipment is marked with the recycling symbol below. 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.



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: Color MFC
DCP-9010CN, MFC-9010CN/9120CN/9125CN/9320CW/9325CW

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.

SAFETY INFORMATION

■ Definitions of Warnings, Cautions, Notes and Memos

The following conventions are used in this manual:

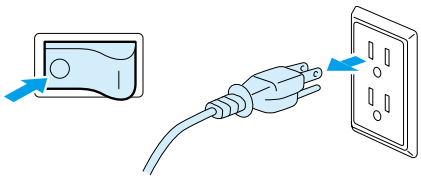
Mark	Contents
	Warnings tell you what to do to prevent possible personal injury.
	Electrical Hazard icons alert you to a possible electrical shock.
	Hot Surface icons warn you not to touch machine parts that are hot.
	Cautions specify procedures you must follow or avoid to prevent possible damage to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

■ Safety Precautions

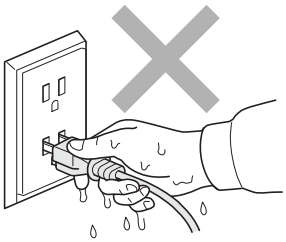
Listed below are the various kinds of “WARNING” messages included in this manual.

WARNING

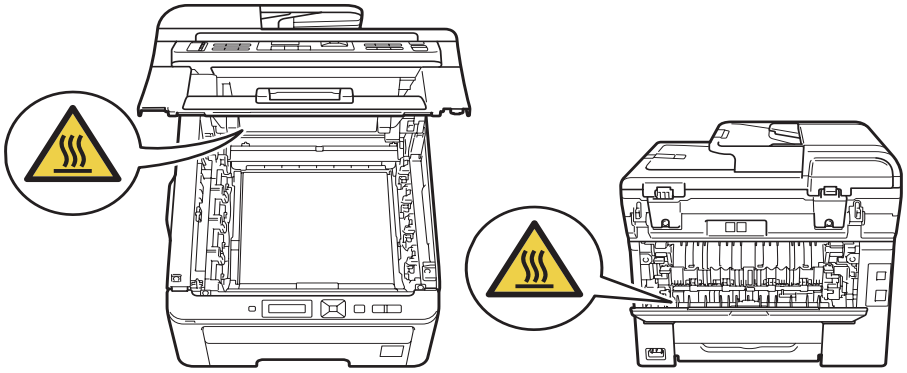
There are high voltage electrodes inside the machine. Before you clean the inside of the machine or replace parts, make sure that you have turned off the power switch and unplugged the machine from the AC power outlet.



DO NOT handle the plug with wet hands. Doing this might cause an electrical shock.

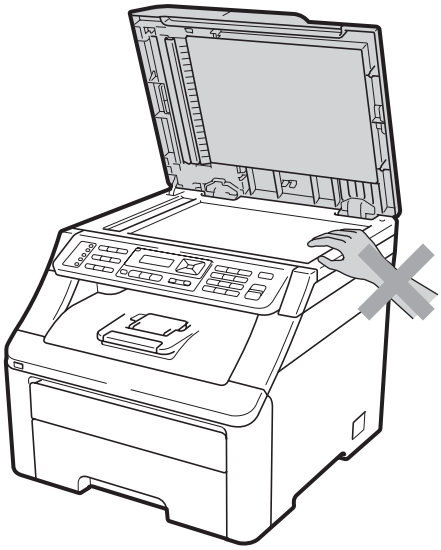


The fuser unit becomes extremely hot during operation. Wait until it has cooled down sufficiently before replacing consumable items. DO NOT remove or damage the caution label located on or around the fuser.

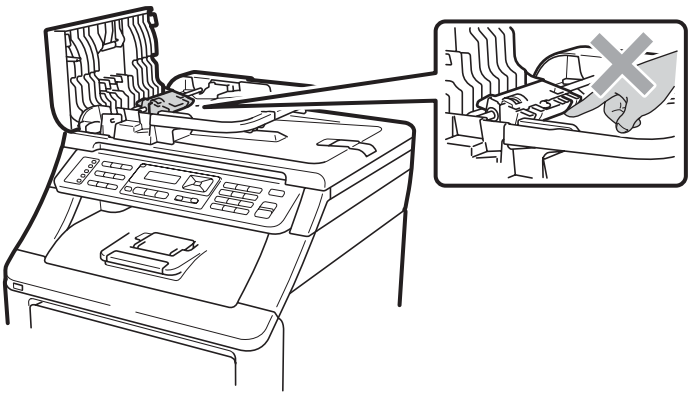


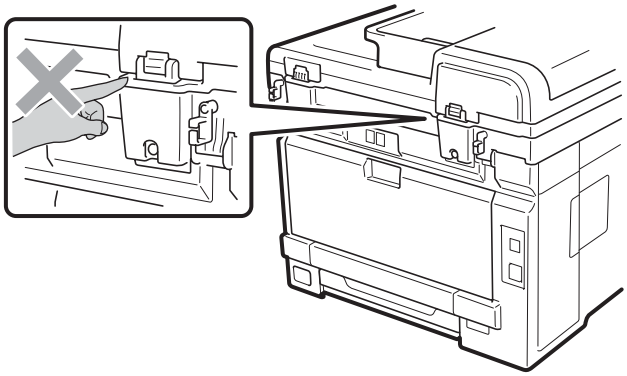
WARNING

To prevent injuries, be careful not to put your hands on the edge of the machine under the document cover as shown in the illustration.



To prevent injuries, be careful not to put your fingers in the areas shown in the illustrations.





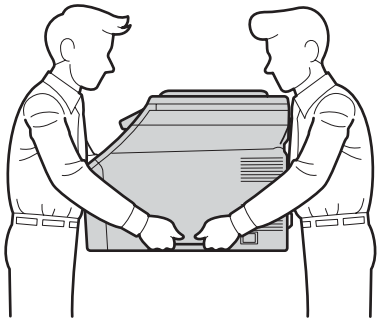
WARNING

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.

If the machine becomes hot, blows smoke, or generates obscure odor, immediately turn off the power switch and unplug the machine from the AC power outlet.

If metal objects, water or other liquids get inside the machine, immediately turn off the power switch and unplug the machine from the AC power outlet.

This machine is heavy and weighs approximately 22.9 kg (50.5 lb). To prevent injuries when moving or lifting this machine, make sure to use at least two people. Be careful not to pinch your fingers when you set the machine back down.



CAUTION

Lightning and power surges can damage this product! We recommend that you use a quality surge protection device on the AC power line, or unplug the machine during a lightning storm.

Violently closing the top cover without mounting the toner cartridge and the drum unit can damage this product.

CHAPTER 1
SPECIFICATIONS

CHAPTER 1
SPECIFICATIONS

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

CONTENTS

1. COMPONENTS

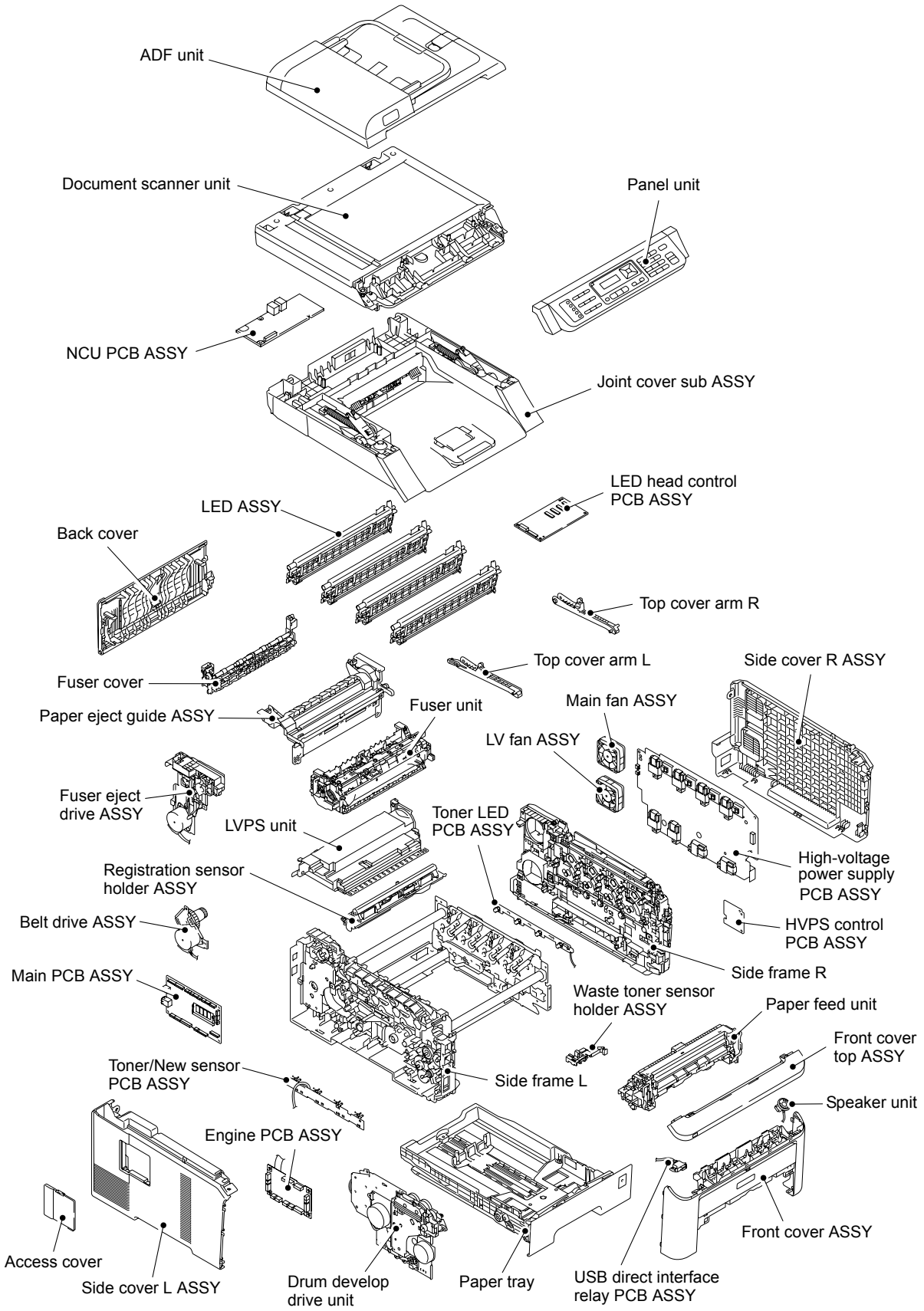


Fig. 1-1

2. SPECIFICATIONS LIST

2.1 General

Model		DCP9010CN	MFC9010CN	MFC9120CN	MFC9320CW
Print method		Electrophotographic LED printer (Single-pass)			
Resolution 600 (main scanning) x 600 (sub scanning) dpi, 2,400 dpi (600 (main scanning) x 2,400 (sub scanning))		Windows Server® 2008, Windows Vista®, Windows Server® 2003 x64 Edition, Windows® XP Professional x64 Edition, Windows Server® 2003, Windows® XP Home Edition/Professional, Windows® 2000, Mac OS® X 10.3.9 or greater			
Print mode		Normal printing mode Economy printing mode (Toner saving mode)			
Print speed	One side	Monochrome/Full Color: Up to 16/16 ppm (A4 size), Up to 17/17 ppm (Letter size) * When loading A4 or Letter-size paper from the paper tray.			
	Duplex	N/A			
Warm-up time		From Sleep Mode: Less than 27 seconds From Power OFF → ON: Less than 37 second * With standard 64 MB RAM, 23 °C (73.4 °F).			
First print time [*1]		Monochrome: Less than 15 seconds Full Color: Less than 16 seconds			
CPU		300 MHz			
Memory	Standard	64 MB			
	Option	1 DIMM slot; expandable up to 576 MB			
Interface		Hi-Speed USB 2.0, Ethernet 10/100 BASE-TX		External TAD, Hi-Speed USB 2.0, Ethernet 10/100 BASE-TX	External TAD, Hi-Speed USB 2.0, USB Host, Ethernet 10/100 BASE-TX, Wireless
Power consumption	Printing	Average 480 W at 25 °C (77 °F)			
	Ready	Average 75 W at 25 °C (77 °F)			
	Sleep	Average 10 W at 25 °C (77 °F)		Average 11 W at 25 °C (77 °F)	Average 12 W at 25 °C (77 °F)

[*1] The time may change if the machine is performing adjustment of color density or adjustment of color registration.

Note:

Print speed varies depending on the paper size or media type. For details, refer to "2.7 Print Speeds with Various Settings" in this chapter.

Specifications are subject to change without notice.

Model		MFC9125CN	MFC9325CW
Print method		Electrophotographic LED printer (Single-pass)	
Resolution 600 (main scanning) x 600 (sub scanning) dpi, 2,400 dpi (600 (main scanning) x 2,400 (sub scanning))		Windows Server® 2008, Windows Vista®, Windows Server® 2003 x64 Edition, Windows® XP Professional x64 Edition, Windows Server® 2003, Windows® XP Home Edition/ Professional, Windows® 7, Windows Server® 2008 R2, Mac OS® X 10.4.11, 10.5.x, 10.6.x	
Print mode		Normal printing mode Economy printing mode (Toner saving mode)	
Print speed	One side	Monochrome/Full Color: Up to 18/18 ppm (A4 size), Up to 19/19 ppm (Letter size) * When loading A4 or Letter-size paper from the paper tray.	
	Duplex	N/A	
Warm-up time		From Sleep Mode: Less than 27 seconds From Power OFF → ON: Less than 37 second * With standard 64 MB RAM, 23 °C (73.4 °F).	
First print time *2		Monochrome: Less than 15 seconds Full Color: Less than 16 seconds	
CPU		300 MHz	
Memory	Standard	64 MB	
	Option	1 DIMM slot; expandable up to 576 MB	
Interface		External TAD, Hi-Speed USB 2.0, Ethernet 10/100 BASE-TX	External TAD, Hi-Speed USB 2.0, USB Host, Ethernet 10/ 100 BASE-TX, Wireless
Power consumption	Printing	Average 480 W at 25 °C (77 °F)	
	Ready	Average 75 W at 25 °C (77 °F)	
	Sleep	Average 11 W at 25 °C (77 °F)	Average 12 W at 25 °C (77 °F)

*2 The time may change if the machine is performing adjustment of color density or adjustment of color registration.

Note:

Print speed varies depending on the paper size or media type. For details, refer to "2.7 Print Speeds with Various Settings" in this chapter.

Specifications are subject to change without notice.

Model		DCP9010CN	MFC9010CN	MFC9120CN	MFC9320CW
Noise level	Sound pressure	Printing: 53 dB (A) Ready: 30 dB (A)			
	Sound power	Printing: LWAd = 6.5 Bell (A) Ready: LWAd = 4.8 Bell (A)			
Environment	Temperature	Operating: 10 to 32.5 °C (50 to 90.5 °F) Non operating: 0 to 40 °C (32 to 104 °F) Storage: -20 to 40 °C (-4 to 104 °F)			
Humidity		Operating: 20 to 80 % (non condensing) Storage: 10 to 90 % (non condensing)			
Dimensions (W × D × H)	With carton	743 x 592 x 575 mm (29.3 x 23.3 x 22.6 inch)			
	Without carton	428 x 491 x 401 mm (16.9 x 19.3 x 15.8 inch)			
Weights		Approximately 22.7 kg (50.0 lb) including the drum unit and toner cartridge		Approximately 22.9 kg (50.5 lb) including the drum unit and toner cartridge	
LCD Size		16 characters x 2 lines			
LCD dimension (W x L)		5 x 1.05 cm (1.85 x 0.43 inch)			
LCD backlight		Yes (Green)			
LED		Error (Orange), Data (Green), Mode key (Fax, Copy, Scan): Blue (FAX model only)			
Security function lock		N/A		Yes	

Model		MFC9125CN	MFC9325CW
Noise level	Sound pressure	Printing: 53 dB (A) Ready: 30 dB (A)	
	Sound power	Printing: LWAd = 6.5 Bell (A) Ready: LWAd = 4.8 Bell (A)	
Environment	Temperature	Operating: 10 to 32.5 °C (50 to 90.5 °F) Non operating: 0 to 40 °C (32 to 104 °F) Storage: -20 to 40 °C (-4 to 104 °F)	
Humidity		Operating: 20 to 80 % (non condensing) Storage: 10 to 90 % (non condensing)	
Dimensions (W × D × H)	With carton	743 x 592 x 575 mm (29.3 x 23.3 x 22.6 inch)	
	Without carton	428 x 491 x 401 mm (16.9 x 19.3 x 15.8 inch)	
Weights		Approximately 22.9 kg (50.5 lb) including the drum unit and toner cartridge	
LCD Size		16 characters x 2 lines	
LCD dimension (W x L)		5 x 1.05 cm (1.85 x 0.43 inch)	
LCD backlight		Yes (Green)	
LED		Error (Orange), Data (Green), Mode key (Fax, Copy, Scan): Blue (FAX model only)	
Security function lock		Yes	

Specifications are subject to change without notice.

<PC software>

Model		DCP9010CN	MFC9010CN	MFC9120CN	MFC9320CW
Printer driver	Windows®	Host-Based Driver for Windows Server® 2008, Windows Vista®, Windows Server® 2003 x64 Edition, Windows® XP Professional x64 Edition, Windows Server® 2003, Windows® XP Home Edition/Professional, Windows® 2000 Professional			
		BR-Script 3 (PPD file for Windows Server® 2008, Windows Vista®, Windows Server® 2003 x64 Edition, Windows® XP Professional x64 Edition, Windows Server® 2003, Windows® XP Home Edition/Professional, Windows® 2000 Professional)			
	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*3	Linux printer driver for CUPS printing system (x86, x64 environment)			
		Linux printer driver for LPD/LPRng printing system (x86, x64 environment)			

*3 Download from http://solutions.brother.com/

<Viewer>

Model		DCP9010CN	MFC9010CN	MFC9120CN	MFC9320CW
Viewer	Windows®	PaperPort 11 SE*4, Page Manager 7 (China)			
	Macintosh®	Page Manager 7			
	Linux	N/A			

*4 PaperPort 11 SE supports Microsoft® Windows Vista® or Windows® XP (SP 2 or higher) or Windows® 2000 (SP4 or higher) only

<PC-Fax> *5

Model		DCP9010CN	MFC9010CN	MFC9120CN	MFC9320CW
Windows®	Send	N/A		Yes (FaxShare Software by Brother)	
	Receive	N/A		Yes (for Windows Vista®/ Windows® XP/ Windows® 2000)	
Macintosh®	Send	N/A		Yes (FaxShare Software by Brother)	
	Receive	N/A			
Linux	Send	N/A		Yes (LPR/CUPS PC-FAX Send Driver)	
	Receive	N/A			

*5 Not available for Color Fax

Specifications are subject to change without notice.

<PC software>

Model		MFC9125CN	MFC9325CW
Printer driver	Windows®	Host-Based Driver for Windows® XP, Windows® XP Professional x64 Edition, Windows Vista®, Windows® 7, Windows Server® 2003, Windows Server® 2003 x64 Edition, Windows Server® 2008, Windows Server® 2008 R2 Edition	
		BR-Script3 (PPD file) for Windows® XP, Windows® XP Professional x64 Edition, Windows Vista®, Windows® 7, Windows Server® 2003, Windows Server® 2003 x64 Edition, Windows Server® 2008, Windows Server® 2008 R2 Edition	
	Macintosh®	Macintosh Printer Driver for Mac OS® X 10.4.11, 10.5.x, 10.6.x	
		BR-Script 3 (PPD file for Mac OS® X 10.4.11, 10.5.x, 10.6.x	
	Linux*6	Linux printer driver for CUPS printing system (x86, x64 environment)	
		Linux printer driver for LPD/LPRng printing system (x86, x64 environment)	

*6 Download from http://solutions.brother.com/

<Viewer>

Model		MFC9125CN	MFC9325CW
Viewer	Windows®	PaperPort 11 SE*7	
	Macintosh®	Page Manager 9	
	Linux	N/A	

*7 PaperPort 11 SE supports Microsoft® Windows Vista® or Windows® XP (SP 2 or higher) or Windows® 2000 (SP4 or higher) only

<PC-Fax>*8

Model		MFC9125CN	MFC9325CW
Windows®	Send	Yes (FaxShare Software by Brother)	
	Receive	Yes (for Windows Vista®/Windows® XP/ Windows® 2007)	
Macintosh®	Send	Yes (FaxShare Software by Brother)	
	Receive	N/A	
Linux	Send	Yes (LPR/CUPS PC-FAX Send Driver)	
	Receive	N/A	

*8 Not available for Color Fax

Specifications are subject to change without notice.

<Configuration tool>

Model		DCP9010CN	MFC9010CN	MFC9120CN	MFC9320CW
Control center	Windows®	Yes (Control Center 3)			
	Macintosh®	Mac OS® X 10.3.9 or grater (Control Center 2)			
	Linux	N/A			
Remote setup	Windows®	N/A		Yes	
	Macintosh®	N/A		Yes (Mac OS® X only)	
	Linux	N/A			

<Network utility>

Model	DCP9010CN	MFC9010CN	MFC9120CN	MFC9320CW
Windows®	BRAdmin Light, Web Based Management, BRAdmin Professional 3, Web BRAdmin	BRAdmin Light, Web Based Management, BRAdmin Professional 3, Web BRAdmin, Network Remote Setup		
Macintosh®	BRAdmin Light, Web Based Management	BRAdmin Light, Web Based Management, BRAdmin Professional 3		
Linux	Web Base Management			

<Direct Print feature>

Model	DCP9010CN	MFC9010CN	MFC9120CN	MFC9320CW
Direct Print	N/A			PDF version 1.7, JPEG, Exif+JPEG, PRN (created by own printer driver), TIFF (scanned by Brother models), XPS version 1.0

Specifications are subject to change without notice.

<Configuration tool>

Model		MFC9125CN	MFC9325CW
Control center	Windows®	Yes (Control Center 3)	
	Macintosh®	Mac OS® X 10.4.11, 10.5.x, 10.6.x (Control Center 2)	
	Linux	N/A	
Remote setup	Windows®	Yes	
	Macintosh®	Yes (Mac OS® X only)	
	Linux	N/A	

<Network utility>

Model	MFC9125CN	MFC9325CW
Windows®	BRAdmin Light, Web Based Management, BRAdmin Professional 3, Web BRAdmin, Network Remote Setup	
Macintosh®	BRAdmin Light, Web Based Management, Network Remote Setup	
Linux	Web Base Management	

<Direct Print feature>

Model	MFC9125CN	MFC9325CW
Direct Print	N/A	PDF version 1.7, JPEG, Exif+JPEG, PRN (created by own printer driver), TIFF (scanned by Brother models), XPS version 1.0

Specifications are subject to change without notice.

<System requirements>

(DCP9010CN/MFC9010CN/MFC9120CN/MFC9320CW)

Computer platform & Operating system version		Processor speed	Minimum RAM	Recom-mended RAM	Available hard disk space
Windows® *9	Windows Server® 2008	Intel® Pentium® 4 or equivalent 64-bit (Intel® 64 or AMD64) supported CPU	512 MB	2 GB	50 MB
	Windows Vista® *10		512 MB	1 GB	500 MB
	Windows Server® 2003 x64 Edition	64-bit (Intel® 64 or AMD64) supported CPU	256 MB	512MB	50 MB
	Windows® XP Professional x64 Edition				150 MB
	Windows Server® 2003	Intel® Pentium® III or equivalent	256 MB	512 MB	50 MB
	Windows® XP Home Edition *10	Intel® Pentium® II or equivalent	128 MB	256 MB	150 MB
	Windows® XP Professional *10				
	Windows® 2000 Professional		64 MB	256 MB	150 MB
Macintosh®	Mac OS® X 10.4.4 or greater	Power PC G4/G5, Intel® Core™ Processor	512 MB	1 GB	80 MB
	Mac OS® X 10.3.9 -10.4.3	Power PC G4/G5, Intel® Core™ Solo/Duo, Power PC G3 350 MHz	128 MB	256 MB	

*9 Internet Explorer® 5.5 or greater.

*10 For WIA, 1,200 (main scanning) x 1,200 (sub scanning) resolution. Brother Scanner Utility enables to enhance up to 19,200 (main scanning) x 19,200 (sub scanning) dpi.

Specifications are subject to change without notice.

(MFC9125CN/MFC9325CW)

Computer platform & Operating system version		Processor speed	Minimum RAM	Recommended RAM	Available hard disk space
Windows® *11	Windows® XP Home*12, *13, Windows® XP Professional *12, *13	Intel® Pentium® II or equivalent	128 MB	256 MB	150 MB
	Windows® XP Professional x64 Edition*12	64-bit (Intel®64 or AMD64) supported CPU	256 MB	512 MB	150 MB
	Windows Vista® *12	Intel® Pentium® 4 or equivalent 64-bit (Intel®64 or AMD64) supported CPU	512 MB	1 GB	500 MB
	Windows® 7*12	Intel® Pentium® 4 or equivalent 64-bit (Intel®64 or AMD64) supported CPU	1 GB (32-bit) 2 GB (64-bit)	1 GB (32-bit) 2 GB (64-bit)	650 MB
	Windows Server® 2003 (print only via network)	Intel® Pentium® III or equivalent	256 MB	512 MB	50 MB
	Windows Server® 2003 x64 Edition (print only via network)	64-bit (Intel®64 or AMD64) supported CPU	256 MB	512 MB	50 MB
	Windows Server® 2008 (print only via network)	Intel® Pentium® 4 or equivalent 64-bit (Intel®64 or AMD64) supported CPU	512 MB	2 GB	50 MB
	Windows Server® 2008 R2 (print only via network)	64-bit (Intel®64 or AMD64) supported CPU	512 MB	2 GB	50 MB
Macintosh®	Mac OS® X 10.4.11, 10.5.x	Power PC G4/G5, Intel® Processor	512 MB	1 GB	80 MB
	Mac OS® X 10.6.x	Intel® Processor	1 GB	2 GB	

*11 Internet Explorer® 5.5 or greater.

*12 For WIA, 1200x1200 resolution. Brother Scanner Utility enables to enhance up to 19200 x 19200 dpi.

*13 PaperPort™ 11SE supports Microsoft® SP2 or higher for Windows® XP.

Specifications are subject to change without notice.

2.2 Network Connectivity

<Wired network>

(DCP9010CN/MFC9010CN/MFC9120CN/MFC9320CW)

Network node type	NC-6700h	
Operating system support	Windows Server® 2008, 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, SNMPv1/v2c/v3, ICMP, LLTD responder, Web Services Print, SSL/TLS, CIFS client, SNTP, FTP client
	TCP/IP: IPv6[*1]	(Turned off as default) 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, SSL/TLS, CIFS client, SNTP, FTP client
Network type	Ethernet 10/100 BASE-TX Auto Negotiation	
Network printing	Windows Server® 2008, Windows Vista®, Windows Server® 2003, Windows® XP and Windows® 2000 TCP/IP printing Mac OS® X 10.3.9 or greater printing	
Management utility	BRAdmin Professional 3[*2]	Windows Server® 2008, Windows Vista®, Windows Server® 2003 x64 Edition, Windows® XP Professional x64 Edition, Windows Server® 2003, Windows® XP Home Edition/Professional Edition, Windows® 2000 Professional
	Web BRAdmin[*2]	Windows Server® 2008, Windows Vista®, Windows Server® 2003 x64 Edition, Windows® XP Professional x64 Edition, Windows Server® 2003, Windows® XP Home Edition/Professional Edition, Windows® 2000 Professional
	Web Based Management	Microsoft Internet Explorer 6.0 (or greater), Firefox 1.0 (or greater) for Windows, and Safari 1.2 (or greater) for Macintosh are recommended.
	BRAdmin Light	Windows Server® 2008, Windows Vista®, Windows Server® 2003 x64 Edition, Windows® XP Professional x64 Edition, Windows Server® 2003, Windows® XP Home Edition/Professional Edition, Windows® 2000 Professional
		Mac OS® X 10.3.9 or greater

[*1] If you want to use the IPv6 protocol, visit http://solutions.brother.com/ for more information.

[*2] BRAdmin Professional and Web BRAdmin are available as a download from http://solutions.brother.com/

Specifications are subject to change without notice.

(MFC9125CN/MFC9325CW)

Network node type	NC-6700h	
Operating system support	Windows Server® 2008, Windows Vista®, Windows Server® 2003 x64 Edition, Windows® XP Professional x64 Edition, Windows Server® 2003, Windows® XP Home Edition/Professional, Windows® 7, Windows Server® 2008 R2, Mac OS® X 10.4.11, 10.5.x, 10.6.x	
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, SNMPv1/v2c/v3, ICMP, LLTD responder, Web Services Print, SSL/TLS, CIFS client, SNTP, FTP client
	TCP/IP: IPv6[*3]	(Turned off as default) 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, SSL/TLS, CIFS client, SNTP, FTP client
Network type	Ethernet 10/100 BASE-TX Auto Negotiation	
Network printing	Windows Server® 2008, Windows Vista®, Windows Server® 2003, Windows® XP, Windows® 7 and Windows Server® 2008 R2 TCP/IP printing Mac OS® X 10.4.11, 10.5.x, 10.6.x printing	
Management utility	BRAdmin Professional 3[*4]	Windows Server® 2008, Windows Vista®, Windows Server® 2003 x64 Edition, Windows® XP Professional x64 Edition, Windows Server® 2003, Windows® XP Home Edition/Professional Edition, Windows® 7, Windows Server® 2008 R2
	Web BRAdmin[*4]	Windows Server® 2008, Windows Vista®, Windows Server® 2003 x64 Edition, Windows® XP Professional x64 Edition, Windows Server® 2003, Windows® XP Home Edition/Professional Edition, Windows® 7, Windows Server® 2008 R2
	Web Based Management	Microsoft Internet Explorer 6.0 (or greater), Firefox 1.0 (or greater) for Windows, and Safari 1.2 (or greater) for Macintosh are recommended.
	BRAdmin Light	Windows Server® 2008, Windows Vista®, Windows Server® 2003 x64 Edition, Windows® XP Professional x64 Edition, Windows Server® 2003, Windows® XP Home Edition/Professional Edition, Windows® 7, Windows Server® 2008 R2
		Mac OS® X 10.4.11, 10.5.x, 10.6.x

[*3] If you want to use the IPv6 protocol, visit http://solutions.brother.com/ for more information.

[*4] BRAdmin Professional and Web BRAdmin are available as a download from http://solutions.brother.com/

Specifications are subject to change without notice.

<Wireless network>

(MFC9320CW)

Network node type	NC-7500w	
Operating system support	Windows Server® 2008, 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, SNMPv1/v2c/v3, ICMP, LLTD responder, Web Services Print, SSL/TLS, CIFS client
	TCP/IP: IPv6[*5]	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, SSL/TLS, CIFS client
Network type	IEEE 802.11 b/g wireless	
Frequency	2412 - 2472 MHz	
RF channels	US/Canada	1 - 11
	Japan	802.11 b: 1 - 14, 802.11 g: 1 - 13
	Others	1 - 13
Communication mode	Infrastructure, Ad-hoc (802.11 b only)	
Data rate	802.11 b	11/5.5/2/1 Mbps
	802.11 g	54/48/36/24/18/12/11/9/6/5.5/2/1 Mbps
Link distance	70 m (233 ft.) at lowest data rate (The distance rate will vary upon environment and other equipment location.)	
Network security	SSID/ESSID, WEP 64/128 bit, WPA-PSK (TKIP/AES), WPA2-PSK (AES), LEAP (CKIP), EAP-FAST (TKIP/AES)	
Network printing	Windows Vista®, Windows Server® 2003, Windows® XP and Windows® 2000 TCP/IP printing Mac OS® X 10.3.9 or greater printing	

[*5] If you want to use the IPv6 protocol, visit http://solutions.brother.com/ for more information.

Specifications are subject to change without notice.

Management utility	BRAdmin Professional 3[*6]	Windows Server® 2008, Windows Vista®, Windows Server® 2003 x64 Edition, Windows® XP Professional x64 Edition, Windows Server® 2003, Windows® XP Home Edition/Professional Edition, Windows® 2000 Professional
	Web BRAdmin[*6]	Windows Server® 2008, Windows Vista®, Windows Server® 2003 x64 Edition, Windows® XP Professional x64 Edition, Windows Server® 2003, Windows® XP Home Edition/Professional Edition, Windows® 2000 Professional
	Web Based Management	Microsoft Internet Explorer 6.0 (or greater), Firefox 1.0 (or greater) for Windows, and Safari 1.2 (or greater) for Macintosh are recommended.
	BRAdmin Light	Windows Server® 2008, Windows Vista®, Windows Server® 2003 x64 Edition, Windows® XP Professional x64 Edition, Windows Server® 2003, Windows® XP Home Edition/Professional Edition, Windows® 2000 Professional
		Mac OS® X 10.3.9 or greater

[*6] BRAdmin Professional and Web BRAdmin are available as a download from http://solutions.brother.com/

Specifications are subject to change without notice.

(MFC9325CW)

Network node type	NC-7500w	
Operating system support	Windows Server® 2008, Windows Vista®, Windows Server® 2003 x64 Edition, Windows® XP Professional x64 Edition, Windows Server® 2003, Windows® XP Home Edition/Professional, Windows® 7, Windows Server® 2008 R2, Mac OS® X 10.4.11, 10.5.x, 10.6.x	
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, SNMPv1/v2c/v3, ICMP, LLTD responder, Web Services Print, SSL/TLS, CIFS client, SNTP
	TCP/IP: IPv6[*7]	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, SSL/TLS, CIFS client, SNTP
Network type	IEEE 802.11 b/g wireless	
Frequency	2412 - 2472 MHz	
RF channels	US/Canada	1 - 11
	Japan	802.11 b: 1 - 14, 802.11 g: 1 - 13
	Others	1 - 13
Communication mode	Infrastructure, Ad-hoc (802.11 b only)	
Data rate	802.11 b	11/5.5/2/1 Mbps
	802.11 g	54/48/36/24/18/12/11/9/6/5.5/2/1 Mbps
Link distance	70 m (233 ft.) at lowest data rate (The distance rate will vary upon environment and other equipment location.)	
Network security	SSID/ESSID, WEP 64/128 bit, WPA-PSK (TKIP/AES), WPA2-PSK (AES), LEAP (CKIP), EAP-FAST (TKIP/AES)	
Network printing	Windows Vista®, Windows Server® 2003, Windows® XP, Windows® 7 and Windows Server® 2008 R2 TCP/IP printing Mac OS® X 10.4.11, 10.5.x, 10.6.x printing	

[*7] If you want to use the IPv6 protocol, visit http://solutions.brother.com/ for more information.

Specifications are subject to change without notice.

Management utility	BRAdmin Professional 3[*8]	Windows Server® 2008, Windows Vista®, Windows Server® 2003 x64 Edition, Windows® XP Professional x64 Edition, Windows Server® 2003, Windows® XP Home Edition/Professional Edition, Windows® 7, Windows Server® 2008 R2
	Web BRAdmin[*8]	Windows Server® 2008, Windows Vista®, Windows Server® 2003 x64 Edition, Windows® XP Professional x64 Edition, Windows Server® 2003, Windows® XP Home Edition/Professional Edition, Windows® 7, Windows Server® 2008 R2
	Web Based Management	Microsoft Internet Explorer 6.0 (or greater), Firefox 1.0 (or greater) for Windows, and Safari 1.2 (or greater) for Macintosh are recommended.
	BRAdmin Light	Windows Server® 2008, Windows Vista®, Windows Server® 2003 x64 Edition, Windows® XP Professional x64 Edition, Windows Server® 2003, Windows® XP Home Edition/Professional Edition, Windows® 7, Windows Server® 2008 R2
		Mac OS® X 10.4.11, 10.5.x, 10.6.x

[*8] BRAdmin Professional and Web BRAdmin are available as a download from http://solutions.brother.com/

Specifications are subject to change without notice.

2.3 Service Information

These are key service information to maintain the product.

- Machine life: approximately 100,000 pages or 5 years
- MTBF (Meantime between failure): 4,000 hours
- MTTR (Meantime to repair): 30 minutes
- Maximum monthly volume: 25,000 pages
- Periodical maintenance parts:

Part	Approximate life
Fuser unit	50,000 pages
Paper feeding kit	50,000 pages
ADF unit	50,000 pages or 5 years
Document scanner unit	50,000 pages or 5 years

* As for replacement of the periodical maintenance parts, refer to “PERIODICAL MAINTENANCE” in Chapter 4.

Specifications are subject to change without notice.

2.4 Consumables

Model	All models
Toner cartridge	Life expectancy: Black Standard*1: Approximately 2,200 pages/cartridge Black Starter*2: Approximately 1,000 pages/cartridge Yellow, Magenta, Cyan Standard*1: Approximately 1,400 pages/cartridge Yellow, Magenta, Cyan Starter*2: Approximately 1,000 pages/cartridge * When printing A4/Letter-size paper in accordance with ISO/IEC 19798. Shelf life: 2 years without opening (6 months after opening)
Drum unit	Life expectancy: Approximately 15,000*3 pages/drum unit The life expectancy varies according to the use condition. (Refer to "1.4.27 Display of the machine's log (Function code 80)" in Chapter 7.) * When printing A4/Letter-size paper. Shelf life: 2 years
The shelf life of toner cartridge and drum unit 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	
Belt unit	Life expectancy: Approximately 50,000 pages/belt unit The life expectancy varies according to the use condition.
Waste toner box	Life expectancy: Approximately 50,000 pages/waste toner box

*1 Separately sold consumable toner

*2 Toner supplied with the machine

*3 In the normal use, the color photosensitive drums rotate simultaneously even if no color print is made at all and black print only is made. Thus, the four color drum units reach the life expectancy at the same time.

Specifications are subject to change without notice.

2.5 Paper

2.5.1 Paper handling

Model		All models
Paper Input[*1]	Standard tray	250 sheets
	Manual feed slot	1 sheet
	Option	N/A
	ADF	Up to 35 sheets
Paper output[*1]	Face-down	100 sheets
	Face-up	1 sheet (Straight paper path)
Duplex		N/A

[*1] Calculated with 80 g/m^2 (20 lb) paper

2.5.2 Media specifications

Model		All models
Media type	Paper tray	Plain paper, Thin paper, Recycled paper
	Manual feed slot	Plain paper, Thin paper, Thick paper, Thicker paper, Recycled paper, Bond paper, Label, Envelopes, Env. Thin, Env. Thick
Media weight	Paper tray	60 to 105 g/m^2 (16 to 28 lb)
	Manual feed slot	60 to 163 g/m^2 (16 to 43 lb)
	ADF	64 to 90 g/m^2 (17 to 24 lb)
Media size	Paper tray	A4, Letter, B5 (ISO), A5, A5 (Long Edge), B6 (ISO), A6, Executive, Legal[*2], Folio
	Manual feed slot	Width: 76.2 to 220 mm (3.0 to 8.66 inch) Length: 116 to 406.4 mm (4.57 to 16 inch)
	ADF	Width: 147.3 to 215.9 mm (5.8 to 8.5 inch) Length: 147.3 to 356.0 mm (5.8 to 14.0 inch)

[*2] Legal size paper is not available in some regions outside the USA and Canada.

Specifications are subject to change without notice.

2.5.3 Type and size of paper

The printer loads paper from the installed paper tray or the manual feed slot. The names for the paper trays in the printer driver as follows:

The name for the paper trays	The name for the paper trays in the printer driver
Paper tray	Tray
Manual feed slot	Manual Feed

<Media type>

	Tray	**Manual Feed**	**Choose the media type from the printer driver**
Plain paper 60 to 105 g/m^2 (16 to 28 lb)	Yes	Yes	**Plain Paper**
Recycled paper	Yes	Yes	**Recycled Paper**
Bond paper Rough paper- 60 to 163 g/m^2 (16 to 43 lb)	N/A	Yes 60 to 163 g/m^2 (16 to 43 lb)	**Bond Paper**
Thick paper 105 to 163 g/m^2 (28 to 43 lb)	N/A	Yes	**Thick Paper or Thicker Paper**
Labels	N/A	Yes A4 or Letter	**Label**
Envelopes	N/A	Yes	**Envelopes, Env. Thin, Env. Thick**

Memo:

- Use paper that is made for plain-paper copying.
- Use paper that is 75 to 90 g/m^2 (20 to 24 lb).
- Use neutral paper. Do not use acidic or alkaline paper.
- Use long-grain paper.
- This machine 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.

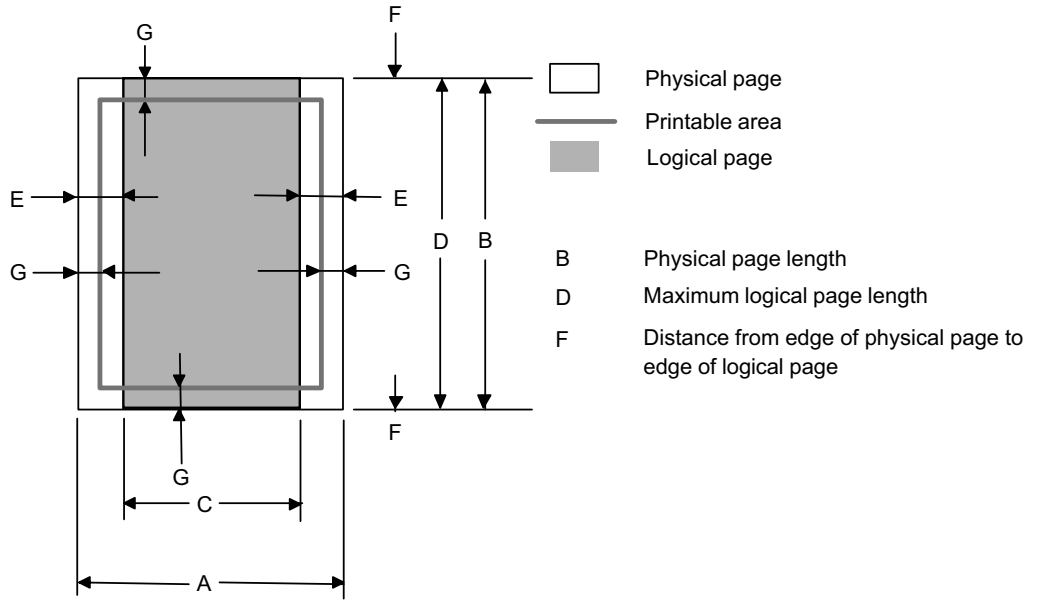
Specifications are subject to change without notice.

2.6 Printable Area

■ PCL5C emulation

When using PCL5C emulation, the edges of the paper that cannot be printed on are shown below.

Portrait



Note:
Therefore, the machine can only print within the shaded area when you use a PCL driver.

Specifications are subject to change without notice.

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

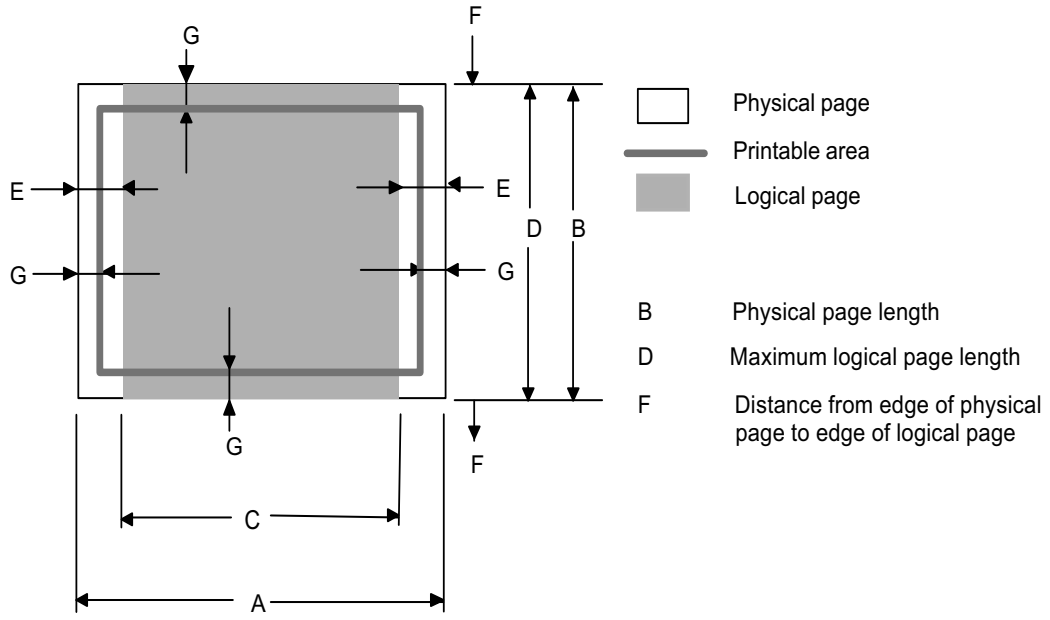
Size		A	B	C	D	E	F	G
Letter	(mm)	215.9	279.4	203.2	279.4	6.35	0	4.23
	(inch)	8.5	11	8	11	0.25	0	0.17
	(dots)	2,550	3,300	2,400	3,300	75	0	50
Legal	(mm)	215.9	355.6	203.2	355.6	6.35	0	4.23
	(inch)	8.5	14	8	14	0.25	0	0.17
	(dots)	2,550	4,200	2,400	4,200	75	0	50
Folio	(mm)	215.9	330.2	203.2	330.2	6.35	0	4.23
	(inch)	8.5	13	8	13	0.25	0	0.17
	(dots)	2,550	3,900	2,400	3,900	75	0	50
Executive	(mm)	184.2	266.7	171.5	266.7	6.35	0	4.23
	(inch)	7.25	10.5	6.75	10.5	0.25	0	0.17
	(dots)	2,175	3,150	2,025	3,150	75	0	50
A4	(mm)	210	297	198	297	6.01	0	4.23
	(inch)	8.3	11.7	7.8	11.7	0.24	0	0.17
	(dots)	2,480	3,507	2,338	3,507	71	0	50
A5	(mm)	148	210	136	210	6.01	0	4.23
	(inch)	5.8	8.3	5.4	8.3	0.24	0	0.17
	(dots)	1,748	2,480	1,606	2,480	71	0	50
A5 Long Edge	(mm)	210	148	198	148	6.01	0	4.23
	(inch)	8.3	5.8	7.8	5.8	0.24	0	0.17
	(dots)	2,480	1,748	2,338	1,748	71	0	50
A6	(mm)	105	148	93	148	6.01	0	4.23
	(inch)	4.1	5.8	3.7	5.8	0.24	0	0.17
	(dots)	1,240	1,748	1,098	1,748	71	0	50
B5 (JIS)	(mm)	182	257	170	257	6.01	0	4.23
	(inch)	7.2	10.1	6.7	10.1	0.24	0	0.17
	(dots)	2,148	3,030	2,006	3,030	71	0	50
B5 (ISO)	(mm)	176	250	164	250	6.01	0	4.23
	(inch)	6.9	9.8	6.5	9.8	0.24	0	0.17
	(dots)	2,078	2,952	1,936	2,952	71	0	50
B6 (JIS)	(mm)	128	182	116	182	6.01	0	4.23
	(inch)	5	7.2	4.6	7.2	0.24	0	0.17
	(dots)	1,511	2,149	1,369	2,149	71	0	50
B6 (ISO)	(mm)	125	176	113	176	6.01	0	4.23
	(inch)	4.9	6.9	4.4	6.9	0.24	0	0.17
	(dots)	1,476	2,078	1,334	2,078	71	0	50
Envelope Monarch	(mm)	98.4	190.5	85.7	190.5	6.35	0	4.23
	(inch)	3.875	7.5	3.375	7.5	0.25	0	0.17
	(dots)	1,162	2,250	1,012	2,250	75	0	50
Envelope Com-10	(mm)	104.7	241.3	92	241.3	6.35	0	4.23
	(inch)	4.125	9.5	3.625	9.5	0.25	0	0.17
	(dots)	1,237	2,850	1,087	2,850	75	0	50
Envelope DL	(mm)	110	220	98	220	6.01	0	4.23
	(inch)	4.3	8.7	3.9	8.7	0.24	0	0.17
	(dots)	1,299	2,598	1,157	2,598	71	0	50
Envelope C5	(mm)	162	229	150	229	6.01	0	4.23
	(inch)	6.4	9	5.9	9	0.24	0	0.17
	(dots)	1,913	2,704	1,771	2,704	71	0	50
Hagaki	(mm)	100	148	88	148	6.01	0	4.23
	(inch)	3.9	5.8	3.5	5.8	0.24	0	0.17
	(dots)	1,181	1,748	1,039	1,748	71	0	50
A4 Long	(mm)	210	405	198	405	6.01	0	4.23
	(inch)	8.3	15.9	7,8	15.9	0.24	0	0.17
	(dots)	2,480	4,783	2,338	4,783	71	0	50
DL Long Edge	(mm)	220	110	207	110	6.27	0	6.27
	(inch)	8.7	4.3	8.2	4.3	0.25	0	0.25
	(dots)	2,598	1,299	2,450	1,299	74	0	74
3X5	(mm)	76.2	127	63.5	127	6.35	0	4.23
	(inch)	3	5	2.5	5	0.25	0	0.17
	(dots)	900	1,500	750	1,500	75	0	50

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.

Specifications are subject to change without notice.

Landscape



Note:

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

Specifications are subject to change without notice.

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

Size		A	B	C	D	E	F	G
Letter	(mm)	279.4	215.9	269.2	215.9	5.08	0	4.23
	(inch)	11	8.5	10.6	8.5	0.2	0	0.17
	(dots)	3,300	2,550	3,180	2,550	60	0	50
Legal	(mm)	355.6	215.9	345.4	215.9	5.08	0	4.23
	(inch)	14	8.5	13.6	8.5	0.2	0	0.17
	(dots)	4,200	2,550	4,080	2,550	60	0	50
Folio	(mm)	330.2	215.9	320	215.9	5.08	0	4.23
	(inch)	13	8.5	12.6	8.5	0.2	0	0.17
	(dots)	3,900	2,550	3,780	2,550	60	0	50
Executive	(mm)	266.7	184.2	256.5	184.2	5.08	0	4.23
	(inch)	10.5	7.25	10.1	7.25	0.2	0	0.17
	(dots)	3,150	2,175	3,030	2,175	60	0	50
A4	(mm)	297	210	287	210	5	0	4.23
	(inch)	11.7	8.3	11.3	8.3	0.2	0	0.17
	(dots)	3,507	2,480	3,389	2,480	59	0	50
A5	(mm)	210	148	200	148	5	0	4.23
	(inch)	8.3	5.8	7.9	5.8	0.2	0	0.17
	(dots)	2,480	1,748	2,362	1,748	59	0	50
A5 Long Edge	(mm)	148	210	138	210	5	0	4.23
	(inch)	5.8	8.3	5.4	8.3	0.2	0	0.17
	(dots)	1,748	2,480	1,630	2,480	59	0	50
A6	(mm)	148	105	138	105	5	0	4.23
	(inch)	5.8	4.1	5.4	4.1	0.2	0	0.17
	(dots)	1,748	1,240	1,630	1,240	59	0	50
B5 (JIS)	(mm)	257	182	247	182	5	0	4.23
	(inch)	10.1	7.2	9.7	7.2	0.2	0	0.17
	(dots)	3,030	2,148	2,912	2,148	59	0	50
B5 (ISO)	(mm)	250	176	240	176	5	0	4.23
	(inch)	9.8	6.9	9.4	6.9	0.2	0	0.17
	(dots)	2,952	2,078	2,834	2,078	59	0	50
B6 (JIS)	(mm)	182	128	172	128	5	0	4.23
	(inch)	7.2	5	6.8	5	0.2	0	0.17
	(dots)	2,149	1,511	2,031	1,511	59	0	50
B6 (ISO)	(mm)	176	125	166	125	5	0	4.23
	(inch)	6.9	4.9	6.5	4.9	0.2	0	0.17
	(dots)	2,078	1,476	1,960	1,476	59	0	50
Envelope Monarch	(mm)	190.5	98.4	180.3	98.4	5.08	0	4.23
	(inch)	7.5	3.875	7.1	3.875	0.2	0	0.17
	(dots)	2,250	1,162	2,130	1,162	60	0	50
Envelope Com-10	(mm)	241.3	104.7	231.1	104.7	5.08	0	4.23
	(inch)	9.5	4.125	9.1	4.125	0.2	0	0.17
	(dots)	2,850	1,237	2,730	1,237	60	0	50
Envelope DL	(mm)	220	110	210	110	5	0	4.23
	(inch)	8.7	4.3	8.3	4.3	0.2	0	0.17
	(dots)	2,598	1,299	2,480	1,299	59	0	50
Envelope C5	(mm)	229	162	219	162	5	0	4.23
	(inch)	9	6.4	8.6	6.4	0.2	0	0.17
	(dots)	2,704	1,913	2,586	1,913	59	0	50
Hagaki	(mm)	148	100	138	100	5	0	4.23
	(inch)	5.8	3.9	5.4	3.9	0.2	0	0.17
	(dots)	1,748	1,181	1,630	1,181	59	0	50
A4 Long	(mm)	405	210	395	210	5	0	4.23
	(inch)	15.9	8.3	15.6	8.3	0.2	0	0.17
	(dots)	4,783	2,480	4,665	2,480	59	0	50
DL Long Edge	(mm)	110	220	102	220	4.23	0	6.27
	(inch)	4.3	8.7	4	8.7	0.17	0	0.25
	(dots)	1,299	2,598	1,199	2,598	50	0	74
3X5	(mm)	127	76.2	116.8	76.2	5.08	0	4.23
	(inch)	5	3	4.6	3	0.2	0	0.17
	(dots)	1,500	900	1,380	900	60	0	50

Note:

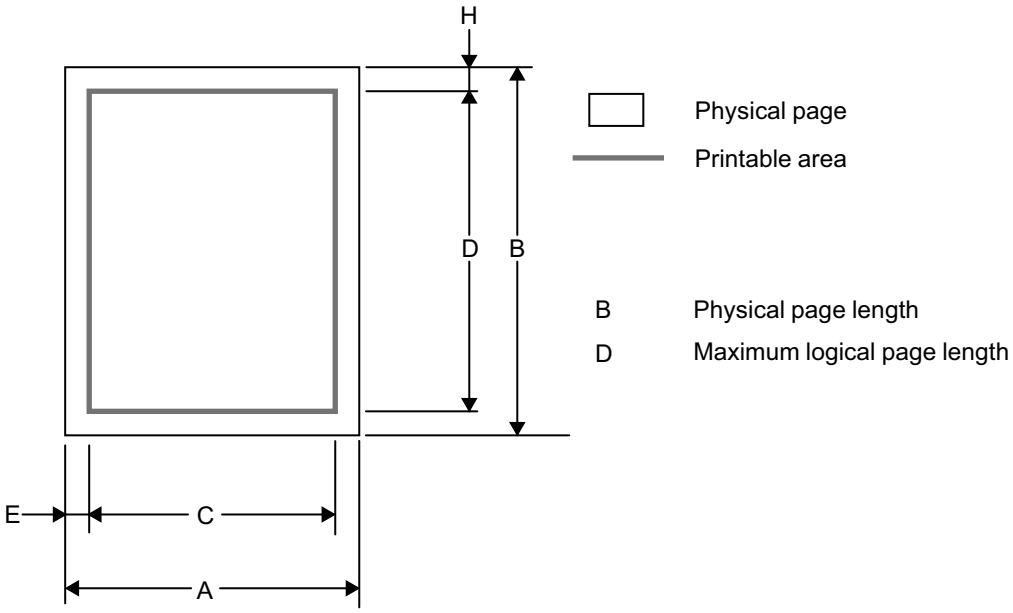
- The paper sizes indicated here should confirm to the nominal dimensions specified by JIS except B5 (ISO), B6 (ISO).
- The dot size is based on 300 dpi resolution.

Specifications are subject to change without notice.

■ PS3/PCL6 (PCLXL) emulation

When using PS3/PCL6 (PCLXL) emulation, the edges of the paper that cannot be printed on are shown below.

Portrait



Note:
This is equivalent to the printable area for a PS driver.

Specifications are subject to change without notice.

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

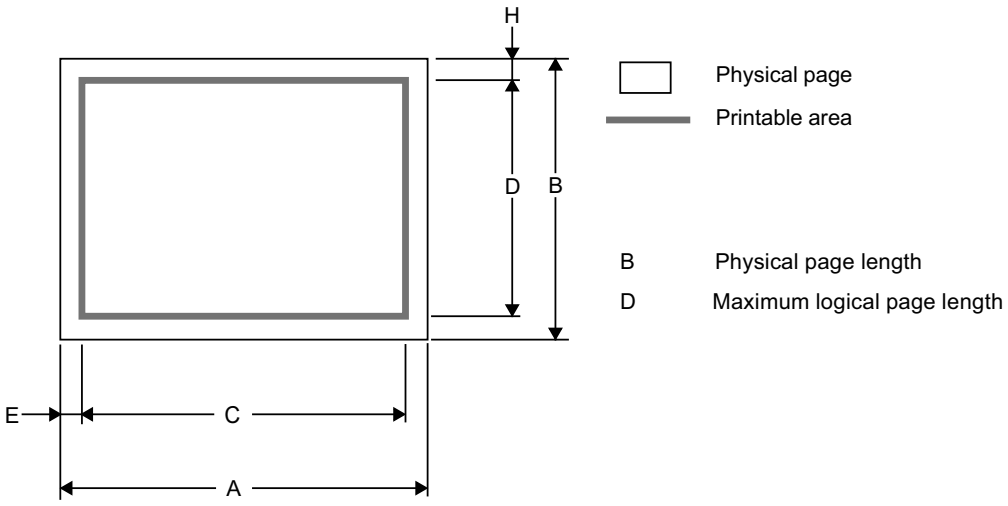
Size		A	B	C	D	E	H
Letter	(mm)	215.9	279.4	207.4	270.9	4.23	4.23
	(inch)	8.5	11	8.17	10.67	0.17	0.17
	(dots)	2,550	3,300	2,450	3,200	50	50
Legal	(mm)	215.9	355.6	207.4	347.1	4.23	4.23
	(inch)	8.5	14	8.17	13.67	0.17	0.17
	(dots)	2,550	4,200	2,450	4,100	50	50
Folio	(mm)	215.9	330.2	207.4	321.7	4.23	4.23
	(inch)	8.5	13	8.17	12.67	0.17	0.17
	(dots)	2,550	3,900	2,450	3,800	50	50
Executive	(mm)	184.2	266.7	175.7	258.2	4.23	4.23
	(inch)	7.25	10.5	6.92	10.17	0.17	0.17
	(dots)	2,175	3,150	2,025	3,050	50	50
A4	(mm)	210	297	202	288	4.23	4.23
	(inch)	8.3	11.7	7.9	11.4	0.17	0.17
	(dots)	2,480	3,507	2,380	3,407	50	50
A5	(mm)	148	210	140	202	4.23	4.23
	(inch)	5.8	8.3	5.5	7.9	0.17	0.17
	(dots)	1,748	2,480	1,648	2,380	50	50
A5 Long Edge	(mm)	210	148	202	140	4.23	4.23
	(inch)	8.3	5.8	7.9	5.5	0.17	0.17
	(dots)	2,480	1,748	2,380	1,648	50	50
A6	(mm)	105	148	97	140	4.23	4.23
	(inch)	4.1	5.8	3.8	5.5	0.17	0.17
	(dots)	1,240	1,748	1,140	1,648	50	50
B5 (JIS)	(mm)	182	257	173	248	4.23	4.23
	(inch)	7.2	10.1	6.8	9.8	0.17	0.17
	(dots)	2,148	3,030	2,048	2,930	50	50
B5 (ISO)	(mm)	176	250	167	241	4.23	4.23
	(inch)	6.9	9.8	6.6	9.5	0.17	0.17
	(dots)	2,078	2,952	1,978	2,852	50	50
B6 (JIS)	(mm)	128	182	119	173	4.23	4.23
	(inch)	5	7.2	4.7	6.8	0.17	0.17
	(dots)	1,511	2,149	1,411	2,049	50	50
B6 (ISO)	(mm)	125	176	117	167	4.23	4.23
	(inch)	4.9	6.9	4.6	6.6	0.17	0.17
	(dots)	1,476	2,078	1,376	1,978	50	50
Envelope Monarch	(mm)	98.4	190.5	89.9	182	4.23	4.23
	(inch)	3.875	7.5	3.54	7.17	0.17	0.17
	(dots)	1,162	2,250	1,062	2,150	50	50
Envelope Com-10	(mm)	104.7	241.3	96.3	232.8	4.23	4.23
	(inch)	4.125	9.5	3.79	9.17	0.17	0.17
	(dots)	1,237	2,850	1,037	2,750	50	50
Envelope DL	(mm)	110	220	102	211	4.23	4.23
	(inch)	4.3	8.7	4	8.3	0.17	0.17
	(dots)	1,299	2,598	1,199	2,498	50	50
Envelope C5	(mm)	162	229	154	220	4.23	4.23
	(inch)	6.4	9	6	8.7	0.17	0.17
	(dots)	1,913	2,704	1,813	2,604	50	50
Hagaki	(mm)	100	148	92	140	4.23	4.23
	(inch)	3.9	5.8	3.6	5.5	0.17	0.17
	(dots)	1,181	1,748	1,081	1,648	50	50
A4 Long	(mm)	210	405	202	396	4.23	4.23
	(inch)	8.3	15.9	7,9	15.9	0.17	0.17
	(dots)	2,480	4,783	2,380	4,683	50	50
DL Long Edge	(mm)	220	110	207	102	6.27	4.23
	(inch)	8.7	4.3	8.2	4	0.25	0.17
	(dots)	2,598	1,299	2,450	1,199	74	50
3X5	(mm)	76.2	127	67.7	118.5	4.23	4.23
	(inch)	3	5	2.67	4.67	0.17	0.17
	(dots)	900	1,500	800	1,400	50	50

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.

Specifications are subject to change without notice.

Landscape



Note:
This is equivalent to the printable area for a PS driver.

Specifications are subject to change without notice.

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

Size		A	B	C	D	E	H
Letter	(mm)	279.4	215.9	270.9	207.4	4.23	4.23
	(inch)	11	8.5	10.67	8.17	0.17	0.17
	(dots)	3,300	2,550	3,200	2,450	50	50
Legal	(mm)	355.6	215.9	347.1	207.4	4.23	4.23
	(inch)	14	8.5	13.67	8.17	0.17	0.17
	(dots)	4,200	2,550	4,100	2,450	50	50
Folio	(mm)	330.2	215.9	321.7	207.4	4.23	4.23
	(inch)	13	8.5	12.67	8.17	0.17	0.17
	(dots)	3,900	2,550	3,800	2,450	50	50
Executive	(mm)	266.7	184.2	258.2	175.7	4.23	4.23
	(inch)	10.5	7.25	10.17	6.92	0.17	0.17
	(dots)	3,150	2,175	3,050	2,075	50	50
A4	(mm)	297	210	288	202	4.23	4.23
	(inch)	11.7	8.3	11.4	7.9	0.17	0.17
	(dots)	3,507	2,480	3,407	2,380	50	50
A5	(mm)	210	148	202	140	4.23	4.23
	(inch)	8.3	5.8	7.9	5.5	0.17	0.17
	(dots)	2,480	1,748	2,380	1,648	50	50
A5 Long Edge	(mm)	148	210	140	202	4.23	4.23
	(inch)	5.8	8.3	5.5	7.9	0.17	0.17
	(dots)	1,748	2,480	1,648	2,380	50	50
A6	(mm)	148	105	140	97	4.23	4.23
	(inch)	5.8	4.1	5.5	3.8	0.17	0.17
	(dots)	1,748	1,240	1,648	1,140	50	50
B5 (JIS)	(mm)	257	182	248	173	4.23	4.23
	(inch)	10.1	7.2	9.8	6.8	0.17	0.17
	(dots)	3,030	2,148	2,930	2,048	50	50
B5 (ISO)	(mm)	250	176	241	167	4.23	4.23
	(inch)	9.8	6.9	9.5	6.6	0.17	0.17
	(dots)	2,952	2,078	2,852	1,978	50	50
B6 (JIS)	(mm)	182	128	173	119	4.23	4.23
	(inch)	7.2	5	6.8	4.7	0.17	0.17
	(dots)	2,149	1,511	2,049	1,411	50	50
B6 (ISO)	(mm)	176	125	167	117	4.23	4.23
	(inch)	6.9	4.9	6.6	4.6	0.17	0.17
	(dots)	2,078	1,476	1,978	1,376	50	50
Envelope Monarch	(mm)	190.5	98.4	182	89.9	4.23	4.23
	(inch)	7.5	3.875	7.17	3.54	0.17	0.17
	(dots)	2,250	1,162	2,150	1,062	50	50
Envelope Com-10	(mm)	241.3	104.7	232.8	96.3	4.23	4.23
	(inch)	9.5	4,125	9.17	3.79	0.17	0.17
	(dots)	2,850	1,237	2,750	1,137	50	50
Envelope DL	(mm)	220	110	211	102	4.23	4.23
	(inch)	8.7	4.3	8.3	4	0.17	0.17
	(dots)	2,598	1,299	2,498	1,199	50	50
Envelope C5	(mm)	229	162	220	154	4.23	4.23
	(inch)	9	6.4	8.7	6	0.17	0.17
	(dots)	2,704	1,913	2,604	1,813	50	50
Hagaki	(mm)	148	100	140	92	4.23	4.23
	(inch)	5.8	3.9	5.5	3.6	0.17	0.17
	(dots)	1,748	1,181	1,648	1,081	50	50
A4 Long	(mm)	405	210	396	202	4.23	4.23
	(inch)	15.9	8.3	15.6	7.9	0.17	0.17
	(dots)	4,783	2,480	4,683	2,380	50	50
DL Long Edge	(mm)	110	220	102	207	4.23	6.27
	(inch)	4.3	8.7	4	8.2	0.17	0.25
	(dots)	1,299	2,598	1,199	2,450	50	74
3X5	(mm)	127	76.2	118.5	67.7	4.23	4.23
	(inch)	5	3	4.67	2.67	0.17	0.17
	(dots)	1,500	900	1,400	800	50	50

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.

Specifications are subject to change without notice.

2.7 Print Speeds with Various Settings

Print speed is up to 18 ppm for A4 size and 19 ppm 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
Plain paper, Recycled paper	DCP9010CN/MFC9010CN/MFC9120CN/MFC9320CW: 16/17 ppm MFC9125CN/MFC9325CW: 18/19 ppm
Thick paper, Envelope, Envelope thin, Label	8 ppm
Thicker paper, Bond paper, Envelope thick	4 ppm

<Smaller size than A4 or Letter>

Media type setting	Print speed
Plain paper, Recycled paper	DCP9010CN/MFC9010CN/MFC9120CN/MFC9320CW: 17 ppm MFC9125CN/MFC9325CW: 19 ppm
Thick paper, Envelope, Envelope thin, Label	8 ppm
Thicker paper, Bond paper, Envelope thick	4 ppm

Note:
The actual print speed may vary according to conditions, such as paper size and paper tray.

Specifications are subject to change without notice.

2.8 Telephone

Model	DCP9010CN	MFC9010CN	MFC9120CN	MFC9320CW
Handset	N/A			
Chain dialing	N/A		Yes	
Automatic redial	N/A		Yes	
PBX feature	N/A		USA: N/A Europe: Yes	
Speaker phone	N/A			
Hold/Mute key	N/A			
Music on hold	N/A			
Handset volume	N/A			
Speaker volume	N/A		Yes (3 steps + OFF)	
Beeper volume	N/A		Yes (3 steps + OFF)	
Ring volume	N/A		Yes (3 steps + OFF)	
One-touch dial	N/A		8 (4 x 2) locations	
Speed dialing	N/A		200 locations	
Figures of One-touch & Speed dialing	N/A		20 digits	
Registerable number of characters	N/A		15 characters China: 10 characters	
Group dial	N/A		Yes (Up to 20 groups)	
Telephone Index	N/A		Yes (▼ button)	
Caller ID	N/A		Yes	
Call waiting caller ID	N/A			
Distinctive ringing	N/A		Yes (Only for USA/Canada/U.K./ Denmark/Australia/New Zealand/Singapore/Hong Kong)	

Specifications are subject to change without notice.

Model	MFC9125CN	MFC9325CW
Handset	N/A	
Chain dialing	Yes	
Automatic redial	Yes	
PBX feature	N/A	
Speaker phone	N/A	
Hold/Mute key	N/A	
Music on hold	N/A	
Handset volume	N/A	
Speaker volume	Yes (3 steps + OFF)	
Beeper volume	Yes (3 steps + OFF)	
Ring volume	Yes (3 steps + OFF)	
One-touch dial	8 (4 x 2) locations	
Speed dialing	200 locations	
Figures of One-touch & Speed dialing	20 digits	
Registerable number of characters	15 characters	
Group dial	Yes (Up to 20 groups)	
Telephone Index	Yes (▼ button)	
Caller ID	Yes	
Call waiting caller ID	N/A	
Distinctive ringing	Yes	

Specifications are subject to change without notice.

2.9 FAX

Model		DCP9010CN	MFC9010CN	MFC9120CN	MFC9320CW
Modem speed		N/A		33,600 bps (Fax)	
Transmission speed		N/A		Approximately 2 seconds (Brother#1 Std resolution, JBIG)	
ITU-T group		N/A		Super G3	
Coding method		N/A		MH/MR/MMR/JBIG/JPEG	
Color FAX	Sending	N/A		Yes (Not available for saving the data into the Memory)	
	Receiving	N/A		Yes (Not available for saving the data into the Memory)	
Fax/Tel switch		N/A		Yes	
Superfine		N/A		Yes (TX & RX)	
Grayscale		N/A		8 bit/256	
Contrast		N/A		Yes (Auto/Light/Dark)	
Smoothing		N/A			
Dual access*1		N/A		Yes	
Remote activate		N/A		Yes	
Station ID		N/A		Yes (20 digits/20 characters)	
Remote maintenance		N/A			
Remote access		N/A		Yes	
FAX retrieval		N/A		Yes	
Paging*1		N/A		USA/Canada: Yes Europe: N/A	
Internet FAX (ITU T.37 simple mode)		N/A		Yes (Download only)	
Sending	Delayed timer*1	N/A		Yes (up to 50)	
	Polled sending*1	N/A		Yes (EUR Secure Polling)	
	Multi transmission	N/A			
	Multi Resolution transmission	N/A			
	Next-Fax reservation	N/A			
	Batch transmission*1	N/A		Yes	

*1 Not available for Color Fax

Specifications are subject to change without notice.

Model		DCP9010CN	MFC9010CN	MFC9120CN	MFC9320CW
Sending	Call reservation (Auto)	N/A			
	Call reservation (Manual TX)	N/A			
	Quick scan*2 (Memory transmission)	N/A		Approximately 2.5 seconds/ page (A4standard)	
	Memory transmission*2 (ITU-T Chart)	N/A		up to 500 pages (ITU-T Test Chart#1, Standard Resolution, JBIG) up to 600 pages (Brother #1 Chart, Standard Resolution, JBIG)	
	ECM	N/A		Yes	
	Error Re-Transmis-sion *2	N/A		Yes	
	Broadcasting *2	N/A		Yes (258 locations)	
	Manual broadcasting *2	N/A		Yes (50 locations)	
	Fax forwarding *2	N/A		Yes	
	Fax forwarding broadcast *2	N/A		Yes (207 locations)	
	Duplex Fax sending*2	N/A			
	Dial restriction	N/A		Yes	
Receiving	Easy receive/ Fax detect	N/A		Yes	
	Polling receive	N/A		Yes (EUR Secure Polling)	
	Auto reduction	N/A		Yes	
	Duplex Fax receiving	N/A			
	Out of paper reception (ITU-T Chart) *2	N/A		Up to 500 pages (ITU-T Test Chart, Standard Resolution, JBIG) Up to 600 pages (Brother #1Chart, Standard Resolution, JBIG)	
	Fax Rx stamp *2	N/A		Yes	

*2 Not available for Color Fax

Specifications are subject to change without notice.

Model		MFC9125CN	MFC9325CW
Modem speed		33,600 bps (Fax)	
Transmission speed		Approximately 2 seconds (Brother#1 Std resolution, JBIG)	
ITU-T group		Super G3	
Coding method		MH/MR/MMR/JBIG/JPEG	
Color FAX	Sending	Yes (Not available for saving the data into the Memory)	
	Receiving	Yes (Not available for saving the data into the Memory)	
Fax/Tel switch		Yes	
Superfine		Yes (TX & RX)	
Grayscale		8 bit/256	
Contrast		Yes (Auto/Light/Dark)	
Smoothing		N/A	
Dual access*3		Yes	
Remote activate		Yes	
Station ID		Yes (20 digits/20 characters)	
Remote maintenance		N/A	
Remote access		Yes	
FAX retrieval		Yes	
Paging*3		USA/Canada: Yes Australia/New Zealand: N/A	
Internet FAX (ITU T.37 simple mode)		Yes (Download only)	
Sending	Delayed timer*3	Yes (up to 50)	
	Polled sending*3	Yes (EUR Secure Polling)	
	Multi transmission	N/A	
	Multi Resolution transmission	N/A	
	Next-Fax reservation	N/A	
	Batch transmission*3	Yes	

*3 Not available for Color Fax

Specifications are subject to change without notice.

Model		MFC9125CN	MFC9325CW
Sending	Call reservation (Auto)	N/A	
	Call reservation (Manual TX)	N/A	
	Quick scan*4 (Memory transmission)	Approximately 2.5 seconds/page (A4standard)	
	Memory transmission*4 (ITU-T Chart)	up to 500 pages (ITU-T Test Chart#1, Standard Resolution, JBIG) up to 600 pages (Brother #1 Chart, Standard Resolution, JBIG)	
	ECM	Yes	
	Error Re-Transmis-sion *4	Yes	
	Broadcasting *4	Yes (258 locations)	
	Manual broadcasting *4	Yes (50 locations)	
	Fax forwarding *4	Yes	
	Fax forwarding broadcast *4	Yes (207 locations)	
	Duplex Fax sending*4	N/A	
	Dial restriction	Yes	
Receiving	Easy receive/ Fax detect	Yes	
	Polling receive	Yes (EUR Secure Polling)	
	Auto reduction	Yes	
	Duplex Fax receiving	N/A	
	Out of paper reception (ITU-T Chart) *4	Up to 500 pages (ITU-T Test Chart, Standard Resolution, JBIG) Up to 600 pages (Brother #1Chart, Standard Resolution, JBIG)	
	Fax Rx stamp *4	Yes	

*4 Not available for Color Fax

Specifications are subject to change without notice.

2.10 List/Report

Model		DCP9010CN	MFC9010CN	MFC9120CN	MFC9320CW
Activity report/Journal report		N/A		Yes (Up to 200)	
Transmission verification report		N/A		Yes	
Coverpage[*1]		N/A		Yes (Super)	
Help list		N/A		Yes	
Call back message		N/A			
Caller ID list		N/A		Yes	
Tel Index list	Numeric	N/A		Yes	
	Alphabetic	N/A		Yes	
Memory status list		N/A			
System setup (User setting) list		Yes			

Model		MFC9125CN	MFC9325CW
Activity report/Journal report		Yes (Up to 200)	
Transmission verification report		Yes	
Coverpage[*1]		Yes (Super)	
Help list		Yes	
Call back message		N/A	
Caller ID list		Yes	
Tel Index list	Numeric	Yes	
	Alphabetic	Yes	
Memory status list		N/A	
System setup (User setting) list		Yes	

[*1] Not available for Color Fax

Specifications are subject to change without notice.

2.11 Copy

Model		DCP9010CN	MFC9010CN	MFC9120CN	MFC9320CW
Copy speed simplex	Monochrome	Up to 16 cpm (A4 size) Up to 17 cpm (Letter size)			
	Color				
First copy out time (from ready mode)	Monochrome	Less than 19 seconds *1			
	Color	Less than 24 seconds *1			
Multi copy	Stack	Yes (Up to 99)			
	Sort	Yes			
Reduction/Enlargement (%)		25 % - 400 % in 1 % increments			
Resolution (dpi)		Maximum. 600 (main scanning) x 600 (sub scanning) dpi			
Auto duplex copy		N/A			
Manual duplex copy		N/A			
N in 1		Yes			
Poster		N/A			
Image enhancement		N/A			

Model		MFC9125CN	MFC9325CW
Copy speed simplex	Monochrome	Up to 18 cpm (A4 size) Up to 19 cpm (Letter size)	
	Color		
First copy out time (from ready mode)	Monochrome	Less than 19 seconds *1	
	Color	Less than 24 seconds *1	
Multi copy	Stack	Yes (Up to 99)	
	Sort	Yes	
Reduction/Enlargement (%)		25 % - 400 % in 1 % increments	
Resolution (dpi)		Maximum. 600 (main scanning) x 600 (sub scanning) dpi	
Auto duplex copy		N/A	
Manual duplex copy		N/A	
N in 1		Yes	
Poster		N/A	
Image enhancement		N/A	

*1 The time may change if the machine is calibrating or registering itself.

Specifications are subject to change without notice.

2.12 Scanner

Model		DCP9010CN	MFC9010CN	MFC9120CN	MFC9320CW
Color/Monochrome		Color			
Resolution (Optical)	FB	Maximum scanning 1,200 (main scanning) x 2,400 dpi (sub scanning)			
	ADF	Maximum scanning 1,200 (main scanning) x 600 dpi (sub scanning)			
Resolution (Interpolated)		19,200 (main scanning) x 19,200 (sub scanning) dpi			
Scanning speed	Monochrome	2.35 (Letter)/2.49 (A4) seconds[*1]			
	Color	7.04 (Letter)/7.48 (A4) seconds[*1]			
Grayscale		256 level			
Color depth (Int./Ext.)		48 bit/24 bit			
Custom scan profile		N/A		Yes	
Duplex scanning		N/A			
Scan to E-mail		Yes			
Scant to E-mail server (I-Fax)[*2]		N/A		Yes (It provides only from the Web site)	
Scan to image		Yes			
Scan to OCR		Yes			
Scan to file		Yes			
Scan to FTP[*2]		N/A		Yes	
Scan to USB[*2]		N/A			Yes
Scan to network[*2]		N/A		Yes	

[*1] Time to scan Letter/A4 sheet at 300 dpi. The time may vary depending on the document type and other conditions. Data transmission time is not included.

[*2] Supported file formats are PDF/secure PDF version 1.3, JPEG, XPS version 1.0 for color and gray, TIFF for B&W scan.

Specifications are subject to change without notice.

Model		MFC9125CN	MFC9325CW
Color/Monochrome		Color	
Resolution (Optical)	FB	Maximum scanning 1,200 (main scanning) x 2,400 dpi (sub scanning)	
	ADF	Maximum scanning 1,200 (main scanning) x 600 dpi (sub scanning)	
Resolution (Interpolated)		19,200 (main scanning) x 19,200 (sub scanning) dpi	
Scanning speed	Monochrome	2.35 (Letter)/2.49 (A4) seconds*3	
	Color	7.04 (Letter)/7.48 (A4) seconds*3	
Grayscale		256 level	
Color depth (Int./Ext.)		48 bit/24 bit	
Custom scan profile		Yes	
Duplex scanning		N/A	
Scan to E-mail		Yes	
Scant to E-mail server (I-Fax)*4		Yes (It provides only from the Web site)	
Scan to image		Yes	
Scan to OCR		Yes	
Scan to file		Yes	
Scan to FTP*4		Yes	
Scan to USB*4		N/A	Yes
Scan to network*4		Yes	

*3 Time to scan Letter/A4 sheet at 300 dpi. The time may vary depending on the document type and other conditions. Data transmission time is not included.

*4 Supported file formats are PDF/secure PDF version 1.3, JPEG, XPS version 1.0 for color and gray, TIFF for B&W scan.

Specifications are subject to change without notice.

2.13 USB Direct Interface

Model	DCP9010CN	MFC9010CN	MFC9120CN	MFC9320CW
PictBridge	N/A			Yes
Direct print	N/A			PDF version 1.7, JPEG, Exif+JPEG, PRN (created by own printer driver), TIFF (scanned by Brother model), XPS version 1.0
Media drive	N/A			

Model	MFC9125CN	MFC9325CW
PictBridge	N/A	Yes
Direct print	N/A	PDF version 1.7, JPEG, Exif+JPEG, PRN (created by own printer driver), TIFF (scanned by Brother model), XPS version 1.0
Media drive	N/A	

Specifications are subject to change without notice.

CHAPTER 2
THEORY OF OPERATION

CHAPTER 2
THEORY OF OPERATION

This chapter gives an overview of the 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.

CONTENTS

1. GENERAL BLOCK DIAGRAM

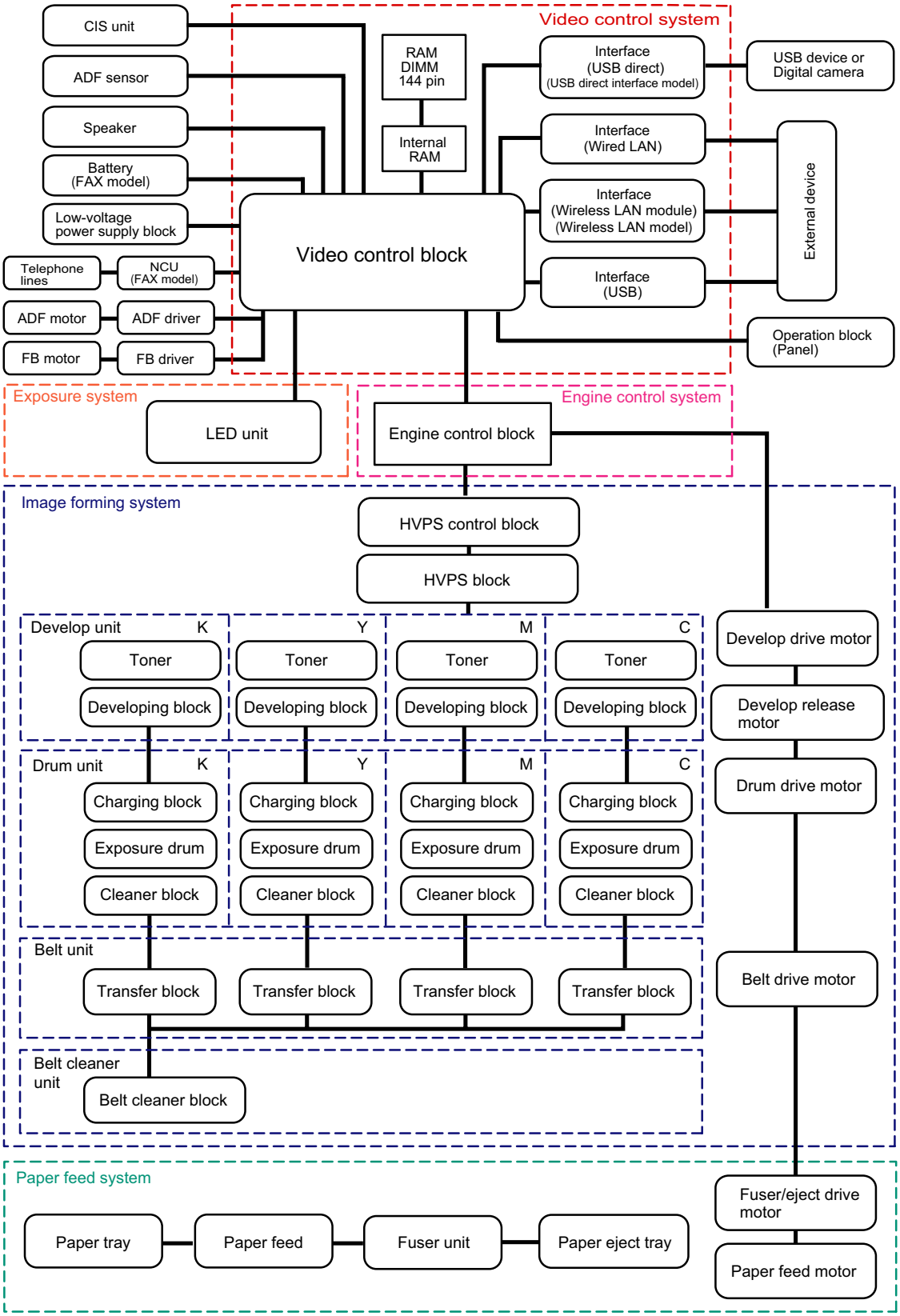


Fig. 2-1

2. ELECTRONICS GENERAL BLOCK DIAGRAM

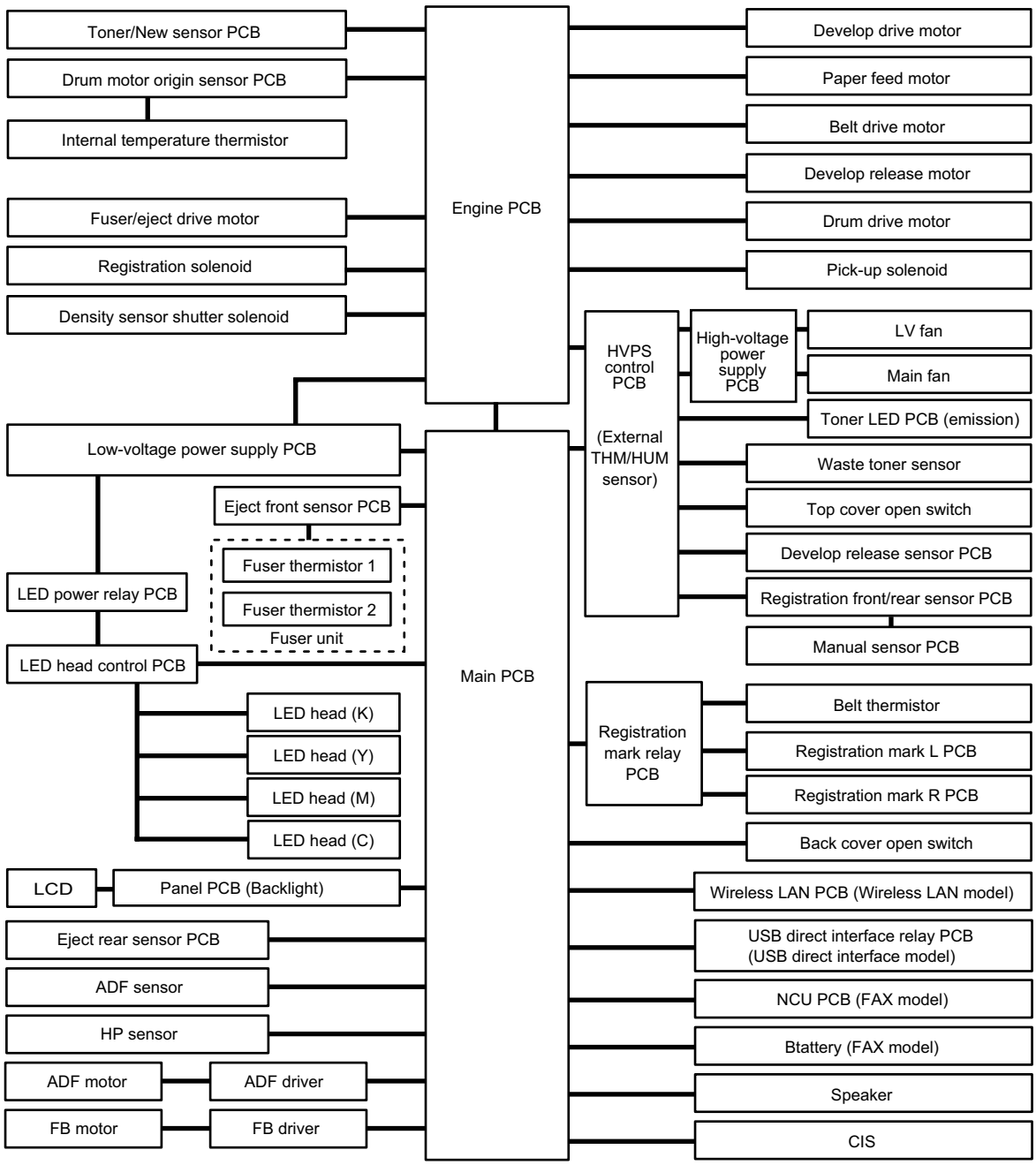


Fig. 2-2

3. MECHANICS

3.1 Cross-section Drawing

■ Printer part

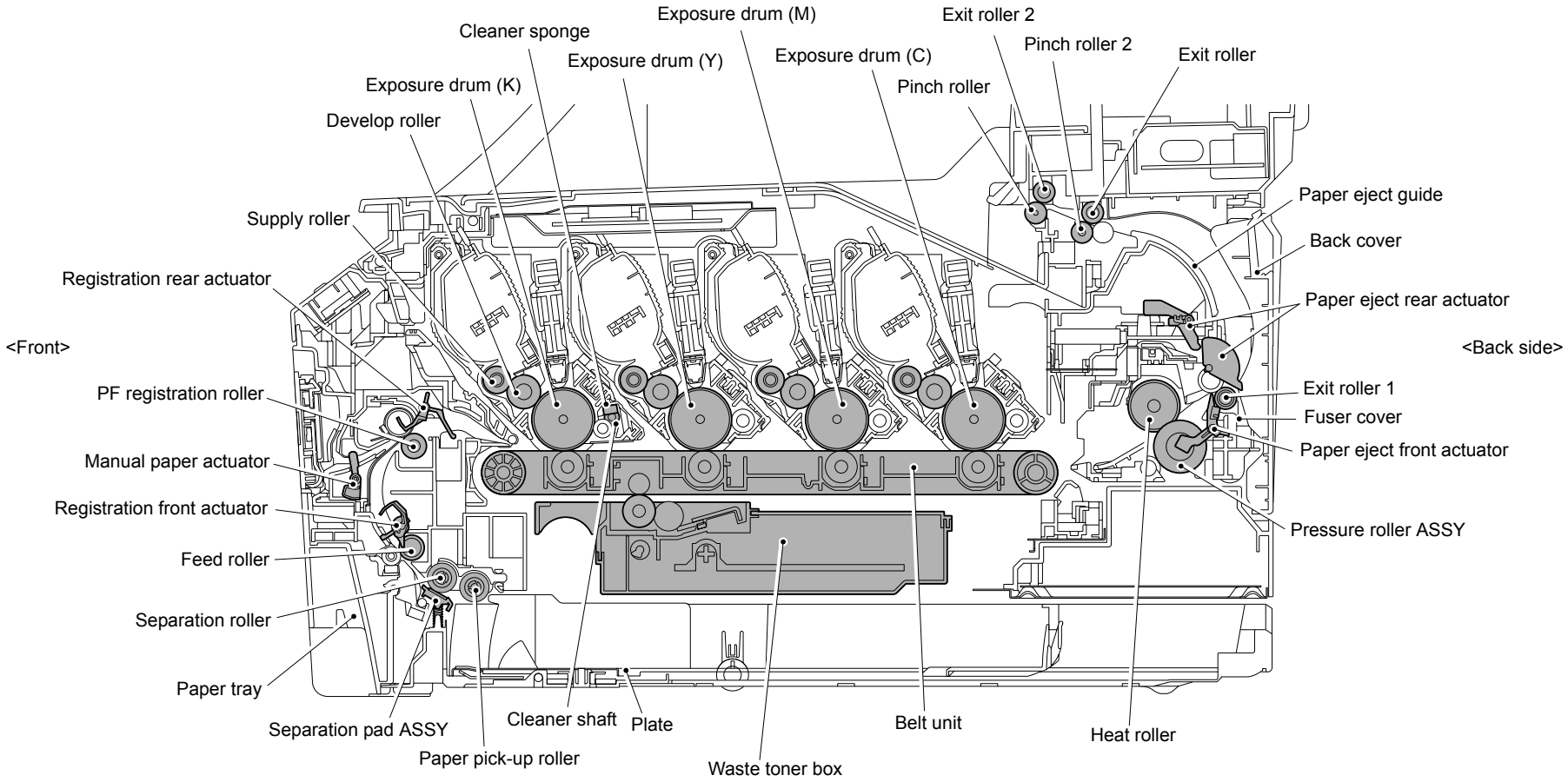


Fig. 2-3

■ ADF part

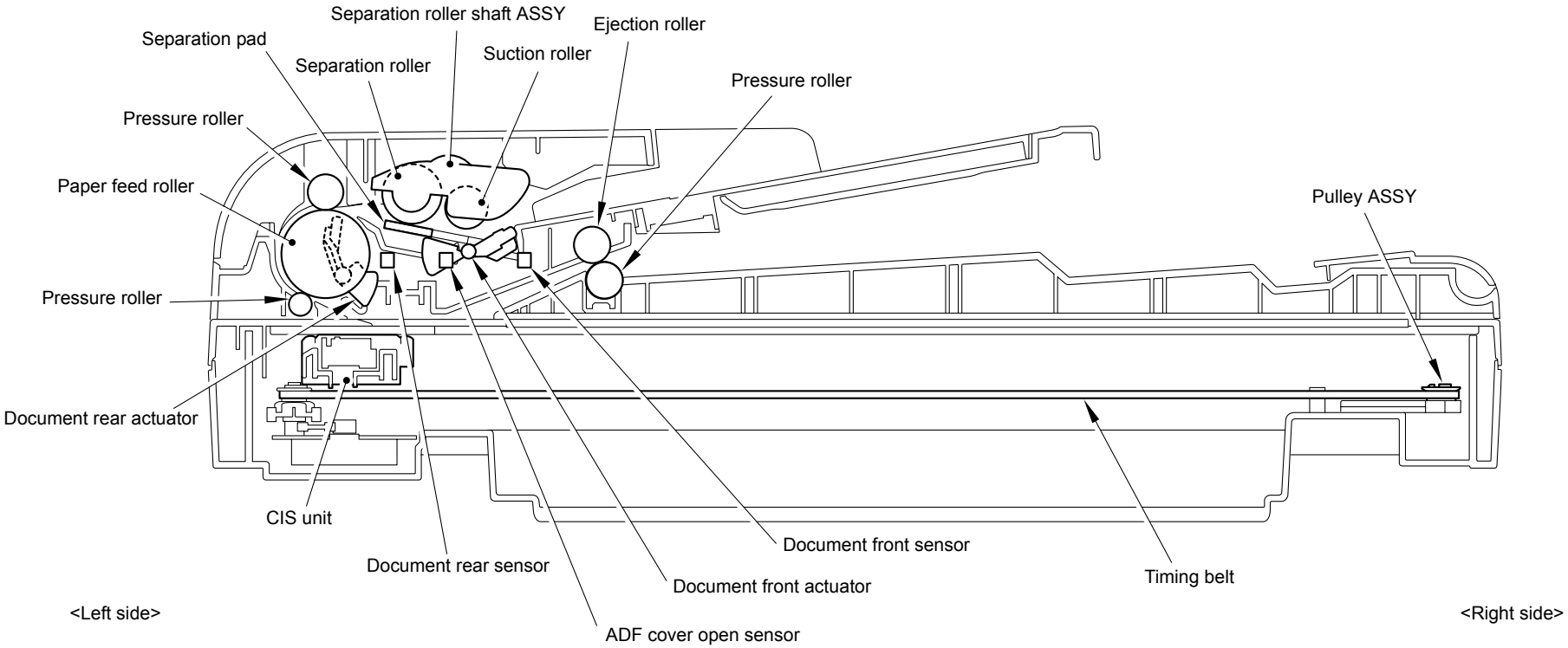


Fig. 2-4

3.2 Scanner Mechanism

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

The document scanner unit consists of a scanner top cover, CIS unit, CIS drive ASSY, and scanner base.

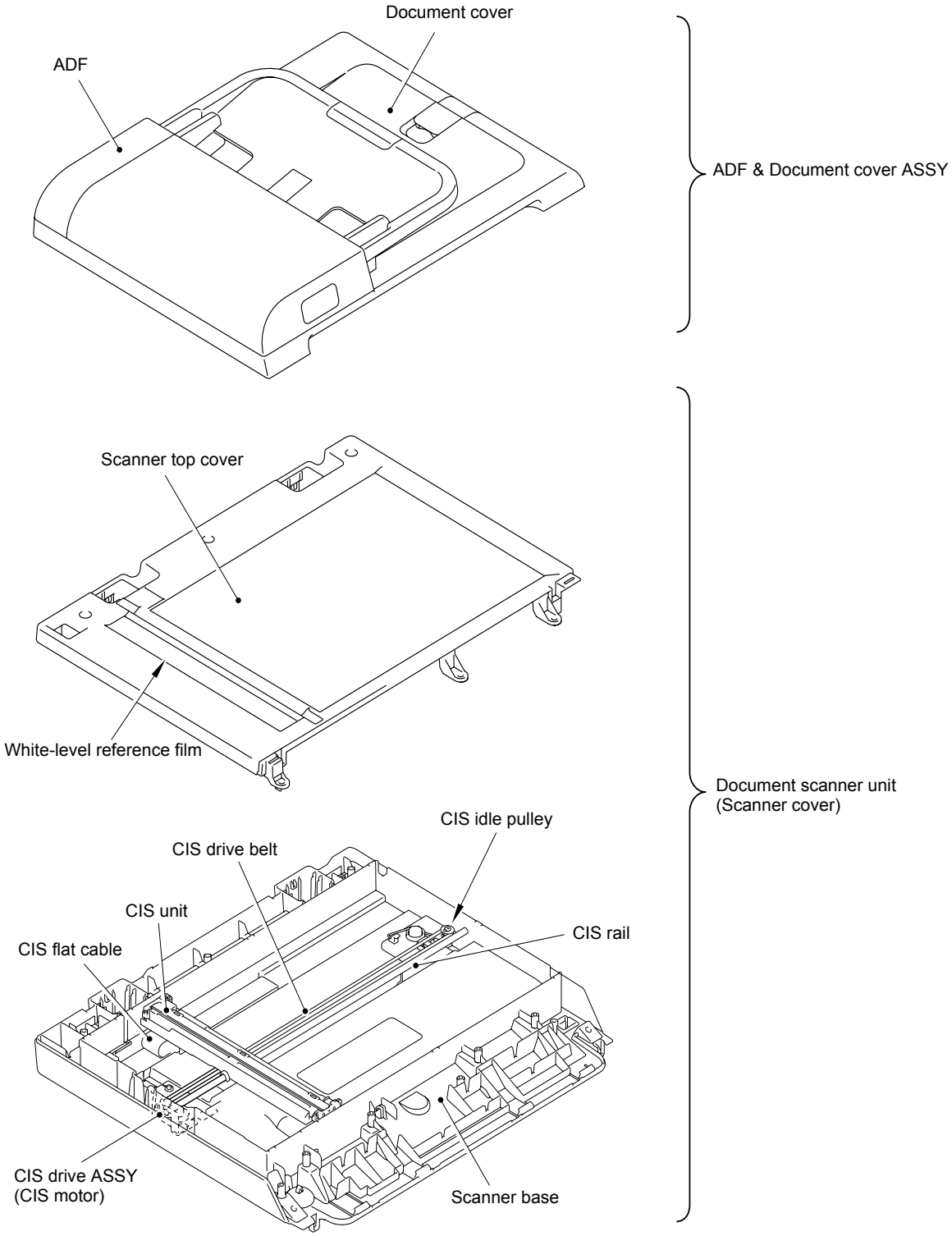


Fig. 2-5

3.2.1 Document scanner unit

The document scanner unit is equipment which scans the paper using the CIS 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 document scanner unit. One is operation to scan with the document scanner unit, the paper is placed on the document glass, the CIS 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 CIS unit.

(1) CIS unit
The CIS unit includes the contact image sensor (CIS) (Resolution of horizontal scanning: Maximum1,200 dpi color scanning).
The light source is light-emitting-diode (LED) of the RGB. The RGB is changed at high speed respectively, and lead the light from the document directly to the image pickup device (CMOS image sensor) through the rod lens array, and the image is generated.

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

(3) The CIS unit home position detection (FB home position detection)
The CIS unit is configured at the FB home position to determine the scanning position of the sub scanning direction.
Based on the scanning position, the FB home position is detected when the home position sensor inside of the document scanner unit.

(4) White level compensation
Whenever the variation of the CIS unit, the correction of the time degradation and the value of the white 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 document scanner unit with the CIS unit.

(5) Scanning operation (The CIS 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 CIS drive mechanism is started and the scanning operation is started.
The motor is rotated so that its action is transferred to the drive belt through the gear train. The CIS unit scans the document while sliding to the right hand side.

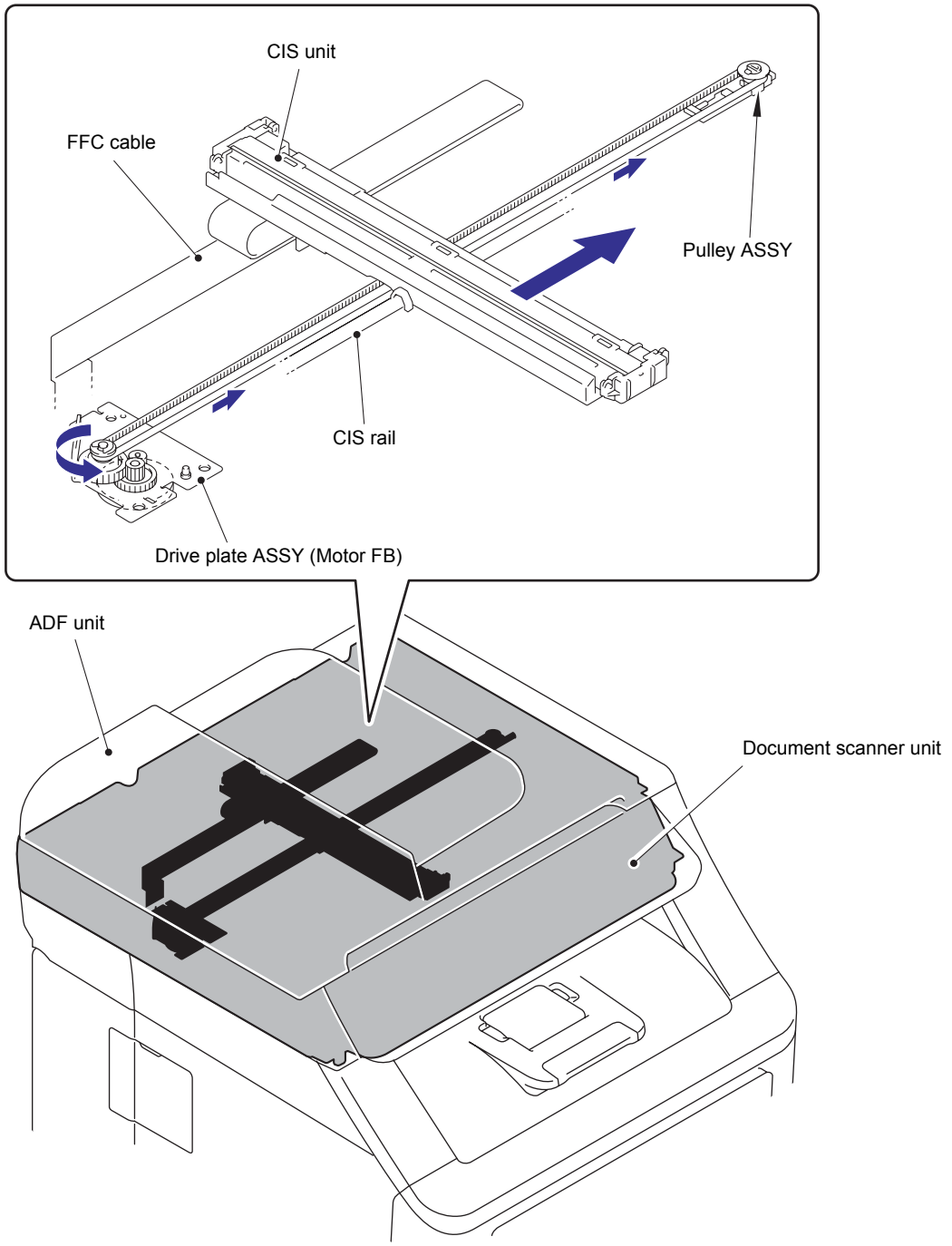


Fig. 2-6

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 document scanner unit, and performs continuous scanning.

■ Performance of the ADF

- The number of maximum capacity: Up to 35 sheets
- Maximum resolution: Up to 1,200 (main scanning) x 600 (sub scanning) dpi
- Maximum scanning speed: 17 pages/minute (Letter size) 16 pages/minute (A4 size) (Simplex scanning)
- Maximum input media size: Width 215.9 mm, Length 355.6 mm
- Minimum input media size: Width 147.3 mm, Length 147.3 mm

(1) Function of each roller

- Suction roller
  Suction roller sends the inserted document to the inside of the ADF.
- Separation roller
  Separation roller separates the sent document one by one.
- Paper feed roller
  Send the document.
- Ejection roller
  Eject the document.

(2) Function of each sensor

- Document front sensor
  Detects whether the document is set in the ADF.
- Document rear sensor
  Detect the timing of the scanning start of the document.
- ADF cover open sensor
  Detects whether the ADF cover is opened or not. If the ADF cover is not closed, scanning from the ADF will not start.

(3) Function of each motor

- ADF motor
  Driving source of overall ADF.

(4) Internal structure

The automatic document feeder (ADF) consists of the separation roller shaft ASSY, paper feed roller, ejection roller, ADF motor, document rear sensor, document front sensor and ADF cover open sensor.

For further details on the sensors, refer to “3.7 Location of Sensors” in this chapter.

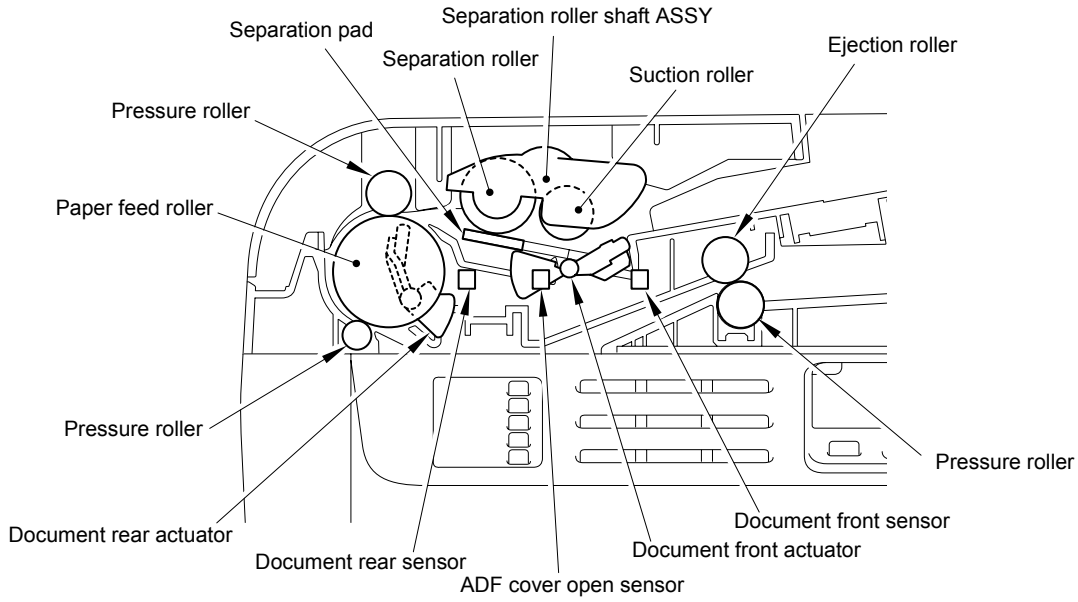


Fig. 2-7

In this reading system, “copyboard glass scanning” and “ADF scanning” are available. These scanning types are switched based on whether or not the document front sensor detects any document at the time when the scanning operation starts.

(5) ADF scanning (The document moves over the immovable CIS unit.)

1) Set the document face up into the document chute. When the machine starts simplex scanning, the ADF motor is rotated clockwise, the suction 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 roller, and is passed over the CIS unit so that the document is scanned. Then, the document is ejected to the document cover by the ejection roller.

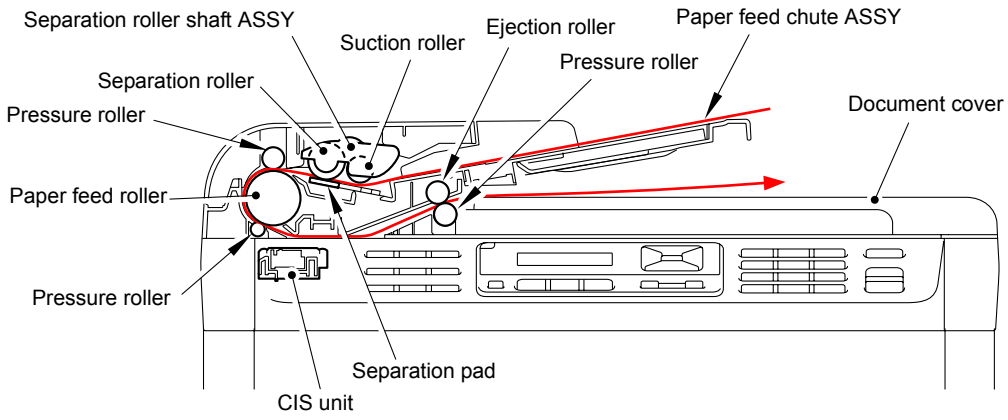


Fig. 2-8

3.3 Paper Feeding

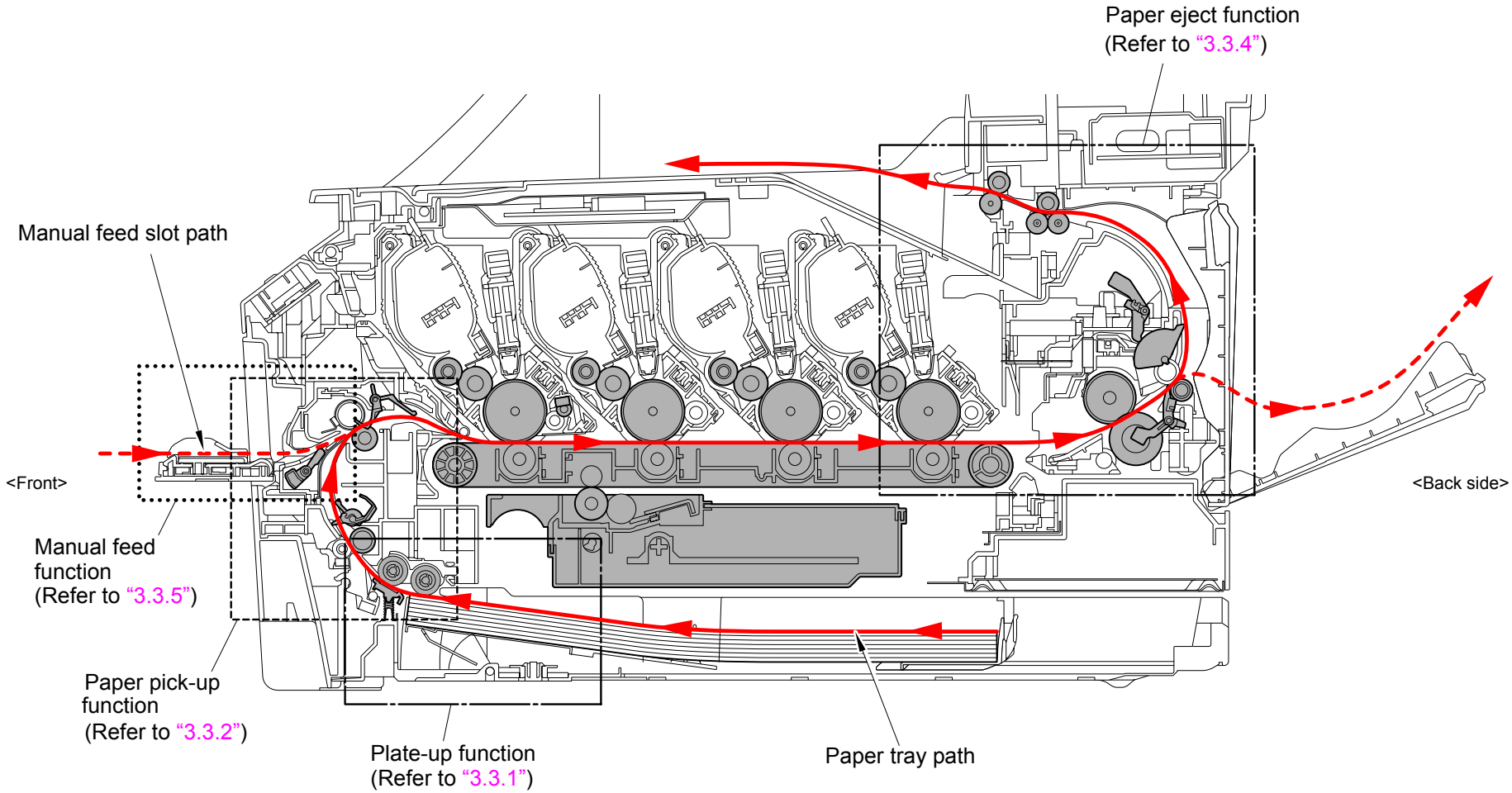


Fig. 2-9

3.3.1 Plate-up function of the paper tray

The plate of the paper tray is pushed up by the force exerted by the motor not by springs so as to keep the pressure on the paper pick-up roller at a certain level and enhance the paper-feeding performance irrespective of the quantity of remaining papers in the tray.
At the time of inserting the paper tray into the main body of the product, the plate is kept lowered. When the paper feed motor is operated under such condition, a driving force is transmitted to the lift gear Z36M75 by way of several gears. The force is also transmitted to the plate-up plate to push up the plate.

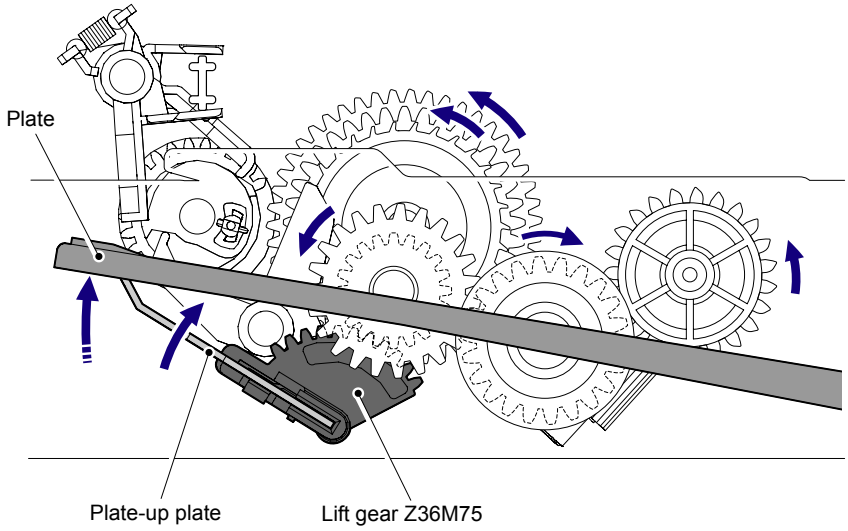


Fig. 2-10

When the plate is pushed up, the lift arm goes down and the hook B is released. The P/P gear 26 sector off the hook B rotates to push down the rib of the hook A. Subsequently, the ratchet of the hook A for the planetary clutch ASSY deviates from the gear and the plate-up plate stops its push-up function.

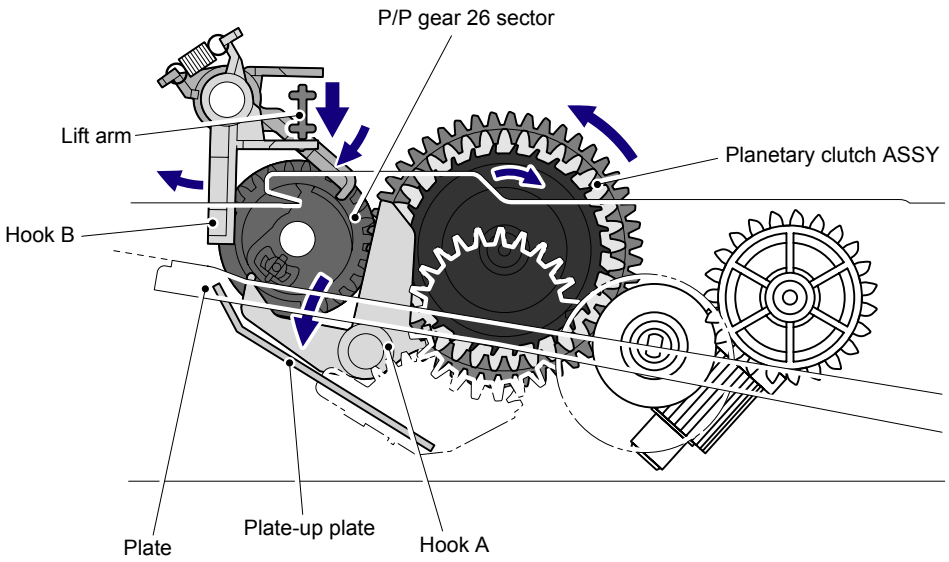


Fig. 2-11

The plate returns to the original position when the paper tray is taken out from the main body of the product, and it repeats the aforementioned operation from the beginning when the paper tray is inserted into the main body of the product.

3.3.2 Paper supply

When the paper pick-up solenoid is turned ON, the power of the paper feed motor rotates the paper pick-up roller, and it picks up a few sheets or one sheet of paper from the top of the sheets in the paper tray every time it is rotated and feeds it to the separation roller. Subsequently, stacks of paper are caught between the separation roller and separation pad ASSY, they are then separated into single sheets.

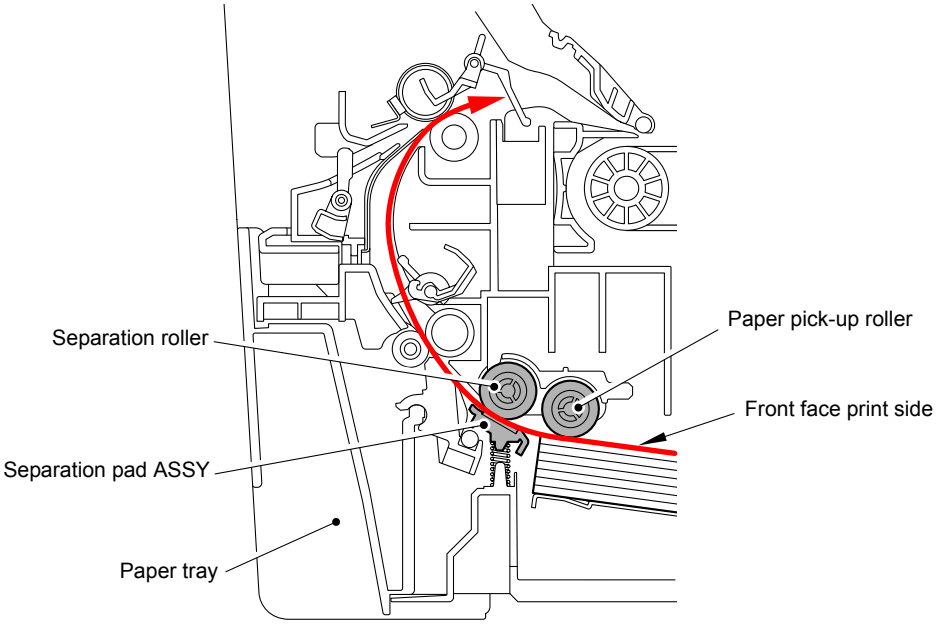


Fig. 2-12

3.3.3 Paper registration

Passing of each sheet of paper which is separated by the separation roller is detected by the registration front actuator. Then, the paper is fed further for a certain time, and its front edge hits the stopped PF registration roller so that the paper skew is corrected. After such correction, the registration solenoid is turned OFF, the power of the paper feed motor rotates the PF registration roller, and the paper is fed to the belt unit. The fed paper is fed to the delivery unit by the belt unit.

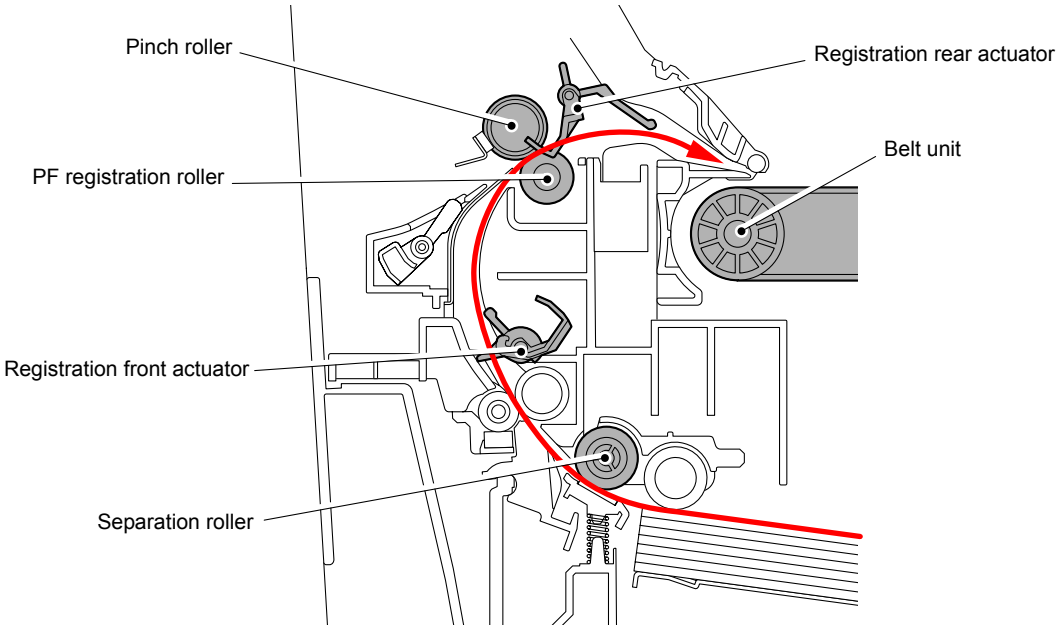


Fig. 2-13

<Operation of actuators>

- Registration front actuator detects the passage of paper and the trailing edge of paper.
- Registration rear actuator detects the timing when the leading edge of the paper passes through the PF registration roller to adjust the starting position for writing on the paper.
- When a paper jam occurs, both actuators will provide information to identify the location where the jam occurred.

3.3.4 Paper eject

Drive of the fuser/eject drive motor rotates the heat roller and pressure roller of the fuser unit, and toner on paper is fused as the paper is being fed. Paper moves along the paper eject guide and is ejected into the output tray from the exit roller 2 with its print side down.

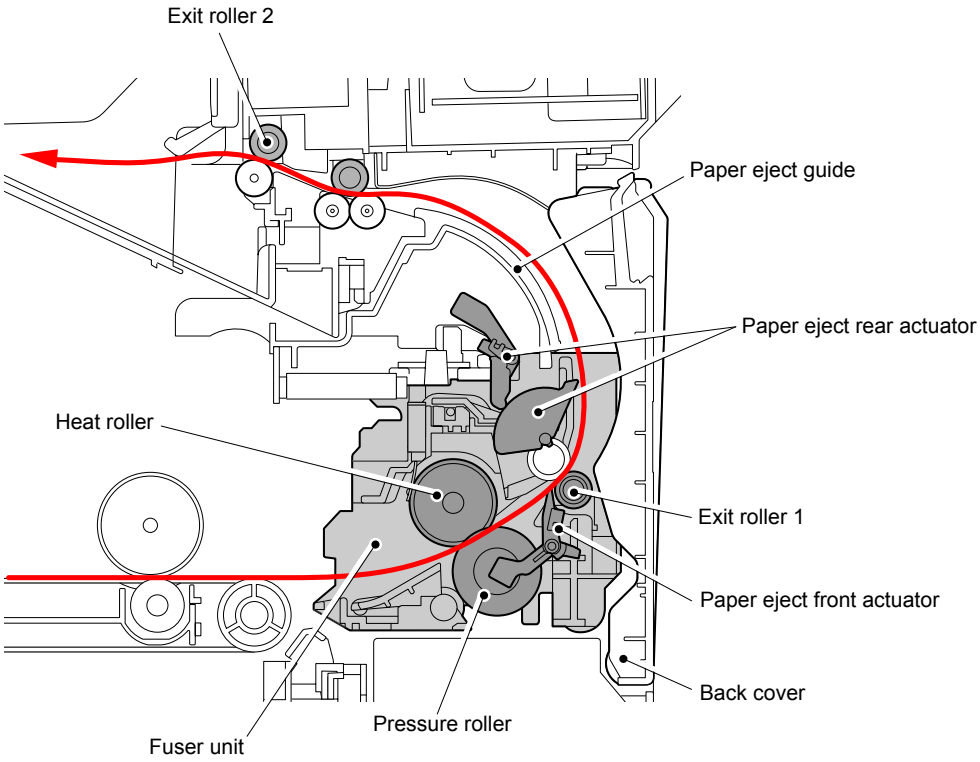


Fig. 2-14

Memo:
When a paper jam is detected near the paper eject front actuator and paper eject rear actuator, the paper feed motor is revolved in the reverse direction to move the gears out of engagement. The heat roller become free, allowing any paper jam to be cleared.

<Operation of actuators>

- The paper eject front actuator detects that the paper passes through the heat roller to detect that the paper does not wind around the heat roller.
- The paper eject rear actuator detects that the paper passes through the fuser unit to detect that a paper jam does not occur between the heat roller and exit roller 1.

3.3.5 Paper supply from manual feed slot and paper eject from back

When making print from the manual feed slot, set papers on it with the print side up. A sheet of paper which is inserted from the manual feed slot one by one presses the manual paper actuator, and consequently the actuator detects that there is a sheet of paper. When the manual paper actuator is turned ON, pick-up from the manual feed slot is given priority. Power of the paper feed motor rotates the PF registration roller, and a sheet of paper is picked up.
When making print while the back cover is open, a printed sheet is ejected from the back with its print side up.

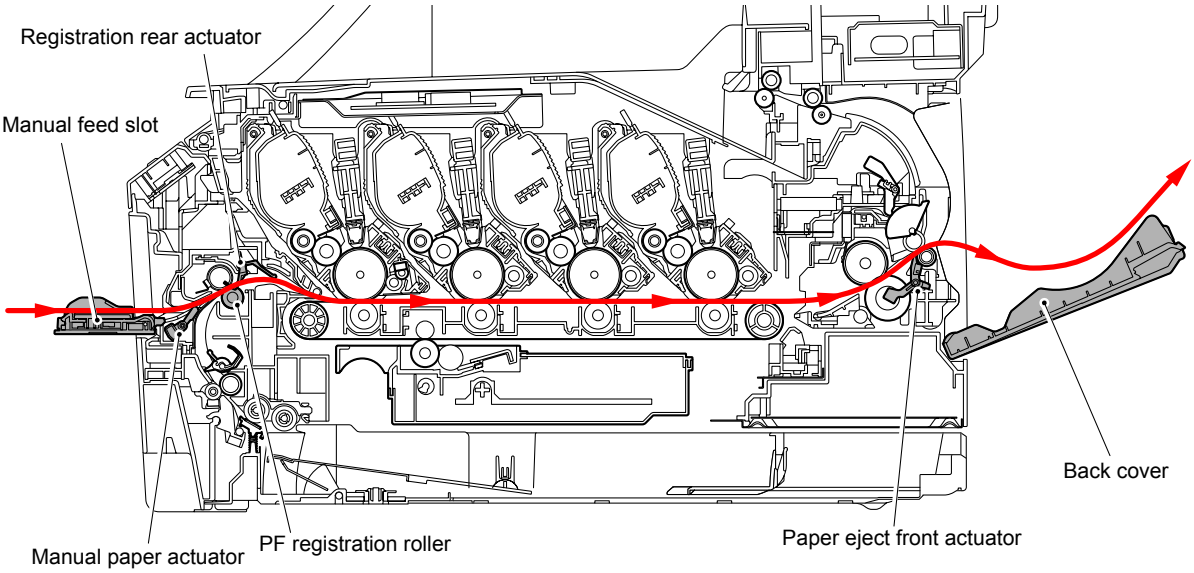


Fig. 2-15

3.4 Toner Cartridge

3.4.1 Type of toner cartridge

This product has four types of toner cartridges, K (black), Y (yellow), M (magenta), and C (cyan), and each toner cartridge has starter toner cartridge and standard toner cartridge. The toner cartridges supplied with the product are starter toner cartridges, and the toner cartridges which are sold as consumable parts are standard toner cartridges. There is a difference in the capacity and inner shape between K and Y/M/C. In addition, the location to install each cartridge is fixed depending on the colors.

3.4.2 Life of toner cartridge

In the following two cases, this product considers that the toner cartridge reaches its life end and stops printing thereafter.

- When the remaining toner powder becomes insufficient for printing
- When the number of accumulated rotations of the develop roller reaches a specified value, and it is considered that the roller cannot maintain sufficient performance

(1) Number of printable pages by a single toner cartridge
When making prints in accordance with ISO/IEC 19798, the number of printable pages by a single toner cartridge is shown in the table below:

Toner cartridge		Number of printable pages
Starter	Black	1,000 pages
	Yellow, Magenta, Cyan	1,000 pages
Standard	Black	2,200 pages
	Yellow, Magenta, Cyan	1,400 pages

(2) Upper limit of number of rotations of develop roller
The upper limit of the number of rotations of the develop roller is shown in the table below:

Toner cartridge		Upper limit of rotations of the develop roller
Starter	Black	26,880 rotations
	Yellow, Magenta, Cyan	26,880 rotations
Standard	Black	57,600 rotations
	Yellow, Magenta, Cyan	38,400 rotations

The graph given in the next page shows the overview of change in the number of printable pages in the case of making prints on A4-size paper.

Memo:

- The number of rotation of the developer roller per page is as follows.

	Color	Monochrome
Number of developer roller rotations for the first page printed	38.4 rotations	35.1 rotations
Number of developer roller rotations for the second page and after (in the case of continuous printing)	14.6 rotations	14.5 rotations

- Number of idling rotation when the printer is turned ON=110.4 rotations
- Number of rotations upon warm-up operation=11.0 rotations
- Number of rotations upon color registration adjustment=42.7 rotations
- Number of rotations upon color density adjustment=56.7 rotations

Note:

The numeral values provided in this page are as of July 2009. These values are subject to change without prior notice.

3.4.3 Method of detecting toner life

This product detects the life of the toner cartridges using the following two means.

■ **Detection by the toner sensor**

This product has a function to detect the remaining toner by checking the level at which toner in a cartridge interrupts light using a transmissive light sensor.

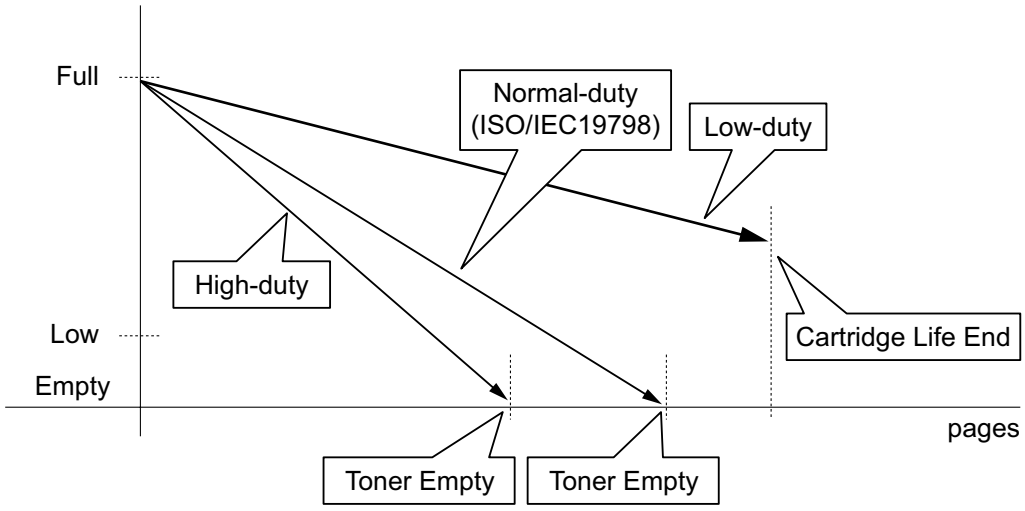
■ **Detection by means of rotation rates of the develop roller reached its upper limit**

This product has a function to stop the operation even if toner remains when the number of rotation reaches the upper limit before the develop roller is worn out and becomes unusable. When toner reaches its life, this product notifies the users about it by displaying a message to that effect on the LCD. There are two messages to indicate toner reaches its life: “Toner Low” and “Replace Toner.” While “Toner Low” is displayed on the LCD when the toner sensor detects a certain amount of toner is used, “Replace Toner” is displayed on the LCD when the toner sensor detects that usable toner in a toner cartridge is used up or when the number of rotations of the develop roller reaches its life.
When “Replace Toner” is displayed on the LCD, no print can be made on this machine until the toner cartridge in question is replaced with a new one.

3.4.4 Relationship between toner amount and life of toner cartridge in number of rotations of develop roller

The number of printable pages by a single toner cartridge and upper limit of the number of rotations of the develop roller are provided in the tables in the previous page. When printing low-duty documents, however, there is a possibility that the number of rotations of the develop roller reaches the upper limit, and “Replace Toner” is displayed before toner runs out.

■ **Relationship between printable pages of the toner cartridge and remaining toner**



Memo:
When the number of rotations of the develop roller reaches the upper limit, “Replace Toner” is displayed even if toner remains.

<Life of toner cartridge>

The life of the toner cartridge varies according to the average number of print pages per job. (See the table below.) The number of printable pages is larger when making continuous prints in one job because deterioration of the develop roller is low.

Relationship between average print page per 1 job and life of toner cartridges

Average print page (page/job)	1	2	3	4	5	6	7	8
Cartridge life (Standard-K)	1,500	2,174	2,556	2,803	2,975	3,102	3,200	3,277
Cartridge life (Standard-YMC)	1,000	1,449	1,704	1,869	1,983	2,068	2,133	2,185
Cartridge life (Starter-KYMC)	700	1,014	1,193	1,308	1,388	1,448	1,493	1,529

The develop roller also rotates for the warm-up operation, color registration adjustment operation, and developing bias adjustment operation when the power is turned ON and when the cover is opened or closed. Therefore, when these operations are frequently performed, the life of toner cartridges is shortened. (The table below shows the worst case in which the warm-up operation, color registration adjustment, and developing bias adjustment are performed when the power is turned ON.)

Life of the toner cartridges in the case that the power is turned OFF/ON for every print job, and color registration adjustment and developing bias adjustment are performed

Average print page (page/job)	1	2	3	4	5	6	7	8
Cartridge life (Standard-K)	232	438	623	789	939	1,076	1,201	1,315
Cartridge life (Standard-YMC)	155	292	415	526	626	717	800	877
Cartridge life (Starter-KYMC)	108	205	291	368	438	502	560	614

Memo:

- This product prohibits the print operation while any of the toner cartridges is not mounted or when “Replace Toner” is displayed. In other words, neither monochrome printing without a color toner cartridge nor color printing without a black toner cartridge is available.
- This product does not have a function to identify colors of the color toner cartridges.

Note:

The numeral values provided in this page are as of July 2009. These values are subject to change without prior notice.

3.4.5 New toner detection

When a toner cartridge is replaced and a new toner cartridge is mounted, there is a need to reset the develop bias voltage value (refer to next page) to the initial value and to reset prohibition of the print operation by clearing the display of “Toner Low” or “Replace Toner.” The old and new toner cartridges can be identified using the new toner detection mechanism shown below.

■ New toner detection mechanism

When a new toner cartridge is mounted and the develop drive motor starts rotating, rotation is conveyed to the reset gear via some other gears. Consequently, the rib on the reset gear presses the reset upper lever, it turns ON the new toner sensor, and it is detected that a new toner cartridge is mounted. If the develop drive motor further rotates, the rib on the reset gear is disengaged from the reset upper lever, and the new toner sensor is turned OFF.

<For standard toner cartridge>

Drive of the develop drive motor rotates the reset gear, and the rib on the reset gear presses the reset upper lever. Consequently, the new toner sensor turns ON, and it is detected that a new toner cartridge is mounted.

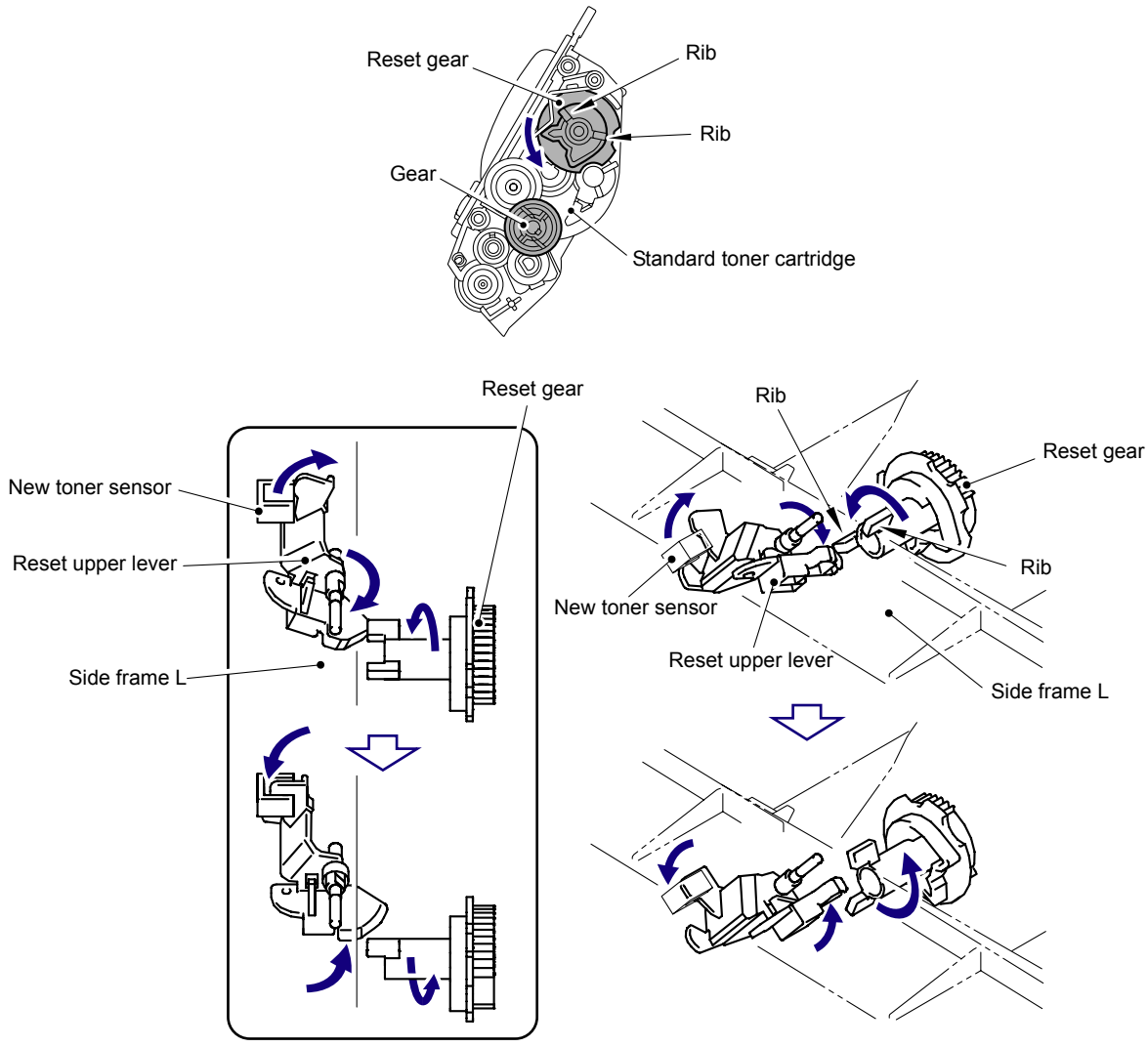


Fig. 2-16

<For starter toner cartridge>

It is assumed that the starter toner cartridge is mounted when the main unit is turned ON for the first time after the product is shipped out. The reset gear is not mounted.

■ Developing bias voltage

Toner in use tends to have a low print density at the beginning of its use, but the density gradually becomes higher after a certain period of use if the bias voltage is kept at a certain level during development.

The properties of the toner is controlled by means of the developing bias voltage. The values are varied according to counts of the amount of toner used immediately after a toner cartridge is changed so that excellent print quality of even contrast can be obtained constantly from the printing start time to the stop time.
In addition, the developing bias voltage of each toner cartridge is periodically corrected so as to eliminate variation in the density of the four colors.
When the new toner detection mechanism detects the change to a new toner cartridge, the developing bias voltage is reset.

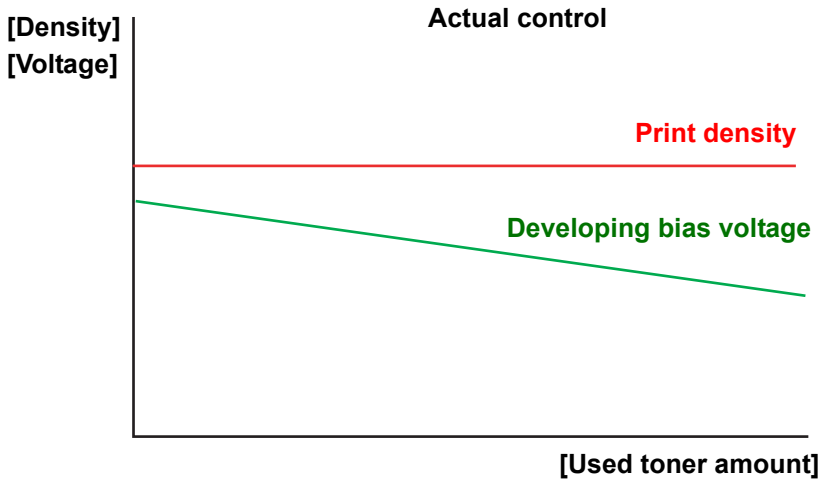


Fig. 2-17

Note:
If a toner cartridge in use is replaced to a cartridge which has previously been in use before reaching a toner life, the developing bias voltage will become incorrect and the density will be changed, and consequently it may cause print failures. Toner cartridges being used must not be replaced with other ones.

3.4.6 Method of counting the number of toner replacements

This machine keeps the number of times that the toner cartridges are replaced and the page counters to learn the usage of the machine. These counters will not be deleted even if the power is turned OFF. The following tables explain the method of counting the counter values when the toner cartridges are replaced.

<When a brand-new toner cartridge (unused) 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 which is not brand-new is inserted after "Replace Toner" is displayed by toner sensor detection[*1]>

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 which is not brand-new is inserted. After resetting, the developing bias voltage correction is performed so that the developing bias voltage is corrected according to the amount of toner.

Note:
While the parameters explained above are separately controlled for 4 color toners, the same counting method is applied.

3.5 Principle of Color Overlapping

The human eye distinguishes one color from others by receiving light's three primary colors (Red, Green, Blue). When monochrome lights are received, each color can be sensed. However, when two-color lights, red (R) and green (G), are received, they are recognized as "yellow"; when three-color lights, red (R), green (G) and blue (B), are received, they are recognized as "white". The fineness of coloration is perceived according to the nature of light.

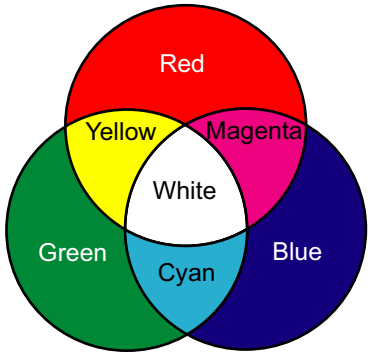
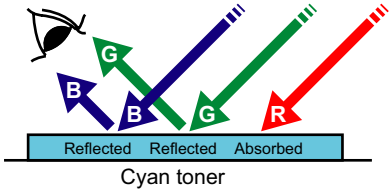


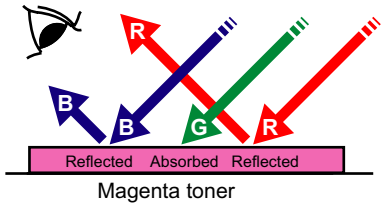
Fig. 2-18

For printed colors, the human eye can perceive them as various colors by distinguishing each color light reflected off the surface of a sheet of paper.

(1) Green+Blue
"Cyan" absorbs red (R) light only among the three-color lights and reflects green (G) and blue (B) lights, and consequently the light is identified as "Cyan."



(2) Red+Blue
"Magenta" absorbs green (G) light only among the three-color lights and reflects red (R) and blue (B) lights, and consequently the light is identified as "Magenta."



(3) Blue
If cyan and magenta are mixed, cyan absorbs red (R) light and magenta absorbs green (G) light, and only blue (B) light is reflected. The light is identified as "blue."

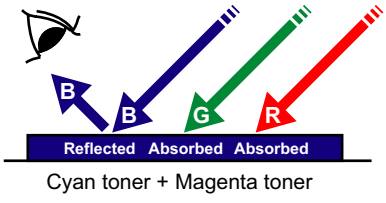


Fig. 2-19

Theoretically, if cyan, magenta and yellow are mixed, all the colors are not reflected and black can be shown. However, a black mix is difficult to produce, and black is shown using blackcolor paint for practical purposes. Using such a principle, color-absorbing paints are mixed to allow many colors to be shown on the surface of a sheet of paper.

3.6 Basic Printing Principle

The printing process consists broadly of 6 processes: Charging, Exposure, Development, Transfer, Fusing and Cleaning.

<Printing process>

(1) Charging: The surface of the drum is electrically charged (Primary Charge).

(2) Exposure: A printed image is formed on the surface of the drum by applying LED beam (Electrostatic Latent Image).

(3) Development: Toner is adhered to the surface of the drum (Visible Image).

(4) Transfer: The toner on the surface of the exposure drum is transferred to the paper.

(5) Fusing: The transferred toner is fused on to the paper.

(6) Cleaning: Toner remaining on the exposure drum and belt unit is removed for recovery.

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

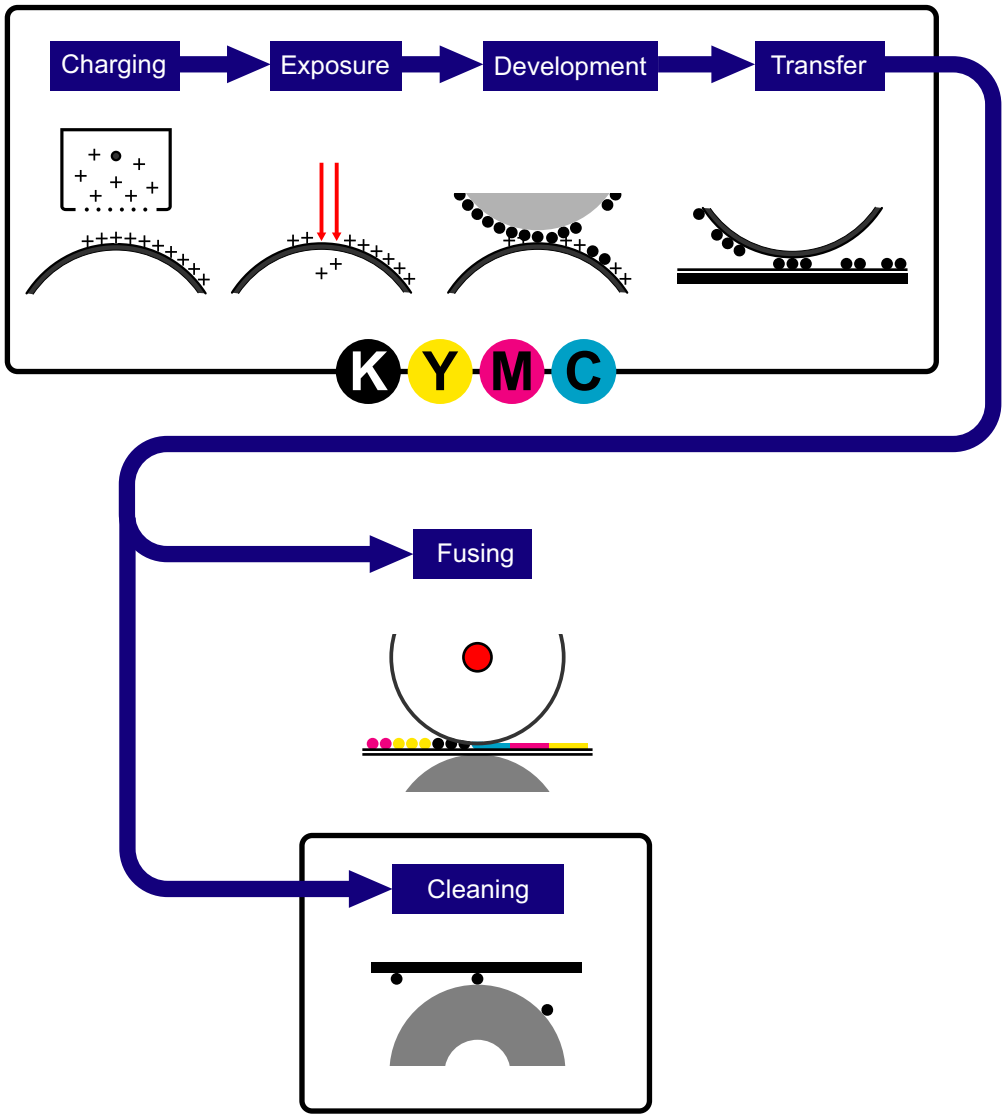


Fig. 2-20

3.6.1 Charging

The exposure drum needs to be evenly electrified to coat toner beautifully on the exposure drum. Ions are produced by supplying high-voltage power to the corona wire. The flow of the ion charge is controlled by the constant voltage of the grid approximately 700 V and electrified the exposure drum surface evenly.

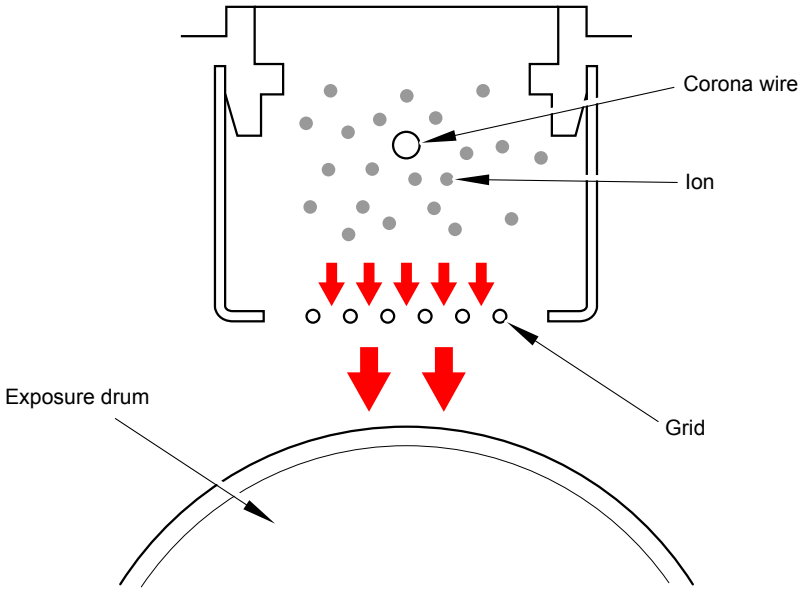


Fig. 2-21

3.6.2 Exposure

Exposure is conducted by LED (Light Emitting Diode) arrays.
Four LED arrays for K, Y, M and C are mounted as an LED ASSY on the top cover unit of the main unit. These four LED arrays do not emit different colors corresponding to toner colors, and they are the same parts in terms of structure.

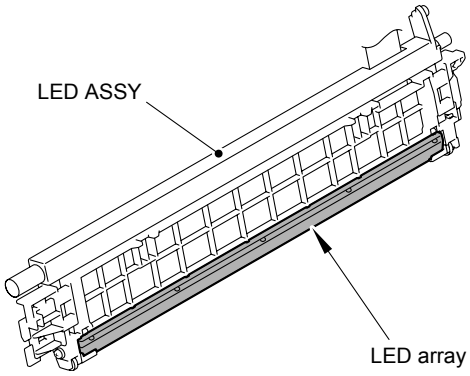


Fig. 2-22

On the PCB in the LED array, 4,992 LEDs, which correspond to the total number of the dots of the 600-dpi print head, are arranged in a staggered pattern. The lens array forms image on the exposure drum using the light emitted from the LEDs. The surface potential on the exposure drum, which is evenly charged, is lowered by exposure, and consequently image is formed.

Memo:

- The focus adjustment of the distance between the LED ASSY and exposure drum is made by the lower rollers at the both ends of the LED ASSY, and a fixed distance is maintained.
- Maximum print width is 207.44 mm = 4,900 dots.

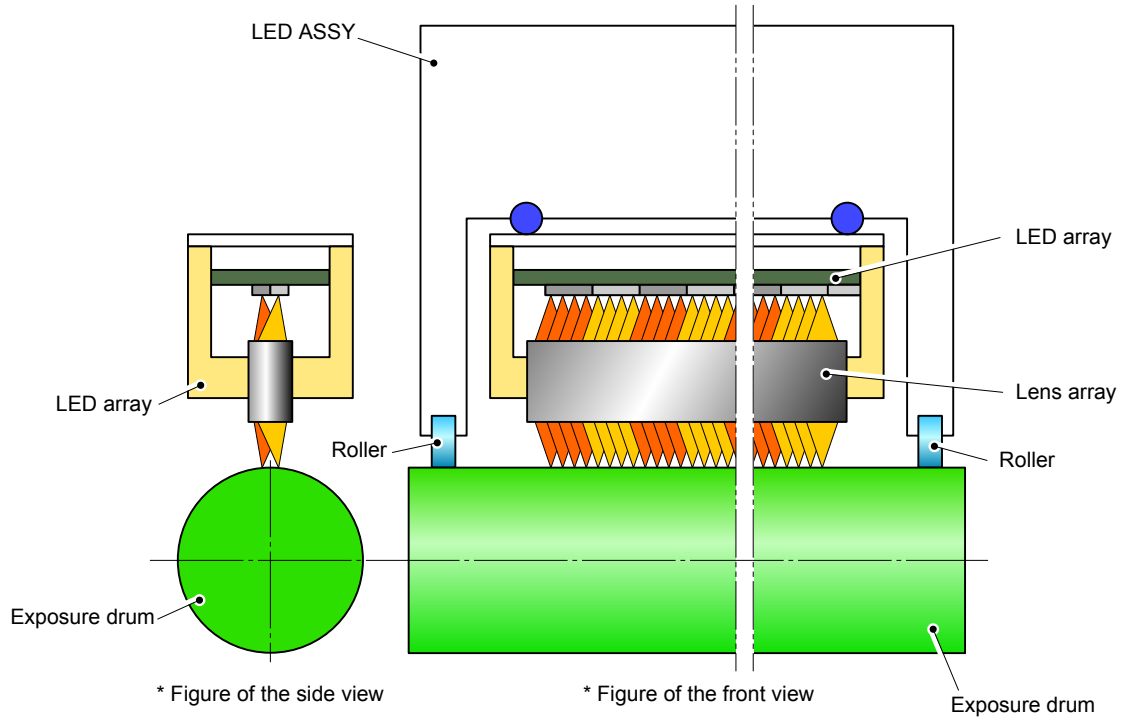


Fig. 2-23

3.6.3 Development

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

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

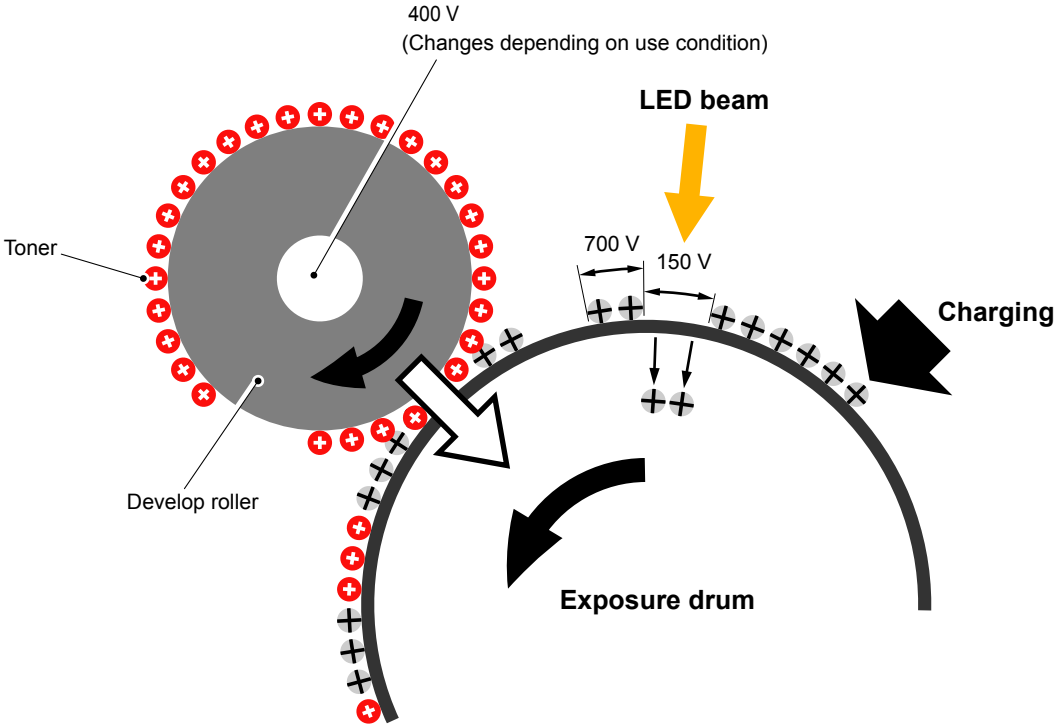


Fig. 2-24

<Flow up of toner to the development process>

(1) Toner adheres to the charged develop roller.

(2) The thickness of the adhered toner is evened out by the blade.

(3) The toner adhered to the develop roller is attracted to the exposed areas of the exposure drum.

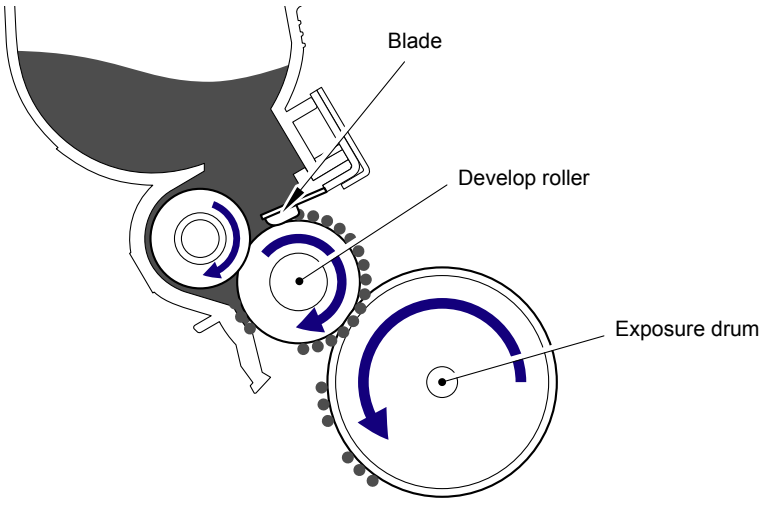


Fig. 2-25

3.6.4 Transfer

By applying a minus charge to the transfer roller of the belt unit, the toner adhered to the exposure drum is transferred to paper which is traveling on the feed belt.

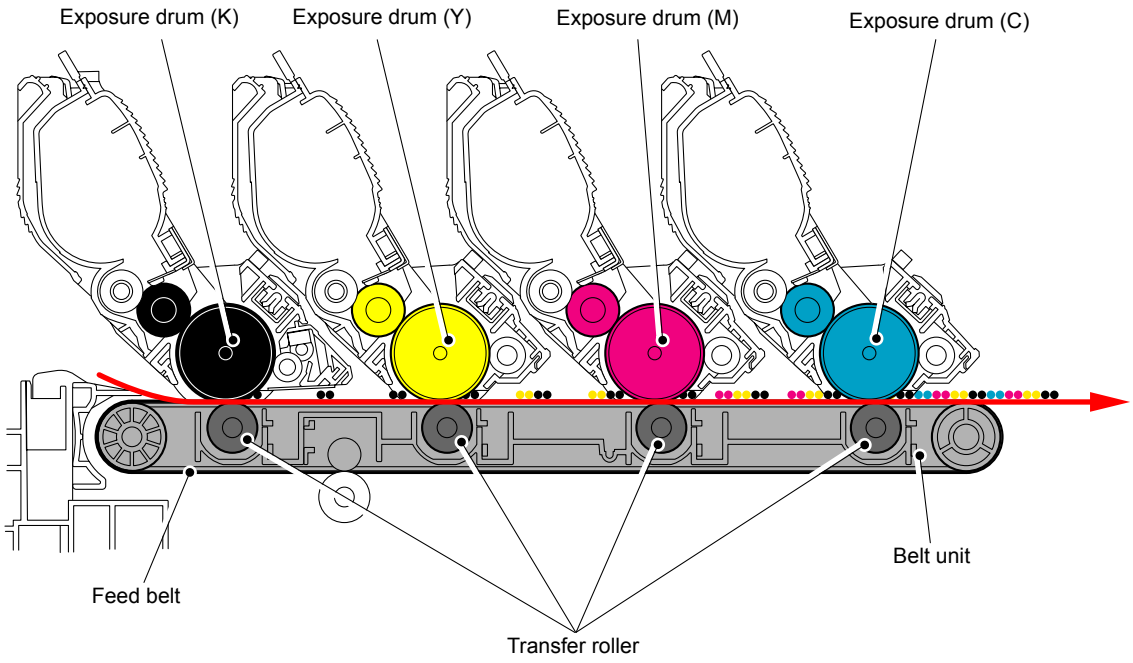


Fig. 2-26

Memo:

The four colors of toner are coated in turn on the paper to form a color:
First comes K, then Y, then M, and then C.

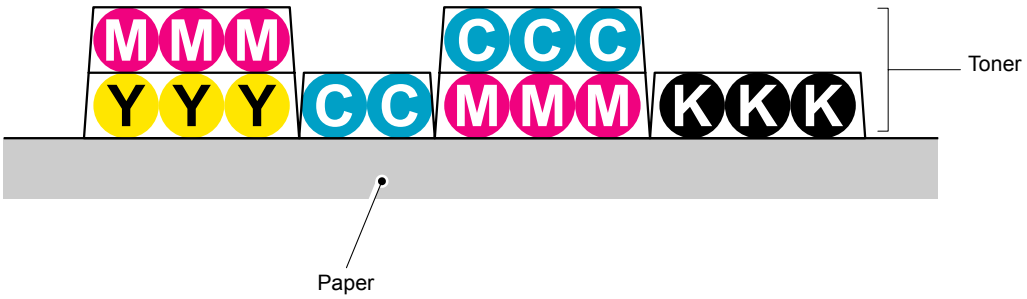


Fig. 2-27

3.6.5 Fusing

The toner transferred on to the paper passes between the heat roller and the pressure roller in the fuser unit and are fused by heat and pressure. The main CPU detects surface temperature of the heat roller using the thermistor and turns ON/OFF the halogen heater lamp to keep the temperature constant.

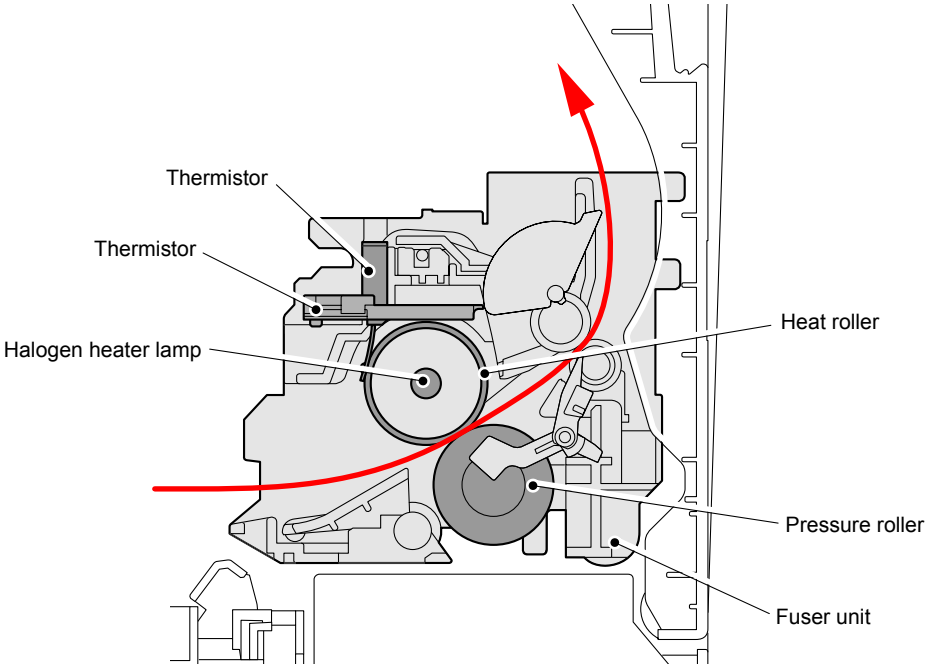


Fig. 2-28

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.

3.6.6 Toner cleaning

<Flow of toner cleaning>

(1) Toner remaining on the exposure drum which has not completely been transferred on to the paper is pulled onto the drum cleaner with a lower potential and the drum is cleaned.

(2) After the above step, the potential of the drum cleaner is raised during printing, and such attracted toner is returned to the exposure drum again. The returned toner is attracted to the belt unit by lowering the potential of the transfer roller.

(3) The toner attracted to the belt unit is collected by the belt cleaner below the unit, and stored in the waste toner box.

Memo:
When the toner returns to the exposure drum from the drum cleaner, the develop roller is separated from the exposure drum to prevent color mixture.

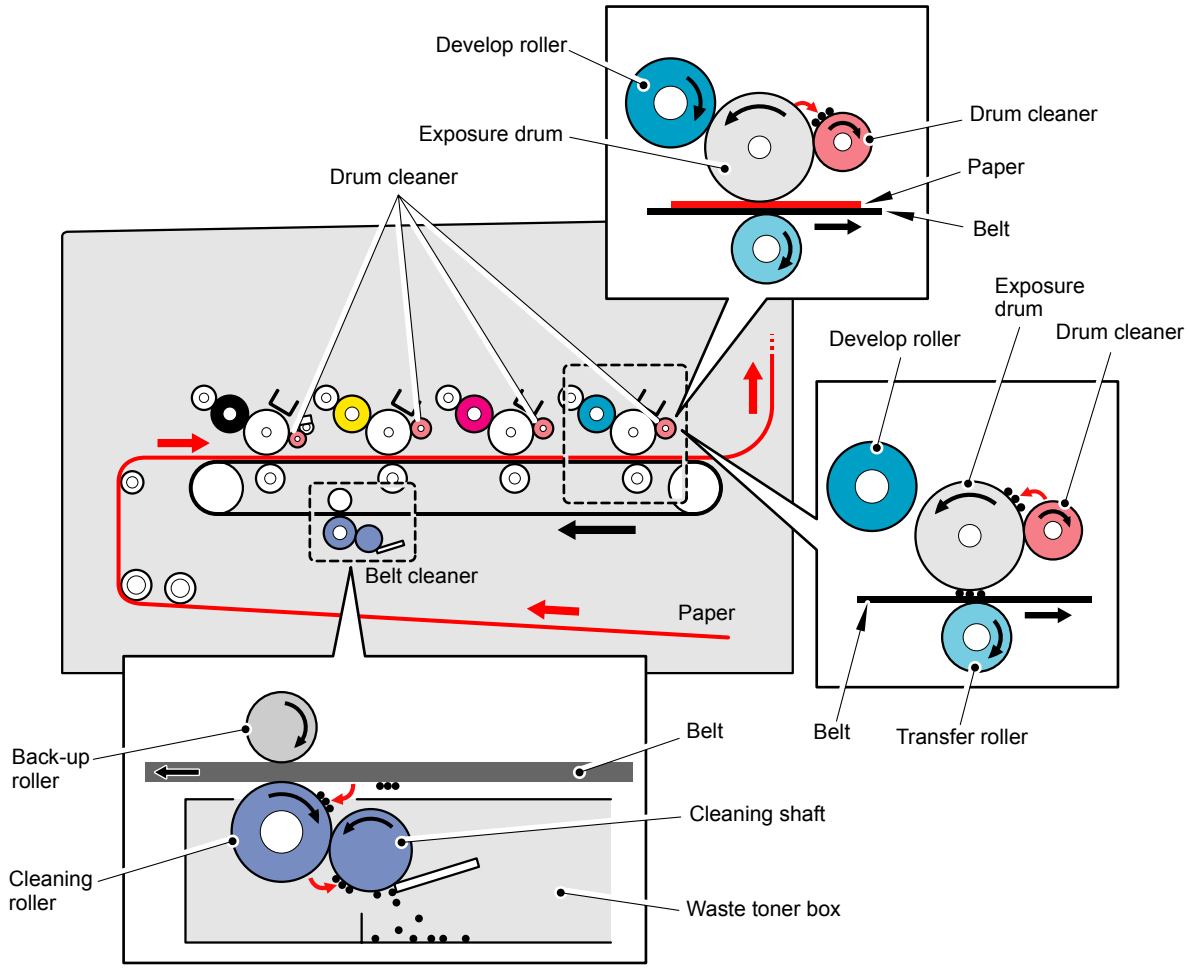


Fig. 2-29

3.7 Location of Sensors

Name of sensor	Type	Position	Function
Paper eject rear sensor	Photosensor	On the eject rear sensor PCB ASSY in the paper eject guide ASSY	The paper eject rear actuator detects that the paper passes through the fuser unit to check that no paper jam occurs between the heat roller and exit roller 1.
Manual sensor	Photosensor	On the manual sensor PCB ASSY in the front chute ASSY	Detects if paper is loaded on the manual feed slot.
Top cover open switch	Mechanical switch	On the side frame R	Detects open and close of the top cover.
Back cover sensor	Mechanical switch	On the side frame L	Detects open and close of the back cover.
Paper eject front sensor (Fuser cover)	Photosensor	On the eject front sensor PCB ASSY in the side frame L	The paper eject front actuator detects that the paper passes through the heat roller to check that no paper winds around the heat roller.
Registration front sensor	Photosensor	On the registration front/ rear sensor PCB ASSY in the paper feed unit	Detects if paper from the paper tray is passing through and detects the trailing edge position of paper.
Registration rear sensor	Photosensor	On the registration front/ rear sensor PCB ASSY in the paper feed unit	Adjusts the write start position on paper.
New toner sensor	Photosensor	On the toner/new sensor PCB ASSY in the side frame L	Detects if a new toner is mounted.
Toner LED (Light emission)	LED	On the toner LED PCB ASSY in the side frame R	Detects if plenty toner remains.
Toner sensor (Light reception)	Photosensor	On the toner/new sensor PCB ASSY in the side frame L	
Waste toner sensor	Photosensor	On the waste toner sensor holder	Detects if waste toner in the waste toner box is almost full.
External temperature/ humidity sensor	Thermistor	On the HVPS control PCB ASSY in the side frame R	Detects ambient temperature and humidity.
Internal temperature sensor	Thermistor	On the drum motor origin sensor PCB ASSY in the side frame L	Detects temperature in the product (L side).

Name of sensor	Type	Position	Function
Belt thermistor	Thermistor	Registration sensor holder ASSY	Detects temperature in the product (at the center).
Drum motor origin sensor	Photosensor	On the drum motor origin sensor PCB ASSY in the side frame L	Detects the phase of the drum motor.
Fuser/eject drive motor sensor	Photosensor	On the fuser/eject drive motor sensor PCB ASSY in the eject gear cover	Detects if the fuser/ eject drive motor operates properly.
Registration mark sensor L	Photosensor	On the registration mark L PCB ASSY in the registration sensor holder ASSY	Measures color displacement (L side).
Registration mark sensor R	Photosensor	On the registration mark R PCB ASSY in the registration sensor holder ASSY	Measures color displacement (R side).
Density sensor	Photosensor	On the registration mark L PCB ASSY in the registration sensor holder ASSY	Measures the density of each color.
Develop release sensor	Photosensor	On the develop release sensor PCB ASSY in the side frame R	Detects the distance between the develop roller and exposure drum.
Document front sensor	Photosensor	On the ADF sensor PCB	Detects whether or not a document is set on the ADF.
Document rear sensor	Photosensor	On the ADF sensor PCB	Detects the timing to start reading a document.
ADF cover open sensor	Photosensor	On the ADF sensor PCB	Detects whether or not the ADF cover is open.
Fuser side thermistor	Thermistor	In the fuser unit	Detects the temperature of the heat roller.
Fuser center thermistor	Thermistor	In the fuser unit	Detects the temperature of the heat roller.

■ Location of sensors

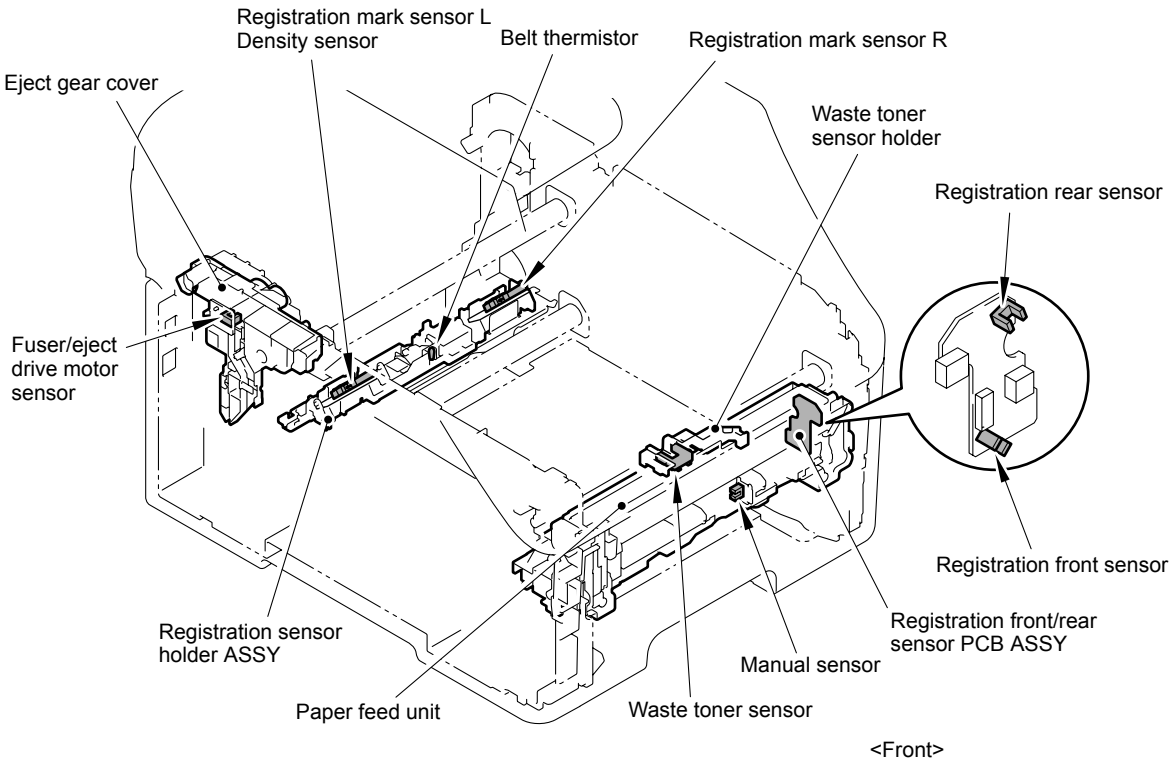


Fig. 2-30

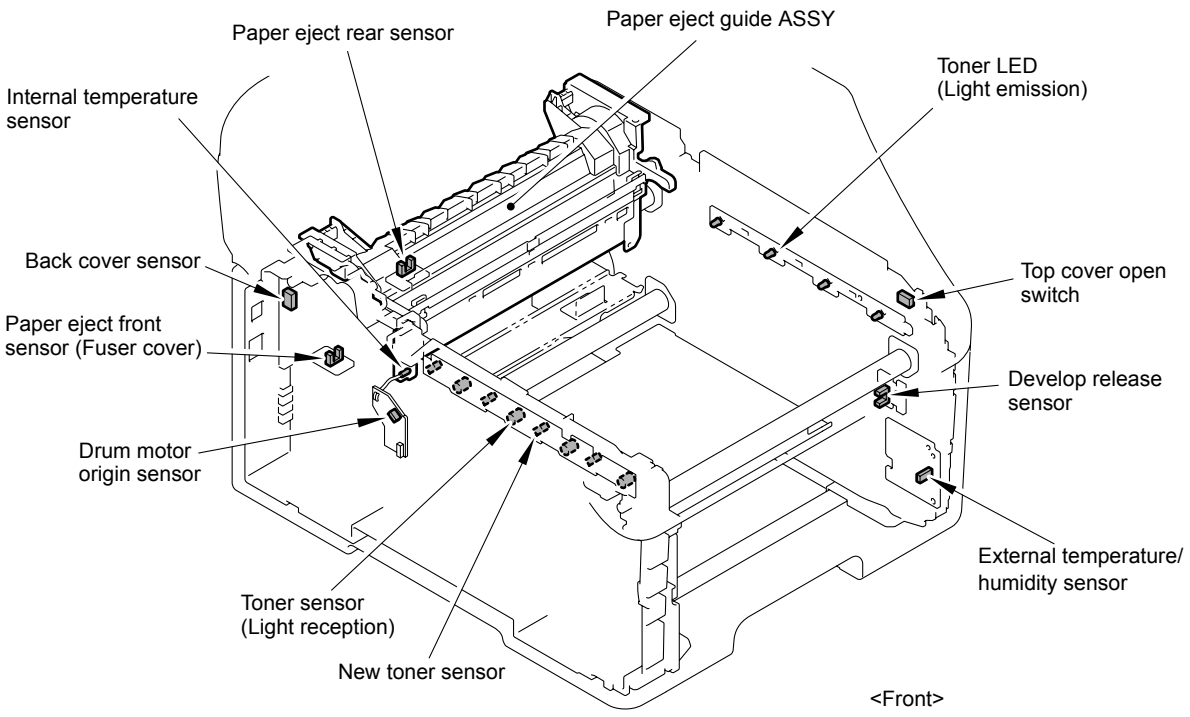


Fig. 2-31

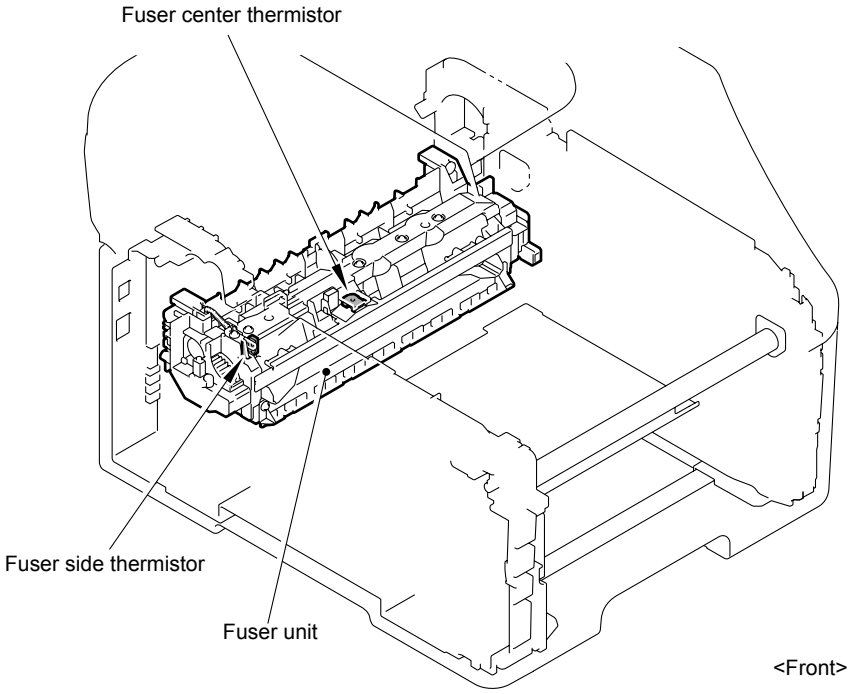


Fig. 2-32

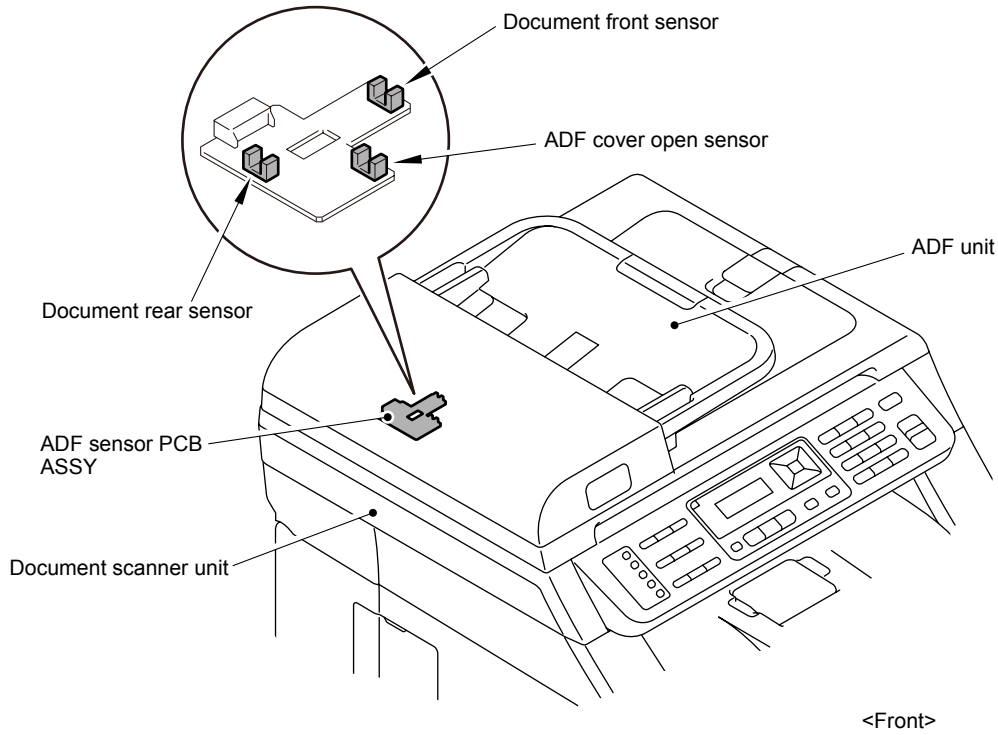


Fig. 2-33

3.8 Adjustment of Color Registration

In this device, the drum and develop unit are prepared for K, Y, M, and C respectively. Four color images are combined into one image, and therefore color registration error might occur. Auto color registration error correction control is to calculate the color registration error amount and adjust the exposure timing as a means to prevent color registration error.

■ Execution timing

- When the continuous print elapsed time reaches a designated time, or when the elapsed time of intermittence print or ready state reaches a designated time.
- Execution from the operation panel (Function code 66), etc.
- Immediately after the top cover is opened and closed.
- After the power is turned OFF and ON. (When the specified period of time has passed since the previous execution.)

3.8.1 Color registration error in sub/main scanning direction

The color registration test patterns are printed on the belt unit, and the registration mark sensor reads them. The registration mark sensor is a reflective sensor, and the reflection rate is different between the surface of the belt unit and toner. The sensor reads the test patterns using the difference of the reflection rate when the test patterns pass through the sensor. The displacement in the sub/main scanning direction is calculated based on the distance between the patterns read by the registration mark sensor, and it is corrected.

3.9 Adjustment of Color Density

To obtain stable print quality, the density of each toner needs to be maintained at a fixed value. If the density balance between the colors cannot be kept, the tint becomes unstable, and accurate color reproduction becomes unavailable. The toner density is changed due to the charged amount of toner, deterioration of the develop unit, and temperature and humidity in the level device. Control to keep the stable print density is made by changing the develop bias voltage.

■ Execution timing

- Execution is made at a designated timing (specified in WSW55; the default is 24 hours). (Execution is made when print is started after a specified time has passed.)
- Execution from the operation panel (Function code 83), etc.
- Execution is made when toner is replaced with a new one.
- Execution is made when the ambient temperature is changed.

■ Operation

The density level adjustment test patterns are printed on the belt unit, and the density sensor reads them. The read density of each color and the density reference value are compared, and if any difference is found, the develop bias voltage is controlled to match the print density to the reference value.

CHAPTER 3
ERROR INDICATION AND TROUBLESHOOTING

CHAPTER 3
ERROR INDICATION AND TROUBLESHOOTING

This chapter details error messages and codes which 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 which could occur in the main sections of the machine and related troubleshooting procedures.

CONTENTS

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.

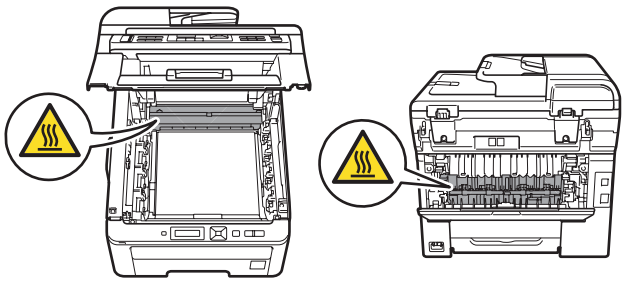
(2) When connecting or disconnecting cable connectors, make sure that you hold the connector body and not the cables.

(3) Static electricity charged in your body may damage electronic parts.
Before handling the PCBs, touch a metal portion of the machine to discharge static electricity charged in your body. When transporting PCBs, be sure to wrap them in conductive sheets.
When replacing the LED ASSY/PCBs, 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.

(4) Follow the warning by all means.

WARNING

The fuser unit becomes extremely hot during operation. Wait until it has cooled down sufficiently before replacing consumable items. DO NOT remove or damage the caution label located on or around the fuser.



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.

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

1.2 Components

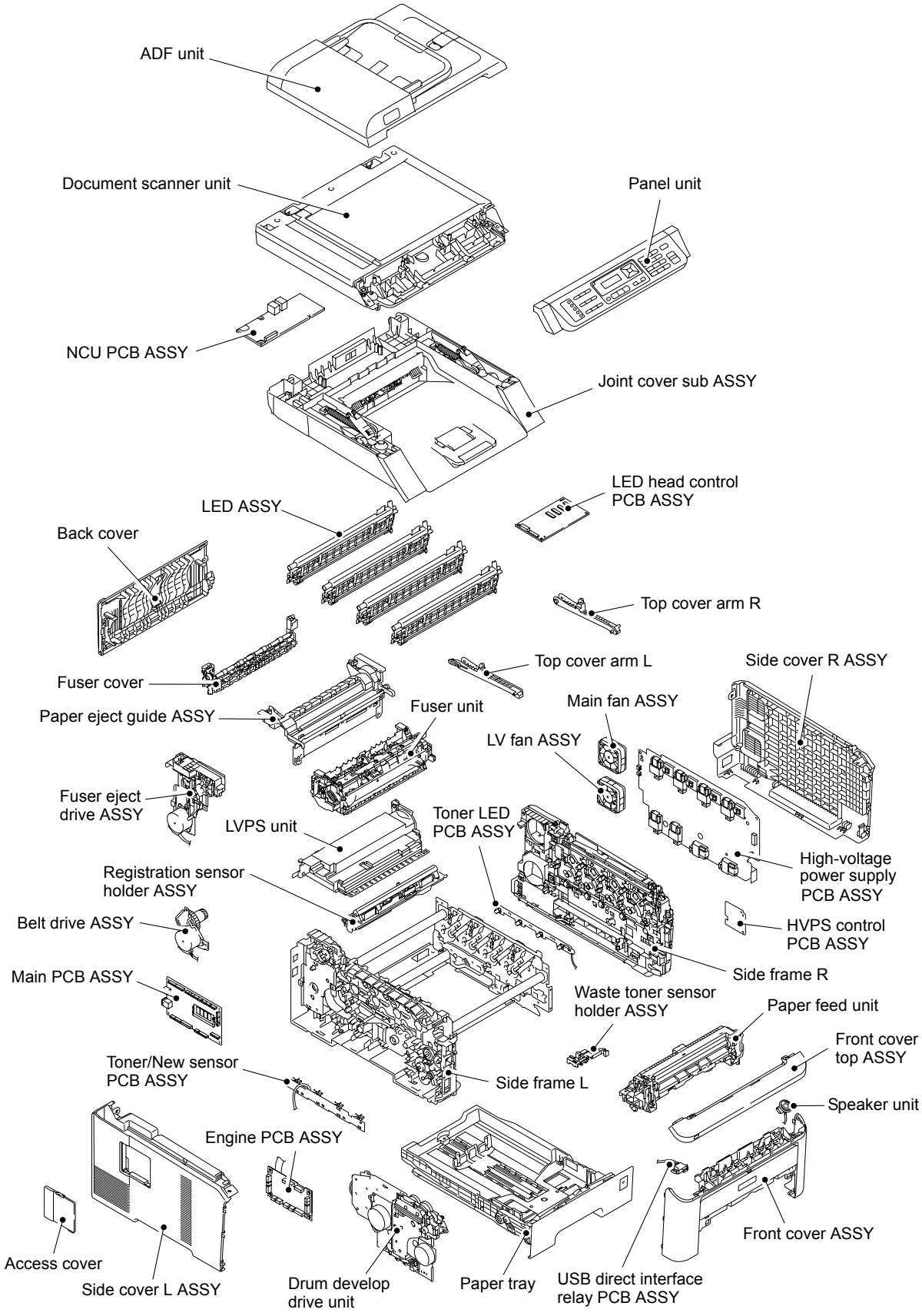


Fig. 3-1

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) Ensure the machine is not exposed to direct sunlight, excessive heat, moisture, or dust.

(4) Keep the machine horizontal when you carry it. To prevent injuries when moving or lifting this machine, make sure to use at least two people.

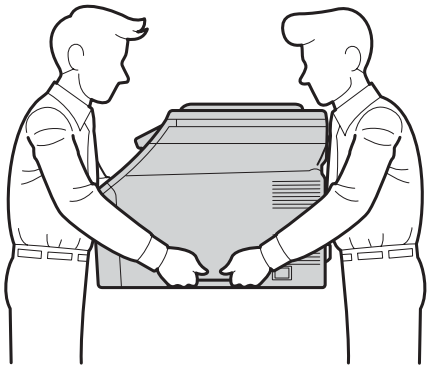


Fig. 3-2

■ Power supply

(1) The AC input power supply described on the rating plate of the machine should be within ±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 “2.5 Paper” 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.

(2) The belt unit and waste toner box are 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 LED array 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 problems.

If condensation has occurred, leave the machine for at least two 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 user to allow the unit to come to room temperature before unpacking it. This will take one or two hours.

(2) Low temperature

The motor may not drive normally under the low temperature environment. This is due to there being too much load to drive each unit. In this case, the "**Low Temperature/ Increase room temperature to allow the machine to operate**" message will appear on the LCD.
Increase the room temperature when the above message is indicated.

■ Cleaning

Use a soft dry lint-free cloth.

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.

2. ERROR INDICATIONS

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 service men to quickly find out the problem.

2.1 Error Codes

Error codes	Problem	Refer to:	Error codes	Problem	Refer to:
10	Color registration adjustment failure (Error, which cannot be recorded, occurs.)	3-11	20	LED ASSY error (K)	3-15
			21	LED ASSY error (Y)	3-15
			22	LED ASSY error (M)	3-15
			23	LED ASSY error (C)	3-15
			24	Internal temperature sensor error	3-15
11	Color registration adjustment failure (Toner of the color which being used reached the end of life.)	3-11	25	Develop drive motor error	3-16
			26	Belt drive motor error	3-16
			28	Drum drive motor error	3-16
			29	Belt cleaner drive motor error	3-16
			2A	Develop release motor error	3-17
12	Color registration adjustment failure (Incorrect measurement value of color registration adjustment.)	3-11	2C	Toner/New sensor PCB error (K)	3-17
			2D	Toner/New sensor PCB error (Y)	3-17
			2E	Toner/New sensor PCB error (M)	3-17
			2F	Toner/New sensor PCB error (C)	3-17
			31	Density sensor error	3-18
13	Developing bias correction failure (Error, which cannot be recorded, occurs.)	3-12	32	Density sensor shutter performance malfunction	3-18
			33	Right color registration sensor error	3-19
14	Developing bias correction failure (Toner life end)	3-12	34	Left color registration sensor error	3-19
			36	HVPS PCB error in ready state	3-20
15	Developing bias correction failure (Incorrect measurement value of developing bias correction)	3-12	37	Belt thermistor error	3-20
			38	External temperature sensor error	3-21
			39	External humidity sensor error	3-21
16	Color registration adjustment failure (Error, which cannot be recorded, occurs.)	3-13	3A	Engine PCB transfer error	3-21
			3B	Main PCB RAM error	3-21
			3E	NVRAM transfer error	3-21
17	Color registration adjustment failure (Toner life end)	3-13	40	HVPS PCB error in operating	3-20
			42	HVPS control PCB transfer error	3-22
18	Color registration adjustment failure (Incorrect measurement value of color registration adjustment)	3-13	43	Main/Engine ASIC transfer error	3-22
			44	No toner cartridge (K)	3-23
			45	No toner cartridge (Y)	3-23
1A	Dew condensation on high-voltage power supply PCB	3-14	46	No toner cartridge (M)	3-23
			47	No toner cartridge (C)	3-23
1B	Drum error (C)	3-14	48	Drum life end (K)	3-23
1C	Drum error (M)	3-14	49	Drum life end (Y)	3-23
1D	Drum error (Y)	3-14	4A	Drum life end (M)	3-23

Error codes	Problem	Refer to:	Error codes	Problem	Refer to:
4B	Drum life end (C)	3-23	75	Machine cooling down inside	3-32
4C	Drum life end soon (K)	3-24	76	Fuser unit error (The center thermistor detects rapid temperature rising.)	3-26
4D	Drum life end soon (Y)	3-24			
4E	Drum life end soon (M)	3-24	78	Fuser unit error (The center thermistor detects rapid temperature falling.)	3-26
4F	Drum life end soon (C)	3-24			
52	Paper feeding kit life end	3-24			
54	Fuser unit life end	3-24	7D	Dirt on drum unit	3-32
56	Fuser cover opened	3-25	7F	FAX paper setting mismatch (The setting paper becomes besides the A4/Letter/Legal/Folio)	3-35
58	Fuser unit error (Some kind of temperature error of the fuser unit occurs.)	3-25			
59	Fuser unit error (Re-detection of fuser unit failure upon startup after the error code 58 occurs.)	3-25	80	FAX paper size is incorrect (The paper is smaller 10 mm than the Letter size (11 inch) in Fax List/Report)	3-35
5B	Short paper	3-27			
5C	Small paper	3-27	81	Incorrect density sensor measurement value when implementing adjustment of color density from the control panel cover ASSY.	3-36
5D	Belt unit life end soon	3-27			
5E	Belt unit life end	3-27			
5F	Waste toner box near full	3-28			
60	Toner life end (C)	3-29	82	Density patch measurement is not completed normally when implementing adjustment of color density from the control panel cover ASSY.	3-36
61	Toner life end (M)	3-29			
62	Toner life end (Y)	3-29			
63	Toner life end (K)	3-29			
64	Toner life end soon (C)	3-30	83	Drum error (K)	3-14
65	Toner life end soon (M)	3-30	84	Paper jam at the back of the machine inside	3-37
66	Toner life end soon (Y)	3-30			
67	Toner life end soon (K)	3-30	87	Toner of the color which is being used reaches the end of life when implementing adjustment of color density from the control panel cover ASSY.	3-31
6A	Fuser unit error (The center thermistor does not detect 60 °C within the specified time.)	3-25			
6B	Fuser unit error (The center thermistor does not detect 100 °C within the specified time.)	3-25	88	Paper jam inside the machine	3-37
			8A	Paper jam in paper tray	3-38
			8D	Eject front sensor sticking at ON upon startup	3-38
6C	Fuser unit error (The center thermistor detects higher temperature than the specified value.)	3-25	8E	Error in the adjustment of color registration result when implementing it from the control panel cover ASSY.	3-39
6D	Fuser unit error (The center thermistor detects lower temperature than the specified value.)	3-26	8F	Detection of abnormal value of registration sensor sensitivity when implementing adjustment of color registration from the control panel cover ASSY	3-39
6F	Fuser unit error (The center or side thermistors detect extremely high temperature.)	3-26			
			91	Size mismatch	3-39
70	Fuser/Eject drive motor error	3-30	94	No paper in paper tray	3-40
73	Recording ASIC read/write error	3-31	96	No paper in all trays	3-40
74	Toner of the color which is being used reaches the end of life while printing.	3-31	97	Not supported paper	3-40
			9A	No paper in manual feed slot	3-41

Error codes	Problem	Refer to:	Error codes	Problem	Refer to:
9D	Detection of incorrect registration sensor measurement value when implementing adjustment of color registration from the control panel cover ASSY	3-39	C3	Identification failure for a new toner cartridge (C)	3-46
			C6	Pressure engagement/disengagement failure of toner cartridge	3-47
9E	Toner of the color which is being used reaches the end of life when implementing adjustment of color registration from the control panel cover ASSY.	3-31	C7	Insufficient memory	3-47
			C8	RAM area for secure data full	3-47
			C9	DIMM error	3-48
			CA	Excess current to USB device	3-48
			CB	No belt unit	3-49
9F	No paper while printing	3-41	CE	No waste toner box	3-49
A1	Top cover opened	3-42	CF	Waste toner box full	3-50
A2	During scanning, 90 cm or longer of a document is detected	3-42	D1	Modem initialization failed	3-50
A3	Document rear sensor is not turned on when feeding the document	3-42	DE	Thermistor of fuser unit misconnected	3-50
			E0	Program error	3-51
A4	ADF cover opened	3-43	E1	Program error	3-51
A5	FAX scanning error (Warning)	3-43	E2	Temperature error of heat roller	3-51
A6	FAX scanning error (Error)	3-43	E3	Drum motor origin sensor failure	3-51
A7	Scanning color parameter file failure	3-44	E6	Write error in EEPROM	3-21
A8	Scanning color parameter matching miss	3-44	E9	Maintenance monitor error	3-52
			EC	Main fan error	3-52
AD	DMA transfer error	3-44	ED	Communication with the wireless LAN PCB cannot be established upon startup of the power supply	3-52
AF	CIS home position sensor is not turned off.	3-44			
B0	Document scanner unit FFC detection error	3-45	EE	Unavailability of communication after connecting to the wireless LAN PCB is detected	3-53
B1	Dark level offset data level error for scanning	3-45			
			EF	Low-voltage power supply PCB failure	3-53
B2	Gain control data level error for scanning	3-45	F2	Waste toner box near full	3-53
			F4	Waste toner box life end	3-54
B7	A/D converter standard voltage failure; at High side	3-45	F8	Battery connection error	3-54
B8	A/D converter standard voltage failure; at Low side	3-45	F9	Power turned OFF while the function code 74 is being executed and “PARAMETER INT” is being displayed	3-54
B9	Scanning light adjustment error is detected	3-45			
			FA	No drum unit (K)	3-55
BB	White level data error	3-46	FB	No drum unit (C)	3-55
BD	Black level data error	3-46	FC	No drum unit (M)	3-55
C0	Identification failure for a new toner cartridge (K)	3-46	FD	No drum unit (Y)	3-55
C1	Identification failure for a new toner cartridge (Y)	3-46	FE	Detection of incorrect measurement value of density sensor sensitivity calibration	3-56
C2	Identification failure for a new toner cartridge (M)	3-46	FF	Overcurrent error of wireless LAN PCB	3-56

2.2 Error Messages

The error messages displayed on the LCD of the product and their description and measure are shown in the table below.

Error message	Description/Measure	Refer to:
Access Error (USB direct interface model only)	The USB device was removed while data was processing. Press **Job Cancel** button. Reinsert the USB device and try to print with Direct Print or PictBridge.	3-48
Belt End Soon	The belt unit is near the end of its life. Buy a new belt unit before you get a “Replace Belt” message.	3-27
Calibrate Scroll message: **Calibration failed. See Troubleshooting chapter in User's guide.**	- Turn off the machine. Wait a few seconds and turn it on again. - Put in a new drum unit. - Put in a new belt unit. - Put in a new waste toner box.	3-31 3-36 3-56
Cartridge Error	Take out the drum unit and toner cartridge assembly for the toner color that is indicated on the LCD. Remove the toner cartridge from the drum unit and install a new toner cartridge in the drum unit. Put the drum unit and toner cartridge assembly back into the machine again.	3-46
Cooling Down Wait for a while	The temperature of the drum unit or toner cartridge is too hot.	3-32
Comm. Error	Poor telephone line quality caused a communication error.	3-88
Connection Fail	You tried to poll a fax machine that is not in polled waiting mode.	3-96
Cover is Open	Close the cover that is indicated on the LCD.	3-25 3-38 3-42
Disconnected	The other person or other person’s fax machine stopped the call.	3-96
Document Jam	The document was not inserted, or fed properly.	3-42 3-101
DR Mode is Use	The machine is set to Distinctive Ring mode.	3-98
Drum End Soon (X) * or **Drums End Soon**	The drum unit is near the end of its life. Buy a new toner cartridge that is indicated on the LCD before you get a “Replace Drum” message.	3-24
Drum Error	Clean the corona wires. If the LCD still shows the same error message after you have cleaned the corona wire, replace the drum unit with a new one that is indicated on the LCD.	3-14 3-32
Fuser Error	Turn off the power switch, wait a few seconds and then turn it on again. Leave the machine for 15 minutes with the power on.	3-25 3-50

* (X) at the end of the message shows the color of the toner cartridge or drum unit. (X) must be either K (Black), Y (Yellow), M (Magenta) or C (Cyan).

Error message	Description/Measure	Refer to:
Jam XXX	Carefully pull out the jammed paper from the area shown in the message.	3-37 3-38 3-58
Low Temperature	Increase room temperature to allow the machine to operate.	---
Manual Feed	Put the same size of paper in the manual feed slot as is shown on the LCD. If the machine is “paused”, press **Start/Black** button.	3-41
No Belt Unit	Install the belt unit.	3-49
No Paper	Put paper in the indicated empty tray. If the problem is not solved, the paper pick-up roller may be stained. Clean the paper pick-up roller.	3-40 3-41
No Response/ Busy	The number you dialed dose not answer.	3-88 3-96
No Toner	Install the toner cartridge that is indicated on the LCD. Install the drum unit that is indicated on the LCD.	3-55
No Waste Toner	Install the waste toner box.	3-49
Out of Memory	If the LCD shows this error message when you print the secure data, press **Job Cancel** button and delete the previously stored data. Except in the case of printing secure data, and add more memory.	3-47
Print Unable ##	Turn off the machine. Wait a few seconds and turn it on again.	3-14 I 3-53
Protected Device (USB direct interface model only)	The protect switch of the USB flash memory drive is on.	3-48 3-56
Registration Scroll message: **Registration failed. See Troubleshooting chapter in User's guide.**	- Turn off the machine. Wait a few seconds and turn it on again. - Put in a new belt unit.	3-31 3-39
Rename the File (USB direct interface model only)	There is already a file on the USB flash memory drive with the same name as the file you are trying to save.	---
Replace Belt	It is time to replace the belt unit. Replace the belt unit.	3-27
Replace Drum (X) * or **Replace Drums**	It is time to replace the drum unit. Replace the drum unit that is indicated on the LCD.	3-23
Replace Toner	It is time to replace the toner cartridge. Replace the toner cartridge that is indicated on the LCD.	3-29 3-31
Replace WT Box	It is time to replace the waste toner box. Replace the waste toner box.	3-50 3-54
Replace Fuser	It is time to replace the fuser unit. Replace the fuser unit.	3-24

* (X) at the end of the message shows the color of the toner cartridge or drum unit. (X) must be either K (Black), Y (Yellow), M (Magenta) or C (Cyan).

Error message	Description/Measure	Refer to:
Replace PF Kit1	It is time to replace the paper feeding kit. Replace the paper feeding kit.	3-24
Scan Unable XX	The machine has a mechanical problem.	3-43 I 3-45
Short paper	Open the back cover (back-output tray) to let the printed paper out on the back-output tray and then press **Start/ Black** button.	3-27
Size Mismatch	Put the same size paper in the paper tray or manual feed slot that is selected in the machine driver, and then press **Start/Black** button or select the size of paper which you set in the paper tray size setting from the control panel cover ASSY.	3-35 3-39
Small paper	Open the back cover (back-output tray) to let the printed paper out on the back-output tray and then press **Start/ Black** button.	3-27
Toner Error	Dismount the drum unit of the color displayed on the LCD or all the drum units, and then take out the toner cartridge from the drum unit(s). Put the toner cartridge back to the drum unit(s), and remount the drum unit(s) to the printer.	3-47
Toner Low (X) *	The toner cartridge is nearly empty. Buy a new toner cartridge that is indicated on the LCD before you get a “Replace Toner” message.	3-30
Too Many Files (USB direct interface model only)	There are too many files stored on the USB flash memory drive.	---
Unusable Device (USB direct interface model only)	Remove the USB flash memory drive from the USB Direct Interface.	3-48 3-56
WT Box End Soon	The waste toner box will need replacement soon. Buy a new waste toner box before you get a “Replace WT Box” message.	3-28 3-53

* (X) at the end of the message shows the color of the toner cartridge or drum unit. (X) must be either K (Black), Y (Yellow), M (Magenta) or C (Cyan).

2.3 Error Cause and Remedy

Check the **User Check** items first. If an error cannot be resolved, follow the procedures in numerical order in the Step field.

■ Error code 10

-

Color registration adjustment failure (Error, which cannot be recorded, occurs.)

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

■ Error code 11

TONER EMPTY #

* Any of K, Y, M, or C, which refer to colors, is indicated in #.

Color registration adjustment failure
(Toner of the color which being used reached the end of life.)

<User Check>

- Replace the toner cartridge of the color displayed on the LCD.

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

■ Error code 12

FAILED

Color registration adjustment failure
(Incorrect measurement value of color registration adjustment.)

<User Check>

- Replace the belt unit with a new one.
- Replace the waste toner box with a new one.

Step	Cause	Remedy
1	Registration mark L/R PCB ASSY failure	Replace the registration sensor holder ASSY.
2	Main PCB failure	Replace the main PCB ASSY.

■ Error code13

-
-

An error, which cannot be recorded, occurs while correction of developing bias is performed.

<User Check>

- Replace the belt unit with a new one.

Step	Cause	Remedy
1	Registration mark L PCB ASSY failure	Replace the registration sensor holder ASSY.
2	HVPS control PCB failure	Replace the HVPS control PCB ASSY.
3	High-voltage power supply PCB failure	Replace the high-voltage power supply PCB ASSY.
4	Main PCB failure	Replace the main PCB ASSY.

■ Error code 14

-
-

Toner reaches its life end while correction of developing bias is performed.

<User Check>

- Replace the cartridge of toner which reaches its life end with a new one.

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

■ Error code 15

-
-

Correction of developing bias fails.

<User Check>

- Replace the belt unit with a new one.

Step	Cause	Remedy
1	Registration mark L PCB ASSY failure	Replace the registration sensor holder ASSY.
2	HVPS control PCB failure	Replace the HVPS control PCB ASSY.
3	High-voltage power supply PCB failure	Replace the high-voltage power supply PCB ASSY.
4	Main PCB failure	Replace the main PCB ASSY.

■ Error code 16

- -

An error, which cannot be recorded, occurs while auto color registration is performed.

<User Check>

- Replace the belt unit with a new one.

Step	Cause	Remedy
1	Registration mark L PCB ASSY failure	Replace the registration sensor holder ASSY.
2	Main PCB failure	Replace the main PCB ASSY.

■ Error code 17

- -

Toner reaches its life end while auto color registration is performed.

<User Check>

- Replace the cartridge of toner which reaches its life end with a new one.

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

■ Error code 18

- -

Auto color registration fails.

<User Check>

- Replace the belt unit with a new one.
- Replace the waste toner box with a new one.

Step	Cause	Remedy
1	Registration mark L PCB ASSY failure	Replace the registration sensor holder ASSY.
2	HVPS control PCB failure	Replace the HVPS control PCB ASSY.
3	High-voltage power supply PCB failure	Replace the high-voltage power supply PCB ASSY.
4	Main PCB failure	Replace the main PCB ASSY.

■ Error code 1A

Print Unable 1A
Turn the power switch off and open the top cover, wait 30 minutes, and then turn it on again.

Dew condensation might have occurred in the machine. (The temperature/humidity sensor on the high voltage control PCB detects sudden environmental change.) / High-voltage power supply PCB error

<User Check>

- Power off and open the top cover. Wait 30 minutes, and then turn it ON again after closing the top cover.
- Clean the corona wire in the drum unit.
- Replace the drum unit with a new one.

Step	Cause	Remedy
1	Dirt on drum unit electrodes	Clean the electrodes of the drum unit and main body. (Refer to Fig. 3-3 (P3-33) and Fig. 3-6 (P3-34).)
2	HVPS control PCB failure	Replace the HVPS control PCB ASSY.
3	High-voltage power supply PCB failure	Replace the high-voltage power supply PCB ASSY.

■ Error code 1B

Drum Error
Replace the Drum Unit. Cyan (C). Refer to the User's Guide.

Error code 1C

Drum Error
Replace the Drum Unit. Magenta (M). Refer to the User's Guide.

Error code 1D

Drum Error
Replace the Drum Unit. Yellow (Y). Refer to the User's Guide.

Error code 83

Drum Error
Replace the Drum Unit. Black (K). Refer to the User's Guide.

Drum error

After the error code 48, 49, 4A, or 4B (the drum unit is at the end of life) occurs, and when the counter value exceeds twice the life expectancy and electric discharge occurs due to smear on the corona wire, and disturbance is detected in the charge current of the high-voltage power supply PCB, the error code 83, 1B, 1C, or 1D appears. When the error code 83, 1B, 1C, or 1D appears, the performance of the drum unit cannot be maintained, and the print quality is deteriorated, and therefore the use of the drum is stopped.

<User Check>

- Replace the drum unit of the appropriate color with a new one.
- After replacing the drum unit with a new one, reset the counter using the control panel cover ASSY on the machine. (Refer to "2.1.3 Resetting the life counter of the drum unit" in Chapter 7.)

■ Error code 20 (K), 21 (Y), 22 (M), 23 (C)

Print Unable 20
Turn the power off and then back on again.

Print Unable 21
Turn the power off and then back on again.

Print Unable 22
Turn the power off and then back on again.

Print Unable 23
Turn the power off and then back on again.

LED ASSY error (EEPROM access error of the LED head)

Step	Cause	Remedy
1	FFC connection failure of each LED ASSY	Check the FFC connection of the appropriate color and reconnect it.
2	LED head control PCB failure	Replace the LED head control PCB ASSY.
3	Failure of each LED ASSY	Replace the LED ASSY of the appropriate color.
4	Main PCB failure	Replace the main PCB ASSY.
5	Low-voltage power supply PCB failure	Replace the low-voltage power supply PCB ASSY.

■ Error code 24

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

Internal temperature sensor error

Step	Cause	Remedy
1	Internal temperature sensor failure	Replace the drum motor origin sensor PCB ASSY.
2	Engine PCB failure	Replace the engine PCB ASSY.
3	Main PCB failure	Replace the main PCB ASSY.

■ **Error code 25**

Print Unable 25
Turn the power off and then back on again.

Develop drive motor error (Incorrect synchronized signal of the develop drive motor)

Error code 26

Print Unable 26
Turn the power off and then back on again.

Belt drive motor error

Error code 28

Print Unable 28
Turn the power off and then back on again.

Drum drive motor error (Incorrect synchronized signal of the drum drive motor)

Error code 29

Print Unable 29
Turn the power off and then back on again.

Belt cleaner drive motor error (Incorrect synchronized signal of the belt cleaner drive motor)

Step	Cause	Remedy
1	Harness connection failure of motor	Check the harness connection of the appropriate motor and reconnect it.
2	Motor failure	Replace the appropriate motor.
3	Engine PCB failure	Replace the engine PCB ASSY.
4	Main PCB failure	Replace the main PCB ASSY.
5	Low-voltage power supply PCB failure	Replace the low-voltage power supply PCB ASSY.

■ Error code 2A

Print Unable 2A
Turn the power off and then back on again.

Develop release motor error

Step	Cause	Remedy
1	Harness connection failure of develop release motor	Check the harness connection of the develop release motor and reconnect it.
2	Develop release motor failure	Replace the develop release motor ASSY.
3	Engine PCB failure	Replace the engine PCB ASSY.
4	HVPS control PCB failure	Replace the HVPS control PCB ASSY.
5	Main PCB failure	Replace the main PCB ASSY.

■ Error code 2C (K), 2D (Y), 2E (M), 2F (C)

Print Unable 2C
Turn the power off and then back on again.

Print Unable 2D
Turn the power off and then back on again.

Print Unable 2E
Turn the power off and then back on again.

Print Unable 2F
Turn the power off and then back on again.

Toner/new sensor PCB error (The toner sensor is ON while the toner LED sensor is not ON.)

Step	Cause	Remedy
1	Toner/new sensor PCB failure	Check the sensor performance following the procedure described in “Function code 32”. If any problem occurs, replace the toner/new sensor PCB ASSY.
2	Engine PCB failure	Replace the engine PCB ASSY.
3	Main PCB failure	Replace the main PCB ASSY.

■ Error code 31

Print Unable 31
Turn the power off and then back on again.

Density sensor error (Incorrect measurement value of the density sensor)

Error code 32

Print Unable 32
Turn the power off and then back on again.

Density sensor shutter performance malfunction

<User Check>

- Check if there is a scratch, dirt or the like on the belt unit. If there is, replace the belt unit with a new one.

Step	Cause	Remedy
1	Harness connection failure of registration mark L PCB ASSY	Check the harness connection between the registration mark L PCB ASSY and registration mark relay PCB ASSY, and the one between the registration mark relay PCB ASSY and engine PCB ASSY. Then, reconnect them.
2	Harness connection failure of density sensor shutter solenoid	Check the harness connection of the density sensor shutter solenoid and reconnect it.
3	Registration mark L PCB failure	Replace the registration sensor holder ASSY.
4	Engine PCB failure	Replace the engine PCB ASSY.
5	Main PCB failure	Replace the main PCB ASSY.

■ Error code 33

Print Unable 33
Turn the power off and then back on again.

Right color registration sensor error
(Incorrect reading value of the color registration sensor (Right))

Error code 34

Print Unable 34
Turn the power off and then back on again.

Left color registration sensor error
(Incorrect reading value of the color registration sensor (Left))

<User Check>

- Check if there is a scratch, dirt or the like on the belt unit. If there is, replace the belt unit with a new one.

Step	Cause	Remedy
1	Harness connection failure of registration mark PCB ASSY	Check the harness connection of the registration mark PCB ASSY and reconnect it.
2	Registration mark PCB failure	Check the performance of the registration mark sensor following the procedure described in "Function code 75". If any problem occurs, replace the registration sensor holder ASSY.
3	Engine PCB failure	Replace the engine PCB ASSY.
4	Main PCB failure	Replace the main PCB ASSY.

■ Error code 36

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

Error occurs while the high-voltage power supply PCB is in ready state.

Error code 40

Print Unable 40
Turn the power off and then back on again.

Error occurs while the high-voltage power supply PCB is in operation

* After the error code 36 is displayed for 5 seconds, the power of the main unit is forcibly turned off, and it takes 10 minutes to recover.

<User Check>

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

Step	Cause	Remedy
1	Dirt on drum unit electrodes	Clean the electrodes of the drum unit and main body. (Refer to Fig. 3-3 (P3-33) and Fig. 3-6 (P3-34).)
2	Harness connection failure of high-voltage power supply PCB ASSY	Check the harness connection between the high-voltage power supply PCB ASSY and engine PCB ASSY, and the one between the high-voltage power supply PCB ASSY and main PCB ASSY. Then, reconnect them.
3	HVPS control PCB failure	Replace the HVPS control PCB ASSY.
4	High-voltage power supply PCB failure	Replace the high-voltage power supply PCB ASSY.
5	Engine PCB failure	Replace the engine PCB ASSY.
6	Main PCB failure	Replace the main PCB ASSY.

■ Error code 37

Print Unable 37
Turn the power off and then back on again.

Belt thermistor error

Step	Cause	Remedy
1	Harness connection failure of belt thermistor ASSY	Check the harness connection of the belt thermistor ASSY and reconnect it.
2	Main PCB failure	Replace the main PCB ASSY.

■ Error code 38

Print Unable 38
Turn the power off and then back on again.

External temperature sensor error

Error code 39

Print Unable 39
Turn the power off and then back on again.

External humidity sensor error

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

■ Error code 3A

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

Engine PCB transfer error (disconnection)

Step	Cause	Remedy
1	Harness connection failure of engine PCB ASSY	Check the harness connection between the main PCB ASSY and engine PCB ASSY, and reconnect it.
2	Engine PCB failure	Replace the engine PCB ASSY.
3	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 error (DIMM access error)

Error code 3E

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

NVRAM transfer error

Error code E6

Print Unable E6
Turn the power off and then back on again.

Write error in EEPROM

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

■ Error code 42

Print Unable 42
Turn the power off and then back on again.

HVPS control PCB transfer error

Step	Cause	Remedy
1	Harness connection failure of high-voltage power supply PCB ASSY	Check the harness connection between the high-voltage power supply PCB ASSY and HVPS control PCB ASSY, and reconnect it.
2	Harness connection failure of HVPS control PCB ASSY	Check the harness connection between the HVPS control PCB ASSY and main PCB ASSY, and reconnect it.
3	HVPS control PCB failure	Replace the HVPS control PCB ASSY.
4	High-voltage power supply PCB failure	Replace the high-voltage power supply PCB ASSY.
5	Main PCB failure	Replace the main PCB ASSY.

■ Error code 43

Print Unable 43
Turn the power off and then back on again.

Main/Engine ASIC transfer error

Step	Cause	Remedy
1	Harness connection failure between the main PCB ASSY and engine PCB ASSY	Check the harness connection between the main PCB ASSY and engine PCB ASSY, and reconnect it.
2	Engine PCB failure	Replace the engine PCB ASSY.
3	Main PCB failure	Replace the main PCB ASSY.

■ Error code 44 (K), 45 (Y), 46 (M), 47 (C)

No Toner
Open the Top Cover, then install Toner Cartridge. Black (K)

No Toner
Open the Top Cover, then install Toner Cartridge. Yellow (Y)

No Toner
Open the Top Cover, then install Toner Cartridge. Magenta (M)

No Toner
Open the Top Cover, then install Toner Cartridge. Cyan (C)

Toner cartridge is not installed into the machine.
(Non-installation is detected by the toner sensor.)

<User Check>

- Install the toner cartridge of the appropriate color.

Step	Cause	Remedy
1	Harness connection failure of toner/new sensor PCB ASSY	Check the harness connection of the toner/new sensor PCB ASSY and reconnect it.
2	Engine PCB failure	Replace the engine PCB ASSY.
3	Main PCB failure	Replace the main PCB ASSY.
4	Toner/new sensor PCB failure	Replace the toner/new sensor PCB ASSY.

■ Error code 48 (K), 49 (Y), 4A (M), 4B (C)

Replace Drum (K)

Replace Drum (Y)

Replace Drum (M)

Replace Drum (C)

Drum unit is at the end of life. (The drum counter value reaches the end of life.)

* When all four colors reach the end of life at the same time.

Replace Drums

<User Check>

- Replace the drum unit of the appropriate color with a new one.
- After replacing the drum unit with a new one, reset the counter using the control panel cover ASSY on the machine. (Refer to “2.1.3 Resetting the life counter of the drum unit” in Chapter 7.)

■ Error code 4C (K), 4D (Y), 4E (M), 4F (C)

Drum End Soon (K)

Drum End Soon (Y)

Drum End Soon (M)

Drum End Soon (C)

The drum unit will reach the end of life soon. (The drum counter value reaches 90 % of life.)

* When all four colors reach 90 % of the life at the same time.

Drums End Soon

<User Check>

- Prepare a new drum unit of the appropriate color.

■ Error code 52

Replace PF Kit1

Paper feeding kit is at the end of life.
(The counter value of the paper feeding kit reaches the end of life.)

Step	Cause	Remedy
1	Paper feeding kit worn out	Replace the paper feeding kit.

■ Error code 54

Replace Fuser

Fuse unit is at the end of life. (The counter value of the fuser unit reaches the end of life.)

Step	Cause	Remedy
1	Fuser unit is at the end of life.	Replace the fuser unit.

■ Error code 56

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

Fuser cover opened (Eject front sensor sticking at ON)

<User Check>

- Check if the fuser cover is closed correctly.

Step	Cause	Remedy
1	Paper eject front actuator catching on some position	Correct catching of the paper eject front actuator.
2	Eject front sensor PCB failure	Replace the eject front sensor PCB ASSY.
3	Main PCB failure	Replace the main PCB ASSY.

■ Error code 58

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

Fuser unit error (Some kind of temperature error of the fuser unit occurs.)

Error code 59

Self-Diagnostic
Will Automatically Restart within 15 minutes.

Fuser unit error (Re-detection of fuser unit failure upon startup after the error code 58 occurs.)
* If the same error is detected again 15 minutes later, the message below is indicated.

Error code 6A

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

Fuser unit error (The center thermistor does not detect 60 °C within the specified time.)

Error code 6B

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

Fuser unit error (The center thermistor does not detect 100 °C within the specified time.)

Error code 6C

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

Fuser unit error (The center thermistor detects higher temperature than the specified value.)

Refer to the next page for remedy.

Error code 6D

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

Fuser unit error (The center thermistor detects lower temperature than the specified value.)

Error code 6F

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

Fuser unit error (The center or side thermistors detect extremely high temperature.)

Error code 76

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

Fuser unit error (The center thermistor detects rapid temperature rising.)

Error code 78

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

Fuser unit error (The center thermistor detects rapid temperature falling.)

Step	Cause	Remedy
1	Harness connection failure between fuser unit connector and eject front sensor PCB ASSY	Check the harness connection between the fuser unit connector and eject front sensor PCB ASSY, and reconnect it.
2	Harness connection failure between eject front sensor PCB ASSY and main PCB ASSY	Check the harness connection between the eject front sensor PCB ASSY and main PCB ASSY, and reconnect it.
3	Fuser unit failure	Replace the fuser unit.
4	Low-voltage power supply PCB failure	Replace the low-voltage power supply PCB ASSY.
5	Eject front sensor PCB failure	Replace the eject front sensor PCB ASSY.
6	Main PCB failure	Replace the main PCB ASSY.

■ Error code 5B

Short paper **Open the Back Cover and then press Start.**

Paper of which size is not supported is used. (Paper of less than 148 mm length is fed.)

<User Check>

- Open the back cover and remove the paper.

■ Error code 5C

Small paper **Open the Back Cover and then press Start.**

Paper of which size is not supported is used.
(Paper of less than 148 mm length is specified from a computer.)

<User Check>

- Open the back cover and make print, or change the paper specified from a computer to larger-size paper.

■ Error code 5D

Belt End Soon

The belt unit will reach the end of life soon. (The belt unit counter value reaches 90 % of life.)

<User Check>

- Prepare a new belt unit.

■ Error code 5E

Replace Belt

The belt unit is at the end of life. (The belt unit counter value reaches the end of life.)

<User Check>

- Replace the belt unit with a new one.
- After replacing the belt unit, reset the counter using the control panel cover ASSY on the machine. (Refer to “2.1.1 Resetting the life counter of the belt unit” in Chapter 7.)

■ Error code 5F

WT Box End Soon

The waste toner box near full. (The waste toner sensor detects the always ON state.)

Note:
The same message appears in the case of the error code F2.

<User Check>

- Prepare a new waste toner box.

Step	Cause	Remedy
1	Harness connection failure of waste toner sensor	Check the harness connection of the waste toner sensor and reconnect it.
2	Waste toner sensor failure	Check the sensor performance following the procedure described in "Function code 32". If any problem occurs, replace the waste toner sensor.
3	HVPS control PCB failure	Replace the HVPS control PCB ASSY.
4	Main PCB failure	Replace the main PCB ASSY.

■ Error code 60 (C), 61 (M), 62 (Y), 63 (K)

Replace Toner
Open the Top Cover, replace Toner Cartridge. Cyan (C).

Replace Toner
Open the Top Cover, replace Toner Cartridge. Magenta (M).

Replace Toner
Open the Top Cover, replace Toner Cartridge. Yellow (Y).

Replace Toner
Open the Top Cover, replace Toner Cartridge. Black (K).

Toner cartridge is at the end of life. (The counter value of the develop roller reaches the end of life, or the toner sensor detects toner empty.)

<User Check>

- Gently shake the toner cartridge of the appropriate color from side to side and install it again.
- Replace the toner cartridge of the appropriate color.

Step	Cause	Remedy
1	HVPS control PCB failure	Replace the HVPS control PCB ASSY.
2	Engine PCB failure	Replace the engine PCB ASSY.
3	Main PCB failure	Replace the main PCB ASSY.
4	Harness connection failure of toner/new sensor PCB ASSY	Check the sensor performance following the procedure described in “Function code 32”. If any problem occurs, check the harness connection of the toner/new sensor PCB ASSY of the appropriate color, then reconnect it.
5	Toner/new sensor PCB failure	Replace the toner/new sensor PCB ASSY.

■ Error code 64 (C), 65 (M), 66 (Y), 67 (K)

Toner Low (#)

* Any of K, Y, M, or C, which refer to colors, is indicated in #.
Toner cartridge will reach the end of life soon. (The counter value of the develop roller reaches 90 % of life, or the toner sensor detects toner near empty.)

<User Check>

- Gently shake the toner cartridge of the appropriate color from side to side and install it again.
- Replace the toner cartridge of the appropriate color.

Step	Cause	Remedy
1	HVPS control PCB failure	Replace the HVPS control PCB ASSY.
2	Engine PCB failure	Replace the engine PCB ASSY.
3	Main PCB failure	Replace the main PCB ASSY.
4	Harness connection failure of toner/new sensor PCB ASSY	Check the sensor performance following the procedure described in "Function code 32". If any problem occurs, check the harness connection of the toner/new sensor PCB ASSY, then reconnect it.
5	Toner/new sensor PCB failure	Replace the toner/new sensor PCB ASSY.

■ Error code 70

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

Fuser/Eject drive motor error

Step	Cause	Remedy
1	Harness connection failure of fuser/eject drive motor	Check the harness connection of the fuser/eject drive motor and reconnect it.
2	Harness connection failure of fuser/eject drive motor sensor PCB ASSY	Check the harness connection of the fuser/eject drive motor sensor PCB ASSY and reconnect it.
3	Fuser/eject drive motor failure	Replace the fuser/eject drive motor.
4	Fuser/eject drive motor sensor PCB ASSY failure	Replace the fuser/eject drive motor sensor PCB ASSY.
5	Engine PCB failure	Replace the engine PCB ASSY.
6	Main PCB failure	Replace the main PCB ASSY.

■ Error code 73

Print Unable 73
Turn the power off and then back on again.

Recording ASIC read/write error

Step	Cause	Remedy
1	Harness connection failure of LED head control PCB ASSY	Check the harness connection between the main PCB ASSY and LED head control PCB ASSY, and reconnect them.
2	LED head control PCB failure	Replace the LED head control PCB ASSY.
3	Main PCB failure	Replace the main PCB ASSY.

■ Error code 74 (This error can be found out only in "Function code 82".)

Replace Toner
Open the Top Cover, replace Toner Cartridge. #

Toner of the color which is being used reaches the end of life while printing.
(The counter value of the develop roller reaches the end of life, or the toner sensor detects toner empty.) This error is not recorded in the error log.

Error code 87

Calibrate
Calibration failed. Insufficient Toner for Calibration.

Toner of the color which is being used reaches the end of life when implementing adjustment of color density from the control panel cover ASSY. (The counter value of the develop roller reaches the end of life, or the toner sensor detects toner empty.)

Error code 9E

Registration
Registration failed. Insufficient Toner for Registration.

Toner of the color which is being used reaches the end of life when implementing adjustment of color registration from the control panel cover ASSY. (The counter value of the develop roller reaches the end of life, or the toner sensor detects toner empty.)

<User Check>

- If any of the toner cartridges reaches the end of life, replace it with a new one.

Step	Cause	Remedy
1	Toner/new sensor PCB failure	Check the sensor performance following the procedure described in "Function code 32". If any problem occurs, replace the toner/new sensor PCB ASSY.
2	Engine PCB failure	Replace the engine PCB ASSY.

■ Error code 75

Cooling Down

Cooling down the inside of the machine to protect it.

The machine indicates “Cooling Down” in one of the conditions below.

- The temperature inside the machine is high.
- Both ends of the heat roller are heated extraordinarily.
- The paper media is replaced.

■ Error code 7D

Drum Error **Slide the Green tab on Drum Unit. Black (K)/ Cyan (C)/ Magenta (M)/ Yellow (Y).** **Refer to the User's Guide.**

Dirt on drum unit (Detection of discharge of the corona wire)

<User Check>

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

Step	Cause	Remedy
1	Dirt or dust on drum unit electrodes	Clean the electrodes of the drum unit, belt unit and main body. (Refer to Fig. 3-3, Fig-3-4 (next page) and Fig. 3-6 (P3-34).)
2	HVPS control PCB failure	Replace the HVPS control PCB ASSY.
3	High-voltage power supply PCB failure	Replace the high-voltage power supply PCB ASSY.
4	Main PCB failure	Replace the main PCB ASSY.

■ Electrodes location of the drum unit and toner cartridge

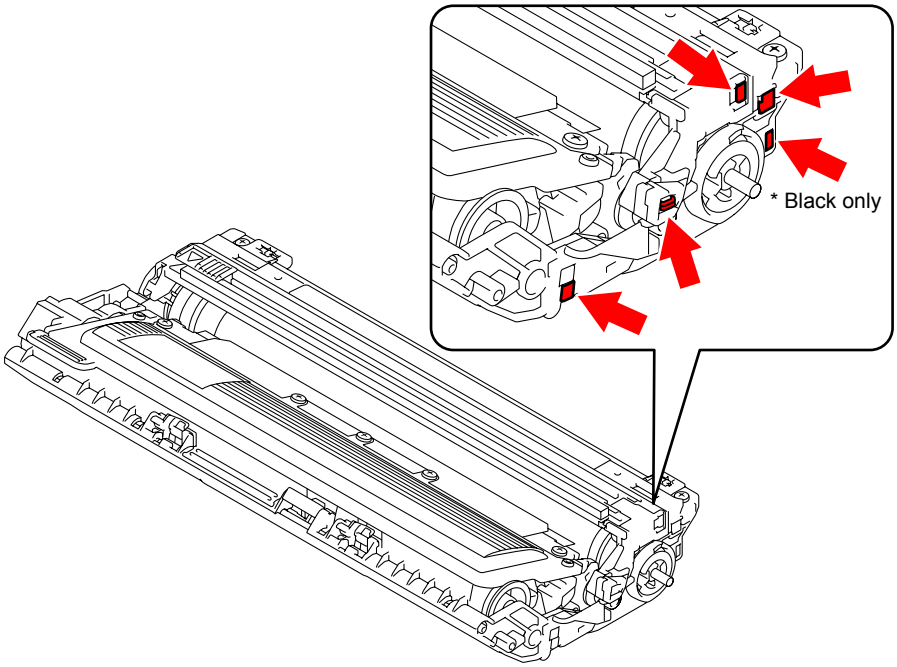


Fig. 3-3

■ Electrodes location of the belt unit

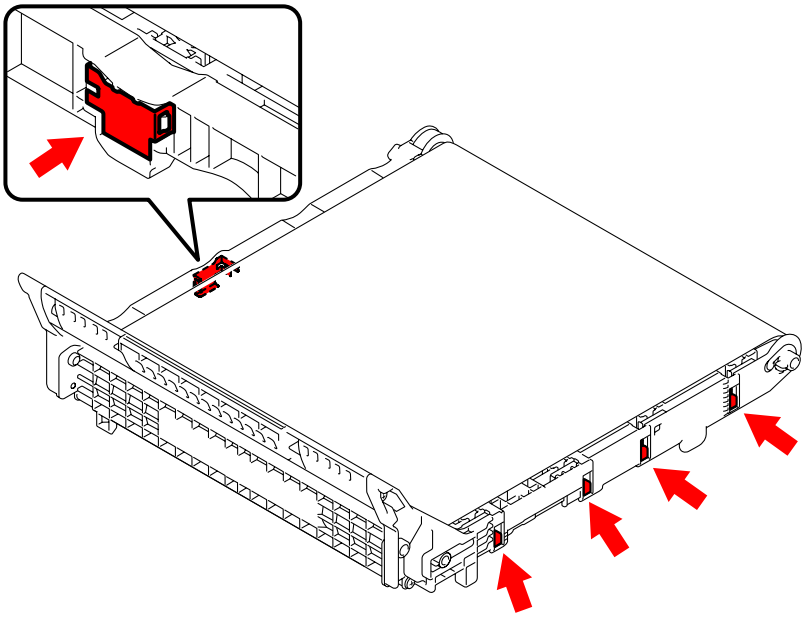


Fig. 3-4

■ Electrodes location of waste toner box

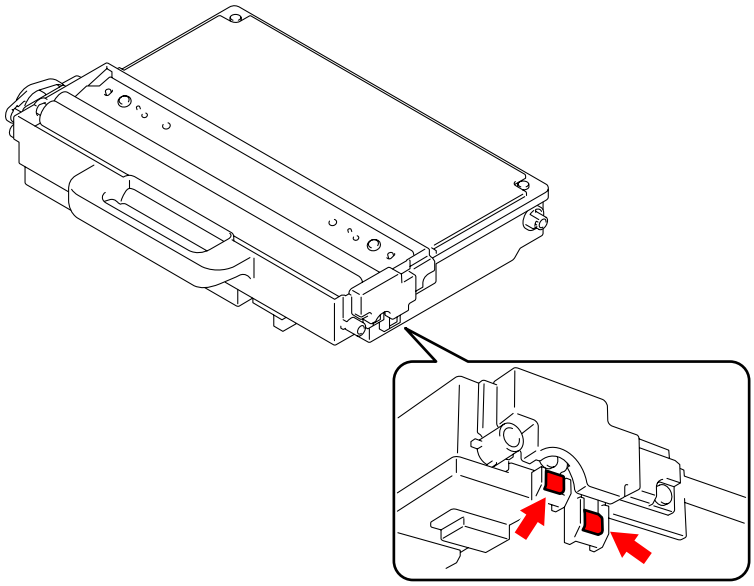


Fig. 3-5

■ Electrodes location of main body

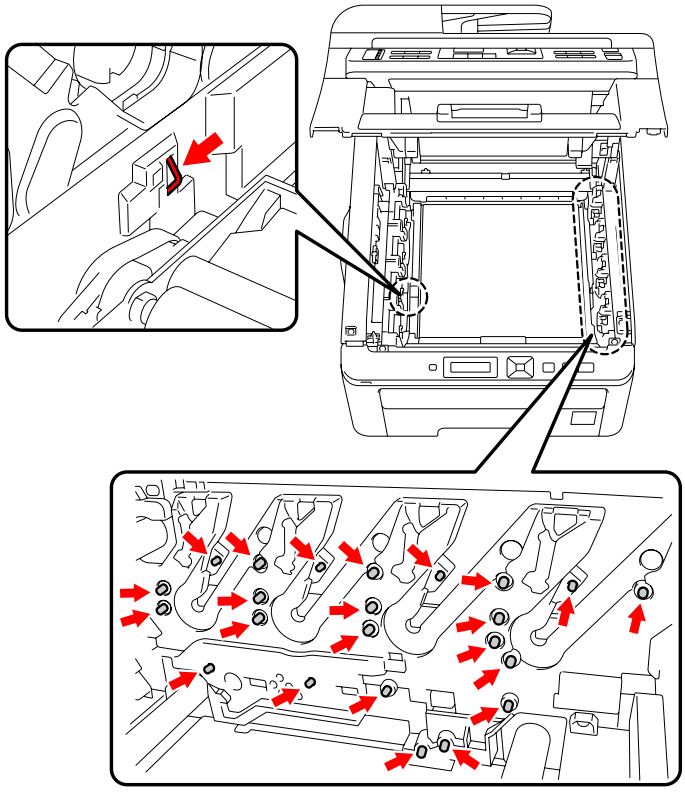


Fig. 3-6

<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)

Error code 80

Size mismatch **Reload correct paper.**

Fax paper size is incorrect (The paper is smaller 10 mm than the Letter size 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 81

Calibrate
Calibration failed. See Troubleshooting chapter in User's Guide.

Incorrect density sensor measurement value when implementing adjustment of color density from the control panel cover ASSY.

Error code 82

Calibrate
Calibration failed. Press Start, and try again.

Density patch measurement is not completed normally when implementing adjustment of color density from the control panel cover ASSY.

<User Check>

- Check if there is a scratch, dirt or the like on the belt unit. If there is, replace the belt unit with a new one.
- Check if the genuine toner cartridges are installed in the correct order of colors.

Step	Cause	Remedy
1	Density sensor shutter catching on some position	Correct catching of the density sensor shutter.
2	Harness connection failure of registration mark L PCB ASSY	Check the harness connection of the registration mark L PCB ASSY and reconnect it.
3	HVPS control PCB failure	Replace the HVPS control PCB ASSY.
4	Engine PCB failure	Replace the engine PCB ASSY.
5	Main PCB failure	Replace the main PCB ASSY.
6	Registration mark L PCB failure	Replace the registration sensor holder ASSY.

■ Error code 84

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

Paper jam at the back of the machine inside
(The eject front sensor sticks at ON after the registration rear actuator is turned OFF.)

Error code 88

Jam Inside
Open the Top Cover, pull out all 4 Drum Units completely and remove the jammed paper.

Paper jam inside the machine
(The registration rear actuator sticks at ON, or the eject front sensor fails to be turned ON.)

<User Check>

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

Step	Cause	Remedy
1	Harness connection failure of registration front/rear sensor PCB ASSY and eject front sensor PCB ASSY	Check the harness connections of the registration front/rear sensor PCB ASSY and eject front sensor PCB ASSY, and reconnect them.
2	Registration rear actuator or paper eject front actuator catching on some position	Correct catching of the registration rear actuator or paper eject front actuator.
3	Eject front sensor PCB failure (Error code 84)	Check the sensor performance following the procedure described in "Function code 32". If any problem occurs, replace the eject front sensor PCB ASSY.
	Registration front/rear sensor PCB failure (Error code 88)	Check the sensor performance following the procedure described in "Function code 32". If any problem occurs, replace the registration front/rear sensor PCB ASSY.
4	HVPS control PCB failure	Replace the HVPS control PCB ASSY.
5	Engine PCB failure	Replace the engine PCB ASSY.
6	Main PCB failure	Replace the main PCB ASSY.

■ Error code 8A

Jam Tray 1
Remove the jammed paper from Tray 1, then press Start.

Paper jam in the paper tray (The registration front sensor sticks at ON.)

<User Check>

- Check if the paper is jammed in the paper 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	Harness connection failure of registration front/rear sensor PCB ASSY	Check the harness connection of the registration front/rear sensor PCB ASSY and reconnect it.
2	Paper feeding kit worn out	Replace the paper feeding kit.
3	Registration front/rear sensor PCB failure	Check the sensor performance following the procedure described in "Function code 32". If any problem occurs, replace the registration front/rear sensor PCB ASSY.
4	HVPS control PCB failure	Replace the HVPS control PCB ASSY.
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.

Eject front sensor sticking at ON upon startup

<User Check>

- Close the fuser cover.

Step	Cause	Remedy
1	Harness connection failure of eject front sensor PCB ASSY	Check the harness connection of the eject front sensor PCB ASSY and reconnect it.
2	Eject front sensor PCB failure	Replace the eject front sensor PCB ASSY.
3	Main PCB failure	Replace the main PCB ASSY.

■ Error code 8E

Registration
Registration failed. Press Start, and try again.

Error in the adjustment of color registration result when implementing it from the control panel cover ASSY.

Error code 8F

Registration
Registration failed. See Troubleshooting chapter in User's Guide.

Detection of abnormal value of registration sensor sensitivity when implementing adjustment of color registration from the control panel cover ASSY

Error code 9D

Registration
Registration failed. See Troubleshooting chapter in User's Guide.

Detection of incorrect registration sensor measurement value when implementing adjustment of color registration from the control panel cover ASSY

<User Check>

- Check if there is a scratch, dirt or the like on the belt unit. If there is, replace the belt unit with a new one.

Step	Cause	Remedy
1	Harness connection failure of registration mark PCB ASSY	Check the harness connection of the registration mark PCB ASSY and reconnect it.
2	HVPS control PCB failure	Replace the HVPS control PCB ASSY.
3	High-voltage power supply PCB failure	Replace the high-voltage power supply PCB ASSY.
4	Main PCB failure	Replace the main PCB ASSY.
5	Registration mark PCB failure	Replace the registration sensor holder ASSY.

■ Error code 91

Size Mismatch
Reload correct paper, then press Start.

Incorrect paper size (The paper size of the tray and that of the data are not matched.)

<User Check>

- Check the paper size to be supported and load the appropriate size of paper.

■ Error code 94

No Paper
Load <size> paper, then press Start.

- No paper in paper tray
  (The registration front actuator is not turned ON after a certain period of time has passed.)
- Paper tray is not installed into the machine.

<User Check>

- Insert the paper into the paper tray.
- Remount the paper tray to the machine.

Step	Cause	Remedy
1	Lift arm and roller holder ASSY not assembled correctly	Be sure to put the boss of the roller holder ASSY into the hole on the lift arm securely.
2	Harness connection failure of registration front/rear sensor PCB ASSY	Check the harness connection of the registration front/rear sensor PCB ASSY and reconnect it.
3	Plate-up function malfunction	Replace the paper tray.
4	Registration front sensor failure	Check the sensor performance following the procedure described in "Function code 32". If any problem occurs, replace the registration front/rear sensor PCB ASSY.
5	HVPS control PCB failure	Replace the HVPS control PCB ASSY.
6	Main PCB failure	Replace the main PCB ASSY.

■ Error code 96

No Paper
Load <size> paper, then press Start.

No paper in all trays (The manual paper actuator is not ON, and the registration front actuator is not turned ON after a certain period of time has passed.)

<User Check>

- Load the paper into any of the trays.

■ Error code 97

Size Error
Specify the correct paper size for Tray 1.

Not supported paper

<User Check>

- Load paper with the size supported by the product.

■ Error code 9A

Manual Feed **Load <size> Paper.**

No paper in manual feed slot (The manual paper actuator is not turned ON.)

Drum Cleaning **Insert the blank paper into the Manual feed slot.**

No paper is inserted on the manual feed slot when drum cleaning is executed.
(The manual paper actuator is not turned ON.)

<User Check>

- Insert a paper into the manual feed slot.

Step	Cause	Remedy
1	Harness connection failure of manual sensor PCB ASSY	Check the harness connection of the manual sensor PCB ASSY and reconnect it.
2	Manual sensor failure	Check the sensor performance following the procedure described in "Function code 32". If any problem occurs, replace the manual sensor PCB ASSY.
3	Registration front/rear sensor PCB failure	Replace the registration front/rear sensor PCB ASSY.
4	HVPS control PCB failure	Replace the HVPS control PCB ASSY.
5	Main PCB failure	Replace the main PCB ASSY.

■ Error code 9F

No Paper **Load <size> paper, then press Start.**

No paper while printing

<User Check>

- Load the paper into the paper tray.

■ Error code A1

Cover is Open
Close the Top Cover.

Top cover opened (The top cover open switch sticks at OFF.)

<User Check>

- Close the top cover.

Step	Cause	Remedy
1	Harness connection failure of top cover switch ASSY	Check the harness connection of the top cover switch ASSY and reconnect it.
2	The member to press the top cover switch at the right side of the inside of the top cover is broken.	Replace the top cover sub ASSY.
3	HVPS control PCB failure	Replace the HVPS control PCB ASSY.
4	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

Error code A3

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

The document rear sensor does not detect the leading edge of a document although the document is fed farther than a designated distance.

<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	Harness connection failure of ADF sensor PCB	Check the harness connection of the ADF sensor PCB and reconnect it.
3	Document rear sensor failure	Replace the ADF sensor PCB ASSY.
4	Main PCB failure	Replace the main PCB ASSY.

■ Error code A4

Cover is Open
Close the ADF cover, then press Stop Key.

The ADF cover open sensor is OFF.

<User Check>

- Close the ADF cover.

Step	Cause	Remedy
1	ADF cover open sensor actuator catching on some position.	Correct catching of the ADF cover open sensor actuator.
2	Harness connection failure of ADF sensor PCB	Check the harness connection of the ADF sensor PCB and reconnect it.
3	ADF cover is changed in shape or cracked.	Replace the ADF cover ASSY.
4	ADF sensor PCB failure	Replace the ADF sensor PCB ASSY.
5	Main PCB failure	Replace the main PCB ASSY.

■ Error code A5

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

Scanning failure upon FAX transmission (Warning at the first occurrence)

<User Check>

- 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.

Scanning failure upon FAX transmission (After A5 occurs, the same symptom occurs again even though the power is turned OFF and ON.)

Step	Cause	Remedy
1	Document scanner unit failure	Replace the document scanner 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 error for recording the image

Step	Cause	Remedy
1	Document scanner unit failure	Replace the document scanner unit.
2	Main PCB failure	Replace the main PCB ASSY.

■ Error code AD

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

Timeout error during waiting for completion of scanning DMA transfer

Step	Cause	Remedy
1	Document scanner unit failure	Replace the document scanner unit.
2	Main PCB failure	Replace the main PCB ASSY.

■ Error code AF

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

CIS unit home position error (The home position sensor cannot be detected.)

Step	Cause	Remedy
1	Harness connection failure of home position sensor.	Check the harness connection of the home position sensor and reconnect it.
2	Document scanner unit failure	Replace the document scanner unit.
3	Main PCB failure	Replace the main PCB ASSY.

■ Error code B0

Scanner Error

The harness of the CIS unit is inserted incompletely.

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

Step	Cause	Remedy
1	Incomplete insertion of the harness of the CIS unit	Reconnect the harness for the CIS unit correctly.
2	Scanner harness broken	Replace the document scanner unit.
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.

Error code B9

Scanner Error

Scanning light adjustment error.

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

Refer to the next page for remedy.

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	Document scanner unit failure	Replace the document scanner unit.
2	Main PCB failure	Replace the main PCB ASSY.

■ Error code C0 (K)

Cartridge Error Put the Black (K) Toner Cartridge back in.

Identification failure for a new toner cartridge (K) (The new toner sensor sticks at ON.)

Error code C1 (Y)

Cartridge Error Put the Yellow (Y) Toner Cartridge back in.

Identification failure for a new toner cartridge (Y) (The new toner sensor sticks at ON.)

Error code C2 (M)

Cartridge Error Put the Magenta (M) Toner Cartridge back in.

Identification failure for a new toner cartridge (M) (The new toner sensor sticks at ON.)

Error code C3 (C)

Cartridge Error Put the Cyan (C) Toner Cartridge back in.

Identification failure for a new toner cartridge (C) (The new toner sensor sticks at ON.)

<User Check>

- Install the toner cartridges into the machine properly.

Step	Cause	Remedy
1	Power off or top cover opened while detecting a new toner cartridge	Reset the developing bias voltage and develop roller counter. (Refer to "2.2 Develop Roller Counter Reset Function" in Chapter 7.)
2	Toner/new sensor failure	Replace the toner/new sensor PCB ASSY.
3	Main PCB failure	Replace the main PCB ASSY.

■ Error code C6

Toner Error
One or more Toner Cartridges are not detected. Pull out and reinsert all 4 Toner Cartridges.

Pressure engagement/disengagement failure of toner cartridge (Develop release sensor output error)

Step	Cause	Remedy
1	Harness connection failure of develop release motor	Check the harness connection of the develop release motor and reconnect it.
2	Harness connection failure of develop release sensor PCB ASSY	Check the harness connection of the develop release sensor PCB ASSY and reconnect it.
3	Develop release motor failure	Replace the develop release motor ASSY.
4	Develop release sensor PCB failure	Replace the develop release sensor PCB ASSY.
5	Engine PCB failure	Replace the engine PCB ASSY.
6	HVPS control PCB failure	Replace the HVPS control PCB ASSY.
7	Main PCB failure	Replace the main PCB ASSY.

■ Error code C7

Out of Memory
Add more Memory.

Insufficient memory

<User Check>

- Install additional DIMM memory.
- Make a print by dividing data.

■ Error code C8

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

RAM area for secure 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.

DIMM error

<User Check>

- Check if the DIMM is installed correctly.
- Replace the DIMM with a new one.

■ Error code CA

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

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 other one.

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

■ Error code CB

No Belt Unit
Open the Top Cover, pull out all 4 Drum Units completely and install the Belt Unit.

Belt unit is not installed into the machine.
(The density sensor detects that the belt unit is not installed.)

<User Check>

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

Step	Cause	Remedy
1	Harness connection failure of registration mark L PCB ASSY	Check the harness connection of the registration mark L PCB ASSY and reconnect it.
2	Harness connection failure of shutter solenoid of the density sensor	Check the harness connection of shutter solenoid of the density sensor and reconnect it.
3	Engine PCB failure	Replace the engine PCB ASSY.
4	Main PCB failure	Replace the main PCB ASSY.
5	Registration mark L PCB failure	Replace the registration sensor holder ASSY.

■ Error code CE

No Waste Toner
Install the Waste Toner Box. Refer to the User's Guide for instructions.

Waste toner box is not installed into the machine.
(It is detected by turning ON and OFF the waste toner sensor using a shutter.)

<User Check>

- Check if the waste toner box is installed into the machine.
- Replace the waste toner box with a new one.

Step	Cause	Remedy
1	Harness connection failure of waste toner sensor	Check the harness connection of the waste toner sensor and reconnect it.
2	HVPS control PCB failure	Replace the HVPS control PCB ASSY.
3	Main PCB failure	Replace the main PCB ASSY.

■ Error code CF

Replace WT Box
Replace the Waste Toner Box. Refer to the User's Guide for instructions.

Waste toner box full (500 pages are printed after the waste toner sensor sticks at ON.)

Note:
The same message appears in the case of the error code F4.

<User Check>

- Replace the waste toner box with a new one.

Step	Cause	Remedy
1	Harness connection failure of waste toner sensor	Check the harness connection of the waste toner sensor and reconnect it.
2	Waste toner sensor failure	Check the sensor performance following the procedure described in "Function code 32". If any problem occurs, replace the waste toner sensor.
3	HVPS control PCB failure	Replace the HVPS control PCB ASSY.
4	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 DE

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

The connector of the fuser unit thermistor is inserted incorrectly.
(It is detected that the edge temperature is lower than 60°C.)

Step	Cause	Remedy
1	Connection failure of fuser unit thermistor connector	Check the connection of the fuser unit thermistor connector and reconnect it.
2	Fuser unit failure	Replace the fuser unit.

■ Error code E0

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

Program error

<User Check>

- Turn the power off and on.

■ Error code E1

Print Unable E1
Turn off and on.

Program error

<User Check>

- Turn the power off and on.

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

■ Error code E2

Print Unable E2
Turn the power off and then back on again.

Temperature error of heat roller
(It is detected that the edge temperature is higher than 280°C.)

Step	Cause	Remedy
1	Fuser unit failure	Replace the fuser unit.
2	Eject front sensor PCB failure	Replace the eject front sensor PCB ASSY.
3	Main PCB failure	Replace the main PCB ASSY.

■ Error code E3

Print Unable E3
Turn the power off and then back on again.

Drum motor origin sensor failure

Step	Cause	Remedy
1	Drum motor origin sensor PCB failure	Replace the drum motor origin sensor PCB ASSY.
2	Engine PCB failure	Replace the engine PCB ASSY.
3	Main PCB failure	Replace the main PCB ASSY.

■ Error code E9

Print Unable E9
Turn the power off and then back on again.

Maintenance monitor error (The engine software detects an incorrect setting value.)

Step	Cause	Remedy
1	Harness connection failure of engine PCB ASSY	Check the harness connection between the main PCB ASSY and engine PCB ASSY, and reconnect it.
2	Engine PCB failure	Replace the engine PCB ASSY.
3	Main PCB failure	Replace the main PCB ASSY.

■ Error code EC

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

Main fan error (The engine PCB controls the rotation of the main fan.)

Step	Cause	Remedy
1	Connection failure of main fan connector	Check the connection of the main fan connector and reconnect it.
2	Main fan failure	Replace the main fan ASSY.
3	HVPS control PCB failure	Replace the HVPS control PCB ASSY.
4	High-voltage power supply PCB failure	Replace the high-voltage power supply PCB ASSY.
5	Engine PCB failure	Replace the engine PCB ASSY.
6	Main PCB failure	Replace the main PCB ASSY.

■ Error code ED

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

Communication with the wireless LAN PCB cannot be established upon startup of the power supply

Step	Cause	Remedy
1	Harness connection failure of wireless LAN PCB	Check the connection of the wireless LAN PCB connector and reconnect it.
2	Wireless LAN PCB failure	Replace the wireless LAN PCB ASSY.
3	Main PCB failure	Replace the main PCB ASSY.

■ Error code EE

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

Unavailability of communication after connecting to the wireless LAN PCB is detected

<User Check>

- Relocate the printer because there is a possibility that large noise is generated in the environment where the printer is installed.

Step	Cause	Remedy
1	Wireless LAN PCB failure	Replace the wireless LAN 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.

Low-voltage power supply PCB failure
(It is detected that the average coverage value suddenly becomes 0 %.)

<User Check>

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

Step	Cause	Remedy
1	Low-voltage power supply PCB failure	Replace the low-voltage power supply PCB ASSY.
2	Main PCB failure	Replace the main PCB ASSY.

■ Error code F2

WT Box End Soon

The waste toner box near full.
(Cleaning high voltage discharge due to reaching the life of the cleaning roller)

Note:
The same message appears in the case of the error code 5F.

<User Check>

- Prepare a new waste toner box.

Step	Cause	Remedy
1	HVPS control PCB failure	Replace the HVPS control PCB ASSY.
2	Engine PCB failure	Replace the engine PCB ASSY.

■ Error code F4

Replace WT Box
Replace the Waste Toner Box. Refer to the User's Guide for instructions.

Waste toner box full.
(Overcurrent flows to the cleaning roller due to the end of life of the cleaning roller.)

Note:
The same message appears in the case of the error code CF.

<User Check>

- Replace the waste toner box with a new one.

Step	Cause	Remedy
1	HVPS control PCB failure	Replace the HVPS control PCB ASSY.
2	Engine PCB failure	Replace the engine PCB ASSY.

■ Error code F8

Machine Error F8

Battery connection error

Step	Cause	Remedy
1	Harness connection failure of battery	Check the connection of the battery connector and reconnect it.
2	Battery failure	Replace the battery ASSY.
3	Main PCB failure	Replace the main PCB ASSY.

■ Error code F9

Machine Error F9

Power turned OFF while the function code 74 is being executed and “PARAMETER INT” is being displayed

Step	Cause	Remedy
1	Incorrect operation when setting EEPROM customize code	Re-enter the EEPROM customize code.

■ Error code FA (K), FB (C), FC (M), FD (Y)

No Toner
Open the Top Cover, then install Toner Cartridge. Black (K)

No Toner
Open the Top Cover, then install Toner Cartridge. Cyan (C)

No Toner
Open the Top Cover, then install Toner Cartridge. Magenta (M)

No Toner
Open the Top Cover, then install Toner Cartridge. Yellow (Y)

The drum unit is not installed in the machine body of the product.
(No conduction on the drum electrode)

<User Check>

- Check if the drum unit of the appropriate color is installed in the machine body of the product.

Step	Cause	Remedy
1	Bend of electrode contact of main body	Correct the bend of the electrode contact of the main body.
2	Dirt on electrodes of main body	Clean the electrodes of the main body. (Refer to Fig. 3-6 (P3-34))
3	HVPS control PCB failure	Replace the HVPS control PCB ASSY.
4	High-voltage power supply PCB failure	Replace the high-voltage power supply PCB ASSY.
5	Engine PCB failure	Replace the engine PCB ASSY.

■ Error code FE

- -

Detection of incorrect measurement value of density sensor sensitivity calibration

<User Check>

- Check if the 4-color drum units are properly installed in the product.

Step	Cause	Remedy
1	Belt unit failure	Replace the belt unit.
2	Harness connection failure of registration mark L PCB ASSY	Check the harness connection of the registration mark L PCB ASSY and reconnect it.
3	Registration mark relay PCB failure	Replace the registration mark relay PCB ASSY.
4	Main PCB failure	Replace the main PCB ASSY.
5	Registration mark L PCB failure	Replace the registration sensor holder ASSY.

■ Error code FF

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

Overcurrent error of wireless LAN PCB

Step	Cause	Remedy
1	Wireless LAN PCB failure	Replace the wireless LAN PCB ASSY.
2	Main PCB failure	Replace the main PCB ASSY.

3. 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.

3.1 No Feeding

<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.
- Check if the thickness of the paper is 60 to 105 g/m^2.
- Release the sleep mode or update the firmware to the latest version if the papers are not fed from the manual feed slot when the machine is in the sleep mode.

Step	Cause	Check	Result	Remedy
1	Paper pick-up roller worn out	Is the paper pick-up roller worn out?	Yes	Replace the roller holder ASSY.
2	Plate gear damaged	Is the plate gear damaged?	Yes	Replace the paper tray.
3	Registration front actuator malfunction	Does the registration front actuator move smoothly?	No	Re-assemble the registration front actuator.
4	Disconnection of the pick-up solenoid harness	Is the harness of the pick-up solenoid disconnected?	Yes	Reconnect the harness of the pick-up solenoid.
5	Registration front/ rear sensor PCB failure	Is the problem solved by replacing the registration front/rear sensor PCB ASSY?	Yes	Replace the registration front/rear sensor PCB ASSY.
6	Pick-up solenoid failure	Does the pick-up solenoid move correctly?	No	Replace the pick-up solenoid.
7	Paper feed motor failure	Is the problem solved by replacing the paper feed motor ASSY?	Yes	Replace the paper feed motor ASSY.
8	Engine PCB failure	Is the problem solved by replacing the engine PCB ASSY?	Yes	Replace the engine PCB ASSY.

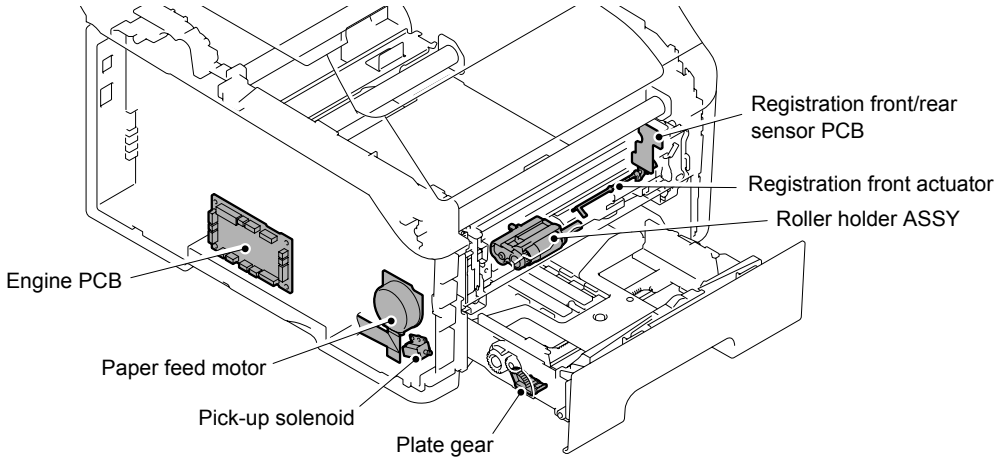


Fig. 3-7

3.2 Double Feeding

<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.
- Check if the thickness of the paper is 60 to 105 g/m^2.
- Set out papers and reload them into the paper tray.

Step	Cause	Check	Result	Remedy
1	Separation pad or separation roller worn out	Is the surface of the separation pad or separation roller worn out?	Yes	Replace the paper feeding kit.

3.3 Paper Jam

<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.
- Check if the thickness of the paper is 60 to 105 g/m^2.

■ Paper jam in the paper tray and front section

Step	Cause	Check	Result	Remedy
1	Foreign object around front section	Is there a foreign object around the front section?	Yes	Remove the foreign object.
2	Belt unit malfunction	Does the belt unit move correctly?	No	Replace the belt unit.
3	Registration front actuator catching on some position	Does the registration front actuator move smoothly?	No	Re-assemble the registration front actuator.
4	Registration rear actuator catching on some position	Does the registration rear actuator move smoothly?	No	Re-assemble the registration rear actuator.
5	Registration front/ rear sensor PCB failure	Does the registration front/rear sensor move smoothly? (Check it following the procedure described in "Function code 32".)	No	Replace the registration front/rear sensor 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 rear actuator top failure	Does the paper rear eject actuator top move smoothly? Is it damaged?	No	Replace the paper eject rear actuator top.
3	Paper eject front actuator failure	Does the paper eject front actuator move smoothly? Is it damaged?	No	Replace the paper eject front actuator.
4	Paper eject rear actuator failure	Does the paper eject rear actuator move smoothly? Is it damaged?	No	Replace the fuser unit.
5	Eject front sensor PCB failure	Is the problem solved by replacing the eject front sensor PCB ASSY?	Yes	Replace the eject front sensor PCB ASSY.
6	Eject rear sensor PCB failure	Is the problem solved by replacing the eject rear sensor PCB ASSY?	Yes	Replace the eject rear sensor PCB ASSY.

3.4 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.
- Replace the waste toner box with a new one.

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 dirty?	Yes	Clean the pressure roller.
2	Dirt in the paper feed system	Is the paper tray or feed system on the drum unit dirty with toner?	Yes	Wipe dirt off.
3	Belt unit dirty	Does dirt on the paper disappear after replacing the belt unit with a new one?	Yes	Replace the belt unit.
4	Waste toner sensor failure	Is the waste toner box full of toner?	No	Replace the waste toner sensor.
5	Main PCB failure	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.

3.5 Wrinkles 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.
- Check if the thickness of the paper is 60 to 105 g/m^2.

Step	Cause	Check	Result	Remedy
1	Fuser unit failure	Do wrinkles on the paper disappear after replacing the fuser unit with a new one?	Yes	Replace the fuser unit.

3.6 Curl of Paper

TS

<User Check>

- Change the curl improvement mode setting of the driver.
- Switch the delivery roller switch lever.

Note:
Be sure not set the curl improvement mode of the driver and switch to the delivery roller switch lever at the same time because it might worsen the level of curl.

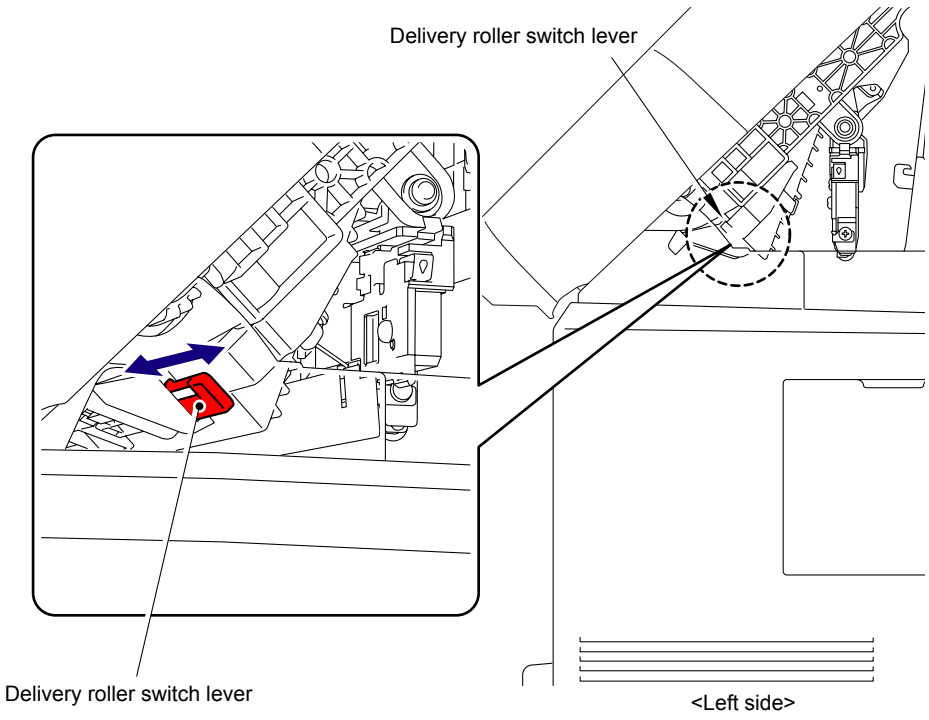


Fig. 3-8

4. PRINT IMAGE DEFECT FROM PC/USB/FAX RECEPTION TROUBLESHOOTING

4.1 Image Defect Examples

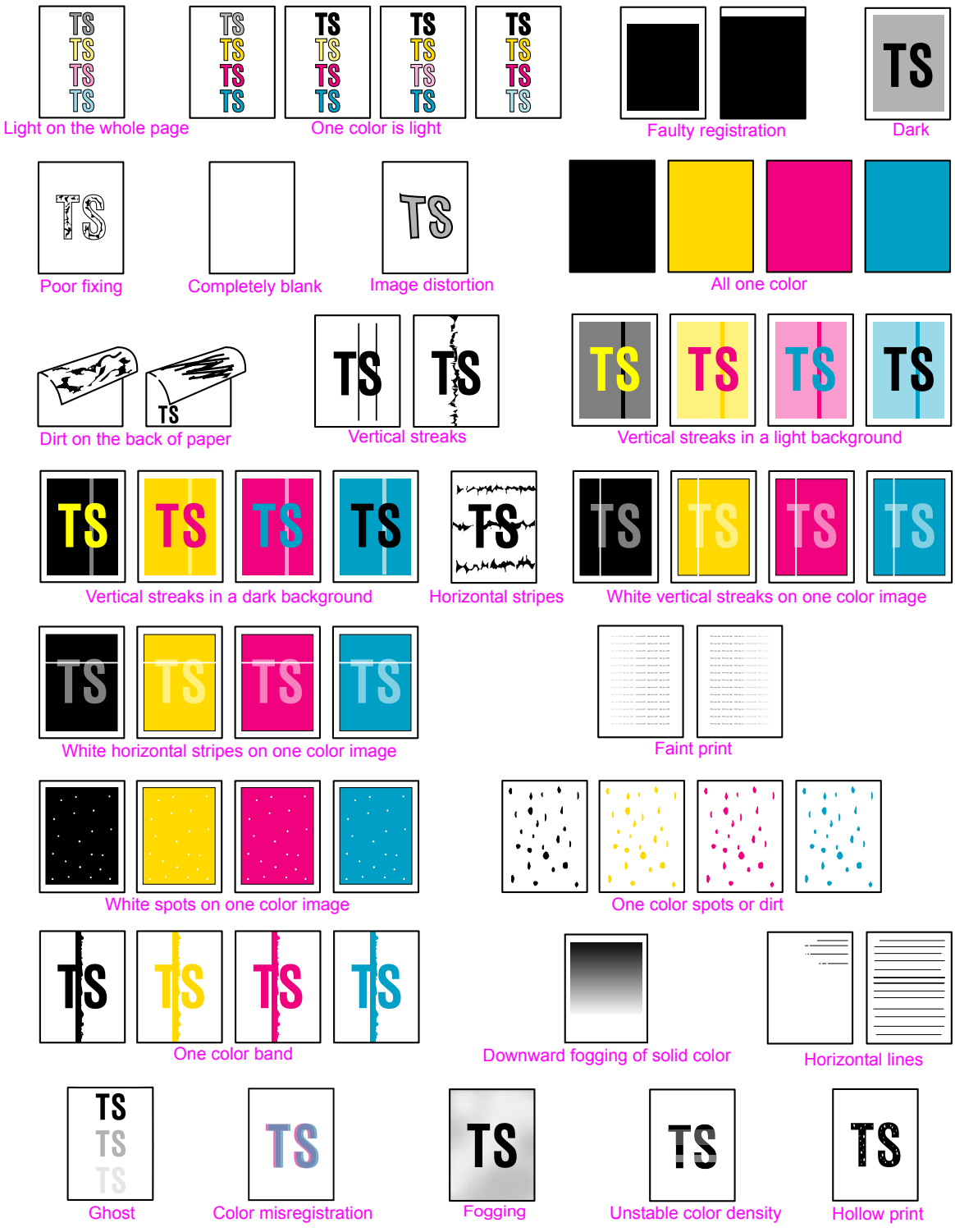


Fig. 3-9

4.2 Pitch Indicated in Roller Image

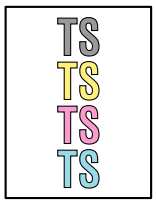
Image defects which occur periodically may be caused by a failure of the roller. By referring to the table below, specify the cause based on the pitch indicated in the image of each roller.

No.	Parts name	The pitch which appears in the image
1	Develop roller	31 mm
2	Exposure drum	94 mm
3	Heat roller in the fuser unit	78 mm
4	Pressure roller in the fuser unit	78 mm

4.3 Troubleshooting Image Defect

Image defect related problems are 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 whole page

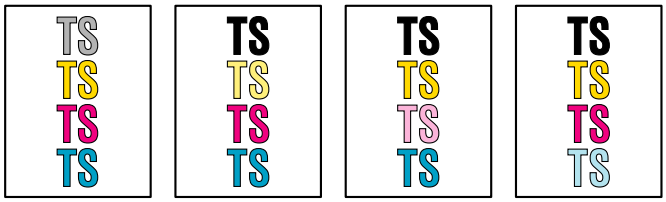


<User Check>

- Check the machine's environment. High temperature and high humidity or low temperature and low humidity conditions can cause this problem.
- If the whole page is light, toner save mode may be on. Turn off the toner save mode.
- Replace the toner cartridge or drum unit with a new one.
- Adjust the color density from the control panel cover ASSY.
- Leave the machine for a while as the power remains ON.

Step	Cause	Check	Result	Remedy
1	HVPS control PCB failure	Is the problem solved after replacing the HVPS control PCB ASSY?	Yes	Replace the HVPS control PCB ASSY.
2	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.
3	Engine PCB failure	Is the problem solved after replacing the engine PCB ASSY?	Yes	Replace the engine PCB ASSY.
4	Main PCB failure	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.
5	LED head control PCB failure	Is the problem solved after replacing the LED head control PCB ASSY?	Yes	Replace the LED head control PCB ASSY.
6	LED ASSY failure	Is the problem solved after replacing the LED ASSY?	Yes	Replace the LED ASSY.
7	Registration mark L PCB failure	Is the problem solved after replacing the registration sensor holder ASSY?	Yes	Replace the registration sensor holder ASSY.

■ One color is light



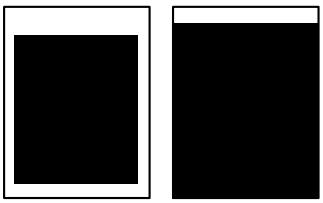
<User Check>

- Open and close the top cover and make print again.
- Check the machine's environment. High temperature and high humidity or low temperature and low humidity conditions can cause this problem.
- Replace the toner cartridge or drum unit with a new one.
- Adjust the color density from the control panel cover ASSY.

Step	Cause	Check	Result	Remedy
1	Dirt on exposure drum electrode	Are the electrodes on the drum unit of the appropriate color and machine body dirty?	Yes	Clean both electrodes. (Refer to Fig. 3-3 (P3-33) and Fig. 3-6 (P3-34))
2	Dirt on develop roller electrode	Are the electrodes on the develop roller of the appropriate color and machine body dirty?	Yes	Clean both electrodes. (Refer to Fig. 3-3 (P3-33) and Fig. 3-6 (P3-34))
3	Dirt on belt unit electrode	Are the electrodes on the belt unit of the appropriate color and machine body dirty?	Yes	Clean both electrodes. (Refer to Fig. 3-4 (P3-33) and Fig. 3-6 (P3-34))
4	Dirt on LED array	Is the LED array of the appropriate color dirty?	Yes	Wipe the dirt off with a clean, soft, and lint-free cloth.
5	Lifting of LED ASSY	Is printing of the LED ASSY test pattern correctly done in "Function code 68"?	No	Re-assemble the LED ASSY.
6	Toner/new sensor PCB failure	After replacing the toner cartridge of the appropriate color with a new one, does the same problem occur even after printing several pages?	No	Replace the toner cartridge of the appropriate color.
7		Does the machine start printing even after removing the toner cartridge of the appropriate color from the drum unit?	Yes	- Check the harness connection of the toner/new sensor PCB ASSY of the appropriate color. - Replace the toner/ new sensor PCB ASSY of the appropriate color.

Step	Cause	Check	Result	Remedy
8	HVPS control PCB failure	Is the problem solved after replacing the HVPS control PCB ASSY?	Yes	Replace the HVPS control PCB ASSY.
9	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.
10	LED head control PCB failure	Is the problem solved after replacing the LED head control PCB ASSY?	Yes	Replace the LED head control PCB ASSY.
11	Main PCB failure	Is the problem solved after replacing the main PCB ASSY.	Yes	Replace the main PCB ASSY.

■ Faulty registration



Step	Cause	Check	Result	Remedy
1	Registration rear actuator catching on some position	Does the registration rear actuator move smoothly?	No	Correct catching of the registration rear actuator.
2	HVPS control PCB failure	Is the problem solved after replacing the HVPS control PCB ASSY?	Yes	Replace the HVPS control PCB ASSY.
3	Main PCB failure	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.

■ Dark

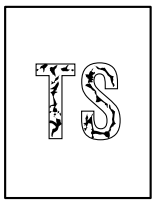
TS

<User Check>

- Check the machine's environment. High temperature and high humidity or low temperature and low humidity conditions can cause this problem.
- Clean the corona wire.
- Replace the toner cartridge or drum unit with a new one.
- Adjust the color density from the control panel cover ASSY.

Step	Cause	Check	Result	Remedy
1	Corona wire conduction failure	Are the electrodes on the drum unit and machine body dirty?	Yes	Clean both electrodes. (Refer to Fig. 3-3 (P3-33) and Fig. 3-6 (P3-34))
2	Dirt on belt unit electrode	Are the electrodes on the belt unit and machine body dirty?	Yes	Clean both electrodes. (Refer to Fig. 3-4 (P3-33) and Fig. 3-6 (P3-34))
3	HVPS control PCB failure	Is the problem solved after replacing the HVPS control PCB ASSY?	Yes	Replace the HVPS control PCB ASSY.
4	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.
5	Engine PCB failure	Is the problem solved after replacing the engine PCB ASSY?	Yes	Replace the engine PCB ASSY.
6	Main PCB failure	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.
7	LED head control PCB failure	Is the problem solved after replacing the LED head control PCB ASSY?	Yes	Replace the LED head control PCB ASSY.
8	Registration mark L PCB failure	Is the problem solved after replacing the registration sensor holder ASSY?	Yes	Replace the registration sensor holder ASSY.
9	Toner/new sensor PCB failure	Is the problem solved after replacing the toner/new sensor PCB ASSY?	Yes	Replace the toner/new sensor PCB ASSY.

■ Poor fixing



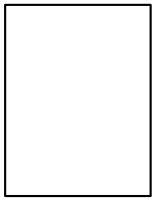
<User Check>

- Open and close the top cover and make print again.
- Adjust the color density from the control panel cover ASSY.
- Check the machine's environment. High temperature and high humidity or low temperature and low humidity conditions can cause this problem.
- Replace the belt unit with a new one.
- Replace the drum unit with a new one.
- Replace the toner cartridge with a new one.

Memo:
You can check this image defect with the function code 71.
(Refer to "1.4.21 Color test pattern (Function code 71)" in Chapter 7)

Step	Cause	Check	Result	Remedy
1	Lifting of LED ASSY	Is printing of the LED ASSY test pattern correctly done in "Function code 68"?	No	Re-assemble the LED ASSY.
2	Fuser unit failure	Is the problem solved after replacing the fuser unit?	Yes	Replace the fuser unit.
3	Low-voltage power supply PCB failure	Is the problem solved after replacing the low-voltage power supply PCB ASSY?	Yes	Replace the low-voltage power supply PCB ASSY.
4	HVPS control PCB failure	Is the problem solved after replacing the HVPS control PCB ASSY?	Yes	Replace the HVPS control PCB ASSY.
5	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.
6	Engine PCB failure	Is the problem solved after replacing the engine PCB ASSY?	Yes	Replace the engine PCB ASSY.
7	Toner/new sensor PCB failure	Is the problem solved after replacing the toner/new sensor PCB ASSY?	Yes	Replace the toner/new sensor PCB ASSY.
8	Main PCB failure	Is the problem solved after replacing the main PCB?	Yes	Replace the main PCB ASSY.

■ Completely blank

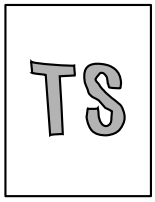


<User Check>

- Replace the belt unit with a new one.
- Replace the toner cartridge or drum unit 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. 3-3 (P3-33) and Fig. 3-6 (P3-34))
2	Dirt on develop roller electrode	Are the electrodes on the develop roller and machine body dirty?	Yes	Clean both electrodes. (Refer to Fig. 3-3 (P3-33) and Fig. 3-6 (P3-34))
3	LED array FFC connection failure	Is the LED array FFC connected securely?	No	Reconnect the LED array FFC.
4	LED ASSY failure	Is the problem solved after replacing the LED ASSY?	Yes	Replace the LED ASSY.
5	HVPS control PCB failure	Is the problem solved after replacing the HVPS control PCB ASSY?	Yes	Replace the HVPS control 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	LED head control PCB failure	Is the problem solved after replacing the LED head control PCB ASSY?	Yes	Replace the LED head control PCB ASSY.
8	Main PCB failure	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.

■ Image distortion

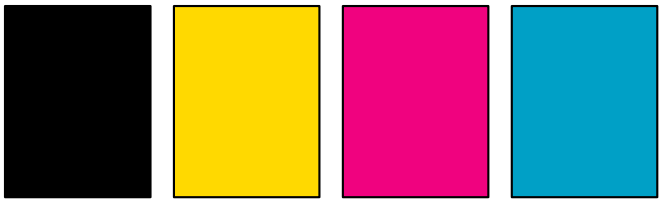


<User Check>

- Replace the belt unit with a new one.

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

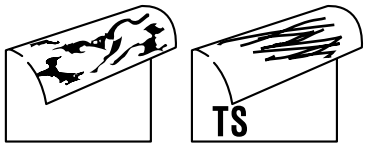
■ All one color



Memo:
You can check this image defect with the function code 71.
(Refer to "1.4.21 Color test pattern (Function code 71)" in Chapter 7)

Step	Cause	Check	Result	Remedy
1	Corona wire failure	Are the electrodes on the drum unit of the appropriate color and machine body dirty?	Yes	Clean both electrodes. (Refer to Fig. 3-3 (P3-33) and Fig. 3-6 (P3-34))
2		Is the corona wire damaged?	Yes	Replace the drum unit.
3	HVPS control PCB failure	Is the problem solved after replacing the HVPS control PCB ASSY?	Yes	Replace the HVPS control PCB ASSY.
4	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.
5	LED ASSY failure	Is the problem solved after replacing the LED ASSY?	Yes	Replace the LED ASSY.
6	LED head control PCB failure	Is the problem solved after replacing the LED head control PCB ASSY?	Yes	Replace the LED head control PCB ASSY.
7	Main PCB failure	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.

■ Dirt on the back of paper

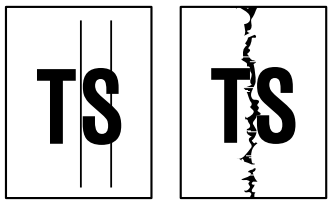


<User Check>

- Replace the waste toner box with a new one.
- Replace the belt unit with a new one.

Step	Cause	Check	Result	Remedy
1	Fuser unit dirty	Is the pressure roller dirty?	Yes	Print approximate 10 pages.
		Is the fuser unit dirty?	No	Replace the fuser unit.
2	Dirt in the paper feed system	Is the paper tray or feed system on the drum unit dirty with toner?	Yes	Wipe dirt off.
3	Waste toner sensor failure	Is the waste toner box full of toner?	Yes	Replace the waste toner sensor.
4	HVPS control PCB failure	Is the problem solved after replacing the HVPS control PCB ASSY?	Yes	Replace the HVPS control PCB ASSY.
5	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.

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

Memo:

You can check this image defect with the function code 71.
(Refer to "1.4.21 Color test pattern (Function code 71)" in Chapter 7)

Step	Cause	Check	Result	Remedy
1	Dirt in the paper feed system	Is the paper tray or feed system on the drum unit dirty with toner?	Yes	Wipe dirt off.
2	Exposure drum dirty	Is there vertical dirt with toner on the surface of the exposure drum?	Yes	Clean the drum unit.
3	Bend of tray ground spring	Is the tray ground spring bent? (Refer to Fig. 3-10)	Yes	Replace the paper tray.
4	Scratch on the heat roller	Is there a scratch on the surface of the heat roller?	Yes	Replace the fuser unit.
5	LED ASSY failure	Is the problem solved after replacing the LED ASSY?	Yes	Replace the LED ASSY.

Note:

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 temporally.

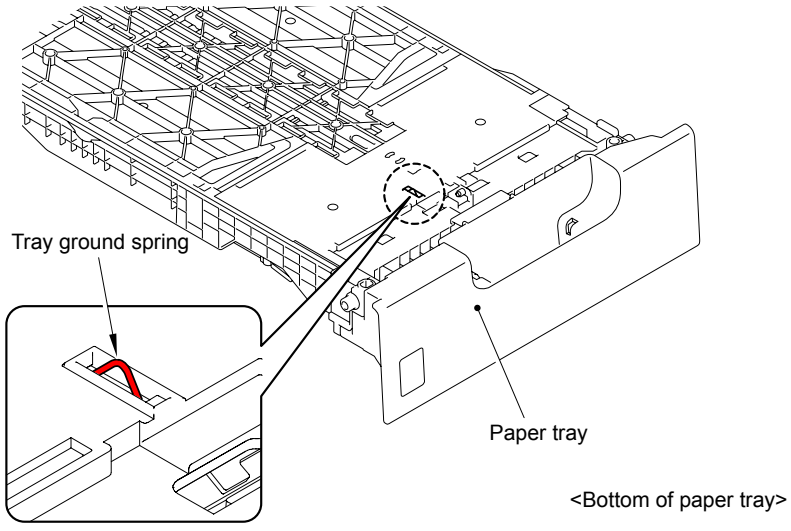
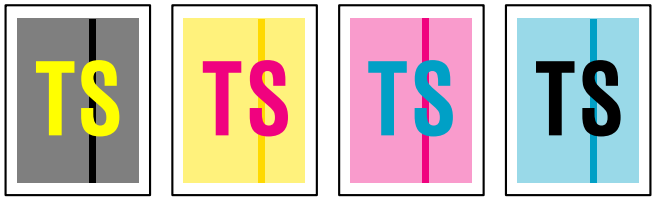


Fig. 3-10

■ Vertical streaks in a light background



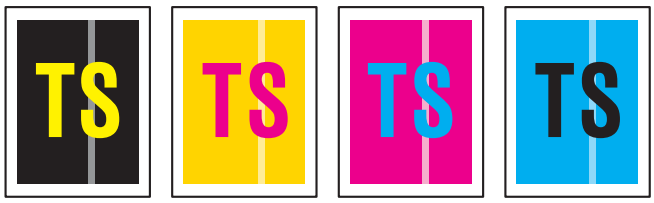
<User Check>

- Clean the inside of the machine and the corona wire in the drum unit.
- Clean the LED array with a soft lint-free cloth.
- Replace the toner cartridge with a new one.
- Replace the drum unit with a new one.

Memo:
You can check this image defect with the function code 71.
(Refer to "1.4.21 Color test pattern (Function code 71)" in Chapter 7)

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

■ Vertical streaks in a dark background

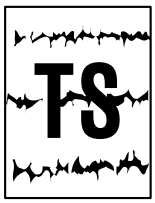


<User Check>

- Clean the inside of the machine and the corona wire in the drum unit.
- Clean the LED array with a soft lint-free cloth.
- Replace the toner cartridge with a new one.

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

■ Horizontal stripes

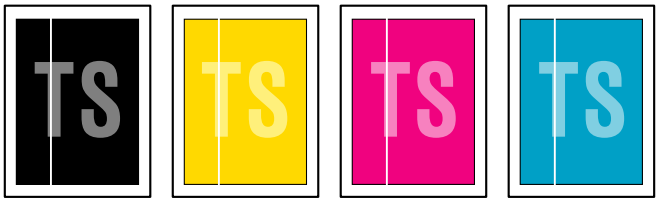


<User Check>

- 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. 3-3 (P3-33) and Fig. 3-6 (P3-34))
2	Bend of tray ground spring	Is the tray ground spring bent? (Refer to Fig. 3-10 (P3-70))	Yes	Replace the paper tray.
3	Toner attached on the develop roller	Are the horizontal stripes at 31 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 on the heat roller	Are the horizontal stripes at 78 mm (heat roller circumference) intervals?	Yes	Replace the fuser unit.
5	HVPS control PCB failure	Is the problem solved after replacing the HVPS control PCB ASSY?	Yes	Replace the HVPS control PCB ASSY.

■ White vertical streaks on one color image

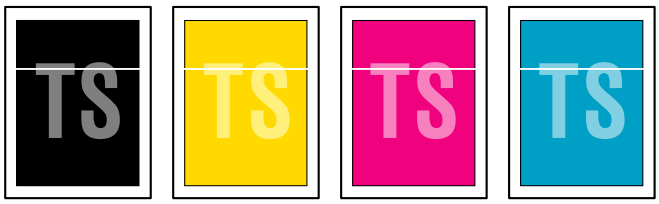


<User Check>

- Check if there is no dust in the gap between the toner cartridge and drum frame.
- Clean the relevant color LED array on which color loss occurs with a soft lint-free cloth.
- Replace the toner cartridge with a new one.
- Check the machine's environment. High temperature and high humidity or low temperature and low humidity conditions can cause this problem.
- Damp (wet) paper might be used. Try to change to freshly unpacked paper.
- Replace the drum unit with a new one.

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	LED array failure	Is the problem solved after replacing the LED ASSY?	Yes	Replace the LED ASSY.

■ White horizontal stripes on one color image

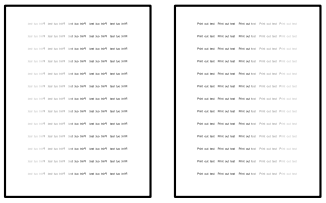


<User Check>

- 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.
- Replace the toner cartridge with a new one.
- The drum unit may be damaged. Replace the drum unit with a new one.

Step	Cause	Check	Result	Remedy
1	HVPS control PCB failure	Is the problem solved after replacing the HVPS control PCB ASSY?	Yes	Replace the HVPS control PCB ASSY.
2	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.
3	Engine PCB failure	Is the problem solved after replacing the engine PCB ASSY?	Yes	Replace the engine PCB ASSY.

■ Faint print

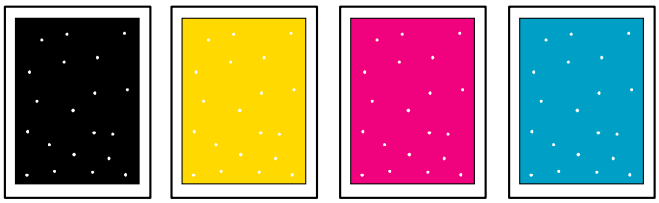


<User Check>

- Open and close the top cover and make print again.
- Check that the machine is installed on a level surface.
- Replace the toner cartridge with a new one.
- Clean the LED array with a soft lint-free cloth.

Step	Cause	Check	Result	Remedy
1	Lifting of LED ASSY	Is printing of the LED ASSY test pattern correctly done in "Function code 68"?	Yes	Re-assemble the LED ASSY.
2	Toner/new sensor PCB failure	Is the "Replace Toner" message indicated on the LCD when replacing the toner cartridge with the one which has reached the end of life?	No	Replace the toner/new sensor PCB ASSY.

■ White spots on one color image



<User Check>

- Toner may be empty. Replace the toner cartridge with a new one.
- If the same problem occurs after printing a few pages, the adhesive of the label or the like, paper powder or dirt may be attached on the surface of the exposure drum. When the size of the white spots is less than 0.35mm, feed the paper from the manual feed slot one to three times to clean the drum. (Refer to "Drum cleaning function of product" in the next page.) When the size of the spots is 0.35mm or more, or when the same problem occurs after feeding the drum cleaning sheet, wipe off the dirt on the exposure drum with a cotton swab. (Refer to "Drum unit cleaning" in this chapter.)
- The drum unit may be damaged. Replace the drum unit with a new one.
- The belt unit may be damaged. Replace the belt unit with a new one.

Step	Cause	Check	Result	Remedy
1	Toner cartridge failure	Are the white spots at 31 mm (develop roller circumference) intervals?	Yes	If the develop roller surface is scratched, replace the toner cartridge.
2	Toner/new sensor PCB failure	Is the "Replace Toner" message indicated on the LCD when replacing the toner cartridge with the one which has reached the end of life?	No	Replace the toner/new sensor PCB ASSY.

Note:
If there is any problem in the print quality, be sure to clean the drum unit in accordance with "Drum cleaning function of product" provided below.
If the problem still persists, be sure to clean the drum unit manually in accordance with "Drum unit cleaning" in this chapter.

<Drum cleaning function of product>

(1) Open the manual feed slot cover.

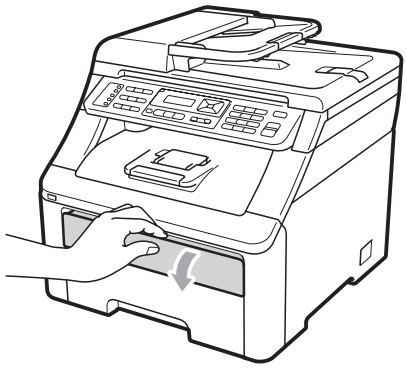


Fig. 3-11

(2) Using both hands, slide the manual feed slot paper guides to the width of the paper that you are going to use.

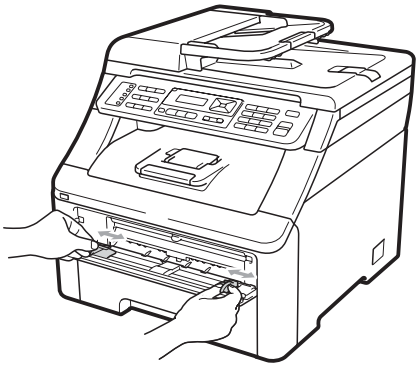


Fig. 3-12

(3) Using both hands, put one piece of paper in the manual feed slot until the front edge of the paper touches the paper feed roller. Wait until the machine automatically feeds the paper. When you feel the machine pull in the paper, let go.

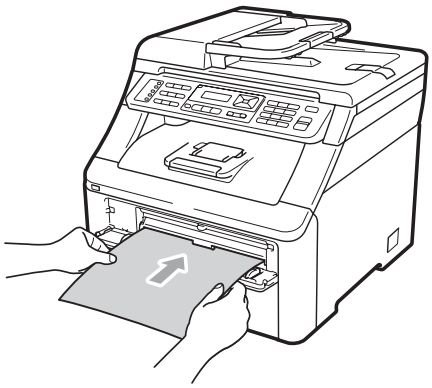


Fig. 3-13

Note:

- Make sure that the paper is straight and in the correct position on the manual feed slot. If it is not, the paper may not be fed properly, resulting in a skewed printout or a paper jam.
- Do not put more than one piece of paper in the manual feed slot at any one time, as it may cause a jam.
- If you put paper in the manual feed slot before the machine is in the ready state, an error may occur and the machine will stop printing.

(4) Press the **Menu**, **4** and **8** button.

(5) "Drum Cleaning Press Start" appears on the LCD.

(6) Press the **Start/Black** button. The machine will pull in the piece of paper and start cleaning the drum unit.

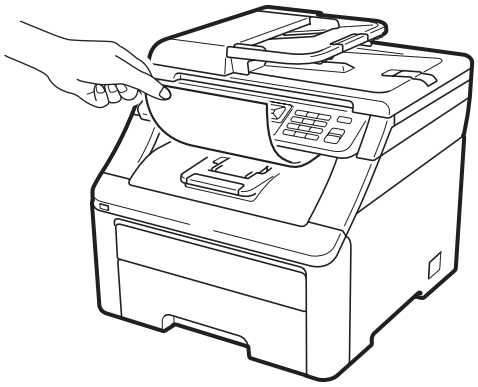


Fig. 3-14

(7) When the machine has finished cleaning, "Completed" appears on the LCD. Press the **Stop/Exit** button so that the machine returns to the ready state.

(8) Repeat steps (3) to (7) two more times.

<Drum unit cleaning>

(1) Pull the drum unit out of the machine and take all the toner cartridges out of the drum unit.

> **Note:**
> We recommend that you place the drum unit on a clean, flat surface with a piece of disposable paper underneath it in case you accidentally spill or scatter toner.

(2) See the print sample to identify the color causing the problem. The color of the spots is the color of the drum you should clean. For example, if the spots are cyan, you should clean the drum for cyan. Put the print sample in front of the drum, and find the exact position of the poor print.

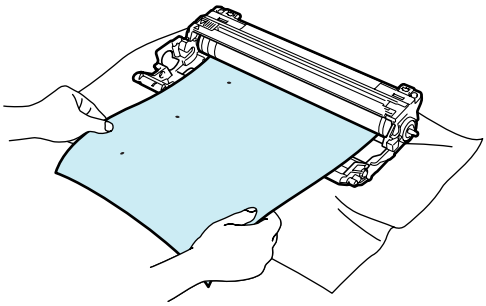


Fig. 3-15

(3) Turn the drum unit gear to the direction of the arrow as shown in the figure below by hand to find smears on the drum while looking at the surface of the drum “1”.

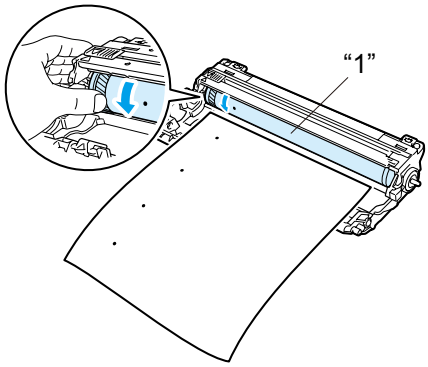


Fig. 3-16

(4) When you have found the mark on the drum that matches the print sample, wipe the surface of the drum gently with a cotton swab until the dust or paper powder on the surface comes off.

> **Note:**
> DO NOT clean the surface of the photosensitive drum with a sharp object.

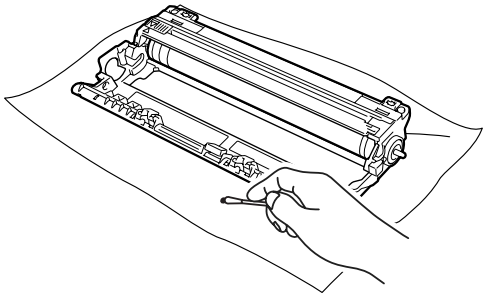
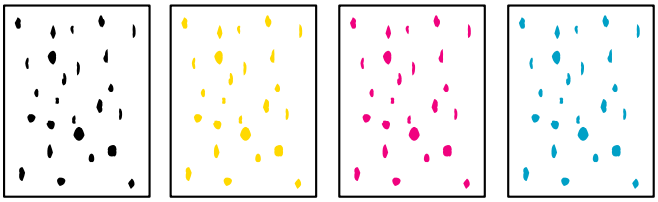


Fig. 3-17

■ One color spots or dirt

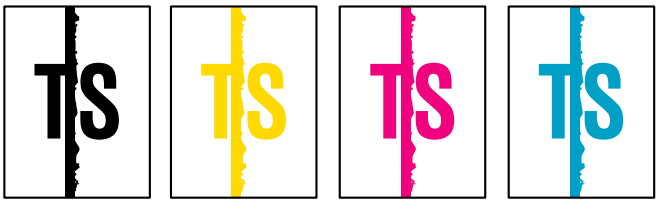


<User Check>

- Damp (wet) paper might be used. Try to changing to freshly unopened paper.
- Toner may be empty. Replace the toner cartridge with a new one.
- If the same problem occurs after printing a few pages, the adhesive of a label or the like, paper powder or dirt may be attached on the surface of the exposure drum. Feed the paper from the manual feed slot one to three times to clean the drum. (Refer to "Drum cleaning function of product" in this chapter.)
  When the same problem occurs after feeding the drum cleaning sheet, wipe off the dirt on the exposure drum with a cotton swab. (Refer to "Drum unit cleaning" in the previous pages.)
- The drum unit may be damaged. Replace the drum unit with a new one.
- The belt unit may be damaged. Replace the belt unit with a new one.

Step	Cause	Check	Result	Remedy
1	Fuser unit failure	Are the spots at 78 mm (heat roller circumference) intervals?	Yes	Replace the fuser unit.
2	Toner/new sensor PCB failure	Is the "Replace Toner" message indicated on the LCD when replacing the toner cartridge with the one which has reached the end of life?	Yes	Replace the toner/new sensor PCB ASSY.

■ One color 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.

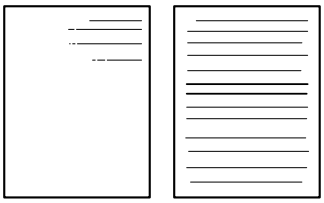
■ Downward fogging of solid color

<User Check>

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

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

■ Horizontal lines

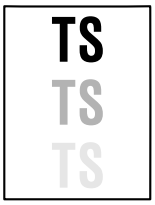


<User Check>

- The paper tray ground terminal provided in the machine body may be dirty. Clean the contact with a dry cloth.
- Replace the drum unit with a new one.
- Replace the toner cartridge with a new one.

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. 3-3 (P3-33) and Fig. 3-6 (P3-34))
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	Toner attached on the develop roller	Are the horizontal lines at 31 mm (develop roller circumference) intervals?	Yes	This symptom might disappear after making approximate 10 prints.
4	Scratch on the heat roller	Are the horizontal lines at 78 mm (heat roller circumference) intervals?	Yes	Replace the fuser unit.
5	HVPS control PCB failure	Is the problem solved after replacing the HVPS control PCB ASSY?	Yes	Replace the HVPS control 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.

■ Ghost



<User Check>

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

Step	Cause	Check	Result	Remedy
1	HVPS control PCB failure	Is the problem solved after replacing the HVPS control PCB ASSY?	Yes	Replace the HVPS control PCB ASSY.
2	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.
3	Engine PCB failure	Is the problem solved after replacing the engine PCB ASSY?	Yes	Replace the engine PCB ASSY.

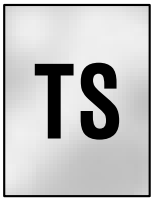
■ Color misregistration

<User Check>

- Implement the adjustment of color registration from the control panel cover ASSY.
- Replace the belt unit with a new one.
- Replace the drum unit with a new one.

Step	Cause	Check	Result	Remedy
1	Engine PCB failure	Is the problem solved after replacing the engine PCB ASSY?	Yes	Replace the engine PCB ASSY.
2	Registration mark L PCB ASSY failure	Is the problem solved after replacing the registration sensor holder ASSY?	Yes	Replace the registration sensor holder 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.

Step	Cause	Check	Result	Remedy
1	Toner/new sensor PCB failure	Is the toner sensor performed normally by following the procedure described in "Function code 32" to check?	No	Replace the toner/new sensor PCB ASSY.
2	HVPS control PCB failure	Is the problem solved after replacing the HVPS control PCB ASSY?	Yes	Replace the HVPS control PCB ASSY.
3	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.
4	Engine PCB failure	Is the problem solved after replacing the engine PCB ASSY?	Yes	Replace the engine PCB ASSY.

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

■ Unstable color density

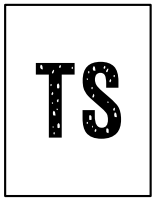
TS

<User Check>

- Make a print on a different type of paper.
- Replace the belt unit with a new one.
- Replace the drum unit with a new one.
- Replace the waste toner box with a new one.
- Replace the toner cartridge with a new one.

Step	Cause	Check	Result	Remedy
1	Drum unit conduction failure	Are the electrodes on the drum unit and machine body dirty?	Yes	Clean both electrodes. (Refer to Fig. 3-3 (P3-33) and Fig. 3-6 (P3-34))
2	Toner cartridge conduction failure	Are the electrodes on the toner cartridge and machine body dirty?	Yes	Clean both electrodes. (Refer to Fig. 3-3 (P3-33) and Fig. 3-6 (P3-34))
3	Dirt on belt unit electrode	Are the electrodes on the belt unit and machine body dirty?	Yes	Clean both electrodes. (Refer to Fig. 3-4 (P3-33) and Fig. 3-6 (P3-34))
4	Engine PCB failure	Is the problem solved after replacing the engine PCB ASSY?	Yes	Replace the engine PCB ASSY.
5	HVPS control PCB failure	Is the problem solved after replacing the HVPS control PCB ASSY?	Yes	Replace the HVPS control 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	LED head control PCB failure	Is the problem solved after replacing the LED head control PCB ASSY?	Yes	Replace the LED head control PCB ASSY.
8	Main PCB failure	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.

■ Hollow print



<User Check>

- Select “Improve Toner Fixing” in the printer driver, or select “Thicker Paper” in Paper Type.
- Check the machine’s environment, conditions such as high humidity and low humidity may cause this situation to occur.
- Make a print on a different type of paper.
- Replace the drum unit with a new one.
- Replace the toner cartridge with a new one.

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

5. SOFTWARE SETTING PROBLEMS

The end user can solve problems pertaining to software, for instance, print cannot be made from a computer although test print and printer setting print can be made from the machine, by 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.

5.1 Cannot Print Data

<User Check>

- Check that the USB cable or LAN cable is not damaged.
- 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.
- Restore the settings at factory shipment. (Refer to User's guide)

Step	Cause	Check	Result	Remedy
1	Failure inside the machine	Does the machine print test pattern? (Check it following the procedure described in "1.4.5 Monochrome image quality test pattern (Function code 09)" 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. (Hexadecimal) Product ID: DCP-9010CN: 0220 MFC-9010CN: 021E MFC-9120CN: 021D MFC-9125CN: 029Eh MFC-9320CW: 021C MFC-9325CW: 029Fh
3	USB direct interface relay PCB failure (USB direct interface model only)	Is the problem solved after replacing the USB direct interface relay PCB ASSY?	Yes	Replace the USB direct interface relay PCB ASSY.
4	Main PCB failure	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.

6. NETWORK PROBLEMS

6.1 Cannot Make a Print through Network Connection

<User Check>

- Check the descriptions in the network user's guide.
- Restore the settings at factory shipment. (Refer to User's guide)

Step	Cause	Check	Result	Remedy
1	Mismatch of MAC address (Ethernet Address) between wireless LAN PCB and main PCB (Wireless LAN model only)	Is the problem solved after obtaining the correct MAC address (Ethernet Address)?	Yes	Obtain the MAC address (Ethernet Address). (Refer to "2.1 Acquiring MAC Address (Ethernet Address) from Main PCB" in Chapter 6.)
2	Wireless LAN PCB failure (Wireless LAN model only)	Is the problem solved after replacing the wireless LAN PCB ASSY?	Yes	Replace the wireless LAN PCB ASSY.
3	Main PCB failure	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.

7. TROUBLESHOOTING OF THE COMMUNICATIONS ERRORS

If a communications error occurs, the machine

(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.

7.1 Definition of Error Codes on the Communications List

(1) Calling

Code 1	Code 2	Cause
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	Cause
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	Cause
32	01	Remote terminal only with V.29 capability in 2,400 or 4,800 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	Cause
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	Cause
50	01	Vertical resolution capability changed after compensation of background color.

(6) ID checking

Code 1	Code 2	Cause
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	Cause
74		DCN received.

(8) TCF transmission/reception

Code 1	Code 2	Cause
80	01	Fallback impossible.

(9) Signal isolation

Code 1	Code 2	Cause
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	Cause
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	Cause
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) Transmission in V. 34 mode

Code 1	Code 2	Cause
C0	01	No common modulation mode or failed to poll.
C0	02	Unable to detect JM.
C0	03	Unable to detect CM.
C0	04	Unable to detect CJ.
C0	10	Cannot finish V. 34 negotiation or training.
C0	11	Modem error detected during V. 34 negotiation or training.
C0	20	Modem error detected during sending of commands.
C0	21	Modem error detected during receiving of commands.
C0	22	Control channel connection time-out.
C0	30	Modem error detected during sending of video signals.
C0	31	Modem error detected during receiving of video signals.

(13) Maintenance mode

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

(14) Equipment error

Code 1	Code 2	Cause
FF	X X	Equipment error (For X X, refer to "2.1 Error Codes" in this chapter.)

8. TROUBLESHOOTING OF THE CONTROL PANEL COVER ASSY

8.1 Nothing is Displayed on the LCD.

<User Check>

- Verify if the power switch is turned off.

Step	Cause	Check	Result	Remedy
1	Connection between main PCB and panel PCB	Are the main PCB and panel PCB connected properly?	No	Reconnect the connector properly.
2	Connection between main PCB and low-voltage power supply PCB ASSY	Are the main PCB and low-voltage power supply PCB ASSY connected properly?	No	Reconnect the connector properly.
3	LCD	Is the problem solved after replacing the LCD?	Yes	Replace the LCD.
4	Panel PCB	Is the problem solved after replacing the panel PCB ASSY?	Yes	Replace the panel PCB ASSY.
5	High-voltage power supply PCB ASSY	Is the problem solved after replacing the high-voltage power supply PCB ASSY?	Yes	Replace the high-voltage power supply PCB ASSY.
6	Low-voltage Power Supply PCB ASSY	Is the problem solved after replacing the low-voltage power supply PCB ASSY?	Yes	Replace the low-voltage power supply PCB ASSY.
7	Main PCB	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.

8.2 The control panel cover ASSY does not Work.

<User Check>

- Check whether the function lock is not set.

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

9. TROUBLESHOOTING OF FAX FUNCTIONS

9.1 FAX can't Send it.

<User Check>

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

Step	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	Connection between main PCB and panel PCB	Are the main PCB and panel PCB connected properly?	No	Reconnect the connector properly.
4	Contact of rubber key	Does the rubber key work correctly?	No	Replace the rubber Key.
5	NCU PCB	Is the problem solved after replacing the NCU PCB ASSY?	Yes	Replace the NCU PCB ASSY.
6	Panel PCB	Is the problem solved after replacing the panel PCB ASSY?	Yes	Replace the panel PCB ASSY.
7	Main PCB	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.

9.2 Speed Dialing and One-touch Dialing can't be Used.

<User Check>

- Check that the Speed Dialing and One-touch Dialing are properly registered.

Step	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	Connection between main PCB and panel PCB	Are the main PCB and panel PCB connected properly?	No	Reconnect the connector properly.
5	Rubber key	Is the problem solved after replacing the rubber key?	Yes	Replace the rubber Key.
6	NCU PCB	Is the problem solved after replacing the NCU PCB ASSY?	Yes	Replace the NCU PCB ASSY.
7	Panel PCB	Is the problem solved after replacing the panel PCB ASSY?	Yes	Replace the panel PCB ASSY.

9.3 FAX can't be Received.

<User Check>

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

Step	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.

9.4 No Bell Ring.

Step	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	Speaker	Is the problem solved after replacing the speaker unit?	Yes	Replace the speaker unit.
5	NCU PCB	Is the problem solved after replacing the NCU PCB ASSY?	Yes	Replace the NCU PCB ASSY.
6	Main PCB	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.

9.5 Speaker is Silent During On-hook Dialing.

Step	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 unit?	Yes	Replace the speaker unit.
3	Connection between main PCB and NCU PCB	Are the main PCB and NCU PCB connected properly?	No	Reconnect the connector properly.
4	Connection between main PCB and panel PCB	Are the main PCB and panel PCB connected properly?	No	Reconnect the connector properly.
5	NCU PCB	Is the problem solved after replacing the NCU PCB ASSY?	Yes	Replace the NCU PCB ASSY.
6	Main PCB	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.

9.6 Dialing Function does not Switch between “Tone” and “Pulse.”

Step	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	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.

10. DOCUMENT FEEDING PROBLEMS

Problems related to document 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.

10.1 No Feeding

<User Check>

- Check if the document is inserted correctly to the depths.
- Check whether the document is 35 or less sheets.
- Check if the ADF cover is closed.

Step	Cause	Check	Result	Remedy
1	Document front actuator catching on some position	Does the document front actuator move smoothly?	No	Re-assembly the document front actuator
2	Document front sensor harness connection failure	Is the harness of the document front sensor connected securely	No	Reconnected the harness of the document front sensor.
3	ADF motor harness connection failure	Is the harness of the ADF motor connected securely?	No	Reconnected the harness of the ADF motor.
4	Document front sensor malfunction	Does the document front sensor move smoothly? (Check it following the procedure described in "Maintenance mode 32")	No	Replace the ADF sensor PCB ASSY.
5	Paper feed roller failure	Is the paper feed roller rotating although the ADF motor is rotating?	Yes	Replace the paper feed roller ASSY.
6	ADF motor failure	Is the problem solved after replacing the ADF motor?	Yes	Replace the ADF motor.
7	Main PCB failure	Is the problem solved after replacing the main PCB?	Yes	Replace the main PCB.

10.2 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	Separation roller failure	Is the surface of the separation roller worn out?	Yes	Replace the separation roller shaft ASSY.
2	Separation rubber worn out	Is the surface of the separation rubber worn out?	Yes	Replace the separation rubber.

10.3 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 inside the area around ADF cover	Is there a foreign object inside the area around the ADF cover?	Yes	Remove the foreign object.

■ 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 sensor actuator catching on some position	Does the document rear sensor actuator move smoothly?	No	Re-assembly the document rear sensor actuator.
3	Document rear sensor malfunction	Does the document rear sensor move smoothly? (Check it following the procedure described in "Maintenance mode 32")	No	Replace the ADF sensor PCB ASSY.
4	Paper feed roller failure	Does the paper feed roller move smoothly? Is it damaged?	No	Replace the paper feed roller ASSY.

■ 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 ejection roller attached to the ejection roller?	No	Re-assembly the pinch roller.
3	Ejection roller failure	Does the ejection roller move smoothly? Is it damaged?	No	Replace the ejection roller ASSY.

10.4 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	Separation roller worn out	Is the separation roller worn out?	Yes	Replace the roller holder ASSY.
2	Paper feed roller worn out	Is the paper feed roller worn out?	Yes	Replace the paper feed roller ASSY.

11. SCANNING IMAGE DEFECT TROUBLESHOOTING

11.1 Image Defect Examples

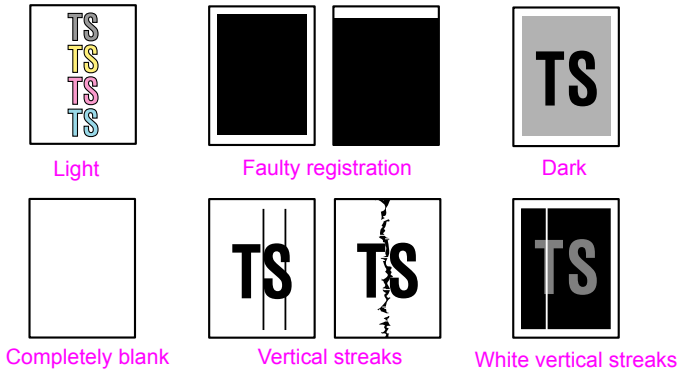
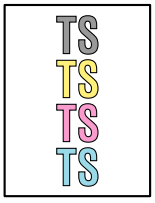


Fig. 3-18

11.2 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

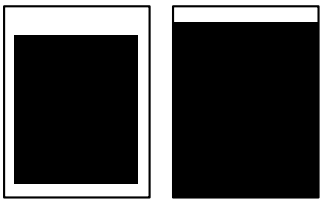


<User Check>

- 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	CIS unit failure	Is the problem solved after replacing the document scanner unit?	Yes	Replace the document scanner unit.
3	Main PCB failure	Is the problem solved after replacing the Main PCB ASSY?	Yes	Replace the main PCB ASSY.

■ Faulty registration



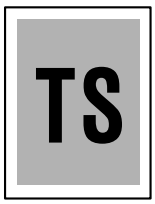
(1) ADF

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	Document rear sensor actuator catching on some position	Does the document rear sensor actuator move smoothly?	No	Re-assembly the document rear sensor actuator.

(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	CIS unit failure	Is the problem solved after replacing the document scanner unit?	Yes	Replace the document scanner unit.

■ Dark

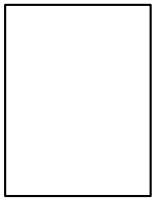


<User Check>

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

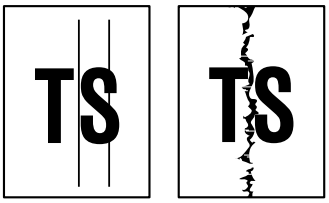
Step	Cause	Check	Result	Remedy
1	White level data malfunction	Is the problem solved by performing the acquisition of white level data. (Function code 55)	Yes	Perform the acquisition of white level data. (Function code 55)
2	CIS unit failure	Is the problem solved after replacing the document scanner unit?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

■ 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	CIS unit failure	Is the problem solved after replacing the document scanner unit?	Yes	Replace the document scanner unit.
3	Main PCB failure	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.

■ Vertical streaks

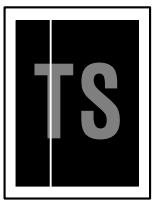


<User Check>

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

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

■ White vertical streaks



<User Check>

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

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

12. OTHERS PROBLEMS

12.1 The Machine is not Turned on, or the LCD Indication does not Appear.

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

Note:
When the error code 36 occurs, the power is forcibly turned OFF, and the machine cannot be turned ON for 10 minutes.

12.2 The Fan does not Work.

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	Failure of the appropriate fan	Is the problem solved after replacing the appropriate fan?	Yes	Replace the appropriate fan.
3	Engine PCB failure	Is the problem solved after replacing the engine PCB ASSY?	Yes	Replace the engine PCB ASSY.
4	HVPS control PCB failure	Is the problem solved after replacing the HVPS control PCB ASSY?	Yes	Replace the HVPS control PCB ASSY.
5	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.
6	Low-voltage power supply PCB failure	Is the problem solved after replacing the low-voltage power supply PCB ASSY?	Yes	Replace the low-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.

12.3 Pickup Function of Paper Tray does not Work.

Step	Cause	Remedy
1	Link lever catching on some position	Re-assemble the link lever.
2	Pickup roller holder ASSY not operating smoothly or catching.	Make sure correct movement of the pickup roller holder ASSY.
3	Roller holder ASSY failure	Replace the roller holder ASSY.
4	Paper feed motor failure	Replace the Paper feed motor ASSY.

12.4 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	Main PCB failure	Replace the main PCB ASSY.
3	Toner/new sensor PCB failure	Replace the toner/new sensor PCB ASSY of the appropriate color.

12.5 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	Cause	Check	Result	Remedy
1	Failure inside the machine	Does the machine print test pattern? (Check it following the procedure described in "1.4.5 Monochrome image quality test pattern (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 computer and a USB cable?	No	Replace the main PCB ASSY.

12.6 USB Direct Printing does not Work. (USB direct interface model only)

Step	Cause	Remedy
1	USB direct interface relay PCB failure	Replace the USB direct interface relay PCB ASSY.
2	Main PCB failure	Replace the main PCB ASSY.

CHAPTER 4
PERIODICAL MAINTENANCE

CHAPTER 4
PERIODICAL MAINTENANCE

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

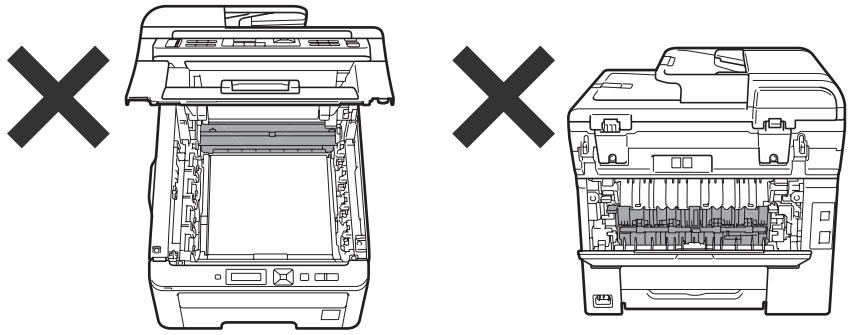
CONTENTS

1. SAFETY PRECAUTIONS

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 joint cover or back cover to access any parts inside the machine, never touch the shaded parts shown in the following figures.



2. CONSUMABLE PARTS

Parts name			Approximate life
Toner cartridge	Black	Starter cartridge	Approximately 1,000 pages (When printing A4-size paper in accordance with ISO/IEC 19798)
		Standard cartridge	Approximately 2,200 pages (When printing A4-size paper in accordance with ISO/IEC 19798)
	Yellow, Magenta, Cyan	Starter cartridge	Approximately 1,000 pages (When printing A4-size paper in accordance with ISO/IEC 19798)
		Standard cartridge	Approximately 1,400 pages (When printing A4-size paper in accordance with ISO/IEC 19798)
Drum unit			Approximately 15,000 pages (When printing one A4- size paper at a time) * The life expectancy varies according to the use condition.
Belt unit			Approximately 50,000 pages (When printing A4-size paper) * The life expectancy varies according to the use condition.
Waste toner box			Approximately 50,000 pages

■ Life of drum unit

< How to calculate the drum unit life >

The drum unit life is based on the “drum counter” or the “number of drum rotations”. The drum counter is based on the total printed pages on each drum unit. This total printed pages should be reset every time you replace the drum unit with a new one. (Refer to “2.1.3 Resetting the life counter of the drum unit” in Chapter 7.) Basically this amount is equal to the assured printable pages of the drum unit.
If the developing bias voltage correction or color registration adjustment is performed frequently, however, only the number of drum rotations increases, and the “page counter based on the number of drum rotation” exceeds the “drum counter” based on the total printed page.
Refer to the calculation of the drum unit life based on the number of drum rotation below;

< How to calculate the page counter >

The number of drum rotations for the first page printed is about 28.
The number of drum rotations per one page for the second or later page printed (continuous printing) is 5.
Page counter based on the number of drum rotations = {Number of drum rotations for the first page printed + [Number of drum rotations per one page for the second or later page printed x (Number of pages in continuous printing - 1)]} / 28
(* The number of drum rotations per one page continuous printing.)

Example: Starts to print when the machine is in the Ready state.

Continuous printing	Page counter based on the number of drum rotations (Pages)
1 page/job	{28 + [5 x (1 - 1)]} / 28 = 1
2 pages/job	{28 + [5 x (2 - 1)]} / 28 = 1.18
18 pages/job	{28 + [5 x (18 - 1)]} / 28 = 4.04

If you leave the machine without printing for a long time, the number of drum rotations is increasing because the developing bias voltage correction and the color registration are performed. If you print one page per one job every time after leaving the machine without printing for a long time, the drum unit life is shorter than usual.
The number of drum rotations required for the developing bias voltage correction = 55 rotations.
Example: Performs the developing bias voltage correction and starts to print after leaving the machine without printing for a long time.

Continuous printing	Page counter based on the number of drum rotations (Pages)
1 page/job	{55 + 28 + [5 x (1 - 1)]} / 28 = 2.96
2 pages/job	{55 + 28 + [5 x (2 - 1)]} / 28 = 3.14
18 pages/job	{55 + 28 + [5 x (18 - 1)]} / 28 = 6.00

The number of drum rotations required for the color registration = 27 rotations
Example: Performs the color registration adjustment and starts to print after leaving the machine without printing for a long time.

Continuous printing	Page counter based on the number of drum rotations (Pages)
1 page/job	{27 + 28 + [5 x (1 - 1)]} / 28 = 1.96
2 pages/job	{27 + 28 + [5 x (2 - 1)]} / 28 = 2.14
18 pages/job	{27 + 28 + [5 x (18 - 1)]} / 28 = 5.00

If the developing bias voltage correction and the color registration are performed continuously, the drum unit life is shorter.

3. PERIODICAL MAINTENANCE PARTS

3.1 Periodical Maintenance Parts

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

The periodical maintenance parts listed in the table below should be replaced according to the service life.

Parts name	LCD	Approximate life	Replacement procedure
Fuser unit	Replace Fuser	50,000 pages	Refer to 3.2.1
Paper feeding kit*	Replace PF Kit	50,000 pages	Refer to 3.2.2

* The paper feeding kit includes the separation pad ASSY, pad spring and roller holder ASSY.

When replacing the periodical maintenance parts, each of the counters need to be reset in order to record the number of replacement times.
(Refer to "2.1 Resetting the Periodical Maintenance Parts Life" in Chapter7.)

The number of print pages of the machine can be checked in the log information display (maintenance mode 80). (Refer to "1.4.27 Display of the machine's log" in Chapter 7.)

The actual number of printed page will vary depending on the type of print job or the paper to being used. The figures indicated as the approximate life in the table above are worked out when printing a general business document (in accordance with ISO/IEC 19798) on A4-size paper.

Note:

- Always turn off the power switch of the machine and unplug the power cord from the power outlet before replacing the periodical maintenance parts.
- If the fuser unit is replaced after an error related to the fuser unit occurs, you need to wait until the machine sufficiently cools down before replacing the unit. After replacing the unit, turn ON the machine and leave it for approximately fifteen minutes. This will make the machine to be released from the error.

3.2 Procedures to Replace Periodical Maintenance Parts

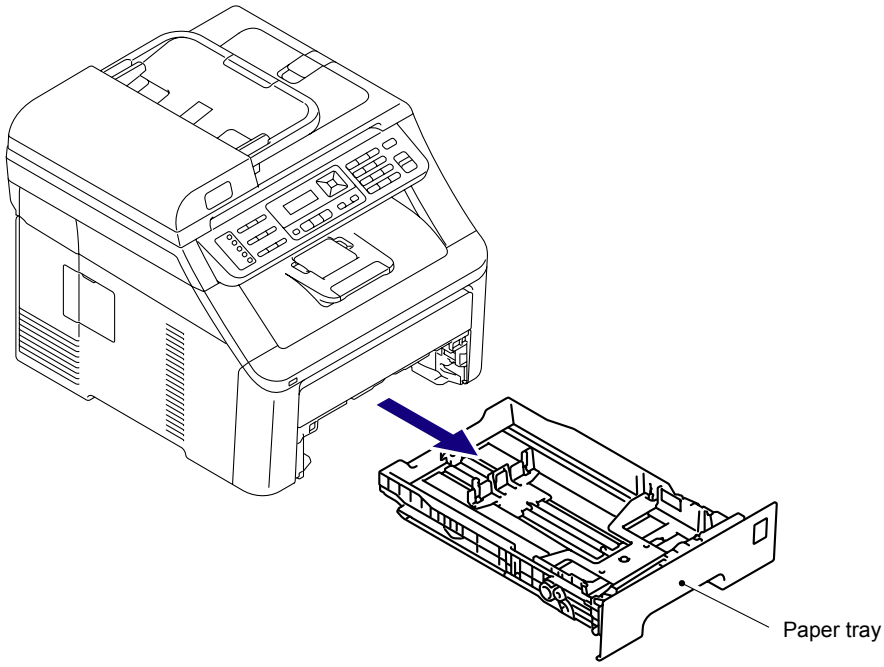
■ Preparation

Prior to proceeding with the disassembly procedure,

(1) Unplug

- the AC cord,
- the modular jack of the telephone line,
- the USB cable, if connected,
- the LAN cable, if connected,
- the USB cable for PictBridge or USB flash memory drive, if connected, and
- the modular jack of the external telephone set if connected.

(2) Remove the Paper tray.



3.2.1 Fuser unit

<Uninstalling procedure>

(1) Open the Back cover.

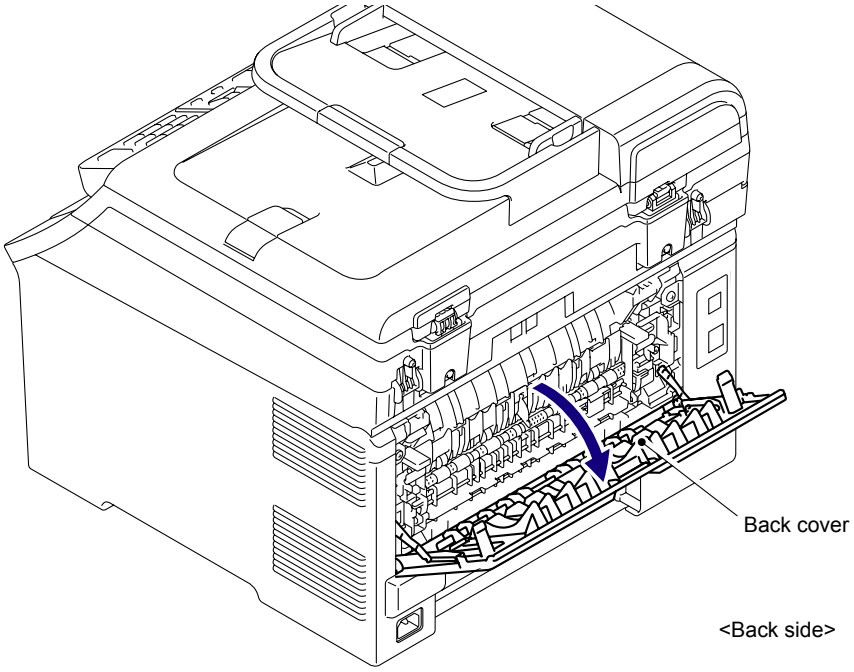


Fig. 4-1

(2) Release the Hook and remove the Back cover stopper L and R from the Main body.

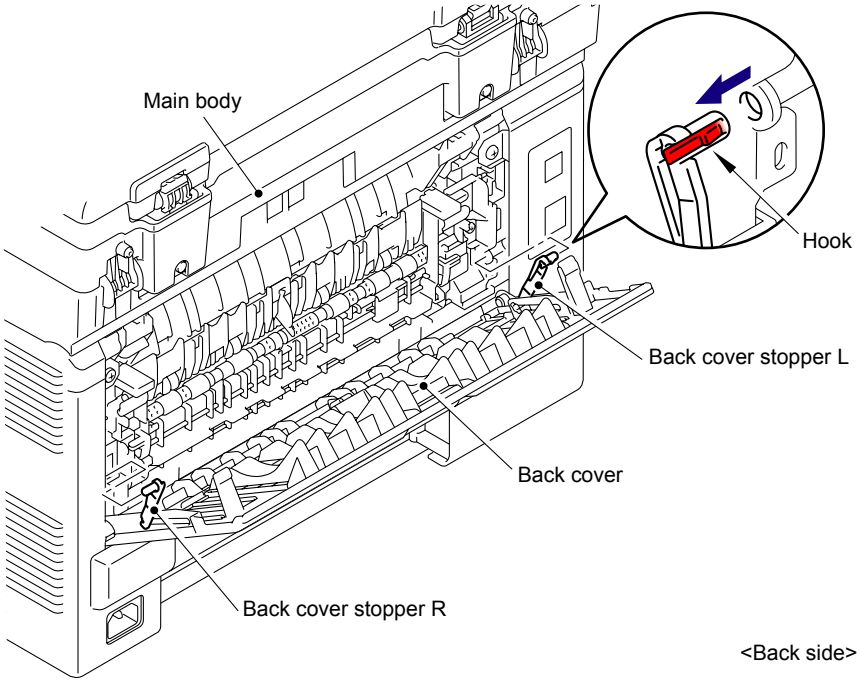


Fig. 4-2

(3) Remove the Bush of the Back cover from the Shaft at the right side of the Main body.

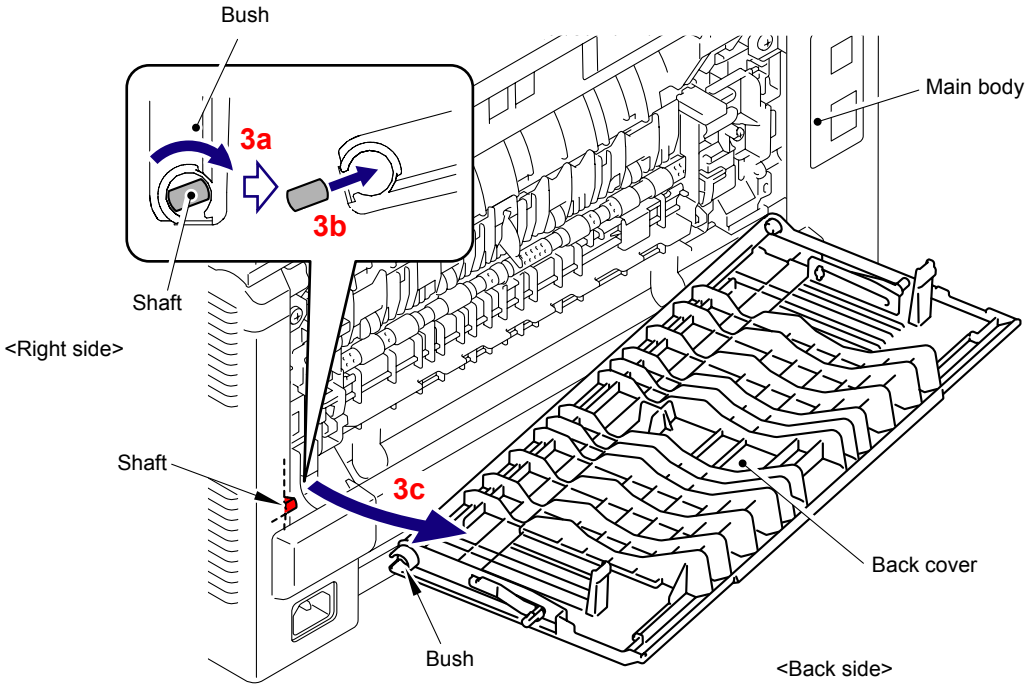


Fig. 4-3

(4) Remove the Back cover from the Shaft at the left of the Main body.

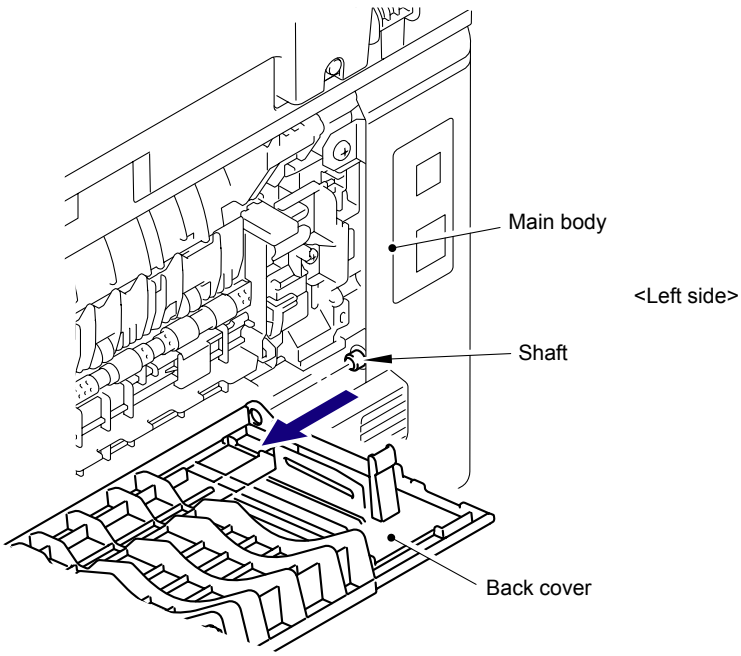


Fig. 4-4

(5) Release the Fuser cover lock lever L and R, and open the Fuser cover.

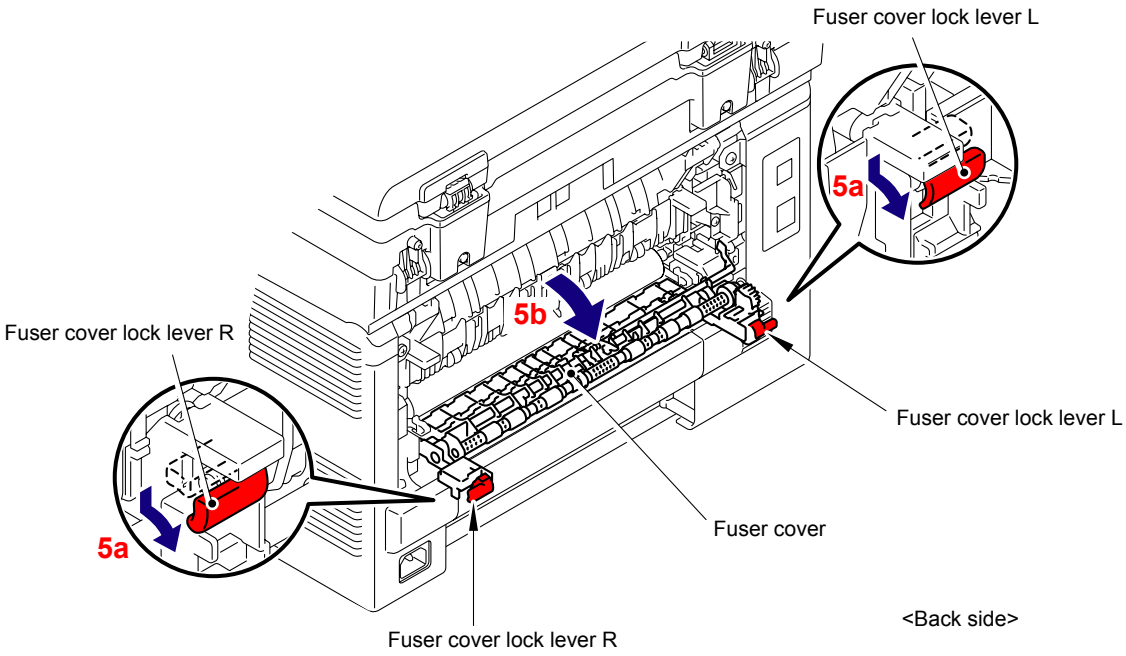


Fig. 4-5

(6) Take out the Shaft at the left side of the Fuser cover from the Notch on the Bush of the Side frame L.

(7) Take out the Shaft at the right side of the Fuser cover from the Bush of the LVPS cover, and remove the Fuser cover.

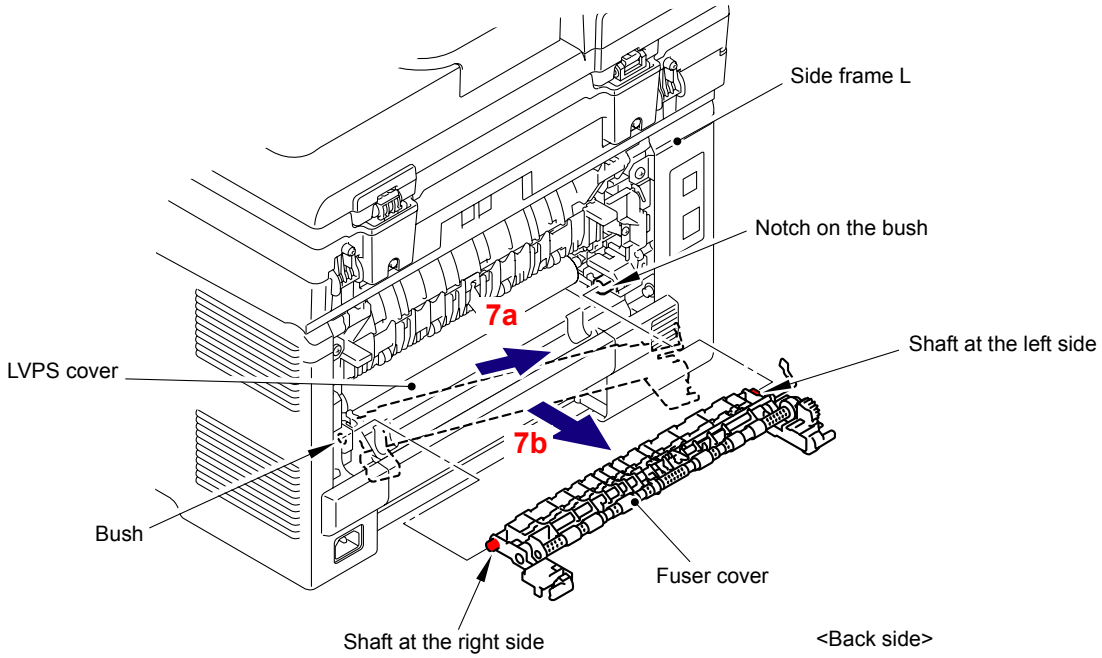


Fig. 4-6

(8) Remove the Taptite bind B M3x12 screw, and then remove the Fuser cover L from the Fuser unit.

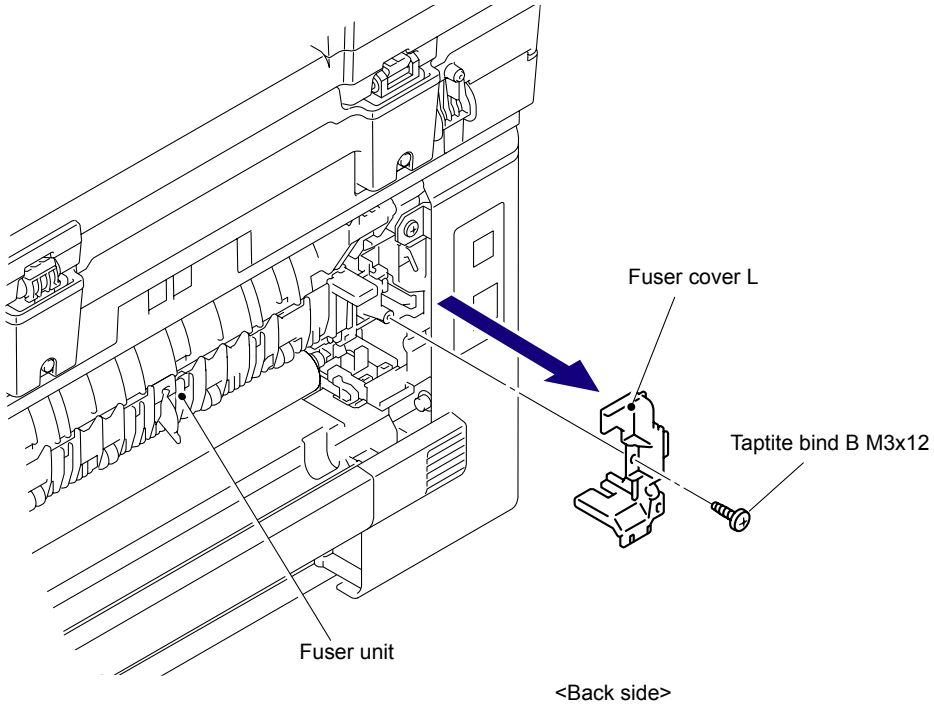


Fig. 4-7

(9) Remove the Taptite bind B M3x12 screw, and then remove the Fuser cover R from the Fuser unit.

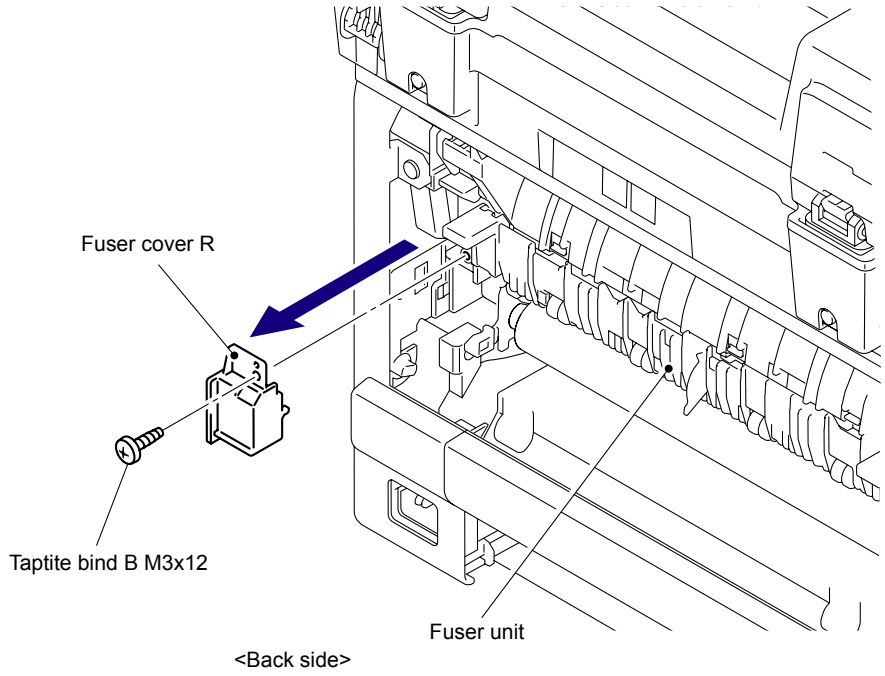


Fig. 4-8

(10) Disconnect the two Connectors (CN1, CN3) from the Eject front sensor PCB ASSY.

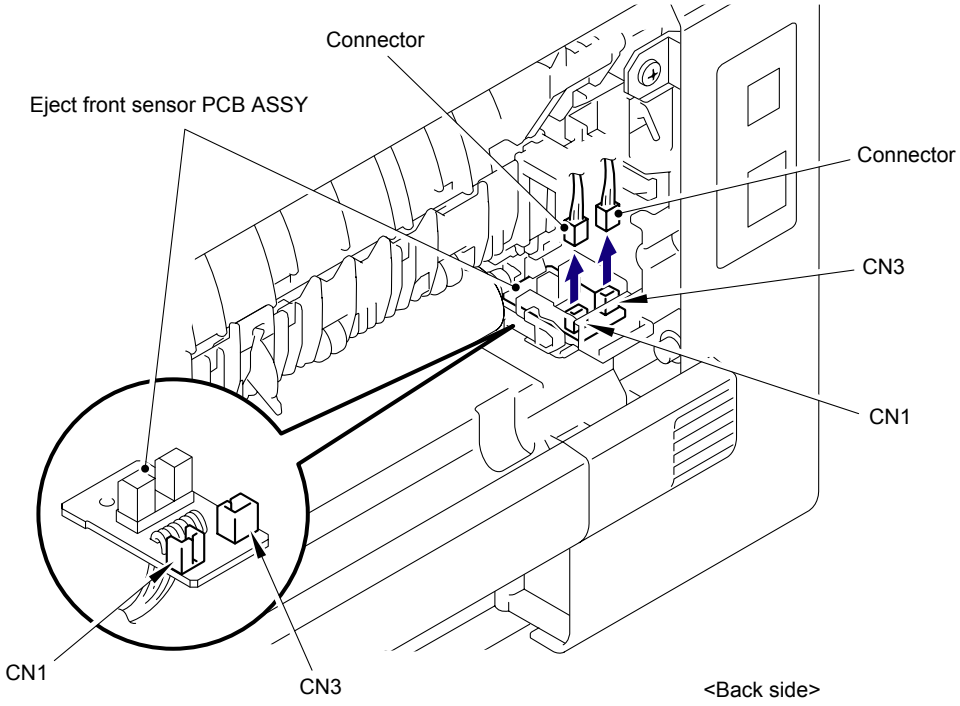


Fig. 4-9

(11) Disconnect the two Electrode terminals from the Fuser unit.

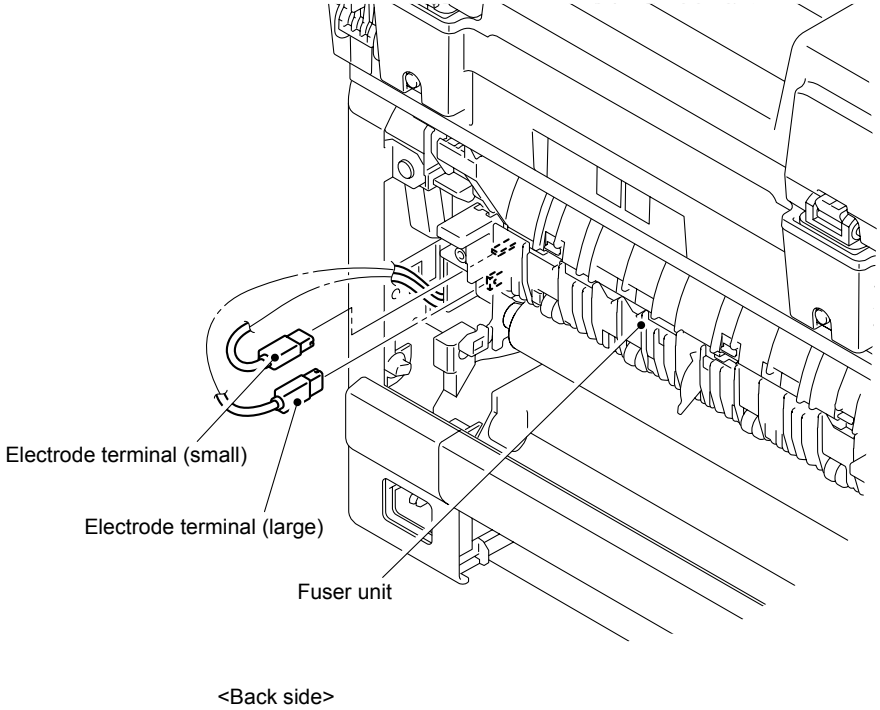


Fig. 4-10

(12) Remove the two Taptite pan B M4x14 screws, and then remove the Fuser unit from the Main body while holding the “A.”

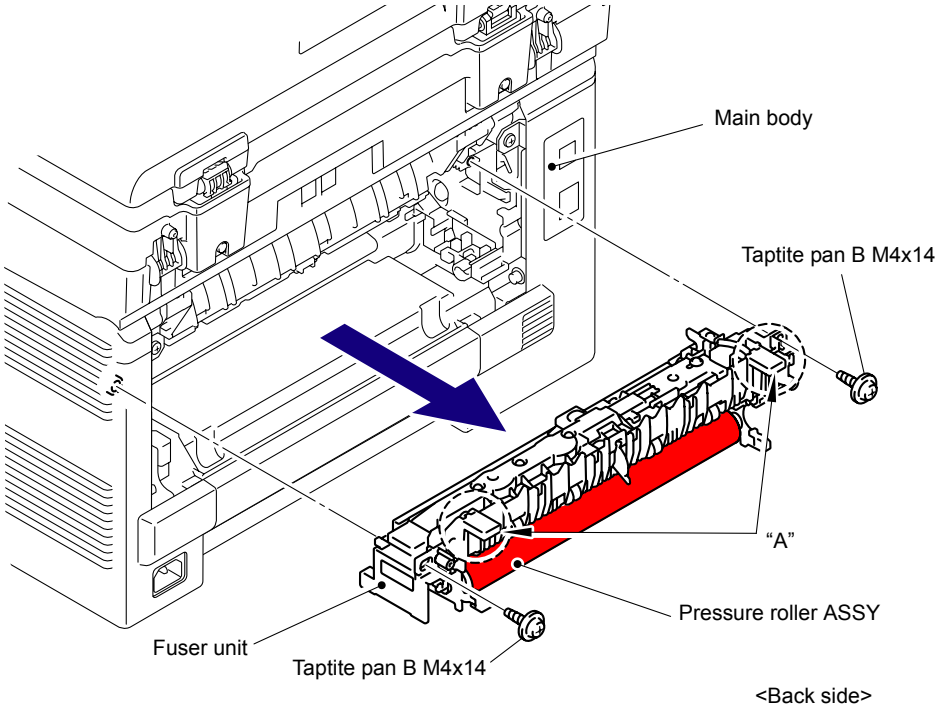


Fig. 4-11

Note:

- Do not apply a physical impact or vibration to the Fuser unit.
- Do not touch the roller and electrodes as shown in the figure below to prevent breakage of the Fuser unit.

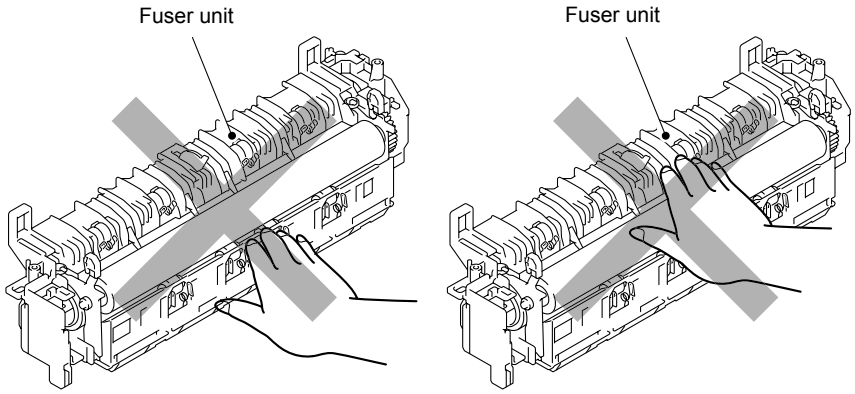


Fig. 4-12

<Installing procedure>

(1) Assemble the Fuser unit while holding the “A”, and then secure it with the two Taptite pan B M4x14 screws.

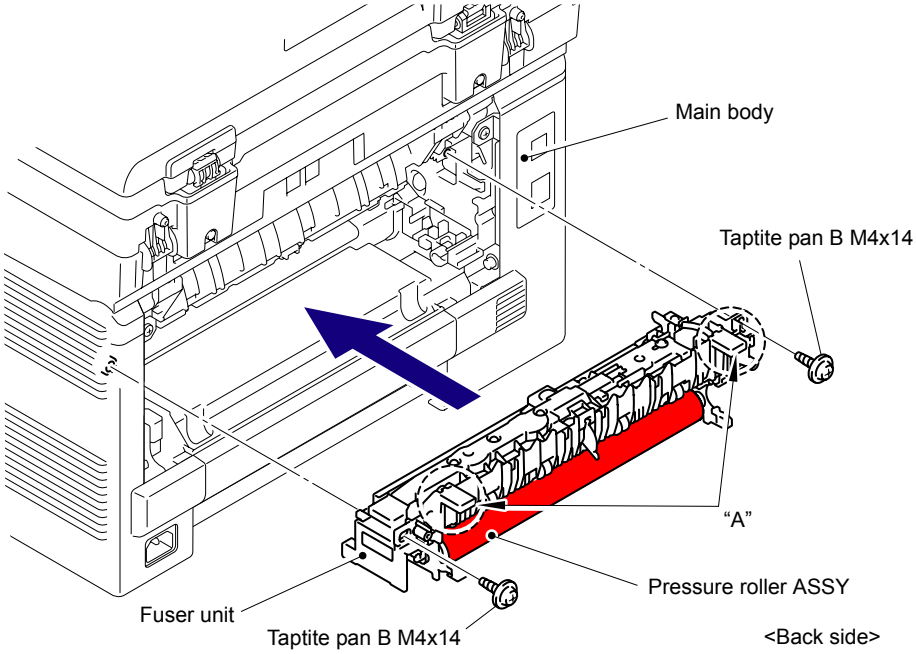


Fig. 4-13

Note:
The Fuser unit for replacement is transported while the pressure roller is held lightly to prevent deformation of the pressure roller. When assembling the Fuser unit, make sure to assemble the Fuser unit to the product first, and then remove the Spacer in the direction of the arrow from the Fuser unit.

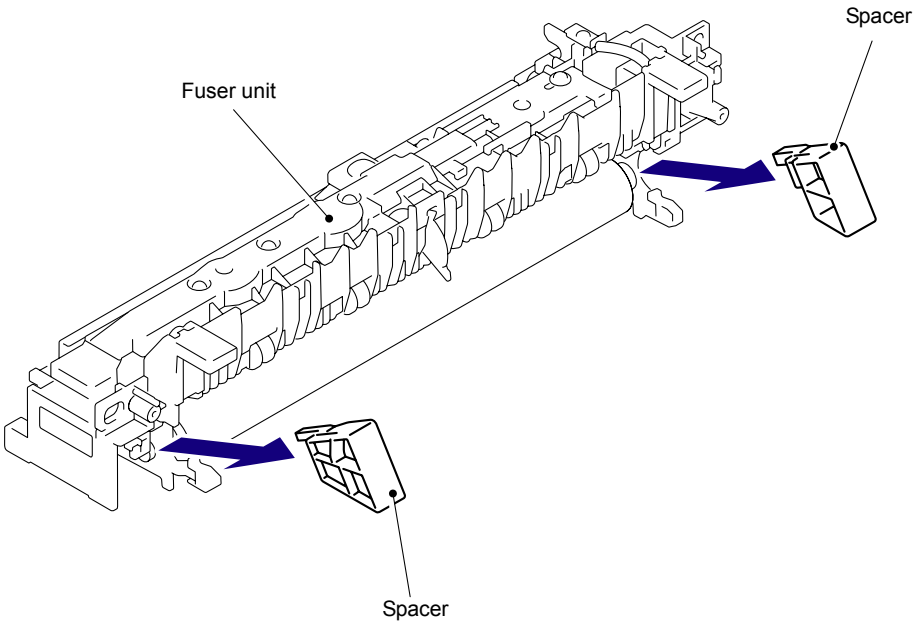


Fig. 4-14

(2) Connect the two Electrode terminals into the Fuser unit.

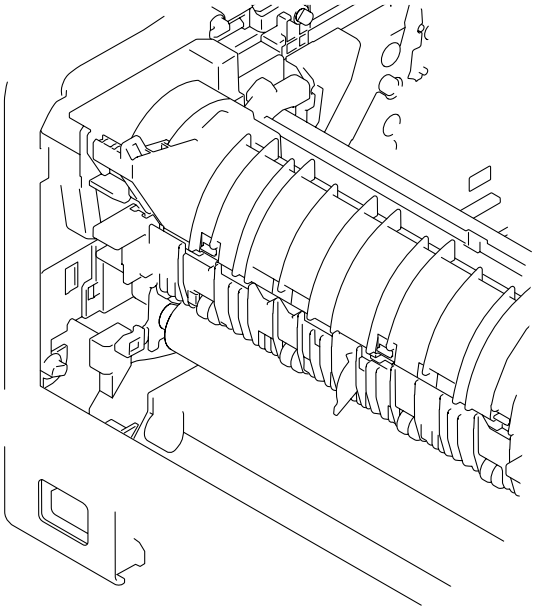


Fig. 4-15

(3) Connect the two connectors (CN1, CN3) into the Eject front sensor PCB ASSY.

Fig. 4-16

(4) Assemble the Fuser cover R to the Fuser unit with the Taptite bind B M3x12 screw.

Note:
Do not pinch the harness from the low-voltage power supply PCB ASSY to the Fuser unit.

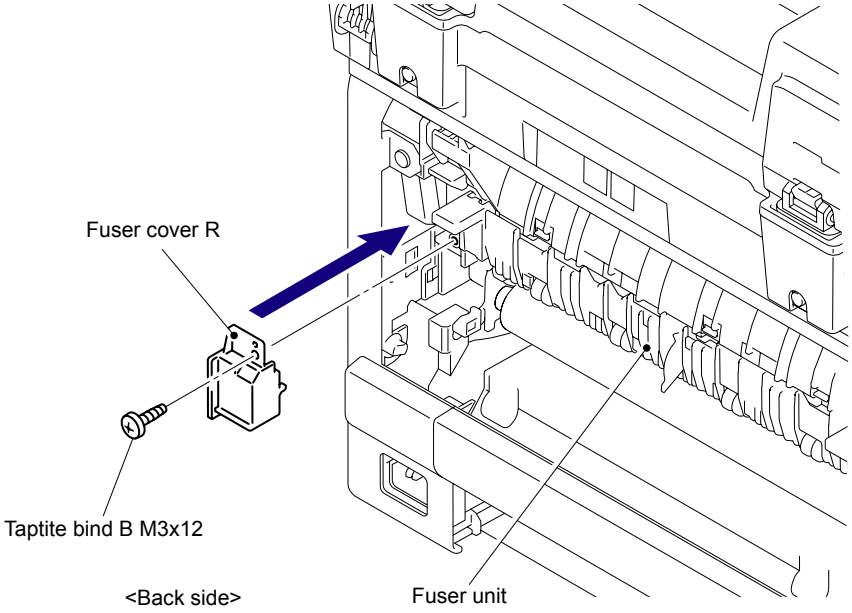


Fig. 4-17

(5) Assemble the Fuser cover L to the Fuser unit with the Taptite bind B M3x12 screw.

Note:
Mount the Fuser cover L as holding down the harness of the thermistor to the Side frame L side. (If the harness is protruded, it hooks up the eject front actuator.)

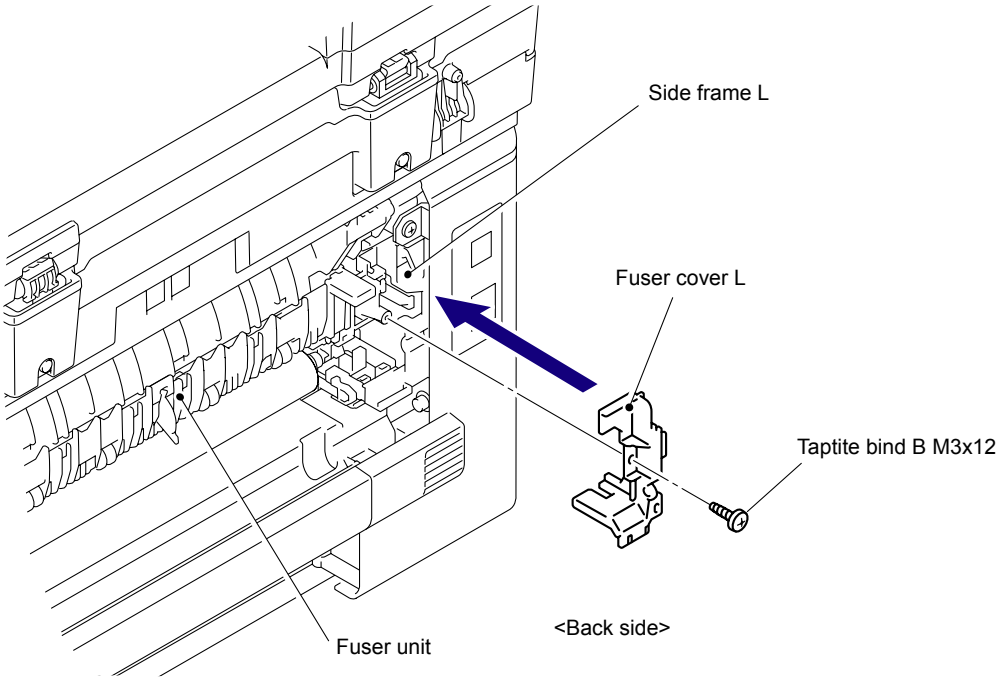


Fig. 4-18

(6) Assemble the Shaft at the right side of the Fuser cover to the Bush of the LVPS cover.

(7) Assemble the Shaft at the left side of the Fuser cover to the Notch on the bush of the Side frame L.

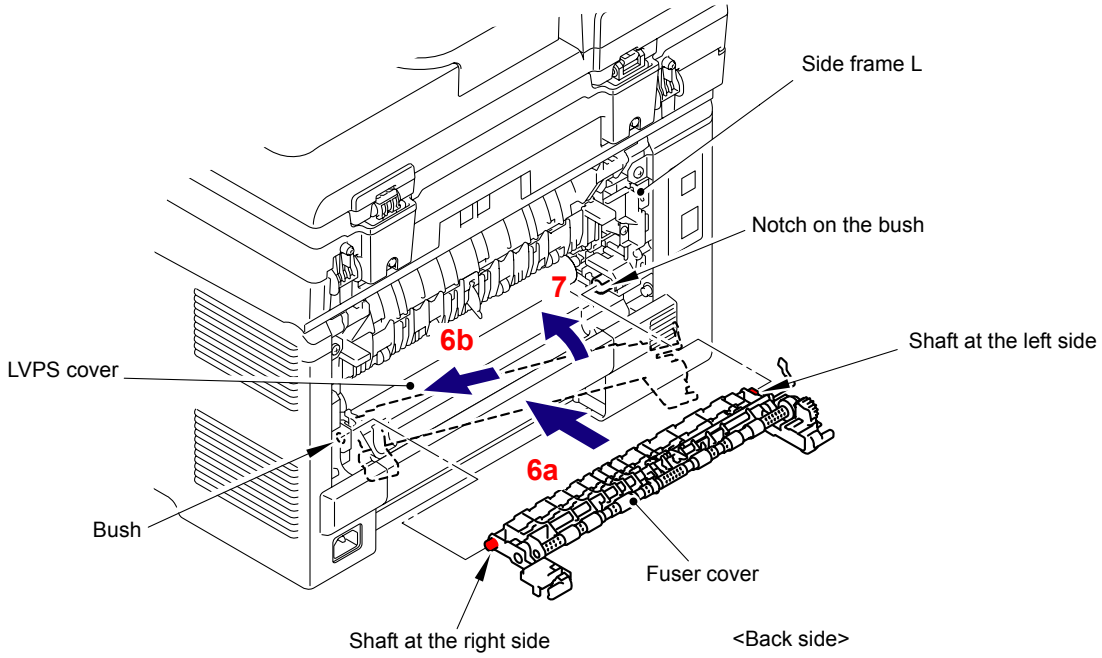


Fig. 4-19

(8) Close the Fuser cover.

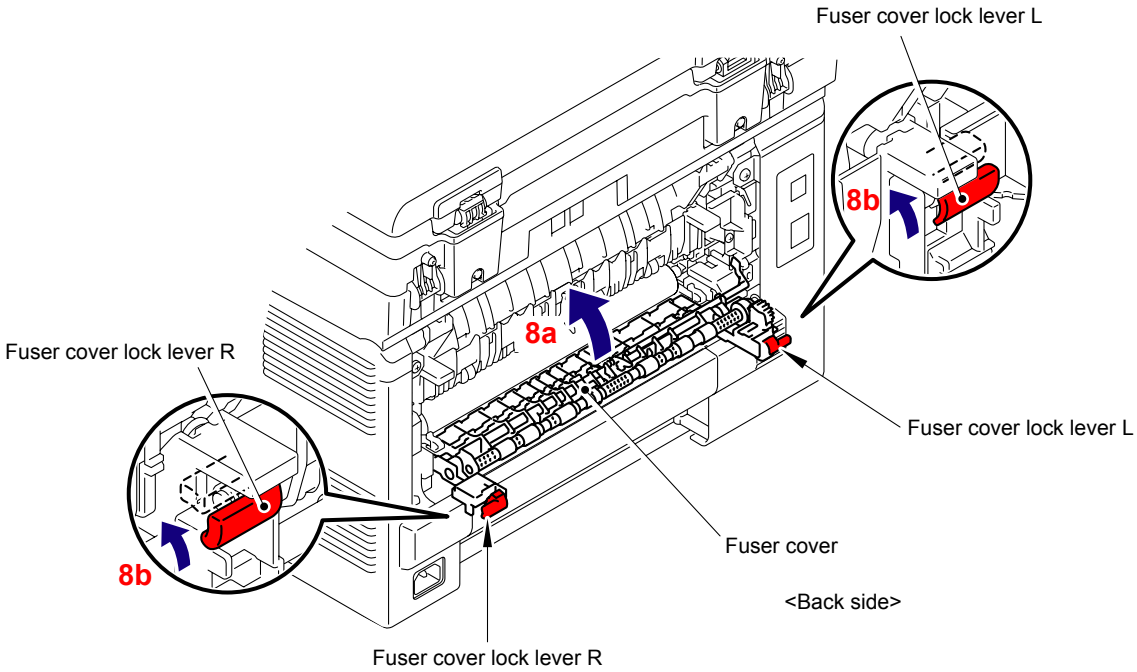


Fig. 4-20

(9) Assemble the Back cover to the Shaft at the left side of the Main body.

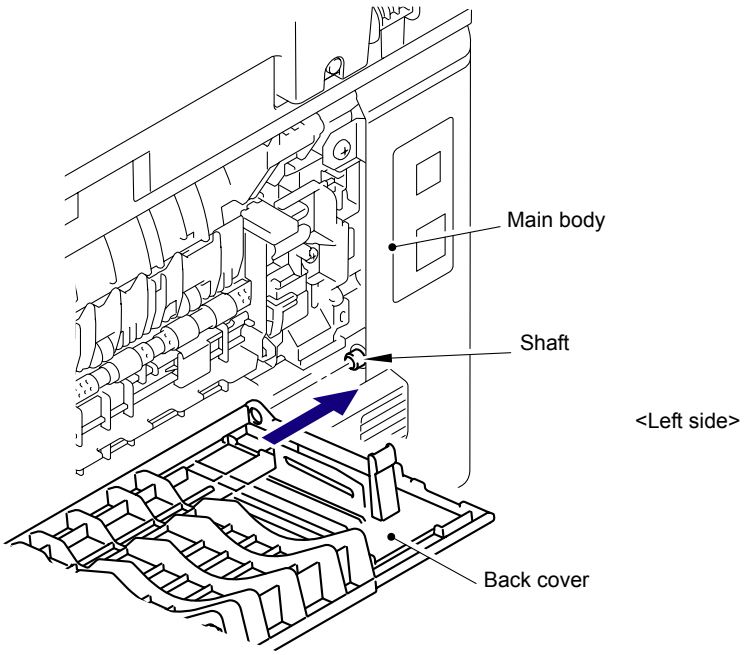


Fig. 4-21

(10) Assemble the Bush of the Back cover to the Shaft at the right side of the Main body.

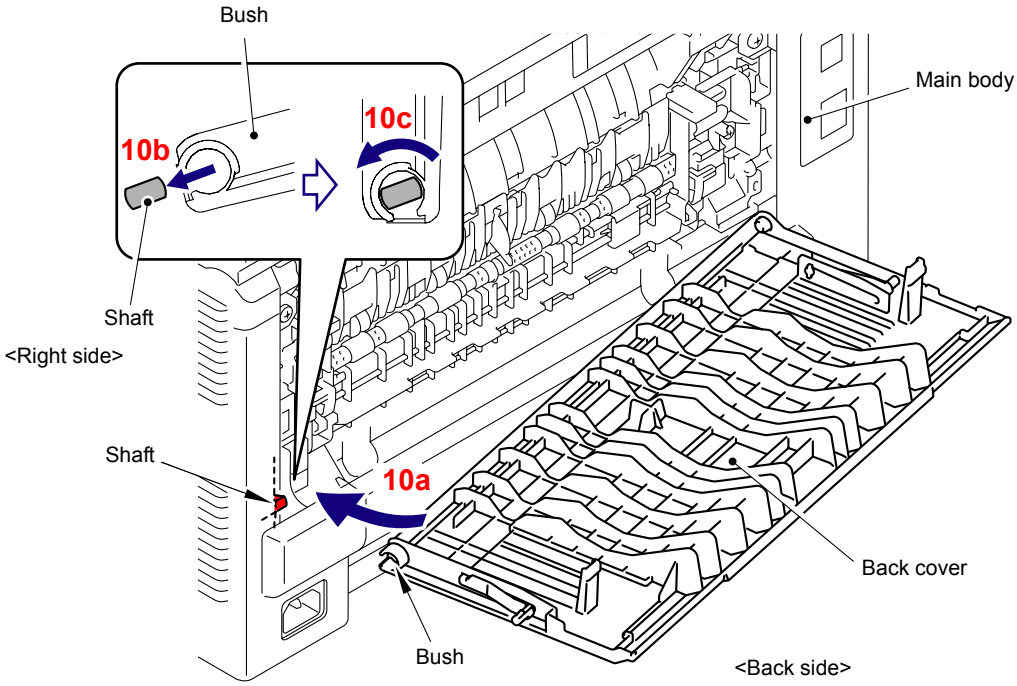


Fig. 4-22

(11) Assemble the Back cover stopper L and Back cover stopper R to the Main body.

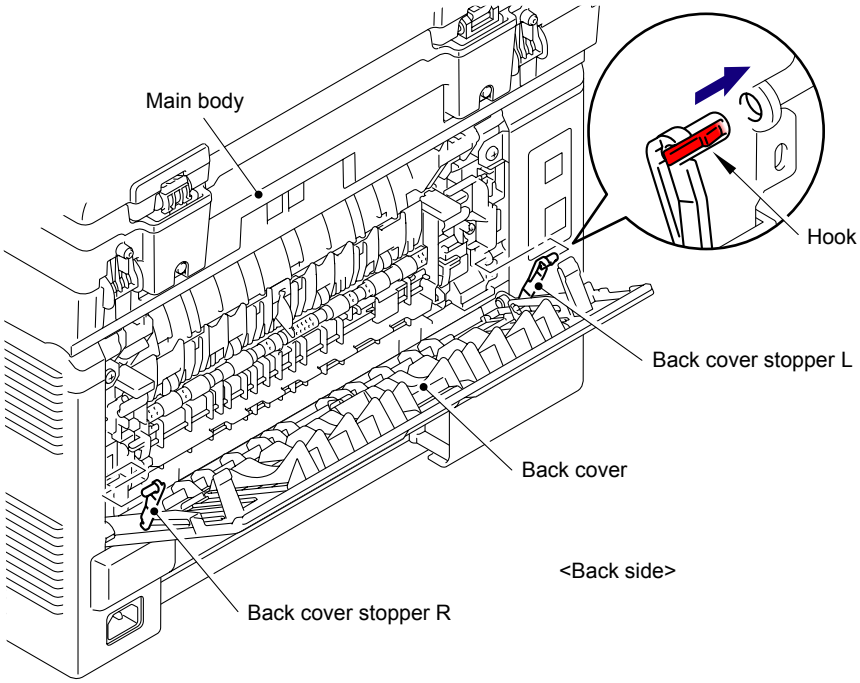


Fig. 4-23

(12) Close the Back cover.

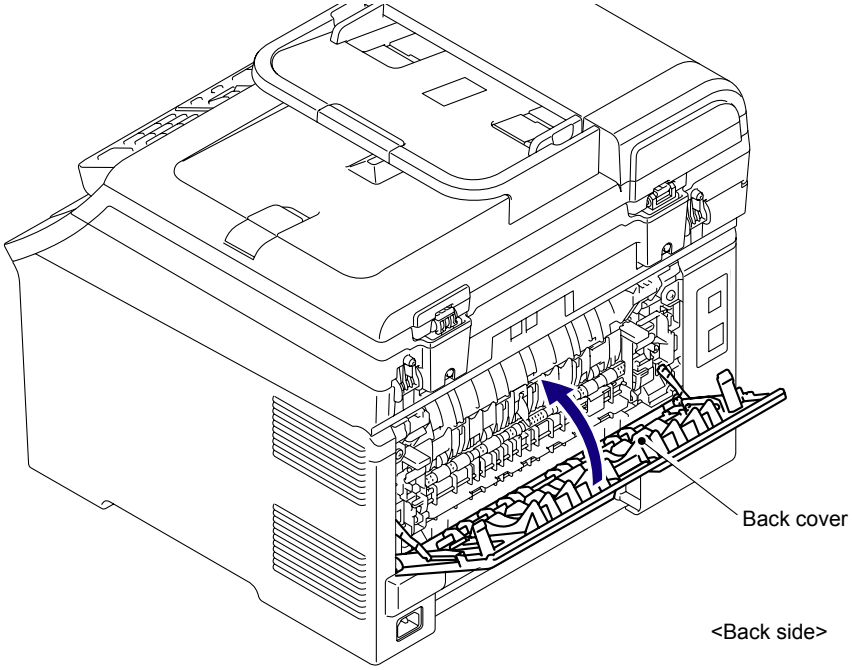


Fig. 4-24

(13) After replacing the Fuser unit, reset the counter. (Refer to "2.1 Resetting the Periodical Maintenance Parts Life" in Chapter7.)

3.2.2 Paper feeding kit

<Uninstalling procedure>

(1) Release the two Hooks of the Separation pad ASSY from the Paper tray.

(2) Release the two Pins to remove the Separation pad ASSY from Paper tray.

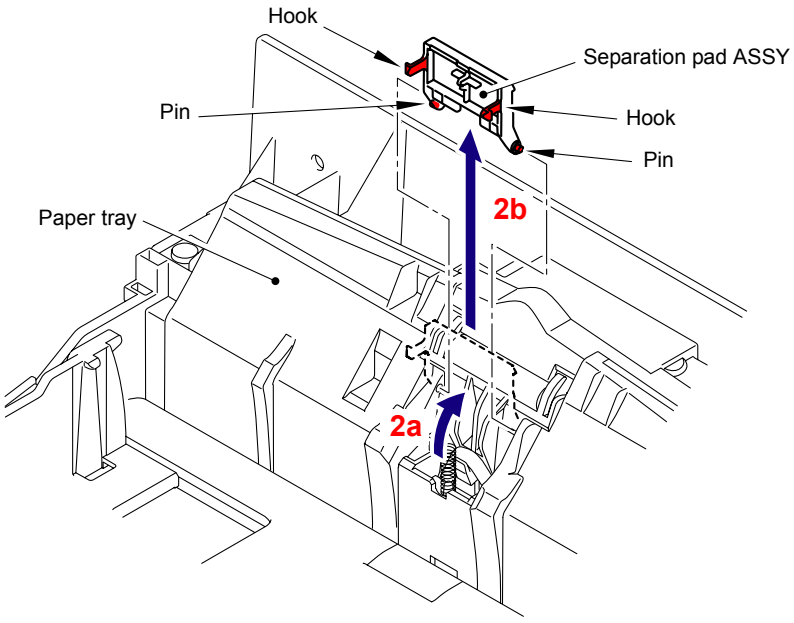


Fig. 4-25

(3) Remove the Pad spring from the Paper tray.

Note:
Be careful not to lose the Pad spring.

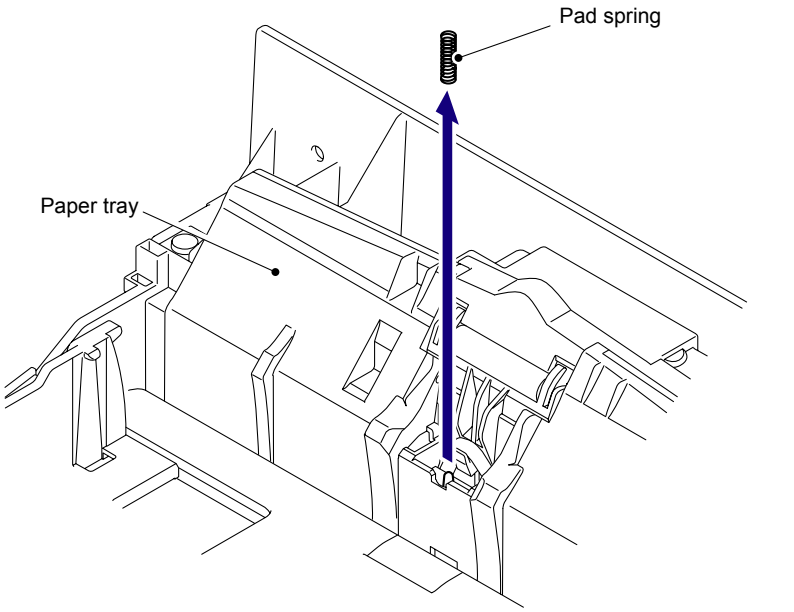


Fig. 4-26

(4) Push the Lift arm to the back and remove “B” of the Roller holder ASSY from “A” of the Lift arm, and the Roller holder ASSY rotates in the direction of the arrow 4b.

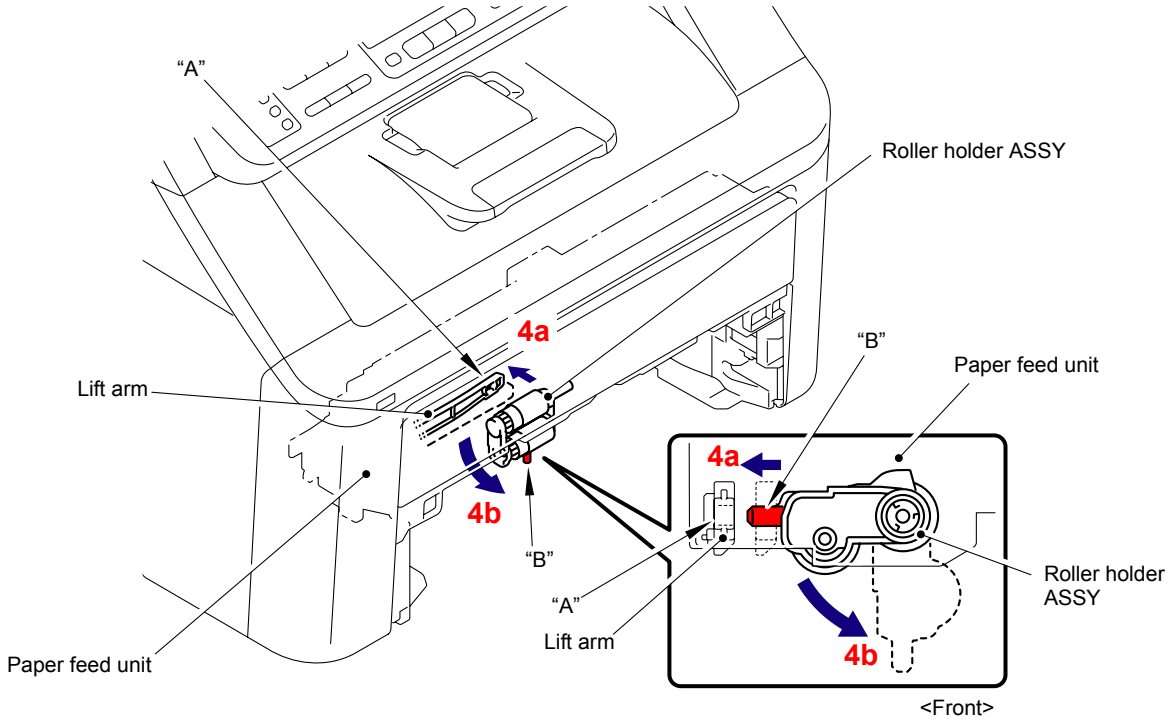


Fig. 4-27

(5) Slide the Roller holder ASSY in the direction of the arrow 5 and remove it from the “C” of the Paper feed unit.

(6) Slide the Roller holder ASSY in the direction of the arrow 6a and 6b in this order and remove it.

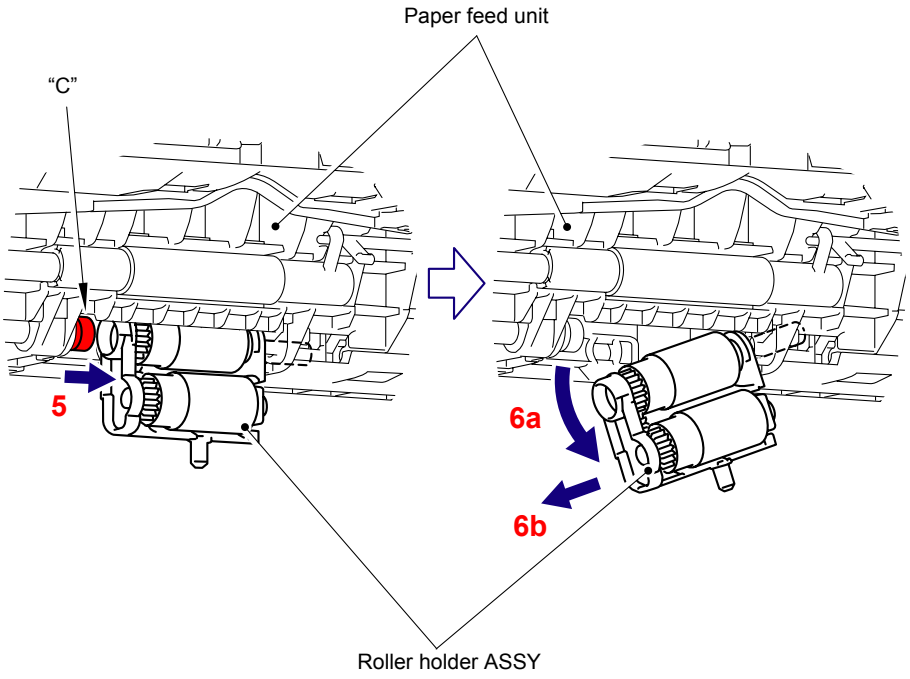


Fig. 4-28

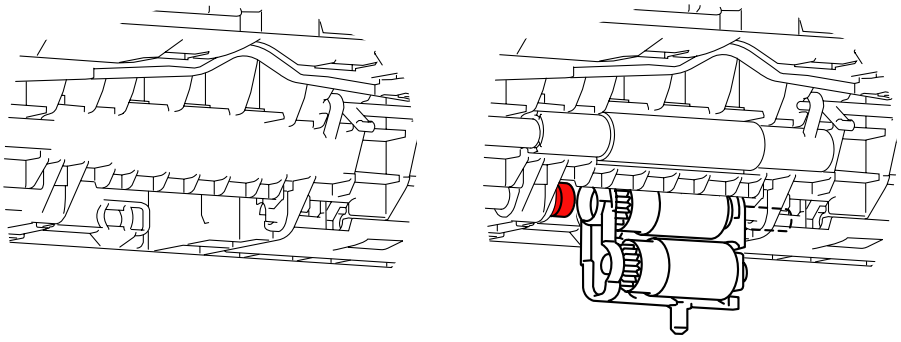


Fig. 4-30

(3) Turn the Roller holder ASSY in the direction of the arrow 3a and insert the “D” of the Roller holder ASSY into the “C” of the Lift arm.

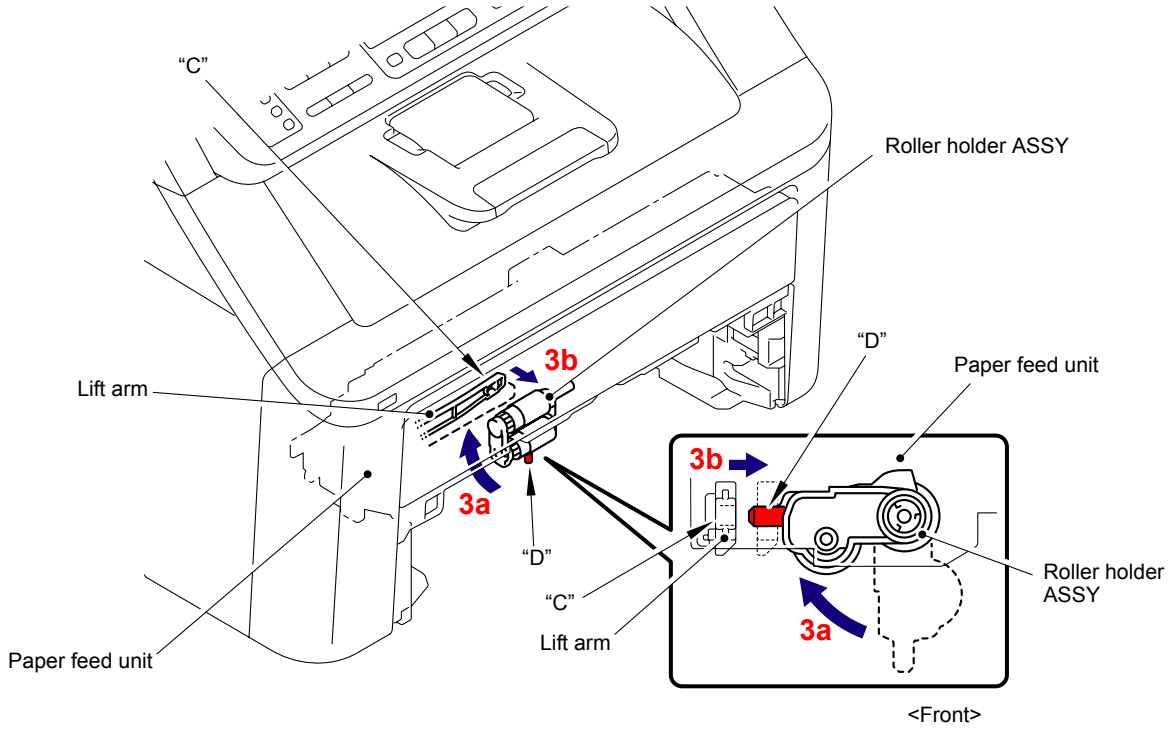


Fig. 4-31

(4) Assemble the Pad spring onto the Paper tray.

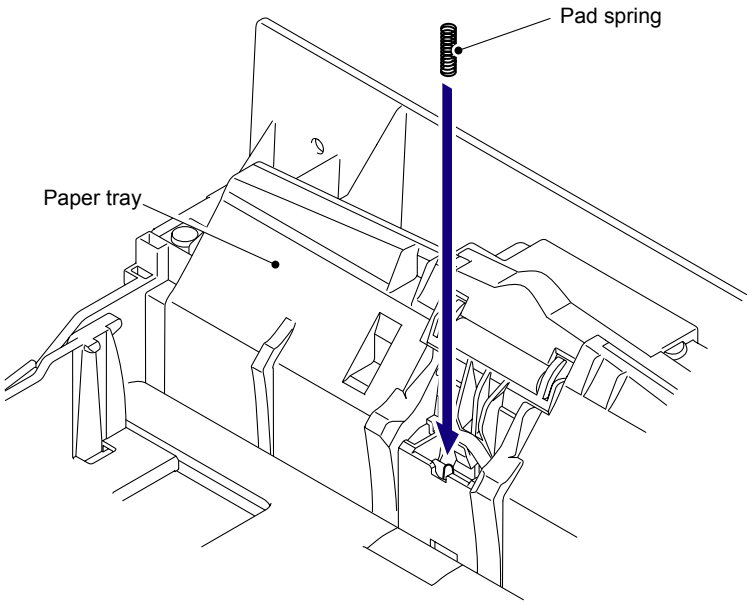


Fig. 4-32

(5) Put the two Pins of the Separation pad ASSY into the Paper tray.

Note:
Apply grease to the Separation pad ASSY before mounting the Paper tray.
(Refer to "4. LUBRICATUION" in Chapter 5.)

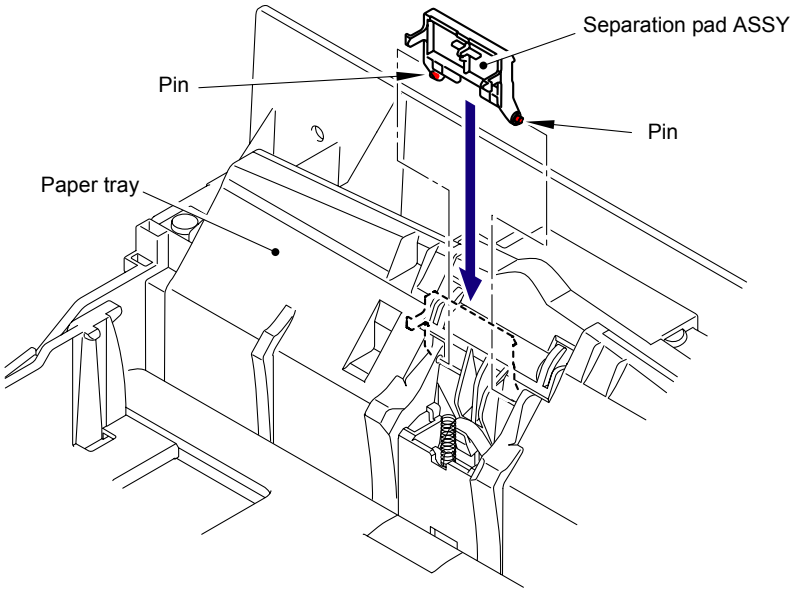


Fig. 4-33

(6) Set the Pad spring in a way that the "E" of the Separation pad ASSY fits into the "F", and assemble the two Hooks of the Separation pad ASSY to the Paper tray.

Note:
Check that the Separation pad ASSY pivots up and down smoothly by pushing it gently.

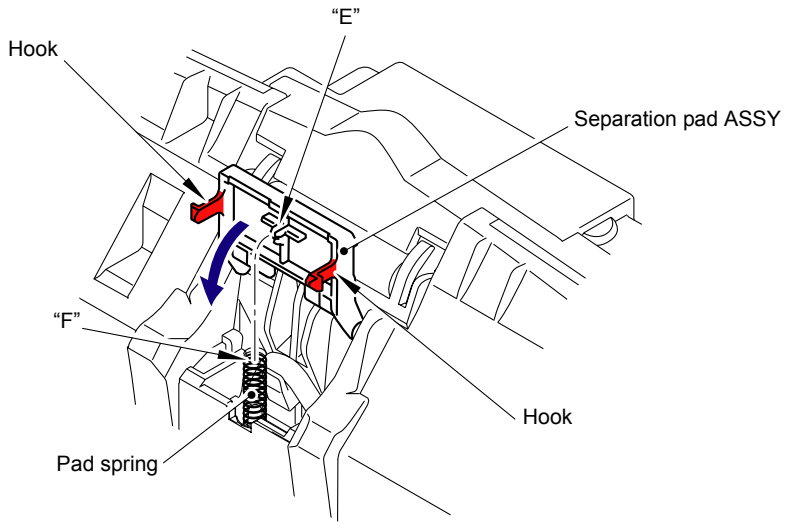


Fig. 4-34

(7) After replacing the Paper feeding kit, reset the counter. (Refer to "2.1 Resetting the Periodical Maintenance Parts Life" in Chapter7.)

CHAPTER 5
DISASSEMBLY AND ASSEMBLY

CHAPTER 5
DISASSEMBLY AND ASSEMBLY

This chapter describes procedures for disassembling and assembling the machine with relates notes. The provided disassembly order flow enables you to take in the quickest way to get an involved part at a glance.
At the start of disassembling, you can check the disassembly order flow which guides you through a shortcut to get to the part.
This chapter also covers screw tightening torques and lubrication points where the specified lubrication should be applied when the machine is assembled.

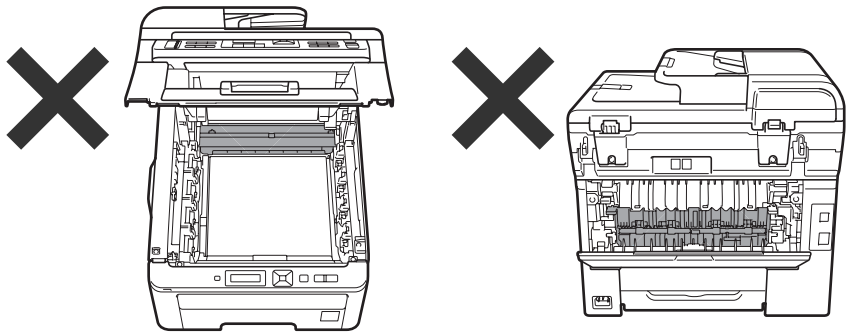
CONTENTS

1. SAFETY PRECAUTIONS

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

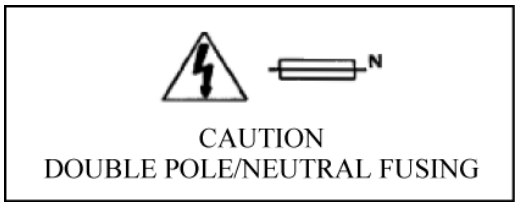
WARNING

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

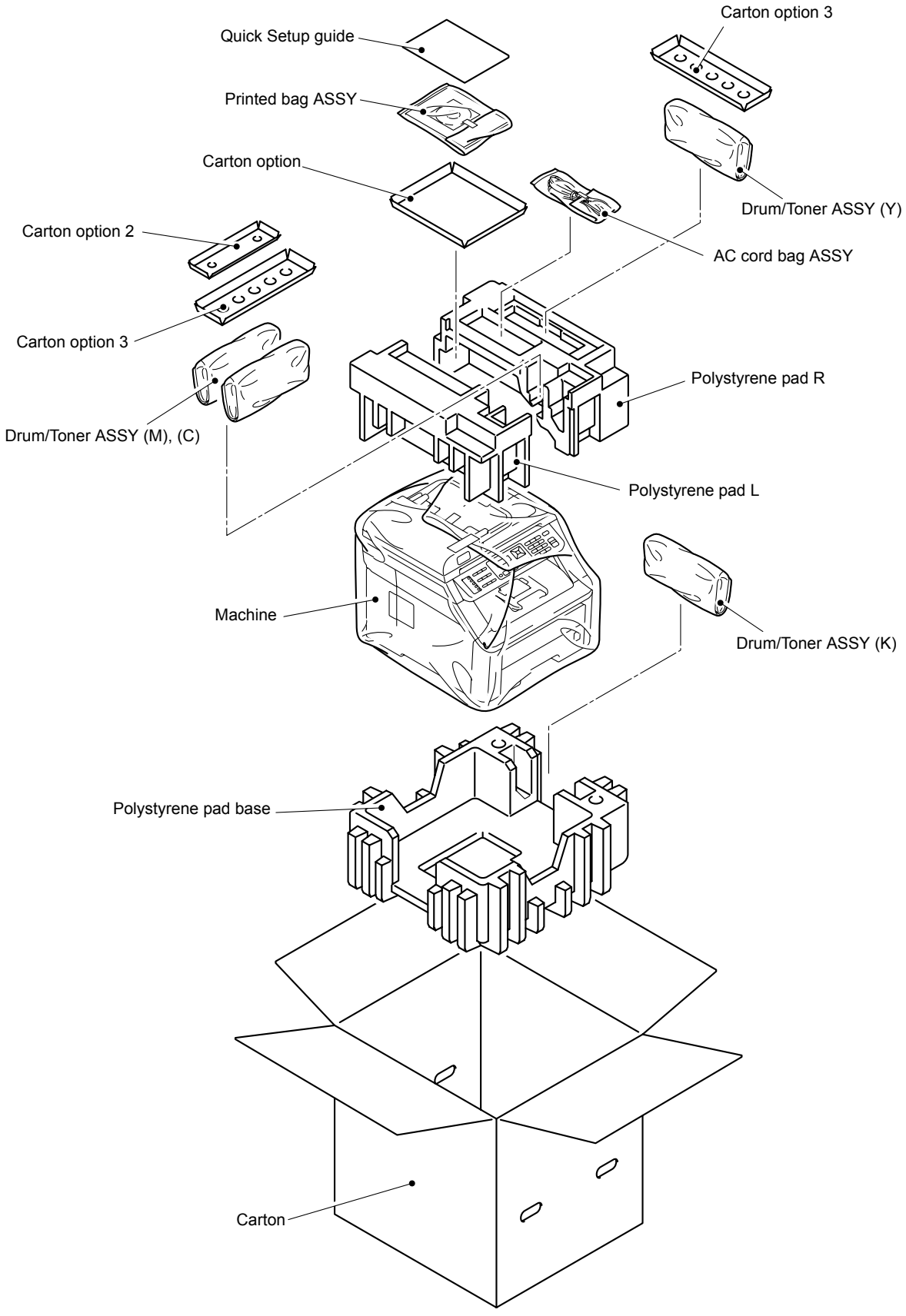


Caution:

- 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.
- After disconnecting flat cables, check that each cable is not damaged at its end or shortcircuited.
- When connecting flat cables, do not insert them at an angle. After insertion, check that the cables are not at an angle.
- 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.
- Violently closing the top cover without mounting the toner cartridge and the drum unit can damage this product.



2. PACKING



3. SCREW TORQUE LIST

Note:
For verifying the shape of each screw, refer to "APPENDIX 4 SCREW CATALOGUE".

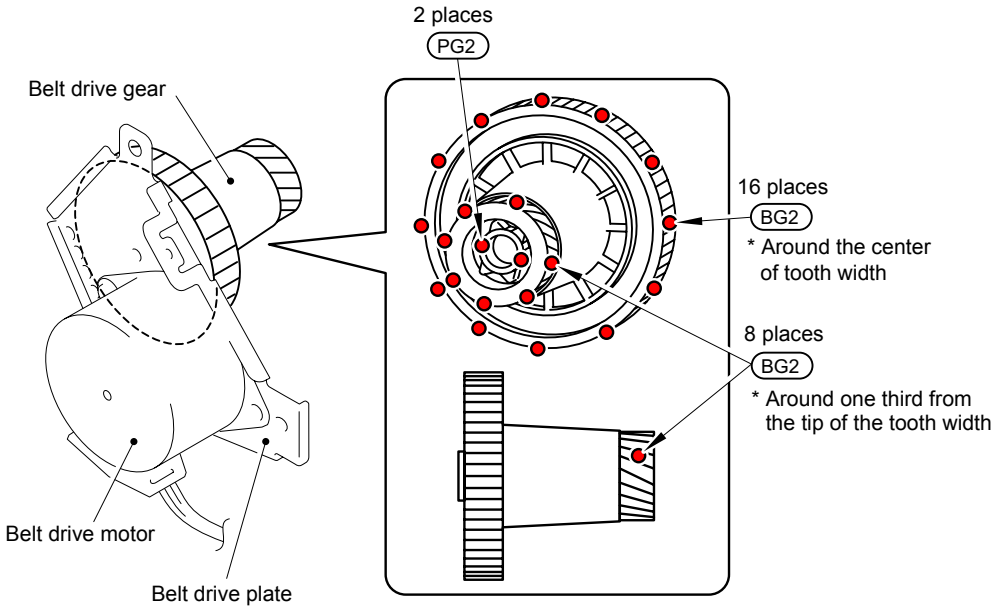
Location of screw	Screw type	Q'ty	Tightening torque N·m (kgf·cm)
Cord hook	Taptite cup B M3x8	2	0.50±0.10 (5±1)
Fuser cover L	Taptite bind B M3x12	1	0.60±0.10 (6±1)
Fuser cover R	Taptite bind B M3x12	1	0.60±0.10 (6±1)
Fuser unit	Taptite pan B M4x14	2	0.80±0.10 (8±1)
Side cover L ASSY	Taptite bind B M4x12	2	0.80±0.10 (8±1)
Side cover R ASSY	Taptite bind B M4x12	2	0.80±0.10 (8±1)
CIS harness hold plate	Taptite cup S M3x6 SR	1	0.50±0.10 (5±1)
Main shield cover plate ASSY	Taptite cup S M3x6 SR	3	0.50±0.10 (5±1)
USB direct interface FG harness ASSY			
FB FG harness ASSY	Taptite cup S M3x6 SR	1	0.50±0.10 (5±1)
ADF FG harness ASSY	Taptite cup S M3x6 SR	1	0.50±0.10 (5±1)
NCU FG harness ASSY 2	Taptite cup S M3x6 SR	1	0.50±0.10 (5±1)
ADF unit	Taptite bind B M4x12	2	0.80±0.10 (8±1)
Hinge ASSY L	Taptite cup B M3x10	2	0.50±0.10 (5±1)
	Taptite cup S M3x12	1	0.80±0.10 (8±1)
Hinge R support	Taptite cup B M3x10	1	0.50±0.10 (5±1)
Hinge base	Taptite cup B M3x10	3	0.50±0.10 (5±1)
Upper document chute ASSY	Taptite cup B M3x10	4	0.50±0.10 (5±1)
Lower document chute ASSY	Taptite cup B M3x10	2	0.50±0.10 (5±1)
ADF FG harness ASSY	Taptite cup S M3x6 SR	1	0.80±0.10 (8±1)
Drive frame ASSY	Taptite cup B M3x10	2	0.50±0.10 (5±1)
ADF motor	Taptite bind S M3x6	1	0.80±0.10 (8±1)
Panel unit	Taptite cup B M3x10	4	0.50±0.10 (5±1)
NCU shield	Taptite pan (washer) B M4x12 DA	2	0.80±0.10 (8±1)
NCU FG harness ASSY 2			
NCU FG harness ASSY 1	Screw PAN (S/P washer) M3.5x6	1	0.50±0.10 (5±1)
NCU PCB ASSY	Taptite cup S M3x6 SR	2	0.50±0.10 (5±1)
Top dress cover L	Taptite bind B M4x12	1	0.90±0.10 (9±1)
	Taptite cup B M3x8	2	0.50±0.10 (5±1)
Top dress cover R	Taptite bind B M4x12	1	0.90±0.10 (9±1)
	Taptite cup B M3x8	2	0.50±0.10 (5±1)
Blind cover L	Taptite bind B M4x12	1	0.90±0.10 (9±1)
Blind cover R	Taptite bind B M4x12	1	0.90±0.10 (9±1)
Front cover top ASSY	Taptite bind B M4x12	2	0.70±0.10 (7±1)

Location of screw	Screw type	Q'ty	Tightening torque N·m (kgf·cm)
USB direct interface relay PCB ASSY or panel ground plate 2	Taptite bind B M3x8	1	0.40±0.05 (4±0.5)
FG harness	Taptite bind B M3x8	1	0.40±0.05 (4±0.5)
USB holder	Taptite bind B M3x8	2	0.40±0.05 (4±0.5)
Front cover	Taptite bind B M4x12	2	0.90±0.10 (9±1)
LED FG harness ASSY	Taptite cup S M3x6 SR	1	0.50±0.10 (5±1)
Inner chute ASSY 2	Taptite bind B M4x12	2	0.90±0.10 (9±1)
Arm guide L	Taptite bind B M4x12	2	0.90±0.10 (9±1)
TC harness cover 2	Taptite bind B M4x12	2	0.90±0.10 (9±1)
Arm guide R	Taptite bind B M4x12	2	0.90±0.10 (9±1)
Back up plate	Taptite cup B M3x8	6	0.40±0.05 (4±0.5)
	Taptite cup S M3x6 SR	2	0.50±0.15 (5±1.5)
Sub frame ASSY	Taptite bind B M4x12	4	0.90±0.10 (9±1)
Inner chute ASSY 1	Taptite bind B M4x12	5	0.90±0.10 (9±1)
LED PCB cover	Taptite cup S M3x6 SR	4	0.50±0.10 (5±1))
Insulation sheet B			
LED head control PCB ASSY	Taptite cup S M3x6 SR	4	0.50±0.10 (5±1)
Develop release motor ASSY	Taptite bind S M3x5	1	0.70±0.10 (7±1)
Main PCB ASSY	Taptite cup S M3x6 SR	4	0.50±0.10 (5±1)
Engine PCB ASSY	Taptite cup S M3x6 SR	2	0.80±0.10 (8±1) (Front side)
		2	0.50±0.10 (5±1) (Back side)
Main PCB shield plate	Taptite cup S M3x6 SR	3	0.80±0.10 (8±1)
	Taptite bind B M4x12	1	0.90±0.10 (9±1)
Engine shield plate	Taptite bind B M4x12	1	0.90±0.10 (9±1)
	Taptite cup S M3x6 SR	1	0.80±0.10 (8±1)
Develop drive plate ASSY	Taptite cup S M3x6 SR	2	0.80±0.10 (8±1)
	Taptite bind B M4x12	2	0.90±0.10 (9±1)
Under bar	Taptite bind B M4x12	4	0.90±0.10 (9±1)
Under bar earth plate	Taptite cup S M3x6 SR	1	0.80±0.10 (8±1)
Drum develop drive unit	Taptite bind B M4x12	3	0.90±0.10 (9±1)
	Taptite cup S M3x6 SR	2	0.80±0.10 (8±1)
Develop drive motor	Screw bind M3x4	3	0.50±0.05 (5±0.5)
Paper feed motor ASSY	Screw bind M3x4	3	0.50±0.05 (5±0.5)
Paper feed unit	Taptite cup S M3x6 SR	3	0.80±0.10 (8±1)
	Shoulder screw	2	0.80±0.10 (8±1)
PF upper cover ASSY	Taptite cup B M3x10	2	0.60±0.10 (6±1)
Registration front/rear sensor PCB ASSY	Taptite cup B M3x8	1	0.55±0.05 (5.5±0.5)
Front chute ASSY	Taptite cup B M3x10	2	0.60±0.10 (6±1)
Cleaner PF gear cover	Taptite bind B M4x12	5	0.90±0.10 (9±1)

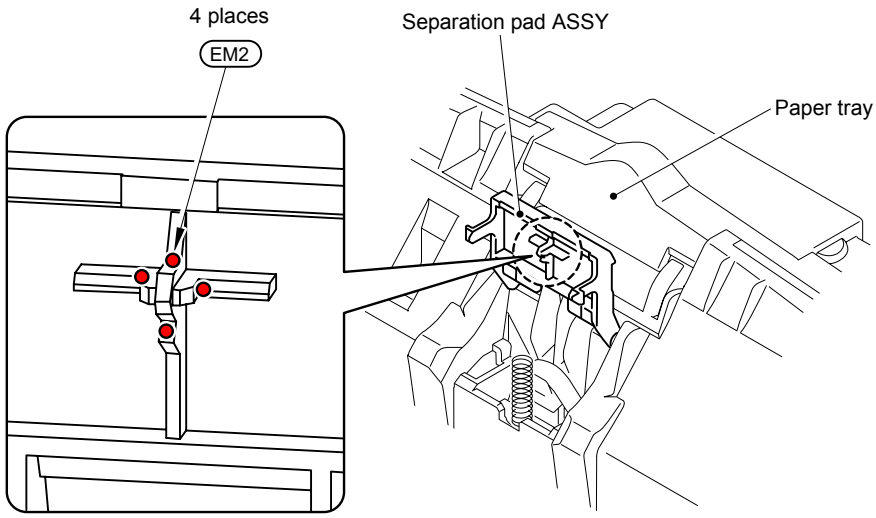
Location of screw	Screw type	Q'ty	Tightening torque N·m (kgf·cm)
PF registration solenoid	Taptite bind B M3x10	1	0.55±0.10 (5.5±1)
Pick-up solenoid	Taptite bind B M3x10	1	0.55±0.10 (5.5±1)
Pick-up solenoid lever			
Fuser/Eject drive motor	Taptite bind B M4x12	1	0.90±0.10 (9±1)
	Taptite cup S M3x6 SR	1	0.80±0.10 (8±1)
Eject gear cover	Taptite bind B M4x12	3	0.90±0.10 (9±1)
Paper eject guide ASSY	Taptite bind B M4x12	4	0.90±0.10 (9±1)
Belt drive ASSY	Taptite pan (washer) B M4x12DA	3	0.70±0.10 (7±1)
Drum motor origin sensor PCB ASSY	Taptite bind B M3x10	1	0.55±0.10 (5.5±1)
NCU harness holder	Taptite bind B M4x12	2	0.90±0.10 (9±1)
Safety louver	Taptite bind B M4x12	1	0.80±0.10 (8±1)
FG harness	Screw pan (S/P washer) M4x8 DB	1	0.80±0.10 (8±1)
Inlet			
NCU FG harness ASSY 1	Screw pan (S/P washer) M4x8 DB	1	0.80±0.10 (8±1)
LVPS unit	Taptite bind B M4x12	2	0.90±0.10 (9±1)
	Taptite cup S M3x6 SR	2	0.50±0.10 (5±1)
LVPS plate	Taptite pan (washer) B M4x12DA	4	0.90±0.10 (9±1)
Low-voltage power supply PCB ASSY	Taptite pan (washer) B M4x12DA	1	0.90±0.10 (9±1)
Registration sensor holder ASSY	Taptite cup S M3x6 SR	1	0.50±0.10 (5±1)
High-voltage power supply PCB ASSY	Taptite bind B M4x12	2	0.70±0.10 (7±1)
	Taptite pan (washer) B M4x12DA	2	0.65±0.10 (6.5±1)
HVPS ground plate 2	Taptite cup S M3x6 SR	1	0.80±0.10 (8±1)
HVPS control PCB ASSY	Taptite pan (S/P W) B M3x10	1	0.40±0.05 (4±0.5)
Develop release sensor PCB ASSY	Taptite cup B M3x8	1	0.40±0.05 (4±0.5)
Side frame R	Shoulder screw M3	4	0.80±0.10 (8±1)
Side frame L	Shoulder screw M3	3	0.80±0.10 (8±1)
	Taptite cup S M3x6 SR	1	0.80±0.10 (8±1)
Bevel gear cover	Taptite bind B M4x12	3	0.90±0.10 (9±1)

4. LUBRICATION

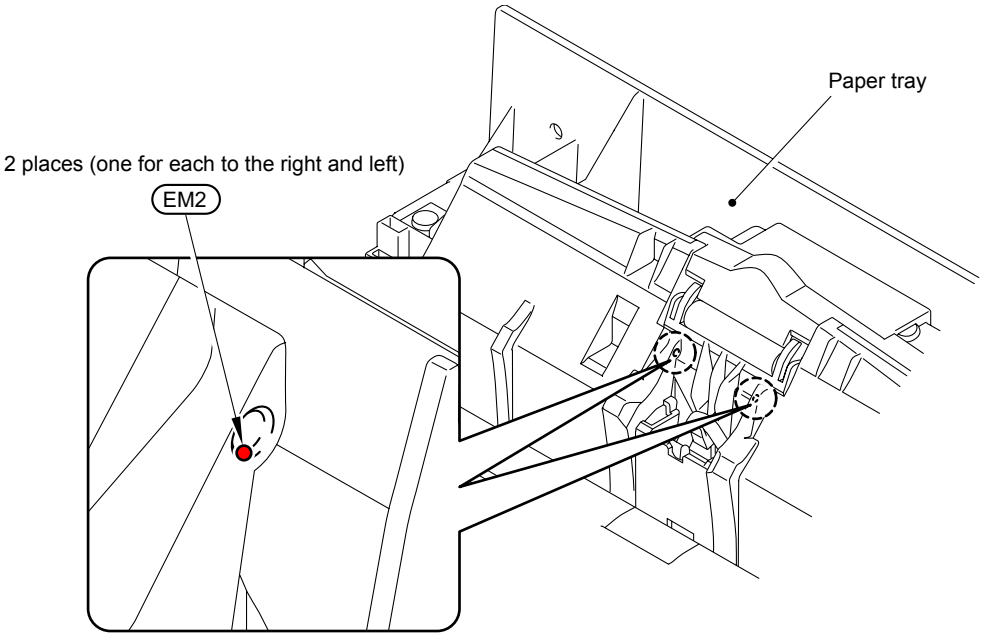
The kind of the lubricating oil (Maker name)	Lubrication point	Quantity of lubrication
MOLYKOTE PG-661 (W) (Dow Corning)	Belt drive gear	2 mm dia. ball (PG2)
	LED ASSY	1 mm dia. ball (PG1)
FLOIL BG-MU (Kanto Kasei)	Belt drive gear	2 mm dia. ball (BG2)
MOLYKOTE EM-D110 (Dow Corning)	Separation pad ASSY	2 mm dia. ball (EM2)
	Paper tray	2 mm dia. ball (EM2)



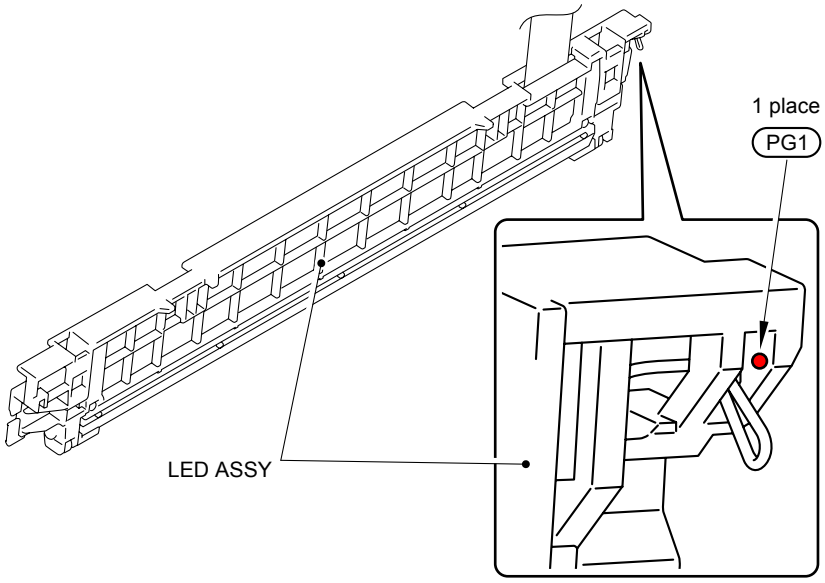
PG2: MOLYKOTE PG-661 (W) (2 mm dia. ball)
BG2: FLOIL BG-MU (2 mm dia. ball)



EM2: MOLYKOTE EM-D110 (2 mm dia. ball)



EM2: MOLYKOTE EM-D110 (2 mm dia. ball)



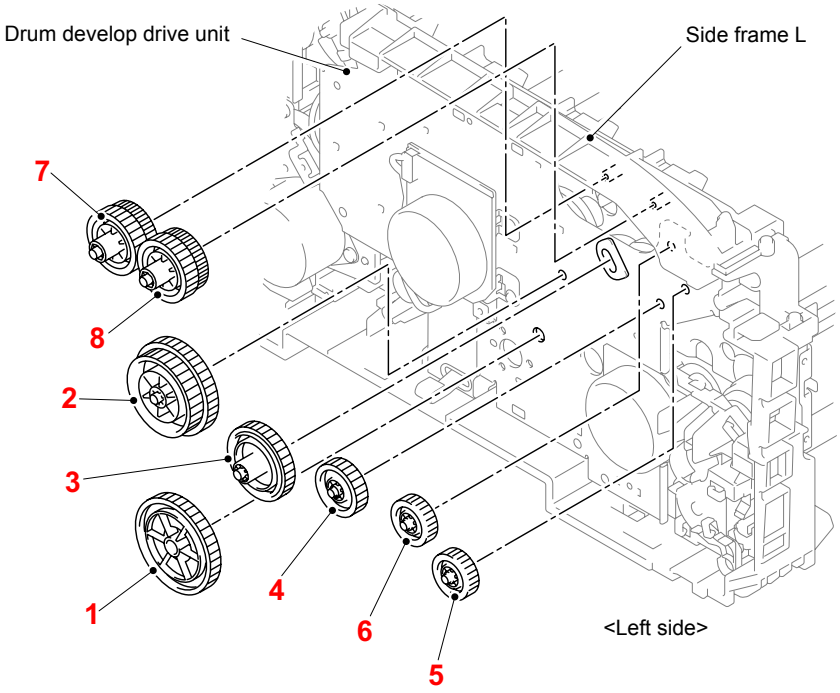
PG1: MOLYKOTE PG-661 (W) (1 mm dia. ball)

5. OVERVIEW OF GEARS

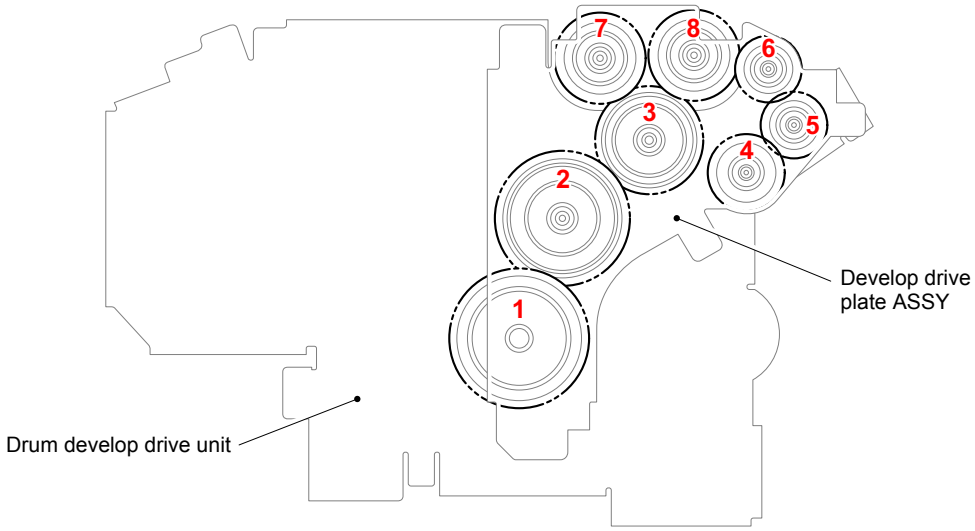
When ordering spare parts, please refer to Parts reference list.

■ Develop drive

<Development view>



<Layout view>



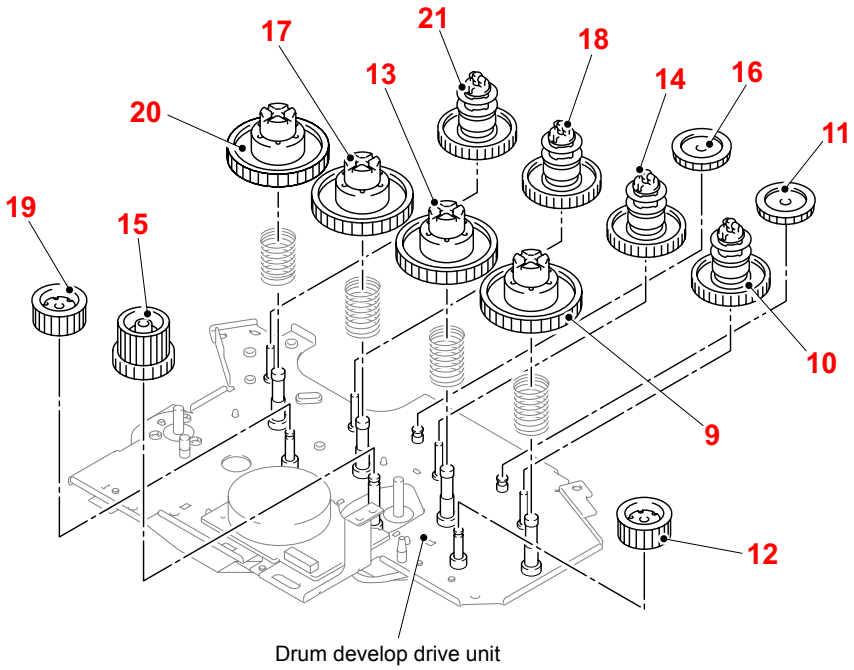
<Name of gears>

1	LU5128	Idle gear 100	5	LU5126	Idle gear 30
2	LU5127	Gear 63/85	6	LU5126	Idle gear 30
3	LU5124	Pendulum gear 50	7	LU5143	Gear 42/39
4	LU5125	Idle gear 35	8	LU5143	Gear 42/39

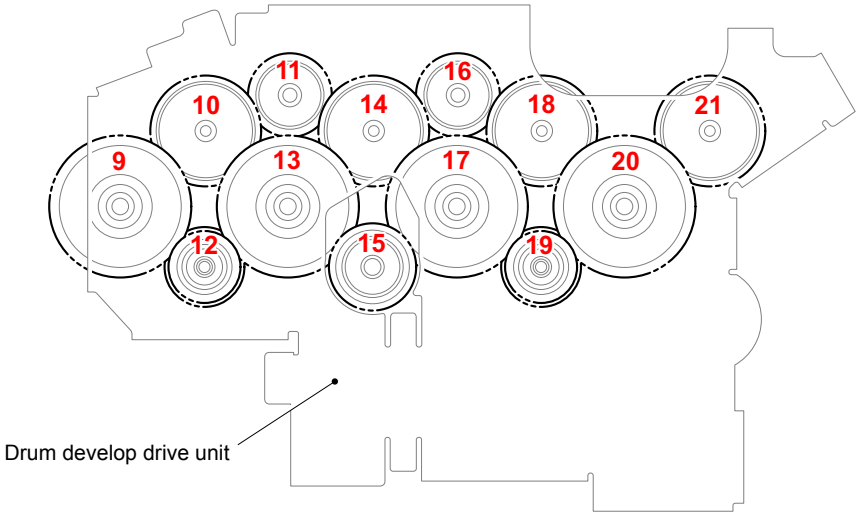
* These parts are subject to change without notice.

■ Drum develop drive

<Development view>



<Layout view>



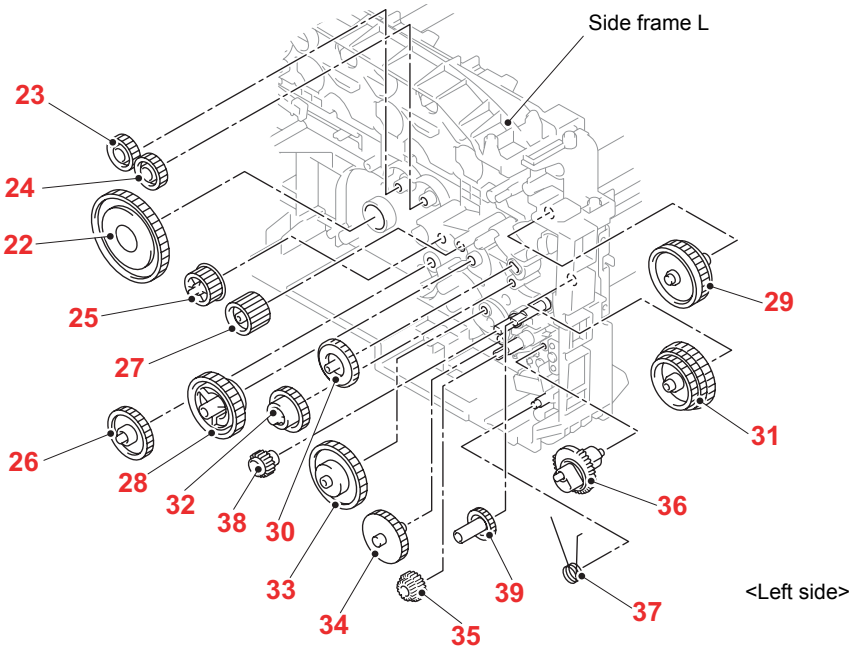
<Name of gears>

9	LU5139	Drum drive gear ASSY	16	LU5136	Coupling idle gear 35
10	LU5132	Develop coupling gear	17	LU6157	Drum drive gear 60
11	LU5136	Coupling idle gear 35	18	LU5132	Develop coupling gear
12	LU6158	Drum idle gear 30	19	LU6158	Drum idle gear 30
13	LU6157	Drum drive gear 60	20	LU6157	Drum drive gear 60
14	LU5132	Develop coupling gear	21	LU5132	Develop coupling gear
15	LU6159	Drum drive gear 62/30			

* These parts are subject to change without notice.

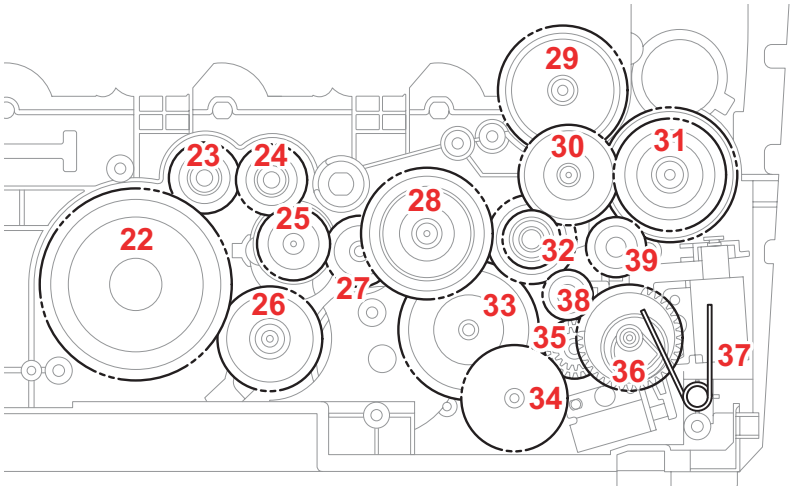
■ Cleaner PF

<Development view>



<Layout view>

* Outside of side frame L



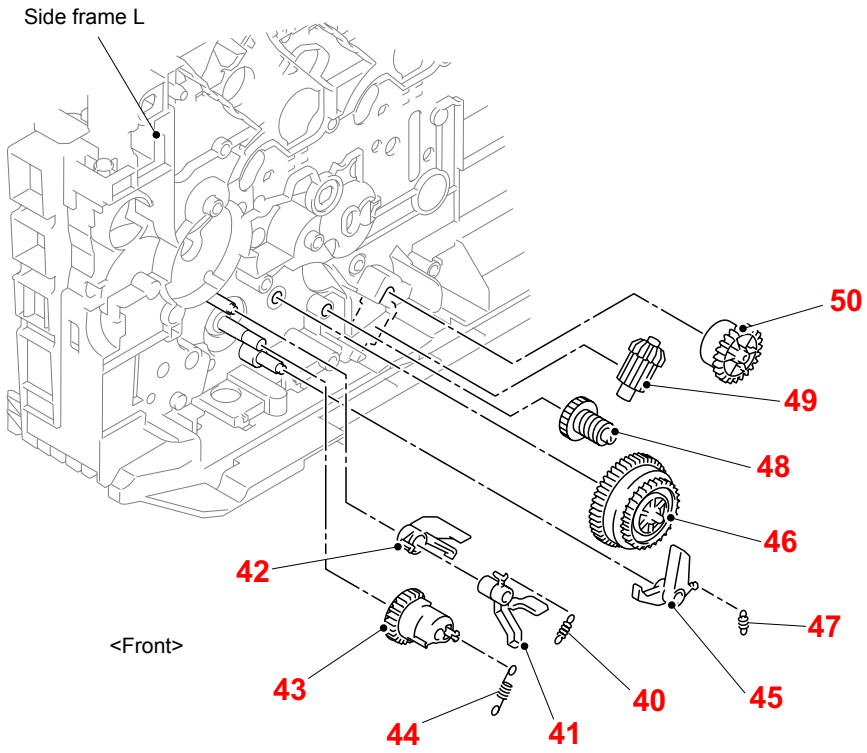
<Name of gears>

22	LU5108	Gear 70	31	LU5744	Registration differential gear
23	LU5110	Idle gear 25 R	32	LU5097	Gear 32/21
24	LU5110	Idle gear 25 R	33	LU5100	Gear 26-51
25	LU5112	Idle gear 25 SW	34	LU5101	Idle gear 40
26	LU5109	Idle gear 38	35	LU2043	Feeder gear 17/22
27	LU5111	Idle gear 25	36	LU5103	Pick-up sector gear 31/38
28	LU5161	Gear 27/72	37	LU5104	Pick-up sector gear spring
29	LU5069	Planetary clutch ASSY	38	LU5222	Feeder gear 17
30	LU5099	Pendulum gear 38	39	LU5223	PF drive gear 23

* These parts are subject to change without notice.

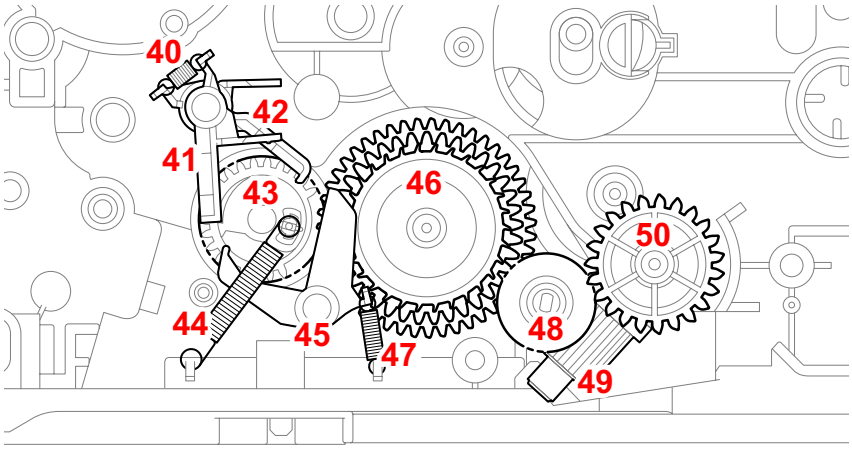
■ PF drive

<Development view>



<Layout view>

* Inside of side frame L



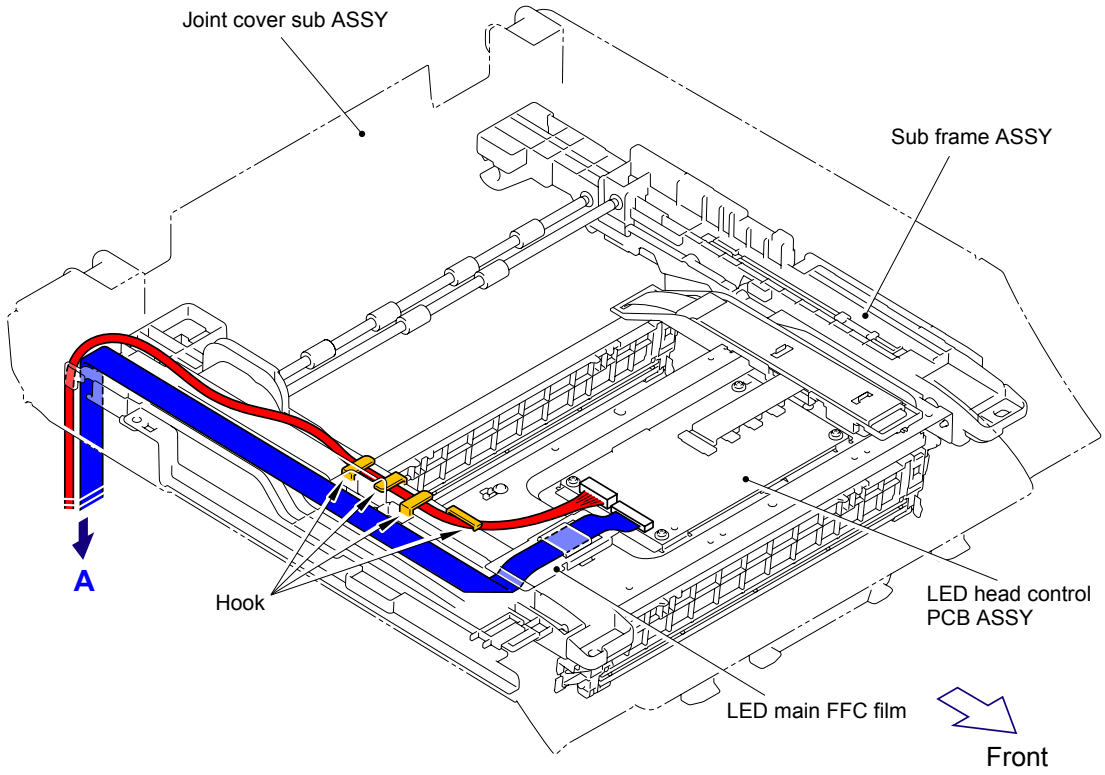
<Name of gears>

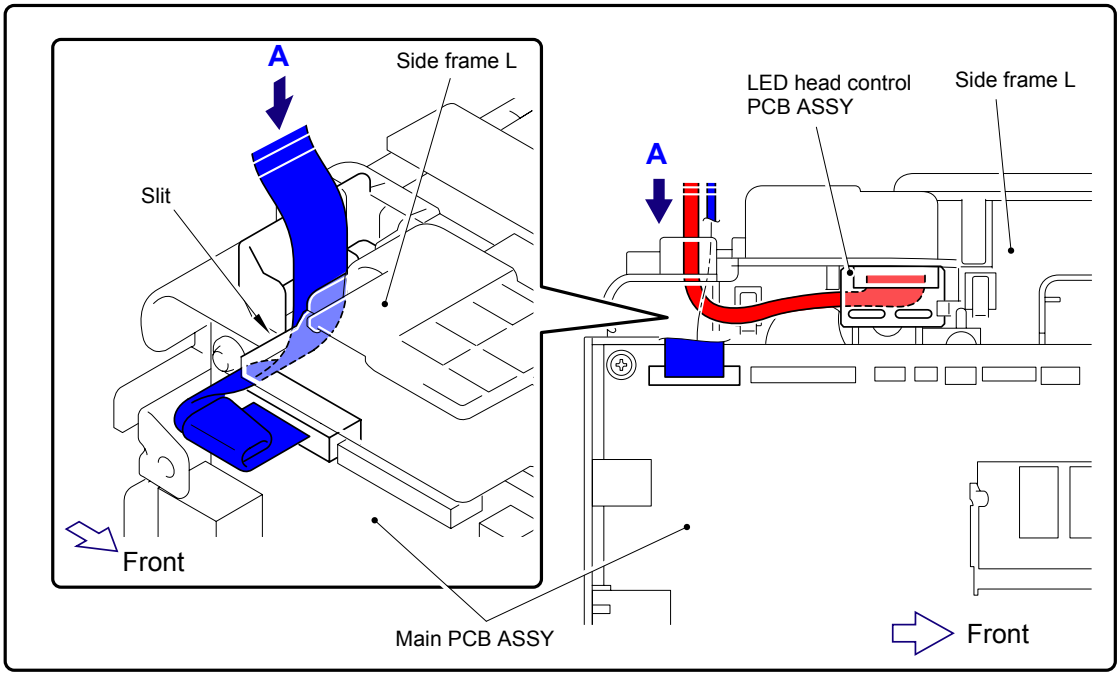
40	LR0910	Hook spring	46	LU5089	Planetary clutch ASSY
41	LU5093	LM hook B	47	LR0910	Hook spring
42	LU5094	LM hook C	48	LU5105	Worm Z33
43	LU5095	P/P gear 26 sector	49	LU5106	Bevel gear Z17G
44	LU6447	P/P gear 26 sector spring	50	LR0301	Bevel gear Z23G
45	LU5088	LM hook A			

* These parts are subject to change without notice.

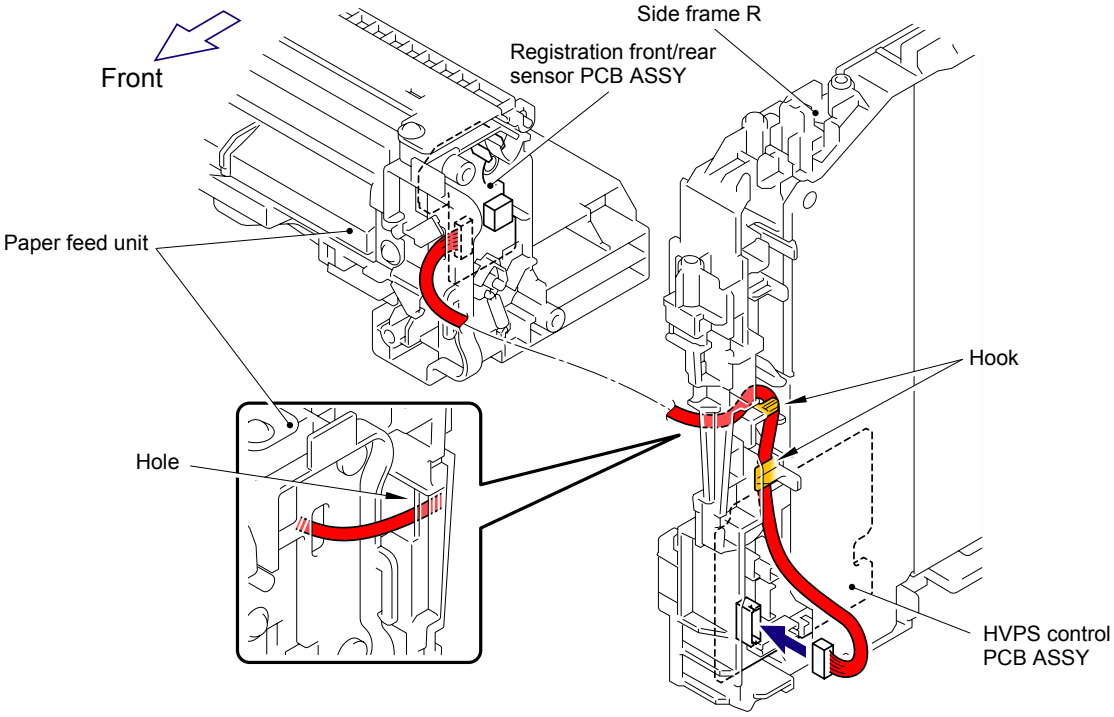
6. HARNESS ROUTING

1 Joint Cover Sub ASSY

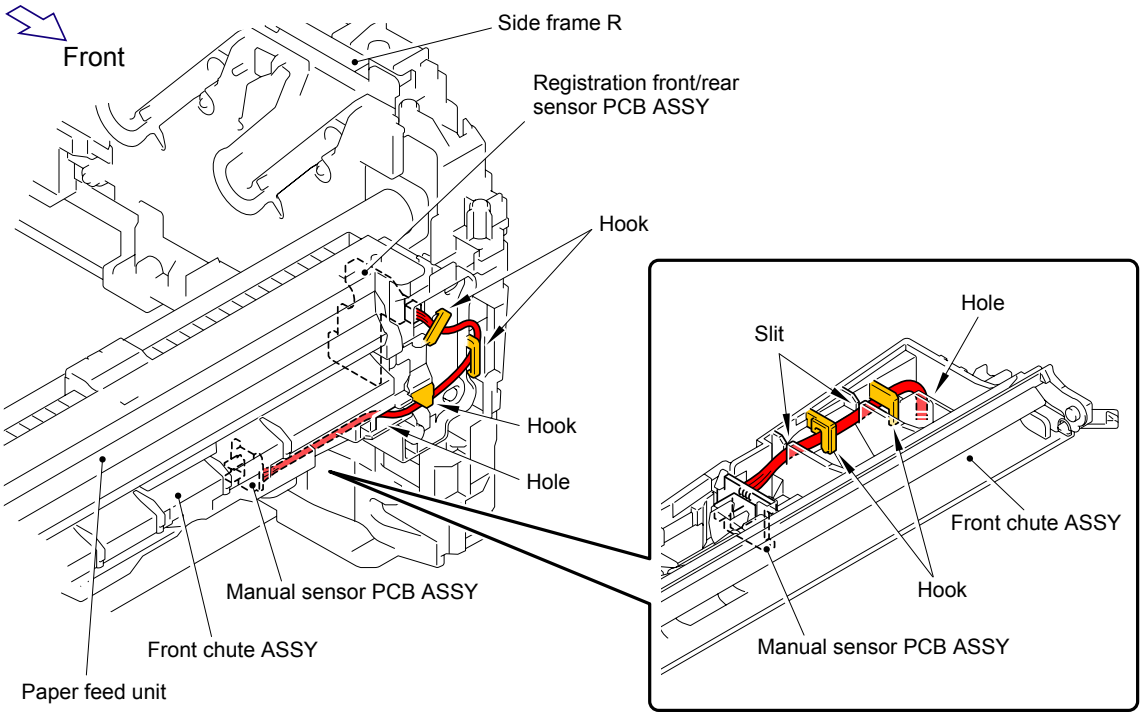




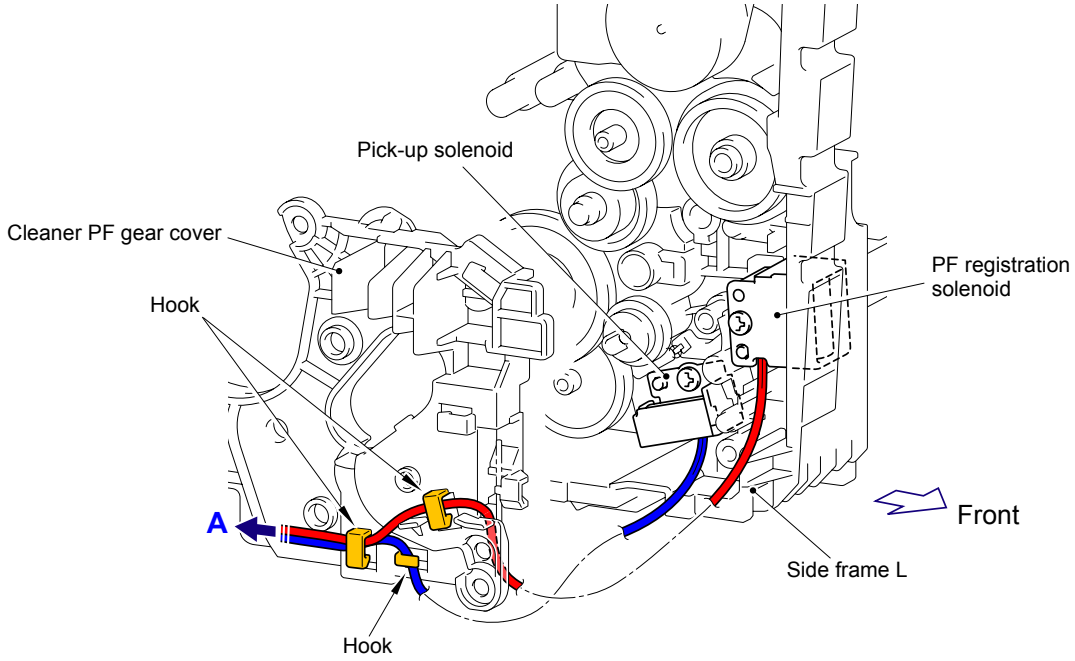
2 Registration Front/Rear Sensor PCB ASSY

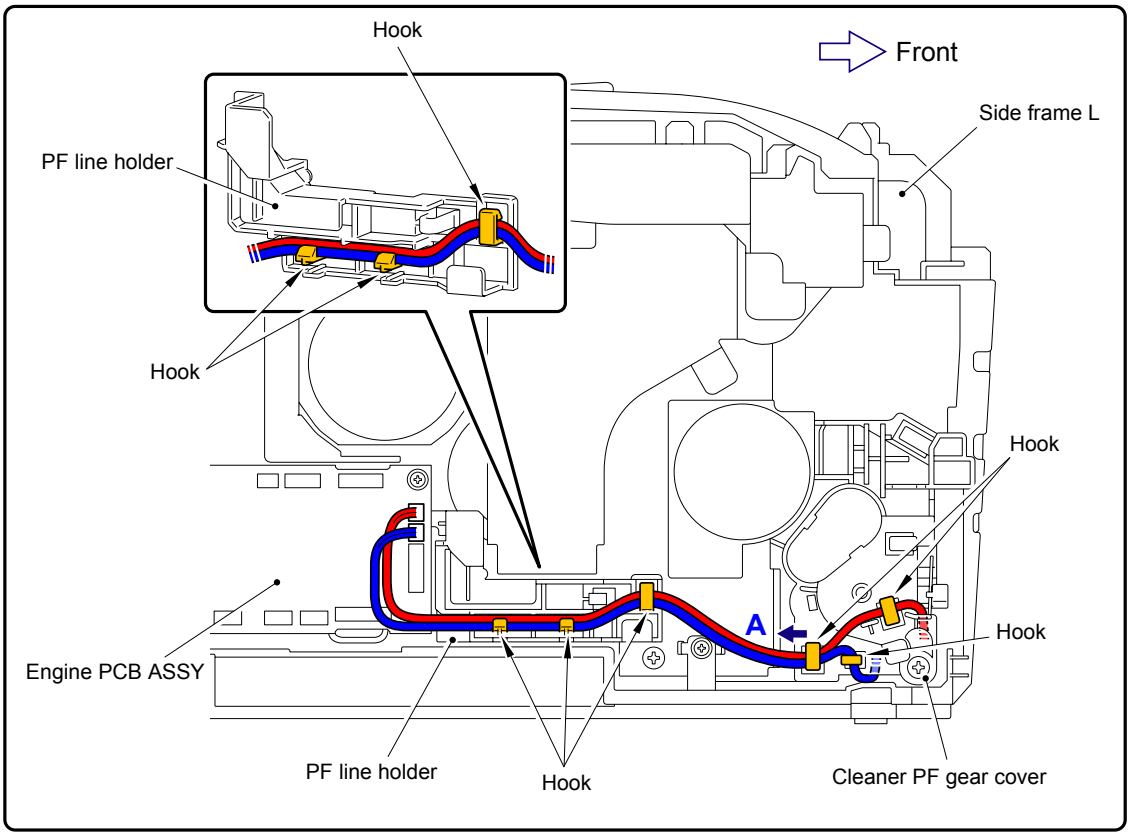


3 Manual Sensor PCB ASSY

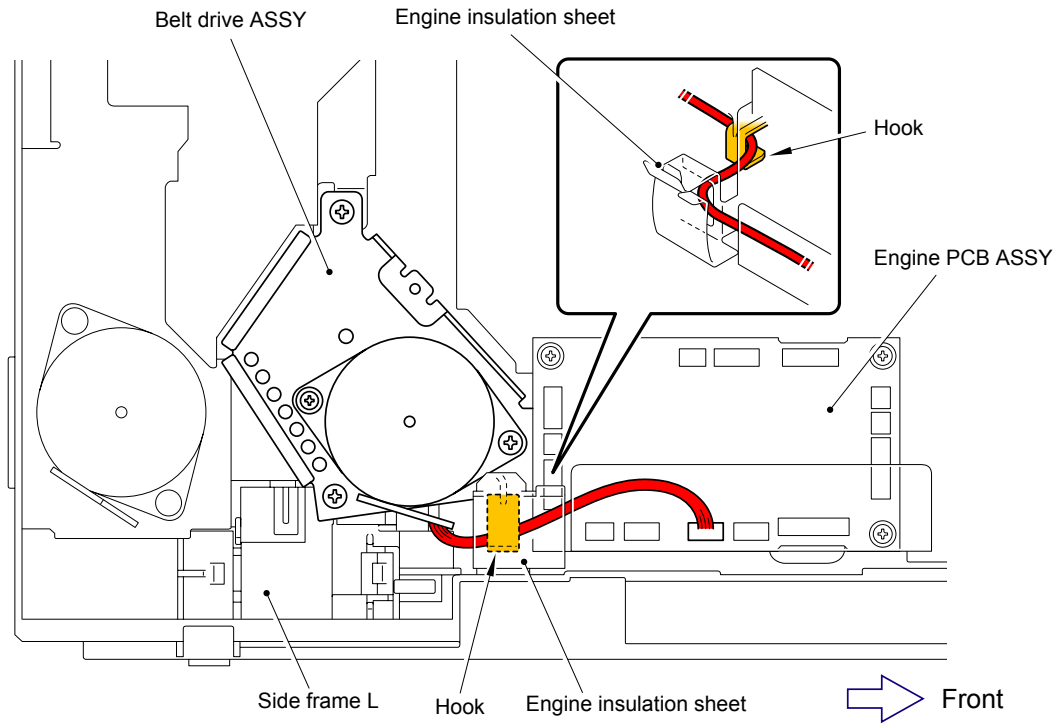


4 PF Registration Solenoid, Pick-up Solenoid

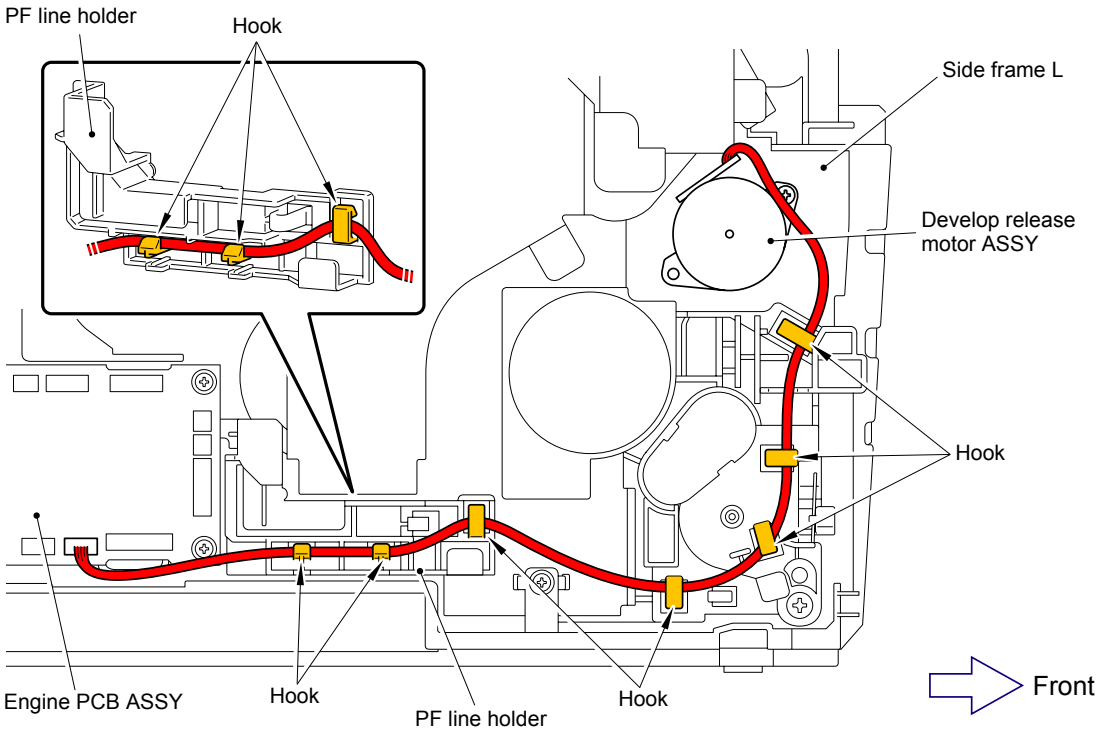




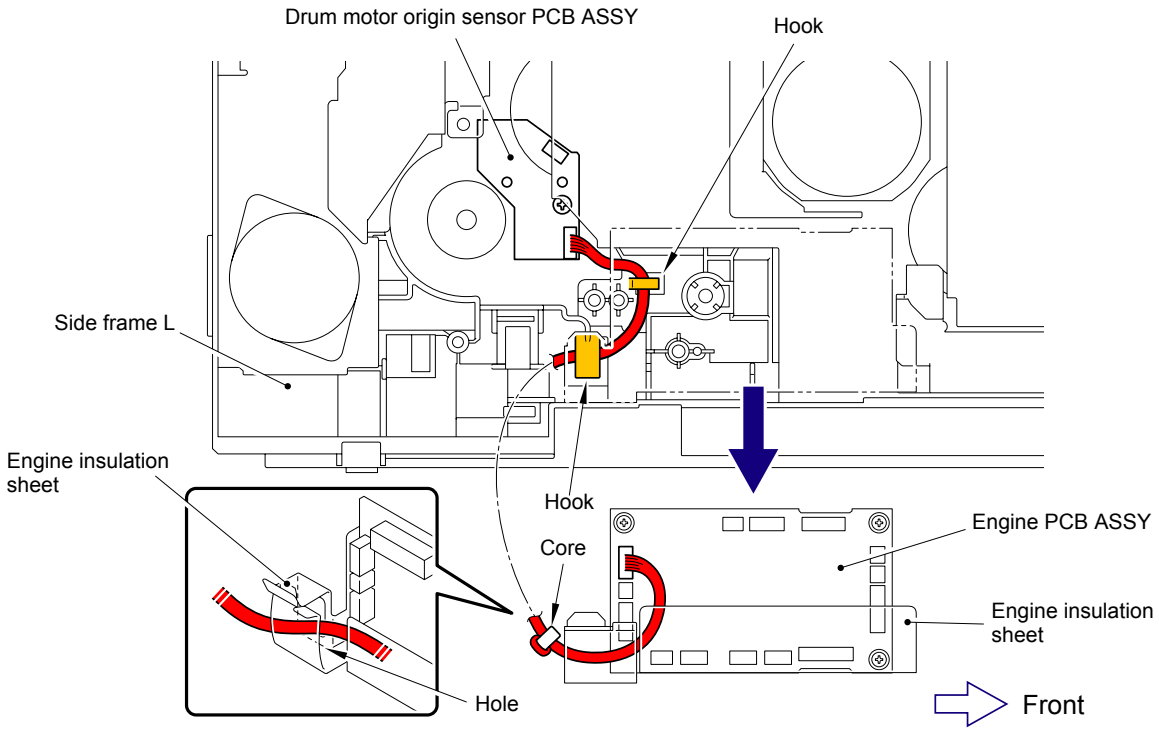
5 Belt Drive ASSY



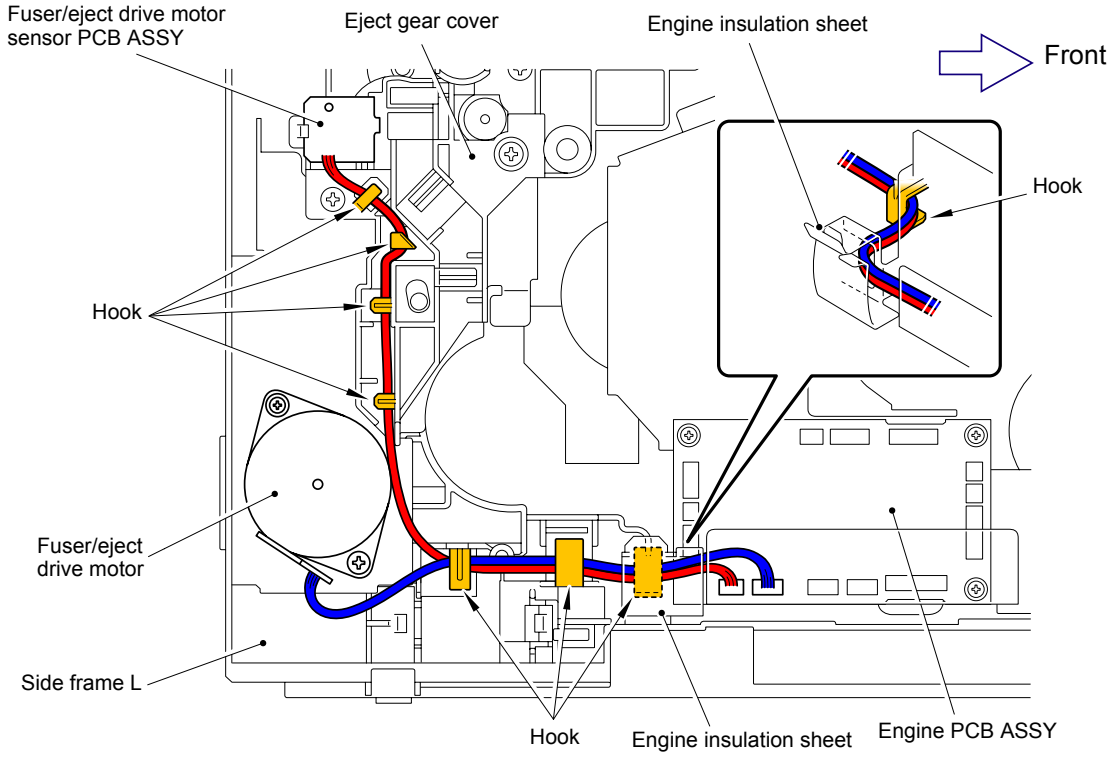
6 Develop Release Motor ASSY



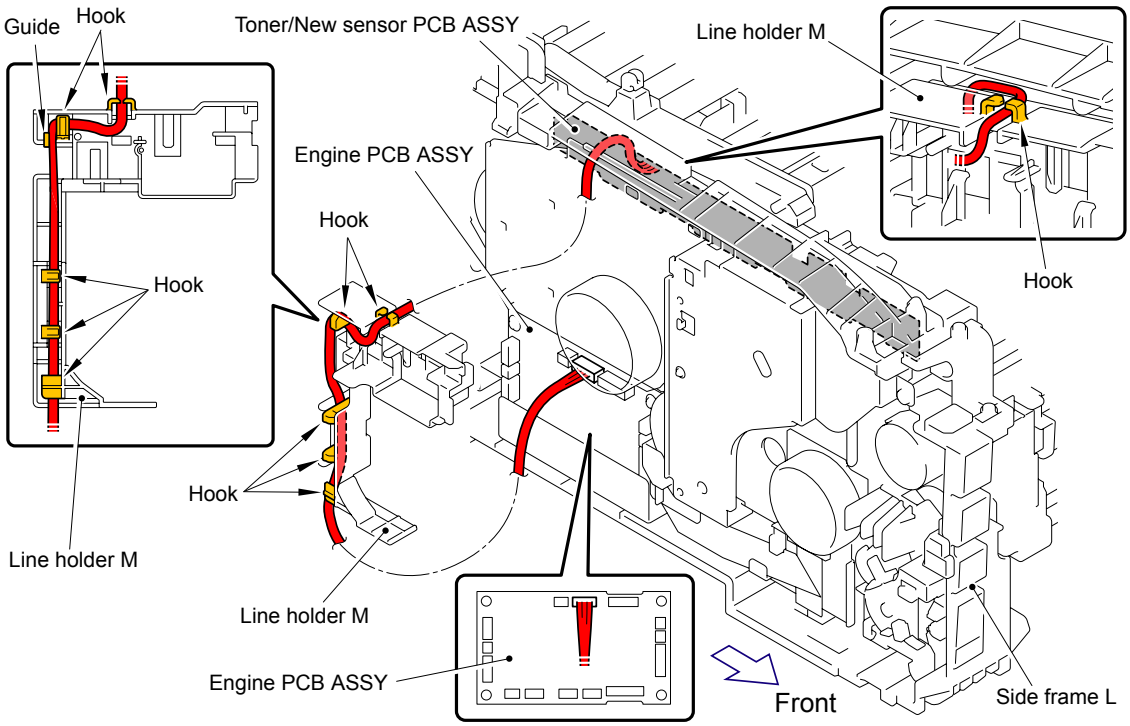
7 Drum Motor Origin Sensor PCB ASSY



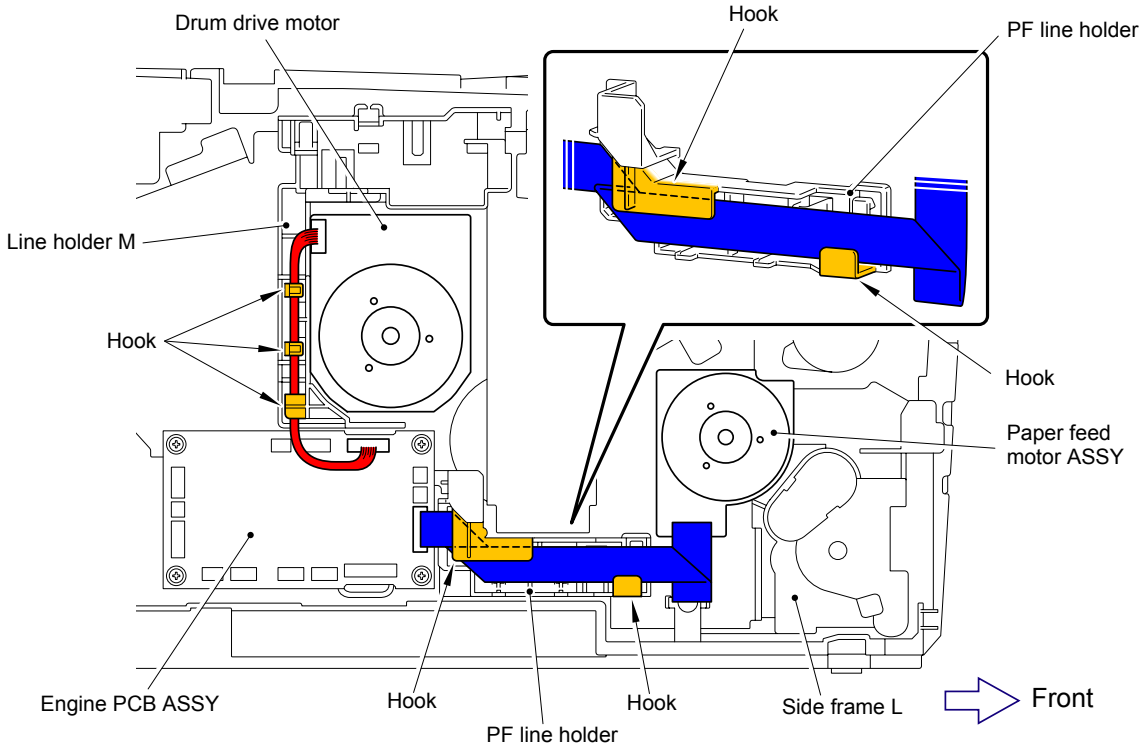
8 Fuser/Eject Drive Motor, Fuser/Eject Drive Motor Sensor PCB ASSY



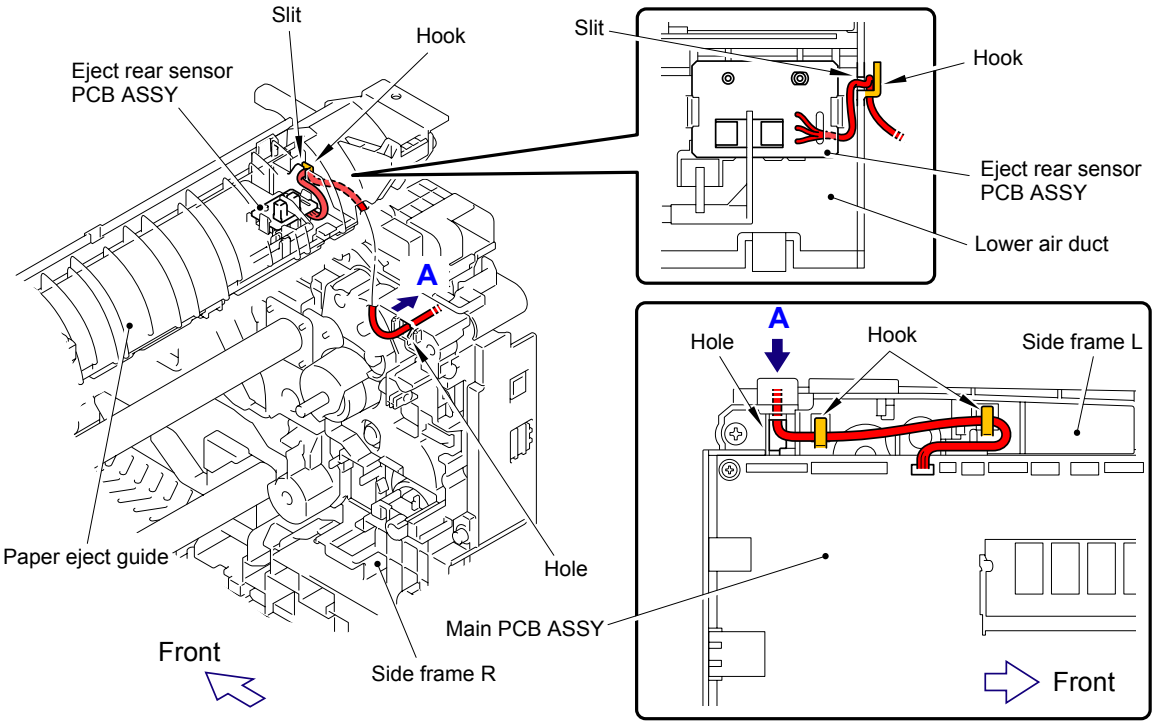
9 Toner/New Sensor PCB ASSY



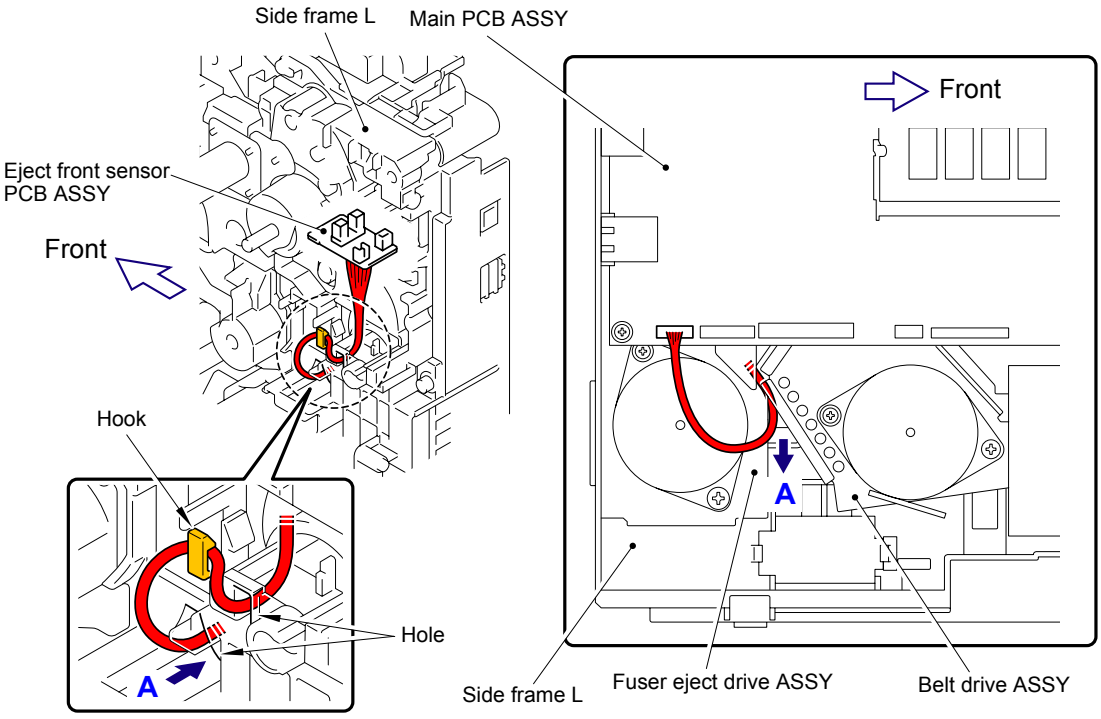
10 Paper Feed Motor ASSY, Drum Drive Motor



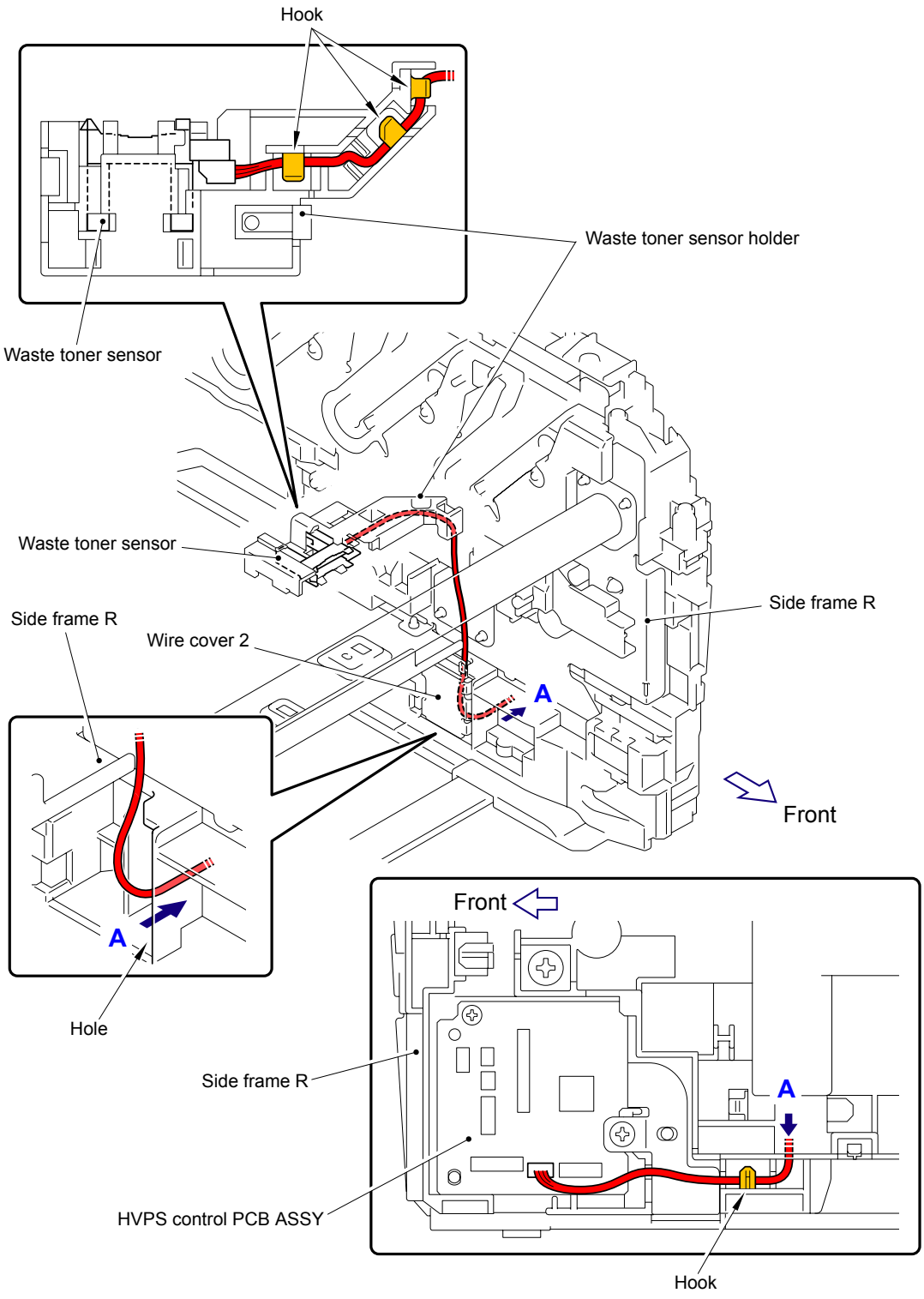
11 Eject Rear Sensor PCB ASSY



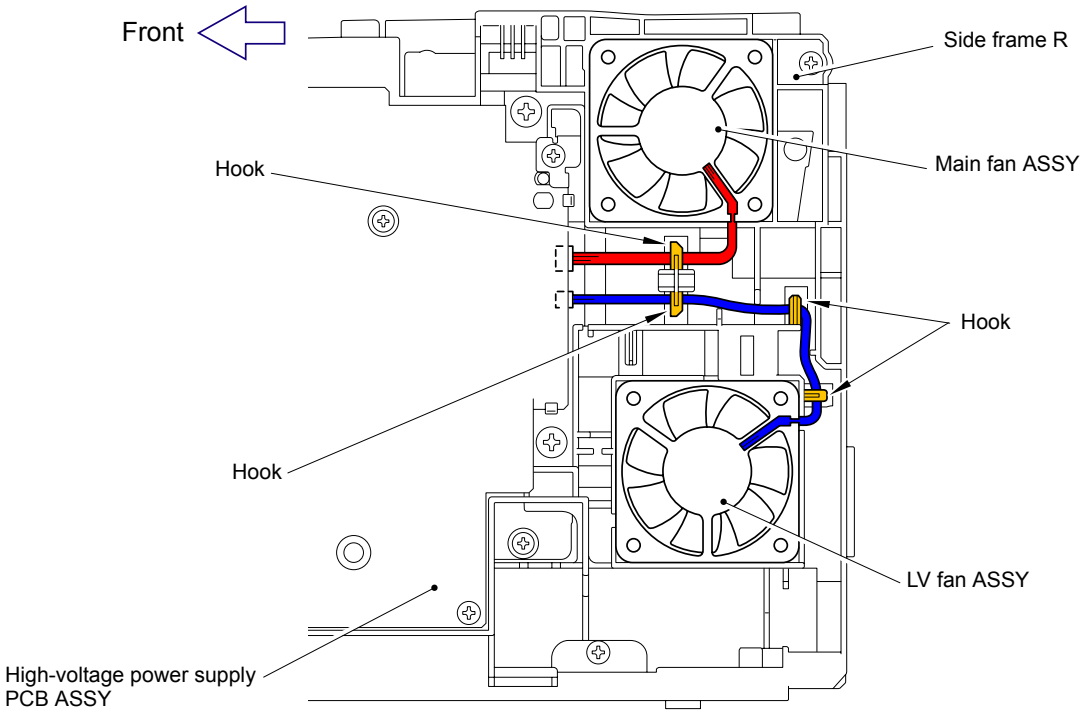
12 Eject Front Sensor PCB ASSY



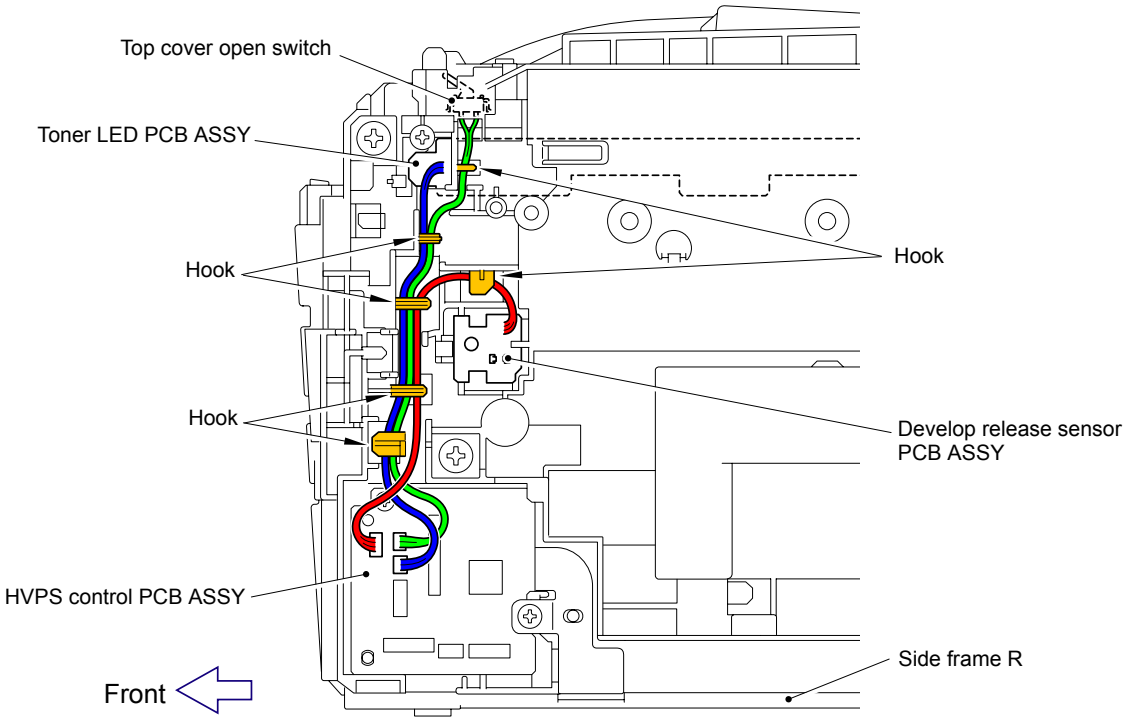
13 Waste Toner Sensor



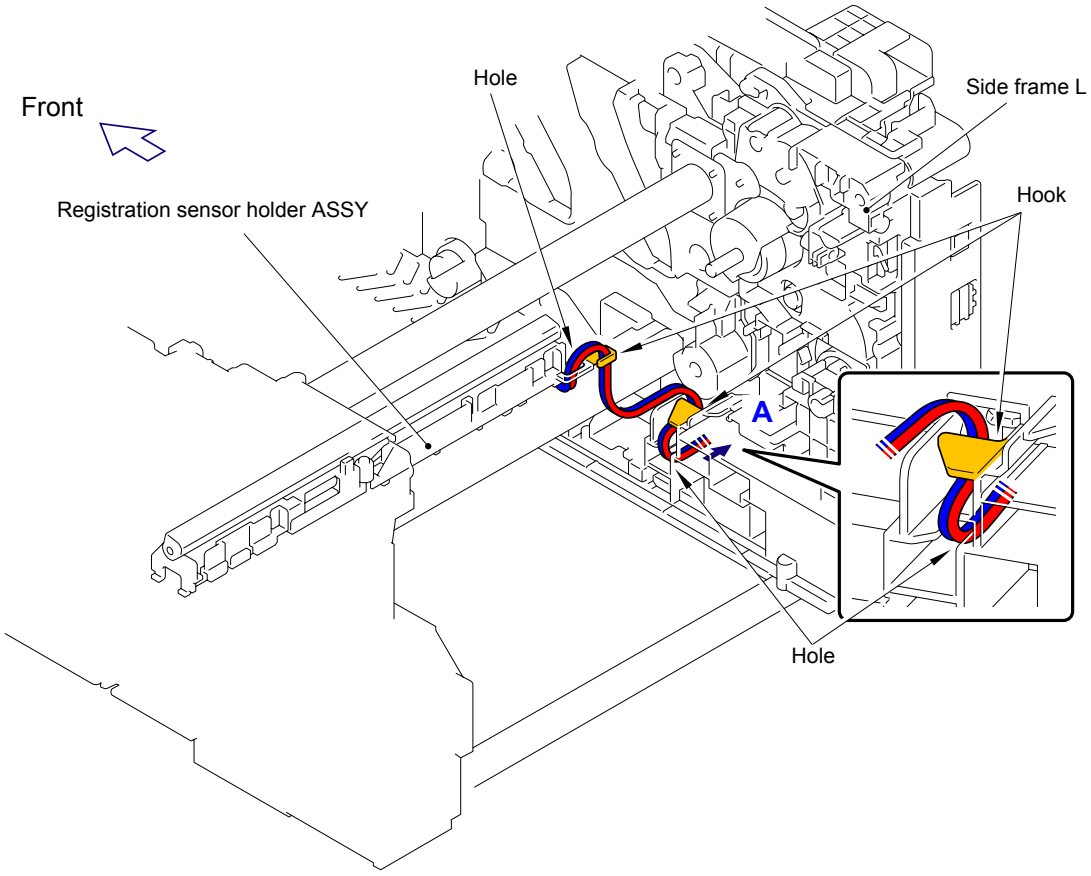
14 Main Fan ASSY, LV Fan ASSY

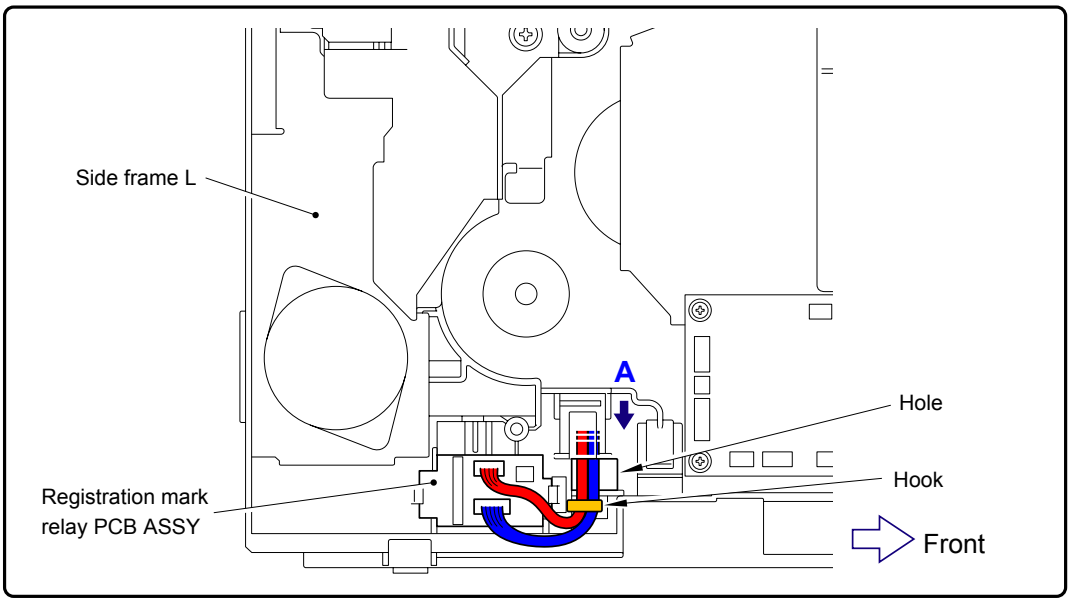


15 Develop Release Sensor PCB ASSY, Top Cover Open Switch, Toner LED PCB ASSY

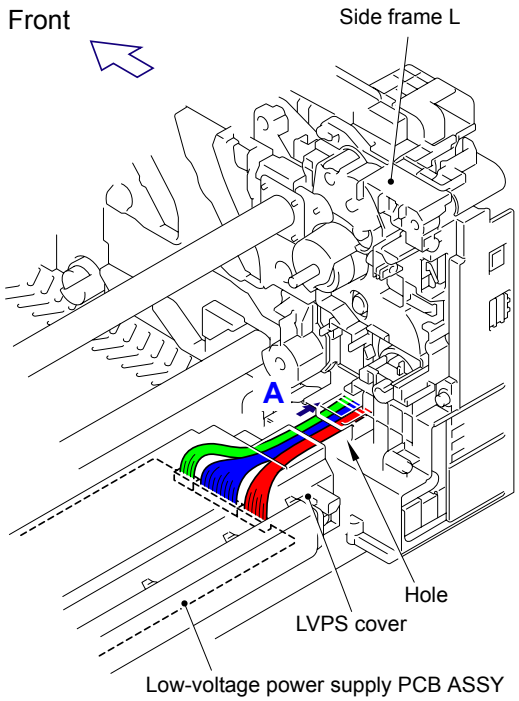


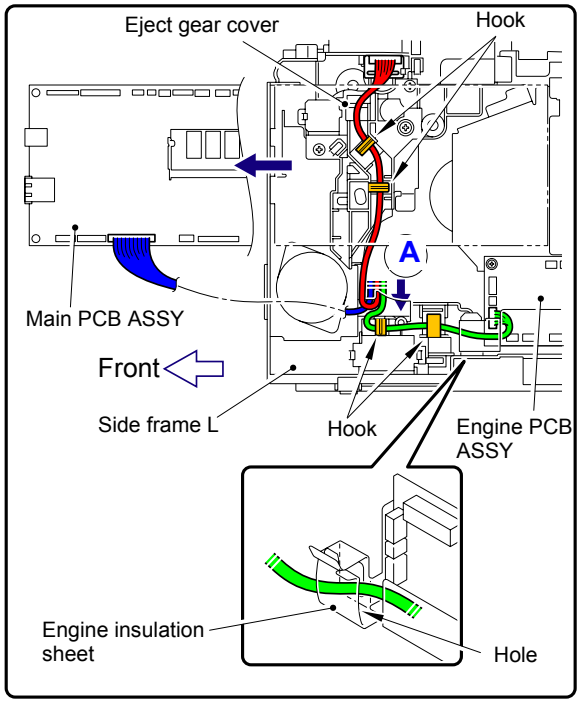
16 Registration Sensor Holder ASSY



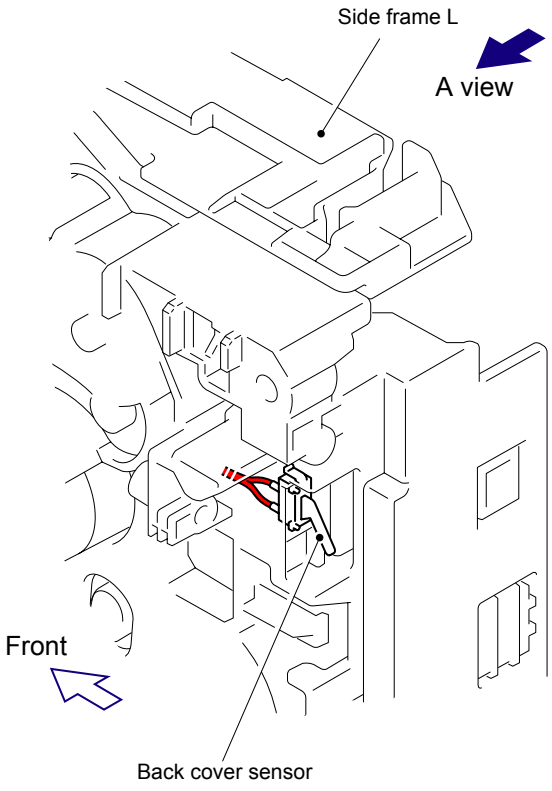


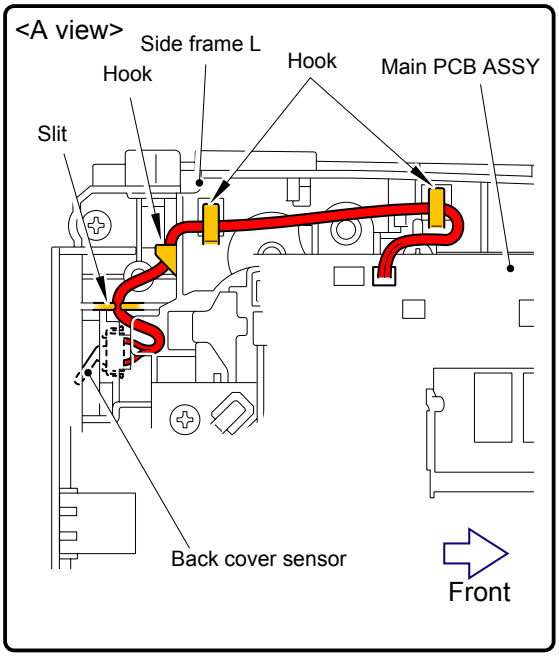
17 Low-voltage Power Supply PCB ASSY



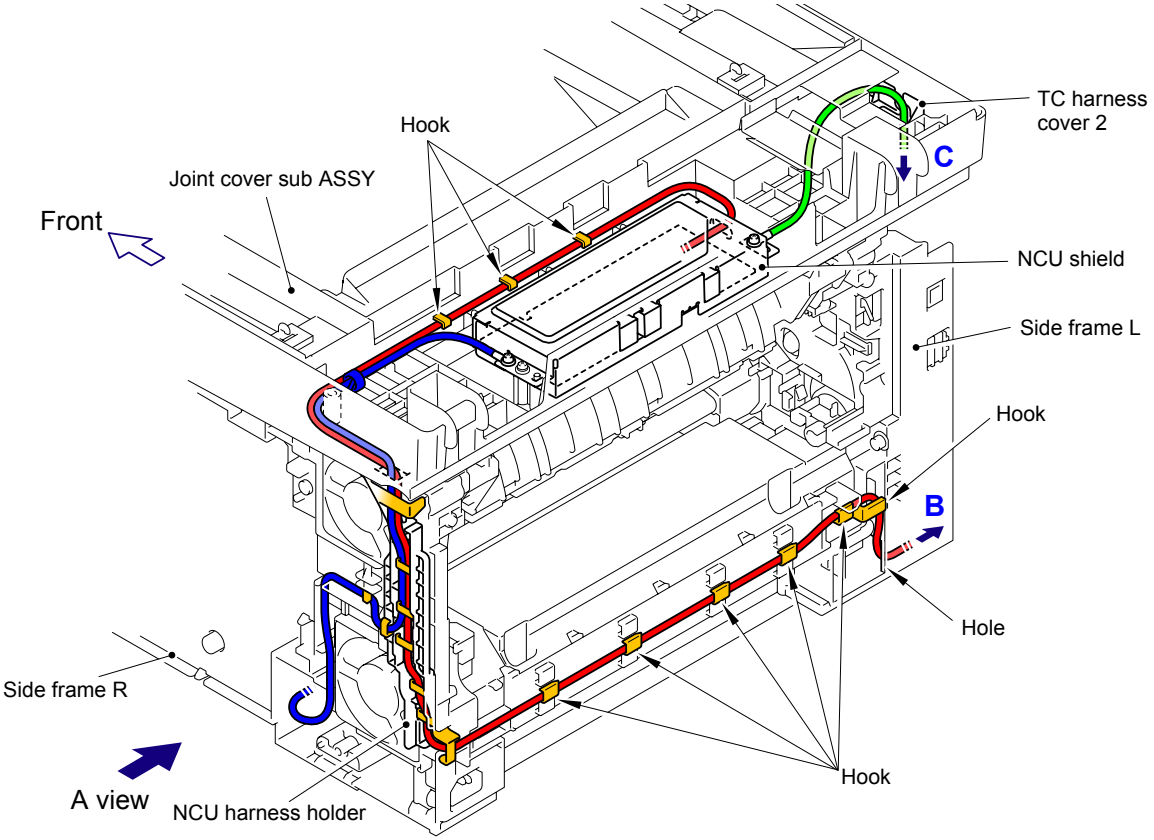


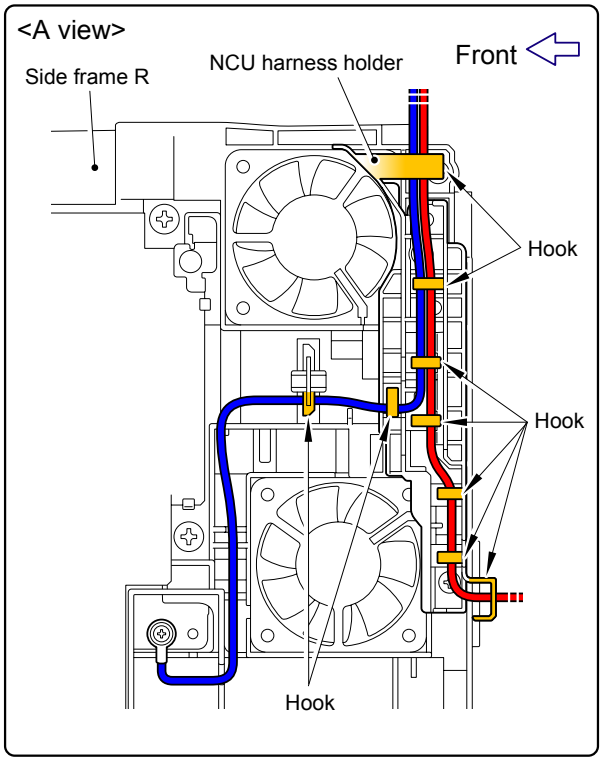
18 Back Cover Sensor

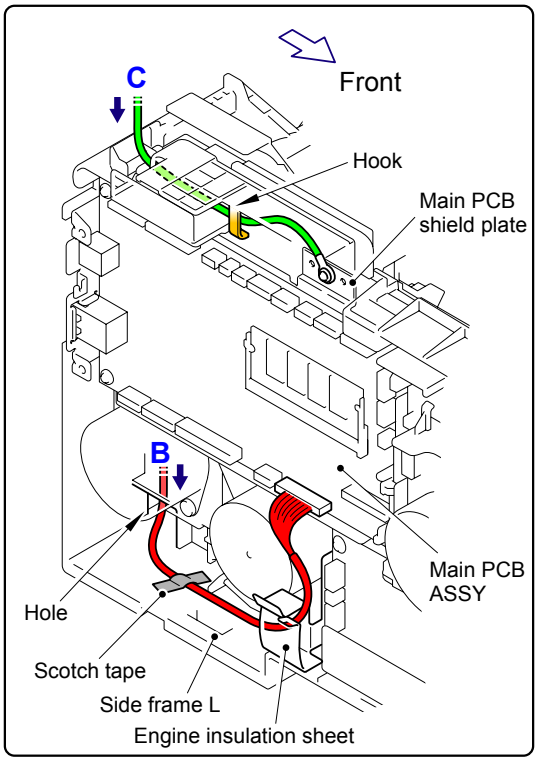




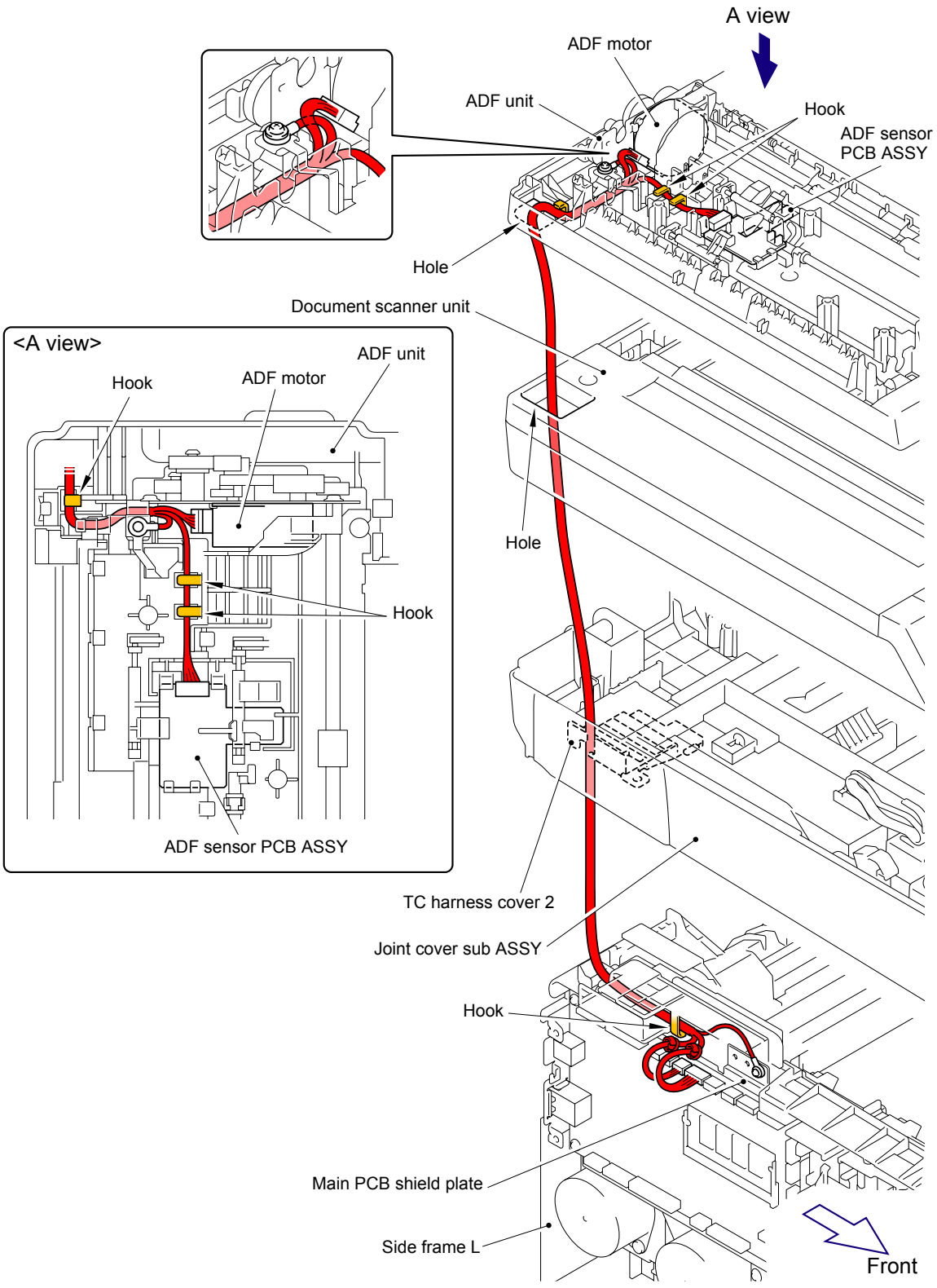
19 NCU Shield



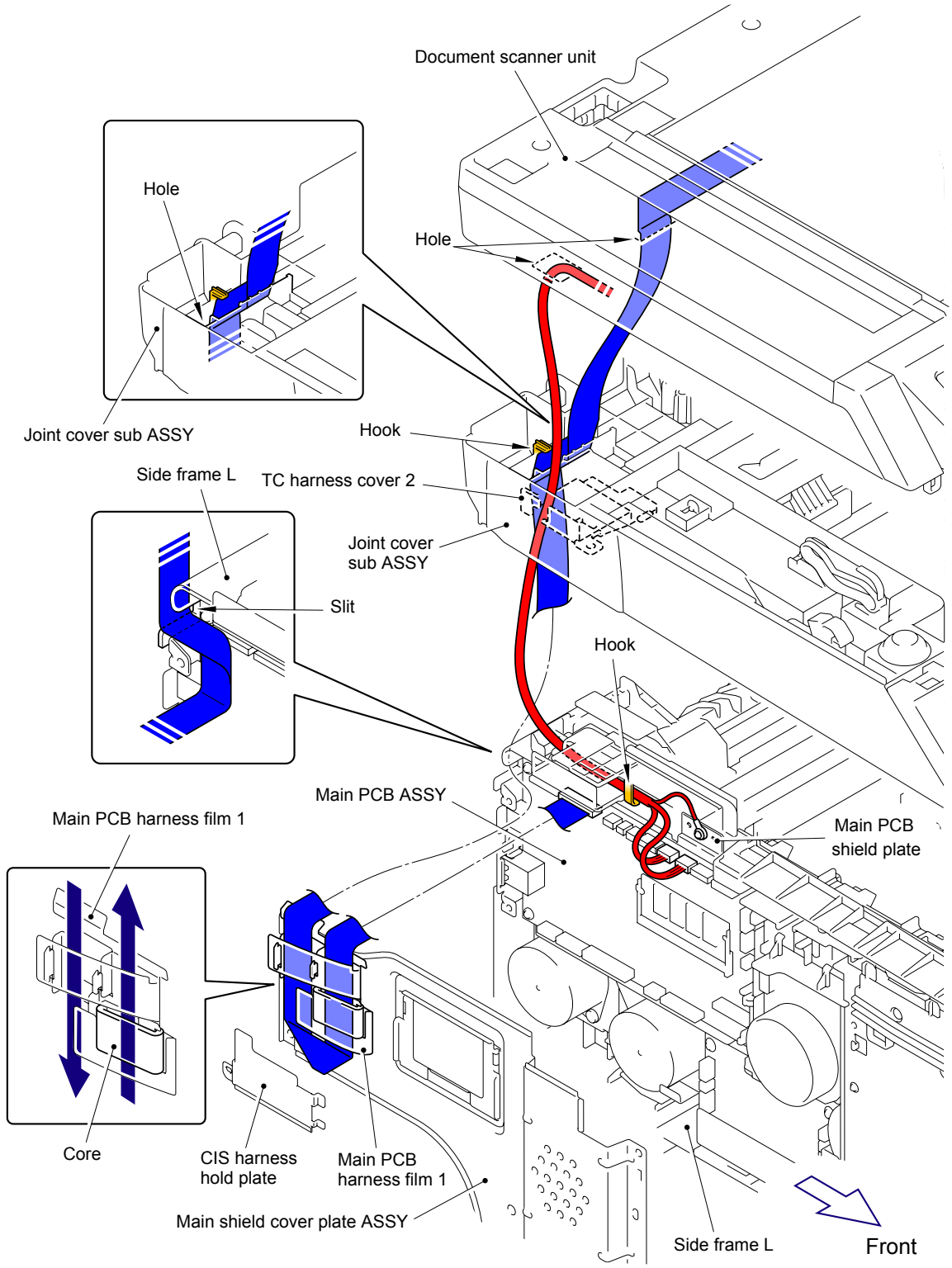




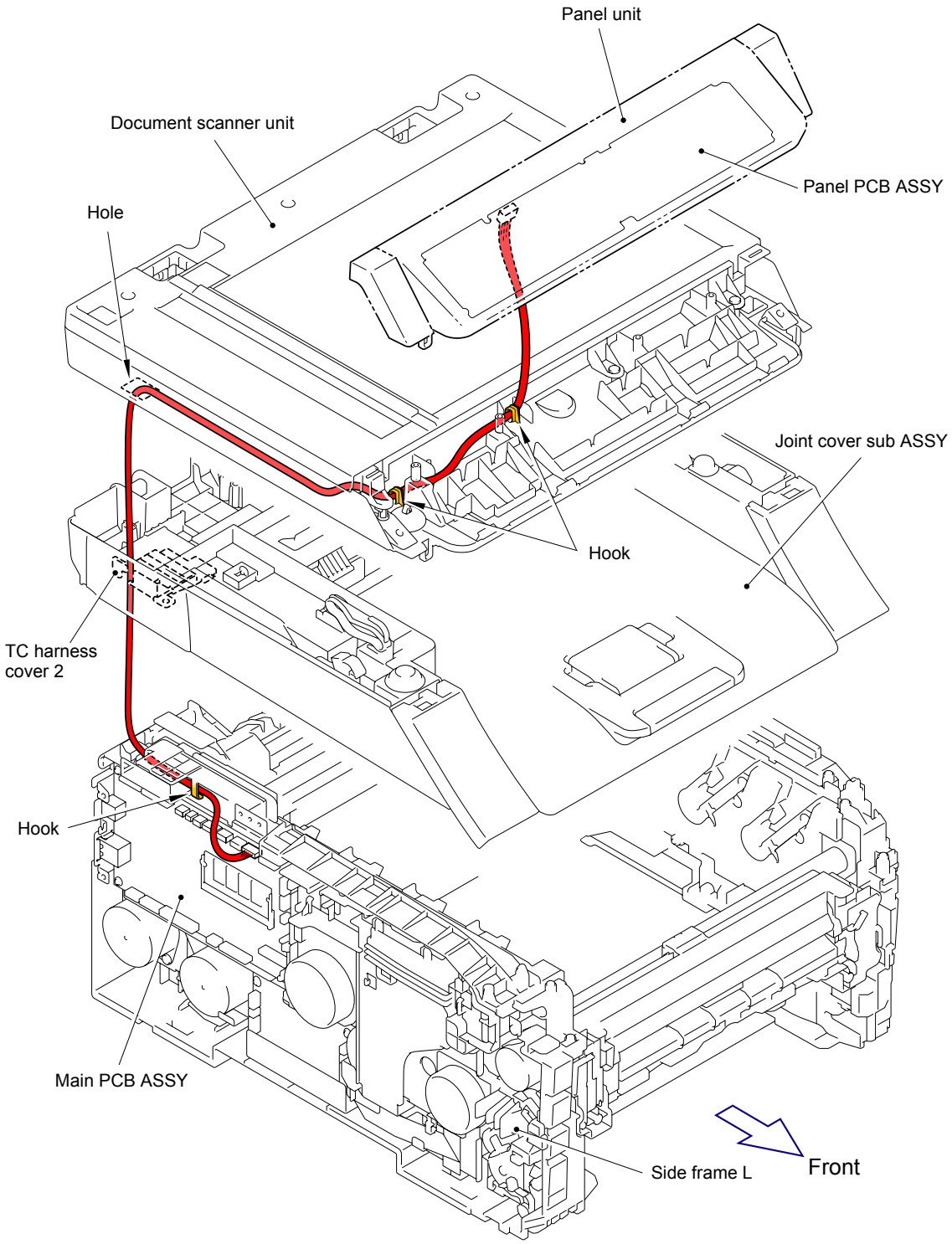
20 ADF Unit



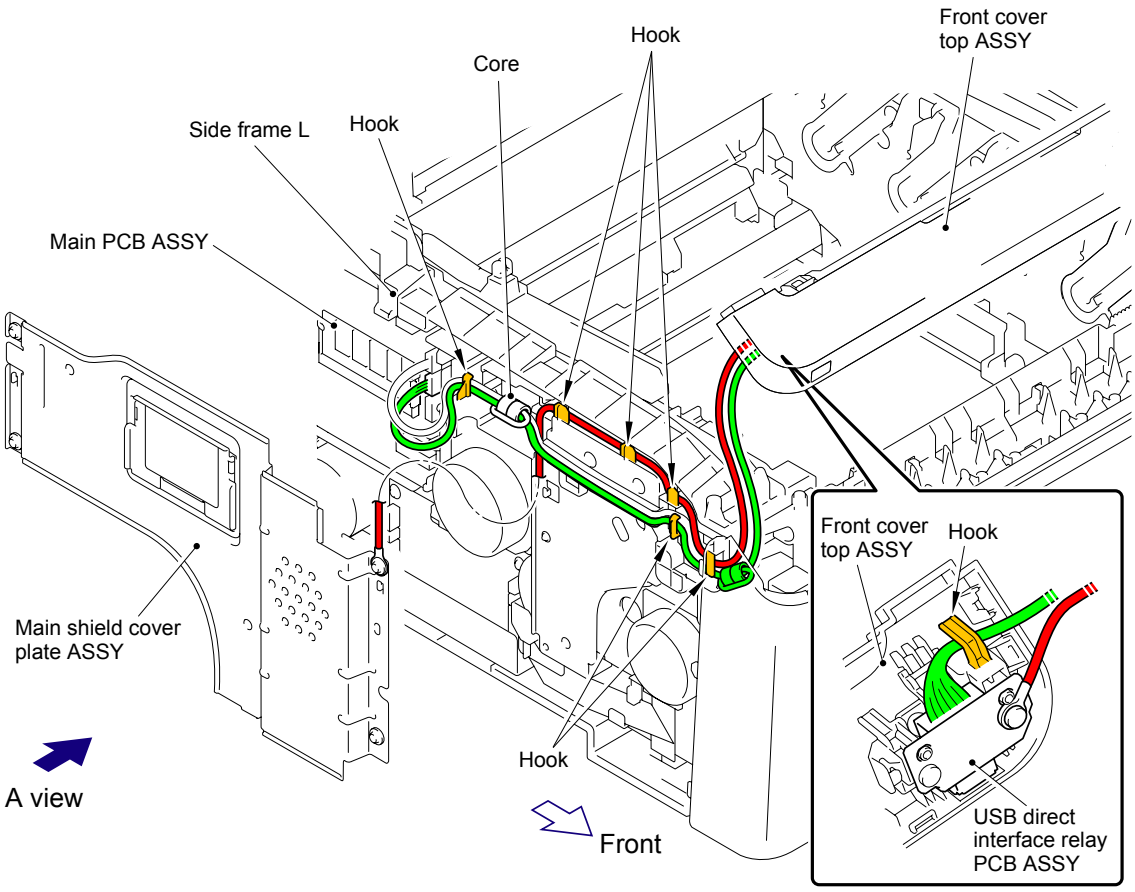
21 Document Scanner Unit

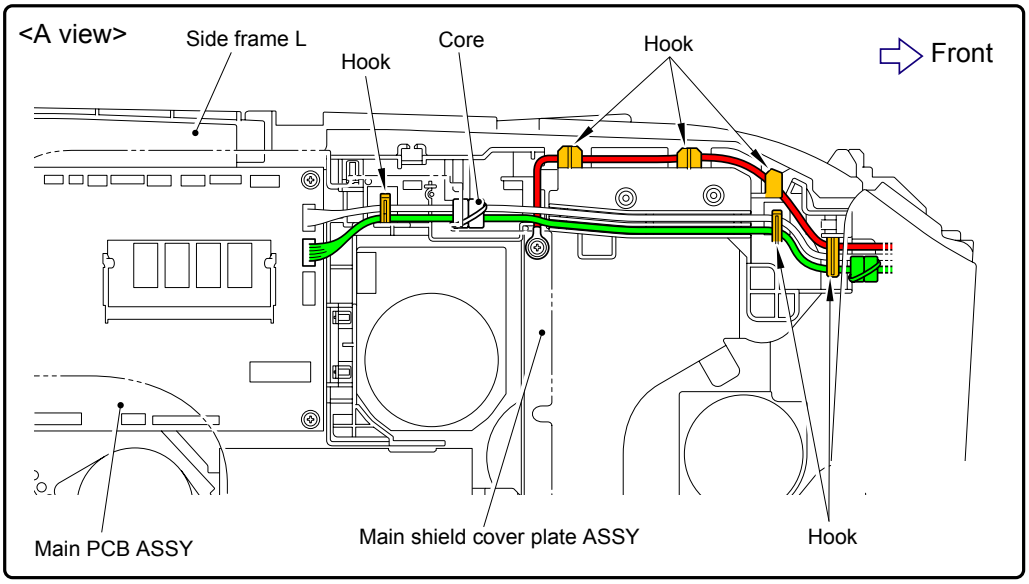


22 Panel Unit

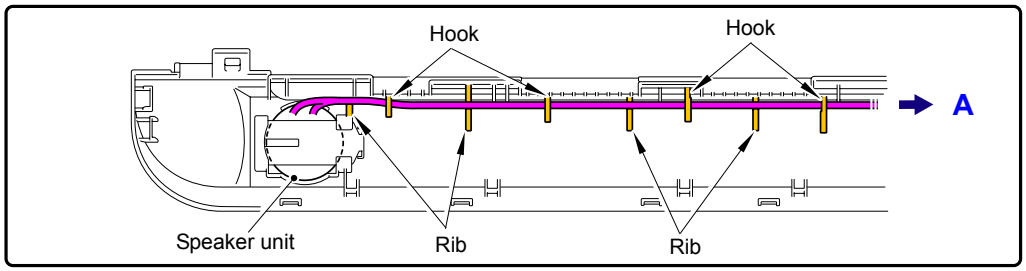


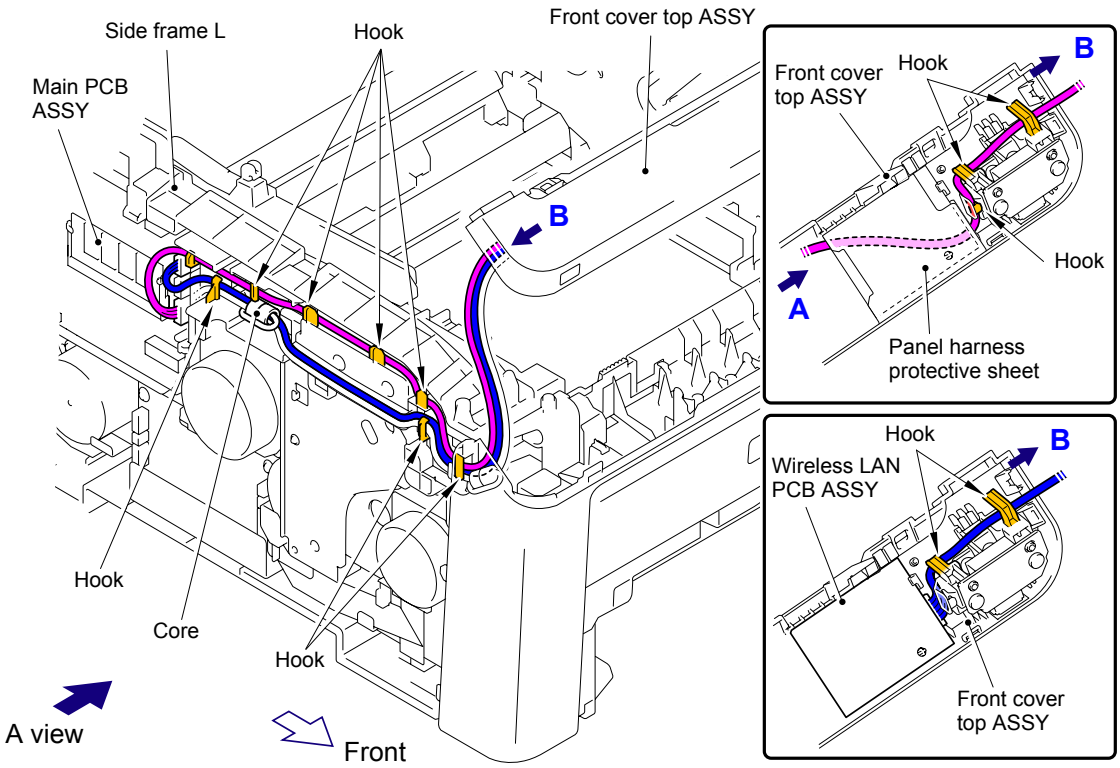
23 Front Cover Top ASSY (USB Direct Interface Relay PCB ASSY)

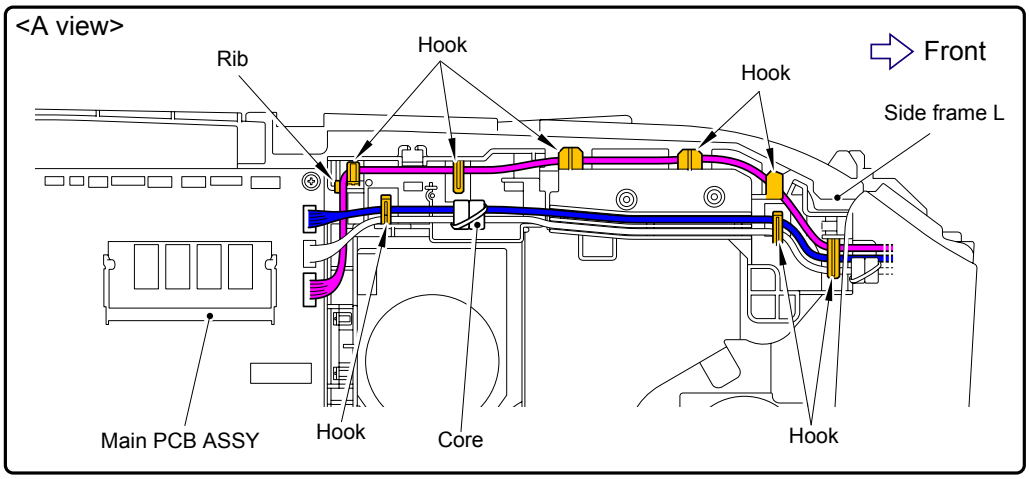




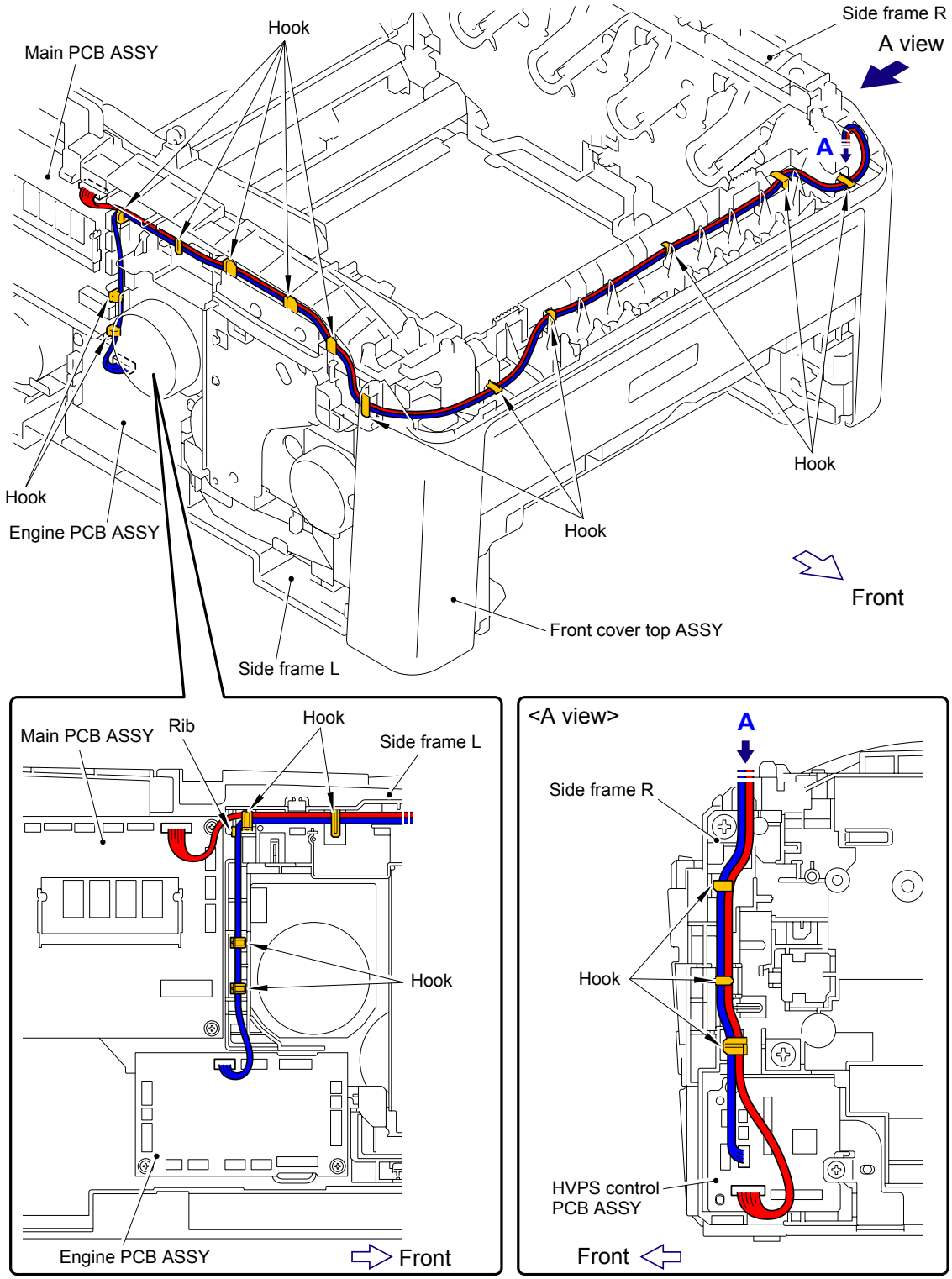
24 Front Cover Top ASSY (Wireless LAN PCB ASSY, Speaker Unit)





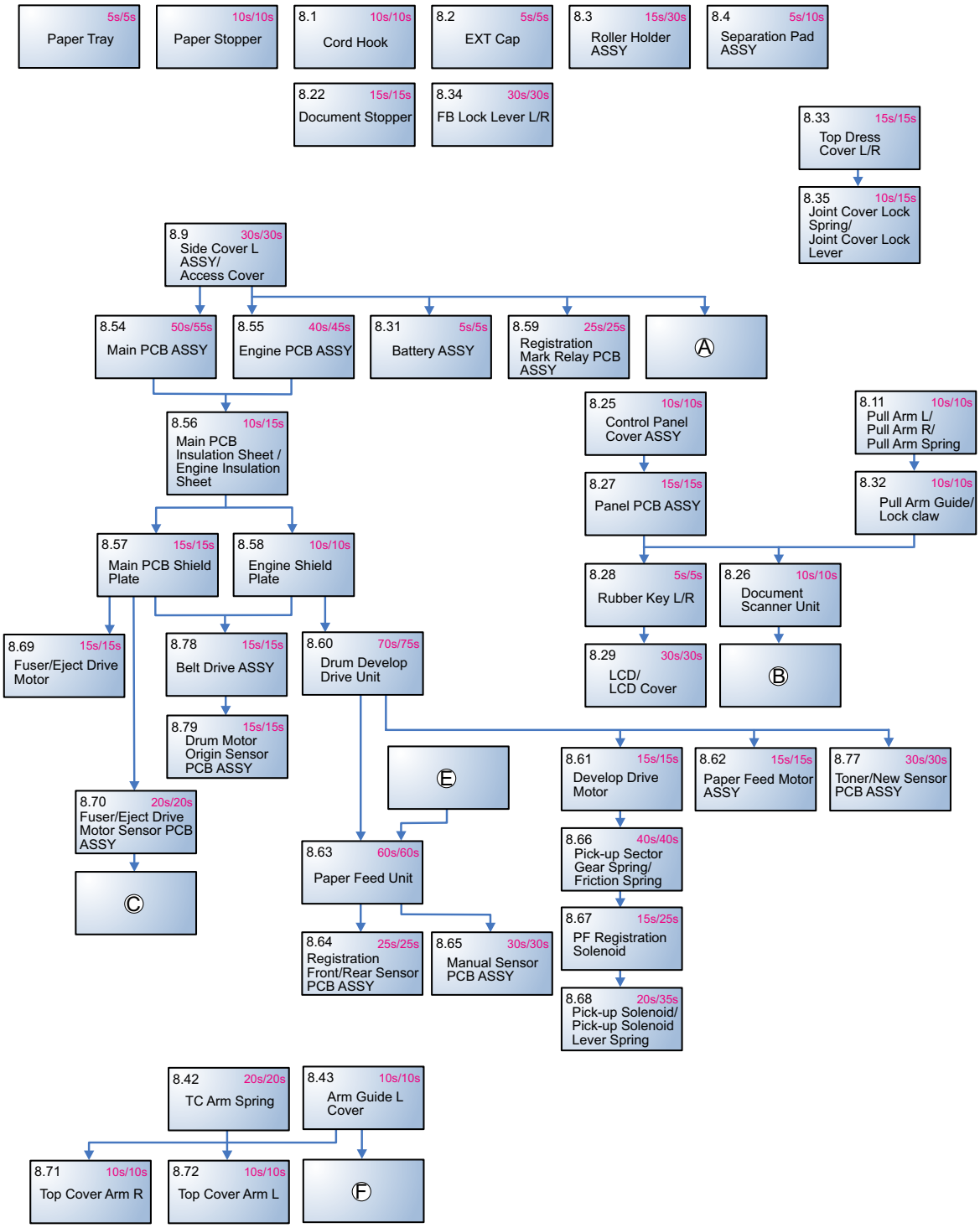


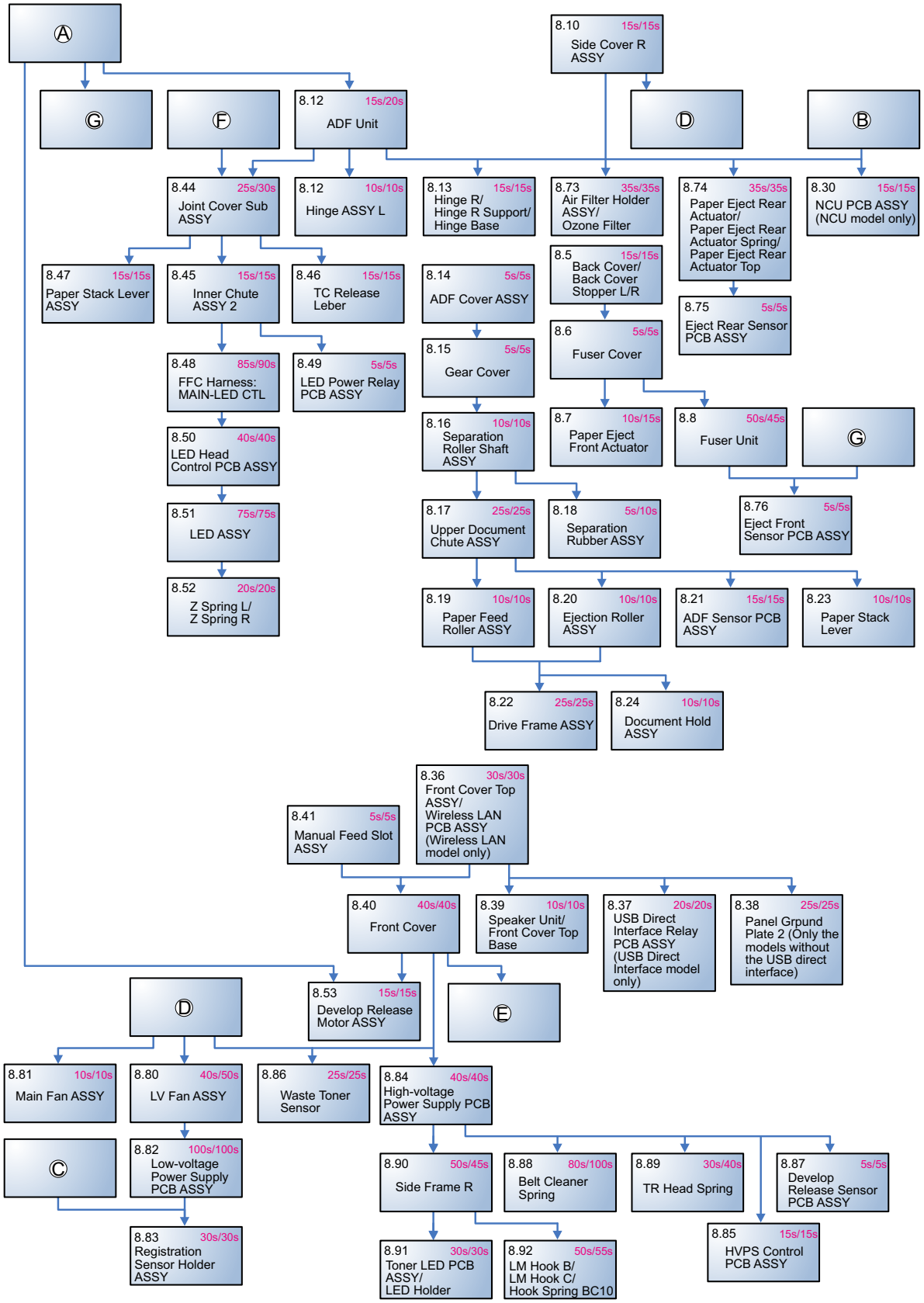
25 HVPS Control PCB ASSY



7. DISASSEMBLY FLOW

Disassembly / Re-Assembly (second)




Ⓐ
Ⓖ
Ⓕ
8.12 15s/20s ADF Unit
8.10 15s/15s Side Cover R ASSY
Ⓓ
Ⓑ
8.44 25s/30s Joint Cover Sub ASSY
8.12 10s/10s Hinge ASSY L
8.13 15s/15s Hinge R/ Hinge R Support/ Hinge Base
8.73 35s/35s Air Filter Holder ASSY/ Ozone Filter
8.74 35s/35s Paper Eject Rear Actuator/ Paper Eject Rear Actuator Spring/ Paper Eject Rear Actuator Top
8.30 15s/15s NCU PCB ASSY (NCU model only)
8.47 15s/15s Paper Stack Lever ASSY
8.45 15s/15s Inner Chute ASSY 2
8.46 15s/15s TC Release Leber
8.14 5s/5s ADF Cover ASSY
8.5 15s/15s Back Cover/ Back Cover Stopper L/R
8.75 5s/5s Eject Rear Sensor PCB ASSY
8.15 5s/5s Gear Cover
8.6 5s/5s Fuser Cover
8.48 85s/90s FFC Harness: MAIN-LED CTL
8.49 5s/5s LED Power Relay PCB ASSY
8.16 10s/10s Separation Roller Shaft ASSY
8.7 10s/15s Paper Eject Front Actuator
8.8 50s/45s Fuser Unit
Ⓖ
8.50 40s/40s LED Head Control PCB ASSY
8.17 25s/25s Upper Document Chute ASSY
8.18 5s/10s Separation Rubber ASSY
8.76 5s/5s Eject Front Sensor PCB ASSY
8.51 75s/75s LED ASSY
8.19 10s/10s Paper Feed Roller ASSY
8.20 10s/10s Ejection Roller ASSY
8.21 15s/15s ADF Sensor PCB ASSY
8.23 10s/10s Paper Stack Lever
8.52 20s/20s Z Spring L/ Z Spring R
8.22 25s/25s Drive Frame ASSY
8.24 10s/10s Document Hold ASSY
8.36 30s/30s Front Cover Top ASSY/ Wireless LAN PCB ASSY (Wireless LAN model only)
8.41 5s/5s Manual Feed Slot ASSY
8.40 40s/40s Front Cover
8.39 10s/10s Speaker Unit/ Front Cover Top Base
8.37 20s/20s USB Direct Interface Relay PCB ASSY (USB Direct Interface model only)
8.38 25s/25s Panel Grpund Plate 2 (Only the models without the USB direct interface)
Ⓓ
8.53 15s/15s Develop Release Motor ASSY
Ⓔ
8.81 10s/10s Main Fan ASSY
8.80 40s/50s LV Fan ASSY
8.86 25s/25s Waste Toner Sensor
8.84 40s/40s High-voltage Power Supply PCB ASSY
Ⓒ
8.82 100s/100s Low-voltage Power Supply PCB ASSY
8.90 50s/45s Side Frame R
8.88 80s/100s Belt Cleaner Spring
8.89 30s/40s TR Head Spring
8.87 5s/5s Develop Release Sensor PCB ASSY
8.83 30s/30s Registration Sensor Holder ASSY
8.91 30s/30s Toner LED PCB ASSY/ LED Holder
8.92 50s/55s LM Hook B/ LM Hook C/ Hook Spring BC10
8.85 15s/15s HVPS Control PCB ASSY

8. DISASSEMBLY PROCEDURE

■ Preparation

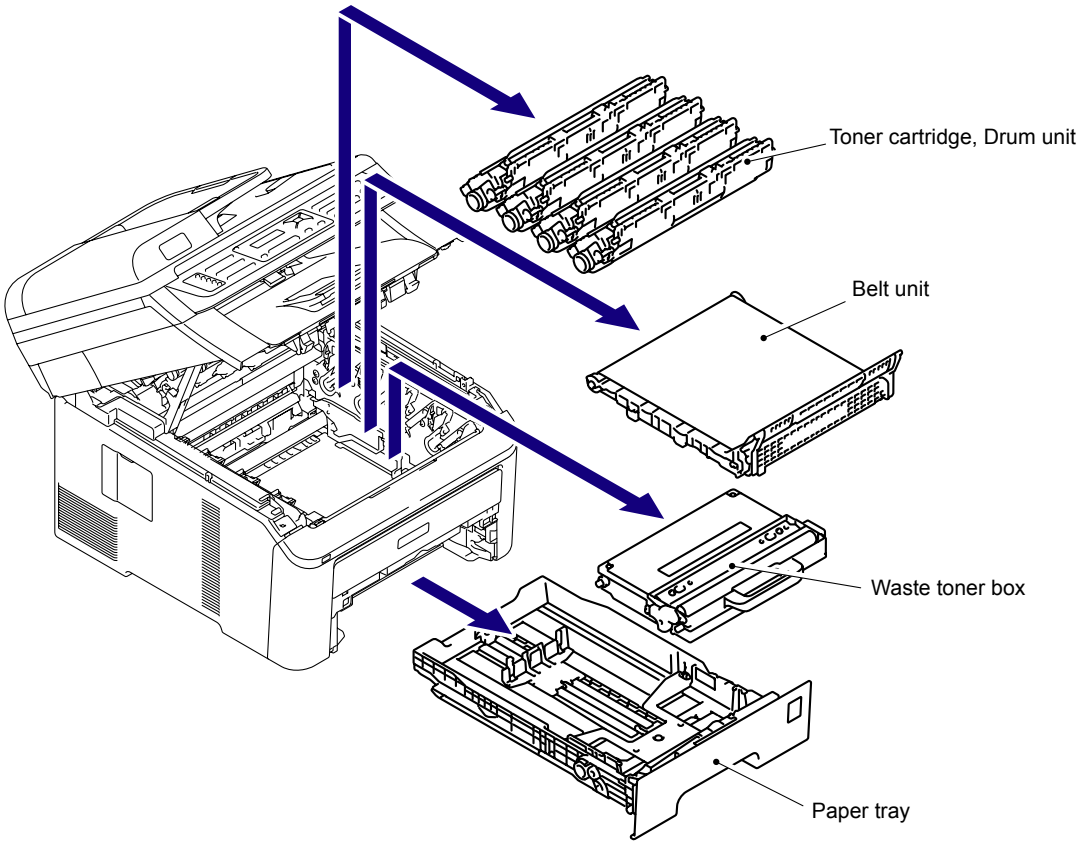
Prior to proceeding with the disassembly procedure,

(1) Unplug

- the AC cord,
- the modular jack of the telephone line,
- the USB cable, if connected,
- the LAN cable, if connected,
- the USB cable for PictBridge or USB flash memory drive, if connected, and
- the modular jack of the external telephone set if connected.

(2) Remove

- the Paper tray,
- the Toner cartridge,
- the Drum unit,
- the Belt unit, and
- the Waste toner box.



8.1 Cord Hook

(1) Remove the two Taptite cup B M3x8 screws, and then remove the two Cord hook from the Document scanner unit.

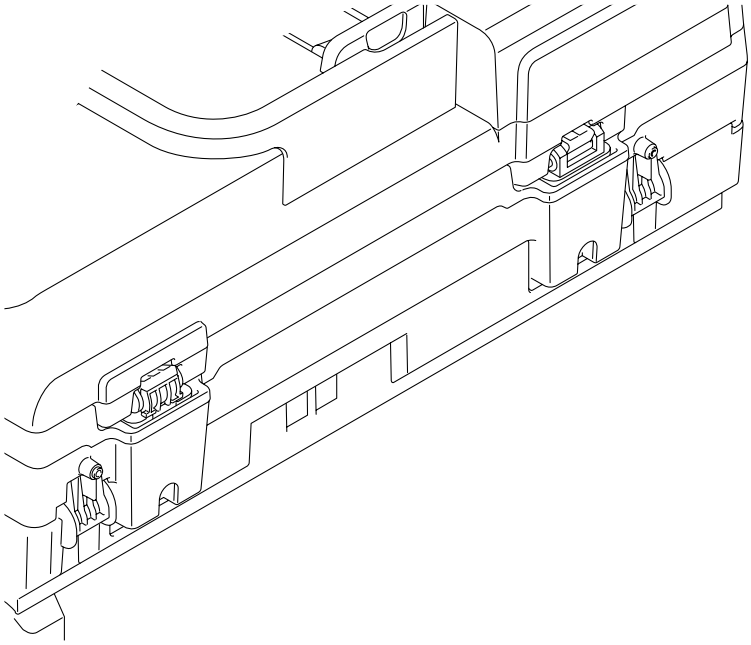


Fig. 5-1

8.2 EXT Cap

(1) Remove the EXT cap from the Document scanner unit.

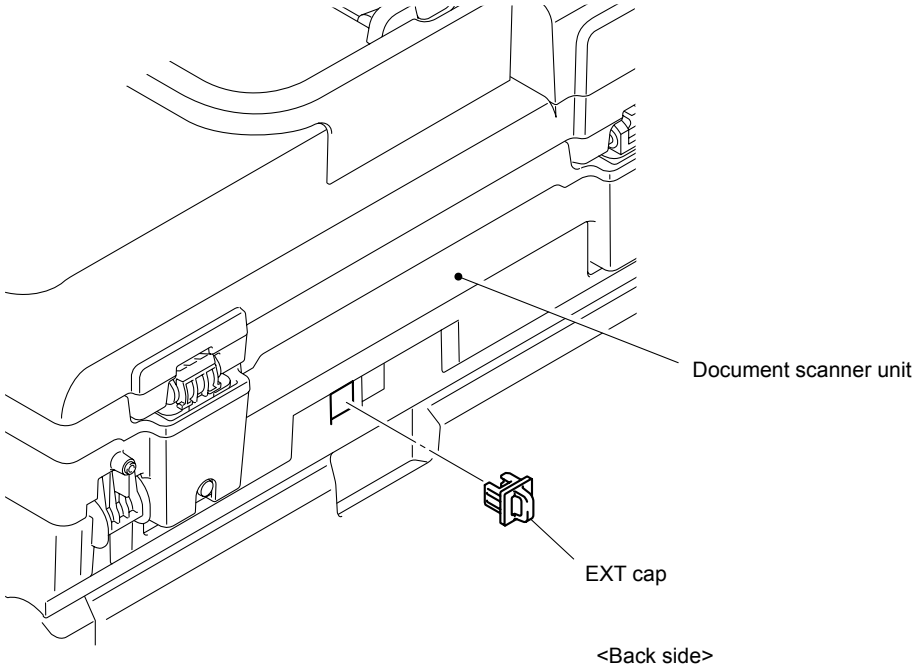


Fig. 5-2

8.3 Roller Holder ASSY

(1) Push the Lift arm to the back and remove “B” of the Roller holder ASSY from “A” of the Lift arm, and the Roller holder ASSY rotates in the direction of the arrow 1b.

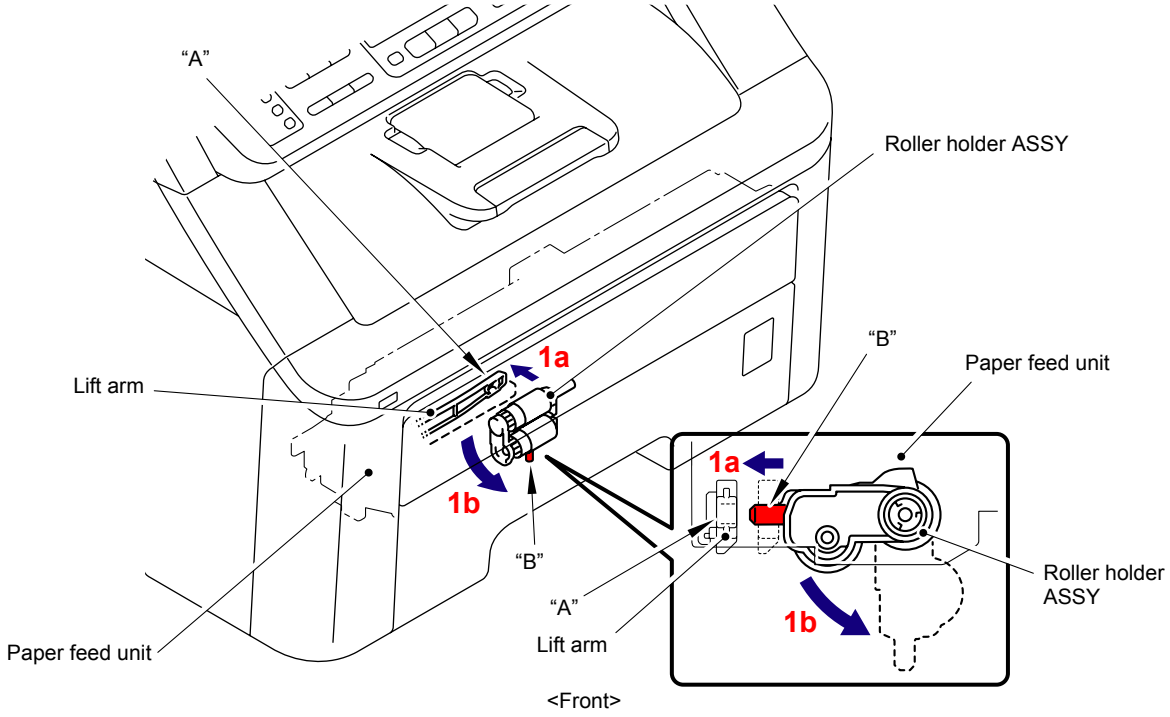


Fig. 5-3

(2) Slide the Roller holder ASSY in the direction of the arrow 2 and remove it from “C” of the Paper feed unit.

(3) Slide the Roller holder ASSY in the direction of the arrows 3a and 3b in this order and remove it from the Paper feed unit.

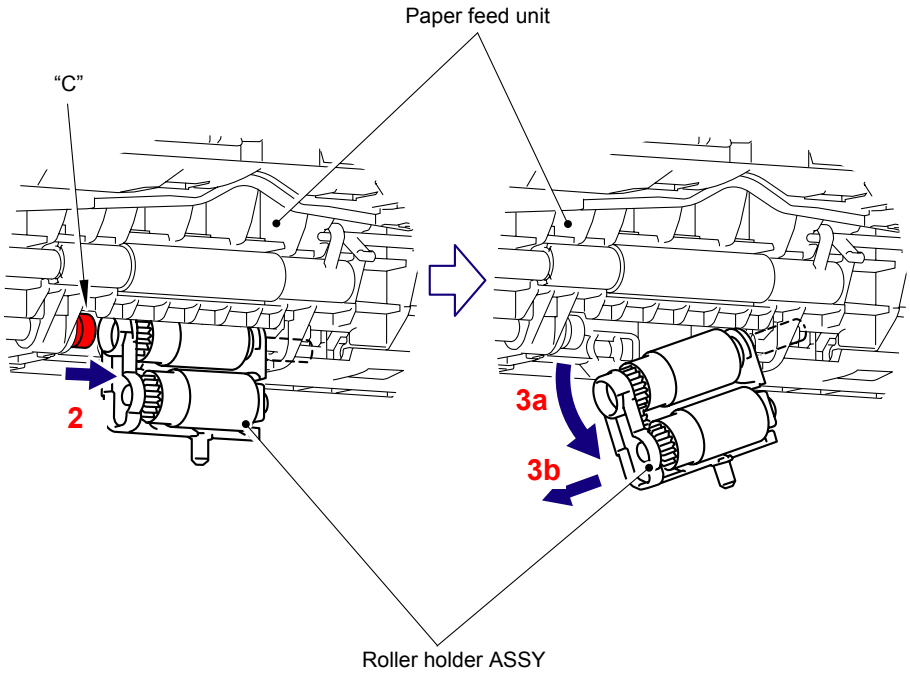


Fig. 5-4

Assembling Note:

When assembling the Roller holder ASSY onto the Paper feed unit, make sure to align the Shaft of the Roller holder ASSY with the Hole of the Paper feed unit, and then insert it into the Hole.

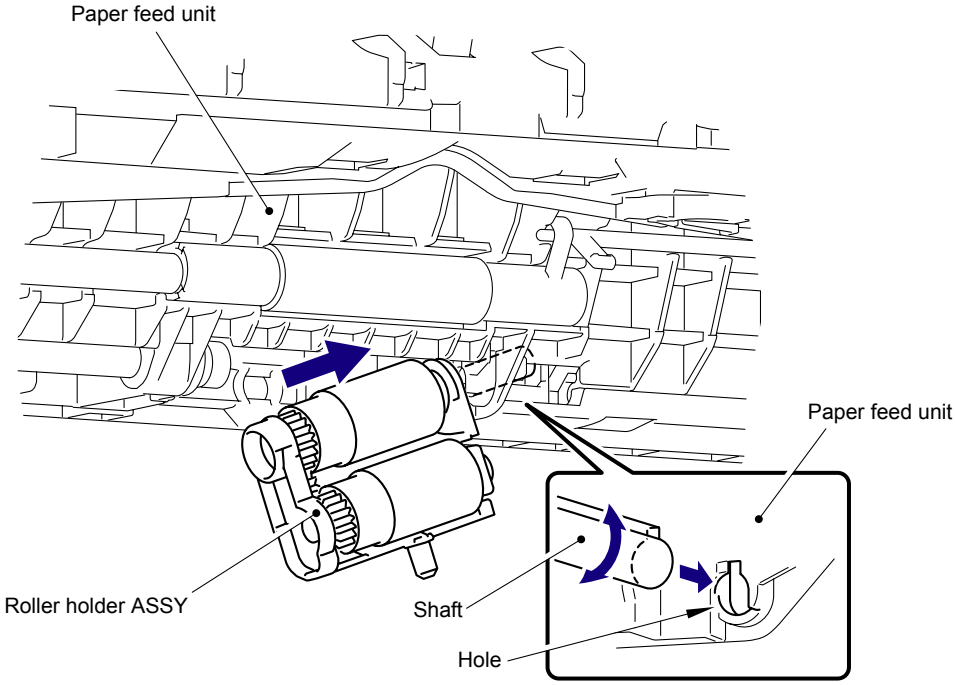


Fig. 5-5

8.4 Separation Pad ASSY

(1) Release the two Hooks of the Separation pad ASSY from the Paper tray.

(2) Release the two Pins to remove the Separation pad ASSY from the Paper tray.

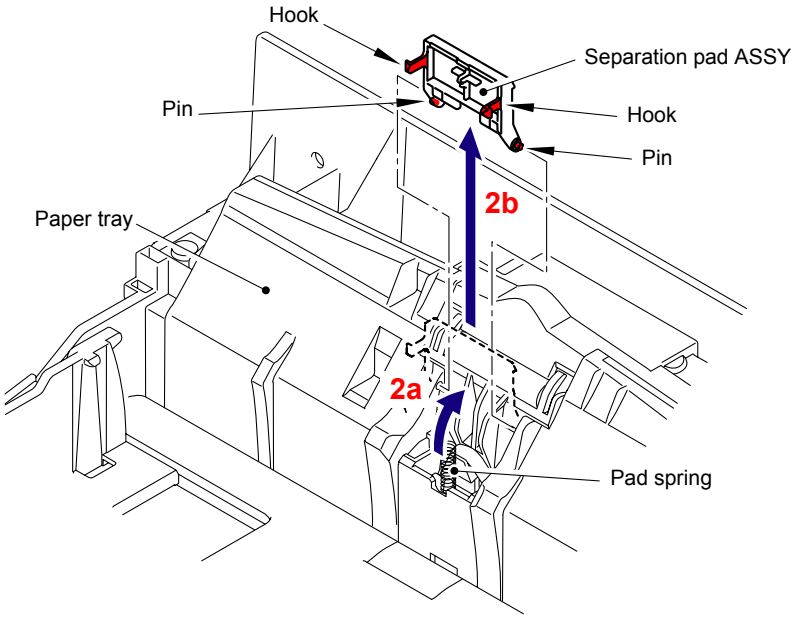


Fig. 5-6

(3) Remove the Pad spring from the Paper tray.

Note:
Be careful not to lose the Pad spring.

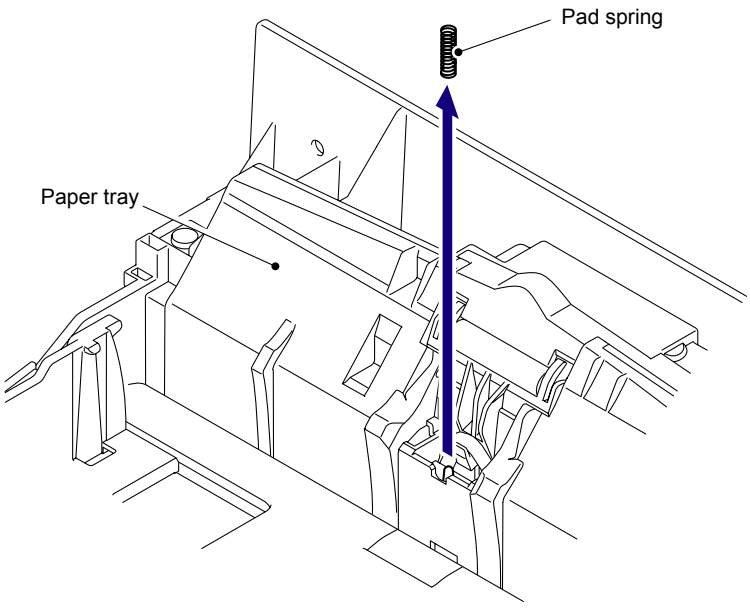


Fig. 5-7

Assembling Note:

Make sure to assemble the Separation pad ASSY in a way that the “A” of the Separation pad ASSY fits into the “B” of the Pad spring.

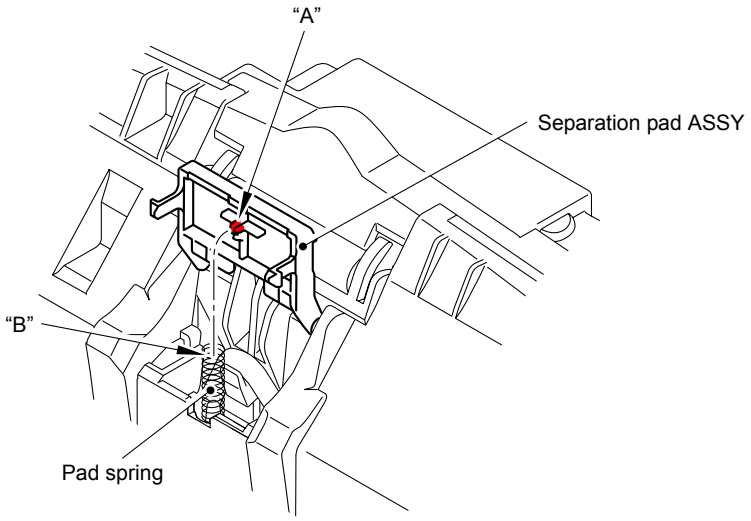


Fig. 5-8

8.5 Back Cover/Back Cover Stopper L/R

(1) Open the Back cover.

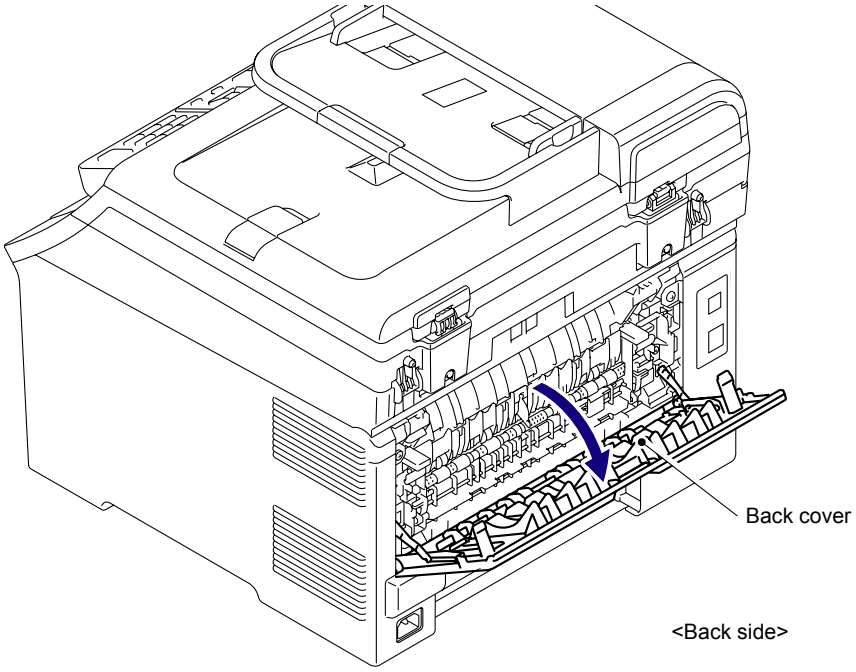


Fig. 5-9

(2) Release the Hook to remove the Back cover stopper L and R from the Main body.

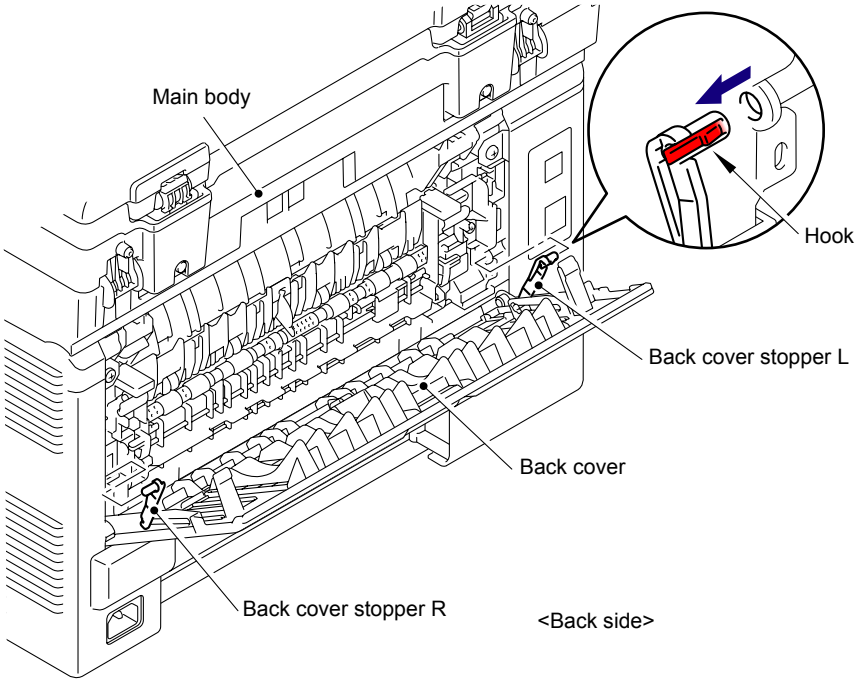


Fig. 5-10

(3) Remove the Bush of the Back cover from the Shaft at the right side of the Main body.

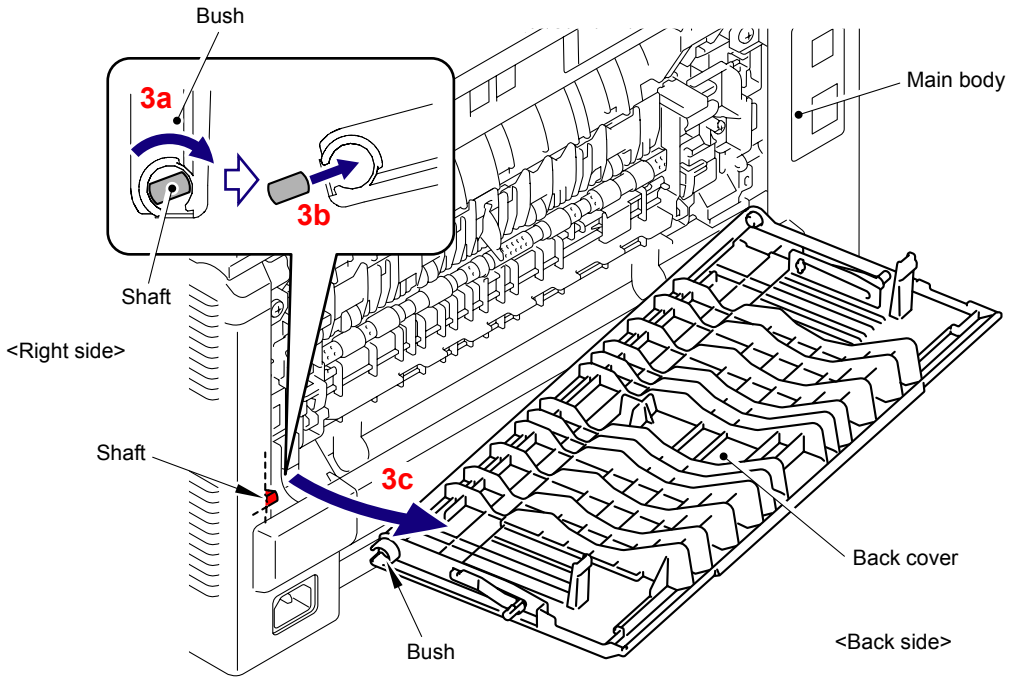


Fig. 5-11

(4) Remove the Back cover from the Shaft at the left side of the Main body.

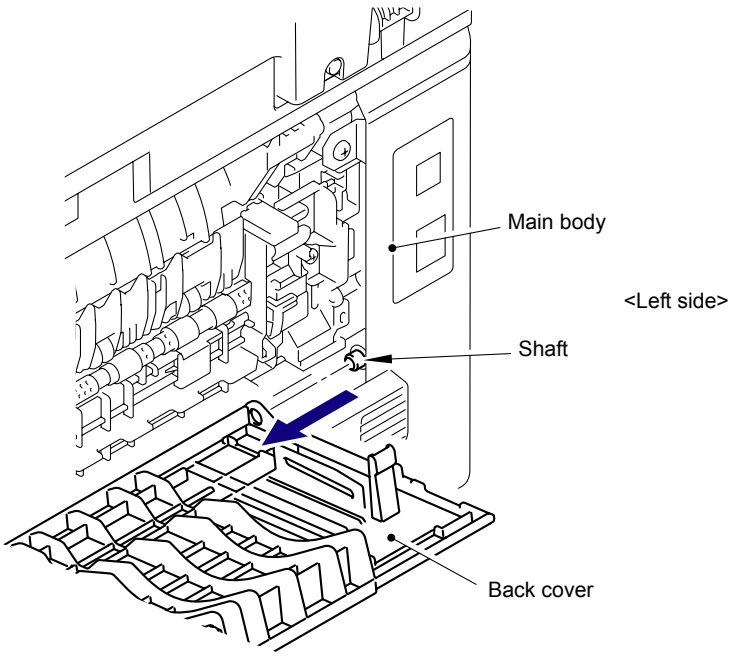


Fig. 5-12

(5) Remove the Back cover stopper L and R from the Back cover.

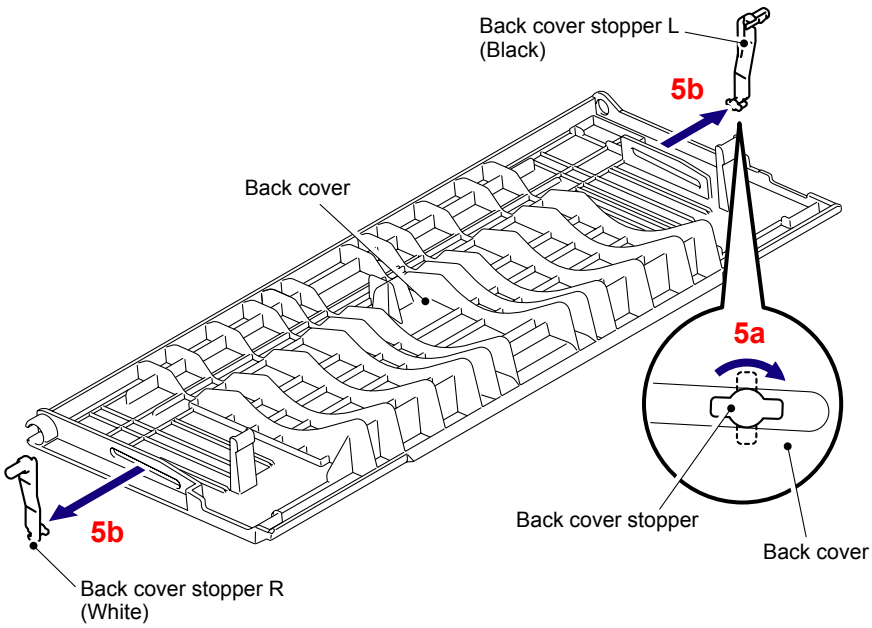


Fig. 5-13

8.6 Fuser Cover

(1) Release of the Fuser cover lock lever L and R and open the Fuser cover.

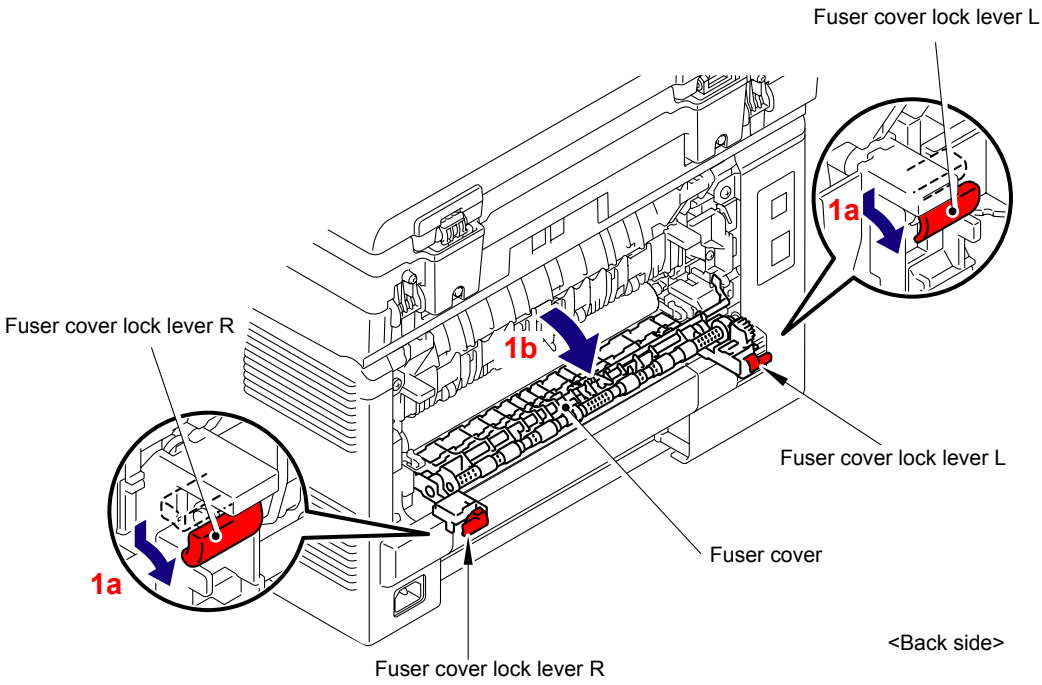


Fig. 5-14

(2) Remove the left Shaft of the Fuser cover from the Notch on the Bush of the Side frame L.

(3) Remove the right Shaft of the Fuser cover from the Bush of the LVPS cover.

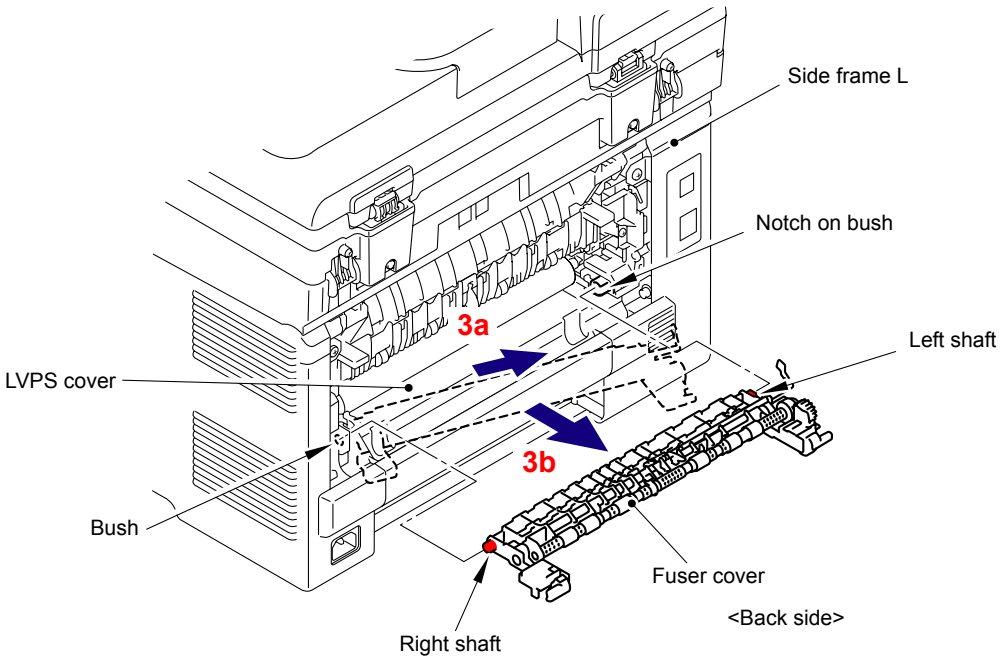


Fig. 5-15

8.7 Paper Eject Front Actuator

(1) Release the Hook and slide the Paper eject front actuator in the direction of arrows 1a and 1b in this order.

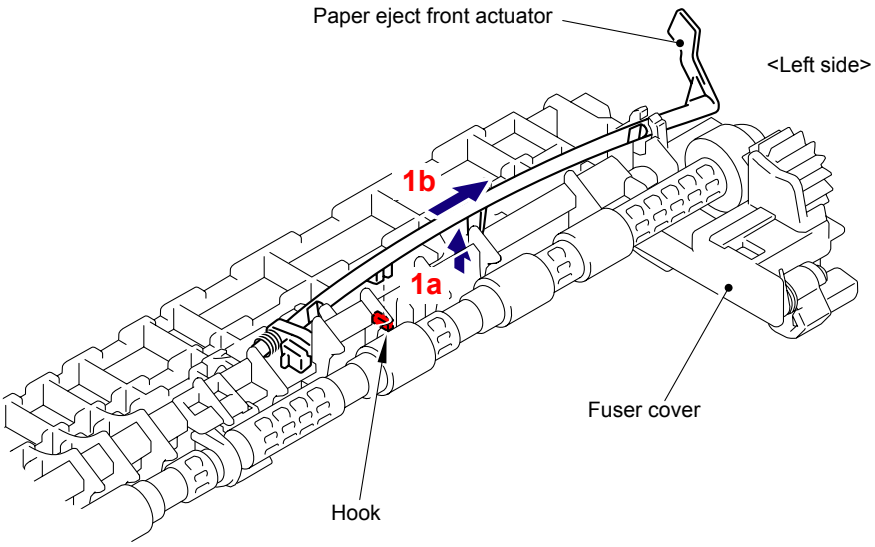


Fig. 5-16

(2) Align the “A” and “B” of the Paper eject front actuator with the “C” and “D” of the Fuser cover respectively, and remove the Paper eject front actuator.

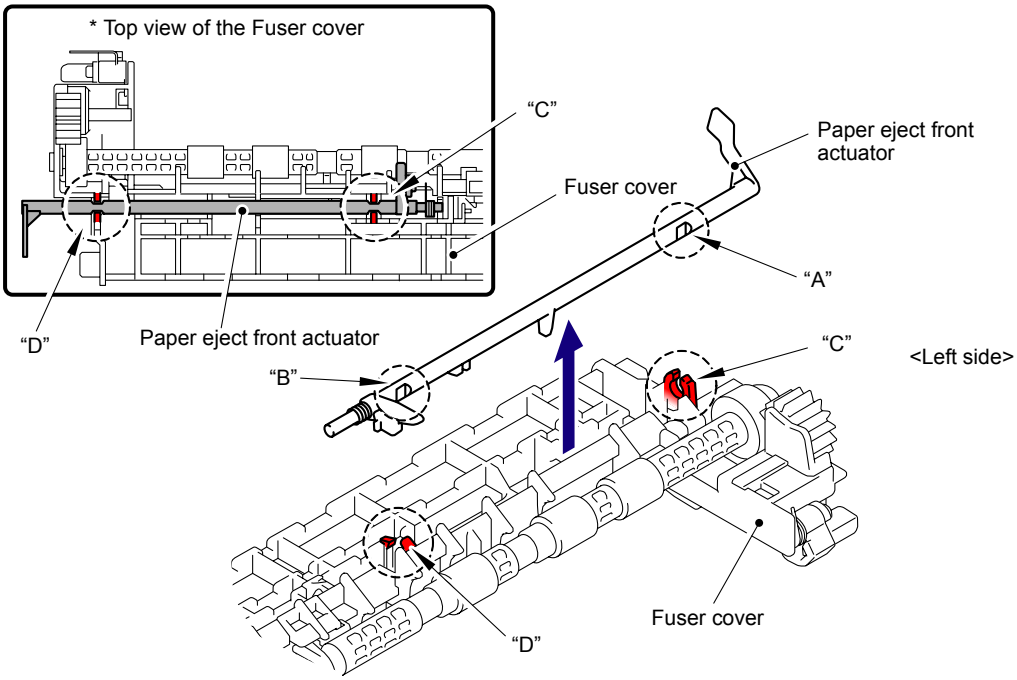


Fig. 5-17

(3) Remove the Paper eject front actuator spring from the Paper eject front actuator.

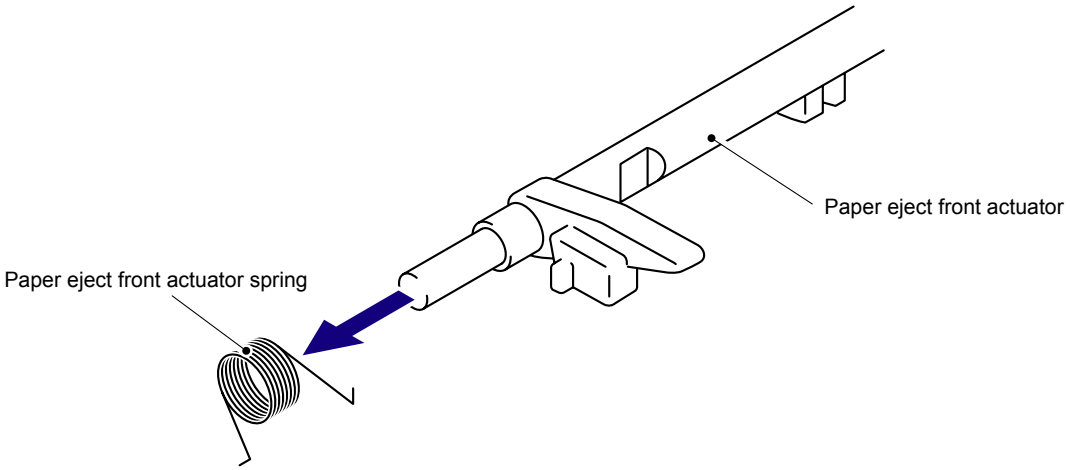


Fig. 5-18

Assembling Note:

- When assembling the Paper eject front actuator, assemble the Paper eject front actuator spring as shown in the figure below.
- Check that the Paper eject front actuator is moved smoothly.

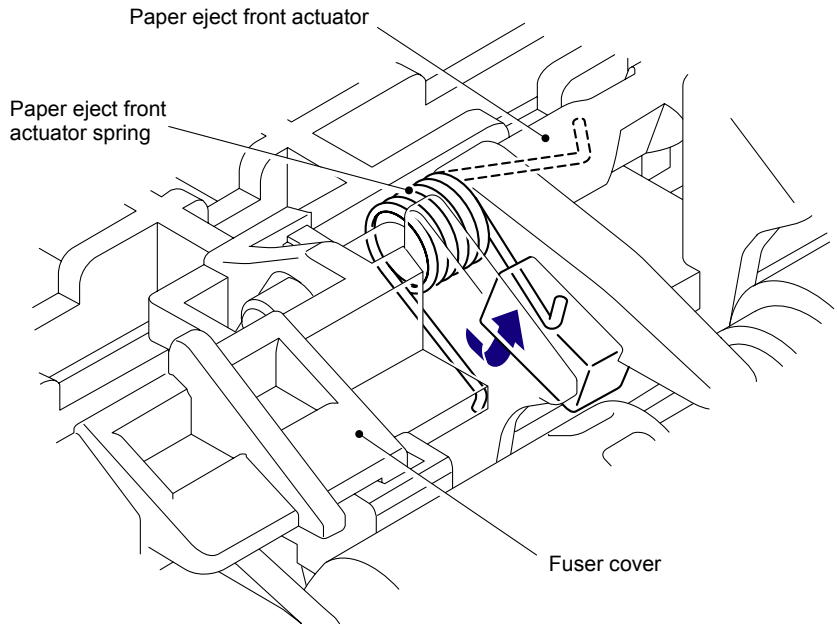


Fig. 5-19

8.8 Fuser Unit

(1) Remove the Taptite bind B M3x12 screw, and then remove the Fuser cover L from the Fuser unit.

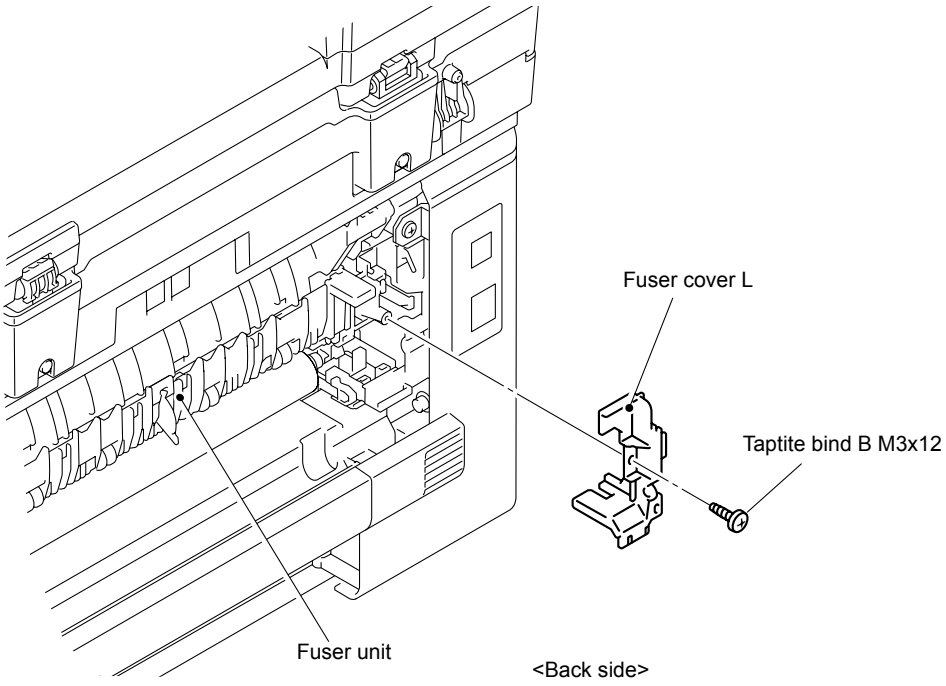


Fig. 5-20

(2) Remove the Taptite bind B M3x12 screw, and then remove the Fuser cover R from the Fuser unit.

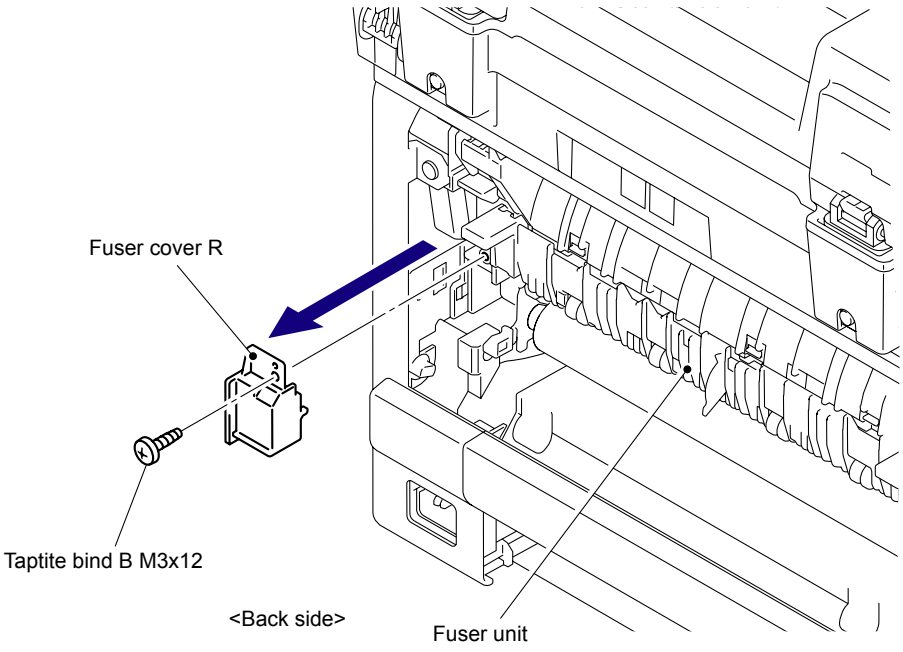


Fig. 5-21

(3) Disconnect the two Connectors (CN1, CN3) from the Eject front sensor PCB ASSY.

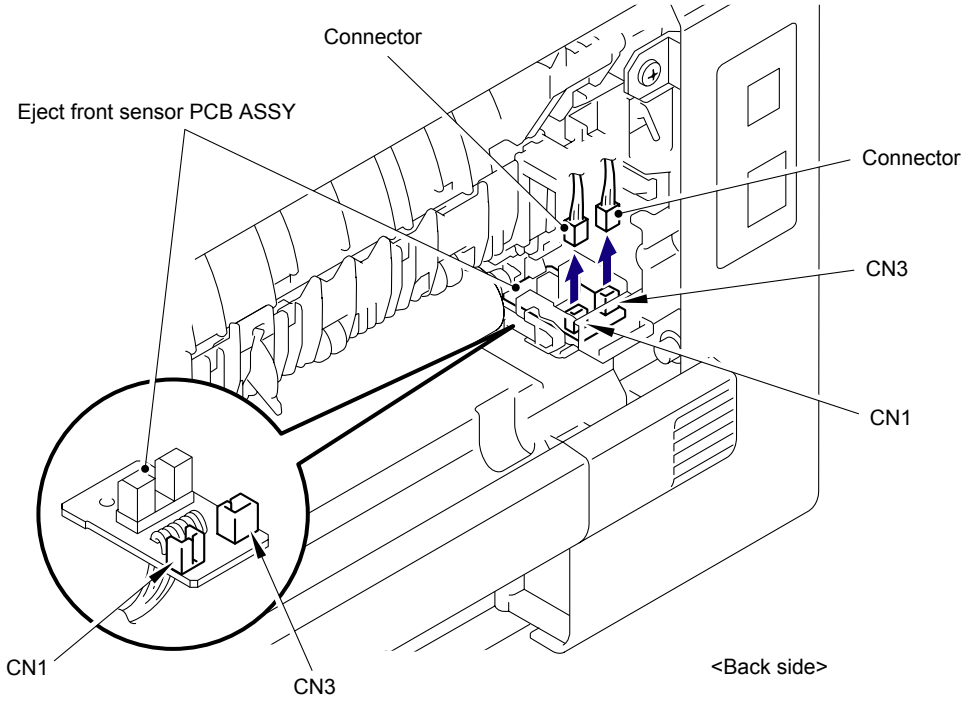


Fig. 5-22

(4) Disconnect the two Electrode terminals from the Fuser unit.

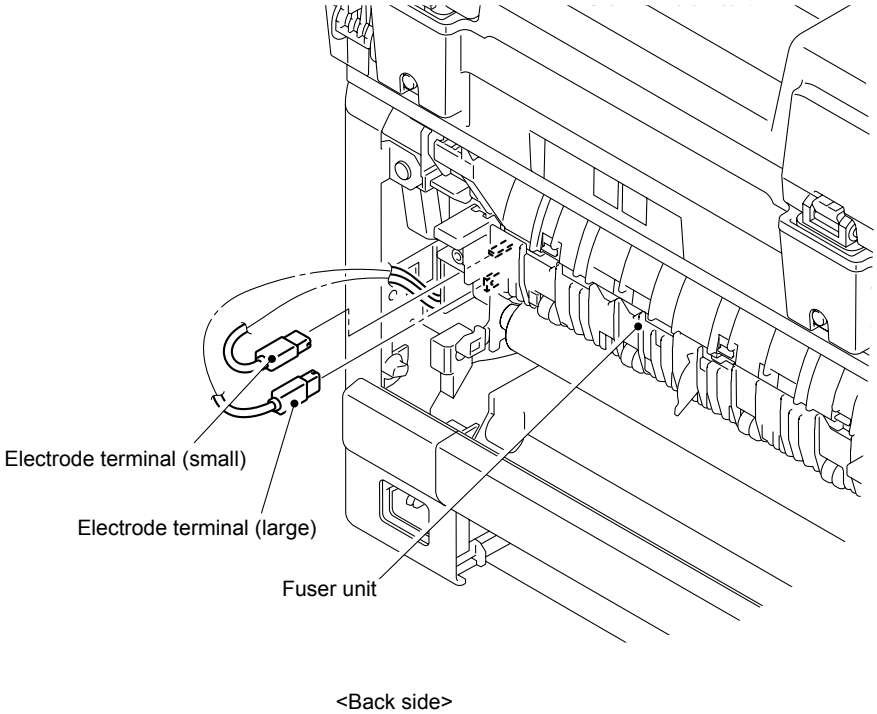


Fig. 5-23

(5) Remove the two Taptite pan B M4x14 screws, and then remove the Fuser unit from the Main body as holding the “A”.

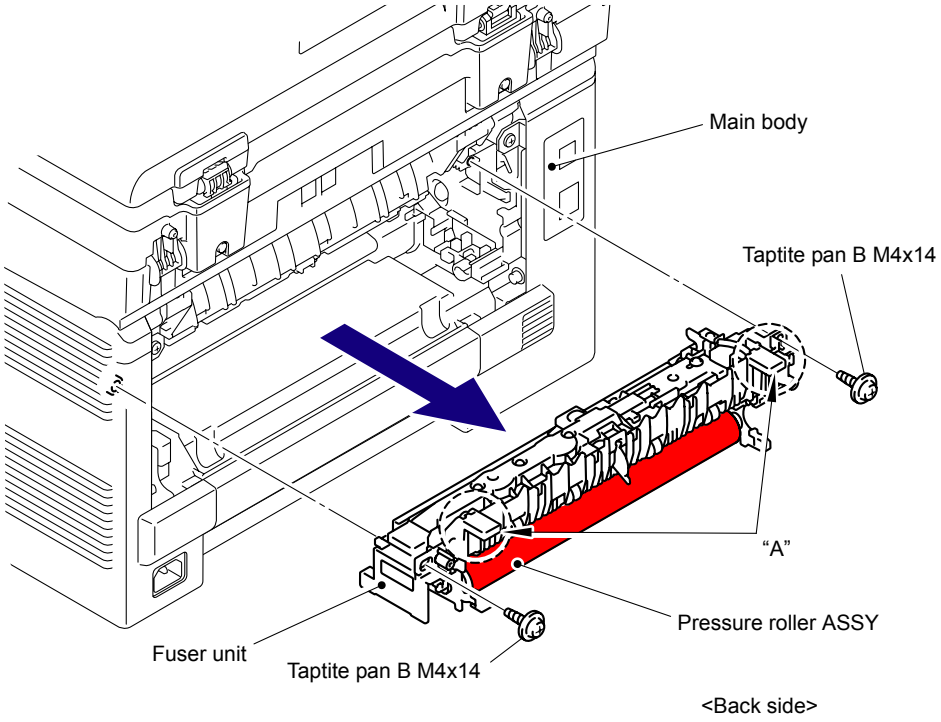


Fig. 5-24

Note:

- Do not apply a physical impact or vibration to the Fuser unit.
- Do not touch the roller and electrodes as shown in the figure below to prevent breakage of the Fuser unit.

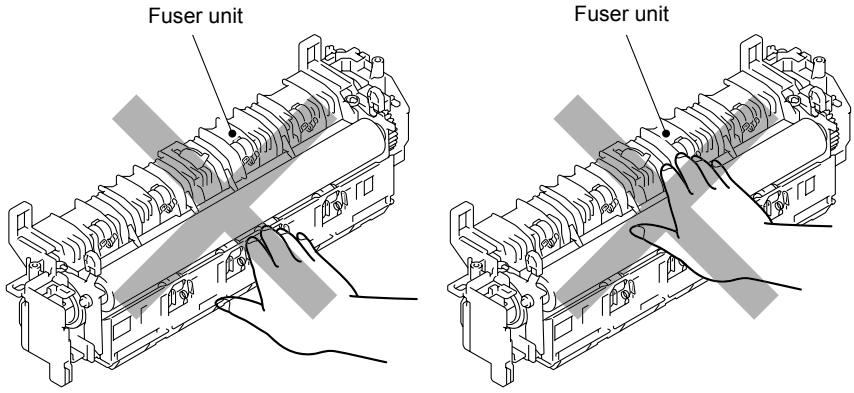


Fig. 5-25

Assembling Note:

The Fuser unit for replacement is transported while the pressure roller is held lightly to prevent deformation of the pressure roller. When assembling the Fuser unit, make sure to assemble the Fuser unit to the product first, and then remove the Spacer in the direction of the arrow from the Fuser unit.

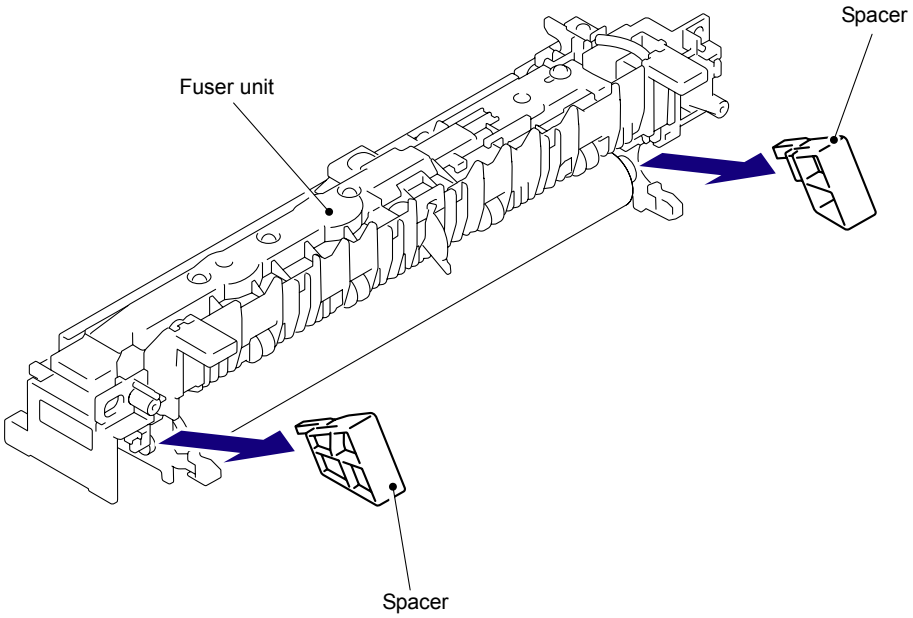


Fig. 5-26

8.9 Side Cover L ASSY/Access Cover

(1) Open the Joint cover sub ASSY as pushing up the TC release lever.

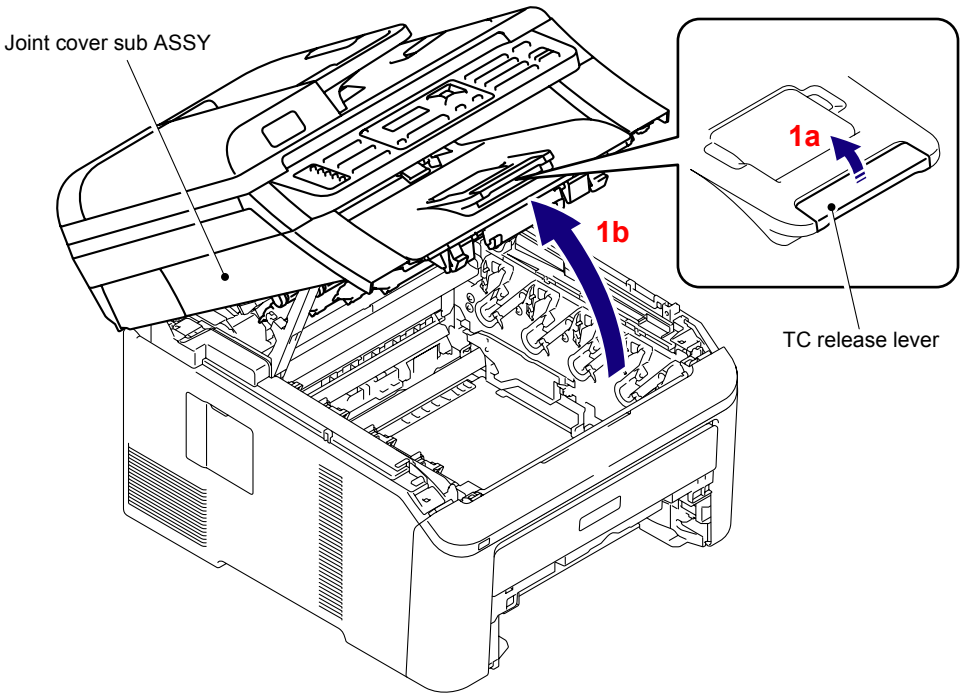
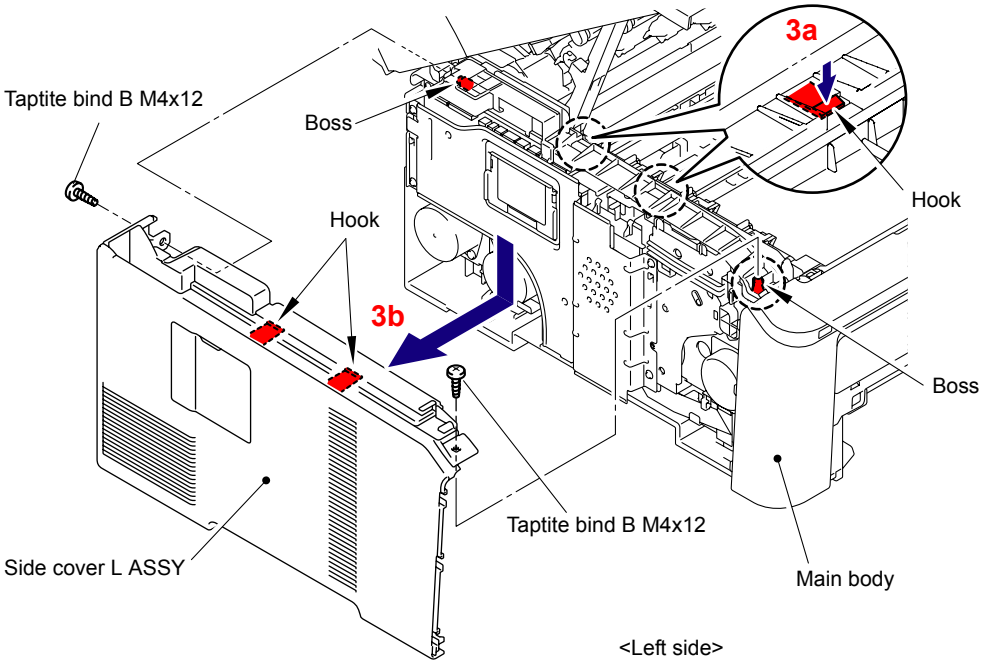


Fig. 5-27

(2) Remove the two Taptite bind B M4x12 screws from the Side cover L ASSY.

(3) Release the two Hooks and two Bosses on the upper side and four Hooks on the bottom, and then remove the Side cover L ASSY from the Main body.



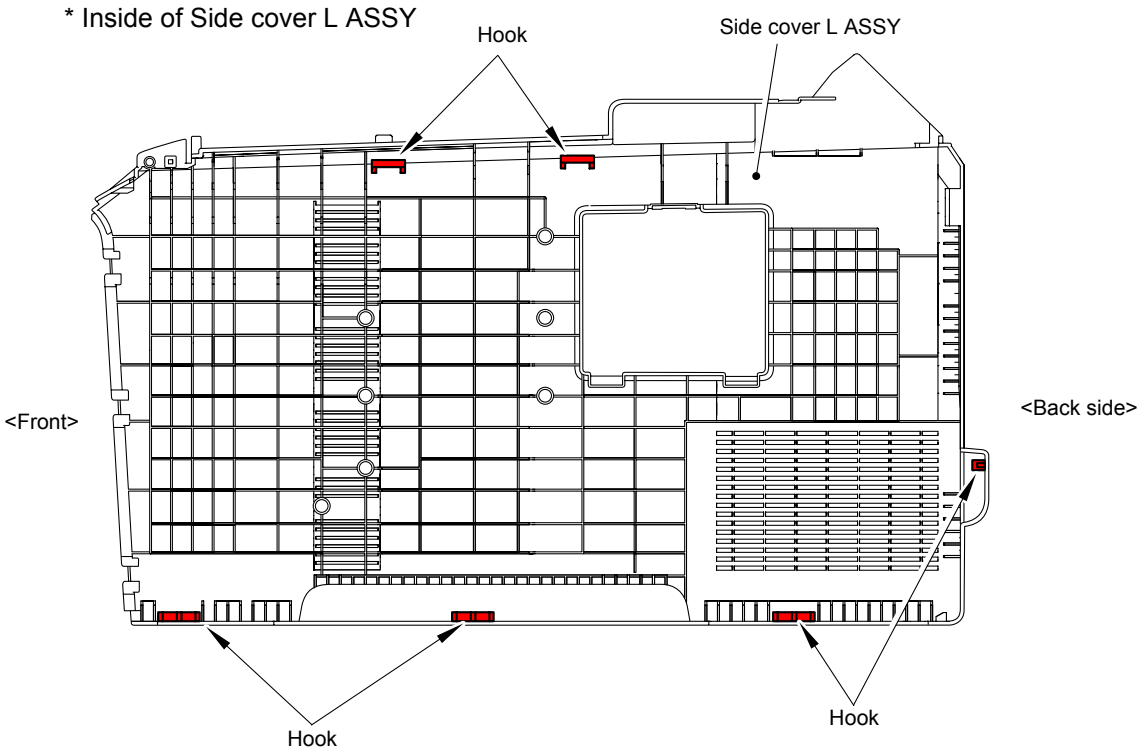


Fig. 5-28

Assembling Note:

- When assembling the Side cover L ASSY onto the Main body, make sure to push the three Hooks of the Front cover into the three “A” of the Side cover L ASSY.
- If the scotch tape to fix the NCU harness is peeled off when assembling the Side cover L ASSY, make sure to re-affix the tape before assembling the side cover L ASSY. If the scotch tape is peeled off, the Side cover L ASSY may bite the NCU harness.

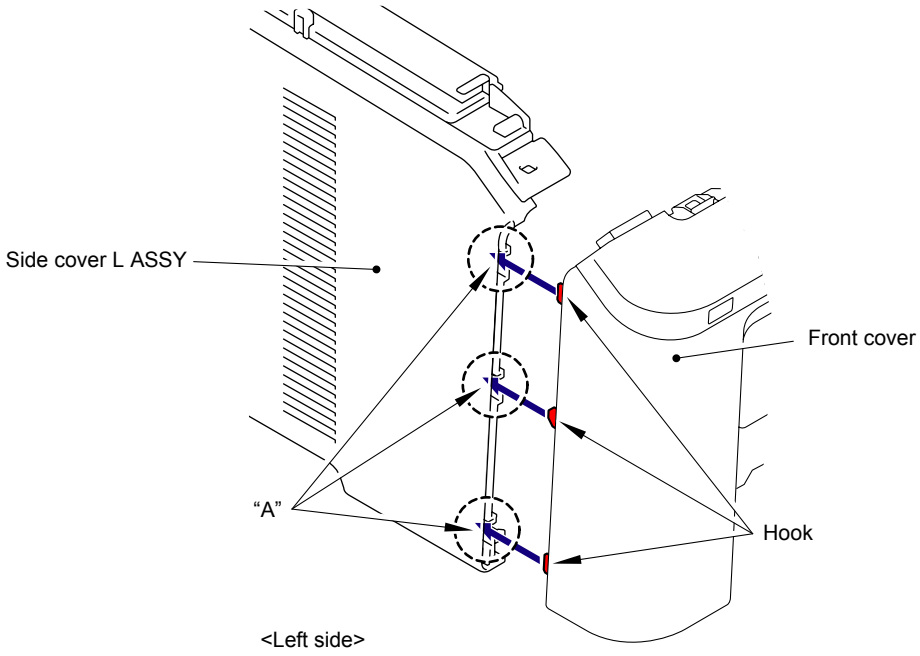


Fig. 5-29

(4) Remove the Access cover from the Side cover L ASSY.

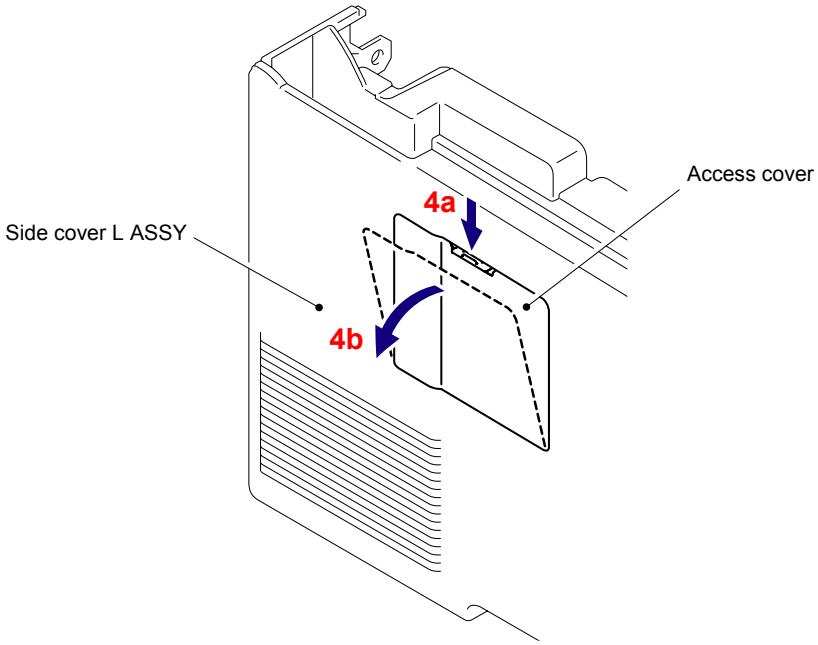


Fig. 5-29-1

8.10 Side Cover R ASSY

(1) Remove the two Taptite bind B M4x12 screws from the Side cover R ASSY.

(2) Release the two Hooks and two Bosses on the upper side and four Hooks on the bottom, and then remove the Side cover R ASSY from the Main body.

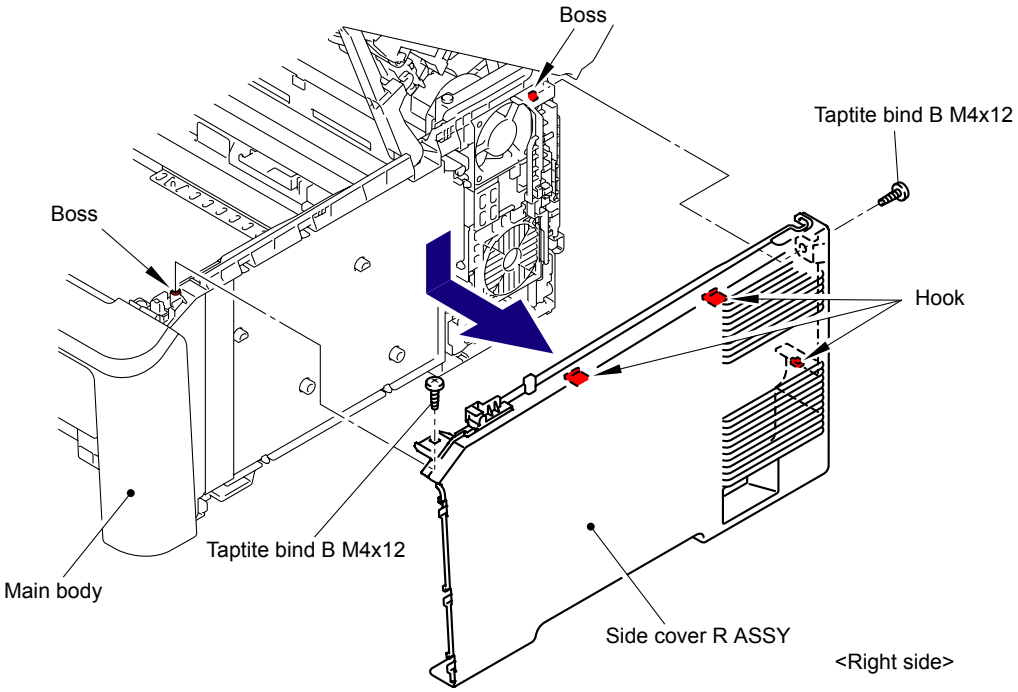


Fig. 5-30

Assembling Note:

When assembling the Side cover R ASSY onto the Main body, make sure to push the three Hooks of the Front cover into the three “A” of the Side cover R ASSY.

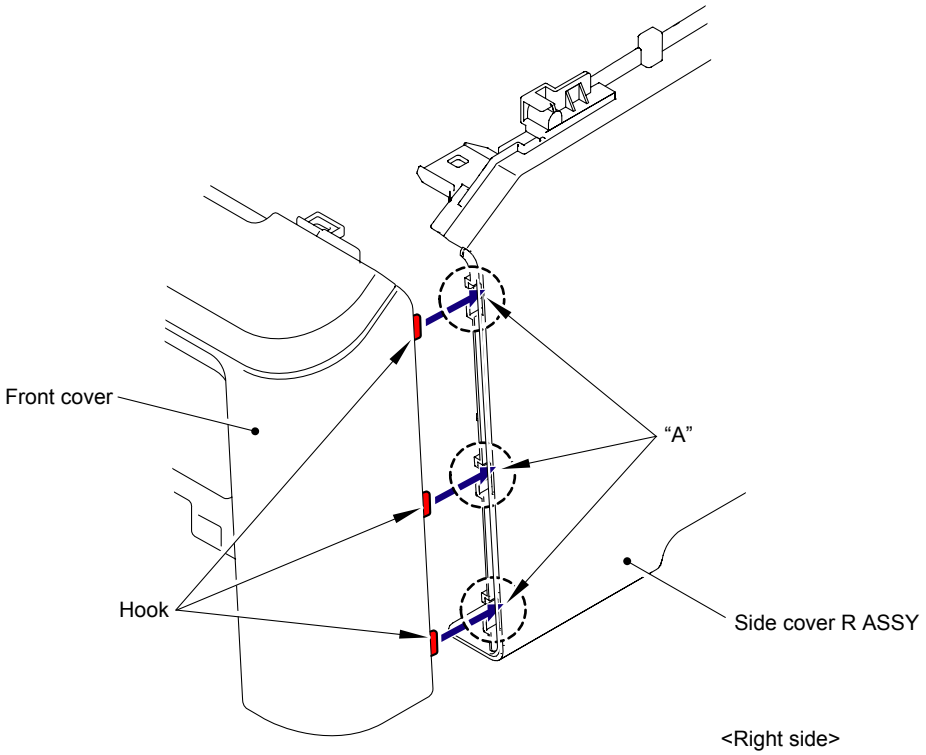


Fig. 5-31

8.11 Pull Arm L/Pull Arm R/Pull Arm Spring

(1) Remove the Taptite cup S M3x6 SR screw, and then remove the CIS harness hold plate.

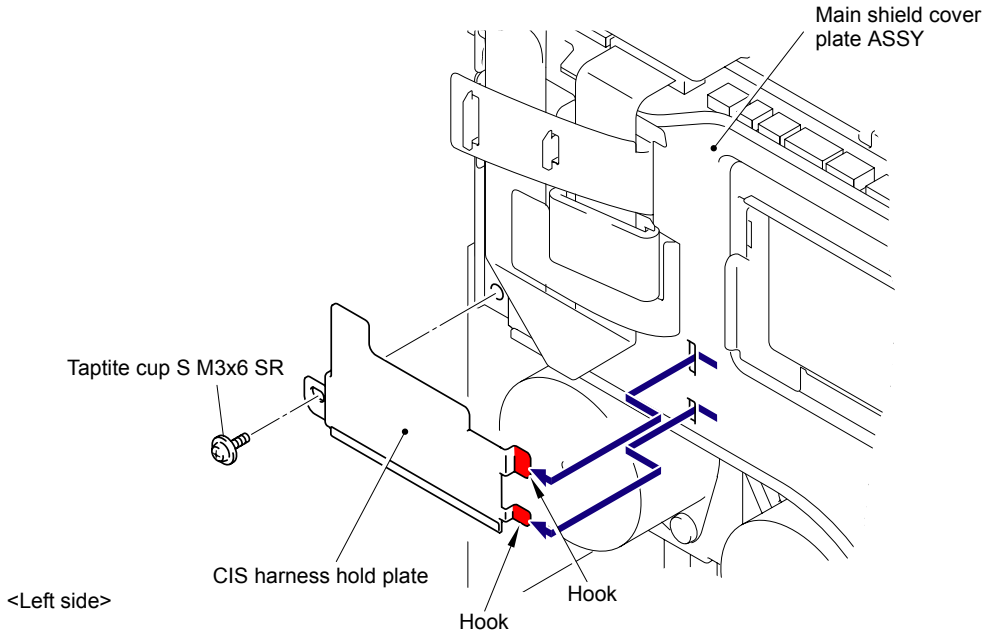


Fig. 5-32

(2) Disconnect the CIS harness from the Main PCB ASSY.

Note:

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

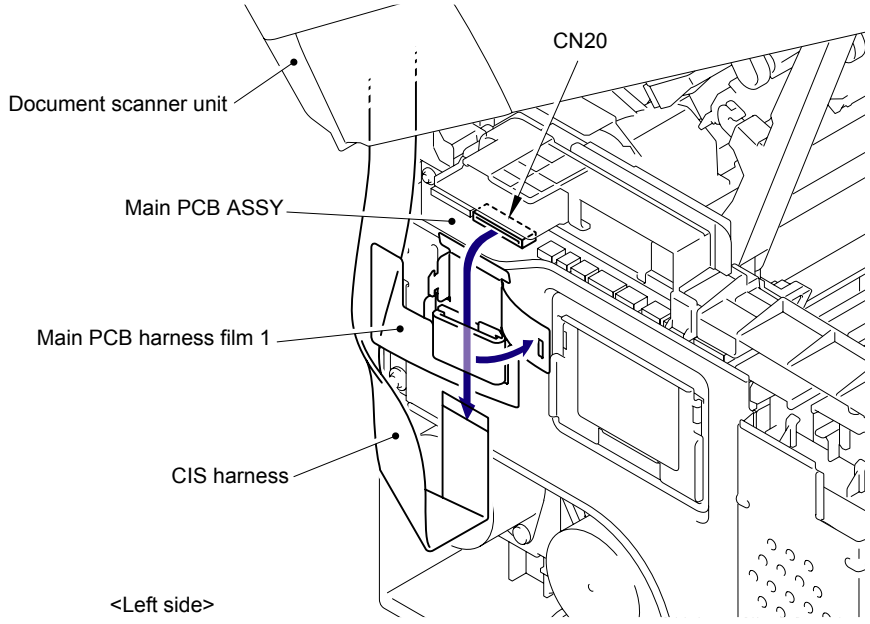


Fig. 5-33

(3) Remove the three Taptite cup S M3x6 SR screws, and then remove the USB direct interface FG harness ASSY and Main shield cover plate ASSY.

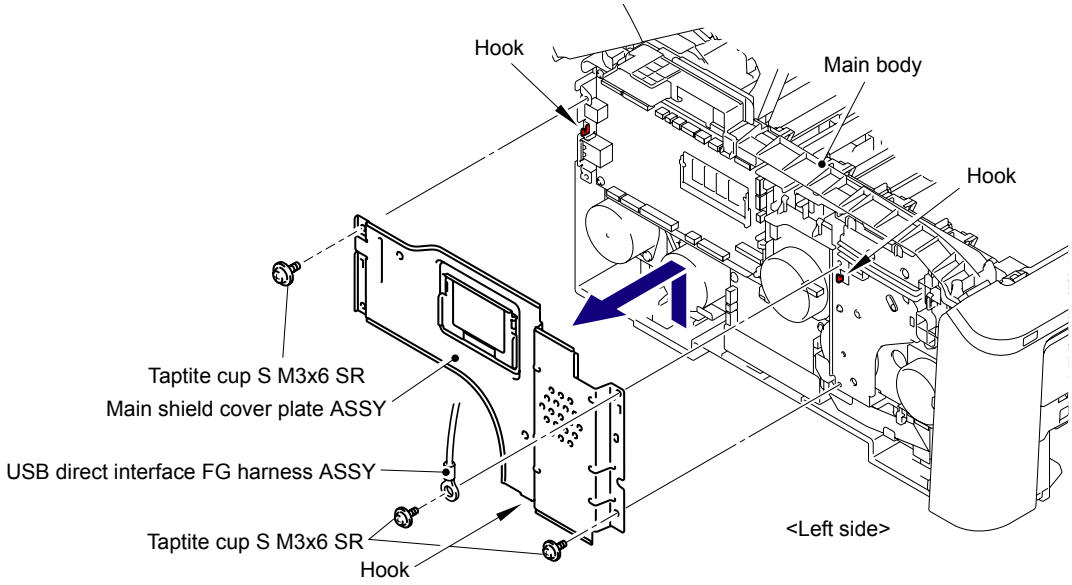


Fig. 5-34

Note:
After removing the Main shield cover plate ASSY, do not set up the main body with the left side down. The machine may get damaged due to load applied to the paper feed motor.

(4) Disconnect the five Connectors (CN16, CN14, CN13, CN11, CN8) from the Main PCB ASSY.

(5) Remove the three Taptite cup S M3x6 SR screws, and then remove the FB FG harness ASSY, ADF FG harness ASSY and NCU FG harness ASSY 2 from the Main PCB shield plate.

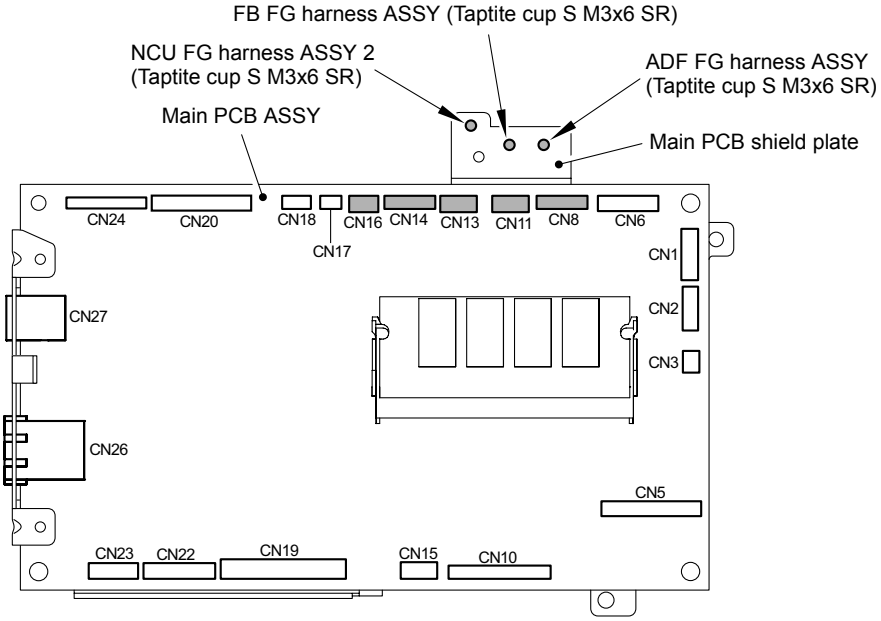


Fig. 5-35

Assembling Note:
Place the Harness of the Connectors (CN16 and CN14) at the front when assembling the Connectors (CN16, CN14, CN13, CN11, and CN8) to the Main PCB ASSY.

(6) Release the FB lock lever L and FB lock lever R and open the Document scanner unit.

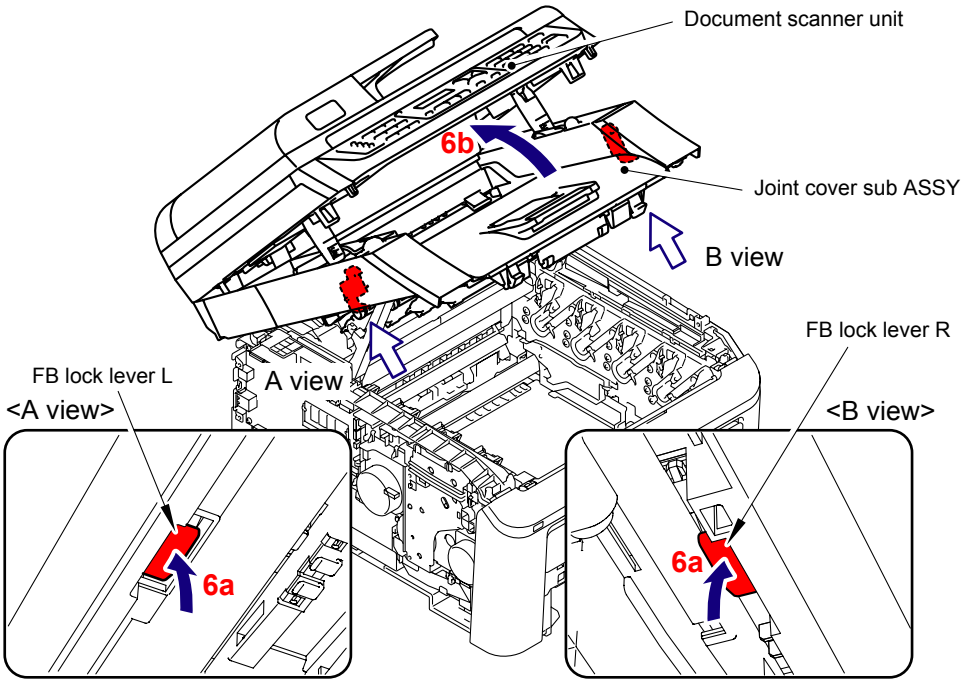


Fig. 5-36

(7) Release the Hooks of the Pull Arm L and Pull Arm R from the joints of the Document scanner unit.

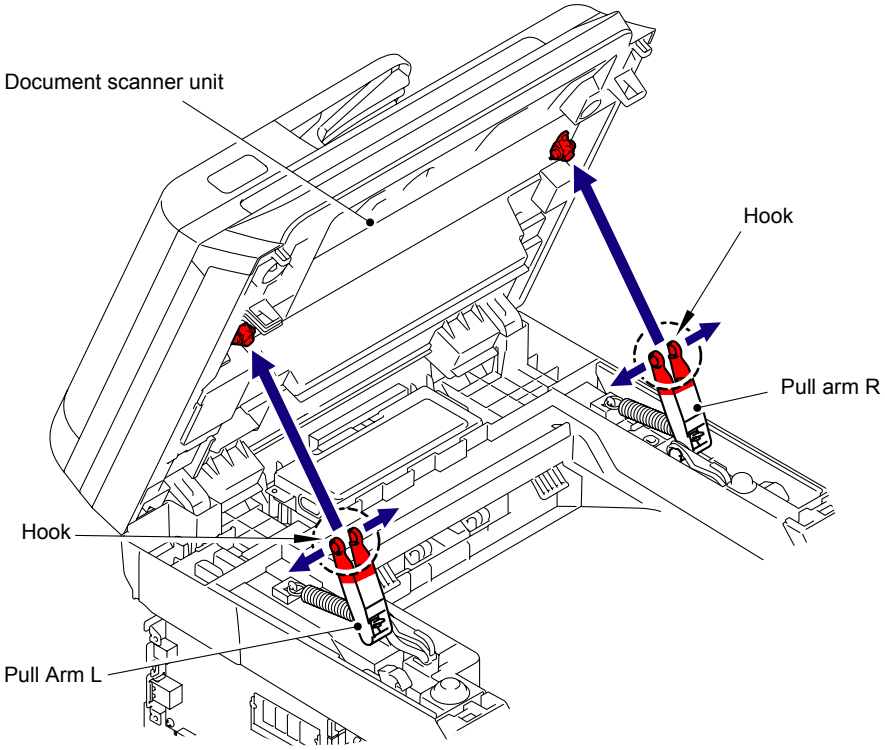


Fig. 5-37

(8) Remove the Pull arm L, Pull arm spring ADF L, Pull arm R and Pull arm spring ADF R from the Pull arm guide.

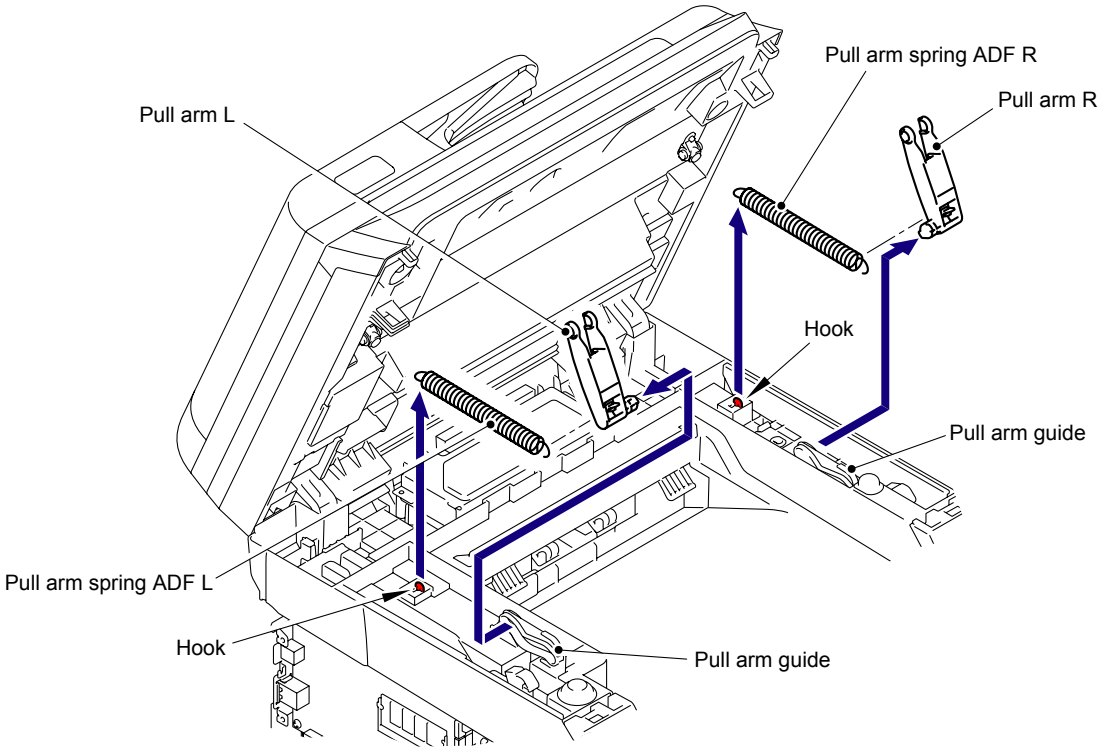


Fig. 5-38

8.12 Hinge ASSY L

(1) Remove the Document scanner unit from the Joint cover sub ASSY.

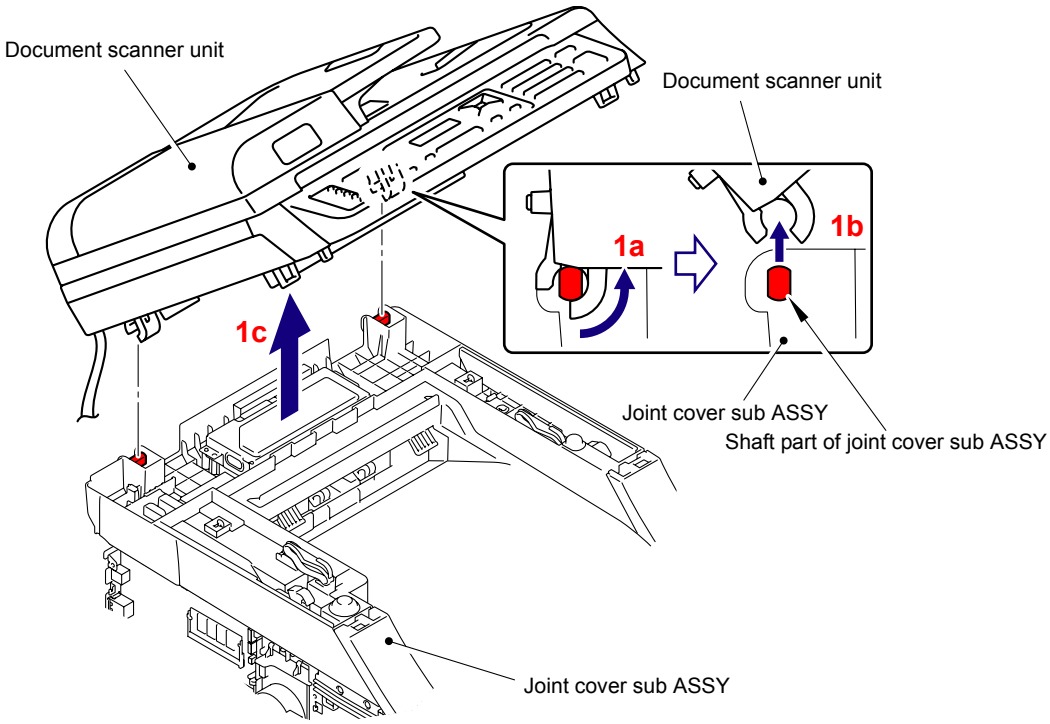


Fig. 5-39

Harness routing: Refer to "21 Document Scanner Unit."

(2) Remove the two Taptite bind B M4x12 screws from the ADF unit.

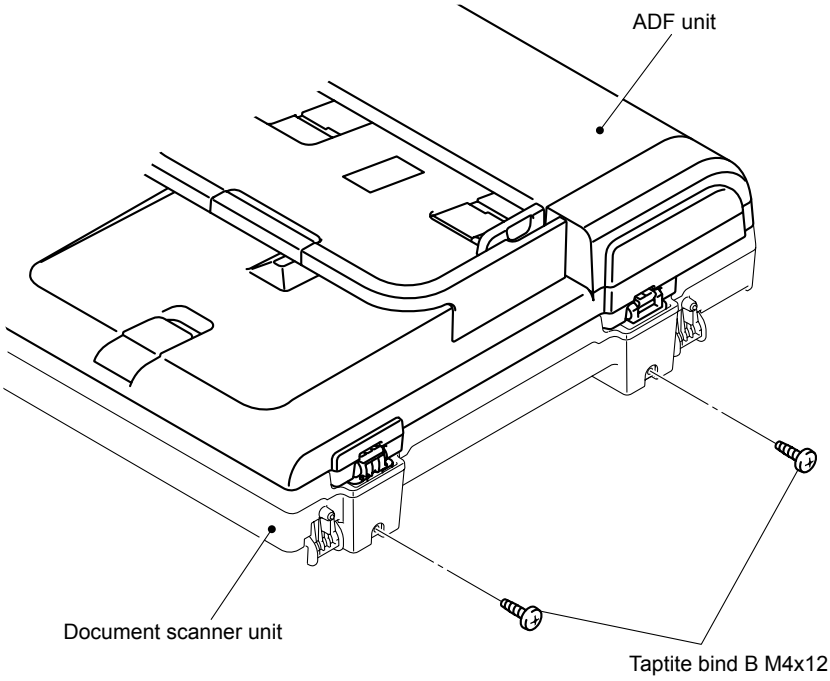


Fig. 5-40

(3) Open the ADF unit and lift it slightly, insert the Ferrite core of the ADF harness unit into the hole of the Document scanner unit, and remove the ADF unit.

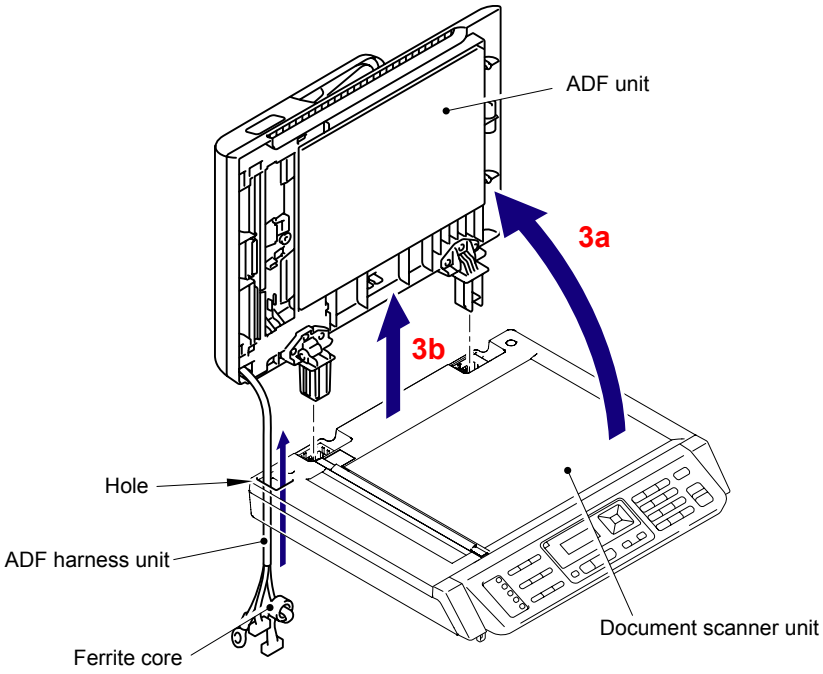


Fig. 5-41

Harness routing: Refer to "20 ADF Unit."

(4) Turn the ADF unit upside down.

(5) Remove the two Taptite cup B M3x10 screws and one Taptite cup S M3x12 screw, and then remove the Hinge ASSY L from the ADF unit.

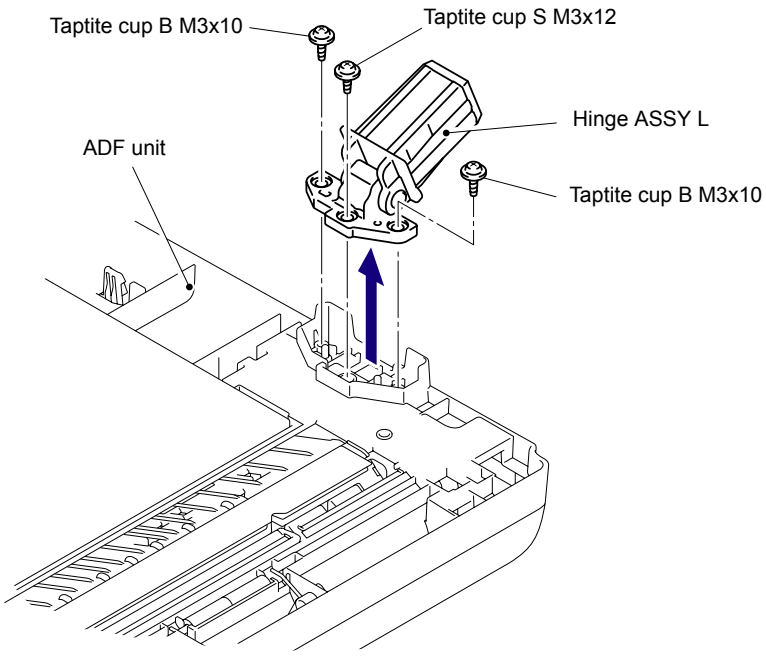


Fig. 5-42

8.13 Hinge R/Hinge R Support/Hinge Base

(1) Remove the Taptite cup B M3x10 screw, and then remove the Hinge R support from the Hinge R, and remove the Hinge R from the Hinge base.

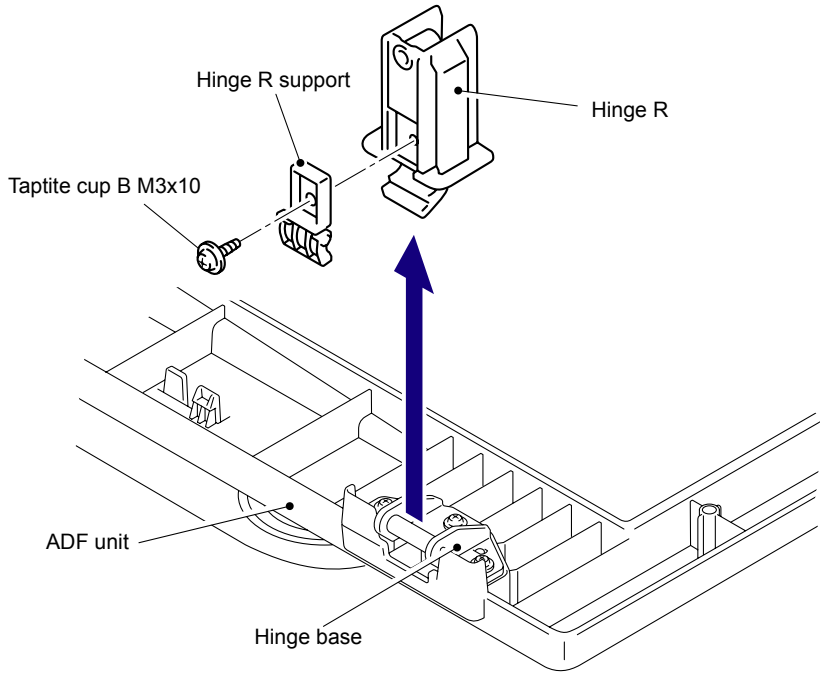


Fig. 5-43

(2) Remove the three Taptite cup B M3x10 screws, and then remove the Hinge base from the ADF unit.

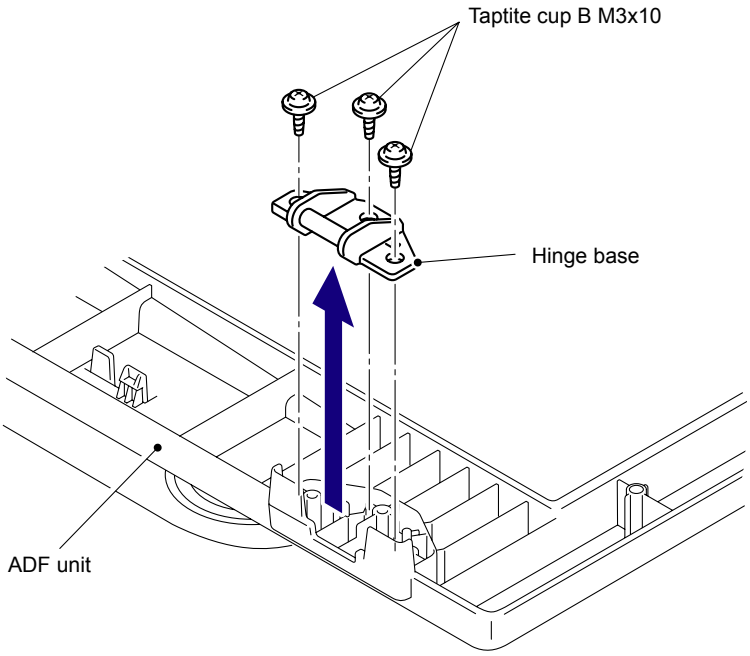


Fig. 5-44

8.14 ADF Cover ASSY

(1) Place the ADF unit the right way up.

(2) Release the two Pins on both sides of the ADF cover ASSY to remove it while the ADF cover ASSY being opened.

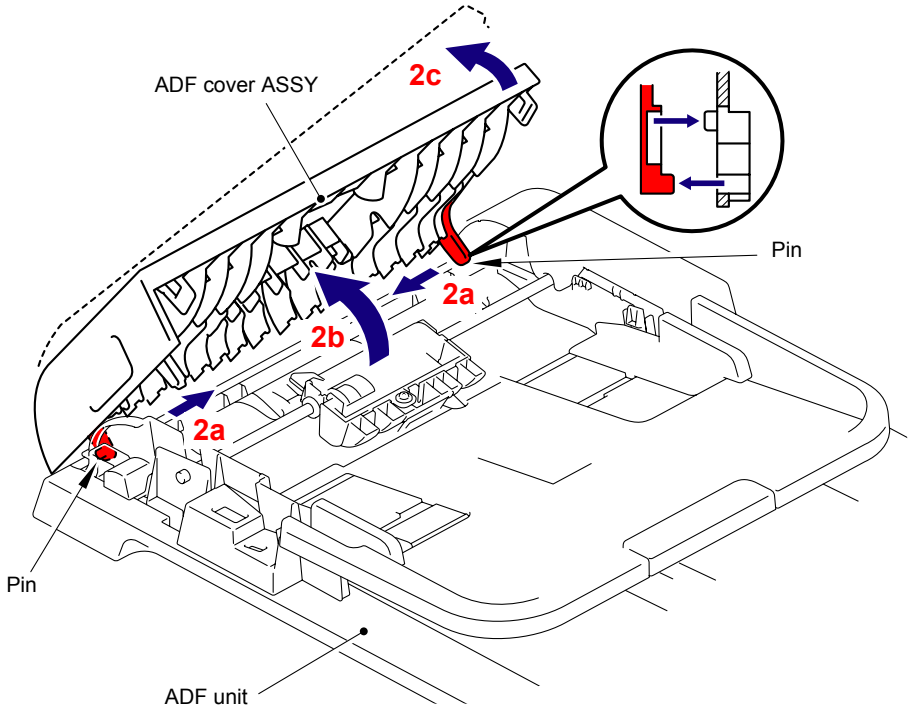
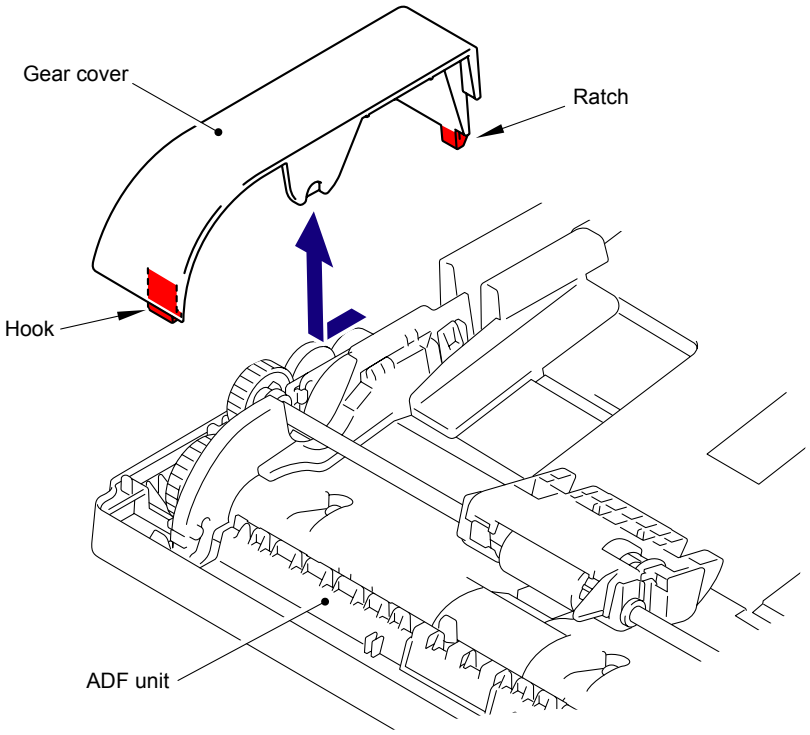


Fig. 5-45

8.15 Gear Cover

(1) Release the Ratch and Hook of the Gear cover from the bottom side of the ADF unit to remove it.



* The positions of Hook and Ratch viewed from the bottom side of the ADF unit.

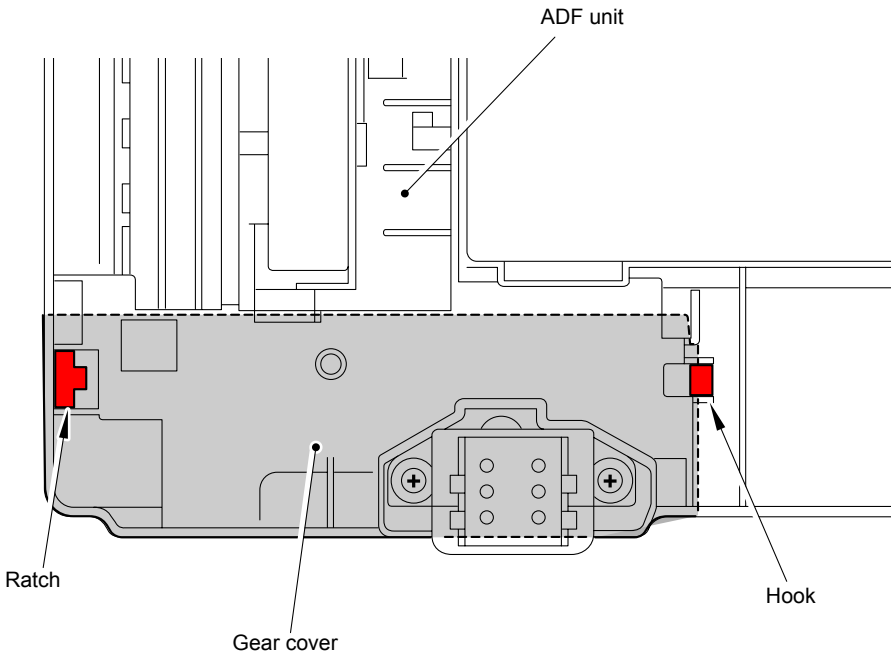


Fig. 5-46

8.16 Separation Roller Shaft ASSY

(1) Release the Rib from the ADF unit to remove the Separation roller shaft ASSY and Separation roller bush.

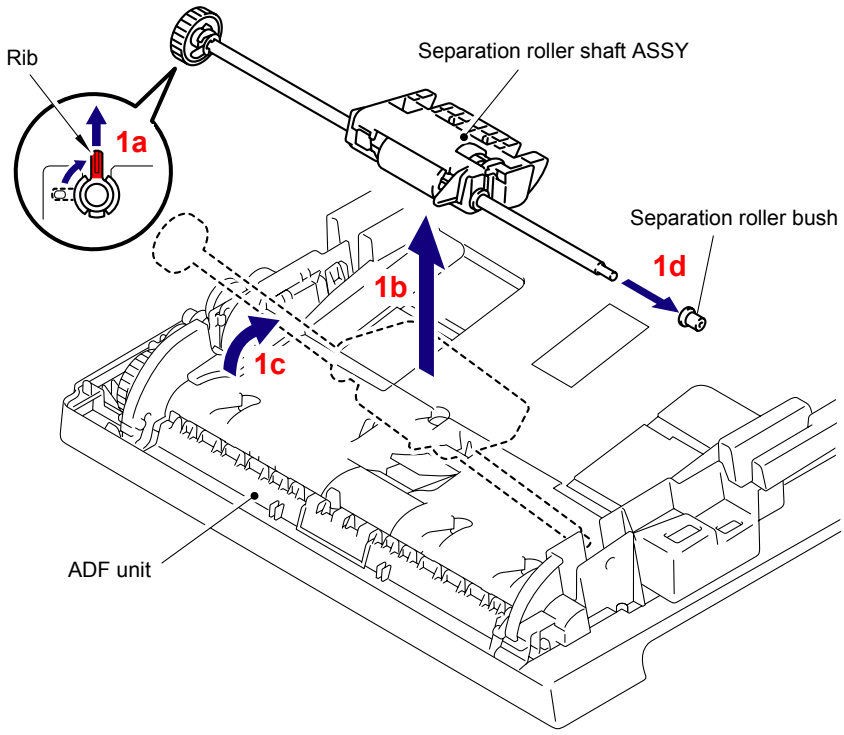


Fig. 5-47

8.17 Upper Document Chute ASSY

(1) Remove the four Taptite cup B M3x10 screws from the Upper document chute ASSY.

(2) Release the five Hooks to remove the Upper document chute ASSY.

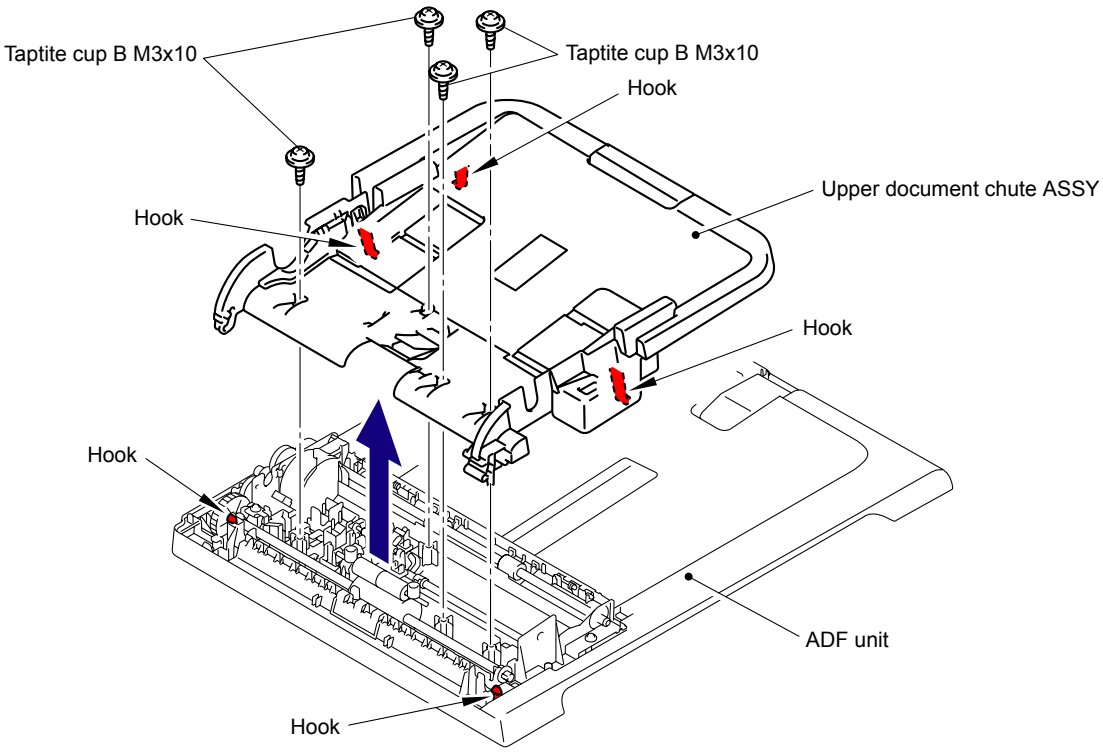


Fig. 5-48

8.18 Separation Rubber ASSY

(1) Remove the Separation rubber ASSY from the Upper document chute ASSY.

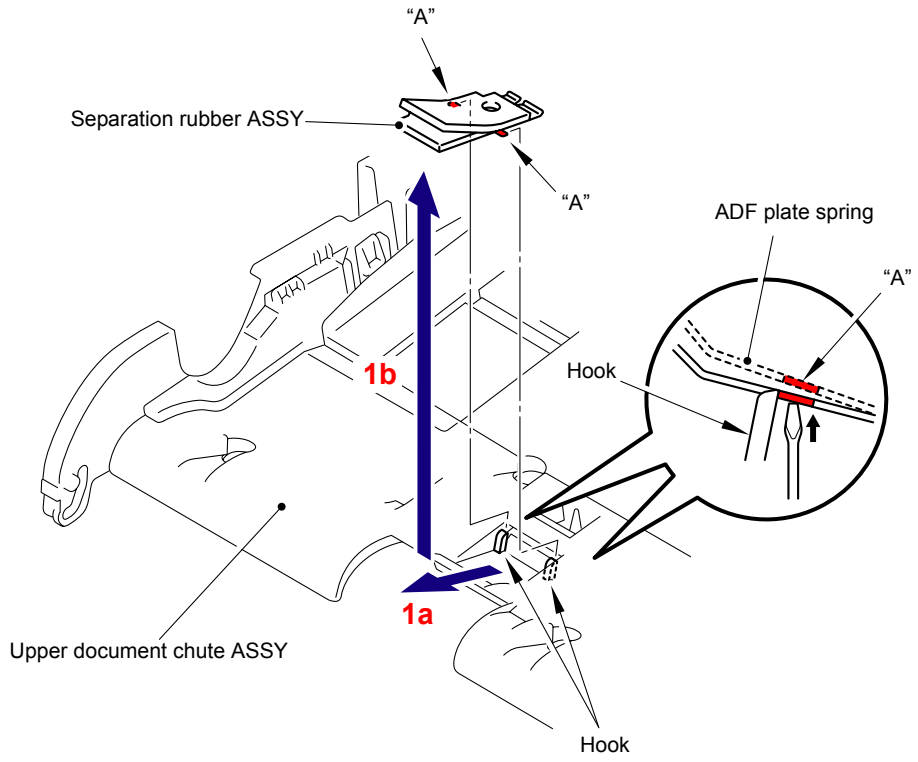


Fig. 5-49

8.19 Paper Feed Roller ASSY

(1) Release the two Hooks to remove the Paper feed roller bush from the Paper feed roller ASSY.

(2) Remove the Paper feed roller ASSY from the Lower document chute ASSY.

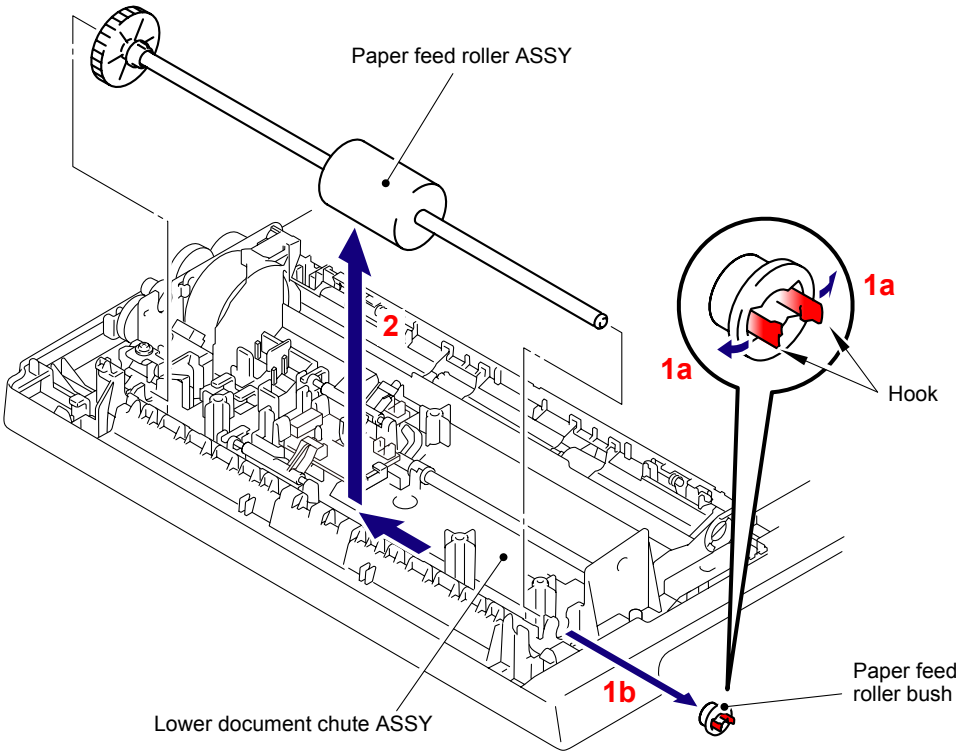


Fig. 5-50

8.20 Ejection Roller ASSY

(1) Release the two Hooks A to remove the Ejection roller ASSY from the Lower document chute ASSY.

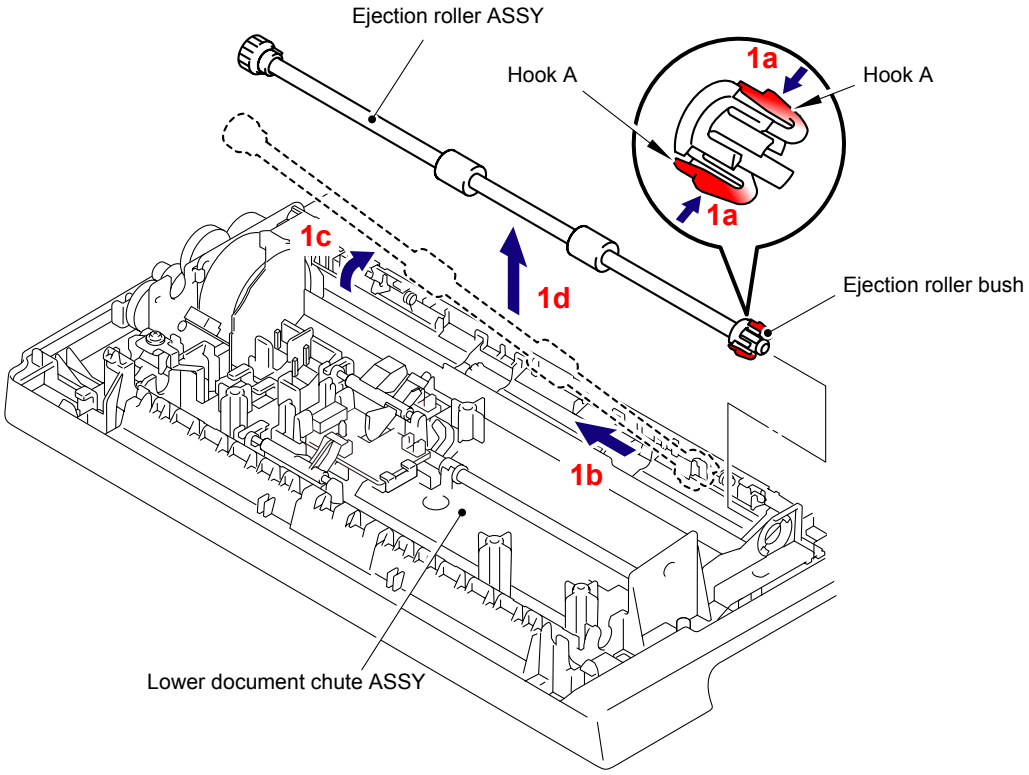


Fig. 5-51

(2) Release the two Hooks B to remove the Ejection roller bush from the Ejection roller ASSY.

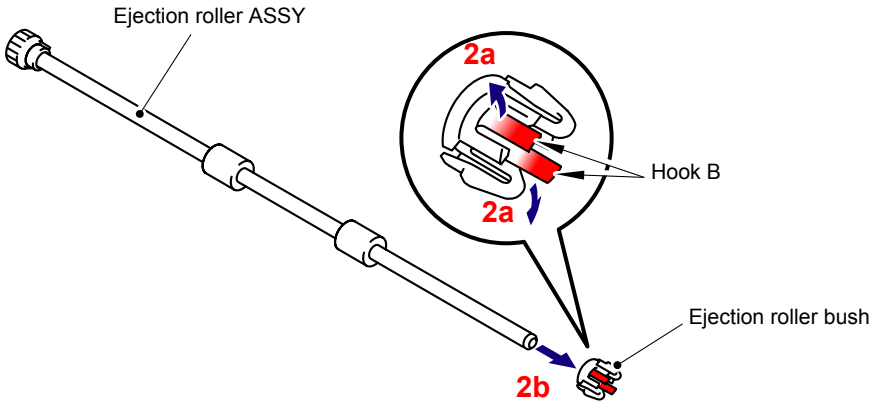


Fig. 5-51-1

8.21 ADF Sensor PCB ASSY

(1) Release the Hook to remove the Actuator F from the Lower document chute ASSY.

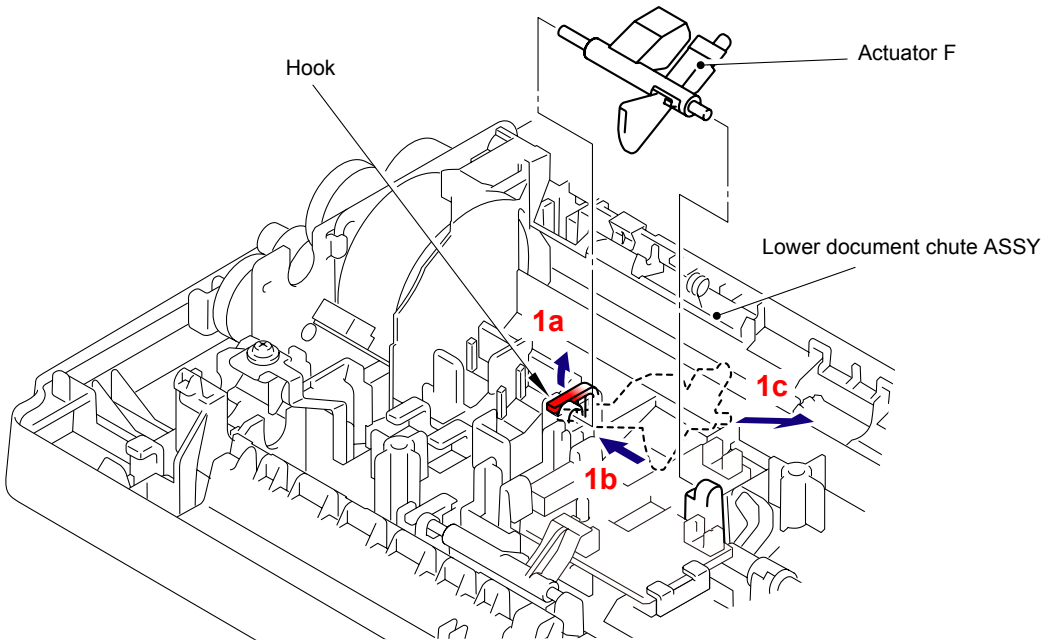


Fig. 5-52

(2) Release the Hook to remove the Actuator R from the Lower document chute ASSY.

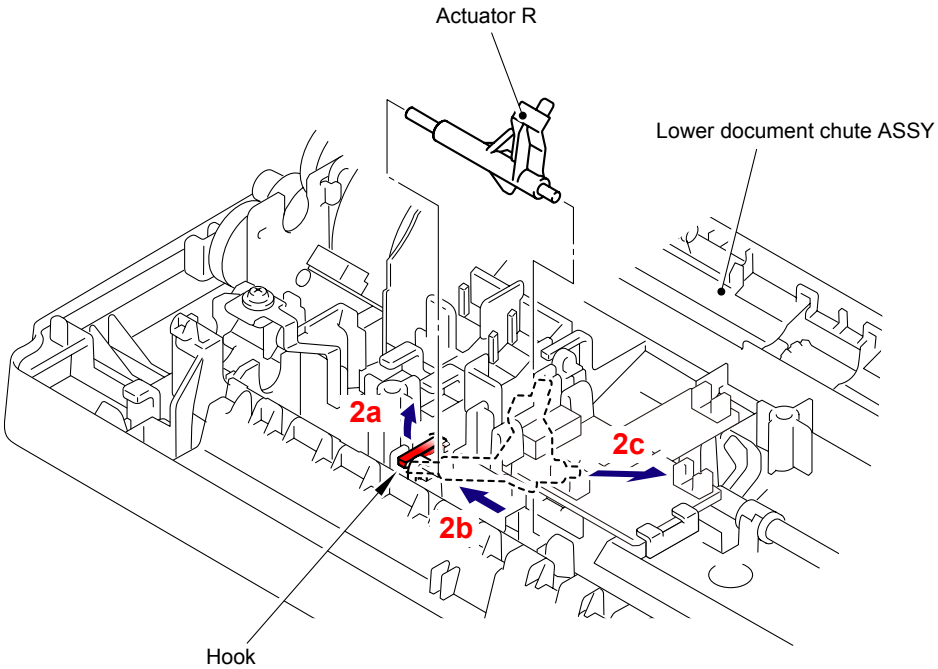


Fig. 5-53

(3) Release the two Hooks of the Lower document chute ASSY pressing the ADF sensor PCB ASSY.

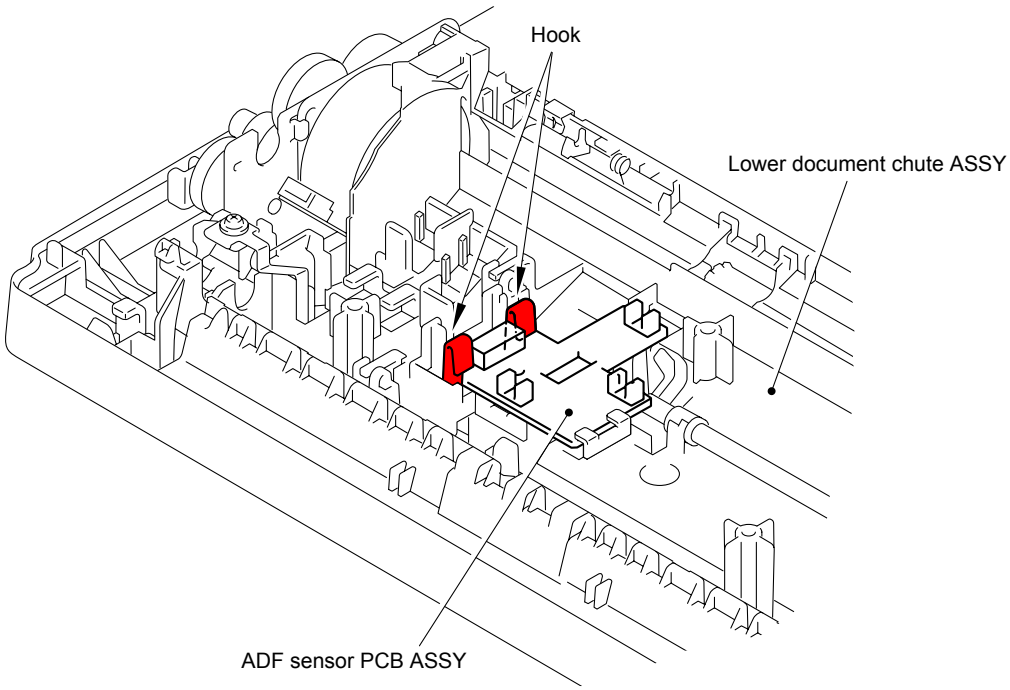


Fig. 5-54

(4) Turn the Shutter part of the Actuator ADF cover to the direction shown in the figure below and remove it.

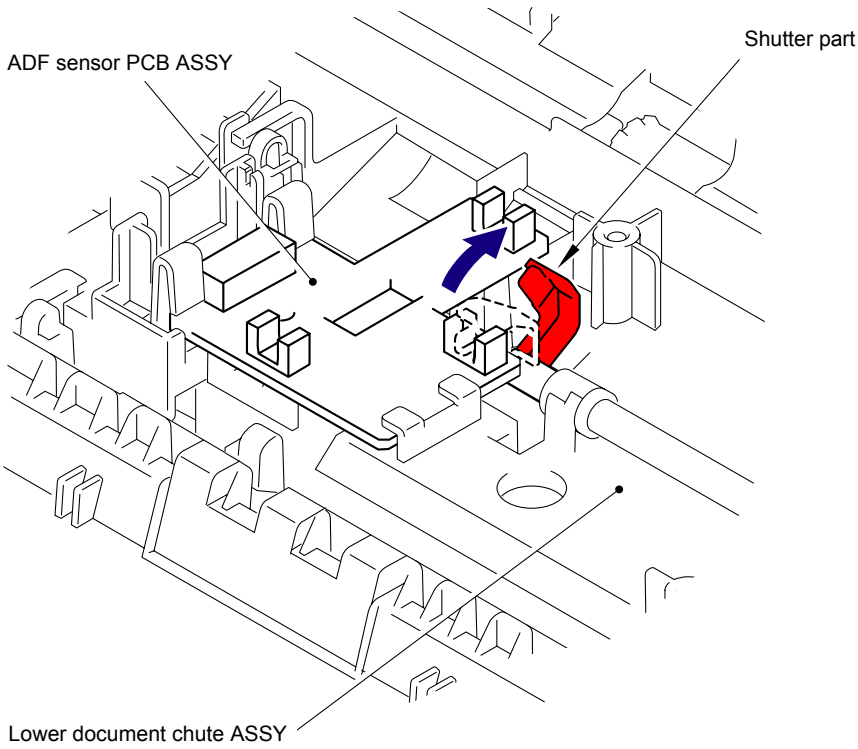


Fig. 5-55

(5) Remove the ADF sensor PCB ASSY from the Lower document chute ASSY.

(6) Remove the ADF sensor harness ASSY from the ADF sensor PCB ASSY.

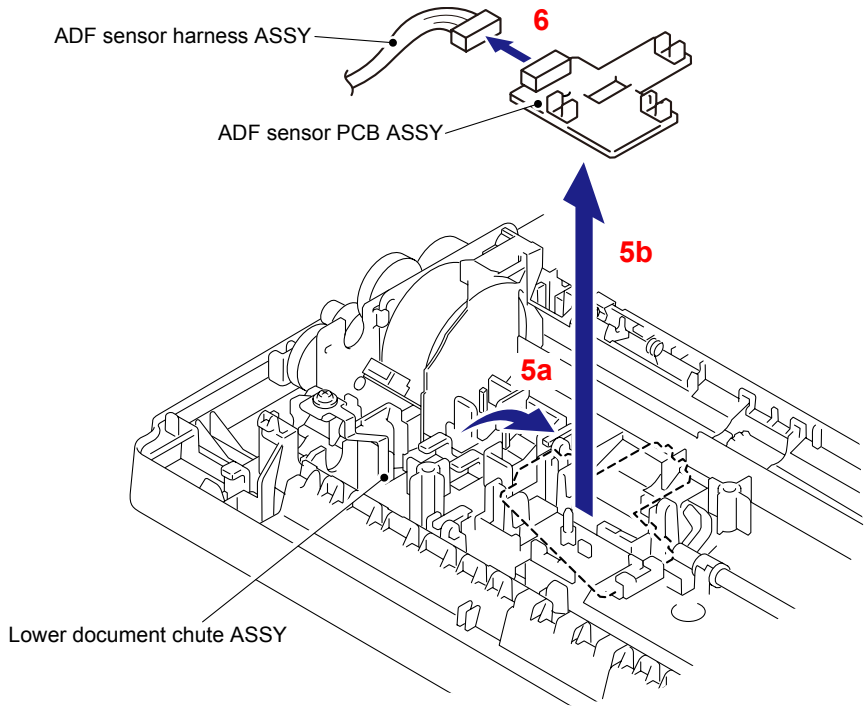


Fig. 5-56

Harness routing: Refer to "20 ADF Unit."

8.22 Drive Frame ASSY

(1) Remove the two Taptite cup B M3x10 screws from the Lower document chute ASSY.

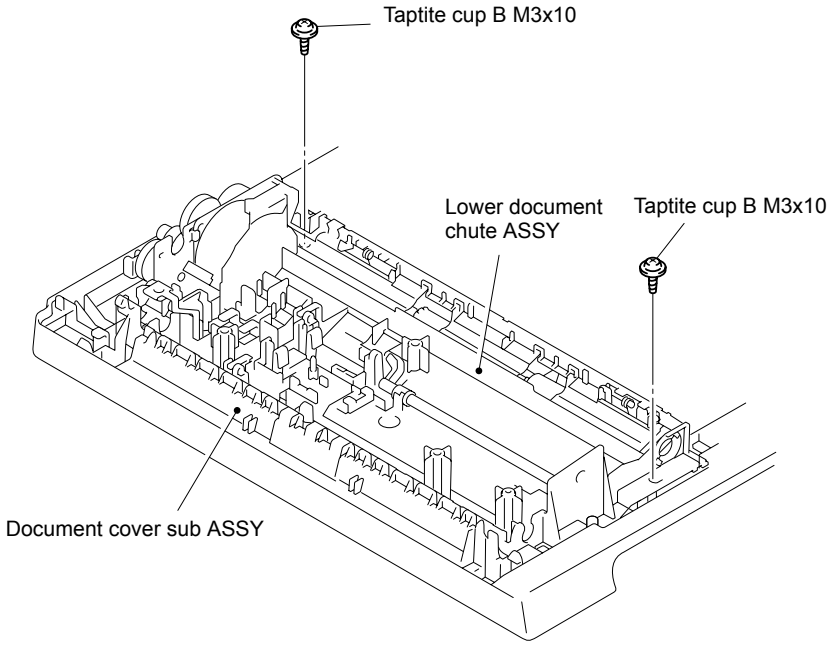


Fig. 5-57

(2) Release the two Hooks to remove the Lower document chute ASSY from the Document cover sub ASSY.

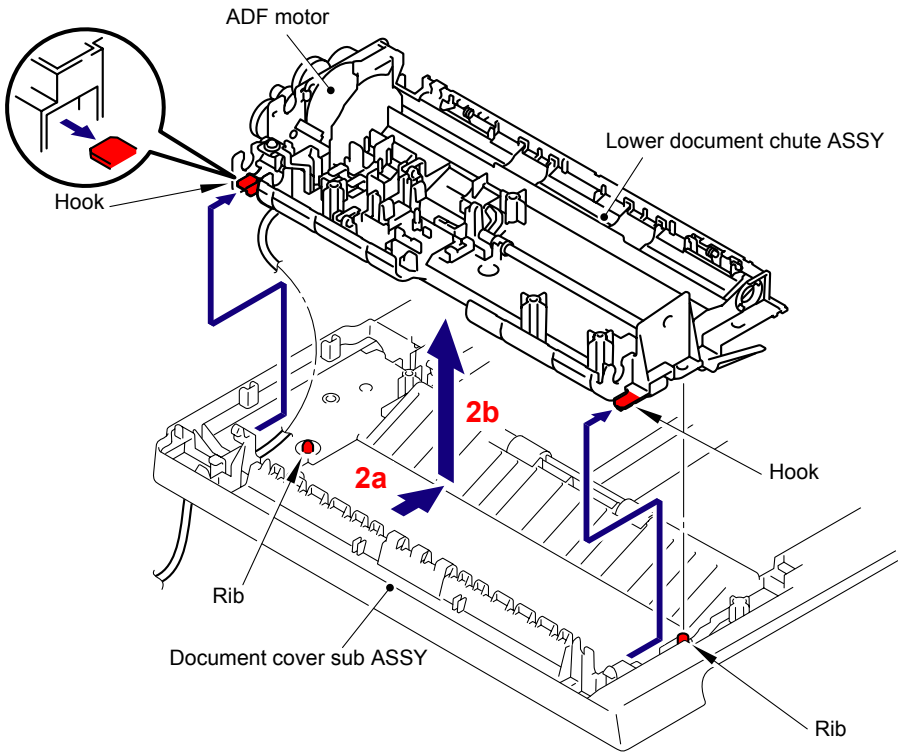


Fig. 5-58

(3) Remove the Taptite cup S M3x6 SR screw, and then remove the ADF FG harness ASSY from the Lower document chute ASSY.

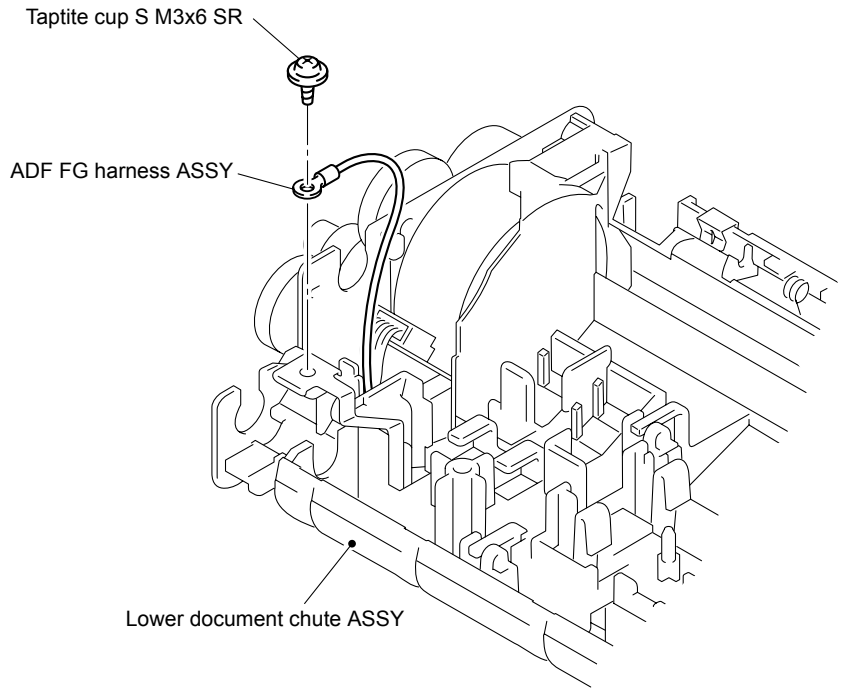


Fig. 5-59

(4) Remove the ADF motor harness ASSY from the ADF motor.

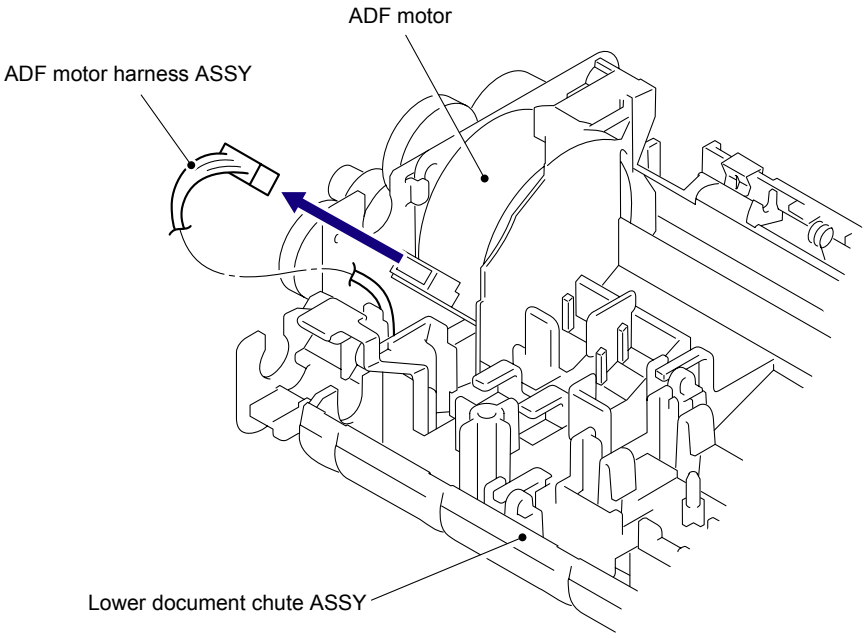


Fig. 5-60

Harness routing: Refer to "20 ADF Unit."

(5) Remove the two Taptite cup B M3x10 screws, and then remove the Drive frame ASSY from the Lower document chute ASSY.

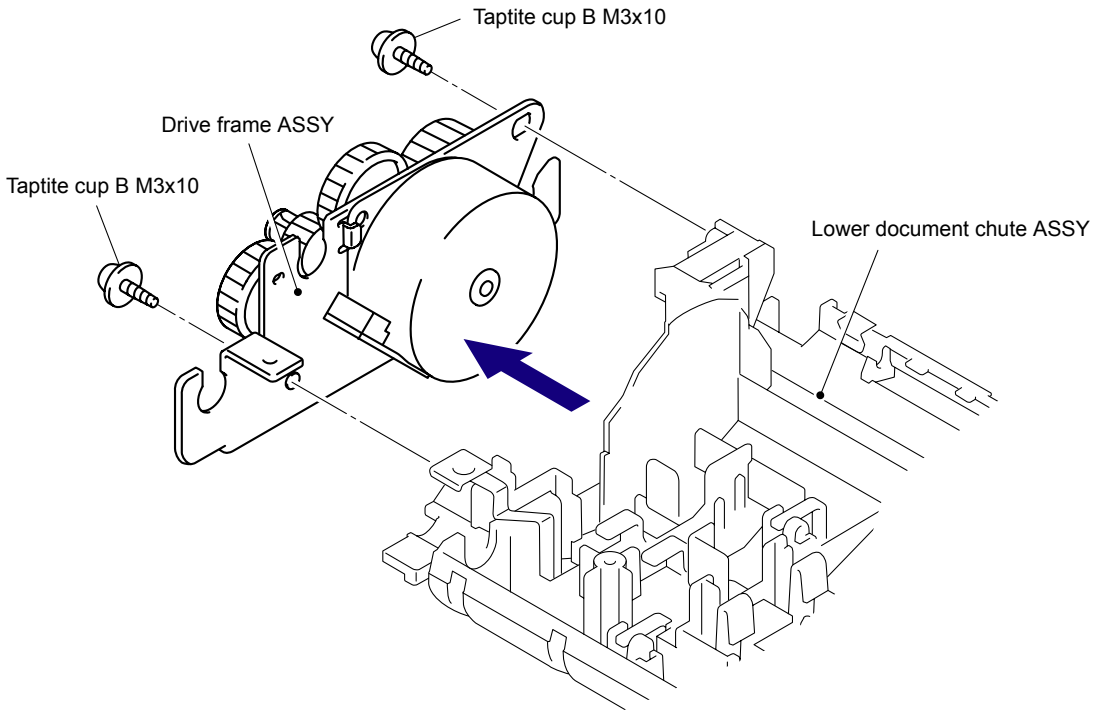


Fig. 5-61

(6) Remove the Taptite bind S M3x6 screw, and then remove the ADF motor from the Drive frame ASSY.

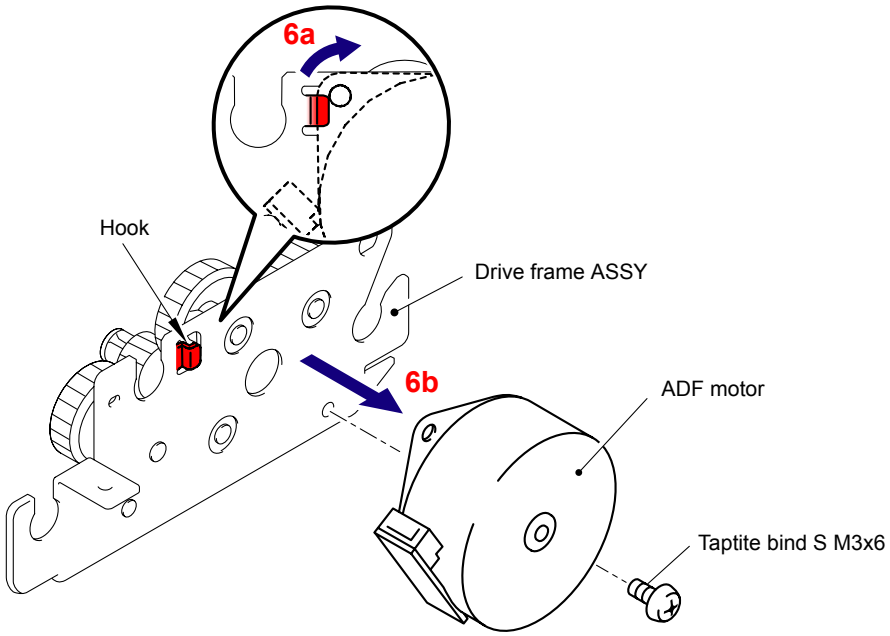


Fig. 5-62

(7) Release the two Pins to remove the Document stopper from the Document cover sub ASSY.

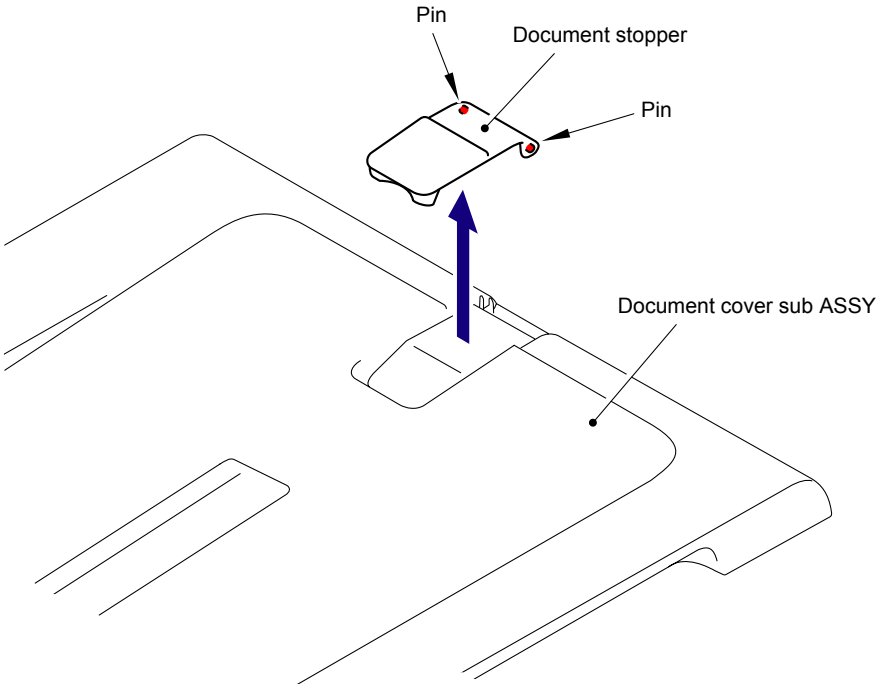


Fig. 5-63

8.23 Paper Stack Lever

(1) Push the both ends of the Paper stack lever on the left side inward to remove the Pins, and remove the Paper stack lever from the Lower document chute ASSY.

(2) Remove the Paper stack lever on the right side in the same way.

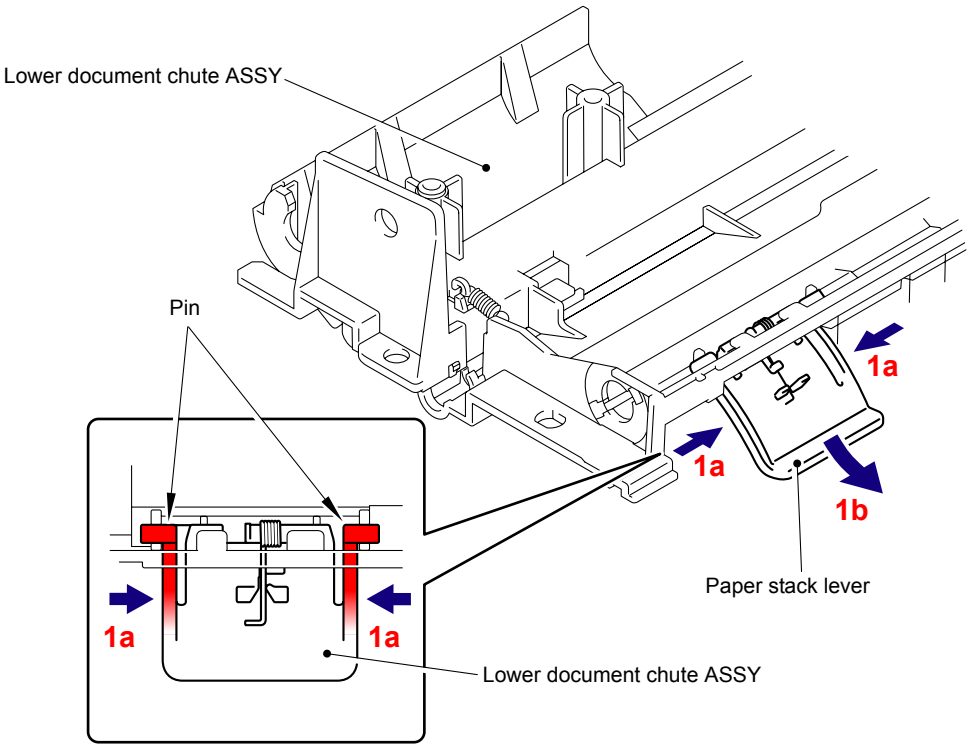


Fig. 5-64

(3) Remove the Paper stack lever spring from the Paper stack lever.

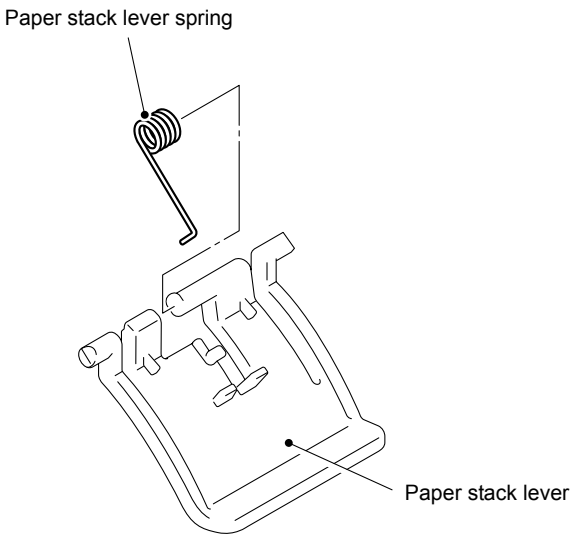


Fig. 5-65

8.24 Document Hold ASSY

(1) Turn the Lower document chute ASSY upside down.

(2) Release the two Pins to remove the Document hold ASSY and Document hold spring from the Lower document chute ASSY.

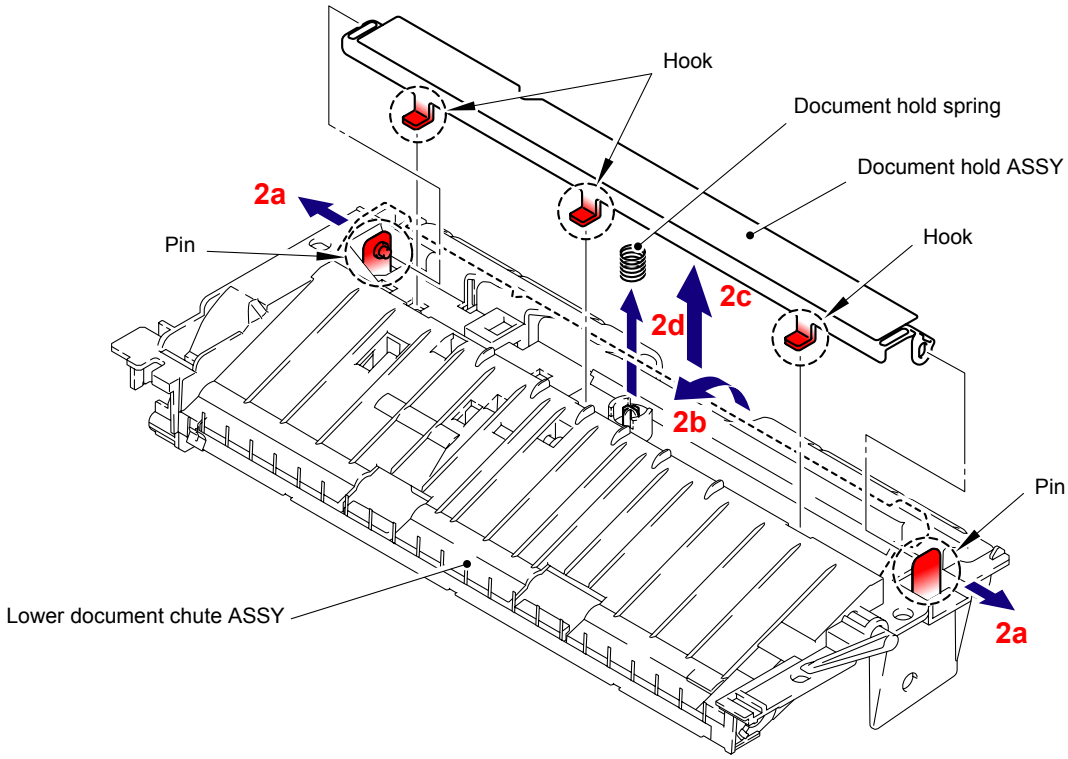


Fig. 5-66

8.25 Control Panel Cover ASSY

(1) Release the eight Hooks to remove the Control panel cover ASSY from the Document scanner unit.

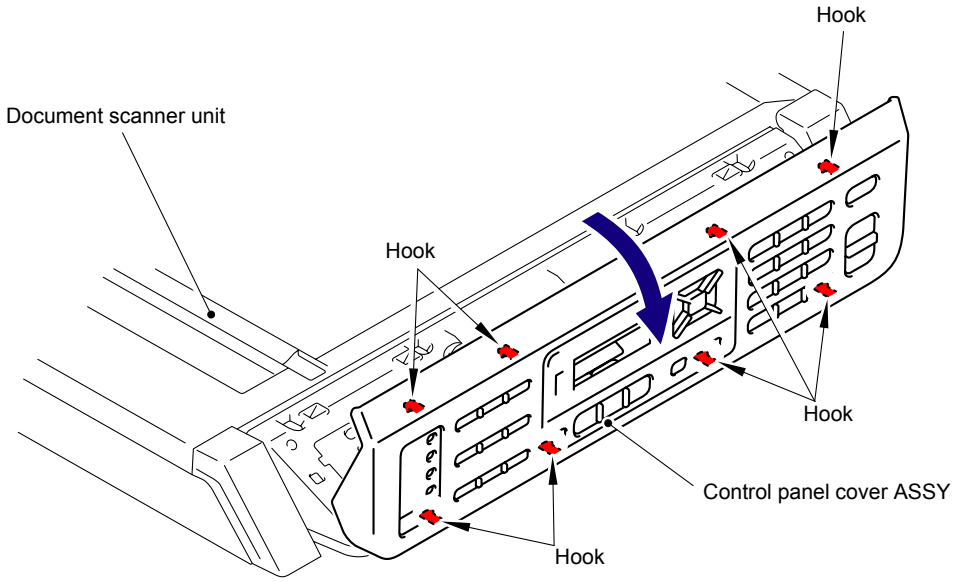


Fig. 5-67

8.26 Document Scanner Unit

(1) Remove the four Taptite cup B M3x10 screws (2 each at upper and lower sides) of the Panel unit, and then lift the Panel unit.

Note:
Do not pull the Panel unit strongly because a Harness is connected.

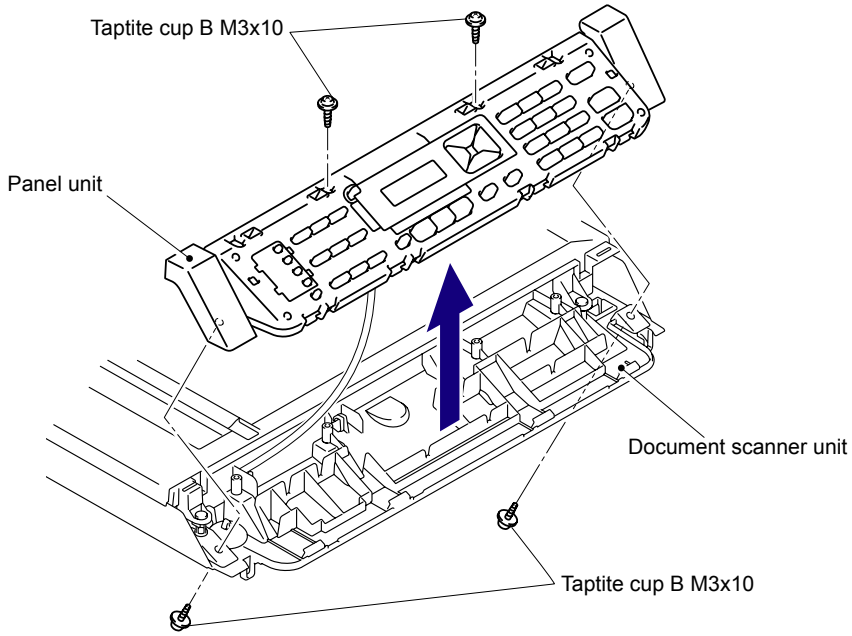


Fig. 5-68

(2) Gently lift up the Panel unit slightly from the Document scanner unit and disconnect the Connector (CN1) from the Panel PCB ASSY.

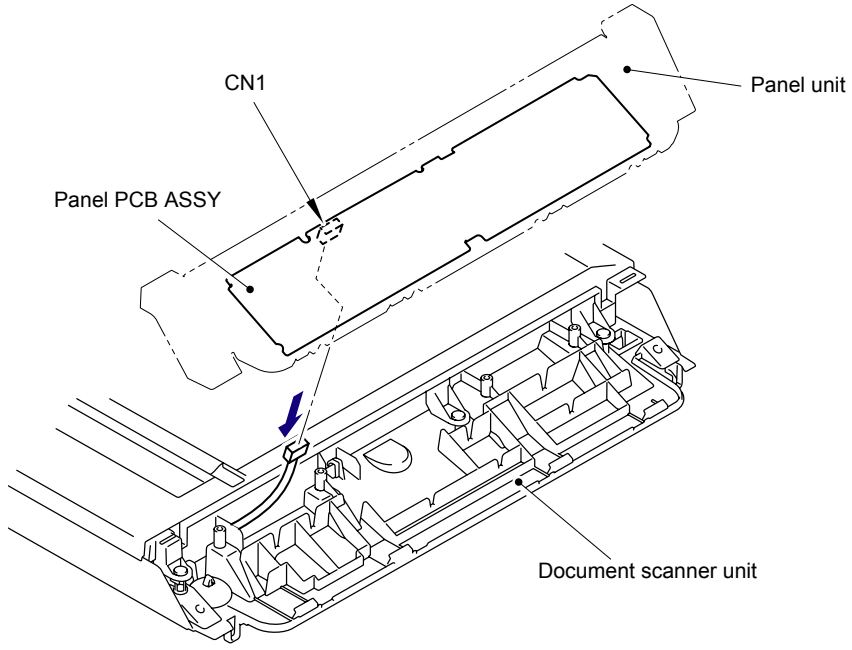


Fig. 5-69

Harness routing: Refer to "22 Panel Unit."

8.27 Panel PCB ASSY

(1) Release the three Hooks to remove the Panel PCB ASSY from the Panel unit.

(2) Turn over the Panel PCB ASSY, release the lock of the connector (CN2) by pushing it in the direction of the arrow 2a, and disconnect the FC harness.

Note:

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

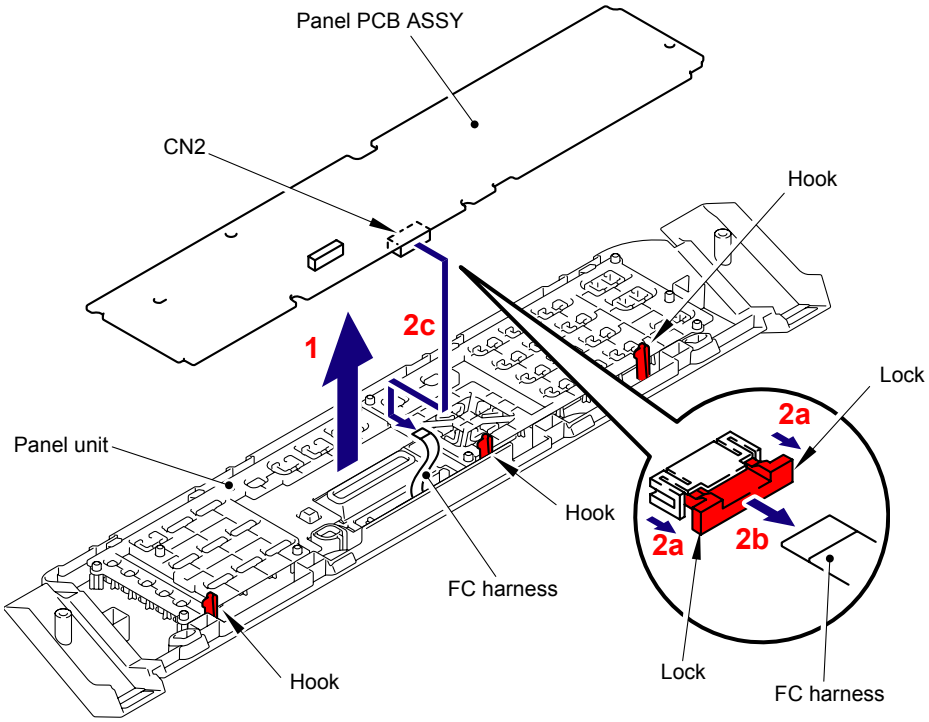


Fig. 5-70

8.28 Rubber Key L/R

(1) Remove the Rubber key R and Printed rubber key L from the Panel unit.

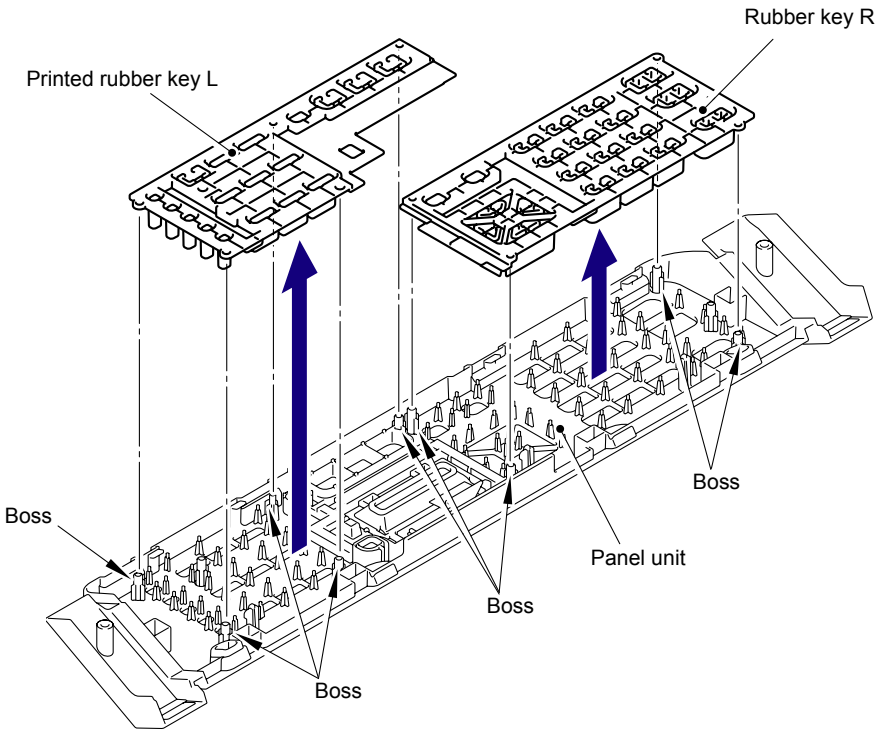


Fig. 5-71

8.29 LCD/LCD Cover

(1) Remove the Panel light guide from the Panel cover generic.

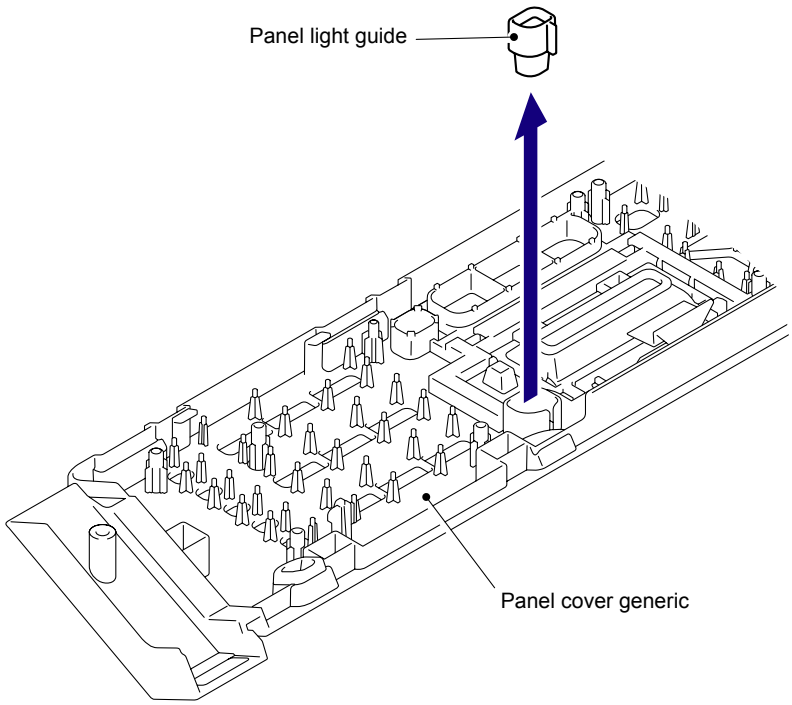


Fig. 5-72

(2) Release the four Hooks to remove the LCD cover from the Panel cover generic.

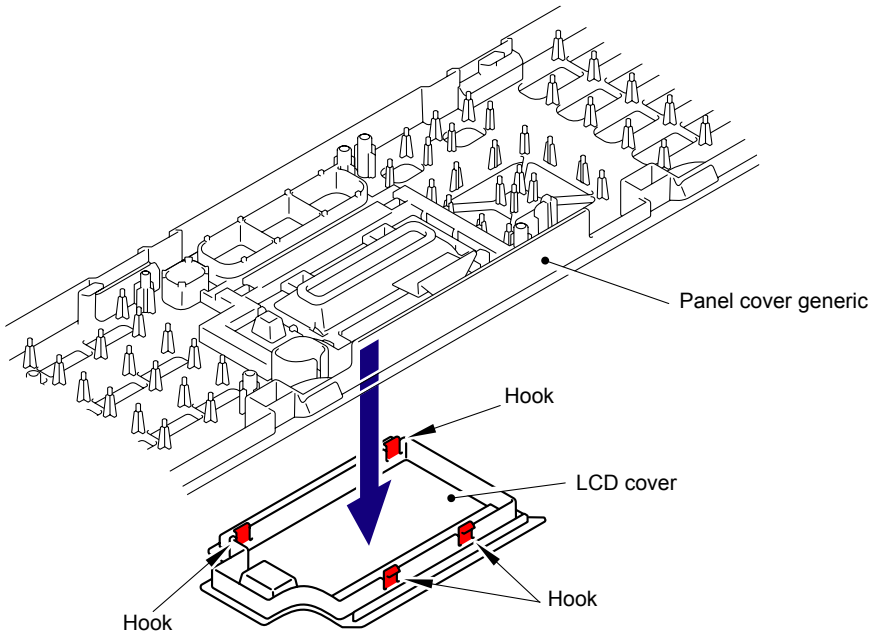


Fig. 5-73

(3) Release the two Hooks to remove the Backlight guide from the Panel cover generic.

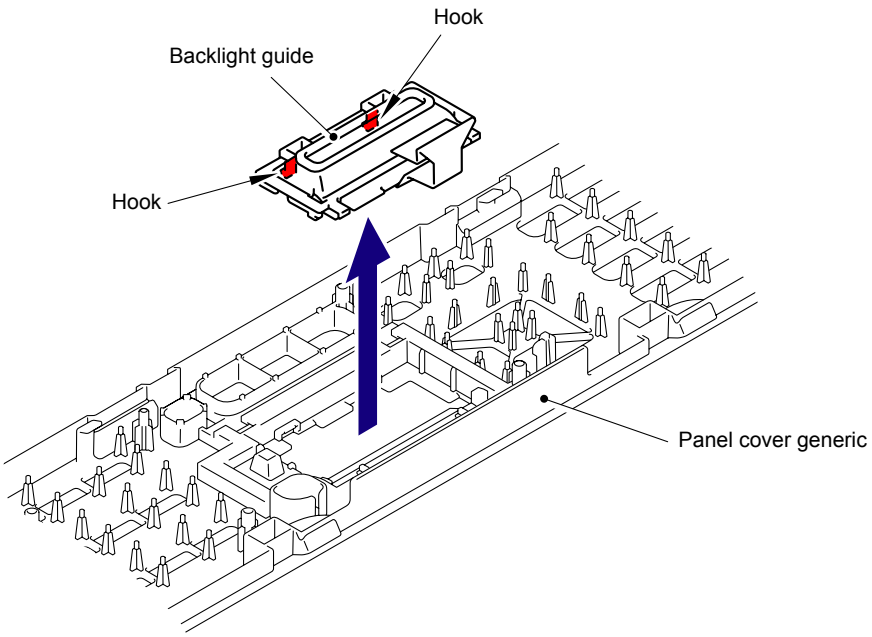


Fig. 5-74

(4) Release the two Hooks to remove the LCD from the Backlight guide.

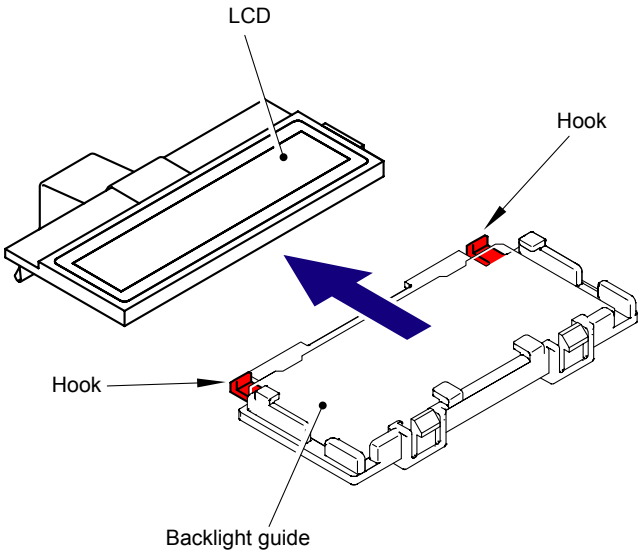


Fig. 5-75

8.30 NCU PCB ASSY (NCU model only)

(1) Remove the two Taptite pan (washer) B M4x12 DA screws, and then remove NCU FG harness ASSY 2 from the NCU shield.

(2) Remove the Screw PAN (S/P washer) M3.5x6 screw, and then remove the NCU FG harness ASSY 1 from the NCU shield.

(3) Lift the NCU shield from the Joint cover sub ASSY.

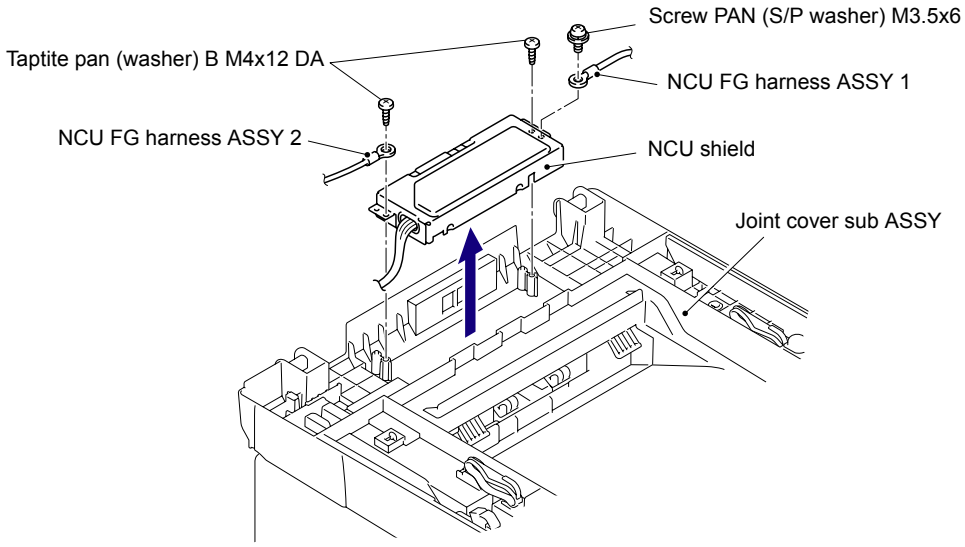


Fig. 5-76

(4) Turn the NCU shield upside down.

(5) Remove the two Taptite cup S M3x6 SR screws, and then remove the NCU PCB ASSY from the NCU shield.

(6) Disconnect the NCU harness ASSY from the NCU PCB ASSY.

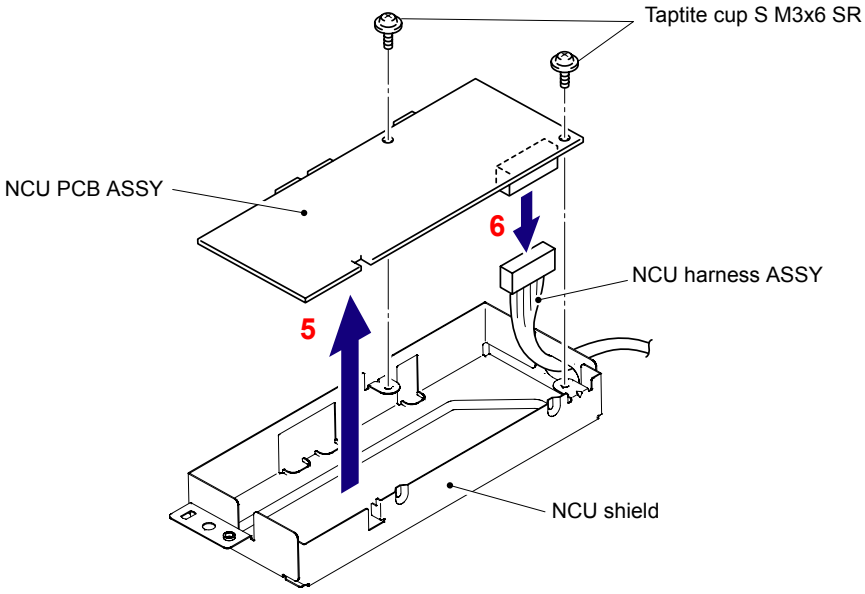


Fig. 5-77

Harness routing: Refer to "19 NCU Shield."

8.31 Battery ASSY

(1) Remove the Battery ASSY from the Side frame L.

(2) Remove the Battery ASSY from the Connector.

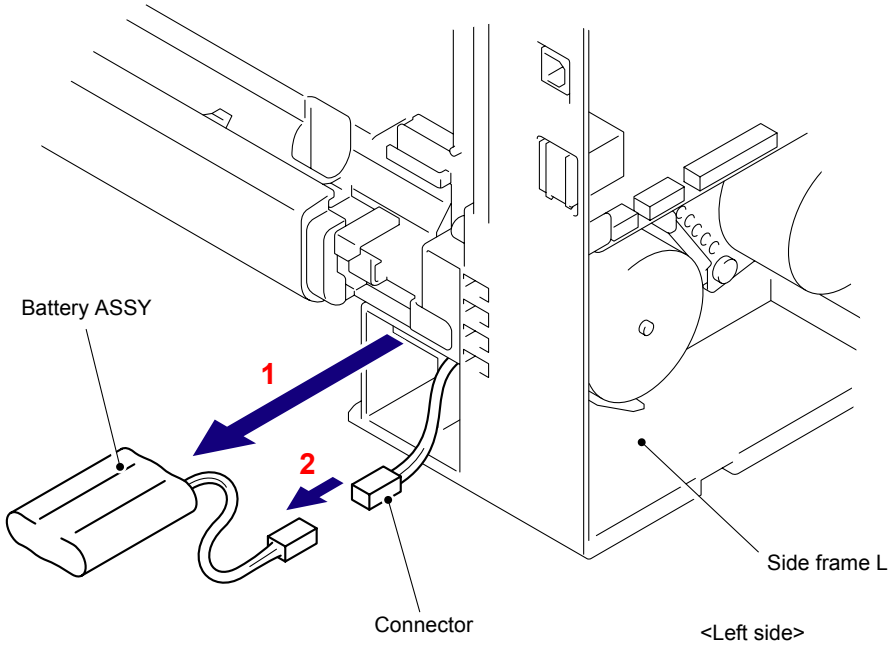


Fig. 5-78

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 ausgewechselt wird, besteht Explosionsgefahr.

8.32 Pull Arm Guide

(1) Remove the Lock claw and remove the left Pull arm guide from the Joint cover sub ASSY.

(2) Remove the right Pull arm guide in the same way.

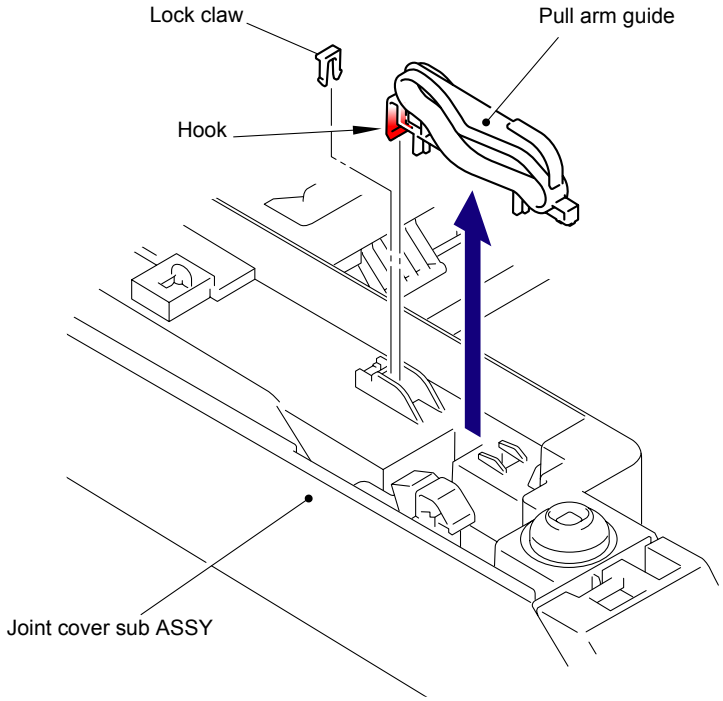


Fig. 5-79

8.33 Top Dress Cover L/R

(1) Remove the Taptite bind B M4x12 screw from the Top dress cover L.

(2) Open the Joint cover sub ASSY and remove the two Taptite cup B M3x8 screws from the Top dress cover L.

(3) Release the Hook to remove the Top dress cover L.

(4) Remove the Top dress cover R in the same way.

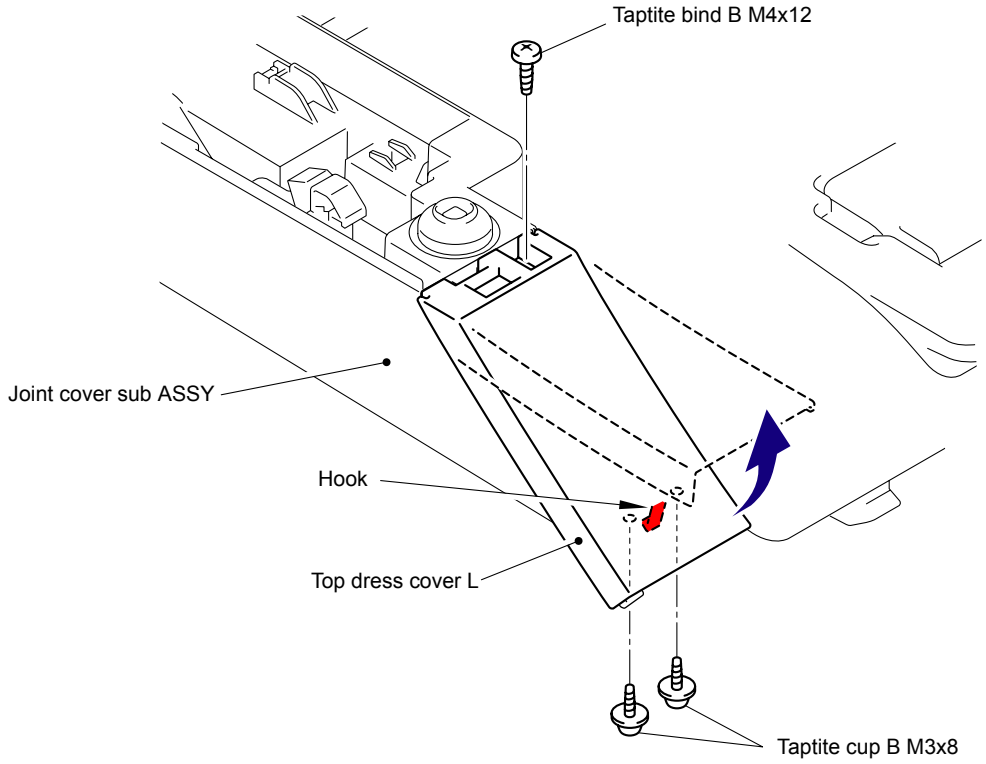


Fig. 5-80

8.34 FB Lock Lever L/R

(1) Remove the FB lock spring from the spring hook and FB lock lever L of the joint cover sub ASSY.

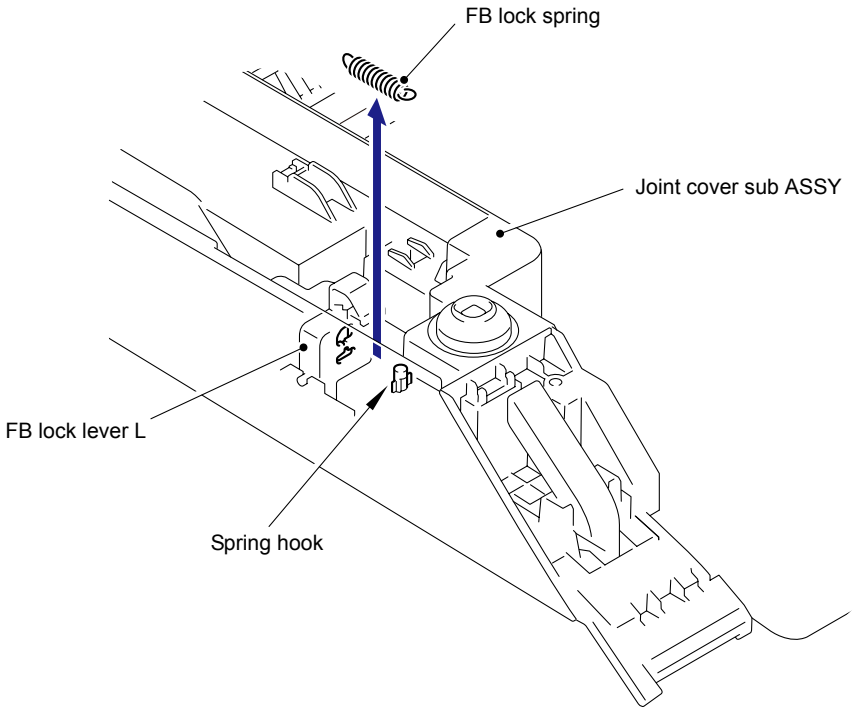


Fig. 5-81

(2) Remove the Taptite bind B M4x12 screw from the Blind cover L.

(3) Release the Hook to remove the Blind cover L from the Joint cover sub ASSY.

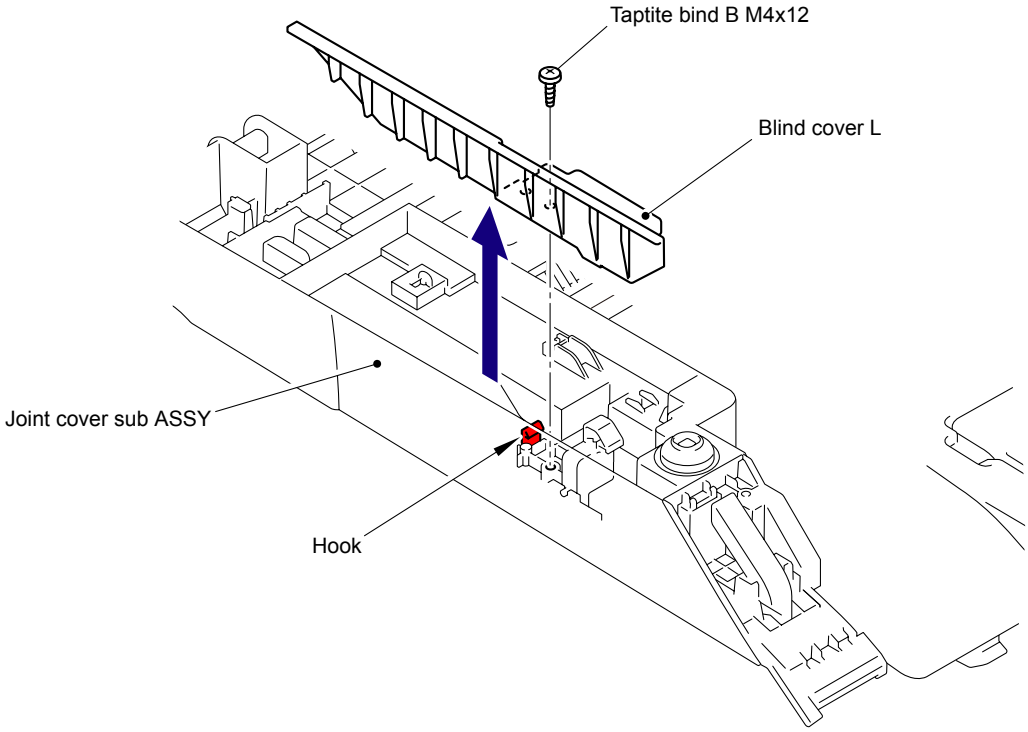


Fig. 5-82

(4) Remove the FB lock lever L from the Joint cover sub ASSY.

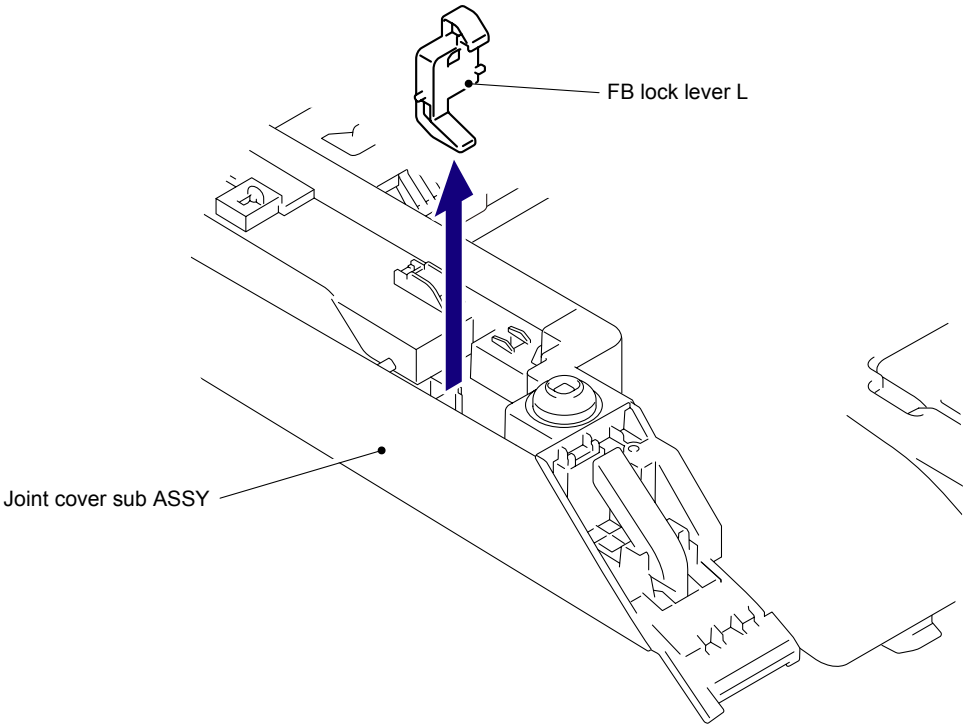


Fig. 5-83

(5) Remove the FB lock spring from the spring hook and FB lock lever R of the joint cover sub ASSY.

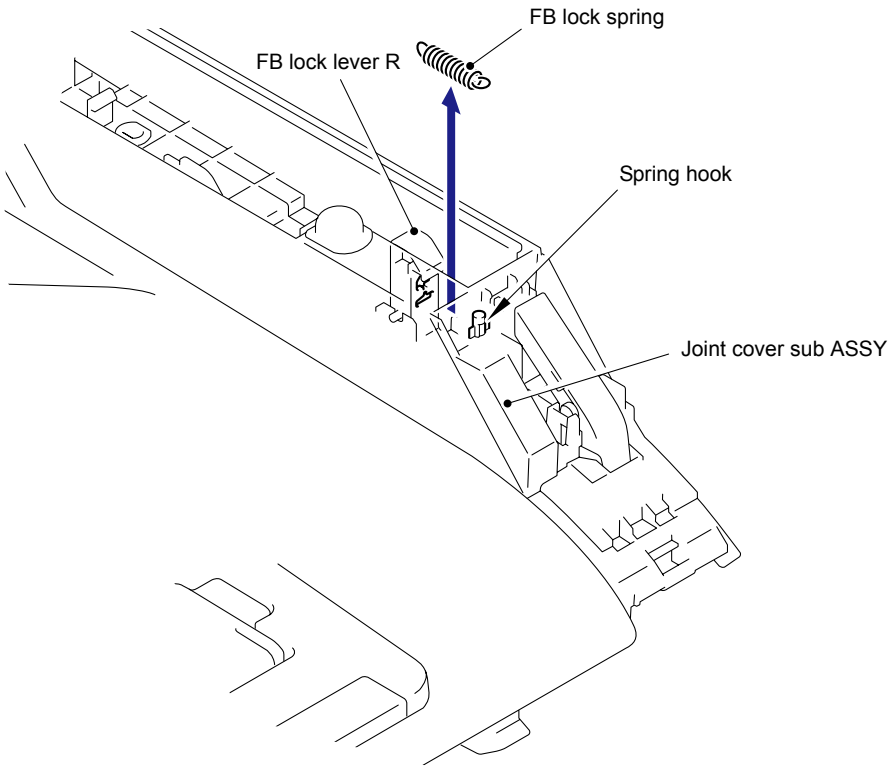


Fig. 5-84

(6) Remove the Taptite bind B M4x12 screw from the Blind cover R.

(7) Release the Hook to remove the Blind cover R from the Joint cover sub ASSY.

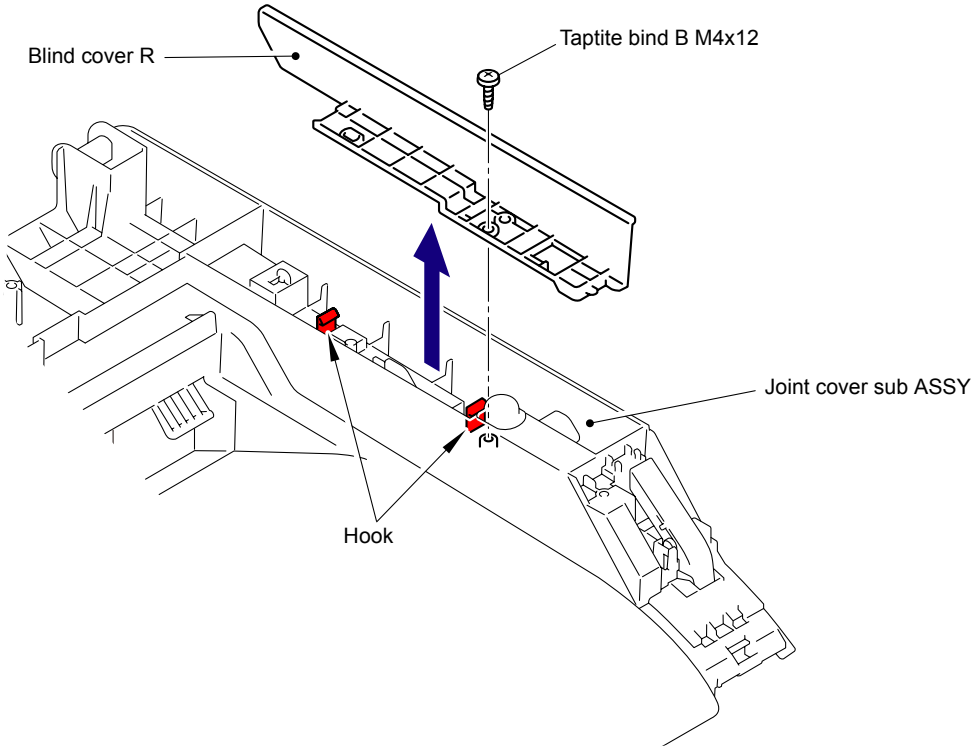


Fig. 5-85

(8) Remove the FB lock lever R from the Joint cover sub ASSY.

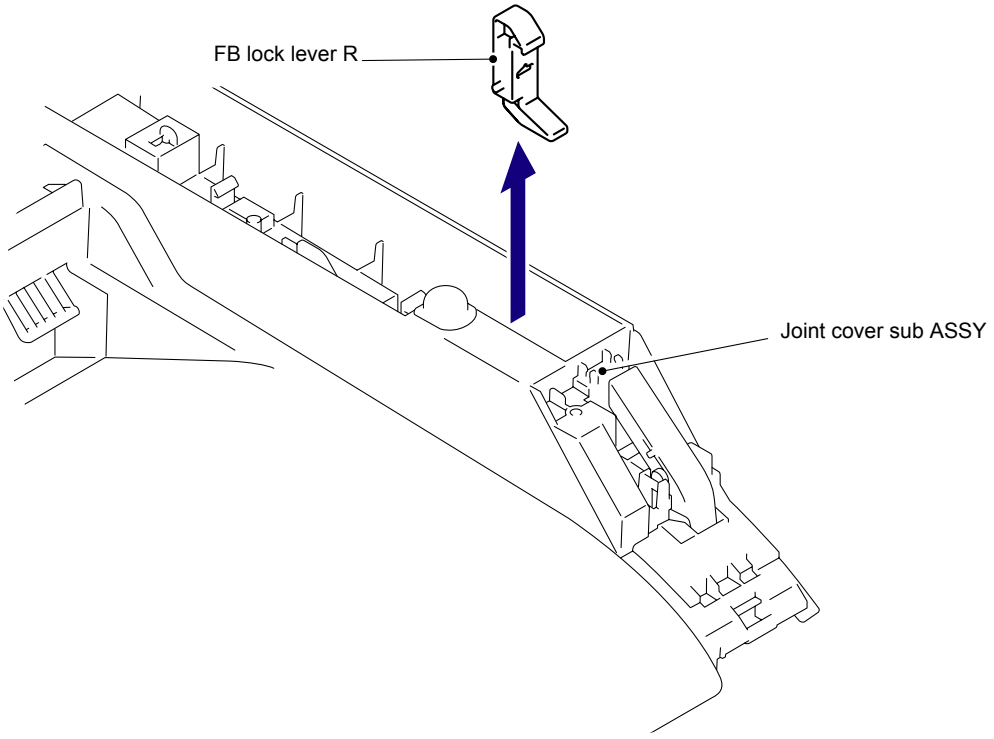


Fig. 5-86

8.35 Joint Cover Lock Spring/Joint Cover Lock Lever

(1) Remove the “A” of Joint cover lock spring from the “B” of the left side of Joint cover lock lever, and remove the “C” of the Joint cover lock spring from the “D” of the Joint cover lock lever.

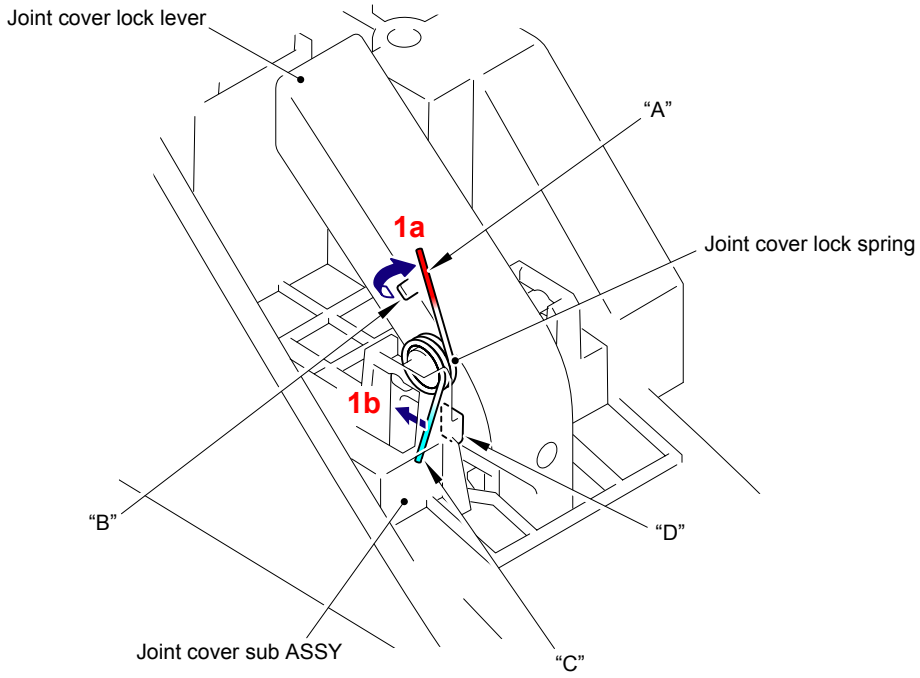


Fig. 5-87

(2) Release the two Pins of the left side of Joint cover lock lever, and remove the Joint cover lock lever and Joint cover lock spring from the Joint cover sub ASSY.

(3) Remove the Joint cover lock lever and Joint cover lock spring on the right side in the same way.

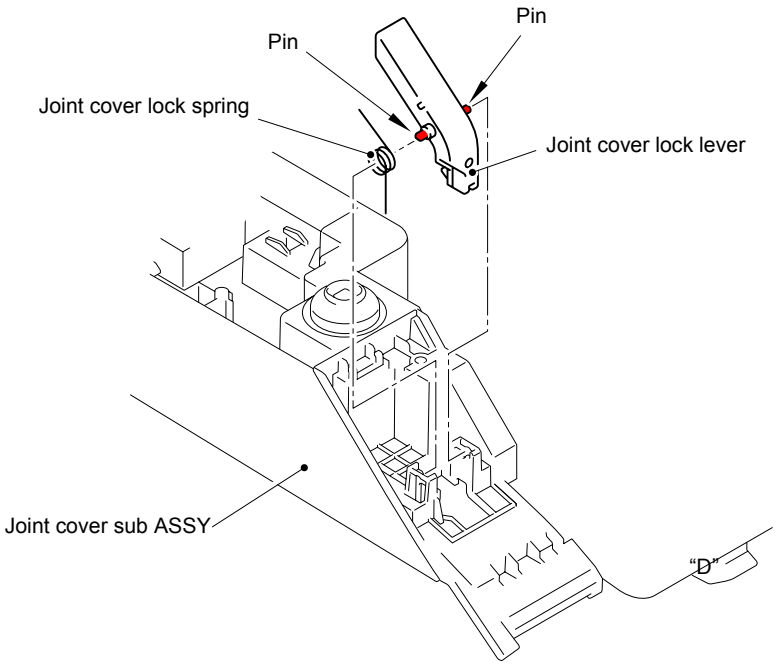


Fig. 5-88

8.36 Wireless LAN PCB ASSY (Wireless LAN model only)

(1) Disconnect the three Connectors (CN1, CN2, CN13) and cables from the Main PCB ASSY.

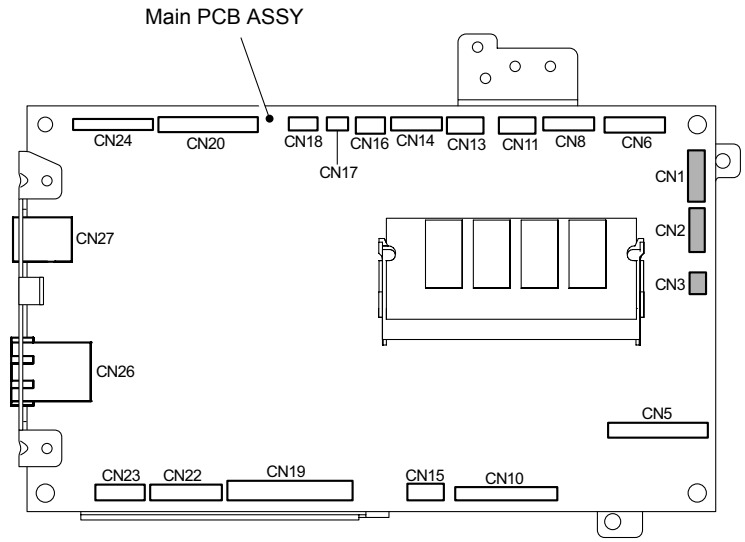


Fig. 5-89

(2) Remove the two Taptite bind B M4x12 screws, and then release the seven Hooks to remove the Front cover top ASSY from the Main body.

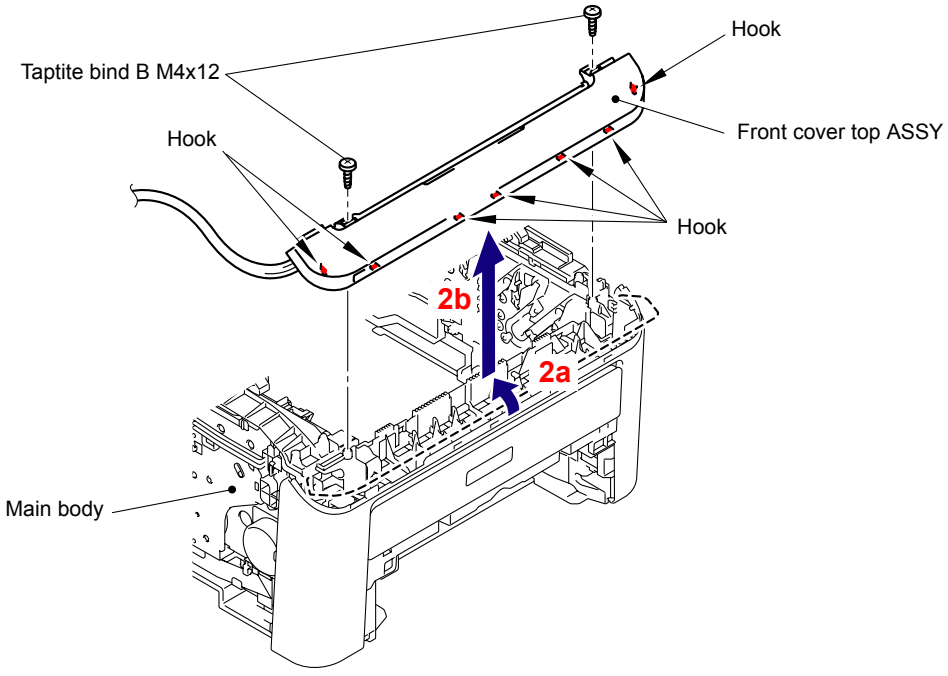


Fig. 5-90

(3) Release the all harnesses in the USB holder.

(4) Release the Hook and hold up the Wireless LAN PCB ASSY slightly in the direction of the arrow 4.

(5) Turn over the Panel harness protective sheet in the direction of the arrow 5.

(6) Remove the Wireless LAN PCB ASSY from the Front cover top ASSY.

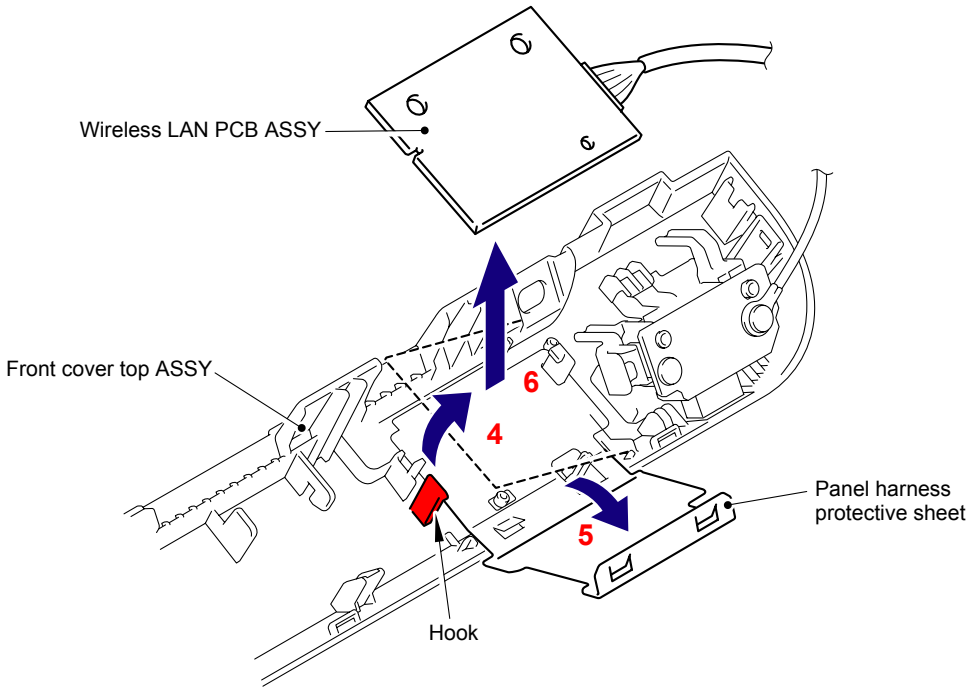


Fig. 5-91

(7) Remove the Panel harness protective sheet from the Front cover top ASSY.

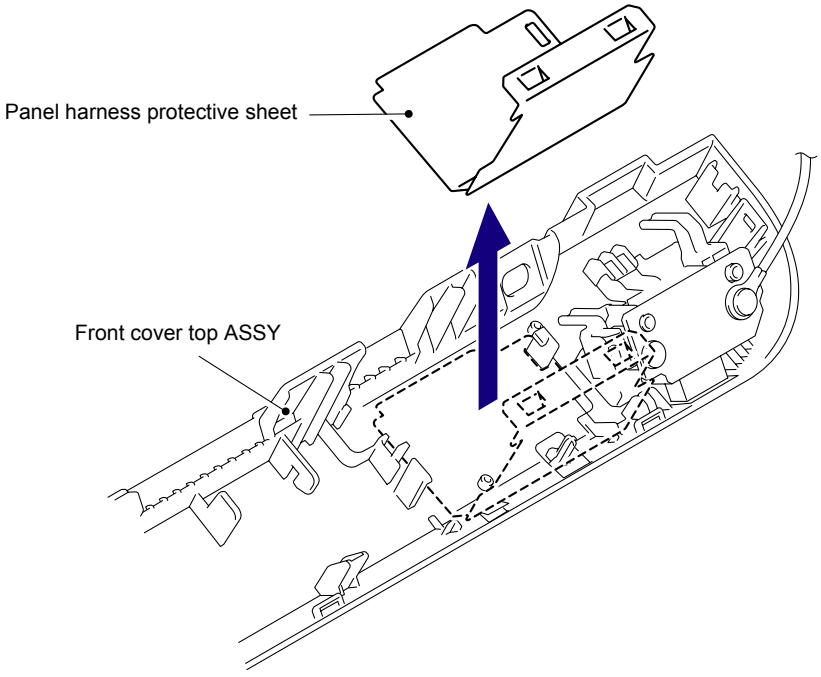


Fig. 5-92

(8) Disconnect the Connector of the WLAN-MAIN harness ASSY from the Wireless LAN PCB ASSY.

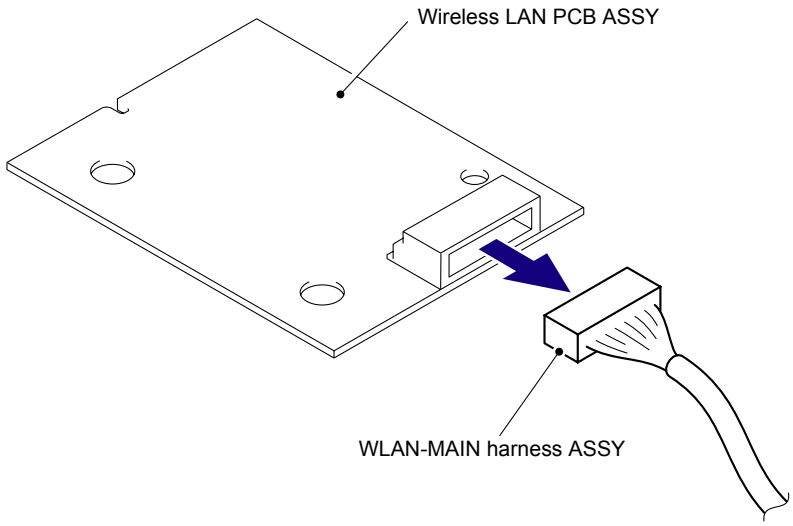


Fig. 5-93

Harness routing: Refer to "24 Front Cover Top ASSY (Wireless LAN PCB ASSY, Speaker Unit)."

8.37 USB Direct Interface Relay PCB ASSY (USB direct interface model only)

(1) Remove the two Taptite bind B M3x8 screws and FG harness.

(2) Remove the USB direct interface relay PCB ASSY from the Front cover top ASSY.

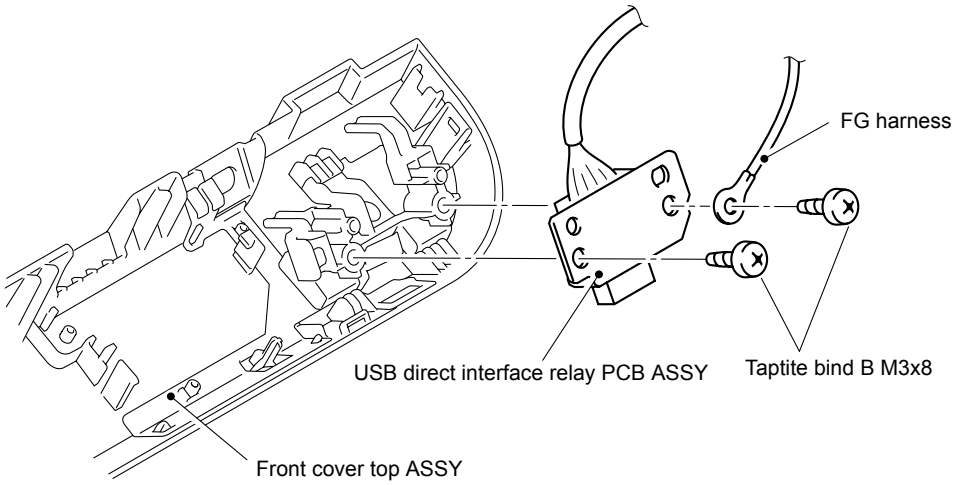


Fig. 5-94

(3) Disconnect the Connector of the USB A-MAIN relay harness ASSY from the USB direct interface relay PCB ASSY.

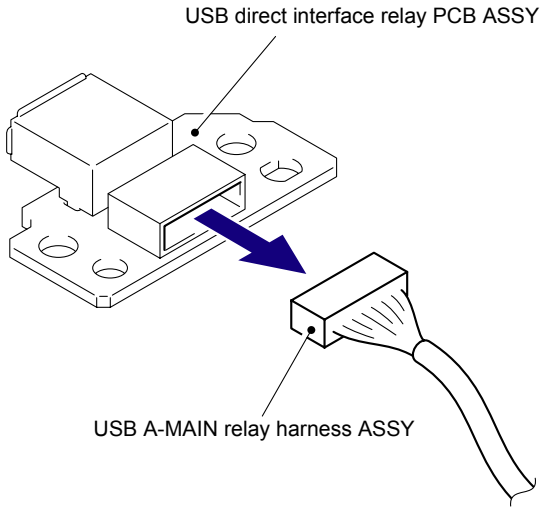


Fig. 5-95

Harness routing: Refer to "23 Front Cover Top ASSY (USB Direct Interface Relay PCB ASSY)."

(4) Remove the two Taptite bind B M3x8 screws, and then remove the USB holder from the Front cover top ASSY.

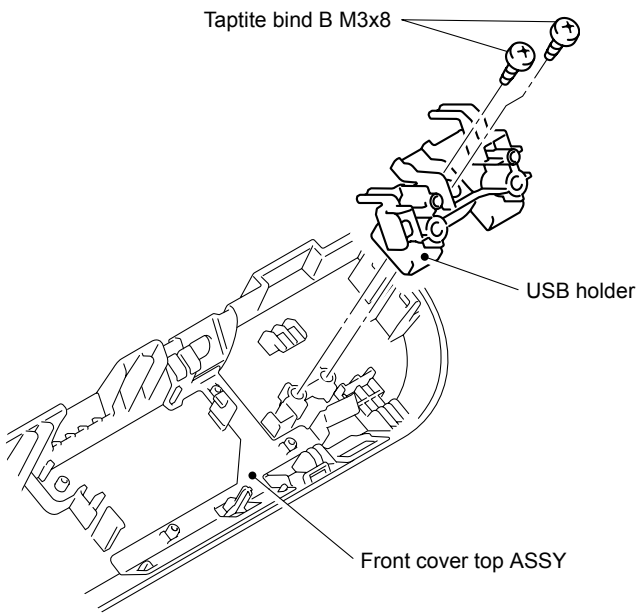


Fig. 5-96

(5) Remove the Panel ground plate from the Front cover top ASSY.

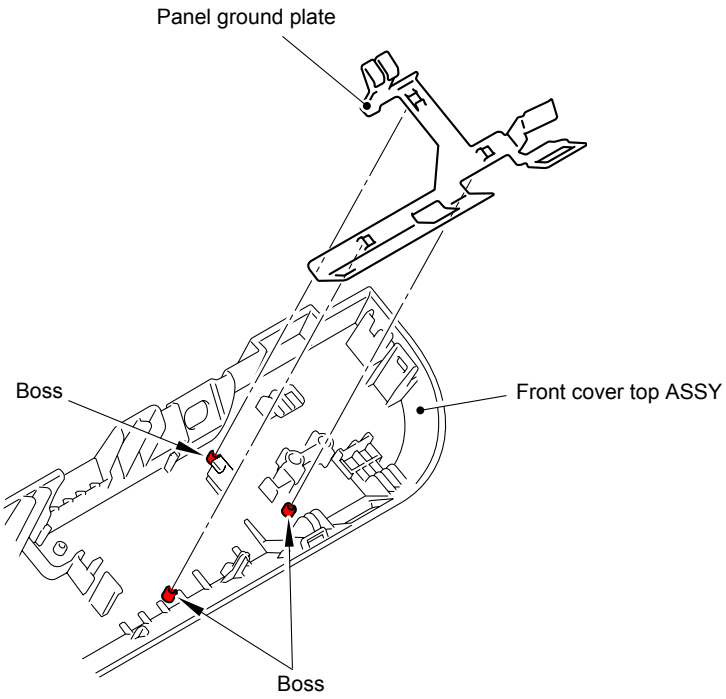


Fig. 5-97

8.38 Panel Ground Plate 2 (Only the models without the USB direct interface)

(1) Remove the two Taptite bind B M3x8 screws and FG harness.

(2) Remove the Panel ground plate 2 from the Front cover top ASSY.

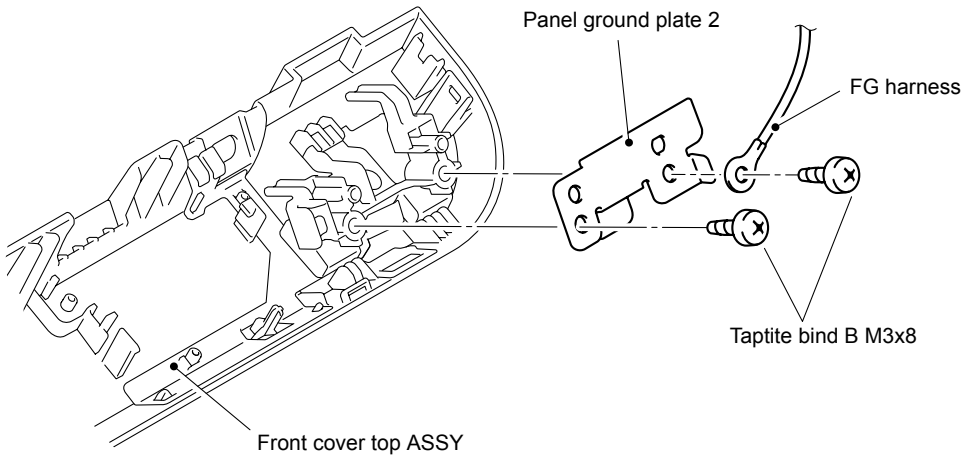


Fig. 5-98

(3) Remove the two Taptite bind B M3x8 screws, and then remove the USB holder from the Front cover top ASSY.

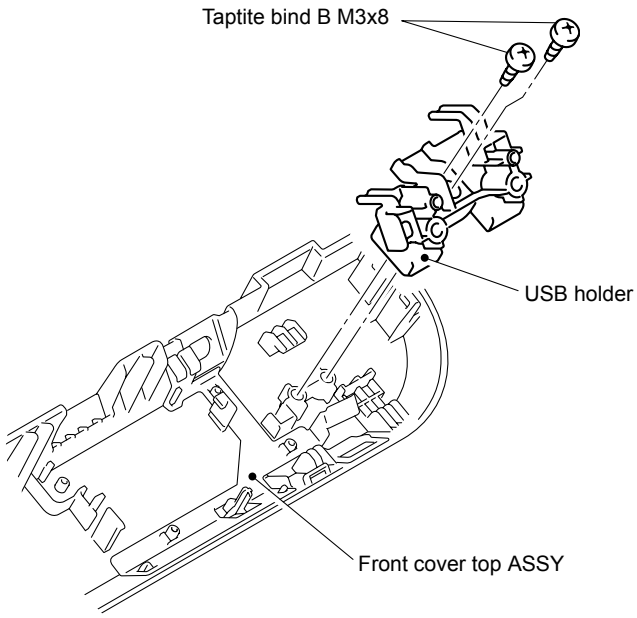


Fig. 5-99

(4) Remove the Panel ground plate from the Front cover top ASSY.

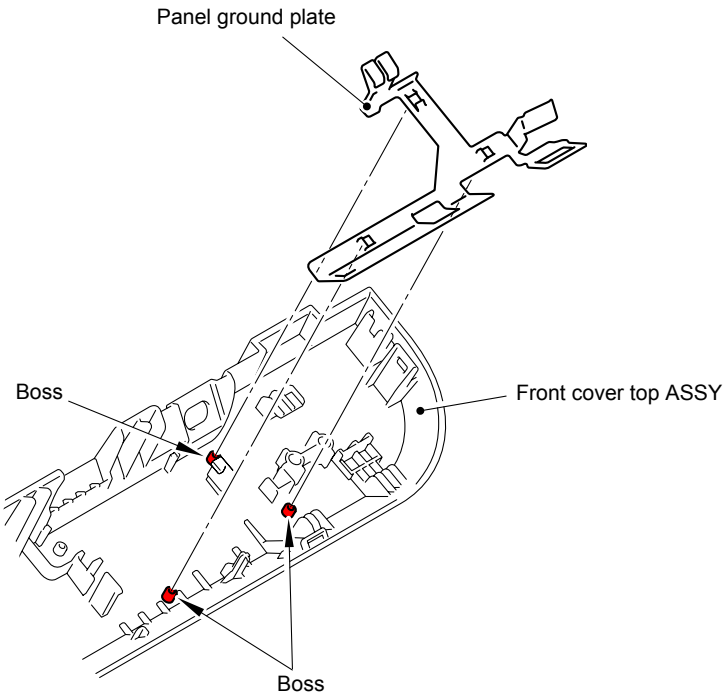


Fig. 5-100

8.39 Speaker Unit/Front Cover Top Base

(1) Release the Hook by pushing the “A” and remove the Speaker spring from the Front cover top base by sliding it in the direction of the arrow.

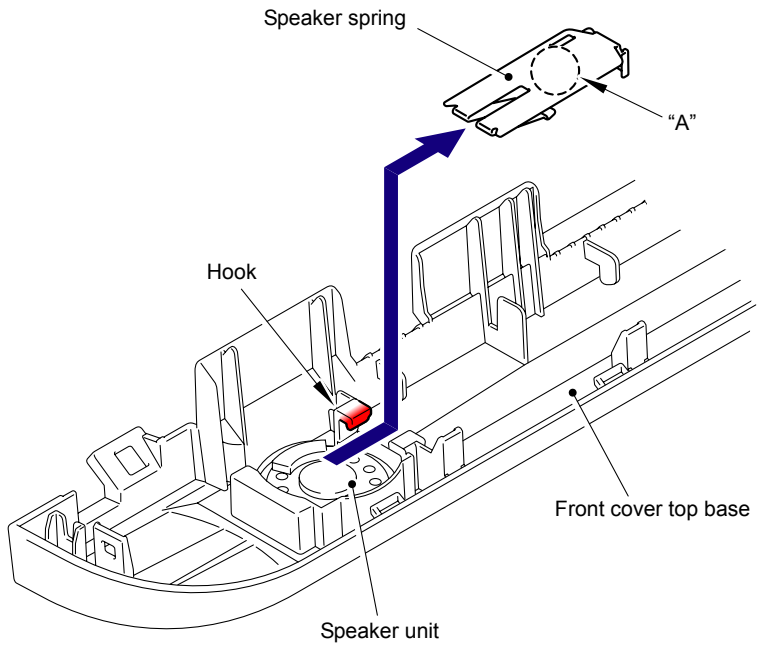


Fig. 5-101

(2) Remove the Speaker unit and Speaker spacer from the Front cover top base.

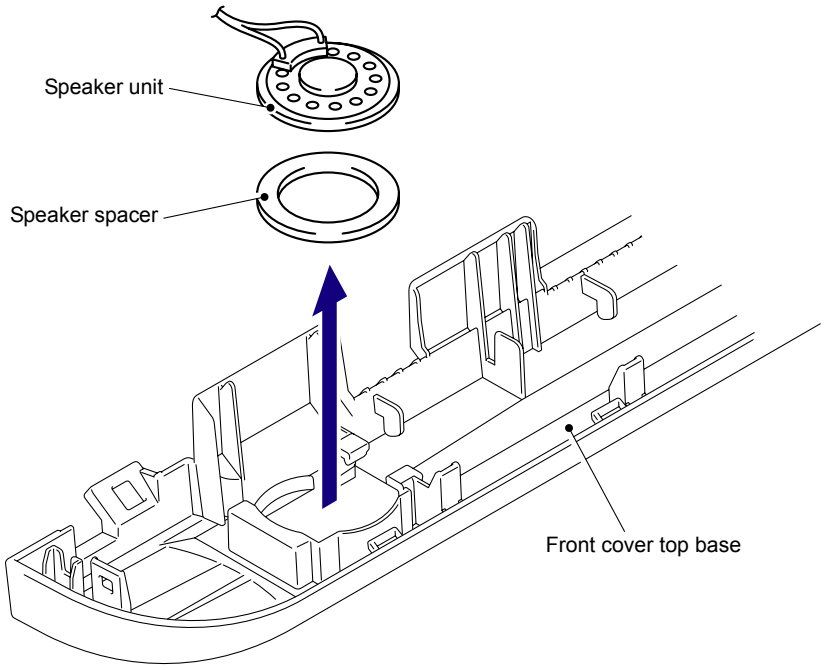


Fig. 5-102

Harness routing: Refer to “24 Front Cover Top ASSY (Wireless LAN PCB ASSY, Speaker Unit).”

8.40 Front Cover

(1) Disconnect the Connector (CN6) from the Main PCB ASSY.

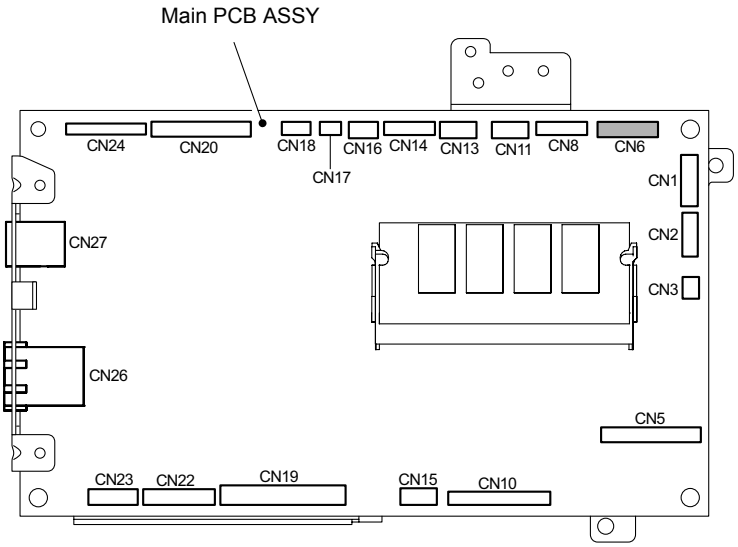


Fig. 5-103

(2) Disconnect the Connector (CN13) and cables from the Engine PCB ASSY.

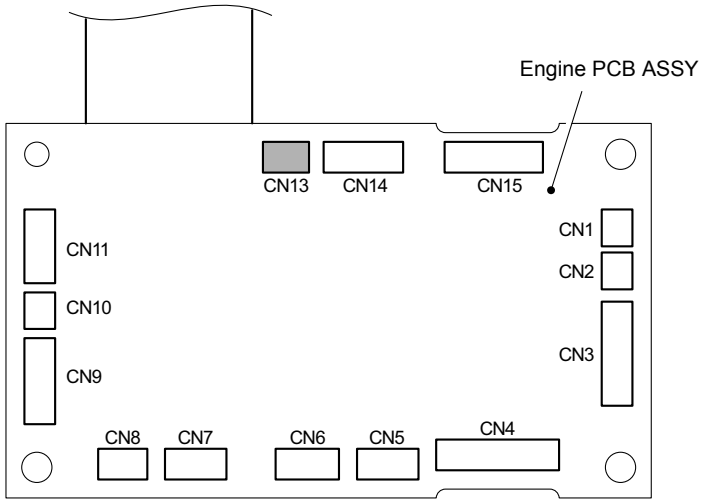


Fig. 5-104

(3) Remove the two Taptite bind B M4x12 screws from the Front cover.

(4) Release the six Hooks and two Bosses to remove the Front cover from the Main body.

(5) Remove the two FG plate from the Front cover.

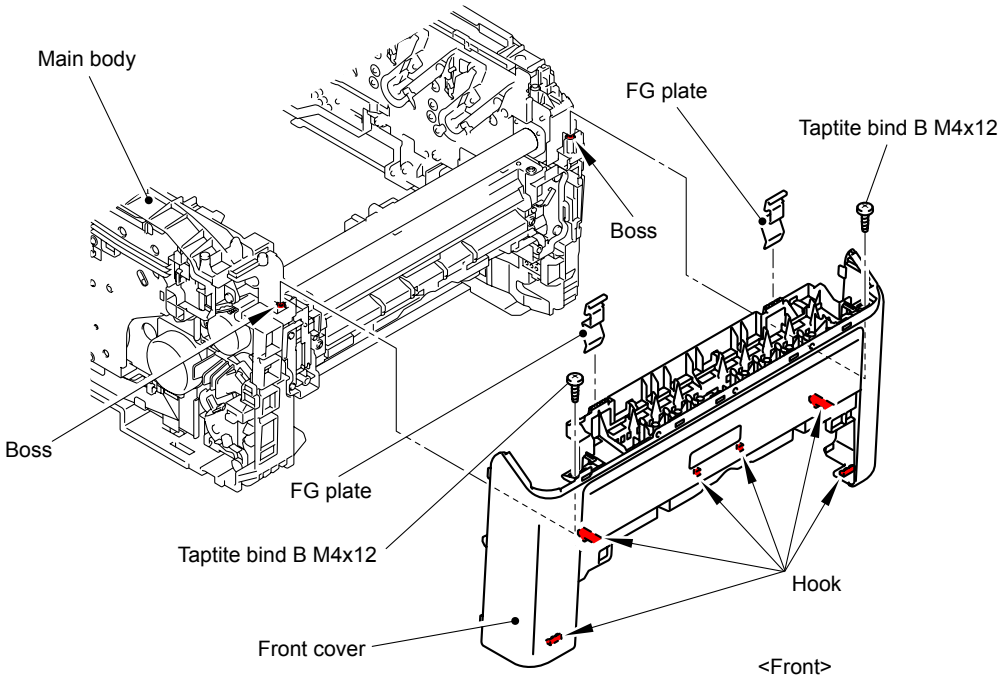


Fig. 5-105

8.41 Manual Feed Slot ASSY

(1) Release the two Bosses to remove the Manual feed slot ASSY from the Front cover.

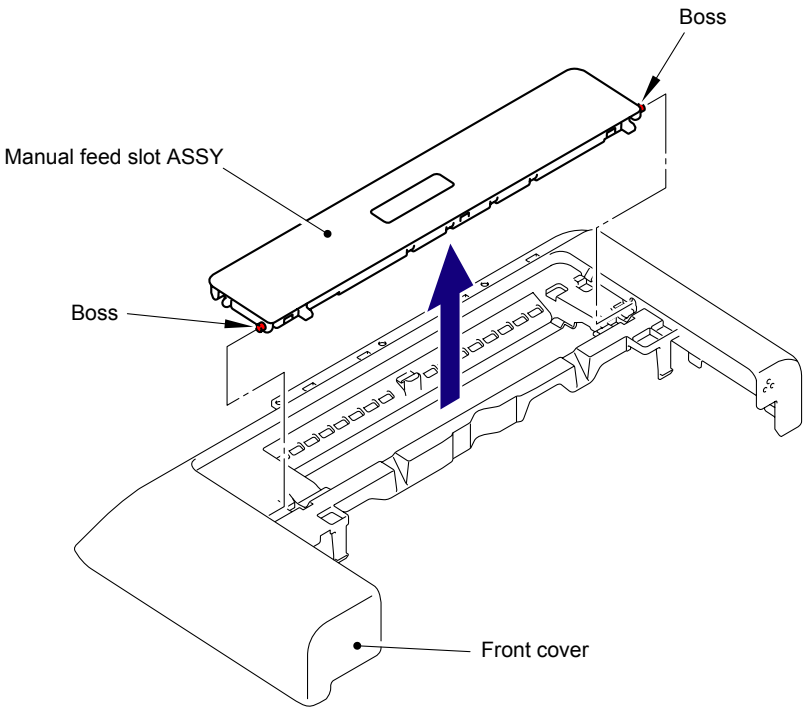


Fig. 5-106

8.42 TC Arm Spring

(1) Disconnect the FFC harness:MAIN-LED CTL (CN24) from the Main PCB ASSY.

Note:

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

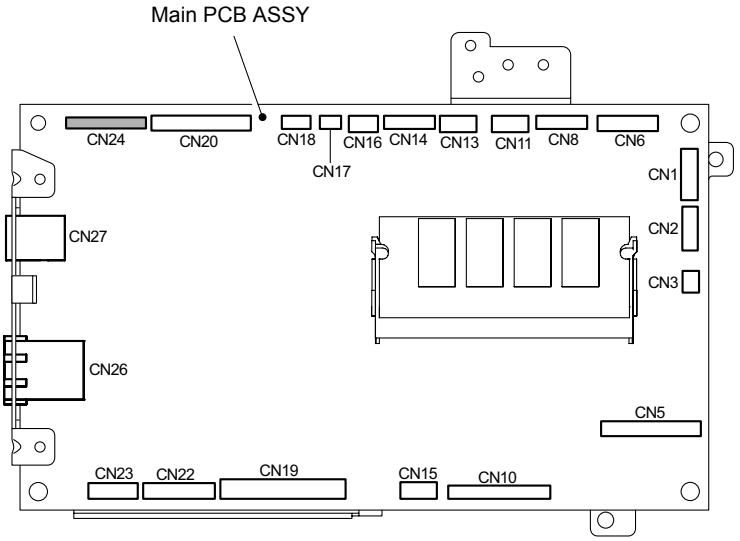


Fig. 5-107

(2) Release the Hook to remove the LED power relay PCB ASSY from the Side frame L.

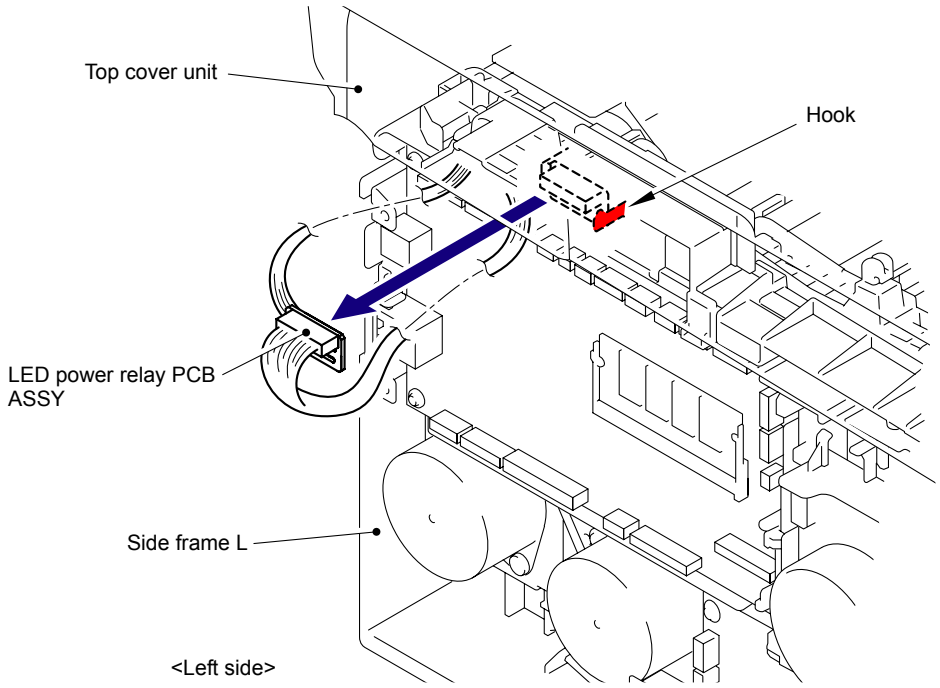


Fig. 5-108

(3) Disconnect the Connector from the LED power relay PCB ASSY.

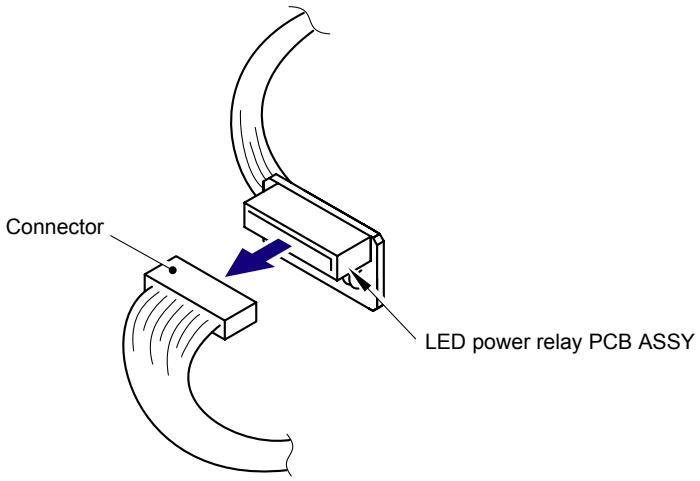


Fig. 5-109

(4) Remove the Taptite cup S M3x6 SR screw, and then remove the LED FG harness from the Main PCB shield plate.

Note:

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

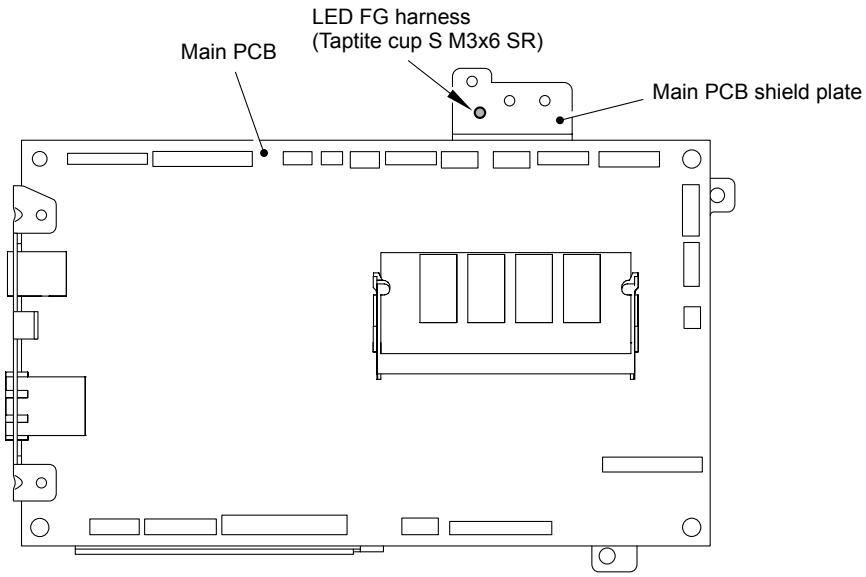


Fig. 5-110

(5) Remove the Relay-LED harness ASSY and FFC harness: MAIN-LED CTL of the Joint cover sub ASSY from the Side frame L.

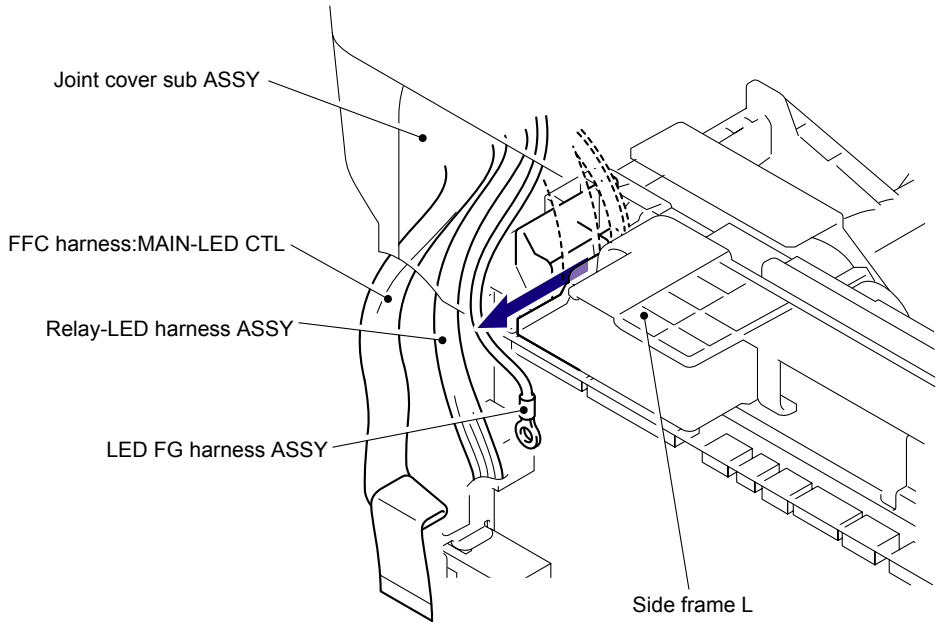


Fig. 5-111

(6) Remove the TC arm spring from the Top cover arm L.

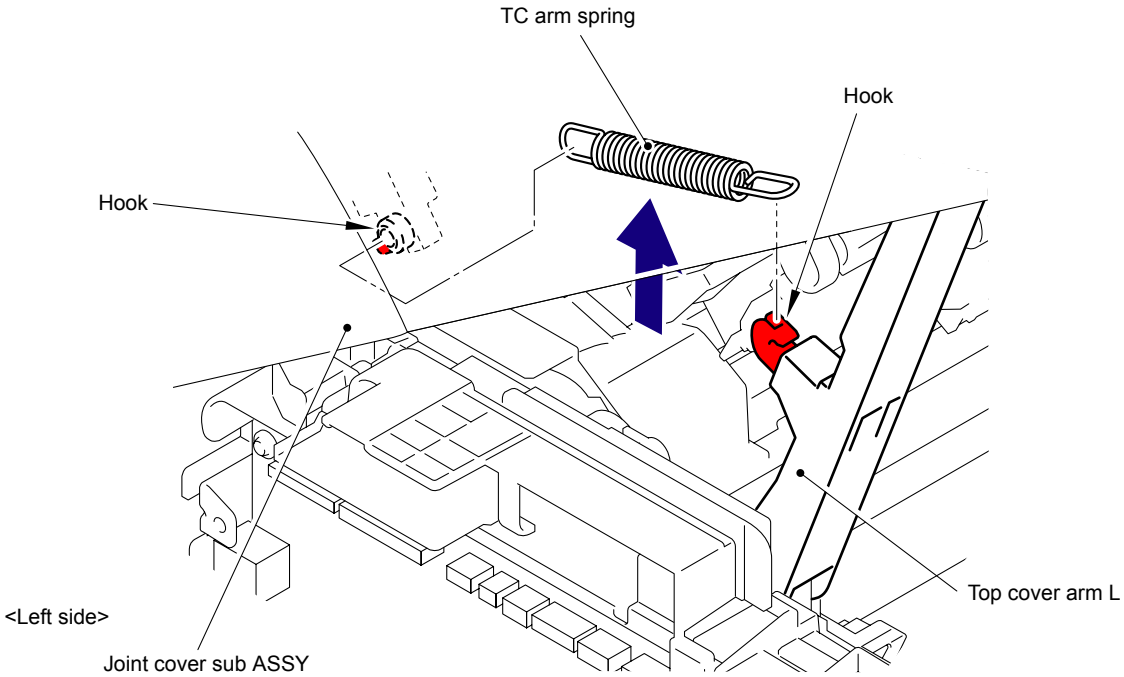


Fig. 5-112

(7) Remove the TC arm spring from the Top cover arm R.

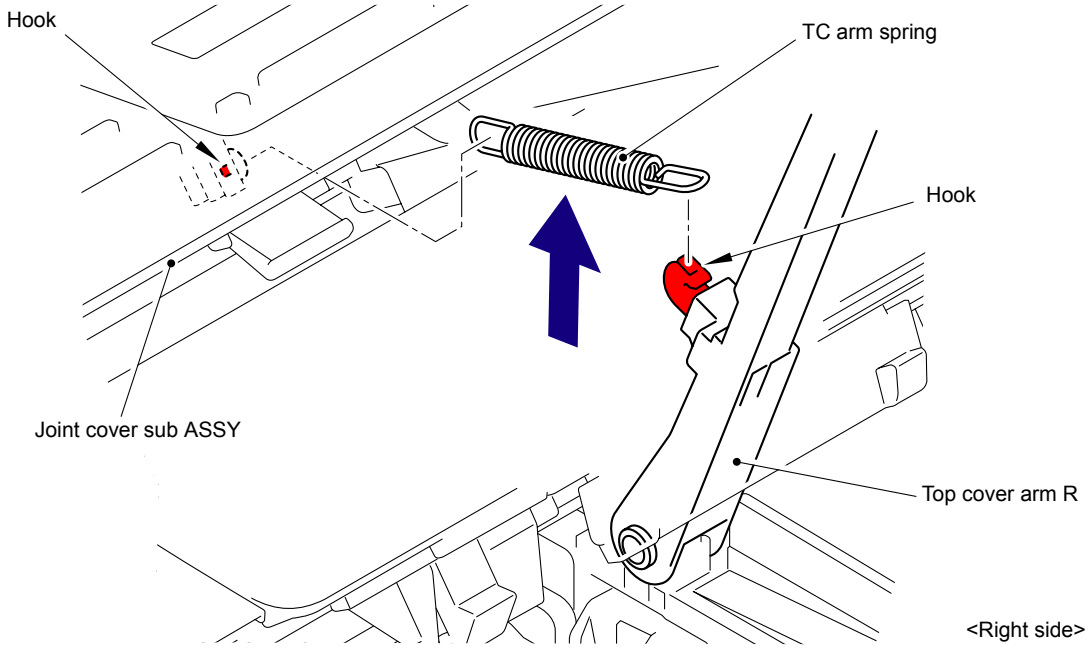


Fig. 5-113

Assembling Note:

The assembling direction of the TC arm spring is fixed.
Make sure to assemble the TC arm spring in the direction shown in the figure below.

- Make sure to assemble the TC arm spring in a way that the end of the spring hook on the joint cover sub ASSY side comes to the bottom.
- Make sure to assemble the spring hook of the TC arm spring in a way that the end with a fold comes to the top cover arm side and the end without a fold comes to the joint cover sub ASSY side.

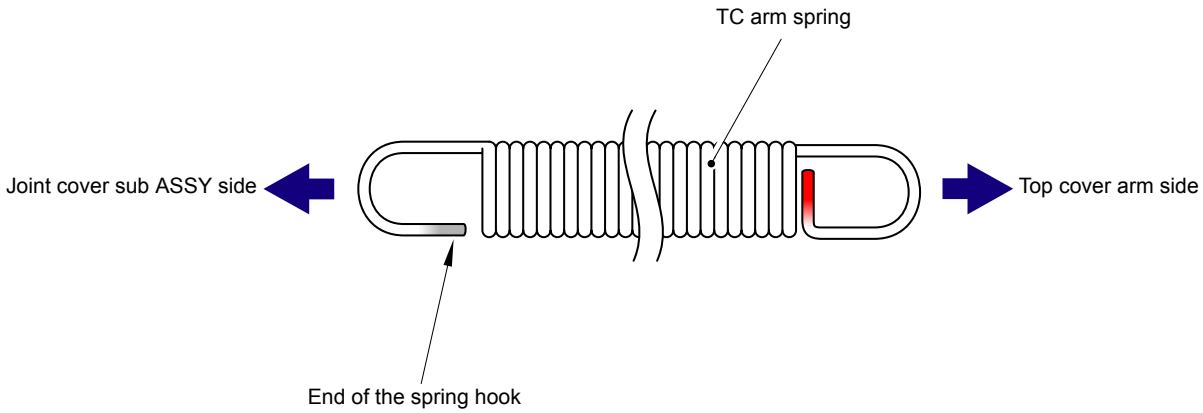


Fig. 5-114

8.43 Arm Guide L Cover

(1) Remove the Arm guide L cover from the Arm guide L.

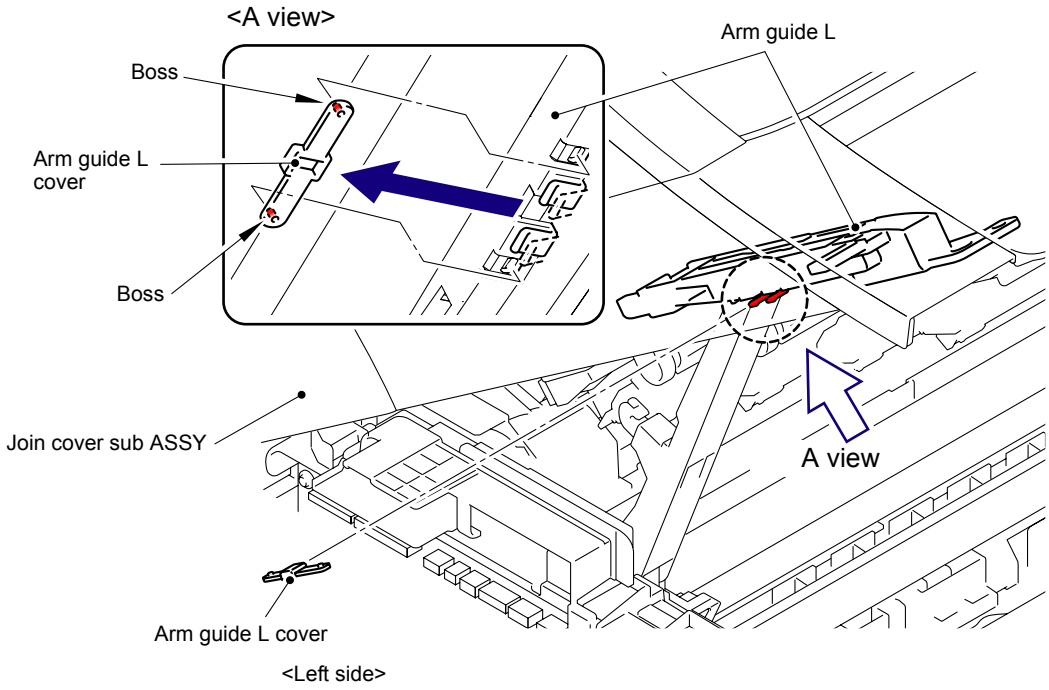


Fig. 5-115

8.44 Joint Cover Sub ASSY

(1) Remove the Pin of the Top cover arm L from the “A” of the Arm guide L.

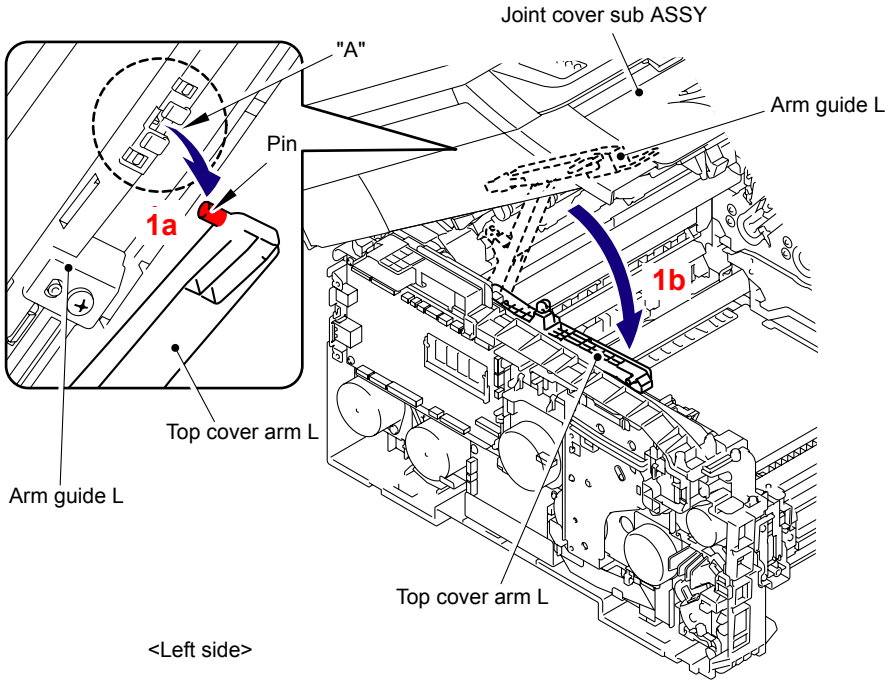


Fig. 5-116

(2) Remove the Pin of the Top cover arm R from the “B” of the Arm guide R.

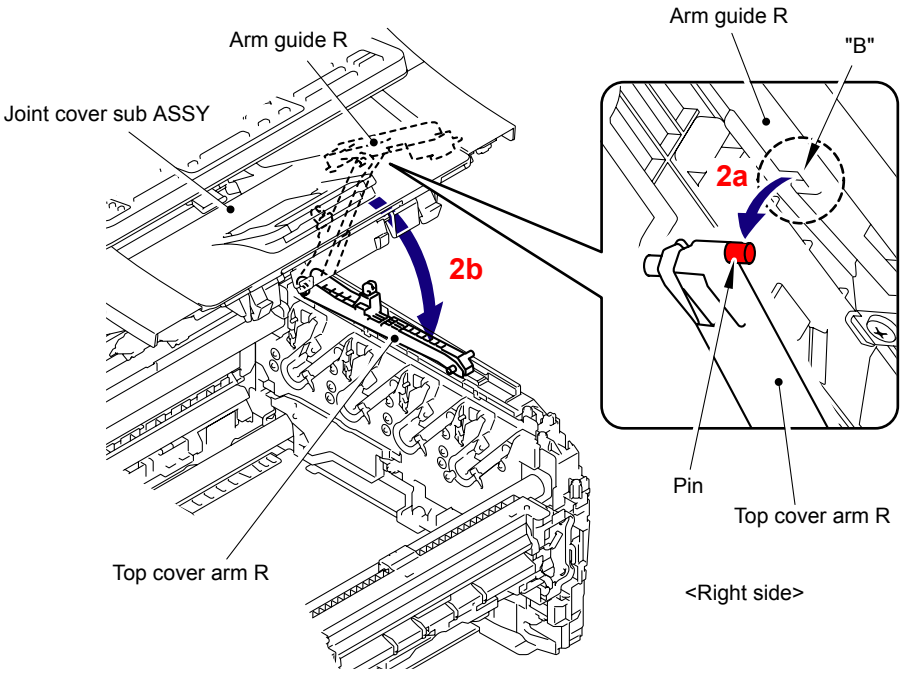


Fig. 5-117

Assembling Note:

When assembling the Arm guide R onto the Top cover arm R, make sure to follow the procedure described below.

1) Slide the Link push arm to the rearmost and insert Pin A of the Top cover arm R to “C” of the Link push arm.

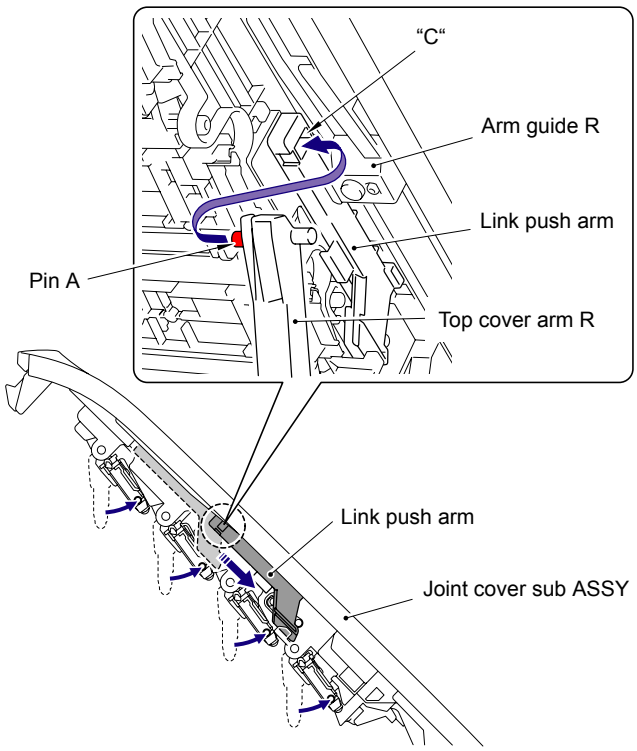


Fig. 5-118

2) Be sure to mount it by inserting Pin B of the Top cover arm R into “B” of the Arm guide R.

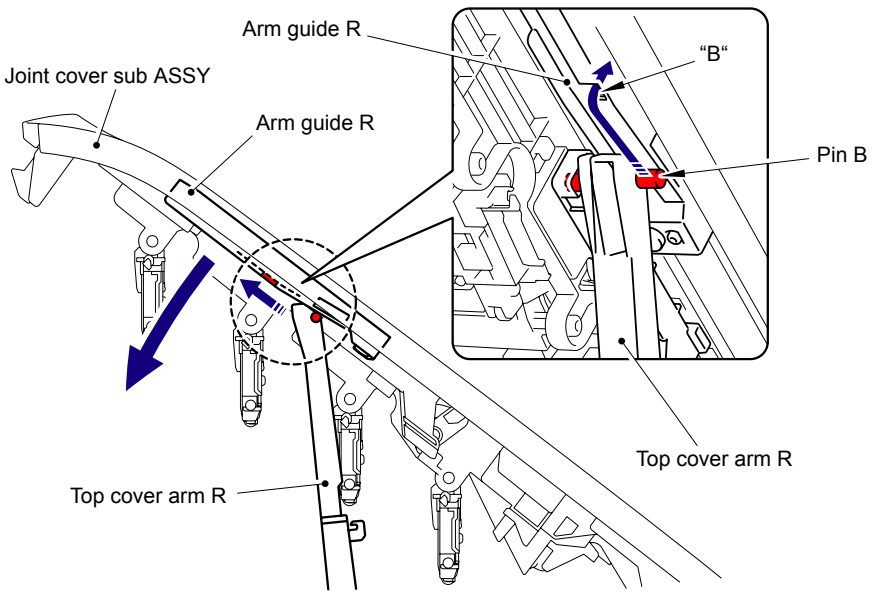


Fig. 5-119

(3) Remove the Joint cover sub ASSY from the Main body.

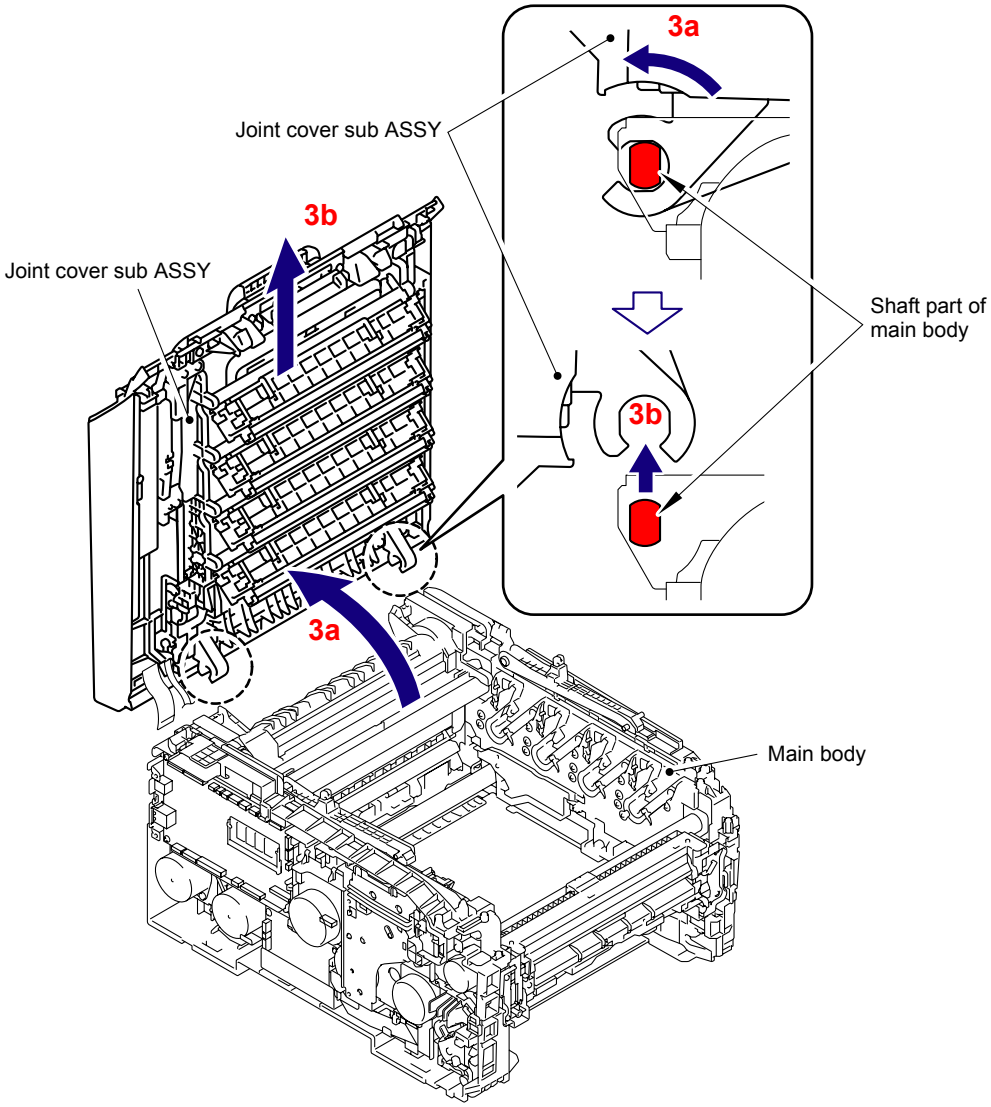


Fig. 5-120

8.45 Inner Chute ASSY 2

(1) Remove the two Taptite bind B M4x12 screws from the Inner chute ASSY 2.

(2) Release the two Bosses to remove the Inner chute ASSY 2 from the Joint cover sub ASSY.

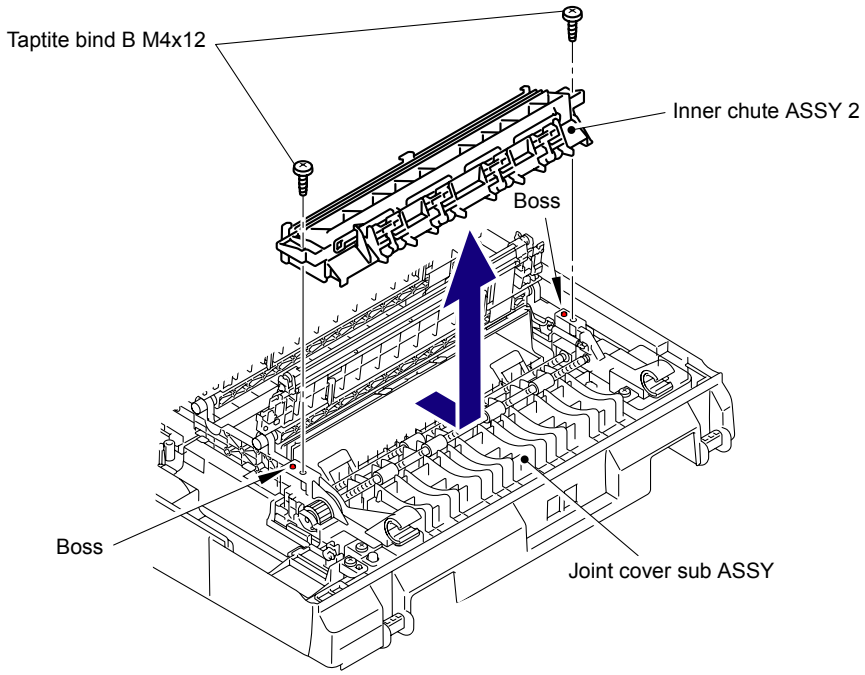


Fig. 5-121

Assembling Note:

When assembling the Inner chute ASSY 2, make sure to assemble it in a way that the two “A” of the Joint cover sub ASSY come above the Inner chute ASSY 2.

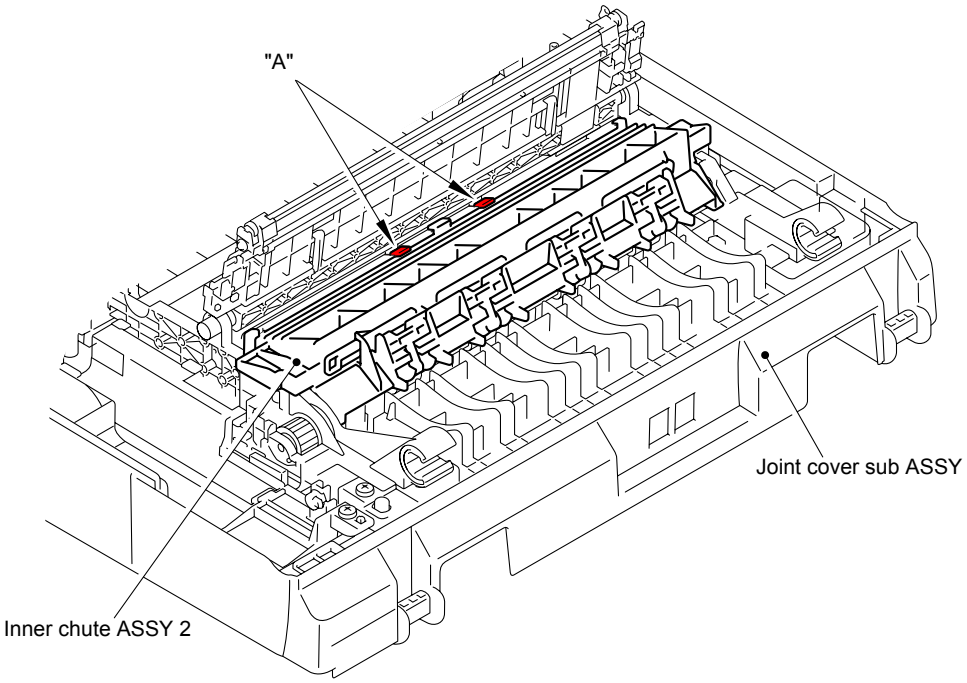


Fig. 5-122

8.46 TC Release Lever

(1) Remove the two Taptite bind B M4x12 screws, and then remove the Arm guide L from the Joint cover sub ASSY.

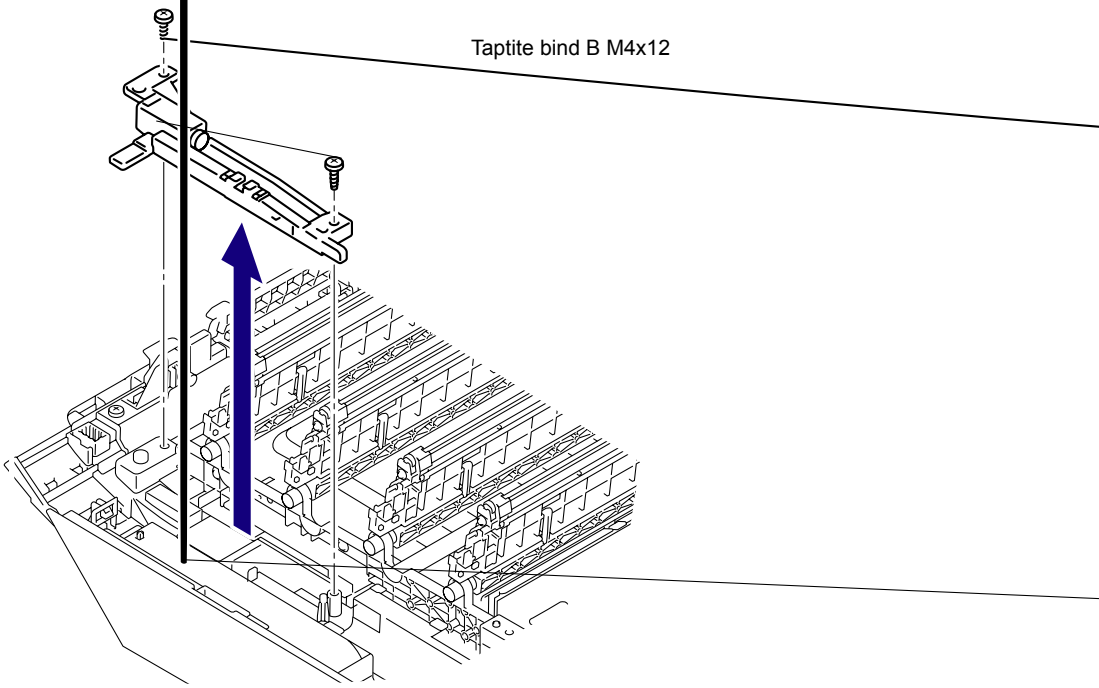


Fig. 5-123

(2) Remove the two Taptite bind B M4x12 screws, and then remove the TC harness cover 2 from the Joint cover sub ASSY.

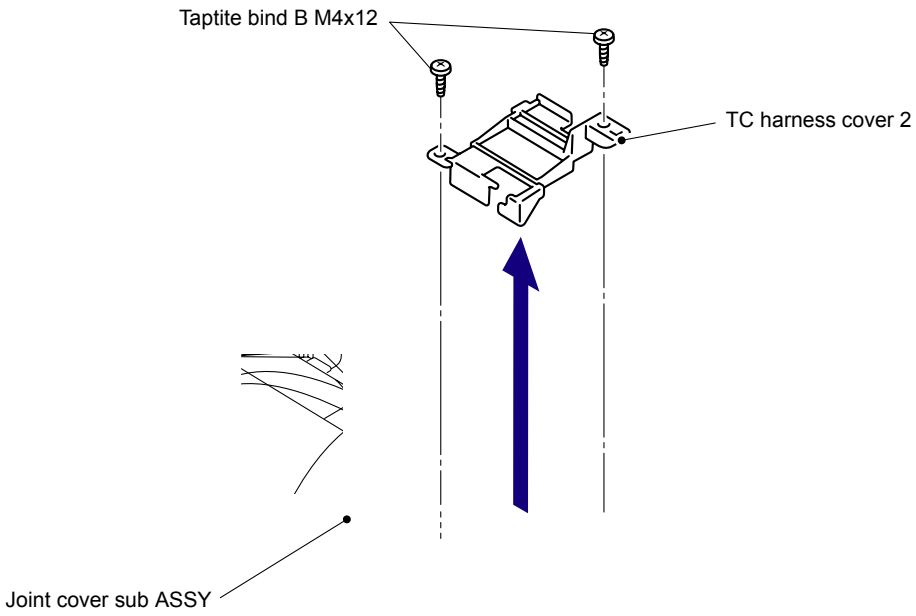


Fig. 5-124

(3) Tilt the TC harness cover 1 in the direction of the arrow 3a, remove the three Hooks, and remove the TC harness cover 1 from the Joint cover sub ASSY.

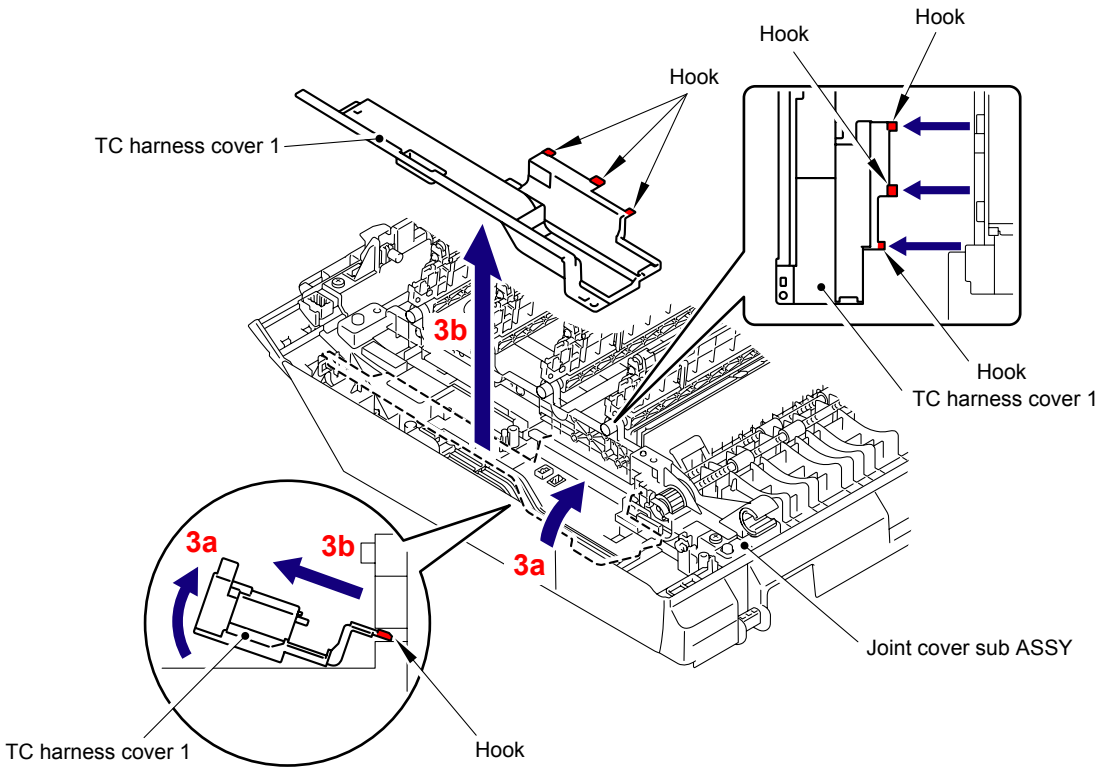


Fig. 5-125

(4) Remove the two Taptite bind B M4x12 screws, and then remove the Arm guide R from the Joint cover sub ASSY.

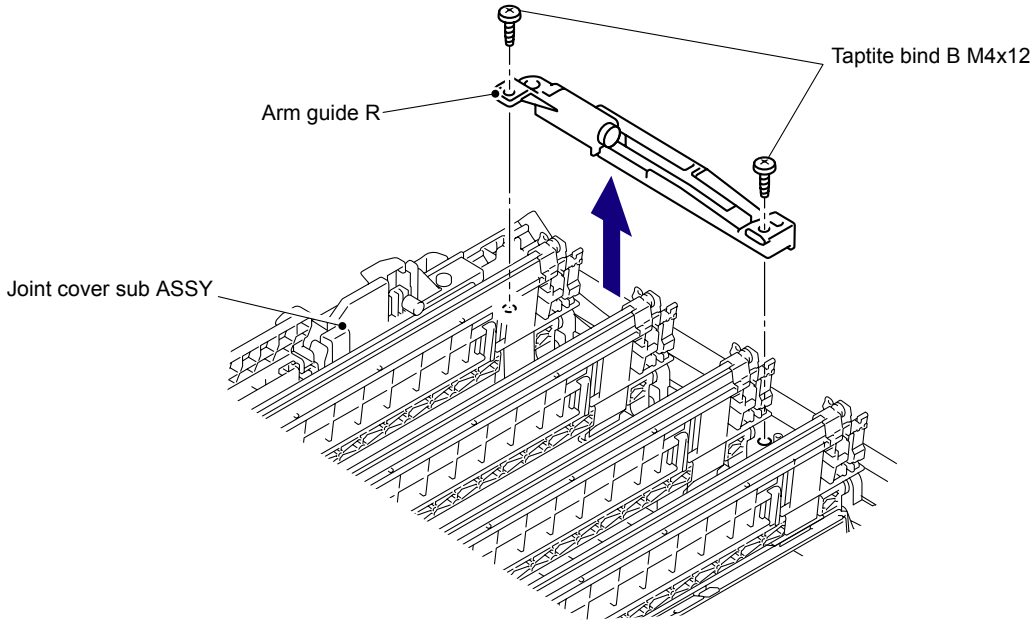


Fig. 5-126

(5) Remove the six Taptite cup B M3x8 screws and two Taptite cup S M3x6 SR screws, and then remove the Back up plate from the Joint cover sub ASSY.

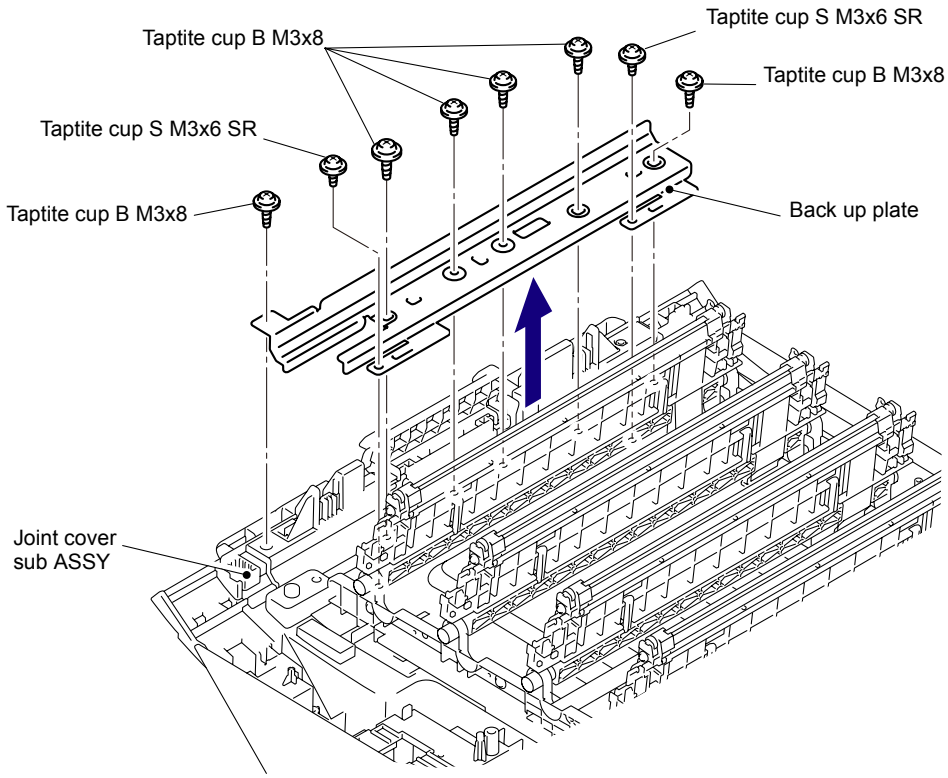


Fig. 5-127

(6) Remove the four Taptite bind B M4x12 screws, and then remove the Sub frame ASSY from the Joint cover sub ASSY.

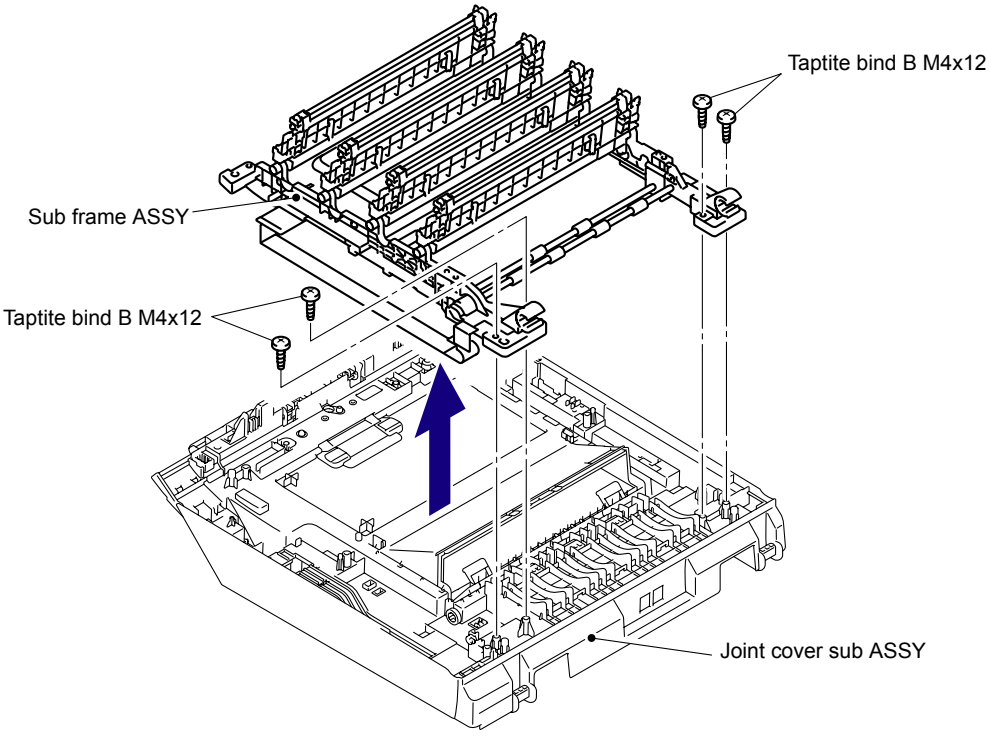


Fig. 5-128

(7) Remove the four Taptite bind B M4x12 screws from the Joint cover sub ASSY.

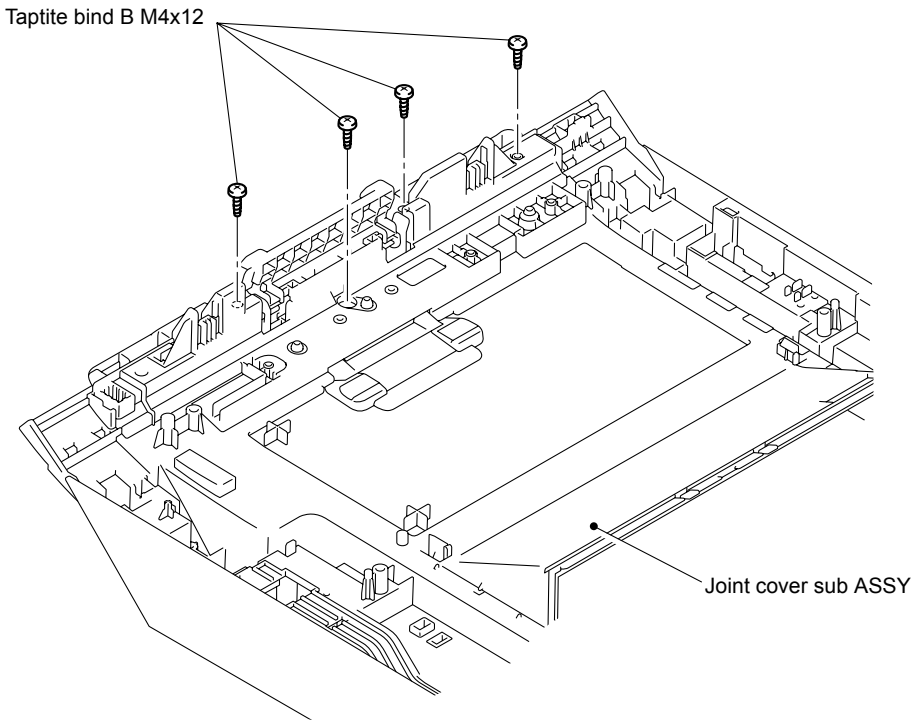


Fig. 5-129

(8) Remove the Taptite bind B M4x12 screw, and then release the nine Hooks to remove the Inner chute ASSY 1 from the Joint cover sub ASSY.

Note:
When you remove any of the following parts, be careful not to damage the Paper stopper.

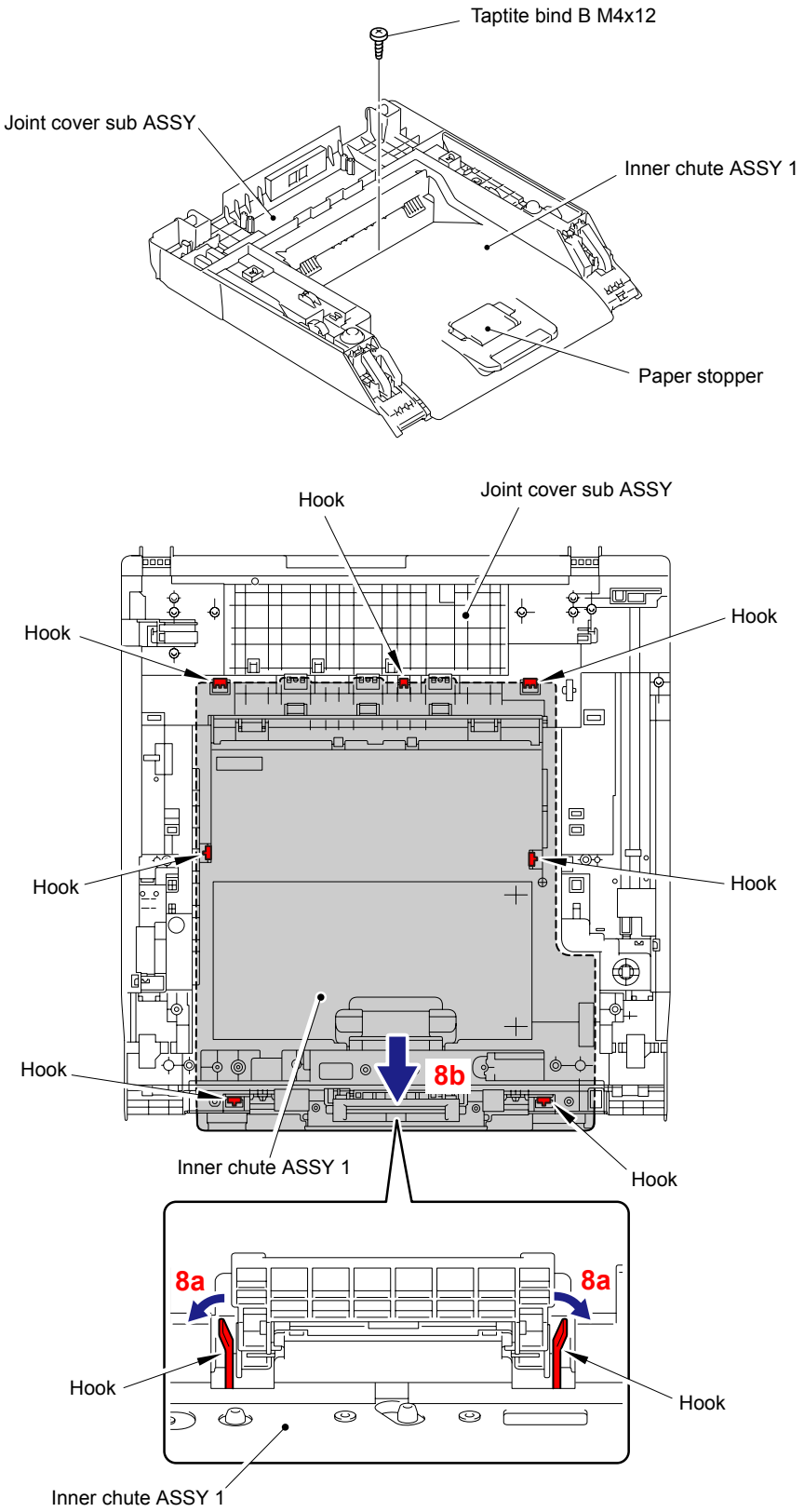


Fig. 5-130

(9) Release the Hook to remove the TC release lever shaft from the Inner chute ASSY 1.

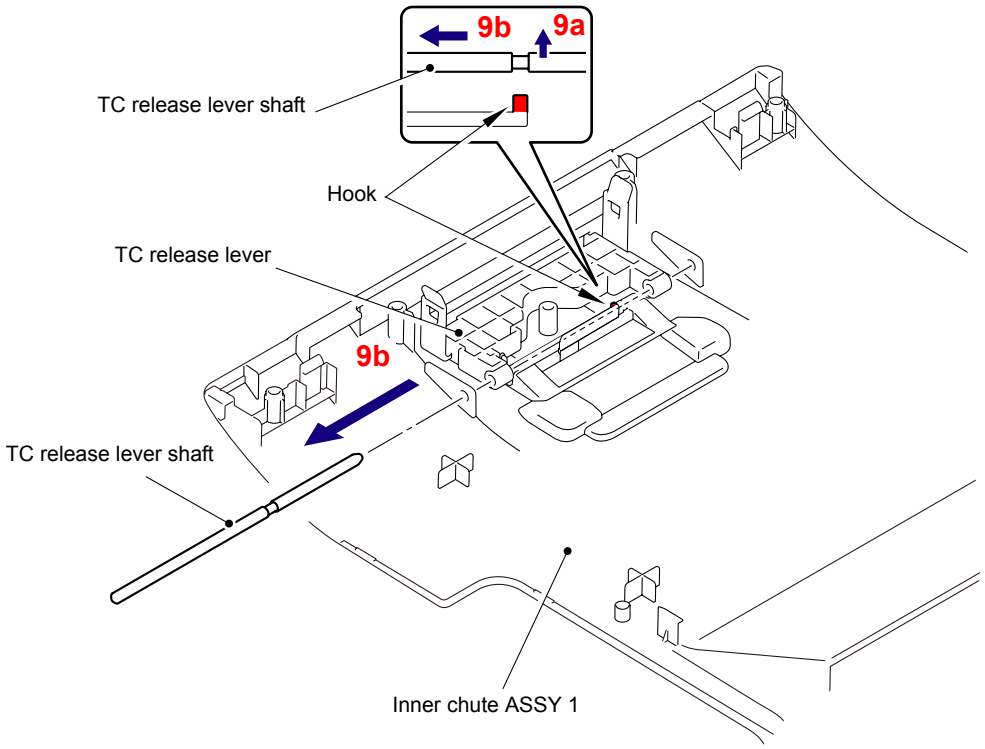


Fig. 5-131

(10) Remove the Inner TC release lever from the chute ASSY 1.

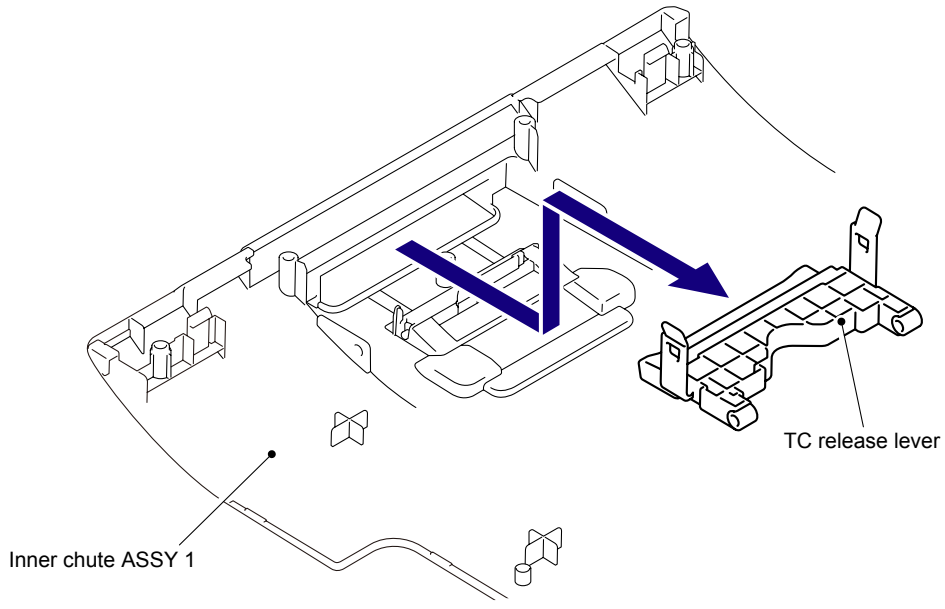


Fig. 5-132

8.47 Paper Stack Lever ASSY

(1) Release the Pin to remove the Paper stack lever ASSY on the left side from the Inner chute ASSY 1.

(2) Remove the Paper stack lever ASSY on the right side in the same way.

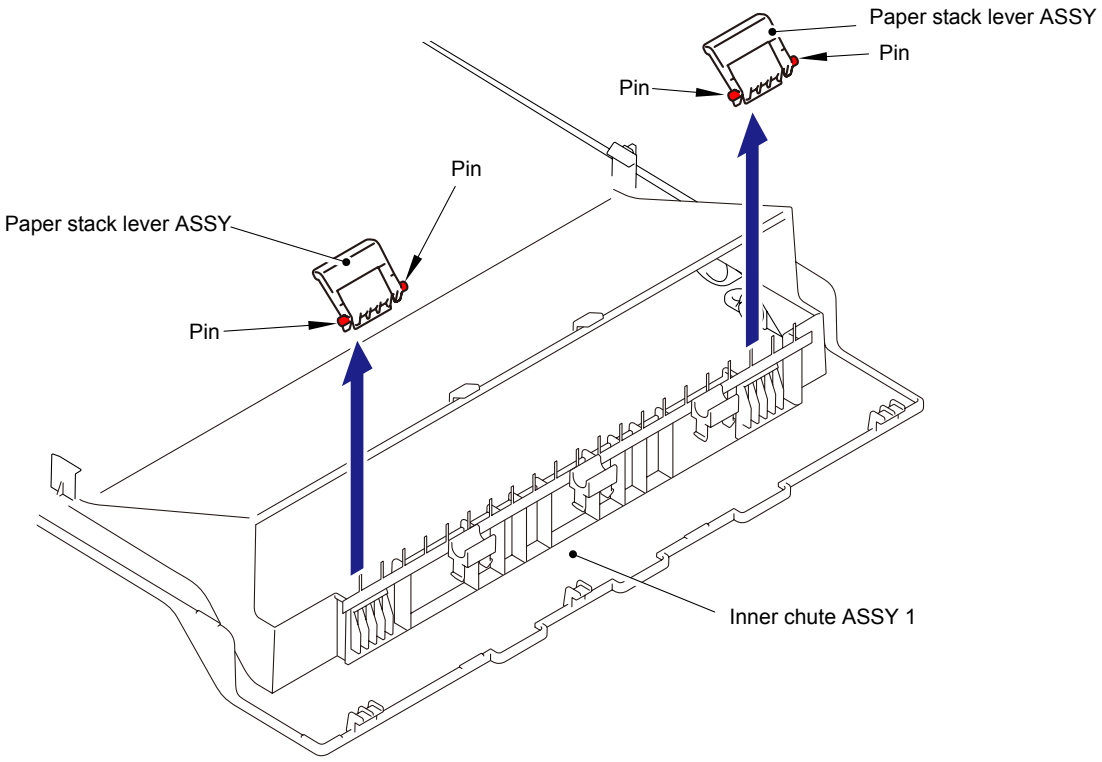


Fig. 5-133

8.48 FFC Harness:MAIN-LED CTL

(1) Insert the two “A” of the removed Sub frame ASSY into the two “B” of the Main body and close it as shown in the figure below.

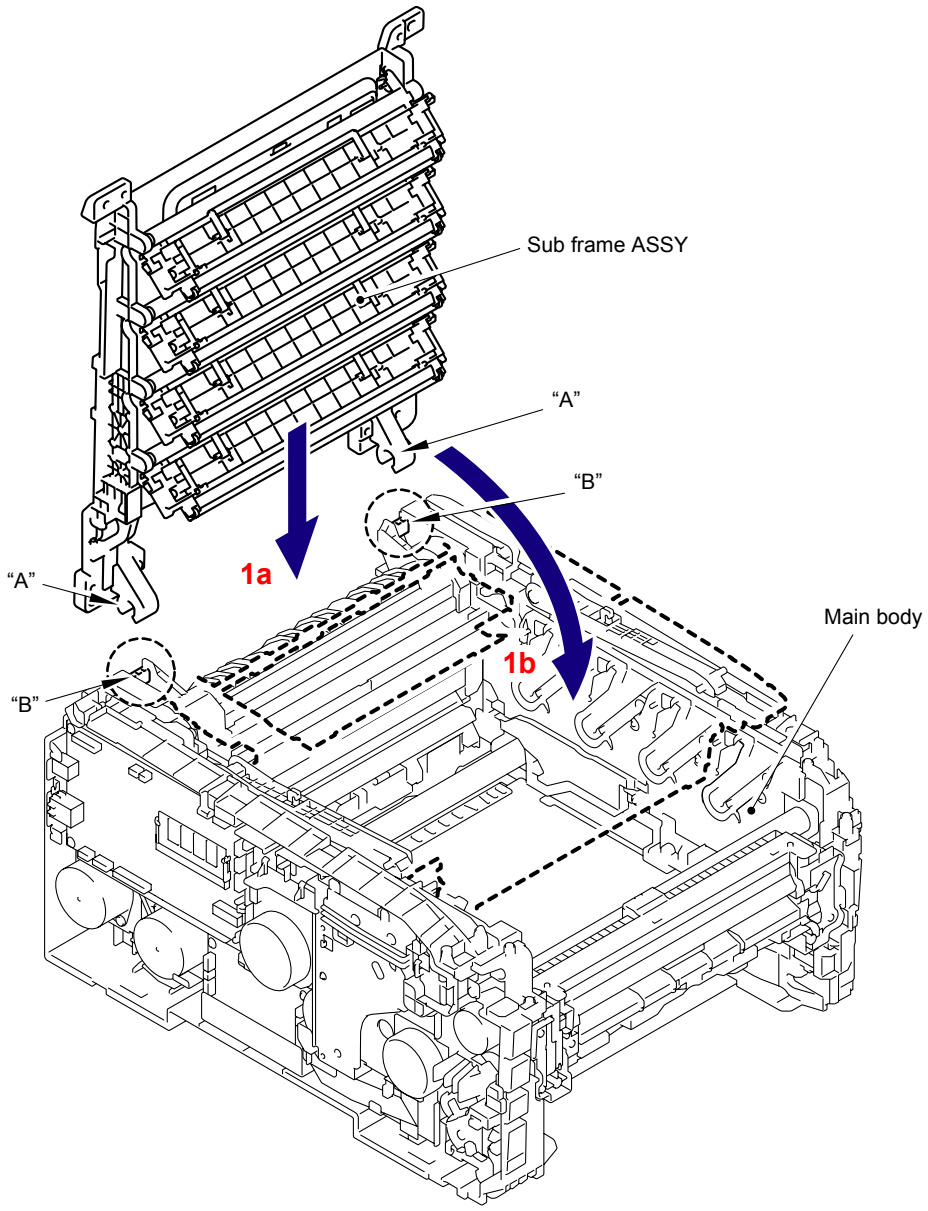


Fig. 5-134

Assembling Note:

After assembling the FFC harness:MAIN-LED CTL, be sure to pass the FFC harness: MAIN-LED CTL through the notch on the LED main FFC film.

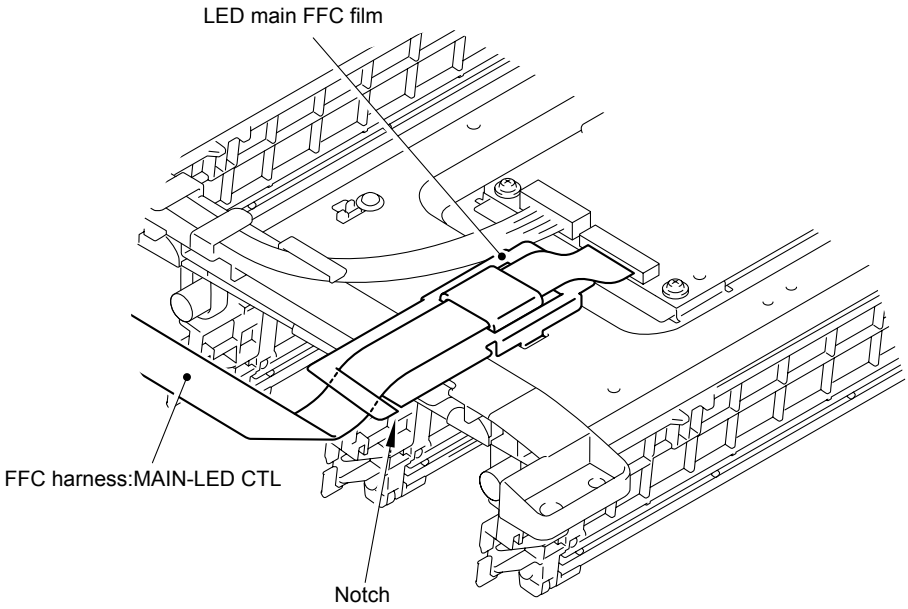


Fig. 5-137

Harness routing: Refer to "1 Joint Cover Sub ASSY."

8.49 LED Power Relay PCB ASSY

(1) Disconnect the Connector (CN6) of the LED power relay PCB ASSY from the LED head control PCB ASSY.

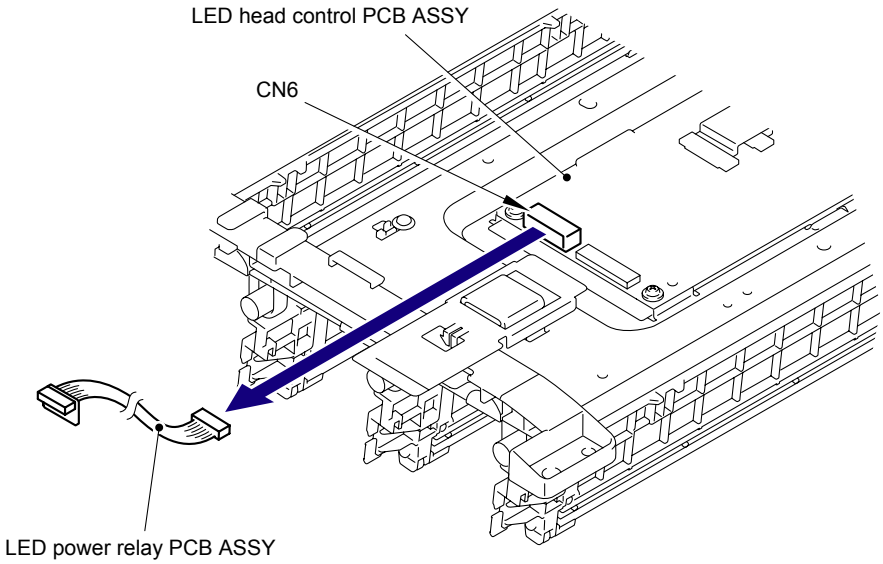


Fig. 5-138

8.50 LED Head Control PCB ASSY

(1) Remove the LED FFC cover film from the Sub frame ASSY.

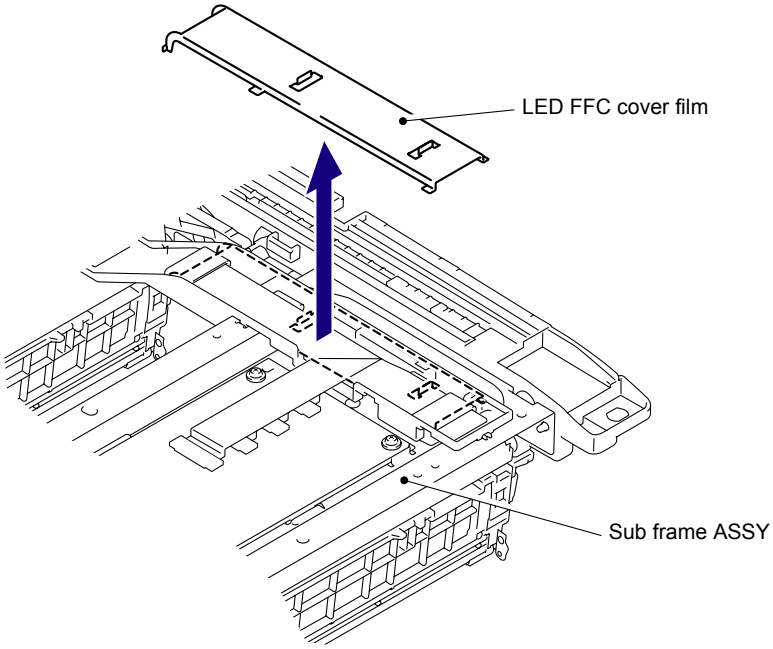


Fig. 5-139

(2) Disconnect the four FFC sheet (CN1, CN2, CN3, CN4) of the LED ASSY from the LED head control PCB ASSY.

Note:

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

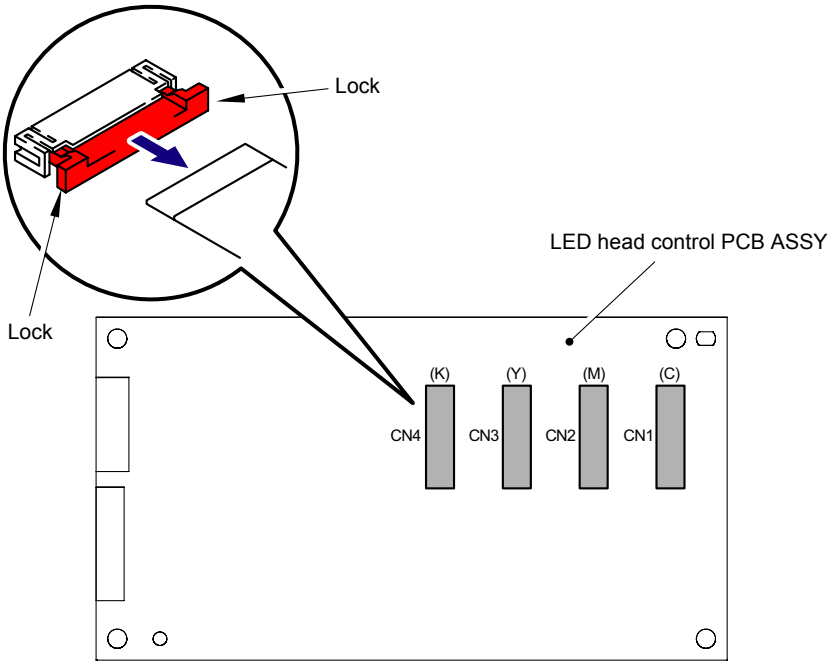


Fig. 5-140

(3) Remove the four Taptite cup S M3x6 SR screws, and then remove the LED head control PCB ASSY from the Sub frame ASSY.

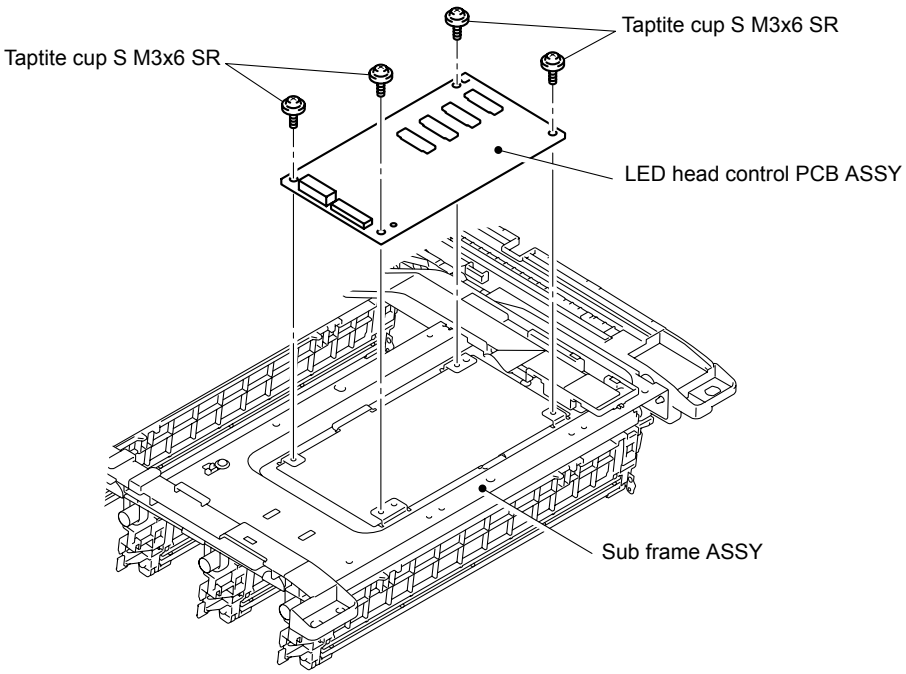


Fig. 5-141

8.51 LED ASSY/Holder Hook

(1) Remove the four FFC sheet from the Sub frame ASSY, and remove the Cores from each of the FFC sheet.

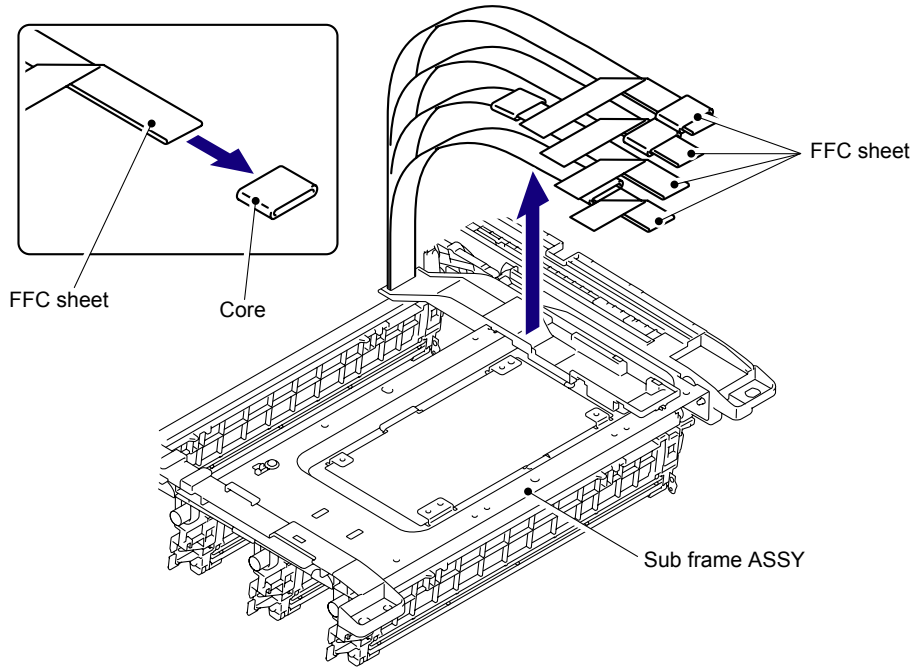


Fig. 5-142

(2) Remove the Sub frame ASSY from the Main body, and place it with the LED ASSY side up.

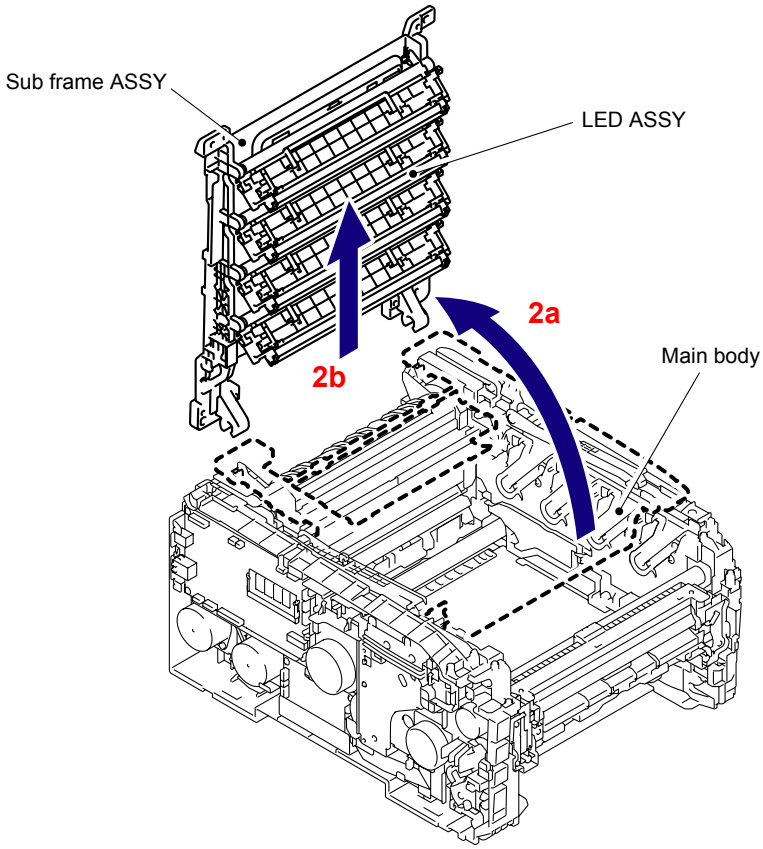


Fig. 5-143

(3) Release the Hook of the Holder hook at the left from the rear side of the LED ASSY using a screwdriver to remove the Holder hook from the Holder and LED ASSY.

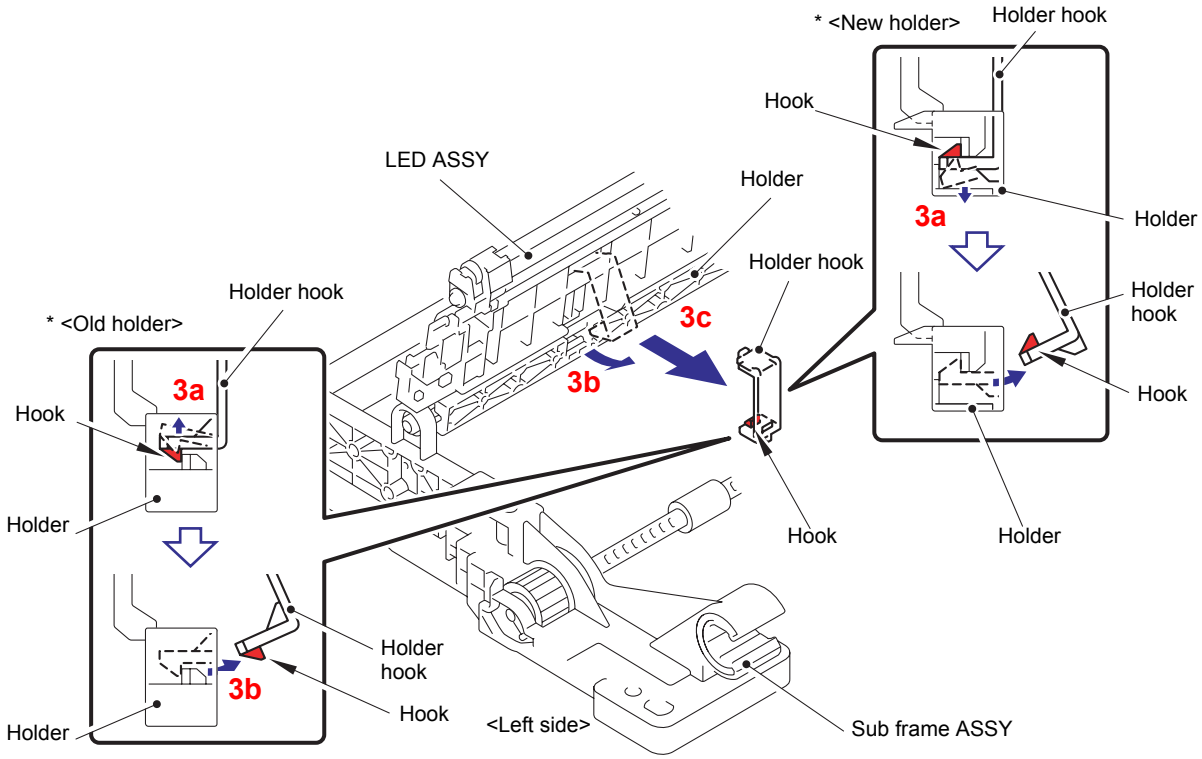


Fig. 5-144

(4) Remove the Holder hook on the right side in the same way.

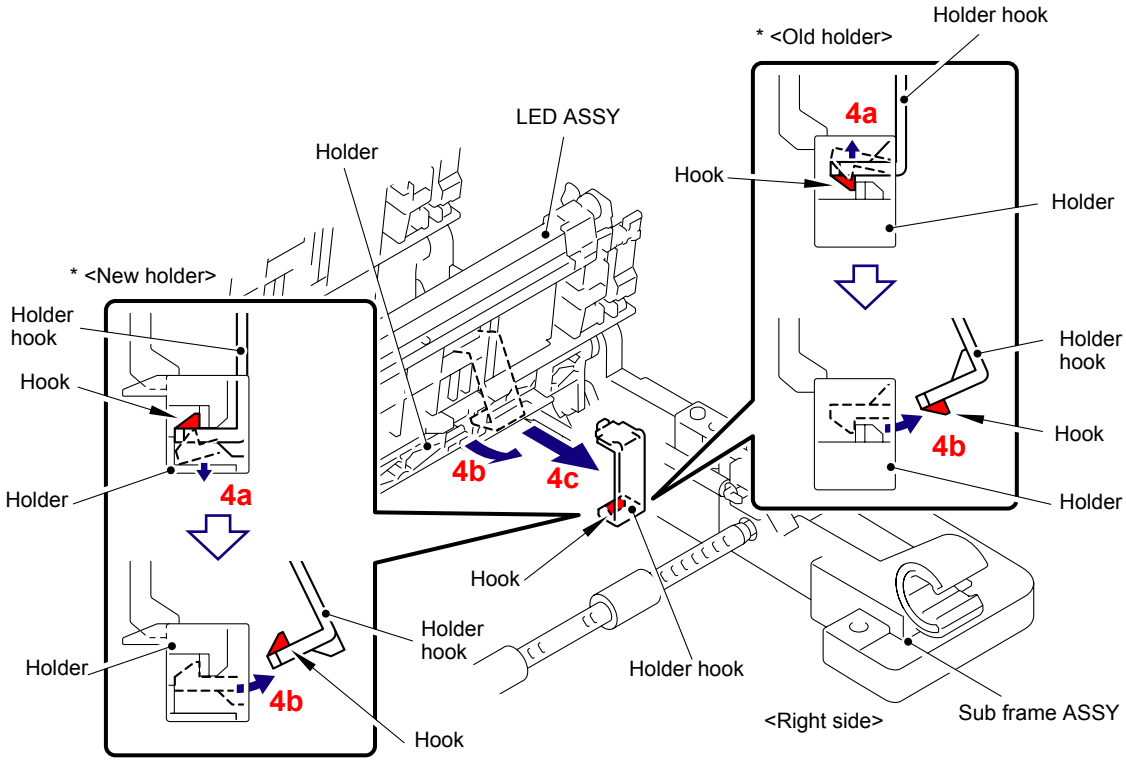


Fig. 5-145

* There are the old and new types of the Holder, and each type has a dedicated holder hook.
  The new-type Holder hook cannot be assembled into the old-type Holder, and vice versa.

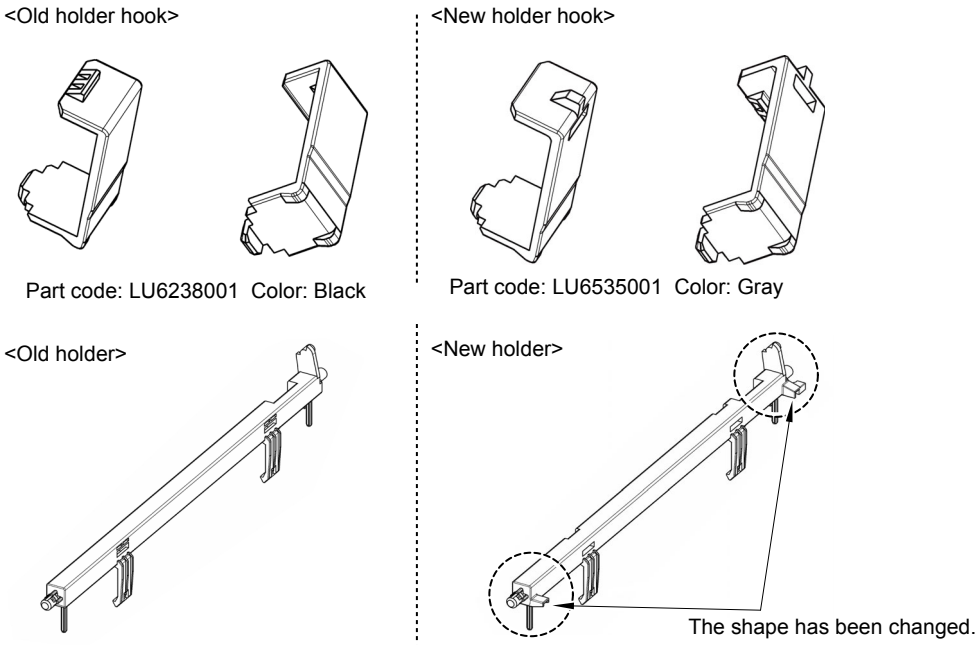


Fig. 5-145-1

Assembling Note:

- When you assemble the Holder hook, make sure to insert the Hook A of the Holder hook into the “A” of the LED ASSY first, and then assemble the Hook B of the Holder hook to the Holder.
- After assembling, make sure to check that the Hook A is firmly engaged to the Holder. If it is not engaged to the Holder firmly, it might cause an image failure.

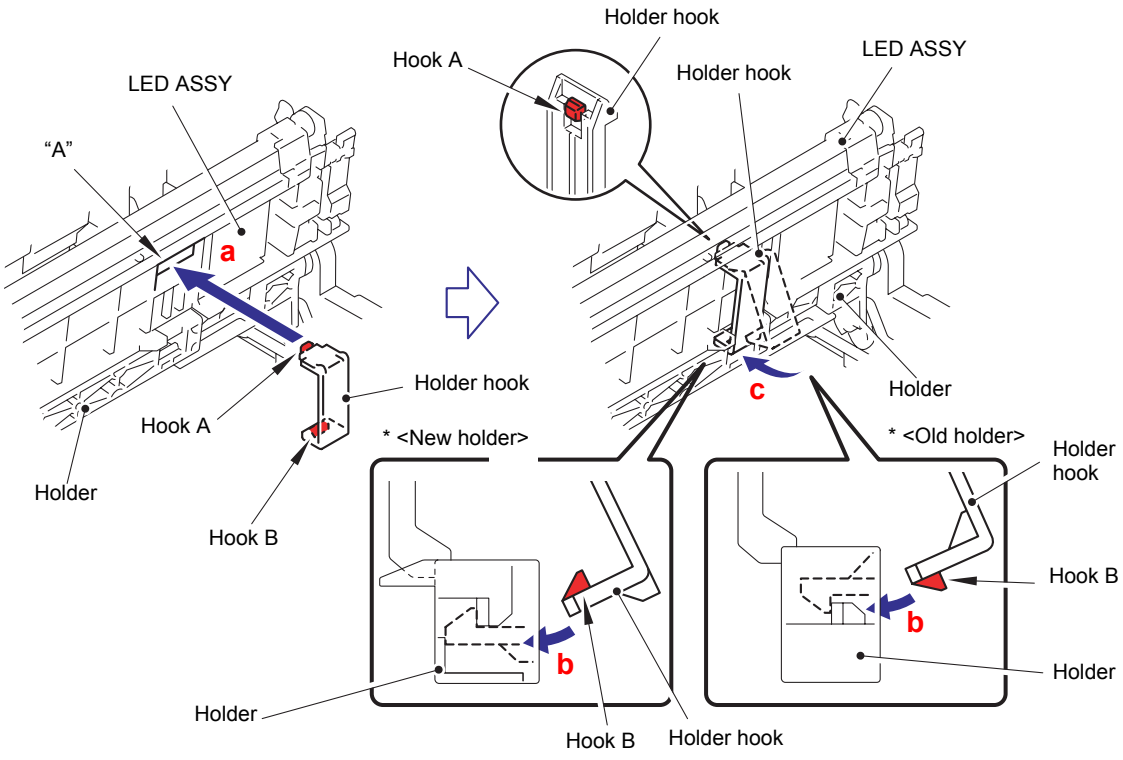
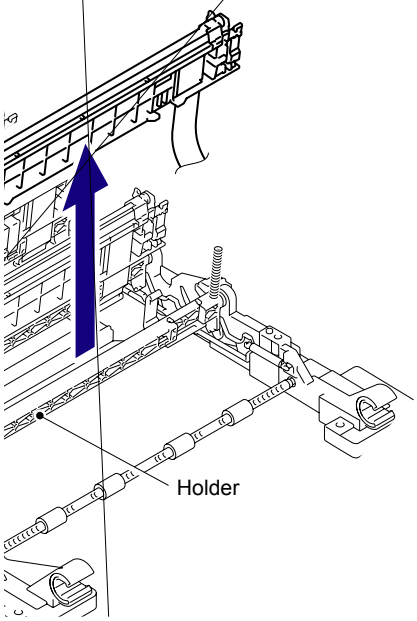


Fig. 5-146

(5) Re ler.

(6) Rei same way as procedures (3) to (5) above.



Assembling N

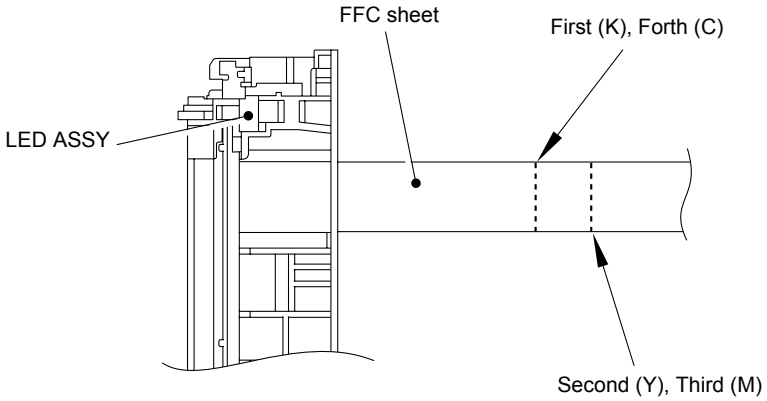
- The LED pa.ts .or rep t are covered with protection tapes. Make sure not t otection until assembling of the LED ASSY is completed. Afte oled, make e to remove the protection tapes.
- If the LE D parts g ed, make sure to wipe smears on the LED parts with a clean and so loth.

Assembling Note:

Since folding part of FFC sheet is different according to color of LED, make sure to fold FFC sheet as shown in Fig. 5-149 and Fig. 5-150 before assembling LED ASSY.

<LED ASSY side>

There are lines on the side of LED ASSY of the FFC sheet. Make to fold FFC sheet along the line in order to replace LED ASSY correctly.



---------- Fold up FFC along with the dotted line

Fig. 5-149

<LED head control PCB ASSY side> (full-scale)

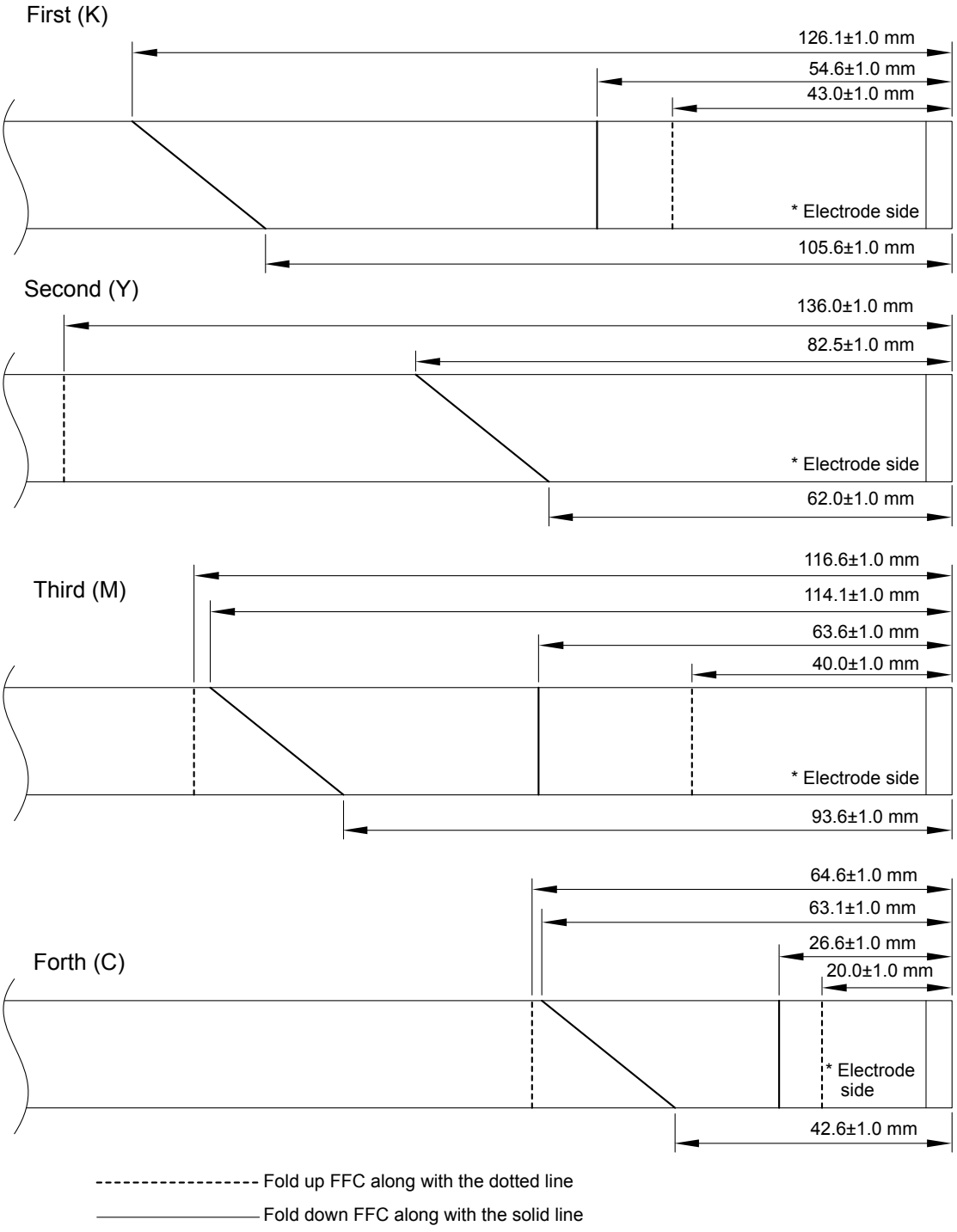


Fig. 5-150

(7) Insert a Screwdriver between the Earth plate L and LED ASSY to release the Hook A.

(8) Release the Hook B to remove the Earth plate L from the LED ASSY.

(9) Remove the Earth plate R in the same way.

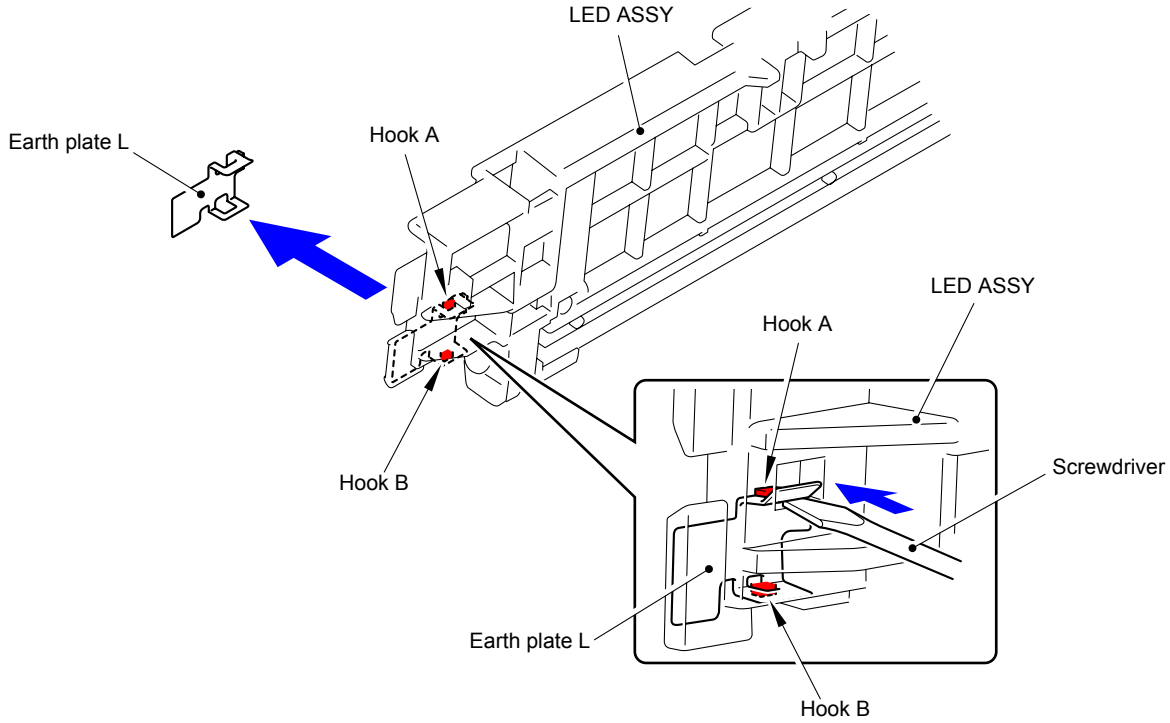


Fig. 5-150-1

Assembling Note:

- If the removed Earth plate L and Earth plate R are bent even a little, it will cause a connection failure, and therefore they cannot be reused. Be sure to use the new Earth plate L and Earth plate R when you assemble them.
- After assembling the Earth plate L and Earth plate R, be sure to check that they are firmly engaged with the Hook A and Hook B, and not lifted from the LED ASSY. (Refer to Fig. 5-150-2)
- The Hook of the Earth plate R must be firmly engaged with the Earth spring R. (Refer to Fig. 5-150-3)

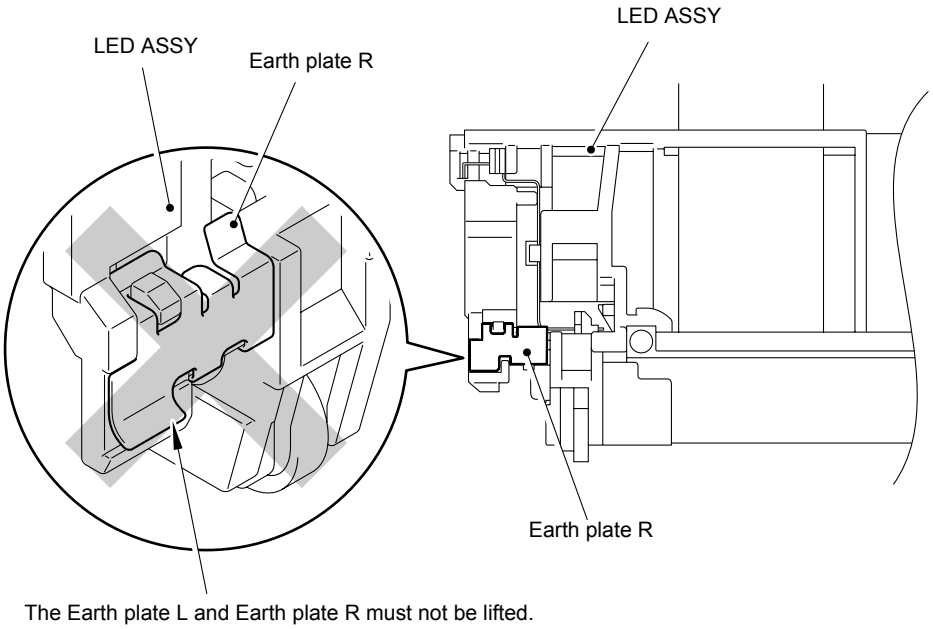


Fig. 5-150-2

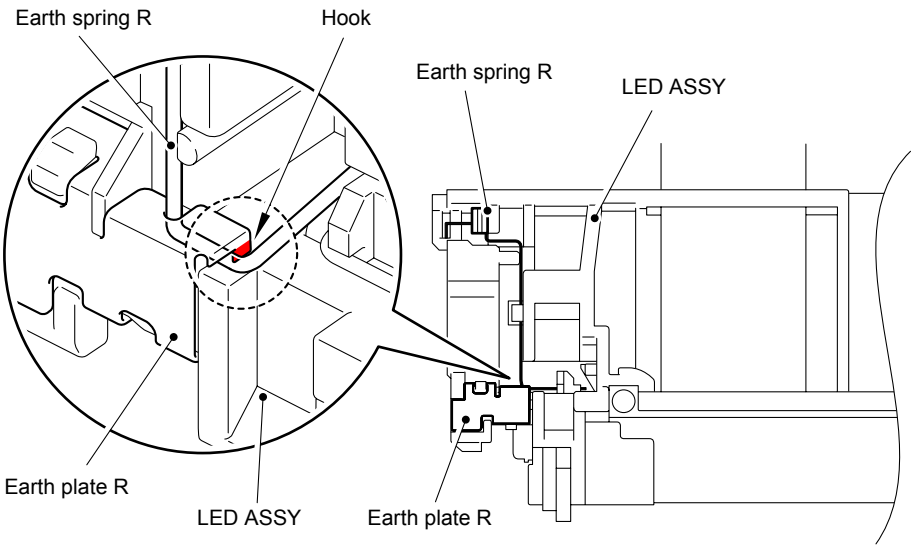


Fig. 5-150-3

(10) Release the four Hooks to remove the Earth spring L from the LED ASSY.

(11) Release the Hook to remove the Earth spring R from the LED ASSY.

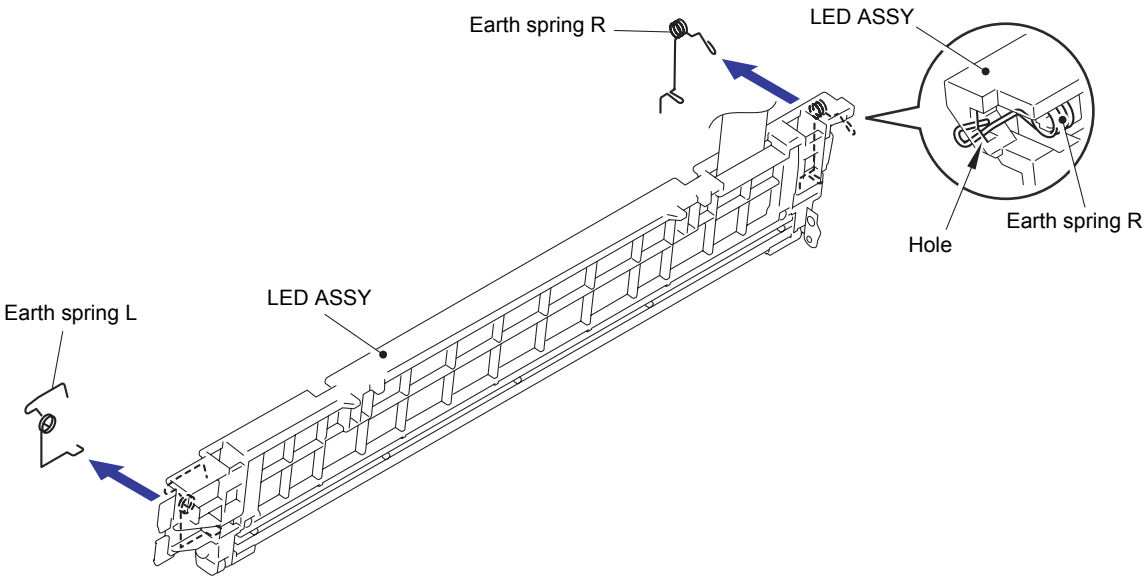


Fig. 5-150-4

Assembling Note:

Check the points shown in the figure below.

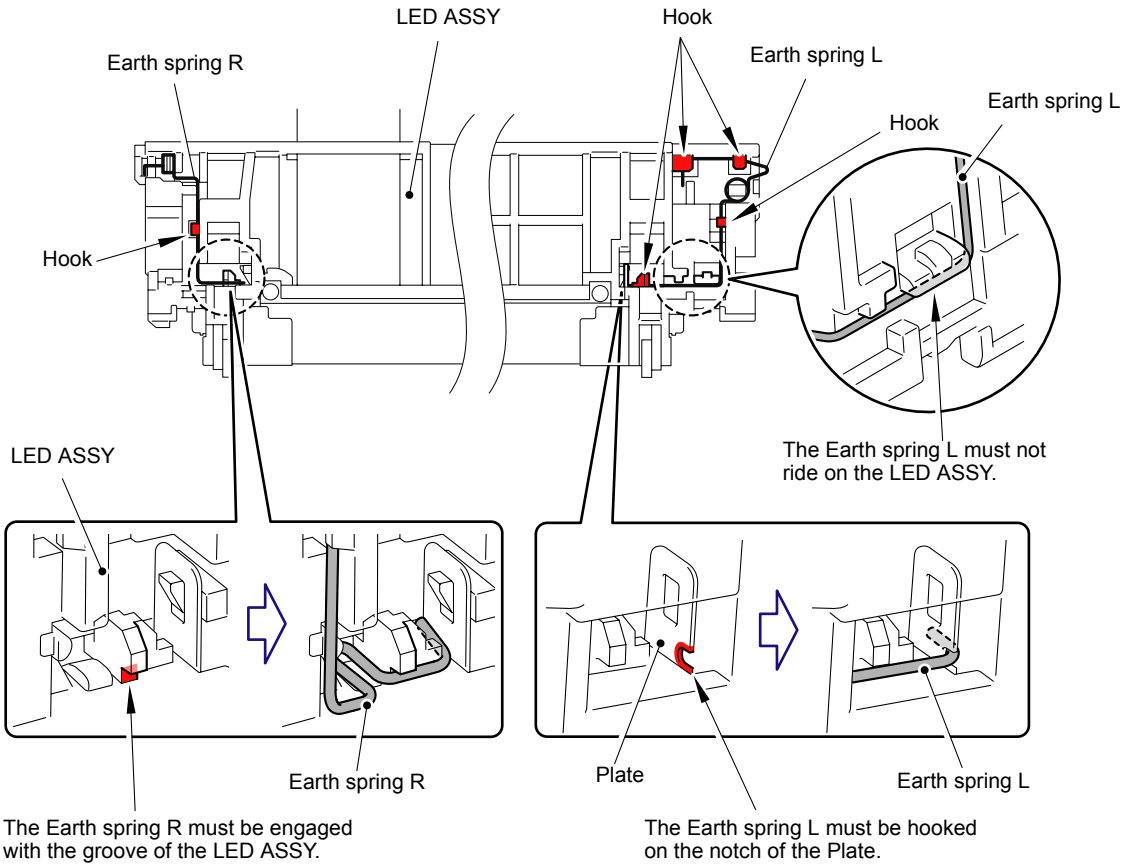


Fig. 5-150-5

8.52 Z Spring L/Z Spring R

(1) Remove the Z spring L from the Holder of the Sub frame ASSY.

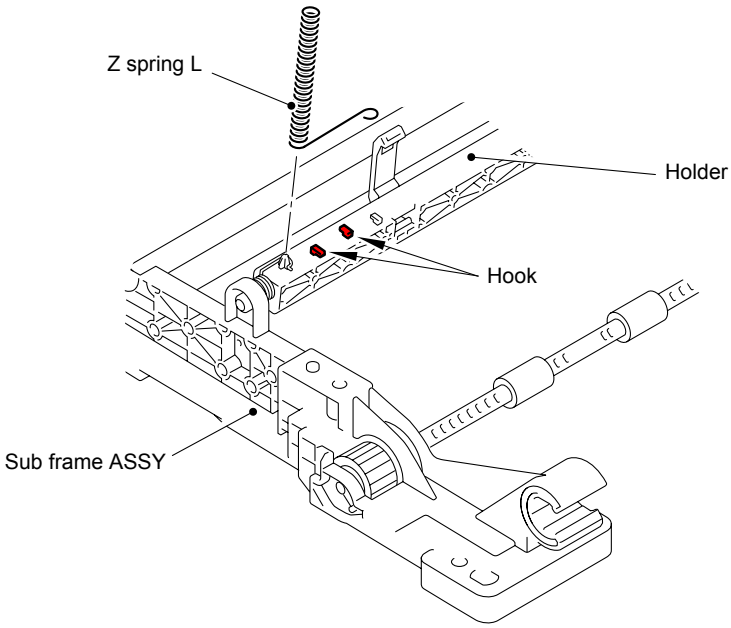


Fig. 5-151

Assembling Note:
When mounting the Z spring L, make sure to assemble them as shown in the figure below.

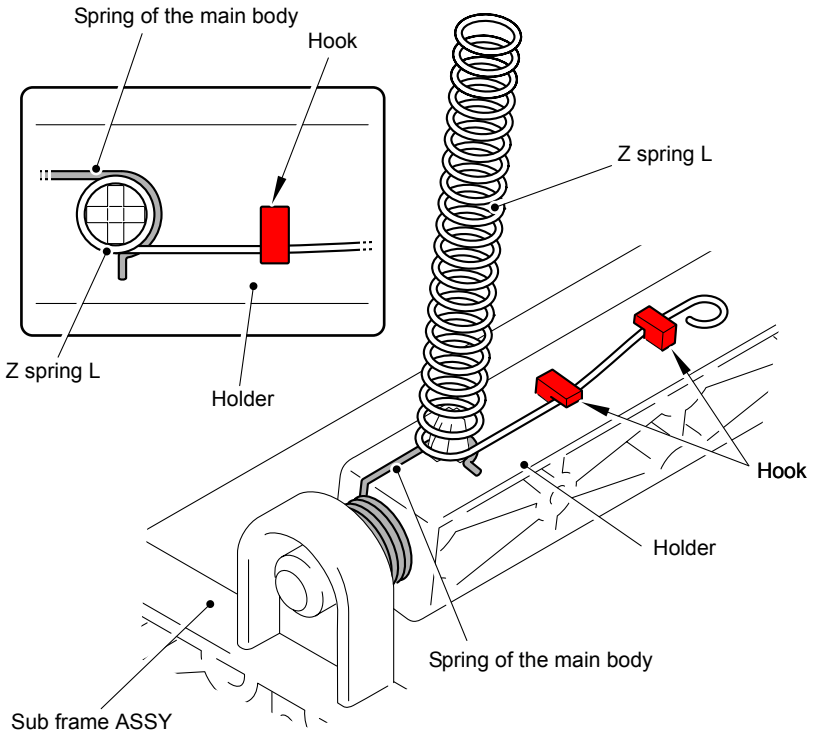


Fig. 5-152

(2) Remove the Z spring R from the Holder of the Sub frame ASSY.

(3) Remove the Z spring L and Z spring R from the other three Holders with the aforementioned procedures (1) and (2).

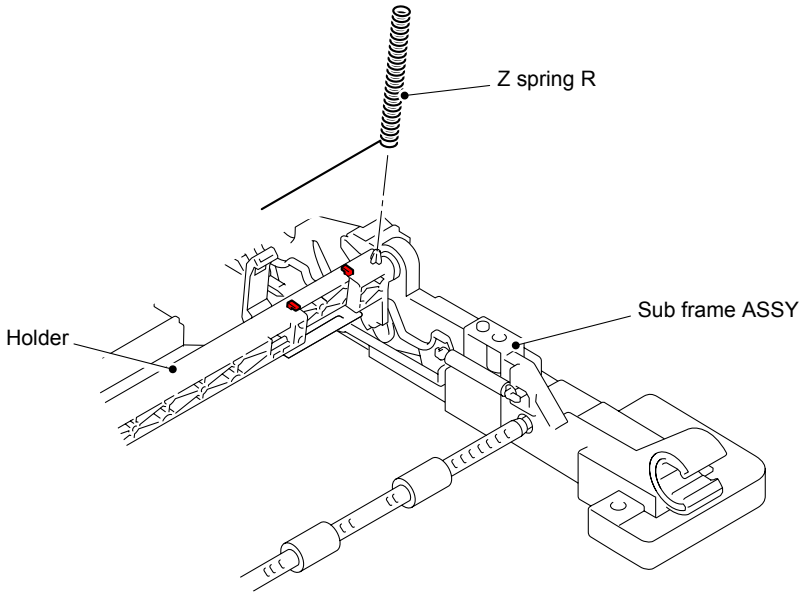


Fig. 5-153

Assembling Note:
When mounting the Z spring R, make sure to assemble them as shown in the figure below.

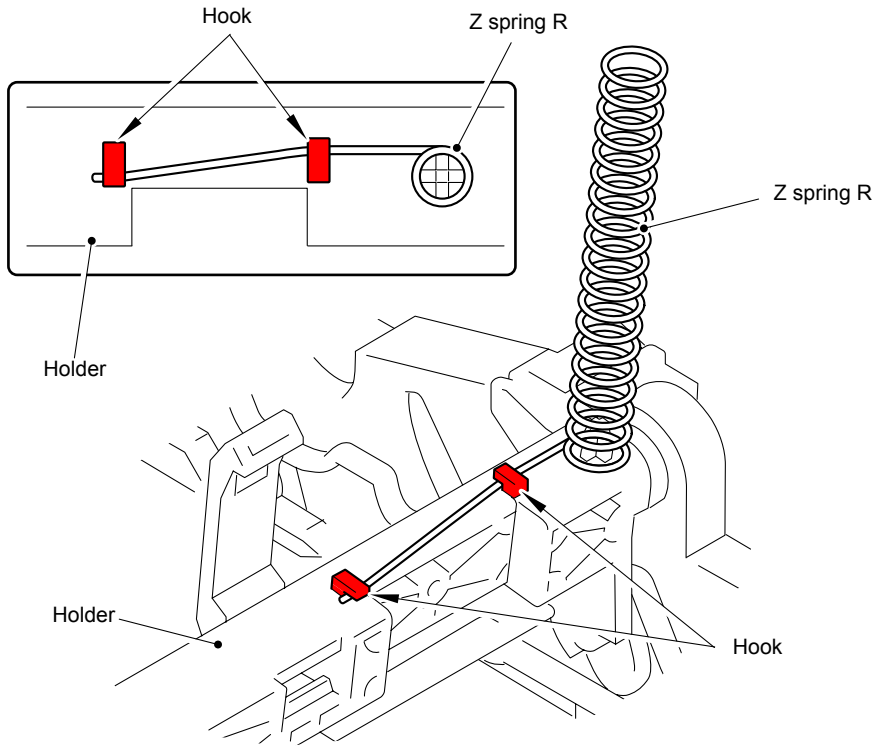


Fig. 5-154

8.53 Develop Release Motor ASSY

(1) Disconnect the Connector (CN5) from the Engine PCB ASSY.

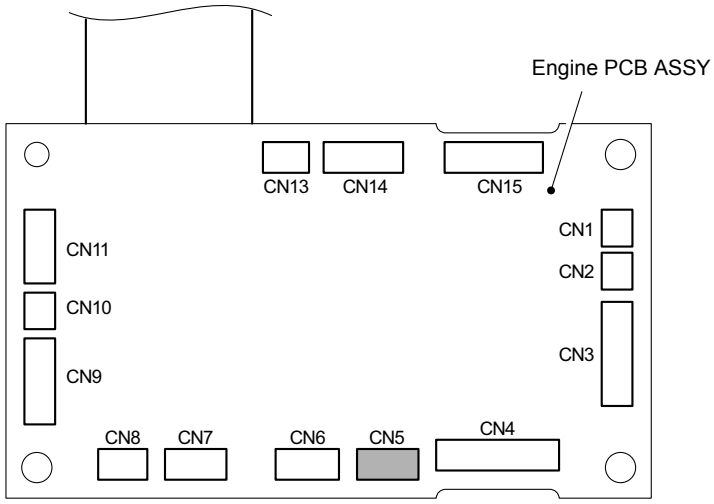


Fig. 5-155

(2) Remove the Taptite bind S M3x5 screw, and then remove the Develop release motor ASSY from the Side frame L.

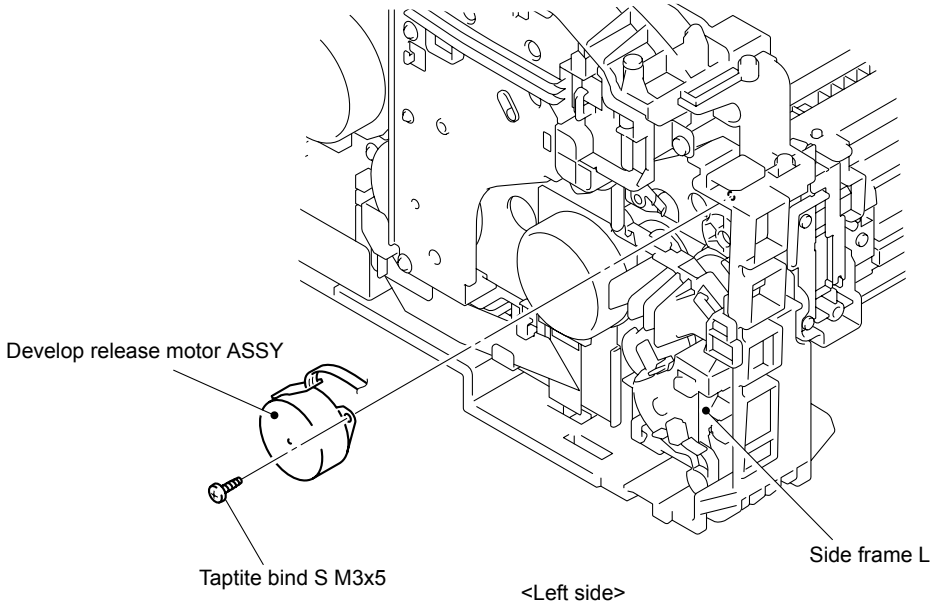


Fig. 5-156

Harness routing: Refer to "6 Develop Release Motor ASSY."

Assembling Note:

- Make sure that the locking part of the Develop release motor ASSY is slid under the Hold spring.
- When assembling the Develop release motor ASSY, make sure to tighten the screw after rotating the Develop release motor ASSY until it stops rotating in the direction indicated by the arrow.

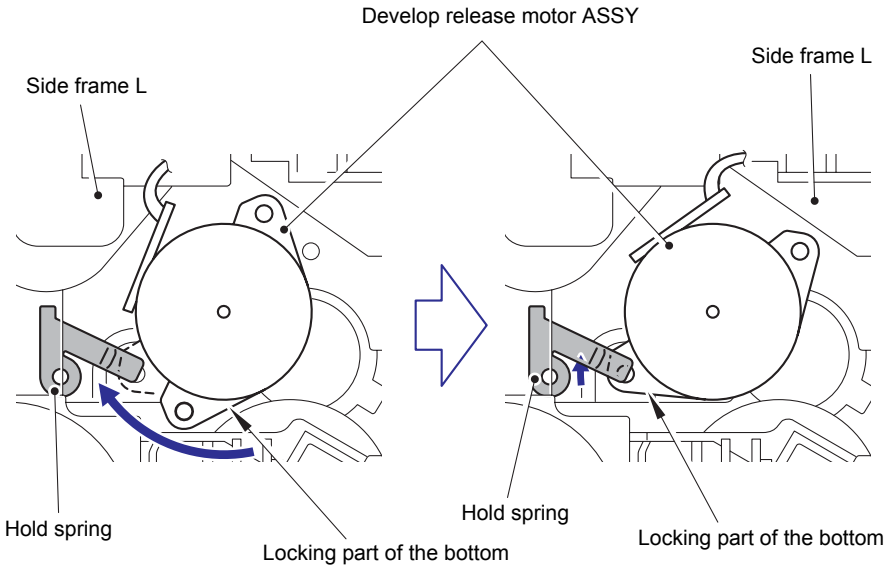


Fig. 5-156-1

8.54 Main PCB ASSY

(1) Disconnect the seven Connectors (CN10, CN15, CN17, CN18, CN19, CN22, CN23) and one flat cable (CN5) from the Main PCB ASSY.

Note:

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

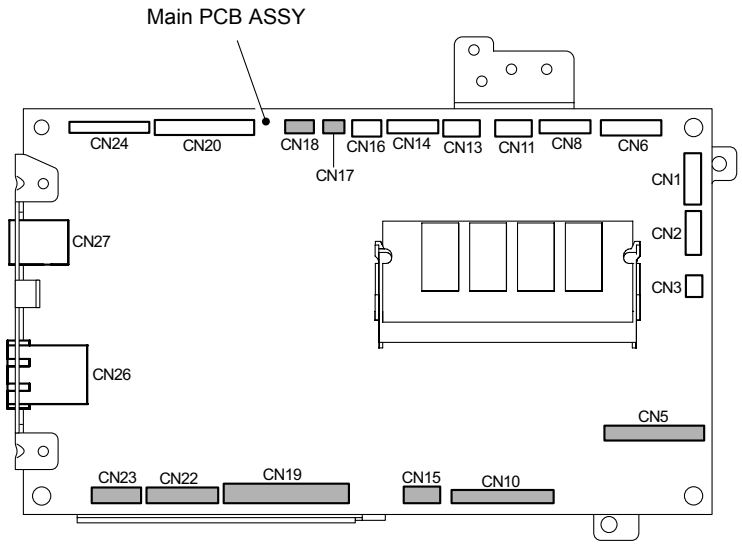


Fig. 5-157

(2) Remove the four Taptite cup S M3x6 SR screws, and then remove the Main PCB ASSY from the Main PCB shield plate.

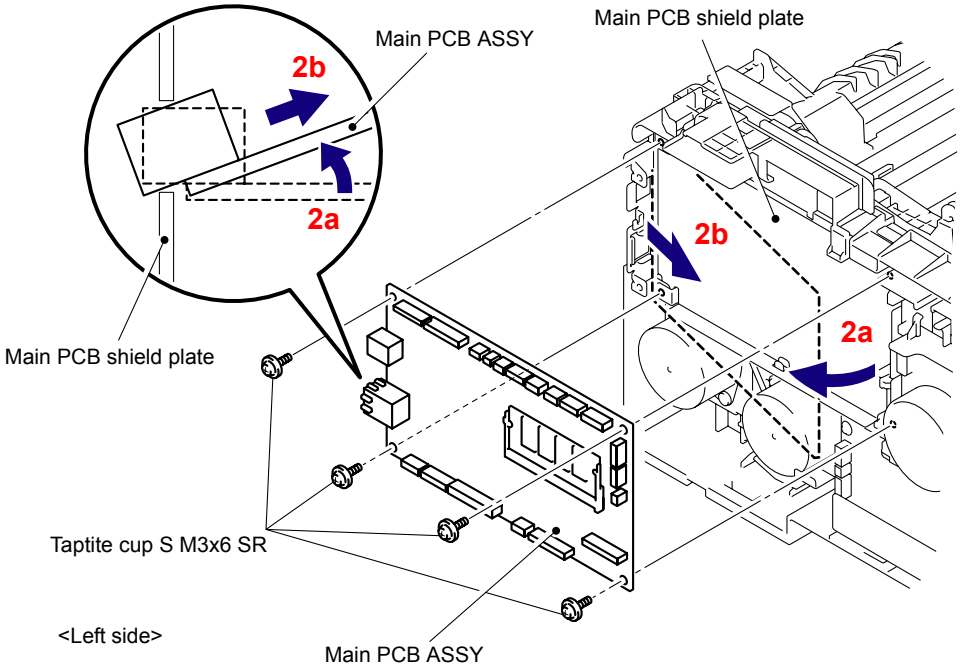


Fig. 5-158

8.55 Engine PCB ASSY

(1) Disconnect the eleven connectors (CN1, CN2, CN4, CN6, CN7, CN8, CN9, CN10, CN11, CN14, CN15) and one flat cable (CN3) from the Engine PCB ASSY.

Note:

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

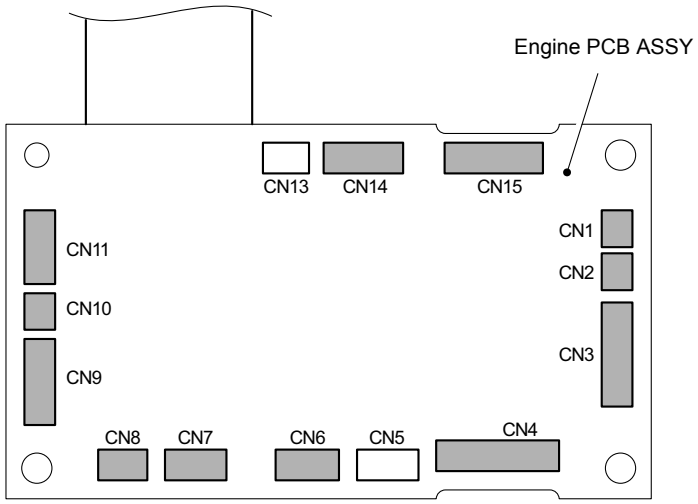


Fig. 5-159

(2) Remove the four Taptite cup S M3x6 SR screws, and then remove the Engine PCB ASSY from the Side frame L.

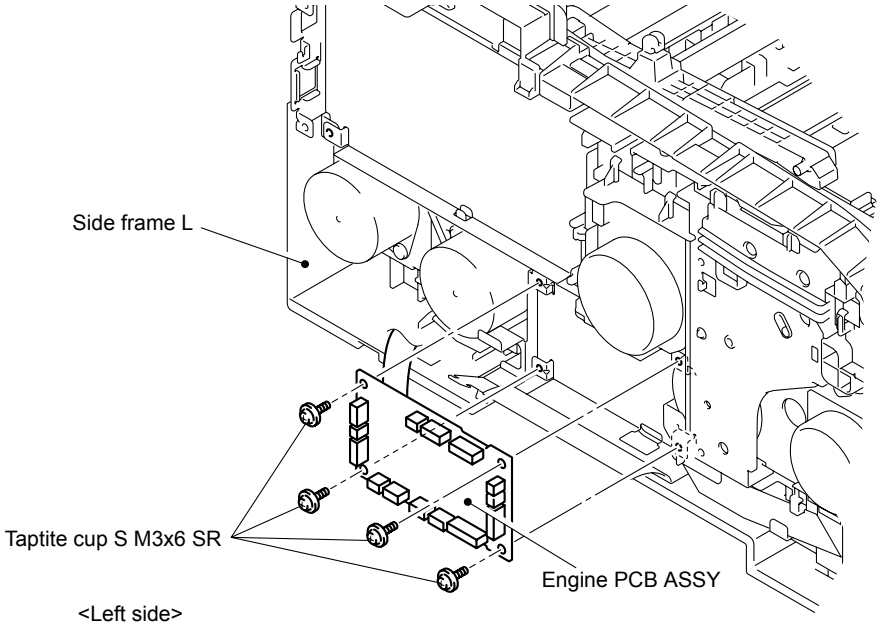


Fig. 5-160

8.56 Main PCB Insulation Sheet/Engine Insulation Sheet

(1) Remove the Main PCB insulation sheet from the Main PCB shield plate.

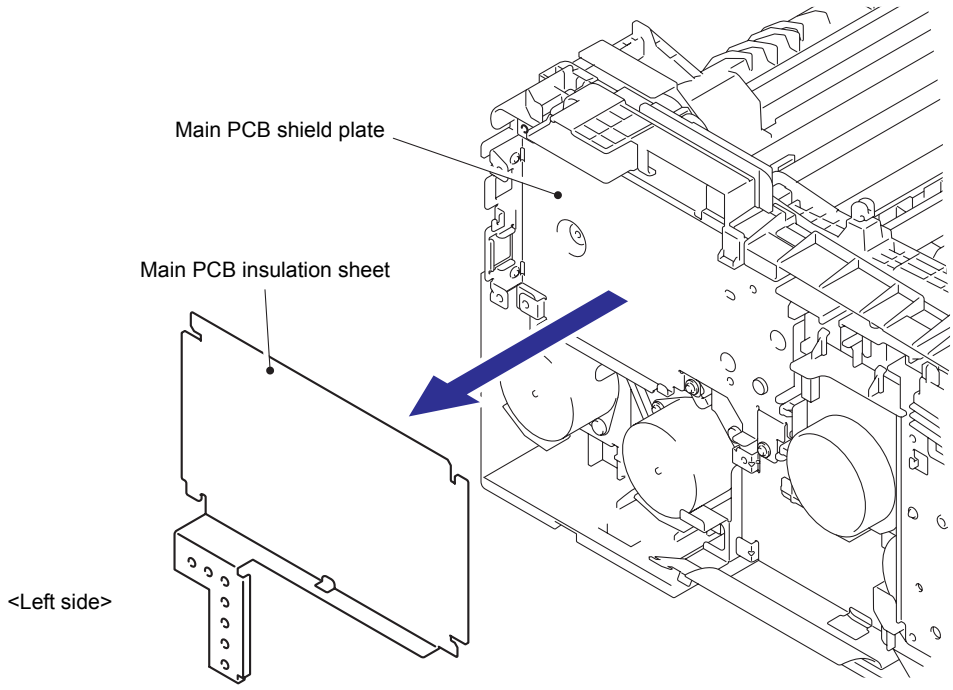


Fig. 5-161

(2) Remove the Engine insulation sheet from the Side frame L.

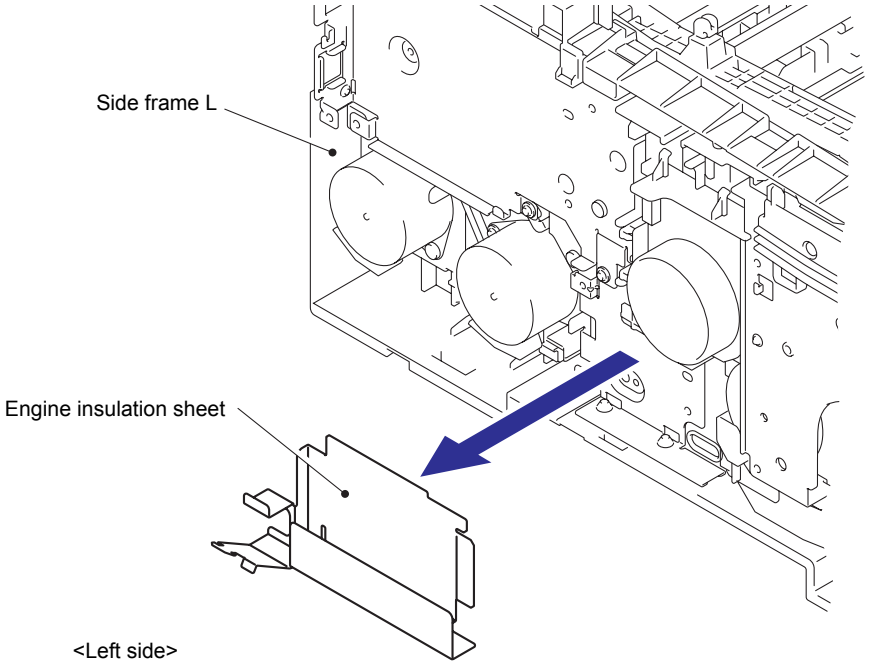


Fig. 5-162

8.57 Main PCB Shield Plate

(1) Remove the three Taptite cup S M3x6 SR screws and one Taptite bind B M4x12 screw, and then remove the Main PCB shield plate from the Side frame L.

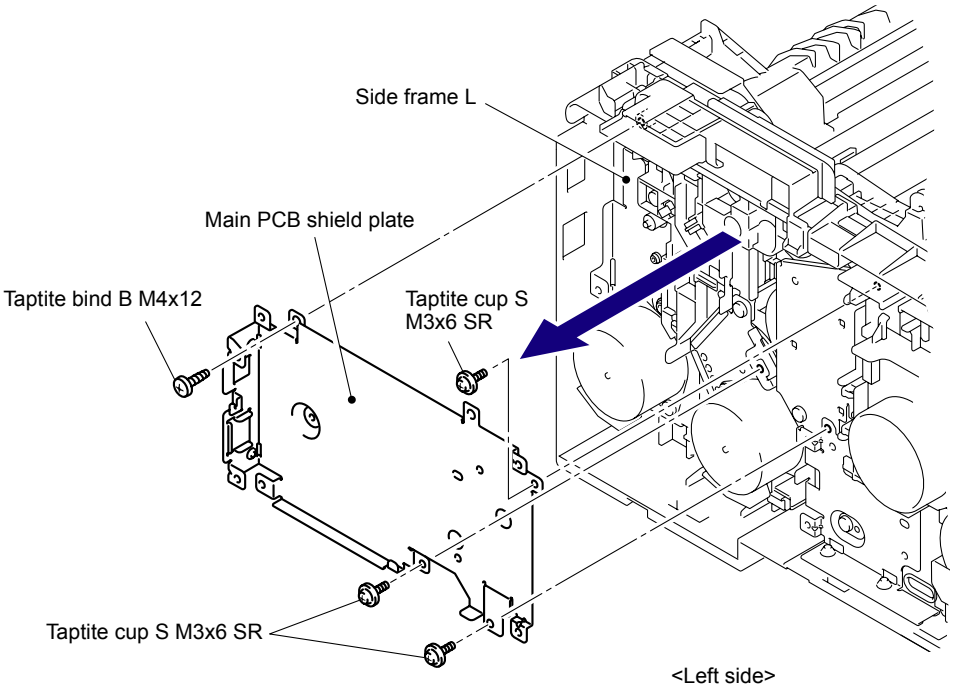


Fig. 5-163

8.58 Engine Shield Plate

(1) Remove the Taptite bind B M4x12 screw and Taptite cup S M3x6 SR screw, and then remove the Engine shield plate from the Side frame L.

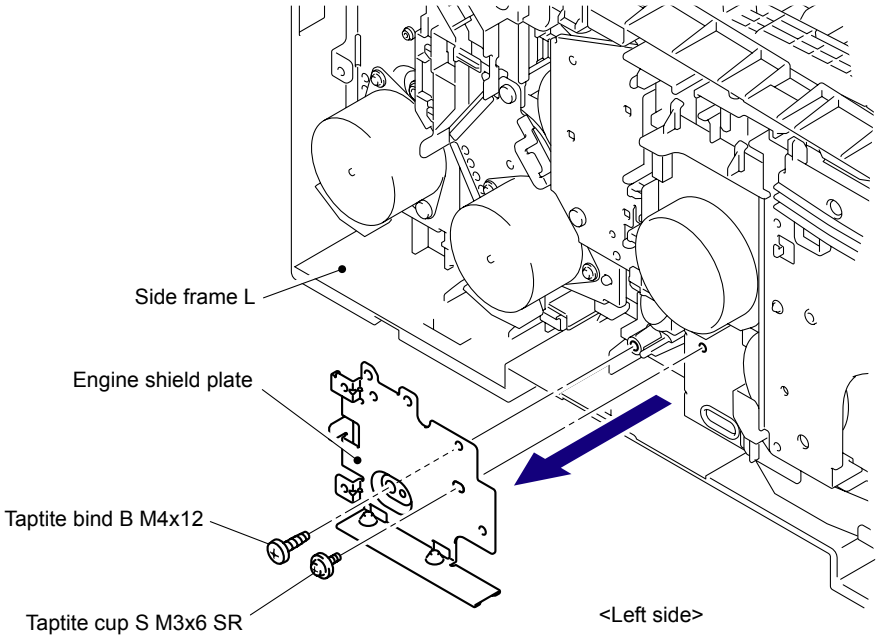


Fig. 5-164

8.59 Registration Mark Relay PCB ASSY

(1) Disconnect the three Connectors (CN2, CN3, CN4) from the Registration mark relay PCB ASSY.

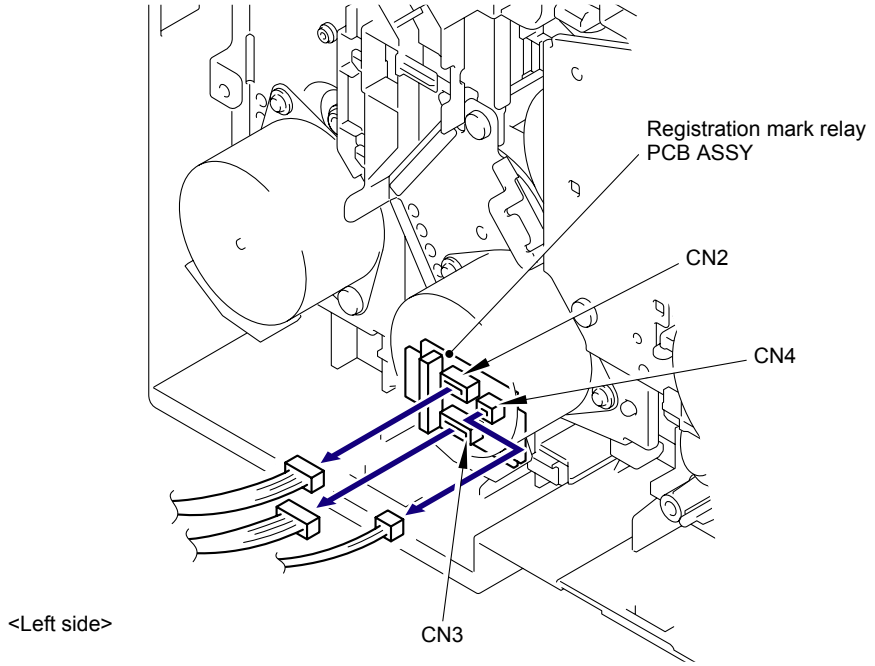


Fig. 5-165

(2) Release the two Hooks to remove the Registration mark relay PCB ASSY from the Side frame L.

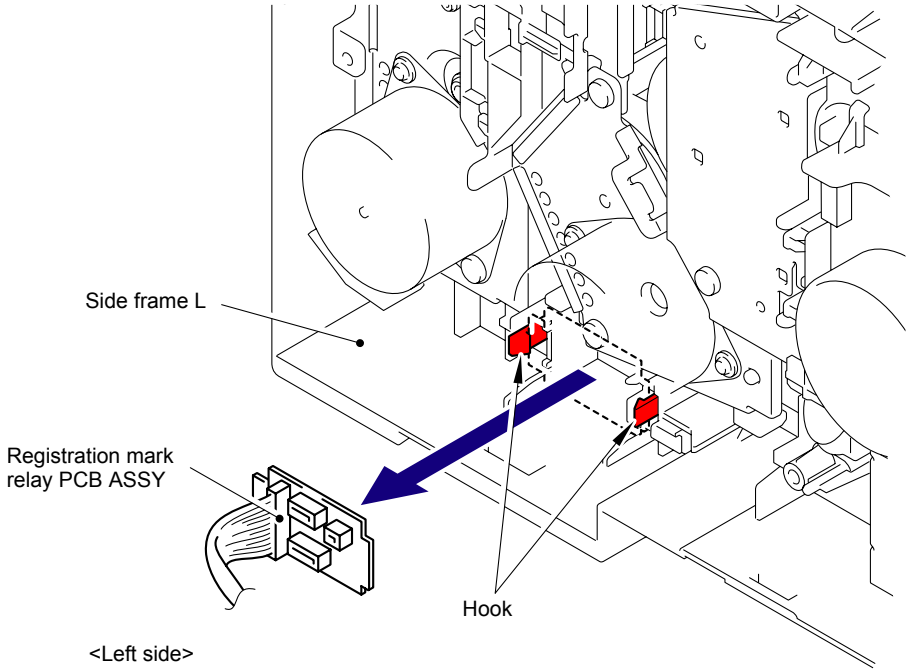


Fig. 5-166

8.60 Drum Develop Drive Unit

(1) Place the Main body upright as shown in the figure below.

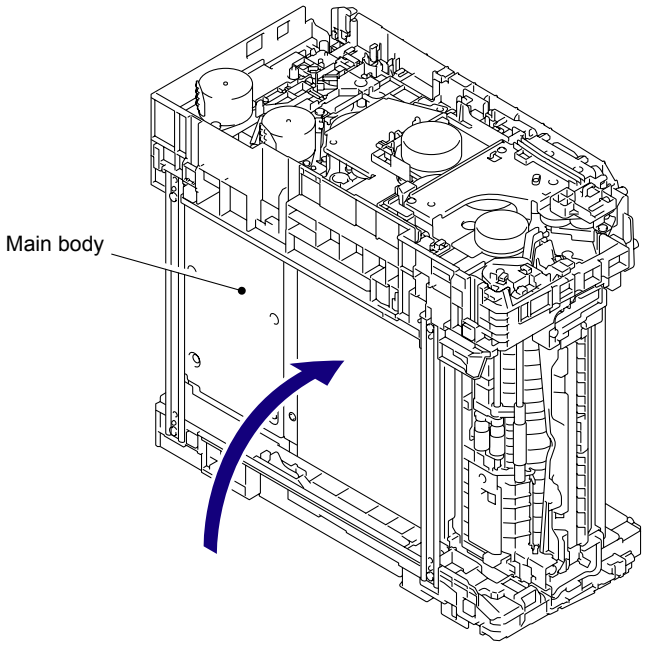


Fig. 5-167

(2) Release the Hook to remove the Line holder front from the Develop drive plate ASSY.

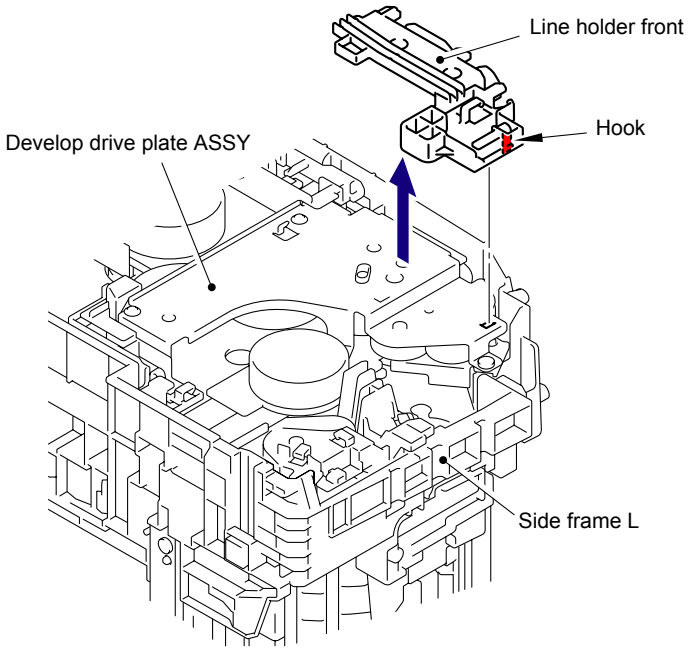


Fig. 5-168

(3) Release the Hook to remove the PF line holder from the Side frame L.

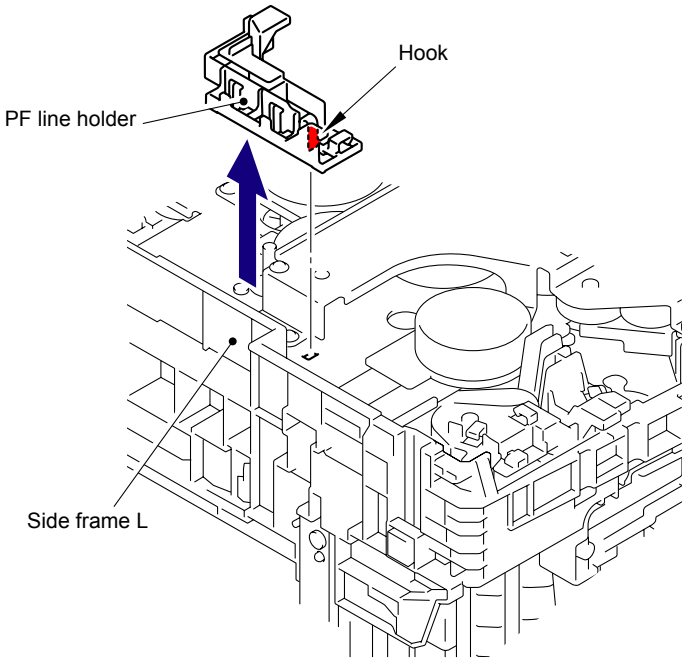


Fig. 5-169

(4) Release the two Hooks A on the upper side to remove the Line holder M from the Drum develop drive unit.

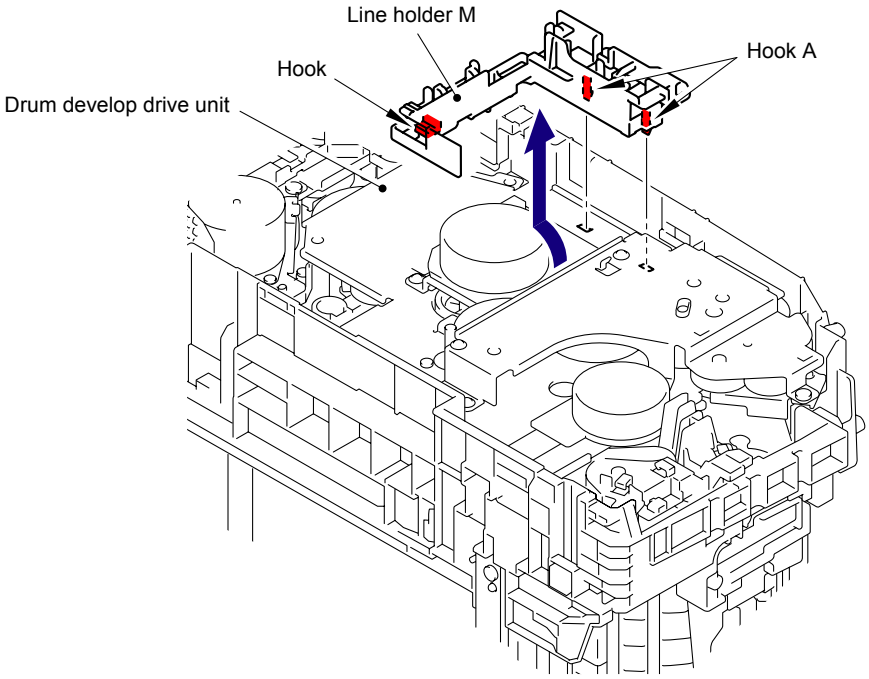


Fig. 5-170

(5) Remove the two Taptite cup S M3x6 SR screws and two Taptite bind B M4x12 screws, and then remove the Develop drive plate ASSY from the Side frame L.

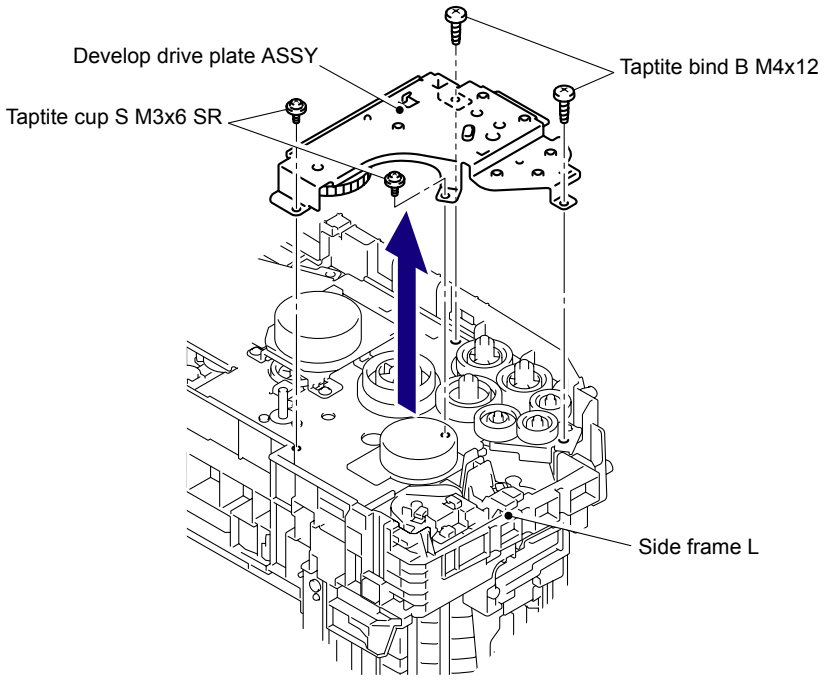


Fig. 5-171

(6) Remove the one Gear 63/85, one Pendulum gear 50, one Idle gear 35, two Idle gear 30 and two Gear 42/39 from the Side frame L.

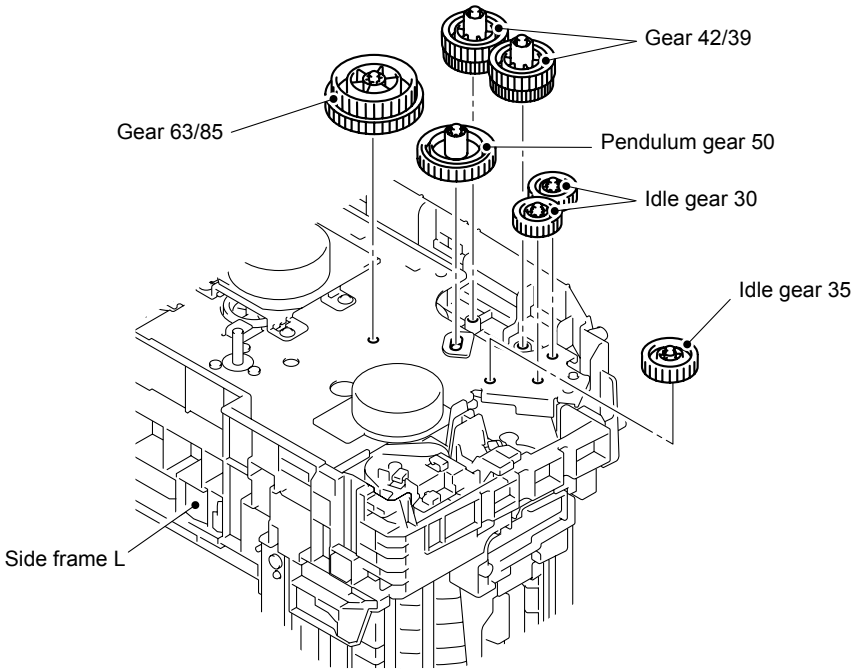


Fig. 5-172

(7) Remove the two Taptite bind B M4x12 screws, and then remove the Under bar from the Main body.

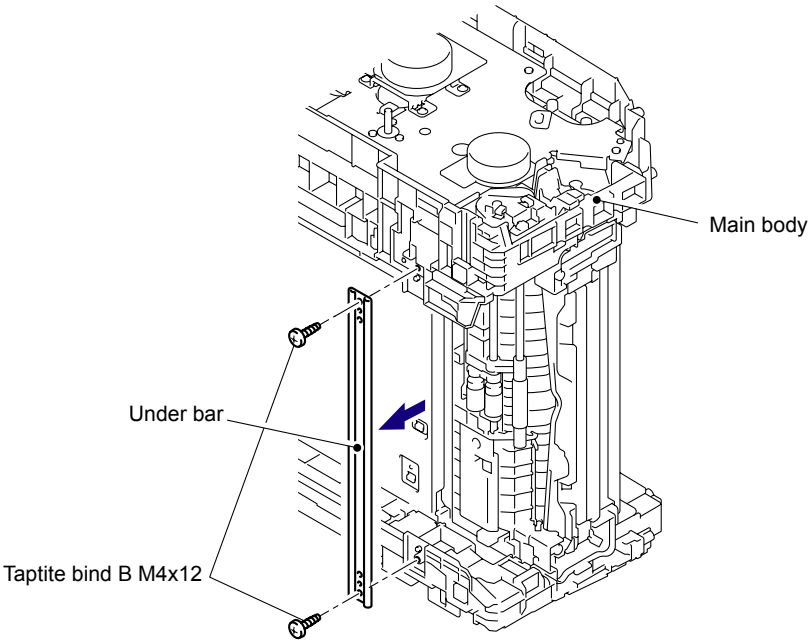


Fig. 5-173

(8) Remove the Taptite cup S M3x6 SR screw, and then remove the Under bar earth plate from the Drum develop drive unit.

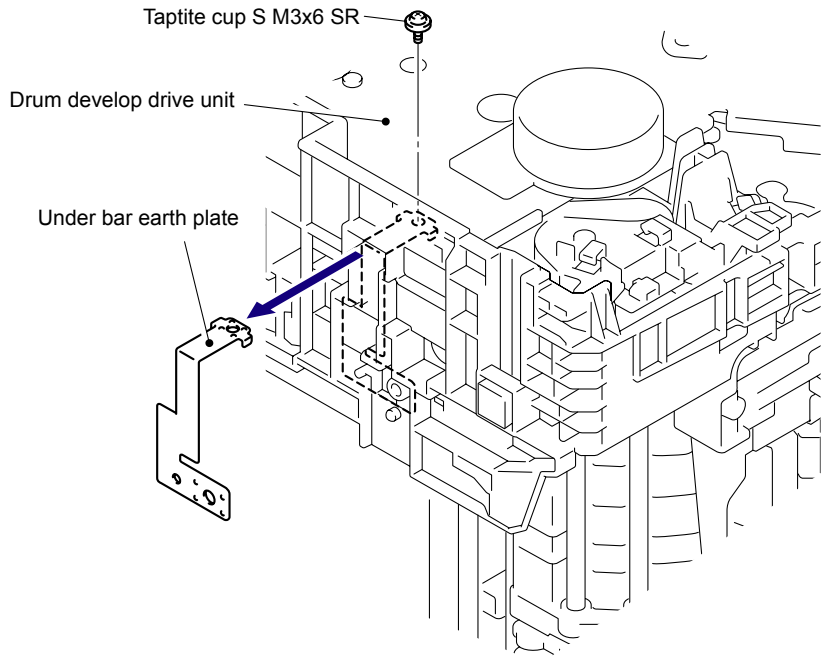


Fig. 5-174

(9) Remove the three Taptite bind B M4x12 screws and two Taptite cup S M3x6 SR screws, and then remove the Drum develop drive unit from the Side frame L.

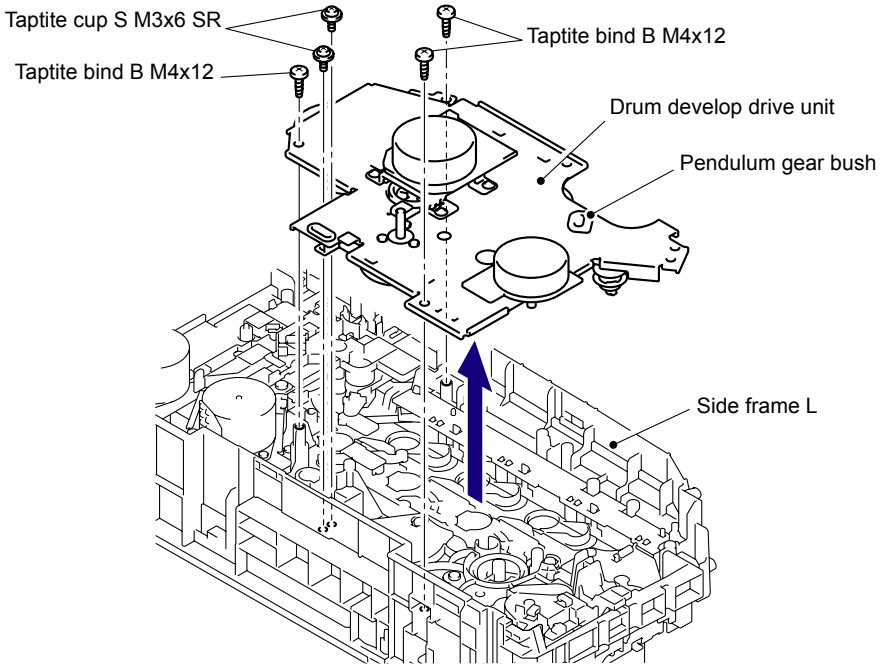


Fig. 5-175

Harness routing: Refer to "10 Paper Feed Motor ASSY, Drum Drive Motor."

(10) Remove the Pendulum gear bush from the Drum develop drive unit.

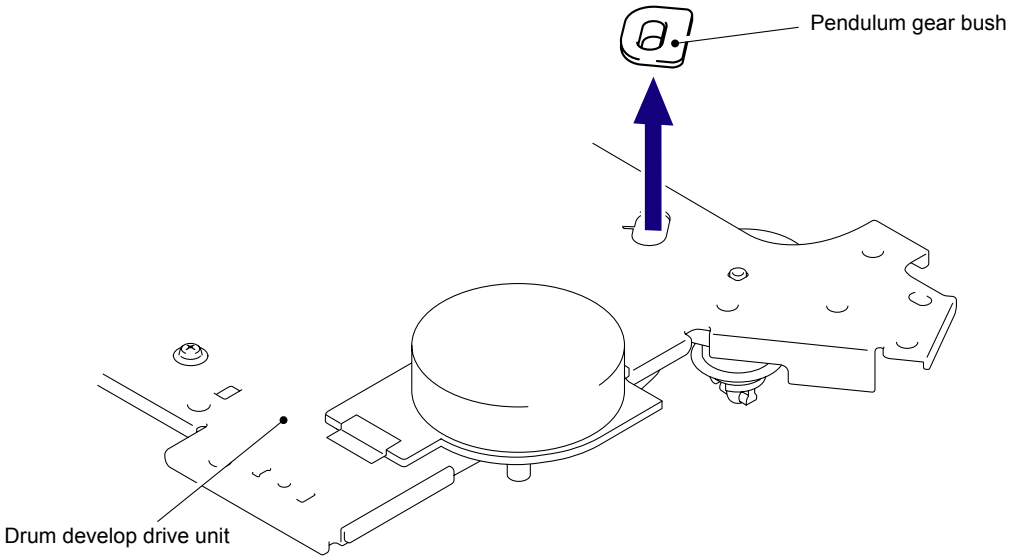


Fig. 5-176

8.61 Develop Drive Motor

(1) Remove the three Screw bind M3x4, and then remove the Develop drive motor from the Drum develop drive unit.

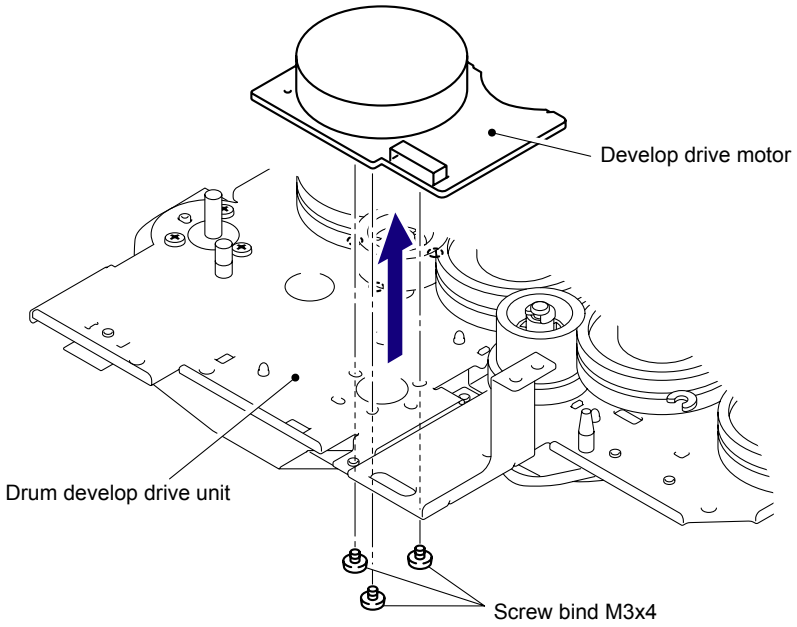


Fig. 5-177

8.62 Paper Feed Motor ASSY

(1) Remove the three Screw bind M3x4, and then remove the Paper feed motor ASSY from the Drum develop drive unit.

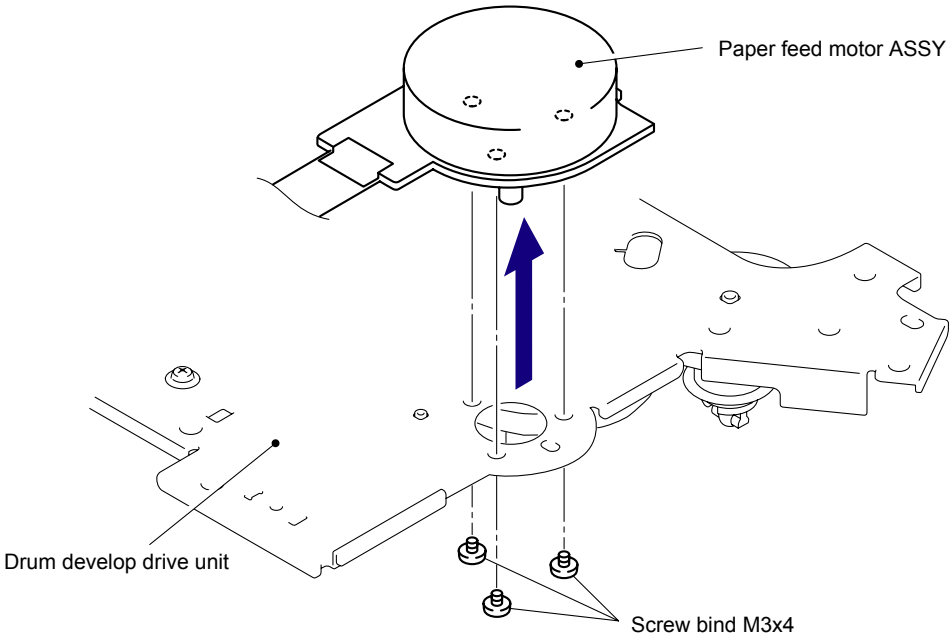


Fig. 5-178

Harness routing: Refer to "10 Paper Feed Motor ASSY, Drum Drive Motor."

Assembling Note:

When replacing the Paper feed motor ASSY with a new one, fold the FFC first in accordance with the "How to Fold FFC of Paper Feed Motor ASSY" figure in the next page, and then assemble the Paper feed motor ASSY.

<How to Fold FFC of Paper Feed Motor ASSY> (full-scale)

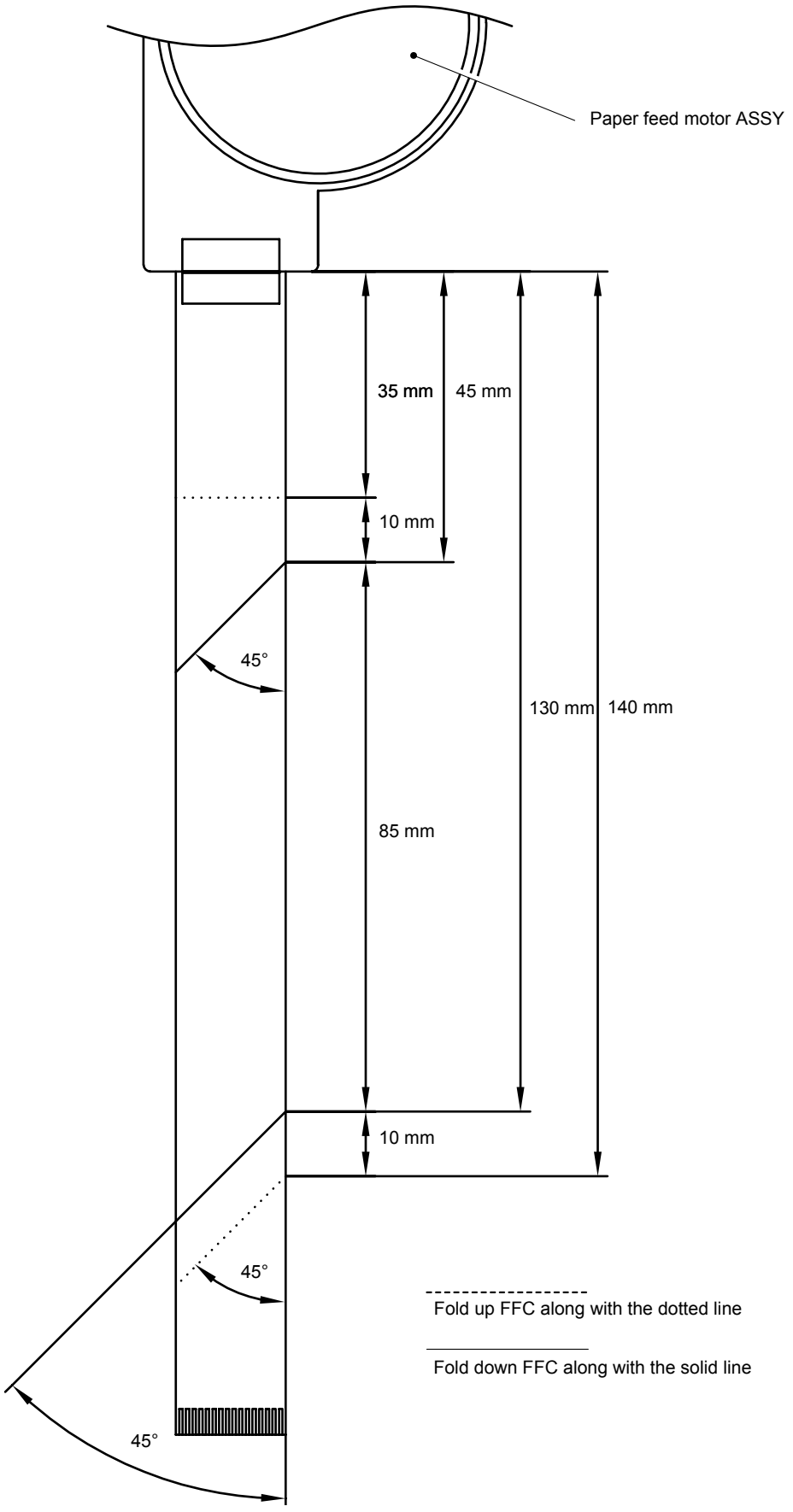


Fig. 5-179

8.63 Paper Feed Unit

(1) Remove the Bush cap and Gear 24/28 from the Side frame L.

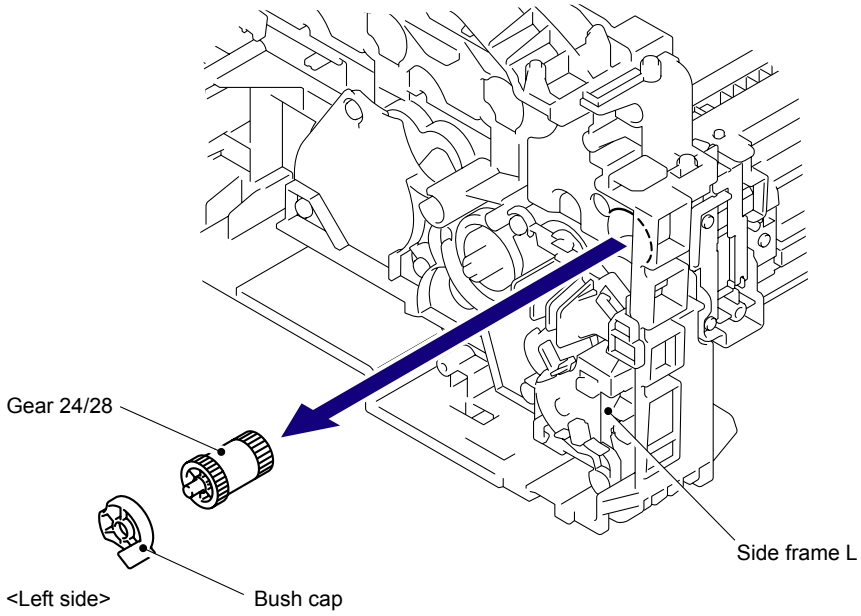


Fig. 5-180

(2) Release the Hook to remove the PF gear cap from the Side frame L.

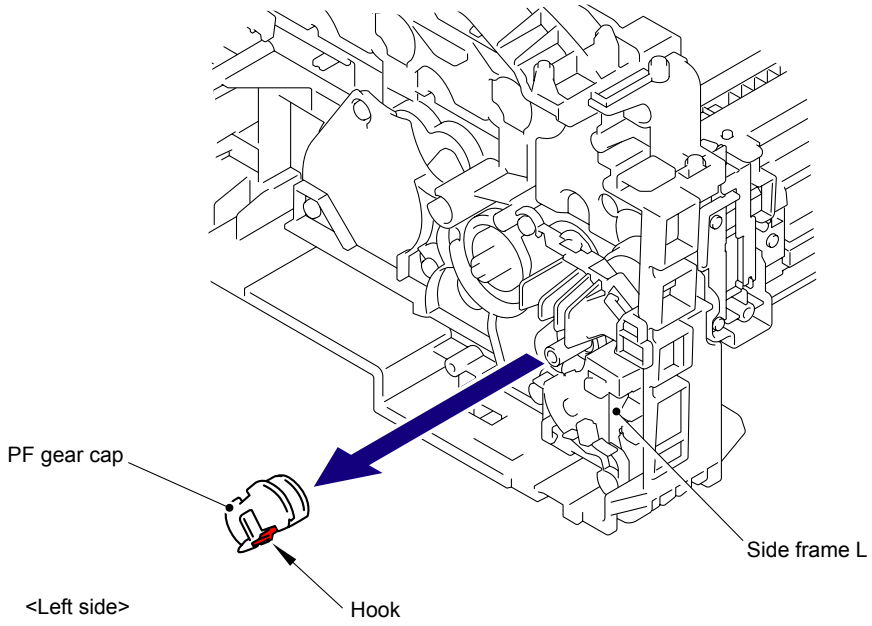


Fig. 5-181

(3) Remove the PF gear 17 and Separation roller drive shaft from the Side frame L.

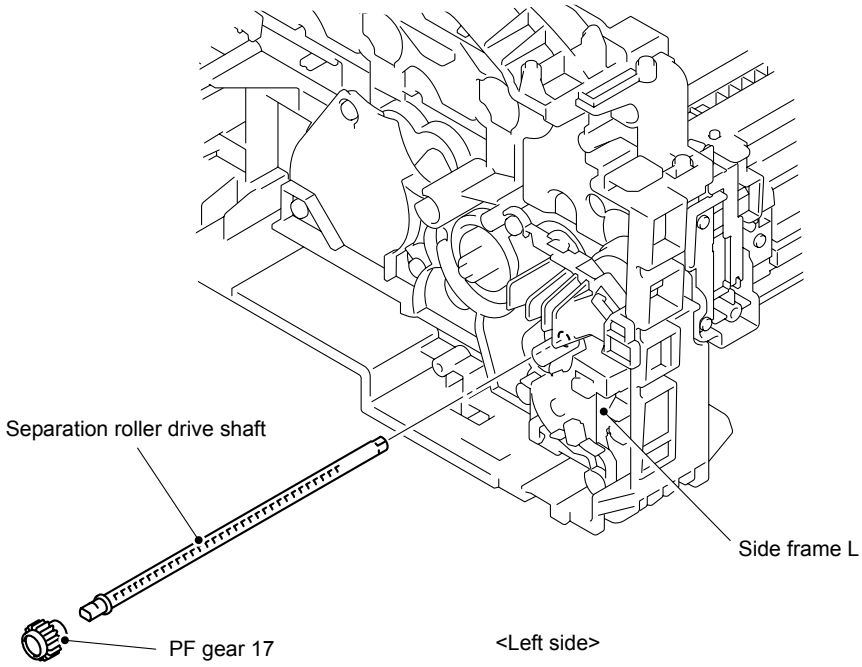


Fig. 5-182

Gear position: Refer to "■ Cleaner PF."

(4) Remove the PF drive gear 23 and PF roller drive shaft TR from the Side frame L.

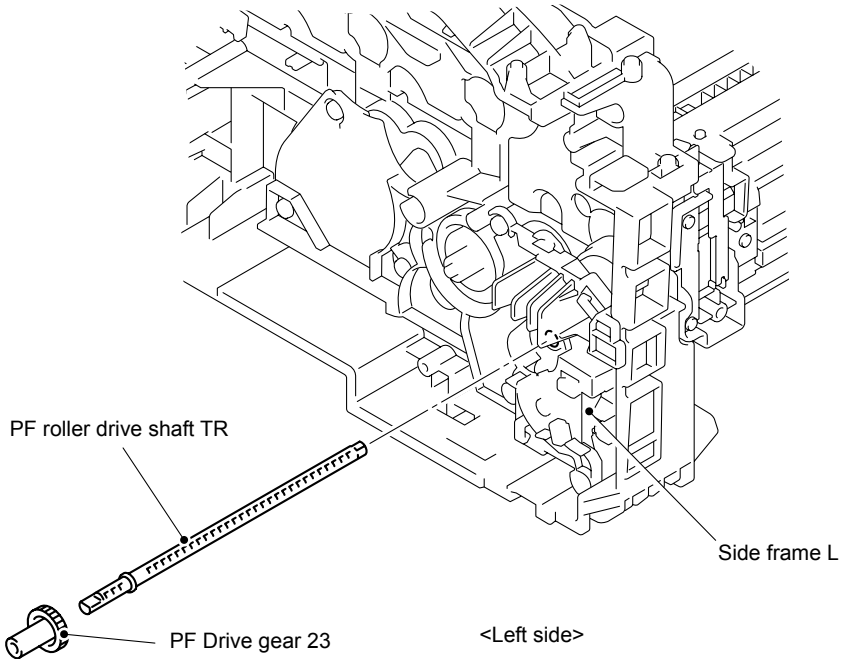


Fig. 5-183

Gear position: Refer to "■ Cleaner PF."

(5) Disconnect the Connector (CN3) of the Registration front/rear sensor harness ASSY from the HVPS control PCB ASSY.

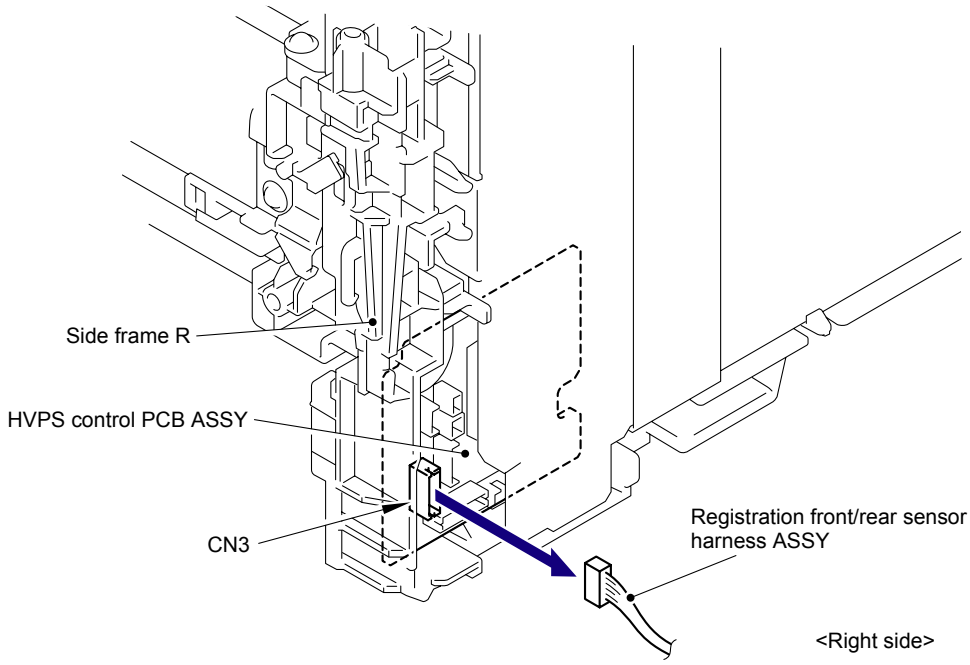


Fig. 5-184

(6) Remove the three Taptite cup S M3x6 SR screws and two Shoulder screws, and then remove the Paper feed unit from the Main body.

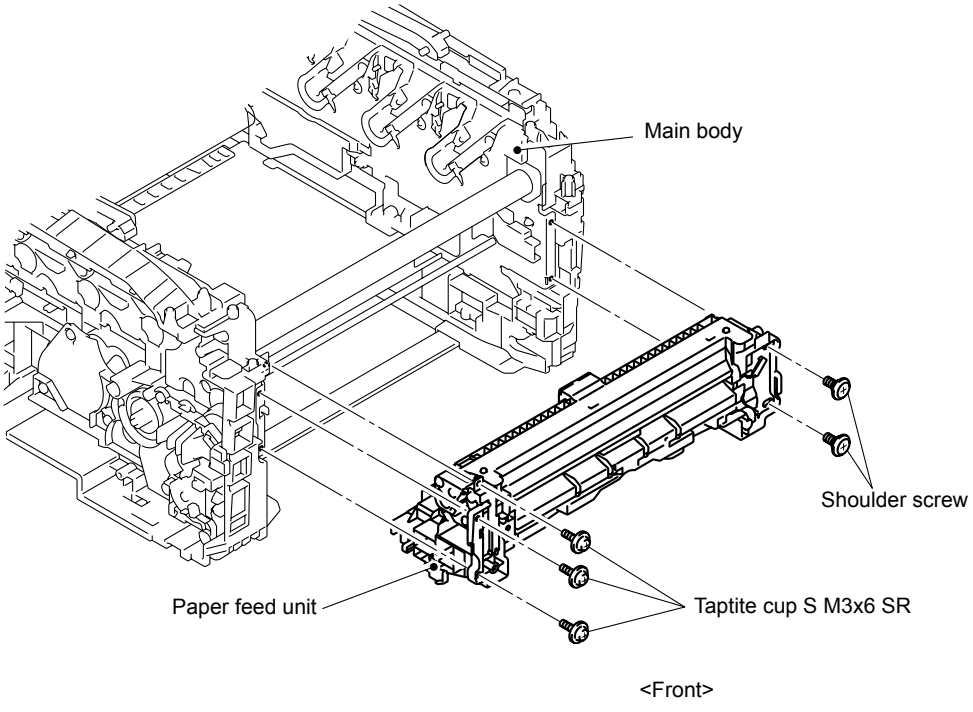


Fig. 5-185

8.64 Registration Front/Rear Sensor PCB ASSY

(1) Remove the two Taptite cup B M3x10 screws from the PF upper cover ASSY.

(2) Keep the shutter part of the Registration rear actuator at the position shown in the figure below.

(3) Release the two Bosses to remove the PF upper cover ASSY from the Paper feed unit.

Note:
When removing the PF upper cover ASSY, be careful not to damage the Registration rear actuator.

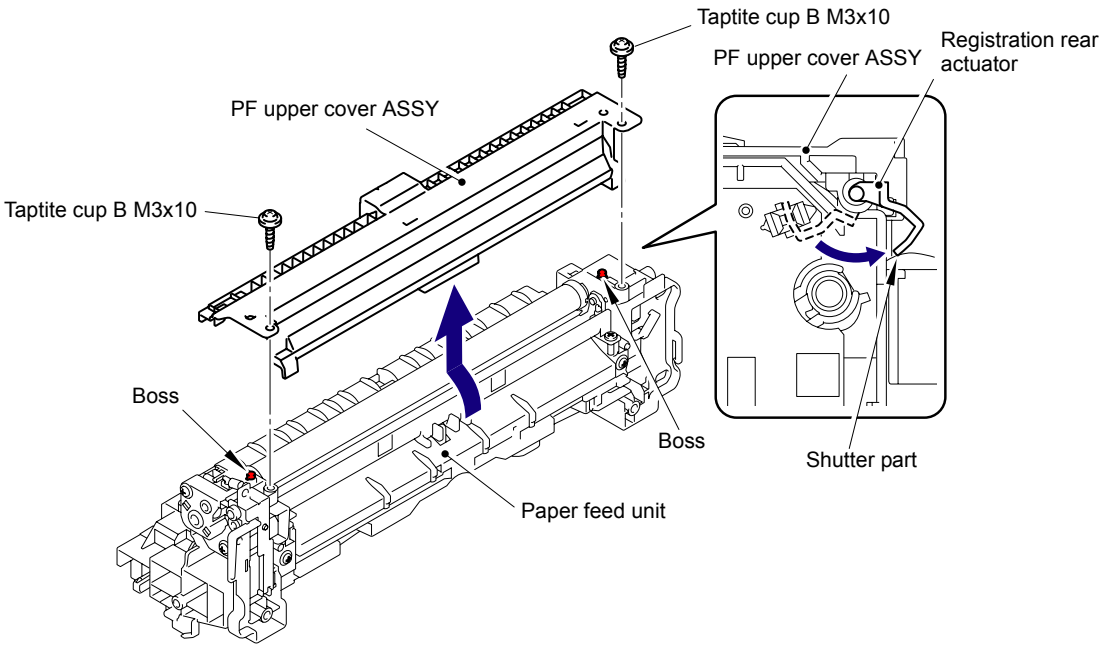


Fig. 5-186

(4) Disconnect the Connector (CN2) of the Manual sensor harness ASSY from the Registration front/rear sensor PCB ASSY.

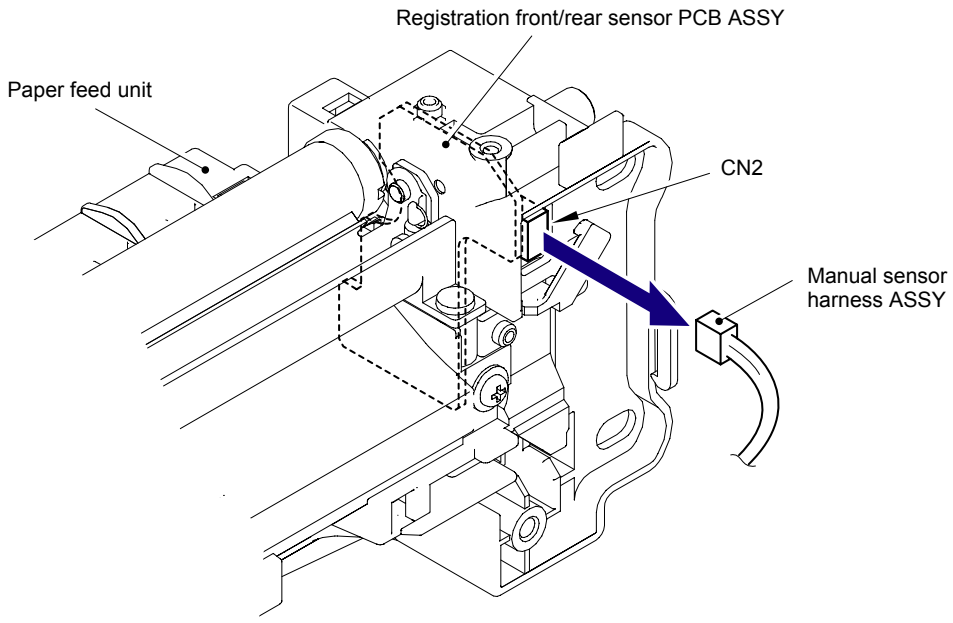


Fig. 5-187

(5) Remove the Taptite cup B M3x8 screw from the Registration front/rear sensor PCB ASSY.

(6) Keep the shutter part of the Registration front actuator at the position shown in the figure below.

(7) Remove the Registration front/rear sensor PCB ASSY from the Paper feed frame.

Note:
When removing the Registration front/rear sensor PCB ASSY, be careful not to damage the Registration front actuator.

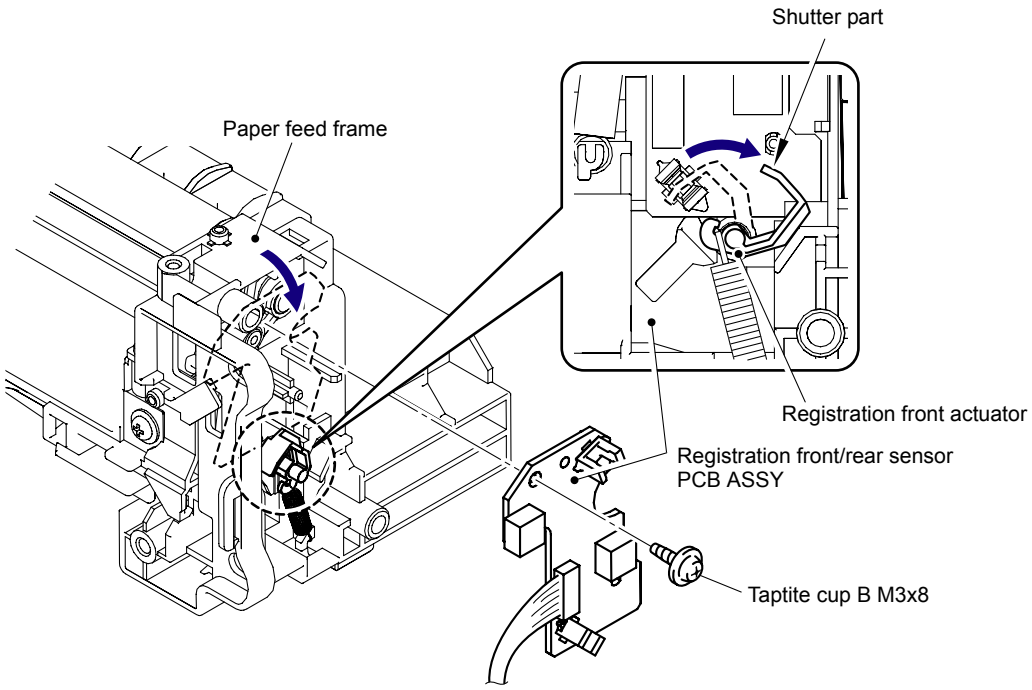


Fig. 5-188

Harness routing: Refer to "2 Registration Front/Rear Sensor PCB ASSY."

8.65 Manual Sensor PCB ASSY

(1) Remove the two Taptite cup B M3x10 screws, and then remove the Front chute ASSY from the Paper feed unit.

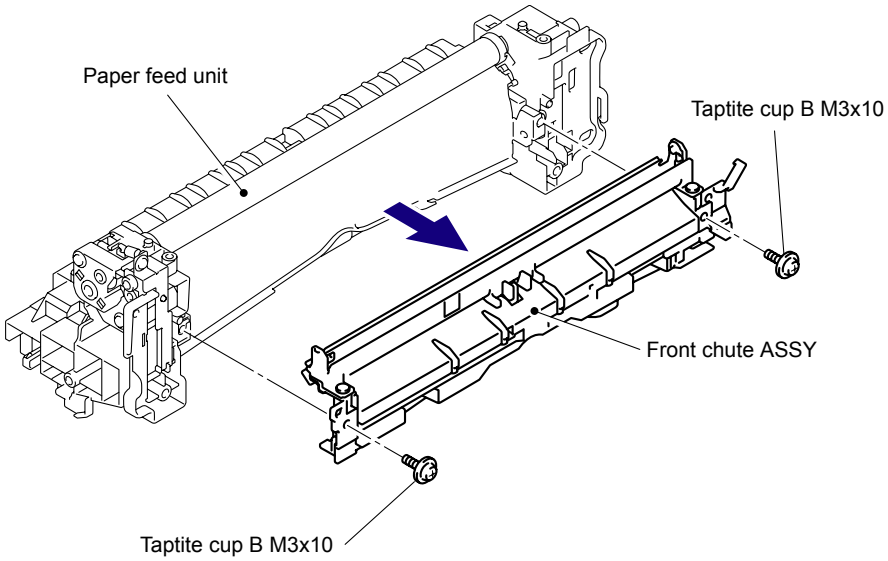


Fig. 5-189

(2) Release the Hook to remove the Manual sensor PCB ASSY from the Front chute ASSY.

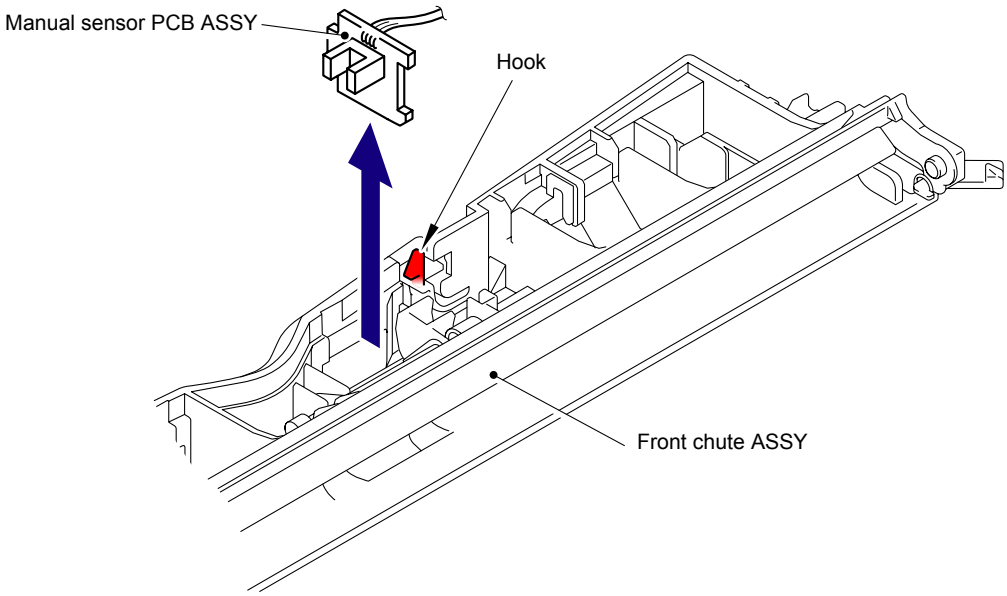


Fig. 5-190

Harness routing: Refer to "3 Manual Sensor PCB ASSY."

8.66 Pick-up Sector Gear Spring/Friction Spring

(1) Remove the Gear 27/72 from the Side frame L.

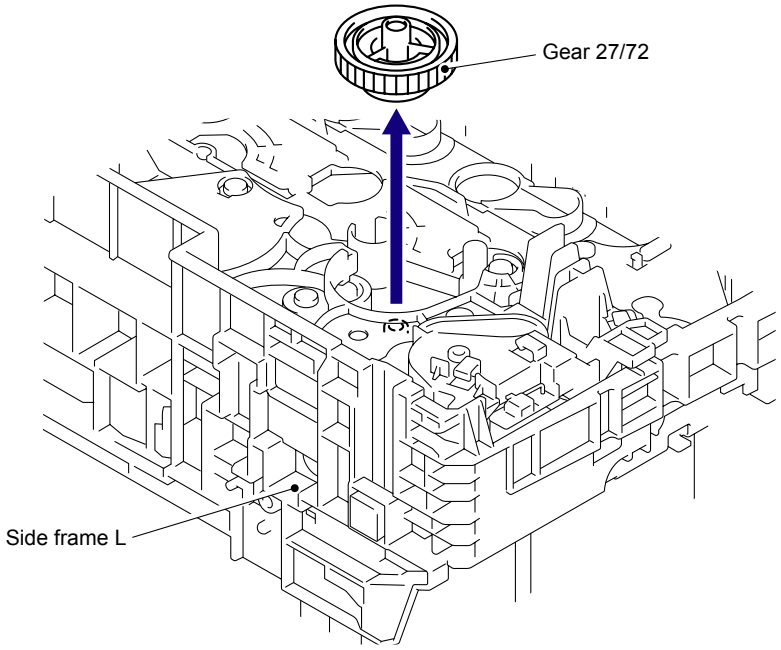


Fig. 5-191

(2) Remove the Pick-up sector gear spring from the Hook of the Cleaner PF gear cover.

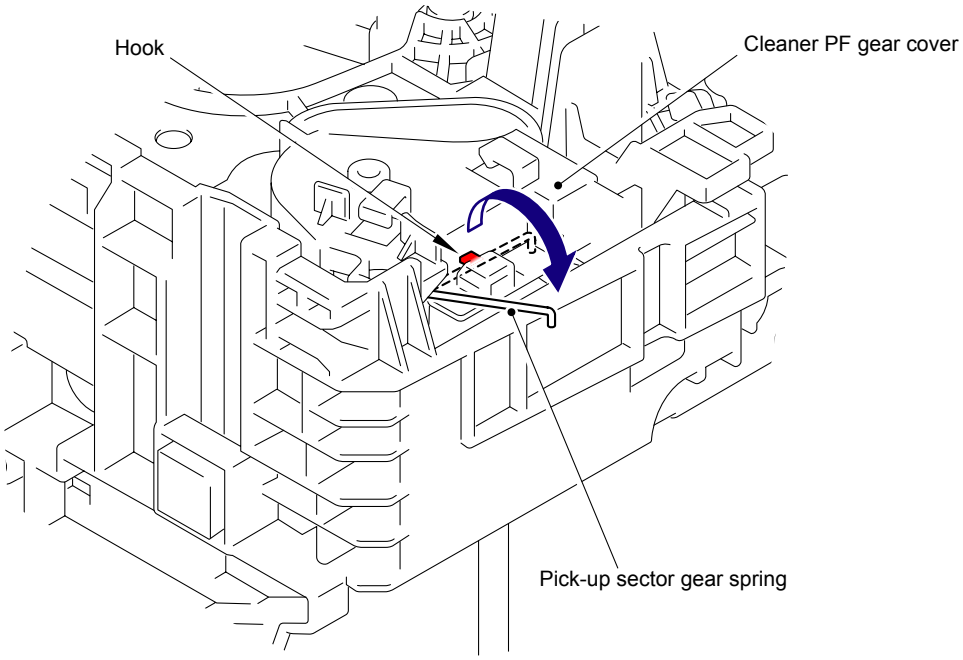


Fig. 5-192

(3) Remove the five Taptite bind B M4x12 screws, and then remove the Cleaner PF gear cover from the Side frame L.

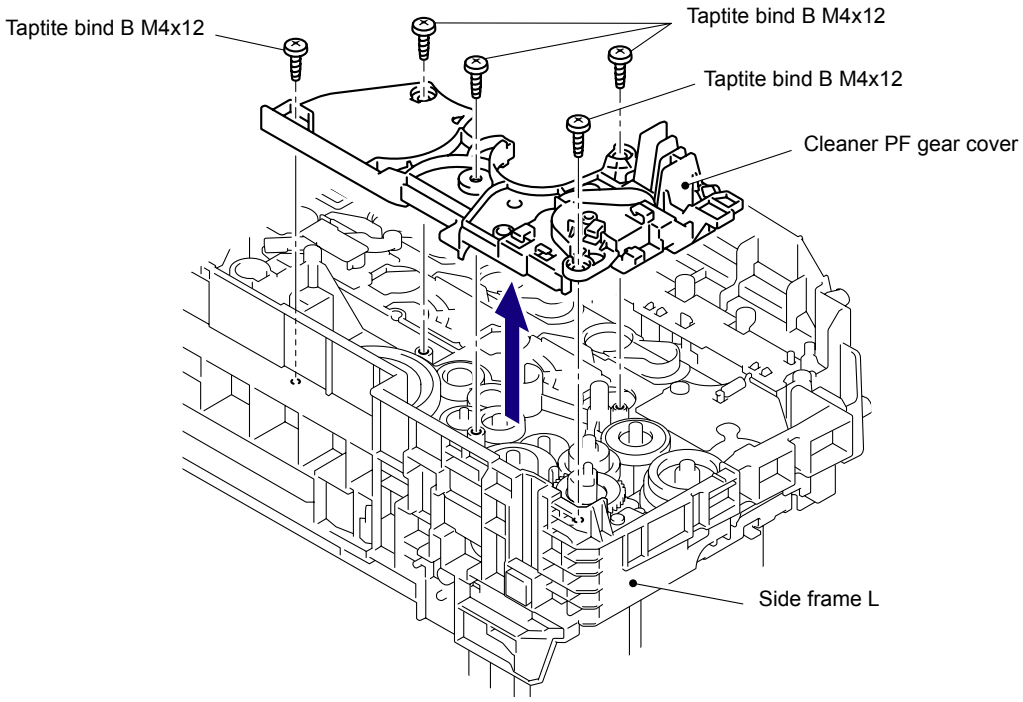


Fig. 5-193

Assembling Note:

When assembling the Cleaner PF gear cover, make sure to place the Pick-up sector gear spring and PF registration solenoid harness correctly as shown in the figure below.

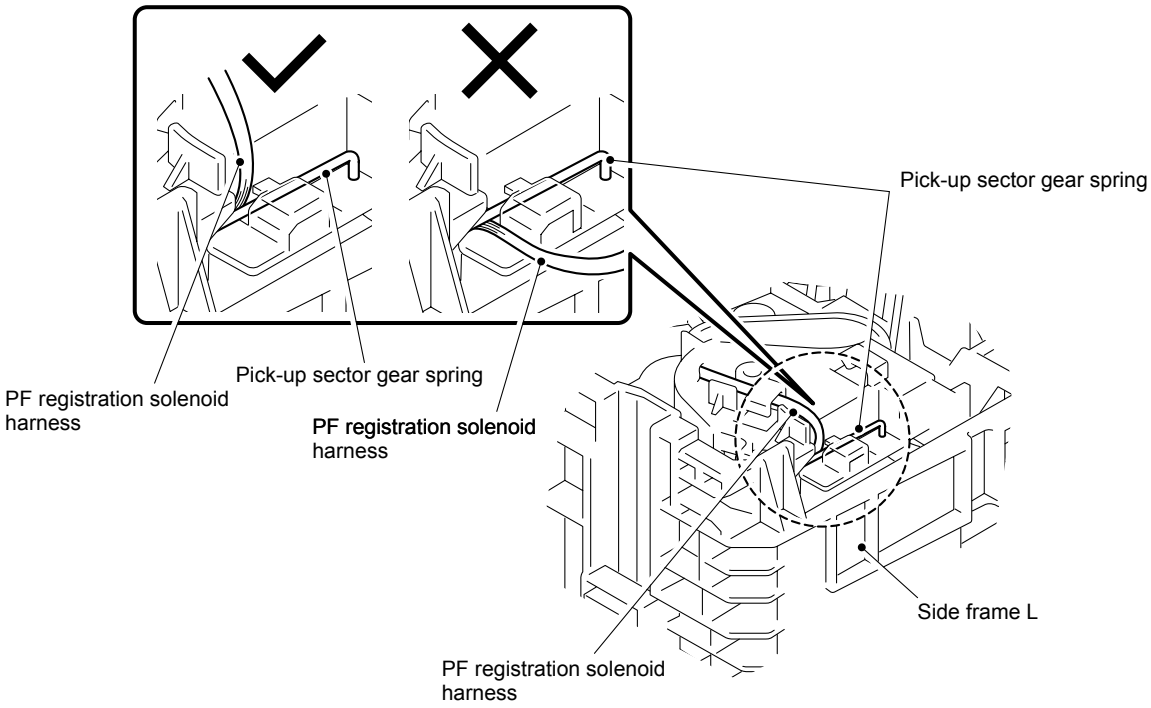


Fig. 5-194

(4) Remove the Friction spring from the Cleaner PF gear cover.

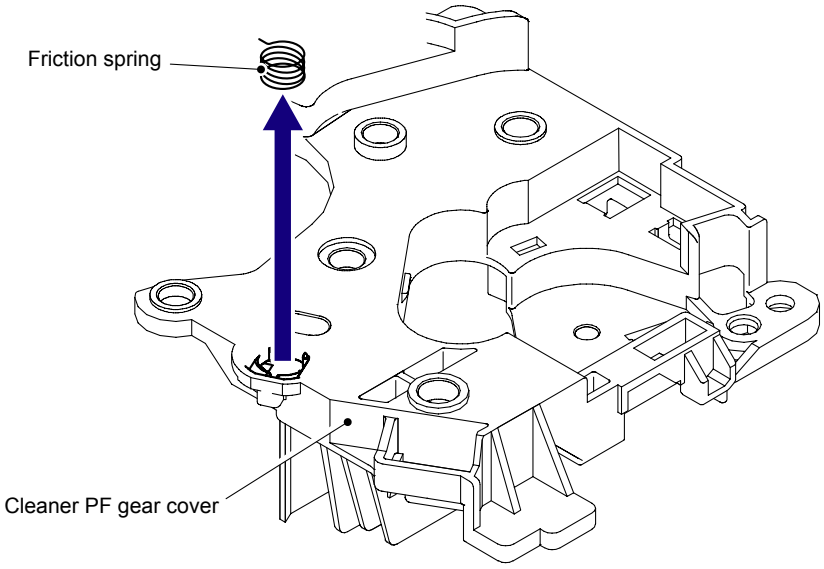


Fig. 5-195

(5) Remove the Pick-up sector gear spring from the Side frame L.

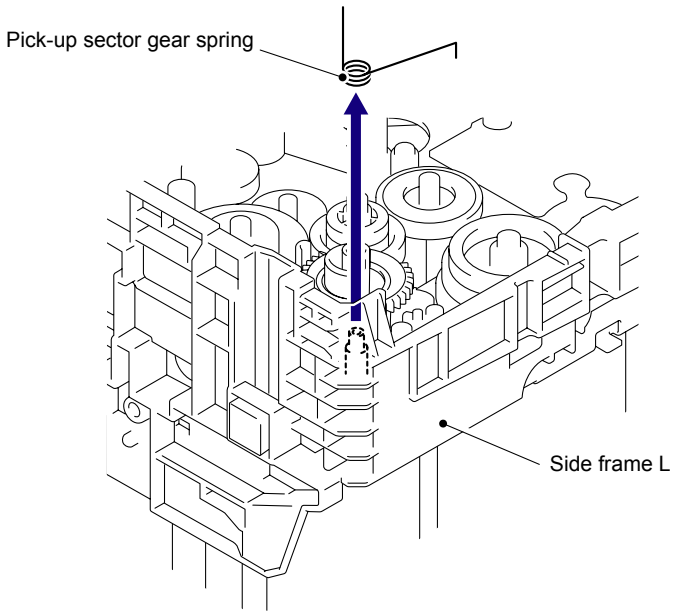


Fig. 5-196

8.67 PF Registration Solenoid

(1) Remove the Pick-up sector gear 31/38 from the Side frame L.

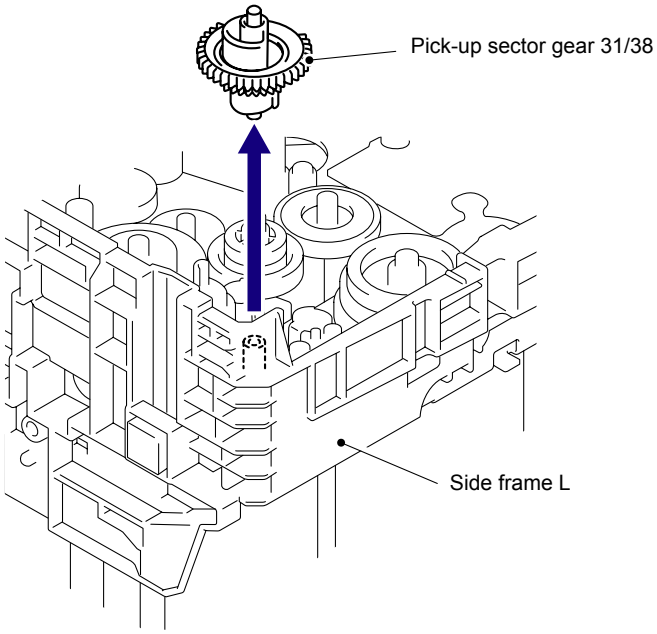


Fig. 5-197

Assembling Note:

When assembling the Pick-up sector gear 31/38 onto the Side frame L, make sure to mount the Pick-up solenoid lever as shown in the figure below.

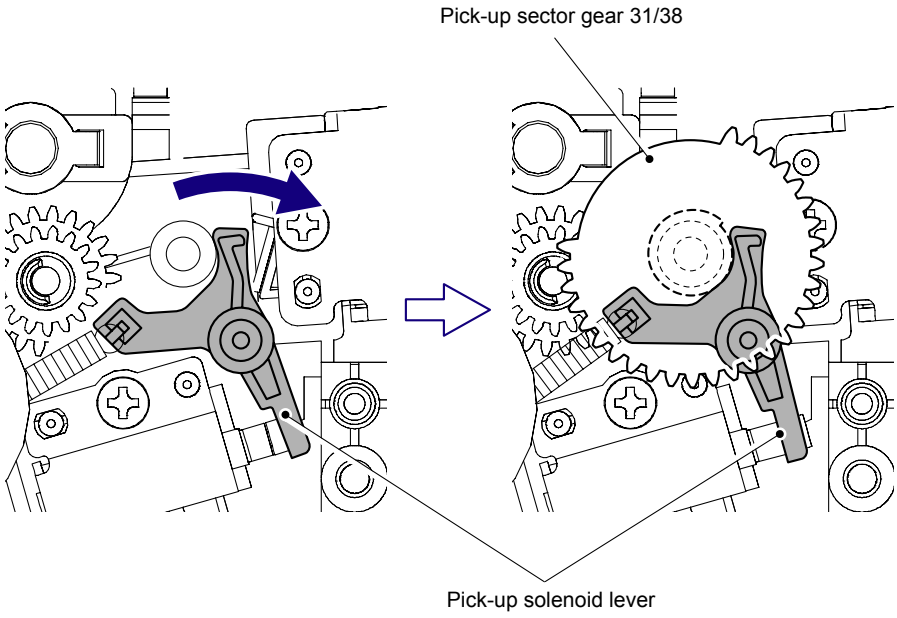


Fig. 5-198

(2) Remove the Taptite bind B M3x10 screw, and then remove the PF registration solenoid from the Side frame L.

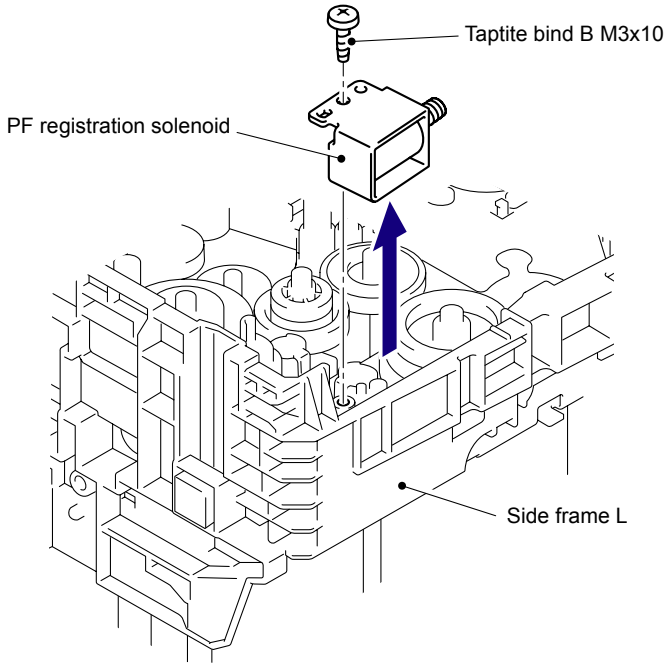


Fig. 5-199

(3) Remove the Registration solenoid spring from the PF registration solenoid.

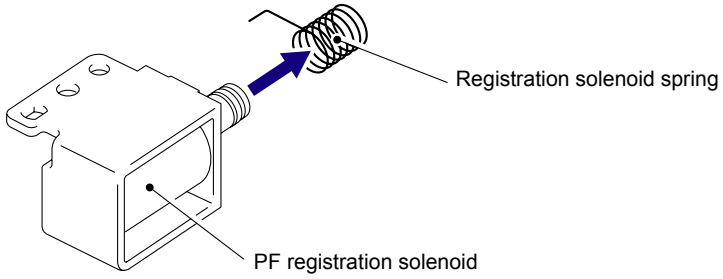


Fig. 5-200

Harness routing: Refer to "4 PF Registration Solenoid, Pick-up Solenoid."

8.68 Pick-up Solenoid/Pick-up Solenoid Lever Spring

(1) Remove the Idle gear 40 from the Side frame L.

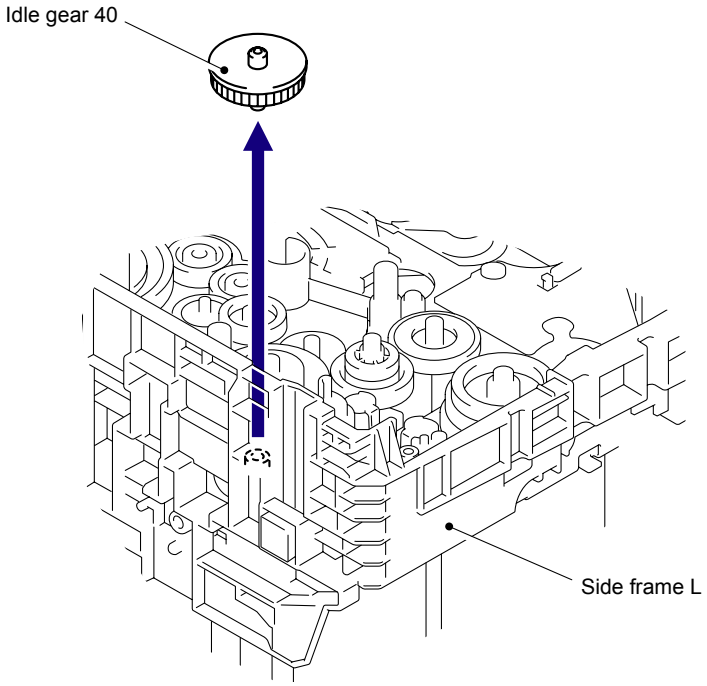


Fig. 5-201

(2) Remove the Pick-up solenoid lever spring from the Hook of the Pick-up solenoid lever.

(3) Remove the Pick-up solenoid lever spring from the Side frame L.

Note:
Be careful not to lose the Pick-up solenoid lever spring.

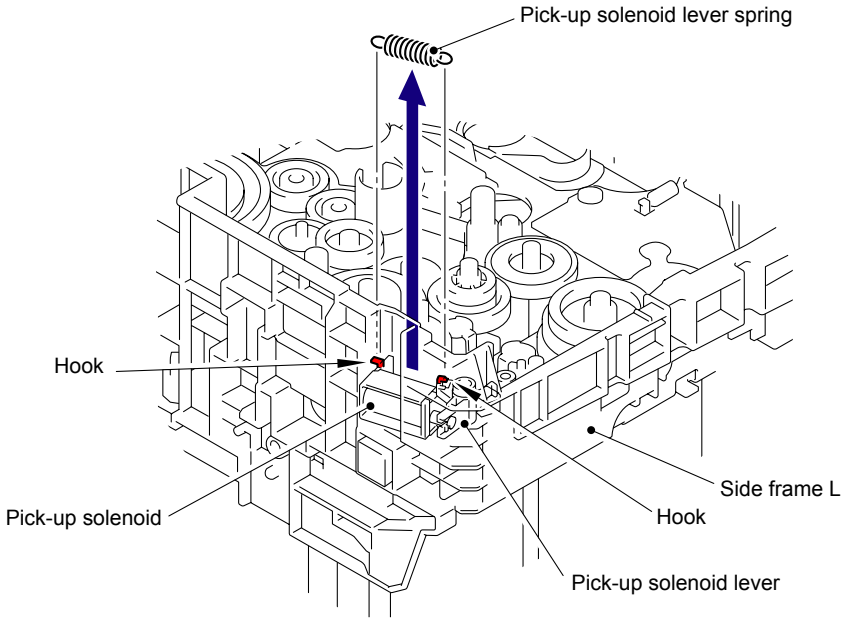


Fig. 5-202

(4) Remove the Taptite bind B M3x10 screw, and then remove the Pick-up solenoid and Pick-up solenoid lever from the Side frame L.

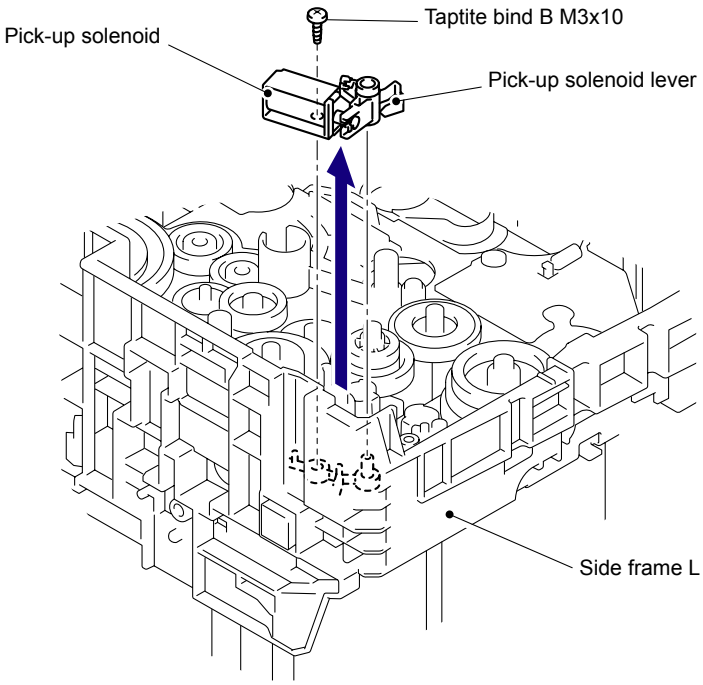


Fig. 5-203

(5) Remove the Pick-up solenoid lever from the Pick-up solenoid.

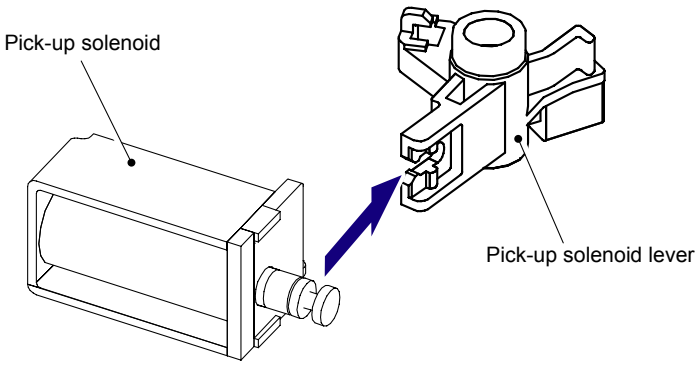


Fig. 5-204

Harness routing: Refer to "4 PF Registration Solenoid, Pick-up Solenoid."

8.69 Fuser/Eject Drive Motor

(1) Remove the Taptite bind B M4x12 screw and Taptite cup S M3x6 SR screw, and then remove the Fuser/Eject drive motor from the Fuser eject drive ASSY.

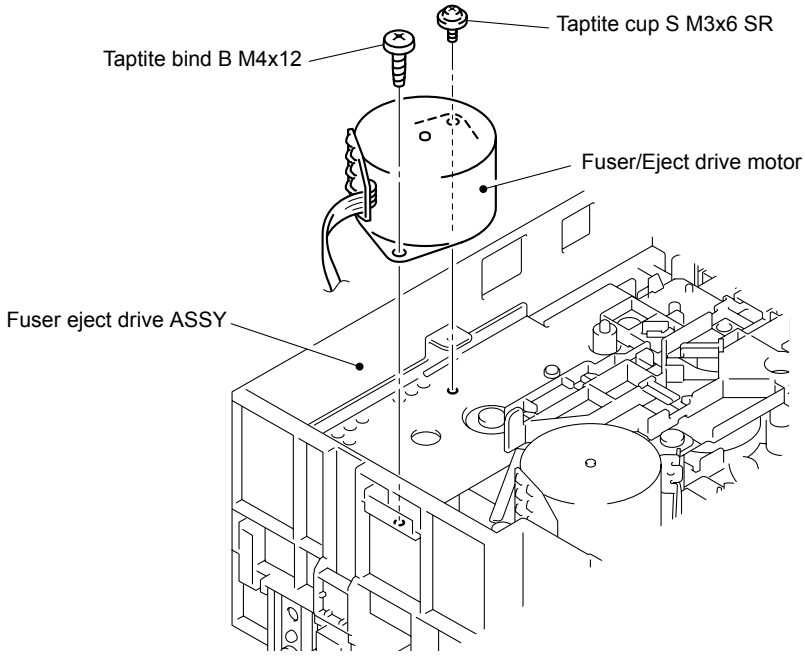


Fig. 5-205

Harness routing: Refer to "8 Fuser/Eject Drive Motor, Fuser/Eject Drive Motor Sensor PCB ASSY."

8.70 Fuser/Eject Drive Motor Sensor PCB ASSY

(1) Remove the three Taptite bind B M4x12 screws, and then remove the Eject gear cover from the Side frame L.

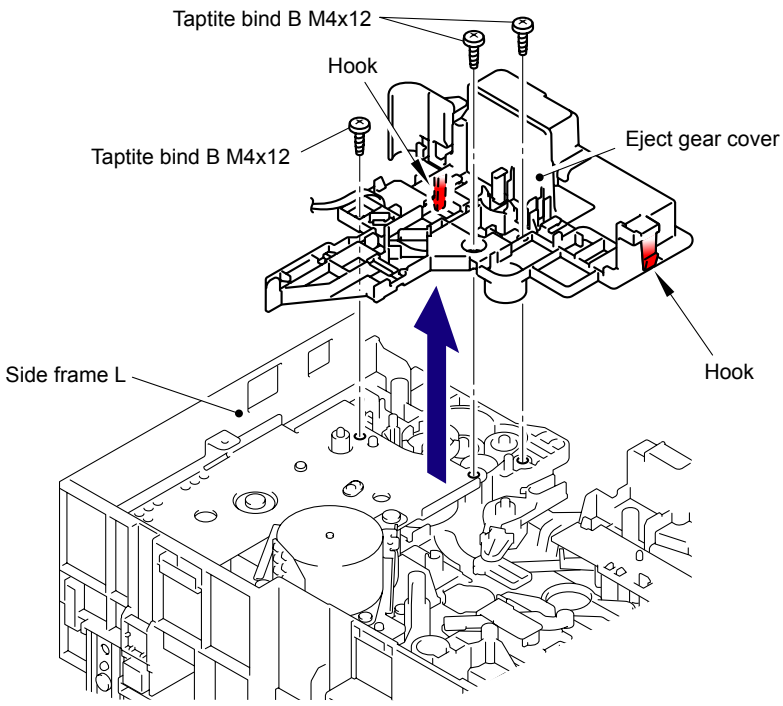


Fig. 5-206

Note:
Be careful when changing the setup condition of the main body with the left side up while the Eject gear cover is removed because the gear may fall off.

(2) Release the Hook to remove the Fuser/eject drive motor sensor PCB ASSY from the Eject gear cover.

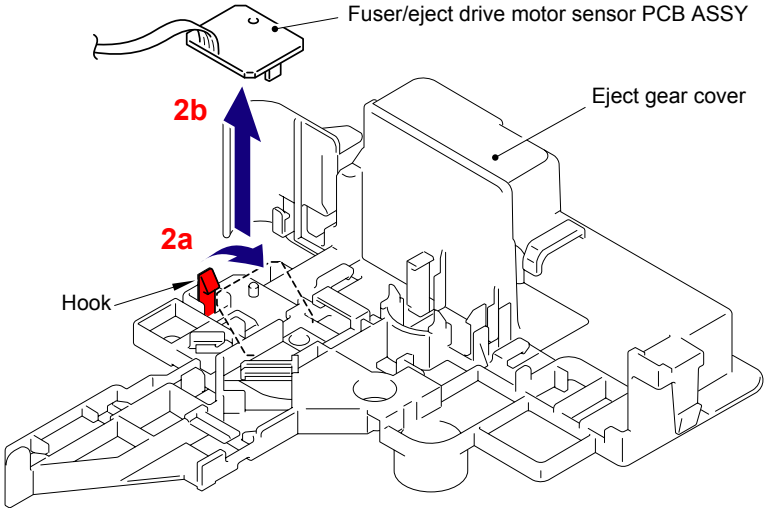


Fig. 5-207

Harness routing: Refer to "8 Fuser/Eject Drive Motor, Fuser/Eject Drive Motor Sensor PCB ASSY."

8.71 Top Cover Arm R

(1) Release the Hook to remove the TC arm pivot shaft from the Side frame R.

(2) Remove the Top cover arm R from the Side frame R.

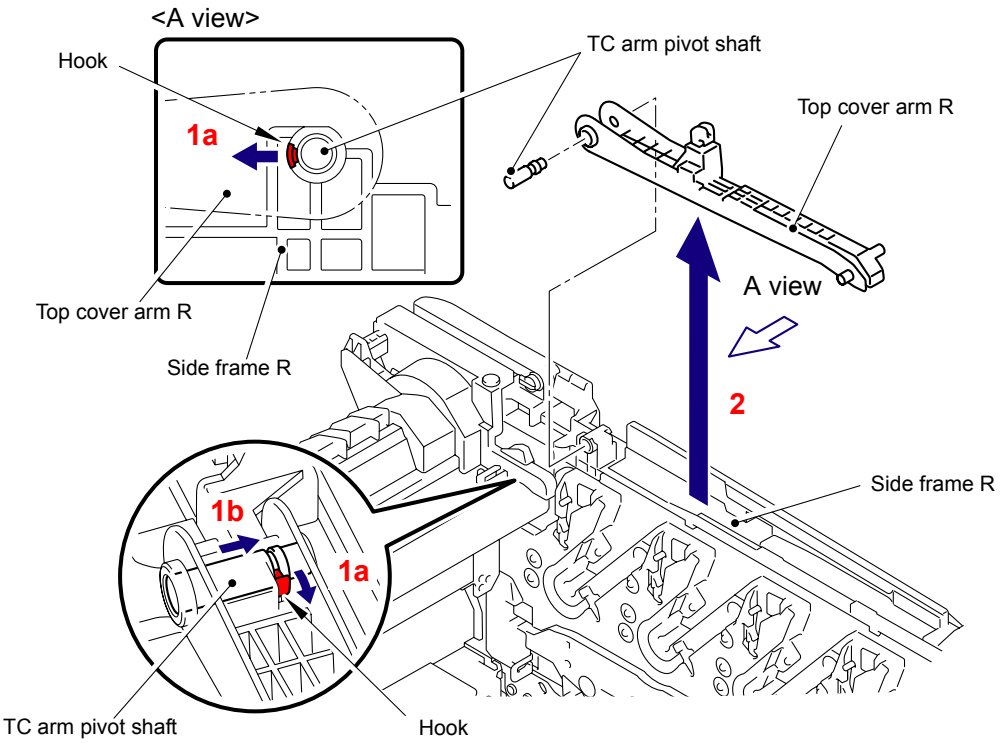


Fig. 5-208

8.72 Top Cover Arm L

(1) Release the Hook to remove the TC arm pivot shaft from the Side frame L.

(2) Remove the Top cover arm L from the Side frame L.

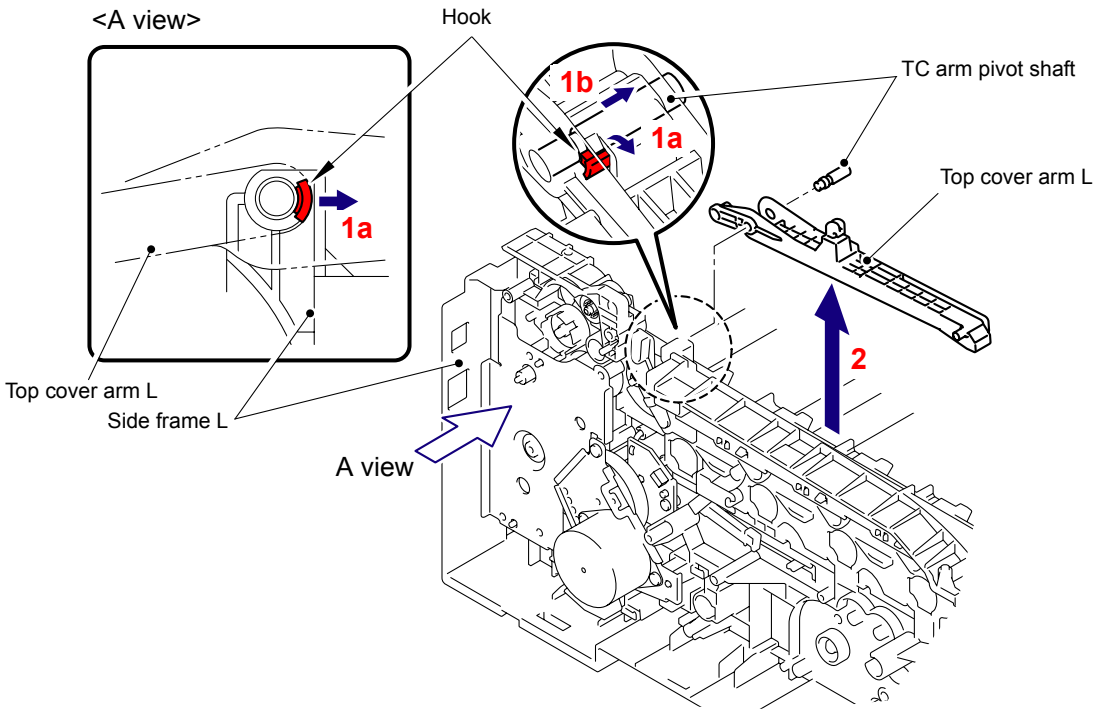


Fig. 5-209

Assembling Note:

When assembling the Top cover arm L, make sure to fit the “A” of the Top cover arm L into the “B” of the Top cover link 1 before assembling the Top cover arm L onto the Side frame L.

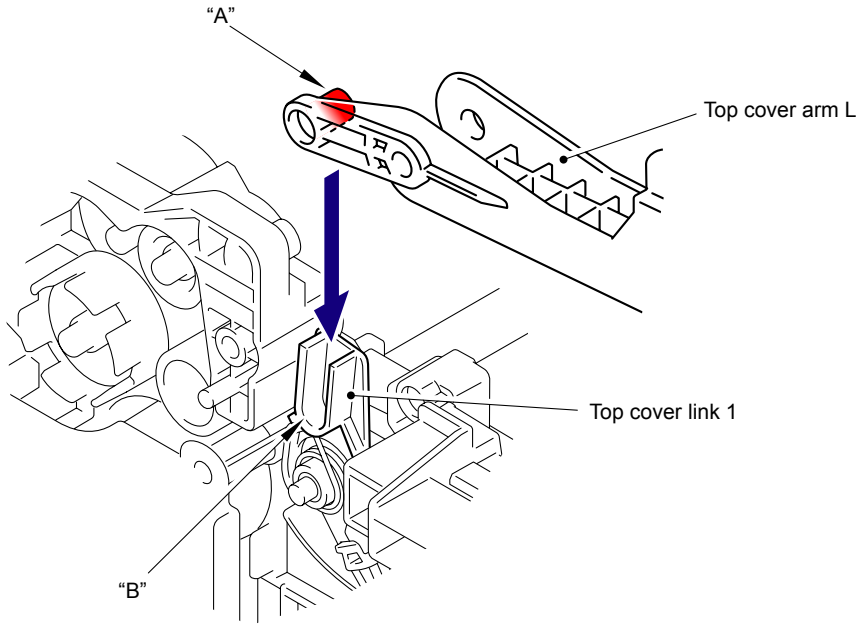


Fig. 5-210

8.73 Air Filter Holder ASSY/Ozone Filter

(1) Remove the two Taptite bind B M4x12 screws from the Paper eject guide ASSY.

(2) Remove the two Taptite bind B M4x12 screws from the Side frame L and Side frame R.

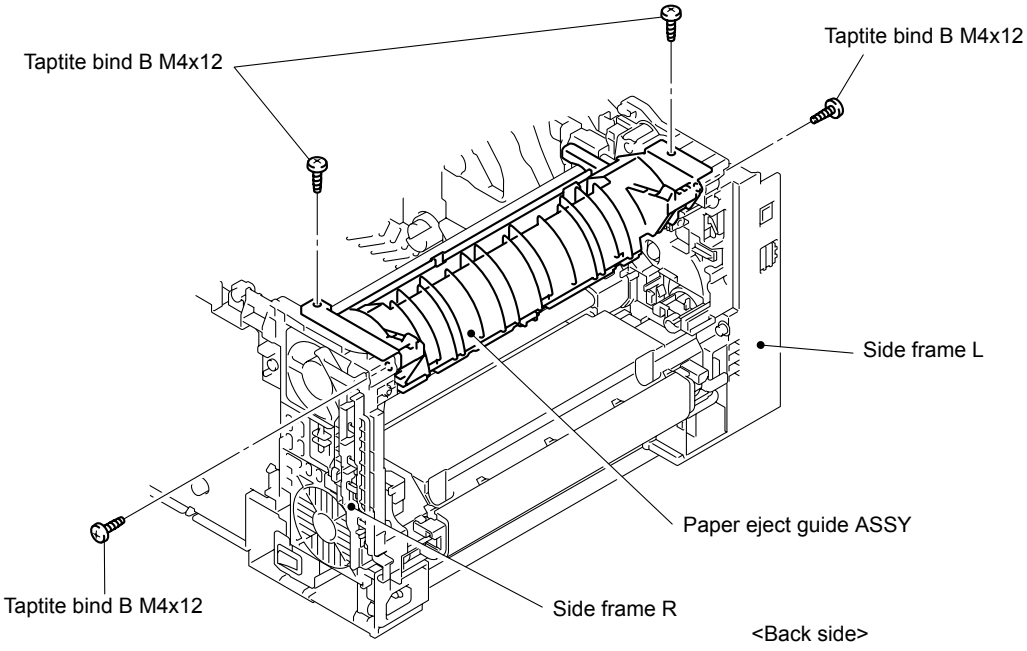


Fig. 5-211

(3) Open the left and right frames to the outside and remove the Paper eject guide ASSY from the Main body.

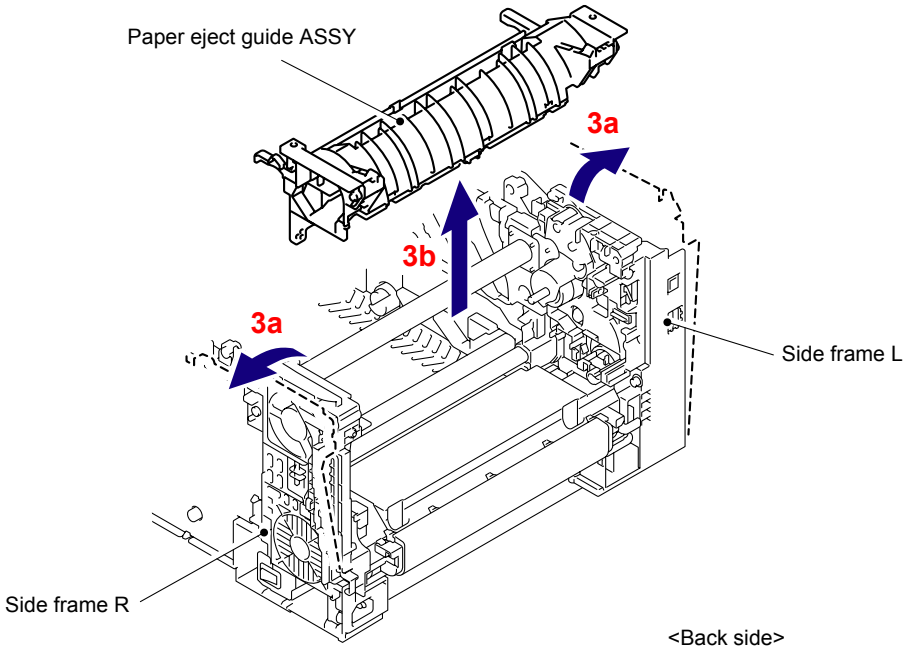


Fig. 5-212

(4) Release the two Hook A in the direction of the arrow 4a and remove the three Hook B in the direction of the arrow 4b. Then, remove the Paper eject guide from the Lower air duct.

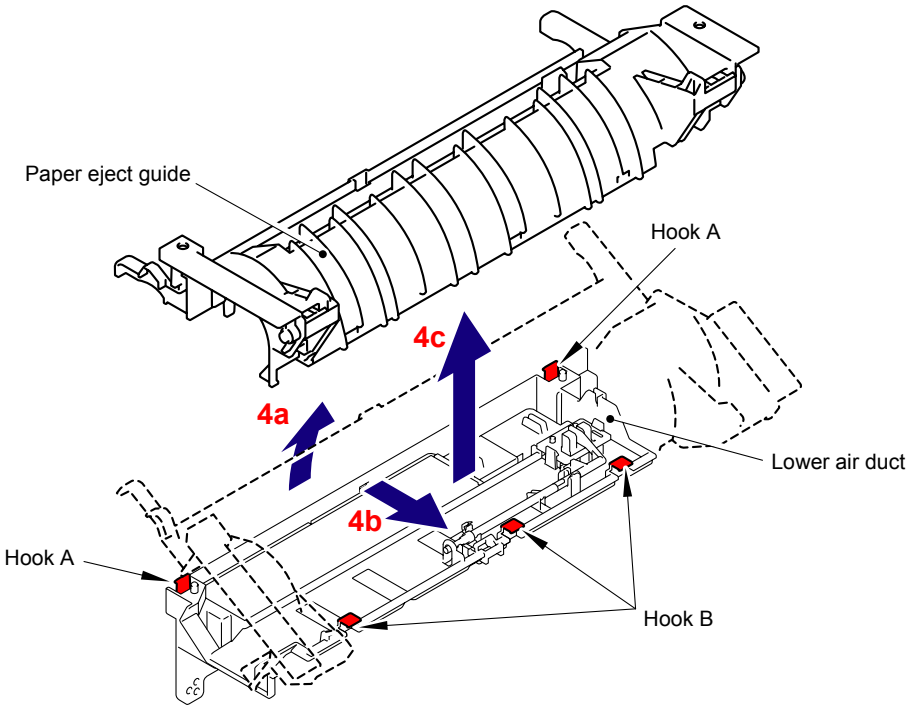


Fig. 5-213

Assembling Note:

When assembling the Paper eject guide onto the Lower air duct, make sure to pass the Eject rear harness ASSY through the “A” of the Lower air duct before assembling it.

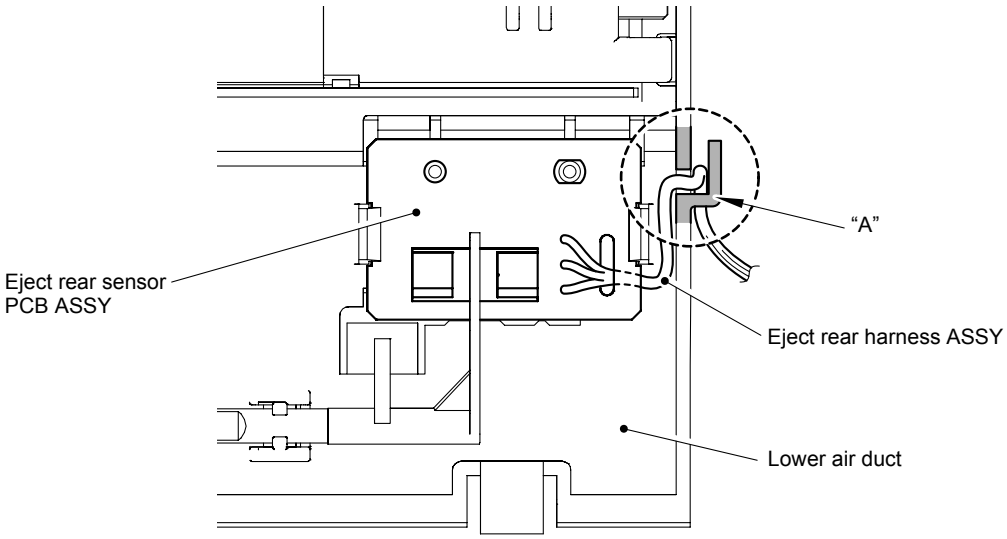


Fig. 5-214

(5) Remove the Ozone filter from the Air filter holder ASSY.

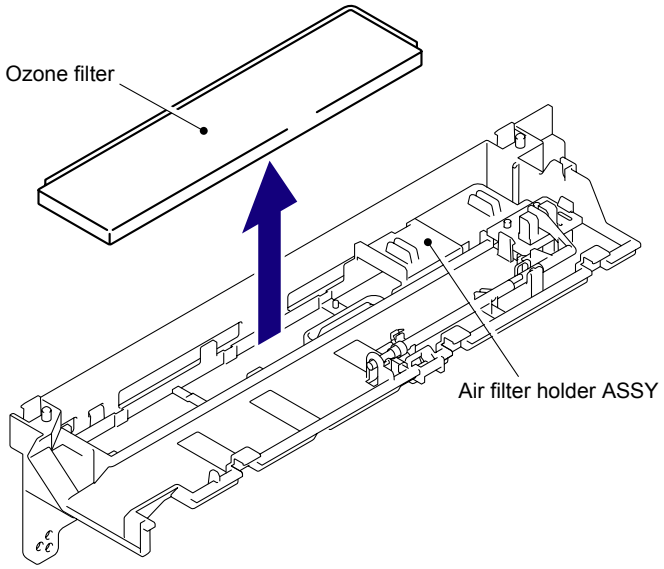


Fig. 5-215

(6) Release the five Hooks to remove the Air filter holder ASSY from the Lower air duct.

Note:
When removing the Air filter holder ASSY from the Lower air duct, be careful not to damage the Toner filter.

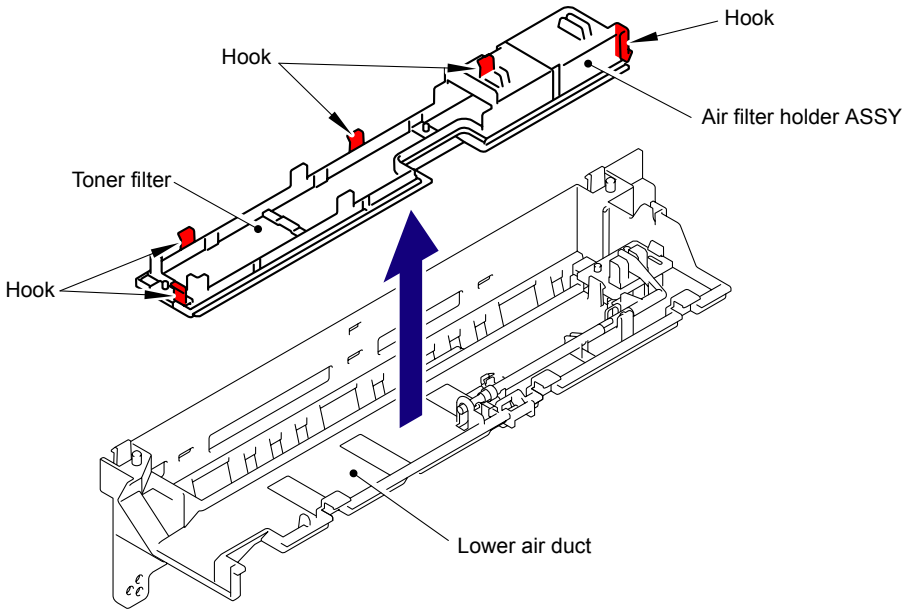


Fig. 5-216

8.74 Paper Eject Rear Actuator/Paper Eject Rear Actuator Spring/Paper Eject Rear Actuator Top

(1) Remove “A” of the Paper eject rear actuator spring from the Hook of the Paper eject rear actuator.

(2) Turn the Paper eject rear actuator to the direction of the arrow 2a and slide it to the direction of the arrow 2b.
Adjust “B” of the Paper eject rear actuator to the position of “C” of the Lower air duct.
Then, remove the Paper eject rear actuator from the Lower air duct.

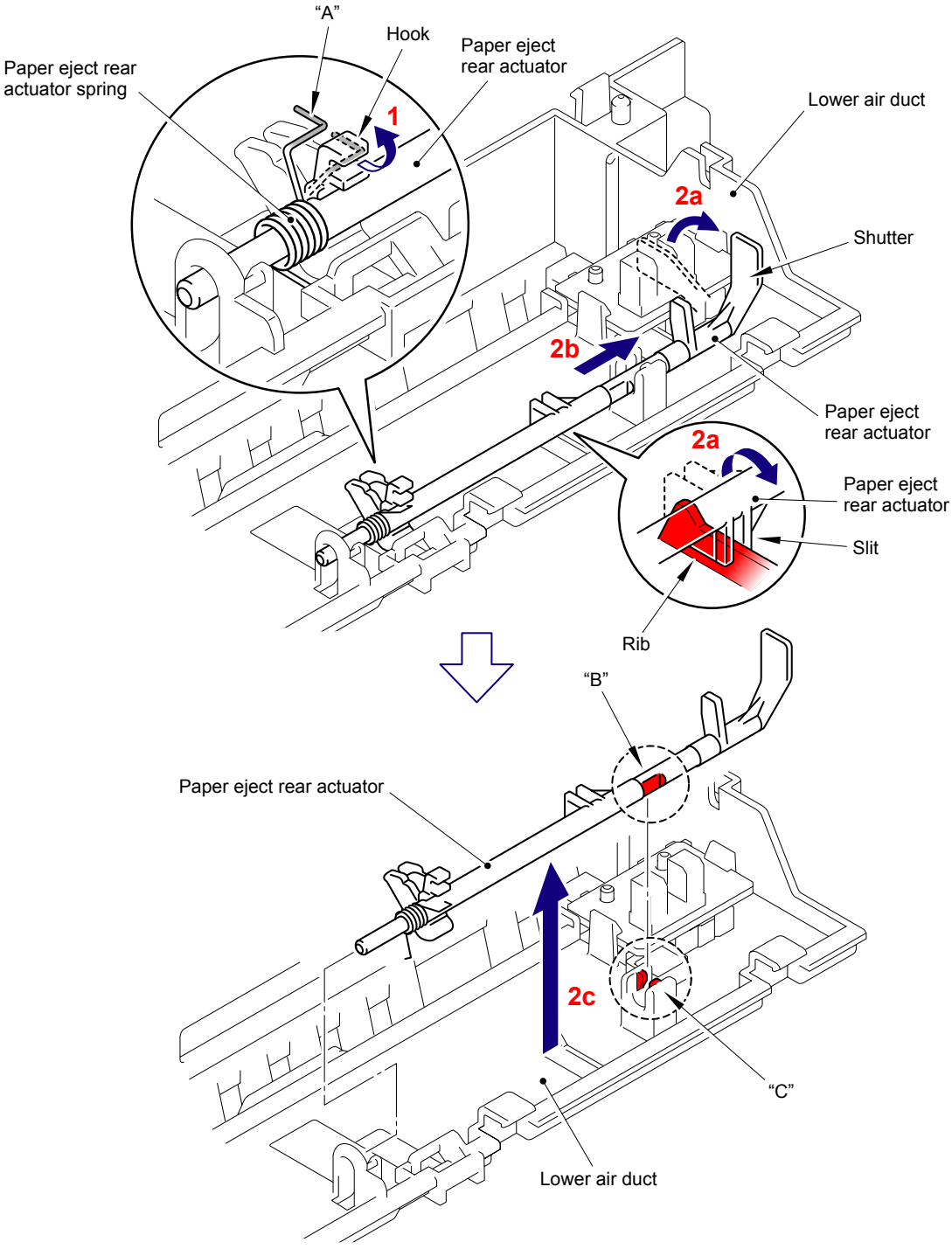


Fig. 5-217

(3) Remove the Paper eject rear actuator spring from the Paper eject rear actuator.

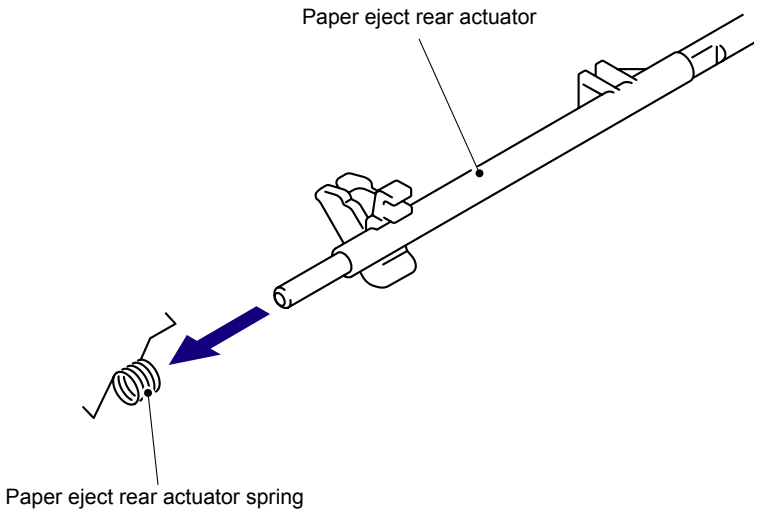


Fig. 5-218

Assembling Note:
When assembling the Paper eject rear actuator spring, make sure to mount the Paper eject rear actuator spring as shown in the figure below.

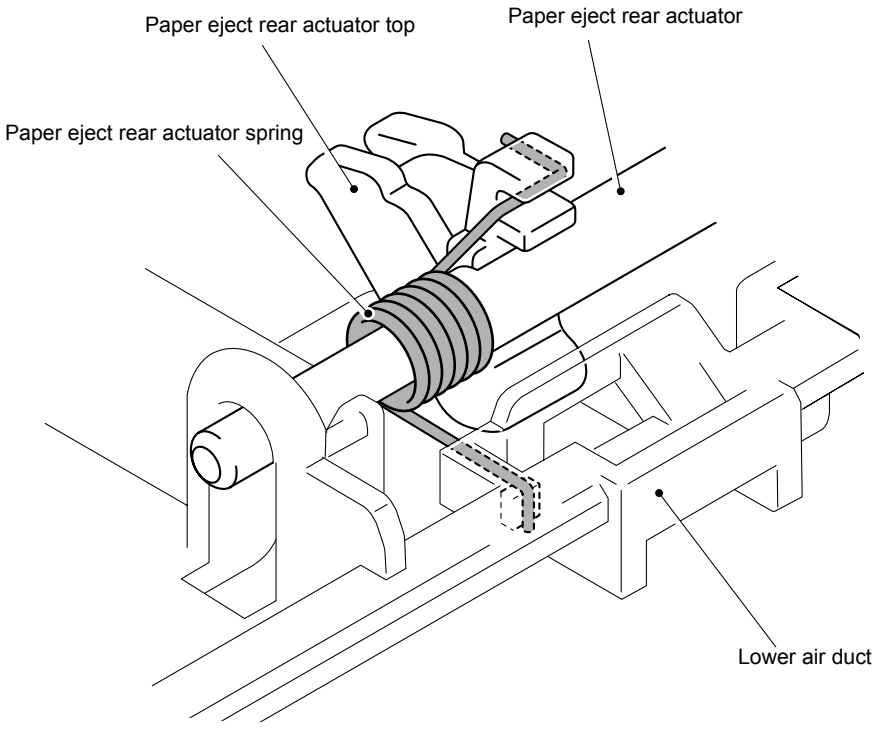


Fig. 5-219

(4) Rotate the Paper eject rear actuator top in the direction of arrow 4a and remove the Paper eject rear actuator top from the Paper eject rear actuator.

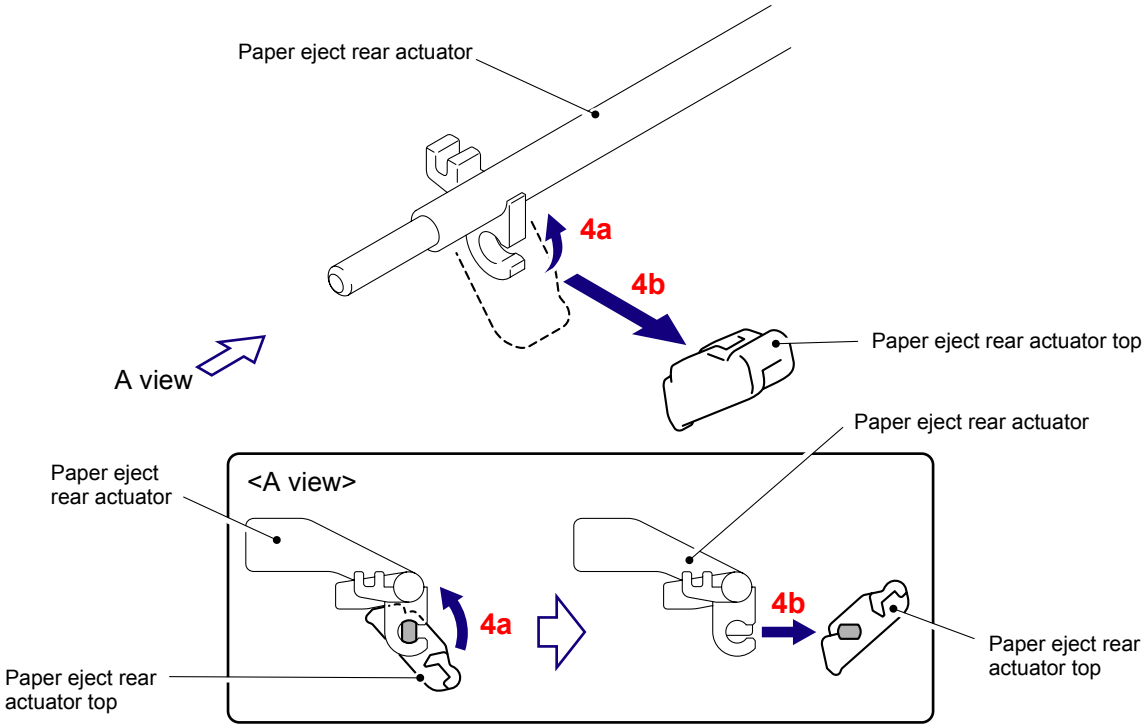


Fig. 5-220

8.75 Eject Rear Sensor PCB ASSY

(1) Release the two Hooks to remove the Eject rear sensor PCB ASSY from the Lower air duct.

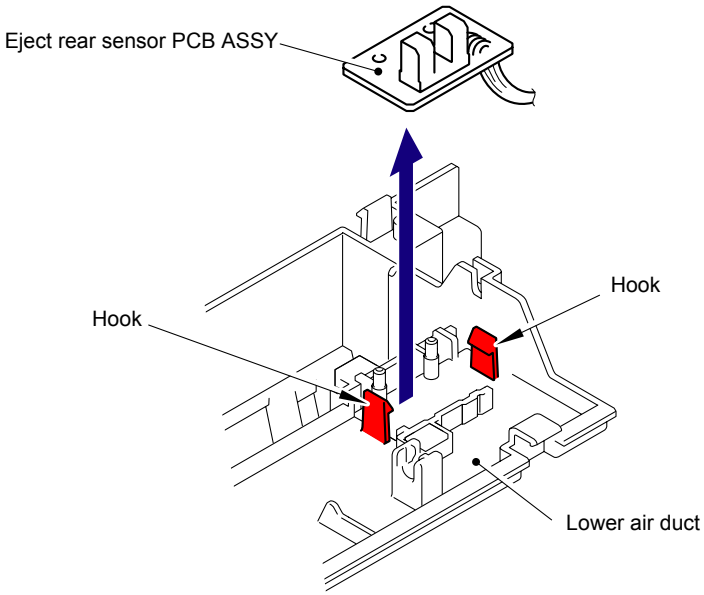


Fig. 5-221

Harness routing: Refer to "11 Eject Rear Sensor PCB ASSY."

8.76 Eject Front Sensor PCB ASSY

(1) Release the Hook to remove the Eject front sensor PCB ASSY from the Side frame L.

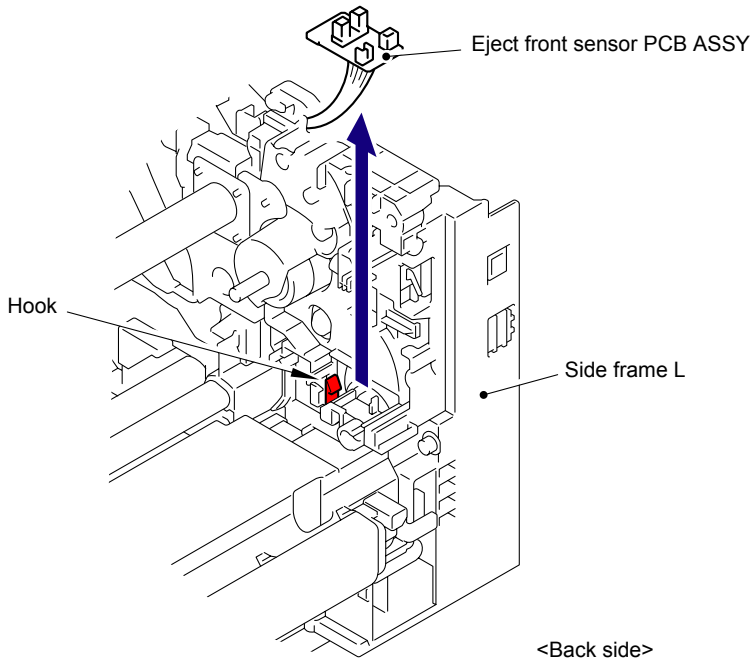


Fig. 5-222

Harness routing: Refer to "12 Eject Front Sensor PCB ASSY."

8.77 Toner/New Sensor PCB ASSY

(1) Release the five Hooks to remove the Toner/New sensor PCB ASSY from the Side frame L.

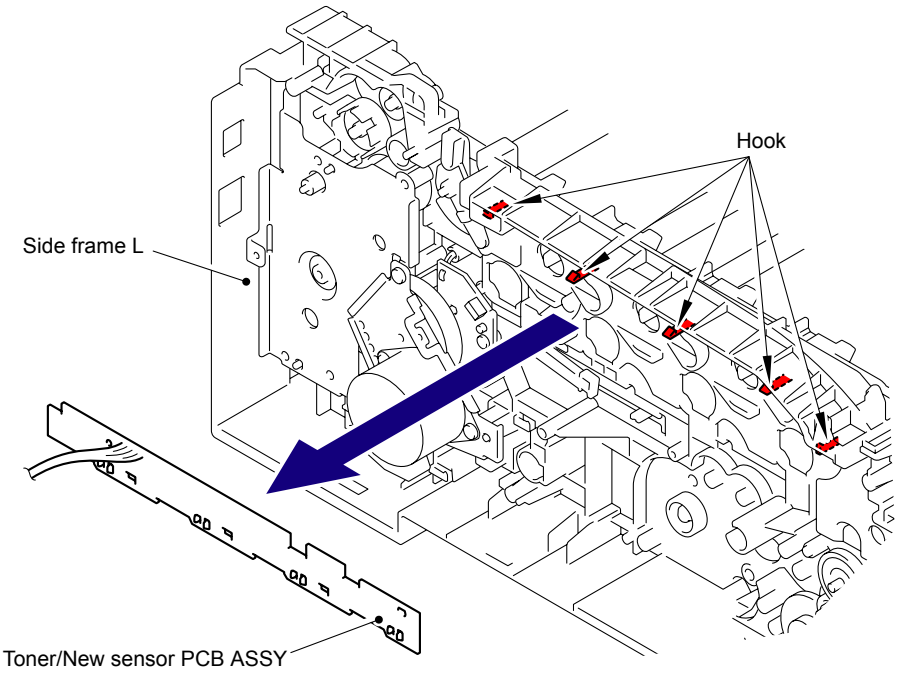


Fig. 5-223

(2) Release the Hooks of the PT sensor holder to remove the four PT sensor holder from the Toner/New sensor PCB ASSY.

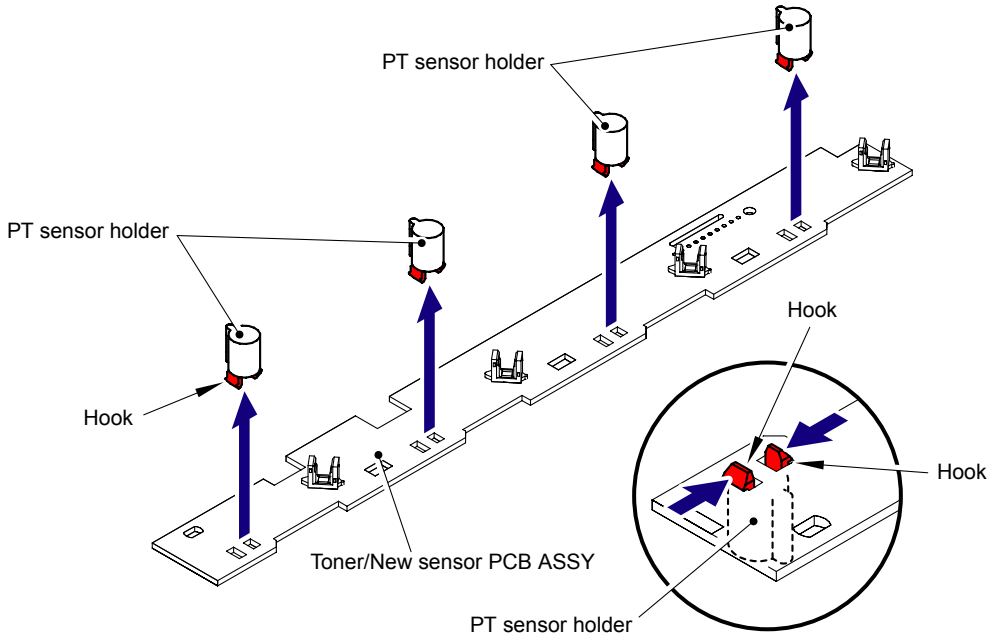


Fig. 5-224

Harness routing: Refer to "9 Toner/New Sensor PCB ASSY."

8.78 Belt Drive ASSY

(1) Remove the three Taptite pan (washer) B M4x12DA screws, and then remove the Belt drive ASSY from the Side frame L.

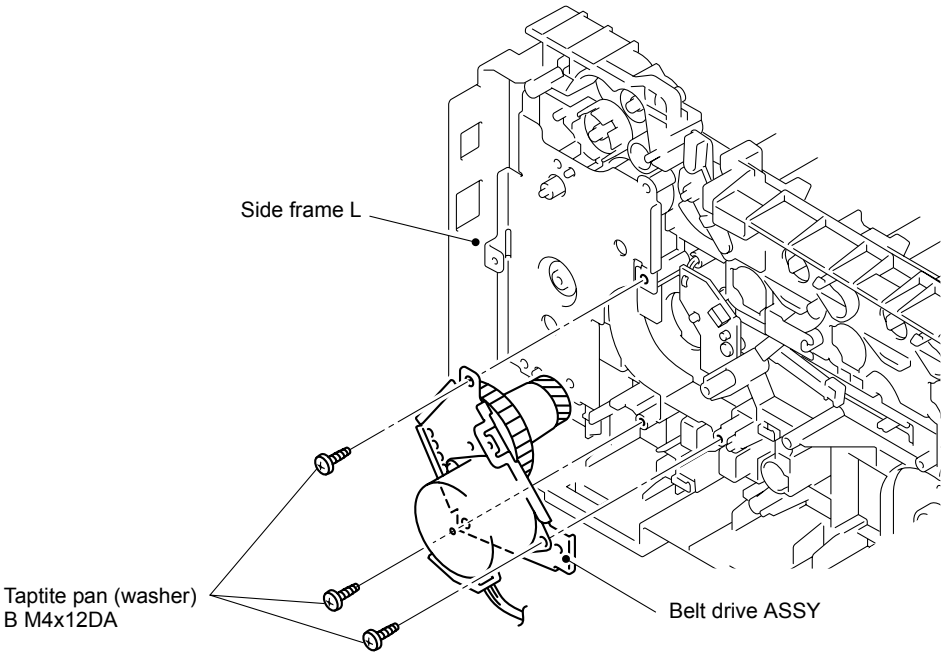


Fig. 5-225

Harness routing: Refer to "5 Belt Drive ASSY."

8.79 Drum Motor Origin Sensor PCB ASSY

(1) Remove the Taptite bind B M3x10 screw, and then remove the Drum motor origin sensor PCB ASSY from the Side frame L.

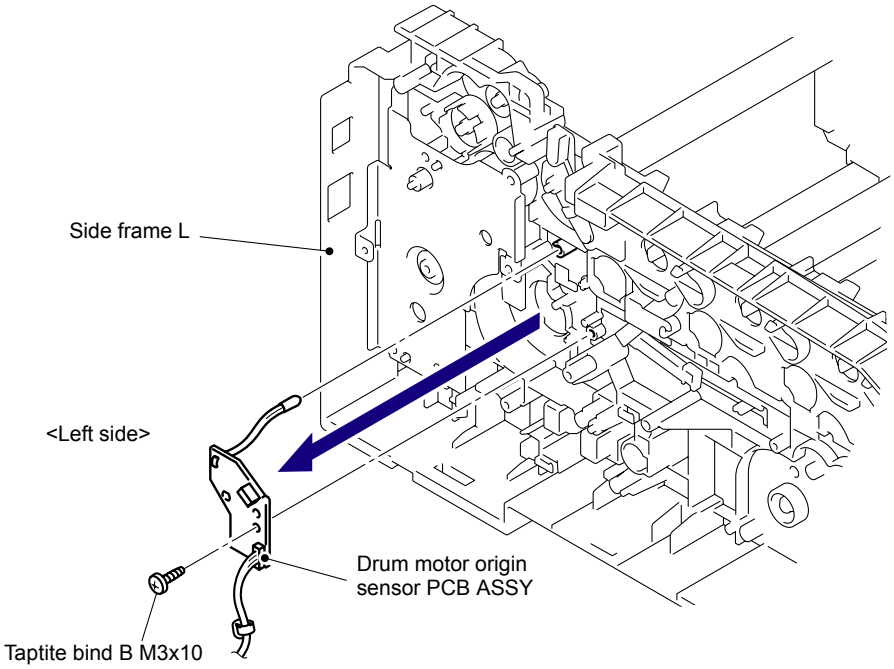


Fig. 5-226

Harness routing: Refer to "7 Drum Motor Origin Sensor PCB ASSY."

8.80 LV Fan ASSY

(1) Remove the two Taptite bind B M4x12 screws, and then remove the NCU harness holder from the Side frame R.

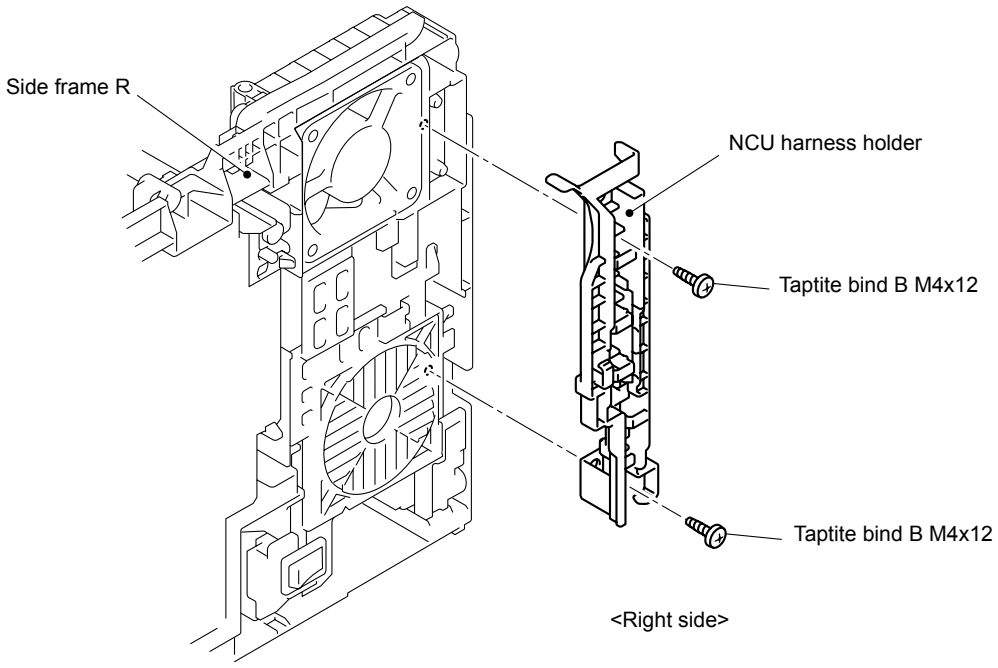


Fig. 5-227

(2) Remove the Taptite bind B M4x12 screw from the Safety louver.

(3) Release the two Hooks to remove the Safety louver from the Side frame R.

Note:
Do not pull the Safety louver strongly because it has the Power supply switch on it.

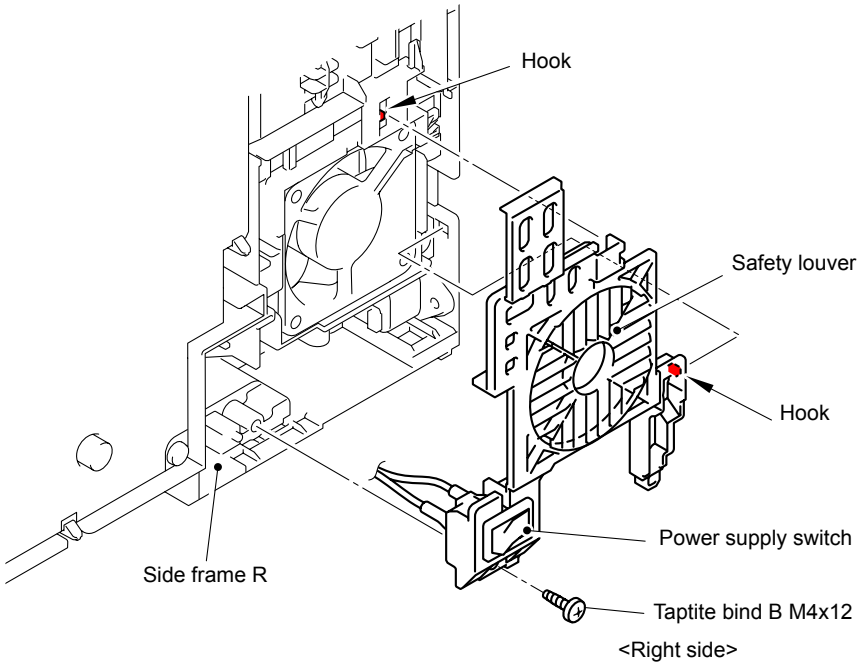


Fig. 5-228

(4) Disconnect the Connector (CN3) from the High-voltage power supply PCB ASSY.

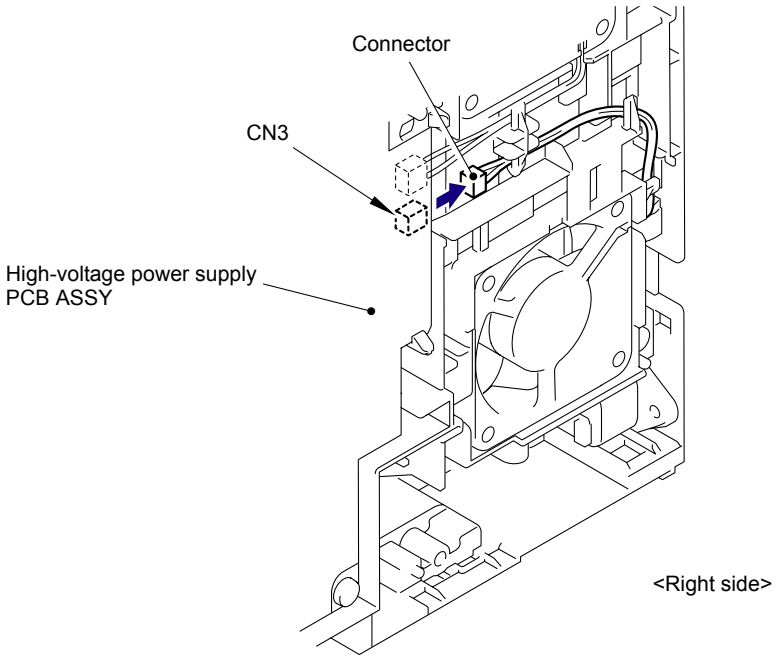


Fig. 5-229

(5) Remove the LV fan ASSY from the Side frame R.

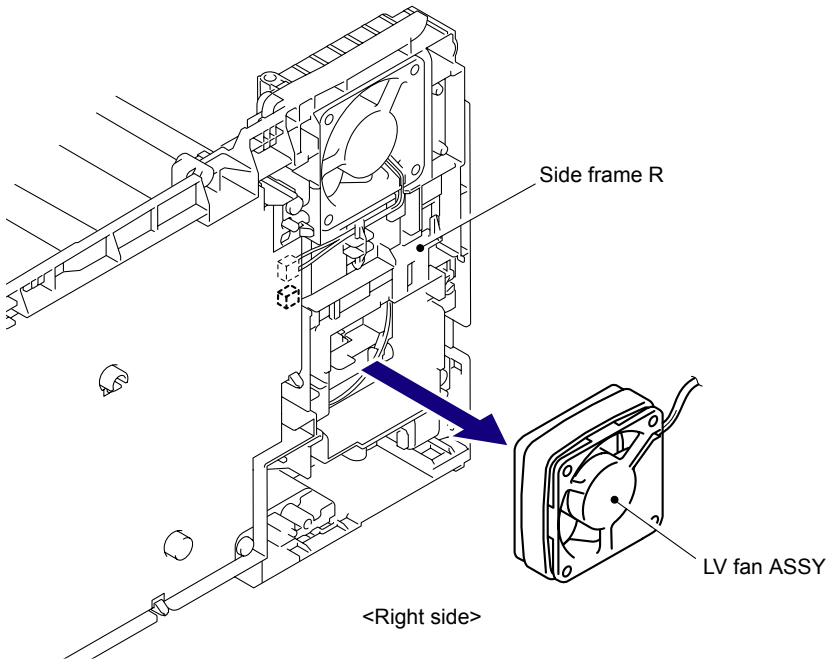


Fig. 5-230

Assembling Note:
When assembling the LV fan ASSY, place it so that the attached label faces outwards.

Harness routing: Refer to "14 Main Fan ASSY, LV Fan ASSY."

8.81 Main Fan ASSY

(1) Disconnect the Connector (CN2) of the Main fan ASSY from the High-voltage power supply PCB ASSY.

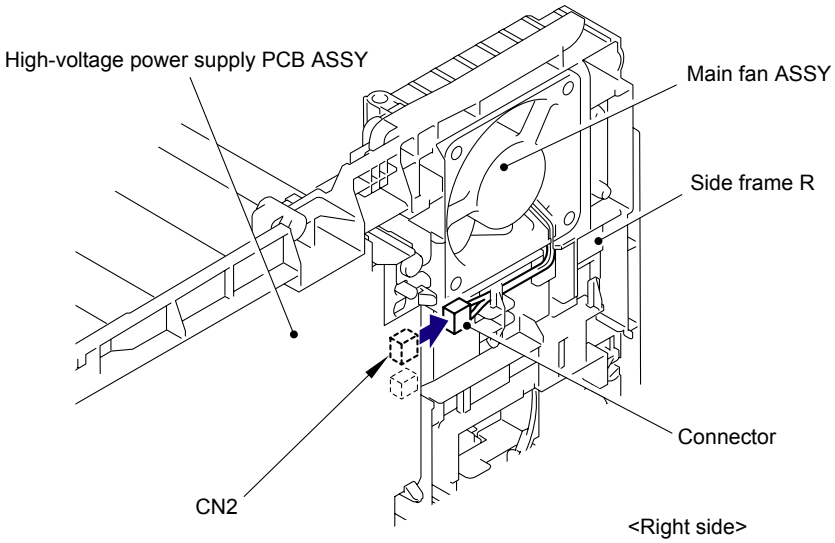


Fig. 5-231

(2) Remove the Main fan ASSY from the Side frame R.

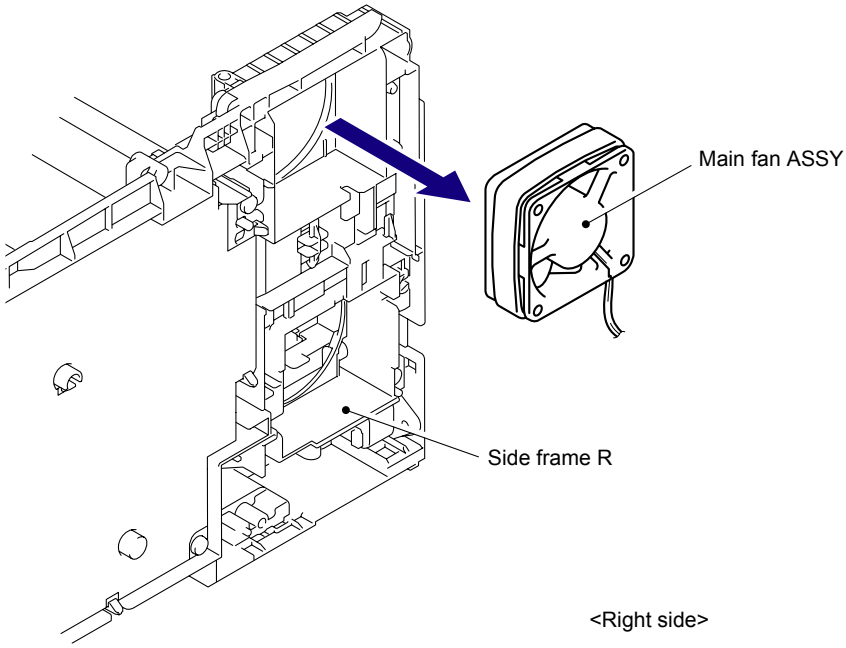


Fig. 5-232

Assembling Note:
When assembling the Main fan ASSY, place it so that the attached label faces outwards.

Harness routing: Refer to "14 Main Fan ASSY, LV Fan ASSY."

8.82 Low-voltage Power Supply PCB ASSY

(1) Release the two Hooks to remove the Power supply switch from the Safety louver.

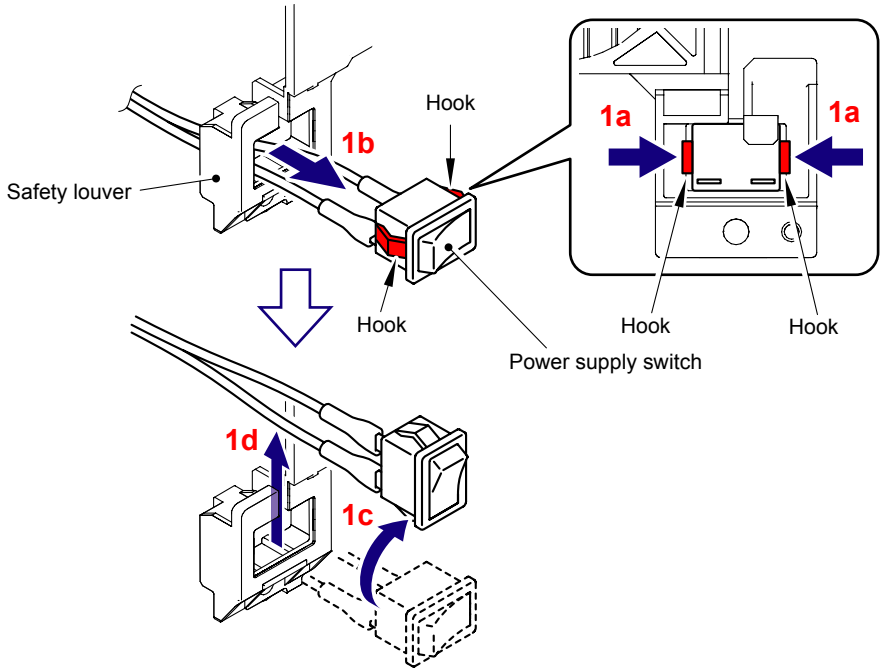


Fig. 5-233

(2) Remove the Screw pan (S/P washer) M4x8 DB and FG harness, and then remove the Inlet from the Side frame R.

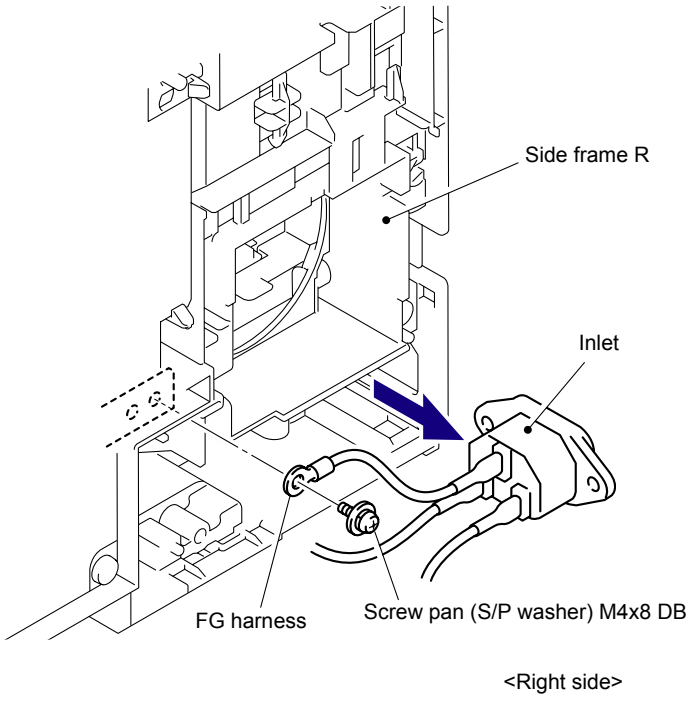


Fig. 5-234

(3) Slide the NCU harness cover in the direction of the arrow, and remove it from the Main body.

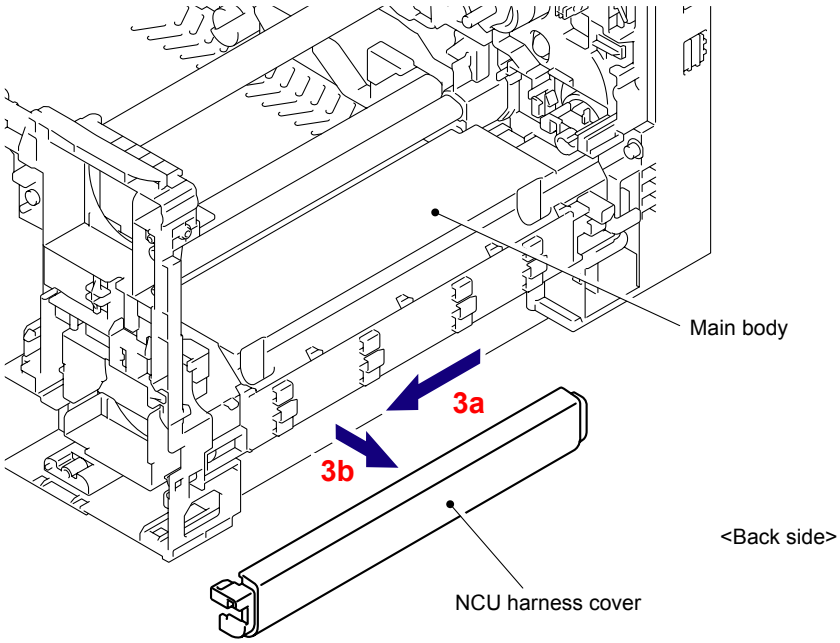


Fig. 5-235

(4) Remove the Screw pan (S/P washer) M4x8 DB screw, and then remove the NCU FG harness ASSY 1 from the Side frame R.

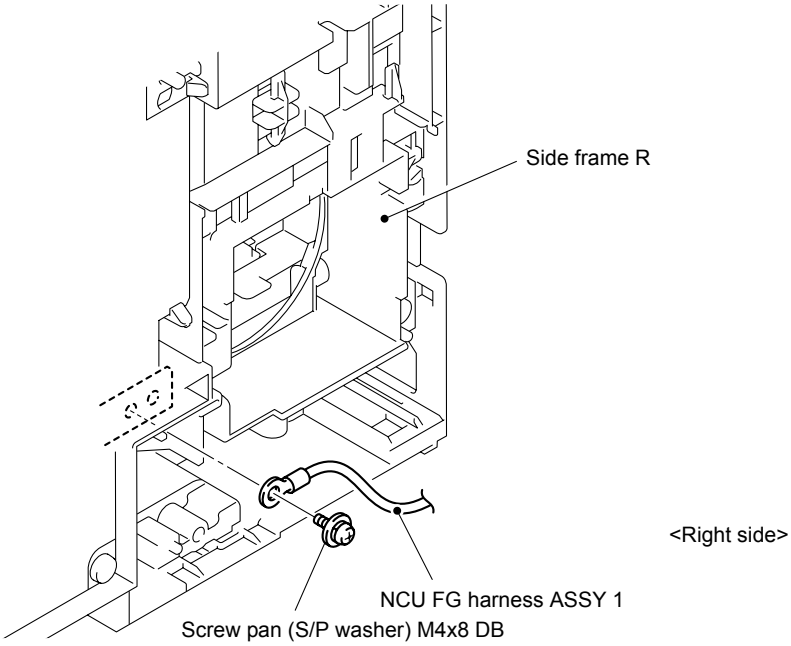


Fig. 5-236

(5) Turn the Main body upside down.

(6) Remove the two Taptite bind B M4x12 screws to remove the Under bar from the Main body.

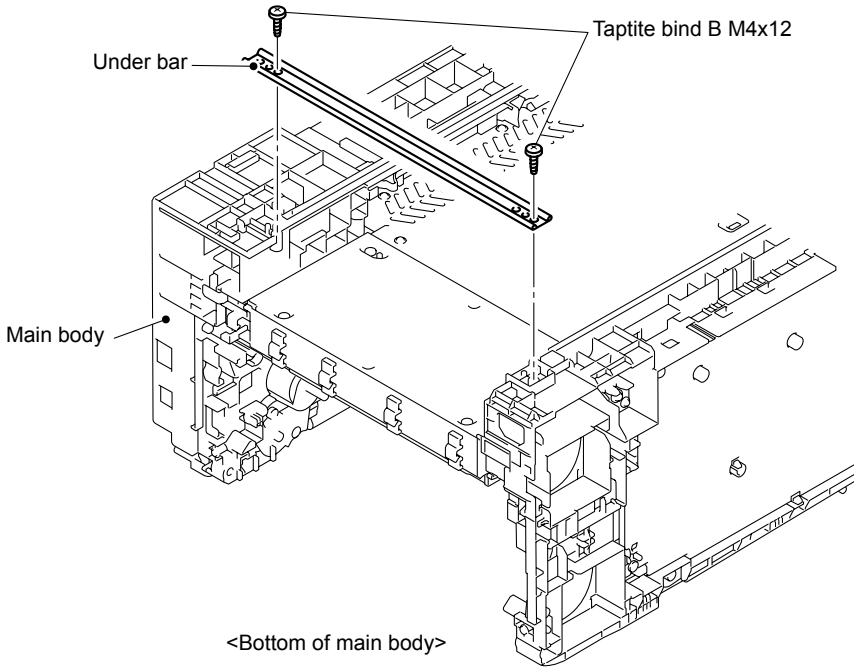


Fig. 5-237

(7) Disconnect the Connector (CN2) of the Heater 120V harness ASSY from the Low-voltage power supply PCB ASSY.

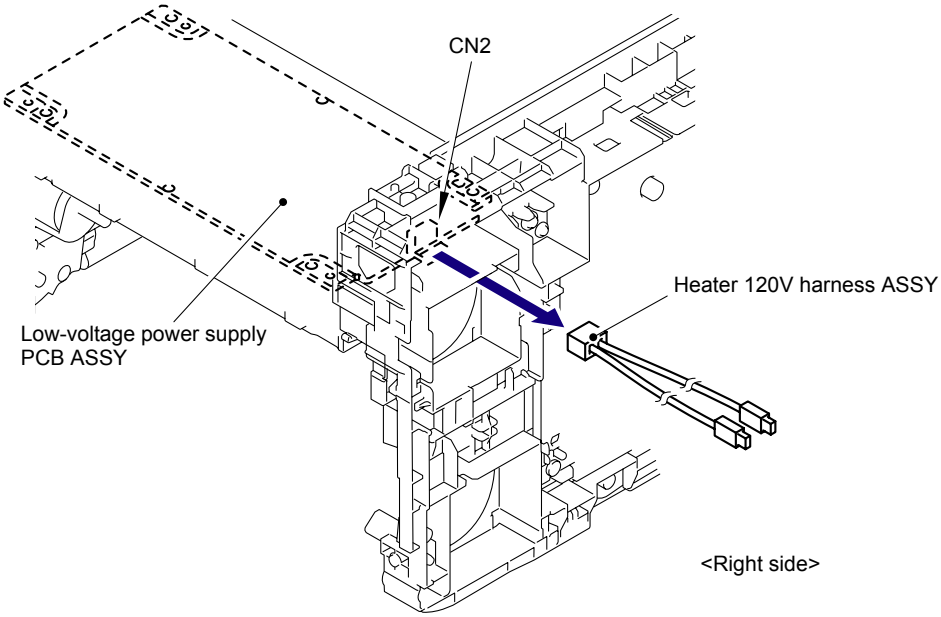


Fig. 5-238

(8) Remove the two Taptite bind B M4x12 screws and two Taptite cup S M3x6 SR screws, and then remove the LVPS unit from the Main body.

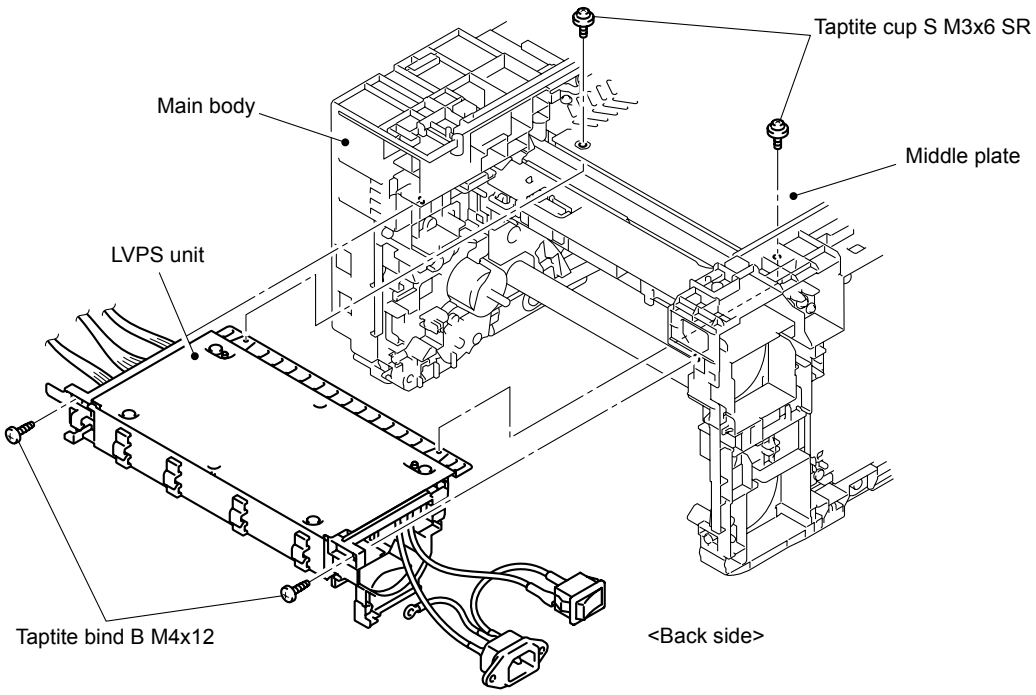


Fig. 5-239

Assembling Note:
When assembling the LVPS unit onto the Main body, make sure to assemble it in a way that the LVPS plate is placed at a lower position than the Middle plate.

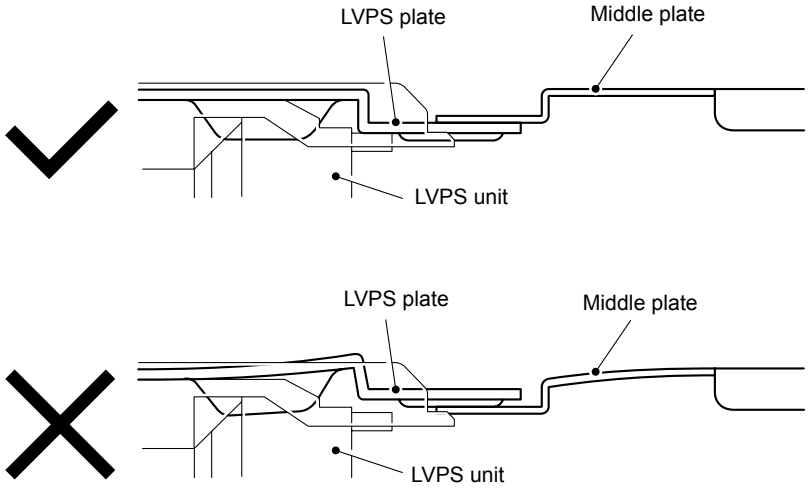


Fig. 5-240

(9) Remove the four Taptite pan (washer) B M4x12DA screws, and then remove the LVPS plate from LVPS cover.

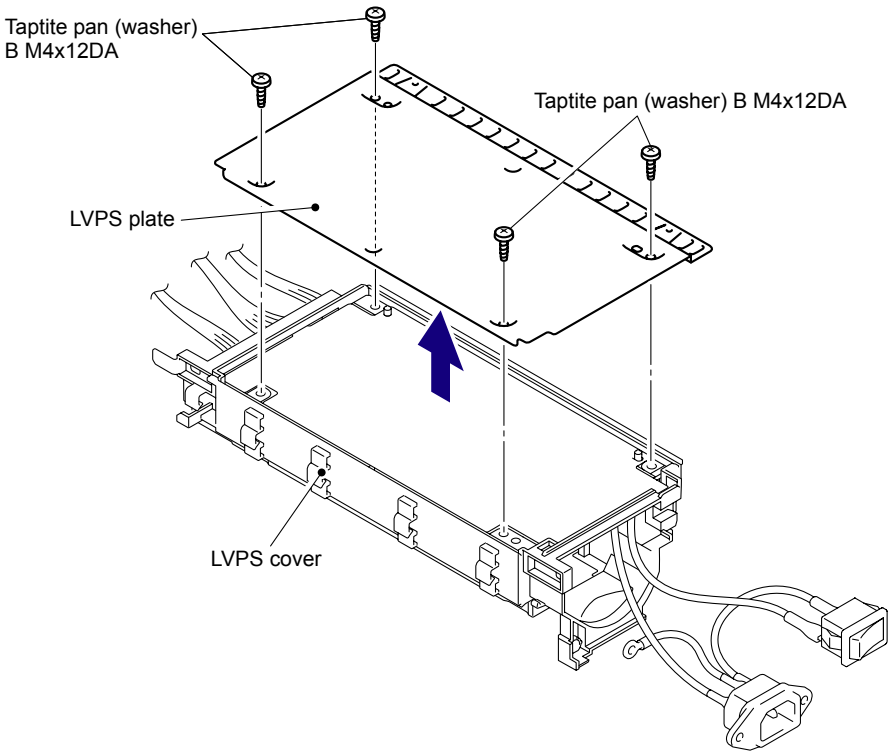


Fig. 5-241

(10) Remove the LVPS insulation sheet from the LVPS cover.

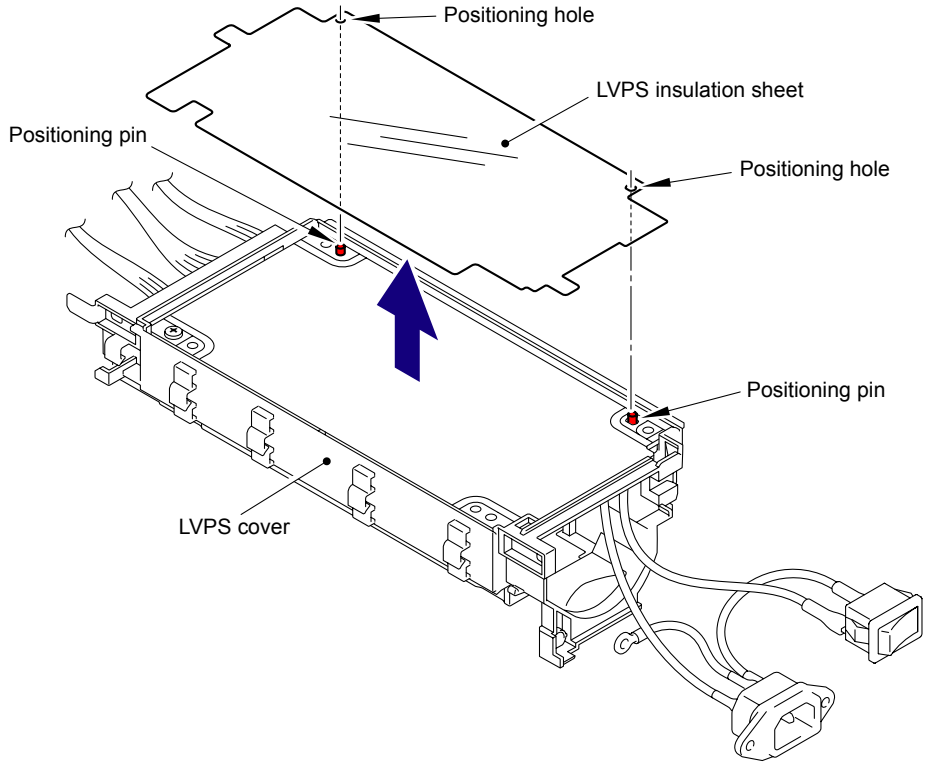


Fig. 5-242

(11) Remove the Taptite pan (washer) B M4x12DA screw, and then remove the Low-voltage power supply PCB ASSY from the LVPS cover.

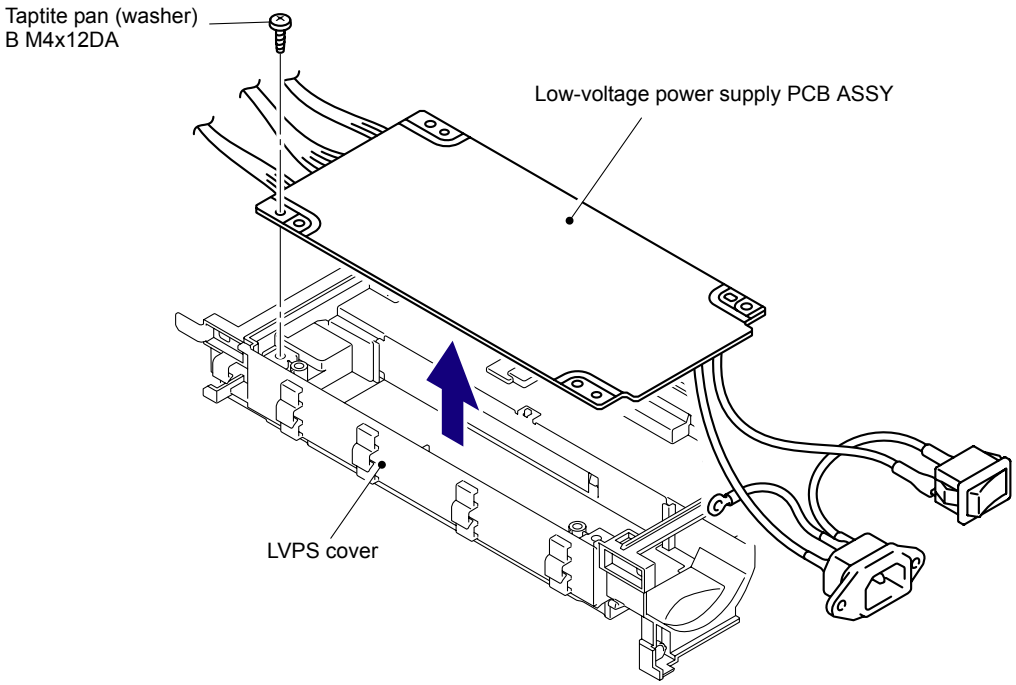


Fig. 5-243

(12) Disconnect the three Connectors (CN101, CN102, CN103) from the Low-voltage power supply PCB ASSY.

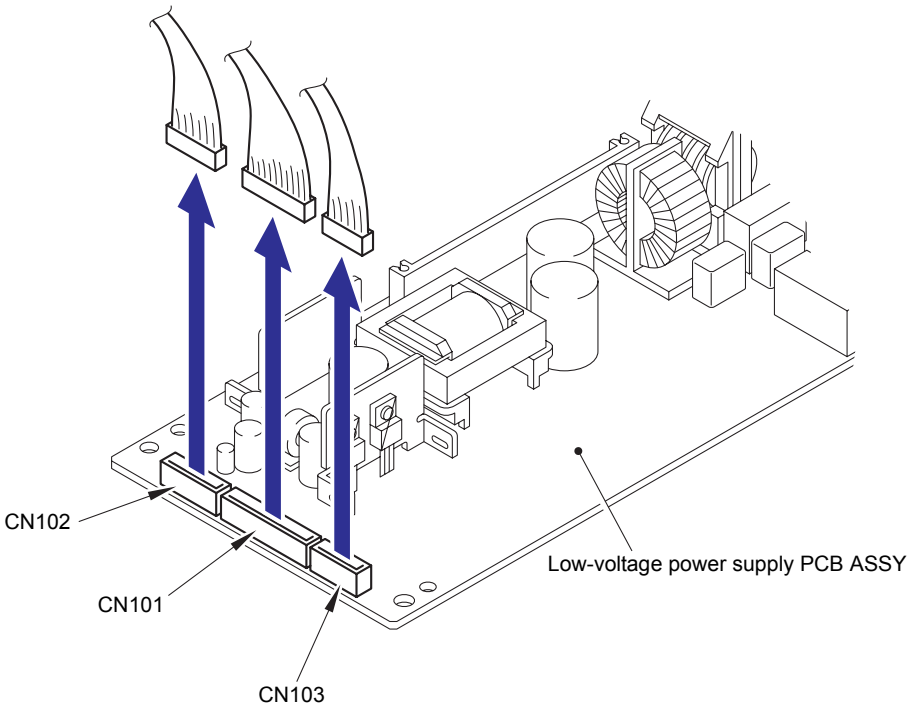


Fig. 5-243-1

Harness routing: Refer to "17 Low-voltage Power Supply PCB ASSY."

8.83 Registration Sensor Holder ASSY

(1) Remove the Taptite cup S M3x6 SR screw from the Registration sensor holder ASSY.

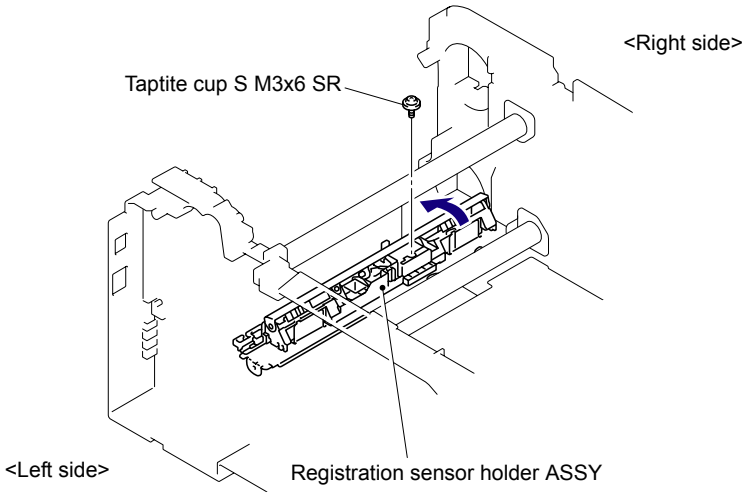


Fig. 5-244

(2) Wire the harness and release the Hook. Slide the Registration sensor holder ASSY in the direction of the arrow 2a, and remove it from the Registration sensor plate.

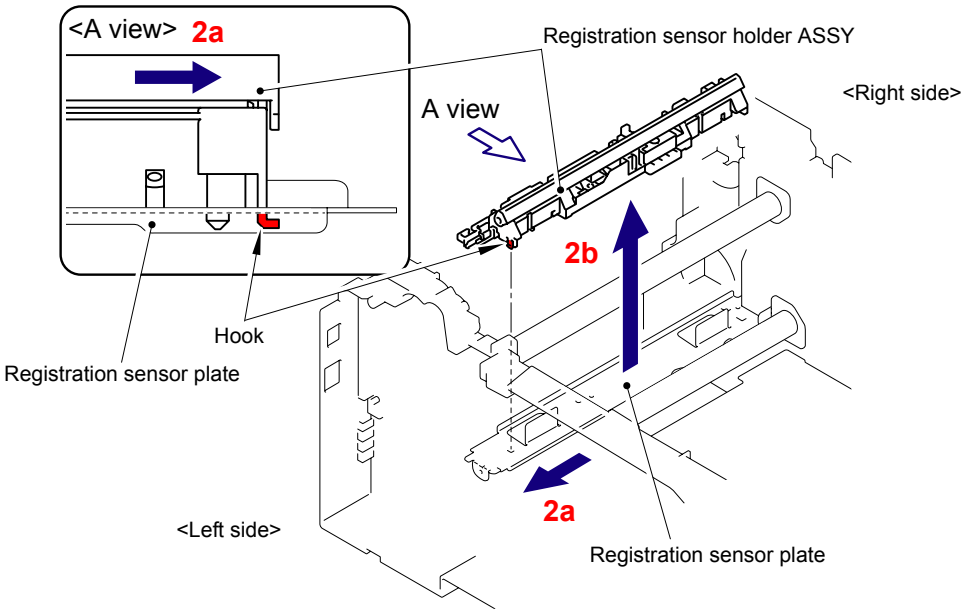


Fig. 5-245

Assembling Note:

- Be careful not to place the harness between the Registration sensor holder ASSY and the Registration sensor plate when assembling the Registration sensor holder ASSY to the Registration sensor plate.
- A reinforcement plate for transportation is assembled to the Registration sensor holder ASSY (service part). Remove the reinforcement plate for transportation from the Registration sensor holder ASSY before assembling.

Harness routing: Refer to "16 Registration Sensor Holder ASSY."

8.84 High-voltage Power Supply PCB ASSY

(1) Remove the two Taptite bind B M4x12 screws and two Taptite pan (washer) B M4x12DA screws from the High-voltage power supply PCB ASSY.

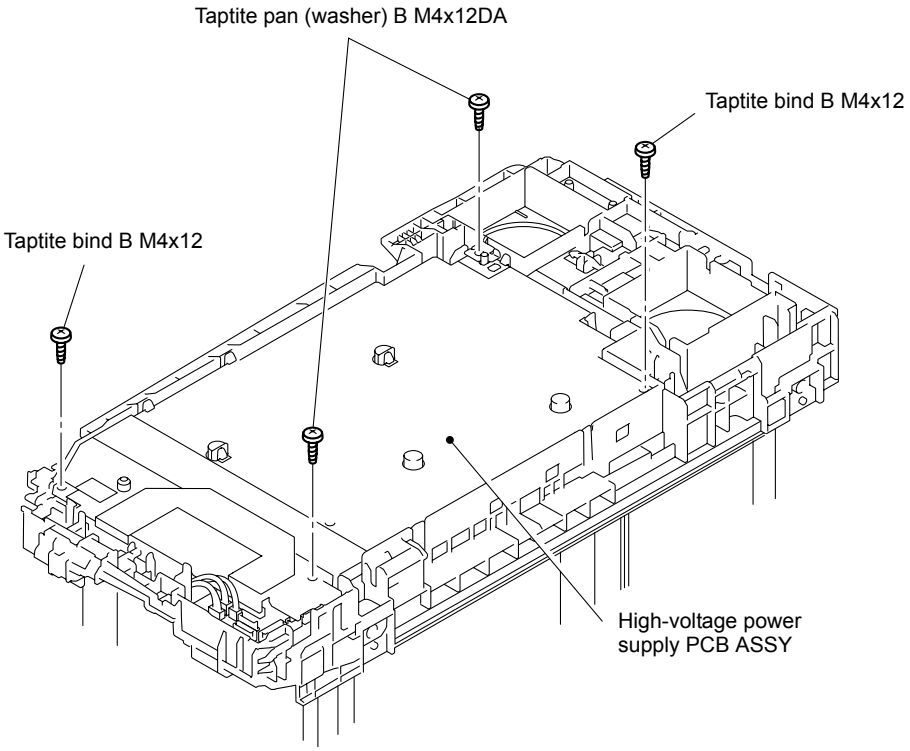


Fig. 5-246

(2) Remove the Taptite cup S M3x6 SR screw, and then remove the HVPS ground plate 2 from the High-voltage power supply PCB ASSY.

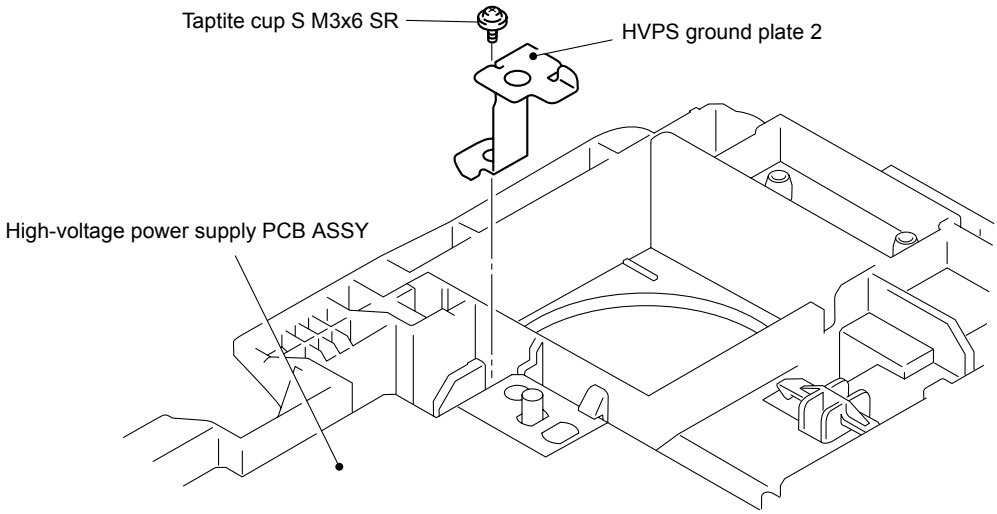


Fig. 5-247

(3) Disconnect the Flat cable (CN7) of the High-voltage power supply PCB ASSY from the HVPS control PCB ASSY.

Note:

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

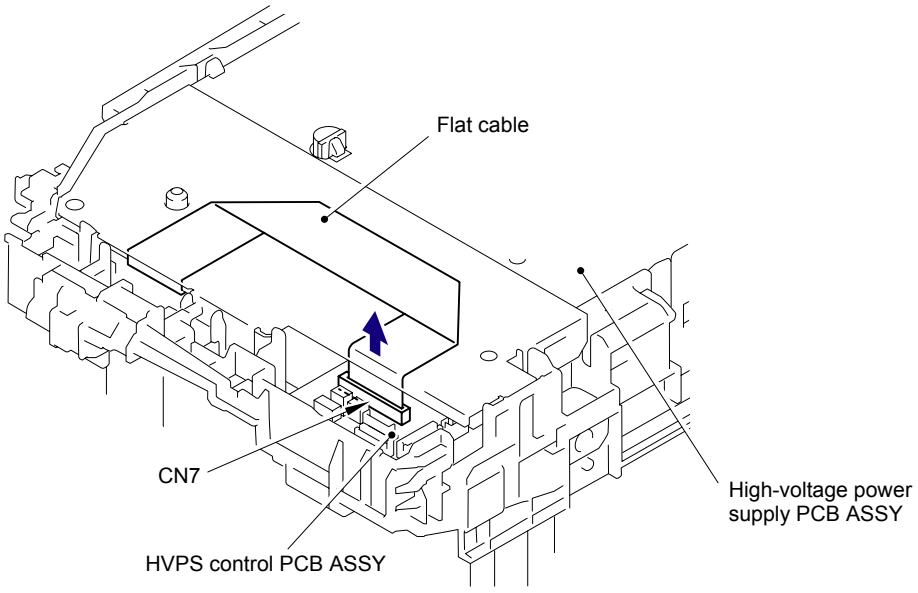


Fig. 5-248

(4) Remove the two Spacer from the High-voltage power supply PCB ASSY.

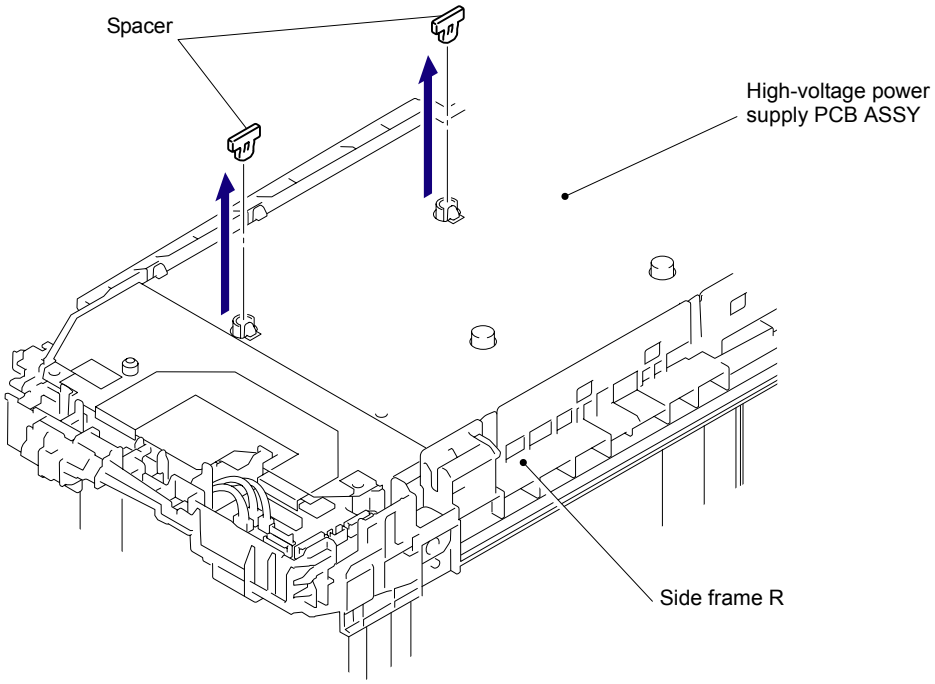


Fig. 5-249

(5) Release the nine Hooks of the Side frame R, and remove the High-voltage power supply PCB ASSY together with the HVPS insulation sheet 1 and HVPS insulation sheet 2.

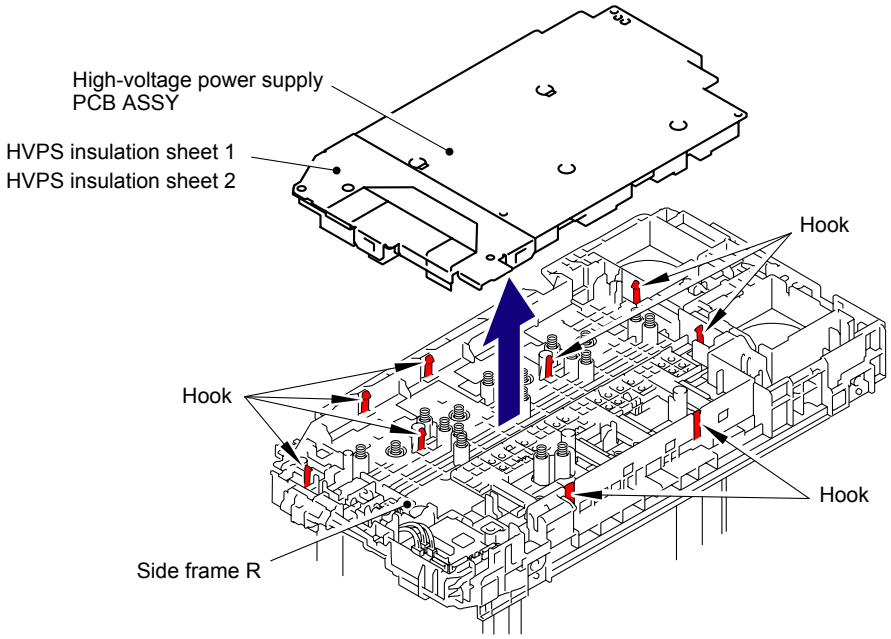


Fig. 5-250

Assembling Note:

When replacing the High-voltage power supply PCB ASSY with a new one, fold the FFC first in accordance with the “How to Fold FFC of High-voltage power supply PCB ASSY” figure in the next page, and then assemble the High-voltage power supply PCB ASSY.

<How to Fold FFC of High-voltage power supply PCB ASSY FFC> (full-scale)

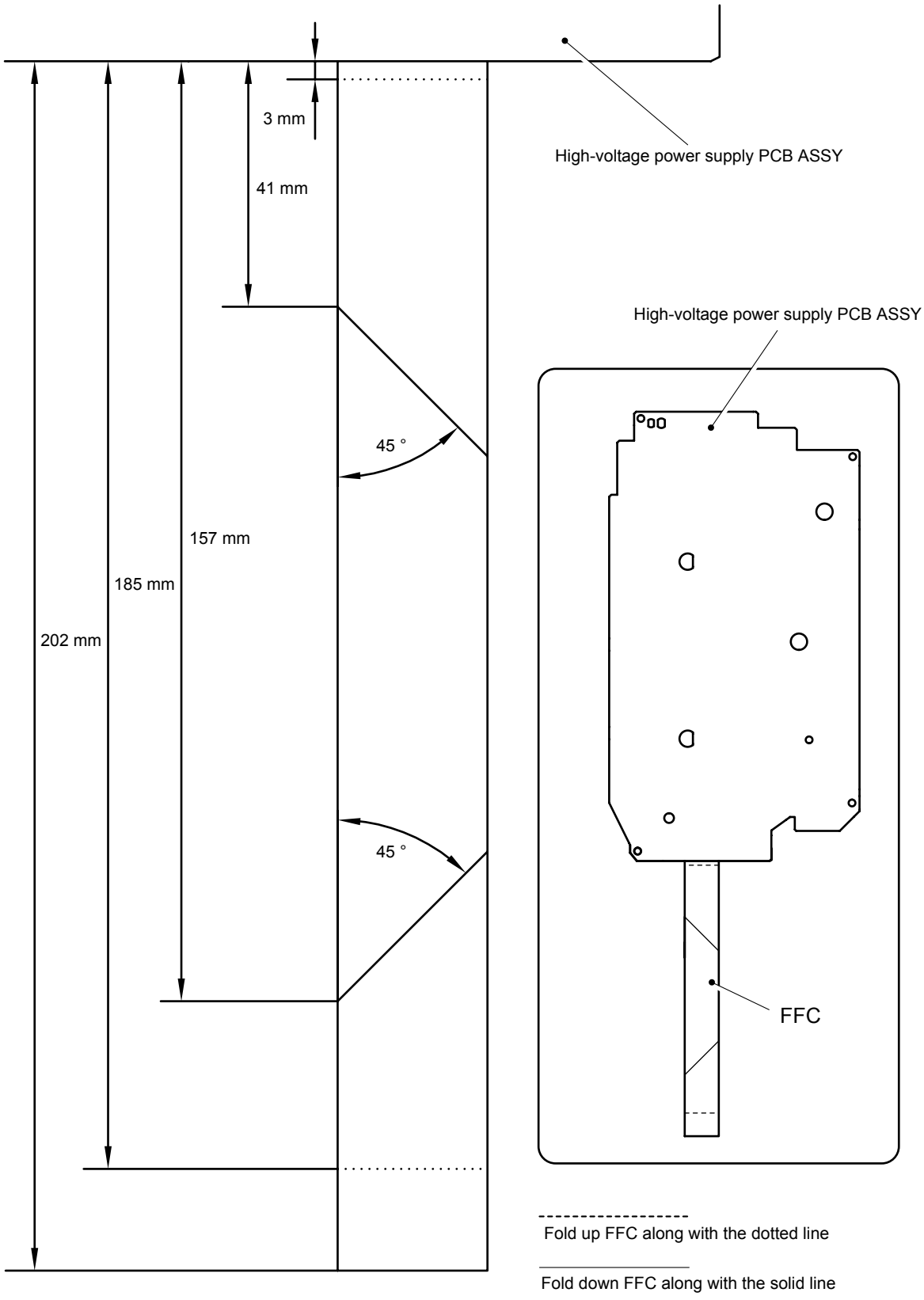


Fig. 5-251

(6) Remove the HVPS insulation sheet 2 from the High-voltage power supply PCB ASSY.

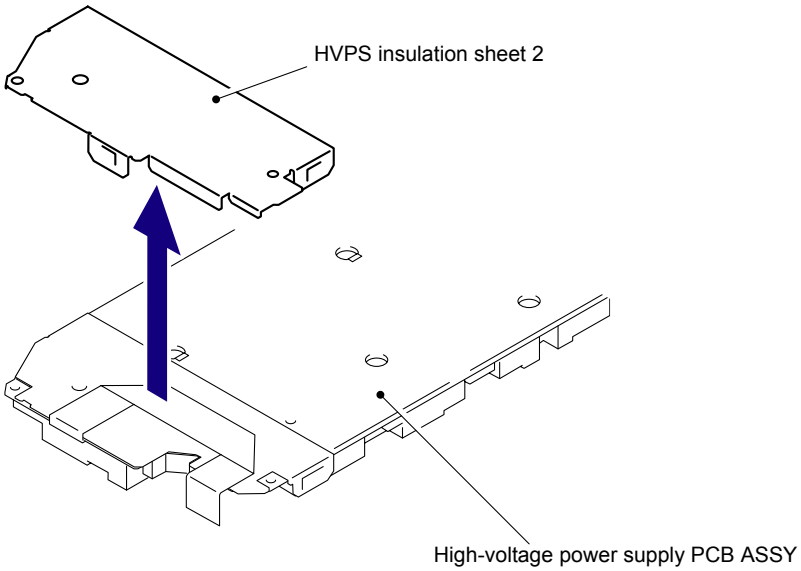


Fig. 5-252

(7) Remove the HVPS insulation sheet 1 from the High-voltage power supply PCB ASSY.

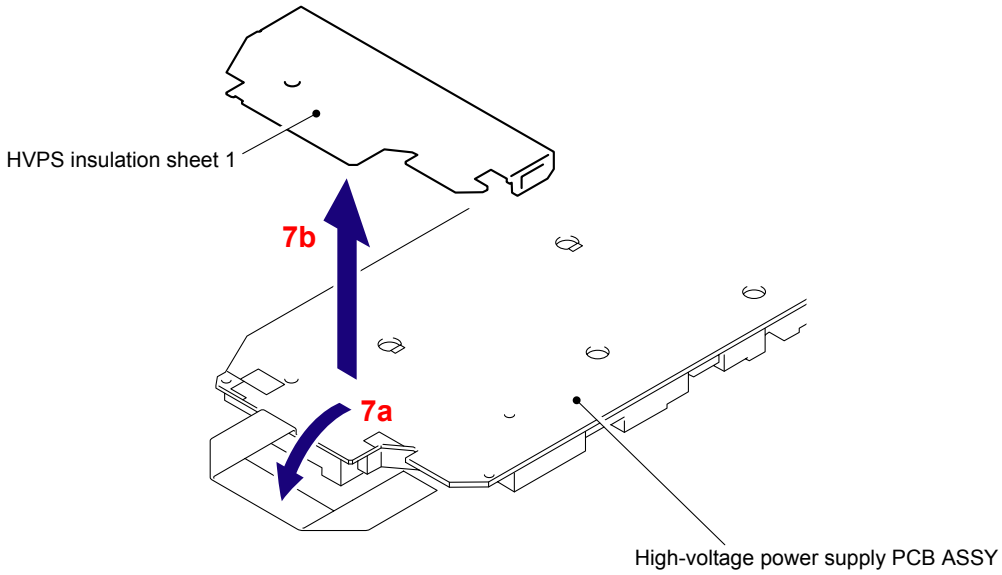


Fig. 5-253

Assembling Note:

When assembling the HVPS insulation sheet 1 and HVPS insulation sheet 2, make sure to assemble them as sandwiching the Flat cable of the High-voltage power supply PCB ASSY with them.

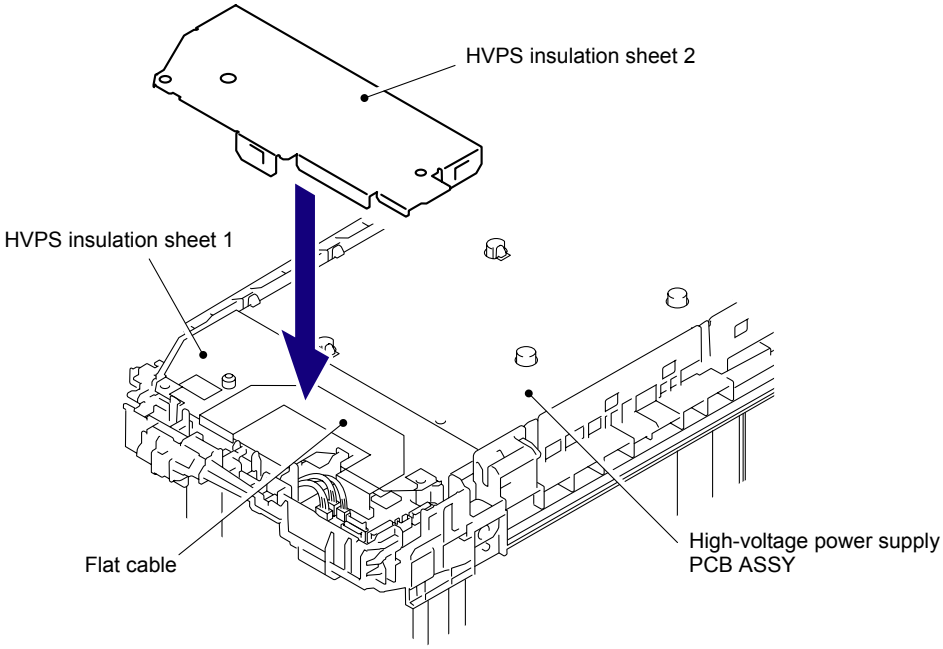


Fig. 5-254

8.85 HVPS Control PCB ASSY

(1) Disconnect the six Connectors (CN1, CN4, CN5, CN8, CN9, CN10) from the HVPS control PCB ASSY.

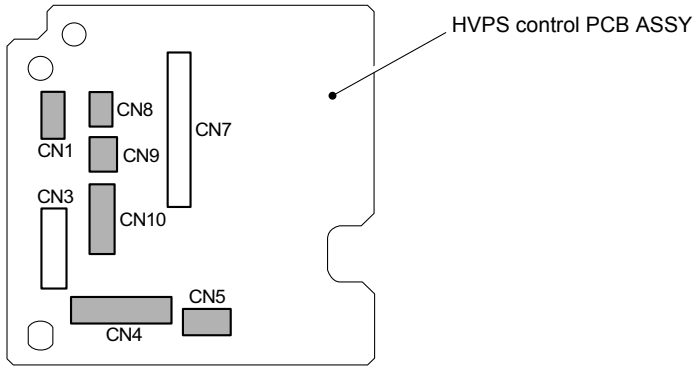


Fig. 5-255

(2) Remove the Taptite pan (S/P W) B M3x10 screw, and then remove the HVPS control PCB ASSY from the Side frame R.

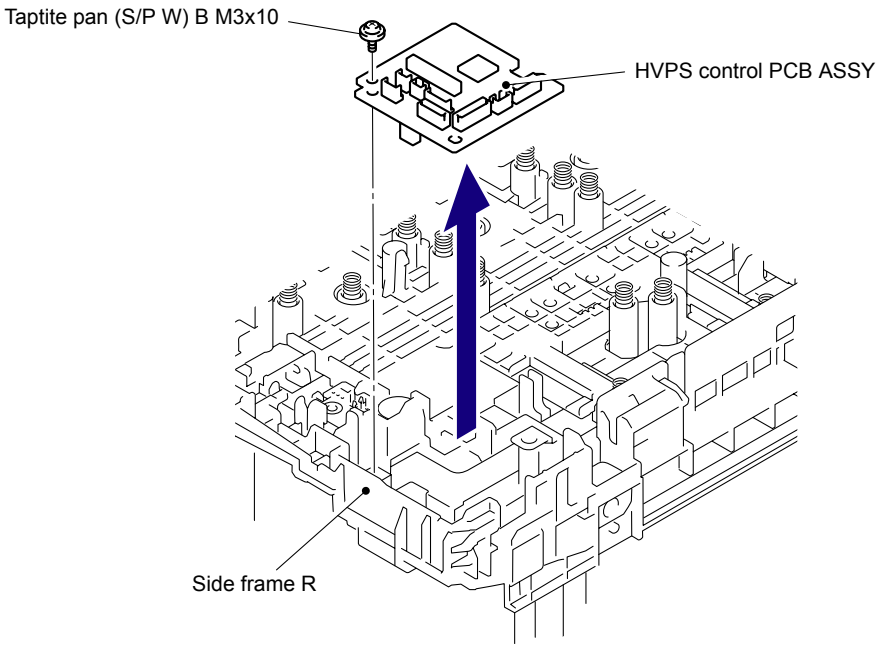


Fig. 5-256

8.86 Waste Toner Sensor

(1) Release the two Hooks to remove the Wire cover 2 from the Side frame R.

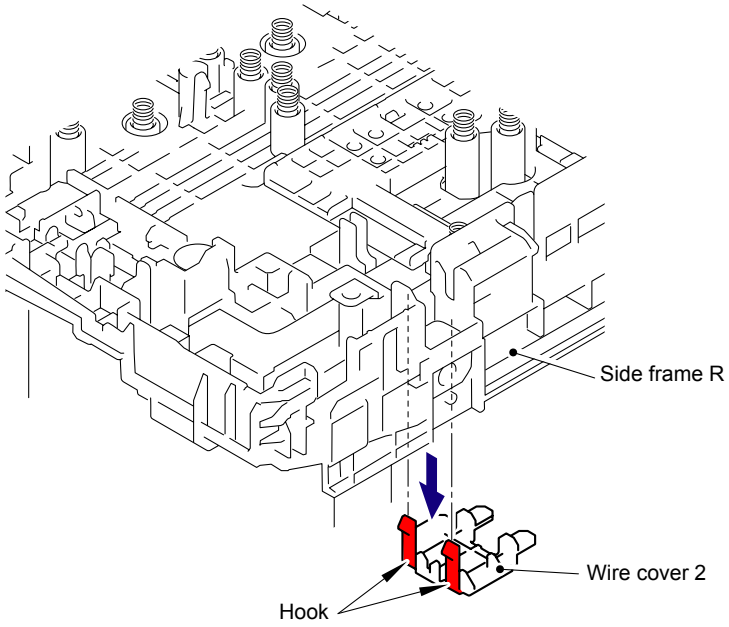


Fig. 5-257

Assembling Note:
When assembling the Wire cover 2, make sure to pass the Waste toner harness ASSY through the “A” before assembling it.

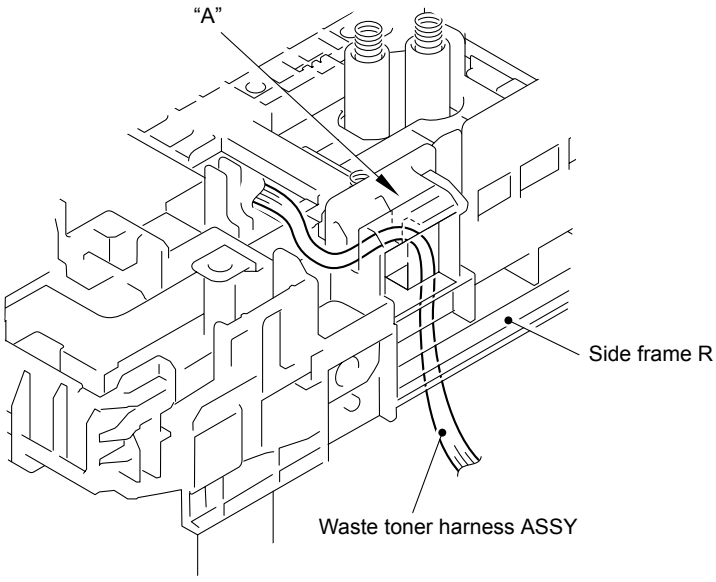


Fig. 5-258

(2) Press the Pin of the Waste toner sensor holder and slide the Waste toner sensor holder to the left.

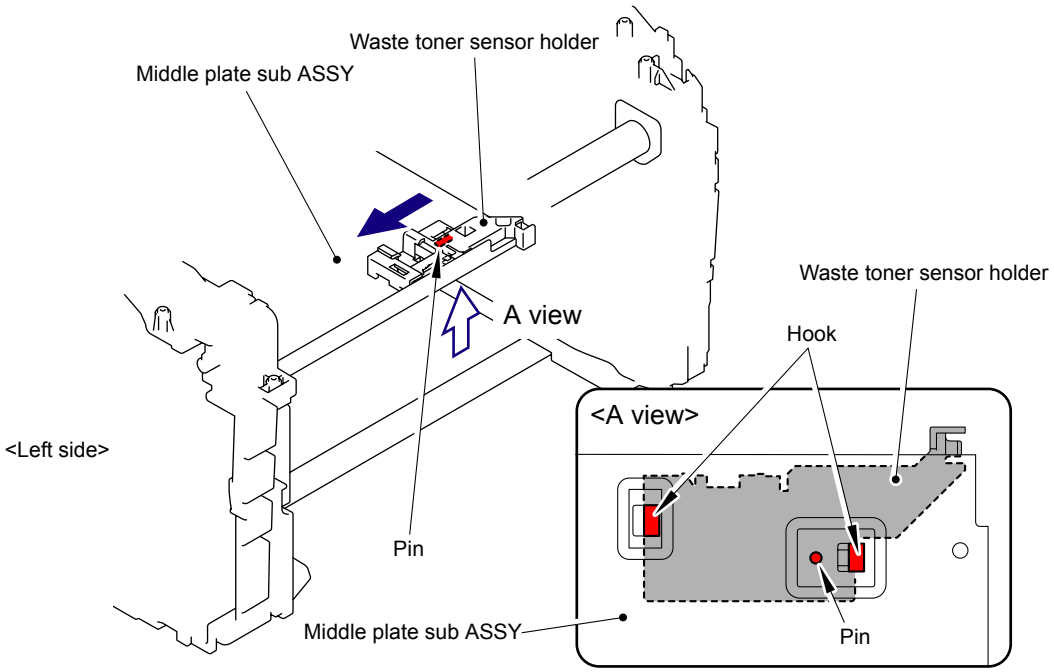


Fig. 5-259

(3) Remove the Waste toner sensor holder from the Middle plate sub ASSY as shown in the figure below.

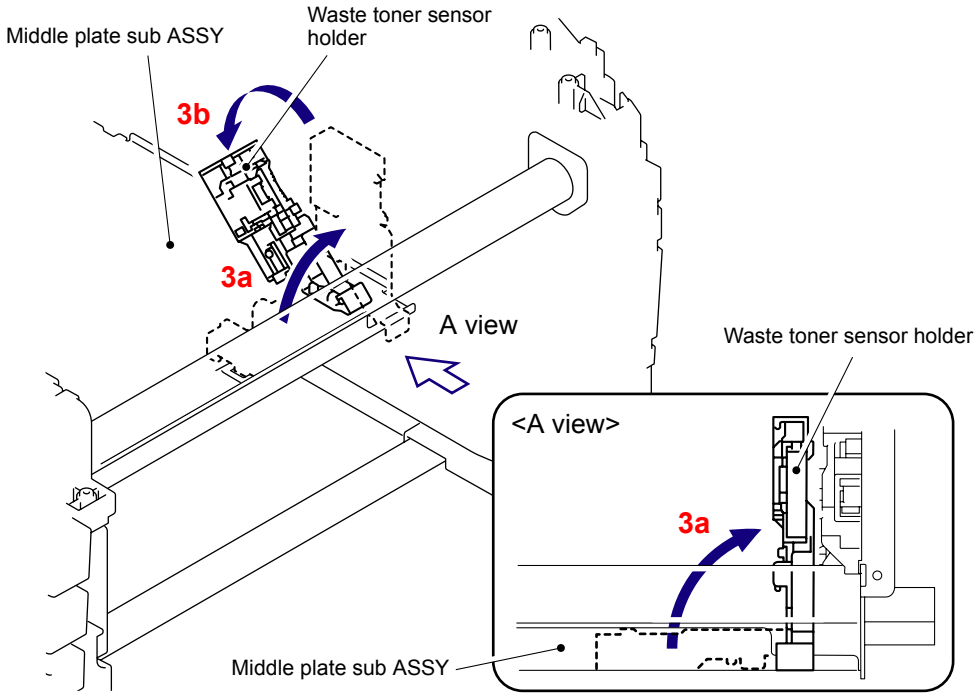


Fig. 5-260

(4) Release the three Hooks to remove the Waste toner sensor from the Waste toner sensor holder.

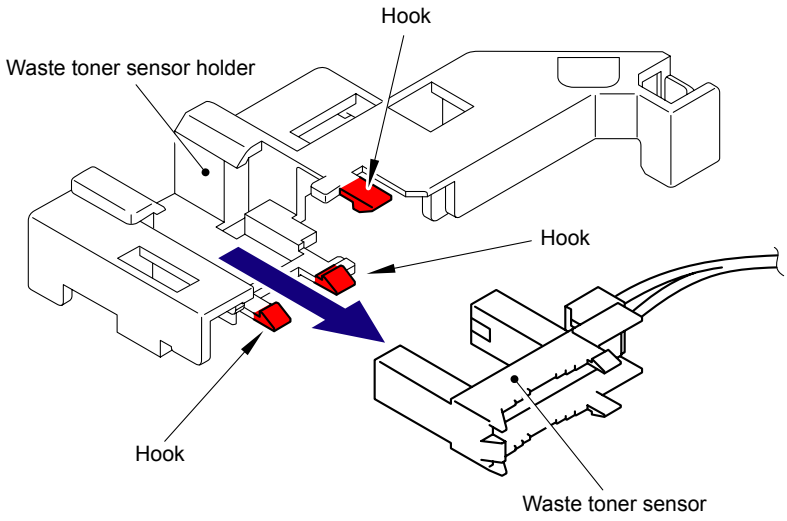


Fig. 5-261

(5) Disconnect the Connector of the Waste toner harness ASSY from the Waste toner sensor.

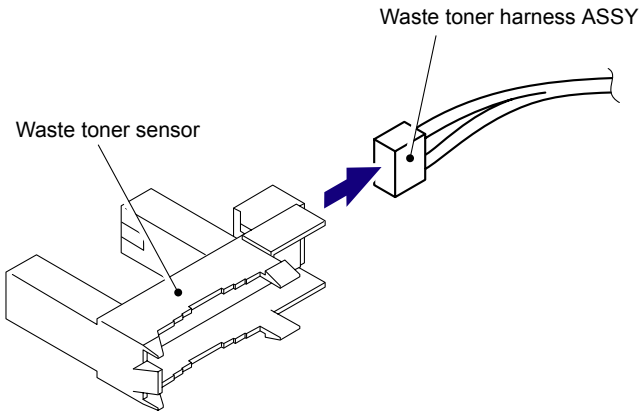


Fig. 5-262

Harness routing: Refer to "13 Waste Toner Sensor."

8.87 Develop Release Sensor PCB ASSY

(1) Remove the Film from the Side frame R.

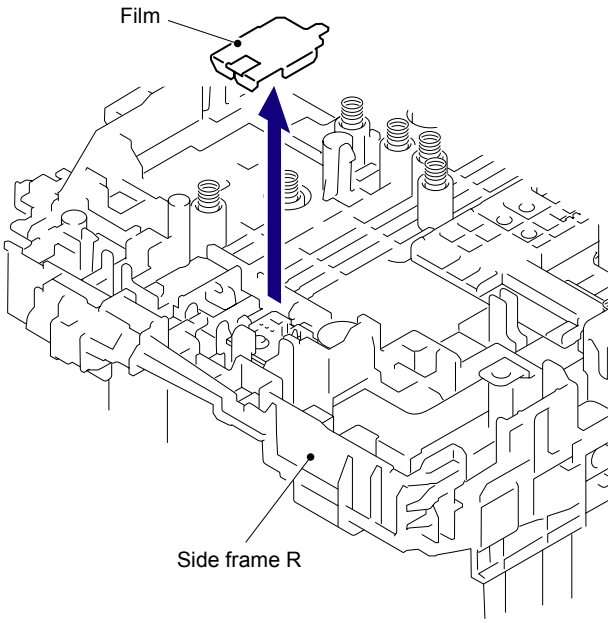


Fig. 5-263

(2) Remove the Taptite cup B M3x8 screw, and then release the Hook to remove the Develop release sensor PCB ASSY from the Side frame R.

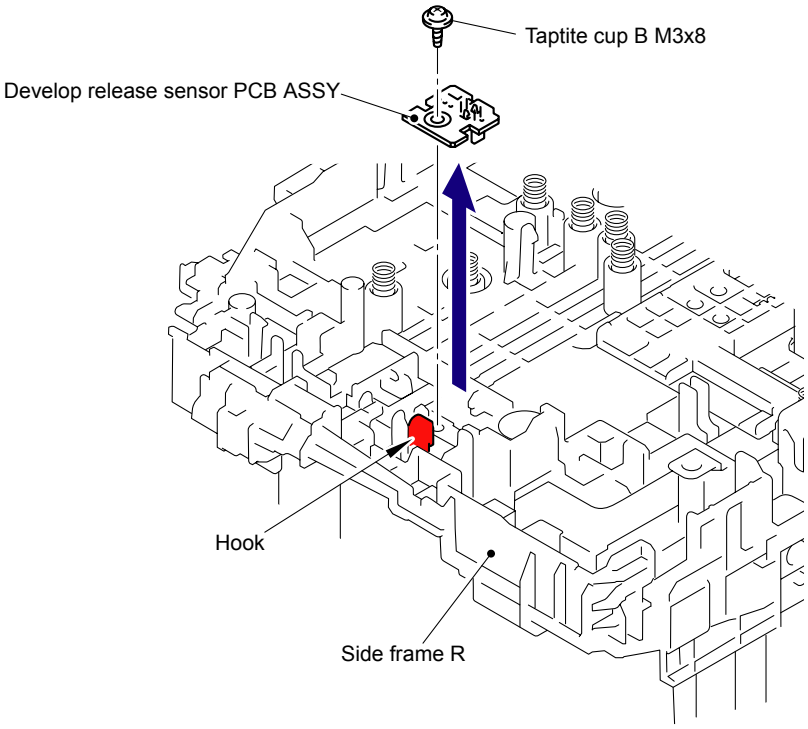


Fig. 5-264

Harness routing: Refer to "15 Develop Release Sensor PCB ASSY, Top Cover Open Switch, Toner LED PCB ASSY."

8.88 Belt Cleaner Spring

(1) Remove the four Electrode head 1 and four Electrode spring 1 from the Side frame R.

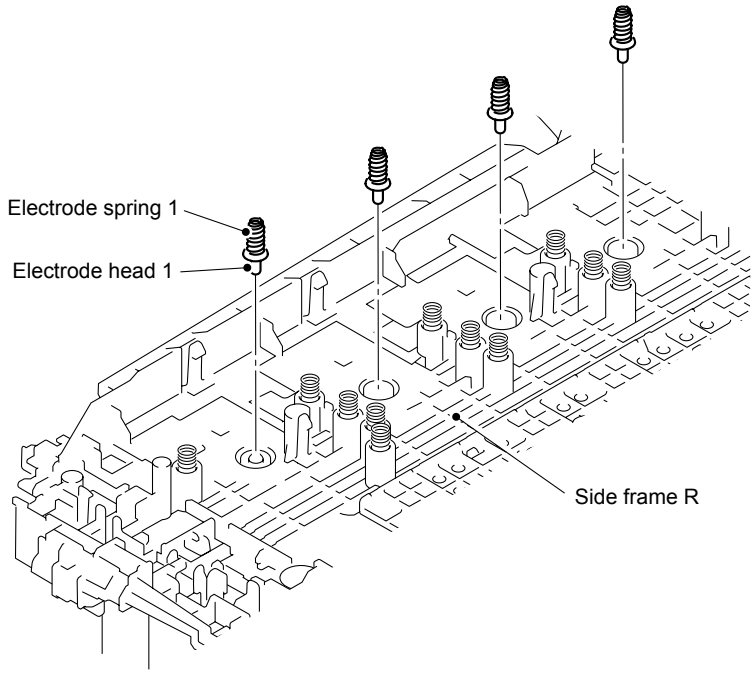


Fig. 5-265

(2) Remove the four Electrode spring 2 from the Side frame R.

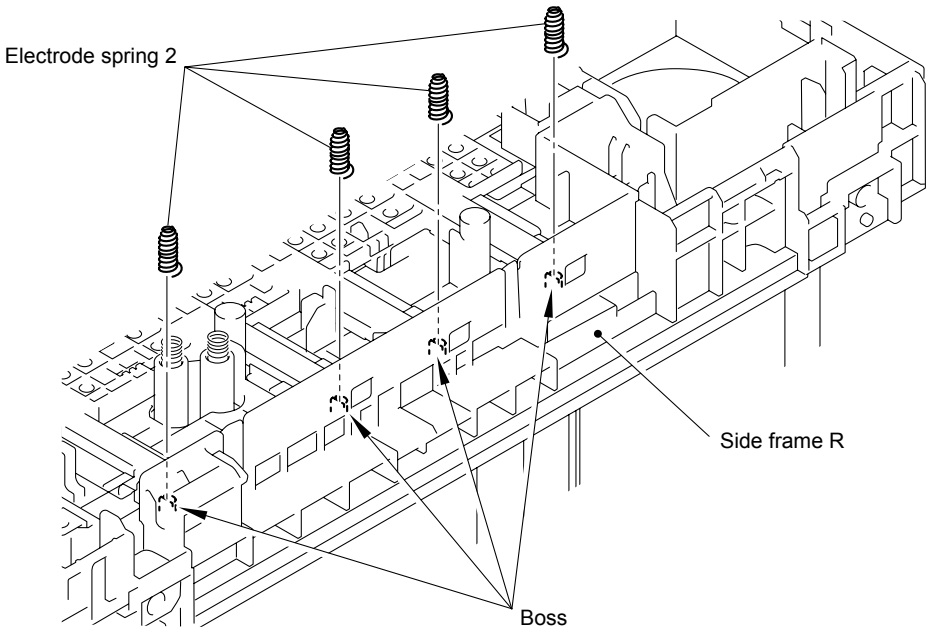


Fig. 5-266

Assembling Note:

When assembling the Electrode spring 2, make sure to insert the tip of the Spring under the TR head spring until it hits the Stopper as shown in the figure below.

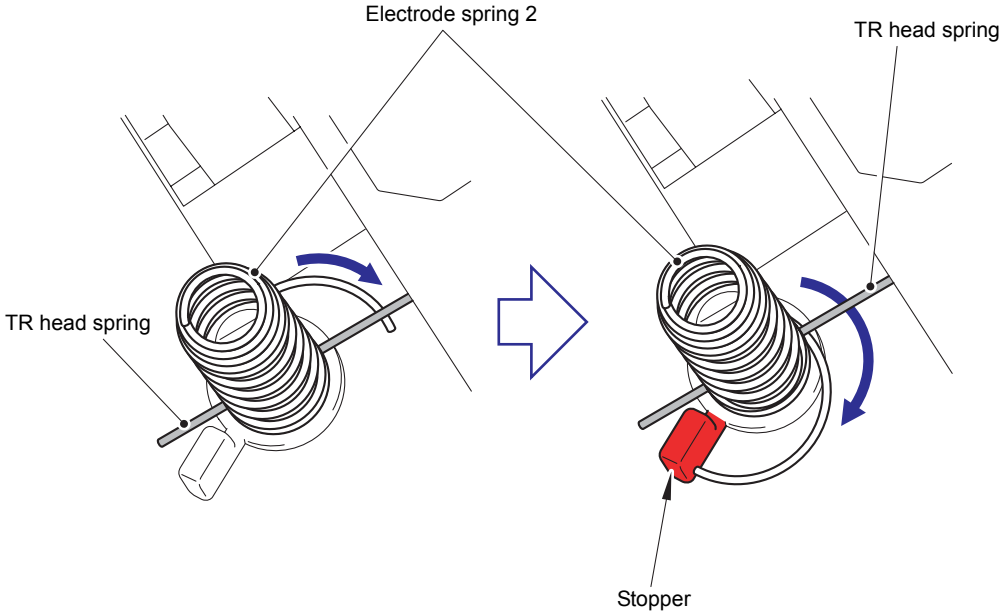


Fig. 5-267

(3) Remove the thirteen Electrode head 2 and thirteen Electrode spring 3 from the Side frame R.

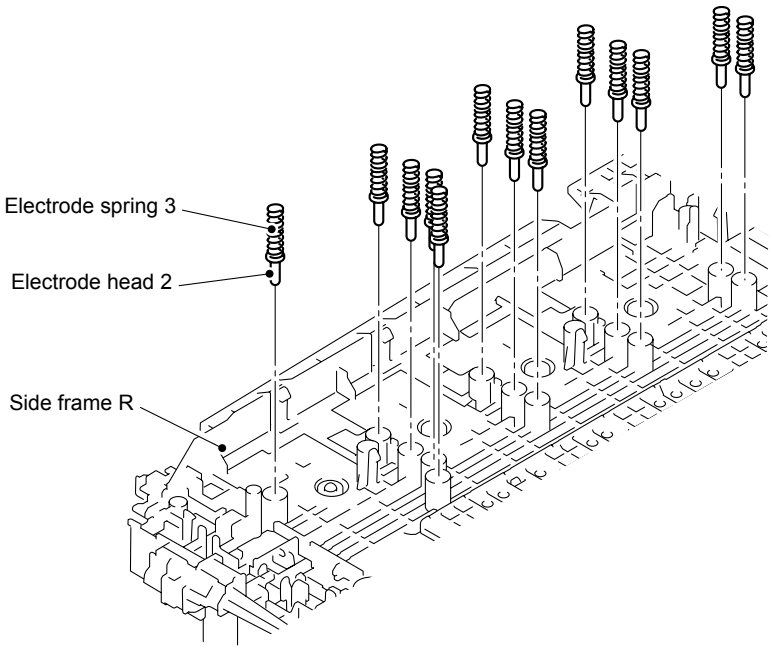


Fig. 5-268

(4) Remove the two Electrode head 2 and two Belt cleaner spring from the Side frame R.

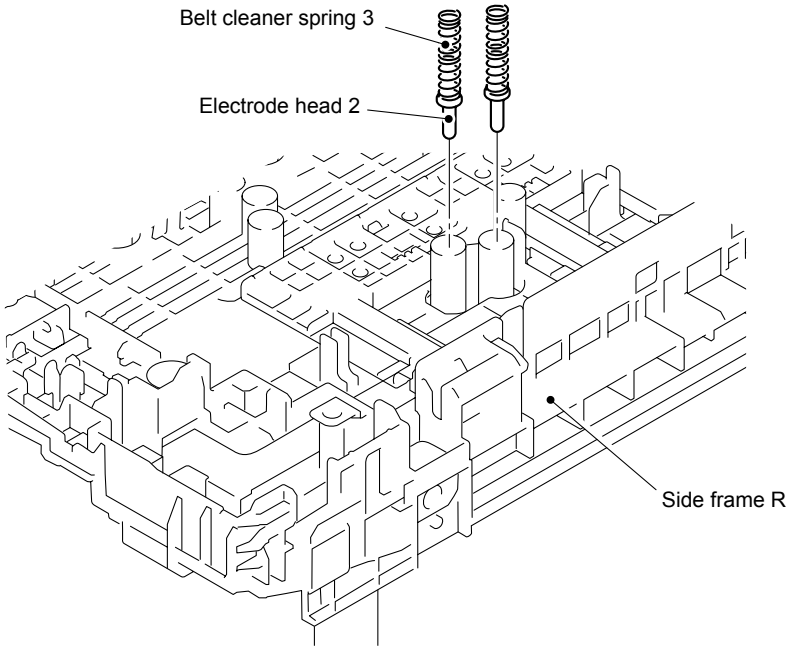


Fig. 5-269

(5) Remove the two Belt cleaner springs from the two Electrode head 2.

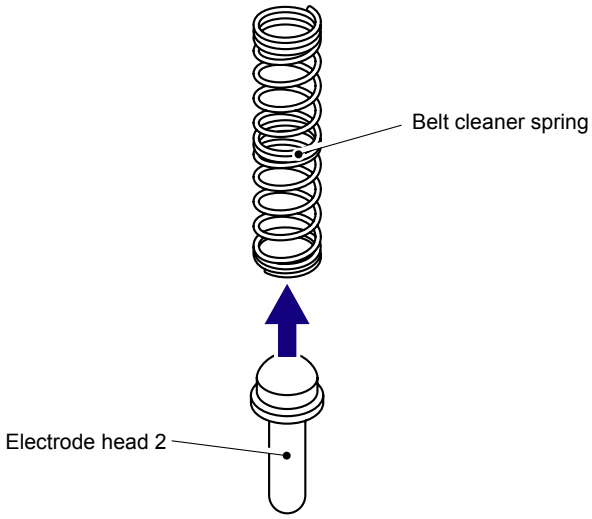


Fig. 5-270

Memo:
Although the following parts are similar in shape, you can identify them by size.

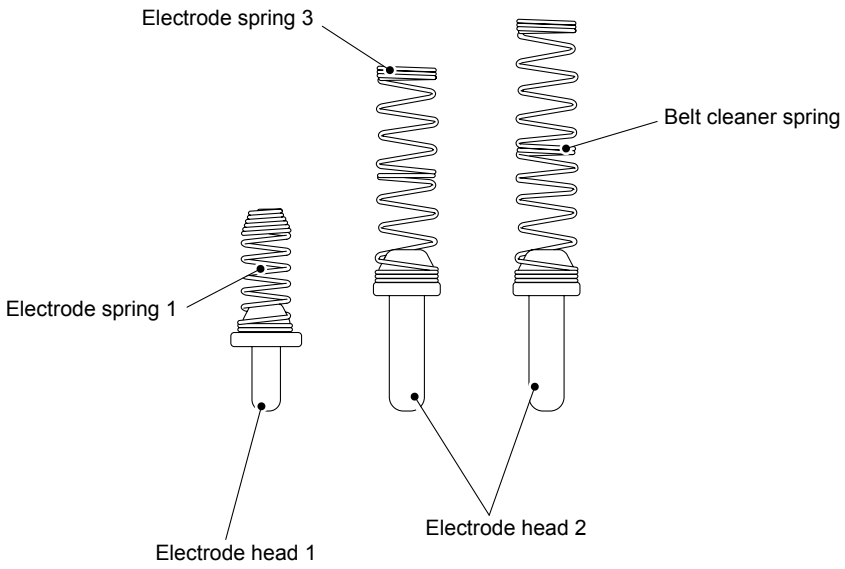


Fig. 5-271

8.89 TR Head Spring

(1) Release the four Hooks, slide the TR head cover in the direction of the arrow 1a, and remove it from the Side frame R in the direction of the arrow 1b.

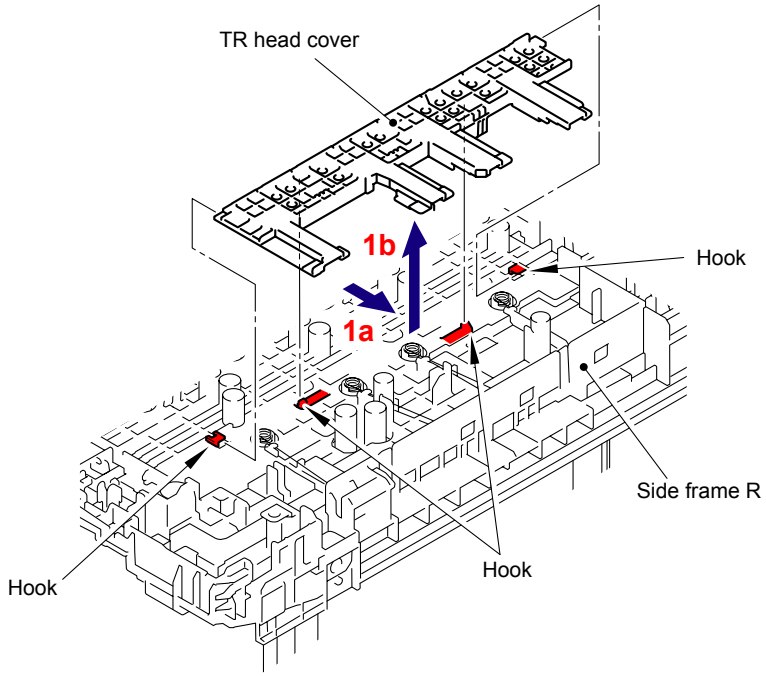


Fig. 5-272

(2) Remove the four Electrode head 2 and four TR head spring from the Side frame R.

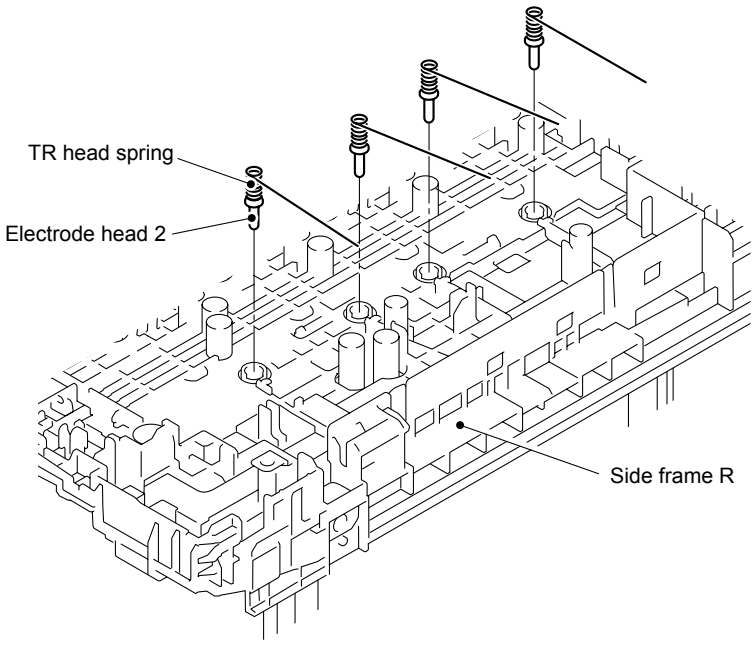


Fig. 5-273

Assembling Note:

When assembling the Electrode head 2 and TR head spring onto the Side frame R, make sure to assemble them as shown in the figure below.

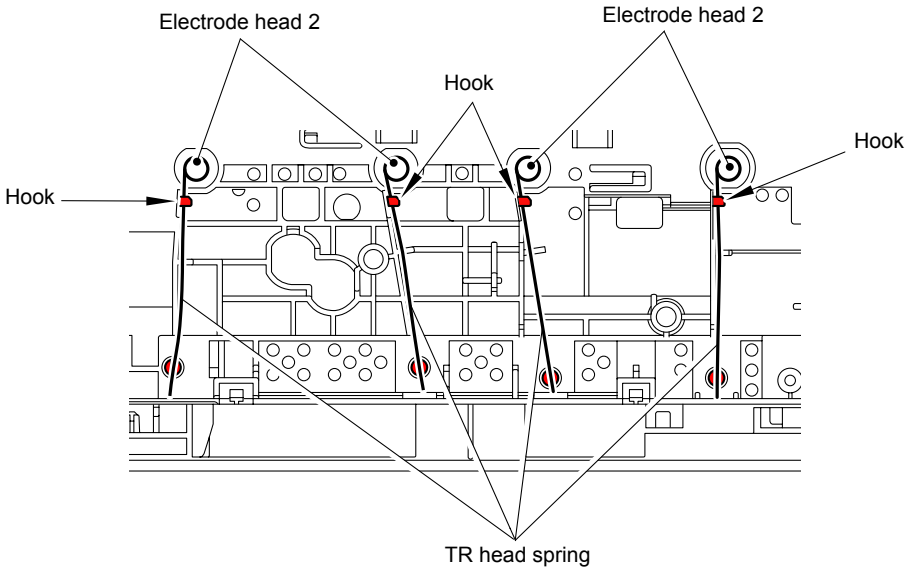


Fig. 5-274

(3) Remove the TR head spring from the four Electrode heads 2 (four springs in total).

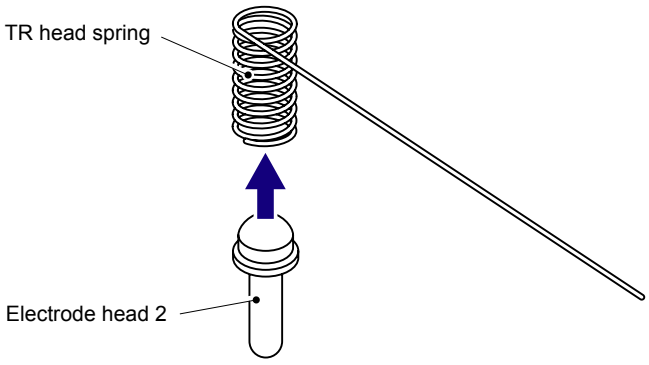


Fig. 5-275

8.90 Side Frame R

(1) Remove the four Shoulder screws M3, and then remove the Side frame R from the Base frame unit.

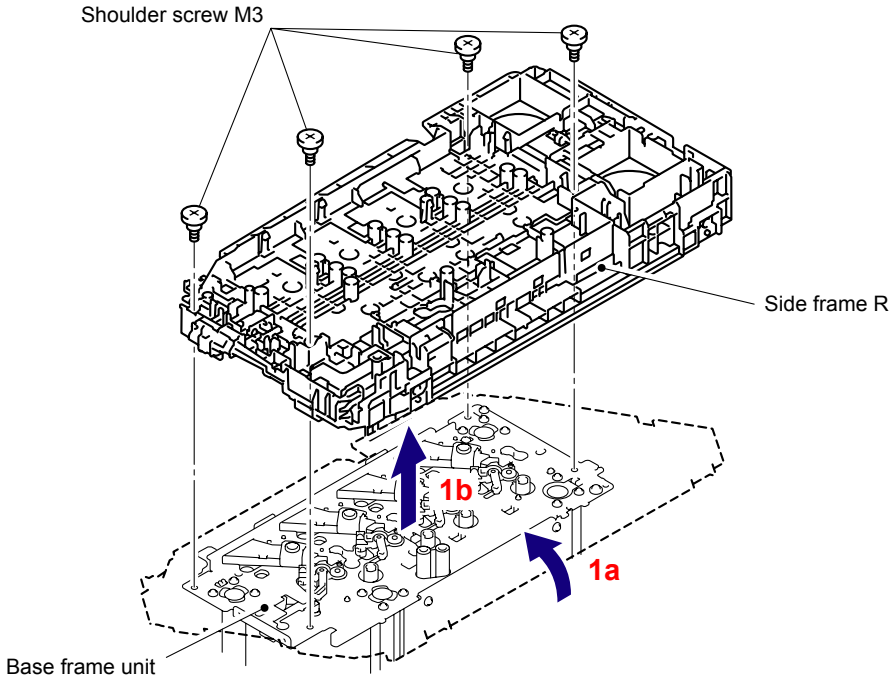


Fig. 5-276

(2) Remove the HVPS ground plate 1 from the Side frame R.

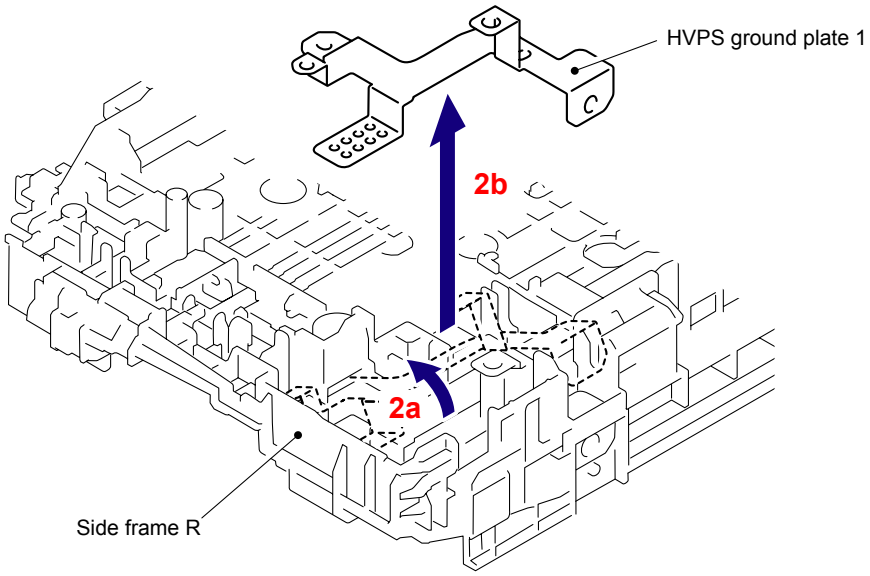


Fig. 5-277

(3) Release the two Hooks of the Top cover open switch to remove the Top cover open switch from the Side frame R.

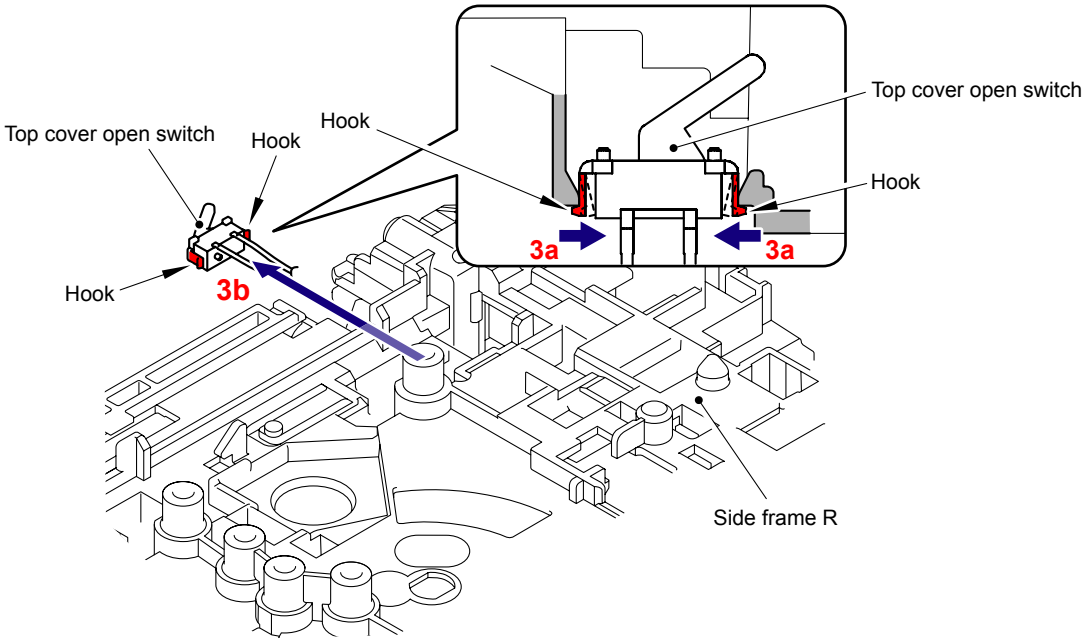


Fig. 5-278

Harness routing: Refer to "15 Develop Release Sensor PCB ASSY, Top Cover Open Switch, Toner LED PCB ASSY."

(4) Release the Hook of the Lock arm from the Side frame R.

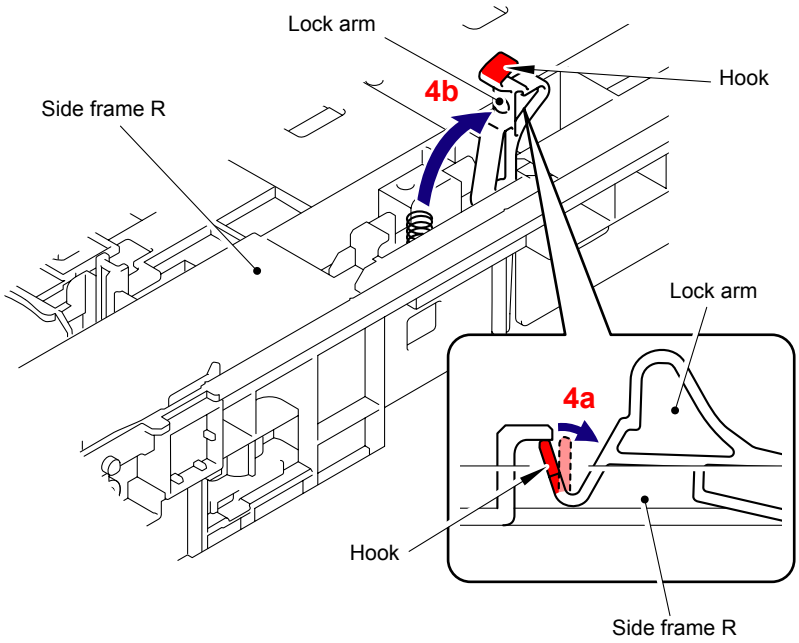


Fig. 5-279

(5) Remove the Lock arm from the Side frame R.

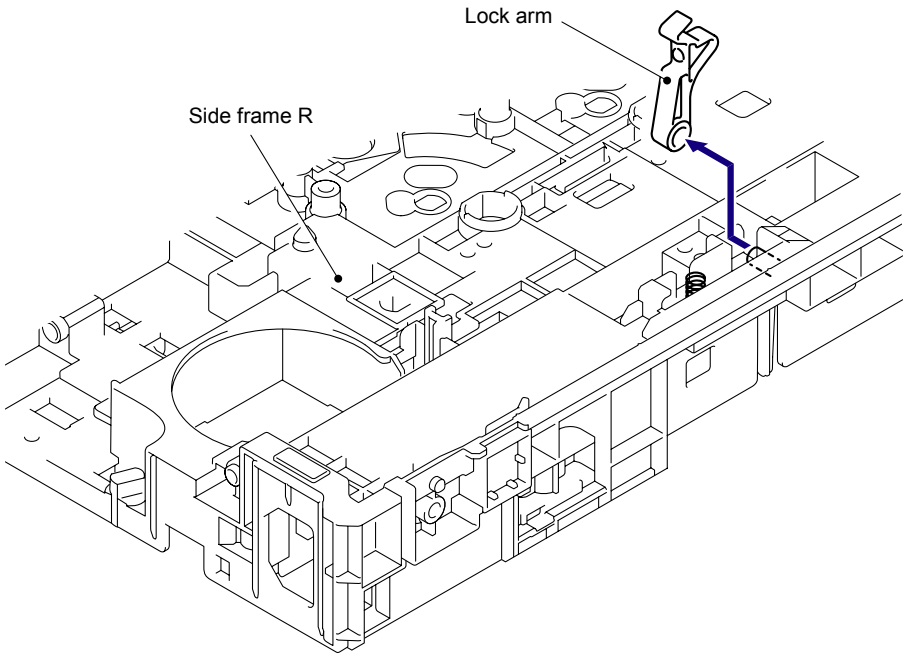


Fig. 5-280

(6) Remove the Cassette lock spring from the Side frame R.

Note:
Be careful not to lose the Cassette lock spring.

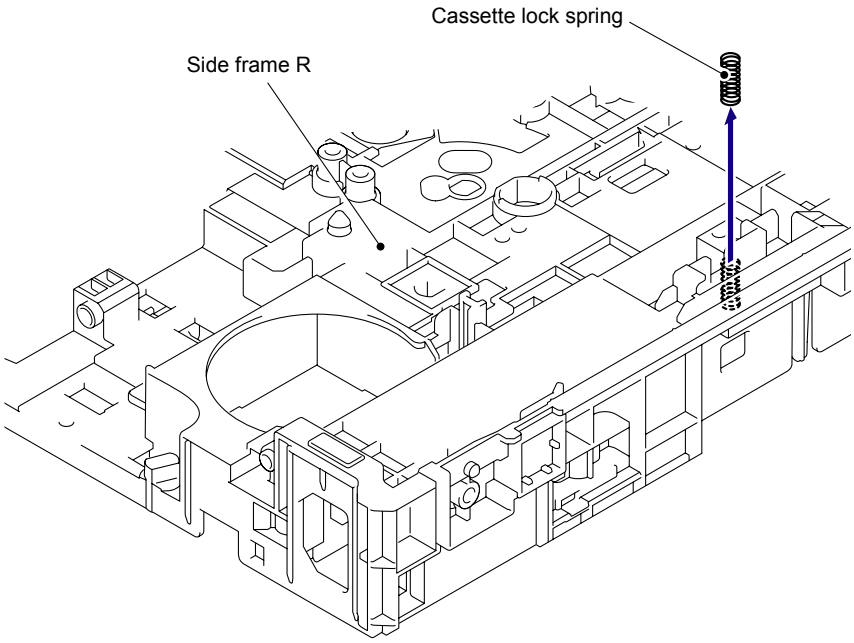


Fig. 5-281

8.91 Toner LED PCB ASSY/LED Holder

(1) Press the Pin of the Side frame R, slide the Toner LED PCB ASSY in the direction of the arrow 1b, and remove it.

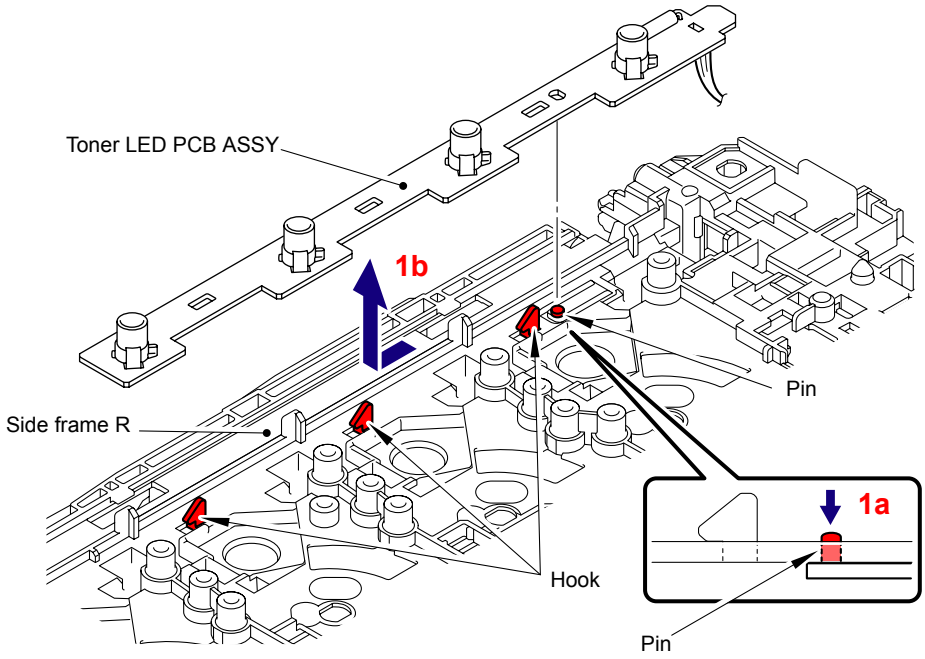


Fig. 5-282

(2) Release the two Hooks to remove the four LED holder from the Toner LED PCB ASSY.

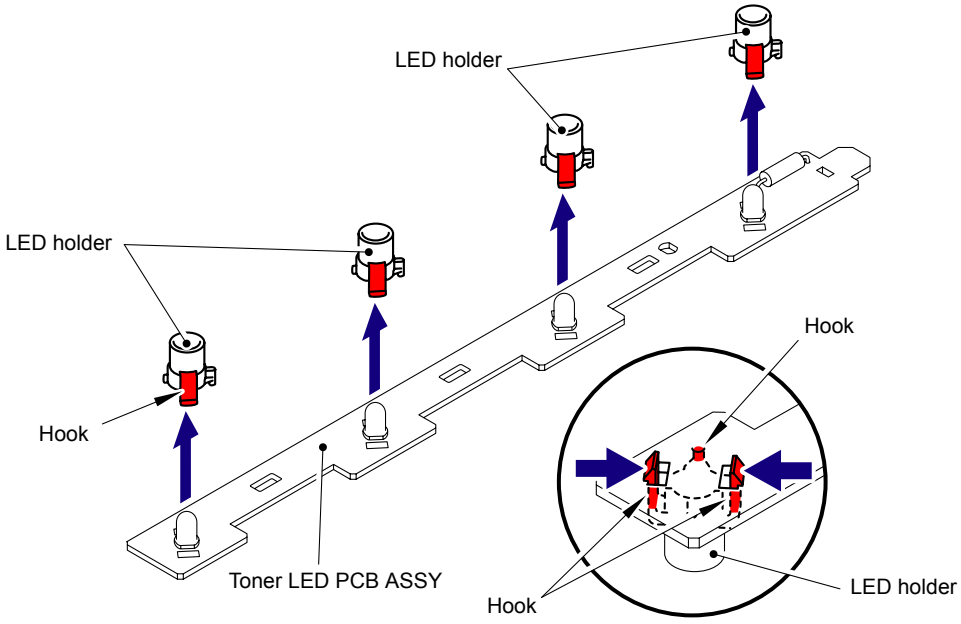


Fig. 5-283

Harness routing: Refer to "15 Develop Release Sensor PCB ASSY, Top Cover Open Switch, Toner LED PCB ASSY."

8.92 LM Hook B/LM Hook C/Hook Spring BC10

Note:
Be sure to mount the eject gear cover and cleaner PF gear cover before turning over the side flame L.

(1) Remove the three Shoulder screws M3 and one Taptite cup S M3x6 SR screw, and then remove the Side frame L from the Base frame unit.

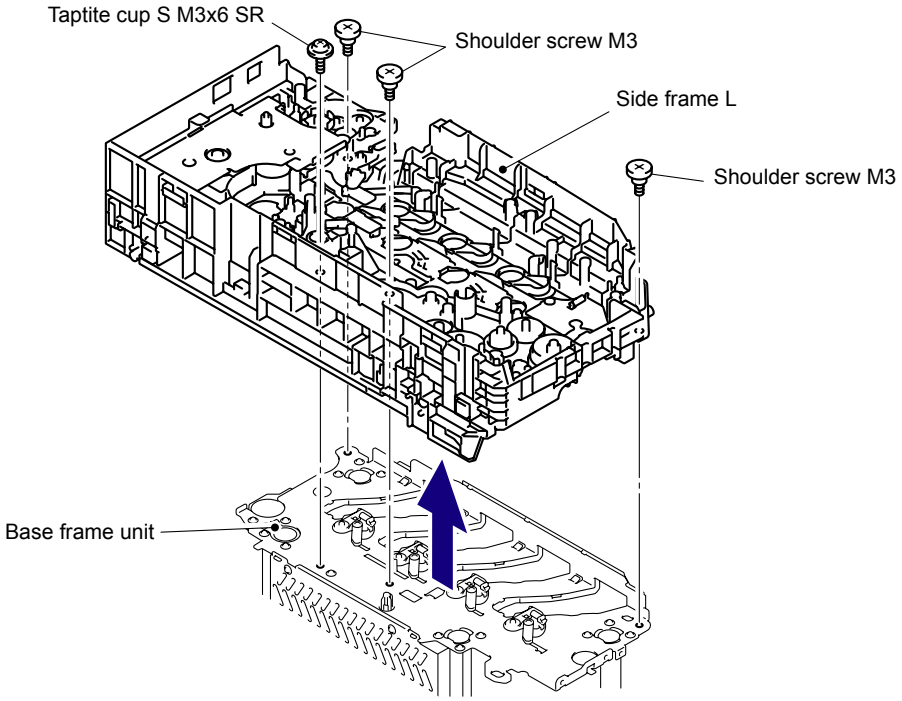


Fig. 5-284

(2) Remove the three Taptite bind B M4x12 screws, and then remove the Bevel gear cover from the Side frame L.

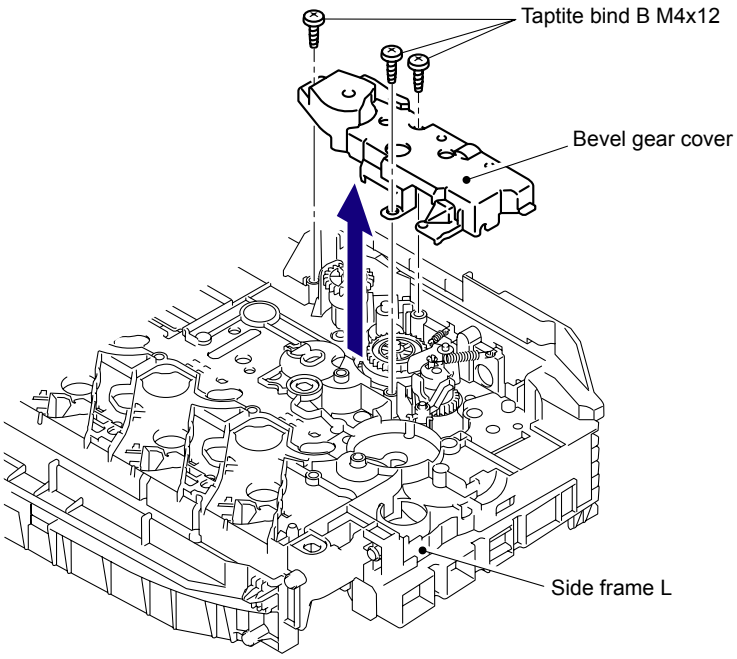


Fig. 5-285

(3) Remove the LM hook B and LM hook C from the Side frame L.

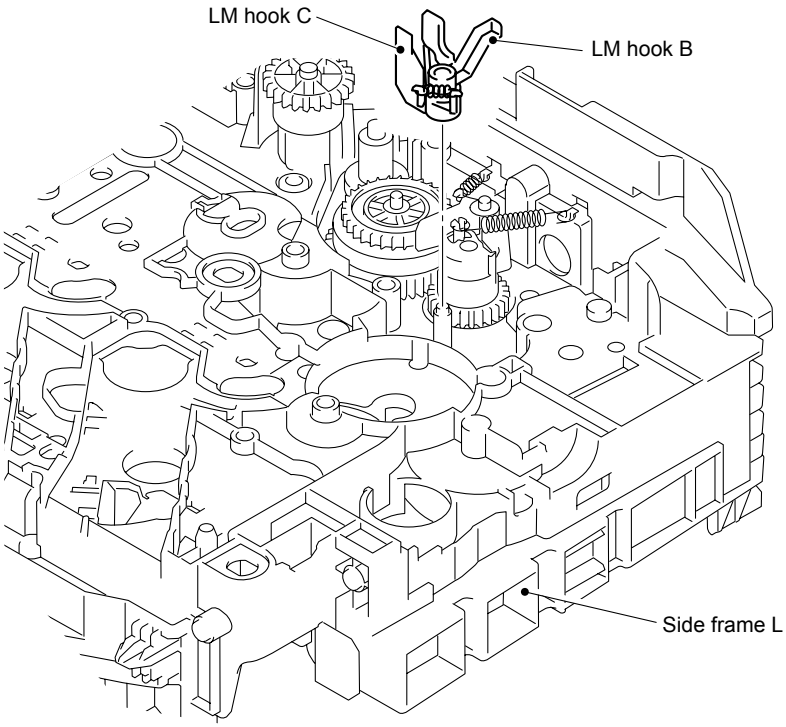


Fig. 5-286

(4) Remove the Hook spring BC10 from the LM hook B and the LM hook C.

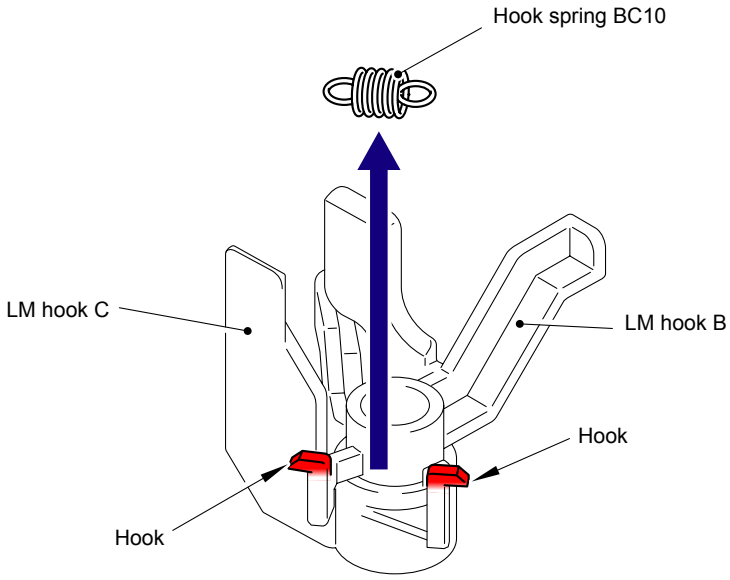


Fig. 5-287

(5) Remove the LM hook B from the LM hook C.

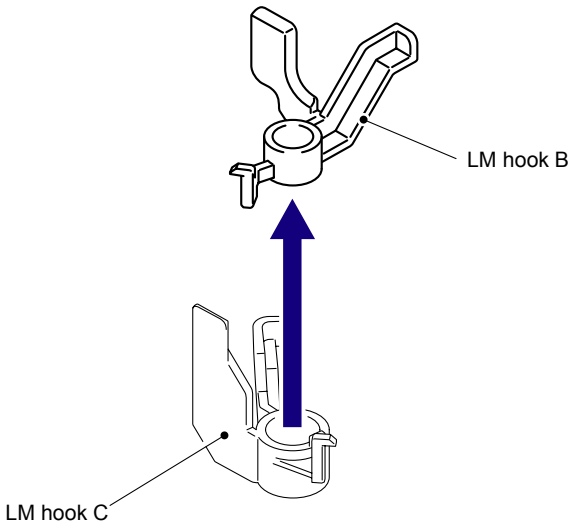


Fig. 5-288

(6) Remove the Hook spring BC10 from the LM hook A and the Side frame L.

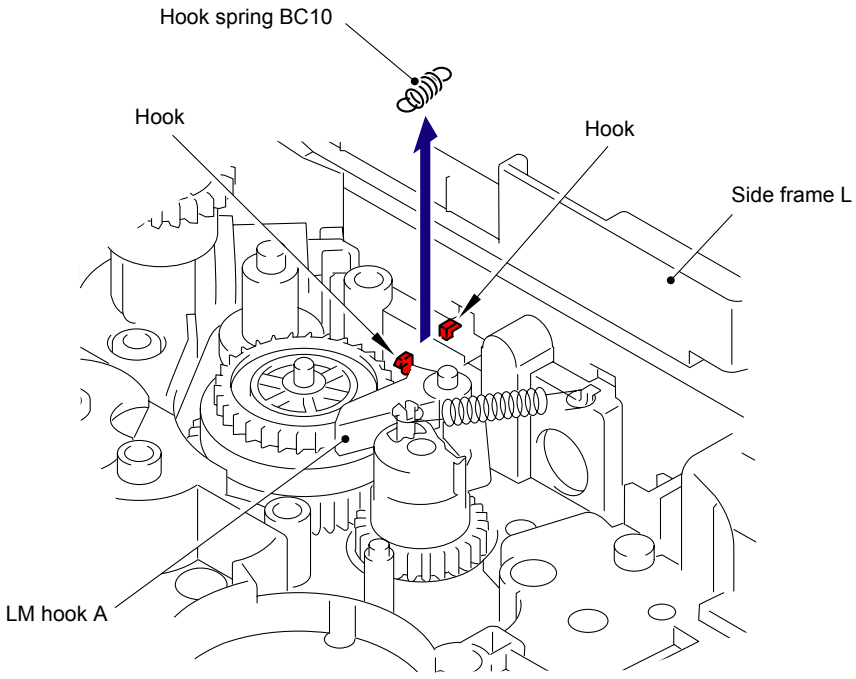


Fig. 5-289

CHAPTER 6

ADJUSTMENTS AND UPDATING OF SETTINGS, REQUIRED AFTER PARTS REPLACEMENT

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

This chapter describes 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.

CONTENTS

1. IF YOU REPLACE THE MAIN PCB

■ What to do when replacing the Main PCB

- Rewriting the firmware (Main firmware, sub firmware (PCL/PS))
- Setting by country (Maintenance mode: code 74)
- Initialization of EEPROM of main PCB (Maintenance mode: code 01)
- Setting the serial number
- Sensitivity adjustment of density sensor (Maintenance mode: code 72)
- Performing the developing bias voltage correction (Maintenance mode: code 83)
- Performing the adjustment of color registration (Maintenance mode: code 66)
- Acquiring MAC address (Ethernet address) from wireless LAN PCB
  (Wireless LAN model only)
- Acquiring white level data (Maintenance mode: code 55)
- Performing operational check of operation panel buttons (Maintenance mode: code 13)

■ Which parts to use

Main PCB: The table below shows the ROM type.

Main PCB (For a spare parts)	ROM 0	Main firmware (Controller program, Network program)
	ROM 1	Sub firmware (PCL/PS)

■ What you need to prepare

(1) A USB cable

(2) A USB flash memory drive (USB direct interface model only)

(3) Computer (Windows® XP or later)
Create a temporary folder on the C drive.

(4) The service setting tool (brusbn.zip)
Copy it into the temporary folder that has been created in the C drive. Extract the copied file and execute “brusbsn.exe” file by double-clicking it.

(5) The download utility (FILEDG32.EXE)
Copy it into the temporary folder that has been created in the C drive.

(6) The Brother maintenance USB printer driver (MaintenanceDriver.zip)
Copy it into the temporary folder that has been created in the C drive. Extract the copied file.

(7) The firmware

Main firmware	LZXXXX_$.djf or LZXXXX_$.upd*
Sub firmware	LZXXXX_$.djf or LZXXXX_$.upd
LZXXXX: First six digits are a parts number of the firmware. $: Alphabet representing the revision of the firmware.	

* upd: Used to rewrite the firmware via a computer.
djf: Used to rewrite the firmware using a USB flash memory.
(USB direct interface model only)

(8) Installing the maintenance driver

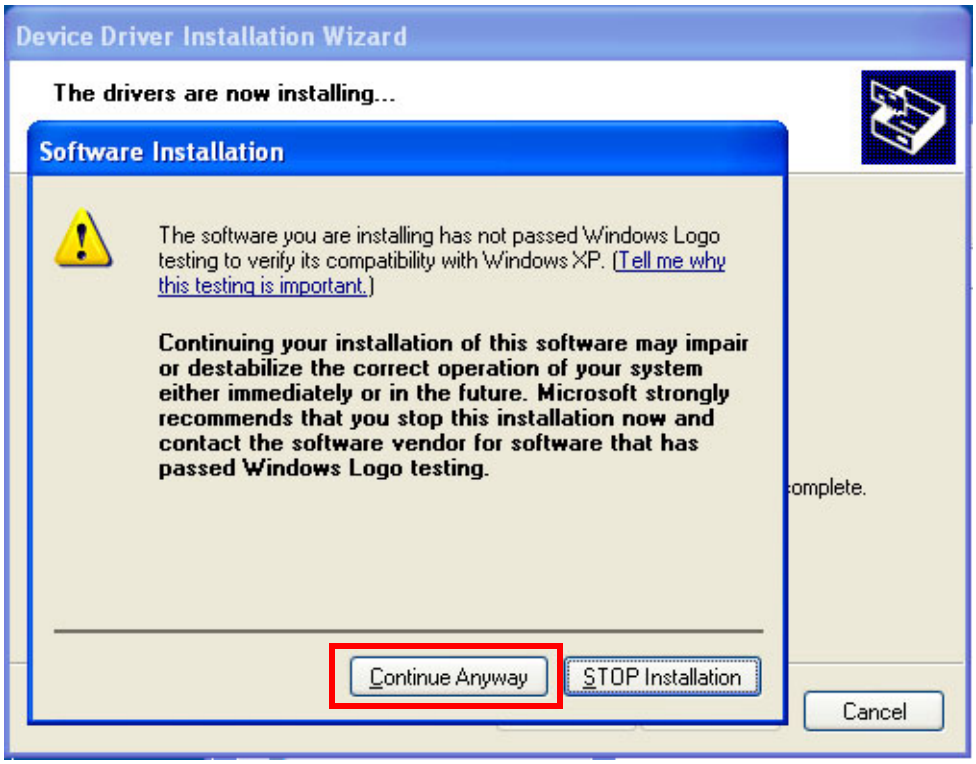
To identify multiple machines connected to the computer via USB, the computer needs to configure the corresponding number of virtual USB devices by a driver or software, If you connect a multiple number of machines to your computer, the same number of virtual USB devices will be automatically configured on your computer.

To prevent virtual USB devices from being configured without limitation, use the unique driver installation procedure described below that enables your computer to identify multiple machines via one single virtual USB device.

<Procedures>

1) While the machine is in the ready state, press the **OK** button and then **Start/Black** button. Next, press the ▲ button 4 times, and the machine goes into the maintenance mode.
2) "▮▮ MAINTENANCE ▮▮▮" appears on the LCD, and the machine goes into the maintenance mode.
3) Double-click "Setup.exe" of the maintenance printer driver which is saved in the temporary folder to execute.
4) The following screen appears, indicating the detection of device driver installation wizard. Click **Next** to proceed. (Screen below is the example of Windows® XP.)

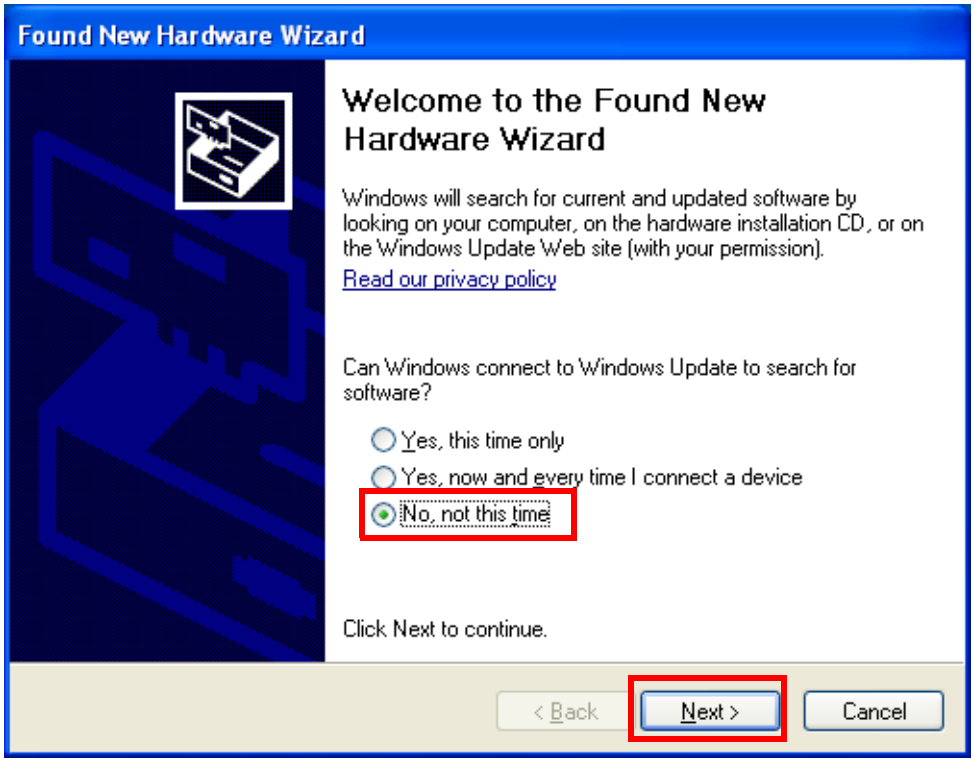
5) Alert warning message appears three times, click **Continue Anyway** to proceed.



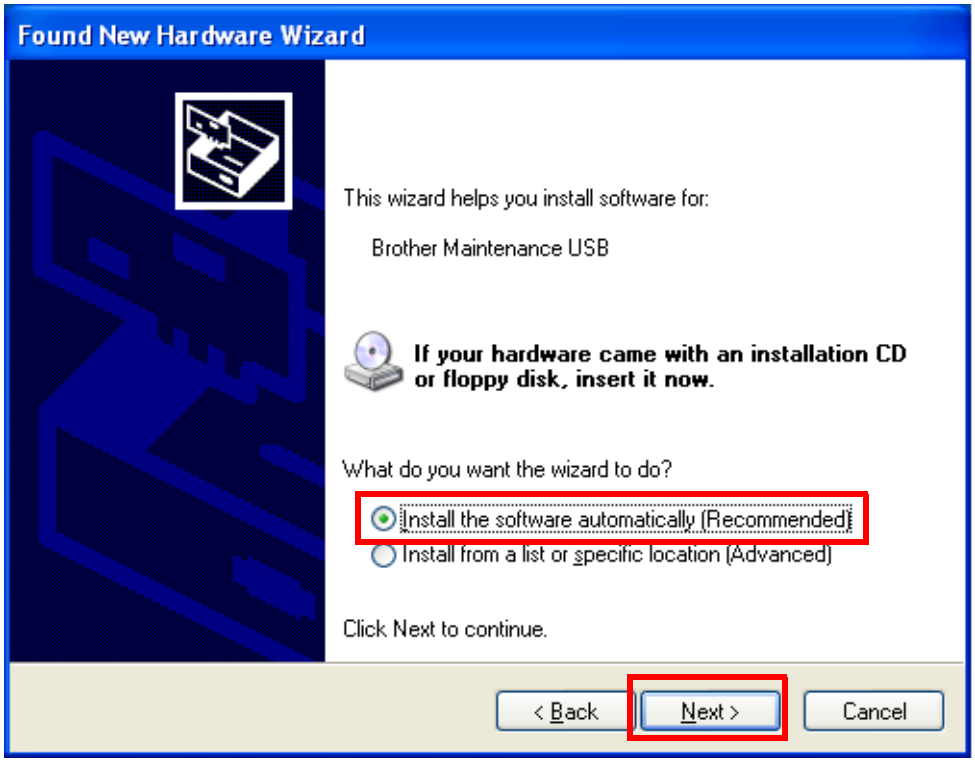
6) If the device driver is successfully installed, the following message screen appears. Click **Finish** to return.

7) Connect the machine to your computer using the USB cable.

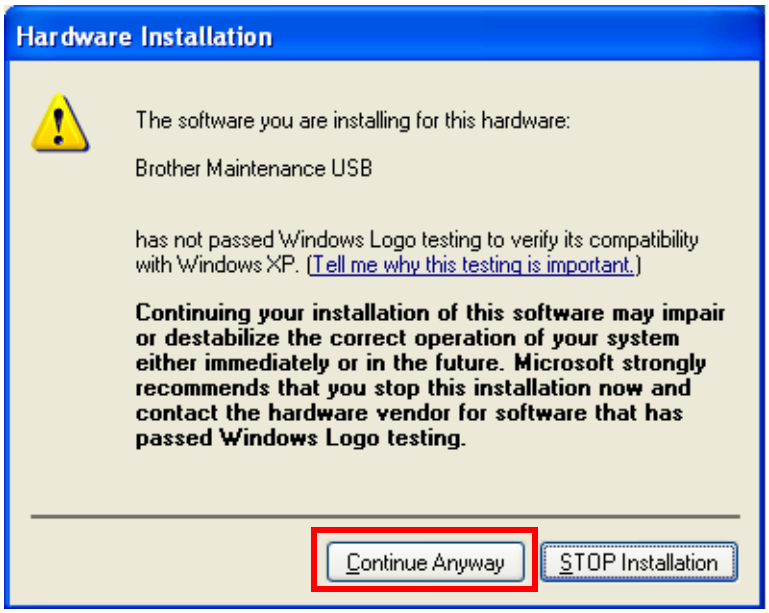
8) The following screen appears, indicating the detection of new hardware device by the system. Select “No, not this time” and click **Next**.

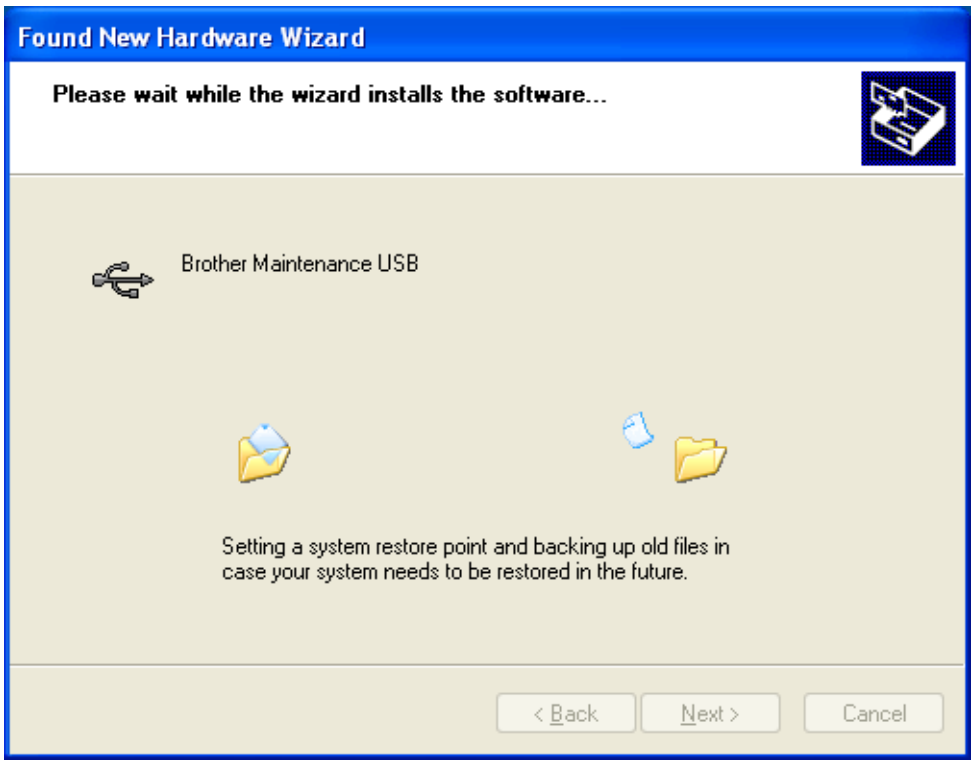


9) Select “Install the software automatically (Recommended)” and click **Next**.

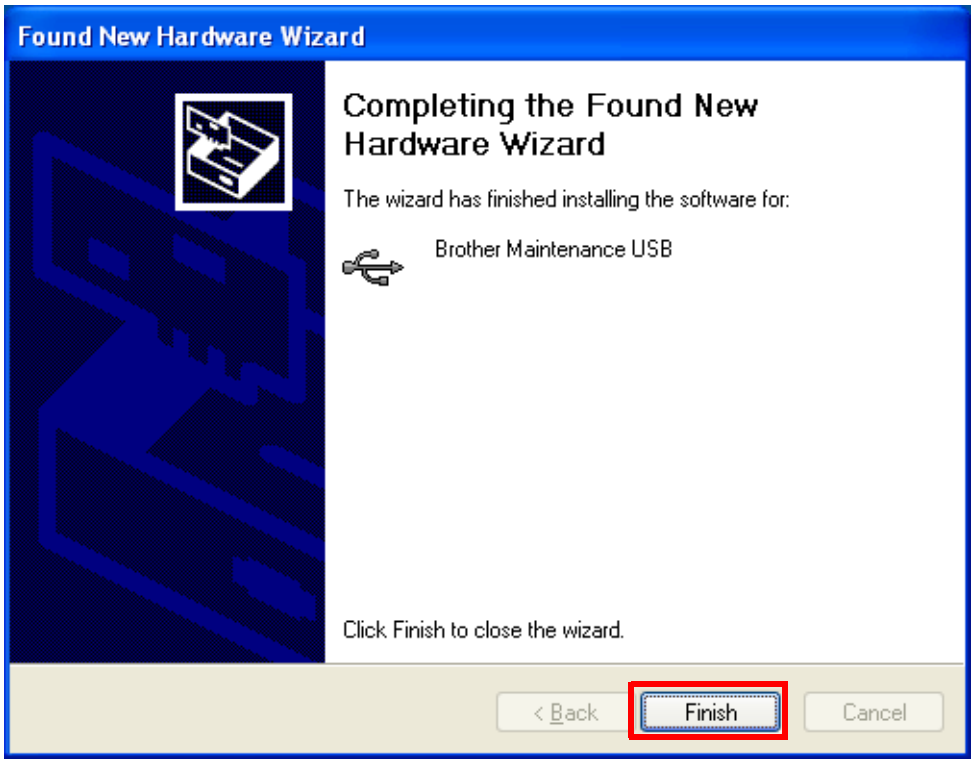


10) Alert warning message appears, click **Continue Anyway** to proceed.





11) If the Brother maintenance USB printer driver is successfully installed, the following message screen appears. Click **Finish** to return.



12) Repeat the steps from 9) to 11) three times, and then complete its installation.

1.1 Rewriting the Firmware (Main Firmware, Sub Firmware (PCL/PS))

The following two methods are available for rewriting the firmware (Main firmware and Sub firmware (PCL/PS)).

- Rewriting using a computer
- Rewriting using USB flash memory (USB direct interface model only)

1.1.1 Checking firmware version

Check if the firmware written on the main PCB is the latest version or not. If it is the latest version, there is no need to write the firmware. If it is not, make sure to write the firmware to the main PCB in accordance with "1.1.2. Rewriting the firmware using computer" or "1.1.3 Rewriting the firmware using USB flash memory (USB direct interface model only)" in this chapter.

<How to check firmware version>

(1) Press the **2** and **5** buttons in this order in the initial state of the maintenance mode. Then, the firmware version information is displayed on the LCD.

1.1.2 Rewriting the firmware using computer

The following firmware files are needed to rewrite the firmware.

Sub firmware (PCL/PS)	LZXXXX_$.upd
Main firmware	LZXXXX_$.upd
LZXXXX: First six digits are a parts number of the firmware. $: Alphabet representing the revision of the firmware.	

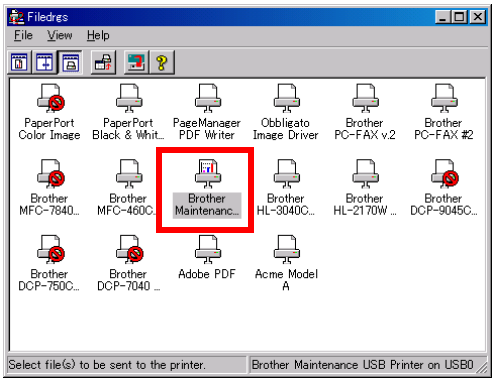
Note:

- It is recommendable to rewrite 1) Sub firmware (PCL/PS) and 2) Main firmware in this order.
- DO NOT unplug the power cord of the machine or your computer or disconnect the USB cable while rewriting the program files.

<Procedures>

(1) Turn the power switch of the machine OFF. Turn on the power as pressing the **5** button. Check that " ▮▮▮▮▮▮▮▮ " appears on the LCD.

(2) Double-click the "FILEDG32.EXE" to start. The following screen appears. Select the "Brother Maintenance USB Printer."



(3) Click the “Brother Maintenance USB Printer” icon to select. Drag the necessary firmware program file such as LZXXXX_$.upd and drop it.

Note:

After rewriting Sub firmware (PCL/PS) or Main firmware is completed, the machine returns to the ready state. When you write a program file continuously, turn OFF the power of the machine, and then turn it on again as pressing the **5** button. Check that “ ▮▮▮▮▮▮▮▮ ” appears on the LCD.

(4) Upon completion of rewriting, the machine restarts and returns to the ready state automatically.

1.1.3 Rewriting the firmware using USB flash memory (USB direct interface model only)

If you save the program files in the USB flash memory drive and plug it into the USB direct interface, you can rewrite the firmware.

When a USB flash memory is used, the following firmware files are needed to rewrite the firmware.

Sub firmware (PCL/PS)	LZXXXX_$.djf
Main firmware	LZXXXX_$.djf
LZXXXX: First six digits are a parts number of the firmware. $: Alphabet representing the revision of the firmware.	

Note:

- Make sure that the USB flash memory drive has enough space to save the program file.
- It is recommendable to rewrite 1) Sub firmware (PCL/PS) and 2) Main firmware in this order.
- If rewriting the firmware using a USB flash memory fails and an error message appears on the LCD, or no message appears on the LCD, it will be necessary to rewrite the firmware from a computer using the "FILEDG32.EXE." (Refer to "1.1.2 Rewriting the firmware using computer" in this chapter.)

<Procedures>

(1) Save the program files (such as LZXXXX_$.djf) which are necessary for rewriting the firmware that are prepared in the temporary folder to the USB flash memory.

(2) While the machine is in the ready state, connect the USB flash memory drive to the USB direct interface on the front of the machine.

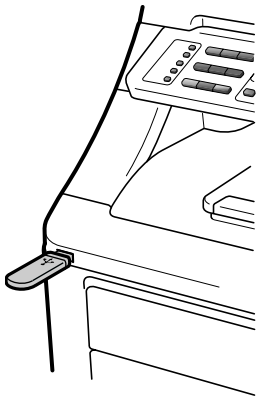


Fig. 6-1

(3) When the machine recognizes the USB flash memory, the names of the files stored in the USB flash memory are displayed. Select an appropriate file using the ▲ or ▼ button, and then press the **OK** button.

Memo:

To print and check the list of data stored in the USB flash memory, display the LCD, select "Index Print" using the ▲ or ▼ button, and then press the **OK** button.

(4) “Program Update/Press Start” appears on the LCD. Press the **Start/Black** or **OK** button to start. “Program Updating/Do not turn OFF” message appears on the LCD with Data LED blinking while rewriting the firmware. DO NOT turn OFF the machine.

(5) When the rewrite is finished, the machine automatically restarts.

(6) If you continue to rewrite other firmware and no file names are displayed, wait for a while, and take out the USB flash memory and insert it again. When file names are displayed, select the program files which need to be rewritten, and repeat the above procedures (3) to (5) to rewrite all the selected program files.

(7) When the rewrite of the main firmware is finished, the machine automatically restarts.

(8) Remove the USB flash memory drive from the USB direct interface once the update have finished.

(9) Next, make the settings according to the country. (Refer to “1.4.23 Setting by country (Function code 74)” in Chapter 7)

Memo:

You can check the firmware version of the Main firmware and the Sub firmware (PCL/PS) on the display of the machine’s log (Function code 80). (Refer to “1.2.27 Display of the machine’s log” in Chapter 7.)

1.2 Setting by Country (Maintenance Mode: Code 74)

Make appropriate settings by country in accordance with "1.4.23 Setting by country" in Chapter 7.

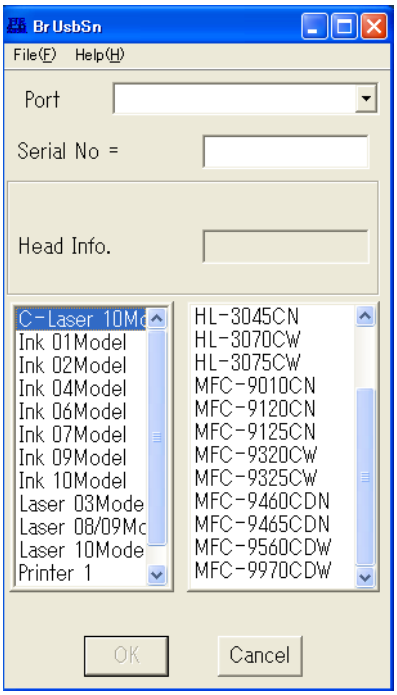
1.3 Initialization of EEPROM of Main PCB (Maintenance Mode: Code 01)

Initialize the EEPROM in accordance with "1.4.1 EEPROM parameter initialization" in Chapter 7.

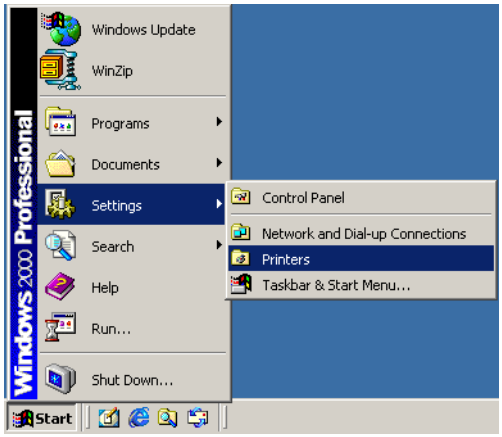
1.4 Setting the Serial Number

<Procedures>

(1) Connect the PC and machine with the USB cable.
(2) Double-click the brusbsn.exe file which has been copied in the temporary folder to start.

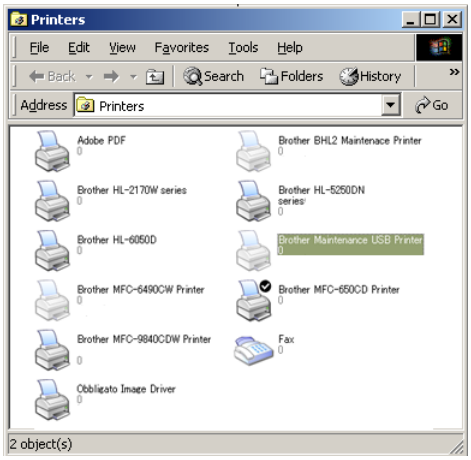


(3) Click the C-Laser 10Model.
(4) In Port on the brusbsn screen, select the port number assigned to the Brother Maintenance USB Printer. If the port number is unknown, follow steps below.
    1) Click Start | Settings | Printers.

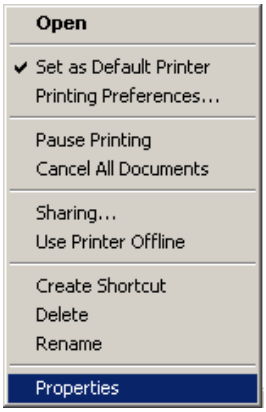


The Printers window appears as shown below.

2) Right-click the Brother Maintenance USB Printer icon.

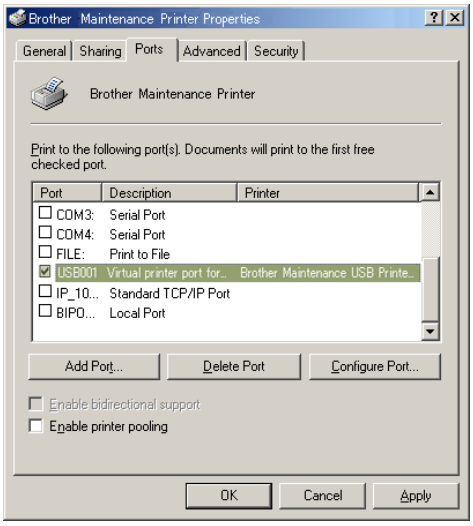


3) Click Properties.



The Brother Maintenance USB Printer Properties window appears as shown below.

4) Click the Ports tab.



In this example, the port number assigned to the Brother Maintenance USB Printer is USB001.

(5) Enter the serial number (the nine digits) of the machine into the box on the “Serial No”.

(6) Click the [**OK**] button. The serial number is written in the machine.

Memo:

Refer to APPENDIX. 3 to know how to read the serial number of the machine.

1.5 Sensitivity Adjustment of Density Sensor (Maintenance Mode: Code 72)

Make sensitivity adjustments of the density sensor in accordance with “1.4.22 Sensitivity adjustment of density sensor” in Chapter 7.

1.6 Performing the Developing Bias Voltage Correction (Maintenance Mode: Code 83)

Perform developing bias voltage correction in accordance with “1.4.29 Developing bias voltage correction” in Chapter 7.

1.7 Performing the Adjustment of Color Registration (Maintenance Mode: Code 66)

Perform adjustment of color registration in accordance with “1.4.17 Adjustment of color registration” in Chapter 7.

1.8 Acquiring MAC Address (Ethernet Address) from Wireless LAN PCB (Wireless LAN model only)

<Procedures>

(1) Turn ON the power as holding down the ▲ button and **OK** button at the same time. Keep holding down the ▲ button and **OK** button until “Check start” appears.

(2) When the MAC address (Ethernet address) is acquired from the wireless LAN PCB, “W Lan Module OK” is displayed on the LCD.

(3) Turn OFF the power.

1.9 Acquiring White Level Data (Maintenance Mode: Code 55)

Acquire the white level data in accordance with “1.4.16 Acquiring white level data” in Chapter 7.

1.10 Performing Operational Check of Operation Panel Buttons (Maintenance Mode: Code 13)

Perform the operational check for the operation panel in accordance with “1.4.8 Operational check of control panel button” in Chapter 7.

2. IF YOU REPLACE THE WIRELESS LAN PCB (WIRELESS LAN MODEL ONLY)

■ **What to do when replacing the wireless LAN PCB**

Acquiring MAC Address (Ethernet Address) from Main PCB

2.1 Acquiring MAC Address (Ethernet Address) from Main PCB

<Procedures>

(1) Turn ON the power as holding down the ▲ button and **OK** button at the same time. Keep holding down the ▲ button and **OK** button until “Check start” appears.

(2) When the MAC address (Ethernet address) is acquired from the main PCB, “W Lan Module OK” is displayed on the LCD.

(3) Turn OFF the power.

3. IF YOU REPLACE THE REGISTRATION SENSOR HOLDER ASSY

■ **What to do when replacing the registration sensor holder ASSY**

Sensitivity Adjustment of Density Sensor (Maintenance Mode: Code 72)

3.1 Sensitivity Adjustment of Density Sensor (Maintenance Mode: Code 72)

Make adjustments of the density sensor in accordance with “1.4.22 Sensitivity adjustment of density sensor” in Chapter 7.

4. IF YOU REPLACE THE DOCUMENT SCANNER UNIT

■ **What to do when replacing the document scanner unit**

Acquisition of the white level data and setting of the CIS scanner area

4.1 Acquiring White Level Data and Setting CIS Scanner Area

<Procedure>

(1) Press the **Menu** button and **Start/Black** button in this order, and then press the ▲ button four times to go into the maintenance mode. (Refer to “1.1 How to Enter Maintenance Mode” in Chapter 7.)

(2) Press the **5** button twice.

(3) Press the **Start/Black** button. The white level data is automatically acquired.

(4) When the acquisition is completed, the machine automatically returns to the initial state of the maintenance mode.

CHAPTER 7
SERVICE FUNCTIONS

CHAPTER 7
SERVICE FUNCTIONS

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

This chapter also covers not-disclosed-to-users function menus, which activate settings and functions or reset the parts life.

CONTENTS

1. MAINTENANCE MODE

The maintenance mode is exclusively designed for the checking, setting and adjustments of the machine by using the buttons on the control panel cover ASSY. The EEPROM can be customized according to the destination of the machine. Moreover, the operational check of the LCD, operation panel board, and sensors, print test, display of the log information and error codes, and change of the worker switches (WSW) can be performed.

1.1 How to Enter the Maintenance Mode

<Operating procedure>

(1) Press the **Menu** button and then the **Start/Black** button while the machine is in the ready state. Next, press the ▲ button four times to enter the maintenance mode.

> **Memo:**
> FAX models equipped with numerical keypads can enter the maintenance mode in the same way as conventional models; that is, by pressing the **Menu**, *, **2**, **8**, **6** and **4** buttons in this sequence.

(2) The machine beeps for one second and displays "▮▮ MAINTENANCE ▮▮▮" on the LCD, indicating that it is placed in the initial state of the maintenance mode, a mode in which the machine is ready to accept entry from the buttons.

(3) To select any of the maintenance mode functions shown in the next page, enter the maintenance mode that you want to use using the buttons.

Memo:

- To exit from the maintenance mode and switch to ready state, press the **9** button twice in the initial state of the maintenance mode.
- When the **Stop/Exit** button is pressed, the machine beeps for one second and returns to the initial state of the maintenance mode.
- When an incorrect maintenance mode is entered, the machine beeps for one second and returns to the initial state of the maintenance mode.

1.2 How to Enter the End User-accessible Maintenance Mode

Basically, the maintenance-mode functions listed in the next 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 by phone, for example.

The end user-accessible functions are **shaded** in the table given on the next page. (codes 06, 09, 10, 11, 12, 25, 43, 52, 53, 54, 68, 71, 72, 77, 80, 82, 87, 88 and 91)
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.

<Operating procedure>

(1) Press the **Menu**, **Start/Black**, **Menu** and ▲ buttons in this order when the machine is in the ready state. "MAINTENANCE 06" appears on the LCD.

(2) Press the ▲ or ▼ button to display the desired maintenance code on the LCD. Then press the **OK** button.

To switch the machine back to the ready state, press the **Stop/Exit** button. When each of the user-accessible functions is completed, the machine automatically returns to the ready state.

1.3 List of Maintenance-mode Functions

Function code	Function	Refer to:
01	EEPROM parameter initialization	1.4.1 (7-3)
05	Printout of scanning compensation data	1.4.2 (7-4)
06	Placement of scanner module position for transportation	1.4.3 (7-7)
08	ADF performance test	1.4.4 (7-7)
09	Monochrome image quality test pattern	1.4.5 (7-8)
10	Worker switch (WSW) setting	1.4.6 [1] (7-9)
11	Printout of worker switch (WSW) data	1.4.6 [2] (7-12)
12	Operational check of LCD	1.4.7 (7-13)
13	Operational check of control panel button	1.4.8 (7-14)
25	Software version check	1.4.9 (7-15)
32	Operational check of sensors	1.4.10 (7-16)
43	PC print function	1.4.11 (7-20)
45	Not-disclosed-to-users functions	1.4.12 (7-23)
52	EEPROM customizing (User-accessible)	1.4.13 (7-27)
53	Received data transfer function	1.4.14 (7-28)
54	Fine adjustment of scan start/end positions	1.4.15 (7-30)
55	Acquisition of white level data	1.4.16 (7-31)
66	Adjustment of color registration	1.4.17 (7-32)
67	Continuous print test	1.4.18 (7-35)
68	LED test pattern print	1.4.19 (7-37)
69	Frame pattern print	1.4.20 (7-39)
71	Color test pattern	1.4.21 (7-41)
72	Sensitivity adjustment of density sensor	1.4.22 (7-43)
74	Setting by country	1.4.23 (7-44)
75	Sensitivity adjustment of registration mark sensor and check of belt surface	1.4.24 (7-46)
77	Printout of maintenance information	1.4.25 (7-48)
78	Operational check of fans	1.4.26 (7-49)
80	Display of the machine's log	1.4.27 (7-50)
82	Error code indication	1.4.28 (7-53)
83	Developing bias voltage correction	1.4.29 (7-54)
87	Output of transmission log to the telephone line	1.4.30 (7-55)
88	Counter reset after replacing the fuser unit and paper feeding kit	1.4.31 (7-55)
91	EEPROM parameter Initialization	1.4.1 (7-3)
99	Exit from the maintenance mode	1.4.32 (7-55)

* The functions shaded in the table above are user-accessible.

1.4 Detailed Description of Maintenance-mode Functions

1.4.1 EEPROM parameter initialization (Function code 01, 91)

<Function>

This function initializes the setting values of the operation parameters, user switches, and worker switches (WSW) registered in the EEPROM.
Entering function code 01 initializes almost all of the EEPROM areas, but entering 91 does not initialize some areas, as listed below.

<table>
<tr><th>Data item</th><th>Function code 01</th><th>Function code 91</th></tr>
<tr><td>- Maintenance mode setting value
- User switch
- Worker switch (Refer to APPENDIX 1.)</td><td rowspan="5">All of these will be initialized.</td><td>These will be initialized.</td></tr>
<tr><td>- Remote activation code
- Station ID data
- Cover page comment registration message
- Forward/ paging number, PIN number
- Telephone function registration
- One-touch dialing
- Speed dialing
- Group dialing</td><td rowspan="4">These will not be initialized.</td></tr>
<tr><td>LAN area (Network settings)</td></tr>
<tr><td>PCL core area (Emulation settings)
(Wireless LAN model only)</td></tr>
<tr><td>Operation lock of the control panel password</td></tr>
</table>

Note:
When the main PCB has been replaced with the one used in other product, it is necessary to perform this operation and customize the EEPROM with the operation of the maintenance mode: code 74 after initializing the EEPROM.
(Refer to "1.4.23 Setting by country (Maintenance Mode: Code 74)" in this chapter.)

<Operating procedure>

(1) Press the **0** and **1** buttons (or the **9** and **1** buttons according to your need) in this order in the initial state of the maintenance mode. The "PARAMETER INIT" will appear on the LCD.

(2) When the initialization of the parameters is finished, the machine beeps for one second and returns to the initial state of the maintenance mode.

1.4.2 Printout of scanning compensation data (Function code 05)

<Function>

The machine prints out the white and black level data for scanning compensation.

<Operating procedure>

Note:

- 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 copy of the document.

(2) Press the **0** and **5** buttons in this order in the initial state of the maintenance mode. The “PRINTING” will appear on the LCD.

(3) The equipment prints out the scanning compensation data list (Refer to Fig. 7-1 and Fig. 7-2) containing the following:

■ **Black and white scanning**

a)	Black and white data graph	
b)	LED PWM data	1 byte
c)	LED pulse data (G)	2 bytes
d)	RLCV (AFE parameter)	1 byte
e)	OFFSET (AFE parameter)	1 byte
f)	GAIN (AFE parameter)	2 bytes
g)	Background color compensated data	1 byte
h)	Black level data	by previous scanning pixel count
i)	White level data (G)	by previous scanning pixel count
j)	White level data (B)	by previous scanning pixel count
k)	White level data (R)	by previous scanning pixel count

■ **Color scanning**

a)	Black and white data graph	
b)	LED PWM data	1 byte
c)	LED pulse data (G)	2 bytes
d)	LED pulse data (B)	2 bytes
e)	LED pulse data (R)	2 bytes
f)	RLCV (AFE parameter)	1 byte
g)	OFFSET (AFE parameter)	1 byte
h)	GAIN (AFE parameter)	2 bytes
i)	Background color compensated data	1 byte
j)	Black level data	by previous scanning pixel count
k)	White level data (G)	by previous scanning pixel count
l)	White level data (B)	by previous scanning pixel count
m)	White level data (R)	by previous scanning pixel count

(4) When printing of the correction data is finished, the machine beeps for one second and returns to the initial state of the maintenance mode.

Note:

- If any data is abnormal, its code will be printed in inline style.
- Regarding the black and white level data after monochrome reading is done, only the G data is printed, and R and B data are not printed.
- The white level data and black level data are imported in 10/16 bits, and the data in the upper 8 bits are printed.

■ For white and black scanning

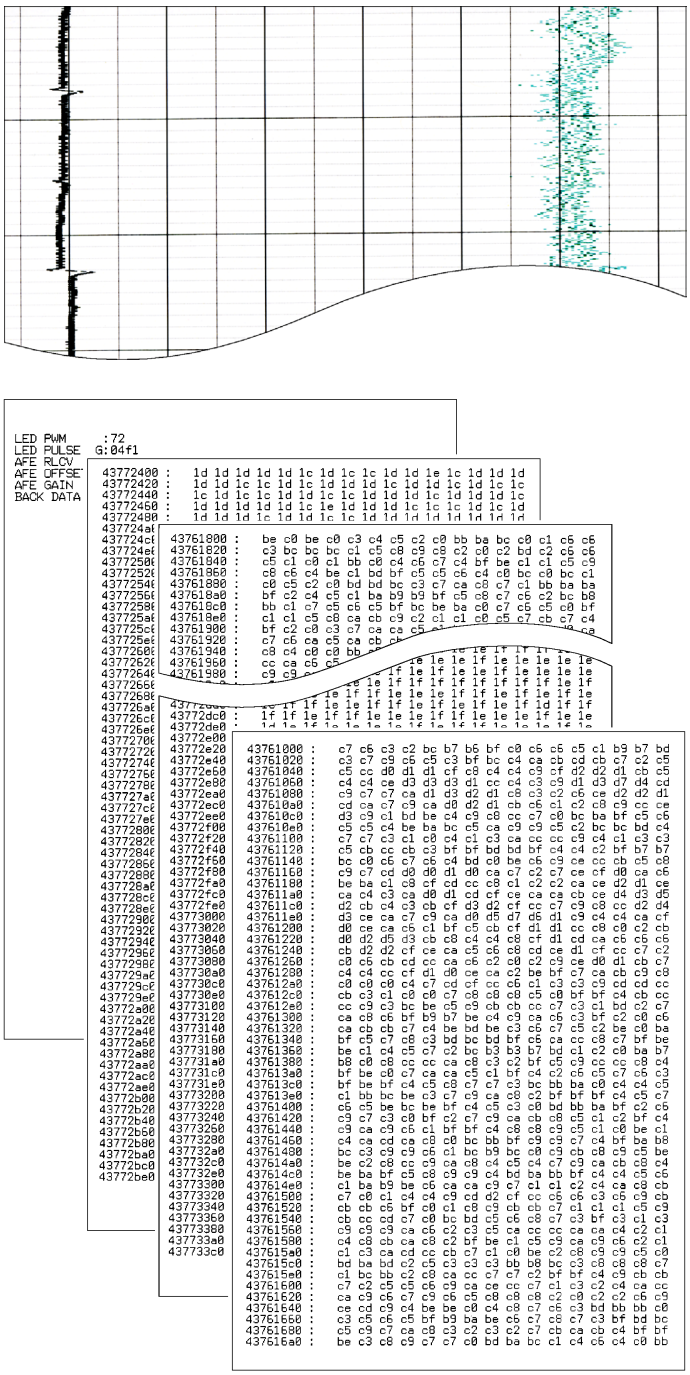


Fig. 7-1

■ For color scanning

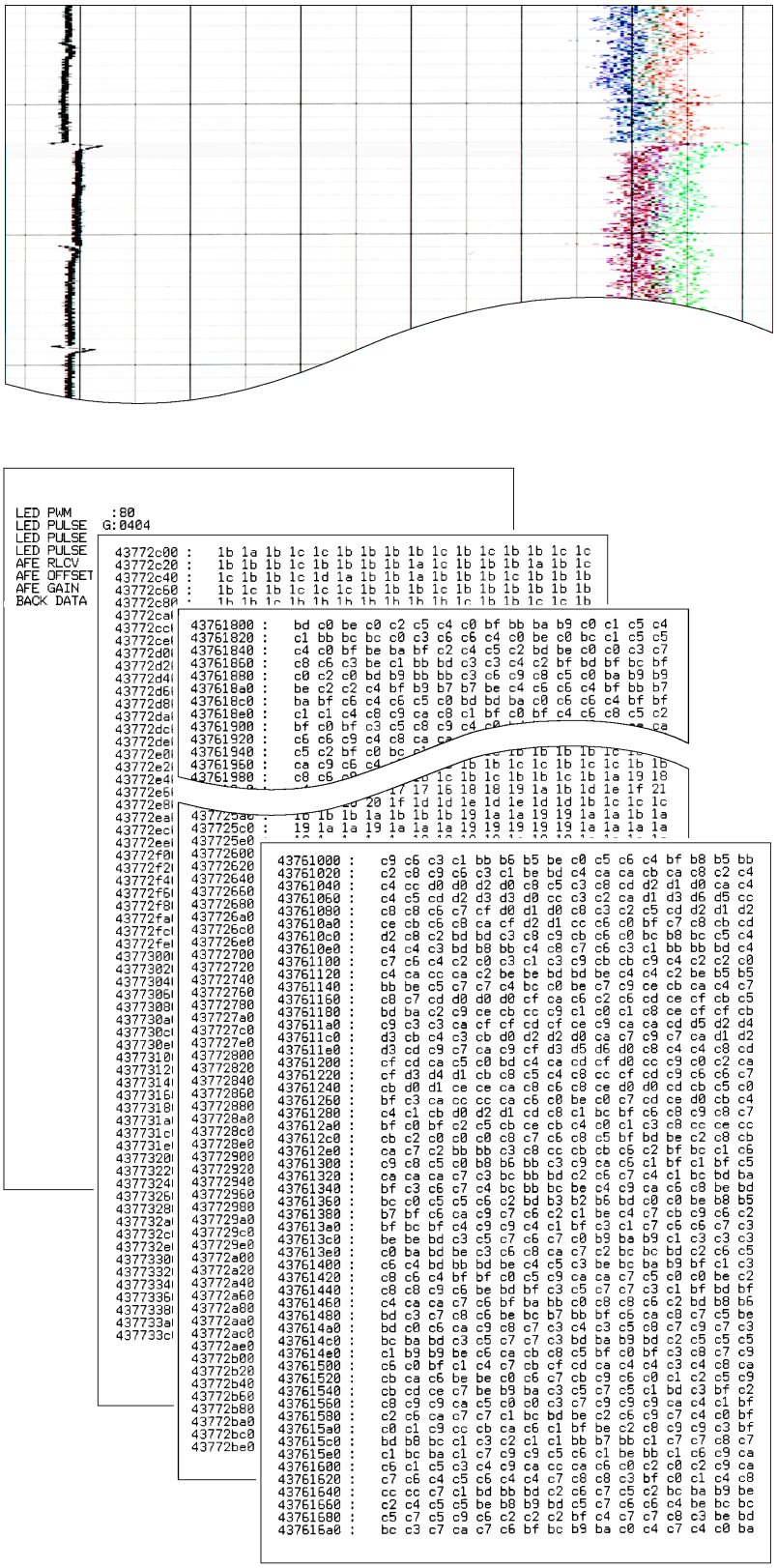


Fig. 7-2

1.4.3 Placement of scanner unit in position for transportation (Function code 06)

<Function>

This function is to move the scanner unit in position for transportation located at the left end. When you fix the machine and check its operation, you need to perform this function last before packing and shipping.

Note:
Please instruct end users to perform this function if possible before packing and shipping their FAX machine to a sales agent or a service dealer for the purpose of repair.
(For information on the procedure to make the user operate the maintenance mode, refer to "1.2 How to Enter the End User-accessible Maintenance Mode" in this chapter.)

<Operating procedure>

(1) Press the **0** and **6** buttons in this order in the initial state of the maintenance mode. The scanner unit moves to the designated position for transportation located at the left end. The "MAINTENANCE 06" is displayed until the scanner unit is placed in position. When the document scanner unit is placed in the position, the "SCAN LOCKED" appears on the LCD.

(2) When the **Stop/Exit** button is pressed, the machine beeps for one second and returns to the initial state of the maintenance mode.

Note:
- When the document scanner unit fails to move to the transport position or when the maintenance mode: code 06 is executed while a reading error occurs, "SCAN LOCK ERROR" appears.
- After the scanner unit has moved to the transport position, the reading operations such as copy cannot be performed.

1.4.4 ADF Performance Test (Function code 08)

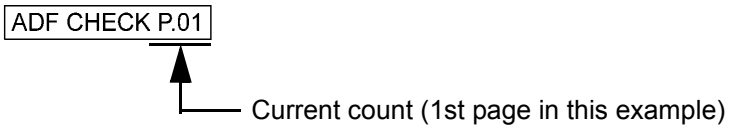
<Function>

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** buttons in this order. While counting the documents, the machine feeds them in and out, displaying the current count on the LCD as shown below.



(3) When the **Stop/Exit** button is pressed, the machine cancels this operation, beeps for one second and returns to the initial state of the maintenance mode.

1.4.5 Monochrome image quality test pattern (Function code 09)

<Function>

This function allows you to print various monochrome test patterns and check the quality and if there is any image loss.

<Operating procedure>

(1) Press the **0** and **9** buttons in this order in the initial state of the maintenance mode.

(2) Printing of the monochrome image quality test pattern (see the figure below) starts, and when printing is finished, the machine beeps for one second and returns to the initial state of the maintenance mode.

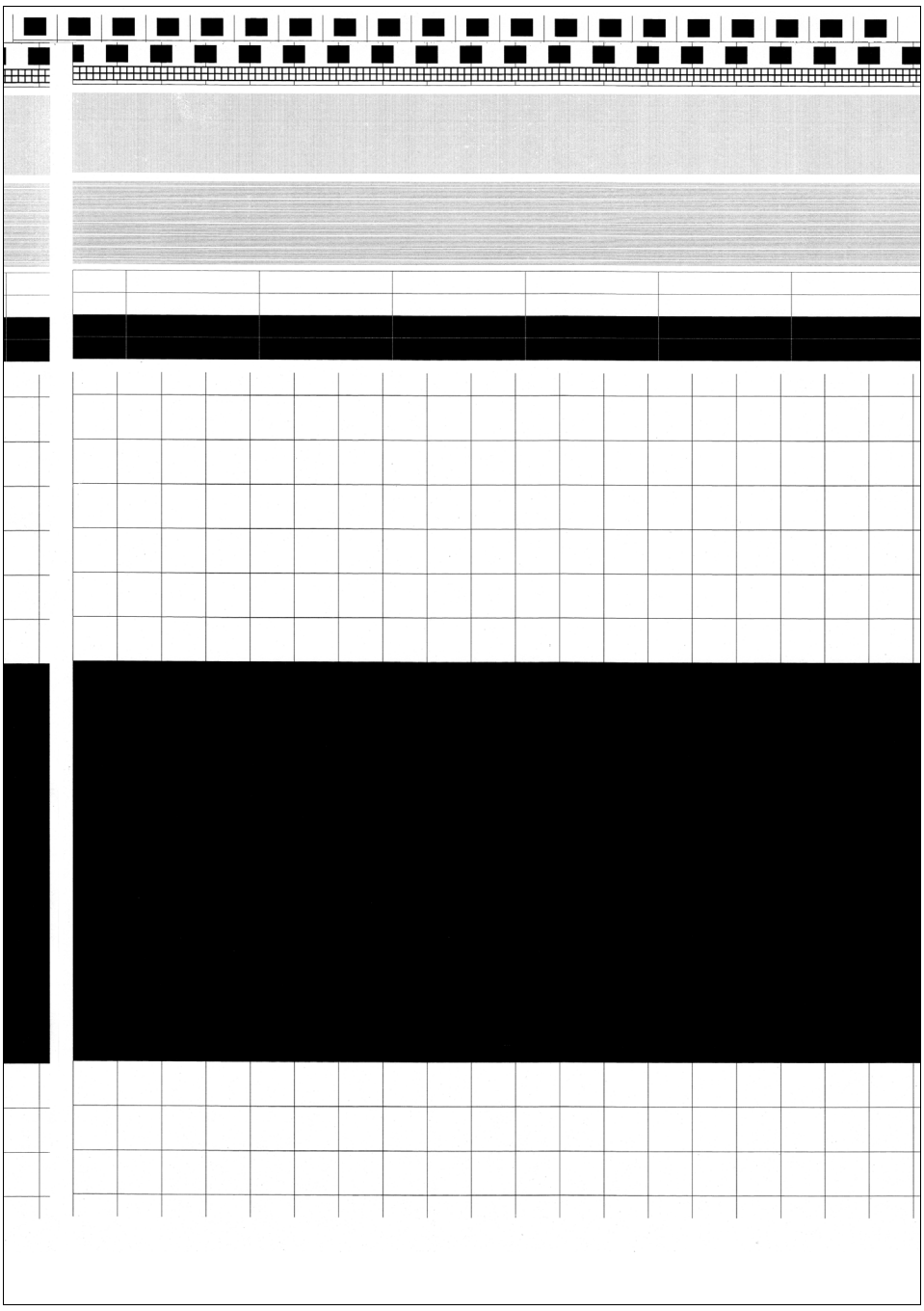


Fig. 7-3

1.4.6 Worker switch (WSW) setting and printout (Function code 10, 11)

[1] Worker switch setting (Function code 10)

<Function>

The machine incorporates the following worker switch functions which may be activated with the procedures using the buttons on the control panel cover ASSY. The worker 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 worker switches may not be applicable in some versions. The worker switch data list indicates “Not used.” for those inapplicable switches.

■ Worker switch

WSW No.	Function	Refer to:
WSW01	Dial pulse setting	App. 1-4
WSW02	Tone signal setting	App. 1-5
WSW03	PABX mode setting	App. 1-6
WSW04	Transfer facility setting	App. 1-7
WSW05	1st dial tone and busy tone detection	App. 1-8
WSW06	**Redial/Pause** button setting and 2nd dial tone detection	App. 1-9
WSW07	Dial tone setting 1	App. 1-11
WSW08	Dial tone setting 2	App. 1-12
WSW09	Protocol definition 1	App. 1-13
WSW10	Protocol definition 2	App. 1-14
WSW11	Busy tone setting	App. 1-15
WSW12	Signal detection condition setting	App. 1-16
WSW13	Modem setting	App. 1-17
WSW14	AUTO ANS facility setting	App. 1-18
WSW15	Redial facility setting	App. 1-19
WSW16	Function setting 1	App. 1-19
WSW17	Function setting 2	App. 1-20
WSW18	Function setting 3	App. 1-21
WSW19	Transmission speed setting	App. 1-22
WSW20	Overseas communications mode setting	App. 1-23
WSW21	TAD setting 1	App. 1-24
WSW22	ECM and call waiting caller ID	App. 1-24
WSW23	Communications setting	App. 1-25
WSW24	TAD setting 2	App. 1-26
WSW25	TAD setting 3	App. 1-26
WSW26	Function setting 4	App. 1-27
WSW27	Function setting 5	App. 1-28
WSW28	Function setting 6	App. 1-28

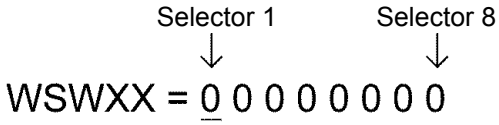
WSW No.	Function	Refer to:
WSW29	Function setting 7	App. 1-29
WSW30	Function setting 8	App. 1-29
WSW31	Function setting 9	App. 1-30
WSW32	Function setting 10	App. 1-30
WSW33	Function setting 11	App. 1-31
WSW34	Function setting 12	App. 1-31
WSW35	Function setting 13	App. 1-31
WSW36	Function setting 14	App. 1-32
WSW37	Function setting 15	App. 1-33
WSW38	V.34 transmission settings	App. 1-34
WSW39	V.34 transmission speed	App. 1-35
WSW40	V.34 modem settings	App. 1-36
WSW41	ON-duration of the scanning light source	App. 1-37
WSW42	Internet mail settings	App. 1-37
WSW43	Function setting 21	App. 1-38
WSW44	Speeding up scanning-1	App. 1-38
WSW45	Speeding up scanning-2	App. 1-39
WSW46	Monitor of power ON/OFF state and parallel port kept at high	App. 1-40
WSW47	Switching between high- and full-speed USB	App. 1-41
WSW48	USB setup latency	App. 1-41
WSW49	End-of-copying beep and print in black	App. 1-42
WSW50	SDAA settings	App. 1-42
WSW51	Function setting 16	App. 1-43
WSW52	Function setting 17	App. 1-43
WSW53	Function setting 18	App. 1-43
WSW54	Function setting 19	App. 1-44
WSW55	Interval of time requred for the developing bias voltage correction	App. 1-45
WSW56	Function setting 21	App. 1-45
WSW57	Function setting 22	App. 1-46
WSW58	Function setting 23	App. 1-46
WSW59	Function setting 24	App. 1-47
WSW60	Function setting 25	App. 1-48
WSW61	Scanning light intensity to judge to be stable 1	App. 1-49
WSW62	Scanning light intensity to judge to be stable 2	App. 1-49
WSW63	Function setting 26	App. 1-50
WSW64	Setting the language/Default paper size	App. 1-51
WSW65	Setting the paper support	App. 1-51

WSW No.	Function	Refer to:
WSW66	Reserved (Change of the setting is prohibited)	App. 1-52
WSW67	Reserved (Change of the setting is prohibited)	App. 1-52
WSW68	Reserved (Change of the setting is prohibited)	App. 1-52
WSW69	Reserved (Change of the setting is prohibited)	App. 1-52
WSW70	Reserved (Change of the setting is prohibited)	App. 1-52
WSW71	Reserved (Change of the setting is prohibited)	App. 1-52
WSW72	Reserved (Change of the setting is prohibited)	App. 1-53
WSW73	Reserved (Change of the setting is prohibited)	App. 1-53
WSW74	ADF stop control	App. 1-53
WSW75	Paper feeding parameter for turning the document counter when the machine takes action duplex scanning	App. 1-53
WSW76	The limited number of the documents in reverse for paper ejection of the simplex scanning from ADF	App. 1-54
WSW77	The limited number of the documents in reverse for paper ejection of the duplex scanning from ADF	App. 1-54

<Operating procedure>

(1) Press the **1** and **0** buttons in this order in the initial state of the maintenance mode. The machine displays “WSW00” on the LCD and becomes ready to accept a worker switch number.

(2) Enter the desired number from the worker switch numbers (01 through 76). The following appears on the LCD.



(3) Enter a value to be set (0 or 1) using the **0** and **1** buttons.

(4) Press the **OK** button. This operation saves the newly entered selector values onto the EEPROM and readies the machine for accepting a worker switch number.

(5) Repeat steps (2) through (4) until the modification for the desired worker switches is completed.

(6) When the **Stop/Exit** button is pressed, the machine beeps for one second and returns to the initial state of the maintenance mode.

Memo:

- To cancel this operation and return to the machine to the initial state 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 worker switch numbers, the machine will automatically return to the initial state of the maintenance mode.

[2] Printout of worker switch data (Function code 11)

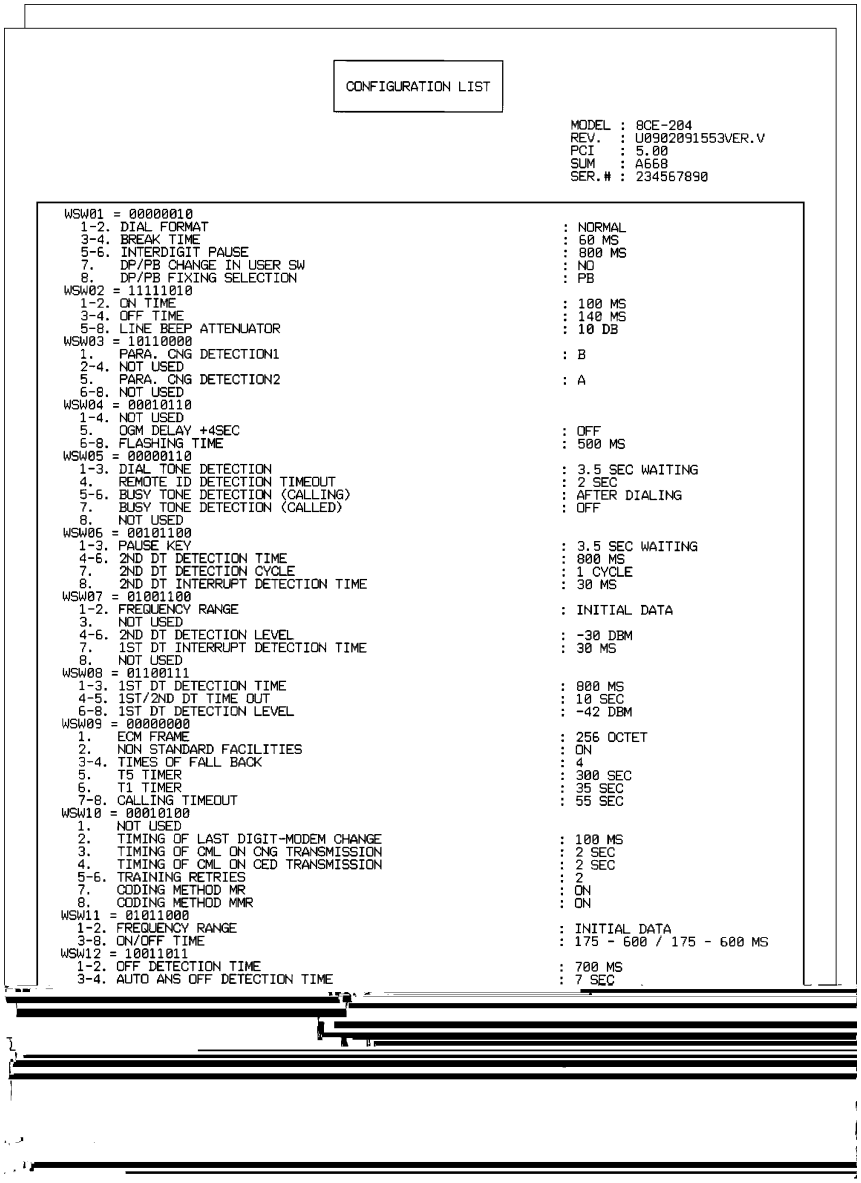
<Function>

The machine prints out the setting items of the worker switches and their contents specified.

<Operating procedure>

(1) Press the **1** button twice in the initial state of the maintenance mode. The machine displays “PRINTING” on the LCD.

(2) Printing of CONFIGURATION LIST (see the figure below) starts, and when printing is finished, the machine beeps for one second and returns to the initial state of the maintenance mode.



CONFIGURATION LIST

MODEL : 8CE-204
REV. : U0902091553VER.V
PCI : 5.00
SUM : A568
SER.# : 234567890

WSW01 = 00000010	
1-2. DIAL FORMAT	: NORMAL
3-4. BREAK TIME	: 60 MS
5-6. INTERDIGIT PAUSE	: 800 MS
7. DP/PB CHANGE IN USER SW	: NO
8. DP/PB FIXING SELECTION	: PB
WSW02 = 11111010	
1-2. ON TIME	: 100 MS
3-4. OFF TIME	: 140 MS
5-8. LINE BEEP ATTENUATOR	: 10 DB
WSW03 = 10110000	
1. PARA. CNG DETECTION1	: B
2-4. NOT USED	
5. PARA. CNG DETECTION2	: A
6-8. NOT USED	
WSW04 = 00010110	
1-4. NOT USED	
5. OGM DELAY +4SEC	: OFF
6-8. FLASHING TIME	: 500 MS
WSW05 = 00000110	
1-3. DIAL TONE DETECTION	: 3.5 SEC WAITING
4. REMOTE ID DETECTION TIMEOUT	: 2 SEC
5-6. BUSY TONE DETECTION (CALLING)	: AFTER DIALING
7. BUSY TONE DETECTION (CALLED)	: OFF
8. NOT USED	
WSW06 = 00101100	
1-3. PAUSE KEY	: 3.5 SEC WAITING
4-6. 2ND DT DETECTION TIME	: 800 MS
7. 2ND DT DETECTION CYCLE	: 1 CYCLE
8. 2ND DT INTERRUPT DETECTION TIME	: 30 MS
WSW07 = 01001100	
1-2. FREQUENCY RANGE	: INITIAL DATA
3. NOT USED	
4-6. 2ND DT DETECTION LEVEL	: -30 DBM
7. 1ST DT INTERRUPT DETECTION TIME	: 30 MS
8. NOT USED	
WSW08 = 01100111	
1-3. 1ST DT DETECTION TIME	: 800 MS
4-5. 1ST/2ND DT TIME OUT	: 10 SEC
6-8. 1ST DT DETECTION LEVEL	: -42 DBM
WSW09 = 00000000	
1. ECM FRAME	: 256 OCTET
2. NON STANDARD FACILITIES	: ON
3-4. TIMES OF FALL BACK	: 4
5. T5 TIMER	: 300 SEC
6. T1 TIMER	: 35 SEC
7-8. CALLING TIMEOUT	: 55 SEC
WSW10 = 00010100	
1. NOT USED	
2. TIMING OF LAST DIGIT-MODEM CHANGE	: 100 MS
3. TIMING OF CML ON CNG TRANSMISSION	: 2 SEC
4. TIMING OF CML ON CED TRANSMISSION	: 2 SEC
5-6. TRAINING RETRIES	: 2
7. CODING METHOD MR	: ON
8. CODING METHOD MMR	: ON
WSW11 = 01011000	
1-2. FREQUENCY RANGE	: INITIAL DATA
3-8. ON/OFF TIME	: 175 - 600 / 175 - 600 MS
WSW12 = 10011011	
1-2. OFF DETECTION TIME	: 700 MS
3-4. AUTO ANS OFF DETECTION TIME	: 7 SEC

Fig. 7-4

Note:
Although function names are printed in CONFIGURATION LIST for reasons of the development of the program, some of them are not available on this machine.

1.4.7 Operational check of LCD (Function code 12)

<Function>

This function allows you to check whether the LCD on the control panel cover ASSY works normally.

<Operating procedure>

(1) Press the **1** and **2** buttons in this order in the initial state of the maintenance mode. The LCD shows.

(2) Each time you press the **Start/Black** button, the LCD cycles through the displays as shown below.

(3) When the **Stop/Exit** button is pressed regardless of the display, the machine cancels the operation, beeps for one second and returns to the initial state of the maintenance mode.

<Display 1>	
Backlight	: OFF
LCD	: Display of all dots
Data LED	: Green blinking
Error LED	: Red blinking
<Display 2>	
Backlight	: OFF
LCD	: Display of a frame with 2 lines and 16 dots
Data LED	: Green blinking
Error LED	: Red blinking
<Display 3>	
Backlight	: OFF
LCD	: Display of no dots
Data LED	: Green blinking
Error LED	: Red blinking
<Display 4>	
Backlight	: ON
LCD	: Display of no dots
Data LED	: Green blinking
Error LED	: Red blinking

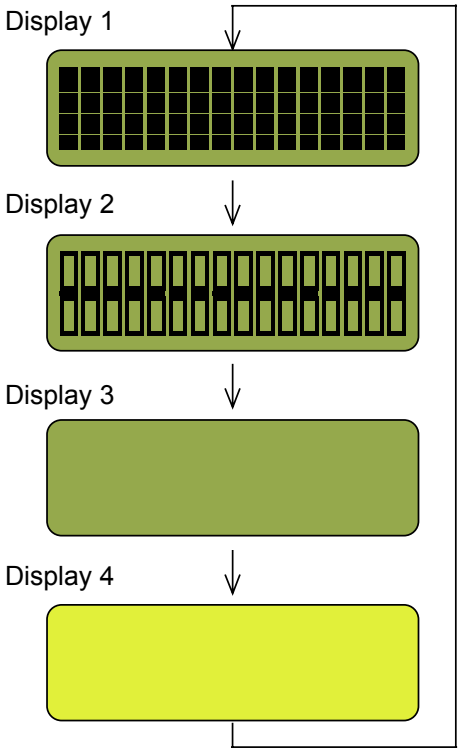


Fig. 7-5

1.4.8 Operational check of control panel button (Function code 13)

<Function>

This function allows you to check if the buttons on the control panel cover ASSY work properly.

<Operating procedure>

(1) Press the **1** and **3** buttons in this order in the initial state of the maintenance mode. The “00” will appear on the LCD.

(2) Press the buttons in the order designated in the illustration shown below. The LCD shows the corresponding number in decimal notation each time a button is pressed. Check that the displayed number is correct by referring to the illustration below.

When the buttons are pressed in an incorrect order, a warning beep goes off and “INVALID OPERATE” appears on the LCD at the same time. Press the **Stop/Exit** button, and the press the correct buttons.

(3) After the last number button is pressed, the machine beeps for one second and returns to the initial state of the maintenance mode.

Memo:
When the **Stop/Exit** button is pressed during the operation, the machine beeps for one second and returns to the initial state of the maintenance mode.

■ MFC-9120CN/9125CN/9320CW/9325CW

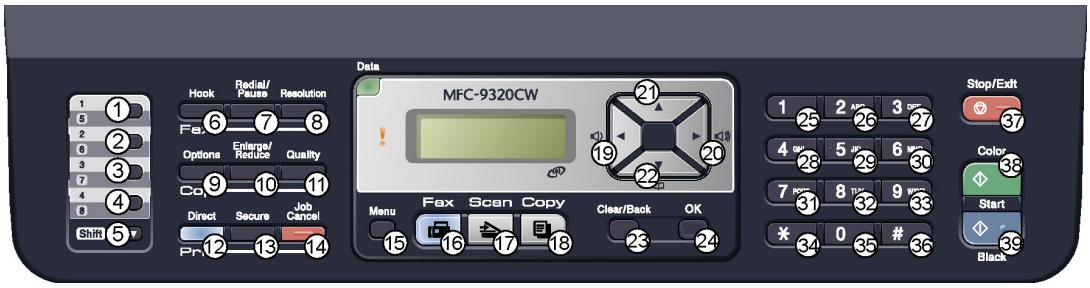


Fig. 7-6

■ DCP-9010CN/MFC-9010CN

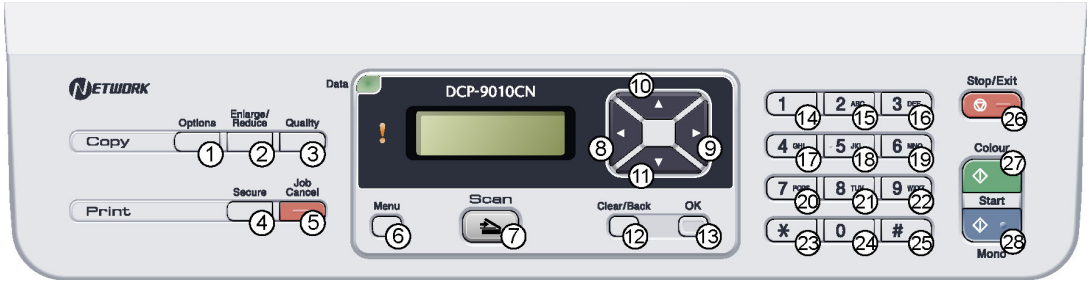


Fig. 7-7

1.4.9 Software 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** and **5** buttons in this order in the initial state of the maintenance mode. The machine displays each of items described below on the LCD.

(2) Press the ▲ or ▼ button to check the next item.

(3) When the **Stop/Exit** button is pressed, the machine cancels this operation, beeps for one second, and returns to the initial state of the maintenance mode.

LCD	Description
TOTAL: Ver A*1	Main firmware version information (A): Revision information
PCL: Ver 1.00*1	Sub firmware (PCL/PS) version information
ENG: Ver1.00*1	Engine firmware version information
NET: Ver 1.00	Network program version information
PICT: Ver 1.00	PictBridge version information
HV: Ver 1.00	High voltage CPU program version and PCB information
i0801170900:0000	I-FAX firmware version information
B09014151027:AF57*1	Boot program creation date
U09040911553:A668*1	Main firmware creation date
D09041191021:2E8F*1	Demo firmware data creation date
P09040031122:FC00*1	Sub firmware (PCL/PS) creation date
ROM Check Sum	Check sum self-diagnosis function*2

*1 How to display the check sum information
Press the **OK** button when its version information is displayed on the LCD to display the check sum information. Press the **OK** button again to go back to the version information display. Press the ▲ or ▼ button to check the next item.

Note:
Regarding the version information (Engine, Network, PictBridge, and HVPS) of which check sum information cannot be obtained, the check sum information is not displayed even if you press the **OK** button.

*2 There are two types of check sum information which can be checked with this function. This function checks if these two types of check sum information are matched each other. When you press the **OK** button while “ROM Check Sum” is displayed, check is automatically conducted for each ROM of each software part. When the check sum is matched, “OK” is displayed on the LCD. When all ROMs result in OK, “ROM Check Sum OK” is displayed at the end, and the operation is finished.
When the check sum of any ROM is not matched, NG is displayed, and the display stops.

1.4.10 Operational check of sensors (Function code 32)

<Function>

This function allows you to check each of the sensors.

<Operational procedure>

(1) Press the **3** and **2** buttons in this order in the initial state of the maintenance mode.

(2) The machine beeps 1,100 Hz and 400 Hz tones cyclically through the following volumes for testing the speaker. To stop beeping, press the **OK** button.

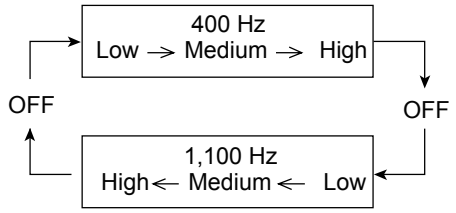


Fig. 7-8

The operation condition of the sensor becomes the one defined in the table below, and "P1MPCVRCRMRAPOFW" is displayed on the LCD. When the **Start/Black** button is pressed, the selected item is switched to the next item.

Given below is the relationship between the LCD indication, sensor name and sensor state.

LCD	Sensors	Sensing status (OK/NG)
P1	Paper eject rear sensor	Paper not detected/detected
MP	Manual sensor	Paper not detected/detected
CV	Top cover sensor	Top cover closed/open
RC	Back cover sensor	Back cover closed/open
RM	Registration front sensor	Paper not detected/detected
RA	Registration rear sensor	Paper not detected/detected
PO	Paper eject front sensor	Paper not detected/detected
FW	Waste toner sensor	Toner full/not detected
NK	New toner sensor K	Used toner/New toner
NY	New toner sensor Y	Used toner/New toner
NM	New toner sensor M	Used toner/New toner
NC	New toner sensor C	Used toner/New toner
KC	Toner sensor K	Toner (K) detected/not detected
YC	Toner sensor Y	Toner (Y) detected/not detected
MC	Toner sensor M	Toner (M) detected/not detected
CC	Toner sensor C	Toner (C) detected/not detected

Note:

- The operating noise is generated when the new toner sensor K and new toner sensor Y are operated while the cover is open.
- The "--" appears on the LCD if there is no display.
- The "**" appears on the LCD if the parts are not installed or there is no item.

LCD	Sensors	Sensing status (OK/NG of temperature/humidity)
TMP	External temperature sensor	XX °C/NG
HUM	External humidity sensor	XX %/NG
MAC	temperature sensor	XX °C/NG
BT	Belt thermistor	XX °C/NG

LCD	Sensors	Sensing status (OK/NG)
DF	Document front sensor	Without documents/With document
DR	Document rear sensor	Without documents/With document
AC	ADF cover open sensor	Close/Open
FH	FB unit home position sensor	Home position/Not home position

Note:
- The "--" appears on the LCD if there is no display.
- The "**" appears on the LCD if the parts are not installed or there is no item.

(3) Check that the display on the LCD is changed when the detection condition of each sensor is changed.
For instance, insert paper to the document front (rear) sensor or the registration front (rear) sensor, open the top cover or the back cover, take out the toner cartridge, make a jam at the paper outlet, and insert paper from the manual feed slot, etc.

(4) When the **Stop/Exit** button is pressed, the machine beeps for one second and returns to the initial state of the maintenance mode.

■ Location of sensors

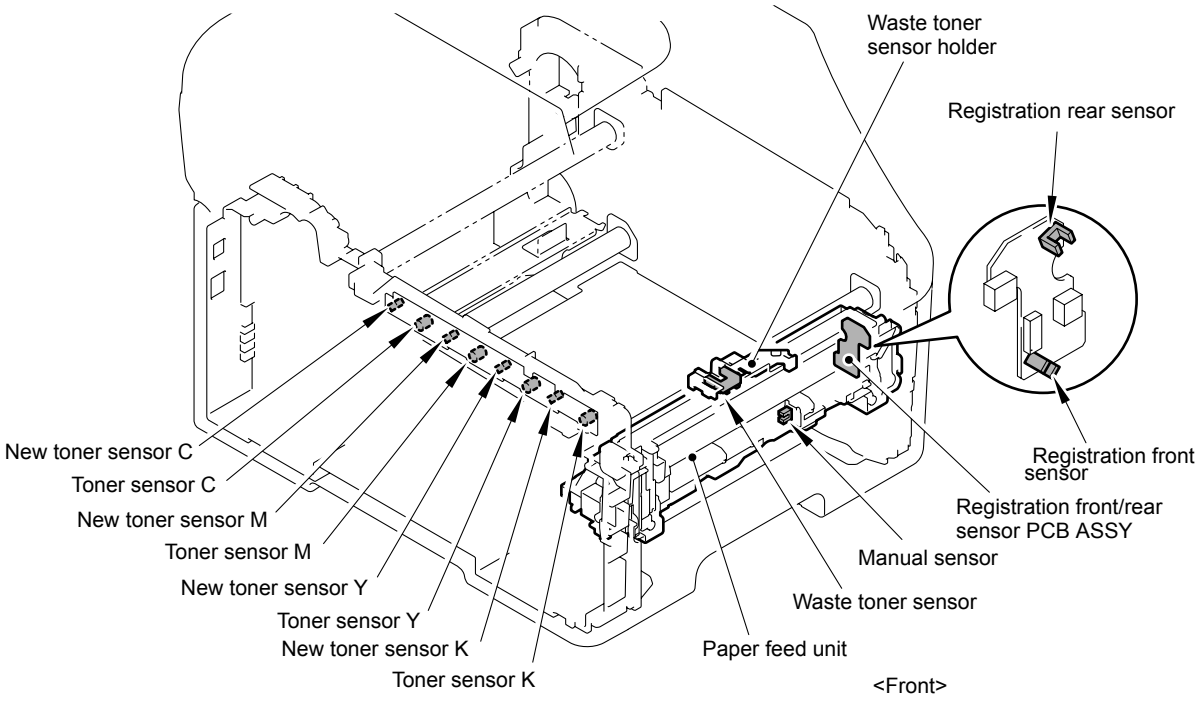


Fig. 7-9

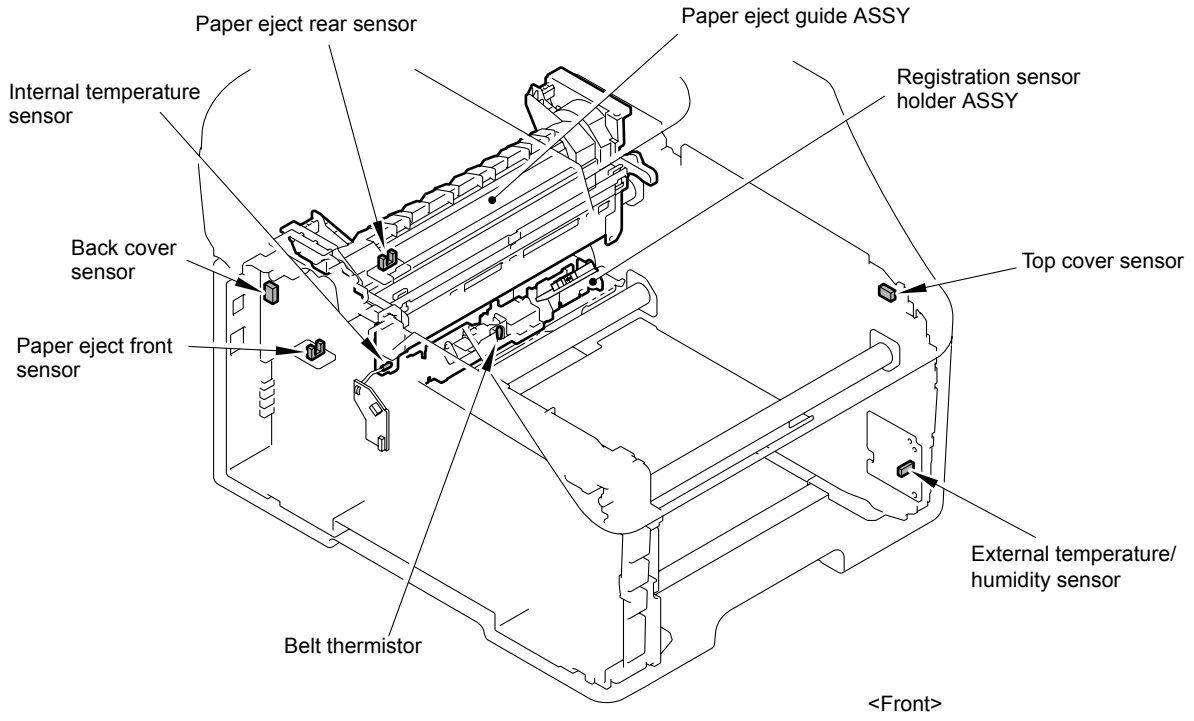


Fig. 7-10

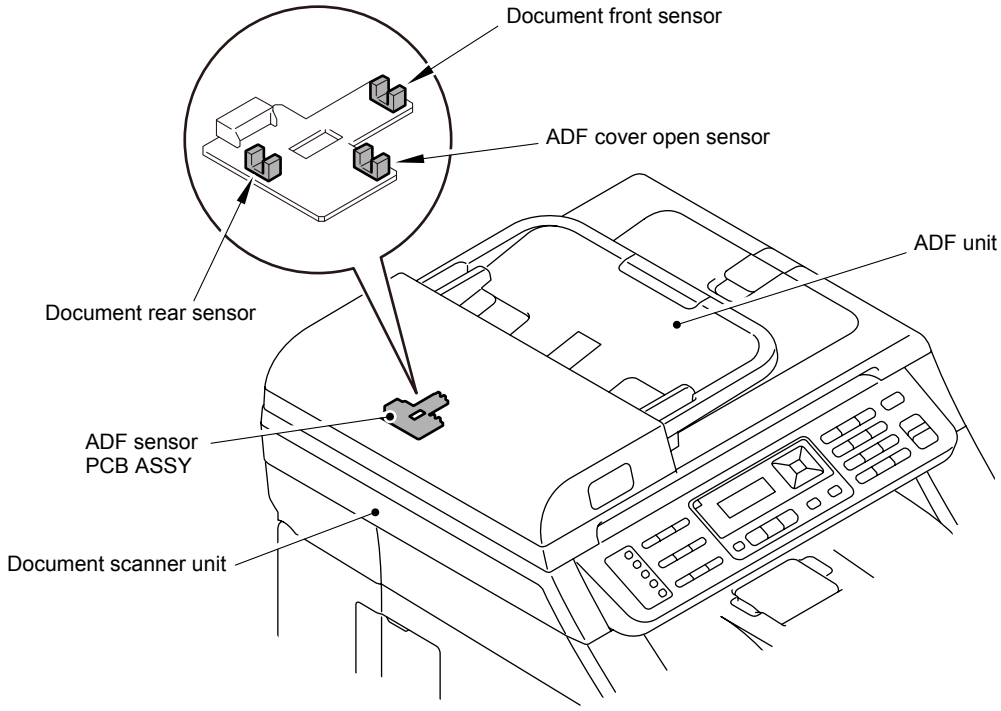


Fig. 7-11

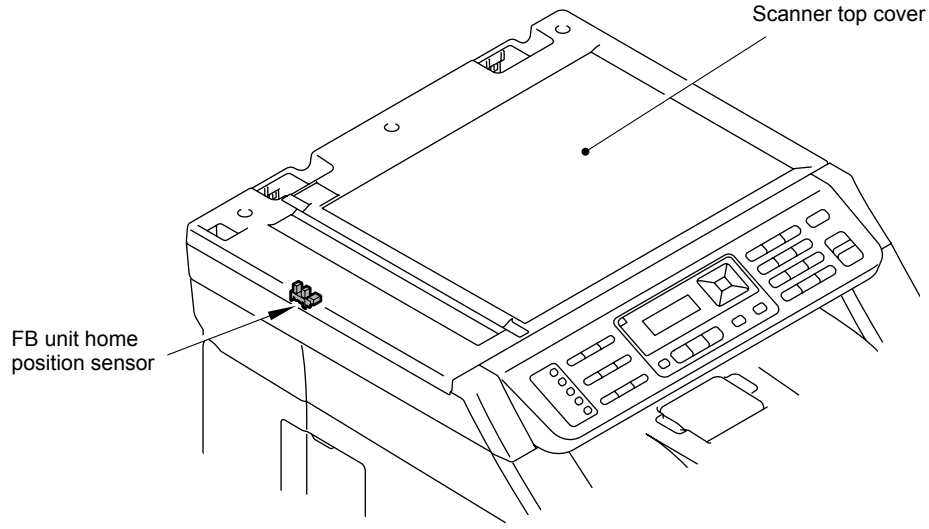


Fig. 7-12

1.4.11 PC print function (Function code 43)

<Function>

This function allows the machine change that the setting of each computer printing function indicated to the following function settings.

<Operating procedure>

(1) Press the **4** and **3** buttons in this order in the initial state of the maintenance mode. The "Manual Feed" will appear on the LCD.

(2) Press the ▲ or ▼ button 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 buttons. And press the **OK** button.

(4) Press the **Stop/Exit** button so that the machine beeps for one second and returns to the initial state 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	300/600/1200 dpi	600
Toner Save	Switching of the Toner Save	On/Off	Off
Density	Switching of the Density level	-6 to 6	0
JB-Can Time	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
Page 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/ Trancparency/Recycled/ Bond/Envlopes/EnvThin/ EnvThick	Plain or Thin
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 or A4
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 (1/300 dpi)	0
P-Pos Y-Offset	Switching of the offset print position of the portrait orientation	-500 to 500 (1/300 dpi)	0

LCD indication	Description	Set value	Initial value
AutoFF	Switching of the auto form feed	On/Off	Off
AutoFF Time	Switching of the time-out period of the auto feed	1 to 99 (seconds)	5
FF Surpress	Switching of the FF Suppress	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 backend/tip of the recording paper	On/Off	On
Left Margin	Switching of the margin at the left end	0 to 145 (columus)	0
Right Margin	Switching of the margin at the right end	10 to 155 (columus)	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 computer, or for the print of the NetWorkConfig/TestPrint/Fontlist/Configuration from the panel. When select the tray on the computer, the setting becomes effective. And this setting is ignored.
Resolution	Effective only for the print from the computer. When set the Resolution on the computer, 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 computer, the setting becomes effective. And this setting is ignored.
Density	Effective for the print from the computer, 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 computer, the setting becomes effective. And this setting is ignored.
JB-Can Time	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.

LCD indication	Detail description
Page Protection	Configure the setting to protect the page memory, when recording in computer. 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.
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 computer. When set the type of the recording paper on the computer, 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 computer, 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 computer. When set the number of the copies on the computer, the setting becomes effective. And this setting is ignored.
Orientation	Configure the switching for the print direction. Effective for the print from the computer.
P-Pos X-Offset	Configure the setting for the offset print position of the landscape orientation. Effective for the print from the computer. When set the X-Offset on the computer, 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 computer. When set the Y-Offset on the computer, 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 computer.
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 computer. 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.

1.4.12 Not-disclosed-to-users functions (Function code 45)

■ Switching of the USB transfer speed in the PictBridge mode

<Function>

This function allows you to change the USB transfer speed in the PictBridge mode. If the digital camera which a user uses cannot be connected in the PictBridge mode, this function may make it possible.

LCD	Description
PB.Speed=AUTO	Adapts the speed to the capability of the USB device. (Full Speed or High Speed) (default)
PB.Speed=FULL	Fixes the speed to Full Speed. The capability of the USB device is not depended on.

An asterisk "*" appears beside the current setting.

<Operating procedure>

(1) Press the **4** and **5** buttons in this order in the initial state of the maintenance mode. "PB.USBspeed" will appear on the LCD.

(2) Press the **OK** button. Then, select the required function by pressing the ▲ or ▼ button and press the **Start/Black** button.

(3) The machine beeps for one second and returns to the initial state of the maintenance mode.

(4) Turn the power of the machine OFF.

Note:
This mode is enabled when the power of the machine is turned OFF and ON.

■ Changing return value of USB No.

<Function>

When the OS of the computer is Windows Vista®, and the computer is connected to a device through USB 2.0 full speed, the OS might fail to get the serial No. of the USB device depending on the computer and USB device. When the OS fails to get the serial No., the return value may continue to increase every time the device is connected to the computer. To avoid this problem, the return value of the serial No. is dropped to "0".

LCD	Description
USBNo. =ON	Returns the serial No. of the device. (default)
USBNo. =OFF	Returns "0".

An asterisk "*" appears beside the current setting.

<Operating procedure>

(1) Press the **4** and **5** buttons in this order in the initial state of the maintenance mode. "PB.USBspeed" will appear on the LCD.

(2) Press the ▲ or ▼ button to display "USB No." and then press the **OK** or **Start/Black** button.

(3) Press the ▲ or ▼ button to select "USB No. = ON" or "USB No. = OFF," and then press the **OK** or **Start/Black** button.

(4) The machine beeps for one second and returns to the initial state of the maintenance mode.

(5) Turn the power of the machine OFF.

Note:
This mode is enabled when the power of the machine is turned OFF and ON.

■ Switching dither pattern

<Function>

This function is to switch the dither pattern when printed letters and/or slanted lines are not smooth, and thin lines are rough or uneven.

LCD	Description
PS.DitherType=0	Dither Pattern 0 is selected. (A dither pattern which improves roughness of letters and slanted lines)
PS.DitherType=1	Dither Pattern 1 is selected. (A dither pattern which alleviates banding) (default)

An asterisk "*" appears beside the current setting.

<Operating procedure>

(1) Press the **4** and **5** buttons in this order in the initial state of the maintenance mode. "PB.USBspeed" will appear on the LCD.

(2) Press the ▲ or ▼ button to display "PS.DitherType" and then press the **OK** or **Start/Black** button.

(3) Press the ▲ or ▼ button to select "PS.DitherType=0" or "PS.DitherType=1," and then press the **OK** or **Start/Black** button.

(4) The machine beeps for one second and returns to the initial state of the maintenance mode.

■ Switching ON/OFF of 94 mm banding measure GridBias control function

<Function>

This function is to switch ON/OFF of the control (Engine control) to make print by increasing GridBias at the 94-mm position from the leading edge of each page in order to avoid a banding failure.

LCD	Description
Bd94GrdBias=ON	94 mm Banding measure GridBias control function ON (default)
Bd94GrdBias=OFF	94 mm Banding measure GridBias control function OFF

An asterisk "*" appears beside the current setting.

<Operating procedure>

(1) Press the **4** and **5** buttons in this order in the initial state of the maintenance mode. "PB.USBspeed" will appear on the LCD.

(2) Press the ▲ or ▼ button to display "Bd94GrdBias" and then press the **OK** or **Start/Black** button.

(3) Press the ▲ or ▼ button to select "Bd94GrdBias=ON" or "Bd94GrdBias=OFF,," and then press the **OK** or **Start/Black** button.

(4) The machine beeps for one second and returns to the initial state of the maintenance mode.

■ Switching ON/OFF of 94 mm Banding measure transfer current correction/ DCLN voltage correction

<Function>

This function is to switch ON/OFF of the transfer current correction/DCLN voltage correction control (Engine control) to the 94-mm position from the leading edge of each page in order to avoid a banding failure. When banding appears, switch this control as a measure.

LCD	Description
Bd94CrctSub=ON	94 mm Banding measure transfer current correction/ DCLN voltage correction ON
Bd94CrctSub=OFF	94 mm Banding measure transfer current correction/ DCLN voltage correction OFF (default)

An asterisk "*" appears beside the current setting.

<Operating procedure>

(1) Press the **4** and **5** buttons in this order in the initial state of the maintenance mode. "PB.USBspeed" will appear on the LCD.

(2) Press the ▲ or ▼ button to display "Bd94CrctSub" and then press the **OK** or **Start/Black** button.

(3) Press the ▲ or ▼ button to select "Bd94CrctSub=ON" or "Bd94CrctSub=OFF," and then press the **OK** or **Start/Black** button.

(4) The machine beeps for one second and returns to the initial state of the maintenance mode.

■ Switching ON/OFF of DirectPrint Color mode - Improve Gray Color

<Function>

This function is to switch ON/OFF of the print control for the gray color when other colors are slightly blended in the gray color or the gray color is uneven upon printing.

LCD	Description
DP.ImpGray=ON	DirectPrint Color mode - Improve Gray Color. (Print control for gray color) ON (Improves the symptom that other colors are slightly blended in the gray color.) (default)
DP.ImpGray=OFF	DirectPrint Color mode - Improve Gray Color. (Print control for gray color) OFF (Improves the unevenness of the gray color)

An asterisk "*" appears beside the current setting.

<Operating procedure>

(1) Press the **4** and **5** buttons in this order in the initial state of the maintenance mode. "PB.USBspeed" will appear on the LCD.

(2) Press the ▲ or ▼ button to display "DP.ImpGray" and then press the **OK** or **Start/Black** button.

(3) Press the ▲ or ▼ button to select "DP.ImpGray=ON" or "DP.ImpGray=OFF," and then press the **OK** or **Start/Black** button.

(4) The machine beeps for one second and returns to the initial state of the maintenance mode.

■ Switching of timing to execute Auto Registration (MFC-9125CN/9325CW only)

<Function>

Relative displacement between Cyan, Magenta, Yellow, and Black is detected using the registration mark sensor, and the Auto Registration is executed at the timing when the displacement value exceeds the stipulated threshold value.

This is a function to switch the threshold value which is used as the timing to execute Auto Registration.

The threshold value can be switched in three phases between High, Mid, and Low.

LCD	Description
Regi Freq=Mid	The frequency to execute Auto Registration is middle. (default)
Regi Freq=High	The frequency to execute Auto Registration is high.
Regi Freq=Low	The frequency to execute Auto Registration is low.

"*" is displayed at the end of the currently specified function in the LCD display.

Note:
It can be set regardless of the Auto Registration switching function in the function menu. Even if this function is switched, it does not affect the timing to execute Auto Registration in the function menu.

<Operating procedure>

(1) Press the **4** and **5** buttons in this order in the initial state of the maintenance mode. The "USBNo." will appear on the LCD.

(2) Press the ▲ or ▼ button to display "Regi Freq" and then press the **OK** or **Start/Black** button.

(3) Select "Regi Freq = Mid", "Regi Freq = High", or "Regi Freq = Low" by pressing the ▲ or ▼ button, and press the **OK** or **Start/Black** button.

(4) "Accepted" is displayed on the LCD, and the product goes back to the initial state of the maintenance mode.

1.4.13 EEPROM customizing (User-accessible) (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”, “East Europe”, “Oceania” and “Iberia” areas only.

<Operating procedure>

(1) Press the **Menu**, **Start/Black** and **Menu** buttons in this order in the ready state. The “0” will appear on the LCD.

(2) Press the **5** and **2** buttons in this order. The “Set Country / Press OK” will appear on the LCD.

(3) Press the **OK** button. 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	East Europe
France	Australia	Norge	España	Ceska republika
België Belgique	New Zealand	Suerige	Portugal	Magyarország
Nederland		Suomi		Polska
		Danmark		България
		Others		România
				Slovensko
				Others

(4) Press the ▲ or ▼ button to display the selected country name on the LCD, and press the **OK** button. “1. Yes 2. No” is displayed on the LCD.

(5) Press the **1** button if the displayed country name is correct. The new setting is saved*, and the machine returns to the initial state of the maintenance mode. Press the **2** button if the country name is not correct, and enter the correct country name again following the step (4).

* When “France,” “Nederland,” “España,” or “Portugal” is entered, you will jump to input of the language setting in the step (6).

(6) When “France,” “Nederland,” “España,” or “Portugal” is selected in the step 5, make the language setting as shown in the table below, or display the language in the table below using the ▲ or ▼ button and press the **OK** button. A confirmation window to ask if the language displayed on the LCD is correct will appear.

Setting language

English	Português	Svenska	Cesky	Română
Français	Italiano	Suomi	Magyar	Slovensky
Deutsch	Nederlands	Dansk	Polski	Türkçe
Español	Norsk	Русский	Български	

(7) Press the **1** button if the displayed language is correct. The new setting is saved*, and the machine returns to the initial state of the maintenance mode. Press the **2** button if the language is not correct, and enter the correct language again following the step (6).

1.4.14 Received data transfer function (Function code 53) (FAX model only)

<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.
- 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** buttons in this order in the initial state of the maintenance mode.
The “FAX TRANSFER” appears on the LCD.

- To check the number of received files, press the **1** button.
  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.”
- To transfer the activity report only, press the **2** button.
  The “2.ACTIVITY” appears.
- To transfer received files (together with the activity report), press the **3** button.
  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** button.
  The “4.COM.LIST (NEW)” appears.
- To transfer the communication list for last three errors, press the **5** button.
  The “5.COM.LIST (ERR3)” appears.
- To transfer the maintenance information (the list in Function code 77), press the **6** button. The "6.MNT77 LIST" appears on the LCD.

(2) 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.

(3) Enter the telephone number of the receiver machine and press the **OK** button again.

(4) The machine displays the “ACCEPTED” for approximately two seconds and starts dialing to transfer data.

Note:

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

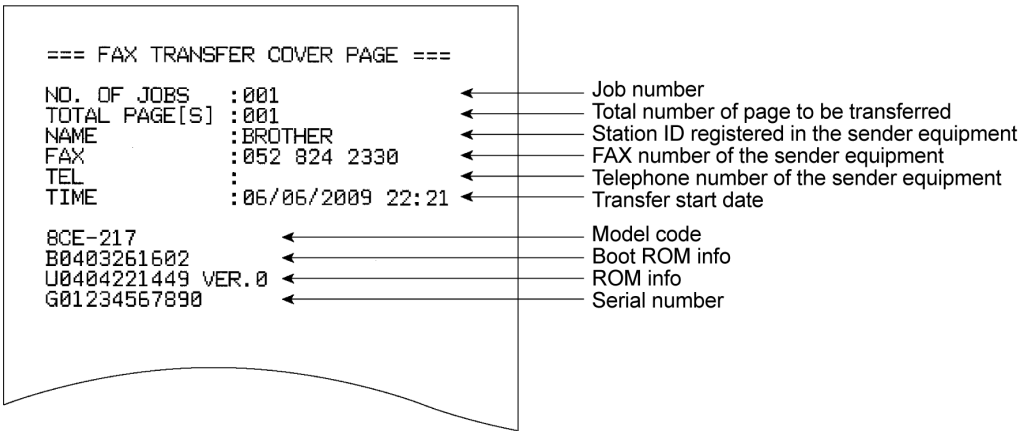


Fig. 7-13

■ End page sample

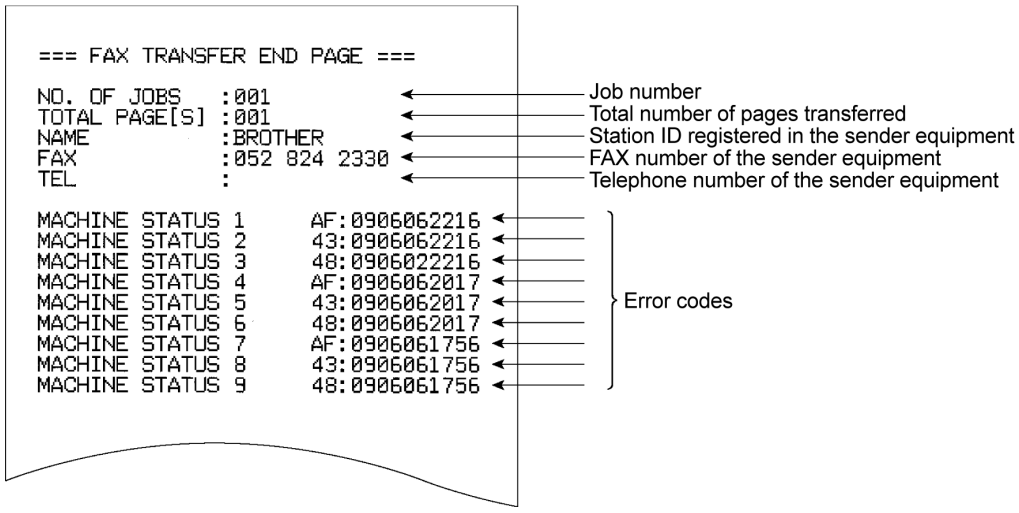


Fig. 7-14

1.4.15 Fine adjustment of scan start/end positions (Function code 54)

<Function>

This function allows you to adjust the scan start/end positions on the ADF and FB unit.

<Operating procedure>

(1) Press the **5** and **4** buttons in this order in the initial state 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** button 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. When the **Stop/Exit** button is pressed, the machine does not change the compensation levels, and beeps for one second and returns to the initial state of the maintenance mode.

(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.

The correlation between the scan start/end positions and compensation levels is shown below.

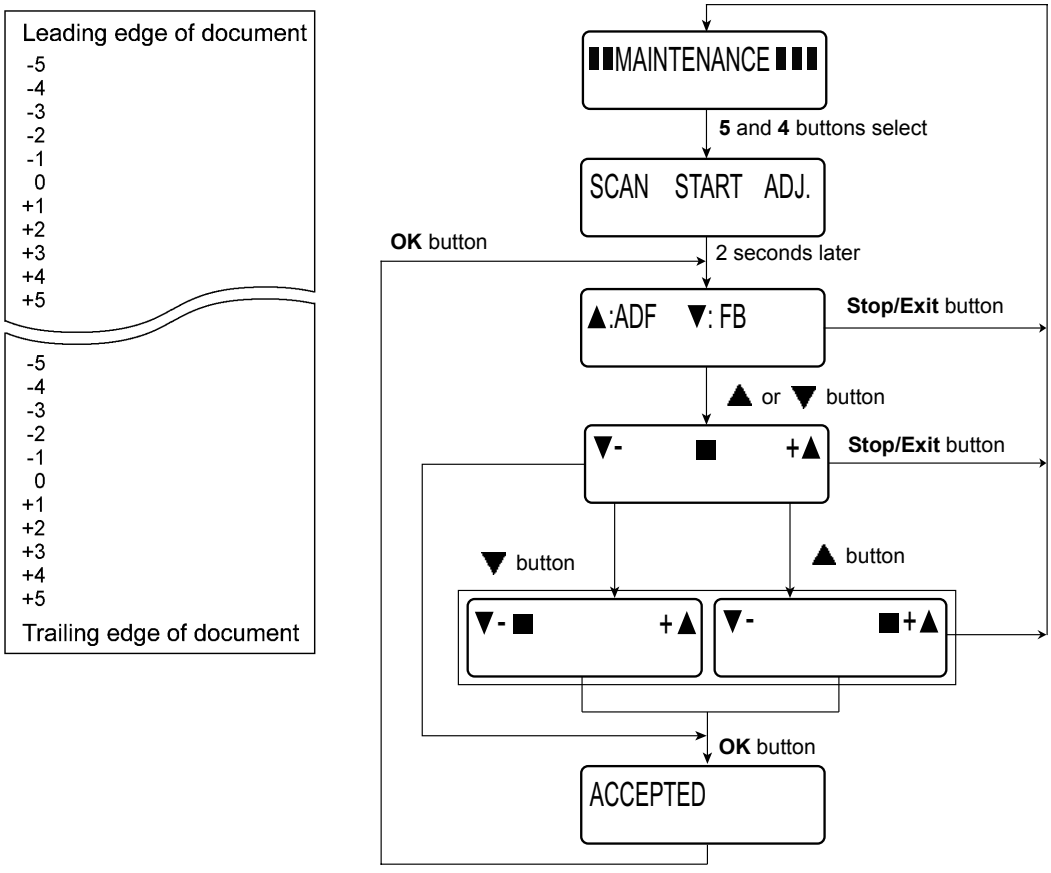


Fig. 7-15

1.4.16 Acquisition of white level data (Function code 55)

<Function>

This function allows you to acquire the white level of the scanner unit and save it to the EEPROM of the main PCB.

Note:
When you replace the document scanner unit, be sure to perform this procedure.

<Operating procedure>

(1) Press the **5** button twice in the initial state of the maintenance mode.

(2) “Press START” will appear on the LCD. Press the **Start/Black** button.
“SCANNER AREA SET” will appear on the LCD.

(3) After a few seconds, the machine saves the magnification compensation setting value, and beeps for one second and returns to the initial state of the maintenance mode.

1.4.17 Adjustment of color registration (Function code 66)

<Function>

This function allows a service man to forcibly activate the color registration adjustment function, which is usually executed automatically in a specified condition. If adjustment of color registration (auto) fails because toner reaches its life, etc., you can adjust color registration manually.

■ Adjustment of color registration (auto)

<Operating procedure>

(1) Press the **6** button twice in the initial state of the maintenance mode.
"REGISTRATION" is displayed on the LCD.

(2) Press the **OK** button. "PLEASE WAIT" is displayed on the LCD, and adjustment of color registration is automatically done.

(3) When this operation is completed without an error, "COMPLETED" is displayed on the LCD.

(4) When the **Stop/Exit** button is pressed, the machine beeps for one second and returns to the initial state of the maintenance mode.

When an error message is displayed on the LCD, take the measures described in the table below.

Error message	Measure
REGISTRATION FAILD	Press the **Start/Black** button to clear the error. Adjust color registration manually in accordance with the procedure for adjustment of color registration (manual) given next page.
REGISTRATION TONER EMPTY # *	Replace the empty toner cartridge and perform adjustment of color registration (auto) again.
NO PAPER LOAD A4 PAPER	Load A4-size paper in the tray and perform adjustment of color registration (auto) again.
REGI WIDTH ERROR	Press the **Start/Black** button to clear the error.
Jam Tray 1	Remove the jammed paper, and press the **Start/Black** button to clear the error.
Jam Rear	
Cover is Open	Close the cover.
K38 * Y25 M18 C30	Press the **Start/Black** button to clear the error.

* # indicates the toner color (Y, M, or C) of which cartridge became empty.

Memo:
Although adjustment of color registration (auto) is executed several times and the result of color registration adjustment chart (Next page) does not fall within the range of ±4, readjust it according to the following procedures.

<Operating procedure>

1) Press the **6** button twice in the initial state of the maintenance mode. "REGISTRATION" is displayed on the LCD. Load A4-size paper on the tray.
2) Press the ▲ or ▼ button to display "PRINT CHART" on the LCD, and then press the **OK** button.
3) Display "PRINTING" on the LCD, and print the color registration adjustment chart. After printing, "PRINT CHART" is displayed again.
4) Press the ▲ or ▼ button to display "OFFSET ADJUST" on the LCD, and then press the **OK** button. "4. MAGENTA = 0" is displayed on the LCD.
5) With the printed color registration adjustment chart, check the numeric value where the color is the darkest among the pattern ❹ (Magenta Center). Press the ▲ or ▼ button to display that numeric value, and then press the **Start/Black** button.
6) Enter the numeric value of the patterns ❺ to ❻ in the same way.
7) When you enter the numeric value of the pattern ❻ (Yellow Center), "COMPLETED" is displayed.
8) Press the **Stop/Exit** button to return to the machine to the initial state of the maintenance mode.

■ Adjustment of color registration (manual)

<Operating procedure>

(1) Press the **6** button twice in the initial state of the maintenance mode. "REGISTRATION" is displayed on the LCD. Load A4-size paper on the tray.
(2) Press the ▲ or ▼ button to display "PRINT CHART" on the LCD, and then press the **OK** button.
(3) Display "PRINTING" on the LCD, and print the color registration adjustment chart (Next page). After printing, "PRINT CHART" is displayed again.
(4) Press the ▲ or ▼ button to display "OFFSET ADJUST" on the LCD, and then press the **OK** button. "1. M LEFT/0" is displayed on the LCD.
(5) With the printed color registration adjustment chart, check the numeric value where the color is the darkest among the pattern ❶ (Magenta Left). Press the ▲ or ▼ button to display that numeric value, and then press the **Start/Black** button.
(6) Enter the numeric value of the patterns ❷ to ❾ in the same way.
(7) When you enter the numeric value of the pattern ❾ (Yellow Right), "SET REGISTRATION/COMPLETED" is displayed.
(8) When the **Stop/Exit** button is pressed, the machine beeps for one second and returns to the initial state of the maintenance mode.

■ Color registration adjustment chart

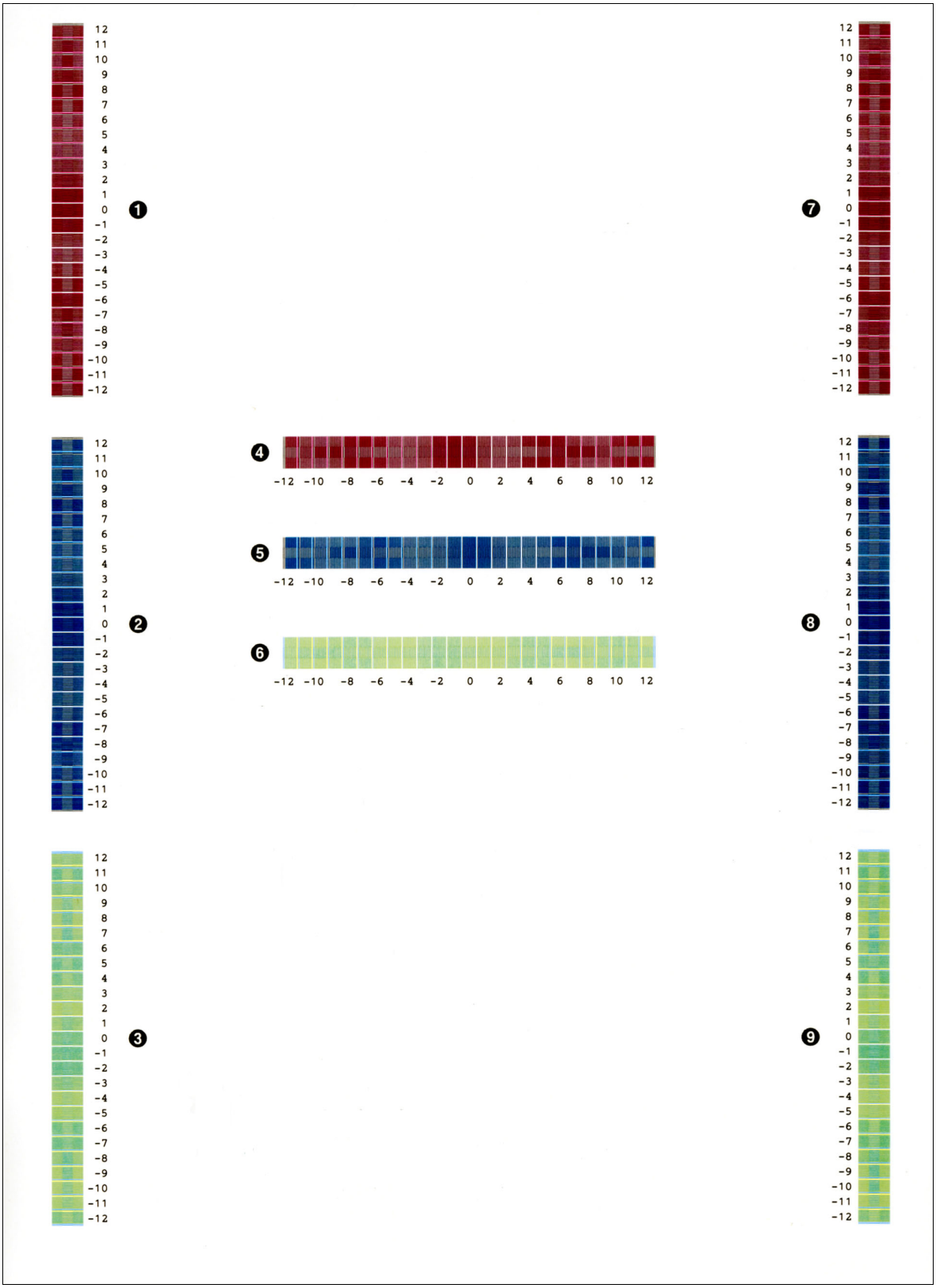


Fig. 7-16

1.4.18 Continuous print test (Function code 67)

<Function>

This function allows you to conduct the pick-up and delivery test as printing patterns.

<Operating procedure>

(1) Press the **6** and **7** buttons in this order in the initial state of the maintenance mode.

(2) When "SELECT: K 100%" appears on the LCD, select a relevant continuous print pattern using ▲ or ▼ button, and then press the **OK** button.

The available continuous print patterns are shown below.

LCD
SELECT: K 100%
SELECT: C 100%
SELECT: M 100%
SELECT: Y 100%
SELECT: R 100%
SELECT: G 100%
SELECT: B 100%
SELECT: KCMY1%*
SELECT: KCMY5%*
SELECT: Lattice

* KCMY1% and KCMY5% are available only for A4 and Letter.

(3) When "SELECT: A4" appears on the LCD, select a relevant paper size using ▲ or ▼ button, and then press the **OK** button.

The available paper sizes are shown below.

LCD
SELECT: A4
SELECT: LETTER
SELECT: LEGAL
SELECT: A5
SELECT: B6
SELECT: A6

(4) The "PAPER FEED TEST" appears on the LCD, and print of the continuous print pattern with the selected pick-up test items starts.

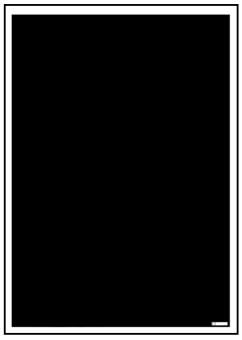
(5) When the **Stop/Exit** button is pressed, the machine cancels this operation, beeps for one second and returns to the initial state of the maintenance mode.

Note:

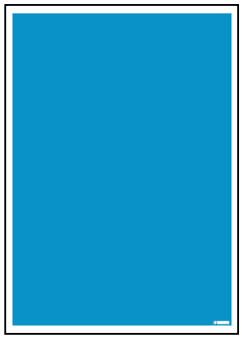
- The machine continues the test printing until there is no paper in a tray. Press the **Stop/Exit** button to stop if you check the paper feeding and ejecting operations. (Printing is resumed when paper is loaded in the tray.)
- In the case that the error occurs during test printing, the test printing is stopped. (Printing is resumed when the error is cleared.)
- To clear the error, remove the error factors, and then press the **Start/Black** button.

■ Continuous print pattern

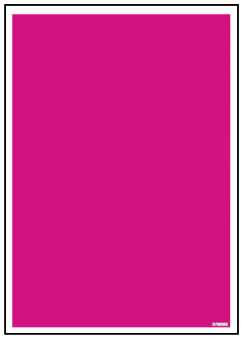
SELECT: K 100%



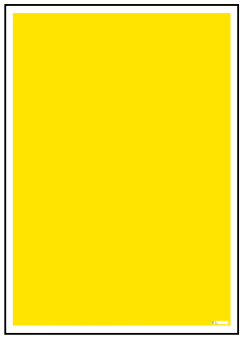
SELECT: C 100%



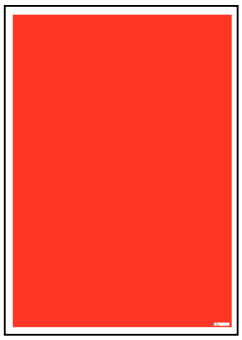
SELECT: M 100%



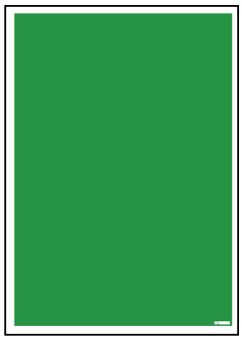
SELECT: Y 100%



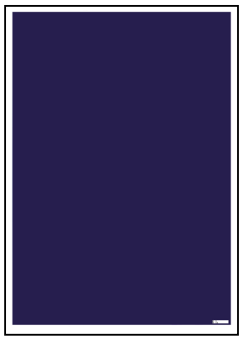
SELECT: R 100%



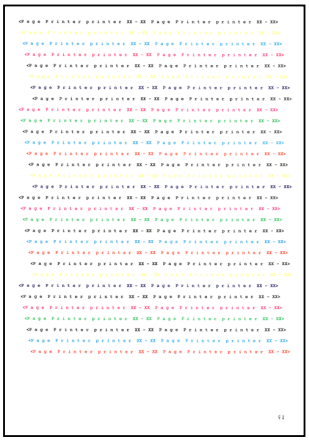
SELECT: G 100%



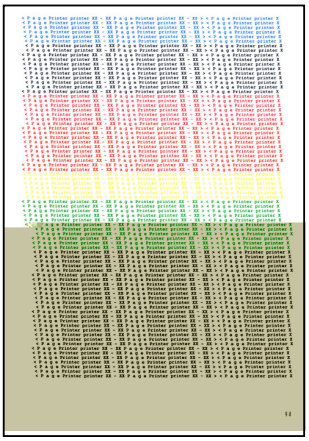
SELECT: B 100%



SELECT: KCMY1%



SELECT: KCMY5%



SELECT: Lattice

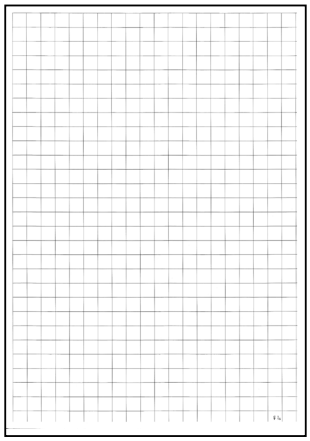


Fig. 7-17

1.4.19 LED test pattern print (Function code 68)

<Function>

This function allows you to print the LED ASSY test pattern and check the quality of the LED ASSY and if it is lifted from the drum.

Note:
You can check scratches and smears on the LED by performing the continuous print test. (Refer to "1.4.18 Continuous print test (Function code 67)" in this chapter)

<Operating procedure>

(1) Press the **6** and **8** buttons in this order in the initial state of the maintenance mode.

(2) When "M68_L" is displayed on the LCD, press the ▲ or ▼ button to select an appropriate test pattern, and press the **OK** button.

The available test pattern is shown below.

LCD	Description
M68_L	Vertical/horizontal dot loss check pattern

"PRINTING" is displayed on the LCD, and the LED test pattern (refer to next page) is printed on a sheet.

Note:
When printing fails, a relevant error is displayed on the LCD. When the error factors are removed and the **Start/Black** button is pressed, the machine automatically recovers to the re-executable state. "PRINTING" is displayed on the LCD, and the test pattern is printed on a sheet.

(3) When the **Stop/Exit** button is pressed, the machine beeps for one second and returns to the initial state of the maintenance mode.

When an error message is displayed on the LCD, take the measures described in the table below.

Error message	Measure
TONER EMPTY # *	Replace the empty toner cartridge and press the **Start/Black** button to clear the error. Perform the LED test pattern print again.
Cover is Open	Close the top cover.
No Paper	Replenish paper, and press the **Start/Black** button to clear the error.
Jam Tray1	Remove the jammed paper, and press the **Start/Black** button to clear the error.
Jam Rear	Remove the jammed paper, and press the **Start/Black** button to clear the error.

* # indicates the toner color (K, Y, M, or C) of which cartridge became empty.

■ LED test pattern (M68_L)

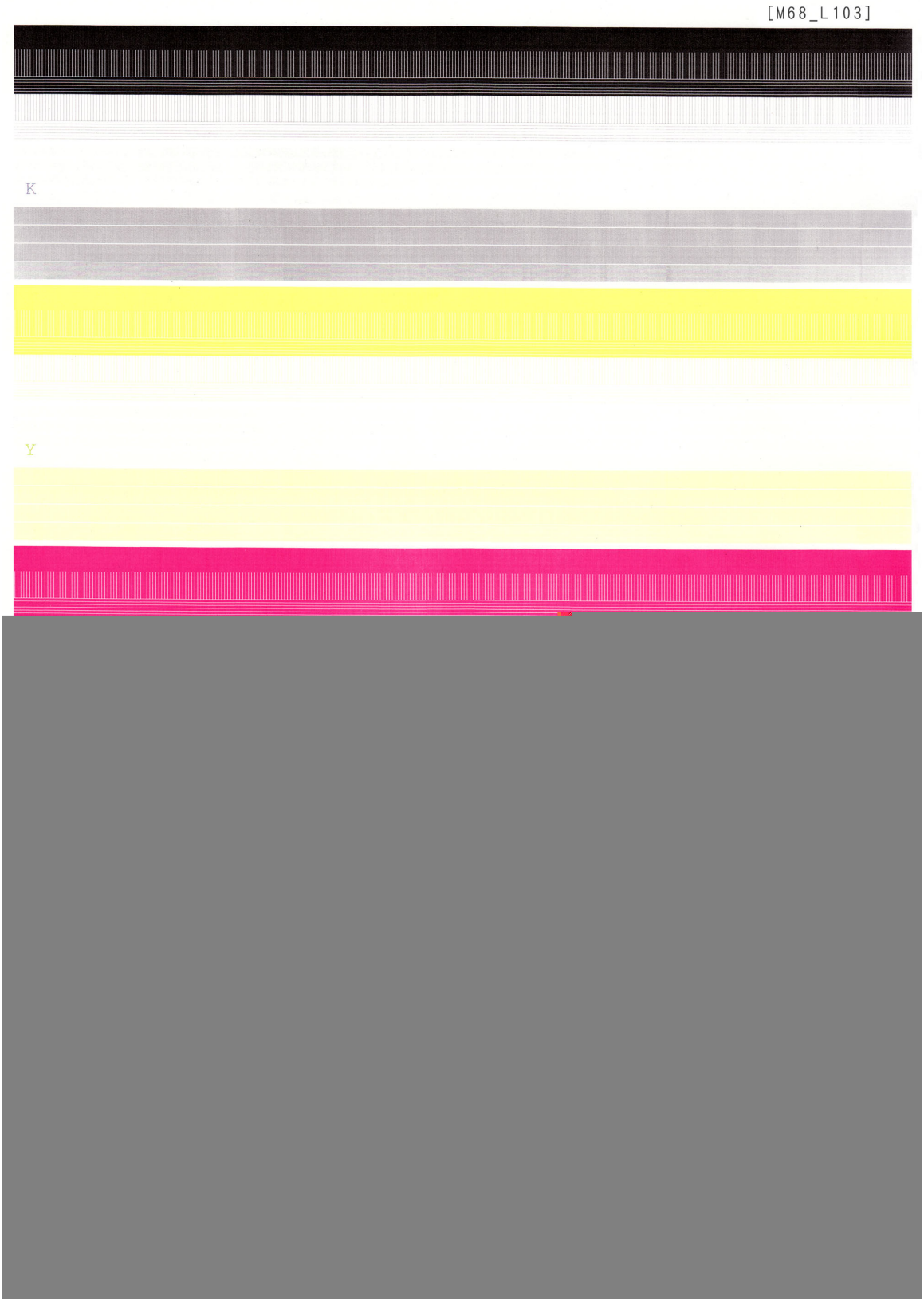


Fig. 7-18

1.4.20 Frame pattern print (Function code 69)

<Function>

This function allows you to print the external periphery frame pattern on a sheet and check if there is print deflection and/or loss.

<Operating procedure>

(1) Load Letter-size paper on the paper tray.

(2) Press the **6** and **9** buttons in this order in the initial state of the maintenance mode. "PRINTING" is displayed on the LCD, and the frame pattern (see the figure below) is printed on a sheet.

Note:
When printing fails, a relevant error is displayed on the LCD. After the error is solved and the **Start/Black** button is pressed, the machine automatically goes back to the re-executable state, and "WAKU SX" is displayed on the LCD. When the **OK** button is pressed, "PRINTING" is displayed on the LCD, and the frame pattern is printed on a sheet.

(3) When the **Stop/Exit** button is pressed, the machine beeps for one second and returns to the initial state of the maintenance mode

When an error message is displayed on the LCD, take the measures described in the table below.

Error message	Measure
TONER EMPTY # *	Replace the empty toner cartridge and press the **Start/Black** button to clear the error. Perform the frame pattern print again.
Cover is Open	Close the top cover.
No Paper	Replenish paper, and press the **Start/Black** button to clear the error.
Jam Tray1	Remove the jammed paper, and press the **Start/Black** button to clear the error.
Jam Rear	Remove the jammed paper, and press the **Start/Black** button to clear the error.

* # indicates the toner color (K, Y, M, or C) of which cartridge became empty.

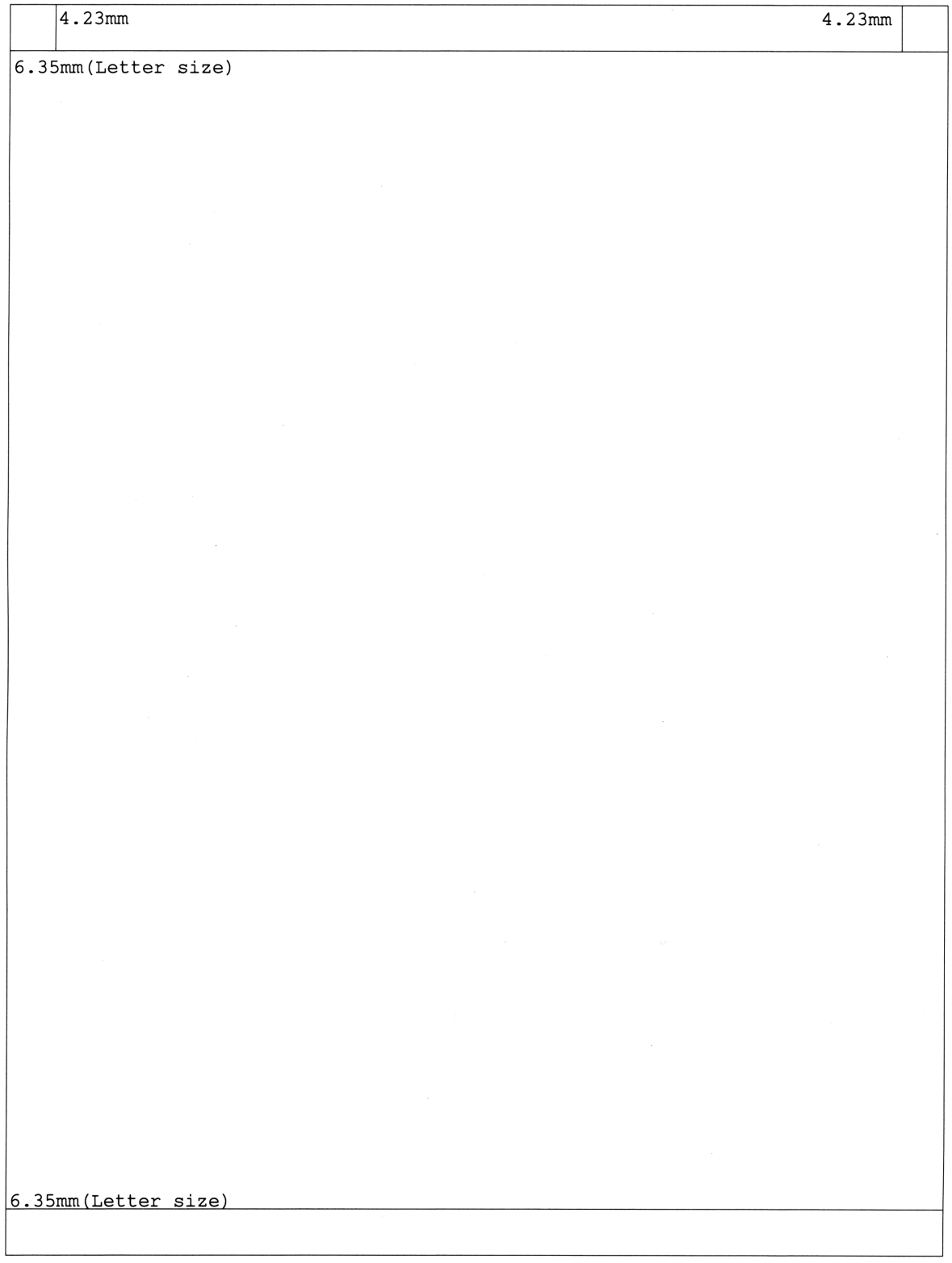


Fig. 7-19

1.4.21 Color test pattern (Function code 71)

<Function>

This function allows you to print the pattern of each color and check if there is any smear on or failure in the belt unit, develop roller, and exposure drum, etc.

<Operating procedure>

(1) Press the **7** and **1** buttons in this order in the initial state of the maintenance mode.

(2) When "2D3S YCMK_ _A" is displayed on the LCD, press the ▲ or ▼ button to select an appropriate print pattern, and press the **OK** button.

(3) "PRINTING" is displayed on the LCD, and the color test pattern (see the figure below) is printed.

The available print patterns are shown below.

LCD	Description	
2D3S YCMK_ _A	One sheet for each color with full page print mode*	Total 4 sheets
2D3S MCYK	4-color horizontal band	Total 1 sheet
2D3S Y	Yellow	Total 1 sheet
2D3S C	Cyan	Total 1 sheet
2D3S M	Magenta	Total 1 sheet
2D3S K	Black	Total 1 sheet

* In the full page print mode, the cleaning operation is performed between printing of M and K.

Note:
When printing fails, a relevant error is displayed on the LCD. When the error factors are removed and the **Start/Black** button is pressed, the machine automatically recovers to the re-executable state. "PRINTING" is displayed on the LCD, and the color test pattern is printed.

(4) When printing is finished, the screen returns to the print pattern display. To print the solid color test pattern again, press the **OK** button.

(5) When the **Stop/Exit** button is pressed, the machine beeps for one second and returns to the initial state of the maintenance mode.

When an error message is displayed on the LCD, take the measures described in the table below.

Error message	Measure
TONER EMPTY # *	Replace the empty toner cartridge and press the **Start/Black** button to clear the error. Perform the color test pattern print again.
Cover is Open	Close the top cover.
No Paper	Replenish paper, and press the **Start/Black** button to clear the error.
Jam Tray1	Remove the jammed paper, and press the **Start/Black** button to clear the error.
Jam Rear	Remove the jammed paper, and press the **Start/Black** button to clear the error.

* # indicates the toner color (K, Y, M, or C) of which cartridge became empty.

■ Color test pattern

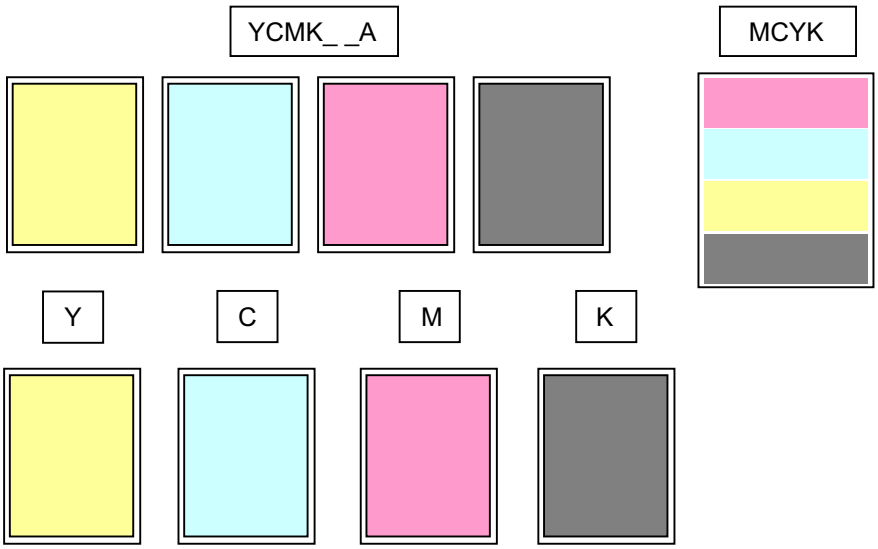


Fig. 7-20

1.4.22 Sensitivity adjustment of density sensor (Function code 72)

<Function>

This function allows you to print the patch data for density sensor sensitivity adjustment on the belt unit and measure the density with the density sensor. The characteristics of the density sensor are calculated based on the value measured by the density sensor, and the parameter is adjusted upon color density adjustment.

<Operating procedure>

(1) Press the **7** and **2** buttons in this order in the initial state of the maintenance mode. "PLEASE WAIT" is displayed on the LCD.

(2) When the acquisition of the parameters is finished without error, the machine beeps for one second and returns to the initial state of the maintenance mode.

When an error message is displayed on the LCD, take the measures described in the table below.

Error message	Measure
FAILED	Remove the error factors with the following operations and press the **Start/Black** button to clear the error. - Re-insert the toner cartridge in the correct position. - Replace the toner cartridge. - Replace the drum unit. - Replace the belt unit. - Replace the registration sensor holder ASSY.
TONER EMPTY # *	Replace the empty toner cartridge and press the **Start/Black** button to clear the error. Perform the sensitivity adjustment of the density sensor again.
Cover is Open	Close the top cover.
Replace Toner	Replace the toner cartridge.
No Paper	Replenish paper, and press the **Start/Black** button to clear the error.
Jam Tray1	Remove the jammed paper, and press the **Start/Black** button to clear the error.
Jam Rear	Remove the jammed paper, and press the **Start/Black** button to clear the error.

* # indicates the toner color (Y, M, or C) of which cartridge became empty.

1.4.23 Setting by country (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** buttons in this order in the initial state of the maintenance mode.
The present customizing code is displayed.

(2) Enter the desired customizing code (e.g., MFC-9320CW (USA): 0201). The newly entered code appears.
To enter letters “A” through “F”, press the **1** through **6** buttons while holding down the **#** button respectively.

Note:
The machine does not work properly when an incorrect code is entered.

(3) Press the **OK** 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 state of the maintenance mode.

Memo:
When the **Stop/Exit** button is pressed, or when no button is pressed for one second procedure during the above procedure, the machine cancels the above, beeps for one second and returns to the initial state of the maintenance mode.
In this case, the modified setting data is not saved.

<EEPROM customizing code list>

Country	DCP-9010CN MFC-9010CN	MFC- 9120CN	MFC- 9320CW	MFC- 9125CN	MFC- 9325CW
USA	0001	0101	0201	0001	0101
Canada	0002	0102	0202	0002	0102
Chile, Argentina	---	0136	---	---	---
Brazil	0042	---	0242	---	---
Germany	1004	0103	0203	---	---
UK	1004	0104	0204	---	---
France	1004 (1055)	0105	0205	---	---
Norway	1004	0107 (0157)	0207	---	---
Belgium	1008 (1055)	0108	0208	---	---
Netherlands	1004 (1055)	0109	0209	---	---
Switzerland	1010	0110	0210	---	---
Finland	1004	0112 (0157)	0212	---	---
Denmark	1004	0113 (0157)	0213	---	---
Austria	1004	0103	0203	---	---
Spain	1015 (1065)	0115	0215	---	---
Italy	1004	0116	0216	---	---
Portugal	1004 (1065)	0118	0218	---	---
Israel	---	0150	---	---	---
South Africa	1004	---	---	---	---
Sweden	1004	0126 (0157)	0226	---	---
Slovakia	1004	0130 (0188)	0230 (0288)	---	---
Bulgaria	1004	0132 (0188)	0232 (0288)	---	---
Rumania	1004	0133 (0188)	0233 (0288)	---	---
Czech	1004	0137 (0188)	0237 (0288)	---	---
Hungary	1004	0138 (0188)	0238 (0288)	---	---
Russia	1004	0148	0248	---	---
Poland	1004	0139 (0188)	0239 (0288)	---	---
Pan-Nordic	1004	0157	0257	---	---
General	1004	0150 (0188)	0250	---	---
EEU General	1004	0150	0250 (0288)	---	---
Singapore, Hong Kong, Gulf	0004	0140	0240	---	---
Australia	0004	0106 (0156)	0206 (0256)	0006 (0056)	0106 (0156)
New Zealand	0004	0127 (0156)	0227 (0256)	0027 (0056)	0127 (0156)
China	0020	0120	0220	---	---
South Africa, Gulf	0024	0124	0224	---	---
India	0045	0145	0245	---	---
Turkey	0004	0125	0225	---	---

* Country codes are subject to change without notice.

Note:

- If you can determine the country where the customer uses the machine, enter the code outside the brackets. If not, enter the code inside.
- The information provided in this page is as of August 2011. Regarding the latest setting codes, see the ROM/ firmware information provided by Brother Industries, Ltd.

1.4.24 Sensitivity adjustment of registration mark sensor and check of belt surface (Function code 75)

<Function>

This function makes the registration mark sensor to adjust its sensitivity compulsory. This allows you to check if the registration mark sensor works properly. This function makes the machine to check the surface of the belt unit by using the registration mark sensor as well.

<Operating procedure>

(1) Press the **7** and **5** buttons in this order in the initial state of the maintenance mode. "REGI SENS ADJUST" is displayed on the LCD.

(2) Press the ▲ or ▼ button to select the appropriate item.

(3) Press the **OK** button to execute the selected item.

(4) When the operation is finished, the machine beeps for one second and returns to the initial state of the maintenance mode.

LCD	Description
REGI_SENS ADJUST BELT OFF	Adjust the sensitivity of the registration mark sensor when the belt unit is not operated. This is to check whether the registration mark sensor's operation is okay or not.
REGI_SENS ADJUST BELT ON	Adjust the sensitivity of the registration mark sensor while the belt unit is driving. (This is the same as the sensitivity adjustment performed before adjustment of color registration.)
REGI_SENS ADJUST BELT CHECK	Check that there are no scratches on the surface of the belt unit of the registration mask sensor.

Note:

- If you press the **OK** button during the sensitivity adjustment or after the error message appears on the LCD, the sensitivity adjustment is started again.
- In the case that the error occurs, refer to the next page to check the error description and the way to solve it.

■ Error display when “REGI_SENS ADJUST BELT OFF” or “REGI_SENS ADJUST BELT CHECK” is executed

Error messages	Description	Solution
REGI_SENS ADJUST Write Err	Failure to write electronic volume NVRAM	Replace the engine PCB ASSY.
REGI_SENS ADJUST Belt Left Err	Measurement data error upon sensitivity adjustment of the registration mark sensor L	Replace the belt unit. If you do not replace it, execute the adjustment of color registration (manual). (Refer to “Adjustment of color registration (Function code 66)” in this chapter.)
REGI_SENS ADJUST Belt Right Err	Measurement data error upon sensitivity adjustment of the registration mark sensor R	

■ Error display when “REGI_SENS ADJUST BELT ON” is executed

Error messages	Description	Solution
REGI_L_SENS: XXX REGI_R_SENS: OK	Result of the belt unit surface check within the coverage of the registration mark sensor L	Execute the adjustment of color registration (manual). If the error occurs again, replace the belt unit. (Refer to “Adjustment of color registration (Function code 66)” in this chapter.)
REGI_L_SENS: OK REGI_R_SENS: XXX	Result of the belt unit surface check within the coverage of the registration mark sensor R	
REGI_L_SENS: XXX REGI_R_SENS: XXX	Result of the belt unit surface check within the coverage of the registration mark sensor	

* XX shows the number of error times (1 to 999) when a scratch is detected on the surface of the belt unit. If the number of times is larger, the condition of the belt unit is worse.

1.4.25 Printout of maintenance information (Function code 77)

<Function>

This function allows you to print a list (see the figure below) of all maintenance information including printer coverage information.

<Operating procedure>

(1) Press the **7** button twice in the initial state of the maintenance mode. "Printing" is displayed on the LCD.

(2) Print the maintenance information shown in the figure below.

```
MAINTENANCE
MFC-9320CW              Serial No.=D9J000659  Model=8CE-217   Country=0201    SW CheckSum=D9
Main ROM: Ver.E U0912161019      ROM ChkSum: 25C1                 OK     0000   01010101
Sub ROM: Ver.0.73 P0904131655    RTC Check: OK                    OKOK   0000
Boot ROM: B0902241409            RTC BackUp: OK                   0102000000100000
HV ROM: 1.02B8C8                 Before BackUp: 00:01             0010000000000000       00000000
PictBridge: 1.00                 After BackUp: 00:00              0005 0005 0000 0F
RAM Size =  64Mbyte              USB Prod.ID: 021C                000A 0008 0008 00
Remaining life of :
*Toner Cartridge          **Drum Unit               Belt Unit: 49949 (100%)
 Cyan(C): 98%              Cyan(C): 14982 (100%)
 Magenta(M): 98%           Magenta(M): 14982 (100%)  PF Kit 1: 50000 (100%)
 Yellow(Y): 98%            Yellow(Y): 14982 (100%)
 Black(K): 98%             Black(K): 14982 (100%)    Fuser Unit: 50000 (100%)

<Device Status>
 Total Page Count: 1
 Color Page Count: 0
 Monochrome Page Count: 1
 Image Count Total: 1
  Cyan(C): 0              Yellow(Y): 0
  Magenta(M): 0           Black(K): 1
 Copy Count: 0
  Color: 0                Monochrome: 0
 PC-Print Count: 0
  Color: 0                Monochrome: 0
 List/FAX Count: 1
  Color: 0                Monochrome: 1

***Average Coverage(Total)
  Cyan(C): 0.00%          Yellow(Y): 0.00%
  Magenta(M): 0.00%       Black(K): 6.27%
***Average Coverage(Current)*
  Cyan(C): 0.00%          Yellow(Y): 0.00%
  Magenta(M): 0.00%       Black(K): 6.27%

<Drum Information>
 Drum Page Count         Drum Count
  Cyan(C): 18             Cyan(C): 410
  Magenta(M): 18          Magenta(M): 410
  Yellow(Y): 18           Yellow(Y): 410
  Black(K): 18            Black(K): 410

<Total Pages Printed>
 Manual Feed: 0
 Tray 1: 1

<Total Pages Printed>
 A4/Letter: 1
 Legal/A4 Long/Folio: 0
 B5/Executive: 0
 Envelope: 0
 A5: 0
 Others: 0

<Total Pages Printed>
 Plain/Thin/Recycled: 1
 Thick/Thicker/Bond: 0
 Envelope/Env.Thick/Env.Thin: 0
 Label: 0
 Hagaki: 0

<Total Paper Jams: 0>
 Jam Tray: 0
 Jam Inside: 0
 Jam Rear: 0

<Power On Time: 11 hours>
<Power On Count: 10>

<Error History (last 10 errors)>
 1: FB:No Toner C                01/01/10  00:00
 2: FC:No Toner M                01/01/10  00:00
 3: FD:No Toner Y                01/01/10  00:00
 4: FA:No Toner K                01/01/10  00:00
 5:
 6:
 7:
 8:
 9:
10:

<Replace Count>
 Toner Cartridge                 Drum Unit
  Cyan(C): 0       00/00/00      Cyan(C): 0
  Magenta(M): 0    00/00/00      Magenta(M): 0
  Yellow(Y): 0     00/00/00      Yellow(Y): 0
  Black(K): 0      00/00/00      Black(K): 0
 Belt Unit: 0                    PF Kit 1: 0
 Fuser Unit: 0                   Waste Toner: 0

<Total Pages Printed>
 Current Toner           Previously Used Toner
  Cyan(C): 0              Cyan(C): 0
  Magenta(M): 0           Magenta(M): 0
  Yellow(Y): 0            Yellow(Y): 0
  Black(K): 0             Black(K): 0
 Waste Toner: 0

<Scan Count>
 Total SX Page Count: 0
 Total FB Page Count: 0
 ADF JAM SX: 0

<COM Error>
1: 00000000  01/01/04 00:00
2: 00000000  01/01/04 00:00
3: 00000000  01/01/04 00:00

<Developing Bias: C:500V M:436V Y:500V K:500V>

<Engine Sensor Log>
 MN: 000690/002395       RS: 001295/002415
 EJ: 004405/002420       ER: 004560/002265

<Status Log>
 83 10 00  83 1B 02  83 1A 02  83 19 02
 83 18 02  01 43 02  01 42 02  01 41 02
 01 40 02  83 10 00

<Temperature/Humidity>
 Temperature: 22 degrees(C)    Humidity: 56%
*  Remaining life will vary depending on the types of documents printed.
** Based on A4/Letter printing.
*** Calculated coverage.
```

Fig. 7-21

1.4.26 Operational check of fans (Function code 78)

<Function>

This function is to check whether each of fans is operating correctly or not. The operation of the following fans is checked respectively, and their operating states (rotation speed 100 %, rotation speed 50 %, or OFF) are displayed.

LCD	Parts name	Description
FU	Main fan	Evacuate hot air of the fuser unit.
PS	LV fan	Evacuate hot air of the Low-voltage power supply PCB.

<Operating procedure>

(1) Press the **7** and **8** buttons in this order in the initial state of the maintenance mode. The indication will appear on the LCD as shown in the figure below.

(2) Press the **Start/Black** button to check the next item. For operation check, spin or stop fans actually on each item.

(3) Press the **Stop/Exit** button so that the machine stops checking the fans, beeps for one second and returns to the initial state of the maintenance mode.

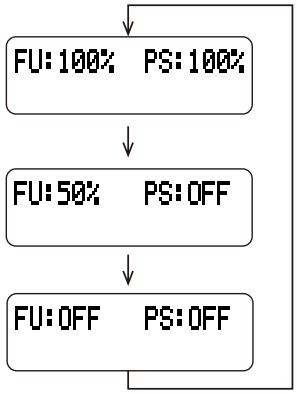


Fig. 7-22

■ Location of fans

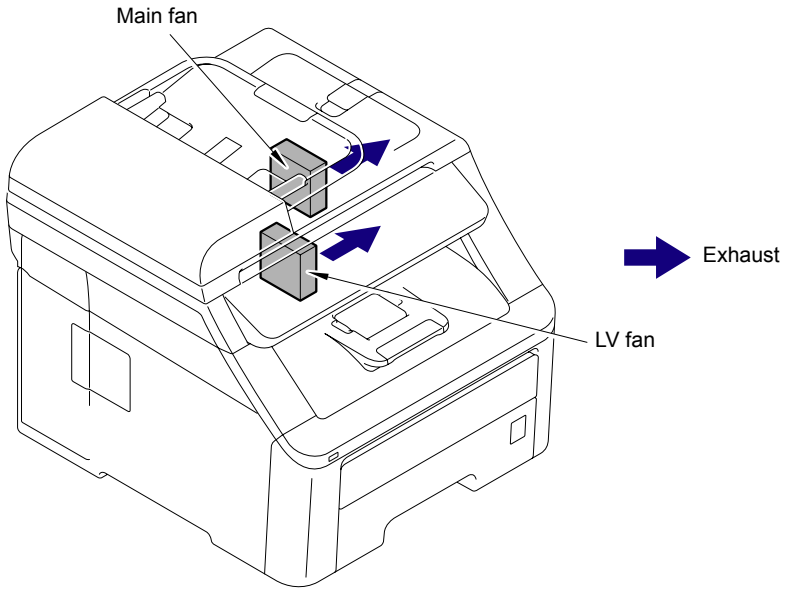


Fig. 7-23

1.4.27 Display of the machine's log (Function code 80)

<Function>

This function allows you to view the counter information. The display items are shown in the table below.

	LCD	Description
Serial	USB:	Serial number
Drum related items	CDRUM:	Number of accumulated rotations of cyan drum
	CDRM_PG:	Number of printed pages by cyan drum
	CDRM_CH:	Number of times the cyan drum unit has been replaced
	MDRUM:	Number of accumulated rotations of magenta drum
	MDRM_PG:	Number of printed pages by magenta drum
	MDRM_CH:	Number of times the magenta drum unit has been replaced
	YDRUM:	Number of accumulated rotations of yellow drum
	YDRM_PG:	Number of printed pages by yellow drum
	YDRM_CH:	Number of times the yellow drum unit has been replaced
	KDRUM:	Number of accumulated rotations of black drum
	KDRM_PG:	Number of printed pages by black drum
	KDRM_CH:	Number of times the black drum unit has been replaced
Toner related items	CTN_PG1:	Number of printed pages by cyan toner
	CTN_PG2:	Number of printed pages before previous reset of cyan toner
	CTN_ERM:	Remaining toner amount detected by the cyan toner sensor
	CTN_RRM:	Remaining toner amount calculated by the number of rotations of the cyan develop roller
	CTN_CH:	Number of times the cyan toner cartridge has been replaced
	MTN_PG1:	Number of printed pages by magenta toner
	MTN_PG2:	Number of printed pages before previous reset of magenta toner
	MTN_ERM:	Remaining toner amount detected by the magenta toner sensor
	MTN_RRM:	Remaining toner amount calculated by the number of rotations of the magenta develop roller
	MTN_CH:	Number of times the magenta toner cartridge has been replaced
	YTN_PG1:	Number of printed pages by yellow toner
	YTN_PG2:	Number of printed pages before previous reset of yellow toner
	YTN_ERM:	Remaining toner amount detected by the yellow toner sensor
	YTN_RRM:	Remaining toner amount calculated by the number of rotations of the yellow develop roller
	YTN_CH:	Number of times the yellow toner cartridge has been replaced
	KTN_PG1:	Number of printed pages by black toner
	KTN_PG2:	Number of printed pages before previous reset of black toner
	KTN_ERM:	Remaining toner amount detected by the black toner sensor
	KTN_RRM:	Remaining toner amount calculated by the number of rotations of the black develop roller
	KTN_CH:	Number of times the black toner cartridge has been replaced

	LCD	Description
Replacing part related items	WTNR_PG:	Printed pages by waste toner box
	WTNR_CH:	Number of times the waste toner box has been replaced
	BCLN:	Number of accumulated rotations of the cleaning roller
	BELT_PG:	Printed pages by belt unit
	BELT_CH:	Number of times the belt unit has been replaced
	PFK1_PG:	Printed pages by paper feeding kit
	PFK1_CH:	Number of times the paper feeding kit has been replaced
	FUSR_PG:	Printed pages by fuser unit
	FUSR_CH:	Number of times the fuser unit has been replaced
Average print rate related items *1	CCVRGUSI:	Average cyan coverage % (Toner in use)
	CCVRGACC:	Average cyan coverage % (Accumulated)
	MCVRGUSI:	Average magenta coverage % (Toner in use)
	MCVRGACC:	Average magenta coverage % (Accumulated)
	YCVRGUSI:	Average yellow coverage % (Toner in use)
	YCVRGACC:	Average yellow coverage % (Accumulated)
	KCVRGUSI:	Average black coverage % (Toner in use)
	KCVRGACC:	Average black coverage % (Accumulated)
Print pages related items	TTL_PG:	Total number of printed pages
	TTL_CO:	Total number of color printed pages
	TTL_MO:	Total number of monochrome printed pages
	TTL_CI:	Cyan printed pages
	TTL_MI:	Magenta printed pages
	TTL_YI:	Yellow printed pages
	TTL_KI:	Black printed pages
	TTLCOPY	Number of copy pages
	CL-COPY	Number of color copy pages
	MN-COPY	Number of B/W copy pages
	TTLPCPT	Number of PC prints made
	CL_PCPT	Total number of PC color printed pages
	MN_PCPT	Total number of PC monochrome printed pages
	TTLFAX *2	Number of List/FAX outputs made
	CL_FAX *2	Total number of color List/FAX printed pages
	MN_FAX *2	Total number of monochrome List/FAX printed pages
Picked-up pages by tray	TR1_PG:	Number of pages picked up from the paper tray
	MN_PG:	Number of pages picked up from the manual feed slot
Picked-up pages by paper size	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 (including A5R) sheets picked up
	OTHER:	Number of other-size (including JIS B6) sheets picked up

*1 Average print rate: Print area/ printable area

*2 This is displayed only on the FAX models.

	LCD	Description
Print pages by paper type[*3]	PLTNRE:	Printed pages of plain, thin, and recycled paper
	TKTRBD:	Printed pages of thick, thicker, and bond paper
	ENVTYP:	Printed pages of envelope, envelope thick, and envelope thin
	HAGAKI:	Printed pages of Hagaki
	LABEL:	Printed pages of label
	ADSX_PG	Number of single-sided scanned pages with the ADF
	FB_PG	Number of scanned pages with the FB unit
Developing bias related items	CDEV_BIAS:	Cyan developing bias voltage (unit: V)
	MDEV_BIAS:	Magenta developing bias voltage (unit: V)
	YDEV_BIAS:	Yellow developing bias voltage (unit: V)
	KDEV_BIAS:	Black developing bias voltage (unit: V)
Power distribution time	POWER:	Power distribution time
	PWRCNT:	Number of times that the power is turned ON
Jam related items	TTL_JAM:	Total number of jams
	TR1_JAM:	Number of jams that occurred at the paper tray
	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 that occurred at singled sided scanning with the ADF
Number of error occurrences	HODN_ER:	Number of discharge errors due to smear of the corona wire
	FUSR_ER:	Number of times that fuser unit error occurs
	MTLK_ER:	Number of times that motor lock error occurs (Not used)
Error log related items	MACHINEERR_##: [*4]	Machine error ##: Error code/number of occurrences
	COMERR##: [*5]	Last communication error code
	ENGERR##: [*6]	Engine error ##: Error level (2 bytes), large classification code (2 bytes), detailed classification code (2 bytes)

[*3] Paper size according to the printer driver settings.
This size is not necessarily matched with the actual paper size.

[*4] 01 to 10 are entered in ## in chronological order. When you press the **OK** button as the machine error history is displayed, the page counter values when the errors occurred are displayed. When you press the **OK** button again, the machine error history is displayed again.

[*5] 01 to 03 are entered in ## in chronological order. When you press the **OK** button as the communication error history is displayed, the page counter values when the errors occurred are displayed. When you press the **OK** button again, the machine error history is displayed again.

[*6] 01 to 10 are entered in ## in chronological order. When you press the **OK** button as the engine error history is displayed, TM: elapsed time (minute) from the previous error and BT: the number of times when the power is ON are displayed. When you press the **OK** button again, the engine error history is displayed again.

<Operating procedure>

(1) Press the **8** and **0** buttons in this order in the initial state of the maintenance mode.

(2) Each time the **Start/Black** button is pressed, next log information item appears on the LCD in the order.
Press the ▼ button to go to the next item.
Press the ▲ button to go back to the previous item.

(3) Press the **Stop/Exit** button to return the machine to the initial state of the maintenance

Note:
Regarding “MACHINEERR”, “COMERR”, and “ENGERR”, when the **OK** button is pressed while the error history is displayed, the page counter value at which the error occurred is displayed.
Press the **OK** button again to return the machine to the error history display.

1.4.28 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** buttons in this order in the initial state of the maintenance mode.
The machine displays “MACHINE ERROR X X” on the LCD.

(2) When the **Stop/Exit** button is pressed, the machine beeps for one second and returns to the initial state of the maintenance mode.

1.4.29 Developing bias voltage correction (Function code 83)

<Function>

This function performs developing bias voltage correction to fix the density of each color toner when printed color is not correct.

Note:
Before this function is performed, there is a need that the Sensitivity adjustment of density sensor (maintenance mode 72) has been done more than once. When performing this maintenance mode 83 after replacing the main PCB, make sure to perform the Sensitivity adjustment of density sensor (maintenance mode 72) first.

<Operating procedure>

(1) Press the **8** and **3** buttons in this order in the initial state of the maintenance mode. The machine displays "PLEASE WAIT" on the LCD.

(2) When the developing bias voltage correction is finished, the machine beeps for one second and returns to the initial state of the maintenance mode.

When any of the following error messages is displayed, take a relevant measure given in the table below.

Error message	Measure
FAILED	Remove the error factors with the following operations and press the **Start/Black** button to clear the error. - Re-insert the toner cartridge in the correct position. - Replace the toner cartridge. - Replace the drum unit. - Replace the belt unit. - Replace the registration sensor holder ASSY.
TONER EMPTY # *	Replace the empty toner cartridge and press the **OK** button to clear the error. Perform the developing bias voltage correction again.
Cover is Open	Close the top cover.
Replace Toner	Replace the toner cartridge.
No Paper	Replenish paper, and press the **Start/Black** button to clear the error.
Jam Tray1	Remove the jammed paper, and press the **Start/Black** button to clear the error.
Jam Rear	Remove the jammed paper, and press the **Start/Black** button to clear the error.

* # indicates the toner color (Y, M, or C) of which cartridge became empty.

Note:
Any panel operation is invalid during the developing bias voltage correction.

1.4.30 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/Black**, **Menu** buttons in this order.

3) Press the **8** and **7** buttons.

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/Black** button of your machine. Your machine will start to receive the transmission log from the user's machine.

1.4.31 Counter reset after replacing the fuser unit and paper feeding 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 and paper feed Kit.

<Operating procedure>

(1) Press the **8** button twice in the initial state of the maintenance mode.

(2) The LCD shows the “Reset Fuser Unit”.

(3) Press the ▲ or ▼ button to select the item you want to reset. The LCD shows.

“Reset-Fuser Unit”

“Reset PF-KIT T”

(4) Press the **OK** or **Start/Black** button, then “OK?” will appear on the LCD.

(5) Press the **OK** or **Start/Black** button to reset the counter of the selected part and returns the operating procedure (2) mode.

(6) When the **Stop/Exit** button is pressed, the machine beeps for one second and returns to the initial state of the maintenance mode.

1.4.32 Exit from maintenance mode (Function code 99)

<Function>

The machine returns to the ready state.

<Operating procedure>

(1) Press the **9** button twice in the initial state of the maintenance mode.

(2) The maintenance mode is finished, and the machine returns to the ready state.

2. OTHER SERVICE FUNCTIONS

2.1 Resetting the Periodical Maintenance Parts Life

2.1.1 Resetting the life counter of the belt unit

<Function>

This function allows you to reset the page counter of the belt unit and increase the number of replacement times by one.

<Operating procedure>

(1) Press the **3** and **9** buttons at the same time in the ready state.
The “Reset Menu/Drum” will appear on the LCD.

(2) Press the ▲ button a few times to select “Belt Unit”.

(3) Press the **OK** button.
The “Belt Unit/1. Reset 2. Exit” will appear on the LCD.

(4) Press the **1** button when resetting the life counter of the belt unit. Press the **2** button if not resetting.

(5) The “Belt Unit/Accepted” will appear on the LCD if pressing the **1** button. The page counter of the belt 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** button, the machine do not reset the page counter and the “Belt Unit” will appear on the LCD.

2.1.2 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** buttons at the same time in the ready state.
The “Reset Menu/Drum” will appear on the LCD.

(2) Press the ▲ button a few times to select “Fuser”.

(3) Press the **OK** button.
The “Fuser/1. Reset 2. Exit” will appear on the LCD.

(4) Press the **1** button when resetting the life counter of the fuser unit. Press the **2** button if not resetting.

(5) The “Fuser/Accepted” will appear on the LCD if pressing the **1** button. 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** button, the machine do not reset the page counter and the “Fuser” will appear on the LCD.

2.1.3 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** buttons at the same time in the ready state.
The “Reset Menu/Drum” will appear on the LCD.

(2) Press the ▲ button a few times to select “Drum Unit”.

(3) Press the **OK** button. The “Drum/Black(K)” will appear on the LCD.

(4) Or select the color to be reset by using the ▲ or ▼ button.

(5) Press the **OK** button.
The “Drum Unit/1. Reset 2. Exit” will appear on the LCD.

(6) Press the **1** button when resetting the life counter of the drum unit. Press the **2** button if not resetting.

(7) The “Drum Unit/Accepted” will appear on the LCD if pressing the **1** button. 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** button, the machine do not reset the page counter and the “Drum Unit” will appear on the LCD.

2.1.4 Resetting the life counter of the paper feeding kit

<Function>

This function allows you to reset the page counter of the paper feeding kit and increase the number of replacement times by one.

<Operating procedure>

(1) Press the **3** and **9** buttons at the same time in the ready state.
The “Reset Menu/Drum” will appear on the LCD.

(2) Press the ▲ button a few times to select “PF Kit”.

(3) Press the **OK** button.
The “PF Kit/1. Reset 2. Exit” will appear on the LCD.

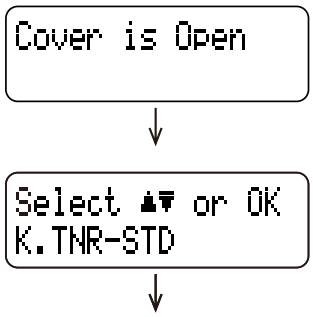
(4) Press the **1** button when resetting the life counter of the paper feeding kit. Press the **2** button if not resetting.

(5) The “PF Kit/Accepted” will appear on the LCD if pressing the **1** button. 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** button, the machine do not reset the page counter and the “PF Kit” will appear on the LCD.

2.2 Develop Roller Counter Reset Function

This function is to manually perform the operation same as the one when a toner cartridge is replaced with a new one. The purpose of this function is to provide a means to resolve an error when a new toner cannot be recognized by the product, and the LCD display fails to be cleared.

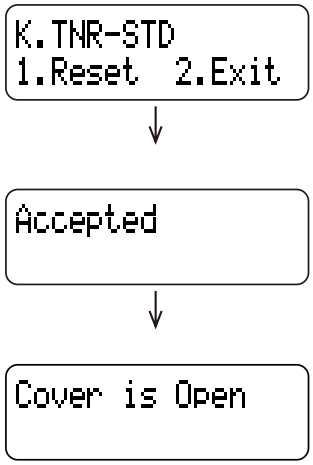
<Operating procedure>



(1) Press the **Clear/Back** button while the top cover is being opened.

(2) "K. TNR-STD" appears on the LCD.
Press the ▲ or ▼ button to select the appropriate toner cartridge, and then press the **OK** button.

LCD	Description
K.TNR-STD	Reset the develop roller counter of standard black toner cartridge.
K.TNR-STR	Reset the develop roller counter of starter black toner cartridge.
C.TNR-STD	Reset the develop roller counter of standard cyan toner cartridge.
C.TNR-STR	Reset the develop roller counter of starter cyan toner cartridge.
M.TNR-STD	Reset the develop roller counter of standard magenta toner cartridge.
M.TNR-STR	Reset the develop roller counter of starter magenta toner cartridge.
Y.TNR-STD	Reset the develop roller counter of standard yellow toner cartridge.
Y.TNR-STR	Reset the develop roller counter of starter yellow toner cartridge.



(3) The "K. TNR-STD/1. Reset 2.Exit" will appear on the LCD. If resetting the counter, press the **1** button. If not, press the **2** button.

(4) The develop roller counter is reset.

(5) The machine returns to the state in which the top cover is open.

Note:

- If there is no operation for 30 seconds or more, the machine automatically returns to step (1).
- While starter toner is also displayed on the LCD, make sure to select standard toner.

2.3 How to Recover from Errors of the Fuser Unit

How to recover from errors of the fuser unit is to use Function code 99 in the maintenance mode.

WARNING

When clearing an error, be sure that the fuser unit is cooled down sufficiently. If an error is cleared while the fuser unit is not cooled down, there is a possibility that the unit might be unable to be repaired.

CHAPTER 8
CIRCUIT DIAGRAMS & WIRING DIAGRAM

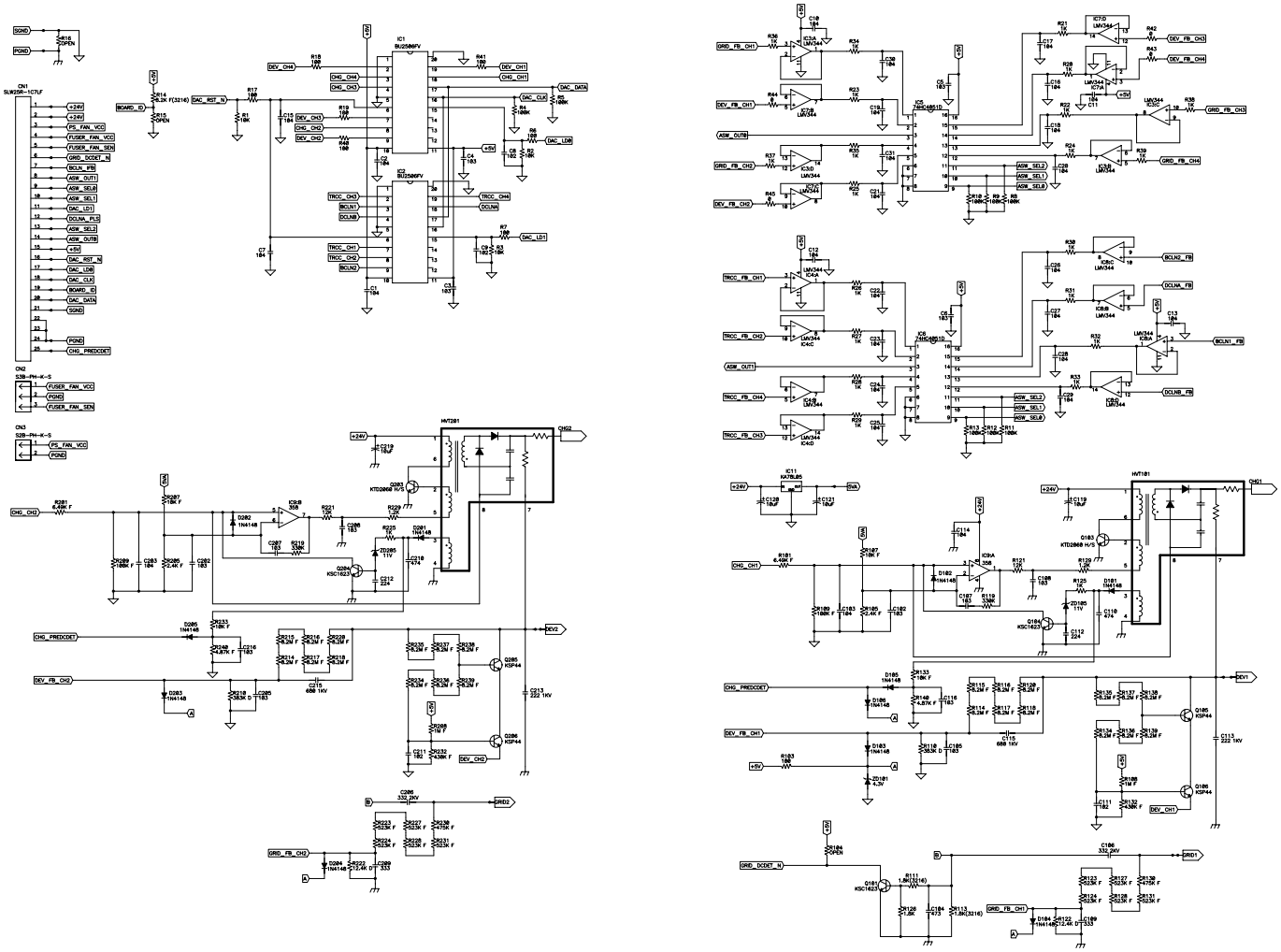
CHAPTER 8
CIRCUIT DIAGRAMS & WIRING DIAGRAM

This chapter provides the circuit diagrams and wiring diagram for the connections of the PCBs.

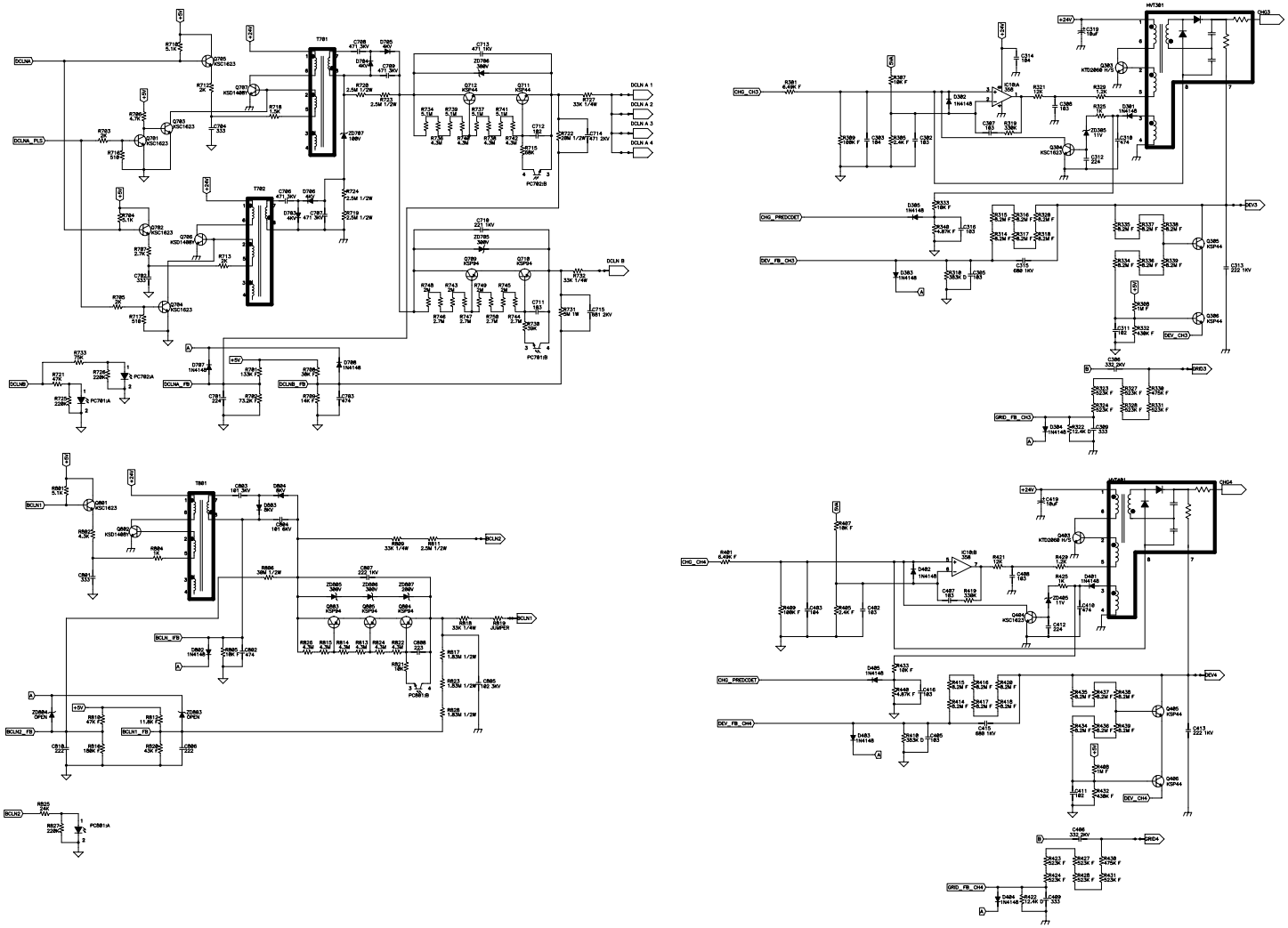
CONTENTS

1. CIRCUIT DIAGRAMS

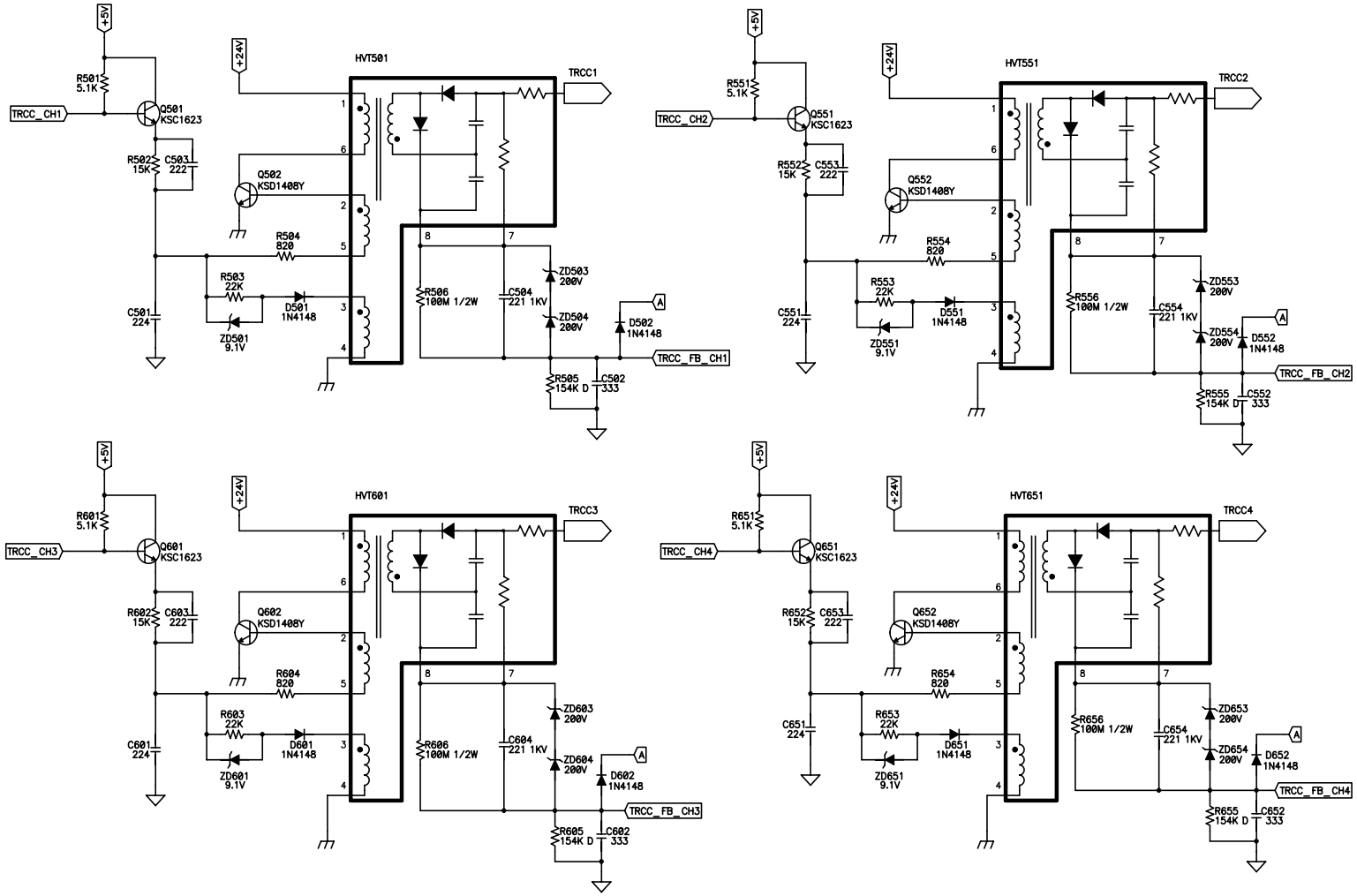
■ **High-voltage Power Supply PCB Circuit Diagram SYS HITEK: SPH-8N35 (1/3)**

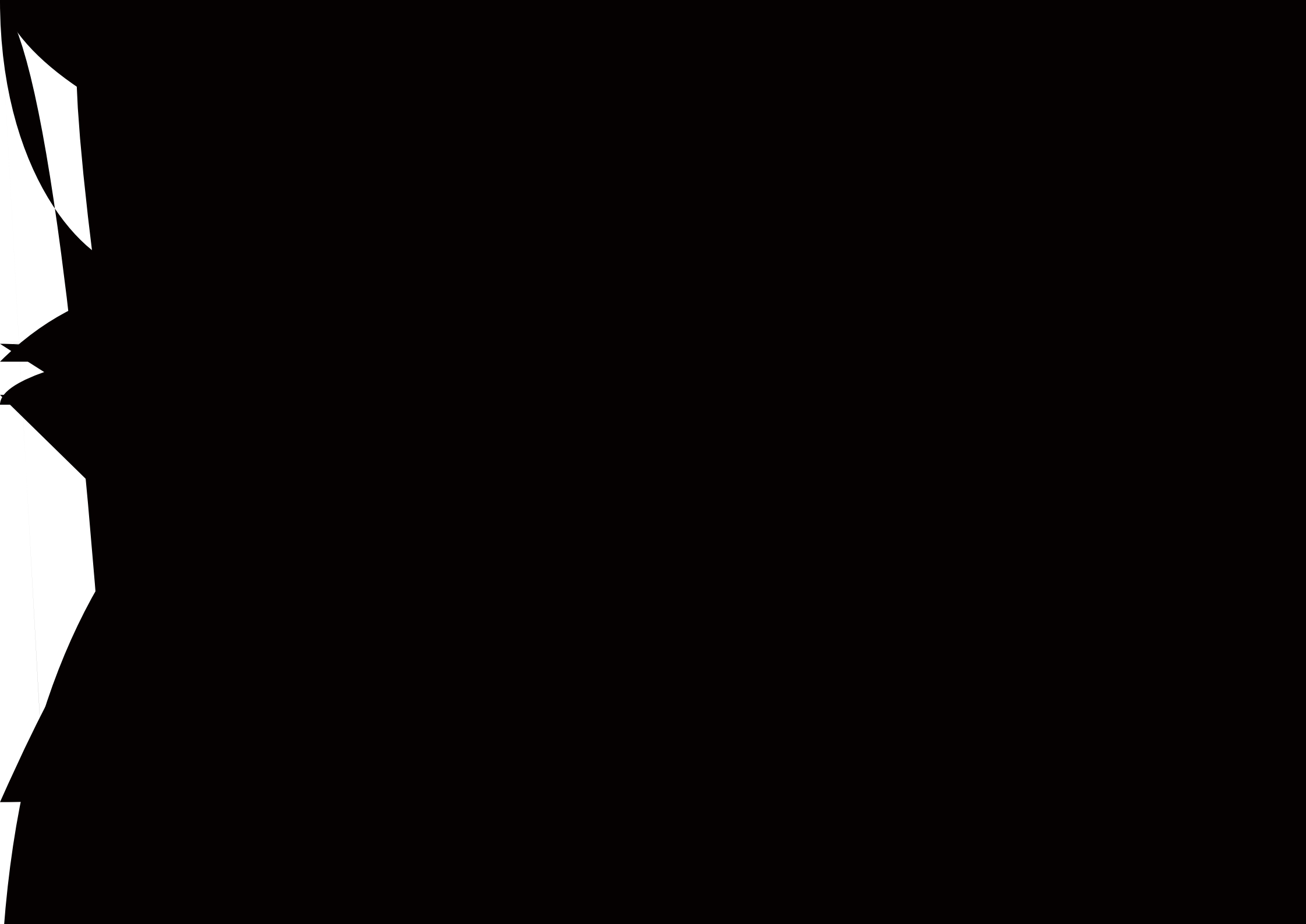


■ High-voltage Power Supply PCB Circuit Diagram SYS HITEK: SPH-8N35 (2/3)

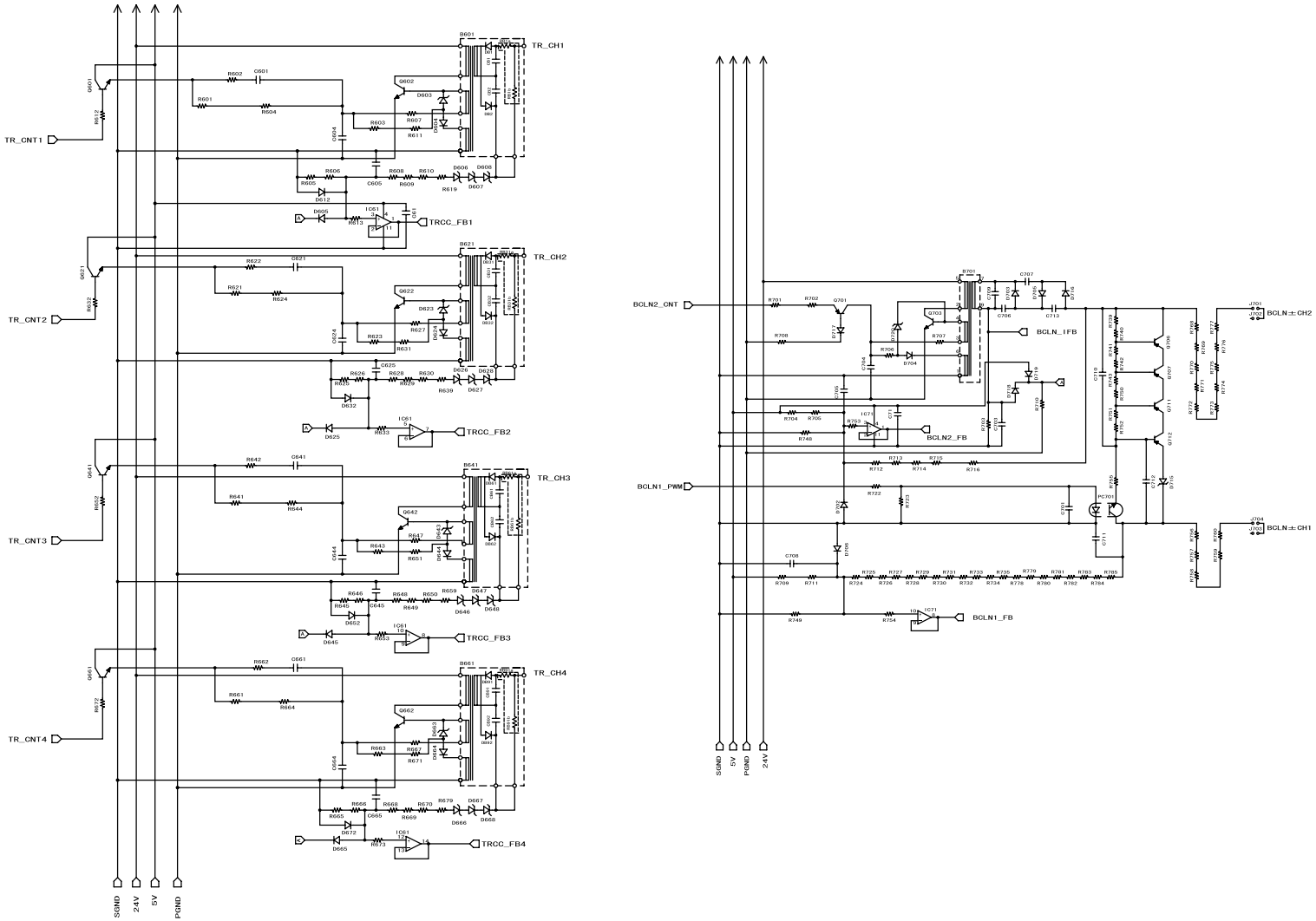


■ High-voltage Power Supply PCB Circuit Diagram SYS HITEK: SPH-8N35 (3/3)

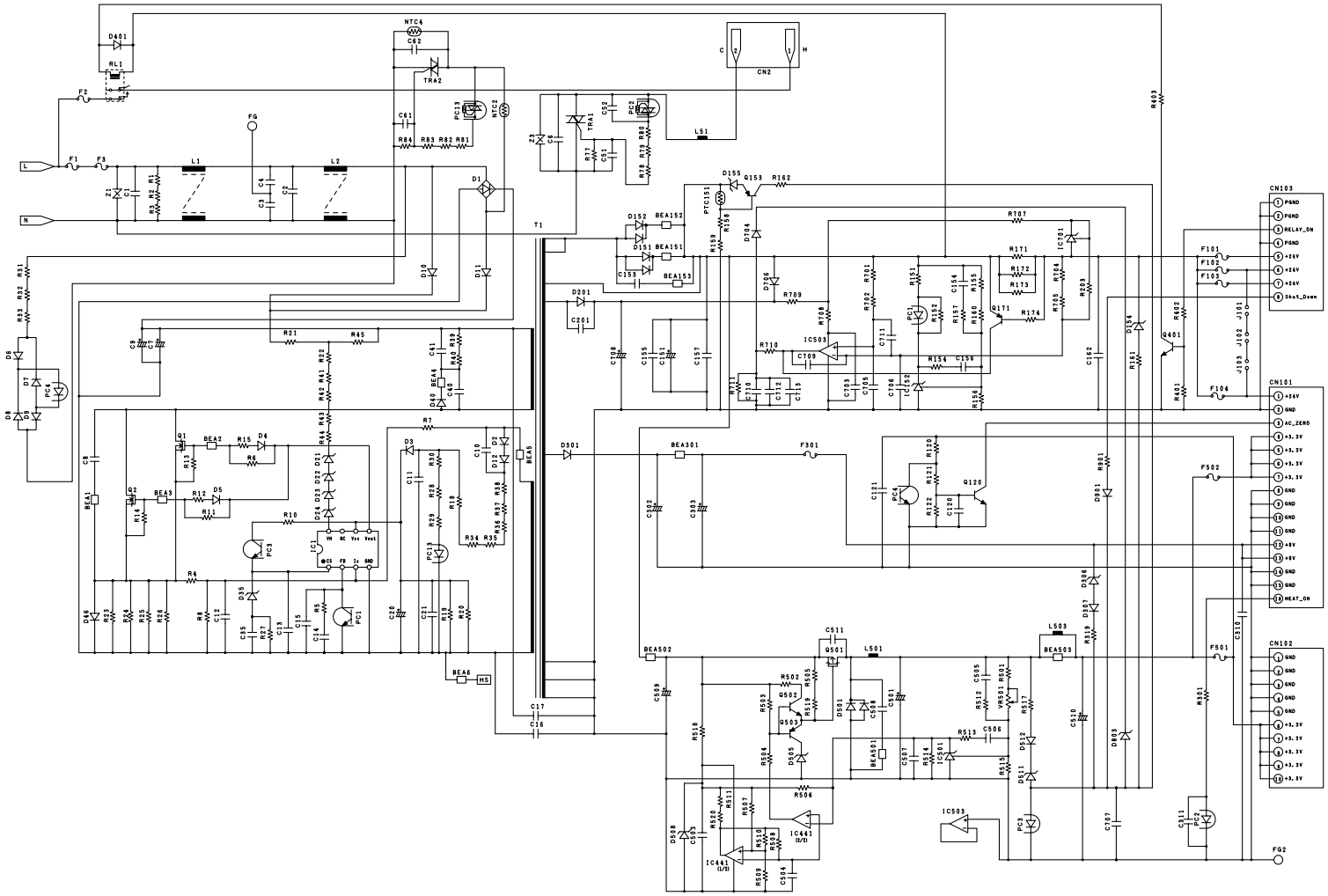




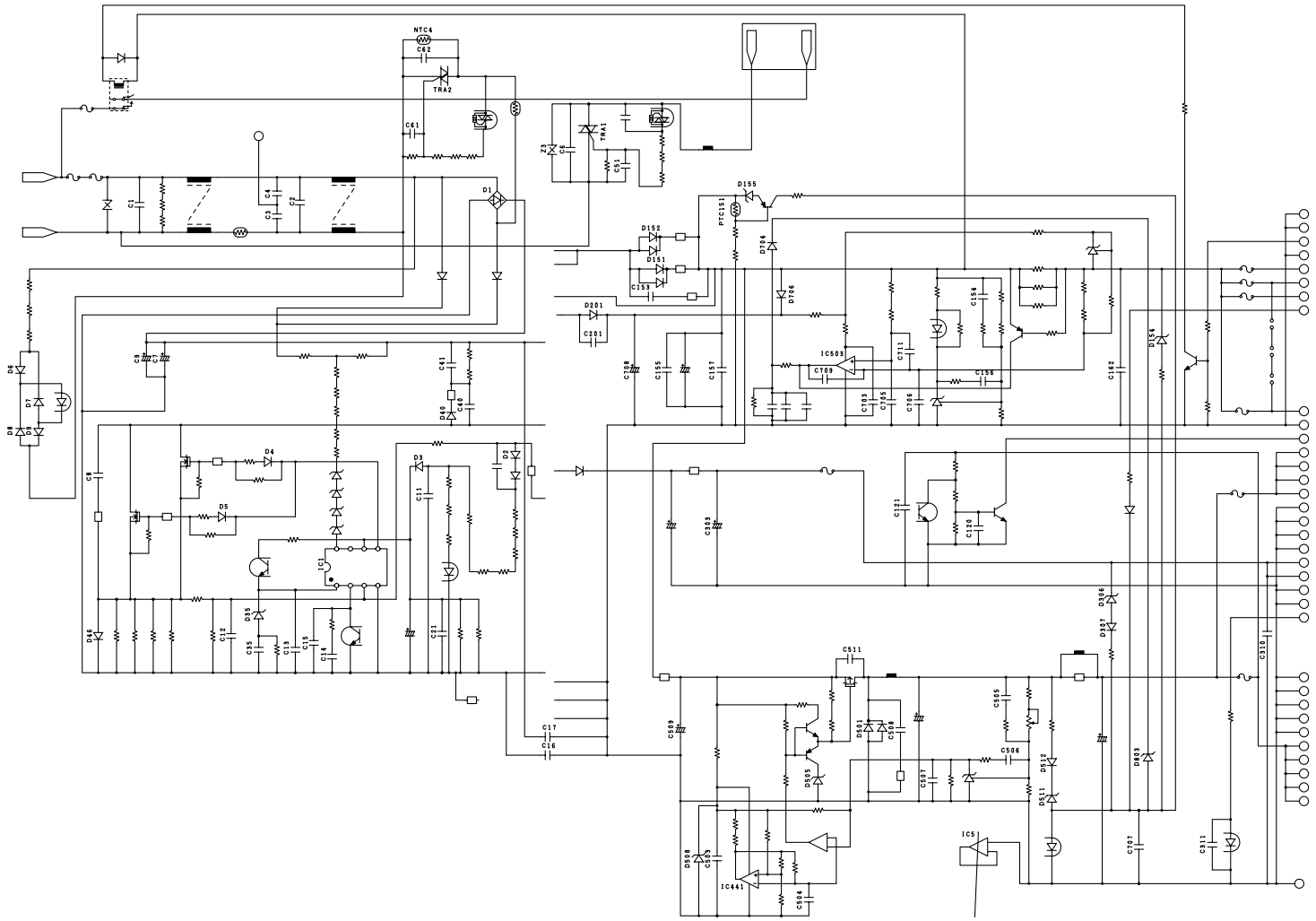
■ High-voltage Power Supply PCB Circuit Diagram MURATA: MPH3316 (3/3)



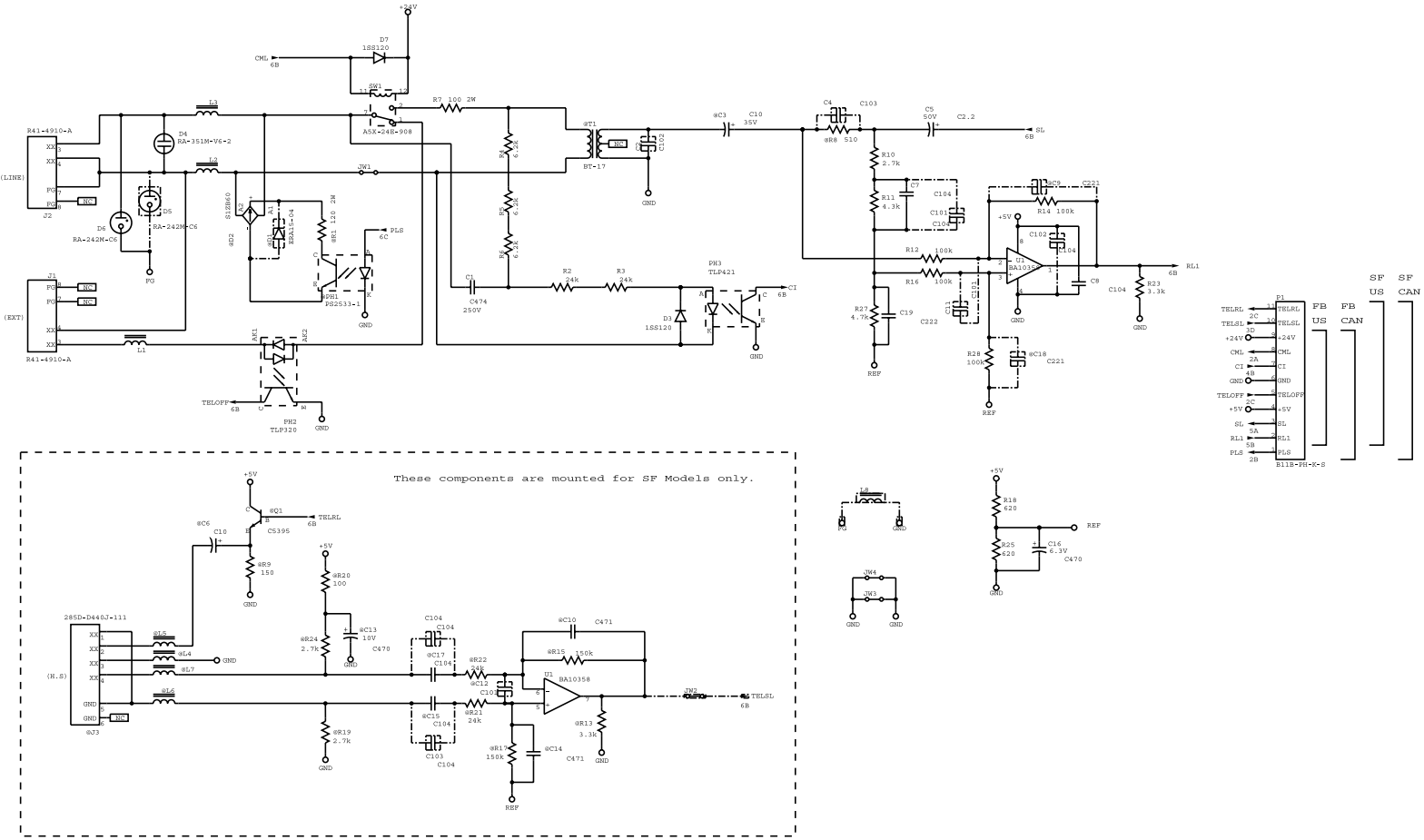
■ Low-voltage Power Supply PCB Circuit Diagram (100V)



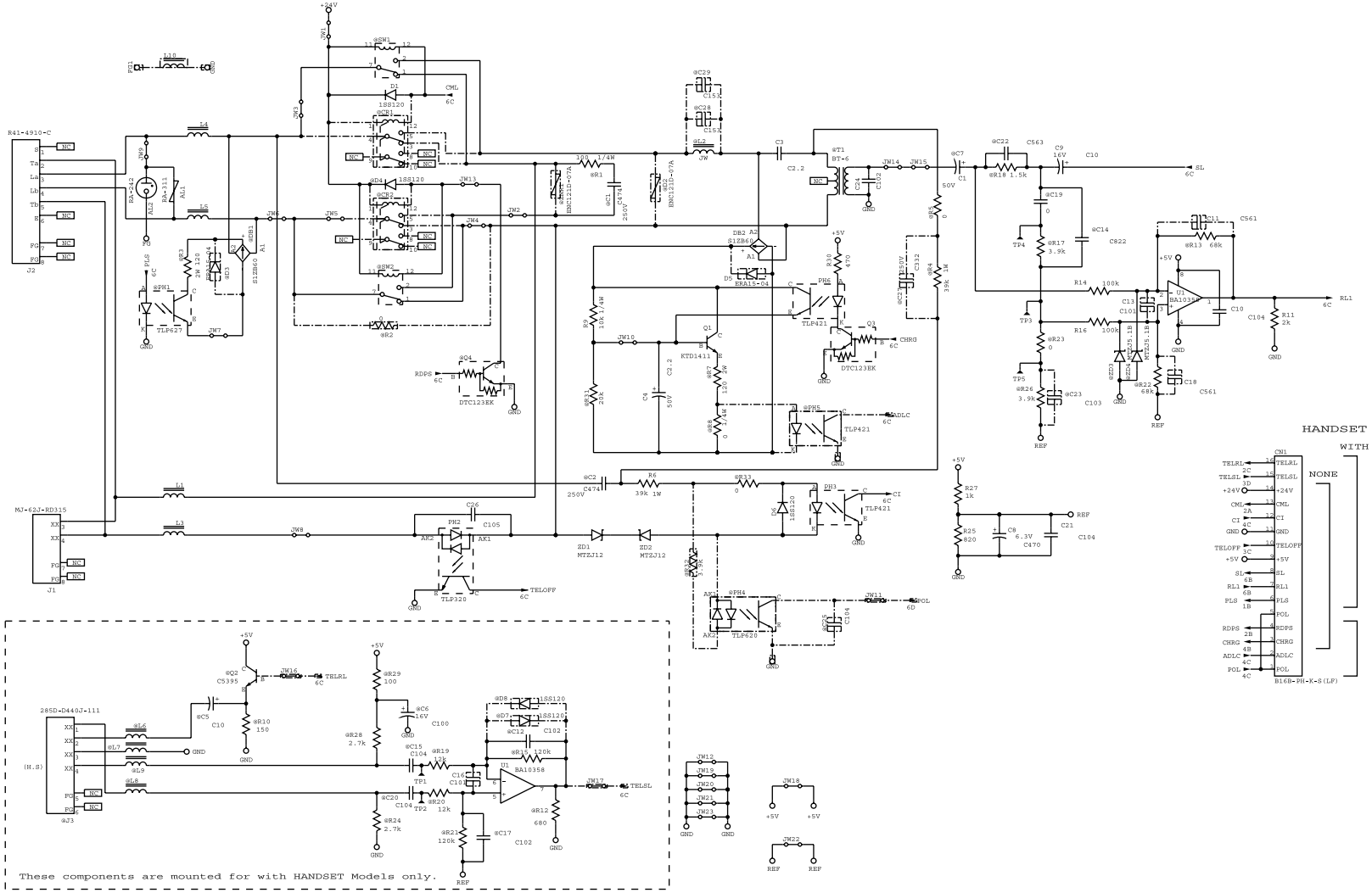
■ Low-voltage Power Supply PCB Circuit Diagram (200V)



■ NCU PCB Circuit Diagram: USA/ Canada



■ NCU PCB Circuit Diagram: Europe/Asia/Oceania/China



APPENDIX 1.
WORKER SWITCH (WSW)

This appendix describes the functions of the worker switches.

Each of the firmware switches 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 worker switch tables in this appendix.

WORKER SWITCH (WSW)

This appendix describes the functions of the worker switches.
It is not allowed to access all of those selectors, but it is allowed to access the selectors **shaded** in the worker switch table.

■ Worker switch

WSW No.	Function	Refer to:
WSW01	Dial pulse setting	App. 1-4
WSW02	Tone signal setting	App. 1-5
WSW03	PABX mode setting	App. 1-6
WSW04	Transfer facility setting	App. 1-7
WSW05	1st dial tone and busy tone detection	App. 1-8
WSW06	**Redial/Pause** button setting and 2nd dial tone detection	App. 1-9
WSW07	Dial tone setting 1	App. 1-11
WSW08	Dial tone setting 2	App. 1-12
WSW09	Protocol definition 1	App. 1-13
WSW10	Protocol definition 2	App. 1-14
WSW11	Busy tone setting	App. 1-15
WSW12	Signal detection condition setting	App. 1-16
WSW13	Modem setting	App. 1-17
WSW14	AUTO ANS facility setting	App. 1-18
WSW15	Redial facility setting	App. 1-19
WSW16	Function setting 1	App. 1-19
WSW17	Function setting 2	App. 1-20
WSW18	Function setting 3	App. 1-21
WSW19	Transmission speed setting	App. 1-22
WSW20	Overseas communications mode setting	App. 1-23
WSW21	TAD setting 1	App. 1-24
WSW22	ECM and call waiting caller ID	App. 1-24
WSW23	Communications setting	App. 1-25
WSW24	TAD setting 2	App. 1-26
WSW25	TAD setting 3	App. 1-26
WSW26	Function setting 4	App. 1-27
WSW27	Function setting 5	App. 1-28

WSW No.	Function	Refer to:
WSW28	Function setting 6	App. 1-28
WSW29	Function setting 7	App. 1-29
WSW30	Function setting 8	App. 1-29
WSW31	Function setting 9	App. 1-30
WSW32	Function setting 10	App. 1-30
WSW33	Function setting 11	App. 1-31
WSW34	Function setting 12	App. 1-31
WSW35	Function setting 13	App. 1-31
WSW36	Function setting 14	App. 1-32
WSW37	Function setting 15	App. 1-33
WSW38	V.34 transmission settings	App. 1-34
WSW39	V.34 transmission speed	App. 1-35
WSW40	V.34 modem settings	App. 1-36
WSW41	ON-duration of the scanning light source	App. 1-37
WSW42	Internet mail settings	App. 1-37
WSW43	Function setting 16	App. 1-38
WSW44	Speeding up scanning-1	App. 1-38
WSW45	Speeding up scanning-2	App. 1-39
WSW46	Monitor of power ON/OFF state and parallel port kept at high	App. 1-40
WSW47	Switching between high- and full-speed USB	App. 1-41
WSW48	USB setup latency	App. 1-41
WSW49	End-of-copying beep and print in black	App. 1-42
WSW50	SDAA settings	App. 1-42
WSW51	Function setting 17	App. 1-43
WSW52	Function setting 18	App. 1-43
WSW53	Function setting 19	App. 1-43
WSW54	Function setting 20	App. 1-44
WSW55	Interval of time requred for the developing bias voltage correction	App. 1-45
WSW56	Function setting 21	App. 1-45
WSW57	Function setting 22	App. 1-46
WSW58	Function setting 23	App. 1-46
WSW59	Function setting 24	App. 1-47
WSW60	Function setting 25	App. 1-48

WSW No.	Function	Refer to:
WSW61	Scanning light intensity to judge to be stable 1	App. 1-49
WSW62	Scanning light intensity to judge to be stable 2	App. 1-49
WSW63	Function setting 26	App. 1-50
WSW64	Setting the language/Default paper size	App. 1-51
WSW65	Setting the paper support	App. 1-51
WSW66	Reserved (Change of the setting is prohibited)	App. 1-52
WSW67	Reserved (Change of the setting is prohibited)	App. 1-52
WSW68	Reserved (Change of the setting is prohibited)	App. 1-52
WSW69	Reserved (Change of the setting is prohibited)	App. 1-52
WSW70	Reserved (Change of the setting is prohibited)	App. 1-52
WSW71	Reserved (Change of the setting is prohibited)	App. 1-52
WSW72	Reserved (Change of the setting is prohibited)	App. 1-53
WSW73	Reserved (Change of the setting is prohibited)	App. 1-53
WSW74	ADF stop control	App. 1-53
WSW75	Paper feeding parameter for turning the document counter when the machine takes action duplex scanning	App. 1-53
WSW76	The limited number of the documents in reverse for paper ejection of the simplex scanning from ADF	App. 1-54
WSW77	The limited number of the documents in reverse for paper ejection of the duplex scanning from ADF	App. 1-54

The functio

■ WSW01 (

Selector
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3 4
5 6
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- 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

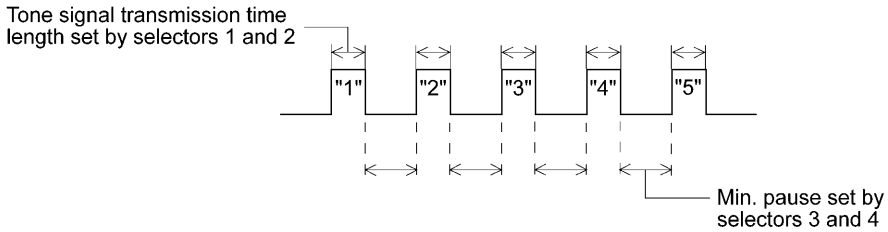
This selector sets the default dialing mode (pulse dialing or tone dialing) which can be changed by the function switch. If the user switches it with the function switch when selector 7 is set to “0,” the setting specified by this selector will also be switched automatically.

■ WSW02 (Tone signal setting)

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 | 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 (PABX mode setting)

Selector No.	Function	Setting and Specifications
1	CNG detection when sharing a modular wall socket with a telephone	0: A 1: B
2 | 4	Detection time length of PABX* dial tone, required for starting dialing (Not used.)	
5	CNG detection when sharing a modular wall socket with a telephone	0: A 1: B
6 7	Dial tone detection in PABX* (Not used.)	
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

■ WSW04 (Transfer facility setting)

Selector No.	Function	Setting and Specifications
1	Earth function in transfer facility (Not used.)	
2 3	Dual tone detection frequency in ICM recording (Not used.)	
4	Dual tone detection sensitivity in ICM recording (Not used.)	
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 I 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 through 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 One Touch button by using the function switch.

■ WSW05 (1st dial tone and busy tone detection)

Selector No.	Function	Setting and Specifications
1 I 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 USA, 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 (Redial/Pause button setting and 2nd dial tone detection)

Selector No.	Function	Setting and Specifications
1 I 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 I 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., USA.

- 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 0 1 0 0 1 1 1 0 0	If you press the **Redial/Pause** button during dialing, the machine will insert wait as defined in the above table. 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.
1 0 1 1 1 0 1 1 1	When these selectors are set to “1, 0, 1”: 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. 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 (Dial tone setting 1)

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.)	
4 I 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., USA.

- 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 (Dial tone setting 2)

Selector No.	Function	Setting and Specifications
1 I 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 I 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., USA.

- 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 (Protocol definition 1)

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 USA 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 (Protocol definition 2)

Selector No.	Function		Setting and Specifications
1	DPS switching interfacing with CML (Not used.)		
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 facsimileto- 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 (Busy tone setting)

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	ON/OFF time length ranges for busy tone (More than one setting allowed)	1: 250-750/250-750 ms
4		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 (Signal detection condition setting)

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: 1,500 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 (1,000 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.	

* 1,000 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 (Modem setting)

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 I 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 I 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 (AUTO ANS facility setting)

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 (China: 80 Hz)
5 I 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 (Redial facility setting)

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 I 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 I 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 (Function setting 1)

Selector No.	Function	Setting and Specifications
1	Not used.	
2	ITU-T (CCITT) superfine recommendation	0: OFF 1: ON
3 I 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 (Function setting 2)

Selector No.	Function	Setting and Specifications
1 2	Off-hook alarm (Not used.)	
3 4	Not used.	
5	Calendar clock type	0: USA 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 (Function setting 3)

Selector No.	Function	Setting and Specifications
1	Addition of registration of station ID for PC-FAX	0: Add 1: Not add
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 (Transmission speed setting)

Selector No.	Function	Setting and Specifications
1 I 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 1 0 0: 12,000 bps 1 0 1: 14,400 bps 1 1 0: 14,400 bps 1 1 1: 14,400 bps
4 I 6	Last transmission speed choice for fallback	
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 (Overseas communications mode setting)

Selector No.	Function	Setting and Specifications
1	EP* tone prefix	0: OFF 1: ON
2	Overseas communications mode (Reception)	0: 2,100 Hz 1: 1,100 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.)	
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 1,700 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 4,800 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 1,100 Hz CED signal instead of 2,100 Hz in receiving operation. This prevents malfunctions resulting from echoes, since the 1,100 Hz signal does not disable the echo suppressor (ES) while the 2,100 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 2,100 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 (TAD setting 1)

Selector No.	Function	Setting and Specifications
1 I 5	Max. waiting time for voice signal (Not used.)	
6 7	Taping the call (Not used.)	
8	Erasure of message stored in the memory after the message transfer	0: Yes 1: No

■ WSW22 (ECM and call waiting caller ID)

Selector No.	Function	Setting and Specifications
1	ECM* in sending	0: ON (Enabled) 1: OFF (Disabled)
2	ECM* in receiving	0: ON (Enabled) 1: OFF (Disabled)
3	Call Waiting Caller ID (Not used.)	
4	Not used.	
5 I 8	Acceptable TCF bit error rate (%) (Only at 4,800 bps) (Not used.)	

* ECM: Error correction mode

Note:
Selector 3 is applicable to the American models only.

■ WSW23 (Communications setting)

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 (TAD setting 2)

Selector No.	Function	Setting and Specifications
1 2	Maximum OGM recording time (Not used.)	
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 I 8	Attenuator for playback of ICM/OGM to the line (Not used.)	

- 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 (TAD setting 3)

Selector No.	Function	Setting and Specifications
1 2	External TAD no-tone detection start delay time (Not used.)	
3 4	External TAD no-tone detection level (Not used.)	
5 I 7	Pause between paging number and PIN	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 USA models only.

■ WSW26 (Function setting 4)

Selector No.	Function	Setting and Specifications
1 2	Not used.	
3	Dialing during document reading into the temporary memory in inmemory 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 inmemory 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 (Function setting 5)

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.)	
4	Detection of distinctive ringing pattern (Not used.)	
5	Not used.	
6	Recording quality (Not used.)	
7	Recording time for high recording quality (Not used.)	
8	Not used.	

Note:
Selectors 4 and 5 are applicable to the USA models only.

- Selector 2: Ringer OFF setting

This selector determines whether or not the ringer can be set to OFF.

■ WSW28 (Function setting 6)

Selector No.	Function	Setting and Specifications
1 I 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 I 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 (Function setting 7)

Selector No.	Function	Setting and Specifications
1 I 3	Compression threshold level for voice signals inputted via the telephone line in the built-in TAD operation (Not used.)	
4 I 6	Compression threshold level for voice signals inputted via the handset in the built-in TAD operation (Not used.)	
7	Impedance switching control in pulse dialing (Not used.)	
8	Prompt beep when the memory area for the activity report becomes full (Not used.)	

Note:
Selectors 7 and 8 are applicable only to the European versions.

■ WSW30 (Function setting 8)

Selector No.	Function	Setting and Specifications
1 I 3	Dial tone/busy tone detection level during recording of ICM (Not used.)	
4 I 6	Not used.	
7	Scanning magnification adjusting function (Not used.)	
8	Not used.	

■ WSW31 (Function setting 9)

Selector No.	Function	Setting and Specifications
1	Not used.	
2	Default reduction rate for failure of automatic reduction during recording	0: ON 1: OFF
3	Not used.	
4	Do not disturb this selector.	
5	Minimum ON and OFF duration of ringer signals effective in distinctive ringing (Not used.)	
6 I 7	Not used.	
8	Drum life indication	0: No 1: Yes

Note:
Selector 5 is applicable only to the USA 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,” (ON) the machine records one-page data at full size (100%) without reduction; if it is set to “1,” (OFF) the machine records it at 70% size.

■ WSW32 (Function setting 10)

Selector No.	Function	Setting and Specifications
1 I 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 (Function setting 11)

Selector No.	Function	Setting and Specifications
1 I 3	Detection threshold level of “no tone” during recording of ICM (Not used.)	
4 5	FAX receiving speed to be kept within the transmission speed limit to the PC (Not used.)	
6	Report output of polled transmission requests	0: Yes 1: No
7 8	Comfortable noise level (Not used.)	

■ WSW34 (Function setting 12)

Selector No.	Function	Setting and Specifications
1 I 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.)	
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.)	
6 7	Number of DTMF tone signals for inhibiting the detection of CNG during external TAD operation (Not used.)	
8	Not used.	

■ WSW35 (Function setting 13)

Selector No.	Function	Setting and Specifications
1 I 4	Max. detection period of dial tone/ busy tone during recording of ICM (Not used.)	
5 I 8	Not used.	

■ WSW36 (Function setting 14)

Selector No.	Function	Setting and Specifications
1	ECP mode* (Not used.)	
2	Recovery from Inactive PC Interface (Not used.)	
3	PC Power-off Recognition Time (Not used.)	
4	Not used.	
5	Escape from phase C	0: Yes 1: No
6 I 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 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 (Function setting 15)

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 inmemory message transmission	0: No 1: Yes
3 I 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 (V.34 transmission settings)

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 1,800 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 33,600 bps to 28,800 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 (V.34 transmission speed)

Selector No.	Function	Setting and Specifications
1 I 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 I 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 (V.34 modem settings)

Selector No.	Function	Setting and Specifications
1 2	Not used.	
3 I 8	Masking of symbol rate(s)	Not masking Masking No. 3 0 1 3,429 symbols/sec No. 4 0 1 3,200 symbols/sec No. 5 0 1 3,000 symbols/sec No. 6 0 1 2,800 symbols/sec No. 7 - - Not used. No. 8 0 1 2,400 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 3,429 symbols/second when the first transmission speed choice is 33,600 bps (specified by selectors 1 through 4 of WSW39), for example, then the allowable maximum transmission speed will be limited to 31,200 bps. If selector 8 is set to “1” to mask the 2,400 symbols/second when the first transmission speed choice is 33,600 bps, then the allowable maximum transmission speed remains 33,600 bps.

If selector 8 is set to “1” to mask the 2,400 symbols/second when the first transmission speed choice is 21,600 bps (specified by selectors 1 through 4 on WSW39), then the allowable maximum transmission speed remains 21,600 bps but the minimum transmission speed will be limited to 4,800 bps.

Symbol rate	Transmission speed (bps)	Symbol rate	Transmission speed (bps)	Symbol rate	Transmission speed (bps)
2,400	2,400	3,000	4,800	3,429	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
2,800	4,800	3,200	4,800		31,200
	7,200		7,200		33,600
	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		
			26,400		
			28,800		
			31,200		

■ WSW41 (ON-duration of the scanning light source)

Selector No.	Function	Setting and Specifications
1 I 3	ON-duration of the scanning light source at room temperature (Not used.)	
4	I-FAX relay report (Not used.)	
5 I 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 I 1 1 1 1: -25 dBm

- 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 (Internet mail settings)

Selector No.	Function	Setting and Specifications
1	Access to the incoming mail (POP3) server (Periodical or on-demand) (Not used.)	
2	Access to the outgoing mail (SMTP) serve (Not used.)	
3	I-FAX relay (Not used.)	
4	JBIG encoding system	0: Not allowed 1: Allowed
5	Drum discharge detection (Not used.)	
6 I 8	Not used.	

■ WSW43 (Function setting 16)

Selector No.	Function	Setting and Specifications
1	Header for sent mail (Station ID) (Not used.)	
2 3	Wait time for PC-Fax reception (Class 2) and FPTS command transmission	No. 2 3 0 0: 50 ms 0 1: 100 ms 1 0: 150 ms 1 1: 0 ms
4 5	Detection time of 2100 Hz CED or ANSam	No. 4 5 0 0: 200 ms 0 1: 300 ms 1 0: 400 ms 1 1: 500 ms
6	Not used.	
7	Automatic start of remote maintenance (Not used.)	
8	JPEG coding	0: Disable 1: Enable

- 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 (Speeding up scanning-1)

Selector No.	Function	Setting and Specifications
1 I 5	Copying speed control (Not used.)	
6 I 8	Effective time length of the white level compensation data obtained beforehand (Not used.)	

■ WSW45 (Speeding up scanning-2)

Selector No.	Function	Setting and Specifications
1 I 3	Delay time from when documents are set until the ADF starts drawing them in (Not used.)	
4 I 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 CIS unit	0: CIS home position 1: Location of the white-level reference film
8	Line polarity reverse detection function	0: No 1: Yes

- 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 CIS unit

This selector determines whether the standby position of the CIS 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 CIS unit will not return to the home position so as to shorten the travel time, decreasing the preparation time for copying.

■ WSW46 (Monitor of power ON/OFF state and parallel port kept at high)

Selector No.	Function	Setting and Specifications
1 2	Monitoring the PC ON/OFF state (Not used.)	
3	Parallel port output pins kept at high level (Not used.)	
4	Previous filtering parameters for white level compensation	0: Enable 1: Disable
5 I 8	Not used.	

Note:
Selector 4 is not applicable to models equipped with flat-bed scanners.

- 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 while-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 (Switching between high- and full-speed USB)

Selector No.	Function	Setting and Specifications
1	Handling paper at the occurrence of a paper feed timing error (Not used.)	
2	Reducing to A4 from B4 and sending at the real time sending (Not used.)	
3 4	Delay of FAX line disconnection when switching to the pseudoringing external telephone (Not used.)	
5	Disable the ringer of external telephone at non-ring reception (Not used.)	
6	Not used.	
7	Disable the ringer of external telephone with CAR signal when caller ID service is available (Not used.)	
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.

■ WSW48 (USB setup latency)

Selector No.	Function	Setting and Specifications
1 2	Not used.	
3 I 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 I 8	USB setup latency (Not used.)	

■ WSW49 (End-of-copying beep and print in black)

Selector No.	Function	Setting and Specifications
1 2	RAM disc size in PCL/ PS (Not used.)	
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 (Not used.)	
8	Print in black (Not used.)	

- 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 (SDAA settings)

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.)	
3	DC mask curve table to be applied when the line is connected (Not used.)	
4	AC impedance to be applied when the line is connected (Not used.)	
5 6	Current control to be applied immediately after connection of the line (Not used.)	
7 8	AC voltage threshold for detection of ring (Not used.)	

■ WSW51 (Function setting 17)

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.)	
3 I 4	Cordless handset microphone volume (Not used.)	
5 I 7	Main unit microphone level and echo cancellation ON/OFF function (Not used.)	
8	Support between nearly empty → empty when main unit cover opened after nearly empty detected (Not used.)	

■ WSW52 (Function setting 18)

Selector No.	Function	Setting and Specifications
1 I 3	Cordless handset microphone level and echo cancellation ON/OFF (Not used.)	
4 I 6	External telephone pseudo ringing signal frequency setting (Not used.)	
7	Caller ID (number display) display after the machine has returned to TEL mode from FAX mode (Not used.)	
8	Dial display during transmission (Not used.)	

■ WSW53 (Function setting 19)

Selector No.	Function	Setting and Specifications
1 2	Not used.	
3 4	Caller ID (number display) FSK receiving timing delay setting (Not used.)	
5 6	Caller ID (number display) instantaneous interrupt detection time setting (Not used.)	
7	CNG detection retry after invalid CNG detected	0: Yes 1: No
8	Decompression of JPEG compressed file (Not used.)	

■ WSW54 (Function setting 20)

Selector No.	Function	Setting and Specifications
1 2	PictBridge command delay time	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.)	
5 6	Caller ID tone alert detection time length (U.K. only)	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 (U.K. only)	0: Yes (default) 1: No
8	Switching between DTMF and FSK for caller ID reception (China only)	0: DTMF (default) 1: FSK

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 (China only)

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 (Interval of time requred for the developing bias voltage correction)

Selector No.	Function	Setting and Specifications
1 I 8	Interval of time required for the developing bias voltage correction (hour)	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 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 (Function setting 21)

Selector No.	Function	Setting and Specifications
1	PS emulation function setting (Not used.)	
2	Switching of the PPT setting (Not used.)	
3	“Last Job Reprint” function setting (Not used.)	
4	Wireless LAN function (Not used.)	
5	Switching of the echo suppression improvement during calling (Not used.)	
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 (Not used.)	
8	Switching of the CPU sleep mode	0: Invalid 1: Valid (default)

- 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 8: Switching of the CPU sleep mode

This selector specifies the CPU sleep mode ON or OFF.

■ WSW57 (Function setting 22)

Selector No.	Function	Setting and Specifications
1 I 3	Caller ID judgment voltage (to be distinguished from rings) (Not used.)	
4 I 6	Caller ID judgment voltage (to be distinguished from reverse polarity voltages) (Not used.)	
7	Caller ID burst link time limit	0: Enable 1: Disable
8	Base unit **Start** button after cordless handset dialing (Not used.)	

■ WSW58 (Function setting 23)

Selector No.	Function	Setting and Specifications
1 I 3	Prevention of line interrupt during ICM recording (ratio of guard tone response time to call end tone ON time) (Not used.)	
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) (Not used.)	
7 8	No. of busy tone detection cycles (Not used.)	

■ WSW59 (Function setting 24)

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 (default) 1: Disable
3 I 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 USA/ 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 (default) 1: Enable

- Selector 1: USB serial number (SN) transmission enabled/disabled

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.

- Selectors 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

The language is switched to a relevant one when a file name cannot be identified.

- Selector 8: Improvement of DTMF detection function (to minimize the effects of momentary power failure or noise)

Be effective only MFC-9120CN/9125CN/9320CW/9325CW.

■ WSW60 (Function setting 25)

Selector No.	Function	Setting and Specifications
1 I 3	Not used.	
4 5	Caller ID primary closed circuit timing adjustment	No. 4 5 0 0: OFF 0 1: Fast 1 0: Normal 1 1: Slow
6	Output of CNG detection result to the activity report	0: Disable (default) 1: Enable
7 I 8	Delay time which allows a polarity inversion interrupt from polarity inversion judgment	No. 7 8 0 0: 500 ms 0 1: 750 ms 1 0: 1,000 ms 1 1: 1,500 ms

- Selector 6: Output of CNG detection result to the activity report

Setting this selector to “1” (Enable) changes the items to be listed in the activity report as follows.

FAX No./NAME	CNG DETECTION STATE (Tone detection status, calling/called status)
DURATION	RCV MODE (FAX receive mode setting)
PAGE (S)	EASY RCV (Easy receive setting)
RESULT	TRIGGER (FAX receive trigger)

■ WSW61 (Scanning light intensity to judge to be stable 1)

Selector No.	Function	Setting and Specifications
1 I 4	Change rate of the CCD scanning light intensity to judge to be stable in the long time mode (Not used.)	
5 I 8	Change rate of the CCD scanning light intensity to judge to be stable in the short time mode (Not used.)	

■ WSW62 (Scanning light intensity to judge to be stable 2)

Selector No.	Function	Setting and Specifications
1 I 4	Change rate of the CCD light intensity for scanning pages compensation (Not used.)	
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 5 through 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 (Function setting 26)

Selector No.	Function	Setting and Specifications
1 2	Switch of the print speed	No. 1 2 0 0: Speed 1 0 1: Speed 2 1 0: Speed 3 1 1: Speed 4
3	Clock type	0: Follow to WSW17 1: Japanese Type (YMD)
4 I 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 I Reserved 1111
8	Font support for Israel	0: Disable 1: Enable (default)

- 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 through 7: 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 (Setting the language/Default paper size)

Selector No.	Function	Setting and Specifications
1 I 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 I 8	Default paper size	No. 7 8 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 (Setting the paper support)

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 (Not used.)	
6	Supporting of LABEL paper	0: Disable 1: Enable
7 8	Not used.	

■ WSW66 (Reserved *Change of the setting is prohibited)

Selector No.	Function	Setting and Specifications
1 I 8	Reserved * Change of the setting is prohibited.	

■ WSW67 (Reserved *Change of the setting is prohibited)

Selector No.	Function	Setting and Specifications
1 I 8	Reserved * Change of the setting is prohibited.	

■ WSW68 (Reserved *Change of the setting is prohibited)

Selector No.	Function	Setting and Specifications
1 I 8	Reserved * Change of the setting is prohibited.	

■ WSW69 (Reserved *Change of the setting is prohibited)

Selector No.	Function	Setting and Specifications
1 I 8	Reserved * Change of the setting is prohibited.	

■ WSW70 (Reserved *Change of the setting is prohibited)

Selector No.	Function	Setting and Specifications
1 I 8	Reserved * Change of the setting is prohibited.	

■ WSW71 (Reserved *Change of the setting is prohibited)

Selector No.	Function	Setting and Specifications
1 I 8	Reserved * Change of the setting is prohibited.	

■ WSW72 (Reserved *Change of the setting is prohibited)

Selector No.	Function	Setting and Specifications
1 I 8	Reserved * Change of the setting is prohibited.	

■ WSW73 (Reserved *Change of the setting is prohibited)

Selector No.	Function	Setting and Specifications
1 I 8	Reserved * Change of the setting is prohibited.	

■ WSW74 (ADF stop control)

Selector No.	Function	Setting and Specifications
1 I 8	ADF stop control (Not used.)	

■ WSW75 (Paper feeding parameter for turning the document counter when the machine takes action duplex scanning)

Selector No.	Function	Setting and Specifications
1	The setting to increase or decrease the feed distance when a document is inverted in the 2-sided scanning (Not used.)	
2 I 8	Feed distance parameter when a document is inverted in the 2-sided scanning (Not used.)	

■ WSW76 (The limited number of the documents in reverse for paper ejection of the simplex scanning from ADF)

Selector No.	Function	Setting and Specifications
1 I 8	The limited number of the documents in reverse for paper ejection of the simplex scanning from ADF	No. 1 2 3 4 5 6 7 8 0 0 0 0 0 0 0 0: 0 0 0 0 0 0 0 0 1: 1 0 0 0 0 0 0 1 0: 2 0 0 0 0 0 0 1 1: 3 0 0 0 0 0 1 0 0: 4 I 0 1 1 0 0 0 1 1: 99 0 1 1 0 0 1 0 0 or later: Invalidity

- Selectors 1 through 8: The limited number of the documents in reverse for paper ejection of the simplex scanning from ADF

These selectors are used to set the limited number of the paper ejection under the following condition.

- The machine takes action simplex scanning from the ADF.
- The documents which are stacked on the ADF are ejected in reverse of the documents which has been scanned.

There is a possibility that loading problem or dog-ear problem occurs if the limited number is over a maximum number which machine can paper feeding.

■ WSW77 (The limited number of the documents in reverse for paper ejection of the duplex scanning from ADF)

Selector No.	Function	Setting and Specifications
1 I 8	The limited number of the documents in reverse for paper ejection of the duplex scanning from ADF	No. 1 2 3 4 5 6 7 8 0 0 0 0 0 0 0 0: 0 0 0 0 0 0 0 0 1: 1 0 0 0 0 0 0 1 0: 2 0 0 0 0 0 0 1 1: 3 0 0 0 0 0 1 0 0: 4 I 0 1 1 0 0 0 1 1: 99 0 1 1 0 0 1 0 0 or later: Invalidity

- Selectors 1 through 8: The limited number of the documents in reverse for paper ejection of the duplex scanning from ADF

These selectors are used to set the limited number of the paper ejection when the machine takes action duplex scanning from the ADF.

There is a possibility that loading problem or dog-ear problem occurs if the limited number is over a maximum number which machine can paper feeding.

APPENDIX 2.

DELETION OF USER SETTING INFORMATION etc.

This appendix provides instructions on how to delete user setting information etc. recorded in the machine.

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, then the “General Setup” will appear on the LCD and press the **OK** button.

(3) Press the ▲ or ▼ button, then the “Reset” will appear on the LCD and press the **OK** button.

(4) Press the ▲ or ▼ button, then the “All Setting” will appear on the LCD and press the **OK** button.
“1. Reset 2. Exit” will appear on the LCD.

(5) Press the **1** button to delete the User Setting Information, etc and returns to the ready mode.

APPENDIX 3.
SERIAL NUMBERING SYSTEM

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

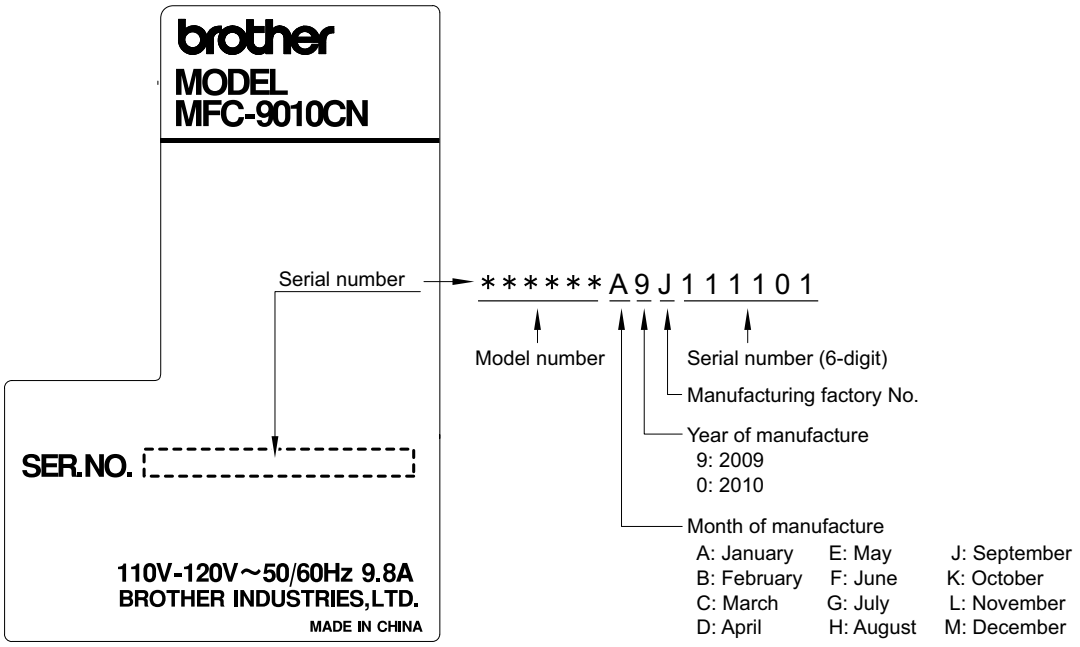


Fig. App 3-1

<Location>

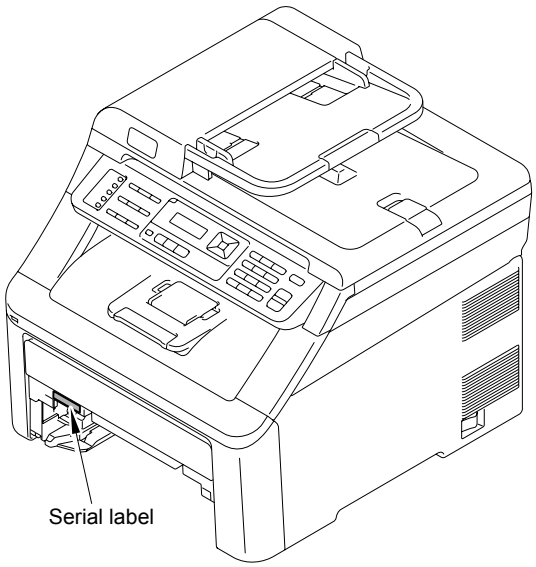


Fig. App 3-2

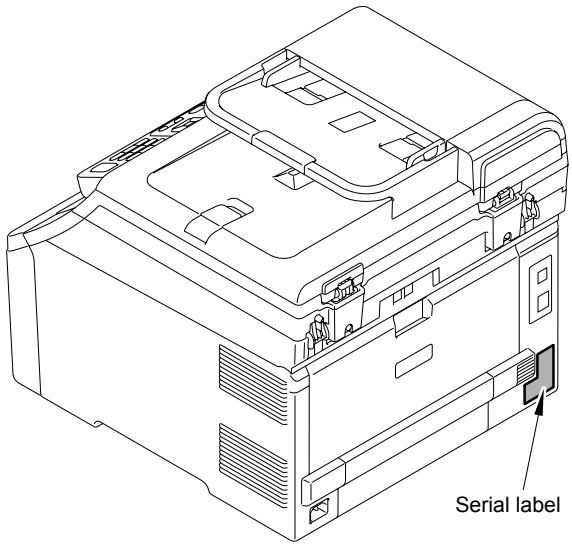


Fig. App 3-3

■ Serial number of the LED ASSY

<Print position>

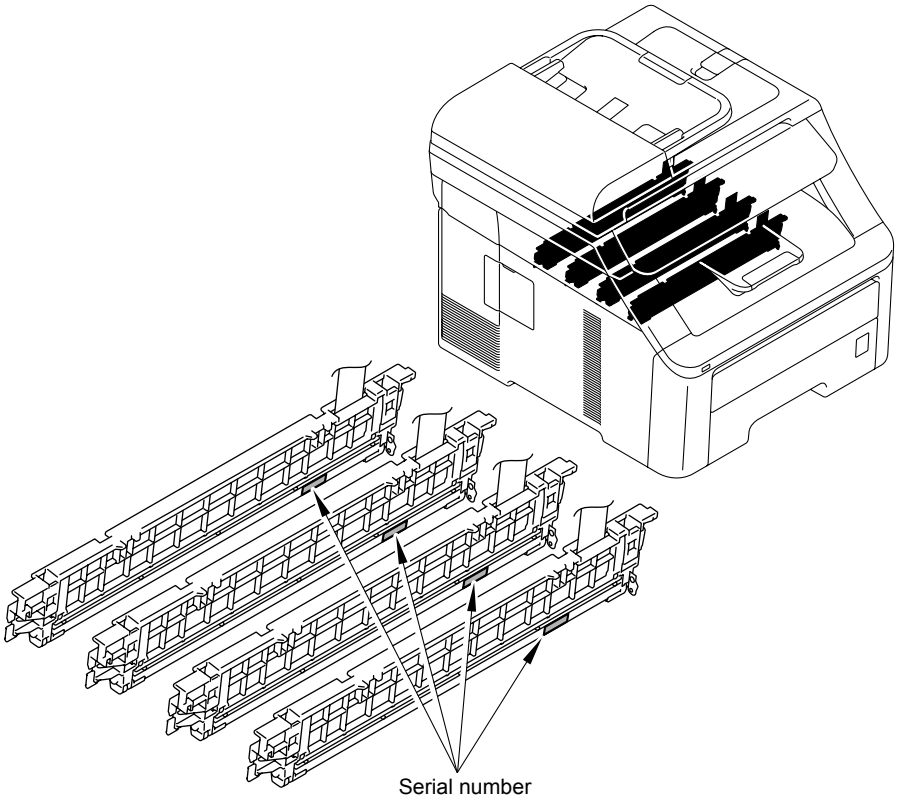
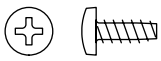
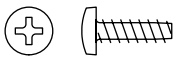
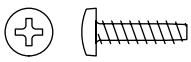
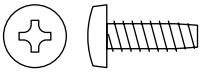


Fig. App 3-4

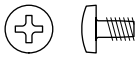
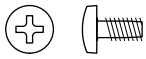
APPENDIX 4.
SCREW CATALOGUE

SCREW CATALOGUE

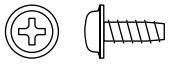
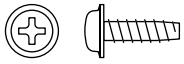
Taptite bind B

Taptite bind B M3x8	
Taptite bind B M3x10	
Taptite bind B M3x12	
Taptite bind B M4x12	

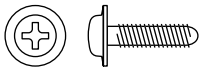
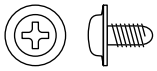
Taptite bind S

Taptite bind S M3x5	
Taptite bind S M3x6	

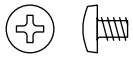
Taptite cup B

Taptite cup B M3x8	
Taptite cup B M3x10	

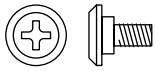
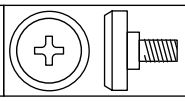
Taptite cup S

Taptite cup S M3x12	
Taptite cup S M3x6 SR	

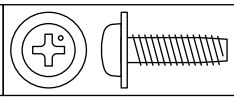
Screw bind

Screw bind M3x4	

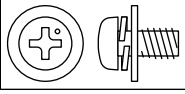
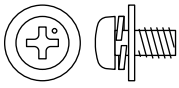
Shoulder screw

Shoulder screw	
Shoulder screw M3	

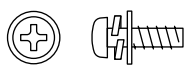
Taptite pan

Taptite pan B M4x14	

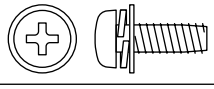
Screw pan (S/P washer)

Screw pan (S/P washer) M3.5x6	
Screw pan (S/P washer) M4x8	
Screw pan (S/P washer) M4x8 DB	

Taptite pan (S/P W)

Taptite pan (S/P W) B M3x10	

Taptite pan (washer)

Taptite pan (washer) B M4x12 DA	

APPENDIX 5.
REFERENCES

REFERENCES

This page provides reference information.
It is possible to get the full instructions of the subjects by just clicking on the links below.

1. Machine specification

(Refer to "2. SPECIFICATIONS LIST" in Chapter 1.)

2. Paper specification

(Refer to "2.5 Paper" in Chapter 1.)

3. Error codes

(Refer to "2.1 Error Codes" in Chapter 3.)

4. Error message

(Refer to "2.3 Error Cause and Remedy" in Chapter 3.)

5. Pitch indicated in roller image

(Refer to "4.2 Pitch Indicated in Roller Image" in Chapter 3.)

6. Periodical maintenance parts

(Refer to "3.1 Periodical Maintenance Parts" in Chapter 4.)

7. Reset parts life

(Refer to "2.1 Resetting the Periodical Maintenance Parts Life" in Chapter 7.)

APPENDIX 6.
GLOSSARY

GLOSSARY

■ ACRONYMS AND TECHNICAL TERMS

In this 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 this manual.

ADF	Auto Document Feeder	LCD	Liquid Crystal Display
APIPA	Automatic Private IP Addressing	LED	Light Emitting Diode
ASIC	Application Specific Integrated Circuit	LED array	The long part which is a part of LED ASSY and emits LED beams
ASSY	Assembly	LM hook	Lift-up Motion hook
C	Cyan (Color)	LV	Low Voltage
CIS	Contact Image Sensor	LVPS	Low Voltage Power Supply
CN	Connector	M	Magenta (Color)
CPU	Central Processing Unit	MP	Multi-Purpose
dB	decibel	N/A	Not Applicable
DEV	Development	NC*	Network Circuit
DIMM	Dual Inline Memory Module	NCU	Network Control Unit
dpi	dots per inch	NVRAM	Nonvolatile Random Access Memory
DX	Duplex		
EEPROM	Electronically Erasable and Programmable Read Only Memory	OPC	Organic Photo Conductor
		PF	Paper Feed
FR	Feed Roller	PP gear	Pressure Plate gear
FU	Fuser	ppm	pages per minute
HEX	Hexadecimal	PU	Pick-Up roller
HUM	Humidity	RAM	Random Access Memory
HV	High Voltage	SP	Spare Parts
HVPS	High Voltage Power Supply	SX	Simplex
IEEE 1284	Institute of Electrical and Electronic Engineers 1284	TE	Toner Empty
		THM	Thermal
IF	Interface	TN	Toner
IPv4	Internet Protocol Version 4	TR	Transfer
IPv6	Internet Protocol Version 6	USB	Universal Serial Bus
K	Black (Color)	Y	Yellow (Color)

* Excluding the acronym shown on the wiring diagram or circuit diagram.