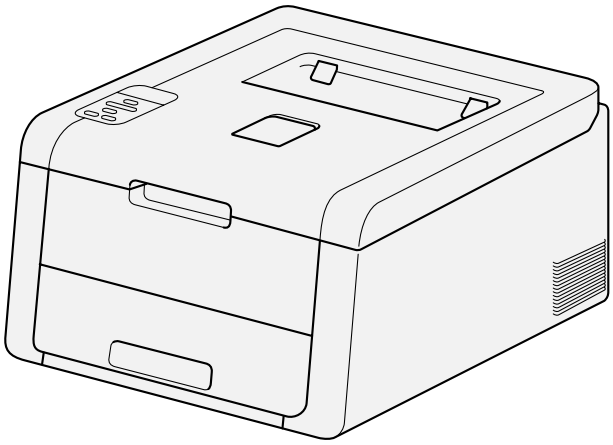
Brother Color Printer
SERVICE MANUAL

MODEL: HL-3140CW/3142CW/ 3150CDN/ 3150CDW/3152CDW/ 3170CDW/3172CDW



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

December 2012
SM-PRN088
84E40*
(8)

The table below shows the functional comparison between the models covered by this manual.

Model	HL-3140CW/ 3142CW	HL-3150CDN	HL-3150CDW/ 3152CDW	HL-3170CDW/ 3172CDW
Wired LAN	---	√	√	---
Wireless LAN	√	---	√	√
2-sided printing	---	√	√	√
Back light	---	---	---	√

Specifications are subject to change without notice.

TRADEMARKS

The Brother logo is a registered trademark of Brother Industries, Ltd.

Brother is a registered trademark of Brother Industries, Ltd.

Windows Vista is either a registered trademark or trademark of Microsoft Corporation in the United States and/or other countries.

Microsoft, Windows, Windows Server and Internet Explorer are registered trademarks of Microsoft Corporation in the United States and/or other countries.

Apple, Macintosh, Safari and Mac OS are trademarks of Apple Inc., registered in the U.S.A. and other countries. AirPrint is a trademark of Apple Inc.

Adobe, Illustrator, PostScript and PostScript 3 are either registered trademarks or trademarks of Adobe Systems Incorporated in the United States and/or other countries.

PowerPC is a registered trademark of IBM in the United States and/or other countries.

AOSS is a trademark of Buffalo Inc.

Wi-Fi Direct, Wi-Fi Protected Setup, WPA, WPA2, and Wi-Fi Protected Access are marks of the Wi-Fi Alliance.

Wi-Fi CERTIFIED, Wi-Fi and Wi-Fi Alliance are registered marks of the Wi-Fi Alliance.

Intel and Pentium are trademarks of Intel Corporation in the U.S.A. and other countries.

AMD is a trademark of Advanced Micro Devices, Inc.

Android is a trademark of Google Inc.

Linux is the registered trademark of Linus Torvalds in the U.S.A. and other countries.

Each company whose software title is mentioned in this manual has a Software License Agreement specific to its proprietary programs.

Any trade names and product names of companies appearing on Brother products, related documents and any other materials are all trademarks or registered trademarks of those respective companies.

CONTENTS

CHAPTER 3 DISASSEMBLY AND ASSEMBLY

CHAPTER 4 ADJUSTMENTS AND UPDATING OF SETTINGS, REQUIRED AFTER PARTS REPLACEMENT

APPENDIX 1 SERIAL NUMBERING SYSTEM

APPENDIX 2 DELETION OF USER SETTING INFORMATION, ETC.

APPENDIX 3 INSTALLING THE MAINTENANCE PRINTER DRIVER

SAFETY INFORMATION

■ Definitions of Warnings, Cautions, Notes and Memos

The following conventions are used in this manual:

Mark	Contents
	WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injuries.
	CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injuries.
	IMPORTANT indicates a potentially hazardous situation which, if not avoided, may result in damage to property or loss of product functionality.
	Prohibition icons indicate actions that must not be performed.
	Electrical Hazard icons alert you to possible electrical shock.
	Fire hazard icons alert you to the possibility of fire.
	Hot Surface icons warn you not to touch product parts that are hot.
Note	Notes tell you how you should respond to a situation that may arise or give tips about how the operation works with other features.
Memo	Memo tells you bits of knowledge to help understand the machine.

■ To use the Machine Safely

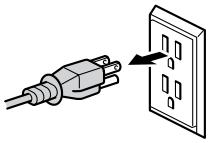
Please keep these instructions for later reference and read them before attempting any maintenance. If you do not follow these safety instructions, there is a possibility of a fire, electrical shock, burn or suffocation.

WARNING

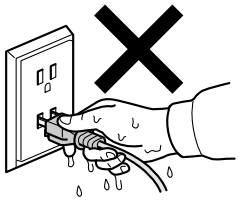
ELECTRICAL HAZARDS

Failure to follow the warnings in this section may create the risk of an electrical shock. In addition, you could create an electrical short, which may create the risk of a fire.

There are high voltage electrodes inside the product. Before you access the inside of the product, including for routine maintenance such as cleaning, make sure you have unplugged the power cord from the AC power outlet, as well as Ethernet (RJ-45) cables (Network models only) from the product. Never push objects of any kind into this product through cabinet slots, since they may touch dangerous voltage points or short out parts.



DO NOT handle the plug with wet hands.



DO NOT use this product during an electrical storm.

Always make sure the plug is fully inserted.
DO NOT use the product or handle the cord if the cord has become worn or frayed.

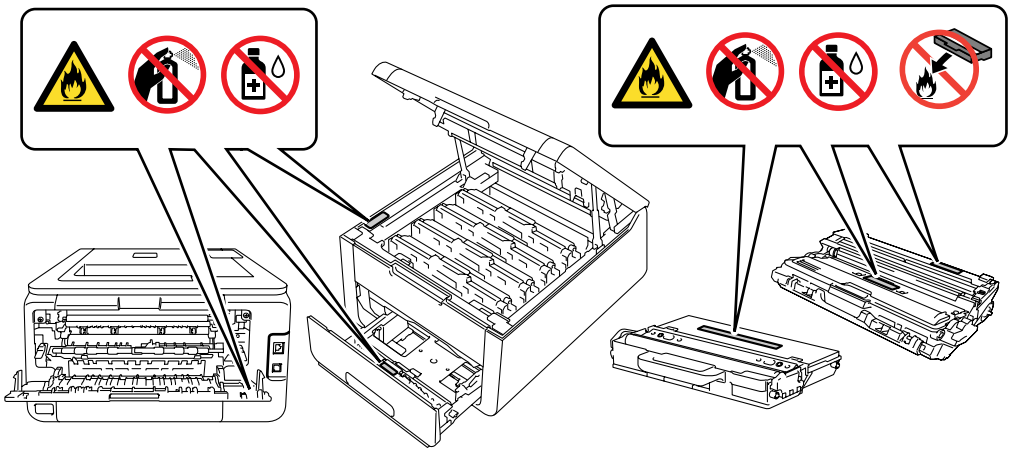
DO NOT allow this product to come into contact with water.

This product should be connected to an AC power source within the range indicated on the rating label. DO NOT connect it to a DC power source or inverter.

Power Cord Safety:

- This product is equipped with a 3-wire grounded plug. This plug will only fit into a grounded power outlet. This is a safety feature. DO NOT defeat the purpose of the grounded plug.
- Use only the power cord supplied with this product.
- DO NOT allow anything to rest on the power cord. DO NOT place this product where people can walk on the cord. DO NOT place this product in a position where the cord is stretched or strain is otherwise put on the cord. Doing so may cause the cord to become worn or frayed.
- We DO NOT advise using an extension cord.

- DO NOT put a toner cartridge, a toner cartridge and drum unit assembly, or a waste toner box into a fire. It could explode, resulting in injuries.
- DO NOT use flammable substances, any type of spray, or an organic solvent/liquid containing alcohol or ammonia to clean the inside or outside of the product. Doing so could cause a fire or electrical shock. Instead, use only a dry, lint-free cloth.

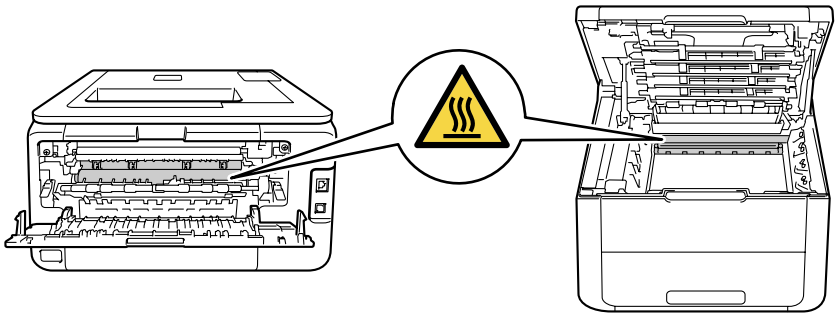


DO NOT attempt to operate this product with a paper jam or with stray pieces of paper inside the product. Prolonged contact of the paper with the fuser unit could cause a fire.

DO NOT use a vacuum cleaner to clean up scattered toner. Doing this might cause the toner dust to ignite inside the vacuum cleaner, potentially starting a fire. Please carefully clean the toner dust with a dry, lint-free soft cloth and dispose of it according to local regulations.

HOT SURFACE

After you have just used the product, some internal parts of the product will be extremely hot. Wait at least 10 minutes for the product to cool down before you touch the internal parts of the product.



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

1. SPECIFICATIONS LIST

1.1 General

Model		HL-3140CW/ HL-3142CW	HL-3150CDN	HL-3150CDW/ HL-3152CDW	HL-3170CDW/ HL-3172CDW
Print method		Electrophotographic LED Printer (Single-pass)			
Resolution		600 x 600 dpi, 2,400 dpi (600 x 2,400 dpi) quality (Except for China) 600 x 600 dpi (for China)			
Print speed	One-sided	Monochrome/Full Color: Up to 18/19 ppm (A4/Letter size) (Except for HL-3150CDN for China) Up to 22/23 ppm (A4/Letter size) (for HL-3150CDN for China)			Monochrome/ Full Color: Up to 22/23 ppm (A4/ Letter size)
	Two-sided	N/A	Monochrome/Full Color: Up to 7/7 sides per minute (3.5/3.5 sheets per minute) (A4/Letter size) * When loading A4 or Letter size paper from the paper tray.		
Warm-up time	From Sleep mode	Less than 24 seconds at 73.4 F (23 °C/50 %)			
	From Power OFF → ON	Less than 25 seconds at 73.4 F (23 °C/50 %)			
First print time	From Ready mode	Monochrome/Full Color: Less than 16/16 seconds			
	From Sleep mode	Monochrome/Full Color: Less than 32/32 seconds			
CPU		333 MHz			
Memory		64 MB			128 MB
Interface		Hi-Speed USB 2.0, IEEE 802.11 b/g/n (Infrastructure Mode/ Ad-hoc Mode) IEEE 802.11 g/n (Wi-Fi Direct)	Hi-Speed USB 2.0, 10Base-T/ 100Base-TX	Hi-Speed USB 2.0, 10Base-T/100Base-TX IEEE 802.11 b/g/n (Infrastructure Mode/ Ad-hoc Mode) IEEE 802.11 g/n (Wi-Fi Direct)	

Specifications are subject to change without notice.

Model		HL-3140CW/ HL-3142CW	HL-3150CDN	HL-3150CDW/ HL-3152CDW	HL-3170CDW/ HL-3172CDW
Power consumption	Peak	Average: Approximately 1,152 W			
	Printing	Average: Approximately 365 W (for the U.S.A.) Average: Approximately 335 W (Except for the U.S.A.)			Average: Approximately 410 W (for the U.S.A.) Average: Approximately 380 W (Except for the U.S.A.)
	Ready	Average: Approximately 65 W (for the U.S.A.) Average: Approximately 60 W (Except for the U.S.A.)			Average: Approximately 70 W (for the U.S.A.) Average: Approximately 60 W (Except for the U.S.A.)
	Sleep	Average: Approximately 7.0 W (for the U.S.A.) Average: Approximately 5.5 W (Except for the U.S.A.)			
	Deep Sleep	Average: Approximately 0.61 W (for the U.S.A.) Average: Approximately 0.57 W (Except for the U.S.A.)			
	Power OFF	Average: Approximately 0.03 W (for the U.S.A.) Average: Approximately 0.05 W (Except for the U.S.A.)			

Specifications are subject to change without notice.

Model		HL-3140CW/ HL-3142CW	HL-3150CDN	HL-3150CDW/ HL-3152CDW	HL-3170CDW/ HL-3172CDW
Noise level	Sound pressure (Printing)	LpAm = 53.0 dB (A)			
	Sound pressure (Ready)	LpAm = 33.0 dB (A)			
	Sound power (Printing)	Full Color: LWAd = 6.31 B (A) Monochrome: LWAd = 6.30 B (A)			Full Color: LWAd = 6.43 B (A) Monochrome: LWAd = 6.42 B (A)
	Sound power (Ready)	LWAd = 4.15 B (A)			LWAd = 4.53 B (A)
Environment	Temperature	Operating: 10 to 32.5 °C Storage: 0 to 40 °C			
	Humidity	Operating: 20 to 80 % (without condensation) Storage: 10 to 90 % (without condensation)			
Dimensions	Carton size	597 x 521 x 364 mm (23.5 x 20.5 x 14.3 inch) (Except for China) 607 x 543 x 372 mm (23.9 x 21.4 x 14.6 inch) (for China)			
	Machine size	410 x 465 x 240 mm (16.1 x 18.3 x 9.45 inch)			
Weights	without Carton with toner/drum	17.0 kg/37.5 lb (for the U.S.A.) 17.4 kg/38.4 lb (for Europe)	17.7 kg/39.0 lb (for the U.S.A.) 18.4 kg/40.6 lb (for Oceania, Asia) 17.8 kg/39.2 lb (for Europe, China)		17.7 kg/39.0 lb (for the U.S.A.) 18.4 kg/40.6 lb (for Oceania, Asia) 18.1 kg/39.9 lb (for Europe) 17.8 kg/39.2 lb (for China)
LCD Size		1.85 x 0.20 inch			

Specifications are subject to change without notice.

<Computer requirements>

Computer Platform & Operating System Version		Processor Minimum Speed	Hard Disk Space to install	Supported PC Interface[*2]
Windows® Operating System[*1]	Windows® XP Home Edition	32 bit (x86) or 64 bit (x64) processor	80 MB	USB, 10Base-T/ 100Base-TX Ethernet, Wireless IEEE 802.11 b/g/n (Infrastructure Mode/Ad-hoc Mode) IEEE 802.11 g/n (Wi-Fi Direct)
	Windows® XP Professional			
	Windows® XP Professional x64 Edition	64 bit (x64) processor		
	Windows Vista®	32 bit (x86) or 64 bit (x64) processor		
	Windows® 7			
	Windows® 8			
	Windows Server® 2003	32 bit (x86) or 64 bit (x64) processor		
	Windows Server® 2003 x64 Edition	64 bit (x64) processor		
	Windows Server® 2008	32 bit (x86) or 64 bit (x64) processor		
	Windows Server® 2008 R2	64 bit (x64) processor		
	Windows Server® 2012			
Macintosh Operating System	Mac OS X v10.6.8	Intel® Processor		
	OS X v10.7.x			
	OS X v10.8.x			

[*1] Microsoft® Internet Explorer® 6.0 or greater.

[*2] Third-party USB ports are not supported.

Specifications are subject to change without notice.

1.2 Network Connectivity

Model		HL-3140CW/ HL-3142CW	HL-3150CDN	HL-3150CDW/ HL-3152CDW	HL-3170CDW/ HL-3172CDW
Wired network	Network node type	N/A	NC-8500h		
	Network type	N/A	10Base-T/100Base-TX		
	Network security	N/A	APOP, POP before SMTP, SMTP-AUTH, SSL/TLS (IPPS, HTTPS, SMTP, POP), SNMP v3 802.1x (EAP-MD5, EAP-FAST, PEAP, EAP-TLS, EAP-TTLS), Kerberos		
Wireless network	Network node type	NC-8100w	N/A	NC-8100w	
	Network type	IEEE 802.11 b/g/n IEEE 802.11 g/n (Wi-Fi Direct)	N/A	IEEE 802.11 b/g/n IEEE 802.11 g/n (Wi-Fi Direct)	
	Communication mode	Infrastructure, Adhoc	N/A	Infrastructure, Adhoc	
	Network security	APOP, POP before SMTP, SMTP-AUTH, SSL/TLS (IPPS, HTTPS, SMTP, POP), SNMP v3 802.1x (LEAP, EAP-FAST, PEAP, EAP-TLS, EAP-TTLS), Kerberos	N/A	APOP, POP before SMTP, SMTP-AUTH, SSL/TLS (IPPS, HTTPS, SMTP, POP), SNMP v3 802.1x (LEAP, EAP-FAST, PEAP, EAP-TLS, EAP-TTLS), Kerberos	

Specifications are subject to change without notice.

1.3 Service Information

Model		HL-3140CW/ HL-3142CW	HL-3150CDN	HL-3150CDW/ HL-3152CDW	HL-3170CDW/ HL-3172CDW
Machine life		100,000 pages (A4/Letter size) or 5 years			
MTBF		4,000 hours			
MTTR		0.5 hours			
Maximum monthly volume		Up to 30,000 pages			
Periodical replacement parts	Fuser unit	Up to 50,000 pages			
	PF kit 1	Up to 50,000 pages			

* As for replacement of the periodical maintenance parts, refer to “PERIODICAL MAINTENANCE” in Chapter 7.

Specifications are subject to change without notice.

1.4 Supplies

<table>
<tr><td colspan="3">Model</td><td>HL-3140CW/
HL-3142CW</td><td>HL-3150CDN</td><td>HL-3150CDW/
HL-3152CDW</td><td>HL-3170CDW/
HL-3172CDW</td></tr>
<tr><td rowspan="6">Toner cartridge</td><td rowspan="2">Starter Toner *1</td><td>Black</td><td colspan="4">Approximately 1,000 pages</td></tr>
<tr><td>Cyan, Magenta, Yellow</td><td colspan="4">Approximately 1,000 pages</td></tr>
<tr><td rowspan="2">Standard Toner</td><td>Black</td><td colspan="4">Approximately 2,500 pages</td></tr>
<tr><td>Cyan, Magenta, Yellow</td><td colspan="4">Approximately 1,400 pages</td></tr>
<tr><td rowspan="2">High Yield Toner</td><td>Black</td><td colspan="4">N/A</td></tr>
<tr><td>Cyan, Magenta, Yellow</td><td colspan="4">Approximately 2,200 pages</td></tr>
<tr><td colspan="7">* When printing A4/Letter size one-sided pages in accordance with ISO/IEC 19798.
Self life: 2 years without opening (6 months after opening)</td></tr>
<tr><td colspan="3">Drum unit</td><td colspan="4">Life expectancy: Approximately 15,000 pages (1 page/job)
The life expectancy varies according to the use condition.
Shelf life: 2 years</td></tr>
<tr><td colspan="7">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 % (without condensation)
* Storage condition at the humidity of 85 to 95 %: Up to 5 days (without condensation)
* Storage condition at the humidity of 10 to 35 %: Up to 5 days (without condensation)</td></tr>
<tr><td colspan="3">Belt unit</td><td colspan="4">Life expectancy: Approximately 50,000 pages/belt unit
Their life expectancy varies according to use the condition.</td></tr>
<tr><td colspan="3">Waste toner box</td><td colspan="4">Life expectancy: Approximately 50,000 pages/waste toner box</td></tr>
</table>

*1 Toner supplied with the machine.

Specifications are subject to change without notice.

1.5 Paper

1.5.1 Paper handling

Model		HL-3140CW/ HL-3142CW	HL-3150CDN	HL-3150CDW/ HL-3152CDW	HL-3170CDW/ HL-3172CDW
Paper Input	Paper tray	250 sheets			
	Manual feed slot	1 sheet			
Paper Output	Face-down	100 sheets (80 g/m^2)			
	Face-up	1 sheet (Straight paper path)			
2-sided		N/A	Yes		

Specifications are subject to change without notice.

1.5.2 Media specifications

Model		HL-3140CW/ HL-3142CW	HL-3150CDN	HL-3150CDW/ HL-3152CDW	HL-3170CDW/ HL-3172CDW
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, Envelope, Env. Thin, Env.Thick, Glossy Paper			
	2-sided	Plain Paper, Thin Paper, Recycled Paper			
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)			
	2-sided	60 to 105 g/m^2 (16 to 28 lb)			
Media size	Paper tray	A4, Letter, B5 (JIS), A5, A5 (Long Edge), A6, Executive, Legal [*1], Folio			
	Manual feed slot	Width: 76.2 to 216 mm (3.0 to 8.5 inch) Length: 116 to 355.6 mm (4.57 to 14 inch)			
	2-sided	Letter, Legal [*1], Folio (for the U.S.A.), A4 (for Europe, Asia, Oceania, China)			

[*1] Legal size paper is not available in some regions outside the U.S.A. and Canada.

Specifications are subject to change without notice.

1.5.3 Type and size of paper

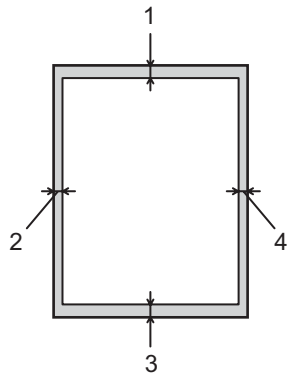
The machine loads paper from the installed paper tray or the manual feed slot.
The names for the paper trays in the printer driver as follows:

The name for the paper trays	The name for the paper trays in the printer driver
Paper tray	Tray 1
Manual feed slot	Manual

Specifications are subject to change without notice.

1.6 Printable Area

The figures below show maximum printable areas. The printable area is defined by subtracting the margins (shown in the list below) from each side of a paper. The printable areas may vary depending on the paper size or settings in the application you are using.



Usage	Document Size	Top (1), Bottom (3)	Left (2), Right (4)
Print	Letter	4.23 mm (0.16 inch)	4.23 mm (0.16 inch)
	A4	4.23 mm (0.16 inch)	4.23 mm (0.16 inch)
	Legal	4.23 mm (0.16 inch)	4.23 mm (0.16 inch)

CHAPTER 2 ERROR INDICATION AND TROUBLESHOOTING

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.

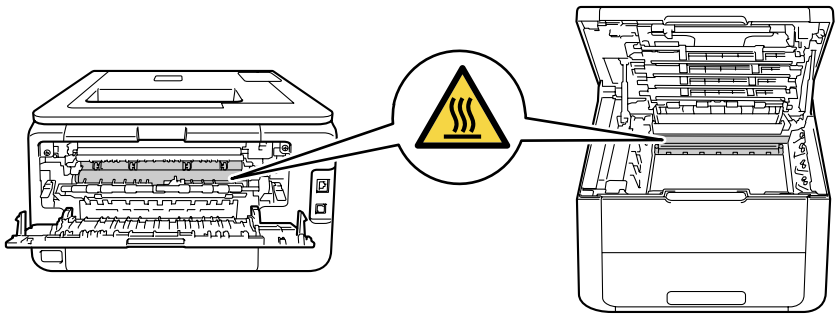
(2) When connecting or disconnecting cable connectors, make sure that you hold the connector body and not the cables.

(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 PCBs, put on a grounding wrist band and perform the job on a antistatic mat. Also take care not to touch the conductor sections on the flat cables.

(4) Follow the warning by all means.

WARNING

Hazard labels as shown below are attached to the machine. Fully understand the descriptions on the hazard labels and observe them during troubleshooting.
Take extreme care not to remove or damage the hazard labels.



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) Check again that the portions and parts repaired or removed during the repair work function properly when the repair is completed.

1.2 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.

■ 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 "1.5.2 Media specifications" in Chapter 1.)

(2) The paper is not damp.

(3) The paper is not short-grained paper or acid paper.

■ Consumable parts

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

(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, increase the room temperature.

■ 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. OVERVIEW

2.1 Cross-section Drawing

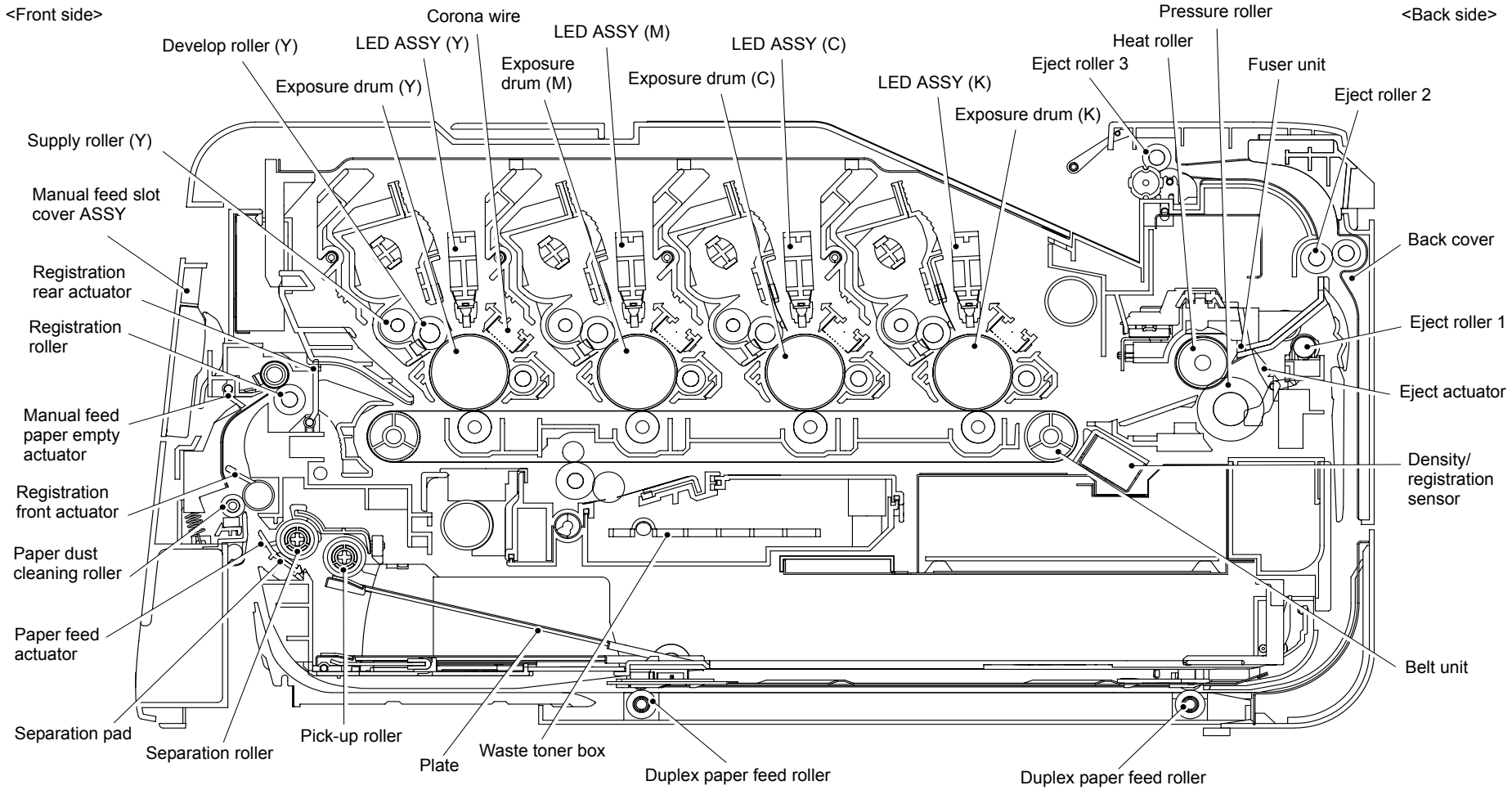


Fig. 2-1

2.2 Paper Feeding

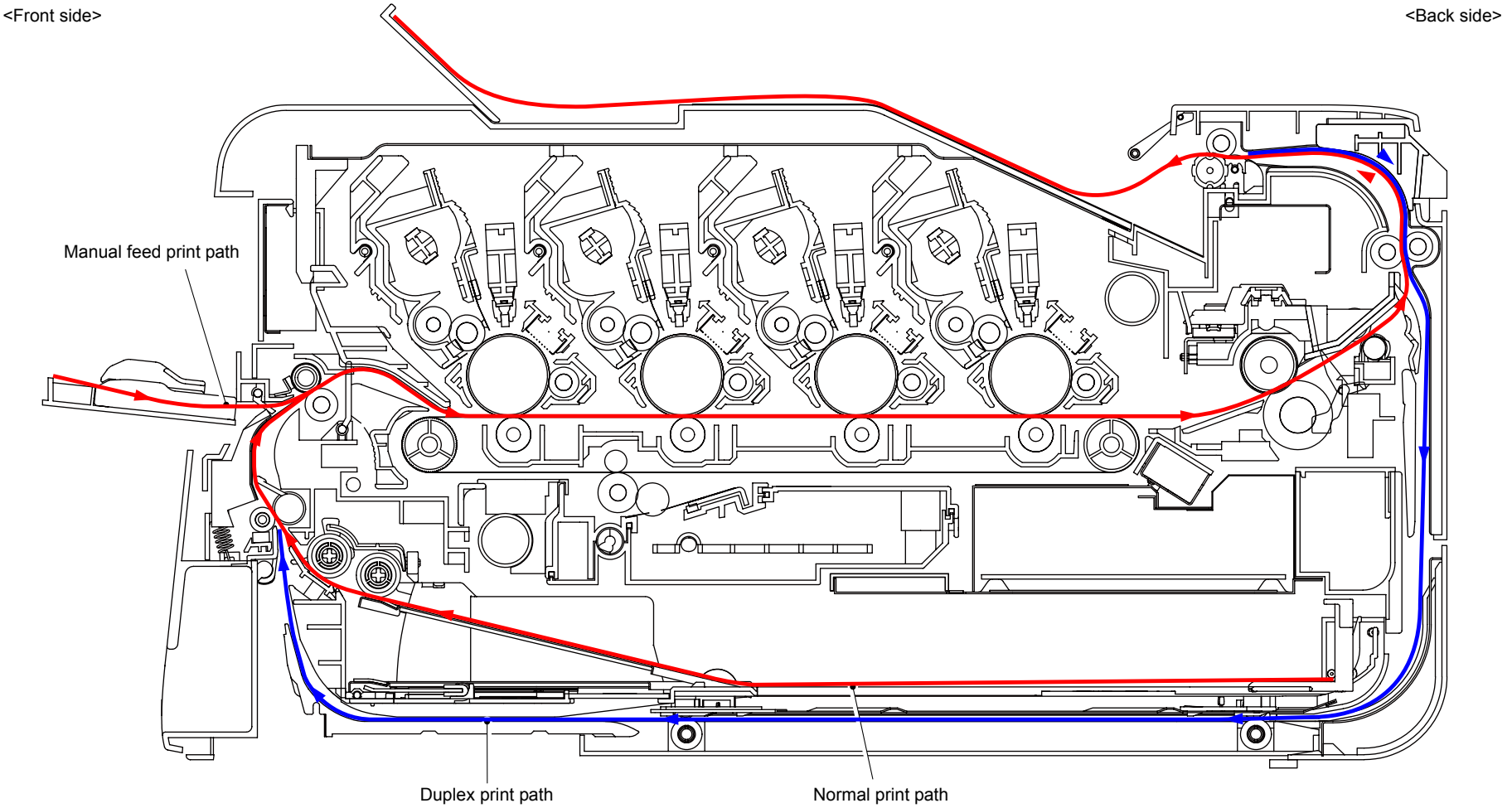


Fig. 2-2

2.3 Operation of Each Part

Part name	Operation
Pick-up roller	Feed the paper from the paper tray.
Separation roller/Separation pad	Separate into single sheet from the paper tray.
Paper feed actuator (Paper feed sensor)	Detect whether or not the paper tray is installed. Detect the paper jam of front part. Detect the rear edge of paper to adjust the timing of feeding the next paper.
Registration front actuator (Registration front sensor)	Detect the front edge of paper and control the drive of the registration roller. Detect the paper jam of front part.
Registration roller	When the front edge of the paper hit the stopped registration roller and the inclination of the paper is corrected. After correction, the paper is fed.
Registration rear actuator (Registration rear sensor)	Detect the front edge of paper to adjust the writing start position. Detect the paper jam of center part. Detect the front and rear edges of paper to detect the paper size.
Belt unit	Feed the paper to the drum unit for each color and transfer toner on the paper.
Heat roller Pressure roller	Fuse and fix the toner transferred on paper by heat and pressure, and feed the paper to the eject roller.
Eject actuator (Eject sensor)	Detect whether or not paper is ejected from the fuser unit. Detect the rear edge of paper in 2-sided printing to adjust the timing of switching the rotation of the eject roller. Detect paper jam at the rear of the machine.
Eject roller 1	Feed the paper ejected from the fuser unit to the eject roller 2.
Eject roller 2	Feed the paper ejected from the eject roller1 to the output tray. In 2-sided printing, after some sheets of paper are fed through the paper eject roller, its rotation is reversed to feed the papers to the duplex tray. (2-sided printing model only)
Duplex paper feed roller	Feed the paper passed in the duplex tray to the registration roller.
Manual feed paper empty actuator	Detect whether paper is set in the manual feed slot.
Back cover sensor	Detect whether the back cover is open.
Top cover sensor	Detect whether the top cover is open.

2.4 Block Diagram

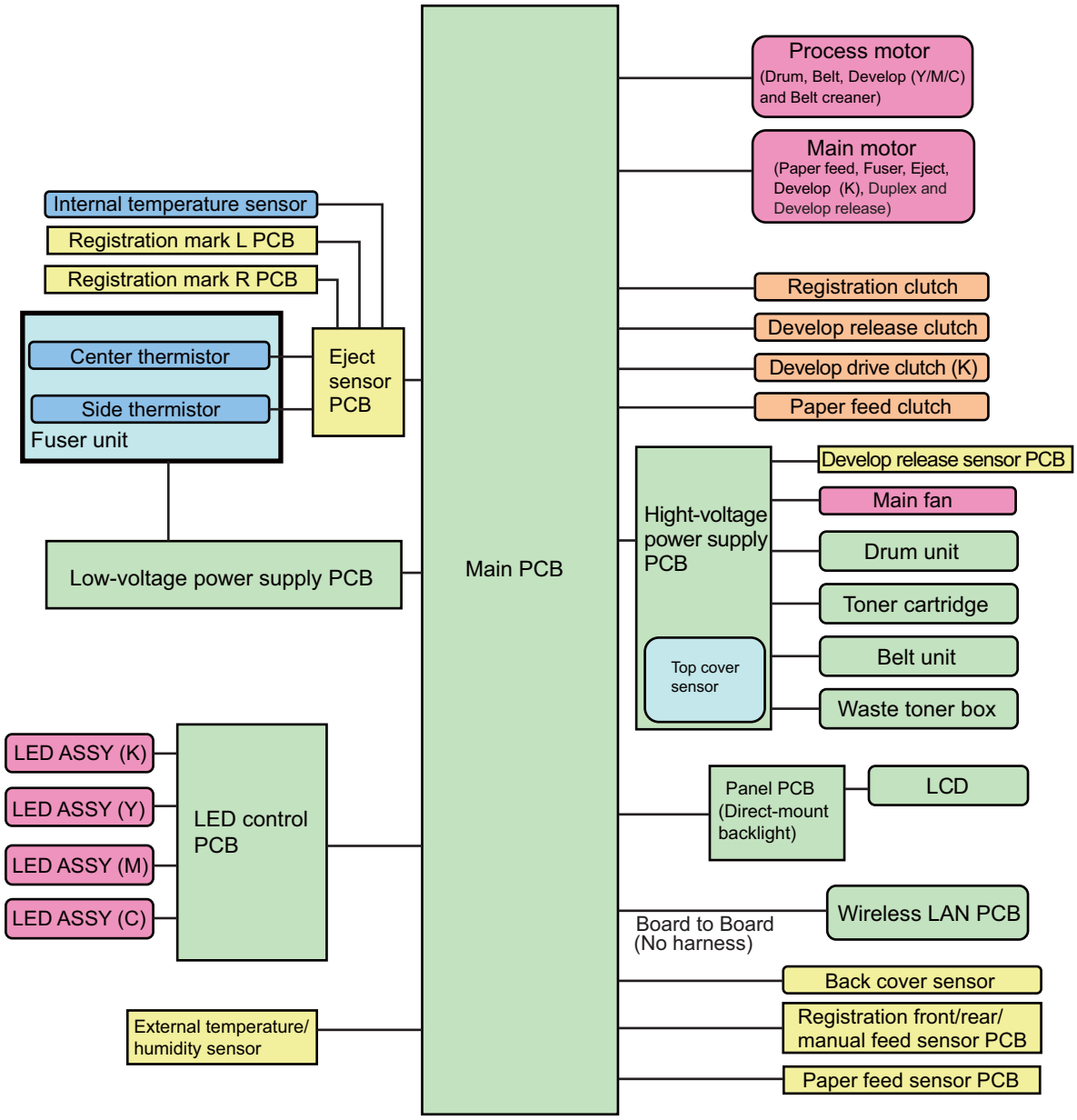


Fig. 2-3

2.5 Components

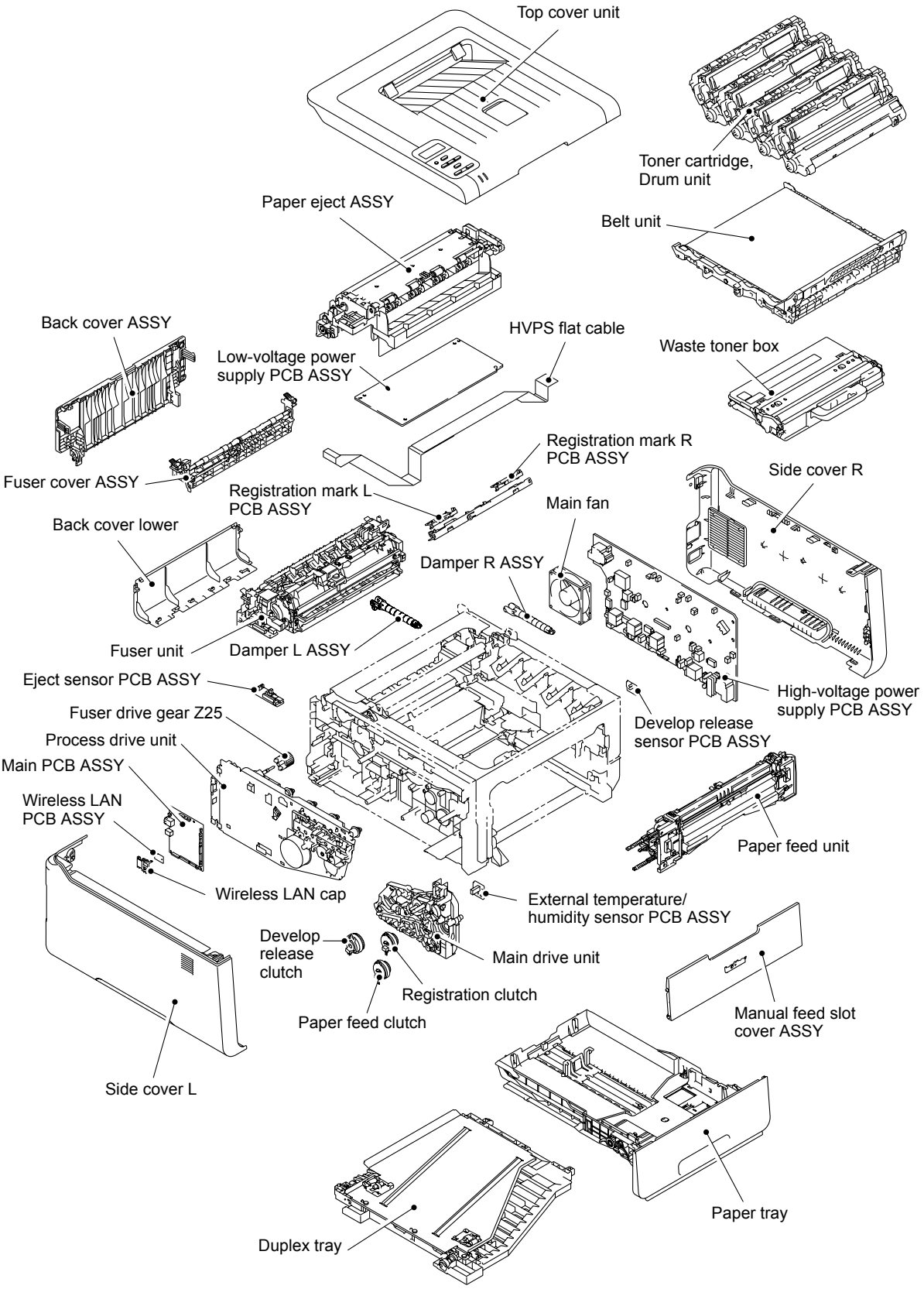


Fig. 2-4

3. 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 personnel to quickly find out the problem.

3.1 Error Codes

The shaded errors hardly occur under normal use. They may be caused by noise around the installation site, variation in power supply voltage, or software failure.

Error codes	Problem	Refer to:
0100	ASIC error or motor driver error occurred.	2-25
0201	Synchronization signal from the main motor cannot be detected. Or the main motor speed is unstable after a set period of time.	2-25
0202	Synchronization signal from the process motor cannot be detected. Or the process motor speed is unstable after a set period of time.	2-25
0203	---	
0204	---	
0205	---	
0206	---	
0207	---	
0208	---	
0209	---	
0300	---	
0401	---	
0402	---	
0501	The center thermistor of the fuser unit does not reach the specified temperature within the specified time.	2-26
0502	The center thermistor of the fuser unit does not reach the specified temperature within the specified time.	2-26
0503	The center thermistor of the fuser unit detected a temperature higher than the specified value.	2-26
0504	After the center thermistor of the fuser unit was normally heated, it detected a temperature lower than the specified value.	2-26
0505	The center thermistor of the fuser unit detected a temperature rise greater than the specified value within a set period of time.	2-26
0506	The center thermistor of the fuser unit detected a temperature fall greater than the specified value within a set period of time.	2-26
0507	---	
0508	---	
0509	---	
050A	The center thermistor or side thermistor of the fuser unit detected some temperature error in the hardware.	2-27

Error codes	Problem	Refer to:
050B	When the temperature of the center thermistor of the fuser unit is lower than the idle temperature, the side thermistor of the fuser unit detected a temperature higher than the specified value.	2-27
050C	When the temperature of the center thermistor of the fuser unit is higher than the idle temperature, the side thermistor of the fuser unit detected a temperature lower than the specified value.	2-27
050D	---	
050F	---	
0700	---	
0800	Error occurred in the internal temperature sensor.	2-28
0900	Machine detected that supplied power was unstable.	2-28
0A01	---	
0A02	The main fan failure was detected.	2-29
0B01	Error in the high-voltage power supply PCB ASSY while the machine is in operation.	2-29
0B02	Error in the high-voltage power supply PCB ASSY in the ready state.	2-29
0C00	Error occurred in the density sensor.	2-30
0D01	---	
0D02	---	
0D03	---	
0D04	---	
0E00	---	

Error codes	Problem	Refer to:
1001	---	
1002	---	
1003	The registration mark sensor R is dirty and cannot normally receive reflected light.	2-30
1004	The registration mark sensor L is dirty and cannot normally receive reflected light.	2-30
1100	---	
1300	---	
1400	---	
1C00	---	
1D01	Communication error occurred in the LED ASSY (Black).	2-31
1D02	Communication error occurred in the LED ASSY (Yellow).	2-31
1D03	Communication error occurred in the LED ASSY (Magenta).	2-31
1D04	Communication error occurred in the LED ASSY (Cyan).	2-31
1E01	Access is unavailable between the main PCB and LED control PCB.	2-31
1E02	Read/Write is unavailable between the main PCB and LED control PCB.	2-31
2001	---	
2002	---	
2003	---	
2004	---	
2005	---	
2006	---	
2101	---	

Error codes	Problem	Refer to:	Error codes	Problem	Refer to:
2102	---		2801	---	
2103	---		2802	---	
2104	---		2803	---	
2105	---		2804	---	
2201	---		2805	---	
2202	---		2806	---	
2203	---		2901	---	
2204	---		2902	---	
2205	---		2903	---	
2206	---		2904	---	
2207	---		2905	---	
2301	---		2906	---	
2302	---		2A01	---	
2401	---		2A02	---	
2402	---		2A03	---	
2403	---		2B01	---	
2404	---		2B02	---	
2405	---		2C01	---	
2408	---		2C02	---	
2409	---		2D01	---	
2501	---		2E01	---	
2502	---		2E02	---	
2503	---		2E03	---	
2504	---		2E04	---	
2601	---		2E05	---	
2602	---		2E06	---	
2603	---		2E07	---	
2604	---		2E08	---	
2605	---		2E0A	---	
2701	---		2F01	---	
2702	---		2F02	---	
2703	---		2F03	---	

Error codes	Problem	Refer to:
2F04	---	
2F05	---	
2F06	---	
2F07	---	
2F08	---	
2F0A	---	
3001	---	
3002	---	
3003	---	
3102	---	
3202	---	
3301	---	
3302	---	
3401	---	
3402	---	
3501	---	
3601	---	
3701	---	
3702	---	
3703	---	
3801	Error occurred in the external temperature/humidity sensor.	2-32
3802	---	
3900	---	
3A00	Error occurred in the communication between the controller in the main PCB and engine.	2-32
4000	---	
4001	Number of the drum unit (Black) rotations reaches the upper limit soon.	2-32
4002	Number of the drum unit (Yellow) rotations reaches the upper limit soon.	2-32
4003	Number of the drum unit (Magenta) rotations reaches the upper limit soon.	2-32
4004	Number of the drum unit (Cyan) rotations reaches the upper limit soon.	2-32
4200	---	
4201	Number of the drum unit (Black) rotations has reached the upper limit.	2-33
4202	Number of the drum unit (Yellow) rotations has reached the upper limit.	2-33
4203	Number of the drum unit (Magenta) rotations has reached the upper limit.	2-33
4204	Number of the drum unit (Cyan) rotations has reached the upper limit.	2-33
4208	---	
4300	The belt unit will reach the end of life soon. (90%)	2-33
4400	Number of pages printed with the belt unit has reached the upper limit.	2-33
4408	---	
4500	Printable pages set for the fuser unit has reached the upper limit.	2-34
4600	---	
4700	The waste toner sensor detected that the waste toner box is almost full.	2-34

Error codes	Problem	Refer to:
4800	After the waste toner sensor detected that the waste toner box was almost full, pages more than the specified number have been printed.	2-34
4900	---	
4A00	---	
4B01	Dot counter of the toner cartridge (Black) or develop roller counter reaches the upper limit soon.	2-35
4B02	Dot counter of the toner cartridge (Yellow) or develop roller counter reaches the upper limit soon.	2-35
4B03	Dot counter of the toner cartridge (Magenta) or develop roller counter reaches the upper limit soon.	2-35
4B04	Dot counter of the toner cartridge (Cyan) or develop roller counter reaches the upper limit soon.	2-35
4C01	Dot counter of the toner cartridge (Black) or develop roller counter has reached the upper limit was detected.	2-36
4C02	Dot counter of the toner cartridge (Yellow) or develop roller counter has reached the upper limit was detected.	2-36
4C03	Dot counter of the toner cartridge (Magenta) or develop roller counter has reached the upper limit was detected.	2-36
4C04	Dot counter of the toner cartridge (Cyan) or develop roller counter has reached the upper limit was detected.	2-36
4C05	During printing, dot counter of color toner cartridge or develop roller counter has reached the upper limit was detected.	2-36

Error codes	Problem	Refer to:
4D01	---	
4E01	---	
4F01	The new toner sensor of the toner cartridge (Black) could not detect a new cartridge properly.	2-37
4F02	The new toner sensor of the toner cartridge (Yellow) could not detect a new cartridge properly.	2-37
4F03	The new toner sensor of the toner cartridge (Magenta) could not detect a new cartridge properly.	2-37
4F04	The new toner sensor of the toner cartridge (Cyan) could not detect a new cartridge properly.	2-37
5001	---	
5002	Printable pages set for the PF kit 1 has reached the upper limit.	2-37
5003	---	
5004	---	
5005	---	
5100	---	
5200	---	
5301	---	
5302	---	
5401	---	
5402	---	
5406	---	
5502	---	
5602	---	
5702	---	
5801	---	
5802	---	
5902	---	

Error codes	Problem	Refer to:
5A02	---	
5B02	---	
5C02	---	
6001	The top cover sensor detected that the top cover was open.	2-38
6002	---	
6003	---	
6004	Eject sensor detected that fuser cover ASSY was open.	2-38
6101	New toner detection terminal not being conducting caused the machine to detected that a toner cartridge (Black) is not set.	2-39
6102	New toner detection terminal not being conducting caused the machine to detected that a toner cartridge (Yellow) is not set.	2-39
6103	New toner detection terminal not being conducting caused the machine to detected that a toner cartridge (Magenta) is not set.	2-39
6104	New toner detection terminal not being conducting caused the machine to detected that a toner cartridge (Cyan) is not set.	2-39
6200	---	
6201	---	
6202	---	
6203	---	
6204	---	
6208	Immediately after power was turned ON or the top cover unit was closed, GRID current failure detected that no drum unit (Color) was set.	2-41

Error codes	Problem	Refer to:
6209	Immediately after power was turned ON or the top cover unit was closed, GRID current failure detected that one of the drum units (Color) was not set.	2-41
620A	Immediately after power was turned ON or the top cover unit was closed, GRID current failure detected that no drum unit (Black) was set.	2-41
6300	BCLN terminal current value detected that no waste toner box was set.	2-42
6400	The registration mark sensor detected that no belt unit was set.	2-43
6602	---	
6701	---	
6801	The internal temperature sensor detected a temperature higher than the specified value.	2-44
6802	---	
6901	Some fuser unit error occurred at power-ON or upon recovery from sleep mode.	2-44
6902	After the error was detected at the fuser unit, power was turned ON again and the error is being checked. (If power is turned OFF and ON after error code 6901 occurred, this code is displayed for about 15 minutes.)	2-44
6A00	Electric discharge that may be caused by dirt on the corona wire of the drum unit was detected.	2-45

Error codes	Problem	Refer to:
6B01	Electric discharge was detected when the number of the drum unit (Black) rotations had become more than twice of the upper limit.	2-46
6B02	Electric discharge was detected when the number of the drum unit (Yellow) rotations had become more than twice of the upper limit.	2-46
6B03	Electric discharge was detected when the number of the drum unit (Magenta) rotations had become more than twice of the upper limit.	2-46
6B04	Electric discharge was detected when the number of the drum unit (Cyan) rotations had become more than twice of the upper limit.	2-46
6B0A	GRID current failure was detected in a state other than immediately after power was turned ON or the top cover unit was closed.	2-47
6C01	---	
6C02	---	
6C03	---	
6C04	---	
6D00	---	
6E00	The develop release sensor detected the develop roller disengagement or engagement failure.	2-47
6F00	---	
7000	After the registration rear sensor detects the end of paper pass, the eject sensor does not detect paper pass.	2-48
7001	---	
7002	---	
7003	---	
7004	---	
7100	After the registration rear sensor detected that paper has passed, the eject sensor continues to detect paper pass.	2-48
7101	---	
7102	---	
7103	---	
7104	---	
7105	---	
7106	---	
7200	---	
7300	After the paper feed sensor detects paper pass, the registration front sensor does not detect paper pass after a set period of time.	2-49
7301	---	
7400	---	
7401	---	
7501	---	
7502	---	
7601	---	
7602	---	
7700	After the first side is printed in 2-sided printing mode, the registration front sensor does not detect paper pass after a set period of time.	2-49
7701	---	
7702	---	
7703	---	
7704	---	
7705	---	

Error codes	Problem	Refer to:
7801	---	
7802	---	
7900	After the manual feed sensor detects pass of paper fed from the manual feed slot, the registration rear sensor does not detect paper pass after a set period of time. Or after the manual feed sensor detects paper pass, the registration rear sensor detects paper pass within a set period of time.	2-50
7C00	---	
7D00	---	
7E00	---	
8401	---	
8402	---	
8501	The paper feed sensor detected that the paper tray was not set (before print registration in engine) in 2-sided printing.	2-50
8502	---	
8503	---	
8504	---	
8505	The paper feed sensor detected that the paper tray was not set (after print registration in engine) in 2-sided printing.	2-50
8506	---	
8507	---	
8508	---	
8601	---	
8602	---	
8603	---	
8604	---	
8701	---	
8702	---	
8703	---	

Error codes	Problem	Refer to:
8801	---	
8802	---	
8901	---	
8902	---	
8903	The back cover sensor detected that the back cover was open (before print registration in engine) in 2-sided printing.	2-51
8904	The back cover sensor detected that the back cover was open (after print registration in engine) in 2-sided printing.	2-51
8A01	The registration rear sensor detected that the fed paper was larger or smaller than the specified size in 2-sided printing.	2-51
8A02	---	
8C00	No paper is in the manual feed slot when printing from the manual feed slot.	2-52
8D01	The registration rear sensor detected that the paper loaded in the paper tray was smaller than the specified size.	2-52
8D02	When printing with the back cover closed, the paper size selected in the print data is smaller than the valid size.	2-52
8E01	---	
8E02	---	
8E03	---	
8F01	---	
8F02	---	
8F03	---	
9001	---	

Error codes	Problem	Refer to:
9002	The size of paper loaded in the paper tray and the one specified from the driver are not same when paper is fed from the paper tray.	2-53
9003	---	
9004	---	
9005	---	
9102	---	
9103	---	
9104	---	
9105	---	
9200	---	
9301	---	
9302	When paper was fed from the paper tray, the paper feed sensor detected that no paper was in the paper tray.	2-53
9303	---	
9304	---	
9305	---	
9306	---	
9307	---	
9401	---	
9402	---	
9403	---	
9404	---	
9501	---	
9502	---	
9503	---	
9504	---	
9505	---	
9601	---	
9608	---	

Error codes	Problem	Refer to:
9701	For 2-sided printing, the tray whose paper size was not supported by 2-sided printing was selected.	2-54
9702	---	
9703	---	
9704	---	
9705	---	
9801	Error occurred with the value measured during color density adjustment performed from the control panel.	2-54
9802	Dot counter or develop roller counter of color toner has reached the upper limit during color density adjustment performed from the control panel.	2-55
9803	Density patch measurement ended unsuccessfully during color density adjustment performed from the control panel.	2-55
9804	Error occurred with the value measured during density sensor sensitivity calibration.	2-55
9901	Error occurred with the value measured during adjustment of color registration.	2-56
9902	Dot counter or develop roller counter of color toner has reached the upper limit during adjustment of color registration.	2-56
9903	Error occurred during patch data printing in adjustment of color registration.	2-57
9A01	Error occurred with the value measured during auto color registration performed from the control panel.	2-58

Error codes	Problem	Refer to:
9A02	Dot counter or develop roller counter of color toner has reached the upper limit during auto color registration performed from the control panel.	2-58
9A03	Error occurred during patch data printing in auto color registration performed from the control panel.	2-59
9A04	---	
9C01	---	
9C02	---	
9C03	---	
9C06	---	
9C07	---	
A000	---	
A200	---	
A300	---	
A400	---	
A500	---	
A600	------	
A700	---	
A800	---	
A900	---	
AA00	---	
AB00	---	
AC00	---	
AD00	---	
AF00	---	
B000	---	
B300	---	
B400	---	
B700	---	
B800	---	
B900	---	

Error codes	Problem	Refer to:
BA00	---	
BB00	---	
BC00	---	
BD00	---	
BE00	---	
BF00	---	
C001	Timeout occurred with access request sent to server due to incorrect server address, network disconnection, or inactive server.	2-60
C002	User authentication is unavailable due to incorrect user name, incorrect password, or asynchronous date and time between the machine and server.	2-60
C003	Access to a file is unavailable due to incorrect directory name, no write permission on directory, file write lock, or no write permission on file.	2-60
C004	The current time necessary for user authentication is unavailable due to machine clock (RTC) not being set and time not being obtained through SNTP.	2-60
C700	The memory is insufficient to expand the data of PC-Print.	2-61
C800	The memory used to store secure print data exceeded the memory size for secure print data.	2-61
C900	---	
CA00	---	
D100	---	
D200	---	
D800	---	
D900	---	

Error codes	Problem	Refer to:
DA00	---	
E000	Some ROM checksum error occurred.	2-61
E100	Program error.	2-61
E400	---	
E500	Error occurred when DRAM on the main PCB ASSY was accessed.	2-62
E600	Error occurred during writing to EEPROM on the main PCB ASSY.	2-62
E700	---	
E900	---	
EC00	---	
F900	Setting by country code is not entered.	2-62
FA01	---	
FA02	---	
FA03	---	
FB01	---	
FB02	---	
FB03	---	
FB04	---	
FB05	---	
FB06	---	
FB07	---	
FB08	---	
FB09	---	
FB0A	---	
FB0B	---	
FB0C	---	
FB0D	---	
FB0E	---	

Error codes	Problem	Refer to:
FB0F	---	
FC01	---	
FC02	---	
FC03	---	
FC04	---	
FC05	---	

3.2 Error Message

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

Error message	Description	Error codes	Refer to:
2-sided Disabled	The back cover sensor detected that the back cover was open.	8903 8904	2-51
Belt End Soon	The belt unit will reach the end of life soon. (90%)	4300	2-33
Calibrate	Adjustment of color density failed.	9801 9802 9803 9804	2-54 2-55
Cartridge Error	The new toner sensor could not detect a new cartridge properly.	4F01 4F02 4F03 4F04	2-37
Cooling Down	The internal temperature sensor detected a temperature higher than the specified value.	6801	2-44
Cover is Open	The top cover sensor detected that the top cover was open.	6001	2-38
	The eject sensor detected that the fuser cover ASSY was open.	6004	2-38
DIMM Error	Faulty DIMM is set or DIMM is not properly set.	---	
Drum End Soon	Number of the drum unit rotations reaches the upper limit soon.	4001 4002 4003 4004	2-32
Drum !	Electric discharge that may be caused by dirt on the corona wire of the drum unit was detected.	6A00	2-45
	Immediately after power was turned ON or the top cover unit was closed, the machine detected that no drum unit was set or the corona wire was dirty.	6208 6209 620A	2-41
	GRID current failure was detected in a state other than immediately after power was turned ON or the top cover unit was closed.	6B0A	2-47
Drum Stop	Electric discharge was detected when the number of the drum unit rotations had become more than twice of the upper limit.	6B01 6B02 6B03 6B04	2-46
Fuser Error	Some fuser unit error occurred at power-ON or upon recovery from sleep mode.	6901	2-44

Error message	Description	Error codes	Refer to:
Ignore Data	Undecodable data is found during printing. Undecodable PS data is received.	---	
Jam 2-sided	After the first side is printed in 2-sided printing mode, the registration front sensor does not detect paper pass after a set period of time.	7700	2-49
Jam Inside	After the registration rear sensor detects the end of paper pass, the eject sensor does not detect paper pass.	7000	2-48
Jam Manual Feed	After the manual feed sensor detects pass of paper fed from the manual feed slot, the registration rear sensor does not detect paper pass after a set period of time. Or after the manual feed sensor detects paper pass, the registration rear sensor detects paper pass within a set period of time.	7900	2-50
Jam Rear	After the registration rear sensor detected that paper has passed, the eject sensor continues to detect paper pass.	7100	2-48
Jam Tray 1	After the paper feed sensor detects paper pass, the registration front sensor does not detect paper pass after a set period of time.	7300	2-49
Limit Exceeded	Specified number of pages to be printed exceeds the maximum number.	---	
Log Access Error	Access to the server is unavailable due to some reasons or failed.	C001 C002 C003 C004	2-60
Machine Error F9	Setting by country code is not entered.	F900	2-62
No Belt Unit	The registration mark sensor detected that no belt unit was set.	6400	2-43
No Paper	When paper was fed from the paper tray, the paper feed sensor detected that no paper was in the paper tray.	9302	2-53
No Permission	The user does not have permission to perform color printing when PC print is performed.	---	
No Toner	Incorrect developing bias cased the machine to detected that no toner cartridge is set.	6101 6102 6103 6104	2-39
No Tray	The paper feed sensor detected that no tray was set.	8501 8505	2-50
No Waste Toner	BCLN terminal current value detected that no waste toner box was set.	6300	2-42

Error message	Description	Error codes	Refer to:
Out of Memory	The memory is insufficient to expand the data of PC-Print.	C700	2-61
	The memory used to store secure print data exceeded the memory size for secure print data.	C800	2-61
Registration	Adjustment of color registration failed.	9901 9902 9903	2-56 2-37
	Automatic color registration failed.	9A01 9A02 9A03	2-58 2-59
Replace Belt	Number of pages printed with the belt unit has reached the upper limit.	4400	2-33
Replace Drum **Replace Drums**	Number of the drum unit rotations has reached the upper limit.	4201 4202 4203 4204	2-33
Replace Fuser	Printable pages set for the fuser unit has reached the upper limit.	4500	2-34
Replace PF Kit1	Printable pages set for the PF kit 1 has reached the upper limit.	5002	2-37
Replace Toner	Dot counter of the toner cartridge or develop roller counter has reached the upper limit was detected.	4C01 4C02 4C03 4C04 4C05	2-36
Replace WT Box	After the waste toner sensor detected that the waste toner box was almost full, pages more than the specified number have been printed.	4800	2-34
Reprint	There is no reprint data when reprinting is performed.	---	
Self-Diagnostic	After the error was detected at fuser unit, power was turned ON again and the error is being checked.	6902	2-44
Short paper	The registration rear sensor detected that the paper loaded in the paper tray was smaller than the specified size.	8D01	2-52
Size Error DX	The registration rear sensor detected that the fed paper was larger or smaller than the specified size in 2-sided printing.	8A01	2-51
	For 2-sided printing, the tray whose paper size was not supported by 2-sided printing was selected.	9701	2-54

Error message	Description	Error codes	Refer to:
Size Mismatch	The size of paper loaded in the paper tray and the one specified from the driver are not same when paper is fed from the paper tray.	9002	2-53
Small paper	When printing with the back cover closed, the paper size selected in the print data is smaller than the valid size.	8D02	2-52
Toner Error	The develop release sensor detected develop roller disengagement or engagement failure.	6E00	2-47
Toner Low	Dot counter of the toner cartridge or develop roller counter reaches the upper limit soon.	4B01 4B02 4B03 4B04	2-35
WT Box End Soon	The waste toner sensor detected that the waste toner box is almost full.	4700	2-34

4. TROUBLESHOOTING

4.1 Error Cause and Remedy

■ Error code 0100

Print Unable 01

ASIC error or motor driver error occurred.

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

■ Error code 0201

Print Unable 02

Synchronization signal from main motor cannot be detected. Or main motor speed is unstable after a set period of time.

Step	Cause	Remedy
1	Main motor harness connection failure	Check the main motor harness connection and reconnect it.
2	Harness connection failure between the low-voltage power supply PCB and main PCB	Check the harness connection between the low-voltage power supply PCB and main PCB, and reconnect it.
3	Main motor failure	Replace the process drive unit.
4	Low-voltage power supply PCB failure	Replace the low-voltage power supply PCB ASSY.
5	Main PCB failure	Replace the main PCB ASSY.

■ Error code 0202

Print Unable 02

Synchronization signal from process motor cannot be detected. Or process motor speed is unstable after a set period of time.

Step	Cause	Remedy
1	Process motor harness connection failure	Check the process motor harness connection and reconnect it.
2	Harness connection failure between the low-voltage power supply PCB and main PCB	Check the harness connection between the low-voltage power supply PCB and main PCB, and reconnect it.
3	Process motor failure	Replace the process drive unit.
4	Low-voltage power supply PCB failure	Replace the low-voltage power supply PCB ASSY.
5	Main PCB failure	Replace the main PCB ASSY.

■ **Error code 0501**

Print Unable 05

The center thermistor of the fuser unit does not reach the specified temperature within the specified time.

Error code 0502

Print Unable 05

The center thermistor of the fuser unit does not reach the specified temperature within the specified time.

Error code 0503

Print Unable 05

The center thermistor of the fuser unit detected a temperature higher than the specified value.

Error code 0504

Print Unable 05

After the center thermistor of the fuser unit was normally heated, it detected a temperature lower than the specified value.

Error code 0505

Print Unable 05

The center thermistor of the fuser unit detected a temperature rise greater than the specified value within a set period of time.

Error code 0506

Print Unable 05

The center thermistor of the fuser unit detected a temperature fall greater than the specified value within a set period of time.

<User Check>

- Turn the power OFF and ON again after several seconds to check if the error code disappears.

Step	Cause	Remedy
1	Connection failure of the center or side thermistor harness of the fuser unit	Check the harness connection of the center or side thermistor of the fuser unit and reconnect them.
2	Connection failure of the heater harness of the fuser unit	Check the harness connection of the heater of the fuser unit and reconnect it.
3	Harness connection failure of the eject sensor PCB	Check the harness connection of the eject sensor PCB and reconnect it.
4	Harness connection failure of the low-voltage power supply PCB	Check the harness connection of the low-voltage power supply PCB and reconnect it.
5	Eject sensor PCB failure	Replace the eject sensor PCB ASSY.
6	Fuser unit failure	Replace the fuser unit.
7	Low-voltage power supply PCB failure	Replace the low-voltage power supply PCB ASSY.
8	Main PCB failure	Replace the main PCB ASSY.

■ Error code 050A

Print Unable 05

The center thermistor or side thermistor of the fuser unit detected some temperature error in the hardware.

Error code 050B

Print Unable 05

When the temperature of the center thermistor of the fuser unit is lower than the idle temperature, the side thermistor of the fuser unit detected a temperature higher than the specified value.

Error code 050C

Print Unable 05

When the temperature of the center thermistor of the fuser unit is higher than the idle temperature, the side thermistor of the fuser unit detected a temperature lower than the specified value.

<User Check>

- Turn the power OFF and ON again after several seconds to check if the error code disappears.

Step	Cause	Remedy
1	Connection failure of the center or side thermistor harness of the fuser unit	Check the harness connection of the center or side thermistor of the fuser unit and reconnect them.
2	Connection failure of the heater harness of the fuser unit	Check the harness connection of the heater of the fuser unit and reconnect it.
3	Harness connection failure of the eject sensor PCB	Check the harness connection of the eject sensor PCB and reconnect it.
4	Harness connection failure of the low-voltage power supply PCB	Check the harness connection of the low-voltage power supply PCB and reconnect it.
5	Eject sensor PCB failure	Replace the eject sensor PCB ASSY.
6	Fuser unit failure	Replace the fuser unit.
7	Low-voltage power supply PCB failure	Replace the low-voltage power supply PCB ASSY.
8	Main PCB failure	Replace the main PCB ASSY.

■ Error code 0800

Print Unable 08

Error occurred in the internal temperature sensor.

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

■ Error code 0900

Print Unable 09

Machine detected that supplied power was unstable.

<User Check>

- Turn the power OFF and ON again after several seconds to check if the error code disappears.

Step	Cause	Remedy
1	Low-voltage power supply PCB failure	Replace the low-voltage power supply PCB ASSY. Reset the irregular power supply detection counter after replacement. (Refer to "3.1 Reset of Irregular Power Supply Detection Counter" in Chapter 4.)
2	Main PCB failure	Replace the main PCB ASSY.

Note:
The irregular power supply detection error (Error code 0900) occurs when there is a large distortion of the power supply voltage supplied to the machine. In this case, if the same power supply is used, the same error might occur again even if the low-voltage power supply PCB ASSY is replaced. For this reason, be sure to ask the user to rearrange the installation environment.

■ Error code 0A02

Print Unable 0A

The main fan failure was detected.

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

■ Error code 0B01

Print Unable 0B

Error in the high-voltage power supply PCB ASSY while the machine is in operation.

Error code 0B02

Print Unable 0B

Error in the high-voltage power supply PCB ASSY in the ready state.

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

■ Error code 0C00

Print Unable 0C

Error occurred in the density sensor.

Step	Cause	Remedy
1	Registration mark L PCB harness connection failure	Check the registration mark L PCB harness connection and reconnect it.
2	Eject sensor PCB harness connection failure	Check the eject sensor PCB harness connection and reconnect it.
3	Registration mark L PCB ASSY failure	Replace the registration mark L PCB ASSY.
4	Eject sensor PCB failure	Replace the eject sensor PCB ASSY.
5	Main PCB failure	Replace the main PCB ASSY.

■ Error code 1003

Print Unable 10

The registration mark sensor R is dirty and cannot normally receive reflected light.

Step	Cause	Remedy
1	Registration mark sensor R dirty	Clean the registration mark sensor R.
2	Registration mark R PCB harness connection failure	Check the registration mark R PCB harness connection and reconnect it.
3	Eject sensor PCB harness connection failure	Check the eject sensor PCB harness connection and reconnect it.
4	Registration mark R PCB ASSY failure	Replace the registration mark R PCB ASSY.
5	Eject sensor PCB failure	Replace the eject sensor PCB ASSY.
6	Main PCB failure	Replace the main PCB ASSY.

■ Error code 1004

Print Unable 10

The registration mark sensor L is dirty and cannot normally receive reflected light.

Step	Cause	Remedy
1	Registration mark sensor L dirty	Clean the registration mark sensor L.
2	Registration mark L PCB harness connection failure	Check the Registration mark L PCB harness connection and reconnect it.
3	Eject sensor PCB harness connection failure	Check the eject sensor PCB harness connection and reconnect it.
4	Registration mark L PCB ASSY failure	Replace the registration mark L PCB ASSY.
5	Eject sensor PCB failure	Replace the eject sensor PCB ASSY.
6	Main PCB failure	Replace the main PCB ASSY.

■ Error code 1D01

Print Unable 1D

Communication error occurred in the LED ASSY (Black).

Error code 1D02

Print Unable 1D

Communication error occurred in the LED ASSY (Yellow).

Error code 1D03

Print Unable 1D

Communication error occurred in the LED ASSY (Magenta).

Error code 1D04

Print Unable 1D

Communication error occurred in the LED ASSY (Cyan).

<User Check>

- Install the toner cartridge.

Step	Cause	Remedy
1	Connection failure of the flat cable of each LED ASSY	Check the flat cable connection of each LED ASSY and reconnect it.
2	LED control PCB harness connection failure	Check the LED control PCB harness connection and reconnect it.
3	Flat cable failure of each LED ASSY	Replace the flat cable of each LED ASSY.
4	Each LED ASSY failure	Replace the each LED ASSY.
5	LED control PCB failure	Replace the LED control PCB ASSY.
6	Main PCB failure	Replace the main PCB ASSY.

■ Error code 1E01

Print Unable 1E

Access is unavailable between the main PCB and LED control PCB.

Error code 1E02

Print Unable 1E

Read/Write is unavailable between the main PCB and LED control PCB.

Step	Cause	Remedy
1	LED control PCB harness connection failure	Check the LED control PCB harness connection and reconnect it.
2	LED control PCB failure	Replace the LED control PCB ASSY.
3	Main PCB failure	Replace the main PCB ASSY.

■ Error code 3801

Print Unable 38

Error occurred in the external temperature/humidity sensor.

Step	Cause	Remedy
1	External temperature/humidity sensor harness connection failure	Check the external temperature/humidity sensor harness connection and reconnect it.
2	External temperature/humidity sensor failure	Replace the external temperature/ humidity sensor PCB ASSY.
3	Main PCB failure	Replace the main PCB ASSY.

■ Error code 3A00

Print Unable 3A

Error occurred in the communication between the controller in the main PCB and engine.

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

■ Error code 4001

Drum End Soon:BK

Number of the drum unit (Black) rotations reaches the upper limit soon.

Error code 4002

Drum End Soon:Y

Number of the drum unit (Yellow) rotations reaches the upper limit soon.

Error code 4003

Drum End Soon:M

Number of the drum unit (Magenta) rotations reaches the upper limit soon.

Error code 4004

Drum End Soon:C

Number of the drum unit (Cyan) rotations reaches the upper limit soon.

<User Check>

- Prepare a new drum unit.

Step	Cause	Remedy
1	Main PCB failure if the error code remains after replacing with a new drum unit and resetting the drum counter	Replace the main PCB ASSY.

■ Error code 4201

Replace Drum:BK

Number of the drum unit (Black) rotations has reached the upper limit. (Printing is not stopped.)

Error code 4202

Replace Drum:Y

Number of the drum unit (Yellow) rotations has reached the upper limit. (Printing is not stopped.)

Error code 4203

Replace Drum:M

Number of the drum unit (Magenta) rotations has reached the upper limit. (Printing is not stopped.)

Error code 4204

Replace Drum:C

Number of the drum unit (Cyan) rotations has reached the upper limit. (Printing is not stopped.)

<User Check>

- Prepare a new drum unit.

Step	Cause	Remedy
1	Main PCB failure if the error code remains after replacing with a new drum unit and resetting the drum counter	Replace the main PCB ASSY.

■ Error code 4300

Belt End Soon

The belt unit will reach the end of life soon. (90%) (Printing is not stopped.)

Error code 4400

Replace Belt

Number of pages printed with the belt unit has reached the upper limit.
(Printing is not stopped.)

<User Check>

- Prepare a new belt unit.

Step	Cause	Remedy
1	Main PCB failure if the error code remains after replacing with a new belt unit and resetting the belt counter	Replace the main PCB ASSY.

■ Error code 4500

Replace Fuser

Printable pages set for the fuser unit has reached the upper limit.
(Printing is not stopped.)

Step	Cause	Remedy
1	Main PCB failure if the error code remains after replacing with a new fuser unit and resetting the fuser unit counter	Replace the main PCB ASSY.

■ Error code 4700

WT Box End Soon

The waste toner sensor detected that the waste toner box is almost full.

Error code 4800

Replace WT Box

After the waste toner sensor detected that the waste toner box was almost full, pages more than the specified number have been printed.

<User Check>

- Replace the waste toner box.

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

■ Error code 4B01

Toner Low:BK

Dot counter of the toner cartridge (Black) or develop roller counter reaches the upper limit soon.

Error code 4B02

Toner Low:Y

Dot counter of the toner cartridge (Yellow) or develop roller counter reaches the upper limit soon.

Error code 4B03

Toner Low:M

Dot counter of the toner cartridge (Magenta) or develop roller counter reaches the upper limit soon.

Error code 4B04

Toner Low:C

Dot counter of the toner cartridge (Cyan) or develop roller counter reaches the upper limit soon.

<User Check>

- Prepare a new toner cartridge.

Step	Cause	Remedy
1	Main PCB failure if the error code remains after replacing with a new toner cartridge and resetting the toner counter	Replace the main PCB ASSY.

■ Error code 4C01

Replace Toner

Dot counter of the toner cartridge (Black) or develop roller counter has reached the upper limit was detected.

Error code 4C02

Replace Toner

Dot counter of the toner cartridge (Yellow) or develop roller counter has reached the upper limit was detected.

Error code 4C03

Replace Toner

Dot counter of the toner cartridge (Magenta) or develop roller counter has reached the upper limit was detected.

Error code 4C04

Replace Toner

Dot counter of the toner cartridge (Cyan) or develop roller counter has reached the upper limit was detected.

Error code 4C05

Replace Toner

During printing, dot counter of color toner cartridge or develop roller counter has reached the upper limit was detected.

<User Check>

- Replace the toner cartridge whose counter reached the upper limit.

Step	Cause	Remedy
1	Process drive unit damaged	Replace the process drive unit.
2	Main PCB failure if the error code remains after replacing with a new toner cartridge and resetting the toner counter	Replace the main PCB ASSY.

■ Error code 4F01

Cartridge Error

The new toner sensor of the toner cartridge (Black) could not detect a new cartridge properly.

Error code 4F02

Cartridge Error

The new toner sensor of the toner cartridge (Yellow) could not detect a new cartridge properly.

Error code 4F03

Cartridge Error

The new toner sensor of the toner cartridge (Magenta) could not detect a new cartridge properly.

Error code 4F04

Cartridge Error

The new toner sensor of the toner cartridge (Cyan) could not detect a new cartridge properly.

<User Check>

- Under the instruction of repair technician, reset the toner manual.
  (Refer to "2.2 Toner Manual Reset Function" in Chapter 5.)

Step	Cause	Remedy
1	Main PCB failure if the error code remains after replacing with a new toner cartridge and resetting the toner manual	Replace the main PCB ASSY.

■ Error code 5002

Replace PF Kit1

Printable pages set for the PF kit 1 has reached the upper limit.
(Printing is not stopped.)

Step	Cause	Remedy
1	PF kit 1 worn out	Replace the PF kit 1.
2	Main PCB failure	Replace the main PCB ASSY.

■ Error code 6001

Cover is Open

The top cover sensor detected that the top cover was open.

<User Check>

- Close the top cover unit.

Step	Cause	Remedy
1	High-voltage power supply PCB harness connection failure	Check the high-voltage power supply PCB harness connection and reconnect it.
2	Top cover sensor failure	Replace the high-voltage power supply PCB ASSY.
3	Main PCB failure	Replace the main PCB ASSY.

■ Error code 6004

Cover is Open

Eject sensor detected that fuser cover ASSY was open.

<User Check>

- Close the fuser cover.

Step	Cause	Remedy
1	Paper jam at the eject actuator	Remove the jammed paper.
2	Eject actuator that has come off or that has been caught	Re-assemble the eject actuator.
3	Eject sensor PCB harness connection failure	Check the eject sensor PCB harness connection and reconnect it.
4	Fuser cover ASSY installation failure	Re-assemble the fuser cover ASSY.
5	Eject sensor PCB failure	Replace the eject sensor PCB ASSY.
6	Main PCB failure	Replace the main PCB ASSY.

■ Error code 6101

No Toner

New toner detection terminal not being conducting caused the machine to detected that a toner cartridge (Black) is not set.

Error code 6102

No Toner

New toner detection terminal not being conducting caused the machine to detected that a toner cartridge (Yellow) is not set.

Error code 6103

No Toner

New toner detection terminal not being conducting caused the machine to detected that a toner cartridge (Magenta) is not set.

Error code 6104

No Toner

New toner detection terminal not being conducting caused the machine to detected that a toner cartridge (Cyan) is not set.

<User Check>

- Re-insert the toner cartridge.

Step	Cause	Remedy
1	Dirt on the terminal of the high-voltage power supply PCB	Clean the terminal of the high-voltage power supply PCB.
2	High-voltage power supply PCB failure	Replace the high-voltage power supply PCB ASSY.
3	Main PCB failure	Replace the main PCB ASSY.

■ Electrodes location of main body

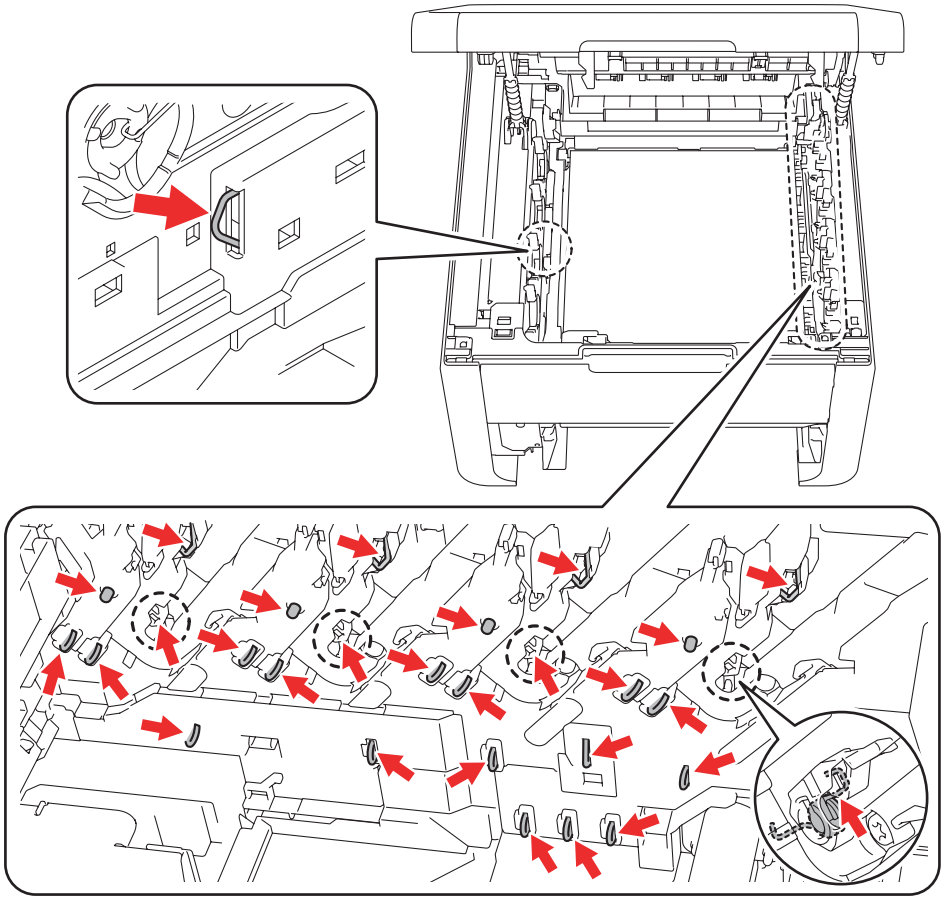


Fig. 2-5

■ Error code 6208

Drum !

Immediately after power was turned ON or the top cover unit was closed, GRID current failure indicated that no drum unit (Color) was set.

Error code 6209

Drum !

Immediately after power was turned ON or the top cover unit was closed, GRID current failure indicated that one of the drum unit (Color) was not set.

Error code 620A

Drum !

Immediately after power was turned ON or the top cover unit was closed, GRID current failure indicated that no drum unit (Black) was set.

<User Check>

- Re-insert the drum unit.
- Clean the GRID terminals of the drum unit. (Refer to the figure below.)
- Clean the corona wire by sliding the green tab of each drum unit for all four colors several times.

Step	Cause	Remedy
1	Dirt on the GRID terminals of the main body	Clean the GRID terminals of the main body. (Refer to fig. 2-5 (P2-40))
2	Dirt on the terminals of the high-voltage power supply PCB	Clean the terminals of the high-voltage power supply PCB.
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 toner cartridge and drum unit

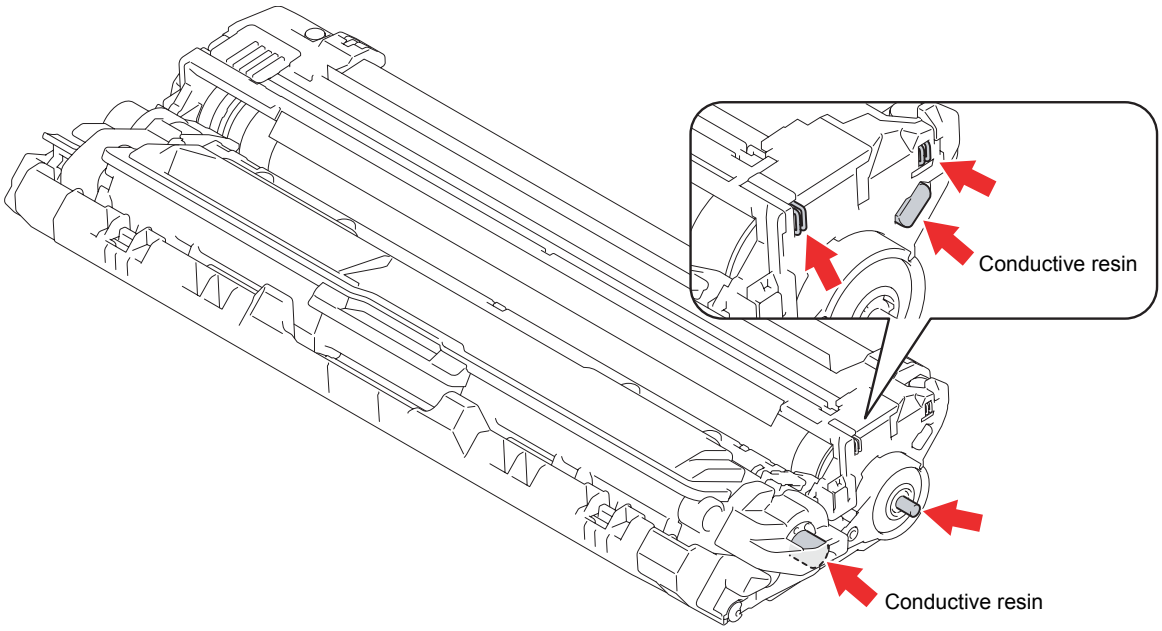


Fig. 2-6

■ Error code 6300

No Waste Toner

BCLN terminal current value detected that no waste toner box was set.

<User Check>

- Re-insert the waste toner box in the correct position.
- Clean the BCLN terminals of the waste toner box. (Refer to the figure below.)

Step	Cause	Remedy
1	Dirt on the BCLN terminals of the main body	Clean the BCLN terminals of the main body. (Refer to fig. 2-5 (P2-40))
2	Dirt on the terminals of the high-voltage power supply PCB	Clean the terminals of the high-voltage power supply PCB.
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 waste toner box

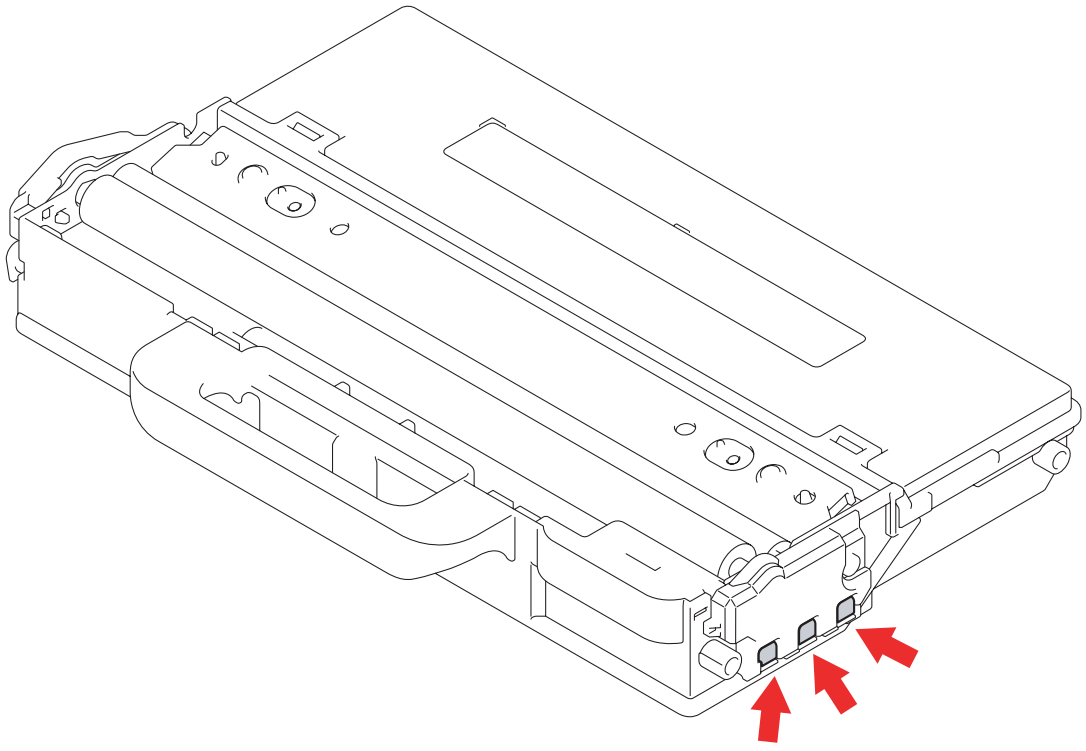


Fig. 2-7

■ Error code 6400

No Belt Unit

The registration mark sensor detected that no belt unit was set.

<User Check>

- Re-insert the belt unit.

Step	Cause	Remedy
1	Registration mark L PCB harness connection failure	Check the registration mark L PCB harness connection and reconnect it.
2	Eject sensor PCB harness connection failure	Check the eject sensor PCB harness connection and reconnect it.
3	Eject sensor PCB failure	Replace the eject sensor PCB ASSY.
4	Registration mark sensor L failure	Replace the registration mark L PCB ASSY.
5	Main PCB failure	Replace the main PCB ASSY.

■ Electrodes location of belt unit

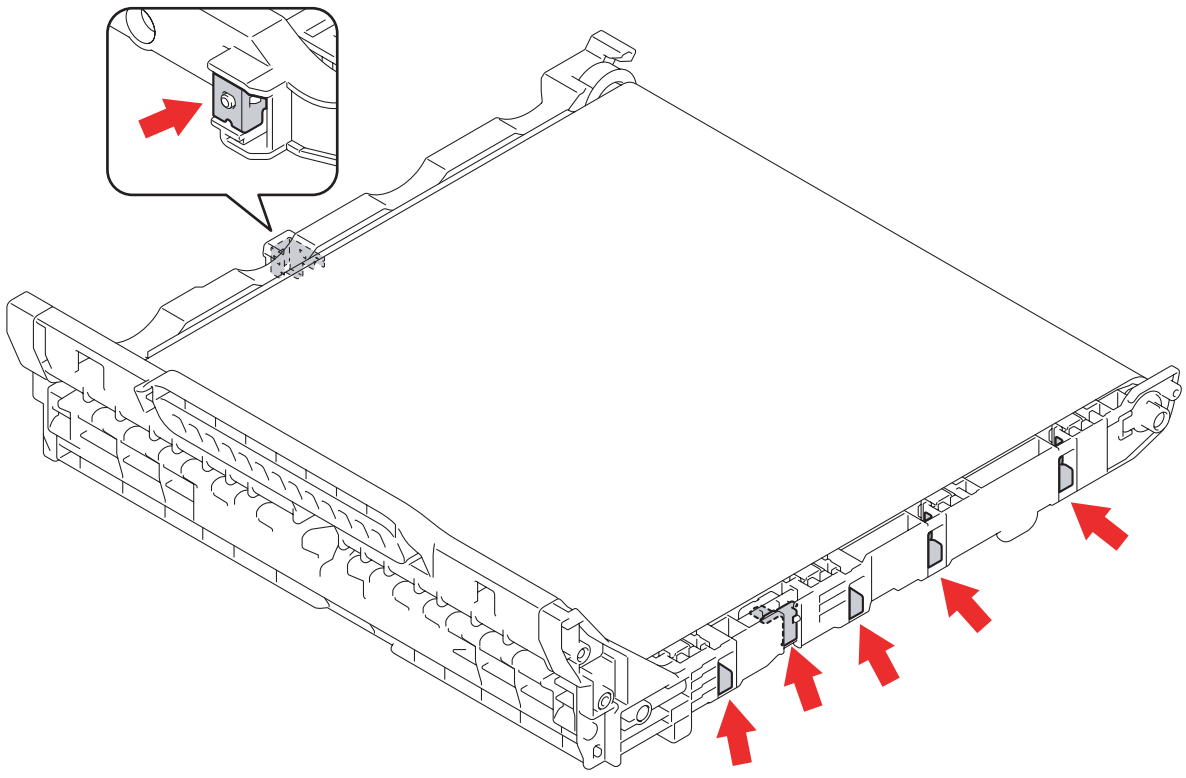


Fig. 2-8

■ Error code 6801

Cooling Down

The internal temperature sensor detected a temperature higher than the specified value.

<User Check>

- Decrease the room temperature.
- Place the machine away from a heater.

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

■ Error code 6901

Fuser Error

Some fuser unit error occurred at power-ON or upon recovery from sleep mode.

Error code 6902

Self-Diagnostic

After the error was detected at the fuser unit, power was turned ON again and the error is being checked. (If power is turned OFF and ON after error code 6901 occurred, this code is displayed for about 15 minutes.)

Step	Cause	Remedy
1	Each harness connection failure of the fuser unit	Check each harnesses connection of the fuser unit and reconnect them.
2	Eject sensor PCB harness connection failure	Check the eject sensor PCB harness connection and reconnect it.
3	Fuser unit failure	Replace the fuser unit.
4	Eject sensor PCB failure	Replace the eject sensor PCB ASSY.
5	Low-voltage power supply PCB failure	Replace the low-voltage power supply PCB ASSY.
6	Main PCB failure	Replace the main PCB ASSY.

Note:
Turn the power OFF. After checking that the fuser unit has cooled down, turn the power ON again. After the machine is left as it is for about 10 minutes, this problem may be resolved.

■ Error code 6A00

Drum !

Electric discharge that may be caused by dirt on the corona wire of the drum unit was detected.

<User Check>

- Clean the corona wire by sliding the green tab of each drum unit for all four colors several times.
- Clean the drum unit. (Refer to fig. 2-6 (P2-41))
- Replace the drum unit.

Step	Cause	Remedy
1	Dirt on the GRID terminals of the main body	Clean the GRID terminals of the main body. (Refer to fig. 2-5 (P2-40))
2	Dirt on the terminals of the high-voltage power supply PCB	Clean the terminals of the high-voltage power supply PCB.
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 6B01

Drum Stop

Electric discharge was detected when the number of the drum unit (Black) rotations had become more than twice of the upper limit.

Error code 6B02

Drum Stop

Electric discharge was detected when the number of the drum unit (Yellow) rotations had become more than twice of the upper limit.

Error code 6B03

Drum Stop

Electric discharge was detected when the number of the drum unit (Magenta) rotations had become more than twice of the upper limit.

Error code 6B04

Drum Stop

Electric discharge was detected when the number of the drum unit (Cyan) rotations had become more than twice of the upper limit.

<User Check>

- Replace the drum unit.

Step	Cause	Remedy
1	Dirt on the GRID terminals of the main body	Clean the GRID terminals of the main body. (Refer to fig. 2-5 (P2-40))
2	Dirt on the terminals of the high-voltage power supply PCB	Clean the terminals of the high-voltage power supply PCB.
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 6B0A

Drum !

GRID current failure was detected in a state other than immediately after power was turned ON or the top cover unit was closed.

<User Check>

- Re-insert the drum unit.
- Clean the GRID terminals of the drum unit. (Refer to fig. 2-6 (P2-41))
- Clean the corona wire by sliding the green tab of each drum unit for all four colors several times.

Step	Cause	Remedy
1	Dirt on the GRID terminals of the main body	Clean the GRID terminals of the main body. (Refer to fig. 2-5 (P2-40))
2	Dirt on the terminals of the high-voltage power supply PCB	Clean the terminals of the high-voltage power supply PCB.
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 6E00

Toner Error

The develop release sensor detected the develop roller disengagement or engagement failure.

Step	Cause	Remedy
1	Develop release sensor harness connection failure	Check the develop release sensor harness connection and reconnect it.
2	High-voltage power supply PCB harness connection failure	Check the high-voltage power supply PCB harness connection and reconnect it.
3	Develop release sensor failure	Replace the develop release sensor PCB ASSY.
4	Misalignment of develop clutch cam	Check the develop clutch cam position and re-assemble it.
5	Develop release clutch failure	Replace the develop release clutch.
6	High-voltage power supply PCB failure	Replace the high-voltage power supply PCB ASSY.
7	Main PCB failure	Replace the main PCB ASSY.

■ Error code 7000

Jam Inside

After the registration rear sensor detects the end of paper pass, the eject sensor does not detect paper pass.

<User Check>

- Remove the jammed paper.

Step	Cause	Remedy
1	Foreign object inside machine	Remove foreign object.
2	Eject actuator that has come off or that has been caught	Re-assemble the eject actuator.
3	Fuser cover installation failure	Re-assemble the fuser cover.
4	Eject sensor PCB harness connection failure	Check the eject sensor PCB harness connection and reconnect it.
5	Fuser cover failure	Replace the fuser cover.
6	Eject sensor failure	Replace the eject sensor PCB ASSY.
7	Fuser unit failure	Replace the fuser unit.
8	Main PCB failure	Replace the main PCB ASSY.

■ Error code 7100

Jam Rear

After the registration rear sensor detected that paper has passed, eject sensor continues to detect paper pass.

<User Check>

- Remove the jammed paper.

Step	Cause	Remedy
1	Foreign object at the back of the machine	Remove foreign object.
2	Eject actuator catching on some position	Re-assemble the eject actuator.
3	Fuser cover installation failure	Re-assemble the fuser cover.
4	Back cover installation failure	Re-assemble the back cover.
5	Eject sensor failure	Replace the eject sensor PCB ASSY.
6	Back cover failure	Replace the back cover.
7	Eject roller 1 failure	Replace the fuser cover.
8	Main PCB failure	Replace the main PCB ASSY.

■ Error code 7300

Jam Tray 1

After the paper feed sensor detects paper pass, the registration front sensor does not detect paper pass after a set period of time.

<User Check>

- Remove the jammed paper.

Step	Cause	Remedy
1	Foreign object inside machine	Remove foreign object.
2	Paper dust cleaning roller installation failure	Re-assemble the paper dust cleaning roller.
3	Registration front actuator that has come off or that has been caught	Re-assemble the registration front actuator.
4	Registration rear actuator that has come off or that has been caught	Re-assemble the registration rear actuator.
5	Registration front/rear/manual feed sensor PCB harness connection failure	Check the registration front/rear/manual feed sensor PCB harness connection and reconnect it.
6	Registration front/rear/manual feed sensor PCB failure	Replace the paper feed unit.
7	Main PCB failure	Replace the main PCB ASSY.

■ Error code 7700

Jam 2-sided

After the first side is printed in 2-sided printing mode, the registration front sensor does not detect paper pass after a set period of time.

<User Check>

- Remove the jammed paper.

Step	Cause	Remedy
1	Foreign object inside the duplex path	Remove foreign object.
2	Fuser cover installation failure	Re-assemble the fuser cover.
3	Back cover installation failure	Re-assemble the back cover.
4	Main PCB failure	Replace the main PCB ASSY.

■ Error code 7900

Jam Manual Feed

After the manual feed sensor detects pass of paper fed from the manual feed slot, the registration rear sensor does not detect paper pass after a set period of time. Or after the manual feed sensor detects paper pass, the registration rear sensor detects paper pass within a set period of time.

<User Check>

- Remove paper that is crammed in the manual feed slot.
- Check if the paper whose thickness is not prescribed is used.
- Remove the jammed paper.
- Check if paper is removed after manual feed printing is started.

Step	Cause	Remedy
1	Foreign object inside the manual feed path	Remove foreign object.
2	Registration rear actuator that has come off or that has been caught	Re-assemble the registration rear actuator.
3	Registration clutch harness connection failure	Check the registration clutch harness connection and reconnect it.
4	Registration front/rear/manual feed sensor PCB harness connection failure	Check the registration front/rear/manual feed sensor PCB harness connection and reconnect it.
5	Registration rear sensor failure	Replace the paper feed unit.
6	Registration clutch failure	Replace the registration clutch.
7	Main PCB failure	Replace the main PCB ASSY.

■ Error code 8501

No Tray

The paper feed sensor detected that the paper tray was not set (before print registration in engine) in 2-sided printing.

Error code 8505

No Tray

The paper feed sensor detected that the paper tray was not set (after print registration in engine) in 2-sided printing.

<User Check>

- Set the paper tray correctly.

Step	Cause	Remedy
1	Foreign object around the area from which paper tray is inserted	Remove foreign object.
2	Paper feed actuator that has come off or that has been caught	Re-assemble the paper feed actuator.
3	Paper feed sensor PCB harness connection failure	Check the paper feed sensor PCB harness connection and reconnect it.
4	Paper feed sensor PCB failure	Replace the paper feed unit.
5	Main PCB failure	Replace the main PCB ASSY.

■ Error code 8903

2-sided Disabled

The back cover sensor detected that the back cover was open (before print registration in engine) in 2-sided printing.

Error code 8904

2-sided Disabled

The back cover sensor detected that the back cover was open (after print registration in engine) in 2-sided printing.

<User Check>

- Close the back cover.

Step	Cause	Remedy
1	Back cover sensor harness connection failure	Check the back cover sensor harness connection and reconnect it.
2	Back cover sensor installation failure	Re-assemble the back cover sensor.
3	Breakage of boss that presses the back cover sensor	Replace the back cover.
4	Back cover sensor failure	Replace the back cover sensor harness ASSY.
5	Main PCB failure	Replace the main PCB ASSY.

■ Error code 8A01

Size Error DX

The registration rear sensor detected that the fed paper was larger or smaller than the specified size in 2-sided printing.

<User Check>

- Use the Letter to Legal size paper.

Step	Cause	Remedy
1	Registration rear actuator catching on some position	Re-assemble the registration rear actuator.
2	Registration rear sensor failure	Replace the paper feed unit.
3	Main PCB failure	Replace the main PCB ASSY.

■ Error code 8C00

Manual Feed

No paper is in the manual feed slot when printing from the manual feed slot.

<User Check>

- Load paper to the manual feed slot.

Step	Cause	Remedy
1	Registration front/rear/manual feed sensor PCB harness connection failure	Check the registration front/rear/manual feed sensor PCB harness connection and reconnect it.
2	Manual feed actuator catching on some position	Re-assemble the manual feed actuator.
3	Manual feed sensor failure	Replace the paper feed unit.
4	Main PCB failure	Replace the main PCB ASSY.

■ Error code 8D01

Short paper

The registration rear sensor detected that the paper loaded in the paper tray was smaller than the specified size.

<User Check>

- Open the back cover and print using the straight paper path.
- Length of the paper is 140 mm or more.

Step	Cause	Remedy
1	Registration rear actuator catching on some position	Re-assemble the registration rear actuator.
2	Registration rear sensor failure	Replace the paper feed unit.
3	Main PCB failure	Replace the main PCB ASSY.

■ Error code 8D02

Small paper

When printing with the back cover closed, the paper size selected in the print data is smaller than the valid size.

<User Check>

- Check whether the back cover is open.

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

■ Error code 9002

Size Mismatch

The size of paper loaded in the paper tray and the one specified from the driver are not same when paper is fed from the paper tray.

<User Check>

- When specifying the paper in the driver, set the paper size of the paper that is actually set.

Step	Cause	Remedy
1	Registration rear actuator catching on some position	Re-assemble the registration rear actuator.
2	Registration rear sensor failure	Replace the paper feed unit.
3	Main PCB failure	Replace the main PCB ASSY.

■ Error code 9302

No Paper

When paper was fed from the paper tray, the paper feed sensor detected that no paper was in the paper tray.

<User Check>

- Load paper to the paper tray.

Step	Cause	Remedy
1	Foreign object in pick-up roller	Remove foreign object.
2	Paper feed sensor PCB harness connection failure	Check the paper feed sensor PCB harness connection and reconnect it.
3	Paper feed actuator catching on some position	Re-assemble the paper feed actuator.
4	Paper feed sensor failure	Replace the paper feed unit.
5	Gear failure inside of process drive unit	Replace the process drive unit.
6	Main PCB failure	Replace the main PCB ASSY.

■ Error code 9701

Size Error DX

For 2-sided printing, the tray whose paper size was not supported by 2-sided printing was selected.

<User Check>

- Set the driver setting to A4 size or equal to or larger than Letter size, and set the same size of paper into the paper tray.

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

■ Error code 9801

Calibrate

Error occurred with the value measured during color density adjustment performed from the control panel.

<User Check>

- Check if the toner cartridges are set in the correct order of colors.
- Replace the toner cartridge.
- Replace the drum unit.
- If the belt unit has a scratch, replace it.
- If "WT Box End Soon" is displayed on the LCD and the belt unit has dirt, replace the waste toner box.

Step	Cause	Remedy
1	Registration mark sensor L dirty	Clean the registration mark sensor L.
2	Failure in printed measurement pattern image	If failure occurs when printing "2D3S YCMK_ _A" in "Function code 71", refer to "4.3 Image Defect Troubleshooting" in this chapter and take a measure.
3	Registration mark L PCB harness connection failure	Check the registration mark L PCB harness connection and reconnect it.
4	Eject sensor PCB harness connection failure	Check the eject sensor PCB harness connection and reconnect it.
5	Density sensor failure	Replace the registration mark L PCB ASSY.
6	Main PCB failure	Replace the main PCB ASSY.

■ Error code 9802

Calibrate

Dot counter or develop roller counter of color toner has reached the upper limit during color density adjustment performed from the control panel.

<User Check>

- Replace the corresponding toner cartridge.

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

■ Error code 9803

Calibrate

Density patch measurement ended unsuccessfully during color density adjustment performed from the control panel.

Error code 9804

Calibrate

Error occurred with the value measured during density sensor sensitivity calibration.

<User Check>

- Check if the toner cartridges are set in the correct order of colors.
- Replace the toner cartridge.
- Replace the drum unit.
- If the belt unit has a scratch, replace it.
- If "WT Box End Soon" is displayed on the LCD and the belt unit has dirt, replace the waste toner box.

Step	Cause	Remedy
1	Registration mark sensor L dirty	Clean the registration mark sensor L.
2	Failure in printed measurement pattern image	If failure occurs when printing "2D3S YCMK_ _A" in "Function code 71", refer to "4.3 Image Defect Troubleshooting" in this chapter and take a measure.
3	Registration mark L PCB harness connection failure	Check the registration mark L PCB harness connection and reconnect it.
4	Eject sensor PCB harness connection failure	Check the eject sensor PCB harness connection and reconnect it.
5	Density sensor failure	Replace the registration mark L PCB ASSY.
6	Main PCB failure	Replace the main PCB ASSY.

■ Error code 9901

Registration

Error occurred with the value measured during adjustment of color registration.

<User Check>

- Check if the toner cartridges are set in the correct order of colors.
- Replace the toner cartridge.
- Replace the drum unit.
- If the belt unit has a scratch, replace it.
- If "WT Box End Soon" is displayed on the LCD and the belt unit has dirt, replace the waste toner box.

Step	Cause	Remedy
1	Registration mark sensor L/ registration mark sensor R dirty	Clean the registration mark sensor L/ registration mark sensor R.
2	Registration mark L PCB/ registration mark R PCB harness connection failure	Check the registration mark L PCB/ registration mark R PCB harness connection and reconnect it.
3	Eject sensor PCB harness connection failure	Check the eject sensor PCB harness connection and reconnect it.
4	Failure in printed measurement pattern image	If failure occurs when printing "2D3S YCMK_ _A" in "Function code 71", refer to "4.3 Image Defect Troubleshooting" in this chapter and take a measure.
5	Registration mark sensor L failure	Replace the registration mark L PCB ASSY.
6	Registration mark sensor R failure	Replace the registration mark R PCB ASSY.
7	Main PCB failure	Replace the main PCB ASSY.

■ Error code 9902

Registration

Dot counter or develop roller counter of color toner has reached the upper limit during adjustment of color registration.

<User Check>

- Replace the corresponding toner cartridge.

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

■ Error code 9903

Registration

Error occurred during patch data printing in adjustment of color registration.

<User Check>

- Check if the toner cartridges are set in the correct order of colors.
- Replace the toner cartridge.
- Replace the drum unit.
- If the belt unit has a scratch, replace it.
- If "WT Box End Soon" is displayed on the LCD and the belt unit has dirt, replace the waste toner box.

Step	Cause	Remedy
1	Registration mark sensor L/ registration mark sensor R dirty	Clean the registration mark sensor L/ registration mark sensor R.
2	Registration mark L PCB/ registration mark R PCB harness connection failure	Check the registration mark L PCB/ registration mark R PCB harness connection and reconnect it.
3	Eject sensor PCB harness connection failure	Check the eject sensor PCB harness connection and reconnect it.
4	Failure in printed measurement pattern image	If failure occurs when printing "2D3S YCMK_ _A" in "Function code 71", refer to "4.3 Image Defect Troubleshooting" in this chapter and take a measure.
5	Registration mark sensor L failure	Replace the registration mark L PCB ASSY.
6	Registration mark sensor R failure	Replace the registration mark R PCB ASSY.
7	Main PCB failure	Replace the main PCB ASSY.

■ Error code 9A01

Registration

Error occurred with the value measured during auto color registration performed from the control panel.

<User Check>

- Check if the toner cartridges are set in the correct order of colors.
- Replace the toner cartridge.
- Replace the drum unit.
- If the belt unit has a scratch, replace it.
- If "WT Box End Soon" is displayed on the LCD and the belt unit has dirt, replace the waste toner box.

Step	Cause	Remedy
1	Registration mark sensor L/ registration mark sensor R dirty	Clean the registration mark sensor L/ registration mark sensor R.
2	Registration mark L PCB/ registration mark R PCB harness connection failure	Check the registration mark L PCB/ registration mark R PCB harness connection and reconnect it.
3	Eject sensor PCB harness connection failure	Check the eject sensor PCB harness connection and reconnect it.
4	Failure in printed measurement pattern image	If failure occurs when printing "2D3S YCMK_ _A" in "Function code 71", refer to "4.3 Image Defect Troubleshooting" in this chapter and take a measure.
5	Registration mark sensor L failure	Replace the registration mark L PCB ASSY.
6	Registration mark sensor R failure	Replace the registration mark R PCB ASSY.
7	Main PCB failure	Replace the main PCB ASSY.

■ Error code 9A02

Registration

Dot counter or develop roller counter of color toner has reached the upper limit during auto color registration performed from the control panel.

<User Check>

- Replace the corresponding toner cartridge.

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

■ Error code 9A03

Registration

Error occurred during patch data printing in auto color registration performed from the control panel.

<User Check>

- Check if the toner cartridges are set in the correct order of colors.
- Replace the toner cartridge.
- Replace the drum unit.
- If the belt unit has a scratch, replace it.
- If "WT Box End Soon" is displayed on the LCD and the belt unit has dirt, replace the waste toner box.

Step	Cause	Remedy
1	Registration mark sensor L/ registration mark sensor R dirty	Clean the registration mark sensor L/ registration mark sensor R.
2	Registration mark L PCB/ registration mark R PCB harness connection failure	Check the registration mark L PCB/ registration mark R PCB harness connection and reconnect it.
3	Eject sensor PCB harness connection failure	Check the eject sensor PCB harness connection and reconnect it.
4	Failure in printed measurement pattern image	If failure occurs when printing "2D3S YCMK_ _A" in "Function code 71", refer to "4.3 Image Defect Troubleshooting" in this chapter and take a measure.
5	Registration mark sensor L failure	Replace the registration mark L PCB ASSY.
6	Registration mark sensor R failure	Replace the registration mark R PCB ASSY.
7	Main PCB failure	Replace the main PCB ASSY.

■ Error code C001

Log Access Error

Timeout occurred with access request sent to server due to incorrect server address, network disconnection, or inactive server.

Error code C002

Log Access Error

User authentication is unavailable due to incorrect user name, incorrect password, or asynchronous date and time between the machine and server.

Error code C003

Log Access Error

Access to a file is unavailable due to incorrect directory name, no write permission on directory, file write lock, or no write permission on file.

Error code C004

Log Access Error

The current time necessary for user authentication is unavailable due to machine clock (RTC) not being set and time not being obtained through SNTP.

<User Check>

- Refer to User's guide and reconfigure network settings.
- Check the wiring of the LAN cables.
- Check the wireless LAN settings.

Step	Cause	Remedy
1	Wireless LAN PCB connector connection failure	Check the wireless LAN PCB connector connection 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 C700

Out of Memory

The memory is insufficient to expand the data of PC-Print.

Error code C800

Out of Memory

The memory used to store secure print data exceeded the memory size for secure print data.

<User Check>

- Print the print data stored in the memory.
- Divide the print data and print it.

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

■ Error code E000

Print Unable E0

Some ROM checksum error occurred.

<User Check>

- Install the latest firmware.

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

■ Error code E100

Print Unable E1

Program error.

<User Check>

- Install the latest firmware.

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

■ Error code E500

Print Unable E5

Error occurred when DRAM on the main PCB ASSY was accessed.

Error code E600

Print Unable E6

Error occurred during writing to EEPROM on the main PCB ASSY.

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

■ Error code F900

Machine Error F9

Setting by country code is not entered.

Step	Cause	Remedy
1	During function code 74, power is turned OFF.	Enter the Setting by country code again. (Refer to "1.4.21 Setting by country (Function code 74)" in Chapter 5.)
2	Main PCB failure	Replace the main PCB ASSY.

4.2 Paper Feeding Problems

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

4.2.1 No paper feeding from paper tray

<User Check>

- Check if the paper is loaded into the paper tray correctly.
- Check that too much paper is not loaded in the paper tray.
- Turn back the paper loaded in the paper tray or change the orientation of the paper by 180°.
- Check if the thickness of the paper is 60 to 105 g/m^2.
- Check whether the manual feed slot is selected mistakenly as the setting of printer driver.
- Shuffle the papers and reload them into the paper tray.
- Clean the pick-up roller.

Step	Cause	Remedy
1	Coming off of paper feed actuator	Re-assemble the paper feed actuator.
2	Main motor harness connection failure	Check the main motor harness connection and reconnect it.
3	Paper feed clutch harness connection failure	Check the paper feed clutch harness connection and reconnect it.
4	Paper feed sensor PCB harness connection failure	Check the paper feed sensor PCB harness connection and reconnect it.
5	Pick-up roller worn out	Replace the pick-up roller.
6	Pressing plate up/down gear damaged (Including the inside of the paper tray)	Replace the each pressing plate up/down gear.
7	Paper feed clutch failure	Replace the paper feed clutch.
8	Paper feed sensor failure	Replace the paper feed unit.
9	Main motor failure	Replace the process drive unit.
10	Main PCB failure	Replace the main PCB ASSY.

4.2.2 No paper feeding from the manual feed slot

<User Check>

- Check if the paper is loaded into the manual feed slot correctly.
- Check that multiple sheets of paper are not loaded in the manual feed slot.
- Check if the thickness of the paper is 60 to 163 g/m^2.
- Check whether a paper tray is selected mistakenly as the setting of printer driver.

Step	Cause	Remedy
1	Coming off of manual feed actuator	Re-assemble the manual feed actuator.
2	Main motor harness connection failure	Check the main motor harness connection and reconnect it.
3	Registration front/rear/manual feed sensor PCB harness connection failure	Check the registration front/rear/manual feed sensor PCB harness connection and reconnect it.
4	Registration clutch failure	Replace the registration clutch.
5	Paper feed unit failure	Replace the paper feed unit.
6	Main motor failure	Replace the process drive unit.
7	Low-voltage power supply PCB failure	Replace the low-voltage power supply PCB ASSY.
8	Main PCB failure	Replace the main PCB ASSY.

4.2.3 Double feeding

<User Check>

- Check if the paper is loaded into the paper tray correctly.
- Check whether the number of set sheets of paper inside paper tray is too much.
- Turn back the paper loaded in the paper tray or change the orientation of the paper by 180°.
- Check if the thickness of the paper is 60 to 105 g/m^2.
- Shuffle the papers and reload them into the paper tray.

Step	Cause	Remedy
1	Separation pad or separation roller worn out	Replace the PF kit 1.

4.2.4 Wrinkles on paper

<User Check>

- Check if the paper is loaded into the each paper tray correctly.
- Turn back the paper loaded in the paper tray or change the orientation of the paper by 180°.
- Adjust the paper guide corresponding to the paper size.
- Check if the thickness of the paper is 60 to 105 g/m^2.
  (60 to 163 g/m^2 for manual feed slot.)
- Check if paper is not damp.
- Check that no dust adheres to the fuser unit.
- Check whether the paper type is appropriate.

Step	Cause	Remedy
1	Fuser unit failure	Replace the fuser unit.

4.2.5 Paper inclines diagonally

<User Check>

- Check if the paper is loaded into the each paper tray correctly.
- Adjust the paper guide corresponding to the paper size.
- Check if the thickness of the paper is 60 to 105 g/m^2.
  (60 to 163 g/m^2 for manual feed slot.)
- Check if too much paper is loaded in the tray.

Step	Cause	Remedy
1	Registration clutch failure	Replace the registration clutch.
2	Paper feed unit failure	Replace the paper feed unit.
3	Main PCB failure	Replace the main PCB ASSY.

4.2.6 Curl of paper

<User Check>

- Select "Reduce Paper Curl" in the driver.
- Check if the thickness of the paper is 60 to 105 g/m^2.
  (60 to 163 g/m^2 for manual feed slot.)
- Perform printing with the envelope lever lowered to the position "B".
  (Refer to the figure below.)
- Print with the anti curl lever set on the outside. (Refer to the figure below.)

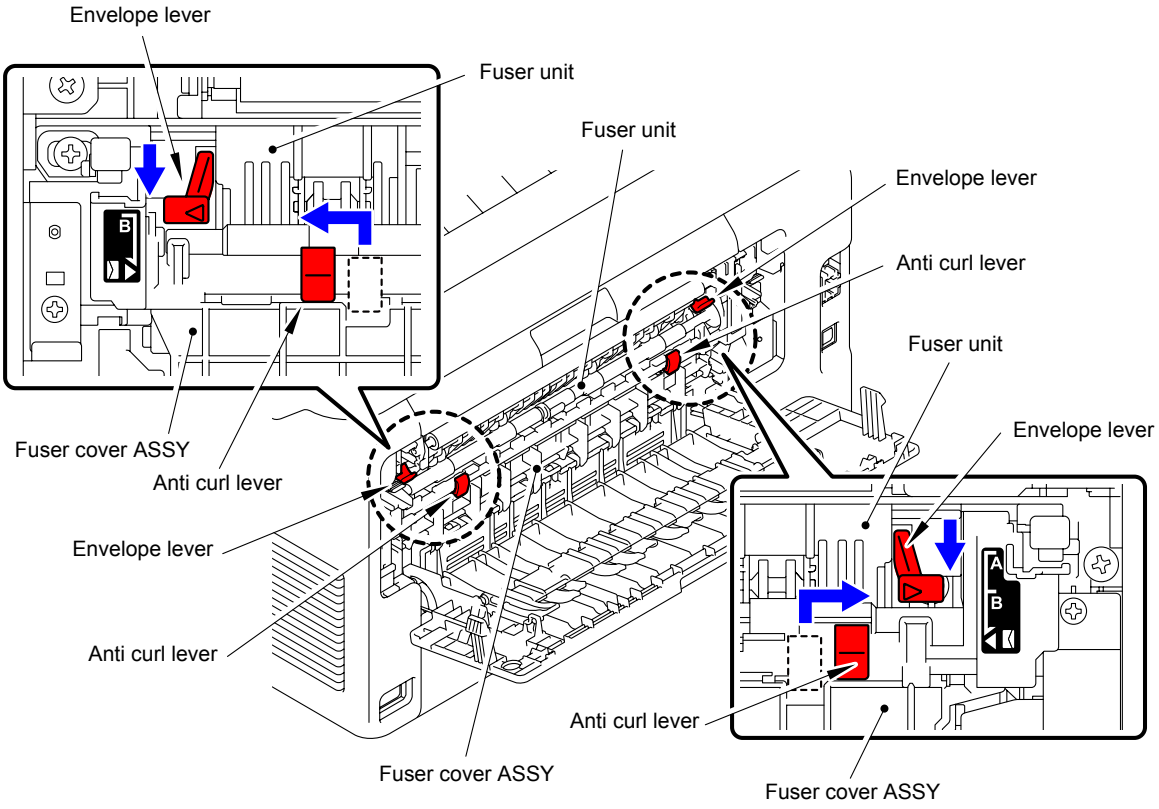


Fig. 2-9

4.2.7 Unable to perform 2-sided printing

<User Check>

- Firmly close the back cover.
- Firmly install the paper tray.
- Set driver to 2-sided printing.
- Use the paper equal to or larger than Letter size or A4 size.
  (Use paper specified in each country setting.)

Step	Cause	Remedy
1	Eject actuator catching on some position	Re-assemble the eject actuator.
2	Back cover failure	Replace the back cover.
3	Duplex tray failure	Replace the duplex tray.
4	Back cover sensor failure	Replace the back cover sensor harness ASSY.

4.2.8 Paper jam

■ Paper jam at paper feed section

<User Check>

- Turn the orientation of the papers loaded in the paper tray by 180°.
- Shuffle the papers loaded in the paper tray and set them in the tray again.
- Check if the thickness of the paper is 60 to 105 g/m^2.
  (60 to 163 g/m^2 for manual feed slot.)
- Check if a label sticks to a roller or the paper transport section.

Step	Cause	Remedy
1	Foreign object at the front of the machine	Remove foreign object. Check if a label sticks to the side or underside of a part.
2	Paper dust cleaning roller installation failure	Re-assemble the paper dust cleaning roller.
3	Registration front actuator that has come off or that has been caught	Re-assemble the registration front actuator.
4	Registration front/rear/manual feed sensor PCB harness connection failure	Check the registration front/rear/manual feed sensor PCB harness connection and reconnect it.
5	Main motor failure	Replace the process drive unit.
6	Feed roller failure	Replace the paper feed unit.
7	Main PCB failure	Replace the main PCB ASSY.

■ Paper jam at center of transport section

<User Check>

- Turn the orientation of the papers loaded in the paper tray by 180°.
- Shuffle the papers loaded in the paper tray and set them in the tray again.
- Check if the thickness of the paper is 60 to 105 g/m^2.
  (60 to 163 g/m^2 for manual feed slot.)
- Check that the belt unit is properly set.
- Check if a label sticks to a roller or the paper transport section.

Step	Cause	Remedy
1	Foreign object inside machine	Remove foreign object. Check if a label sticks to the side or underside of a part.
2	Eject actuator that has come off or that has been caught	Re-assemble the eject actuator.
3	Fuser cover installation failure	Re-assemble the fuser cover.
4	Eject sensor PCB harness connection failure	Check the eject sensor PCB harness connection and reconnect it.
5	Fuser cover failure	Replace the fuser cover.
6	Eject sensor failure	Replace the eject sensor PCB ASSY.
7	Fuser unit failure	Replace the fuser unit.
8	Main PCB failure	Replace the main PCB ASSY.

■ Paper jam at paper eject section

<User Check>

- Turn the orientation of the papers loaded in the paper tray by 180°.
- Check if the thickness of the paper is 60 to 105 g/m^2.
  (60 to 163 g/m^2 for manual feed slot.)
- Check if a label sticks to a roller or the paper transport section.

Step	Cause	Remedy
1	Foreign object at the back of the machine	Remove foreign object. Check if a label sticks to the side or underside of a part.
2	Eject actuator catching on some position	Re-assemble the eject actuator.
3	Fuser cover installation failure	Re-assemble the fuser cover.
4	Back cover installation failure	Re-assemble the back cover.
5	Eject sensor PCB harness connection failure	Check the eject sensor PCB harness connection and reconnect it.
6	Back cover failure	Replace the back cover.
7	Eject roller 1 failure	Replace the fuser cover.
8	Eject sensor failure	Replace the eject sensor PCB ASSY.
9	Main PCB failure	Replace the main PCB ASSY.

■ Paper jam at duplex tray section

<User Check>

- Turn the orientation of the papers loaded in the paper tray by 180°.
- Check if the thickness of the paper is 60 to 105 g/m^2.
  (60 to 163 g/m^2 for manual feed slot.)
- Check if a label sticks to a roller or the paper transport section.

Step	Cause	Remedy
1	Foreign object inside the duplex path	Remove foreign object. Check if a label sticks to the side or underside of a part.
2	Fuser cover installation failure	Re-assemble the fuser cover.
3	Back cover installation failure	Re-assemble the back cover.
4	Main PCB failure	Replace the main PCB ASSY.

4.3 Image Defect Troubleshooting

4.3.1 Image defect examples

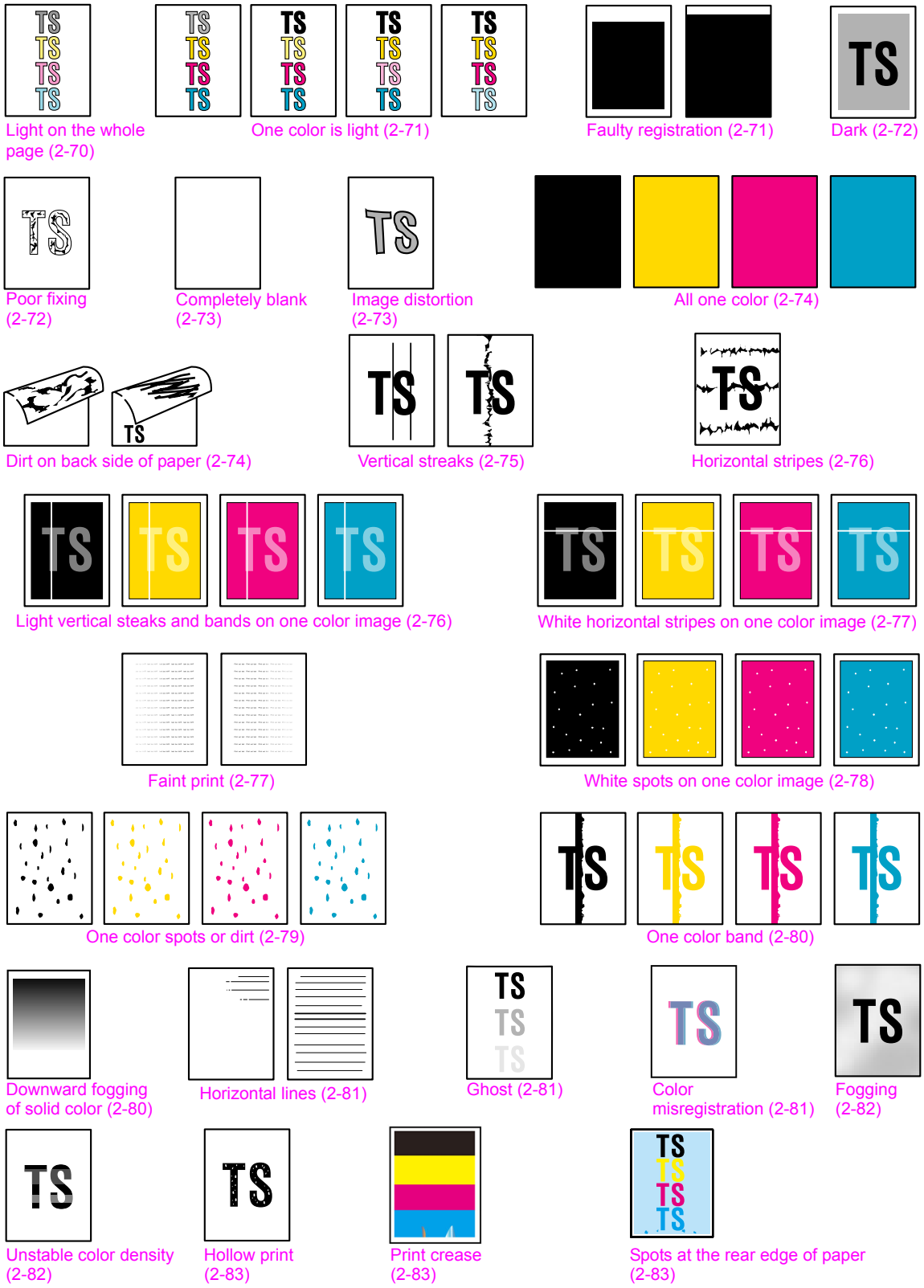
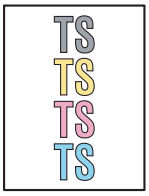


Fig. 2-10

4.3.2 Troubleshooting image defect

Image defect related problems 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.

■ Light on the whole page

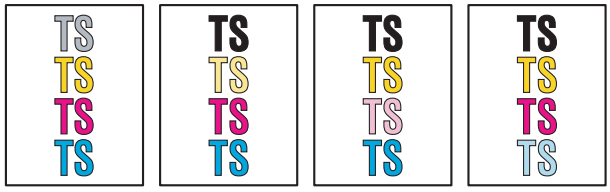


<User Check>

- 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.
- Adjust the color calibration from the control panel.
- Replace the drum unit with a new one.
- Replace the toner cartridge with a new one.
- Replace the belt unit with a new one.

Step	Cause	Remedy
1	Dirt on the GRID electrodes of main body and drum unit	Clean the GRID electrodes of the main body and the drum unit. (Refer to fig. 2-5 (P2-40) and fig. 2-6 (P2-41))
2	Fuser unit failure	Replace the fuser unit.
3	High-voltage power supply PCB failure	Replace the high-voltage power supply PCB ASSY.
4	Main PCB failure	Replace the main PCB ASSY.

■ One color is light



<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 drum unit or toner cartridge with a new one.
- Adjust the color calibration from the control panel.
- Clean the LED ASSY.

Step	Cause	Remedy
1	Dirt on the GRID electrodes of the main body and drum unit.	Clean the GRID electrodes of the main body and drum unit. (Refer to fig. 2-5 (P2-40) and fig. 2-6 (P2-41))
2	Dirt on the electrodes of main body and develop roller	Clean the electrodes of the main body and the develop rollers. (Refer to fig. 2-5 (P2-40))
3	LED ASSY failure of the corresponding color	Replace the LED ASSY of corresponding color.
4	High-voltage power supply PCB failure	Replace the high-voltage power supply PCB ASSY.
5	Main PCB failure	Replace the main PCB ASSY.

■ Faulty registration

<User Check>

- Check whether appropriate paper type is selected on the driver.

Step	Cause	Remedy
1	Registration rear actuator catching on some position	Re-assemble the registration rear actuator.
2	LED ASSY failure	Replace the LED ASSY.
3	Main PCB failure	Replace the main PCB ASSY.

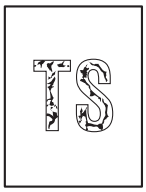
■ Dark

<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 of each drum unit for all four colors.
- Check if a used toner cartridge is set after new toner detection.
- Adjust density with the density adjustment function.
- Replace the drum unit or toner cartridge with a new one.
- Replace the belt unit with a new one.

Step	Cause	Remedy
1	Dirt on the GRID electrodes of the main body or drum unit	Clean the GRID electrodes of the main body or drum unit. (Refer to fig. 2-5 (P2-40) and fig. 2-6 (P2-41))
2	High-voltage power supply PCB failure	Replace the high-voltage power supply PCB ASSY.
3	LED ASSY of corresponding color failure	Replace the LED ASSY of corresponding color.
4	Registration mark sensor failure	Replace the registration mark L PCB ASSY.
5	Main PCB failure	Replace the main PCB ASSY.

■ Poor fixing

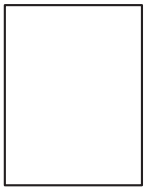


<User Check>

- 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 of each drum unit for all four colors.
- Replace the drum unit or toner cartridge with a new one.
- Replace the belt unit with a new one.
- Clean the surface of the LED ASSY.

Step	Cause	Remedy
1	Fuser unit failure	Replace the fuser unit.
2	High-voltage power supply PCB failure	Replace the high-voltage power supply PCB ASSY.
3	Low-voltage power supply PCB failure	Replace the low-voltage power supply PCB ASSY.
4	LED ASSY failure	Replace the LED ASSY.
5	Main PCB failure	Replace the main PCB ASSY.

■ Completely blank

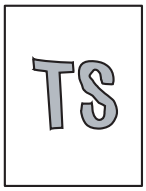


<User Check>

- Clean the corona wire of each drum unit for all four colors.
- Replace the drum unit or toner cartridge with a new one.
- Install the latest firmware.

Step	Cause	Remedy
1	Dirt on the GRID electrodes of the main body or drum unit	Clean the GRID electrodes of the main body or drum unit. (Refer to fig. 2-5 (P2-40) and fig. 2-6 (P2-41))
2	LED ASSY flat cable connection failure	Check the LED ASSY flat cable connection and reconnect it.
3	LED ASSY installation failure	Re-assemble the LED ASSY.
4	LED ASSY flat cable failure	Replace the LED ASSY flat cable.
5	LED ASSY failure	Replace the LED ASSY.
6	LED control PCB failure	Replace the LED control PCB ASSY.
7	High-voltage power supply PCB failure	Replace the high-voltage power supply PCB ASSY.
8	Main PCB failure	Replace the main PCB ASSY.

■ Image distortion

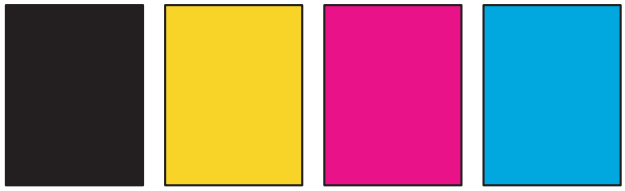


<User Check>

- Replace the belt unit with a new one.

Step	Cause	Remedy
1	LED ASSY installation failure	Install the LED ASSY properly and tighten screws securely.
2	LED ASSY failure	Replace the LED ASSY.
3	Main PCB failure	Replace the main PCB ASSY.

■ All one color

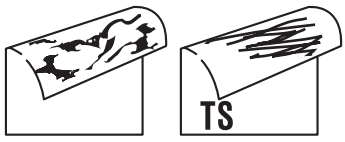


<User Check>

- Clean the corona wire of each drum unit for all four colors.
- Replace the drum unit with a new one.

Step	Cause	Remedy
1	Dirt on the GRID electrodes of the main body and drum unit.	Clean the GRID electrodes of the main body and drum unit. (Refer to fig. 2-5 (P2-40) and fig. 2-6 (P2-41))
2	Flat cable connection failure of the LED ASSY	Reconnect the flat cable of LED ASSY correctly.
3	LED ASSY flat cable failure	Replace the LED ASSY flat cable.
4	LED control PCB failure	Replace the LED control PCB ASSY.
5	High-voltage power supply PCB failure	Replace the high-voltage power supply PCB ASSY.
6	LED ASSY failure	Replace the LED ASSY.
7	Main PCB failure	Replace the main PCB ASSY.

■ Dirt on back side of paper



<User Check>

- This symptom might stop occurring after making several prints.
- Replace the toner cartridge with a new one.
- Replace the belt unit.
- Replace the waste toner box.

Step	Cause	Remedy
1	Dirt in the paper feed system	Wipe dirt off.
2	Fuser unit dirty	Replace the fuser unit.
3	High-voltage power supply PCB failure	Replace the high-voltage power supply PCB ASSY.

■ Vertical streaks

<User Check>

- Clean the corona wire of each drum unit for all four colors.
- Return the cleaning tab of the corona wire to the ▲ position.
- This symptom might stop occurring after making several prints.
- Refer to the User's guide and remove the dirt on the exposure drum using a cotton swab.
- Replace the drum unit or toner cartridge with a new one.
- Clean the LED ASSY.

Step	Cause	Remedy
1	Dirt in the paper feed system	Wipe dirt off.
2	FG wires and FG plate installation failure (Grounding is not performed properly)	Retighten the screws that hold the FG wires and FG plate. Repair the bend of the tray ground spring of the paper tray.
3	LED ASSY failure	Replace the LED ASSY.
4	Scratch and dirt on fuser unit	Replace the fuser unit.

Note:
If the machine continuously prints the same pattern including vertical streaks in particular, black vertical streaks may appear on the paper since the electrostatic performance of the exposure drum is decreased temporally.

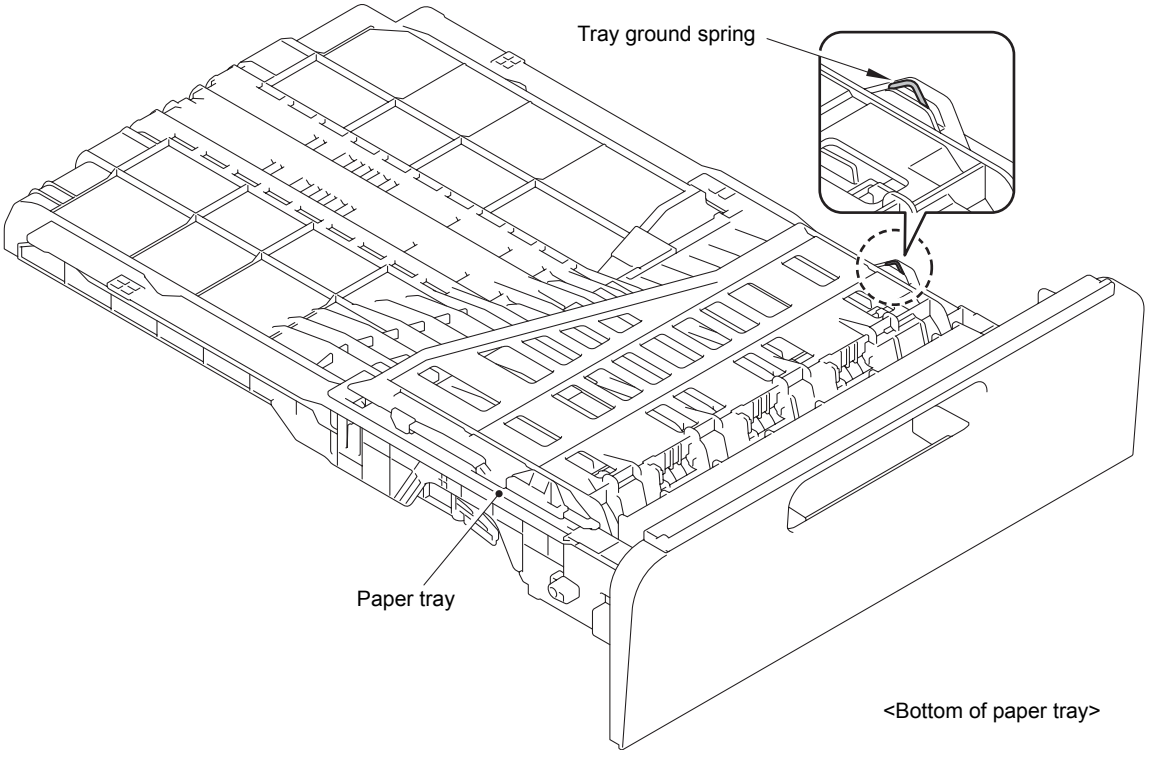


Fig. 2-11

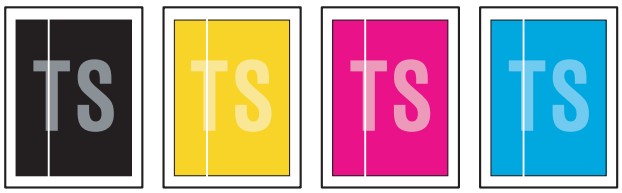
■ Horizontal stripes

<User Check>

- Clean the corona wire of each drum unit for all four colors.
- This symptom might stop occurring after making several prints.
- Refer to the User's guide and remove the dirt on the exposure drum using a cotton swab.
- Replace the drum unit or toner cartridge with a new one.

Step	Cause	Remedy
1	Dirt on charged electrode	Wipe dirt off.
2	Scratch and dirt on fuser unit	Replace the fuser unit.
3	High-voltage power supply PCB failure	Replace the high-voltage power supply PCB ASSY.

■ Light vertical steaks and bands on one color image

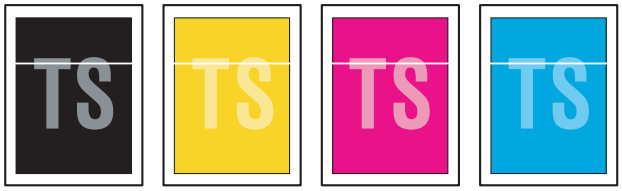


<User Check>

- Clean the inside of the machine and the corona wire of each drum unit for all four colors. (Refer to fig. 2-5 (P2-40) and fig. 2-6 (P2-41))
- Check if dust adheres to the area of the toner cartridge corresponding to the location where the white vertical streak appears.
- Refer to the User's guide and remove the dirt on the exposure drum using a cotton swab.
- Replace the drum unit or toner cartridge with a new one.
- Clean the LED ASSY.

Step	Cause	Remedy
1	Condensation	Print several pages or leave the machine for about two hours with the power turned ON.
2	LED ASSY failure	Replace the LED ASSY.

■ White horizontal stripes on one color image



<User Check>

- This symptom might stop occurring after making several prints.
- Refer to the User's guide and remove the dirt on the exposure drum using a cotton swab.
- Replace the drum unit or toner cartridge with a new one.

Step	Cause	Remedy
1	Dirt on charged electrode	Wipe dirt off.
2	Scratch and dirt on fuser unit	Replace the fuser unit.
3	High-voltage power supply PCB failure	Replace the high-voltage power supply PCB ASSY.

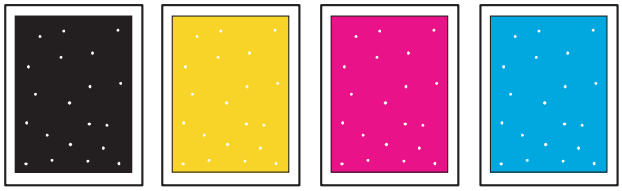
■ Faint print

<User Check>

- Check that the machine is set on a level surface.
- Replace the drum unit or toner cartridge with a new one.
- Clean the LED ASSY.

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

■ White spots on one color image



<User Check>

- Check if the main fan is not blocked.
- Refer to the User's guide and remove the dirt on the exposure drum using a cotton swab.
- Replace the drum unit or toner cartridge with a new one.

Step	Cause	Remedy
1	Paper dust cleaning roller dirty	Referring to the figure below, remove paper dust attached on the paper dust cleaning roller.
2	Scratch and dirt on fuser unit	Replace the fuser unit.
3	High-voltage power supply PCB failure	Replace the high-voltage power supply PCB ASSY.
4	Main PCB failure	Replace the main PCB ASSY.

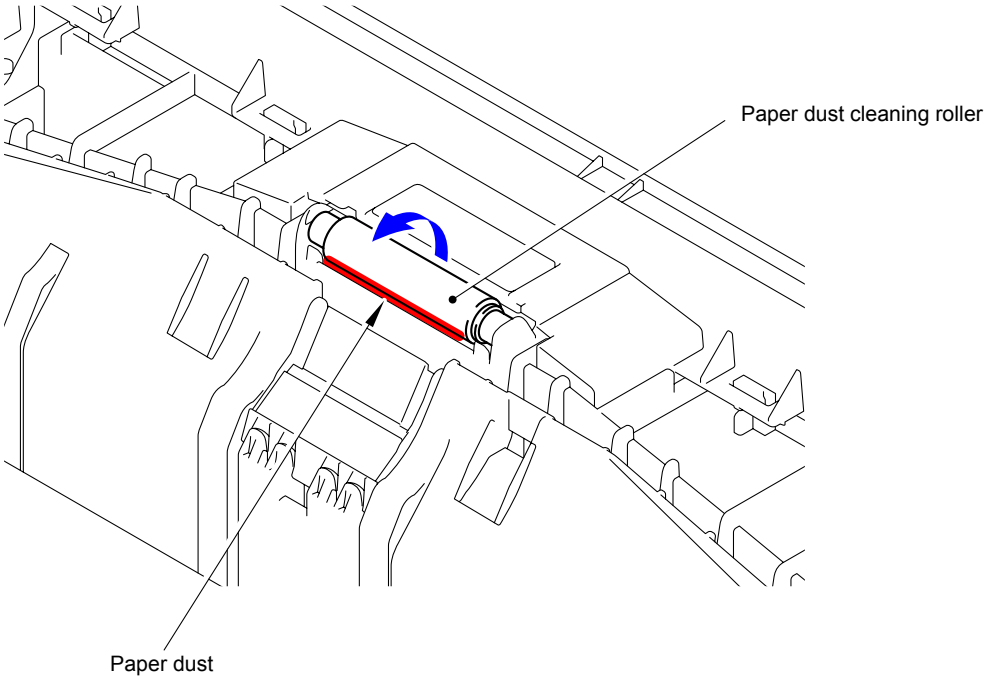
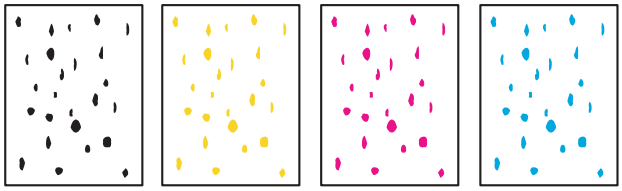


Fig. 2-12

■ One color spots or dirt



<User Check>

- Check if damp paper is used.
- Refer to the User's guide and remove the dirt on the exposure drum using a cotton swab.
- Replace the drum unit or toner cartridge with a new one.

Step	Cause	Remedy
1	Scratch and dirt on fuser unit	Replace the fuser unit.
2	High-voltage power supply PCB failure	Replace the high-voltage power supply PCB ASSY.
3	Main PCB failure	Replace the main PCB ASSY.

Note:
Image defects which occur periodically may be caused by a failure of the rollers.
Use the diameters of the rollers or the pitches which appear in images shown in the table below to identify the cause of the problem.

<Diameters of rollers and pitches on images>

No.	Part name	Diameter	The pitch which appears in the image
1	Develop roller	Ø 13 mm	24.7 mm
2	Exposure drum	Ø 30 mm	94.2 mm
3	Heat roller of the fuser unit	Ø 21 mm	66 mm
4	Pressure roller of the fuser unit	Ø 25 mm	78.5 mm

■ One color band

<User Check>

- Clean the inside of the machine and the corona wire of each drum unit for all four colors.
- Return the cleaning tab of the corona wire to the ▲ position.
- The paper tray ground terminal provided in the main body may be dirty. Clean the contact with a dry cloth.
- Refer to the User's guide and remove the dirt on the exposure drum using a cotton swab.
- Replace the drum unit or toner cartridge with a new one.
- Clean the LED ASSY.

Step	Cause	Remedy
1	LED flat cable connection failure	Reconnect the LED flat cable correctly.
2	LED flat cable failure	Replace the LED flat cable.
3	Bend of tray ground spring	Replace the paper tray.
4	LED ASSY failure	Replace the LED ASSY.

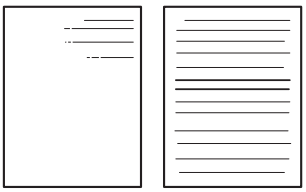
■ Downward fogging of solid color

<User Check>

- Replace the toner cartridge with a new one.

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

■ Horizontal lines



<User Check>

- This symptom might stop occurring after making several prints.
- Refer to the User's guide and remove the dirt on the exposure drum using a cotton swab.
- Replace the drum unit or toner cartridge with a new one.

Step	Cause	Remedy
1	Dirt on charged electrode	Wipe dirt off.
2	Scratch and dirt on fuser unit	Replace the fuser unit.
3	High-voltage power supply PCB failure	Replace the high-voltage power supply PCB ASSY.

■ Ghost

<User Check>

- Check the machine's environment. High temperature and high humidity or low temperature and low humidity conditions can cause this problem.
- Check whether appropriate paper type is selected on the driver.
- Select "Improve Toner Fixing Mode" in the driver.
- Replace the drum unit with a new one.

Step	Cause	Remedy
1	Fuser unit failure	Replace the fuser unit.
2	High-voltage power supply PCB failure	Replace the high-voltage power supply PCB ASSY.
3	Main PCB failure	Replace the main PCB ASSY.

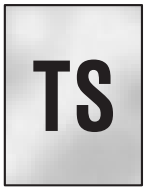
■ Color misregistration

<User Check>

- Implement the adjustment of color registration (adjustment of inter-color position alignment).
- Replace the drum unit with a new one.
- Replace the belt unit with a new one.
- Replace the waste toner box with a new one.

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

■ Fogging



<User Check>

- Check the machine's environment. High temperature and high humidity or low temperature and low humidity conditions can cause this problem.
- This symptom might stop occurring after making several prints.
- Replace the drum unit or toner cartridge with a new one.
- Do not use acid paper.

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

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

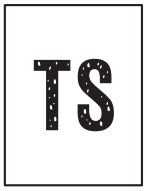
■ Unstable color density

<User Check>

- 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 or toner cartridge with a new one.
- Replace the waste toner box with a new one.

Step	Cause	Remedy
1	Dirt on drum unit electrode	Clean the electrodes of the main body and drum unit. (Refer to fig. 2-5 (P2-40) and fig. 2-6 (P2-41))
2	Dirt on toner cartridge electrode	Clean the electrodes of the main body and toner cartridge. (Refer to fig. 2-5 (P2-40) and fig. 2-6 (P2-41))
3	Dirt on belt unit electrode	Clean the electrodes of the main body and belt unit. (Refer to fig. 2-5 (P2-40) and fig. 2-8 (P2-43))
4	LED ASSY failure	Replace the LED ASSY.
5	High-voltage power supply PCB failure	Replace the high-voltage power supply PCB ASSY.
6	Main PCB failure	Replace the main PCB ASSY.

■ Hollow print



<User Check>

- Check the machine's environment. High temperature and high humidity or low temperature and low humidity conditions can cause this problem.
- Refer to the User's guide and remove the dirt on the exposure drum using a cotton swab.
- Replace the drum unit or toner cartridge with a new one.

Step	Cause	Remedy
1	Paper dust cleaning roller dirty	Remove paper dust attached on the paper dust cleaning roller. (Refer to fig. 2-12 (P2-78))
2	Scratch and dirt on fuser unit	Replace the fuser unit.
3	High-voltage power supply PCB failure	Replace the high-voltage power supply PCB ASSY.

■ Print crease

<User Check>

- Check the machine's environment. High temperature and high humidity or low temperature and low humidity conditions can cause this problem.
- Change the paper to thick paper.
- Check if paper is not damp.
- Check if the thickness of the paper is properly set in the driver.
- Perform printing with the envelope lever lowered to the position "B". (Refer to fig. 2-9 (P2-66))

Step	Cause	Remedy
1	Fuser unit failure	Replace the fuser unit.

■ Spots at the rear edge of paper

<User Check>

- Check the machine's environment. High temperature and high humidity or low temperature and low humidity conditions can cause this problem.
- Perform printing with the envelope lever lowered to the position "B". (Refer to fig. 2-9 (P2-66))

Step	Cause	Remedy
1	Fuser unit failure	Replace the fuser unit.

4.4 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.

4.4.1 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.
- Check the driver setting.
- Restore the settings at factory shipment. (Refer to User's guide.)

Step	Cause	Remedy
1	Machine connection	When using Macintosh, check the product ID* in Macintosh and update the firmware if the product ID is not correct.
2	Main PCB failure	Replace the main PCB ASSY.

* Follow the procedures below to verify the product ID in Macintosh.
  (1) Select [About This Mac] from the [Apple] menu.
  (2) Click the [More Info...] button in the [About This Mac] dialog box.
  (3) Select [USB] under the [Hardware] in [Contents] on the left side.
  (4) Select the machine (HL-XXXX) from [USB Device Tree].
  (5) Check [Product ID] in [HL-XXXX].

■ **Product ID (Hexadecimal)**

HL-3140CW: 0051h

HL-3142CW: 0070h

HL-3150CDN: 0055h

HL-3150CDW: 0052h

HL-3152CDW: 0071h

HL-3170CDW: 0053h

HL-3172CDW: 0072h

4.5 Network Problems

4.5.1 Cannot make a print through network connection

<User Check>

- Check the descriptions in the network User’s guide.
- Check the network connection.
- Perform network reset. (Refer to User's guide.)
- Check the LAN cable.

Step	Cause	Remedy
1	Harness connection failure of the wireless LAN PCB	Reconnect the harness of the wireless LAN PCB.
2	Wireless LAN PCB failure	Replace the wireless LAN PCB.
3	LAN terminal pin deformation Main PCB failure	Replace the main PCB ASSY.

4.6 Troubleshooting of the Control Panel

4.6.1 Nothing is displayed on the LCD.

Step	Cause	Remedy
1	AC cord failure	Replace the AC cord.
2	Incompatible firmware	Install the latest firmware.
3	Panel PCB harness connection failure	Check the panel PCB harness connection and reconnect it.
4	LCD harness connection failure	Check the LCD harness connection and reconnect it.
5	Low-voltage power supply PCB harness connection failure	Check the low-voltage power supply PCB harness connection and reconnect it.
6	LCD failure	Replace the LCD.
7	Panel PCB failure	Replace the panel PCB ASSY.
8	Low-voltage power supply PCB failure	Replace the low-voltage power supply PCB ASSY.
9	Main PCB failure	Replace the main PCB ASSY.

4.6.2 No LED indication

Step	Cause	Remedy
1	AC cord failure	Replace the AC cord.
2	Panel PCB harness connection failure	Check the panel PCB harness connection and reconnect it.
3	Panel PCB failure	Replace the panel PCB ASSY.
4	Low-voltage power supply PCB failure	Replace the low-voltage power supply PCB ASSY.
5	Main PCB failure	Replace the main PCB ASSY.

4.6.3 Unable to perform panel operation

Step	Cause	Remedy
1	Panel unit attachment failure	Re-assemble the panel unit.
2	Panel PCB harness connection failure	Check the panel PCB harness connection and reconnect it.
3	Rubber key failure	Replace the rubber key ASSY.
4	Panel PCB failure	Replace the panel PCB ASSY.
5	Low-voltage power supply PCB failure	Replace the low-voltage power supply PCB ASSY.
6	Main PCB failure	Replace the main PCB ASSY.

4.7 Troubleshooting of the Toner Cartridge and Drum Unit

4.7.1 New toner not detected

<User Check>

- Be sure to install a new toner cartridge.

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

4.7.2 Cartridge error (Toner cartridge not detected)

Step	Cause	Remedy
1	During new toner cartridge detection, power is turned OFF or the top cover unit is opened	Perform toner manual reset. (Refer to "2.2 Toner Manual Reset Function" in Chapter 5)
2	High-voltage power supply PCB failure	Replace the high-voltage power supply PCB ASSY.
3	Main PCB failure	Replace the main PCB ASSY.

4.7.3 Toner low (Even though a new toner cartridge is set, Toner low warning remains)

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

4.7.4 Drum error

<User Check>

- Clean the corona wire of each drum unit for all four colors.
- Replace the drum unit with a new one and reset the drum counter.

Step	Cause	Remedy
1	Dirt on the GRID electrodes of the drum unit	Clean the GRID electrodes of the main body and drum unit. (Refer to fig. 2-5 (P2-40) and fig. 2-6 (P2-41))
2	High-voltage power supply PCB failure	Replace the high-voltage power supply PCB ASSY.
3	Main PCB failure	Replace the main PCB ASSY.

4.7.5 Drum unit replacement (Even though drum counter is reset, "Replace Drum" warning remains.)

Step	Cause	Remedy
1	Dirt on the GRID electrodes of the drum unit	Clean the GRID electrodes of the main body and drum unit. (Refer to fig. 2-5 (P2-40) and fig. 2-6 (P2-41))
2	High-voltage power supply PCB failure	Replace the high-voltage power supply PCB ASSY.
3	Main PCB failure	Replace the main PCB ASSY.

4.8 Troubleshooting of the Fuser Unit

4.8.1 Fuser unit failure

Step	Cause	Remedy
1	Harness connection failure between the connector of the fuser unit and eject sensor PCB	Check the harness connection between the connector of the fuser unit and eject sensor PCB, and reconnect it.
2	Harness connection failure between the connector of the fuser unit and low-voltage power supply PCB	Check the harness connection between the connector of the fuser unit and low-voltage power supply PCB, and reconnect it.
3	Harness connection failure of the eject sensor PCB	Check the harness connection the eject sensor PCB harness and reconnect it.
4	Eject sensor PCB failure	Refer to "1.4.8 Operational check of sensors (Maintenance mode 32)" in Chapter 5 and check the operations of sensors. If sensor operation failure occurs, replace the eject sensor PCB ASSY.
5	Low-voltage power supply PCB failure	Replace the low-voltage power supply PCB ASSY.
6	Fuser unit failure	Replace the fuser unit.
7	Main PCB failure	Replace the main PCB ASSY.

Note:

- Turn the power OFF and then ON again. After the machine is left as it is for about 10 minutes, this problem may be resolved.
- If test print is performed in maintenance mode for service personnel, the machine may recover from the error. However, note that if this operation is performed while the heater has not cooled down, the fuser unit may melt.

4.9 Troubleshooting of the LED ASSY

4.9.1 LED ASSY failure

<User Check>

- Turn ON the power, open the top cover unit and back cover, and leave them as they are for a while.
- Clean the LED ASSY.

Step	Cause	Remedy
1	Flat cable connection failure of the LED ASSY	Check the flat cable connection of the LED ASSY and reconnect it.
2	Harness connection failure of the LED control PCB	Check the harness connection of the LED control PCB ASSY and reconnect it.
3	Flat cable failure of LED ASSY	Replace the flat cable of the LED ASSY.
4	LED ASSY failure	Replace the LED ASSY.
5	LED control PCB failure	Replace the LED control PCB ASSY.
6	Main PCB failure	Replace the main PCB ASSY.

4.10 Troubleshooting on the PCB

4.10.1 Main PCB failure

<User Check>

- Turn OFF and ON the power switch.
- Install the latest firmware.

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

4.10.2 Full memory

Memory is full.

<User Check>

- Press **Go** button and print the accumulated data.
- Reduce the amount of data or lower the resolution.

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

4.10.3 Print overrun

Data deployment is too late.

<User Check>

- Reduce complication of the data or lower the resolution.

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

4.10.4 High-voltage power supply PCB failure

Step	Cause	Remedy
1	Harness connection failure between the high-voltage power supply PCB and main PCB	Check the harness connection between the high-voltage power supply PCB and main PCB, and reconnect it.
2	Contact failure of electrode terminal(s) of high-voltage power supply PCB	Clean the each electrode terminal of high-voltage power supply PCB.
3	High-voltage power supply PCB failure	Replace the high-voltage power supply PCB ASSY.
4	Low-voltage power supply PCB failure	Replace the low-voltage power supply PCB ASSY.
5	Main PCB failure	Replace the main PCB ASSY.

4.10.5 Low-voltage power supply PCB failure

Step	Cause	Remedy
1	Harness connection failure of the low-voltage power supply PCB	Check the harness connection of the low-voltage power supply PCB and reconnect it.
2	Low-voltage power supply PCB failure	Replace the low-voltage power supply PCB ASSY and reset the irregular power supply detection counter.
3	Main PCB failure	Replace the main PCB ASSY.

Note:

The irregular power supply detection error (Error code 0900) occurs when there is a large distortion of the power supply voltage supplied to the machine. In this case, if the same power supply is used, the same error might occur again even if the low-voltage power supply PCB ASSY is replaced. For this reason, be sure to ask the user to rearrange the installation environment.

4.11 Others Problems

4.11.1 The machine is not turned ON

<User Check>

- Properly insert the AC cord.

Step	Cause	Remedy
1	Harness connection failure of the panel PCB	Check the panel PCB harness connection and reconnect it.
2	Harness connection failure of the LCD	Check the LCD harness connection and reconnect it.
3	Harness connection failure of the low-voltage power supply PCB	Check the low-voltage power supply PCB harness connection and reconnect it.
4	Panel PCB failure	Replace the panel PCB ASSY.
5	LCD failure	Replace the LCD.
6	Low-voltage power supply PCB failure	Replace the low-voltage power supply PCB ASSY.
7	Main PCB failure	Replace the main PCB ASSY.

4.11.2 Main fan not rotate

Step	Cause	Remedy
1	Harness connection failure of the main fan	Check the harness connection of the main fan and reconnect it.
2	Harness connection failure of the high-voltage power supply PCB	Check the harness connection of the high-voltage power supply PCB and reconnect it.
3	Harness connection failure of the low-voltage power supply PCB	Check the harness connection of the low-voltage power supply PCB and reconnect it.
4	Main fan failure	Replace the main fan.
5	High-voltage power supply PCB failure	Replace the high-voltage power supply PCB ASSY.
6	Low-voltage power supply PCB failure	Replace the low-voltage power supply PCB ASSY.
7	Main PCB failure	Replace the main PCB ASSY.

4.11.3 Top cover unit open

Top cover unit is open state.

<User Check>

- Check that the top cover unit is completely closed.

Step	Cause	Remedy
1	Harness connection failure of the high-voltage power supply PCB	Check the harness connection of the high-voltage power supply PCB and reconnect it.
2	The member inside the top cover unit that pushes the top cover sensor is broken	Replace the top cover ASSY.
3	Top cover sensor failure	Replace the high-voltage power supply PCB ASSY.
4	Main PCB failure	Replace the main PCB ASSY.

4.11.4 Back cover open

Back cover in open state.

<User Check>

- Check that the back cover is completely closed.

Step	Cause	Remedy
1	Harness connection failure of the back cover sensor	Check the harness connection of the back cover sensor and reconnect it.
2	The member inside the back cover that pushes the back cover sensor is broken	Replace the back cover ASSY.
3	Back cover sensor failure	Replace the back cover sensor harness ASSY.
4	Main PCB failure	Replace the main PCB ASSY.

4.11.5 Unusual noise generated from the machine

<User Check>

- Check that the covers are closed correctly.
- Set each paper tray correctly.

Step	Cause	Remedy
1	Identify the location where noise is produced since the cause of the problem changes depending on the location.	When identifying the location, check if foreign object is present around the location. (Replacement of the part set at the location.)
2	Insufficient part lubrication	Lubricate the part again.
3	Bend or failure of part	Replace the part.

4.11.6 Memory related failure

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

4.11.7 Printing related failure

<User Check>

- Check if the maximum number of pages that can be printed is exceeded.

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

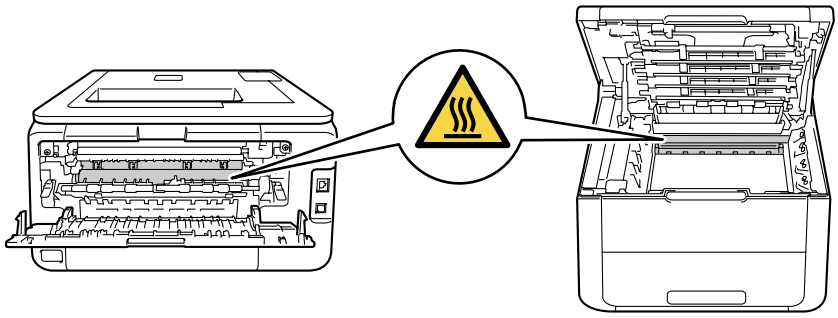
CHAPTER 3 DISASSEMBLY AND ASSEMBLY

1. SAFETY PRECAUTIONS

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

WARNING

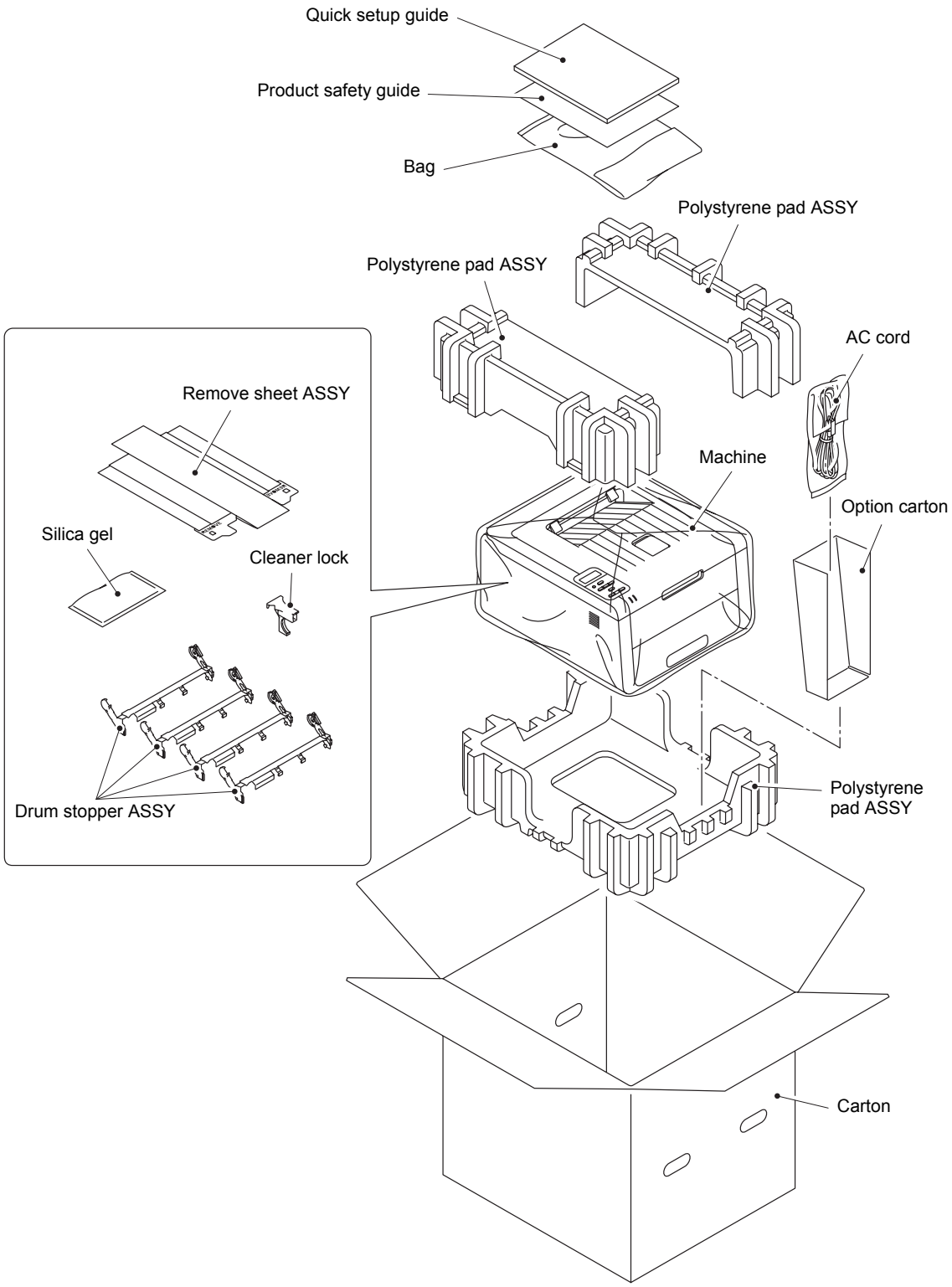
Some parts inside the machine are extremely hot immediately after the machine is used. When opening the top cover unit or back cover to access any parts inside the machine, never touch the shaded parts shown in the following figures.



Note:

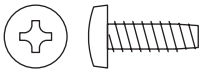
- Be careful not to lose screws, washers, or other parts removed.
- Be sure to apply grease to the gears and applicable positions specified in this chapter.
- When using soldering irons or other heat-generating tools, take care not to accidentally damage parts such as wires, PCBs and covers.
- Static 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 harness, 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 handling of harnesses. 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 main body.
- After an assembly, recommend the operation of "dielectric strength voltage check" and "continuity check".
- There must be no damage in the insulation sheet.

2. PACKING

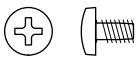


3. SCREW CATALOGUE

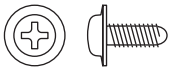
Taptite bind B

Taptite bind B M3x10	
Taptite bind B M4x12	

Taptite bind S

Taptite bind S M3x5	

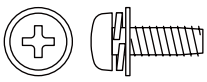
Taptite cup S

Taptite cup S M3x8 SR	

Screw pan (S/P washer)

Screw pan (S/P washer) M3.5x6	

Taptite pan (washer)

Taptite pan (washer) B M4x12 DA	

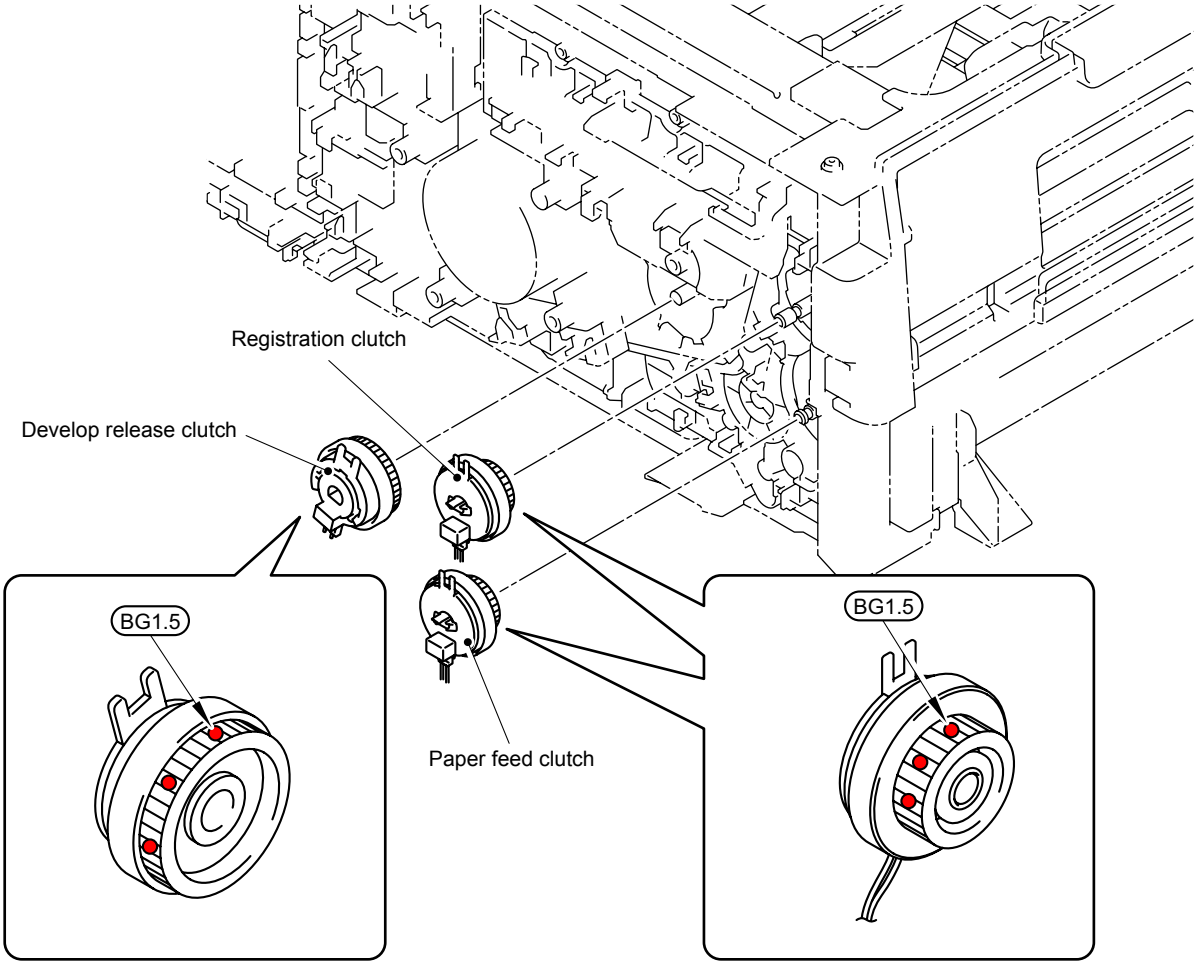
4. SCREW TORQUE LIST

Note:
For verifying the shape of each screw, refer to "3. SCREW CATALOGUE" in this chapter.

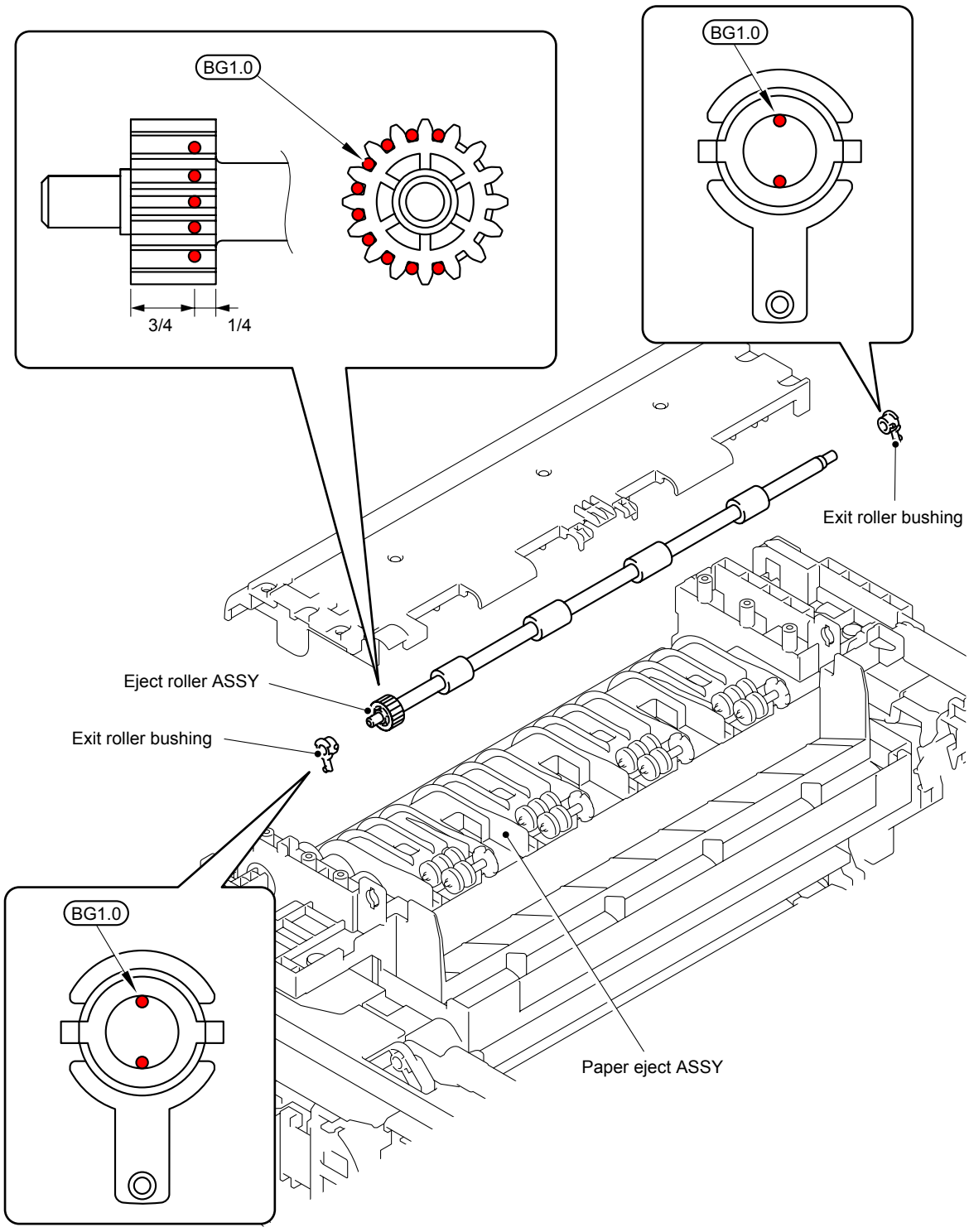
Location of screw	Screw type	Q' ty	Tightening torque N·m (kgf·cm)
Fuser cover L	Taptite bind B M3x10	1	0.45±0.05 (4.5±0.5)
Fuser cover R	Taptite bind B M3x10	1	0.45±0.05 (4.5±0.5)
Fuser unit	Taptite pan (washer) B M4x12 DA	2	0.7±0.05 (7±0.5)
Registration sensor ASSY	Taptite bind S M3x5	1	0.5±0.1 (5±1)
Side cover L	Taptite bind B M4x12	2	0.9±0.1 (9±1)
Side cover R	Taptite bind B M4x12	2	0.9±0.1 (9±1)
Duplex tray	Taptite bind B M4x12	2	0.7±0.05 (7±0.5)
Main shield cover plate	Taptite cup S M3x8 SR	4	0.7±0.1 (7±1)
LED FG harness	Taptite pan (washer) B M4x12 DA	1	0.8±0.1 (8±1)
TC lock arm guide	Taptite bind B M4x12	2	0.5±0.1 (5±1)
Sub frame ASSY	Taptite bind B M4x12	5	0.5±0.1 (5±1)
LED PCB cover	Taptite cup S M3x8 SR	3	0.4±0.05 (4±0.5)
LED control PCB ASSY	Taptite cup S M3x8 SR	2	0.4±0.05 (4±0.5)
Main PCB ASSY	Taptite cup S M3x8 SR	3	0.7±0.1 (7±1)
Develop clutch gear cover	Taptite cup S M3x8 SR	1	0.7±0.1 (7±1)
Process drive unit	Taptite cup S M3x8 SR	2	0.7±0.05 (7±0.5)
	Taptite bind B M4x12	7	0.7±0.05 (7±0.5)
	Taptite pan (washer) B M4x12 DA	1	0.7±0.05 (7±0.5)
Main drive unit	Taptite bind B M4x12	5	0.7±0.1 (7±1)
Paper feed unit	Taptite bind B M4x12	4	0.8±0.1 (8±1)
Develop release link holder	Taptite bind B M3x10	2	0.5±0.05 (5±0.5)
Paper eject ASSY	Taptite bind B M4x12	3	0.8±0.1 (8±1)
Back cover upper	Taptite bind B M3x10	4	0.5±0.1 (5±1)
HVPS ground plate front	Taptite cup S M3x8 SR	1	0.7±0.1 (7±1)
	Taptite pan (washer) B M4x12 DA	1	0.6±0.05 (6±0.5)
HVPS ground plate rear	Taptite pan (washer) B M4x12 DA	1	0.6±0.05 (6±0.5)
High-voltage power supply PCB ASSY	Taptite bind B M4x12	1	0.6±0.05 (6±0.5)
Cover plate	Taptite bind B M4x12	2	0.8±0.1 (8±1)
	Taptite bind S M3x5	1	0.5±0.1 (5±1)
	Taptite pan (washer) B M4x12 DA	1	0.7±0.05 (7±0.5)
LVPS FG harness	Screw pan (S/P washer) M3.5x6	1	0.4±0.05 (4±0.5)
LVPS plate lower	Taptite pan (washer) B M4x12 DA	6	0.8±0.1 (8±1)
	Taptite cup S M3x8 SR	2	0.5±0.1 (5±1)

5. LUBRICATION

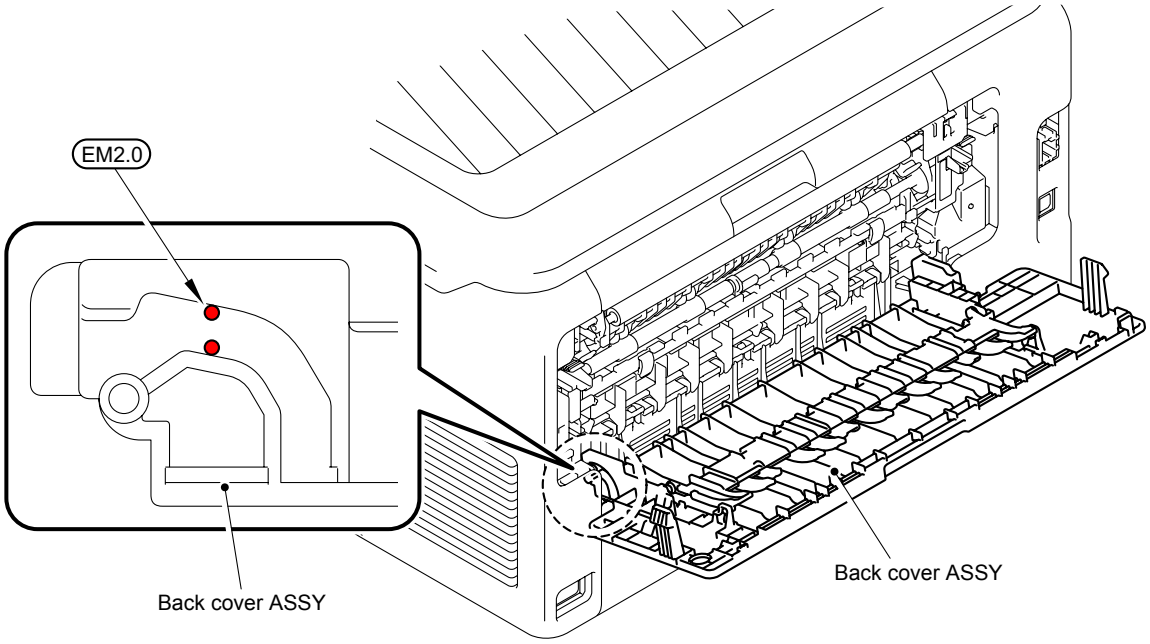
The kind of the lubricating oil (Maker name)	Lubrication point	Quantity of lubrication
FLOIL BG-10KS (Kanto Kasei)	Paper feed clutch	1.5 mm dia. ball (BG1.5)
	Develop release clutch	1.5 mm dia. ball (BG1.5)
	Registration clutch	1.5 mm dia. ball (BG1.5)
	Eject roller ASSY	1.0 mm dia. ball (BG1.0)
	Exit roller bushing	1.0 mm dia. ball (BG1.0)
MOLYKOTE EM-D110 (Dow Corning)	Back cover ASSY	2.0 mm dia. ball (EM2.0)



BG1.5: FLOIL BG-10KS (1.5 mm dia. ball)



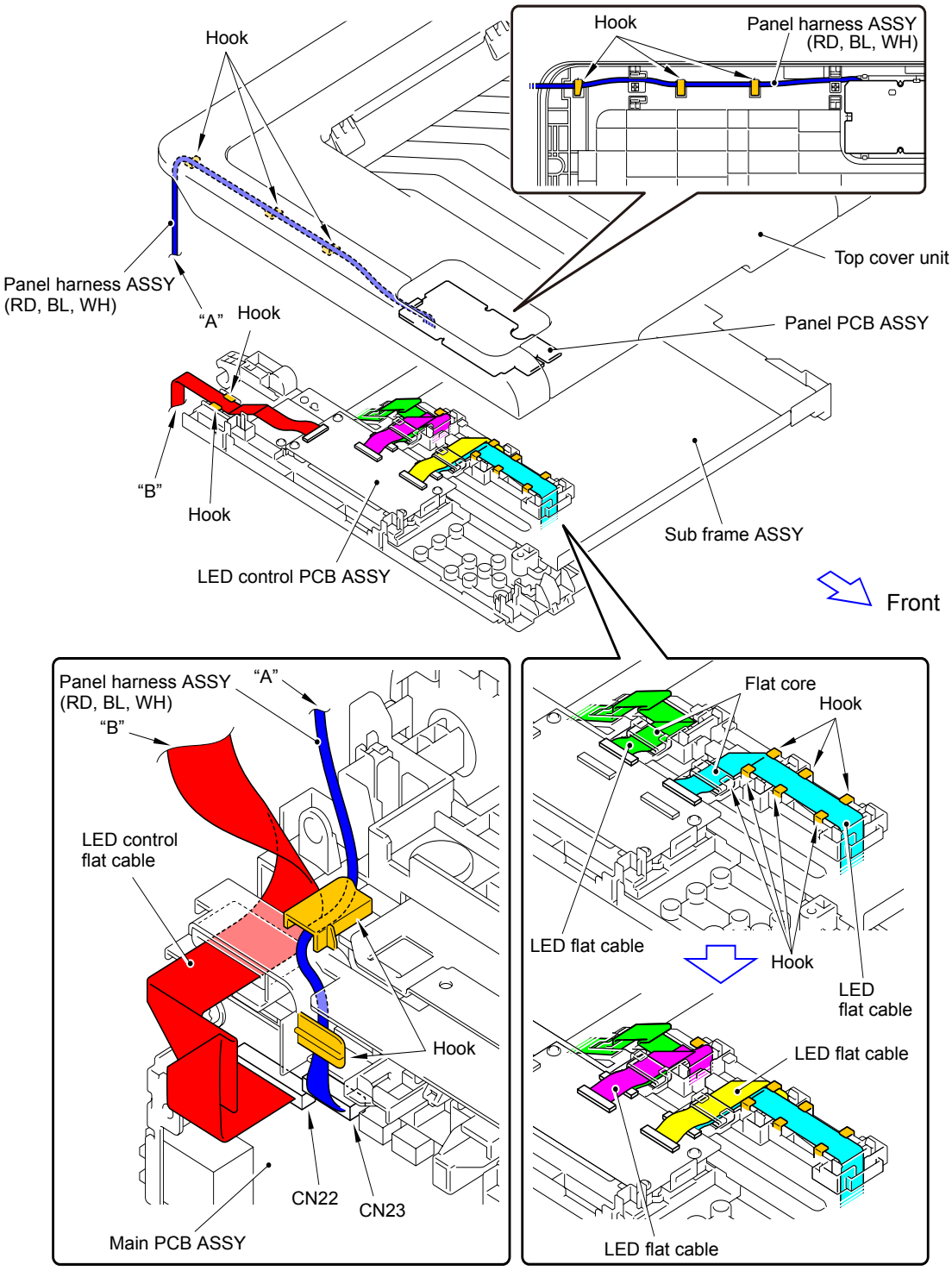
BG1.0: FLOIL BG-10KS (1.0 mm dia. ball)



EM2.0: MOLYKOTE EM-D110 (2.0 mm dia. ball)

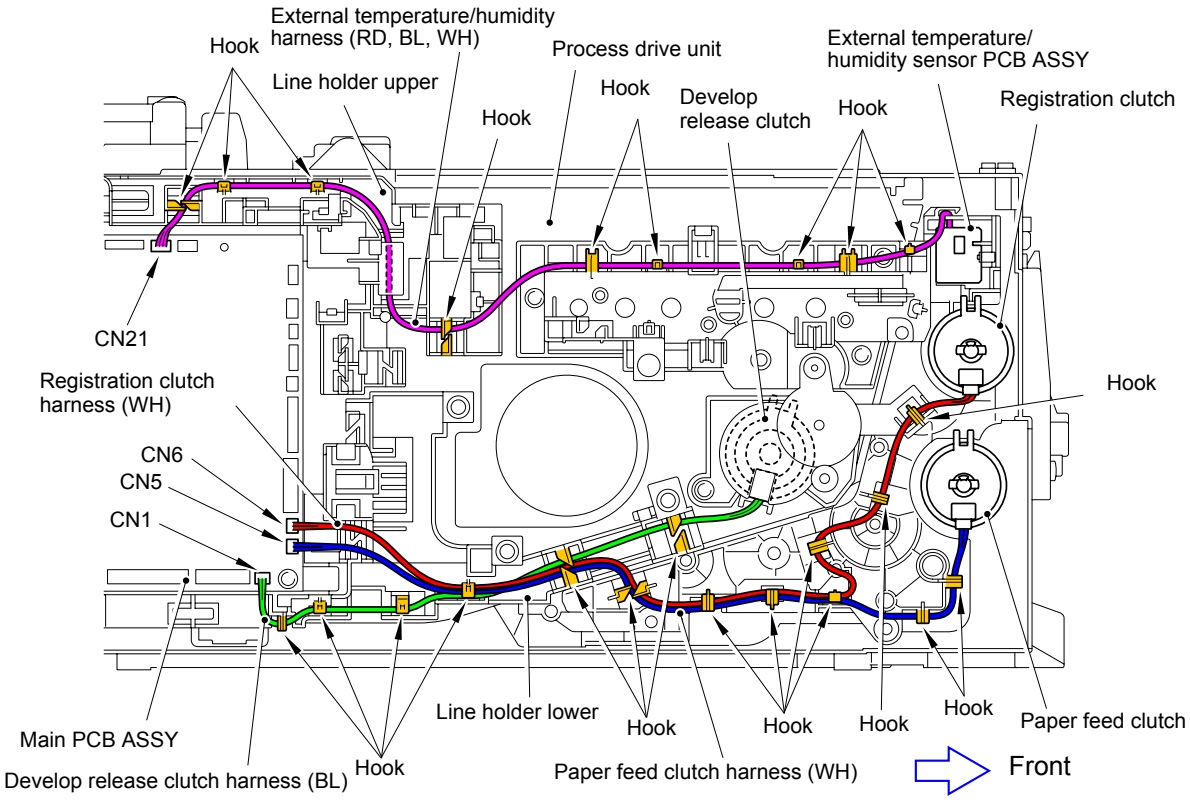
6. HARNESS ROUTING

1 Top Cover Unit



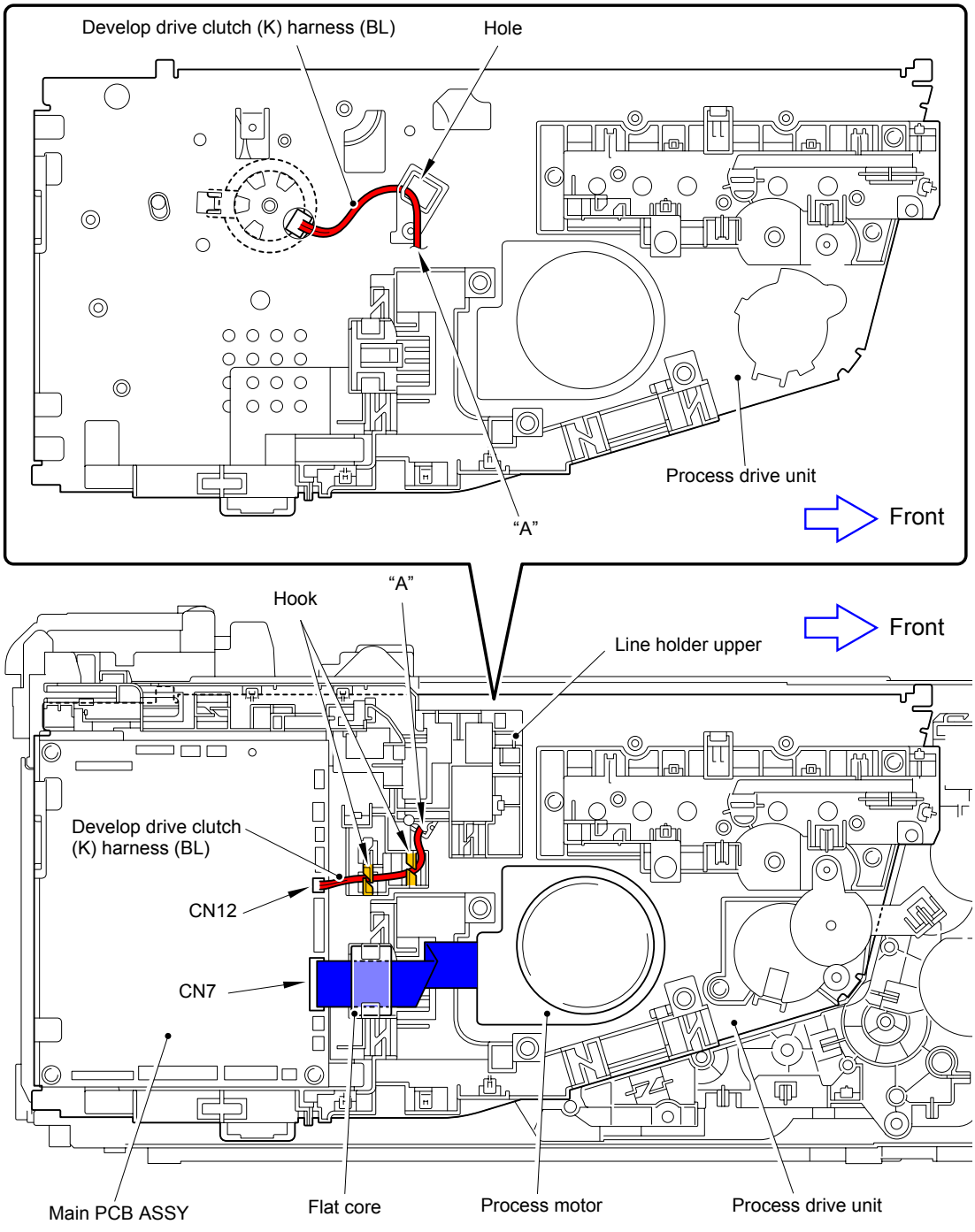
Harness colors may be changed for any reason.

2 External Temperature/Humidity Sensor PCB ASSY, Develop Release Clutch, Registration clutch, Paper Feed Clutch



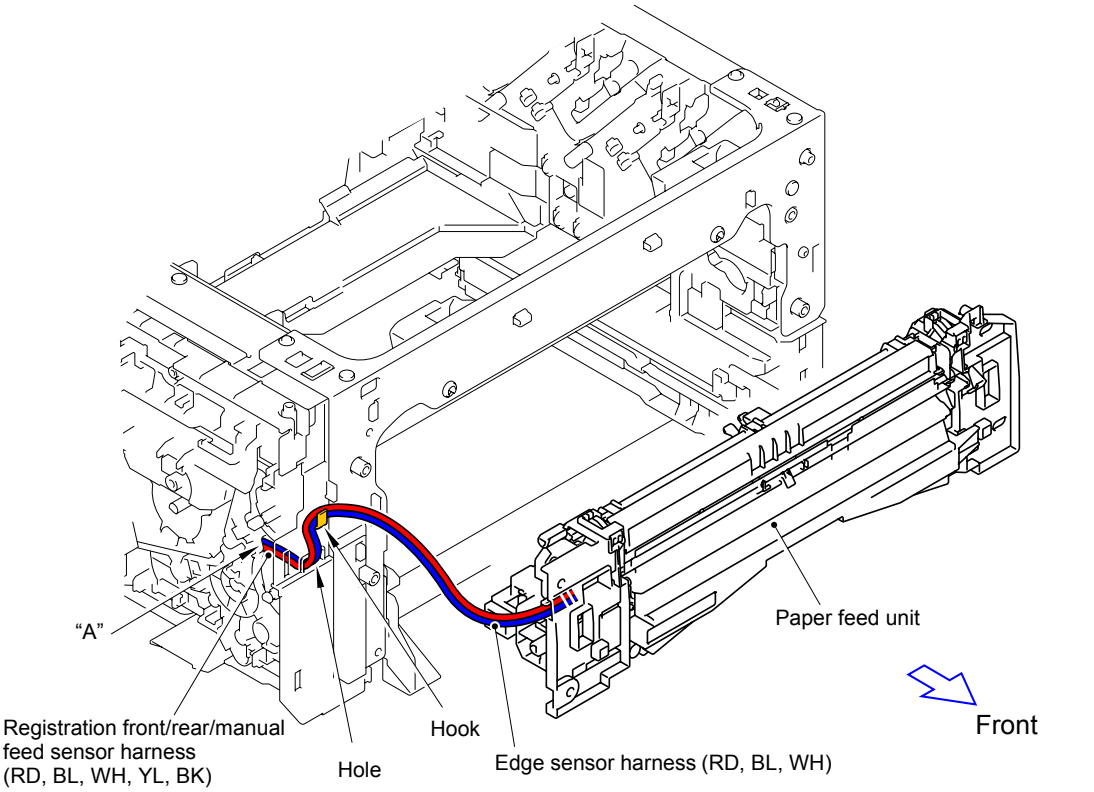
Harness colors may be changed for any reason.

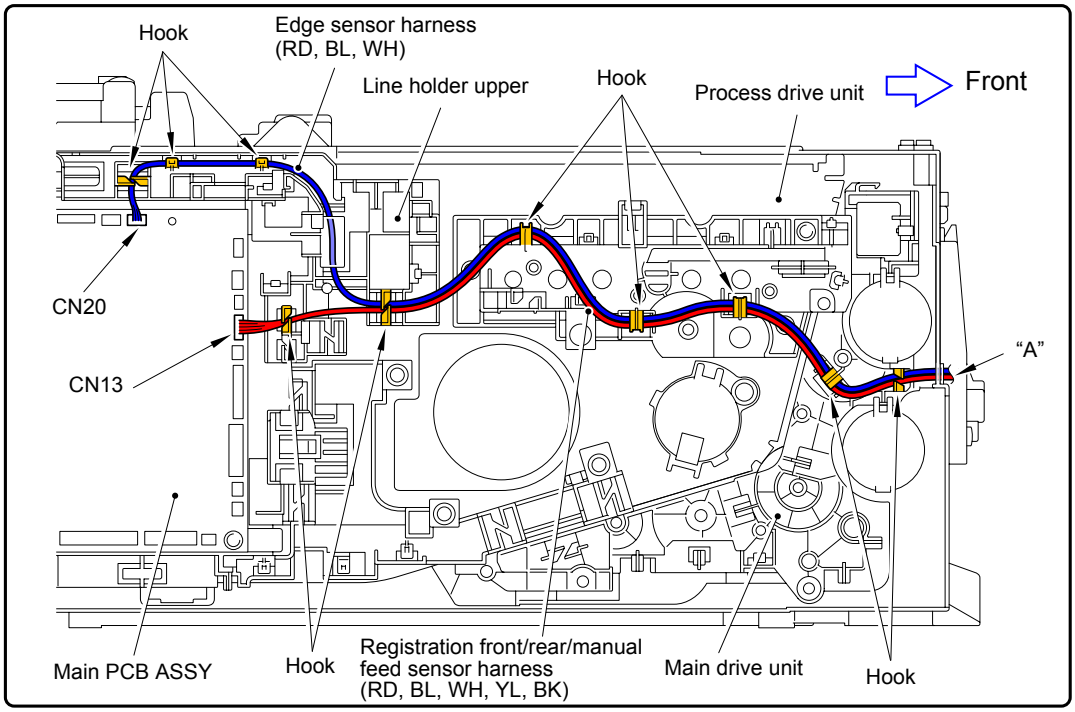
3 Process Drive Unit



Harness colors may be changed for any reason.

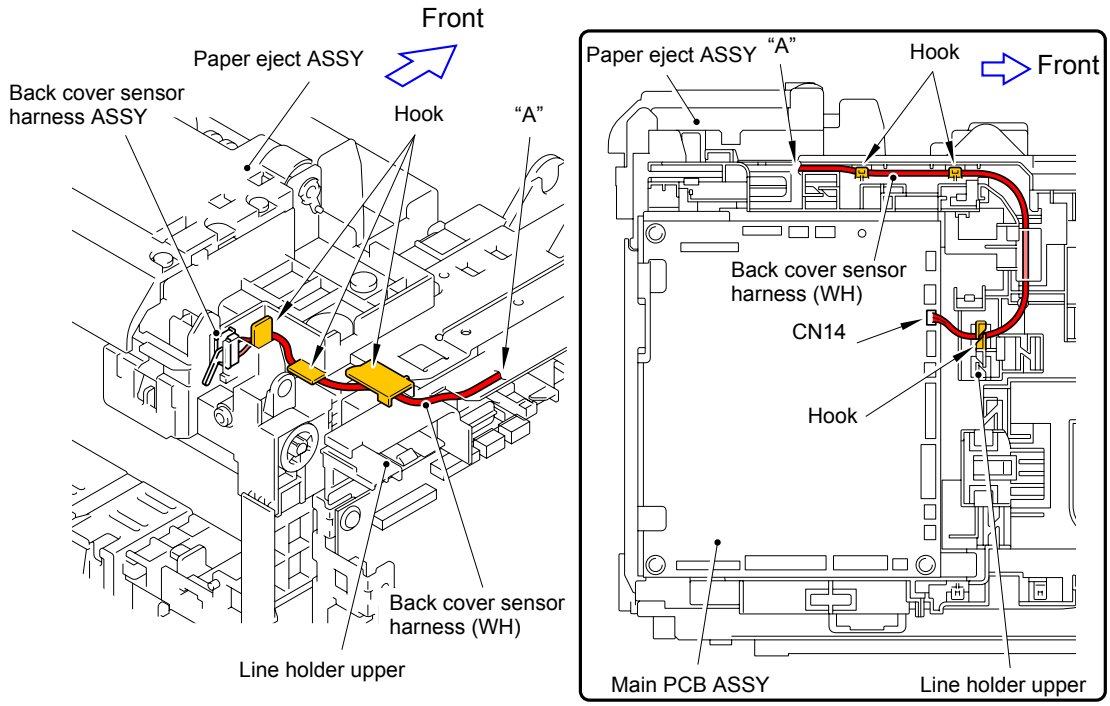
4 Paper Feed Unit



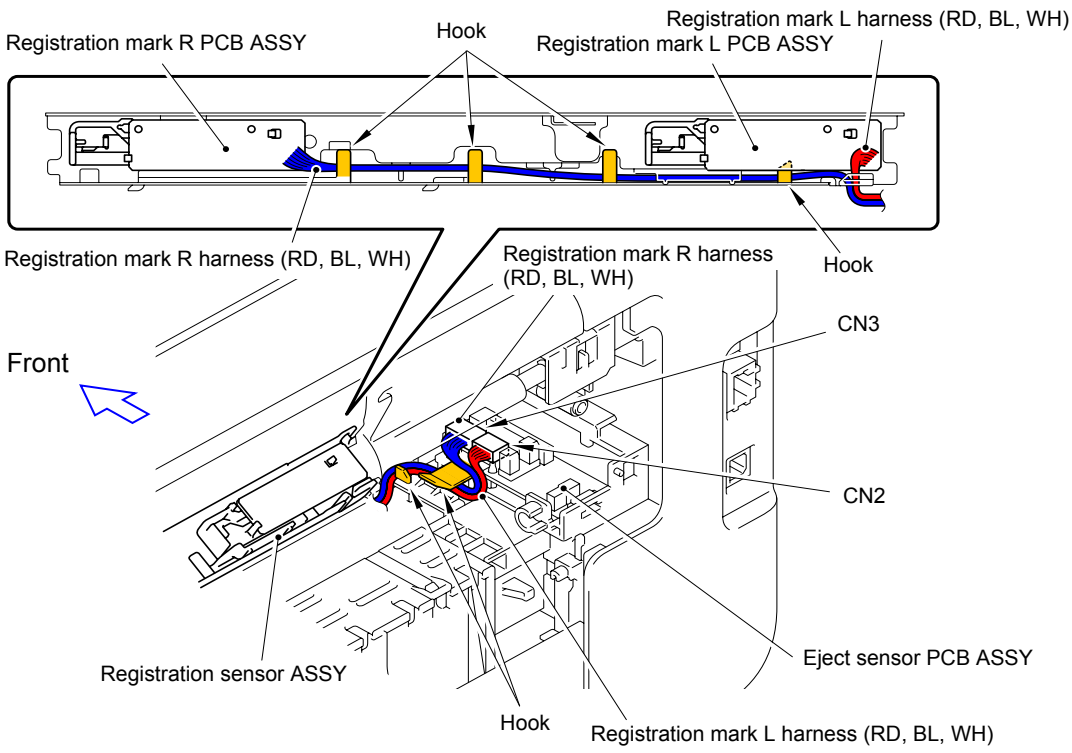


Harness colors may be changed for any reason.

5 Back Cover Sensor Harness ASSY

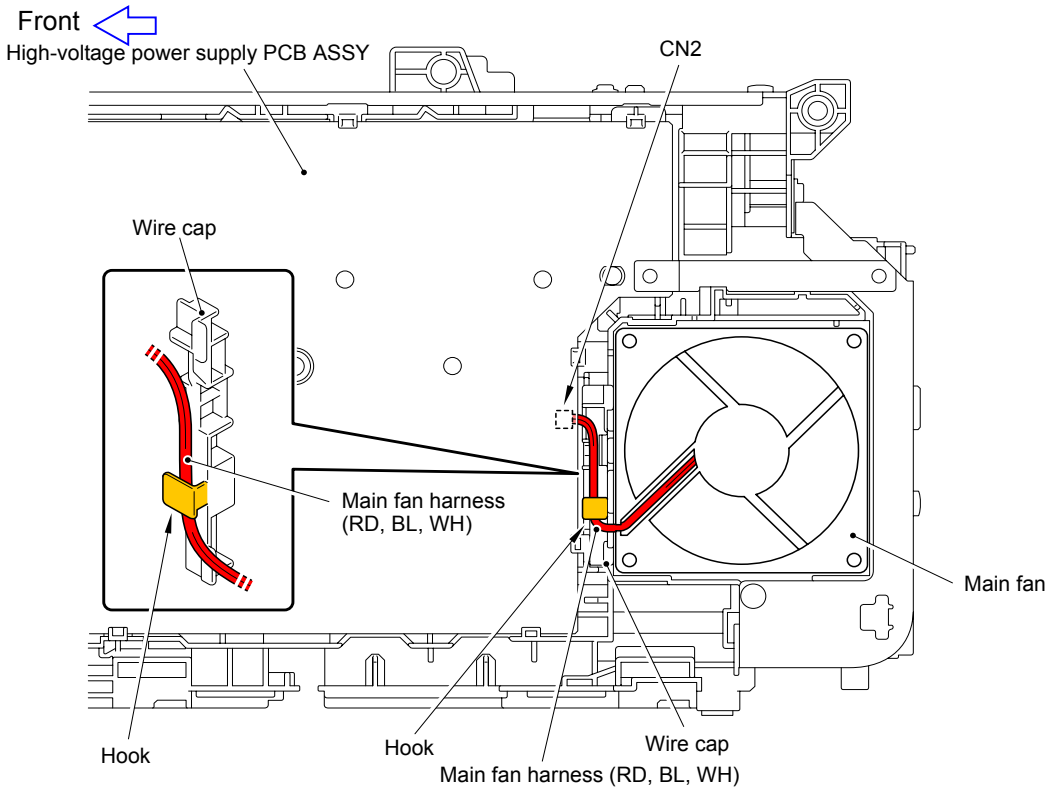


6 Registration Mark L PCB ASSY, Registration Mark R PCB ASSY



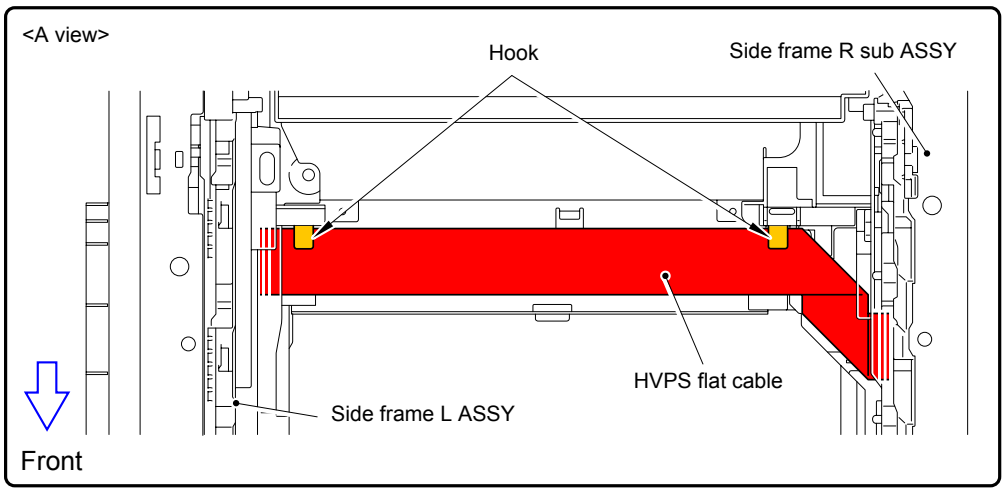
Harness colors may be changed for any reason.

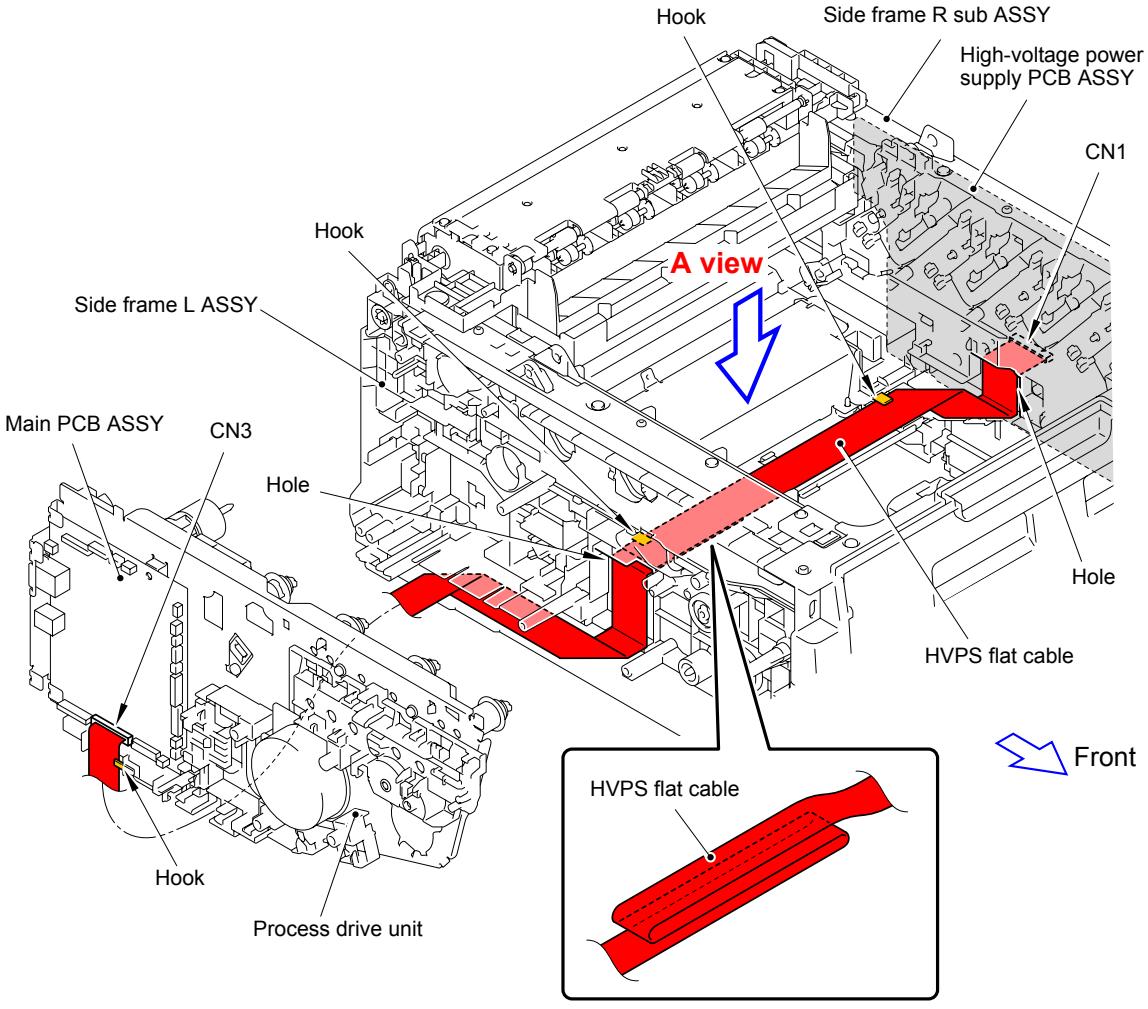
7 Main Fan



Harness colors may be changed for any reason.

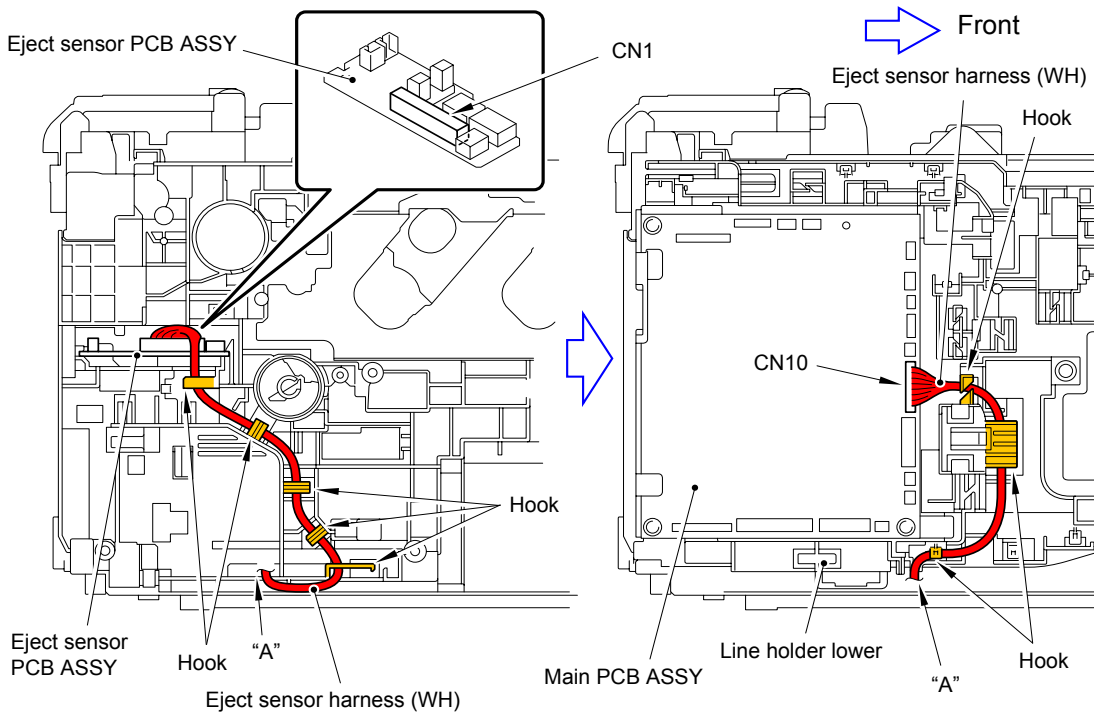
8 HVPS Flat Cable





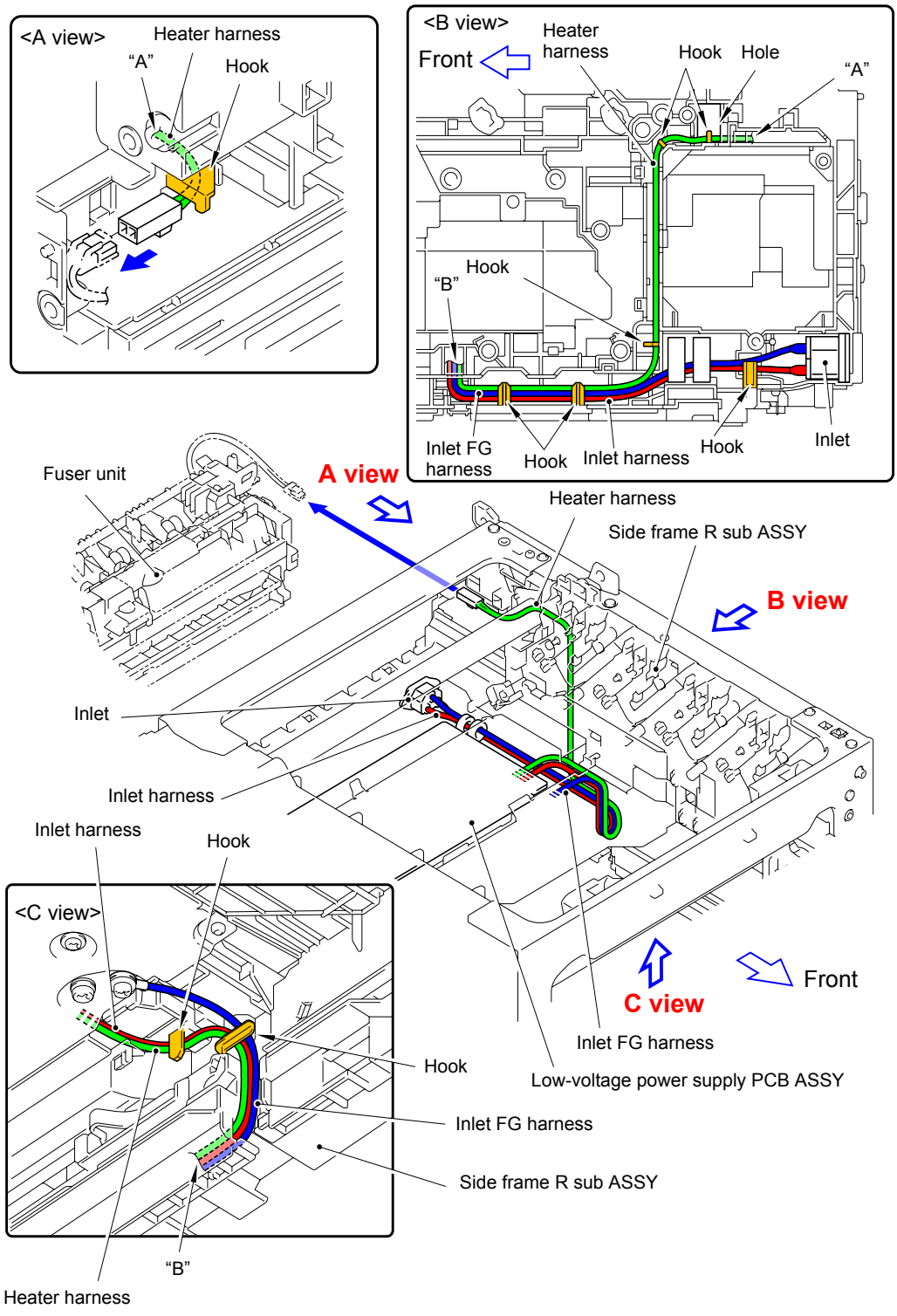
Harness colors may be changed for any reason.

9 Eject Sensor PCB ASSY



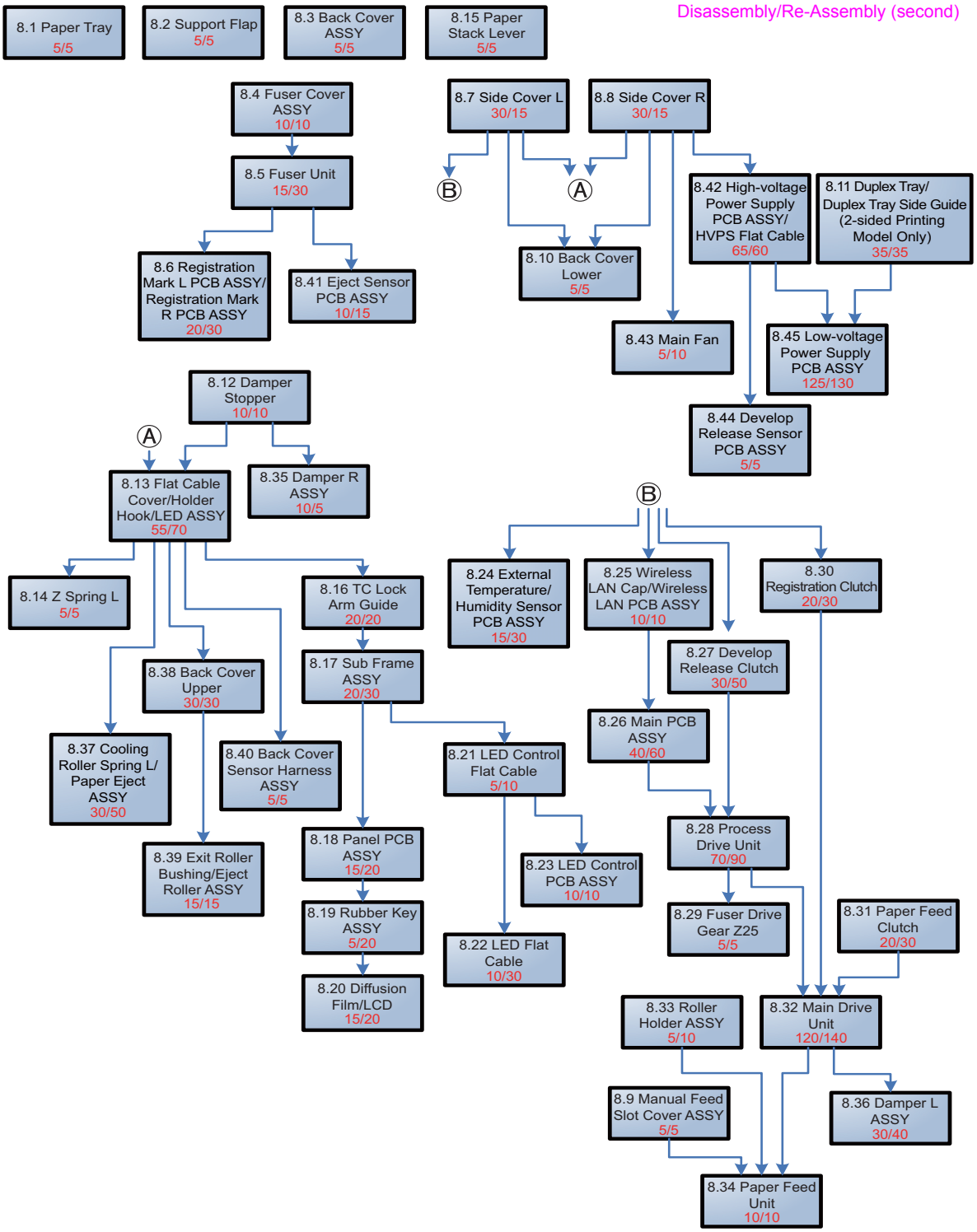
Harness colors may be changed for any reason.

10 Low-voltage Power Supply PCB ASSY



Harness colors may be changed for any reason.

7. DISASSEMBLY FLOW



8. DISASSEMBLY PROCEDURE

■ Preparation

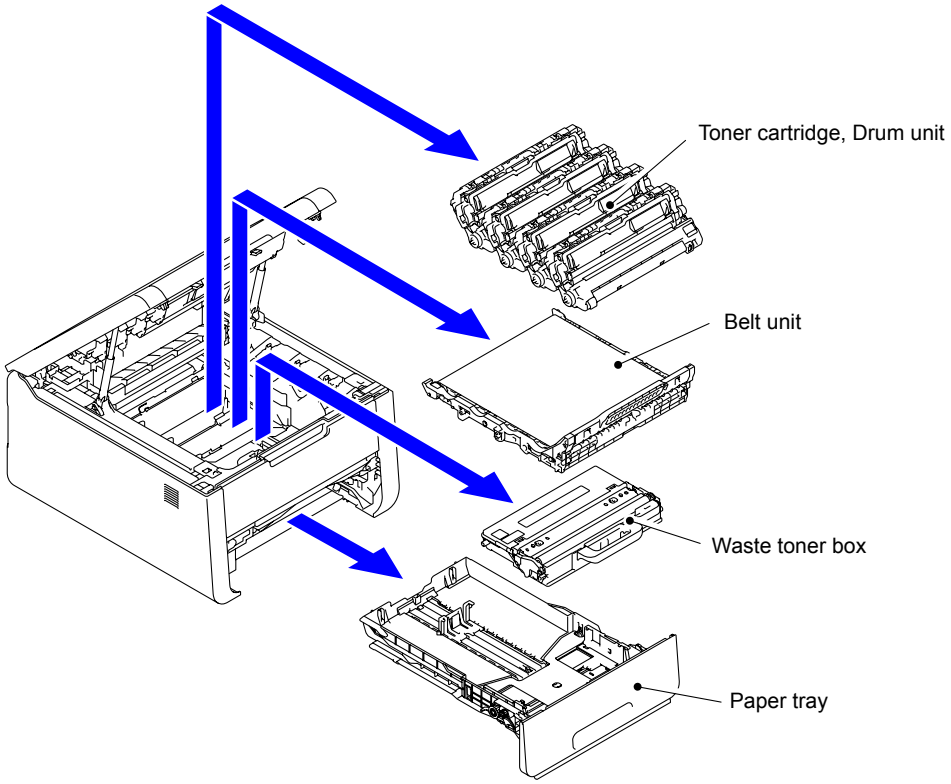
Prior to proceeding with the disassembly procedure,

(1) Unplug

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

(2) Remove

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



8.1 Lift Gear 46/Gear Z23M10Z14M75/Gear Z19M10

(1) Lift the Plate up plate. Release the Hook to remove the Lift gear 46 from the Plate up plate.

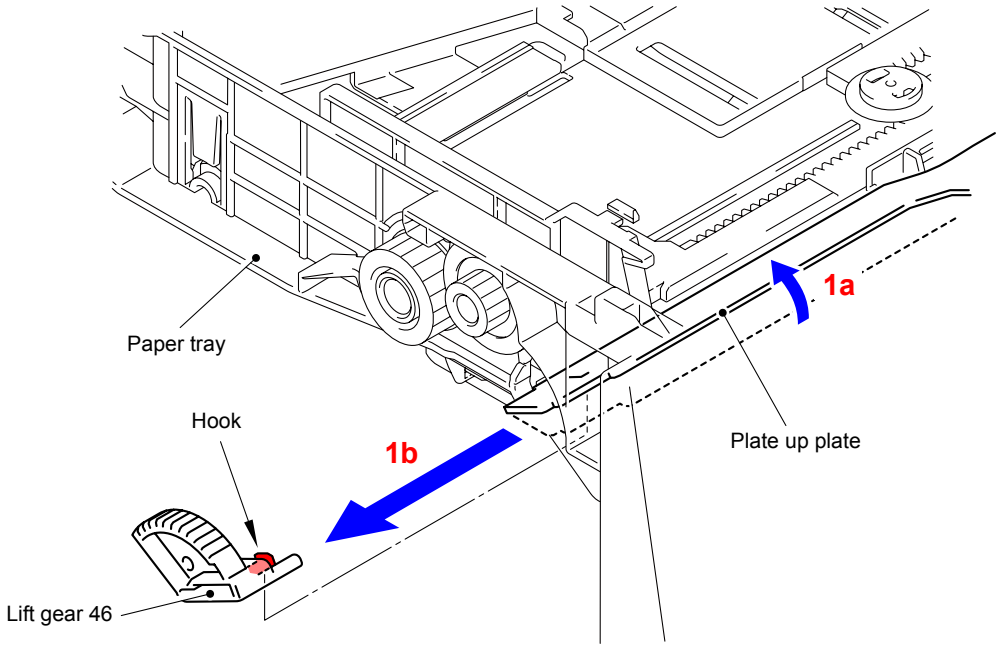


Fig. 3-1

(2) Remove the Gear Z23M10Z14M75 from the Paper tray.

(3) Remove the Gear Z19M10 from the Paper tray.

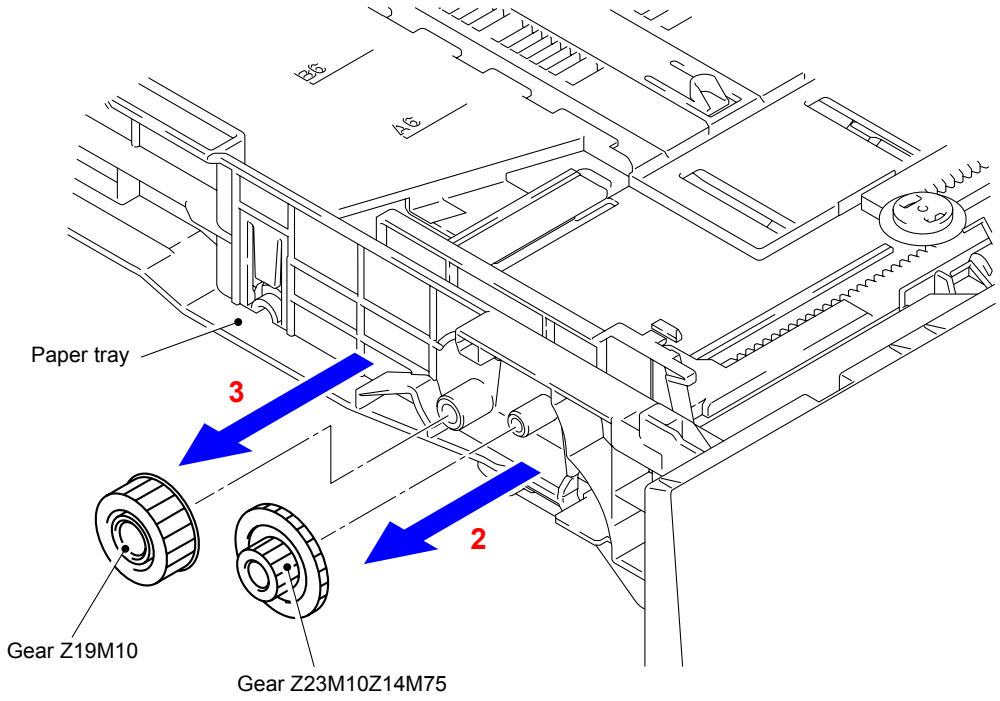


Fig. 3-2

8.2 Support Flap

(1) Remove the two Pins to remove the Support flap from the Main body.

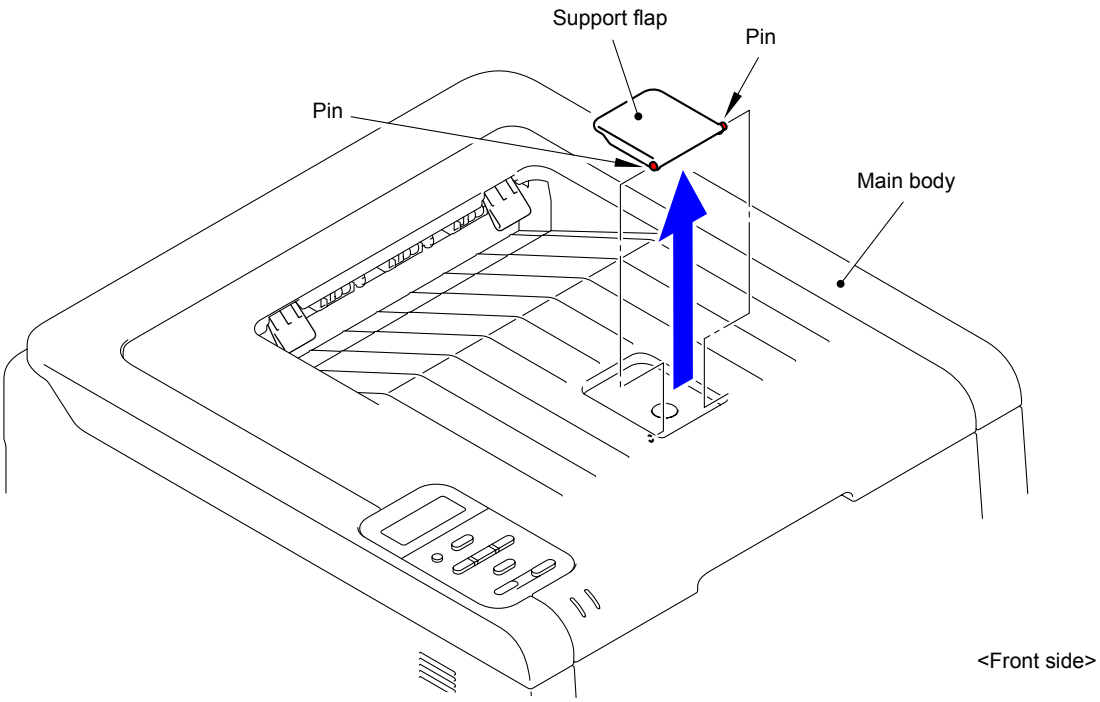


Fig. 3-3

8.3 Back Cover ASSY

(1) Open the Back cover ASSY.

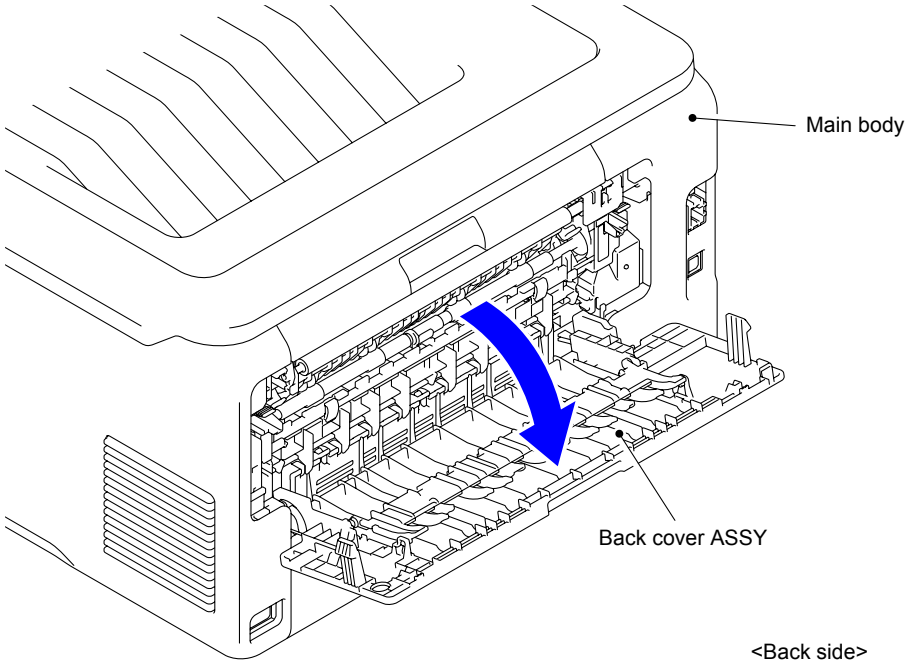


Fig. 3-4

(2) Remove the Boss and Bush of the Back cover ASSY from the Boss and Bush on the left side of the Main body.

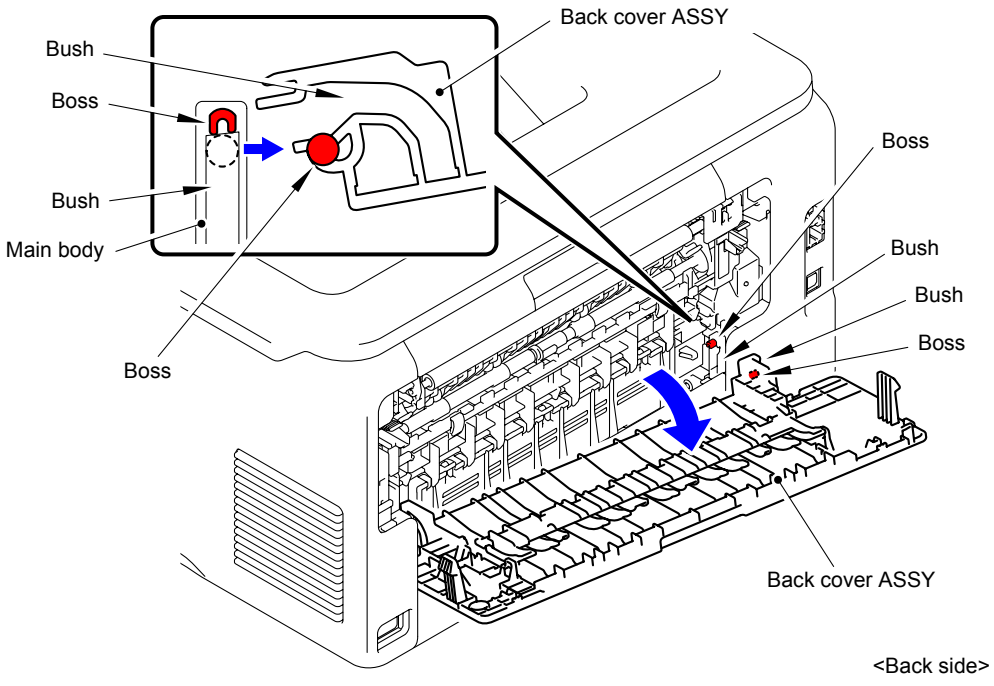


Fig. 3-5

(3) Remove the Boss and Bush of the Back cover ASSY from the Boss and Bush on the right side of the Main body.

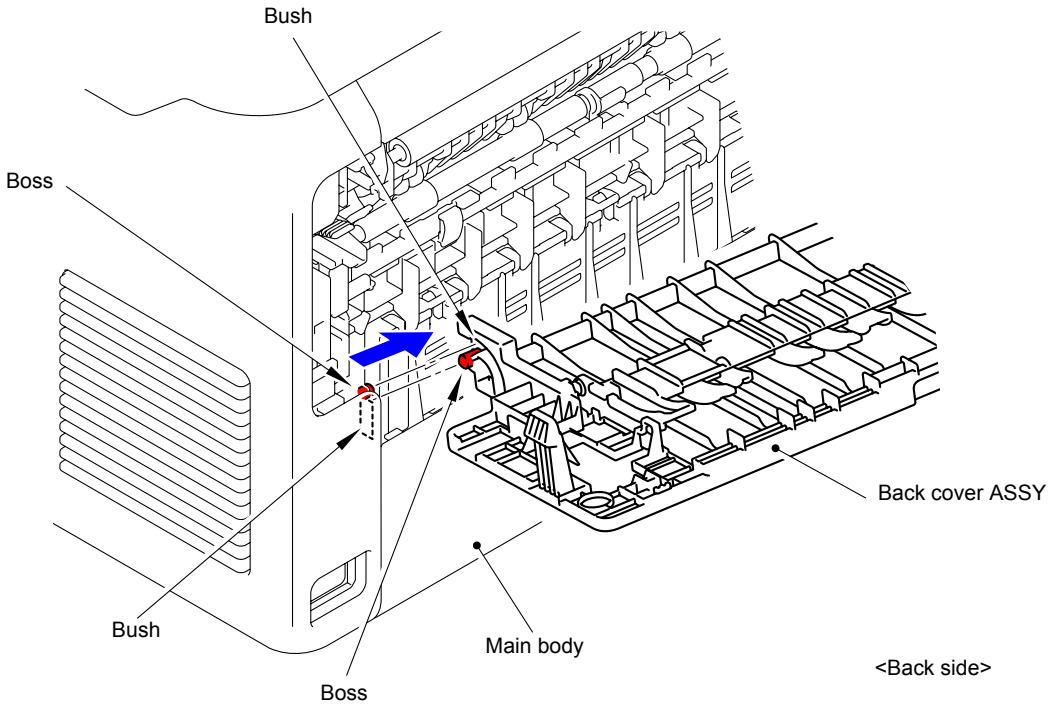


Fig. 3-6

8.4 Fuser Cover ASSY

(1) Release the lock of the Lock lever L/R to open the Fuser cover ASSY.

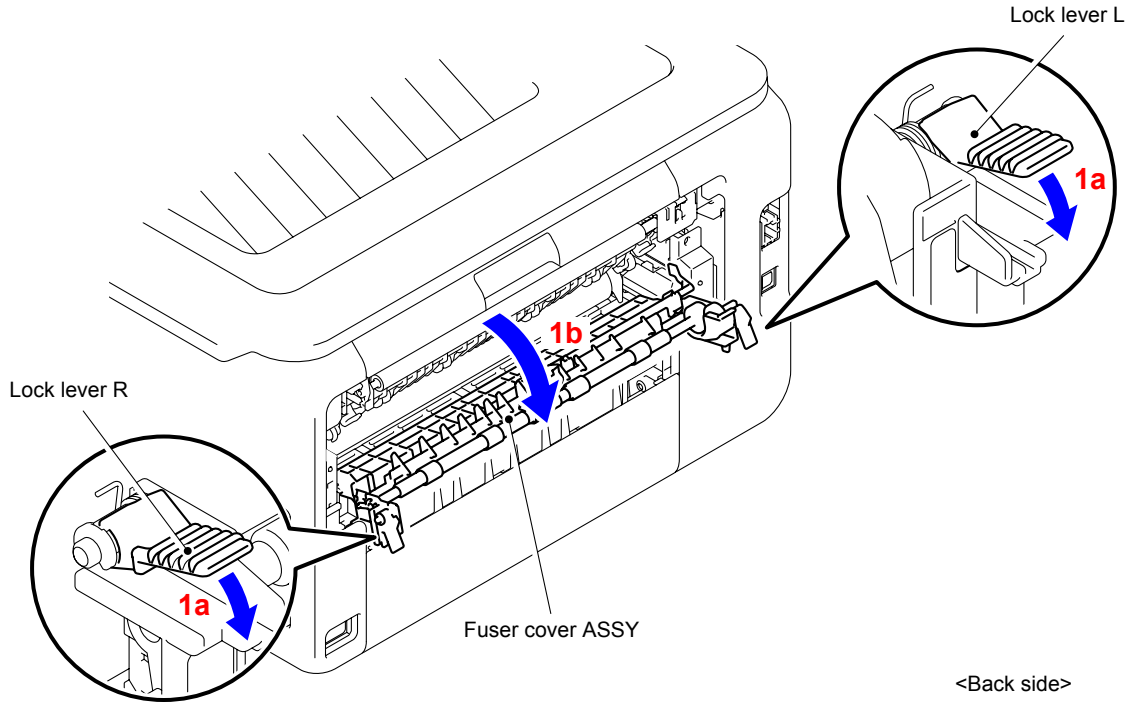


Fig. 3-7

(2) Remove the left side Boss of the Fuser cover ASSY from the Bush of the Main body.

(3) Remove the right side Boss of the Fuser cover ASSY from the Bush of the Main body.

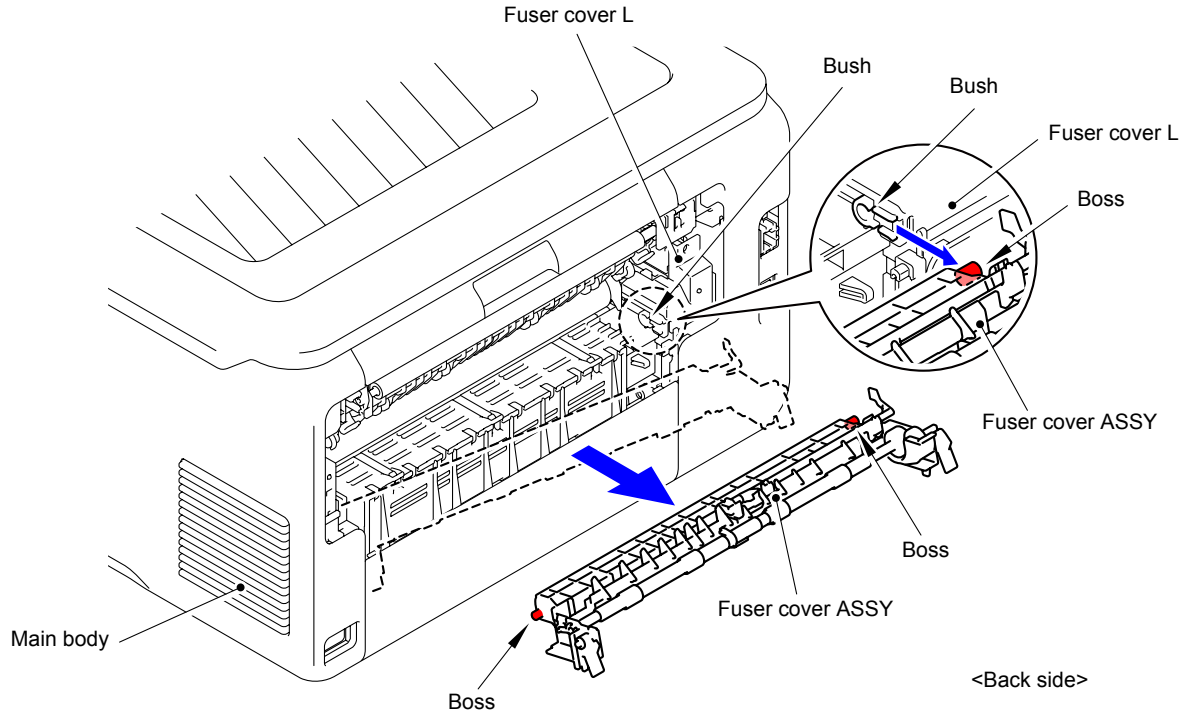


Fig. 3-8

8.5 Fuser Unit

(1) Remove the Taptite bind B M3x10 screw from the Fuser cover L.

(2) Remove the Pin to remove the Fuser cover L from the Main body.

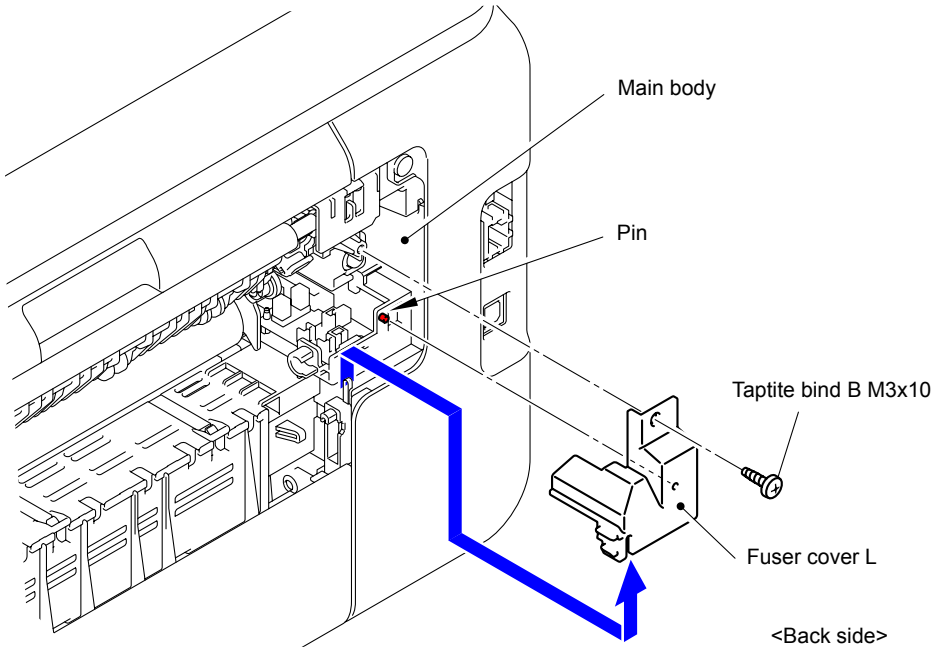


Fig. 3-9

(3) Remove the Taptite bind B M3x10 screw to remove the Fuser cover R from the Main body.

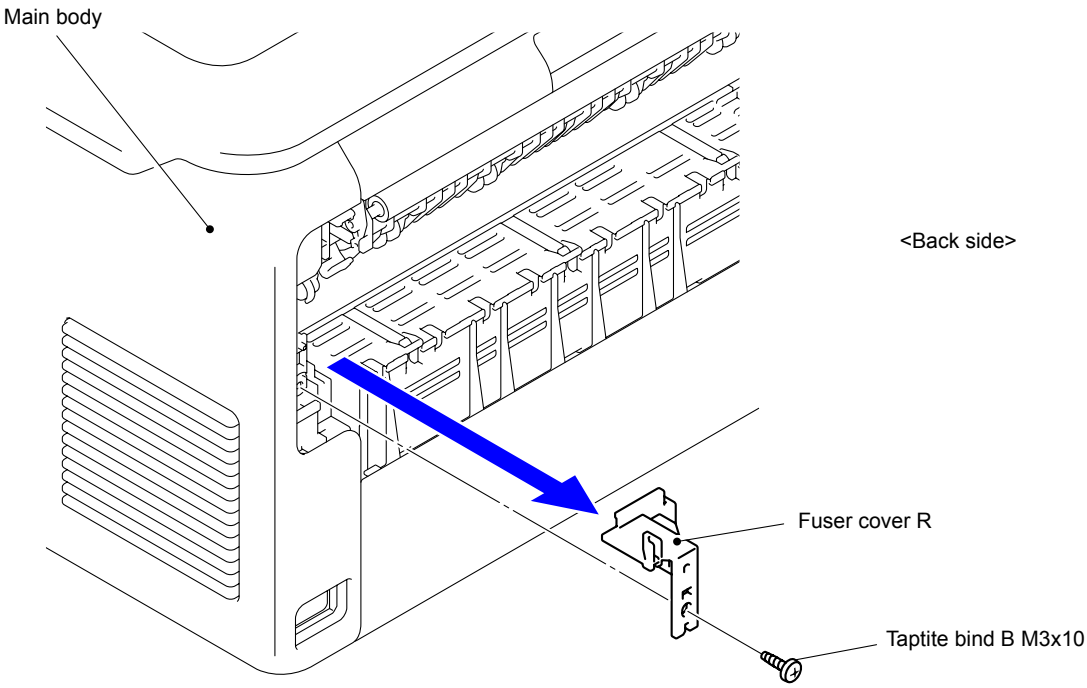


Fig. 3-10

Assembling Note:
After assembling the Fuser cover R, make sure that the Heater harness is not visible.

(4) Disconnect the two Connectors (CN4 and CN5) from the Eject sensor PCB ASSY.

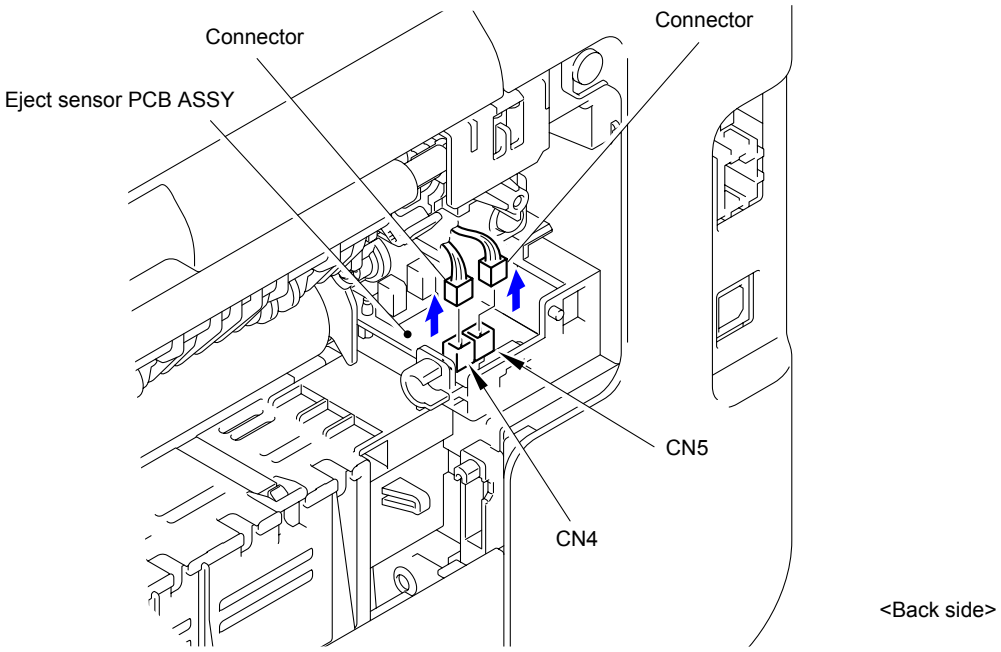


Fig. 3-11

(5) Remove the two Taptite pan (washer) B M4x12 DA screws. Remove the Fuser unit from the Main body holding the "A" parts.

(6) Disconnect the Electrode terminal of the Fuser unit from the Electrode terminal of the Main body.

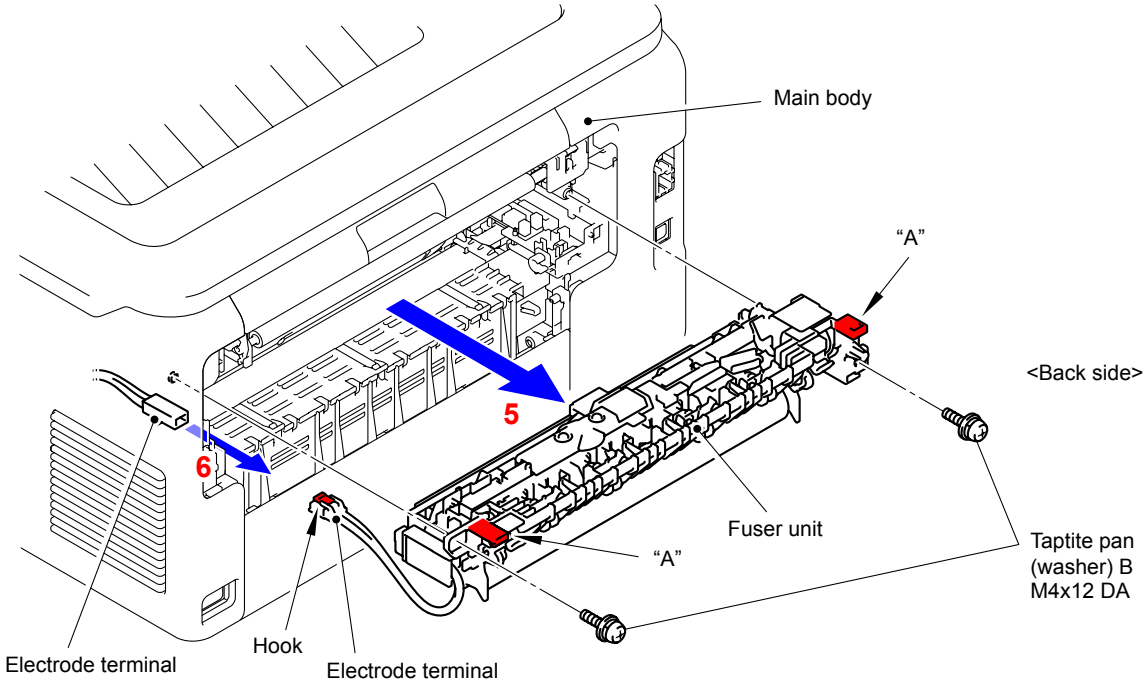


Fig. 3-12

Note:

- Do not apply a physical impact or vibration to the Fuser unit.
- Do not touch the Roller to prevent breakage of the Fuser unit.

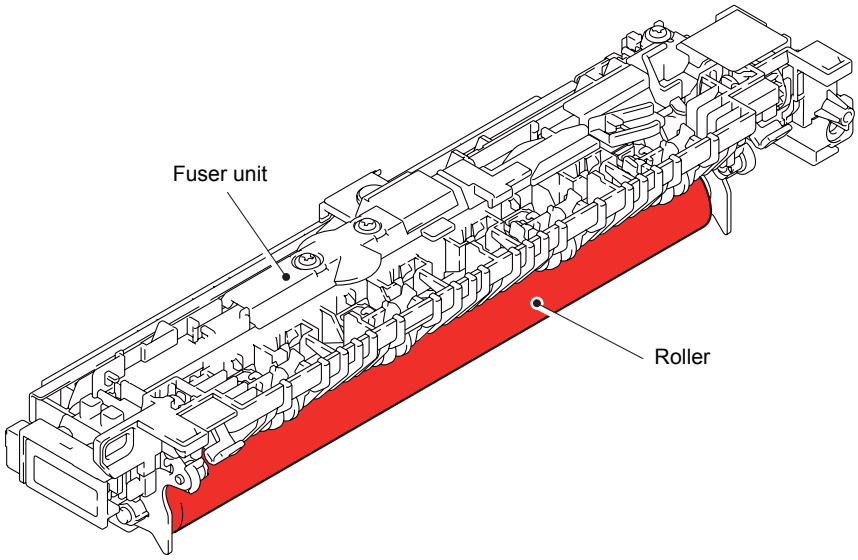


Fig. 3-13

8.6 Registration Mark L PCB ASSY/ Registration Mark R PCB ASSY

(1) Disconnect the two Connectors (CN2 and CN3) from the Eject sensor PCB ASSY.

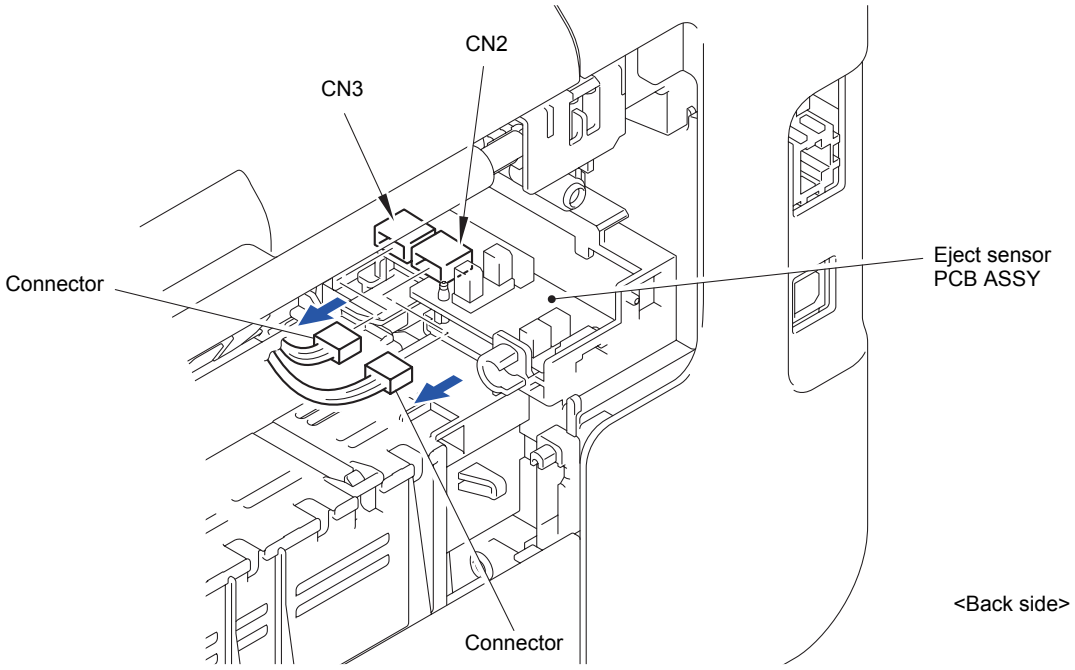


Fig. 3-14

(2) Open the Top cover unit.

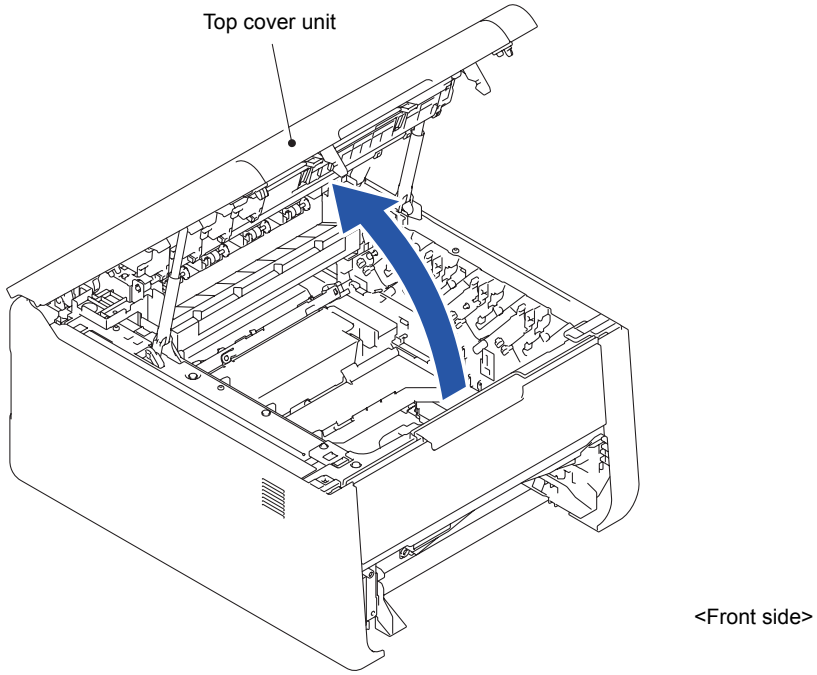


Fig. 3-15

(3) Remove the Taptite bind S M3x5 screw from the Registration sensor ASSY.

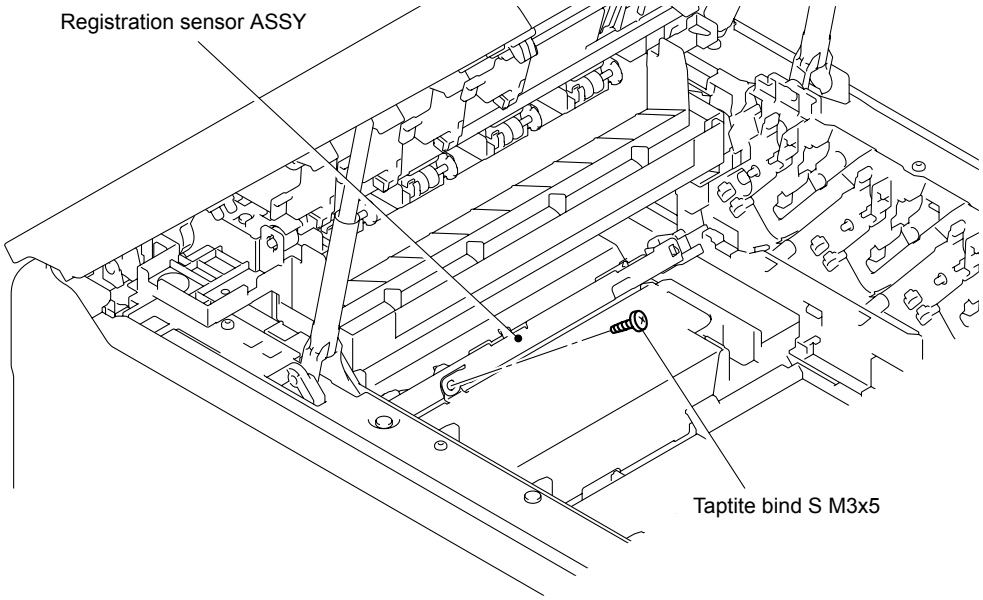


Fig. 3-16

(4) Pull the left side of the Registration sensor ASSY in the direction of 4a and release the Hook on the right side to remove the Registration sensor ASSY.

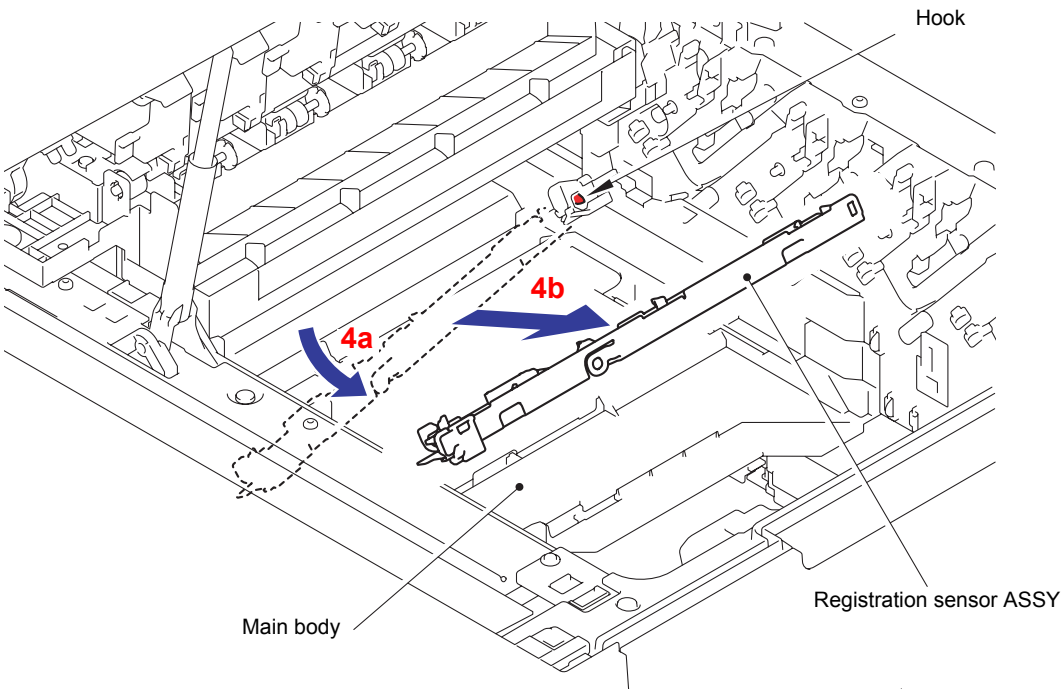


Fig. 3-17

(5) Disconnect the wiring of the Registration mark L PCB harness.
(6) As the Boss being removed, slide the Registration mark L PCB ASSY in the direction of the arrow 6a to remove it from the Registration sensor ASSY.

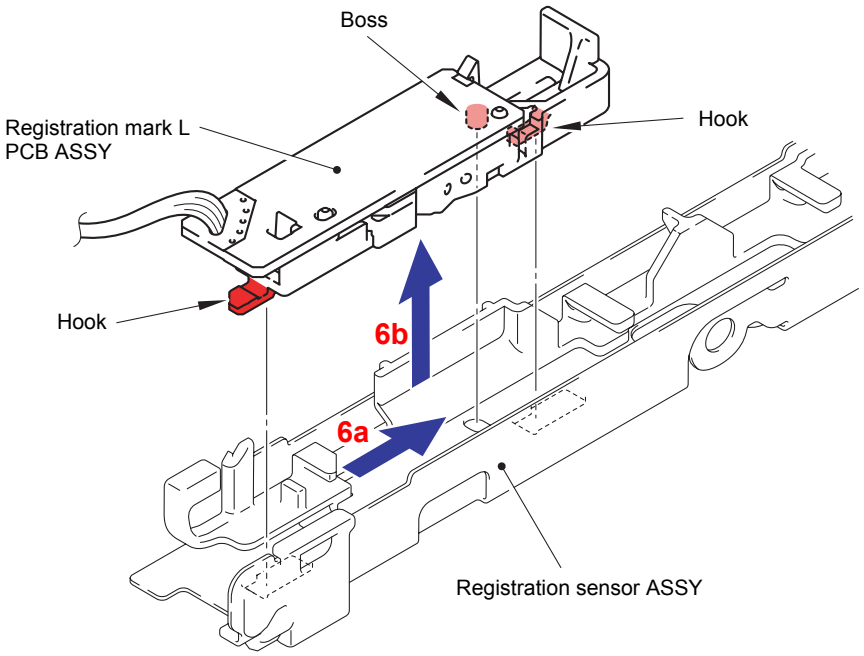


Fig. 3-18

(7) Disconnect the wiring of the Registration mark R PCB harness.
(8) As the Boss being removed, slide the Registration mark R PCB ASSY in the direction of the arrow 8a to remove it from the Registration sensor ASSY.

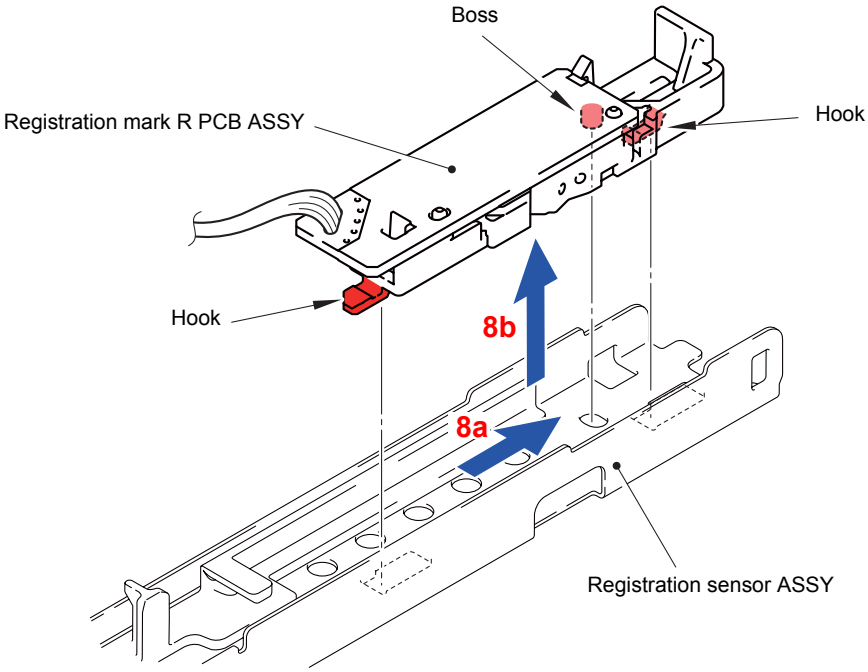


Fig. 3-19

Harness routing: Refer to " 6 Registration Mark L PCB ASSY/ Registration Mark R PCB ASSY"

8.7 Side Cover L

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

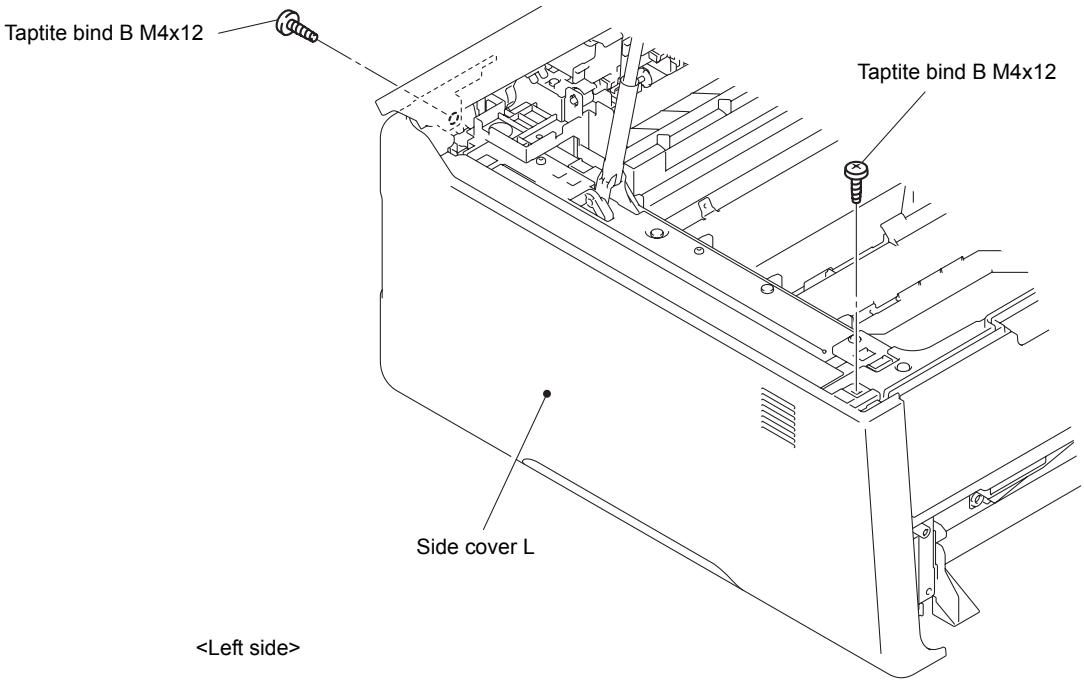


Fig. 3-20

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

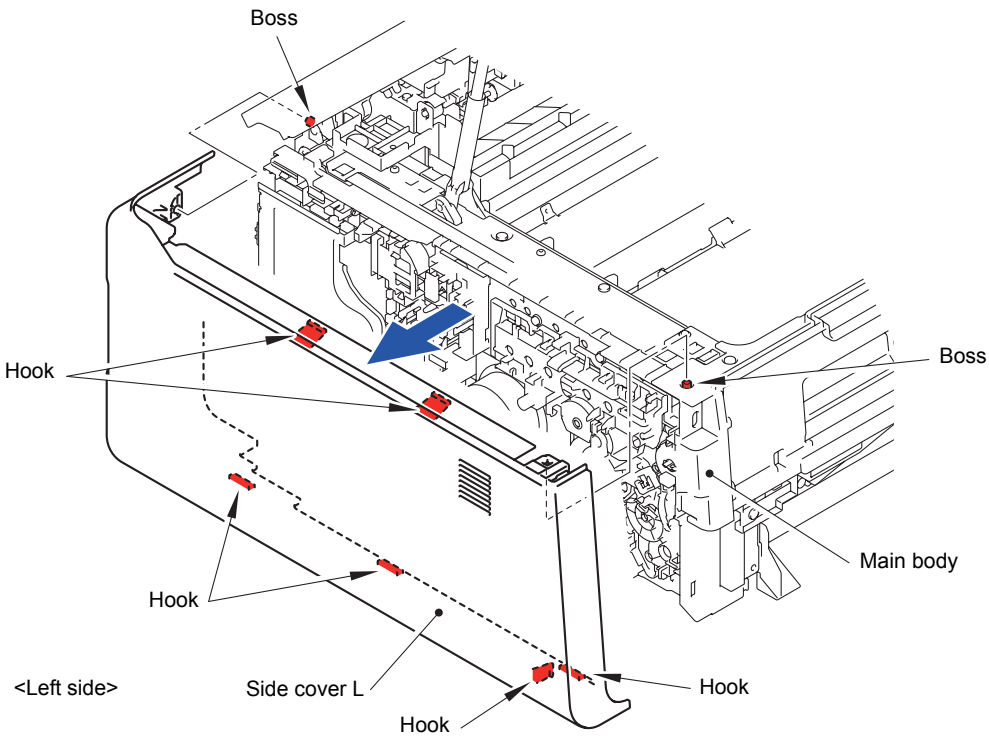


Fig. 3-21

* Inside of Side cover L

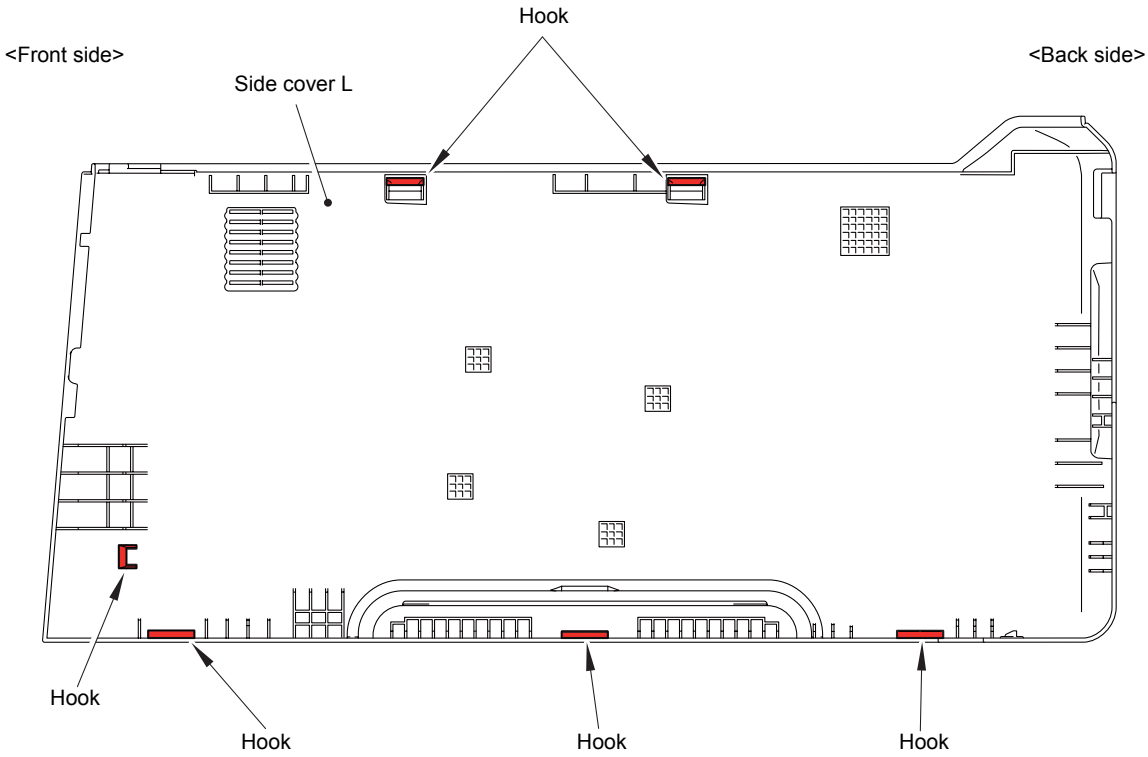


Fig. 3-22

8.8 Side Cover R

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

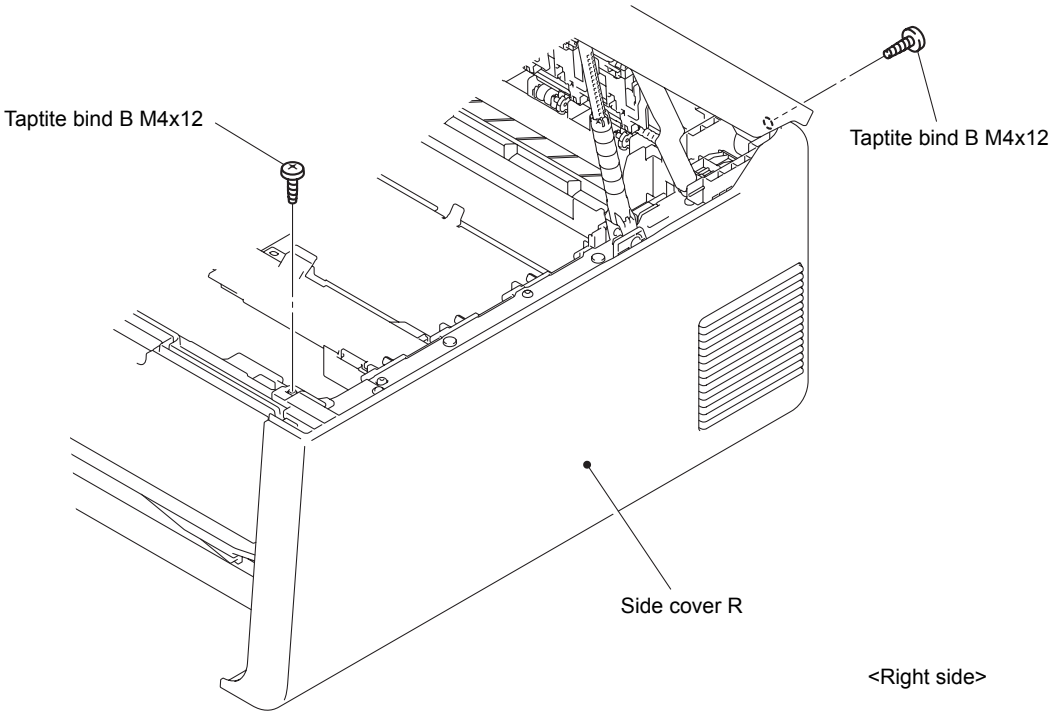


Fig. 3-23

(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 from the Main body.

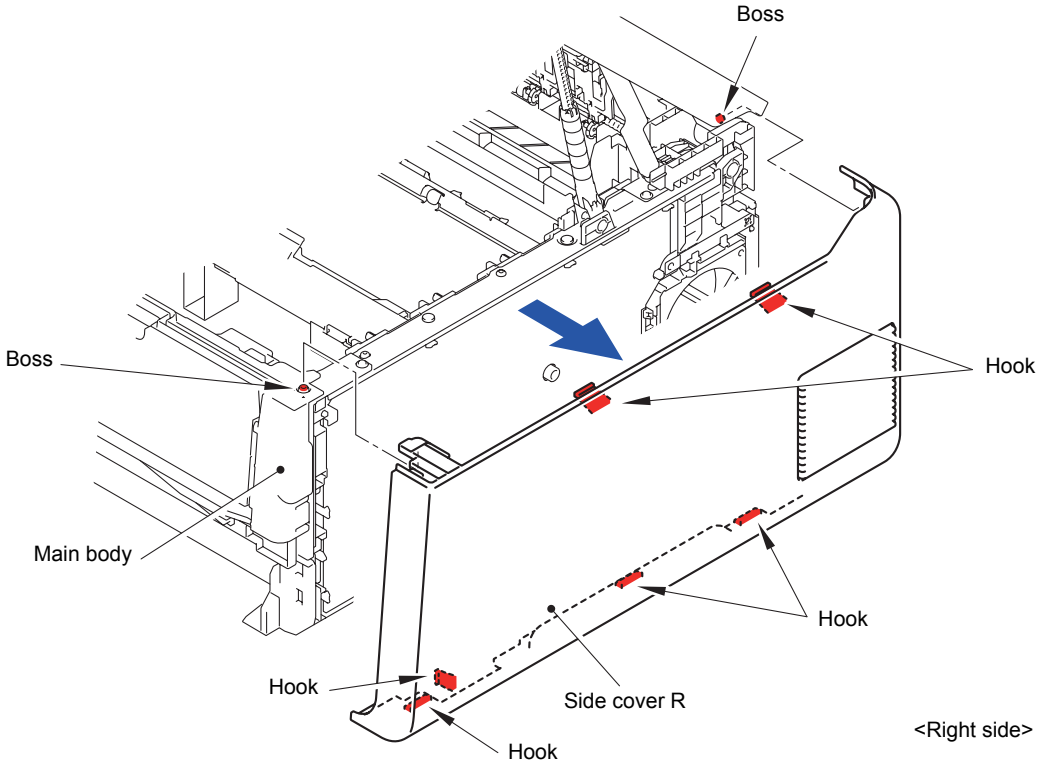


Fig. 3-24

* Inside of Side cover R

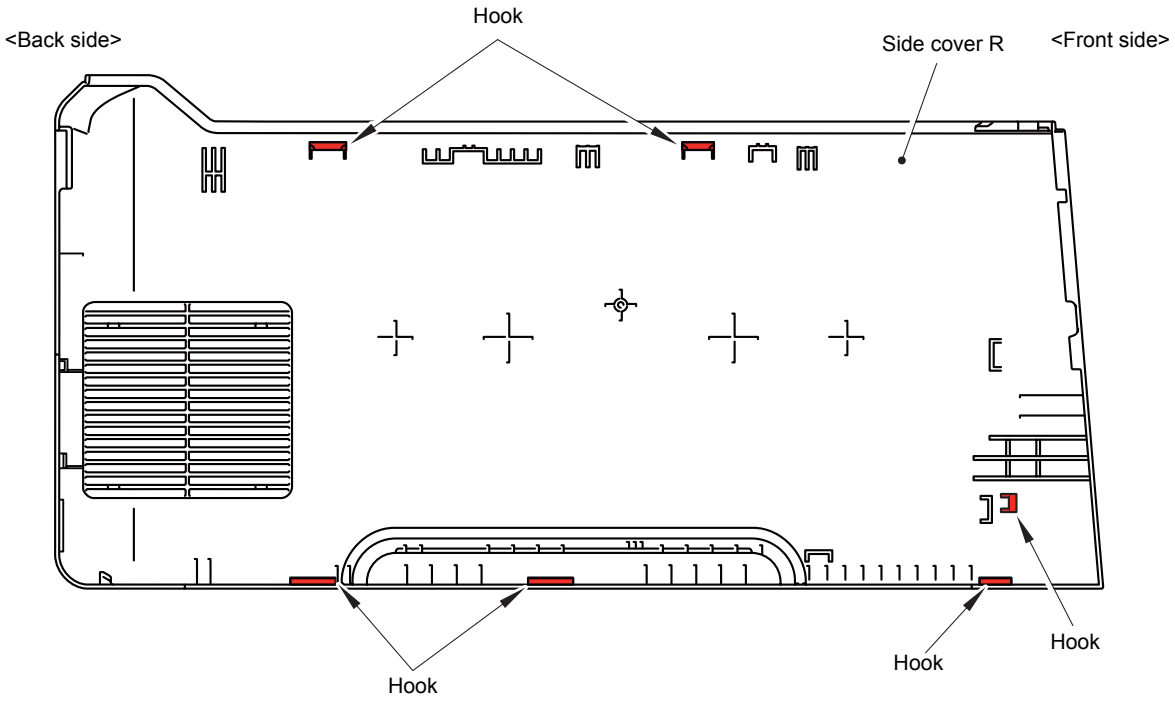


Fig. 3-25

8.9 Manual Feed Slot Cover ASSY

(1) Remove the two Pins to remove the Manual feed slot cover ASSY from the Inner front cover.

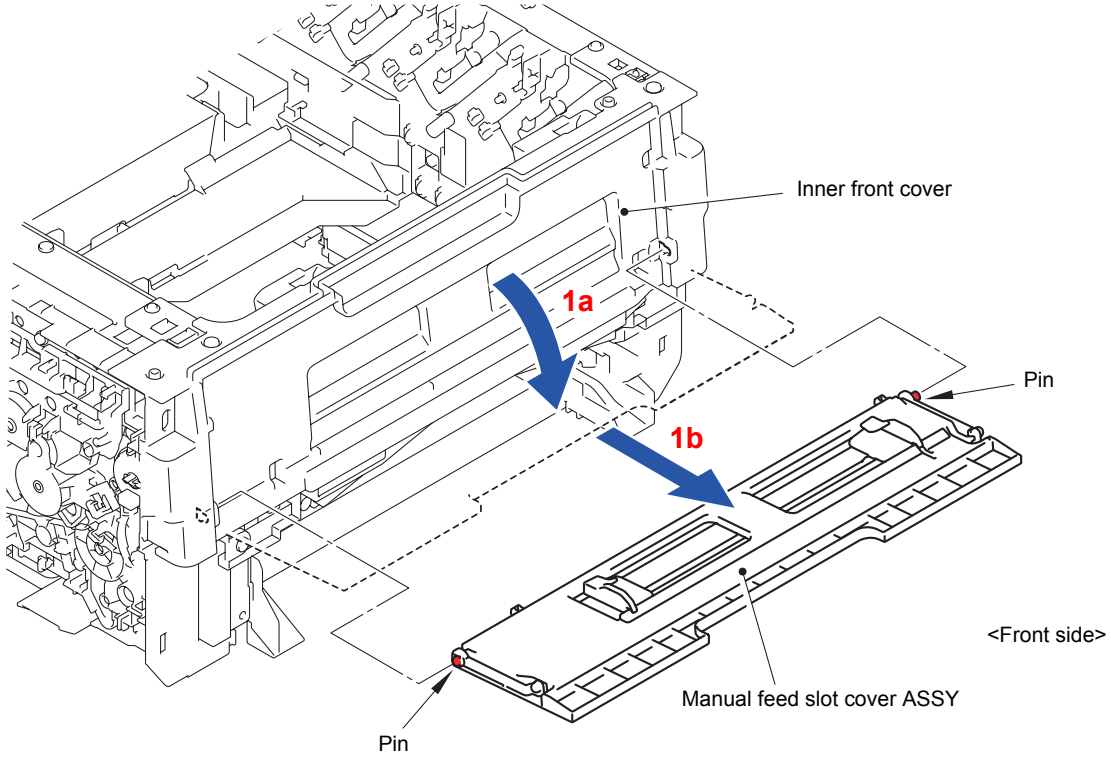


Fig. 3-26

8.10 Back Cover Lower

(1) Close the Top cover unit.

(2) Place the Main body upright as shown in the figure below.

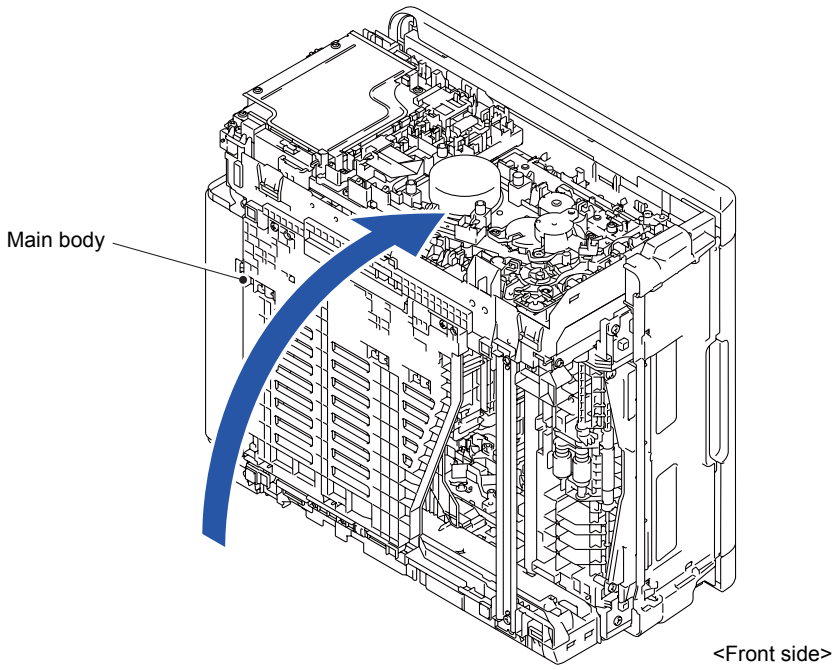


Fig. 3-27

(3) Release the four Hooks to remove the Back cover lower from the Main body.

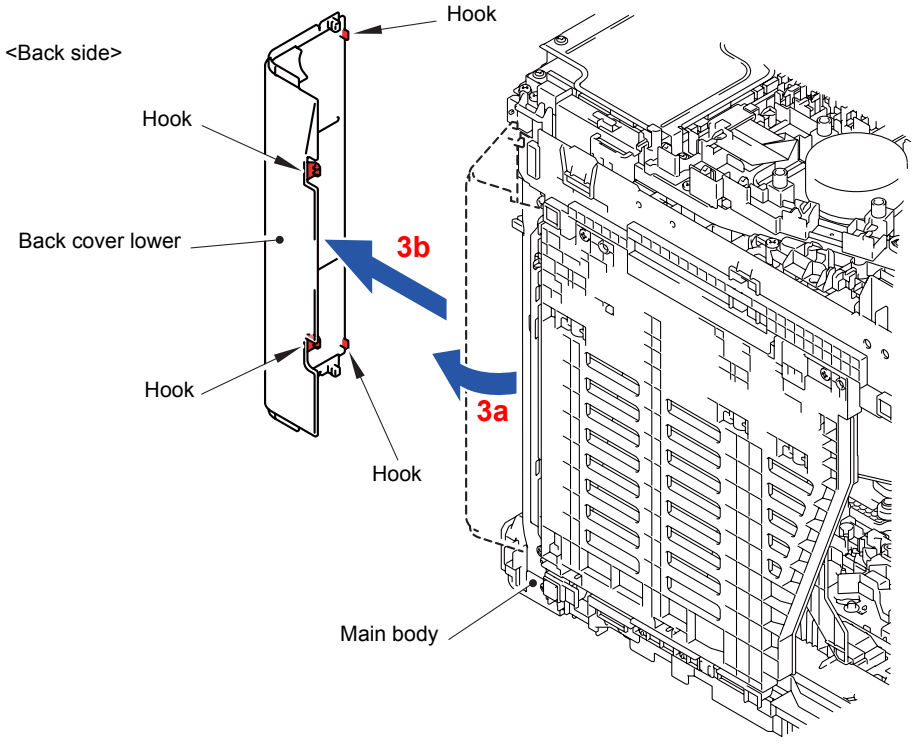


Fig. 3-28

8.11 Duplex Tray/Duplex Tray Side Guide (2-sided Printing Model Only)

(1) Remove the two Taptite bind B M4x12 screws and two Bosses to remove the Duplex tray from the Main body.

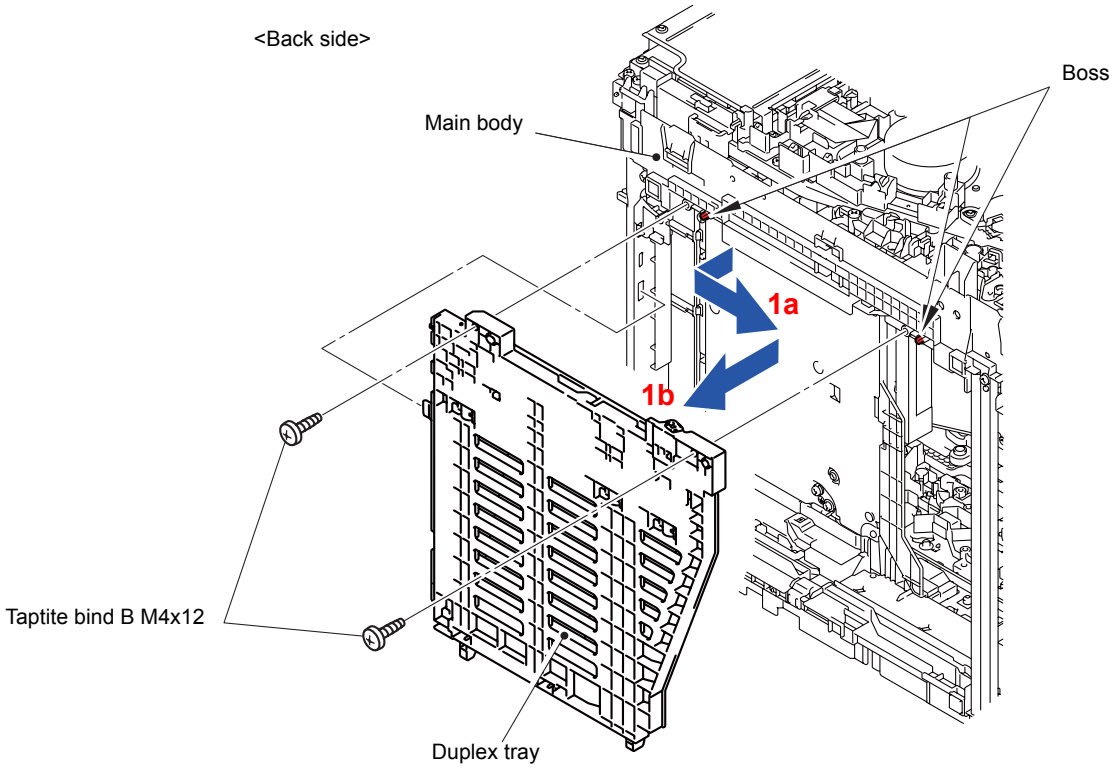


Fig. 3-29

(2) Release the Hook to remove the Duplex tray side guide from the Main body.

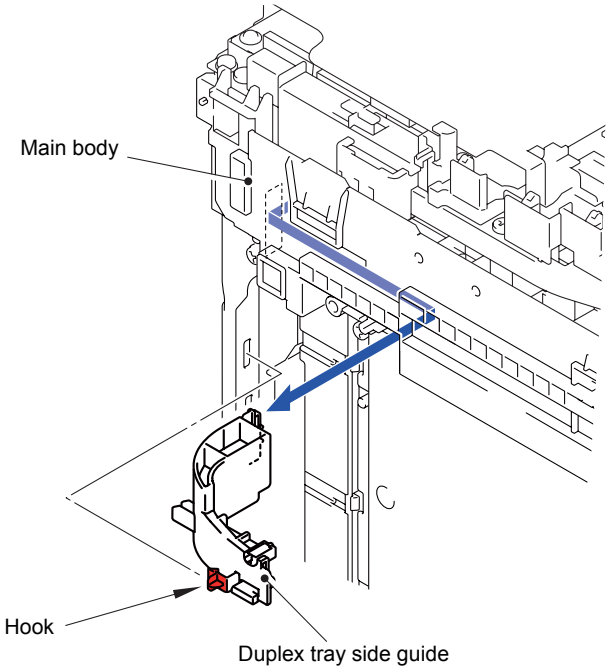


Fig. 3-30

Assembling Note:

When you assemble the Duplex tray side guide, make sure to insert the "A" of the Duplex tray side guide into the Hole of the machine, and then assemble the Hook.

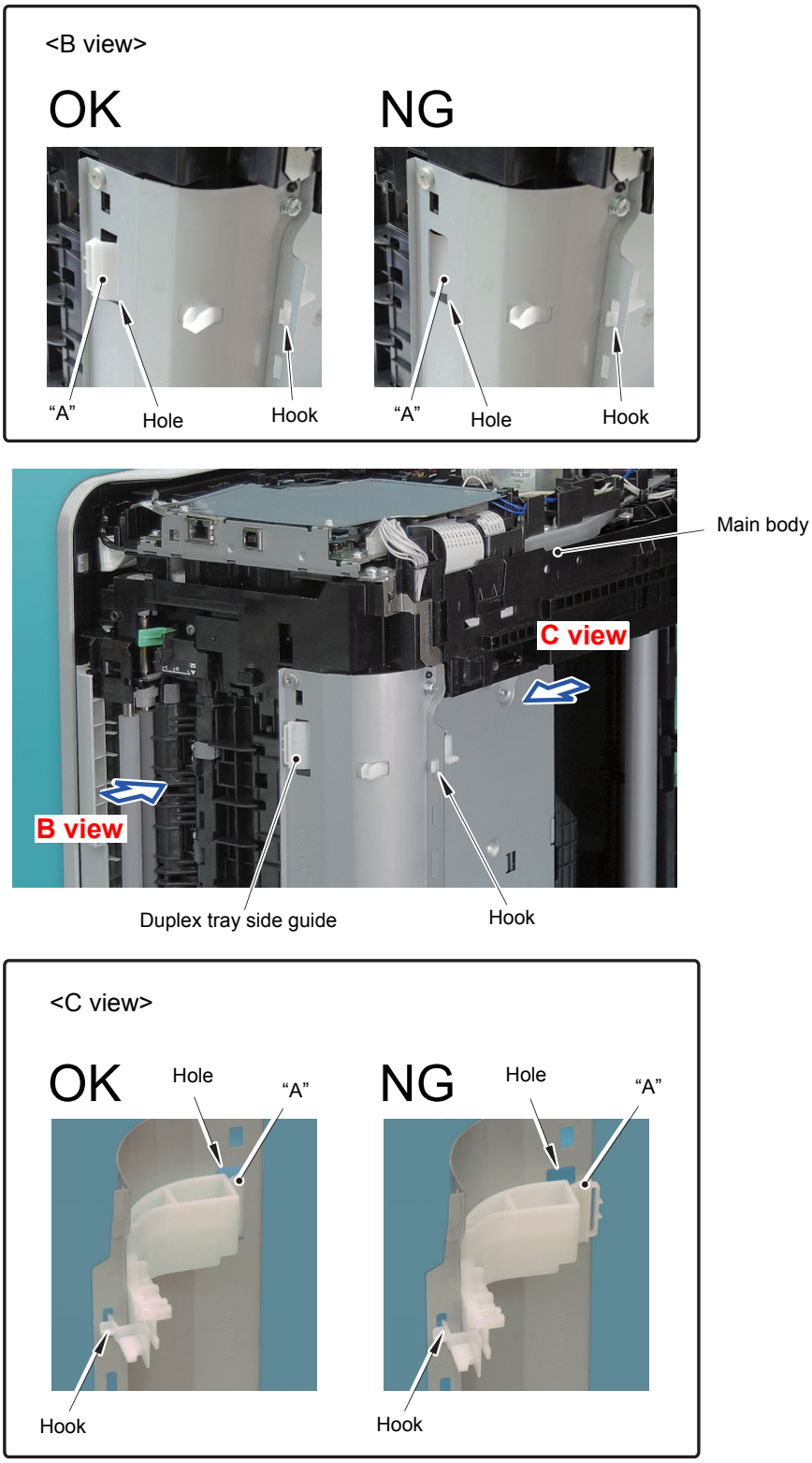


Fig. 3-31

8.12 Damper Stopper

(1) Open the Top cover unit.

(2) Release the two Hooks to remove the Damper stopper from the left side of the Top cover unit.

(3) Release the two Hooks to remove the Damper stopper from the right side of the Top cover unit.

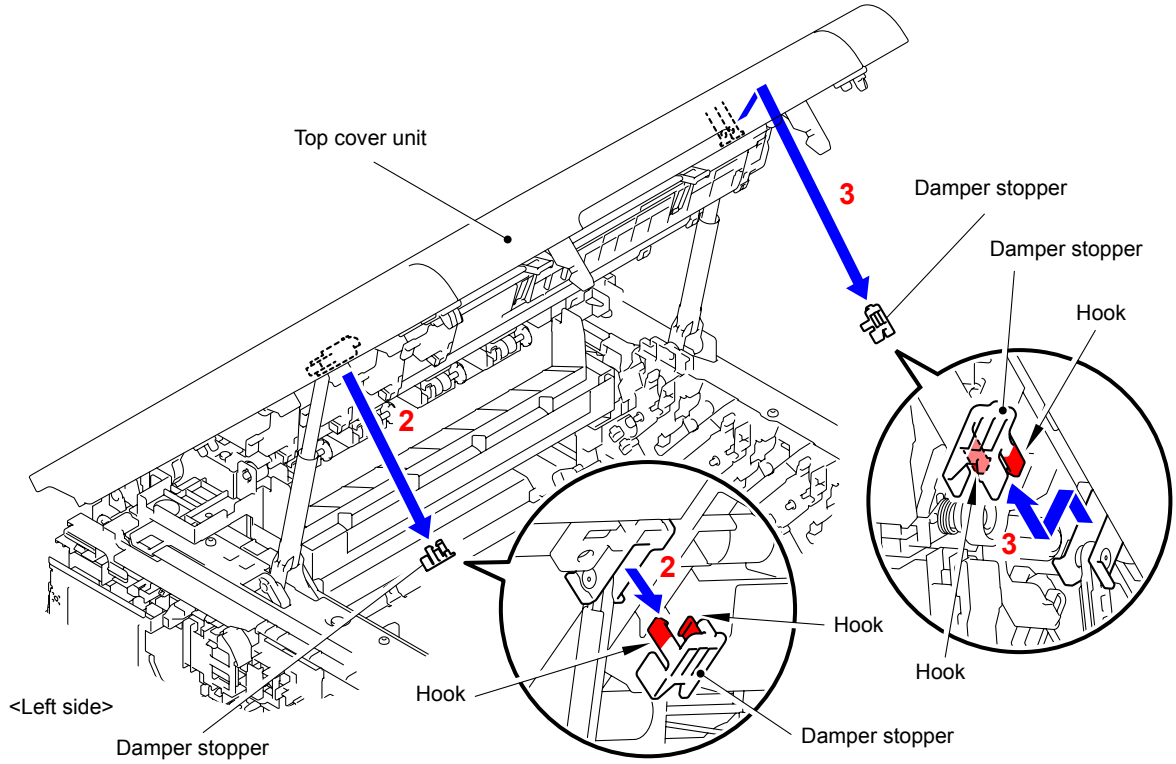


Fig. 3-32

8.13 Flat Cable Cover/Holder Hook/LED ASSY

(1) Remove the four Taptite cup S M3x8 SR screws to remove the Main shield cover plate from the Side frame L ASSY.

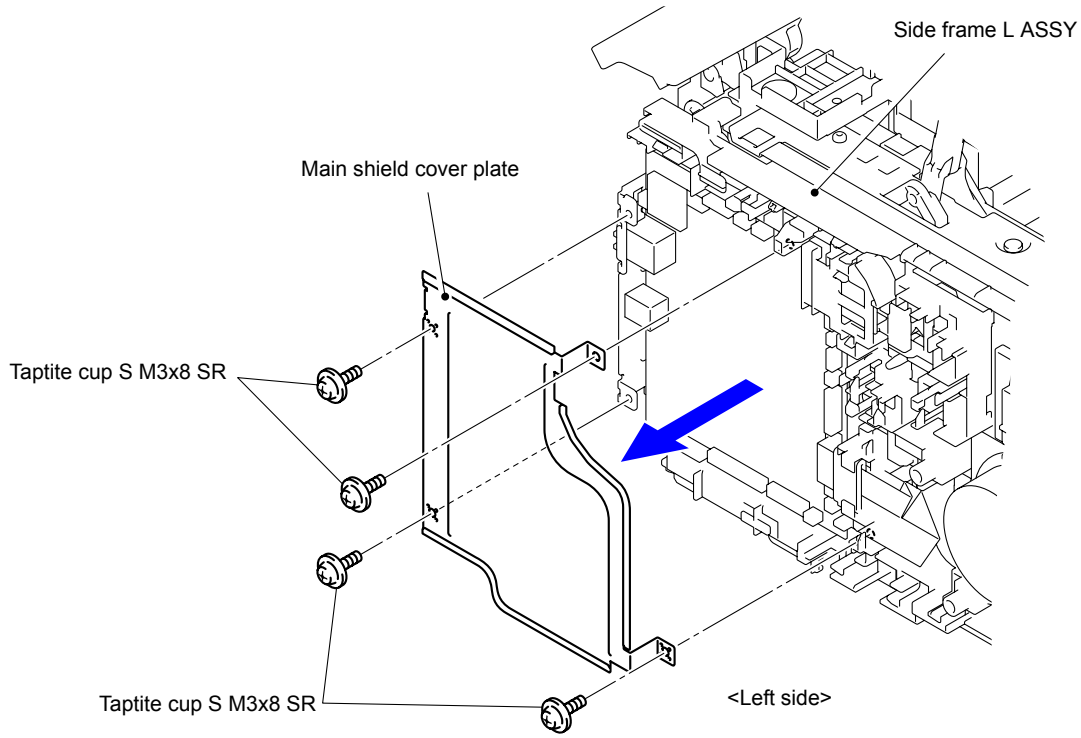


Fig. 3-33

(2) Release the Lock to disconnect the LED control flat cable (CN22) from the Main PCB ASSY. Disconnect the Connector (CN23) from the Main PCB ASSY.

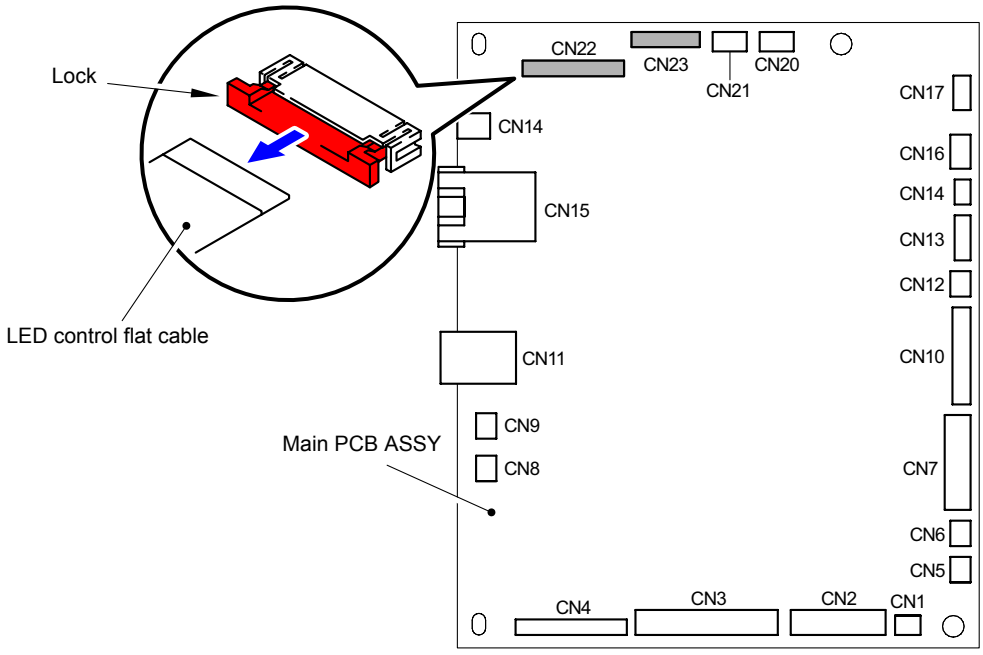


Fig. 3-34

(3) Release the Hook, and then remove the Flat core from the LED control flat cable.

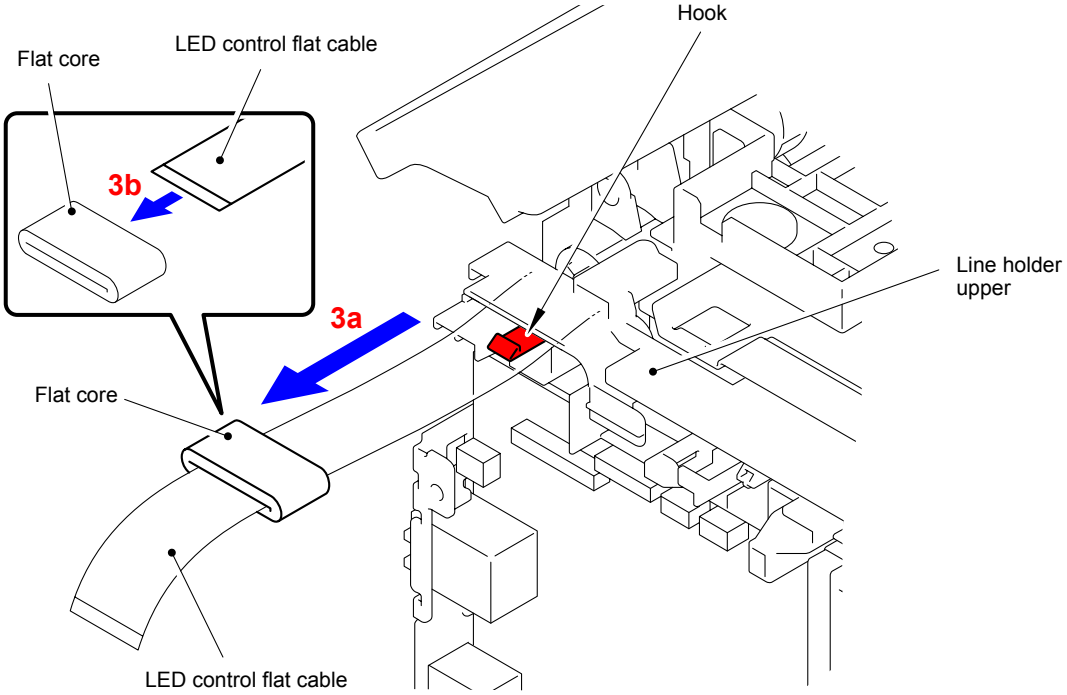


Fig. 3-35

(4) Disconnect the wiring of the Panel PCB harness.
(5) Remove the Taptite pan (washer) B M4x12 DA screw to remove the LED FG harness from the Side frame R ASSY.

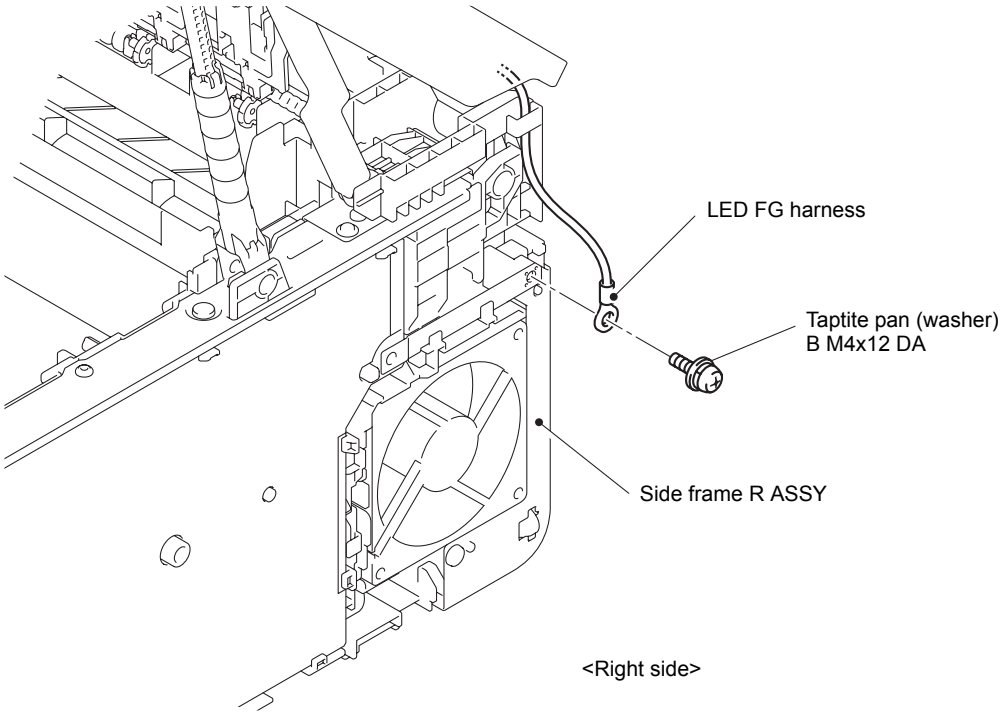


Fig. 3-36

(6) Remove the two Pins of the Damper L ASSY from the Top cover unit.

(7) Remove the two Pins of the Damper R ASSY from the Top cover unit.

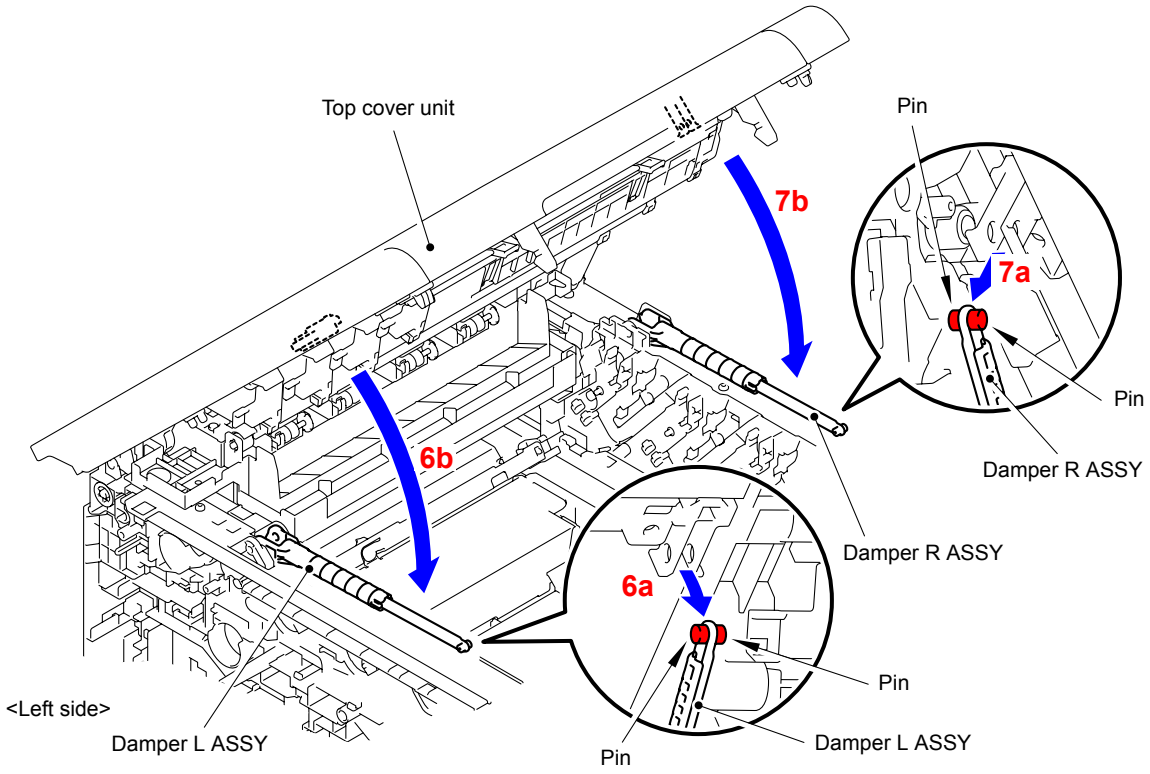


Fig. 3-37

(8) Release the two Hooks and remove the Arm R from the Boss of the Top cover unit.

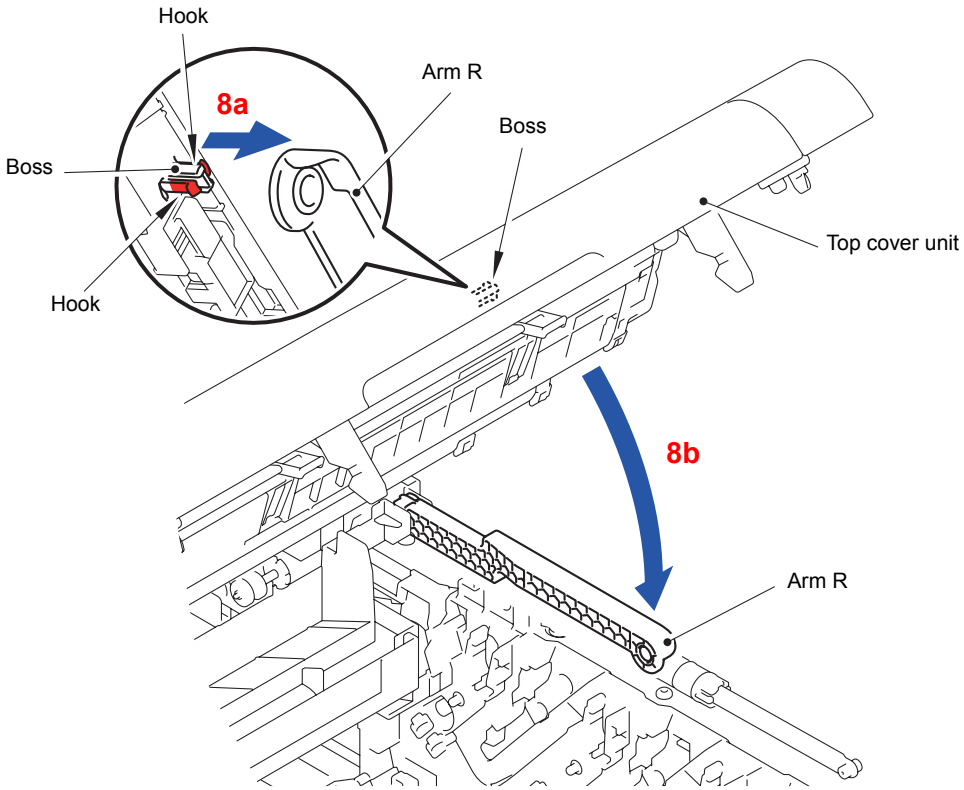


Fig. 3-38

(9) Remove the Top cover unit from the two Bosses of the Main body.

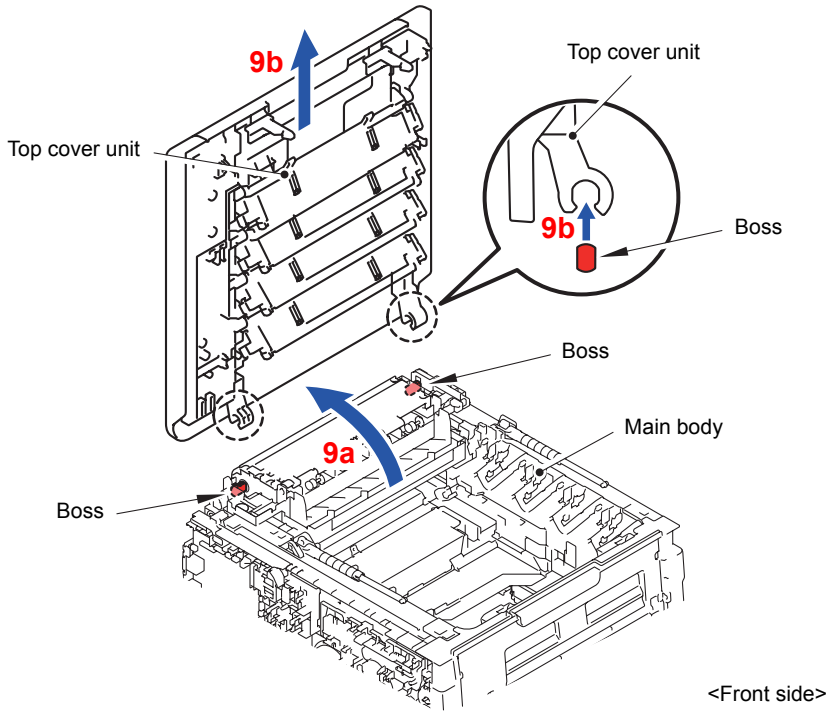


Fig. 3-39

Note:
If the LED ASSY is laid down, slide the Push arm of the Sub frame ASSY in the direction of the arrow "a" to raise the LED ASSY before performing this step.

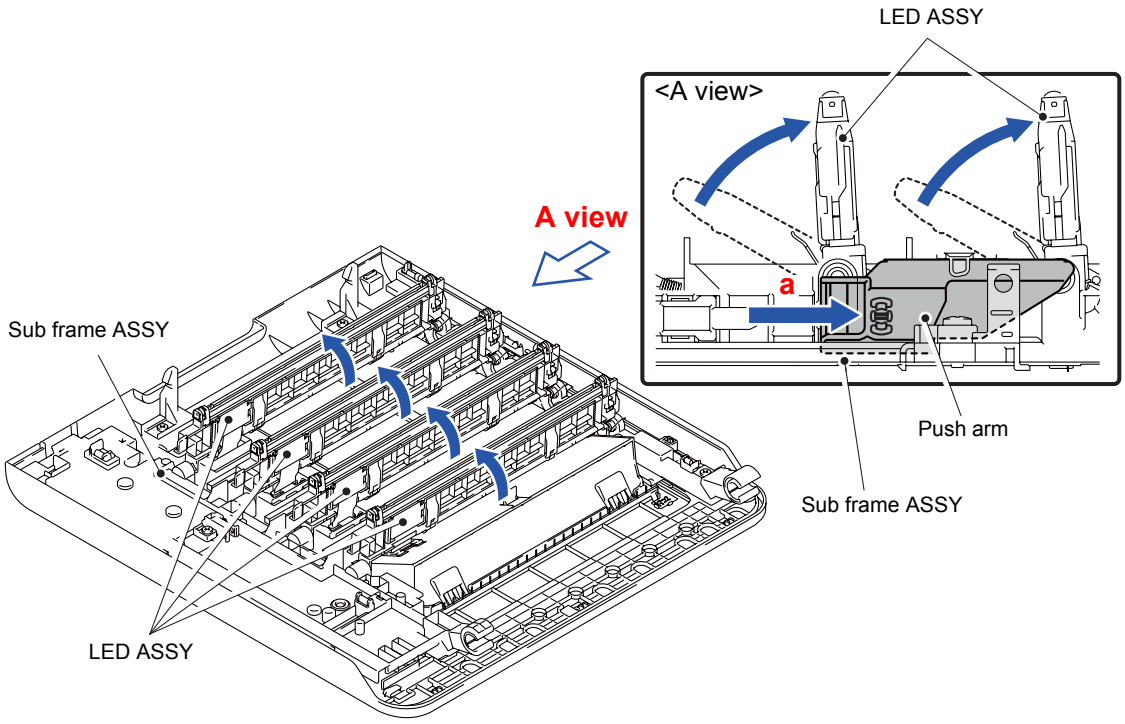


Fig. 3-40

(10) Release the three Hooks to remove the Flat cable cover from the LED ASSY.

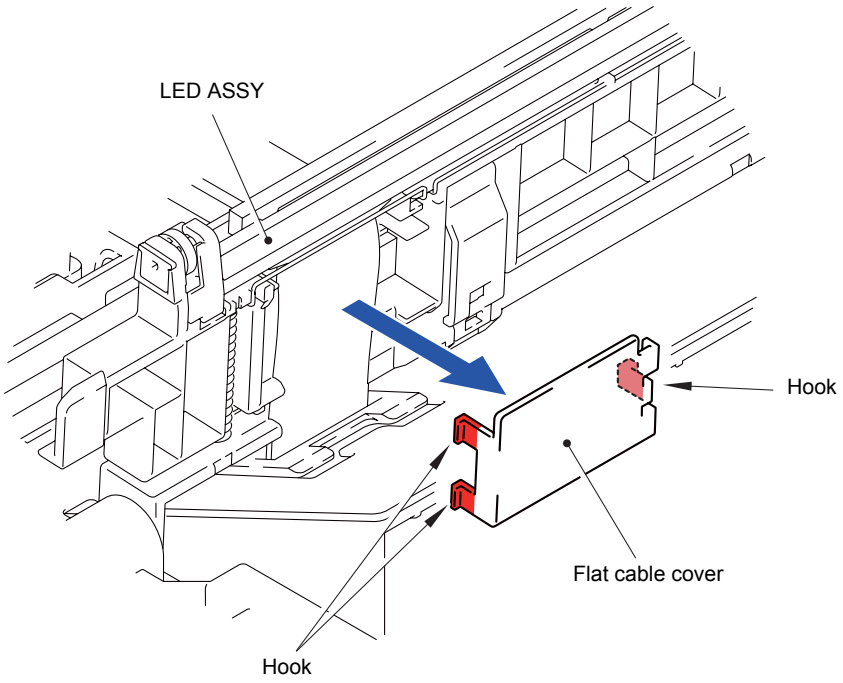


Fig. 3-41

(11) Release the Hook of the Holder hook by the driver from the back side of the LED ASSY.

(12) Release the Hook of the upper side to remove the Holder hook from the left side of the LED ASSY.

(13) Remove the Holder hook on the right side in the same way.

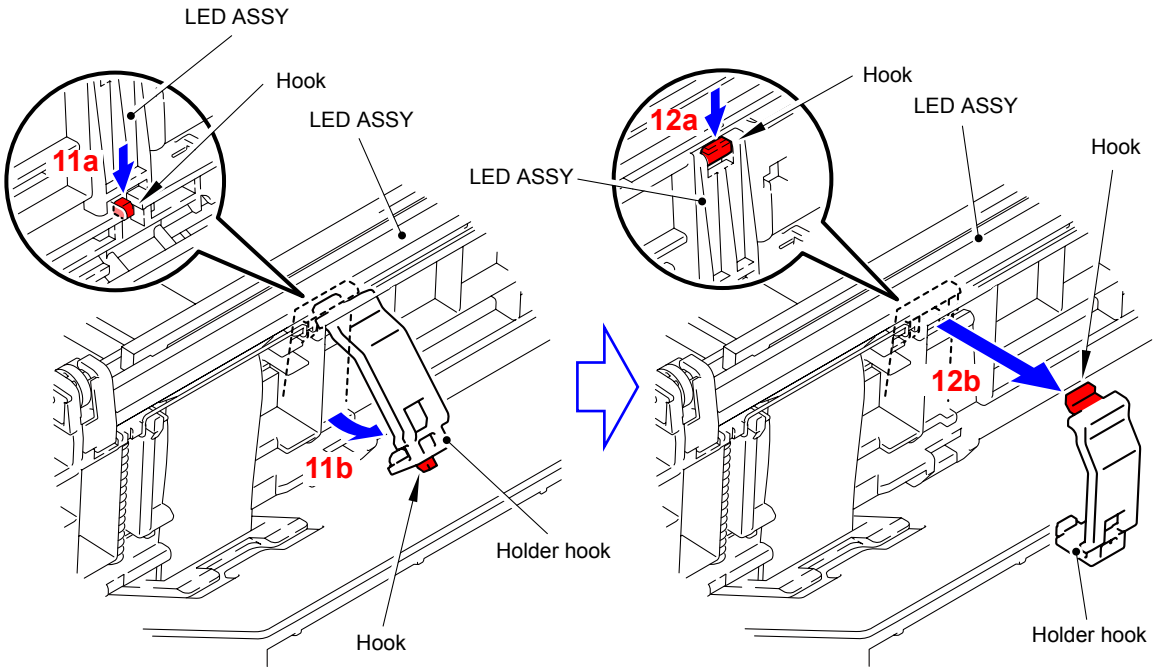


Fig. 3-42

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.

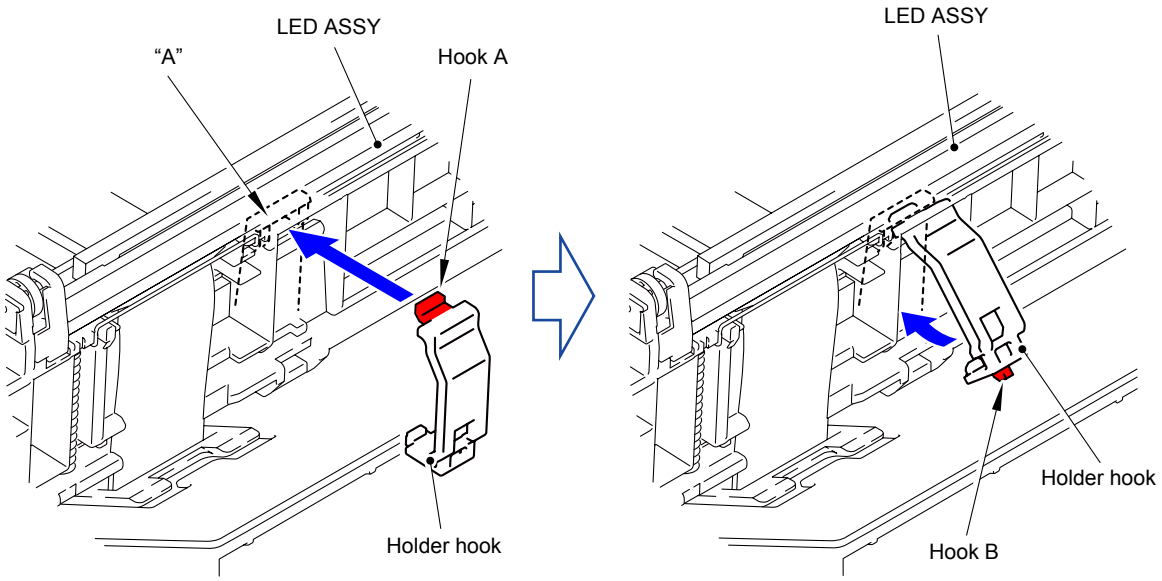


Fig. 3-43

(14) Remove the LED ASSY from the LED holder.

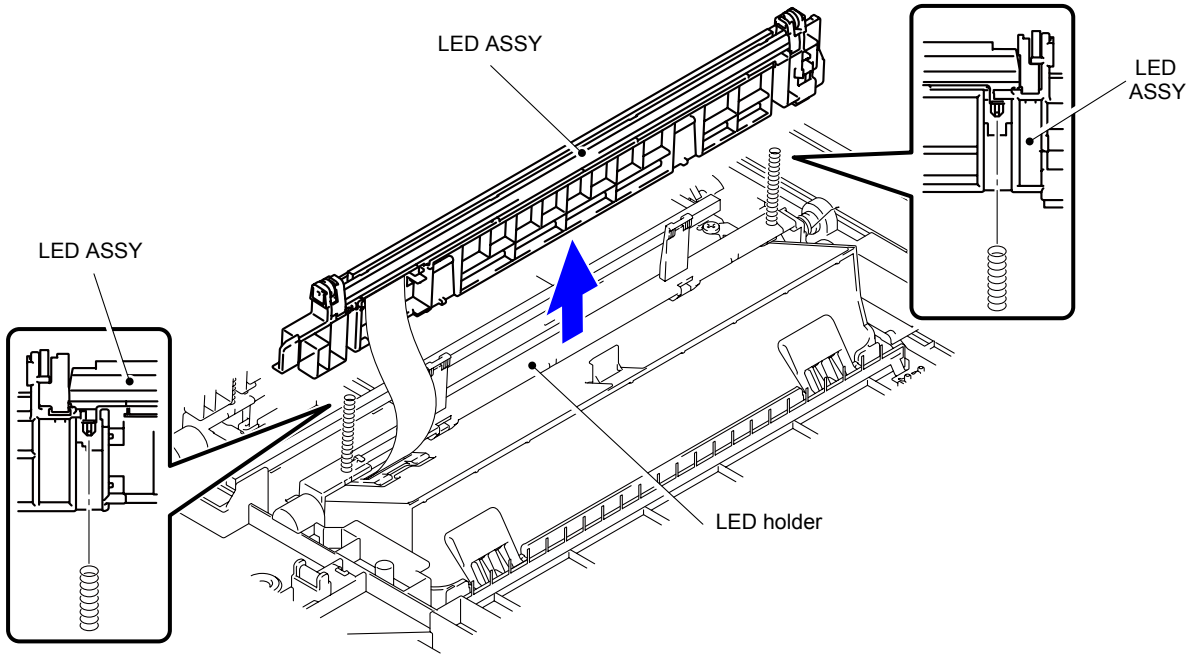


Fig. 3-44

(15) Release the lock of the connector to disconnect the LED flat cable from the LED ASSY.

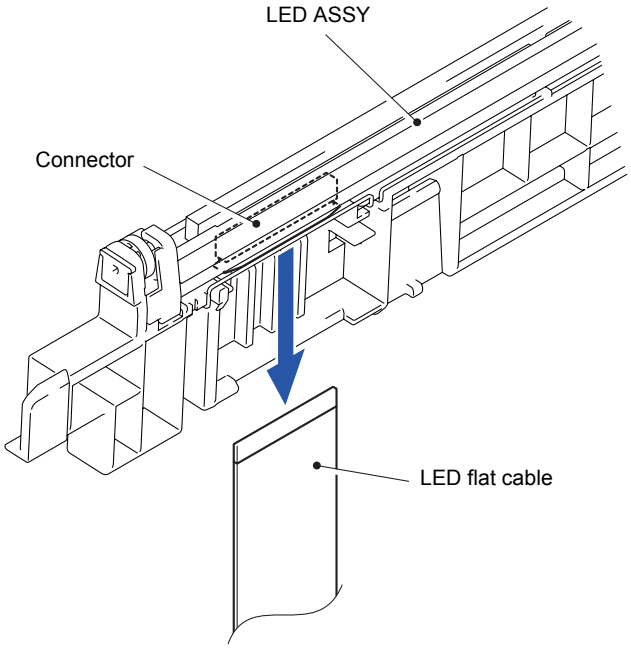


Fig. 3-45

(16) Remove the other three LED ASSYs in the same way as steps (10) to (15) above.

Assembling Note:

- The LED parts of the LED ASSY for replacement are covered with protection tapes. Make sure not to remove the protection tapes until assembling of the LED ASSY is completed. After it is assembled, make sure to remove the protection tapes.
- If the LED parts get smeared, make sure to wipe smears on the LED parts with a clean and soft cloth.

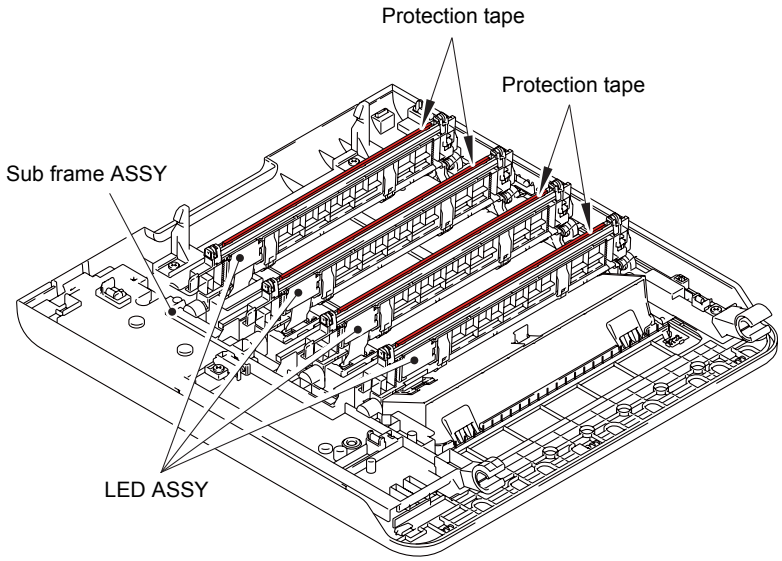


Fig. 3-46

Assembling Note:

When assembling the LED flat cable to the LED ASSY (K), fold up flat cable along with the dotted line as shown in the figure below and assemble it to the LED ASSY (K).

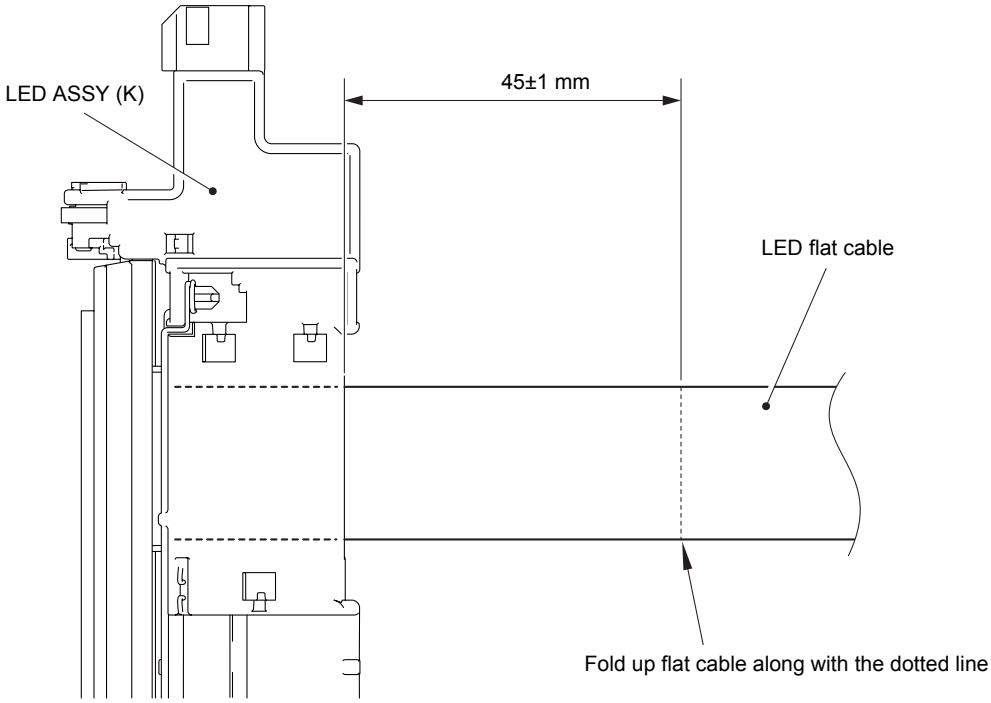


Fig. 3-47

Harness routing: Refer to " 1 Top Cover Unit"

8.14 Z Spring L

(1) Release the two Hooks to remove the Z spring L from the Boss of the LED holder.

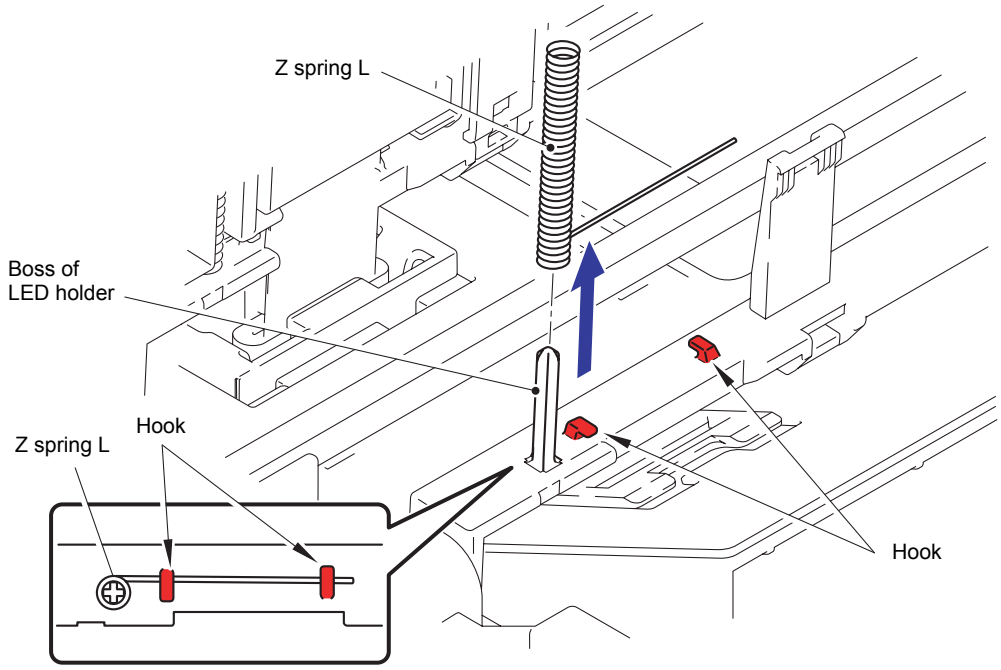


Fig. 3-48

Note:
When removing the Z spring L, be careful not to damage the Boss of the LED holder.

(2) Remove the other Z springs L in the same way.

8.15 Paper Stack Lever

(1) Remove the two Pins to remove the Paper stack lever on the left side.

(2) Remove the Paper stack lever on the right side in the same way.

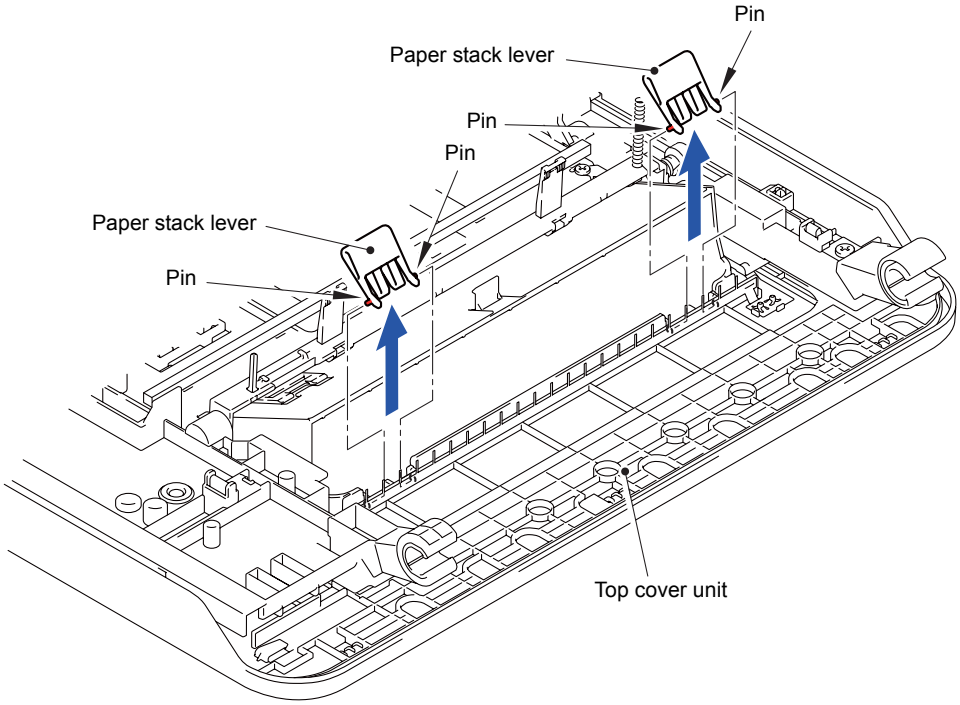


Fig. 3-49

8.16 TC Lock Arm Guide

(1) Remove the Taptite bind B M4x12 screw on the left side of Top cover unit to remove the TC lock arm guide.

(2) Remove the TC lock arm guide on the right side in the same way.

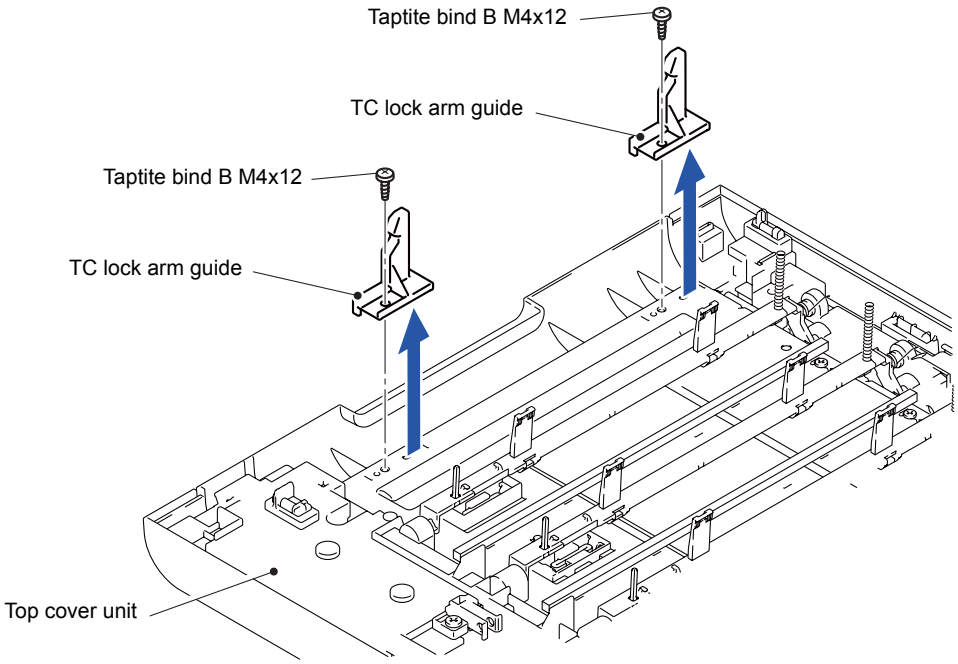


Fig. 3-50

8.17 Sub Frame ASSY

(1) Remove the five Taptite bind B M4x12 screws from the Top cover unit.

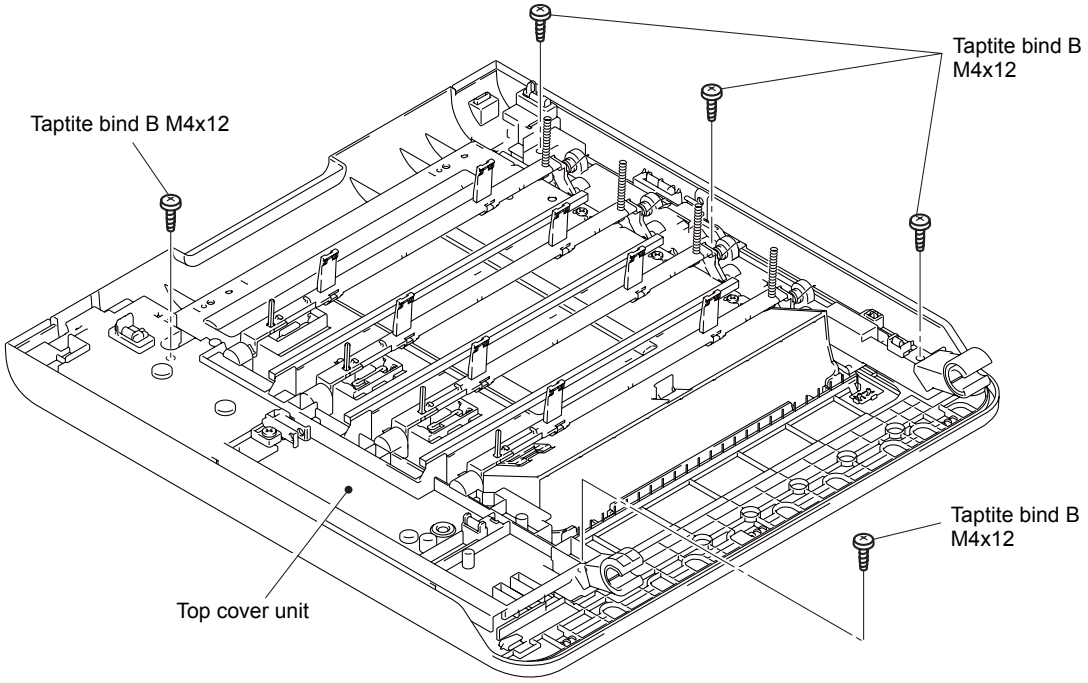


Fig. 3-51

(2) Disconnect the wiring of the LED FG harness.
(3) Release the Hook to remove the Sub frame ASSY from the Top cover ASSY.

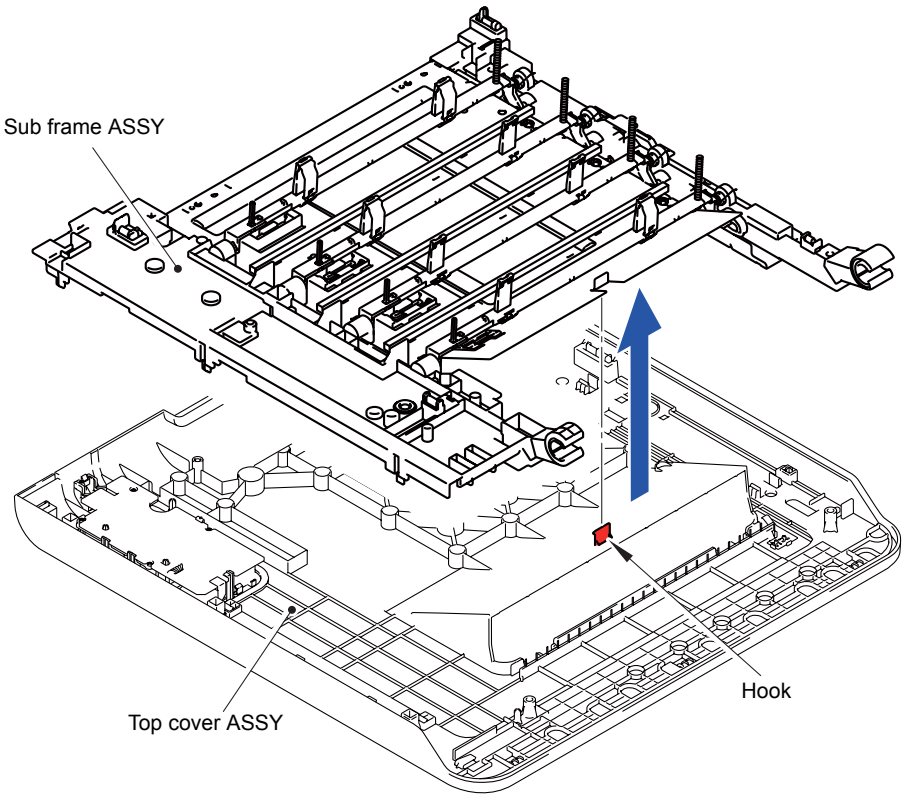


Fig. 3-52

Harness routing: Refer to " 1 Top Cover Unit"

8.18 Panel PCB ASSY

(1) Disconnect the wiring of the Panel PCB harness.
(2) Release the four Hooks to remove the Panel PCB ASSY from the Top cover ASSY.

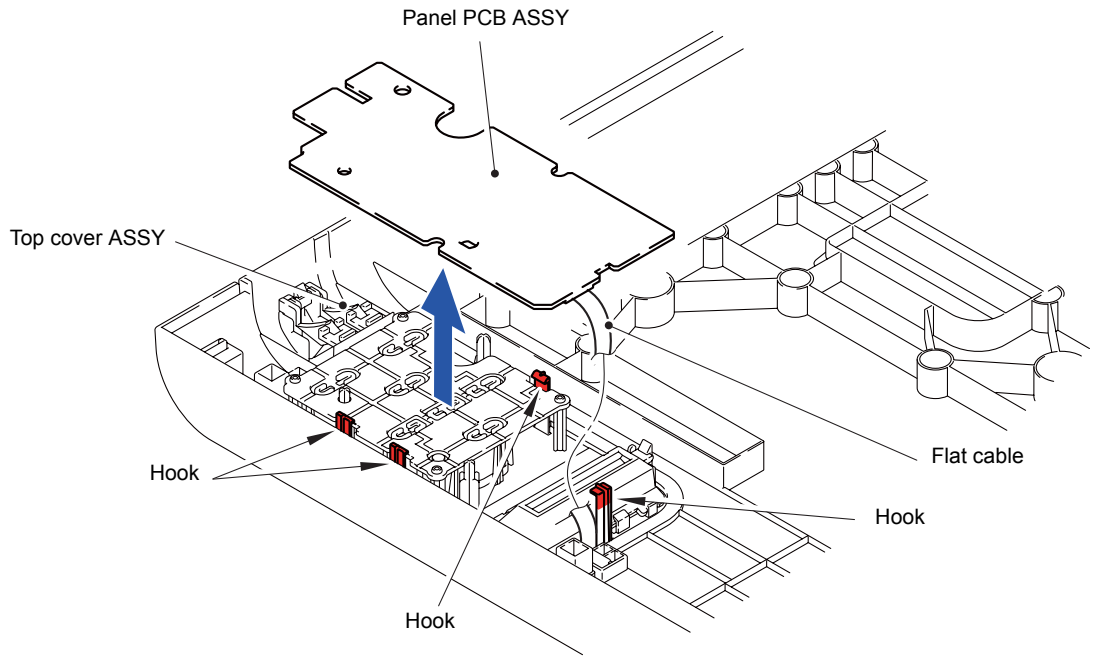


Fig. 3-53

Note:
Be careful that the Flat cable of the LCD is connected to the Panel PCB ASSY.

(3) Release the Lock of the Flat cable connector (CN1). Disconnect the Flat cable from the Panel PCB ASSY.

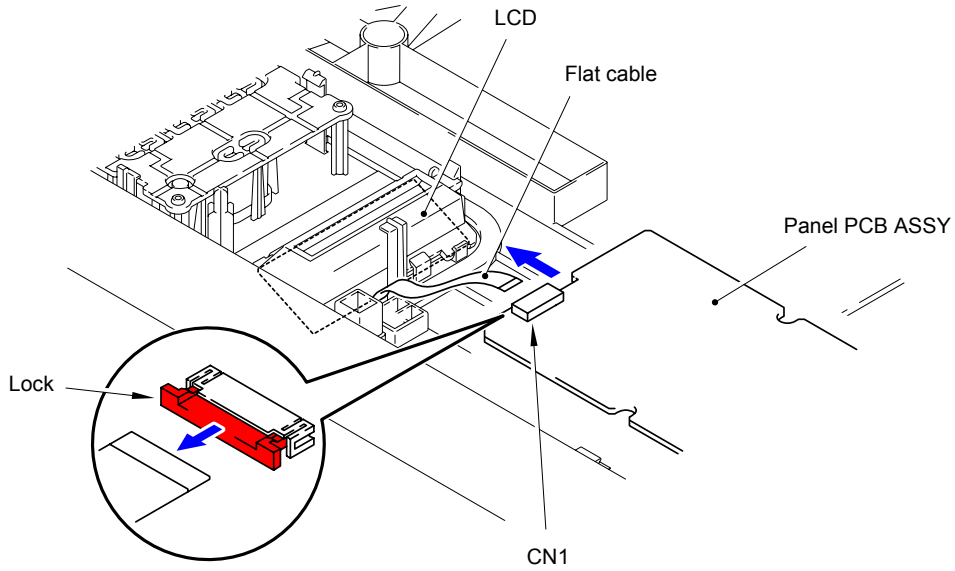


Fig. 3-54

Harness routing: Refer to " 1 Top Cover Unit"

8.19 Rubber Key ASSY

(1) Remove the Rubber key ASSY from the Top cover ASSY.

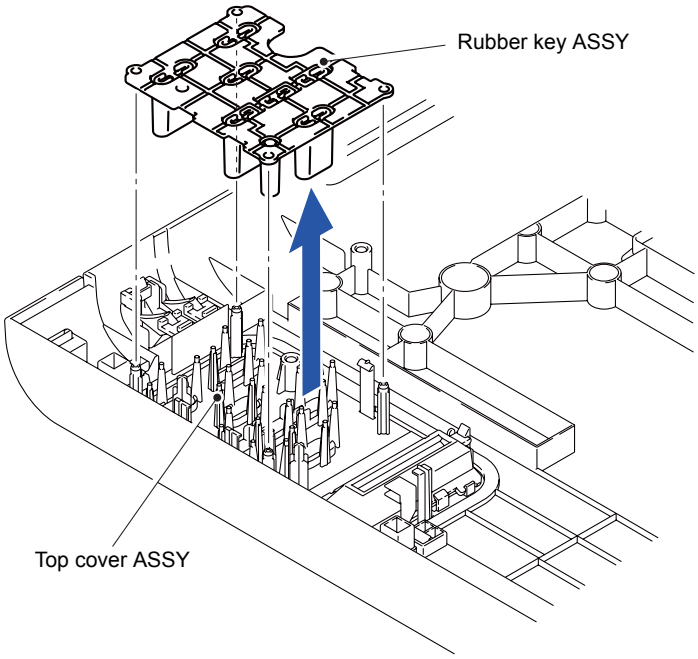


Fig. 3-55

8.20 Diffusion Film/LCD

(1) Release the two Hooks to remove the LCD holder from the Top cover ASSY.

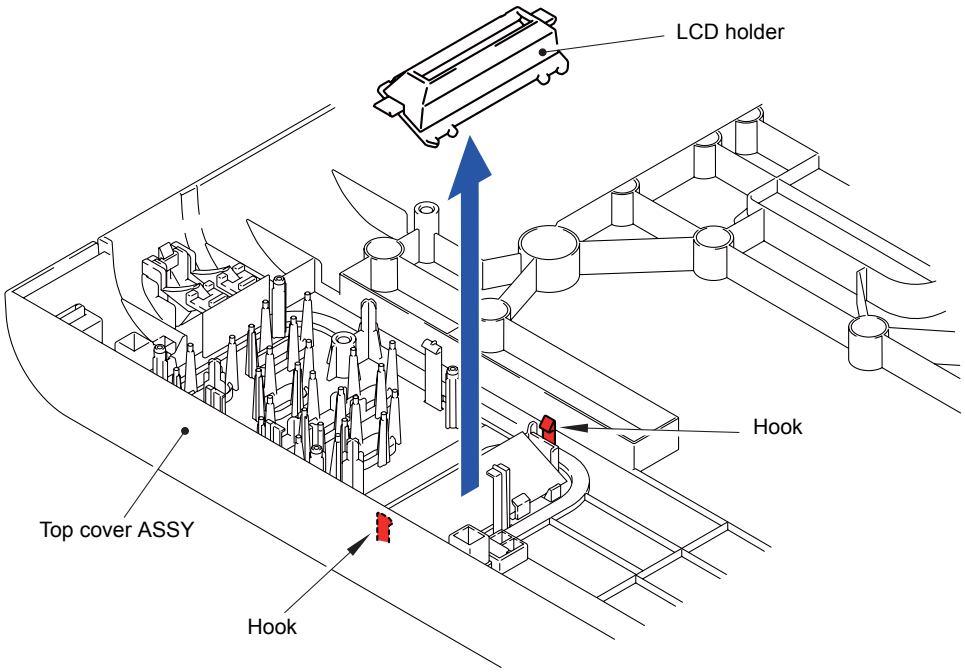


Fig. 3-56

(2) Remove the Diffusion film and LCD from the Top cover ASSY.

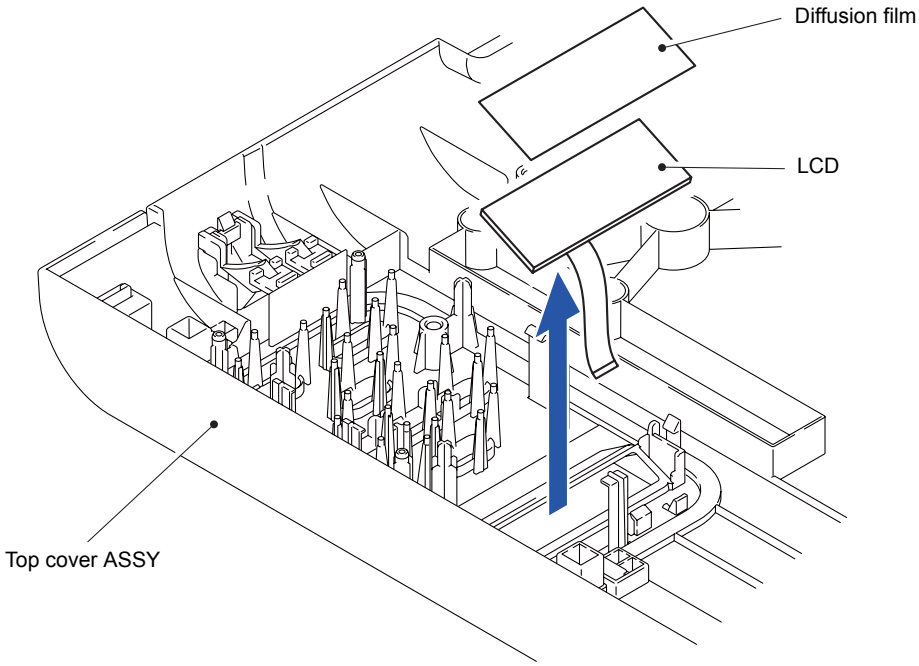


Fig. 3-57

8.21 LED Control Flat Cable

(1) Assemble the Sub frame ASSY to the two Bosses of the Main body.

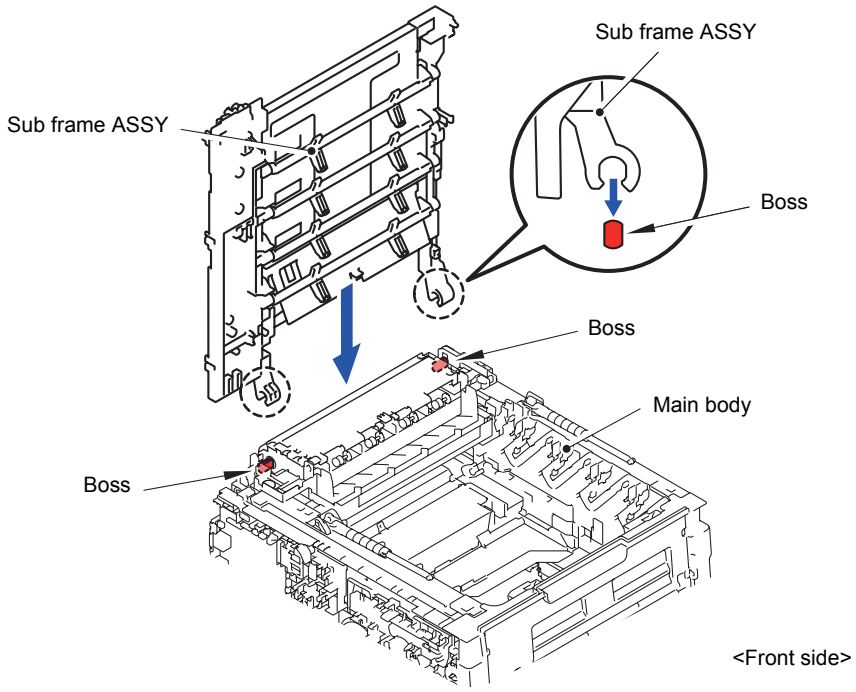


Fig. 3-58

(2) Assemble the two Pins of the Damper L into the Sub frame ASSY.

(3) Assemble the Arm R into the Boss of the Sub frame ASSY.

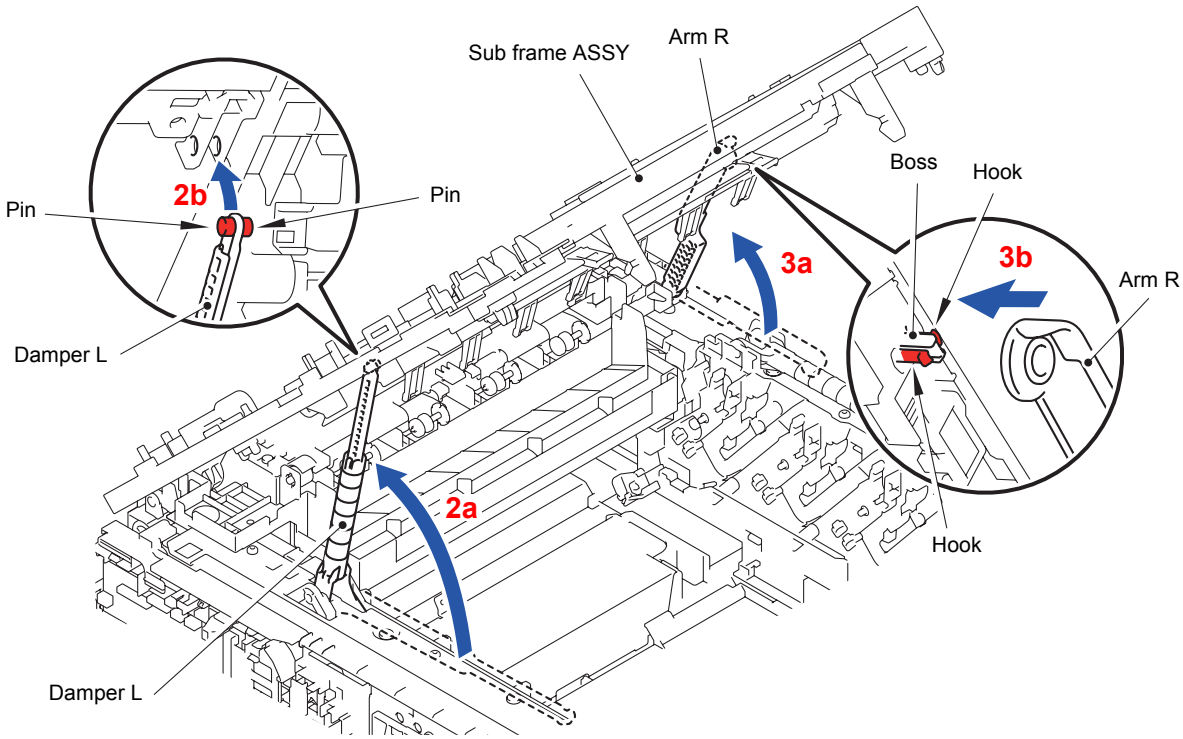


Fig. 3-59

(4) Close the Sub frame ASSY.

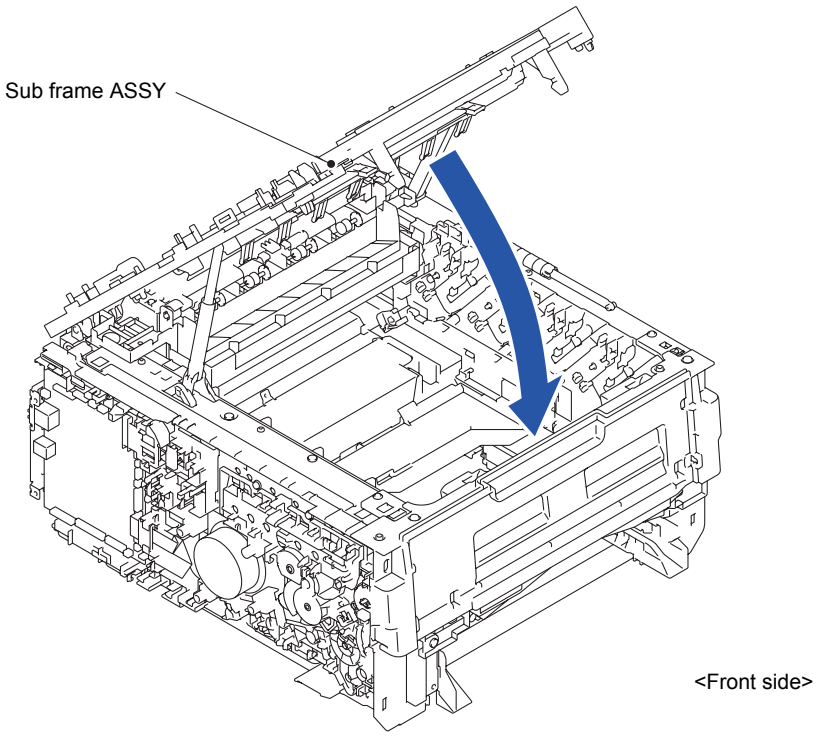


Fig. 3-60

(5) Remove the three Taptite cup S M3x8 SR screws to remove the LED PCB cover from the LED control PCB ASSY.

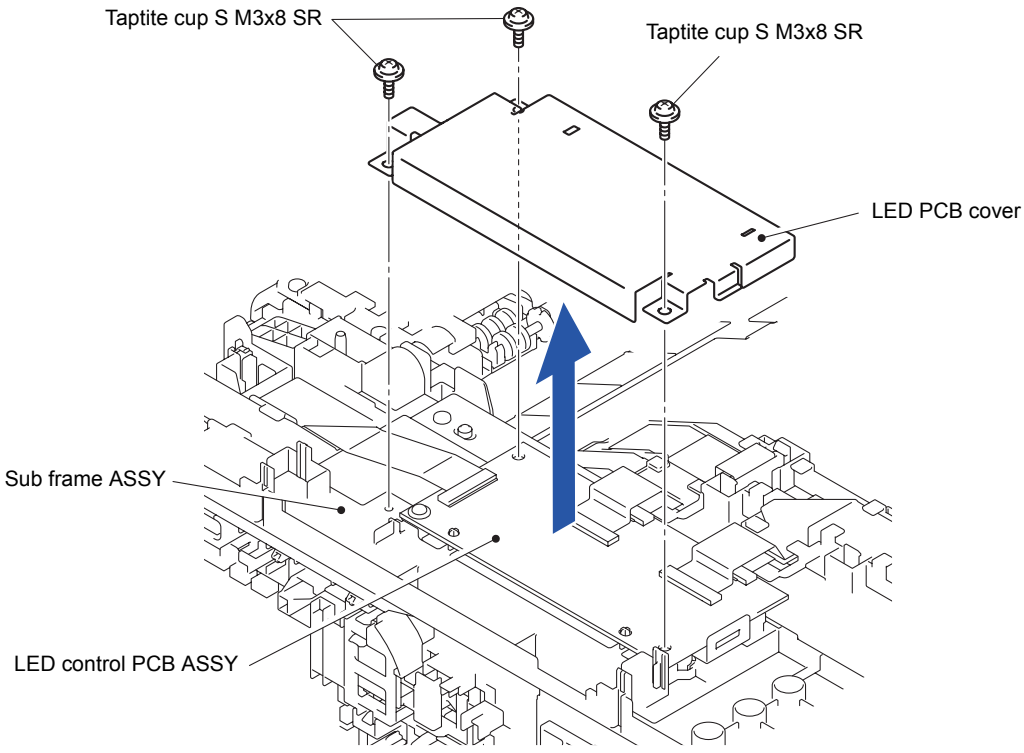


Fig. 3-61

(6) Release the Lock of the LED control flat cable connector (CN1). Disconnect the LED control flat cable from the LED control PCB ASSY.

(7) Remove the LED control flat cable from the Film by removing the Double-sided adhesive tape.

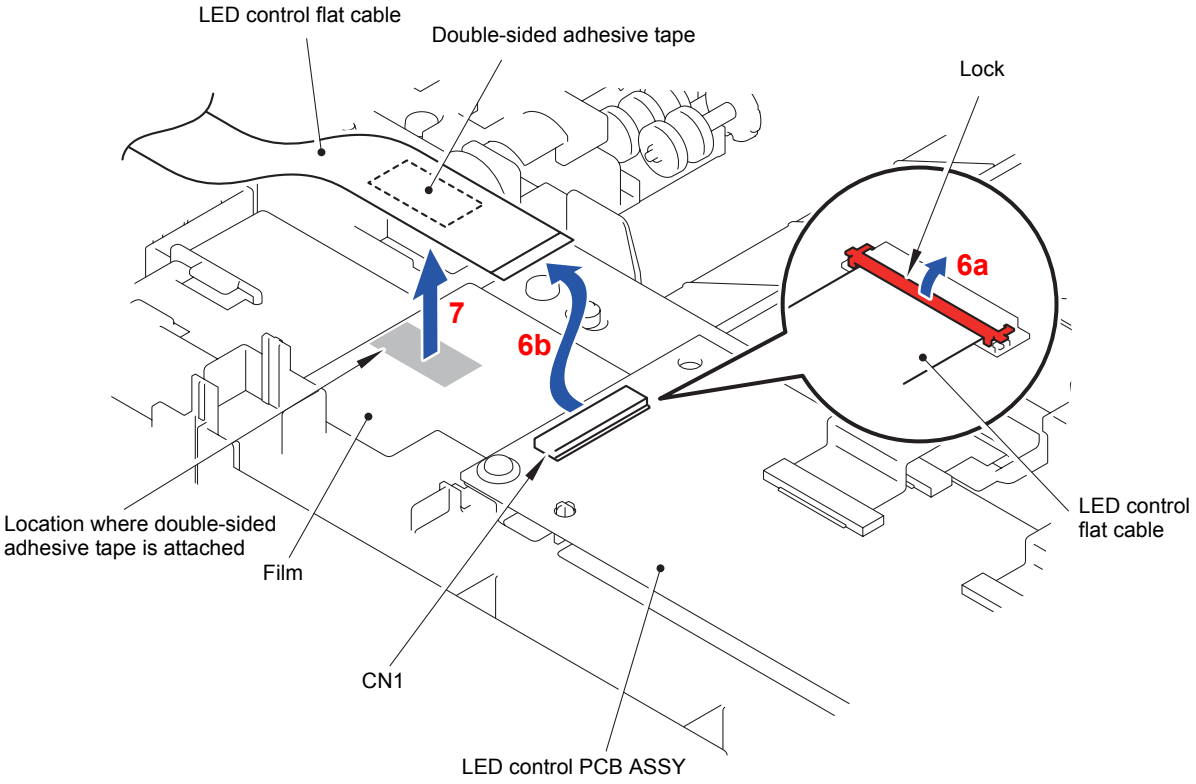


Fig. 3-62

Harness routing: Refer to " 1 Top Cover Unit"

<How to Fold flat cable of LED control flat cable>

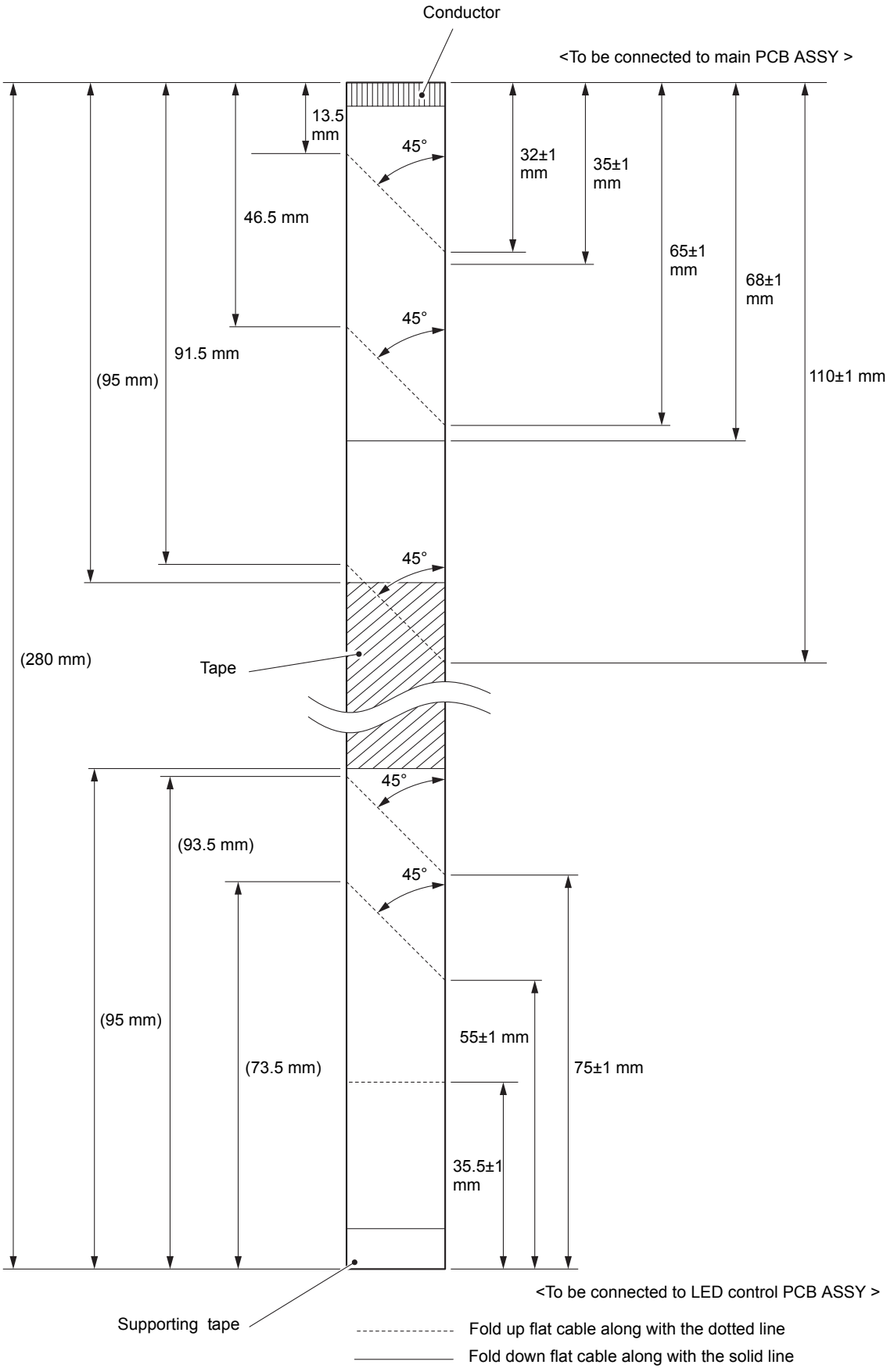


Fig. 3-63

8.22 LED Flat Cable

(1) Release the Lock of the LED flat cable connector (CN2). Disconnect the LED flat cable (M) from the LED control PCB ASSY.
Release the Lock of the LED flat cable connector (CN4). Disconnect the LED flat cable (Y) from the LED control PCB ASSY.

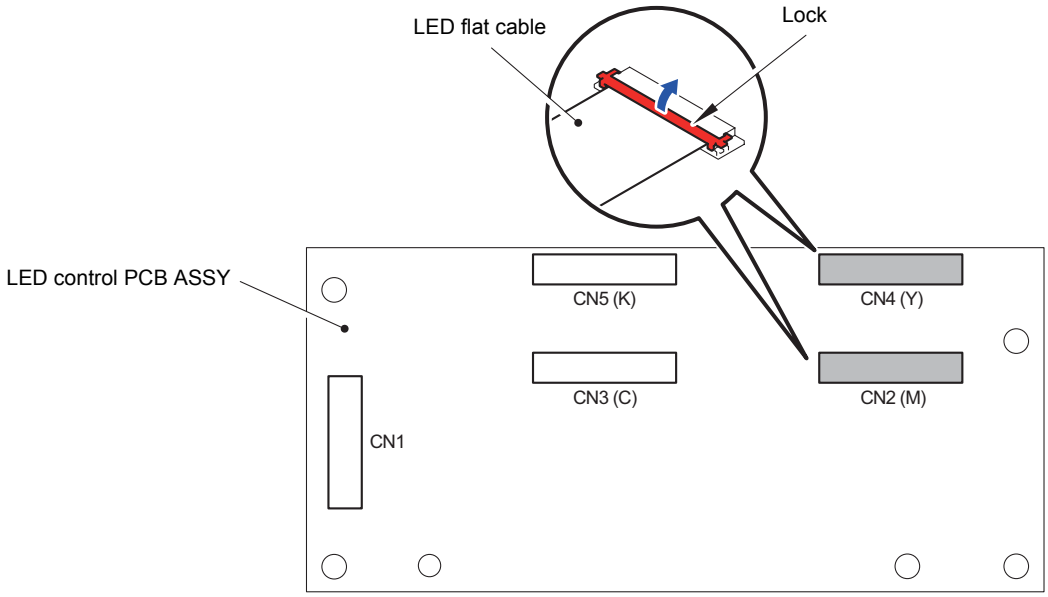


Fig. 3-64

(2) Remove the Flat core from the two LED flat cables (Y and M) of the LED flat cable holder.

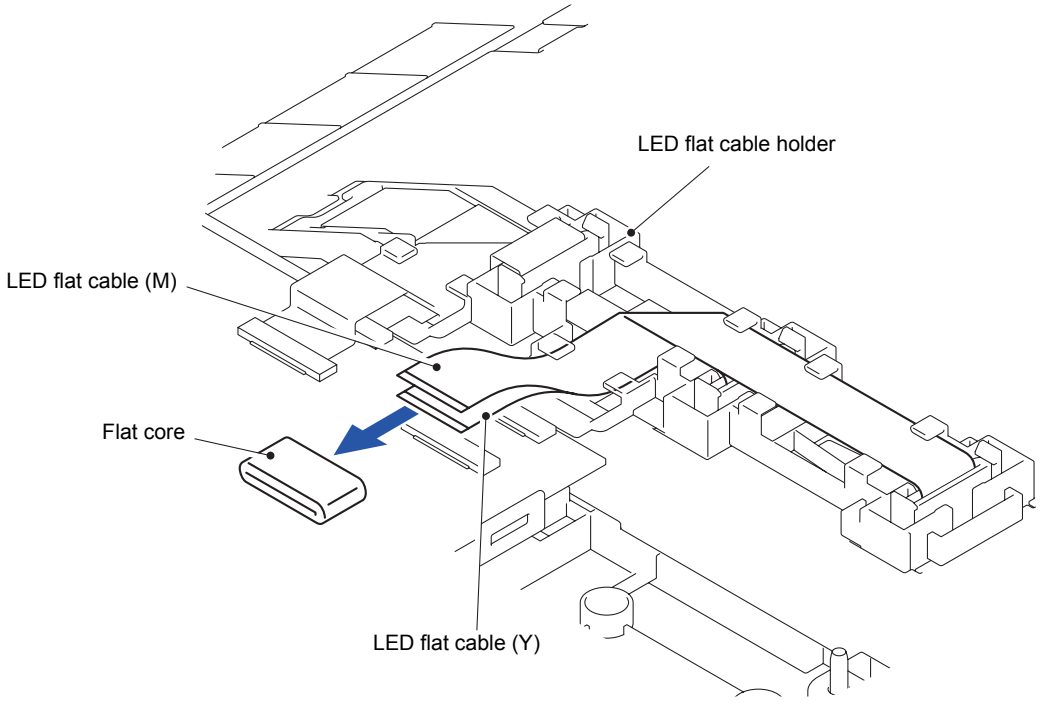


Fig. 3-65

(3) Pull out the LED flat cable (Y) from the Flat core of the LED flat cable holder.

(4) Pull out the LED flat cable (M) from the Flat core of the LED flat cable holder.

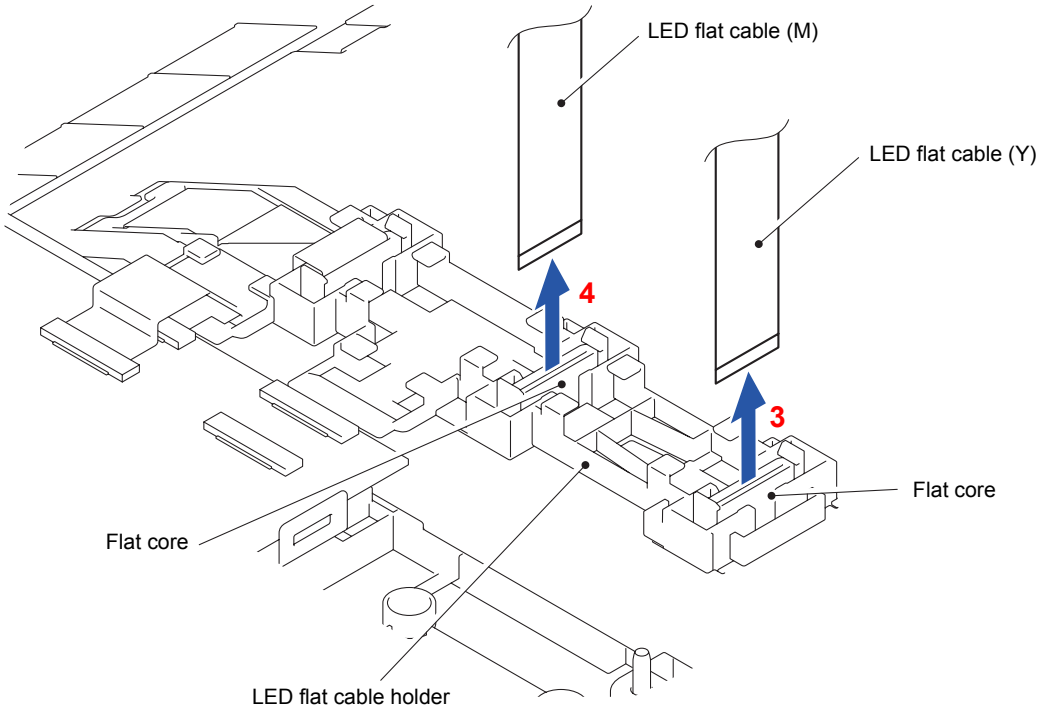


Fig. 3-66

(5) Release the Lock of the LED flat cable connector (CN3). Disconnect the LED flat cable (C) from the LED control PCB ASSY.
Release the Lock of the LED flat cable connector (CN5). Disconnect the LED flat cable (K) from the LED control PCB ASSY.

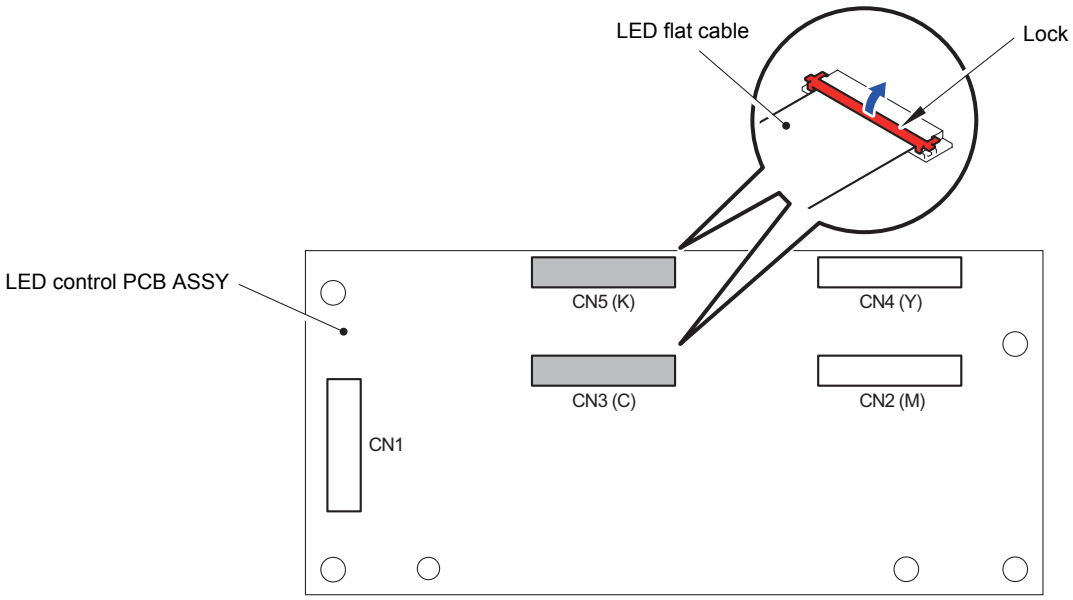


Fig. 3-67

(6) Remove the Flat core from the two LED flat cables (K and C) of the LED flat cable holder.

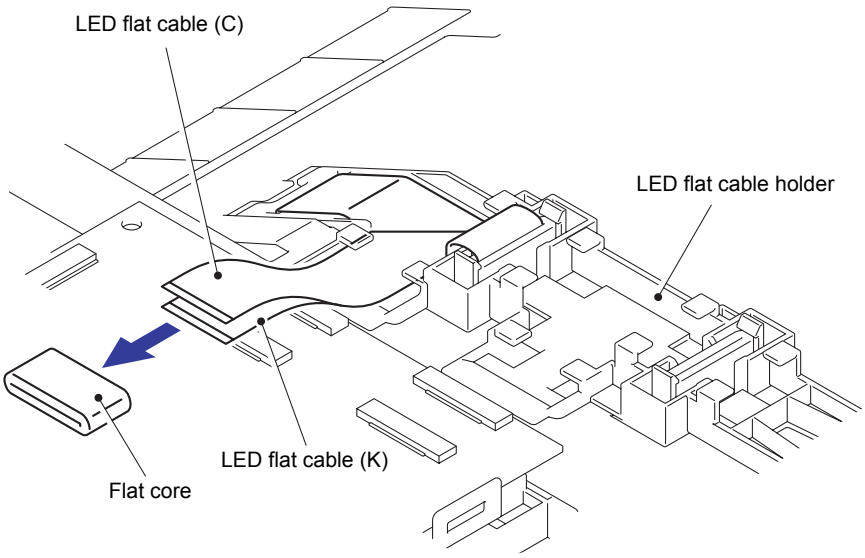


Fig. 3-68

(7) Pull out the LED flat cable (C) from the Flat core.

(8) Pull out the LED flat cable (K) from the LED flat cable holder by removing the Double-sided adhesive tape.

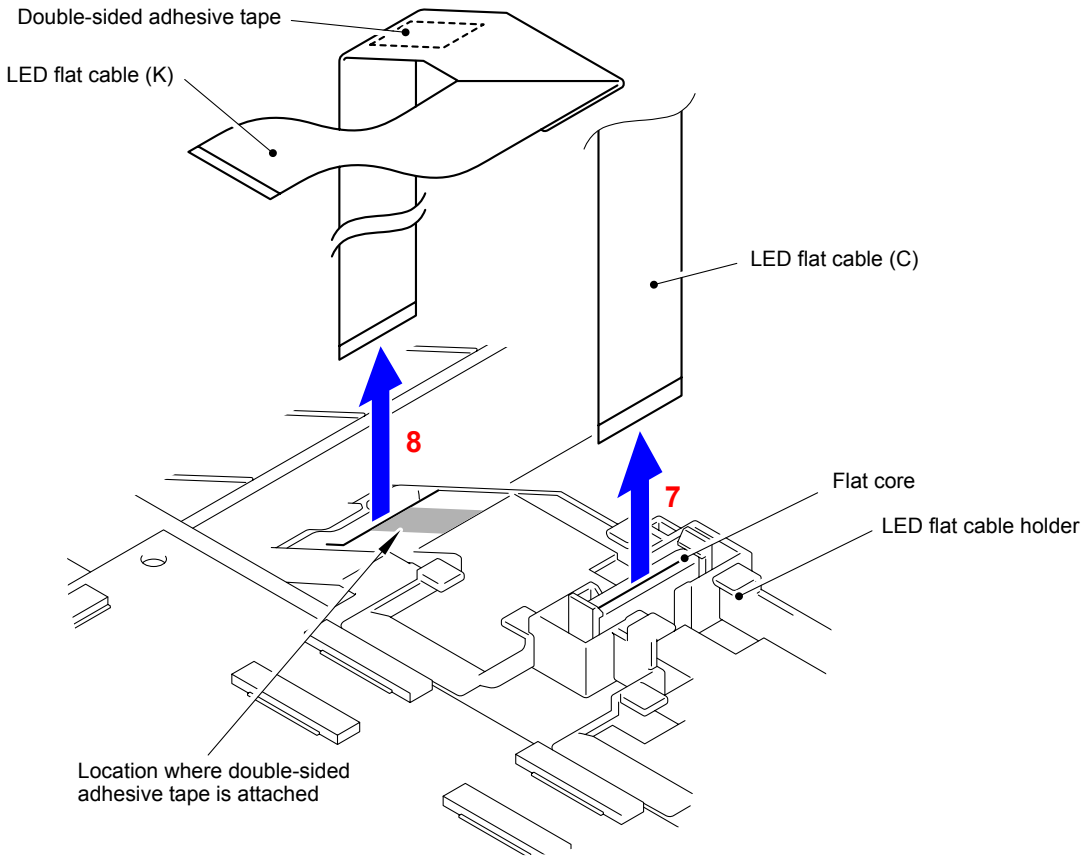


Fig. 3-69

Harness routing: Refer to " 1 Top Cover Unit"

<Flat cable>

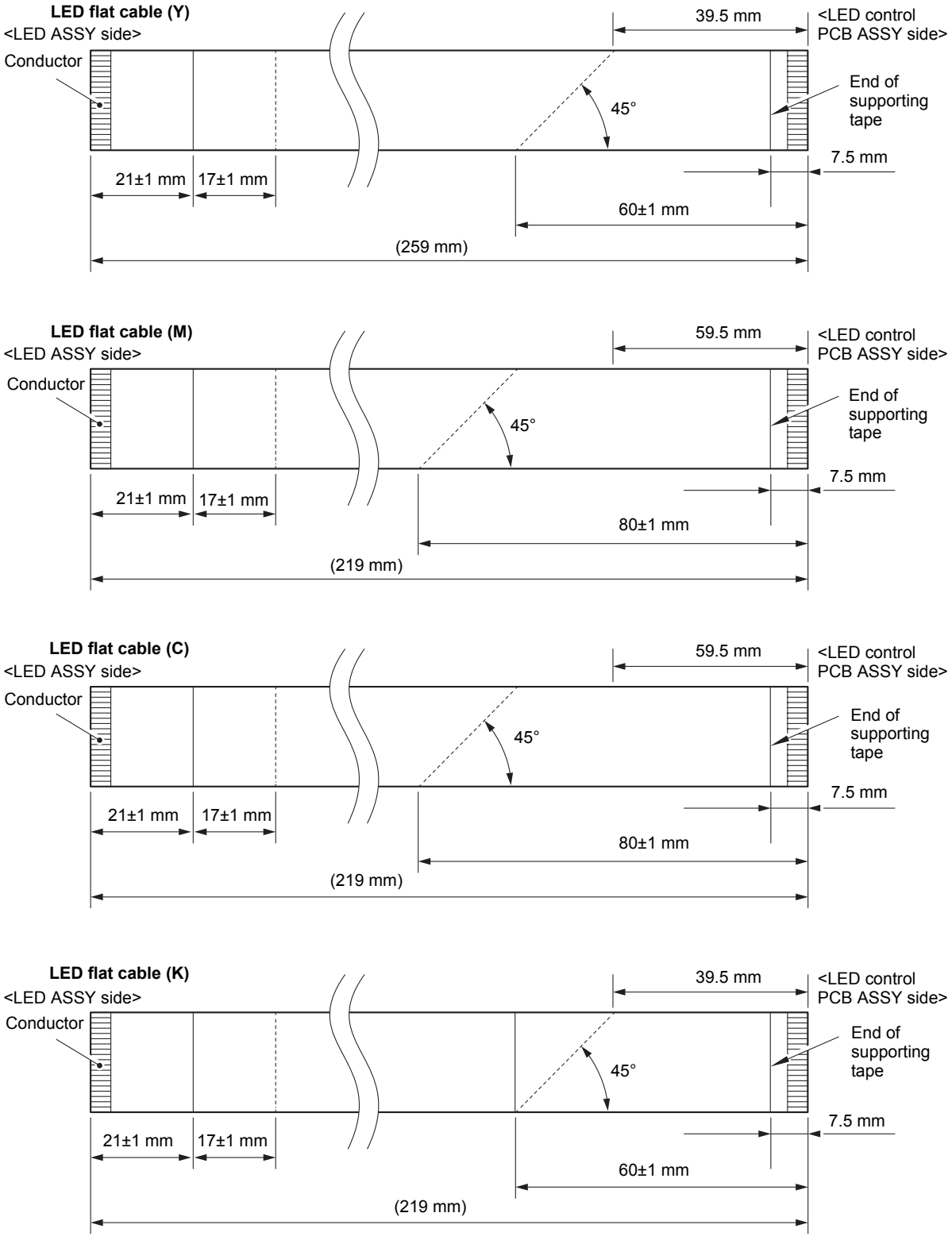


Fig. 3-70

8.23 LED Control PCB ASSY

(1) Remove the two Taptite cup S M3x8 SR screws to remove the LED control PCB ASSY from the Sub frame ASSY.

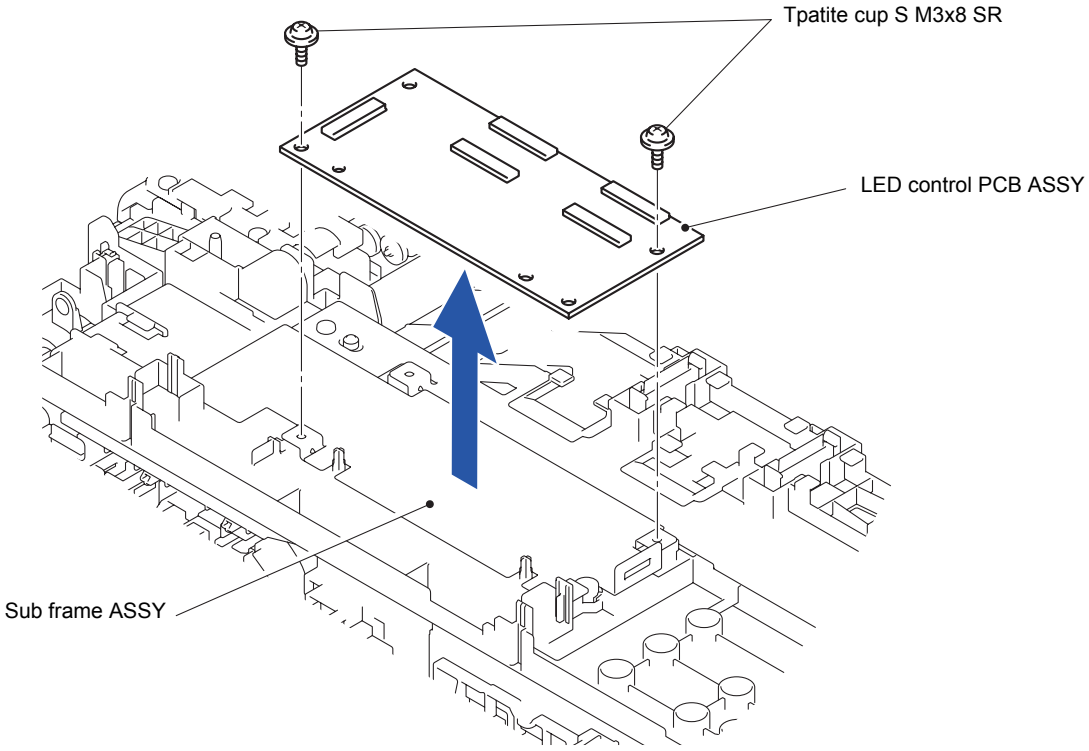


Fig. 3-71

8.24 External Temperature/Humidity Sensor PCB ASSY

(1) Disconnect the Connector (CN21) from the Main PCB ASSY.

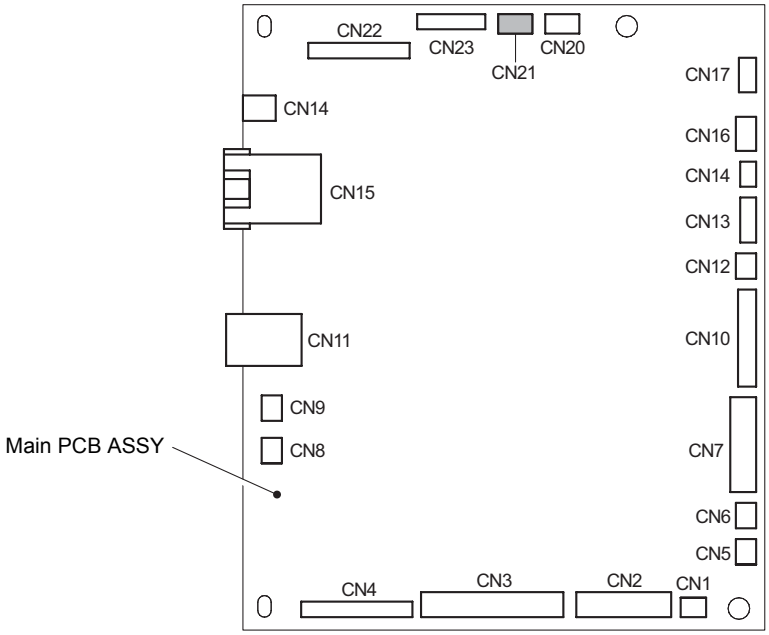


Fig. 3-72

(2) Disconnect the wiring of the External temperature/humidity sensor harness.

(3) Release the Hook to remove the External temperature/humidity sensor PCB ASSY from the Main PCB ASSY.

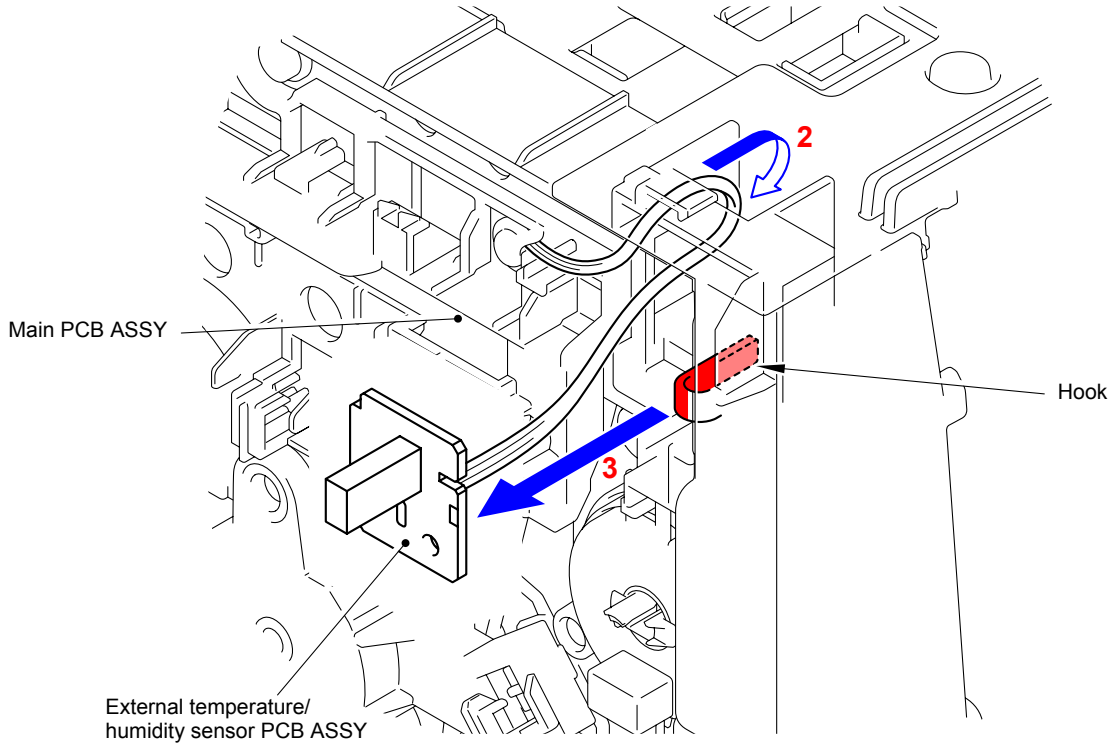


Fig. 3-73

Harness routing: Refer to " 2 External Temperature/Humidity Sensor PCB ASSY, Develop Release Clutch, Registration Clutch, Paper Feed Clutch"

8.25 Wireless LAN Cap/Wireless LAN PCB ASSY/ Spacer Sponge

(1) Release the four Hooks to remove the Wireless LAN cap from the Line holder upper.

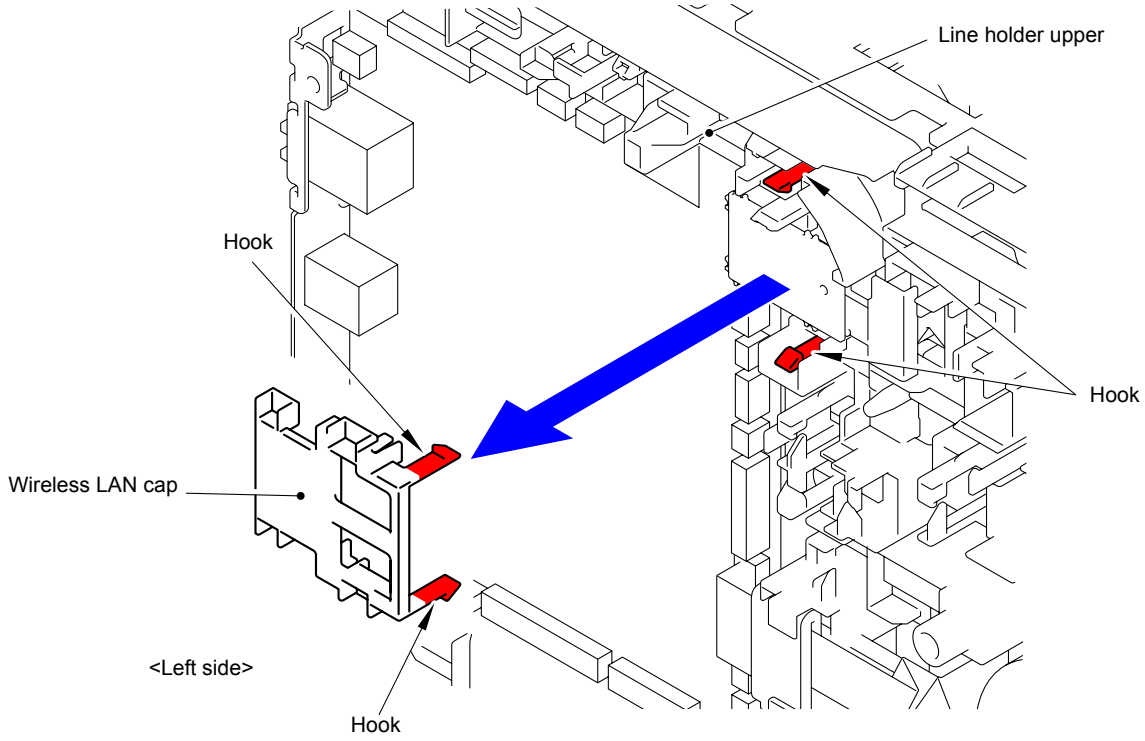


Fig. 3-74

(2) Remove the Wireless LAN PCB ASSY from the Connector (CN17) of the Main PCB ASSY.

(3) Remove the Spacer sponge from the Wireless LAN PCB ASSY.

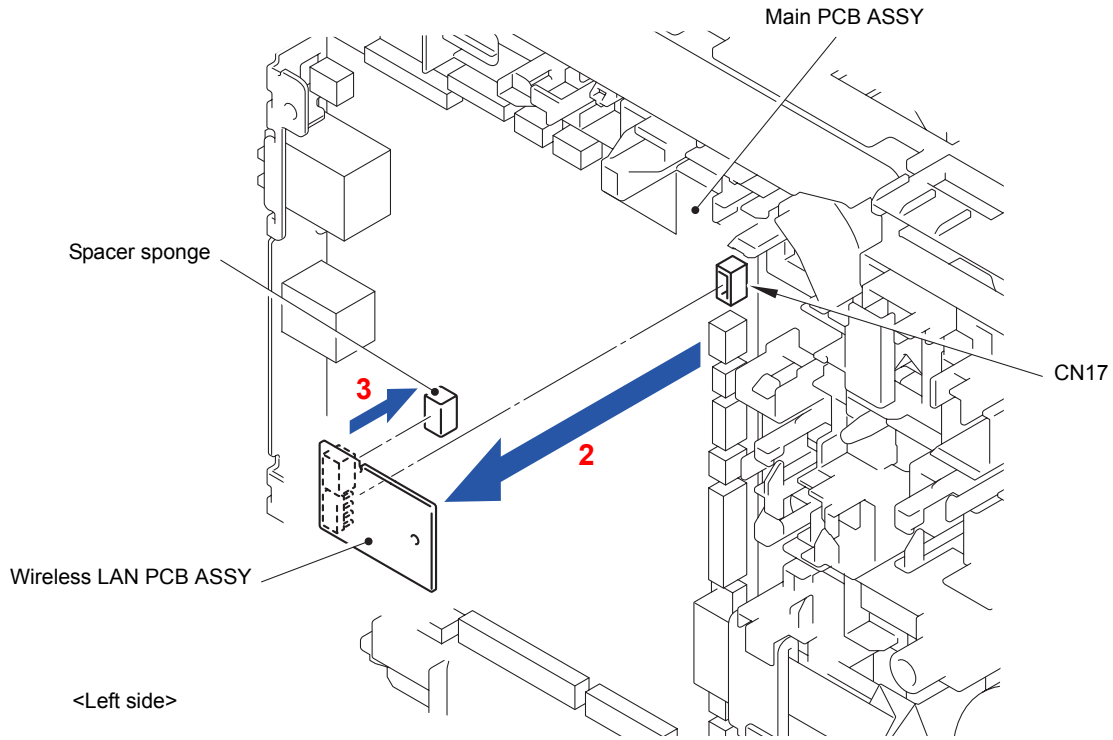


Fig. 3-75

Assembling Note:
When attaching the Spacer sponge to the Wireless LAN PCB ASSY, attach it to the position shown below. At the same time, the double-sided adhesive tape needs to be replaced with a new one.

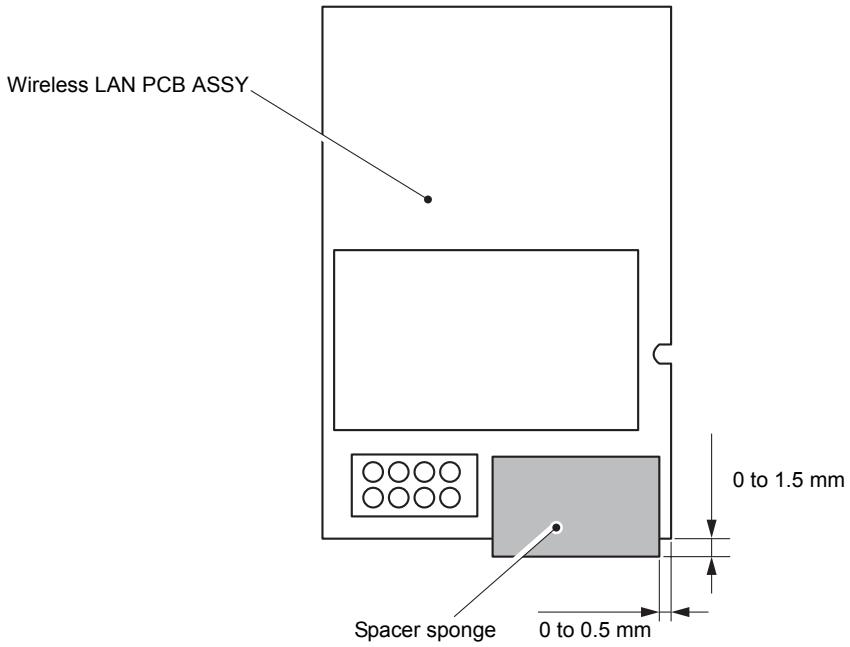


Fig. 3-76

8.26 Main PCB ASSY

(1) Disconnect the ten Connectors (CN1, CN4, CN5, CN6, CN10, CN12, CN13, CN14, CN16 and CN20) and three Flat cables (CN2, CN3 and CN7) from the Main PCB ASSY.

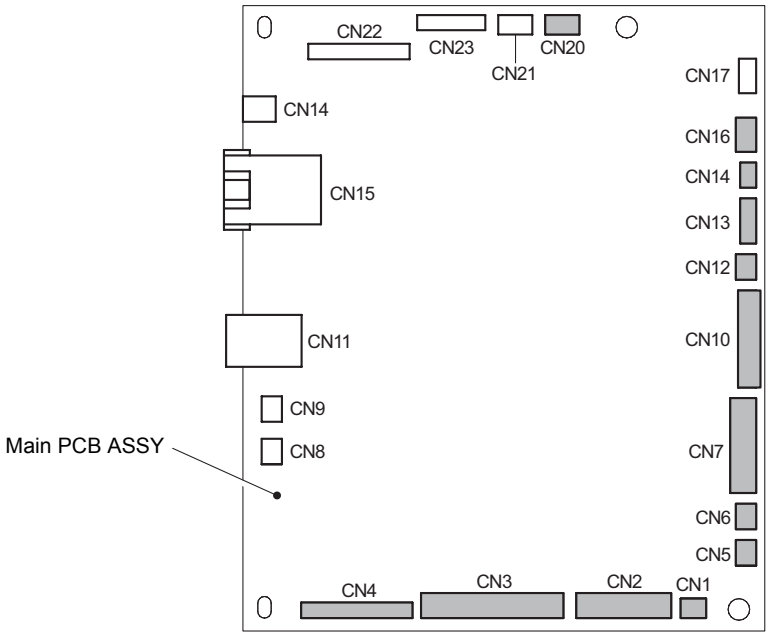


Fig. 3-77

(2) Remove the three Taptite cup S M3x8 SR screws to remove the Main PCB ASSY from the Side frame L ASSY.

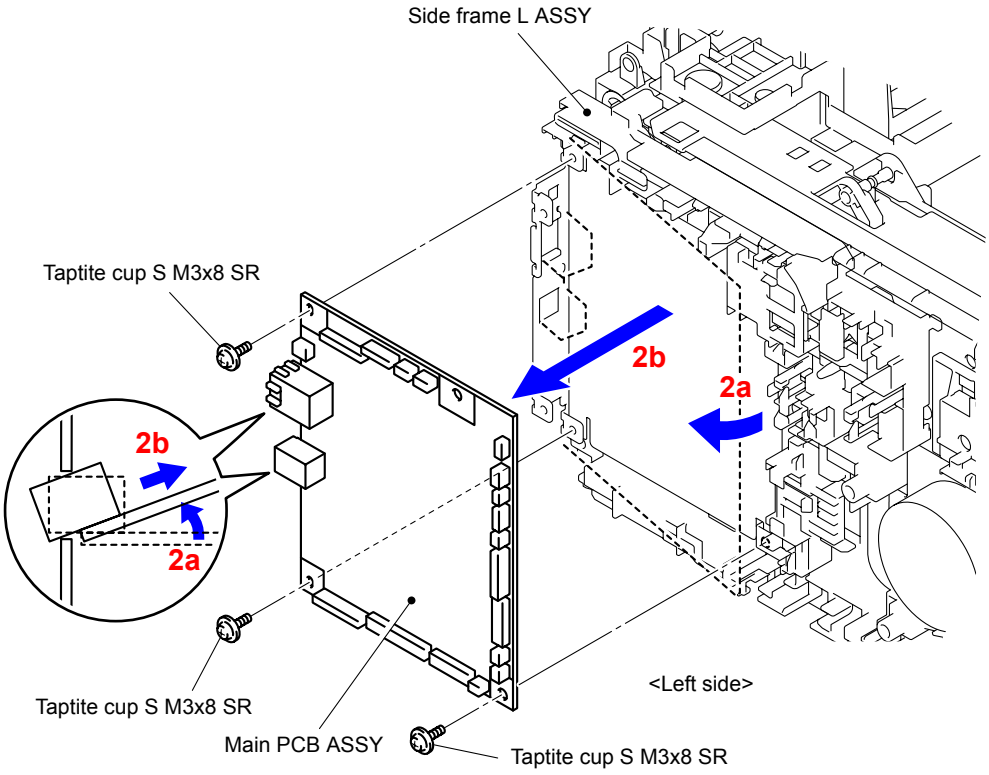


Fig. 3-78

8.27 Develop Release Clutch

(1) Disconnect the wiring of the Registration clutch harness.

(2) Remove the Taptite cup S M3x8 SR screw. Release the three Hooks to remove the Develop clutch gear cover from the Side frame L ASSY.

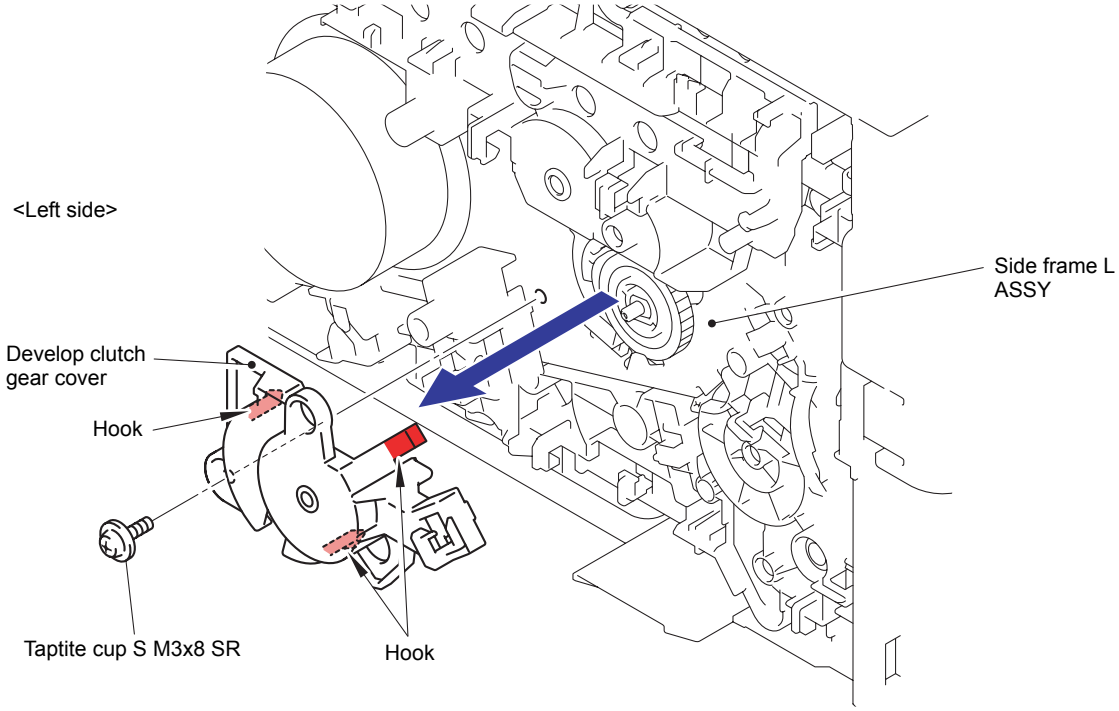


Fig. 3-79

(3) Remove the Develop release drive gear Z33 from the Side frame L ASSY.

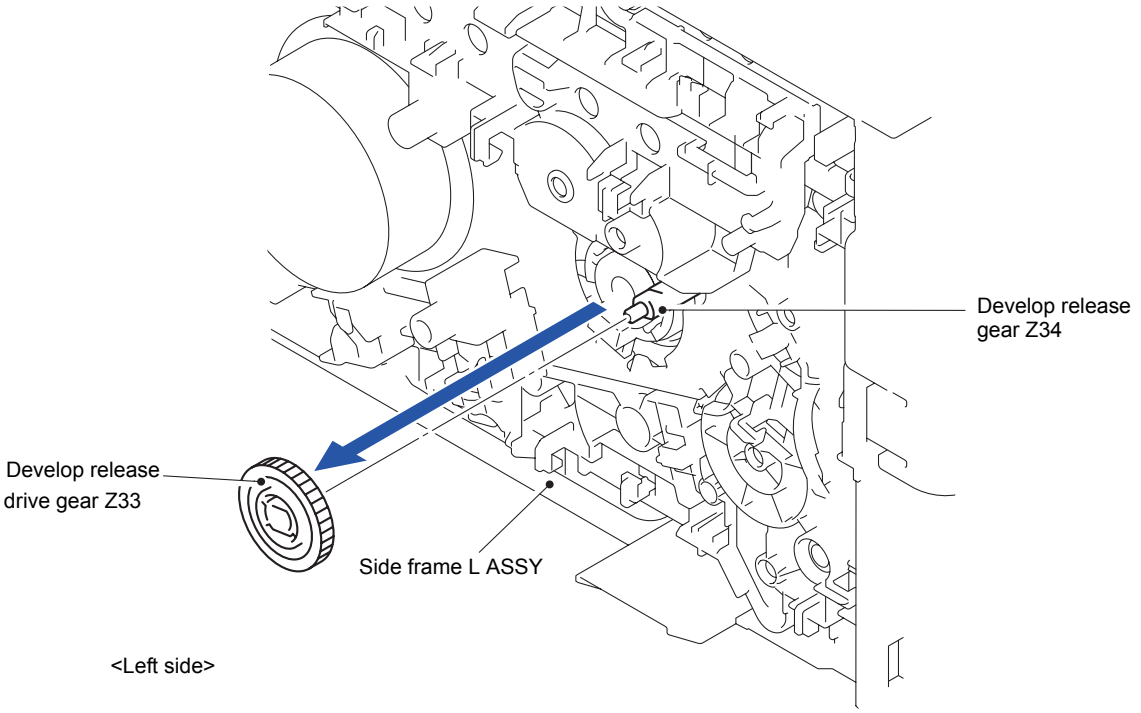


Fig. 3-80

(4) Disconnect the wiring of the Develop release clutch harness.
(5) Remove the Develop release clutch from the Side frame L ASSY.

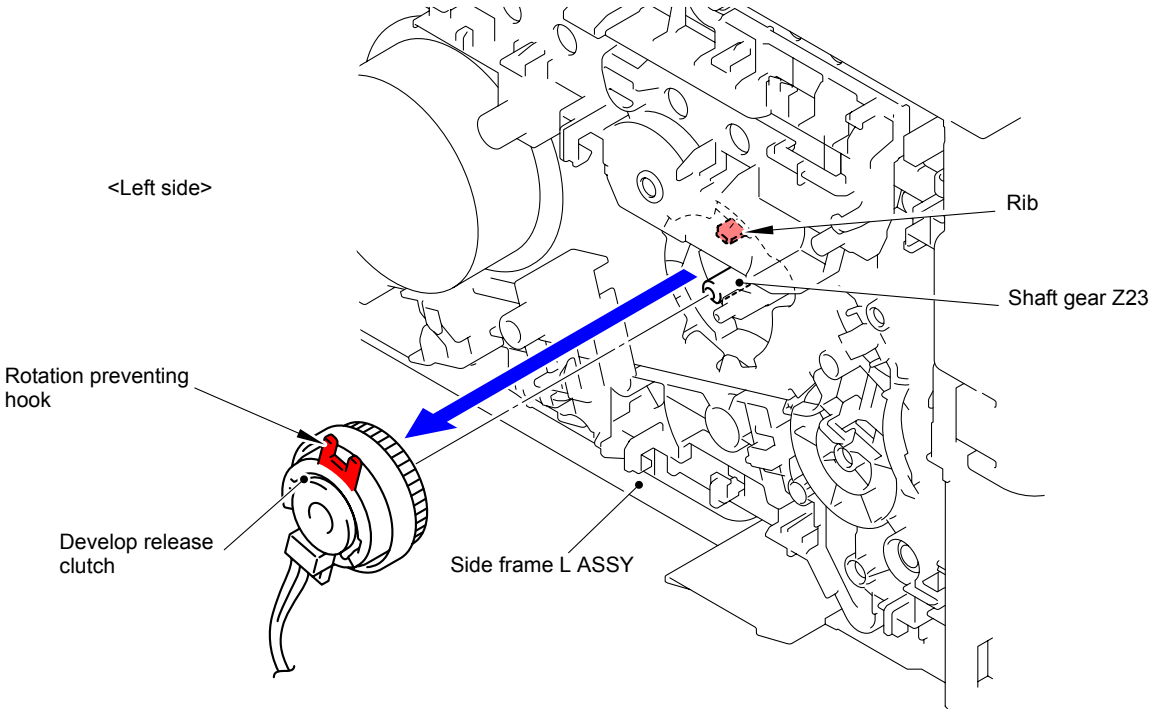


Fig. 3-81

Assembling Note:
When assembling the Develop release clutch, attach the Rotation preventing hook to the Rib of the Main body.

Harness routing: Refer to " 2 External Temperature/Humidity Sensor PCB ASSY, Develop Release Clutch, Registration Clutch, Paper Feed Clutch"

Assembling Note:

When assembling the Develop release link, be sure to assemble that the positional relationship between "A" of the Develop release cam and Develop release link is as shown in the figure.

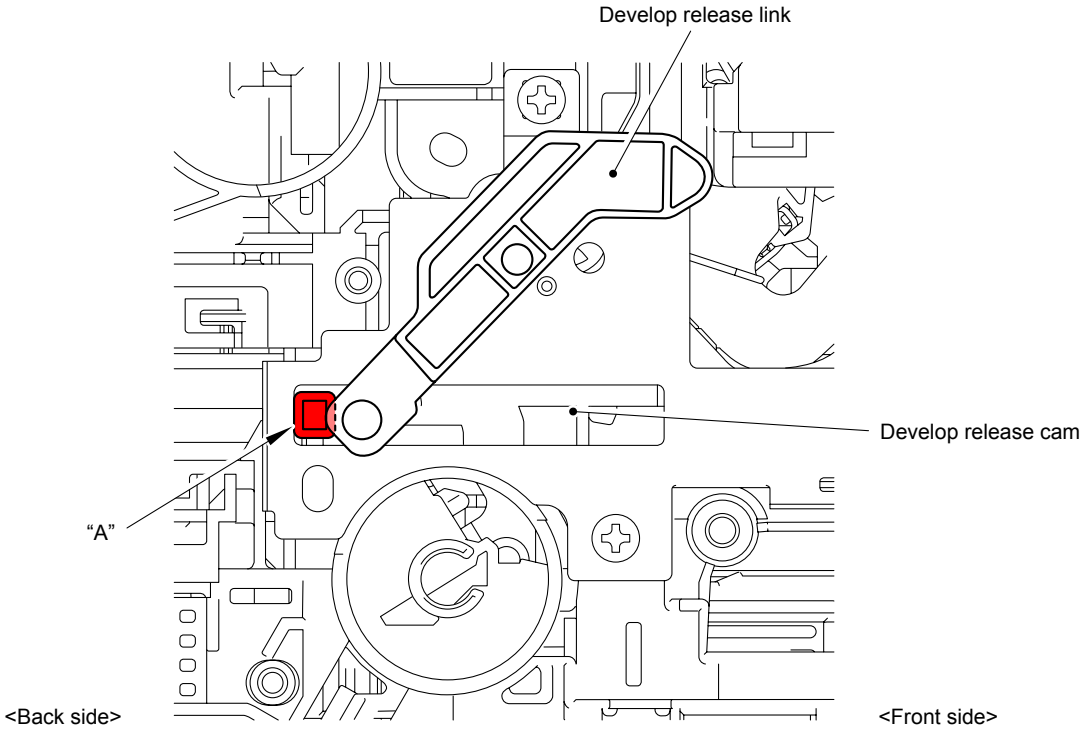


Fig. 3-82

Assembling Note:
When assembling the Develop release link holder, be sure to assemble that the positional relationship between "A" of the Develop release link and Develop release link spring is as shown in the figure. (Make sure that the portion "A" is not at the front of the spring.)

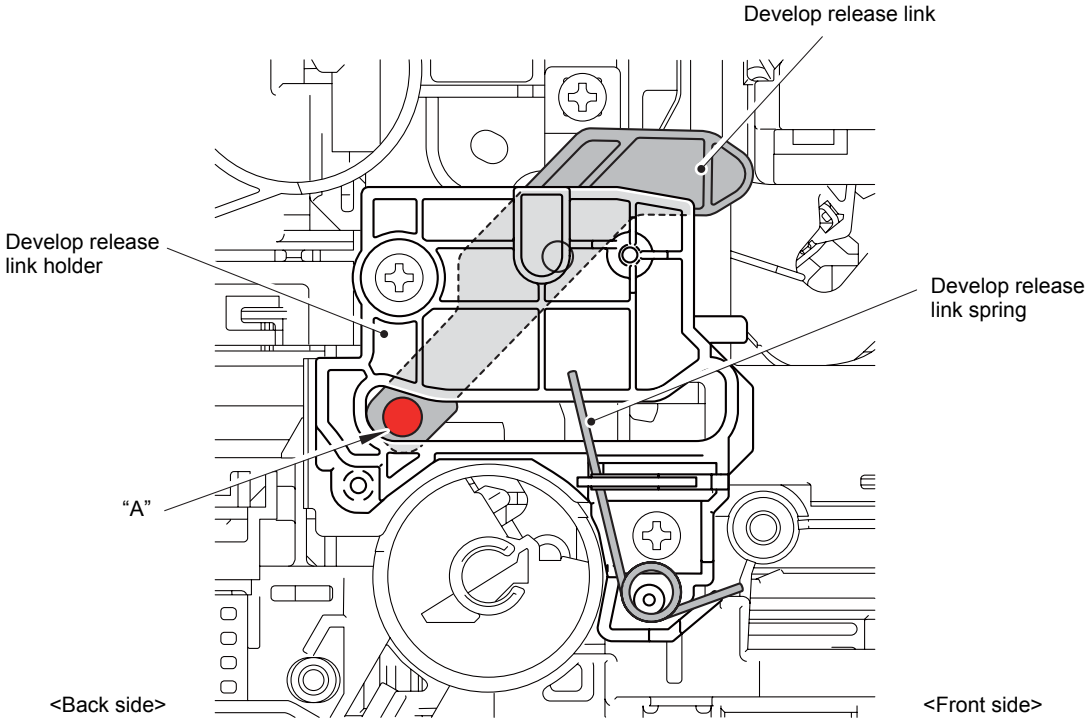


Fig. 3-83

Assembling Note:

- When assembling the Develop release clutch, develop release operation may not work properly if the Develop release cam and Develop release link are misaligned.
- When assembling the Develop release clutch, align the end of the Develop release cam with the reference line of the Develop release cam cover when viewed from the hole of the Develop release cam cover as shown in the figure below.
- If the Process drive unit is not removed, adjust the position of the Develop clutch cam while the Top cover unit is opened.

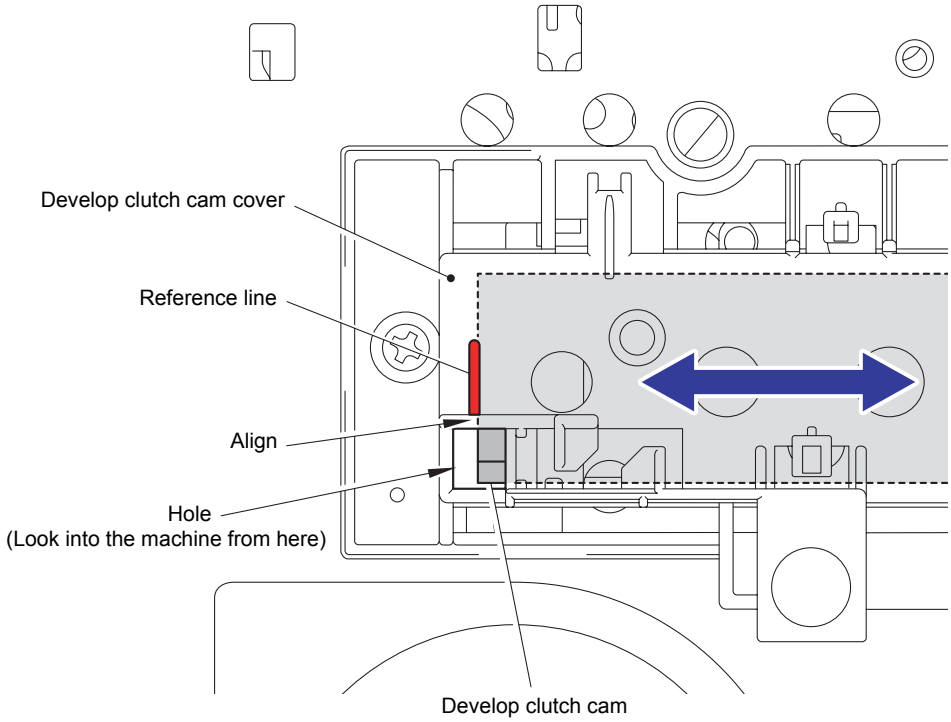


Fig. 3-84

8.28 Process Drive Unit

(1) Release the two Hooks to remove the Main PCB insulation sheet from the Side frame L ASSY.

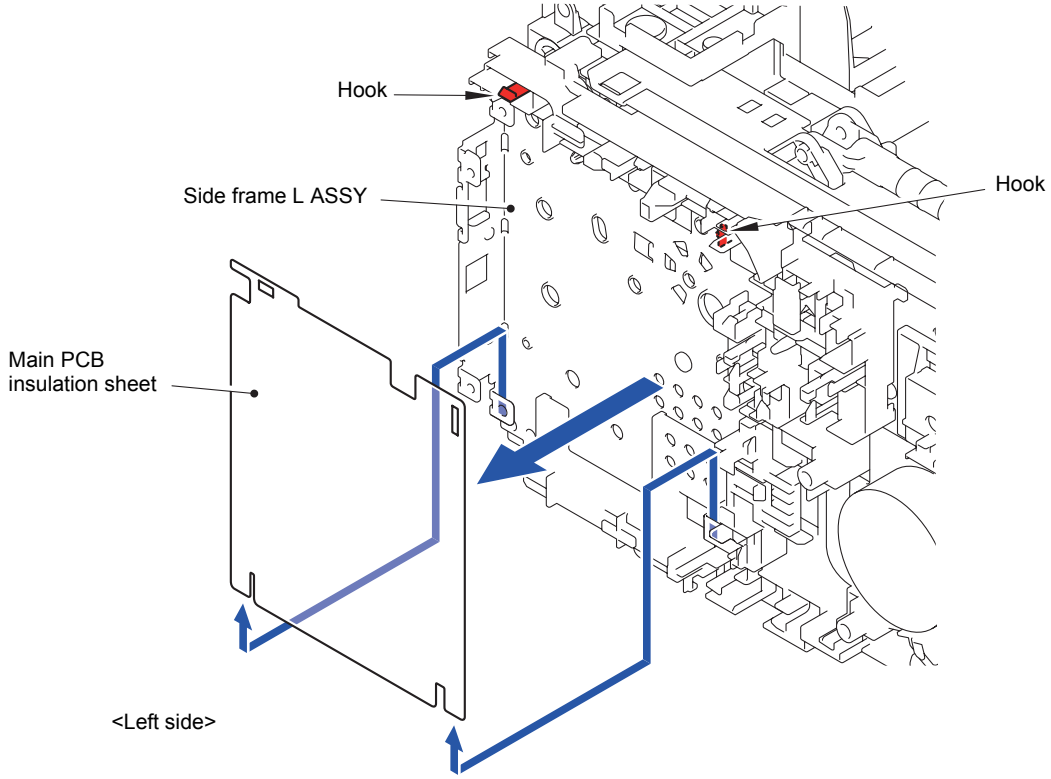


Fig. 3-85

(2) Disconnect the wiring of the Back cover sensor harness, Registration front/rear/manual feed sensor harness, Paper feed harness and Duplex clutch harness.

(3) Release the four Hooks to remove the Line holder upper from the Side frame L ASSY.

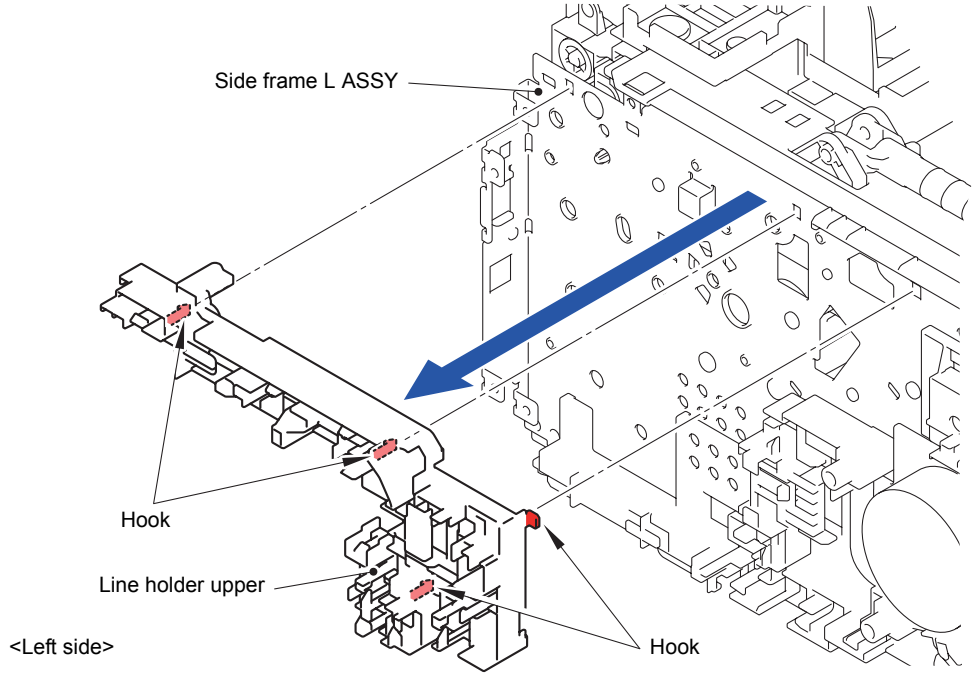


Fig. 3-86

(4) Disconnect the wiring of the Registration clutch harness, Paper feed clutch harness, Registration front/rear/manual feed sensor harness, Paper feed harness and Eject sensor PCB harness.

(5) Remove the two Taptite cup S M3x8 SR screws, seven Taptite bind B M4x12 screws, and the one Taptite pan (washer) B M4x12 DA screw. Remove the Process drive unit from the Side frame L ASSY.

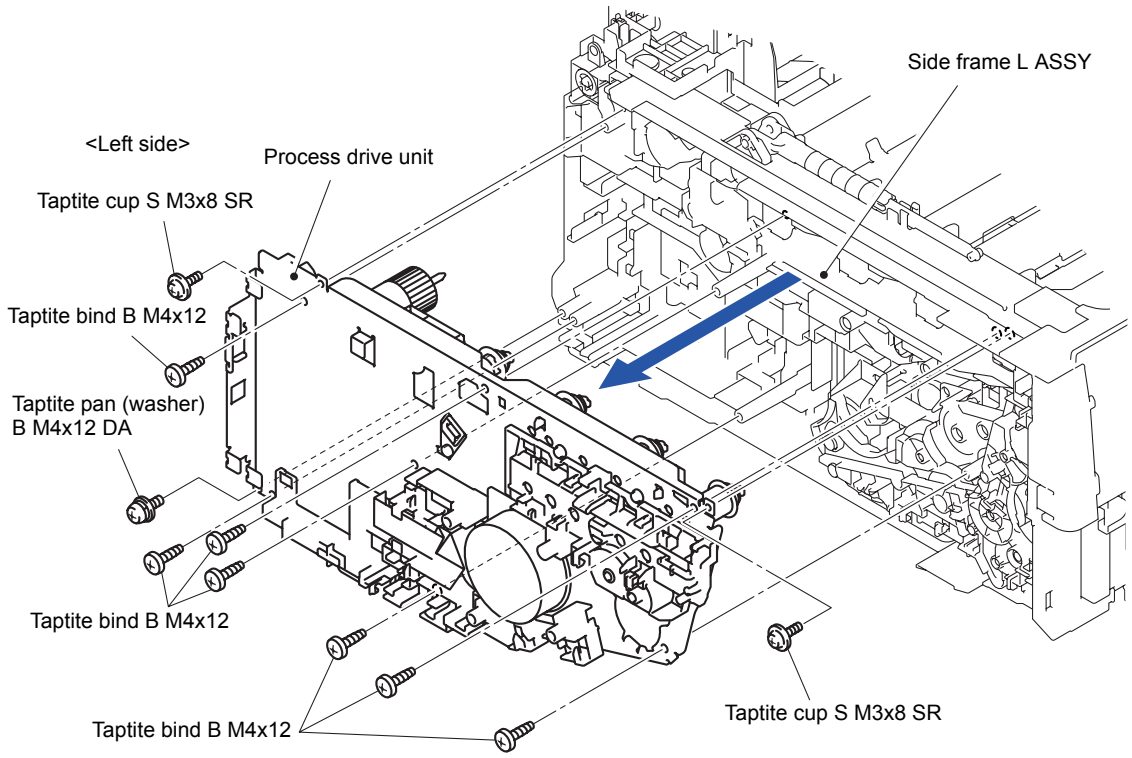


Fig. 3-87

Assembling Note:
Make sure to attach insulation sheet. Failure to attach the insulation sheet can result in fire or electrical shock.

Harness routing: Refer to " 3 Process Drive Unit"

8.29 Fuser Drive Gear Z25

(1) Release the Hook to remove the Fuser drive gear Z25 from the Process drive unit.

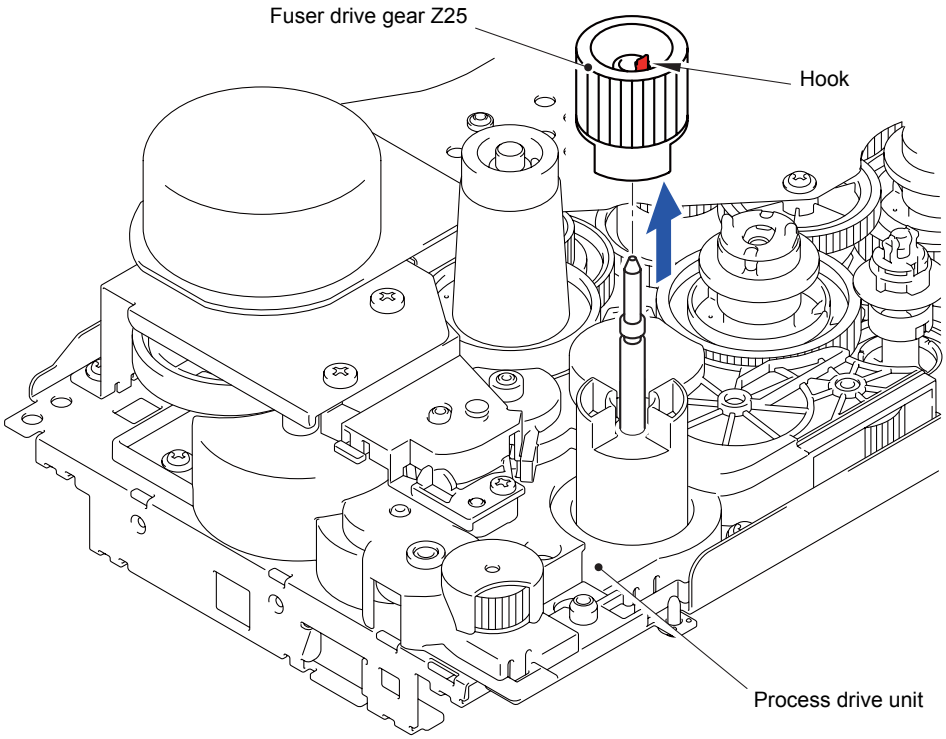


Fig. 3-88

8.30 Registration Clutch

(1) Release the Hook to remove the Registration clutch from the PF registration drive joint.

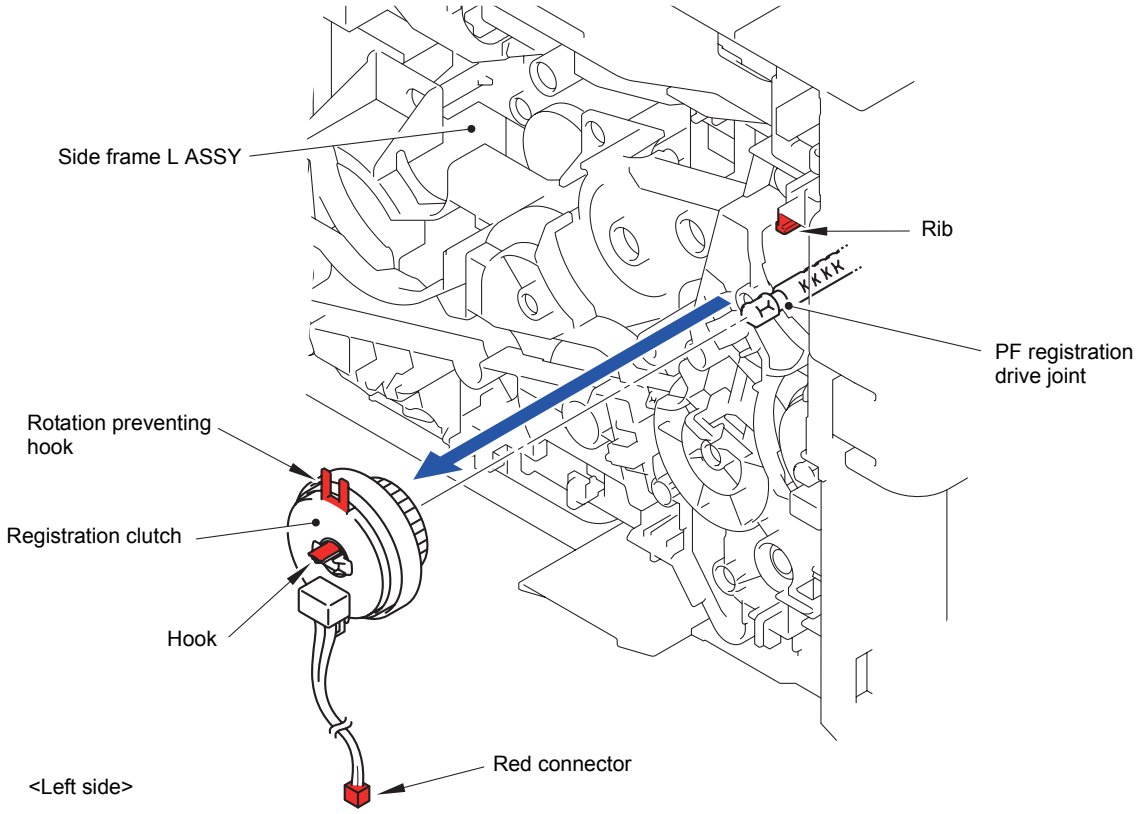


Fig. 3-89

Assembling Note:

- When assembling the Registration clutch, attach the Rotation preventing hook to the Rib of the Main body.
- Registration clutch and Paper feed clutch are both clutch parts, and they are identified with connector colors. The connector of the Registration clutch is red. Be careful not to install an incorrect clutch.

Harness routing: Refer to " 2 External Temperature/Humidity Sensor PCB ASSY, Develop Release Clutch, Registration Clutch, Paper Feed Clutch"

8.31 Paper Feed Clutch

(1) Disconnect the wiring of the Paper feed clutch harness.

(2) Release the Hook to remove the Paper feed clutch from the Separation roller drive joint.

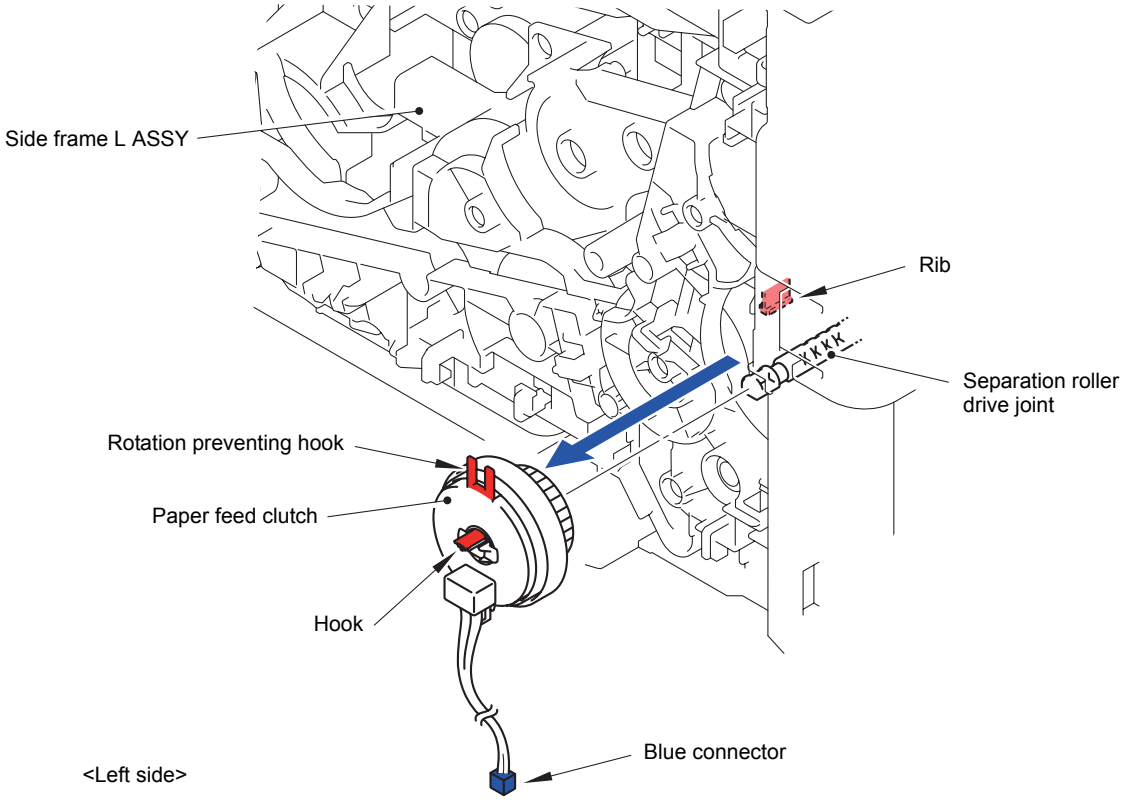


Fig. 3-90

Assembling Note:

- When assembling the Paper feed clutch, attach the Rotation preventing hook to the Rib of the Main body.
- Registration clutch and Paper feed clutch are both clutch parts, and they are identified with connector colors. The connector of the Paper feed clutch is blue. Be careful not to install an incorrect clutch.

Harness routing: Refer to " 2 External Temperature/Humidity Sensor PCB ASSY, Develop Release Clutch, Registration Clutch, Paper Feed Clutch"

8.32 Main Drive Unit

(1) Release the Hook to remove the Collar 6 from the PF registration drive joint.

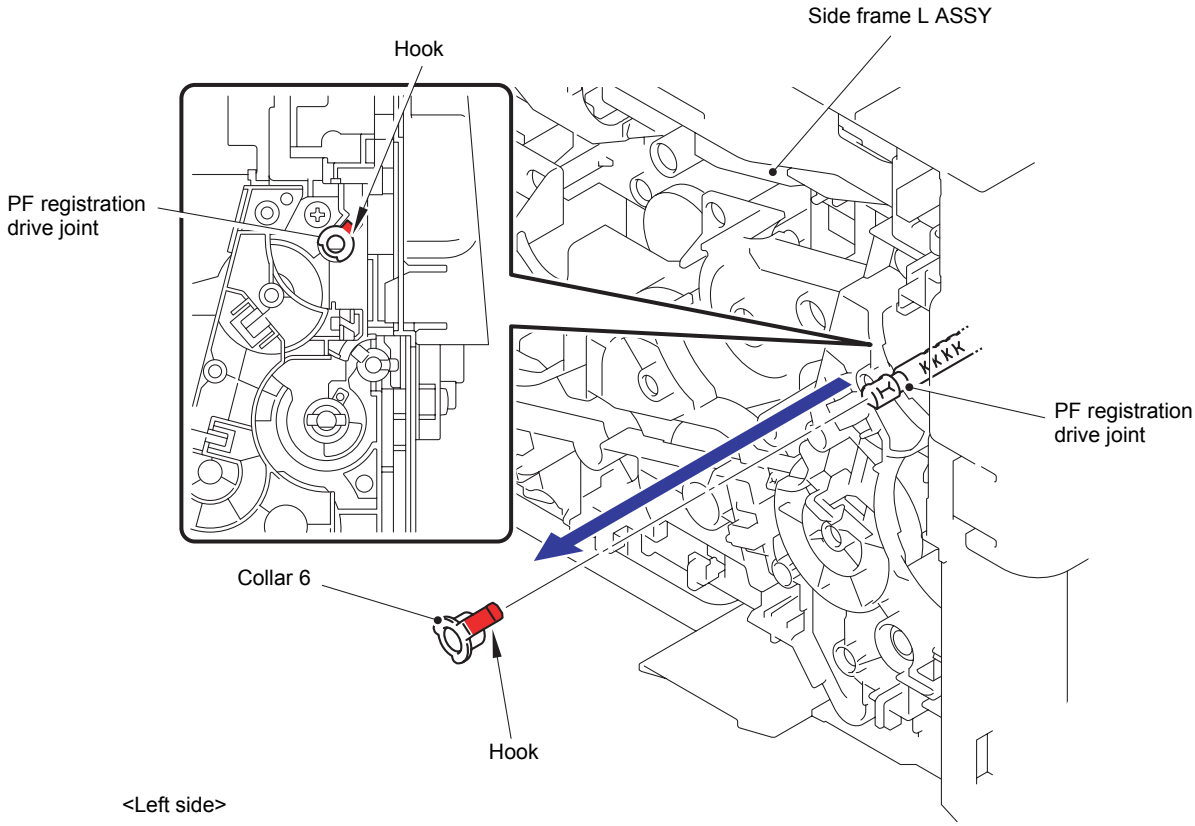


Fig. 3-91

(2) Remove the PF registration drive joint from the Side frame L ASSY.

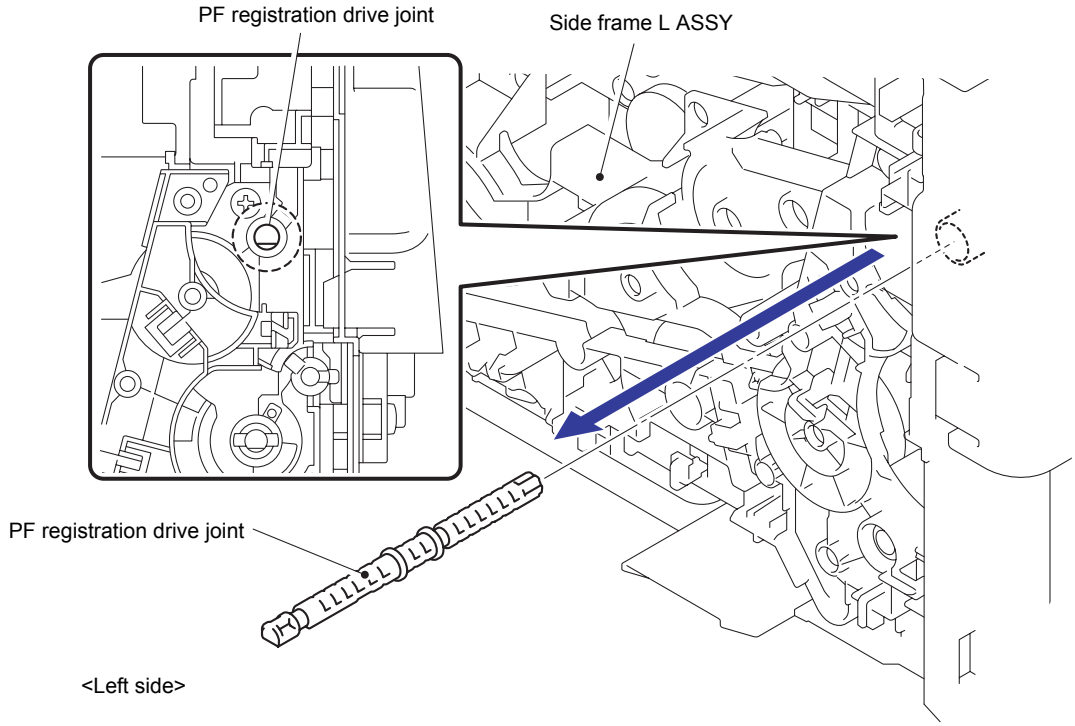


Fig. 3-92

(3) Rotate the T1 bushing in the direction of the arrow 3a, and remove it from the Separation roller drive joint.

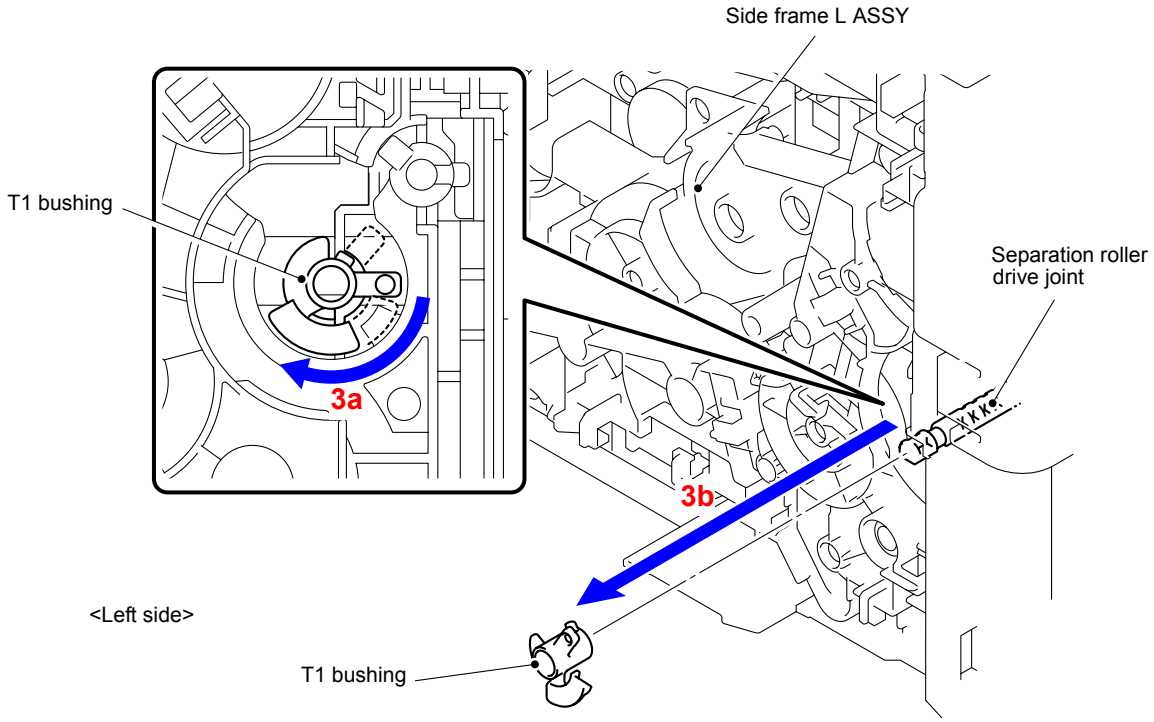


Fig. 3-93

(4) Remove the Separation roller drive joint from the Side frame L ASSY.

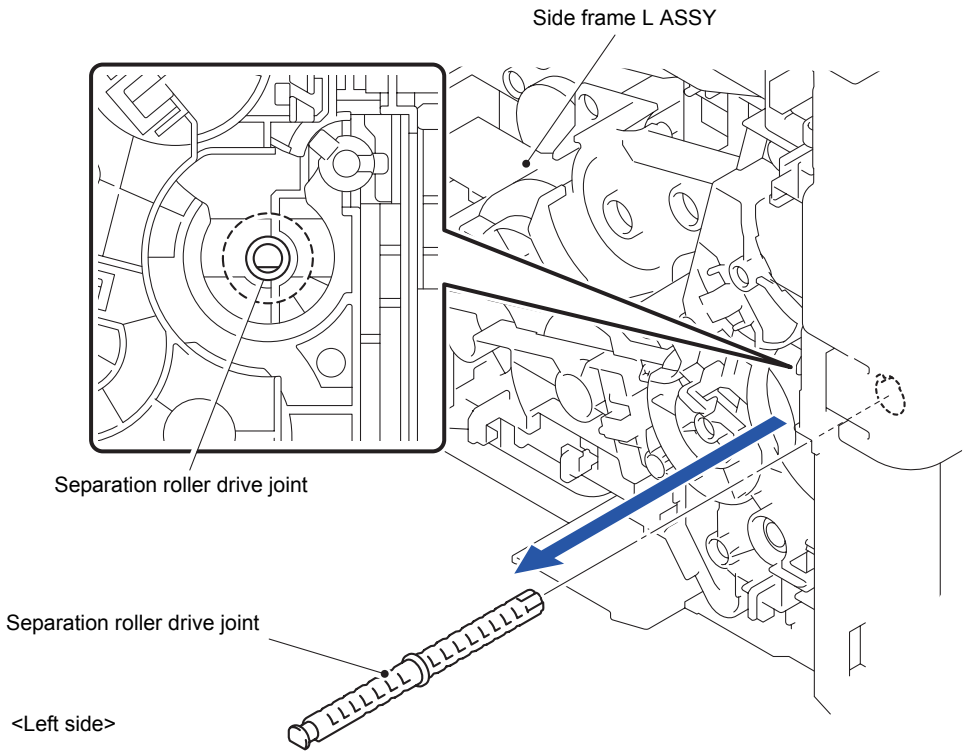


Fig. 3-94

(5) Release the Hook to remove the PF bushing from the Feed roller drive shaft.

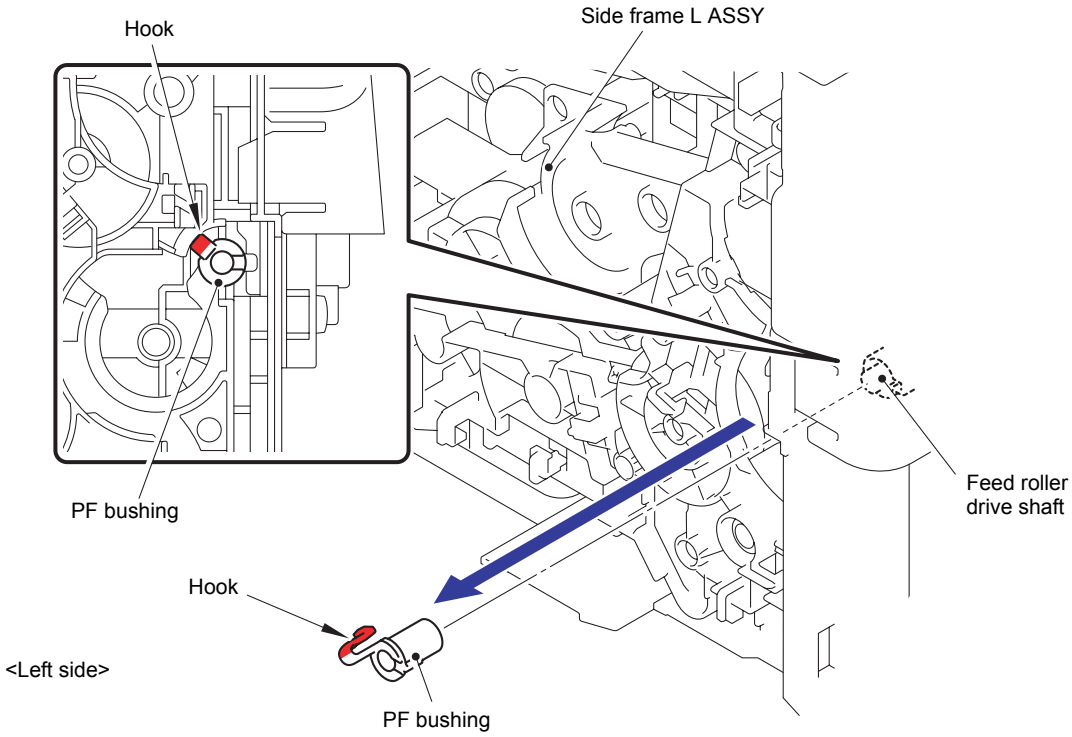


Fig. 3-95

(6) Remove the Feed roller drive shaft from the Side frame L ASSY.

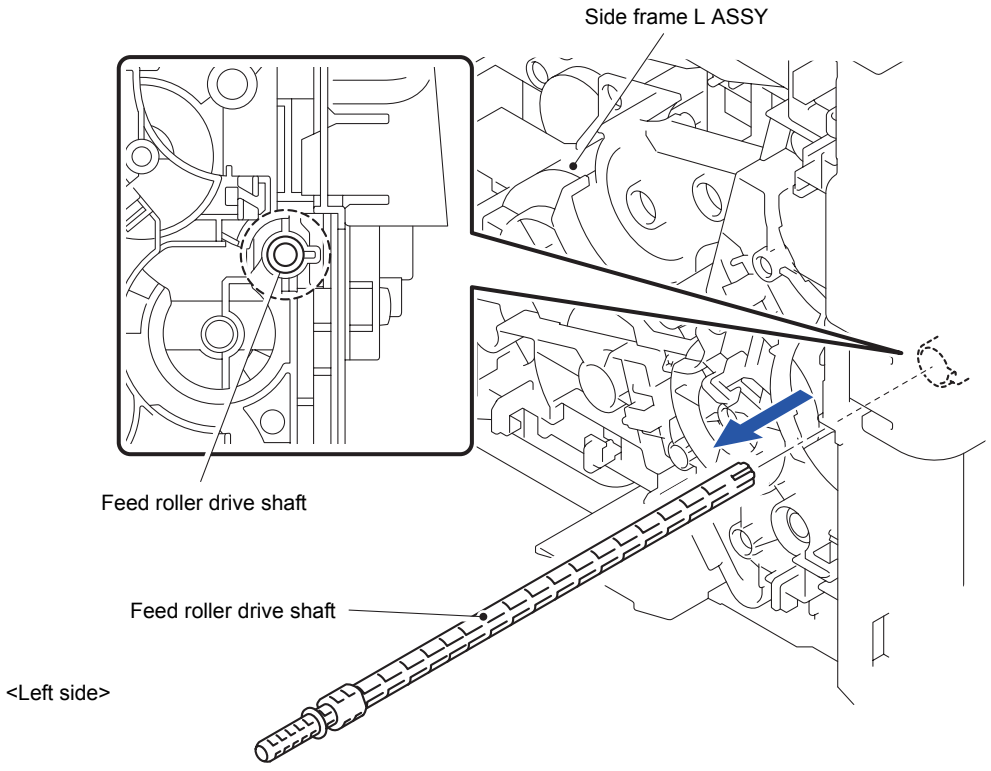


Fig. 3-96

(7) Remove the five Taptite bind B M4x12 screws to remove the Main drive unit from the Side frame L ASSY.

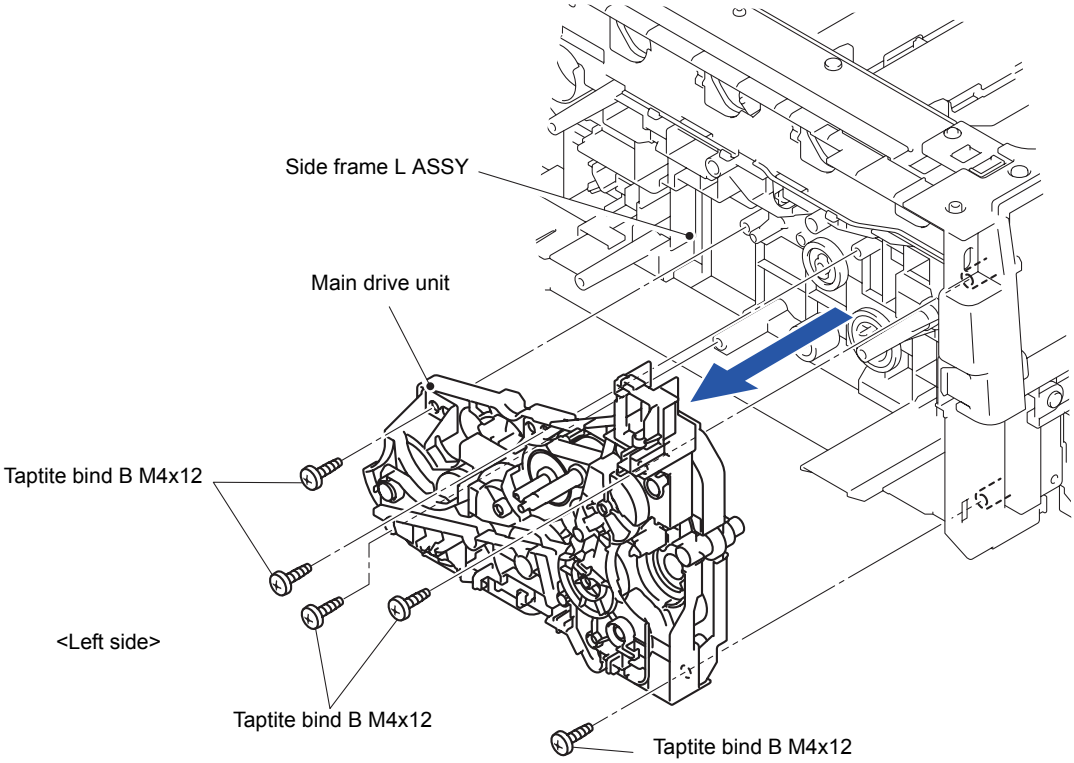


Fig. 3-97

Note:
As the two gears (DX gear Z21 and PP gear Z14-51) shown in the figure tend to come off. Be careful not to lose them.

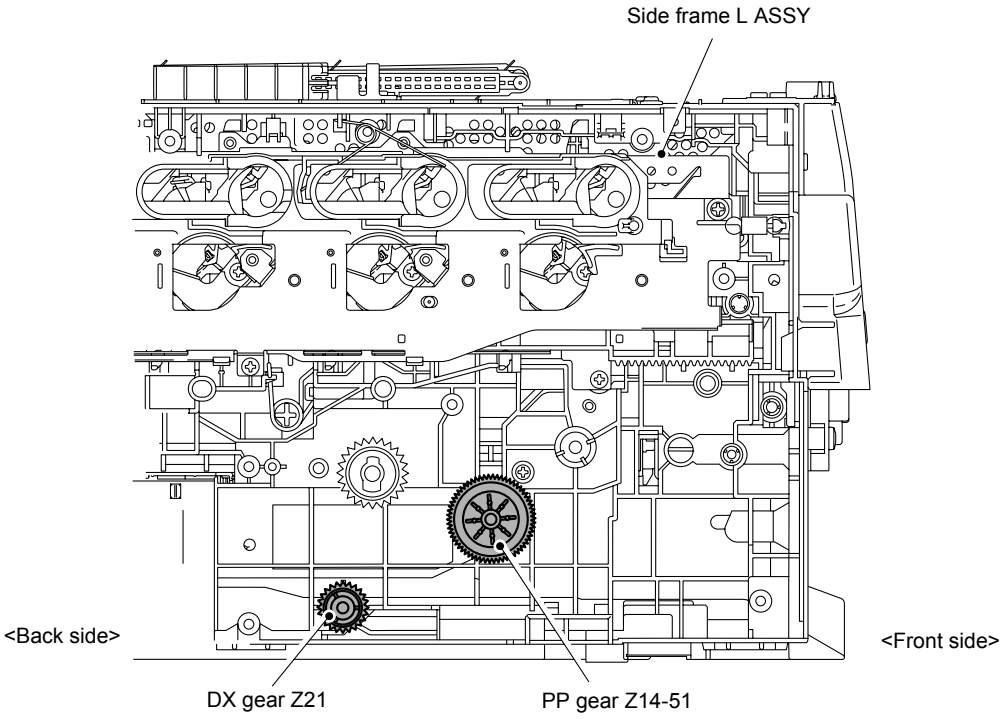


Fig. 3-98

8.33 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. Rotate the Roller holder ASSY in the direction of the arrow 1b.

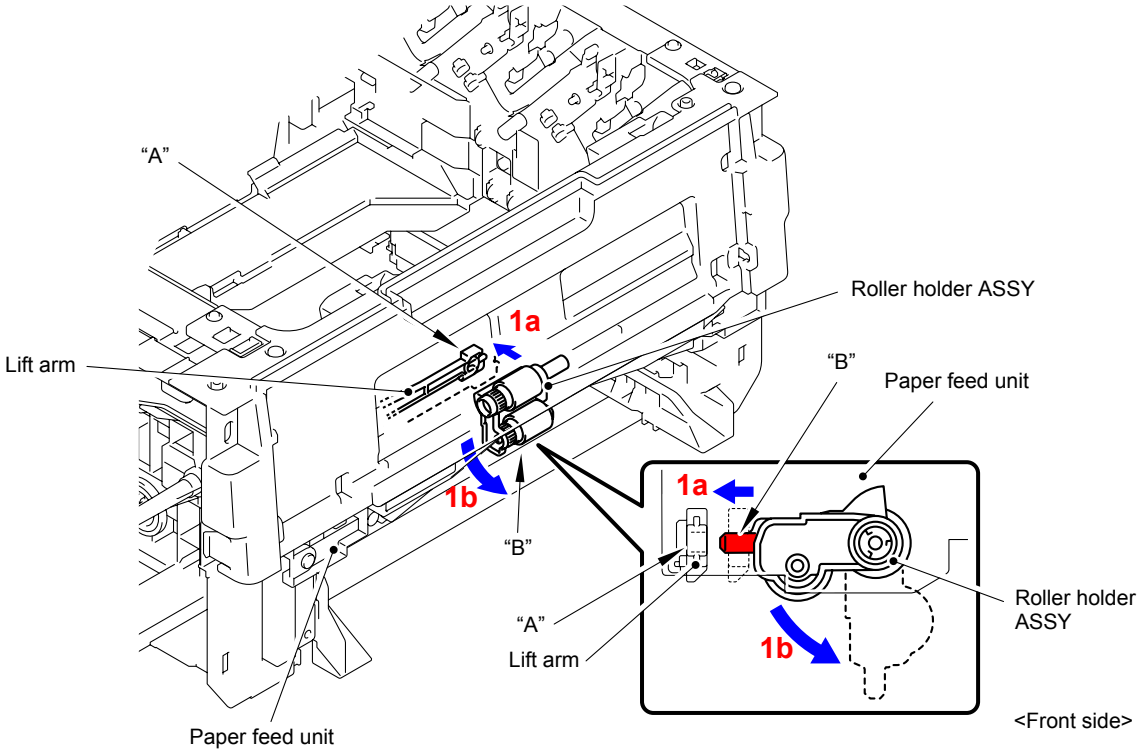


Fig. 3-99

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

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

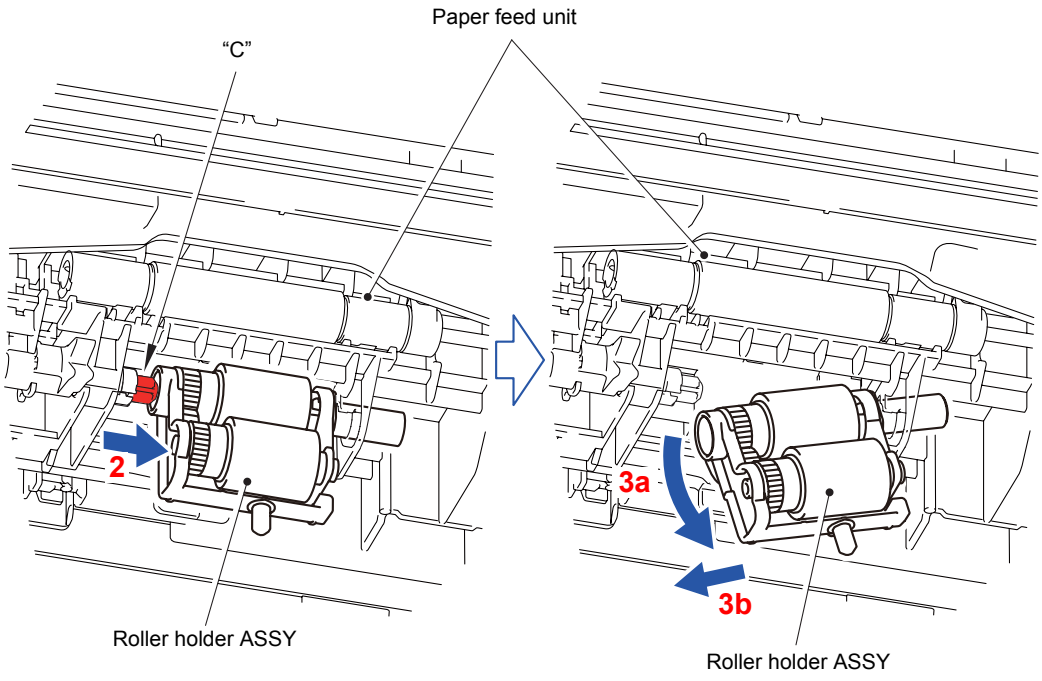


Fig. 3-100

Assembling Note:

Align the Hole of the Paper feed unit to the Shaft of the Roller holder ASSY and insert it into the Hole.

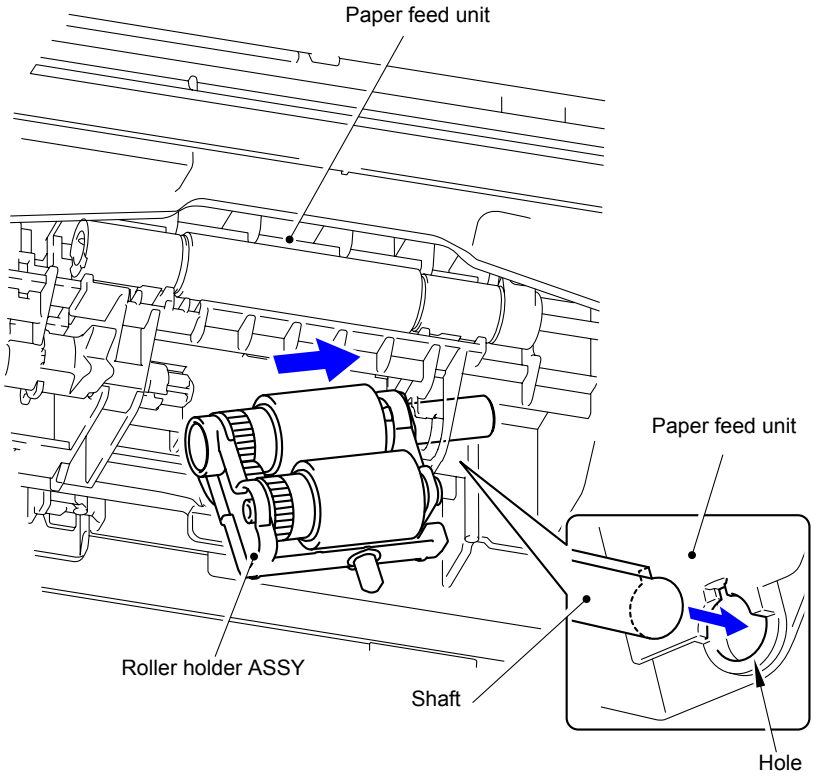


Fig. 3-101

8.34 Paper Feed Unit

(1) Remove the Boss as bending the Lift arm in the direction of the arrow 1a to slide the Lift arm to the direction of the arrow 1b. (The Lift arm does not have to be removed.)

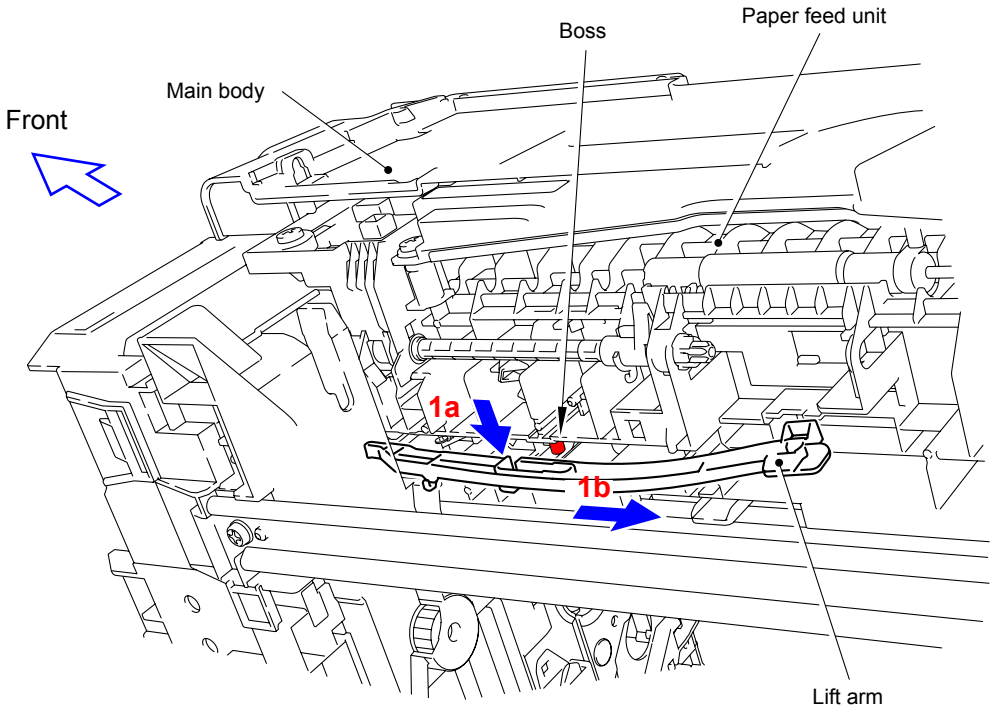


Fig. 3-102

(2) Release the two Hooks and two Bosses to remove the Inner front cover from the Main body.

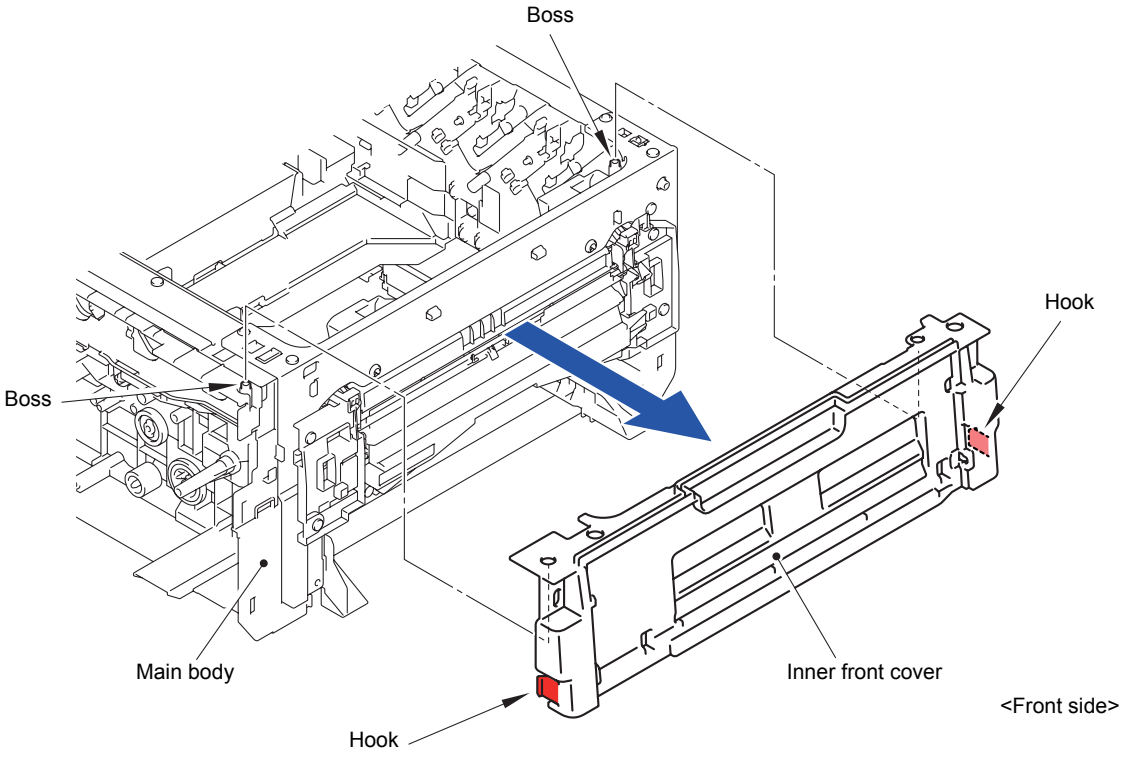


Fig. 3-103

(3) Disconnect the wiring of the Registration front/rear/manual feed sensor harness and Paper feed harness.

(4) Remove the four Taptite bind B M4x12 screws to remove the Paper feed unit from the Main body.

Assembling Note:
Tighten the four Taptite bind B M4x12 screws in the order of 1 to 4.

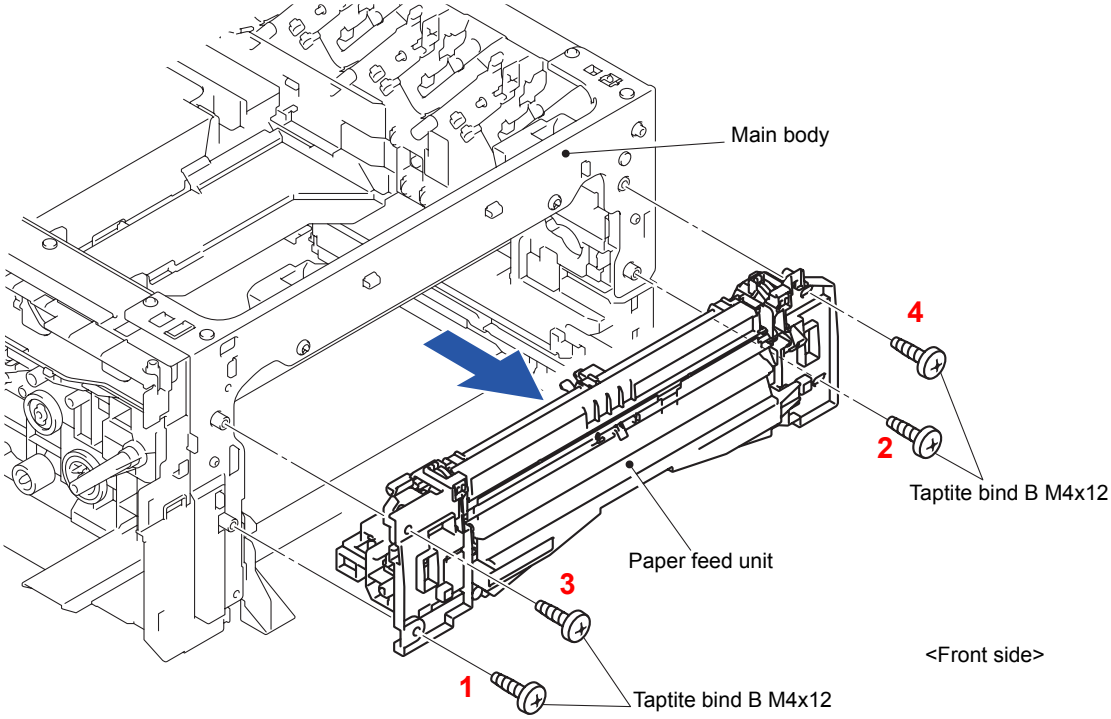


Fig. 3-104

Harness routing: Refer to " 4 Paper Feed Unit"

8.35 Damper R ASSY

(1) Tilt the Damper R ASSY in the direction of the arrow 1.

(2) Remove the two Pins to remove the Damper R ASSY from the Side frame R sub ASSY.

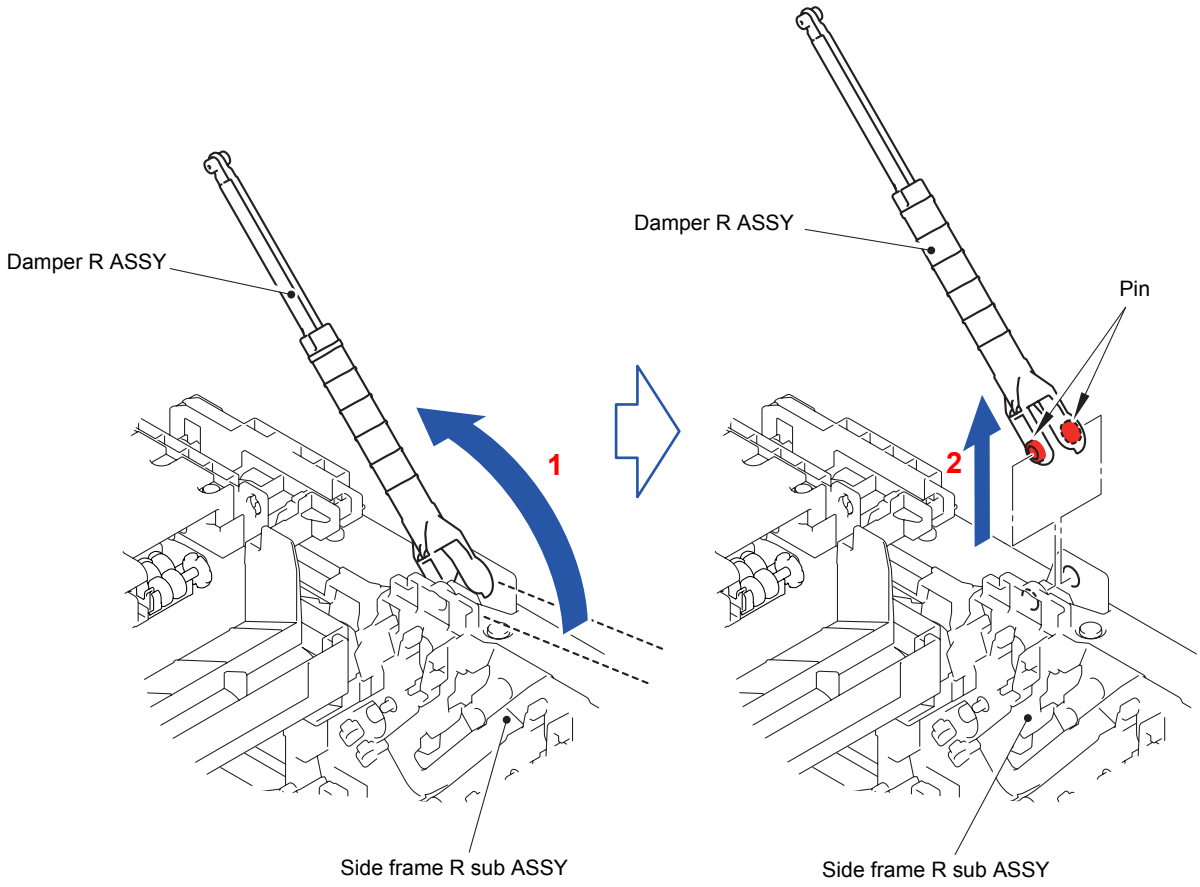


Fig. 3-105

Note:
Be careful not to damage the Side frame R sub ASSY.

8.36 Damper L ASSY

(1) Place the Main body upright as shown in the figure below.

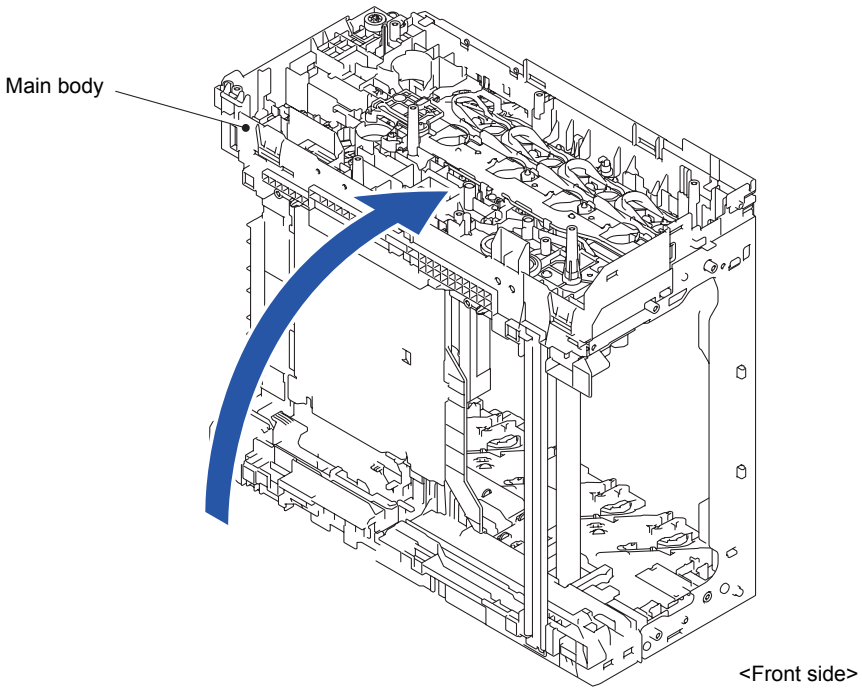


Fig. 3-106

(2) Release the Hook to remove the Develop release link spring from the Side frame L ASSY.

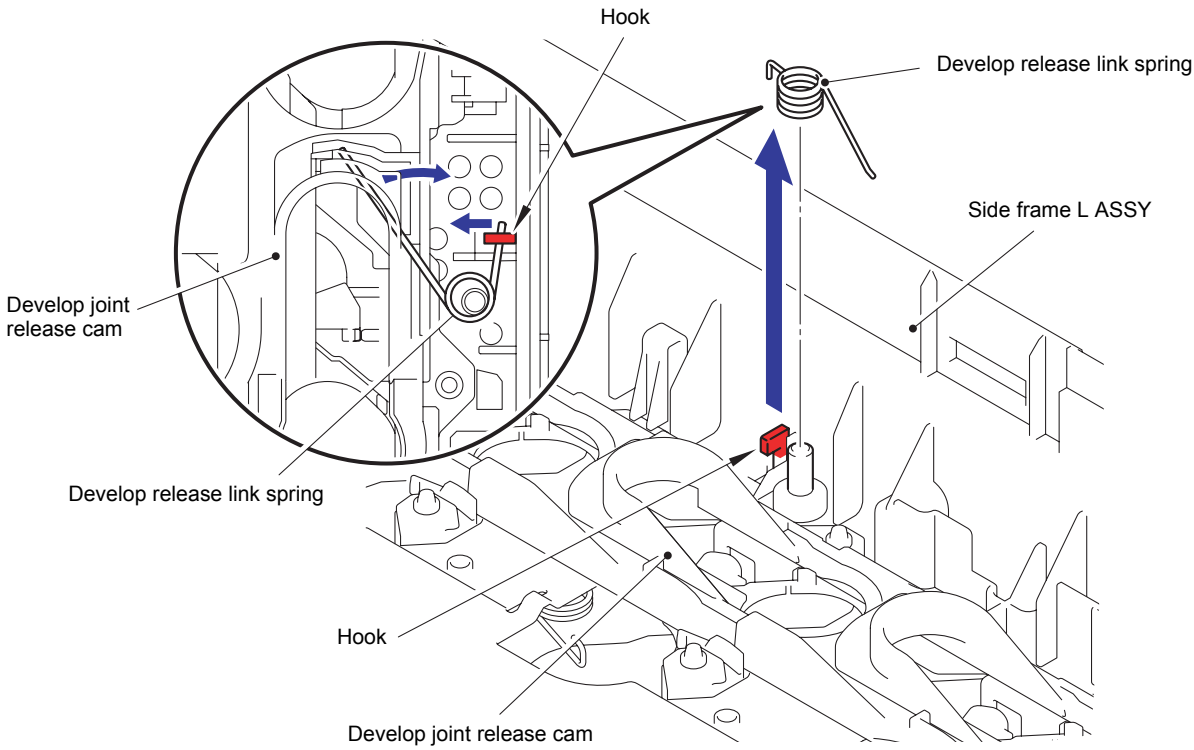


Fig. 3-107

(3) Release the two Hooks to remove the Develop joint REL cam assist spring from the Side frame L ASSY.

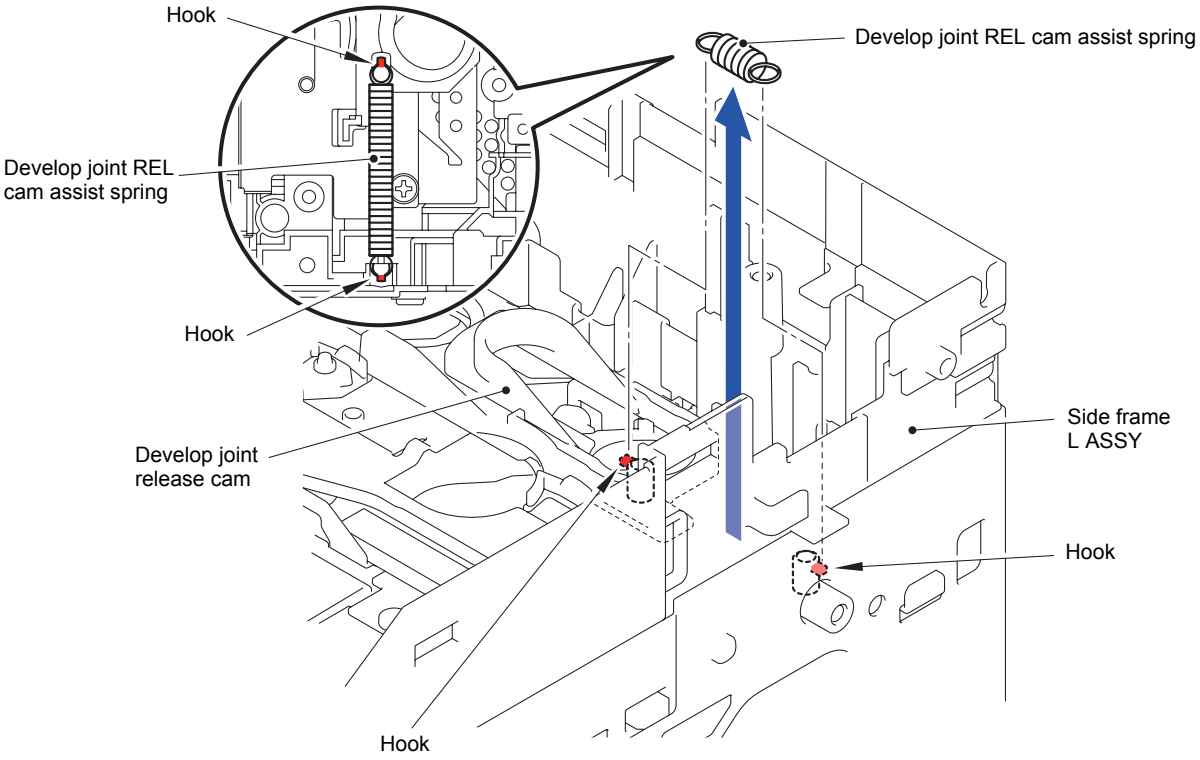


Fig. 3-108

(4) Remove the two Taptite bind B M3x10 screws to remove the Develop release link holder from the Side frame L ASSY.

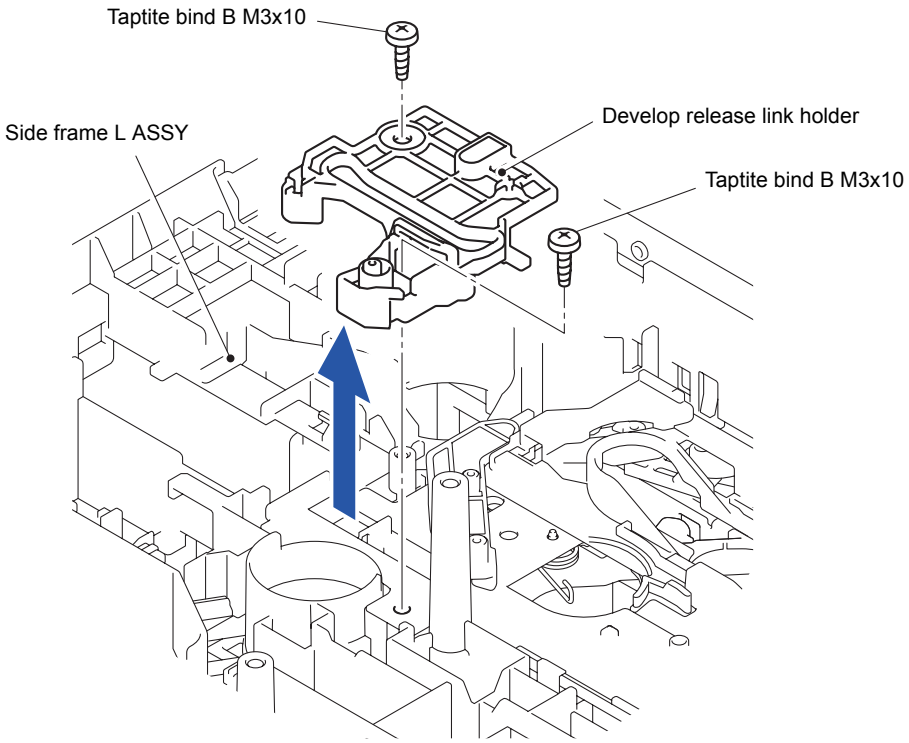


Fig. 3-109

Assembling Note:
When assembling the Develop release link holder, refer to fig. 3-83 (P3-70).

(5) Remove the Develop release link from the Develop joint release cam.

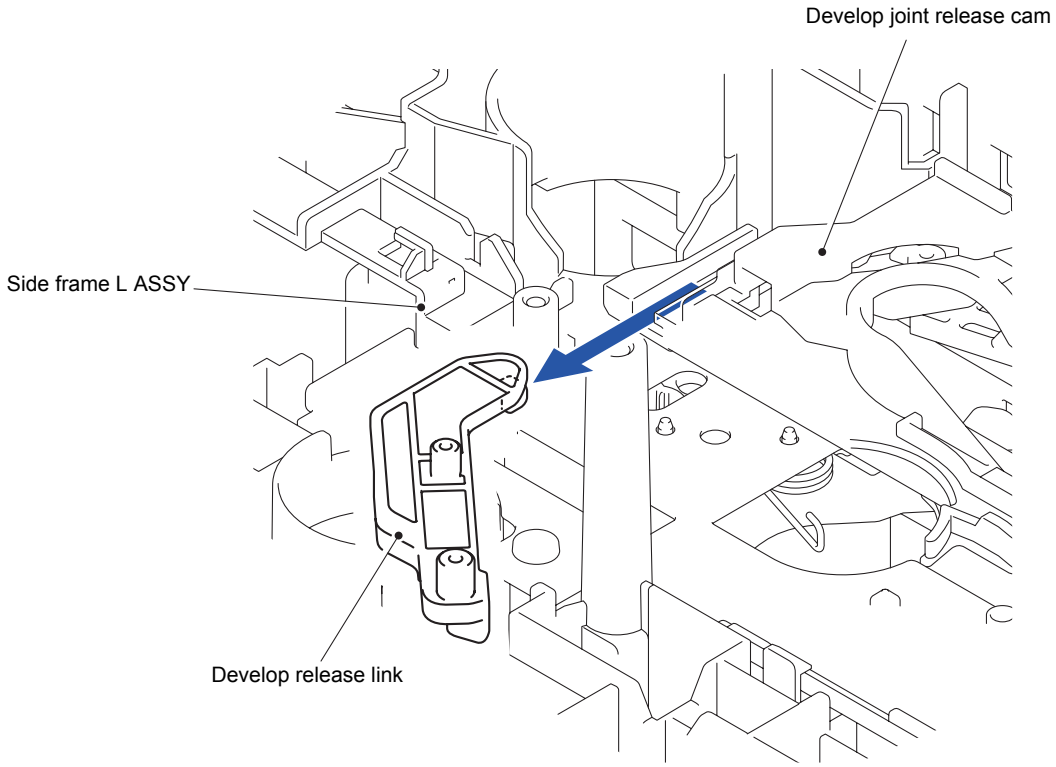


Fig. 3-110

Assembling Note:
When assembling the Develop release link, refer to fig. 3-82 (P3-69).

(6) Slide the Develop joint release cam so that its Slits align with the Ribs of the Side frame L ASSY, and remove the Develop joint release cam.

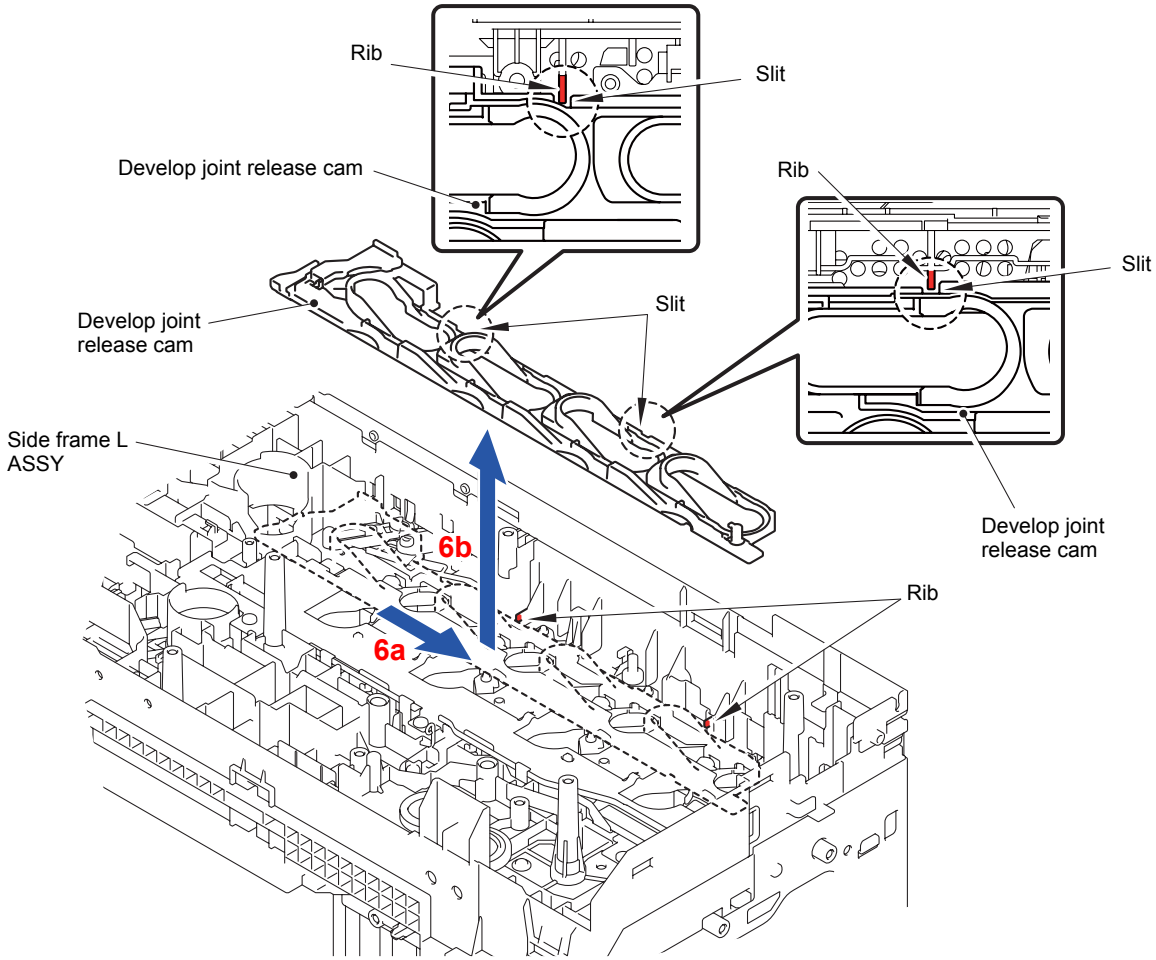


Fig. 3-111

Assembling Note:

When assembling the Develop joint release cam, be sure to assemble that the positional relationship between Develop joint release link A, Develop joint release link B and Develop joint release cam is as shown in the figure.

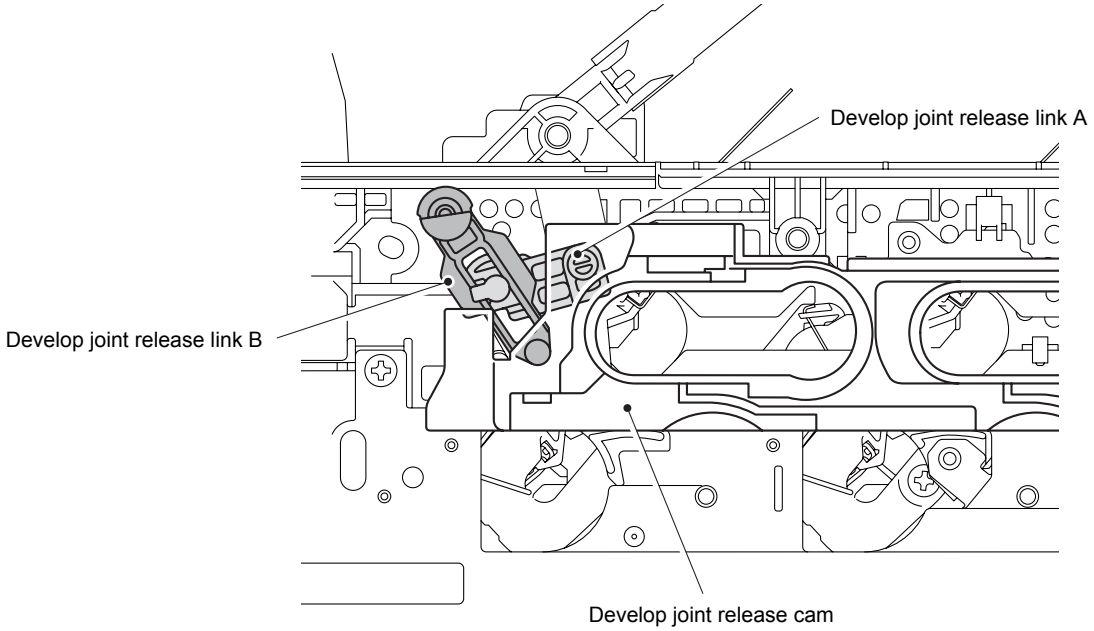


Fig. 3-112

(7) Remove the Collar 5 from the Damper shaft.

(8) While releasing the Hook, pull out the Damper shaft from the Damper L ASSY.

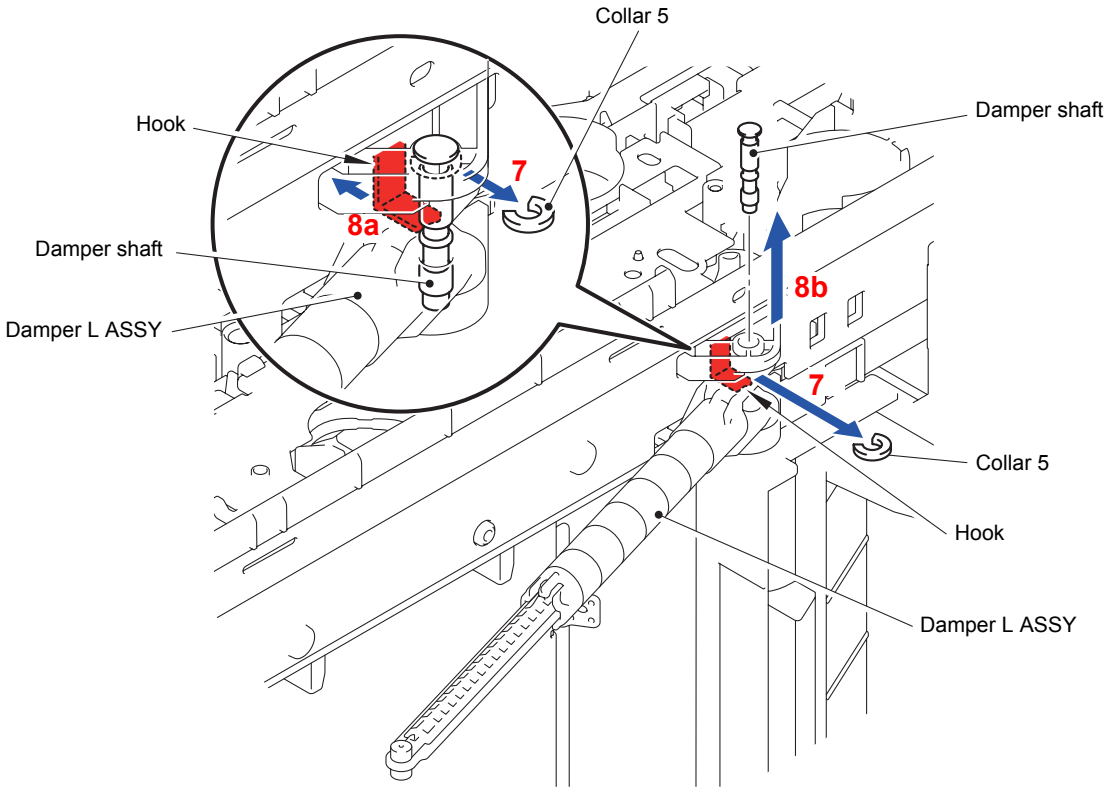


Fig. 3-113

(9) Slide the Damper L ASSY in the direction of the arrow 9a. Remove the Boss to remove the Damper L ASSY from the Side frame L ASSY.

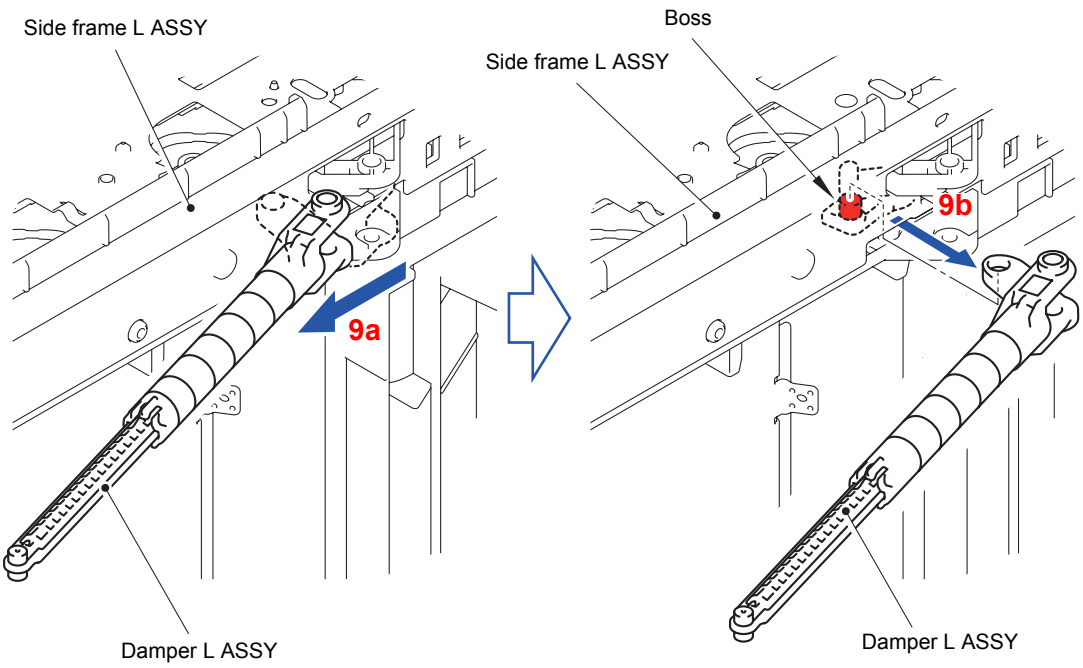


Fig. 3-114

8.37 Cooling Roller Spring L/Paper Eject ASSY

(1) Release the Hook to remove the Cooling roller spring L from the Paper eject ASSY. (2-sided printing model only)

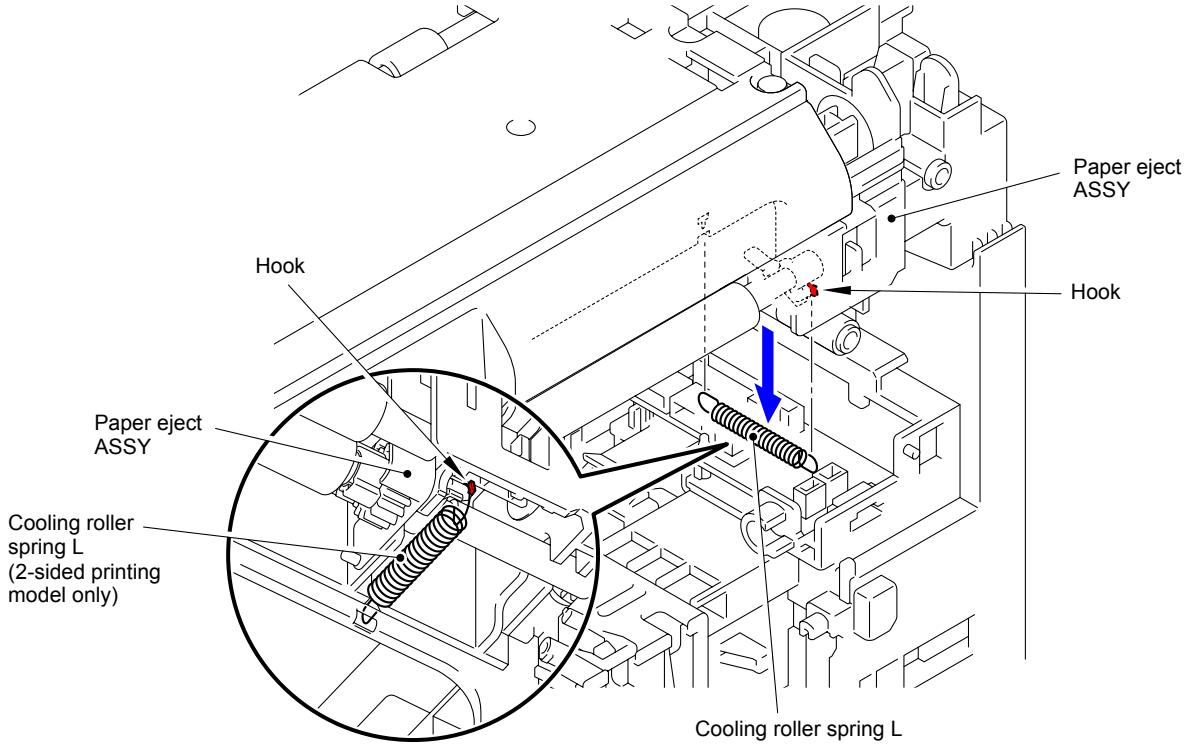


Fig. 3-115

(2) Raise the Arm R as shown in the figure, and then remove it from the Boss of the Paper eject ASSY.

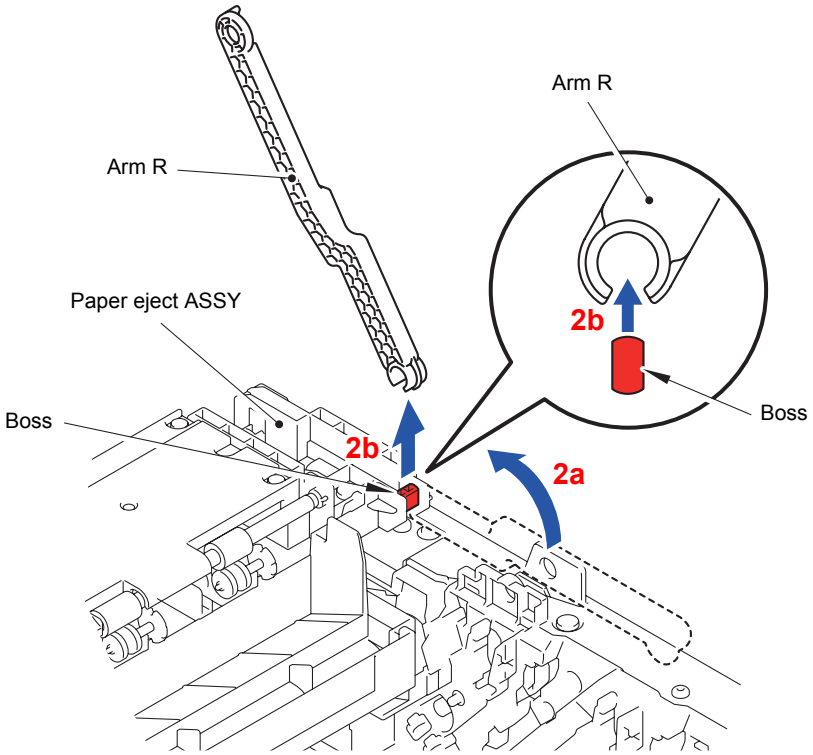


Fig. 3-116

(3) Remove the three Taptite bind B M4x12 screws from the Paper eject ASSY.

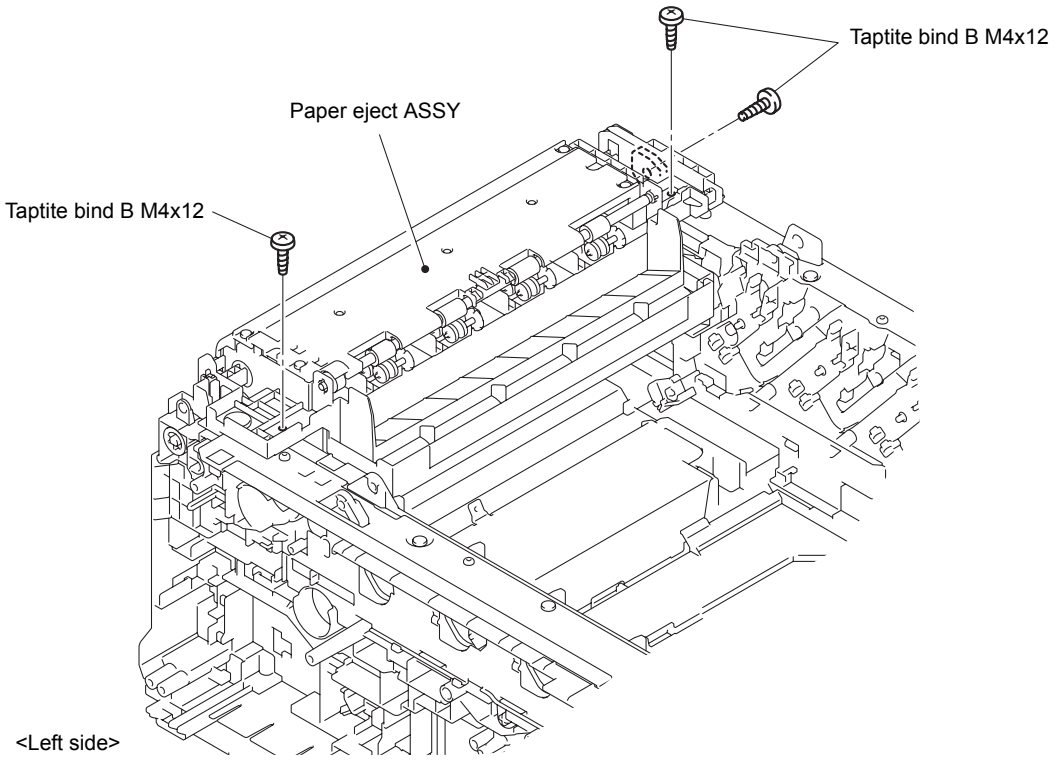


Fig. 3-117

(4) Remove the two Bosses to remove the Paper eject ASSY from the Main body.

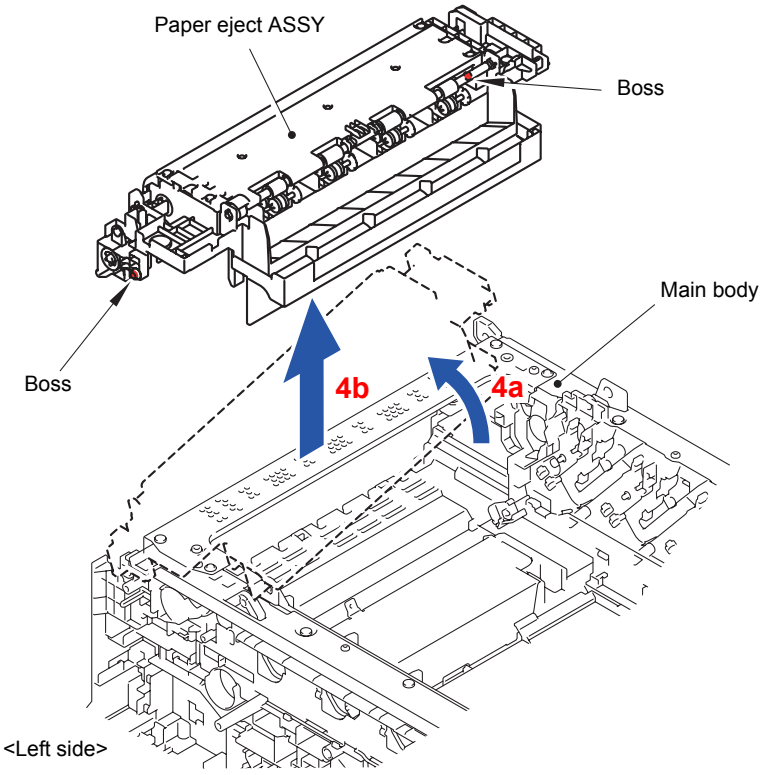


Fig. 3-118

8.38 Back Cover Upper

(1) Remove the four Taptite bind B M3x10 screws to remove the Back cover upper from the Paper eject ASSY.

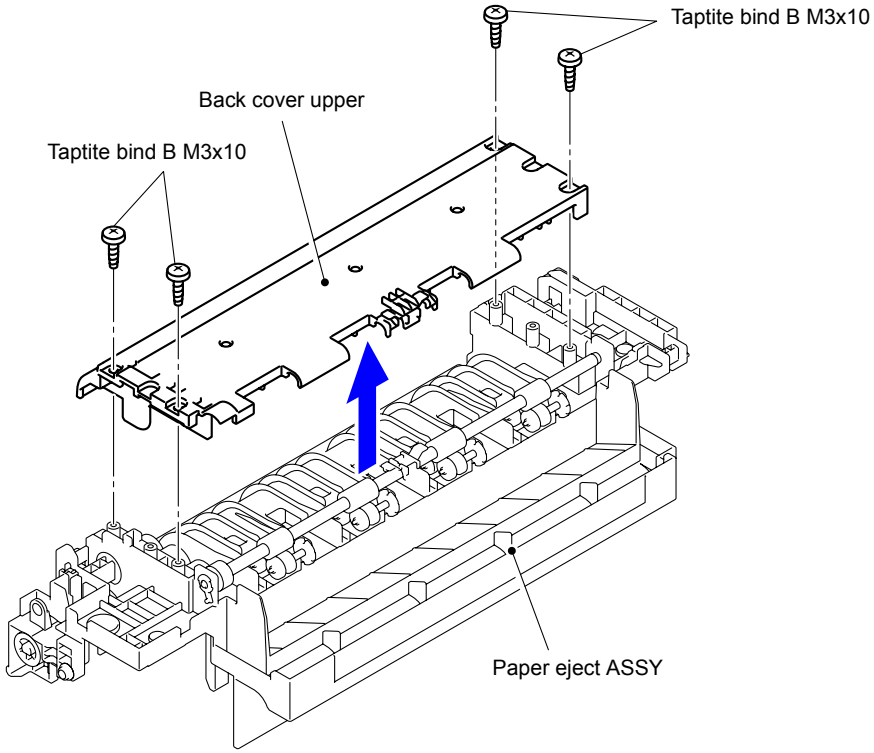


Fig. 3-119

(2) Release the two Hooks to remove the Exit roller bushing C from the Back cover upper.

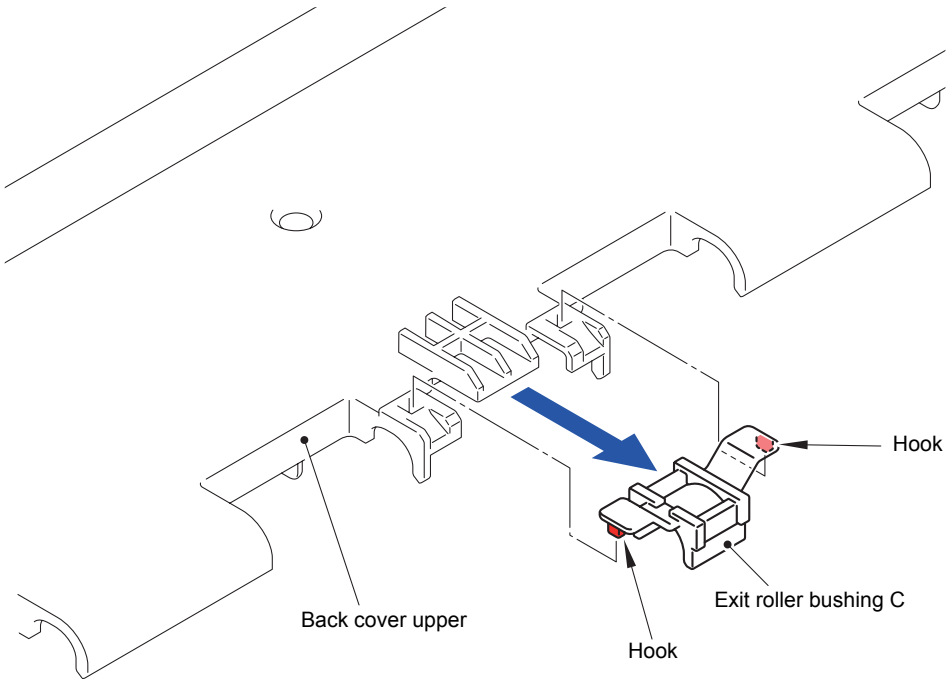


Fig. 3-120

8.39 Exit Roller Bushing/Eject Roller ASSY

(1) Remove the Pin to remove the Exit roller bushing from the left side of the Paper eject ASSY.

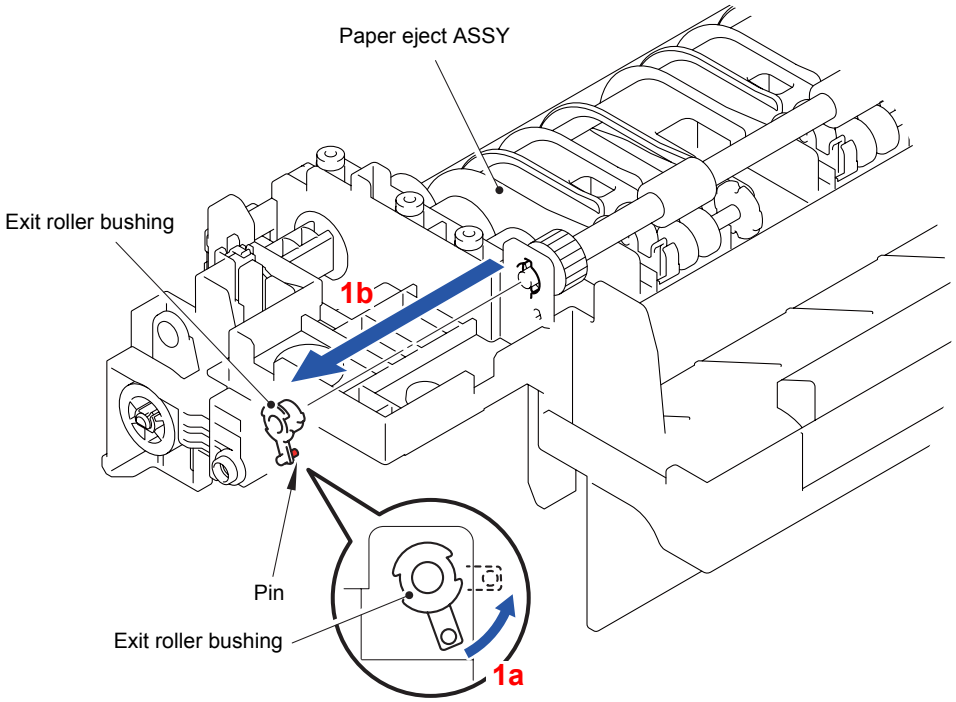


Fig. 3-121

(2) Remove the other Exit roller bushing in the same way.

(3) Remove the Eject roller ASSY from the Paper eject ASSY.

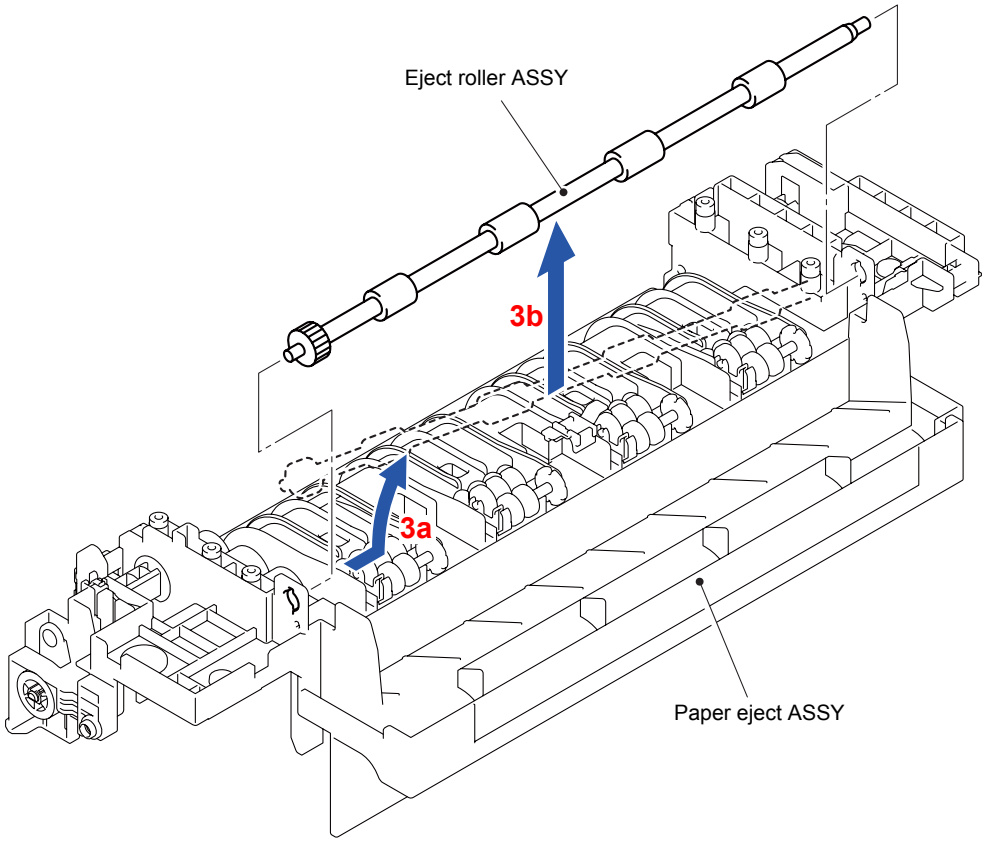


Fig. 3-122

8.40 Back Cover Sensor Harness ASSY

(1) Release the Hook to remove the Back cover sensor harness ASSY from the Paper eject ASSY.

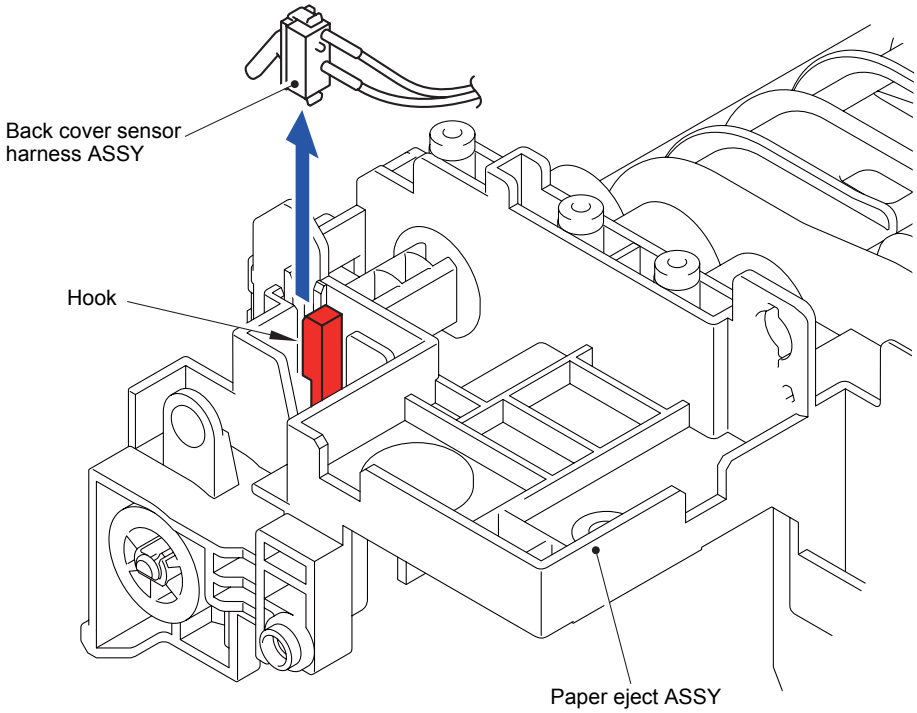


Fig. 3-123

Harness routing: Refer to " 5 Back Cover Sensor Harness ASSY"

8.41 Eject Sensor PCB ASSY

(1) Disconnect the two Connectors (CN1 and CN3) from the Eject sensor PCB ASSY.

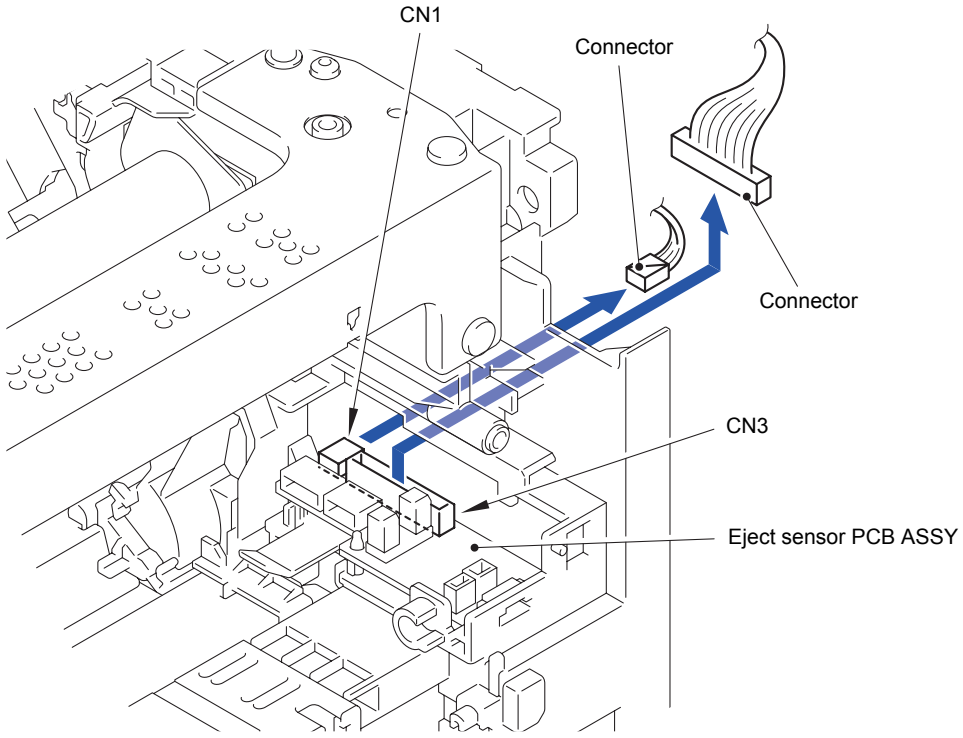


Fig. 3-124

(2) Release the Hook to remove the Eject sensor PCB ASSY from the Side frame L ASSY.

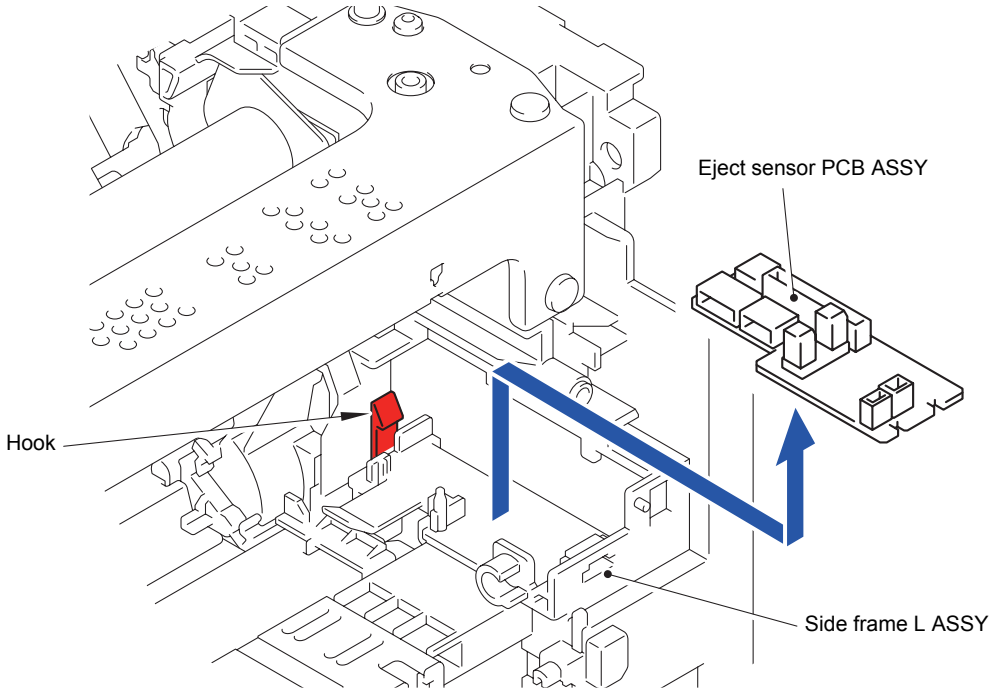


Fig. 3-125

Harness routing: Refer to " 9 Eject Sensor PCB ASSY"

8.42 High-voltage Power Supply PCB ASSY/ HVPS Flat Cable

(1) Remove the Taptite cup S M3x8 SR screw and the Taptite pan (washer) B M4x12 DA screw, and then remove the HVPS ground plate front from the Side frame R.

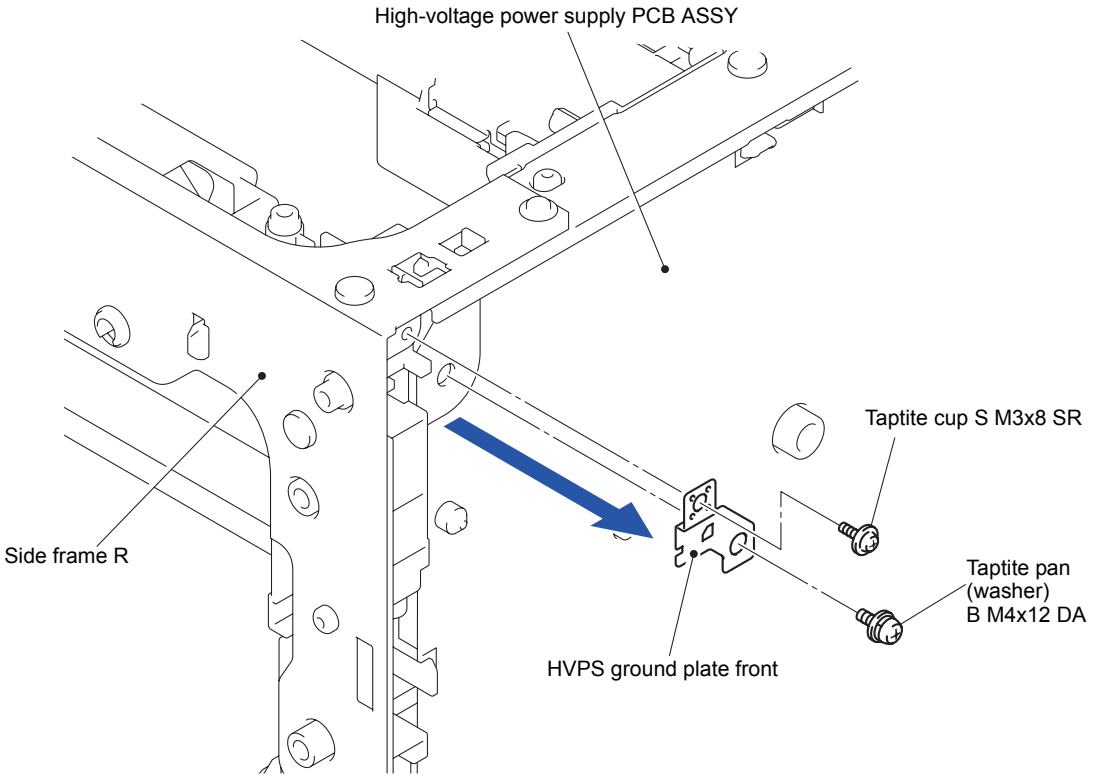


Fig. 3-126

(2) Remove the Taptite pan (washer) B M4x12 DA screw to remove the HVPS ground plate rear from the Side frame R.

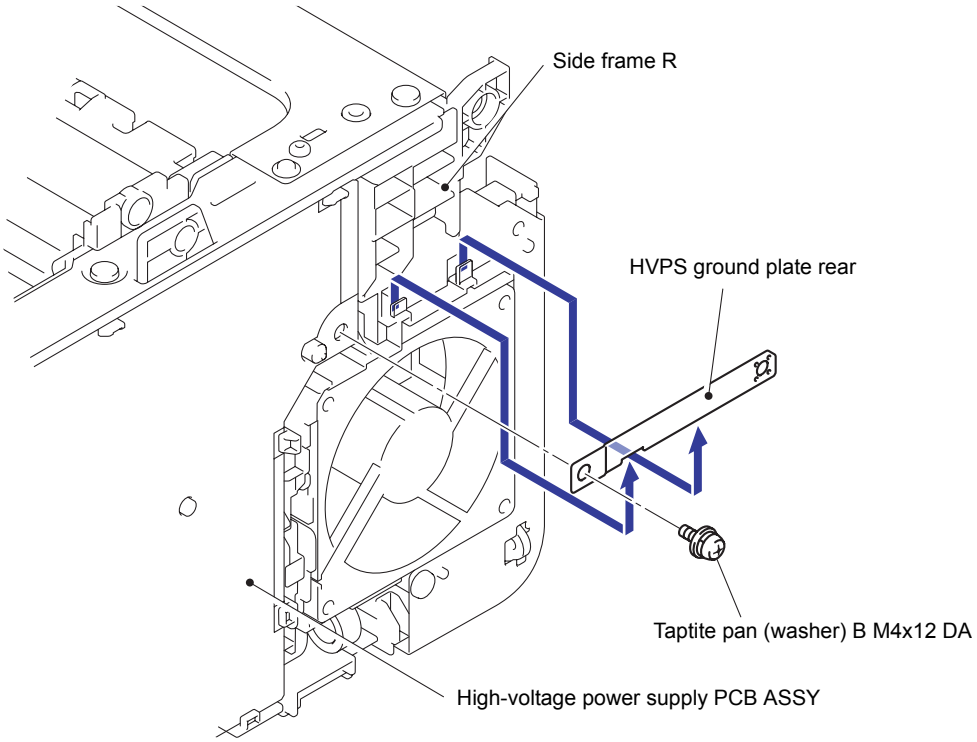


Fig. 3-127

(3) Slide the HVPS flat cable cover in the direction of the arrow 3a as holding down the cover and remove it from the Main body.

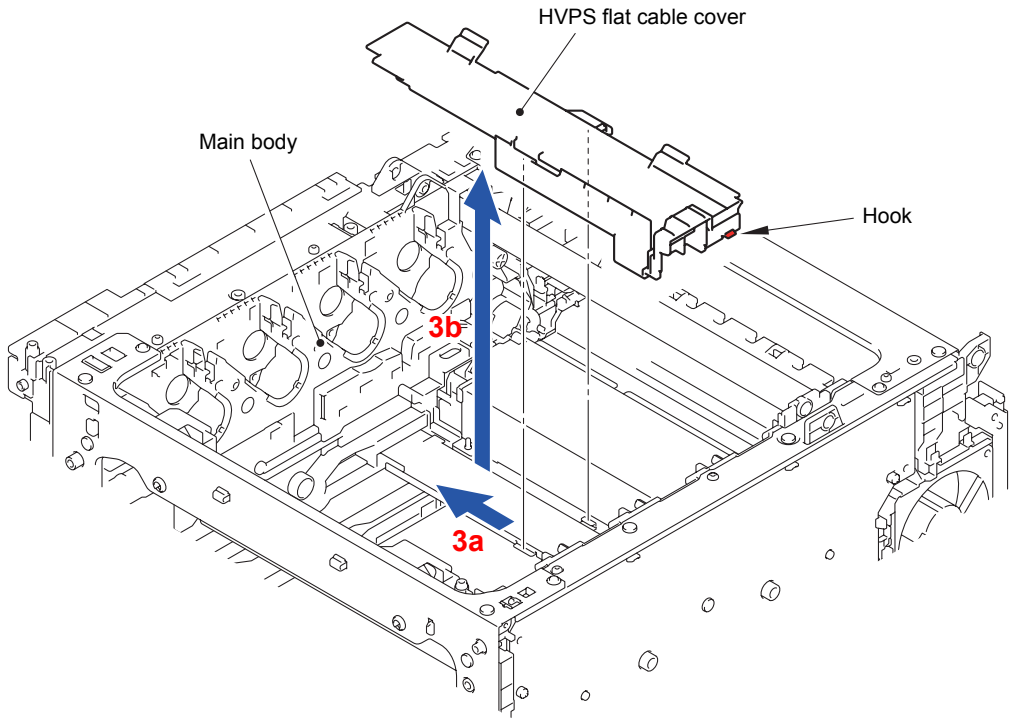


Fig. 3-128

(4) Unhook the HVPS flat cable from the two Hooks of the Main body, and smooth out the crease.

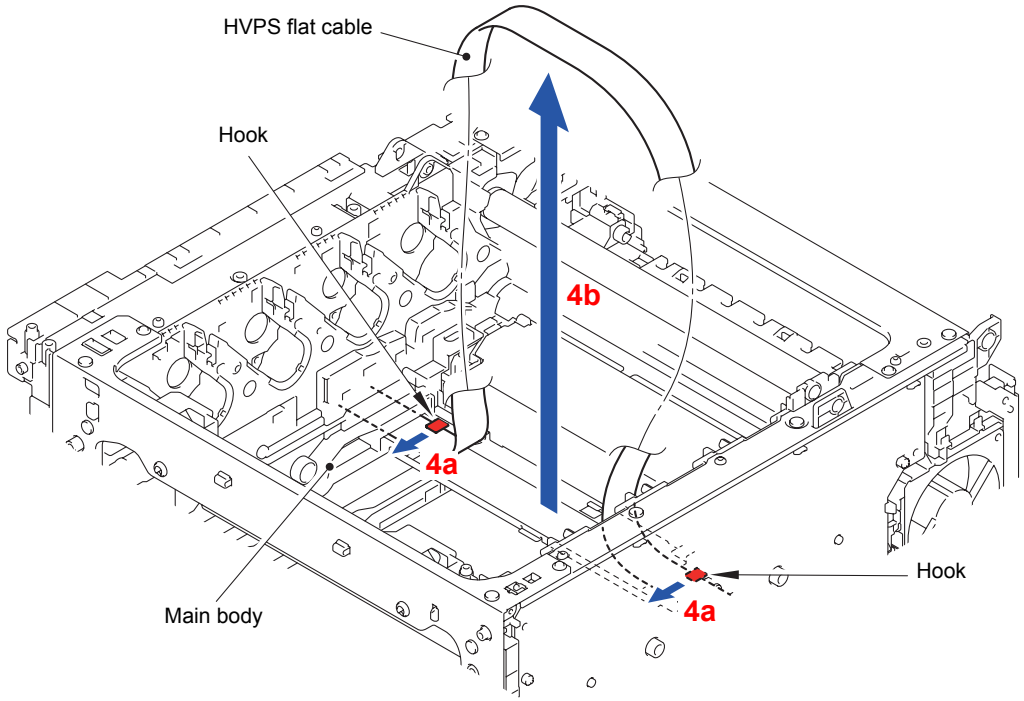


Fig. 3-129

(5) Remove the Taptite bind B M4x12 screw and release the ten Hooks. Remove the High-voltage power supply PCB ASSY from the Main body.

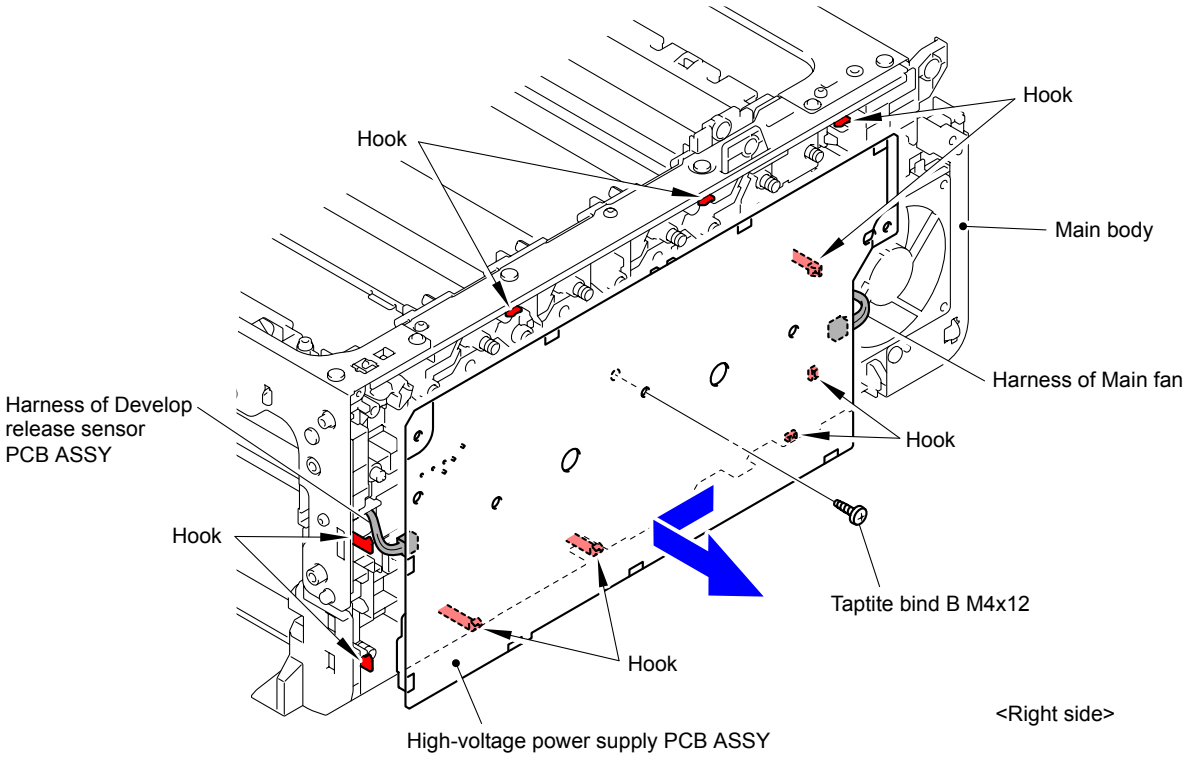


Fig. 3-130

Assembling Note:

- Be careful that the harness of the Main fan and the harness of the Develop release sensor PCB ASSY are connected.
- Be careful not to damage the Wire cap.

(6) Disconnect the two Connectors (CN2 and CN3) from the High-voltage power supply PCB ASSY.
(7) Disconnect the HVPS flat cable from the Connector (CN1) of the High-voltage power supply PCB ASSY.

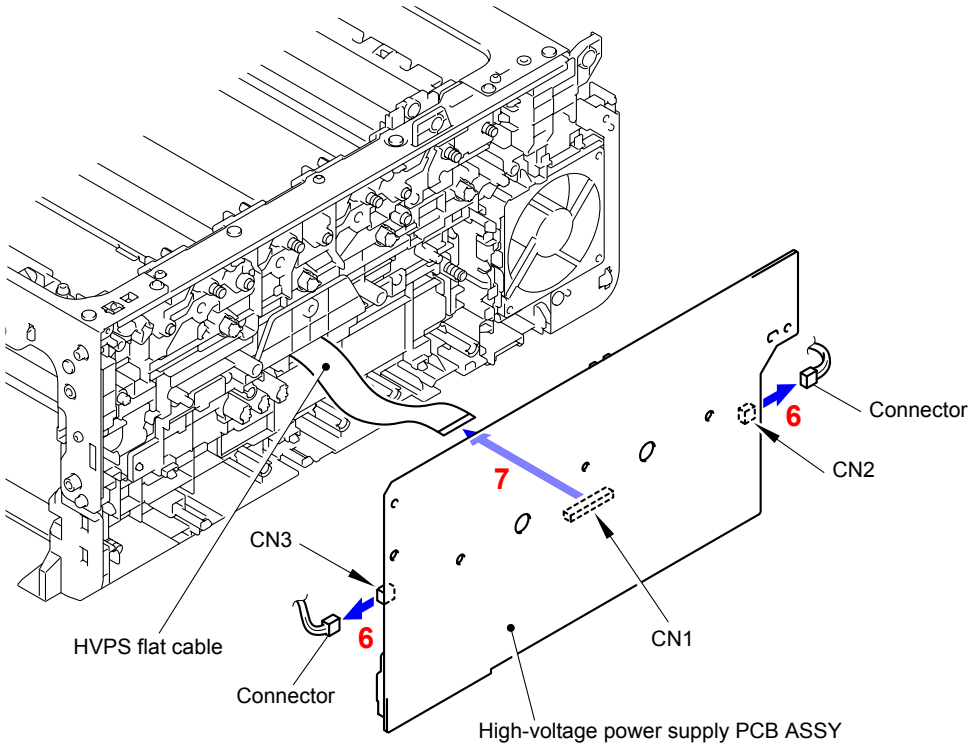


Fig. 3-131

Assembling Note:

- As the DCLN coil spring and CHG 1 coil spring tend to come out of the Side frame R, be careful not to lose them.
- When assembling the High-voltage power supply PCB ASSY, make sure that the CHG 1 coil spring and CHG 2 coil spring properly come into contact with the electrodes. If not, Drum Error will occur.

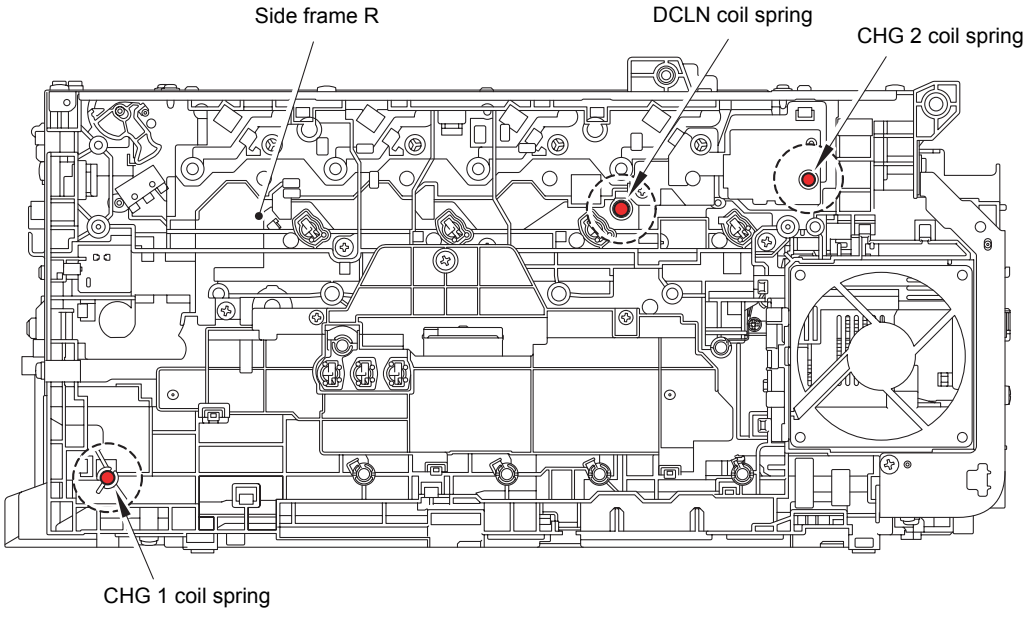


Fig. 3-132

(8) Pull out the HVPS flat cable from the Hole of the Side frame R.

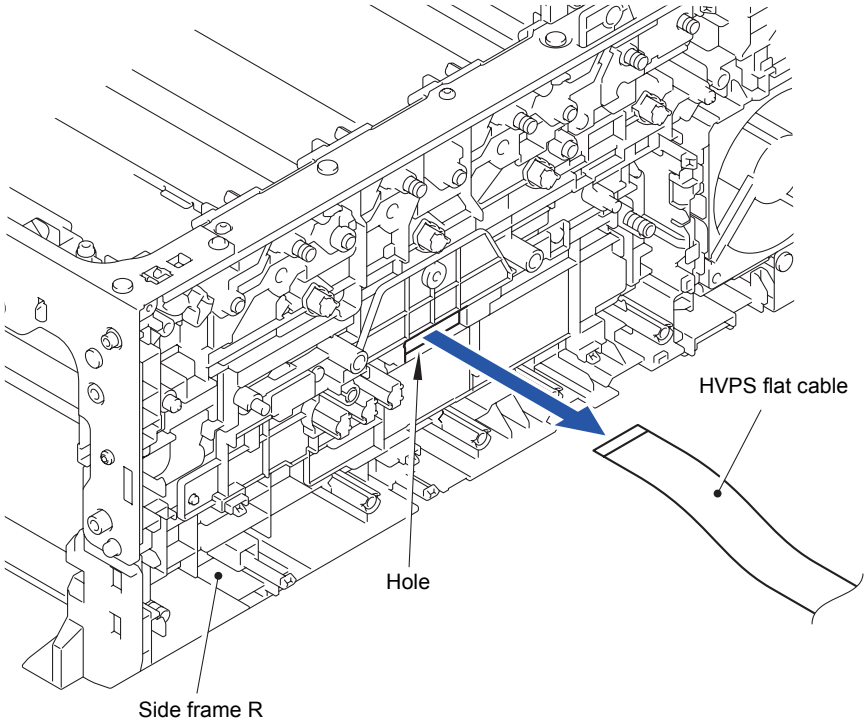


Fig. 3-133

Assembling Note:
Assembling the HVPS flat cable with its crease smoothed out.

Harness routing: Refer to " 8 HVPS Flat Cable"

<How to fold flat cable of HVPS flat cable>

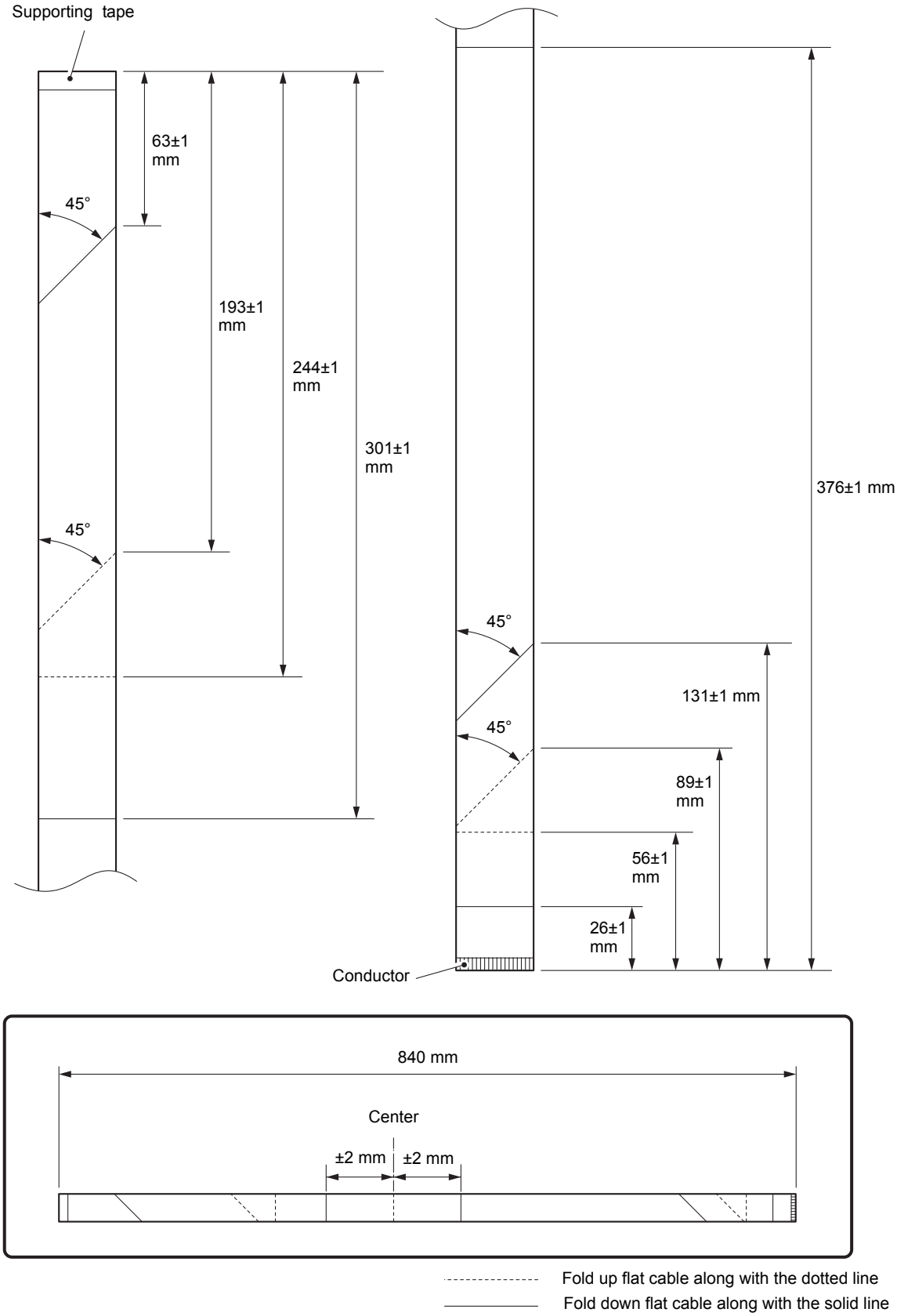


Fig. 3-134

8.43 Main Fan

(1) As the two Hooks being released, remove the Main fan from the Side frame R while rotating the fan in the direction of the arrow 1a.

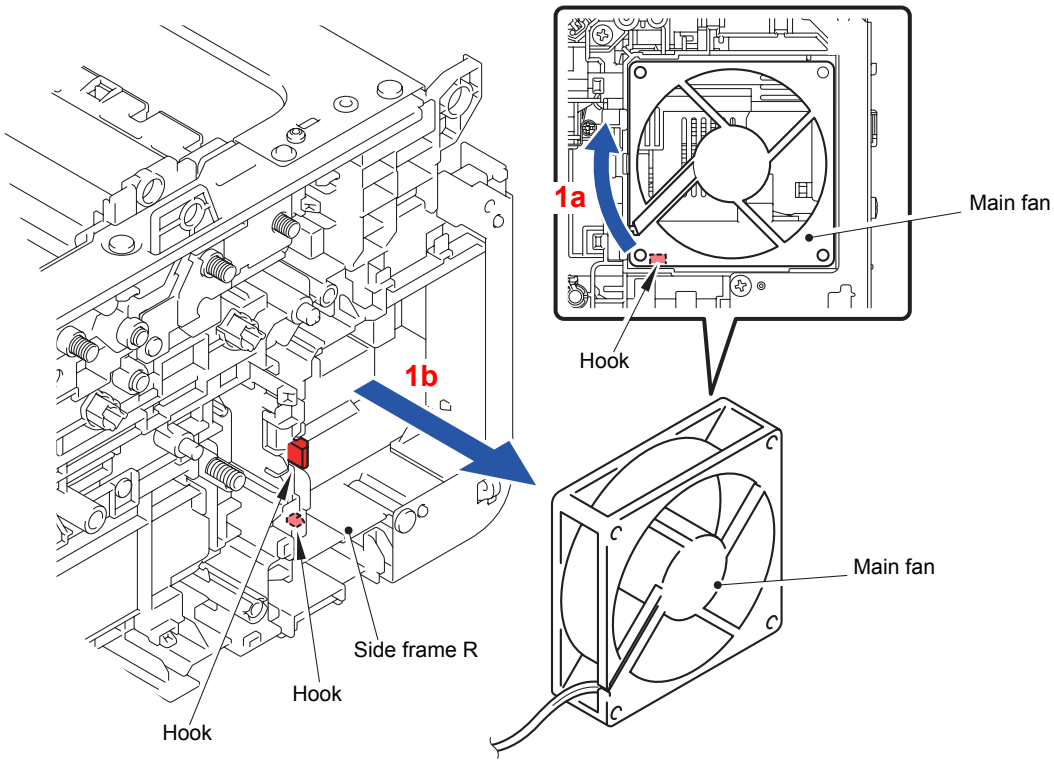


Fig. 3-135

Harness routing: Refer to " 7 Main Fan"

8.44 Develop Release Sensor PCB ASSY

(1) Release the Hook to remove the Develop release sensor PCB ASSY from the Side frame R.

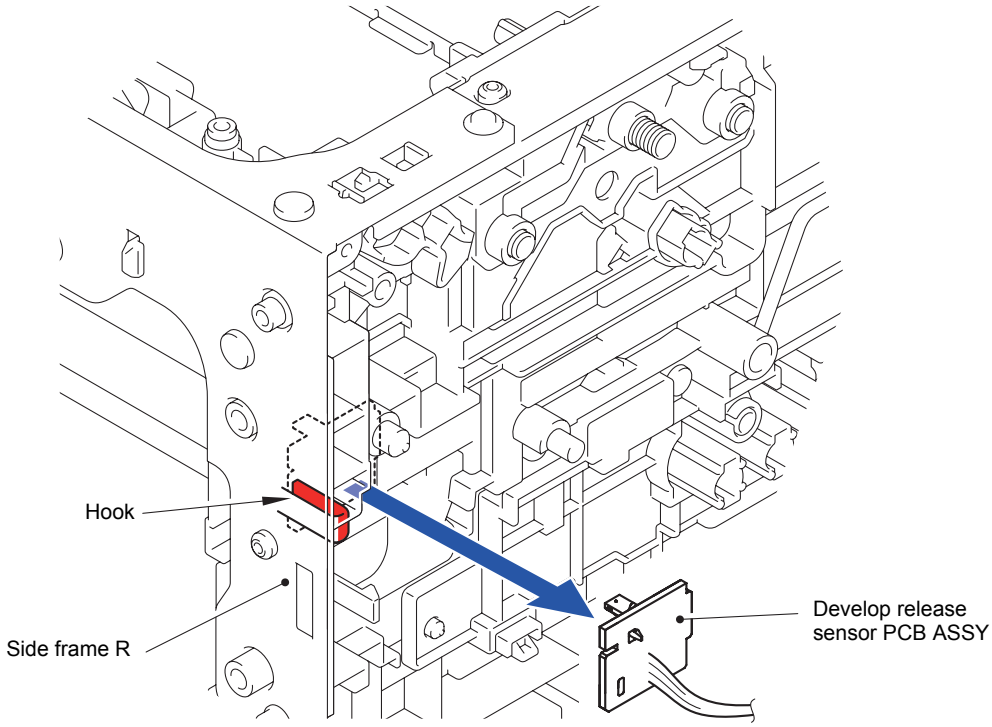


Fig. 3-136

8.45 Low-voltage Power Supply PCB ASSY

(1) Turn the Main body upside down.

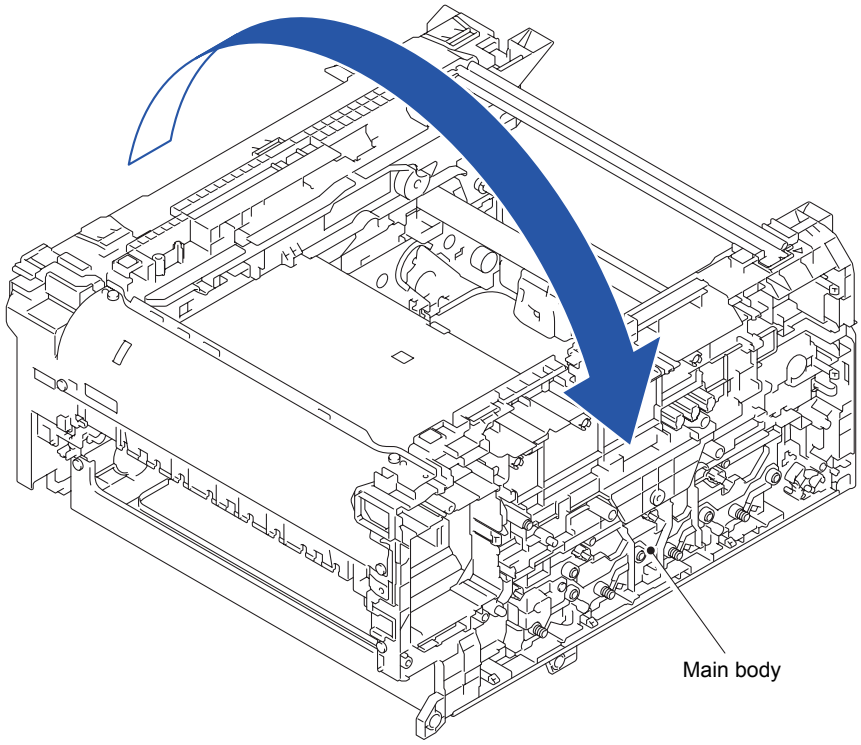


Fig. 3-137

(2) Remove the two Taptite bind B M4x12 screws, one Taptite bind S M3x5 screw, one Taptite pan (washer) B M4x12 DA screw, and the Boss. Remove the Cover plate from the Side frame R.

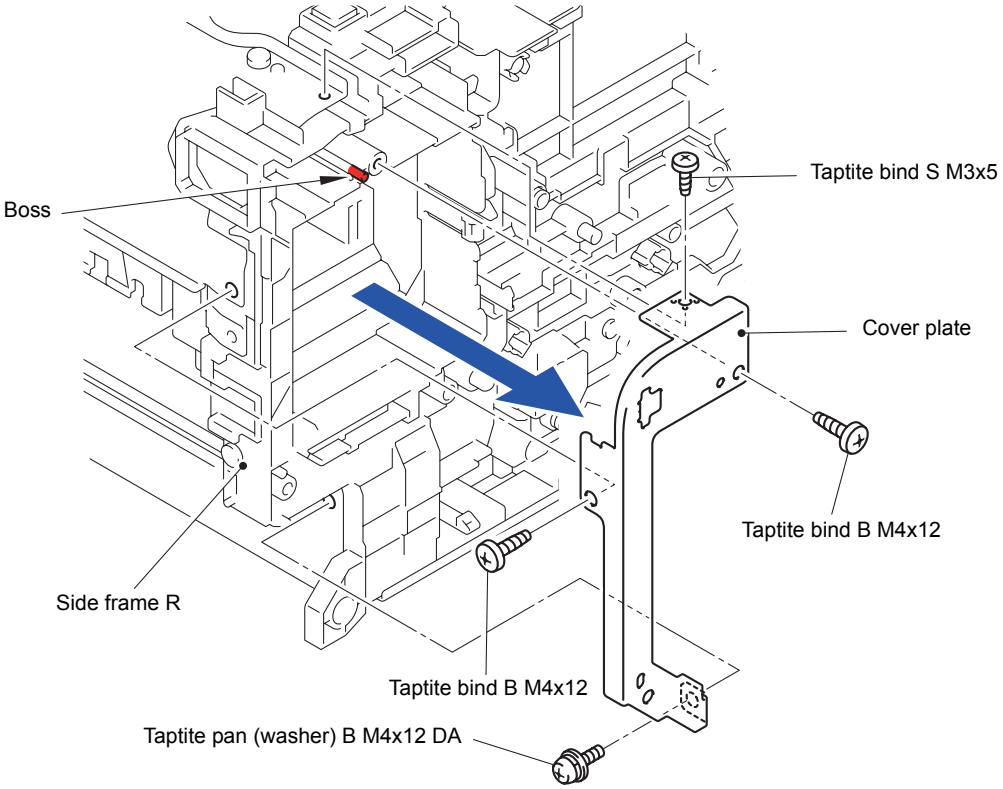


Fig. 3-138

(3) Release the two Hooks to remove the Wire cap from the Side frame R.

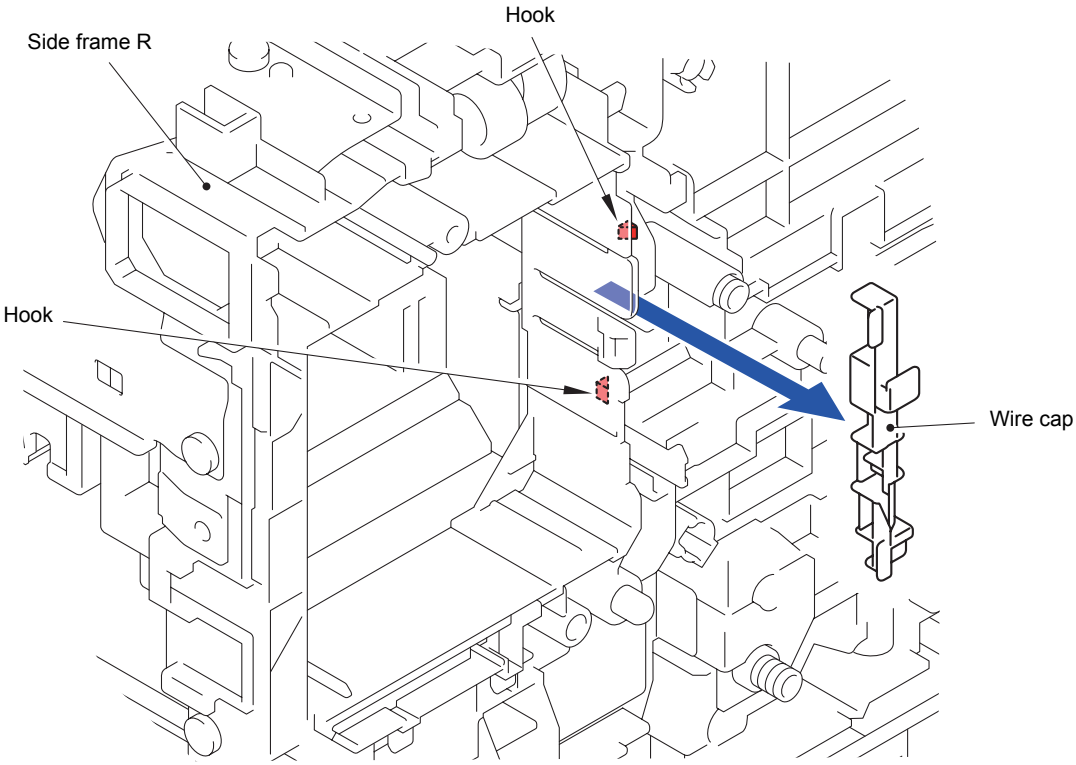


Fig. 3-139

(4) Pull out the Heater harness and Inlet harness ASSY from the Main body.

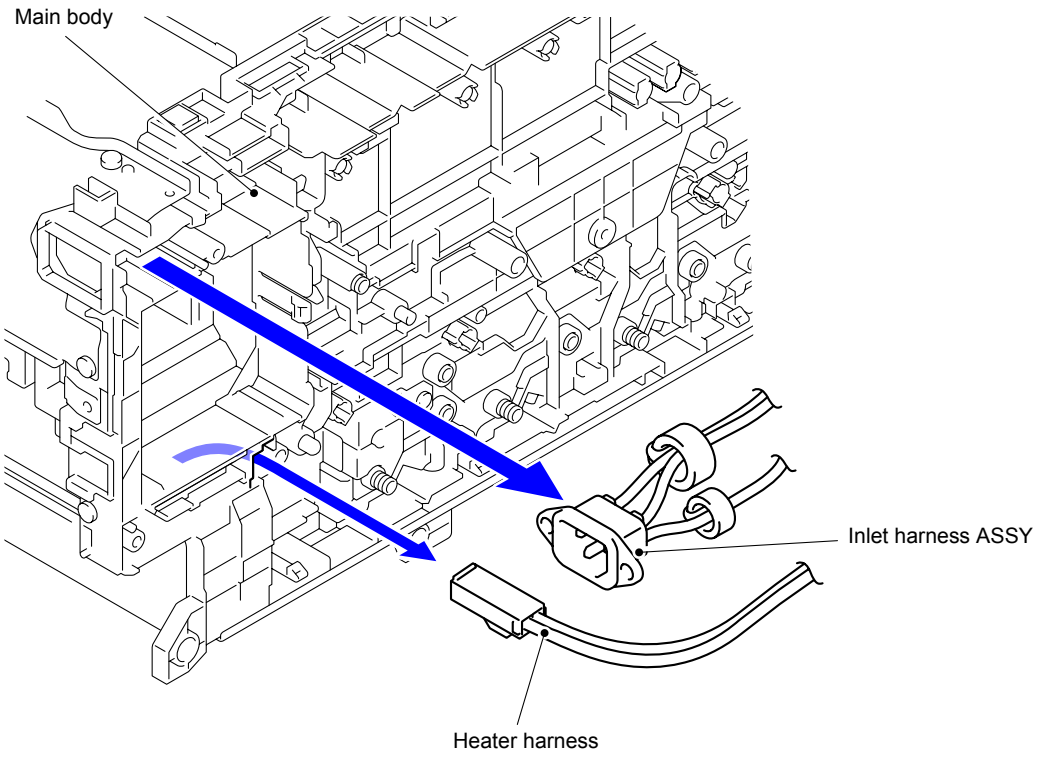


Fig. 3-140

(5) Release the three Hooks to remove the Wire cover from the Side cover R.

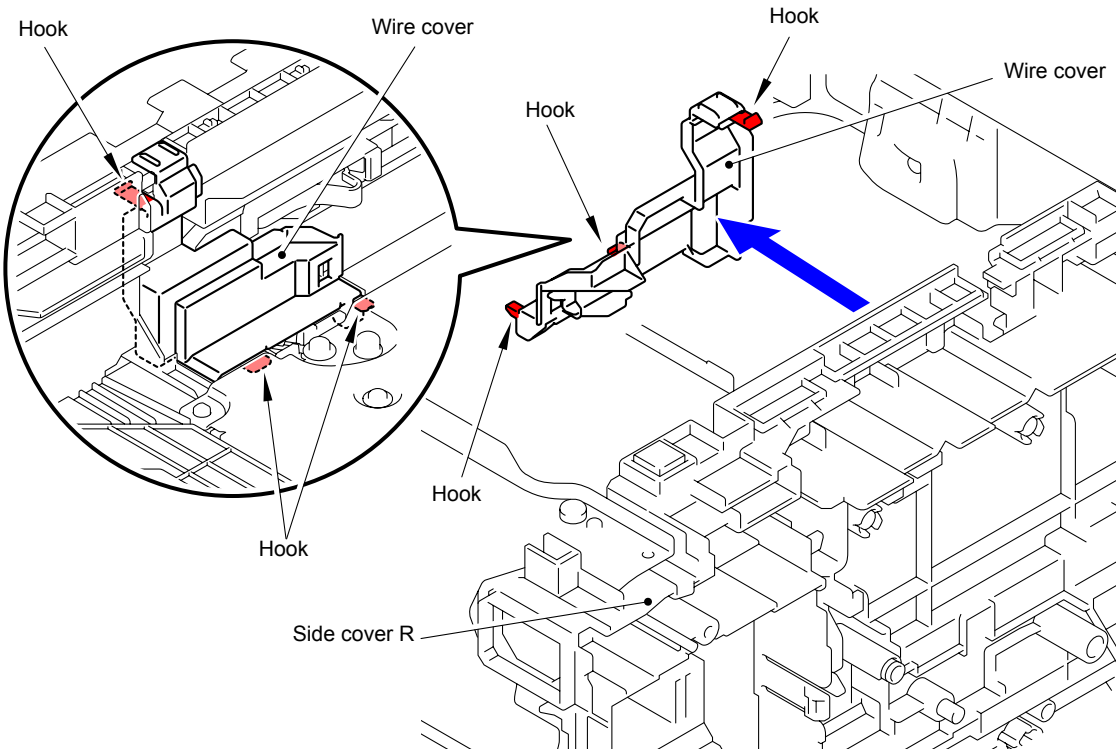


Fig. 3-141

(6) Disconnect the wiring of the Heater harness and Inlet harness ASSY.
(7) Remove the Screw pan (S/P washer) M3.5x6 screw to remove the LVPS FG harness.
(8) Remove the six Taptite pan (washer) B M4x12 DA screws and two Taptite cup S M3x8 SR screws to remove the LVPS plate lower from the Main body.

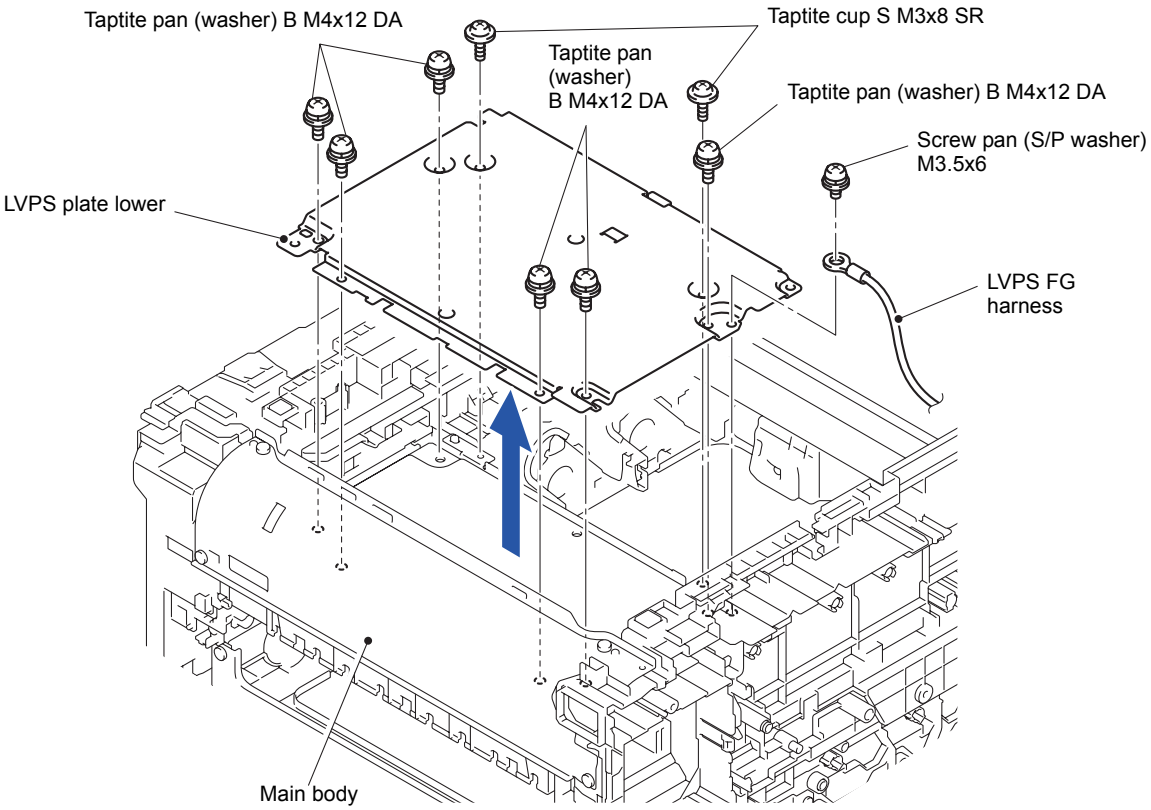


Fig. 3-142

(9) Release the two Bosses to remove the LVPS insulation sheet lower from the Low-voltage power supply PCB ASSY.

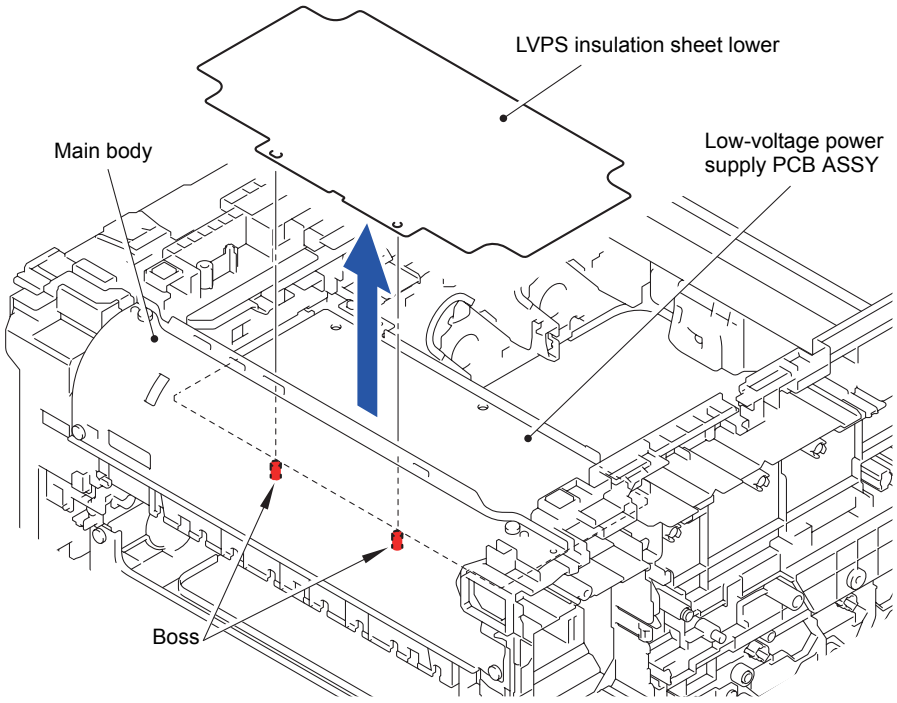


Fig. 3-143

(10) Release the two Bosses to remove the Low-voltage power supply PCB ASSY from the Main body.

(11) Disconnect the Connector (CN101) from the Low-voltage power supply PCB ASSY.

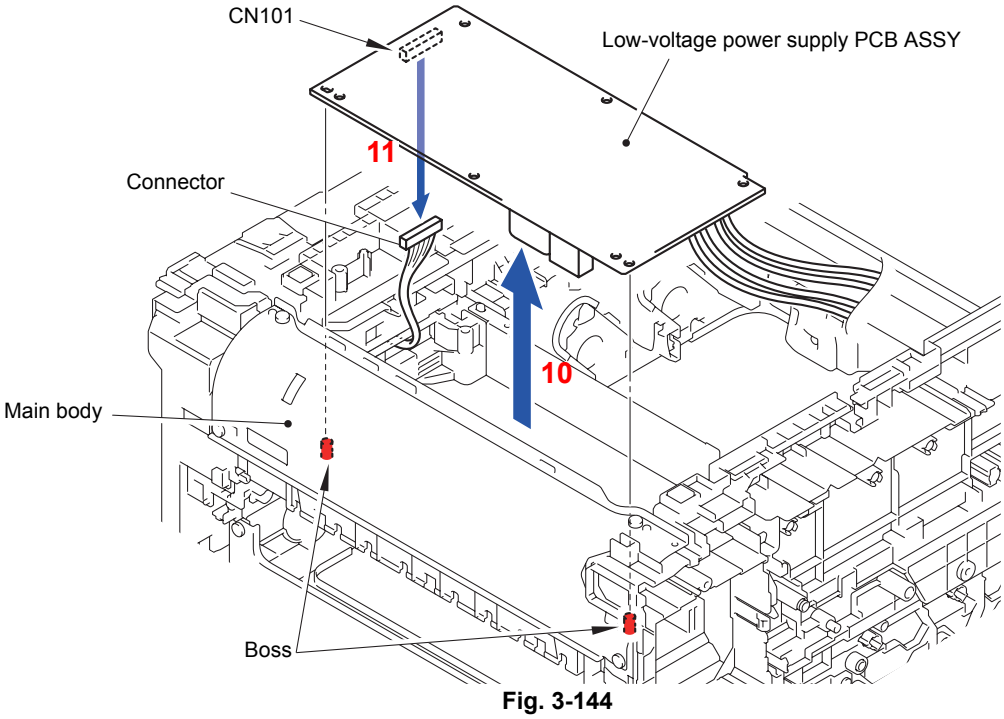


Fig. 3-144

Assembling Note:

Make sure to attach insulation sheet. Failure to attach the insulation sheet can result in fire or electrical shock.

Harness routing: Refer to " 10 Low-voltage Power Supply PCB ASSY"

CHAPTER 4 ADJUSTMENTS AND UPDATING OF SETTINGS, REQUIRED AFTER PARTS REPLACEMENT

1. IF YOU REPLACE THE MAIN PCB ASSY

■ What to do when replacing the main PCB ASSY

- Installing the Firmware (Sub firmware (GDI or PCL/PS), Main firmware)
- Initialization of EEPROM of Main PCB ASSY (Function code 01)
- Setting by Country (Function code 74)
- Setting the Serial Number (Function code 80)
- Motor Reset (Function code 57)
- Continuous Adjustments of Density and Registration Sensors (Function code 73)

Memo:

In the Continuous adjustments of density and registration sensors (Function code 73), Sensitivity adjustment of density sensor (Function code 72), Developing bias voltage correction (Function code 83), and Adjustment of color registration (Adjustment of inter-color position alignment) including registration sensor calibration (Function code 66) are executed consecutively.

■ What you need to prepare

(1) A USB cable

(2) Computer (Windows® XP or later)
Create a temporary folder in the C drive.

(3) Service setting tool (BrUsbsn.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.

(4) The download utility (FILEDG32.EXE)
Copy it into the temporary folder that has been created in the C drive.

(5) The Brother maintenance USB printer driver (MaintenanceDriver.zip)
If the maintenance printer driver is not installed, copy it into the temporary folder created in the C drive and decompress and expand the file. Refer to APPENDIX 3 INSTALLING THE MAINTENANCE PRINTER DRIVER to install the driver

(6) The firmware

Sub firmware	Except for HL-3170CDW/3172CDW: GDI	LZXXXX_$.upd
	HL-3170CDW/3172CDW: PCL/PS	
Main firmware		LZXXXX_$.upd
LZXXXX: First six digits are a parts number of the firmware. $: Alphabet representing the revision of the firmware.		

1.1 Installing the Firmware (Sub Firmware (GDI or PCL/PS), Main Firmware)

1.1.1 Checking firmware version

Check whether the firmware installed in the main PCB is the latest version. If the version is the latest, updating the firmware is unnecessary.

If the version is not the latest, install the latest firmware into the Main PCB following the instructions provided in "1.1.2 Installing the firmware".

<How to check firmware version>

Press the ▲ or ▼ button to display "MAINTENANCE 25" on the LCD in the initial state of the maintenance mode. Then, press the **OK** button. Then, the Main firmware version information is displayed on the LCD.
Then, you press the ▼ button the version information of the Sub firmware is displayed.

Memo:

You can check the firmware version of the Sub firmware (GDI or PCL/PS) and the Main firmware by printing the Printer Settings.
(Refer to "2.4 Printout of Printer Settings" in Chapter 5.)

1.1.2 Installing the firmware

Memo:

- Install the Sub firmware (GDI or PCL/PS) first and then the Main firmware.
- DO NOT unplug the power cord of the machine or computer and the USB cable during installation.

<Procedures>

(1) Turn OFF the power of the computer and machine.

(2) Connect the computer to the machine with the USB cable.

(3) While pressing the **Go** and **Cancel** buttons at the same time, turn ON the power of the machine. Confirm that " ▮▮▮▮▮▮▮▮ " is displayed on the LCD, and then release the two buttons.

(4) Turn ON the power of the computer.

(5) Open the temporary folder, double-click the "FILEDG32.EXE" to start, and select the Brother Maintenance USB Printer.

(6) Drag and drop the Sub firmware (GDI or PCL/PS: LZXXXX_$.upd) to the Brother Maintenance USB Printer icon. The Sub firmware files are sent to the machine and installation into the flash ROM is started.

(7) During installation, "Program Updating" is displayed on the LCD. When the installation is completed, the machine reboots and returns to the ready state. Do not remove the USB cable nor turn OFF the power of the computer until the installation is completed.

(8) Turn OFF the power of the machine and repeat steps (3) to (7) to install the Main firmware.

(9) Turn OFF the power of the machine.

1.2 Initialization of EEPROM of Main PCB ASSY (Function code 01)

Initialize the EEPROM in accordance with "1.4.1 EEPROM Parameter Initialization" in Chapter 5.

1.3 Setting by Country (Function code 74)

Make appropriate settings by country in accordance with "1.4.21 Setting by country" in Chapter 5.

1.4 Setting the Serial Number (Function code 80)

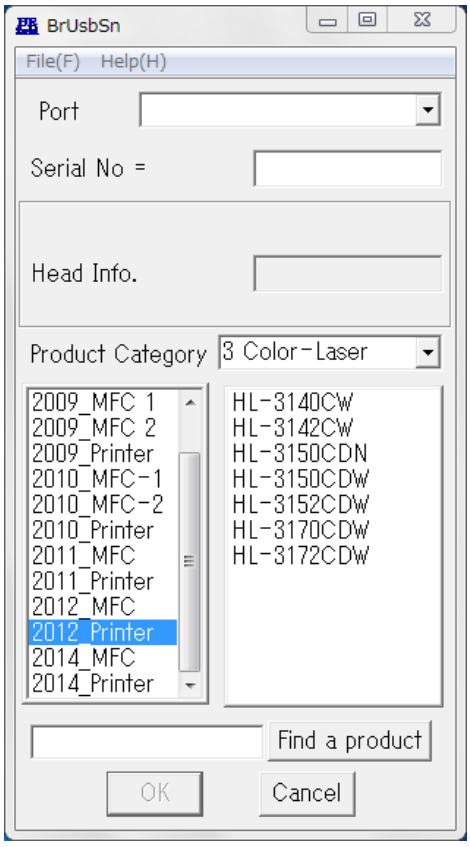
Referring to "1.4.24 Display of device log information" in Chapter 5, set the serial number. The serial number can be also set using the service setting tool (BrUsbSn.exe). The procedures are described below.

<Procedures>

(1) Press the **OK** button and then the **Go** button while the machine is in the ready state. Next, press the ▲ button four times to enter the maintenance mode.

(2) Connect the computer to the machine with the USB cable.

(3) Double-click the "BrUsbsn.exe" file copied into the temporary folder to start the file. The BrUsbSn screen appears as shown below



(4) Enter the model name of your machine in the "Find a product" field (ex: HL-3170CDW) and click the **Find a product** button. **Find a product** button turns into **Find Next** button, and model name appears in the box above the **Find Next** button.

(5) Check if the model name of your machine is shown in the box above the **Find Next** button. If you can not find the model name of your machine, keep clicking the **Find Next** button until it appears.

(6) In "Port" field on the BrUsbSn screen, select the port assigned to Brother Maintenance USB Printer.

If the port number is unknown, follow steps below.

1) Click "Start" "Settings" "Printers". The Printers screen appears.

2) Right-click the Brother Maintenance USB Printer icon.

3) Click "Properties". The Brother Maintenance USB Printer Properties screen appears.

4) Click the Ports tab. The port for Brother Maintenance USB Printer is displayed.

(7) Enter the serial number (the fifteen digits) of the machine into the box on the "Serial No" field.

(8) Click the **OK** button, then confirmation screen appears. Check that the serial number and click the **Yes** button. The serial number is written in the machine.

(9) Turn OFF the power of the machine.

Memo:

Refer to APPENDIX 1 SERIAL NUMBERING SYSTEM to know how to read the serial number label of the machine.

1.5 Motor Reset (Function code 57)

Following the instructions provided in "1.4.12 Motor reset" in Chapter 5, perform motor reset.

1.6 Continuous Adjustments of Density and Registration Sensors (Function code 73)

Perform continuous adjustments of density and registration sensors in accordance with "1.4.20 Continuous adjustments of density and registration sensors" in Chapter 5.

Memo:

In the Continuous adjustments of density and registration sensors (Function code 73), Sensitivity adjustment of density sensor (Function code 72), Developing bias voltage correction (Function code 83), and Adjustment of color registration (Adjustment of inter-color position alignment) including registration sensor calibration (Function code 66) are executed consecutively.

2. IF YOU REPLACE THE REGISTRATION MARK L PCB ASSY AND REGISTRATION MARK R PCB ASSY

■ **What to do when replacing the registration mark L PCB ASSY and registration mark R PCB ASSY**

- Continuous Adjustments of Density and Registration Sensors (Function code 73)

2.1 Continuous Adjustments of Density and Registration Sensors (Function code 73)

Perform continuous adjustments of density and registration sensors in accordance with "1.4.20 Continuous adjustments of density and registration sensors" in Chapter 5.

Memo:

In the Continuous adjustments of density and registration sensors (Function code 73), Sensitivity adjustment of density sensor (Function code 72), Developing bias voltage correction (Function code 83), and Adjustment of color registration (Adjustment of inter-color position alignment) including registration sensor calibration (Function code 66) are executed consecutively.

3. IF YOU REPLACE THE LOW-VOLTAGE POWER SUPPLY PCB ASSY

■ **What to do when replacing the low-voltage power supply PCB ASSY**

- Reset of Irregular Power Supply Detection Counter

■ **What you need to prepare**

(1) A USB cable

(2) Computer (Windows® XP or later)
Create a temporary folder in the C drive.

(3) The download utility (FILEDG32.EXE)
Copy it into the temporary folder that has been created in the C drive.

(4) The Brother maintenance USB printer driver (MaintenanceDriver.zip)
If the maintenance printer driver is not installed, copy it into the temporary folder created in the C drive and decompress and expand the file. Refer to APPENDIX 3 INSTALLING THE MAINTENANCE PRINTER DRIVER to install the driver

(5) Irregular power supply detection counter PJL file (SQWAVE.PJL).

3.1 Reset of Irregular Power Supply Detection Counter

The irregular power supply detection counter is counted up when the machine detects irregular power supply. When the counter reaches the limit and the irregular power supply detection error is displayed, replace the low-voltage power supply PCB ASSY which may have been damaged by repeated irregular power supply and reset the irregular power supply detection counter.
In this case, if the same power supply is used, the same error might occur again even if the low-voltage power supply PCB ASSY is replaced. For this reason, be sure to ask the user to rearrange the installation environment.

(1) Press the **OK** button and then the **Go** button while the machine is in the ready state. Next, press the ▲ button four times to enter the maintenance mode.

(2) Connect the computer to the machine with the USB cable.

(3) Double-click the "FILEDG32.EXE" to start. Select the "Brother Maintenance USB Printer".

(4) Drag and drop SQWAVE.PJL on the "Brother Maintenance USB Printer" icon.

(5) Turn OFF the power of the machine.

4. IF YOU REPLACE THE PROCESS DRIVE UNIT

■ **What to do when replacing the process drive unit**

- Motor Reset (Function code 57)

4.1 Motor Reset (Function code 57)

Following the instructions provided in "1.4.12 Motor reset" in Chapter 5, perform motor reset.

5. IF YOU REPLACE THE LED ASSY OR TOP COVER ASSY

■ **What to do when replacing the LED ASSY or top cover ASSY**

- Sensitivity Adjustment of Density Sensor (Function code 72)
- Developing Bias Voltage Correction (Function code 83)
- Adjustment of Color Registration (Adjustment of Inter-color Position Alignment) without Registration Sensor Calibration (Function code 66)

5.1 Sensitivity Adjustment of Density Sensor (Function code 72)

Make sensitivity adjustment of density sensor in accordance with "1.4.19 Sensitivity adjustments of density sensor" in Chapter 5.

5.2 Developing Bias Voltage Correction (Function code 83)

Perform developing bias voltage correction in accordance with "1.4.26 Developing bias voltage correction" in Chapter 5.

5.3 Adjustment of Color Registration (Adjustment of Inter-color Position Alignment) without Registration Sensor Calibration (Function code 66)

Perform adjustment of inter-color position alignment without registration sensor calibration (auto) in accordance with "1.4.13 Adjustment of color registration (Adjustment of inter-color position alignment)" in Chapter 5.

6. IF YOU REPLACE THE FUSER UNIT/PF KIT 1

■ **What to do when replacing the fuser unit/PF kit 1**

- Reset the counter of the desired periodical replacement parts.

Periodical replacement parts whose counter can be reset. (Function code 88)

- Fuser unit
- PF kit 1

6.1 Counter Reset after Fuser Unit/PF Kit 1 Replacement (Function code 88)

Following "1.4.27 Counter reset after fuser unit/PF kit 1 replacement" in Chapter 5, reset the counter of the desired periodical replacement parts.

CHAPTER 5 SERVICE FUNCTIONS

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. You can perform operational checks of sensors, perform a print test, display the log information or error codes, and modify the worker switch (WSW).

1.1 How to Enter the Maintenance Mode

<Operating procedure>

(1) Press the **OK** button and then the **Go** button while the machine is in the ready state. Next, press the ▲ button four times to enter the maintenance mode.

> **Note:**
> To enter the maintenance mode, you must press the **Go** button within 2 seconds after pressing the **OK** button. Also, you need to press the ▲ button within 2 seconds after pressing the **Go** button.

(2) The machine displays "▮▮ MAINTENANCE ▮▮▮" on the LCD, indicating that it is placed in the initial state of the maintenance mode.

(3) To select one of the maintenance-mode functions listed in the next page, press the ▲ or ▼ button to display any function code on the LCD. Then press the **OK** button.

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 09, 12, 25, 28, 45, 66, 68, 71, 72, 77, 80, 82 and 91)

<Operating procedure>

(1) Press the **OK**, **Go** and **OK** buttons in this order when the machine is in the ready state. "0" is displayed on the LCD.

(2) Press the ▲ or ▼ button to display the desired maintenance code on the LCD. Then press the **OK** button.

When each of the user-accessible functions is completed, the machine automatically returns to the ready state. As for the codes 12, 25, 28, 45, 66, 68, 71, 72, 80 and 82, press the **Cancel** button to switch the machine return to the ready state.

1.3 List of Maintenance-mode Functions

Function code	Function	Refer to:
01	EEPROM parameter initialization	1.4.1 (5-3)
09	Monochrome image quality test pattern	1.4.2 (5-4)
10	Worker switch (WSW) setting	1.4.3 [1] (5-5)
11	Printout of worker switch (WSW) data	1.4.3 [2] (5-7)
12	Operation check of LCD	1.4.4 (5-8)
13	Operational check of control panel button	1.4.5 (5-9)
25	Software version check	1.4.6 (5-10)
28	"One Push Demo" setting	1.4.7 (5-11)
32	Operational check of sensors	1.4.8 (5-12)
33	LAN connection status display	1.4.9 (5-14)
40	EEPROM Dump Print	1.4.10 (5-15)
45	Changing return value of USB No./Switching Dither Pattern/ Adjusting left-end print start position on second side in duplex printing (2-sided printing model only)	1.4.11 (5-16)
57	Motor reset	1.4.12 (5-18)
66	Adjustment of color registration (Adjustment of inter-color position alignment)	1.4.13 (5-19)
67	Print test	1.4.14 (5-22)
68	LED test pattern print	1.4.15 (5-25)
69	Frame pattern print (One-sided)	1.4.16 (5-27)
70	Frame pattern print (Two-sided)	1.4.17 (5-28)
71	Color test pattern	1.4.18 (5-29)
72	Sensitivity adjustment of density sensor	1.4.19 (5-32)
73	Continuous adjustments of density and registration sensor	1.4.20 (5-33)
74	Setting by country	1.4.21 (5-34)
77	Printout of maintenance information	1.4.22 (5-36)
78	Operational check of fans	1.4.23 (5-40)
80	Display of device log information	1.4.24 (5-41)
82	Display of device error codes	1.4.25 (5-45)
83	Developing bias voltage correction	1.4.26 (5-46)
88	Counter reset after fuser unit/PF kit 1 replacement	1.4.27 (5-47)
91	EEPROM parameter initialization	1.4.1 (5-3)
95	Function unnecessary for maintenance work	---
99	Exit from the maintenance mode	1.4.28 (5-48)

* 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.

Data item	Function code 01	Function code 91
Printer switch (Counter information)	These will not be initialized.	These will not be initialized.
Error History		
MAC address		
Operation lock of the control panel password	These will be initialized.	
Secure Function Lock		
Worker switch		
User switches		These will be initialized.
LAN settings		
Emulation settings		

<Operating procedure>

(1) Press the ▲ or ▼ button to display "MAINTENANCE 01" (or "MAINTENANCE 91" according to your need) on the LCD in the initial state of the maintenance mode.

(2) Press the **OK** button. The "PARAMETER INIT" appears on the LCD.

(3) Upon completion of parameter initialization, the machine returns to the initial state of the maintenance mode.

Note:

- Function code 01 is for service personnel. Function code 91 is for user support.
- If the power is turned OFF while "PARAMETER INIT" is being displayed on the LCD, EEPROM initialization fails to be completed successfully. In this case, when the power is turned ON next time, the EEPROM is initialized automatically and the machine returns to the initial state of the maintenance mode after the completion of the initialization.

1.4.2 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 ▲ or ▼ button to display "MAINTENANCE 09" on the LCD in the initial state of the maintenance mode.

(2) Press the **OK** button. Printing of a monochrome image quality test pattern (see the figure below) is started.

(3) When printing is finished, the machine returns to the initial state of the maintenance mode.

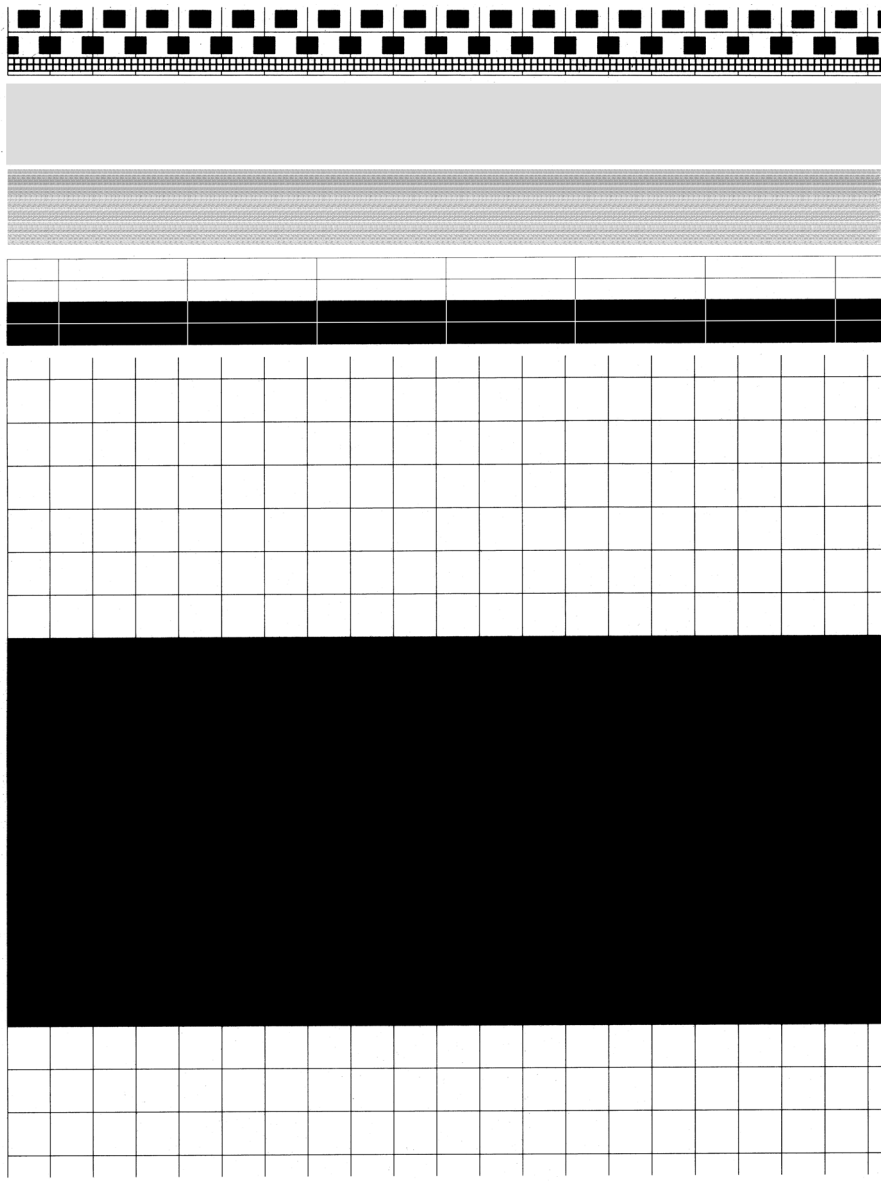


Fig. 5-1

1.4.3 Worker switch (WSW) setting and printout (Function code 10, 11)

[1] Worker switch (WSW) setting (Function code 10)

<Function>

The worker switches shown in the table below can be used to set the function to satisfy various requirements. The switch setting can be changed using the buttons on the control panel. The worker switches are factory set to confirm with the laws and regulations of the country the machine is shipped to. Do not change these settings unless necessary.

WSW No.	Function
WSW47	Switching between high-speed USB and full-speed USB
WSW55	Interval of time required for the developing bias voltage correction
WSW56	Function setting 1
WSW59	Enabling and disabling of transmission of USB serial number (SN)
WSW63	Switch of the print speed/Demo print type/Font support for Israel
WSW64	Language setting/Default paper size
WSW65	Default media type/Range of supported media types
WSW66	Reserved (Change of the setting is prohibited)
WSW67	Reserved (Change of the setting is prohibited)
WSW68	Reserved (Change of the setting is prohibited)
WSW70	Reserved (Change of the setting is prohibited)
WSW73	Reserved (Change of the setting is prohibited)
WSW78	Recording stop function when the drum reaches the end of life
WSW81	Emulation function setting

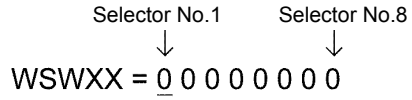
<Operating procedure>

(1) Press the ▲ or ▼ button to display "MAINTENANCE 10" on the LCD in the initial state of the maintenance mode.

(2) Press the **OK** button. The machine displays "WSW00" on the LCD and becomes ready to accept a worker switch number.

(3) Press the ▲ or ▼ button to display the worker switch number whose setting you want to change on the LCD.

(4) Press the **OK** button.
The following appears on the LCD.



(5) Pressing the ▲ button to enter "1" and the ▼ button to enter "0". Press the button of the value you want to enter at selector No.1. The underline cursor moves to the next digit.

(6) Enter each value at selectors No.2 to No.8 in the way described in step (5) using the ▲ and ▼ buttons.

(7) Press the **OK** button. This operation saves the newly entered selector values onto the EEPROM and readies the printer for accepting afirmware switch number. The machine displays "WSW00" on the LCD again to accept a worker switch number.

(8) When worker switch setting is completed, press the **Cancel** button to return the machine to the initial state of the maintenance mode.

Memo:

- To cancel this operation and return the machine to the initial state of the maintenance mode during the above procedure, press the **Cancel** 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 the set details.

<Operating procedure>

(1) Press the ▲ or ▼ button to display "MAINTENANCE 11" on the LCD in the initial state of the maintenance mode.

(2) Press the **OK** button. "PRINTING" is displayed on the LCD and CONFIGURATION LIST shown below is printed.

(3) When printing is finished, the machine returns to the initial state of the maintenance mode.

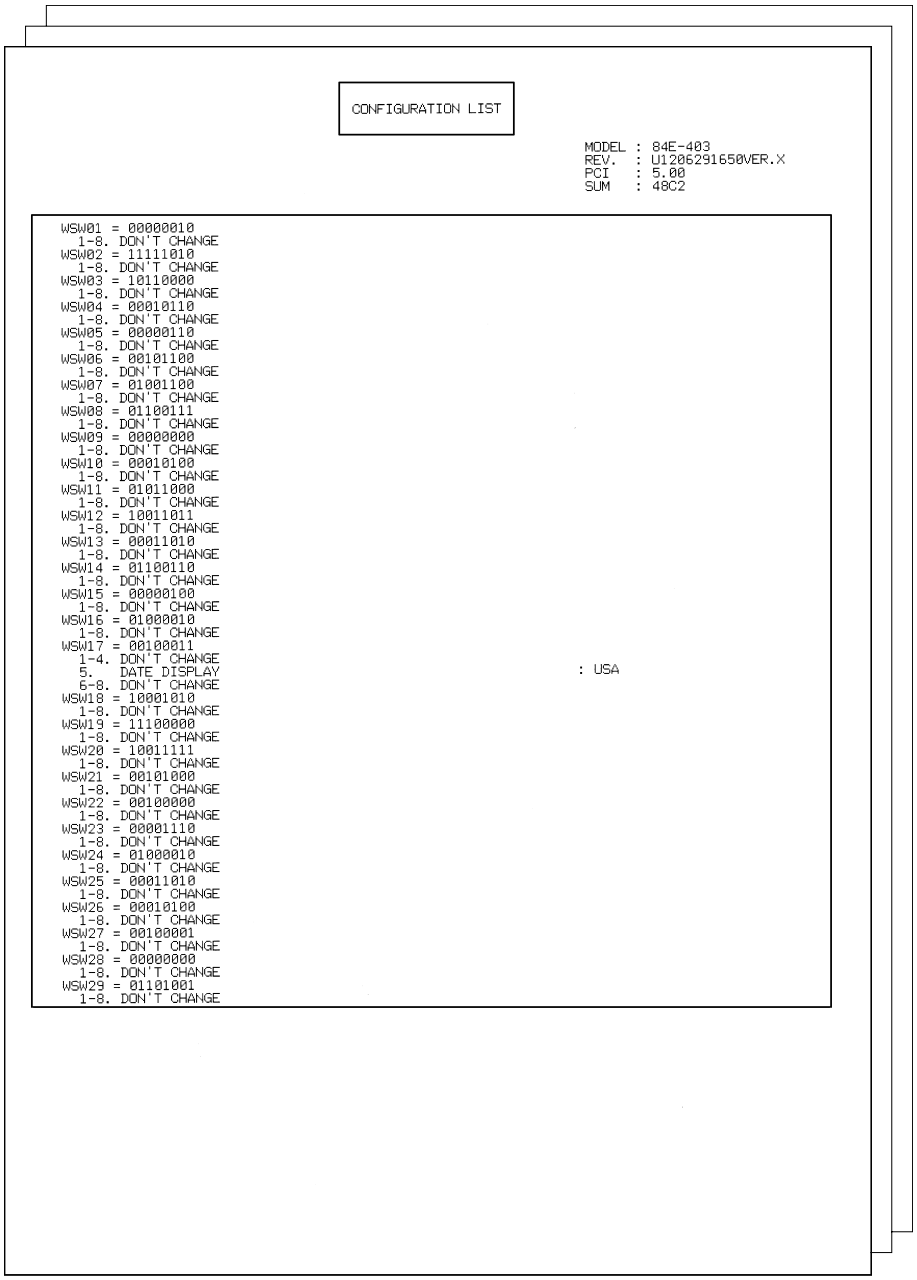


Fig. 5-2

1.4.4 Operational check of LCD (Function code 12)

<Function>

This function allows you to check whether the LCD on the control panel works normally.

<Operating procedure>

(1) Press the ▲ or ▼ button to display "MAINTENANCE 12" on the LCD in the initial state of the maintenance mode.

(2) Press the **OK** button. The screen in the figure below is shown on the LCD.
Each time you press the **Go** button, the LCD cycles through the displays as shown below.

(3) When the **Cancel** button is pressed, the machine returns to the initial state of the maintenance mode, regardless of the display status.

<Display 1>	
Back light	: OFF
LCD	: Display of all dots
Data LED	: Green ON
Error LED	: Orange ON
<Display 2>	
Back light	: OFF
LCD	: Display of 16 dots per line
Data LED	: Green ON
Error LED	: Orange ON
<Display 3>	
Back light	: OFF
LCD	: Display of NO dots
Data LED	: Green ON
Error LED	: Orange ON
<Display 4>	
Back light	: ON *
LCD	: Display of NO dots
Data LED	: Green ON
Error LED	: Orange ON

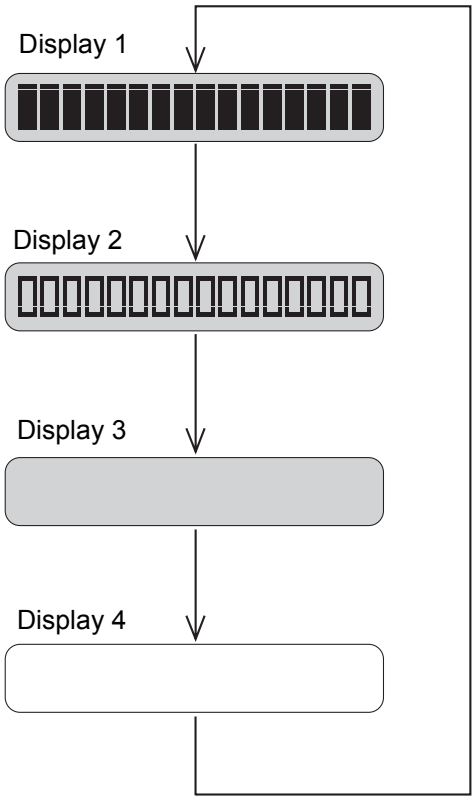


Fig. 5-3

* No lighting in the models without back light

1.4.5 Operational check of control panel button (Function code 13)

<Function>

This function allows you to check if the buttons on the control panel work normally.

<Operating procedure>

(1) Press the ▲ or ▼ button to display "MAINTENANCE 13" on the LCD in the initial state of the maintenance mode.

(2) Press the **OK** button. "00" is displayed on the LCD.

(3) Press the buttons in the order designated in the 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 figure below. If the buttons are pressed in the incorrect order, the machine displays the "INVALID OPERATE" on the LCD.
If you press the **Cancel** button under this condition, the machine returns to the state as immediately before the buttons are pressed in the wrong order.

(4) After the last number button is pressed, the machine returns to the initial state of the maintenance mode.
To cancel this operation and return the machine to the initial state of the maintenance mode during the above procedure, press the **Cancel** button.

Fig. 5-4

1.4.6 Software version check (Function code 25)

<Function>

This function allows you to check the version information of the firmware or programs, or check sum information.

<Operating procedure>

(1) Press the ▲ or ▼ button to display "MAINTENANCE 25" on the LCD in the initial state of the maintenance mode.

(2) Press the **OK** button. The machine displays each of items described below on the LCD.

(3) Press the **Go**, ▲ or ▼ button to check the next item.

(4) Press the **Cancel** button to return the machine to the initial state of the maintenance mode.

LCD	Description
TOTAL:Ver T *1 (MAIN:Ver1.00(A))	Main firmware version information (A): Revision information
SUB1 :Ver1.00(P) *1	Sub firmware (PCL/PS or GDI) version information (P): Identifier of PCL/PS or GDI *2
ENG :Ver1.00	Engine program version information
NET: Ver1.00	Network program version information
B0612312359:1234 *1	Boot program creation date
U0612312359:1234 *1	Main firmware creation date
D0612312359:1234 *1	Demo firmware creation date
P0612312359:1234 *1	Sub firmware (PCL/PS or GDI) creation date
ROM Check Sum	Check sum self-diagnosis function *3

*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 returns to the version information display. Press the **Go**, ▲ or ▼ button to check the next item.

> **Note:**
> Regarding the version information (Engine and Network) of which check sum information cannot be obtained, the check sum information is not displayed even if you press the **OK** button.

*2 (P) indicates that the firmware supports PCL/PS. (G) indicates that the firmware supports GDI.

*3 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.

1.4.7 "One Push Demo" setting (Function code 28)

<Function>

The One Push Demo function is to implement demo printing by pressing the **Go** button, which is mainly used for sales promotion at the shop. It is disabled if printing from a computer even once. Therefore, it is necessary to change the setting so that the function is enabled again.

OnePushDemo = ON (Enabled)

OnePushDemo = OFF (Disabled)

The default setting is displayed with "*".

<Operating procedure>

(1) Press the ▲ or ▼ button to display "MAINTENANCE 28" on the LCD in the initial state of the maintenance mode.

(2) Press the **OK** button. "OnePushDemo=ON*" is displayed on the LCD. If the current setting is OFF, "OnePushDemo=ON" is displayed on the LCD without an asterisk (*).

(3) To enable the function, display "OnePushDemo=ON" using the ▲ or ▼ button.
To disable the function, display "OnePushDemo=OFF".

(4) Press the **OK** button. The displayed setting is confirmed and the machine returns to the initial state of the maintenance mode.

(5) To terminate this operation, press the **Cancel** button. The machine returns to the initial state of the maintenance mode.

Note:
Once the One Push Demo function is enabled, printing from a computer does not disable this function unless the power is turned OFF. (After the One Push Demo function is enabled, if the power is turned OFF and ON again, and then printing is made from a computer, the function is disabled.)

1.4.8 Operational check of sensors (Function code 32)

<Function>

This function allows you to check each of the sensors.

<Operating procedure>

(1) Press the ▲ or ▼ button to display "MAINTENANCE 32" on the LCD in the initial state of the maintenance mode.

(2) Press the **OK** button. The sensor operating conditions defined in the table below are applied. "C1MPTCRCPORMRA**" is displayed on the LCD.

(3) Pressing the **Go** button displays the next group. The table below summarizes the displays on the LCD, sensor names and detection status.

LCD	Sensors	Detection status (displayed/not displayed)
C1	Paper feed sensor	Paper tray installed/not installed
MP	Manual feed paper empty sensor	Paper not detected/detected
TC	Top cover sensor	Top cover closed/open
RC	Back cover sensor	Back cover closed/open
PO	Eject sensor	Paper not detected/detected
RM	Registration front sensor	Paper not detected/detected
RA	Registration rear sensor	Paper not detected/detected

Note:
- The "--" appears on the LCD if the sensor is OFF.
- The "**" appears on the LCD if the parts are not installed or there is no item.

LCD	Sensors	Detection status (displayed/not displayed)
MAC	Internal temperature sensor	XX °C/NG
TMP	External temperature sensor	XX °C/NG
HUM	External humidity sensor	XX %/NG

Note:
- If the sensor detects the unusual value, the machine displays "NG" on the LCD.

(4) Check that the display on the LCD is changed when the detection condition of each sensor is changed. For instance, insert paper through the registration front/rear sensor, open the top cover unit or the back cover, make a jam at the paper outlet, insert paper from the manual feed slot, set paper tray, etc.

(5) Press the **Cancel** button to return the machine to the initial state of the maintenance mode.

■ Location of sensors

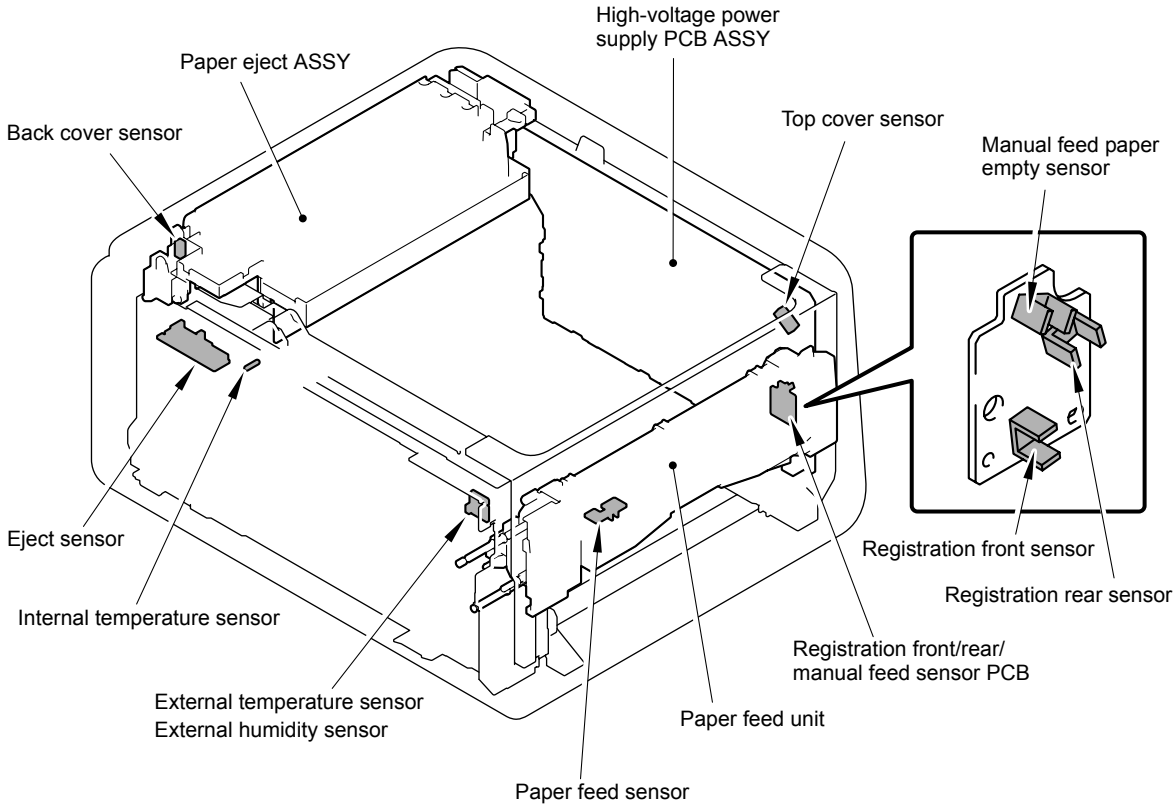


Fig. 5-5

1.4.9 LAN connection status display (Function code 33)

<Function>

This function allows you to check the status of the wired LAN connection.

<Operating procedure>

(1) Press the ▲ or ▼ button to display "MAINTENANCE 33" on the LCD in the initial state of the maintenance mode.

(2) Press the **OK** button. The wired LAN connection status described in the table below is displayed on the LCD.

(3) Press the **Cancel** button to return the machine to the initial state of the maintenance mode.

LCD	LAN connection status
Active 100B-FD	100B-FD
Active 100B-HD	100B-HD
Active 10B-FD	10B-FD
Active 10B-HD	10B-HD
Inactive	Not connected.

1.4.10 EEPROM Dump Print (Function code 40)

<Function>

This function allows you to print the EEPROM logs described below.

<Operating procedure>

(1) Press the ▲ or ▼ button to display "MAINTENANCE 40" on the LCD in the initial state of the maintenance mode.

(2) Press the **OK** button. "E2PDUMP ENGN ALL" is displayed on the LCD.

(3) Press the ▲ or ▼ button to select the information you wish to print.

(4) Press the **OK** button, and then the "E2PDUMP PRINTING" is displayed on the LCD. The machine starts to print the EEPROM log.

(5) Upon completion of EEPROM logs printing, the machine returns to the initial state of the maintenance mode.

(6) If you press the **Cancel** button during printing, printing is interrupted and the machine returns to the initial state of the maintenance mode.

LCD	Description
E2PDUMP ENGN ALL	Print of all the values stored in the E2PROM of the engine control unit. (print of 1 page)
E2PDUMP MAIN TOP	Print of the values stored in the E2PROM corresponding to the top 1 Kbytes of the main controller. (print of 1 page)
E2PDUMP MAIN BTM	Print of the values stored in the E2PROM corresponding to the last 1 Kbytes of the main controller. (print of 1 page)
E2PDUMP MAIN REG	Print of the values stored in the E2PROM of the information related to the correction values of the main controller. (print of 1 page)
E2PDUMP MAIN ALL	Print of all the values stored in the E2PROM of the main controller. (print of 8 pages)

Note:

- If an error occurs during printing, it is necessary to start from the beginning.
- The serial number of the machine is printed on the first line on each page.

1.4.11 Changing return value of USB No./Switching Dither Pattern/ Adjusting left-end print start position on second side in duplex printing (2-sided printing model only) (Function code 45)

■ 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 number of the USB device depending on the computer and USB device. When the OS fails to get the serial number, the return value may continue to increase every time the device is connected to the computer. To avoid this problem, you can fix the return value of the USB No. to "0" by setting "USBNo. = ON".

LCD	Description
USBNo. = ON	Returns "0".
USBNo. = OFF	Returns the serial number of the machine. (default)

"*" is displayed at the end of the currently specified function in the LCD display.

<Operating procedure>

(1) Press the ▲ or ▼ button to display "MAINTENANCE 45" on the LCD in the initial state of the maintenance mode.

(2) Press the **OK** button. "USBNo." is displayed on the LCD.

(3) Press the **OK** button. "USBNo. = ON" is displayed on the LCD.

(4) When you press the ▲ or ▼ button to fix the return value of serial number to "0" or not to fix it to "0", display "USBNo. = ON" or "USBNo. = OFF", respectively.

(5) Press the **OK** button. "Accepted" is displayed on the LCD, and the machine returns to the initial state of the maintenance mode.

(6) Turn OFF the power switch of the machine.

Note:
This function is enabled when the power of the machine is turned OFF and ON after the setting is done.

■ 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) (default)
PS.DitherType=1	Dither Pattern 1 is selected. (A dither pattern which alleviates banding)

"*" is displayed at the end of the currently specified function in the LCD display.

<Operating procedure>

(1) Press the ▲ or ▼ button to display "MAINTENANCE 45" on the LCD in the initial state of the maintenance mode.

(2) Press the **OK** button. "PS.DitherType" is displayed on the LCD.

(3) Press the ▲ or ▼ button to select "PS.DitherType=0" or "PS.DitherType=1".

(4) Press the **OK** button. "Accepted" is displayed on the LCD, and the machine returns to the initial state of the maintenance mode.

■ Adjusting left-end print start position on second side in duplex printing (2-sided printing model only)

<Function>

This function is to adjust the left-end print start position on the second side in the left and right direction if it is displaced in duplex printing. The adjustable range is -100 to 750 (unit: 300 dpi) (The minus direction means the left direction.)

<Operating procedure>

(1) Press the ▲ or ▼ button to display "MAINTENANCE 45" on the LCD in the initial state of the maintenance mode.

(2) Press the **OK** button. "USBNo." is displayed on the LCD.

(3) Press the ▲ or ▼ button to display "DX.XAdjust".

(4) Press the **OK** button. "DX.XAdjust=**" is displayed on the LCD.
(** represents the currently set value.)

(5) To move the print start position to the left, press the ▼ button and decrease the value.
To move the print start position to the right, press the ▲ button and increase the value.

(6) When the value is changed to the adjustment value, press the **OK** button.
"Accepted" is displayed on the LCD, and the machine returns to the initial state of the maintenance mode.

1.4.12 Motor reset (Function code 57)

<Function>

If the manufacturer of the machine's motors is unidentified, identification operation is performed before a warm-up. After the operation is completed, a warm-up is performed.
If the combination of main PCB and/or motors is changed, the motor identification result needs to be reset. This function allows you to reset the motor identification result.

<Operating procedure>

(1) Press the ▲ or ▼ button to display "MAINTENANCE 57" on the LCD in the initial state of the maintenance mode.

(2) Press the **OK** button. "RESET MOTOR" is displayed on the LCD.

(3) When the **Go** button is pressed, the motor identification result is reset and "PLZ POWER OFF/ON" is displayed on the LCD.

(4) Turn OFF the power switch of the machine.

Note:
When the power is turned OFF and ON again after the motor identification result is reset, a motor identification operation is performed.

1.4.13 Adjustment of color registration (Adjustment of inter-color position alignment) (Function code 66)

<Function>

This function allows service personnel to forcibly activate the adjustment of color registration (adjustment of inter-color position alignment) function which is usually executed automatically under a specified condition. If adjustment of inter-color position alignment (auto) fails because toner reaches its life, etc, you can adjust inter-color position alignment manually. The end users are allowed to perform "Adjustment of inter-color position alignment without registration sensor calibration (auto)", "Printing of misregistration correction chart" and "Adjustment of inter-color position alignment (manual)" only.

Note:

If an error occurs after executing Maintenance mode 66, upgrade the firmware to the latest one. (Refer to "1.1 Installing the Firmware " in Chapter 4.) After upgrading the firmware, execute Maintenance mode 66 again.

This function has the following functions.

Function	Description	LCD
Adjustment of inter-color position alignment without registration sensor calibration (auto)	Automatically correct misregistration between colors that occurs as the number of printed pages increases and time passes.	REGISTRATION
Printing of misregistration correction chart	Print the chart that you check for an input value when manually correcting misregistration between colors.	PRINT CHART
Input of sensor offset value	Unavailable for maintenance work.	OFFSET ADJUST
Adjustment of inter-color position alignment (manual)	Using the chart, manually correct misregistration between colors that occurs as the number of printed pages increases and time passes. This is performed when automatic adjustment fails.	SET REGISTRATION
Adjustment of inter-color position alignment including registration sensor calibration (auto)	After the sensitivity adjustment of registration sensor, correct misregistration between colors that occurs as the number of printed pages increases and time passes.	ADD REGISTRATION

■ Adjustment of inter-color position alignment without registration sensor calibration (auto)

<Operating procedure>

(1) Press the ▲ or ▼ button to display "MAINTENANCE 66" on the LCD in the initial state of the maintenance mode.

(2) Press the **OK** button. "REGISTRATION" is displayed on the LCD.

(3) Press the **OK** key. "PLS WAIT 66-1" is displayed on the LCD, and adjustment of inter-color position alignment is automatically done.

(4) When this operation is completed without an error, "COMPLETED" is displayed on the LCD.

(5) Press the **Cancel** button to return the machine to the initial state of the maintenance mode.

Memo:

If the Adjustment of inter-color position alignment without registration sensor calibration (auto) fails while being in process, "ERROR 66-1" is displayed on the LCD.
Refer to the error message list on P5-21 for the troubleshooting.

■ Printing of misregistration correction chart

<Operating procedure>

(1) Press the ▲ or ▼ button to display "MAINTENANCE 66" on the LCD in the initial state of the maintenance mode.

(2) Press the **OK** button. "REGISTRATION" is displayed on the LCD.

(3) Press the ▲ or ▼ button to display "PRINT CHART" on the LCD.

(4) Press the **OK** button. "PRINTING" is displayed on the LCD, and printing of misregistration correction chart (refer to fig. 5-6 (P5-21)) is printed. When printing is finished, "PRINT CHART" is displayed on the LCD.

(5) Press the **Cancel** button to return the machine to the initial state of the maintenance mode.

■ Adjustment of inter-color position alignment (manual)

<Operating procedure>

(1) Press the ▲ or ▼ button to display "MAINTENANCE 66" on the LCD in the initial state of the maintenance mode.

(2) Press the **OK** button. "REGISTRATION" is displayed on the LCD.

(3) Press the ▲ or ▼ button to display "SET REGISTRATION" on the LCD.

(4) Press the **OK** button. "1. MAGENTA=0" is displayed on the LCD.
Using the printed misregistration correction chart, identify the numeric value whose color is the darkest in the pattern of (1) (Magenta Left) shown in fig. 5-6 (P5-21).
Press the ▲ or ▼ button to display the identified numeric value.

(5) Press the **OK** button, and enter each numeric value of the patterns (2) to (9) in the same way.

(6) When you enter the numeric value of the pattern (9) (Yellow Right), "COMPLETED" is displayed on the LCD.

(7) Press the **Cancel** button to return the machine to the initial state of the maintenance mode.

■ Adjustment of inter-color position alignment including registration sensor calibration (auto)

<Operating procedure>

(1) Press the ▲ or ▼ button to display "MAINTENANCE 66" on the LCD in the initial state of the maintenance mode.

(2) Press the **OK** button. "REGISTRATION" is displayed on the LCD.

(3) Press the ▲ or ▼ button to display "ADD REGISTRATION" on the LCD.

(4) Press the **OK** button. "PLS WAIT 66-1" is displayed on the LCD and sensitivity adjustment of registration sensor and adjustment of inter-color position alignment are performed automatically.

(5) When this operation is completed without an error, "COMPLETED" is displayed on the LCD.

(6) Press the **Cancel** button to return the machine to the initial state of the maintenance mode.

Memo:

If the Adjustment of inter-color position alignment including registration sensor calibration (auto) fails while being in process, "ERROR 66-1" is displayed on the LCD.
Refer to the error message list on P5-21 for the troubleshooting.

If the Adjustment of inter-color position alignment (auto) fails while being in process, "ERROR 66-1" is displayed on the LCD. If you press the ▼ button with the error displayed, the details of the error are shown as follows. Refer to the following list for the troubleshooting.

■ Error message list

Error message	Measure
FAILED REGIST	Press the **Go** button to clear the error. Perform the Adjustment of inter-color position alignment (auto) again. If the error recurs, clean the belt unit and the drum units of all four colors and then perform the adjustment again. If the error still recurs, replace the belt unit and the drum units of all four colors.
TONER EMPTY # *	Replace the empty toner cartridge and press the **Go** button to clear the error. Perform the Adjustment of inter-color position alignment (auto) again.
NG * L:C080 R:M105	Press the **Go** button to clear the error. Perform the Adjustment of inter-color position alignment (auto) again.
NG R-L:C030	
NG PWM L120 R180	
NG PWM R-L:080	
NG CNT R100 L100	
NG S-POSI R:080	
NG SKEW:120	
NG PWM R-P L:080	
NG XMARGIN:M191	
Cover is Open	Close the top cover unit.

* # indicates the toner color (Y, M, or C) of which cartridge became empty.

■ Printing of misregistration correction chart

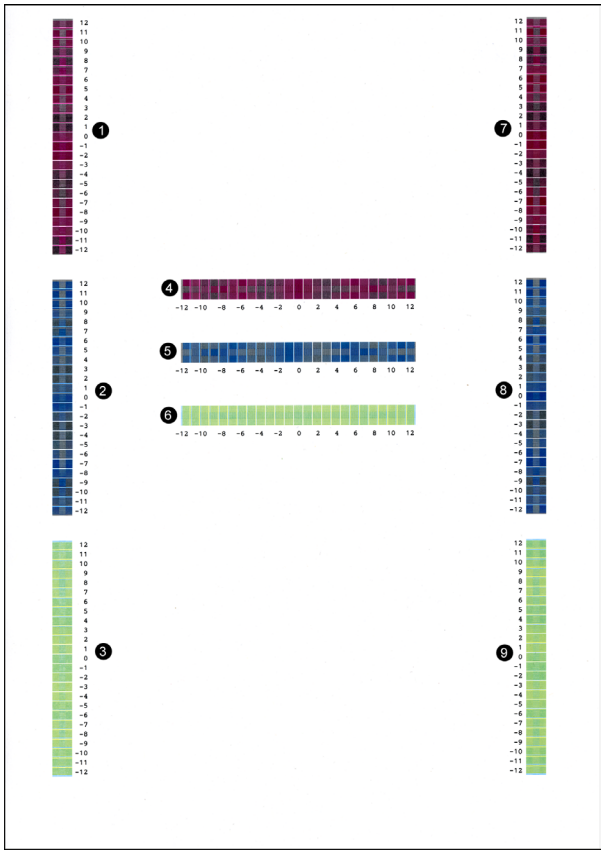


Fig. 5-6

1.4.14 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 ▲ or ▼ button to display "MAINTENANCE 67" on the LCD in the initial state of the maintenance mode.

(2) Press the **OK** button. "SELECT: K 100%" is displayed on the LCD.

(3) Referring to the table below (Print pattern), press the ▲ or ▼ button to select the desired print pattern.

(4) Press the **OK** button. "SELECT: A4" is displayed on the LCD.

(5) Referring to the table on the next page (Paper size), press the ▲ or ▼ button to select the desired paper size.

(6) Press the **OK** button. "SELECT: PLAIN" is displayed on the LCD.

(7) Referring to the table on the next page (Print specifications), press the ▲ or ▼ button to select the desired print specifications.

(8) Press the **OK** button. "SELECT: TRAY1 SX" is displayed on the LCD.

(9) Referring to the table on the next page (Print type), press the ▲ or ▼ button to select the desired print type.

(10) Press the **OK** button. "SELECT: 1PAGE" is displayed on the LCD.

(11) Referring to the table on the next page (Number of pages to be printed), press the ▲ or ▼ button to select the desired number of pages to be printed.

(12) Press the **OK** button. "SELECT: 1P/JOB" is displayed on the LCD.
(Intermittent pattern printing only)

(13) Referring to the table on the next page (Number of pages per job), press the ▲ or ▼ button to select the desired number of pages per job.
(Intermittent pattern printing only)

(14) Press the **OK** button. "PAPER FEED TEST" is displayed on the LCD and the test pattern starts to be printed under the selected items for paper feed test.

(15) If you press the **Cancel** button, printing of test pattern is interrupted and the machine returns to the initial state of the maintenance mode.

<Print pattern>

LCD	Description
SELECT: K 100%	Black 100% solid print
SELECT: C 100%	Cyan 100% solid print
SELECT: M 100%	Magenta 100% solid print
SELECT: Y 100%	Yellow 100% solid print
SELECT: W 100%	White 100% solid print
SELECT: R 100%	Red 100% solid print
SELECT: G 100%	Green 100% solid print
SELECT: B 100%	Blue 100% solid print
SELECT: KCMY1%	Black/Cyan/Magenta/Yellow 1% intermittent pattern print *
SELECT: KCMY5%	Black/Cyan/Magenta/Yellow 5% intermittent pattern print *
SELECT: Lattice	Lattice print
SELECT: Total	Total pattern print

* Up to 500 sheets in one-sided printing and 1,000 sheets in two-sided printing in the case of job printing.

<Paper size>

LCD	Description
SELECT: A4	A4-size
SELECT: LETTER	Letter-size

<Print specifications>

LCD	Description
SELECT: PLAIN	Plain paper (Except for China)/ Plain paper (Thick) (for China)
SELECT: THICK	Thick paper
SELECT: THIN	Plain paper (Thin) (Except for China)/ Plain paper (for China)

<Print type>

LCD	Description
SELECT: TRAY1 SX	One-sided printing from paper tray
SELECT: MF SX	One-sided printing from manual feed slot
SELECT: TRAY1 DX	Two-sided printing from paper tray *
SELECT: MF DX	Two-sided printing from manual feed slot *

* Selectable only in a duplex model. The back side has the same pattern as the one on the front side. (Excluding the total pattern)

<Number of pages to be printed>

LCD	Description
SELECT: 1PAGE	One page printing
SELECT: CONTINUE	Continuous printing
SELECT: JOB	Intermittent printing by each unit *

* Selectable only when "KCMY1%" or "KCMY5%" is selected as print pattern and a tray other than the manual feed slot is selected as print type.

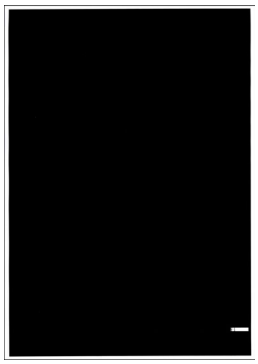
<Number of pages per job>(Intermittent pattern printing only)

LCD	Description
SELECT: 1P/JOB	Printing 1 page per job *1
SELECT: 2P/JOB	Printing 2 pages per job *1
SELECT: 5P/JOB	Printing 5 pages per job *1
SELECT: 2I/JOB	Printing 2 images per job *2
SELECT: 5I/JOB	Printing 5 images per job *2 *3
SELECT: 10I/JOB	Printing 10 images per job *2

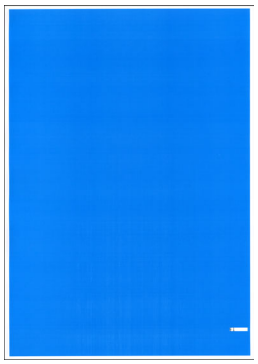
*1 Selectable only when SX is selected as print type.
*2 Selectable only when DX is selected as print type.
*3 One-sided printing for the 5th page.

■ Print pattern

SELECT: K 100%

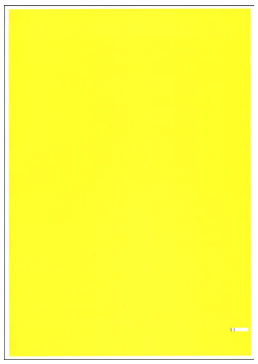


SELECT: C 100%

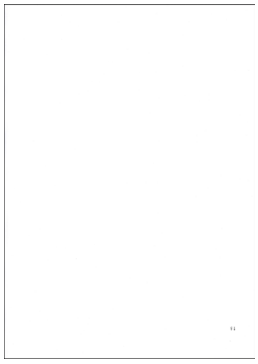


SELECT: M 100%

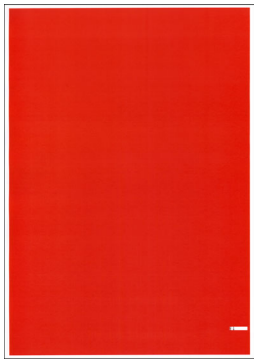
SELECT: Y 100%



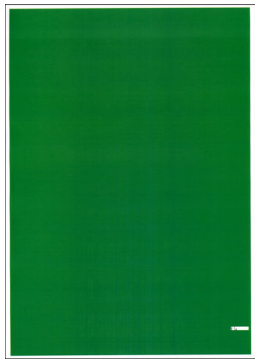
SELECT: W 100%



SELECT: R 100%

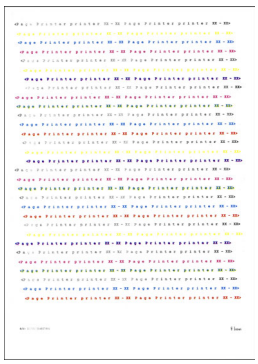


SELECT: G 100%

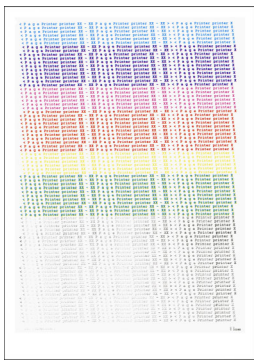


SELECT: B 100%

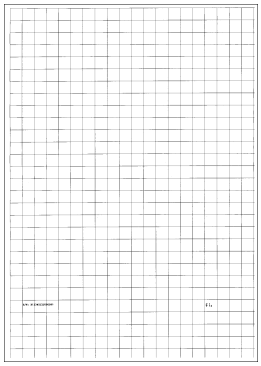
SELECT: KCMY1%



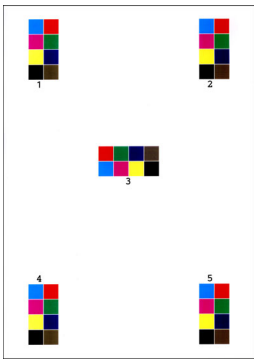
SELECT: KCMY5%



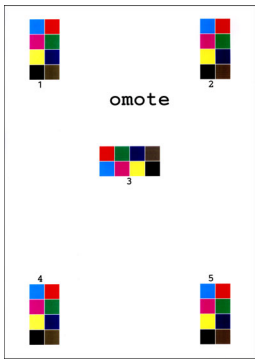
SELECT: Lattice



SELECT: Total (When Print type is SX)



SELECT: Total (When Print type is DX)



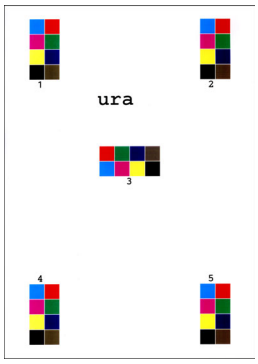


Fig. 5-7

1.4.15 LED test pattern print (Function code 68)

<Function>

This function allows you to print the LED test pattern and check the LED ASSY for its quality and float from the exposure drum.

Memo:

You can check the LED for scratches and dirt by performing print test.
(Refer to "1.4.14 Print test (Function code 67)" in this chapter.)

<Operating procedure>

(1) Press the ▲ or ▼ button to display "MAINTENANCE 68" on the LCD in the initial state of the maintenance mode.

(2) Press the **OK** button. "PRINTING" is displayed on the LCD, and one LED test pattern (refer to next page) is printed.

Note:

When printing fails, a relevant error is displayed on the LCD. When the error factors are removed and the **Go** button is pressed, the machine automatically recovers to the re-executable state. "PRINTING" is displayed on the LCD, and the LED test pattern is printed on a sheet.

(3) When this operation is completed without an error, "M68_L" is displayed on the LCD.

LCD	Description
M68_L	Vertical/horizontal dot loss check pattern

(4) Press the **Cancel** button to return the machine to the initial state of the maintenance mode. If an error message is displayed, remove the cause of the error referring to the measures described in the table below, and press the **Go** button.

Error message	Measure
TONER EMPTY # *	Replace the empty toner cartridge.
Cover is Open	Close the top cover unit.
No Paper	Load paper into the paper tray, and close the paper tray.
Jam Tray1	Remove the jammed paper, and close the paper tray.
Jam Rear	Remove the jammed paper, and close all the covers.

* # indicates the toner color (Y, M, or C) of which cartridge became empty.

■ LED test pattern (M68_L)

Fig. 5-8

1.4.16 Frame pattern print (One-sided) (Function code 69)

<Function>

This function allows you to print one page of the frame pattern of the external circumference in one-sided printing and check if there is print deflection.

<Operating procedure>

Before starting the procedure below, load letter-size paper for test pattern printing.

(1) Press the ▲ or ▼ button to display "MAINTENANCE 69" on the LCD in the initial state of the maintenance mode.

(2) Press the **OK** button. "PRINTING" is displayed on the LCD, and the frame pattern is printed on a single side of the paper. (Refer to the figure below.)

(3) When print is completed, "WAKU SX" is displayed on the LCD.

Note:
If printing fails, the following error indications are displayed and printing is cancelled. To print again, refer to the measures in the table below and remove the cause of the error. Then, press the **Go** button. "WAKU SX" is displayed on the LCD, and press the **OK** button. "PRINTING" is displayed on the LCD, and the frame pattern is printed on a single side of the paper.

(4) To print the frame pattern again, press the **OK** button.

(5) Press the **Cancel** button to return the machine to the initial state of the maintenance mode.

Error message	Measure
TONER EMPTY # *	Replace the empty toner cartridge.
Cover is Open	Close the top cover unit.
No Paper	Load paper into the paper tray, and close the paper tray.
Jam Tray1	Remove the jammed paper, and close the paper tray.
Jam Rear	Remove the jammed paper, and close all the covers.

* # indicates the toner color (Y, M, or C) of which cartridge became empty.

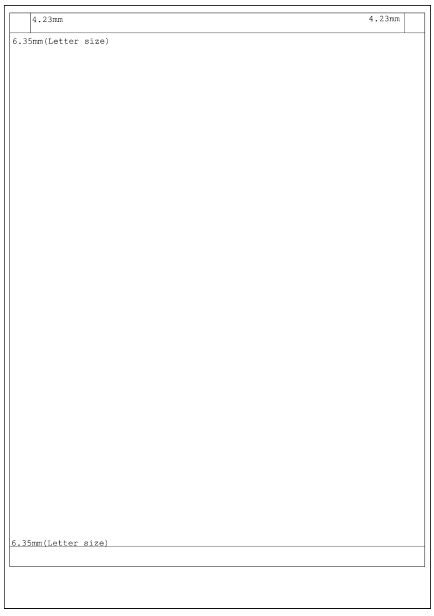


Fig. 5-9

1.4.17 Frame pattern print (Two-sided) (Function code 70)

<Function>

This function allows you to print one page of the frame pattern of the external circumference in two-sided printing and check if there is print deflection.

<Operating procedure>

Before starting the procedure below, load paper whose size matches the default paper setting of the region.

(1) Press the ▲ or ▼ button to display "MAINTENANCE 70" on the LCD in the initial state of the maintenance mode.

(2) Press the **OK** button. "PRINTING" is displayed on the LCD, and the frame pattern is printed on both sides of the paper. (Refer to the figure below.)

(3) When print is completed, "WAKU DX" is displayed on the LCD.

Note:

If printing fails, the following error indications are displayed and printing is cancelled. To print again, refer to the measures in the table below and remove the cause of the error. Then, press the **Go** button. "WAKU DX" is displayed on the LCD, and press the **OK** button. "PRINTING" is displayed on the LCD, and the frame pattern is printed on both sides of the paper.

(4) To print the frame pattern again, press the **OK** button.

(5) Press the **Cancel** button to return the machine to the initial state of the maintenance mode.

Error message	Measure
TONER EMPTY # *	Replace the empty toner cartridge.
Cover is Open	Close the top cover unit.
No Paper	Load paper into the paper tray, and close the paper tray.
Jam Tray1	Remove the jammed paper, and close the paper tray.
Jam Rear	Remove the jammed paper, and close all the covers.
Jam Duplex	Remove the jammed paper, and close the paper tray.
Duplex Disabled	Load paper that is compatible with the two-sided printing into the paper tray, and close the paper tray. Or close the back cover.

* # indicates the toner color (Y, M, or C) of which cartridge became empty.

Fig. 5-10

1.4.18 Color test pattern (Function code 71)

<Function>

This function allows you to print the pattern of each color and check if there is any dirty on or failure in the belt unit, developer roller, and exposure drum, etc.

<Operating procedure>

(1) Press the ▲ or ▼ button to display "MAINTENANCE 71" on the LCD in the initial state of the maintenance mode.

(2) Press the **OK** button. "2D3S YCMK__A" is displayed on the LCD.

(3) Referring to the table below (Print pattern), press the ▲ or ▼ button to select the desired print pattern.

(4) Press the **OK** button. When "2D3S YCMK__A" is selected, "PRINTING" is displayed on the LCD and a test pattern printing is started. When a print pattern other than "2D3S YCMK__A" is selected, "SELECT: A4" is displayed on the LCD. (Following steps (5) to (12) described below, select an option in each item and perform test pattern printing.)

(5) Referring to the table on the next page (Paper size), press the ▲ or ▼ button to select the desired paper size.

(6) Press the **OK** button. "SELECT: PLAIN" is displayed on the LCD.

(7) Referring to the table on the next page (Print specifications), press the ▲ or ▼ button to select the desired print specifications.

(8) Press the **OK** button. "SELECT: SX" is displayed on the LCD.

(9) Referring to the table on the next page (Print type), press the ▲ or ▼ button to select the desired print type.

(10) Press the **OK** button. "SELECT: 1PAGE" is displayed on the LCD.

(11) Referring to the table on the next page (Number of pages to be printed), press the ▲ or ▼ button to select the desired number of pages to be printed.

(12) Press the **OK** button. "PRINTING" is displayed on the LCD and the test pattern starts to be printed under the selected items for paper feed test.

Note:
If printing fails, the following error indications are displayed and printing is ancelled. To print again, refer to the measures in the table below and remove the cause of the error. Then, press the **Go** button. "PRINTING" is displayed on the LCD and the color test pattern is printed.

(13) When printing is finished, the screen returns to the print pattern display. To print the test pattern again, press the **OK** button.

(14) Press the **Cancel** button to return the machine to the initial state of the maintenance mode.

<Print pattern>

LCD	Description
2D3S YCMK__A	One sheet for each color with full page print mode *
2D3S M	Magenta
2D3S K	Black
2D3S C	Cyan
2D3S Y	Yellow
2D3S MCYK	4-color horizontal band

* In the full page print mode, the cleaning operation is performed between printing of Magenta and Black.

<Paper size>

LCD	Description
SELECT: LETTER	Letter-size
SELECT: A4	A4-size

<Print specifications>

LCD	Description
SELECT: PLAIN	Plain paper (Except for China)/ Plain paper (Thick) (for China)
SELECT: THICK	Thick paper
SELECT: THIN	Plain paper (Thin) (Except for China)/ Plain paper (for China)

<Print type>

LCD	Description
SELECT: SX	One-sided printing from paper tray
SELECT: DX	Two-sided printing from paper tray *

* Selectable only in a duplex model. The back side has the same pattern as the one on the front side.

<Number of pages to be printed>

LCD	Description
SELECT: 1PAGE	One page printing
SELECT: CONTINUE	Continuous printing

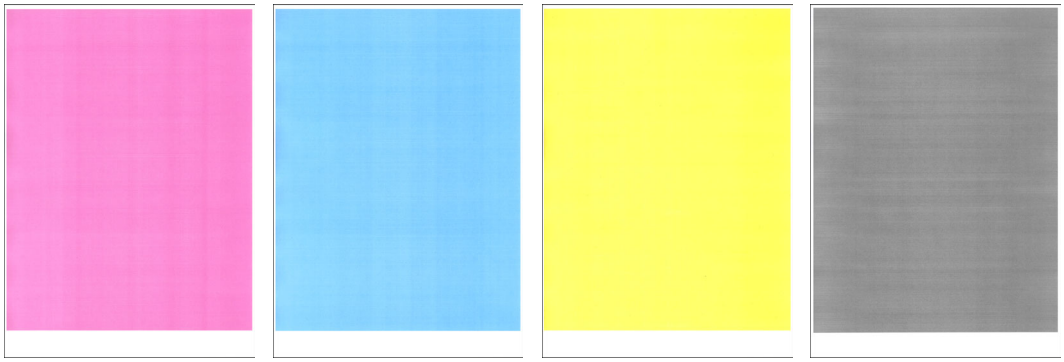
<Error message>

LCD	Description
TONER EMPTY # *	Replace the empty toner cartridge.
Cover is Open	Close the top cover unit.
No Paper	Load paper into the paper tray, and close the paper tray.
Jam Tray1	Remove the jammed paper, and close the paper tray.
Jam Rear	Remove the jammed paper, and close all the covers.

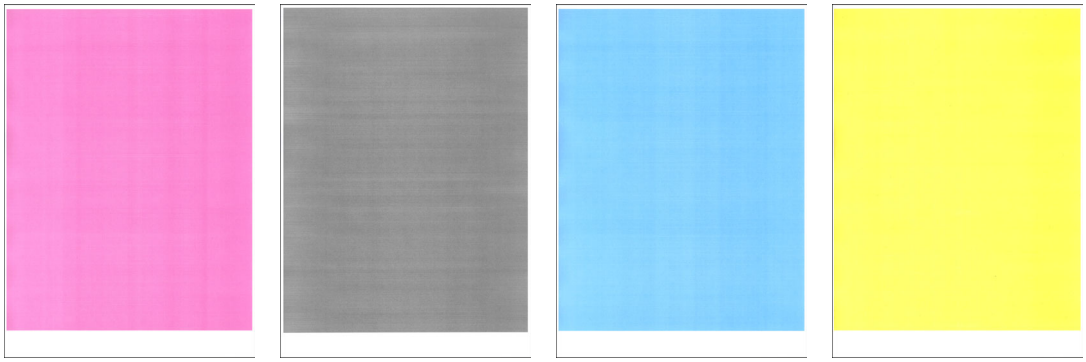
* # indicates the toner color (Y, M, or C) of which cartridge became empty.

■ Color test pattern

2D3S YCMK__A



2D3S M　　2D3S K　　2D3S C　　2D3S Y



2D3S MCYK

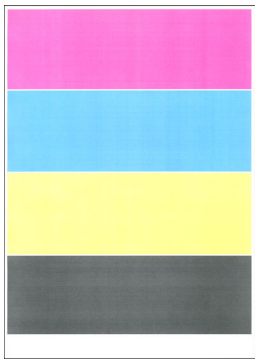


Fig. 5-11

1.4.19 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 for correcting developing bias voltage is adjusted.

<Operating procedure>

(1) Press the ▲ or ▼ button to display "MAINTENANCE 72" on the LCD in the initial state of the maintenance mode.

(2) Press the **OK** button. "PLS WAIT 72" is displayed on the LCD.

(3) When the parameter is obtained without errors, the machine returns to the initial state of the maintenance mode. If the sensitivity adjustment of the density sensor fails, "ERROR 72" is displayed on the LCD. Display the error message by pressing the ▼ button, and take the following measure that corresponds to the error message.

LCD	Description
dens_l_drk_err	- Check the harness connection of the eject sensor PCB and reconnect it. - Replace the registration mark L PCB ASSY. - Replace the main PCB ASSY.
belt_err	- Replace the belt unit. - Replace the waste toner box. - Replace the registration mark L PCB ASSY. - Replace the main PCB ASSY.
dens_pat_err dens_calc_err	- Check if the toner cartridges and drum units are set in the correct order of colors. - Replace the toner cartridges and drum units. - Replace the registration mark L PCB ASSY. - Replace the main PCB ASSY.
dens_led_adj_err	- Replace the belt unit. - Replace the waste toner box. - Replace the registration mark L PCB ASSY. - Replace the main PCB ASSY.
lph_calc_err	- Replace the toner cartridges and drum units. - Securely close the top cover unit. - Clean the LED ASSY. - Check the attachment of the LED ASSY, and reattach it.
TONER EMPTY # *	Replace the empty toner cartridge and press the **Go** button to clear the error. Perform the sensitivity adjustment of the density sensor again.
Cover is Open	Close the top cover unit.
Replace Toner	Replace the black toner cartridge and press the **Go** button to clear the error. Perform the sensitivity adjustment of the density sensor again.

* # indicates the toner color (Y, M, or C) of which cartridge became empty.

1.4.20 Continuous adjustments of density and registration sensor (Function code 73)

<Function>

This function allows you to perform the following functions consecutively:
Sensitivity adjustment of density sensor (Function code 72), Developing bias voltage correction (Function code 83), and Adjustment of color registration (Adjustment of inter-color position alignment) including registration sensor calibration (Function code 66).

<Operating procedure>

(1) Press the ▲ or ▼ button to display "MAINTENANCE 73" on the LCD in the initial state of the maintenance mode.

(2) Press the **OK** button. "DDRPT2" is displayed on the LCD. Press the ▲ or ▼ button to display "DDR" on the LCD.

(3) Press the **OK** button. "PLS WAIT 72" is displayed on the LCD and each adjustment is performed in the following order.

1) Sensitivity adjustment of density sensor (Function code 72)
LCD: PLS WAIT 72

2) Developing bias voltage correction (Function code 83)
LCD: PLS WAIT 83

3) Adjustment of color registration (Adjustment of inter-color position alignment) including registration sensor calibration (Function code 66)
LCD: PLS WAIT 66-1

(4) When all operations are completed, "COMP" is displayed on the LCD. Pressing the ▼ button and **Cancel** button in this order allows the machine returns to the initial state of the maintenance mode.

Note:

- If each adjustment fails, "ERROR**" is displayed on the LCD and the adjustment is stopped. ("**" indicates the corresponding function code.) If you press the ▼ button with "ERROR**" displayed, the details of the error are shown.
- If the details of the error indicate one of the following, scratch or dirt on the belt unit or the drum units may cause the error: "FAILED REGIST", "NG * L:C080 R:M105", "NG R-L:C030", "NG PWM L120 R180", "NG PWM R-L:080", "NG CNT R100 L100", "NG S-POSI R:080", "NG SKEW:120", "NG PWM R-P L:080", "NG XMARGIN:M191". In this case, replace the belt unit and the drum units of all four colors with the ones that do not have any scratch or dirt, and perform the function from step (1) again. If the function is completed successfully, mount the removed belt unit and four drum units.

1.4.21 Setting by country (Function code 74)

<Function>

This function allows you to customize the machine according to language, function settings, and worker switch settings.

<Operating procedure>

(1) Press the ▲ or ▼ button to display "MAINTENANCE 74" on the LCD in the initial state of the maintenance mode.

(2) Press the **OK** button. The present country code is displayed on the LCD.

(3) Enter the upper 2 digits of the country code that you want to set. Select the desired value of the 1 digit by pressing the ▲ or ▼ button, and press the **OK** button. The cursor moves to the 2 digit. Select the desired value for the 2 digit by pressing the ▲ or ▼ button, and press the **OK** button. The cursor moves to the 4 digit.

(4) Enter the lower 2 digits of the country code that you want to set.

Select the desired values for the 3 and 4 digits by pressing the ▲ or ▼ button, and press the **OK** button. (Values that are not selectable will be skipped.)

(5) Press the **Go** button. The new setting is saved, and "PARAMETER INIT" is displayed on the LCD. After the setting is saved, the machine returns to the initial state of the maintenance mode.

(6) If you press the **Cancel** button while setting the code, the machine returns to the initial state of the maintenance mode without saving the country code.

Note:

- If there is a pause of more than one minute, the machine will automatically return to the initial state of the maintenance mode.
- The above information is as of March 2016. Please confirm the latest firmware information which is available from your local Brother Customer Service.

■ Setting by country code list

Country	HL-3140CW	HL-3142CW	HL-3150CDN	HL-3150CDW	HL-3152CDW	HL-3170CDW	HL-3172CDW
U.S.A.	0001	---	---	---	---	0201	---
Canada	0002	---	---	---	---	0202	---
Germany	0004	0004	---	0104	0104	0204	0204
UK	0004	---	---	0104	---	0204	---
Australia	---	---	0306	---	---	0206	---
Switzerland	0004	---	---	0104	---	0204	---
Italy	0004	---	---	0104	---	0204	---
Iberia	0004	---	---	0104	---	0204	---
China	---	---	0320	---	---	0220	---
Philippines	---	---	0321	---	---	0221	---
Taiwan	---	---	---	---	---	0240	---
Argentina	---	---	0336	---	---	---	---
Chile	---	---	0336	---	---	0236	---
Gulf	---	---	0341	---	---	0241	---
Brazil	0006	---	---	---	---	---	---
Singapore	---	---	0306	---	---	0206	---
Korea	---	---	0306	---	---	0206	---
India	---	---	0306	---	---	0206	---
Russia	0004	---	---	---	---	0204	---
France/ Belgium/ Netherlands	0004	---	---	0104	---	0204	---
Pan-Nordic	0004	---	---	---	---	0204	---
CEE-General	0004	---	---	---	---	0204	---

1.4.22 Printout of maintenance information (Function code 77)

<Function>

This function allows you to print a list of all maintenance information including machine coverage information. The contents are almost equivalent to the one provided in the second page of the "Printer settings".

<Operating procedure>

(1) Press the ▲ or ▼ button to display "MAINTENANCE 77" on the LCD in the initial state of the maintenance mode.

(2) Press the **OK** button. Maintenance information starts to be printed.

(3) When printing is finished, the machine returns to the initial state of the maintenance mode.

■ Maintenance information

```
MAINTENANCE
❶HL-3170CDW series ❷Serial No.=X12345J2J000091 ❸Model=84E-403 ❹Country=0201 ❺SW CheckSum=14 /NG
❻Main ROM: Ver.0.66 U1209112045 ❿ROM ChkSum: CA2F
❼Sub ROM: Ver.0.65 P1209111454 ⓫USB Prod.ID: 0053
❽Boot ROM: B1209111405 ⓬RAM Size = 128Mbyte
❾Demo ROM: D1208271704
⓭OK     71000001016 5   00000000   FFFFFFFF
⓮OKOK   0000   0018000000000000
⓯01             C00004002000000F  00000010
⓰0001 0001 0001 0007 0002 0000 0001

Remaining life of :
*Toner Cartridge          **Drum Unit
⓱Cyan(C): 94%             ㉑Cyan(C): 14978 (100%)
⓲Magenta(M): 92%          ㉒Magenta(M): 14978 (100%)
⓳Yellow(Y): 93%           ㉓Yellow(Y): 14978 (100%)
⓴Black(BK): 95%           ㉔Black(BK): 14978 (100%)
㉕Belt Unit: 49945 (100%)
㉖Fuser Unit: 49984 (100%)
㉗PF Kit 1: 49995 (100%)

<Device Status>
㉘Total Page Count: 16
  Color: 11              Monochrome: 5

***Average Coverage(Total)
㉙Cyan(C): 29.88%        Yellow(Y): 29.76%
 Magenta(M): 29.69%     Black(BK): 13.85%
***Average Coverage(Current)*
㉚Cyan(C): 29.88%        Yellow(Y): 29.76%
 Magenta(M): 29.69%     Black(BK): 13.85%
***Average Coverage(Previous)
㉛Cyan(C): 0.00%         Yellow(Y): 0.00%
 Magenta(M): 0.00%      Black(BK): 0.00%

<Drum Information (Page/Count)>
㉜(C): 22/406            (Y): 22/406
(M): 22/406             (BK): 22/406

<Developing Roller Count(Current/Previous)>
㉝(C): 569/0             (Y): 569/0
(M): 569/0              (BK): 656/0

<Total Pages Printed>
㉞Manual Feed: 1         2-sided: 1
  Tray 1: 14
  A4/Letter: 16          Envelope: 0
  Legal/Folio: 0         A5: 0
  B5/Executive: 0        Others: 0
  Plain/Thin/Recycled: 16
  Thick/Thicker/Bond: 0
  Envelope/Env.Thick/Env.Thin: 0
  Label: 0               Hagaki: 0
  Glossy: 0
㉟Current Toner          Previous Used Toner
   Cyan(C): 11           Cyan(C): 0
   Magenta(M): 11        Magenta(M): 0
   Yellow(Y): 11         Yellow(Y): 0
   Black(BK): 16         Black(BK): 0
  Waste Toner: 16
㊱Developing Roller Count(Current/Previous)
 (C): 361/0              (Y): 361/0
 (M): 361/0              (BK): 531/0

㊲<Total Paper Jams: 0>
   Jam Manual Feed: 0
   Jam Tray 1: 0         Jam Rear: 0
   Jam Inside: 0         Jam 2-sided: 0

㊳<Error History (last 10 errors)>          Page (C)   %
   1: 6208:Drum !                            1  20   43
   2: 620A:Drum !                            1  20   43
   3:
   4:
   5:
   6:
   7:
   8:
   9:
  10:

㊴<Replace Count>
   Toner Cartridge          Drum Unit
    Cyan(C): 0 (0)           Cyan(C): 0
    Magenta(M): 0 (0)        Magenta(M): 0
    Yellow(Y): 0 (0)         Yellow(Y): 0
    Black(BK): 0 (0)         Black(BK): 0
   Belt Unit: 0             Fuser Unit: 0
   Waste Toner: 0           PF Kit 1: 0

㊵<Developing Bias: C:0V M:0V Y:0V K:0V>

㊶<Engine Sensor Log>
   KO: 000215/002250      MN: 000430/002280
   RS: 000930/002330      EJ: 003590/002345

㊷<Status Log>
   834002  834701  830100  834002  834701
   834002  834701  830100  834002  834701

㊸<Temperature/Humidity>
   Temperature: 25 degrees(C)  (MAX: 25 MIN: 20)
   Humidity: 32%               (MAX: 53 MIN: 32)

㊹<Power On Time: 1 hours>
  <Power On Count: 5>

㊺<First Date PC-Prn: --/--/-->

*   Remaining life will vary depending on the types of documents printed,
    their coverage and device usage.
**  Based on A4/Letter printing.
*** Calculated coverage.
```

Fig. 5-12

1	Model name	21	Remaining life of drum unit (Cyan)
2	Serial number	22	Remaining life of drum unit (Magenta)
3	Model code	23	Remaining life of drum unit (Yellow)
4	Country code	24	Remaining life of drum unit (Black)
5	Switch checksum (factory use)	25	Remaining life of belt unit
6	Main firmware version	26	Remaining life of fuser unit
7	Sub firmware version	27	Remaining life of PF kit 1
8	Boot firmware version	28	Total printed page
9	Demo firmware version	29	Accumulated average coverage
10	ROM CheckSum	30	Average coverage (Current toner)
11	USB ID code	31	Average coverage (Previous used toner)
12	RAM size	32	Drum page count/Rotations of the drum
13	Function code 72 result/ Main PCB serial No. first digit/ Wireless LAN country setting/ Wireless LAN output value/ WLAN Setup history/ One Push Demo setting/ Production ID/ Toner type CMYK (Current)/ Toner type CMYK (Previously used) *1	33	Rotations of the developer roller (Current toner/Previous used toner)
		34	Total printed pages per paper tray/ Paper size/Paper type
		35	Total printed pages by each toner cartridge (Current toner/Previous used toner)
		36	Rotations of the developer roller used in printing (Current toner/Previous used toner)
14	Main PCB inspection log/ High-voltage inspection log/ Number of electric discharge errors/ Number of fuser unit errors/ Process execution state (Function code 1 to 64)	37	Total number of paper jams/Paper jams that have occurred in each section in the machine
		38	Machine error log/Total printed pages by the time of error occurrence/ Temperature and humidity at the time of error occurrence
15	Next Power On State/ Process execution state (Function code 65 to 128)/ Process execution checksum	39	Number of times that consumables and periodical replacement parts have been replaced *2
16	Number of color correction (hexadecimal) that has been executed (Auto registration/ Developing bias voltage correction/ Gamma correction/ Auto registration (user)/ Developing bias voltage correction (user)/Gamma correction (user)/ Registration error/ Color calibration flag)	40	Developing bias voltage value *3
		41	Engine sensor log (Not necessary for maintenance work)
		42	Status log (Not necessary for maintenance work)
		43	Temperature and humidity under which Function code 77 is executed/ Maximum and minimum temperature and humidity *4
17	Estimated remaining life of toner (Cyan)		
18	Estimated remaining life of toner (Magenta)	44	Number of times that the power is turned ON/Total power distribution time
19	Estimated remaining life of toner (Yellow)	45	Date and time when the machine starts to be used (Date and time when the first printing is made with the driver)
20	Estimated remaining life of toner (Black)		

*1 00: Starter toner cartridge, 01: Standard toner cartridge, 02: High yield toner cartridge

*2 For toner cartridges, the value in the parentheses ( ) shows the number of times that toner manual reset is performed. The # sign indicates that the most recent new toner detection was manual reset.

*3 The color toner value may become 0V when Function code 77 is executed.

*4 The maximum and minimum temperature and humidity is updated when the machine comes out of the sleep mode.

1.4.23 Operational check of fans (Function code 78)

<Function>

This function allows you to check that the main fan is operating normally. The rotation speed is changed among three settings: 100 %, 50 % and OFF.

<Operating procedure>

(1) Press the ▲ or ▼ button to display "MAINTENANCE 78" on the LCD in the initial state of the maintenance mode.

(2) Press the **OK** button. "F 100" is displayed on the LCD, and the main fan operates at the rotating speed of 100 %.
If the main fan is faulty, "NG" is displayed on the LCD.

(3) Press the **Go** button. "F 50" is displayed on the LCD, and the main fan operates at the rotating speed of 50 %.

(4) Press the **Go** button. "F0" is displayed on the LCD, and the main fan stops.

(5) Press the **Go** button. "F 100" is displayed on the LCD, and the machine returns to the state described in step (2). Every time the **Go** button is pressed, the displayed rotating speed changes as described in steps (2) to (4).

(6) Press the **Cancel** button to return the machine to the initial state of the maintenance mode.

1.4.24 Display of device log information (Function code 80)

<Function>

This function allows you to display log information on the LCD.

<Operating procedure>

(1) Press the ▲ or ▼ button to display "MAINTENANCE 80" on the LCD in the initial state of the maintenance mode.

(2) Press the **OK** button. "USB:********" is displayed on the LCD.
(********* represents the serial number of the machine.)

(3) Each time you press the **Go** button, a different item is displayed.

(4) Press the **Cancel** button to return the machine to the initial state of the maintenance mode.

LCD	Description
USB:000G8J000166	Serial number *1
MAC:008077112233	MAC Address
PCB:911309123456	Main PCB serial number
CTN_ERM:78%	Amount of remaining cyan toner estimated from coverage
CTN_RRM:67%	Amount of remaining cyan toner estimated from the number of developer rotations
MTN_ERM:78%	Amount of remaining magenta toner estimated from coverage
MTN_RRM:67%	Amount of remaining magenta toner estimated from the number of developer rotations
YTN_ERM:78%	Amount of remaining yellow toner estimated from coverage
YTN_RRM:67%	Amount of remaining yellow toner estimated from the number of developer rotations
KTN_ERM:87%	Amount of remaining black toner estimated from coverage
KTN_RRM:67%	Amount of remaining black toner estimated from the number of developer rotations
CDRM_PG:00000000	Number of pages printed with cyan drum
MDRM_PG:00000000	Number of pages printed with magenta drum
YDRM_PG:00000000	Number of pages printed with yellow drum
KDRM_PG:00000000	Number of pages printed with black drum
PFK1_PG:00000000	Number of pages where PF kit 1 has been used
FUSR_PG:00000000	Number of pages printed on fuser unit
BELT_PG:00000000	Number of pages printed on belt unit
TTL_PG:00000000	Total number of pages printed
TTL_CO:00000000	Total number of color pages printed
TTL_MO:00000000	Total number of monochrome pages printed
TTL_CI:00000000	Total number of cyan pages printed
TTL_MI:00000000	Total number of magenta pages printed
TTL_YI:00000000	Total number of yellow pages printed
TTL_KI:00000000	Total number of black pages printed

LCD	Description
CCVRGUSI:4.32%	Average coverage of cyan toner cartridge in use
CCVRGACC:3.47%	Accumulated average coverage of cyan toner cartridge
MCVRGUSI:4.32%	Average coverage of magenta toner cartridge in use
MCVRGACC:3.47%	Accumulated average coverage of magenta toner cartridge
YCVRGUSI:4.32%	Average coverage of yellow toner cartridge in use
YCVRGACC:3.47%	Accumulated average coverage of yellow toner cartridge
KCVRGUSI:4.32%	Average coverage of black toner cartridge in use
KCVRGACC:3.47%	Accumulated average coverage of black toner cartridge
CDRUM:00000000	Number of cyan drum rotations
MDRUM:00000000	Number of magenta drum rotations
YDRUM:00000000	Number of yellow drum rotations
KDRUM:00000000	Number of black drum rotations
CTN_RND: 00000000	Number of cyan developer roller rotations
MTN_RND: 00000000	Number of magenta developer roller rotations
YTN_RND: 00000000	Number of yellow developer roller rotations
KTN_RND: 00000000	Number of black developer roller rotations
MN_PG:00000000	Number of pages printed on paper fed from manual feed slot
TR1_PG:00000000	Number of pages printed on paper fed from paper tray
DX_PG:00000000	Number of sheets where two-sided are printed
A4+LTR:00000000	Total of pages printed on A4 and letter size paper
LG+FOL:00000000	Total of pages printed on legal and folio size paper
B5+EXE:00000000	Total of pages printed on B5 and EXE size paper
ENVLOP:00000000	Number of pages printed on envelopes
A5 :00000000	Number of pages printed on A5 size paper
OTHER :00000000	Total of pages printed on paper other than the above
PLTNRE:00000000	Total of pages printed on plain, thin, and recycled paper
TKTRBD:00000000	Total of pages printed on thick, thicker paper and bond paper
ENVTYP:00000000	Total of pages printed on envelopes, envelopes (thick), and envelopes (thin)
LABEL:00000000	Number of pages printed on label
HAGAKI:00000000	Number of pages printed on post card
GLOSSY:00000000	Number of pages printed on glossy paper
TTL_JAM:00000000	Total of jammed sheets
MN_JAM:00000000	Number of sheets jammed in the manual feed slot
TR1_JAM:00000000	Number of sheets jammed in the paper tray
IN_JAM:00000000	Number of sheets jammed inside the machine
RE_JAM:00000000	Number of sheets jammed in paper eject section and back cover

LCD	Description
DX_JAM:00000000	Number of sheets jammed during two-sided printing
POWER:00000375	Total hours of current conduction
PWRCNT:00000000	Number of times that the power is turned ON
MACERR_01:0000 *2	Machine error history (Past 10 error history)
CTN_CH:0000 *3	Number of times that the cyan toner cartridge has been replaced
MTN_CH:0000 *3	Number of times that the magenta toner cartridge has been replaced
YTN_CH:0000 *3	Number of times that the yellow toner cartridge has been replaced
KTN_CH:0000 *3	Number of times that the black toner cartridge has been replaced
CDRM_CH:0000 *3	Number of times that the cyan drum unit has been replaced
MDRM_CH:0000 *3	Number of times that the magenta drum unit has been replaced
YDRM_CH:0000 *3	Number of times that the yellow drum unit has been replaced
KDRM_CH:0000 *3	Number of times that the black drum unit has been replaced
WTNR_CH:0000 *3	Number of times that the waste toner box has been replaced
BELT_CH:0000	Number of times that the belt unit has been replaced
FUSR_CH:0000 *3	Number of times that the fuser unit has been replaced
PFK1_CH:0000 *3	Number of times that the PF kit 1 has been replaced
CTN_PG1:00000000	Number of pages printed from the currently installed cyan toner cartridge
CTN_PG2:00000000	Number of pages printed from the previous installed cyan toner cartridge
MTN_PG1:00000000	Number of pages printed from the currently installed magenta toner cartridge
MTN_PG2:00000000	Number of pages printed from the previous installed magenta toner cartridge
YTN_PG1:00000000	Number of pages printed from the currently installed yellow toner cartridge
YTN_PG2:00000000	Number of pages printed from the previous installed yellow toner cartridge
KTN_PG1:00000000	Number of pages printed from the currently installed black toner cartridge
KTN_PG2:00000000	Number of pages printed from the previous installed black toner cartridge
WTNR_PG:00000000	Number of pages printed from the waste toner box
CDEV_BIAS:400V	Cyan developing bias voltage
MDEV_BIAS:400V	Magenta developing bias voltage
YDEV_BIAS:400V	Yellow developing bias voltage

LCD	Description
KDEV_BIAS:400V	Black developing bias voltage
ENGERR01:000000 *4	Engine error history (Past 10 error history)
HODN_ER:0000	Number of electric discharge errors
FUSR_ER:0000	Number of fuser unit errors
BCLN:00000000	Number of belt cleaner roller rotations
DEVSTATUS__01:00 *5	Log for design analysis

*1 The serial number can be changed according to the steps below.

1) With "USB:********" displayed on the LCD, display "9" on the LCD by pressing the ▲ or ▼ button.
2) Press the **OK** button. "USB:********" is displayed on the LCD again.
3) Repeat steps 1) and 2) and enter "4", "7", and "5" respectively.
4) The cursor appears on the first digit of the serial number on the LCD, and edit mode is entered.
5) Enter the first digit of the serial number using ▲ or ▼ button.
6) Press the **OK** button. The cursor moved to the second digit. Enter the second digit to the 15th digit similarly.
7) When you press the **Go** button, the serial number is written and the machine returns to the initial state of the maintenance mode.

*2 If you press the **OK** button while a machine error is displayed, the indication on the LCD changes into "PGCNT:*******". "*******" represents the total of sheets that had been printed under which the error occurred. When you press the **OK** button again, the indication on the LCD changes into "TMP:*** HUM:***". "***" represents the temperature and the humidity under which the error occurred.

*3 If you press the **OK** button while the number of times that each part has been replaced, the indication on the LCD changes into "DATE_XX:*******". "XX" represents the abbreviated letters of each part and "*******" represents the total number of sheets that had been printed when the last replacement was made.

*4 If you press the **OK** button while the engine error is displayed, the indication on the LCD changes into "TM: ***** BT:***". "TM" represents the period of time (minute) that has passed after the last occurrence of error. "BT" represents the number of time that the power has been turned ON.

*5 If you press the **OK** button while the history is displayed, the indication on the LCD changes into "PGCNT:*******". "*******" represents the total number of sheets that had been printed under which the error occurred.

1.4.25 Display of device error codes (Function code 82)

<Function>

This function displays the most recent machine error code on the LCD.

<Operating procedure>

(1) Press the ▲ or ▼ button to display "MAINTENANCE 82" on the LCD in the initial state of the maintenance mode.

(2) Press the **OK** button. "MACHINE ERR XXXX" is displayed on the LCD.

(3) Press the **Cancel** button to return the machine to the initial state of the maintenance mode.

1.4.26 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 "1.4.19 Sensitivity adjustment of density sensor (Function code 72) in this chapter" has been done more than once. When performing this maintenance mode 83 after replacing the main PCB ASSY, make sure to perform the "1.4.19 Sensitivity adjustment of density sensor (Function Code 72)" first.

<Operating procedure>

(1) Press the ▲ or ▼ button to display "MAINTENANCE 83" on the LCD in the initial state of the maintenance mode.

(2) Press the **OK** button. The machine displays "PLS WAIT 83" on the LCD and starts the developing bias voltage correction.

(3) When the developing bias voltage correction is finished, the machine returns to the initial state of the maintenance mode. If developing bias voltage correction fails, "ERROR 83" is displayed on the LCD. Display the error message by pressing the ▼ button, and take the following measure that corresponds to the error message.

Error message	Measure
FAILED DEVBIAS	Remove the error factors with the following operations and press the **Go** button to clear the error. - Re-insert the toner cartridge in the correct position. - Replace the toner cartridge. - Replace the drum unit. - Replace the waste toner box. - Replace the belt unit. - Replace the registration mark L/R PCB ASSY.
TONER EMPTY # *	Replace the empty toner cartridge and press the **Go** button to clear the error. After the sensitivity adjustment of the density sensor (Function code 72) is performed, the developing bias voltage value is compensated again.
Cover is Open	Close the top cover unit.
Replace Toner	Replace the black toner cartridge and press the **Go** button to clear the error. After the sensitivity adjustment of the density sensor (Function code 72) is performed, the developing bias voltage value is compensated again.

* # indicates the toner color (Y, M, or C) of which cartridge became empty.

1.4.27 Counter reset after fuser unit/PF kit 1 replacement (Function code 88)

<Function>

After replacing a fuser unit or PF kit 1, perform this function to increase the replacement count by one and reset the "Replace ***" warning.

<Operating procedure>

(1) Press the ▲ or ▼ button to display "MAINTENANCE 88" on the LCD in the initial state of the maintenance mode.

(2) Press the **OK** button. "Reset-Fuser Unit" is displayed on the LCD.

(3) Select the consumable to be reset with the ▲ or ▼ button. The following is displayed on the LCD.

"Reset-Fuser Unit"

"Reset-PF KIT T1"

(4) Press the **OK** button, and "*** OK?" is displayed on the LCD. (*** indicates the selected consumable part.)

(5) Pressing the **OK** button causes the counter of the selected consumable part to be reset and "Reset-***" is displayed on the LCD.
(*** indicates the consumable part whose counter is reset.)

(6) Press the **Cancel** button to return the initial state of the maintenance mode.

1.4.28 Exit from the maintenance mode (Function code 99)

<Function>

This function allows you to exit from the maintenance mode. If the error related to the fuser unit occurs, the error is cleared.
(Refer to "2.6 How to Recover from Errors of the Fuser Unit" in this chapter.)

<Operating procedure>

(1) Press the ▲ or ▼ button to display "MAINTENANCE 99" on the LCD in the initial state of the maintenance mode.

(2) Press the **OK** button. The machine exits from the maintenance mode and return to the ready state.

> **Note:**
> When a fuser error occurs, be sure to turn ON the power after cooling the halogen heater sufficiently.

2. OTHER SERVICE FUNCTIONS

2.1 Service Function Menus Enabled by Pressing Button (s) When Turning the Machine ON

The following settings and functions will be available by holding down the specified button (s) while turning the machine ON.

■ Press one button when turning the machine ON

Panel operation	Function
Go	Not used
Secure	Not used
Back	Not used
▼ (-)	Hex dump mode *1
▲ (+)	Not used
OK	Don't use
Cancel	Not used

*1 You can print data from the computer as hexadecimal code. It is useful to analyze print data itself whether it is okay or not.

■ Press two buttons at the same time when turning the machine ON

Panel operation		Function
OK	Back	Don't use
Go	▲ (+)	Not used
Go	Back	Engine non-startup mode *2
▼ (-)	▲ (+)	Don't use
▼ (-)	OK	Not used
OK	▲ (+)	Don't use
Go	OK	Not used
Go	Cancel	Installing the firmware mode (UPD file/Model classification is available.)

*2 This mode is to start-up the machine without using the engine. When the error related to the engine occurs, you can ignore the error and get the error history or the other counter information though it is impossible to print.
Even if the machine is not started successfully due to communication mismatch between the main controller and engine controller, the main controller independently installs the firmware allowing the recovery from the communication mismatch.

■ **Press the ▲ or ▼ button as holding down the Go button in the ready state**

Panel operation		Function
Go	▲ (+)	Parts life reset mode for the consumable parts. (Refer to "2.3 Parts Life Reset Function" in this chapter.)
Go	▼ (-)	Switching of Return Value of USB No./Support for Banding *3 (Refer to "2.7 Switching of Return Value of USB No./ Support for Banding" in this chapter.)

*3 This is the same function as Function code 45.

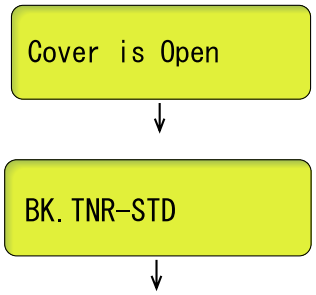
■ **Press the Cancel button as holding down the Secure button while the top cover unit is opened**

Panel operation		Function
Secure	Cancel	Toner manual reset mode (Refer to "2.2 Toner Manual Reset Function" in this chapter.)

2.2 Toner Manual Reset Function

This function is to manually perform the same operation 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 cartridge cannot be recognized by the machine, and the toner life display fails to be cleared.

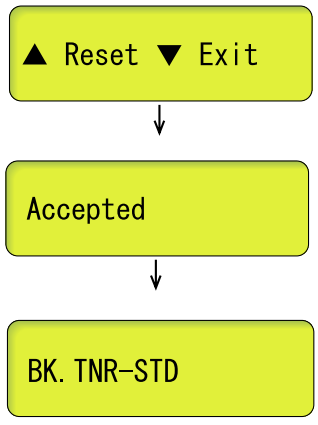
<Operating procedure>



(1) Press the **Secure** and **Cancel** buttons at the same time when the top cover unit is open.

(2) "BK.TNR-STD" appears on the LCD. Press the ▲ or ▼ button to select the appropriate toner cartridge, and then press the **OK** button.

LCD	Description
BK.TNR-STD	Standard black toner manual reset
BK.TNR-STR	Starter black toner manual reset
C.TNR-STD	Standard cyan toner manual reset
C.TNR-HC	High yield cyan toner manual reset
C.TNR-STR	Starter cyan toner manual reset
M.TNR-STD	Standard magenta toner manual reset
M.TNR-HC	High yield magenta toner manual reset
M.TNR-STR	Starter magenta toner manual reset
Y.TNR-STD	Standard yellow toner manual reset
Y.TNR-HC	High yield yellow toner manual reset
Y.TNR-STR	Starter yellow toner manual reset



(3) Once " ▲ Reset ▼ Exit" appears on the LCD; press ▲ button.

(4) The counter is reset.

(5) The machine returns to the state of step (2).

Note:
If there is no operation for 30 seconds or more, the machine automatically returns to step (1).

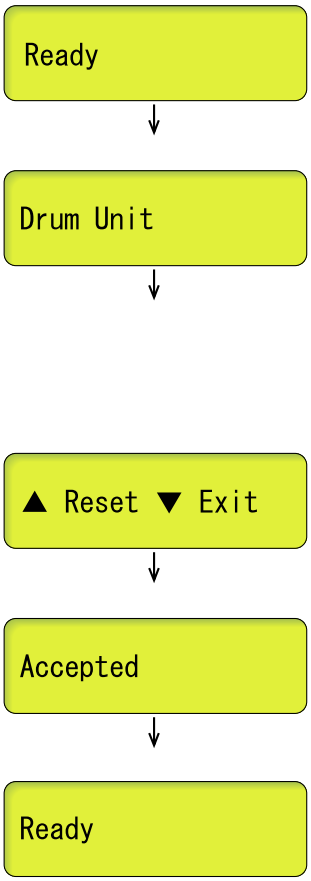
2.3 Parts Life Reset Function

This function is used to reset the relevant part counter and set +1 to the replacement counter when the user replaced the consumable parts with the correct procedure, and also used to forcibly reset the relevant part counter when an error cannot be resolved because the user did not replace the consumable parts with the correct procedure.

■ Pressing the two buttons in the ready state

Panel operation	Function
Press ▲ **(+)** as holding down **Go** button.	Menus of the parts life reset (Resets the counter of the consumable parts and counts up the number of replacement times by 1.)

<Operating procedure>



(1) Press the ▲ button as holding down the **Go** button in the ready state.

(2) The "Drum Unit" will appear on the LCD.
Select the applicable consumable part by pressing the ▲ or ▼ button and press the **OK** button.

<Consumable parts are displayed on the LCD>
- Drum Unit
- Belt Unit
- Fuser Unit
- PF kit

(3) Once " ▲ Reset ▼ Exit" appears on the LCD, press the ▲ button.

(4) The machine implements clearing the counter.

(5) The machine returns to the ready state.

(6) Turn OFF the power switch.

Note:
- All consumable parts are always indicated on the LCD even though their lives do not reach the end of life.
- The machine returns to the ready state automatically if no panel operation is implemented for 30 seconds.
- The setting is applied after the power switch is turned OFF and then ON again.

2.4 Printout of Printer Settings

The machine prints "PRINTER SETTINGS". All pages have following terms in common; Title, Model name, Serial number.

<Operating procedure>

(1) Press the **OK** button three times when the machine is in the ready state.

(2) The machine displays "Print Settings/Printing" on the LCD, and starts to print. Upon completion of printing, the machine returns to the ready state.

■ Printer Settings (Page 1)

This page includes various setting information of the machine.
Each item is indicated when it fulfills the condition.

■ Printer Settings (Page 2)

(1) Machine information
The following items are indicated in the order.

1) Main Controller Main ROM Version
(Main controller firmware version)

2) Main Controller Sub1 ROM Version
(Sub firmware (GDI or PCL/PS) version)

3) RAM Size (MB)

(2) Maintenance information

1) Consumable part information/Periodical replacement part information

The printable pages remained for the part are indicated. (Toner cartridges are excluded.) Also, the percentage of the printable pages until the end of life relative to the total printable pages (remaining ratio) is displayed using numerical values and a band graph.

A sample indication (PF Kit 1) is as follows:
From the top left, the parts name, the number of printable pages remained, and the percentage of life remained are indicated. The band graph shows the percentage of the remaining life, and one grid indicates 2% in the remaining life.

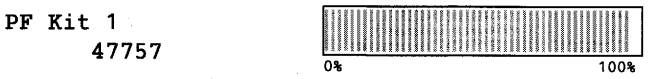


Fig. 5-13

The consumable parts and periodical replacement parts indicated are as follows:

- Toner Cartridge (K, Y, M and C are separated and 4 cartridges)
- Drum Unit
- Belt Unit
- PF Kit 1
- Fuser Unit

■ Printer settings (Page 3 to Page 5)

These pages include various network settings information of the machine.

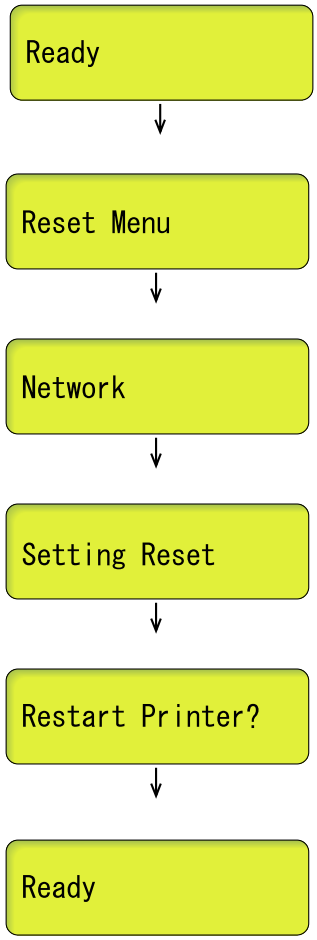
Wired/Wireless LAN network model	Wired Enable setting = ON, WLAN Enable setting = ON Wifi-Direct: ON Page 3: Wired Network Information Page 4: Wireless Network Information Page 5: Wifi-Direct Information
	Wired Enable setting = ON, WLAN Enable setting = ON Wifi-Direct: OFF Page 3: Wired Network Information Page 4: Wireless Network Information Page 5: Not Available
	Wired Enable setting = ON, WLAN Enable setting = OFF Wifi-Direct: OFF Page3: Wired Network Information Page 4&5: Not Available
	Wired Enable setting = OFF, WLAN Enable setting = ON Wifi-Direct: ON Page 3: Wireless Network Information Page 4: Wifi-Direct Information Page 5: Not Available
	Wired Enable setting = OFF, WLAN Enable setting = ON Wifi-Direct: OFF Page 3: Wireless Network Information Page 4&5: Not Available
	Wired Enable setting = OFF, WLAN Enable setting = OFF Wifi-Direct: ON Page 3: Wifi-Direct Information Page 4&5: Not Available
	Wired Enable setting = OFF, WLAN Enable setting = OFF Wifi-Direct: OFF Page 3 to 5: Not Available

2.5 Deletion of User Setting Information, etc.

In this machine, the user setting information is stored in the EEPROM and flash memory of the main PCB. You can delete all the data listed below at a time with the procedure given below.

- Information related to Net
- User setting information
- Computer usage limit information

<Operating procedure>



(1) Disconnect the network cable from the machine.

(2) Press the ▲ or ▼ button in the ready state until "Reset Menu" appears on the LCD.

(3) Press the **OK** button. The "Network" will appear on the LCD.

(4) Press the ▲ and **Cancel** buttons at the same time. The "Setting Reset" will appear on the LCD.

(5) Press the **OK** button. The "Restart Printer?" will appear on the LCD.

(6) Press the **OK** button again, and the machine automatically restarts, the user setting information is deleted, and the machine returns to the ready state.

Note:
The machine returns to the ready state automatically if no panel operation is implemented for 30 seconds.

2.6 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

First of all, turn OFF the power of the machine to cool the fuser unit.
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.

2.7 Switching of Return Value of USB No./ Support for Banding

This function allows you to switch the return value of the USB No. and switch controls to resolve banding symptoms. (This is the same function as Function code 45.)

<Operating procedure>

(1) Press the **Go** button and ▼ button at the same time while the machine is in the ready state. "USB No." is displayed on the LCD.

(2) Select one of the functions in the table below that you want to change the value using the ▲ or ▼ button and press the **OK** or **Go** button.

LCD	Description
USB No. = ON	Switching return value of USB No.
PS. Dither Type = 0	Switching of PS Dither Pattern
DX. XAdjust	Adjusting left-end print start position on second side in duplex printing

"*" is displayed at the end of the currently specified function in the LCD display.

(3) Select the value that you want to set using the ▲ or ▼ button and press the **OK** or **Go** button.

(4) "Accepted" is displayed for approximately two seconds, and the machine returns to the ready state.

Note:
After the setting of USB No., turn OFF the power switch.
(The change will not be applied until the power switch is turned OFF and ON.)

<Details>

Item	Description	Setting
USB No.	When the OS of the computer is Windows Vista®, it might not be able to obtain the serial number of a USB device depending on the computer and USB device. To avoid this problem, the return value of the serial number is switched to "0".	USBNo. =ON Returns "0".
		USBNo. =OFF Returns the serial number of the machine.
PS. Dither Type	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.	PS.DitherType=0 Improves roughness of letters and slanted lines.
		PS.DitherType=1 Alleviates banding.
DX. XAdjust	This function is to adjust the left-end print start position on the second side in the left and right direction if it is displaced in duplex printing. The adjustable range is -100 to 750 (unit: 300 dpi) (The minus direction means the left direction.)	DX.Xadjust=** To move the print start position to the left, press the ▼ button and decrease the value. To move the print start position to the right, press the ▲ button and increase the value.

2.8 Deep Sleep Function

In addition to the sleep function with the normal specifications, the deep sleep function is prepared to reduce the power consumption.

The deep sleep function is used to stop the operation of the following functions whereas they are available in the normal sleep mode.

- Operation of the fan

<Transition conditions>

The machine goes into the deep sleep function when the user does not operate the machine (from a computer) and no warning such as an error is issued after it goes into the normal sleep mode and the main fan is stopped.

<How to Exit>

The machine comes out of deep sleep when receiving input from an external device like print data from a computer or when a button on the control panel is pressed, top cover unit is opened/closed, or paper is loaded into the manual feed slot.

■ Setting of ON/OFF of the deep sleep function

You can set ON/OFF of the deep sleep function so that the machine will not go into the deep sleep function even when the aforementioned conditions are satisfied.

<Operating procedure>

(1) Press the **OK** button while the machine is in the ready state.

(2) Press the ▲ or ▼ button to display "General Setup" on the LCD, and then press the **OK** button.

(3) Press the ▲ or ▼ button to display "Ecology" on the LCD, and then press the **OK** button.

(4) Press the ▲ or ▼ button to display "Sleep Time" on the LCD, and then press the **OK** button.

(5) Press the **Cancel** button and ▼ button at the same time while "*Min" is displayed on the LCD. "Deep Sleep" is displayed on the LCD.

(6) Press the **OK** button. Press the ▲ or ▼ button to switch Deep Sleep On and Off and display the state that you want to set, and then press the **Go** button.

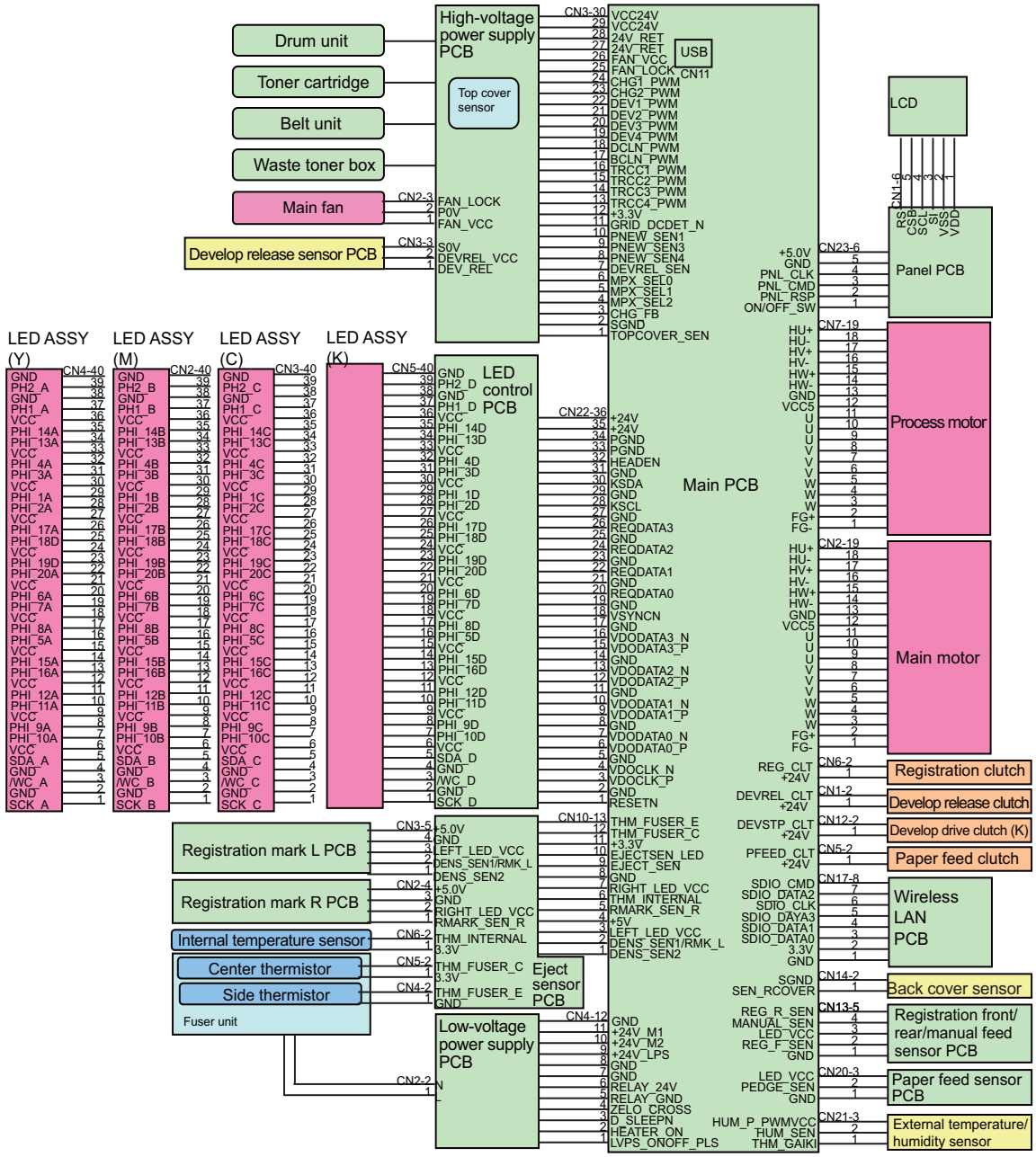
(7) "Accepted" is displayed on the LCD, and the machine returns to the ready state.

Note:

- When no operation is made for 30 seconds during the switching operation, the machine returns to the ready state.
- The initial value of Deep Sleep is set to On.
- In the step (6), the present setting (On or Off) of Deep Sleep is displayed on the LCD.
- "*" is displayed on the right side of the present setting (On or Off) of Deep Sleep.

CHAPTER 6 WIRING DIAGRAM

1. WIRING DIAGRAM



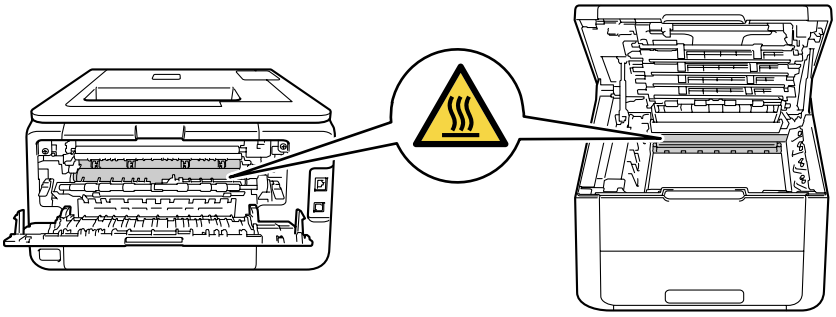
CHAPTER 7 PERIODICAL MAINTENANCE

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



Note:

- Be careful not to lose screws, washers, or other parts removed.
- Be sure to apply grease to the gears and applicable positions specified in Chapter 3.
- 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 harness, 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 handling of harnesses. 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 main body.
- After an assembly, recommend the operation of "dielectric strength voltage check" and "continuity check".
- There must be no damage in the insulation sheet.

2. PERIODICAL REPLACEMENT PARTS

2.1 Procedures to Replace Periodical Replacement Parts

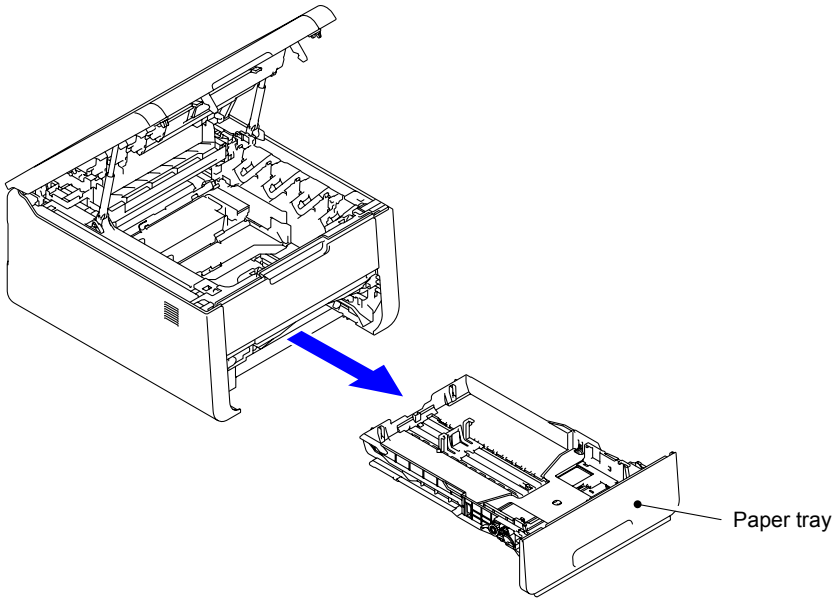
■ Preparation

Prior to proceeding with the disassembly procedure,

(1) Unplug

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

(2) Remove the Paper tray.



2.1.1 PF Kit 1

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

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

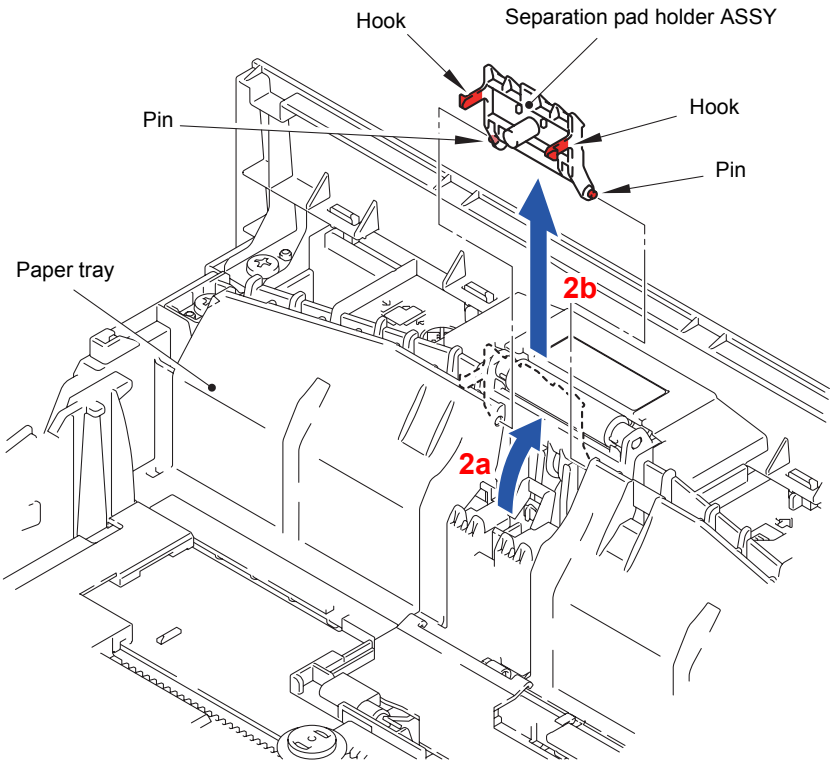


Fig. 7-1

Assembling Note:

Be sure to fit "A" of the Separation pad spring into the Boss of the Paper tray.
Fit the two Pins and two Hooks of the Separation pad holder ASSY into the Paper tray.

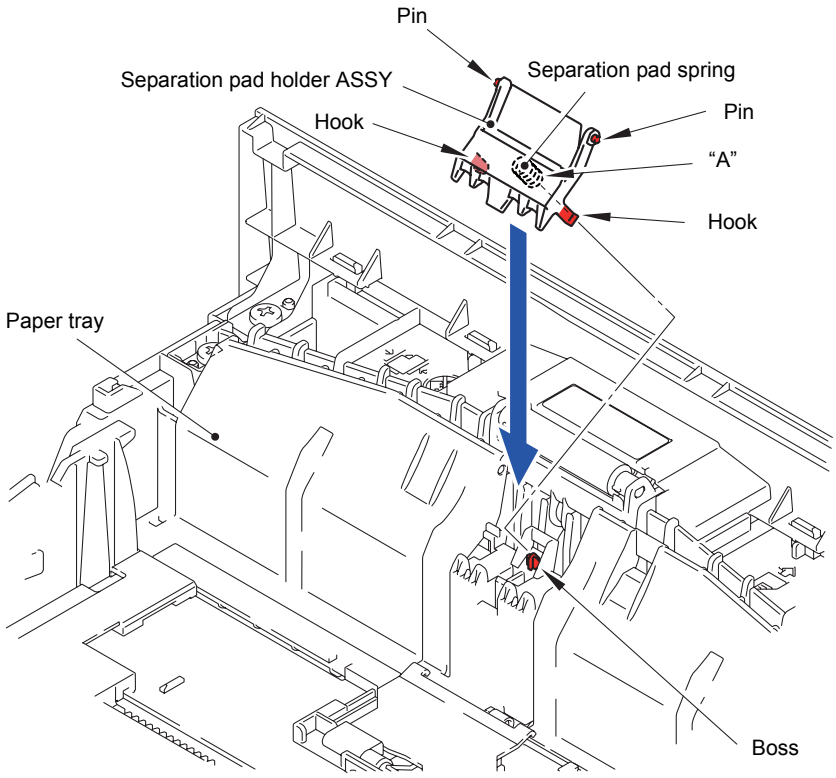


Fig. 7-2

(3) Remove the Separation pad spring from the Boss of the Separation pad holder ASSY.

Note:
Be careful not to lose the Separation pad spring.

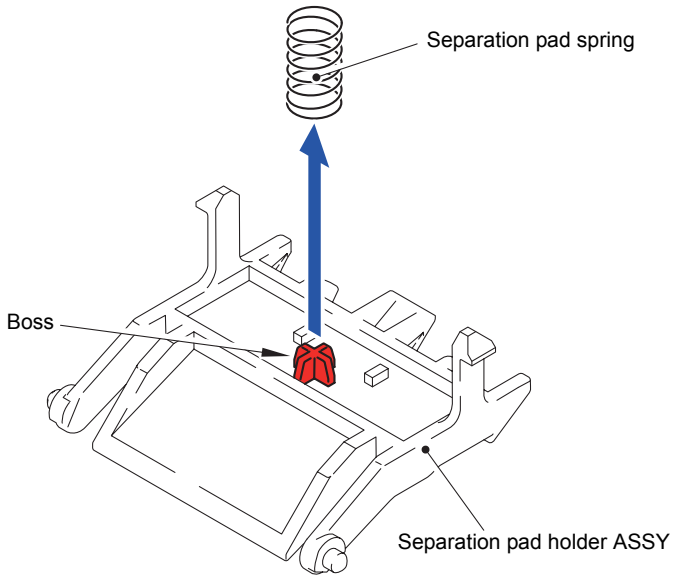


Fig. 7-3

(4) Push the Lift arm to the back and remove "B" of the Roller holder ASSY from "A" of the Lift arm. Rotate the Roller holder ASSY in the direction of the arrow 4b.

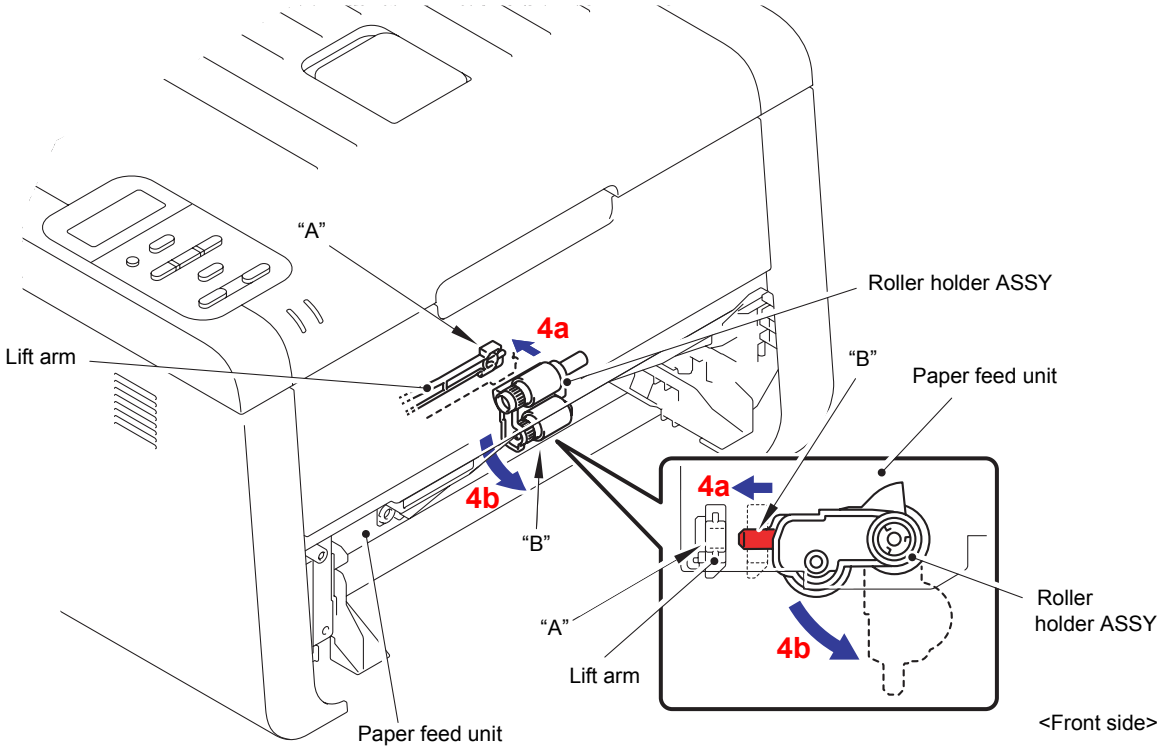


Fig. 7-4

(5) Slide the Roller holder ASSY in the direction of the arrow 5 to 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 to remove it from the Paper feed unit.

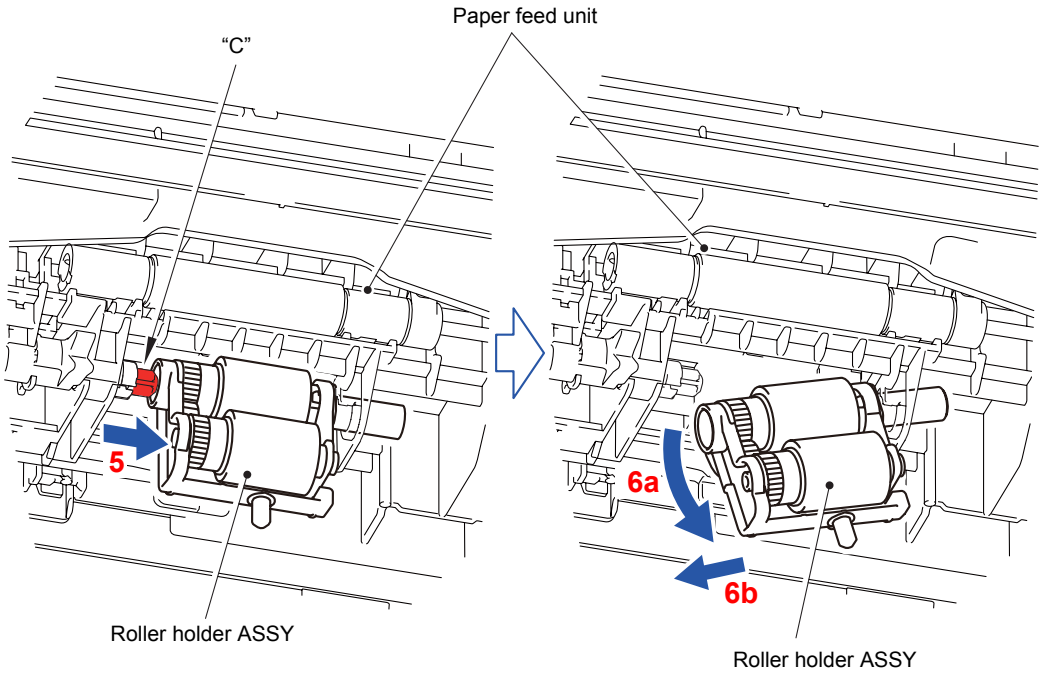


Fig. 7-5

Assembling Note:

Align the Hole of the Paper feed unit to the Shaft of the Roller holder ASSY and insert it into the Hole.

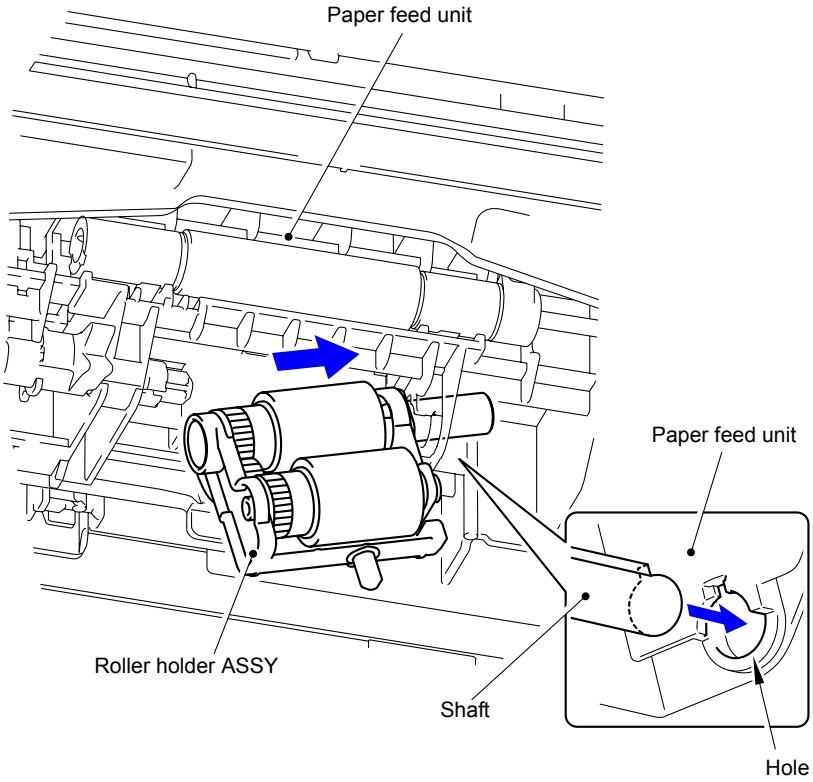


Fig. 7-6

2.1.2 Fuser Unit

(1) Open the Back cover ASSY.

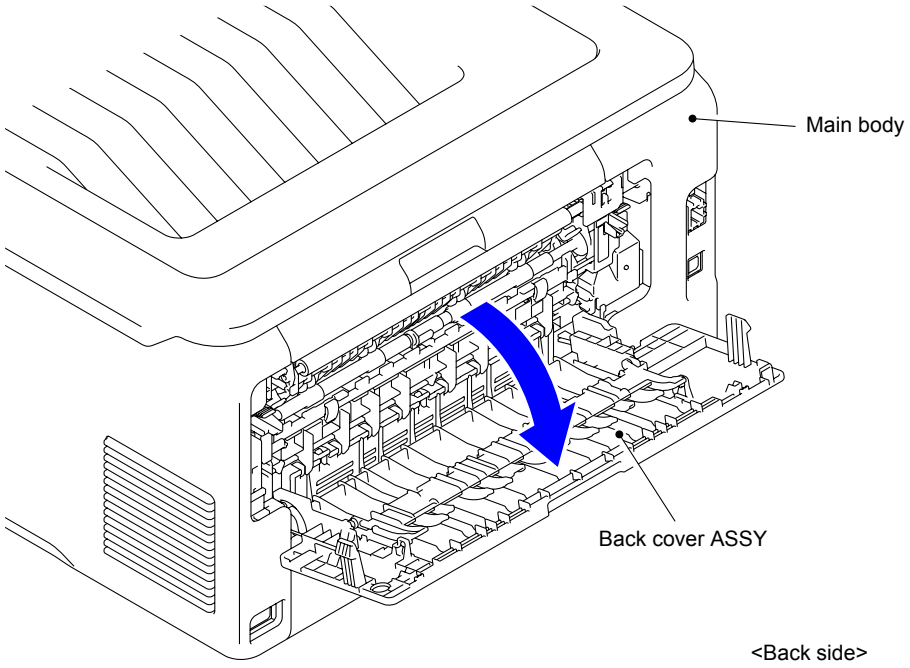


Fig. 7-7

(2) Remove the Boss and Bush of the Back cover ASSY from the Boss and Bush on the left side of the Main body.

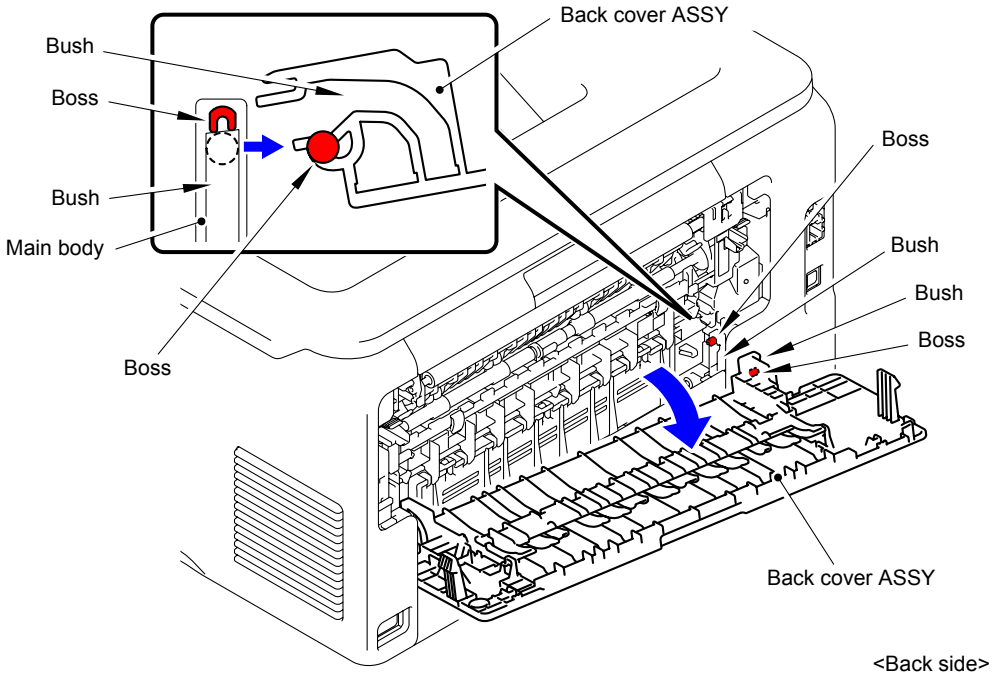


Fig. 7-8

(3) Remove the Boss and Bush of the Back cover ASSY from the Boss and Bush on the right side of the Main body.

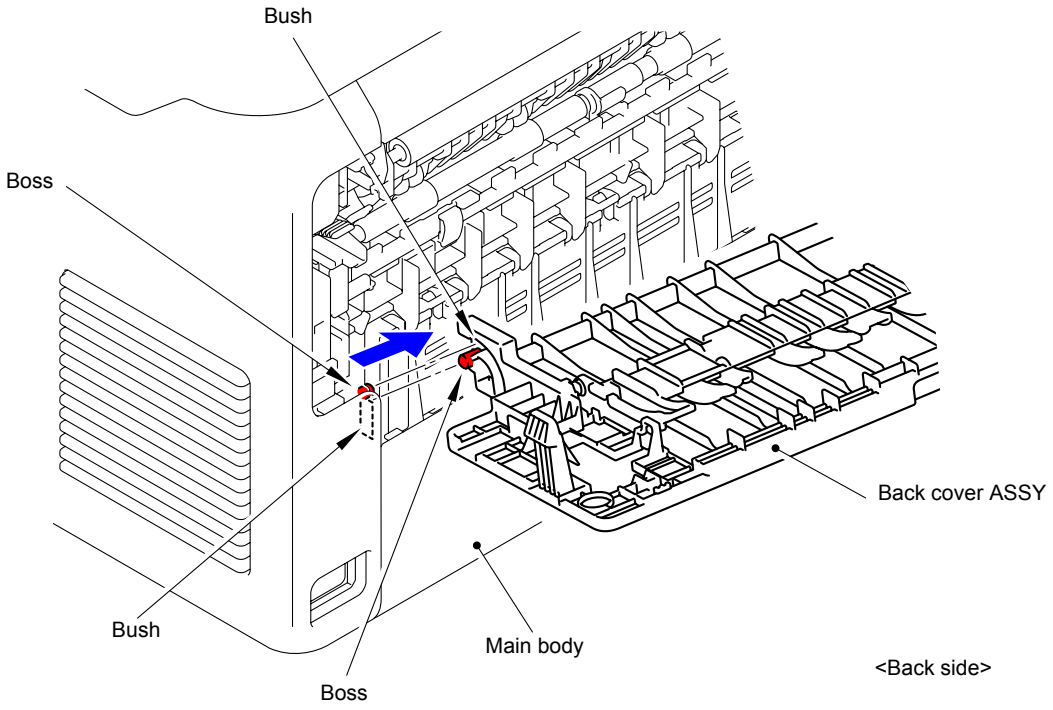


Fig. 7-9

(4) Release the lock of the Lock lever L/R to open the Fuser cover ASSY.

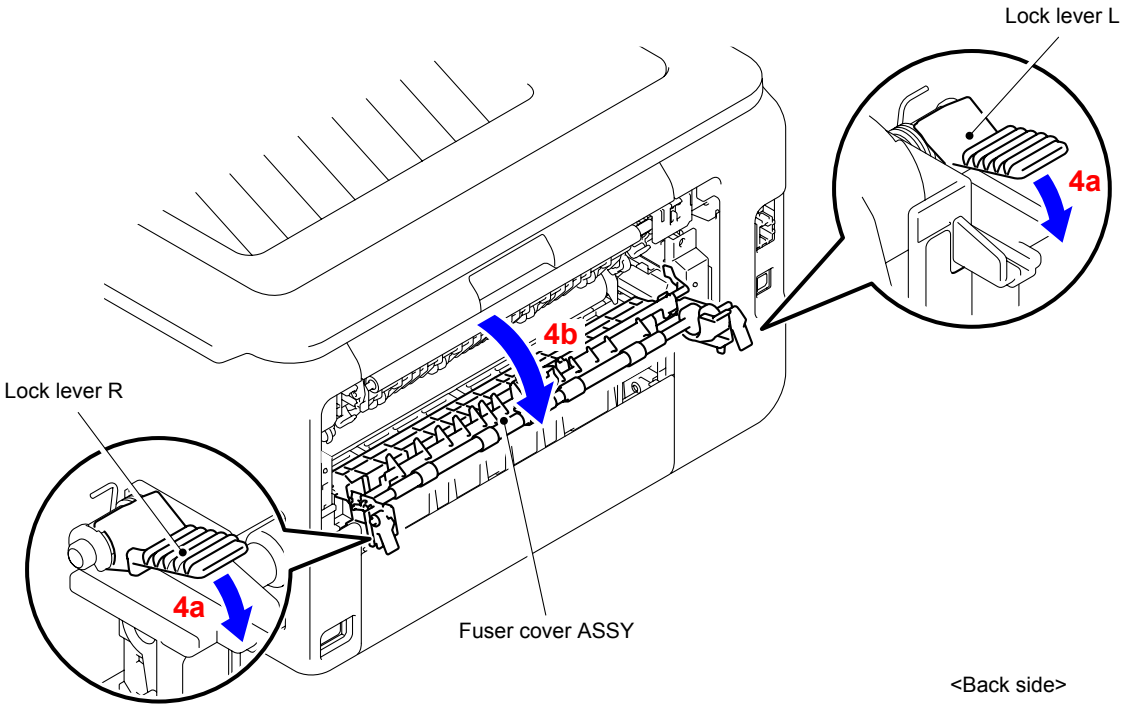


Fig. 7-10

(5) Remove the left side Boss of the Fuser cover ASSY from the Bush of the Main body.

(6) Remove the right side Boss of the Fuser cover ASSY from the Bush of the Main body.

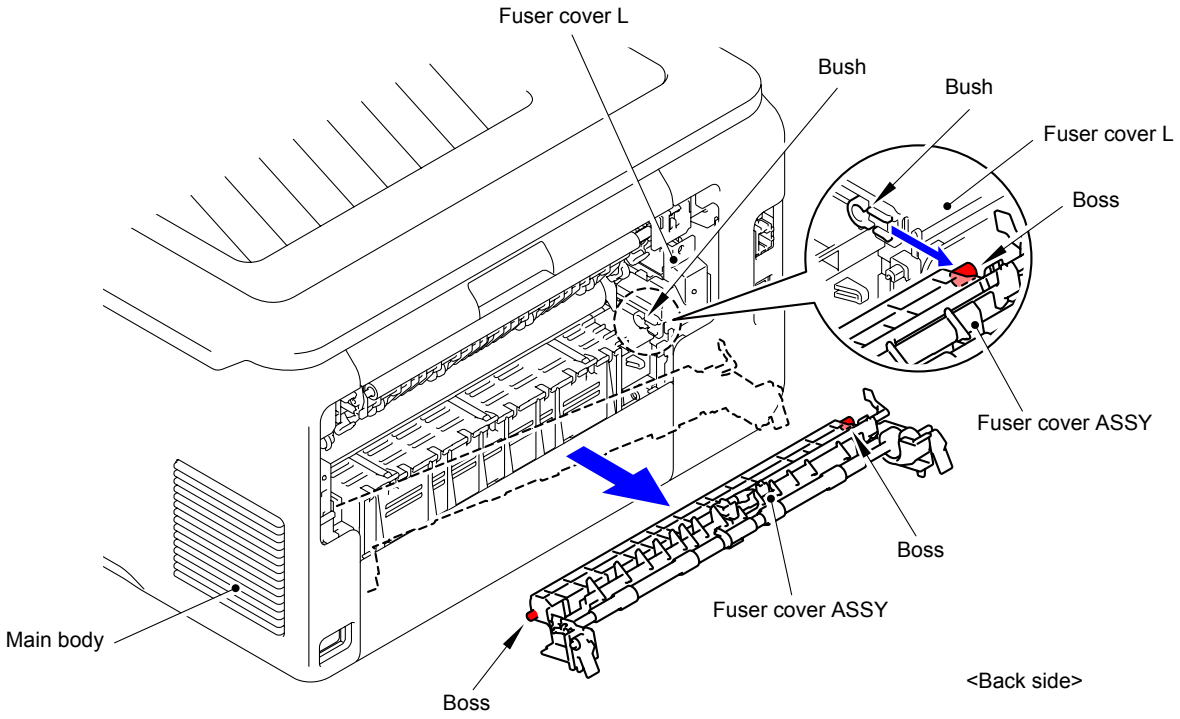


Fig. 7-11

(7) Remove the Taptite bind B M3x10 screw from the Fuser cover L.

(8) Remove the Pin to remove the Fuser cover L from the Main body.

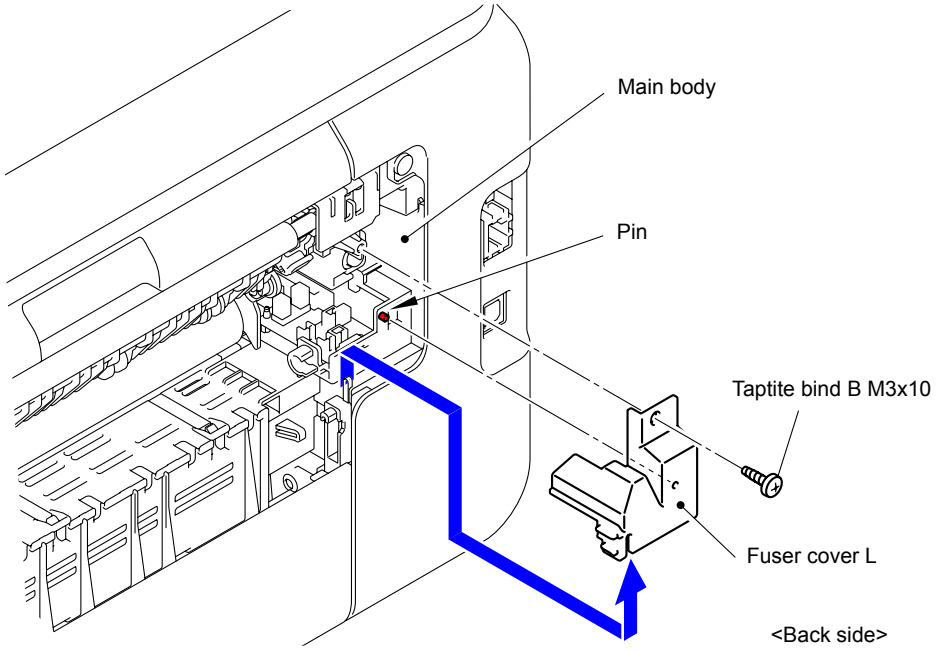


Fig. 7-12

(9) Remove the Taptite bind B M3x10 screw to remove the Fuser cover R from the Main body.

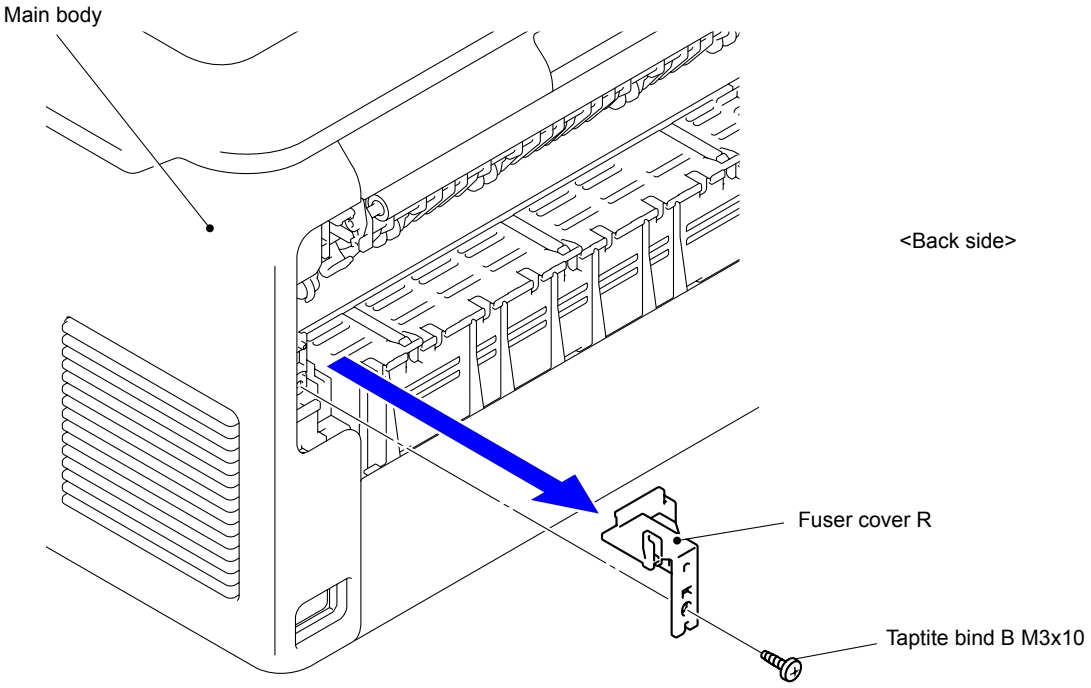


Fig. 7-13

Assembling Note:
After assembling the Fuser cover R, make sure that the Heater harness is not visible.

(10) Disconnect the two Connectors (CN4 and CN5) from the Eject sensor PCB ASSY.

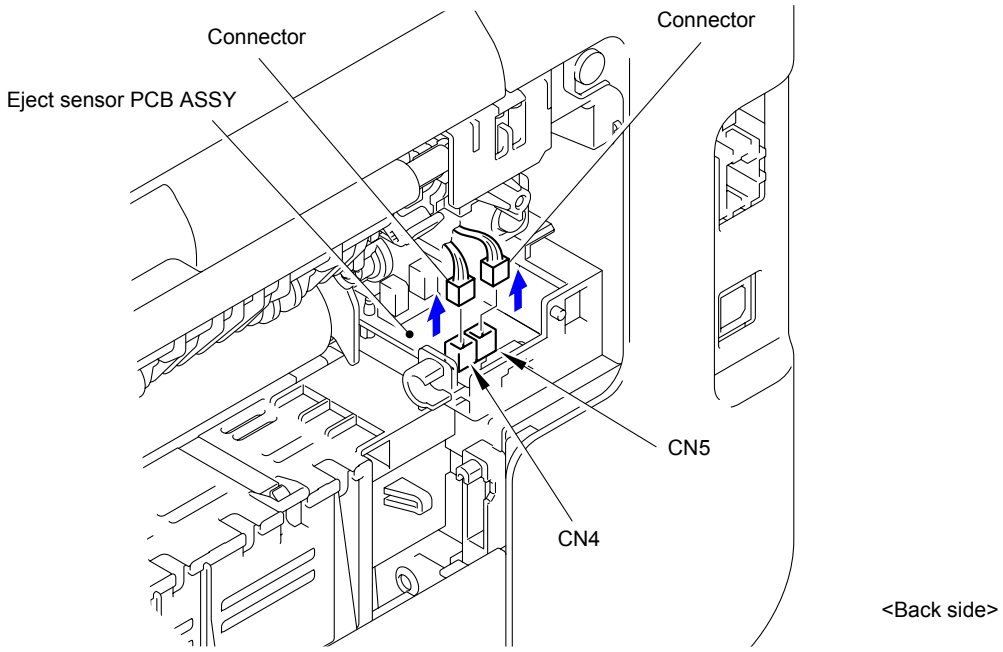


Fig. 7-14

(11) Remove the two Taptite pan (washer) B M4x12 DA screws. Remove the Fuser unit from the Main body holding the "A" parts.

(12) Disconnect the Electrode terminal of the Fuser unit from the Electrode terminal of the Main body.

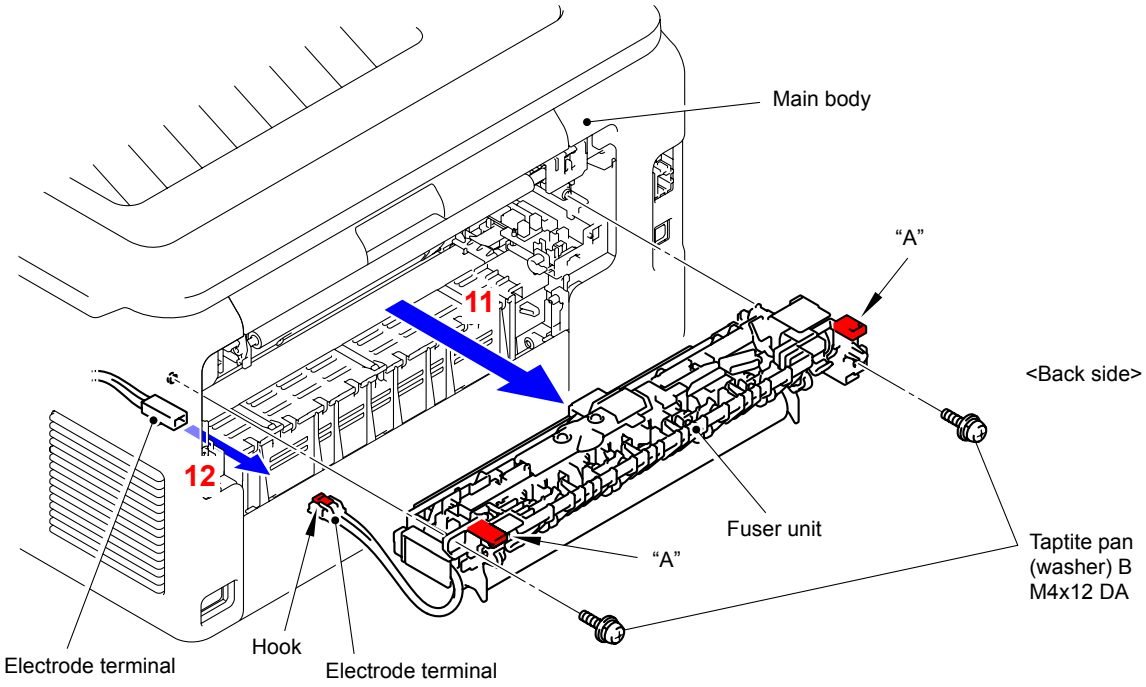


Fig. 7-15

Note:

- Do not apply a physical impact or vibration to the Fuser unit.
- Do not touch the Roller to prevent breakage of the Fuser unit.

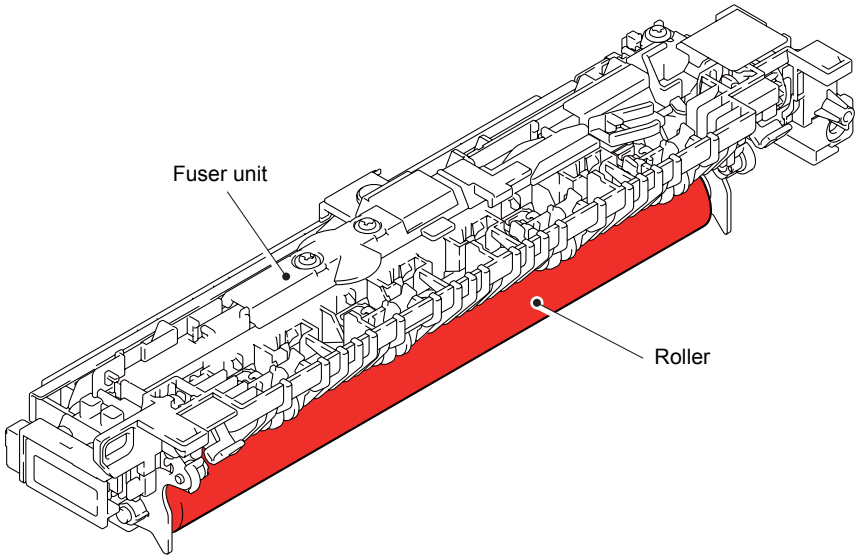


Fig. 7-16

APPENDIX 1 SERIAL NUMBERING SYSTEM

■ Serial number label

<How to Read>

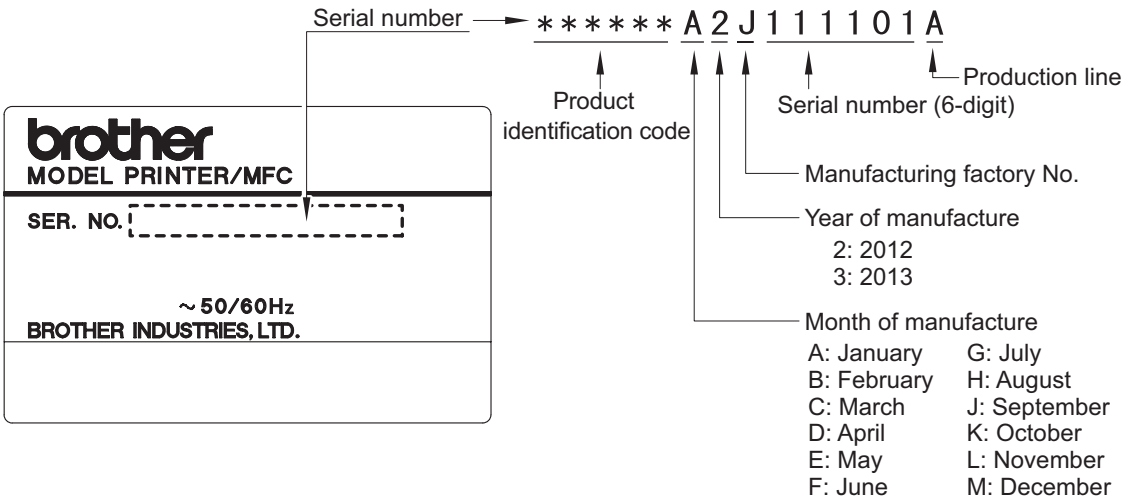


Fig. App 1-1

<Location>

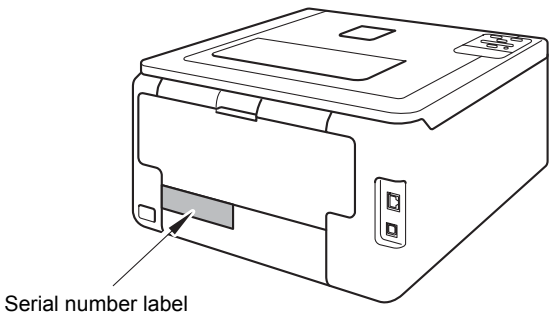


Fig. App 1-2

APPENDIX 2 DELETION OF USER SETTING INFORMATION, ETC.

In this machine, the user setting information is stored in the main PCB. The following procedure allows the factory default settings to be restored in the machine.

<Operating procedure>

(1) Disconnect the network cable from the machine.

(2) Press the ▲ or ▼ button in the ready state until "Reset Menu" appears on the LCD.

(3) Press the **OK** button. The "Network" will appear on the LCD.

(4) Press the ▲ and **Cancel** buttons at the same time. The "Setting Reset" will appear on the LCD.

(5) Press the **OK** button. The "Restart Printer?" will appear on the LCD.

(6) Press the **OK** button again, and the machine automatically restarts, the user setting information is deleted, and the machine returns to the ready state.

Note:

The machine returns to the ready state automatically if no panel operation is implemented for 30 seconds.

APPENDIX 3 INSTALLING THE MAINTENANCE PRINTER DRIVER

To identify machines connected via USB direct interface, the computer requires the corresponding driver for the virtual USB device. If you connect any number of machines to your computer, the same number of virtual USB devices will be automatically configured on your computer. To prevent many virtual USB devices from being configured, use the unique driver installation procedure described below that enables your computer to identify terminals via one single virtual USB device.

Note:

- Once this installation procedure is carried out for a computer, no more driver/software installation will be required for that computer to identify machines. If the Brother Maintenance USB Printer driver has been already installed to your computer according to this procedure, skip this section.
- Before proceeding to the procedure given below, make sure that the Brother Maintenance USB Printer driver is stored in your computer.

■ Windows XP

(1) Check that the power switch of the machine is turned off. Disconnect the USB cable that connects the machine with your computer.

(2) Turn on your computer.

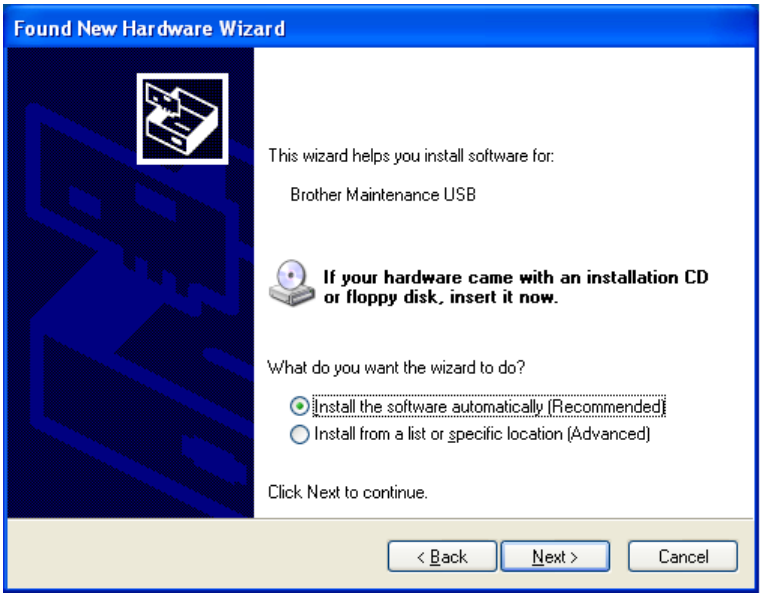
(3) Turn on the power switch of the machine.

(4) Enter the maintenance mode.
(Refer to "1.1 How to Enter the Maintenance Mode" in Chapter 5.)

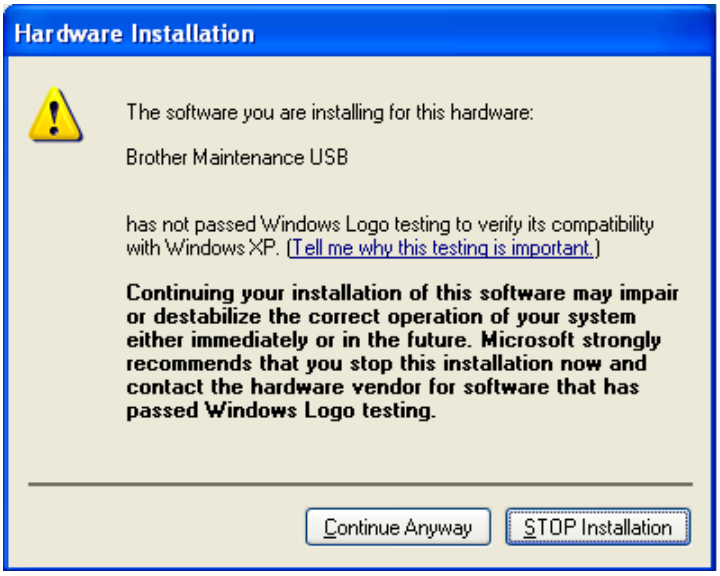
(5) Connect the machine to your computer using a USB cable.
The following window appears.

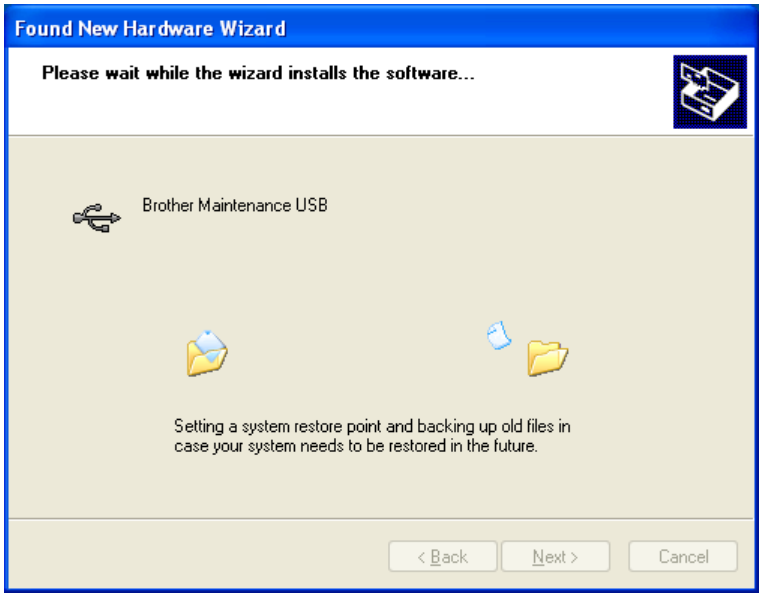
(6) The following screen appears, indicating the detection of new hardware device by the system. Select "No, not this time." And click [Next].

(7) Select "Install the software automatically (Recommended)" and click [Next].



(8) Alert warning message of WHQL appears. Click [Continue Anyway] to proceed.



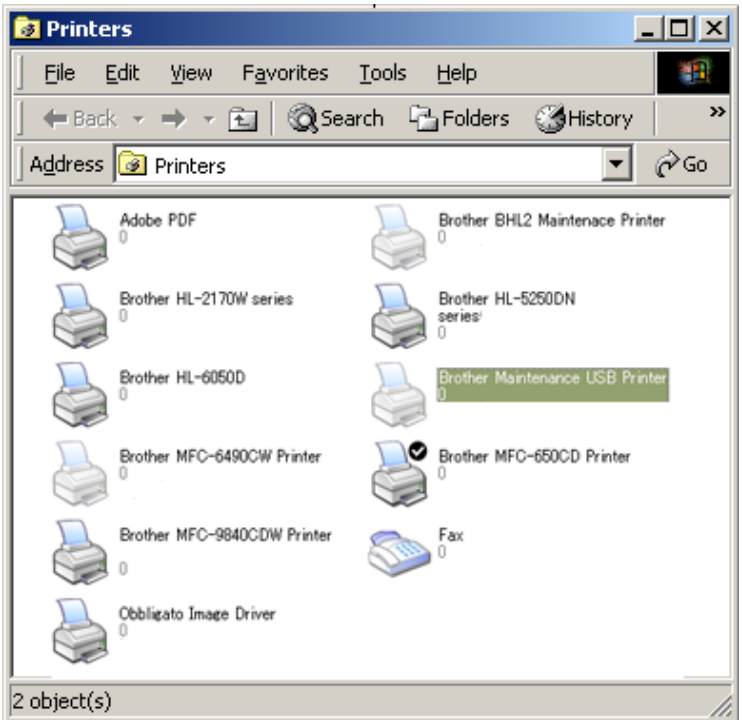


(9) Repeat steps (6) to (8) three times. Installation is completed.

(10) If the Brother Maintenance USB Printer driver is successfully installed, the following message screen appears. Click [Finish] to return.

Note:

In order to check whether the printer driver is successfully installed, click [Start], [Settings], [Printers] to select the Printers window. Then, check that the Brother Maintenance USB Printer icon is shown.

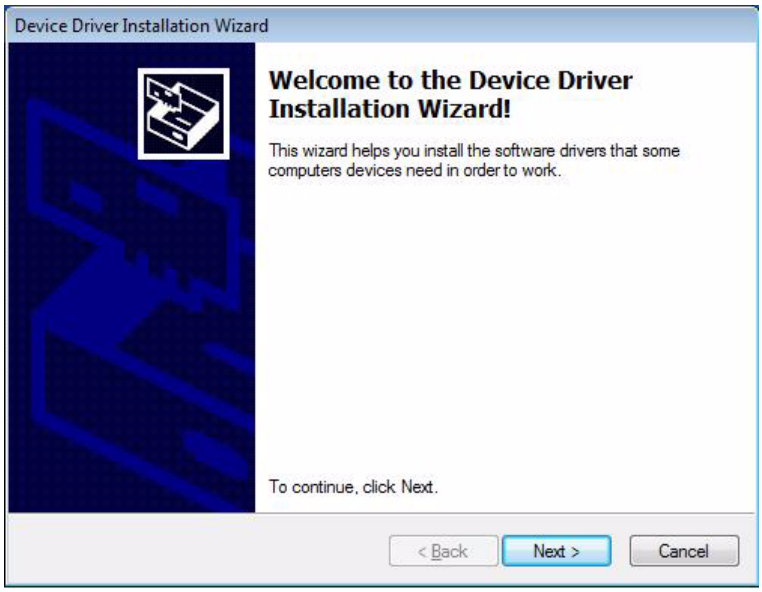


■ Windows Vista/Windows 7/Windows 8

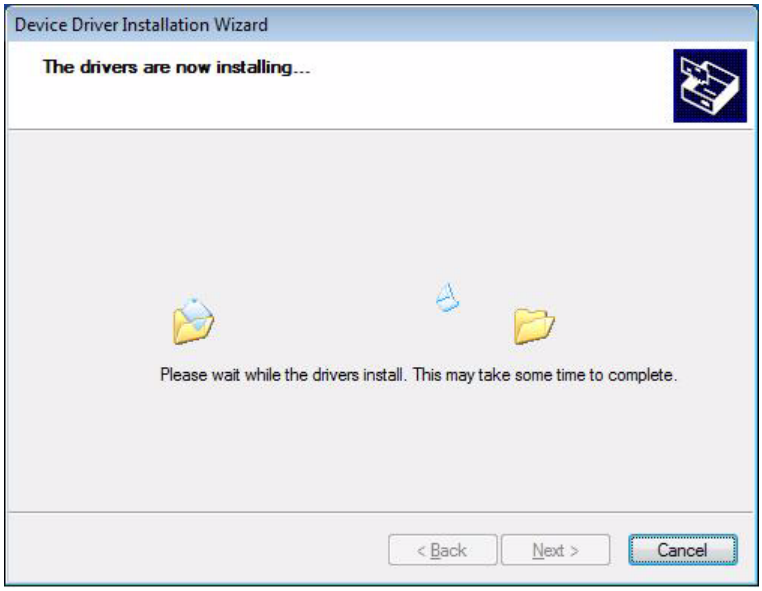
(1) Check that the power cord of the machine is unplugged from the electrical outlet. Disconnect the USB cable that connects the machine with your computer.

(2) Turn on your computer.

(3) Double-click Setup.exe inside the Brother Maintenance USB Printer folder that was saved in a temporary folder. The following screen appears. Click the [Next] button.



The following screen is displayed during installation.



(4) Wait for the following screen to appear and click [Finish].

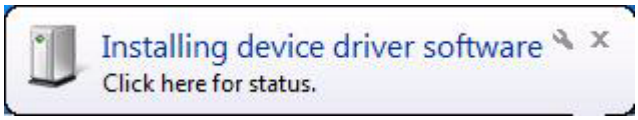
(5) Plug the power cord of the machine into an electrical outlet.

(6) Enter the maintenance mode.
(Refer to "1.1 How to Enter the Maintenance Mode" in Chapter 5.)

(7) Connect the machine to your computer using a USB cable.

■ Windows Vista/Windows 7

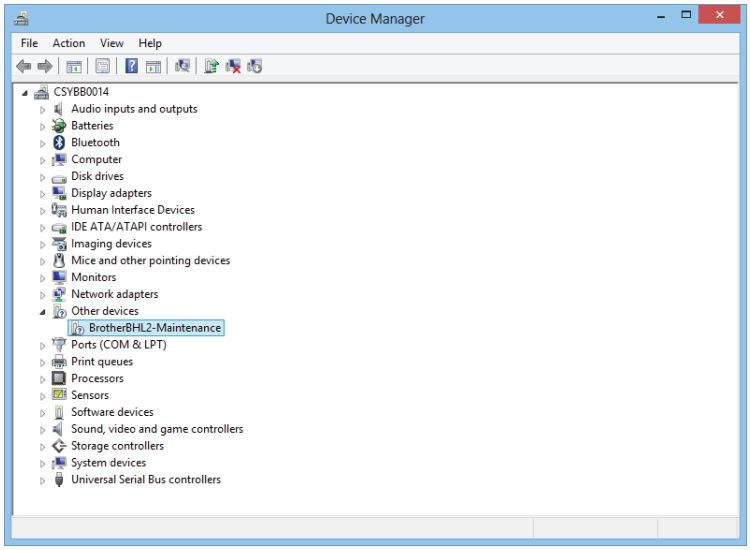
The following window is displayed during installation.



If the following window appears, the installation is completed.

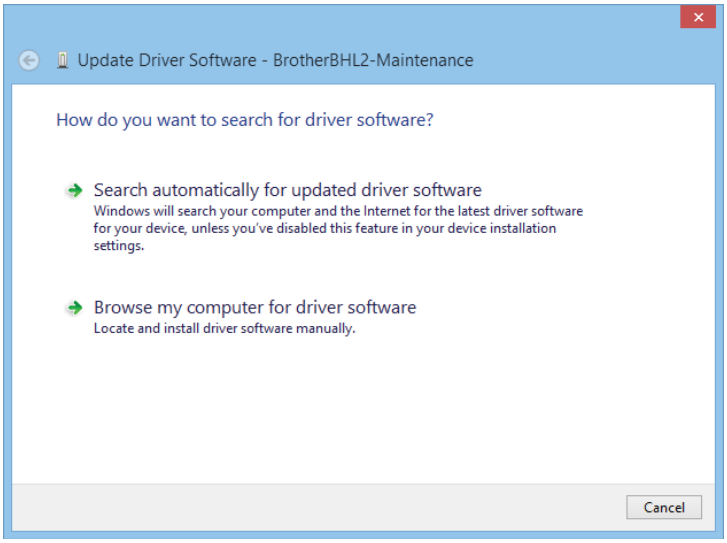
■ Windows 8

Open "Device Manager" from [Settings] → [Control Panel].



Select "Update Driver Software" from the pull-down menu of "Brother BHL2-Maintenance" in "Other devices".

When the following screen appears, click "Search automatically for updated driver software".



Select "Brother Maintenance USB Printer" and click [Next].

When the following screen appears, click [Close] to close the screen.