

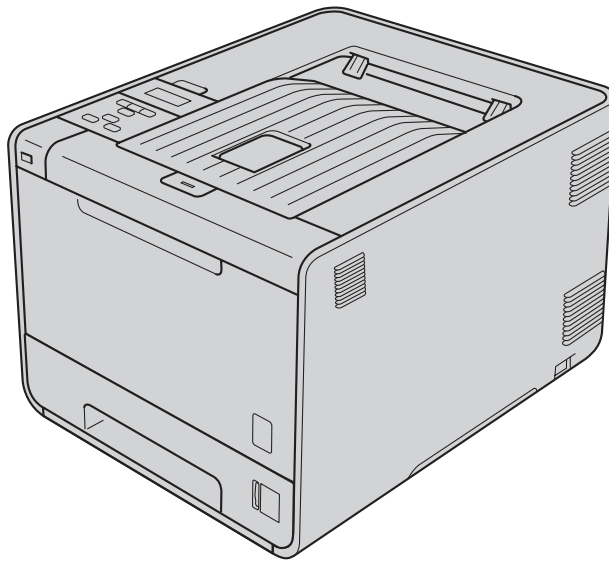


# Brother Color Laser Printer SERVICE MANUAL

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**MODEL: HL-4140CN/4150CDN/  
4570CDW/4570CDWT**



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

August 2010  
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(4)

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Model	HL-4140CN	HL-4150CDN	HL-4570CDW	HL-4570CDWT
LAN	Wired	Wired	Wired/Wireless	Wired/Wireless
Duplex printing	---	√	√	√
LT	Option	Option	Option	Standard equipment
USB host	√	√	√	√

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# REGULATION

## ■ Declaration of Conformity (Europe only) (HL-4570CDW/HL-4570CDWT only)

We, Brother Industries, Ltd.

15-1, Naeshiro-cho, Mizuho-ku, Nagoya 467-8561 Japan

declare that this product is in compliance with the essential requirements of Directives 1999/5/EC and 2005/32/EC.

The Declaration of Conformity (DoC) is on our Website.

Please go to <http://solutions.brother.com/>.

- choose region (eg. Europe)
- choose country
- choose your model
- choose "Manuals"
- choose Declaration of Conformity (Select Language when required.)

## ■ Declaration of Conformity (Europe only) (HL-4140CN/HL-4150CDN only)

We, Brother Industries, Ltd.

15-1, Naeshiro-cho, Mizuho-ku, Nagoya 467-8561 Japan

declare that this product is in compliance with the essential requirements of Directives 2004/108/EC, 2006/95/EC and 2005/32/EC.

The Declaration of Conformity (DoC) is on our Website.

Please go to <http://solutions.brother.com/>.

- choose region (eg. Europe)
- choose country
- choose your model
- choose "Manuals"
- choose Declaration of Conformity (Select Language when required.)

## ■ IEC60825-1:2007 Specification (For 220-240V models only)

This product is a Class 1 laser product as defined in IEC60825-1:2007 specifications. The label shown below is attached in countries where required.

This product has a Class 3B Laser Diode which emits invisible laser radiation in the scanner unit. The scanner unit should not be opened under any circumstances.



### Internal laser radiation

Wave length: 770 - 800 nm

Output: 20 mW max.

Laser Class: Class 3B



Use of controls, adjustments or performance of procedures other than those specified in this manual may result in hazardous radiation exposure.

■ **Disconnect Device**

This product must be installed near an electrical socket that is easily accessible. In case of emergencies, you must disconnect the power cord from the electrical socket to shut off power completely.

■ **Wiring Information (U.K. only)**

If you need to replace the plug fuse, fit a fuse that is approved by ASTA to BS1362 with the same rating as the original fuse.


Always replace the fuse cover. Never use a plug that does not have a cover. If in any doubt, call a qualified electrician.

**Warning -This product must be earthed.**

The wires in the mains lead are coloured in line with the following code:

- Green and Yellow: Earth
- Blue: Neutral
- Brown: Live

■ **LAN Connection (Network models only)**

 <b>CAUTION</b>
DO NOT connect this product to a LAN connection that is subject to over-voltages.

■ **Radio Interference**

This product complies with EN55022 (CISPR Publication 22)/Class B.

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



European  
Union only

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

## For USA and Canada

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

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

declares, that the products

Product name: Printer HL-4140CN, HL-4150CDN, HL-4570CDW and HL-4570CDWT  
Model number: HL-41, HL-45  
Product option: Lower Tray Unit LT-300CL

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

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

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

(Wireless network models only)

This transmitter must be co-located or operated in conjunction with any other antenna or transmitter.

### **Important**

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

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

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

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

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

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

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

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

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

MANUFACTURED: Brother Technology (Shenzhen) Ltd. NO6 Gold Garden Ind., Nanling Buji, Longgang, Shenzhen, China This product complies with FDA performance standards for laser products except for deviations pursuant to Laser Notice No.50, dated June 24, 2007.
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■ **Internal laser radiation**

Maximum radiation power:	20 mW
Wave length:	770 - 800 nm
Laser class:	Class 3B

# SAFETY INFORMATION

## ■ Definitions of Warnings, Cautions, Notes and Memos

The following conventions are used in this manual:

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

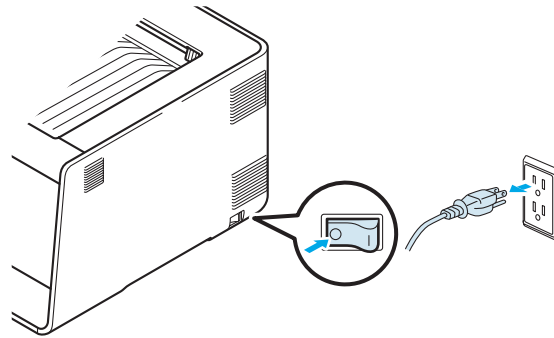
## ■ Safety Precautions

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

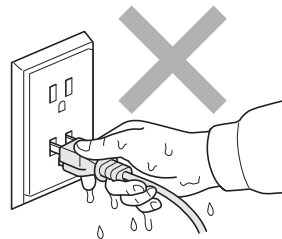
### **WARNING**



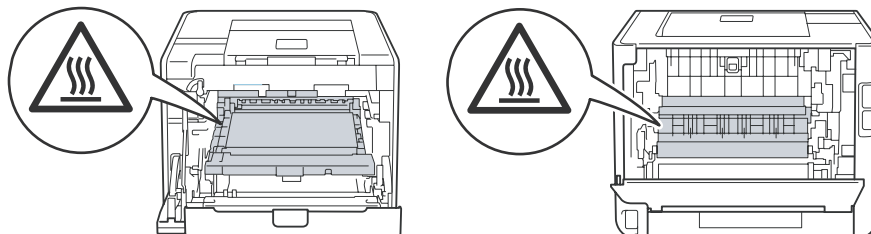
There are high voltage electrodes inside the machine. Before you clean the inside of the machine or replace parts, make sure that you have turned off the power switch and unplugged the machine from the AC power outlet.



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



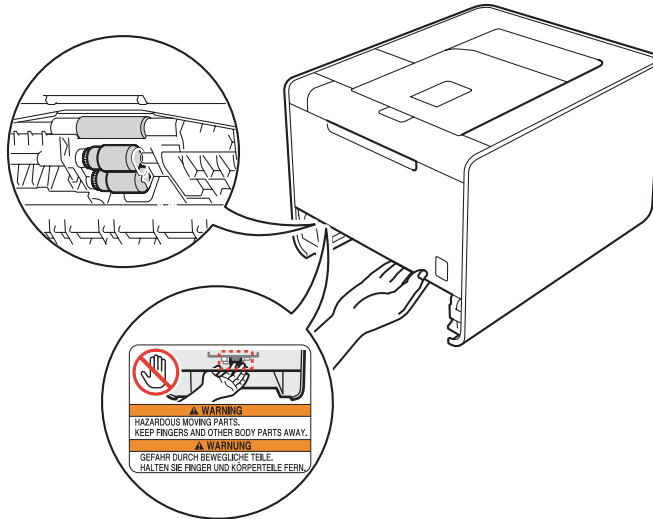
The fuser unit becomes extremely hot during operation. Wait until it has cooled down sufficiently before replacing consumable items. DO NOT remove or damage the caution label located on or around the fuser.



**WARNING**



DO NOT touch the shaded parts shown in the illustration. These rollers may be rotating at high speed and can pinch or entrap your hand.



Languages on the label may vary depending on your country.

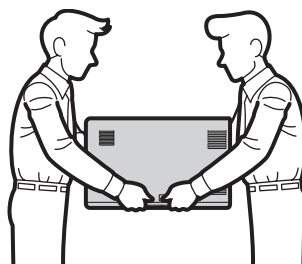
DO NOT use flammable substances, any type of spray or any organic solvent/liquids contains alcohol or ammonia to clean the inside or outside of the machine. Doing this may cause a fire or electrical shock.



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

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

This machine is heavy and weighs approximately 21.0 kg (46.3 lb). To prevent injuries when moving or lifting this machine, make sure to use at least two people. Be careful not to pinch your fingers when you set the machine back down.





**! CAUTION**

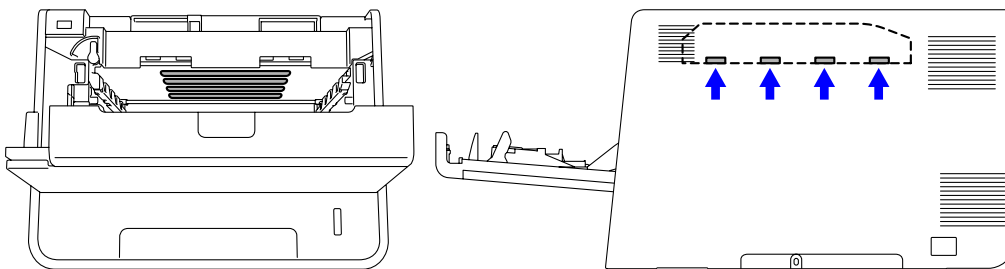
Lightning and power surges can damage this product! We recommend that you use a quality surge protection device on the AC power line, or unplug the machine during a lightning storm.

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

## ■ Caution for Laser Product (WARNHINWEIS für Laser drucker)

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

<Location of the scanner windows>



## ■ Additional Information

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

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



# **CHAPTER 1**

## **SPECIFICATIONS**

# CHAPTER 1

## SPECIFICATIONS

This chapter lists the specifications of each model.

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# 1. SPECIFICATIONS LIST

## 1.1 General

Model		HL-4140CN	HL-4150CDN	HL-4570CDW	HL-4570CDWT
Print method		Electrophotographic Laser printer (Single-pass)			
Resolution		600 x 600 dpi, 2,400 dpi (2400 x 600) quality			
Print speed	One-sided	Monochrome & Full Color: Up to 22/22 ppm (A4/Letter size)	Monochrome & Full Color: Up to 24/25 ppm (A4/Letter size)	Monochrome & Full Color: Up to 28/30 ppm (A4/Letter size)	
	Two-sided	N/A	Monochrome/Full Color: Up to 7/7 ppm (A4/Letter size) * When loading A4 or Letter size paper from the paper tray		
Warm-up time		From Sleep mode: Less than 29 seconds at 23 °C (73.4 F) From Power OFF → ON: Less than 33 seconds at 23 °C (73.4 F)			
First print time <sup>*1</sup>		From Ready mode: Less than 16 seconds From Sleep mode: Less than 40 seconds			
CPU		StarSapphire (SS1000) 400 MHz			
Memory	Standard	128 MB			
	Option	Up to 256 MB (DDR2 16 bit, 144 pin)			
Interface		Hi-Speed USB 2.0, 10BASE-T/100BASE-TX Ethernet		Hi-Speed USB 2.0, 10BASE-T/100BASE-TX Ethernet, Wireless LAN IEEE802.11b/g	
Power consumption	Peak	1,200 W			
	Printing	Average: Approximately 560 W			
	Ready	Average: Approximately 65 W	Average: Approximately 70 W (for USA) Approximately 65 W (for Europe, Asia Pacific)		Average: Approximately 65 W
	Sleep, Wireless LAN: ON	N/A		Average: Approximately 7 W (for USA) Approximately 8 W (for Europe, Asia Pacific)	Average: Approximately 7 W
	Deep Sleep	Average: Approximately 0.9 W	Average: Approximately 0.7 W (for USA) Approximately 0.9 W (for Europe, Asia Pacific)		

<sup>\*1</sup> The time may change if the printer is performing adjustment of color density or adjustment of color registration.

Specifications are subject to change without notice.

Model		HL-4140CN	HL-4150CDN	HL-4570CDW	HL-4570CDWT
Noise level	Sound pressure	Printing: LpAm = 57 dB (A) Ready: LpAm = 33 dB (A)			
	Sound power	Printing (Monochrome): LWAd = 6.71B (A) Ready: LWAd = 4.07 B (A)	Printing (Monochrome): LWAd = 6.63B (A) Ready: LWAd = 4.01 B (A)	Printing (Monochrome): LWAd = 6.77B (A) Ready: LWAd = 4.09 B (A)	
Environment	Temperature	Operating: 10 to 32.5 °C Storage: 0 to 40 °C			
	Humidity	Operating: 20 to 80 % Non operating: Storage: 10 to 90 %			
Dimensions	Carton size	650 x 574 x 521 mm (25.6 x 22.6 x 20.5 inch)			815 x 599 x 850 mm (32.1 x 23.6 x 33.5 inch)
	Machine size	410 x 486 x 313 mm (16.1 x 19.1 x 12.3 inch)			410 x 495 x 446 mm (16.1 x 19.5 x 17.6 inch)
Weights	with Carton	25.5 kg/56.2 lb			39.0 kg/86.0 lb
	without Carton, with toner/drum	21.0 kg/46.3 lb			27.0 kg/59.5 lb
	without Carton, and toner/drum	16.0 kg/35.3 lb			22.0 kg/48.5 lb
LCD Size		16 Characters x 2 lines			

Specifications are subject to change without notice.

**<Computer requirements>**

Computer Platform & Operating System Version		Processor Minimum Speed	Minimum RAM	Recommended RAM	Hard Disk Space to install	Supported PC Interface* <sup>2</sup>
Windows® Operating System* <sup>1</sup>	Windows® 2000 Professional	Intel® Pentium® II or equivalent	64 MB	256 MB	50 MB	USB, 10Base-T/ 100Base-TX Ethernet, Wireless 802.11b/g
	Windows® XP Home Edition		128 MB			
	Windows® XP Professional					
	Windows® XP Professional x64 Edition	64-bit (Intel® 64 or AMD64) supported CPU	256 MB	512 MB		
	Windows Vista®	Intel® Pentium® 4 or equivalent 64-bit (Intel® 64 or AMD64) supported CPU	512 MB	1 GB		
	Windows® 7		1 GB (32-bit) 2 GB (64-bit)	1 GB (32-bit) 2 GB (64-bit)		
	Windows Server® 2003	Intel® Pentium® III or equivalent	256 MB	512 MB		
	Windows Server® 2003 x64 Edition	64-bit (Intel® 64 or AMD64) supported CPU				
	Windows Server® 2008	Intel® Pentium® 4 or equivalent 64-bit (Intel® 64 or AMD64) supported CPU	512 MB	2 GB		
	Windows Server® 2008 R2	64-bit (Intel® 64 or AMD64) supported CPU				
Macintosh Operating System	OS X 10.4.11 and 10.5.x	PowerPC® G4/ G5 Intel® Core™ Processor	512 MB	1GB	80 MB	
	OS X 10.6.x	Intel® Core™ Processor	1GB	2GB		

\*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-4140CN	HL-4150CDN	HL-4570CDW	HL-4570CDWT
Wired network	Network node type	NC-6900h type2			
	Network type	10Base-T/100Base-TX Ethernet			
	Network security	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	N/A		NC-7700w type2	
	Network type	N/A		IEEE802.11b/g	
	Communication mode	N/A		Infrastructure, Ad-hoc	
	Network security	N/A		WEP 64/128 bit, WPA-PSK (TKIP/AES), WPA2-PSK (AES), 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-4140CN	HL-4150CDN	HL-4570CDW	HL-4570CDWT
Machine life		200,000 pages (A4/Letter) or 5 years			
MTBF		4,000 hours			
MTTR		0.5 hours			
Maximum monthly volume		Up to 40,000 pages		Up to 60,000 pages	
Periodical replacement parts	Fuser unit	100,000 pages			
	Laser unit	100,000 pages			
	Paper feeding kit1	100,000 pages			
	Paper feeding kit2	100,000 pages			
	Paper feeding kit MP	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

Model		HL-4140CN	HL-4150CDN	HL-4570CDW	HL-4570CDWT	
Toner cartridge	Starter Toner <sup>*2</sup>	Black	Approximately 2,500 pages			
		Cyan, Magenta, Yellow	Approximately 1,500 pages			
	Standard Toner <sup>*1</sup>	Black	Approximately 2,500 pages			
		Cyan, Magenta, Yellow	Approximately 1,500 pages			
	High Capacity Toner <sup>*1</sup>	Black	N/A (for USA, Asia Pacific) Approximately 4,000 pages (for Europe)	N/A (for Asia Pacific) Approximately 6,000 pages (for USA) Approximately 4,000 pages (for Europe)		
		Cyan, Magenta, Yellow	N/A (for USA, Asia Pacific) Approximately 3,500 pages (for Europe)	Approximately 3,500 pages		
Super High Capacity Toner <sup>*1</sup>	Black	N/A	N/A (for USA, Europe) Approximately 6,000 pages (for Asia Pacific)	N/A (for USA) Approximately 6,000 pages (for Asia Pacific, Europe)	N/A (for USA, Asia Pacific) Approximately 6,000 pages (for Europe)	
	Cyan, Magenta, Yellow	N/A				
<p>* When printing A4/Letter size one sided pages in accordance with ISO/IEC 19798. Shelf life: 2 years without opening (6 months after opening)</p>						
Drum unit		<p>Life expectancy: Approximately 25,000 pages/drum unit The life expectancy varies according to the use condition. (Refer to Display of the machine log (<a href="#">Function code 80 in Chapter 5.</a>) * When printing A4/Letter size one sided pages in accordance with ISO/IEC 19798. Shelf life: 2 years without opening</p>				
<p>The shelf life of toner cartridge and drum unit is guaranteed under the normal condition as below; (Temperature) Normal condition: 0 to 40 °C * Storage condition at the temperature of 40 to 50 °C: Up to 5 days * Storage condition at the temperature of -20 to 0 °C: Up to 5 days (Humidity) Normal condition: 35 to 85 % * Storage condition at the humidity of 85 to 95 %: Up to 5 days * Storage condition at the humidity of 10 to 35 %: Up to 5 days</p>						
Belt unit		<p>Life expectancy: Approximately 50,000 pages/belt unit The life expectancy varies according to use the condition.</p>				
Waste toner box		<p>Life expectancy: Approximately 50,000 pages/waste toner box</p>				

<sup>\*1</sup> Separately sold consumable toner.

<sup>\*2</sup> Toner supplied with the printer.

Specifications are subject to change without notice.

## 1.5 Paper

### 1.5.1 Paper handling

Model		HL-4140CN	HL-4150CDN	HL-4570CDW	HL-4570CDWT
Paper Input	Paper tray 1	250 sheets			
	Paper tray 2	500 sheets			
	MP tray	50 sheets			
Paper Output	Face-down	150 sheets			
	Face-up	1 sheet (Straight paper path)			
Duplex		N/A	Yes		

Specifications are subject to change without notice.

### 1.5.2 Media specifications

Model		HL-4140CN	HL-4150CDN	HL-4570CDW	HL-4570CDWT
Media type	Paper tray 1	Plain Paper, Thin Paper, Recycled Paper			
	Paper tray 2	Plain Paper, Thin Paper, Recycled Paper			
	MP tray	Plain Paper, Thin Paper, Thick Paper, Thicker Paper, Recycled Paper, Bond, Label, Envelope, Env. Thin, Env.Thick, Glossy Paper <sup>*1</sup>			
	Duplex	N/A	Plain Paper, Thin Paper, Recycled Paper, Glossy Paper		
Media weight	Paper tray 1	60 to 105 g/m <sup>2</sup> (16 to 28 lb)			
	Paper tray 2	60 to 105 g/m <sup>2</sup> (16 to 28 lb)			
	MP tray	60 to 163 g/m <sup>2</sup> (16 to 43 lb)			
	Duplex	N/A	60 to 105 g/m <sup>2</sup> (16 to 28 lb)		
Media size	Paper tray 1	A4, Letter, B5(ISO/JIS), A5, A5(Long Edge), B6(ISO), A6, Executive, Legal <sup>*2</sup> , Folio			
	Paper tray 2	A4, Letter, B5(ISO/JIS), A5, B6(ISO), Executive, Legal <sup>*2</sup> , Folio			
	MP tray	Width: 69.8 to 216 mm (2.75 to 8.5 inch) Length: 116 to 406.4 mm (4.57 to 16 inch)			
	Duplex	N/A	Letter, Legal <sup>*2</sup> , Folio (for USA), A4 (for Europe, Asia Pacific)		

<sup>\*1</sup> When you print on glossy paper, set only a single sheet on the MP tray.

<sup>\*2</sup> Legal size paper is not available in some regions outside USA and Canada.

Specifications are subject to change without notice.

### 1.5.3 Type and size of paper

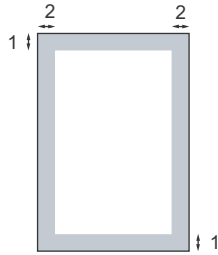
The printer loads paper from the installed paper tray or the manual feed slot. The names for the paper trays in the printer driver as follows:

The name for the paper trays	The name for the paper trays in the printer driver
Paper tray 1 (T1)	Tray 1
Paper tray 2 (T2)	Tray 2
MP tray	MP Tray
Duplex	DX

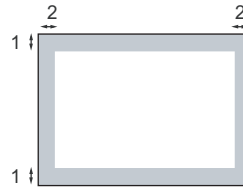
Specifications are subject to change without notice.

## 1.6 Unprintable Area

Portrait



Landscape



	Windows® printer driver and Macintosh printer driver BRScript printer driver for Windows® and Macintosh
1	4.23 mm (0.16 inch)
2	4.23 mm (0.16 inch)

**Note:**

The area that cannot be printed on may vary depending on the paper size and the printer driver you are using. The unprintable area shown above is for Letter size paper.

# **CHAPTER 2**

## **ERROR INDICATION AND TROUBLESHOOTING**

# CHAPTER 2

## ERROR INDICATION AND TROUBLESHOOTING

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

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

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# 1. INTRODUCTION

Troubleshooting is the countermeasure procedures that the service personnel should follow if an error or malfunction occurs with the printer. 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.

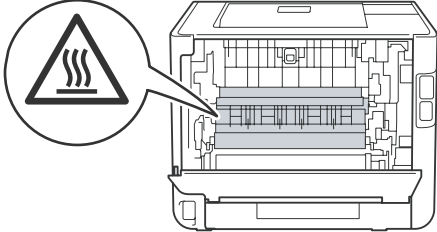
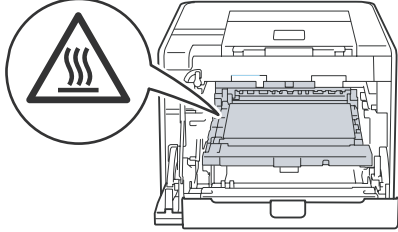
## 1.1 Precautions


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 printer 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 printer 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 conductive mat. Also take care not to touch the conductor sections on the flat cables.
- (4) Follow the warning by all means.




 **WARNING**

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



 **WARNING**

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



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



## 1.2 Initial Check

Check the following items before attempting to repair the printer.

### ■ Operating environment

- (1) Put your printer on a flat, stable surface such as a desk that is free of vibration and shocks.
- (2) Use the printer in a well-ventilated room; use the printer 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 printer is not exposed to direct sunlight, excessive heat, moisture, or dust.
- (4) Keep the printer horizontal when you carry it. To prevent injuries when moving or lifting this printer, make sure to use at least two people.

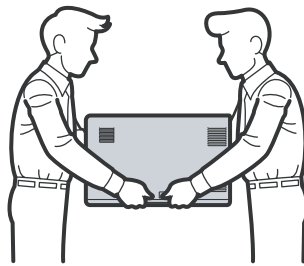


Fig. 2-1

### ■ Power supply

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

### ■ Paper

- (1) A recommended type of paper is being used. (Refer to User's guide.)
- (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 printer is moved from a cold place into a warm room, condensation may occur inside the printer, causing various problems as listed below.

- Condensation on the surface of optical devices such as the scanner windows, lens, reflecting mirror, and protection glass, etc, may cause light print image.
- 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 printer for at least two hours to allow it to reach room temperature.


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

### (2) Low temperature




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

## ■ Cleaning

Use a soft dry lint-free cloth.

 **WARNING**

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



# 2. OVERVIEW

## 2.1 Cross-section Drawing

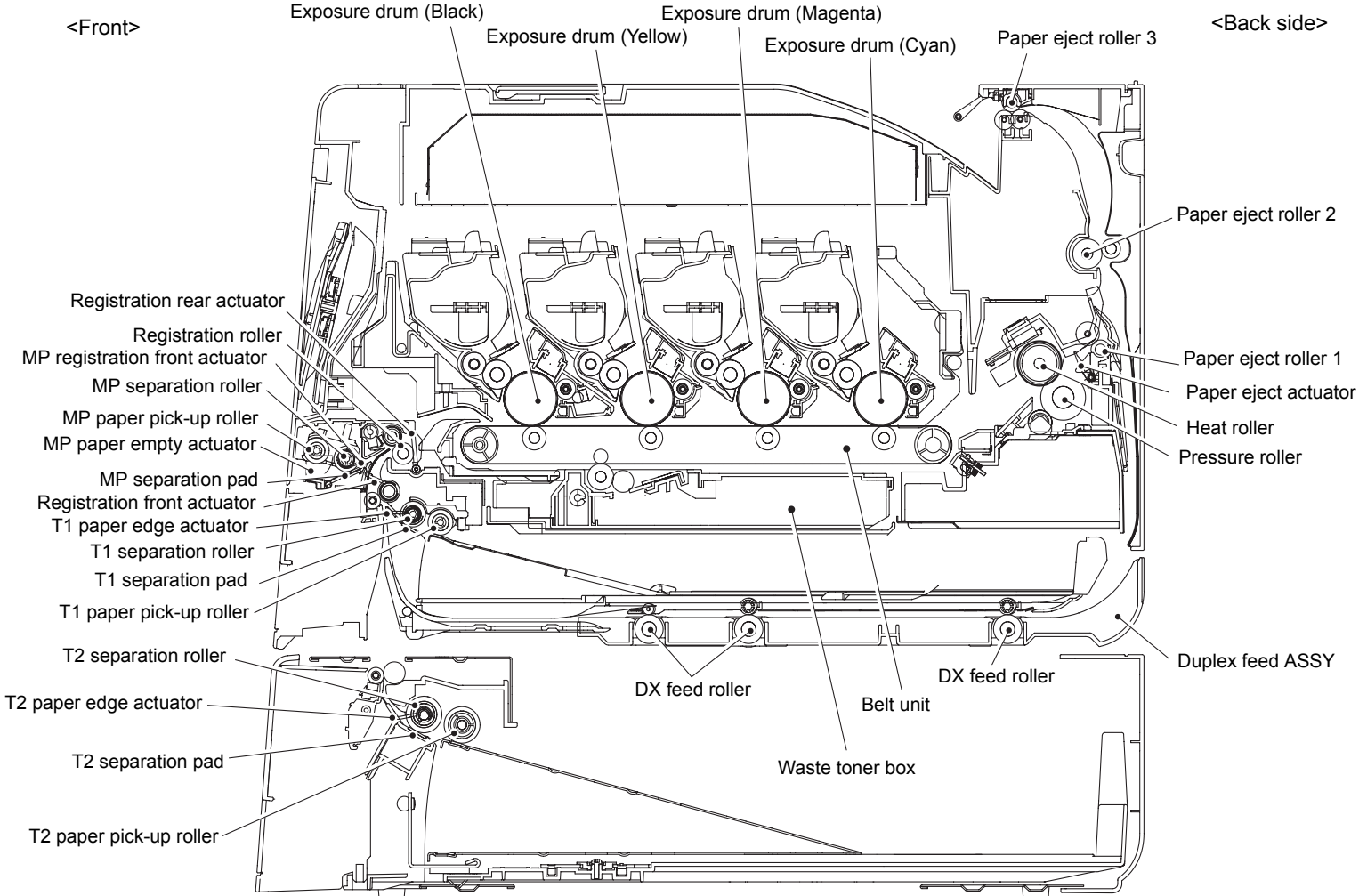


Fig. 2-2

## 2.2 Paper Feeding

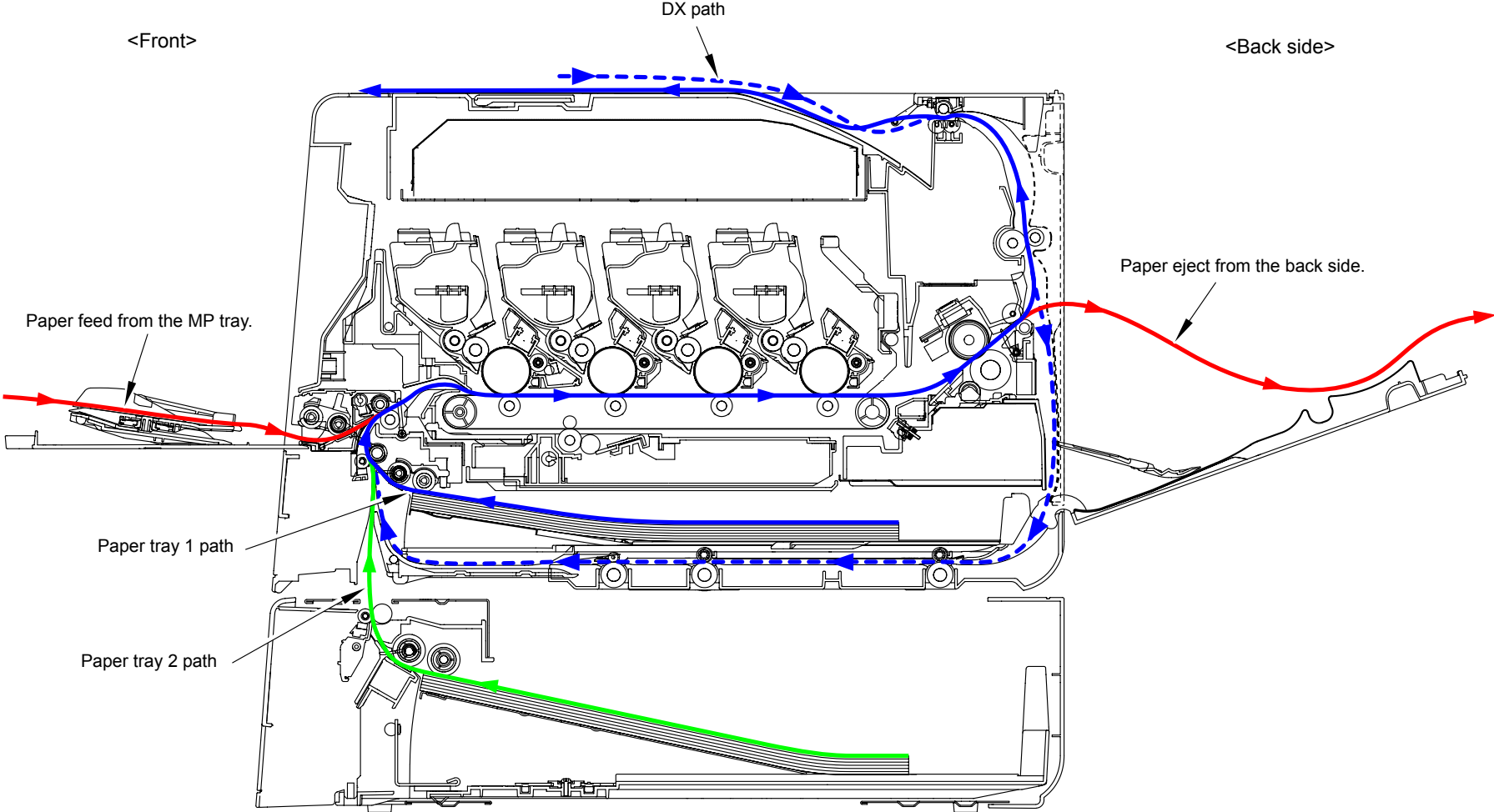


Fig. 2-3

## 2.3 Operation of Each Part

Part name	Operation
T1 paper pick-up roller	Feed the paper from the paper tray 1.
T1 separation roller, T1 separation pad	Separate into single sheet from the paper tray 1.
T1 paper edge actuator	Detect whether or not the paper tray 1 is installed. Detect whether or not paper is loaded. Detect the paper jam of front part.
Registration front actuator	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 is made, the registration roller rotates to feed the paper to the belt unit.
Registration rear actuator	Detect the passage of paper and adjust the starting position for writing on a sheet of paper. Detect the paper jam of center part. Detect the rear edge of paper and identify 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 paper eject roller 1.
Paper eject actuator	Detect whether or not paper is ejected from the fuser unit. In the case of the duplex printing, detect the rear edge of paper and adjust the timing of the paper eject roller 2 and 3 switching.
Paper eject roller 1	Feed the paper ejected from the fuser unit to the paper eject roller 2.
Paper eject roller 2	Feed the paper to the paper eject roller 3. In the case of the duplex printing, after the paper is fed from the eject roller 3 up to a certain point with the front of the sheet printed, the eject roller 3 rotates conversely and feeds the paper to the duplex tray.
Paper eject roller 3	Eject the paper to the face-down output tray. In the case of the duplex printing, after the paper is fed from the eject roller 3 up to a certain point with the front of the sheet printed, the eject roller 3 rotates conversely and feeds the paper to the duplex tray.
DX feed roller	Feed the paper passed in the duplex tray to the registration roller.
MP paper pick-up roller	Feed the paper from the MP tray.
MP separation roller, MP separation pad	Separate into single sheet from the MP tray.
MP paper empty actuator	Detect whether paper is loaded in the MP tray.

Part name	Operation
MP registration front actuator	Detect the front edge of paper from MP tray and control the drive of the registration roller. Detect the paper jam of MP part.
T2 paper pick-up roller	Feed the paper from the paper tray 2.
T2 separation roller, T2 separation pad	Separate into single sheet from the paper tray 2.
T2 paper edge actuator	Detect whether or not the paper tray 2 is installed. Detect whether or not paper is loaded.

## 2.4 Block Diagram

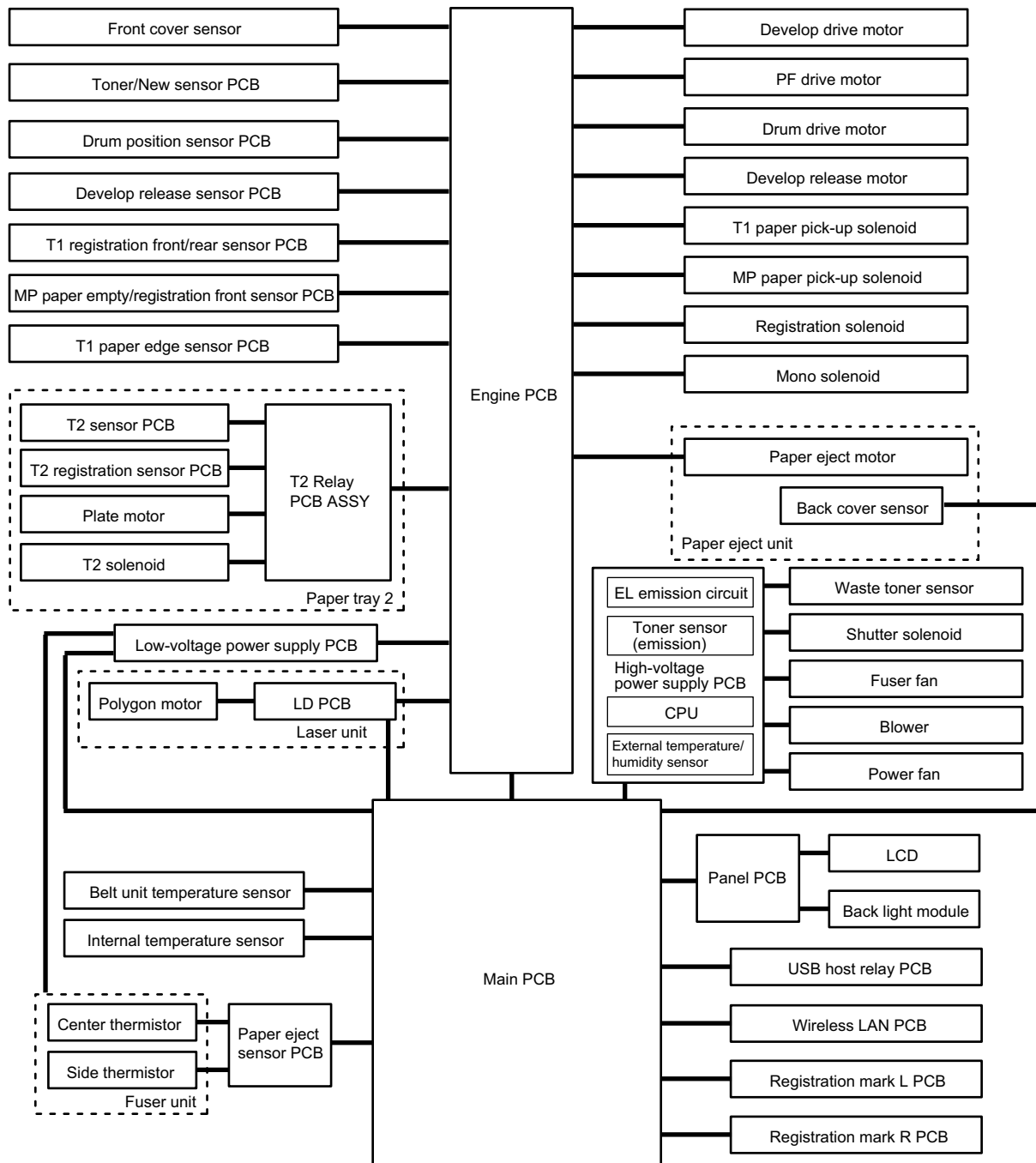


Fig. 2-4

## 2.5 Components

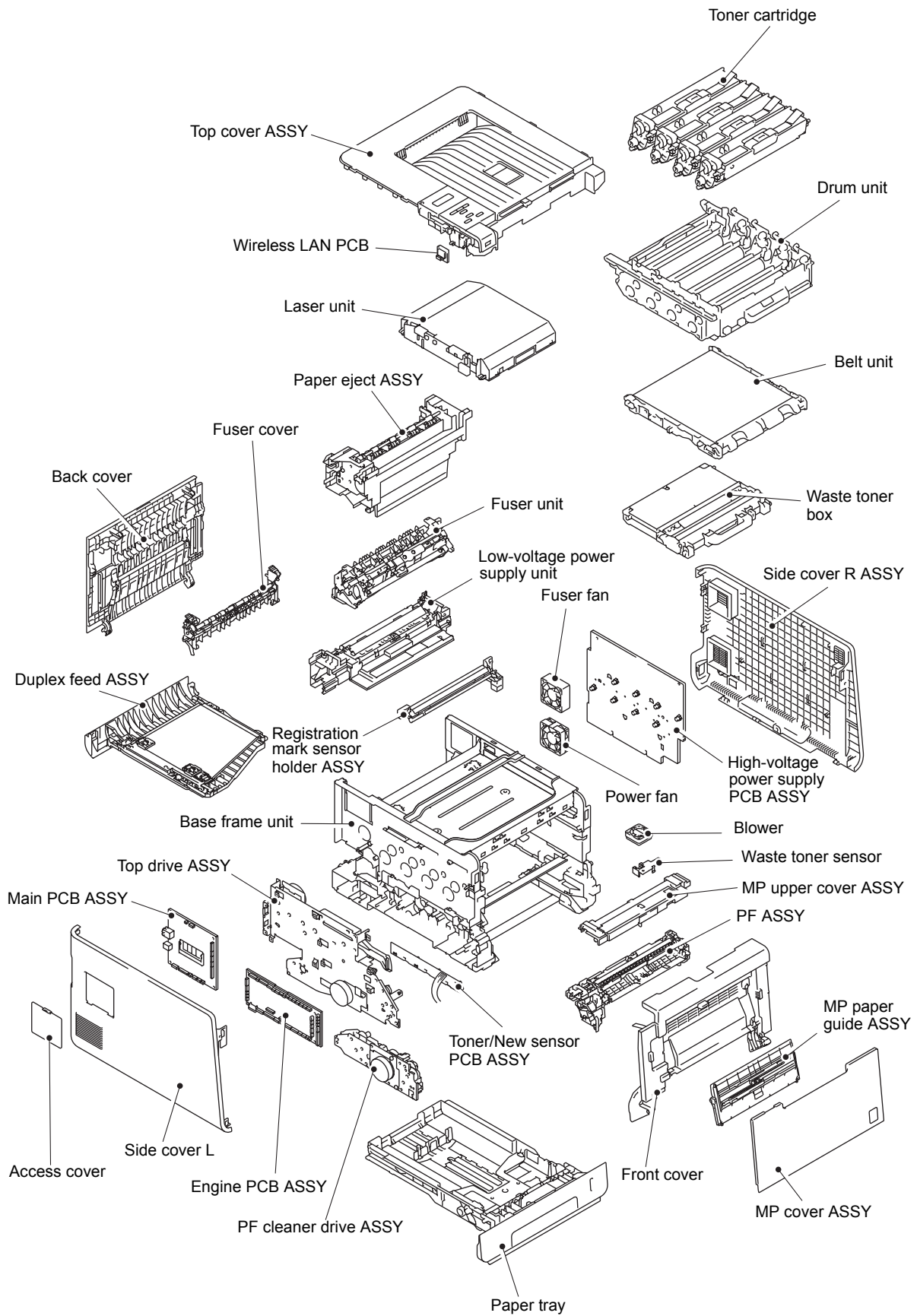


Fig. 2-5



## 3. ERROR INDICATIONS

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

### 3.1 Error Codes

The errors with a mesh background in the table below do not occur in the normal operation. They might occur due to noise around the installation site, change of the power supply voltage, and failures in the software.

Error codes	Problem	Refer to:	Error codes	Problem	Refer to:
0F	The back cover is open upon duplex printing. (The back cover sensor is OFF.)	2-21	1B	Cyan drum error. (An error occurred after the counter value exceeded the value more than twice as long as the life of the drum.) (Printing is not available until the drum unit is replaced.)	2-25
10	Inter-color position alignment adjustment failure. (Error, which cannot be recorded, occurs.)	2-21	1C	Magenta drum error. (An error occurred after the counter value exceeded the value more than twice as long as the life of the drum.) (Printing is not available until the drum unit is replaced.)	2-25
11	Inter-color position alignment adjustment failure. (Toner of the color which is being used reached the end of life.)	2-21	1D	Yellow drum error. (An error occurred after the counter value exceeded the value more than twice as long as the life of the drum.) (Printing is not available until the drum unit is replaced.)	2-25
12	Inter-color position alignment adjustment failure. (Incorrect measurement value of inter-color position alignment adjustment.)	2-22	1E	The drum unit will reach the end of life soon.	2-25
16	Paper of unsupported size for duplex printing or paper of different sizes is loaded.	2-22	1F	More than the specified number of the option trays is installed.	2-26
17	The paper tray 1 is not installed before printing. (The cassette of the T1 paper edge sensor is open.)	2-23	20	Black laser diode error (K).	2-26
18	The paper tray 2 is not installed before printing. (The cassette of the T2 paper edge sensor is open.)	2-23	21	Yellow laser diode error (Y).	2-26
19	The drum unit reached the end of life.	2-24	22	Magenta laser diode error (M).	2-26
1A	Condensation occurred on the laser unit.	2-24	23	Cyan laser diode error (C).	2-26
			24	Internal temperature sensor error.	2-27
			25	Develop drive motor error.	2-27
			26	Belt drive motor error.	2-27

Error codes	Problem	Refer to:	Error codes	Problem	Refer to:
27	PF drive motor error.	2-28	3C	Main PCB error. (Write error in NVRAM)	2-35
28	Drum drive motor error.	2-28			
29	Paper eject motor error.	2-29	3D	Main PCB error. (Read error in NVRAM.)	2-35
2A	Develop release motor error.	2-29			
2B	Blower error.	2-30	3E	Main PCB error. (Bus error in NVRAM.)	2-35
2C	Black Toner/New sensor PCB error.	2-31	3F	Write error in engine firmware.	2-36
2D	Yellow Toner/New sensor PCB error.	2-31	40	Error in the high-voltage power supply PCB while the printer is in operation.	2-36
2E	Magenta Toner/New sensor PCB error.	2-31	42	High-voltage power supply PCB transfer error.	2-36
2F	Cyan Toner/New sensor PCB error.	2-31			
30	Erase lamp current value error.	2-31	43	ASIC error of the main PCB.	2-36
31	Density sensor error.	2-32	44	The black toner cartridge is not installed.	2-37
32	Registration mark sensor shutter operation error.	2-32			
33	Registration mark R PCB ASSY error.	2-33	45	The yellow toner cartridge is not installed.	2-37
34	Registration mark L PCB ASSY error.	2-33	46	The magentatoner cartridge is not installed.	2-37
35	Failure in NVRAM of the engine PCB.	2-33	47	The cyan toner cartridge is not installed.	2-37
36	Error in the high-voltage power supply PCB while the printer is in the standby mode.	2-34	48	Black drum unit is at the end of life.	2-38
37	Belt unit temperature sensor error.	2-34	49	Yellow drum unit is at the end of life.	2-38
38	External temperature sensor error.	2-34			
39	External humidity sensor error.	2-34	4A	Magenta drum unit is at the end of life.	2-38
3A	Engine PCB transfer error. (Communication error between the main CPU and sub CPU.)	2-35	4B	Cyan drum unit is at the end of life.	2-38
3B	Main PCB DRAM access error.	2-35	4C	The black drum unit will reach the end of life soon.	2-38
			4D	The yellow drum unit will reach the end of life soon.	2-38

Error codes	Problem	Refer to:	Error codes	Problem	Refer to:
4E	The magenta drum unit will reach the end of life soon.	2-38	5F	The waste toner box near full. (The sensor detected that the waste toner became near full.)	2-43
4F	The cyan drum unit will reach the end of life soon.	2-38	60	Cyan toner cartridge is at the end of life.	2-44
50	Drum unit is at the end of life.	2-39	61	Magenta toner cartridge is at the end of life.	2-44
51	MP paper feeding kit is at the end of life.	2-39	62	Yellow toner cartridge is at the end of life.	2-44
52	Paper feeding kit1 is at the end of life.	2-39	63	Black toner cartridge is at the end of life.	2-44
53	Paper feeding kit2 is at the end of life.	2-39	64	The cyan toner cartridge will reach the end of life soon.	2-45
54	Fuser unit is at the end of life.	2-39	65	The magenta toner cartridge will reach the end of life soon.	2-45
55	Laser unit is at the end of life.	2-39	66	The yellow toner cartridge will reach the end of life soon.	2-45
56	The fuser cover is open.	2-40	67	The black toner cartridge will reach the end of life soon.	2-45
57	Paper is jammed in the duplex paper feed system.	2-40	68	Fuser unit error. (The temperature rise is detected even after the halogen heater is turned OFF.)	2-45
58	Fuser unit error. (Some kind of fixing error occurs.) (warning)	2-41	69	Fuser unit error. (The connector of the center thermistor is inserted incorrectly.)	2-45
59	Fuser unit error. (After the error code 58 occurred, a failure in the fuser unit is detected again upon start-up.)	2-41	6A	Fuser unit error. (The center thermistor does not detect 60 °C within the specified time.)	2-46
5A	High-voltage power supply PCB transfer error.	2-41	6B	Fuser unit error. (The center thermistor does not detect 100 °C within the specified time.)	2-46
5B	It was detected that the length of the paper under printing was less than the specified value.	2-42			
5C	It was detected that the size of the paper was less than the specified value.	2-42			
5D	The belt unit will reach the end of life soon.	2-42			
5E	Belt unit is at the end of life.	2-42			

Error codes	Problem	Refer to:	Error codes	Problem	Refer to:
6C	Fuser unit error. (The center thermistor detects 270 °C or higher temperature for 1 second.)	2-46	7D	Dirt on drum unit.	2-51
6D	Fuser unit error. (The center thermistor detects 60 °C or lower temperature for 1 second during standby or printing.)	2-46	7E	Belt unit is at the end of life. (The operation is stopped.)	2-54
6E	Fuser unit error. (The center thermistor fails to detect the temperature rise even after the halogen heater is turned ON during printing and 15 second pass.)	2-46	7F	An unidentified error occurred.	2-54
6F	Fuser unit error. (The center and side thermistors detect extremely high temperature.) (Detection of hardware.)	2-47	81	Incorrect density sensor measurement value when implementing adjustment of color density.	2-55
70	Fuser develop motor error.	2-47	82	Density patch measurement is not completed normally when implementing adjustment of color density.	2-55
71	Laser unit polygon motor error.	2-48	83	Drum unit error. (An drum error occurred after the drum unit reached the end of life.)	2-55
72	Beam detecting sensor (Black/ Yellow) error of the laser unit.	2-48	84	Paper jam at the rear section of the printer.	2-56
73	Beam detecting sensor (Cyan/ Magenta) error of the laser unit.	2-48	85	The paper tray 1 is not installed.	2-57
74	The color toner reached the end of life during printing.	2-49	86	The paper tray 2 is not installed.	2-57
75	Cooling down the inside of the printer to protect it.	2-49	87	Toner of the color which is being used reaches the end of life when implementing adjustment of color density.	2-58
76	Fuser unit error. (The center thermistor detects the sharp temperature rise.)	2-50	88	Paper jam inside the printer.	2-58
78	Fuser unit error. (The center thermistor detects the sharp temperature fall.)	2-50	89	Unsupported paper size is used for duplex printing.	2-59
7A	Engine PCB error. (detection of PF drive motor lock error.)	2-50	8A	Paper jam in the paper tray 1.	2-59
7B	Engine PCB error.	2-51	8B	Paper jam in the paper tray 2.	2-60
7C	Communication error between the engine PCB and main PCB.	2-51	8C	Paper jam in the MP tray.	2-61
			8D	Paper jam occurred around the back cover at the time when the power was turned ON, or the fuser cover is open.	2-61
			8E	Error in the adjustment of inter-color position alignment result when implementing it.	2-62

Error codes	Problem	Refer to:	Error codes	Problem	Refer to:
8F	Detection of abnormal value of registration sensor sensitivity when implementing adjustment of inter-color position alignment.	2-62	9E	Toner of the color which is being used reaches the end of life when implementing adjustment of inter-color position alignment.	2-67
90	The paper size of the MP tray does not match that of the print setting.	2-63	9F	Run out of paper.	2-67
91	The paper size of the paper tray 1 does not match that of the print setting.	2-63	A1	The front cover is open.	2-68
92	The paper size of the paper tray 2 does not match that of the print setting.	2-63	AA	An unidentified error occurred.	2-69
93	No paper in MP tray.	2-63	AB	An unidentified error occurred.	2-69
94	No paper is loaded in the paper tray 1. (Registration front sensor fails to be turned ON.)	2-64	AE	An unidentified error occurred.	2-69
95	No paper in paper tray 2.	2-64	B5	An unidentified error occurred.	2-69
96	No paper in all trays.	2-65	B6	An unidentified error occurred.	2-69
97	A paper size, which is not supported by the paper tray 1, is specified in the paper size of the data.	2-65	BA	An unidentified error occurred.	2-69
98	A paper size, which is not supported by the paper tray 2, is specified in the paper size of the data.	2-65	BE	An unidentified error occurred.	2-69
99	The tray in which unsupported paper size is loaded is selected for duplex printing.	2-65	C0	Failure to detect a new black toner cartridge.	2-70
9A	No paper is loaded in the MP tray (MP paper empty sensor fails to be turned ON.)	2-66	C1	Failure to detect a new yellow toner cartridge.	2-70
9D	Detection of incorrect registration sensor measurement value when implementing adjustment of inter-color position alignment.	2-66	C2	Failure to detect a new magenta toner cartridge.	2-70
			C3	Failure to detect a new cyan toner cartridge.	2-70
			C4	Paper tray 2 pressing plate up/down error.	2-71
			C5	Energization failure of erase lamp.	2-71
			C6	Pressure engagement/disengagement failure of toner cartridge.	2-72
			C7	Insufficient memory.	2-72
			C8	RAM area for secure data full.	2-72
			C9	Defective DIMM is installed.	2-73
			CA	USB device overcurrent error.	2-73
			CB	The belt unit is not installed.	2-73
			CC	The fuser unit is not installed.	2-74
			CD	The drum unit is not installed.	2-74

Error codes	Problem	Refer to:	Error codes	Problem	Refer to:
CE	The waste toner box is not installed.	2-75	E9	Main PCB error.	2-79
			EA	An unidentified error occurred.	2-79
CF	Waste toner box full. (The sensor detects that the waste toner is full.)	2-75	EB	Read error in EEPROM of the laser unit.	2-80
			EC	Fuser fan error.	2-80
D2	An unidentified error occurred.	2-76	ED	Communication with the wireless LAN PCB cannot be established upon startup of the power supply.	2-80
D3	An unidentified error occurred.	2-76			
D4	An unidentified error occurred.	2-76			
D5	An unidentified error occurred.	2-76	EE	Unavailability of communication after connecting to the wireless LAN PCB is detected.	2-81
D6	An unidentified error occurred.	2-76			
D7	An unidentified error occurred.	2-76			
D8	An unidentified error occurred.	2-76	EF	The supplied power is unstable.	2-81
D9	An unidentified error occurred.	2-76	F1	An unidentified error occurred.	2-82
DA	An unidentified error occurred.	2-76	F2	The waste toner box will reach the end of life soon.	2-82
DB	An unidentified error occurred.	2-76			
DC	An unidentified error occurred.	2-76	F3	An unidentified error occurred.	2-82
DE	When the center thermistor is higher than the idle temperature, it is detected that the side thermistor temperature is lower than 60 °C.	2-77	F4	The waste toner box is at the end of life.	2-82
			F5	Main PCB communication error.	2-83
E0	Program error. (An error occurred in the ROM checksum.)	2-77	F6	P.C.I error.	2-83
E1	Program error.	2-77	F8	Battery connection error	2-83
			F9	The country code is not entered properly.	2-83
E2	When the center thermistor is lower than the idle temperature, it is detected that the side thermistor temperature is higher than 280 °C.	2-78	FA	The black drum unit is not installed.	2-84
			FB	The cyan drum unit is not installed.	2-84
			FC	The magenta drum unit is not installed.	2-84
E3	Drum position sensor error.	2-78	FD	The yellow drum unit is not installed.	2-84
E4	Run out of paper.	2-78	FE	Detection of incorrect measurement value of density sensor sensitivity calibration.	2-85
E6	Write error in EEPROM of the main PCB.	2-79			
E7	An unidentified error occurred.	2-79	FF	Wireless LAN module overcurrent error.	2-85
E8	An unidentified error occurred.	2-79			

## 3.2 Error Messages

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

Error message	Description	Error codes	Refer to:
<b>Access Error</b>	The USB device is taken out while data is being processed.	---	
<b>Belt End Soon</b>	The belt unit will reach the end of life soon.	5D	2-42
<b>Calibrate (Calibration Failed)</b>	Incorrect density sensor measurement value when implementing adjustment of color density.	81	2-55
	Density patch measurement is not completed normally when implementing adjustment of color density.	82	2-55
	Toner of the color which is being used reaches the end of life when implementing adjustment of color density.	87	2-58
<b>Cartridge Error</b>	Failure to detect a new black toner cartridge.	C0	2-70
	Failure to detect a new yellow toner cartridge.	C1	2-70
	Failure to detect a new magenta toner cartridge.	C2	2-70
	Failure to detect a new cyan toner cartridge.	C3	2-70
<b>Condensation</b>	Condensation occurred on the laser unit.	1A	2-24
<b>Connection Error</b>	As the result that an access point is searched, more than one access point is found.	---	
<b>Connection Fail</b>	As the result that an access point is searched, the access point is found, but connection fails to be established.	---	
<b>Cooling Down</b>	Cooling down the inside of the printer to protect it.	75	2-49
<b>Cover is Open</b>	The front cover is open.	A1	2-68
	The fuser cover is open.	56	2-40
<b>DIMM Error</b>	Defective DIMM is installed.	C9	2-73
<b>Drum End Soon</b>	The drum unit will reach the end of life soon.	1E	2-25
<b>Drum Error</b>	Dirt on drum unit.	7D	2-51
<b>Drum Stop</b>	Drum unit error. (An drum error occurred after the drum unit reached the end of life.)	83	2-55
<b>Duplex Disabled</b>	The back cover is open upon duplex printing. (The back cover sensor is OFF.)	0F	2-21
		16	2-22

Error message	Description	Error codes	Refer to:
<b>Fuser Error</b>	Failure in the center thermistor of the fuser unit.	6A 6B 6C 6D 6F 76 78	2-46 2-46 2-46 2-46 2-47 2-50 2-50
<b>Ignore Data</b>	Undecodable data is found during printing. Undecodable PS data is received.	---	
<b>Jam Duplex</b>	Paper is jammed in the duplex paper feed system.	57	2-40
<b>Jam Inside</b>	Paper jam inside the printer.	88	2-58
<b>Jam MP Tray</b>	Paper jam in the MP tray.	8C	2-61
<b>Jam Rear</b>	Paper jam at the rear section of the printer.	84	2-56
<b>Jam Tray 1</b>	Paper jam in the paper tray 1.	8A	2-59
<b>Jam Tray 2</b>	Paper jam in the paper tray 2.	8B	2-60
<b>Log Access Error</b>	Authentication error occurs.	---	
	File access error occurs.	---	
	Server timeout occurs.	---	
	Server time cannot be obtained when SNTP is used.	---	
<b>Low temperature</b>	Room temperature is low.	---	
<b>Machine Error F9</b>	The country code is not entered properly.	F9	2-83
<b>Manual Feed</b>	No paper is loaded in the MP tray (MP paper empty sensor fails to be turned ON.)	9A	2-66
<b>No Belt Unit</b>	The belt unit is not installed.	CB	2-73
<b>No Drum Unit</b>	The drum unit is not installed.	CD	2-74
<b>No HUB Support</b>	USB HOST connection error	---	
<b>No Paper</b>	No paper in paper tray 1.	94	2-64
	No paper in MP tray.	93	2-63
	No paper in paper tray 2.	95	2-64
	No paper in all trays.	96	2-65
<b>No Toner</b>	The black toner cartridge is not installed.	44	2-37
	The yellow toner cartridge is not installed.	45	2-37
	The magenta toner cartridge is not installed.	46	2-37
	The cyan toner cartridge is not installed.	47	2-37



Error message	Description	Error codes	Refer to:
<b>No Tray</b>	The paper tray 1 is not installed before printing. (The cassette of the T1 paper edge sensor is open.)	17	2-23
	The paper tray 1 is not installed.	85	2-57
	The paper tray 2 is not installed before printing. (The cassette of the T2 paper edge sensor is open.)	18	2-23
	The paper tray 2 is not installed.	86	2-57
<b>No Waste Toner</b>	The waste toner box is not installed.	CE	2-75
<b>Out of Memory</b>	Insufficient memory.	C7	2-72
	RAM area for secure data full.	C8	2-72
<b>Registration (Registration Failed)</b>	Inter-color position alignment adjustment failure. (Error, which cannot be recorded, occurs.)	10	2-21
	Inter-color position alignment adjustment failure. (Toner of the color which is being used reached the end of life.)	11	2-21
	Inter-color position alignment adjustment failure. (Incorrect measurement value of inter-color position alignment adjustment.)	12	2-22
	Error in the adjustment of inter-color position alignment result when implementing it.	8E	2-62
	Detection of incorrect registration sensor measurement value when implementing adjustment of inter-color position alignment.	9D	2-66
	Toner of the color which is being used reaches the end of life when implementing adjustment of inter-color position alignment.	9E	2-67
<b>Replace Belt</b>	Belt unit is at the end of life.	5E	2-42
	Belt unit is at the end of life. (The operation is stopped.)	7E	2-54
<b>Replace Drum</b>	Drum unit is at the end of life.	19	2-24
		50	2-39
<b>Replace Fuser</b>	Fuser unit is at the end of life.	54	2-39
<b>Replace Laser</b>	Laser unit is at the end of life.	55	2-39
<b>Replace PF Kit MP</b>	MP paper feeding kit is at the end of life.	51	2-39
<b>Replace PF Kit1</b>	Paper feeding kit1 is at the end of life.	52	2-39
<b>Replace PF Kit2</b>	Paper feeding kit2 is at the end of life.	53	2-39

Error message	Description	Error codes	Refer to:
<b>Replace Toner</b>	Each toner cartridge reached the end of life.	60 61 62 63	2-44
	The color toner reached the end of life during printing.	74	2-49
<b>Replace WT Box</b>	Waste toner box full. (The sensor detected that the waste toner became full.)	CF	2-75
<b>Self-Diagnostic</b>	Fuser unit error. (After the error code 58 occurred, a failure in the fuser unit is detected again upon start-up.)	59	2-41
<b>Short paper</b>	It was detected that the length of the paper under printing was less than the specified value.	5B	2-42
<b>Size Error</b>	A paper size, which is not supported by the paper tray 1, is specified in the paper size of the data.	97	2-65
	A paper size, which is not supported by the paper tray 2, is specified in the paper size of the data.	98	2-65
<b>Size Error DX</b>	Unsupported paper size is used for duplex printing.	89	2-59
	The tray in which unsupported paper size is loaded is selected for duplex printing.	99	2-65
<b>Size Mismatch</b>	The paper size of the MP tray does not match that of the print setting.	90	2-63
	The paper size of the paper tray 1 does not match that of the print setting.	91	2-63
	The paper size of the paper tray 2 does not match that of the print setting.	92	2-63
<b>Small paper</b>	It was detected that the size of the paper was less than the specified value.	5C	2-42
<b>Toner Error</b>	Pressure engagement/disengagement failure of toner cartridge.	C6	2-72
<b>Tray 2 Error</b>	Paper tray 2 pressing plate up/down error.	C4	2-71
<b>Unable to Update</b>	Execution of the program update cannot be started because other function is being executed.	---	
<b>Unusable Device</b>	USB device overcurrent error.	CA	2-73
	Unsupported device	---	
<b>Unusable File</b>	The update process cannot be continued because the data of the program file is incorrect.	---	

Error message	Description	Error codes	Refer to:
<b>WT Box End Soon</b>	The waste toner box near full. (The sensor detected that the waste toner became near full.)	5F	2-43

### 3.3 Error Cause and Remedy

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

#### ■ Error code 0F

**Duplex Disabled**  
**Close the Back Cover of the machine.**

The back cover is open upon duplex printing. (The back cover sensor is OFF.)

#### <User Check>

- Close the back cover.

Step	Cause	Remedy
1	Harness connection failure of back cover sensor	Check the harness connection of the back cover sensor ASSY and reconnect it.
2	Back cover damaged	Replace the back cover.
3	Back cover sensor failure	Replace the back cover sensor ASSY.
4	Main PCB failure	Replace the main PCB ASSY.

#### ■ Error code 10

**Registration**  
**Registration failed. Press Go, and try again.**

Inter-color position alignment adjustment failure. (Error, which cannot be recorded, occurs.)

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

#### ■ Error code 11

**Registration**  
**Registration failed. Press Go, and try again.**

Inter-color position alignment adjustment failure.  
 (Toner of the color which is being used reached the end of life.)

#### <User Check>

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

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

■ **Error code 12**

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

Inter-color position alignment adjustment failure.  
(Incorrect measurement value of inter-color position alignment adjustment.)

**<User Check>**

- Replace the toner cartridge 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	Foreign object is affixed around the density sensor	Remove the foreign object affixed around the density sensor.
2	Harness connection failure of registration mark sensor holder ASSY	Check the harness connection of the registration mark sensor holder ASSY and reconnect it.
3	Registration mark sensor PCB failure	Replace the registration mark sensor holder ASSY.
4	High-voltage power supply PCB failure	Replace the high-voltage power supply PCB ASSY.
5	Engine PCB failure	Replace the engine PCB ASSY.
6	Low-voltage power supply PCB failure	Replace the low-voltage power supply PCB ASSY.
7	Main PCB failure	Replace the main PCB ASSY.

■ **Error code 16**

**Duplex Disabled**  
**Reload paper, then press Go.**

Paper of unsupported size for duplex printing or paper of different sizes is loaded.

**<User Check>**

- Use the A4 or Letter size paper.

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

■ **Error code 17**

**No Tray**  
**A Tray is not detected, install Tray 1.**  
**(The paper tray cannot be detected, re-install Tray 1.)**

The message displayed in the second line on the LCD might be the one in parentheses according to the version.

The paper tray 1 is not installed before printing.  
 (The cassette of the T1 paper edge sensor is open.)

**<User Check>**

- Open and close the paper tray 1.

Step	Cause	Remedy
1	T1 paper edge actuator catching on some position	Check the T1 paper edge actuator and reinstall it.
2	Harness connection failure of T1 paper edge sensor PCB ASSY	Check the harness connection of the T1 paper edge sensor PCB ASSY and reconnect it.
3	T1 paper edge sensor PCB failure	Replace the T1 paper edge sensor PCB ASSY.
4	Engine PCB failure	Replace the engine PCB ASSY.
5	Main PCB failure	Replace the main PCB ASSY.

■ **Error code 18**

**No Tray**  
**A Tray is not detected, install Tray 2.**  
**(The paper tray cannot be detected, re-install Tray 2.)**

The message displayed in the second line on the LCD might be the one in parentheses according to the version.

The paper tray 2 is not installed before printing.  
 (The cassette of the T2 paper edge sensor is open.)

**<User Check>**

- Open and close the paper tray 2.

Step	Cause	Remedy
1	T2 paper edge actuator catching on some position	Check the T2 paper edge actuator and reinstall it.
2	Harness connection failure of T2 sensor PCB ASSY	Check the harness connection of the T2 sensor PCB ASSY and reconnect it.
3	Harness connection failure of T2 Relay PCB ASSY	Check the harness connection of the T2 Relay PCB ASSY and reconnect it.
4	T2 sensor PCB ASSY failure	Replace the T2 paper feed frame unit.
5	T2 Relay PCB failure	Replace the T2 Relay PCB ASSY.
6	Engine PCB failure	Replace the engine PCB ASSY.
7	Main PCB failure	Replace the main PCB ASSY.

■ **Error code 19**

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

The drum unit reached the end of life.

**<User Check>**

- Replace the drum unit and reset the counter.  
(Refer to "2.3 Parts Life Reset Function" in Chapter 5.)

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

■ **Error code 1A**

**Condensation**  
**Leave switched ON. Fully open the front cover. Wait 30 minutes, switch OFF and close cover, then switch ON.**

Condensation occurred on the laser unit.

**<User Check>**

- Open the front and back covers and leave them for 30 minutes or more with the power ON.  
After that, close the front and back covers and turn OFF and ON the power switch.

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

■ **Error code 1B (C)**

**Drum Stop**  
We cannot guarantee the print quality. Replace the Drum Unit. Refer to the User's Guide for instructions.

**Error code 1C (M)**

**Drum Stop**  
We cannot guarantee the print quality. Replace the Drum Unit. Refer to the User's Guide for instructions.

**Error code 1D (Y)**

**Drum Stop**  
We cannot guarantee the print quality. Replace the Drum Unit. Refer to the User's Guide for instructions.

Drum error. (An drum error occurred after the counter value exceeded the value more than twice as long as the life of the drum.) (Printing is not available until the drum unit is replaced.)

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

**<User Check>**

- Turn OFF the power switch, and turn it ON again after a while.

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

■ **Error code 1E**

**Drum End Soon**

The drum unit will reach the end of life soon.

**<User Check>**

- Prepare a new drum unit.

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



■ **Error code 1F**

-

More than the specified number of the option trays is installed.

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

**<User Check>**

- Turn OFF the power switch, and turn it ON again after a while.

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

■ **Error code 20 (K)**

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

**Error code 21 (Y)**

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

**Error code 22 (M)**

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

**Error code 23 (C)**

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

Laser diode error.

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

**<User Check>**

- Turn OFF the power switch, and turn it ON again after a while.

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

■ **Error code 24**

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

Internal temperature sensor error.

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

■ **Error code 25**

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

Develop drive motor error.

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

**<User Check>**

- Turn OFF the power switch, and turn it ON again after a while.

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

■ **Error code 26**

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

Belt drive motor error.

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

**<User Check>**

- Turn OFF the power switch, and turn it ON again after a while.

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

■ **Error code 27**

**Print Unable 27**  
**Turn the power off and then back on again.**

PF drive motor error.

**<User Check>**

- Turn OFF the power switch, and turn it ON again after a while.

Step	Cause	Remedy
1	Harness connection failure of PF drive motor	Check the harness connection of the PF drive motor and reconnect it.
2	PF drive motor failure	Replace the PF plate ASSY.
3	Engine PCB failure	Replace the engine 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

■ **Error code 28**

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

Drum drive motor error.

**<User Check>**

- If paper or any other foreign object is affixed to the exposure roller of the drum, remove it.

Step	Cause	Remedy
1	Harness connection failure of drum drive motor	Check the harness connection of the drum drive motor and reconnect it.
2	Drum drive motor failure	Replace the drum drive motor.
3	Engine PCB failure	Replace the engine 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.

■ **Error code 29**

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

Paper eject motor error.

**<User Check>**

- Turn OFF the power switch, and turn it ON again after a while.

Step	Cause	Remedy
1	Harness connection failure of paper eject motor	Check the harness connection of the paper eject motor and reconnect it.
2	Paper eject motor failure	Replace the paper eject motor.
3	Engine PCB failure	Replace the engine 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.

■ **Error code 2A**

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

Develop release motor error.

**<User Check>**

- Turn OFF the power switch, and turn it ON again after a while.

Step	Cause	Remedy
1	Harness connection failure of develop release motor	Check the harness connection of the develop release motor and reconnect it.
2	Develop release motor failure	Replace the develop release motor.
3	Engine PCB failure	Replace the engine 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.

■ **Error code 2B**

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

Blower error.

**<User Check>**

- Turn OFF the power switch, and turn it ON again after a while.

Step	Cause	Remedy
1	Harness connection failure of blower	Check the harness connection of the blower and reconnect it.
2	Blower failure	Replace the blower.
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 2C (K)**

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

**Error code 2D (Y)**

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

**Error code 2E (M)**

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

**Error code 2F (C)**

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

Toner/New sensor PCB error.

Step	Cause	Remedy
1	Toner/New sensor PCB ASSY failure	Check the sensor performance following the procedure described in "Function code 32". If any problem occurs, replace the Toner/New sensor PCB ASSY.
2	Engine PCB failure	Replace the engine PCB ASSY.
3	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 30**

**Print Unable 30**  
**Turn the power off and then back on again.**

Erase lamp current value error.

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

**<User Check>**

- Turn OFF the power switch, and turn it ON again after a while.

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

■ **Error code 31**

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

Density sensor error.

Step	Cause	Remedy
1	Harness connection failure of registration mark sensor holder ASSY	Check the harness connection of the registration mark sensor holder ASSY and reconnect it.
2	Registration mark sensor holder ASSY failure	Replace the registration mark sensor holder ASSY.
3	Main PCB failure	Replace the main PCB ASSY.

■ **Error code 32**

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

Registration mark sensor shutter operation error.

**<User Check>**

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

Step	Cause	Remedy
1	Foreign object around registration mark sensor shutter	Remove the foreign object.
2	Harness connection failure of registration mark sensor holder ASSY	Check the harness connection of the registration mark sensor holder ASSY and reconnect it.
3	Harness connection failure of shutter solenoid	Check the harness connection of the shutter solenoid and reconnect it.
4	High-voltage power supply PCB failure	Replace the high-voltage power supply PCB ASSY.
5	Registration mark sensor holder ASSY failure	Replace the registration mark sensor holder ASSY.
6	Main PCB failure	Replace the main PCB ASSY.

■ **Error code 33**

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

Registration mark R PCB ASSY error.

**Error code 34**

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

Registration mark L PCB ASSY error.

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

**<User Check>**

- Turn OFF the power switch, and turn it ON again after a while.

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

■ **Error code 35**

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

Failure in NVRAM of the engine PCB.

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

**<User Check>**

- Turn OFF the power switch, and turn it ON again after a while.

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



■ **Error code 36**

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

Error in the high-voltage power supply PCB while the printer is in the standby mode.

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

■ **Error code 37**

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

Belt unit temperature sensor error.

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

■ **Error code 38**

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

External temperature sensor error.

■ **Error code 39**

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

External humidity sensor error.

Step	Cause	Remedy
1	External temperature/humidity sensor failure	Replace the high-voltage power supply PCB ASSY.
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 3A**

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

Engine PCB transfer error. (Communication error between the main CPU and sub CPU.)

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

■ **Error code 3B**

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

Main PCB DRAM access error.

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

■ **Error code 3C**

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

Main PCB error. (Write error in NVRAM.)

**Error code 3D**

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

Main PCB error. (Read error in NVRAM.)

**Error code 3E**

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

Main PCB error. (Bus error in NVRAM.)

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

**<User Check>**

- Turn OFF the power switch, and turn it ON again after a while.

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

■ **Error code 3F**

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

Write error in engine firmware.

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

**<User Check>**

- Turn OFF the power switch, and turn it ON again after a while.

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

■ **Error code 40**

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

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

**Error code 42**

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

High-voltage power supply PCB transfer error.

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

■ **Error code 43**

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

ASIC error of the main PCB.

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

**<User Check>**

- Turn OFF the power switch, and turn it ON again after a while.

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

■ **Error code 44 (K)**

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

**Error code 45 (Y)**

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

**Error code 46 (M)**

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

**Error code 47 (C)**

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

The toner cartridge of the appropriate color is not installed.

**<User Check>**

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

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

■ **Error code 48**

-

Black drum unit is at the end of life.

**Error code 49**

-

Yellow drum unit is at the end of life.

**Error code 4A**

-

Magenta drum unit is at the end of life.

**Error code 4B**

-

Cyan drum unit is at the end of life.

**Error code 4C**

-

The black drum unit will reach the end of life soon.

**Error code 4D**

-

The yellow drum unit will reach the end of life soon.

**Error code 4E**

-

The magenta drum unit will reach the end of life soon.

**Error code 4F**

-

The cyan drum unit will reach the end of life soon.

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

**<User Check>**

- Turn OFF the power switch, and turn it ON again after a while.

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

■ **Error code 50**

**Replace Drum**

Drum unit is at the end of life.

**Error code 51**

**Replace PF Kit MP**

MP paper feeding kit is at the end of life.

**Error code 52**

**Replace PF Kit1**

Paper feeding kit1 is at the end of life.

**Error code 53**

**Replace PF Kit2**

Paper feeding kit2 is at the end of life.

**Error code 54**

**Replace Fuser**

Fuser unit is at the end of life.

**Error code 55**

**Replace Laser**

Laser unit is at the end of life.

Step	Cause	Remedy
1	The part displayed on the LCD reached the end of life.	Replace the part displayed on the LCD and reset the counter of each part. (Refer to "2.3 Parts Life Reset Function" in Chapter 5.)
2	Main PCB failure	Replace the main PCB ASSY.

■ **Error code 56**

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

The fuser cover is open.

**<User Check>**

- Close the fuser cover properly.

Step	Cause	Remedy
1	Paper eject actuator catching on some position	Correct the position of the paper eject actuator.
2	Paper eject sensor PCB failure	Check the sensor performance following the procedure described in "Function code 32". If any problem occurs, replace the paper eject sensor PCB ASSY.
3	Main PCB failure	Replace the main PCB ASSY.

■ **Error code 57**

**Jam Duplex**  
**Pull out Tray 1 completely. Check inside the machine or open the Back Cover to remove the jammed paper.**

Paper is jammed in the duplex paper feed system.

**<User Check>**

- Check if the paper is jammed. If jammed, remove it.
- Use the A4 or letter size paper.

Step	Cause	Remedy
1	Foreign object around paper eject	Remove the foreign object.
2	Foreign object around paper guide DX ASSY	Remove the foreign object.
3	Coming off of back flapper ASSY	Re-assemble the back flapper ASSY.
4	Duplex feed ASSY not assembled correctly	Re-assemble the duplex feed ASSY.
5	Duplex paper guide not assembled correctly	Re-assemble the duplex paper guide.
6	Harness connection failure of paper eject ASSY	Check the harness connection of the paper eject ASSY and reconnect it.
7	Paper eject motor failure	Replace the paper eject motor.
8	Duplex feed ASSY and Duplex paper guide failure	Replace the paper tray 1.
9	Paper eject ASSY failure	Replace the paper eject ASSY.
10	Engine PCB failure	Replace the engine PCB ASSY.
11	Main PCB failure	Replace the main PCB ASSY.

■ **Error code 58**

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

**Error code 59**

**Self-Diagnostic**  
**Will Automatically Restart within 15 minutes.**

Fuser unit error.

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

■ **Error code 5A**

**Print Unable 5A**  
**Turn the power off and then back on again.**

High-voltage power supply PCB transfer error.

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

**<User Check>**

- Turn OFF the power switch, and turn it ON again after a while.

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



■ **Error code 5B**

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

It was detected that the length of the paper under printing was less than the specified value.

**Error code 5C**

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

It was detected that the size of the paper was less than the specified value.

**<User Check>**

- Remove the paper left inside the printer.
- Replace the paper with the specified A4 size or larger size paper.

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

■ **Error code 5D**

**Belt End Soon**

The belt unit will reach the end of life soon.

**<User Check>**

- Prepare a new belt unit.

■ **Error code 5E**

**Replace Parts**  
**Belt**

Belt unit is at the end of life.

**<User Check>**

- Prepare a new belt unit. Reset the belt counter.  
(Refer to "2.3 Parts Life Reset Function" in Chapter 5.)

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

■ Error code 5F

**WT Box End Soon**

The waste toner box near full. (The sensor detected that the waste toner became near full.)

**<User Check>**

- Prepare a new waste toner box.

Step	Cause	Remedy
1	Harness connection failure of waste toner sensor	Check the harness connection of the waste toner sensor and reconnect it.
2	Waste toner sensor failure	Check the sensor performance following the procedure described in "Function code 32". If any problem occurs, replace the waste toner sensor.
3	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 60 (C)**

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

**Error code 61 (M)**

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

**Error code 62 (Y)**

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

**Error code 63 (K)**

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

Each toner cartridge reached the end of life.

**<User Check>**

- Replace the toner cartridge of the appropriate color.

Step	Cause	Remedy
1	Harness connection failure of Toner/New sensor PCB ASSY	Check the sensor performance following the procedure described in "Function code 32". If any problem occurs, check the harness connections of the Toner/New sensor PCB ASSY and reconnect them.
2	Toner/New sensor PCB ASSY failure (Toner empty)	Replace the Toner/New sensor PCB ASSY.
3	Engine PCB failure	Replace the engine PCB ASSY.
4	Main PCB failure	Replace the main PCB ASSY.

■ **Error code 64 (C)**

Ready  
K ■ Y ■ M ■ C □

**Error code 65 (M)**

Ready  
K ■ Y ■ M □ C ■

**Error code 66 (Y)**

Ready  
K ■ Y □ M ■ C ■

**Error code 67 (K)**

Ready  
K □ Y ■ M ■ C ■

Each toner cartridge will reach the end of life soon. ■ : Lighting, □ : Blinking

**<User Check>**

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

Step	Cause	Remedy
1	Toner/New sensor PCB ASSY failure (Toner empty)	Replace the Toner/New sensor PCB ASSY.
2	Engine PCB failure	Replace the engine PCB ASSY.
3	Main PCB failure	Replace the main PCB ASSY.

■ **Error code 68**

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

Fuser unit error. (The temperature rise is detected even after the halogen heater is turned OFF.)

**Error code 69**

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

Fuser unit error. (The connector of the center thermistor is inserted incorrectly.)

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

**<User Check>**

- Turn OFF the power switch, and turn it ON again after a while.

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

■ **Error code 6A**

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

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

**Error code 6B**

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

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

**Error code 6C**

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

Fuser unit error. (The center thermistor detects 270 °C or higher temperature for 1 second.)

**Error code 6D**

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

Fuser unit error. (The center thermistor detects 60 °C or lower temperature for 1 second during standby or printing.)

Step	Cause	Remedy
1	Fuser unit connector connection failure	Reconnect the connector of the fuser unit.
2	Fuser unit failure	Replace the fuser unit.
3	Low-voltage power supply PCB failure	Replace the low-voltage power supply PCB ASSY.
4	Paper eject sensor PCB failure	Replace the paper eject sensor PCB ASSY.
5	Main PCB failure	Replace the main PCB ASSY.

■ **Error code 6E**

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

Fuser unit error. (The center thermistor fails to detect the temperature rise even after the halogen heater is turned ON during printing and 15 second pass.)

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

**<User Check>**

- Turn OFF the power switch, and turn it ON again after a while.

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

■ **Error code 6F**

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

Fuser unit error.  
 (The center and side thermistors detect extremely high temperature.) (Detection of hardware.)

Step	Cause	Remedy
1	Fuser unit connector connection failure	Reconnect the connector of the fuser unit.
2	Fuser unit failure	Replace the fuser unit.
3	Low-voltage power supply PCB failure	Replace the low-voltage power supply PCB ASSY.
4	Paper eject sensor PCB failure	Replace the paper eject sensor PCB ASSY.
5	Main PCB failure	Replace the main PCB ASSY.

■ **Error code 70**

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

Fuser develop motor error.

**<User Check>**

- Open the fuser cover to check if paper is wound around the fuser unit.
- Replace the toner cartridges except the black toner cartridge.

Step	Cause	Remedy
1	Harness connection failure of fuser develop motor	Check the harness connection of the fuser develop motor and reconnect it.
2	Fuser develop motor failure	Replace the fuser develop motor ASSY.
3	Engine PCB failure	Replace the engine 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.

■ **Error code 71**

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

Laser unit polygon motor error.

**Error code 72**

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

Beam detecting sensor (Black/Yellow) error of the laser unit.

**Error code 73**

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

Beam detecting sensor (Cyan/Magenta) error of the laser unit.

**<User Check>**

- Open the front and back covers and leave them for 30 minutes or more with the power ON. After that, close the front and back covers and turn OFF and ON the power switch.

Step	Cause	Remedy
1	Harness connection failure of laser unit	Check the harness connections (at three locations) of the laser unit and reconnect them.
2	Laser unit failure	Replace the laser unit.
3	Engine PCB failure	Replace the engine PCB ASSY.
4	Main PCB failure	Replace the main PCB ASSY.

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

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

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

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

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

The color toner reached the end of life during printing.

**<User Check>**

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

Step	Cause	Remedy
1	Toner/New sensor PCB ASSY failure (Toner empty)	Check the sensor performance following the procedure described in "Function code 32". If any problem occurs, replace the Toner/New sensor PCB ASSY.
2	Engine PCB failure	Replace the engine PCB ASSY.
3	Main PCB failure	Replace the main PCB ASSY.

■ **Error code 75**

**Cooling Down**  
**Wait for a while**

Cooling down the inside of the printer to protect it.

**<User Check>**

- Leave the printer for a while as the power remains ON.

Step	Cause	Remedy
1	Internal temperature sensor failure	Replace the internal temperature sensor.
2	Main PCB failure	Replace the main PCB ASSY.



■ **Error code 76**

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

Fuser unit error. (The center thermistor detects the sharp temperature rise.)

■ **Error code 78**

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

Fuser unit error. (The center thermistor detects the sharp temperature fall.)

Step	Cause	Remedy
1	Fuser unit failure	Replace the fuser unit.
2	Low-voltage power supply PCB failure	Replace the low-voltage power supply PCB ASSY.
3	Paper eject sensor PCB failure	Replace the paper eject sensor PCB ASSY.
4	Main PCB failure	Replace the main PCB ASSY.

■ **Error code 7A**

**Print Unable 7A**  
**Turn the power off and then back on again.**

Engine PCB failure (detection of motor lock error)

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

**<User Check>**

- Turn OFF the power switch, and turn it ON again after a while.

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

■ **Error code 7B**

**Print Unable 7B**  
**Turn the power off and then back on again.**

Engine PCB error.

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

■ **Error code 7C**

**Print Unable 7C**  
**Turn the power off and then back on again.**

Communication error between the engine PCB and main PCB.

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

**<User Check>**

- Turn OFF the power switch, and turn it ON again after a while.

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

■ **Error code 7D**

**Drum Error**  
**Slide the Green tab on Drum Unit in each color. Refer to the User's Guide for the procedures.**

Dirt on drum unit.

**<User Check>**

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

Step	Cause	Remedy
1	Dirt or dust on drum unit electrodes	Clean the electrodes of the drum unit and main body. (Refer to <a href="#">Fig. 2-6 (next page)</a> and <a href="#">Fig. 2-9 (P2-53)</a> )
2	High-voltage power supply PCB failure	Replace the high-voltage power supply PCB ASSY.
3	Engine PCB failure	Replace the engine PCB ASSY.
4	Main PCB failure	Replace the main PCB ASSY.

■ Electrodes location of the drum unit and toner cartridge

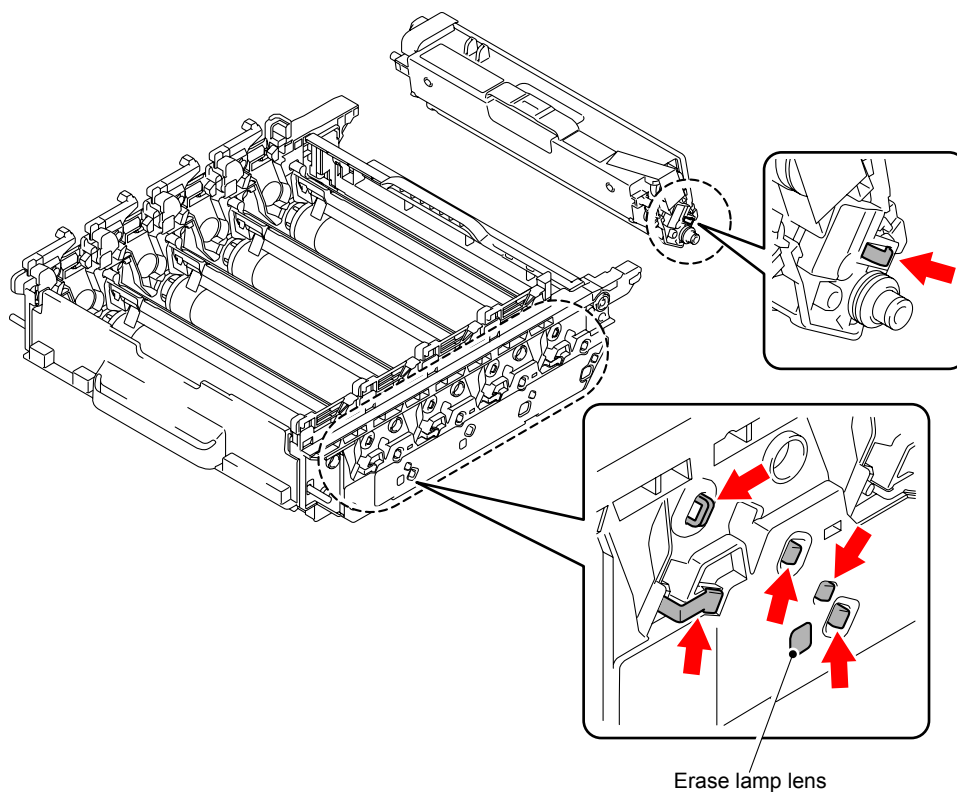


Fig. 2-6

■ Electrodes location of the belt unit

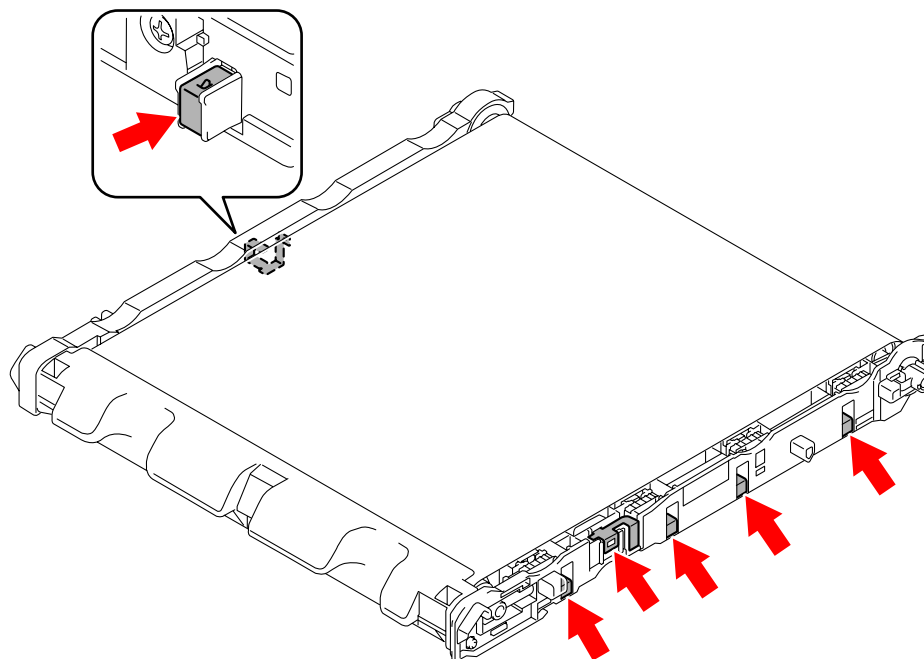


Fig. 2-7

## ■ Electrodes location of waste toner box

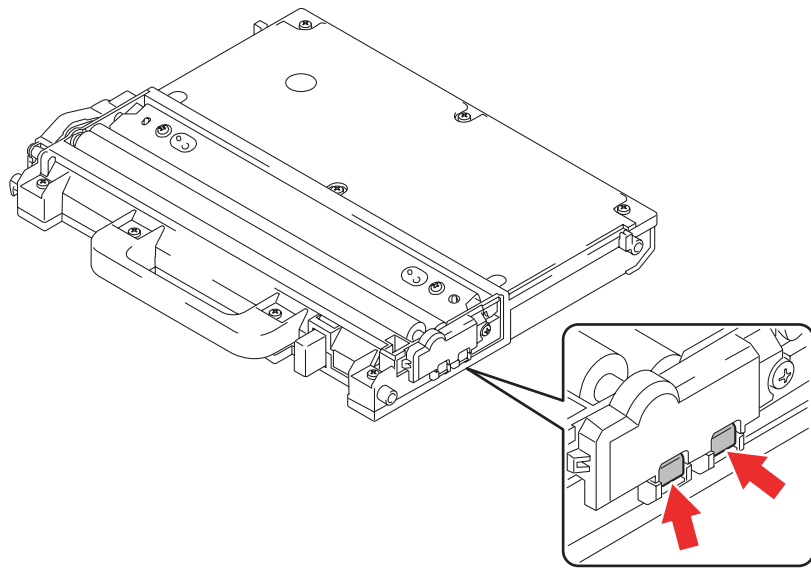


Fig. 2-8

## ■ Electrodes location of main body

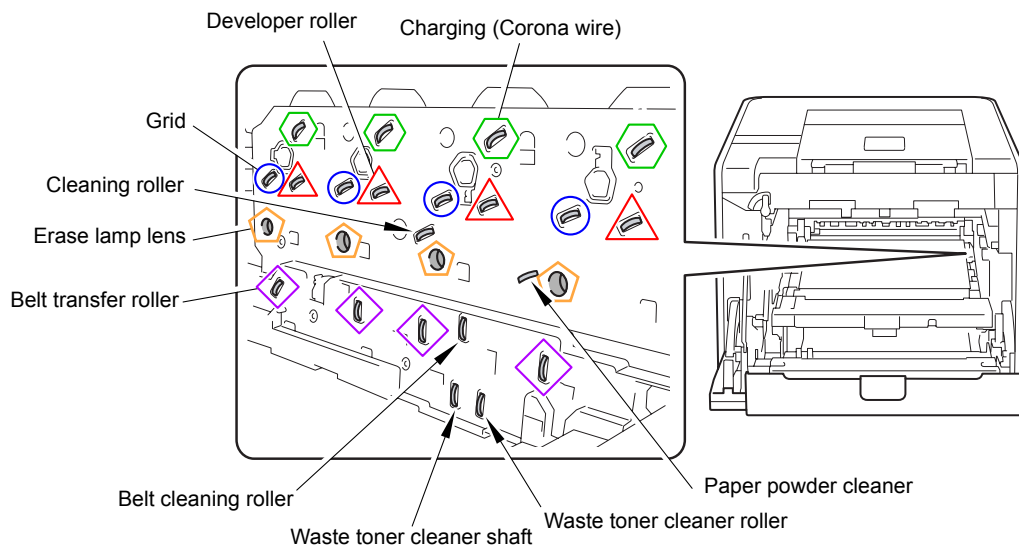


Fig. 2-9

### <How to clean the electrodes>

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

■ **Error code 7E**

**Replace Belt**  
**Open the Front Cover, replace the Belt Unit.**

Belt unit is at the end of life. (The operation is stopped.)

**<User Check>**

- Replace the belt unit with a new one and reset the counter.  
(Refer to "2.3 Parts Life Reset Function" in Chapter 5.)

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

■ **Error code 7F**

-

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

**<User Check>**

- Turn OFF the power switch, and turn it ON again after a while.

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

■ **Error code 81**

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

Incorrect density sensor measurement value when implementing adjustment of color density.

**Error code 82**

**Calibrate**  
**Calibration failed. Press Go, and try again.**

Density patch measurement is not completed normally when implementing adjustment of color density.

**<User Check>**

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

Step	Cause	Remedy
1	Foreign object is affixed around the density sensor	Remove the foreign object affixed around the density sensor.
2	Harness connection failure of registration mark sensor holder ASSY	Check the harness connection of the registration mark sensor holder ASSY and reconnect it.
3	Density sensor failure	Replace the registration mark sensor holder ASSY.
4	High-voltage power supply PCB failure	Replace the high-voltage power supply PCB ASSY.
5	Engine PCB failure	Replace the engine PCB ASSY.
6	Low-voltage power supply PCB failure	Replace the low-voltage power supply PCB ASSY.
7	Main PCB failure	Replace the main PCB ASSY.

■ **Error code 83**

**Drum Stop**  
**Replace the Drum Unit. Refer to the instructions in the carton of new drum.**

Drum unit error. (An drum error occurred after the drum unit reached the end of life.)

**<User Check>**

- Replace the drum unit with a new one and reset the drum counter.  
 (Refer to "2.3 Parts Life Reset Function" in Chapter 5.)

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

■ **Error code 84**

**Jam Rear**  
**Open the Back Cover and remove the jammed paper.**

Paper jam at the rear section of the printer.

**<User Check>**

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

Step	Cause	Remedy
1	Foreign object around paper eject	Remove the foreign object.
2	Coming off of back flapper ASSY	Re-assemble the back flapper ASSY.
3	Paper eject actuator malfunction	Re-assemble the paper eject actuator.
4	Harness connection failure of paper eject motor	Check the harness connection of the paper eject motor and reconnect it.
5	Paper eject sensor PCB ASSY failure	Check the sensor performance following the procedure described in "Function code 32". If any problem occurs, replace the paper eject sensor PCB ASSY.
6	Paper eject motor failure	Replace the paper eject motor.
7	Paper eject ASSY failure	Replace the paper eject ASSY.
8	Engine PCB failure	Replace the engine PCB ASSY.
9	Main PCB failure	Replace the main PCB ASSY.

■ **Error code 85**

**No Tray**  
**A Tray is not detected, install Tray 1.**  
**(The paper tray cannot be detected, re-install Tray 1.)**

The message displayed in the second line on the LCD might be the one in parentheses according to the version.

The paper tray 1 is not installed.

**<User Check>**

- Check if the paper tray 1 is installed into the printer.
- Check if the paper is jammed in the paper tray 1. If jammed, remove it.

Step	Cause	Remedy
1	Harness connection failure of T1 paper edge sensor PCB ASSY	Check the harness connection of the T1 paper edge sensor PCB ASSY and reconnect it.
2	T1 paper edge sensor PCB failure	Check the sensor performance following the procedure described in "Function code 32". If any problem occurs, replace the T1 paper edge sensor PCB ASSY.
3	Engine PCB failure	Replace the engine PCB ASSY.
4	Main PCB failure	Replace the main PCB ASSY.

■ **Error code 86**

**No Tray**  
**A Tray is not detected, install Tray 2.**  
**(The paper tray cannot be detected, re-install Tray 2.)**

The message displayed in the second line on the LCD might be the one in parentheses according to the version.

The paper tray 2 is not installed.

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

**<User Check>**

- Turn OFF the power switch, and turn it ON again after a while.

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



■ **Error code 87**

**Calibrate**  
**Calibration failed. Insufficient Toner for Calibration.**

Toner of the color which is being used reaches the end of life when implementing adjustment of color density.

**<User Check>**

- Replace the toner cartridge with a new one.

Step	Cause	Remedy
1	Toner/New sensor PCB failure (Toner empty)	Check the sensor performance following the procedure described in "Function code 32". If any problem occurs, replace the Toner/New sensor PCB ASSY.
2	Engine PCB failure	Replace the engine PCB ASSY.
3	Main PCB failure	Replace the main PCB ASSY.

■ **Error code 88**

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

Paper jam inside the printer.

**<User Check>**

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

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

■ **Error code 89**

**Size Error DX**  
**Specify the correct paper and press Go.**

Unsupported paper size is used for duplex printing.

**<User Check>**

- Use the A4 or Letter size paper.
- Check if the thickness of the paper is 60 to 105 g/m<sup>2</sup>.

Step	Cause	Remedy
1	Registration front/rear sensor PCB failure	Check the registration front/rear sensor performance following the procedure described in "Function code 32". If any problem is found, replace the registration front/rear sensor PCB ASSY.
2	Engine PCB failure	Replace the engine PCB ASSY.
3	Main PCB failure	Replace the main PCB ASSY.

■ **Error code 8A**

**Jam Tray 1**  
**Remove the jammed paper from Tray 1.**

Paper jam in the paper tray 1.

**<User Check>**

- Check if the paper is loaded into the paper tray 1 correctly.
- Turn back the paper loaded in the paper tray 1 or change the orientation of the paper by 180°.
- Adjust the paper guide corresponding to the paper size.
- Check if too much paper is loaded in the tray.
- Check if the thickness of the paper is 60 to 105 g/m<sup>2</sup>.

Step	Cause	Remedy
1	Foreign object around paper tray 1	Remove the foreign object.
2	Harness connection failure of T1 registration front/rear sensor PCB ASSY	Check the harness connection of the T1 registration front/rear sensor PCB ASSY and reconnect it.
3	Paper feeding kit1 worn out	Replace the paper feeding kit1.
4	Registration front actuator malfunction	Re-assemble the registration front actuator.
5	Registration front sensor failure	Check the sensor performance following the procedure described in "Function code 32". If any problem occurs, replace the T1 registration front/rear sensor PCB ASSY.
6	Engine PCB failure	Replace the engine PCB ASSY.
7	Main PCB failure	Replace the main PCB ASSY.

■ **Error code 8B**

**Jam Tray 2**  
**Remove the jammed paper from Tray 2.**

Paper jam in the paper tray 2.

**<User Check>**

- Check if the paper is jammed in the paper tray 2. If jammed, remove it.
- Check if the paper is loaded into the paper tray 2 correctly.
- Turn back the paper loaded in the paper tray 2 or change the orientation of the paper by 180°.
- Adjust the paper guide corresponding to the paper size.
- Check if too much paper is loaded in the tray.
- Check if the thickness of the paper is 60 to 105 g/m<sup>2</sup>.

Step	Cause	Remedy
1	Foreign object around the front of the paper tray 2	Remove the foreign object.
2	Harness connection failure of T2 sensor PCB ASSY	Check the harness connection of the T2 sensor PCB ASSY and reconnect it.
3	Harness connection failure of T2 Relay PCB ASSY	Check the harness connection of the T2 Relay PCB ASSY and reconnect it.
4	T2 separation roller ASSY worn out	Replace the T2 separation roller ASSY.
5	T2 Relay PCB failure	Replace the T2 Relay PCB ASSY.
6	Engine PCB failure	Replace the engine PCB ASSY.
7	Main PCB failure	Replace the main PCB ASSY.

■ **Error code 8C**

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

Paper jam in the MP tray.

**<User Check>**

- Check if paper is jammed around the MP tray. If paper is jammed, remove the jammed paper.
- Check if the paper is loaded into the MP tray correctly.
- Turn back the paper loaded in the MP tray or change the orientation of the paper by 180°.
- Adjust the paper guide corresponding to the paper size.
- Check if too much paper is loaded in the tray.
- Check if the thickness of the paper is 60 to 163 g/m<sup>2</sup>.

Step	Cause	Remedy
1	Foreign object around MP tray	Remove the foreign object.
2	MP paper feeding kit worn out	Replace the MP paper feeding kit.
3	MP registration front sensor failure	Check the sensor performance following the procedure described in "Function code 32". If any problem occurs, replace the MP paper empty/registration front sensor PCB ASSY.
4	Engine PCB failure	Replace the engine PCB ASSY.
5	Main PCB failure	Replace the main PCB ASSY.

■ **Error code 8D**

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

Paper jam occurred around the back cover at the time when the power was turned ON, or the fuser cover is open.

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

**<User Check>**

- Turn OFF the power switch, and turn it ON again after a while.

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

■ **Error code 8E**

**Registration**  
**Registration failed. Press Go, and try again.**

Error in the adjustment of inter-color position alignment result when implementing it.

**<User Check>**

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

Step	Cause	Remedy
1	Harness connection failure of the registration mark L PCB ASSY or registration mark R PCB ASSY	Check the harness connection of the registration mark sensor holder ASSY and reconnect it.
2	Registration mark sensor holder ASSY failure	Replace the registration mark sensor holder ASSY.
3	Main PCB failure	Replace the main PCB ASSY.

■ **Error code 8F**

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

Detection of abnormal value of registration sensor sensitivity when implementing adjustment of inter-color position alignment.

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

**<User Check>**

- Turn OFF the power switch, and turn it ON again after a while.

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

■ **Error code 90**

**Size Mismatch**  
**Load <size> paper in Multi Purpose Tray and press Go.**

The paper size of the MP tray does not match that of the print setting.

**Error code 91**

**Size Mismatch**  
**Load <size> paper in Tray1 and press Go.**

The paper size of the paper tray 1 does not match that of the print setting.

**Error code 92**

**Size Mismatch**  
**Load <size> paper in Tray2 and press Go.**

The paper size of the paper tray 2 does not match that of the print setting.

**<User Check>**

- Match the paper size of the each paper tray with that of the print setting.

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

■ **Error code 93**

**No Paper**  
**Load <size> paper in Multi Purpose Tray.**

No paper in MP tray.

**<User Check>**

- Load paper in the MP tray.

Step	Cause	Remedy
1	Operation failure of the actuator of the MP paper empty sensor	Uninstall and reinstall the actuator of the MP paper empty sensor.
2	Harness connection failure of MP paper empty/registration front sensor PCB	Check the harness connection of the MP paper empty/registration front sensor PCB and reconnect it.
3	MP paper empty sensor failure	Check the sensor performance following the procedure described in "Function code 32". If any problem occurs, replace the MP paper empty/registration front sensor PCB ASSY.
4	Engine PCB failure	Replace the engine PCB ASSY.
5	Main PCB failure	Replace the main PCB ASSY.

■ **Error code 94**

**No Paper**  
**Load <size> paper in Tray 1.**

No paper is loaded in the paper tray 1. (Registration front sensor fails to be turned ON.)

**<User Check>**

- Load paper in the paper tray 1.

Step	Cause	Remedy
1	Coming off of registration front actuator	Re-assemble the registration front actuator.
2	Harness connection failure of T1 registration front/rear sensor PCB ASSY	Check the harness connection of the T1 registration front/rear sensor PCB ASSY and reconnect it.
3	Registration front sensor failure	Check the sensor performance following the procedure described in "Function code 32". If any problem occurs, replace the T1 registration front/rear sensor PCB ASSY.
4	Engine PCB failure	Replace the engine PCB ASSY.
5	Main PCB failure	Replace the main PCB ASSY.

■ **Error code 95**

**No Paper**  
**Load <size> paper in Tray 2.**

No paper in paper tray 2.

**<User Check>**

- Load paper in the paper tray 2.
- Check if paper is properly loaded in the paper tray 2. (Check of connector connection)

Step	Cause	Remedy
1	T2 paper edge actuator malfunction	Re-assemble the T2 paper edge actuator.
2	Harness connection failure of T2 sensor PCB ASSY	Check the harness connection of the T2 sensor PCB ASSY and reconnect it.
3	Harness connection failure of T2 Relay PCB ASSY	Check the harness connection of the T2 Relay PCB ASSY and reconnect it.
4	Harness connection failure of plate drive motor	Check the harness connection of the plate drive motor and reconnect it.
5	T2 paper edge sensor failure	Check the sensor performance following the procedure described in "Function code 32". If any problem occurs, replace the T2 paper feed frame unit.
6	T2 Relay PCB failure	Replace the T2 Relay PCB ASSY.
7	Engine PCB failure	Replace the engine PCB ASSY.
8	Main PCB failure	Replace the main PCB ASSY.

■ **Error code 96**

**No Paper**  
**Load <size> paper in Tray.**

No paper in all trays.

**<User Check>**

- Load paper in any tray.

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

■ **Error code 97**

**Size Error**  
**Specify the correct paper size for Tray 1.**

A paper size, which is not supported by the paper tray 1, is specified in the paper size of the data.

**Error code 98**

**Size Error**  
**Specify the correct paper size for Tray 2.**

A paper size, which is not supported by the paper tray 2, is specified in the paper size of the data.

**<User Check>**

- Change the size of the paper loaded in each tray to a supported paper size.

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

■ **Error code 99**

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

The tray in which unsupported paper size is loaded is selected for duplex printing.

**<User Check>**

- Change the paper size of the specified tray to A4.

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



■ **Error code 9A**

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

No paper is loaded in the MP tray (MP paper empty sensor fails to be turned ON.)

**<User Check>**

- Load paper in the MP tray.

Step	Cause	Remedy
1	Coming off of MP paper empty actuator	Re-assemble the MP paper empty actuator.
2	Harness connection failure of MP paper empty/registration front sensor PCB	Check the harness connection of the MP paper empty/registration front sensor PCB and reconnect it.
3	MP paper empty sensor/ registration front sensor PCB failure	Replace the MP paper empty/registration front sensor PCB ASSY.
4	Engine PCB failure	Replace the engine PCB ASSY.
5	Main PCB failure	Replace the main PCB ASSY.

■ **Error code 9D**

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

Detection of incorrect registration sensor measurement value when implementing adjustment of inter-color position alignment.

**<User Check>**

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

Step	Cause	Remedy
1	Foreign object is affixed around the density sensor	Remove the foreign object affixed around the density sensor.
2	Harness connection failure of registration mark sensor holder ASSY	Check the harness connection of the registration mark sensor holder ASSY and reconnect it.
3	Registration mark sensor PCB failure	Replace the registration mark sensor holder ASSY.
4	High-voltage power supply PCB failure	Replace the high-voltage power supply PCB ASSY.
5	Engine PCB failure	Replace the engine PCB ASSY.
6	Low-voltage power supply PCB failure	Replace the low-voltage power supply PCB ASSY.
7	Main PCB failure	Replace the main PCB ASSY.

■ **Error code 9E**

**Registration**  
**Registration failed. Insufficient Toner for Registration.**

Toner of the color which is being used reaches the end of life when implementing adjustment of inter-color position alignment.

**<User Check>**

- Replace the toner cartridge with a new one.

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

■ **Error code 9F**

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Run out of paper.

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

**<User Check>**

- Turn OFF the power switch, and turn it ON again after a while.

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

■ **Error code A1**

**Cover is Open**  
**Close the Front Cover.**

The front cover is open.

**<User Check>**

- Close the front cover properly.

Step	Cause	Remedy
1	Harness connection failure of front cover sensor	Check the harness connection of the front cover sensor and reconnect it.
2	Front cover sensor failure	Check the sensor performance following the procedure described in "Function code 32". If any problem occurs, replace the front cover sensor.
3	The member part to press the front cover sensor which is located at the inner left side of the front cover is broken.	Replace the front cover.
4	Engine PCB failure	Replace the engine PCB ASSY.
5	Main PCB failure	Replace the main PCB ASSY.

■ **Error code AA**

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**Error code AB**

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**Error code AE**

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**Error code B5**

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**Error code B6**

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**Error code BA**

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**Error code BE**

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This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

**<User Check>**

- Turn OFF the power switch, and turn it ON again after a while.

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

■ **Error code C0 (K)**

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

Failure to detect a new black toner cartridge.

**Error code C1 (Y)**

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

Failure to detect a new yellow toner cartridge.

**Error code C2 (M)**

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

Failure to detect a new magenta toner cartridge.

**Error code C3 (C)**

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

Failure to detect a new cyan toner cartridge.

**<User Check>**

- Install the toner cartridges into the printer properly.

Step	Cause	Remedy
1	Power off or front cover opened while detecting a new toner cartridge	Reset the developing bias voltage and developer roller counter. (Refer to "2.2 Developer Roller Counter Reset Function" in Chapter 5.)

■ **Error code C4**

**Tray 2 Error**  
**Take out Tray 2 and push it back in firmly.**

Paper tray 2 pressing plate up/down error.

**<User Check>**

- Check if the paper tray 2 is installed into the printer.

Step	Cause	Remedy
1	Harness connection failure of T2 plate motor ASSY	Check the harness connection of the T2 plate motor ASSY and reconnect it.
2	Harness connection failure of T2 Relay PCB ASSY	Check the harness connection of the T2 Relay PCB ASSY and reconnect it.
3	T2 plate-up detection sensor failure	Check the sensor performance following the procedure described in "Function code 32". If any problem occurs, replace the T2 paper feed frame unit.
4	T2 Relay PCB ASSY failure	Replace the T2 Relay PCB ASSY.
5	Engine PCB failure	Replace the engine PCB ASSY.
6	T2 plate motor ASSY failure	Replace the paper tray 2.

■ **Error code C5**

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Energization failure of erase lamp

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

**<User Check>**

- Turn OFF the power switch, and turn it ON again after a while.

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

■ **Error code C6**

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

Pressure engagement/disengagement failure of toner cartridge.

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

■ **Error code C7**

**Out of Memory**  
**Add more Memory.**

Insufficient memory.

**<User Check>**

- Delete the stored data.
- Install additional DIMM.

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

■ **Error code C8**

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

RAM area for secure data full.

**<User Check>**

- Delete the stored data.
- Limit the registration of secure files within the limit of 10 users and 3 jobs.

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

■ **Error code C9**

**DIMM Error**

Defective DIMM is installed.

**<User Check>**

- Replace the DIMM.

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

■ **Error code CA**

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

USB device overcurrent error.

**<User Check>**

- Remove the USB device from the USB direct interface and turn OFF the power. After a while, turn ON the power again.
- Replace the USB device with another one.

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

■ **Error code CB**

**No Belt Unit**  
**Open the Front Cover, pull out the Drum Unit completely and install the Belt Unit.**

The belt unit is not installed.

**<User Check>**

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

Step	Cause	Remedy
1	Harness connection failure of registration mark sensor holder ASSY	Check the harness connection of the registration mark sensor holder ASSY and reconnect it.
2	Density sensor failure	Replace the registration mark sensor holder ASSY.
3	Main PCB failure	Replace the main PCB ASSY.



■ **Error code CC**

**No Fuser Unit  
Install the Fuser Unit**

The fuser unit is not installed.

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

**<User Check>**

- Turn OFF the power switch, and turn it ON again after a while.

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

■ **Error code CD**

**No Drum Unit  
Install the Drum unit.**

The drum unit is not installed.

**<User Check>**

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

Step	Cause	Remedy
1	Dirt on the electrode of the drum unit and on the printer	Clean the dirt on the contact points of the both electrodes. (Refer to Fig. 2-6 (P2-52) and Fig. 2-9 (P2-53))
2	Bend of electrode contact of main body	Correct the bend of the electrode contact of the main body.
3	Contact failure between the electrode of the high-voltage power supply PCB ASSY and that of the printer	Clean the electrodes of the high-voltage power supply PCB ASSY.
4	High-voltage power supply PCB failure	Replace the high-voltage power supply PCB ASSY.
5	Engine PCB failure	Replace the engine PCB ASSY.

■ **Error code CE**

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

The waste toner box is not installed.

**<User Check>**

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

Step	Cause	Remedy
1	Waste toner sensor failure	Check the sensor performance following the procedure described in "Function code 32". If any problem occurs, replace the waste toner sensor.
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 CF**

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

Waste toner box full. (The sensor detects that the waste toner is full.)

**<User Check>**

- Replace the waste toner box with a new one.

Step	Cause	Remedy
1	Harness connection failure of waste toner sensor	Check the harness connection of the waste toner sensor and reconnect it.
2	Waste toner sensor failure	Check the sensor performance following the procedure described in "Function code 32". If any problem occurs, replace the waste toner sensor.
3	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 D2

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Error code D3

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Error code D4

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Error code D5

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Error code D6

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Error code D7

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Error code D8

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Error code D9

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Error code DA

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Error code DB

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Error code DC

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This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

<User Check>

- Turn OFF the power switch, and turn it ON again after a while.

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

■ **Error code DE**

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

When the center thermistor is higher than the idle temperature, it is detected that the side thermistor temperature is lower than 60 °C.

Step	Cause	Remedy
1	Harness connection failure between paper eject sensor PCB ASSY and fuser unit	Check the harness connection between the paper eject sensor PCB ASSY and fuser unit, and reconnect it.
2	Side thermistor or center thermistor failure	Replace the fuser unit.
3	Paper eject sensor PCB ASSY failure	Replace the paper eject sensor PCB ASSY.
4	Main PCB failure	Replace the main PCB ASSY.

■ **Error code E0**

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

Program error. (An error occurred in the ROM checksum.)

Step	Cause	Remedy
1	Firmware update failure	Upload the latest firmware.
2	Main PCB failure	Replace the main PCB ASSY.

■ **Error code E1**

**Print Unable E1**  
**Turn the power off and then back on again.**

Program error.

Step	Cause	Remedy
1	Firmware update failure	Upload the latest firmware.
2	Main PCB failure	Replace the main PCB ASSY.

■ **Error code E2**

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

When the center thermistor is lower than the idle temperature, it is detected that the side thermistor temperature is higher than 280 °C.

Step	Cause	Remedy
1	Heat roller dirty	Clean the heat roller.
2	Harness connection failure between paper eject sensor PCB ASSY and fuser unit	Check the harness connection between the paper eject sensor PCB ASSY and fuser unit, and reconnect it.
3	Side thermistor or center thermistor failure	Replace the fuser unit.
4	Paper eject sensor PCB failure	Replace the paper eject sensor PCB ASSY.
5	Main PCB failure	Replace the main PCB ASSY.

■ **Error code E3**

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

Drum position sensor error.

Step	Cause	Remedy
1	Harness connection failure of drum position sensor PCB ASSY	Check the harness connection of the drum position sensor PCB ASSY and reconnect it.
2	Phase displacement of drum gear	Align the drum phase. (Refer to "6. IF YOU REPLACE THE DRUM DRIVE MOTOR" in Chapter 4.)
3	Drum position sensor failure	Replace the drum position sensor PCB ASSY.
4	Engine PCB failure	Replace the engine PCB ASSY.

■ **Error code E4**

-

Run out of paper.

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

**<User Check>**

- Turn OFF the power switch, and turn it ON again after a while.

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

■ **Error code E6**

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

Write error in EEPROM of the main PCB.

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

■ **Error code E7**

-

**Error code E8**

-

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

**<User Check>**

- Turn OFF the power switch, and turn it ON again after a while.

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

■ **Error code E9**

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

Main PCB error.

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

■ **Error code EA**

-

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

**<User Check>**

- Turn OFF the power switch, and turn it ON again after a while.

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

■ **Error code EB**

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

Read error in EEPROM of the laser unit.

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

■ **Error code EC**

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

Fuser fan error.

Step	Cause	Remedy
1	Harness connection failure of fuser fan	Check the harness connection of the fuser fan and reconnect it.
2	Fuser fan failure	Replace the fuser fan.
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 ED**

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

Communication with the wireless LAN PCB cannot be established upon startup of the power supply. (Wireless LAN model only)

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

■ **Error code EE**

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

Unavailability of communication after connecting to the wireless LAN PCB is detected.  
(Wireless LAN model only)

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

■ **Error code EF**

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

The supplied power is unstable.

**<User Check>**

- Turn OFF the power switch, and turn it ON again after a while.

Step	Cause	Remedy
1	The irregular power supply is detected	Replace the low-voltage power supply PCB ASSY. Reset the irregular power supply detection counter following the procedure described in "5. IF THE MACHINE ERROR EF IS DETECTED AND THE LOW-VOLTAGE POWER SUPPLY PCB ASSY IS REPLACED" in Chapter 4.
2	Main PCB failure	Replace the main PCB ASSY.

**Note:**

The irregular power supply detection error (Machine Error EF) occurs when there is a large distortion of the power supply voltage supplied to the printer.  
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 F1**

-

**Error code F2**

**WT Box End Soon**

The waste toner box will reach the end of life soon.  
(The belt cleaner voltage becomes lower than the specified value.)

**Error code F3**

-

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

**<User Check>**

- Turn OFF the power switch, and turn it ON again after a while.

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

■ **Error code F4**

**High Temperature**  
**Decrease room temperature and humidity to allow the machine to operate.**

The waste toner box is at the end of life.

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

**<User Check>**

- Turn OFF the power switch, and turn it ON again after a while.

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

■ **Error code F5**

-

Main PCB communication error

■ **Error code F6**

-

P.C.I error

■ **Error code F8**

-

Battery connection error

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

**<User Check>**

- Turn OFF the power switch, and turn it ON again after a while.

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

■ **Error code F9**

**Machine Error F9**

The country code is not entered properly

Step	Cause	Remedy
1	Power turned OFF while the function code 74 is being executed and "PARAMETER INIT" is being displayed	Re-enter the country code. (Refer to "1.4.19 Setting by country (Function code 74)" in Chapter 5.)

■ **Error code FA (K)**

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

The black drum unit is not installed.

**Error code FB (C)**

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

The cyan drum unit is not installed.

**Error code FC (M)**

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

The magenta drum unit is not installed.

**Error code FD (Y)**

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

The yellow drum unit is not installed.

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

**<User Check>**

- Turn OFF the power switch, and turn it ON again after a while.

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

■ **Error code FE**

**Calibrate**  
**Calibration failed. Press Go, and try again.**

Detection of incorrect measurement value of density sensor sensitivity calibration.

**<User Check>**

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

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

■ **Error code FF**

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

Wireless LAN overcurrent error. (Wireless LAN model only)

This error does not usually occur in the normal use. The conceivable causes are noise around the installation site, fluctuation of the power supply voltage, and failures in the software.

**<User Check>**

- Turn OFF the power switch, and turn it ON again after a while.

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

## 3.4 Paper Feeding Problems

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

### 3.4.1 No feeding

#### ■ Paper fails to be supplied from the paper tray 1 (Error code 27, etc)

##### <User Check>

- Check if the Tray Use setting is fixed to other tray.
- Check if the paper is loaded into the paper tray 1 correctly.
- Check if the loaded paper is smaller than the specified size.
- Turn back the paper loaded in the paper tray 1 or change the orientation of the paper by 180°.
- Adjust the paper guide in accordance with the paper size.
- Check if the thickness of the paper is 60 to 105 g/m<sup>2</sup>.

Step	Cause	Remedy
1	T1 paper edge actuator malfunction	Re-assemble the T1 paper edge actuator.
2	Harness connection failure of PF drive motor	Check the harness connection of the PF drive motor and reconnect it.
3	Installation failure of roller holder ASSY	Check the installation of the roller holder ASSY and reinstall it correctly.
4	T1 paper pick-up roller worn out	Replace the paper feeding kit1.
5	T1 paper edge sensor failure	Check the sensor performance following the procedure described in "Function code 32". If any problem occurs, replace the T1 paper edge sensor PCB ASSY.
6	Plate gear damaged	Replace the paper tray 1.
7	T1 solenoid ASSY failure	Replace the T1 solenoid ASSY.
8	PF drive motor failure	Replace the PF plate ASSY.
9	Engine PCB failure	Replace the engine PCB ASSY.
10	Main PCB failure	Replace the main PCB ASSY.

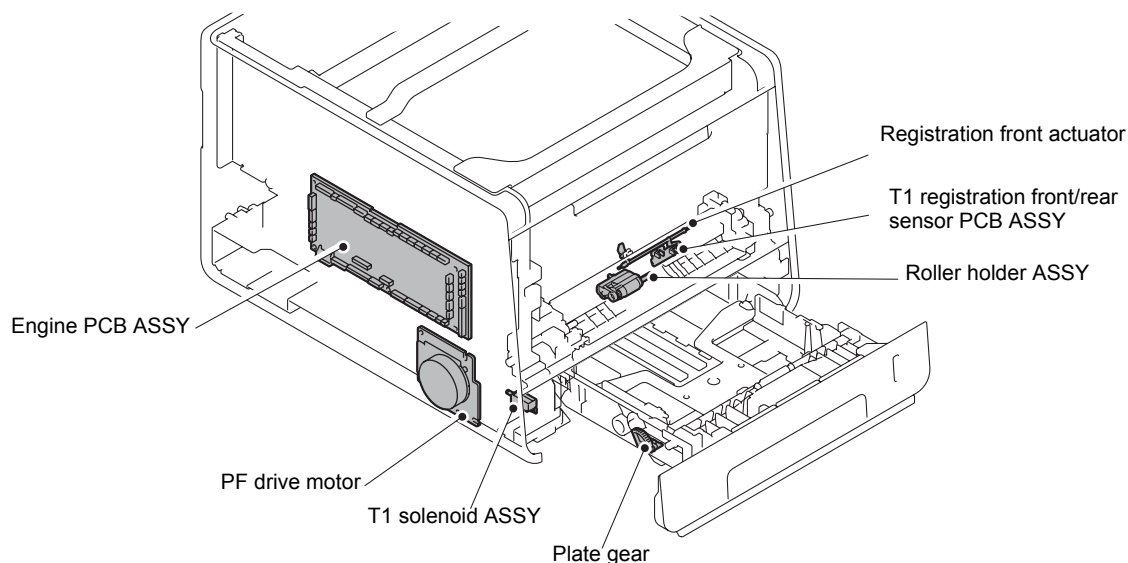


Fig. 2-10

■ Paper fails to be supplied from the paper tray 2 (Error code 27, etc)

<User Check>

- Check if the Tray Use setting is fixed to other tray.
- Check if the paper is loaded into the paper tray 2 correctly.
- Check if the size of the paper is smaller than the specifications.
- Turn back the paper loaded in the paper tray 2 or change the orientation of the paper by 180°.
- Adjust the paper guide in accordance with the paper size.
- Check if the thickness of the paper is 60 to 105 g/m<sup>2</sup>.
- Check if the paper tray 2 is installed in the machine properly.  
(Check of the connection of the connectors.)

Step	Cause	Remedy
1	T2 paper edge actuator malfunction	Re-assemble the T2 paper edge actuator.
2	Harness connection failure of plate drive motor	Check the harness connection of the plate drive motor and reconnect it.
3	Harness connection failure of T2 sensor PCB ASSY	Check the harness connection of the T2 sensor PCB ASSY and reconnect it.
4	Harness connection failure of T2 Relay PCB ASSY	Check the harness connection of the T2 Relay PCB ASSY and reconnect it.
5	Installation failure of T2 roller holder ASSY	Check the installation of the T2 roller holder ASSY and reinstall it correctly.
6	T2 separation roller ASSY worn out	Replace the T2 separation roller ASSY.
7	Plate gear damaged/Plate drive motor damaged	Replace the paper tray 2.
8	T2 paper edge sensor failure	Replace the T2 paper feed frame unit.
9	T2 Relay PCB ASSY failure	Replace the T2 Relay PCB ASSY.
10	T2 solenoid ASSY failure	Replace the T2 solenoid ASSY.
11	PF drive motor failure	Replace the PF plate ASSY.
12	Engine PCB failure	Replace the engine PCB ASSY.
13	Main PCB failure	Replace the main PCB ASSY.

■ Paper fails to be supplied from the MP tray (Error code 27, etc)

<User Check>

- Check if the Tray Use setting is fixed to other tray.
- Check if the paper is loaded into the MP tray correctly.
- Check if the thickness of the paper is 60 to 163 g/m<sup>2</sup>.

Step	Cause	Remedy
1	Operation failure of the actuator of the MP paper empty sensor	Uninstall and reinstall the actuator of the MP paper empty sensor.
2	Harness connection failure of PF drive motor	Check the harness connection of the PF drive motor and reconnect it.
3	MP paper pick-up roller worn out	Replace the MP paper feeding kit.
4	MP paper empty sensor failure	Replace the MP paper empty/registration front sensor PCB ASSY.
5	MP sector solenoid failure	Replace the MP sector solenoid.
6	PF drive motor failure	Replace the PF plate ASSY.
7	Engine PCB failure	Replace the engine PCB ASSY.
8	Main PCB failure	Replace the main PCB ASSY.

### 3.4.2 Double feeding

#### <User Check>

- Check if too much paper is not loaded in each paper tray.
- Check if paper is properly loaded in each paper tray.
- Turn back the paper loaded in the each paper tray or change the orientation of the paper by 180°.
- Check if the thickness of the paper is 60 to 105 g/m<sup>2</sup>. (60 to 163 g/m<sup>2</sup> for the MP tray.)
- Set out papers and reload them into the paper tray.

Step	Cause	Remedy
1	Abrasion of separation pad or separation roller	Replace the appropriate paper feeding kit.

### 3.4.3 Paper jam

#### ■ Paper jam at the paper tray 1 (Error code 8A)

#### <User Check>

- Check if the paper is loaded into the paper tray 1 correctly.
- Turn back the paper loaded in the paper tray 1 or change the orientation of the paper by 180°.
- Adjust the paper guide corresponding to the paper size.
- Check if too much paper is loaded in the tray.
- Check if the thickness of the paper is 60 to 105 g/m<sup>2</sup>.

Step	Cause	Remedy
1	Foreign object around paper tray 1	Remove the foreign object.
2	Harness connection failure of T1 registration front/rear sensor PCB ASSY	Check the harness connection of the T1 registration front/rear sensor PCB ASSY and reconnect it.
3	Paper feeding kit1 worn out	Replace the paper feeding kit1.
4	Registration front actuator malfunction	Re-assemble the registration front actuator.
5	Registration front sensor failure	Check the sensor performance following the procedure described in "Function code 32". If any problem occurs, replace the T1 registration front/rear sensor PCB ASSY.
6	Engine PCB failure	Replace the engine PCB ASSY.
7	Main PCB failure	Replace the main PCB ASSY.



■ Paper jam at the paper tray 2 (Error code 8B, etc)

<User Check>

- Check if the paper is loaded into the paper tray 2 correctly.
- Turn back the paper loaded in the paper tray 2 or change the orientation of the paper by 180°.
- Adjust the paper guide corresponding to the paper size.
- Check if too much paper is loaded in the tray.
- Check if the thickness of the paper is 60 to 105 g/m<sup>2</sup>.

Step	Cause	Remedy
1	Foreign object around paper tray 2	Remove the foreign object.
2	Foreign object around paper tray 1	Remove the foreign object.
3	Harness connection failure of T2 sensor PCB ASSY	Check the harness connection of the T2 sensor PCB ASSY and reconnect it.
4	Harness connection failure of T2 Relay PCB ASSY	Check the harness connection of the T2 Relay PCB ASSY and reconnect it.
5	T2 paper edge actuator malfunction	Re-assemble the T2 paper edge actuator.
6	T2 separation roller ASSY worn out	Replace the T2 separation roller ASSY.
7	Registration front sensor failure	Check the sensor performance following the procedure described in "Function code 32". If any problem occurs, replace the registration front/rear sensor PCB ASSY.
8	T2 Relay PCB failure	Replace the T2 Relay PCB ASSY.
9	Engine PCB failure	Replace the engine PCB ASSY.
10	Main PCB failure	Replace the main PCB ASSY.

■ Paper jam at the MP tray (Error code 8C)

<User Check>

- Check if the paper is loaded into the MP tray correctly.
- Turn back the paper loaded in the MP tray or change the orientation of the paper by 180°.
- Adjust the paper guide corresponding to the paper size.
- Check if too much paper is loaded in the tray.
- Check if the thickness of the paper is 60 to 163 g/m<sup>2</sup>.

Step	Cause	Remedy
1	Foreign object around MP tray	Remove the foreign object.
2	MP paper feeding kit worn out	Replace the MP paper feeding kit.
3	MP registration front sensor failure	Check the sensor performance following the procedure described in "Function code 32". If any problem occurs, replace the MP paper empty/registration front sensor PCB ASSY.
4	Engine PCB failure	Replace the engine PCB ASSY.
5	Main PCB failure	Replace the main PCB ASSY.

■ Paper jam around the belt unit (Error code 88, etc.)

<User Check>

- Check if the belt unit is properly installed.

Step	Cause	Remedy
1	Registration rear actuator malfunction	Re-assemble the registration rear actuator.
2	Paper eject actuator malfunction	Re-assemble the paper eject actuator.
3	Harness connection failure of paper eject sensor PCB ASSY	Check the harness connection of the paper eject sensor PCB ASSY and reconnect it.
4	Harness connection failure of drum drive motor	Check the harness connection of the drum drive motor and reconnect it.
5	Paper eject sensor PCB failure	Replace the paper eject sensor PCB ASSY.
6	Drum drive motor failure	Replace the drum drive motor.
7	Rotation failure of the heat roller	Replace the fuser unit.
8	Engine PCB failure	Replace the engine PCB ASSY.
9	Main PCB failure	Replace the main PCB ASSY.

■ Paper jam in the back cover and paper eject section (Error code 84, etc.)

Step	Cause	Remedy
1	Foreign object around paper eject ASSY	Remove the foreign object.
2	Coming off of back flapper ASSY	Re-assemble the back flapper ASSY.
3	Paper eject actuator malfunction	Re-assemble the paper eject actuator.
4	Harness connection failure of paper eject motor	Check the harness connection of the paper eject motor and reconnect it.
5	Paper eject sensor PCB ASSY failure	Check the sensor performance following the procedure described in "Function code 32". If any problem occurs, replace the fuser unit.
6	Paper eject motor failure	Replace the paper eject motor.
7	Paper eject ASSY failure	Replace the paper eject ASSY.
8	Engine PCB failure	Replace the engine PCB ASSY.
9	Main PCB failure	Replace the main PCB ASSY.

■ Paper jam during duplex printing (Error code 57, etc.)

<User Check>

- Use the A4 or letter size recording paper.

Step	Cause	Remedy
1	Foreign object around paper eject ASSY	Remove the foreign object.
2	Foreign object around duplex feed ASSY	Remove the foreign object.
3	Foreign object around duplex tray	Remove the foreign object.
4	Paper eject actuator malfunction	Re-assemble the paper eject actuator.
5	Coming off of back flapper ASSY	Re-assemble the back flapper ASSY.
6	Harness connection failure of paper eject motor	Check the harness connection of the paper eject motor and reconnect it.
7	Duplex feed ASSY failure	Replace the duplex feed ASSY.
8	Duplex tray failure	Replace the duplex feed ASSY.
9	Paper eject motor failure	Replace the paper eject motor.
10	Paper eject ASSY failure	Replace the paper eject ASSY.
11	Engine PCB failure	Replace the engine PCB ASSY.
12	Main PCB failure	Replace the main PCB ASSY.

### 3.4.4 Dirt on paper

#### <User Check>

- Check if the paper is loaded into the paper tray correctly.
- Turn back the paper loaded in the paper tray or change the orientation of the paper by 180°.
- Replace the toner cartridge with a new one.
- Replace the waste toner box with a new one.
- Replace the belt unit with a new one.

Step	Cause	Remedy
1	Fuser unit dirty	Clean the entrance of the fuser unit.
		Clean the pressure roller.
2	Dirt in the paper feed system	Wipe dirt off.
3	Paper eject ASSY dirty	Clean the paper eject ASSY.
4	Waste toner sensor failure	Replace the waste toner sensor.

### 3.4.5 Wrinkles on paper

#### <User Check>

- Check if paper is not damp.
- Check if the paper is loaded into the paper tray correctly.
- 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/m2. (60 to 163 g/m2 for the MP tray.)
- Switch the envelope levers.

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

# 3.5 Image Defect Troubleshooting

## 3.5.1 Image defect examples

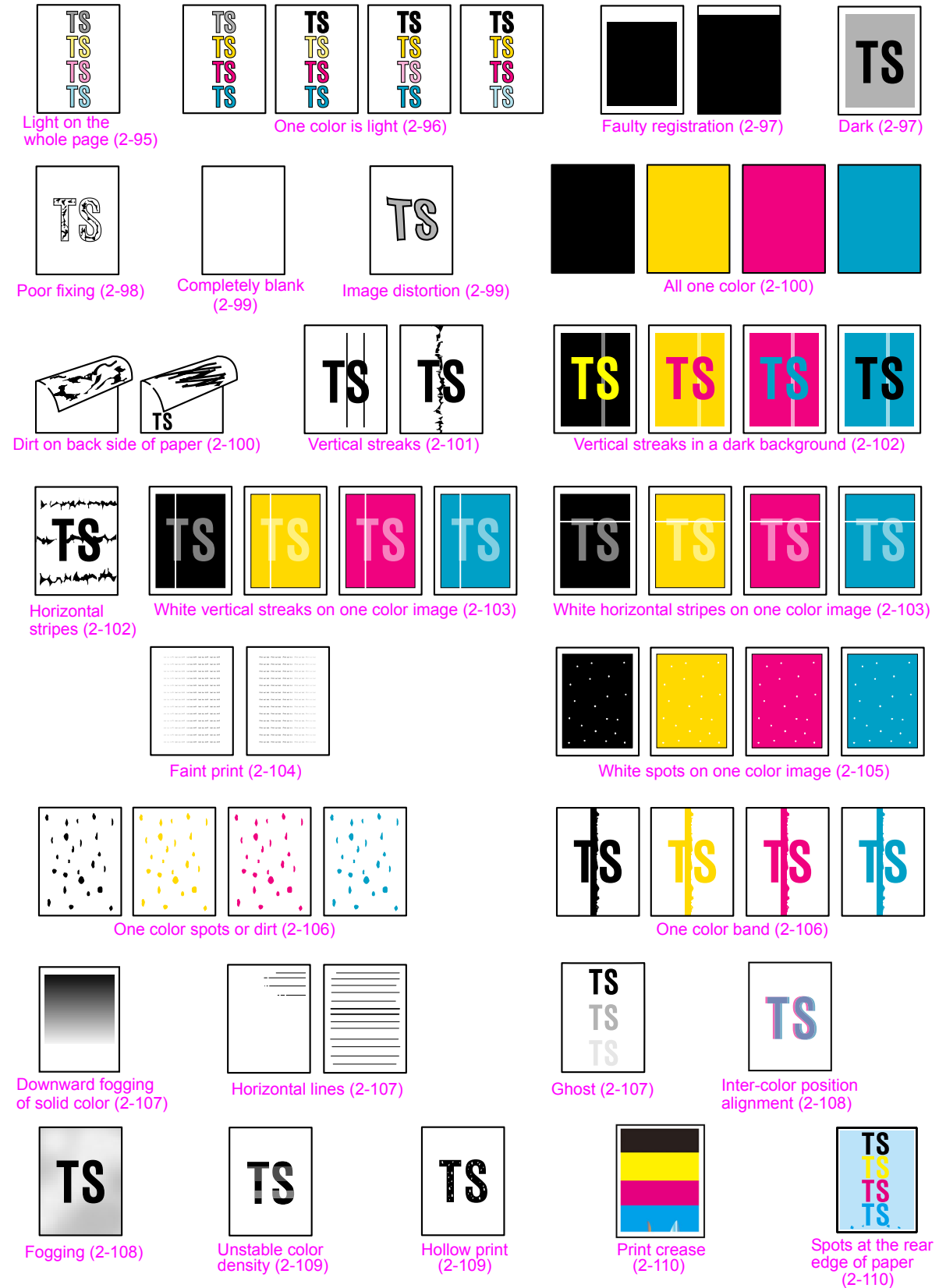


Fig. 2-11

### 3.5.2 Pitch indicated in roller image

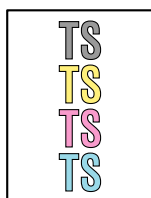
Image defects which occur periodically may be caused by a failure of the roller. By referring to the table below, specify the cause based on the pitch indicated in the image of each roller.

No.	Parts name	The pitch which appears in the image
1	Developer roller	30 mm
2	Exposure drum	94 mm
3	Heat roller in the fuser unit	78.5 mm
4	Pressure roller in the fuser unit	78.5 mm

### 3.5.3 Troubleshooting image defect

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

#### ■ Light on the whole page



#### <User Check>

- Check the printer'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.
- Wipe the scanner windows of the laser unit with a soft, lint-free cloth. (Refer to the figure below.)
- Adjust the color calibration from the control panel.
- Adjust the color density from the control panel.
- Leave the printer for a while as the power remains ON.
- Replace the toner cartridge, drum unit or belt unit with a new one.

Step	Cause	Remedy
1	High-voltage power supply PCB failure	Replace the high-voltage power supply PCB ASSY.
2	Engine PCB failure	Replace the engine PCB ASSY.
3	Main PCB failure	Replace the main PCB ASSY.
4	Laser unit failure	Replace the laser unit.
5	Registration mark sensor PCB failure	Replace the registration mark sensor holder ASSY.

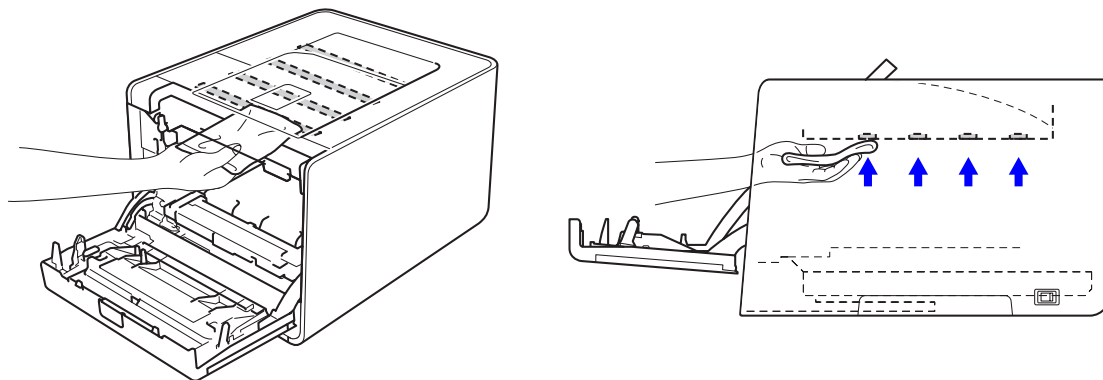
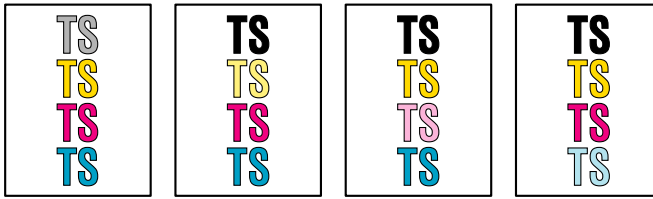


Fig. 2-12

■ One color is light

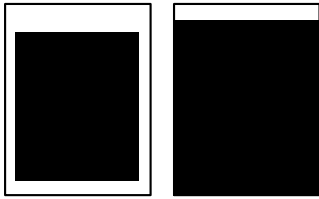


<User Check>

- Open and close the front cover and make print again.
- Check the printer's environment. High temperature and high humidity or low temperature and low humidity conditions can cause this problem.
- Wipe the scanner windows of the laser unit with a soft, lint-free cloth.  
(Refer to Fig. 2-12 (P2-95))
- Adjust the color density from the control panel.
- Replace the toner cartridge or drum unit with a new one.

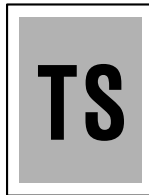
Step	Cause	Remedy
1	Dirt on exposure drum electrode	Clean the electrodes of the drum unit and main body. (Refer to Fig. 2-6 (P2-52) and Fig. 2-9 (P2-53))
2	Dirt on developer roller electrode	Clean the electrodes of the developer roller and main body. (Refer to Fig. 2-6 (P2-52) and Fig. 2-9 (P2-53))
3	Dirt on belt unit electrode	Clean the electrodes of the belt unit and main body. (Refer to Fig. 2-7 (P2-52) and Fig. 2-9 (P2-53))
4	Toner/New sensor PCB failure	Check the harness connection of the Toner/New sensor PCB ASSY. Replace the Toner/New sensor PCB ASSY.
5	High-voltage power supply PCB failure	Replace the high-voltage power supply PCB ASSY.
6	Laser unit failure	Replace the laser unit.
7	Main PCB failure	Replace the main PCB ASSY.

## ■ Faulty registration



Step	Cause	Remedy
1	Registration rear actuator catching on some position	Correct catching of the registration rear actuator.
2	Engine PCB failure	Replace the engine PCB ASSY.

## ■ Dark



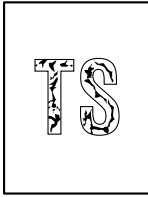
### <User Check>

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

Step	Cause	Remedy
1	Corona wire conduction failure	Clean the electrodes of the drum unit and main body. (Refer to Fig. 2-6 (P2-52) and Fig. 2-9 (P2-53))
2	Dirt on belt unit electrode	Clean the electrodes of the belt unit and main body. (Refer to Fig. 2-7 (P2-52) and Fig. 2-9 (P2-53))
3	High-voltage power supply PCB failure	Replace the high-voltage power supply PCB ASSY.
4	Engine PCB failure	Replace the engine PCB ASSY.
5	Main PCB failure	Replace the main PCB ASSY.
6	Laser unit failure	Replace the laser unit.
7	Registration mark sensor PCB failure	Replace the registration mark sensor holder ASSY.
8	Toner/New sensor PCB failure	Replace the Toner/New sensor PCB ASSY.



## ■ Poor fixing



### <User Check>

- Check if the scanner window of the laser unit is dirty. (Refer to [Fig. 2-12 \(P2-95\)](#))
- Use the specified paper.
- Open and close the front cover and make print again.
- Adjust the color calibration from the control panel.
- Adjust the auto registration from the control panel.
- Check the printer's environment. High temperature and high humidity or low temperature and low humidity conditions can cause this problem.
- Replace the belt unit with a new one.
- Replace the drum unit with a new one.
- Replace the toner cartridge with a new one.

### Memo

You can check this image defect with the function code 71.  
(Refer to ["1.4.17 Color test pattern \(Function code 71\)"](#) in Chapter 5.)

Step	Cause	Remedy
1	Fuser unit failure	Replace the fuser unit.
2	Low-voltage power supply PCB failure	Replace the low-voltage power supply PCB ASSY.
3	High-voltage power supply PCB failure	Replace the high-voltage power supply PCB ASSY.
4	Engine PCB failure	Replace the engine PCB ASSY.
5	Laser unit failure	Replace the laser unit.
6	Toner/New sensor PCB failure	Replace the Toner/New sensor PCB ASSY.
7	Main PCB failure	Replace the main PCB ASSY.

■ **Completely blank**

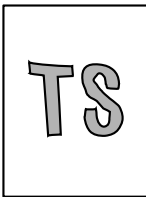


**<User Check>**

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

Step	Cause	Remedy
1	Developing bias voltage conduction failure	Clean the electrodes of the drum unit and main body. (Refer to Fig. 2-6 (P2-52) and Fig. 2-9 (P2-53))
2	Dirt on developer roller electrode	Clean the electrodes of the developer roller and main body. (Refer to Fig. 2-6 (P2-52) and Fig. 2-9 (P2-53))
3	Installation failure of laser unit	Uninstall and reinstall the laser unit.
4	High-voltage power supply PCB failure	Replace the high-voltage power supply PCB ASSY.
5	Laser unit failure	Replace the laser unit.
6	Main PCB failure	Replace the main PCB ASSY.

■ **Image distortion**

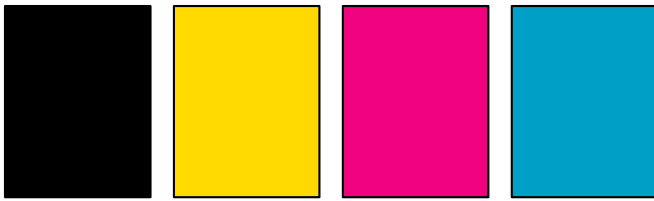


**<User Check>**

- Replace the belt unit with a new one.

Step	Cause	Remedy
1	Laser unit assembling failure	Re-assemble the laser unit.
2	Main PCB failure	Replace the main PCB ASSY.

■ All one color



<User Check>

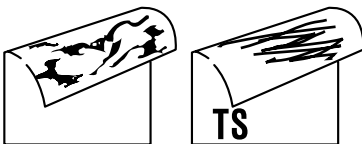
- Replace the drum unit with a new one.

**Memo**

You can check this image defect with the function code 71.  
(Refer to "1.4.17 Color test pattern (Function code 71)" in Chapter 5.)

Step	Cause	Remedy
1	Corona wire failure	Clean the electrodes of the drum unit and main body. (Refer to Fig. 2-6 (P2-52) and Fig. 2-9 (P2-53))
2	High-voltage power supply PCB failure	Replace the high-voltage power supply PCB ASSY.
3	Laser unit failure	Replace the laser unit.
4	Main PCB failure	Replace the main PCB ASSY.

■ Dirt on back side of paper

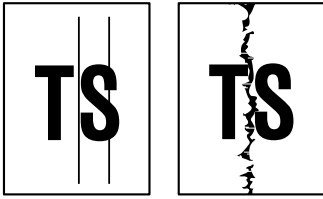


<User Check>

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

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>

- This problem may occur with noise which is caused by dirt on the corona wire in the drum unit. In this case, clean the corona wire.
- Refer to the User's guide and remove the dirt on the exposure drum using a cotton swab.
- Replace the drum unit with a new one.
- Replace the toner cartridge with a new one.

### Memo

You can check this image defect with the function code 71.  
(Refer to "1.4.17 Color test pattern (Function code 71)" in Chapter 5.)

Step	Cause	Remedy
1	Dirt in the paper feed system	Wipe dirt off.
2	Exposure drum dirty	Refer to "2.8 Drum Cleaning" in Chapter 5 and perform drum cleaning.
3	Bend of tray ground spring (Refer to Fig. 2-13)	Replace the paper tray.
4	Scratch on the heat roller	Replace the fuser unit.

### Note:

When a same pattern is printed continuously, the static charge of the exposure drum is temporarily lowered, and black streaks may appear on paper.

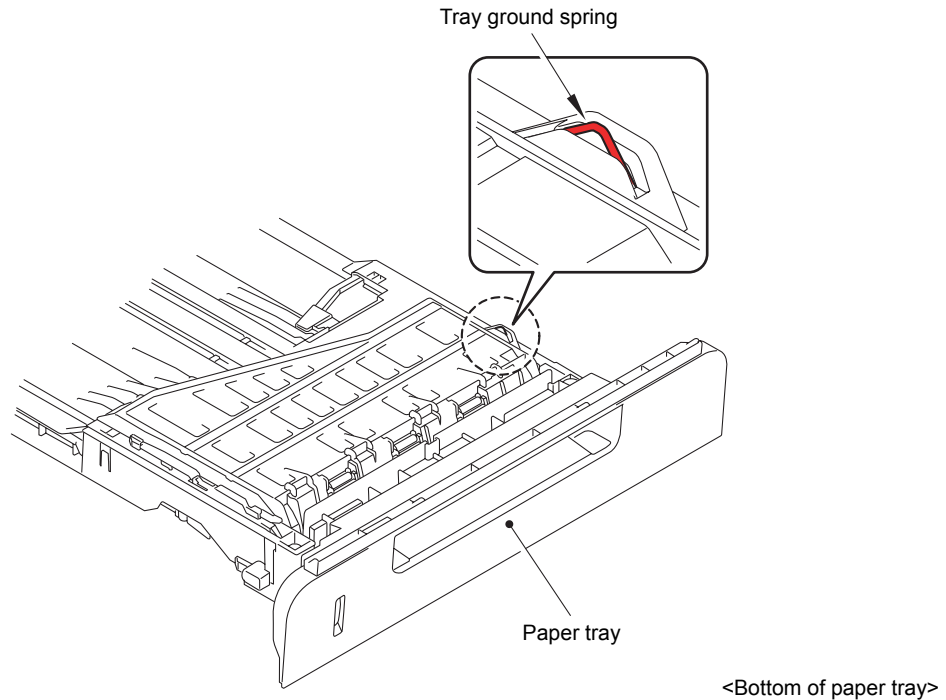
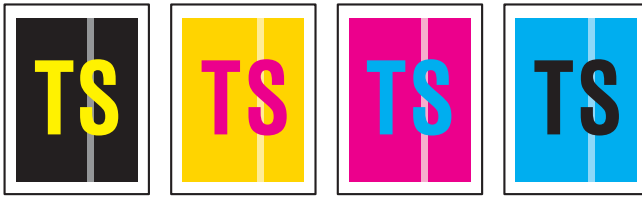


Fig. 2-13

## ■ Vertical streaks in a dark background

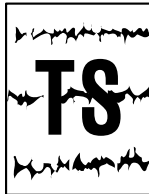


### <User Check>

- Clean the inside of the printer and the corona wire in the drum unit.
- Refer to the User's guide and remove the dirt on the exposure drum using a cotton swab.
- Replace the toner cartridge with a new one.

Step	Cause	Remedy
1	Exposure drum dirty	Refer to "2.8 Drum Cleaning" in Chapter 5 and perform drum cleaning.
2	Laser unit failure	Replace the laser unit.

## ■ Horizontal stripes

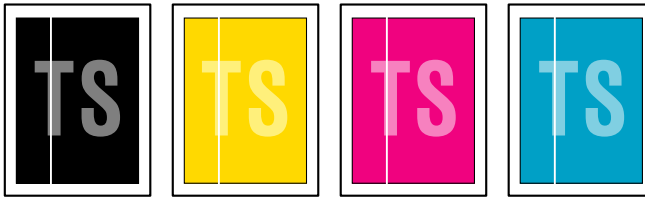


### <User Check>

- Clean the inside of the printer and the corona wire in the drum unit.
- This symptom might stop occurring after making several prints.  
If the symptom continues, replace the toner cartridge with a new one.
- Replace the drum unit with a new one.

Step	Cause	Remedy
1	Dirt on charged electrode	Clean the electrodes of the drum unit and main body. (Refer to Fig. 2-6 (P2-52) and Fig. 2-9 (P2-53))
2	Bend of tray ground spring	Replace the paper tray.(Refer to Fig. 2-13 (P2-101))
3	Scratch on the heat roller	Replace the fuser unit.
4	High-voltage power supply PCB failure	Replace the high-voltage power supply PCB ASSY.

■ **White vertical streaks on one color image**

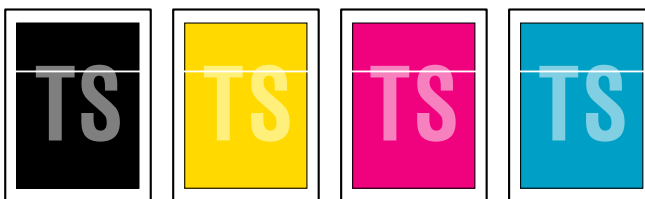


**<User Check>**

- Check if there is no dust in the gap between the toner cartridge and drum frame.
- Wipe the scanner windows of the laser unit with a soft, lint-free cloth.  
(Refer to [Fig. 2-12 \(P2-95\)](#))
- Refer to the User's guide and remove the dirt on the exposure drum using a cotton swab.
- Replace the toner cartridge with a new one.
- Check the printer's environment. High temperature and high humidity or low temperature and low humidity conditions can cause this problem.
- Damp (wet) paper might be used. Try to change to freshly unpacked paper.
- Replace the drum unit with a new one.

Step	Cause	Remedy
1	Condensation	Try to print several pages or leave the printer 2 hours to allow it to reach room temperature.
2	Exposure drum dirty	Refer to " <a href="#">2.8 Drum Cleaning</a> " in <a href="#">Chapter 5</a> and perform drum cleaning.
3	Laser unit failure	Replace the laser unit.

■ **White horizontal stripes on one color image**

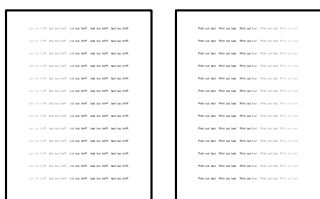


**<User Check>**

- The problem may disappear by itself. Try printing multiple pages to clear this problem especially if the printer has not been used for a long time.
- Replace the toner cartridge with a new one.
- The drum unit may be damaged. Replace the drum unit with a new one.

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

■ **Faint print**

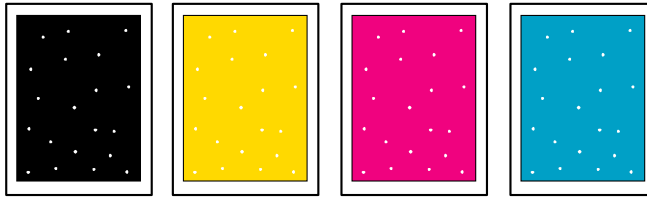


**<User Check>**

- Open and close the front cover and make print again.
- Check that the printer is installed on a level surface.
- Check if the orange protection material is removed from the drum unit.
- Wipe the scanner windows of the laser unit with a soft, lint-free cloth. (Refer to [Fig. 2-12 \(P2-95\)](#))
- Replace the toner cartridge with a new one.
- Replace the drum unit with a new one.

Step	Cause	Remedy
1	Laser unit failure	Replace the laser unit.
2	Toner/New sensor PCB failure	Replace the Toner/New sensor PCB ASSY.

■ **White spots on one color image**



**<User Check>**

- Check if the fuser fan and low-voltage power supply PCB fan are not blocked.
- Toner may be empty. Replace the toner cartridge with a new one.
- Refer to the User's guide and remove the dirt on the exposure drum using a cotton swab.
- The drum unit may be damaged. Replace the drum unit with a new one.
- The belt unit may be damaged. Replace the belt unit with a new one.

Step	Cause	Remedy
1	Dirt on the pinch roller of the paper tray	Refer to the figure below and clean the pinch roller.
2	Exposure drum dirty	Refer to "2.8 Drum Cleaning" in Chapter 5 and perform drum cleaning.
3	High-voltage power supply PCB failure	Replace the high-voltage power supply PCB ASSY.
4	Toner/New sensor PCB failure	Replace the Toner/New sensor PCB ASSY.

■ **Pinch roller cleaning procedure**

Pull out both sides of the pinch roller cover from the ribs to remove the pinch roller cover. Clean the pinch roller with a brush as rotating the pinch roller in the arrow direction with your fingers.

Remove paper dust accumulated in the paper tray by turning over the paper tray.

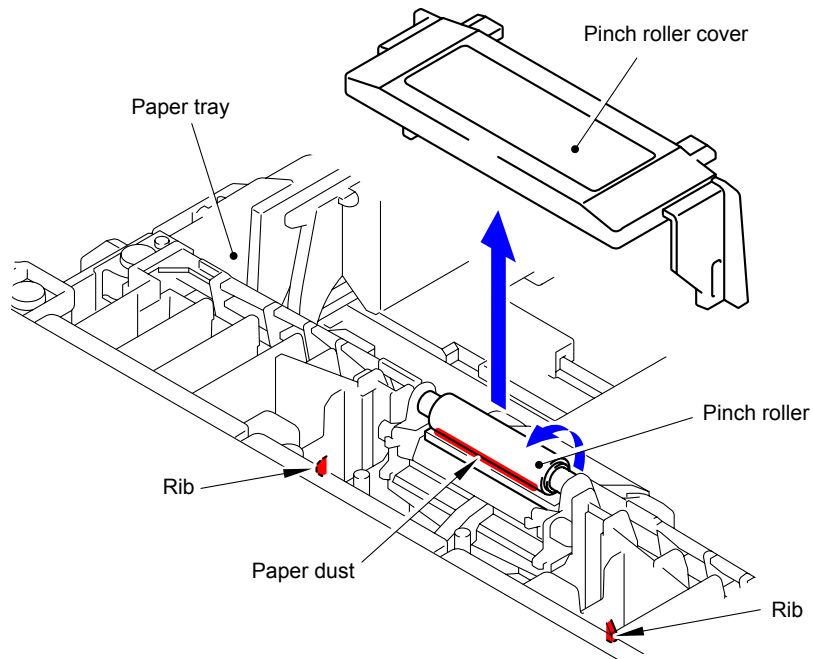
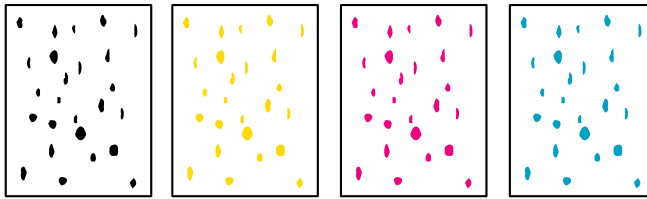


Fig. 2-14



■ One color spots or dirt



<User Check>

- Damp (wet) paper might be used. Try to changing to freshly unopened paper.
- Toner may be empty. Replace the toner cartridge with a new one.
- Refer to the User's guide and remove the dirt on the exposure drum using a cotton swab.
- The drum unit may be damaged. Replace the drum unit with a new one.
- The belt unit may be damaged. Replace the belt unit with a new one.

Step	Cause	Remedy
1	Dirt on the pinch roller of the paper tray	Refer to Fig. 2-14 (P2-105) and clean the pinch roller.
2	Exposure drum dirty	Refer to "2.8 Drum Cleaning" in Chapter 5 and perform drum cleaning.
3	Fuser unit failure	Replace the Fuser unit.
4	High-voltage power supply PCB failure	Replace the high-voltage power supply PCB ASSY.
5	Toner/New sensor PCB failure	Replace the Toner/New sensor PCB ASSY.

■ One color band



<User Check>

- Clean the inside of the printer and the corona wire in the drum unit. If the same problem occurs after cleaning, replace the drum unit with a new one.
- Refer to the User's guide and remove the dirt on the exposure drum using a cotton swab.
- The paper tray ground terminal provided in the printer body may be dirty. Clean the contact with a dry cloth.

Step	Cause	Remedy
1	Exposure drum dirty	Refer to "2.8 Drum Cleaning" in Chapter 5 and perform drum cleaning.

## ■ Downward fogging of solid color

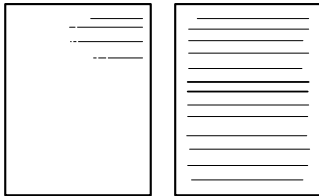


### <User Check>

- Toner may be empty. 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	Engine PCB failure	Replace the engine PCB ASSY.
3	Main PCB failure	Replace the main PCB ASSY.

## ■ Horizontal lines

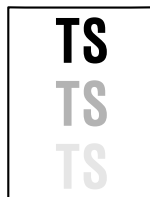


### <User Check>

- The paper tray ground terminal provided in the printer body may be dirty. Clean the contact with a dry cloth.
- This symptom might stop occurring after making several prints.  
If the symptom continues, replace the drum unit cartridge with a new one.
- Replace the toner cartridge with a new one.

Step	Cause	Remedy
1	Dirt on charged electrode	Clean the electrodes of the drum unit and main body. (Refer to Fig. 2-6 (P2-52) and Fig. 2-9 (P2-53))
2	Paper tray ground terminal provided in printer body	Correct bending of paper tray ground terminal.
3	Scratch on the heat roller	Replace the fuser unit.
4	High-voltage power supply PCB failure	Replace the high-voltage power supply PCB ASSY.

## ■ Ghost



### <User Check>

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

Step	Cause	Remedy
1	Erase lamp lens dirty	Clean the erase lamp lens. (Refer to Fig. 2-6 (P2-52) and Fig. 2-9 (P2-53))
2	High-voltage power supply PCB failure	Replace the high-voltage power supply PCB ASSY.
3	Engine PCB failure	Replace the engine PCB ASSY.
4	Fuser unit failure	Replace the fuser unit.

## ■ Inter-color position alignment

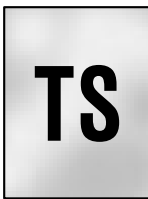


### <User Check>

- Implement the adjustment of inter-color position alignment from the control panel.
- Replace the belt unit with a new one.
- Replace the drum unit with a new one.

Step	Cause	Remedy
1	Phase displacement of drum gear	Align the drum phase. (Refer to "6. IF YOU REPLACE THE DRUM DRIVE MOTOR" in Chapter 4.)
2	Registration mark sensor PCB failure	Replace the registration mark sensor holder ASSY.
3	Main PCB failure	Replace the main PCB ASSY.

## ■ Fogging



### <User Check>

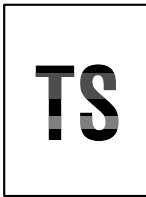
- Do not use acid paper.
- Replace the toner cartridge with a new one.
- Replace the drum unit with a new one.
- Check the printer's environment. (If the printer is used in the high humidity environment, this symptom is likely to occur.)

Step	Cause	Remedy
1	Toner/New sensor PCB failure	Replace the Toner/New sensor PCB ASSY.
2	High-voltage power supply PCB failure	Replace the high-voltage power supply PCB ASSY.
3	Engine PCB failure	Replace the engine PCB ASSY.

### Note:

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

## ■ Unstable color density



### <User Check>

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

Step	Cause	Remedy
1	Dirt on drum unit electrode	Clean the electrodes of the drum unit and main body. (Refer to Fig. 2-6 (P2-52) and Fig. 2-9 (P2-53))
2	Dirt on toner cartridge electrode	Clean the electrodes of the toner cartridge and main body. (Refer to Fig. 2-6 (P2-52) and Fig. 2-9 (P2-53))
3	Dirt on belt unit electrode	Clean the electrodes of the belt unit and main body. (Refer to Fig. 2-7 (P2-52) and Fig. 2-9 (P2-53))
4	Engine PCB failure	Replace the engine PCB ASSY.
5	High-voltage power supply PCB failure	Replace the high-voltage power supply PCB ASSY.
6	Laser unit failure	Replace the laser unit.
7	Main PCB failure	Replace the main PCB ASSY.

## ■ Hollow print



### <User Check>

- Select "Improve Toner Fixing" in the printer driver, or select "Thicker Paper" in Paper Type.
- Check the printer's environment, conditions such as high humidity and low humidity may cause this situation to occur.
- Make a print on a different type of paper.
- Refer to the User's guide and remove the dirt on the exposure drum using a cotton swab.
- Replace the drum unit with a new one.
- Replace the toner cartridge with a new one.

Step	Cause	Remedy
1	Dirt on the pinch roller of the paper tray	Refer to Fig. 2-14 (P2-105) and clean the pinch roller.
2	Exposure drum dirty	Refer to "2.8 Drum Cleaning" in Chapter 5 and perform drum cleaning.
3	Fuser unit failure	Replace the fuser unit.

■ **Print crease**



**<User Check>**

- Check the printer's environment. This symptom occurs when the printer is used in the high humidity environment.
- Change the paper to thick paper.
- Check if paper is not damp.

Step	Cause	Remedy
1	The pressure of the pressure roller is high	Change the position of the PR arm covers. (Refer to the figure below.)
2	Fuser unit failure	Replace the fuser unit.

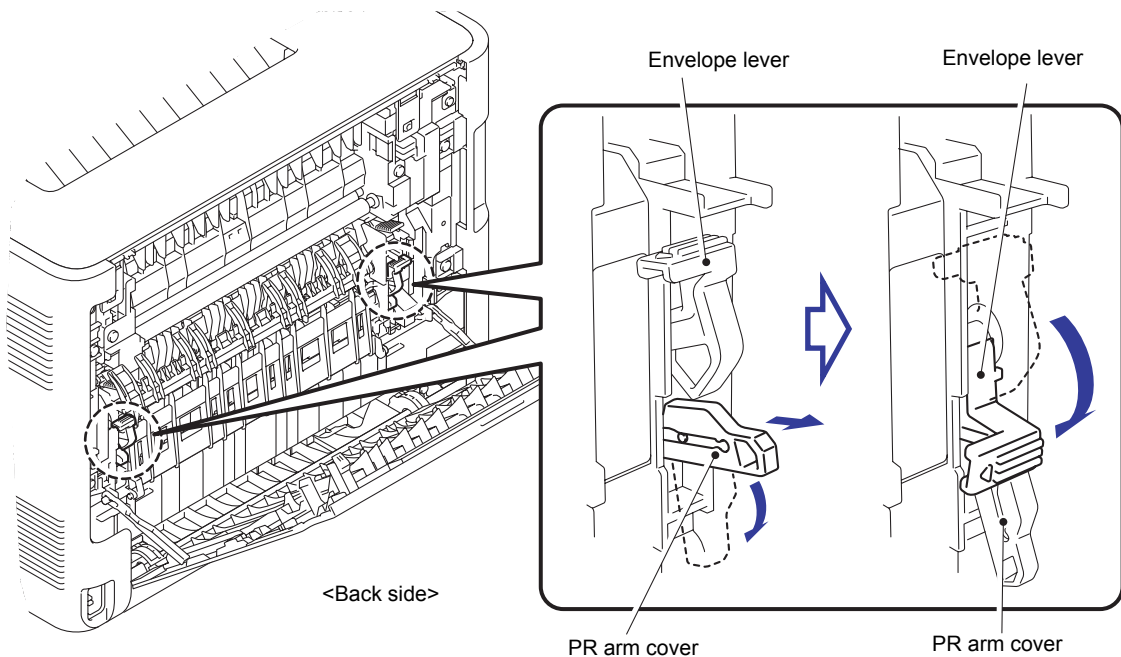
■ **Spots at the rear edge of paper**



**<User Check>**

- Check the printer's environment. This symptom occurs when the printer is used in the high humidity environment.

Step	Cause	Remedy
1	The pressure of the pressure roller is high	Change the position of the PR arm covers. (Refer to the figure below.)
2	Fuser unit failure	Replace the fuser unit.



**Fig. 2-15**

## 3.6 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 printer, 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.

### 3.6.1 Cannot print data

#### <User Check>

- Check that the USB cable or LAN cable is not damaged.
- Check that the correct printer is selected if you have an interface switching device.
- Check the descriptions on the software setting in the user's guide.
- Restore the settings at factory shipment. (Refer to User's guide)
- Check the driver setting.

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

## 3.7 Network Problems

### 3.7.1 Cannot make a print through network connection (Error code ED, EE)

#### <User Check>

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

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

## 3.8 Others Problems

### 3.8.1 The printer is not turned ON, or the LCD indication does not appear

Step	Cause	Remedy
1	AC cord failure	Replace the AC cord.
2	Harness connection failure of panel PCB ASSY	Reconnect the panel PCB ASSY harness.
3	Harness connection failure of LCD	Reconnect the LCD harness.
4	LCD failure	Replace the LCD ASSY.
5	Inlet harness ASSY failure	Replace the inlet harness ASSY.
6	Low-voltage power supply PCB failure	Replace the low-voltage power supply PCB ASSY.
7	Panel PCB failure	Replace the panel PCB ASSY.
8	Engine PCB failure	Replace the engine PCB ASSY.
9	High-voltage power supply PCB failure	Replace the high-voltage power supply PCB ASSY.
10	Main PCB failure	Replace the main PCB ASSY.

### 3.8.2 The fan does not work (Error code 2B, EC)

Step	Cause	Remedy
1	Harness connection failure of the appropriate fan	Reconnect the harness of the appropriate fan correctly.
2	Failure of the appropriate fan	Replace the appropriate fan.
3	Engine PCB failure	Replace the engine PCB ASSY.
4	High-voltage power supply PCB failure	Replace the high-voltage power supply 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.

### 3.8.3 The USB direct interface does not work (Error code CA, etc)

#### <User Check>

- Check if the data is supported device.
- Replace the USB flash memory and check if the interface works.
- Turn OFF and ON the power.
- Reduce the data in the USB flash memory.

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

### 3.8.4 The room temperature is high or low

#### <User Check>

- Adjust the room temperature to 10 °C to 30 °C.
- Check if the exhaust opening is blocked.

Step	Cause	Remedy
1	Internal temperature thermistor failure	Replace the Internal temperature thermistor.
2	External temperature/humidity sensor failure	Replace the high-voltage power supply PCB ASSY.
3	Main PCB failure	Replace the main PCB ASSY.

### 3.8.5 Paper is not fed from the specified tray

#### <User Check>

- Specify the tray correctly.
- Check the printer driver setting.

Step	Cause	Remedy
1	Malfunction of firmware	Upload the latest firmware.
2	Main PCB failure	Replace the main PCB ASSY.



# **CHAPTER 3**

## **DISASSEMBLY AND ASSEMBLY**

# CHAPTER 3

## DISASSEMBLY AND ASSEMBLY

This chapter describes procedures for disassembling and assembling the printer with relates notes. The provided disassembly order flow enables you to take in the quickest way to get an involved part at a glance.

At the start of disassembling, you can check the disassembly order flow which guides you through a shortcut to get to the part.

This chapter also covers screw tightening torques and lubrication points where the specified lubrication should be applied when the printer is assembled.

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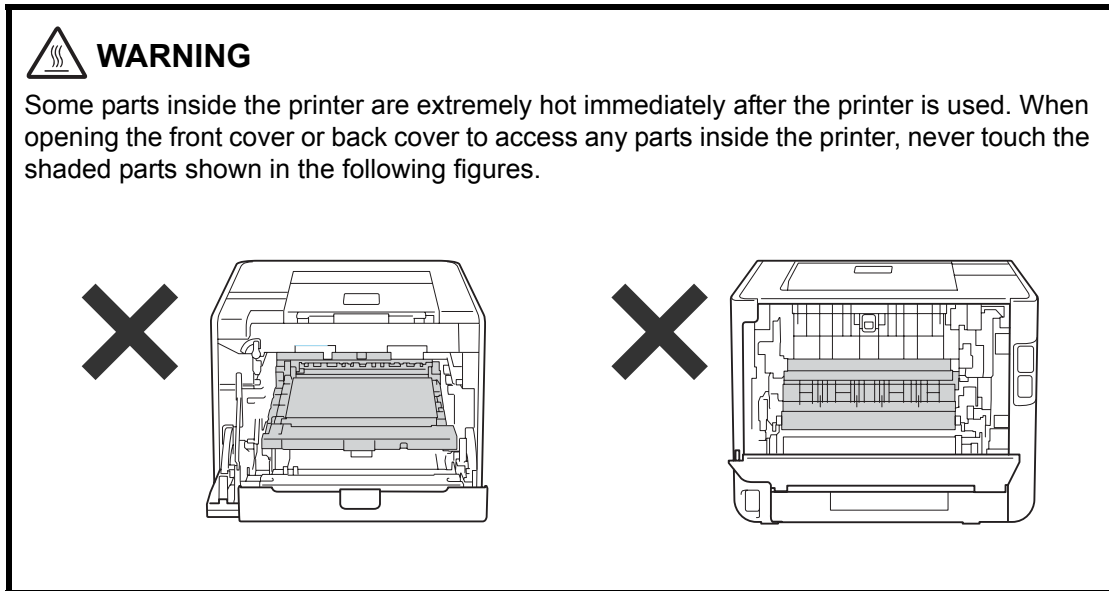
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- 10.9 T2 Paper Feed Frame Unit ..... 3-139

# 1. SAFETY PRECAUTIONS

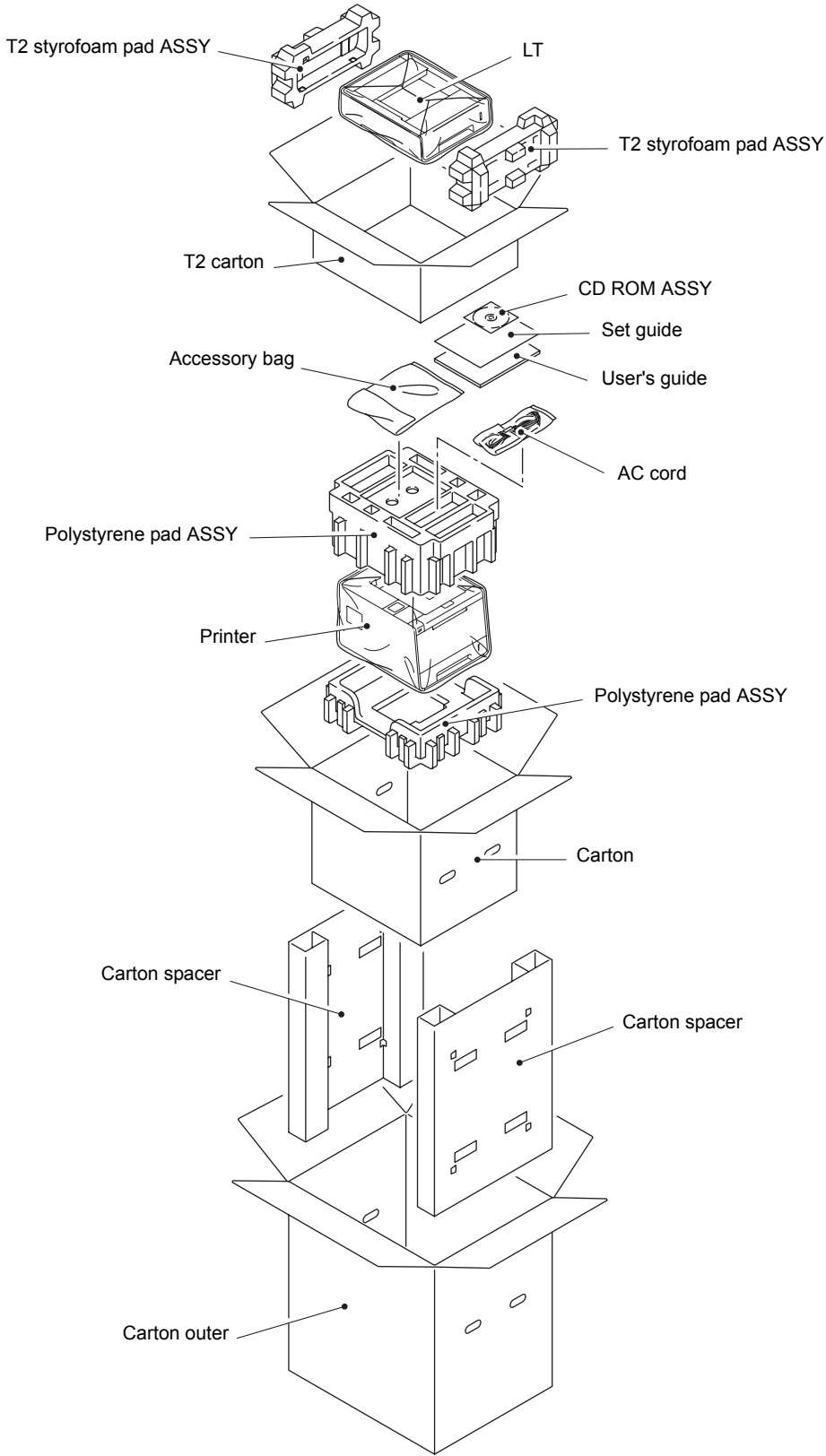
To avoid creating secondary problems by mishandling, follow the warnings and precautions below during maintenance work.



## Caution:



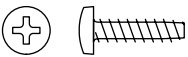

- Be careful not to lose screws, washers, or other parts removed.
- Be sure to apply grease to the gears and applicable positions specified in this chapter.
- When using soldering irons or other heat-generating tools, take care not to accidentally damage parts such as wires, PCBs and covers.
- Static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

# 2. PACKING

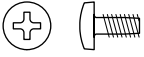
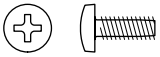


### 3. SCREW CATALOGUE

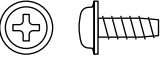


#### Taptite bind B

Taptite bind B M3x8	
Taptite bind B M3x10	
Taptite bind B M3x12	
Taptite bind B M4x12	


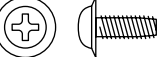
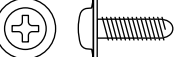
#### Taptite bind S

Taptite bind S M3x6	
Taptite bind S M3x8	


#### Taptite cup B

Taptite cup B M3x8	
Taptite cup B M3x10	
Taptite cup B M3x12	


#### Taptite cup S

Taptite cup S M3x6 SR	
Taptite cup S M3x8	
Taptite cup S M3x10 SR	

#### Taptite flat B

Taptite flat B M3x10	
-------------------------	---



#### Screw bind

Screw bind M3x4	
--------------------	---



#### Shoulder screw

Shoulder screw	
----------------	---


#### Taptite pan

Taptite pan B M3x3.5	
Taptite pan B M4x14	

#### Screw pan (S/P washer)

Screw pan (S/P washer) M4x8	
Screw pan (S/P washer) M4x8 DB	

#### Taptite pan (washer)

Taptite pan (washer) B M4x12 DA	
------------------------------------	---

#### Screw cup

Screw cup M3x6	
-------------------	---

## 4. SCREW TORQUE LIST

**Note:**

For verifying the shape of each screw, refer to “3. SCREW CATALOGUE” in this chapter.

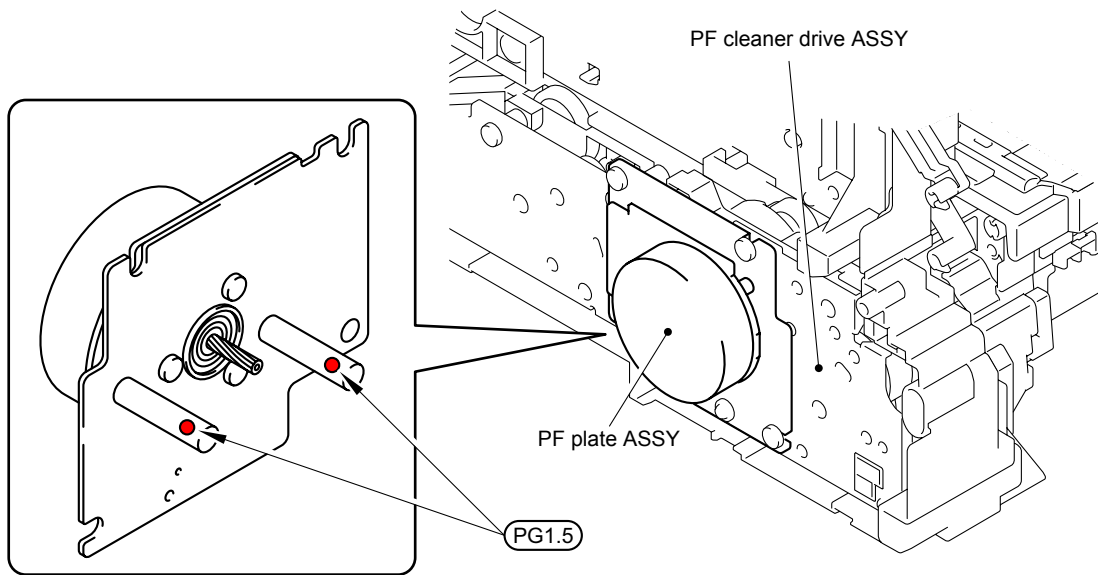
Location of screw	Screw type	Q' ty	Tightening torque N·m (kgf·cm)
Fuser cover L	Taptite bind S M3x8	1	0.70±0.10 (7±1)
Fuser cover R	Taptite bind S M3x8	1	0.70±0.10 (7±1)
Fuser unit	Taptite pan B M4x14	2	0.80±0.10 (8±1)
Side cover L	Taptite bind S M3x8	1	0.60±0.10 (6±1)
	Taptite cup S M3x8	2	0.60±0.10 (6±1)
	Taptite bind B M4x12	1	0.90±0.10 (9±1)
Side cover R ASSY	Taptite bind S M3x8	1	0.60±0.10 (6±1)
	Taptite cup S M3x8	2	0.60±0.10 (6±1)
	Taptite bind B M4x12	1	0.90±0.10 (9±1)
Duplex feed ASSY	Taptite cup B M3x12	2	0.40±0.05 (4±0.5)
Front cover arm L	Taptite bind B M4x12	1	0.70±0.05 (7±0.5)
Front cover arm R	Taptite bind B M4x12	1	0.70±0.05 (7±0.5)
Main shield cover plate ASSY	Taptite cup S M3x6 SR	6	0.70±0.10 (7±1)
Top cover ASSY	Taptite cup S M3x6 SR	1	0.70±0.10 (7±1)
	Taptite bind B M4x12	2	0.70±0.10 (7±1)
Panel cover ASSY	Taptite bind B M4x12	3	0.70±0.10 (7±1)
USB host relay PCB ASSY	Taptite bind B M4x12	2	0.90±0.10 (9±1)
Main PCB ASSY	Taptite cup S M3x6 SR	3	0.70±0.10 (7±1)
Engine PCB ASSY	Taptite cup S M3x6 SR	4	0.70±0.10 (7±1)
Top beam	Taptite cup S M3x6 SR	2	0.70±0.10 (7±1)
Scanner holder	Taptite cup S M3x6 SR	5	0.70±0.10 (7±1)
Develop release motor	Taptite bind S M3x6 SR	2	0.70±0.10 (7±1)
Panel cable rack	Taptite cup S M3x6 SR	1	0.70±0.10 (7±1)
Grand plate	Taptite cup S M3x6 SR	1	0.70±0.10 (7±1)
	Taptite pan (washer) B M4x12DA	1	0.50±0.05 (5±0.5)
Top drive ASSY	Taptite cup S M3x6 SR	9	0.70±0.10 (7±1)
	Taptite bind B M4x12	1	0.80±0.10 (8±1)
Drum drive motor	Screw bind M3x4	3	0.50±0.05 (5±0.5)
Registration solenoid ASSY	Taptite cup S M3x6 SR	1	0.70±0.10 (7±1)
Top drive cover	Taptite cup S M3x6 SR	3	0.70±0.10 (7±1)
Mono solenoid ASSY	Taptite cup S M3x6 SR	1	0.70±0.10 (7±1)
Fuser develop motor ASSY	Taptite cup S M3x6 SR	4	0.70±0.10 (7±1)
PF plate ASSY	Taptite bind B M4x12	3	0.60±0.10 (6±1)
	Taptite cup S M3x6 SR	1	0.80±0.10 (8±1)
PF cleaner drive ASSY	Taptite bind B M4x12	2	0.60±0.10 (6±1)



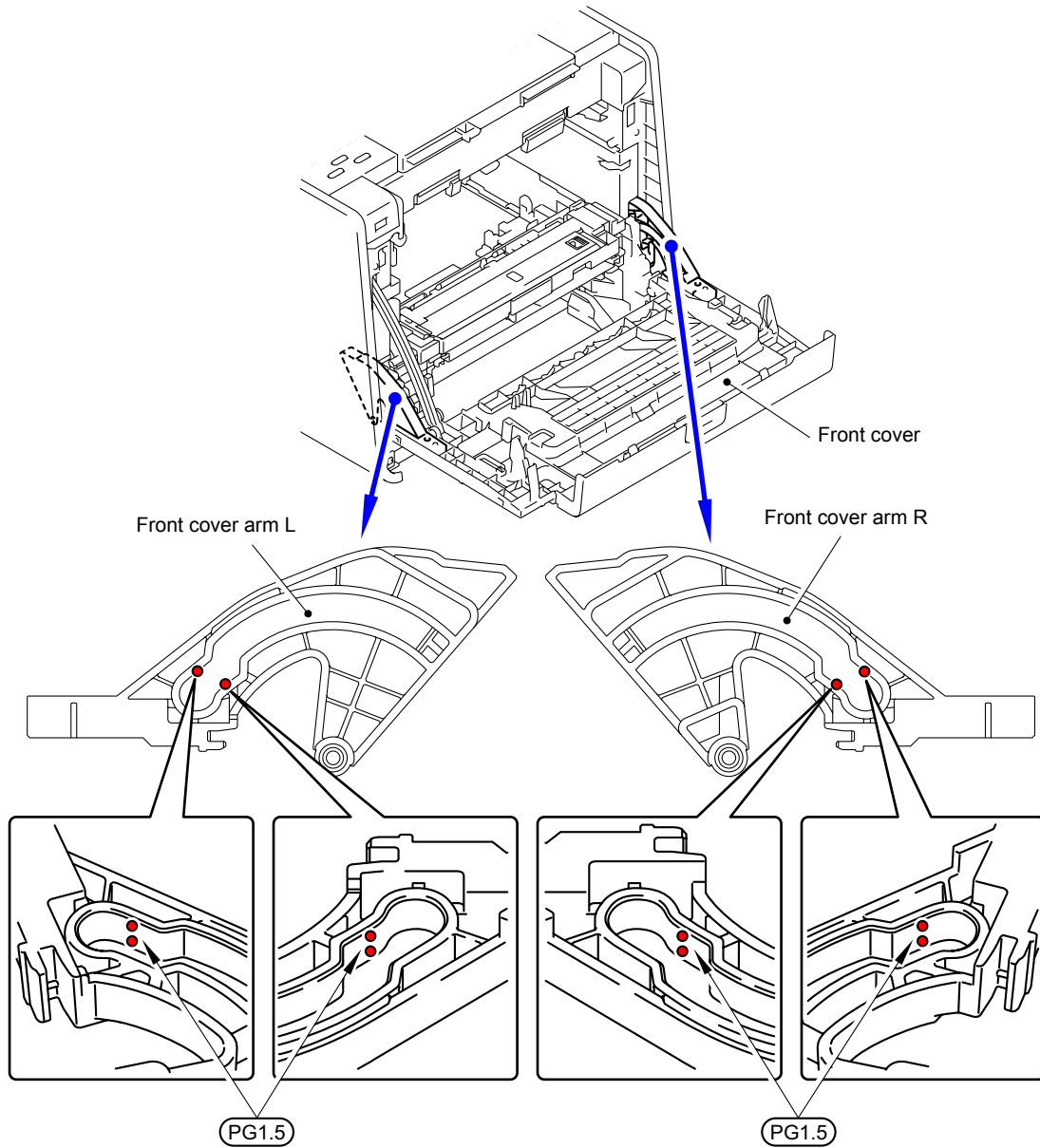
Location of screw	Screw type	Q' ty	Tightening torque N·m (kgf·cm)
T1 solenoid ASSY	Taptite bind B M3x8	1	0.35±0.05 (3.5±0.5)
Paper eject ASSY	Taptite cup S M3x6 SR	5	0.70±0.10 (7±1)
Eject duct	Taptite bind B M4x12	1	0.80±0.10 (8±1)
Paper eject motor	Taptite bind S M3x6	2	0.70±0.10 (7±1)
AC inlet	Taptite flat B M3x10	1	0.50±0.10 (5±1)
Low-voltage power supply unit	Screw pan (S/P washer) M4x8	2	0.90±0.10 (9±1)
	Taptite cup S M3x8	2	0.70±0.10 (7±1)
	Taptite cup B M3x12	2	0.40±0.05 (4±0.5)
	Taptite pan (washer) B M4x12DA	4	0.90±0.10 (9±1)
	Screw pan (S/P washer) M4x8	1	0.90±0.10 (9±1)
Low-voltage power supply PCB ASSY	Screw cup M3x6	4	0.35±0.05 (3.5±0.5)
Registration mark sensor holder ASSY	Taptite bind B M3x10	2	0.40±0.05 (4±0.5)
Shutter solenoid	Taptite bind B M3x10	1	0.55±0.05 (5.5±0.5)
MP upper cover ASSY	Taptite bind B M3x10	2	0.40±0.10 (4±1)
MP paper empty/registration front sensor PCB ASSY	Taptite bind B M3x8	1	0.40±0.10 (4±1)
PF ASSY	Taptite bind B M4x12	2	0.80±0.10 (8±1)
	Shoulder screw	1	0.70±0.10 (7±1)
T1 registration front/rear sensor PCB holder	Taptite bind B M3x10	1	0.50±0.10 (5±1)
MP sector solenoid	Taptite bind B M3x8	1	0.40±0.10 (4±1)
MP drive frame	Taptite bind B M3x10	3	0.50±0.10 (5±1)
High-voltage power supply shield ASSY	Taptite cup S M3x6 SR	2	0.50±0.10 (5±1)
T2 cover rear	Taptite cup S M3x10 SR	2	0.80±0.10 (8±1)
T2 cover left	Taptite cup S M3x6 SR	2	0.80±0.10 (8±1)
T2 cover right	Taptite cup S M3x6 SR	2	0.80±0.10 (8±1)
T2 relay PCB ASSY	Taptite cup S M3x6 SR	1	0.80±0.10 (8±1)
T2 solenoid holder ASSY	Taptite cup S M3x6 SR	1	0.80±0.10 (8±1)
T2 solenoid holder	Screw flanged M3x3.5	1	0.50±0.10 (5±1)
T2 beam F ASSY	Taptite cup S M3x6 SR	5	0.80±0.10 (8±1)
T2 beam front	Taptite cup S M3x6 SR	2	0.80±0.10 (8±1)
T2 beam rear	Taptite cup S M3x6 SR	4	0.80±0.10 (8±1)
T2 frame L unit	Taptite bind B M4x10	1	0.80±0.10 (8±1)

## 5. LUBRICATION

The kind of the lubricating oil (Maker name)	Lubrication point	Quantity of lubrication
MOLYKOTE PG-661 (W) (Dow Corning)	PF plate ASSY	1.5 mm dia. ball (PG1.5)
	Front cover arm L	1.5 mm dia. ball (PG1.5)
	Front cover arm R	1.5 mm dia. ball (PG1.5)



PG1.5: MOLYKOTE PG-661 (W) (1.5 mm dia. ball)



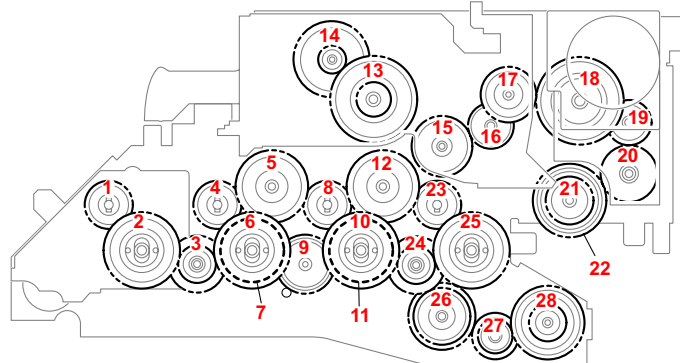
PG1.5: MOLYKOTE PG-661 (W) (1.5 mm dia. ball)

## 6. OVERVIEW OF GEARS

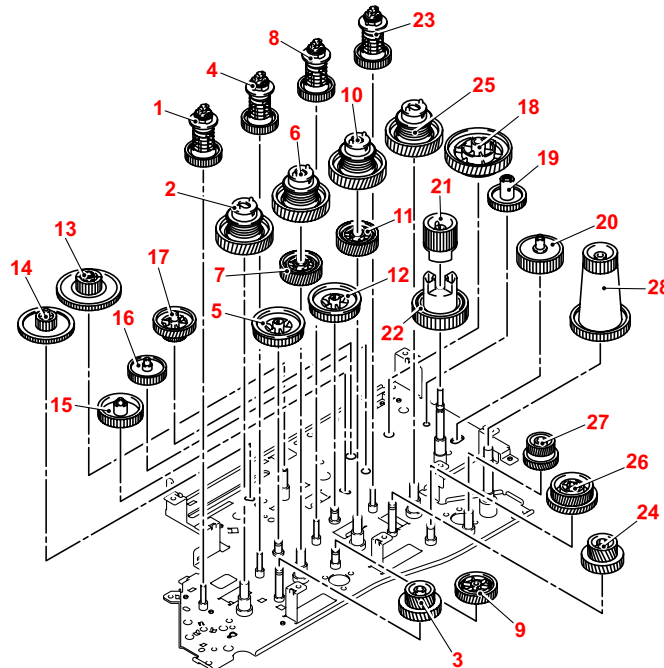
When ordering spare parts, please refer to Parts reference list.

### ■ Top drive ASSY

<Layout view>



<Development view>



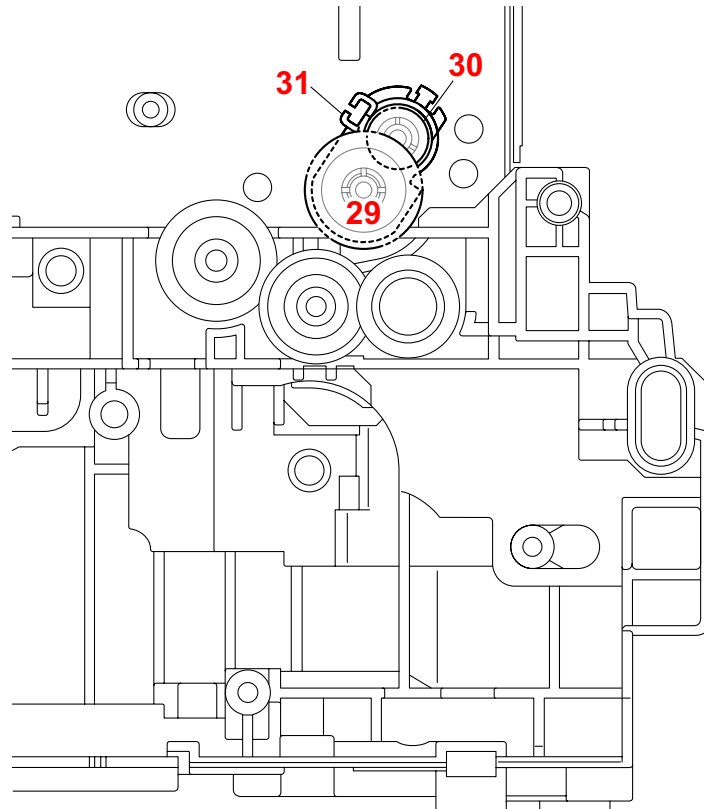
<Name of gears>

1	LY0192	Develop joint gear Z48	15	LY0213	Gear Z60
2	LY0196	Drum coupling gear Z52	16	LY0217	Gear Z50
3	LY0197	Drum double idle gear Z64-26	17	LY0214	Gear Z63-30
4	LY0192	Develop joint gear Z48	18	LY0231	Gear Z100-47
5	LY0194	Develop idle gear Z66	19	LY0212	Gear Z37
6	LY0196	Drum coupling gear Z52	20	LY0211	Gear Z45
7	LY0198	Drum idle gear Z64	21	LY0233	Fuser drive gear Z25
8	LY0192	Develop joint gear Z48	22	LY0216	Gear Z55
9	LY0199	Drum idle gear Z64 first	23	LY0192	Develop joint gear Z48
10	LY0196	Drum coupling gear Z52	24	LY0197	Drum double idle gear Z64-26
11	LY0198	Drum idle gear Z64	25	LY0196	Drum coupling gear Z52
12	LY0194	Develop joint gear Z48	26	LY0203	Belt idle gear Z64-75
13	LY0220	Gear Z54-18	27	LY0202	Belt idle gear Z52-40
14	LY0219	Gear Z90-18	28	LY0201	Belt drive gear 25-80

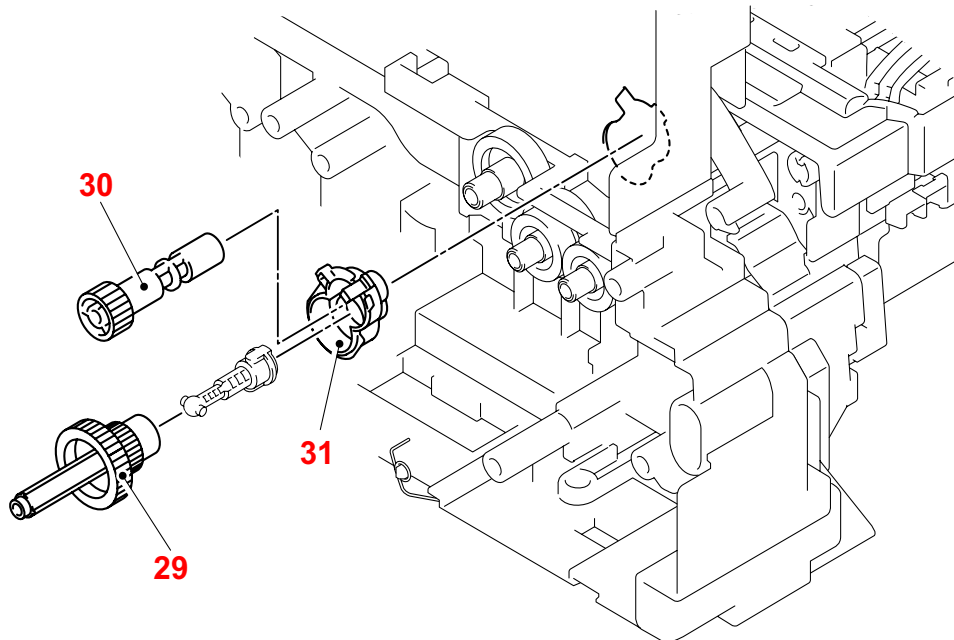
\* These parts are subject to change without notice.

■ PF ASSY

<Layout view>



<Development view>



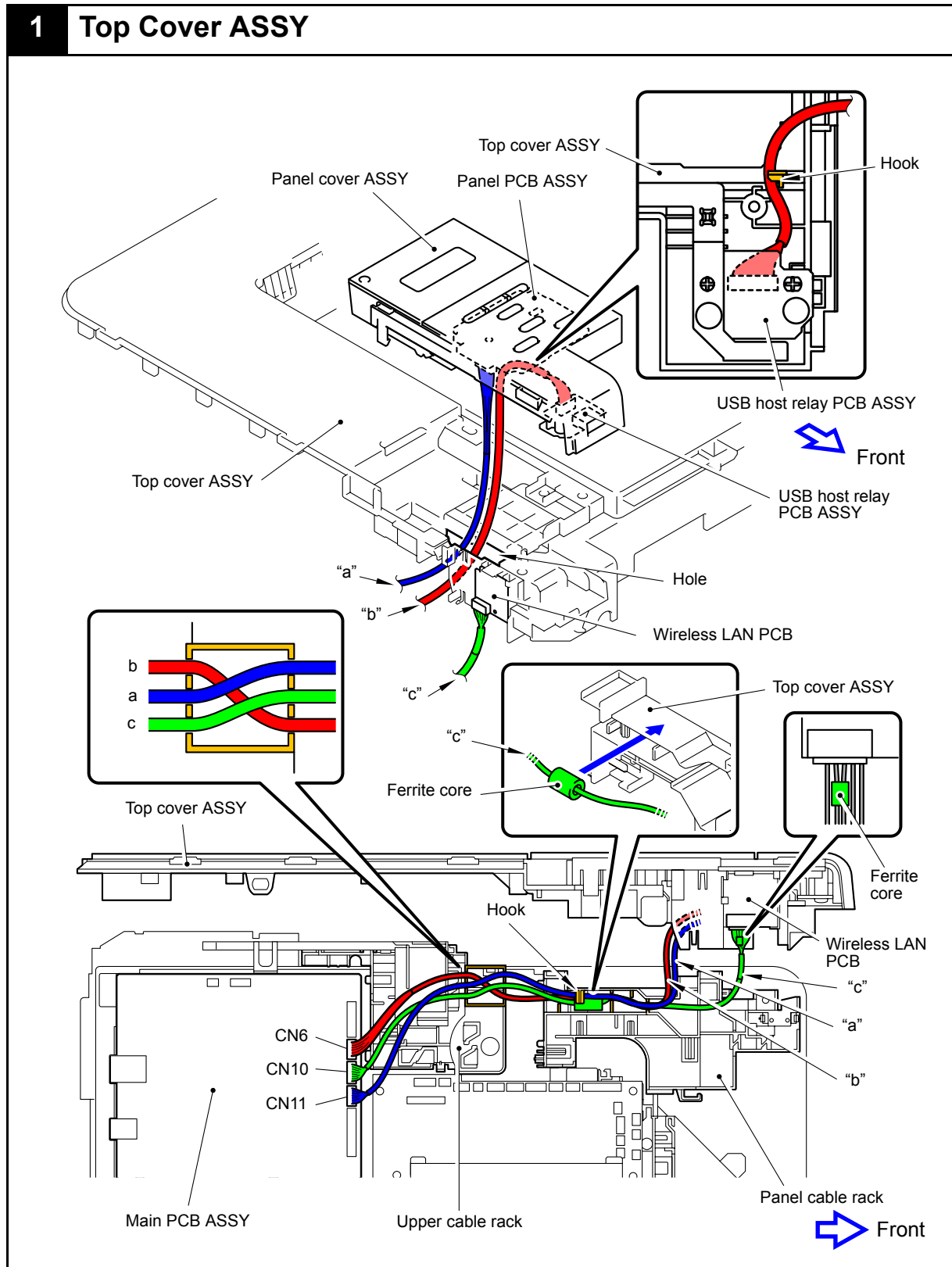
<Name of gears>

29	LU5132	Registration gear	31	LY0298	Registration/Pinch roller gear bush
30	LY0299	Pinch roller drive gear			

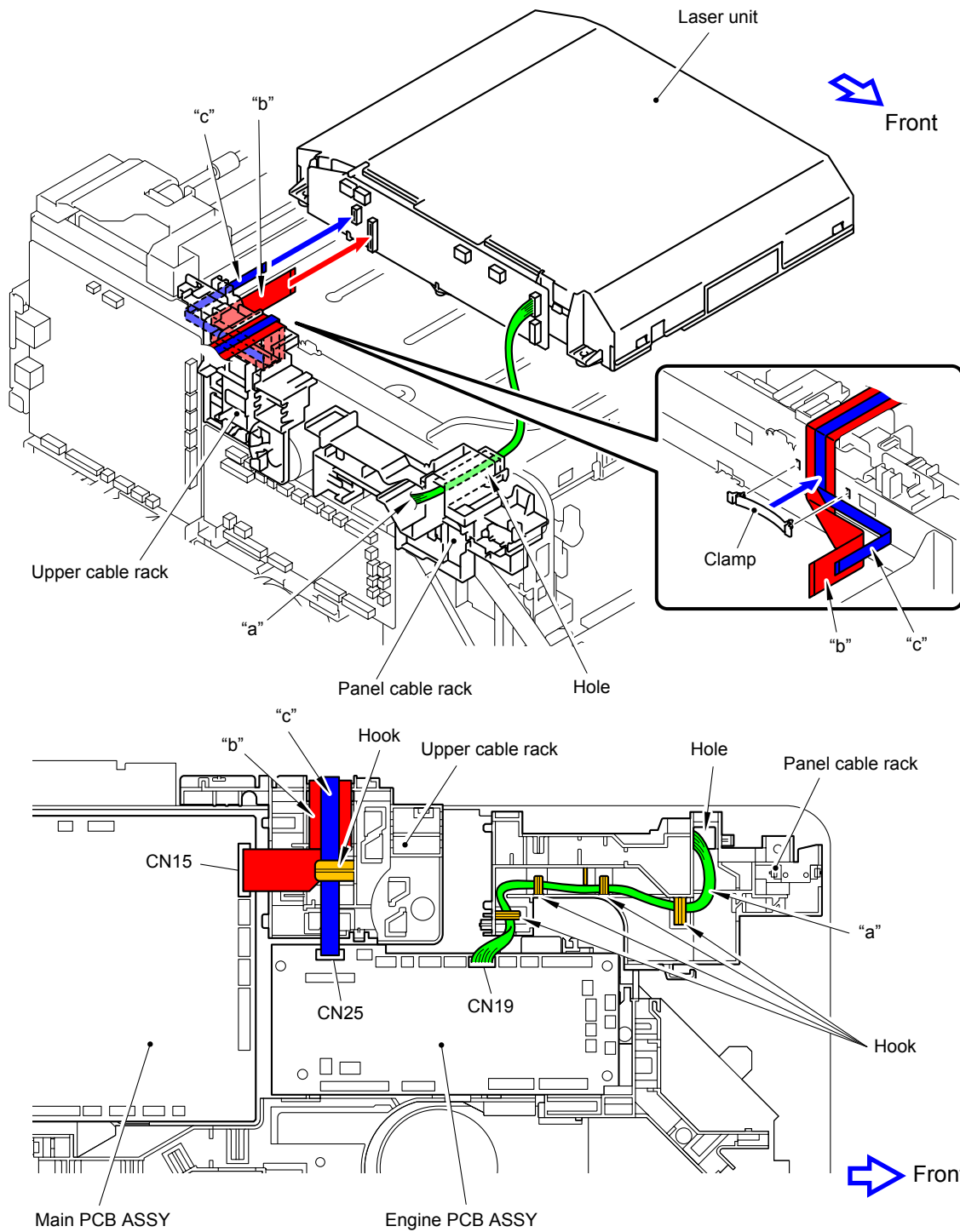
\* These parts are subject to change without notice.

# 7. HARNESS ROUTING

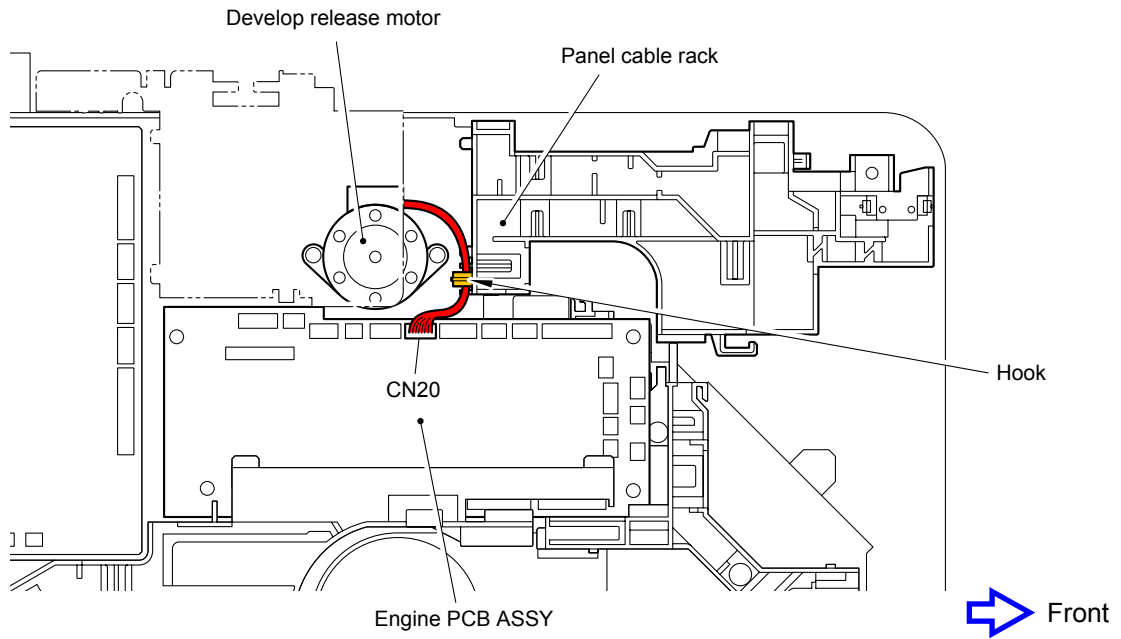
## 1 Top Cover ASSY



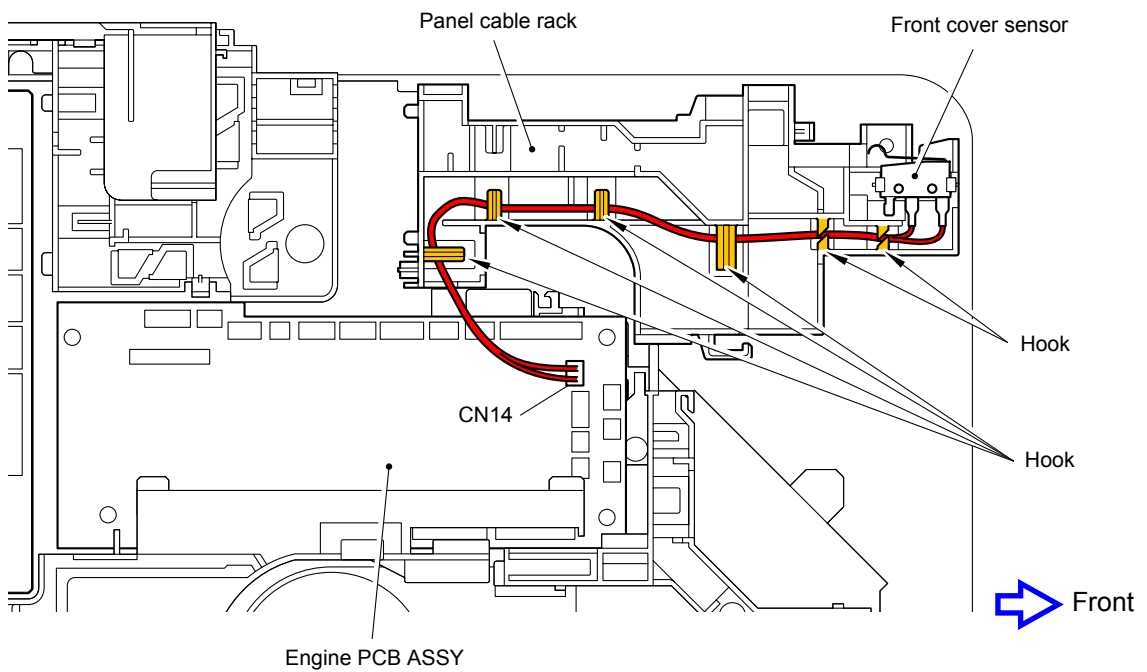
## 2 Laser Unit



### 3 Develop Release Motor

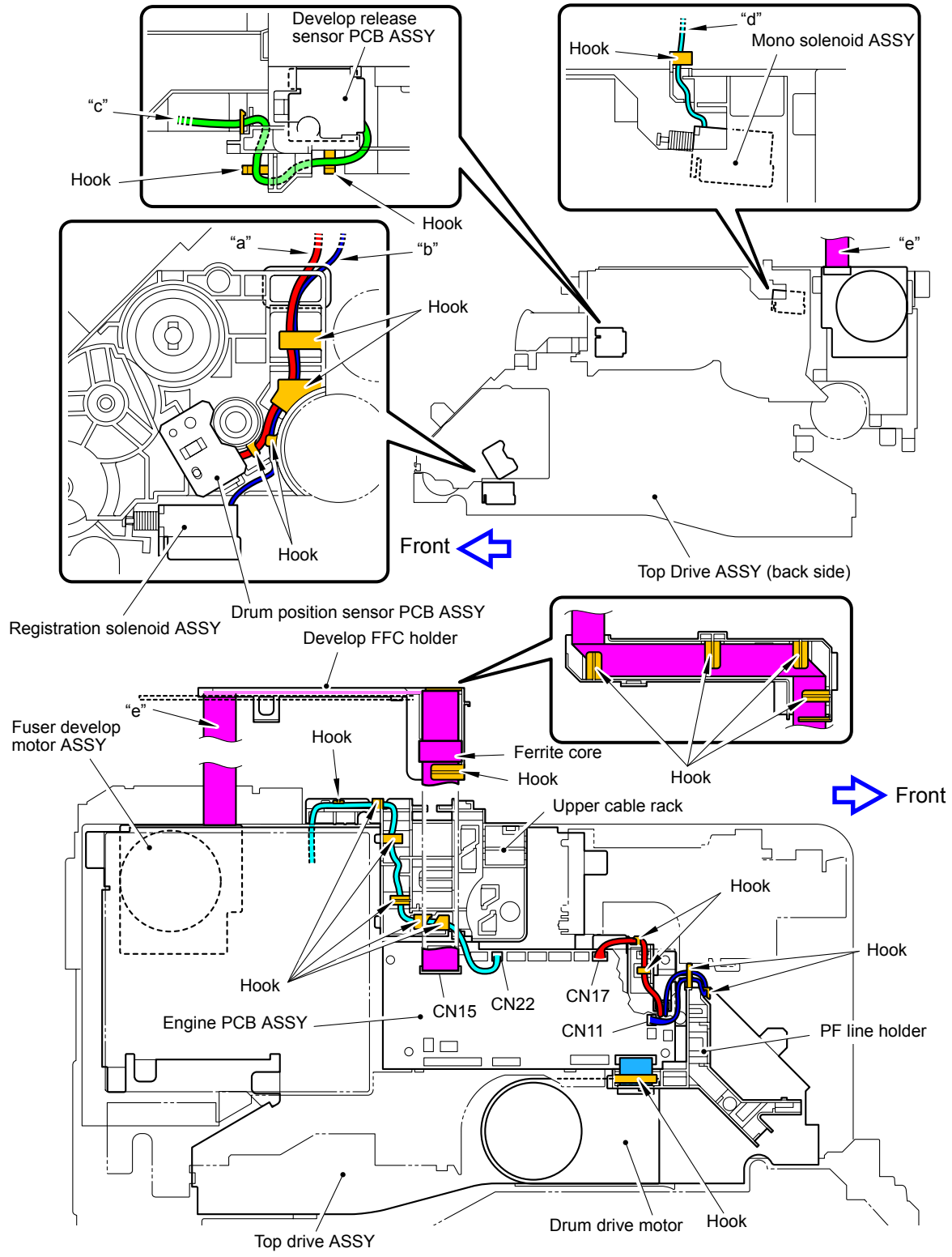


### 4 Front Cover Sensor

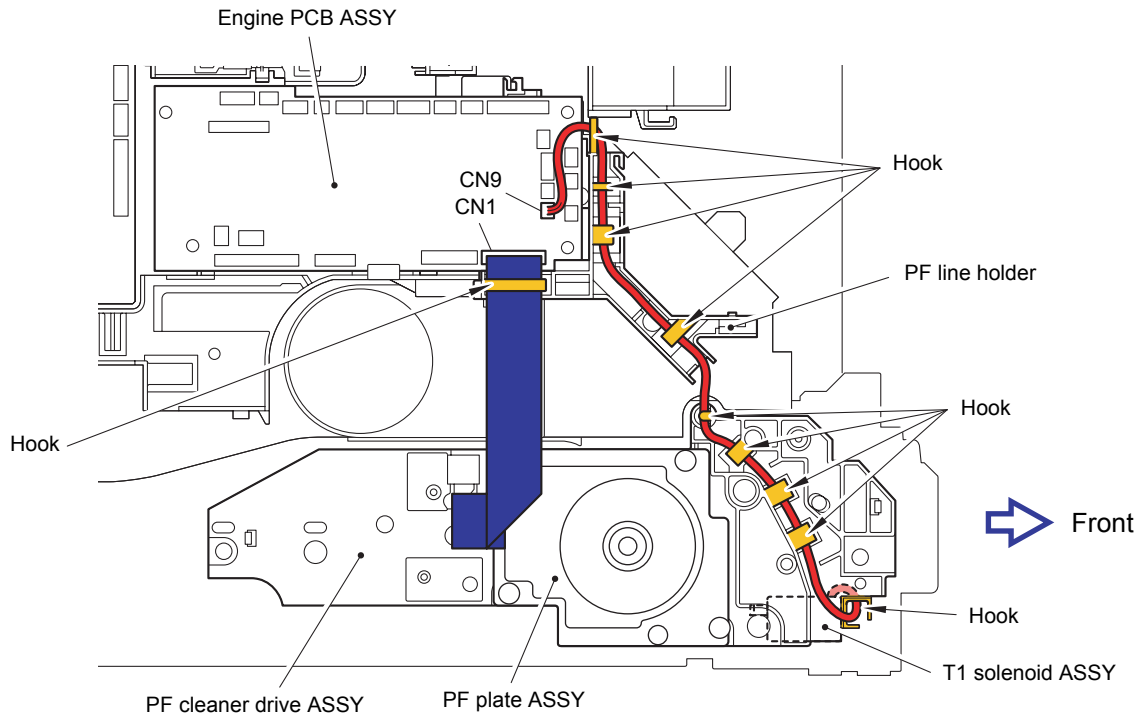




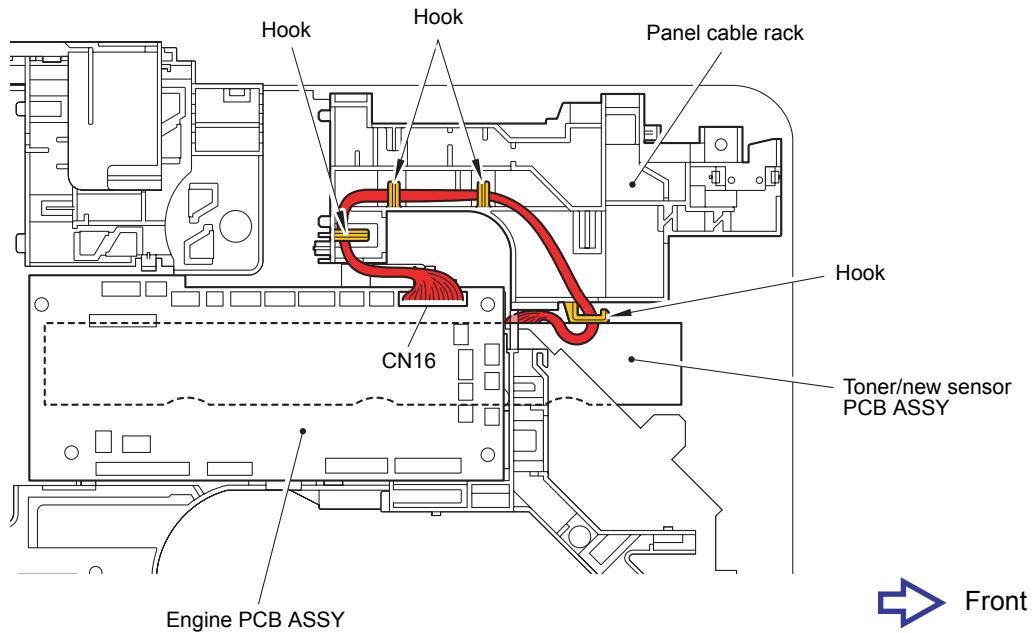
# 5 Top Drive ASSY



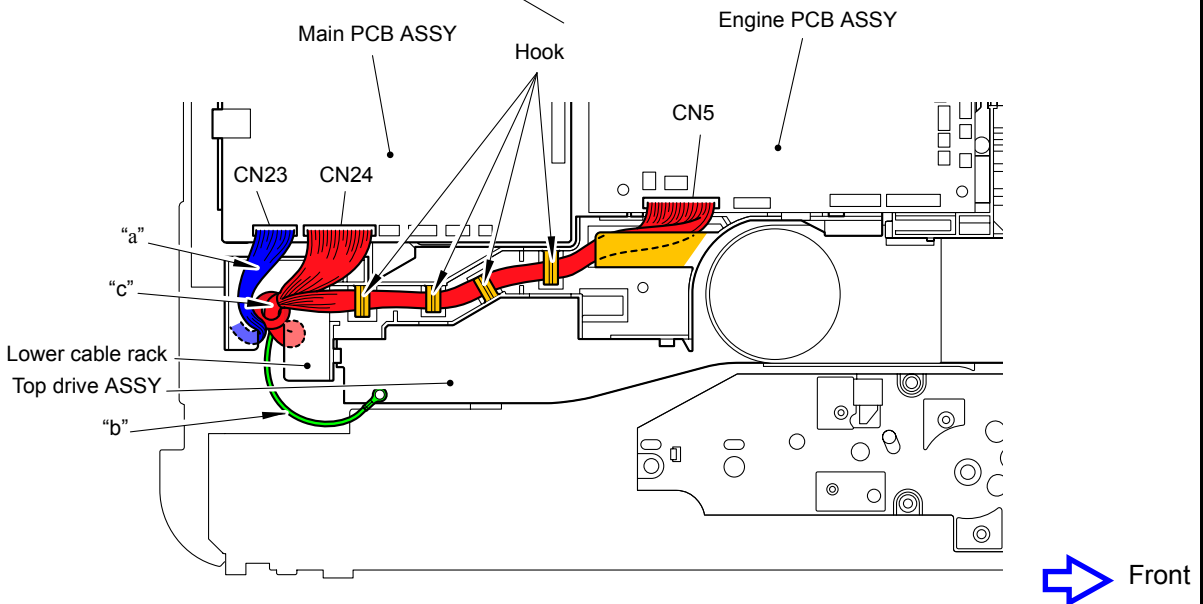
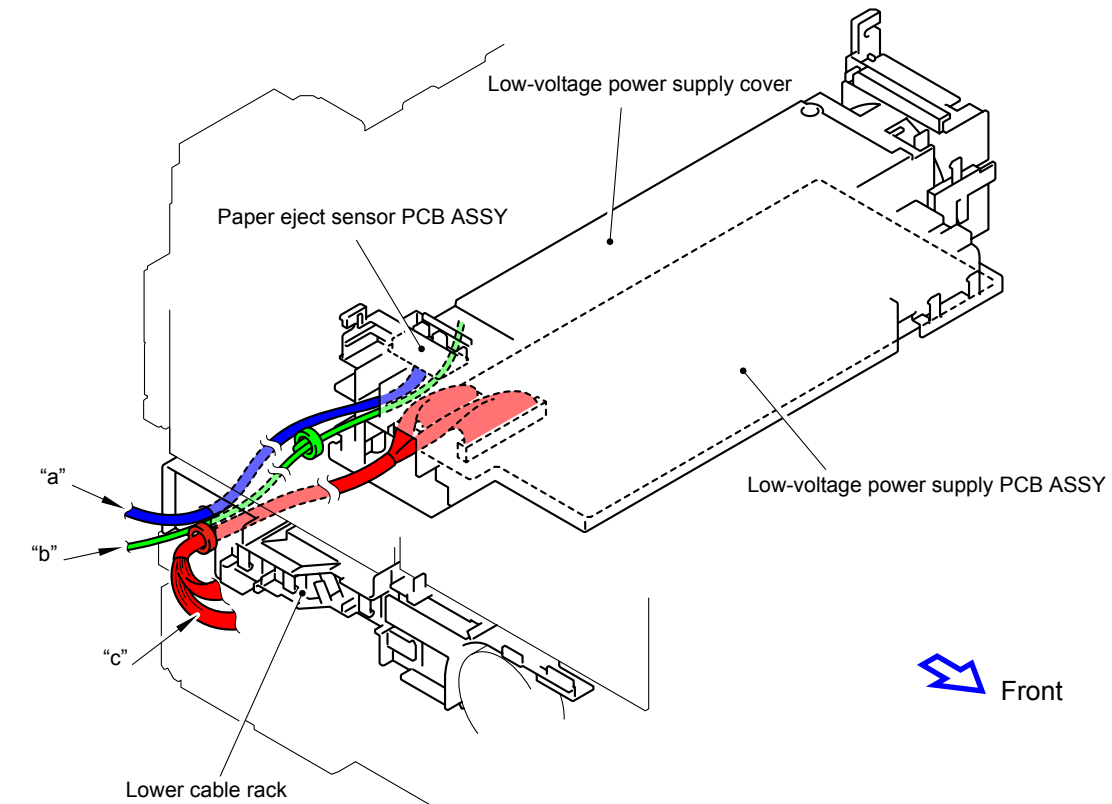
## 6 PF Plate ASSY



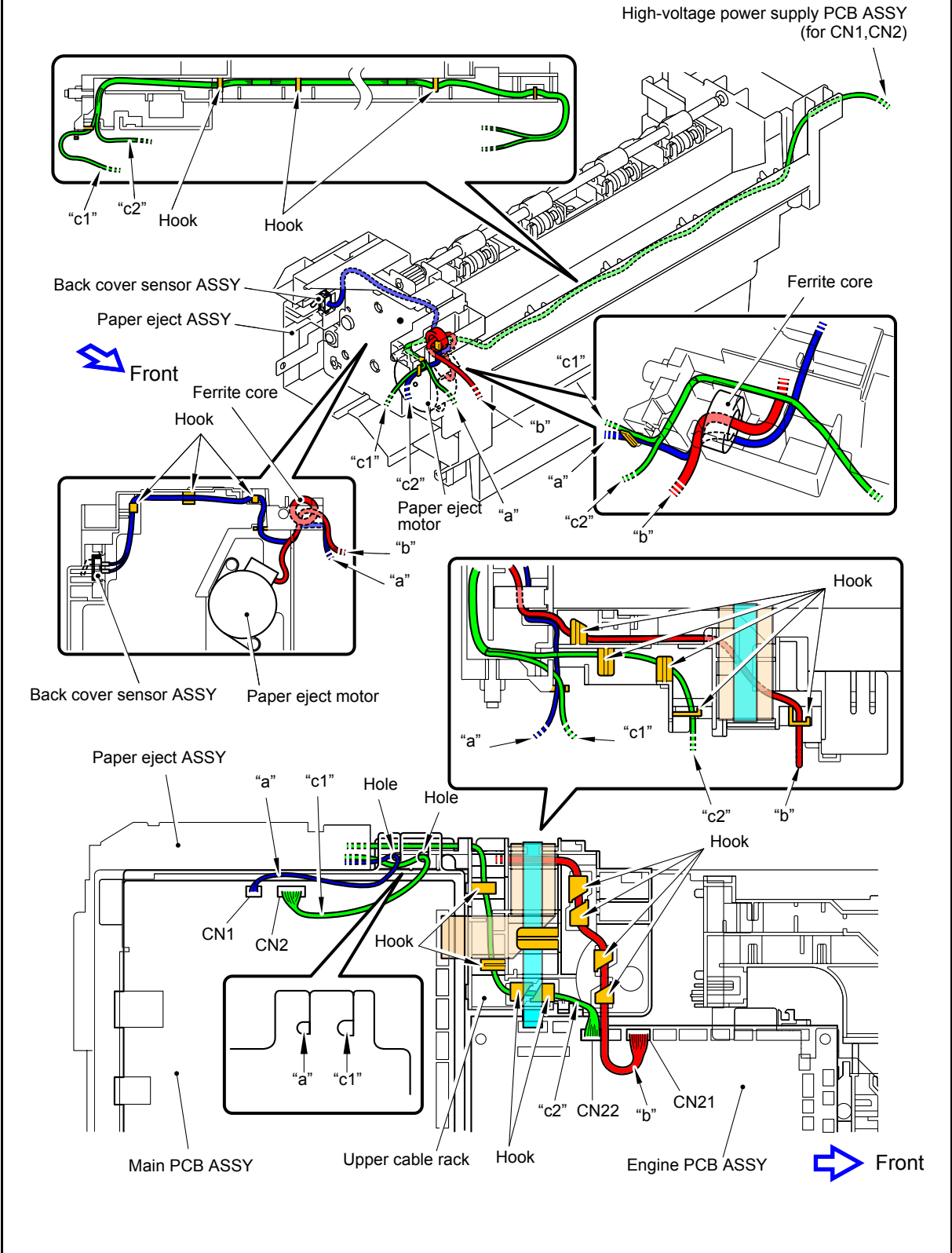
## 7 Toner/New Sensor PCB ASSY



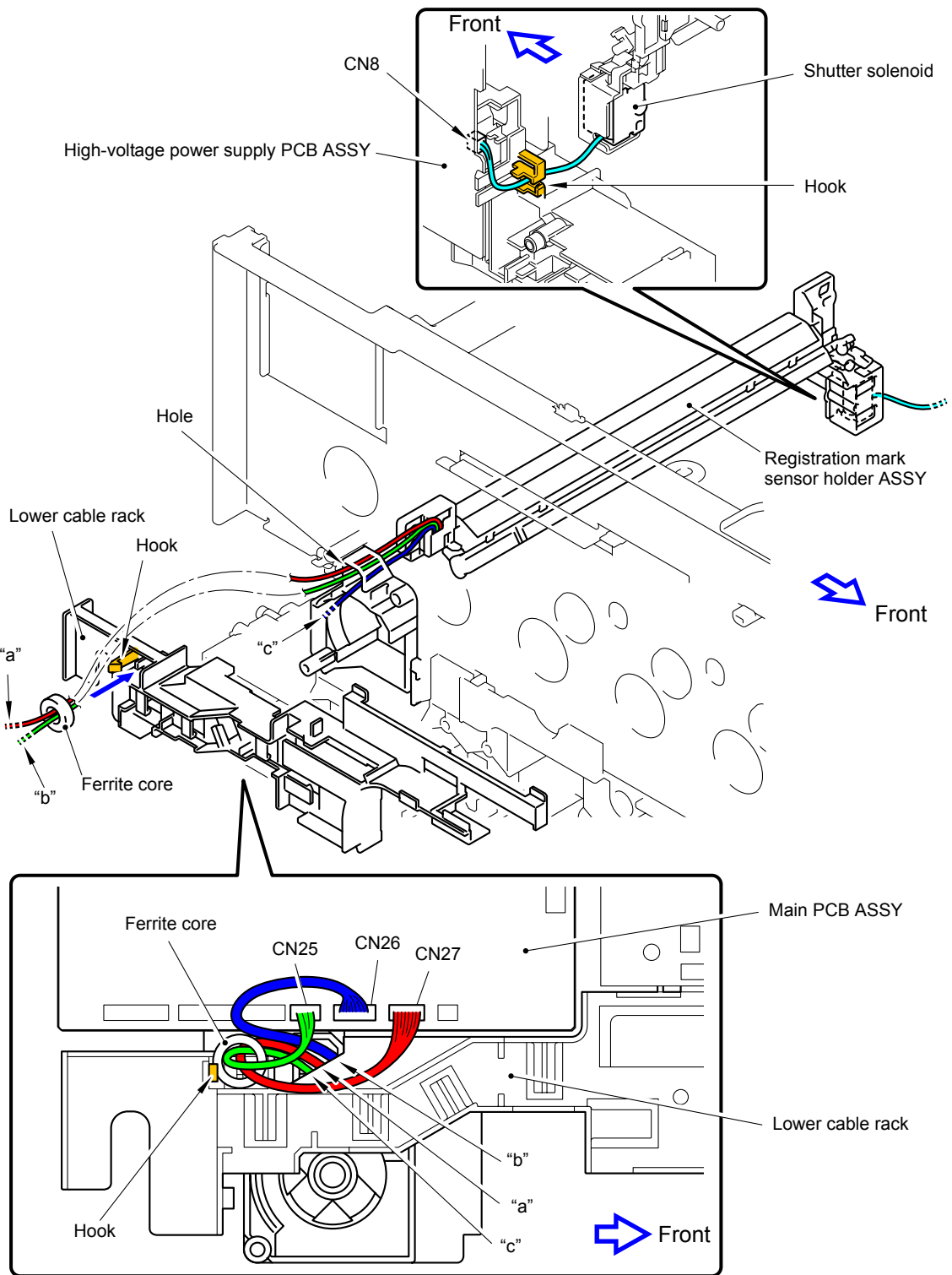
## 8 Low-voltage Power Supply PCB ASSY



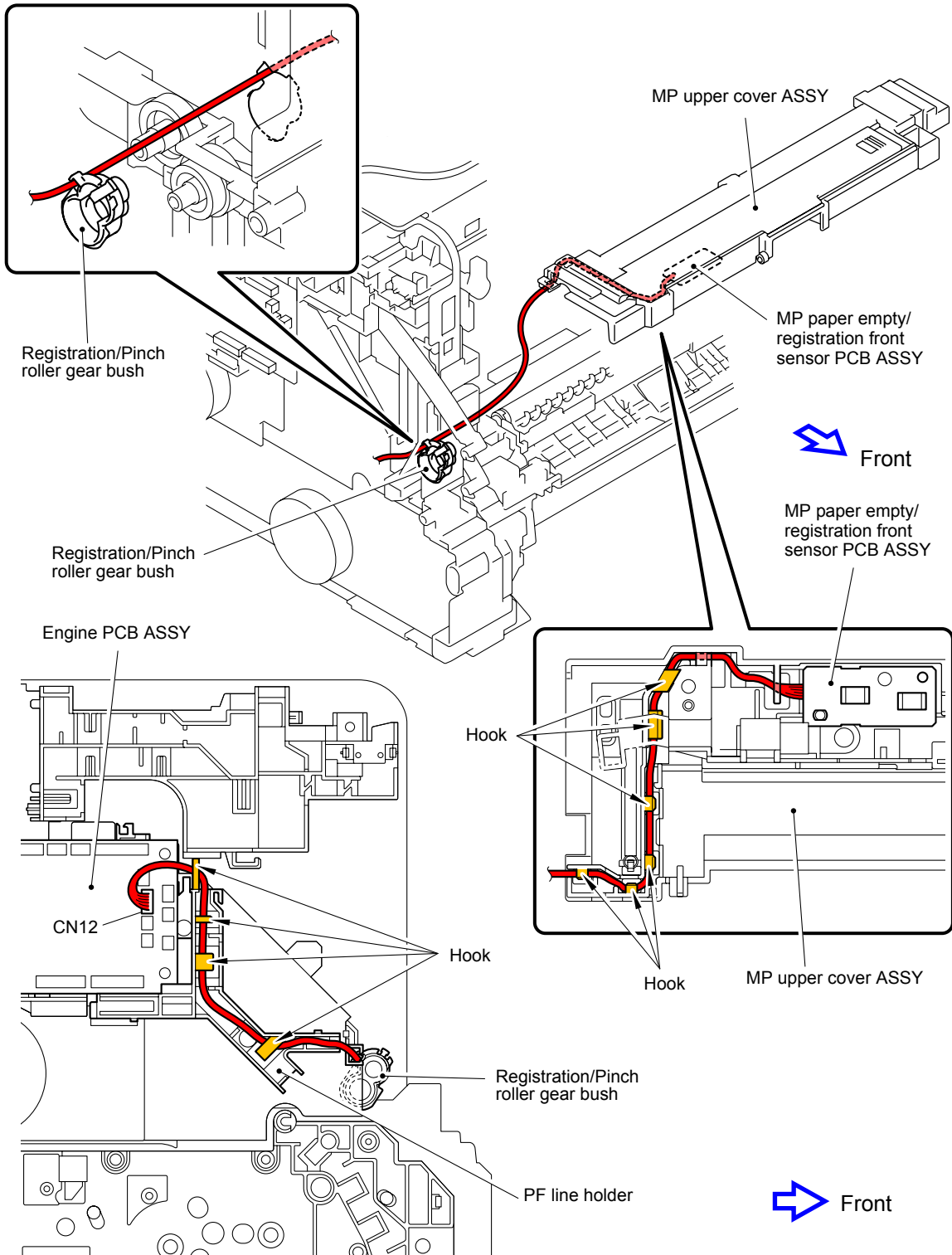
# 9 Paper Eject ASSY



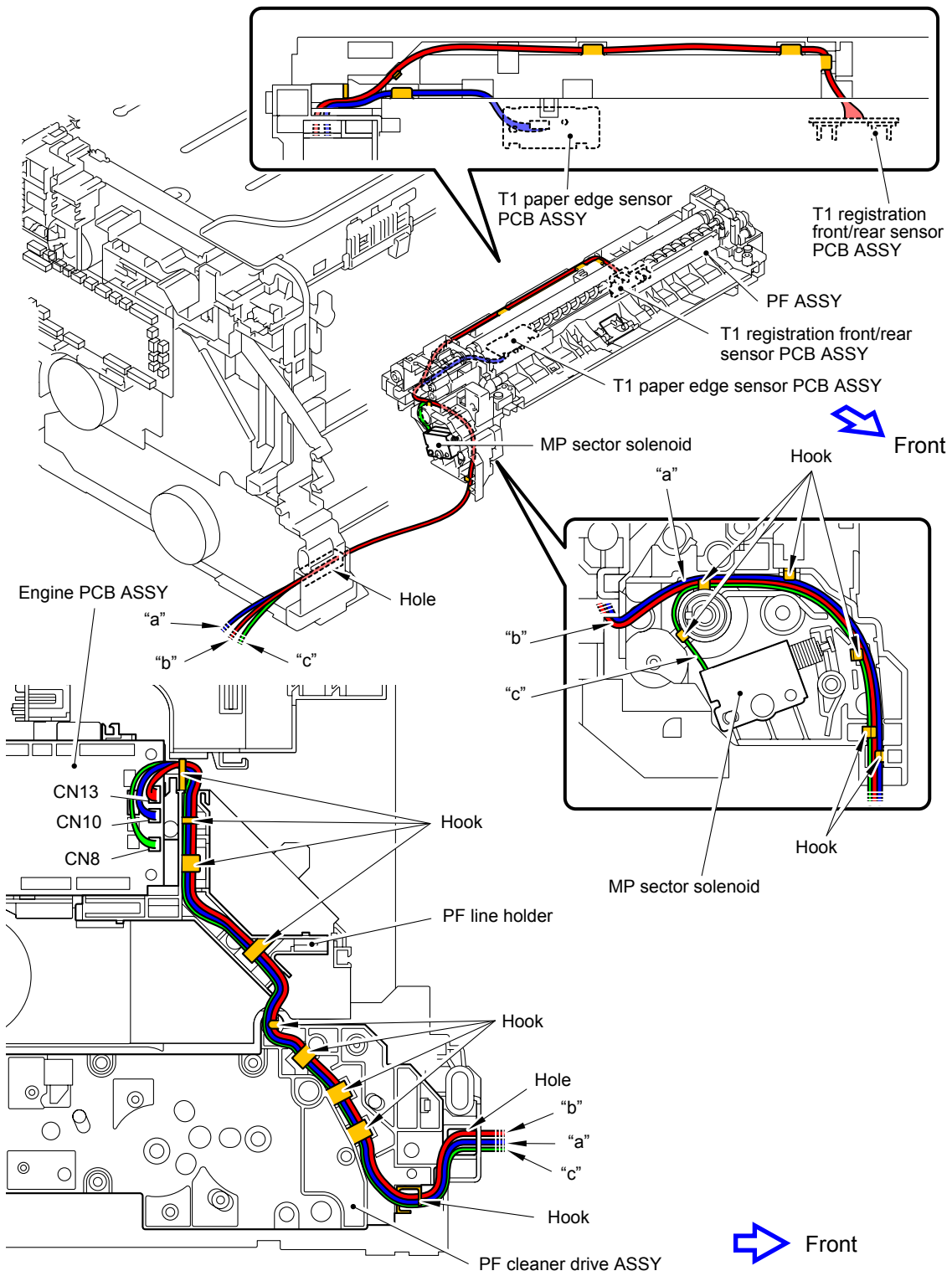
# 10 Registration Mark Sensor Holder ASSY



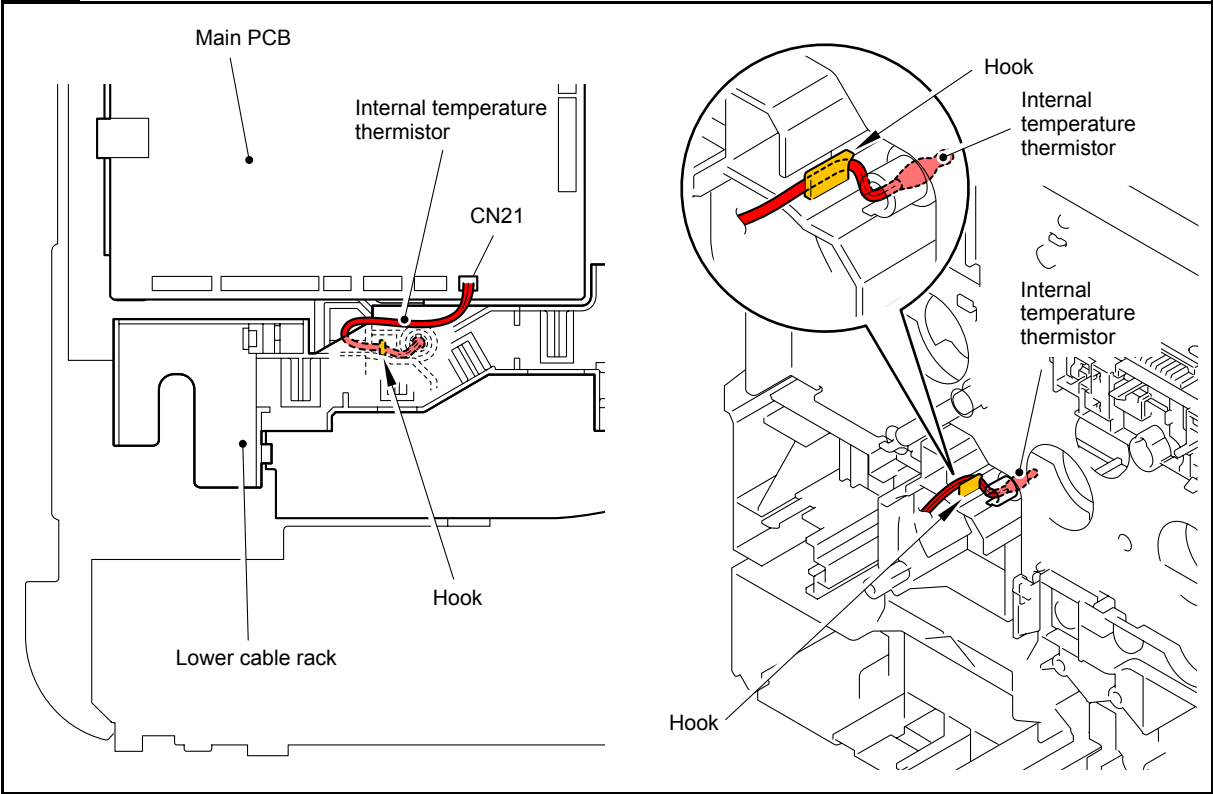
# 11 MP Paper Empty/Registration Front Sensor PCB ASSY



# 12 PF ASSY



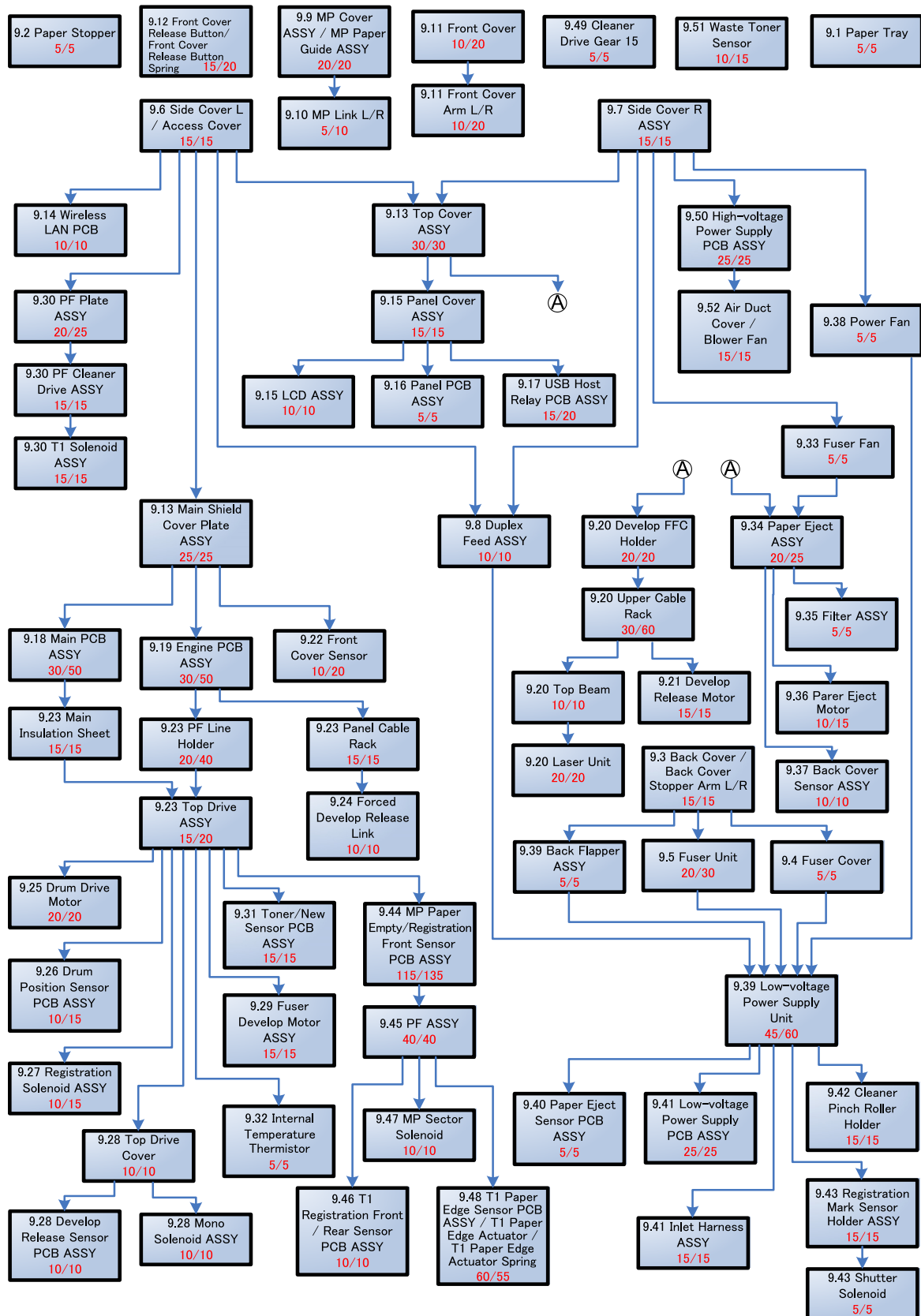
# 13 Internal Temperature Thermistor





# 8. DISASSEMBLY FLOW

Disassembly/Re-Assembly (second)



# 9. DISASSEMBLY PROCEDURE

## ■ Preparation

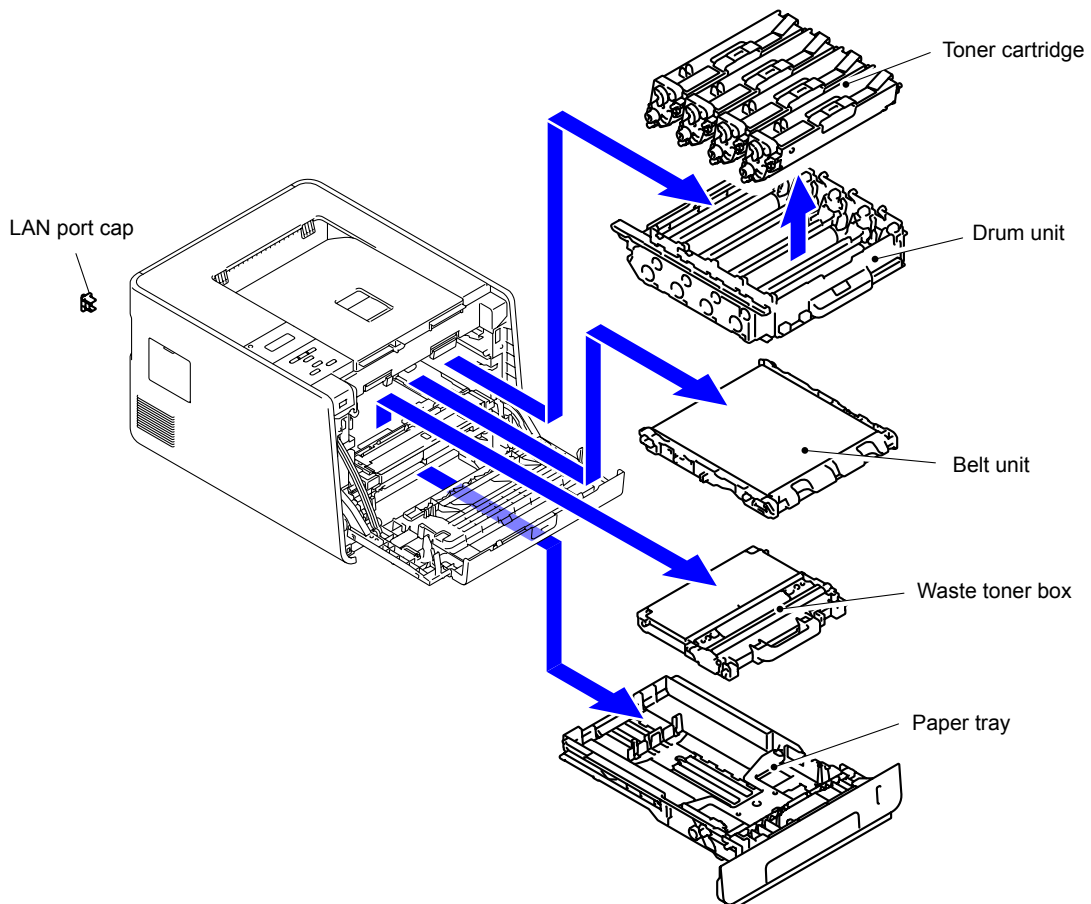
Prior to proceeding with the disassembly procedure,

### (1) Unplug

- the AC cord,
- the USB cable, if connected,
- the LAN cable, if connected, and
- USB flash memory drive, if connected.
- LAN port cap

### (2) Remove

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



## 9.1 Paper Tray

- (1) Release the Hook to remove the T1 separation pad holder ASSY from the Paper tray.

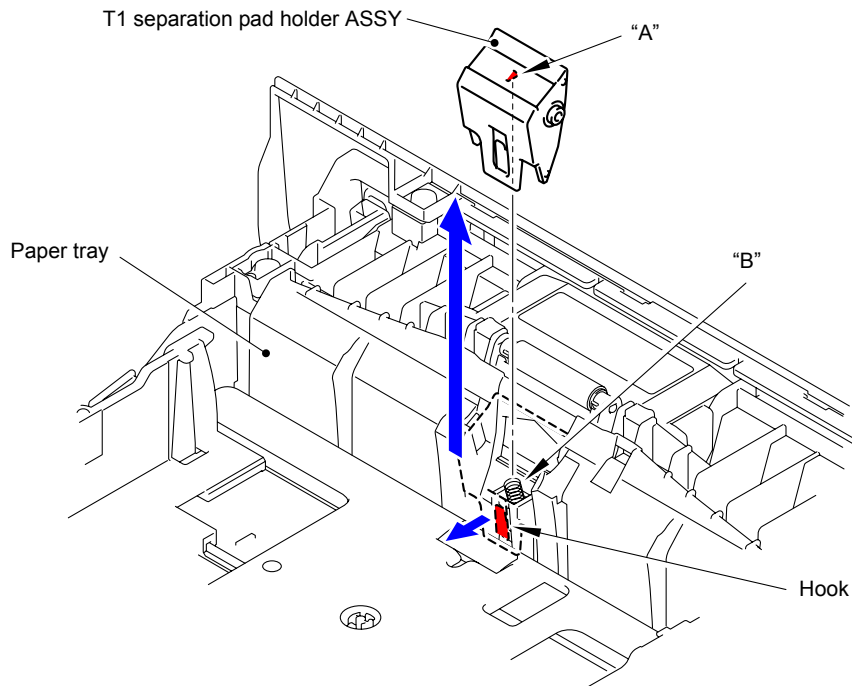


Fig. 3-1

### Assembling Note:

Mount the T1 separation pad holder ASSY in a way that "A" of the T1 separation pad holder ASSY is inserted into "B" of the T1 separation pad spring.

- (2) Remove the T1 separation pad spring from the Paper tray.

### Note:

Be careful not to lose the T1 separation pad spring.

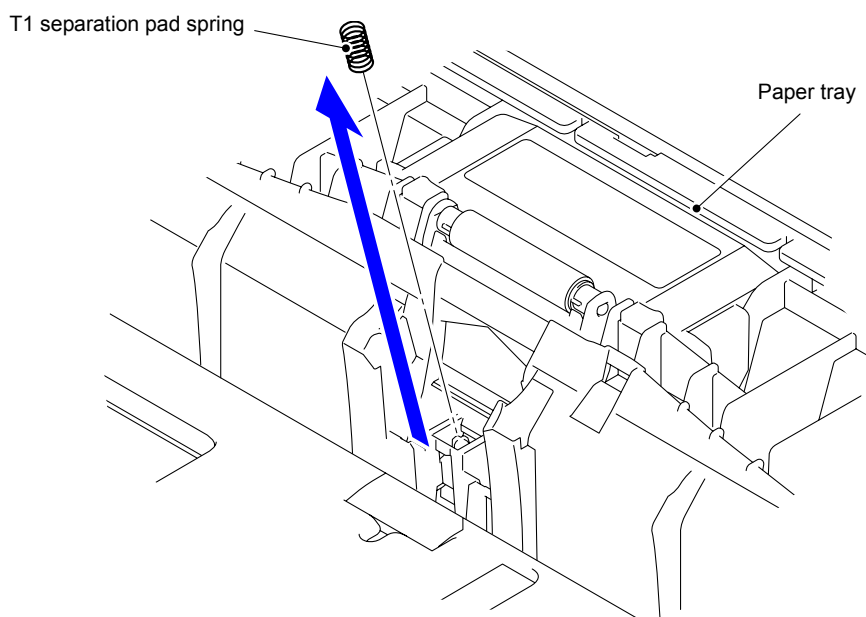


Fig. 3-2

# 9.2 Paper Stopper

(1) Remove the two Pins to remove the Paper stopper from the Main body.

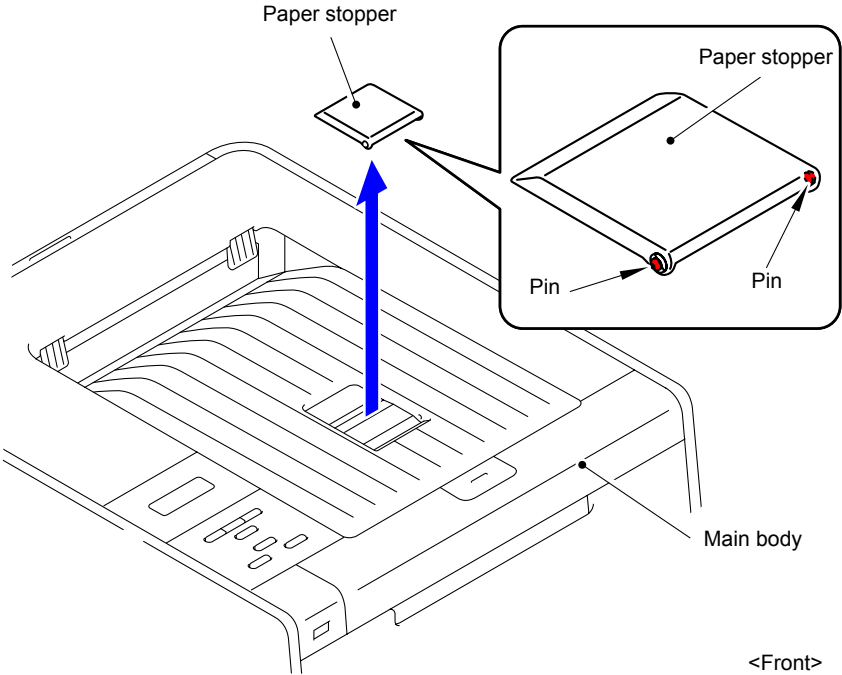


Fig. 3-3

### 9.3 Back Cover/Back Cover Stopper Arm L/R

(1) Open the Back cover.

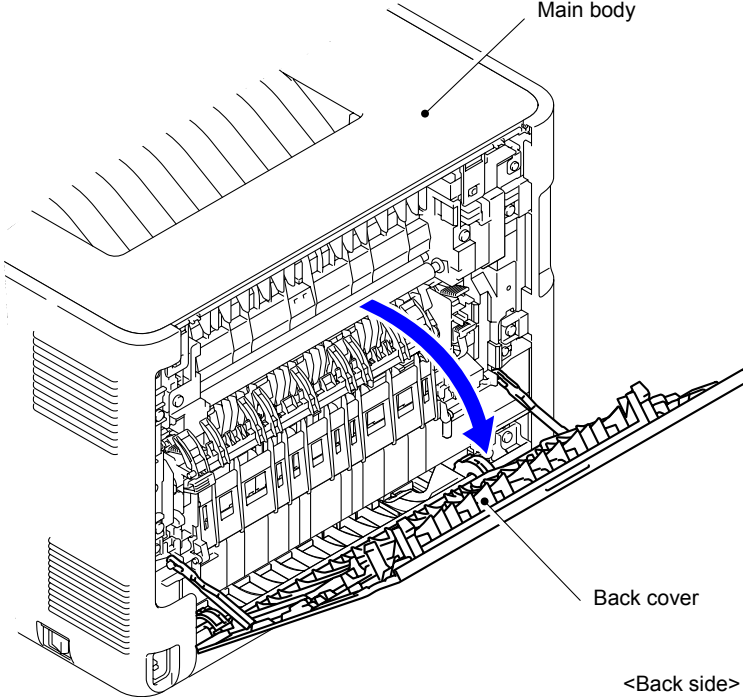


Fig. 3-4

(2) Remove the Back cover stopper arm L and R from the Main body.

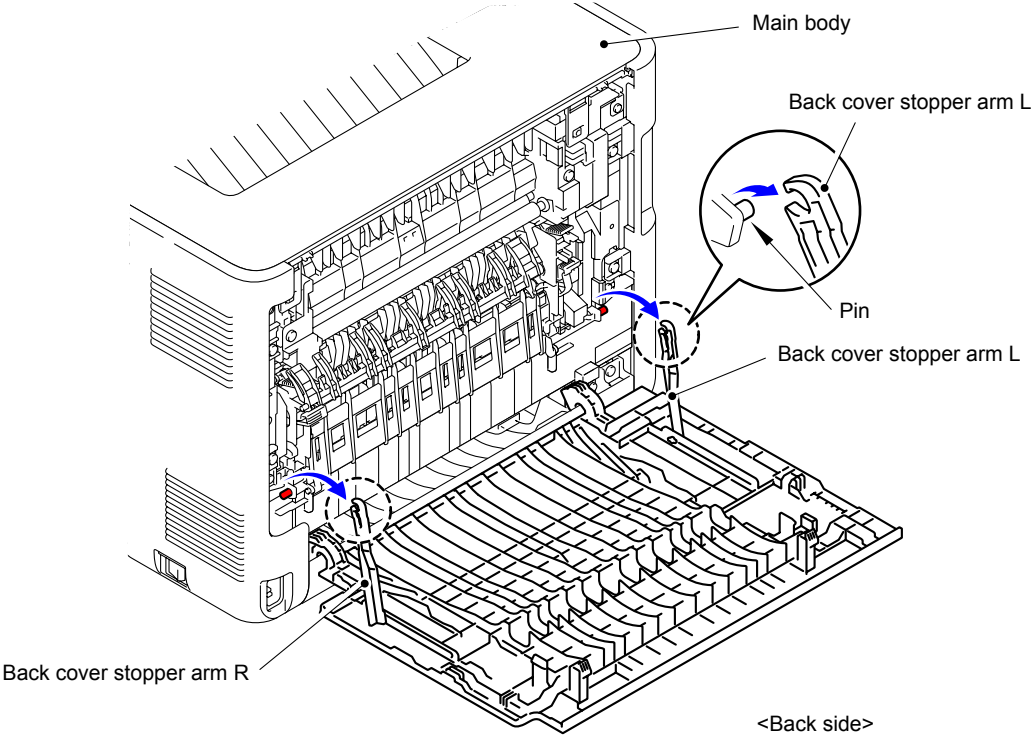


Fig. 3-5

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

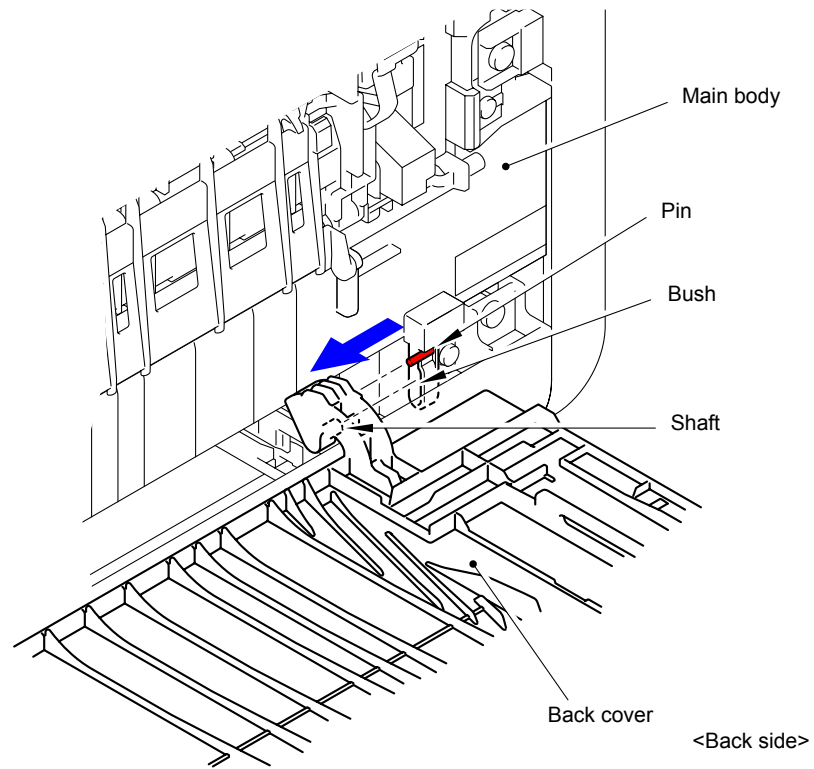


Fig. 3-6

(4) Remove the Back cover.

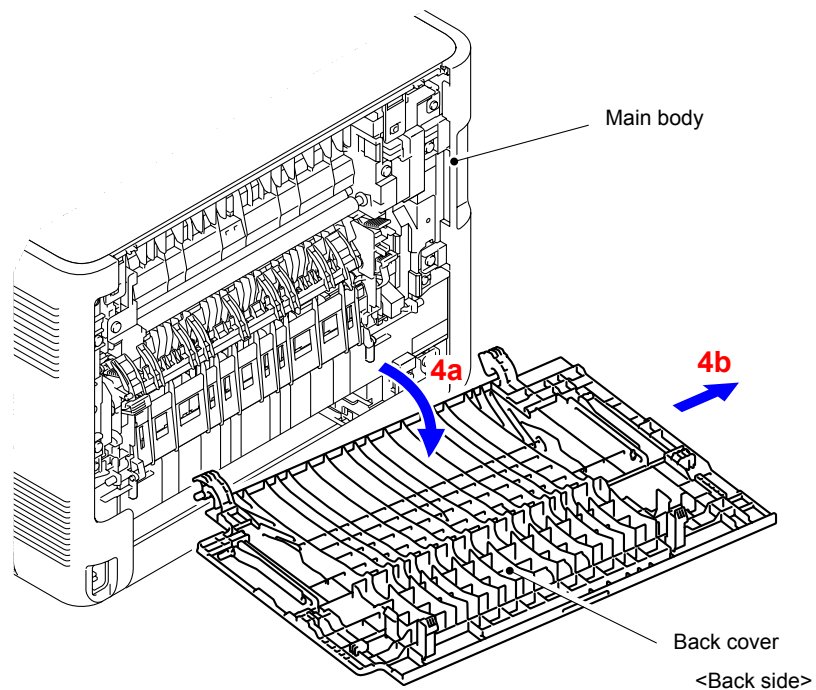


Fig. 3-7

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

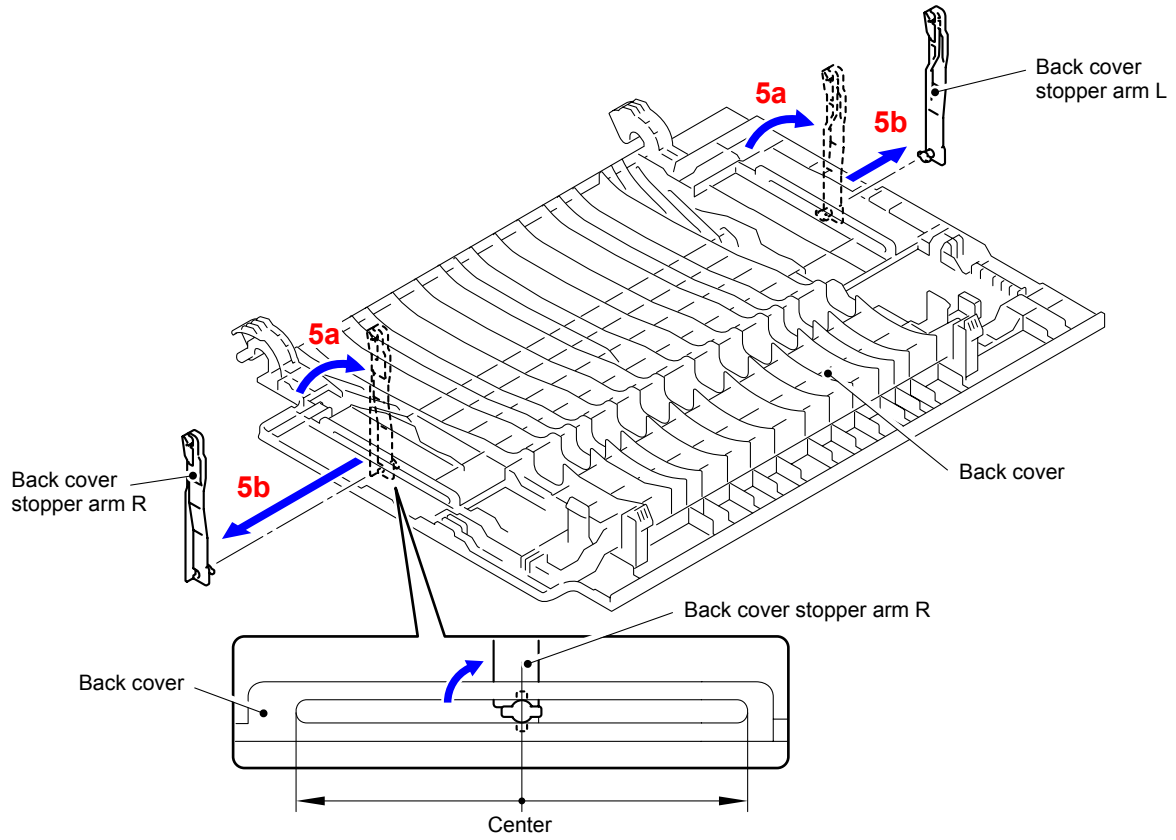


Fig. 3-8

## 9.4 Fuser Cover

- (1) Open the Back flapper ASSY.

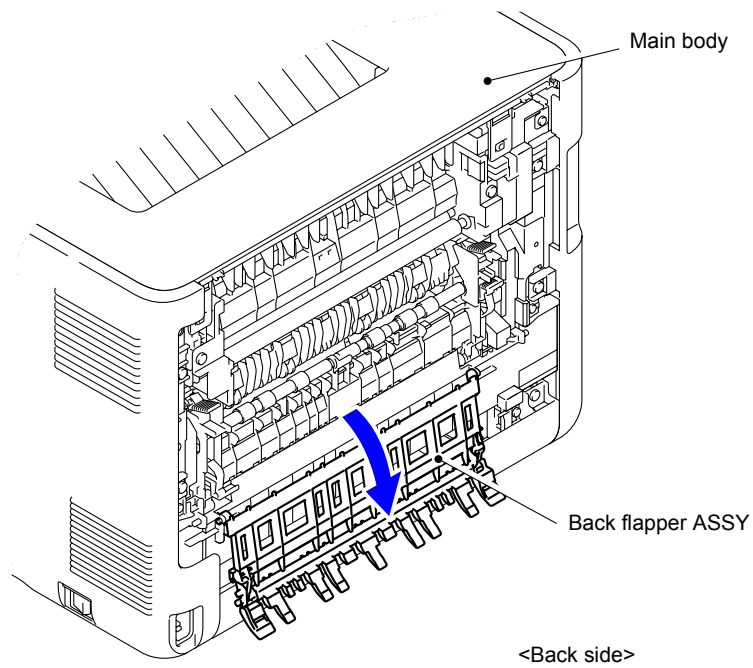


Fig. 3-9

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

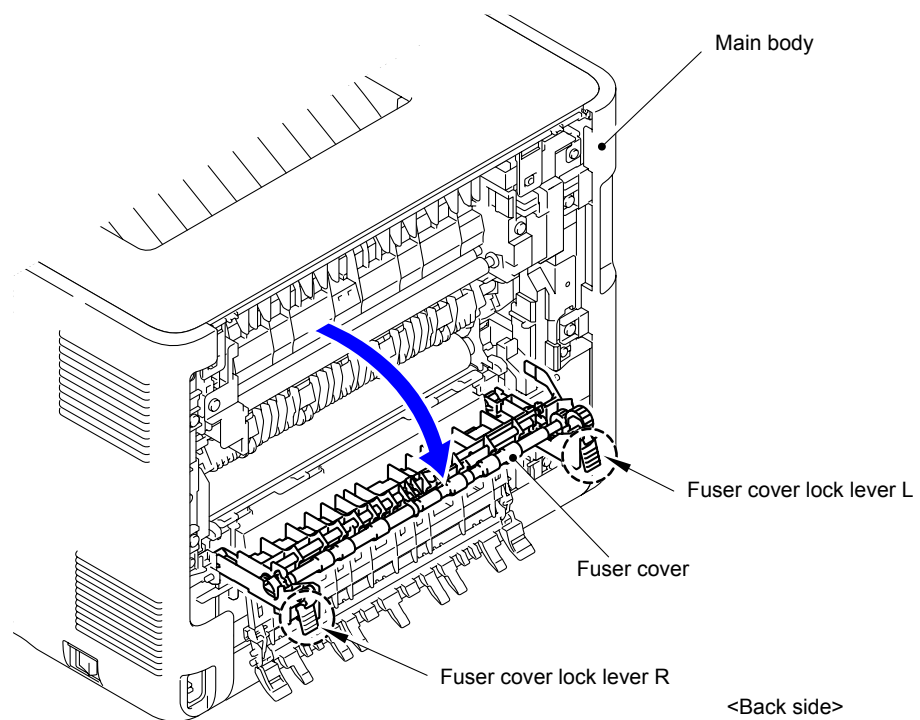
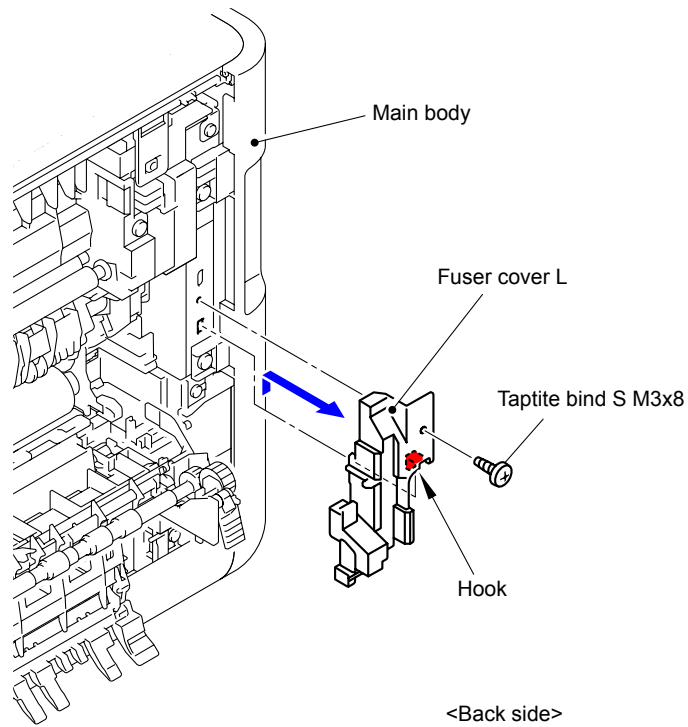


Fig. 3-10

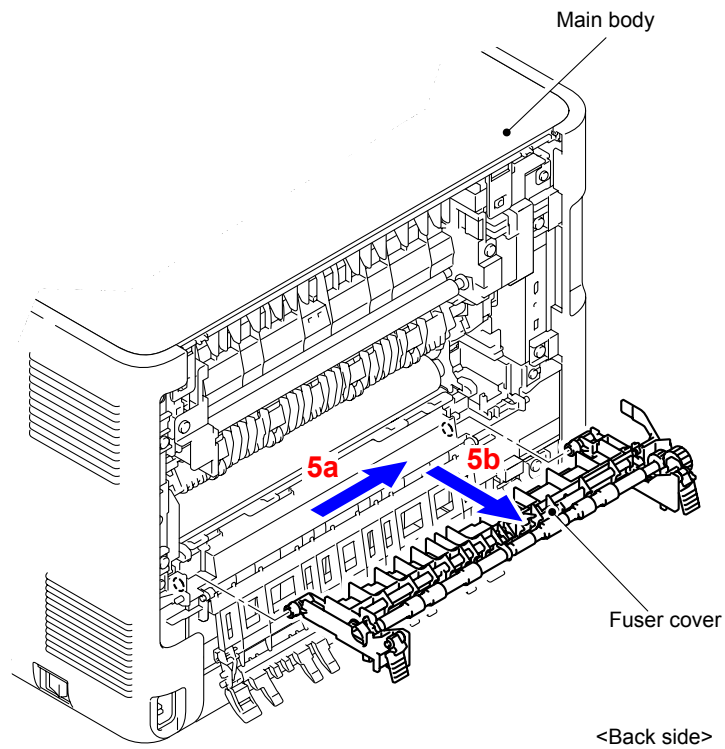


- (3) Remove the Taptite bind S M3x8 screw from the Fuser cover L.
- (4) Release the Hook to remove the Fuser cover L from the Main body.



**Fig. 3-11**

- (5) Slide the Fuser cover in the direction of the arrow 5a to remove it to the front.



**Fig. 3-12**

# 9.5 Fuser Unit

- (1) Remove the Taptite bind S M3x8 screw from the Fuser cover R.
- (2) Release the Hook to remove the Fuser cover R from the Main body.

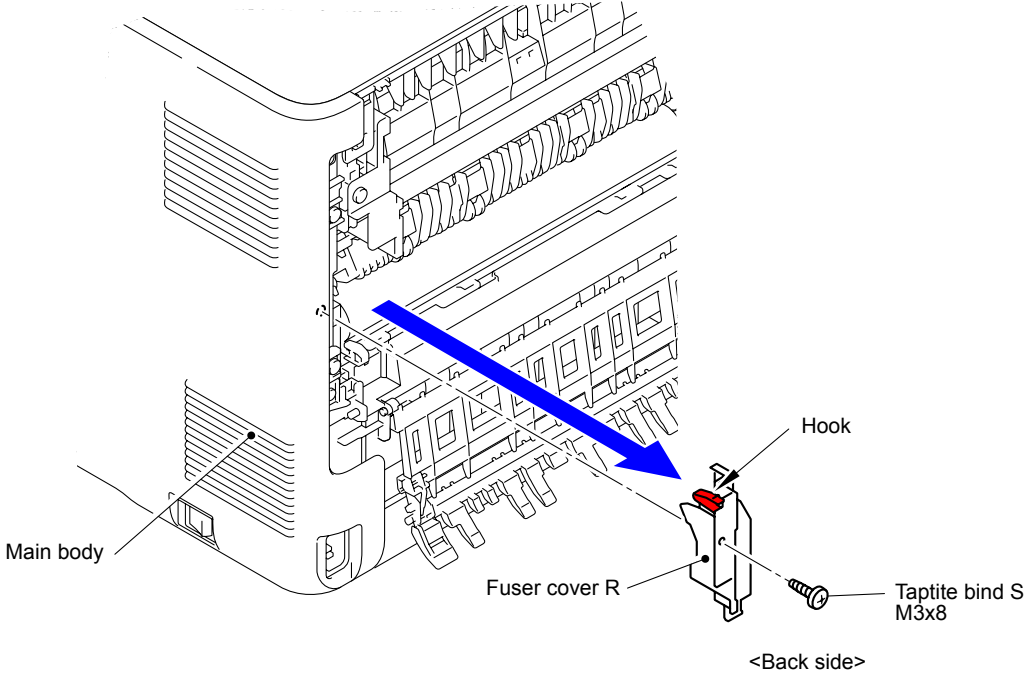


Fig. 3-13

- (3) Disconnect the two Connectors (CN1, CN2) from the Paper eject sensor PCB ASSY.

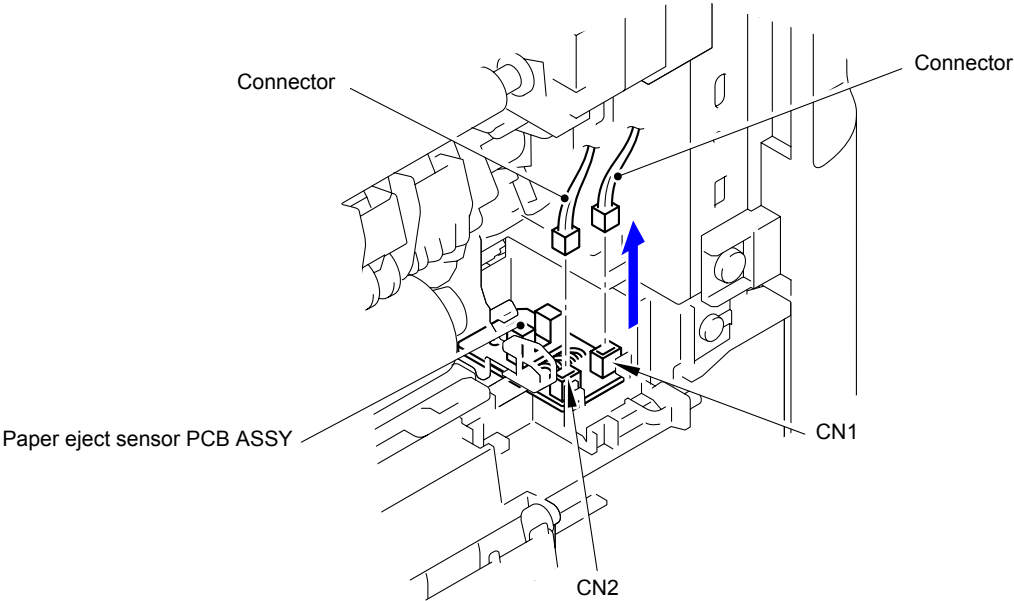


Fig. 3-14

(4) Disconnect the Electrode terminal from the Fuser unit.

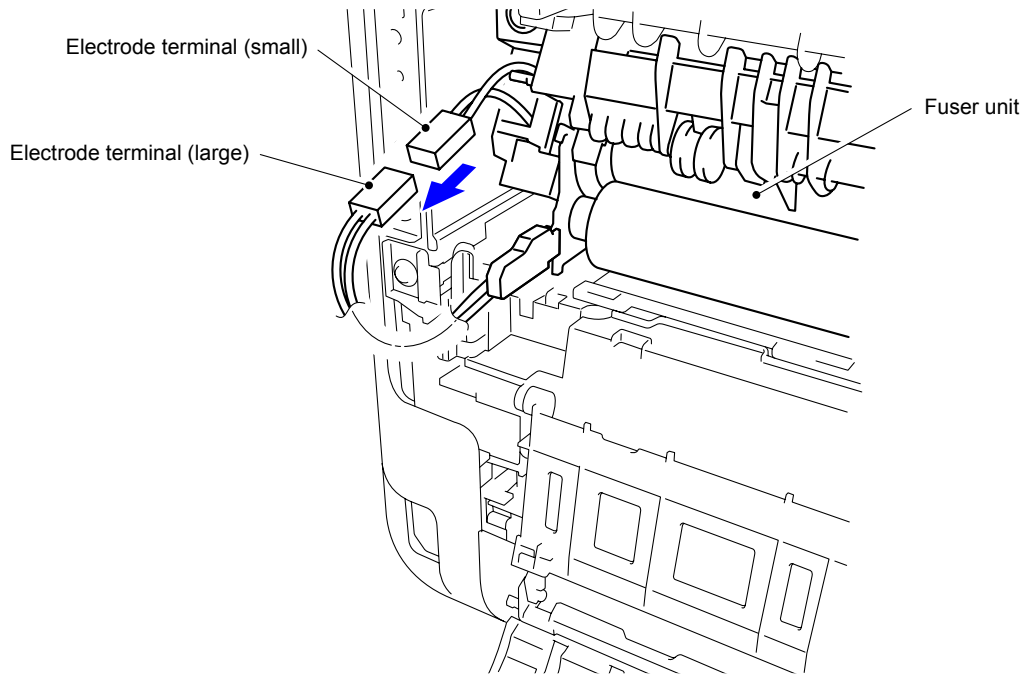


Fig. 3-15

(5) Remove the two Taptite pan B M4x14 screws to remove the Fuser unit from the Main body.

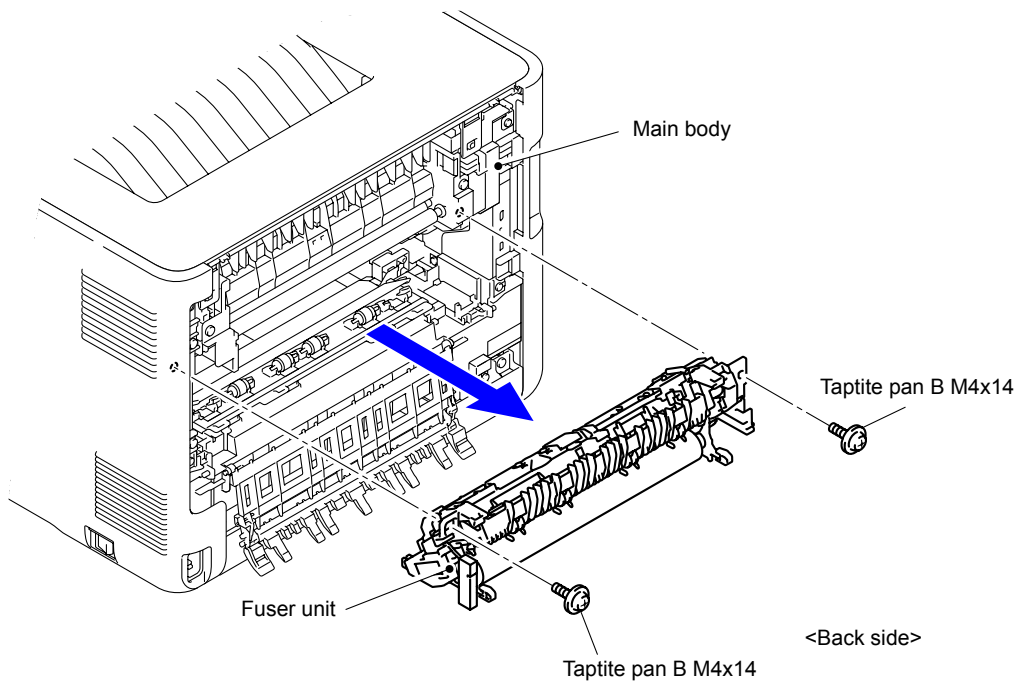
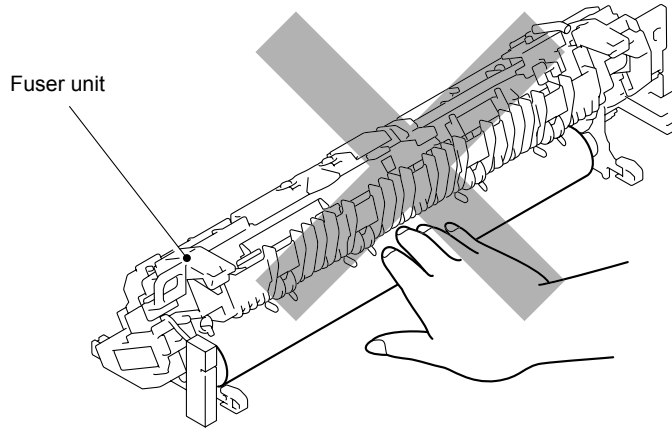


Fig. 3-16

**Note:**

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



**Fig. 3-17**

## 9.6 Side Cover L/Access Cover

- (1) Open the Front cover.

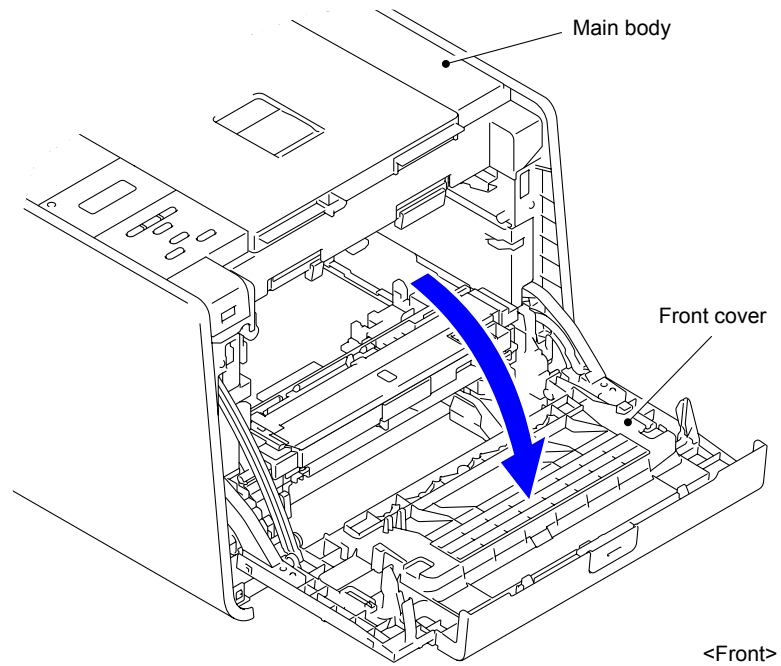


Fig. 3-18

- (2) Remove the Taptite bind S M3x8 screw from the front of the Side cover L.
- (3) Remove the Taptite bind B M4x12 screw from the side of the Side cover L.

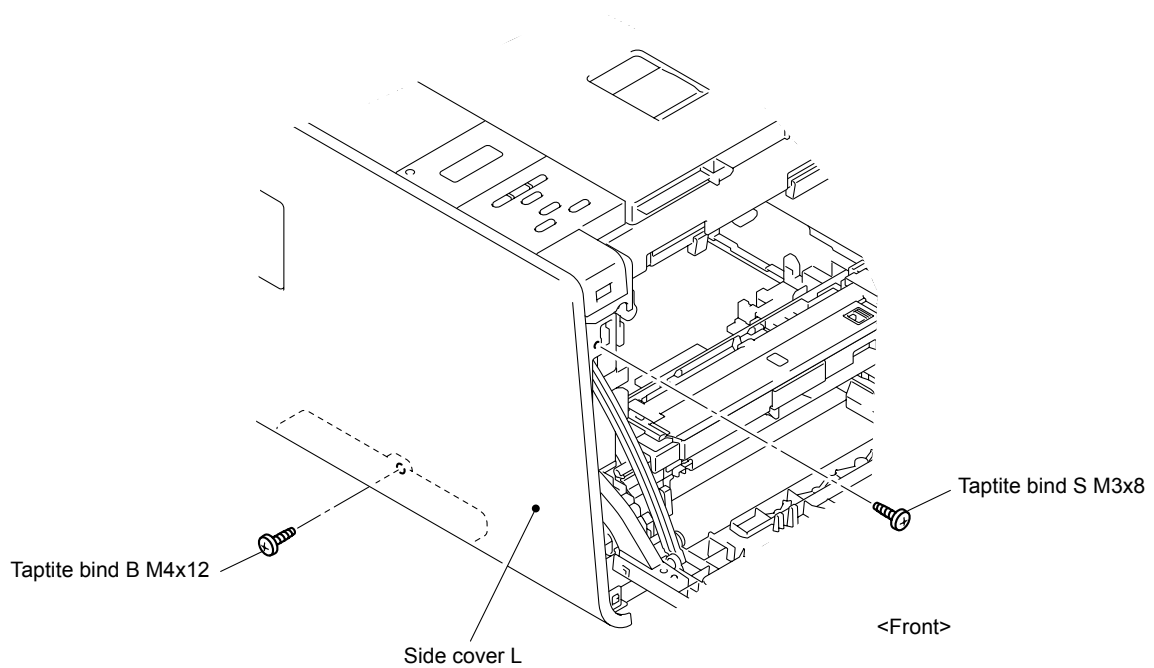


Fig. 3-19

- (4) Remove the two Taptite cup S M3x8 screws from the back of the Side cover L.

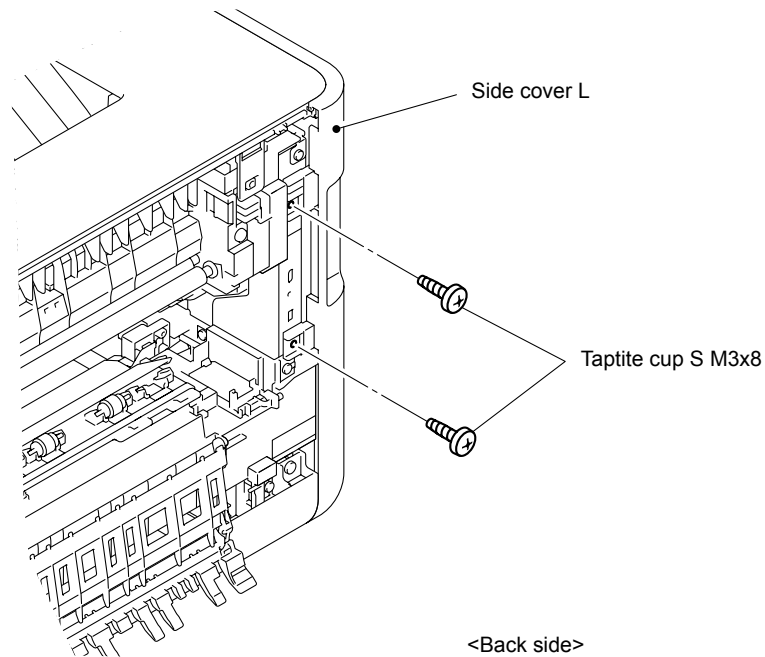


Fig. 3-20

- (5) Release the Hooks 1 and 2 at the same time, and then release the Hooks 3 to 6 in numerical order. Hold the "A" section and lift the cover to release the Hook 7. Lower the cover, and then lift it again and release the Hooks 8 and 9 to remove the Side cover L from the Main body.

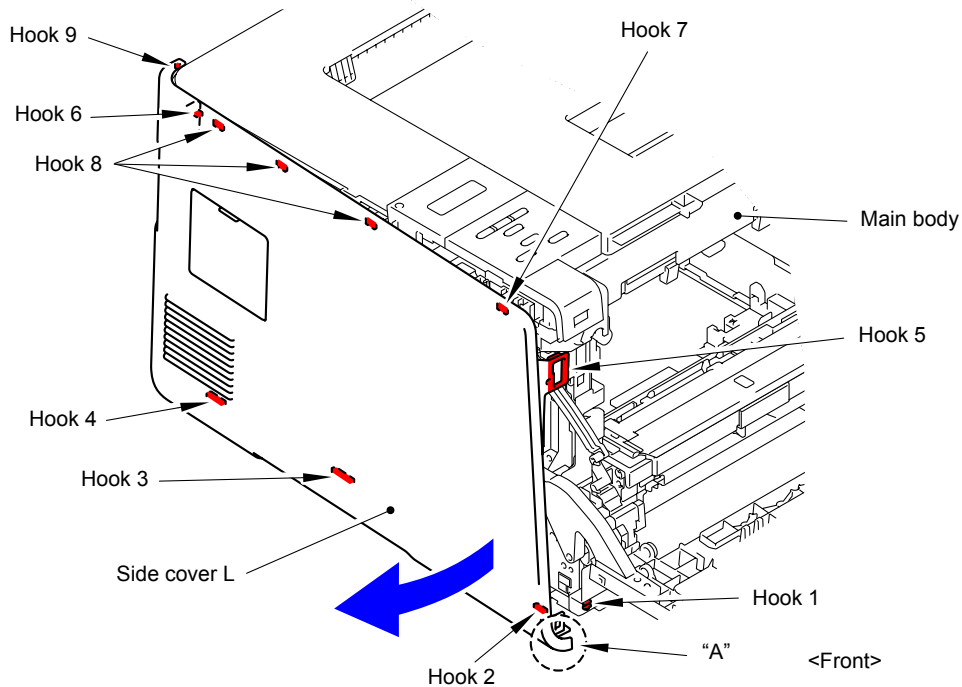


Fig. 3-21

**Assembling Note:**

When assembling the Side Cover L, make sure to push "A" to the rear side of the main body first, and then tighten the screws.

\* Inside of Side cover L

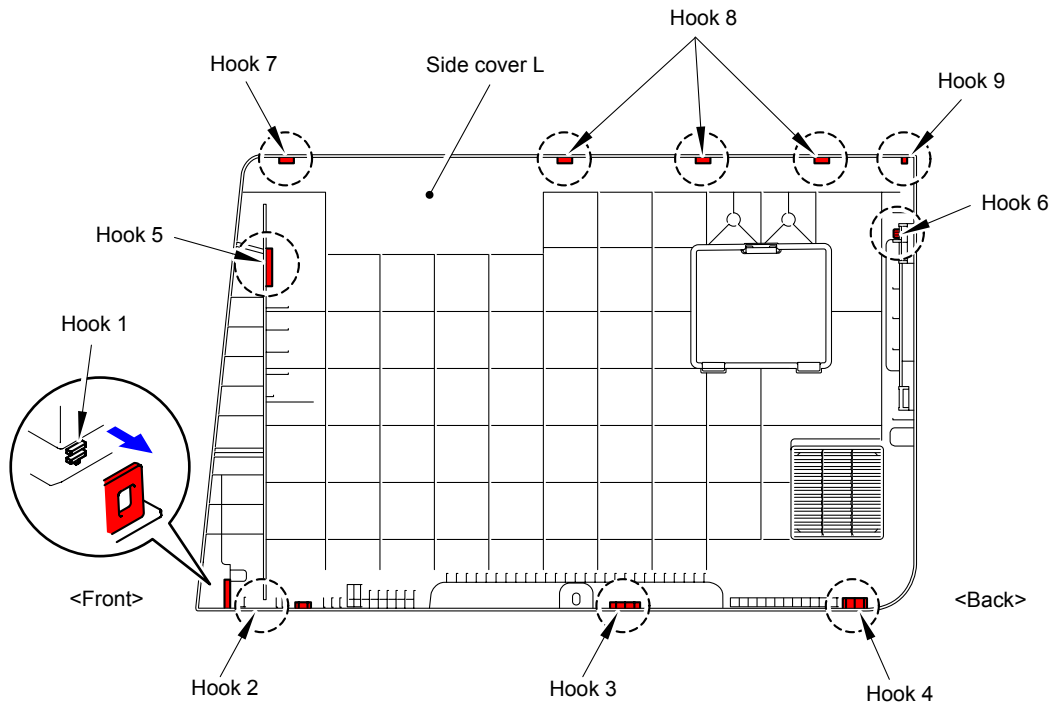


Fig. 3-22

(6) Remove the Access cover from the Side cover L.

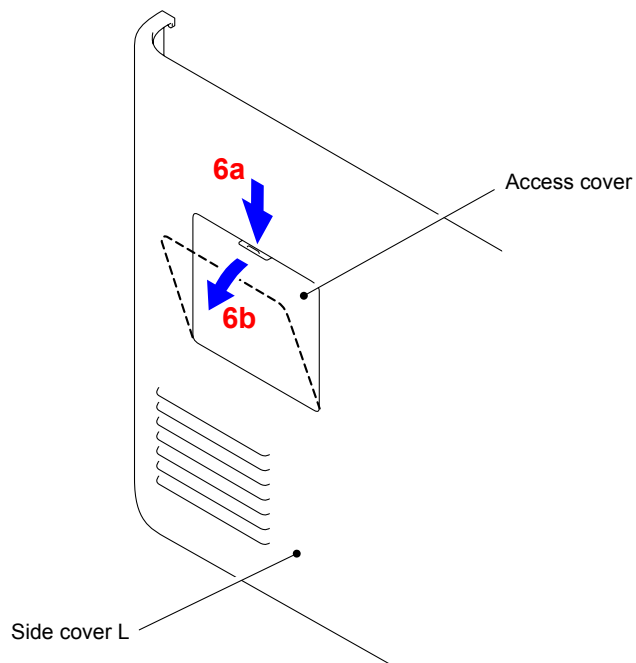


Fig. 3-23

# 9.7 Side Cover R ASSY

- (1) Remove the Taptite bind S M3x8 screw from the front of the Side cover R ASSY.
- (2) Remove the Taptite bind B M4x12 screw from the side of the Side cover R ASSY.

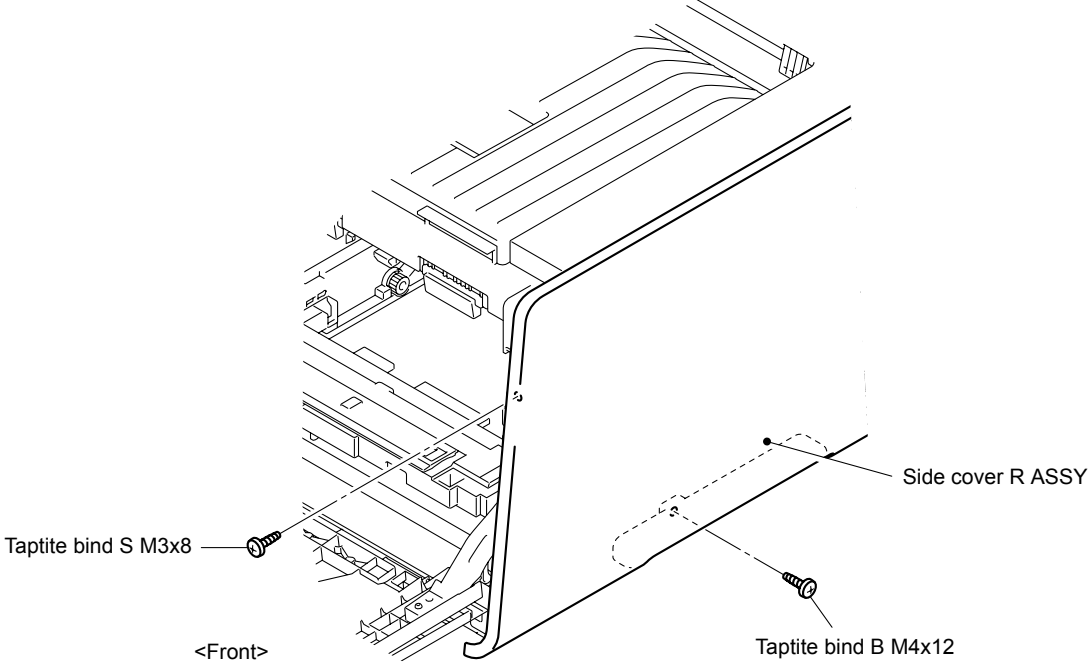


Fig. 3-24

- (3) Remove the two Taptite cup S M3x8 screws from the back of the Side cover R ASSY .

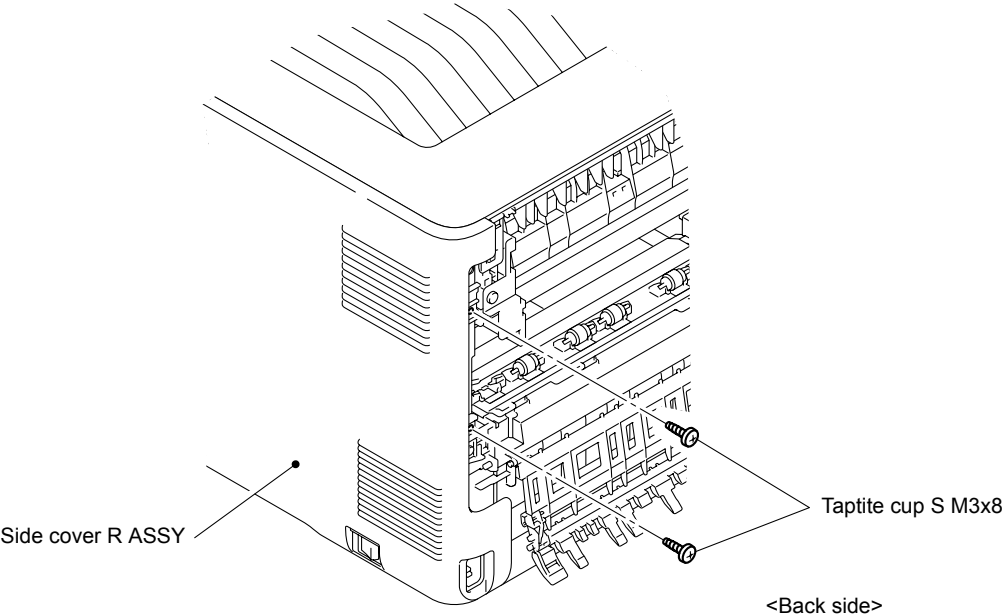


Fig. 3-25



- (4) Release the Hooks 1 and 2 at the same time, and then release the Hooks 3 to 6 in numerical order. Hold the "A" section and lift the cover to release the Hook 7. Lower the cover, and then lift it again and release the Hooks 8 and 9 to remove the Side cover R ASSY from the Main body.

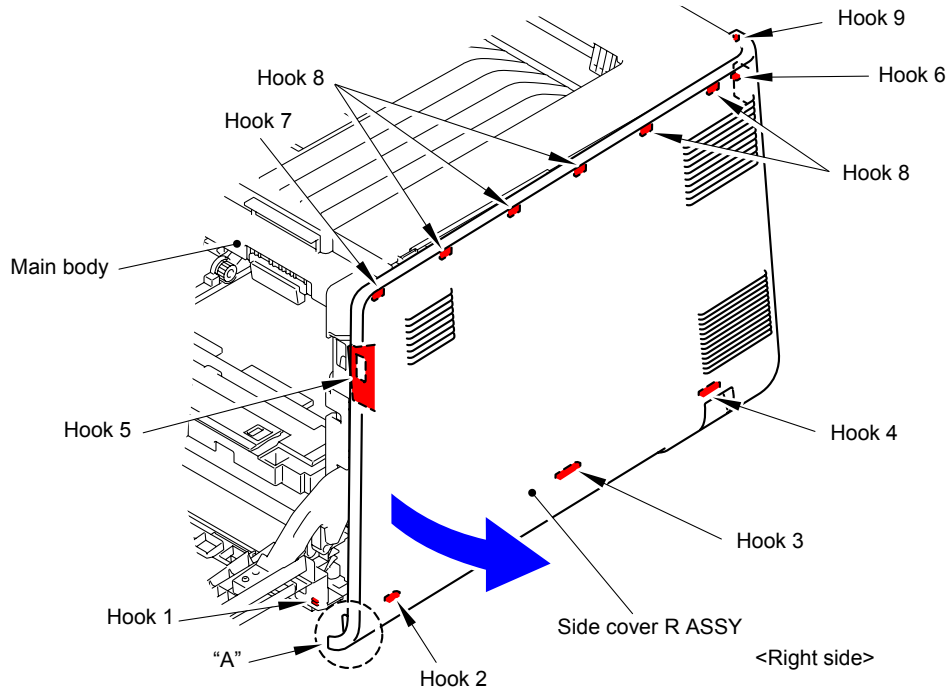


Fig. 3-26

\* Inside of Side cover R ASSY

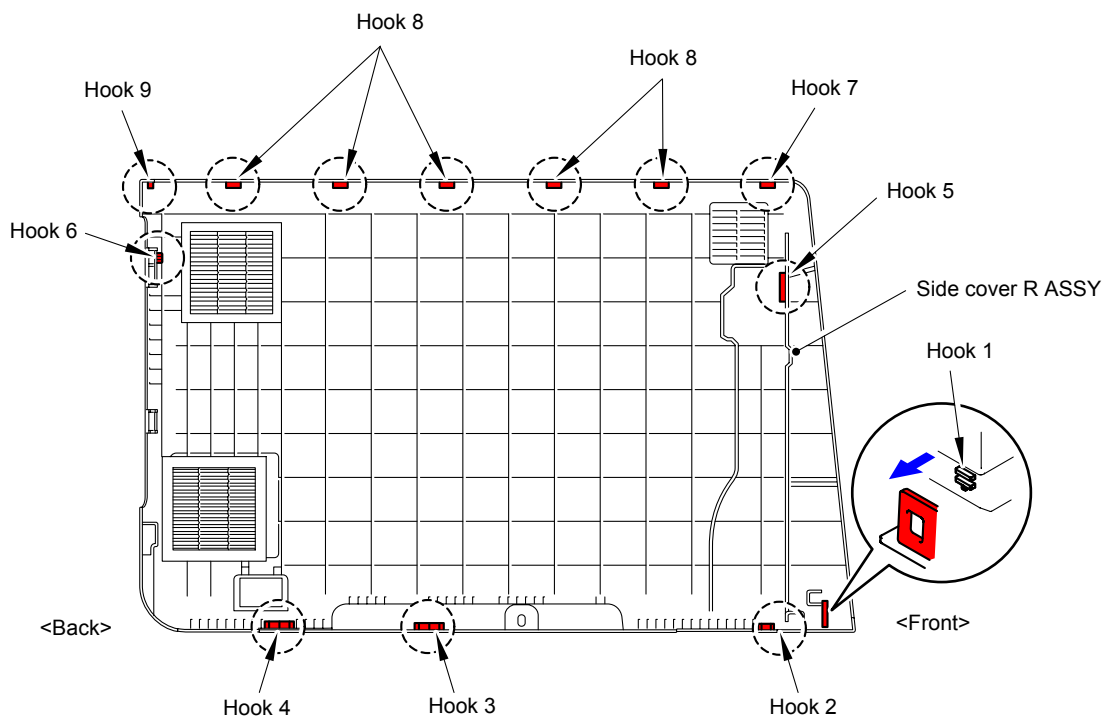


Fig. 3-27

# 9.8 Duplex Feed ASSY

- (1) Remove the two Taptite cup B M3x12 screws to remove the Duplex feed ASSY from the Main body.

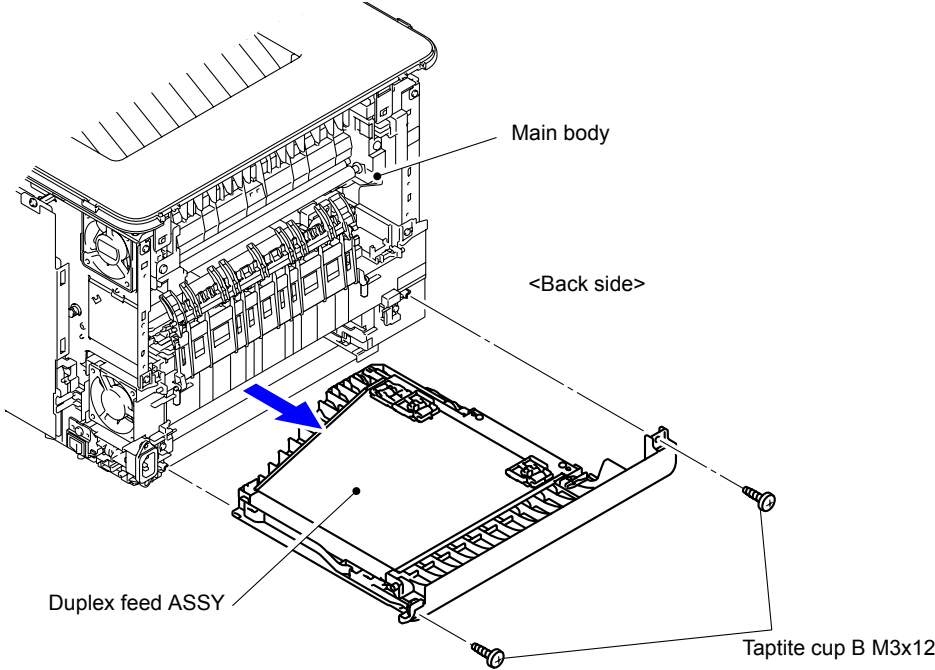


Fig. 3-28

# 9.9 MP Cover ASSY/MP Paper Guide ASSY

- (1) Close the Front cover.
- (2) Open the MP cover ASSY.

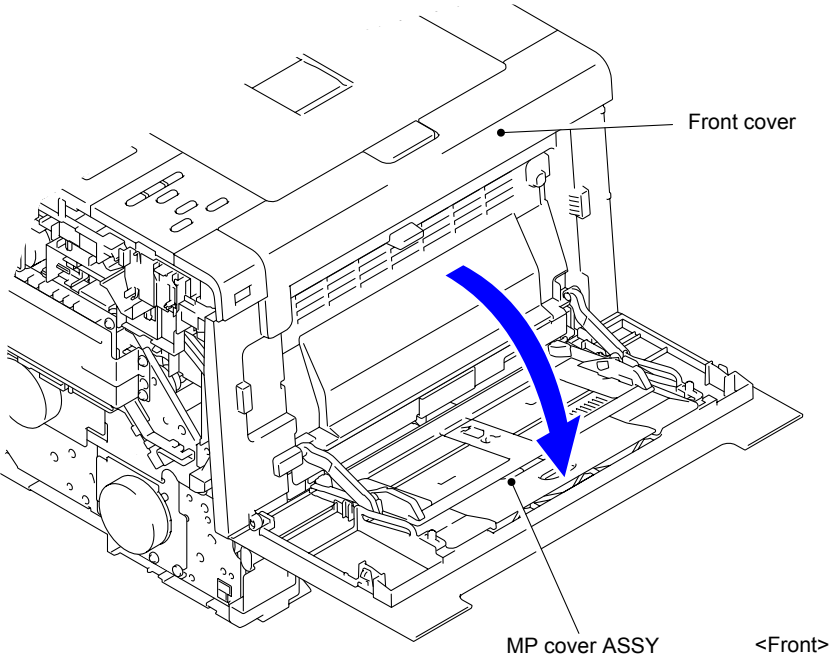


Fig. 3-29

- (3) Remove the Pin of the MP link L and R from the MP cover ASSY.

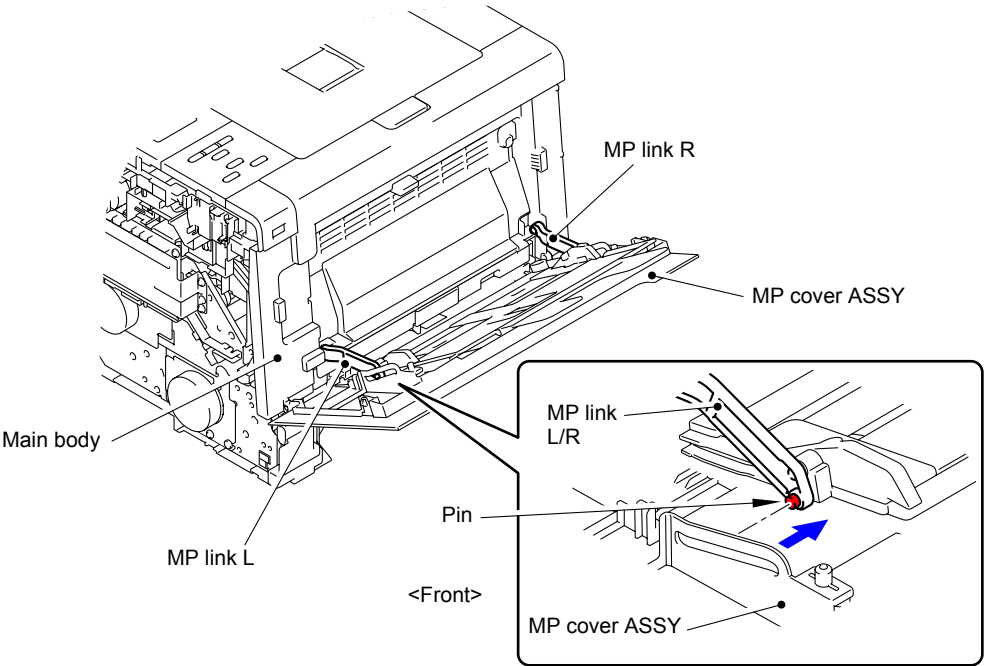


Fig. 3-30

- (4) Remove the Pin of the MP link L and R from the MP paper guide ASSY.

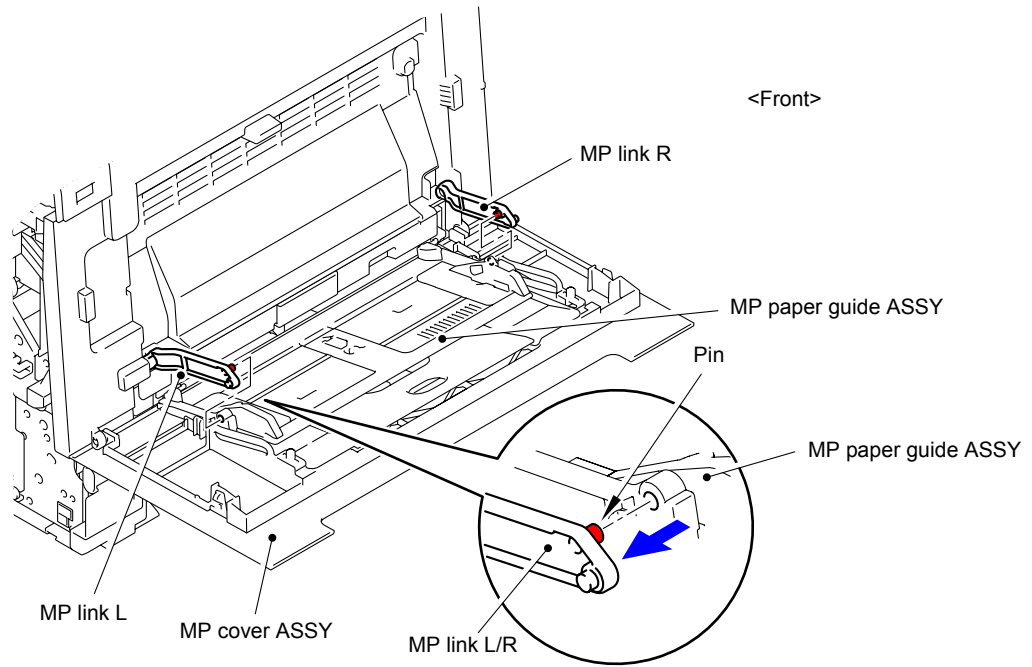


Fig. 3-31

- (5) Slide the MP paper guide ASSY in the direction of the arrow to remove from MP cover ASSY.

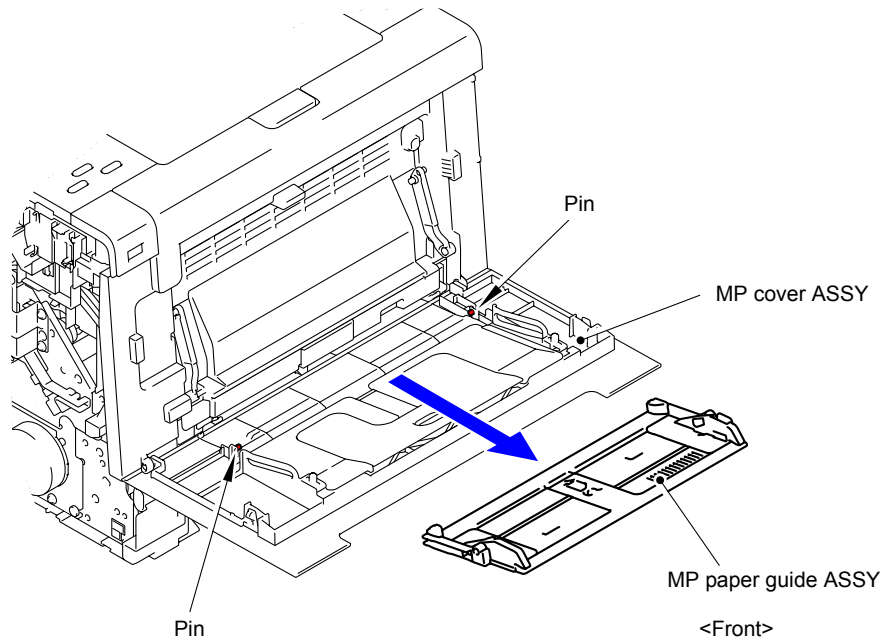


Fig. 3-32

(6) Remove the two Pins to remove the MP cover ASSY from the Front cover.

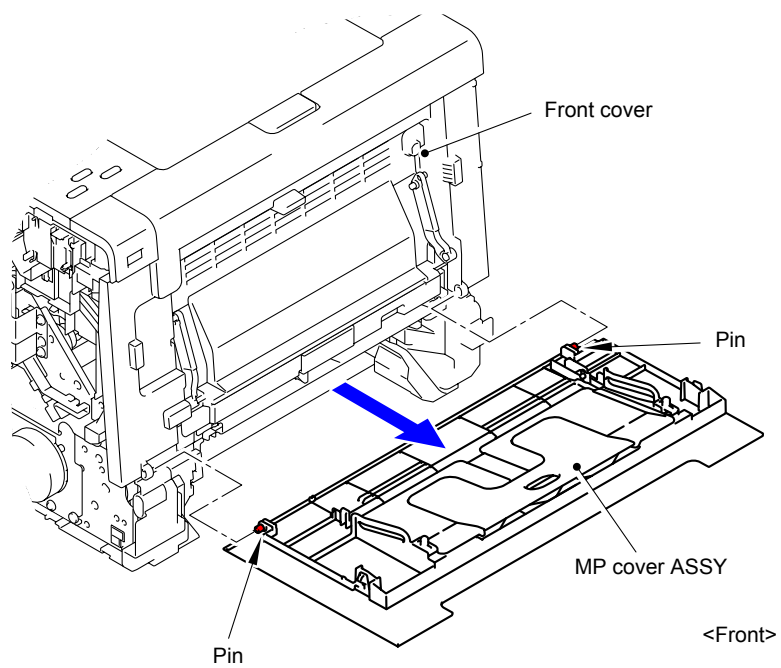


Fig. 3-33

# 9.10 MP Link L/R

(1) Remove the MP link L and R from the Front cover.

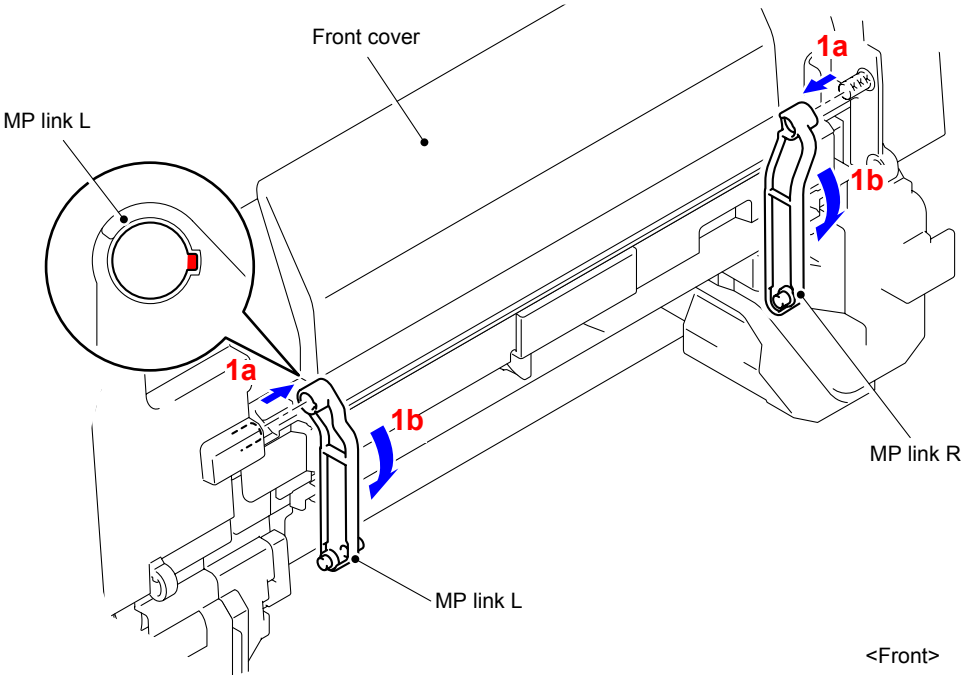


Fig. 3-34

# 9.11 Front Cover Arm L/R

- (1) Open the Front cover.
- (2) Release the Hook to remove the Forced develop release link from the Front cover.

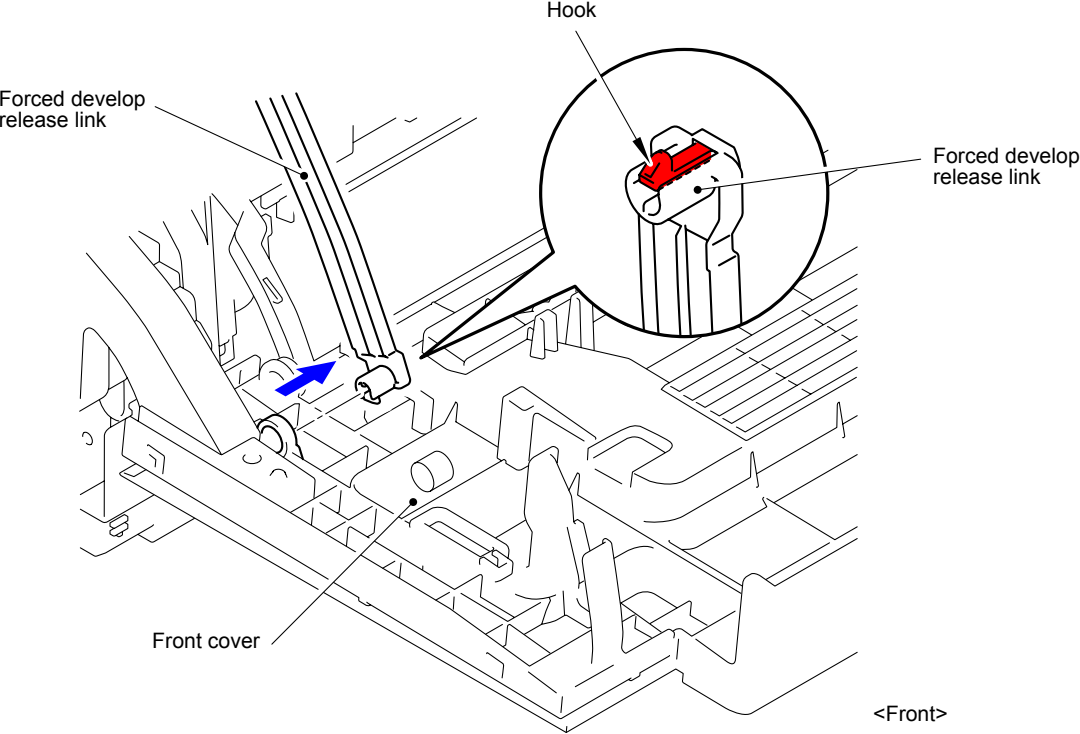


Fig. 3-35

- (3) Release the Hook to remove the Joint release link from the Front cover.

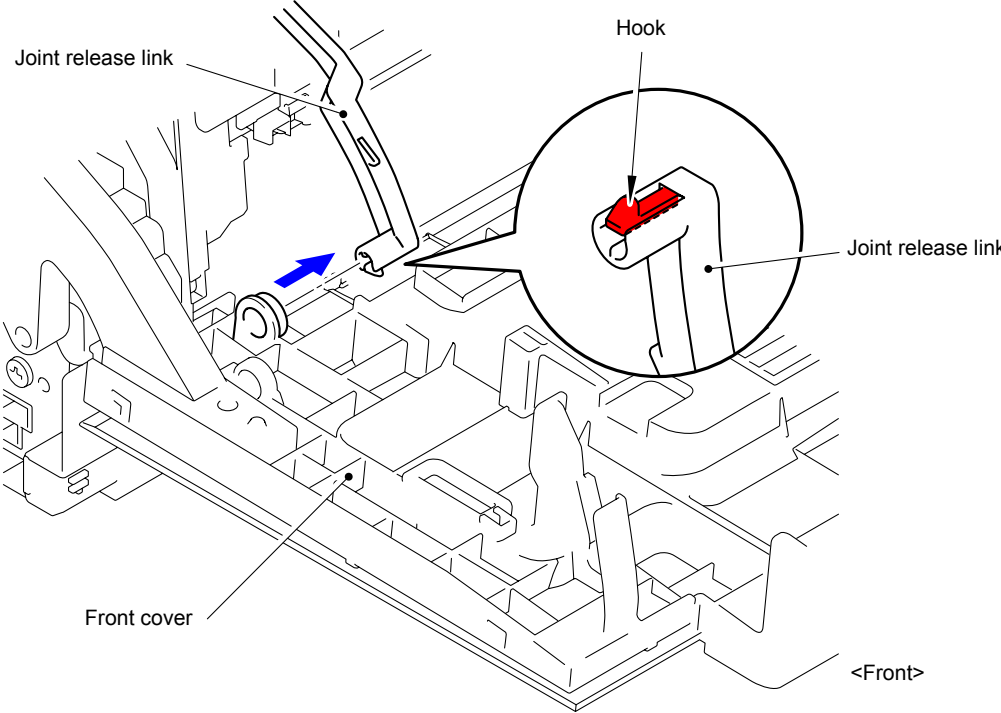


Fig. 3-36

(4) Remove the Front cover from the Main body.

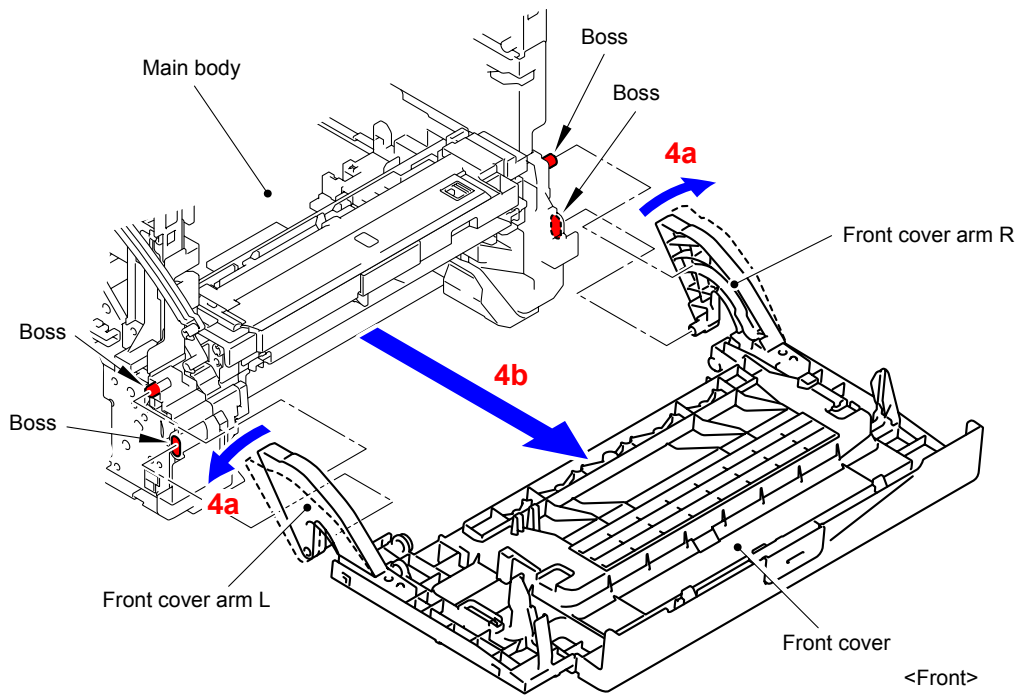


Fig. 3-37

(5) Remove the Taptite bind B M4x12 screw from the Front cover arm L.

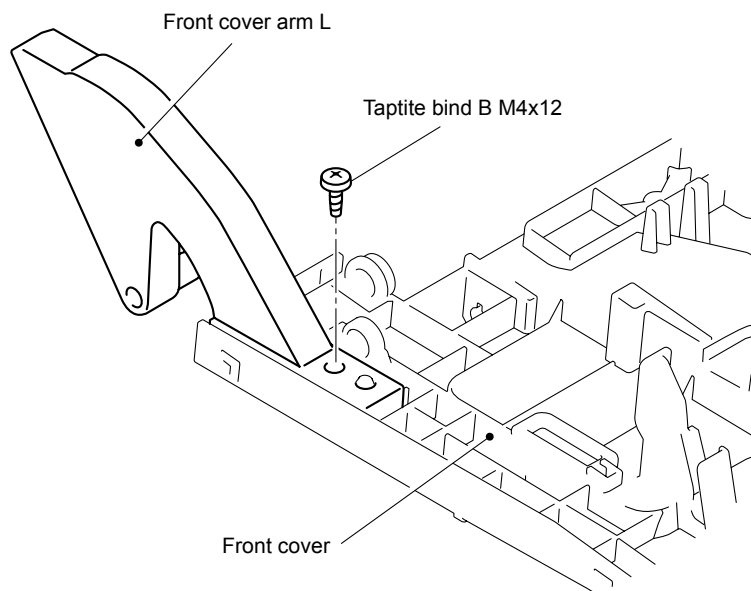


Fig. 3-38



(6) Release the Hook to remove the Front cover arm L from the Front cover.

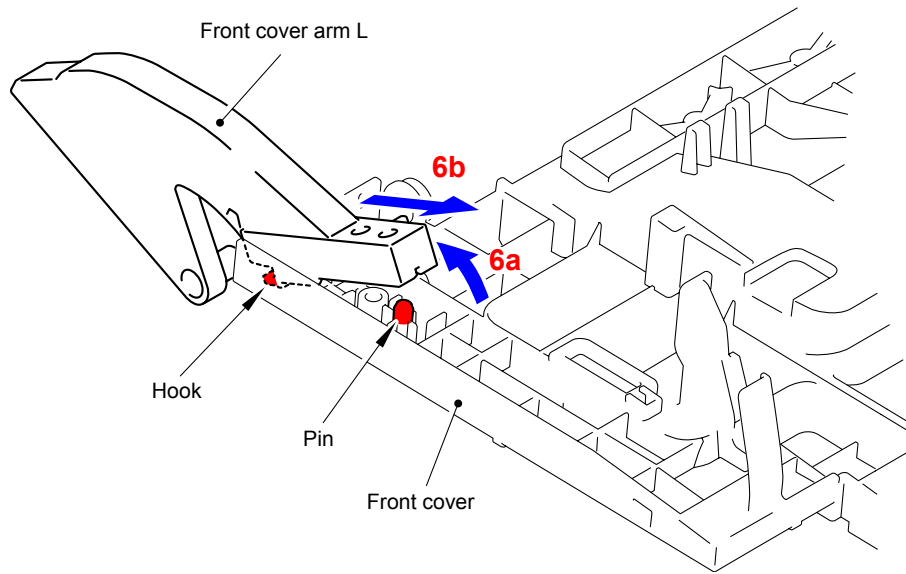


Fig. 3-39

(7) Remove the Taptite bind B M4x12 screw from the Front cover arm R.

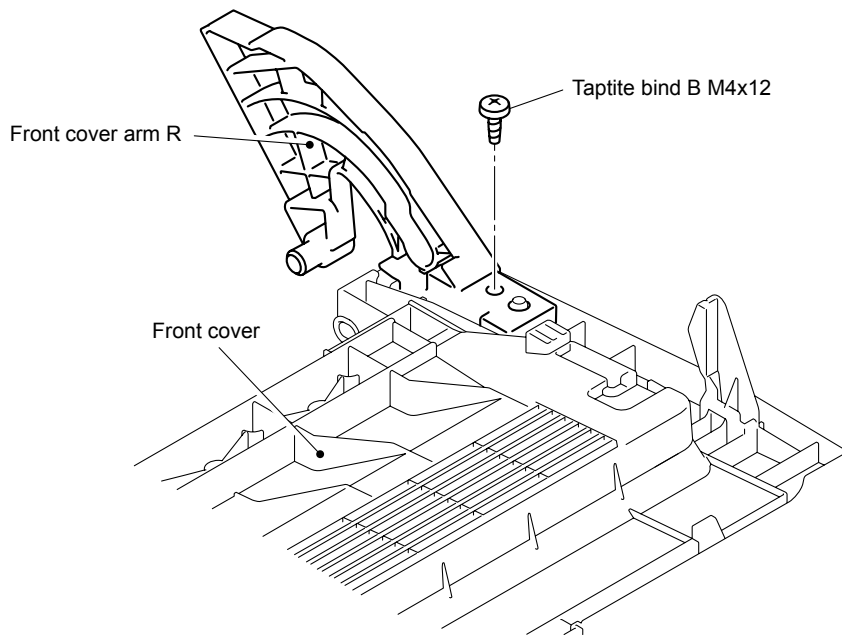
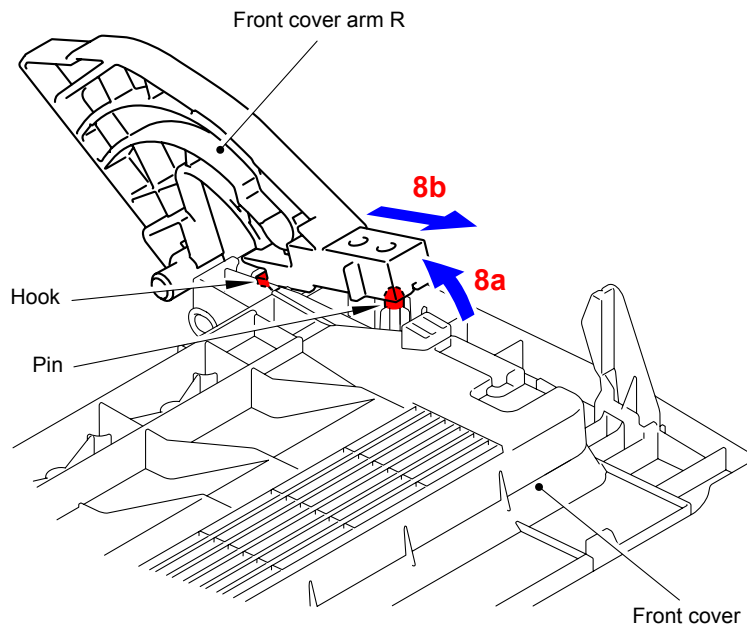


Fig. 3-40

- (8) Release the Hook to remove the Front cover arm R from the Front cover.



**Fig. 3-41**

# 9.12 Front Cover Release Button/Front Cover Release Button Spring

(1) Fasten the Hook of the Front cover release button to the Rib of the Front cover.

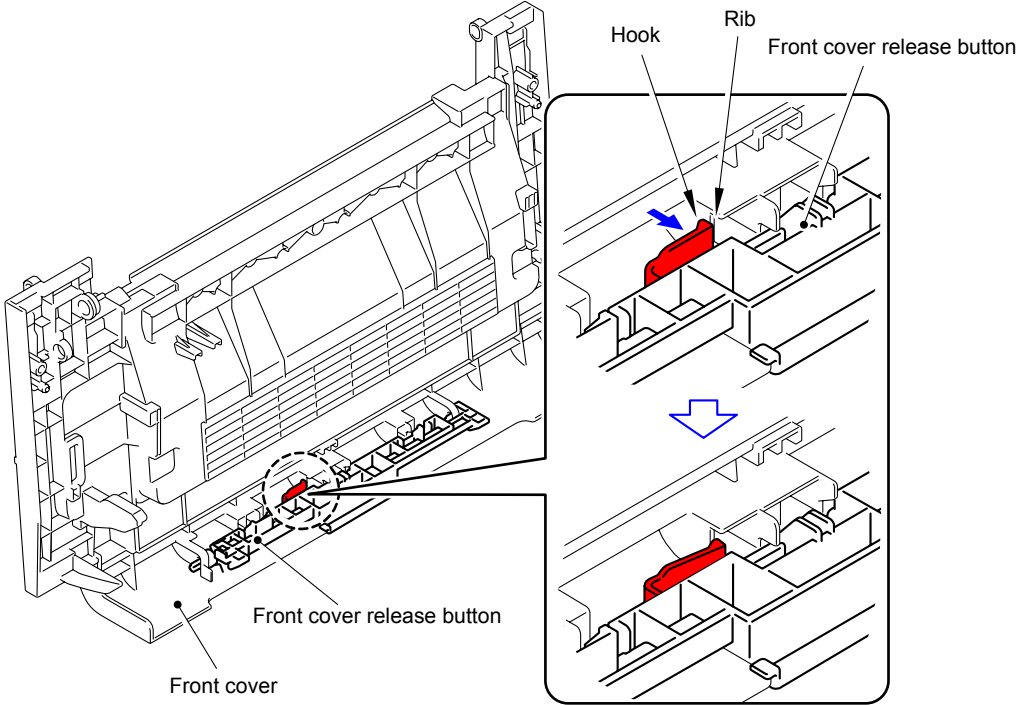


Fig. 3-42

- (2) Tilt the Front cover release button in the direction of the arrow 2.
- (3) Slide it in the direction of the arrow 3 to remove the shaft, and then remove the Front cover release button from the Front cover.

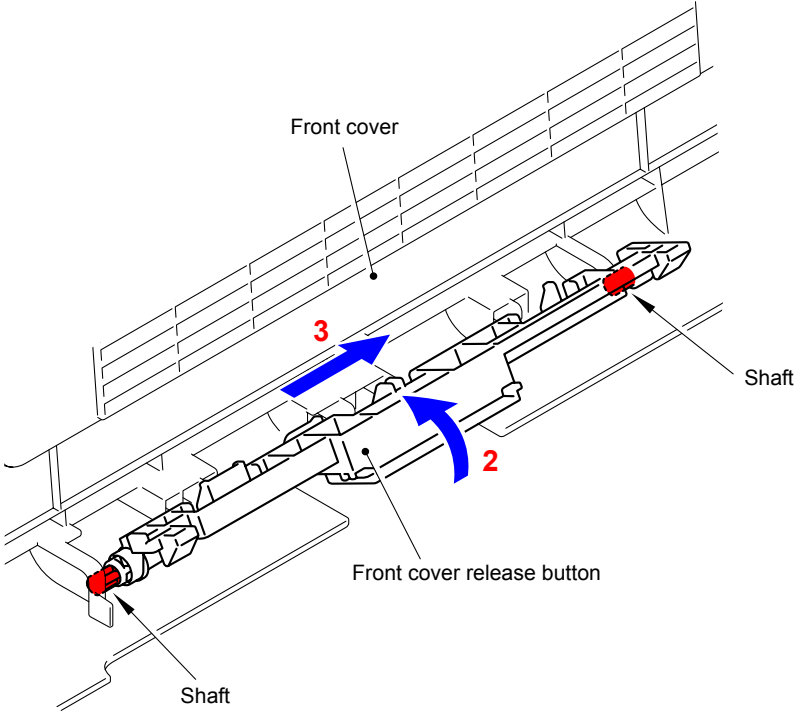


Fig. 3-43

- (4) Remove the Front cover release button spring from the Front cover release button.

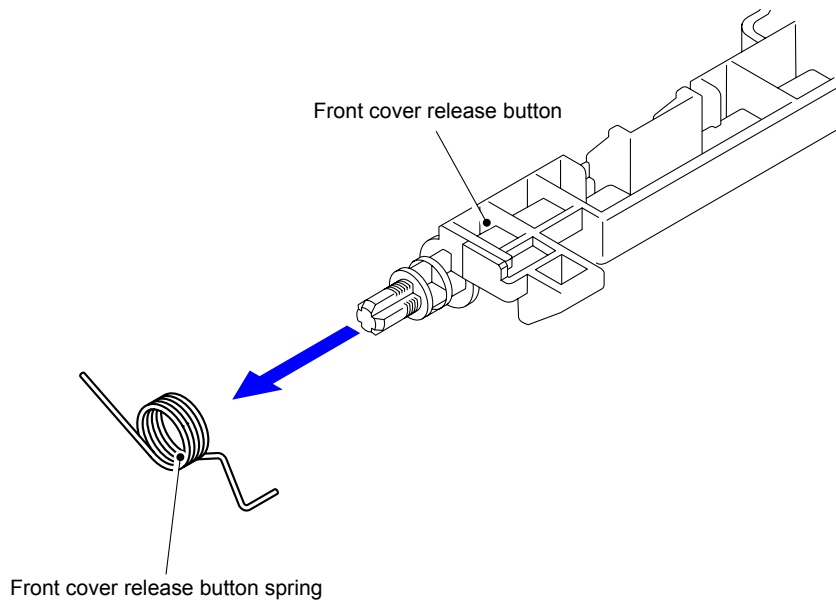


Fig. 3-44

**Assembling Note:**

When assembling the Front cover release button spring, assemble "A" and "B" as shown in the figure.

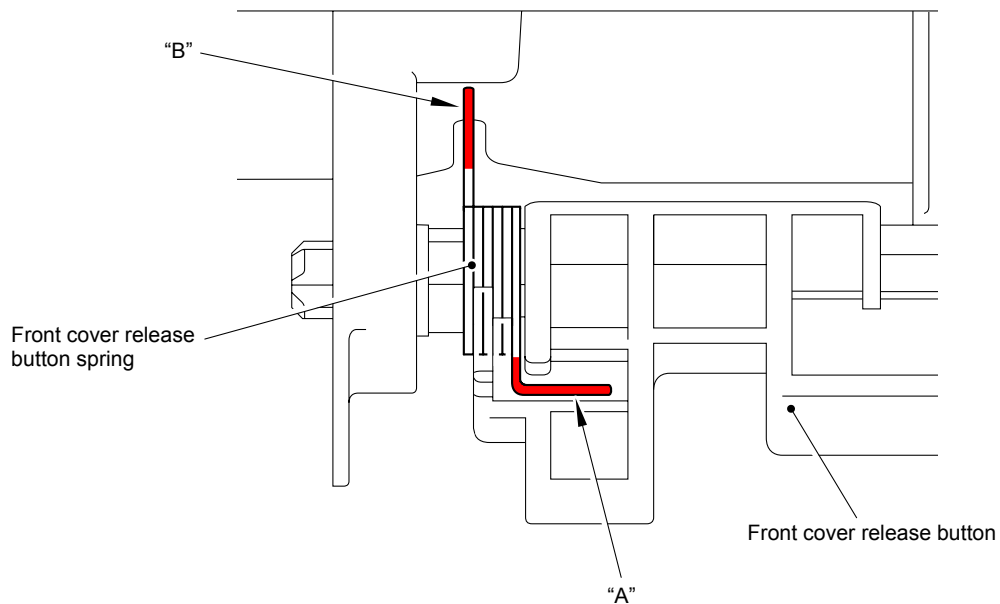


Fig. 3-45

# 9.13 Top Cover ASSY

- (1) Remove the six Taptite cup S M3x6 SR screws to remove the Main shield cover plate ASSY from the Main body.

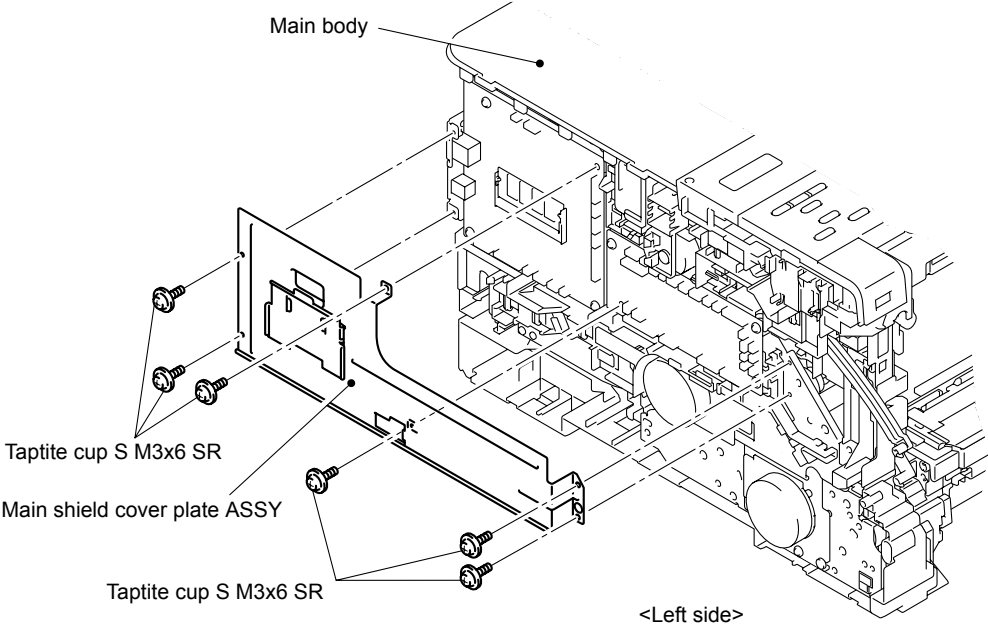


Fig. 3-46

- (2) Disconnect the three Connectors (CN6, CN10, CN11) and cables from the Main PCB ASSY.

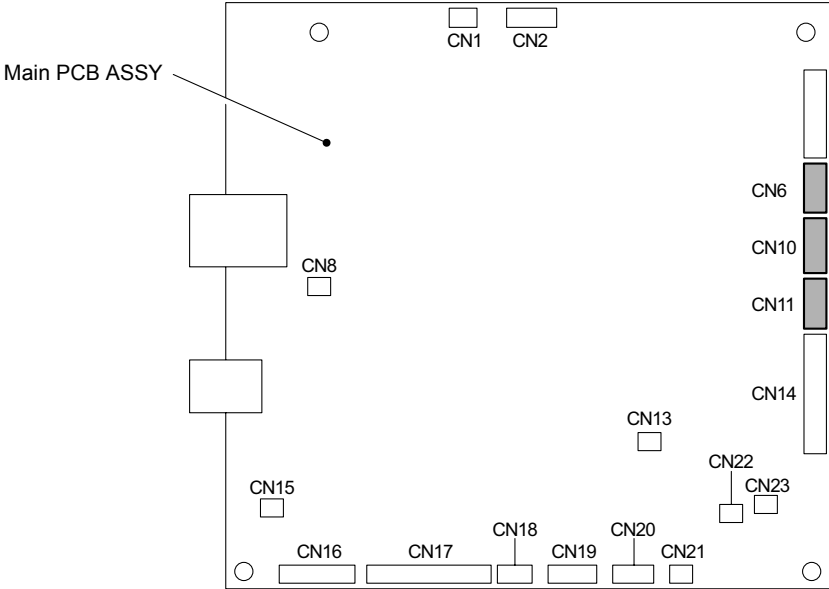
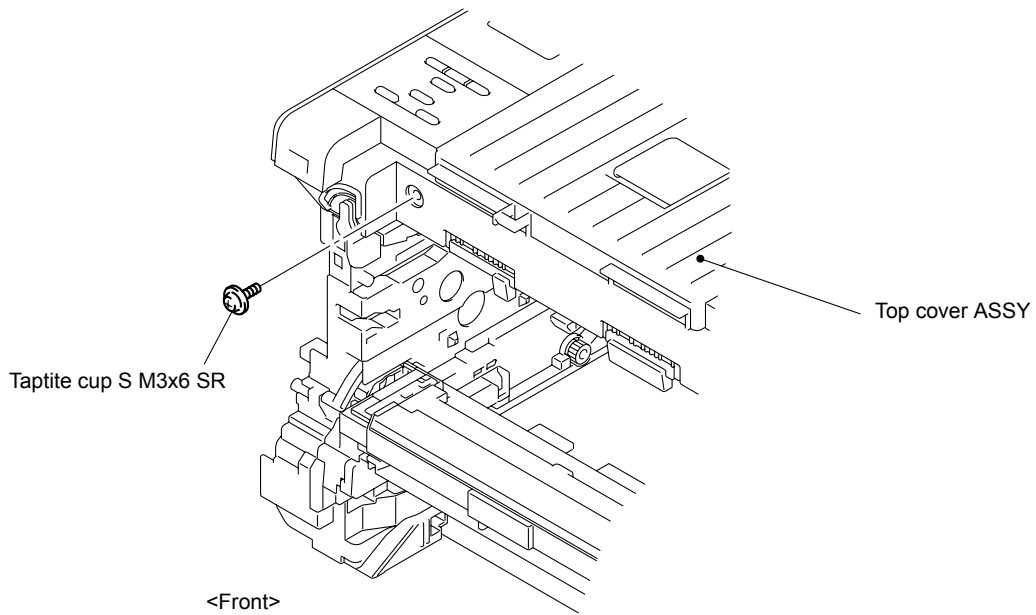


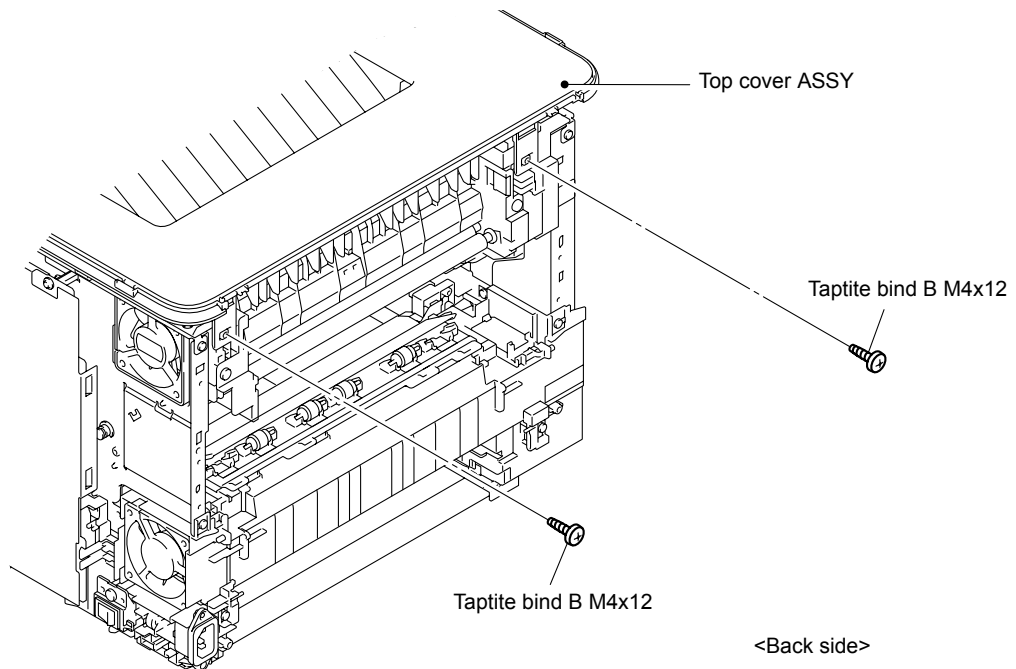
Fig. 3-47

(3) Remove the Taptite cup S M3x6 SR screw from the front of the Top cover ASSY.



**Fig. 3-48**

(4) Remove the two Taptite bind B M4x12 screws from the back of the Top cover ASSY.



**Fig. 3-49**

- (5) Release the three Hooks 1, and then release the Hooks 2 to 7. Insert a screwdriver into the hole to release the Hook and press the Hook 8 with the screwdriver to release it. Release the Hook 9 by pressing it with a screwdriver to remove the Top cover ASSY from the Main body.

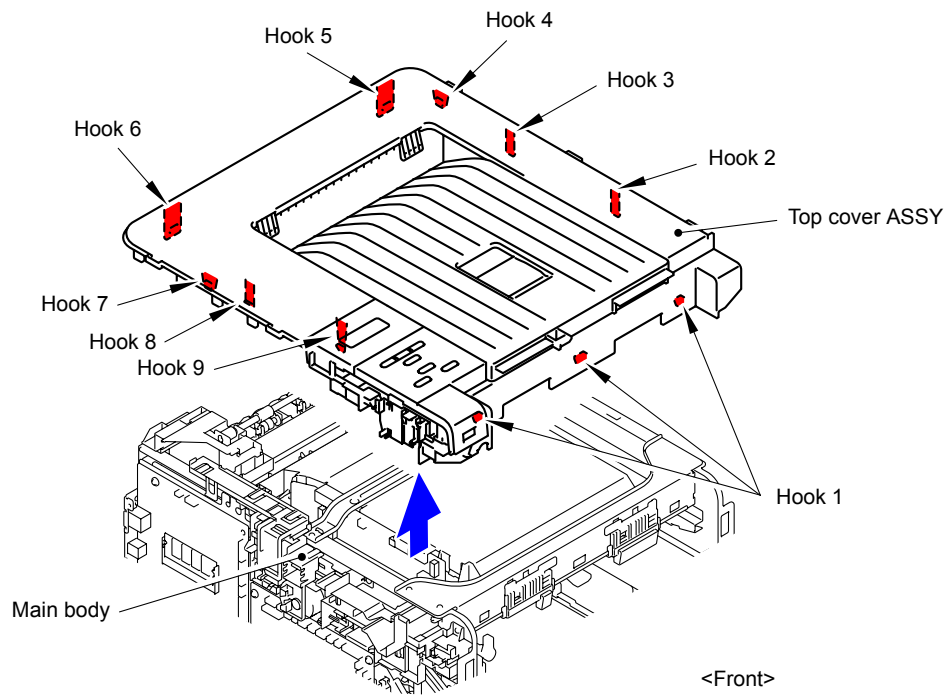



Fig. 3-50

Harness routing: Refer to "  Top Cover ASSY"

# 9.14 Wireless LAN PCB

(1) Remove the Pin to remove the Wireless LAN PCB from the Top cover ASSY.

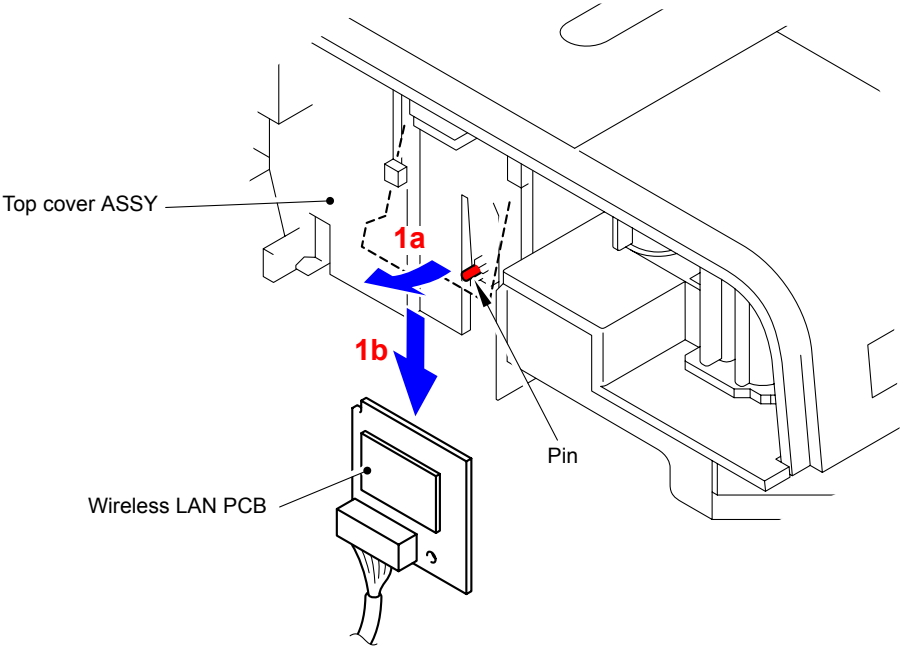


Fig. 3-51

(2) Remove the Wireless LAN harness ASSY from the Wireless LAN PCB.

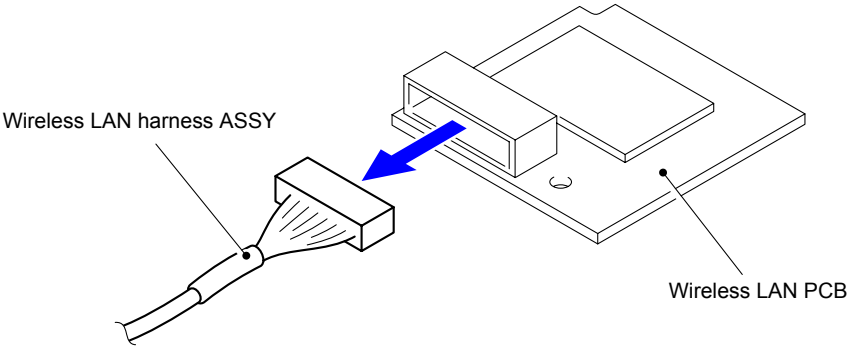


Fig. 3-52

**Harness routing:** Refer to “**1** Top Cover ASSY”



# 9.15 LCD ASSY

- (1) Turn the Top cover ASSY upside down.
- (2) Remove the three Taptite bind B M4x12 screws from the Top cover ASSY.

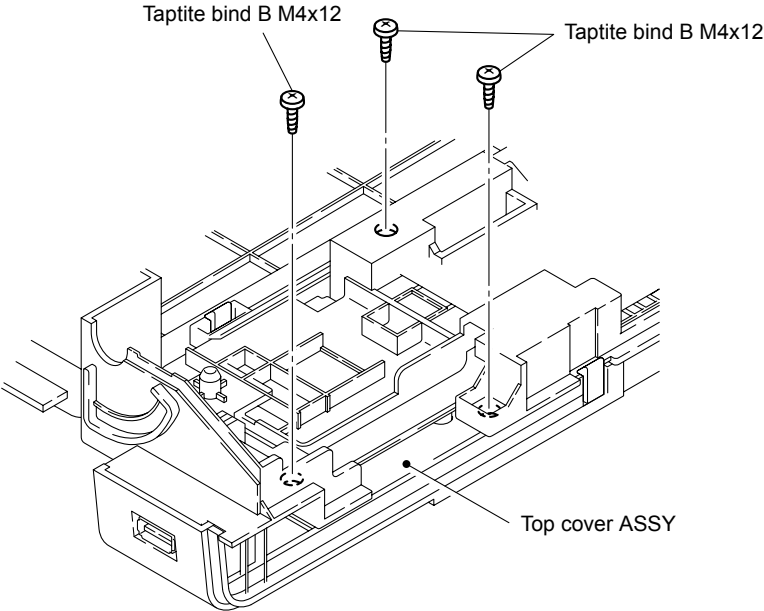


Fig. 3-53

- (3) Release the two Hooks to remove the Panel cover ASSY from the Top cover ASSY.

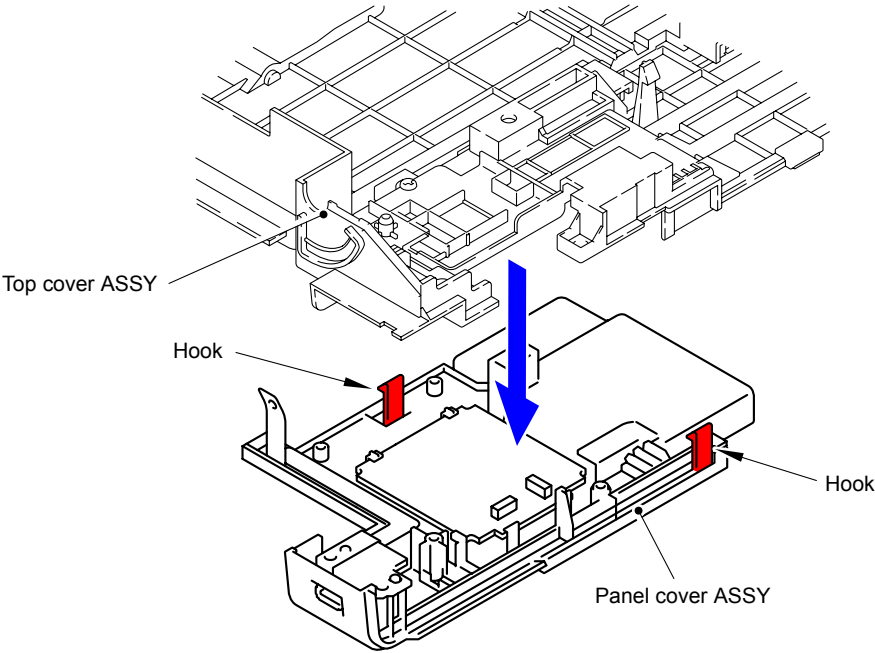


Fig. 3-54

- (4) Disconnect the Flat cable (CN1) from the Panel PCB ASSY.

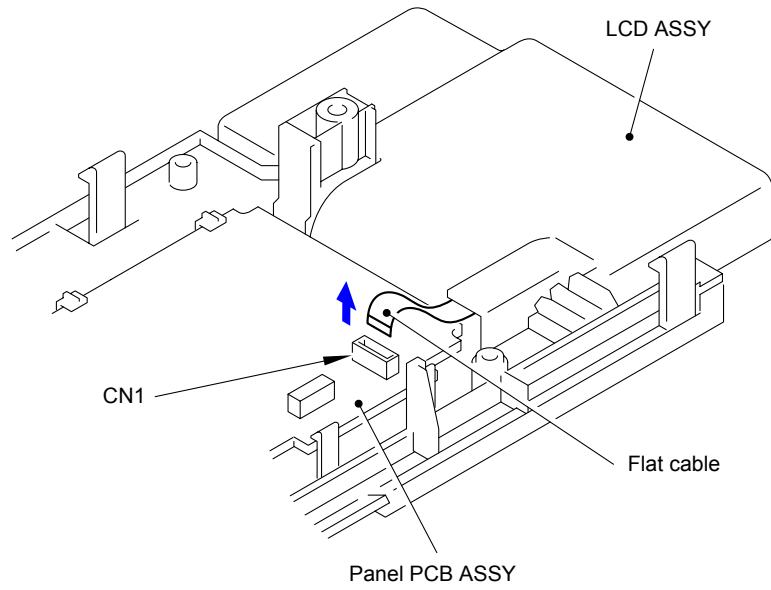


Fig. 3-55

- (5) Remove the two Pins to remove the LCD ASSY from the Panel cover ASSY.

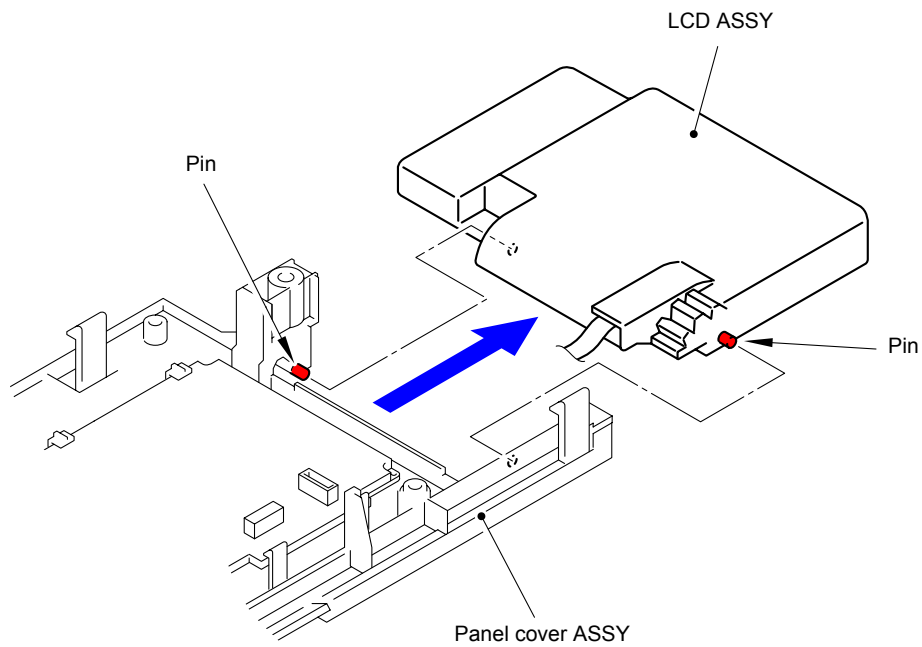


Fig. 3-56

# 9.16 Panel PCB ASSY

(1) Release the two Hooks to remove the Panel PCB ASSY from the Panel cover ASSY.

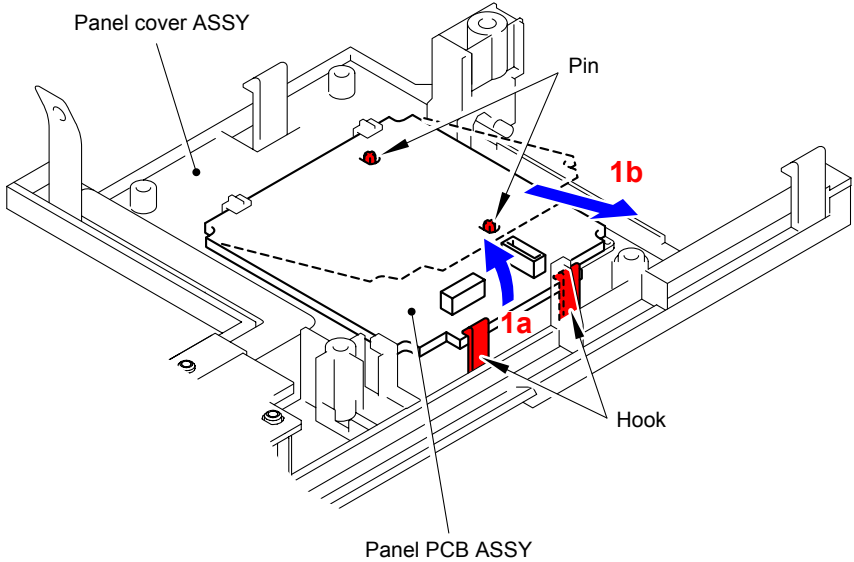


Fig. 3-57

(2) Remove the Panel PCB harness ASSY from the CN2 of the Panel PCB ASSY.

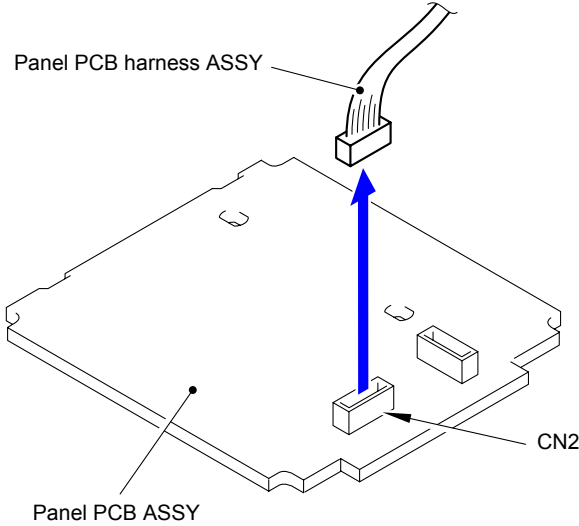


Fig. 3-58

Harness routing: Refer to “**1** Top Cover ASSY”

# 9.17 USB Host Relay PCB ASSY

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

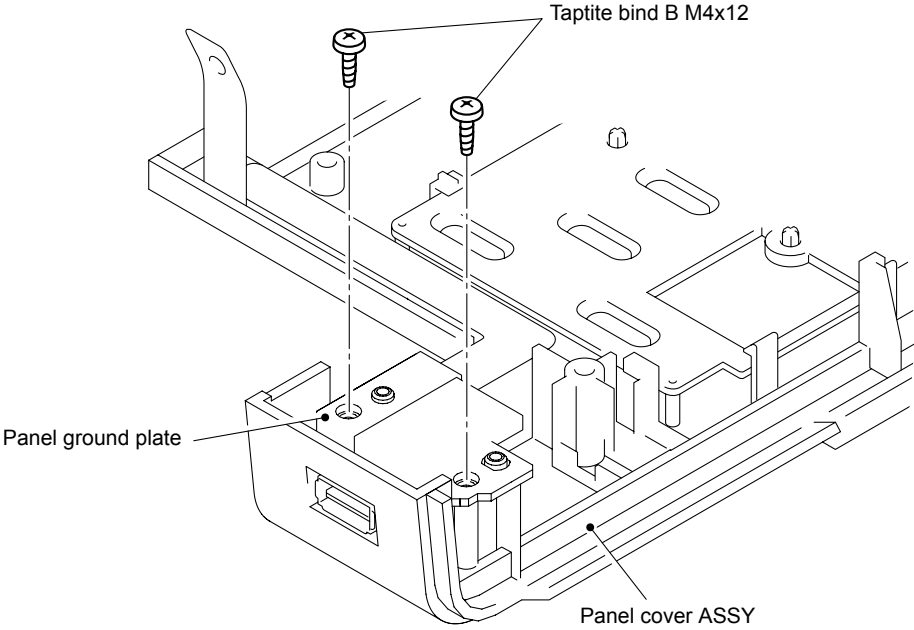


Fig. 3-59

(2) Lift "A" of the Panel ground plate to remove the USB host relay PCB ASSY from the Panel cover ASSY.

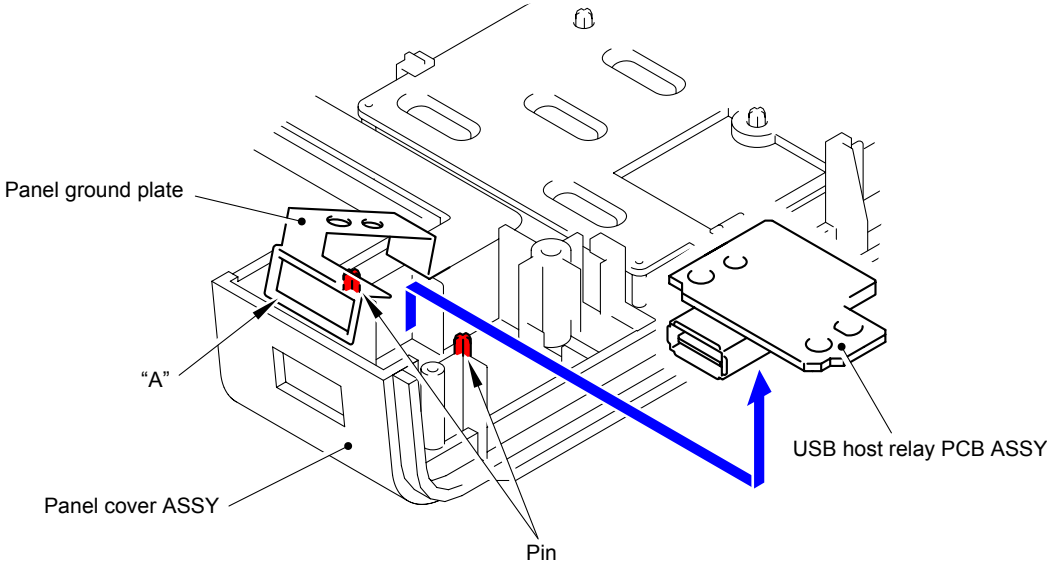
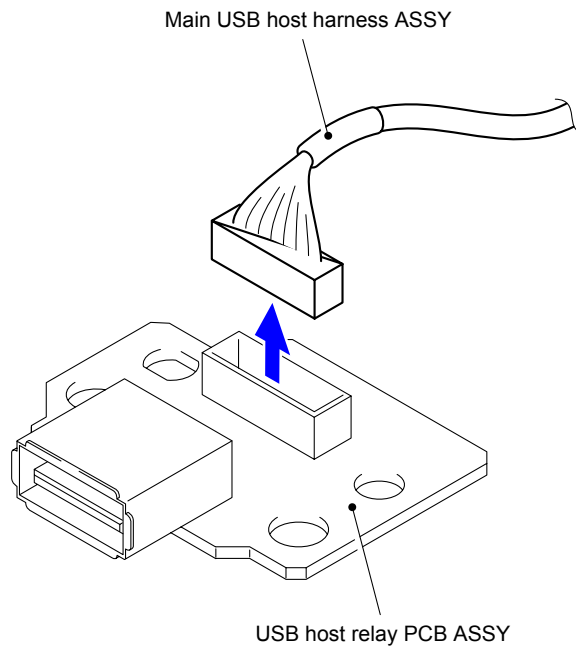


Fig. 3-60

(3) Remove the Main USB host harness ASSY from the USB host relay PCB ASSY.



**Fig. 3-61**

**Harness routing:** Refer to "[1 Top Cover ASSY](#)"

## 9.18 Main PCB ASSY

- (1) Disconnect the eight Connectors (CN1, CN2, CN16, CN17, CN18, CN19, CN20, and CN21) and two Flat cables (CN5 and CN14).

**Note:**

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

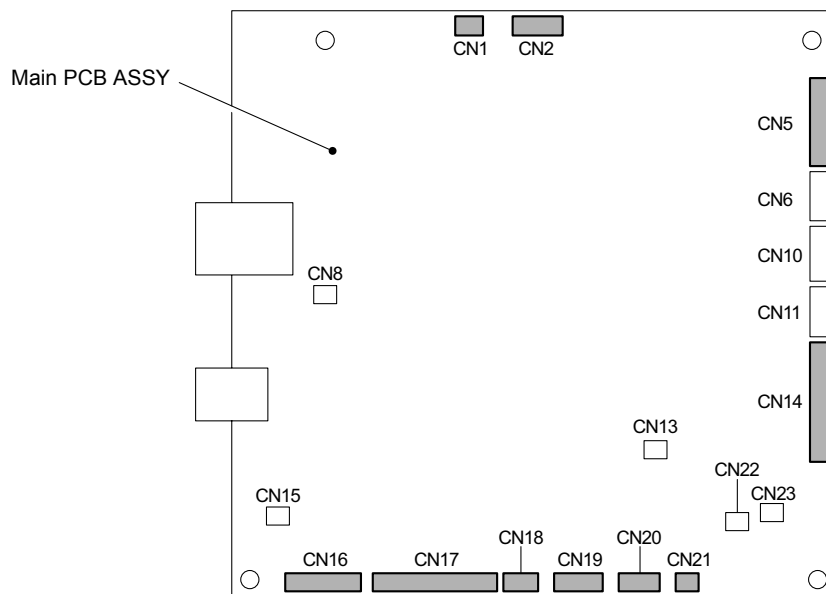


Fig. 3-62

- (2) Remove the three Taptite cup S M3x6 SR screws to remove the Main PCB ASSY from the Top drive ASSY.

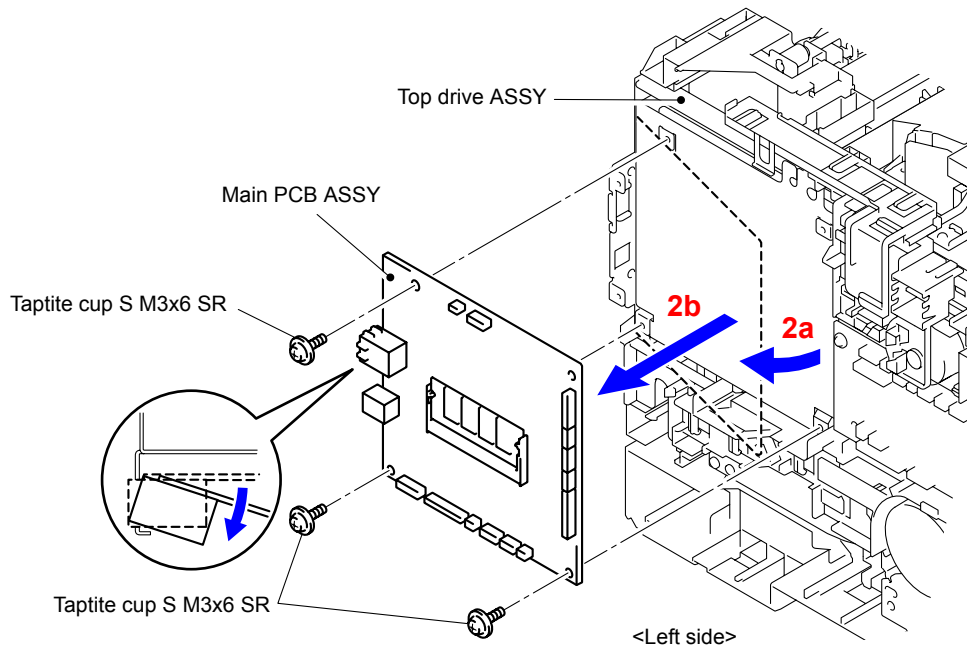


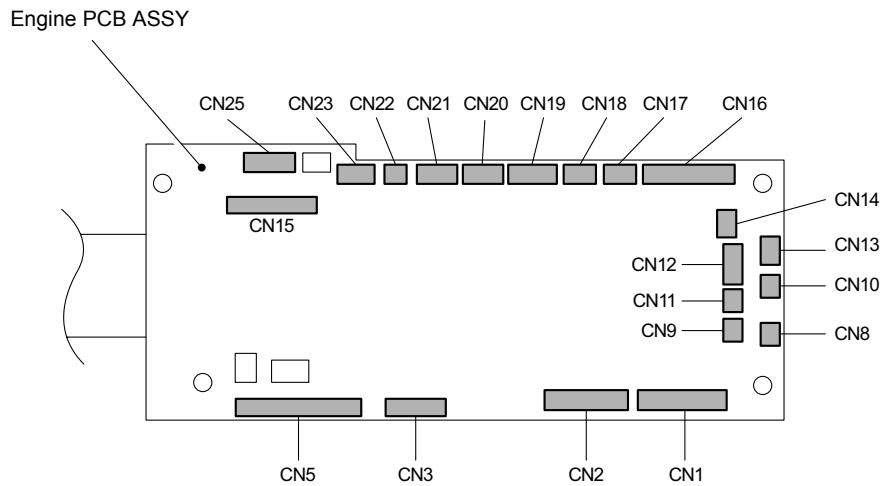
Fig. 3-63

## 9.19 Engine PCB ASSY

- (1) Disconnect the 17 Connectors (CN3, CN5, CN8, CN9, CN10, CN11, CN12, CN13, CN14, CN16, CN17, CN18, CN19, CN20, CN21, CN22, and CN23) and four Flat cables (CN1, CN2, CN15 and CN25).

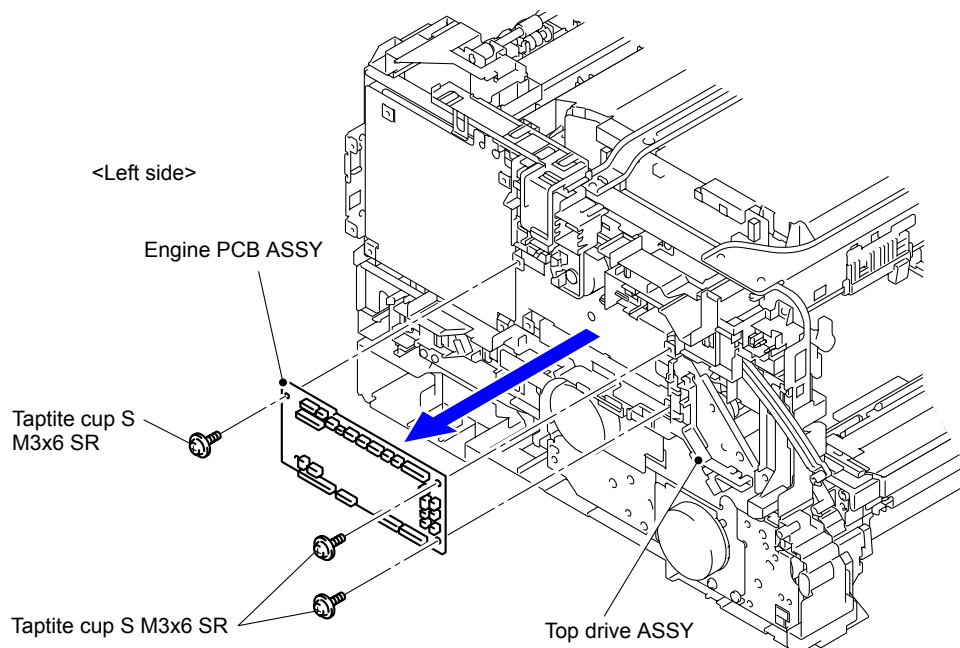
**Note:**

- 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.



**Fig. 3-64**

- (2) Remove the three Taptite cup S M3x6 SR screws to remove the Engine PCB ASSY from the Top drive ASSY.



**Fig. 3-65**



## 9.20 Laser Unit

- (1) Disconnect the wiring of the Fuser develop motor flat cable from the Develop FFC holder.
- (2) Release the two Hooks to remove the Develop FFC holder from the Upper cable rack.

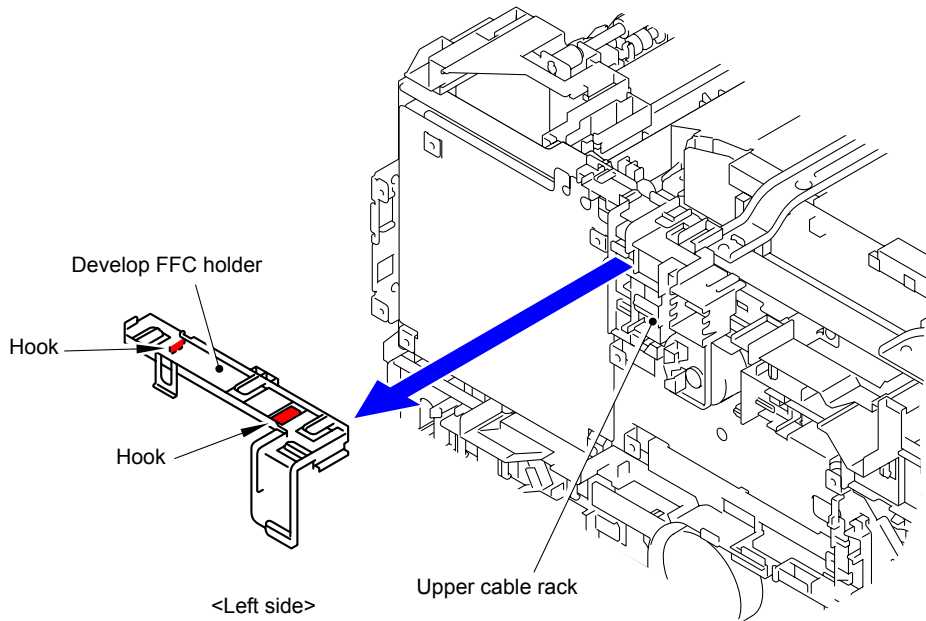


Fig. 3-66

- (3) Disconnect the wiring of the Laser unit-Engine flat cable and Laser unit-Main flat cable from the Upper cable rack.
- (4) Release the four Hooks to remove the Upper cable rack from the Base frame unit.

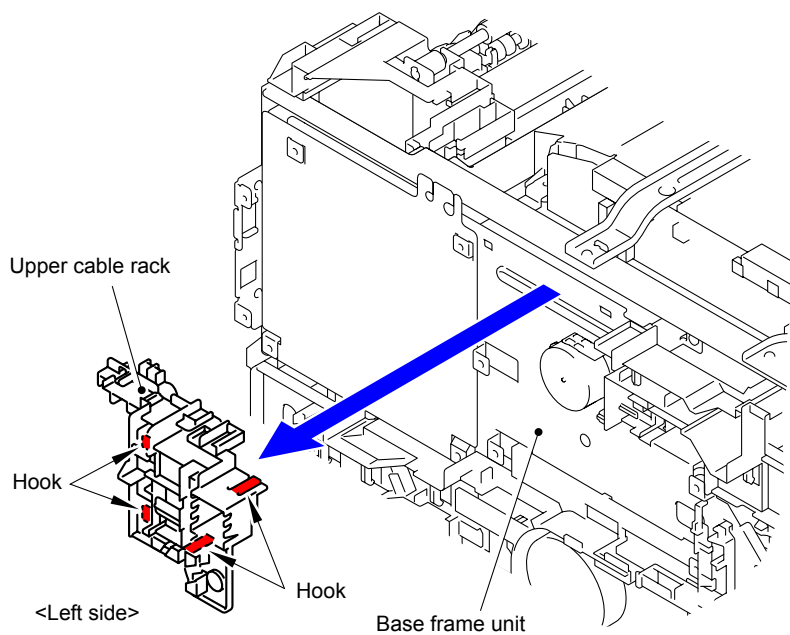
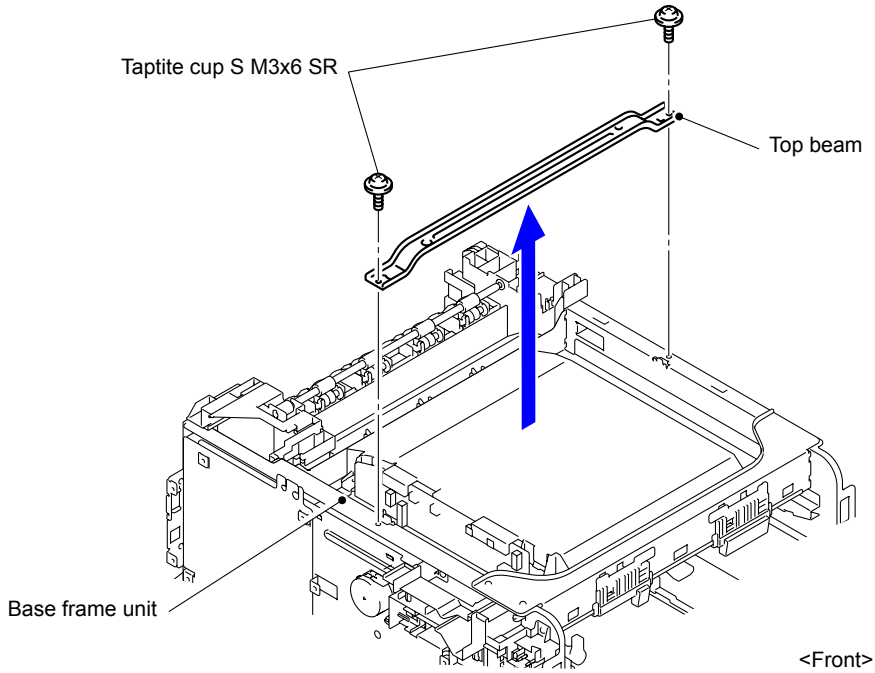


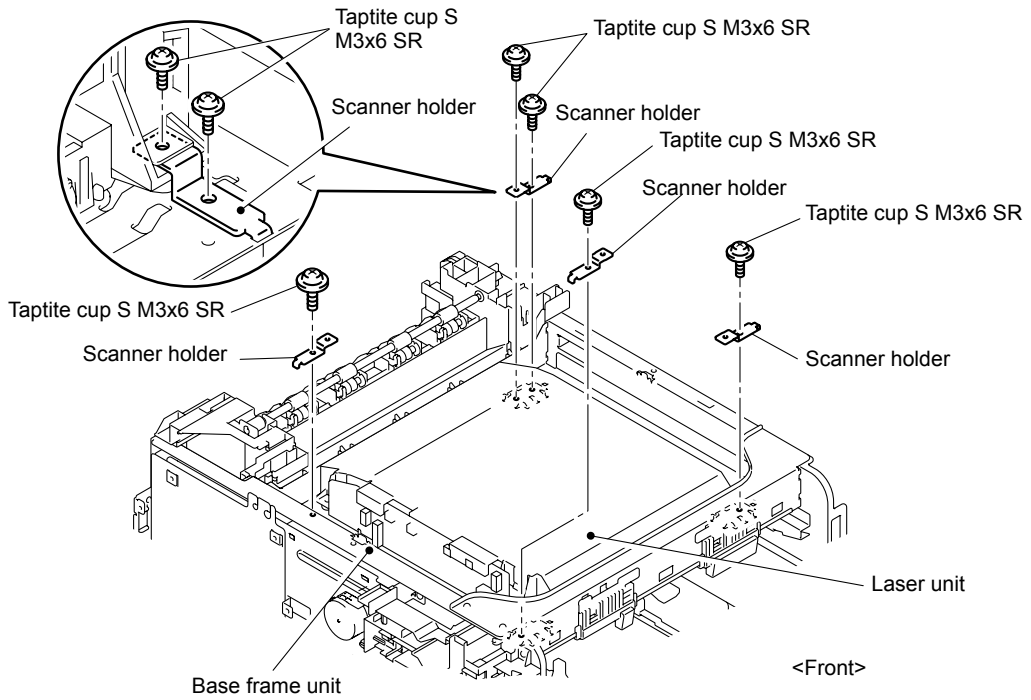
Fig. 3-67

- (5) Remove the two Taptite cup S M3x6 SR screws to remove the Top beam from the Base frame unit.



**Fig. 3-68**

- (6) Remove the five Taptite cup S M3x6 SR screws to remove the four Scanner holders.



**Fig. 3-69**

- (7) Disconnect the Connector (CN8) and two Flat cables from the Laser unit to remove the Laser unit from the Base frame unit.

**Note:**

After disconnecting flat cables, check that each cable is not damaged at its end or shortcircuited.

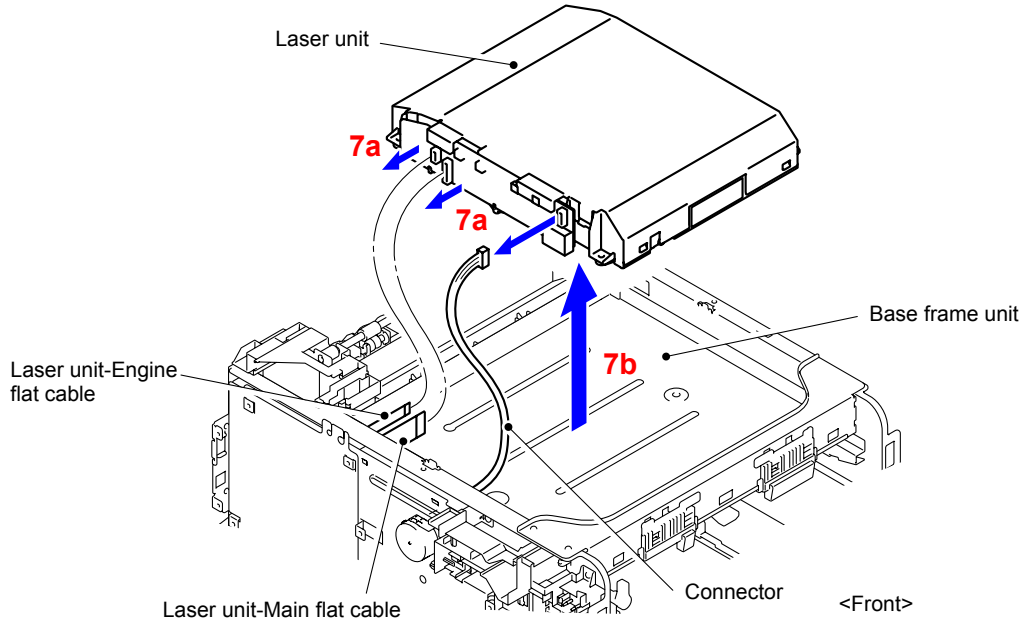


Fig. 3-70

**Assembling Note:**

- When connecting flat cables, do not insert them at an angle. After insertion, check that the cables are not at an angle.
- When the flat cables of the Laser unit are replaced, be sure to fold and assemble the Flat cable as shown in the figure.

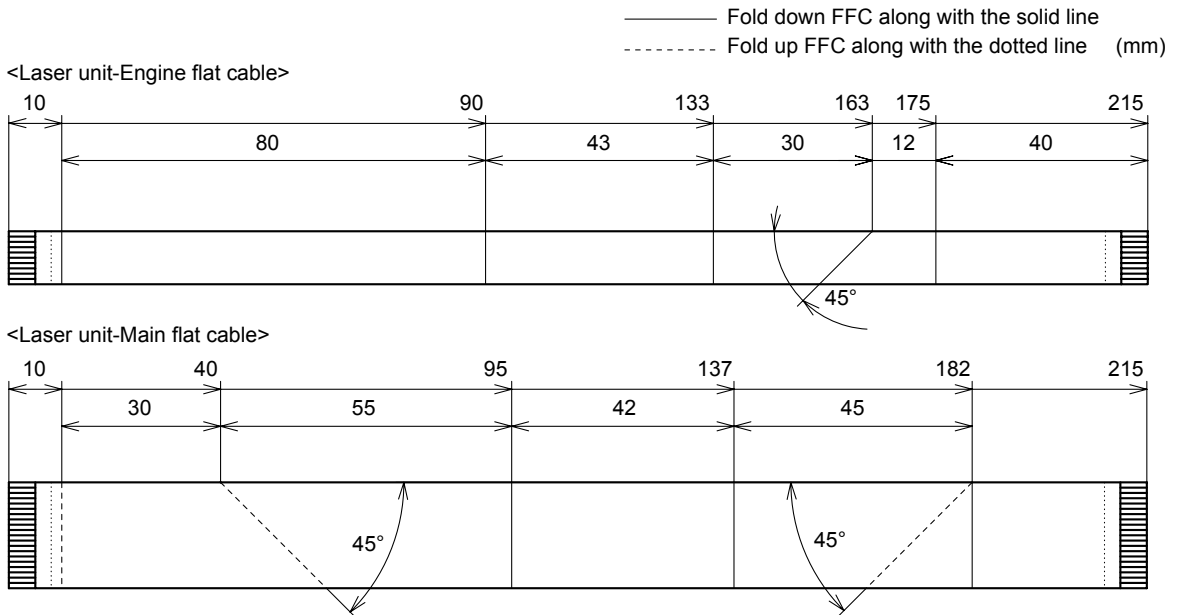


Fig. 3-71

**Harness routing:** Refer to "2 Laser Unit"

# 9.21 Develop Release Motor

(1) Remove the two Taptite bind S M3x6 screws.

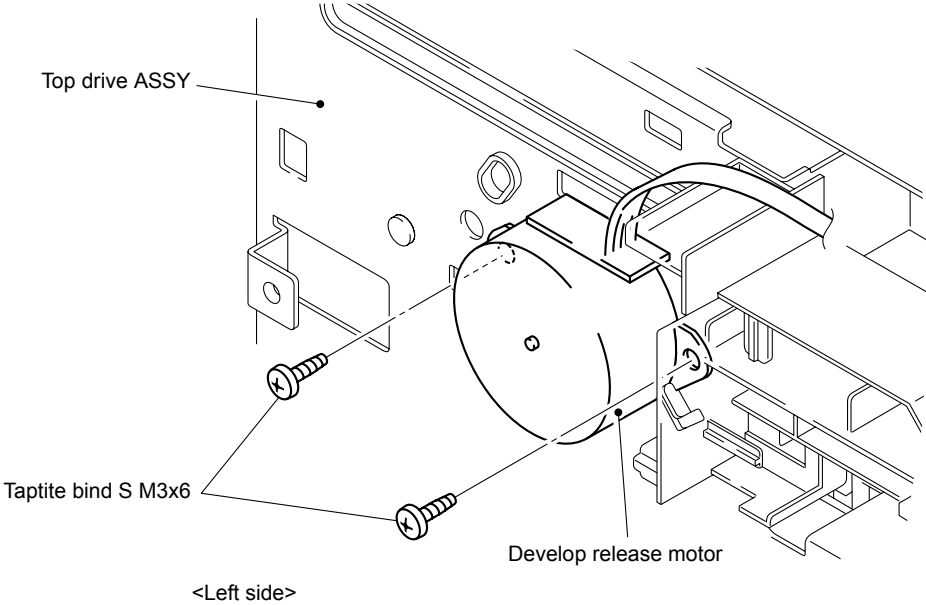


Fig. 3-72

(2) Rotate the Develop release motor counterclockwise to release the Hook to remove the Develop release motor from the Top drive ASSY.

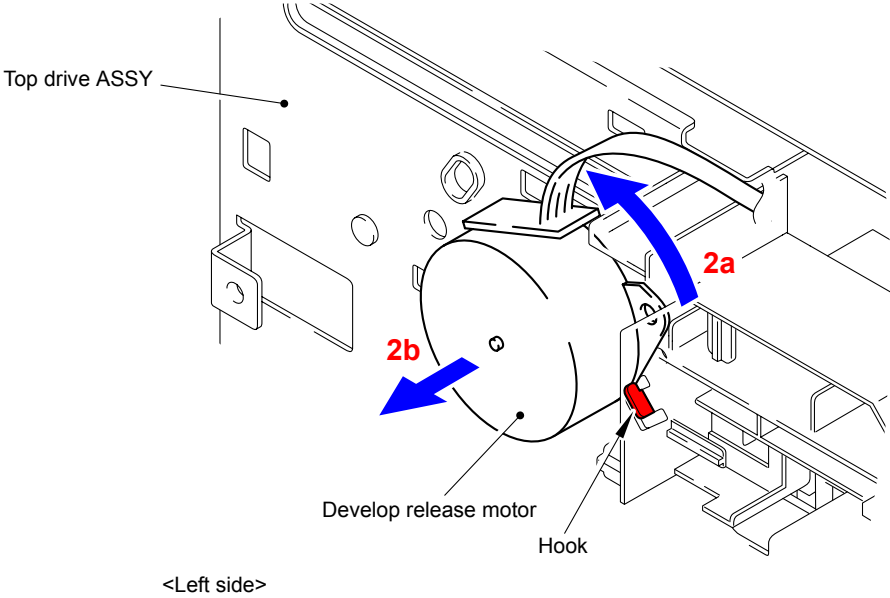


Fig. 3-73

Harness routing: Refer to “ 3 Develop Release Motor”

## 9.22 Front Cover Sensor

- (1) Disconnect the wiring of the Front cover sensor from the Panel cable rack.
- (2) Release the two Hooks to remove the Front cover sensor.

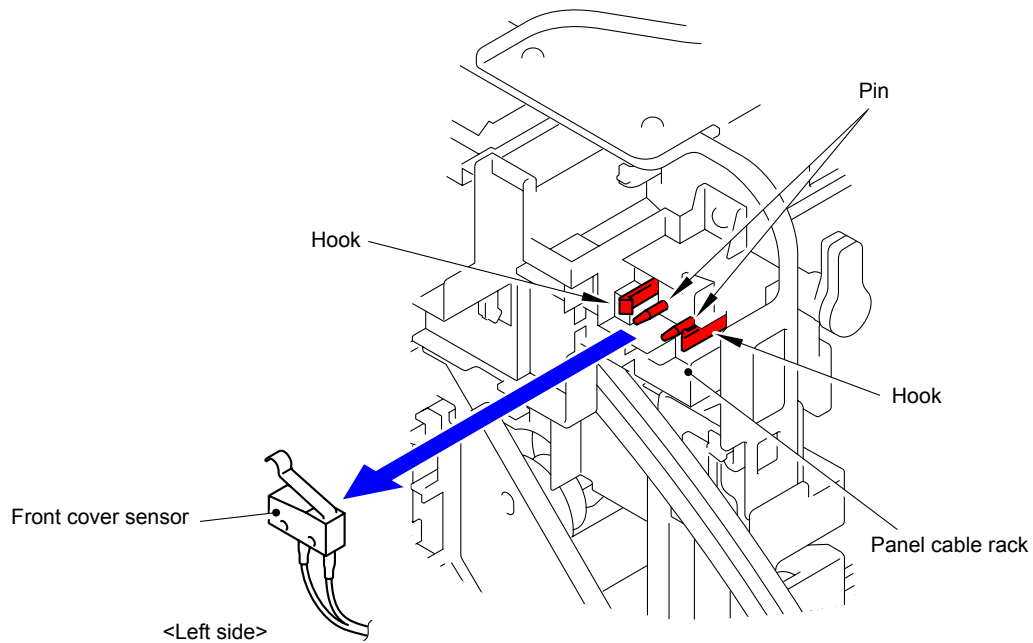


Fig. 3-74

**Harness routing:** Refer to “[4 Front Cover Sensor](#)”

# 9.23 Top Drive ASSY

(1) Remove the Main insulation sheet from the Top drive ASSY.

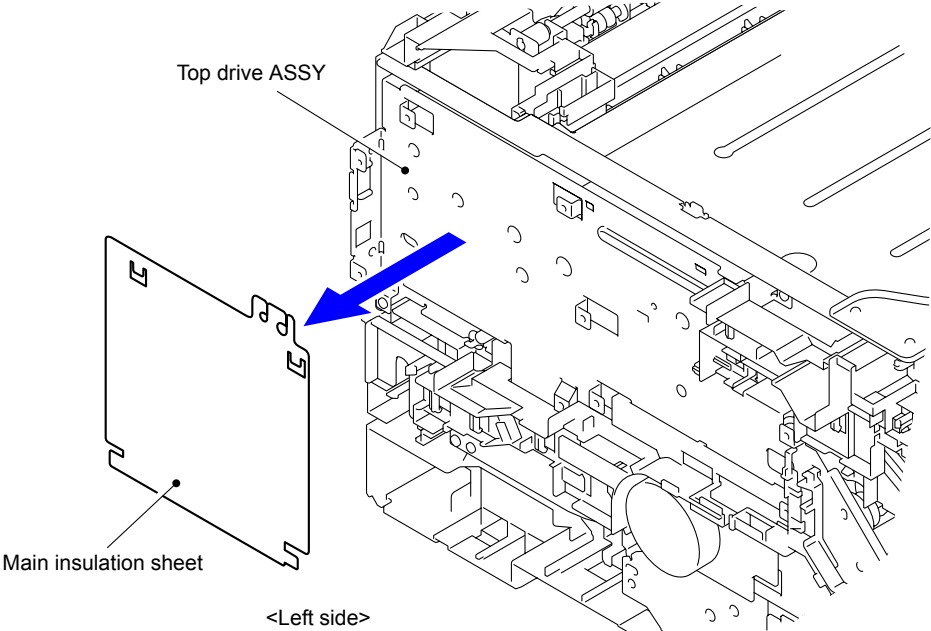


Fig. 3-75

**Assembling Note:**  
When assembling the Main insulation sheet, be careful to insert the "A" into the rear side of the Top drive ASSY.

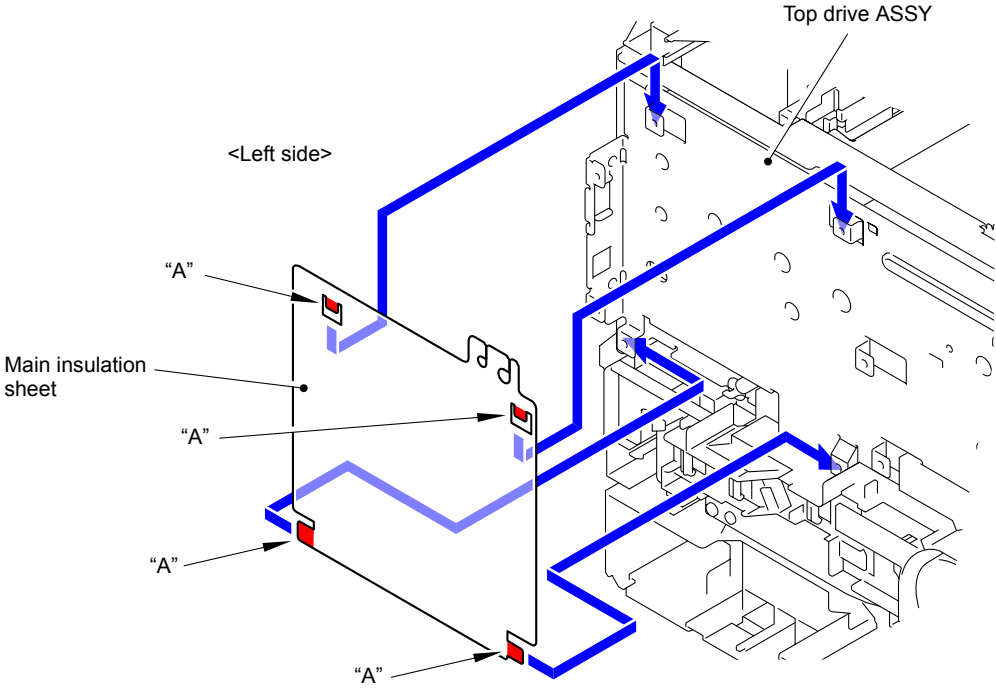
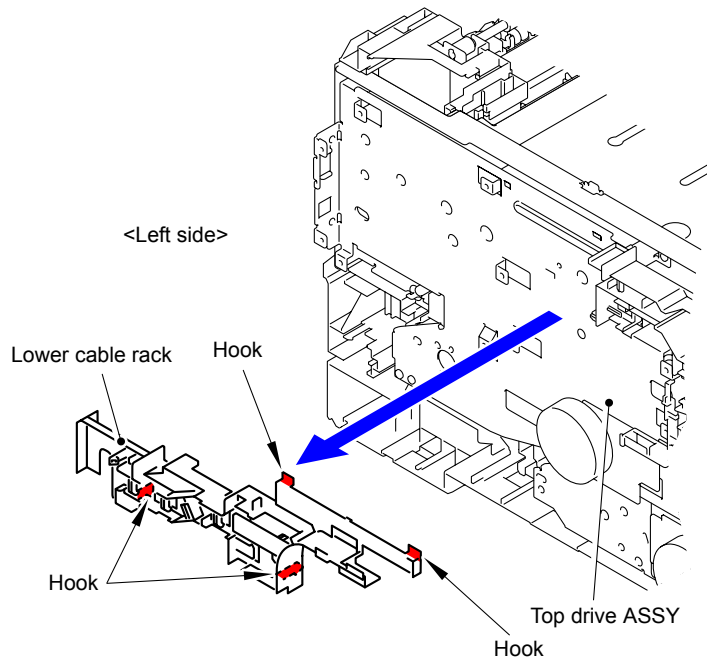


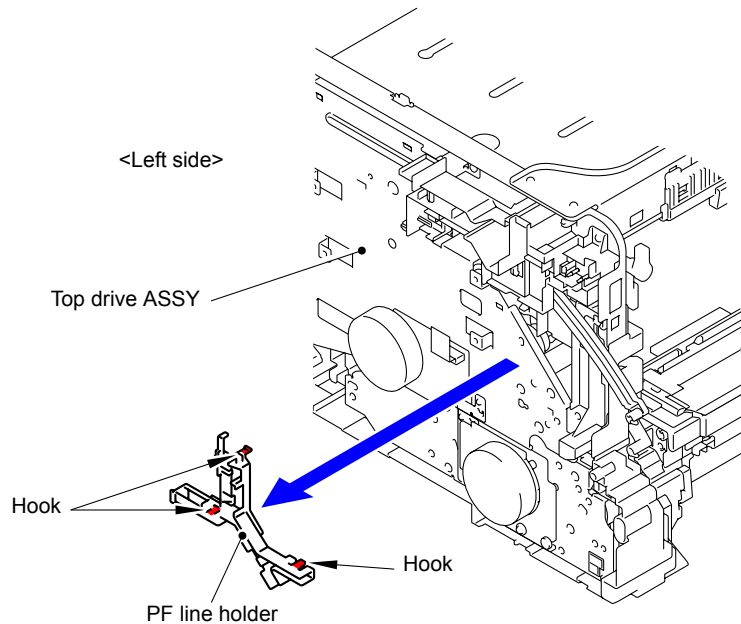
Fig. 3-76

- (2) Disconnect cables from the Lower cable rack.
- (3) Release the four Hooks to remove the Lower cable rack from the Top drive ASSY.



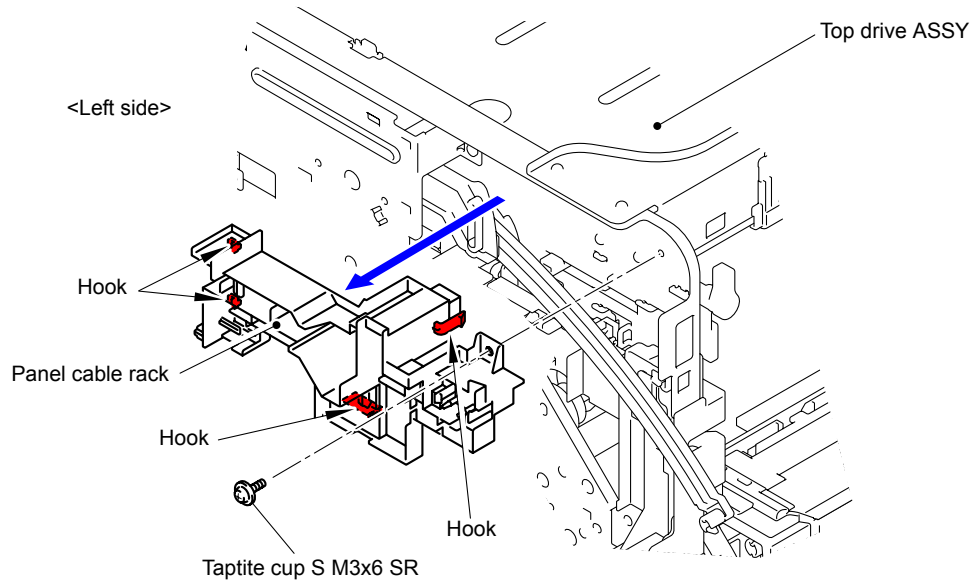
**Fig. 3-77**

- (4) Disconnect cables from the PF line holder.
- (5) Release the three Hooks to remove the PF line holder from the Top drive ASSY.



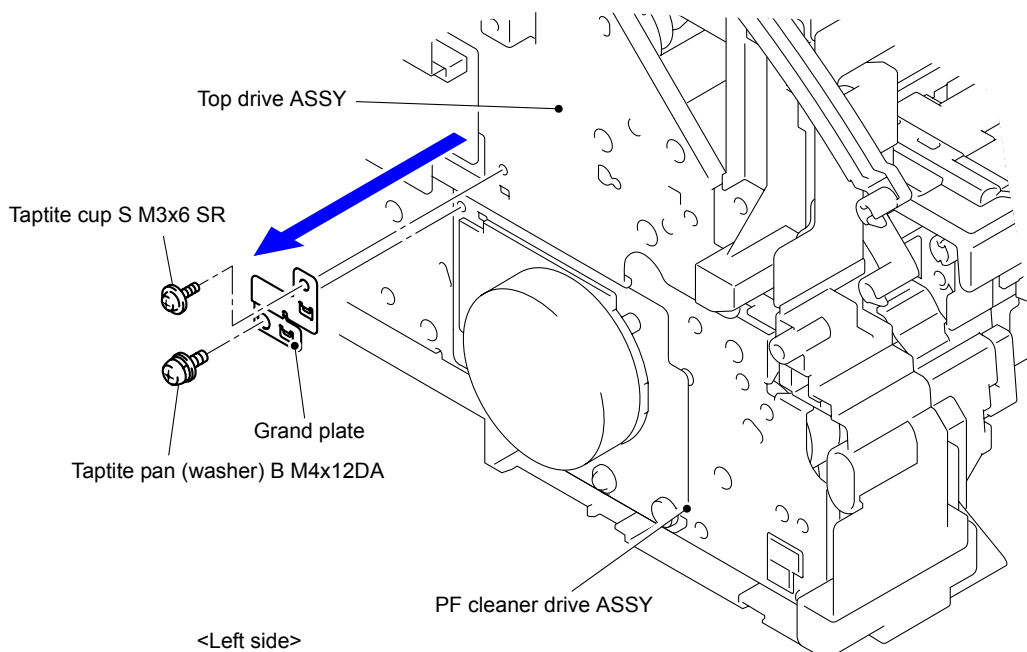
**Fig. 3-78**

- (6) Disconnect cables from the Panel cable rack.
- (7) Remove the Taptite cup S M3x6 SR screw.
- (8) Release the four Hooks to remove the Panel cable rack from the Top drive ASSY.



**Fig. 3-79**

- (9) Remove the Taptite cup S M3x6 SR screw and the Taptite pan (washer) B M4x12DA screw, and then remove the Grand plate from the Top drive ASSY and PF cleaner drive ASSY.



**Fig. 3-80**



(10) Remove the nine Taptite cup S M3x6 SR screws and Taptite bind B M4x12 screw from the Top drive ASSY.

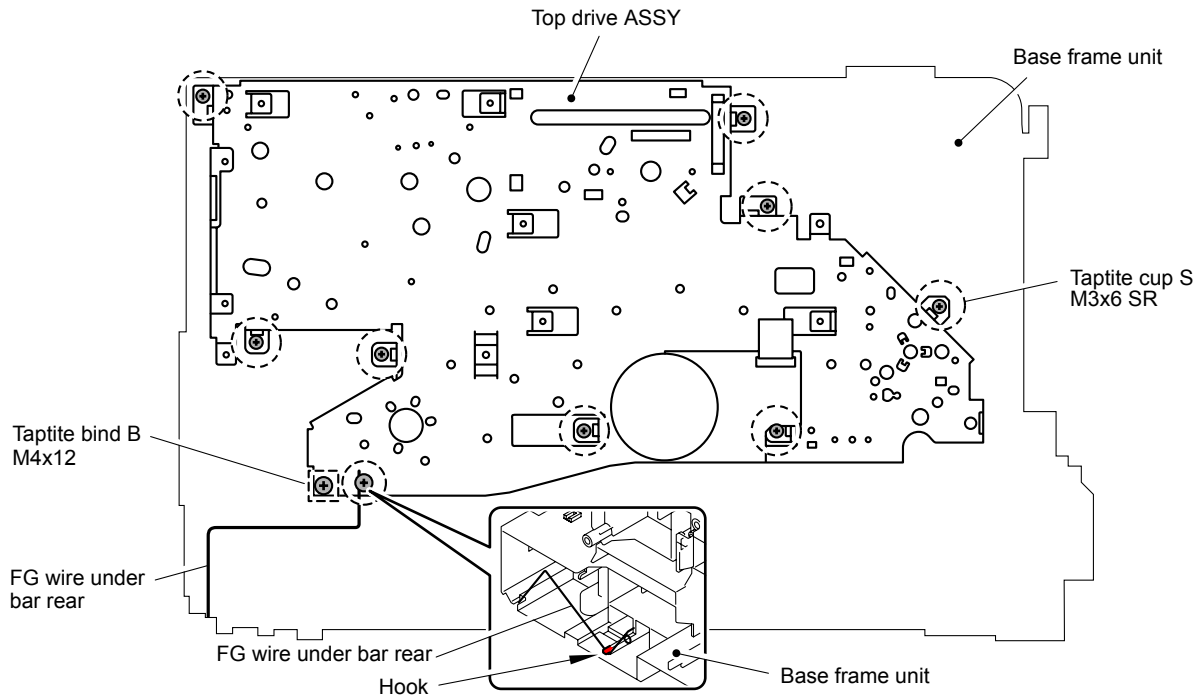


Fig. 3-81

**Note:**

- When removing and installing the Top drive ASSY, be sure to hang the FG wire under bar rear on the Hook of the Base frame unit as shown in the figure before removing and installing the Top drive ASSY.
- Be sure to install the FG wire under bar rear in the Top drive ASSY when installing the Top drive ASSY.

- (11) Remove the Forced develop release link from the Develop forced release part.
- (12) Release the two Hooks to remove the Top drive ASSY from the Base frame unit.

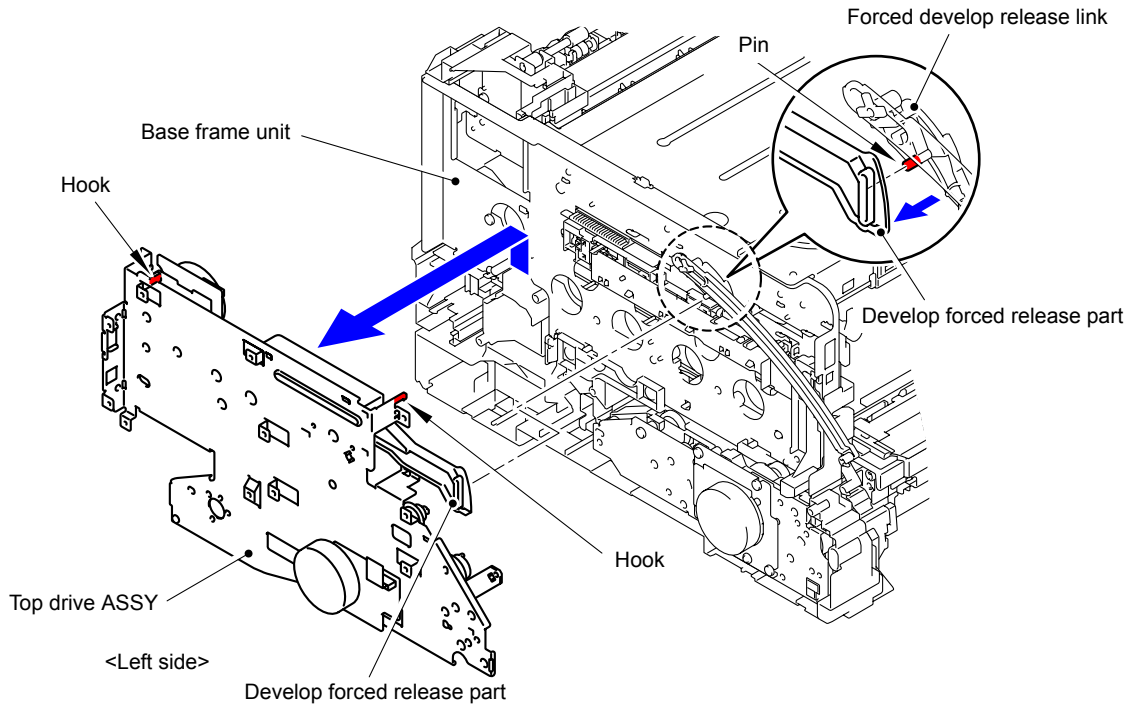


Fig. 3-82

- (13) Disconnect the Fuser develop motor flat cable.

**Assembling Note:**

When the Fuser develop motor flat cable is replaced, be sure to fold and assemble the flat cable as shown in the figure.

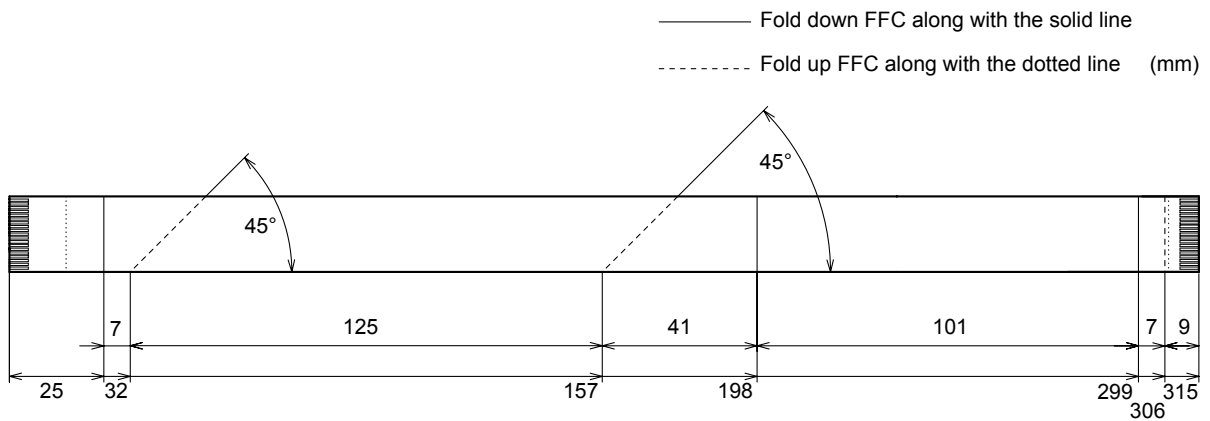


Fig. 3-83

**Harness routing:** Refer to “[5 Top Drive ASSY](#)”

# 9.24 Forced Develop Release Link

(1) Remove the Forced develop release link from the Forced develop release cam.

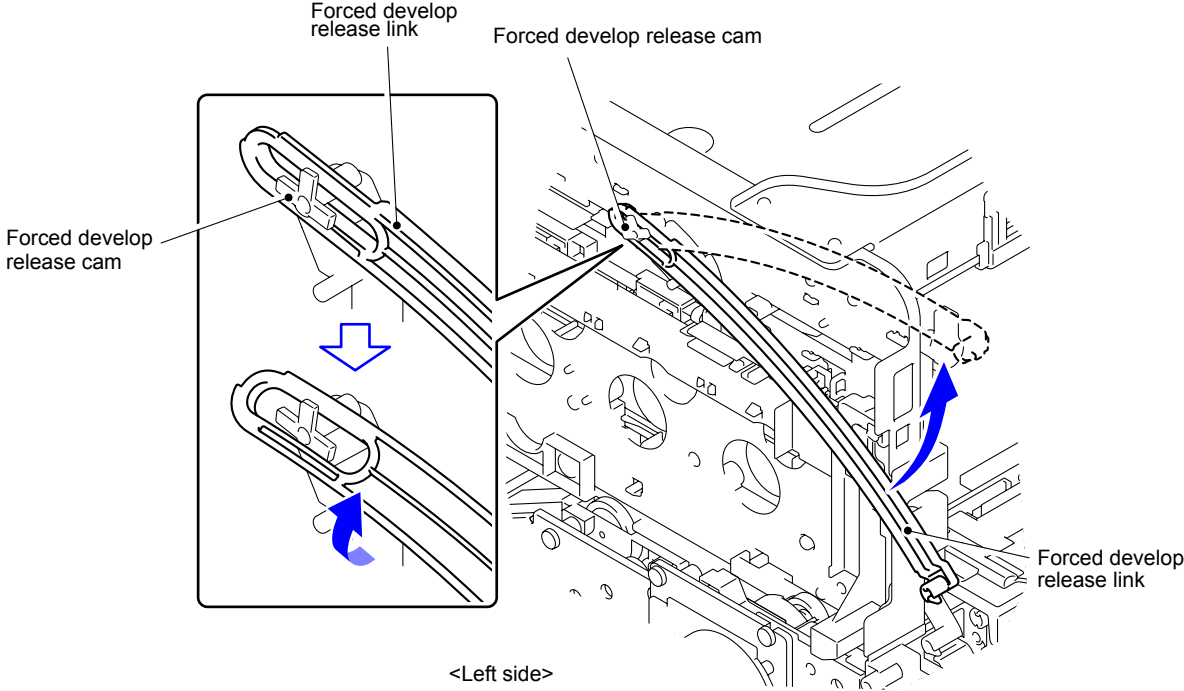


Fig. 3-84

# 9.25 Drum Drive Motor

(1) Remove the two Drum coupling gear Z52 from the Top drive ASSY.

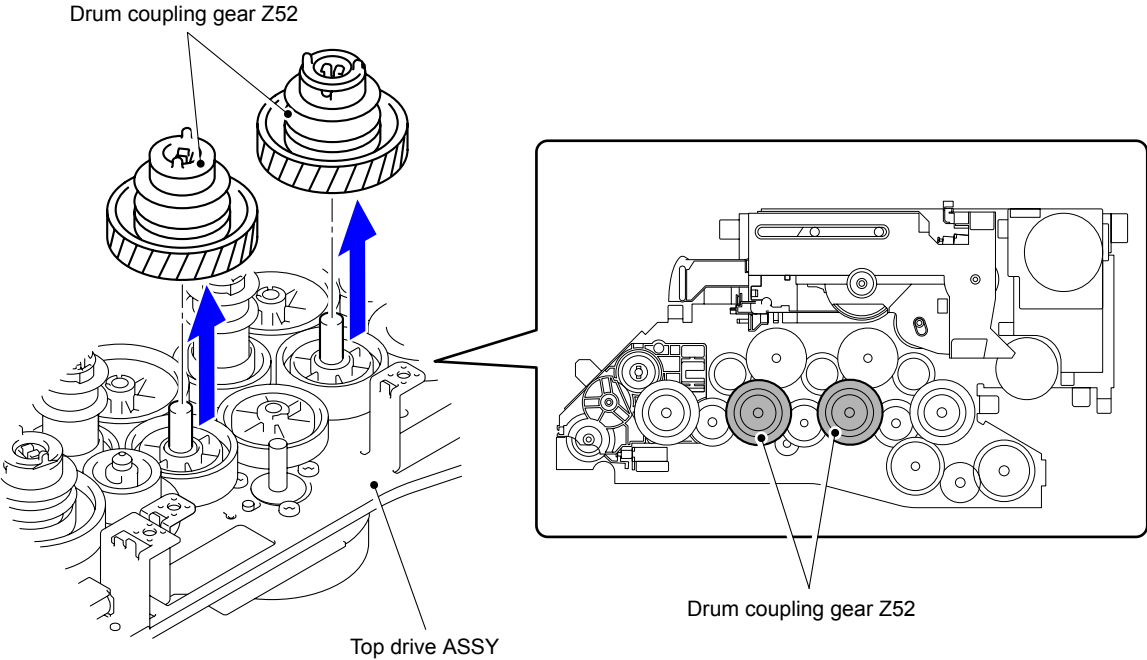


Fig. 3-85

**Gear position:** Refer to "■ Top drive ASSY."

(2) Remove the two Drum idle gear Z64 from the Top drive ASSY.

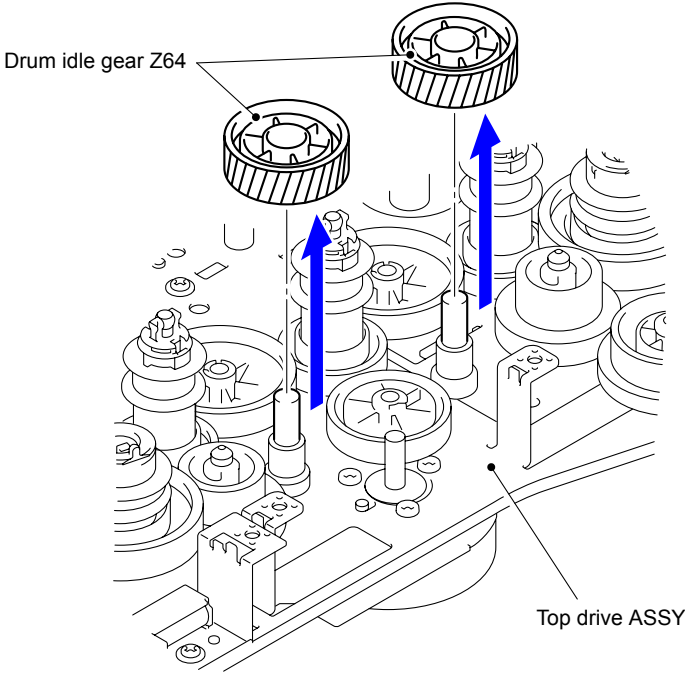


Fig. 3-86

**Gear position:** Refer to "■ Top drive ASSY."

(3) Remove the Collar 6 from the Drum idle gear Z64 first.

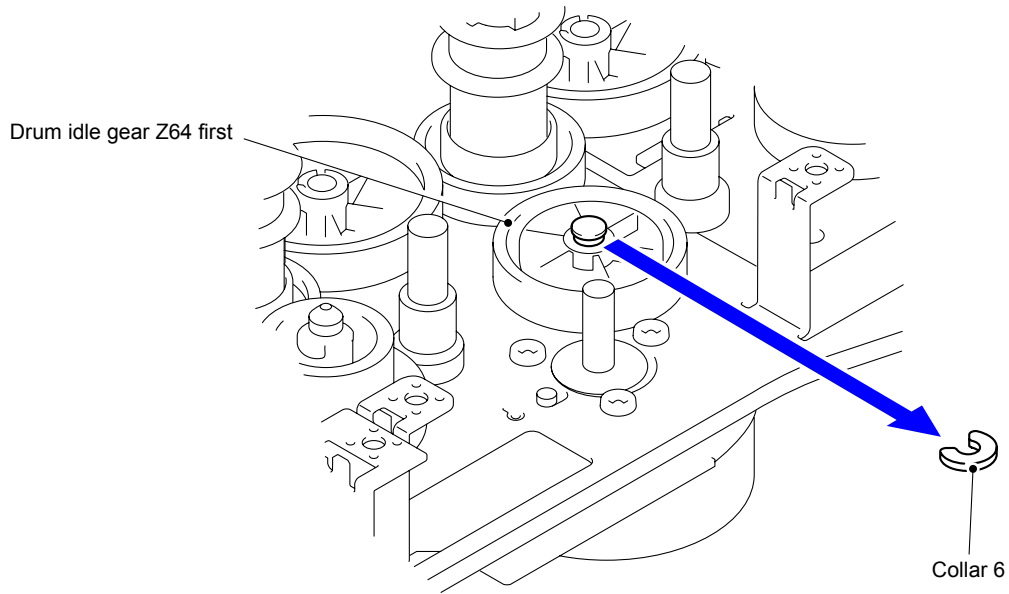


Fig. 3-87

(4) Remove the Drum idle gear Z64 first from the Top drive ASSY.

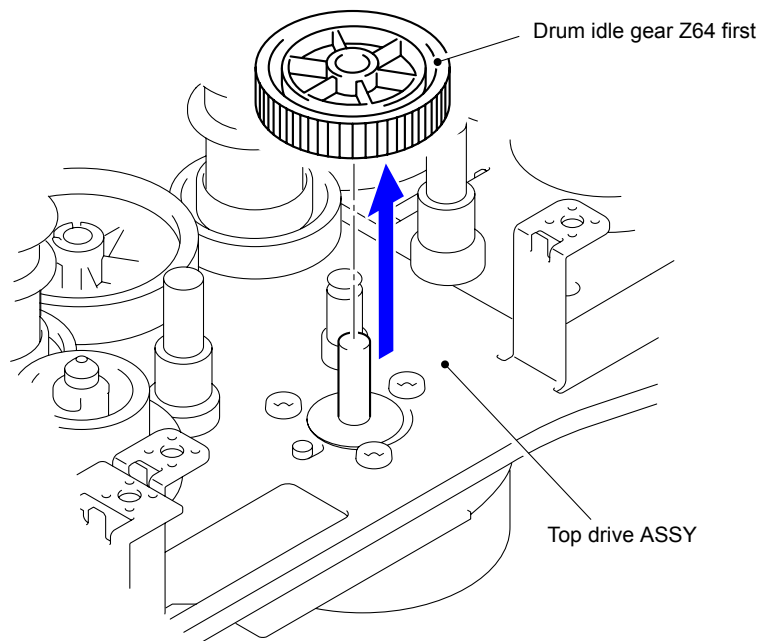


Fig. 3-88

Gear position: Refer to "■ Top drive ASSY."

- (5) Remove the three Screw bind M3x4 screws to remove the Drum drive motor from the Top drive ASSY.

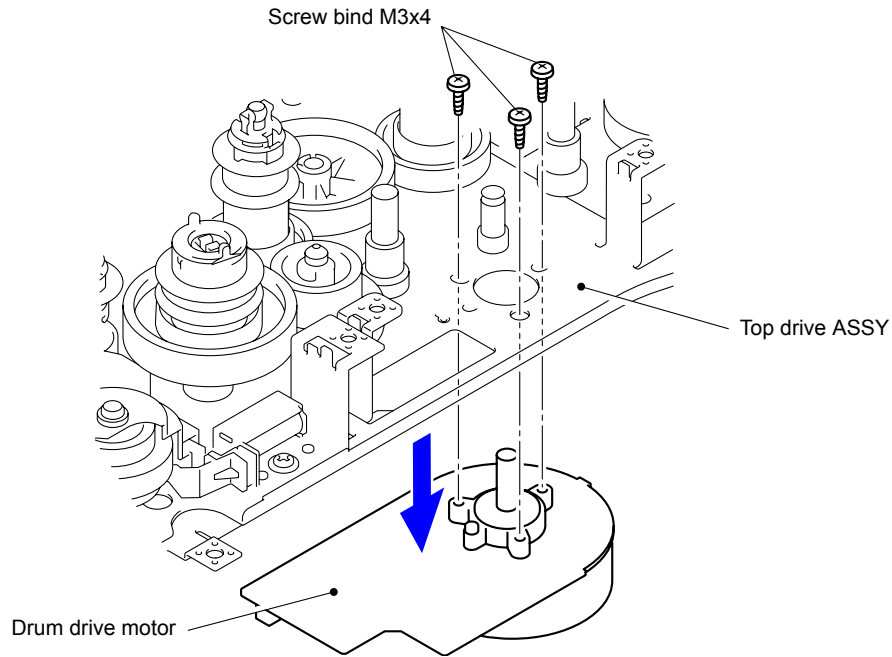


Fig. 3-89

**Assembling Note:**

Align the phase of the Drum idle gear Z64, Drum idle gear Z64 first, and Drum coupling gear Z52. (Refer to "6. IF YOU REPLACE THE DRUM DRIVE MOTOR" in Chapter 4.)

**Harness routing:** Refer to "5 Top Drive ASSY"

## 9.26 Drum Position Sensor PCB ASSY

- (1) Remove the Drum coupling gear Z52 from the Top drive ASSY.

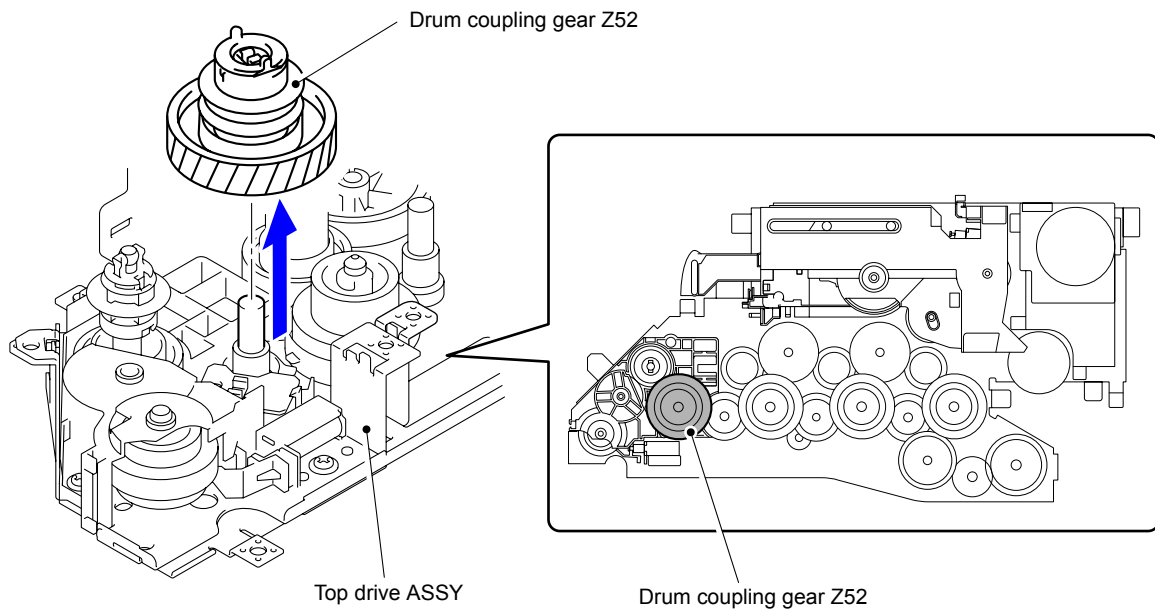



Fig. 3-90

**Gear position:** Refer to "  Top drive ASSY."

**Note:**

Be sure to align the phase before removing the gear.

- (2) Disconnect the wiring of the Drum position sensor PCB ASSY.
- (3) Release the two Hooks to remove the Drum position sensor PCB ASSY from the Top drive ASSY.

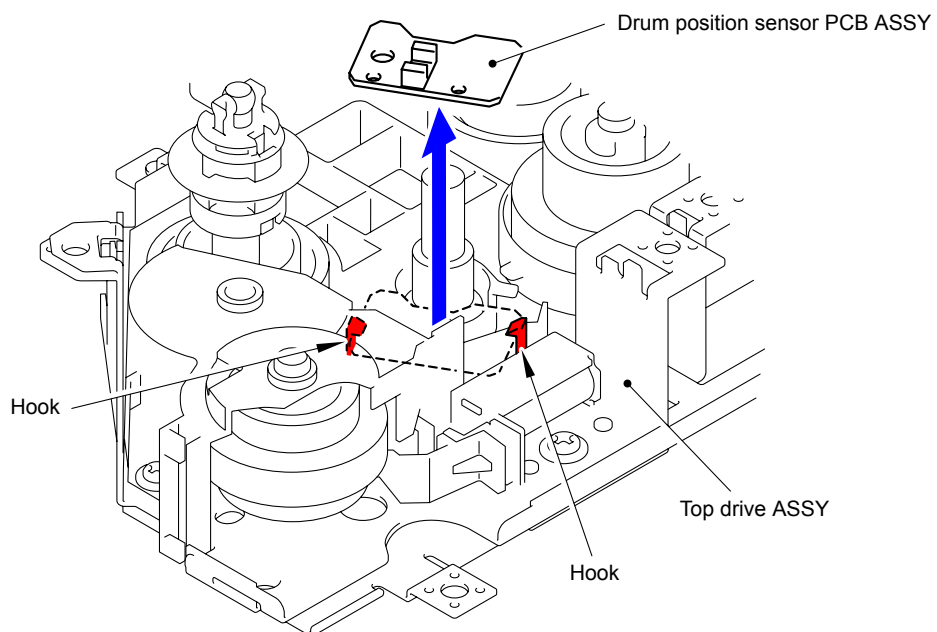



Fig. 3-91

**Harness routing:** Refer to "  5 Top Drive ASSY"

## 9.27 Registration Solenoid ASSY

- (1) Disconnect the wiring of the Registration solenoid ASSY.
- (2) Remove the Taptite cup S M3x6 SR screw to remove the Registration solenoid ASSY and Registration solenoid spring from the Top drive ASSY.

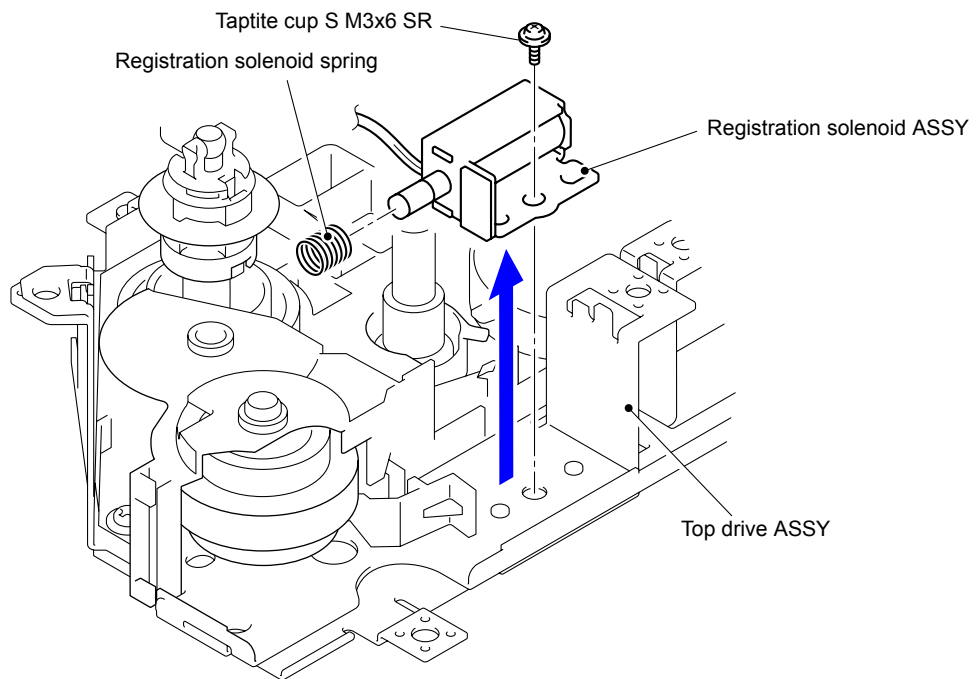


Fig. 3-92

**Harness routing:** Refer to “[5 Top Drive ASSY](#)”



# 9.28 Develop Release Sensor PCB ASSY/Mono Solenoid ASSY

- (1) Remove the three Taptite cup S M3x6 SR screws to remove the Top drive cover from the Top drive ASSY.

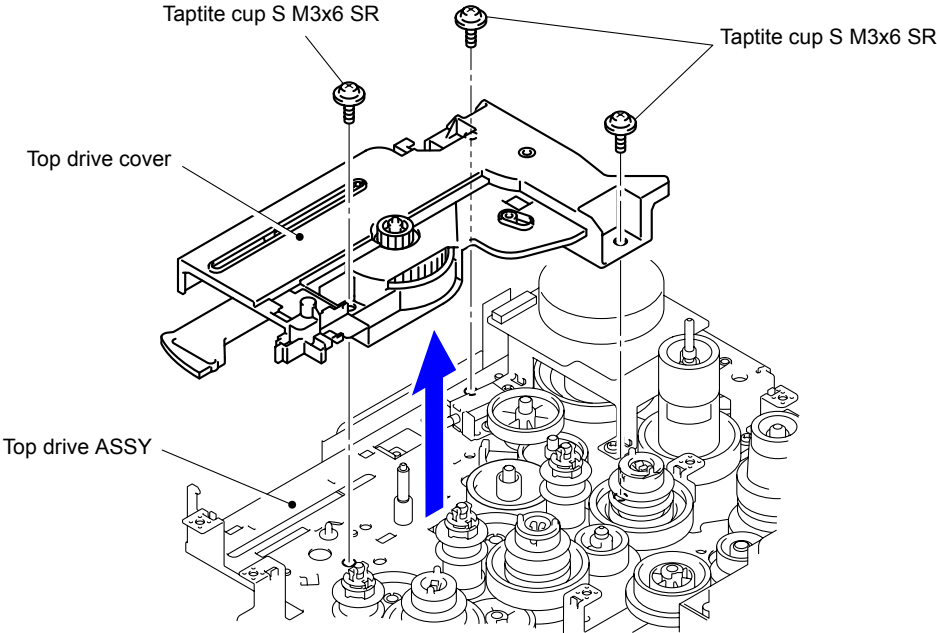


Fig. 3-93

- (2) Turn the Top drive cover upside down and disconnect the wiring of the Develop release sensor PCB ASSY.
- (3) Release the Hook to remove the Develop release sensor PCB ASSY from the Top drive cover.

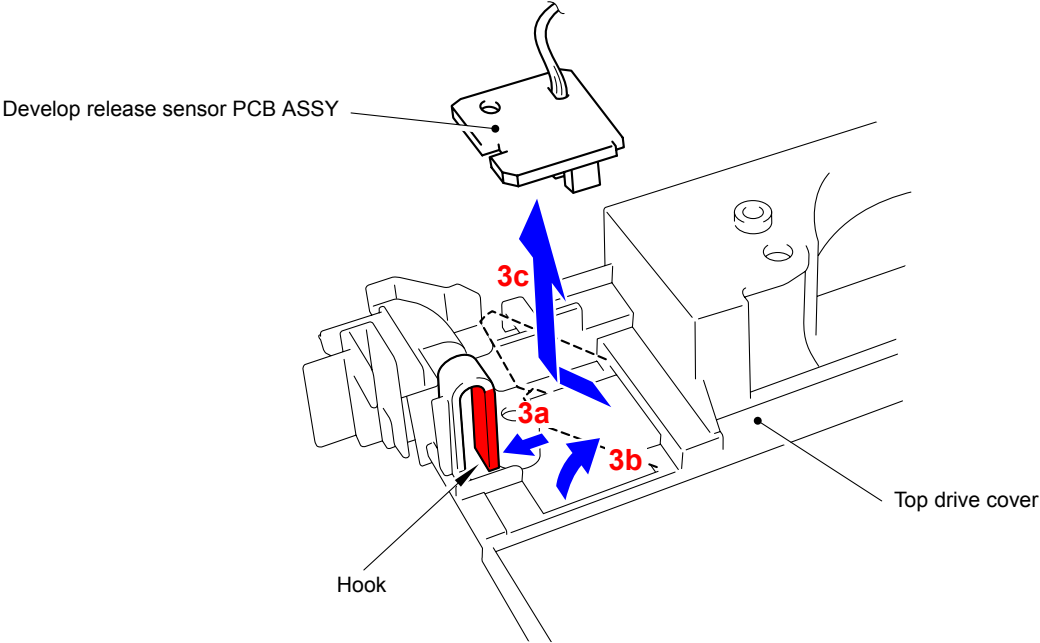
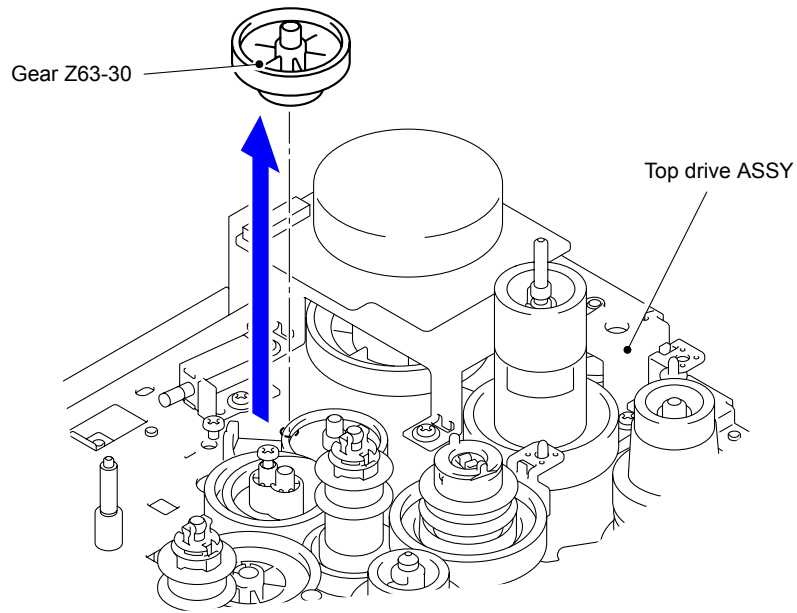



Fig. 3-94

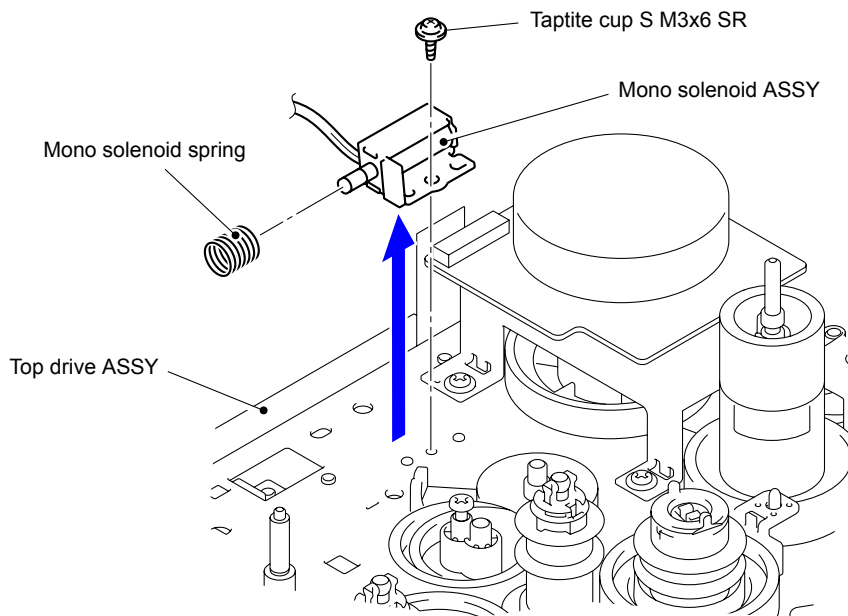
- (4) Remove the Gear Z63-30 from the Top drive ASSY.




**Fig. 3-95**

**Gear position:** Refer to "  Top drive ASSY."

- (5) Remove the Taptite cup S M3x6 SR screw to remove the Mono solenoid ASSY and Mono solenoid spring from the Top drive ASSY.



**Fig. 3-96**

**Harness routing:** Refer to "  Top Drive ASSY"

## 9.29 Fuser Develop Motor ASSY

- (1) Remove the four Taptite cup S M3x6 SR screws to remove the Fuser Develop Motor ASSY from the Top drive ASSY.

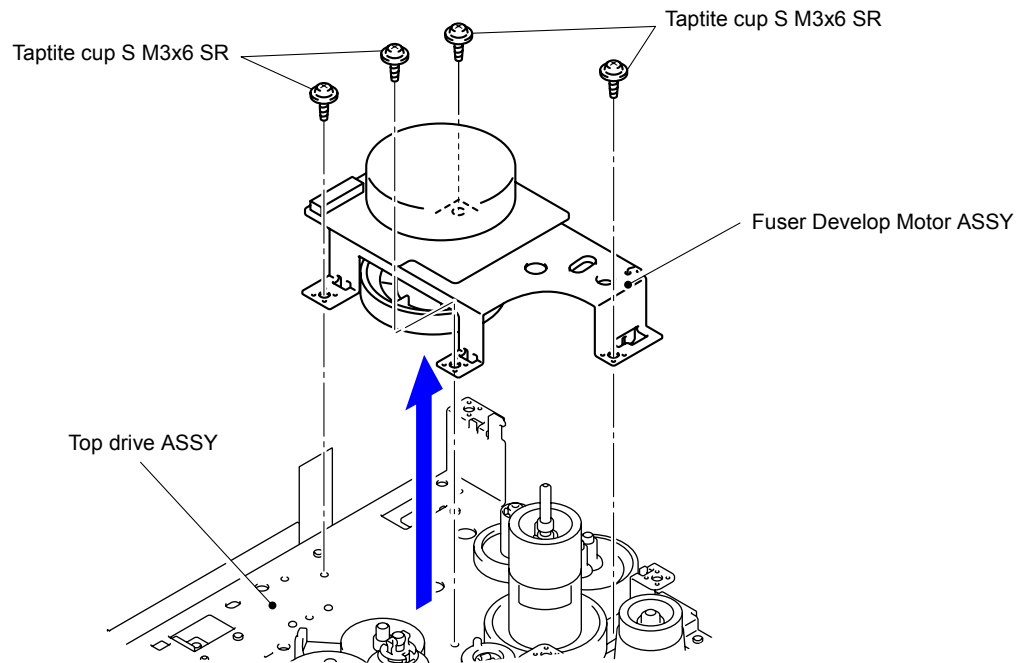


Fig. 3-97

**Harness routing:** Refer to "**5 Top Drive ASSY**"

## 9.30 PF Plate ASSY/T1 Solenoid ASSY

- (1) Remove the three Taptite bind B M4x12 screws and Taptite cup S M3x6 SR screw. Release the FG wire under bar to remove the PF plate ASSY from the PF cleaner drive ASSY.

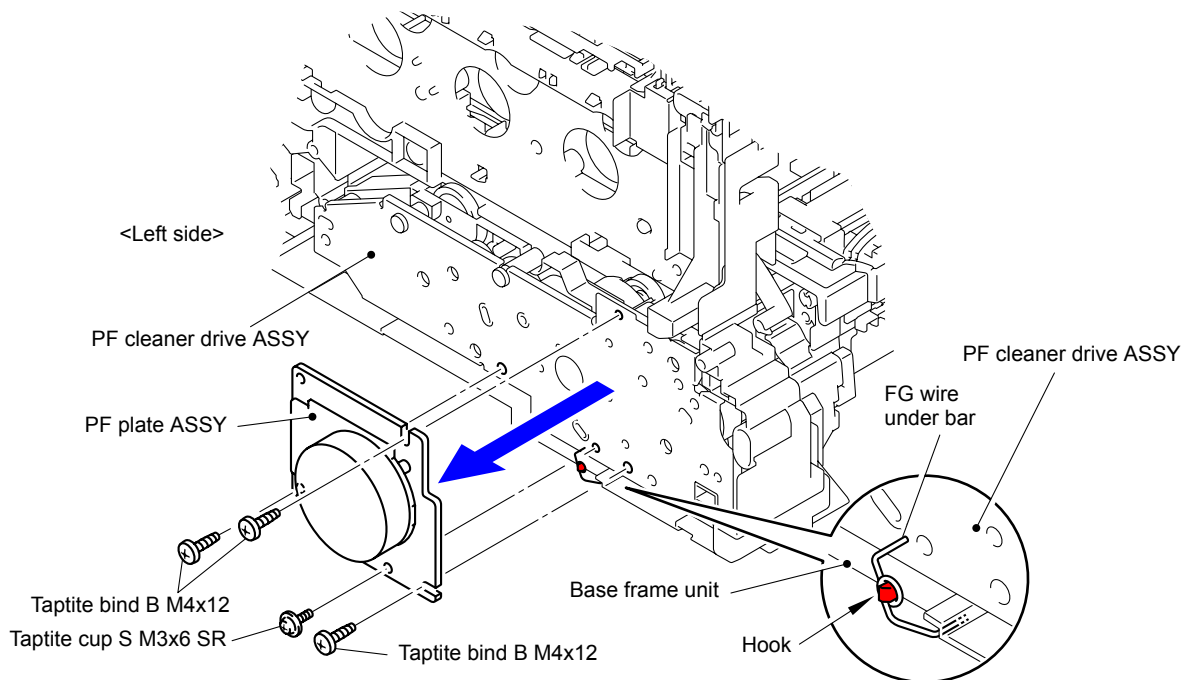
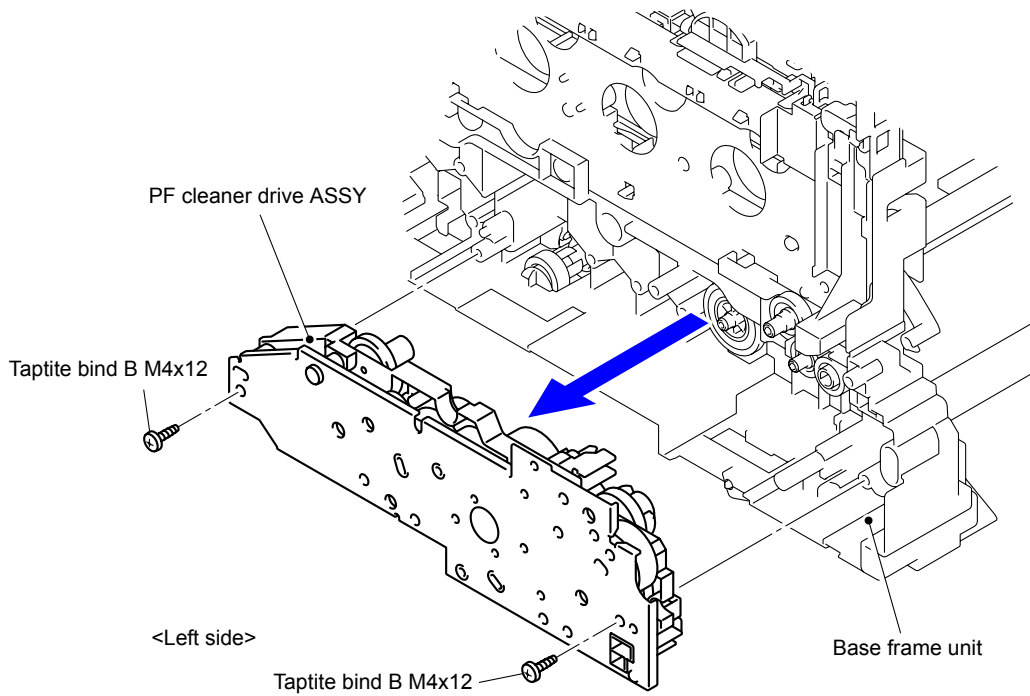


Fig. 3-98

**Note:**

- When removing and installing the PF plate ASSY, be sure to hang the FG wire under bar on the Hook of the Base frame unit as shown in the figure before removing and installing the PF plate ASSY.
- Be sure to install the FG wire under bar in the PF plate ASSY when installing the PF plate ASSY.

- (2) Disconnect the wiring of the PF cleaner drive ASSY.
- (3) Remove the two Taptite bind B M4x12 screws to remove the PF cleaner drive ASSY from the Base frame unit.

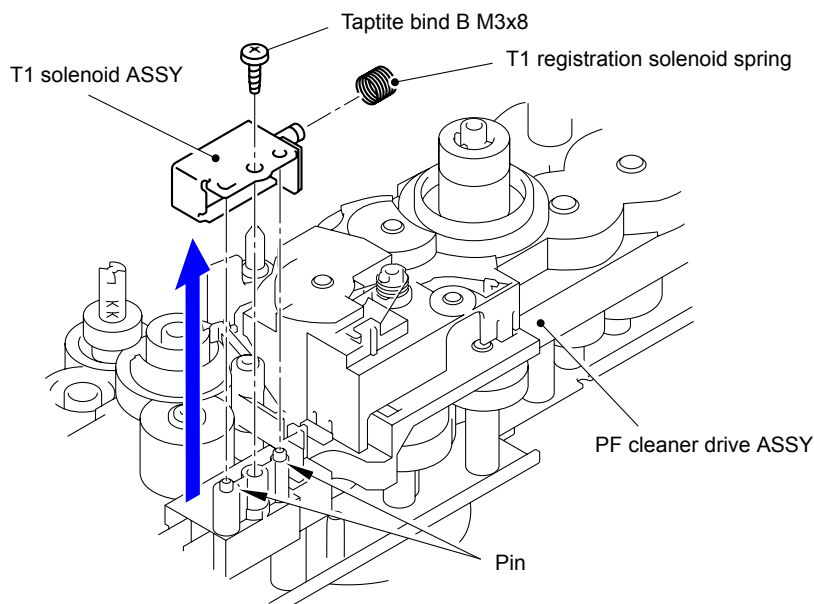


**Fig. 3-99**

**Note:**

Some of the gears on the PF cleaner drive ASSY easily come off, and thus be careful not to lose them.

- (4) Remove the Taptite bind B M3x8 screw to remove the T1 solenoid ASSY and T1 registration solenoid spring from the PF cleaner drive ASSY.



**Fig. 3-100**

**Harness routing:** Refer to " **6 PF Plate ASSY**"

## 9.31 Toner/New Sensor PCB ASSY

- (1) Release the two Hooks to remove the TE sensor protect film from the Toner reset holder.

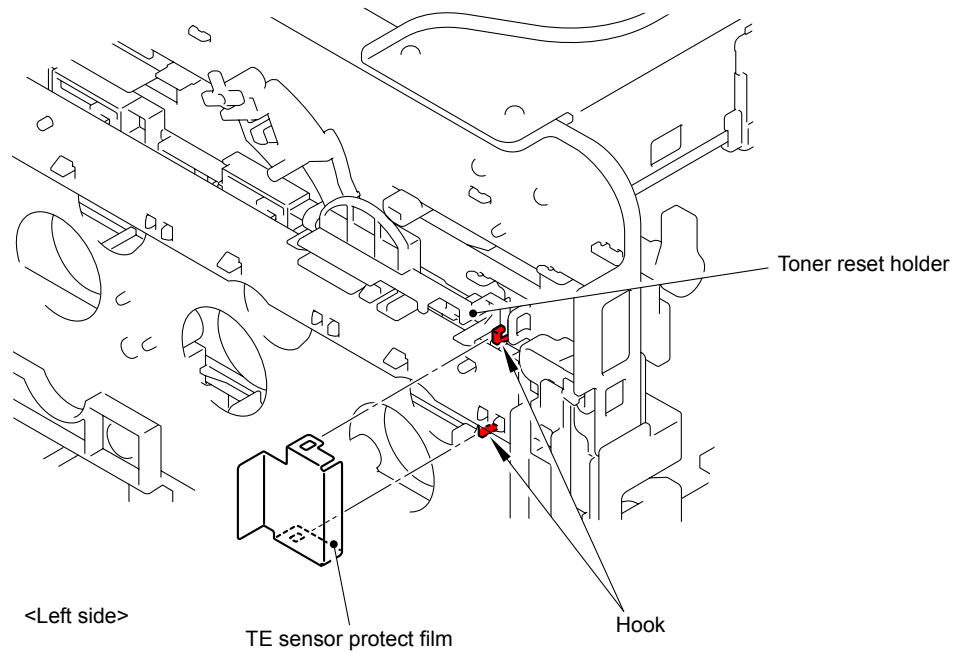


Fig. 3-101

- (2) Release the six Hooks to remove the Toner/New sensor PCB ASSY from the Toner reset holder.

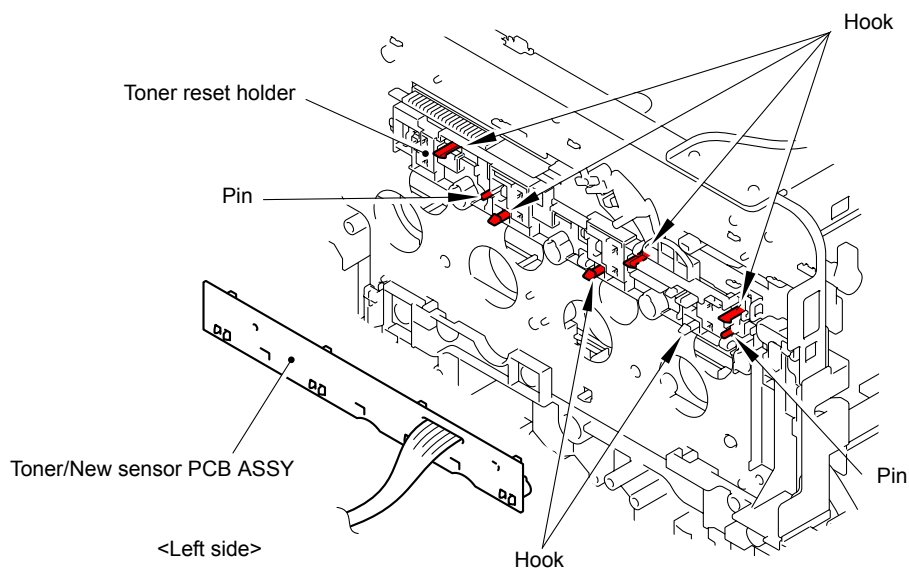


Fig. 3-102

**Harness routing:** Refer to “[7 Toner/New Sensor PCB ASSY](#)”

## 9.32 Internal Temperature Thermistor

- (1) Remove the Internal temperature thermistor from the Main body.

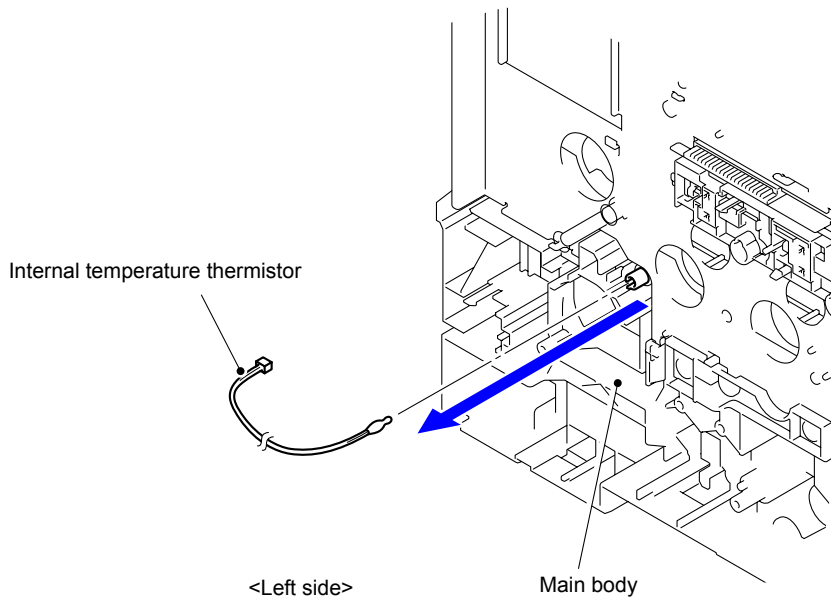


Fig. 3-103

### Assembling Note:

- Insert the tip of the Internal temperature thermistor firmly into the Insertion hole until it reaches the end of the Hole.
- After inserting the Internal temperature thermistor, hang the Harness on the Hook.

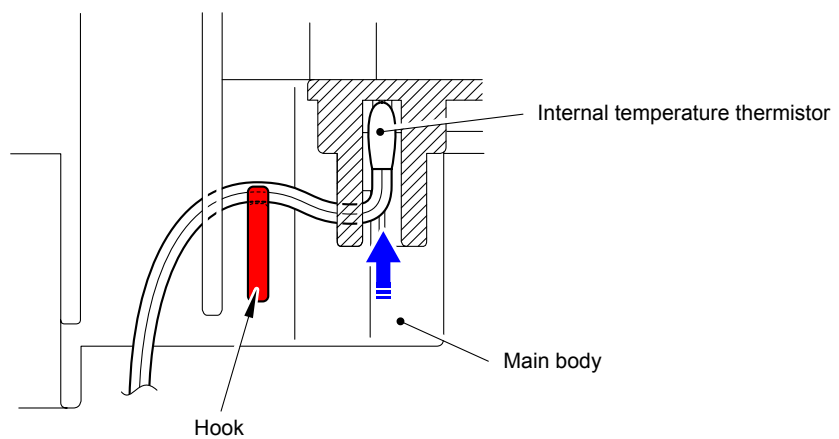


Fig. 3-104

**Harness routing:** Refer to "[13 Internal Temperature Thermistor](#)"

### 9.33 Fuser Fan

- (1) Disconnect the Connector (CN4) from the High-voltage power supply PCB ASSY.

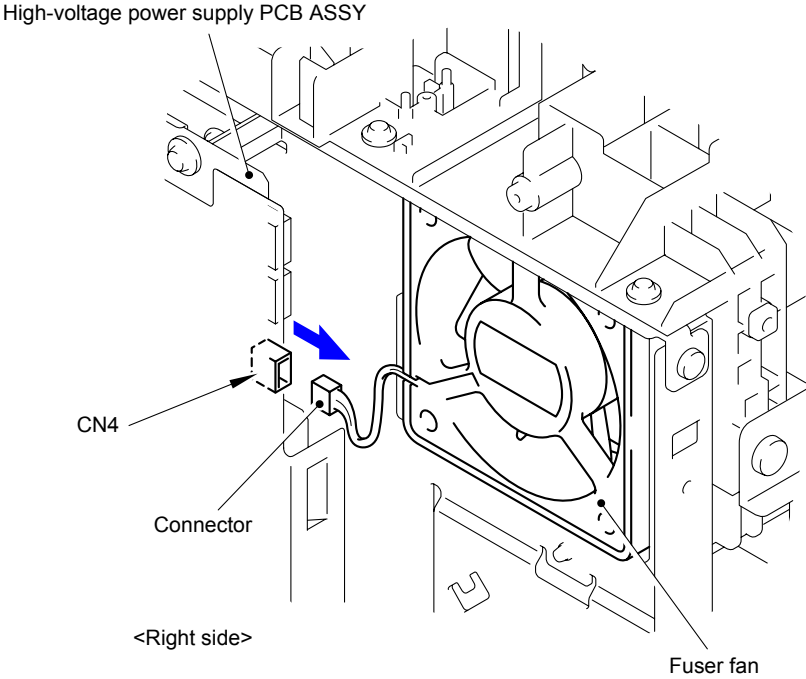


Fig. 3-105

- (2) Pull out the Fuser fan from the Paper eject ASSY by slightly rotating it in the arrow direction in the figure below.

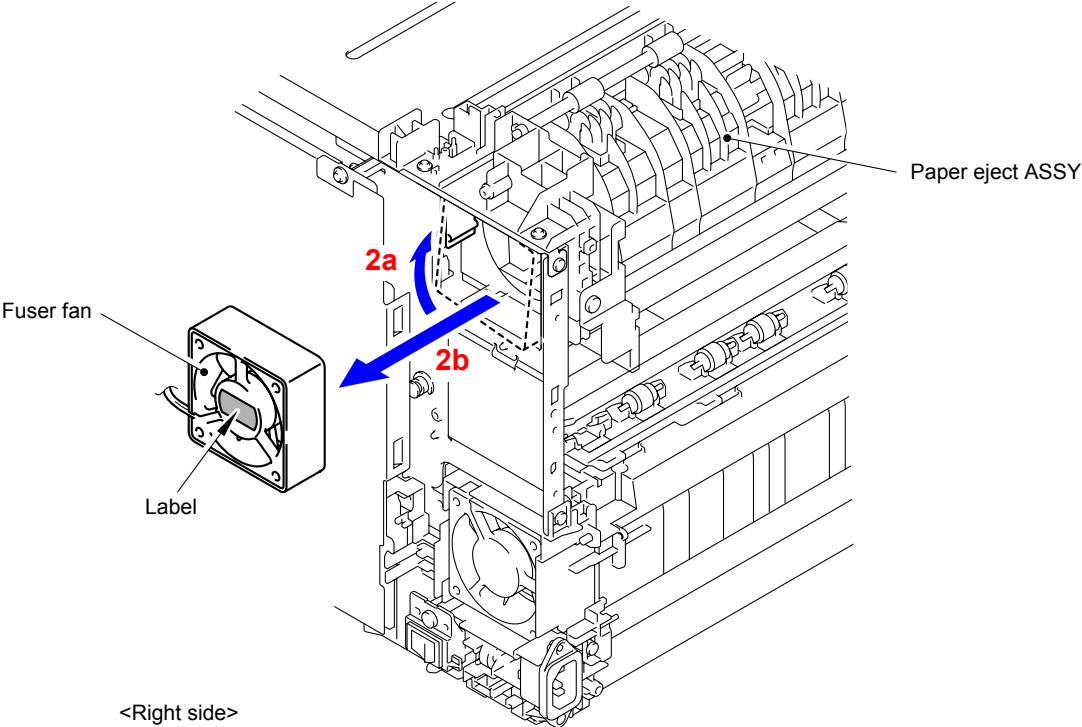
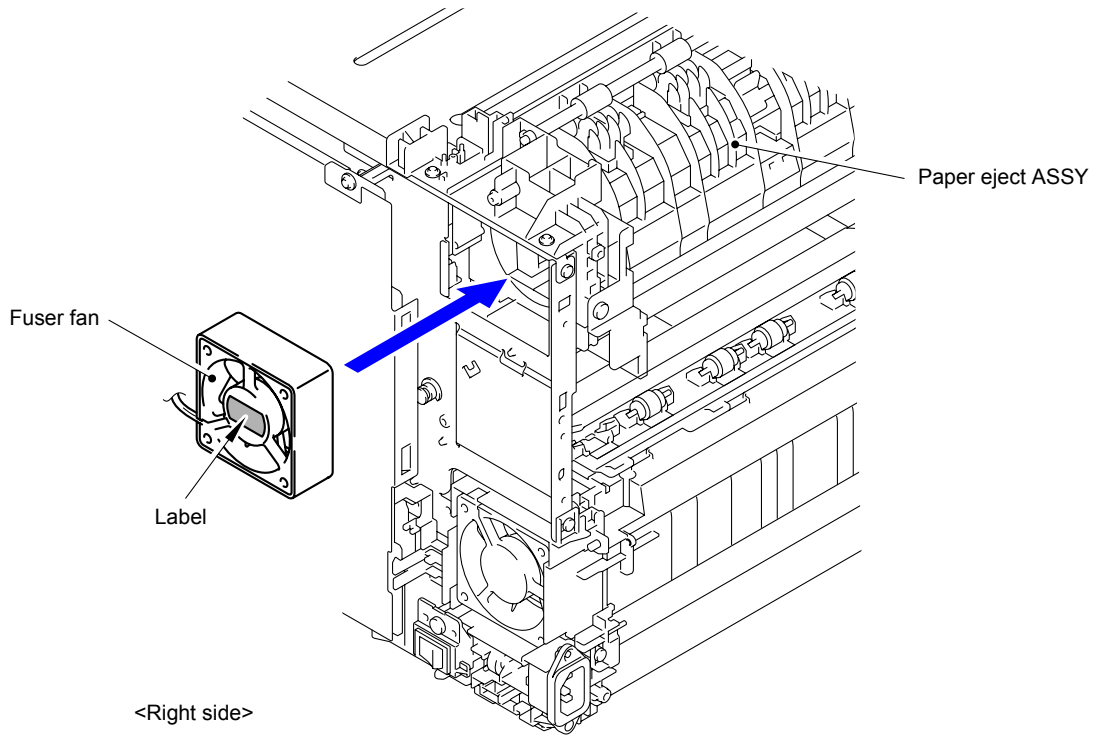


Fig. 3-106



**Assembling Note:**

When assembling the Fuser fan, be sure to assemble it in a way that the label side faces out.



**Fig. 3-107**

## 9.34 Paper Eject ASSY

- (1) Disconnect the wiring of the harness from the High-voltage power supply PCB ASSY.
- (2) Remove the five Taptite cup S M3x6 SR screws to remove the Paper eject ASSY from the Base frame unit.

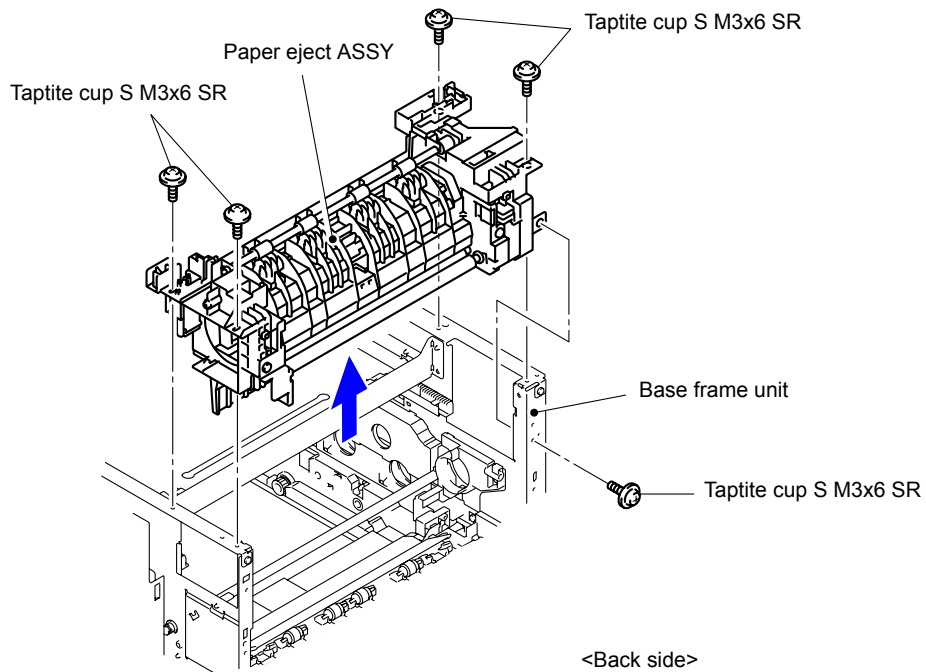


Fig. 3-108

**Harness routing:** Refer to “ **9** Paper Eject ASSY”

### 9.35 Filter ASSY

(1) Remove the Toner filter ASSY from the Paper eject ASSY.

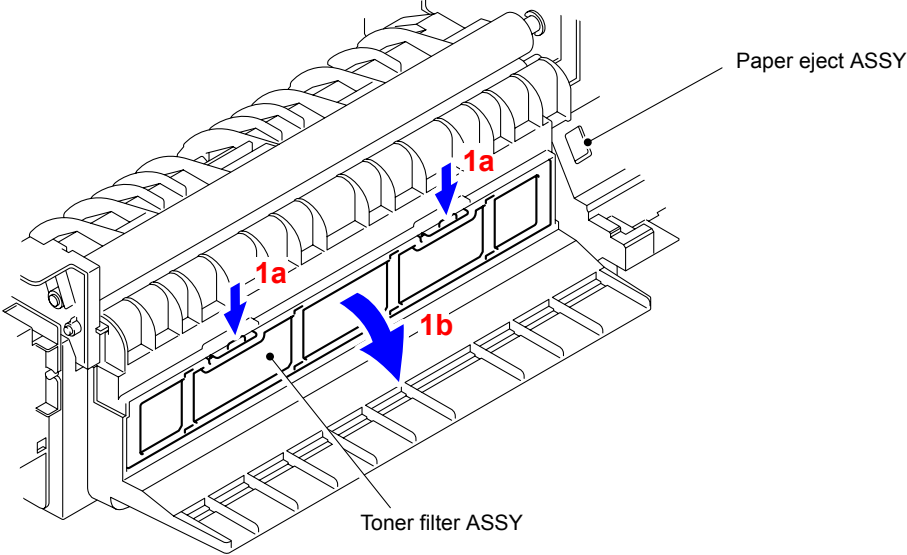


Fig. 3-109

(2) Remove the Taptite bind B M4x12 screw to remove the Eject duct from the Paper eject ASSY.

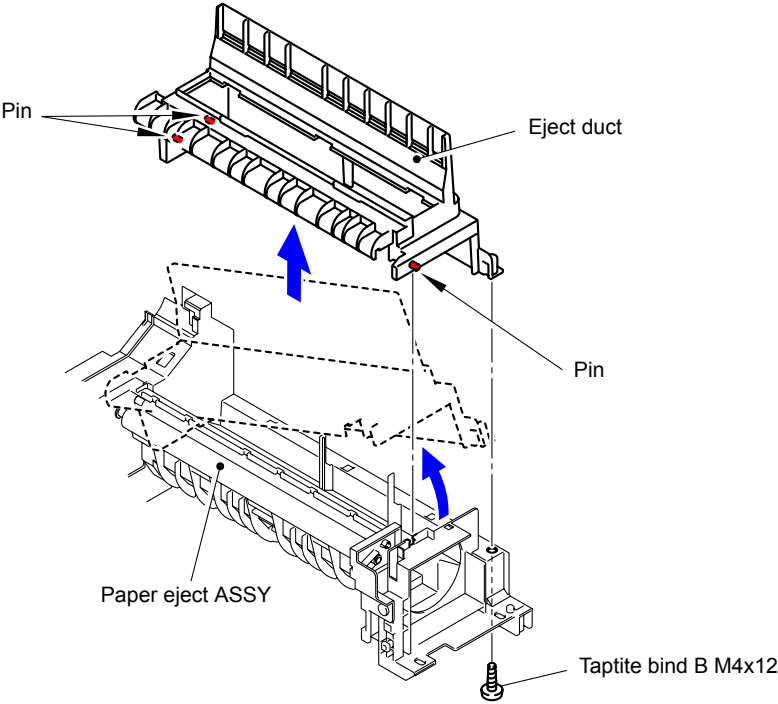
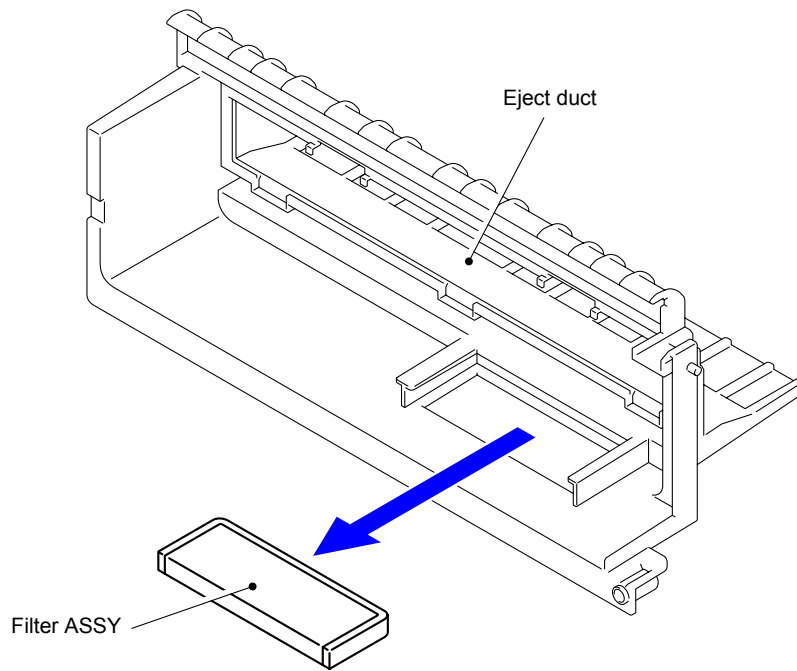


Fig. 3-110

(3) Remove the Filter ASSY from the Eject duct.



**Fig. 3-111**

## 9.36 Paper Eject Motor

- (1) Remove the two Taptite bind S M3x6 screws to remove the Paper eject motor from the Paper eject ASSY.

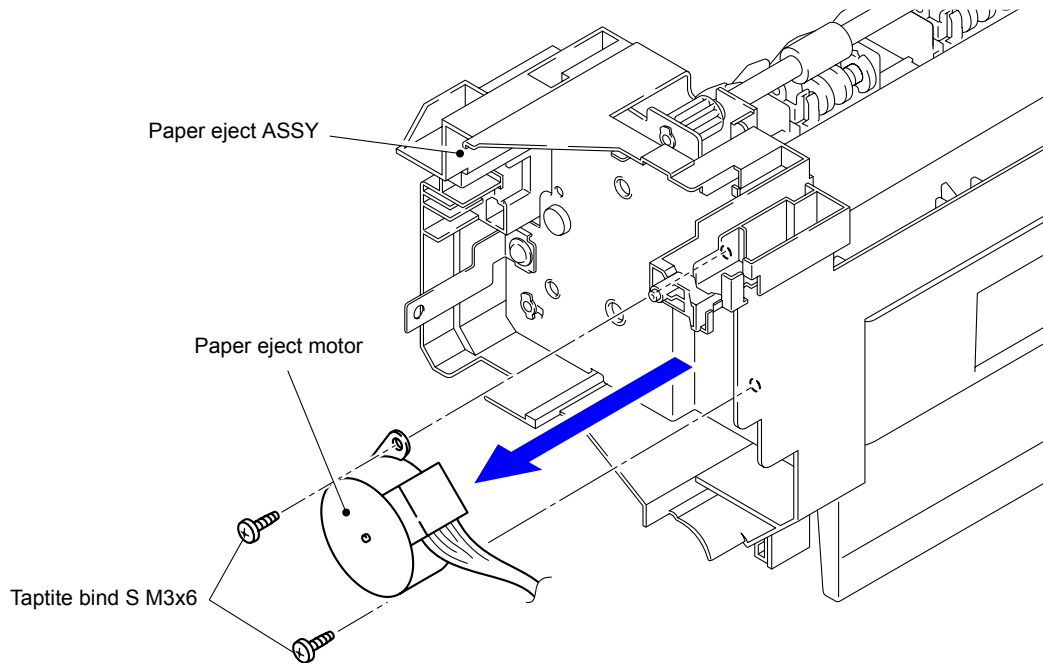


Fig. 3-112

**Harness routing:** Refer to “[9 Paper Eject ASSY](#)”

## 9.37 Back Cover Sensor ASSY

- (1) Release the two Hooks to remove the Back cover sensor ASSY from the Paper eject ASSY.

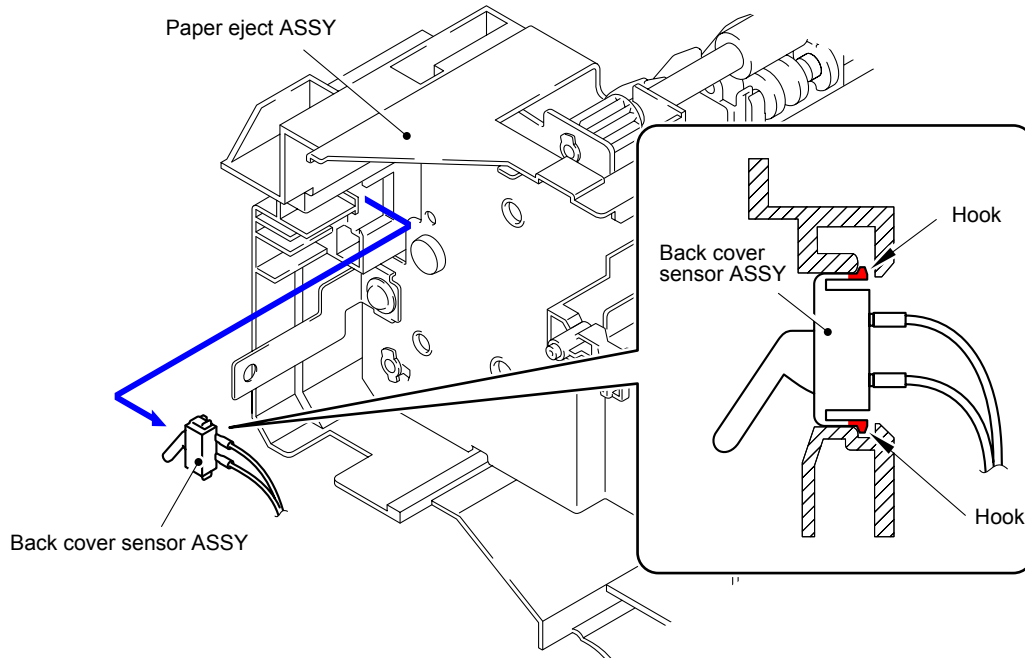


Fig. 3-113

**Harness routing:** Refer to “[9 Paper Eject ASSY](#)”

# 9.38 Power Fan

(1) Disconnect the Connector (CN5) from the High-voltage power supply PCB ASSY.

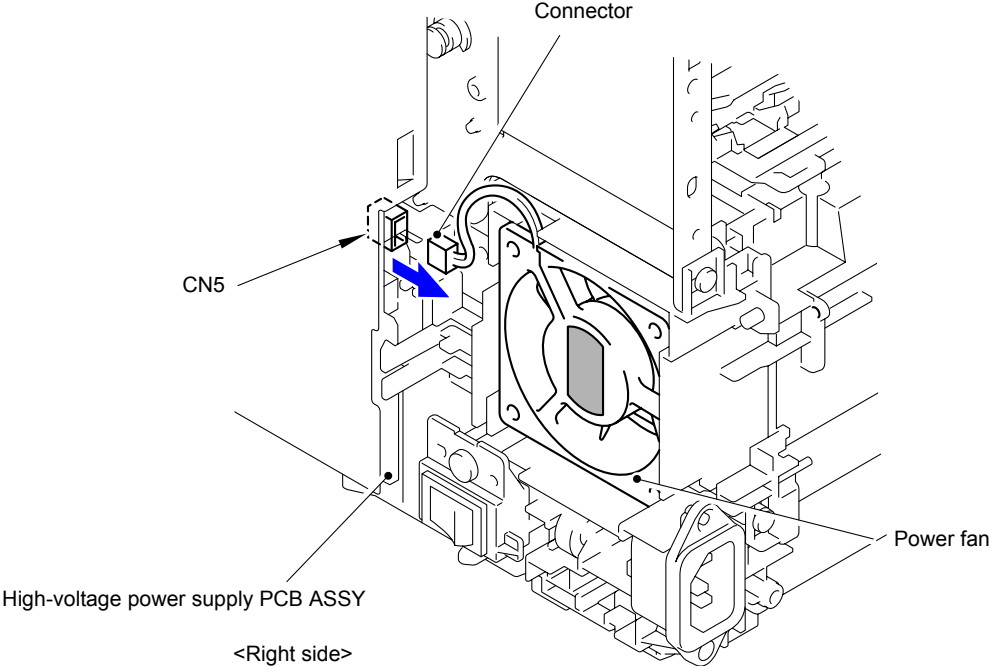


Fig. 3-114

(2) Remove the Power fan from the Base frame unit.

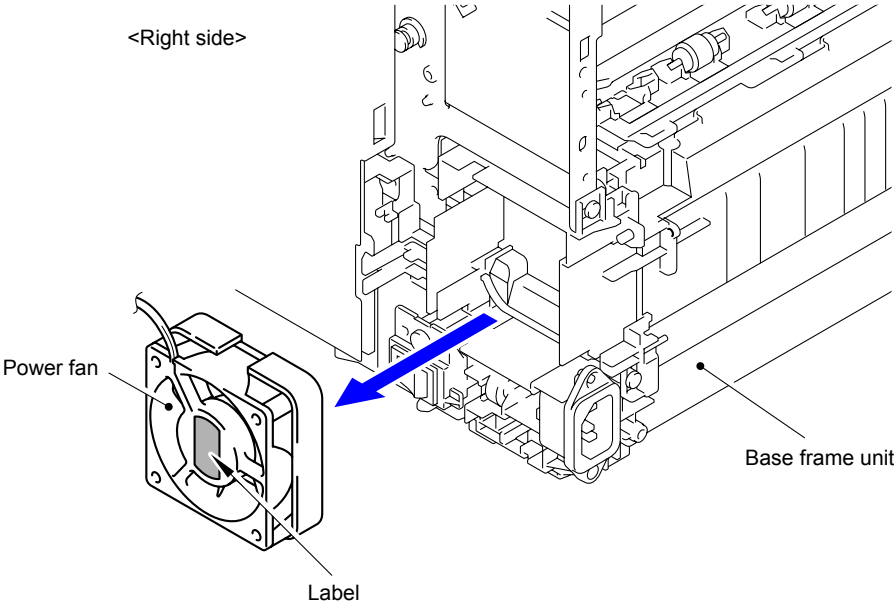
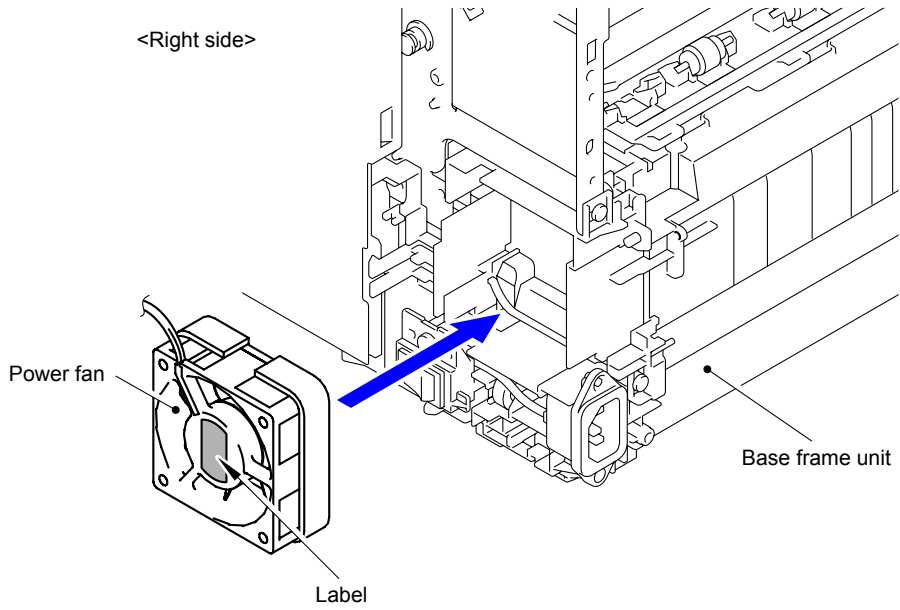


Fig. 3-115

**Assembling Note:**

When assembling the Power fan, be sure to assemble it in a way that the label side faces out.



**Fig. 3-116**



# 9.39 Low-voltage Power Supply Unit

- (1) Remove the two Pins to remove the Back flapper ASSY from the Low-voltage power supply cover.

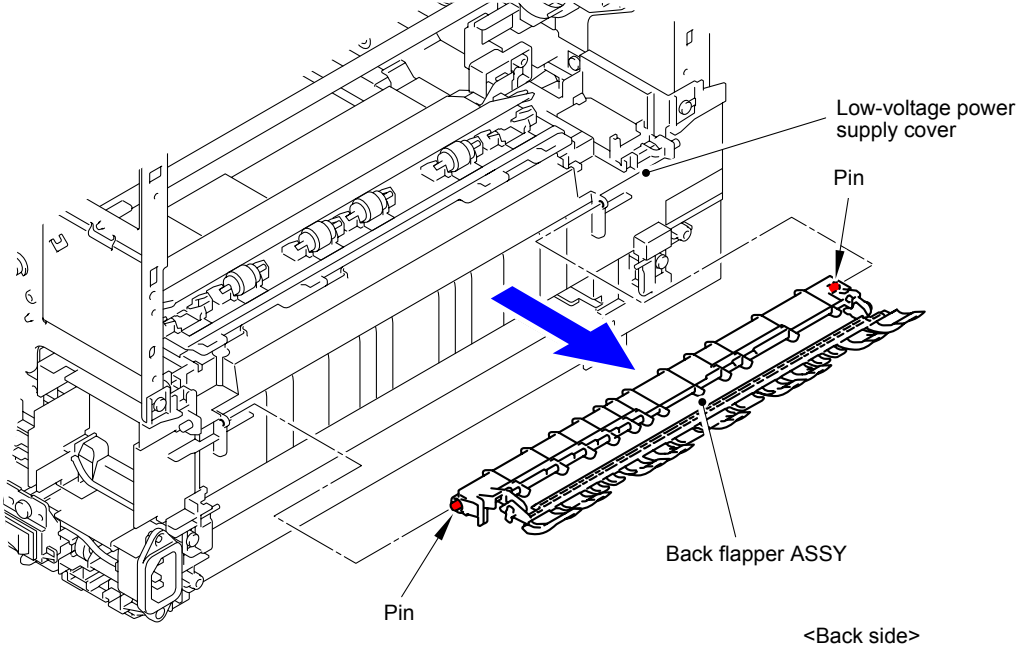


Fig. 3-117

- (2) Release the two Hooks to remove the Switch holder from the Base frame unit.

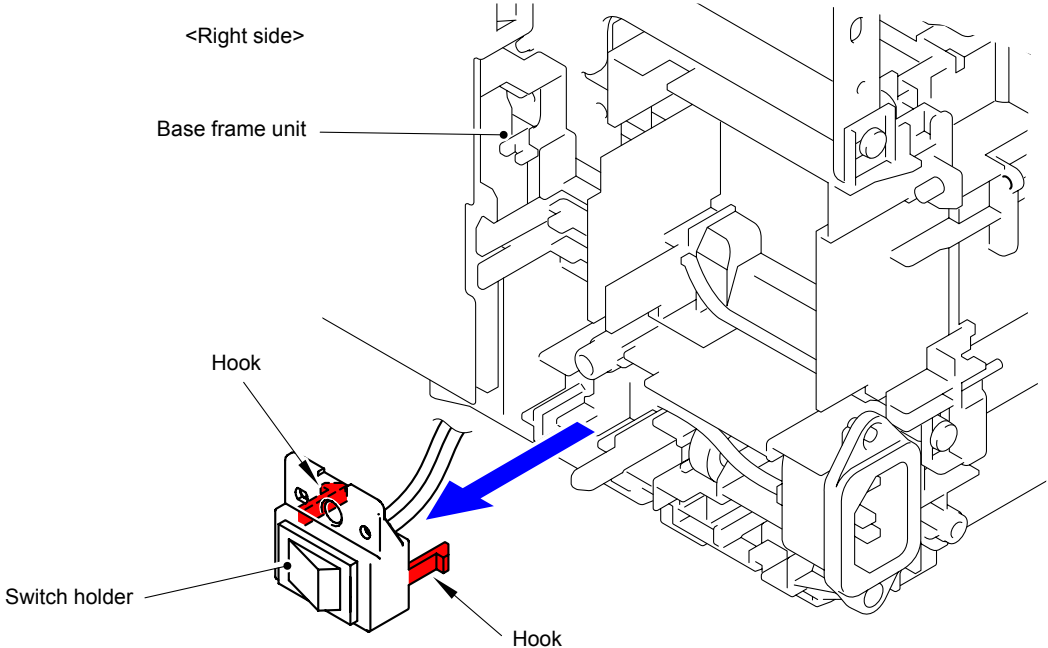


Fig. 3-118

- (3) Remove the Taptite flat B M3x10 screw to remove the AC inlet from the Low-voltage power supply unit.

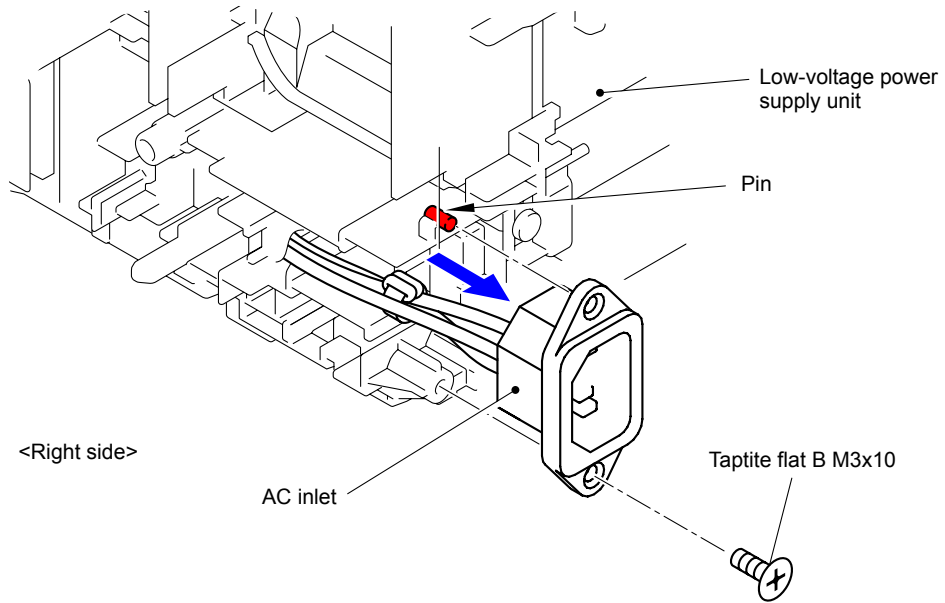


Fig. 3-119

- (4) Remove the screw "a" of the Screw pan (S/P washer) M4x8 from the Low-voltage power supply unit to remove the ground terminal.

**Note:**

When removing the screws of the Screw pan (S/P washer) M4x8, be sure to remove the screw "a" first and then screw "b".

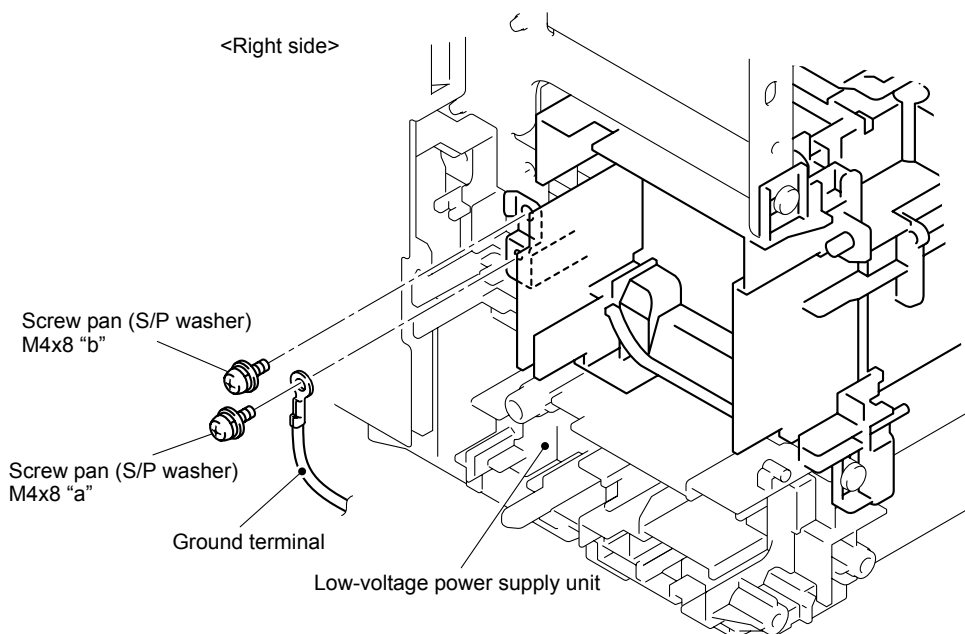


Fig. 3-120

**Assembling Note:**

When assembling the screws of the Screw pan (S/P washer) M4x8, be sure to assemble the screw "b" first and then screw "a".

- (5) Remove the two Taptite cup S M3x8 screws and two Taptite cup B M3x12 screws to remove the Low-voltage power supply unit from the Base frame unit.

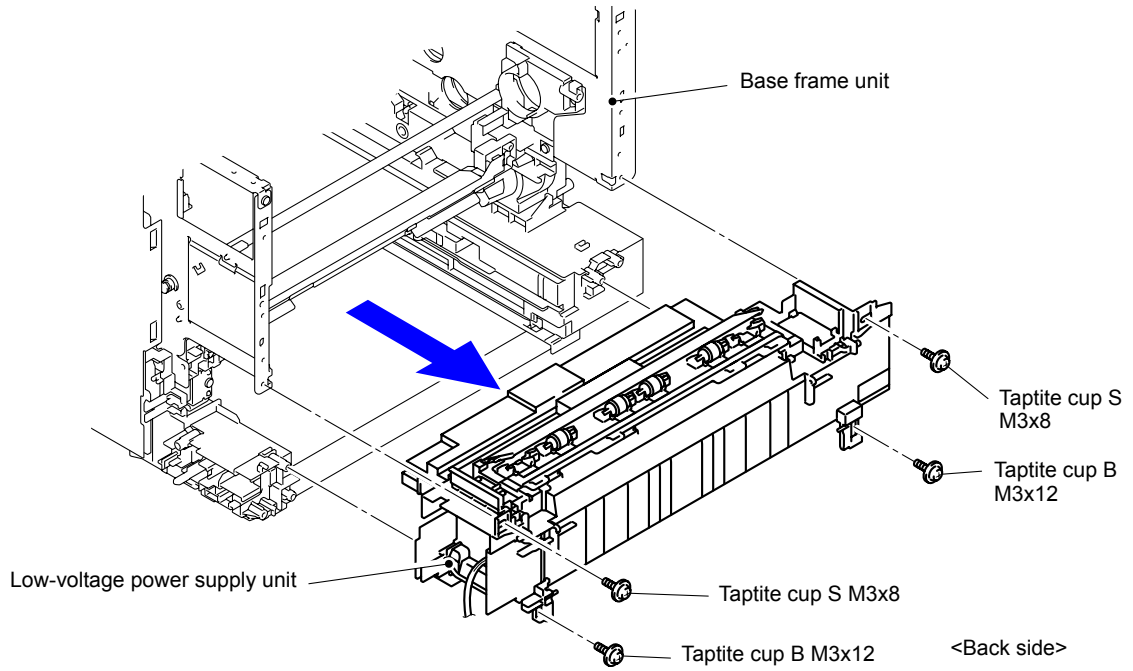


Fig. 3-121

**Harness routing:** Refer to “ **8** Low-voltage Power Supply PCB ASSY”

# 9.40 Paper Eject Sensor PCB ASSY

- (1) Release the Hook to remove the Paper eject sensor PCB ASSY from the Low-voltage power supply cover.

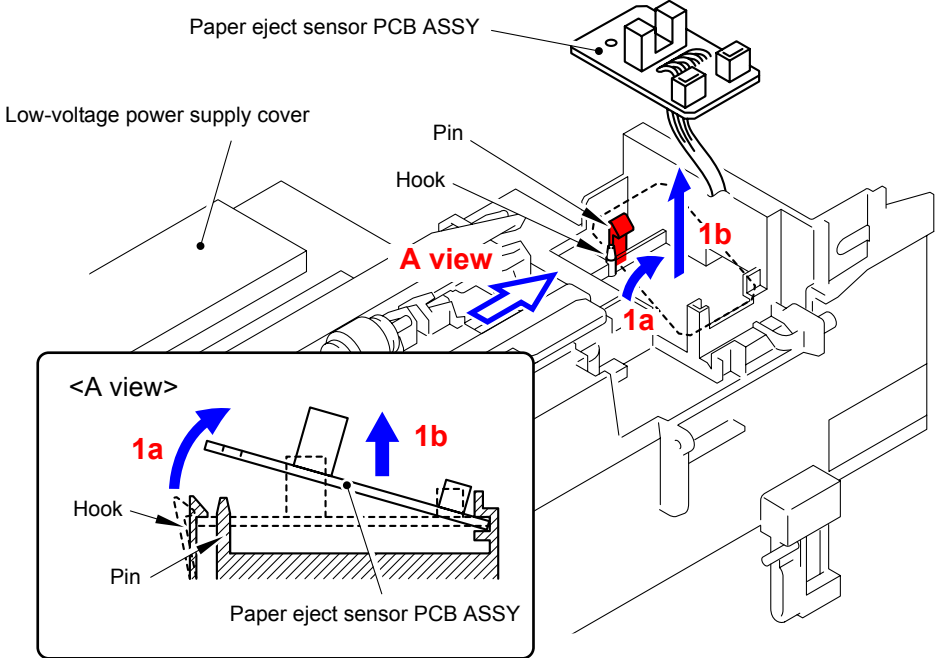


Fig. 3-122

**Harness routing:** Refer to “ [8](#) Low-voltage Power Supply PCB ASSY”

# 9.41 Low-voltage Power Supply PCB ASSY/Inlet Harness ASSY

- (1) Disconnect the Harness from Hooks.
- (2) Remove the four Taptite pan (washer) B M4x12DA screws, one Screw pan (S/P washer) M4x8, and the Low-voltage power supply ground plate, and then remove the Low-voltage power supply plate from the Low-voltage power supply cover.

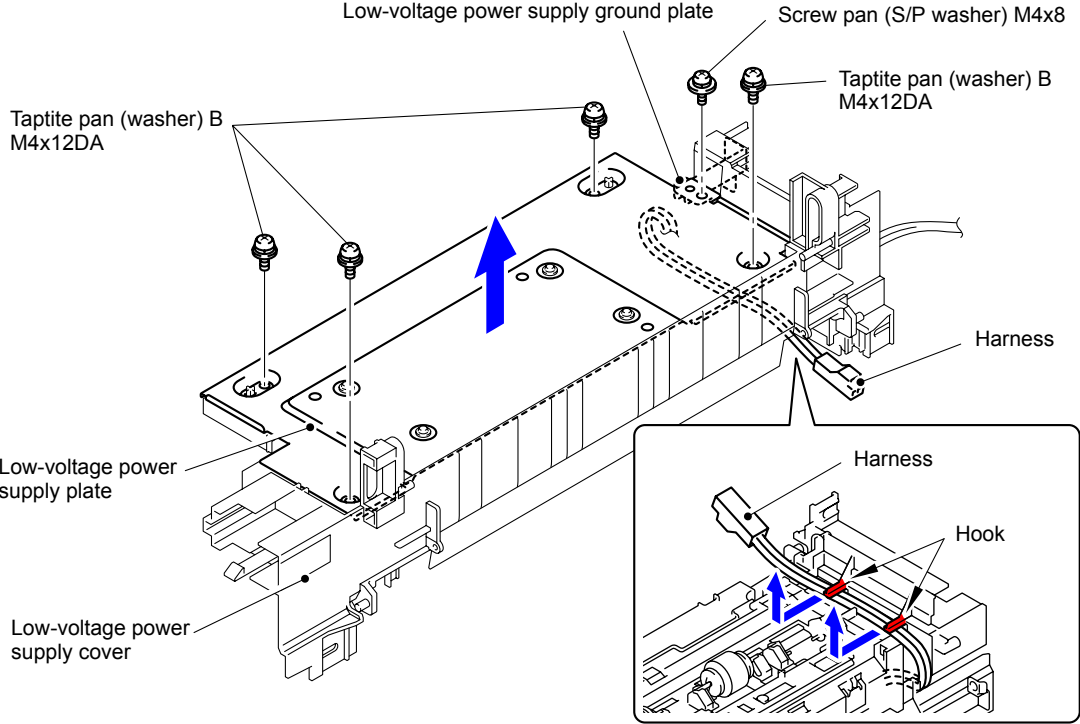


Fig. 3-123

- (3) Disconnect the Connector (CN1) to remove the Inlet harness ASSY from the Low-voltage power supply PCB ASSY.

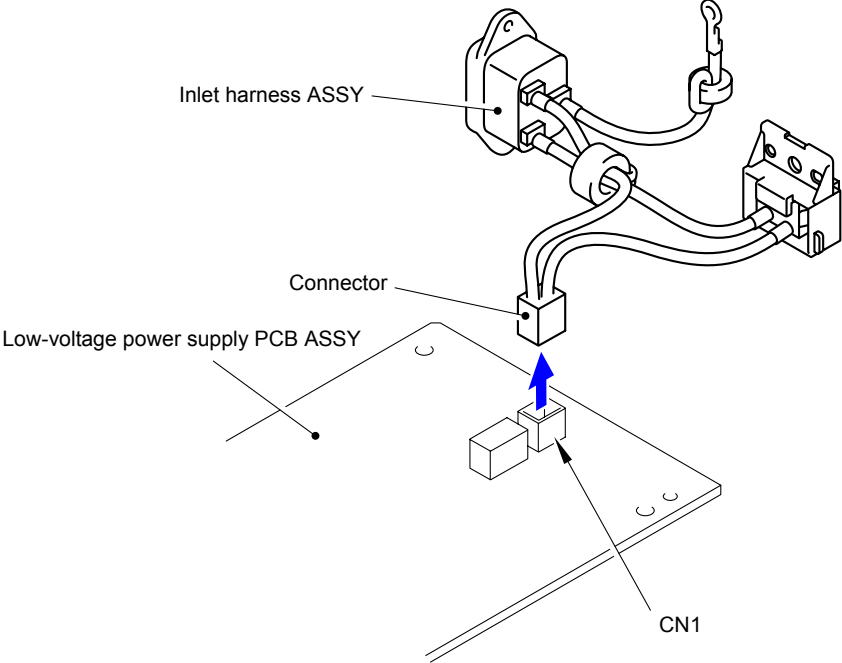
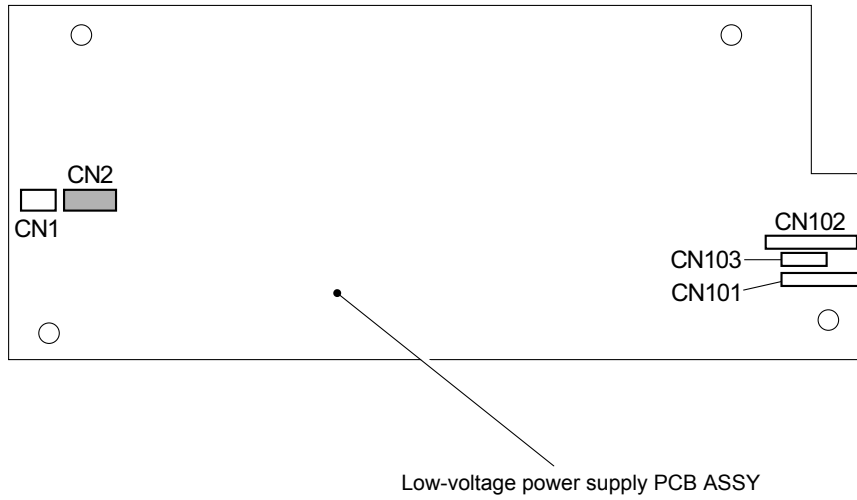


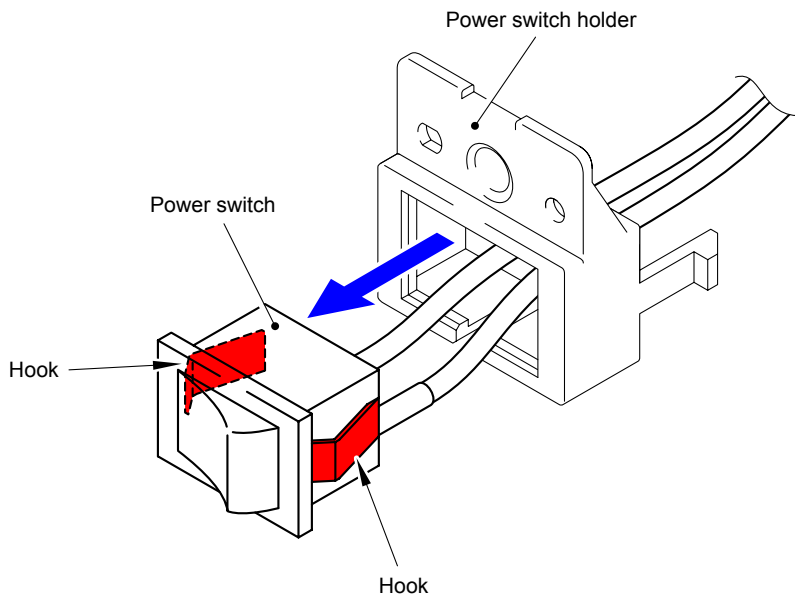
Fig. 3-124

- (4) Disconnect the Connector (CN2) from the Low-voltage power supply PCB ASSY.



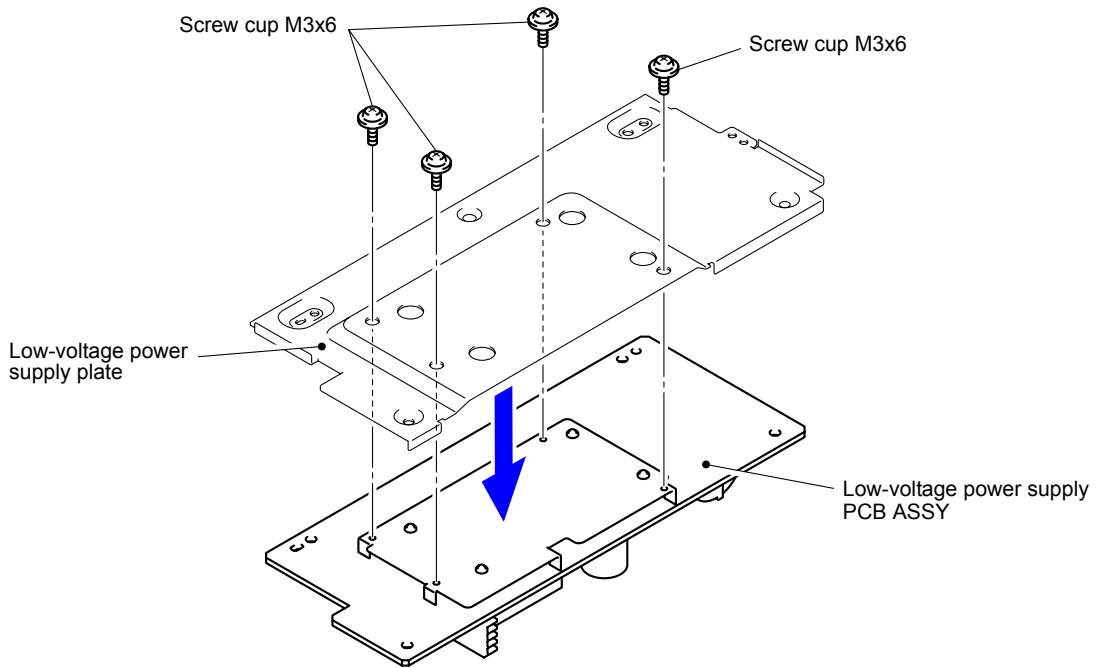
**Fig. 3-125**

- (5) Release the two Hooks to remove the Power switch from the Power switch holder.



**Fig. 3-126**

- (6) Remove the four Screw cup M3x6 screws to remove the Low-voltage power supply PCB ASSY from the Low-voltage power supply plate.



**Fig. 3-127**

# 9.42 Cleaner Pinch Roller Holder

- (1) Remove the two Pins and release the one Hook to remove the Front chute flapper and two Flapper springs from the Low-voltage power supply unit.

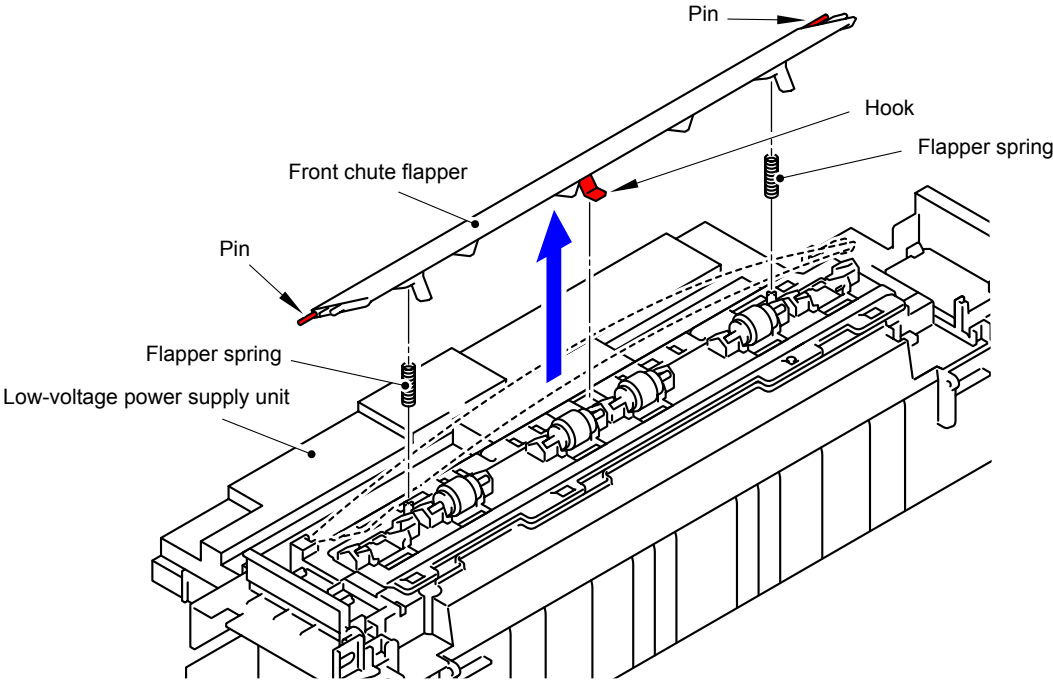


Fig. 3-128

- (2) Press the stopper, and then slide the Cleaner pinch roller to remove it from the Low-voltage power supply unit.

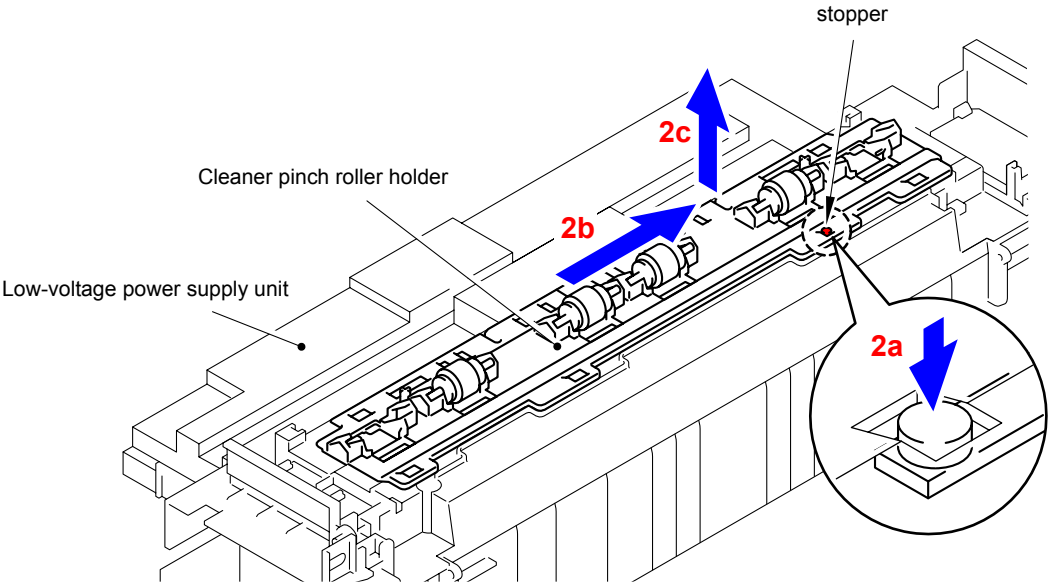
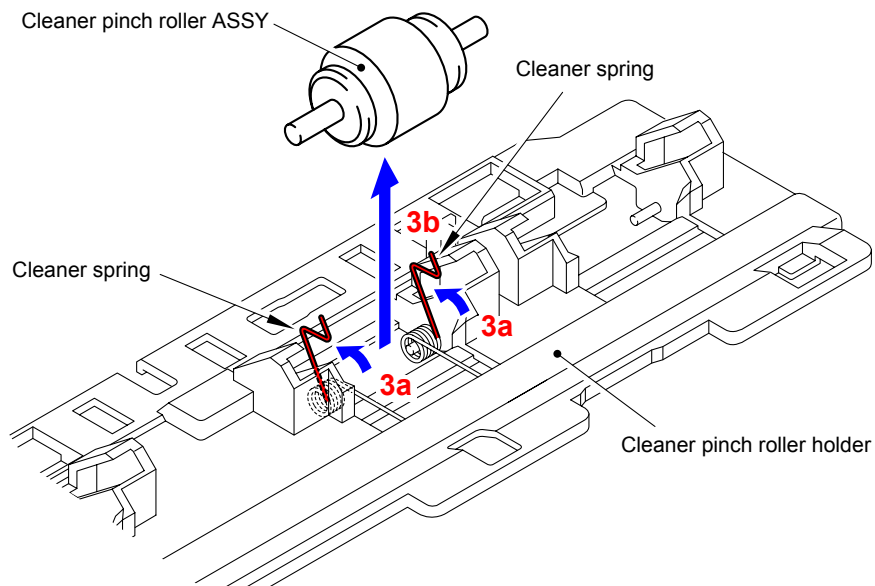


Fig. 3-129



- (3) Hold down the Cleaner spring of the Cleaner pinch roller holder to remove the Cleaner pinch roller ASSY.
- (4) Remove the other three Cleaner pinch roller ASSY in the same way.



**Fig. 3-130**

# 9.43 Registration Mark Sensor Holder ASSY/ Shutter Solenoid

(1) Disconnect the Connector (CN8) from the High-voltage power supply PCB ASSY.

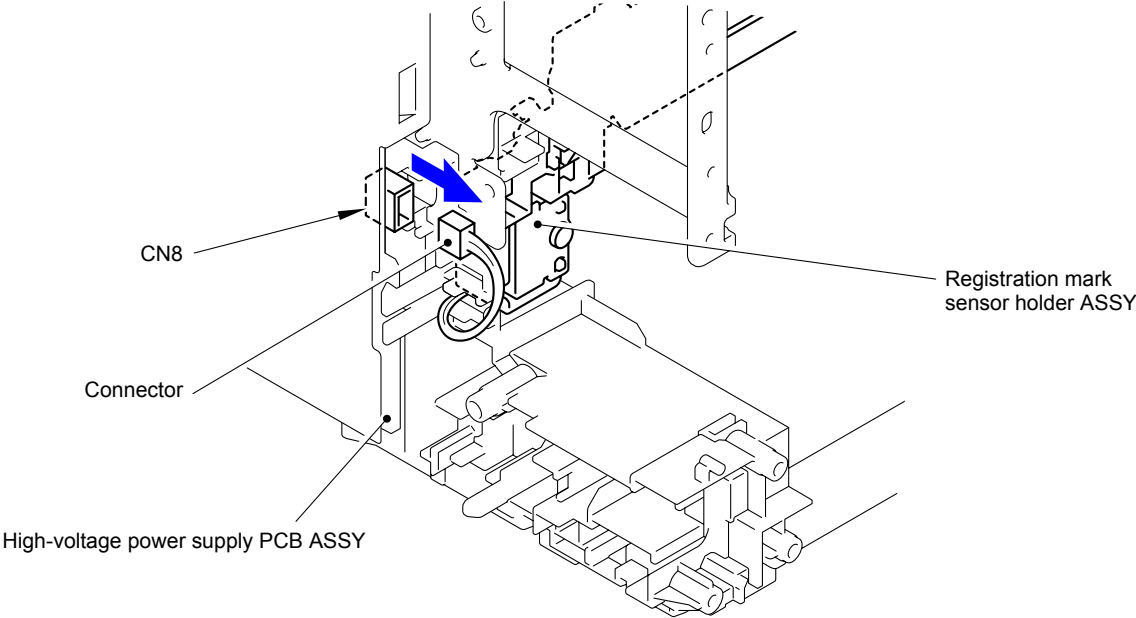


Fig. 3-131

(2) Remove the Core from the Harness of the Registration mark R PCB and Belt temperature sensor.

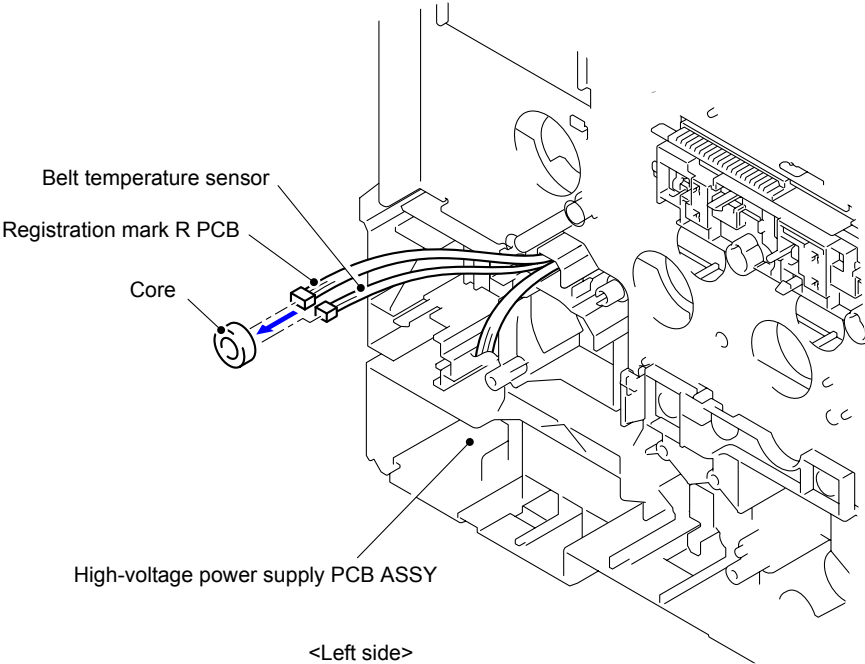


Fig. 3-132

- (3) Remove the two Taptite bind B M3x10 screws to remove the Registration mark sensor holder ASSY from the Base frame unit.

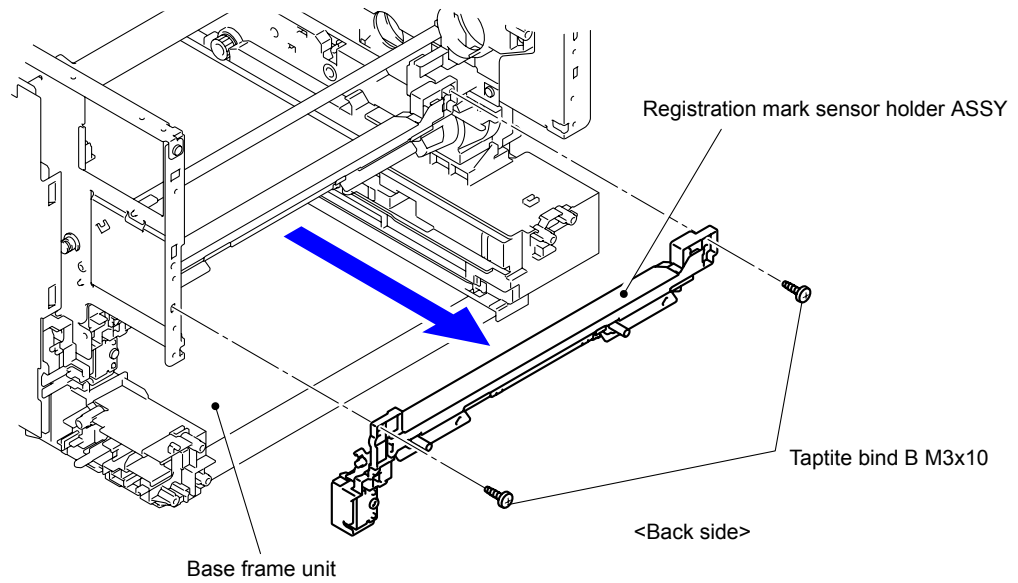


Fig. 3-133

- (4) Remove the Taptite bind B M3x10 screw to remove the Shutter solenoid from the Registration mark sensor holder ASSY.

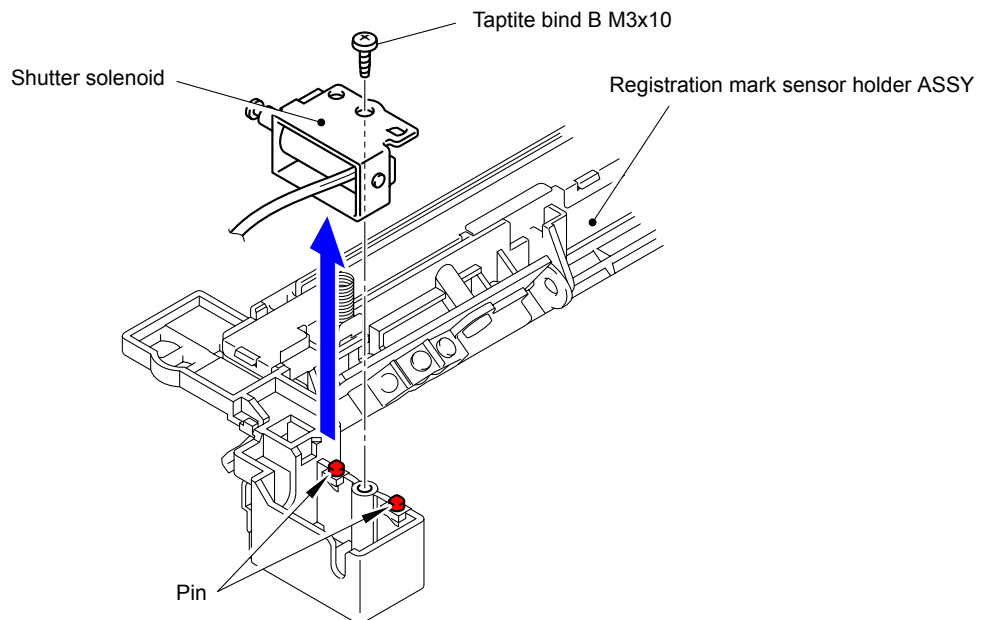
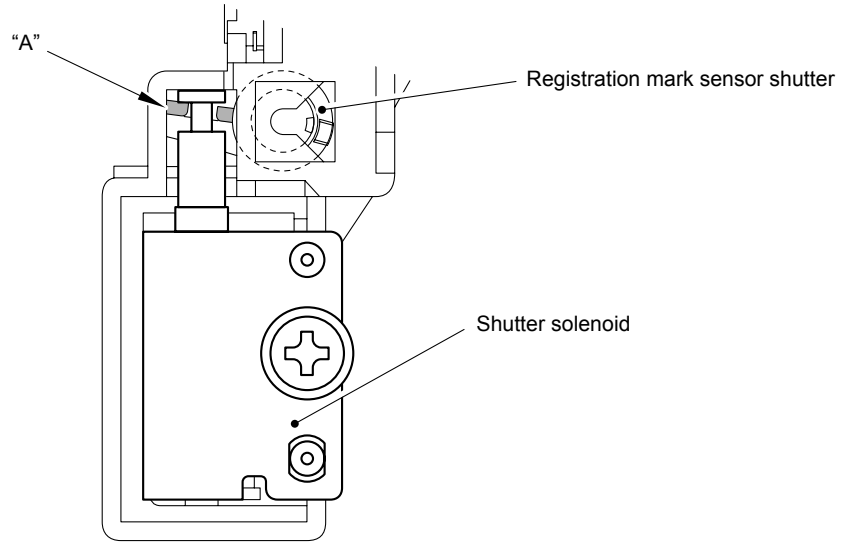


Fig. 3-134

**Assembling Note:**

Be sure to firmly insert the tip of the Pin of the Shutter solenoid into "A" of the Registration mark sensor shutter.



**Fig. 3-135**

**Harness routing:** Refer to "[10 Registration Mark Sensor Holder ASSY](#)"

# 9.44 MP Paper Empty/Registration Front Sensor PCB ASSY

- (1) Press "A" to release the Hook and then remove the MP upper frame cover from the MP upper cover ASSY.

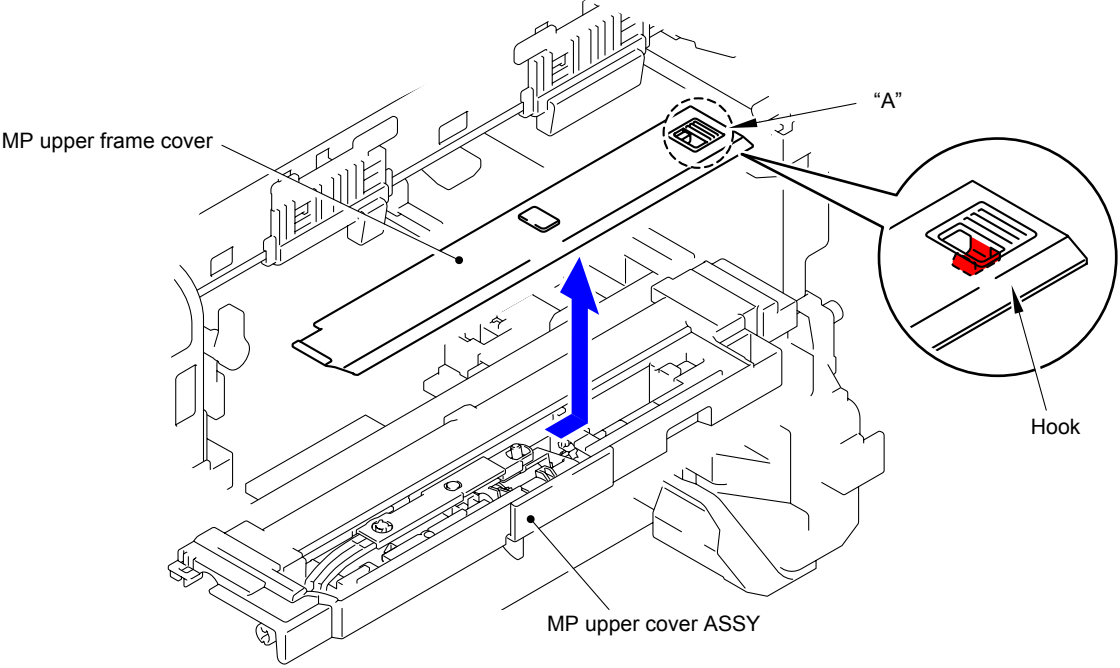


Fig. 3-136

- (2) Remove the MP lift arm B from the MP upper cover ASSY.

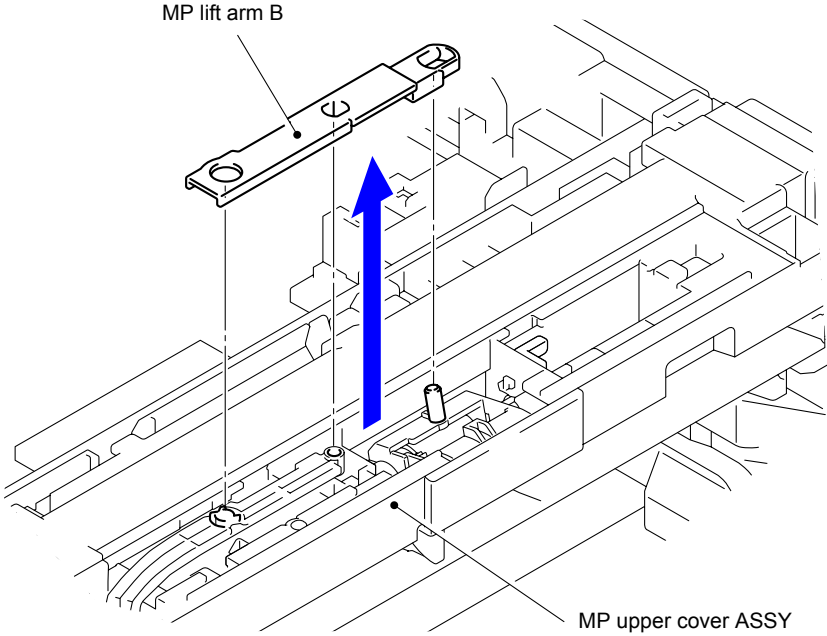
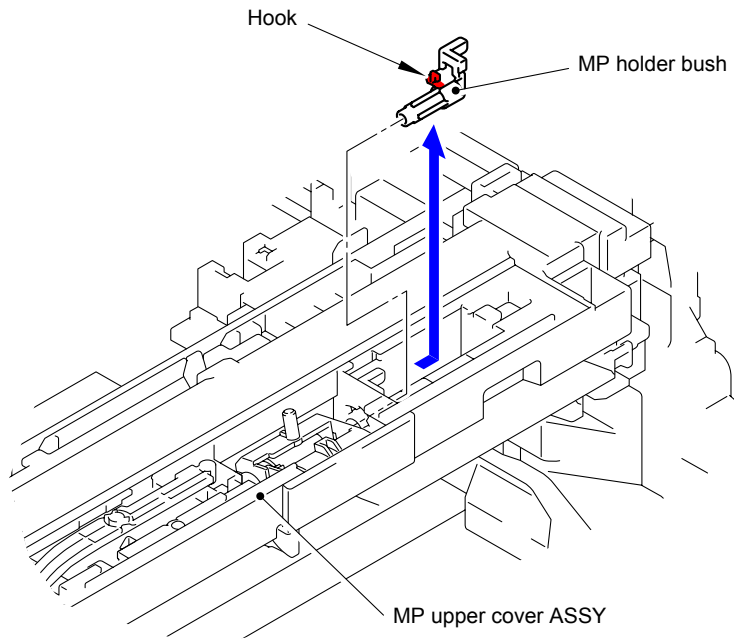


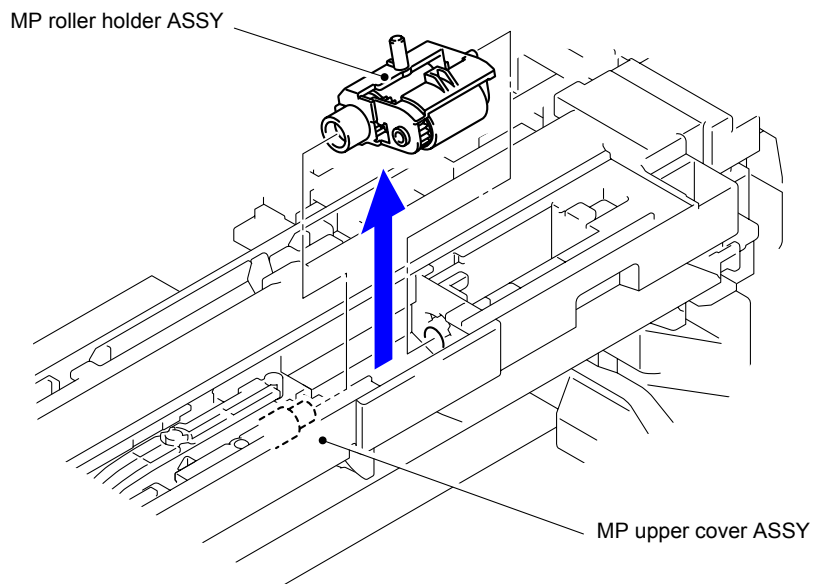
Fig. 3-137

- (3) Release the Hook to remove the MP holder bush from the MP upper cover ASSY.



**Fig. 3-138**

- (4) Remove the MP roller holder ASSY from the MP upper cover ASSY.



**Fig. 3-139**

- (5) Remove the Registration gear from the Base frame unit.

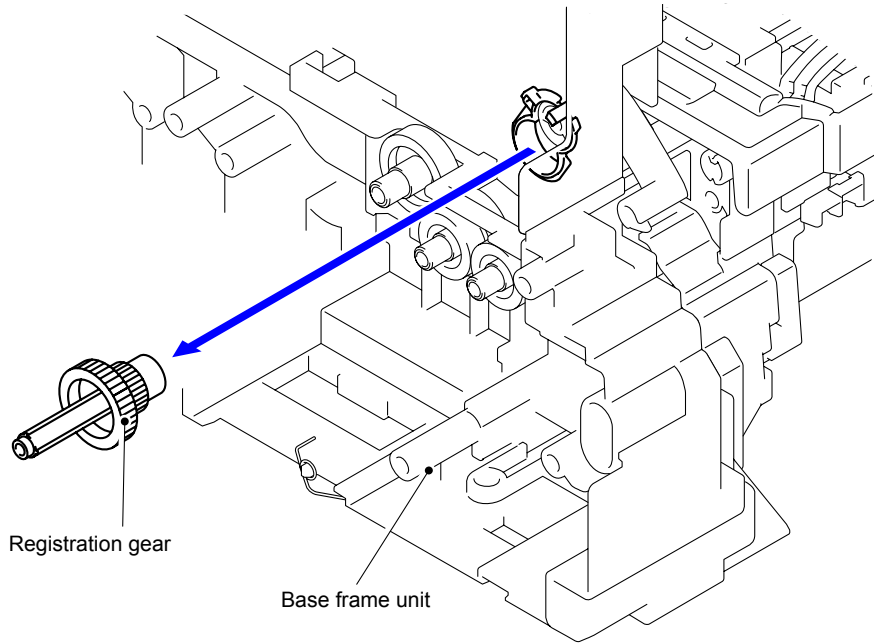


Fig. 3-140

**Gear position:** Refer to "PF ASSY."

- (6) Remove the Pinch roller drive gear from the Base frame unit.

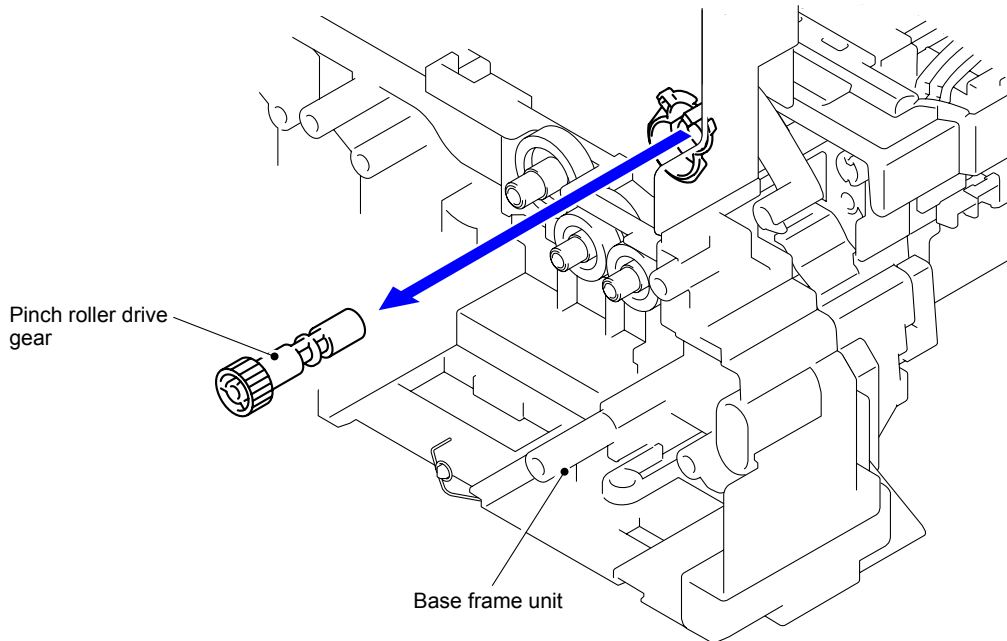


Fig. 3-141

**Gear position:** Refer to "PF ASSY."

- (7) Release the Hook to remove the Registration/Pinch roller gear bush from the Base frame unit.

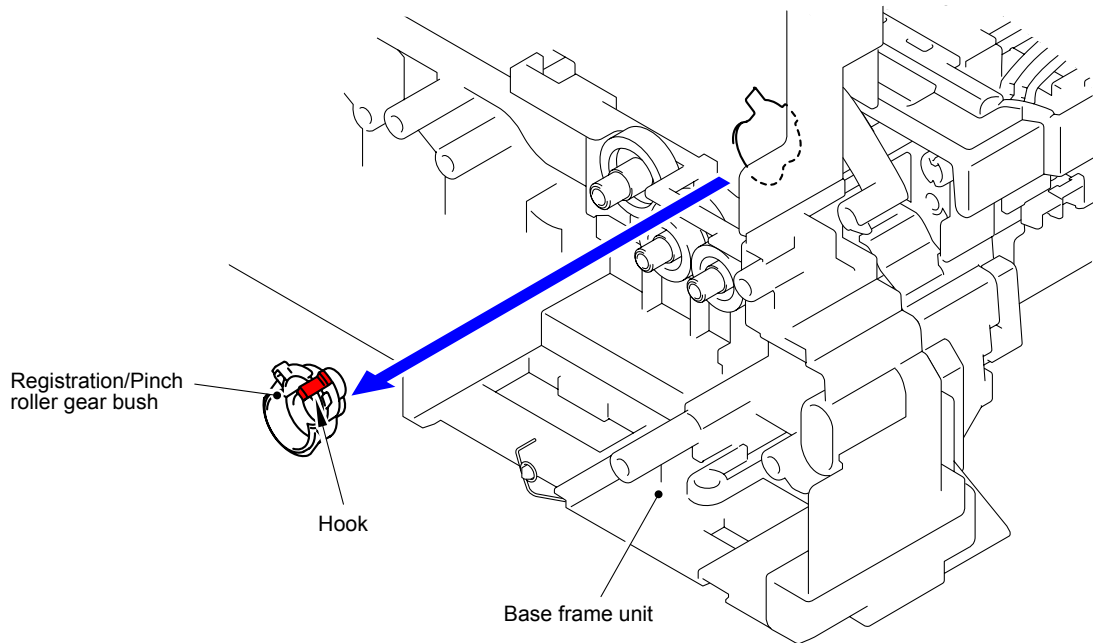


Fig. 3-142

**Gear position:** Refer to "PF ASSY."

- (8) Remove the two Taptite bind B M3x10 screws. Slide the MP drive shaft as shown in the figure. Remove the MP upper cover ASSY from the PF ASSY.

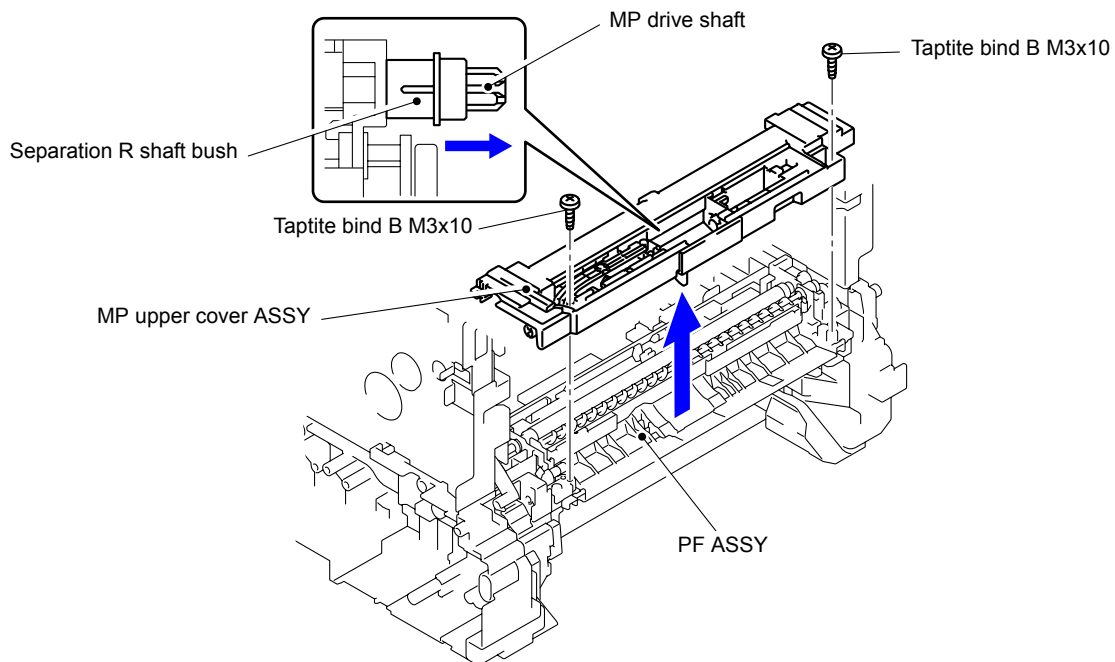
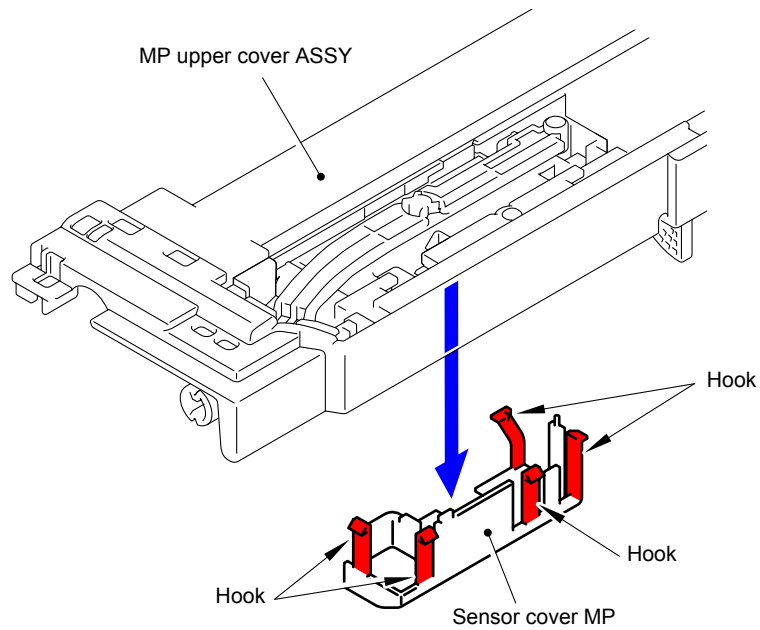


Fig. 3-143

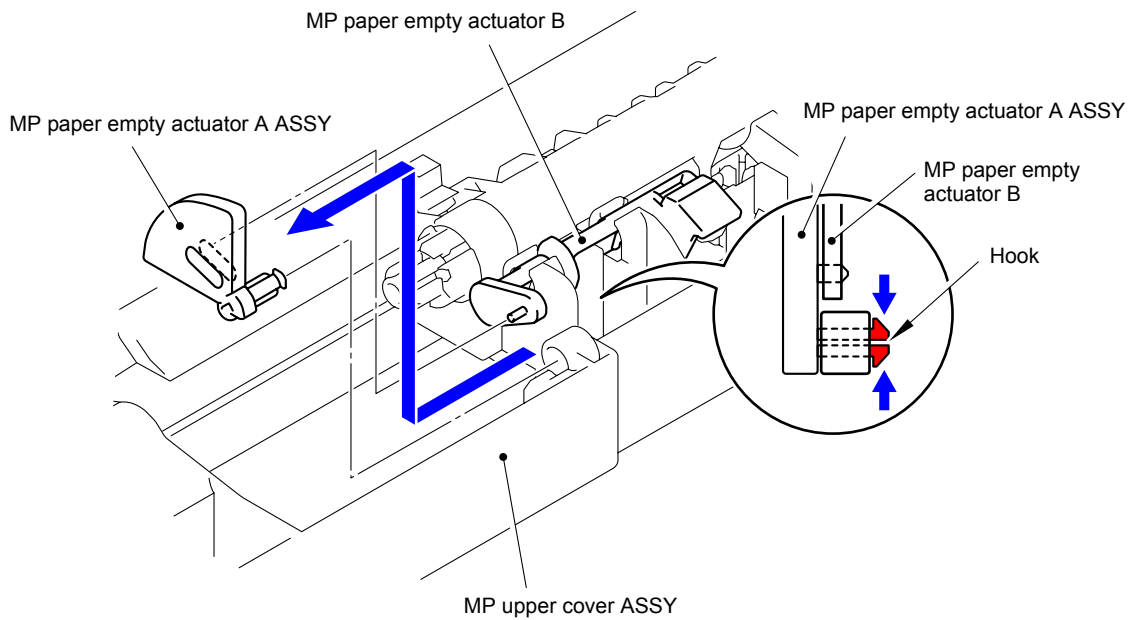


(9) Release the five Hooks to remove the Sensor cover MP from the MP upper cover ASSY.



**Fig. 3-144**

(10) Release the two Hooks to remove the MP paper empty actuator A ASSY from the MP upper cover ASSY.



**Fig. 3-145**

(11) Release the Hook to remove the MP paper empty actuator B from the MP upper cover ASSY.

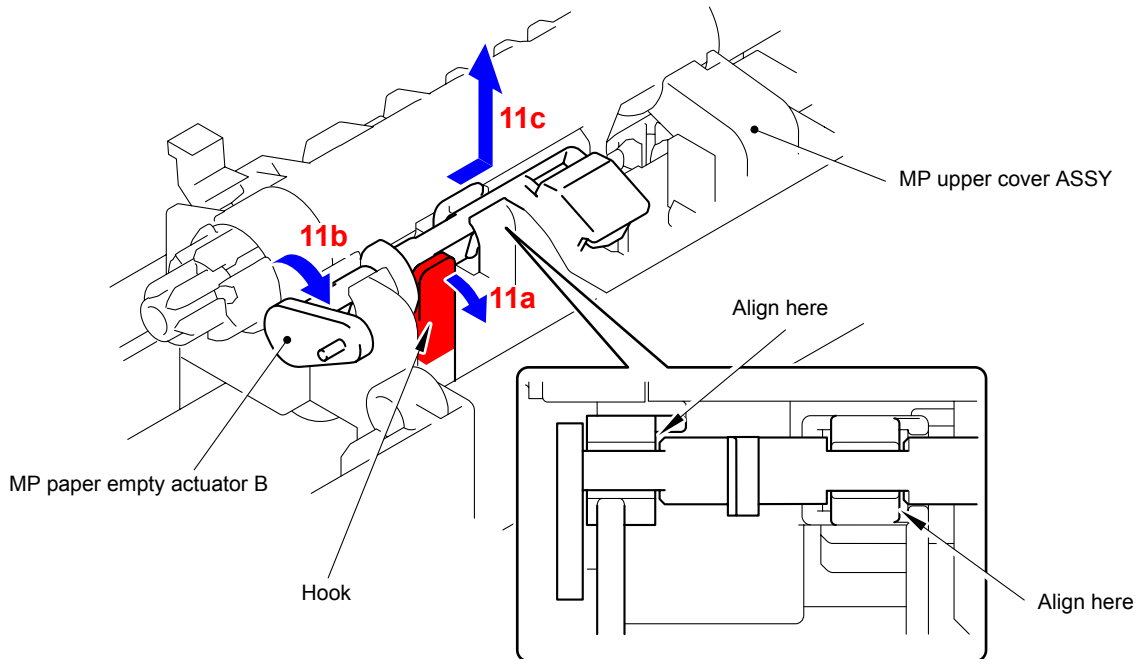


Fig. 3-146

(12) Release the Hook to remove the Separation R shaft bush from the MP drive shaft.

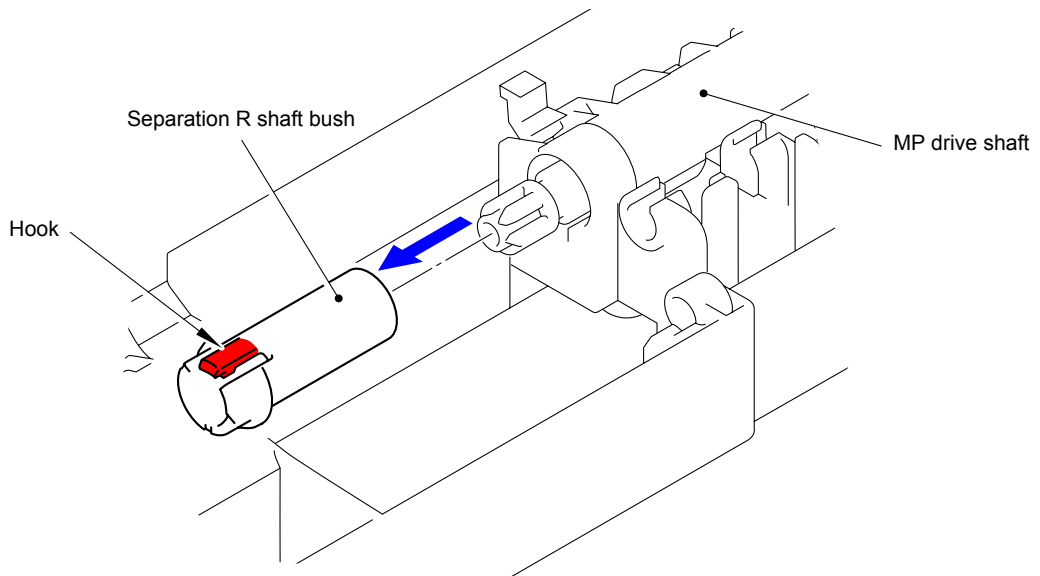


Fig. 3-147

(13) Remove the MP registration front actuator spring from the MP registration front actuator.

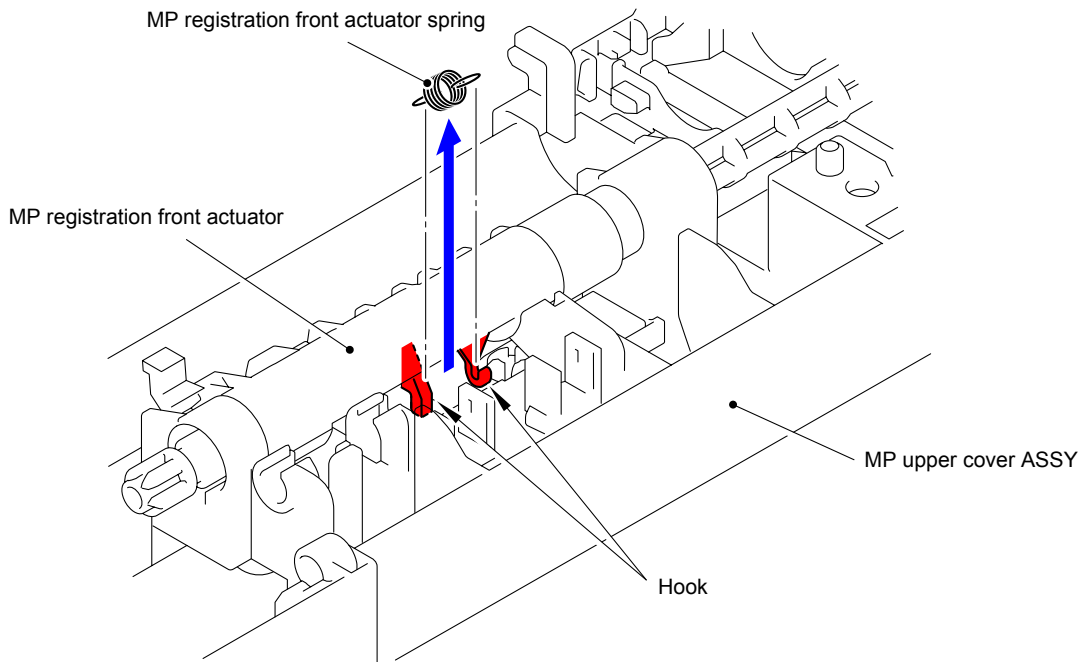


Fig. 3-148

(14) Take out the MP drive shaft, and then remove the MP registration front actuator from the MP upper cover ASSY.

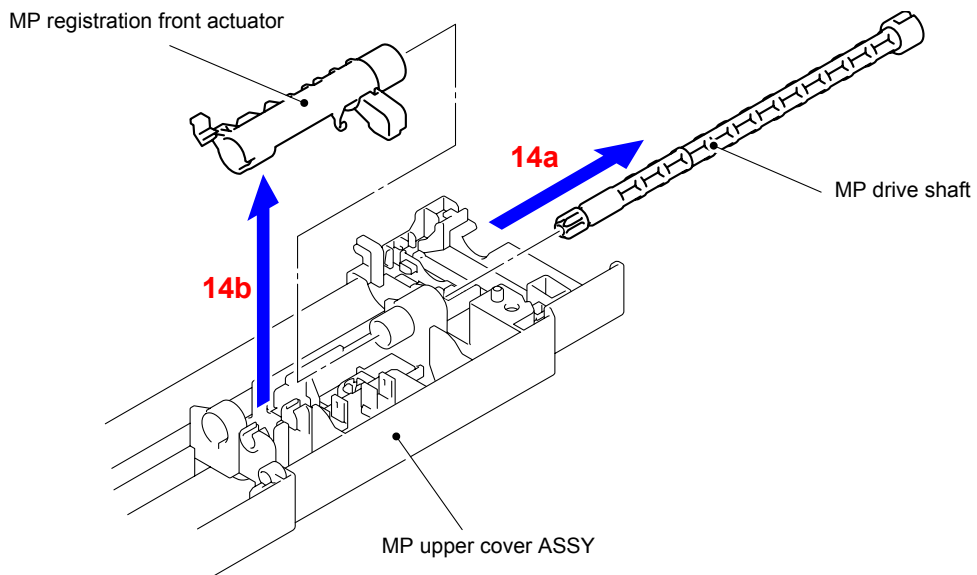
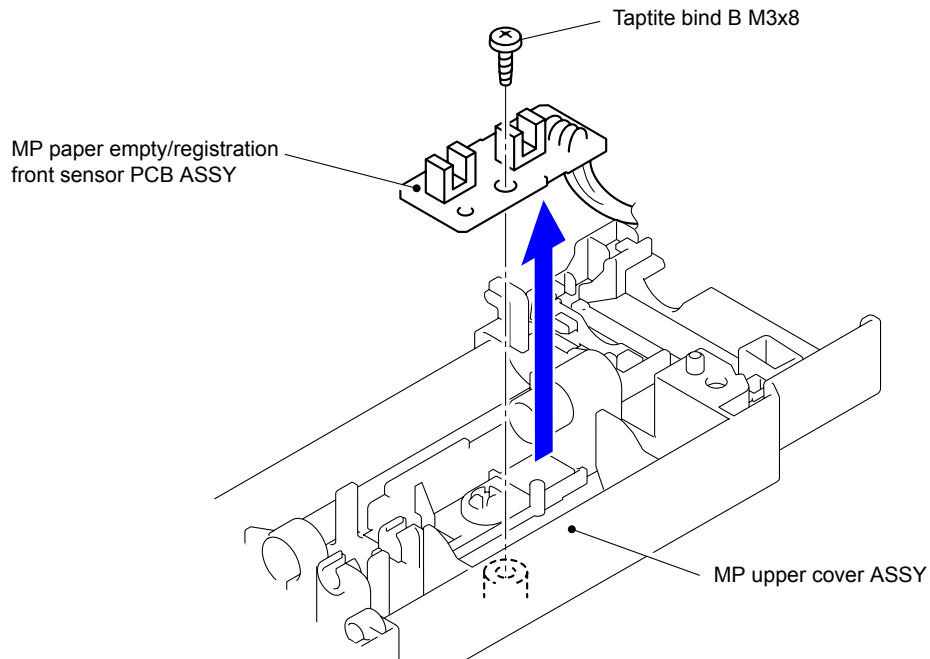


Fig. 3-149

- (15) Disconnect the wiring of the MP paper empty/registration front sensor PCB ASSY.
- (16) Remove the Taptite bind B M3x8 screw, and then remove the MP paper empty/registration front sensor PCB ASSY from the MP upper cover ASSY.



**Fig. 3-150**

**Harness routing:** Refer to “[11](#) MP Paper Empty/Registration Front Sensor PCB ASSY”

## 9.45 PF ASSY

- (1) Push the T1 lift arm to the back to remove "B" of the Roller holder ASSY from "A" of the T1 lift arm.

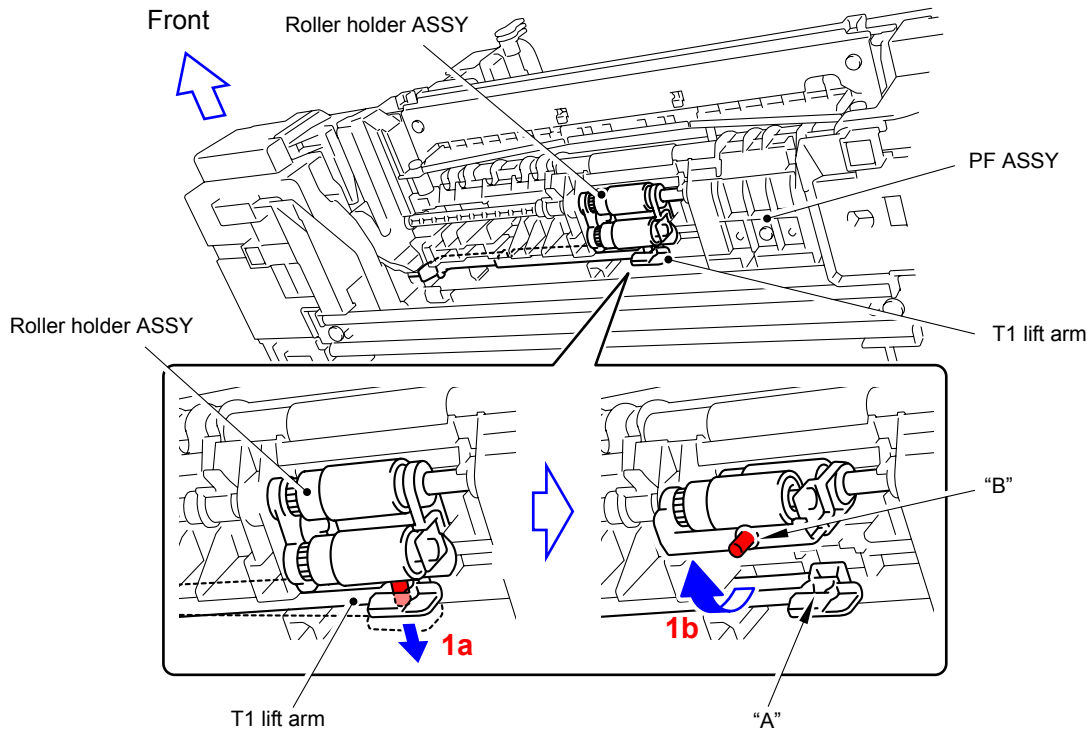


Fig. 3-151

- (2) Slide the Roller holder ASSY in the direction of the arrow 2 to remove it from the "C" of the PF ASSY.
- (3) Slide the Roller holder ASSY in the direction of the arrow 3a and 3b in this order to remove it.

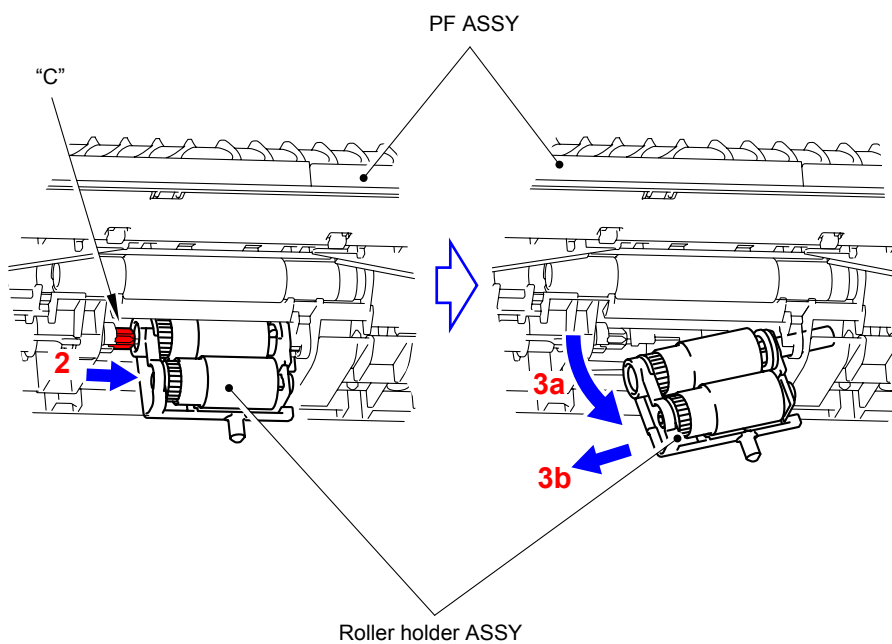
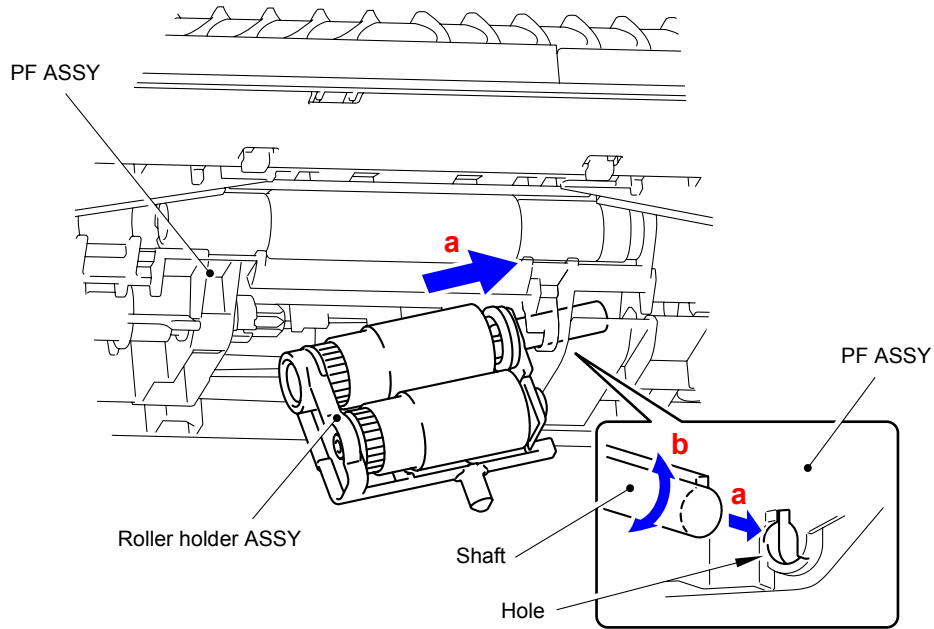


Fig. 3-152

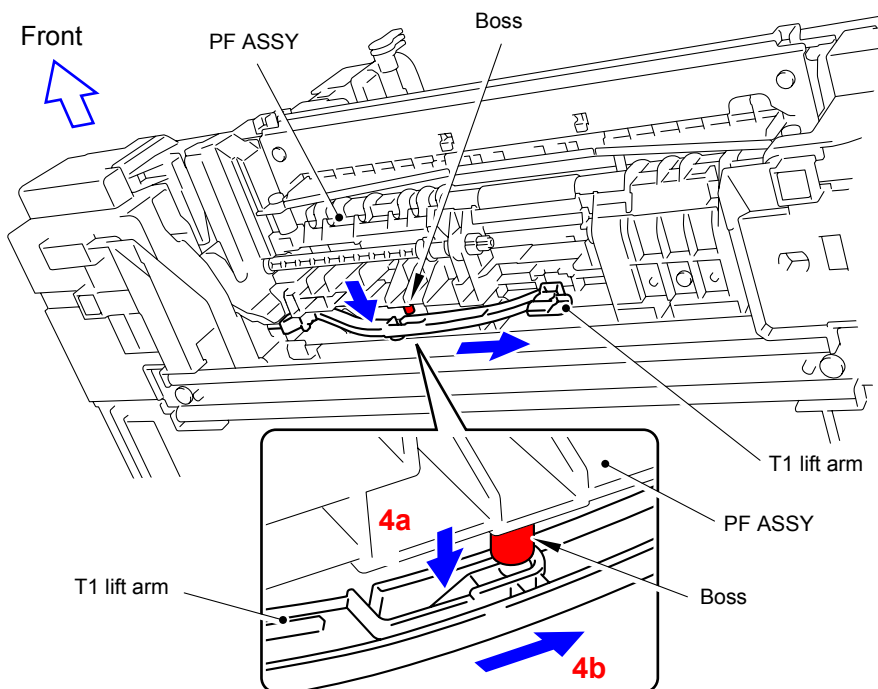
**Assembling Note:**

Align the Shaft of the Roller holder ASSY to the hole of the PF ASSY and insert it into the hole.



**Fig. 3-153**

- (4) Move the T1 lift arm in the direction of the arrow 4b as bending it in the direction of the arrow 4a to remove it from the Boss of the PF ASSY.



**Fig. 3-154**

- (5) Remove the Shoulder screw from the PF ASSY.
- (6) Remove the two Taptite bind B M4x12 screws, then shift the PF ASSY to the right, and remove it from the Base frame unit.

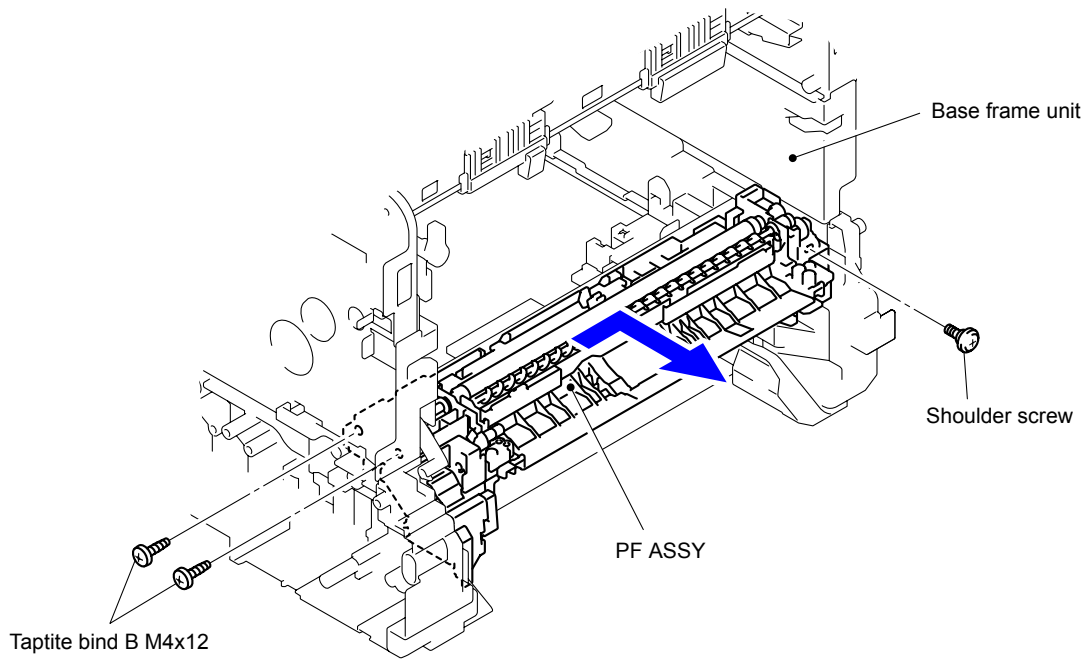


Fig. 3-155

**Harness routing:** Refer to "12 PF ASSY"

## 9.46 T1 Registration Front/Rear Sensor PCB ASSY

- (1) Disconnect the wiring of the T1 registration front/rear sensor PCB ASSY.
- (2) Remove the Taptite bind B M3x10 screw to remove the T1 registration front/rear sensor PCB holder from the PF ASSY.

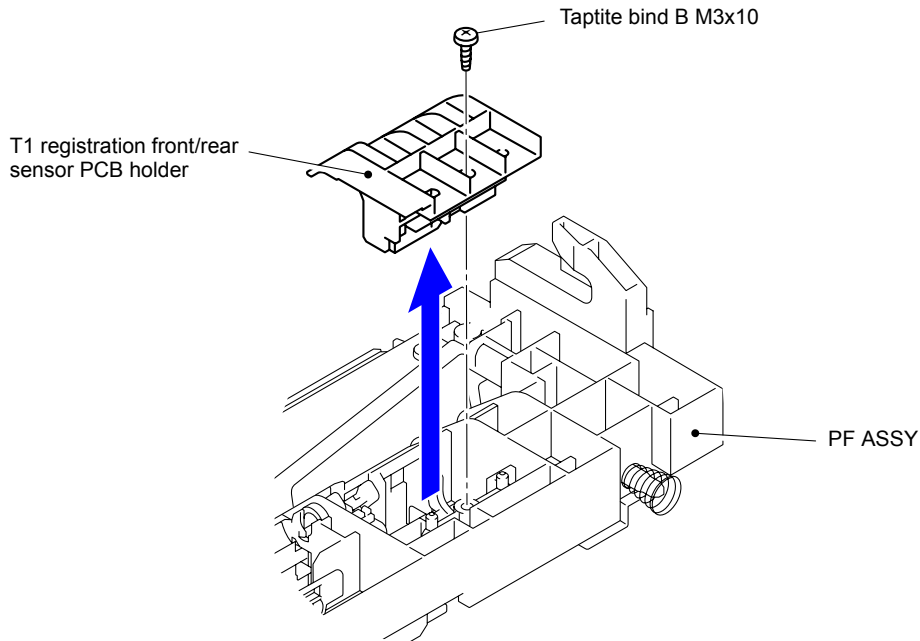


Fig. 3-156

- (3) Release the three Hooks to remove the T1 registration front/rear sensor PCB ASSY from the T1 registration front/rear sensor PCB holder.

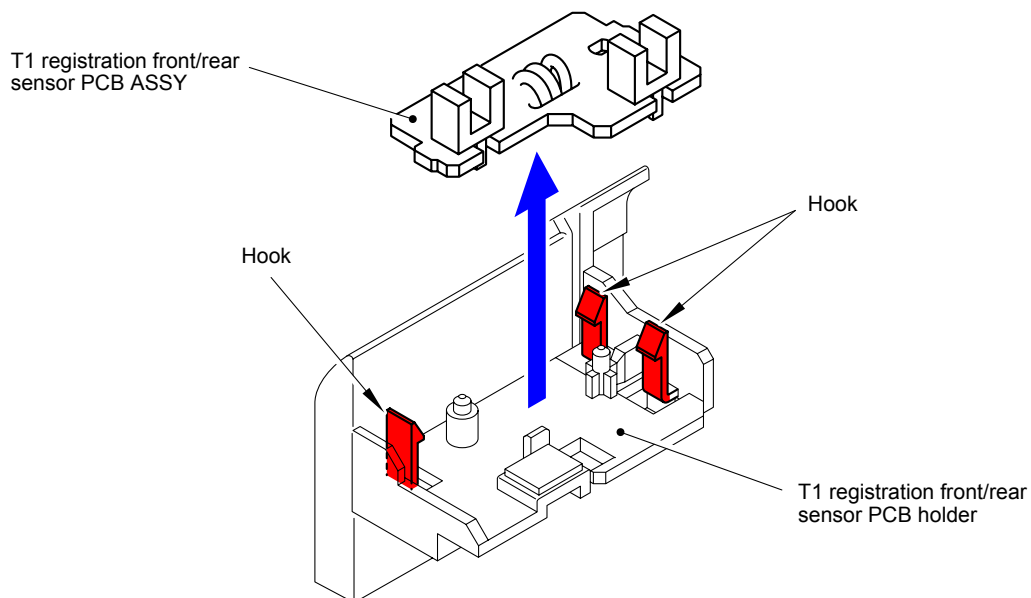


Fig. 3-157

**Harness routing:** Refer to " [12 PF ASSY](#) "



## 9.47 MP Sector Solenoid

- (1) Disconnect the wiring of the MP sector solenoid.
- (2) Remove the Taptite bind B M3x8 screw. Remove the MP sector solenoid and Solenoid spring MP from the PF ASSY.

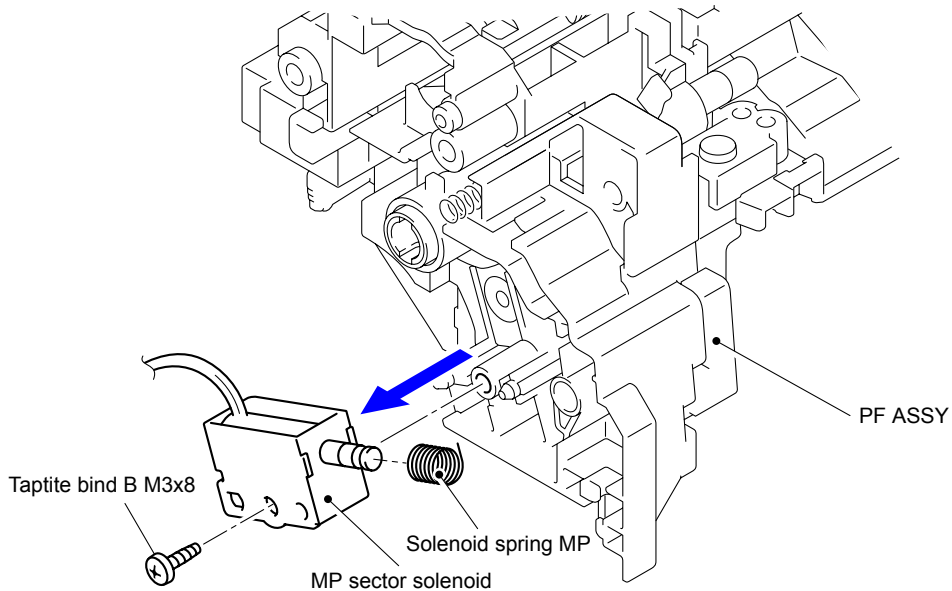


Fig. 3-158

### Assembling Note:

When assembling the MP sector solenoid, be sure to assemble it as shown in the figure below.

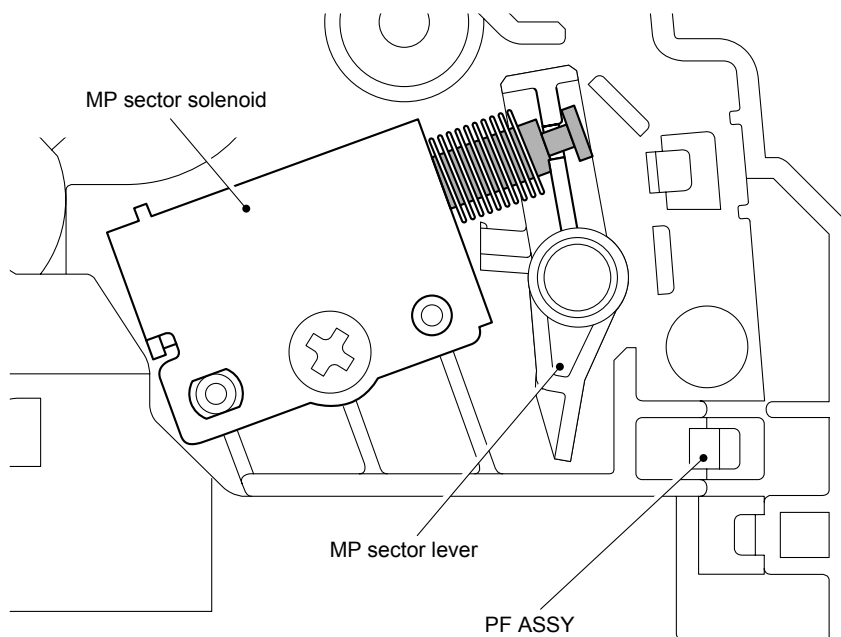


Fig. 3-159

**Harness routing:** Refer to “[12 PF ASSY](#)”

## 9.48 T1 Paper Edge Sensor PCB ASSY/ T1 Paper Edge Actuator/ T1 Paper Edge Actuator Spring

- (1) Remove the three Taptite bind B M3x10 screws of the Pinch roller shaft sub ASSY from the MP drive frame.
- (2) Remove "A" of the Registration roller ground wire.
- (3) Remove the MP drive frame from the PF ASSY.

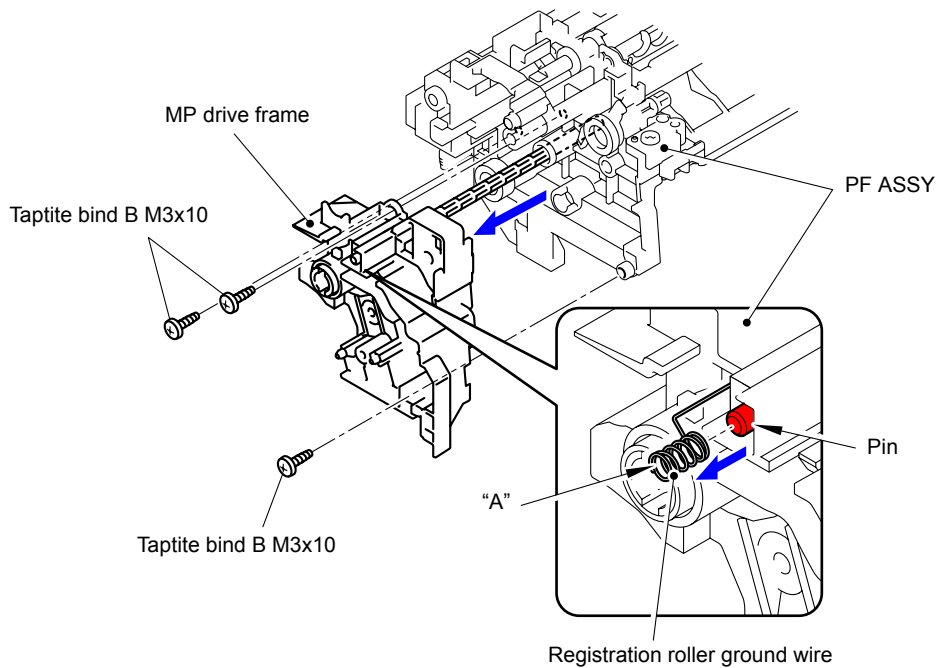


Fig. 3-160

- (4) Release the Hook to remove the Separation R shaft bush from the T1 drive shaft gear Z17M07.

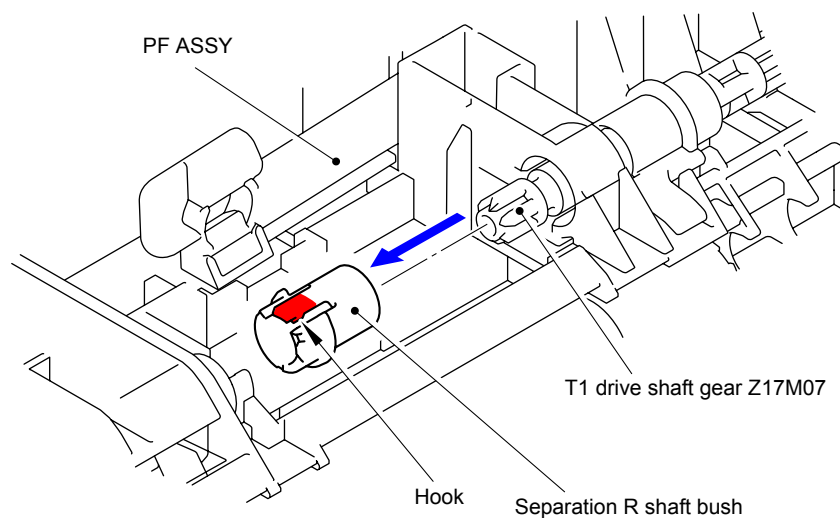


Fig. 3-161

- (5) Remove the T1 paper edge actuator spring from the Hook of the PF ASSY and the Hook of the T1 paper edge actuator.

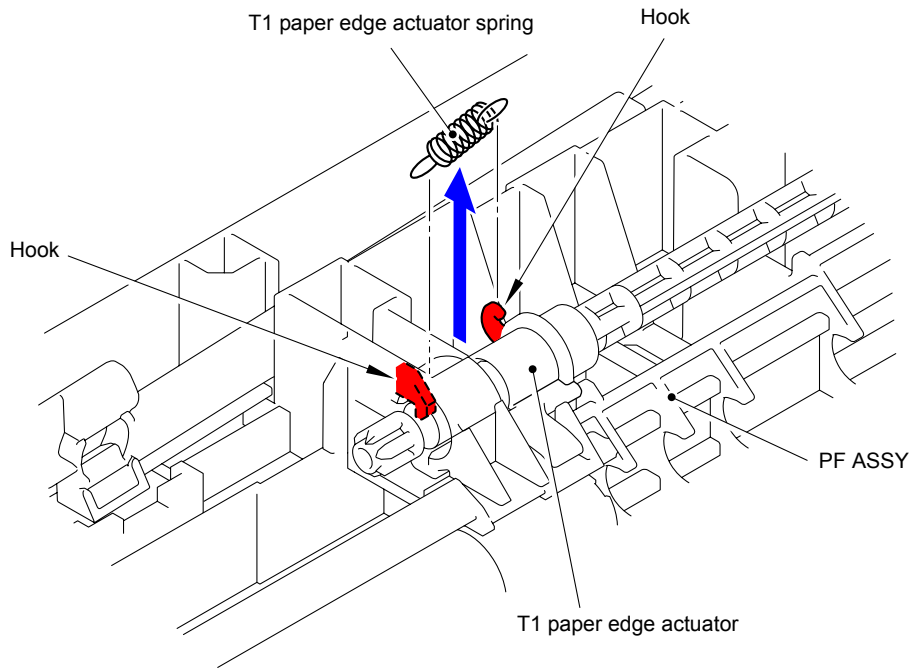


Fig. 3-162

- (6) Take out the T1 drive shaft gear Z17M07 from the PF ASSY, and then remove the T1 paper edge actuator.

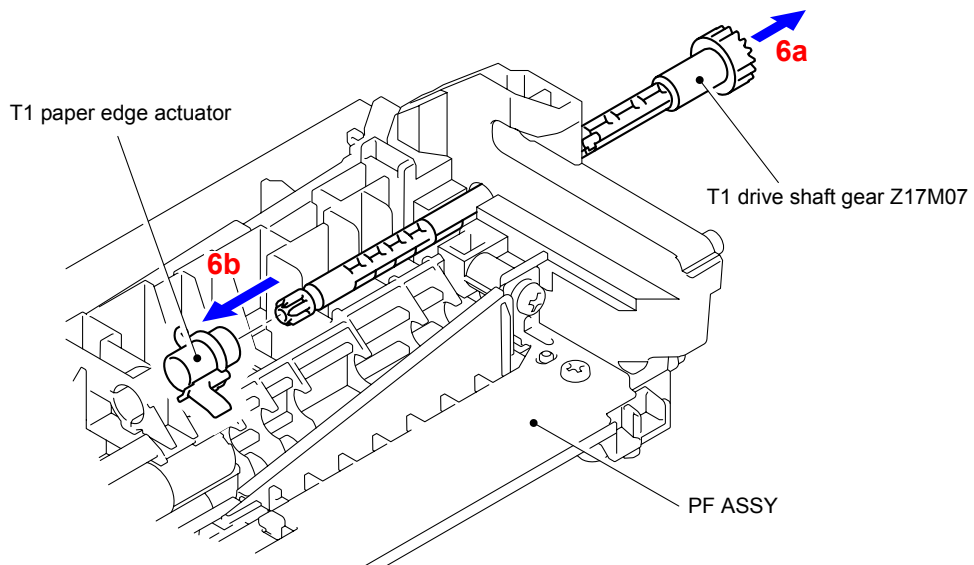


Fig. 3-163

- (7) Disconnect the wiring of the T1 paper edge sensor PCB ASSY.
- (8) Release the three Hooks to remove the T1 paper edge sensor PCB ASSY from the PF ASSY.

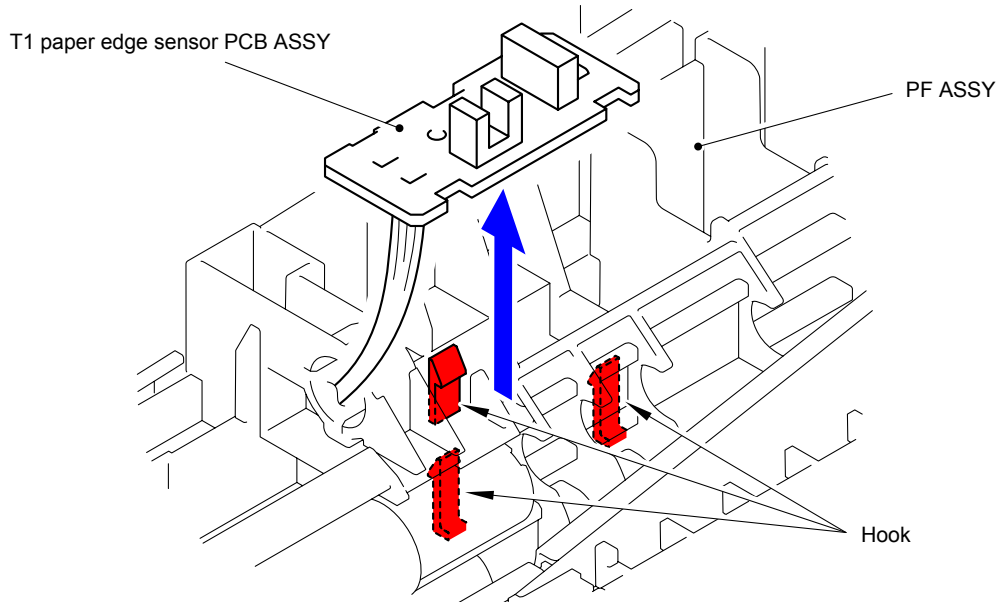


Fig. 3-164

**Harness routing:** Refer to "[12 PF ASSY](#)"

# 9.49 Cleaner Drive Gear 15

(1) Press the Hook of the Cleaner drive gear 15, and then remove it from the Main body.

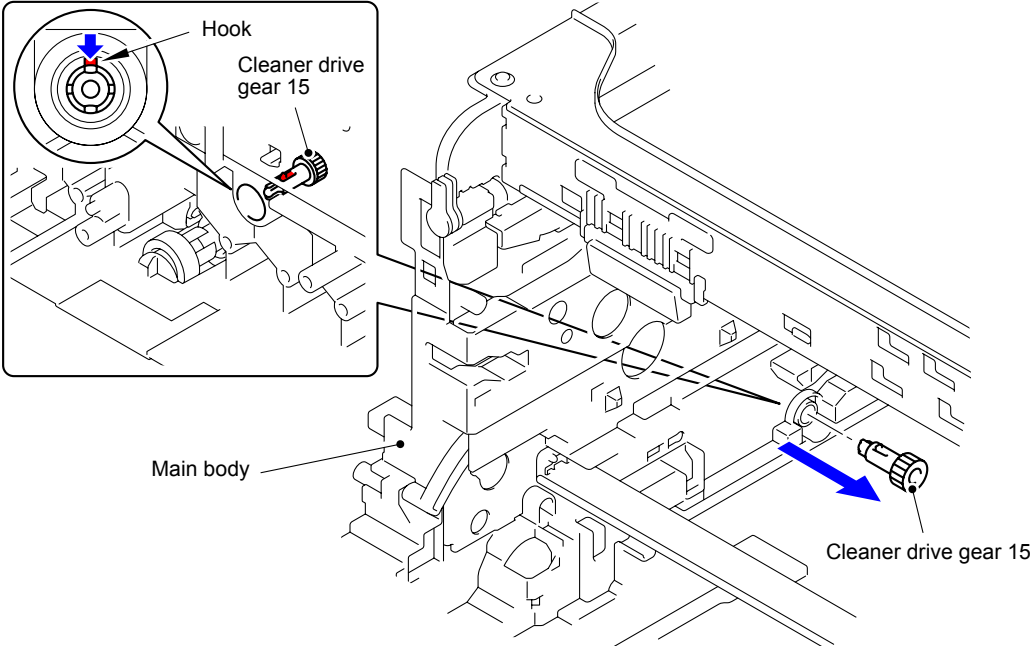


Fig. 3-165

# 9.50 High-voltage Power Supply PCB ASSY

(1) Remove the High-voltage power supply protect film from the Base frame unit.

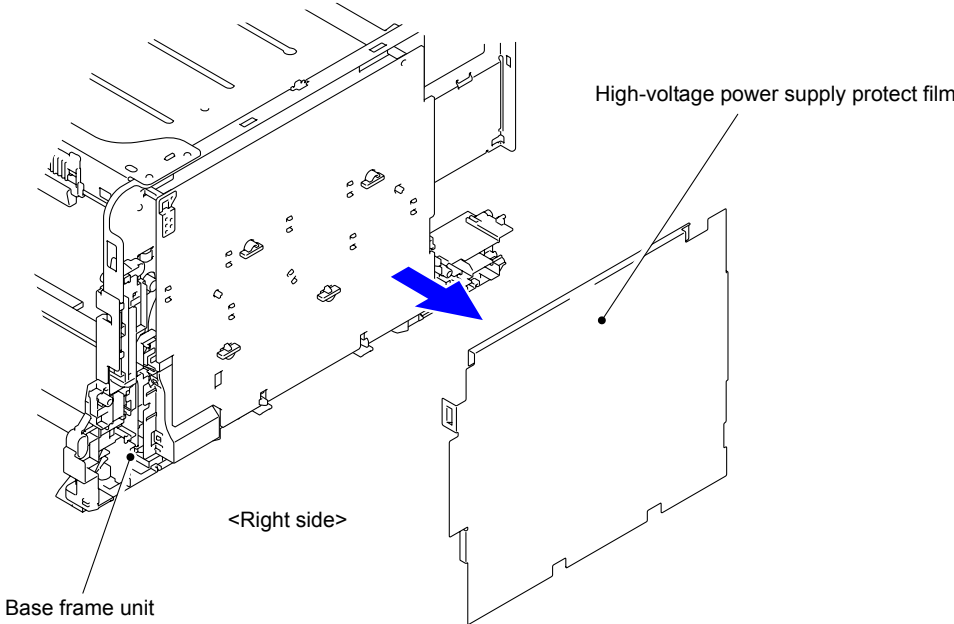


Fig. 3-166

(2) Remove the four Spacers from the Base frame unit.

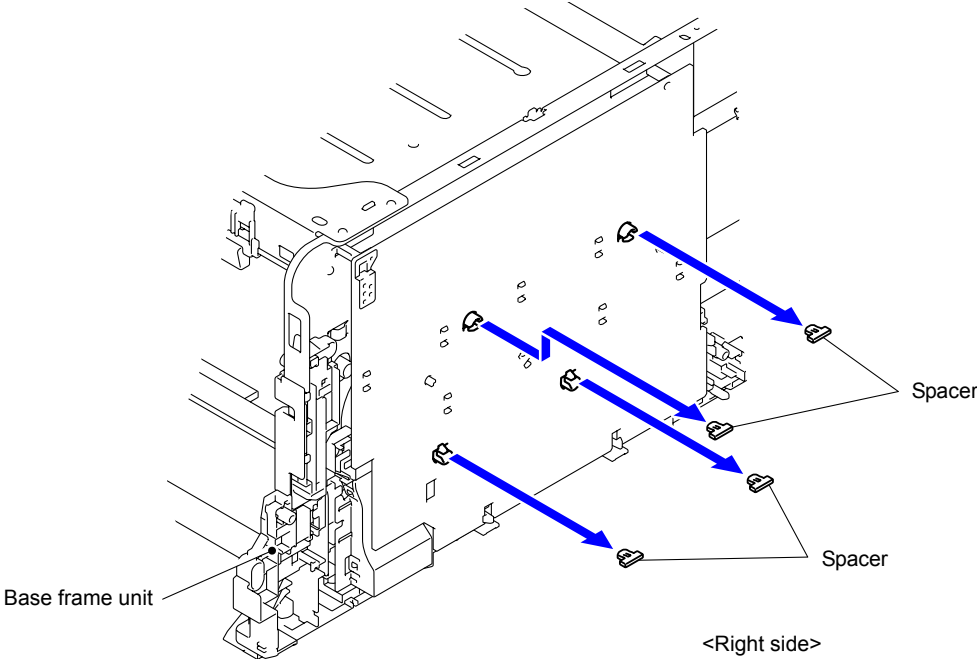
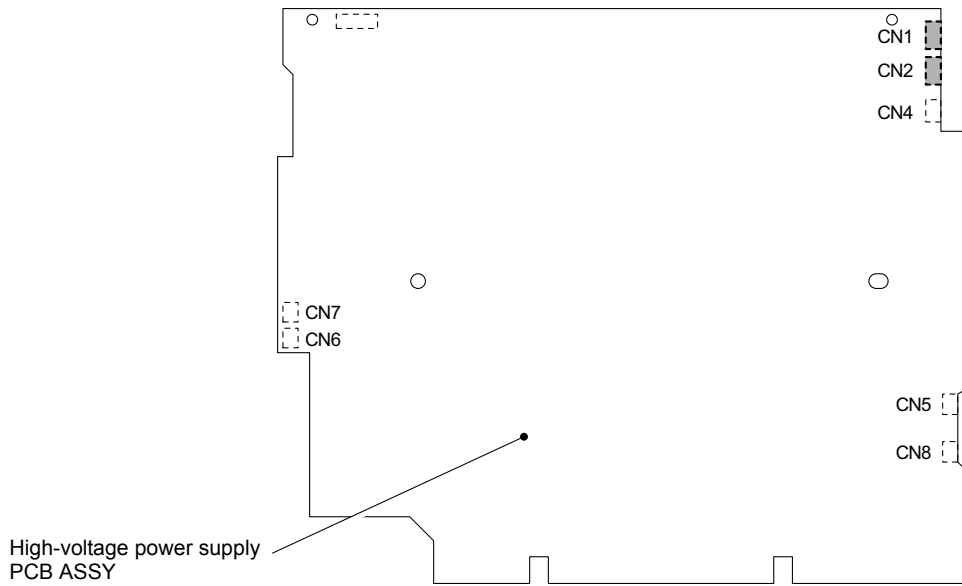


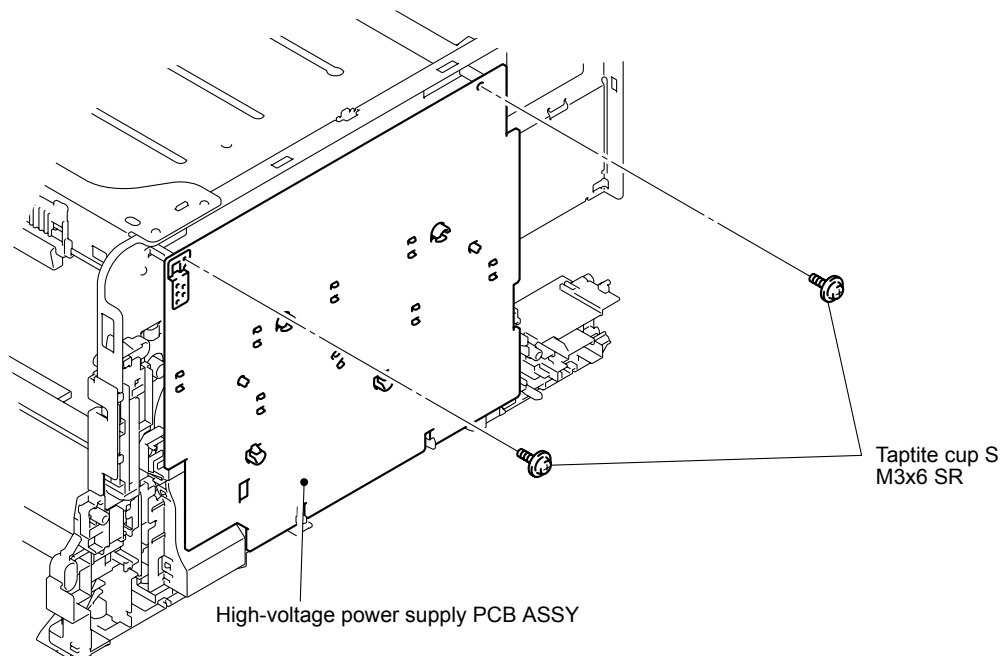
Fig. 3-167

- (3) Disconnect the two Connectors (CN1, CN2) from the High-voltage power supply PCB ASSY.



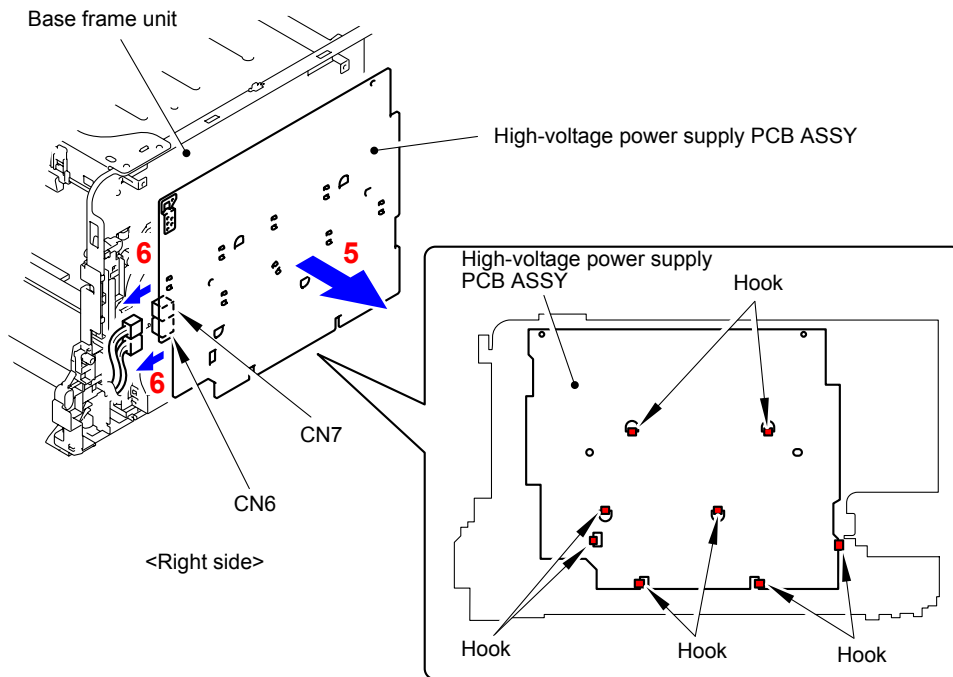
**Fig. 3-168**

- (4) Remove the two Taptite cup S M3x6 SR screws.



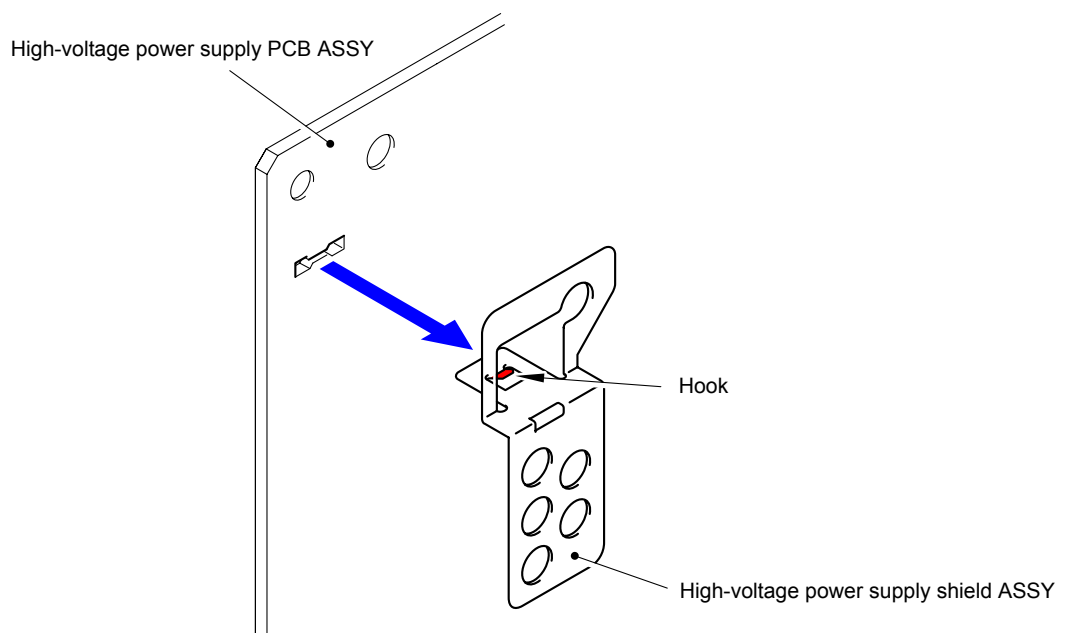
**Fig. 3-169**

- (5) Release the eight Hooks to remove the High-voltage power supply PCB ASSY from the Base frame unit.
- (6) Disconnect the two Connectors (CN6, CN7).



**Fig. 3-170**

- (7) Release the Hook to remove the High-voltage power supply shield ASSY from the High-voltage power supply PCB ASSY.



**Fig. 3-171**



# 9.51 Waste Toner Sensor

(1) Release the two Hooks to remove the Waste toner sensor cover from the Base frame unit.

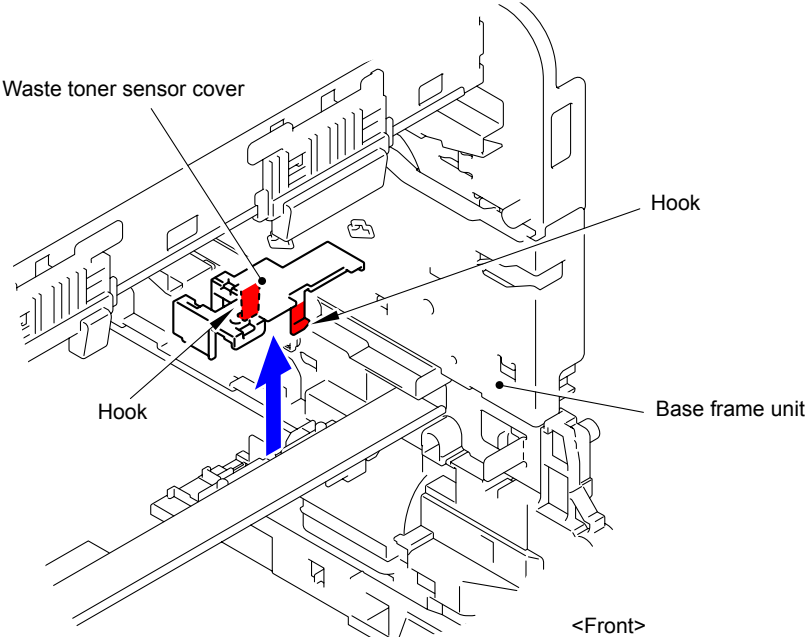


Fig. 3-172

(2) Release the three Hooks to remove the Waste toner sensor from the Base frame unit.

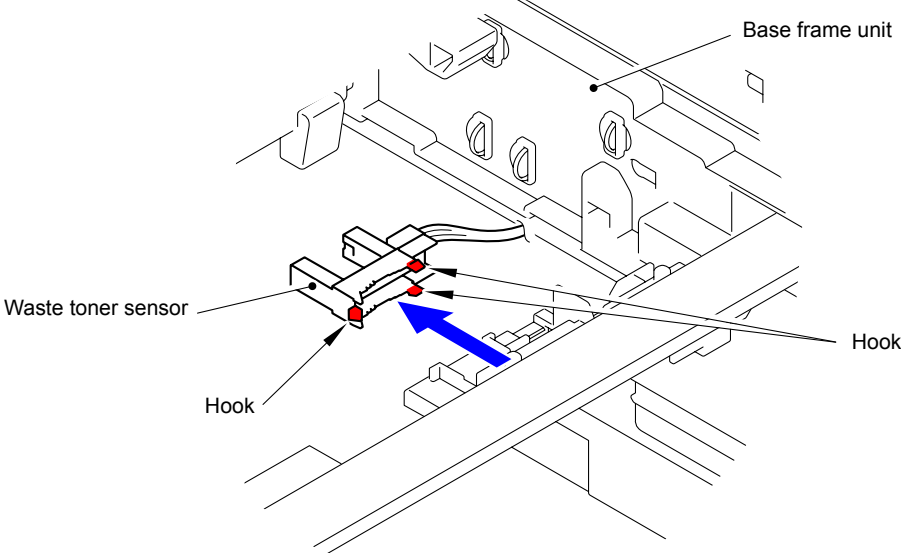
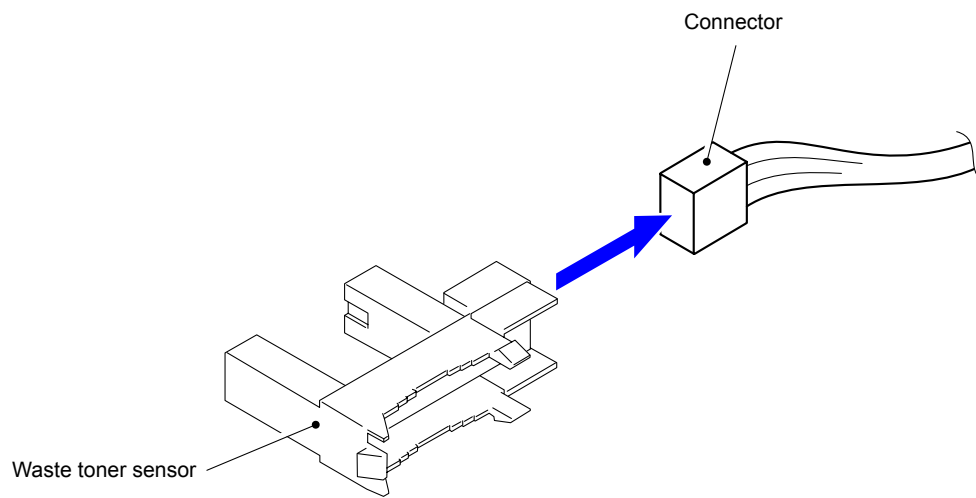


Fig. 3-173

(3) Disconnect the Connector from the Waste toner sensor.



**Fig. 3-174**

# 9.52 Air Duct Cover/Blower

(1) Release the four Hooks to remove the Air duct cover from the Base frame unit.

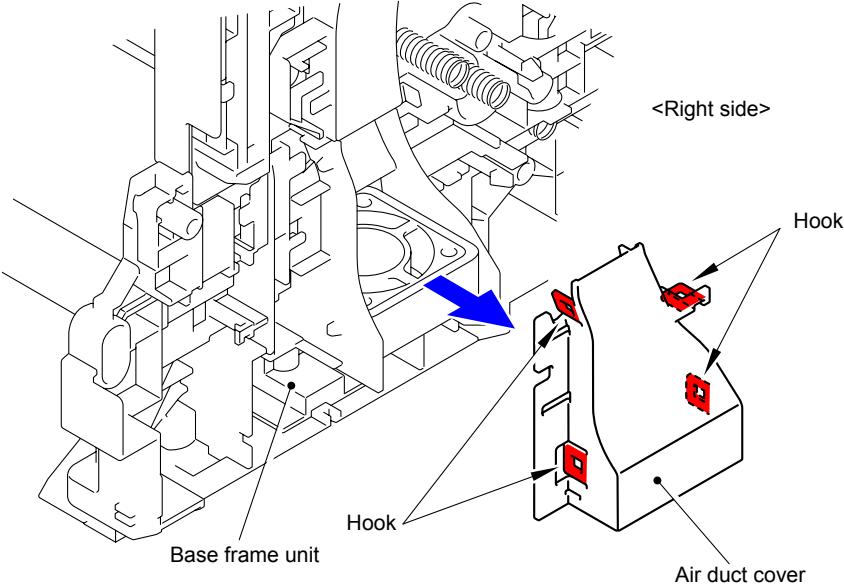


Fig. 3-175

- (2) Disconnect the wiring of the Blower.
- (3) Remove the Blower from the Base frame unit.

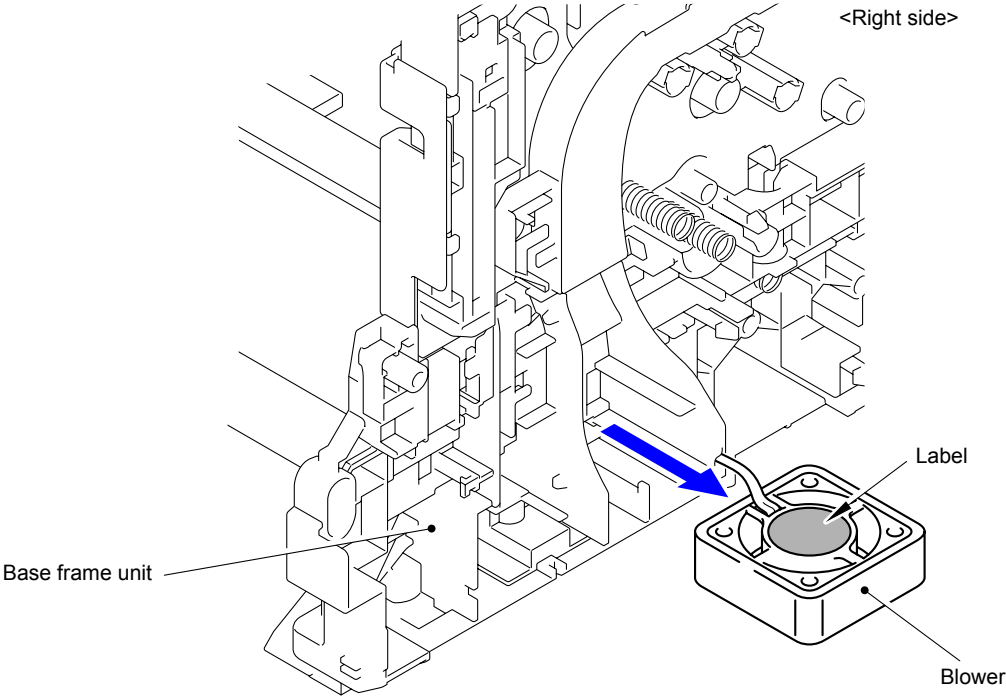
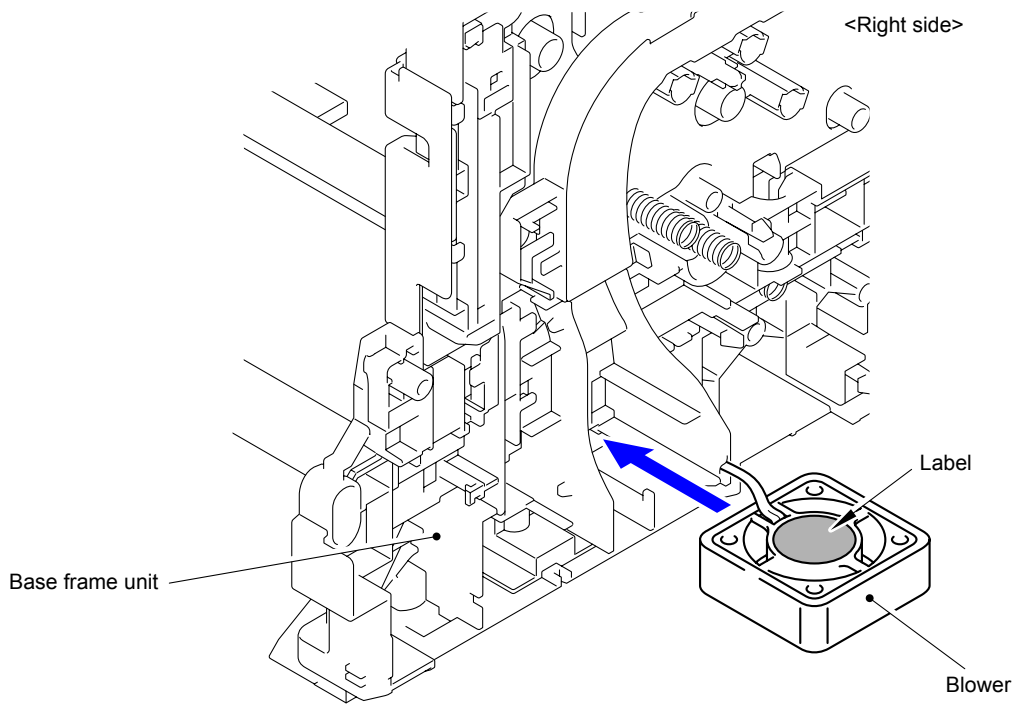


Fig. 3-176

**Assembling Note:**

When assembling the Blower, be sure to assemble it in a way that the label side faces up.



**Fig. 3-177**

# 10. DISASSEMBLY PROCEDURE (LT-300CL)

## 10.1 T2 Paper Tray Unit

- (1) Take out the T2 paper tray unit from the main body.

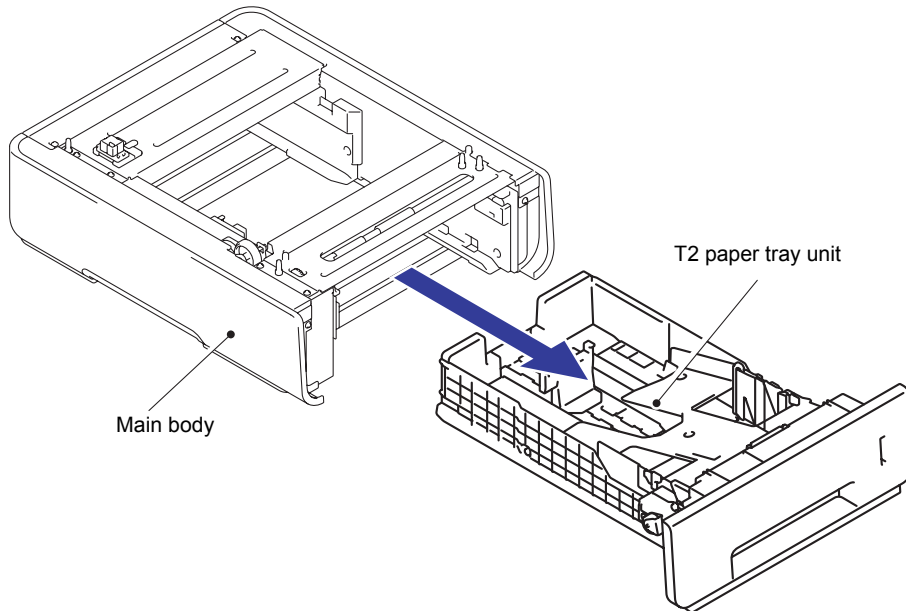


Fig. 3-178

- (2) Release the two Hooks of the T2 separation pad ASSY to remove them in the upward direction.

**Note:**

Be careful not to lose the T2 separation pad spring.

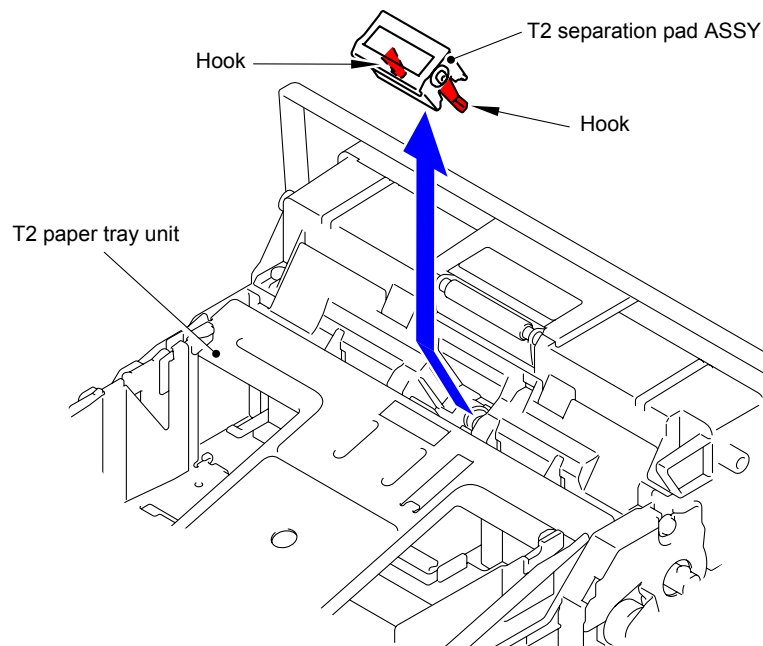
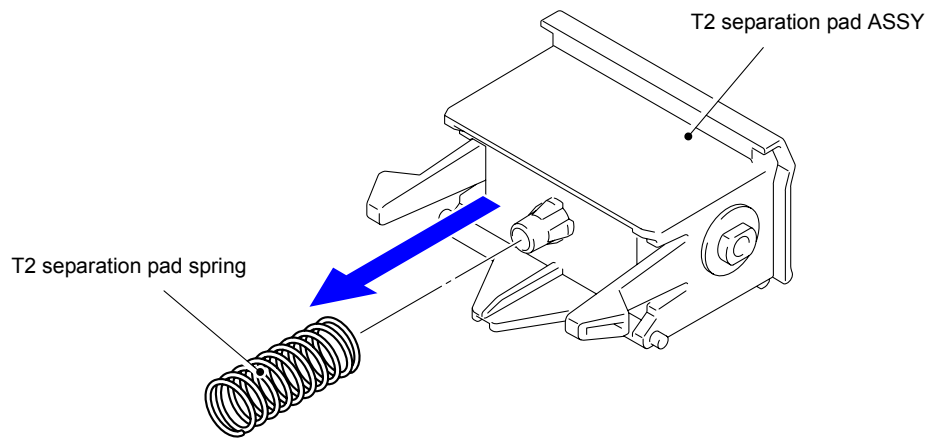


Fig. 3-179

(3) Remove the T2 separation pad spring from the T2 separation pad ASSY.



**Fig. 3-180**

## 10.2 T2 Separation Roller ASSY/T2 Paper Feed Roller ASSY 1

- (1) Release the Hook and slide the T2 separation roller ASSY in the direction of the arrow 1.
- (2) Remove the T2 separation roller ASSY in the direction of the arrow 2b as rotating it in the direction of the arrow 2a.

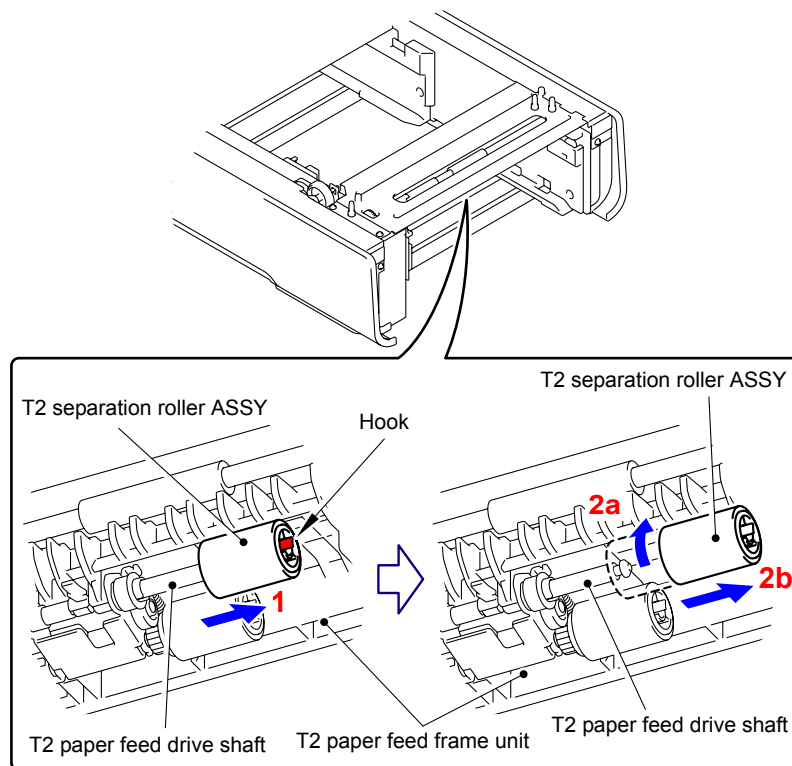


Fig. 3-181

### Assembling Note:

When assembling the T2 separation roller ASSY, be sure to assemble it by sliding it in the direction of the arrow b as rotating the T2 separation roller ASSY in the direction of the arrow a.

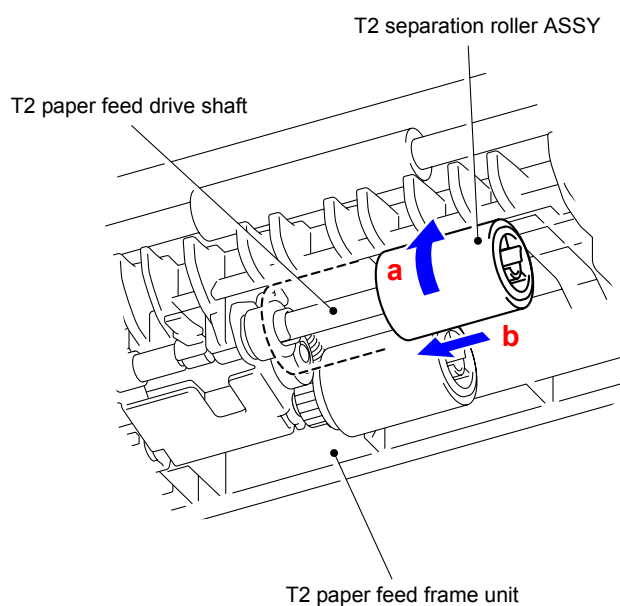
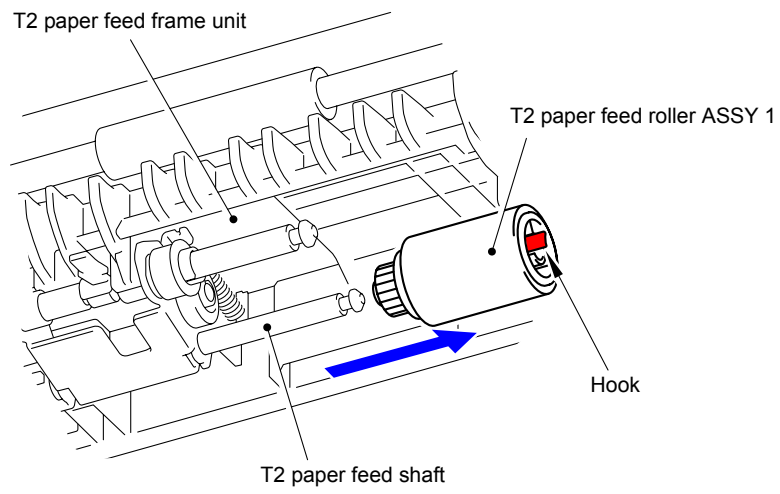


Fig. 3-182

- (3) Release the Hooks to remove the T2 paper feed roller ASSY 1 from the T2 paper feed shaft.



**Fig. 3-183**



## 10.3 T2 Cover Rear

- (1) Remove the two Taptite cup S M3x10 SR screws from the T2 cover rear.

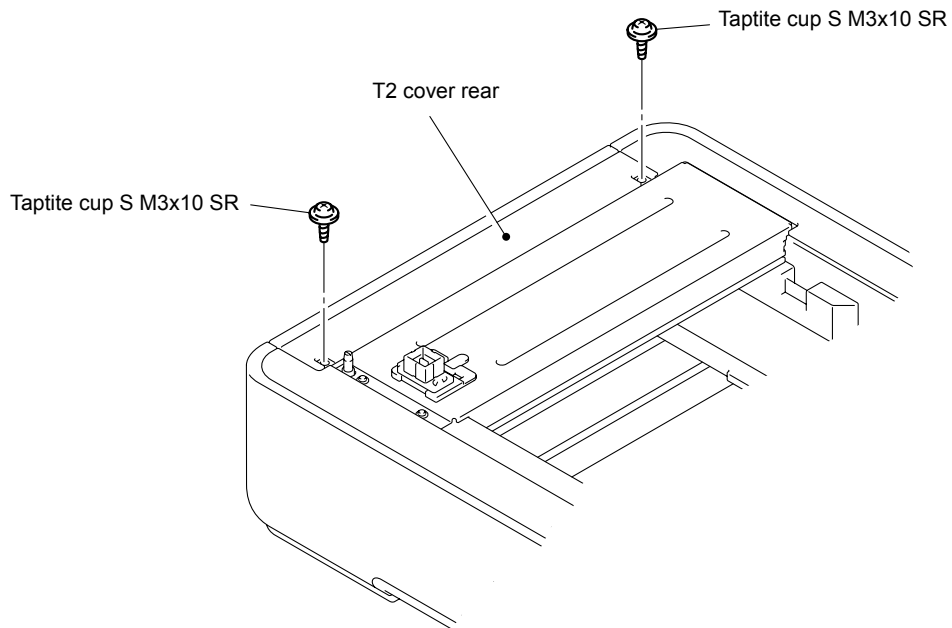


Fig. 3-184

- (2) Remove the two Pins to remove the T2 cover rear from the Main body.

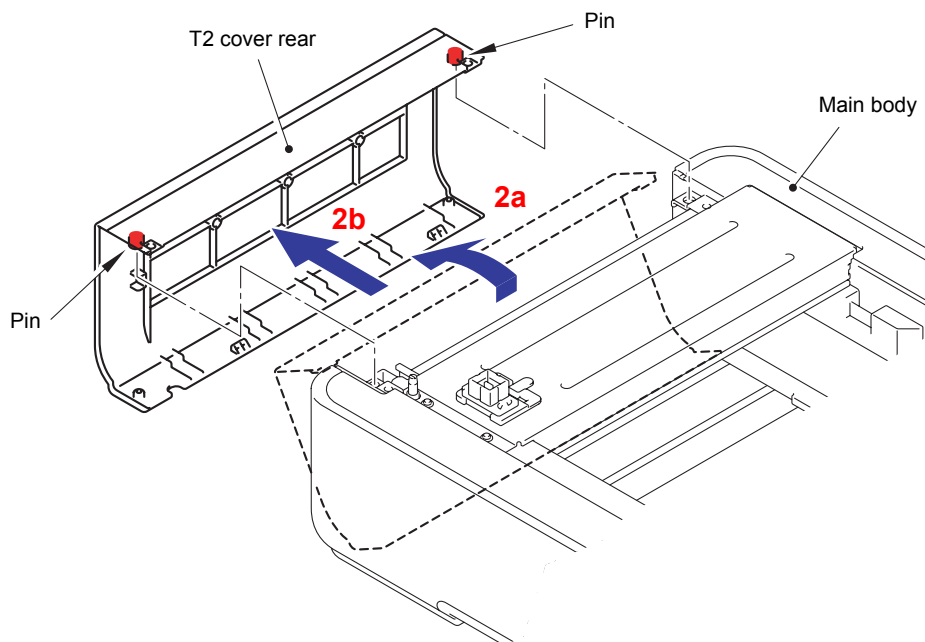


Fig. 3-185

## 10.4 T2 Cover Left

- (1) Remove the two Taptite cup S M3x6 SR screws from the T2 cover left.

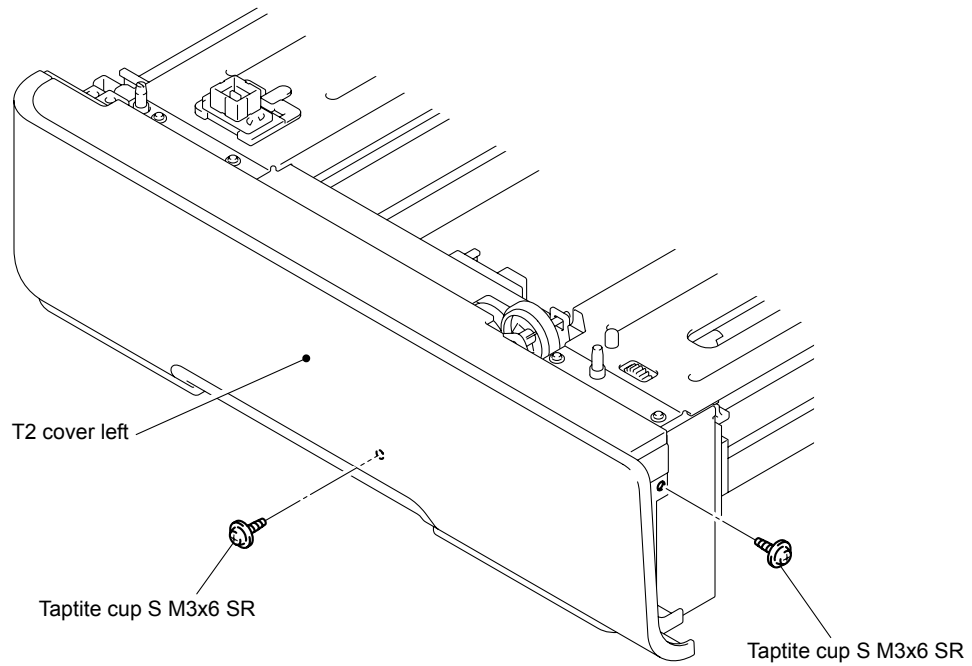


Fig. 3-186

- (2) Remove the one Pin, and then release the two Hooks at the top.
- (3) Release the two Hooks at the bottom to remove the T2 cover left from the T2 frame L unit.

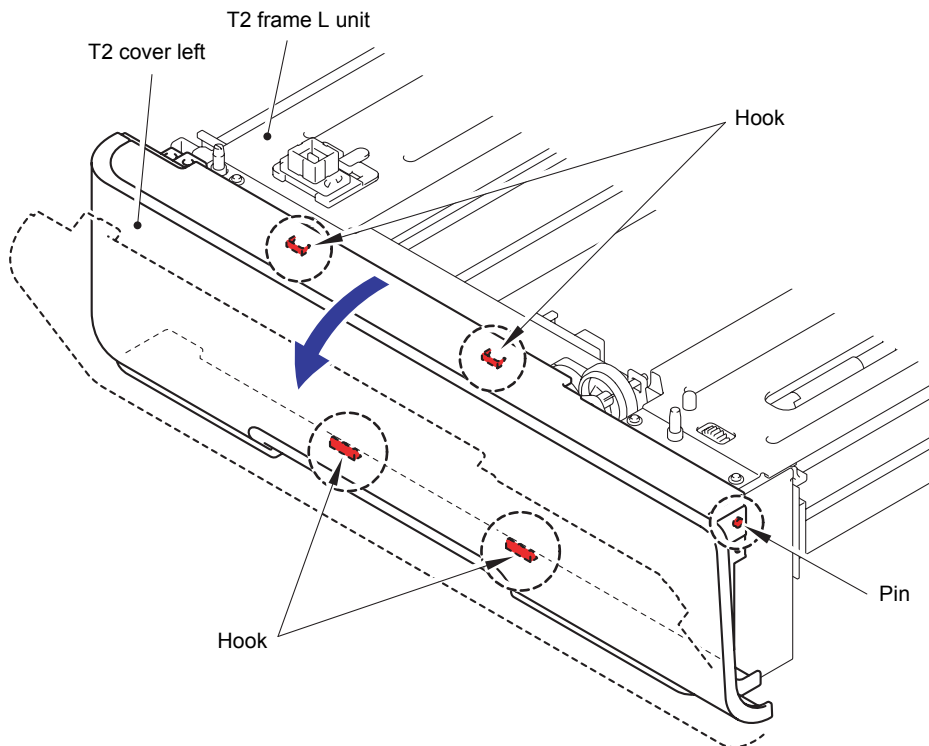


Fig. 3-187

## 10.5 T2 Cover Right

- (1) Remove the two Taptite cup S M3x6 SR screws from the T2 cover right.

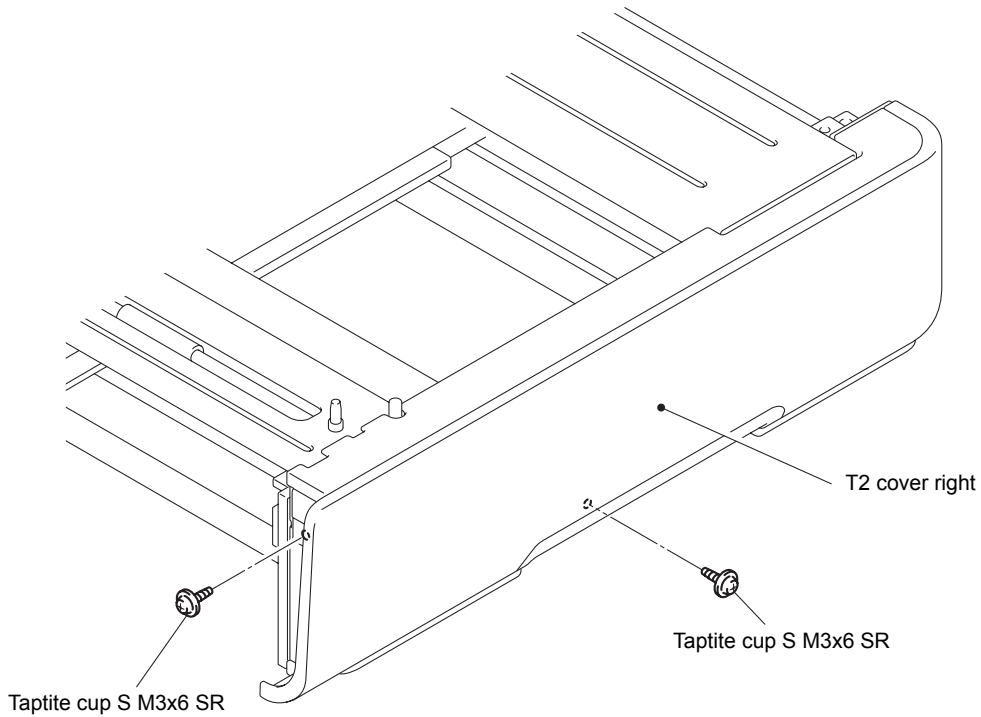


Fig. 3-188

- (2) Remove the one Pin, and then release the two Hooks at the top.
- (3) Release the three Hooks at the bottom to remove the T2 cover right from the T2 frame L unit.

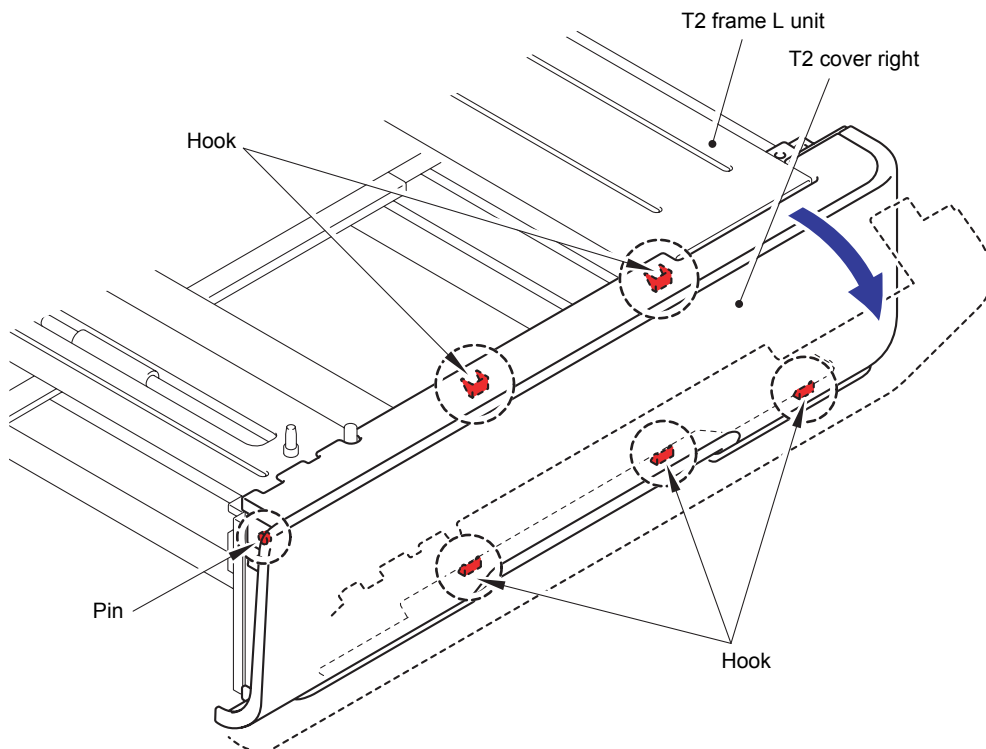
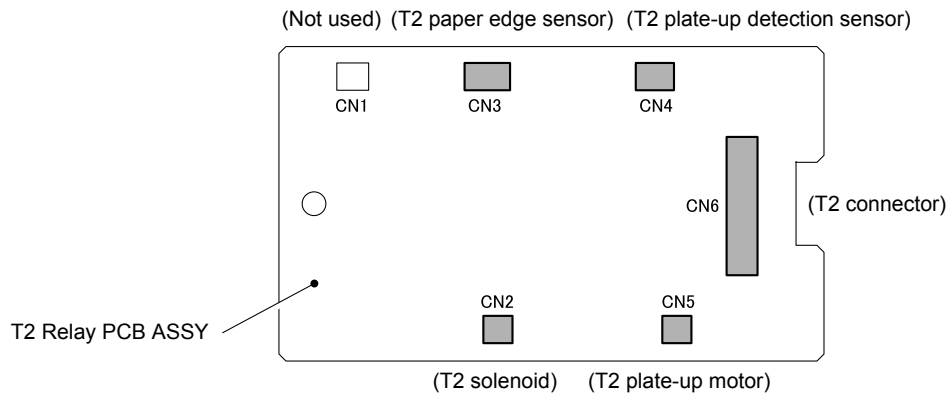


Fig. 3-189

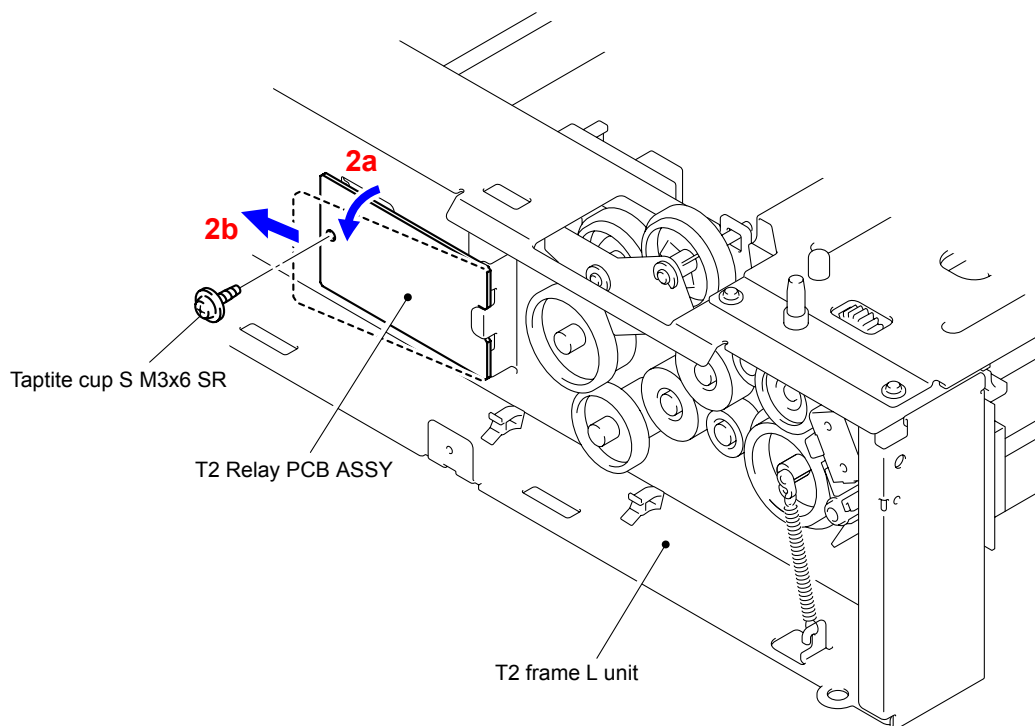
## 10.6 T2 Relay PCB ASSY

- (1) Disconnect the all Connectors from the T2 Relay PCB ASSY.



**Fig. 3-190**

- (2) Remove the Taptite cup S M3x6 SR screw to remove the T2 Relay PCB ASSY from the T2 frame L unit.



**Fig. 3-191**

## 10.7 T2 Solenoid ASSY

- (1) Remove the Taptite cup S M3x6 SR screw to remove the T2 solenoid holder ASSY from the T2 frame L unit.

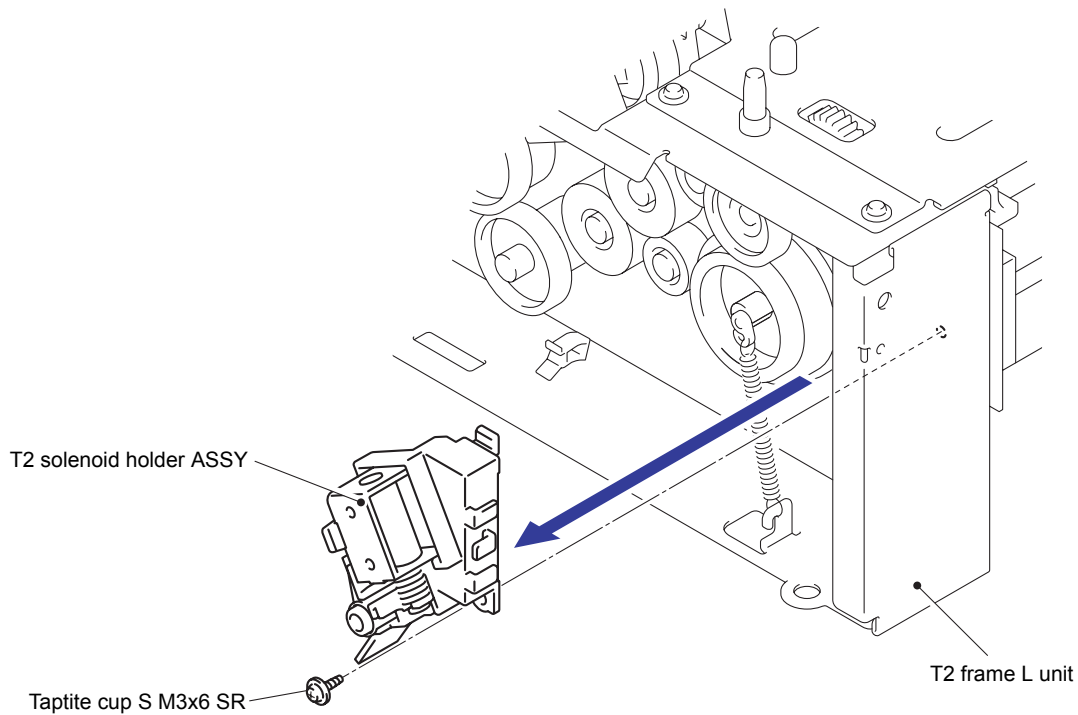


Fig. 3-192

- (2) Remove the Screw flanged M3x3.5 screw to remove the T2 solenoid ASSY and T2 solenoid spring MP from the T2 solenoid holder.

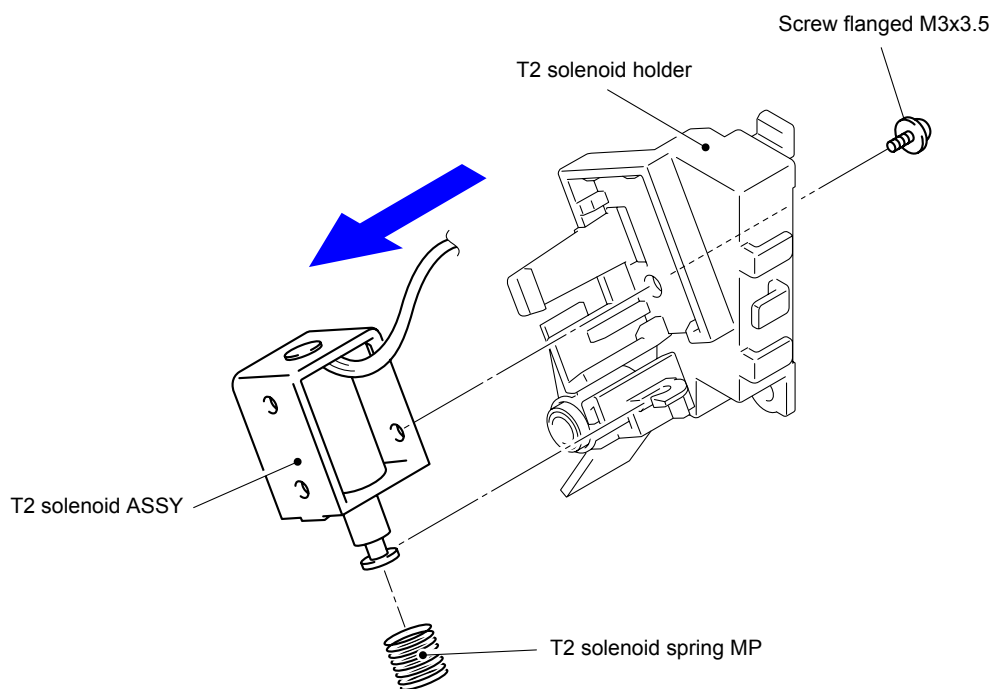


Fig. 3-193

## 10.8 Collar 6

- (1) Remove the two pieces of the Collar 6 from the Fittings shaft.

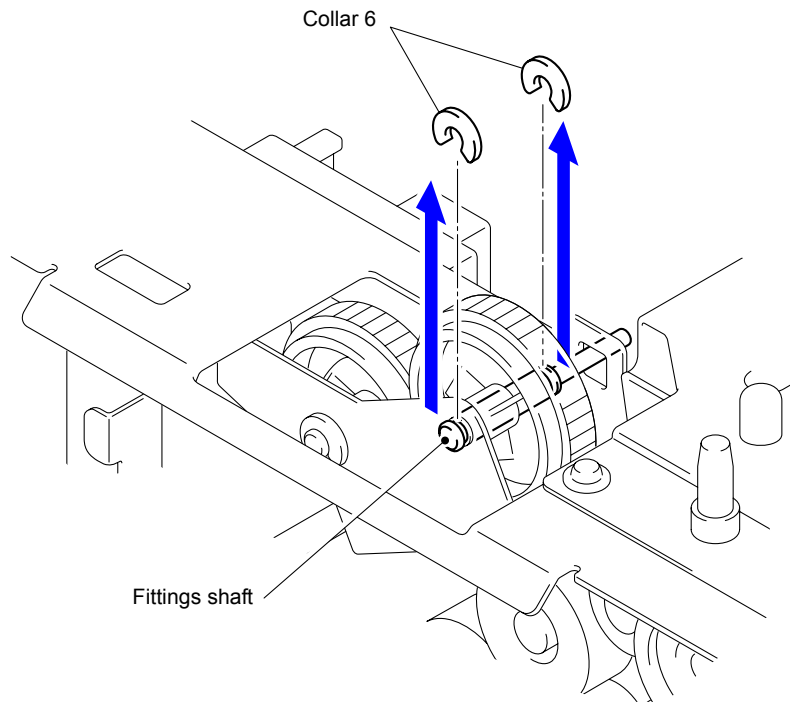


Fig. 3-194

## 10.9 T2 Paper Feed Frame Unit

- (1) Remove the Clutch spring from the Clutch arm ASSY.

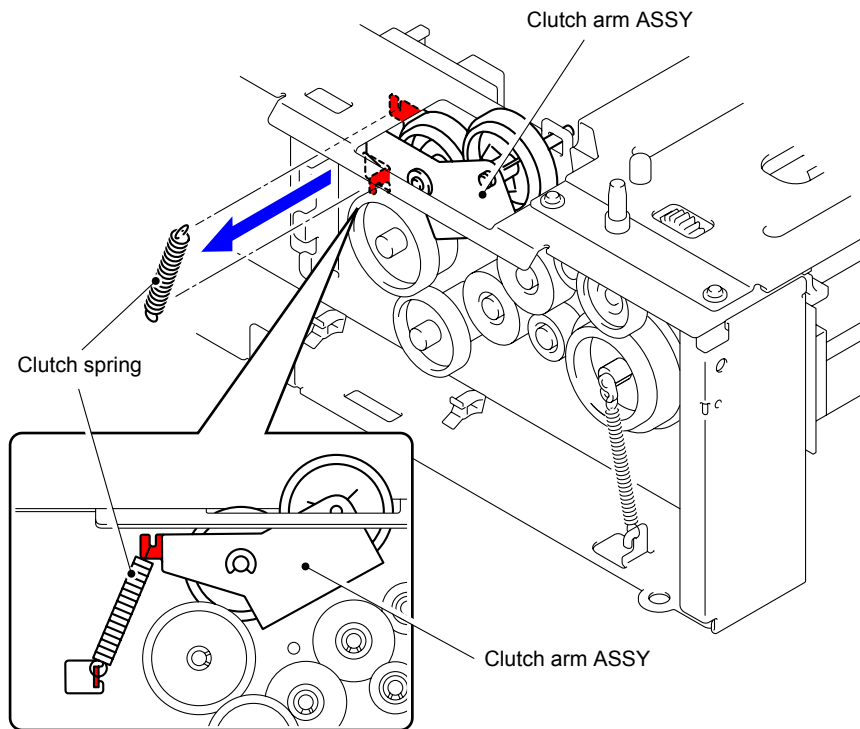


Fig. 3-195

- (2) Release the Hook to remove the Gear 45/40 from the T2 frame L unit.

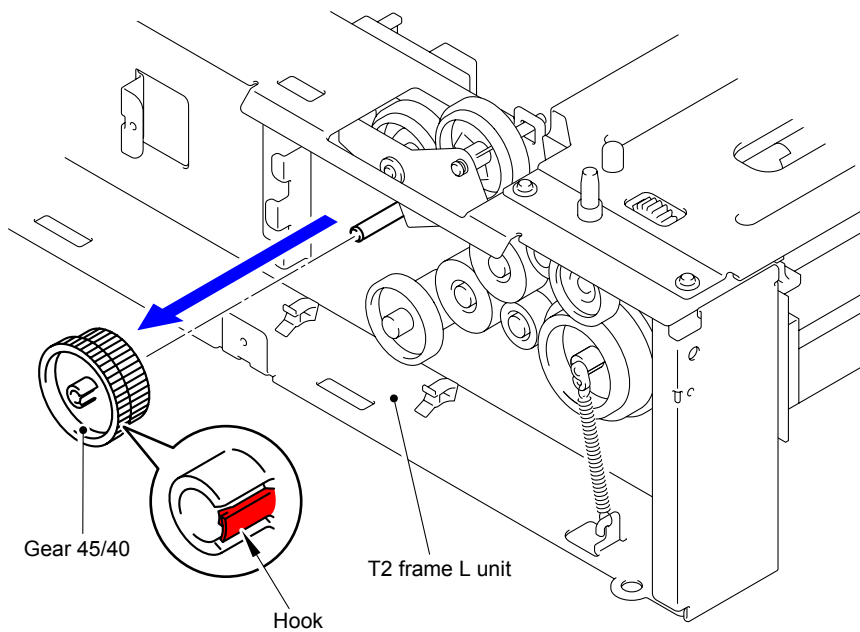
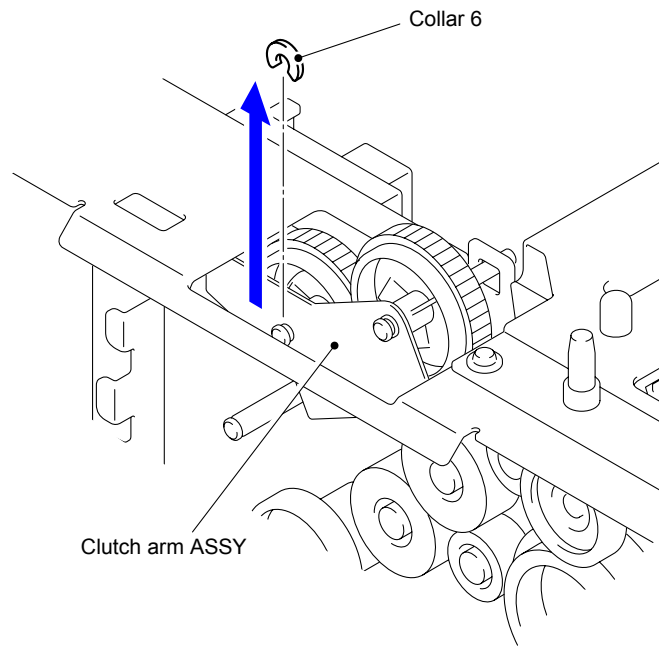


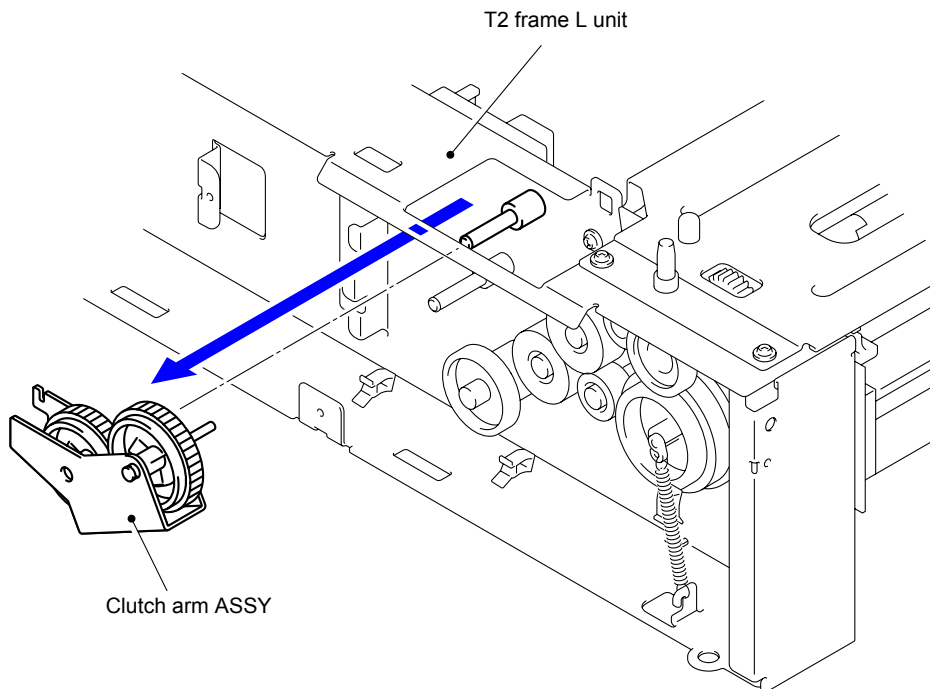
Fig. 3-196

(3) Remove the Collar 6 from the Clutch arm ASSY.



**Fig. 3-197**

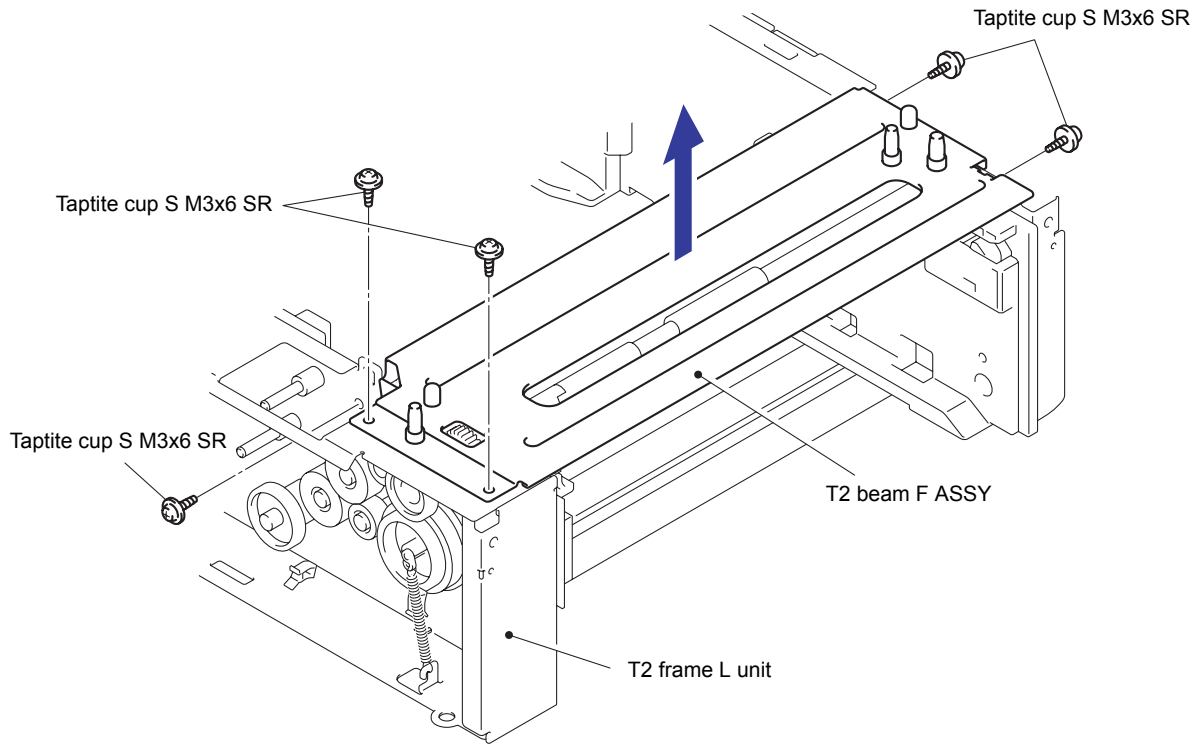
(4) Remove the Clutch arm ASSY from the T2 frame L unit.



**Fig. 3-198**

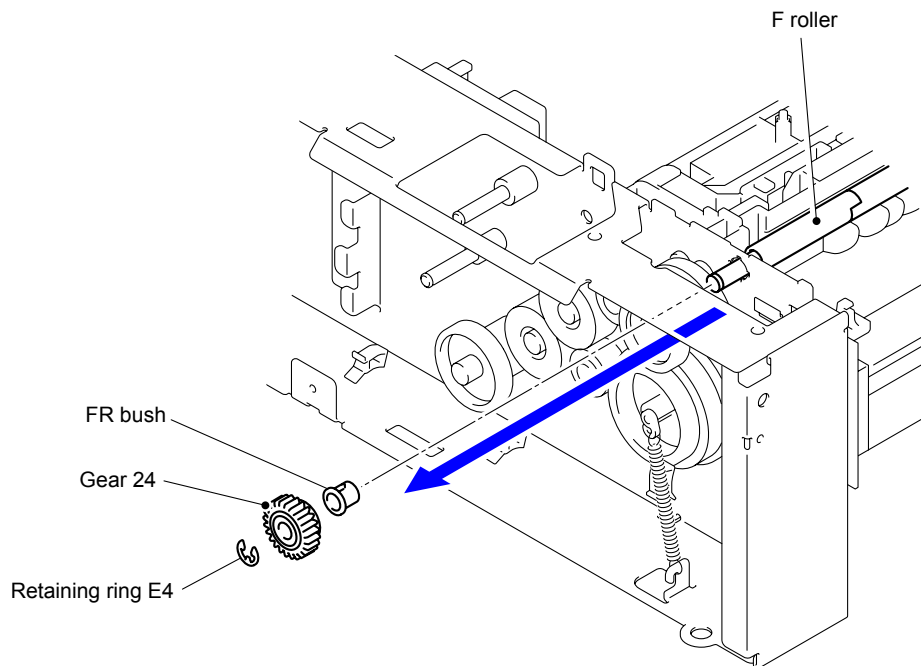


- (5) Remove the five Taptite cup S M3x6 SR screws to remove the T2 beam F ASSY from the T2 frame L unit.



**Fig. 3-199**

- (6) Remove the Retaining ring E4 from the F roller, and then remove the Gear 24 and FR bush.



**Fig. 3-200**

- (7) Remove the Retaining ring E3 from the F roller, and then remove the FR bush TR.

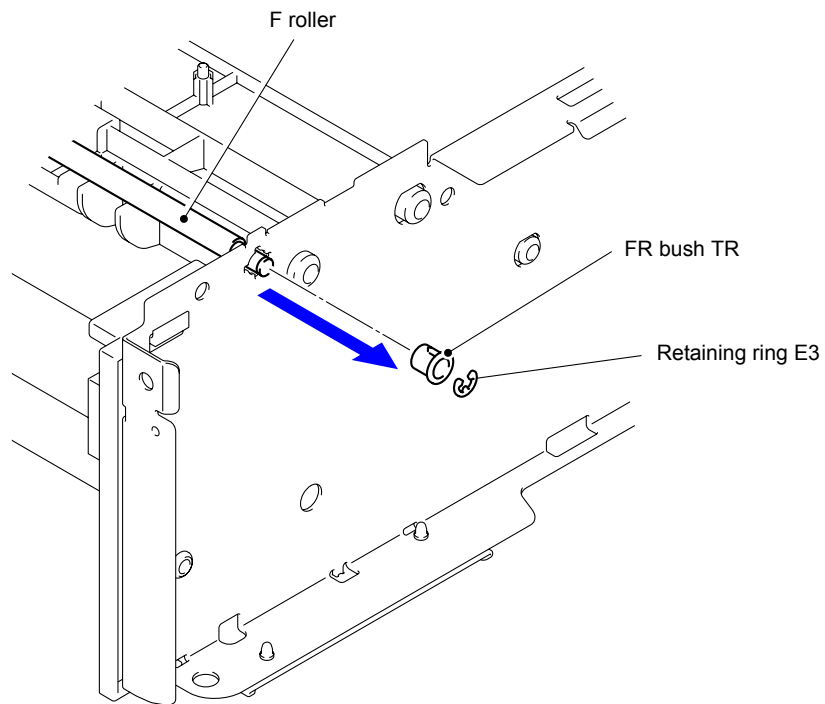


Fig. 3-201

- (8) Remove the Lift spring from the Hook of the Lift lever A.
- (9) Remove the F roller from the T2 frame L unit in the directions of the arrows 9a, 9b, and 9c in this order.

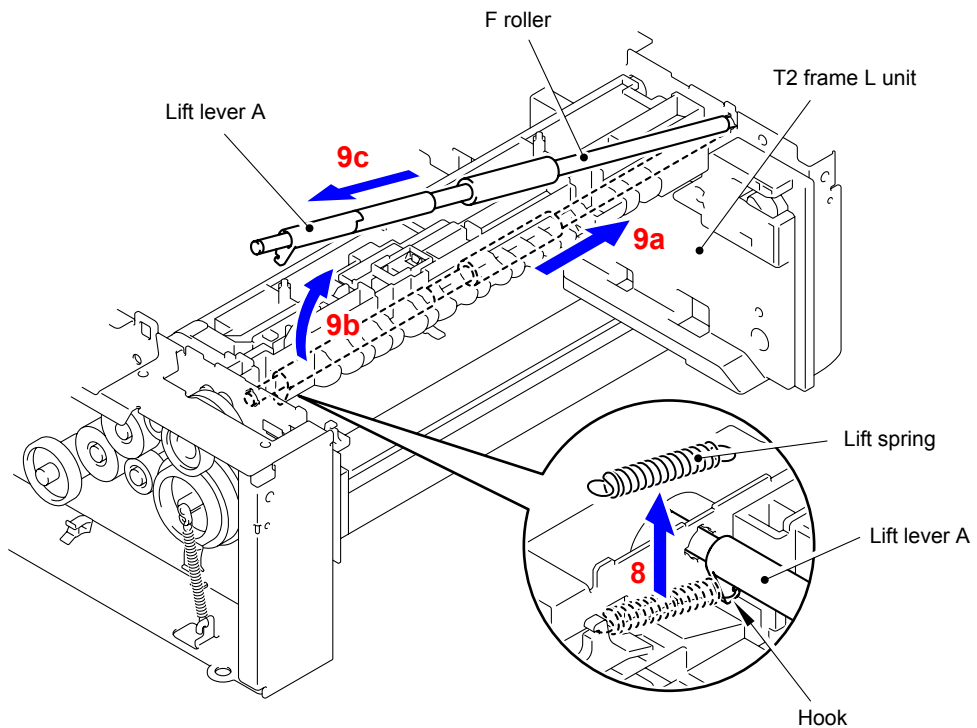
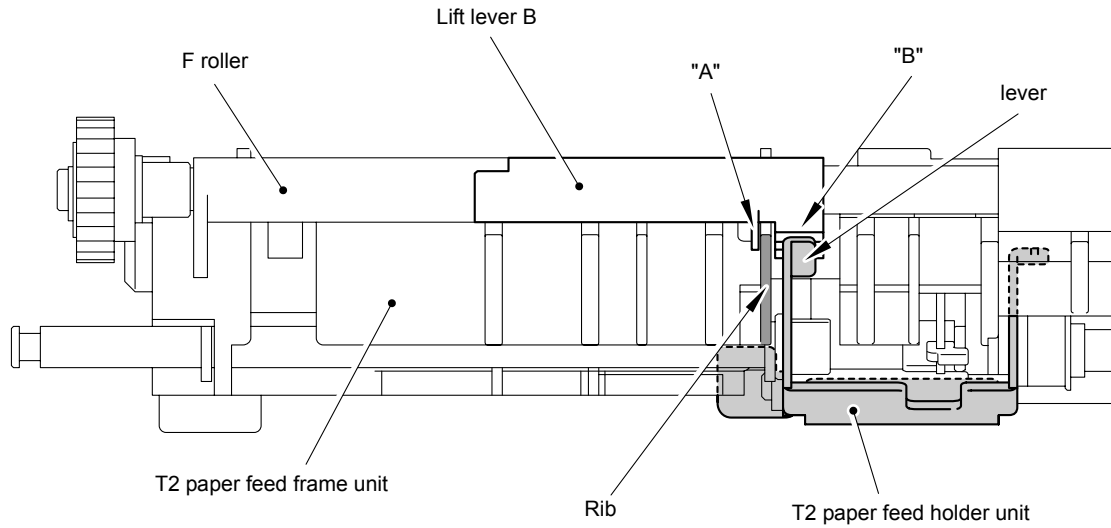


Fig. 3-202

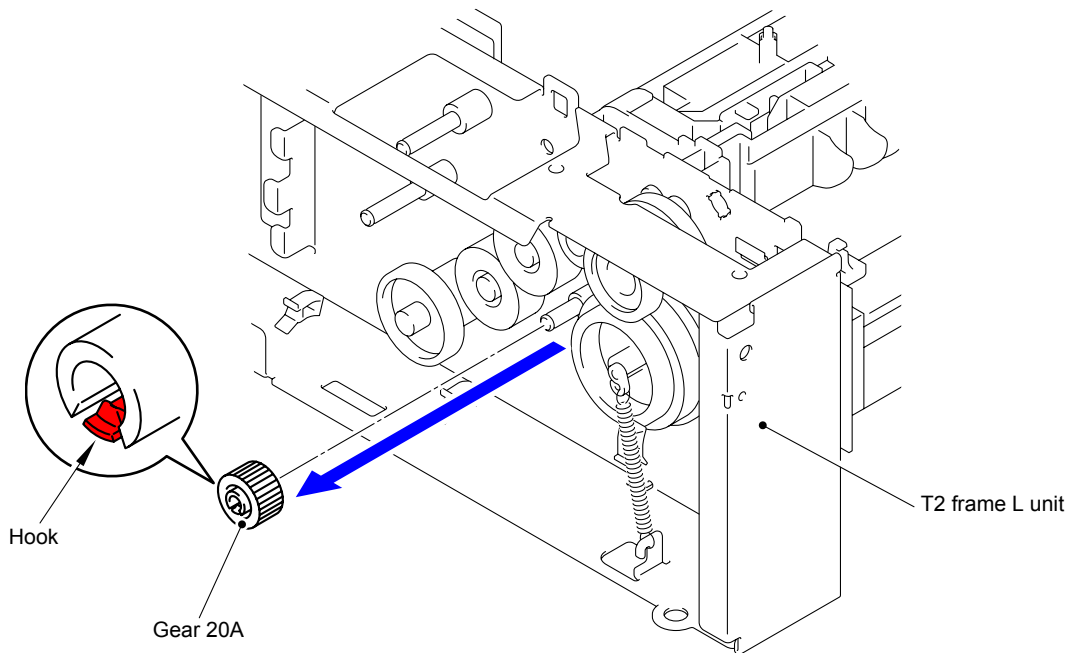
**Assembling Note:**

When assembling the F roller, be sure to assemble it in a way that the Rib of the T2 paper feed frame unit comes between "A" and "B" of the Lift lever B, and the lever of the T2 paper feed holder unit comes in front of "B".



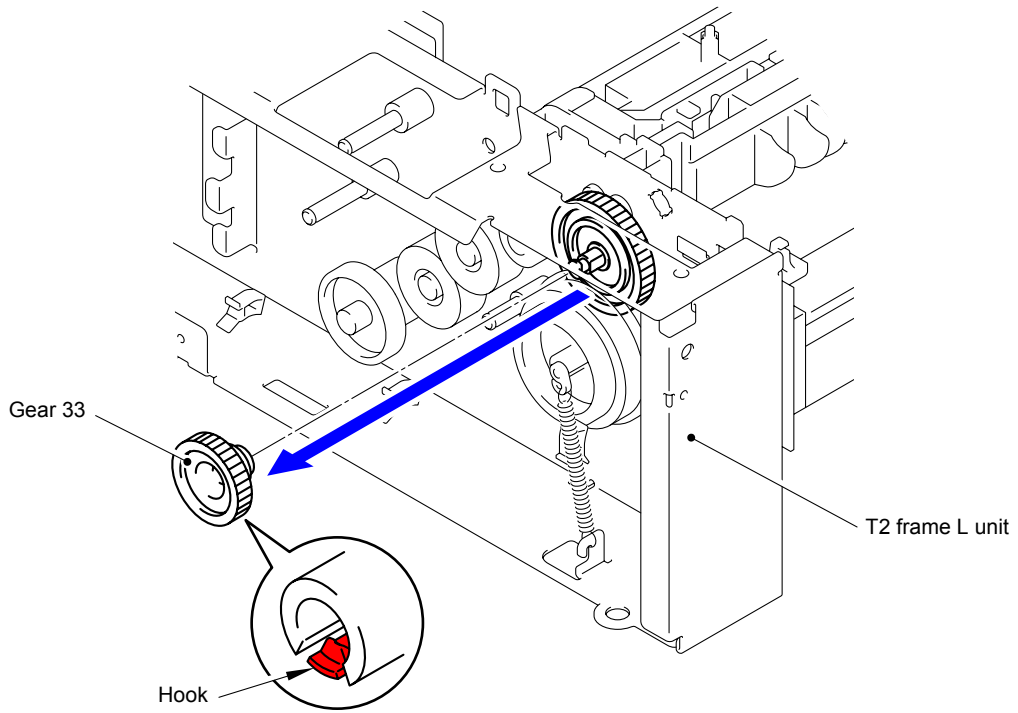
**Fig. 3-203**

(10) Release the Hook to remove the Gear 20A from the T2 frame L unit.



**Fig. 3-204**

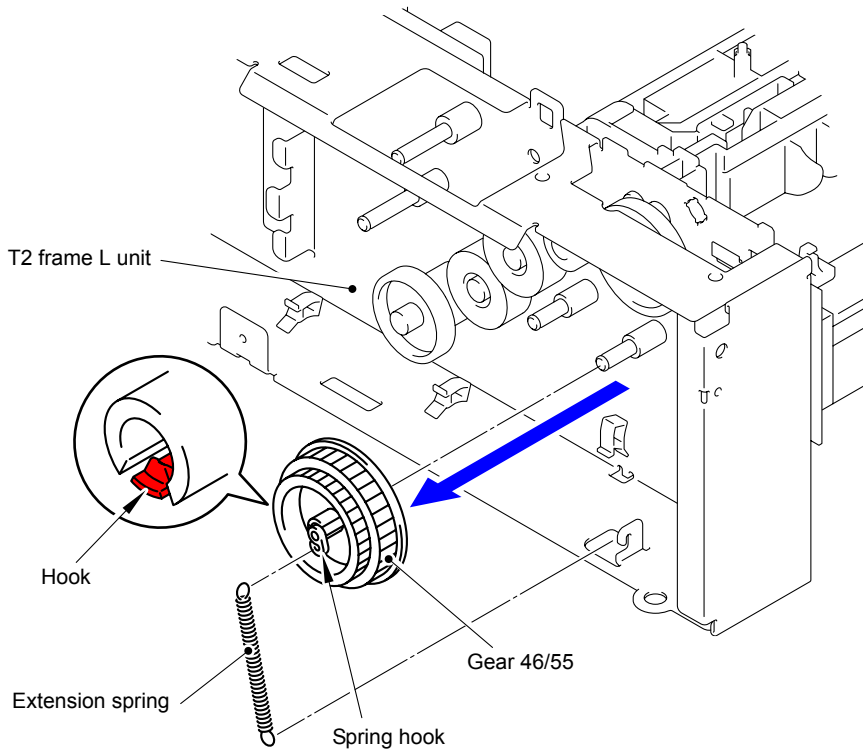
(11) Release the Hook to remove the Gear 33 from the T2 frame L unit.



**Fig. 3-205**

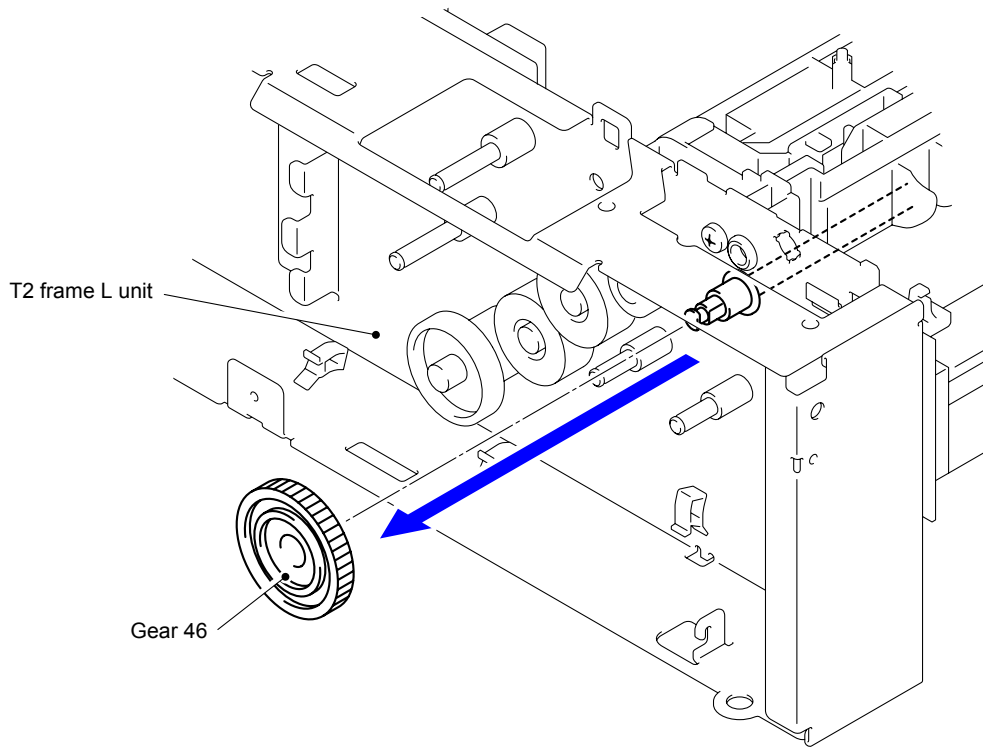
(12) Remove the Extension spring from the Spring hook.

(13) Release the Hook to remove the Gear 46/55 from the T2 frame L unit.



**Fig. 3-206**

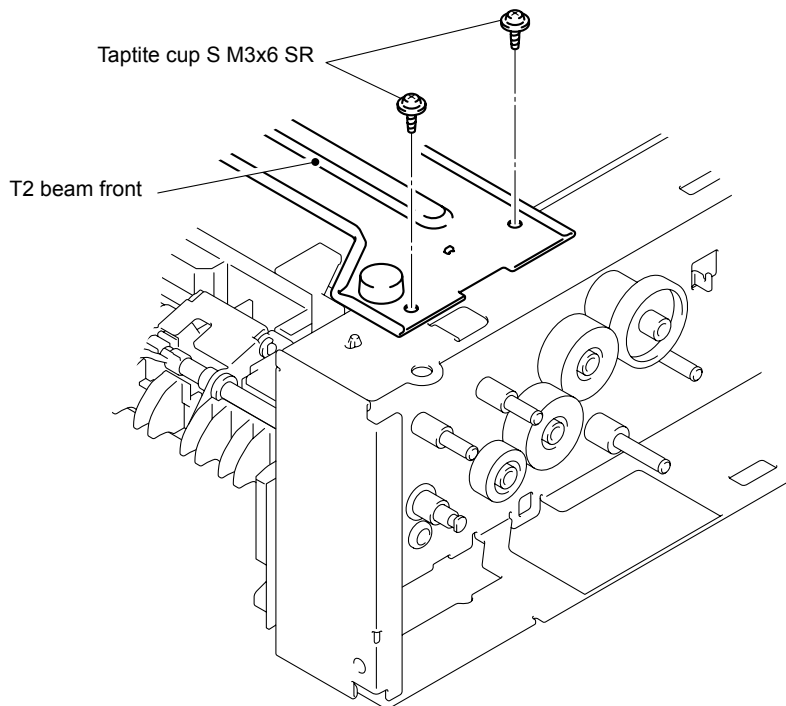
(14) Remove the Gear 46 from the T2 frame L unit.



**Fig. 3-207**

(15) Turn the T2 frame L unit upside down.

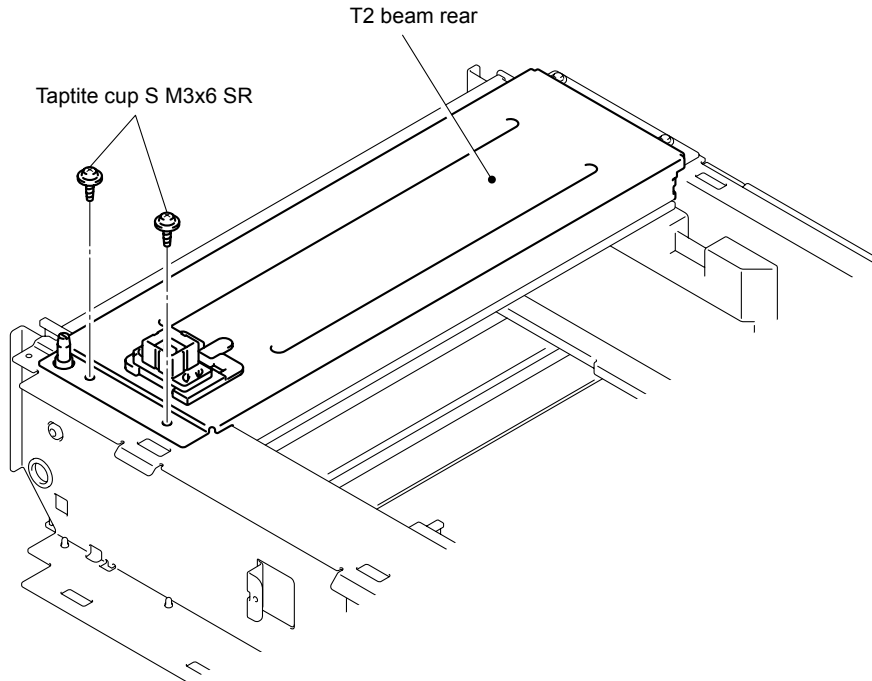
(16) Remove the two Taptite cup S M3x6 SR screws from the T2 beam front.



**Fig. 3-208**

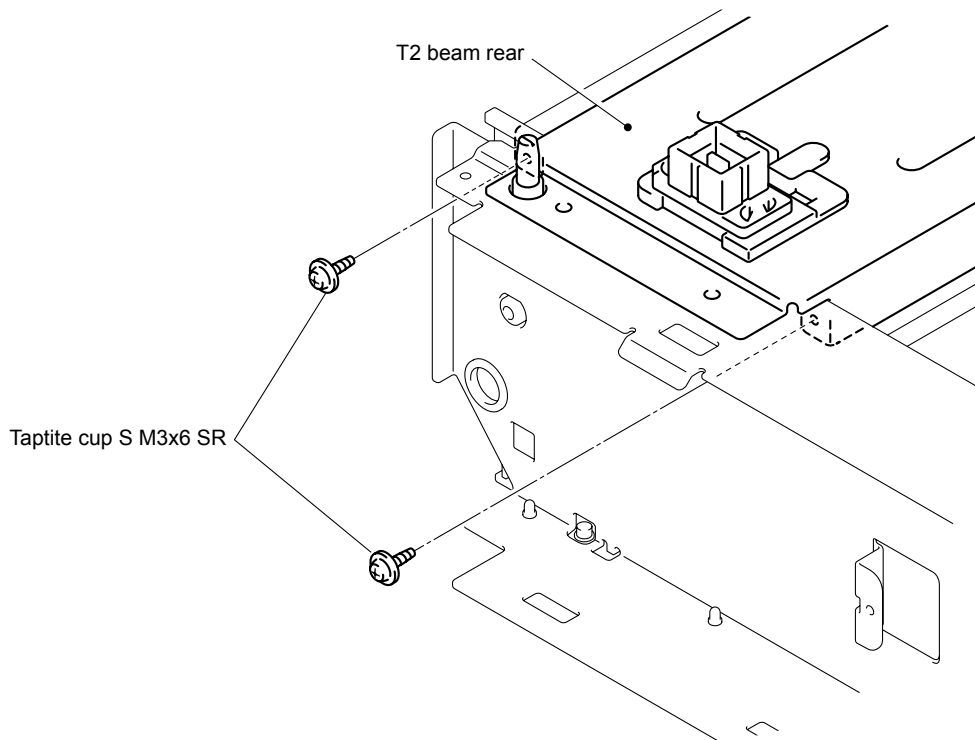
(17) Return the T2 frame L unit to the original position.

(18) Remove the two Taptite cup S M3x6 SR screws from the T2 beam rear.



**Fig. 3-209**

(19) Remove the two Taptite cup S M3x6 SR screws from the T2 beam rear.



**Fig. 3-210**

(20) Remove the Taptite bind B M4x10 screw and Bush.

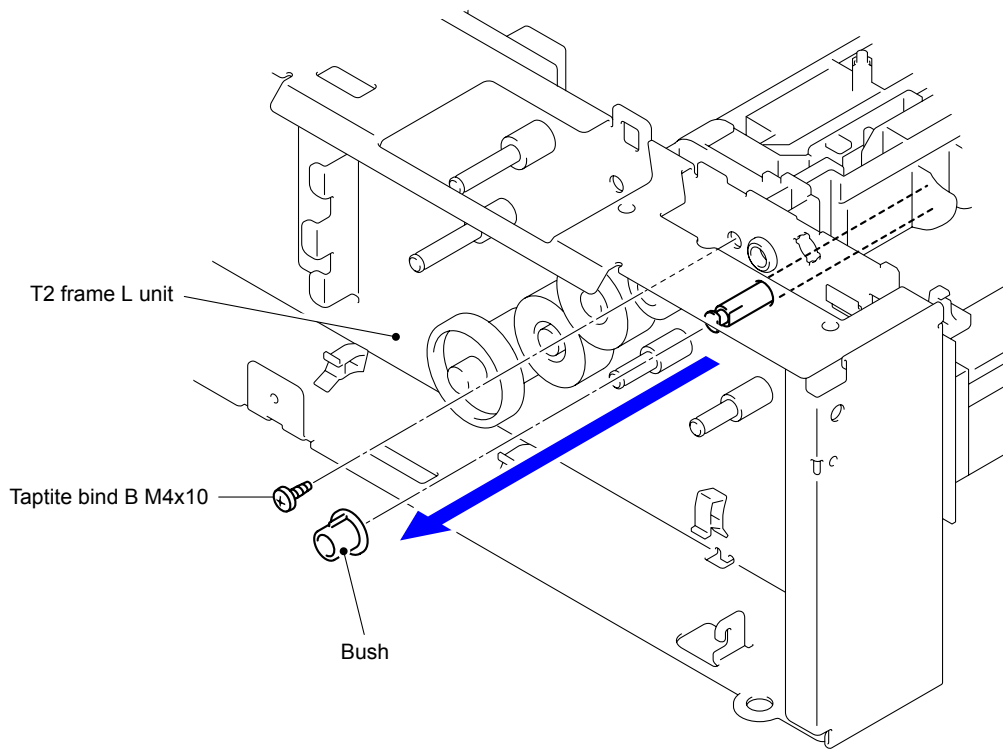


Fig. 3-211

(21) Remove the T2 paper feed frame unit from the T2 frame L unit in the direction of the arrows 21a and 21b in this order.

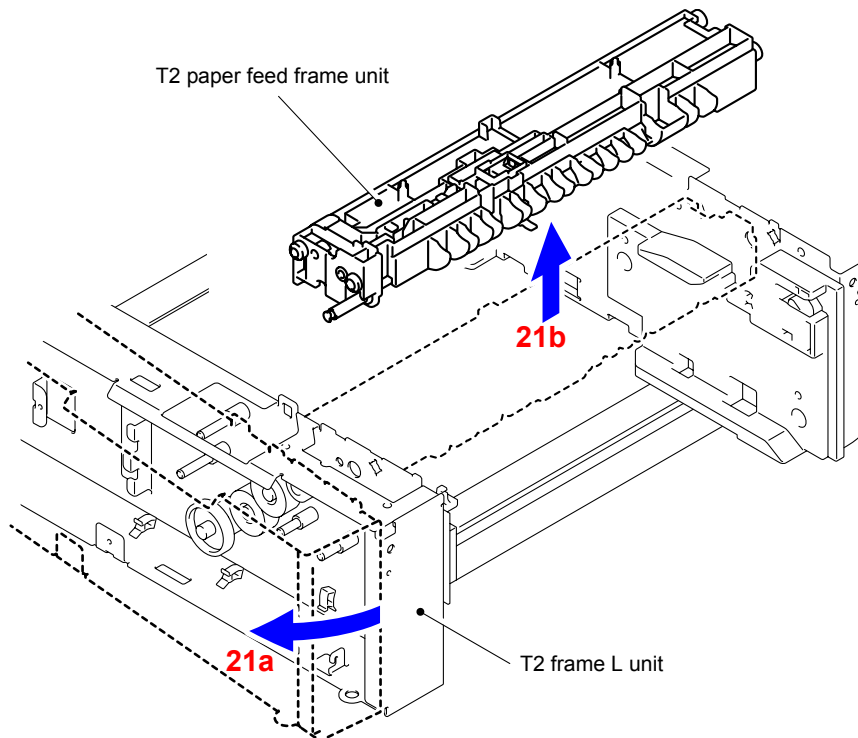


Fig. 3-212

# **CHAPTER 4**

## **ADJUSTMENTS AND UPDATING OF SETTINGS, REQUIRED AFTER PARTS REPLACEMENT**



# CHAPTER 4

## ADJUSTMENTS AND UPDATING OF SETTINGS, REQUIRED AFTER PARTS REPLACEMENT

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

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# 1. IF YOU REPLACE THE MAIN PCB ASSY

## ■ What to do when replacing the main PCB ASSY

- Rewriting the firmware (Sub firmware, Main firmware)
- Initialization of EEPROM of main PCB ASSY (Maintenance mode: code 01)
- Setting by country (Maintenance mode: code 74)
- Setting the serial number
- Sensitivity adjustment of density sensor (Maintenance mode: code 72)
- Performing the developing bias voltage correction (Maintenance mode: code 83)
- Performing the adjustment of inter-color position alignment (Maintenance mode: code 66)

### Note:

Since the counters are reset when the main PCB ASSY is replaced, the consumables and/or periodical replacement parts might reach the end of the life before the message is displayed.

## ■ What you need to prepare

- (1) A USB cable
- (2) A USB flash memory drive
- (3) Computer (Windows<sup>®</sup> XP/2000 or later)  
Create a "hl4000" folder on the C drive, for example.
- (4) Service setting tool (brusbn.zip)  
Copy it into the "hl4000" folder that has been created in the C drive. Extract the copied file and execute "brusbsn.exe" file by double-clicking it.
- (5) The download utility (FILEDG32.EXE)  
Copy it into the "hl4000" folder that has been created in the C drive.
- (6) The Brother maintenance USB printer driver (Maintenance\_Driver.zip)  
Copy it into the "hl4000" folder that has been created in the C drive. Extract the copied file.
- (7) The firmware

Sub firmware	LZXXXX_\$.djf or LZXXXX_\$.upd*
Main firmware	LZXXXX_\$.djf or LZXXXX_\$.upd*
LZXXXX: First six digits are a parts number of the firmware. \$: Alphabet representing the revision of the firmware.	

\* upd: Used to rewrite the firmware via a computer.

   djf: Used to rewrite the firmware using a USB flash memory.

- (8) Installing the maintenance driver. (Refer to [APPENDIX 3.](#))

## 1.1 Rewriting the Firmware (Sub Firmware, Main Firmware)

The following two methods are available for rewriting the firmware (Sub firmware and Main firmware).

- Rewriting using a computer
- Rewriting using USB flash memory

### 1.1.1 Checking firmware version

Check if the firmware written on the main PCB ASSY is the latest version or not. If it is the latest version, there is no need to write the firmware. If it is not, make sure to write the firmware to the main PCB ASSY in accordance with “1.1.2 Rewriting the firmware using computer” or “1.1.3 Rewriting the firmware using USB flash memory” in this chapter.

#### <How to check firmware version>

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

#### Memo

You can check the firmware version of the Sub firmware and the Main firmware by printing the Printer Settings. (Refer to “2.4 Printout of Printer Settings” in Chapter 5.)

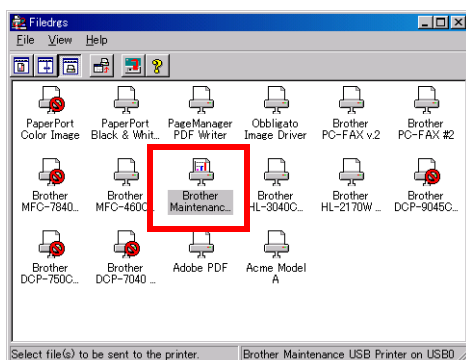
### 1.1.2 Rewriting the firmware using computer

#### Note:

- It is recommendable to rewrite 1) Sub firmware and 2) Main firmware in this order.
- DO NOT unplug the power cord of the printer or your computer or disconnect the USB cable while rewriting the program files.

#### <Procedures>

- (1) Turn the power switch of the printer off. Then, turn it on while pressing the **Go** and **Cancel** buttons at the same time. Check that “■■■■■■■■” appears on the LCD.
- (2) Connect the computer to the printer with the USB cable.
- (3) Double-click the “FILEDG32.EXE” to start. The following screen appears. Select the “Brother Maintenance USB Printer.”



- (4) Drag and drop a program file that you want to rewrite (for instance, LZXXXX\_\$.upd) onto the Brother Maintenance USB Printer icon in the screen shown above.

#### Note:

After rewriting Sub firmware or Main firmware is completed, the printer returns to the ready state. To continue rewriting the other program files, turn off the power switch of the printer, and turn it on again while pressing the **Go** and **Cancel** buttons at the same time. Check that “■■■■■■■■” appears on the LCD and start rewriting.

- (5) Upon completion of rewriting, the printer restarts and returns to the ready state automatically.
- (6) Disconnect the USB cable from the printer.

### 1.1.3 Rewriting the firmware using USB flash memory

If you save the program files in the USB flash memory drive and plug it into the USB direct interface, you can rewrite the firmware.

#### Note:

- You cannot write the firmware using USB flash memory in the Deep Sleep mode. Press the **OK** button to clear the Deep Sleep mode before rewriting the firmware.
- Make sure that the USB flash memory drive has enough space to save the program file.
- It is recommendable to rewrite 1) Sub firmware and 2) Main firmware in this order.
- If rewriting the firmware using a USB flash memory fails and an error message appears on the LCD, or no message appears on the LCD, it will be necessary to rewrite the firmware from a computer using the "FILEDG32.EXE". (Refer to "1.1.2 Rewriting the firmware using computer" in this chapter.)
- The printer driver of the relevant model must have been installed.

#### <Procedures>

- (1) Save the program files (such as LZXXXX\_\$.djf) which are necessary for rewriting the firmware to the USB flash memory.
- (2) While the printer is in the ready state, connect the USB flash memory drive to the USB direct interface on the front of the printer.

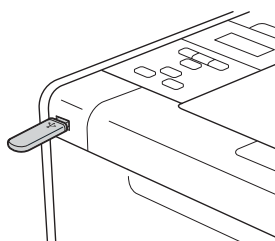


Fig. 4-1

- (3) When the printer recognizes the USB flash memory, the names of the files stored in the USB flash memory are displayed. Select an appropriate file using the **▲** or **▼** button, and then press the **Go** or **OK** button.

#### Memo

To print and check the list of data stored in the USB flash memory, display the LCD, select Index Print using the **▲** or **▼** button, and then press the **Go** or **OK** button.

- (4) "Program Update/Press Go" appears on the LCD. Press the **Go** or **OK** button to start. "Program Updating" message appears on the LCD with Data LED blinking while rewriting the firmware. DO NOT turn off the printer.
- (5) When the rewrite is finished, the printer automatically restarts.
- (6) If you continue to rewrite other firmware and no file names are displayed, wait for a while, and take out the USB flash memory and insert it again. When file names are displayed, select the program files which need to be rewritten, and repeat the above procedures (3) to (5) to rewrite all the selected program files.
- (7) When the rewrite of the main firmware is finished, the printer automatically restarts.
- (8) Remove the USB flash memory drive from the USB direct interface once the update have finished.

## 1.2 Initialization of EEPROM of Main PCB ASSY (Maintenance Mode: Code 01)

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

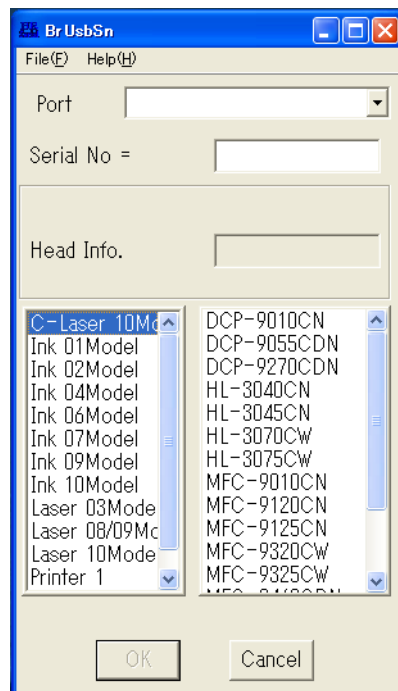
## 1.3 Setting by Country (Maintenance Mode: Code 74)

Make appropriate settings by country in accordance with “1.4.19 Setting by country” in Chapter 5.

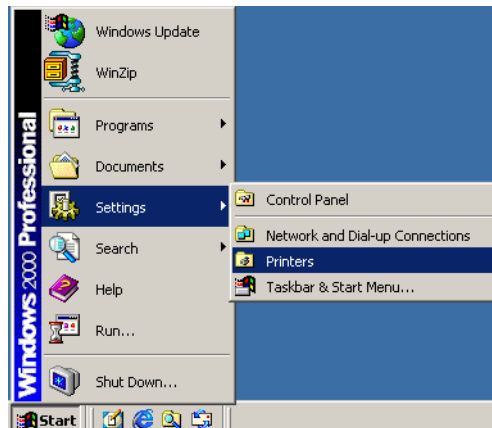
## 1.4 Setting the Serial Number

### <Procedures>

- (1) Connect the PC and printer with the USB cable.
- (2) Double-click the brusbsn.exe file which has been copied in the “hl4000” folder to start.

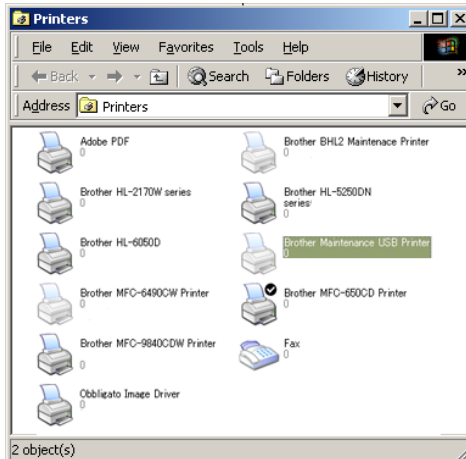


- (3) Click the C-Laser 10Model.
- (4) In Port on the brusbsn screen, select the port number assigned to the Brother Maintenance USB Printer. If the port number is unknown, follow steps below.
  - 1) Click Start | Settings | Printers.

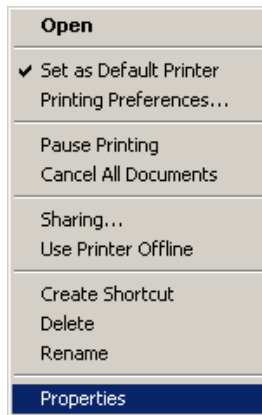


The Printers window appears as shown below.

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

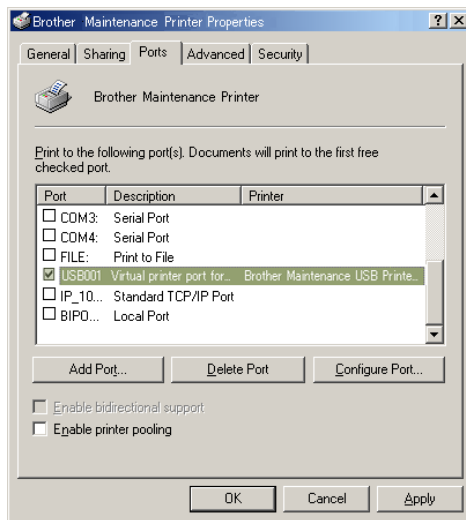


- 3) Click Properties.



The Brother Maintenance USB Printer Properties window appears as shown below.

- 4) Click the Ports tab.



In this example, the port number assigned to the Brother Maintenance USB Printer is USB001.

- (5) Enter the serial number (the fifteen digits) of the printer into the box on the "Serial No".
- (6) Click the **[OK]** button. The serial number is written in the printer.

#### Memo

Refer to **APPENDIX 1** to know how to read the serial number of the printer.

## 1.5 Sensitivity Adjustment of Density Sensor (Maintenance Mode: Code 72)

Make sensitivity adjustments of the density sensor in accordance with "1.4.18 Sensitivity adjustment of density sensor" in Chapter 5.

## 1.6 Performing the Developing Bias Voltage Correction (Maintenance Mode: Code 83)

Perform developing bias voltage correction in accordance with "1.4.25 Developing bias voltage correction" in Chapter 5.

## 1.7 Performing the Adjustment of Inter-color Position Alignment (Maintenance Mode: Code 66)

Perform adjustment of color registration in accordance with "1.4.12 Adjustment of color registration" in Chapter 5.

# 2. IF YOU REPLACE THE REGISTRATION MARK SENSOR HOLDER ASSY

---

### ■ What to do when replacing the laser unit

- Sensitivity adjustment of density sensor (Maintenance mode: code 72)
- Performing the developing bias voltage correction (Maintenance mode: code 83)
- Performing the adjustment of inter-color position alignment (Maintenance mode: code 66)

## 2.1 Sensitivity Adjustment of Density Sensor (Maintenance Mode: Code 72)

Make sensitivity adjustments of the density sensor in accordance with "1.4.18 Sensitivity adjustment of density sensor" in Chapter 5.

## 2.2 Performing the Developing Bias Voltage Correction (Maintenance Mode: Code 83)

Perform developing bias voltage correction in accordance with "1.4.25 Developing bias voltage correction" in Chapter 5.

## 2.3 Performing the Adjustment of Inter-color Position Alignment (Maintenance Mode: Code 66)

Perform adjustment of inter-color position alignment in accordance with "1.4.12 Adjustment of inter-color position alignment" in Chapter 5.



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

---

### ■ What to do when replacing the laser unit

- Sensitivity adjustment of density sensor (Maintenance mode: code 72)
- Performing the developing bias voltage correction (Maintenance mode: code 83)
- Performing the adjustment of inter-color position alignment (Maintenance mode: code 66)

### 3.1 Sensitivity Adjustment of Density Sensor (Maintenance Mode: Code 72)

Make sensitivity adjustments of the density sensor in accordance with "1.4.18 Sensitivity adjustment of density sensor" in Chapter 5.

### 3.2 Performing the Developing Bias Voltage Correction (Maintenance Mode: Code 83)

Perform developing bias voltage correction in accordance with "1.4.25 Developing bias voltage correction" in Chapter 5.

### 3.3 Performing the Adjustment of Inter-color Position Alignment (Maintenance Mode: Code 66)

Perform adjustment of inter-color position alignment in accordance with "1.4.12 Adjustment of inter-color position alignment" in Chapter 5.

## 4. IF YOU REPLACE THE LASER UNIT

---

### ■ What to do when replacing the laser unit

- Sensitivity adjustment of density sensor (Maintenance mode: code 72)
- Performing the developing bias voltage correction (Maintenance mode: code 83)
- Performing the adjustment of inter-color position alignment (Maintenance mode: code 66)

### 4.1 Sensitivity Adjustment of Density Sensor (Maintenance Mode: Code 72)

Make sensitivity adjustments of the density sensor in accordance with “1.4.18 Sensitivity adjustment of density sensor” in Chapter 5.

### 4.2 Performing the Developing Bias Voltage Correction (Maintenance Mode: Code 83)

Perform developing bias voltage correction in accordance with “1.4.25 Developing bias voltage correction” in Chapter 5.

### 4.3 Performing the Adjustment of Inter-color Position Alignment (Maintenance Mode: Code 66)

Perform adjustment of inter-color position alignment in accordance with “1.4.12 Adjustment of inter-color position alignment” in Chapter 5.

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

---

### 5.1 Reset of Irregular Power Supply Detection Counter

The irregular power supply detection counter is counted up when the printer detects irregular power supply. If the counter reaches to the limit, the printer shows the service error to replace the low-voltage power supply PCB because it might be damaged by recursive irregular power supply. 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.

**Note:**

The maintenance driver must have been installed. (Refer to [APPENDIX 3.](#))

- (1) Press the **OK** button and then the **Go** button while the printer is in the ready state. Next, press the **▲** button four times to enter the maintenance mode.  
The printer displays **■■ MAINTENANCE ■■■** on the LCD.
- (2) Connect the PC to the printer with the USB cable.
- (3) Start the "FILEDG32.EXE" and select the "Brother Maintenance USB Printer".
- (4) Click the "Brother Maintenance USB Printer" icon to select. Drag the SQWAVE.PJL and drop it.

## 6. IF YOU REPLACE THE DRUM DRIVE MOTOR

### <Procedures>

- Alignment of gear phase

When replacing the drum drive motor, the gears listed below are removed. Align the phase of each gear in accordance with the table and figure given below when mounting these gears so that the phases of each drum is aligned. Failing this could cause the color misregistration.

### <Gear names>

1, 2	LY0197001	Drum idle gear Z64-26
3	LY0198001	Drum idle gear Z64
4	LY0199001	Drum idle gear Z64 first
5	LY0198001	Drum idle gear Z64
6 to 9	LY0196001	Drum coupling gear Z52

### <Gear phase alignment procedure>

- (1) When assembling Nos. 1 and 2 LY0197001 Drum idle gear Z64-26, be sure to assemble them by aligning the phase as shown in the figure below.
  - Align the mark of the Drum idle gear Z64-26 with the shaft direction of the Drum coupling gear Z52.

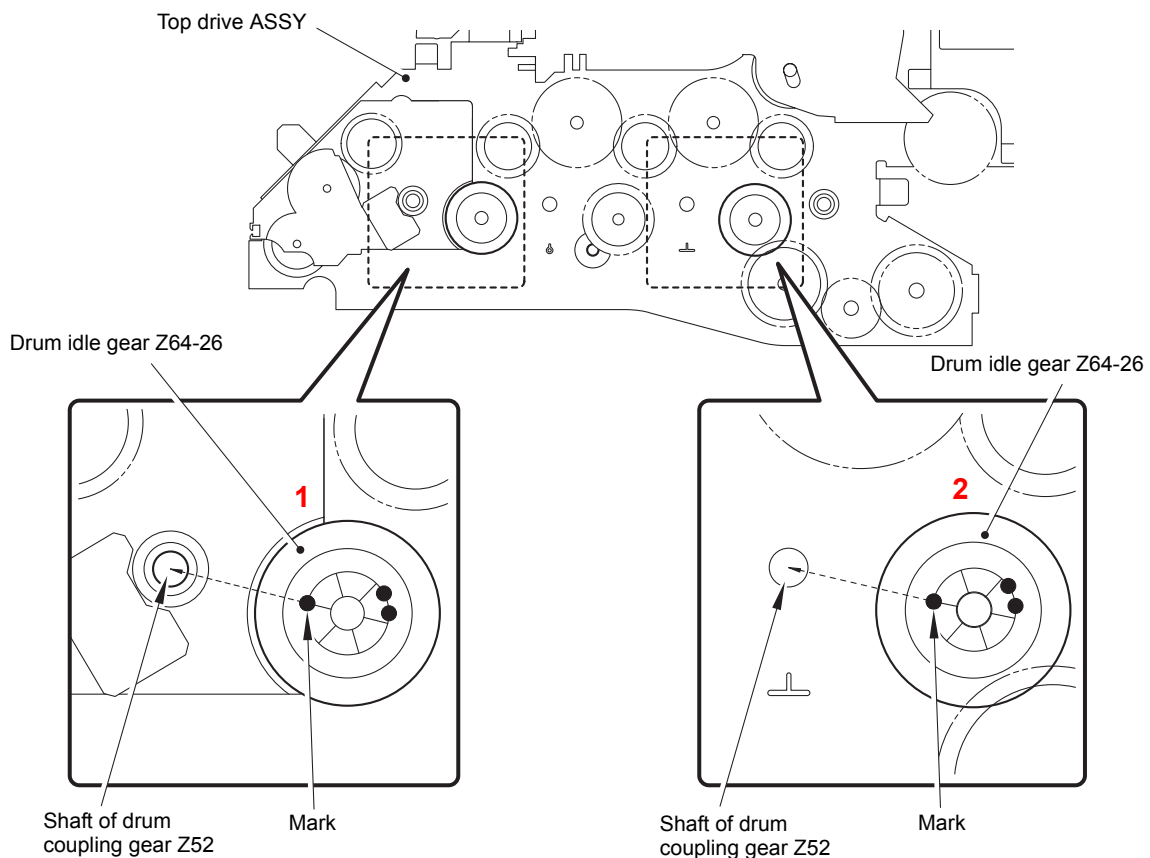


Fig. 4-2

- (2) When mounting LY0198001 Drum idle gear Z64 and LY0199001 Drum idle gear Z64 first of Nos. 3 to 5, mount them by aligning their phases as shown in the figure below.

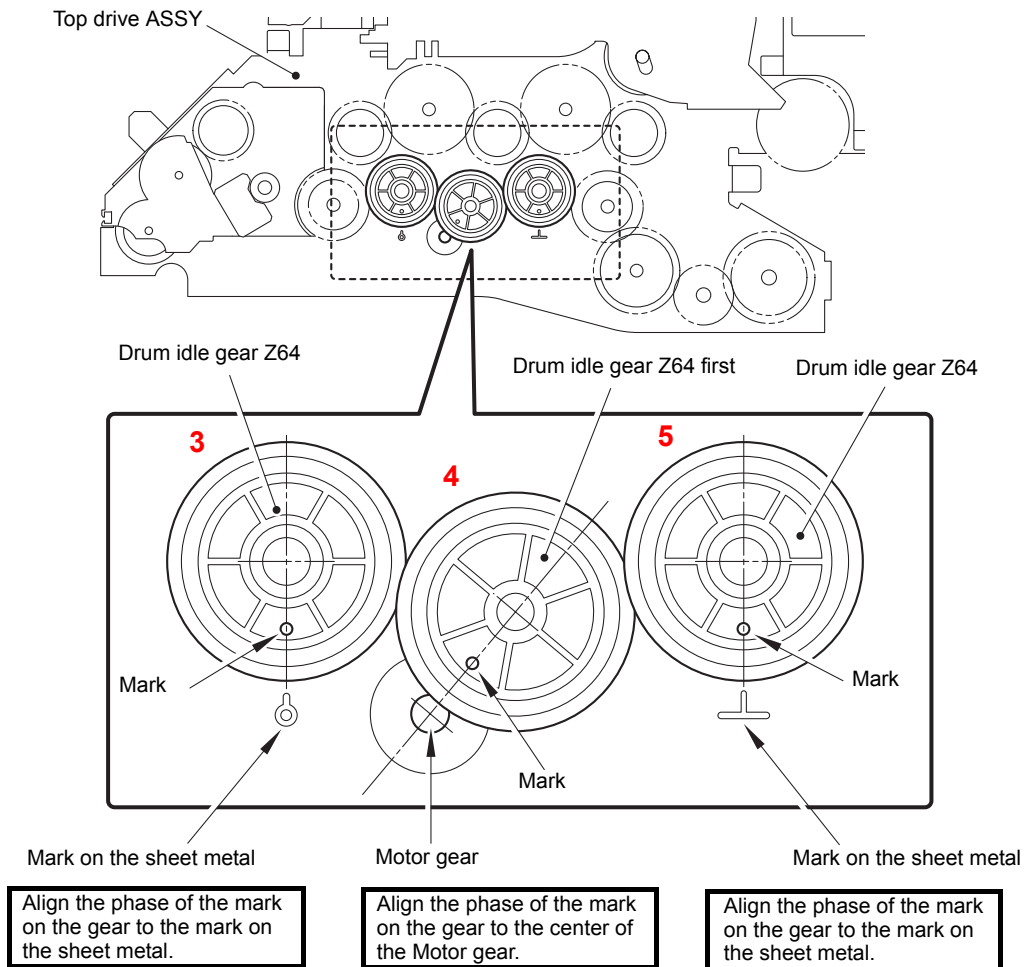


Fig. 4-3

- (3) When assembling Nos. 6 to 9 LY0196001 Drum coupling gear Z52, be sure to assemble them by aligning the phase as shown in the figure below.
- Align the mark ( ▲ ) of the Drum coupling gear Z52 of No. 6 with the mark ( ● ) of the Drum idle gear Z64-26.
  - Align the mark ( ● ) of the Drum coupling gear Z52 of No. 7 at the center between the two marks ( ● ) of the Drum idle gear Z64-26.
  - Align the mark ( ▲ ) of the Drum coupling gear Z52 of No. 8 with the mark ( ● ) of the Drum idle gear Z64-26.
  - Align the mark ( ◆ ) of the Drum coupling gear Z52 of No. 9 at the center between the two marks ( ● ) of the Drum idle gear Z64-26.

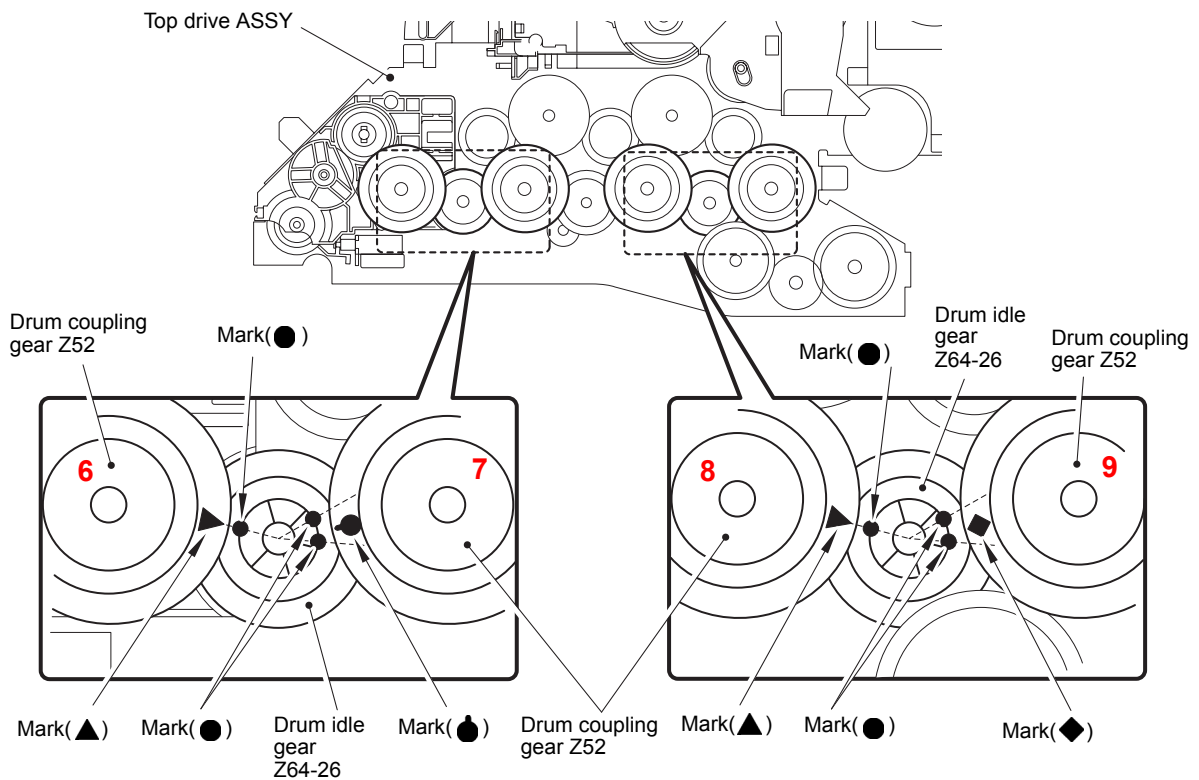


Fig. 4-4

**Note:**

Since the teeth of the gears are oriented at an angle in the shaft direction, be careful when aligning the phase upon mounting the gears.

# **CHAPTER 5**

## **SERVICE FUNCTIONS**

# CHAPTER 5

## SERVICE FUNCTIONS

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

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

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# 1. MAINTENANCE MODE

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The maintenance mode is exclusively designed for the checking, setting and adjustments of the printer 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 printer 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 printer displays “■■ MAINTENANCE ■■■” on the LCD, indicating that it is placed in the initial state of the maintenance mode, a mode in which the printer is ready to accept entry from the buttons.
- (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](#), [75](#), [77](#), [80](#), [82](#) and [91](#))

### <Operating procedure>

- (1) Press the **OK**, **Go** and **OK** buttons in this order when the printer is in the ready state. “0” appears 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 printer automatically returns to the ready state. As for the codes [12](#), [25](#), [28](#), [45](#), [66](#), [68](#), [71](#), [72](#), [75](#), [80](#) and [82](#), press the **Cancel** button to switch the printer 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	Operational 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(5-15)
40	Printout of EEPROM log	1.4.10(5-16)
45	Not-disclosed-to-users functions	1.4.11(5-17)
66	Adjustment of inter-color position alignment	1.4.12(5-21)
67	Continuous print test	1.4.13(5-25)
68	Laser unit test pattern print	1.4.14(5-28)
69	Frame pattern print (One-sided)	1.4.15(5-29)
70	Frame pattern print (Two-sided)	1.4.16(5-31)
71	Color test pattern	1.4.17(5-33)
72	Sensitivity adjustment of density sensor	1.4.18(5-35)
74	Setting by country	1.4.19(5-36)
75	Sensitivity adjustment of registration mark sensor and check of belt unit surface	1.4.20(5-38)
77	Printout of maintenance information	1.4.21(5-40)
78	Operational check of fans	1.4.22(5-42)
80	Display of machine history (log)	1.4.23(5-43)
82	Error code indication	1.4.24(5-47)
83	Developing bias voltage correction	1.4.25(5-48)
91	EEPROM parameter initialization	1.4.1(5-3)
99	Exit from the maintenance mode	1.4.26(5-49)

\*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 <b>not</b> be initialized.	These will <b>not</b> be initialized.
Error history		
MAC address (Ethernet Address)		
Operation lock of the control panel password	These will be initialized.	
Secure function lock		
Worker switch		
User switches (Items to be initialized when resetting to the factory default settings)		
Function settings except user switches (Items except the factory default settings) - Languages - Reprint - Secure print - Interfaces		These will be initialized.
LAN area (Network settings)		
PCL core area (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. Then, press the **OK** button. The “PARAMETER INIT” appears on the LCD.
- (2) Upon completion of parameter initialization, the printer returns to the initial state of the maintenance mode.

#### **Note:**

Function code 01 is for service personnel. Function code 91 is for user support.

## 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. Then, press the OK button.
- (2) Printing of a monochrome image quality test pattern (see the figure below) is started. When printing is finished, the printer returns to the initial state of the maintenance mode.

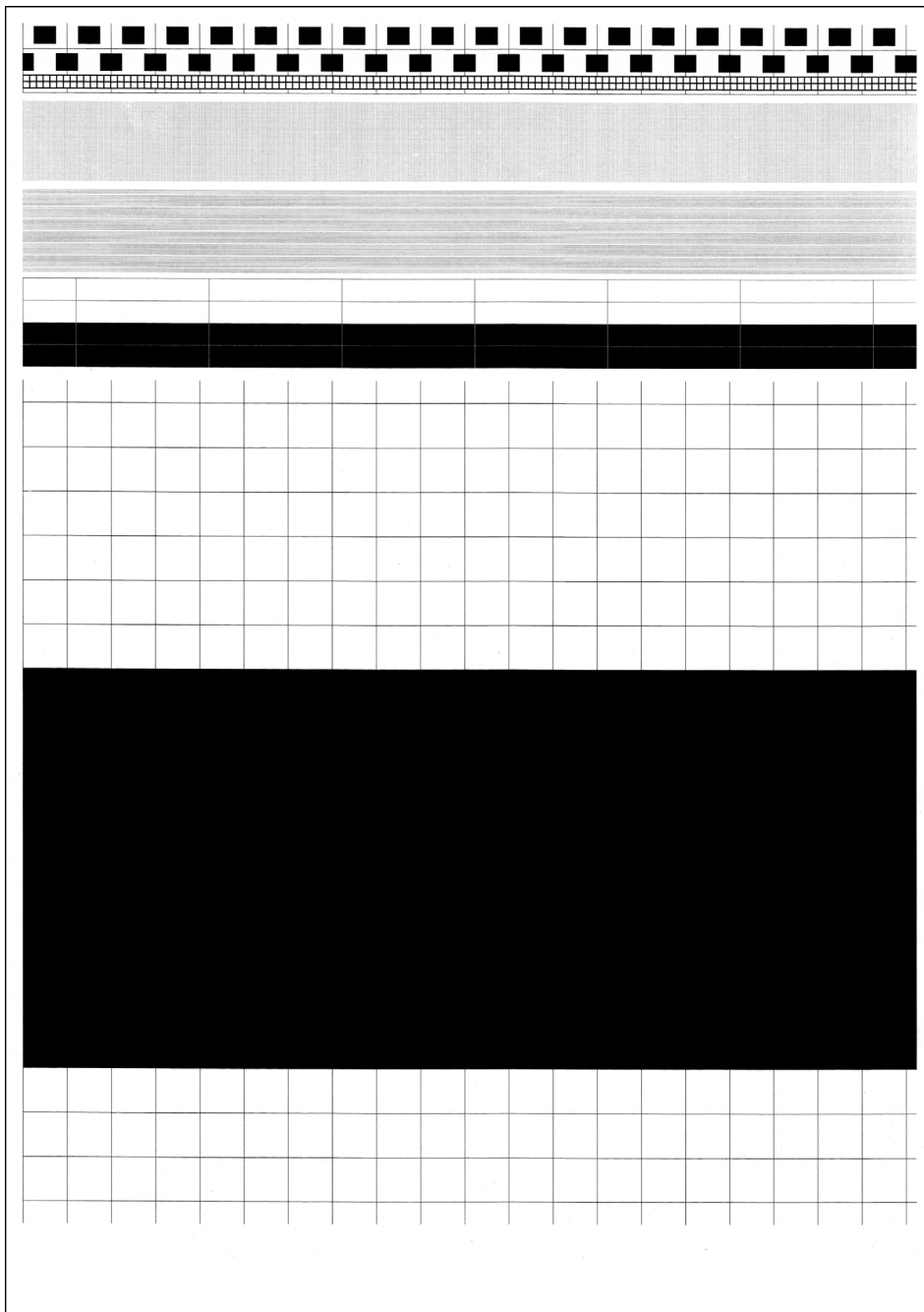


Fig. 5-1

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

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

The printer incorporates the following worker switch functions which may be activated with the procedures using the buttons on the control panel. The worker switches have been set at the factory in conformity to the codes of each country. Do not disturb them unless necessary.

WSW No.	Function
<b>WSW17</b>	Switching of the time display method (between the American method (MM/DD/YY**) and European method (DD/MM/YY**))
<b>WSW47</b>	Switching between high-speed USB and full-speed USB
<b>WSW55</b>	Interval of time required for the developing bias voltage correction
<b>WSW56</b>	“Last Job Reprint” function setting
	Switching of the display for the coverage of toner cartridge
	Switching of the CPU sleep mode
<b>WSW59</b>	Enabling and disabling of transmission of USB serial number (SN)
<b>WSW63</b>	Switching of the time display method (between the Japanese method (YY/MM/DD**) and other methods)
	Demo print type (Demo language)
	Font support for Israel
<b>WSW64</b>	Language setting
	Default paper size
<b>WSW65</b>	Default media type
	Support for Bond paper
	Support for Hagaki
	Support for Label

\* For details of the worker switches (WSW), refer to the attached manual.

\*\* DD, MM, and YY refer to the date, month, and year respectively.

### <Operating procedure>10

- (1) Press the ▲ or ▼ button to display “MAINTENANCE 10” on the LCD in the initial state of the maintenance mode. Then, press the **OK** button.
- (2) The printer displays “WSW00” on the LCD and becomes ready to accept a worker switch number.
- (3) Press the ▲ or ▼ button to select the desired number from the worker switch numbers. Then, press **OK** button.
- (4) The following appears on the LCD.  

Selector 1	Selector 8
↓	↓
WSWXX = <u>0</u> 0 0 0 0 0 0 0	
- (5) “1” is set by pressing the ▲ button and “0” is set by pressing the ▼ button. Press the ▲ button if you want to input “1” to the selector 1 and press the ▼ button if you want to input “0”.
- (6) The cursor moves to the selector 2. The cursor moves to the selector 3 by inputting “1”, by pressing the ▲ button or “0” by pressing the ▼ button as with the procedure (5). Input a value up to the selector 8 by repeating the aforementioned procedure according to the need. When an incorrect value is inputted, move the cursor back by pressing the **Back** button and re-input a correct value.
- (7) Press the **OK** button when the setting value is entered. This operation saves the newly entered selector values onto the EEPROM and readies the printer for accepting a firmware switch number. The printer displays “WSW00” on the LCD again to accept a worker switch number.
- (8) Press the **Cancel** button to return to the printer to the initial state of the maintenance mode.

**Note:**

- To cancel this operation and return to the printer 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, the printer will automatically return to the initial state of the maintenance mode.

## [2] Printout of worker switch data (Function code 11)

### <Function>

The printer prints out the setting items of the worker switches and their contents specified.

### <Operating procedure>

- (1) Press the ▲ or ▼ button to display “MAINTENANCE 11” on the LCD in the initial state of the maintenance mode. Then, press the OK button. The printer displays “PRINTING” on the LCD.
- (2) Printing of the CONFIGURATION LIST (see the figure below) is started. When printing is finished, the printer returns to the initial state of the maintenance mode.

```

                                CONFIGURATION LIST
                                MODEL : 84E-302
                                REV.  : U0009161919VER.V
                                PCI   : 5.00
                                SUM   : AA8B
WSW01 = 00000010
1-2. DIAL FORMAT                : NORMAL
3-4. BREAK TIME                 : 60 MS
5-6. INTERDIGIT PAUSE          : 800 MS
7. DP/PB CHANGE IN USER SW    : NO
8. DP/PB FIXING SELECTION      : PB
WSW02 = 1111010
1-2. ON TIME                   : 100 MS
3-4. OFF TIME                  : 140 MS
5-8. LINE BEEP ATTENUATOR      : 10 DB
WSW03 = 10110000
1. PARA. CNG DETECTION1       : B
2-4. NOT USED
5. PARA. CNG DETECTION2       : A
6-8. NOT USED
WSW04 = 00010110
1-4. NOT USED
5. DGM DELAY +4SEC           : OFF
6-8. FLASHING TIME            : 500 MS
WSW05 = 00000110
1-3. DIAL TONE DETECTION       : 3.5 SEC WAITING
4. REMOTE ID DETECTION TIMEOUT : 2 SEC
5-6. BUSY TONE DETECTION (CALLING) : AFTER DIALING
7. BUSY TONE DETECTION (CALLED) : OFF
8. NOT USED
WSW06 = 00101100
1-3. PAUSE KEY                 : 3.5 SEC WAITING
4-6. 2ND DT DETECTION TIME     : 800 MS
7. 2ND DT DETECTION CYCLE     : 1 CYCLE
8. 2ND DT INTERRUPT DETECTION TIME : 30 MS
WSW07 = 01001100
1-2. FREQUENCY RANGE          : INITIAL DATA
3. NOT USED
4-6. 2ND DT DETECTION LEVEL    : -30 DBM
7. 1ST DT INTERRUPT DETECTION TIME : 30 MS
8. NOT USED
WSW08 = 01100111
1-3. 1ST DT DETECTION TIME     : 800 MS
4-5. 1ST/2ND DT TIME OUT      : 10 SEC
6-8. 1ST DT DETECTION LEVEL    : -42 DBM
WSW09 = 00000000
1. ECM FRAME                   : 256 OCTET
2. NON STANDARD FACILITIES     : ON
3-4. TIMES OF FALL BACK        : 4
5. T5 TIMER                    : 300 SEC
6. T1 TIMER                    : 35 SEC
7-8. CALLING TIMEOUT          : 55 SEC
WSW10 = 00010100
1. NOT USED
2. TIMING OF LAST DIGIT-MODEM CHANGE : 100 MS
3. TIMING OF CML ON CNG TRANSMISSION : 2 SEC
4. TIMING OF CML ON CED TRANSMISSION : 2 SEC
5-6. TRAINING RETRIES         : 2
7. CODING METHOD MMR           : ON
8. CODING METHOD MMR           : ON
WSW11 = 01011000
1-2. FREQUENCY RANGE          : INITIAL DATA
3-8. ON/OFF TIME              : 175 - 600 / 175 - 600 MS
WSW12 = 10011011
1-2. OFF DETECTION TIME       : 700 MS
3-4. AUTO ANS OFF DETECTION TIME : 7 SEC
5-6. ON DETECTION TIME        : 250 MS
7-8. NOT USED
```

Fig. 5-2

### Note:

The function names specific to multi-function printers are printed in CONFIGURATION LIST for convenience of program development. They are invalid in this printer and should be ignored. These settings must not be changed.



## 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. Then, press the **OK** button.
- (2) Each time you press the **Go** button, the LCD cycles through the displays as shown below.
- (3) Press **Cancel** button in any process of the display cycle. The printer returns to the initial state of the maintenance mode.

<Display 1>	
Backlight	: OFF
LCD	: Display of all dots
Data LED	: Green blinking
Error LED	: Red blinking
<Display 2>	
Backlight	: OFF
LCD	: Display of 16 dots in 2 lines
Data LED	: Green blinking
Error LED	: Red blinking
<Display 3>	
Backlight	: OFF
LCD	: Display of no dots
Data LED	: Green blinking
Error LED	: Red blinking
<Display 4>	
Backlight	: ON
LCD	: Display of no dots
Data LED	: Green blinking
Error LED	: Red blinking

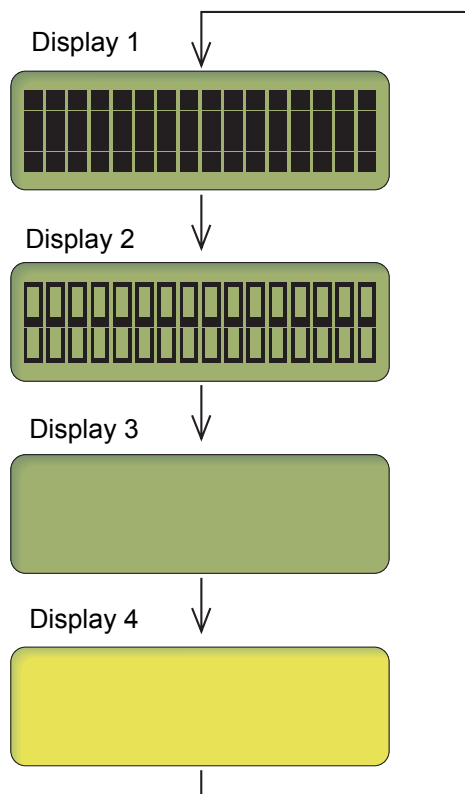


Fig. 5-3

## 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 properly.

### <Operating procedure>

- (1) Press the ▲ or ▼ button to display “MAINTENANCE 13” on the LCD in the initial state of the maintenance mode. Then, press the **OK** button. The printer displays “00” on the LCD.
- (2) Press the buttons in the order designated in the illustration shown below. The LCD shows the corresponding number in decimal notation each time a button is pressed. Check that the displayed number is correct by referring to the illustration below. If a button is pressed out of order, the printer displays the “INVALID OPERATE” on the LCD. Press the **Cancel** button, and then press the correct buttons.
- (3) After the last number button is pressed, the printer returns to the initial state of the maintenance mode.

### Memo:

To terminate this operation, press the **Cancel** button. The printer returns to the initial state of the maintenance mode.



Fig. 5-4

## 1.4.6 Software version check (Function code 25)

### <Function>

This function allows you to check the management information of the software programs such as version information, check sum.

### <Operating procedure>

- (1) Press the ▲ or ▼ button to display “MAINTENANCE 25” on the LCD in the initial state of the maintenance mode. Then, press the **OK** button. The printer displays each of items described below on the LCD.
- (2) Press the **Go**, ▲ or ▼ button to check the next item.
- (3) To terminate this operation, press the **Cancel** button. The printer returns to the initial state of the maintenance mode.

LCD	Description
MAIN: Ver1.00(A)* <sup>1</sup>	Main firmware version information (A): Revision information
PCL: Ver1.00(P)* <sup>1</sup>	Sub firmware version information (P): Identifier of PCL/PS * <sup>2</sup>
ENG: Ver1.00	Engine firmware version information
NET: Ver1.00	Network program version information
HV: Ver1.00 BXXX	High voltage CPU program version and PCB information
B0608071049:5708* <sup>1</sup>	Boot program creation date
U0612271600:7B0A* <sup>1</sup>	Main firmware creation date
D0611301115:E6C3* <sup>1</sup>	Demo firmware data creation date
P0612271602:BD40* <sup>1</sup>	Sub firmware creation date
ROM Check Sum	Check sum self-diagnosis function * <sup>3</sup>

\*<sup>1</sup> How to display the check sum information

Press the **OK** button when its version information is displayed on the LCD to display the check sum information. Press the **OK** button again to go back to the version information display. Press the **Go**, ▲ or ▼ button to check the next item.

#### **Note:**

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

\*<sup>2</sup> (P) indicates that the firmware supports PCL/PS.

\*<sup>3</sup> 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)/OFF (Disabled)

The default setting is displayed with “\*”.

### <Operating procedure: How to set “OnePushDemo = ON”>

- (1) Press the ▲ or ▼ button to display “MAINTENANCE 28” on the LCD in the initial state of the maintenance mode. Then, press the **OK** button. The printer displays “OnePushDemo = ON” on the LCD.
- (2) Press the **OK** button so that the One Push Demo function is set to be enabled.
- (3) The printer automatically returns to the initial state of the maintenance mode.

#### **Note:**

- To terminate this operation, press the **Cancel** button. The printer returns to the initial state of the maintenance mode.
- 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. Then, press the **OK** button.
- (2) If the sensing status are as listed below, the LCD will show “C1C2L2T2\*\*” when paper tray 2 is installed. “C1\*\*\*\*\*” appears on the LCD when paper tray 2 is not installed. The LCD indication moves to the next term by pressing the **Go** button.

Given below is the relationship between the LCD indication, sensor name and sensor state.

LCD	Sensors	Sensing status (OK/NG)
C1	T1 paper edge sensor	Paper tray 1 not installed/installed
C2	T2 paper edge sensor	Paper tray 2 not installed/installed
L2	T2 plate-up detection sensor	Plate down/Plate up
T2	T2 connector	Paper tray 2 installed/not installed
MP	MP paper empty sensor	MP tray paper not detected/detected
MR	MP registration front sensor	MP tray paper not detected/detected
CV	Front cover sensor	Front cover closed/open
RC	Back cover sensor	Back cover closed/open
RM	Registration front sensor	Paper not detected/detected
RA	Registration rear sensor	Paper not detected/detected
PO	Paper eject sensor	Paper not detected/detected
FW	Waste toner sensor	OFF/ON
NK	New toner sensor Black	OFF/ON
NY	New toner sensor Yellow	OFF/ON
NM	New toner sensor Magenta	OFF/ON
NC	New toner sensor Cyan	OFF/ON
KC	Toner sensor Black	Toner (K) detected/not detected
YC	Toner sensor Yellow	Toner (Y) detected/not detected
MC	Toner sensor Magenta	Toner (M) detected/not detected
CC	Toner sensor Cyan	Toner (C) detected/not 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	Sensing status (OK/NG of temperature/humidity)
TMP	External temperature/humidity sensor	XX °C/NG
HUM	External temperature/humidity sensor	XX %/NG
MAC	Internal temperature sensor	XX °C/NG
BT	Belt temperature sensor	XX °C/NG

**Note:**

If the sensor detects the abnormal value, the printer displays “NG” on the LCD.

- (3) Change the detecting conditions to check that the indication on the LCD changes according to the sensor status. For instance, insert paper through the registration front/rear sensor, open the front cover or the back cover, remove the toner cartridge, jam paper at the paper outlet, insert paper from the manual feed slot, etc.
- (4) Press the **Cancel** button to return to the printer to the initial state of the maintenance mode.

■ Location of sensors

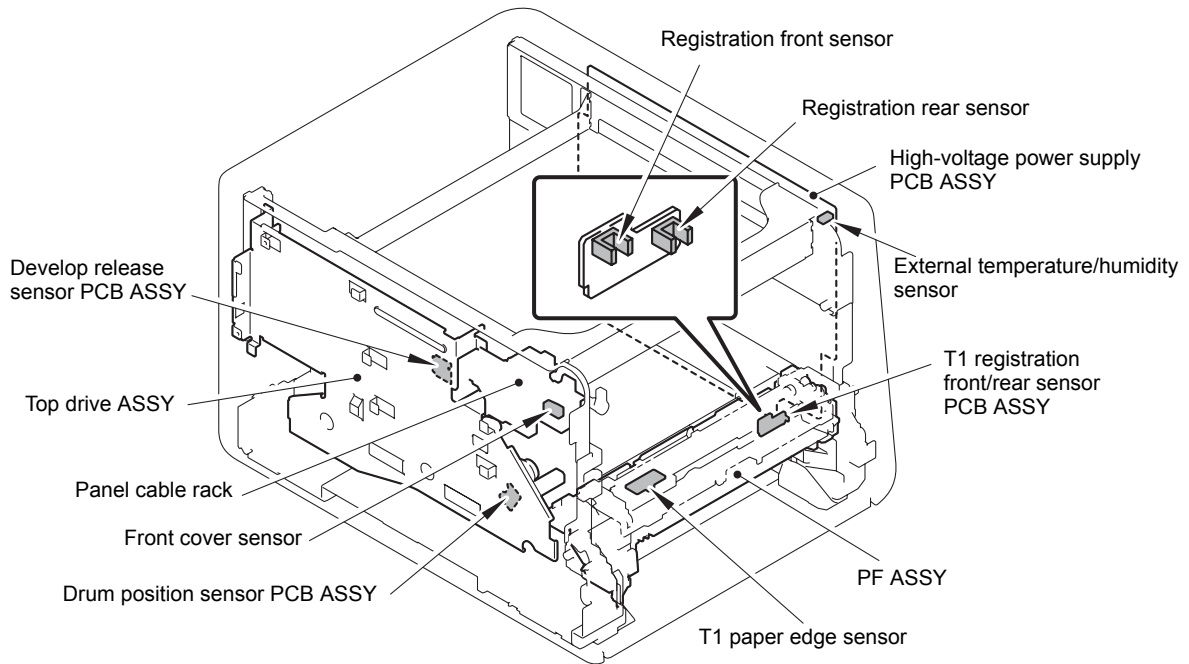


Fig. 5-5

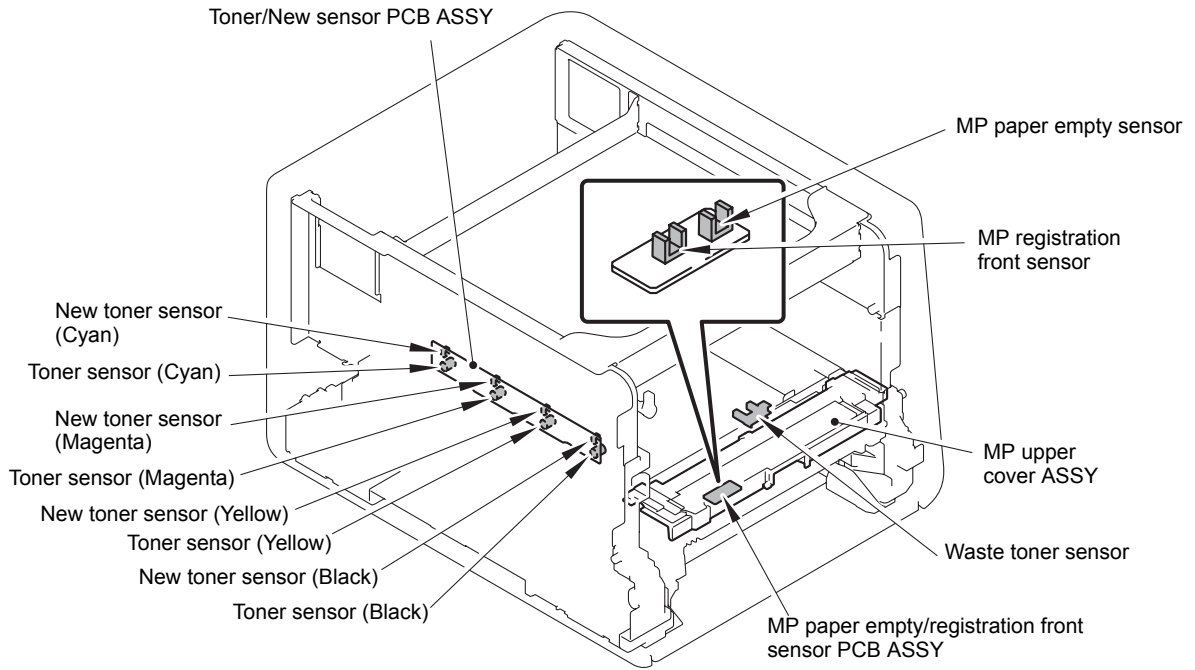


Fig. 5-6

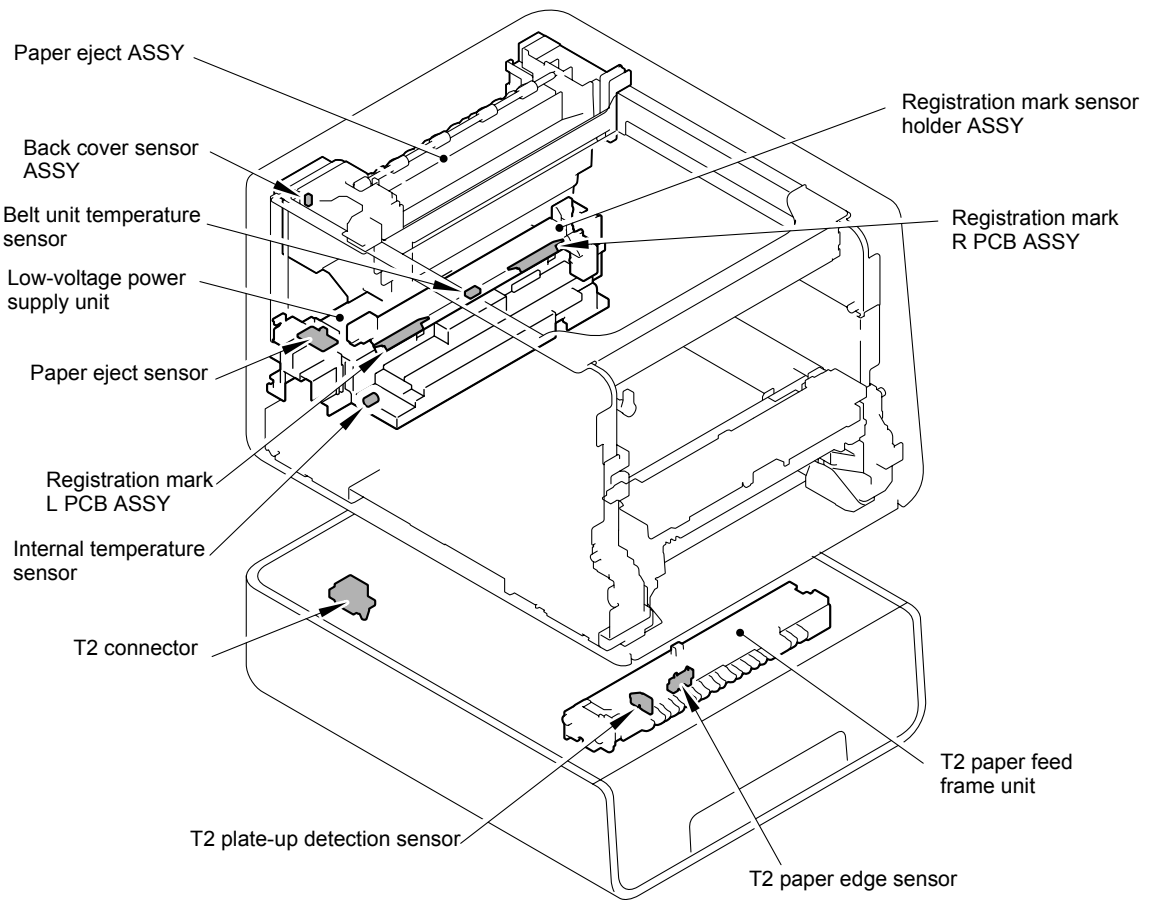


Fig. 5-7

### 1.4.9 LAN connection status display (Function code 33)

#### <Function>

This function allows you to check the status of the wired LAN connection. The display items are shown in the table below.

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.

#### <Operating procedure>

- (1) Press the ▲ or ▼ button to display "MAINTENANCE 33" on the LCD in the initial state of the maintenance mode. Then, press the **OK** button.
- (2) The display items in the table above are displayed.
- (3) Press the **Cancel** button to return to the printer to the initial state of the maintenance mode.



## 1.4.10 Printout of EEPROM log (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. Then, press the **OK** button. The printer displays “E2PDUMP ENGN ALL” on the LCD.
- (2) Press the ▲ or ▼ button to select the information you wish to print. Press the **OK** button, and then the “E2PDUMP PRINTING” appears on the LCD. The printer starts to print the EEPROM log.

The terms of EEPROM logs on the LCD are as follows;

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 compensation 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)

- (3) Upon completion of EEPROM logs printing, the printer returns to the initial state of the maintenance mode.

#### **Note:**

- Press the **Cancel** button to return to the printer to the initial state of the maintenance mode.
- If the error occurs during printing, it is necessary to start from the beginning.
- The serial number of the printer is printed on the first line on each page.

### 1.4.11 Not-disclosed-to-users functions (Function code 45)

Regarding the not-disclosed-to-users functions, the function setting can be executed by a simple panel operation.

#### ■ Changing return value of USB No.

##### <Function>

When the OS of the computer is Windows Vista<sup>®</sup>, and the computer is connected to a device through USB 2.0 full speed, the OS might fail to get the serial No. of the USB device depending on the computer and USB device. When the OS fails to get the serial No., the return value may continue to increase every time the device is connected to the computer. To avoid this problem, the return value of the serial No. can be fixed to "0".

LCD	Description
USBNo. =ON	Returns the serial No. of the device. (default)
USBNo. =OFF	Returns "0".

"\*" 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. Then, press the **OK** button. The "USBNo." will appear on the LCD.
- (2) Press the **OK** or **Go** button to select "USB No. = ON" or "USB No. = OFF," and then press the **OK** or **Go** button.
- (3) "Accepted" is displayed on the LCD, and the printer goes back to the initial state of the maintenance mode.
- (4) Turn the power switch of the printer OFF.

##### **Note:**

This mode is enabled when the power of the printer is turned OFF/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. Then, press the **OK** button. The “USBNo.” will appear on the LCD.
- (2) Press the ▲ or ▼ button to display “PS.DitherType” and then press the **OK** or **Go** button.
- (3) Press the ▲ or ▼ button to select “PS.DitherType=0” or “PS.DitherType=1,” and then press the **OK** or **Go** button.
- (4) “Accepted” is displayed on the LCD, and the printer goes back to the initial state of the maintenance mode.

## ■ Switching ON/OFF of DirectPrint Color mode - Improve Gray Color

### <Function>

This function is to switch ON/OFF of the print control for the gray color when other colors are slightly blended in the gray color or the gray color is uneven upon printing.

LCD	Description
DP.ImpGray=ON	DirectPrint Color mode - Improve Gray Color. (Print control for gray color) ON (Improves the symptom that other colors are slightly blended in the gray color.) (default)
DP.ImpGray=OFF	DirectPrint Color mode - Improve Gray Color. (Print control for gray color) OFF (Improves the unevenness of the gray color)

“\*” 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. Then, press the **OK** button. The “USBNo.” will appear on the LCD.
- (2) Press the ▲ or ▼ button to display “DP.ImpGray” and then press the **OK** or **Go** button.
- (3) Press the ▲ or ▼ button to select “DP.ImpGray=ON” or “DP.ImpGray=OFF,” and then press the **OK** or **Go** button.
- (4) “Accepted” is displayed on the LCD, and the printer goes back to the initial state of the maintenance mode.

## ■ Switching of timing to execute Auto Registration

### <Function>

Relative displacement between Cyan, Magenta, Yellow, and Black is detected using the registration mark sensor, and the Auto Registration is executed at the timing when the displacement value exceeds the stipulated threshold value.

This is a function to switch the threshold value which is used as the timing to execute Auto Registration.

The threshold value can be switched in three phases between High, Mid, and Low.

LCD	Description
Regi Freq=Mid	The frequency to execute Auto Registration is middle. (default)
Regi Freq=High	The frequency to execute Auto Registration is high.
Regi Freq=Low	The frequency to execute Auto Registration is low.

“\*” is displayed at the end of the currently specified function in the LCD display.

#### Note:

It can be set regardless of the Auto Registration switching function in the function menu.  
Even if this function is switched, it does not affect the timing to execute Auto Registration in the function menu.

### <Operating procedure>

- (1) Press the ▲ or ▼ button to display “MAINTENANCE 45” on the LCD in the initial state of the maintenance mode. Then, press the **OK** button. The “USBNo.” will appear on the LCD.
- (2) Press the ▲ or ▼ button to display “Regi Freq” and then press the **OK** or **Go** button.
- (3) Select “Regi Freq = Mid”, “Regi Freq = High”, or “Regi Freq = Low” by pressing the ▲ or ▼ button, and press the **OK** or **Go** button.
- (4) “Accepted” is displayed on the LCD, and the printer goes back to the initial state of the maintenance mode.

## ■ Adjusting left-end print start position on second side in duplex printing

### <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. Then, press the **OK** button. The “USBNo.” will appear on the LCD.
- (2) Press the ▲ or ▼ button to display “DX.XAdjust” and then press the **OK** or **Go** button.
- (3) 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.
- (4) When the value is changed to the adjustment value, press the **OK** button. “Accepted” is displayed on the LCD, and the printer goes back to the initial state of the maintenance mode.

## ■ Switching ON/OFF of Deep Sleep function

### <Function>

This function is to switch whether or not to permit the printer to go into Deep Sleep when StoreData(Secure) exists in the main body.

LCD	Description
DpSlp.StrDt =ON	Even when StoreData(Secure) exists, the Deep Sleep function operates.
DpSlp.StrDt =OFF	When StoreData(Secure) exists, the Deep Sleep function does not operate. (default)

“\*” is displayed at the end of the currently specified function in the LCD display.

#### Note:

This function is enabled when the Deep Sleep function is set to ON.

### <Operating procedure>

- (1) Press the ▲ or ▼ button to display “MAINTENANCE 45” on the LCD in the initial state of the maintenance mode. Then, press the **OK** button. The “USBNo.” will appear on the LCD.
- (2) Press the ▲ or ▼ button to display “DpSlp.StrDt” and then press the **OK** button.
- (3) Select “DpSlp.StrDt =ON” or “DpSlp.StrDt =OFF” by pressing the ▲ or ▼ button, and press the **OK** button.
- (4) “Accepted” is displayed on the LCD, and the printer goes back to the initial state of the maintenance mode.

## ■ Change of the transfer current setting (Only for Japanese hagaki printing)

### <Function>

Dots appeared when hagaki printing is performed can be alleviated by changing the transfer current setting.

### <Operating procedure>

- (1) Press the ▲ or ▼ button to display “MAINTENANCE 45” on the LCD in the initial state of the maintenance mode. Then, press the **OK** button. The “USBNo.” will appear on the LCD.
- (2) Press the ▲ or ▼ button until “Special Printing” is displayed to press the **OK** button.
- (3) Press the ▲ or ▼ button to change the setting, and press the **OK** or **Go** button. There are four setting options: "Default", "HAGAKI1", "HAGAKI2", and "HAGAKI3". (“\*” is displayed at the end of the currently specified function in the LCD display. The initial value is “Default”.)
- (4) “Accepted” is displayed on the LCD, and the printer goes back to the initial state of the maintenance mode.
- (5) Perform hagaki printing again to check if the dot symptom is alleviated.
- (6) When the symptom is not alleviated, repeat the procedures (1) to (4) to set an optimum option, and then perform hagaki printing.

## 1.4.12 Adjustment of inter-color position alignment (Function code 66)

### <Function>

This function allows a service man to forcibly activate the inter-color position alignment adjustment function, which is usually executed automatically in 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 user is allowed to execute reset of inter-color position alignment adjustment (manual) only.

#### Note:

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

### ■ Adjustment of inter-color position alignment (auto)

#### <Operating procedure>

- (1) Press the ▲ or ▼ button to display "MAINTENANCE 66" on the LCD in the initial state of the maintenance mode. Then, press the **OK** button. "REGISTRATION" is displayed on the LCD.
- (2) Press the **OK** button. "PLEASE WAIT" is displayed on the LCD, and adjustment of inter-color position alignment is automatically done.
- (3) When this operation is completed without an error, "OK L:C110 R:M105" is displayed on the LCD.
- (4) Press the **Cancel** button to return to the printer to the initial state of the maintenance mode. When an error message is displayed on the LCD, take the measures described in the table below.

Error message	Measure
FAILED	Press the <b>Go</b> button to clear the error. Adjust inter-color position alignment manually in accordance with the procedure for adjustment of inter-color position alignment (manual) given <a href="#">next page</a> .
TONER EMPTY # *	Replace the empty toner cartridge and press the <b>Go</b> button to clear the error. Conduct adjustment of inter-color position alignment (auto) again.
NG*L : c080 R : M105	Press the <b>Go</b> button to clear the error. Conduct 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 C : 050	
Cover is Open	Close the front cover.
No Paper	Replenish paper of the A4-size paper specified in the display on the tray. Conduct adjustment of inter-color position (auto) again.
Jam Tray 1	Remove the jammed paper, and press the <b>Go</b> button to clear the error.
Jam Rear	

\* # indicates the toner color (Y, M, or C) of which cartridge became empty.

#### Memo:

Although adjustment of inter-color position alignment (auto) is executed several times and the result of inter-color position alignment adjustment chart ([P5-23](#)) does not fall within the range of  $\pm 4$ , readjust it according to the following procedures.

### <Operating procedure after adjustment inter-color position alignment (auto) fails>

- 1) Press the ▲ or ▼ button to display "MAINTENANCE 66" on the LCD in the initial state of the maintenance mode. Then, press the **OK** button. "REGISTRATION" is displayed on the LCD. Load A4-size paper on the tray.
- 2) Press the ▲ or ▼ button to display "PRINT CHART" on the LCD, and then press the **OK** button.
- 3) Display "PRINTING" on the LCD, and print the inter-color position alignment adjustment chart. After printing, "PRINT CHART" is displayed again.
- 4) Press the ▲ or ▼ button to display "OFFSET ADJUST" on the LCD, and then press the **OK** button. "1. MAGENTA = 0" is displayed on the LCD.
- 5) With the printed inter-color position alignment adjustment chart, check the numeric value where the color is the darkest among the pattern ① (Magenta Left). Press the ▲ or ▼ button to display that numeric value, and then press the **OK** button.
- 6) Enter the numeric value of the patterns ② to ③ and ⑦ to ⑨ in the same way.
- 7) When you enter the numeric value of the pattern ⑨ (Yellow Right), "COMPLETED" is displayed.
- 8) Press the **Cancel** button to return to the printer 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. Then, press the **OK** button. "REGISTRATION" is displayed on the LCD. Load A4-size paper on the tray.
- (2) Press the ▲ or ▼ button to display "PRINT CHART" on the LCD, and then press the **OK** button.
- (3) Display "PRINTING" on the LCD, and print the inter-color position alignment adjustment chart. After printing, "PRINT CHART" is displayed again.
- (4) Press the ▲ or ▼ button to display "SET REGISTRATION" on the LCD, and then press the **OK** button. "1. MAGENTA = 0" is displayed on the LCD.
- (5) With the printed inter-color position alignment adjustment chart, check the numeric value where the color is the darkest among the pattern ① (Magenta Left). Press the ▲ or ▼ button to display that numeric value, and then press the **OK** button.
- (6) Enter the numeric value of the patterns ② to ⑨ in the same way.
- (7) When you enter the numeric value of the pattern ⑨ (Yellow Right), "COMPLETED" is displayed.
- (8) Press the **Cancel** button to return to the printer to the initial state of the maintenance mode.

■ Inter-color position alignment adjustment chart

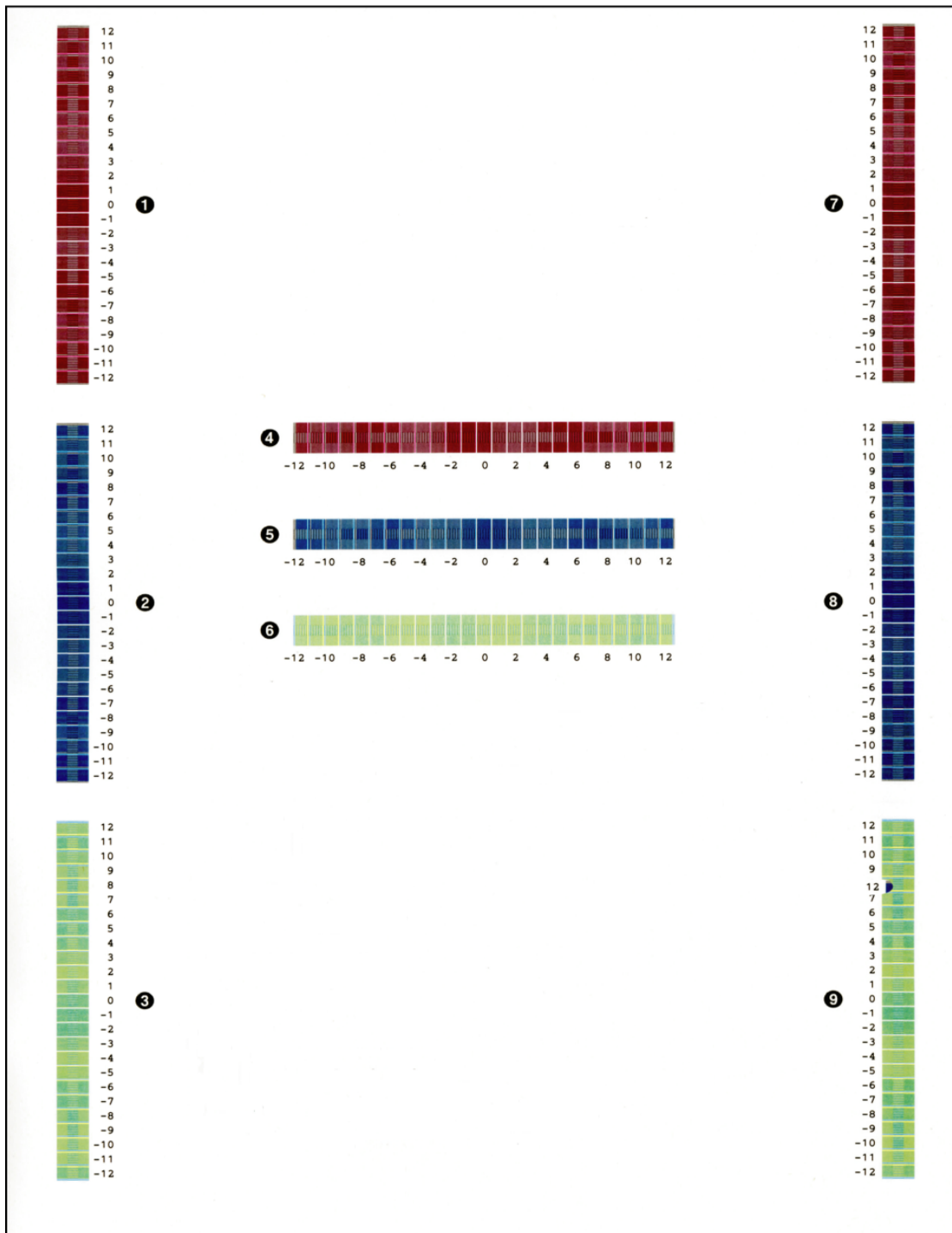


Fig. 5-8



## ■ Reset of inter-color position alignment adjustment (manual)

If adjustment of inter-color position alignment (both auto and manual) cannot be executed because an incorrect value is inputted in adjustment of inter-color position alignment (manual), etc., you can clear the input value for 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. Then, press the **OK** button. “REGISTRATION” is displayed on the LCD.
- (2) Press the ▲ or ▼ button to display “MANUAL REG RESET” on the LCD, and then press the **OK** button.
- (3) “PLEASE WAIT” is displayed on the LCD.
- (4) When reset of color registration adjustment is finished, the printer goes back to the initial state of the maintenance mode.

If you want to perform adjustment of inter-color position alignment again, you may as well conduct adjustment of inter-color position alignment (auto) of Function code 66.

### 1.4.13 Continuous print test (Function code 67)

#### <Function>

This function allows you to conduct the pick-up and delivery test as printing patterns.

#### <Operating procedure>

- (1) Press the ▲ or ▼ button to display “MAINTENANCE 67” on the LCD in the initial state of the maintenance mode. Then, press the **OK** button.
- (2) When “SELECT: K 100%” is displayed on the LCD, select a relevant continuous print pattern using ▲ or ▼ button and then press the **OK** button.

The available continuous print patterns are shown below.

LCD
SELECT: K 100%
SELECT: C 100%
SELECT: M 100%
SELECT: Y 100%
SELECT: R 100%
SELECT: G 100%
SELECT: B 100%
SELECT: KCMY1%*
SELECT: KCMY5%*
SELECT: Lattice

\* KCMY1% and KCMY5% are available only for A4 and Letter.

- (3) When “SELECT: A4” is displayed on the LCD, select a relevant paper size using ▲ or ▼ button, and then press the **OK** button.

The available paper sizes are shown below.

LCD
SELECT: A4
SELECT: LETTER
SELECT: LEGAL
SELECT: A5
SELECT: B6
SELECT: A6

- (4) When “SELECT: TRAY1” is displayed on the LCD, press the ▲ or ▼ button to select the print format, and press the **OK** button.

The available print formats are shown below.

LCD
SELECT: TRAY1
SELECT: TRAY2
SELECT: MP
SELECT: TRAY1 DX
SELECT: TRAY2 DX
SELECT: MP      DX

- (5) The “PAPER FEED TEST” appears on the LCD, and print of the continuous print pattern with the selected pick-up test items starts.
- (6) Press the **Cancel** button to return to the printer to the initial state of the maintenance mode.

**Note:**

- The test printing is stopped until there is no paper in a tray. Press the **Cancel** button to stop if you check the paper feeding and ejecting operations. (Printing is resumed when paper is loaded in the tray.)
- In the case that the error occurs during test printing, the test printing is stopped. (If you do not press the **Cancel** button, printing is resumed when the error is cleared.)
- To clear the error, remove the error factors, and then press the **Go** button.

■ Continuous print pattern

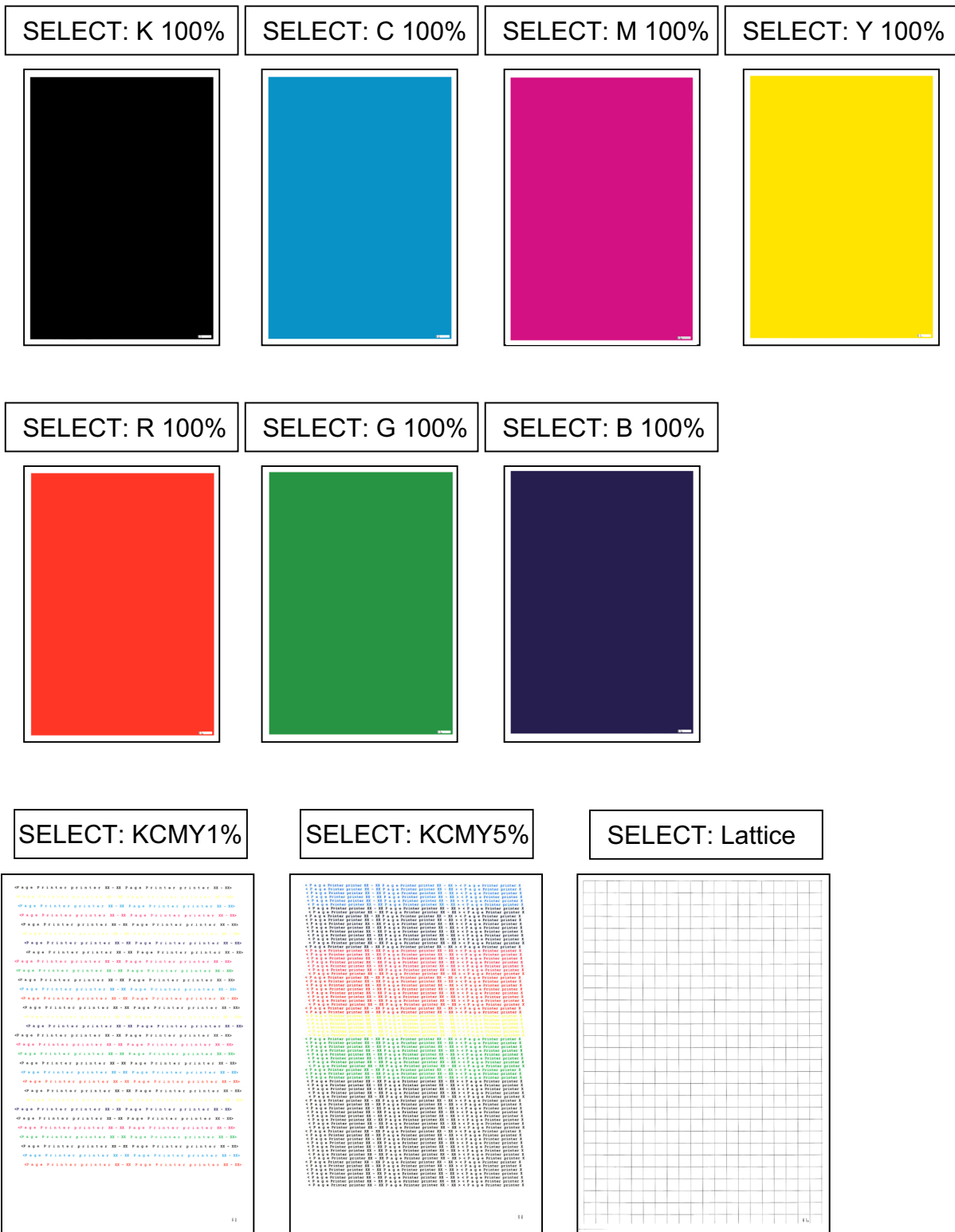


Fig. 5-9

## 1.4.14 Laser unit test pattern print (Function code 68)

### <Function>

This function allows you to print the laser unit test patterns and check if there is any failure in the laser unit.

### <Operating procedure>

- (1) Press the ▲ or ▼ button to display “MAINTENANCE 68” on the LCD in the initial state of the maintenance mode. Then, press the **OK** button. “PRINTING” is displayed on the LCD, and one laser unit test pattern (refer to the figure below) 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 printer automatically recovers to the re-executable state. “PRINTING” is displayed on the LCD, and the laser unit test pattern is printed on a sheet.

- (2) When this operation is completed without an error, “SCANNER CHECK” is displayed on the LCD.
  - (3) Press the **Cancel** button to return to the printer to the initial state of the maintenance mode.
- When an error message is displayed on the LCD, take the measures described in the table below.

Error message	Measure
TONER EMPTY # *	Replace the empty toner cartridge and press the <b>Go</b> button to clear the error.
Cover is Open	Close the front cover.
No Paper	Replenish paper of the A4-size paper specified in the display on the tray. Press the <b>Go</b> button to clear the error.
Jam Tray1	Remove the jammed paper, and press the <b>Go</b> button to clear the error.
Jam Rear	

\* # indicates the toner color (K, Y, M, or C) of which cartridge became empty.

### ■ Laser unit test pattern



Fig. 5-10

## 1.4.15 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 any deviation or omission of print.

### <Operating procedure>

- (1) Load Letter-size paper on the paper tray.
- (2) Press the ▲ or ▼ button to display “MAINTENANCE 69” on the LCD in the initial state of the maintenance mode. Then, press the **OK** button. “PRINTING” is displayed on the LCD, and one page of the frame pattern (refer to the [next page](#)) in one-sided printing. When print is completed, “WAKU SX” is displayed on the LCD.

#### Note:

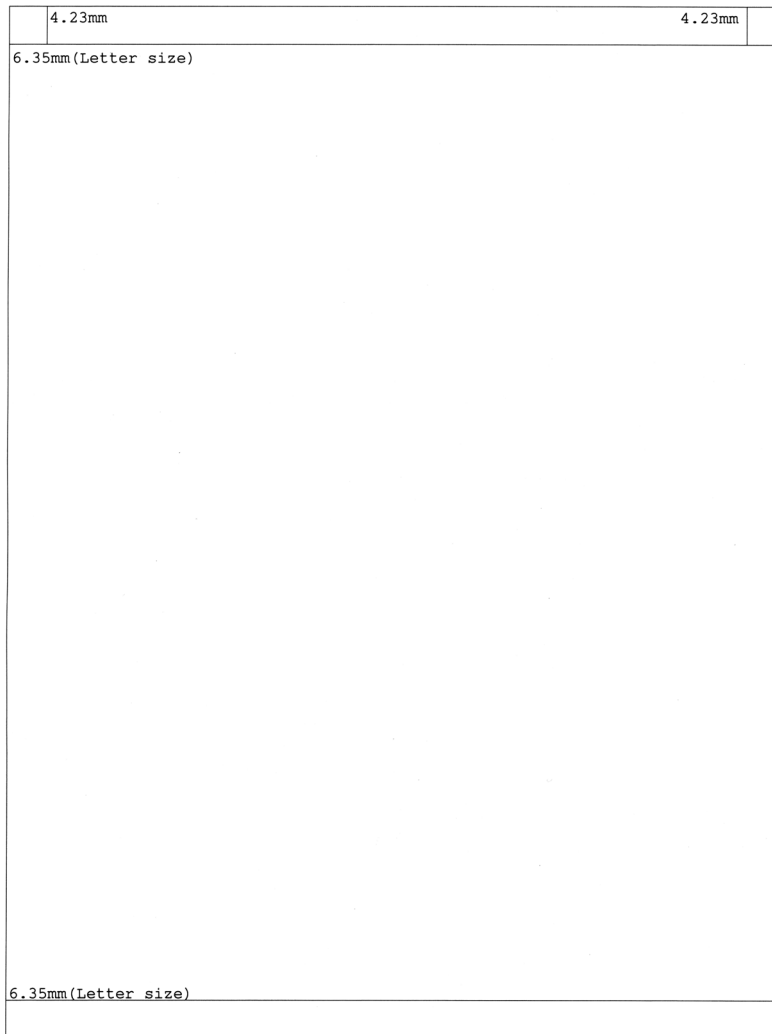
When printing fails, a relevant error is displayed on the LCD. Remove the cause of error and press the **Go** button, and the printer automatically goes back to the executable state, and “WAKU SX” is displayed on the LCD. Press the **OK** button, and “PRINTING” is displayed on the LCD, and one page of the frame pattern is printed in one-sided printing.

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

When an error message is displayed on the LCD, take the measures described in the table below.

Error message	Measure
TONER EMPTY # *	Replace the empty toner cartridge and press the <b>Go</b> button to clear the error.
Cover is Open	Close the front cover.
No Paper	Replenish the letter-size paper in the tray and press the <b>Go</b> button to clear the error.
Jam Tray1	Remove the jammed paper, and press the <b>Go</b> button to clear the error.
Jam Rear	

\* # indicates the toner color (K, Y, M, or C) of which cartridge became empty.



**Fig. 5-11**

## 1.4.16 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 any deviation or omission of print.

### <Operating procedure>

- (1) Load Letter-size paper on the paper tray.
- (2) Press the ▲ or ▼ button to display “MAINTENANCE 70” on the LCD in the initial state of the maintenance mode. Then, press the **OK** button. “PRINTING” is displayed on the LCD, and one page of the frame pattern (refer to the [next page](#)) in two-sided printing. When print is completed, “WAKU DX” is displayed on the LCD.

#### **Note:**

When printing fails, a relevant error is displayed on the LCD. Remove the cause of error and press the **Go** button, and the printer automatically goes back to the executable state, and “WAKU DX” is displayed on the LCD. Press the **OK** button, and “PRINTING” is displayed on the LCD, and one page of the frame pattern is printed in two-sided printing.

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

When an error message is displayed on the LCD, take the measures described in the table below.

Error message	Measure
TONER EMPTY # *	Replace the empty toner cartridge and press the <b>Go</b> button to clear the error.
Cover is Open	Close the front cover.
No Paper	Replenish the letter-size paper in the tray and press the <b>Go</b> button to clear the error.
Jam Tray1	Remove the jammed paper, and press the <b>Go</b> button to clear the error.
Jam Rear	

\* # indicates the toner color (K, Y, M, or C) of which cartridge became empty.



6.35mm(Letter size) DX page1 (DX path)	
6.35mm(Letter size)	

(First side)

6.35mm(Letter size) DX page2(SX path)	
6.35mm(Letter size)	

(Second side)

**Fig. 5-12**

## 1.4.17 Color test pattern (Function code 71)

### <Function>

This function allows you to print the pattern of each color and check if there is any smear on or failure in the belt unit, 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. Then, press the **OK** button.
- (2) When “2D3S YCMK\_\_A” is displayed on the LCD, press the ▲ or ▼ button to select an appropriate print pattern, and press the **OK** button.
- (3) “PRINTING” is displayed on the LCD, and the color test pattern (next page) is printed.

The available print patterns are shown below.

LCD	Description
2D3S YCMK__A	One sheet for each color with full page print mode* Total 4 sheets
2D3S MCYK	4-color horizontal band Total 1 sheet
2D3S Y	Yellow Total 1 sheet
2D3S C	Cyan Total 1 sheet
2D3S M	Magenta Total 1 sheet
2D3S K	Black Total 1 sheet

\* In the full page print mode, the cleaning operation is performed between printing of Magenta and Black.

#### 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 printer automatically recovers to the re-executable state. “PRINTING” is displayed on the LCD, and the color test pattern is printed.

- (4) When printing is finished, the screen returns to the print pattern display. To print the solid color test pattern again, press the **OK** button.
- (5) Press the **Cancel** button to return to the printer to the initial state of the maintenance mode.

When an error message is displayed on the LCD, take the measures described in the table below.

Error message	Measure
TONER EMPTY # *	Replace the empty toner cartridge and press the <b>Go</b> button to clear the error.
Cover is Open	Close the front cover.
No Paper	Replenish paper of the A4-size paper specified in the display on the tray. Press the <b>Go</b> button to clear the error.
Jam Tray1	Remove the jammed paper, and press the <b>Go</b> button to clear the error.
Jam Rear	

\* # indicates the toner color (K, Y, M, or C) of which cartridge became empty.

■ Color test pattern

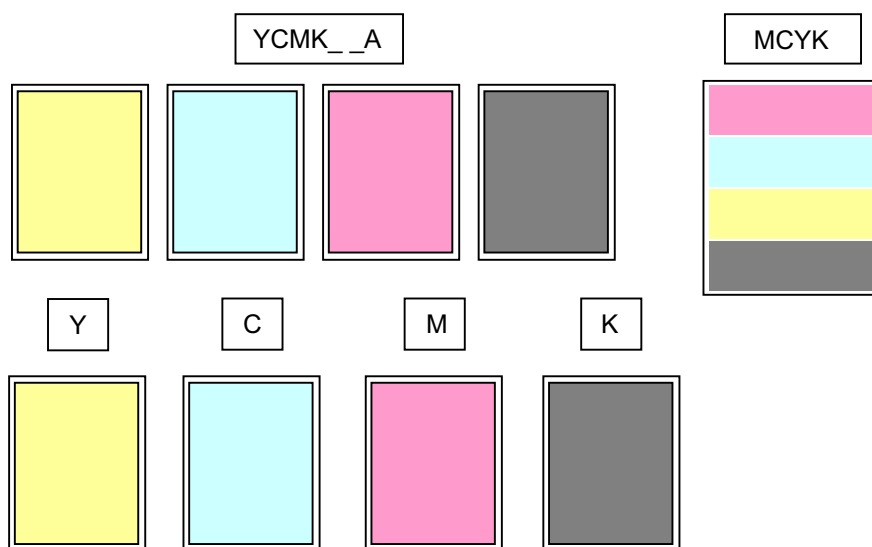


Fig. 5-13

## 1.4.18 Sensitivity adjustment of density sensor (Function code 72)

### <Function>

This function allows you to print the patch data for density sensor sensitivity adjustment on the belt unit and measure the density with the density sensor. The characteristics of the density sensor are calculated based on the value measured by the density sensor, and the parameter is adjusted upon color density adjustment.

#### Note:

If you replace the main PCB ASSY, be sure to carry out this procedure. This function must not be executed until it is verified that the printer is in the ready state.

### <Operating procedure>

- (1) Press the ▲ or ▼ button to display "MAINTENANCE 72" on the LCD in the initial state of the maintenance mode. Then, press the **OK** button. "PLEASE WAIT" is displayed on the LCD.
- (2) When the parameter is obtained without errors, the printer returns to the initial state of the maintenance mode.

When an error message is displayed on the LCD, take the measures described in the table below.

Error message	Measure
FAILED	Remove the error factors with the following operations and press the <b>Go</b> button to clear the error. <ul style="list-style-type: none"><li>- Re-insert the toner cartridge in the correct position.</li><li>- Replace the toner cartridge.</li><li>- Replace the drum unit.</li><li>- Replace the waste toner box.</li><li>- Replace the belt unit.</li><li>- Replace the registration mark sensor holder ASSY.</li></ul>
TONER EMPTY # *	Replace the empty toner cartridge and press the <b>Go</b> button to clear the error. Perform the sensitivity adjustment of the density sensor again.
Cover is Open	Close the front cover.
Replace Toner	Replace the black toner cartridge and press the <b>Go</b> 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.

## 1.4.19 Setting by country (Function code 74)

### <Function>

This function allows you to customize the printer according to language, function settings, and worker switch settings.

#### **Note:**

When you replace the main PCB ASSY and rewrite the firmware forcibly, be sure to carry out this procedure.

### <Operating procedure>

- (1) Press the ▲ or ▼ button to display "MAINTENANCE 74" on the LCD in the initial state of the maintenance mode. Then, press the **OK** button. The present country code is displayed.
- (2) Enter the upper 2 digits of the country code that you want to set.  
Press the **OK** button, and the cursor moves from the first digit to the second digit.  
(The first digit cannot be selected.)  
Press the ▲ or ▼ button to enter the second digit and press the **OK** button, and the cursor moves to the fourth digit.
- (3) Enter the lower 2 digits of the country code that you want to set.  
Press the ▲ or ▼ button to enter the third and fourth digits (The numbers which cannot be selected are skipped.) and press the **Go** button.
- (4) The new setting is saved, and "PARAMETER INIT" is displayed on the LCD. After the setting is saved, the printer returns to the initial state of the maintenance mode.

#### **Memo:**

- To cancel this operation and return to the printer 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, the printer will automatically return to the initial state of the maintenance mode.

■ **Setting by country code list**

Country	HL-4140CN	HL-4150CDN	HL-4570CDW
USA	---	0001	0101
Canada	---	0002	0102
Brazil	---	0042	---
Chile	---	---	0136
Argentina	---	0036	---
Germany	0204	0004	0104
UK	0204	0004	0104
France/Belgium/Netherlands	0204	0004	0104
Italy	0204	0004	0104
Iberia	0204	0004	0104
Switzerland	0204	0004	0104
Pan-Nordic	0204	0004	0104
Russia	---	0004	---
EEU General	0204	0004	0104
Israel	---	---	---
South Africa	---	---	---
Australia/New Zealand	---	0006	0106
Singapore	---	0040	0140
Gulf	---	0004	0104
Turkey	---	---	---
India	---	0045	---
Philippines	---	---	---
Taiwan	---	---	---
Korea	---	0040	---
China	---	0020	0120

\* Country codes are subject to change without notice.

**Note:**

The information in this page is as of August 2010.  
For information on the latest code settings, see the ROM/firmware information provided by Brother.

## 1.4.20 Sensitivity adjustment of registration mark sensor and check of belt unit surface (Function code 75)

### <Function>

This function makes the registration mark sensor to adjust its sensitivity compulsory. This allows you to check if the registration mark sensor works properly. This function makes the printer to check the surface of the belt unit by using the registration mark sensor as well.

### <Operating procedure>

- (1) Press the ▲ or ▼ button to display "MAINTENANCE 75" on the LCD in the initial state of the maintenance mode. Then, press the **OK** button. After "REGI\_SENS ADJUST" is displayed on the LCD, "REGI ADJ-BELTOFF" is displayed.
- (2) Press the ▲ or ▼ button to select the appropriate item.

LCD	Description
REGI ADJ - BELTOFF	Adjust the sensitivity of the registration mark sensor when the belt unit is not operated. This is to check whether the registration mark sensor's operation is okay or not.
REGI BELT CHECK	Check that there are no scratches on the surface of the belt unit of the registration mask sensor.
REGI ADJ&CHECK	Adjust the sensitivity of the registration mark sensor when the belt unit is operated. (This adjustment is the same as the operation before the inter-color position alignment.)

- (3) Press the **Go** button, and then the sensitivity adjustment is started. Upon completion of this adjustment, the "OK" appears on the LCD.
- (4) Press the **Cancel** button to return to the printer to the initial state of the maintenance mode.

#### Note:

- If you press the **Go** button during the sensitivity adjustment or after the error message appears on the LCD, the sensitivity adjustment is started again.
- In the case that the error occurs, refer to the [next page](#) to check the error description and the way to solve it.

■ Error display when “REGI ADJ-BELTOFF” is executed

Error message	Description	Solution
REGI_ADJ:NG	Registration mark sensor failure	Execute the adjustment of inter-color position alignment (manual). (Refer to “Adjustment of inter-color position alignment (Function code 66)” in this chapter.)
		Replace the belt unit.
		Replace the engine PCB ASSY.
		Replace the main PCB ASSY.
		Replace the registration mark sensor holder ASSY.

■ Error display when “REGI BELT CHECK” or “REGI ADJ&CHECK” is executed

Error message	Description	Solution
NG:X L:YYY R:ZZZ <sup>*1,2</sup>	Error occurred at the registration mark sensor L or registration mark sensor R, or at the both of them.	Execute the adjustment of inter-color position alignment (manual). If the error occurs again, replace the belt unit. (Refer to “Adjustment of inter-color position alignment (Function code 66)” in this chapter.)

<sup>\*1</sup> X shows the result of the state check of the belt unit surface in the number of errors (1 to 9). As the number is larger, the state of the belt unit is worse. When an error is detected at the registration mark sensor L or registration mark sensor R, the number of errors which occurred at the registration mark sensor L is displayed. (The number of errors which occurred at the registration mark sensor R is displayed only when no error is detected at the registration mark sensor L.) When ten or more errors are detected, “NG: A” is displayed.

<sup>\*2</sup> YYY and ZZZ indicate the largest width in 2,400 dpi dots among the error noises detected by the registration mark sensor L and registration mark sensor R respectively. (1 to 999). When an error noise of which width exceeds 999 is detected, “L: 999 R: 999” is displayed.



## 1.4.21 Printout of maintenance information (Function code 77)

### <Function>

This function allows you to print a list of all maintenance information including printer coverage information. The items are those listed in the second page of the [Printer Settings](#). The following items are printed on the maintenance information only.

Average Coverage	Total: Accumulated coverage Current: Coverage by the toner cartridge which is currently used
Drum Information	Number of prints and count value of the drum which is currently used.
Power On Time	Elapsed time while the power is ON.
Power On Count	Number of times when the power is turned ON.
Current/Previously Used	The number of printed pages of the current toner cartridge and the previous toner cartridge on each color.
Current Waste Toner	The number of printed pages of the current waste toner box.
Developing Bias	The current developing bias voltage on each color.
Engine Sensor Log	Operation logs of the following sensors located in the paper path. MN: Registration front sensor RS: Registration rear sensor EJ: Paper eject sensor KO: T1 paper edge sensor
Status Log	Information for those in charge of development.
Temperature/Humidity	Ambient temperature/ humidity during printing.

#### Note:

The error data items stored in the error history are different from those in the second page of Printer Settings.

### <Operating procedure>

- (1) Press the ▲ or ▼ button to display "MAINTENANCE 77" on the LCD in the initial state of the maintenance mode. Then, press the **OK** button.
- (2) Upon completion of printing, the printer returns to the initial state of the maintenance mode.

## ■ Maintenance information

```

MAINTENANCE
-----
HL-4570CDW series   Serial No.=X12345E0J000549   Model=84E-302   Country=0101   SW CheckSum=BE
Main ROM: Ver.0.69 U1004271841   ROM ChkSum: 1E92   8100000165   01010101
Sub ROM: Ver.0.40 P1004271842   USB Prod.ID: 003E   OKOK   000000
Boot ROM: B1001121720   001C008100000020
HV ROM: 0.78B4C5   E230040000000000   000000D0
RAM Size = 128Mbyte   000E 0006 0002
                                0004 0003 00

Remaining life of :
*Toner Cartridge   **Drum Unit: 24938 (100%)   Belt Unit: 49829 (100%)
Cyan(C): 92%   PF Kit MP: 50000 (100%)   Fuser Unit: 99986 (100%)
Magenta(M): 92%   PF Kit 1: 99988 (100%)   Laser Unit: 99986 (100%)
Yellow(Y): 92%
Black(K): 94%

<Device Status>
Total Page Count: 14
Color Page Count: 9
Monochrome Page Count: 5
Image Count Total: 41
Cyan(C): 9   Yellow(Y): 9
Magenta(M): 9   Black(K): 14

***Average Coverage(Total)
Cyan(C): 0.42%   Yellow(Y): 0.51%
Magenta(M): 0.37%   Black(K): 0.95%
***Average Coverage(Current)*
Cyan(C): 0.42%   Yellow(Y): 0.51%
Magenta(M): 0.37%   Black(K): 0.95%

<Drum Information>
Drum Page Count: 62
Drum Count: 1494

<Developing Roller Count>
Cyan(C): 3151   Yellow(Y): 3151
Magenta(M): 3151   Black(K): 3918

<Total Pages Printed>
MP Tray: 0   Duplex: 2
Tray 1: 12

<Total Pages Printed>
A4/Letter: 13
Legal/Folio: 0
B5/Executive: 0
Envelope: 0
A5: 0
Others: 1

<Total Pages Printed>
Plain/Thin/Recycled: 14
Thick/Thicker/Bond: 0
Envelope/Env.Thick/Env.Thin: 0
Label: 0
Hagaki: 0
Glossy: 0

<Total Paper Jams: 0>
Jam MP Tray: 0   Jam Rear: 0
Jam Tray 1: 0   Jam Duplex: 0
Jam Inside: 0

<Power On Time: 71 hours>
<Power On Count: 27>

<Error History (last 10 errors)>
1: 88:Jam Inside   01/26/04 12:02 Page: 5
2: 93:No Paper MP   01/26/04 11:58 Page: 5
3: 96:No Paper   01/22/04 08:34 Page: 1
4:
5:
6:
7:
8:
9:
10:

<Replace Count>
Toner Cartridge   Belt Unit: 0
Cyan(C): 0   00/00/00   Fuser Unit: 0
Magenta(M): 0   00/00/00   Laser Unit: 0
Yellow(Y): 0   00/00/00   PF Kit MP: 0
Black(K): 0   00/00/00   PF Kit 1: 0
Drum Unit: 0
Waste Toner: 0

<Total Pages Printed>
Current Toner   Previously Used Toner
Cyan(C): 9   Cyan(C): 0
Magenta(M): 9   Magenta(M): 0
Yellow(Y): 9   Yellow(Y): 0
Black(K): 14   Black(K): 0
Waste Toner: 14

<Developing Bias: C:400V M:394V Y:350V K:371V>

<Engine Sensor Log>
KO: 000200/001700   MN: 000335/001700
RS: 000550/001650   EJ: 002845/001715

<Status Log>
85 14 01 83 10 00 85 26 60 85 14 01
83 10 00 85 14 01 83 10 00 83 13 00
83 10 00 83 10 00

<Temperature/Humidity>
Temperature: 28 degrees(C)   Humidity: 52%

* Remaining life will vary depending on the types of documents printed.
** Based on A4/Letter printing.
*** Calculated coverage.

```

Fig. 5-14

## 1.4.22 Operational check of fans (Function code 78)

### <Function>

This function is to check whether each of fans is operating correctly or not. The operation of the following fan is checked respectively, and their operating states (rotation speed 100 %, rotation speed 50 %, or OFF) are displayed.

LCD	Parts name	Description
F	Fuser fan	Evacuate hot air of the fuser unit.
P	Power fan	Evacuate hot air of the low-voltage power supply PCB ASSY.
B	Blower	Intake air to prevent a dirt on the corona wire.

### <Operating procedure>

- (1) Press the ▲ or ▼ button to display "MAINTENANCE 78" on the LCD in the initial state of the maintenance mode. Then, press the OK button.
- (2) Press the Go button to check the next term. For operation check, spin or stop fans actually on each term.

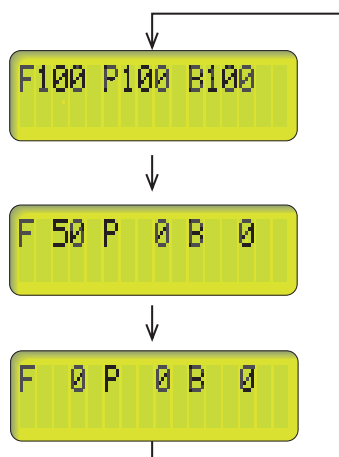


Fig. 5-15

- (3) Press **Cancel** button in any process of the display cycle. The printer returns to the initial state of the maintenance mode.

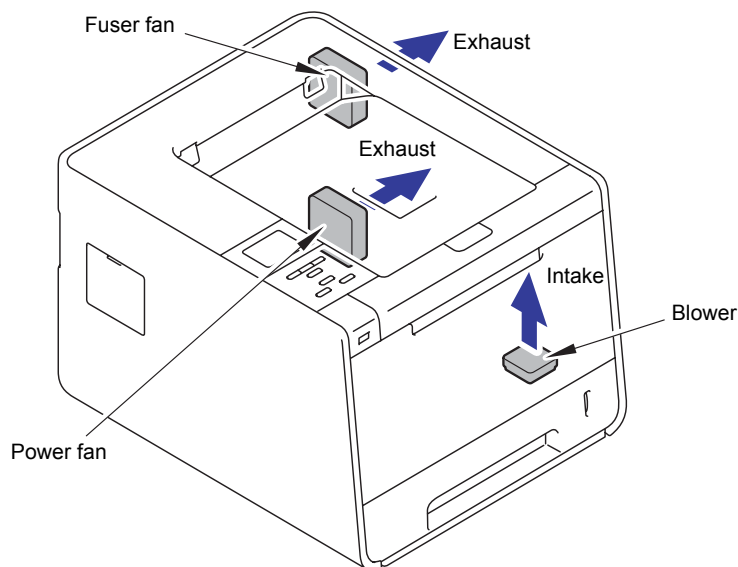


Fig. 5-16

### 1.4.23 Display of machine history (log) (Function code 80)

#### <Function>

This function allows you to view the machine history (log). The display items are shown in the table below.

	LCD	Description
Serial	USB:	Serial number
MAC Address	MAC:	MAC Address (Ethernet Address)
PCB Serial	PCB:	Main PCB serial number
Drum related items	DRUM:	Number of drum rotations
	DRUM_PG:	Number of printed pages by drum
	DRUM_CH: * <sup>1</sup>	Number of times the drum unit has been replaced/ Date of last replacement
Toner related items	CTN_PG1:	Number of printed pages by cyan toner
	CTN_PG2:	Number of printed pages before previous reset of cyan toner
	CTN_ERM:	Remaining toner amount of cyan toner (the calculated value in dots)
	CTN_RRM:	Remaining toner amount of cyan toner (the remaining amount based on the number of rotations of the developer roller)
	CTN_CH: * <sup>1</sup>	Number of times the cyan toner has been replaced/ Date of last replacement
	CTN_RND:	Cyan toner developer roller count
	MTN_PG1:	Number of printed pages by magenta toner
	MTN_PG2:	Number of printed pages before previous reset of magenta toner
	MTN_ERM:	Remaining toner amount of magenta toner (the calculated value in dots)
	MTN_RRM:	Remaining toner amount of magenta toner (the remaining amount based on the number of rotations of the developer roller)
	MTN_CH: * <sup>1</sup>	Number of times the magenta toner has been replaced/ Date of last replacement
MTN_RND:	Magenta toner developer roller count	

\*<sup>1</sup> Press the **OK** button while the number of times that the consumable part has been replaced is displayed, the date last time the consumable part was replaced is displayed. Press the **OK** button again, and the number of times the consumable part has been replaced is displayed again.

	LCD	Description
Toner related items	YTN_PG1:	Number of printed pages by yellow toner
	YTN_PG2:	Number of printed pages before previous reset of yellow toner
	YTN_ERM:	Remaining toner amount of yellow toner (the calculated value in dots)
	YTN_RRM:	Remaining toner amount of yellow toner (the remaining amount based on the number of rotations of the developer roller)
	YTN_CH: *1	Number of times the yellow toner has been replaced/ Date of last replacement
	YTN_RND:	Yellow toner developer roller count
	KTN_PG1:	Number of printed pages by black toner
	KTN_PG2:	Number of printed pages before previous reset of black toner
	KTN_ERM:	Remaining toner amount of black toner (the calculated value in dots)
	KTN_RRM:	Remaining toner amount of black toner (the remaining amount based on the number of rotations of the developer roller)
	KTNR_CH: *1	Number of times the black toner has been replaced/ Date of last replacement
	KTN_RND:	Black toner developer roller count
Other replacing part related items	WTNR_PG:	Printed pages by waste toner box
	WTNR_CH: *1	Number of times the waste toner box has been replaced/ Date of last replacement
	BCLN:	Number of rotations of the belt cleaner roller
	BELT_PG:	Printed pages by belt unit
	BELT_CH:	Number of times the belt unit has been replaced
	PFMP_PG:	Printed pages by MP paper feeding kit
	PFMP_CH:	Number of times the MP paper feeding kit has been replaced
	PFK1_PG:	Printed pages by paper feeding kit1
	PFK1_CH:	Number of times the paper feeding kit1 has been replaced
	PFK2_PG:	Printed pages by paper feeding kit2
PFK2_CH:	Number of times the paper feeding kit2 has been replaced	

\*1 Press the **OK** button while the number of times that the consumable part has been replaced is displayed, the date last time the consumable part was replaced is displayed. Press the **OK** button again, and the number of times the consumable part has been replaced is displayed again.

	LCD	Description
Other replacing part related items	FUSR_PG:	Printed pages by fuser unit
	FUSR_CH:	Number of times the fuser unit has been replaced
	LASR_PG:	Printed pages by laser unit
	LASR_CH:	Number of times the laser unit has been replaced
Average print rate related items *2	CCVRGUSI:	Average cyan coverage % (Toner in use)
	CCVRGACC:	Average cyan coverage % (Accumulated)
	MCVRGUSI:	Average magenta coverage % (Toner in use)
	MCVRGACC:	Average magenta coverage % (Accumulated)
	YCVRGUSI:	Average yellow coverage % (Toner in use)
	YCVRGACC:	Average yellow coverage % (Accumulated)
	KCVRGUSI:	Average black coverage % (Toner in use)
Print pages related items	TTL_PG:	Total number of printed pages
	TTL_CO:	Total number of color printed pages
	TTL_MO:	Total number of monochrome printed pages
	TTL_CI:	Cyan printed pages
	TTL_MI:	Magenta printed pages
	TTL_YI:	Yellow printed pages
	TTL_KI:	Black printed pages
Picked-up pages by tray	TR1_PG:	Number of pages picked up from the paper tray 1
	TR2_PG:	Number of pages picked up from the paper tray 2
	MP_PG:	Number of pages picked up from the MP tray
	DX_PG:	Number of sheets picked up from the DX (except HL-4140CN)
Picked-up pages by paper size	A4+LTR:	Number of A4/Letter size sheets picked up
	LG+F0L:	Number of Legal/Folio size sheets picked up
	B5+EXE:	Number of B5/Executive size sheets picked up
	ENVLOP:	Number of envelopes picked up
	A5:	Number of A5 size (including A5R) sheets picked up
	OTHER:	Number of other-size (including JIS B6) sheets picked up

\*2 Average print rate: Print area/printable area

	LCD	Description
Print pages by paper type <sup>*3</sup>	PLTNRE:	Printed pages of plain, thin, and recycled paper
	TKTRBD:	Printed pages of thick, thicker, and bond paper
	ENVTYP:	Printed pages of envelope, envelope thick, and envelope thin
	HAGAKI:	Printed pages of Hagaki
	LABEL:	Printed pages of label
	GLOSSY:	Number of prints of glossy paper
Developing bias related time	CDEV_BIAS:	Cyan developing bias voltage (unit: V)
	MDEV_BIAS:	Magenta developing bias voltage (unit: V)
	YDEV_BIAS:	Yellow developing bias voltage (unit: V)
	KDEV_BIAS:	Black developing bias voltage (unit: V)
Power distribution time	POWER:	Power distribution time (unit: H)
	PWRCNT:	Number of times that the power is turned ON
Jam related items	TTL_JAM:	Total number of times when a jam occurs
	TR1_JAM:	Number of times when a jam occurs at the paper tray 1
	TR2_JAM:	Number of times when a jam occurs at the paper tray 2
	MP_JAM:	Number of times when a jam occurs at the MP tray
	DX_JAM	Number of sheets jammed in the DX (except HL-4140CN)
	IN_JAM:	Number of sheets jammed in the printer
Number of error occurrences	RE_JAM:	Number of sheets jammed around the back cover
	HODN_ER:	Number of times that the error caused by the dirt on the corona wire occurs
	FUSR_ER:	Number of times that fuser unit error occurs
	MTLK_ER:	Number of times that the motor lock error in the laser scanner occurs

<sup>\*3</sup> Paper type according to the printer driver settings. It is not necessarily matched with the type of the actually fed paper.

	LCD	Description
Error log related items	MACHINEERR_##: * <sup>4</sup>	Error history ## to be displayed to the user: Error code/Occurrence page counter
	ENGERR##:***** * <sup>5</sup>	Engine error history ##: ***** Error level (2 bytes), large classification code (2 bytes), detailed classification code (2 bytes)
	DEVSTATUS_##: * <sup>6</sup>	Log for design analysis / Occurrence page counter

\*<sup>4</sup> 01 to 10 are entered in ## in chronological order. When you press the **OK** button as the printer error history is displayed, the page counter values when the errors occurred are displayed.

**Note:**

The error data items stored in the error history are different from those in the second page of Printer Settings.

\*<sup>5</sup> 01 to 10 are entered in ## in chronological order. When you press the **OK** button as the engine error history is displayed, TM: elapsed time (minute) from the previous error and BT: the number of times when the power is ON are displayed. When you press the **OK** button again, the engine error history is displayed again.

\*<sup>6</sup> 01 to 10 are entered in ## in chronological order. In the log for design analysis, even if a same error occurs continuously, it is recorded in the history every time it occurs.

**Note:**

If you press the **OK** button while an error code of "MACHINEERR" or "DEVATATUS" is displayed on the LCD, you can check the page counter value at the time when this error occurred. Press the **OK** button again to return to the error log display.

**<Operating procedure>**

- (1) Press the ▲ or ▼ button to display "MAINTENANCE 80" on the LCD in the initial state of the maintenance mode. Then, press the **OK** button. The printer displays "USB:" on the LCD.
- (2) Each time the **Go** button is pressed, next log information item appears on the LCD in the order. If pressing the **Back** button, the previous log information appears.
- (3) Press the **Cancel** button to return to the printer to the initial state of the maintenance mode.

**1.4.24 Error code indication (Function code 82)**

**<Function>**

This function displays an error code of the printer 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. Then, press the **OK** button. The printer displays "printer ERROR X X" on the LCD.
- (2) Press the **Cancel** button to return to the printer to the initial state of the maintenance mode.



## 1.4.25 Developing bias voltage correction (Function code 83)

### <Function>

This function performs developing bias voltage correction to fix the density of each color toner when printed color is not correct.

#### Note:

Before this function is performed, there is a need that the “Sensitivity adjustment of density sensor (Function mode 72)” has been done more than once. When performing this maintenance mode 83 after replacing the main PCB, make sure to perform the “Sensitivity adjustment of density sensor (Function mode 72)” first.

### <Operating procedure>

- (1) Press the ▲ or ▼ button to display “MAINTENANCE 83” on the LCD in the initial state of the maintenance mode. Then, press the **OK** button. The printer displays “PLEASE WAIT” on the LCD and starts the developing bias voltage correction.
- (2) Upon completion of the developing bias voltage correction, the printer returns to the initial state of the maintenance mode.

When an error message is displayed on the LCD, take the measures described in the table below.

Error message	Measure
FAILED	Remove the error factors with the following operations and press the <b>Go</b> button to clear the error. <ul style="list-style-type: none"><li>- Re-insert the toner cartridge in the correct position.</li><li>- Replace the toner cartridge.</li><li>- Replace the drum unit.</li><li>- Replace the waste toner box.</li><li>- Replace the belt unit.</li><li>- Replace the registration mark sensor holder ASSY.</li></ul>
TONER EMPTY # *	Replace the empty toner cartridge and press the <b>Go</b> 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 front cover.
Replace Toner	Replace the black toner cartridge and press the <b>Go</b> 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.

#### Note:

Any panel operation is invalid during the developing bias voltage correction.

## 1.4.26 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. Then, press the **OK** button. The maintenance mode 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 Printer On

The following settings and functions will be available by holding down the specified button (s) while turning the printer on.

#### ■ Press one button when turning the printer on

Panel operation	Function
<b>Go</b>	Not used
<b>Secure</b>	Not used
<b>Back</b>	Not used
<b>▼ (-)</b>	Hex dump mode <sup>*1</sup>
<b>▲ (+)</b>	Not used
<b>OK</b>	Don't use
<b>Cancel</b>	Not used

<sup>\*1</sup> 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 printer on

Panel operation		Function
<b>OK</b>	<b>Back</b>	Don't use
<b>Go</b>	<b>▲ (+)</b>	Not used
<b>Go</b>	<b>Back</b>	Engine non-startup mode <sup>*2</sup>
<b>▼ (-)</b>	<b>▲ (+)</b>	Don't use
<b>▼ (-)</b>	<b>OK</b>	Don't use
<b>OK</b>	<b>▲ (+)</b>	Not used
<b>Go</b>	<b>OK</b>	Not used
<b>Go</b>	<b>Cancel</b>	Flash ROM updates mode (UPD file/Model classification is available.)

<sup>\*2</sup> This mode is to start-up the printer 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. When the printer doesn't work in case that the connection failure between the main controller and the engine controller occurs, it is possible to update the main controller itself to recover from the failures.

■ Press the ▲ or ▼ button as holding down the Go button in the ready state

Panel operation		Function
<b>Go</b>	▲ ( + )	Parts life reset mode for the periodical replacement parts (Refer to “2.3 Parts Life Reset Function” in this chapter.)
<b>Go</b>	▼ ( - )	Switching of Return Value of USB No./Support for Banding (Refer to “2.7 Switching of Return Value of USB No./ Support for Banding” in this chapter.)

■ Press the Cancel button as holding down the Secure button while the front cover is opened

Panel operation		Function
<b>Secure</b>	<b>Cancel</b>	Developer roller counter reset mode (Refer to “2.2 Developer Roller Counter Reset Function” in this chapter.)

## 2.2 Developer Roller Counter Reset Function

This function is to manually perform the operation same as the one when a toner cartridge is replaced with a new one. The purpose of this function is to provide a means to resolve an error when a new toner cannot be recognized by the printer, and the toner life display fails to be cleared.

### ■ Pressing the two buttons at the same time while the front cover is opened

Panel operation		Function
<b>Secure</b>	<b>Cancel</b>	Menus of the developer roller counter reset

#### <Operating procedure>

Cover is Open  
Close the Front



Reset Menu  
K. TNR-STD



- (1) Press the **Secure** and **Cancel** buttons at the same time when the front cover is open.
- (2) "Reset Menu" appears on the LCD. Press the ▲ or ▼ button to select the appropriate toner cartridge, and then press the **OK** button.

LCD	Description
K.TNR-STD	Starter/Standard black toner developer roller counter reset
K.TNR-HC	High capacity black toner developer roller counter reset
K.TNR-S.HC	Super high capacity black toner developer roller counter reset
C.TNR-STD	Starter/Standard cyan toner developer roller counter reset
C.TNR-HC	High capacity cyan toner developer roller counter reset
C.TNR-S.HC	Super high capacity cyan toner developer roller counter reset
M.TNR-STD	Starter/Standard magenta toner developer roller counter reset
M.TNR-HC	High capacity magenta toner developer roller counter reset
M.TNR-S.HC	Super high capacity magenta toner developer roller counter reset
Y.TNR-STD	Starter/Standard yellow toner developer roller counter reset
Y.TNR-HC	High capacity yellow toner developer roller counter reset
Y.TNR-S.HC	Super high capacity yellow toner developer roller counter reset

K. TNR-STD  
▲ Reset ▼ Exit



K. TNR-STD  
Accepted



Cover is Open  
Close the Front

(3) Once “ ▲ Reset ▼ Exit” appears on the LCD; press ▲ button.

(4) The developer roller counter is reset.

(5) The printer returns to the state in which the front cover is open.

**Note:**

If there is no operation for 30 seconds or more, the printer automatically returns to step (1).

## 2.3 Parts Life Reset Function

This function is used to reset the relevant part counter when the user replaced a periodical replacement part 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 a consumable part 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 periodical replacement parts or consumable parts and counts up the number of replacement times by 1.)

#### <Operating procedure>

Ready  
K ■ Y ■ M ■ C ■



Reset Menu  
Drum Unit



Drum Unit  
▲ Reset ▼ Exit



Drum Unit  
Accepted



Ready  
K ■ Y ■ M ■ C ■

(1) Press the **Go** and **▲** buttons at the same time in the ready state.

(2) The “Reset Menu” will appear on the LCD. Select the applicable periodical replacement part or consumable part by pressing the **▲** or **▼** button and press the **OK** button.

<Periodical replacement parts or consumable part are indicated on the LCD

- Drum unit
- Belt unit
- PF kit MP
- PF kit1
- PF kit2
- Fuser unit
- Laser unit

(3) Once “**▲** Reset **▼** Exit” appears on the LCD, press the **▲** button.

(4) The printer implements clearing the counter.

(5) The printer returns to the ready state.

#### Note:

- All replacement parts are always indicated on the LCD even though their lives do not reach the end of life.
- The printer returns to the ready state automatically if no panel operation is implemented for 30 seconds.





## ■ Printer settings (Page 1)

This page includes various setting information of the printer. Each item is indicated when it fulfills the condition.

## ■ Printer settings (Page 2)

This page includes the printer information and the maintenance information in the following order.

### (1) Printer information

The following items are indicated in the order.

- 1) Main Controller Main ROM Version  
(Main controller firmware version)
- 2) Main Controller Sub ROM Version  
(Sub firmware (PCL/PS) version)
- 3) RAM Size (MB)

### (2) Maintenance information

#### 1) Consumable information/Periodical replacement part information

The printable pages remained for the part is indicated. (Toner cartridges are excluded.) Iso, the percentage of life remained over the total printable pages is indicated in numerical value and bar 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 column graph shows the percentage of the remaining life, and one block indicates 2%.

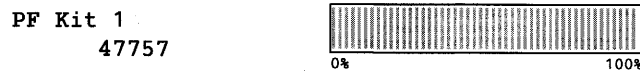


Fig. 5-18

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 MP
- PF Kit 1
- PF Kit 2 \* indicated only when paper tray 2(LT) is installed.
- Fuser Unit
- Laser Unit

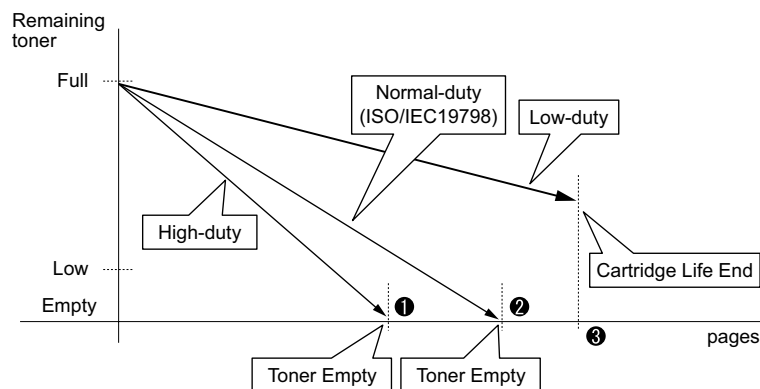
## ■ Life of toner cartridge

### <Method of detecting toner life>

Toner life can be detected by toner sensor and by rotation rates of the develop roller. “Replace Toner” is displayed on the LCD when the toner sensor detects that toner runs out, or when the number of rotations of the develop roller reaches the cartridge life end.

- Detection by the toner sensor  
This printer has a function to detect the remaining toner by checking the level at which toner in a cartridge interrupts light using a transmissive light sensor.
- Detection by means of rotation rates of the developer roller reached its upper limit  
This printer has a function to detect when the number of rotations reaches the upper limit before the developer roller is worn out and becomes unusable.

<Relationship between printable pages of the toner cartridge and remaining toner>



#### Memo:

When the number of rotations of the developer roller reaches the cartridge life end, “Replace Toner” is displayed even if toner remains.

The life of toner cartridges when making prints of the print pattern specified by ISO/IEC 19798 is shown in the table below. (At the point of ② in the figure above)

Toner cartridge		Number of printable pages
Standard	Black	2,500 pages
	Yellow, Magenta, Cyan	1,500 pages
High	Black	4,000 pages
	Yellow, Magenta, Cyan	3,500 pages
Super High	Black	6,000 pages
	Yellow, Magenta, Cyan	6,000 pages

To avoid problems caused by the worn-out of the developer roller surface and deterioration of the toner ceiling, “Replace Toner” message is displayed and the print operation is prohibited when the number of the rotations of the developer roller reaches the upper limit even if toner remains. The upper limit of the number of the rotations of the developer roller is shown in the table below. Due to the specification change of detecting standard of “Replace Toner”, the upper limit differs depending on the version of main firmware.

(1) Main Ver. from Master to Ver. 1.15

Toner cartridge		Upper limit of rotations of the developer roller
Standard	Black	72,450 rotations
	Yellow	43,470 rotations
	Magenta	43,470 rotations
	Cyan	43,470 rotations
High	Black	115,920 rotations
	Yellow	101,430 rotations
	Magenta	101,430 rotations
	Cyan	101,430 rotations
Super High	Black	173,880 rotations
	Yellow	173,880 rotations
	Magenta	173,880 rotations
	Cyan	173,880 rotations

(2) Main Ver.1.17 or later

Toner cartridge		Upper limit of rotations of the developer roller
Standard	Black	72,450 rotations
	Yellow	51,543 rotations
	Magenta	52,164 rotations
	Cyan	43,470 rotations
High	Black	115,920 rotations
	Yellow	120,267 rotations
	Magenta	121,716 rotations
	Cyan	101,430 rotations
Super High	Black	173,880 rotations
	Yellow	206,172 rotations
	Magenta	208,656 rotations
	Cyan	173,880 rotations

### <Cartridge life>

The cartridge life (at the point of ③ in the figure above), which depends on the upper limit of the number of rotations of the developer roller, varies according to the average number of print pages per job. (See the table below.) The number of printable pages is larger when making continuous prints in one job because deterioration of the developer roller is low.

#### Memo:

- The number of rotations of the developer roller per A4-size page\*:

	Color	Monochrome
First page	42.5 rotations (K, Y, M, C roller)	42.5 rotations (K roller only)
Second page and after (in the case of continuous printing)	11.3 rotations (K, Y, M, C roller)	11.3 rotations (K roller only)

- The number of rotations of the developer roller for each operation\*:

	K roller	Y, M, C roller
Warm-up operation	37.0 rotations	35.0 rotations
Adjustment of color registration	83.0 rotations	67.7 rotations
Adjustment of color calibration	142.0 rotations	111.3 rotations
Number of idling rotation when the printer is turned ON (Worst value)	262.0 rotations	214.0 rotations

\* Since the number of rotations varies according to individual differences between printers and the environment, consider it as a reference value.

#### Note:

The numeral values provided in this page are as of August 2010. These values are subject to change without prior notice.

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

Average print page (page/job)	1	2	3	4	5	6	7	8
Cartridge life (Standard-K)	1,750	2,762	3,421	3,885	4,229	4,494	4,705	4,876
Cartridge life (Standard-YMC)	1,050	1,640	2,018	2,281	2,474	2,622	2,739	2,834
Cartridge life (High-K)	2,800	4,419	5,474	6,216	6,766	7,190	7,528	7,802
Cartridge life (High-YMC)	2,450	3,827	4,708	5,322	5,773	6,118	6,392	6,613
Cartridge life (Super High-K)	4,200	6,628	8,211	9,324	10,149	10,785	11,291	11,703
Cartridge life (Super High-YMC)	4,200	6,560	8,071	9,123	9,896	10,488	10,957	11,337

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

### <Cartridge life in the case that the power is turned OFF/ON and adjustment is performed before printing>

Average print page (page/job)	1	2	3	4	5	6	7	8
Cartridge life (Standard-K)	244	470	681	877	1,061	1,233	1,395	1,547
Cartridge life (Standard-YMC)	167	319	459	588	708	818	921	1,017
Cartridge life (High-K)	390	752	1,089	1,403	1,697	1,973	2,232	2,475
Cartridge life (High-YMC)	389	745	1,072	1,373	1,651	1,909	2,149	2,373
Cartridge life (Super High-K)	585	1,128	1,633	2,105	2,546	2,959	3,347	3,713
Cartridge life (Super High-YMC)	667	1,277	1,837	2,353	2,831	3,273	3,684	4,067

■ **Life of drum unit**

**<How to read the drum unit life>**

- It initially indicates 100% and gradually decreases.
- It indicates 10% when the “Drum End Soon” appears on the LCD.

**<How to calculate the drum unit life>**

The drum unit life is based on the “drum counter” or the “number of drum rotations.” The drum counter is based on the total printed pages on each drum unit. This total printed pages should be reset every time you replace the drum unit with a new one. (Refer to “2.3 Parts Life Reset Function” in this chapter.) Basically this amount is equal to the assured printable pages of the drum unit. If the developing bias voltage correction or color registration adjustment is performed frequently, however, only the number of drum rotations increases, and the “page counter based on the number of drum rotation” exceeds the “drum counter” based on the total printed page.

Refer to the calculation of the drum unit life based on the number of drum rotation below;

**<How to calculate the page counter>**

The number of drum rotations for the first page printed is about 24.

The number of drum rotations per one page for the second or later page printed (continuous printing) is 3.6.

Page counter based on the number of drum rotations = {Number of drum rotations for the first page printed + [Number of drum rotations per one page for the second or later page printed x (Number of pages in continuous printing - 1)]} / 24

(\* The number of drum rotations per one page continuous printing.)

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

Continuous printing	Page counter based on the number of drum rotations (Pages)
1 page/job	{24 + [3.6 x (1 - 1)]} / 24 = 1
2 pages/job	{24 + [3.6 x (2 - 1)]} / 24 = 1.15
18 pages/job	{24 + [3.6 x (18 - 1)]} / 24 = 3.55

If you leave the printer without printing for a long time, the number of drum rotations is increasing because the developing bias voltage correction and the color registration are performed. If you print one page per one job every time after leaving the printer without printing for a long time, the drum unit life is shorter than usual.

The number of drum rotations required for the developing bias voltage correction = 68 rotations.

Example: Performs the developing bias voltage correction and starts to print after leaving the printer without printing for a long time.

Continuous printing	Page counter based on the number of drum rotations (Pages)
1 page/job	{68 + 24 + [3.6 x (1 - 1)]} / 24 = 3.83
2 pages/job	{68 + 24 + [3.6 x (2 - 1)]} / 24 = 3.98
18 pages/job	{68 + 24 + [3.6 x (18 - 1)]} / 24 = 5.38

The number of drum rotations required for the color registration = 35 rotations

Example: Performs the color registration adjustment and starts to print after leaving the printer without printing for a long time.

Continuous printing	Page counter based on the number of drum rotations (Pages)
1 page/job	{35 + 24 + [3.6 x (1 - 1)]} / 24 = 2.45
2 pages/job	{35 + 24 + [3.6 x (2 - 1)]} / 24 = 2.61
18 pages/job	{35 + 24 + [3.6 x (18 - 1)]} / 24 = 5.03

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

2) Counter information, history information

The counter and history information related to the following item are included. When it reaches the maximum count, each item is no longer counted.

Total Page Count	The total number of printed pages. The maximum count is 1 million pages.
Color Page Count	The total number of printed pages with color toners (Y/M/C). The maximum count is 1 million pages.
Monochrome Page Count	The total number of printed pages with black toner only. The maximum count is 1 million pages.
Image Count Total	The total number of printed pages, and the total number of printed pages on each color (K/Y/M/C). The maximum count is 1million pages for each color.
Total Pages Printed	The total number of printed pages from each of the MP tray, Manual Feed, Tray 1, Tray 2 and the Duplex. (Duplex is not displayed on the HL-4140CN.) The maximum count is 1 million pages. This information is not cleared when the paper feeding kit is replaced.
Total Pages Printed	The total number of printed pages by paper size. Available paper sizes are A4/Letter, Legal/Folio, B5/Executive, Envelope, A5 and Others. The maximum count is 1 million pages.
Total Pages Printed	The total number of printed pages by paper type. Available paper types are Plain/Thin/Recycled, Thick/Thicker/Bond, Envelope/Env.Thick/Env.Thin, Label, Hagaki, and Glossy. The maximum count is 1 million pages.
Total Paper Jams	The number of paper jam occurrence in each of the MP tray, Tray1, Tray 2, Inside, Rear and Duplex. (Duplex is not displayed on the HL-4140CN.) The paper jam occurs when the printer is turned ON is not counted. The maximum count for each item is 65,535 times. Total number of jam occurrences is printed after "Total Paper Jams:."
Error History	The error history including the latest 10 errors and the number of pages when these errors occur are indicated. The errors such as Cover is Open, Manual Feed, No Paper XX and No Tray XX are not included.
Replace Count	The number of replacement of each of Toner Cartridge (K/Y/M/C), Drum Unit, Belt Unit, PF Kit MP, PF Kit 1, PF Kit 2, Fuser Unit, Laser Unit and Waste Toner. The maximum count for each item is 255 times.

■ **Printer Settings (Page 3, Page 4)**

These pages include various network settings information of the printer.

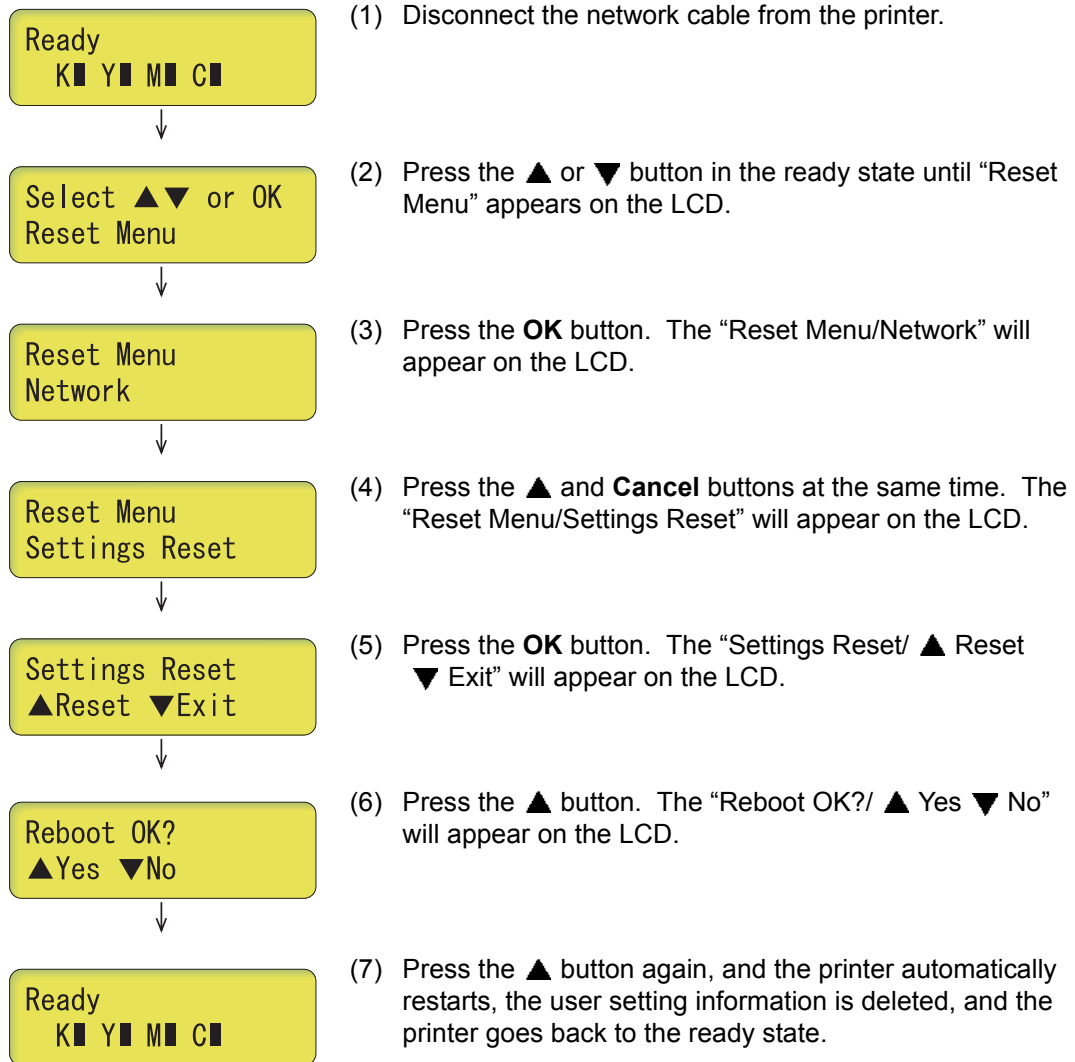
HL-4140CN/ 4150CDN	Page 3: Wired Network Information
HL-4570CDW/ 4570CDWT	LAN: Wired Enable setting = ON, LAN: WLAN Enable setting = ON Page 3: Wired Network Information Page 4: Wireless Network Information
	LAN: Wired Enable setting = ON, LAN: WLAN Enable setting = OFF Page 3: Wired Network Information Page 4: Not Available
	LAN: Wired Enable setting = OFF, LAN: WLAN Enable setting = ON Page 3: Wireless Network Information Page 4: Not Available
	LAN: Wired Enable setting = OFF, LAN: WLAN Enable setting = OFF Page 3&4: Not Available

## 2.5 Deletion of User Setting Information, etc.

In this printer, 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 (HL-4570CDW/4570CDWT only)

### <Operating procedure>



#### Note:

The printer 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 printer 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.

### <Operating procedure>

- (1) Press the **Go** button and **▼** button at the same time while the printer is in the ready state. "USB No." will appear 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
USBNo. =ON	Changing return value of USB No.
PS.DitherType=0	Switching of PS Dither Pattern
DP.ImpGray=ON	Switching ON/OFF of DirectPrint Color mode-Improve Gray Color
Regi Freq	Switching of timing to execute Auto Registration
DX.XAdjust	Adjusting left-end print start position on second side in duplex printing
DpSlp.StrDt	Switching ON/OFF of Deep Sleep function when StoreData (Secure) exists
Special Printing	Change of the transfer current setting (Only for Japanese hagaki 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 second, and the printer goes back 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
USBNo.	When the OS of the computer is Windows Vista <sup>®</sup> , it might not be able to obtain the serial No. of a USB device depending on the computer and USB device. To avoid this problem, the return value of the serial No. is switched to "0."	USBNo. =ON Returns the serial No. of the device.
		USBNo. =OFF Returns "0."
PS.DitherType	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.
DP.ImpGray	This function is to switch ON/OFF of the print control for the gray color when other colors are slightly blended in the gray color or the gray color is uneven upon printing.	DP.ImpGray=ON Improves the symptom that other colors are slightly blended in the gray color.
		DP.ImpGray=OFF Improves the unevenness of the gray color.
Regi Freq	This function is to switch the threshold value which is used as the timing to execute Auto Registration. The threshold value can be switched in three phases between High, Mid, and Low.	Regi Freq=Mid The frequency to execute Auto Registration is middle.
		Regi Freq=High The frequency to execute Auto Registration is high.
		Regi Freq=Low The frequency to execute Auto Registration is low.
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.
DpSlp.StrDt	This function is to switch whether or not to permit the printer to go into Deep Sleep when StoreData (Secure) exists in the main body.	DpSlp.StrDt =ON Even when StoreData(Secure) exists, the Deep Sleep function operates.
		DpSlp.StrDt =OFF When StoreData(Secure) exists, the Deep Sleep function does not operate.
Special Printing	Dots appeared when hagaki printing is performed can be alleviated by changing the transfer current setting. (Only for Japanese hagaki printing)	Default HAGAKI1 HAGAKI2 HAGAKI3

## 2.8 Drum Cleaning

### ■ Drum cleaning function overview

This function is to attach a special cleaning sheet on the drum and perform the cleaning of the drum.

#### <Operating procedure>

- (1) Press the **Cancel** button and ▼ button while the printer is in the ready state.  
“Drum Cleaning/Attach the cleaning sheet. Please refer to the included instructions.” is displayed on the LCD.
- (2) Open the front cover, take out the drum unit, and attach the cleaning sheet on the drum unit. (For the method of attaching the cleaning sheet, refer to the insertion of the cleaning sheet.)
- (3) Mount the drum unit to the printer and close the front cover.  
“Drum Cleaning/Please wait” is displayed on the LCD, and then drum cleaning starts.
- (4) After a while, “Drum Cleaning/Drum Cleaning completed. Remove the cleaning sheet.” is displayed on the LCD, and drum cleaning is completed. Then, open the front cover, take out the drum unit, and remove the cleaning sheet from the drum unit.
- (5) Mount the drum unit to the printer and close the front cover, and the printer goes back to the ready state.

#### **Note:**

If the printer is not operated for one minute while it is in the state of the procedure (1), it goes back to the ready state.

## 2.9 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 wireless LAN
- Power supply to the paper tray 2
- Operation of all the fans
- Detection of files in a USB memory

### <Transition conditions>

The printer goes into the deep sleep function when the user does not operate the printer (from a PC) and no warning such as an error is issued after it goes into the normal sleep mode and all the fans are stopped. When secure print exists, the printer does not go into the deep sleep mode.

### <How to Exit>

The printer exits from the deep sleep function when it receives an input from the outside, for instance when it receives print data from a PC, or when any button on the control panel is operated, or when the front cover is opened or closed.

## ■ Setting of ON/OFF of the deep sleep function

You can set ON/OFF of the deep sleep function so that the printer will not go into the deep sleep function even when the aforementioned conditions are satisfied.

### <Operating procedure>

- (1) Press the **OK** button while the printer 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 “General Setup/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 “Sleep Time/\*Min” is displayed on the LCD. “Deep Sleep/On\*” is displayed on the LCD.
- (6) 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) “Deep Sleep/Accepted” is displayed on the LCD, and the printer goes back to the ready state.

#### Note:

- When no operation is made for 30 seconds during the switching operation, the printer goes back to the ready state.
- The initial value of Deep Sleep is set to On.
- In the procedure (5), 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**

## **CIRCUIT DIAGRAMS & WIRING DIAGRAM**

# CHAPTER 6

## CIRCUIT DIAGRAMS & WIRING DIAGRAM

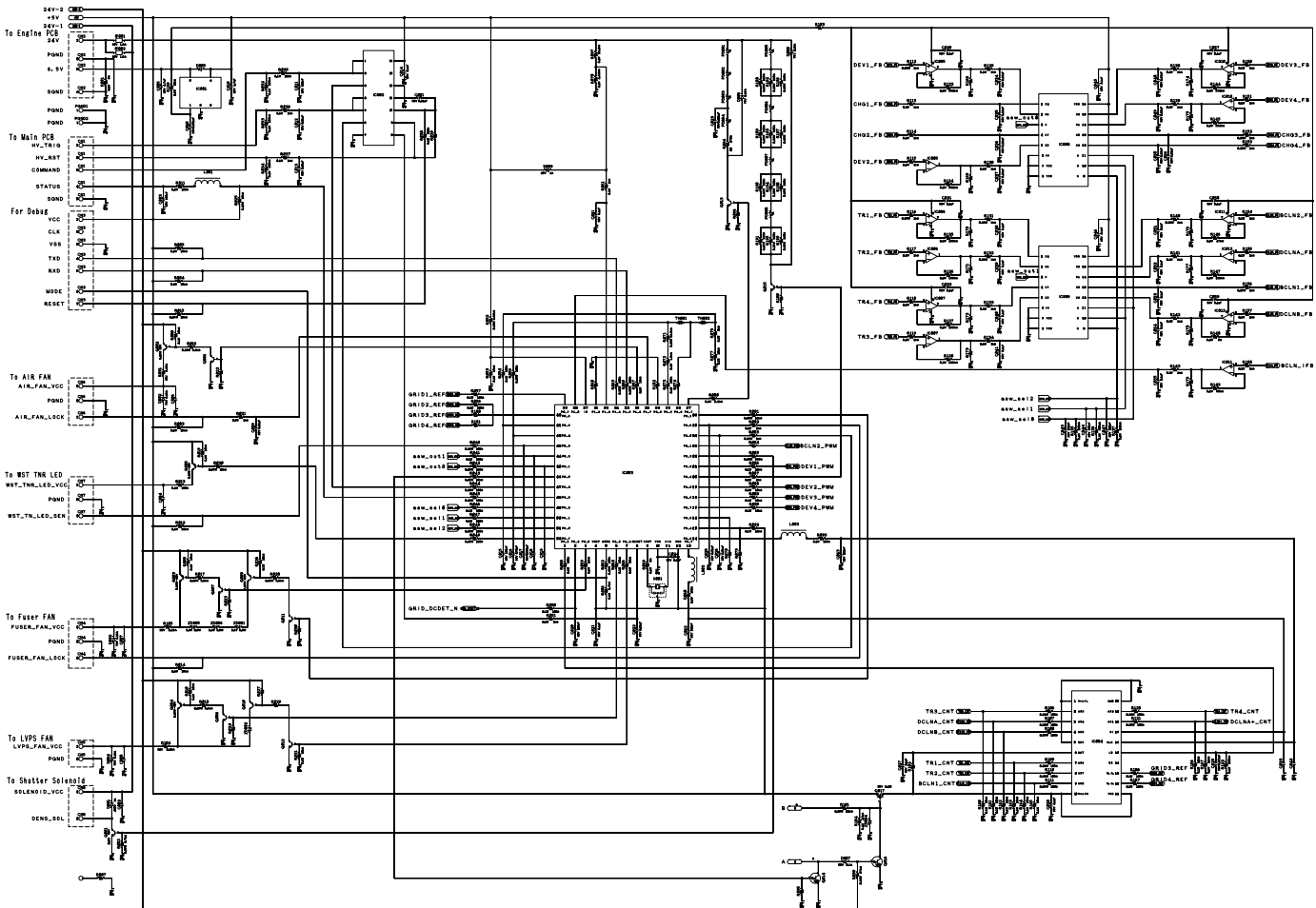
This chapter provides the circuit diagrams and wiring diagram for the connections of the PCBs.

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# 1. CIRCUIT DIAGRAMS

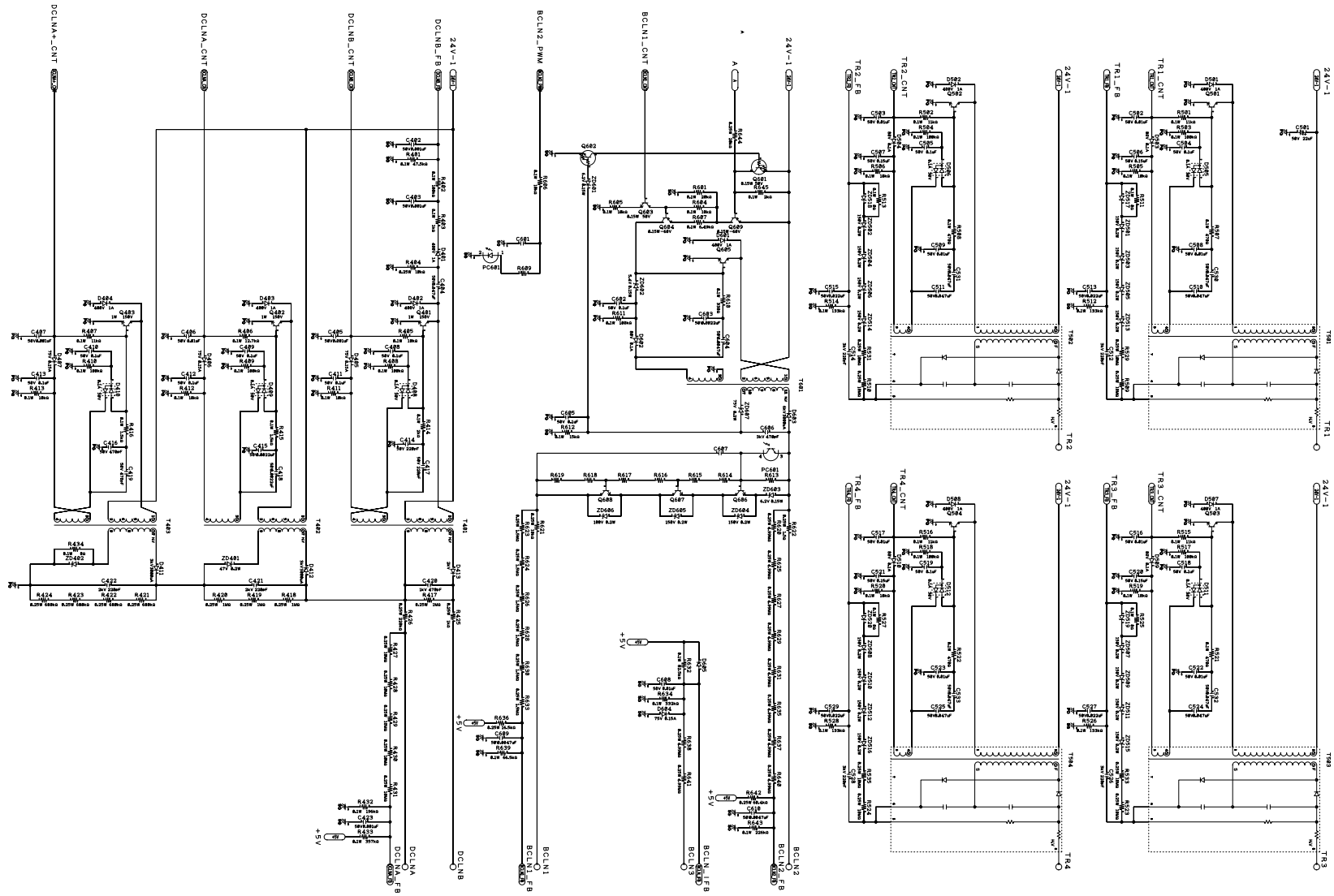
## High-voltage Power Supply PCB Circuit Diagram (1/3)



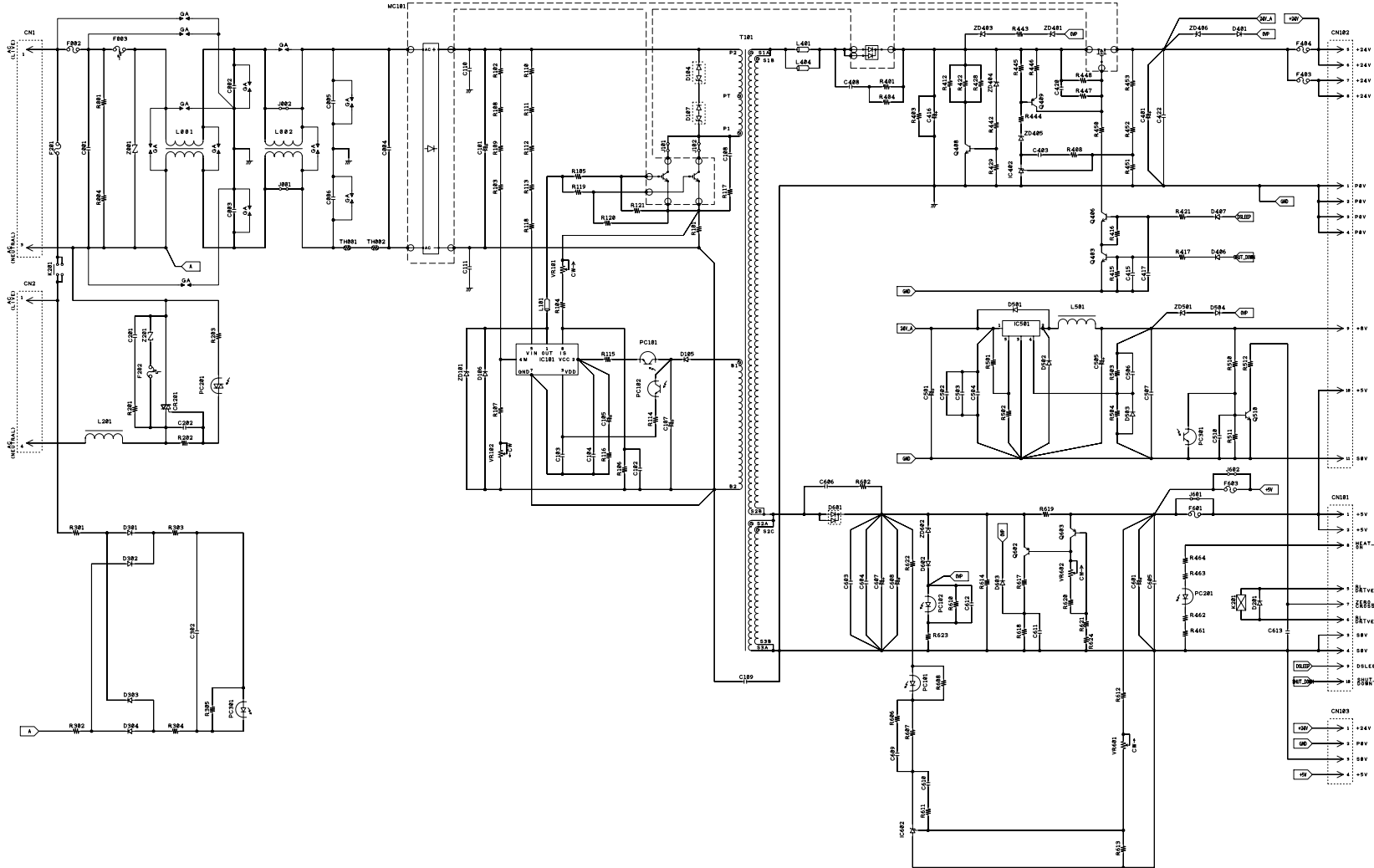




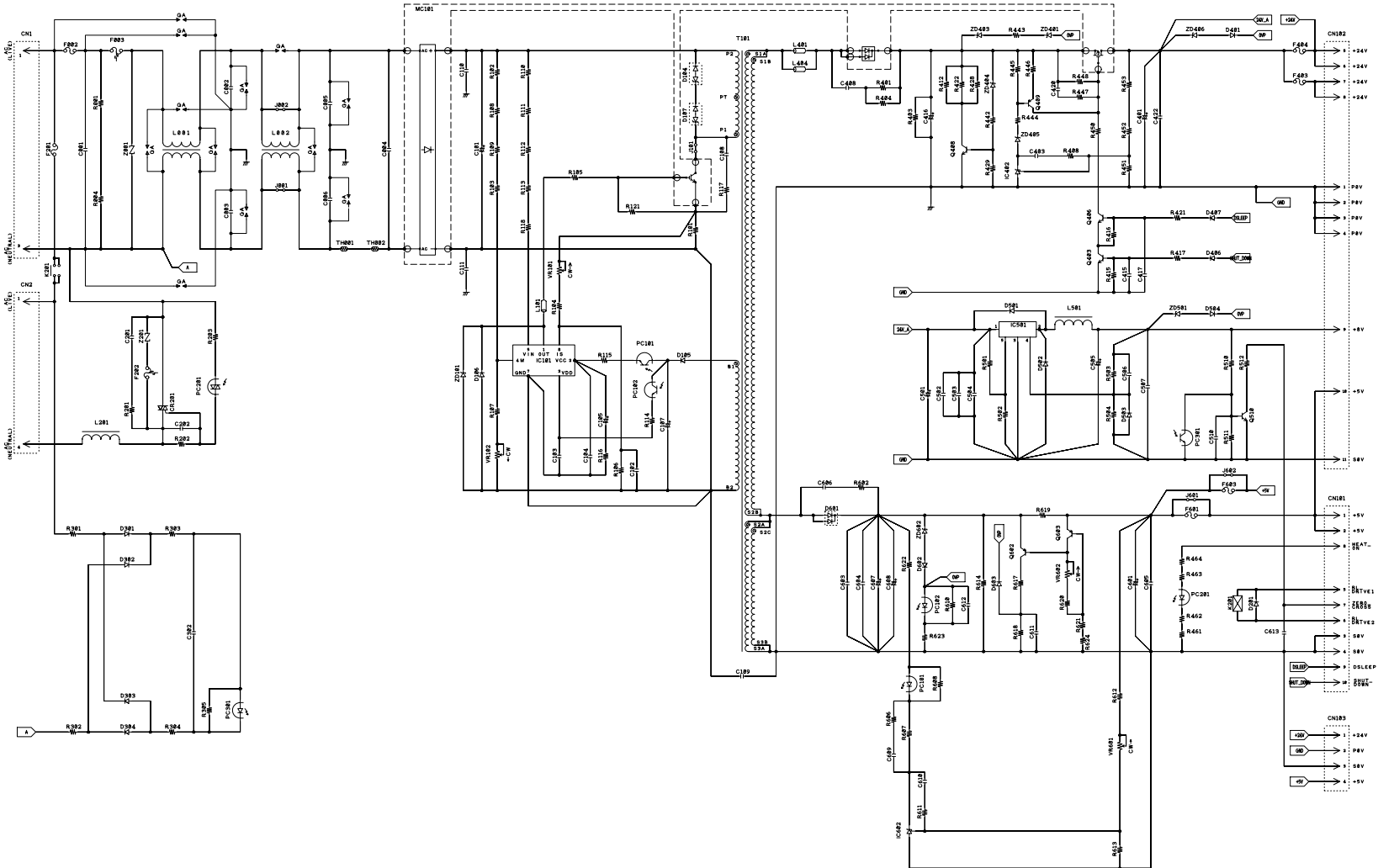
# High-voltage Power Supply PCB Circuit Diagram (3/3)



■ Low-voltage Power Supply PCB Circuit Diagram (100V)



■ Low-voltage Power Supply PCB Circuit Diagram (200V)





# **CHAPTER 7**

## **PERIODICAL MAINTENANCE**

# CHAPTER 7

## PERIODICAL MAINTENANCE


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

### CONTENTS

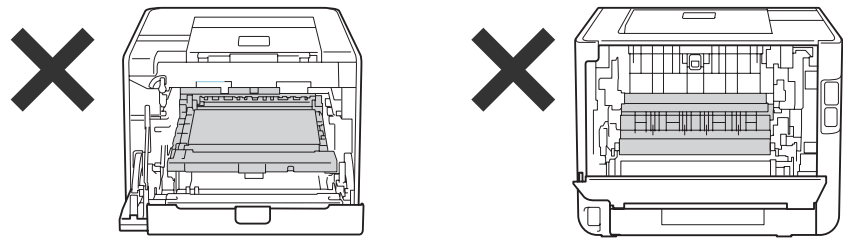
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# 1. PRECAUTIONS

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

 **WARNING**

- Always turn off the power switch and unplug the power cord from the power outlet before accessing any parts inside the printer.
- When opening the front cover or back cover to access any parts inside the printer, never touch the shaded parts shown in the following figures.



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

When replacing the periodical replacement parts, each of the counters need to be reset in order to record the number of replacement times. Refer to [“2. Periodical Replacement Parts” in this chapter](#). The number of printed pages of the printer can be checked on Print Settings. (Refer to [“2.4 Printout of Printer Settings” in Chapter 5](#).) The actual number of printed page will vary depending on the type of print job or the paper to be used. The figures indicated as the approximate life in the table above are worked out when printing a general business document (in accordance with ISO/IEC 19798) on A4-size paper.

**Note:**

- If the fuser unit is replaced after errors related to the fuser unit occur, you need to wait until the printer sufficiently cools down before replacing the unit. After replacing the unit, turn ON the printer and leave it for approximately fifteen minutes. This will make the printer to be released from the error.
- 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.



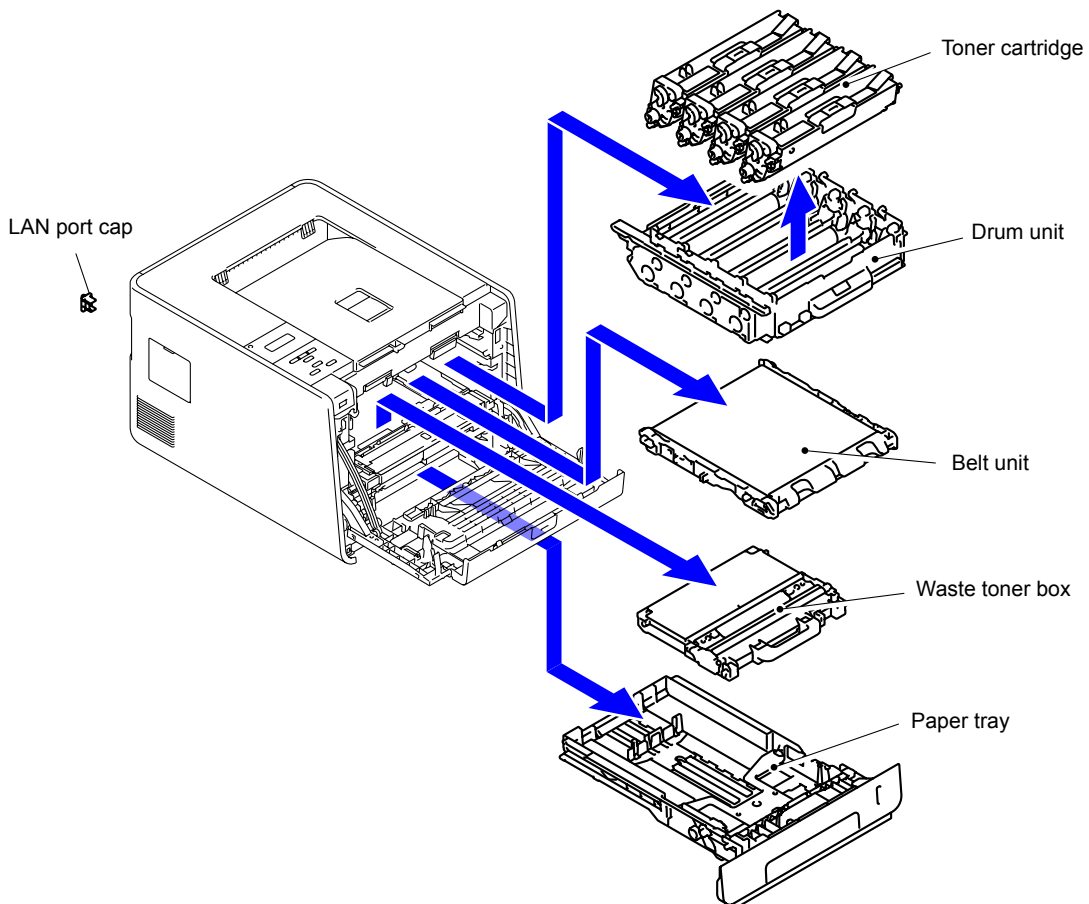
## 2. PERIODICAL REPLACEMENT PARTS

### 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,
  - the LAN cable, if connected, and
  - USB flash memory drive, if connected.
  - LAN port cap
- (2) Remove the Paper tray.



## 2.1.1 Fuser unit

(1) Open the Back cover.

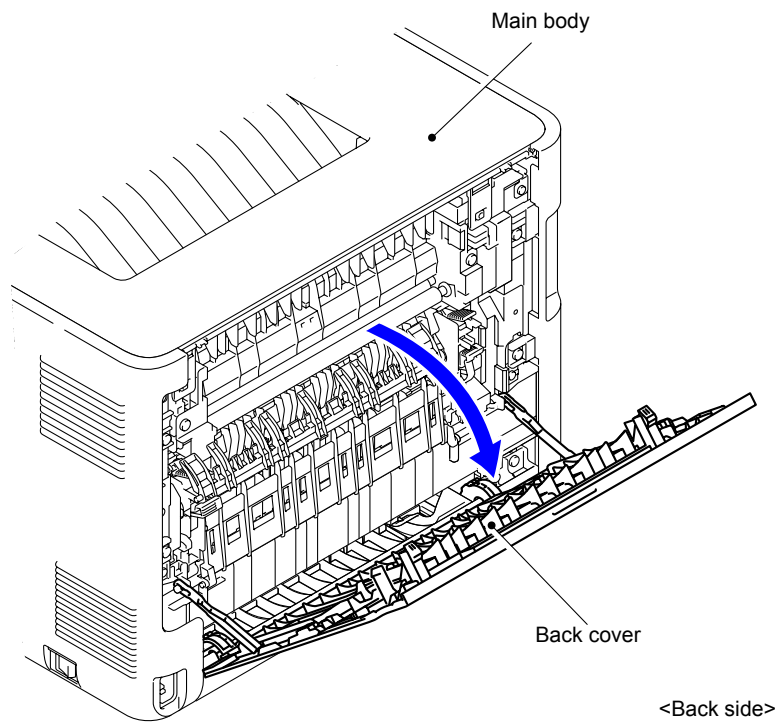


Fig. 7-1

(2) Remove the Back cover stopper arm L and R from the Main body.

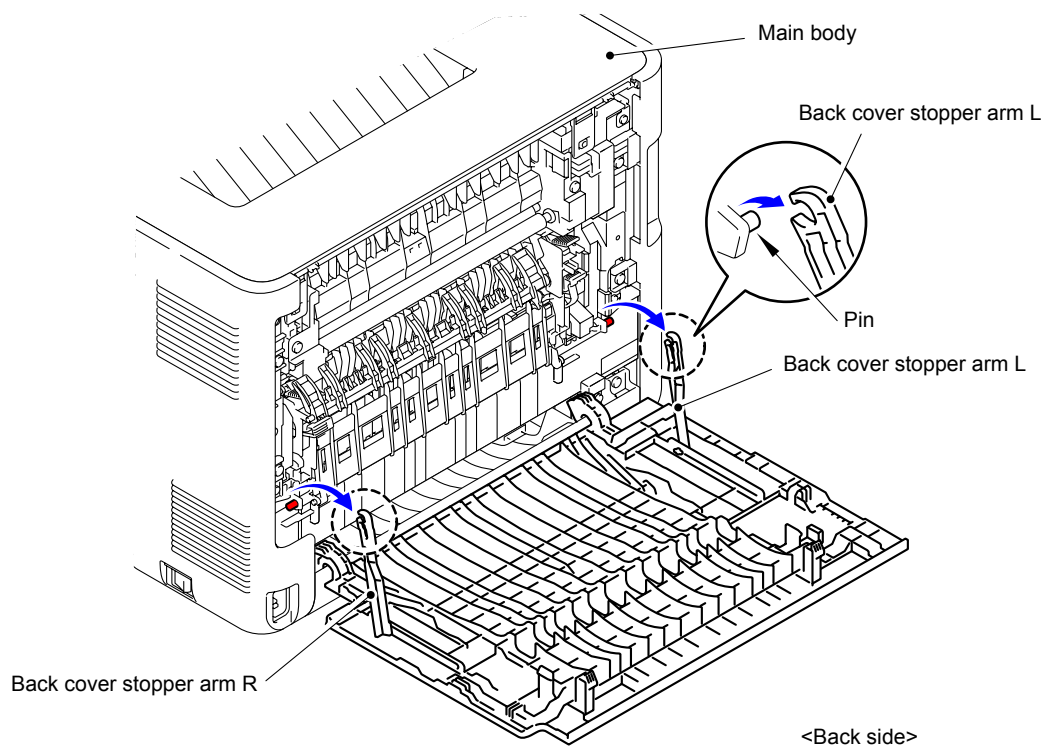


Fig. 7-2

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

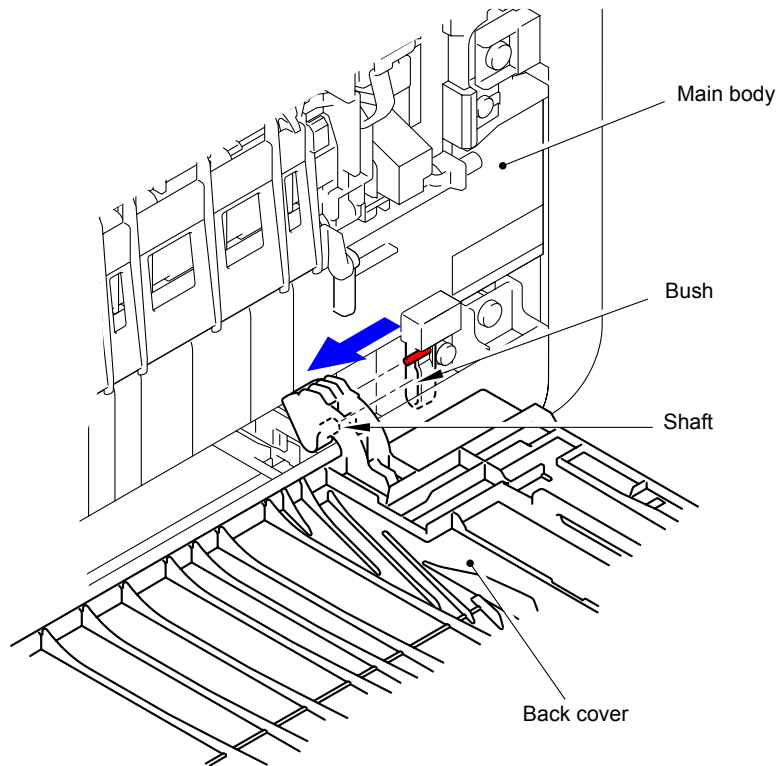


Fig. 7-3

(4) Remove the Back cover.

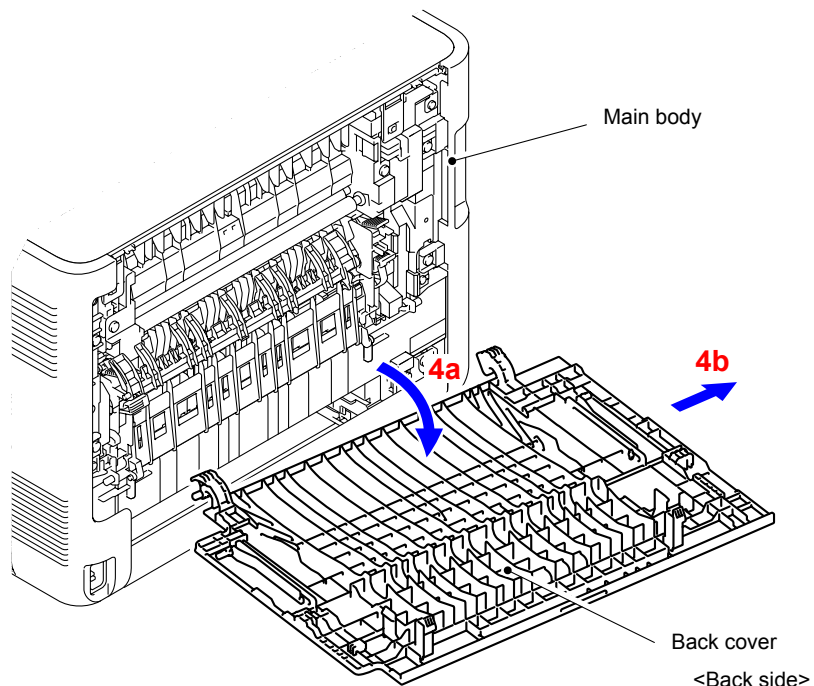


Fig. 7-4

(5) Open the Back flapper ASSY.

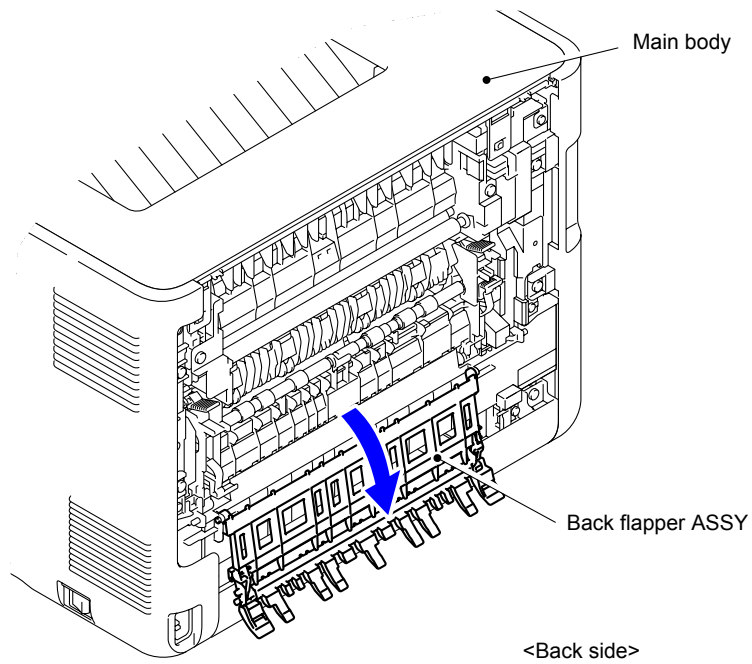


Fig. 7-5

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

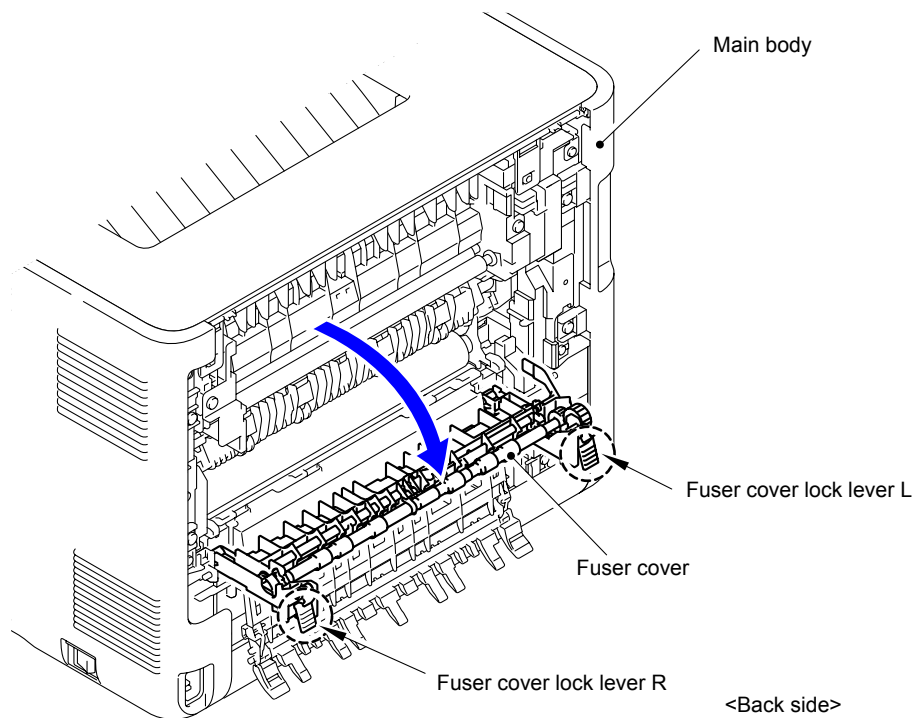
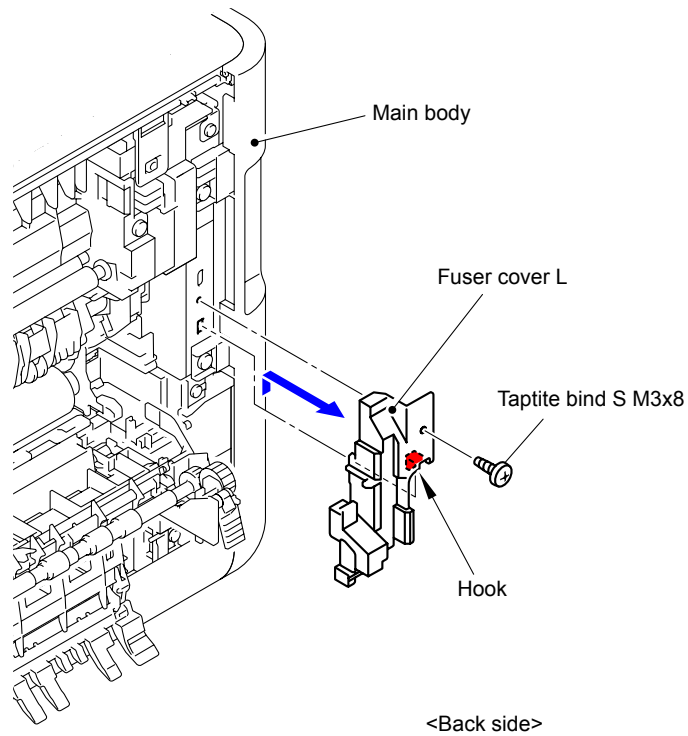


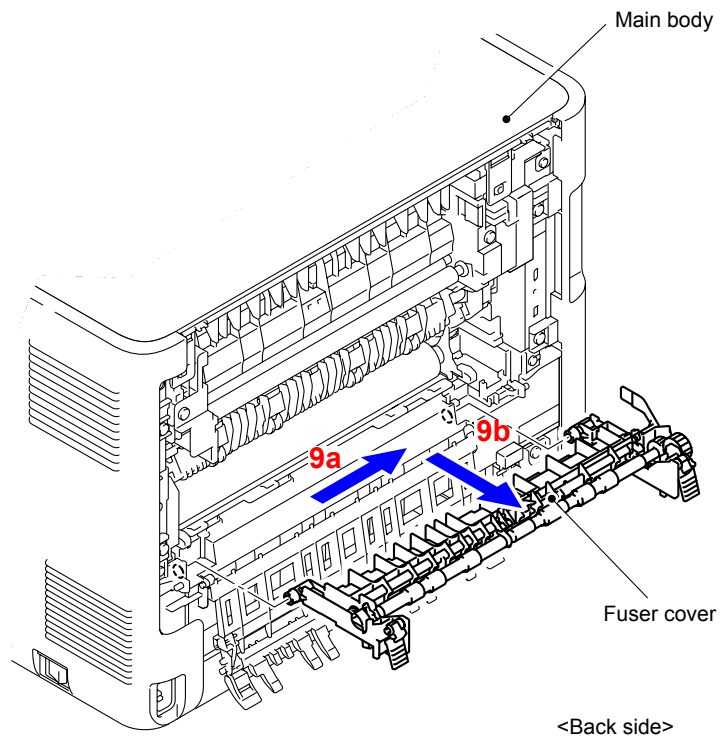
Fig. 7-6

- (7) Remove the Taptite bind S M3x8 screw from the Fuser cover L.
- (8) Release the Hook to remove the Fuser cover L from the Main body.



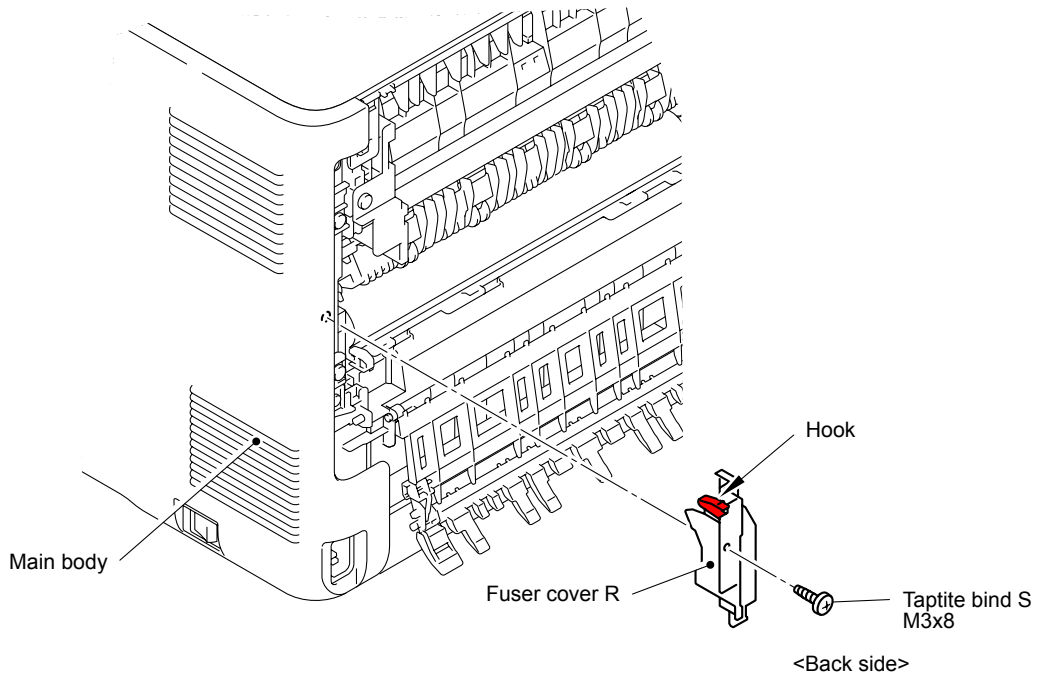
**Fig. 7-7**

- (9) Slide the Fuser cover in the direction of the arrow 9a to remove it to the front.



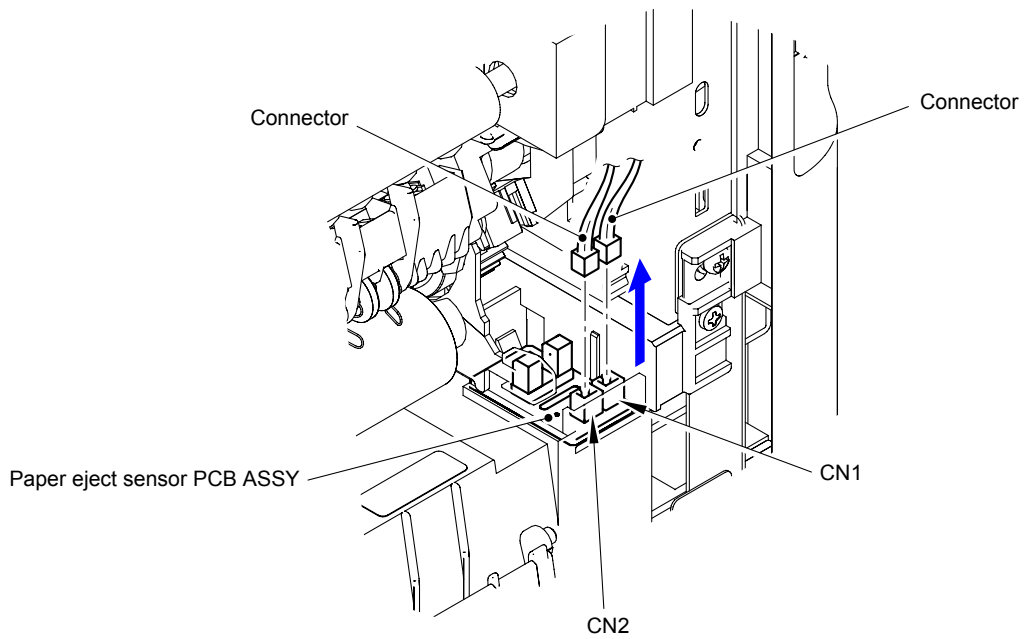
**Fig. 7-8**

- (10) Remove the Taptite bind S M3x8 screw from the Fuser cover R.
- (11) Release the Hook to remove the Fuser cover R from the Main body.



**Fig. 7-9**

- (12) Disconnect the two Connectors (CN1, CN2) from the Paper eject sensor PCB ASSY.



**Fig. 7-10**

(13) Disconnect the Electrode terminal from the Fuser unit.

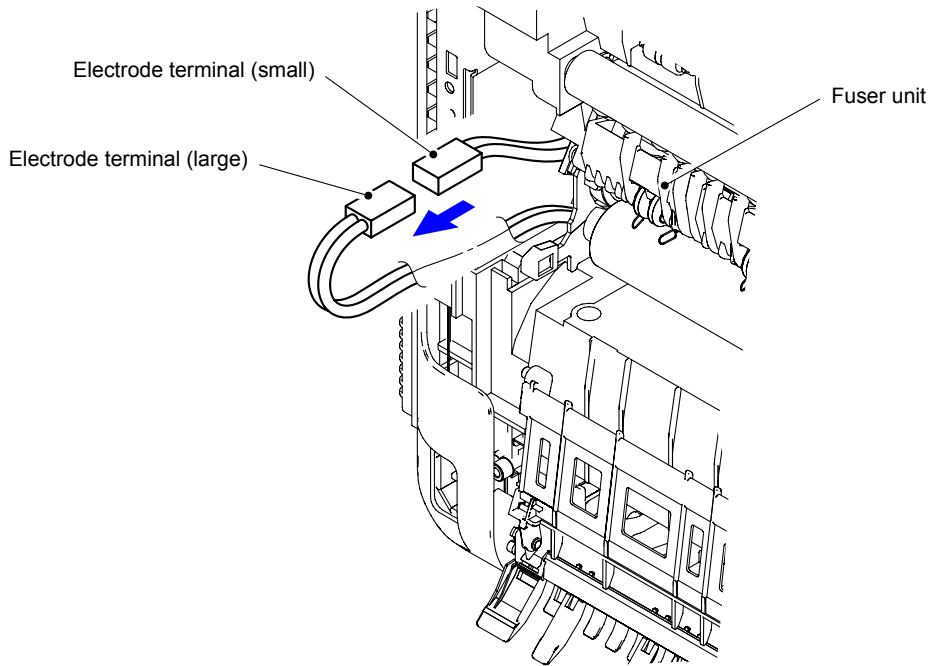


Fig. 7-11

(14) Remove the two Taptite pan B M4x14 screws to remove the Fuser unit from the Main body.

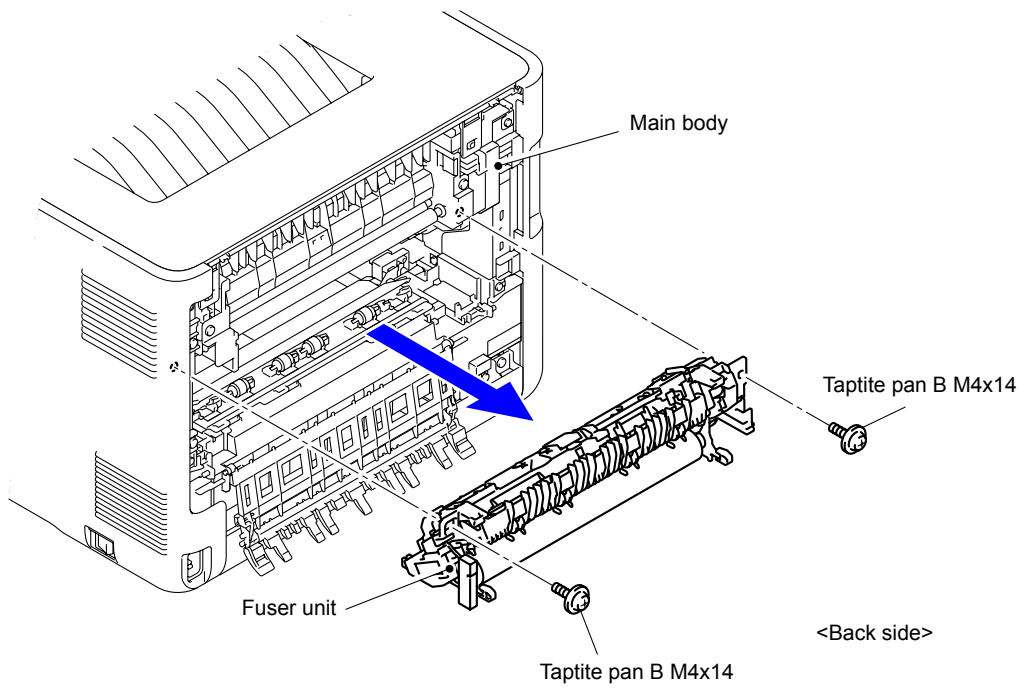


Fig. 7-12

(15) Remove the Toner filter ASSY from the Paper eject ASSY.

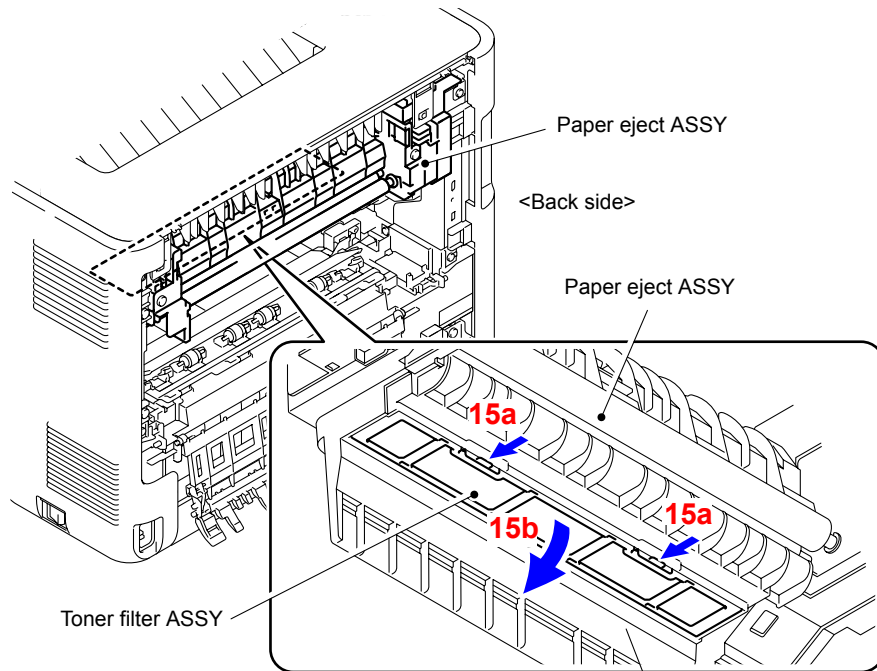


Fig. 7-13

(16) Hold down the Cleaner spring of the Cleaner pinch roller holder to remove the Cleaner pinch roller ASSY.

(17) Remove the other three Cleaner pinch roller ASSY in the same way.

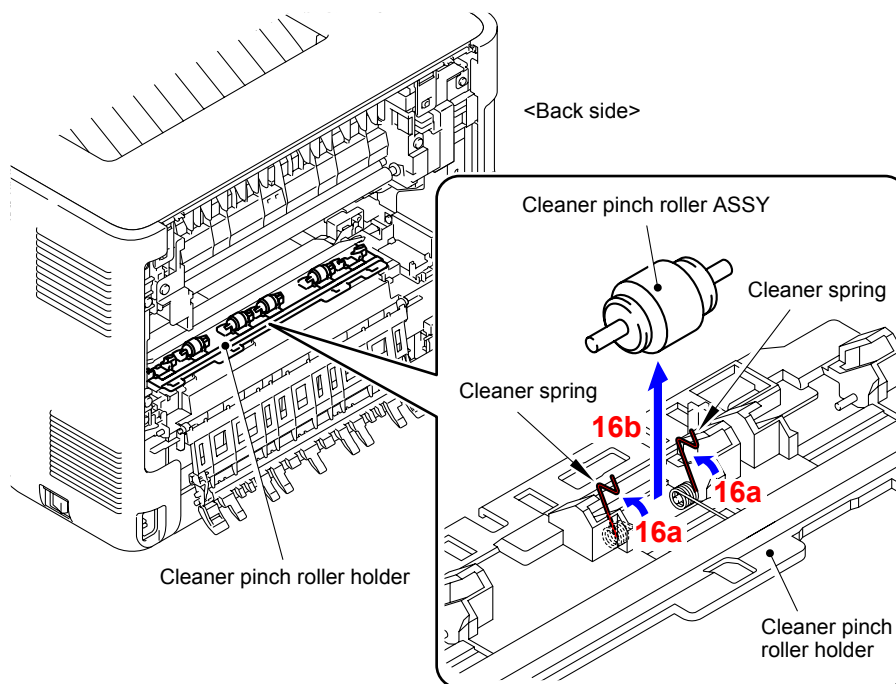
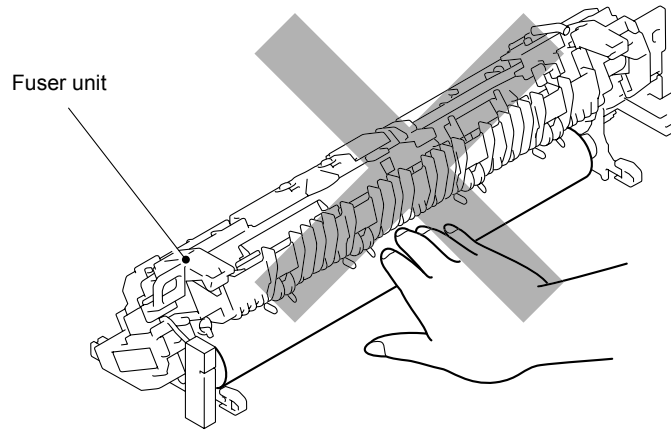


Fig. 7-14



**Note:**

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



**Fig. 7-15**

(18) After replacing the Fuser unit, reset the counter. (Refer to [“2.3 Parts Life Reset Function”](#) in Chapter 5.)

## 2.1.2 Laser unit

(1) Open the Back cover.

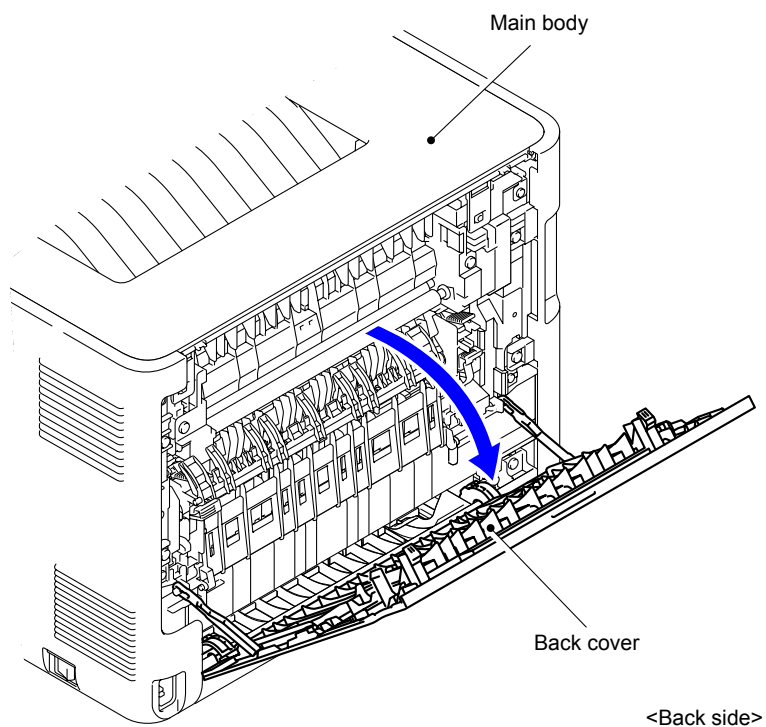


Fig. 7-16

(2) Remove the Back cover stopper arm L and R from the Main body.

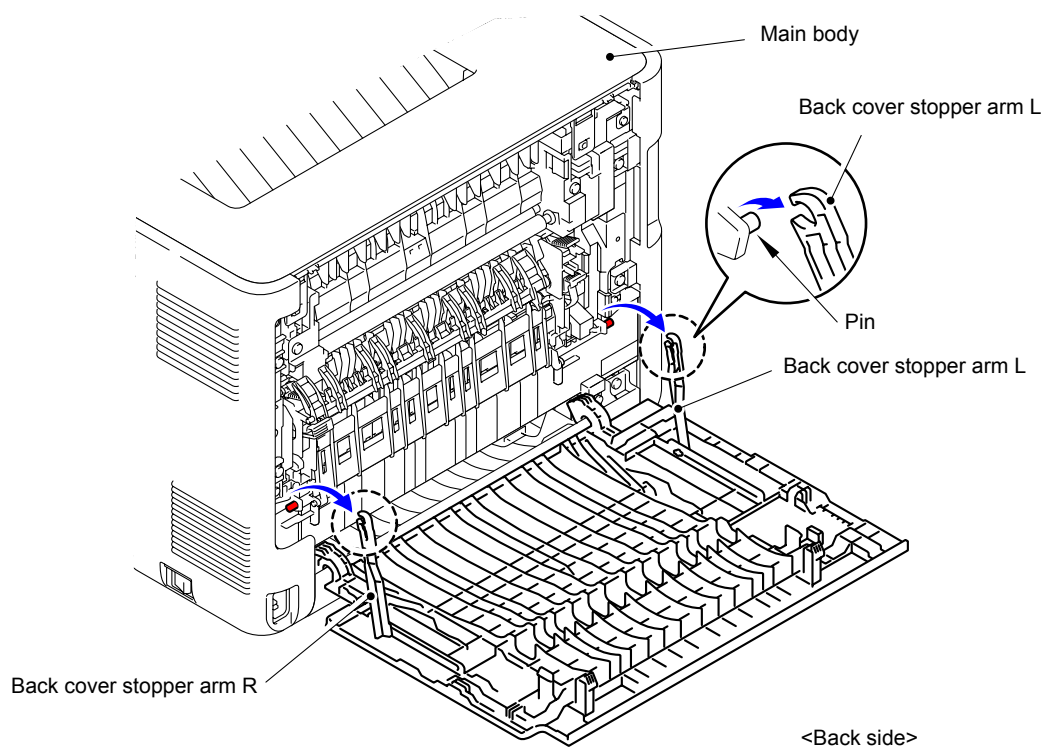


Fig. 7-17

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

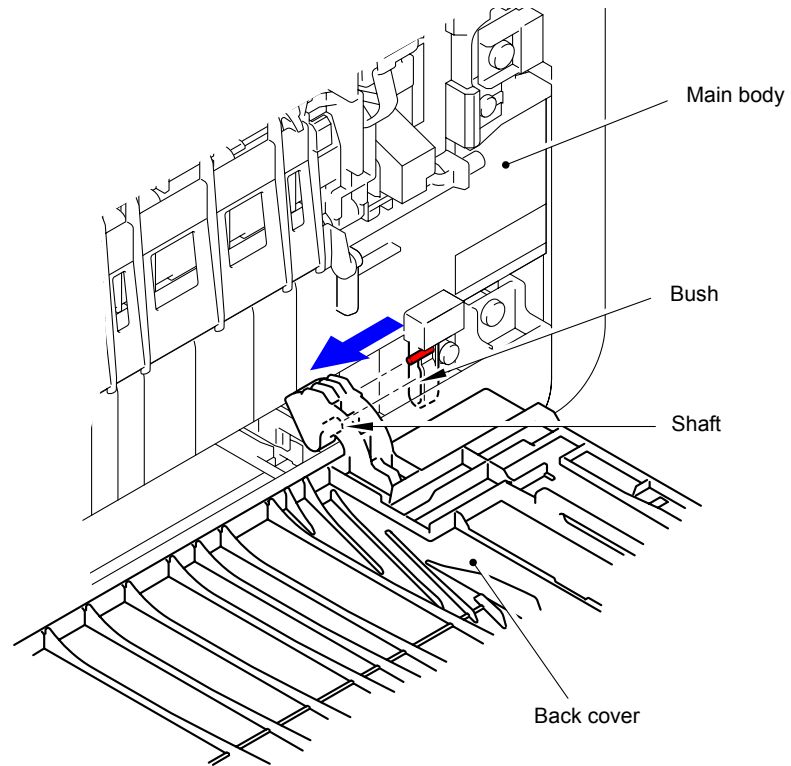


Fig. 7-18

(4) Remove the Back cover.

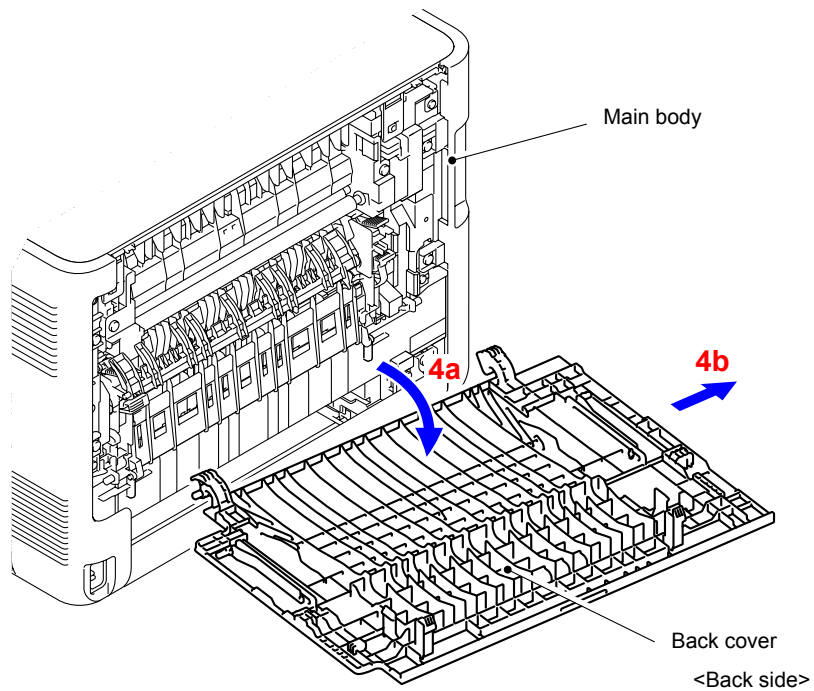


Fig. 7-19

(5) Open the Back flapper ASSY.

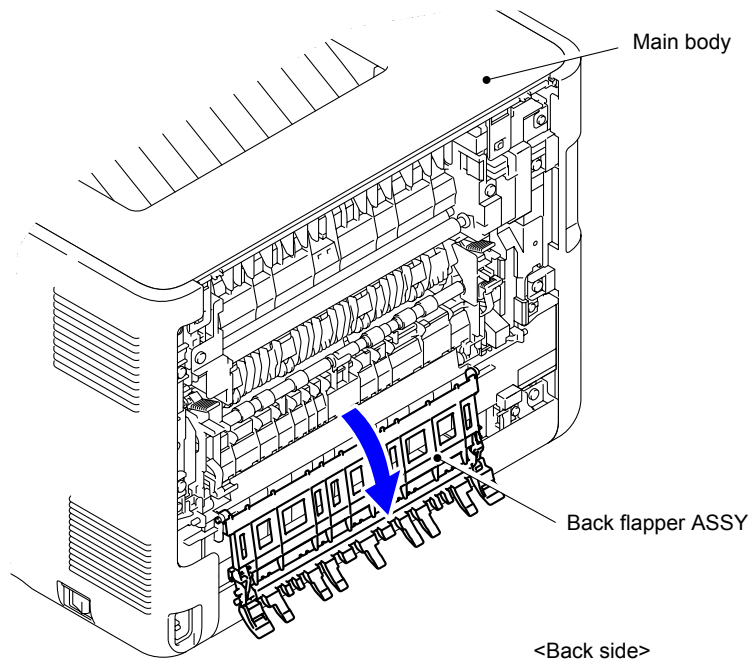


Fig. 7-20

(6) Open the Front cover.

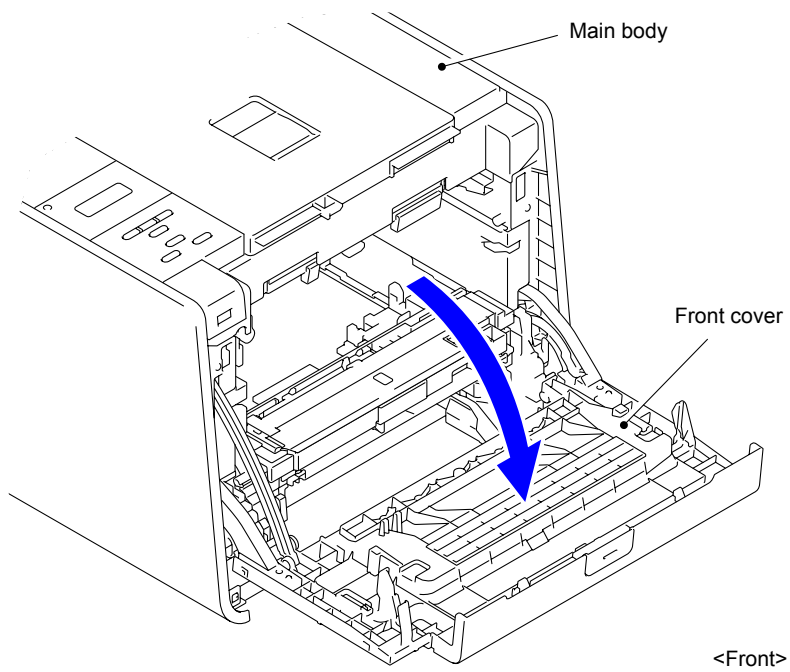
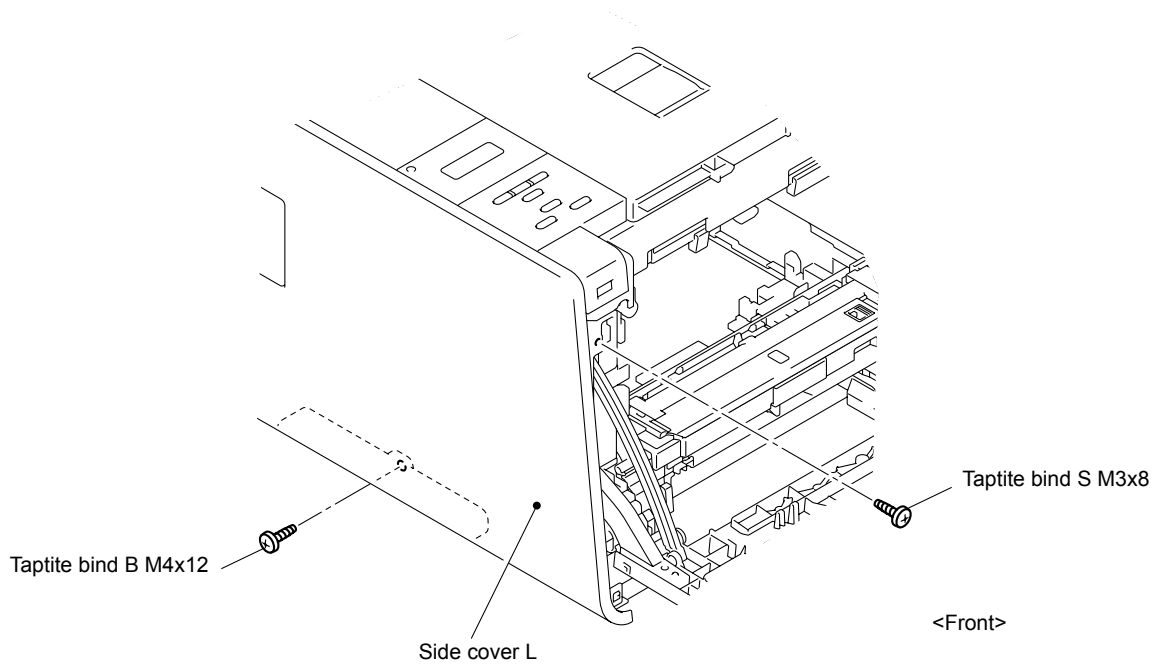


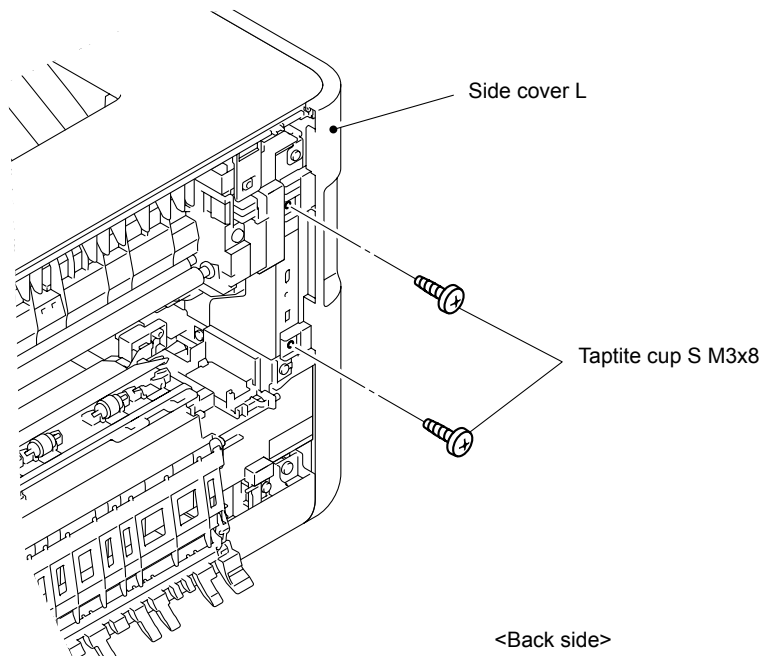
Fig. 7-21

- (7) Remove the Taptite bind S M3x8 screw from the front of the Side cover L.
- (8) Remove the Taptite bind B M4x12 screw from the side of the Side cover L.



**Fig. 7-22**

- (9) Remove the two Taptite cup S M3x8 screws from the back of the Side cover L.



**Fig. 7-23**

- (10) Release the Hooks 1 and 2 at the same time, and then release the Hooks 3 to 6 in numerical order. Hold the "A" section and lift the cover to release the Hook 7. Lower the cover, and then lift it again and release the Hooks 8 and 9 to remove the Side cover L from the Main body.

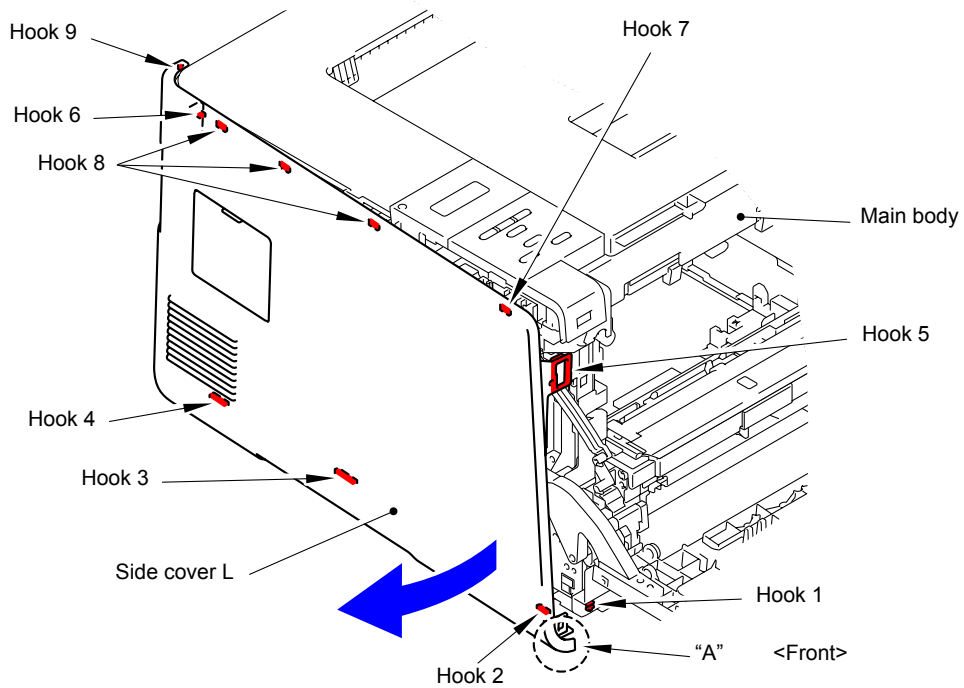


Fig. 7-24

**Assembling Note:**

When assembling the Side Cover L, make sure to push "A" to the rear side of the main body first, and then tighten the screws.

\* Inside of Side cover L

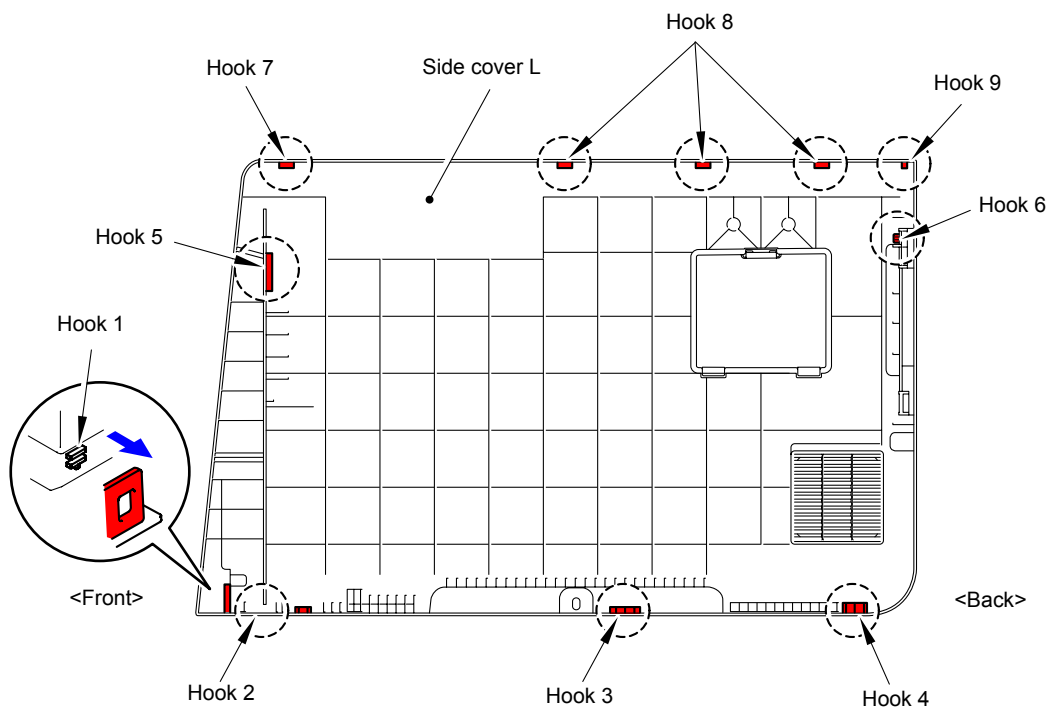


Fig. 7-25

- (11) Remove the Taptite bind S M3x8 screw from the front of the Side cover R ASSY.
- (12) Remove the Taptite bind B M4x12 screw from the side of the Side cover R ASSY.

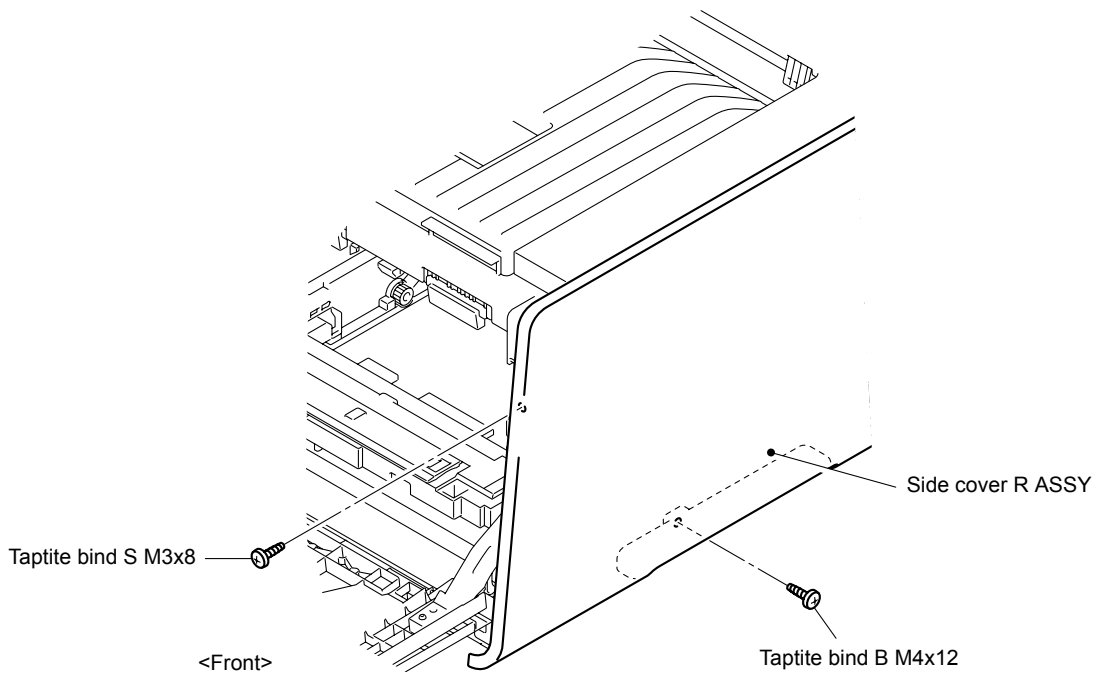


Fig. 7-26

- (13) Remove the two Taptite cup S M3x8 screws from the back of the Side cover R ASSY .

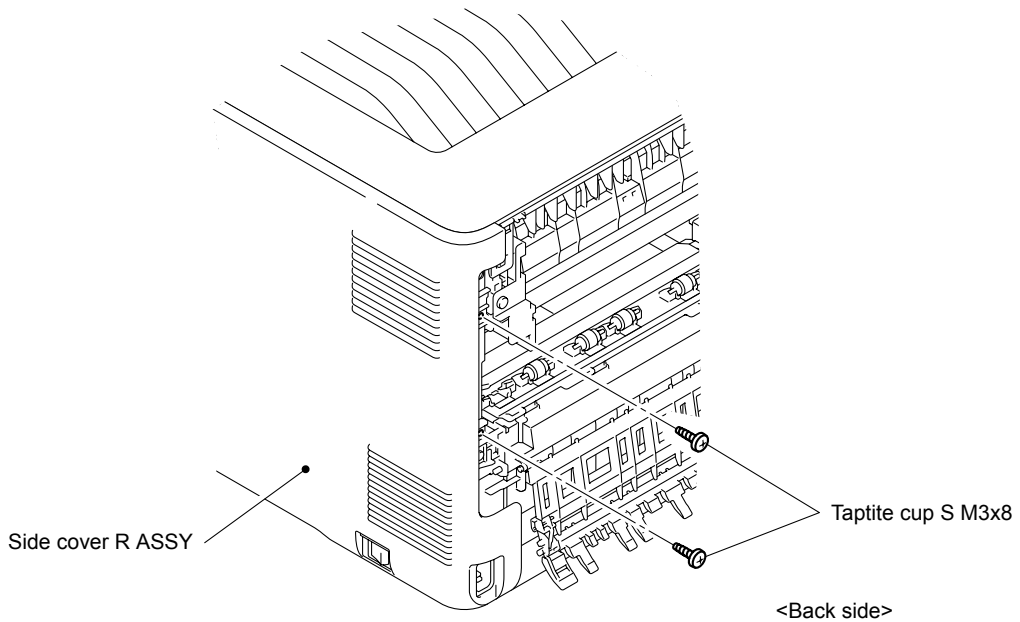


Fig. 7-27

- (14) Release the Hooks 1 and 2 at the same time, and then release the Hooks 3 to 6 in numerical order. Hold the "A" section and lift the cover to release the Hook 7. Lower the cover, and then lift it again and release the Hooks 8 and 9 to remove the Side cover R ASSY from the Main body.

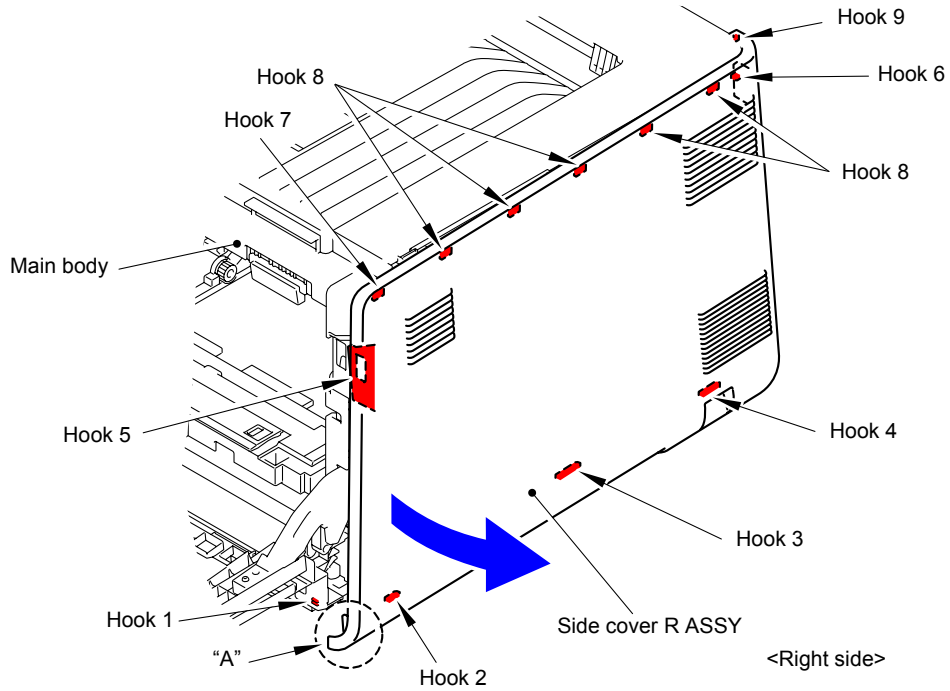


Fig. 7-28

\* Inside of Side cover R ASSY

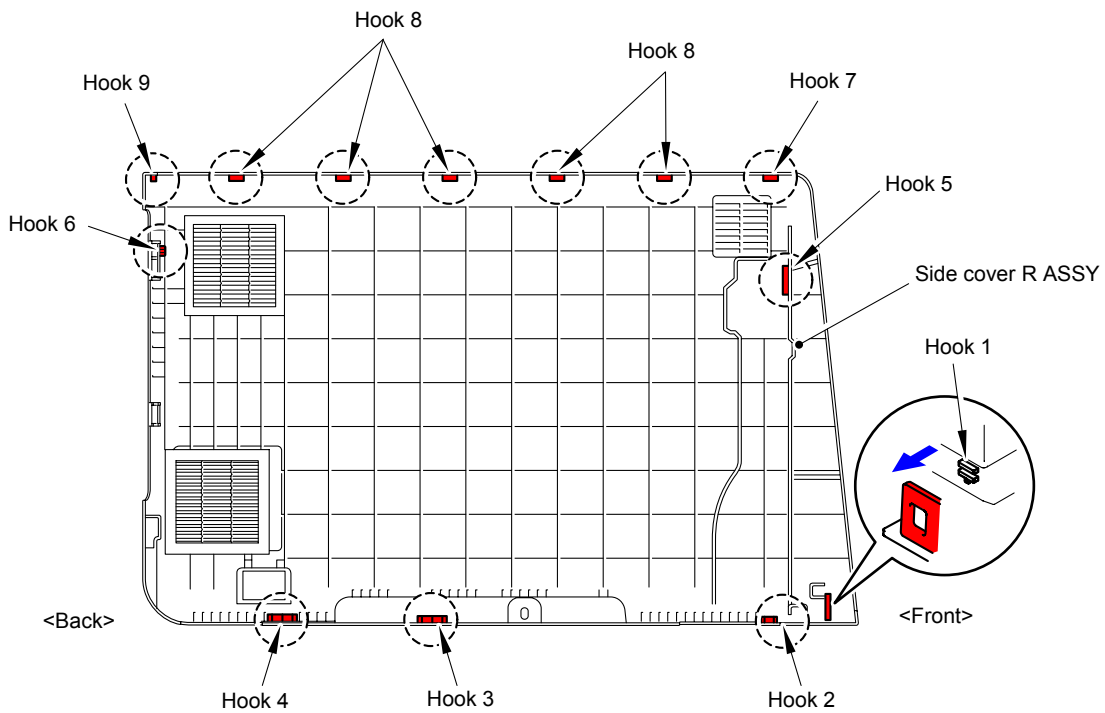
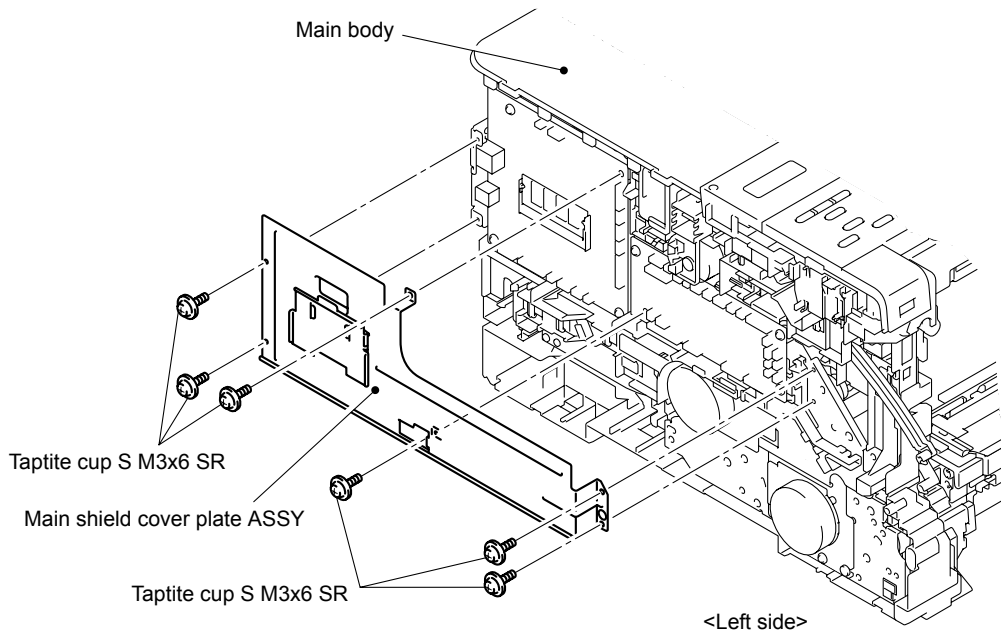


Fig. 7-29

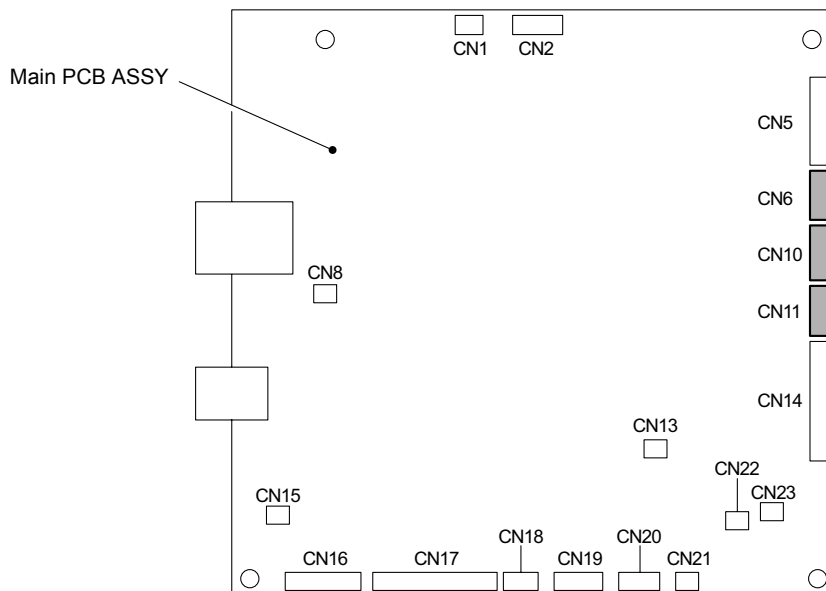


(15) Remove the six Taptite cup S M3x6 SR screws to remove the Main shield cover plate ASSY from the Main body.



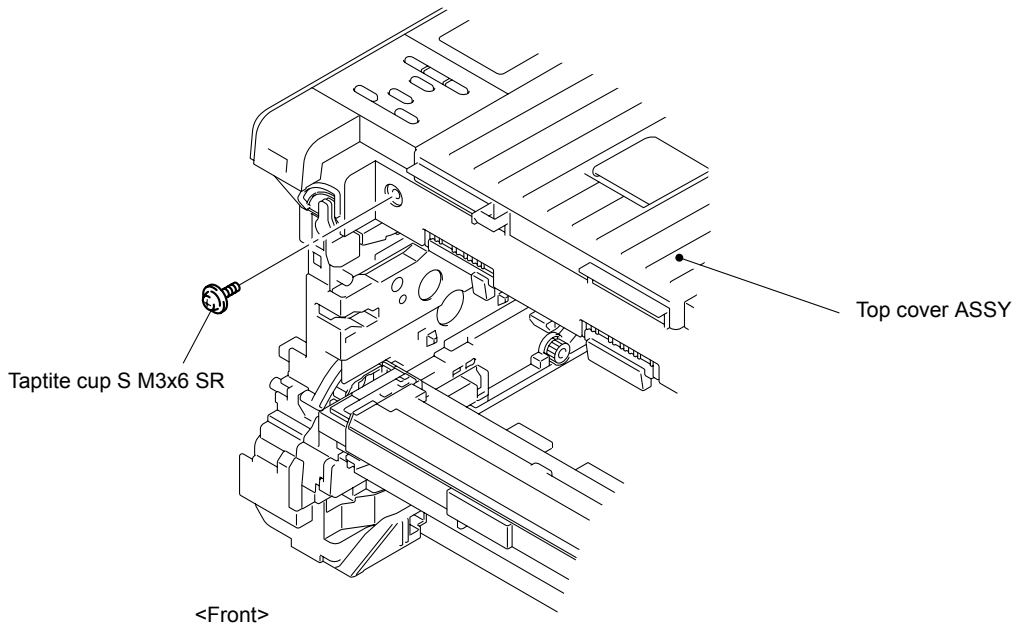
**Fig. 7-30**

(16) Disconnect the three Connectors (CN6, CN10, CN11) from the Main PCB ASSY.



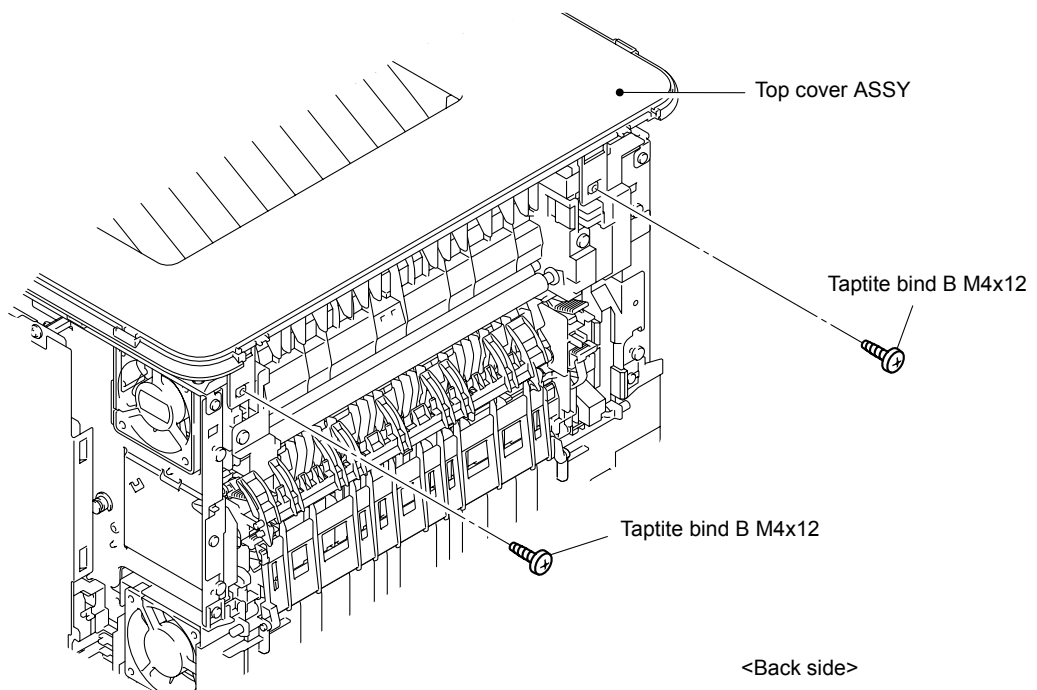
**Fig. 7-31**

(17) Remove the Taptite cup S M3x6 SR screw from the front of the Top cover ASSY.



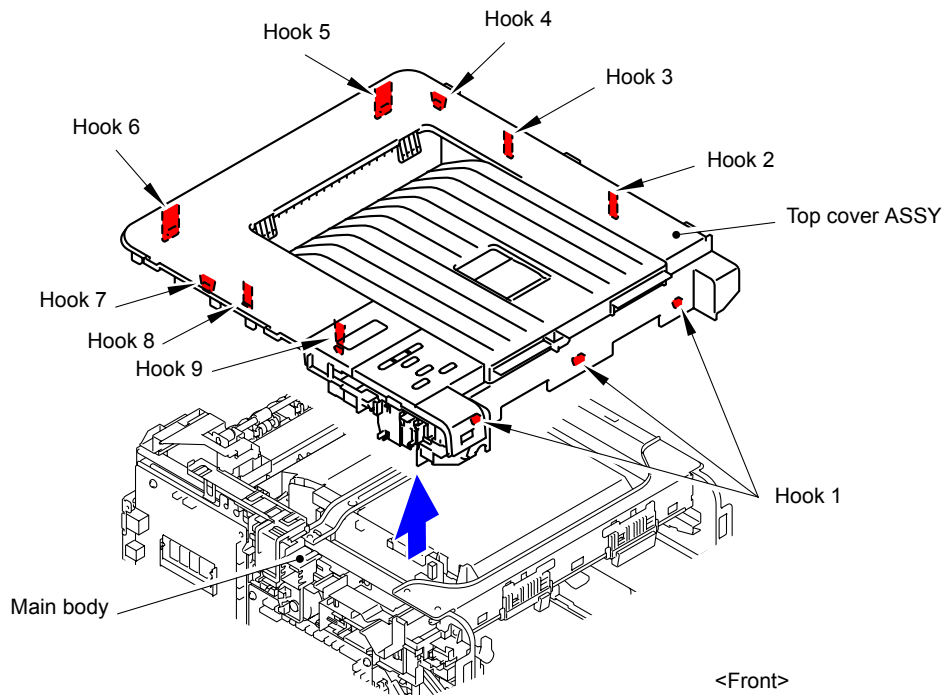
**Fig. 7-32**

(18) Remove the two Taptite bind B M4x12 screws from the back of the Top cover ASSY.



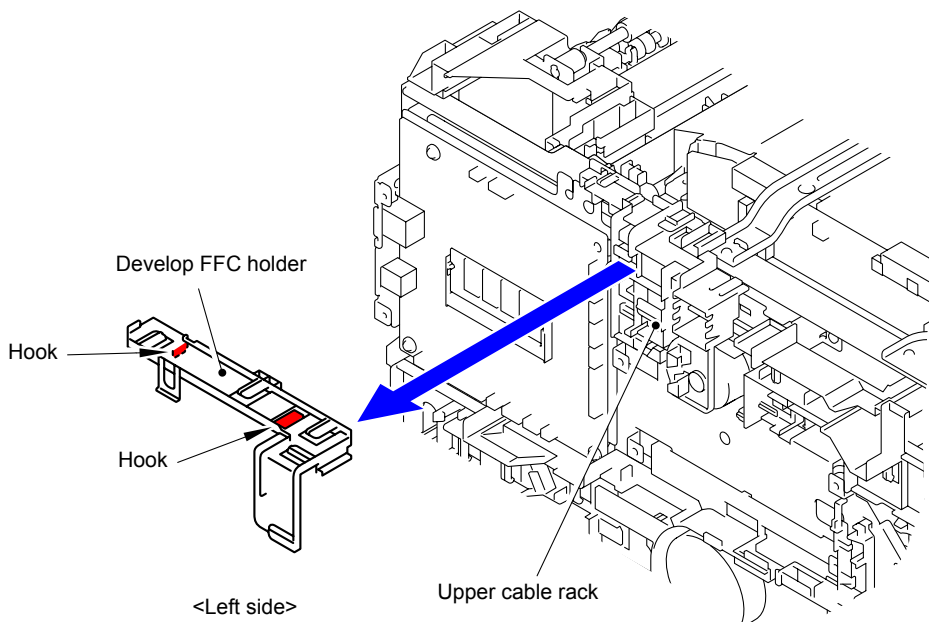
**Fig. 7-33**

- (19) Release the three Hooks 1, and then release the Hooks 2 to 7. Insert a screwdriver into the hole to release the Hook and press the Hook 8 with the screwdriver to release it. Release the Hook 9 by pressing it with a screwdriver to remove the Top cover ASSY from the Main body.



**Fig. 7-34**

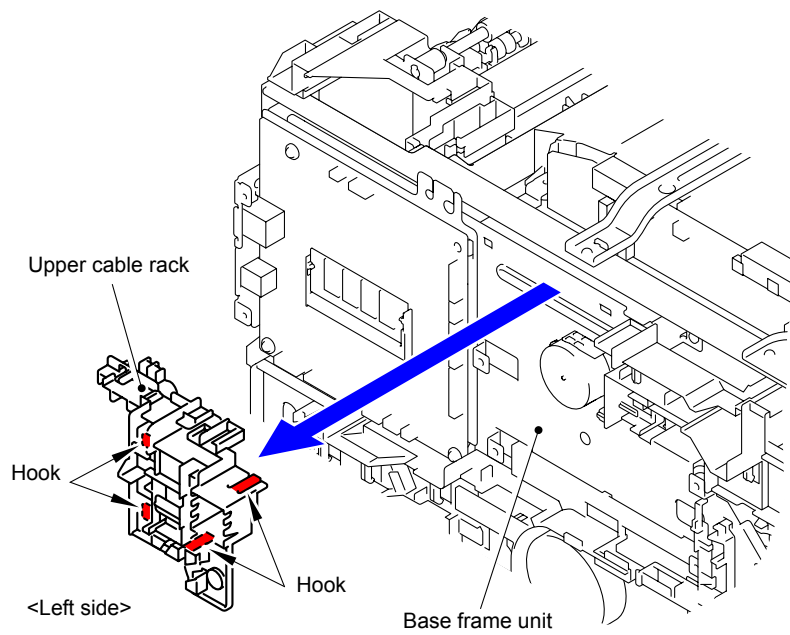
- (20) Disconnect the Flat cable from the Develop FFC holder.
- (21) Release the two Hooks to remove the Develop FFC holder from the Upper cable rack.



**Fig. 7-35**

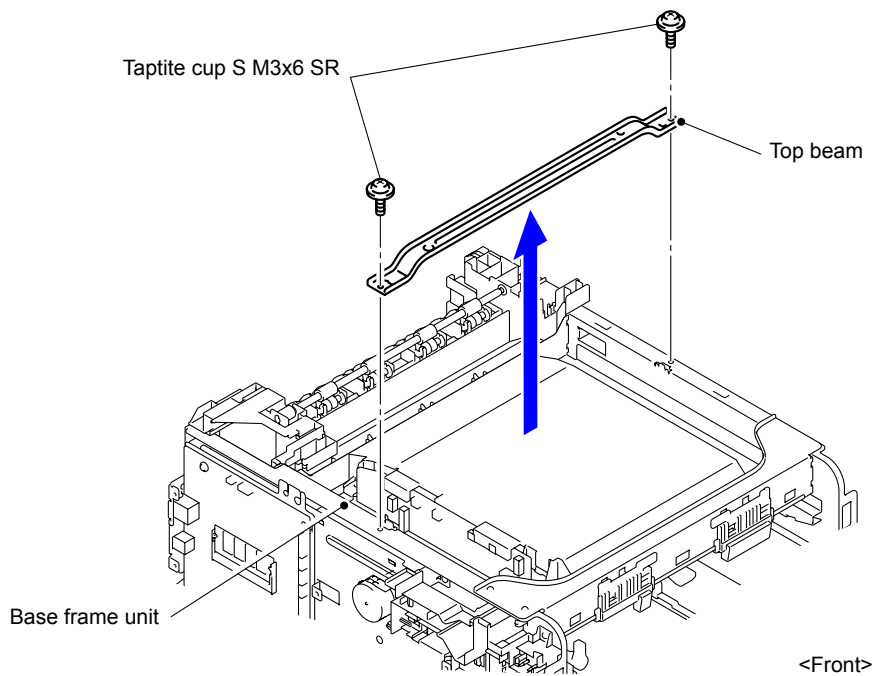
(22) Disconnect cables from the Upper cable rack.

(23) Release the four Hooks to remove the Upper cable rack from the Base frame unit.



**Fig. 7-36**

(24) Remove the two Taptite cup S M3x6 SR screws to remove the Top beam from the Base frame unit.



**Fig. 7-37**

(25) Remove the five Taptite cup S M3x6 SR screws to remove the four Scanner holders.

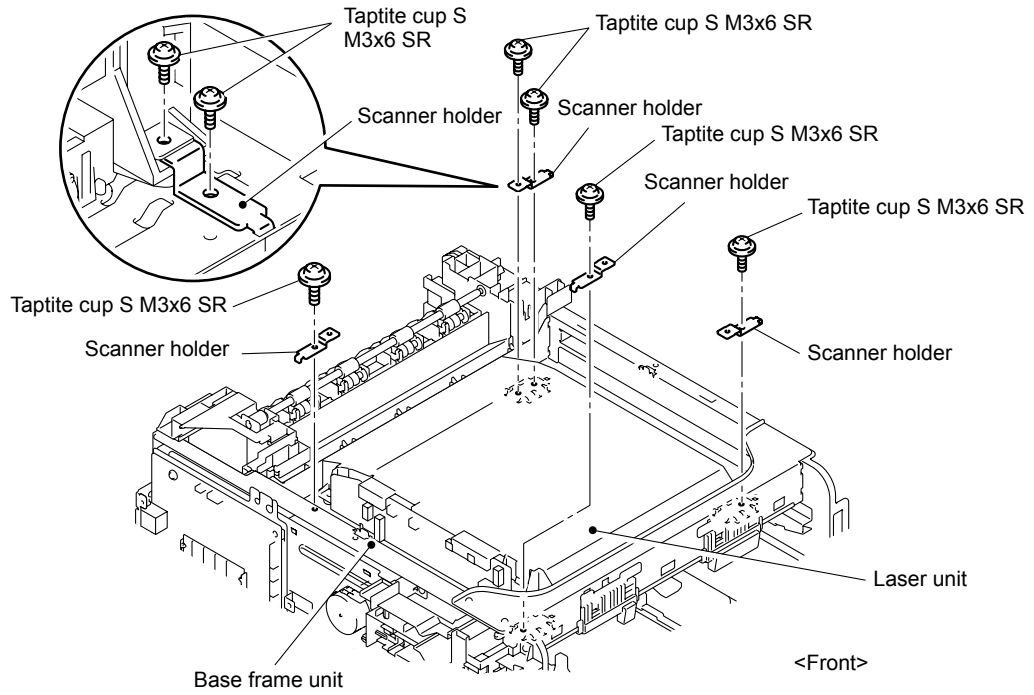


Fig. 7-38

(26) Remove the Connector (CN8) and two Flat cables from the Laser unit to remove the Laser unit from the Base frame unit.

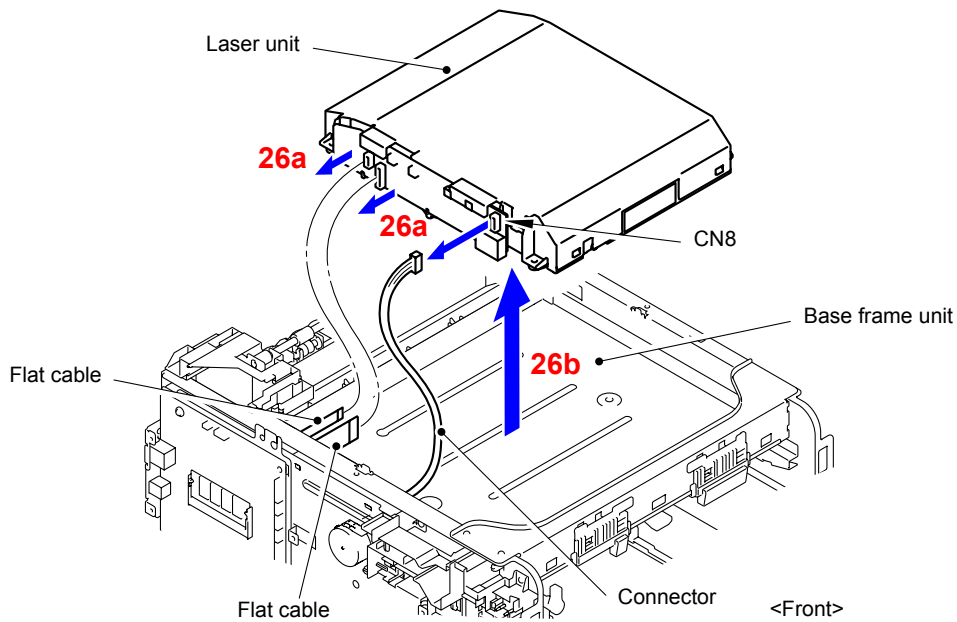


Fig. 7-39

**Assembling Note:**

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

(27) After replacing the Laser unit, reset the counter. (Refer to [“2.3 Parts Life Reset Function”](#) in Chapter 5.)

### 2.1.3 Paper feeding kit1

- (1) Release the Hook to remove the T1 separation pad holder ASSY from the Paper tray.

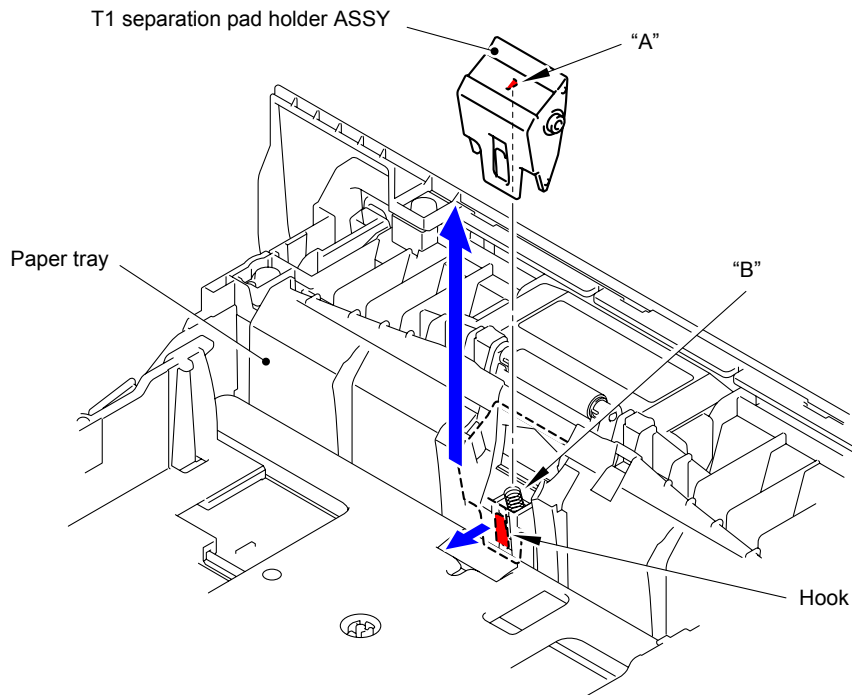


Fig. 7-40

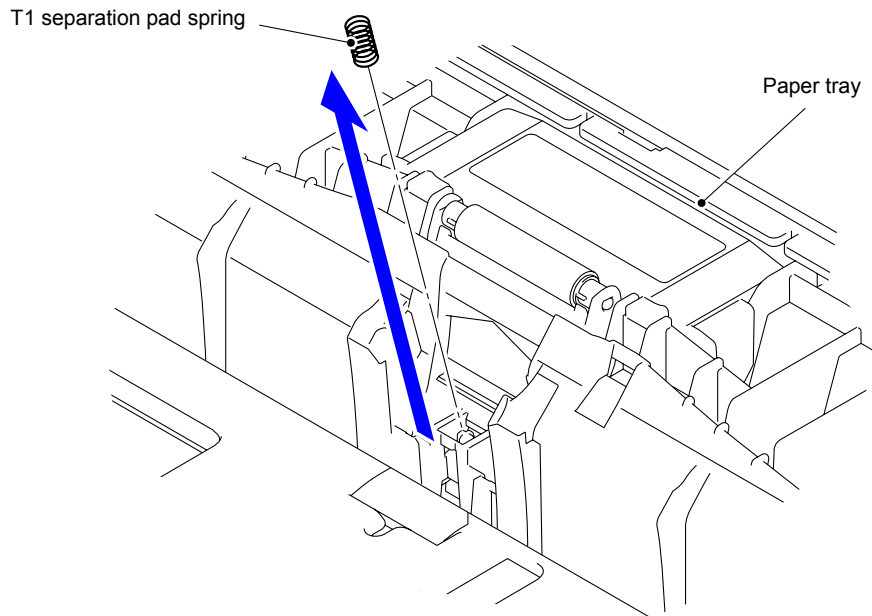
**Assembling Note:**

Mount the T1 separation pad holder ASSY in a way that "A" of the T1 separation pad holder ASSY is inserted into "B" of the T1 separation pad spring.

- (2) Remove the T1 separation pad spring from the Paper tray.

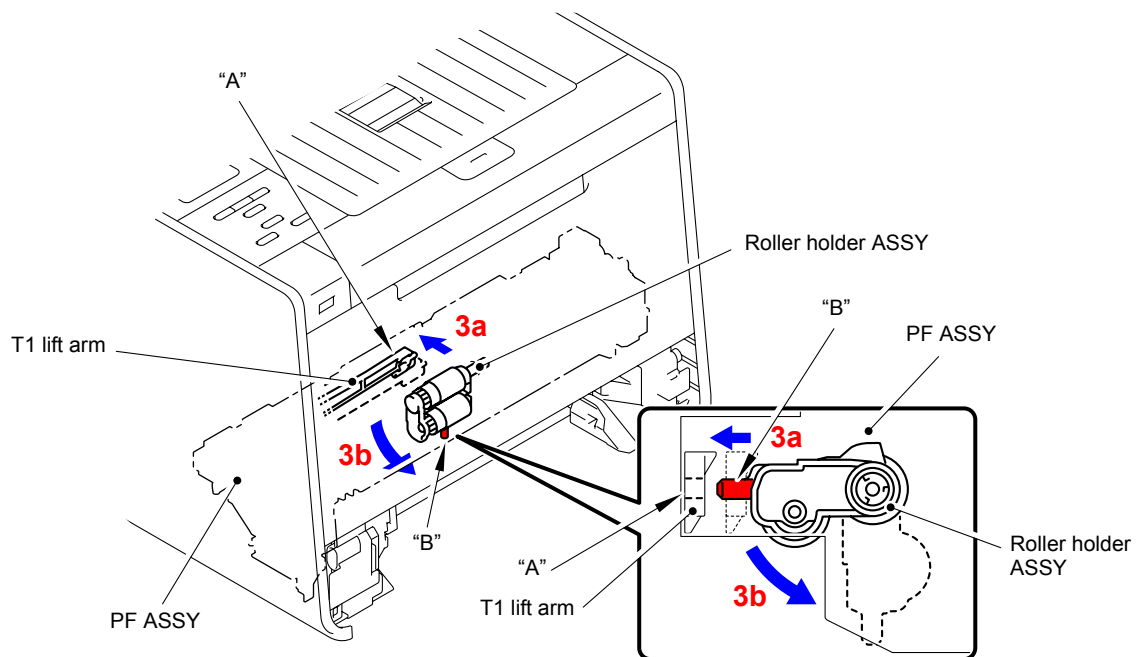
**Note:**

Be careful not to lose the T1 separation pad spring.



**Fig. 7-41**

- (3) Push the T1 lift arm to the back to remove "B" of the Roller holder ASSY from "A" of the T1 lift arm.



**Fig. 7-42**



- (4) Slide the Roller holder ASSY in the direction of the arrow 4 to remove it from the "C" of the PF ASSY.
- (5) Slide the Roller holder ASSY in the direction of the arrow 5a and 5b in this order to remove it.

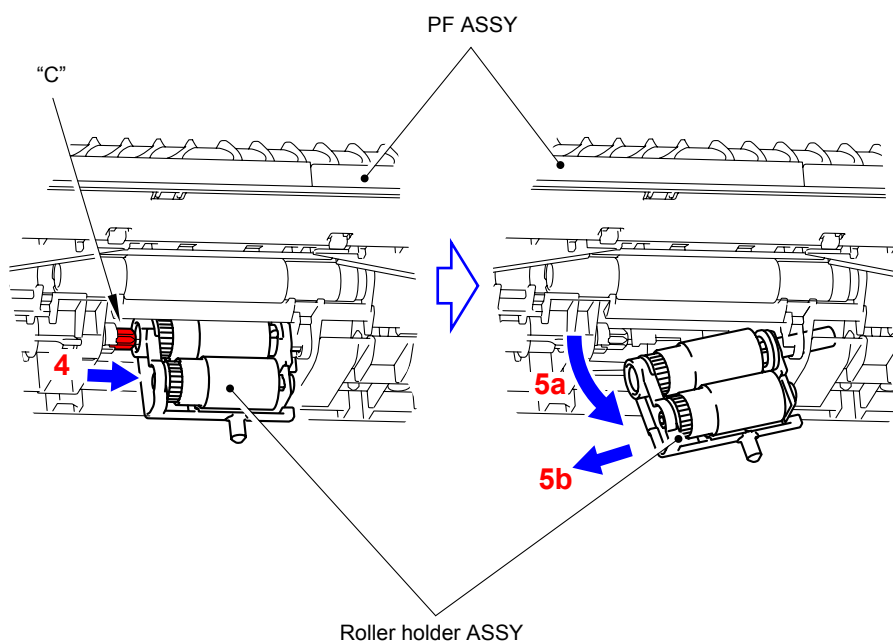


Fig. 7-43

**Assembling Note:**

Align the Shaft of the Roller holder ASSY to the hole of the PF ASSY and insert it into the hole.

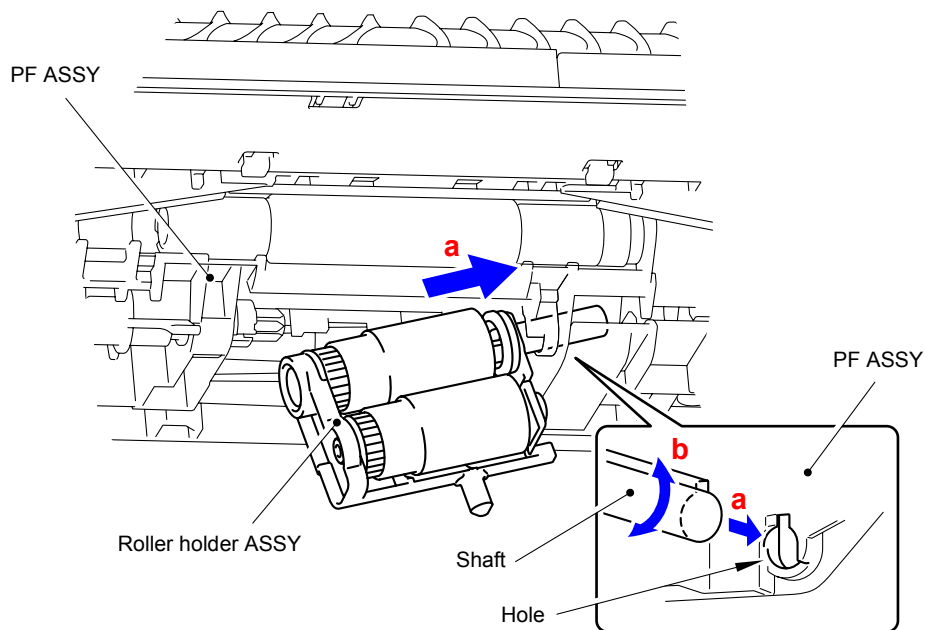


Fig. 7-44

- (6) After replacing the Paper feeding kit, reset the counter. (Refer to "2.3 Parts Life Reset Function" in Chapter 5.)

## 2.1.4 Paper feeding kit2

- (1) Release the two Hooks of the T2 separation pad ASSY to remove them in the upward direction.

**Note:**

Be careful not to lose the T2 separation pad spring.

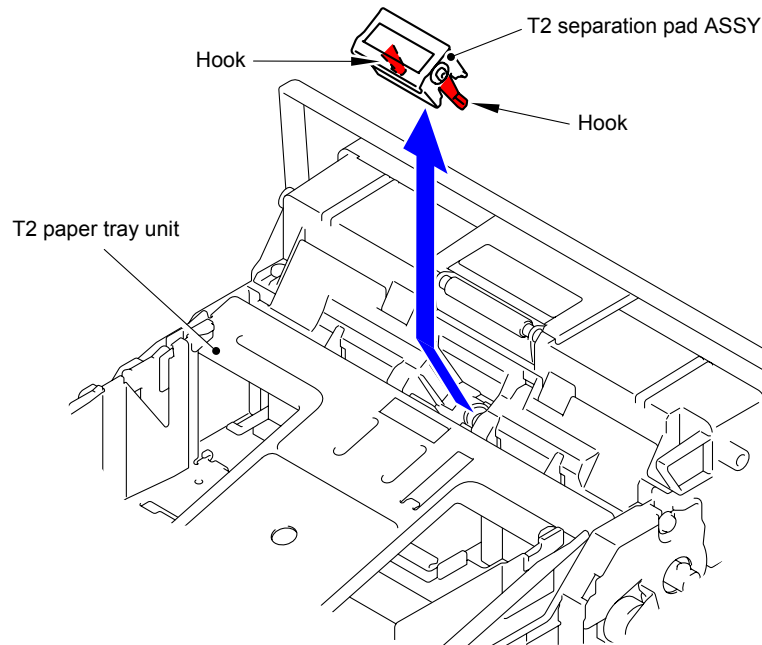


Fig. 7-45

- (2) Remove the T2 separation pad spring from the T2 separation pad ASSY.

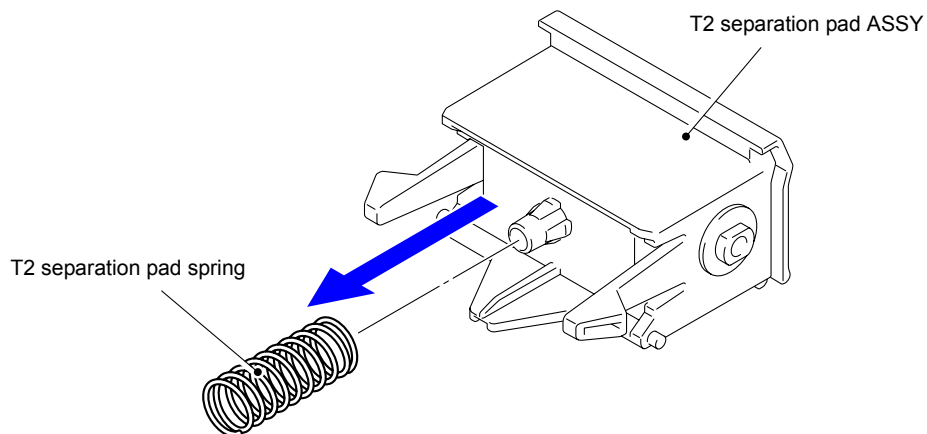


Fig. 7-46

- (3) Release the Hook and slide the T2 separation roller ASSY in the direction of the arrow 3.
- (4) Remove the T2 separation roller ASSY in the direction of the arrow 4b as rotating it in the direction of the arrow 4a.

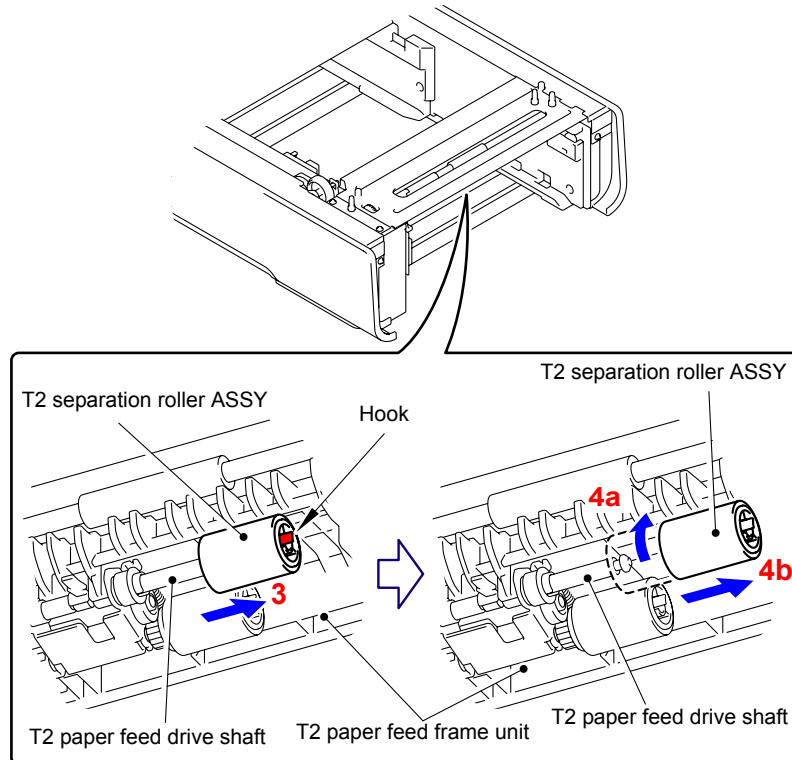


Fig. 7-47

**Assembling Note:**

When assembling the T2 separation roller ASSY, be sure to assemble it by sliding it in the direction of the arrow b as rotating the T2 separation roller ASSY in the direction of the arrow a.

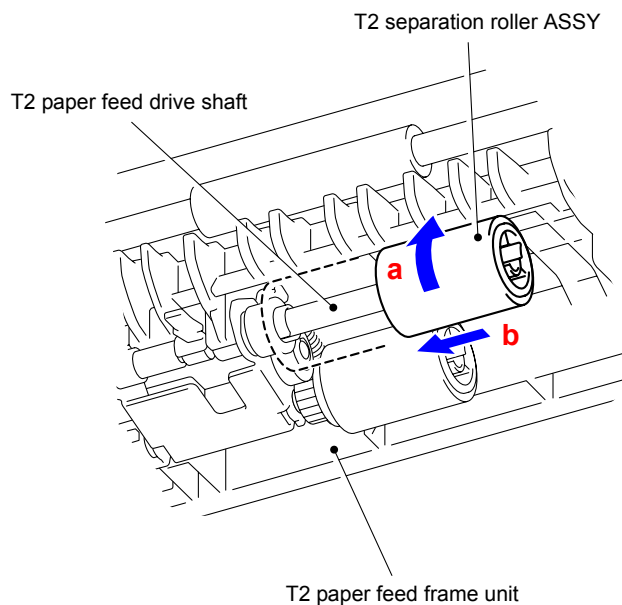
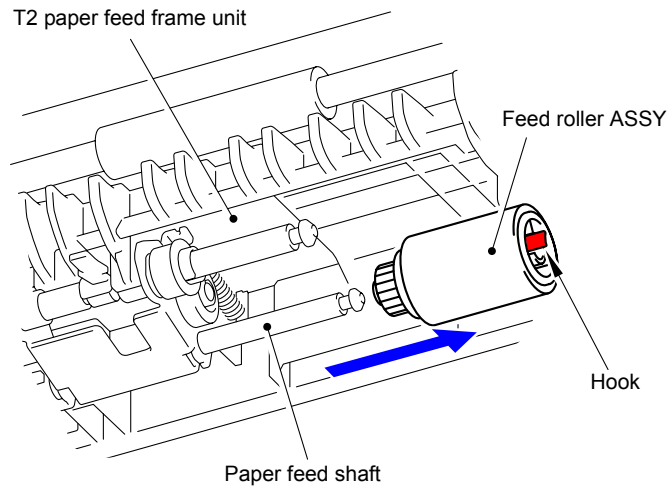


Fig. 7-48

- (5) Release the Hooks to remove the Feed roller ASSY from the Paper feed shaft.



**Fig. 7-49**

- (6) After replacing the Paper feeding kit, reset the counter. (Refer to [“2.3 Parts Life Reset Function”](#) in Chapter 5.)

## 2.1.5 MP paper feeding kit

- (1) Press "A" to release the Hook and then remove the MP upper frame cover from the MP upper cover ASSY.

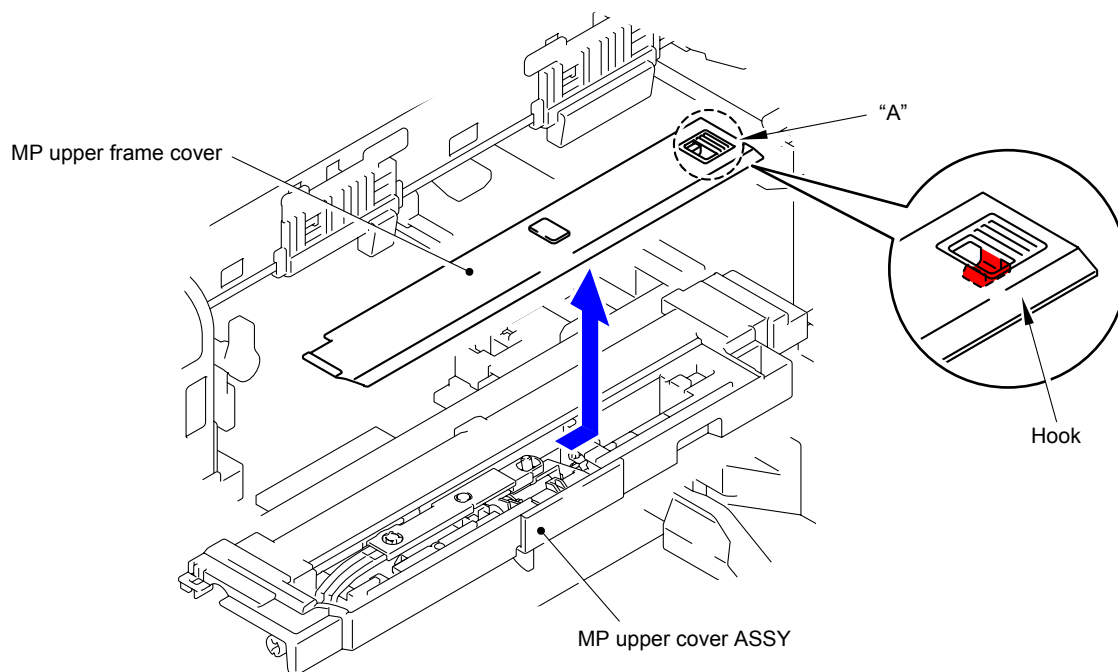


Fig. 7-50

- (2) Remove the MP lift arm B from the MP upper cover ASSY.

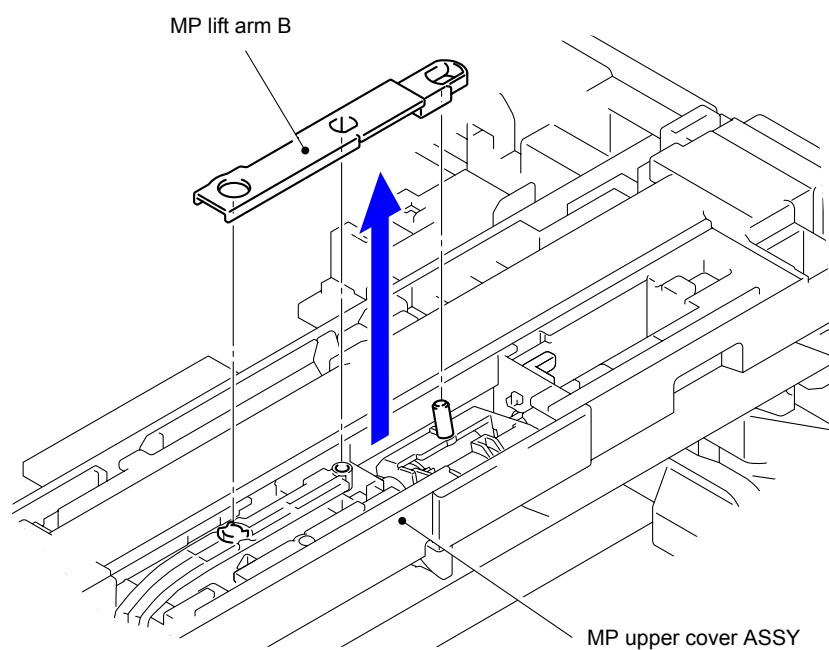


Fig. 7-51

- (3) Release the Hook to remove the MP holder bush from the MP upper cover.

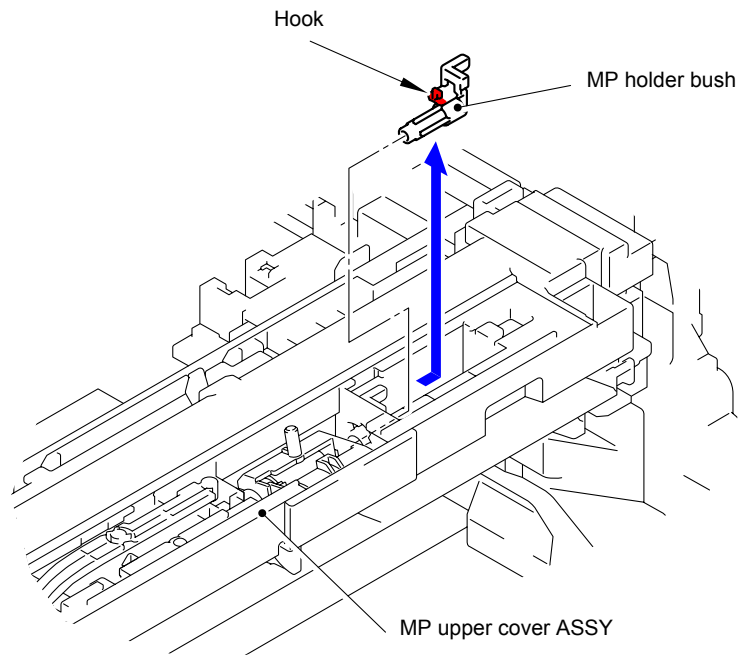


Fig. 7-52

- (4) Remove the MP roller holder ASSY from the MP upper cover ASSY.

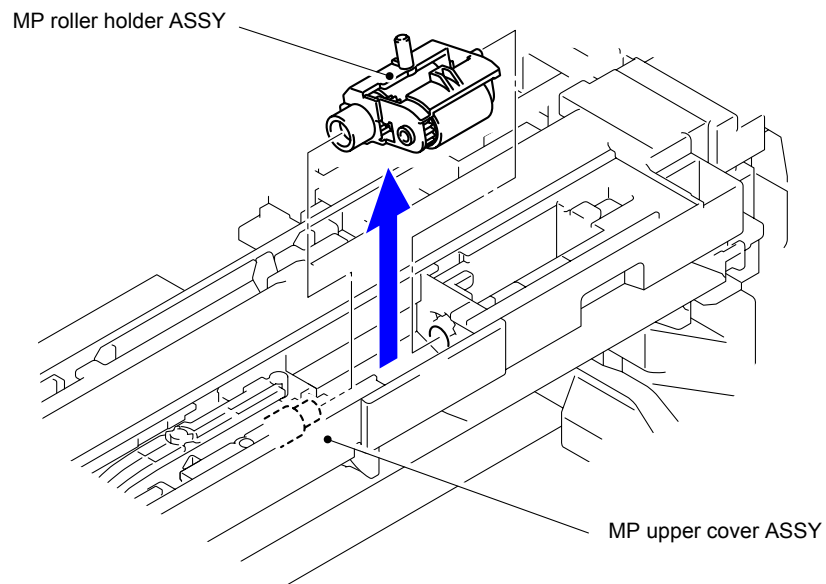


Fig. 7-53

- (5) Turn the MP separation pad ASSY upright to remove it from the MP unit.

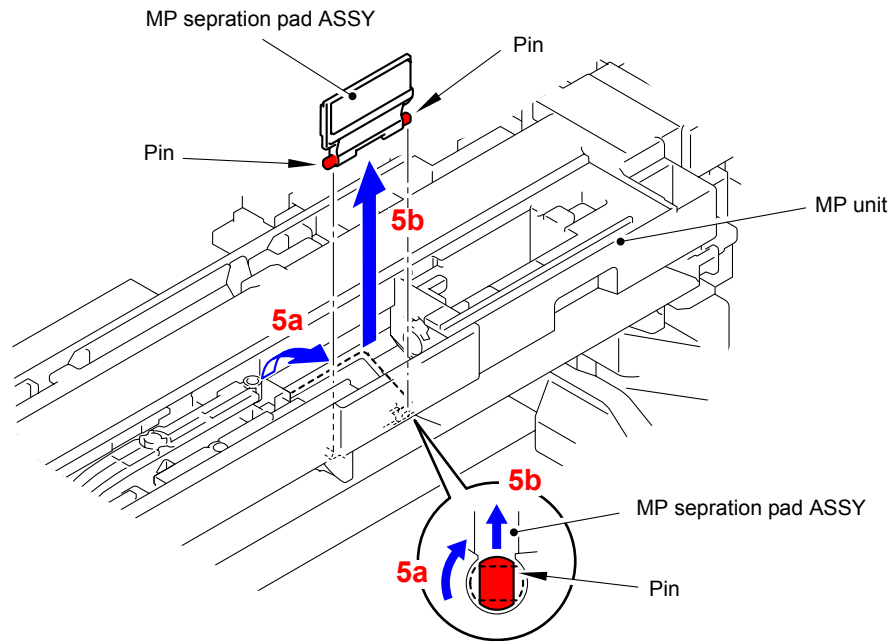


Fig. 7-54

- (6) Remove the MP separation pad spring from the two Pins of MP unit.

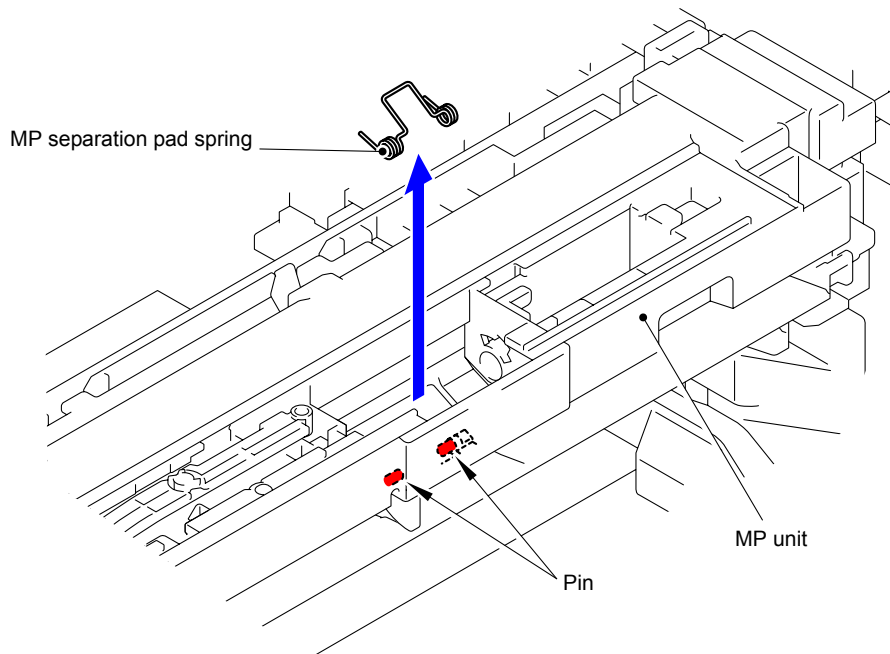


Fig. 7-55

- (7) After replacing the MP paper feeding kit, reset the counter. (Refer to [“2.3 Parts Life Reset Function”](#) in Chapter 5.)

# **APPENDIX 1.**

## **SERIAL NUMBERING SYSTEM**



# APPENDIX 1 SERIAL NUMBERING SYSTEM

## Serial number labels for the printer itself

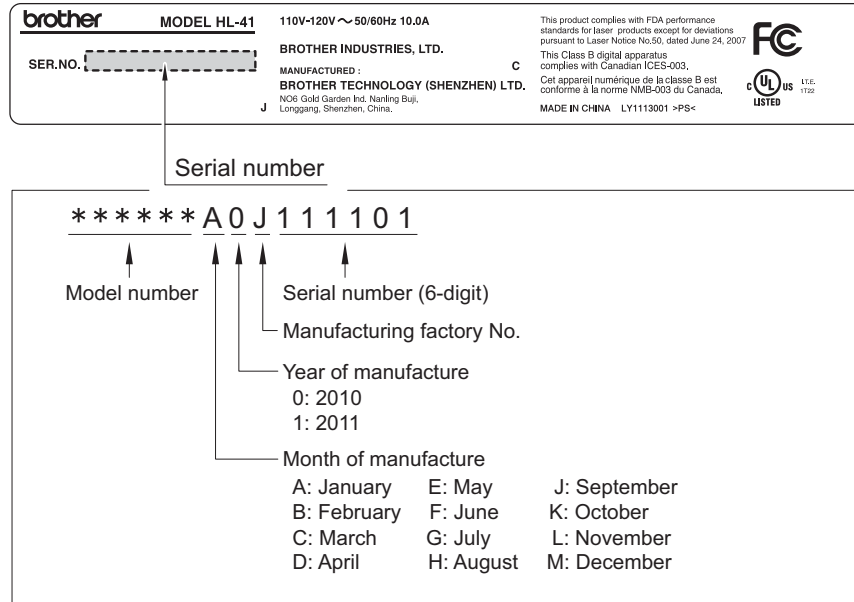


Fig. App 1-1

### <Location>

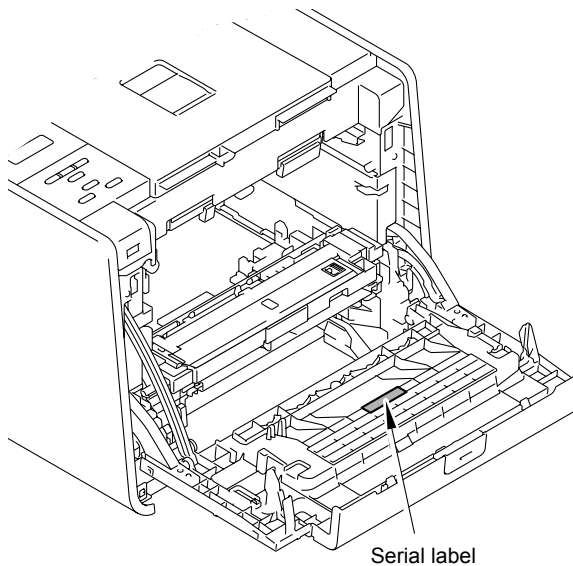


Fig. App 1-2

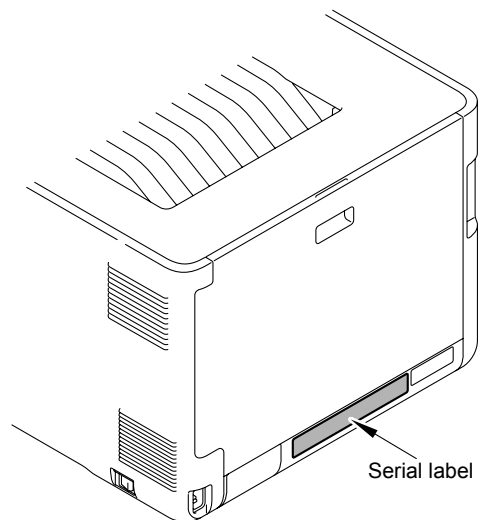


Fig. App 1-3

## **APPENDIX 2.**

### **DELETION OF USER SETTING INFORMATION, ETC.**

This appendix provides instructions on how to delete user setting information etc. recorded in the printer.

## APPENDIX 2 DELETION OF USER SETTING INFORMATION, ETC.

In this printer, the user setting information is stored in the EEPROM and flash memory of the main PCB ASSY. 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 (HL-4570CDW/4570CDWT only)

### <Operating procedure>

- (1) Disconnect the network cable from the printer.
- (2) Press the ▲ or ▼ button in the ready state until "Reset Menu" appears on the LCD.
- (3) Press the **OK** button. The "Reset Menu/Network" will appear on the LCD.
- (4) Press the ▲ and **Cancel** buttons at the same time. The "Reset Menu/Settings Reset" will appear on the LCD.
- (5) Press the **OK** button. The "Settings Reset/ ▲ Reset ▼ Exit" will appear on the LCD.
- (6) Press the ▲ button. The "Reboot OK?/ ▲ Yes ▼ No" will appear on the LCD.
- (7) Press the button again, and the printer automatically restarts, the user setting information is deleted, and the printer goes back to the ready state.

#### **Note:**

The printer returns to the ready state automatically if no panel operation is implemented for 30 seconds.

# **APPENDIX 3.**

## **INSTALLING THE MAINTENANCE DRIVER**

## APPENDIX 3 INSTALLING THE MAINTENANCE DRIVER

To identify multiple printers connected to the computer via USB, the computer needs to configure the corresponding number of virtual USB devices by a driver or software. If you connect a multiple number of printers to your computer, the same number of virtual USB devices will be automatically configured on your computer.

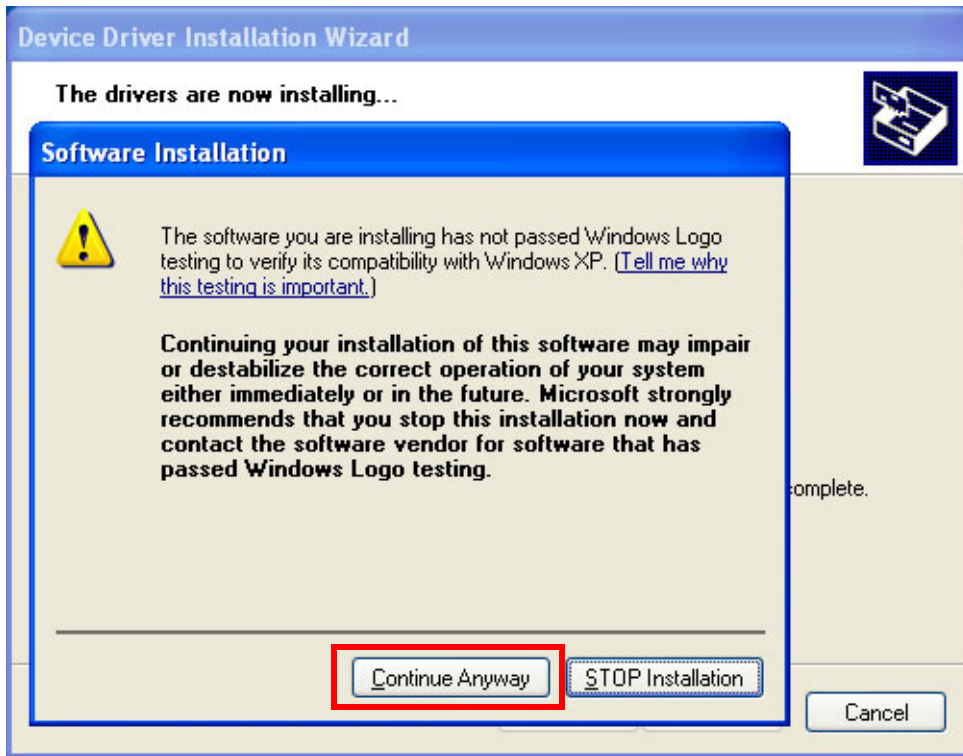
To prevent virtual USB devices from being configured without limitation, use the unique driver installation procedure described below that enables your computer to connect multiple printers via one single virtual USB device.

### <Procedures>

- (1) While the printer is in the ready state, press the **OK** button and then **Go** button. Next, press the **▲** button 4 times, and the printer goes into the maintenance mode.
- (2) “■■ MAINTENANCE ■■” appears on the LCD, and the printer goes into the maintenance mode.
- (3) Double-click “Setup.exe” of the maintenance printer driver which is saved in the “hl4000” folder to execute.
- (4) The following screen appears, indicating the detection of device driver installation wizard. Click **Next** to proceed. (Screen below is the example of Windows® XP.)



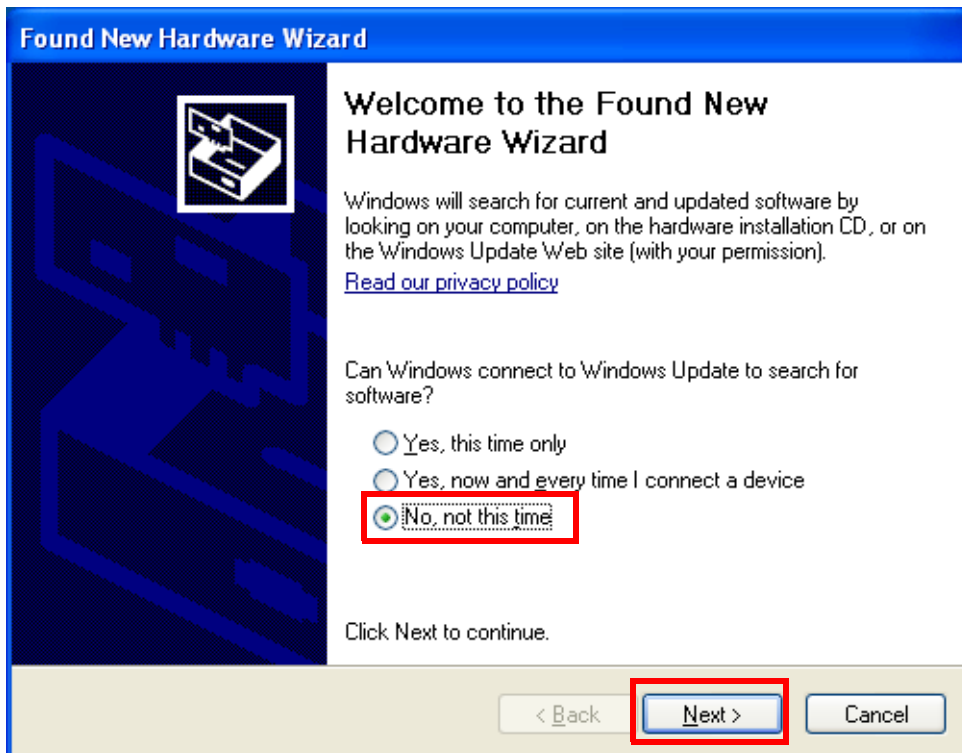
- (5) Alert warning message appears three times, click **Continue Anyway** to proceed.



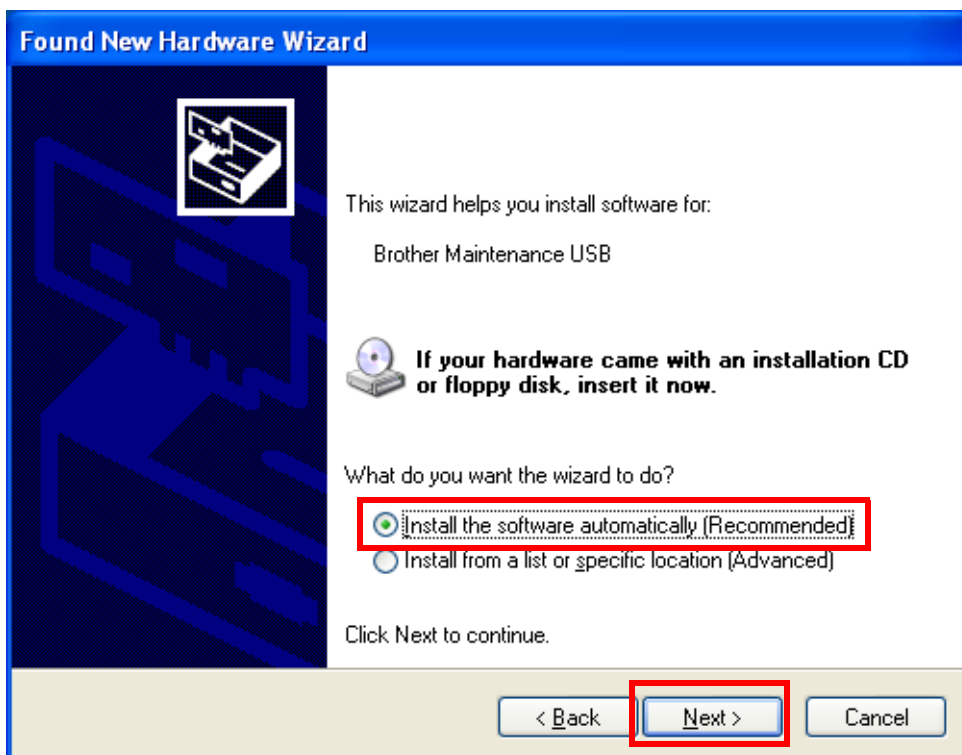
- (6) If the device driver is successfully installed, the following message screen appears. Click **Finish** to return.



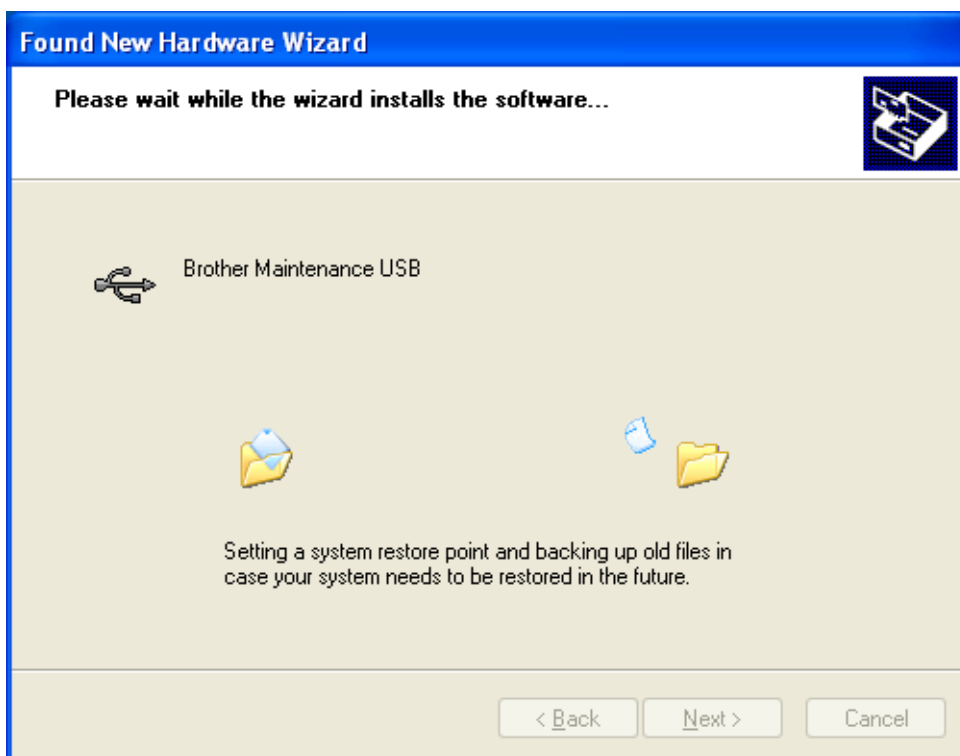
- (7) Connect the printer to your computer using the USB cable.
- (8) The following screen appears, indicating the detection of new hardware device by the system. Select "No, not this time" and click **Next**.



- (9) Select "Install the software automatically (Recommended)" and click **Next**.

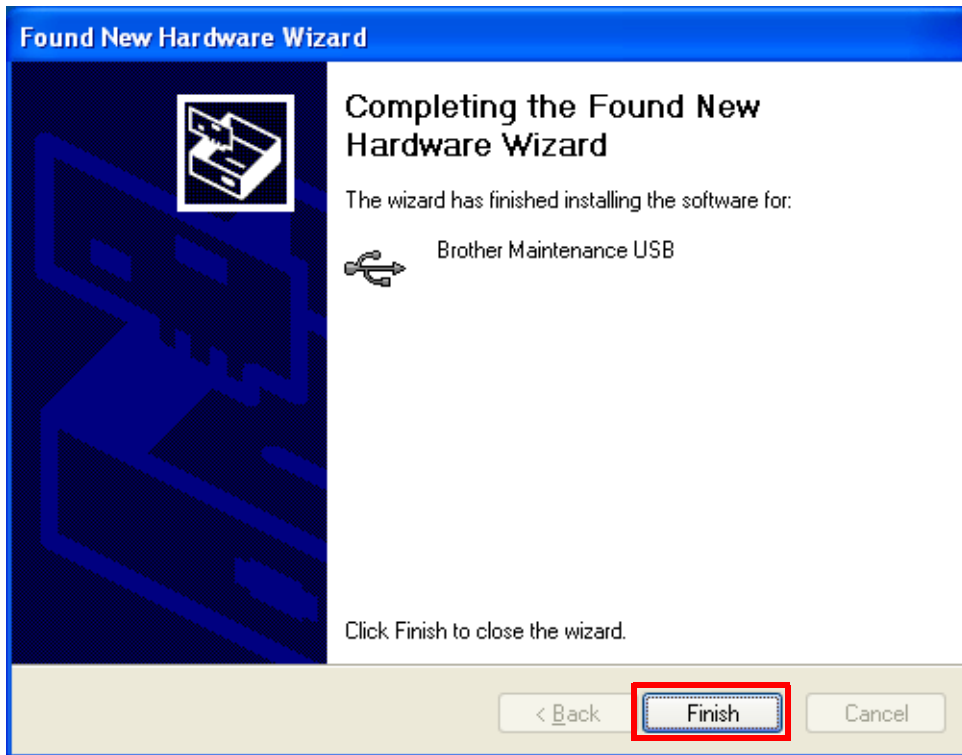


(10) Alert warning message appears, click **Continue Anyway** to proceed.





- (11) If the Brother maintenance USB printer driver is successfully installed, the following message screen appears. Click **Finish** to return.



- (12) Repeat the steps from (9) to (11) three times, and then complete its installation.
- (13) Disconnect the USB cable.
- (14) Press the ▲ or ▼ button to display "MAINTENANCE 99" on the LCD. Then, press the **OK** button. The maintenance mode exits from the maintenance mode and return to the ready state.