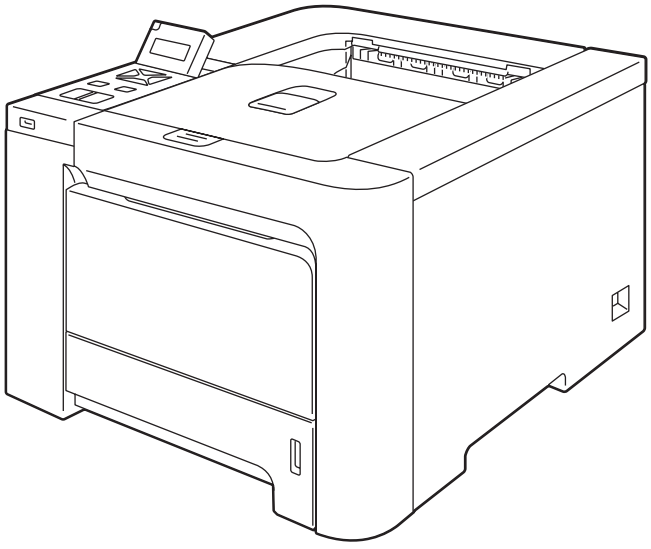
Brother Color Laser Printer

SERVICE MANUAL

MODEL:
HL-4040CN/4040CDN/
4050CDN/4070CDW



Read this manual thoroughly before maintenance work.

Keep this manual in a convenient place for quick and easy reference at all times.

February 2007
SM-PRN061
(12)

Compilation and Publication:

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PREFACE

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

This service manual covers the **HL-4040CN/4040CDN/4050CDN/4070CDW machines**.

This manual consists of the following chapters:

CHAPTER 1: TROUBLESHOOTING

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

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

CHAPTER 2: PERIODICAL MAINTENANCE

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

CHAPTER 3: DISASSEMBLY AND ASSEMBLY

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

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

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

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

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

CHAPTER 5: SERVICE FUNCTIONS

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

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

CHAPTER 6: CIRCUIT DIAGRAMS, WIRING DIAGRAM

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

APPENDIX 1: WORKER SWITCH (WSW)

Describes the functions of the worker switches, which can be divided into two groups: one is for customizing preferences designed for the destination and the other is for modifying preferences that match the machine to the environmental conditions. Use the latter group if the machine malfunctions due to mismatching.

APPENDIX 2: DELETION OF PERSONAL INFORMATION

Provides instructions on how to delete personal information recorded in the machine.

APPENDIX 3: SERIAL NUMBERING SYSTEM

APPENDIX 4: SCREW CATALOGUE

APPENDIX 5: HOW TO MAKE THE DRUM UNIT REMOVE SHEET

APPENDIX 6: REFERENCES

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

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

There is the service reference manual as well. This service reference manual contains “SPECIFICATIONS”, “THEORY OF OPERATION”, “TONER CARTRIDGE WEIGHT INFORMATION”, “REFERENCES”, and “GLOSSARY”.

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REGULATION

<For Europe and Other countries>

■ Radio interference (220 to 240 volt model only)

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

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

(1) A shielded parallel interface cable with twisted-pair conductors and that it is marked IEEE 1284 compliant (For HL-4050CDN/ 4070CDW).

(2) A USB cable.

The cable must not be more than 2 meters long.

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

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

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

Caution

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

For Finland and Sweden

LUOKAN 1 LASERLAITE

KLASS 1 LASER APPARAT

Varoitus!

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

Varning

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

■ Internal laser radiation

Maximum radiation power:	30 mW
Wave length:	780 - 800 nm
Laser class:	Class 3B

■ EU Directive 2002/96/EC and EN50419

(European Union only)

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

< For USA and Canada >

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

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

declares, that the products

Product name: Laser Printer HL-4040CN, HL-4040CDN, HL-4050CDN and HL-4070CDW
Model number: HL-40C
Product option: Lower Tray Unit LT-100CL

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

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

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

Important

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

■ Industry Canada Compliance Statement (For Canada)

This Class B digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

■ Laser Safety (110 to 120 volt model only)

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

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

■ FDA Regulations (110 to 120 volt model only)

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

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

■ Internal laser radiation

Maximum radiation power:	30 mW
Wave length:	780 - 800 nm
Laser class:	Class 3B

SAFETY INFORMATION

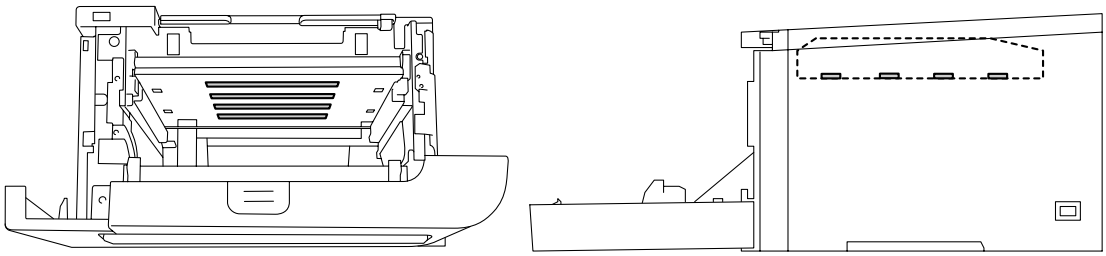
■ Caution for Laser Product (WARNHINWEIS fur Laser drucker)

CAUTION: When the machine during servicing is operated with the cover open, the regulations of VBG 93 and the performance instructions for VBG 93 are valid.

CAUTION: In case of any trouble with the laser unit, replace the laser unit itself. To prevent direct exposure to the laser beam, do not try to open the enclosure of the laser unit.

ACHTUNG: Im Falle von Störungen der Lasereinheit muß diese ersetzt werden. Das Gehäuse der Lasereinheit darf nicht geöffnet werden, da sonst Laserstrahlen austreten können.

<Location of the laser beam window>



■ Additional Information

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.

■ Definitions of Warnings, Cautions, Notes and Memos

The following conventions are used in this manual:

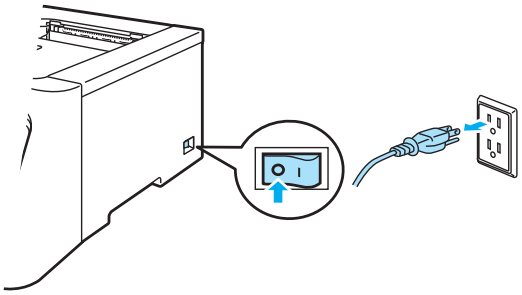
Mark	Contents
	Warnings tell you what to do to prevent possible personal injury.
	Electrical Hazard icons alert you to a possible electrical shock.
	Hot Surface icons warn you not to touch machine parts that are hot.
	Cautions specify procedures you must follow or avoid to prevent possible damage to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

■ Safety Precautions

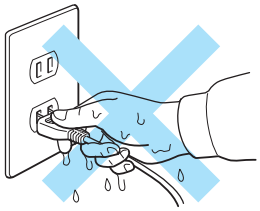
Listed below are the various kinds of “WARNING” messages included in this manual.

WARNING

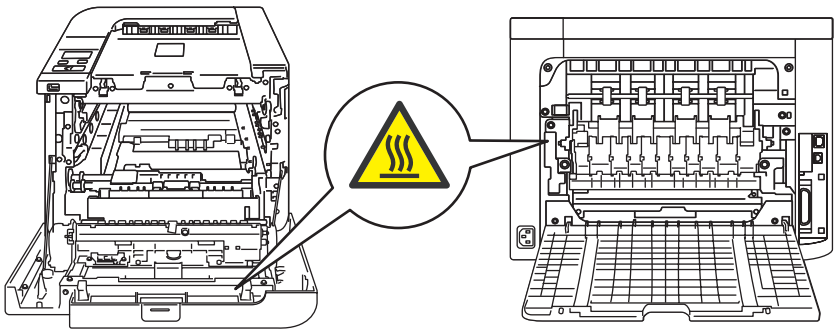
There are high voltage electrodes inside the machine. Before you clean the inside of the machine or replace parts, make sure that you have turned off the power switch and unplugged the machine from the AC power outlet.



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



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



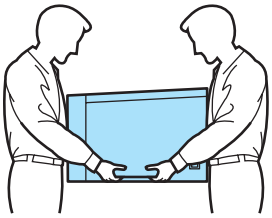
WARNING

DO NOT use any type of spray to clean 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 over 44lb (20kg). 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.

CHAPTER 1 TROUBLESHOOTING

1. INTRODUCTION

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

1.1 Precautions

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

(1) Always turn off the power and unplug the power cable before removing any covers or PCBs, adjusting the machine and so on. If you need to take voltage measurements with the power switched on, take the greatest of care not to receive an electric shock.

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

(3) Electronic devices are sensitive to static build up; make sure that you touch a metal portion of the machine to discharge yourself before accessing the PCBs.
Handle PCBs with care when repairing them.

Verify again that the repaired portion works properly.

1.2 Initial Check

Check the following items before attempting to repair the machine.

<Operating Environment>

(1) Put your machine on a flat, stable surface such as a desk that is free of vibration and shocks.

(2) Use the machine in a well-ventilated room; use the machine within the following ranges of temperature and humidity: temperature between 10°C and 32.5°C (50 °F to 90.5 °F), and the relative humidity is maintained between 20% and 80%.

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

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

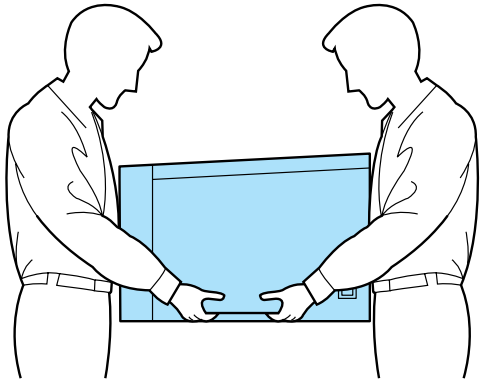


Fig. 1-1

<Power Supply>

(1) The AC input power supply described on the rating plate of the machine should be within ±10% of the rated voltage.

(2) The AC input power supply is within the regulated value.

(3) The cables and harnesses are connected correctly.

(4) The fuses are not blown.

<Paper>

(1) A recommended type of paper is being used. (Refer to "2.6 Paper" in Reference 1.)

(2) The paper is not damp.

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

<Consumable Parts>

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

(2) The belt unit and waste toner box are installed correctly.

<Others>

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

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

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

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

(2) Low temperature
If the room temperature is low the motor may not drive normally, this is due to there being too much load to drive the drum 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.

(3) Cleaning
Use a soft dry cloth.

CAUTION:

<u>DO NOT</u> use any type of spray to clean inside or outside of the machine. Doing this may cause a fire or electrical shock.

2. ERROR CODES

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

2.1 Error Indication

The error codes **shaded** in the table below are recoverable errors if following the User Check items.

Error codes	Problem	Refer to:	Error codes	Problem	Refer to:
20	Laser diode failure (K)	1-10	52	Replace the T1 paper feeding kit	1-5
21	Laser diode failure (Y)	1-10	53	Replace the LT paper feeding kit	1-5
22	Laser diode failure (M)	1-10	54	Replace the fuser unit	1-6
23	Laser diode failure (C)	1-10	55	Replace the laser unit	1-6
24	Internal temperature sensor failure	1-10	56	Back cover opened	1-17
25	Develop drive motor failure	1-11	57	Paper jam while turning it over in duplex printing, or DX solenoid failure	1-18
26	Belt drive motor failure	1-11			
27	Paper feed/belt cleaner motor failure	1-11	58	Fuser unit failure	1-18
28	Drum drive motor 1 (K, Y) failure	1-11	59	Fuser unit failure	1-18
29	Drum drive motor 2 (M, C) failure	1-11	5A	Charge HVPS PCB ASSY failure	1-19
2A	Belt cleaner release sensor failure	1-12	5E	Replace the belt unit	1-6
2B	Air intake fan (AIR) failure	1-12	5F	Replace the waste toner box	1-19
2C	Toner sensor PCB failure (K)	1-13	60	Toner cartridge (C) is at the end of life.	1-20
2D	Toner sensor PCB failure (Y)	1-13	61	Toner cartridge (M) is at the end of life.	1-20
2E	Toner sensor PCB failure (M)	1-13	62	Toner cartridge (Y) is at the end of life.	1-20
2F	Toner sensor PCB failure (C)	1-13	63	Toner cartridge (K) is at the end of life.	1-20
30	Incorrect EL lamp current value	1-13	64	Replace the toner cartridge (C)	1-20
31	Density sensor failure	1-14	65	Replace the toner cartridge (M)	1-20
32	Density sensor shutter performance malfunction	1-14	66	Replace the toner cartridge (Y)	1-20
			67	Replace the toner cartridge (K)	1-20
33	Color registration sensor failure	1-14	68	Fuser unit failure	1-21
34	Color adjustment shutter failure	1-15	69	Fuser unit failure	1-21
35	NVRAM failure on engine PCB	1-15	6A	Fuser unit failure	1-21
36	Transfer HVPS PCB failure	1-15	6B	Fuser unit failure	1-21
37	Belt unit temperature sensor failure	1-15	6C	Fuser unit failure	1-21
38	THM sensor failure	1-16	6D	Fuser unit failure	1-21
39	HUM sensor failure	1-16	6E	Fuser unit failure	1-21
3A	Engine communication error	1-16	6F	Fuser unit failure	1-21
3B	Main PCB RAM failure	1-16	71	Polygon motor failure	1-22
3D	Main PCB failure	1-17	72	Beam detecting sensor (K) failure	1-22
3F	Writing error into engine firmware	1-17	73	Beam detecting sensor (C) failure	1-22
50	Replace the drum unit	1-5	74	Toner cartridge whose color is used reaches the end of life during printing.	1-23
51	Replace the MP paper feeding kit	1-5			

Error codes	Problem	Refer to:
75	Machine cooling down inside	1-6
76	Fuser unit failure	1-23
78	Fuser unit failure	1-23
7C	Engine communication error	1-16
7D	Dirt on drum unit	1-24
81	Incorrect density sensor measurement value when implementing calibration from the control panel.	1-24
82	Density patch measurement is not completed normally when implementing calibration from the control panel.	1-24
84	Paper jam rear side of the machine	1-25
85	Tray 1 (T1) is not installed into the machine.	1-26
87	Toner cartridge whose color is used reaches the end of life when implementing calibration from the control panel.	1-23
88	Paper jam inside the machine	1-25
89	Incorrect paper size in duplex printing	1-26
8A	Paper jam in Tray 1 (T1)	1-27
8B	Paper jam in Tray 2 (LT)	1-27
8C	Paper jam in MP tray (MP)	1-27
8E	Auto color registration failure when implementing it from the control panel	1-28
8F	Sensor sensitivity adjustment failure when implementing auto color registration from the control panel	1-28
90	Incorrect paper size (MP)	1-7
91	Incorrect paper size (T1)	1-7
92	Incorrect paper size (LT)	1-7
93	No paper in MP tray (MP)	1-29
94	No paper in Tray 1 (T1)	1-29
95	No paper in Tray 2 (LT)	1-30
96	No paper in all trays	1-7
97	Specified paper size is not supported for Tray 1 (T1).	1-7
98	Specified paper size is not supported for Tray 2 (LT).	1-8
99	Specified paper size is not supported for duplex printing (DX).	1-8
9A	Manual paper feeding is selected.	1-29
9B	Request on developing bias voltage adjustment	1-8
9C	Request on auto color registration	1-8
9D	Incorrect sensor measurement value when implementing auto color registration from the control panel	1-28
9E	Toner cartridge whose color is used reaches the end of life when implementing auto color registration from the control panel.	1-23
A1	Front cover opened	1-30
C0	Identification failure for a new toner cartridge (K)	1-31
C1	Identification failure for a new toner cartridge (Y)	1-31
C2	Identification failure for a new toner cartridge (M)	1-31
C3	Identification failure for a new toner cartridge (C)	1-31
C4	Tray 2 (LT) plate-up function malfunction	1-32
C5	EL lamp electrifying failure	1-32
C6	Toner cartridge mis-dividing	1-32
C7	Insufficient DIMM memory	1-8
C8	RAM area for secure data full	1-33
C9	Defective DIMM is installed.	1-9
CA	Excess current to USB device	1-33
CB	Belt unit is not installed into the machine.	1-33
CC	Fuser unit is not installed into the machine.	1-34
CD	Drum unit is not installed into the machine.	1-34
CE	Waste toner box is not installed into the machine.	1-36
CF	Waste toner box full	1-36
E0	Program error (An error occurred in the ROM checksum.)	1-9
E1	Program error	1-9
E6	NVRAM error on main PCB	1-37
EB	NVRAM reading error on laser unit	1-37
ED	Failure of wireless LAN connection	1-37
EE	Wireless LAN is unable to communicate.	1-37
EF	Incorrect print coverage value	1-37

2.2 Error Cause and Remedy

2.2.1 Recoverable Error by User Check

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

■ Error code 50

```
Drum End Soon
```

Replace the drum unit

User Check

- Replace the drum unit with a new one.
- After replacing the Drum unit, reset the counter using the control panel on the machine.
  (Refer to "2.3 Parts Life Reset Function" in Chapter 2.)

■ Error code 51

```
Change PF Kit MP
```

Replace the MP paper feeding kit

User Check

- Replace the MP paper feeding kit with a new one.
- After replacing the MP paper feeding kit, reset the counter using the control panel on the machine.
  (Refer to "2.3 Parts Life Reset Function" in Chapter 2.)

■ Error code 52

```
Change PF Kit 1
```

Replace the T1 paper feeding kit

User Check

- Replace the T1 paper feeding kit with a new one.
- After replacing the T1 paper feeding kit, reset the counter using the control panel on the machine.
  (Refer to "2.3 Parts Life Reset Function" in Chapter 2.)

■ Error code 53

```
Change PF Kit 2
```

Replace the LT paper feeding kit

User Check

- Replace the LT paper feeding kit with a new one.
- After replacing the LT paper feeding kit, reset the counter using the control panel on the machine.
  (Refer to "2.3 Parts Life Reset Function" in Chapter 2.)

■ Error code 54

```
Fuser Unit End
```

Replace the fuser unit

User Check

- Replace the fuser unit with a new one.
- After replacing the fuser unit, reset the counter using the control panel on the machine. (Refer to "2.3 Parts Life Reset Function" in Chapter 2.)

■ Error code 55

```
Laser Unit End
```

Replace the laser unit

User Check

- Replace the laser unit with a new one.
- After replacing the laser unit, reset the counter using the control panel on the machine. (Refer to "2.3 Parts Life Reset Function" in Chapter 2.)

■ Error code 5E

```
Change Belt Unit
```

Replace the belt unit

User Check

- Replace the belt unit with a new one.
- After replacing the belt unit, reset the counter using the control panel on the machine. (Refer to "2.3 Parts Life Reset Function" in Chapter 2.)

■ Error code 75

```
Cooling Down
```

Cooling down the inside of the machine to protect it.

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

(1) The temperature inside the machine is high.

(2) Both ends of the heat roller are heated extraordinarily.

(3) The paper media is replaced.

■ Error code 90 (MP)

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

Incorrect paper size

User Check

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

■ Error code 91 (T1)

```
Size Mismatch
Load <size> paper in Tray 1 and press Go.
```

Incorrect paper size

User Check

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

■ Error code 92 (LT)

```
Size Mismatch
Load <size> paper in Tray 2 and press Go.
```

Incorrect paper size

User Check

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

■ Error code 96

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

No paper in all trays

User Check

- Load the paper into any of the trays.

■ Error code 97

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

Specified paper size is not supported for Tray 1 (T1).

User Check

- Select the correct paper size in the driver to match the paper in Tray 1.

■ Error code 98

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

Specified paper size is not supported for Tray 2 (LT).

User Check

- Select the correct paper size in the driver to match the paper in Tray 2.

■ Error code 99

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

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

User Check

- Check if the selected paper is supported for duplex printing.
- Check the size setting of the tray to feed paper.

■ Error code 9B (* This error can be found out only in "Maintenance mode 82".)

```
Print Unable 9B
```

Request on developing bias voltage adjustment

User Check

- The machine starts implementing the developing bias voltage adjustment automatically when it enters the standby status.

■ Error code 9C (* This error can be found out only in "Maintenance mode 82".)

```
Print Unable 9C
```

Request on auto color registration

User Check

- The machine starts implementing color registration automatically when it enters the standby status.

■ Error code C7

```
Out of Memory
Add more Memory.
```

Insufficient DIMM memory

User Check

- Install additional DIMM memory.

■ Error code C9

```
DIMM Error
Make sure that the DIMM is inserted correctly.
```

Defective DIMM is installed.

User Check

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

■ Error code E0

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

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

User Check

- Turn the power off and on.

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

User Check

- Turn the power off and on.

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

2.2.2 Service Call Error

Check the User Check items first. If the same problem occurs follow each procedure in the order of the number described in the Step column in the table below.

■ **Error code 20(K)**

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

Laser diode failure (K)

Error code 21(Y)

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

Laser diode failure (Y)

Error code 22(M)

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

Laser diode failure (M)

Error code 23(C)

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

Laser diode failure (C)

Step	Cause	Remedy
1	Laser unit harness connection failure	Check the two harness connections of the laser unit and reconnect them.
2	Laser unit failure	Replace the laser unit.
3	Engine PCB failure	Replace the engine PCB ASSY.

■ **Error code 24**

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

Internal temperature sensor failure

Step	Cause	Remedy
1	Harness connection failure of internal temperature sensor	Check the harness connection of the internal temperature sensor and reconnect it.
2	Engine PCB failure	Replace the engine PCB ASSY.

■ Error code 25

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

Develop drive motor failure

Error code 26

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

Belt drive motor failure

Error code 27

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

Paper feed/belt cleaner motor failure

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

■ Error code 28

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

Drum drive motor 1 (K, Y) failure

Error code 29

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

Drum drive motor 2 (M, C) failure

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

■ Error code 2A

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

Belt cleaner release sensor failure

Step	Cause	Remedy
1	Rotation defective of release shaft A of waste toner box.	Replace the waste toner box.
2	Harness connection failure between belt cleaner release sensor PCB and belt cleaner release solenoid.	Check the harness connection between the belt cleaner release sensor PCB and belt cleaner release solenoid and reconnect them.
3	Belt cleaner release sensor actuator performance defective	Replace the belt cleaner release ASSY.
4	Belt cleaner release sensor PCB failure	Check the sensor performance following the procedure described in "Maintenance mode 32". If any problem occurs, replace the belt cleaner release sensor PCB ASSY.
5	Belt cleaner release solenoid failure	Replace the belt cleaner release ASSY.
6	Engine PCB failure	Replace the engine PCB ASSY.

■ Error code 2B

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

Air intake fan (AIR) failure, or short-circuit of fuser unit fan (FU), LVPS fan (PS), or drum unit fan (OPC)

Step	Cause	Remedy
1	Air intake fan (AIR) harness connection failure	Check the harness connection of the air intake fan (AIR) and reconnect it.
2	Short-circuit of air intake fan (AIR), fuser unit fan (FU), LVPS fan (PS), or drum unit fan (OPC)	Check if the harness terminal of any of these fans is short-circuited using the tester. If any of the fans is short-circuited, replace the short-circuited fan and the engine PCB ASSY at the same time. The harness terminals that must be checked are: - Air intake fan (AIR): Between 1 and 3 pins - Fuser unit fan (FU): Between 1 and 2 pins - LVPS fan (PS): Between 1 and 2 pins - Drum unit fan (OPC): Between 1 and 2 pins
3	Air intake fan (AIR) failure	If no fans are short-circuited in Step 2, replace the air intake fan (AIR).
4	Engine PCB failure	If no fans are short-circuited in Step 2, replace the engine 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 sensor PCB failure for the appropriate color

Step	Cause	Remedy
1	Toner sensor PCB (TE/NEW) failure	Check the sensor performance following the procedure described in "Maintenance mode 32". If any problem occurs, replace the toner sensor PCB ASSY (TE/NEW) for the appropriate color.
2	Engine PCB failure	Replace the engine PCB ASSY.

■ Error code 30

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

Incorrect EL lamp current value

User Check

- Replace the drum unit with a new one.

Step	Cause	Remedy
1	Drum unit electrode dirty	Clean the electrodes of the main body and the drum unit. (Refer to Fig.1-2 (P 1-35).)

■ Error code 31

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

Density sensor failure

Error code 32

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

Density sensor shutter performance malfunction

User Check

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

Step	Cause	Remedy
1	Harness connection failure of density sensor holder ASSY	Check the harness connection between the density sensor holder ASSY and registration relay PCB, and the one between the registration relay PCB and engine PCB. Then, reconnect them.
2	Harness connection failure of density sensor solenoid ASSY	Check the harness connection between the engine PCB and registration relay PCB and reconnect them.
3	Density sensor holder ASSY failure	Replace the density sensor holder ASSY.
4	Transfer HVPS PCB unit failure	Replace the transfer HVPS PCB unit.
5	Engine PCB failure	Replace the engine PCB ASSY.

■ Error code 33

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

Color registration sensor failure

User Check

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

Step	Cause	Remedy
1	Harness connection failure of registration-mark sensor PCB ASSY	Check the harness connection of the registration-mark sensor PCB ASSY and reconnect it.
2	Registration-mark sensor PCB failure	Check the performance of the registration-mark sensor following the procedure described in "Maintenance mode 75". If any problem occurs, replace the registration-mark sensor PCB ASSY.
3	Transfer HVPS PCB unit failure	Replace the transfer HVPS PCB unit.
4	Engine PCB failure	Replace the engine PCB ASSY.

■ Error code 34

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

Color adjustment shutter failure

Step	Cause	Remedy
1	Density sensor shutter catching on some position	Correct catching of the density sensor shutter.
2	Density sensor holder ASSY assembling failure	Reassemble the density sensor holder ASSY correctly.

■ Error code 35

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

NVRAM failure on engine PCB

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

■ Error code 36

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

Transfer HVPS PCB failure

Step	Cause	Remedy
1	Harness connection failure of transfer HVPS PCB ASSY	Check the two harness connections between the transfer HVPS PCB and registration relay PCB, and the two ones between the registration relay PCB and engine PCB. Then reconnect them.
2	Transfer HVPS PCB ASSY failure	Replace the transfer HVPS PCB ASSY.
3	Engine PCB failure	Replace the engine PCB ASSY.

■ Error code 37

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

Belt unit temperature sensor failure

Step	Cause	Remedy
1	Belt unit temperature sensor harness connection failure	Check the harness connection between the belt unit temperature sensor and registration relay PCB, and the one between the registration relay PCB and engine PCB. Then reconnect them.
2	Transfer HVPS PCB unit failure	Replace the transfer HVPS PCB unit.
3	Engine PCB failure	Replace the engine PCB ASSY.

■ Error code 38

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

THM sensor failure

Error code 39

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

HUM sensor failure

Step	Cause	Remedy
1	Harness connection failure of THM/HUM sensor	Check the harness connection of the THM/HUM sensor and reconnect it.
2	THM/HUM sensor failure	Replace the THM/HUM sensor holder ASSY.
3	Engine PCB failure	Replace the engine PCB ASSY.

■ Error code 3A

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

Error code 7C

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

Engine communication error

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

■ Error code 3B

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

Main PCB RAM failure

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

■ Error code 3D

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

Main PCB failure (Any of the PCBs is judged to be failure by the PCB checker, or it is not tested with the checker.)

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

■ Error code 3F

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

Writing error into engine firmware

Step	Cause	Remedy
1	The machine is turned off while rewriting the data into the engine firmware.	Turn the power on. Resend the engine firmware (DJF format) with the USB memory while the error code is being indicated.

■ Error code 56

```
Cover is Open
Close the Back Cover.
```

Back cover opened

User Check

- Check if the back cover is closed certainly.

Step	Cause	Remedy
1	Back cover switch failure	Check the sensor performance following the procedure described in “Maintenance mode 32”.
2	Harness connection failure of back cover switch ASSY	Check the harness connection of the back cover switch ASSY and reconnect it.
3	The boss pressing back cover switch is broken.	Replace the back cover ASSY.
4	Engine PCB failure	Replace the engine 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 jam while turning it over in duplex printing, or DX solenoid failure

User Check

- Check if the paper is jammed or not. If jammed, remove it.

Step	Cause	Remedy
1	DX feed ASSY not assembled correctly	Reassemble the DX feed ASSY.
2	Paper eject ASSY harness connection failure	Check the harness connection of the paper eject ASSY and reconnect it.
3	DX solenoid failure	Replace the paper eject ASSY.
4	Engine PCB failure	Replace the engine 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.
```

If the same error is detected again 15 minutes later, the message below is indicated.

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

Fuser unit failure

* The code included in the message above is some one of 68, 69, 6A, 6B, 6C, 6D, 6E, 6F, 76 and 78.

Step	Cause	Remedy
1	Harness connection failure between fuser unit connector and engine PCB	Check the harness connection between the fuser unit connector and engine PCB, and reconnect it.
2	Fuser unit failure	Replace the fuser unit.
3	Low-voltage power supply PCB failure	Replace the PS PCB unit.
4	Engine PCB failure	Replace the engine PCB ASSY.

■ Error code 5A

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

Charge HVPS PCB failure

Step	Cause	Remedy
1	Charge HVPS PCB ASSY harness connection failure	Check the harness connection between the charge HVPS PCB and engine PCB, and the one between the charge HVPS PCB and low-voltage power supply PCB. Then, reconnect them.
2	Charge HVPS PCB failure	Replace the charge HVPS PCB ASSY.
3	Engine PCB failure	Replace the engine PCB ASSY.

■ Error code 5F

```
Waste Toner Soon
```

Replace the waste toner box

User Check

- 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 "Maintenance mode 32". If any problem occurs, replace the waste toner near/full sensor ASSY.
2	Harness connection failure of waste toner near/full sensor ASSY	Check the harness connection of the waste toner near/full sensor ASSY and reconnect it.
3	Engine PCB failure	Replace the engine PCB ASSY.

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

```
Toner Life End
Replace <color> Toner Cartridge.
```

Toner cartridge is at the end of life.

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	Harness connection failure of toner sensor PCB ASSY (TE/NEW)	Check the sensor performance following the procedure described in "Maintenance mode 32". If any problem occurs, check the harness connection of the toner sensor PCB ASSY (TE/NEW) of the appropriate color, then reconnect it.
2	Toner sensor PCB (TE/NEW) failure (Toner empty)	Replace the toner sensor PCB ASSY (TE/NEW) of the appropriate color.
3	Engine PCB failure	Replace the engine PCB ASSY.

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

```
Ready
 ■  ■  □  ■
 K  Y  M  C        * Sample: M is blinking.
```

Replace the toner cartridge whose color is 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	Harness connection failure of toner sensor PCB ASSY (TE/NEW)	Check the harness connection of the toner sensor PCB ASSY (TE/NEW) of the appropriate color and reconnect it.
2	Toner sensor (TE/NEW) failure	Check the sensor performance following the procedure described in "Maintenance mode 32". If any problem occurs, replace the toner sensor PCB ASSY (TE/NEW) of the appropriate color.
3	Engine PCB failure	Replace the engine PCB ASSY.

■ Error code 68

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

Fuser unit failure (The side thermistor detects higher temperature than the specified value.)

Error code 69

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

Fuser unit failure (The side thermistor detects lower temperature than the specified value.)

Error code 6A

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

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

Error code 6D

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

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

Error code 6E

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

Fuser unit failure (The center thermistor does not detect temperature rising within the specified time.)

Error code 6F

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

Fuser unit failure (The center and side thermistors detect extremely high temperature.)

Step	Cause	Remedy
1	Fuser unit failure	Replace the fuser unit.
2	Low-voltage power supply PCB failure	Replace the PS PCB unit.
3	Engine PCB failure	Replace the engine PCB ASSY.

■ Error code 71

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

Polygon motor failure

Error code 72

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

Beam detecting sensor (K) failure

Error code 73

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

Beam detecting sensor (C) failure

Step	Cause	Remedy
1	Condensation on laser unit	Turn the power off and leave the machine in an airy place at normal room temperature.
2	Laser unit harness connection failure	Check the two harness connections of the laser unit and reconnect them.
3	Laser unit failure	Replace the laser unit.
4	Engine PCB failure	Replace the engine PCB ASSY.

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

```
Print Unable 74
```

Toner cartridge whose color is used reaches the end of life during printing.

Error code 87

```
Calibrate
Calibration failed. Insufficient Toner for Calibration.
```

Toner cartridge whose color is used reaches the end of life when implementing calibration from the control panel.

Error code 9E

```
Registration
Registration failed. Insufficient Toner for Registration.
```

Toner cartridge whose color is used reaches the end of life when implementing auto color registration from the control panel.

User Check

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

Step	Cause	Remedy
1	Toner sensor PCB (TE/NEW) failure (Toner empty)	Check the sensor performance following the procedure described in "Maintenance mode 32". If any problem occurs, replace the toner sensor PCB (TE/NEW) of the appropriate color.
2	Engine PCB failure	Replace the engine PCB ASSY.

■ Error code 76

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

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

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

■ Error code 78

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

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

Step	Cause	Remedy
1	Harness connection failure between fuser unit connector and engine PCB	Check the harness connection between the fuser unit connector and engine PCB, and reconnect it.
2	Fuser unit failure	Replace the fuser unit.

■ 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 main body and the drum unit. (Refer to Fig. 1-2.)
2	Charge HVPS PCB failure	Replace the charge HVPS PCB ASSY.
3	Engine PCB failure	Replace the engine PCB ASSY.

■ Error code 81

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

Incorrect density sensor measurement value when implementing calibration from the control panel.

Error code 82

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

Density patch measurement is not completed normally when implementing calibration from the control panel.

User Check

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

Step	Cause	Remedy
1	Density sensor shutter catching on some position	Correct catching of the density sensor shutter.
2	Harness connection failure of density sensor holder ASSY	Check the harness connection of the density sensor holder ASSY and reconnect it.
3	Density sensor failure	Replace the density sensor holder ASSY.
4	Transfer HVPS PCB failure	Replace the transfer HVPS PCB ASSY.
5	Engine PCB failure	Replace the engine PCB ASSY.

■ Error code 84 (Jam Rear)

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

Paper jam rear side of the machine

Error code 88 (Jam Inside)

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

Paper jam inside the machine

User Check

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

Step	Cause	Remedy
1	Harness connection failure of registration front sensor PCB ASSY, registration rear sensor PCB ASSY or paper eject sensor PCB ASSY	Check the harness connections of the registration front sensor PCB ASSY, registration rear sensor PCB ASSY and paper eject sensor PCB ASSY, and reconnect them.
2	Registration front actuator, registration rear actuator or paper eject actuator catching on some position.	Correct catching of the registration front actuator, registration rear actuator or paper eject actuator.
3a	Paper eject sensor PCB failure	Check the sensor performance following the procedure described in “Maintenance mode 32”. If any problem occurs, replace the fuser unit.
3b	Registration front sensor PCB failure (MP/ T1/ LT)	(MP/ T1) Check the sensor performance following the procedure described in “Maintenance mode 32”. If any problem occurs, replace the front door unit ASSY.
		(LT) Check the sensor performance following the procedure described in “Maintenance mode 32”. If any problem occurs, replace the LT paper feed frame unit.
3c	Registration rear sensor PCB failure	Check the sensor performance following the procedure described in “Maintenance mode 32”. If any problem occurs, replace the front door unit ASSY.
4	Engine PCB failure	Replace the engine PCB ASSY.

■ Error code 85

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

Tray 1 (T1) is not installed into the machine.

User Check

- Check if Tray 1 (T1) is installed into the machine.
- Check if the paper is jammed in Tray 1 (T1).

Step	Cause	Remedy
1	T1 PE/edge sensor PCB failure	Check the sensor performance following the procedure described in "Maintenance mode 32". If any problem occurs, replace the T1 PE/edge sensor PCB ASSY.
2	Harness connection failure of T1 PE/edge sensor PCB ASSY	Check the harness connection of the T1 PE/edge sensor PCB ASSY and reconnect it.
3	Engine PCB failure	Replace the engine PCB ASSY.

■ Error code 89

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

Incorrect paper size in duplex printing

User Check

- Use the letter size or longer paper.
- Do not use too thin paper.

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

■ Error code 8A (T1)

```
Jam Tray 1
Removed the jammed paper from Tray 1.
```

Error code 8B (LT)

```
Jam Tray 2
Removed the jammed paper from Tray 2.
```

Error code 8C (MP)

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

Paper jam in the appropriate tray

User Check

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

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

■ Error code 8E

```
Registration
Registration failed. Press Go and try again.
```

Auto color registration failure when implementing it from the control panel

Error code 8F

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

Sensor sensitivity adjustment failure when implementing auto color registration from the control panel

Error code 9D

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

Incorrect sensor measurement value when implementing auto color registration from the control panel

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	Invisible damage on belt unit	Check the registration mark sensor performance following the procedure described in "Maintenance mode 75". If any problem occurs, replace the belt unit.
2	Harness connection failure of registration-mark sensor PCB ASSY	Check the harness connection of the registration-mark sensor PCB ASSY and reconnect it.
3	Registration-mark sensor PCB failure	Replace the registration-mark sensor PCB ASSY.
4	Transfer HVPS PCB unit failure	Replace the transfer HVPS PCB unit.
5	Engine PCB failure	Replace the engine PCB ASSY.

■ Error code 93

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

No paper in MP tray (MP)

User Check

- Load the paper into the MP tray.

Error code 9A

```
Manual Feed
Load <size> Paper, and press Go.
```

Manual paper feeding is selected.

User Check

- Load the paper into one of the trays, then press the **Go** button.

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

No paper in manual feeding

User Check

- Load the paper.

Step	Cause	Remedy
1	Harness connection failure of MP PE/sensor PCB ASSY	Check the harness connection of the MP PE/sensor PCB ASSY and reconnect it.
2	MP PE/sensor failure	Check the sensor performance following the procedure described in "Maintenance mode 32". If any problem occurs, replace the front door unit ASSY.
3	Engine PCB failure	Replace the engine PCB ASSY.

■ Error code 94

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

No paper in Tray 1 (T1)

Step	Cause	Remedy
1	T1 PE/edge sensor failure	Check the sensor performance following the procedure described in "Maintenance mode 32". If any problem occurs, replace the T1 PE/edge sensor PCB ASSY.
2	Plate-up function malfunction	Replace the paper tray.
3	Lift arm and roller holder ASSY not assembled correctly	Be sure to put the boss of the roller holder ASSY into the hole on the lift arm securely.
4	Harness connection failure of T1 PE/edge sensor PCB ASSY	Check the harness connection of the T1 PE/edge sensor PCB ASSY and reconnect it.
5	Engine PCB failure	Replace the engine PCB ASSY.

■ Error code 95

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

No paper in Tray 2 (LT)

Step	Cause	Remedy
1	LT PE sensor failure	Check the sensor performance following the procedure described in "Maintenance mode 32". If any problem occurs, replace the LT paper feed frame unit.
2	Plate-up function malfunction	Replace the paper tray.
3	Harness connection failure of LT paper feed frame unit	Check the harness connection of the LT paper feed frame unit and reconnect it.
4	Engine PCB failure	Replace the engine PCB ASSY.

■ Error code A1

```
Cover is Open
Close the Front Cover.
```

Front cover opened

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

■ Error code C0(K)

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

Identification failure for a new toner cartridge (K)

Error code C1(Y)

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

Identification failure for a new toner cartridge (Y)

Error code C2(M)

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

Identification failure for a new toner cartridge (M)

Error code C3(C)

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

Identification failure for a new toner cartridge (C)

User Check

- Install the toner cartridges into the machine properly.

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

■ Error code C4

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

Tray 2 (LT) plate-up function malfunction

User Check

- Check if Tray 2 (LT) is installed into the machine.

Step	Cause	Remedy
1	Connection failure between the machine and LT connector	Replace the connector.
2	Harness connection failure of plate motor ASSY LT	Check the harness connection of the plate motor ASSY LT and reconnect it.
3	Harness connection failure of LT paper feed frame unit	Check the harness connection of the LT paper feed frame unit and reconnect it.
4	LT paper feed frame unit failure	Check the sensor performance following the procedure described in "Maintenance mode 32". If any problem occurs, replace the LT paper feed frame unit.
5	Engine PCB failure	Replace the engine PCB ASSY.

■ Error code C5

```
EL Error
Open the Front Cover and close it again.
```

EL lamp electrifying failure

User Check

- Open and close the front cover.

Step	Cause	Remedy
1	Dirt on electrodes on drum unit and front cover	Clean both electrodes.
2	EL lamp PCB failure	Replace the drum unit.
3	EL lamp PCB harness broken	Replace the front door unit ASSY.
4	Engine PCB failure	Replace the engine PCB ASSY.

■ Error code C6

```
Toner Error
A Toner is not detected. Put all the Toner Cartridges back in
correctly.
```

Toner cartridge mis-dividing

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 sensor PCB failure	Replace the develop release sensor PCB ASSY.
3	Engine PCB failure	Replace the engine 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.

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.
```

Excess current to USB device

User Check

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

Step	Cause	Remedy
1	Harness connection failure of USB host relay PCB ASSY	Check the harness connection of the USB host relay PCB ASSY and reconnect it.
2	USB host relay PCB failure	Replace the USB host relay PCB ASSY.
3	Main PCB failure	Replace the Main PCB ASSY.
4	A device whose power consumption is out of the specification is inserted in the USB direct interface.	Remove the device.

■ Error code CB

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

Belt unit is not installed into the machine.

User Check

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

Step	Cause	Remedy
1	Harness connection failure of density sensor holder ASSY	Check the harness connection of the density sensor holder ASSY and reconnect it.
2	Density sensor failure	Replace the density sensor holder ASSY.
3	Transfer HVPS PCB unit failure	Replace the transfer HVPS PCB unit.
4	Engine PCB failure	Replace the engine PCB ASSY.

■ Error code CC

```
No Fuser Unit
Install the Fuser Unit.
```

Fuser unit is not installed into the machine.

User Check

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

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

■ Error code CD

```
No Drum Unit
Install the Drum Unit.
```

Drum unit is not installed into the machine.

User Check

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

Step	Cause	Remedy
1	Dirt on electrodes on drum unit and front door unit ASSY	Clean both electrodes. (Refer to Fig. 1-2 and Fig 1-3 (P 1-35).)
2	Bending of front door unit ASSY electrode contact	Correct the electrode bending of the front door unit ASSY.
3	Harness connection failure between front door unit ASSY electrode and engine PCB ASSY	Check the harness connection between the front door unit ASSY electrode and engine PCB ASSY.
4	Engine PCB failure	Replace the engine PCB ASSY.

■ Electrodes location of the drum unit

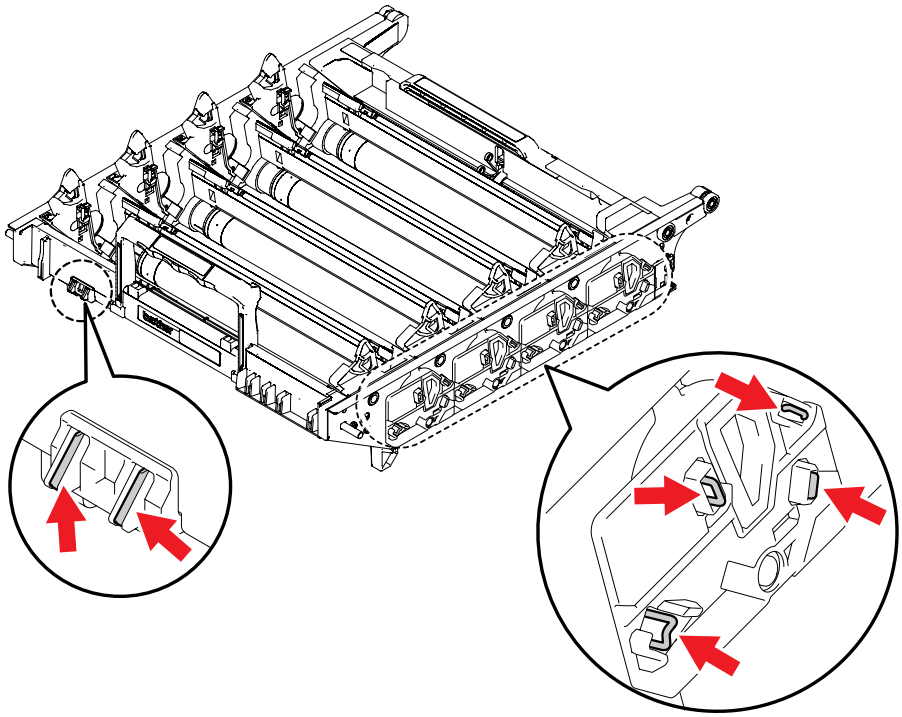


Fig. 1-2

■ Electrodes location of the front door unit ASSY

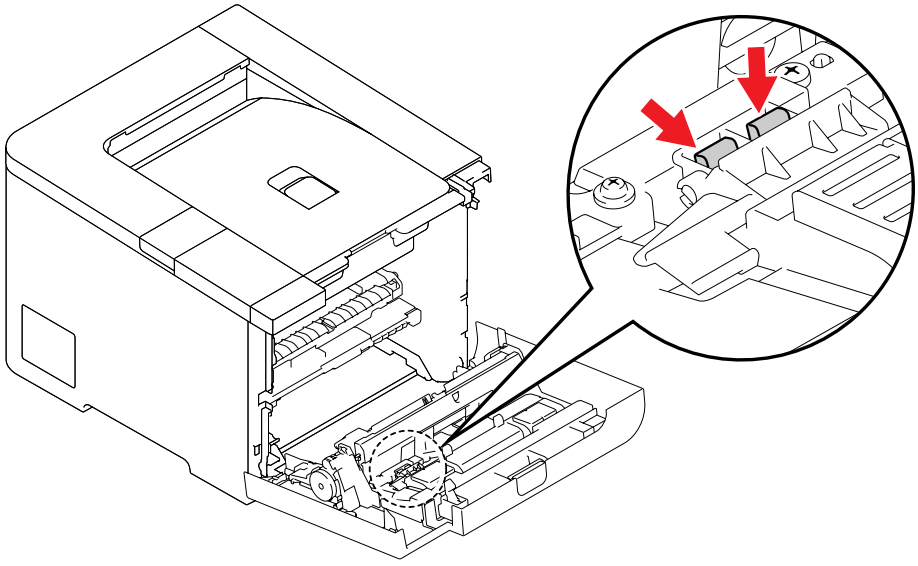


Fig. 1-3

<How to clean the electrodes>

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

■ Error code CE

```
No Waste Toner
Install the Waste Toner Box. Refer to the User's Guide for how to install.
```

Waste toner box is not installed into the machine.

User Check

- Check if the waste toner box is installed into the machine correctly.

Step	Cause	Remedy
1	Rotation defective of release shaft A of waste toner box.	Replace the waste toner box.
2	Harness connection failure between belt cleaner release sensor PCB and belt cleaner release solenoid.	Check the harness connection between the belt cleaner release sensor PCB and belt cleaner release solenoid and reconnect them.
3	Belt cleaner release sensor actuator performance defective	Replace the belt cleaner release ASSY.
4	Belt cleaner release sensor PCB failure	Check the sensor performance following the procedure described in "Maintenance mode 32". If any problem occurs, replace the belt cleaner release sensor PCB ASSY.
5	Belt cleaner release solenoid failure	Replace the belt cleaner release ASSY.
6	Engine PCB failure	Replace the engine PCB ASSY.

■ Error code CF

```
Waste Toner Full
Replace the Waste Toner Box. Refer to the User's Guide for how to do it.
```

Waste toner box full

User Check

- 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 "Maintenance mode 32". If any problem occurs, replace the waste toner near/full sensor ASSY.
2	Harness connection failure of waste toner near/full sensor ASSY	Check the harness connection of the waste toner near/full sensor ASSY and reconnect it.
3	Engine PCB failure	Replace the engine PCB ASSY.

■ Error code E6

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

NVRAM error on main PCB

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.
```

NVRAM reading error on laser unit

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

■ Error code ED

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

Failure of wireless LAN connection (Connection to the wireless LAN module is failed when the machine is turned ON.)

Error code EE

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

Wireless LAN is unable to communicate. (Any problem that the wireless LAN cannot be connected is occurred after wireless LAN connection is succeeded.)

User Check

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

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

■ Error code EF

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

Incorrect print coverage value

User Check

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

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

3. PAPER FEEDING PROBLEMS

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

3.1 No Feeding

Step	Cause	Check	Result	Remedy
1	Plate gear damaged	Is the plate gear damaged?	Yes	Replace the paper tray.
2	T1 edge actuator malfunction	Does T1 edge actuator move smoothly?	No	Re-assemble T1 edge actuator.
3	Disconnection of the paper feed solenoid harness	Is the harness of the paper feed solenoid disconnected?	Yes	Reconnect the harness.
4	Paper feed/belt cleaner motor failure	Is the problem solved by replacing the paper feed/ belt cleaner motor?	Yes	Replace the paper feed/ belt cleaner motor.

3.2 Double Feeding

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

3.3 Paper Jam

■ Paper jam in the paper tray and front cover

Step	Cause	Check	Result	Remedy
1	Belt unit malfunction	Does the belt unit move correctly?	No	Replace the belt unit.
2	Registration front actuator catching on some position	Does the registration front actuator move smoothly?	No	Re-assemble the registration front actuator.
3	T1 registration front sensor failure	Does T1 registration front sensor move smoothly? (Check it following the procedure described in "Maintenance mode 32".)	No	Replace the front door unit ASSY.

■ Paper jam in the back cover and paper eject section

Step	Cause	Check	Result	Remedy
1	Foreign object around fuser unit	Is there a foreign object around the fuser unit?	Yes	Remove the foreign object.
2	Paper eject ASSY malfunction	Is each pinch roller of the paper eject ASSY attached to each paper eject roller properly?	No	Replace the paper eject ASSY.
3	Paper eject actuator failure	Does the paper eject actuator move smoothly? Is it damaged?	No	Replace the fuser unit.

■ Paper jam in the DX paper feeding section

User Check

- Use the letter size or longer paper.
- Use paper which has not curled.
- Do not use too thin paper.
- Check that the DX paper size (A4/Letter) switch lever of the DX feed ASSY is placed in the correct position.

Step	Cause	Check	Result	Remedy
1	Deformation of paper guide DX on the bottom of the paper tray	Is the paper guide DX deformed?	No	Replace the paper tray.
2	DX feed ASSY failure	Is the DX feed ASSY deformed? Do the rollers of the DX feed ASSY move correctly?	No	Replace the DX feed ASSY.

3.4 Dirt on Paper

User Check

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

Step	Cause	Check	Result	Remedy
1	Fuser unit dirty	Is there dirt around the entrance of the fuser unit?	Yes	Clean the entrance of the fuser unit.
		Is the pressure roller ASSY dirty?	Yes	Clean the pressure roller ASSY.
2	Dirt on belt unit electrode	Is the electrode of the belt unit dirty?	Yes	Clean the electrode of the main body and the belt unit.
3	Dirt on waste toner box electrode	Is the electrode of the waste toner box dirty?	Yes	Clean the electrode of the main body and the waste toner box.
4	Belt unit dirty	Does dirt on the paper disappear after replacing the belt unit with a new one?	Yes	Replace the belt unit.
5	Toner leak from the waste toner box	Is the waste toner box full of toner?	Yes	Replace the waste toner near/full sensor ASSY. Or, replace the main PCB ASSY.

3.5 Wrinkles

User Check

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

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

4. IMAGE DEFECT TROUBLESHOOTING

4.1 Image Defect Examples

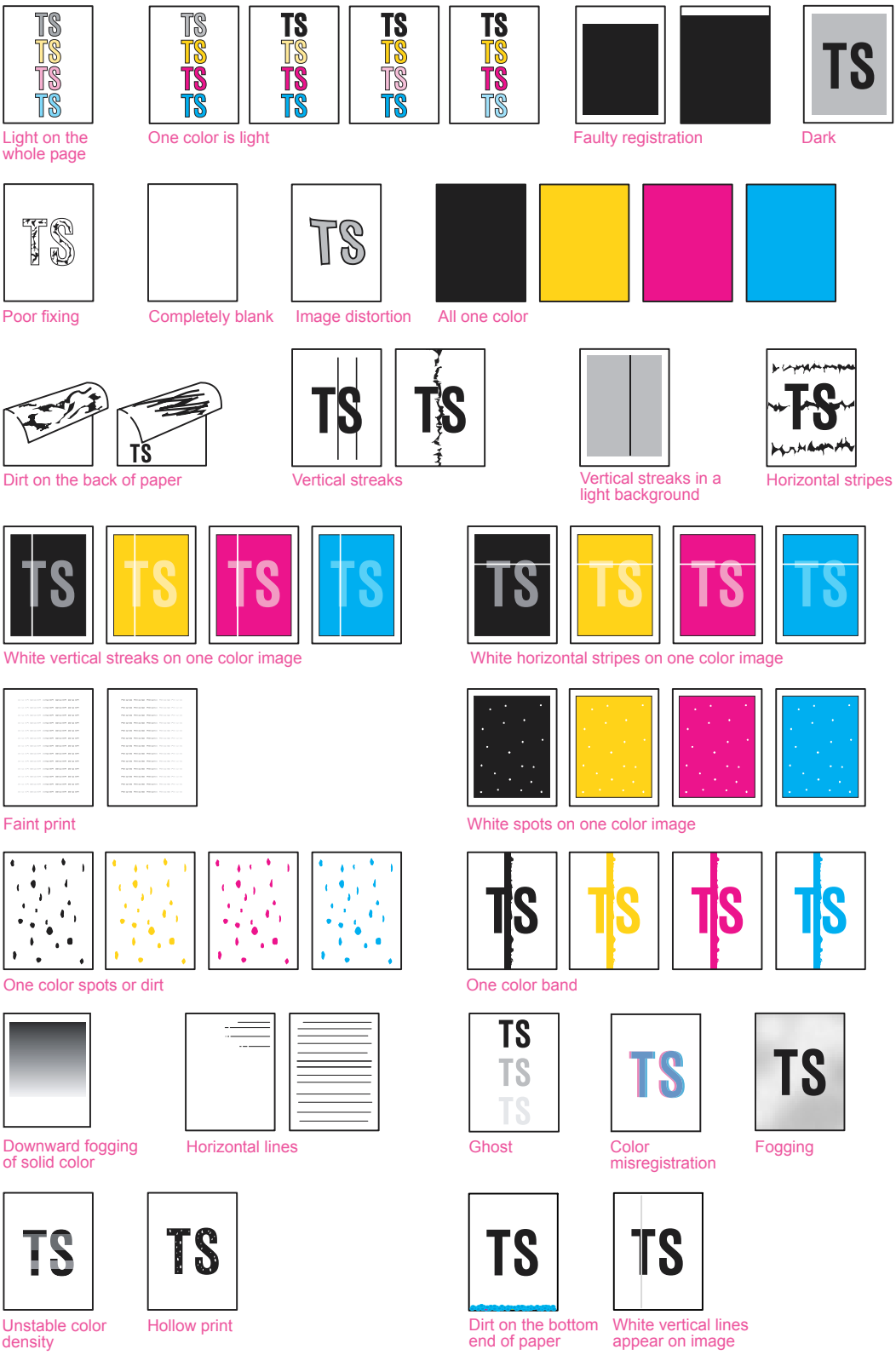


Fig. 1-4

4.2 Diameter of Rollers

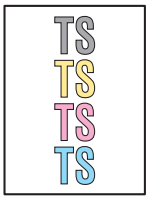
Image defects which appear periodically may be caused by failure of a roller. Specify the cause referring to the diameters of the rollers or pitch which appears in the image as shown in the table below.

No.	Parts name	Diameter	The pitch which appears in the image
1	Develop roller	Ø 20.0 mm	37.4 mm
2	Exposure drum	Ø 24.0 mm	75.0 mm
3	Heat roller in the fuser unit	Ø 25.0 mm	78.5 mm
4	Pressure roller ASSY in the fuser unit	Ø 25.0 mm	78.5 mm

4.3 Troubleshooting Image Defect

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

■ Light on the whole page

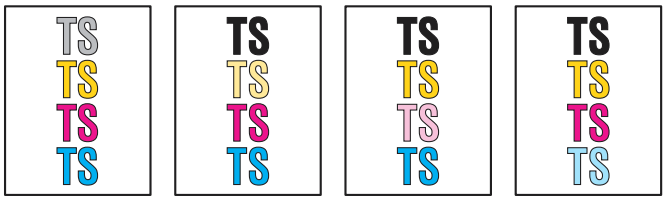


User Check

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

Step	Cause	Check	Result	Remedy
1	Transfer HVPS PCB failure	Is the transfer HVPS PCB ASSY connected correctly?	Yes	Replace the transfer HVPS PCB ASSY.
2	Engine PCB failure	Is the harness between the HVPS PCB and engine PCB connected correctly?	Yes	Replace the engine PCB ASSY.
3	Charge HVPS PCB failure	Is the harness of the HVPS PCB connected correctly?	Yes	Replace the charge HVPS PCB ASSY.
4	Laser unit failure	Is the problem solved after replacing the laser unit?	Yes	Replace the laser unit.

■ One color is light

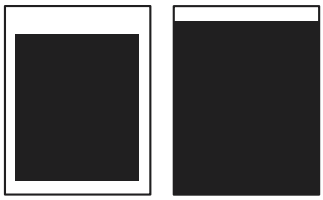


User Check

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

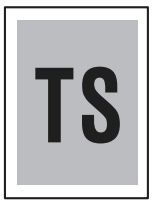
Step	Cause	Check	Result	Remedy
1	Dirt on exposure drum electrode	Are the electrodes of the drum unit and the appropriate color and machine body dirty?	Yes	Clean both electrodes.
2	Dirt on belt unit electrode	Are the electrodes of the belt unit and the appropriate color and machine body dirty?	Yes	Clean both electrodes.
3	Dirt on scanner windows	Is the scanner windows of the appropriate color dirty?	Yes	Wipe the dirt off with a soft, clean, lint free cloth.
4	Toner sensor failure	After replacing the toner cartridge of the appropriate color with a new one, does the same problem occur even after printing several pages?	No	Replace the toner cartridge of the appropriate color.
5		Does the machine start printing even after removing the toner cartridge of the appropriate color from the drum unit?	Yes	- Clean the toner sensor of the appropriate color. - Check the harness connection of the toner sensor PCB ASSY (TE/NEW) of the appropriate color. - Replace the toner sensor PCB ASSY (TE/NEW) of the appropriate color.
6	Transfer HVPS PCB failure	Is the problem solved after replacing the transfer HVPS PCB ASSY?	Yes	Replace the transfer HVPS PCB ASSY.
7	Charge HVPS PCB failure	Is the problem solved after replacing the charge HVPS PCB ASSY?	Yes	Replace the charge HVPS PCB ASSY.
8	Engine PCB failure	Is the problem solved after replacing the engine PCB ASSY?	Yes	Replace the engine PCB ASSY.

■ Faulty registration



Step	Cause	Check	Result	Remedy
1	Registration rear actuator catching on some position	Does the registration rear actuator move smoothly?	No	Re-assemble the registration rear actuator.
2	Engine PCB failure	Is the problem solved after replacing the engine PCB ASSY?	Yes	Replace the engine PCB ASSY.

■ Dark

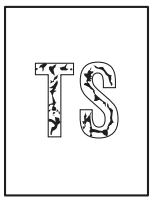


User Check

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

Step	Cause	Check	Result	Remedy
1	Corona wire conduction failure	Are the electrodes on the drum unit and machine body dirty?	Yes	Clean both electrodes.
2	Dirt on belt unit electrode	Are the electrodes on the belt unit and machine body dirty?	Yes	Clean both electrodes.
3	Transfer HVPS PCB failure	Is the problem solved after replacing the transfer HVPS PCB ASSY?	Yes	Replace the transfer HVPS PCB ASSY.
4	Charge HVPS PCB failure	Is the problem solved after replacing the charge HVPS PCB ASSY?	Yes	Replace the charge HVPS PCB ASSY.
5	Engine PCB failure	Is the harness connected between the HVPS PCB and engine PCB correctly?	Yes	Replace the engine PCB ASSY.

■ Poor fixing

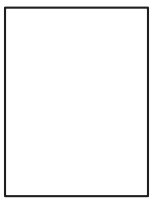


User Check

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

Step	Cause	Check	Result	Remedy
1	Fuser unit failure	Is the problem solved after replacing the fuser unit?	Yes	Replace the fuser unit.
2	Low-voltage power supply PCB failure	Is the problem solved after replacing the PS PCB unit?	Yes	Replace the PS PCB unit.
3	Transfer HVPS PCB failure	Is the problem solved after replacing the transfer HVPS PCB ASSY?	Yes	Replace the transfer HVPS PCB ASSY.
4	Charge HVPS PCB failure	Is the problem solved after replacing the charge HVPS PCB ASSY?	Yes	Replace the charge HVPS PCB ASSY.
5	Engine PCB failure	Is the problem solved after replacing the engine PCB ASSY?	Yes	Replace the engine PCB ASSY.

■ Completely blank

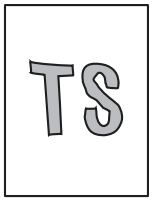


User Check

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

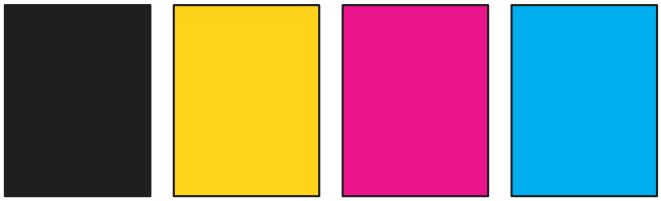
Step	Cause	Check	Result	Remedy
1	Developing bias voltage conduction failure	Are the electrodes on the drum unit and machine body dirty?	Yes	Clean both electrodes.
2	Scanner harness connection failure	Is the scanner harness connected securely?	No	Reconnect the scanner harness.
3	Engine PCB failure	Is the problem solved after replacing the engine PCB ASSY?	Yes	Replace the engine PCB ASSY.
4	Laser unit failure	Is the problem solved after replacing the laser unit?	Yes	Replace the laser unit.
5	Transfer HVPS PCB failure	Is the problem solved after replacing the transfer HVPS PCB ASSY?	Yes	Replace the transfer HVPS PCB ASSY.
6	Charge HVPS PCB failure	Is the problem solved after replacing the charge HVPS PCB ASSY?	Yes	Replace the charge HVPS PCB ASSY.

■ Image distortion



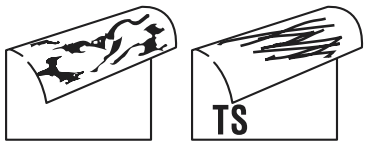
Step	Cause	Check	Result	Remedy
1	Laser unit not assembled correctly	Is the laser unit assembled into the machine securely? (Check if there is no gap.)	No	Assemble the laser unit correctly and secure the screw.
2	Incorrect radiation angle of scanner diode Scanner motor rotation failure	Is the problem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

■ All one color



Step	Cause	Check	Result	Remedy
1	Corona wire failure	Are the electrodes on the drum unit of the appropriate color and machine body dirty?	Yes	Clean both electrodes.
2		Is the corona wire damaged?	Yes	Replace the drum unit.
3	Charge HVPS PCB failure	Is the problem solved after replacing the charge HVPS PCB ASSY?	Yes	Replace the charge HVPS PCB ASSY.
4	Main PCB failure	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.
5	Engine PCB failure	Is the problem solved after replacing the engine PCB ASSY?	Yes	Replace the engine PCB ASSY.
6	Laser unit failure	Is the problem solved after replacing the laser unit?	Yes	Replace the laser unit.

■ Dirt on the back of paper

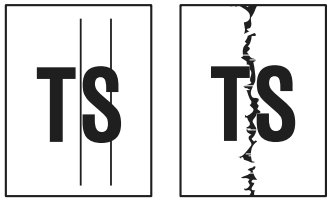


User Check

- If there is dirt on the back of the paper in duplex printing, the back of the paper tray may be dirty. Clean the back of the paper tray.

Step	Cause	Check	Result	Remedy
1	Fuser unit dirty	Is the pressure roller ASSY dirty? Is any other area in the machine dirty?	Yes	Print approximate 10 pages.
			No	Replace the fuser unit.
2	Dirt in the paper feed system	Is the paper tray or feed system on the drum unit dirty with toner?	Yes	Wipe dirt off.
3	Belt unit dirty	Is the problem solved by replacing the belt unit?	Yes	Replace the belt unit.
4	Waste toner box dirty	Is the problem solved by replacing the waste toner box?	Yes	Replace the waste toner box.

■ Vertical streaks



User Check

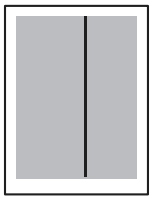
- This problem may occur with noise which is caused by dirt on the corona wire in the drum unit. In this case, clean the corona wire with the wire cleaner.
- Replace the drum unit with a new one.
- Replace the toner cartridge with a new one.

Step	Cause	Check	Result	Remedy
1	Dirt in the paper feed system	Is the paper tray or feed system on the drum unit dirty with toner?	Yes	Wipe dirt off.
2	Scratch on the exposure drum	Is there a scratch on the surface of the exposure drum?	Yes	Replace the drum unit.
3	Exposure drum dirty	Is there vertical dirt with toner on the surface of the exposure drum?	Yes	Replace the drum unit.
4	Scratch on the heat roller	Is there a scratch on the surface of the heat roller?	Yes	Replace the fuser unit

Note:

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

■ Vertical streaks in a light background

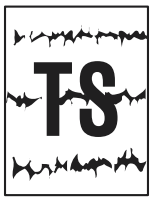


User Check

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

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

■ Horizontal stripes



User Check

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

Step	Cause	Check	Result	Remedy
1	Dirt on the charged electrode	Are the electrodes on the drum unit and machine body dirty?	Yes	Clean both electrodes
2	Paper tray ground terminal provided in the machine body	Is the paper tray ground terminal bent, which is provided in the machine body? (Refer to Fig. 1-5.)	Yes	Correct bending of paper tray ground terminal.
3	Toner attached on the develop roller	Are the horizontal stripes at 37.4 mm (develop roller circumference) intervals?	Yes	This problem will disappear by printing approximate 10 pages. If the same problem occurs, replace the toner cartridge.
4	Scratch on the exposure drum	Are the horizontal stripes at 75.0 mm (exposure drum circumference) intervals?	Yes	Replace the drum unit.
5	Scratch on the heat roller	Are the horizontal stripes at 78.5mm (heat roller circumference) intervals?	Yes	Replace the fuser unit.
6	Transfer HVPS PCB failure	Is the problem solved after replacing the transfer HVPS PCB ASSY?	Yes	Replace the transfer HVPS PCB ASSY.
7	Charge HVPS PCB failure	Is the problem solved after replacing the charge HVPS PCB ASSY?	Yes	Replace the charge HVPS PCB ASSY.

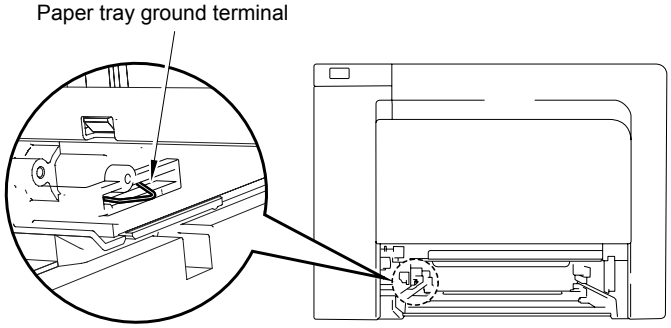
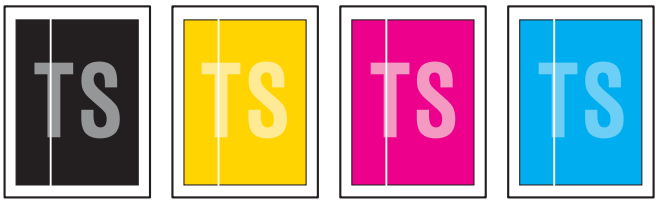


Fig. 1-5

■ White vertical streaks on one color image

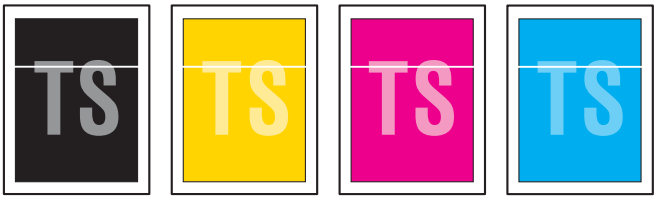


User Check

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

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

■ White horizontal stripes on one color image



User Check

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

Step	Cause	Check	Result	Remedy
1	Toner cartridge electrode connection failure	Are the electrodes on the toner cartridge and machine body dirty?	Yes	Clean both electrodes

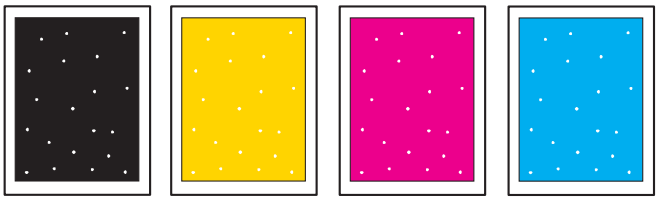
■ Faint print

User Check

- Check that the machine is installed on a level surface.
- Replace the toner cartridge with a new one.
- Clean the scanner windows with a soft cloth.

Step	Cause	Check	Result	Remedy
1	Laser unit failure	Is the problem solved after replacing the laser unit?	Yes	Replace the laser unit.
2	Toner empty sensor failure	Is the “Toner Life End” message indicated on the LCD after replacing the current toner cartridge with an empty one?	No	Replace the toner sensor PCB ASSY (TE/NEW) of the appropriate color.

■ White spots on one color image



User Check

- Toner may be empty. Replace the toner cartridge with a new one.
- If the same problem occurs after printing a few pages, the adhesive of the label or the like, paper powder or dirt may be attached on the surface of the exposure drum.
  When the size of the white spots is less than 0.35mm, feed the drum cleaning sheet from the MP tray one to three times to clean the drum.
  (For the procedure, refer to “Drum Unit Cleaning Mode” in Chapter 5.)
  When the size of the spots is 0.35mm or more, or when the same problem occurs after feeding the drum cleaning sheet, wipe off the dirt on the exposure drum with a cotton swab.
  (For the procedure, refer to Note in the next pages.)
- The drum unit may be damaged. Replace the drum unit with a new one.

Step	Cause	Check	Result	Remedy
1	Drum unit failure	Are the white spots at 75.0 mm (exposure drum circumference) intervals?	Yes	If the exposure drum surface is scratched, replace the drum unit.
2	Drum unit connection failure	Are the electrodes on the drum unit and machine body dirty?	Yes	Clean both electrodes.
3	Transfer HVPS PCB failure	Is the problem solved after replacing the transfer HVPS PCB ASSY?	Yes	Replace the transfer HVPS PCB ASSY.
4	Charge HVPS PCB failure	Is the problem solved after replacing the charge HVPS PCB ASSY?	Yes	Replace the charge HVPS PCB ASSY.

Note:

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

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

(2) Turn the drum unit over by holding the handle. Make sure that the drum unit gears "1" are on the left hand.

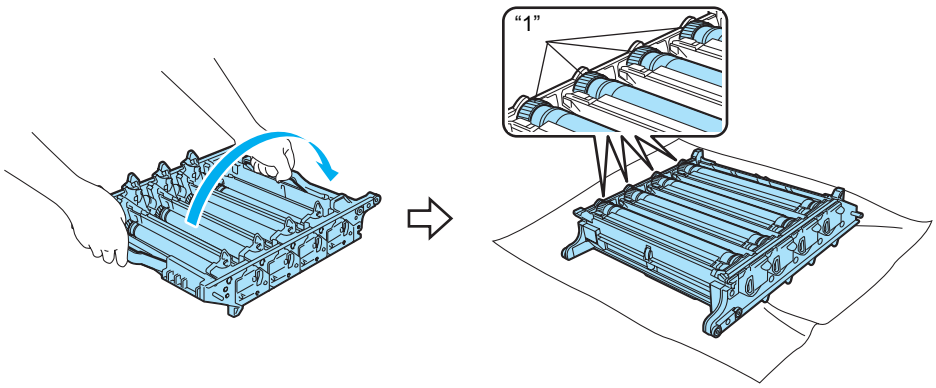


Fig. 1-6

Caution

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

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

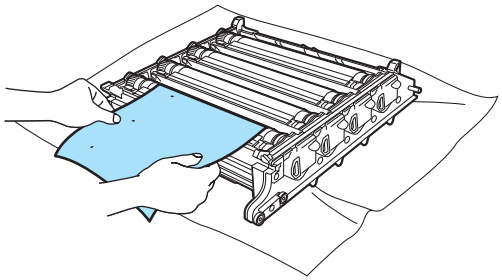


Fig. 1-7

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

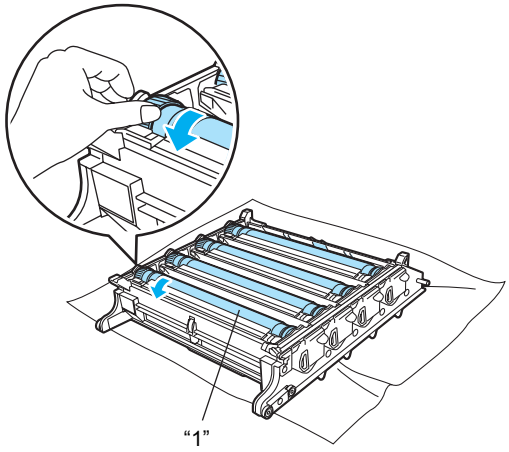


Fig. 1-8

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

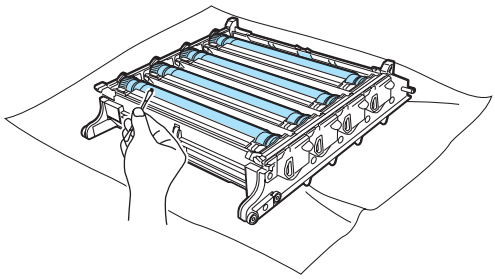


Fig. 1-9

Caution

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

(6) Turn the drum unit gear to the direction of the arrow as shown in the figure below by hand to return it to the home position. The home position of each drum can be identified by matching the number on the drum unit gear to the same number on the side of the drum unit as shown in the illustration. Make sure that the number on each of the four drum unit gears matches the corresponding number on the side of the drum unit.

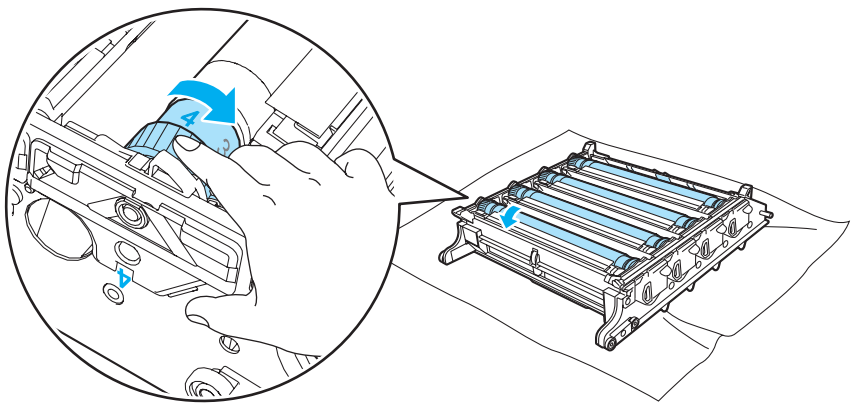
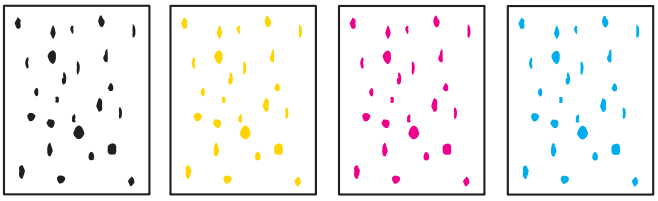


Fig. 1-10

■ One color spots or dirt



User Check

- Damp (wet) paper might be used. Try to change to freshly unpacked paper.
- Toner may be empty. Replace the toner cartridge with a new one.
- If the same problem occurs after printing a few pages, the adhesive of the label or the like, paper powder or dirt may be attached on the surface of the exposure drum.
  Feed the drum cleaning sheet from the MP tray one to three times to clean the drum.
  (For the procedure, refer to "Drum Unit Cleaning Mode" in Chapter 5.)
  When the same problem occurs after feeding the drum cleaning sheet, wipe off the dirt on the exposure drum with a cotton swab.
  (For the procedure, refer to Note in the previous pages.)
- The drum unit may be damaged. Replace the drum unit with a new one.

Step	Cause	Check	Result	Remedy
1	Drum unit failure	Are the spots at 75.0 mm (exposure drum circumference) intervals?	Yes	If the surface of the exposure drum is scratched, replace the drum unit.
2	Drum unit connection failure	Are the electrodes on the drum unit and machine body dirty?	Yes	Clean both electrodes
3	Fuser unit failure	Are the spots at 78.5mm (heat roller circumference) intervals?	Yes	Replace the fuser unit.
4	Transfer HVPS PCB failure	Is the problem solved after replacing the transfer HVPS PCB ASSY?	Yes	Replace the Transfer HVPS PCB ASSY.
5	Charge HVPS PCB failure	Is the problem solved after replacing the charge HVPS PCB ASSY?	Yes	Replace the charge HVPS PCB ASSY.

One color band

User Check

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

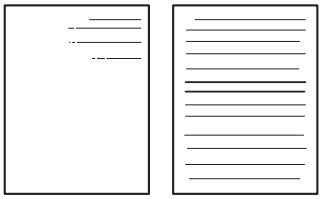
■ Downward fogging of solid color

User Check

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

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

■ Horizontal lines

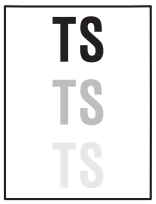


User Check

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

Step	Cause	Check	Result	Remedy
1	Dirt on charged electrode	Are the electrodes on the drum unit and machine body dirty?	Yes	Clean both electrodes
2	Paper tray ground terminal provided in machine body	Is the paper tray ground terminal bent, which is provided in the machine body?	Yes	Correct bending of paper tray ground terminal.

■ Ghost



User Check

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

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

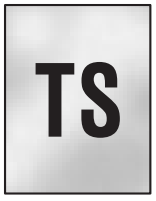
■ Color misregistration

User Check

- Implement the auto color registration by the panel operation.
- 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.

Step	Cause	Check	Result	Remedy
1	Phase shift of gear 39/121	Check if gear 39/121 phase is shifted?	Yes	Phase the Gear 39/121. For the method how to phase the gear 39/121, refer to "Chapter 3 DISASSEMBLY AND ASSEMBLY".
2	Engine PCB failure	Is the problem solved after replacing the engine PCB ASSY?	Yes	Replace the engine PCB ASSY.

■ Fogging



User Check

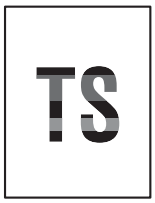
- Replace the toner cartridge with a new one.
- Replace the drum unit with a new one.
- Do not use acid paper.
- Check if there is dust or paper powder in the machine.

Step	Cause	Check	Result	Remedy
1	Toner sensor failure (Machine body)	Is the toner sensor performed normally by following the procedure described in "Maintenance mode 32" to check.	No	Replace the toner sensor PCB (TE/NEW) of the appropriate color.
2	Transfer HVPS PCB failure	Is the problem solved after replacing the transfer HVPS PCB ASSY?	Yes	Replace the Transfer HVPS PCB ASSY.
3	Charge HVPS PCB failure	Is the problem solved after replacing the charge HVPS PCB ASSY?	Yes	Replace the charge HVPS PCB ASSY.
4	Engine PCB failure	Is the problem solved after replacing the engine PCB ASSY?	Yes	Replace the engine PCB ASSY.

Note:

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

■ Unstable color density



User Check

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

Step	Cause	Check	Result	Remedy
1	Drum unit conduction failure	Are the electrodes on the drum unit and machine body dirty?	Yes	Clean both electrodes.
2	Toner cartridge electrode connection failure	Are the electrodes on the toner cartridge and machine body dirty?	Yes	Clean both electrodes.
3	Dirt on belt unit electrode	Are the electrodes on the belt unit and machine body dirty?	Yes	Clean both electrodes.
4	Main PCB failure	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.
5	Engine PCB failure	Is the problem solved after replacing the engine PCB ASSY?	Yes	Replace the engine PCB ASSY.
6	Transfer HVPS PCB failure	Is the problem solved after replacing the transfer HVPS PCB ASSY?	Yes	Replace the transfer HVPS PCB ASSY.
7	Charge HVPS PCB failure	Is the problem solved after replacing the charge HVPS PCB ASSY?	Yes	Replace the charge HVPS PCB ASSY.
8	Laser unit failure	Is the problem solved after replacing the laser unit?	Yes	Replace the laser unit.

■ Hollow print

User Check

- Select the ‘Thick paper mode’ in the printer driver, or use thinner paper than you are currently using.
- Check the machine’s environment, conditions such as high humidity may cause this situation to occur.

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

■ Dirt on the bottom end of paper

TS

Step	Cause	Check	Result	Remedy
1	Dirt on the bottom of drum unit	Is the bottom of drum unit dirty?	Yes	Wipe the dirt with a dry cloth as shown in Fig. 1-11.
2	Dirt on base shaft	Is the base shaft dirty?	Yes	Wipe the dirt with a dry cloth as shown in Fig. 1-12.

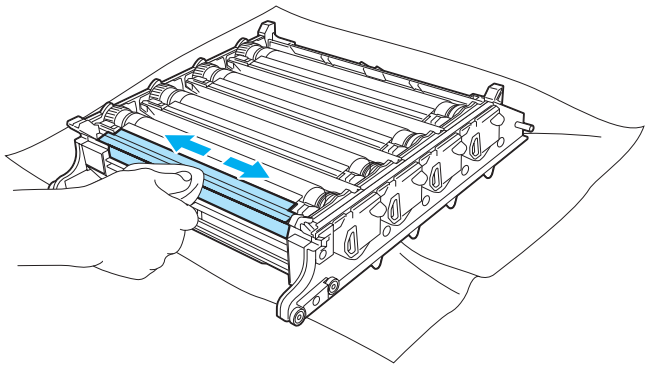
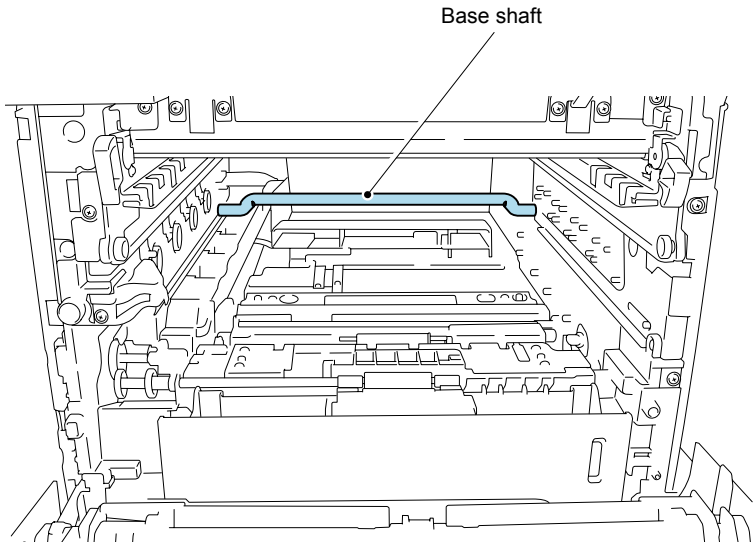


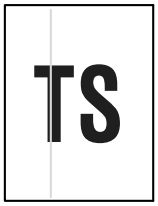
Fig. 1-11



* Figure of the front view

Fig. 1-12

■ White vertical lines appear on image



User Check

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

Step	Cause	Check	Result	Remedy
1	Dirt on fuser unit	Is the heat roller of the fuser unit dirty?	Yes	Clean the heat roller of the fuser unit.
2	Foreign substance or dirt on the paper feeding path	Is there any foreign substance or dirt on the paper feeding path?	Yes	Clean the paper feeding path.

5. SOFTWARE SETTING PROBLEMS

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

User Check

- Check that the printer cable or USB cable are not damaged.
- Check that the correct machine is selected if you have an interface switching device.
- Check the descriptions on the software setting in the user's guide.
- Try resetting the factory settings.

Step	Cause	Check	Result	Remedy
1	Failure inside the machine	Does the machine print "Printer Settings"?	No	Identify the error type, and then refer to the specified section of this chapter.
2	Machine connection	For Macintosh, has the product ID been verified?	No	Verify the product ID. Product ID: HL-4040CN: 002E * HL-4040CDN: 0036 * HL-4050CDN: 002F * HL-4070CDW: 0030 * * Hexadecimal
3	USB host relay PCB failure	Is the problem solved after replacing the USB host relay PCB ASSY?	Yes	Replace the USB host relay PCB ASSY.
4	Main PCB failure	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.

6. NETWORK PROBLEMS

User Check

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

Step	Cause	Check	Result	Remedy
1	Wireless LAN PCB failure (HL-4070CDW)	Is the problem solved after replacing the wireless LAN PCB ASSY?	Yes	Replace the wireless LAN PCB ASSY.
2	Main PCB failure	Is the problem solved after replacing the main PCB ASSY?	Yes	Replace the main PCB ASSY.

7. OTHERS PROBLEMS

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

User Check

- Pull out the power supply cord from the power outlet and leave it for 5 minutes or more. Then, insert it to the power outlet again and turn on the power supply.

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

■ The fan does not work.

(Verify the position of each fan referring to "1.4.16 Operational Check of Fans (Function code 78)" in Chapter 5.)

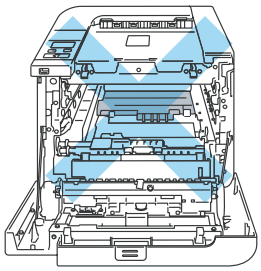
Step	Cause	Check	Result	Remedy
1	Harness connection failure of the appropriate fan	Is the harness of the appropriate fan connected correctly?	No	Reconnect the harness of the appropriate fan correctly.
2	Charge HVPS PCB failure	Is the problem solved after replacing the charge HVPS PCB ASSY?	Yes	Replace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

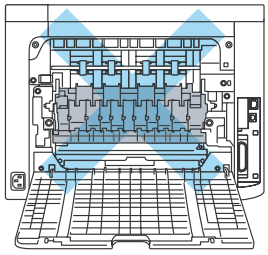
CHAPTER 2 PERIODICAL MAINTENANCE

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

WARNING

- Always turn off the power switch and unplug the power cord from the power outlet before accessing any parts inside the machine.
- When opening the front cover or back cover to access any parts inside the machine, never touch the shaded parts shown in the following figures.





1. CONSUMABLE PARTS

The consumable parts described in this section are parts which are subject to deterioration or damage and should be replaced at least once during the period of warranty of the product if any printing quality problem appears.

Parts			Approximate Life
Toner Cartridge	Black	Standard cartridge	Approx. 2,500 pages A4/Letter pages @ 5% coverage
		High capacity cartridge	Approx. 5,000 pages A4/Letter pages @ 5% coverage
	Cyan, Magenta, Yellow	Standard cartridge	Approx. 1,500 pages A4/Letter pages @ 5% coverage
		High capacity cartridge	Approx. 4,000 pages A4/Letter pages @ 5% coverage
Drum Unit			Approx. 17,000 pages A4/Letter pages Life expectancy will vary depending on number of continuous printing pages. (Refer to “Life of Drum Unit” in Chapter 5, “2.3 Printout of Printer Settings”.)
Belt Unit			Approx. 50,000 pages A4/Letter pages Life expectancy will vary depending on number of continuous printing pages. (Refer to “Life of Belt Unit” in Chapter 5, “2.3 Printout of Printer Settings”.)
Waste Toner Box			Approx. 20,000 pages A4/Letter pages @ 5% coverage for CMYK each

2. PERIODICAL REPLACEMENT PARTS

2.1 Periodical Replacement Parts

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

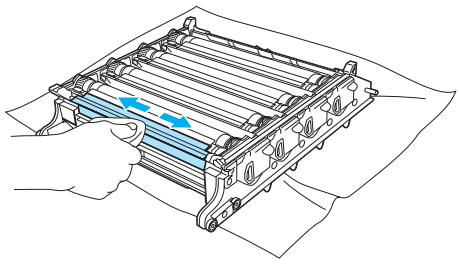
The periodical replacement parts listed in the table below should be replaced according to the service life.

Parts Name	LCD	Q'ty	Approximate Life	Replacement Procedure
Fuser unit & Toner filter frame ASSY	Fuser Unit	1	80,000 pages	Refer to 2.2.1.
Laser unit	Laser Unit	1	100,000 pages	Refer to 2.2.2.
Paper feeding kit *1	PF Kit1, PF Kit2	1	100,000 pages	Refer to 2.2.3.
MP paper feeding kit *2	PF KitMP	1	50,000 pages	Refer to 2.2.4.

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

*2: MP Paper feeding kit includes the separation pad ASSY MP, separation pad spring MP, and MP roller holder ASSY.

When replacing the periodical replacement parts, each of the counters need to be reset in order to count the number of replacement times. Refer to "2.3 Parts Life Reset Function" in this chapter.
Also make sure to wipe the dirt on the drum unit as shown in the figure below when replacing each of the periodical replacement parts.



The number of printed pages of the machine can be checked on Print Settings. (Refer to "2.3 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 being used. The figures indicated as the approximate life in the table above are worked out when printing a general business document (with 5% print coverage) on one side of A4-size paper.

Note:

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

2.2 Procedures to Replace Periodical Replacement Parts

2.2.1 Fuser Unit & Toner Filter Frame ASSY

<Uninstalling Procedure>

(1) Open the Back cover.

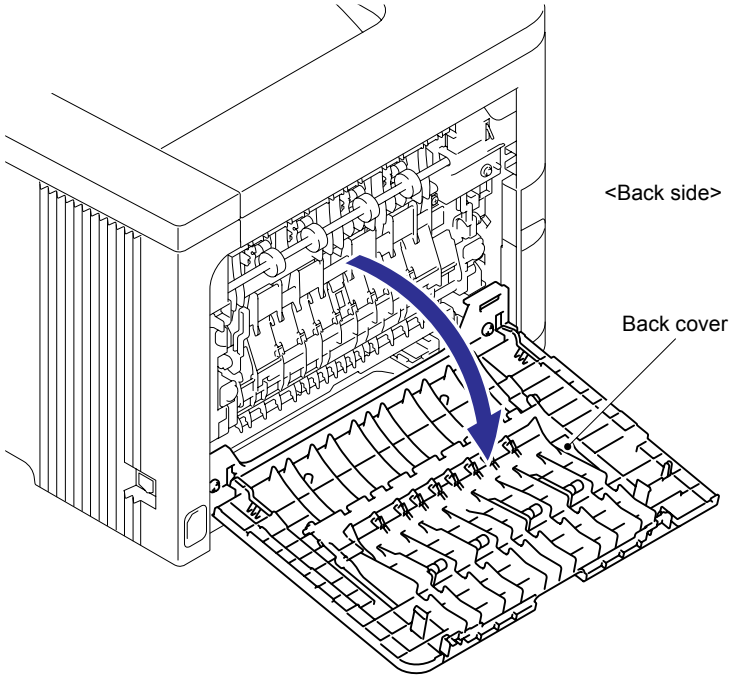


Fig. 2-1

(2) Remove the two pan B M4x14 Taptite screws, and then pull out the Fuser unit to the back of the machine.

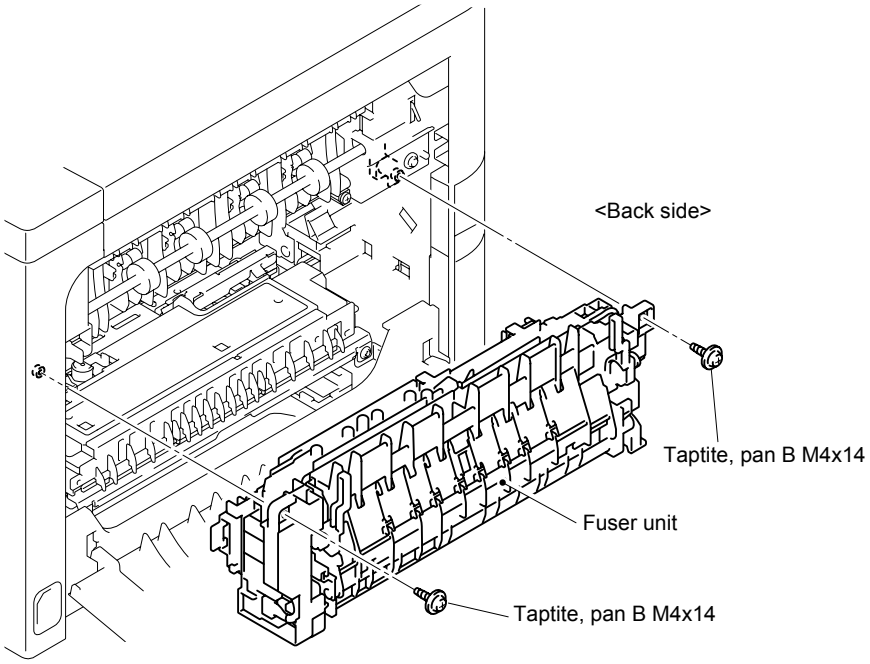


Fig. 2-2

(3) Remove the Toner filter frame ASSY from the Paper eject ASSY DX/SX.

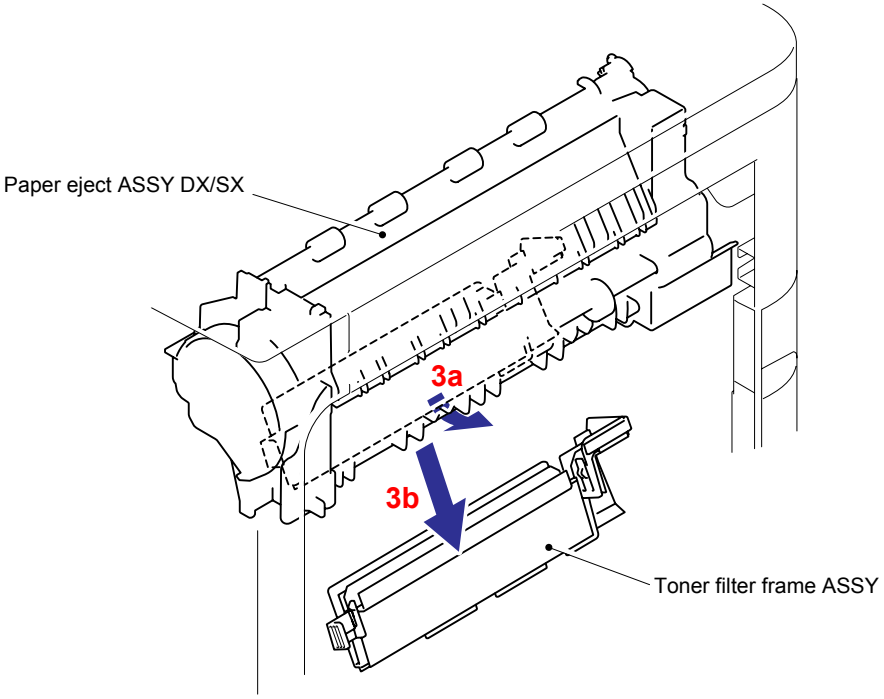


Fig. 2-3

<Installing Procedure>

(1) Assemble the Toner filter frame ASSY onto the Paper eject ASSY DX/SX.

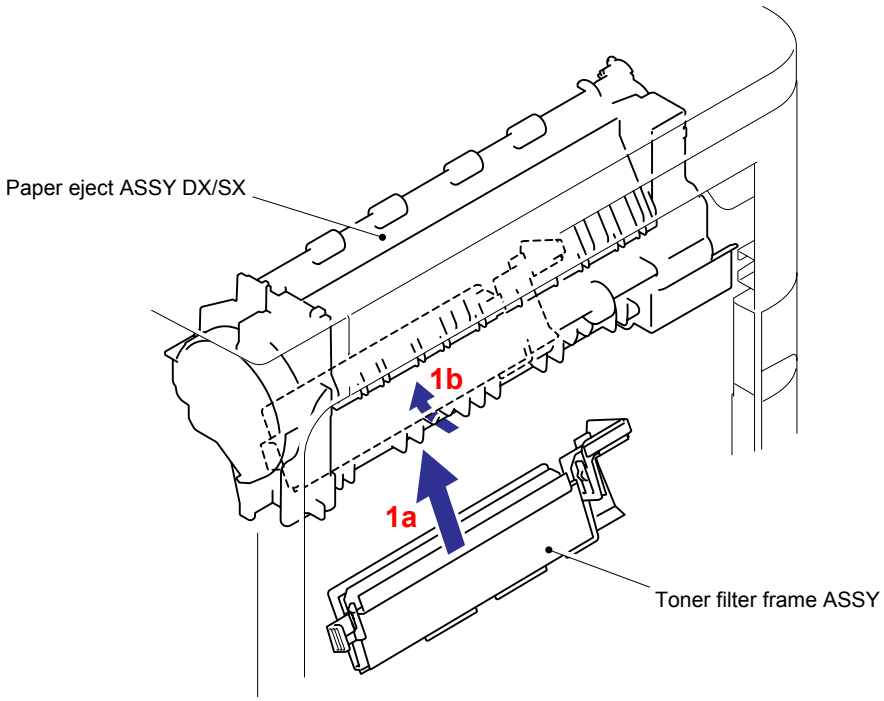


Fig. 2-4

(2) Put the Fuser unit into the machine and fix it with the two pan B M4x14 Taptite screws.

*1 **Tightening Note:**

When tightening the screw, slowly turn it counterclockwise (in the direction to loosen the screw) with your hand until you feel that the screw is a little dropped in the hole. Then, slightly turn it clockwise (in the direction to tighten the screw) with your hand and tighten it according to the specified torque with a screwdriver.

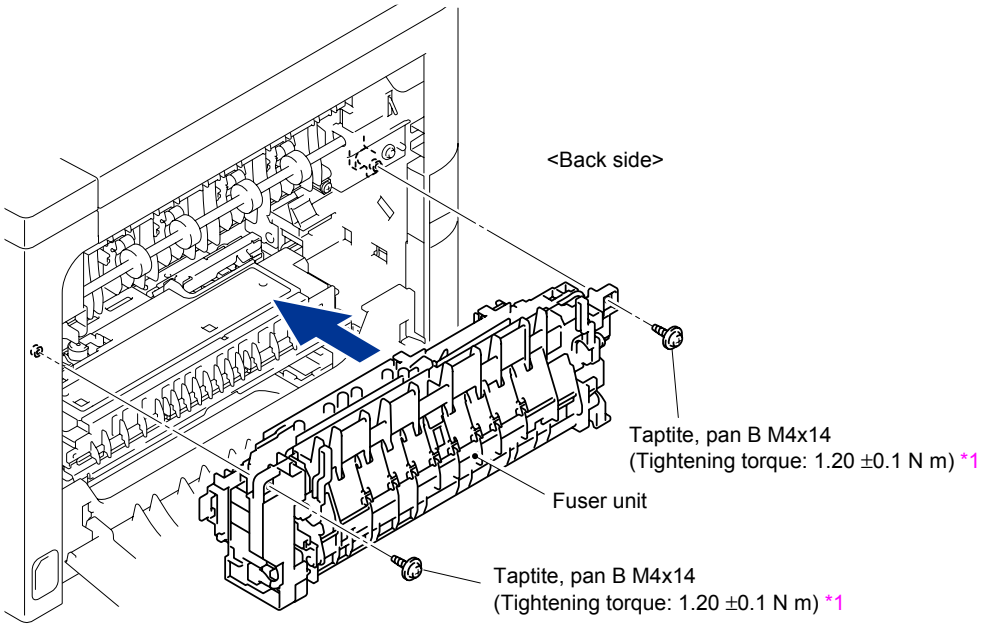


Fig. 2-5

Note:

- When assembling the fuser unit, make sure that the two Harnesses are placed in the groove and under the rib of the Plastic frame. If they are not, then correct them as shown in the figure below.

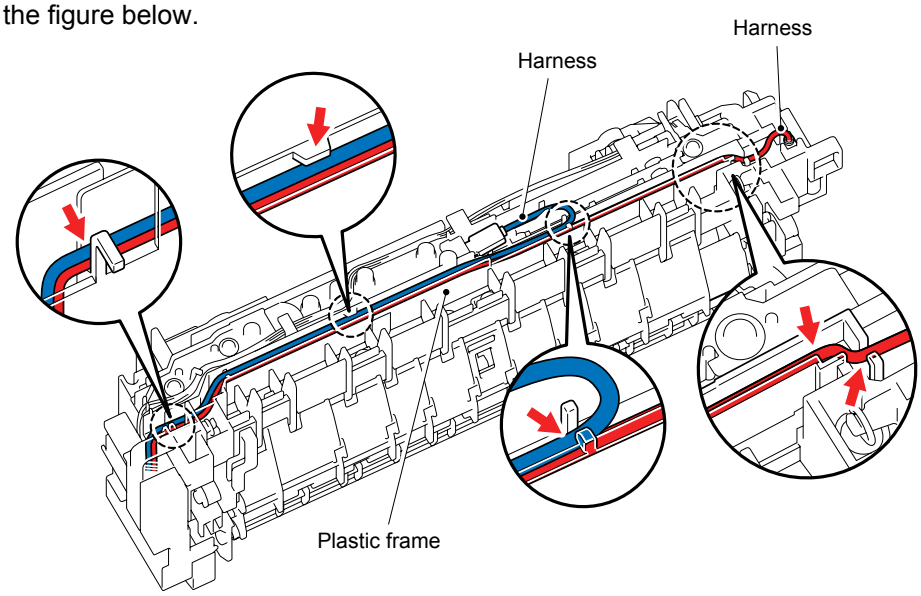


Fig. 2-6

- When assembling or disassembling the fuser unit, the sponge on the HV TR top cover might get scraped. If it is scraped, remove the scraped waste and clean the feeding path. After replacing the fuser unit, be sure to execute the test print and check that there are no print failures, such as vertical lines on the print result.

(3) Close the Back cover.

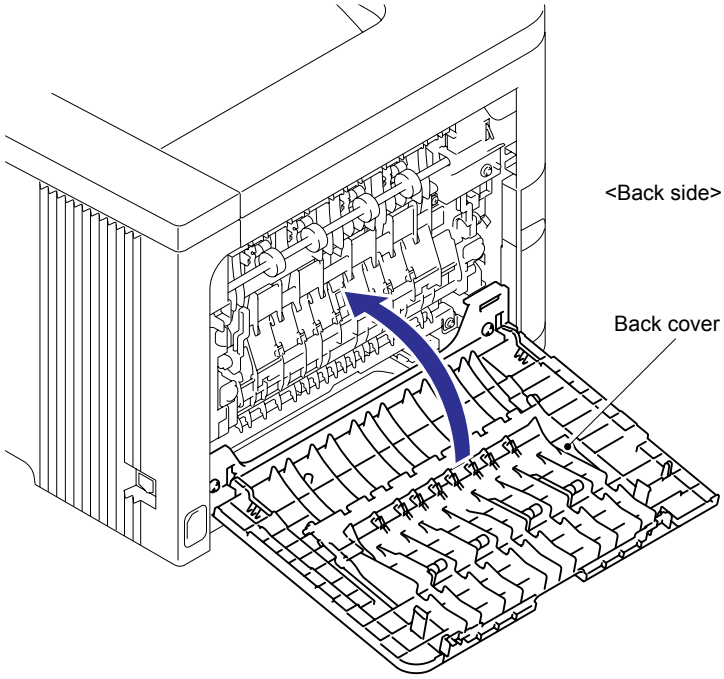


Fig. 2-7

(4) After replacing the Fuser unit, reset the counter. (Refer to "2.3 Parts Life Reset Function" in this chapter.)

2.2.2 Laser Unit

<Uninstalling Procedure>

(1) Press the Front cover release button, and open the Front door unit ASSY.

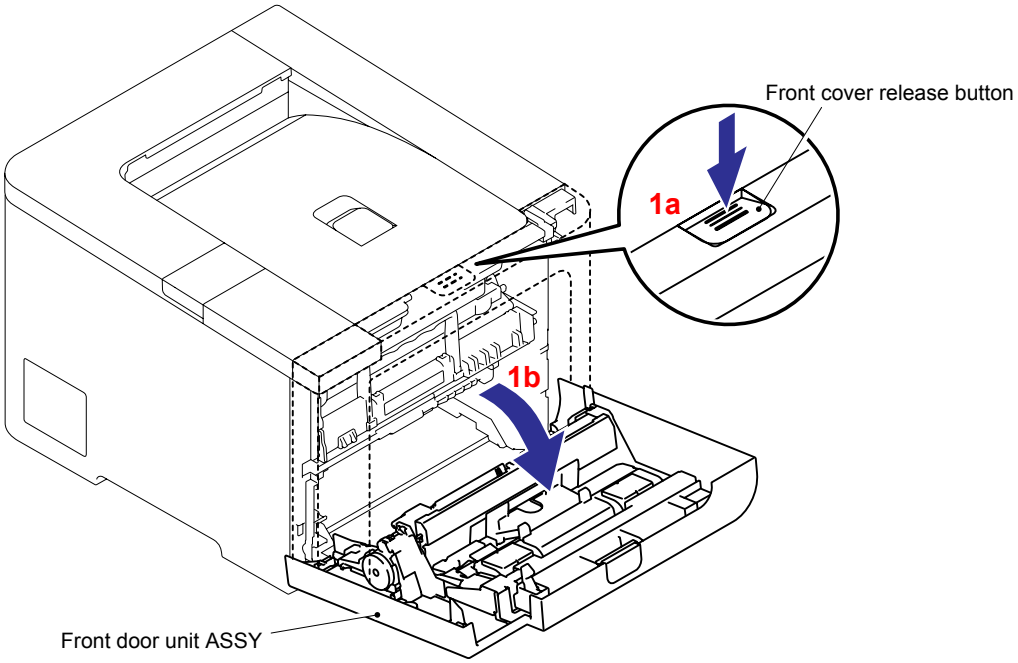


Fig. 2-8

(2) Open the Back cover.

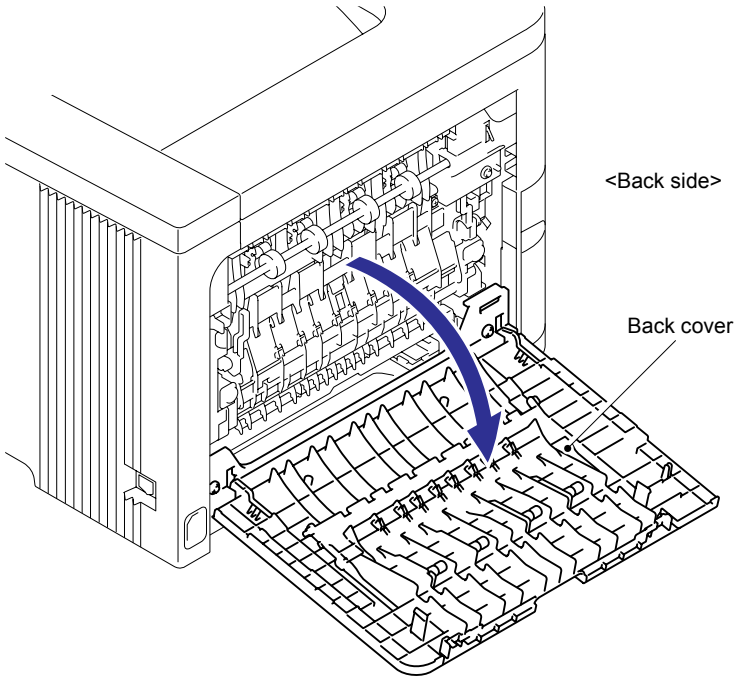


Fig. 2-9

(3) Remove the two cup S M3x8 Taptite screws, and then remove the Back cover upper.

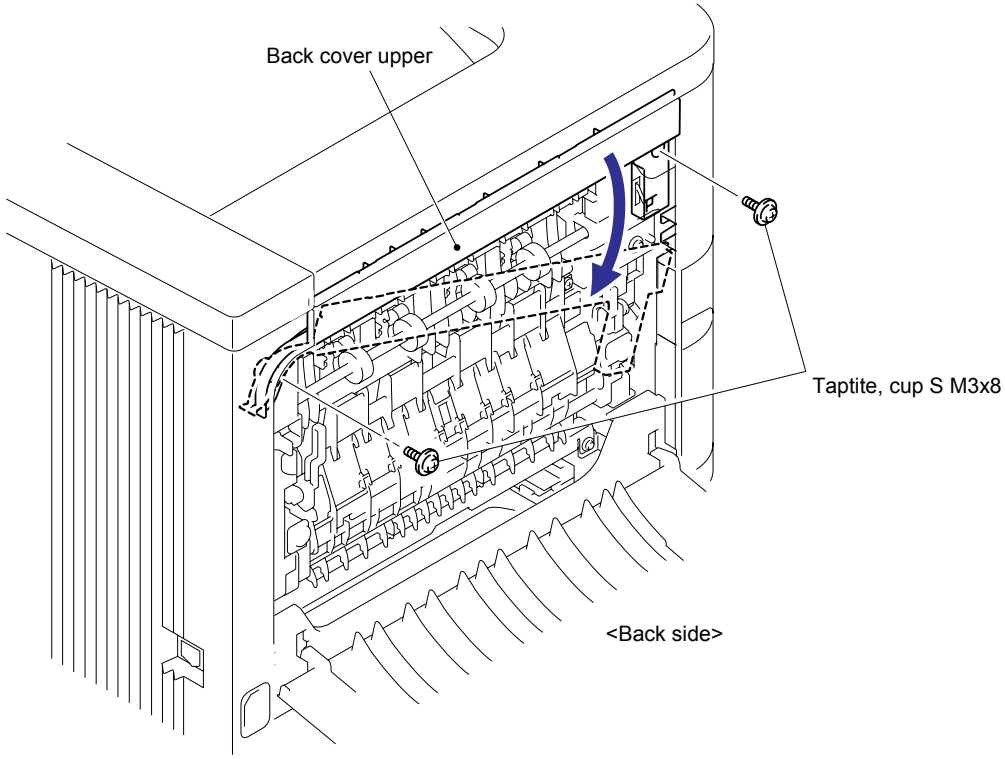


Fig. 2-10

(4) Remove the two cup S M3x8 Taptite screws, and then remove the Back cover ASSY.

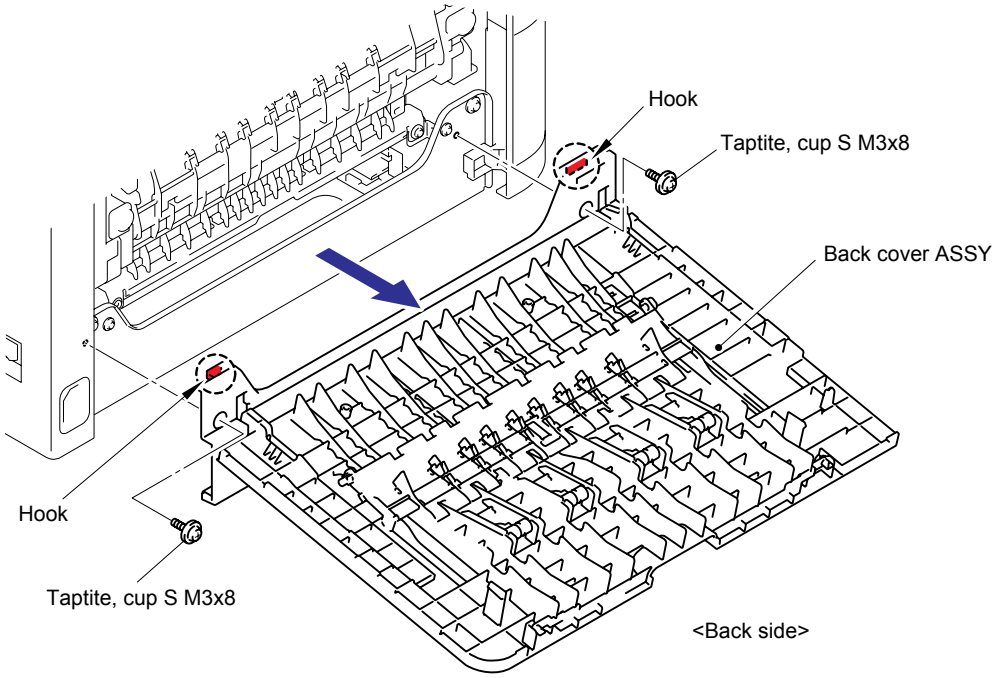


Fig. 2-11

(5) Remove the cup S M3x8 Taptite screw and three cup B M4x12 Taptite screws.

(6) Release the three Hooks on the bottom and the two hooks on the back side, and then remove the Side cover L ASSY.

Note:

When removing the Side cover L ASSY, pay attention to the Wire support rope.

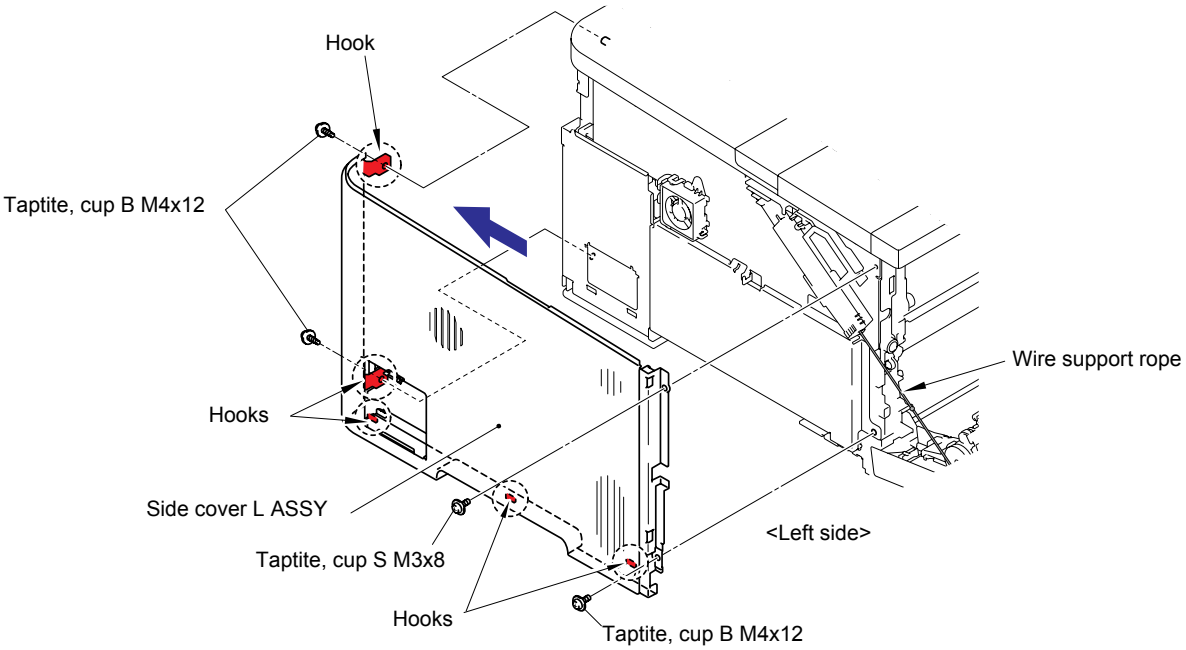


Fig. 2-12

(7) Remove the two cup B M4x12 Taptite screws and two cup S M4x8 Taptite screws.

(8) Release the one Hook on the front side, two Hooks on the bottom and the two Hooks on the back side, and then remove the Side cover R ASSY.

Note:

When removing the Side cover R ASSY, be careful not to damage section “A”.

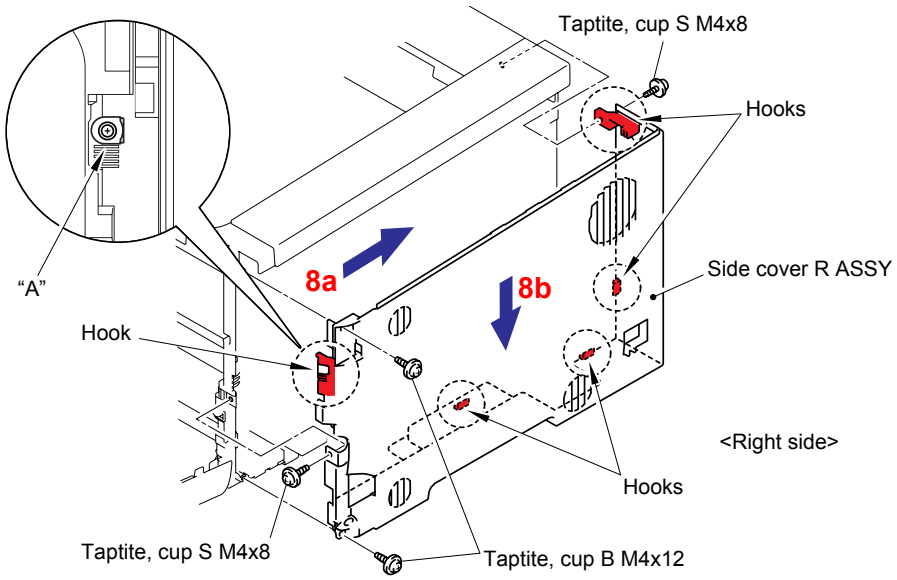


Fig. 2-13

(9) Remove the two cup B M4x14 Taptite screws from the back side of the Top cover ASSY.

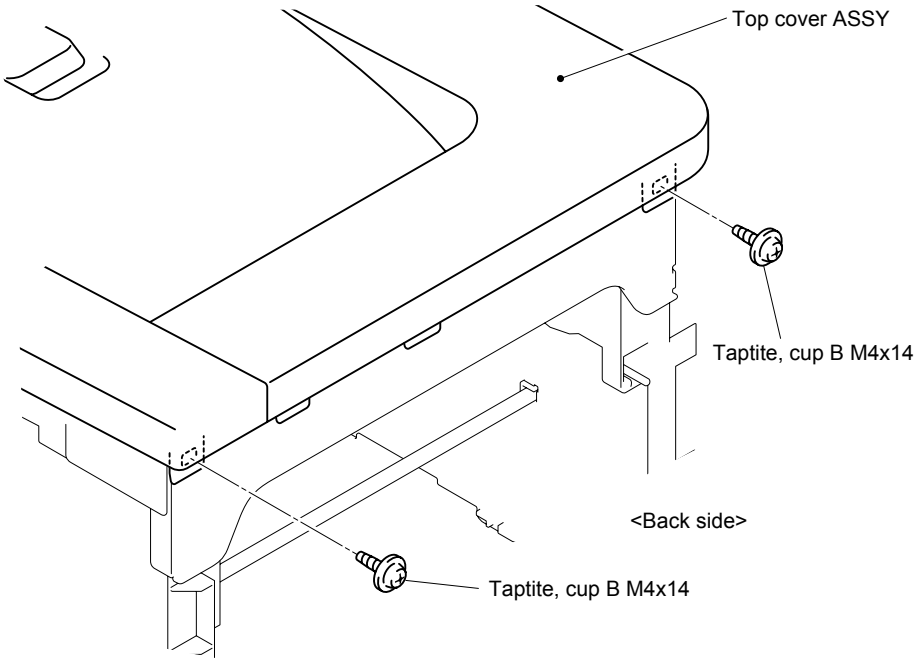


Fig. 2-14

(10) Remove the three cup S M3x8 Taptite screws from the front side of the Top cover ASSY.

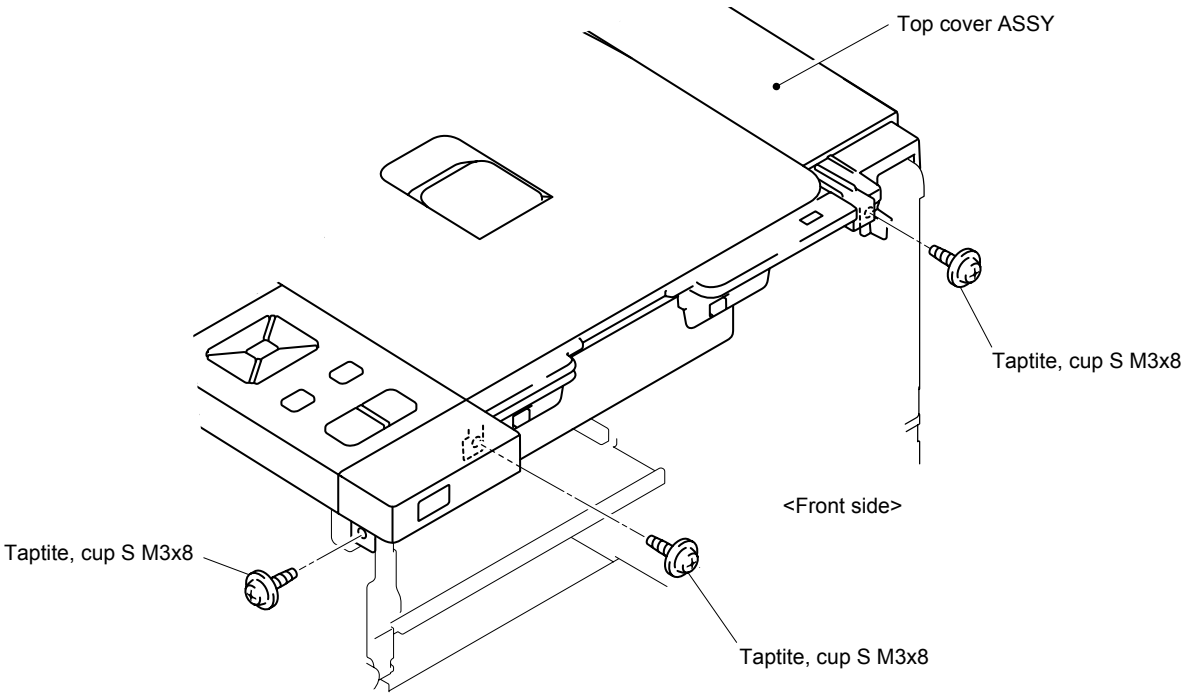


Fig. 2-15

(11) Release the six Hooks in the order of 11a to 11f. Then, incline the Top cover ASSY 45° to 90° to the left hand side and remove it from the Frame unit.

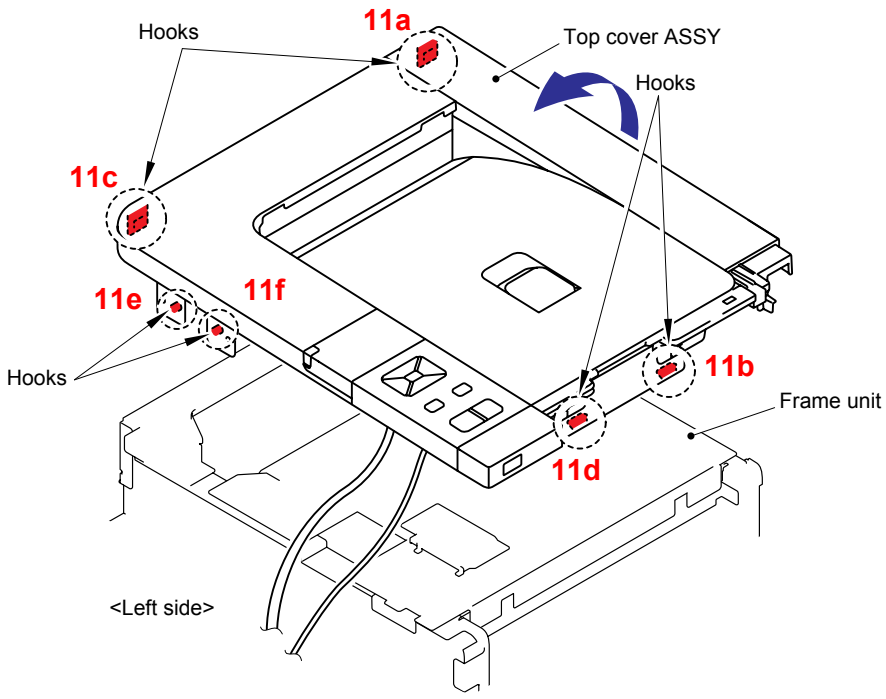


Fig. 2-16

(12) While inclining the Top cover ASSY 45° to 90° to the left hand side, disconnect the Connector (5pin) from the LCD panel PCB ASSY and the Connector (6pin) from the USB host relay PCB ASSY.

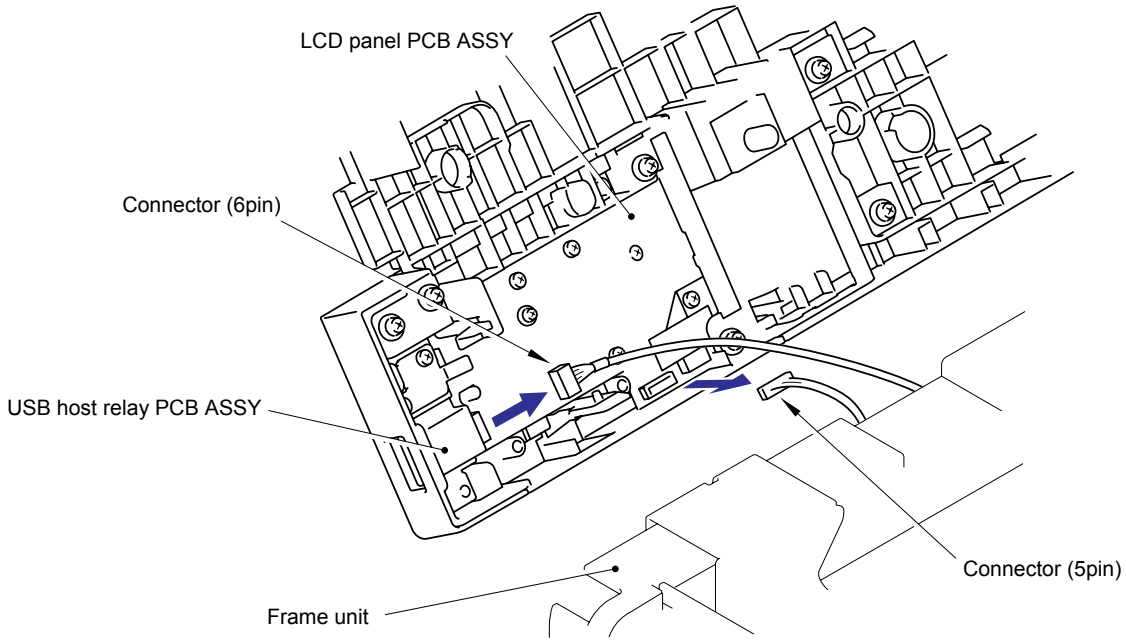


Fig. 2-17

(13) Disconnect the Connector from the Wireless LAN PCB ASSY. (HL-4070CDW only)

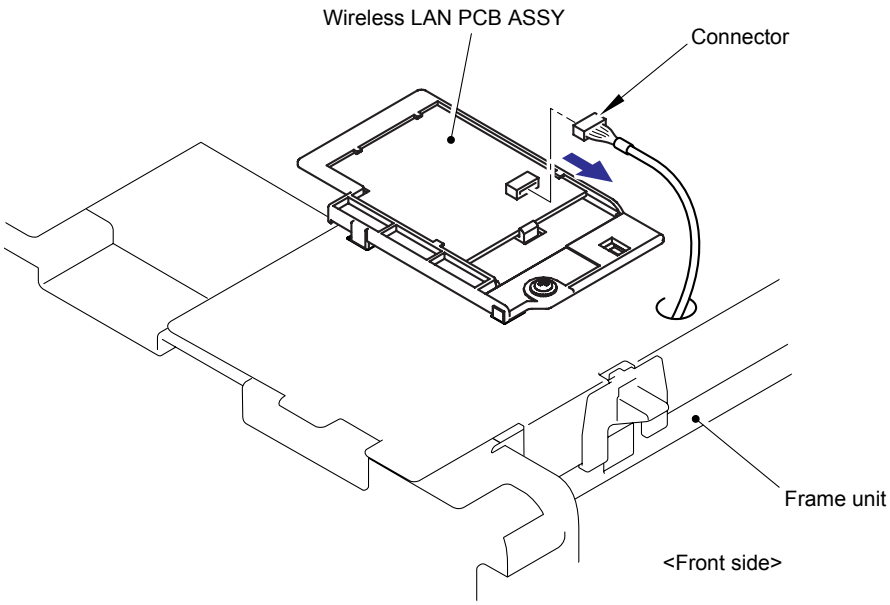


Fig. 2-18

(14) Remove the four cup S M3x8 Taptite screws, and then remove the two Hook slopes.

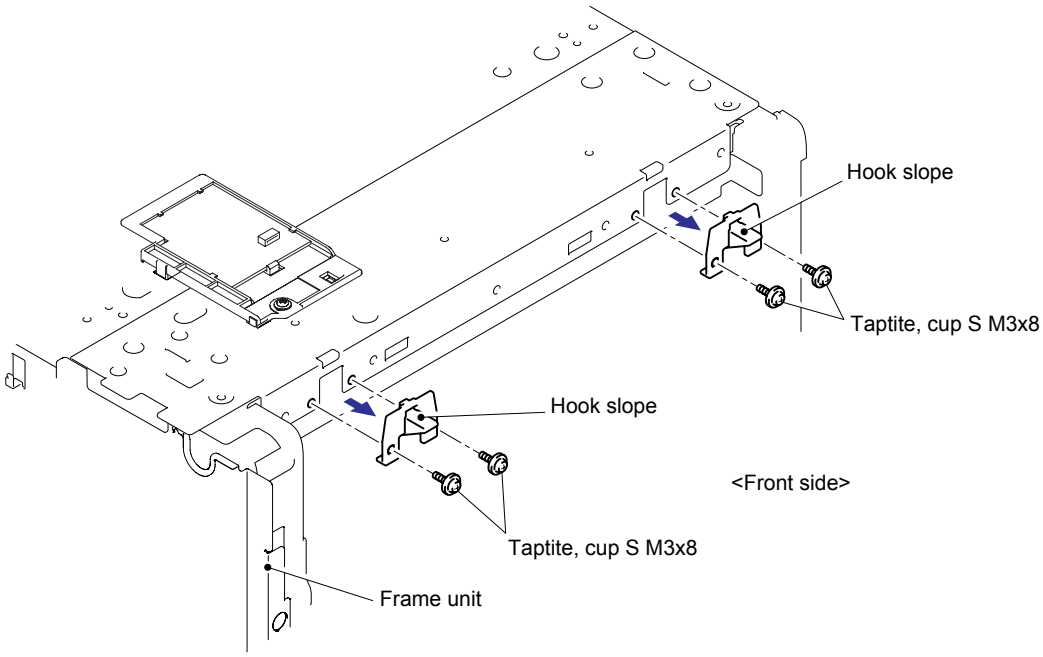


Fig. 2-19

(15) Remove the nine cup S M3x6 Taptite screws (8 pieces from the top and 1 piece from the front side), and then remove the Scanner cover.

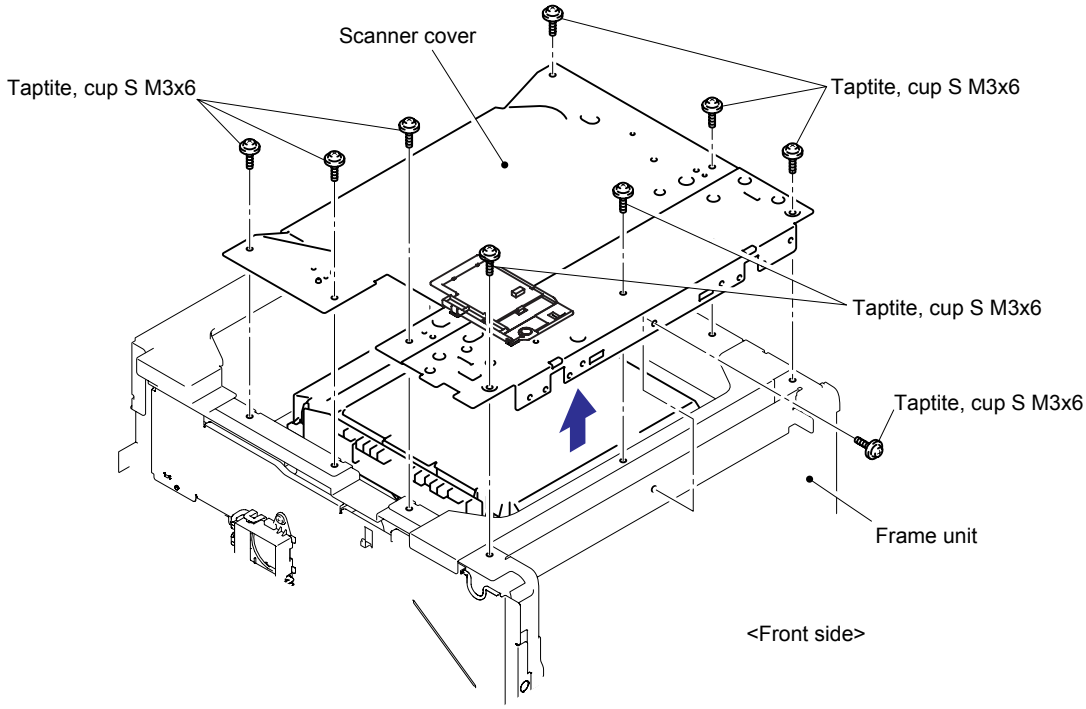


Fig. 2-20

(16) Disconnect the two flat cables (CN1, CN4) and connector (CN8) from the Laser unit.

Note:

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

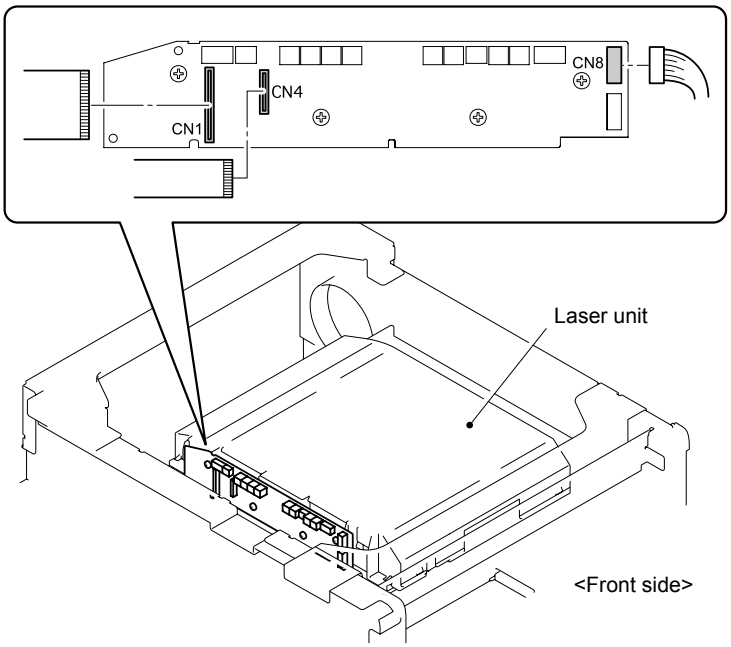


Fig. 2-21

(17) Remove the seven cup S M3x6 SR Taptite screws, and then remove the four Scanner holders and Laser unit.

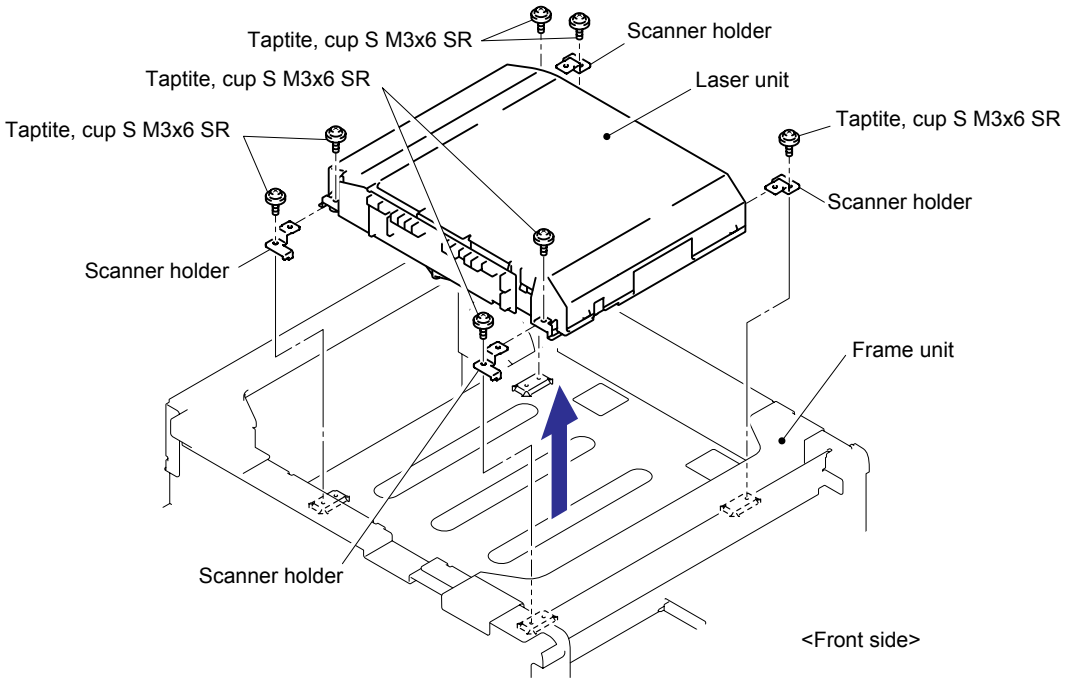


Fig. 2-22

<Installing Procedure>

(1) Assemble the Laser unit with the four Scanner holders and seven cup S M3x6 SR Taptite screws.

Note:

When assembling the Laser unit with the Scanner holders, ensure to put the positioning boss of the Laser unit into the positioning hole referring to the figure below.

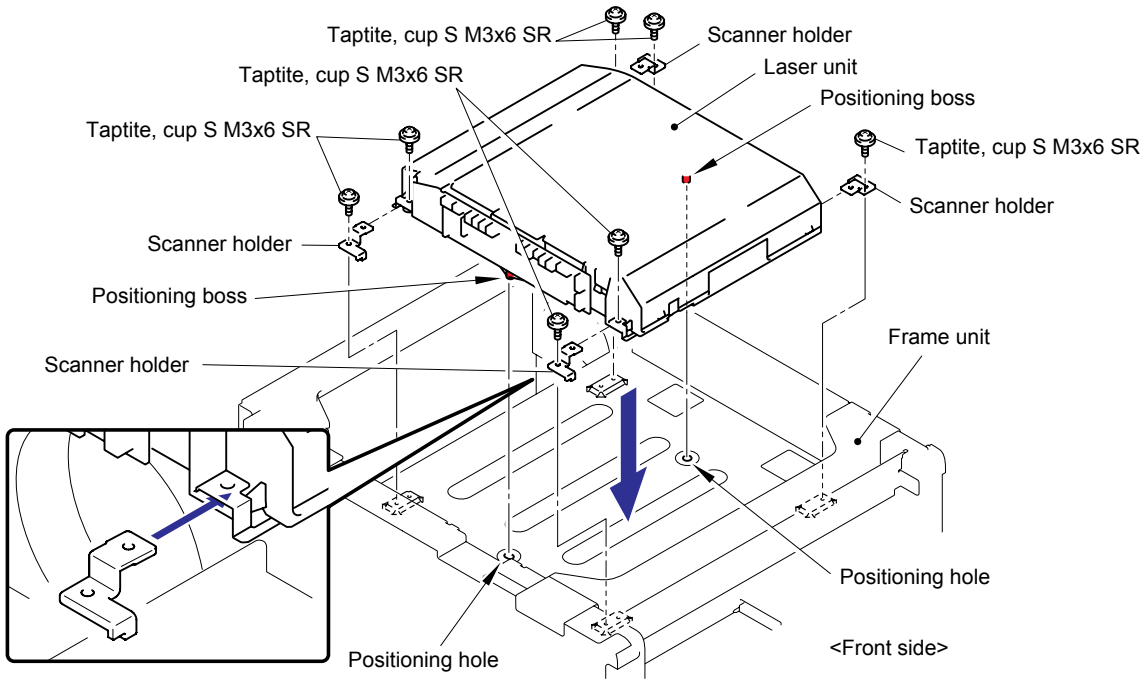


Fig. 2-23

(2) Connect the two flat cables (CN1, CN4) and one connector (CN8) into the Laser unit.

Note:
When connecting the flat cable(s), do not insert it at an angle. After insertion, check that the cable is not at an angle.

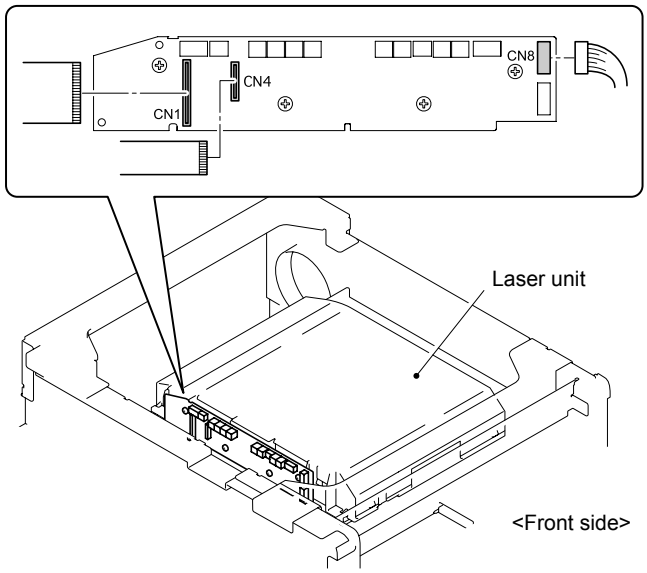


Fig. 2-24

(3) Assemble the Scanner cover with the nine cup S M3x6 Taptite screws (8 pieces on the top and 1 piece on the front side).

Note:

When assembling the Scanner cover, secure the Screws in the order of the numbers which are indicated on the Scanner cover.

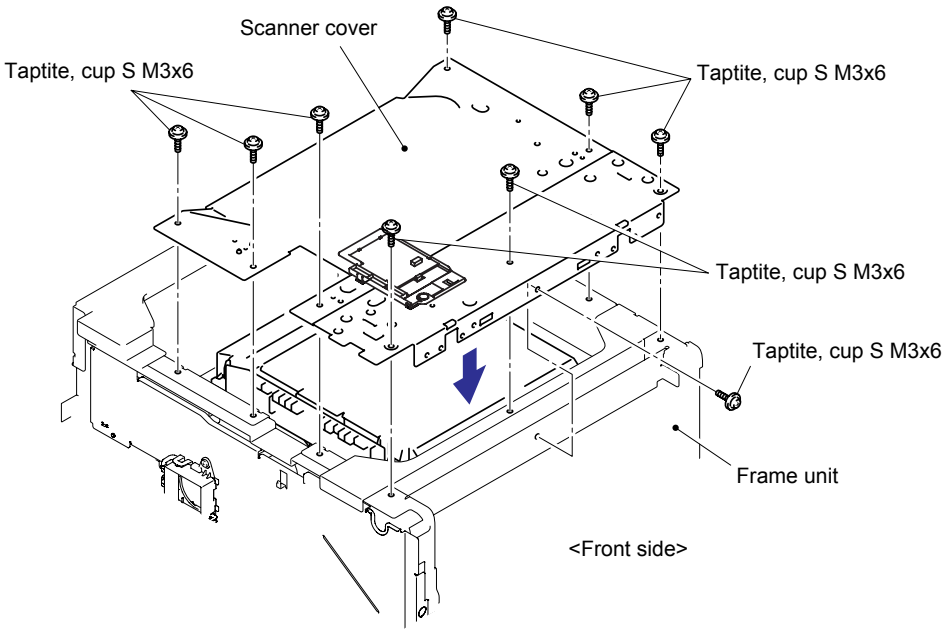


Fig. 2-25

(4) Assemble the two Hook slopes with the four cup S M3x8 Taptite screws.

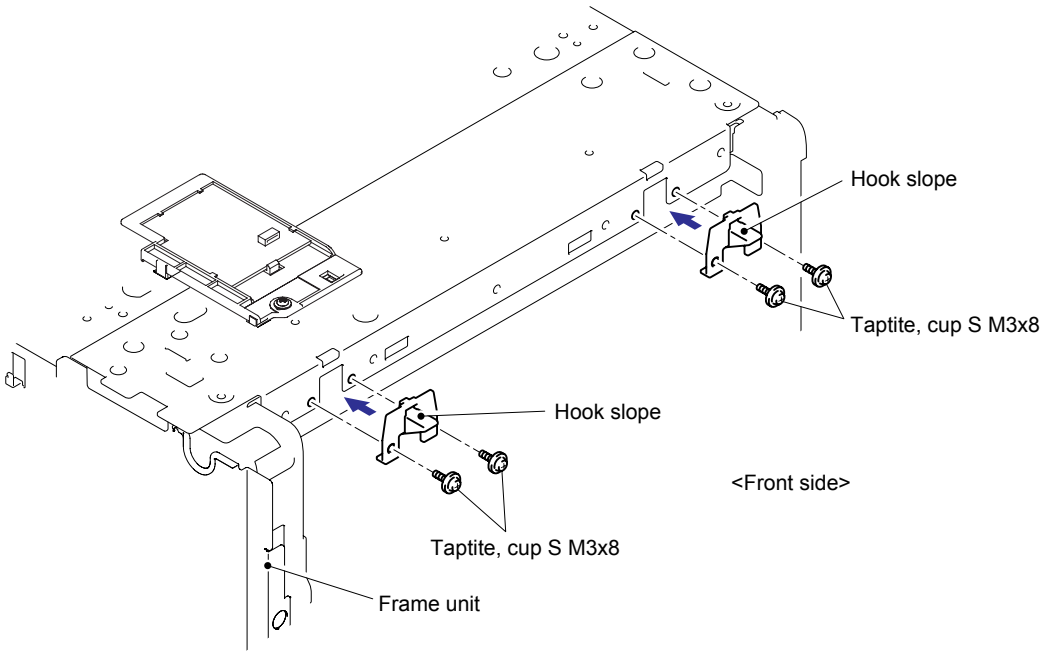


Fig. 2-26

(5) Connect the Connector into the Wireless LAN PCB ASSY. (HL-4070CDW only)

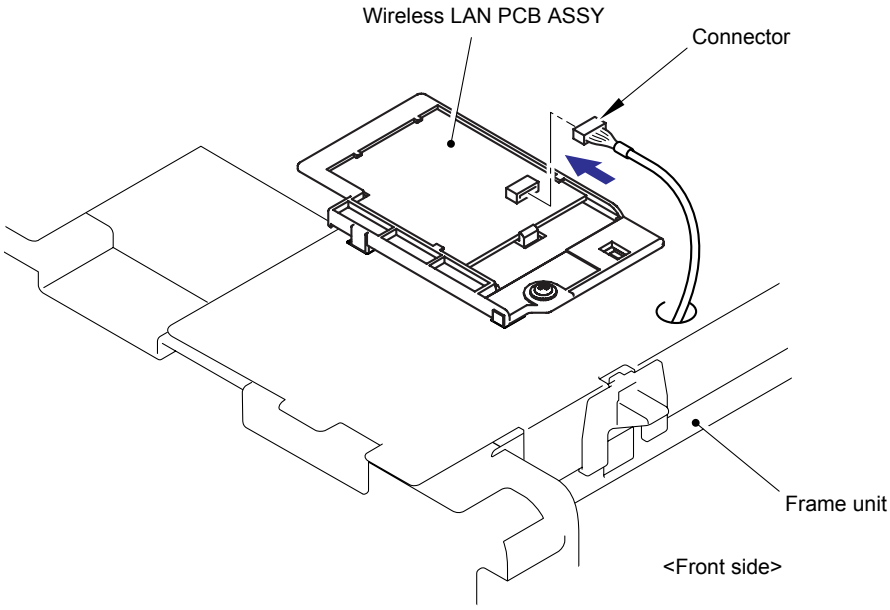


Fig. 2-27

(6) Connect the Connector (6pin) into the USB host relay PCB ASSY, and connect the Connector (5pin) into the LCD panel PCB ASSY.

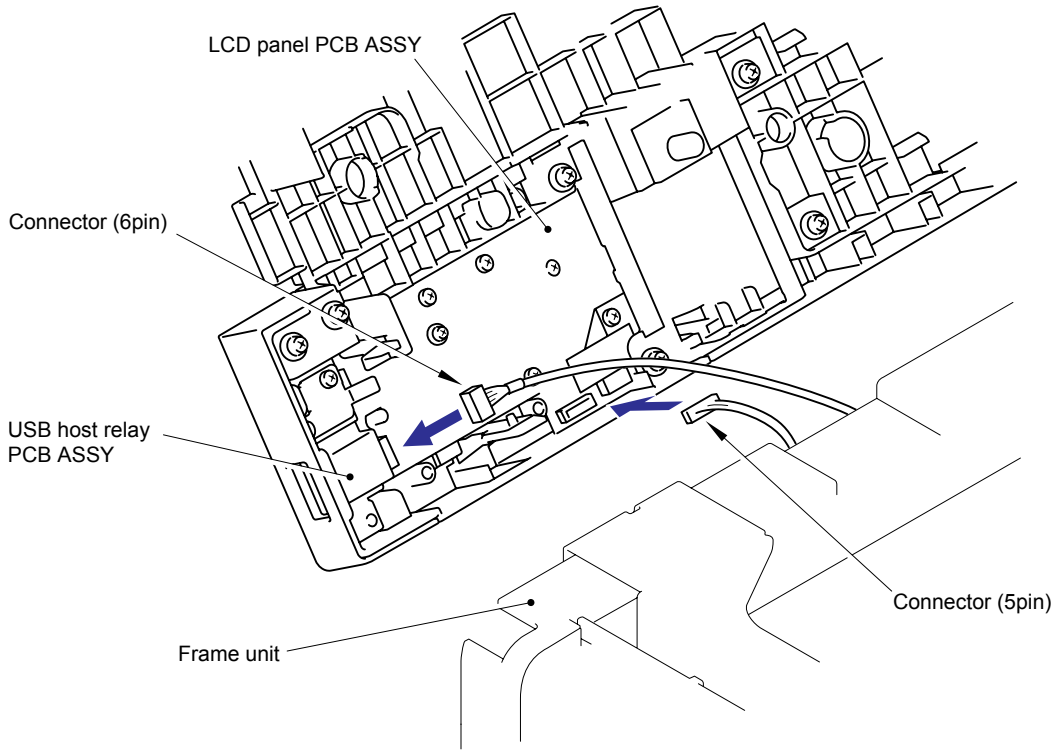


Fig. 2-28

(7) Align the two Hooks of the front side of the Top cover ASSY with the Frame unit and catch the six Hooks at the same time.

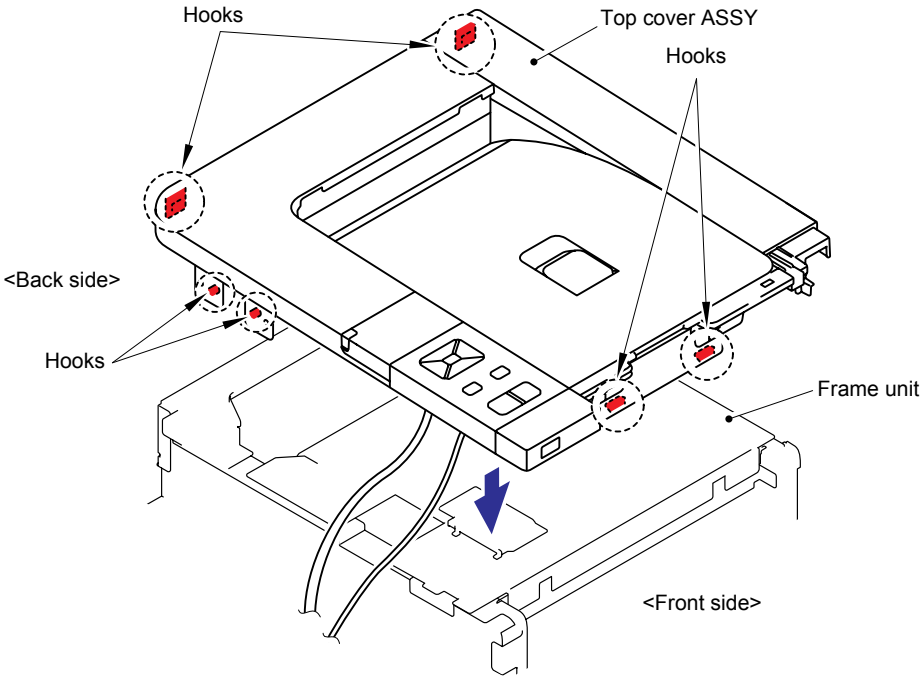


Fig. 2-29

(8) Secure the three cup S M3x8 Taptite screws on the front side of the Top cover ASSY.

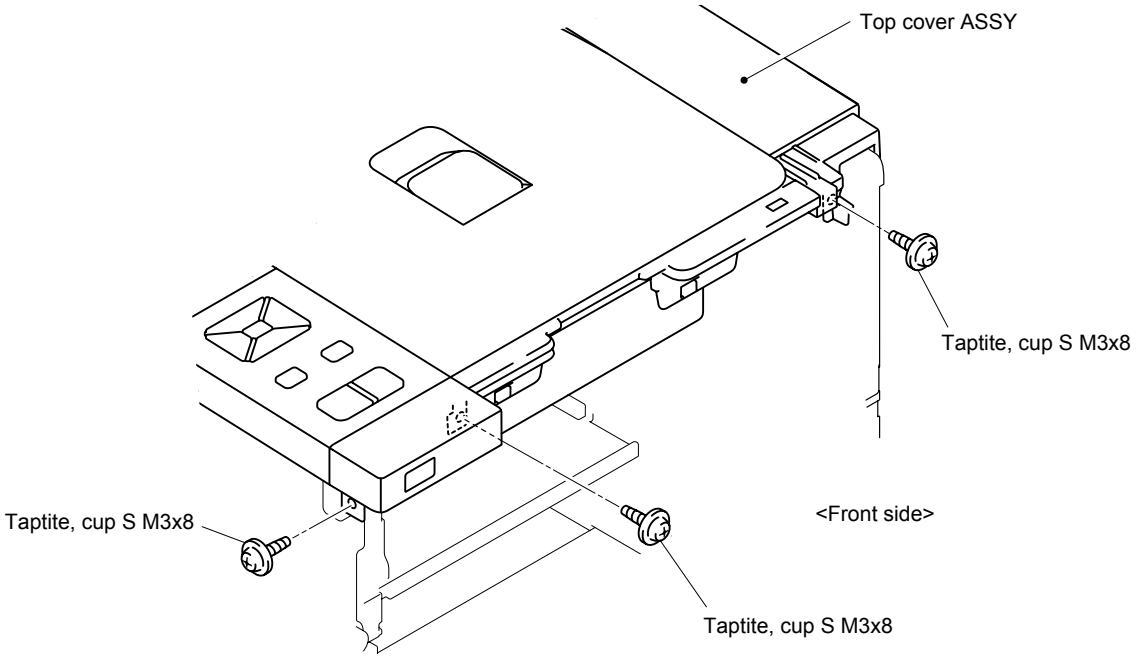


Fig. 2-30

(9) Secure the two cup B M4x14 Taptite screws on the back side of the Top cover ASSY.

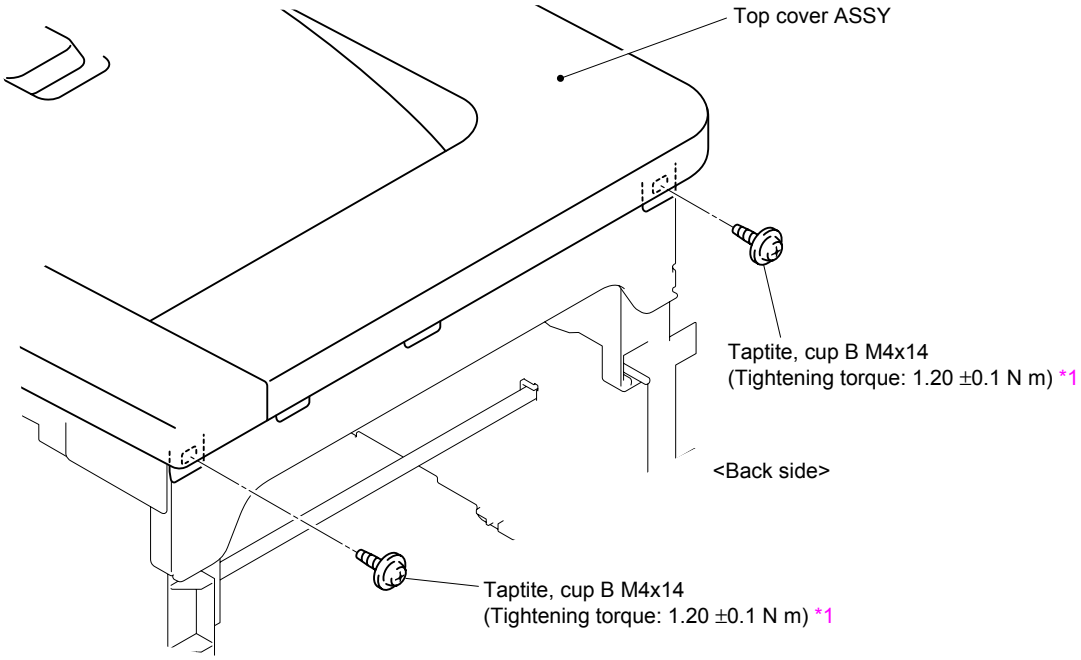


Fig. 2-31

*1 **Tightening Note:**
When tightening the screw, slowly turn it counterclockwise (in the direction to loosen the screw) with your hand until you feel that the screw is a little dropped in the hole. Then, slightly turn it clockwise (in the direction to tighten the screw) with your hand and tighten it according to the specified torque with a screwdriver.

(10) Catch the Hooks of the Side cover R ASSY with the machine body in the order of 10a to 10e and fix the Side cover R ASSY with the two cup B M4x12 Taptite screws and two cup S M4x8 Taptite screws.

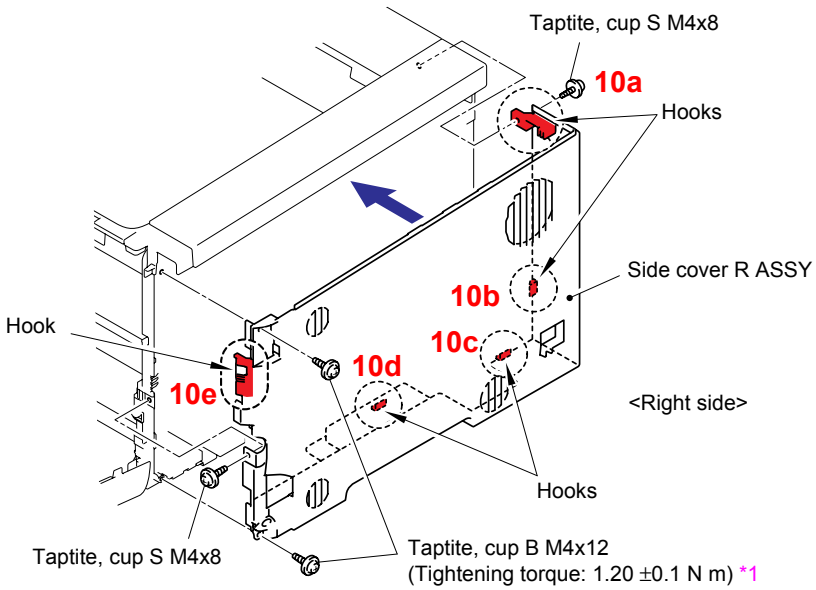


Fig. 2-32

(11) Catch the Hooks of the Side cover L ASSY with the machine body and fix the Side cover L ASSY with the one cup S M3x8 Taptite screws and three cup B M4x12 Taptite screws.

Note:

When assembling the Side cover L ASSY, pay attention to the Wire rope.

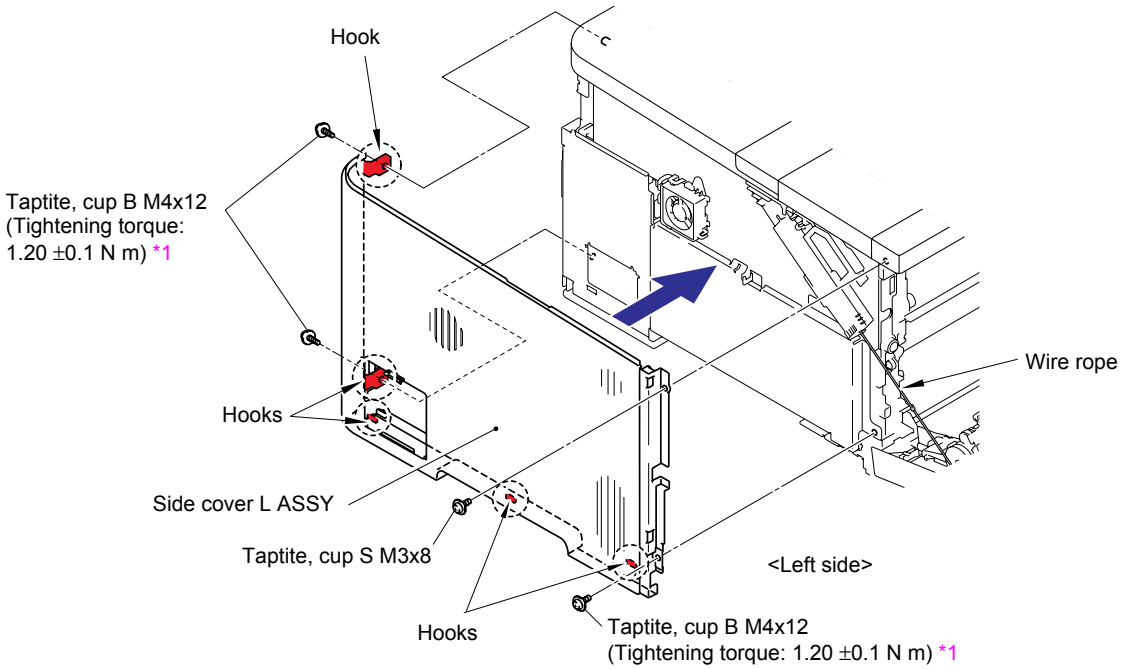


Fig. 2-33

*1 **Tightening Note:**

When tightening the screw, slowly turn it counterclockwise (in the direction to loosen the screw) with your hand until you feel that the screw is a little dropped in the hole. Then, slightly turn it clockwise (in the direction to tighten the screw) with your hand and tighten it according to the specified torque with a screwdriver.

(12) Catch the Hooks of the Back cover ASSY and assemble it with the two cup S M3x8 Taptite screws.

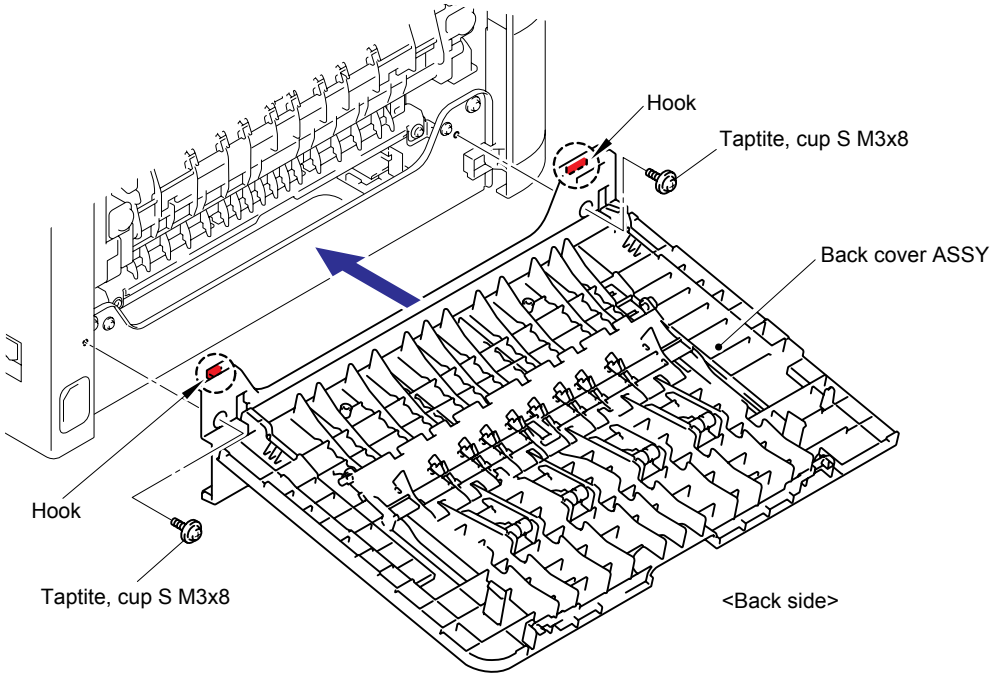


Fig. 2-34

(13) Assemble the Back cover upper with the two cup S M3x8 Taptite screws.

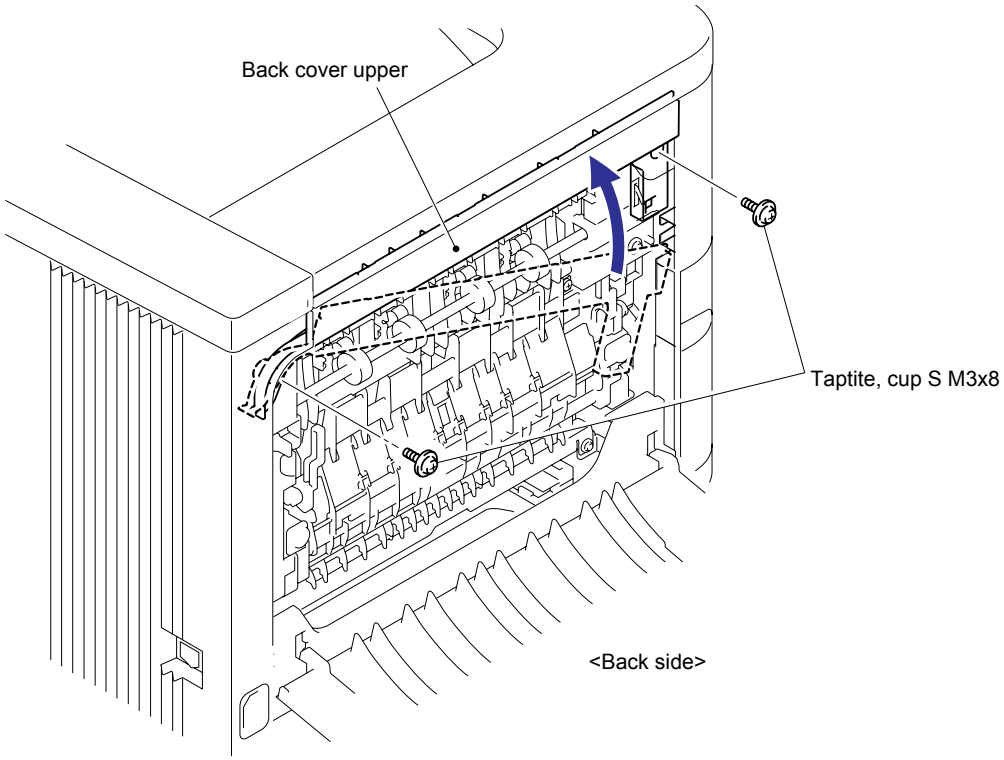


Fig. 2-35

2.2.3 Paper Feeding Kit (PF kit1, PF Kit2)

<Uninstalling Procedure>

(1) Pull out the Paper tray, and remove the paper from the Paper tray.

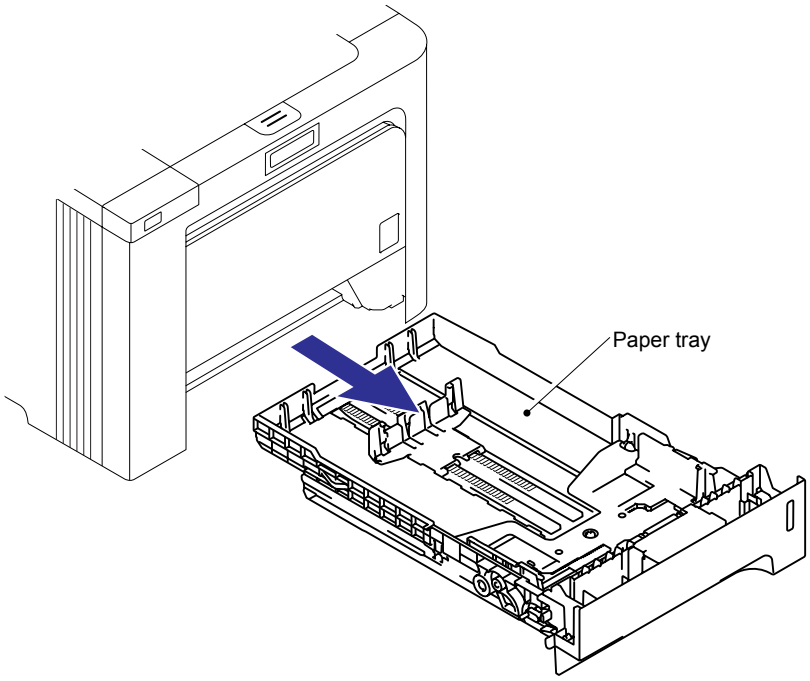


Fig. 2-38

(2) Release the two Hooks of the Separation pad ASSY, and then lift up the Separation pad ASSY.

Note:
Be careful not to loose the Separation pad spring.

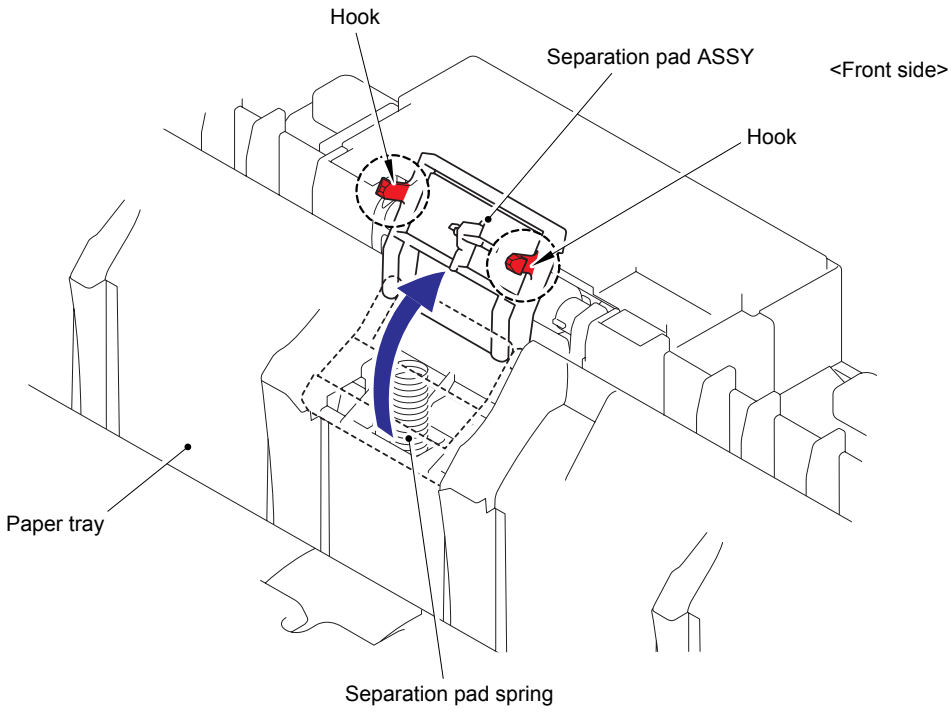


Fig. 2-39

(3) Push both sides of the Separation pad ASSY inwards to release the Pins and remove the Separation pad ASSY from the Paper tray.

(4) Remove the Separation pad spring from the Paper tray.

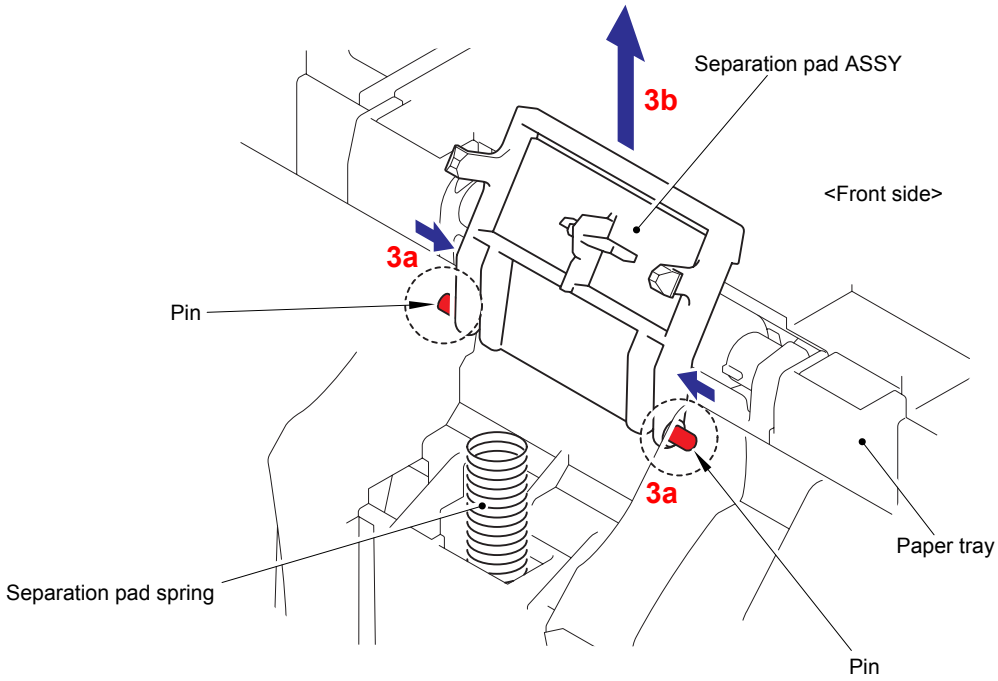


Fig. 2-40

(5) Press the Front cover release button, and open the Front door unit ASSY.

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

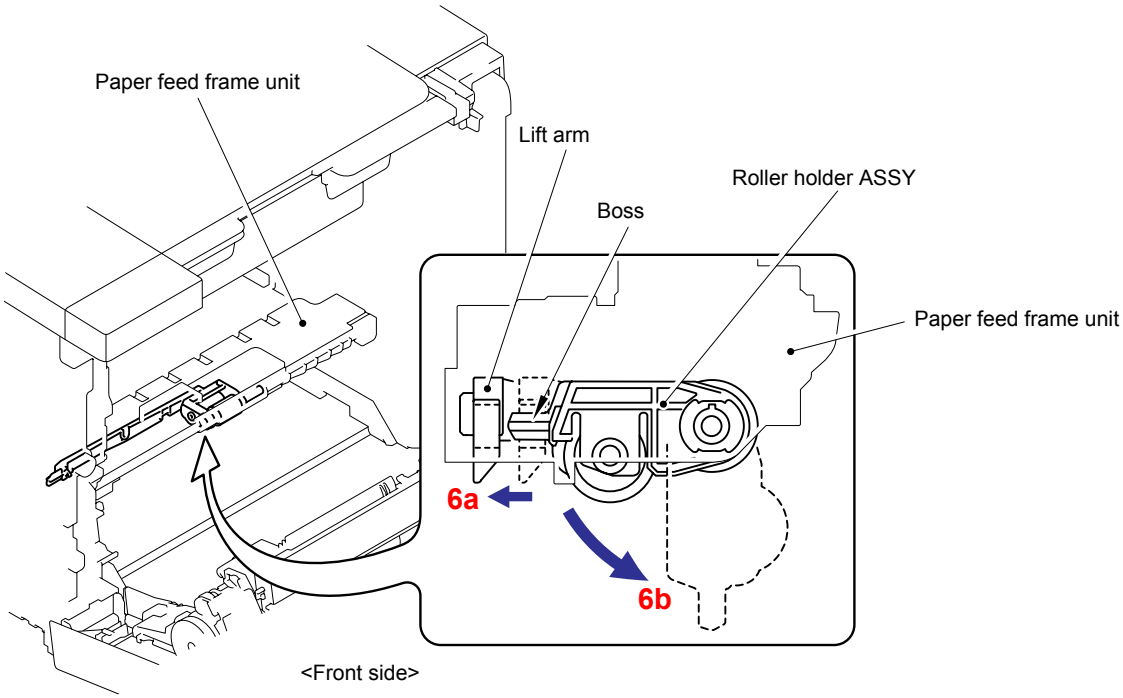


Fig. 2-41

(7) Slide the Roller holder ASSY to the direction of the arrows 7a, 7b and 7c in this order and remove it.

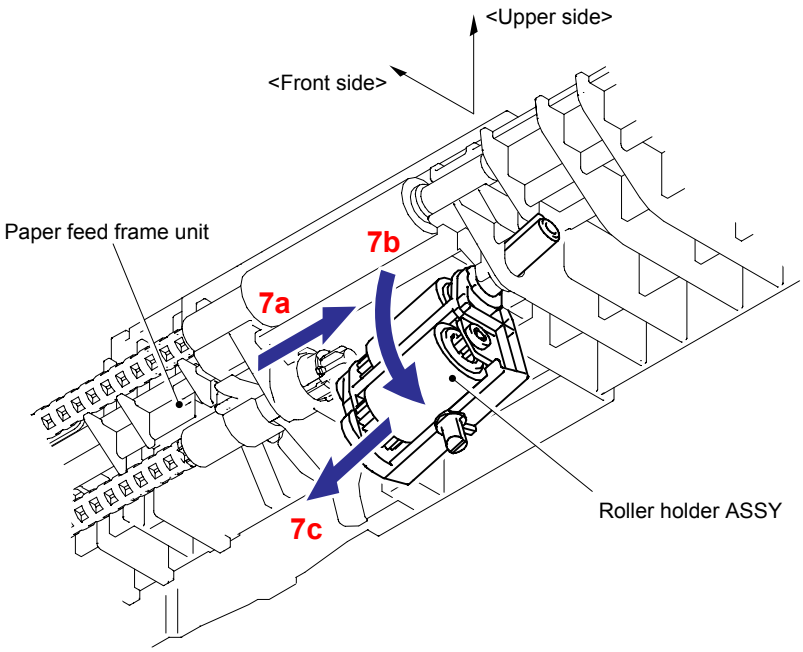


Fig. 2-42

<Installing Procedure>

(1) Assemble the Roller holder ASSY onto the Paper feed frame unit in the order of the arrow 1a, 1b and 1c.

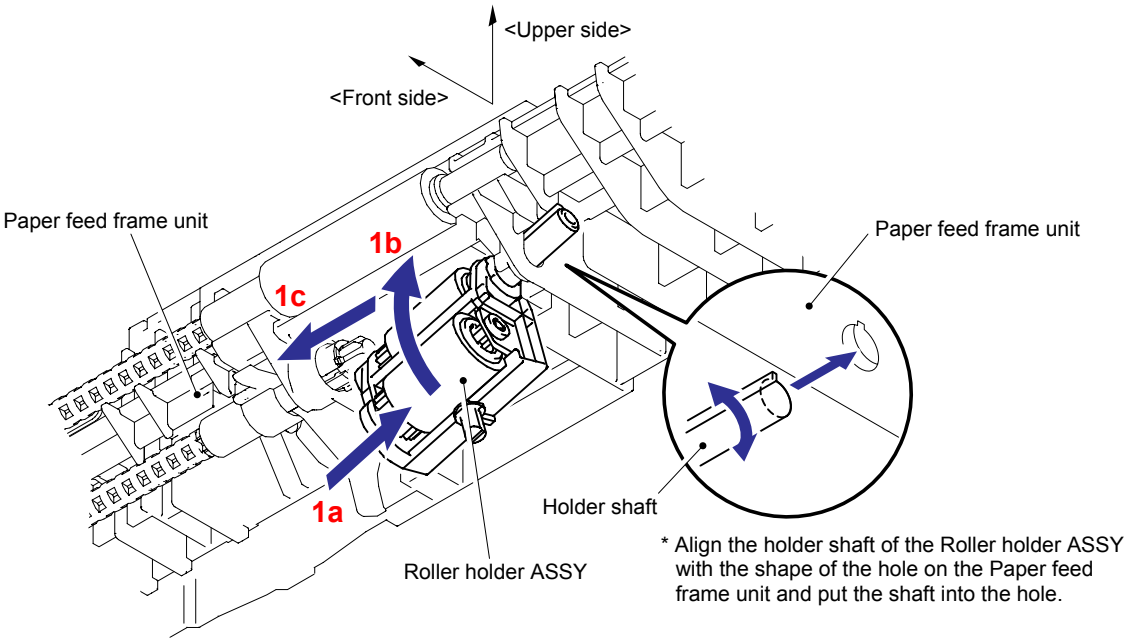


Fig. 2-43

(2) Turn the Roller holder ASSY to the direction of the arrow 2a, push the Lift arm to the direction of the arrow 2b and fix the Boss of the Roller holder ASSY into the hole of the Lift arm.

Note:

Check whether the Lift arm is moved by putting the Roller holder upwards. If the Lift arm is not moved, it is not assembled correctly.

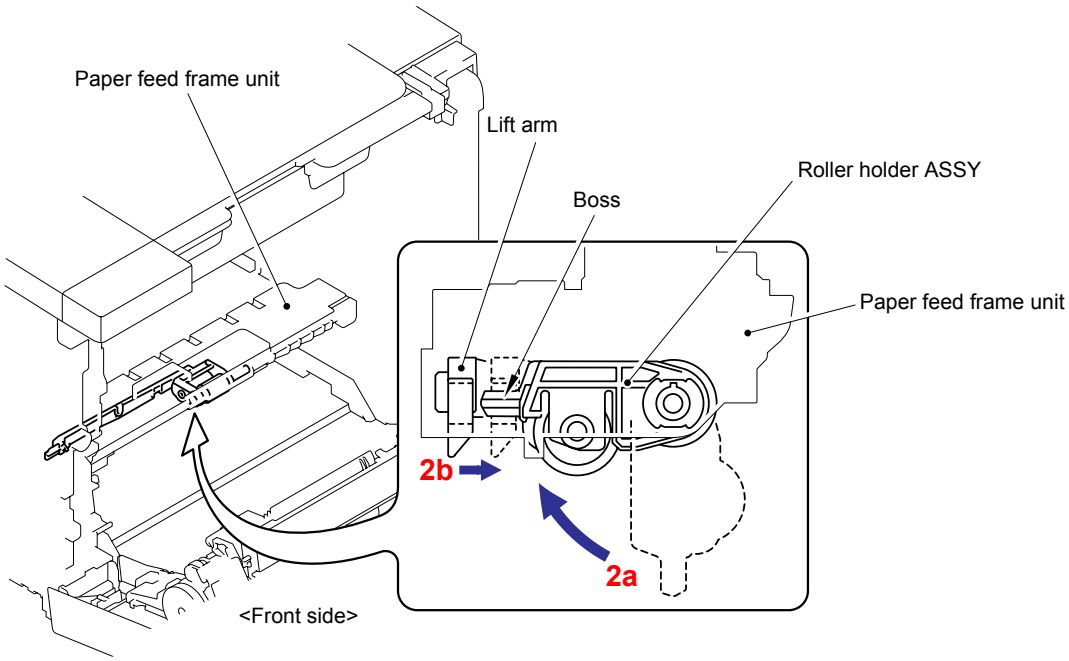


Fig. 2-44

(3) Close the Front door unit ASSY.

(4) Assemble the Separation pad spring. Put the positioning section of the Separation pad ASSY into the spring and catch the two Hooks.

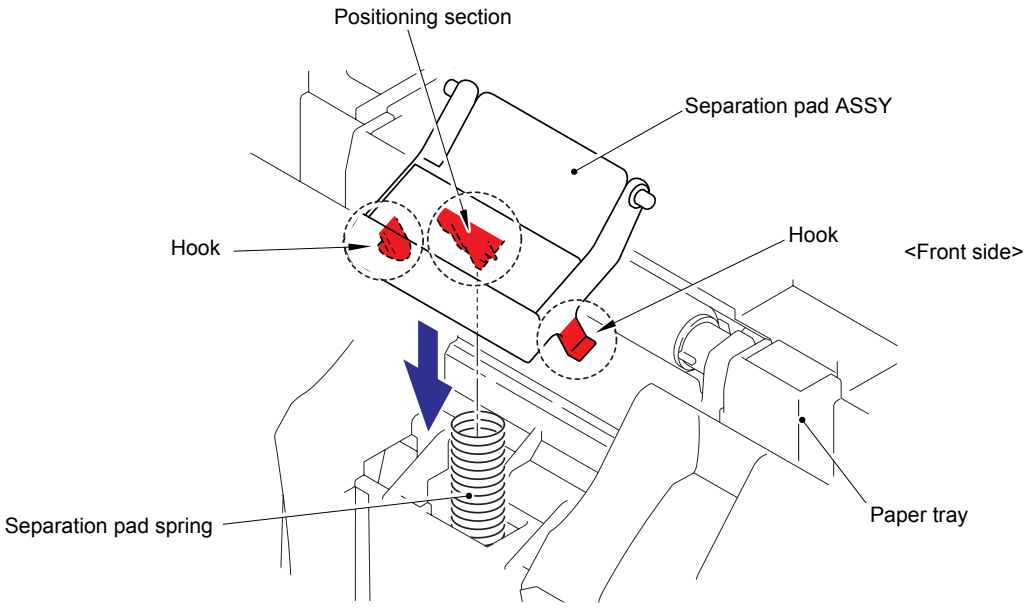


Fig. 2-45

(5) Push both sides of the Separation pad ASSY inwards and put its Pins into the Paper tray.

Note:

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

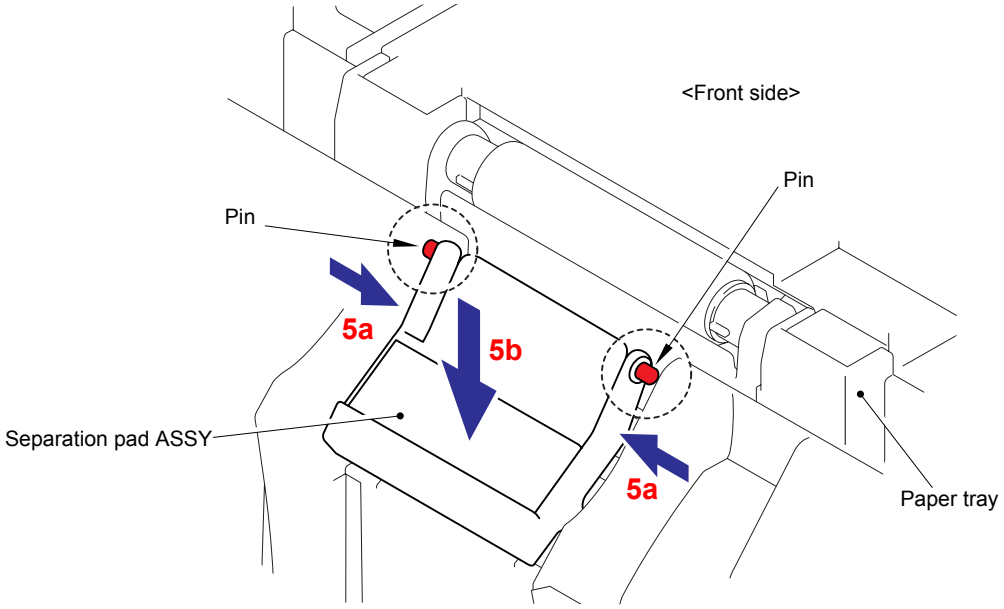


Fig. 2-46

(6) Install the Paper tray into the machine.

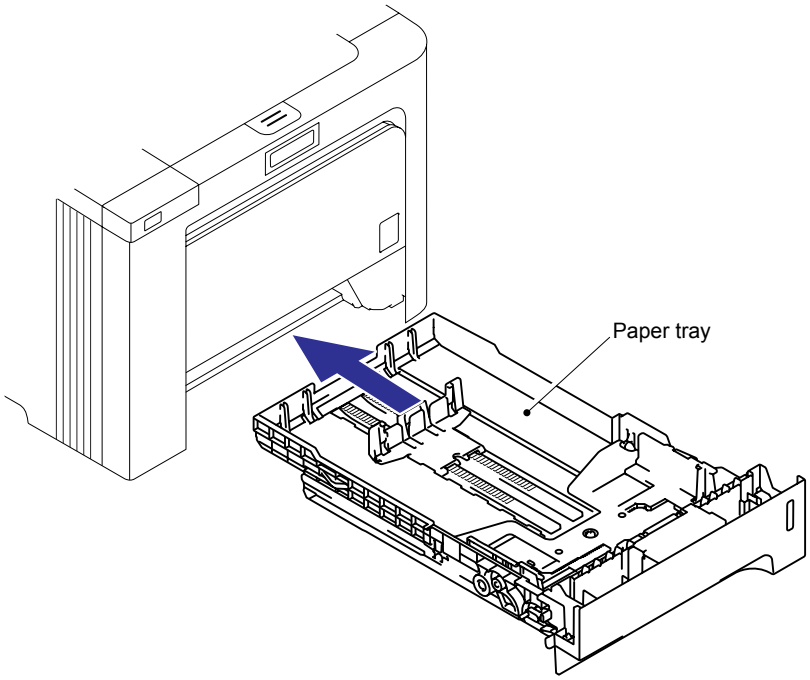


Fig. 2-47

(7) After replacing the Paper feeding kit, reset the counter. (Refer to "2.3 Parts Life Reset Function" in this chapter.)

2.2.4 MP Paper Feeding Kit

<Uninstalling Procedure>

(1) Press the Front cover release button, and open the Front door unit ASSY.

(2) Release the two Hooks to remove the MP feed frame cover from the Front door unit ASSY.

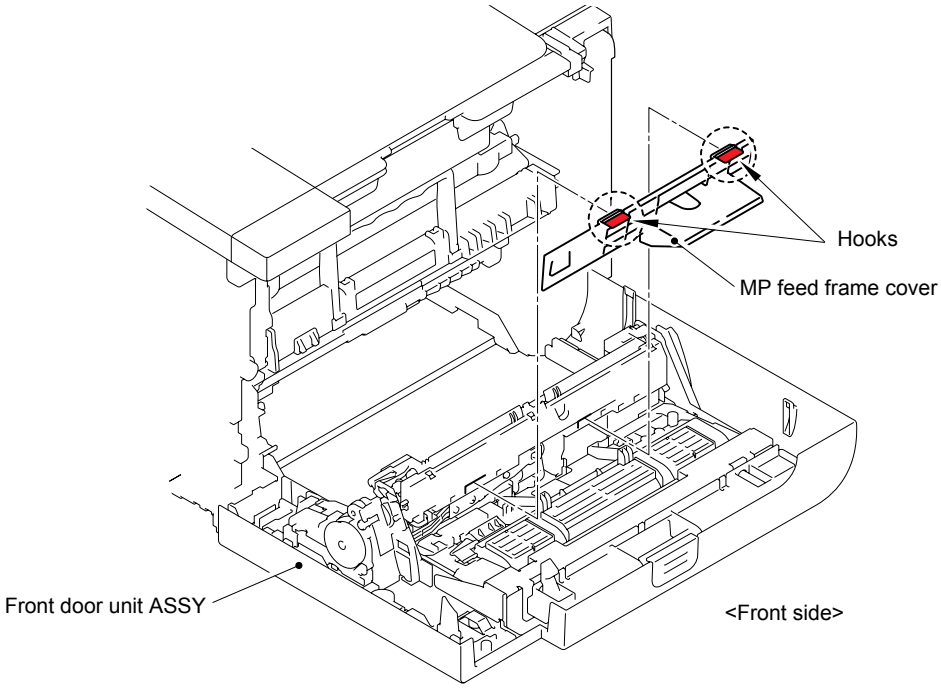


Fig. 2-48

(3) Remove the MP lift arm 2.

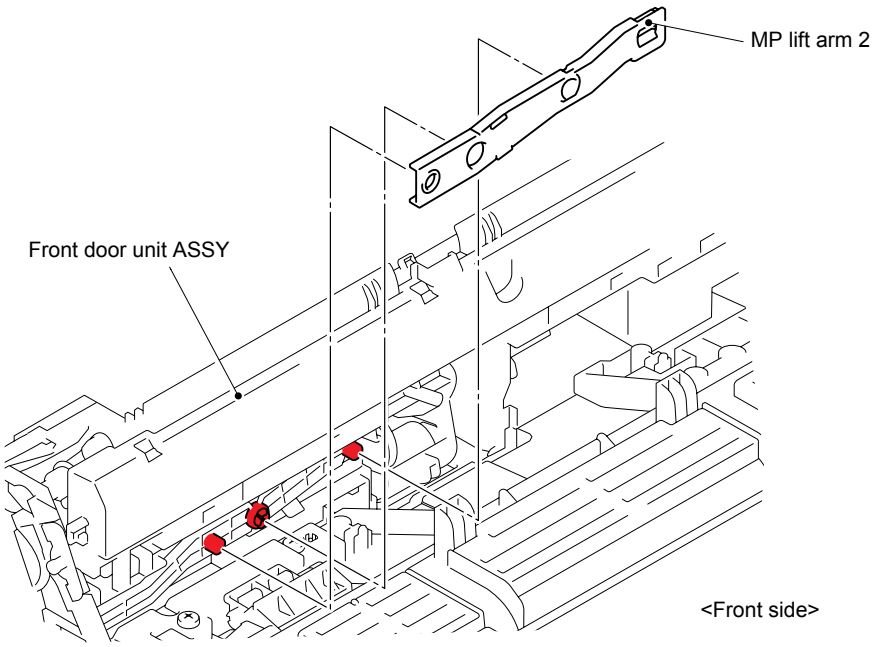


Fig. 2-49

(4) Lift up the Hook and release it in the direction of arrow 4a. Slide the Holder bush MP in the direction of arrow 4b, and then remove the Holder bush MP from the shaft of the MP roller holder ASSY.

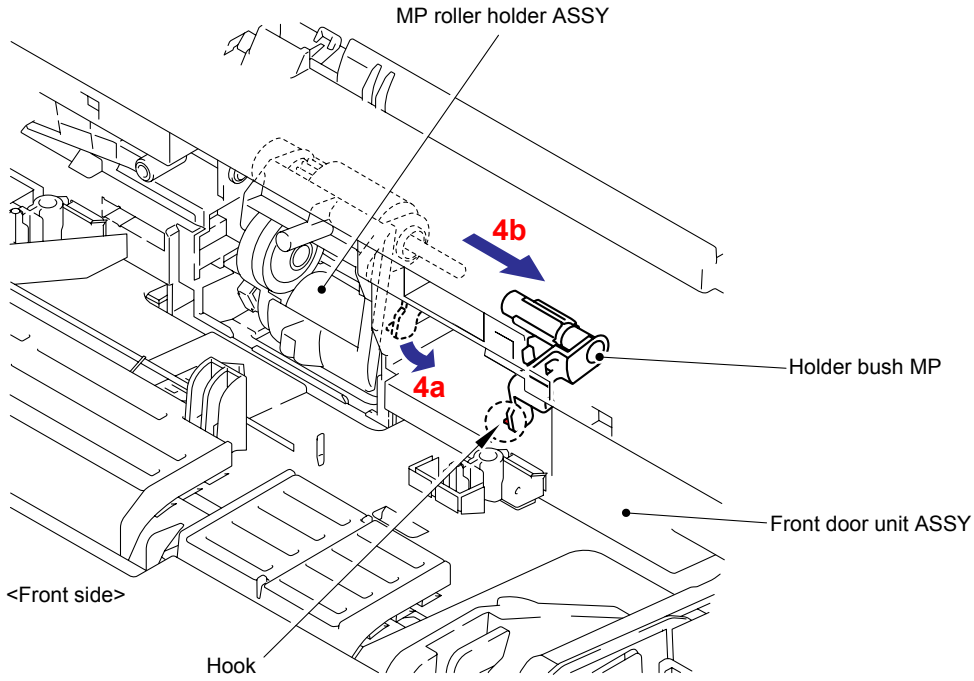


Fig. 2-50

(5) Slide the MP roller holder ASSY in the direction of arrow 5a and slightly pull it down in the direction of arrow 5b. Then, remove it.

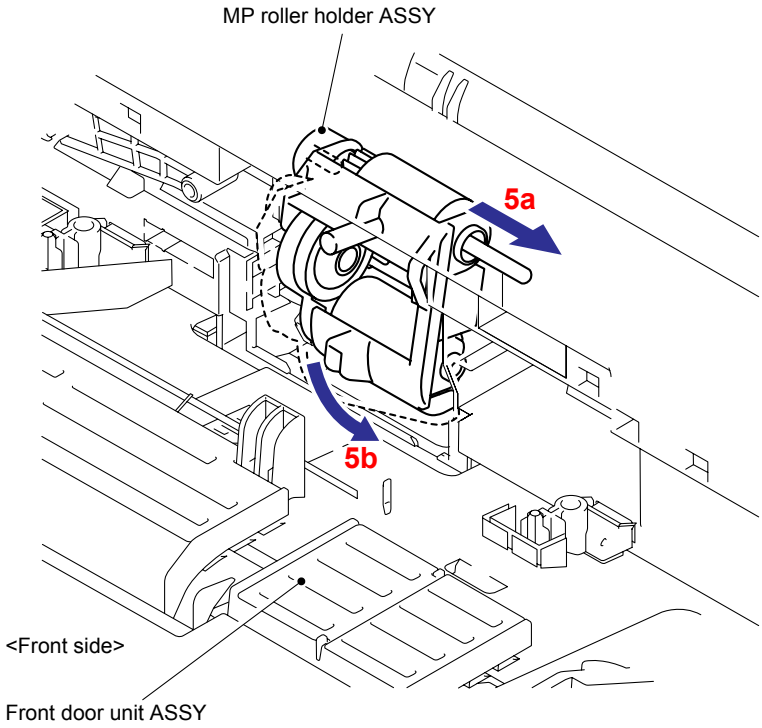


Fig. 2-51

(6) Remove the Separation pad ASSY MP from the Front door unit ASSY.

(7) Remove the Separation pad spring MP.

Note:

Be careful not to loose the Separation pad spring MP.

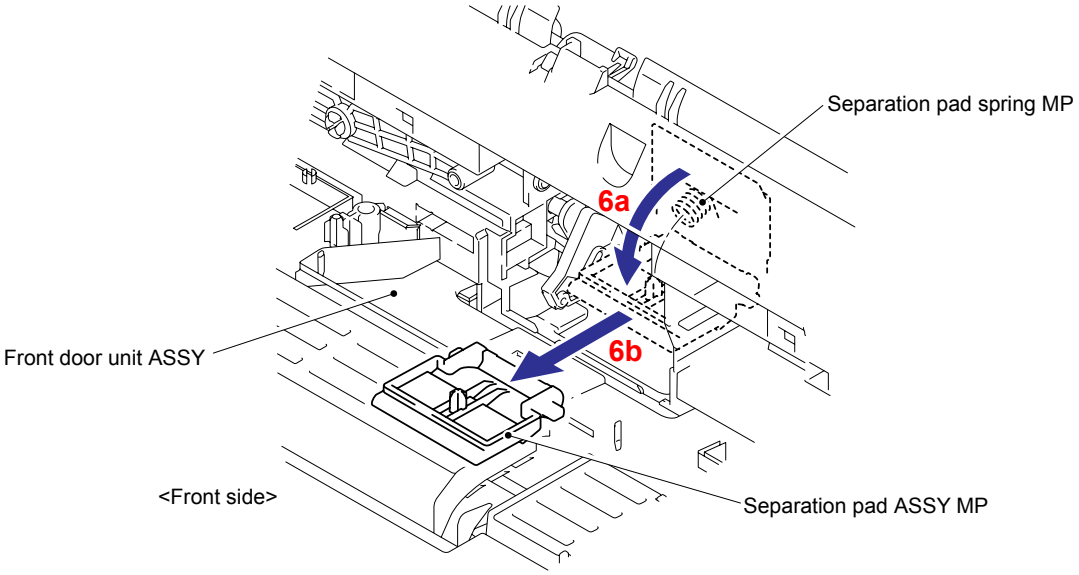


Fig. 2-52

<Installing Procedure>

(1) Assemble the Separation pad Spring MP.

(2) Put the positioning section of the Separation pad ASSY MP into the Separation pad spring MP and catch the two Hooks to fix the Separation pad ASSY MP.

Note:

Check that the Separation pad ASSY MP moves smoothly by pushing it up and down.

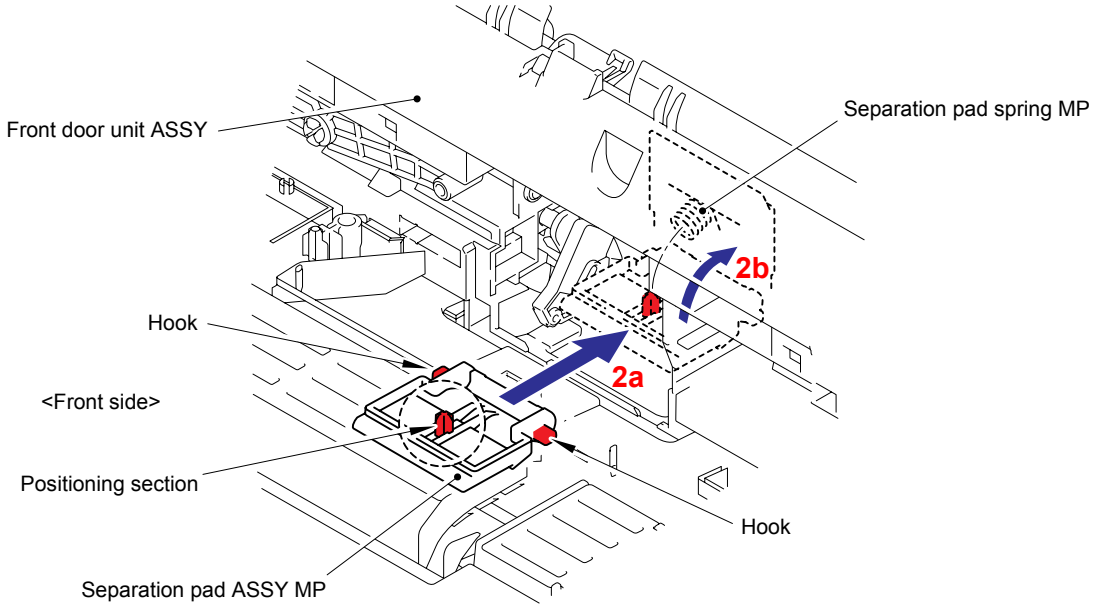


Fig. 2-53

(3) Put the Holder shaft into the hole while holding the Separation pad ASSY MP. Slide the MP roller holder ASSY to the direction of the arrow 3b to re-assemble it.

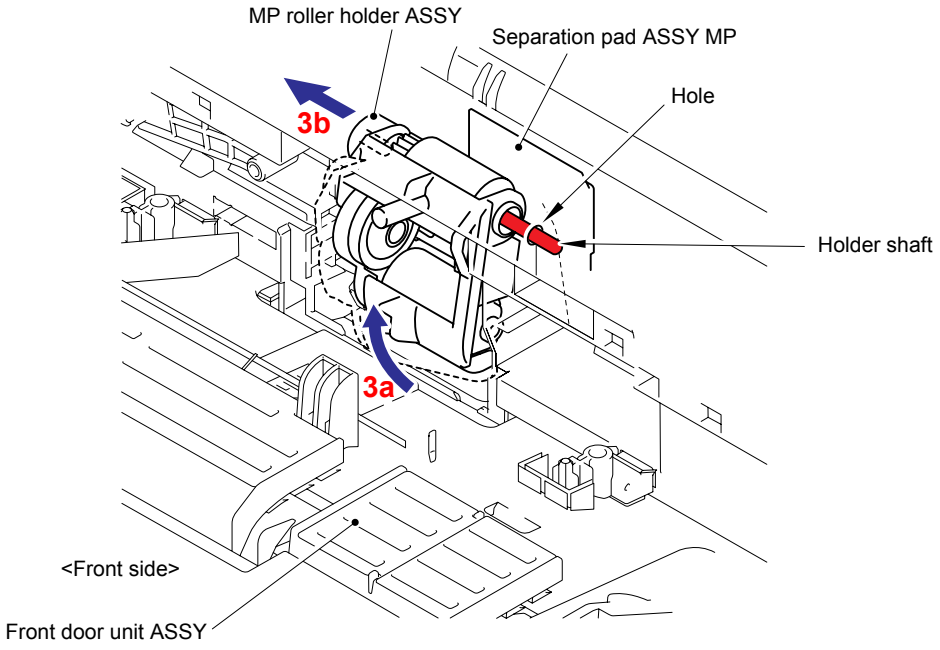


Fig. 2-54

(4) Put into the Holder bush MP to the direction of the arrow 4a and turn it to the direction of the arrow 4b so that the Hook catches.

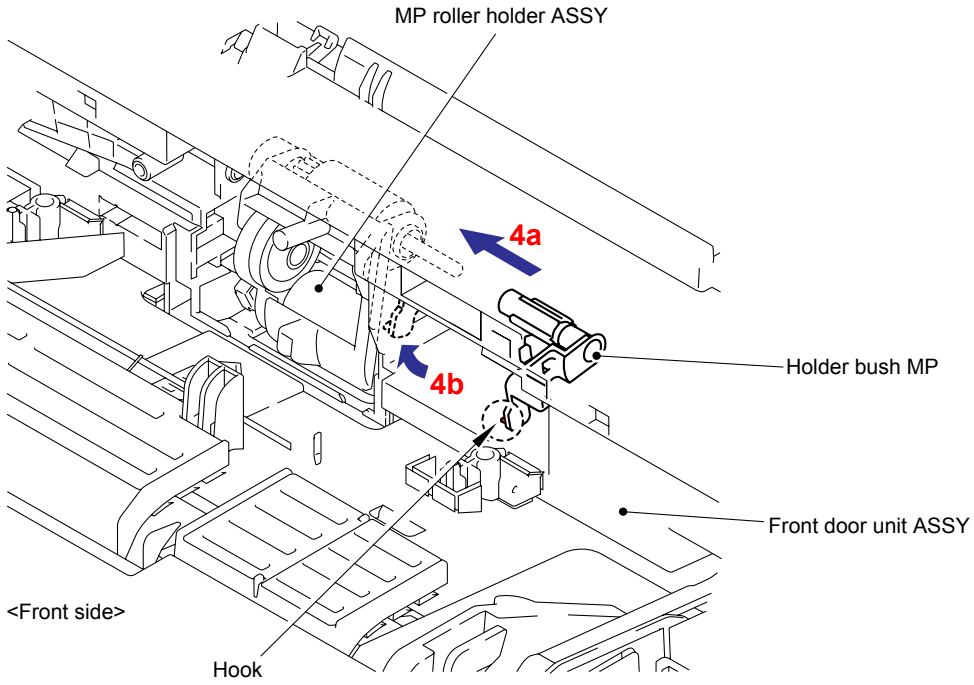


Fig. 2-55

(5) Assemble the MP lift arm 2 with aligning it with the three Bosses provided on the Front door unit ASSY.

Note:

When assembling the MP lift arm 2, make sure that the shaft of the MP roller holder ASSY is put into the hole on the MP lift arm 2.

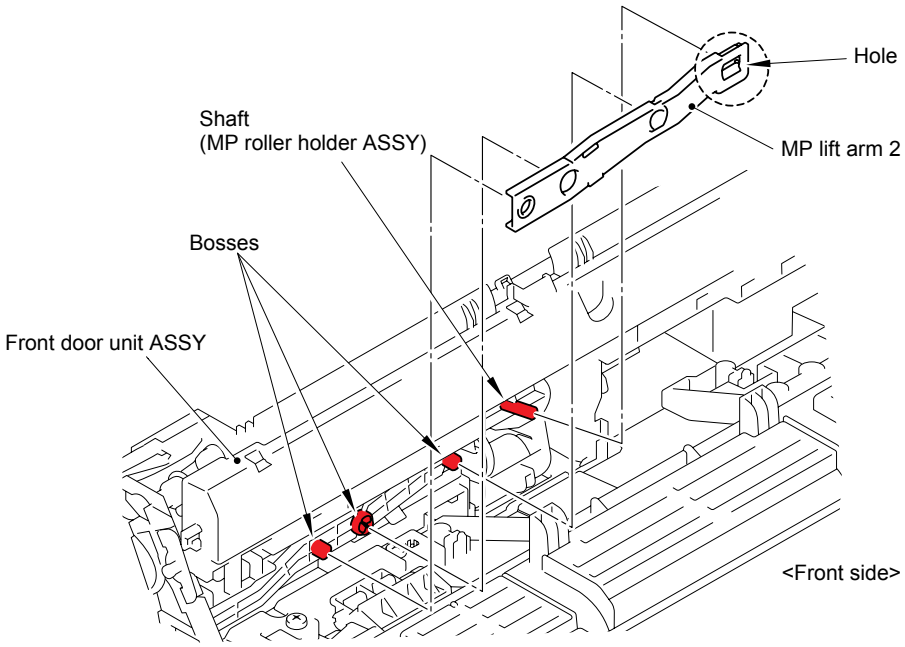


Fig. 2-56

(6) Assemble the MP feed frame cover onto the Front door unit ASSY.

(7) Close the Front door unit ASSY.

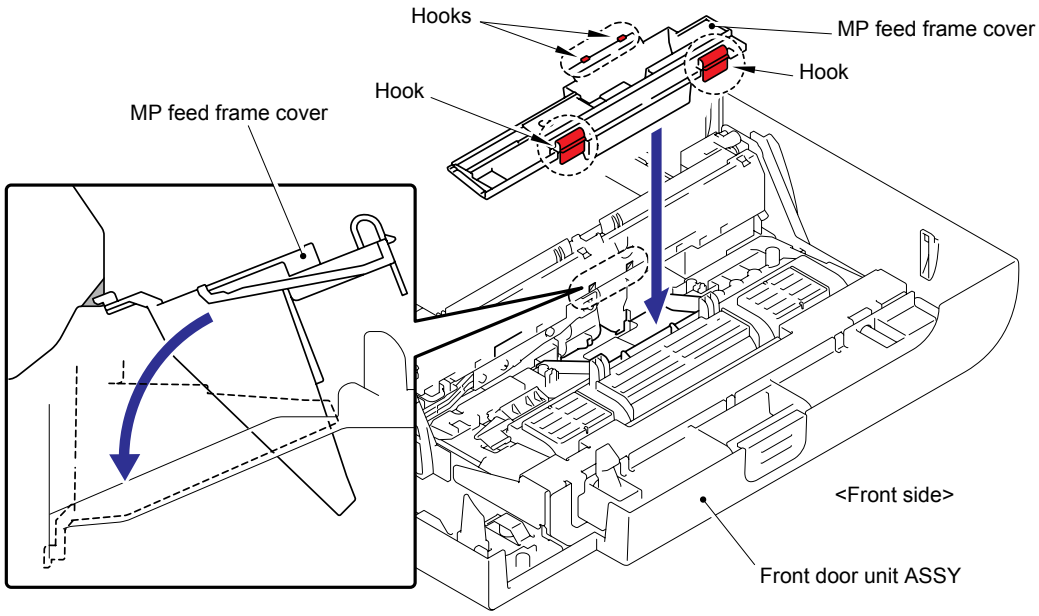


Fig. 2-57

(8) After replacing the MP paper feeding kit, reset the counter. (Refer to "2.3 Parts Life Reset Function" in this chapter.)

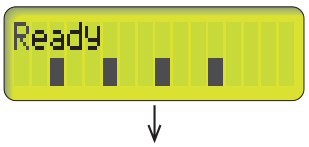
2.3 Parts Life Reset Function

This function is provided for service personnel in order to reset the counter of each periodical replacement part and count the number of replacement times when replacing the periodical replacement parts.

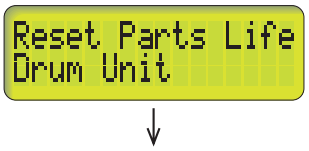
■ Pressing the two buttons in the normal status

Panel Operation	Function
Go & ▲ (+)	Indicates the reset menu (“Reset Parts Life”) (Resets the counter of the periodical replacement parts and counts the number of replacement times.)

<Operating Procedure>



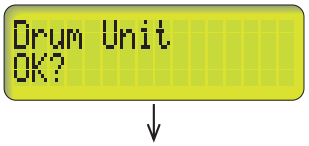
(1) Press the **Go** and ▲ buttons at the same time in the ready status.



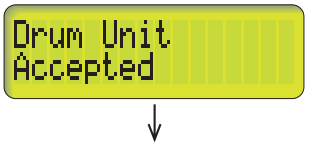
(2) The “Reset Parts Life” will appear on the LCD. Select the applicable periodical replacement part by pressing the ▲ or ▼ button and press the **OK** button.

< Periodical replacement parts are indicated on the LCD >

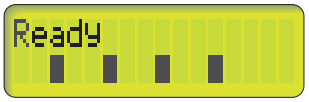
- Drum Unit - Belt Unit - PF KitMP - PF Kit1
- PF Kit2 - Fuser Unit - Laser Unit



(3) The “OK?” will appear on the LCD. Then, press the **OK** button.



(4) The machine implements clearing the counter.



(5) The machine returns to the ready status.

Note:

- All periodical replacement parts are always indicated on the LCD even though their lives do not reach 0 %.
- The PF kit2 is always indicated even though Tray 2 is not installed, or it is not supported for the model to be used.
- The machine returns to the ready status automatically if no panel operation is implemented for 30 seconds.

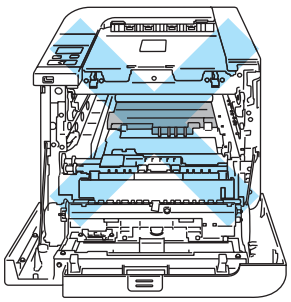
CHAPTER 3 DISASSEMBLY AND ASSEMBLY

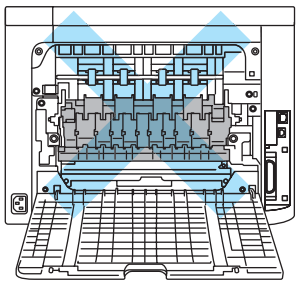
1. SAFETY PRECAUTIONS

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

HOT SURFACE

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

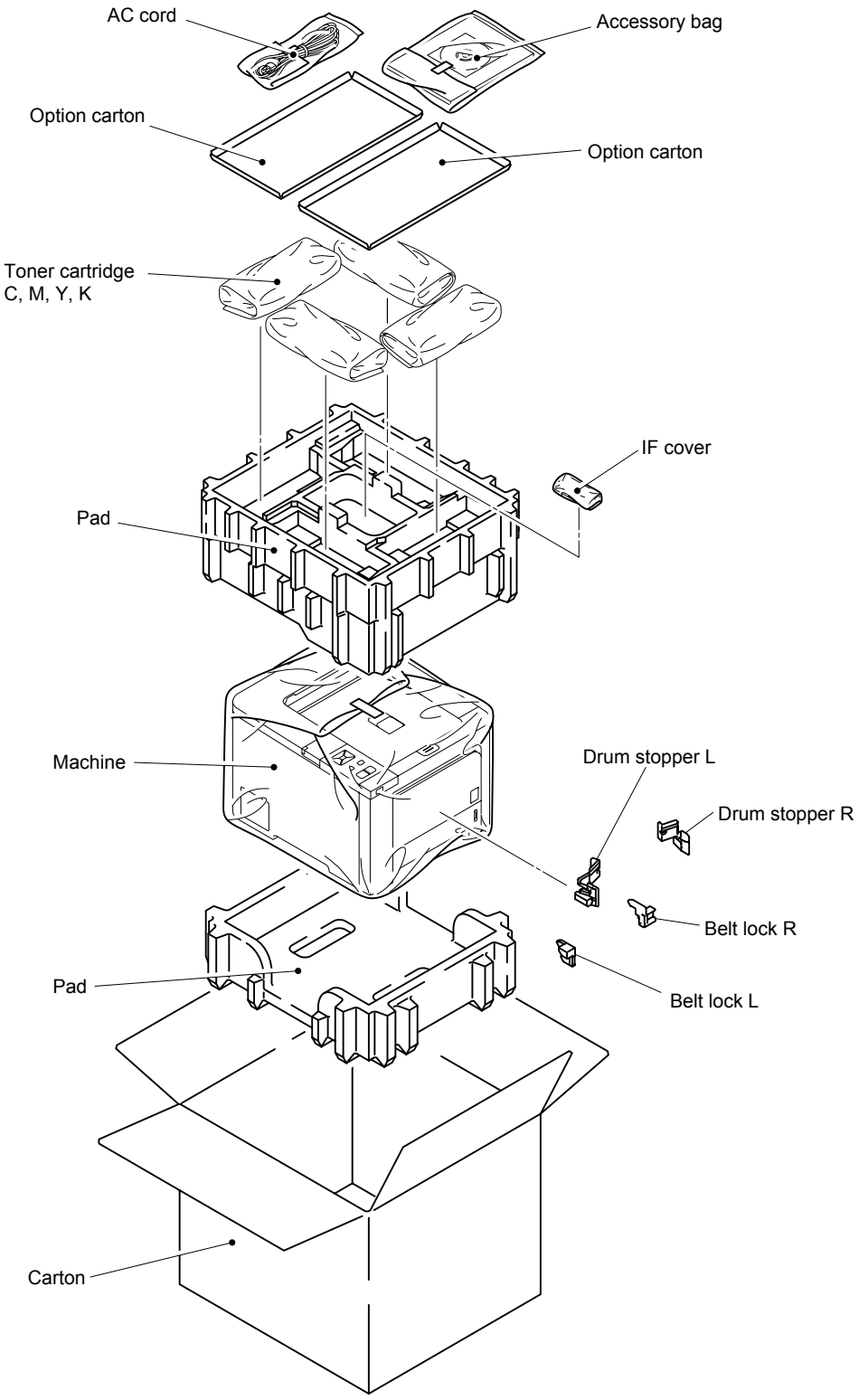




Caution:

- 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 short-circuited.
- 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.

2. PACKING



3. SCREW TORQUE LIST

Tightening Note:

When tightening any of the screws shaded in the table below, slowly turn it counterclockwise (in the direction to loosen the screw) with your hand until you feel that the screw is a little dropped in the hole. Then, slightly turn it clockwise (in the direction to tighten the screw) with your hand and tighten it according to the specified torque with a screwdriver.

Note:

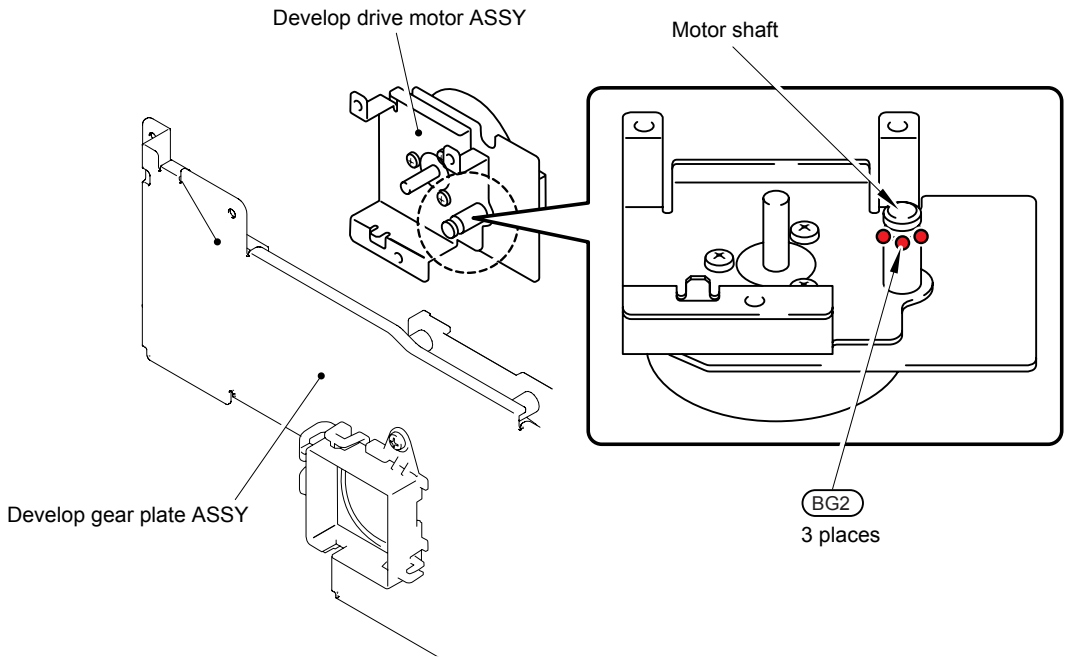
For verifying the shape of each screw, refer to "APPENDIX 4 SCREW CATALOGUE".

Location of screw	Screw type	Q'ty	Tightening torque N m (kgf • cm)
Tray cover ASSY	Taptite, bind B M4x12	2	0.80 ±0.1 (8 ±1)
Fuser unit	Taptite, pan B M4x14	2	1.20 ±0.1 (12 ±1)
Back cover upper	Taptite, cup S M3x8	2	0.80 ±0.1 (8 ±1)
Drive shaft holder	Taptite, bind B M3x10	1	0.60 ±0.1 (6 ±1)
Paper eject ASSY DX/SX	Taptite, cup B M4x12	2	1.20 ±0.1 (12 ±1)
	Taptite, cup S M3x6	1	0.80 ±0.1 (8 ±1)
Back cover ASSY	Taptite, cup S M3x8	2	0.80 ±0.1 (8 ±1)
Transfer HVPS PCB unit	Taptite, cup S M3x6	2	0.80 ±0.1 (8 ±1)
Density shield plate 1	Taptite, bind B M3x8	2	0.60 ±0.1 (6 ±1)
Earth plate 2	Taptite, cup S M3x6	1	0.80 ±0.1 (8 ±1)
Earth plate 3	Taptite, bind B M3x8	1	0.60 ±0.1 (6 ±1)
Registration-mark sensor PCB ASSY 1	Taptite, bind B M3x8	1	0.60 ±0.1 (6 ±1)
Registration-mark sensor PCB ASSY 2	Taptite, bind B M3x8	1	0.60 ±0.1 (6 ±1)
Density sensor	Taptite, bind B M3x8	2	0.60 ±0.1 (6 ±1)
Registration relay PCB ASSY	Taptite, bind B M3x8	1	0.60 ±0.1 (6 ±1)
Transfer HVPS PCB ASSY	Taptite, cup B M3x10	3	0.70 ±0.1 (7 ±1)
	Taptite, cup S M3x6	1	0.80 ±0.1 (8 ±1)
Side cover L ASSY	Taptite, cup B M4x12	3	1.20 ±0.1 (12 ±1)
	Taptite, cup S M3x8	1	0.80 ±0.1 (8 ±1)
Side plate LB	Taptite, cup B M4x12	1	1.20 ±0.1 (12 ±1)
	Taptite, cup S M4x8	1	1.20 ±0.1 (12 ±1)
	Taptite, cup S M3x6	3	0.80 ±0.1 (8 ±1)
Side cover R ASSY	Taptite, cup B M4x12	2	1.20 ±0.1 (12 ±1)
	Taptite, cup S M4x8	2	1.20 ±0.1 (12 ±1)
Paper feed frame unit	Taptite, bind B M3x10	2	0.70 ±0.1 (7 ±1)
	Taptite, cup S M3x6	1	0.70 ±0.1 (7 ±1)
PF plate	Taptite, bind B M3x8	5	0.40 ±0.1 (4 ±1)
Belt cleaner release sensor PCB ASSY	Taptite, bind B M3x8	1	0.50 ±0.1 (5 ±1)
THM/HUM sensor holder ASSY	Taptite, cup S M3x6	4	0.69 ±0.1 (6.9 ±1)
THM/HUM ground plate	Taptite, cup S M3x6	1	0.69 ±0.1 (6.9 ±1)
Release rack plate	Taptite, cup B M3x8	1	0.49 ±0.1 (4.9 ±1)

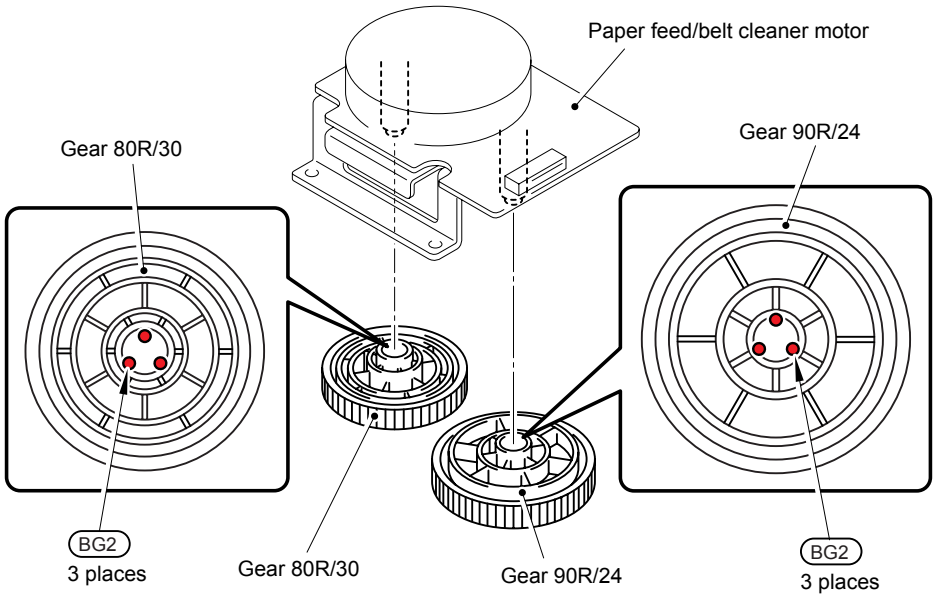
Location of screw	Screw type	Q'ty	Tightening torque N m (kgf • cm)
Front door unit earth	Taptite, cup S M3x6	1	0.80 ±0.1 (8 ±1)
Wire support rope	Shoulder screw	1	0.80 ±0.1 (8 ±1)
Harness cover MP	Taptite, cup S M3x6	1	0.78 ±0.1 (7.8 ±1)
Front door sub	Taptite, cup B M4x10	5	0.59 ±0.1 (5.9 ±1)
	Taptite, cup B M3x8	1	0.39 ±0.1 (3.9 ±1)
EL electrode spring cover ASSY	Taptite, bind B M3x8	2	0.392 ±0.098 (3.92 ±0.98)
EL spring harness ASSY	Taptite, bind B M3x8	2	0.392 ±0.098 (3.92 ±0.98)
Hook cover	Taptite, cup B M4x10	2	0.59 ±0.1 (5.9 ±1)
Front door main	Taptite, bind B M4x10	2	0.59 ±0.1 (5.9 ±1)
Engine PCB ASSY	Taptite, cup S M3x6	5	0.80 ±0.1 (8 ±1)
Ground spring plate	Taptite, cup S M3x6	1	0.80 ±0.1 (8 ±1) (Frame unit side)
		1	0.50 ±0.1 (5 ±1) (Main PCB ASSY side)
Ground plate	Taptite, cup S M3x6	1	0.80 ±0.1 (8 ±1)
	Taptite, bind B M4x12	1	1.20 ±0.1 (12 ±1)
Main PCB ASSY	Taptite, cup S M3x6	1	0.80 ±0.1 (8 ±1)
Parallel connector	Screw	2	0.80 ±0.1 (8 ±1)
Top cover ASSY	Taptite, cup B M4x14	2	1.20 ±0.1 (12 ±1)
	Taptite, cup S M3x8	3	0.80 ±0.1 (8 ±1)
Top cover panel ASSY	Taptite, cup B M4x12	3	0.80 ±0.1 (8 ±1)
LCD panel PCB ASSY	Taptite, bind B M3x8	3	0.50 ±0.1 (5 ±1)
USB holder	Taptite, bind B M3x8	2	0.50 ±0.1 (5 ±1)
Paper chute	Taptite, cup B M4x12	6	0.80 ±0.1 (8 ±1)
Top cover R	Taptite, cup B M4x12	1	1.20 ±0.1 (12 ±1)
Wireless LAN holder	Taptite, cup S M3x8	1	0.80 ±0.1 (8 ±1)
Hook slope	Taptite, cup S M3x8	4	0.70 ±0.1 (7 ±1)
Scanner cover	Taptite, cup S M3x6	8	0.90 ±0.1 (9 ±1) (Top side)
		1	0.80 ±0.1 (8 ±1) (Front side)
Laser unit	Taptite, cup S M3x6 SR	7	0.80 ±0.1 (8 ±1)
Develop gear plate ASSY	Taptite, cup S M3x6	7	0.80 ±0.1 (8 ±1)
Develop drive motor ASSY	Taptite, cup S M3x6	3	0.70 ±0.1 (7 ±1)
Gear guide holder	Taptite, cup B M3x10	5	0.70 ±0.1 (7 ±1)
Harness shield plate	Taptite, cup S M3x6	2	0.80 ±0.1 (8 ±1) (Frame unit side)
		1	0.50 ±0.1 (5±1) (Main shield side)
Engine PCB plate	Taptite, cup S M3x6	4	0.80 ±0.1 (8 ±1)
Drum drive motor 1, 2	Taptite, cup S M3x6	4	0.70 ±0.1 (7 ±1)
Drum drive ASSY	Taptite, bind B M4x12	6	1.20 ±0.1 (12 ±1)
Drum phase sensor PCB ASSY 1, 2	Taptite, bind S M3x6	2	0.70 ±0.1 (7 ±1)
Drive frame unit ASSY	Taptite, bind B M4x12	3	1.20 ±0.1 (12 ±1)
Paper feed/belt cleaner motor ASSY	Taptite, cup S M3x6	4	0.60 ±0.1 (6±1)
Develop release sensor PCB ASSY	Taptite, cup B M3x8	1	0.60 ±0.1 (6 ±1)
Develop press drive L ASSY	Taptite, bind B M3x12	3	0.80 ±0.1 (8 ±1)
	Taptite, cup B M3x12	1	0.80 ±0.1 (8 ±1)

Location of screw	Screw type	Q'ty	Tightening torque N m (kgf • cm)
Develop release motor ASSY	Taptite, bind S M3x6	1	0.70 ±0.1 (7 ±1)
Release drive holder	Taptite, cup B M3x10	3	0.70 ±0.1 (7 ±1)
Toner sensor PCB ASSY (TE/NEW)	Taptite, bind B M3x8	3	0.55 ±0.05 (5.5 ±0.5)
	Taptite, cup B M3x8	1	0.55 ±0.05 (5.5 ±0.5)
Side plate R ASSY	Taptite, cup S M3x6	2	0.75 ±0.05 (7.5 ±0.5) (Back side)
	Taptite, cup S M3x6	2	0.90 ±0.1 (9 ±1) (Front side)
	Taptite, cup B M4x12	4	0.90 ±0.1 (9 ±1)
	Taptite, cup S M4x8	1	1.20 ±0.1 (12 ±1)
	Screw pan (S/P washer) M4x8	2	0.80 ±0.1 (8 ±1)
Drum lock lever R	Screw, bind M3x8	1	0.69 ±0.1 (6.9 ±1)
Drum lock lever L	Screw, bind M3x8	1	0.69 ±0.1 (6.9 ±1)
Charge HVPS PCB ASSY	Taptite, cup S M3x6	1	0.80 ±0.1 (8 ±1)
	Taptite, bind B M4x12	2	1.20 ±0.1 (12 ±1)
Toner LED PCB	Screw pan (S/P washer) M3x16	4	0.50 ±0.1 (5 ±1)
Power inlet socket	Taptite, flat B M3x10	2	0.60 ±0.1 (6 ±1)
Ground terminal	Screw pan (S/P washer) M4x8	1	0.80 ±0.1 (8 ±1)
PS PCB unit	Taptite, bind B M4x12	3	0.90 ±0.1 (9 ±1)
Belt gear plate ASSY	Taptite, cup B M4x12	3	1.20 ±0.1 (12 ±1)
	Screw, cup M3x6	1	0.70 ±0.1 (7 ±1)
LV fan duct	Taptite, bind B M3x10	1	0.80 ±0.1 (8 ±1)
Belt unit drive motor ASSY	Taptite, cup B M4x12	3	1.20 ±0.1 (12 ±1)
Belt unit drive motor	Screw, bind M3x5	2	0.70 ±0.1 (7 ±1)
LT tray guide left rear ASSY	Taptite, cup S M3x6	3	0.80 ±0.1 (8 ±1)
LT Solenoid ASSY	Screw flanged M3x3.5	1	0.50 ±0.1 (5 ±1)
Solenoid holder ASSY	Taptite, cup S M3x6	1	0.80 ±0.1 (8 ±1)
Pinch roller holder cover LT	Taptite, bind B M4x10	2	0.70 ±0.1 (7 ±1)
LT relay PCB ASSY	Taptite, cup S M3x6	1	0.80 ±0.1 (8 ±1)
LT cover right	Shoulder screw	3	0.80 ±0.1 (8 ±1)
LT cover left	Shoulder screw	3	0.80 ±0.1 (8 ±1)
LT cover rear	Shoulder screw	4	0.80 ±0.1 (8 ±1)
LT front cover, LT beam F	Taptite, cup S M3x6	4	0.80 ±0.1 (8 ±1)
LT frame unit	Taptite, cup S M3x6	7	0.80 ±0.1 (8 ±1)
	Taptite, bind B M4x10	1	0.80 ±0.1 (8 ±1)
LT beam R	Taptite, cup S M3x6	2	0.80 ±0.1 (8 ±1)

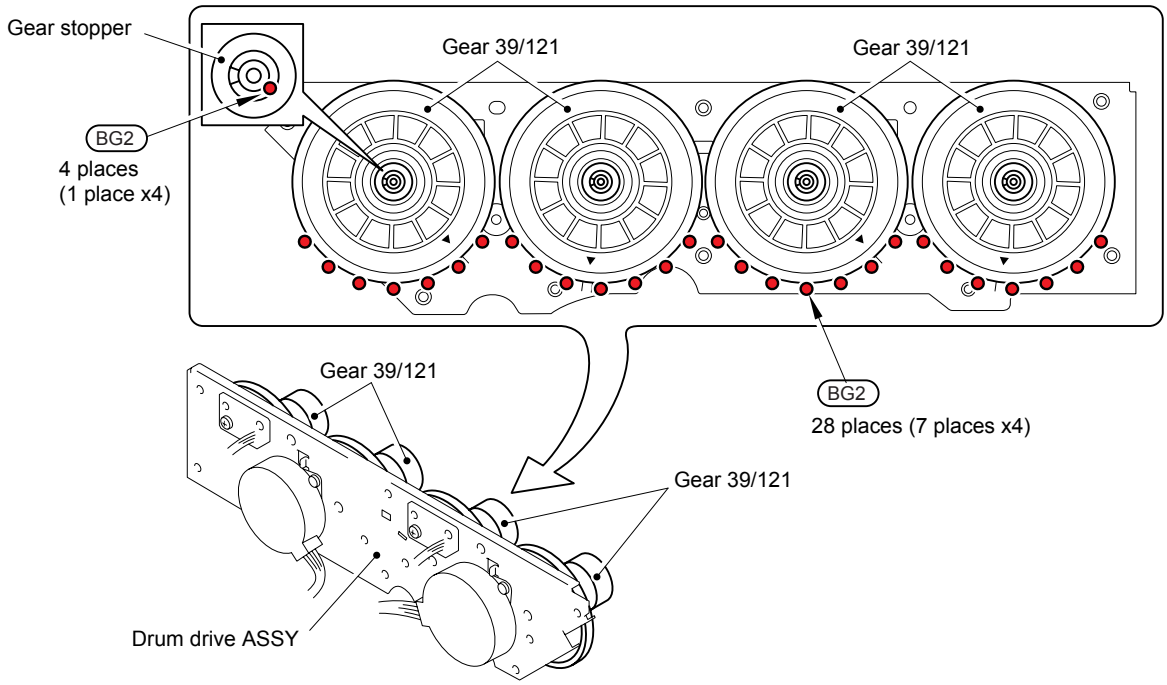
4. LUBRICATION



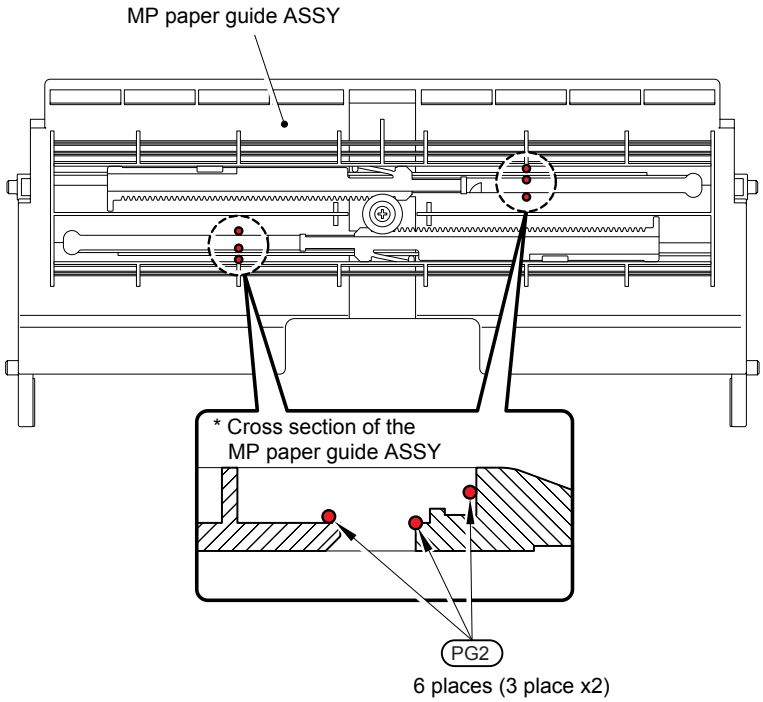
BG2: BG-MU (2mm dia. ball)



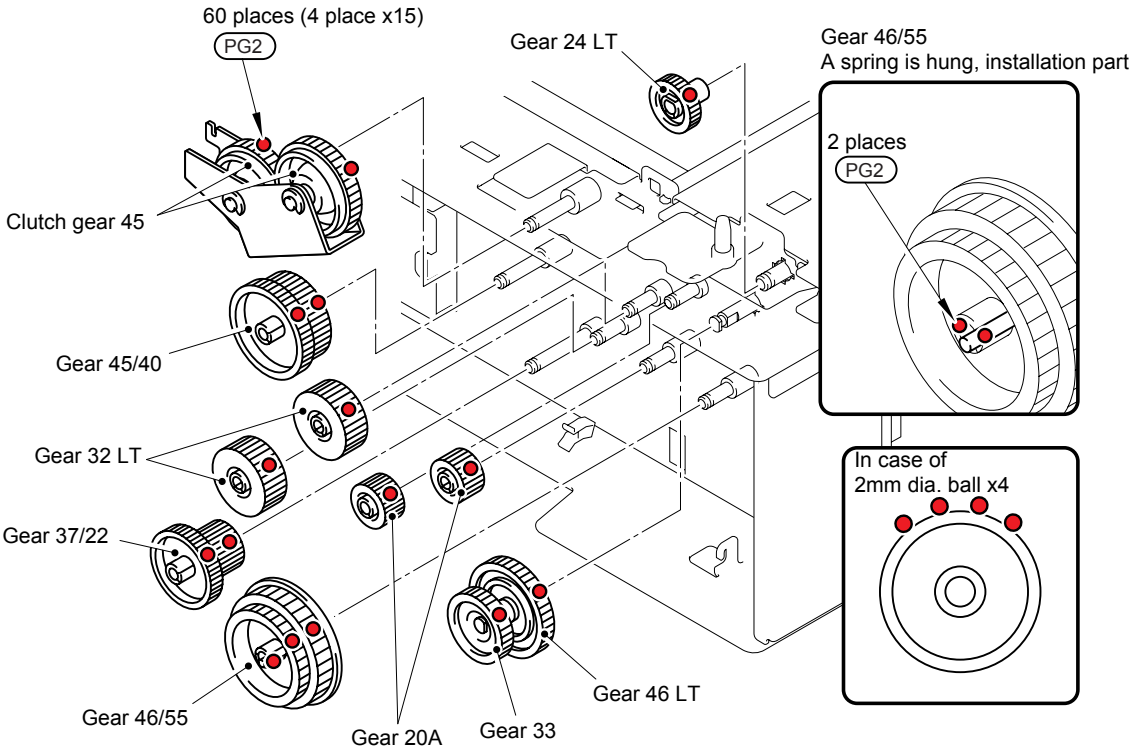
BG2: BG-MU (2mm dia. ball)



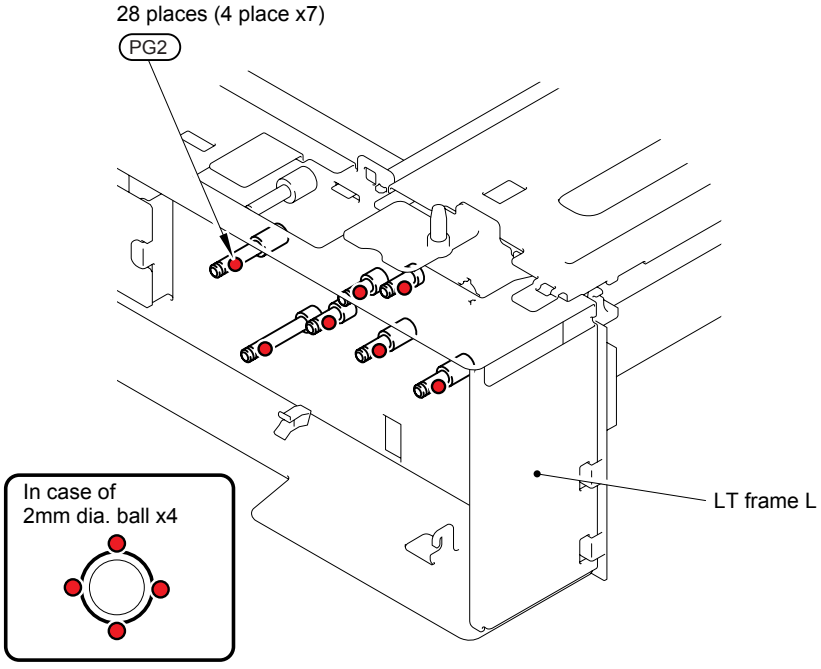
BG2: BG-MU (2mm dia. ball)



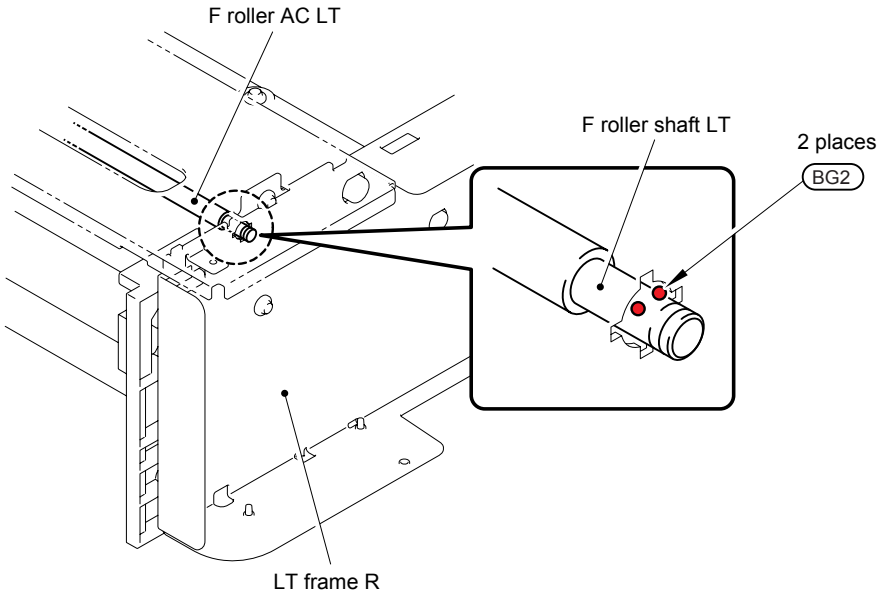
PG2: PG-661(W) (2mm dia. ball)



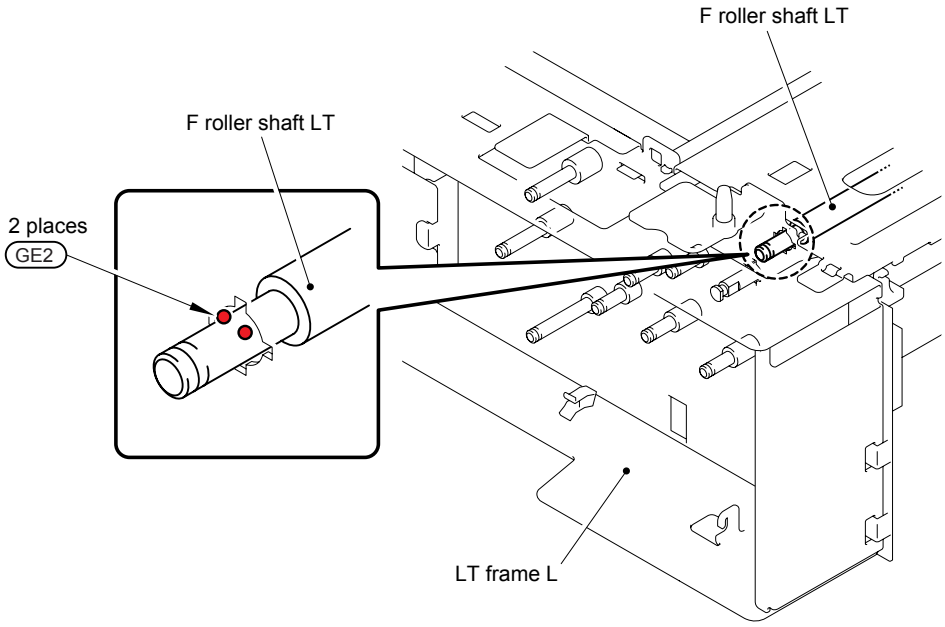
PG2: PG-661(W) (2mm dia. ball)



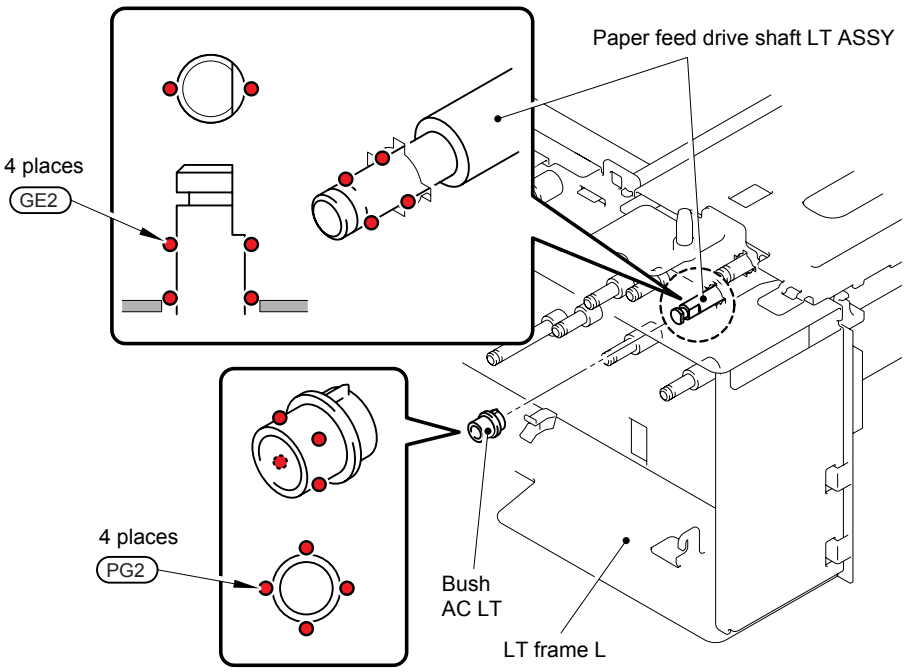
PG2: PG-661(W) (2mm dia. ball)



BG2: BG-MS (2mm dia. ball)

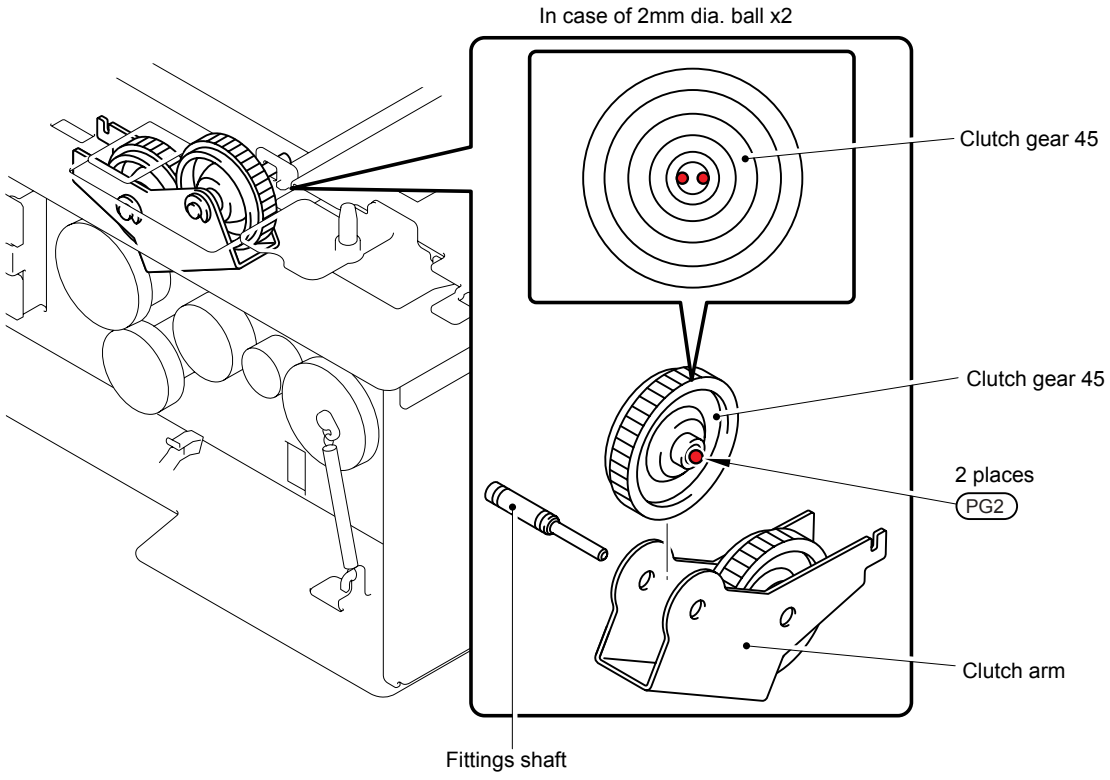


GE2: GE-676 (2mm dia. ball)

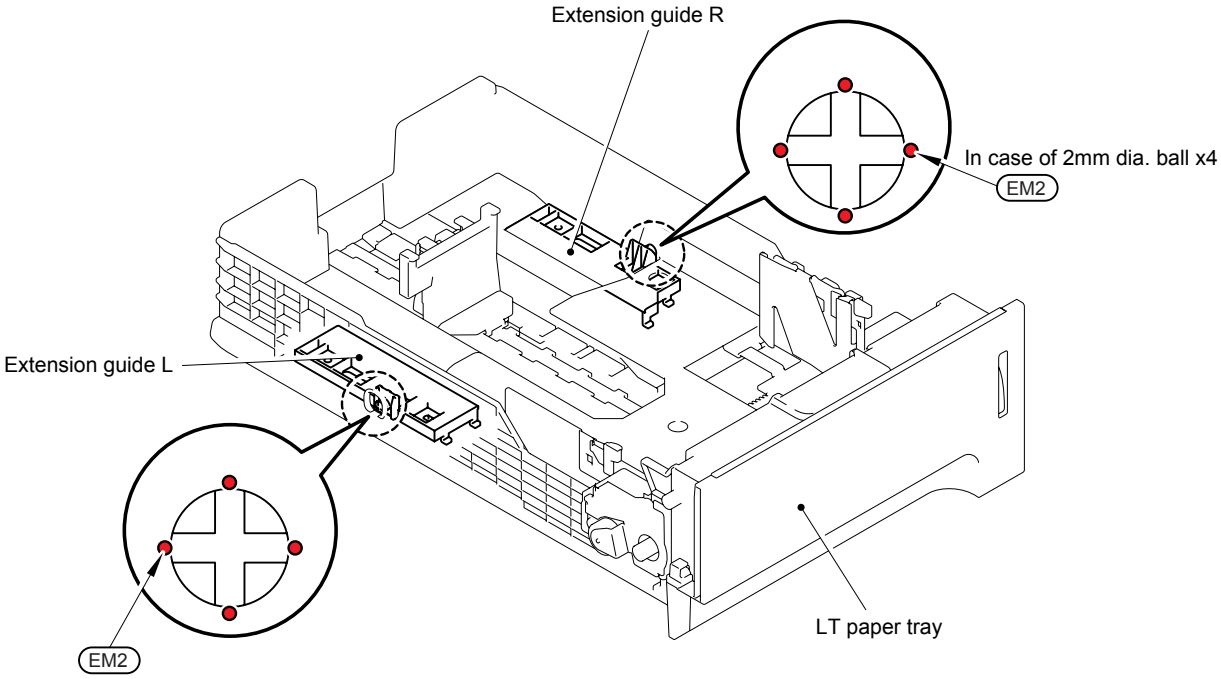


GE2: GE-676 (2mm dia. ball)

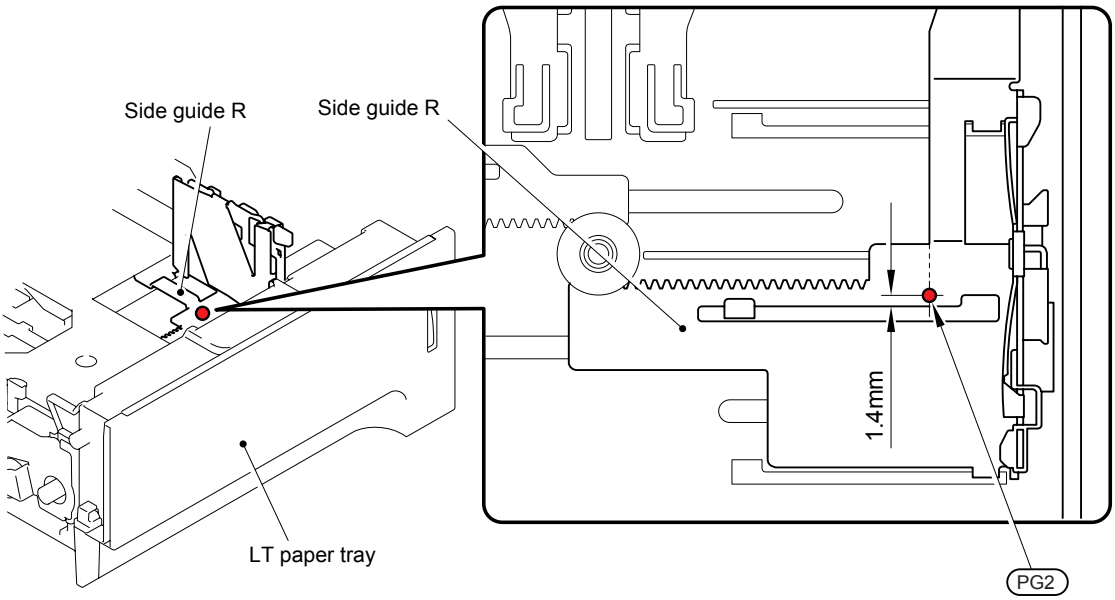
PG2: PG-661(W) (2mm dia. ball)



PG2: PG-661(W) (2mm dia. ball)



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

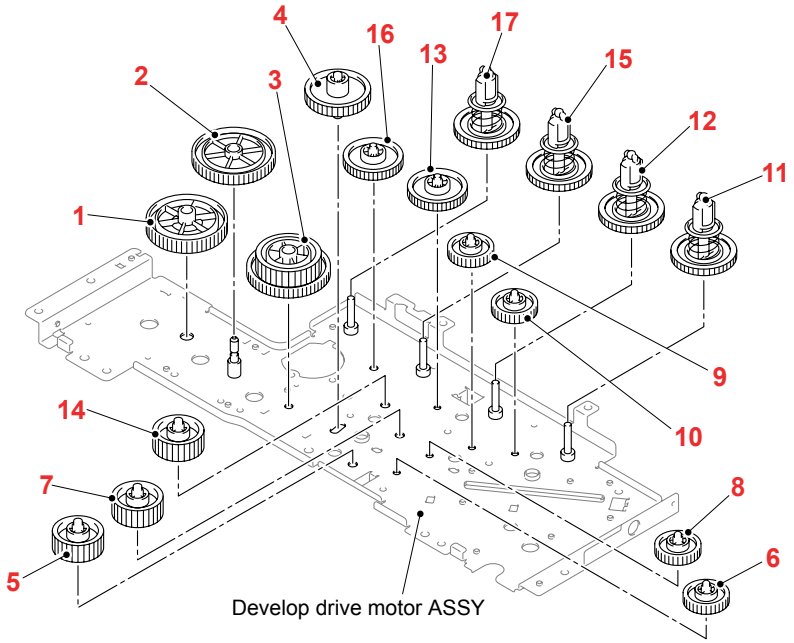


PG2: PG-661(W) (2mm dia. ball)

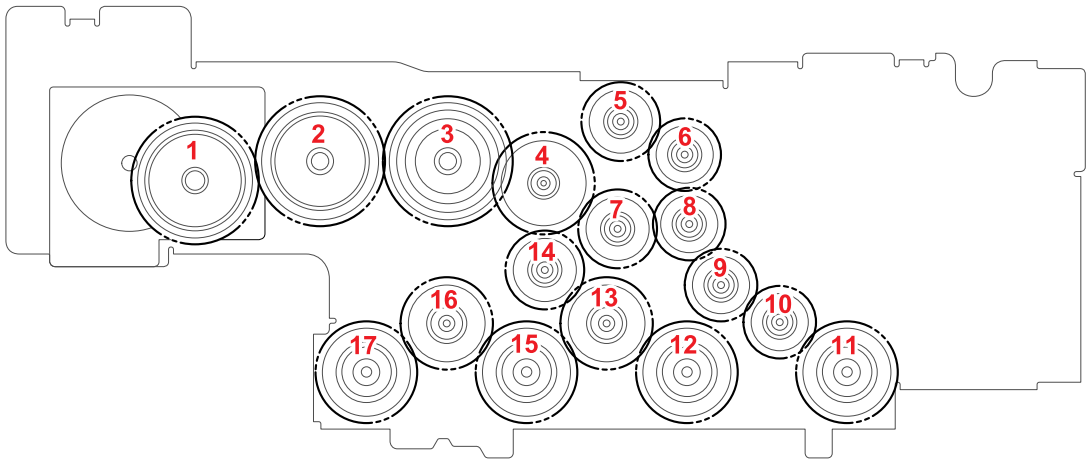
5. OVERVIEW OF GEARS

■ DEVELOPER DRIVE

<Development view>



<Layout view>



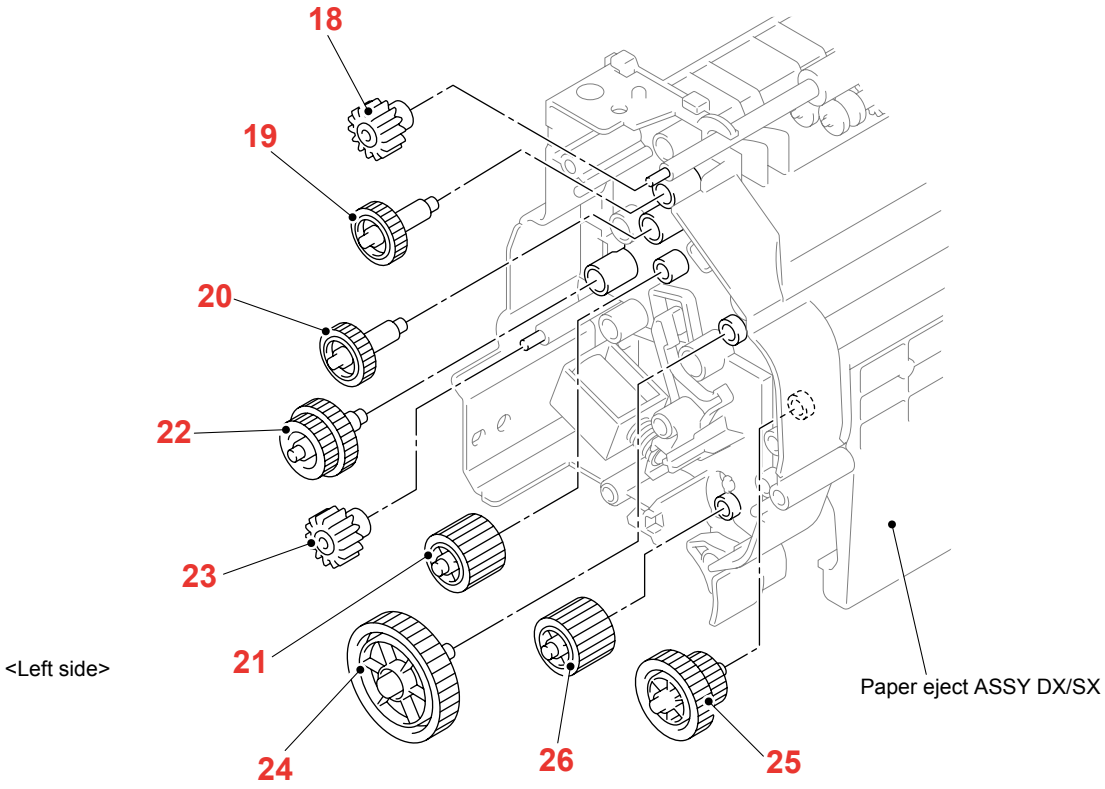
<Name of Gears>

1	LR0194001	Gear 98	10	LR0199001	Gear 35
2	LR0202001	Gear 100	11	LR0203001	Coupling gear 50
3	LR0201001	Gear 50/100	12	LR0203001	Coupling gear 50
4	LR0197001	Pendulum gear 50	13	LR0200001	Gear 45
5	LR0198001	Gear 38	14	LR0198001	Gear 38
6	LR0199001	Gear 35	15	LR0203001	Coupling gear 50
7	LR0198001	Gear 38	16	LR0200001	Gear 45
8	LR0199001	Gear 35	17	LR0203001	Coupling gear 50
9	LR0199001	Gear 35			

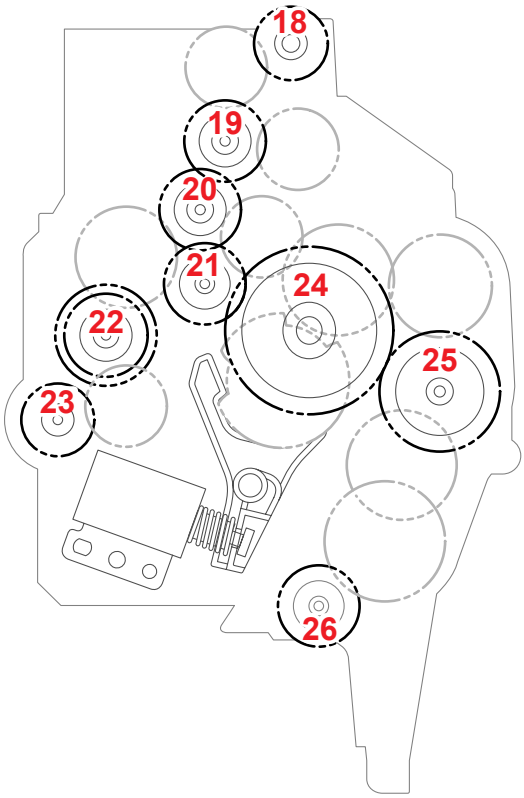
* These parts are subject to change without notice.

■ PAPER EJECT (1/2)

<Development view>



<Layout view>



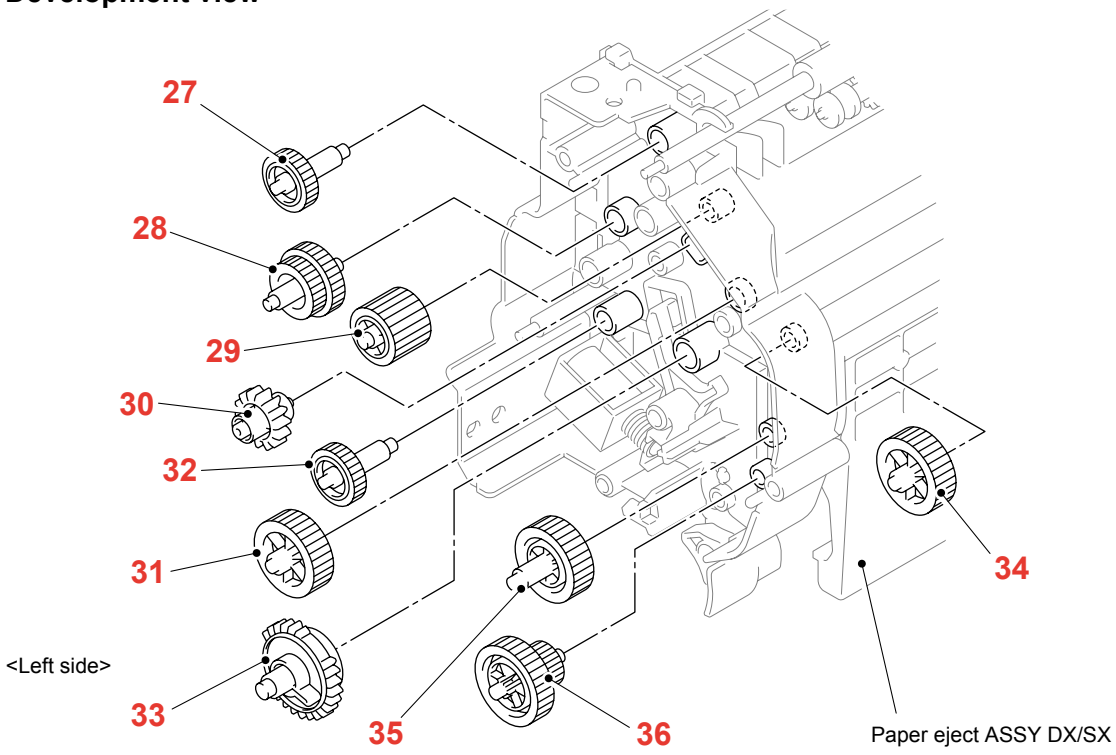
<Name of Gears>

18	LR0482001	Eject roller gear
19	LJ7365001	Idle gear 16B
20	LJ7365001	Idle gear 16B
21	LM5016001	Ejector gear 16
22	LR0480001	Ejector gear 16/20
23	LR0482001	Eject roller gear
24	LR1181001	Ejector gear 36 SX
25	LR0478001	Ejector gear 14/24
26	LM5016001	Ejector gear 16

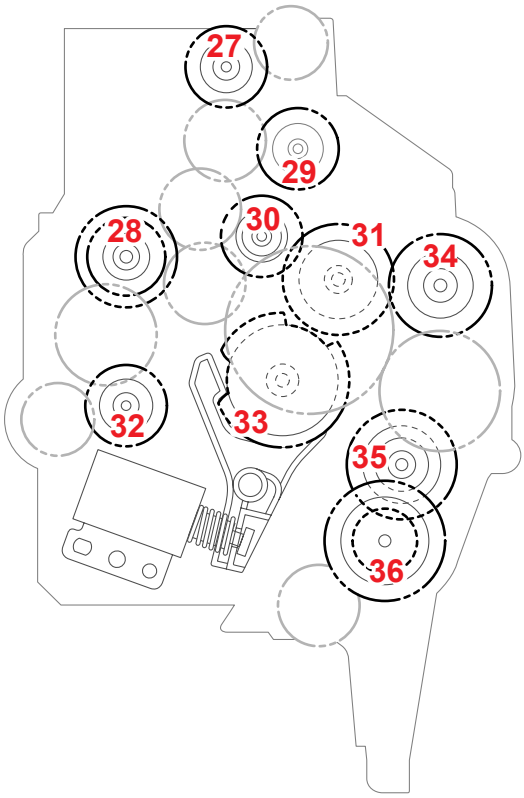
* These parts are subject to change without notice.

■ PAPER EJECT (2/2)

<Development view>



<Layout view>



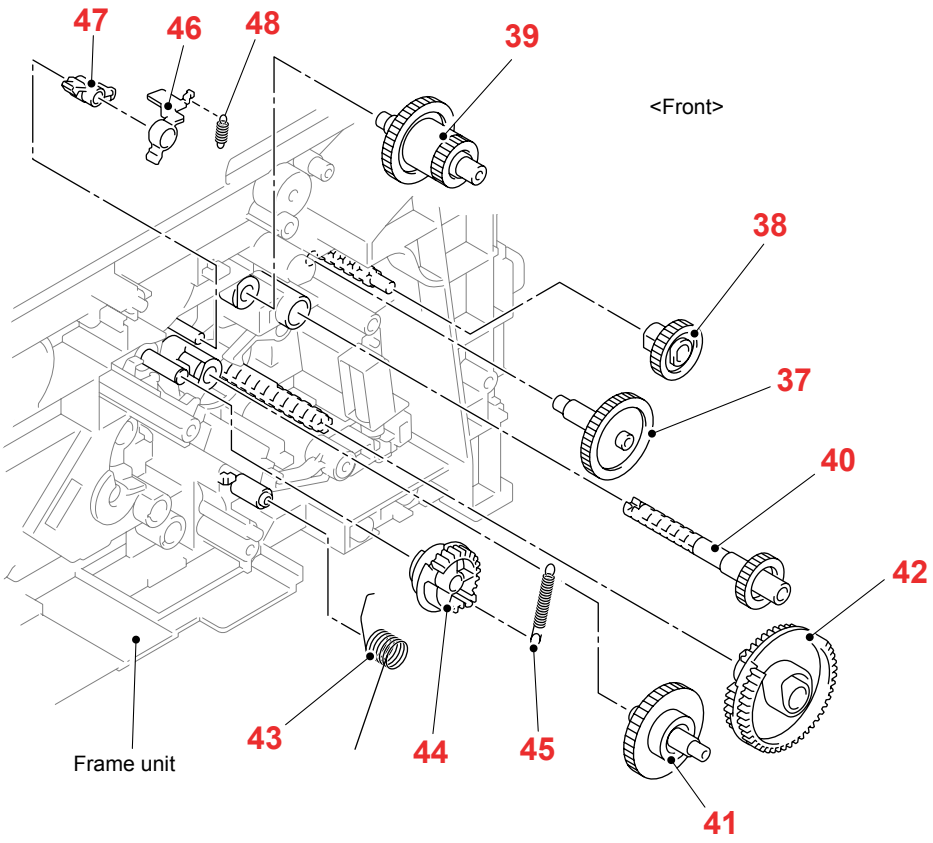
<Name of Gears>

27	LJ7365001	Idle gear 16B
28	LR0479001	Ejector gear 15/20
29	LM5016001	Ejector gear 16
30	LM5018001	Ejector gear 16 planetary
31	LM5019001	Ejector gear 22
32	LJ7365001	Idle gear 16B
33	LR0979001	Ejector gear 28 sector
34	LM5019001	Ejector gear 22
35	LR0476001	Ejector gear 22B
36	LR0477001	Ejector gear 12/24

* These parts are subject to change without notice.

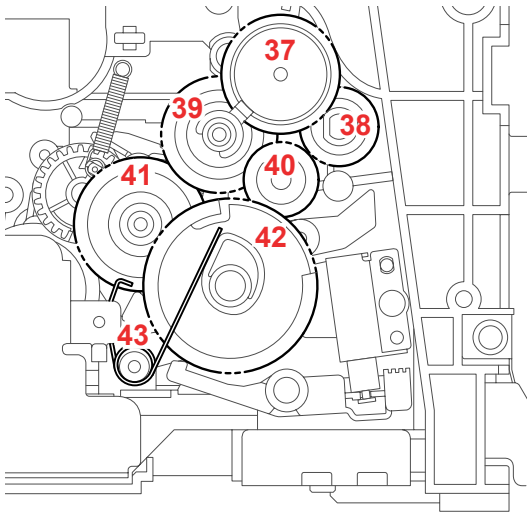
■ PF DRIVE

<Development view>



<Layout view>

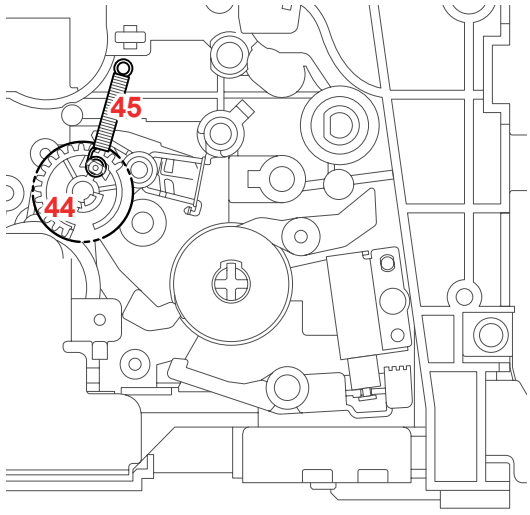
Location of PF drive gears



<Name of Gears>

37	LR0316001	Gear Z35M75
38	LR0311001	PF drive gear Z23M75
39	LR0315001	Gear Z3218M0875
40	LR0326001	PU drive gear Z20M08
41	LR0314001	Gear Z3717M08
42	LR0320001	PU sector gear Z4648M08
43	LR0324001	Torque spring for PU sector

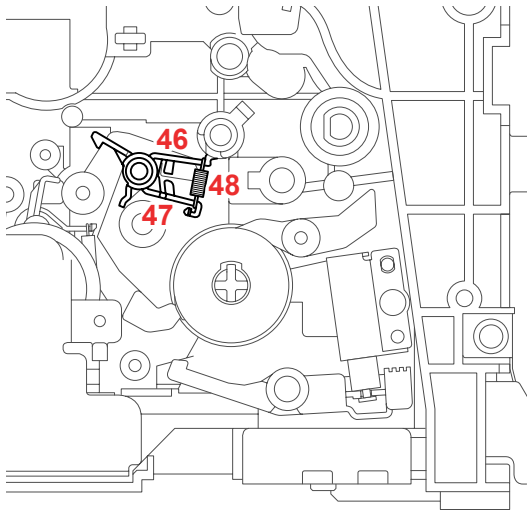
Location of parts after removing the parts shown as 37 to 43 in the figure above



<Name of Gears>

44	LR0309001	PP gear clutch cam
45	LR0310001	PP gear clutch cam spring

Location of parts after removing the parts shown as 44 and 45 in the figure above



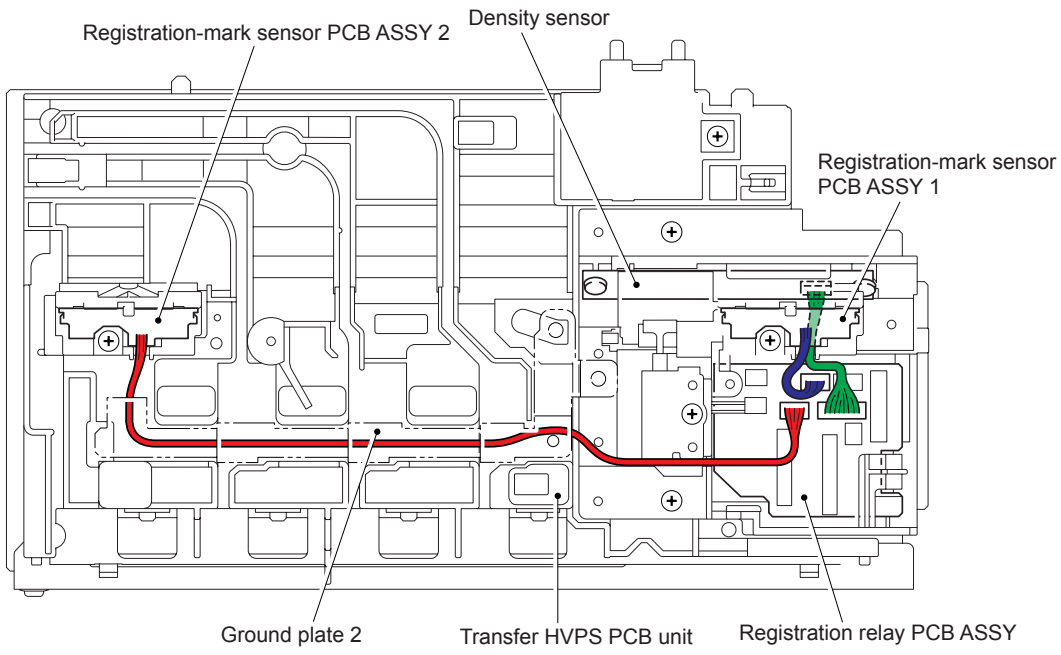
<Name of Gears>

46	LR0308001	Hook C
47	LR0307001	Hook B
48	LR0910001	Hook spring BC

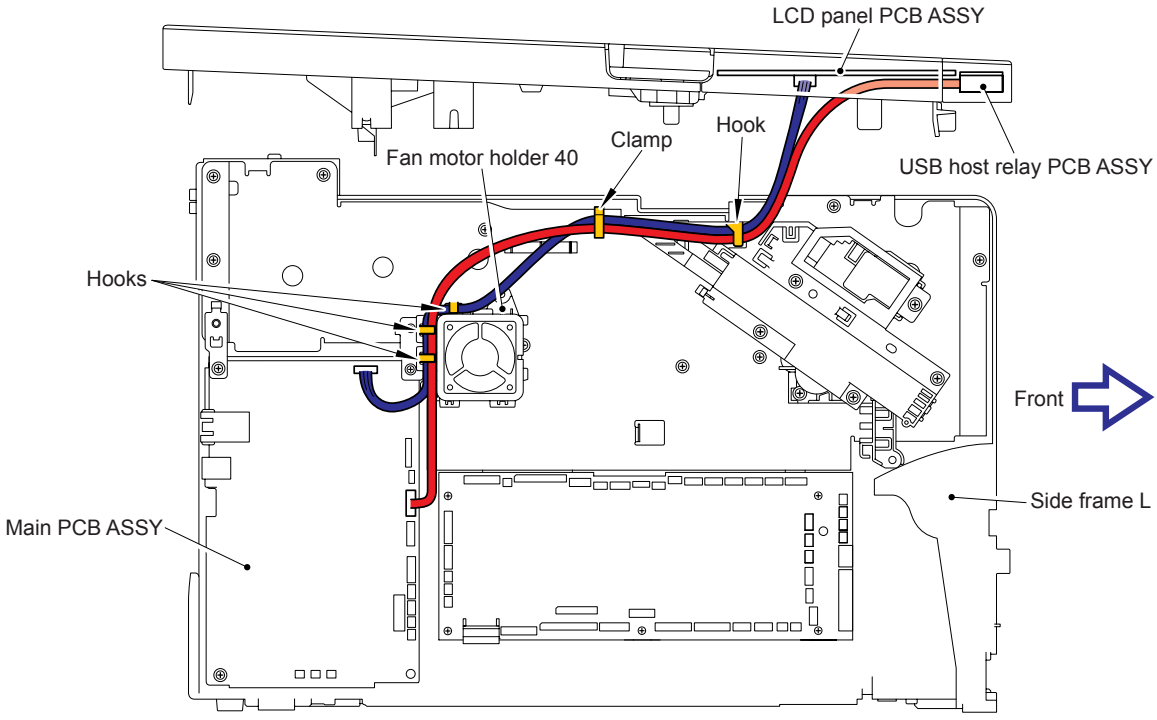
* These parts are subject to change without notice.

6. HARNESS ROUTING

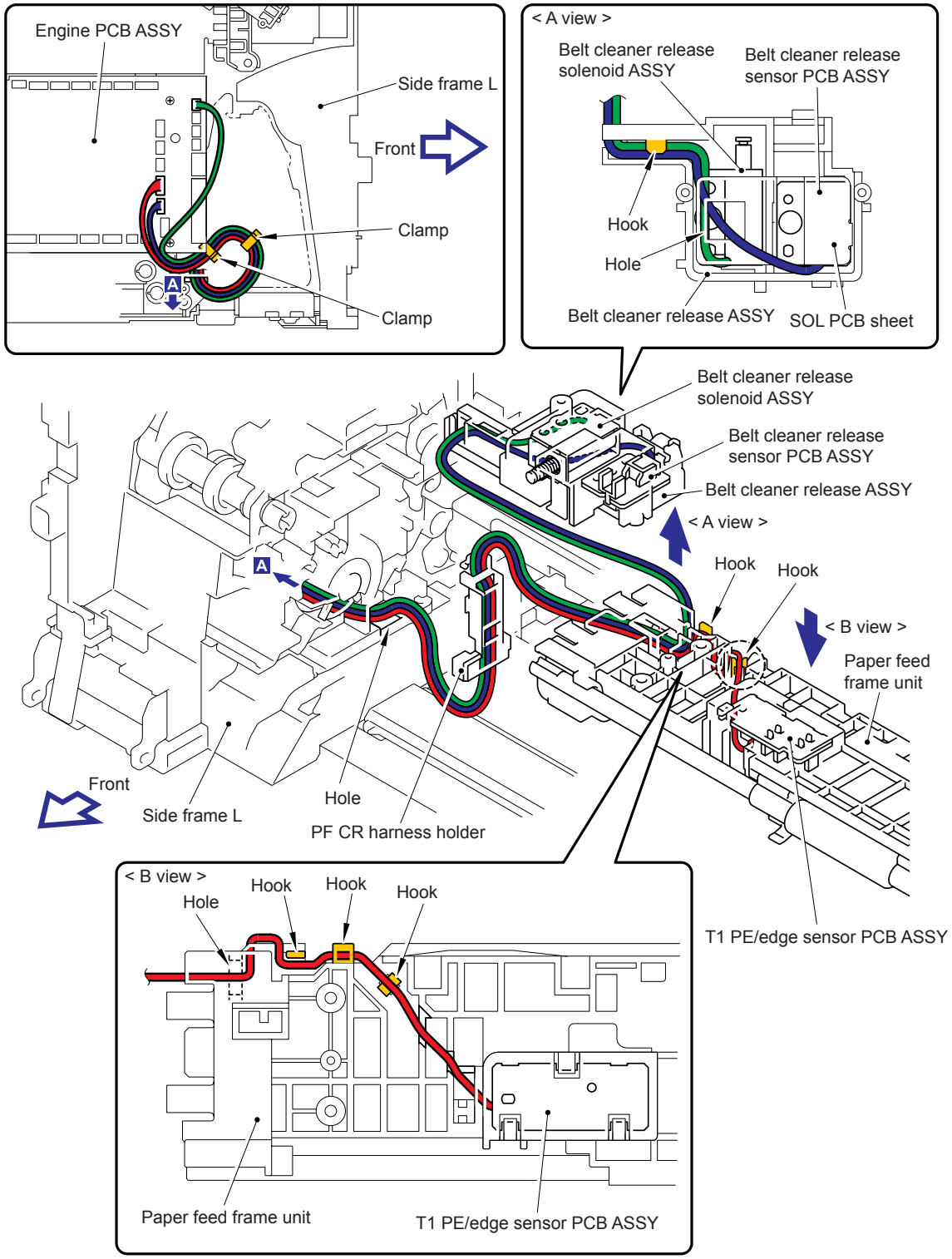
1 Transfer HVPS PCB unit (Registration-mark sensor PCB ASSY 1, 2, Density sensor)



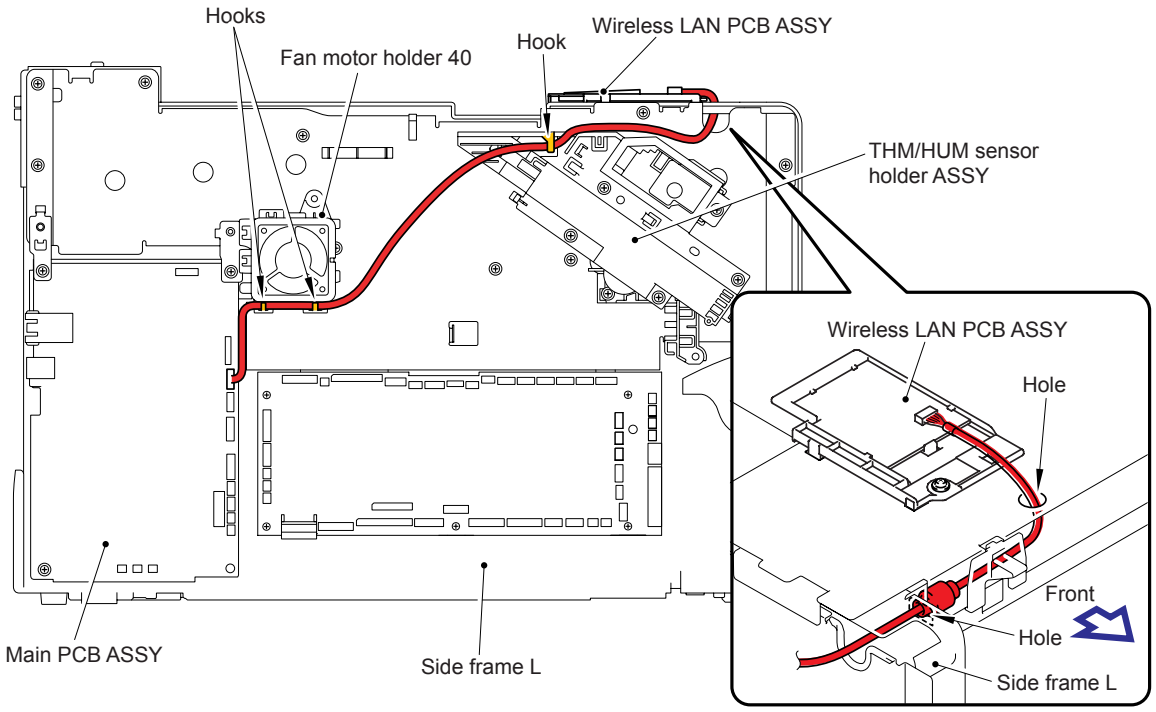
2 Top cover panel ASSY (LCD panel PCB ASSY, USB host relay PCB ASSY)



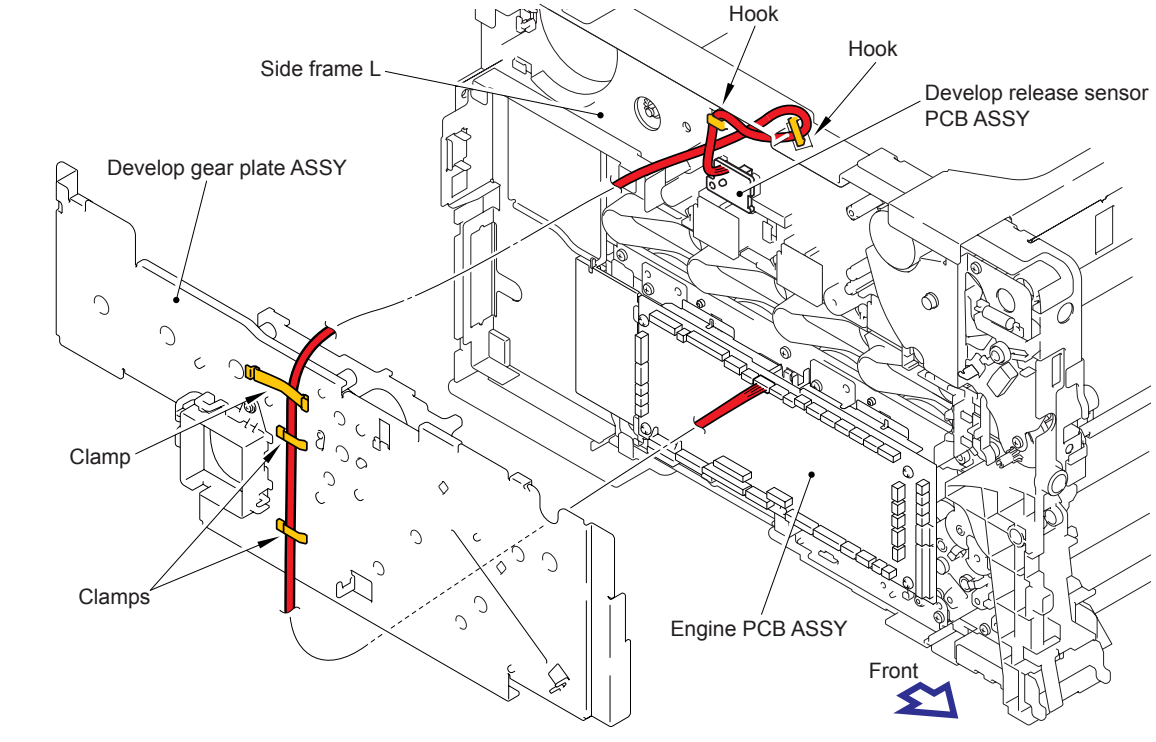
3 T1 PE/edge sensor PCB ASSY, Belt cleaner release sensor PCB ASSY



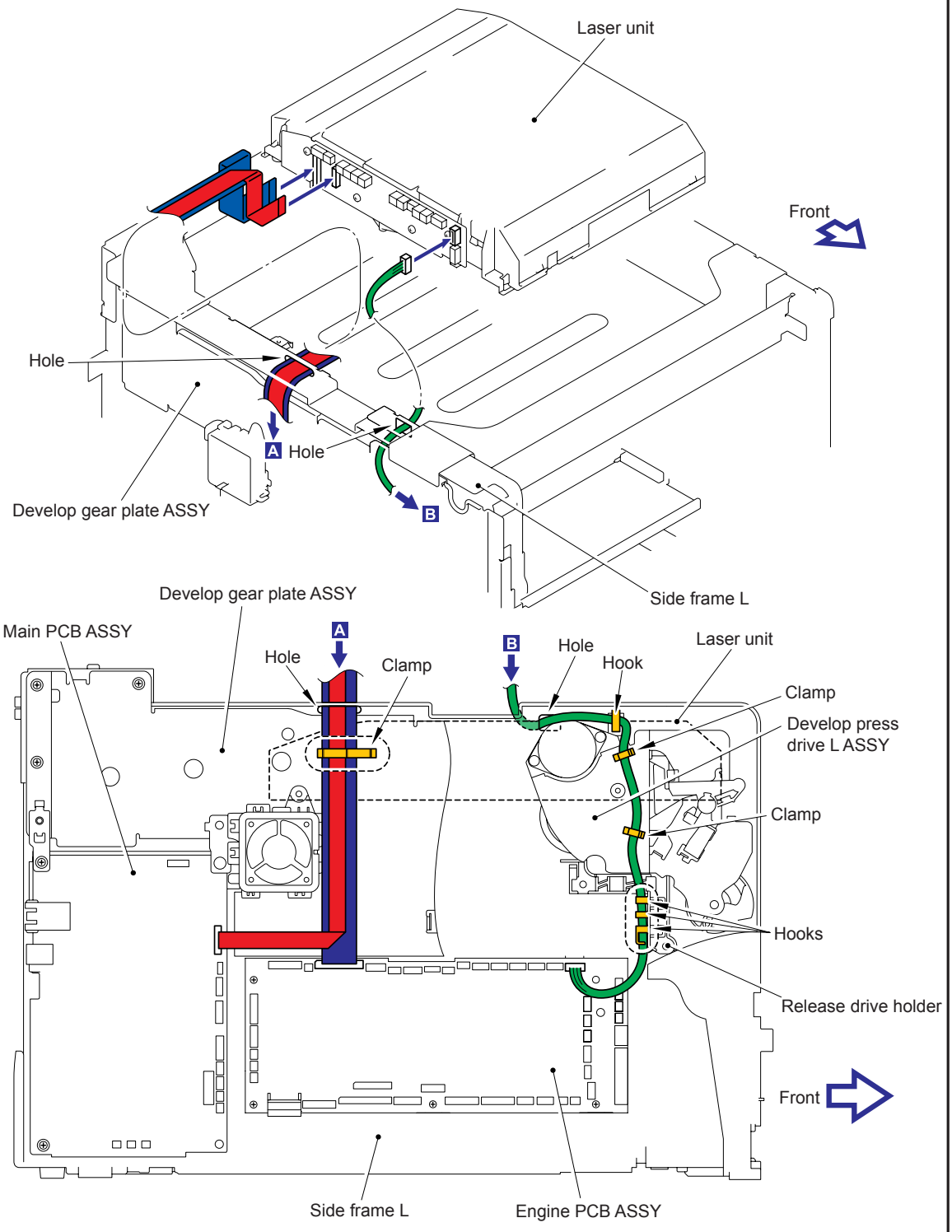
4 Wireless LAN PCB ASSY (HL-4070CDW only)



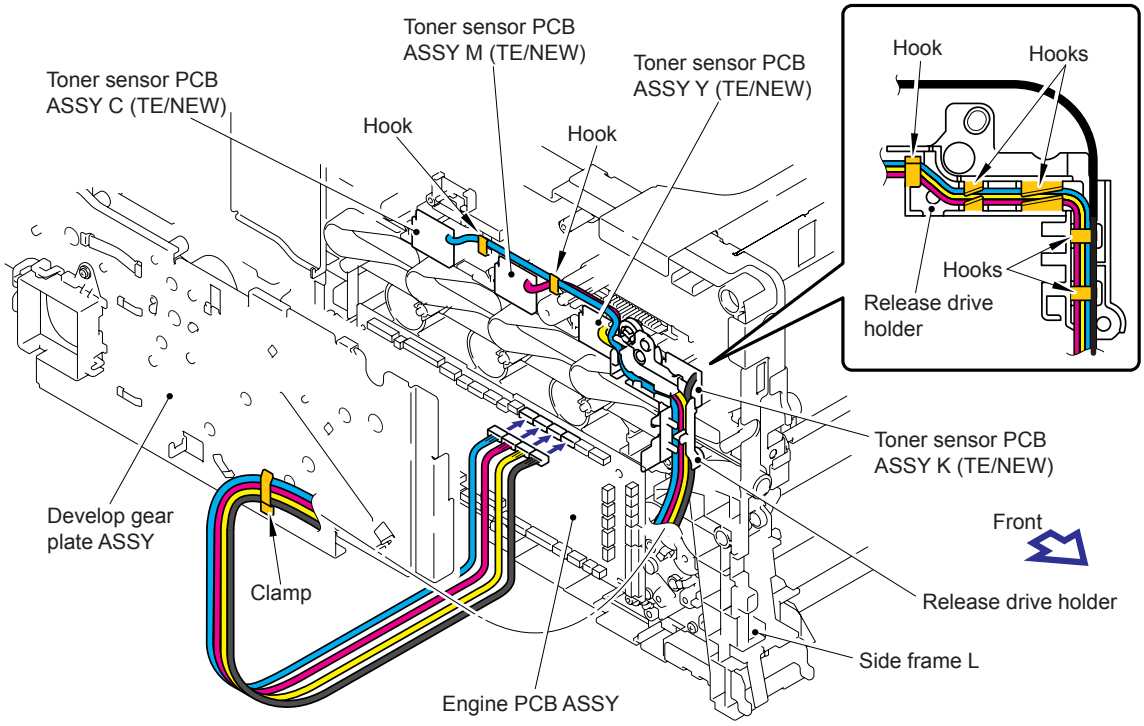
5 Develop release sensor PCB ASSY



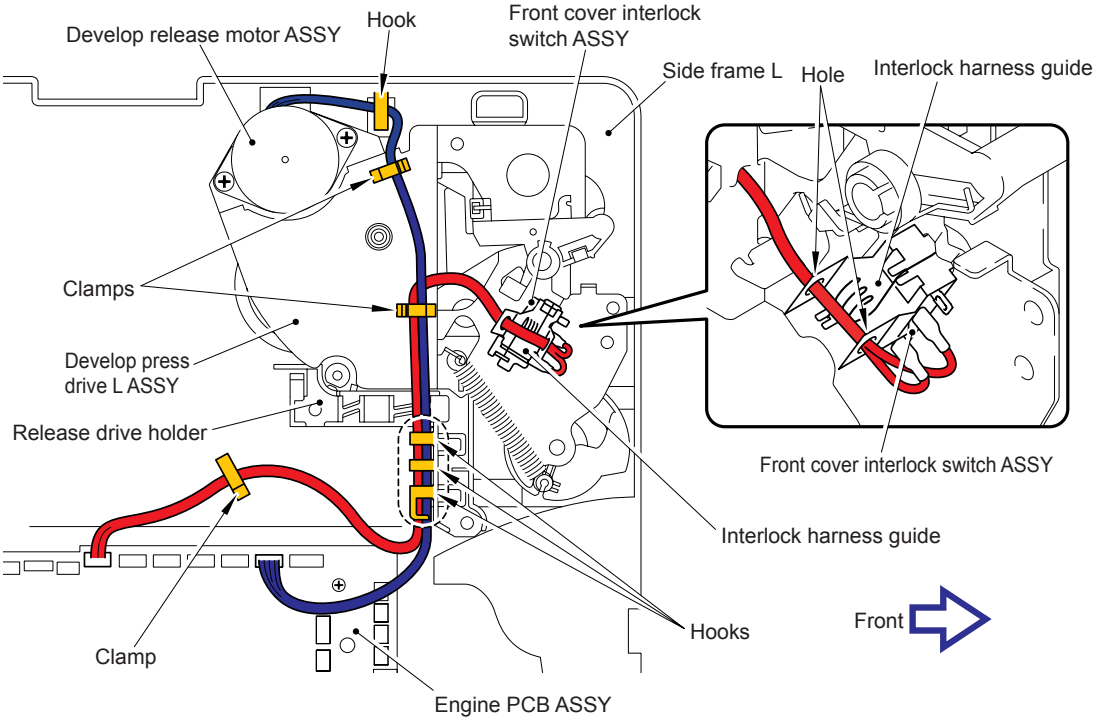
6 Laser unit



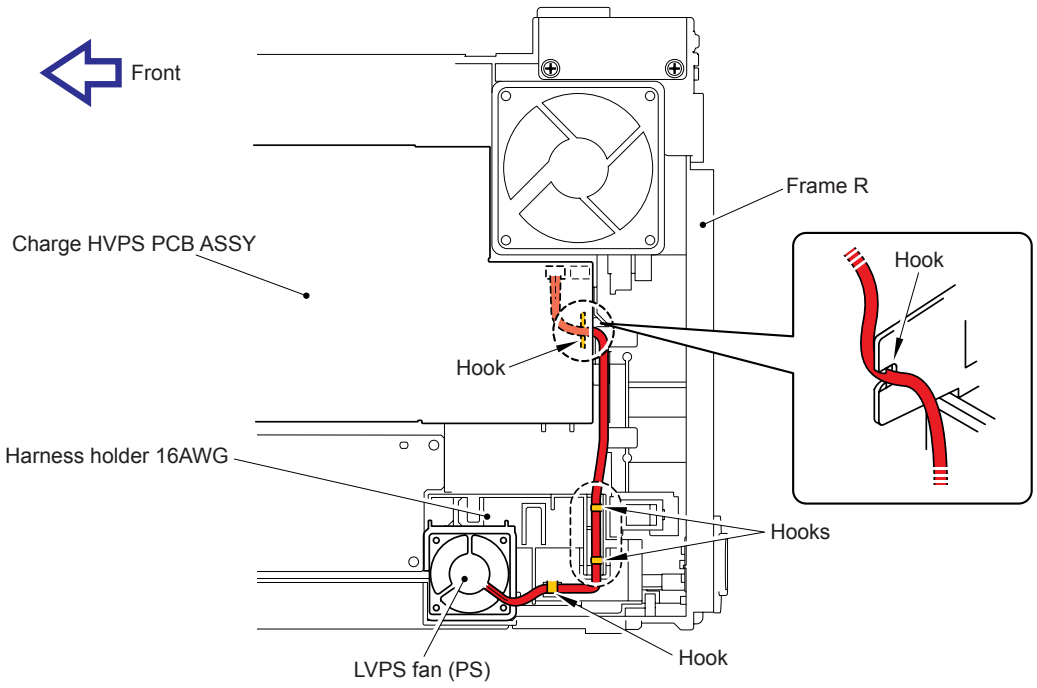
7 Toner sensor PCB ASSY K, Y, M, C (TE/NEW)



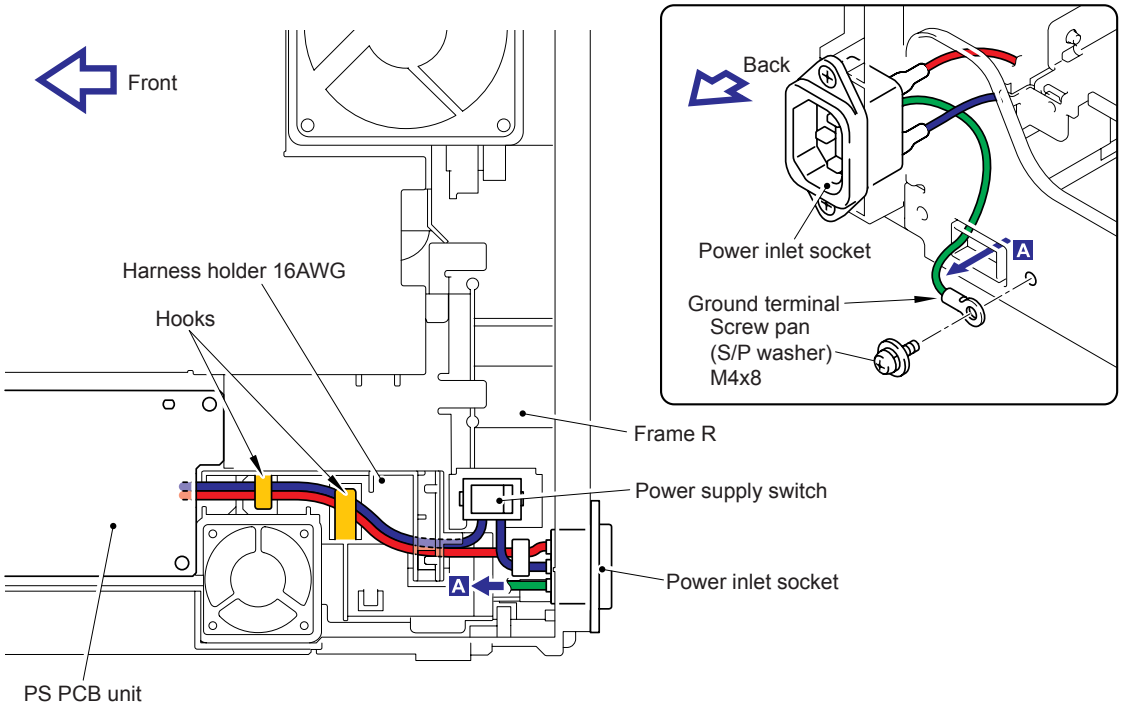
8 Develop press drive L ASSY (Develop release motor ASSY, Front cover interlock switch ASSY)



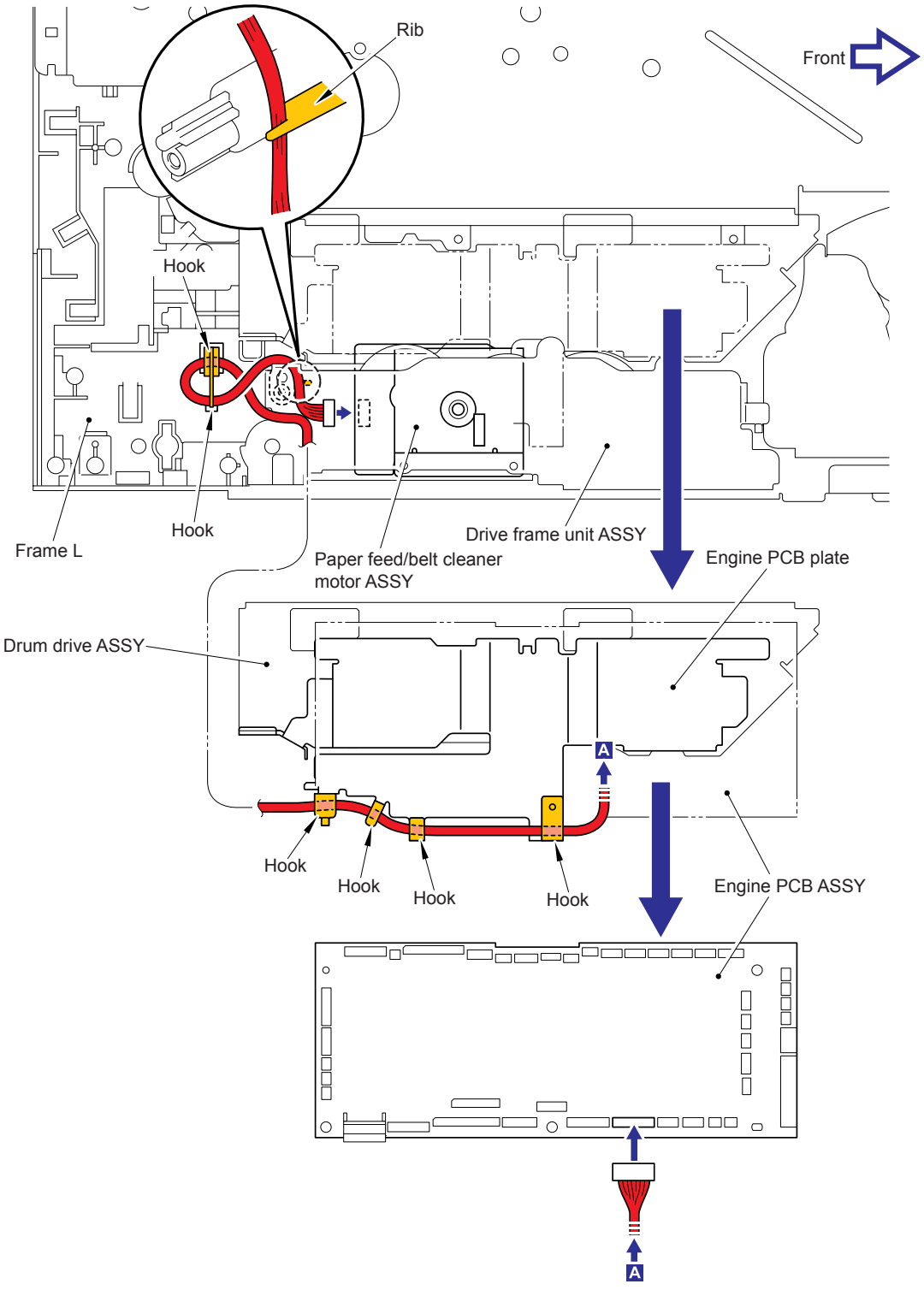
9 LVPS fan (PS)



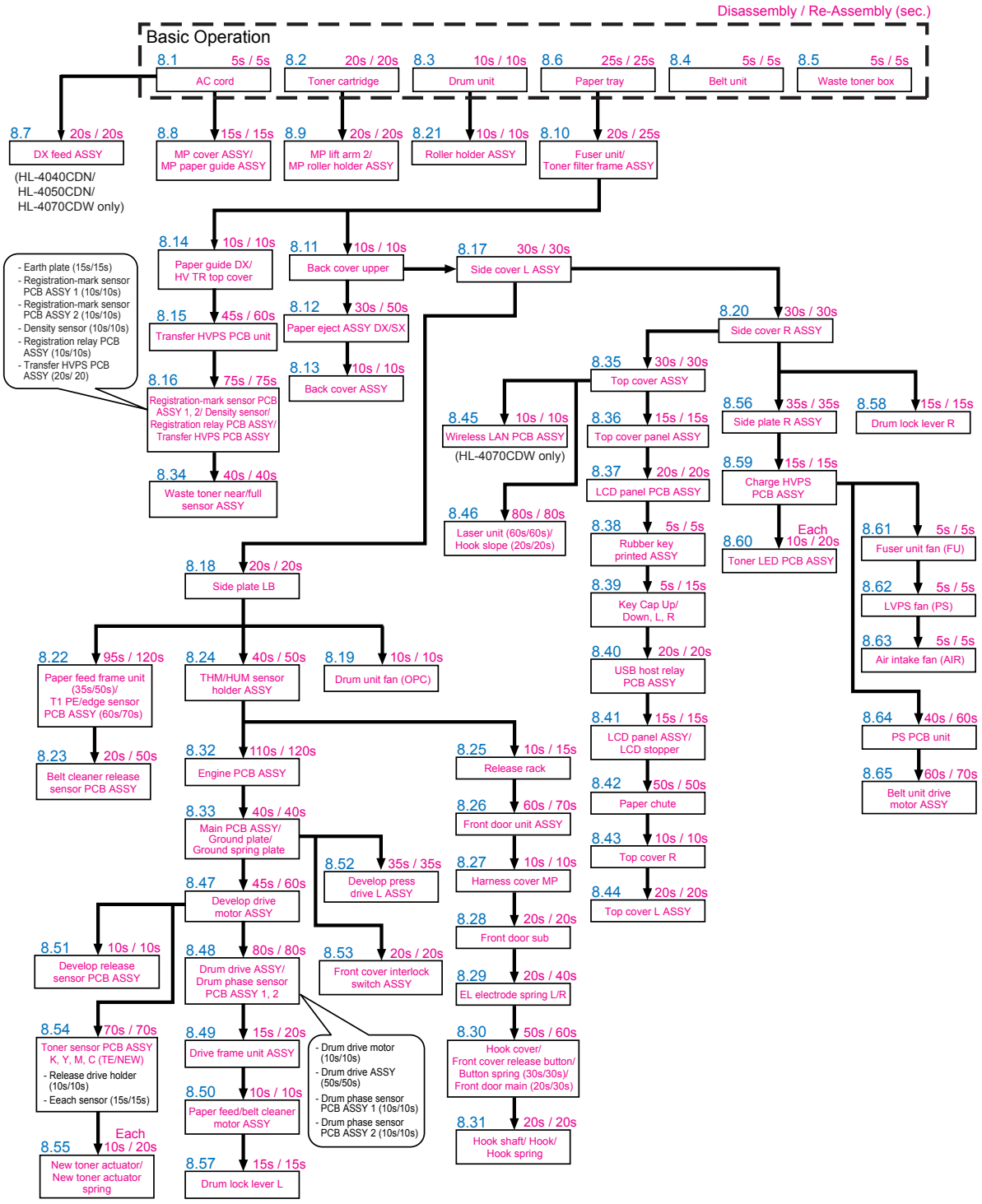
10 PS PCB unit



11 Paper feed/belt cleaner motor ASSY



7. DISASSEMBLY FLOW



8. DISASSEMBLY PROCEDURE

8.1 AC Cord

(1) Disconnect the AC cord from the Main body.

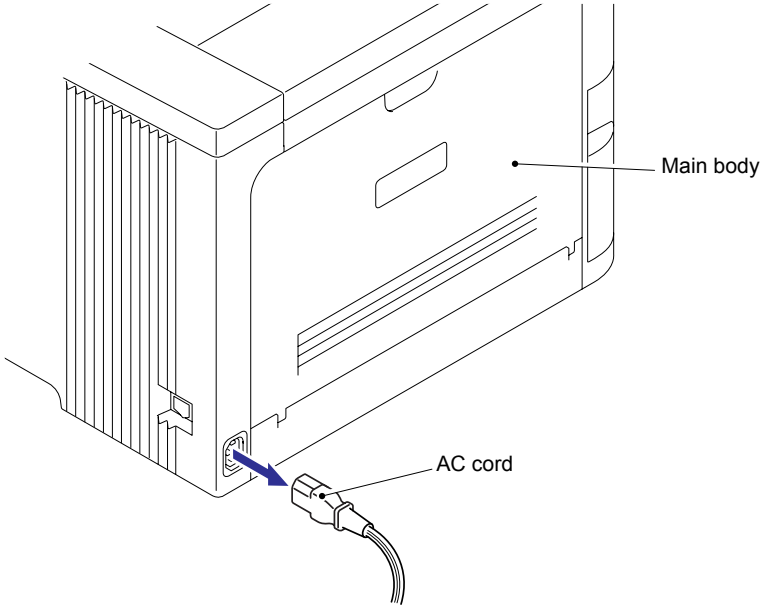


Fig. 3-1

8.2 Toner Cartridge

(1) Press the Front cover release button, and open the Front door unit ASSY.

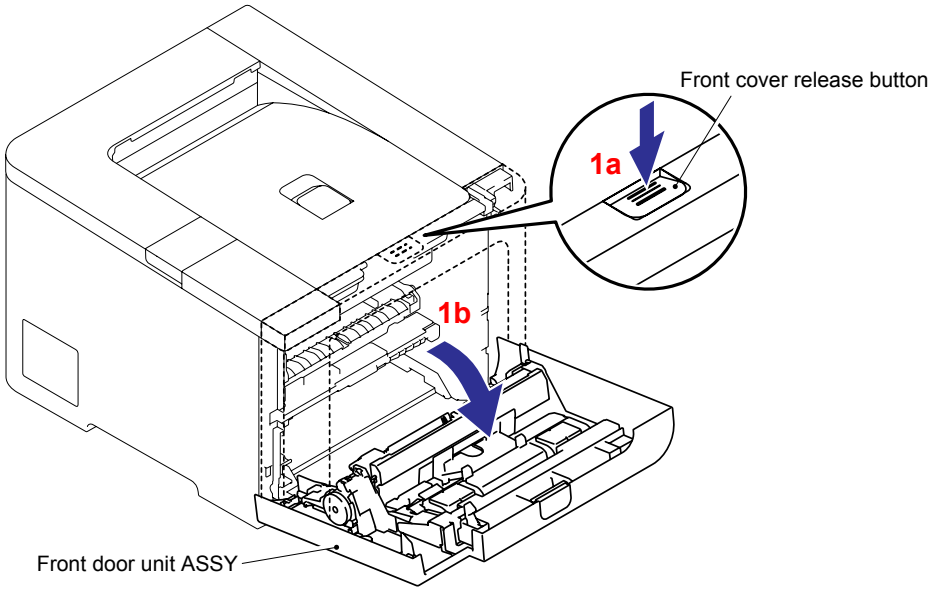


Fig. 3-2

(2) Hold the Green handle of the Drum unit. Lift the drum unit up and then pull it out until it stops.

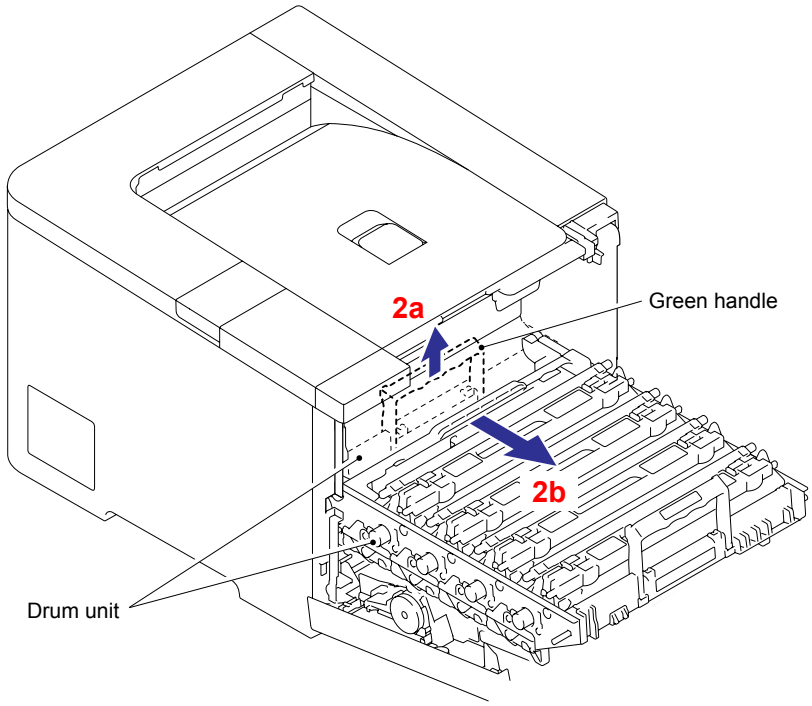


Fig. 3-3

Note:

If you cannot pull the drum unit out, make sure that the front door unit ASSY is fully open as shown below.

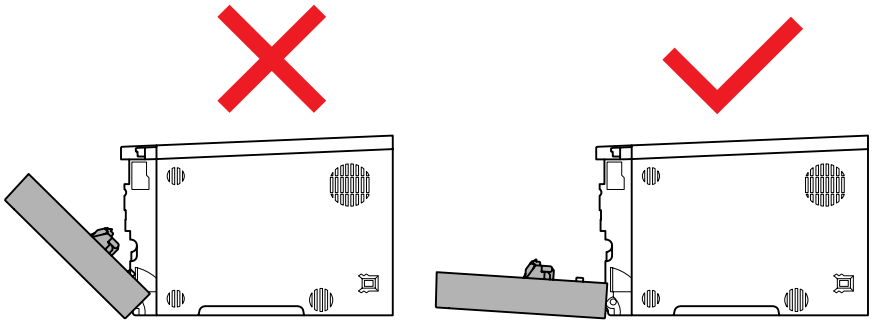


Fig. 3-4

(3) Raise the Handle of the Toner cartridge to release the Locks. Then, hold the Handle of the Toner cartridge and pull it out of the drum unit.

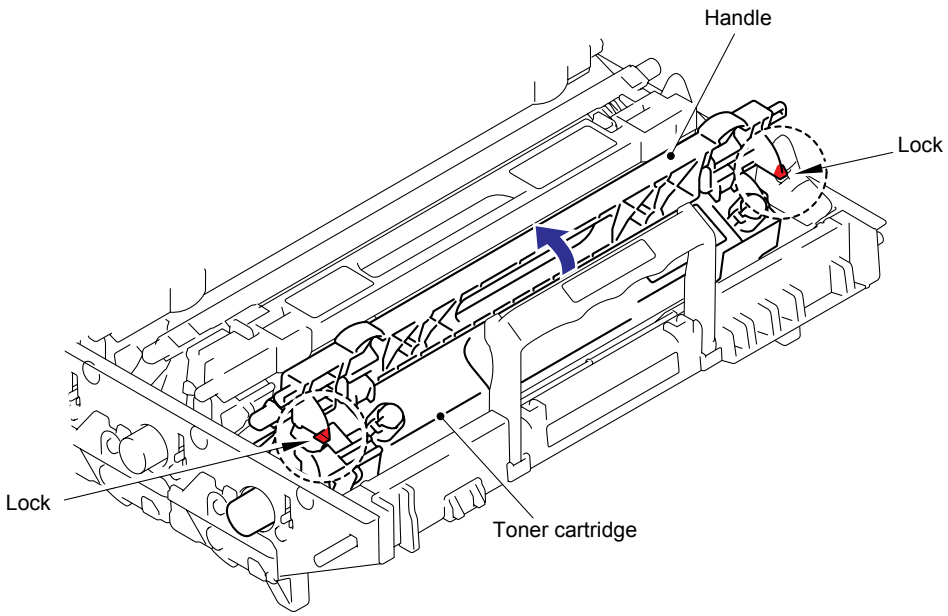


Fig. 3-5

(4) Repeat Step (3) for all the other Toner cartridges.

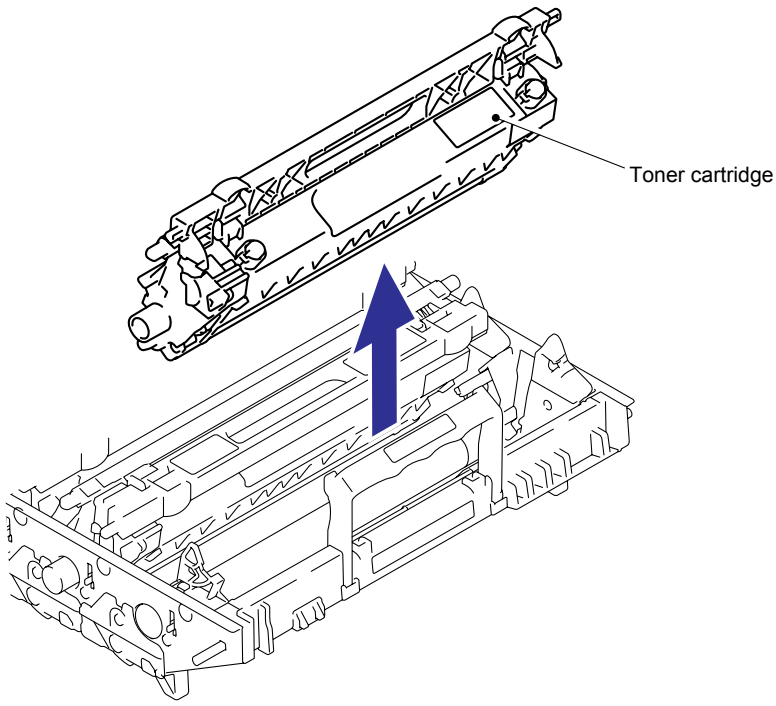


Fig. 3-6

8.3 Drum Unit

(1) Pull up the Drum lock lever L, and release the lock. The drum lock lever R is also released engaging with the action of the lock lever L.

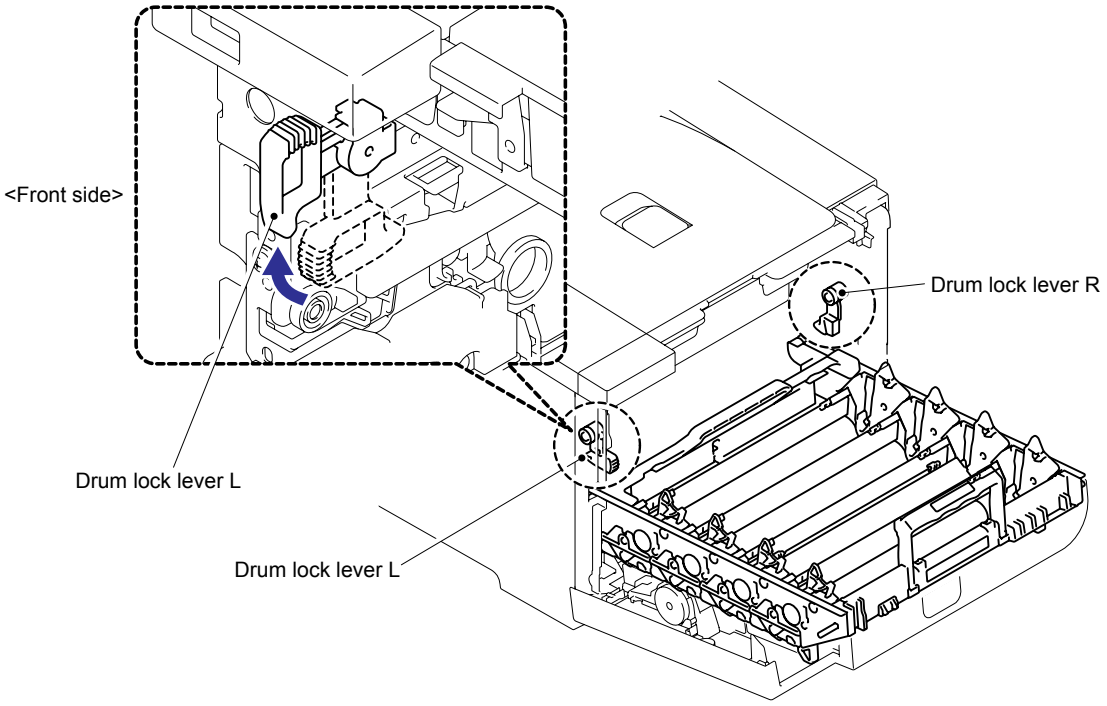


Fig. 3-7

(2) Hold the two Green handles in the front and back of the Drum unit and pull out the drum unit while lifting it up slightly.

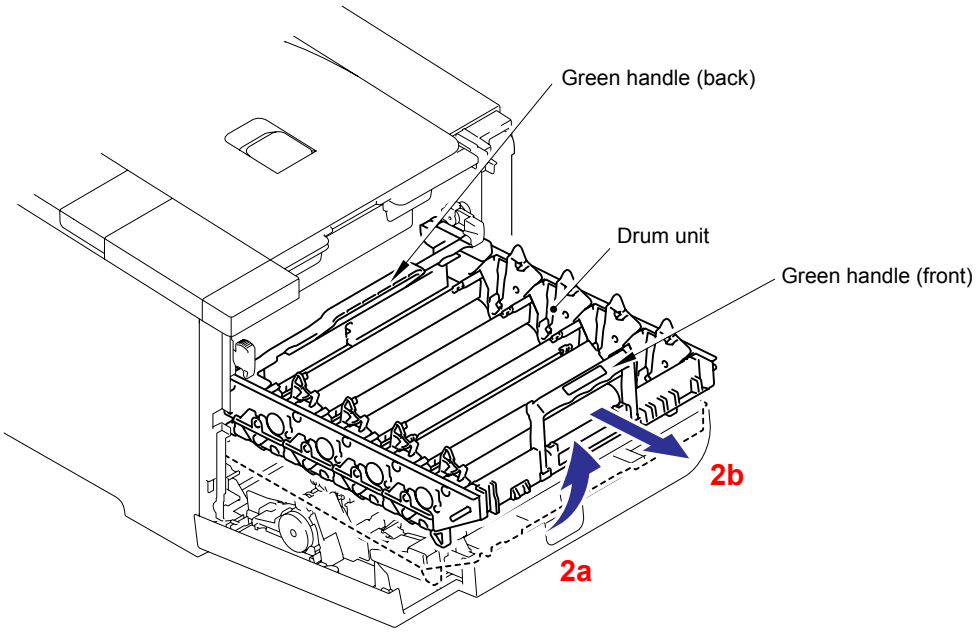


Fig. 3-8

Note:

If continuing the disassembly, always return the Drum lock lever L to the original (locking) position.

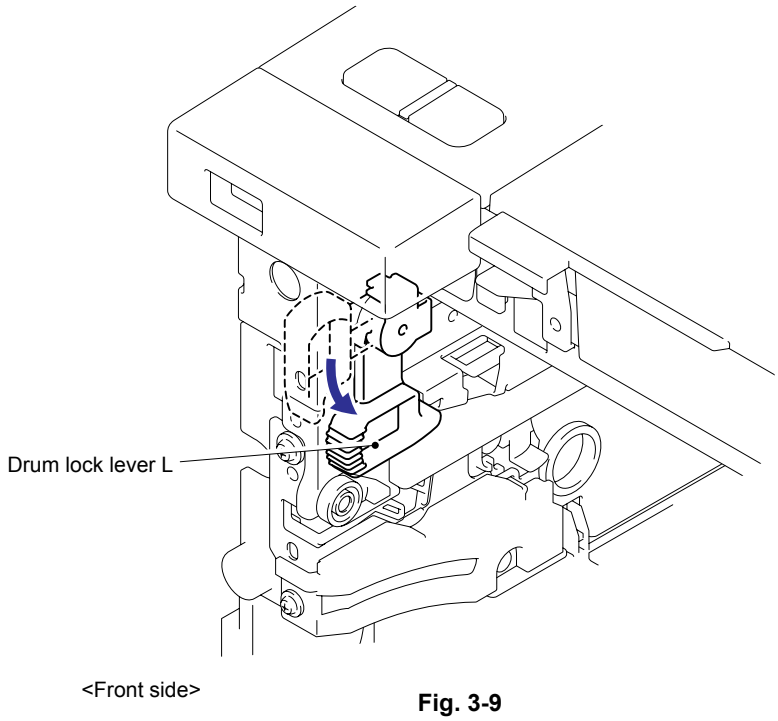


Fig. 3-9

8.4 Belt Unit

(1) Lift up both sections “A” and “B” of the Belt unit slightly and pull it out.

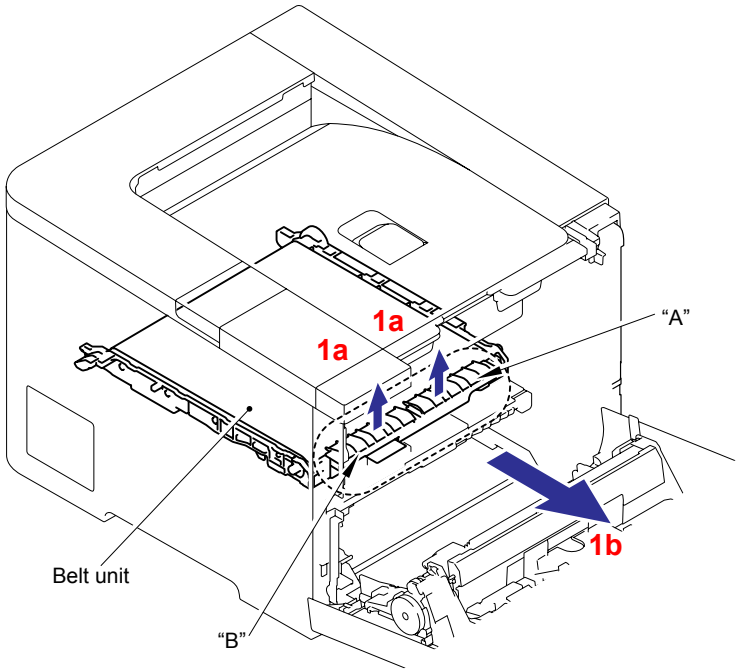


Fig. 3-10

8.5 Waste Toner Box

(1) Lift up the section “A” of the Waste toner box and pull it out.

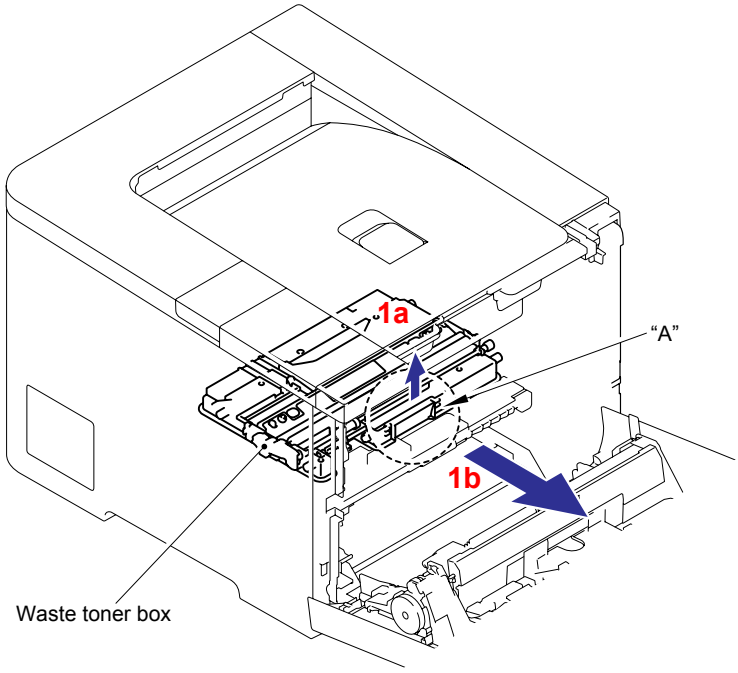


Fig. 3-11

8.6 Paper Tray

(1) Close the Front door unit ASSY.

(2) Pull out the Paper tray, and remove the paper from the Paper tray.

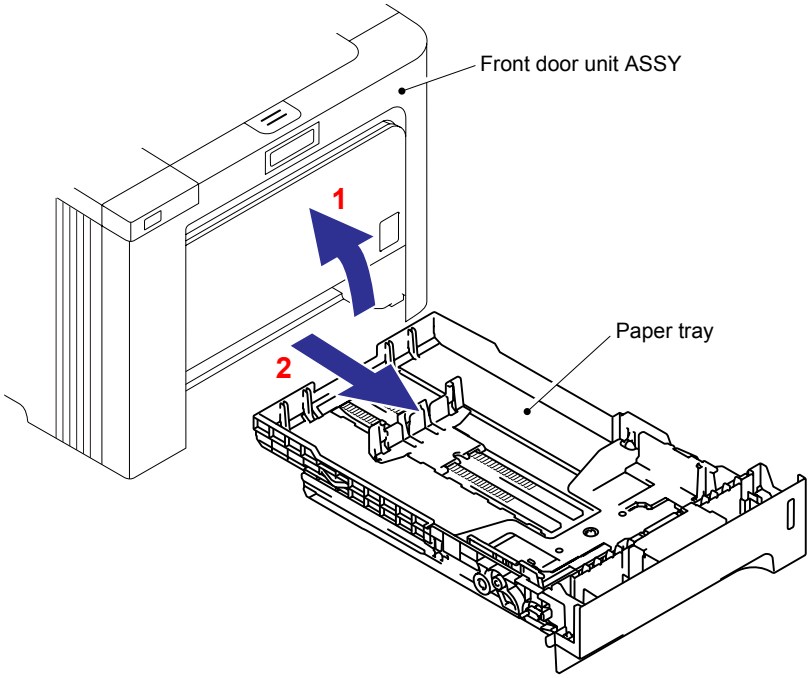


Fig. 3-12

(3) Release the two Hooks of the Separation pad ASSY, and then lift up the Separation pad ASSY.

Note:

Be careful not to loose the Separation pad spring.

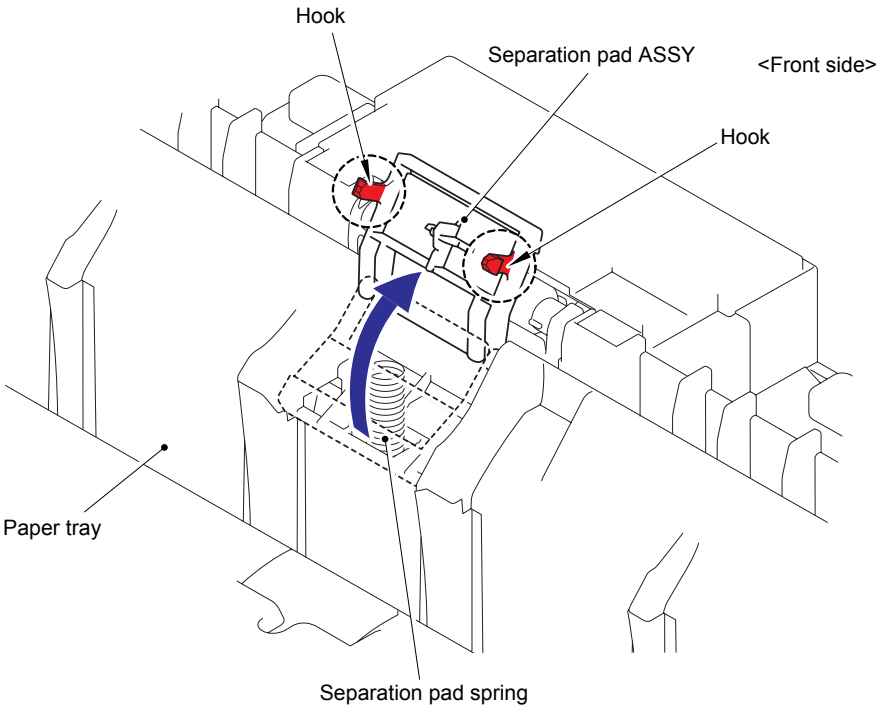


Fig. 3-13

(4) Push both sides of the Separation pad ASSY inwards to release the Pins and remove the Separation pad ASSY from the Paper tray.

(5) Remove the Separation pad spring from the Paper tray.

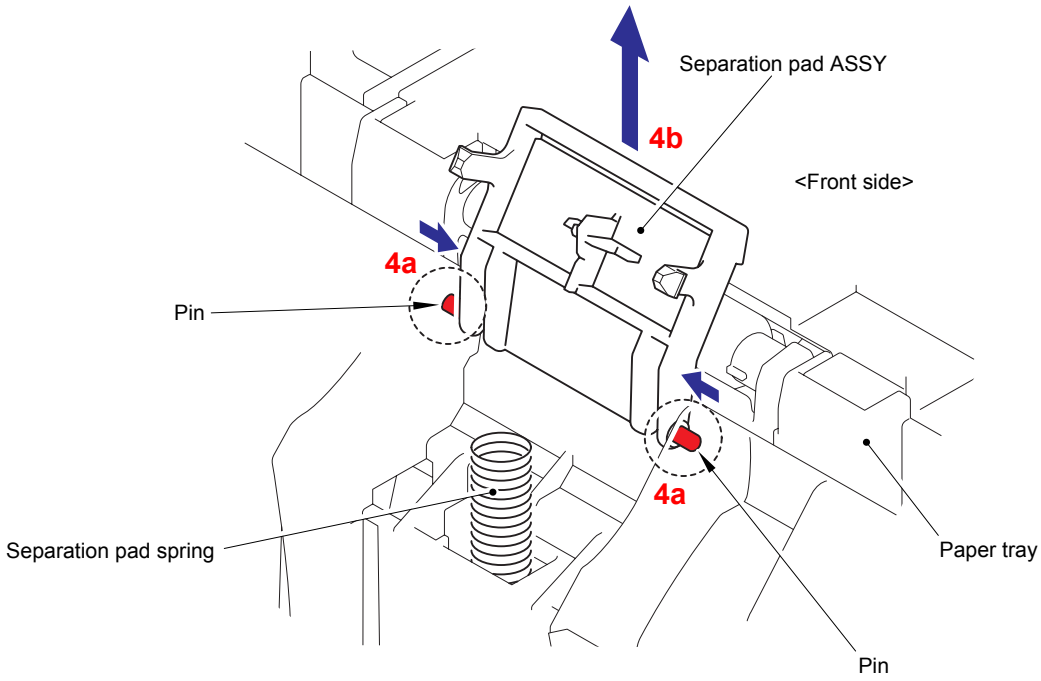


Fig. 3-14

The steps from (6) to (8) are for HL-4040CDN, HL-4050CDN and HL-4070CDW only.

(6) Remove the two bind B M4x12 Taptite screws, and then remove the Tray cover ASSY.

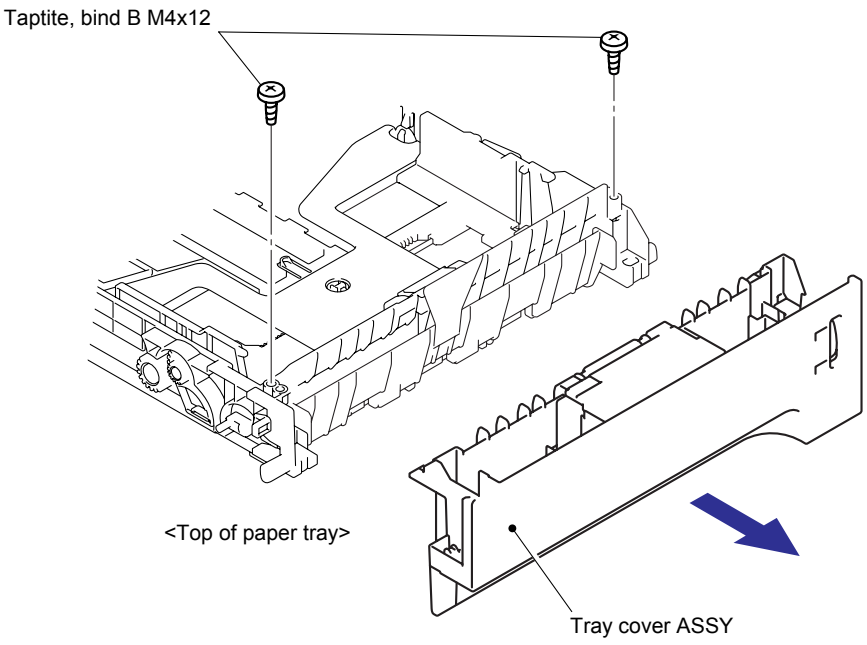


Fig. 3-15

(7) Turn the paper tray upside down.

(8) Release the two Hooks to remove the Paper guide DX ASSY.

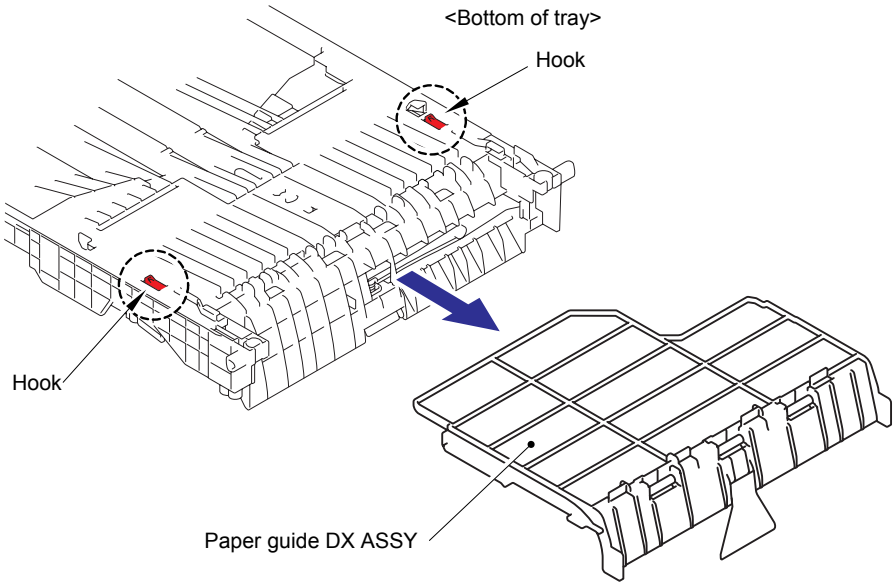


Fig. 3-16

8.7 DX Feed ASSY (HL-4040CDN/ 4050CDN/ 4070CDW only)

(1) Release the three Hooks to remove the DX hook ASSY AC.

(2) Release the two Bosses to remove the DX feed ASSY.

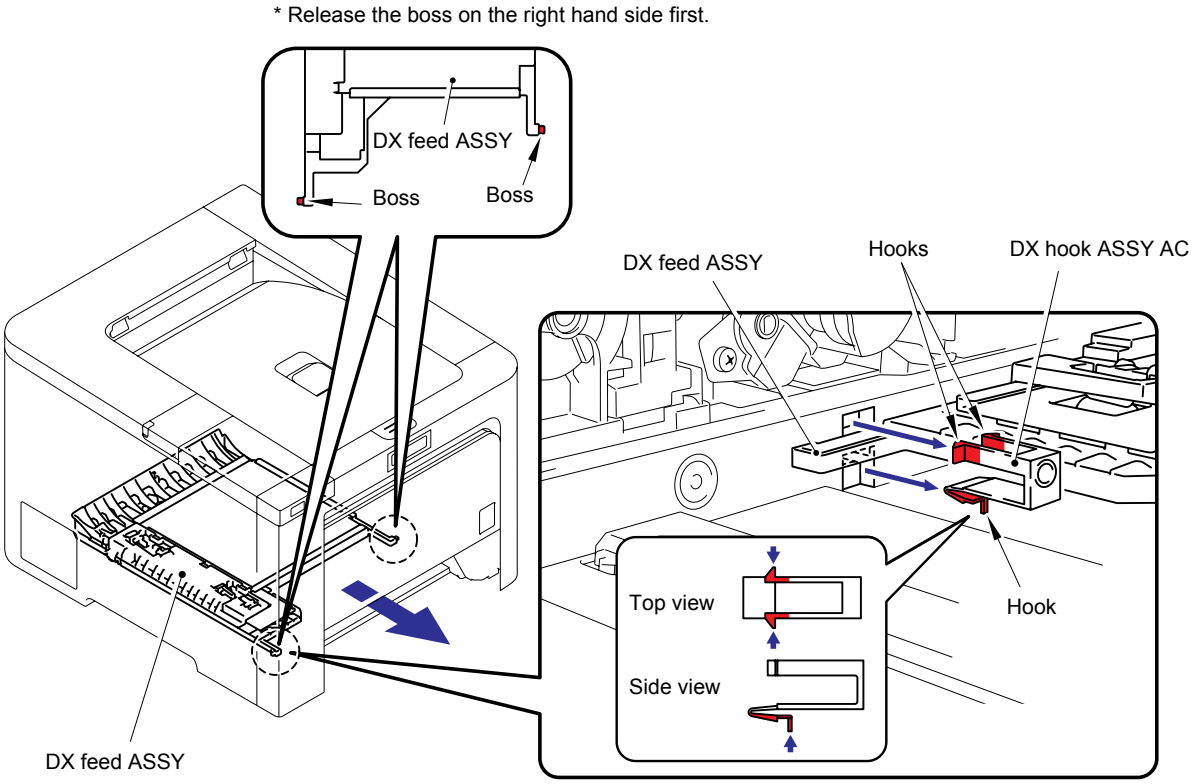


Fig. 3-17

8.8 MP Cover ASSY/ MP Paper Guide ASSY

(1) Open the MP cover ASSY.

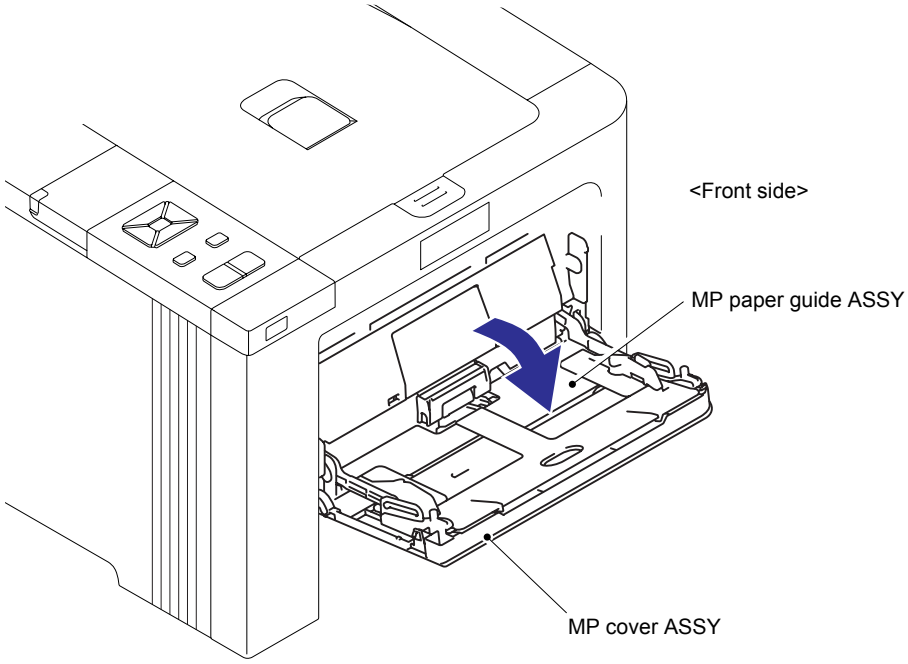


Fig. 3-18

(2) Release the two Bosses of the MP paper guide ASSY.

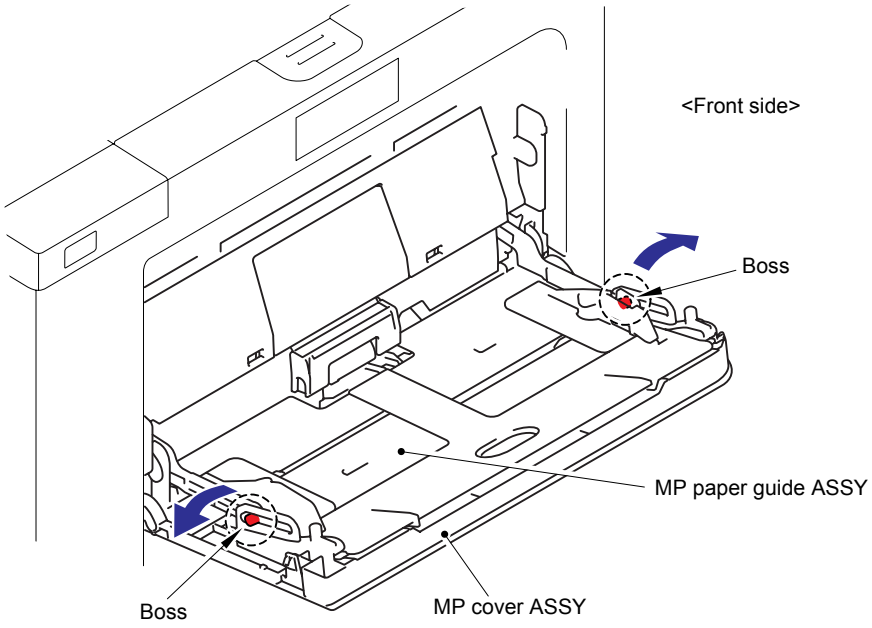


Fig. 3-19

(3) Lift up the MP paper guide ASSY align the MP paper guide ASSY with section “A” of the MP lower chute. Bend section “A” then, remove the MP paper guide ASSY.

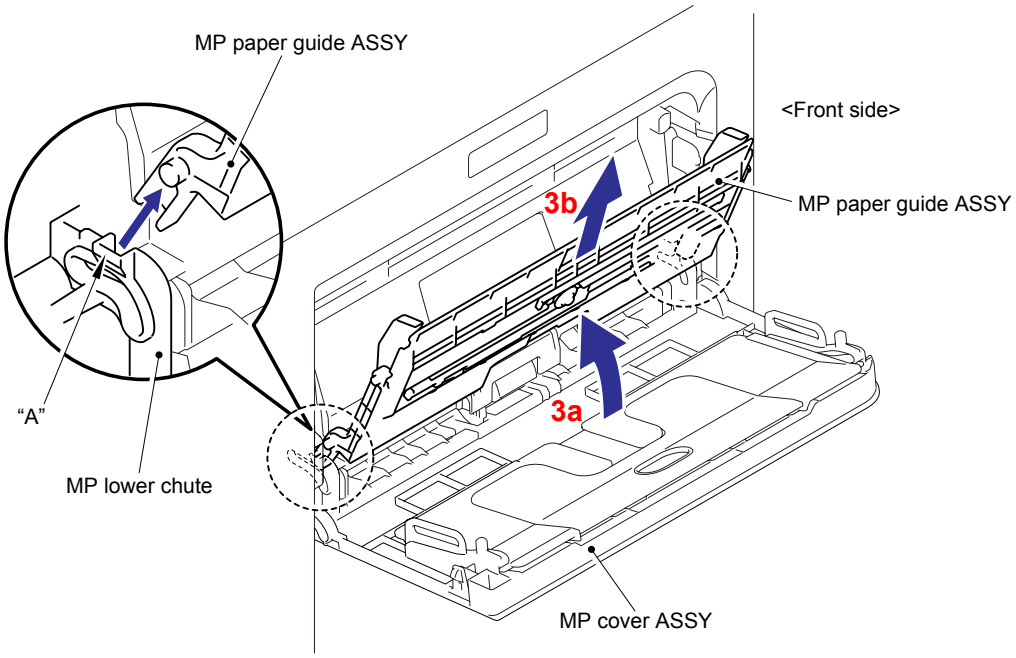


Fig. 3-20

(4) Release the Bosses while bending the MP cover ASSY and remove the MP cover ASSY from the Front door main.

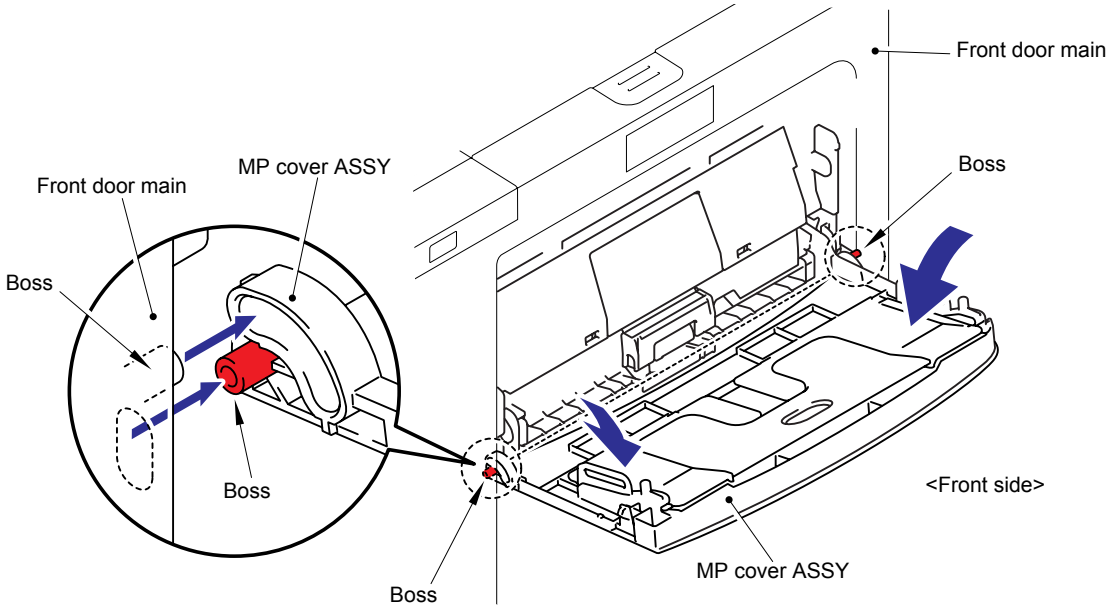


Fig. 3-21

Assembling Note:

When assembling the MP paper guide ASSY, note the assembling method referring to the figure below.

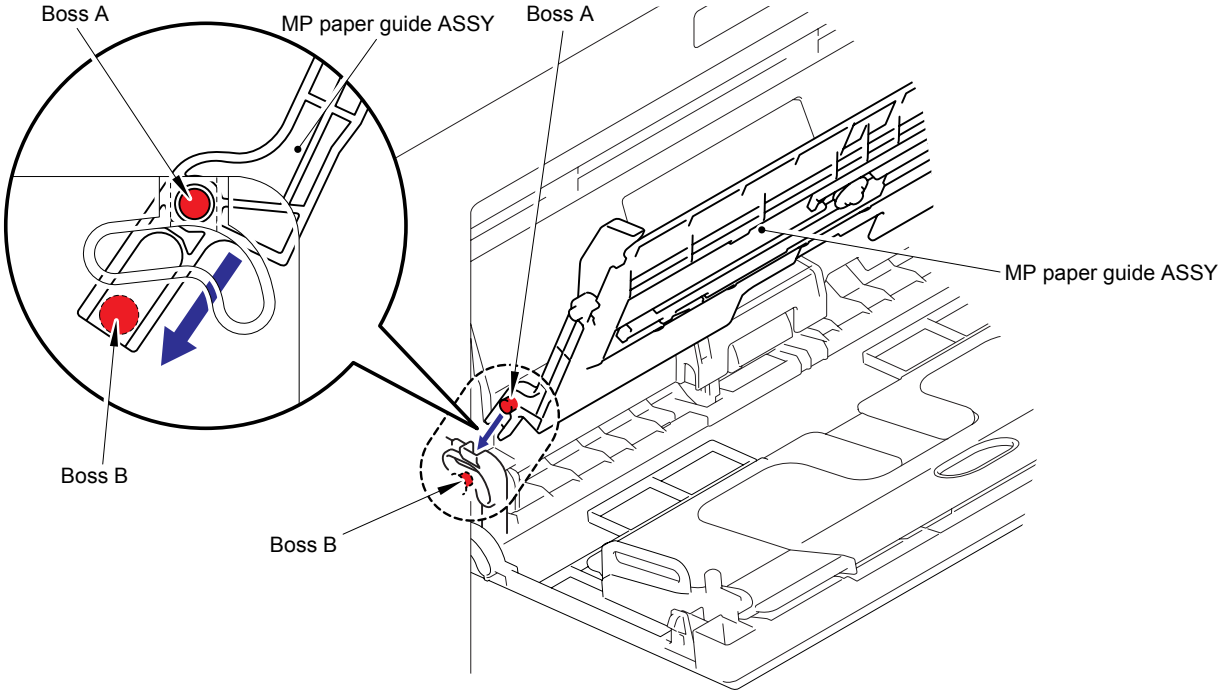


Fig. 3-22

8.9 MP Lift Arm 2/ MP Roller Holder ASSY

(1) Press the Front cover release button, and open the Front door unit ASSY.

(2) Release the two Hooks to remove the MP feed frame cover from the Front door unit ASSY.

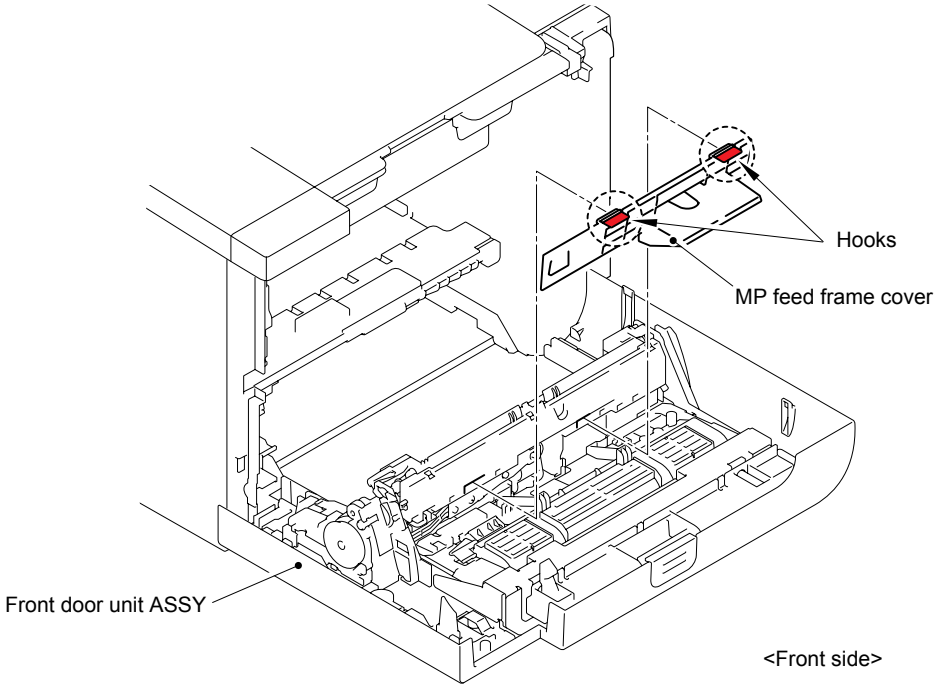


Fig. 3-23

(3) Remove the MP lift arm 2.

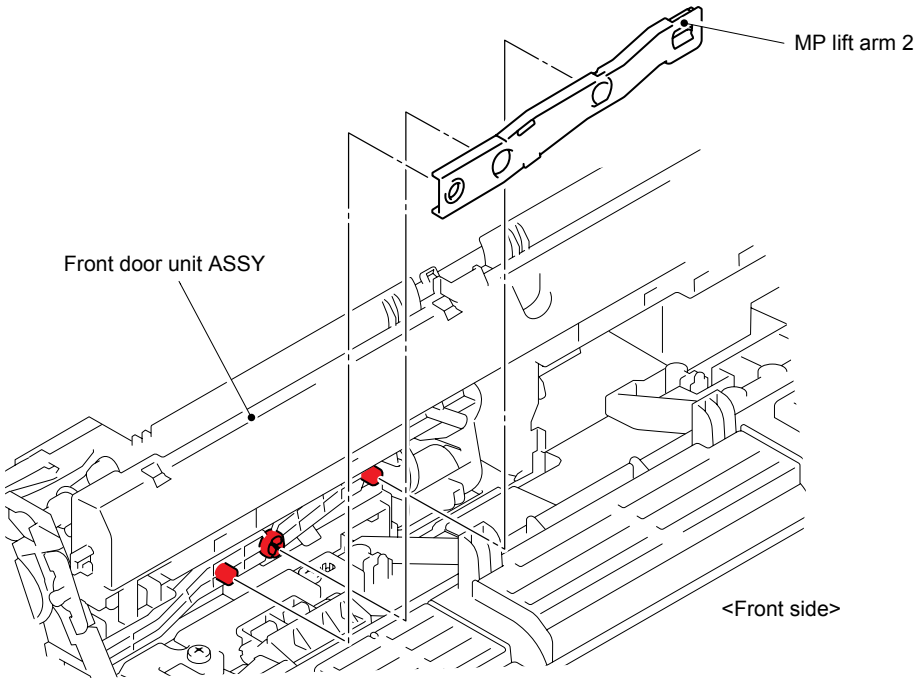


Fig. 3-24

(4) Release the Hook to slide the Holder bush MP in the direction of arrow 4b, and then remove the Holder bush MP from the shaft of the MP roller holder ASSY.

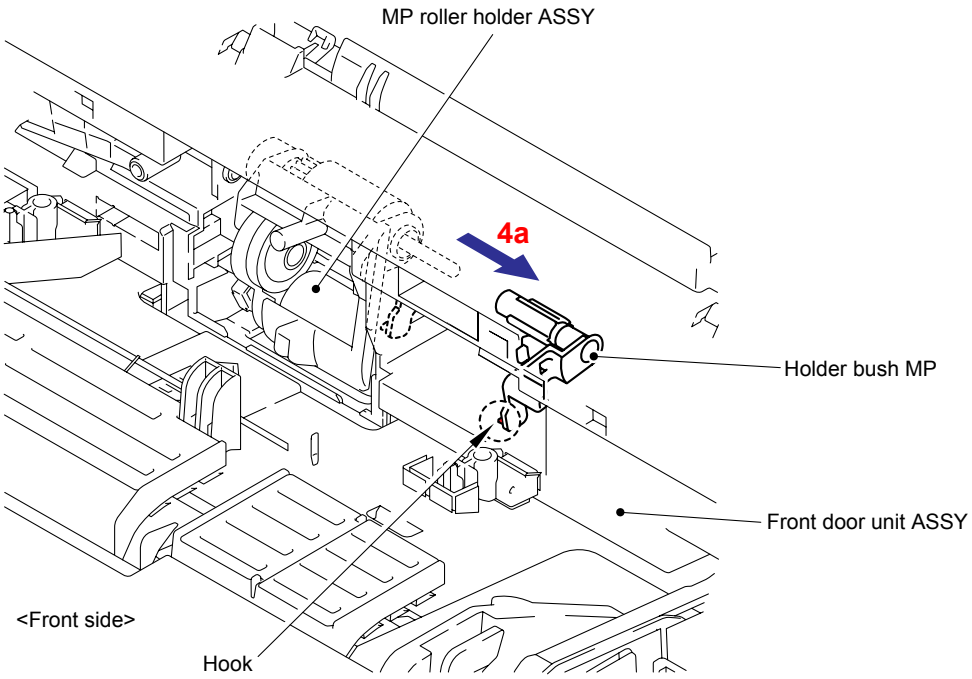


Fig. 3-25

(5) Slide the MP roller holder ASSY in the direction of arrow 5a and slightly pull it down in the direction of arrow 5b. Then, remove it.

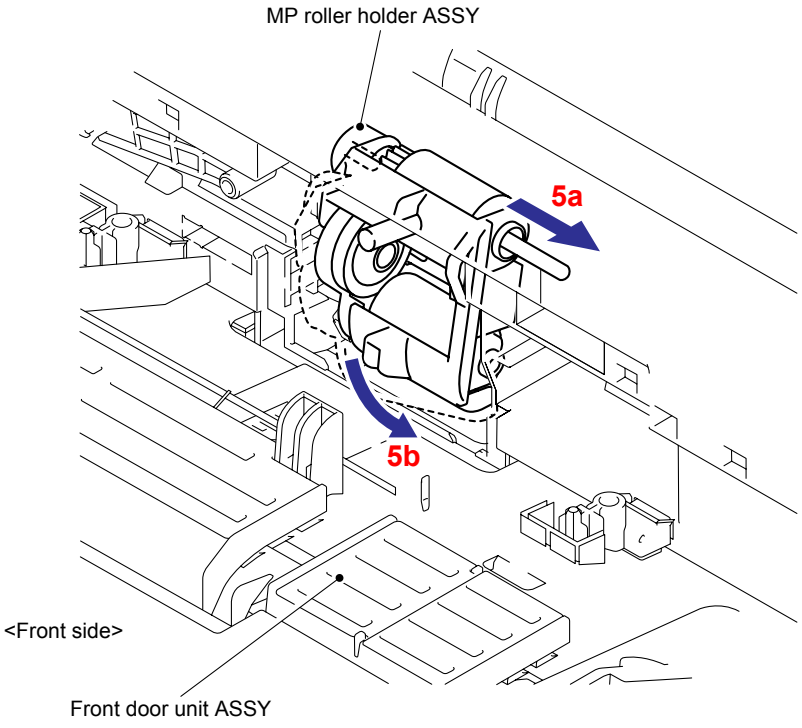


Fig. 3-26

(6) Remove the Separation pad ASSY MP from the Front door unit ASSY.

(7) Remove the Separation pad spring MP.

Note:

Be careful not to loose the Separation pad spring MP.

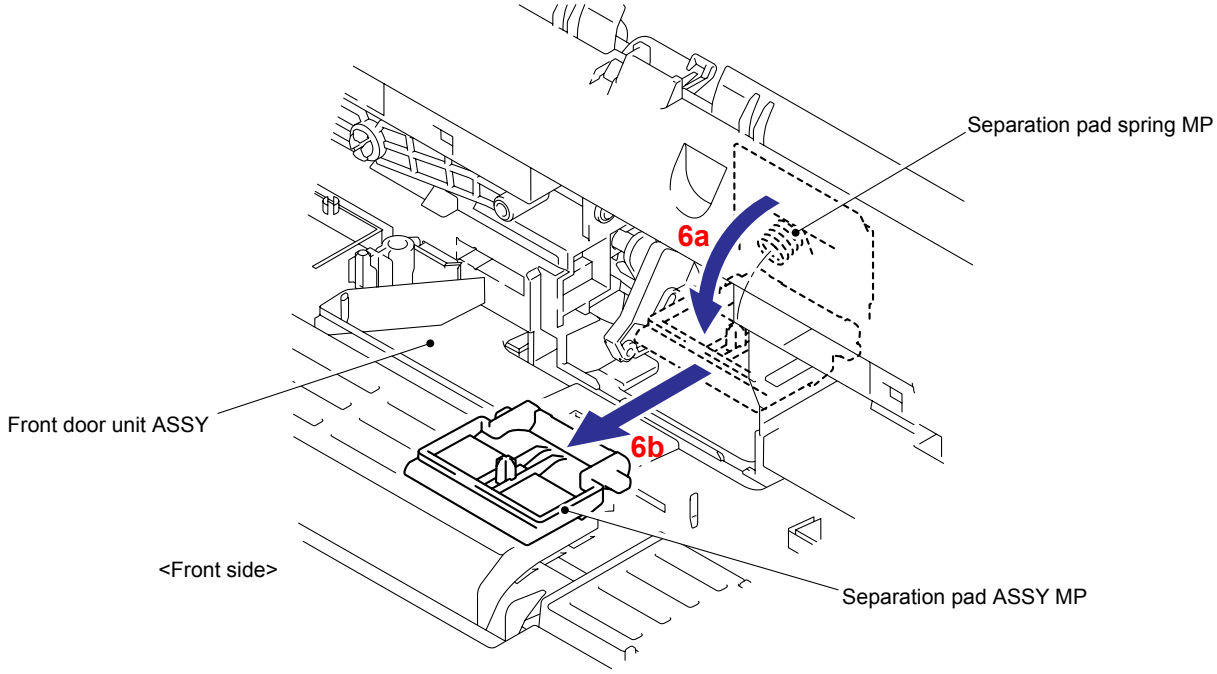


Fig. 3-27

8.10 Fuser Unit/ Toner Filter Frame ASSY

(1) Open the Back cover.

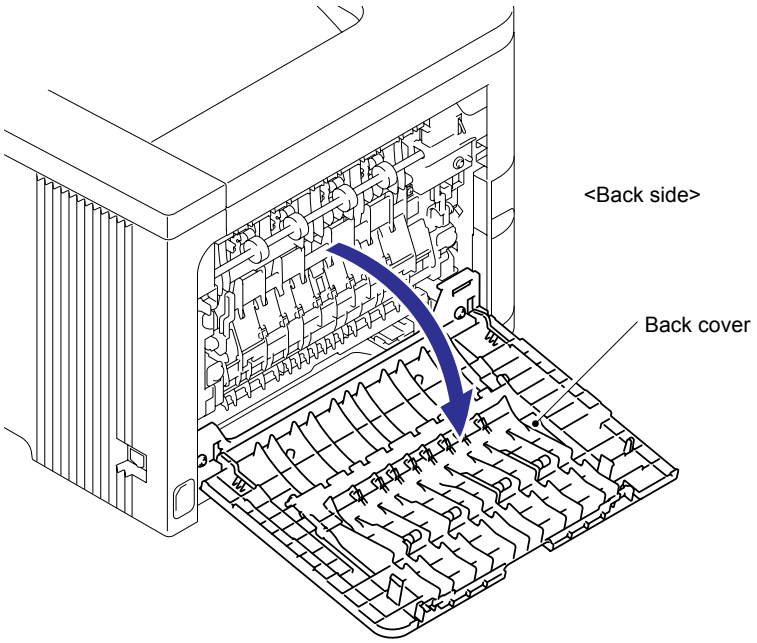


Fig. 3-28

(2) Remove the two pan B M4x14 Taptite screws, and then pull out the Fuser unit to the back of the machine.

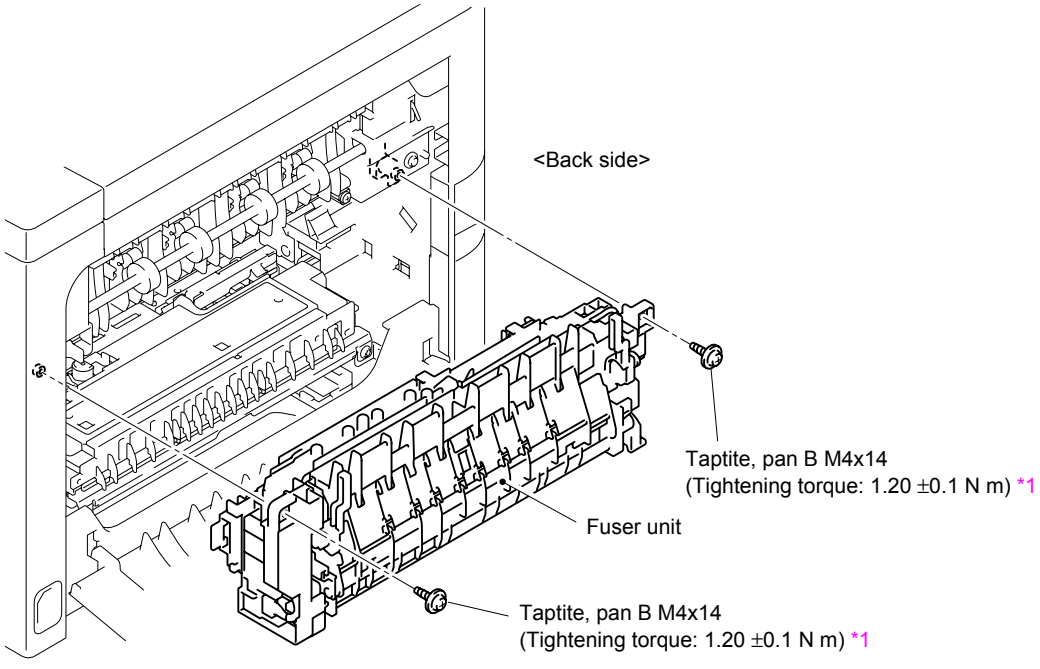


Fig. 3-29

*1 **Tightening Note:**
When tightening the screw, slowly turn it counterclockwise (in the direction to loosen the screw) with your hand until you feel that the screw is a little dropped in the hole. Then, slightly turn it clockwise (in the direction to tighten the screw) with your hand and tighten it according to the specified torque with a screwdriver.

(3) Remove the Toner filter frame ASSY from the Paper eject ASSY DX/SX.

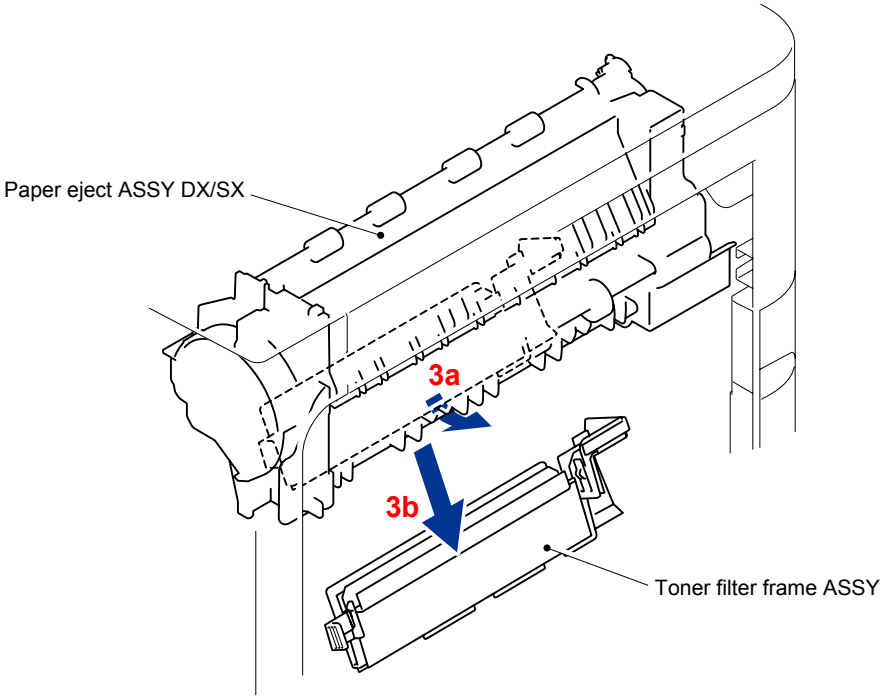


Fig. 3-30

Assembling Note:

- When assembling the fuser unit, make sure that the two Harnesses are placed in the groove and under the rib of the Plastic frame. If they are not, then correct them as shown in the figure below.

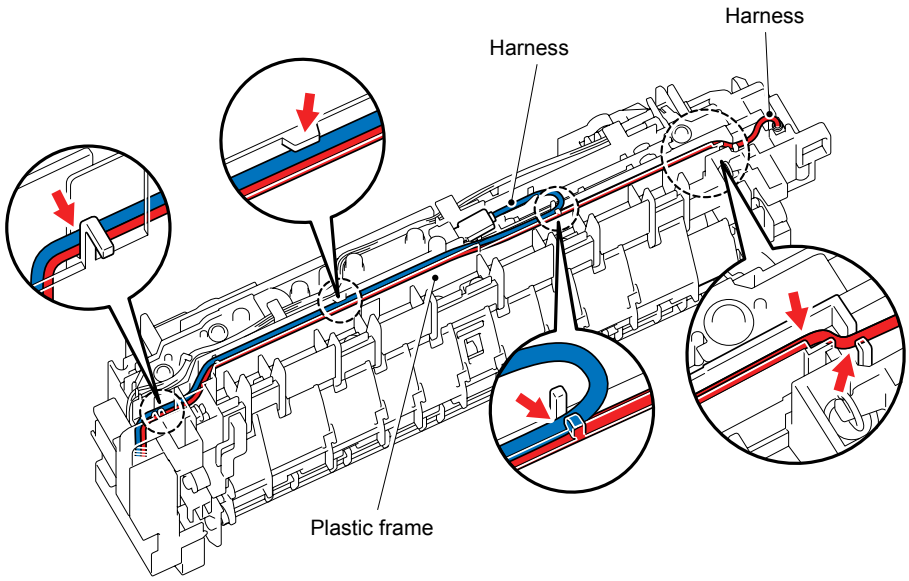


Fig. 3-31

- When assembling or disassembling the fuser unit, the sponge on the HV TR top cover might get scraped. If it is scraped, remove the scraped waste and clean the feeding path.
  After replacing the fuser unit, be sure to execute the test print and check that there are no print failures, such as vertical lines on the print result.

8.11 Back Cover Upper

(1) Remove the two cup S M3x8 Taptite screws, and then remove the Back cover upper.

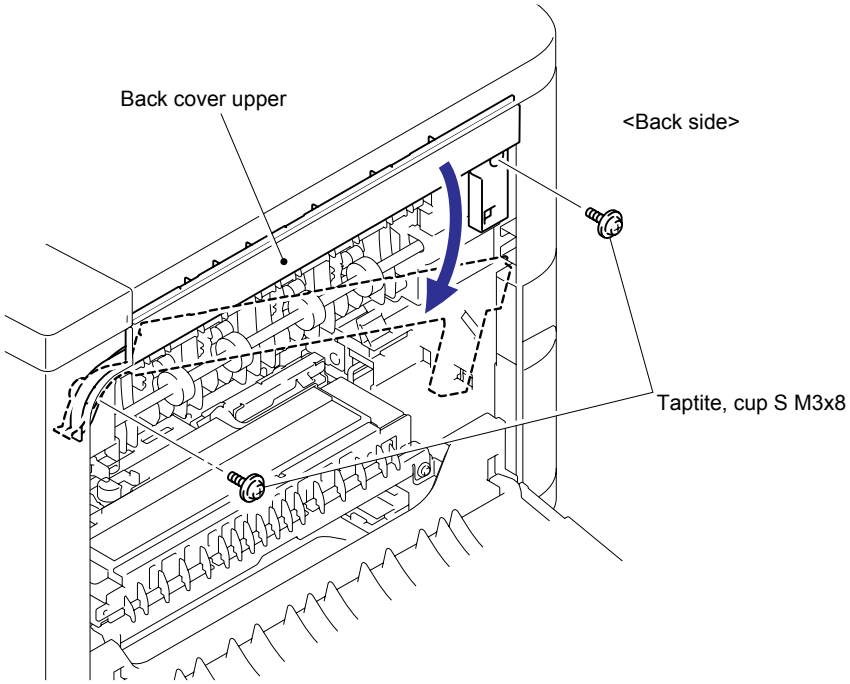


Fig. 3-32

8.12 Paper Eject ASSY DX/SX

(1) Remove the bind B M3x10 Taptite screw, and then remove the Drive shaft holder.

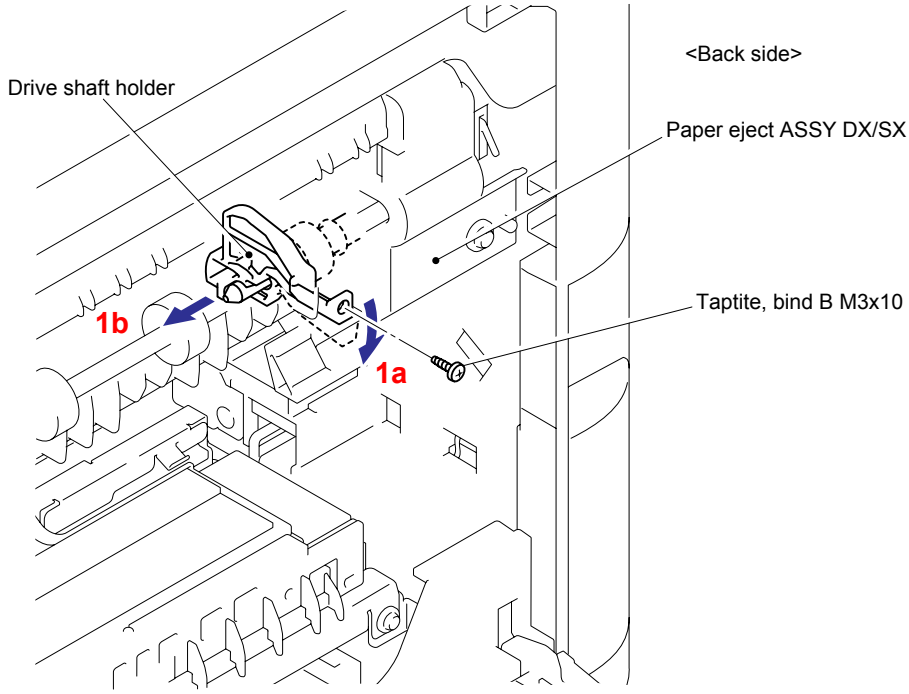


Fig. 3-33

(2) Release the Hook to remove the Fuser drive gear 18 from the shaft.

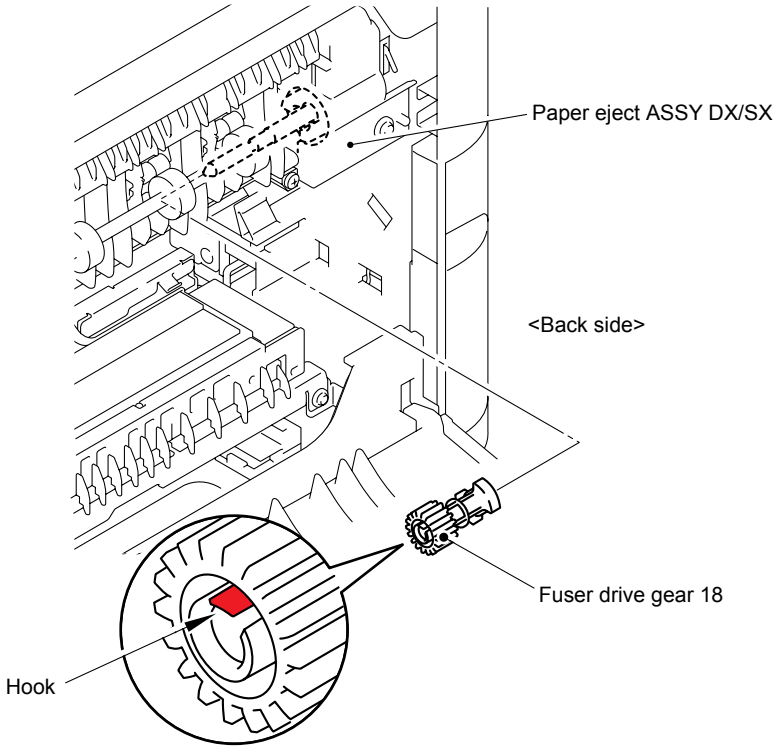


Fig. 3-34

(3) Remove the two cup B M4x12 Taptite screws and cup S M3x6 Taptite screw.

(4) Disconnect the connector. (HL-4040CDN/ 4050CDN/ 4070CDW only)

(5) Remove the Paper eject ASSY DX/SX.

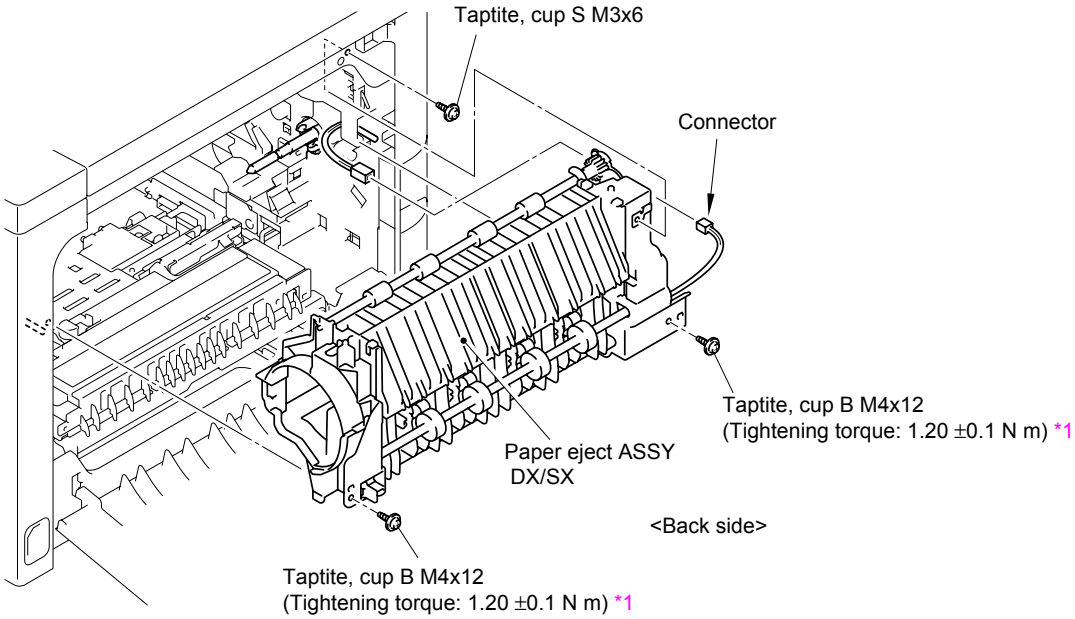


Fig. 3-35

*1 **Tightening Note:**
When tightening the screw, slowly turn it counterclockwise (in the direction to loosen the screw) with your hand until you feel that the screw is a little dropped in the hole. Then, slightly turn it clockwise (in the direction to tighten the screw) with your hand and tighten it according to the specified torque with a screwdriver.

Parts Replacement Note:

The Paper eject ASSY DX/SX is supplied with the Drive shaft holder already fitted. When replacing the Paper eject ASSY DX/SX, remove the Drive shaft holder from the supplied Paper eject ASSY DX/SX first, then assemble the Paper eject ASSY DX/SX.

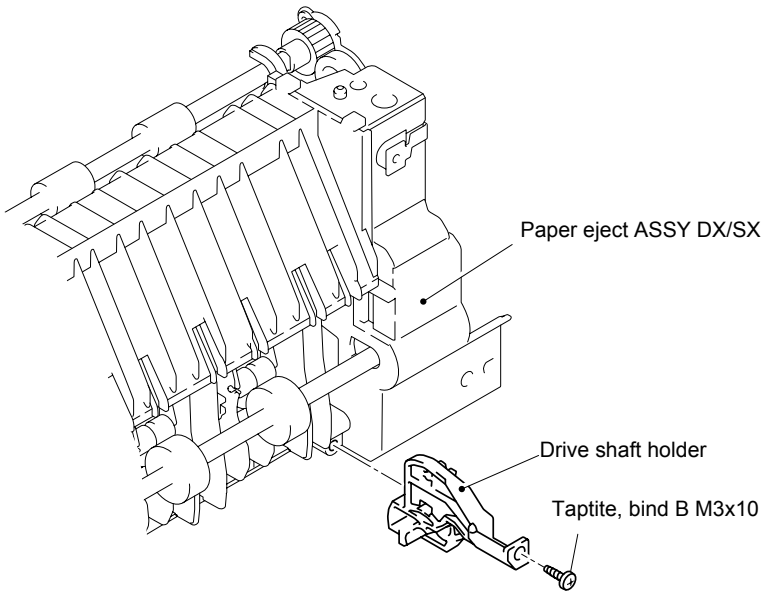


Fig. 3-36

Assembling Note:

(1) Put the Drive shaft holder into the Shaft of the Frame unit.

(2) Align the Hook and Pin of the Drive shaft holder with the hole on the Paper eject ASSY DX/SX while inclining the Drive shaft holder 10 degrees downwards.

(3) Move the Drive shaft holder to the direction of the arrow 3 to align it with the screw hole of the Paper eject ASSY DX/SX, and secure the Drive shaft holder with the bind B M3x10 Taptite screw.

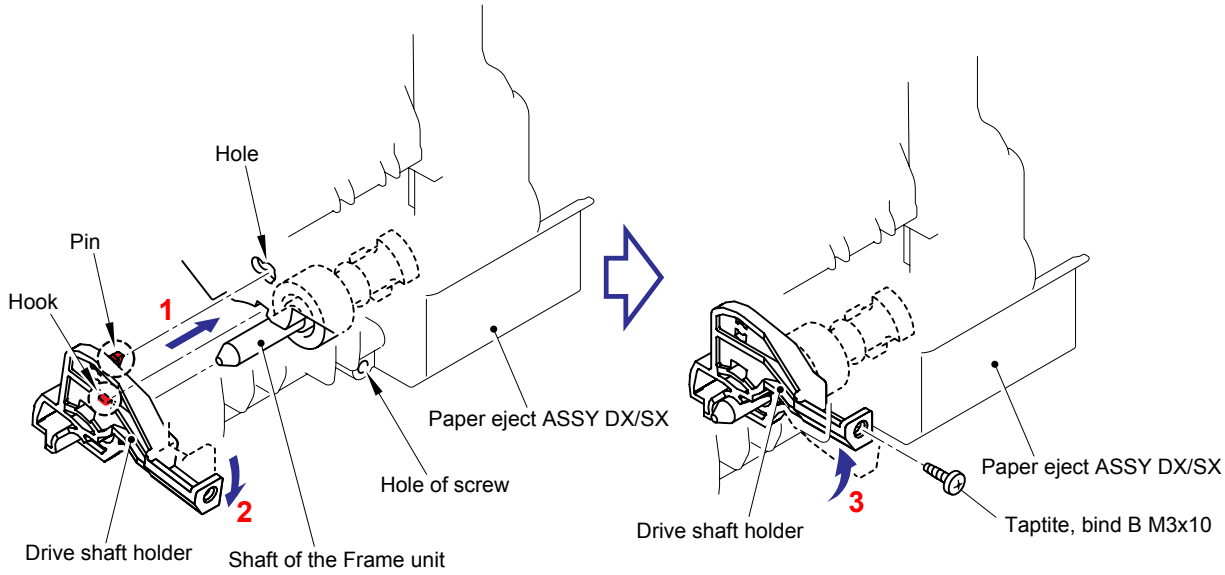


Fig. 3-37

8.13 Back Cover ASSY

(1) Remove the two cup S M3x8 Taptite screws, and then remove the Back cover ASSY.

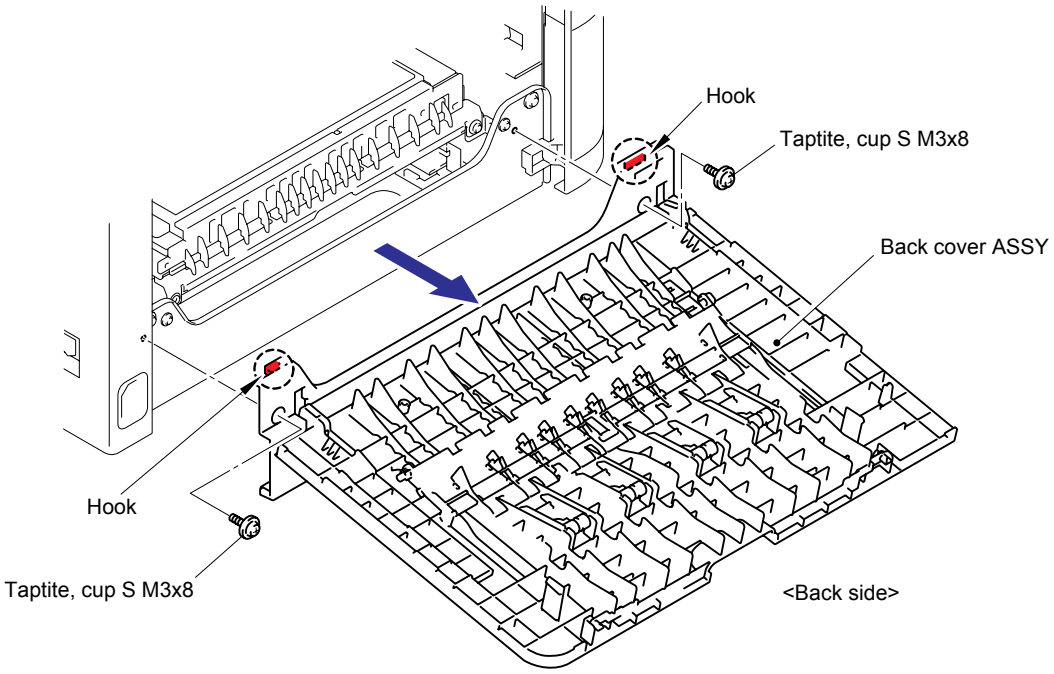


Fig. 3-38

8.14 Paper Guide DX/ HV TR Top Cover

(1) Release the two Bosses, and then remove the Paper guide DX from the Transfer HVPS PCB unit while lifting it up slightly.

Note:

When removing the Paper guide DX, be careful not to damage the two Ribs.

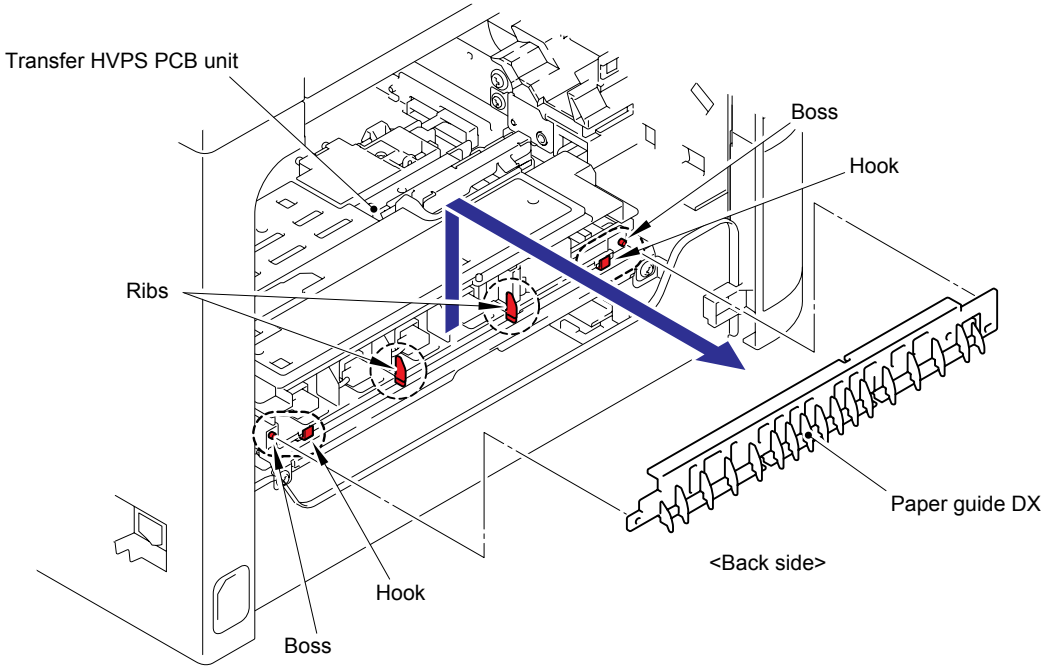


Fig. 3-39

(2) Slide the HV TR top cover to the left hand side and release the four Hooks. Then, remove the HV TR top cover.

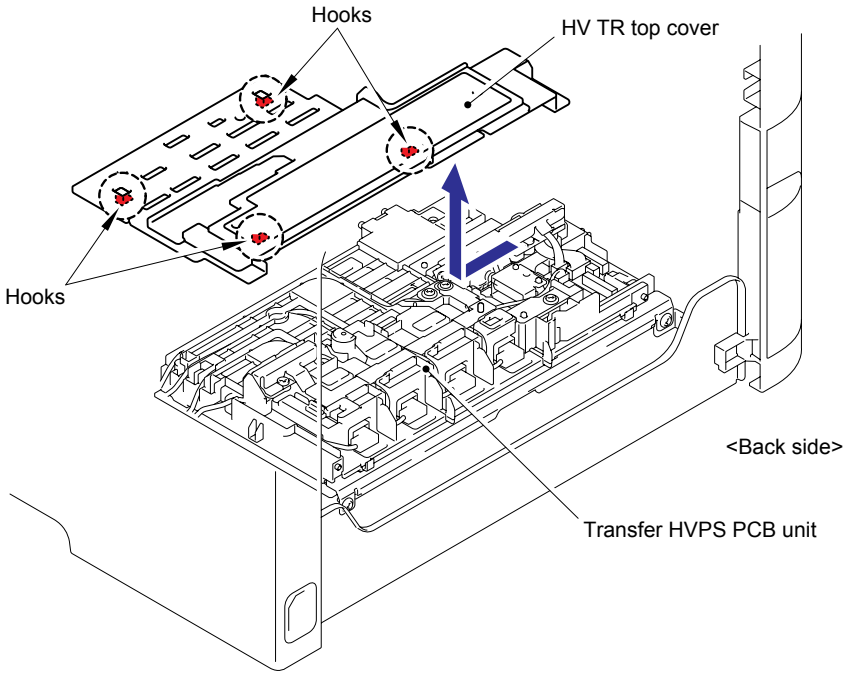


Fig. 3-40

8.15 Transfer HVPS PCB Unit

(1) Disconnect the four Connectors from the Electrode head.

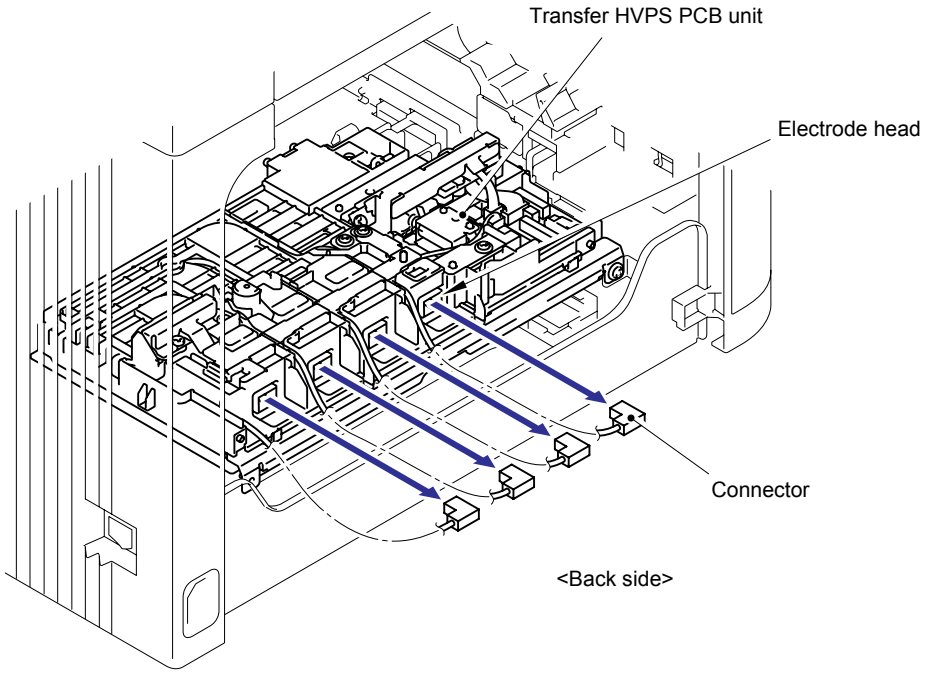


Fig. 3-41

(2) Disconnect the flat cable (CN1) and two connectors (CN5, CN8) from the Registration relay PCB unit.

Note:

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

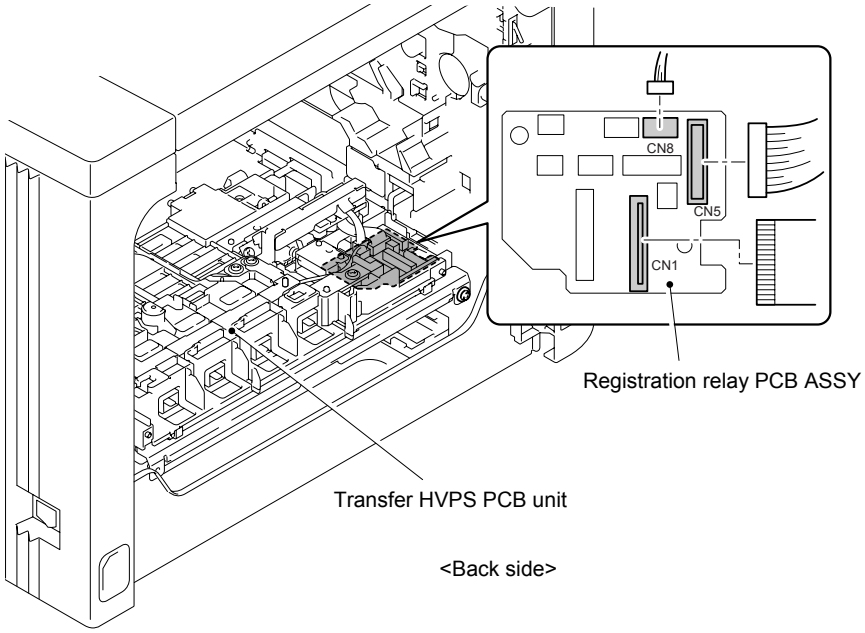


Fig. 3-42

(3) Remove the two cup S M3x6 Taptite screws, and then remove the Transfer HVPS PCB unit.

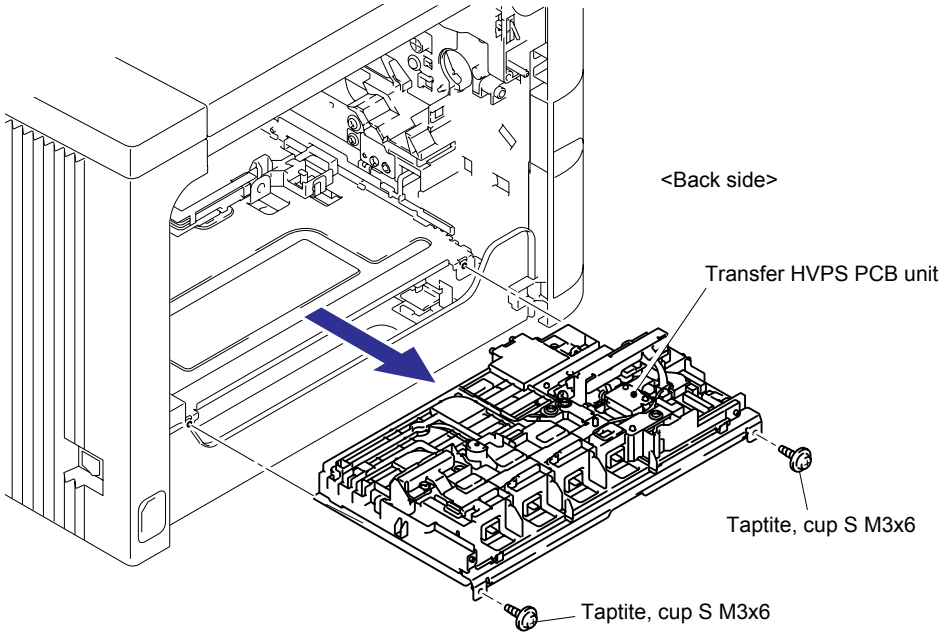


Fig. 3-43

8.16 Registration-mark Sensor PCB ASSY 1, 2/ Density Sensor/ Registration Relay PCB ASSY/ Transfer HVPS PCB ASSY

(1) Remove the bind B M3x8 Taptite screw, and then remove the Earth plate 3.

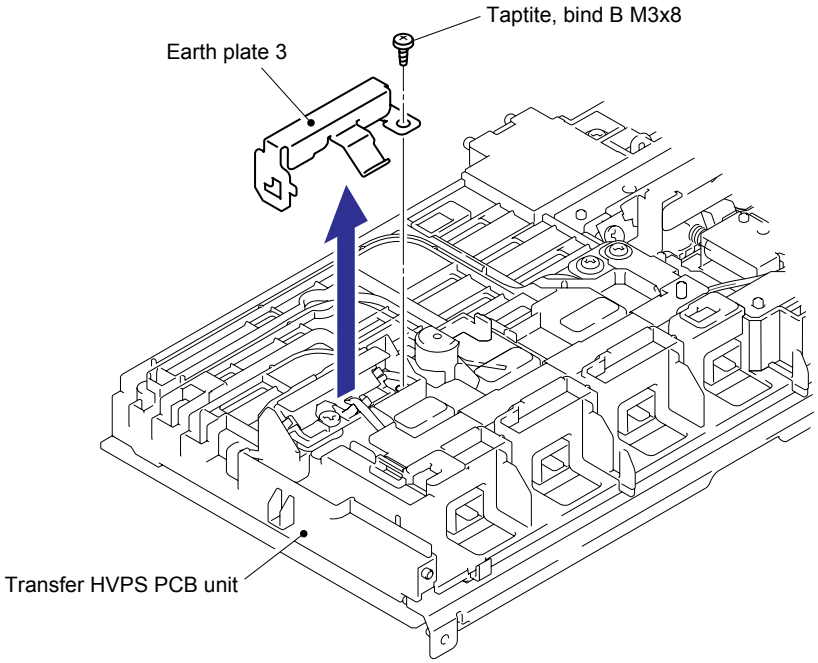


Fig. 3-44

(2) Remove the two bind B M3x8 Taptite screws, and then remove the Density shield plate 1.

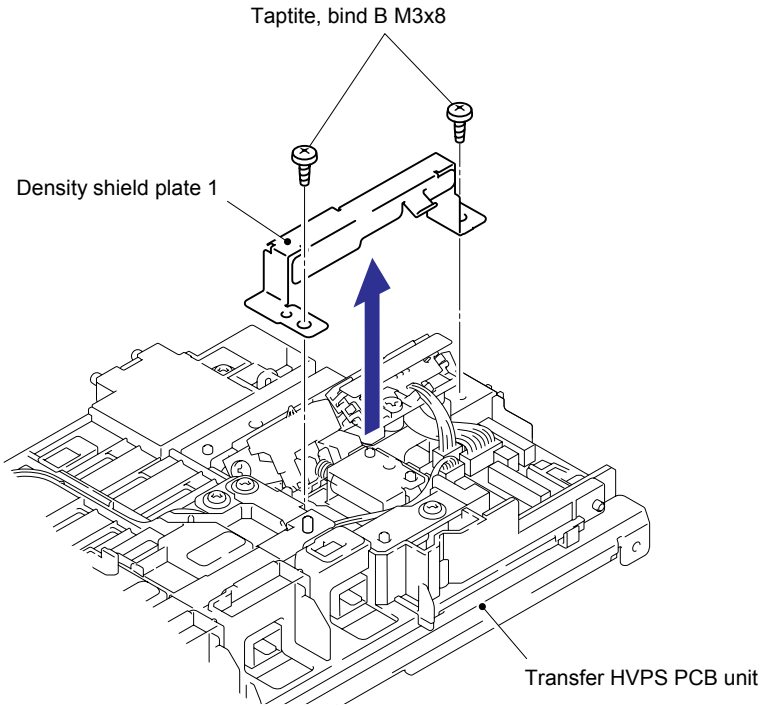


Fig. 3-45

(3) Remove the cup S M3x6 Taptite screw, and then remove the Earth plate 2.

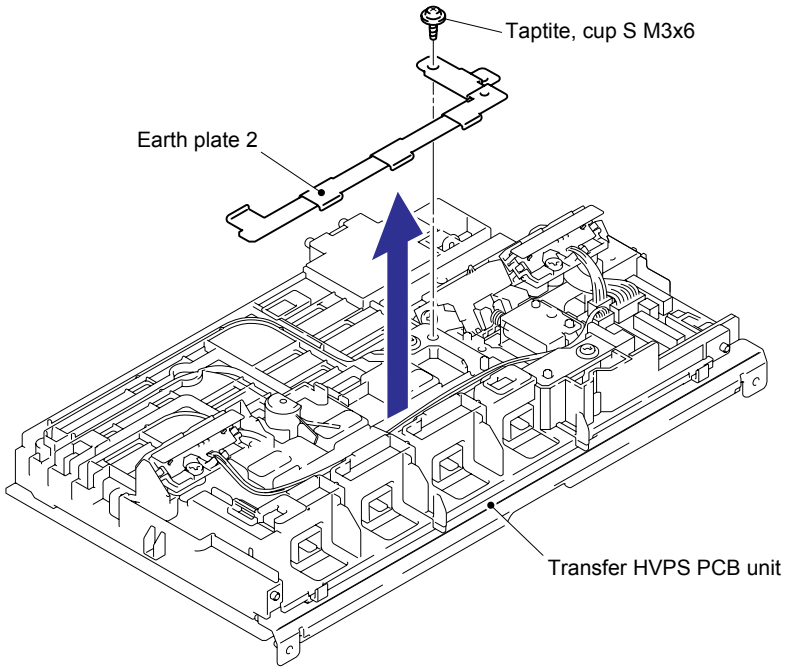


Fig. 3-46

(4) Disconnect the Connector (CN3) of the Registration-mark sensor PCB ASSY 1.

(5) Remove the bind B M3x8 Taptite screw, and then remove the Registration-mark sensor PCB ASSY 1 from the Density sensor holder.

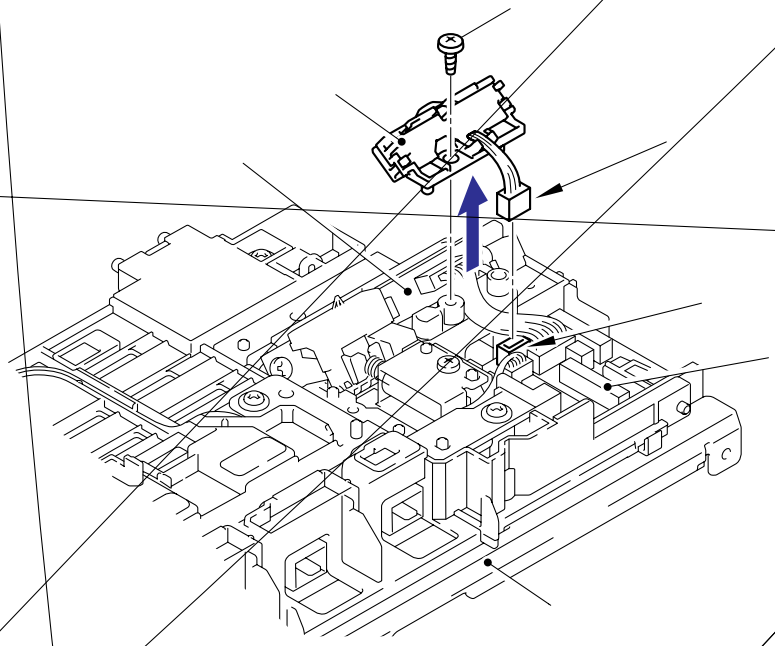
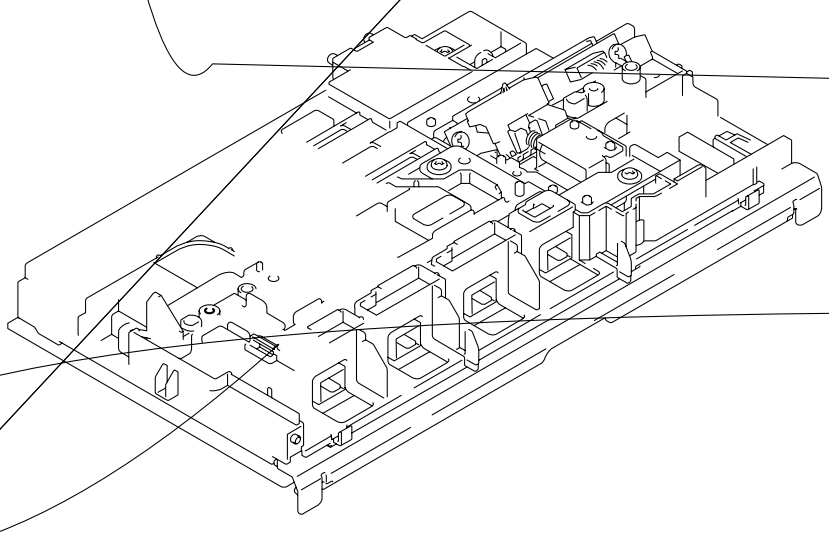


Fig. 3-47

(6) Disconnect the Connector (CN4) of the Registration-mark sensor PCB ASSY 2.

(7) Remove the bind B M3x8 Taptite screw, and then remove the Registration-mark sensor PCB ASSY 2.



(8) Disconnect the Connector (CN7), and remove the two bind B M3x8 Taptite screws, and then remove the Density sensor.

Note:

Do not touch the Variable resistor on the back of the Density sensor.

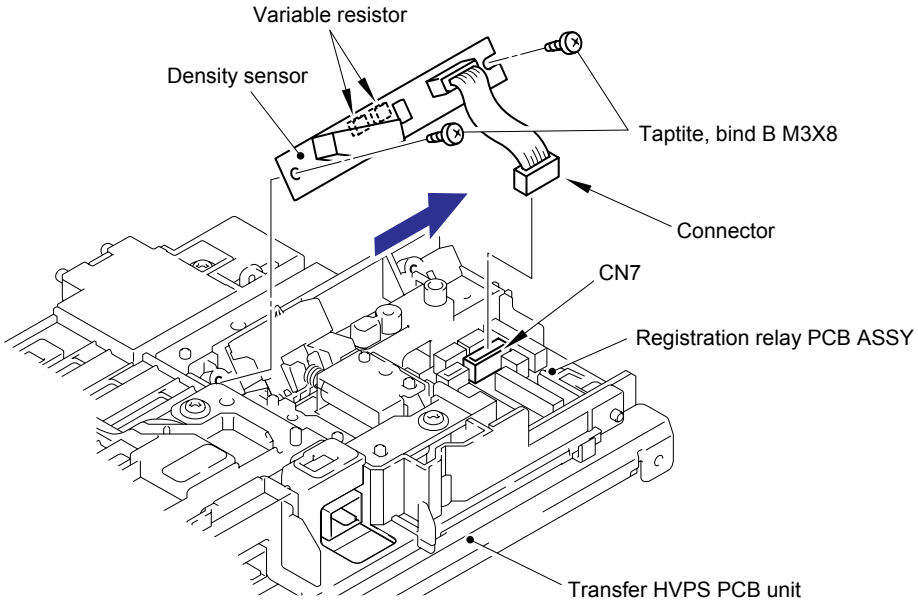


Fig. 3-49

(9) Disconnect the Flat cable (CN2) and three Connectors (CN6, CN9, CN13) from the Registration relay PCB ASSY.

Note:

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

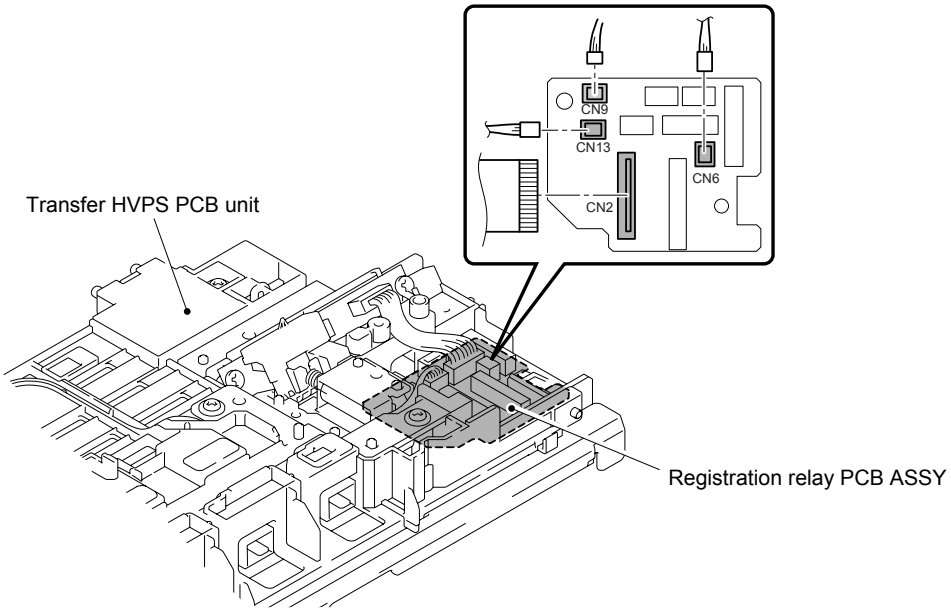


Fig. 3-50

(10) Turn the Transfer HVPS PCB ASSY upside down. Remove the bind B M3x8 Taptite screw from the Registration relay PCB ASSY.

(11) Remove the Registration relay PCB ASSY from the Transfer HVPS PCB unit.

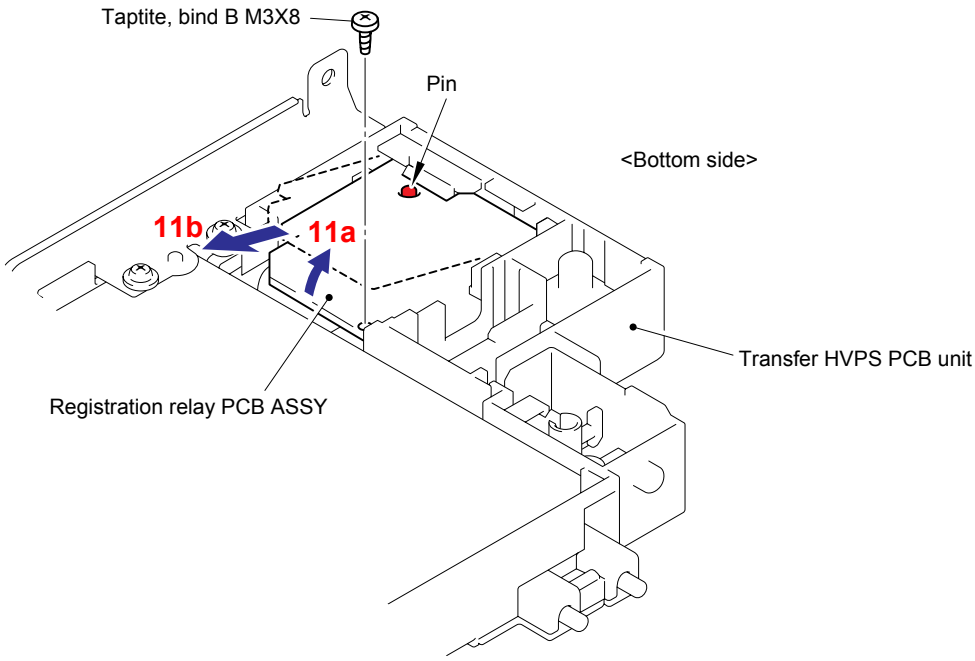


Fig. 3-51

(12) Remove the three cup B 3x10 Taptite screws and one cup S M3x6 Taptite screw, and then remove the HV TR ground plate and Transfer HVPS PCB ASSY.

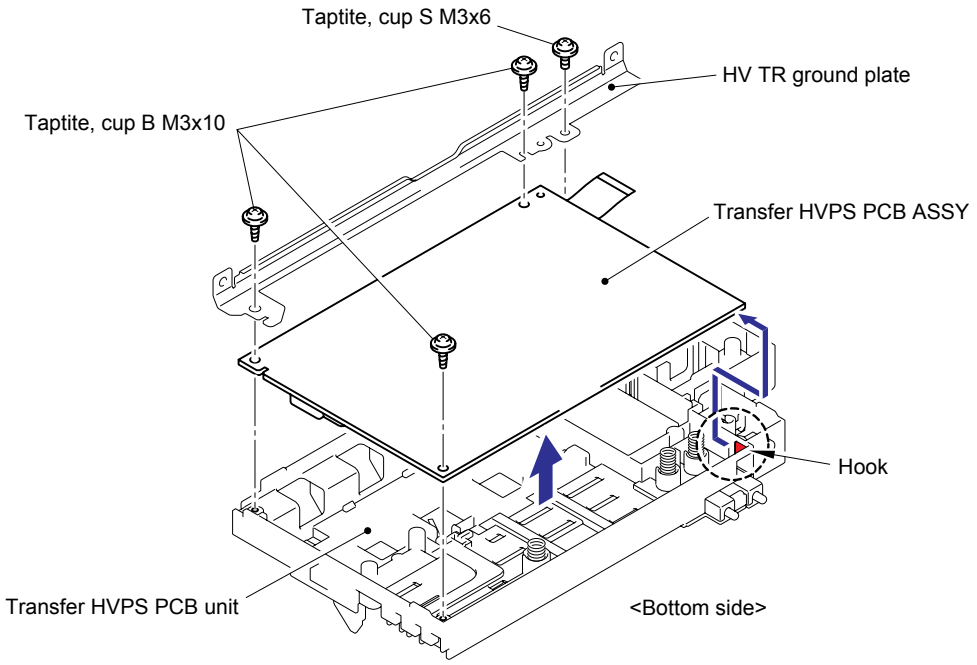


Fig. 3-52

Assembling Note:

When assembling the Registration relay PCB ASSY, put the section “A” of the Registration relay PCB ASSY into the section “B” of the Transfer HVPS PCB unit.

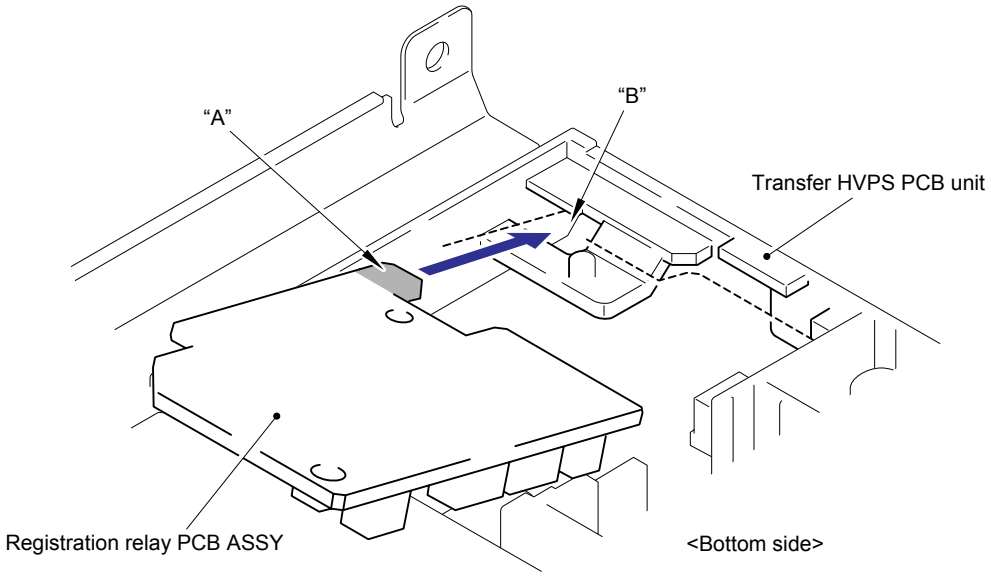


Fig. 3-53

8.17 Side Cover L ASSY

(1) Remove the cup S M3x8 Taptite screw and three cup B M4x12 Taptite screws.

(2) Release the three Hooks on the bottom and the two hooks on the back side, and then remove the Side cover L ASSY.

Note:

When removing the Side cover L ASSY, pay attention to the Wire support rope.

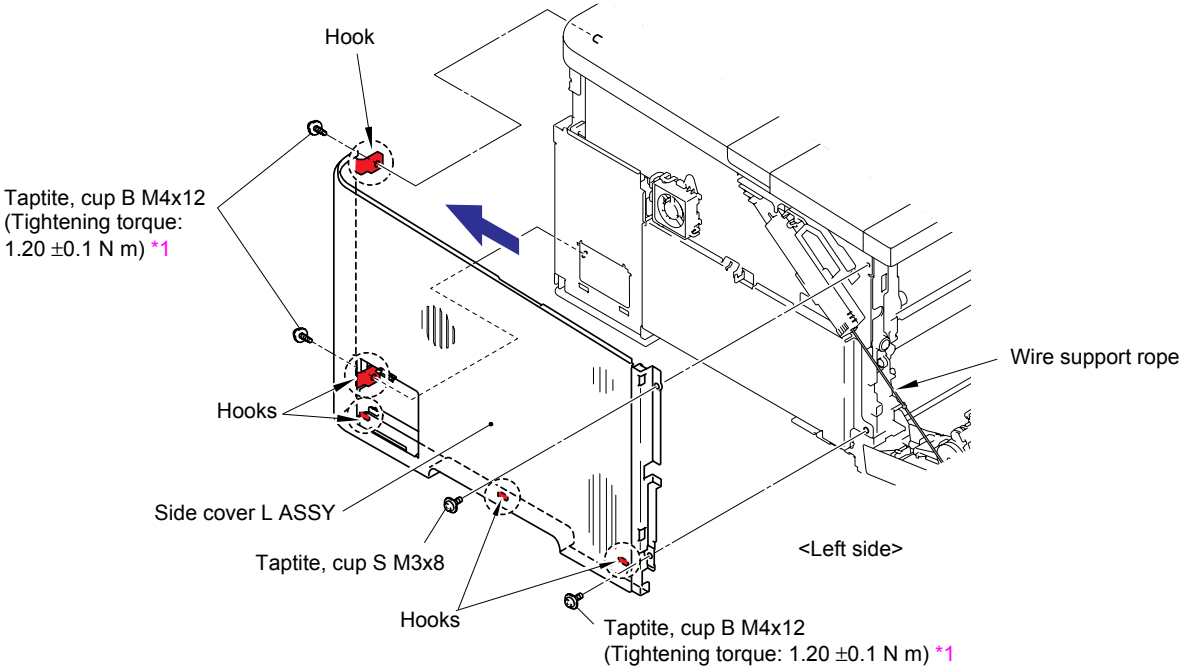


Fig. 3-54

*1 **Tightening Note:**

When tightening the screw, slowly turn it counterclockwise (in the direction to loosen the screw) with your hand until you feel that the screw is a little dropped in the hole. Then, slightly turn it clockwise (in the direction to tighten the screw) with your hand and tighten it according to the specified torque with a screwdriver.

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

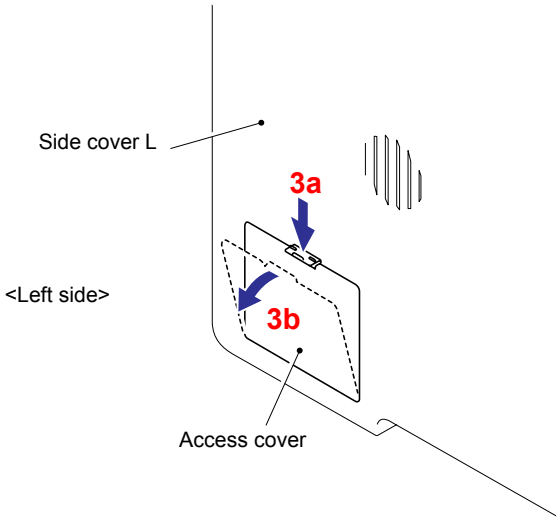


Fig. 3-55

8.18 Side Plate LB

(1) Remove the three cup S M3x6 Taptite screws, cup B M4x12 Taptite screw and cup S M4x8 Taptite screw, and then remove the Side plate LB.

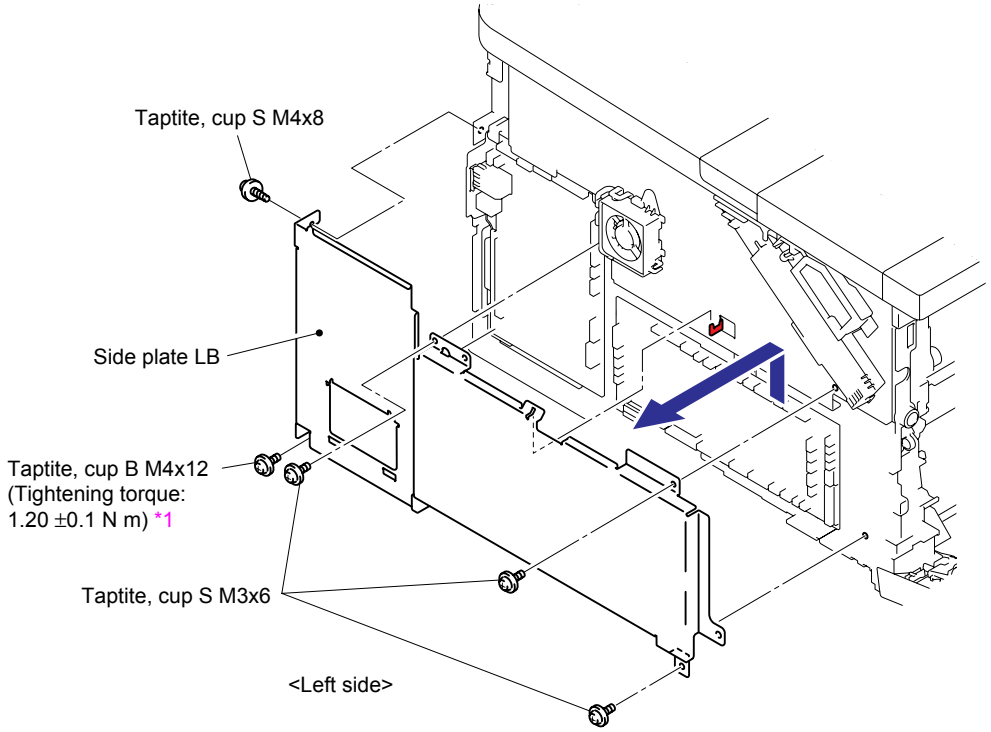


Fig. 3-56

*1 **Tightening Note:**
When tightening the screw, slowly turn it counterclockwise (in the direction to loosen the screw) with your hand until you feel that the screw is a little dropped in the hole. Then, slightly turn it clockwise (in the direction to tighten the screw) with your hand and tighten it according to the specified torque with a screwdriver.

8.19 Drum Unit Fan (OPC)

(1) Disconnect the Connector from the Engine PCB ASSY, and then remove the Drum unit fan (OPC).

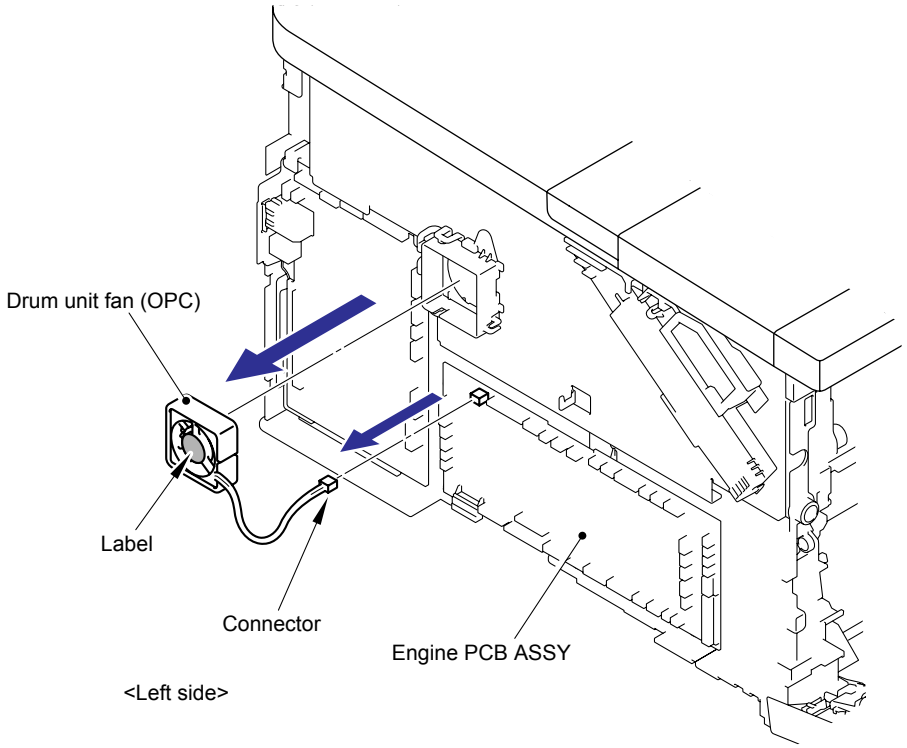


Fig. 3-57

Assembling Note:

When assembling the Drum unit fan (OPC), place it so that the attached Label faces outwards.

8.20 Side Cover R ASSY

(1) Remove the two cup B M4x12 Taptite screws and two cup S M4x8 Taptite screws.

(2) Release the one Hook on the front side, two Hooks on the bottom and the two Hooks on the back side, and then remove the Side cover R ASSY.

Note:
When removing the Side cover R ASSY, be careful not to damage section “A”.

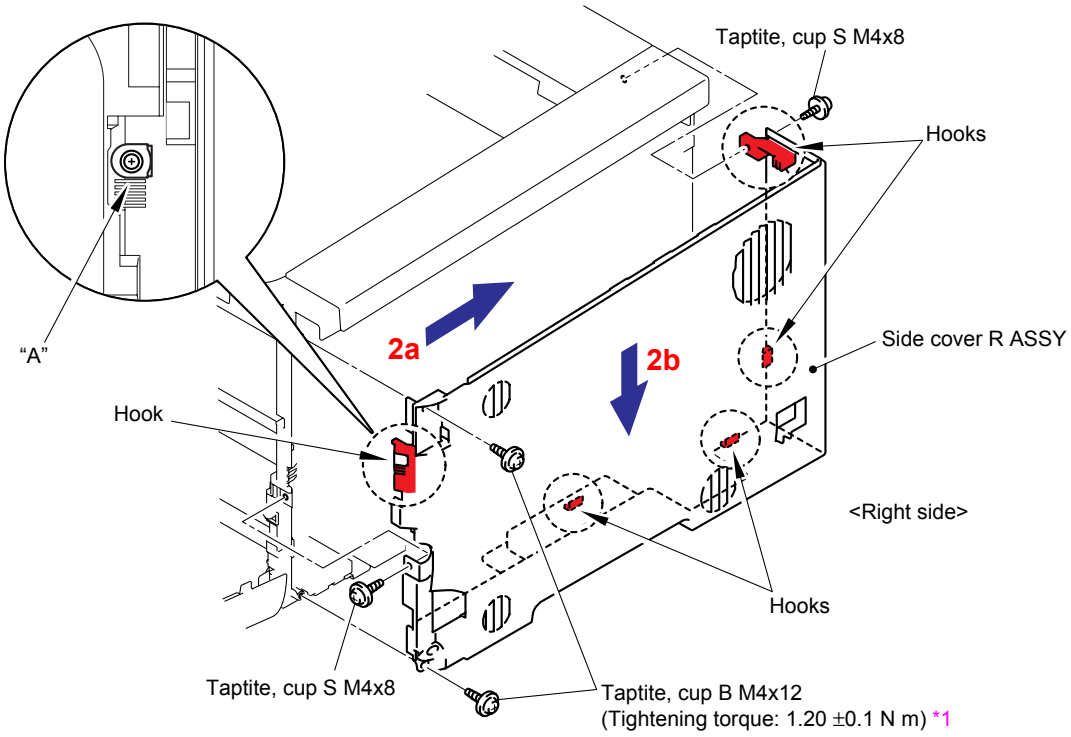


Fig. 3-58

*1 **Tightening Note:**
When tightening the screw, slowly turn it counterclockwise (in the direction to loosen the screw) with your hand until you feel that the screw is a little dropped in the hole. Then, slightly turn it clockwise (in the direction to tighten the screw) with your hand and tighten it according to the specified torque with a screwdriver.

8.21 Roller Holder ASSY

(1) Push the Lift arm to the direction of the arrow 1a and release the boss of the Roller holder ASSY. Then, turn the Roller holder ASSY to the direction of the arrow 1b.

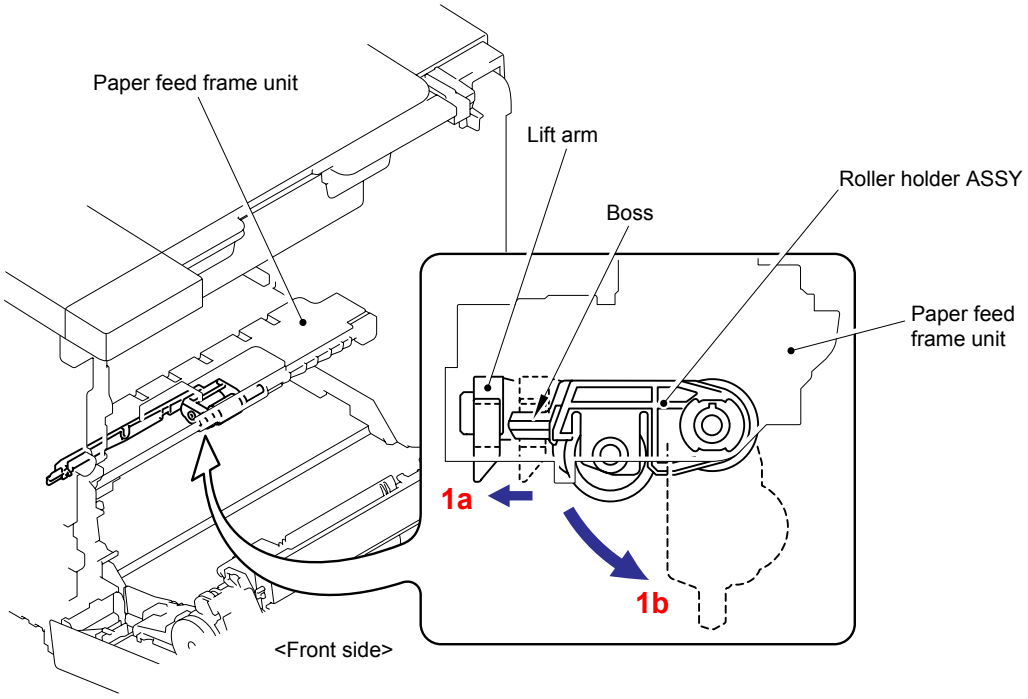


Fig. 3-59

(2) Slide the Roller holder ASSY to the direction of the arrows 2a, 2b and 2c in this order and remove it.

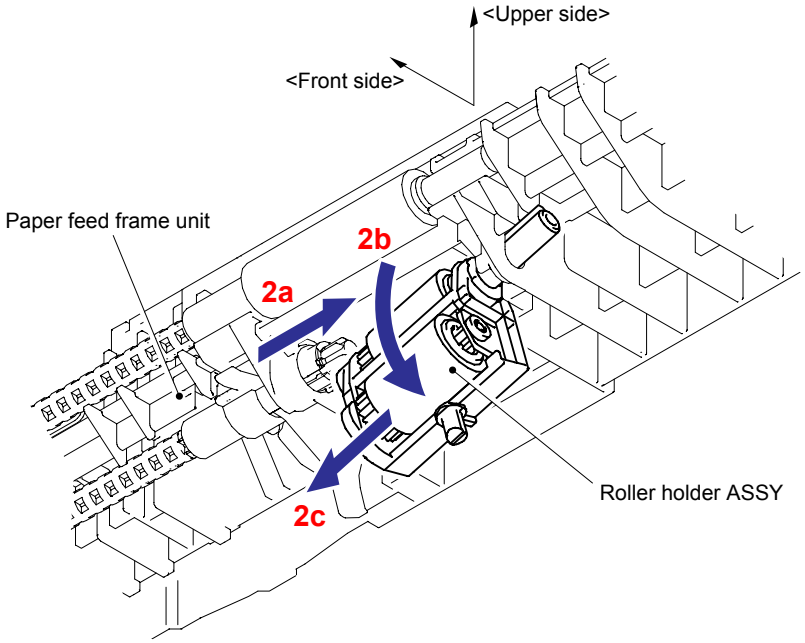


Fig. 3-60

8.22 Paper Feed Frame Unit/ T1 PE/Edge Sensor PCB ASSY

(1) Disconnect the three connectors (CN1, CN10, CN11) from Engine PCB ASSY.

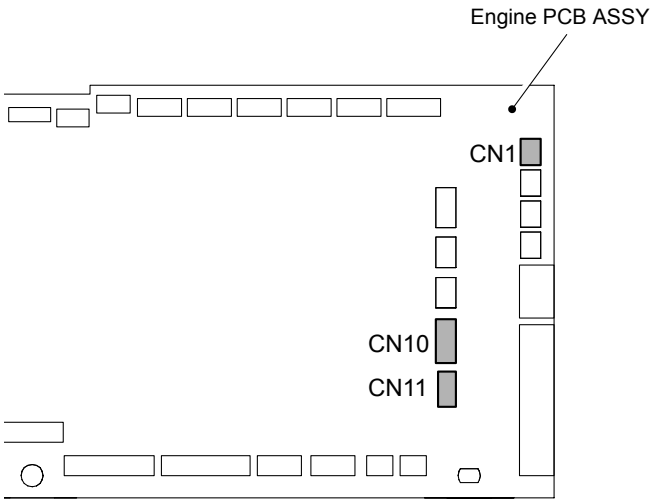


Fig. 3-61

(2) Close the Front door unit ASSY. Remove the cup S M3x6 Taptite screw and two bind B M3x10 Taptite screws.

(3) Open the Front door unit ASSY. Slide the Paper feed frame unit in the direction of arrows 3a and 3b in this order and remove it.

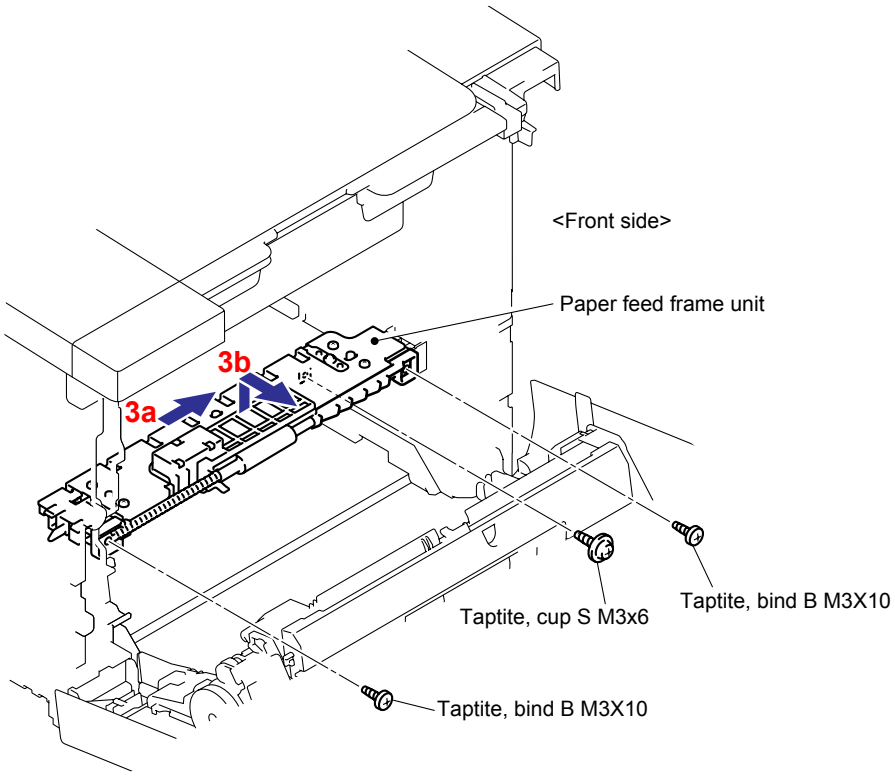


Fig. 3-62

(4) Release the two Hooks to remove the PF CR harness holder.

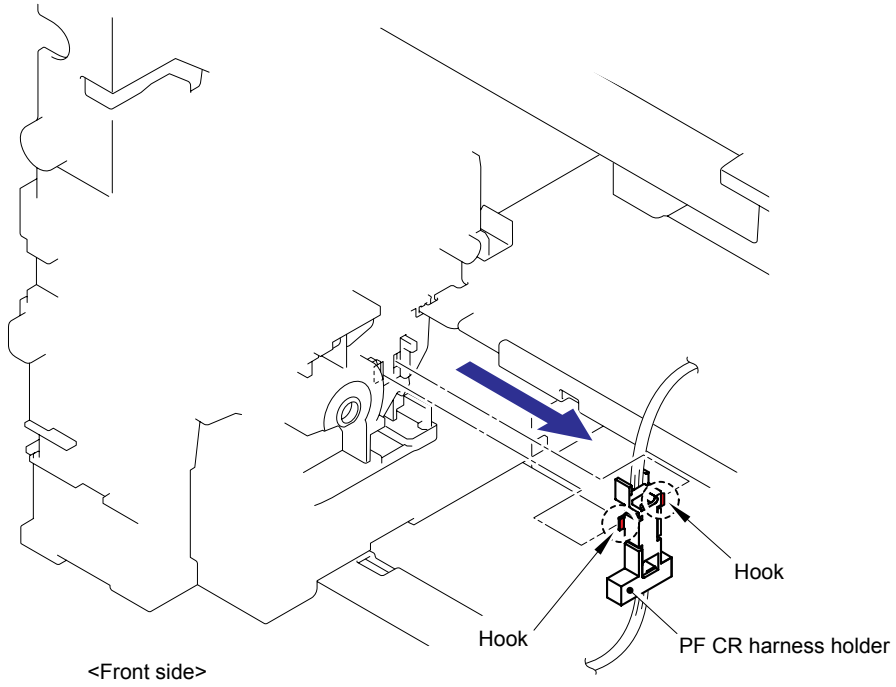


Fig. 3-63

(5) Remove the Harness from the PF CR harness holder.

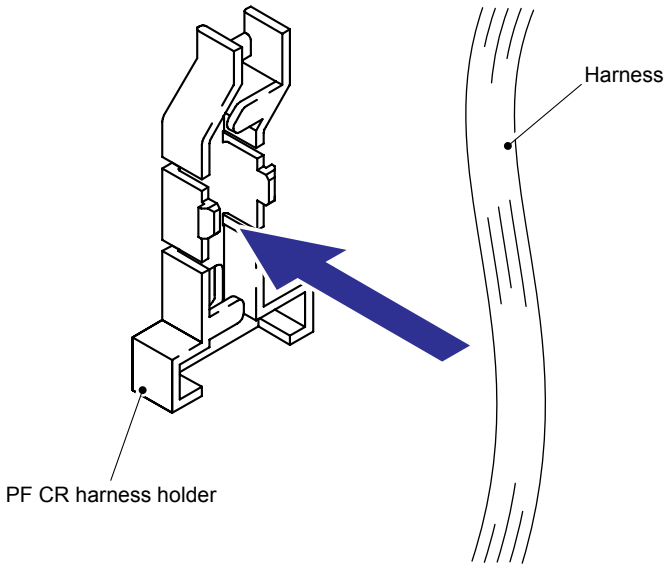


Fig. 3-64

(6) Remove the five bind B M3x8 Taptite screws, and then remove the PF plate from the Paper feed frame.

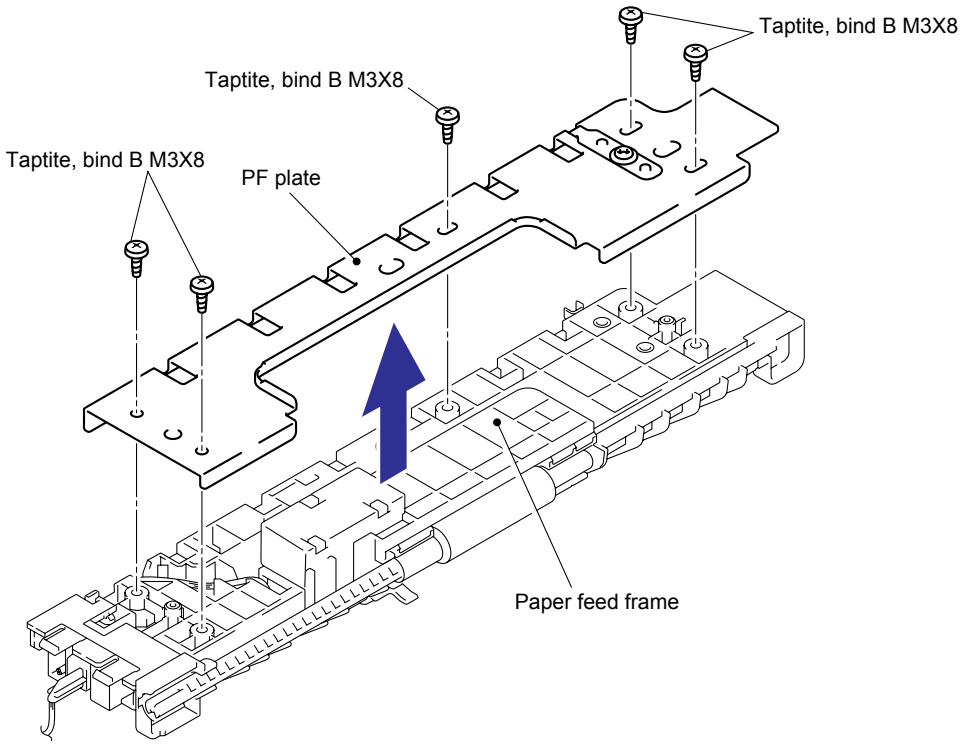


Fig. 3-65

(7) Release the Hook of the Separation roller bush to remove it. Then, remove the Separation roller drive shaft.

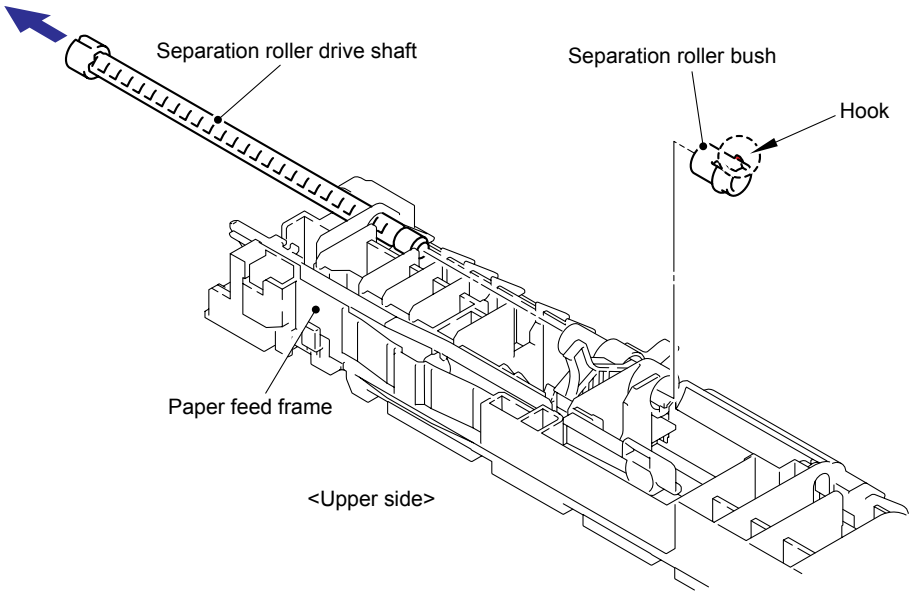


Fig. 3-66

(8) Remove the Edge actuator and PE actuator, and remove the Edge actuator spring.

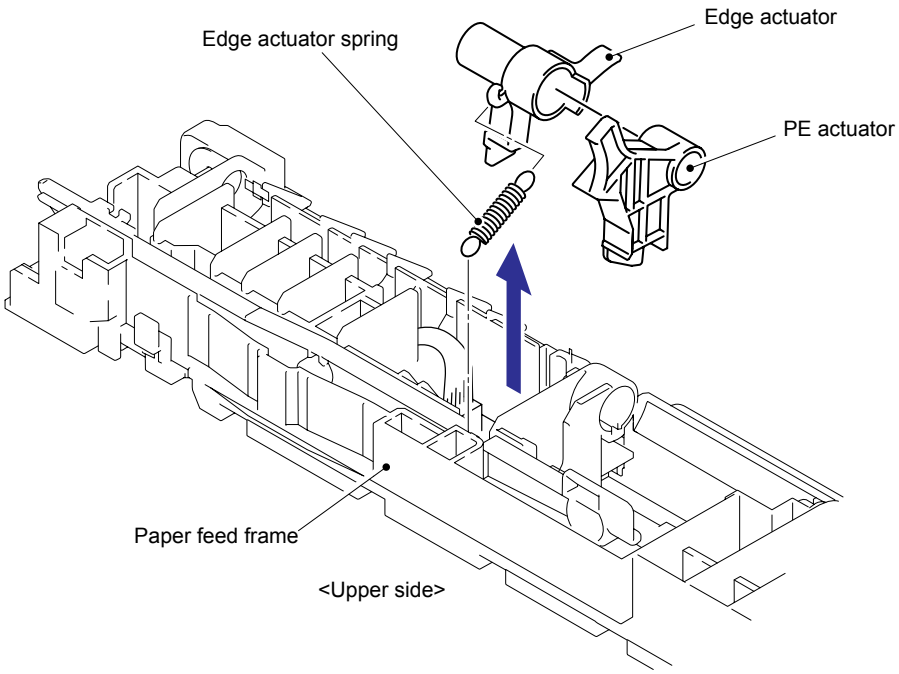


Fig. 3-67

(9) Release the three Hooks to remove the T1 PE/edge sensor PCB ASSY.

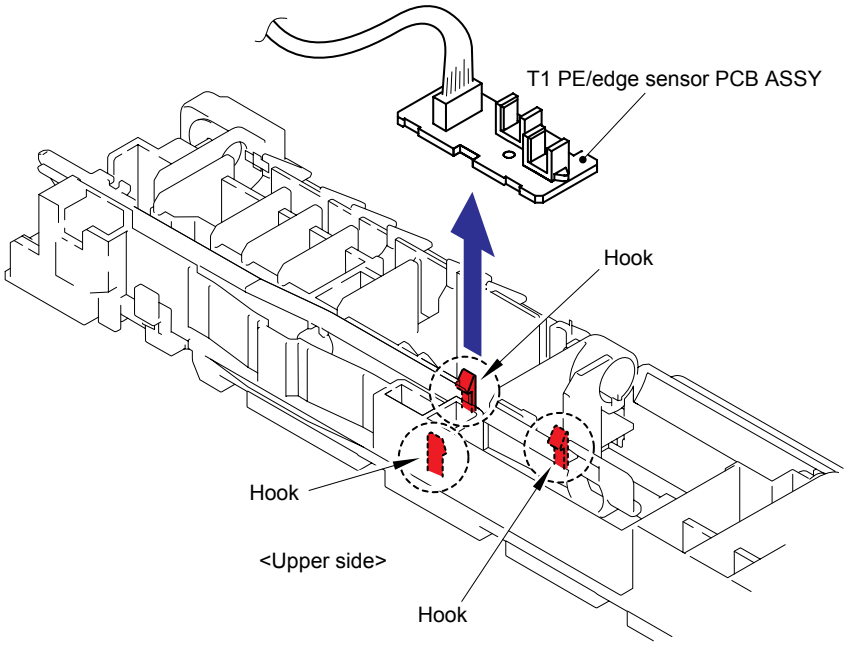


Fig. 3-68

Assembling Note:

When assembling the Paper feed frame unit, make sure to follow the procedure described below.

(1) Put the belt cleaner release sensor harness and belt cleaner release solenoid harness through the hole on the paper feed frame.

(2) Put the two harnesses above and T1 PE/edge sensor harness through the PF CR harness holder and put them out of the hole on the Side frame L.

(3) Hold the PU lift up cam with a Screwdriver or the like so that it is push to the back side of the machine. The section “B” shown in Fig. 3-71 in the next page can be moved up and down by this operation, which makes easy to assemble the lift arm.

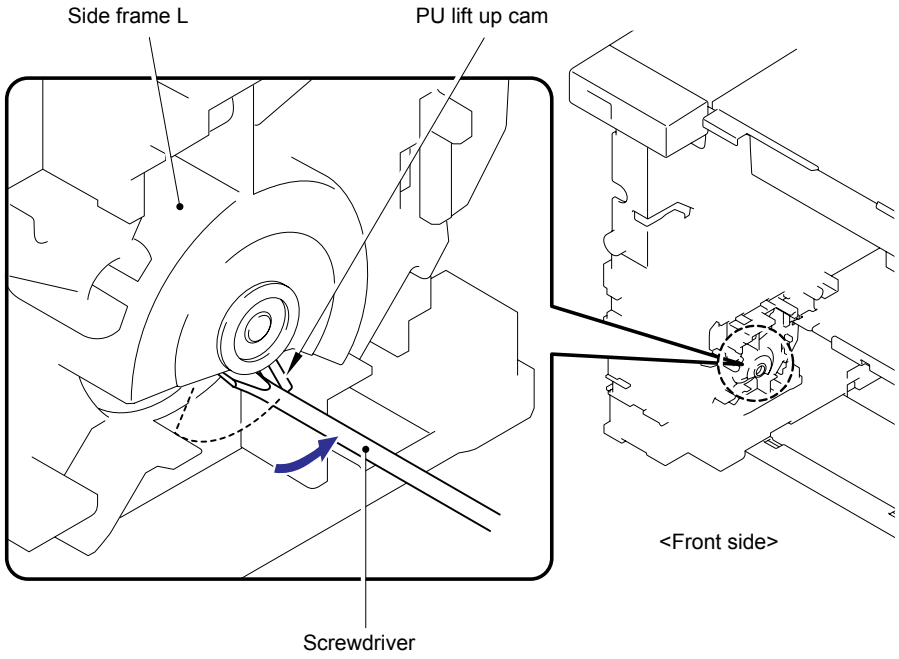


Fig. 3-69

(4) Assemble the Lift arm, Feed roller shaft TR and Separation roller drive shaft of the Paper feed frame unit following the procedure described below.

<Assembling the Lift arm>

Implement the operations below while holding the status described in Step (3).

1) When pushing up the Roller holder ASSY with your hand, the end (section “A”) of the Lift arm goes down. That makes easy to push the end of the Lift arm under the section “B” shown in Fig. 3-71.

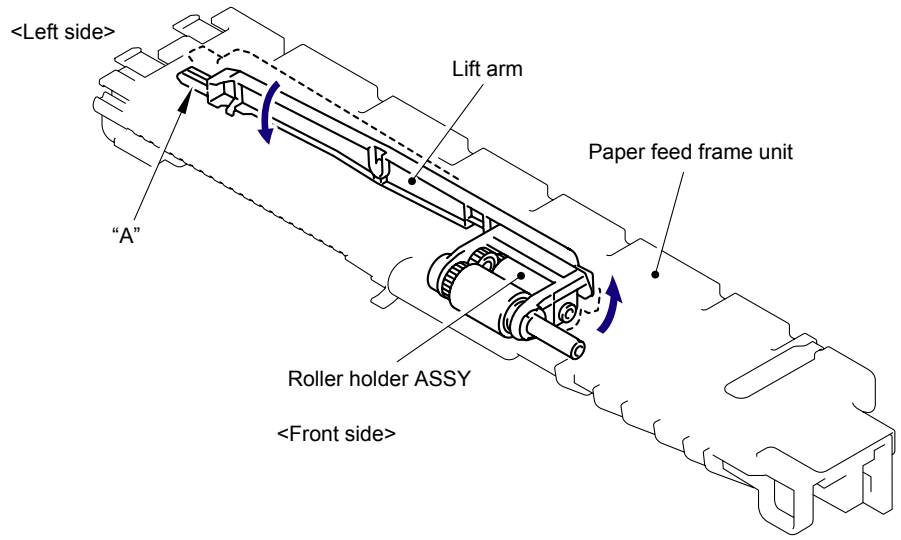


Fig. 3-70

2) Push up the section “B” of the Side frame L with the end (section “A”) of the Lift arm and place the section “A” under the section “B”. Then, put the section “A” into the space between the Hooks B and C inside the machine and assemble the Paper feed frame unit into the machine.

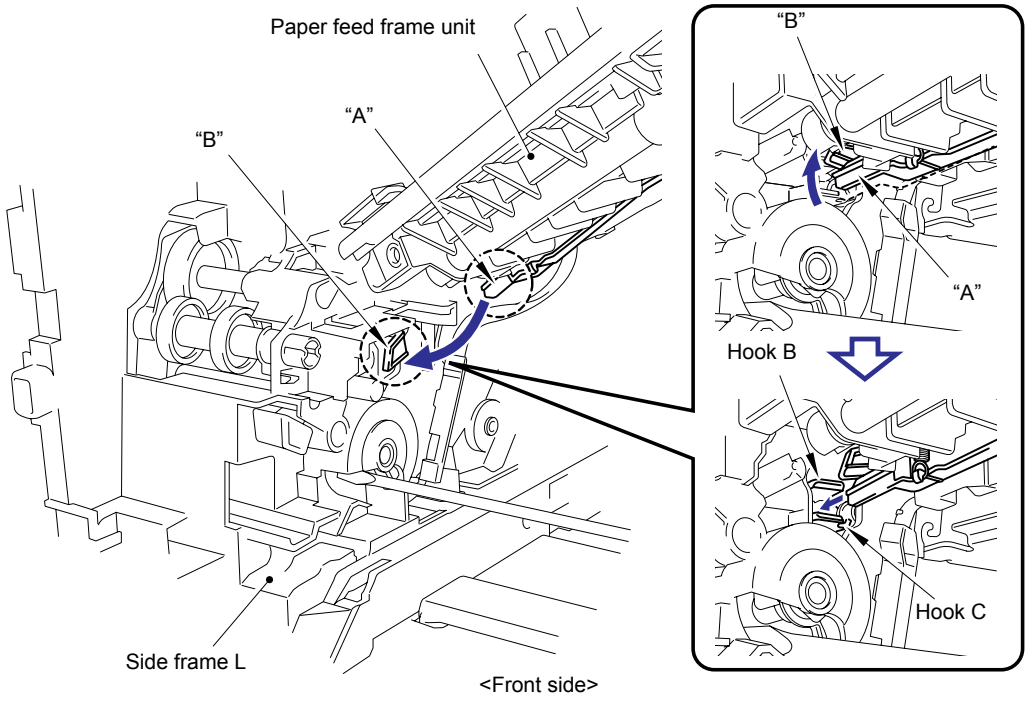


Fig. 3-71

<Assembling the Feed roller shaft TR>

While moving the Paper feed frame unit to the left hand side, turn the Gear to align the section “C” with the Feed roller shaft TR and put the shaft into the section “C”.

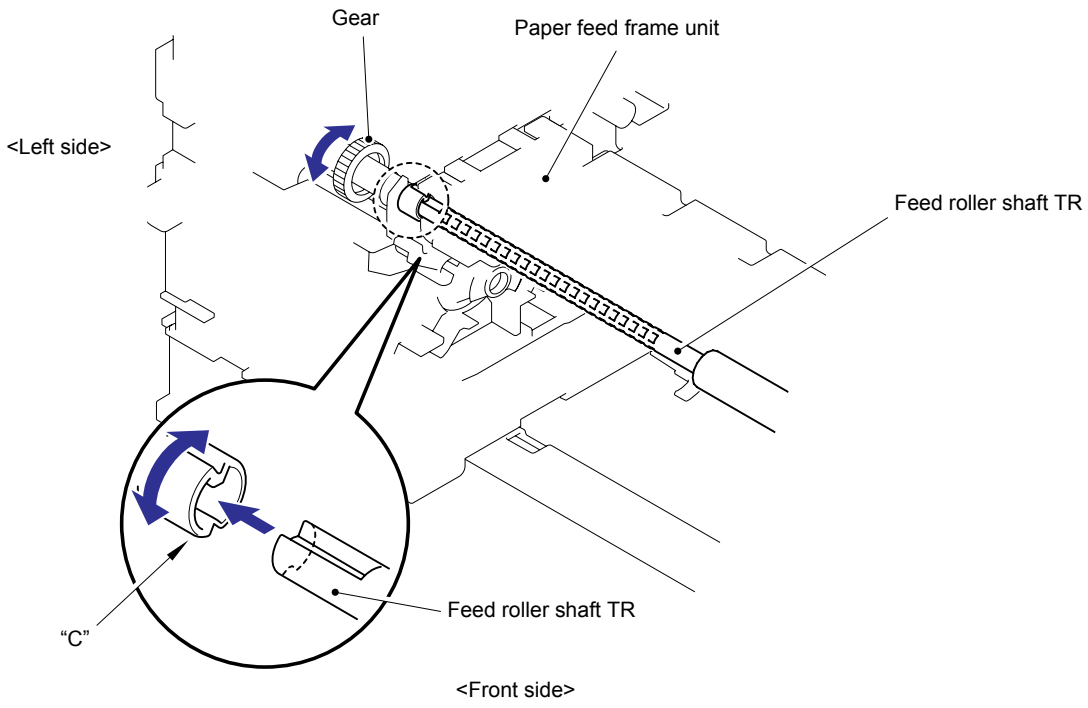


Fig. 3-72

<Assembling the Separation roller drive shaft>

While moving the Paper feed frame unit to the left hand side, turn the Separation roller of the Roller holder ASSY to align the section “D” of the Separation roller drive shaft with the section “E” of the Side frame L and put the section “E” into the section “D”.

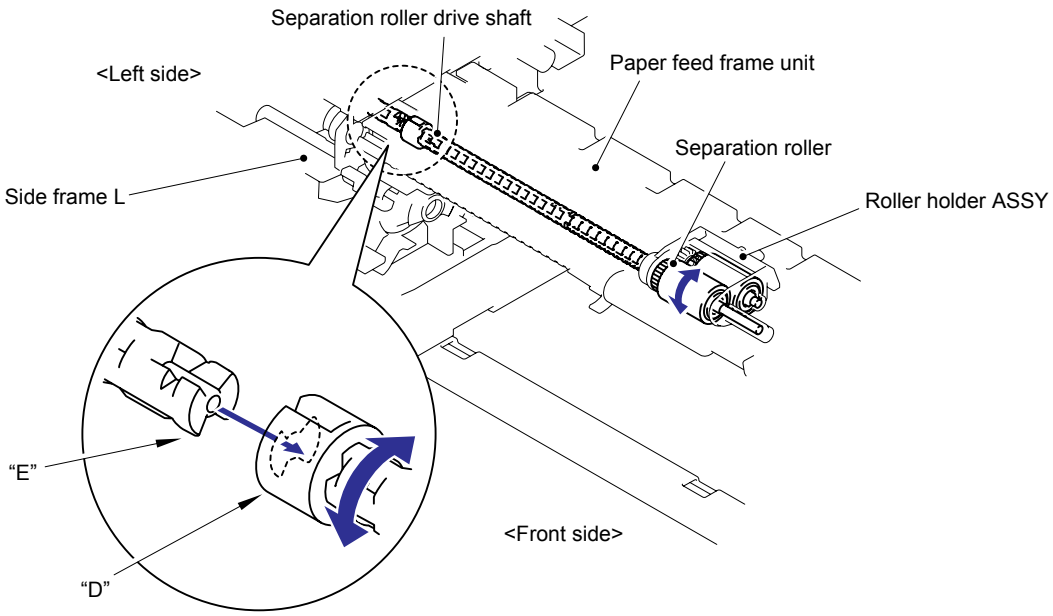


Fig. 3-73

(5) Check the engagement of each roller and move the Paper feed frame unit to the left hand side of the main body until it stops to assemble it.

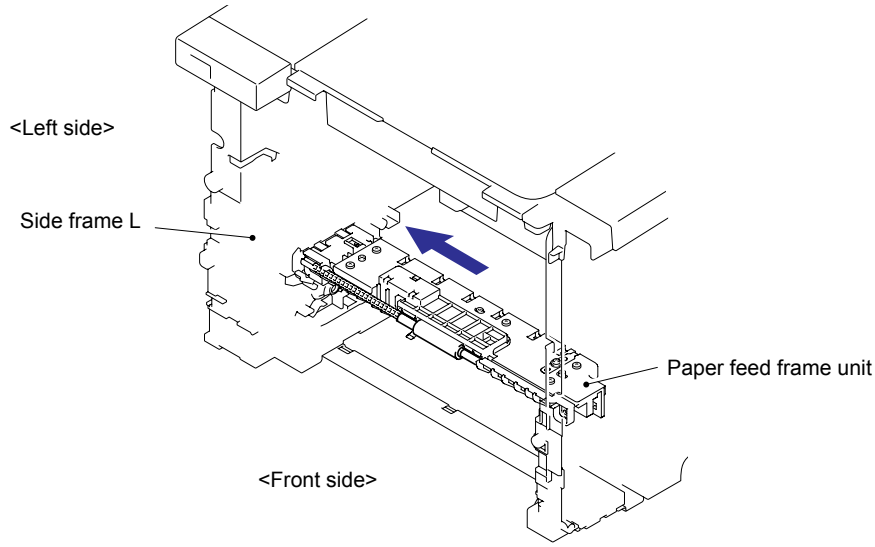


Fig. 3-74

(6) Make sure that there is no looseness of the harness. If there is, pull the harness from the outside of the side frame L.

(7) Check that the Feed roller TR and Roller holder ASSY are moved smoothly.

<How to check>

- Check that the Feed roller TR is turned smoothly.
- Check that the Separation roller is turned smoothly.
- Check that the Roller holder ASSY is push up smoothly.

Note:

If they are not moved smoothly, they may not be assembled correctly. Reassemble them from the beginning of the procedure.

(8) Secure the screws in the order as shown in the figure below while the front door unit ASSY being closed.

*1 **Tightening Note:**

When tightening the screw, slowly turn it counterclockwise (in the direction to loosen the screw) with your hand until you feel that the screw is a little dropped in the hole. Then, slightly turn it clockwise (in the direction to tighten the screw) with your hand and tighten it according to the specified torque with a screwdriver.

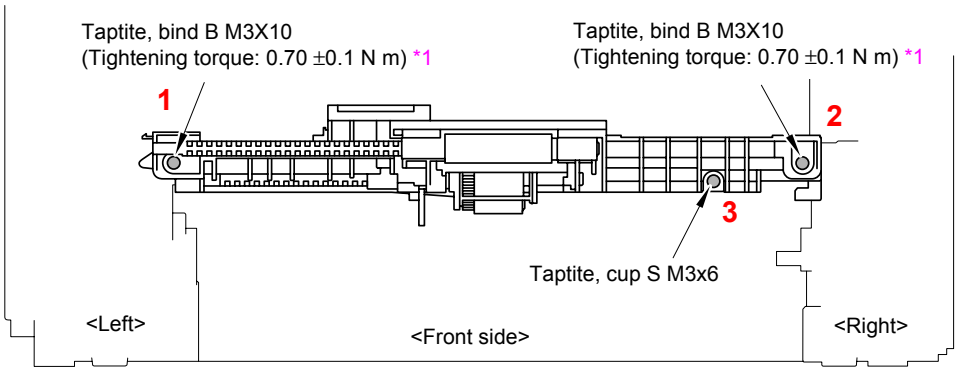


Fig. 3-75

8.23 Belt Cleaner Release Sensor PCB ASSY

(1) Release the two Hooks to remove the Belt cleaner release ASSY from the Middle plate.

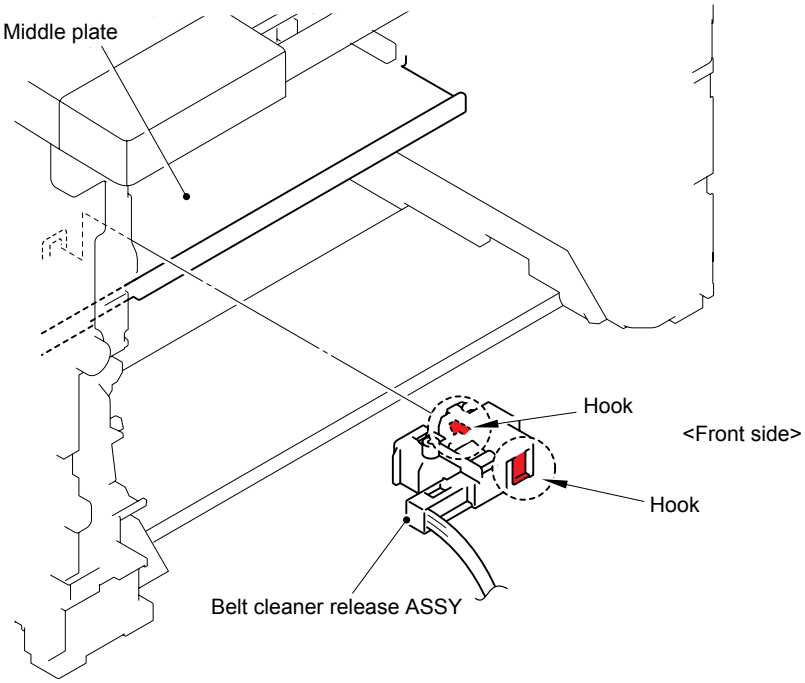


Fig. 3-76

(2) Turn the Belt cleaner release ASSY upside down. Remove the bind B M3x8 Taptite screw, and then remove the SOL PCB sheet and Belt cleaner release sensor PCB ASSY.

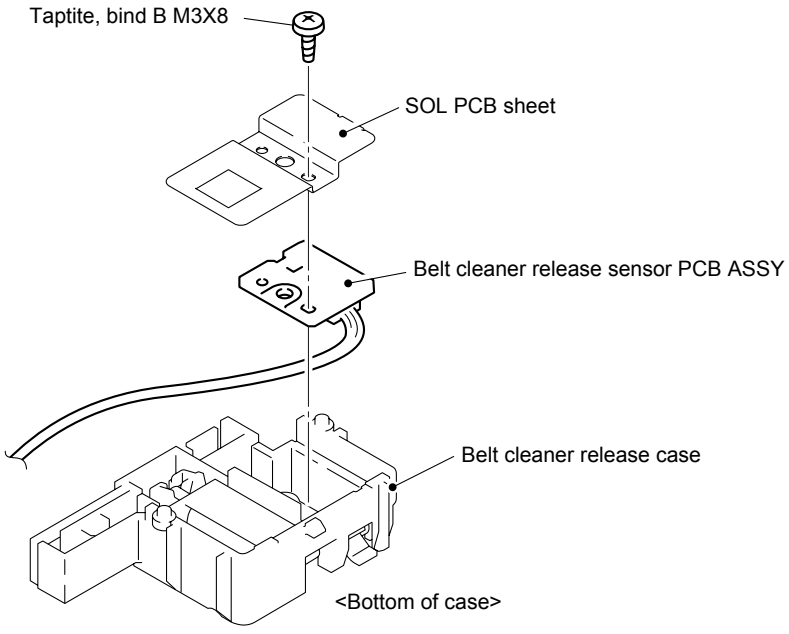


Fig. 3-77

(3) Disconnect the Connector from the Belt cleaner release sensor PCB ASSY.

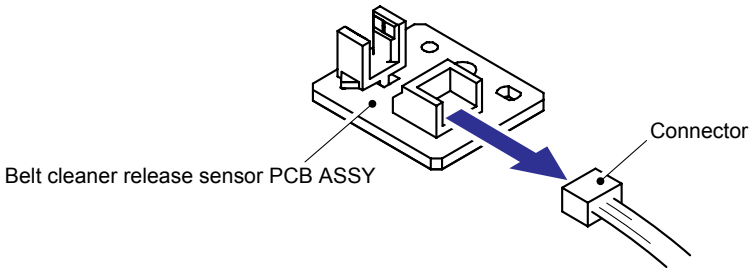


Fig. 3-78

8.24 THM/HUM Sensor Holder ASSY

(1) Disconnect the three Connectors (CN2, CN3, CN11) from the Main PCB ASSY.
(CN2: HL-4070CDW only)

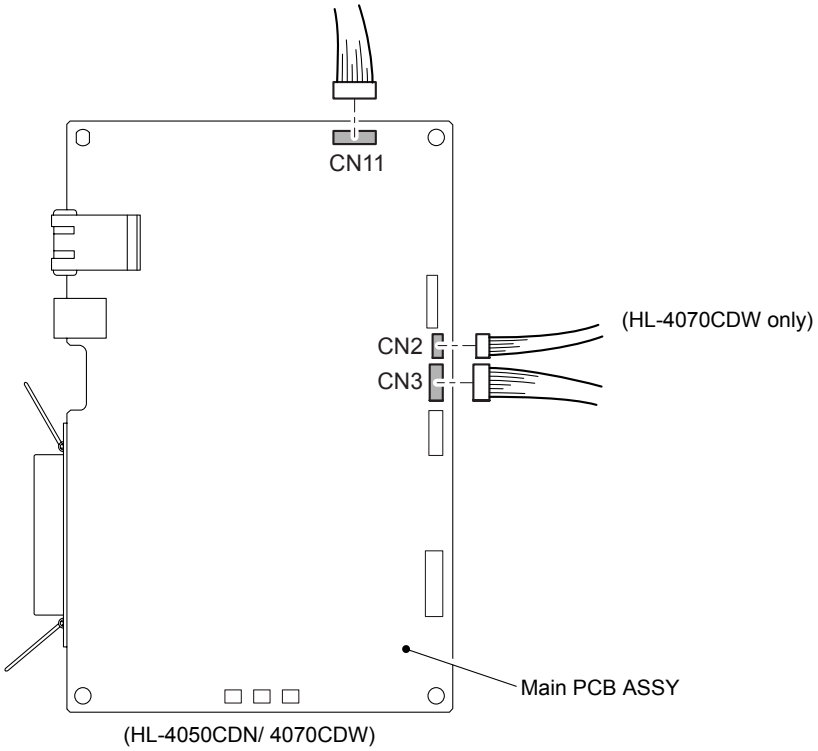


Fig. 3-79

(2) Disconnect the Connector (CN35) from the Engine PCB ASSY.

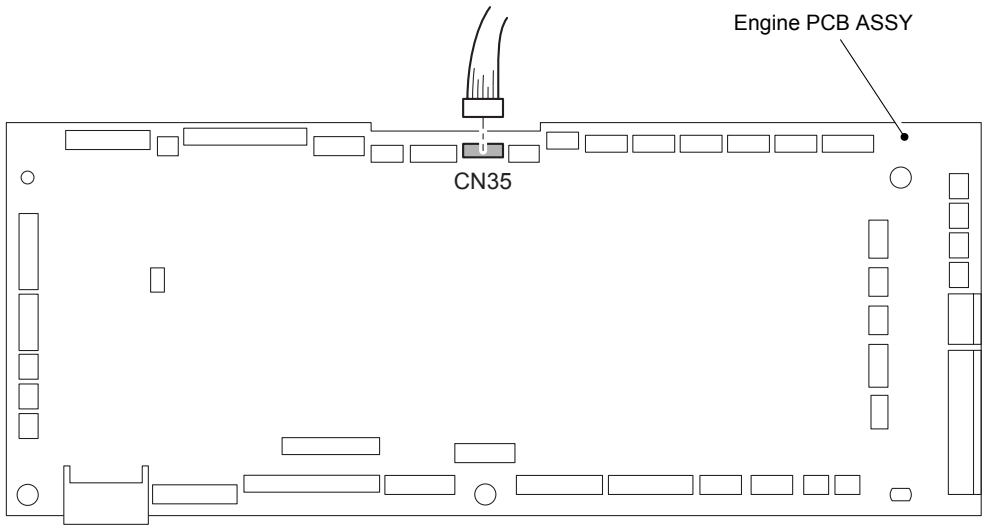


Fig. 3-80

(3) Remove the one cup S M3x6 Taptite screw, and then remove the THM/HUM ground plate.

(4) Remove the four cup S M3x6 Taptite screws.

(5) Release the two Hooks to remove the THM/HUM sensor holder ASSY.

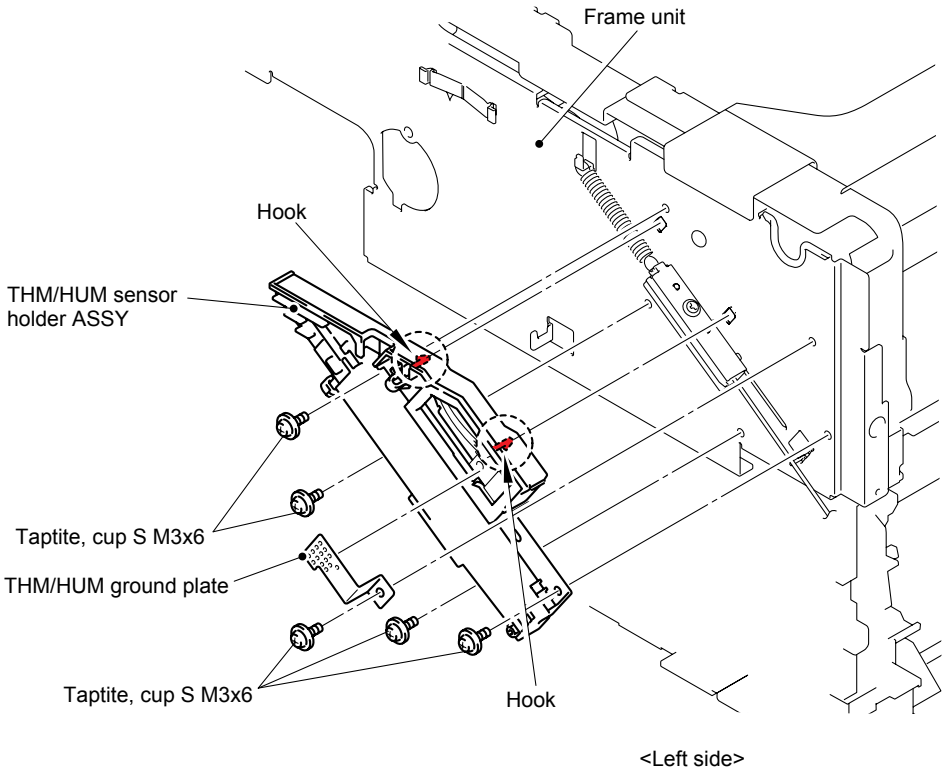


Fig. 3-81

8.25 Release Rack

(1) Remove the Release rack spring from the Hook.

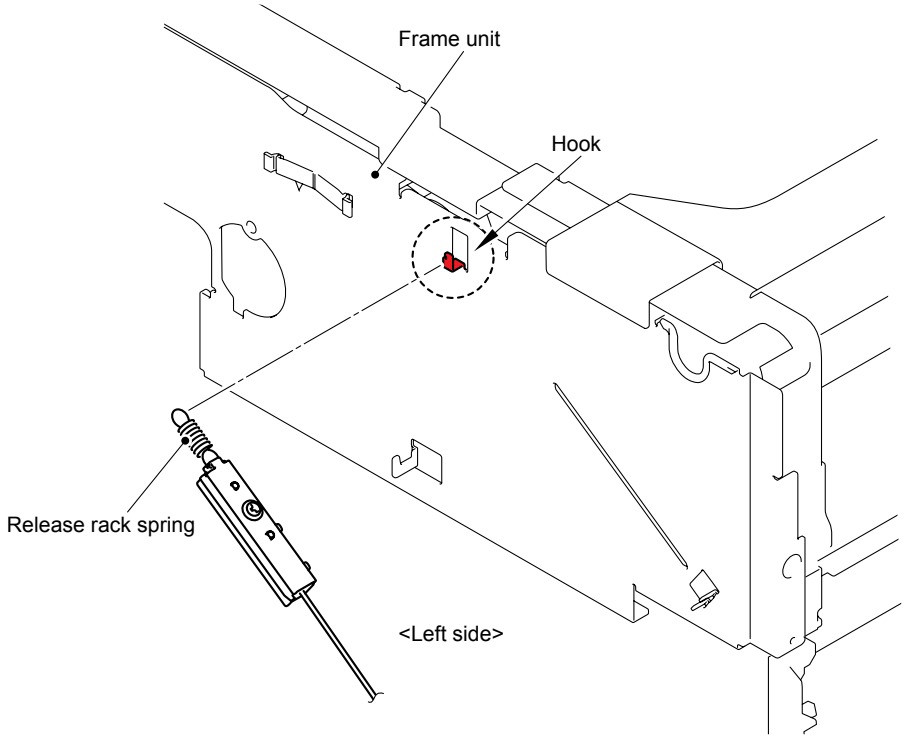


Fig. 3-82

(2) Remove the cup B M3x8 Taptite screw, and then remove the Release rack plate from the Release rack.

(3) Remove the Release rack spring from the Release rack plate.

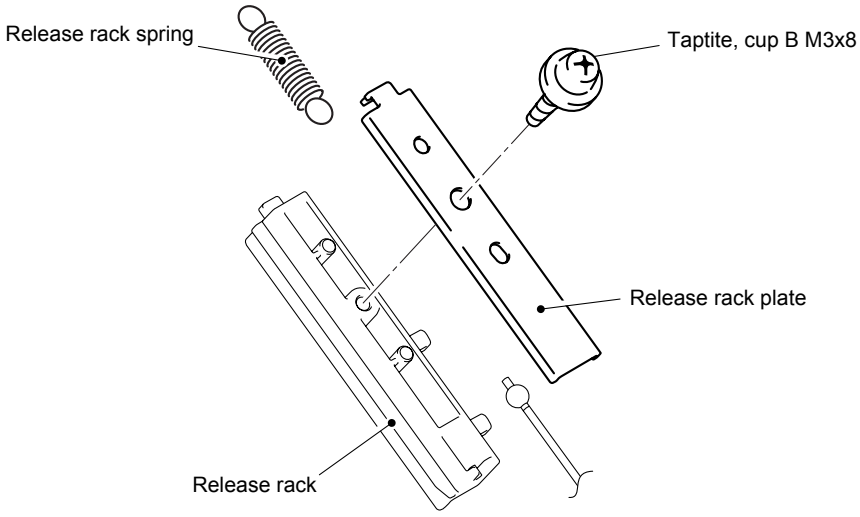


Fig. 3-83

8.26 Front Door Unit ASSY

(1) Remove the cup S M3x6 Taptite screw, and then remove the Earth.

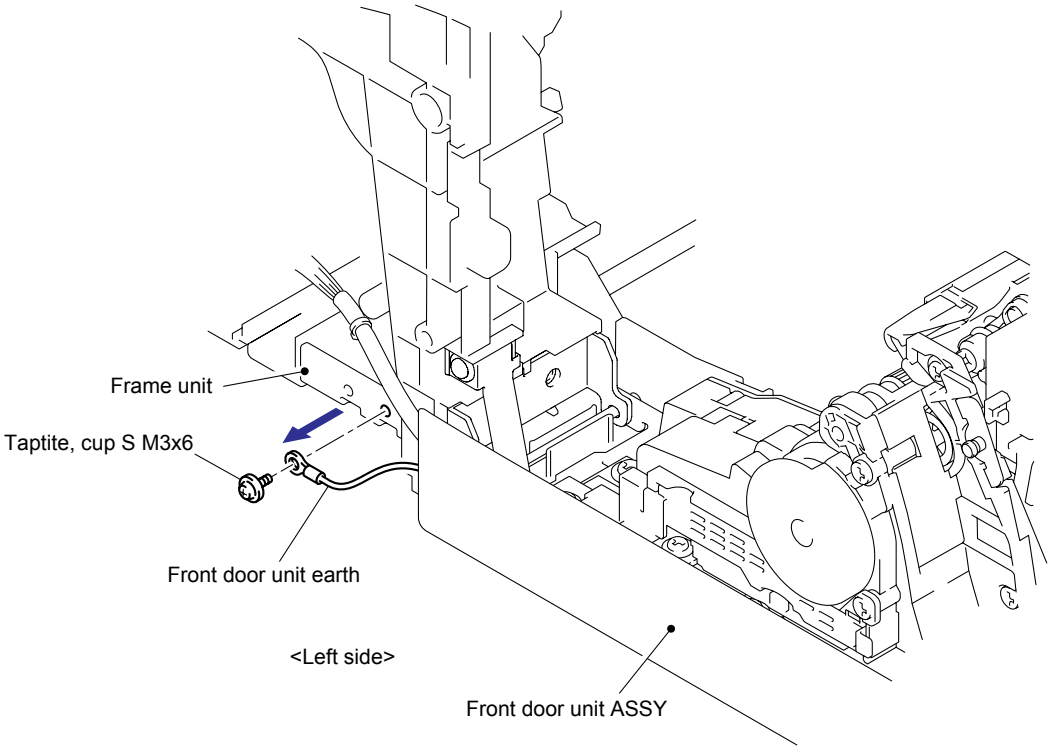


Fig. 3-84

(2) Disconnect the six connectors (CN2, CN3, CN4, CN7, CN8, CN9) from the Engine PCB ASSY.

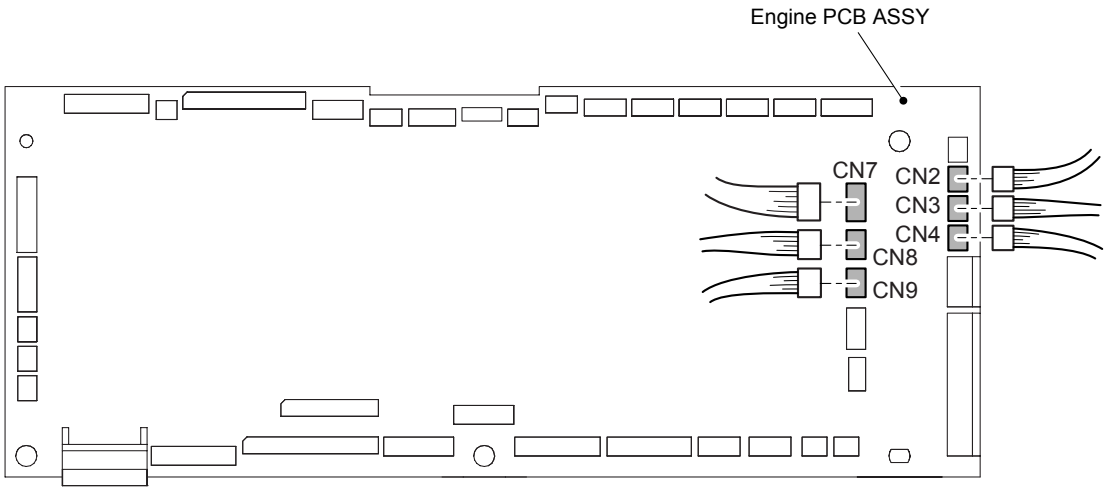


Fig. 3-85

(3) Remove the Shoulder screw fixing the Wire support rope, and then release the Wire support rope from the Shaft.

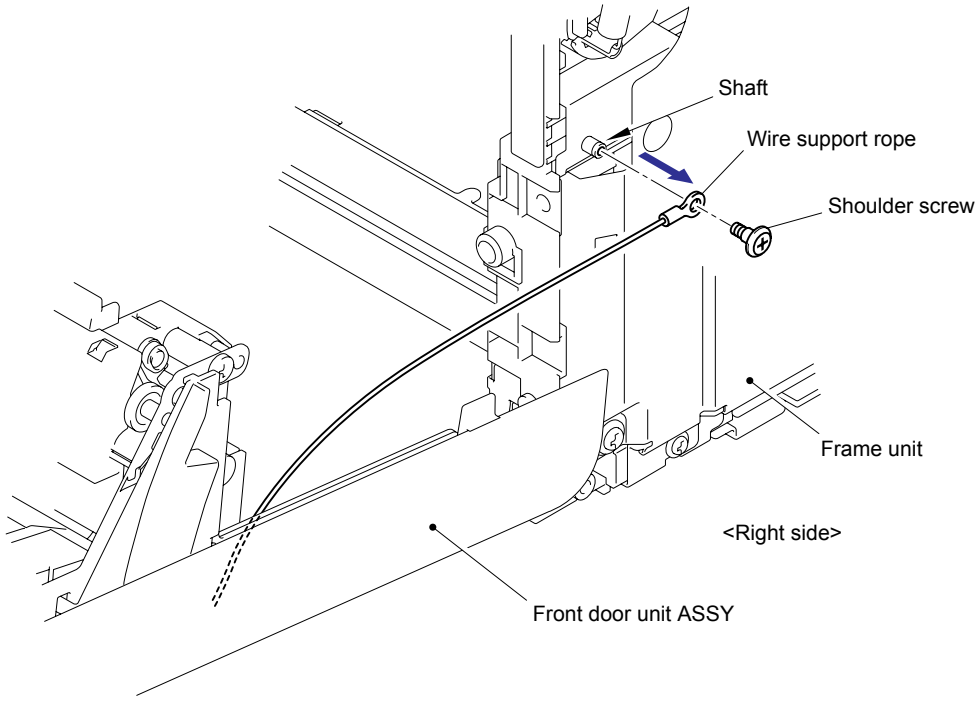


Fig. 3-86

(4) Remove the Collar 3 from the Hinge shaft L, and then remove the Hinge shaft L from the Hinge plate L.

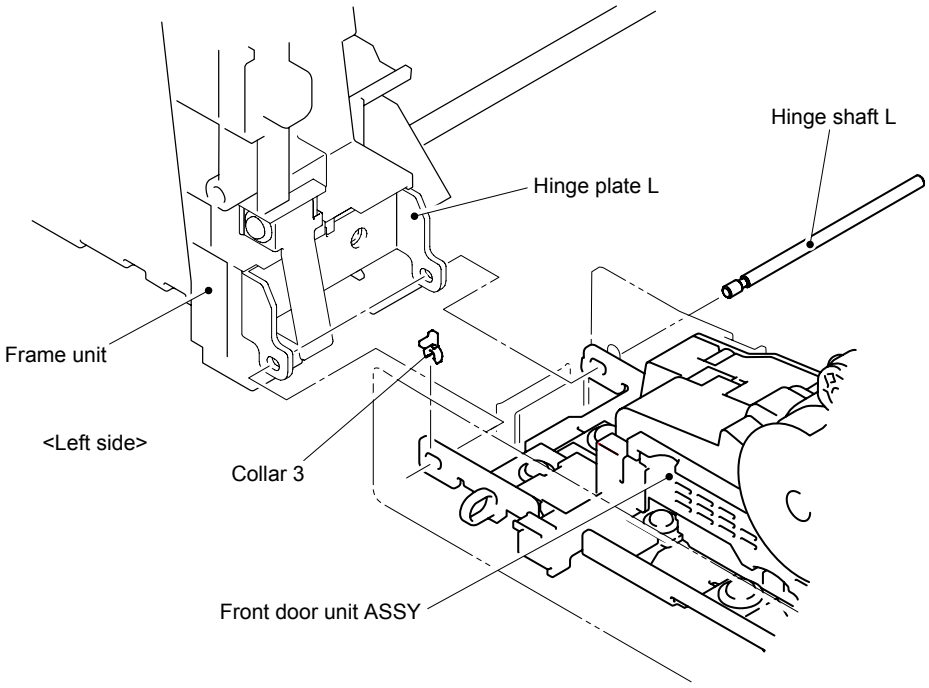


Fig. 3-87

(5) Remove the Collar 3 from the Hinge shaft R, and then remove the Hinge shaft R from the Hinge plate R.

(6) Remove the Front door unit ASSY from Frame unit.

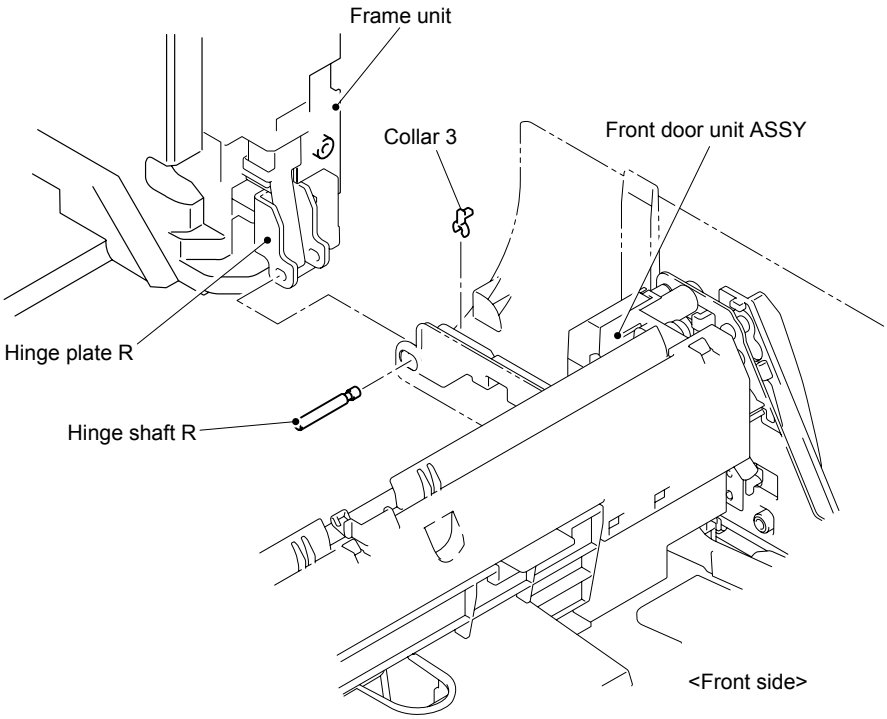


Fig. 3-88

Assembling Note:

- When assembling the Wire rope onto the Shaft on the main body, be careful of the direction of Wire rope referring to the figure below.

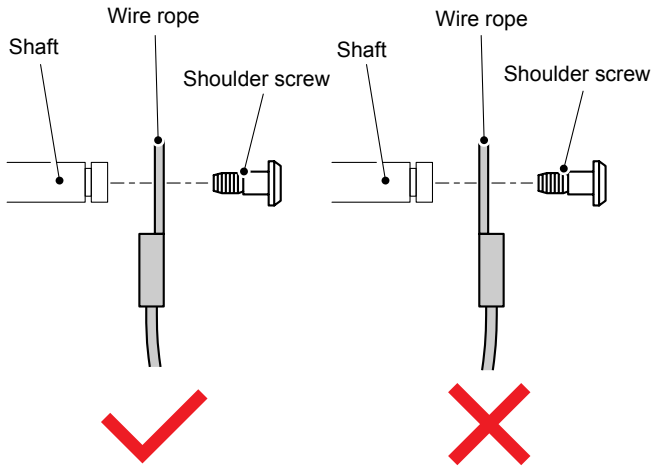


Fig. 3-89

Assembling Note:

- When assembling the Front door unit ASSY onto the Hinge on the main body, make sure to align the Front door unit ASSY with the Hinge as shown in the figure below.

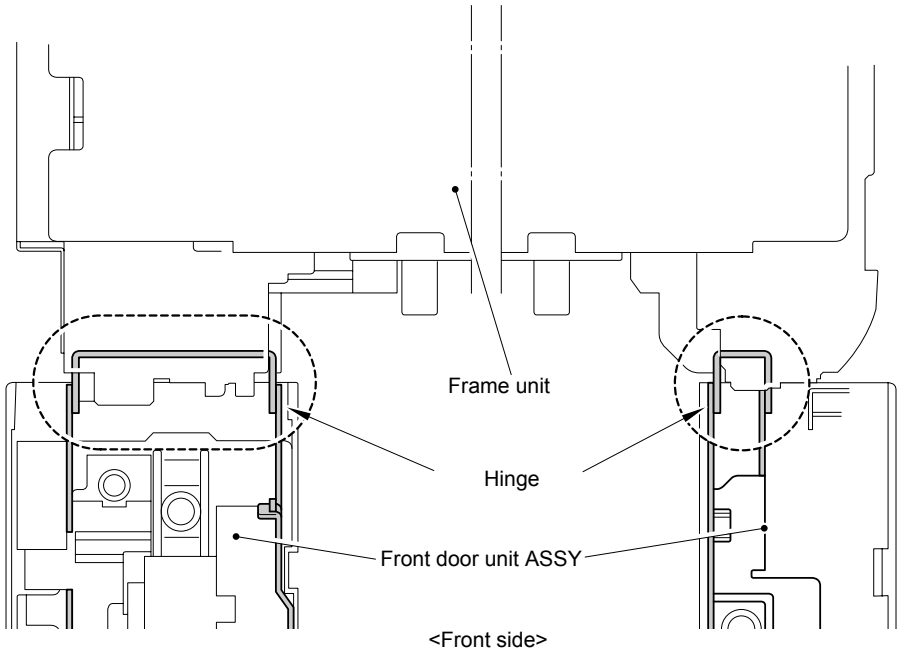


Fig. 3-90

8.27 Harness Cover MP

(1) Remove the cup S M3x6 Taptite screw, and then remove the Harness cover MP from the Front door unit ASSY.

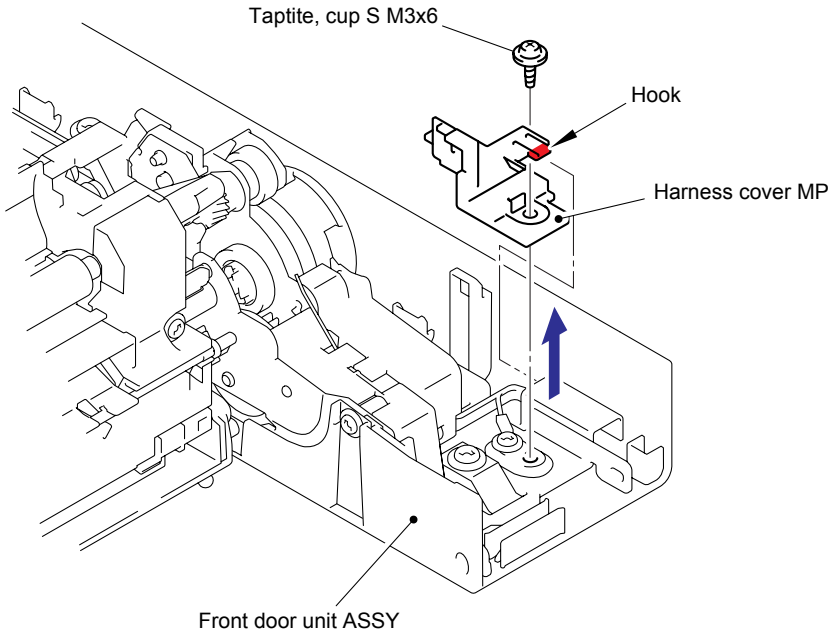


Fig. 3-91

8.28 Front Door Sub

(1) Remove the five cup B M4x10 Taptite screws and one cup B M3x8 Taptite screw, and then remove the Front door sub.

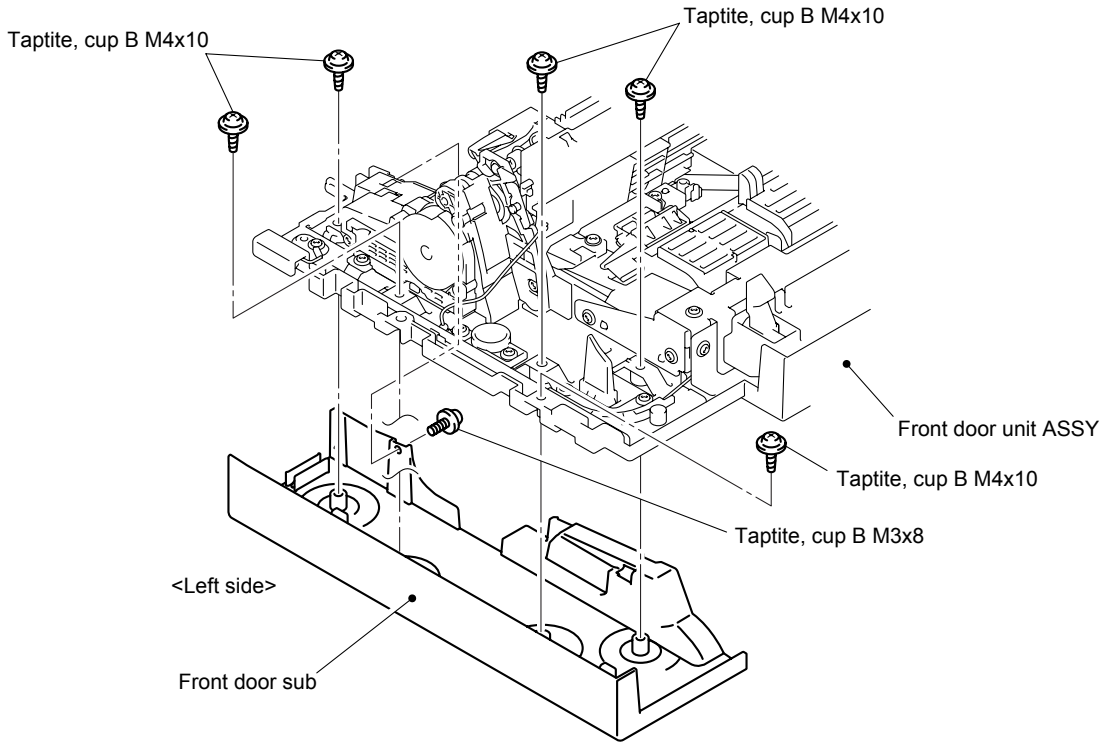


Fig. 3-92

8.29 EL Electrode Spring L/R

(1) Remove the two bind B M3x8 Taptite screws, and then remove the EL electrode spring cover ASSY.

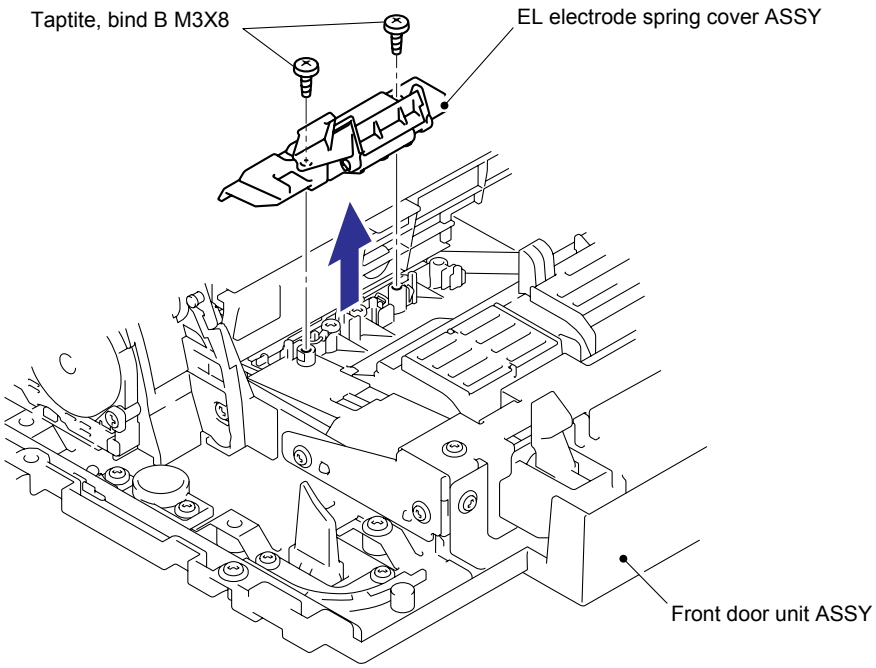


Fig. 3-93

(2) Remove the two bind B M3x8 Taptite screws, and then remove the EL spring harness ASSY and EL electrode spring L/R.

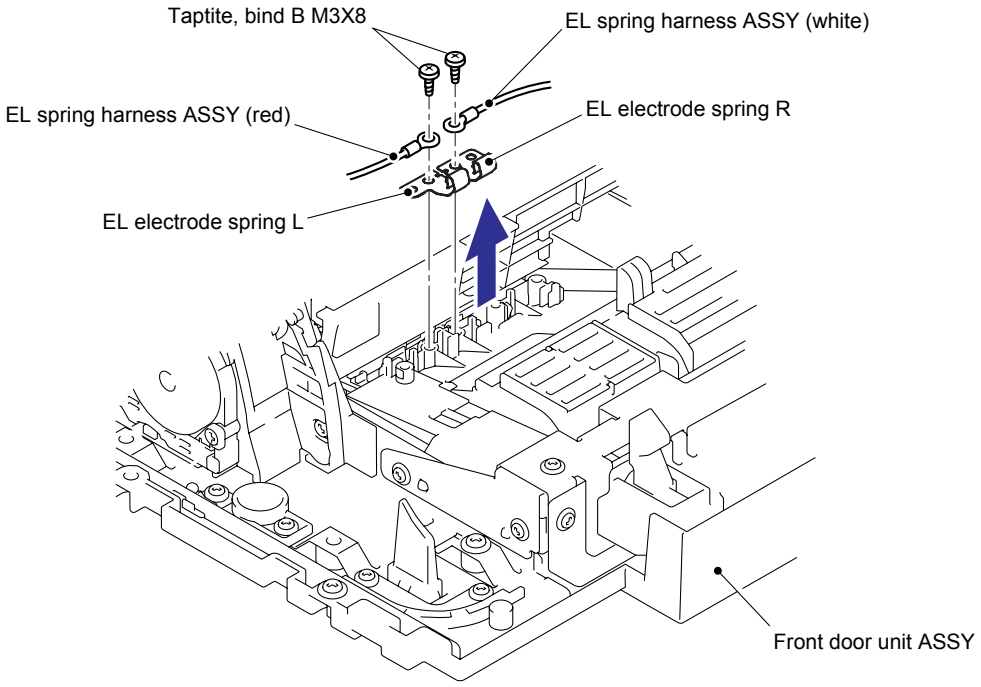


Fig. 3-94

8.30 Hook Cover/ Front Cover Release Button/ Button Spring/ Front Door Main

(1) Remove the two cup B M4x10 Taptite screws.

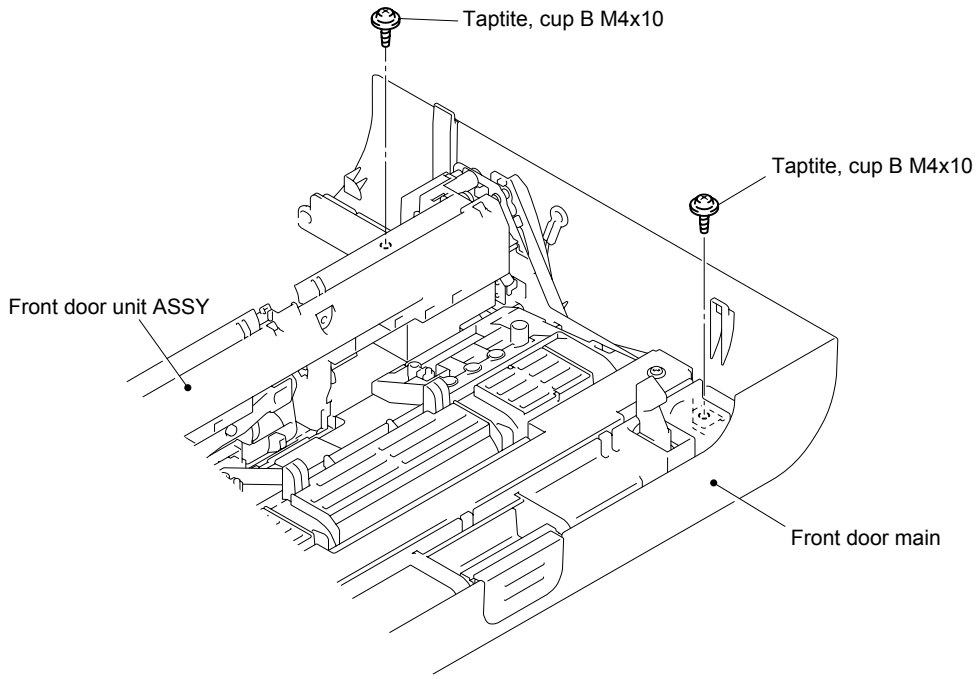


Fig. 3-95

(2) Remove the two cup B M4x10 Taptite screws.

(3) Release the three Hooks to remove the Hook cover from the Front door unit ASSY.

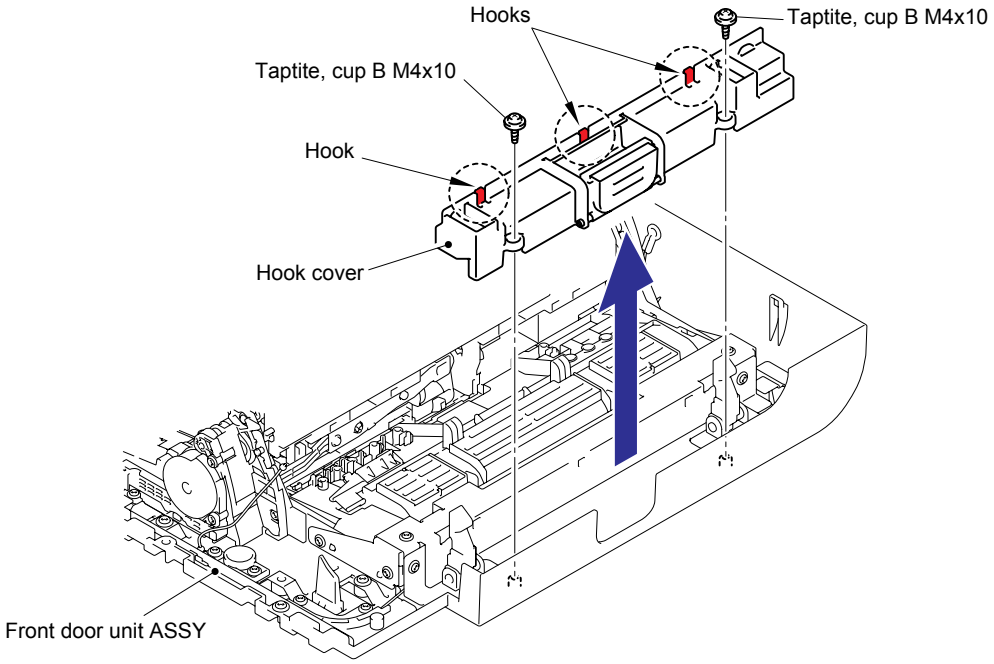


Fig. 3-96

(4) Remove the Front cover release button and Button spring from the Hook cover.

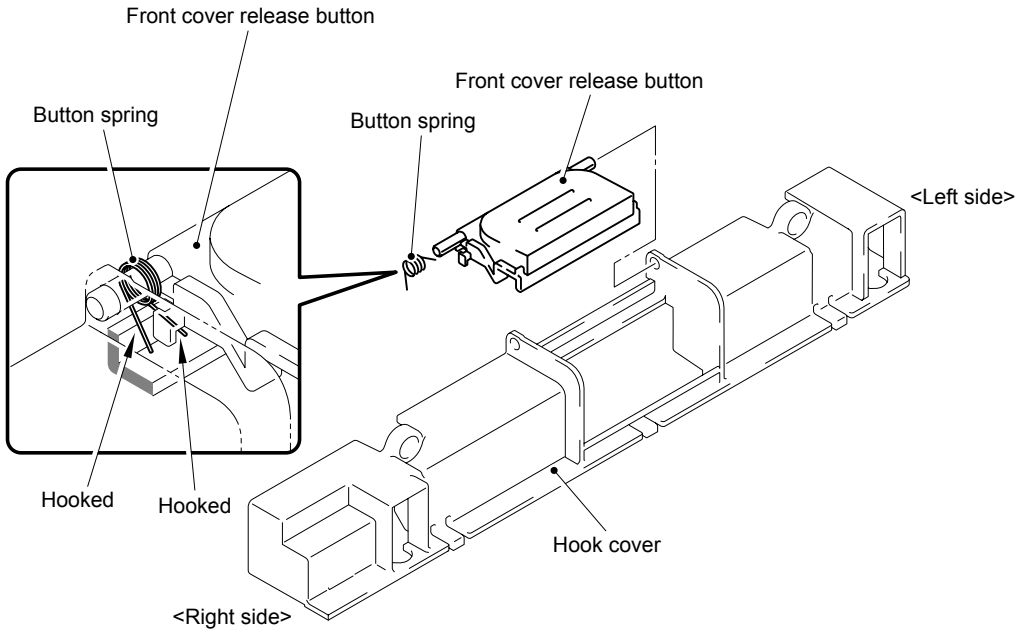


Fig. 3-97

(5) Release the two Hooks to remove the Front door Main from the Front door unit ASSY.

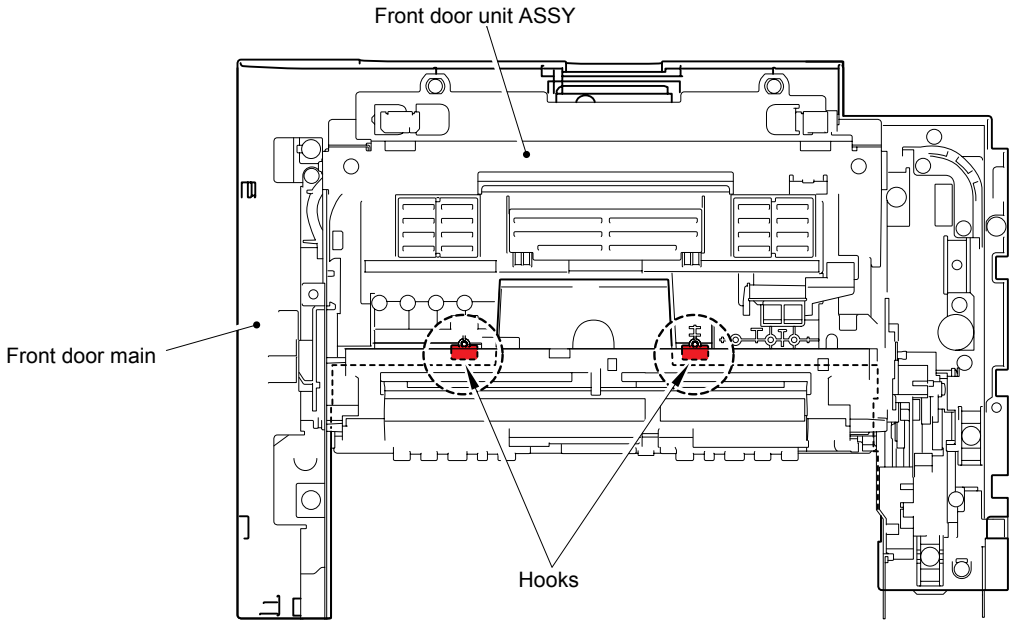


Fig. 3-98

8.31 Hook Shaft/ Hook/ Hook Spring

(1) Remove the Hook shaft.

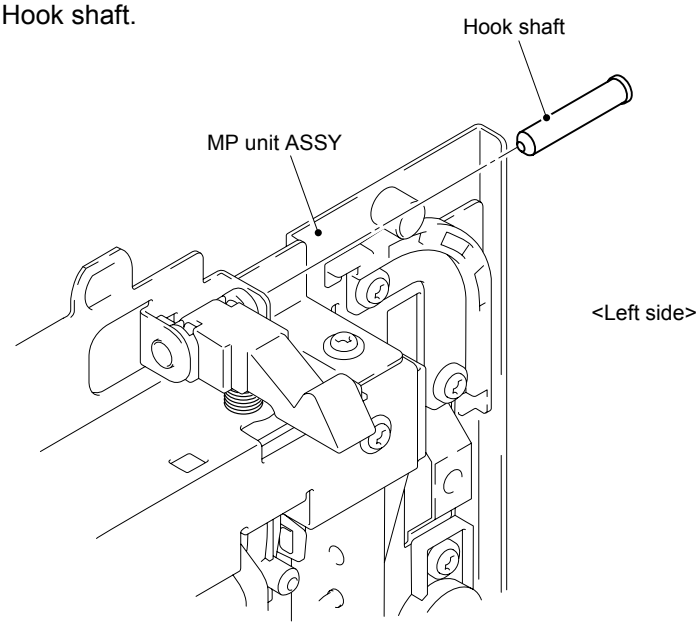


Fig. 3-99

(2) Remove the Hook and Hook spring L from the MP unit ASSY.

(3) Remove the Hook and Hook spring R from the MP unit ASSY in the same way.

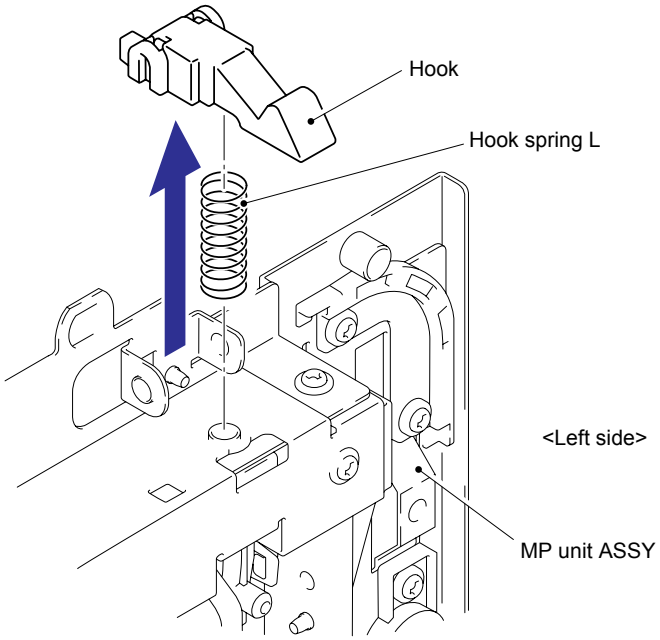


Fig. 3-100

Assembling Note:

When assembling the Hook spring, be sure to assemble each of the Hook springs Left and Right onto the correct sides. (Left is longer silver one and Right is shorter black one.)

8.32 Engine PCB ASSY

(1) Disconnect all the connectors from the Engine PCB ASSY.

Note:

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

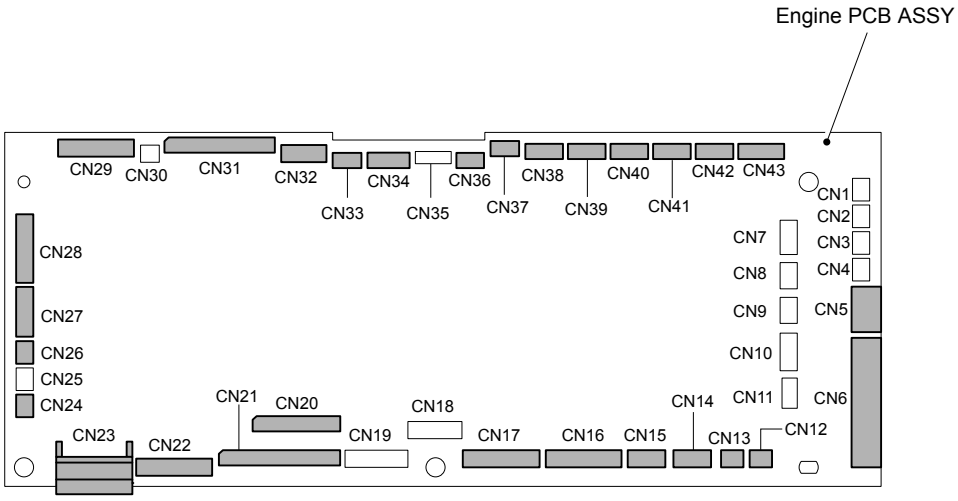


Fig. 3-101

(2) Remove the five cup S M3x6 Taptite screws, and then remove the Engine PCB ASSY from the Frame unit.

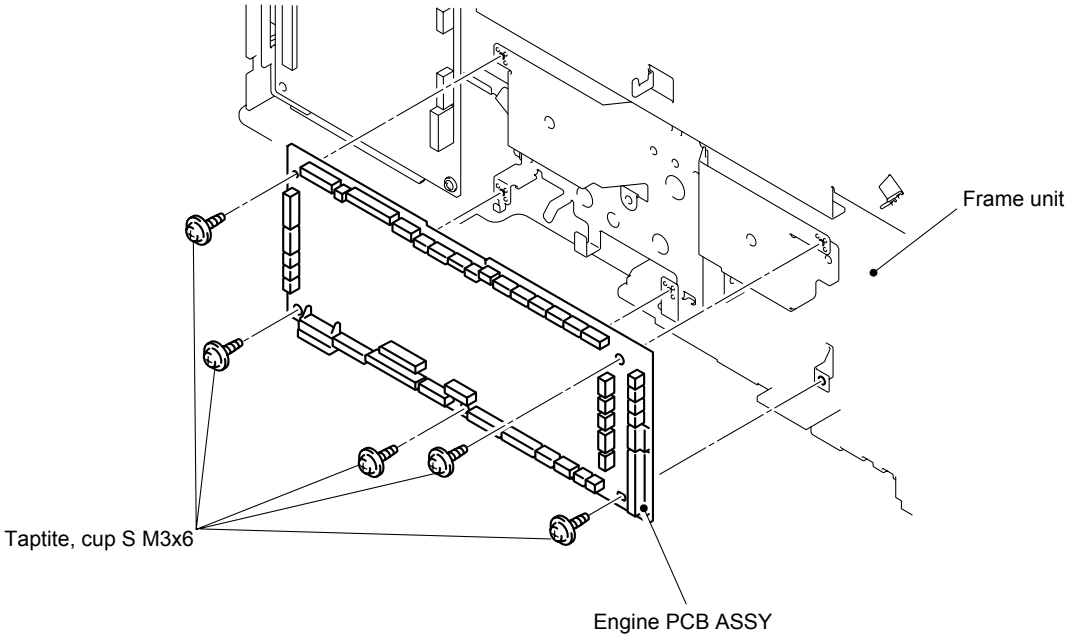


Fig. 3-102

8.33 Main PCB ASSY/ Ground Plate/ Ground Spring Plate

(1) Remove the cup S M3x6 Taptite screw and bind B M4x12 Taptite screw, and then remove the Ground plate.

(2) Remove the two cup S M3x6 Taptite screws, and then remove the Ground spring plate.

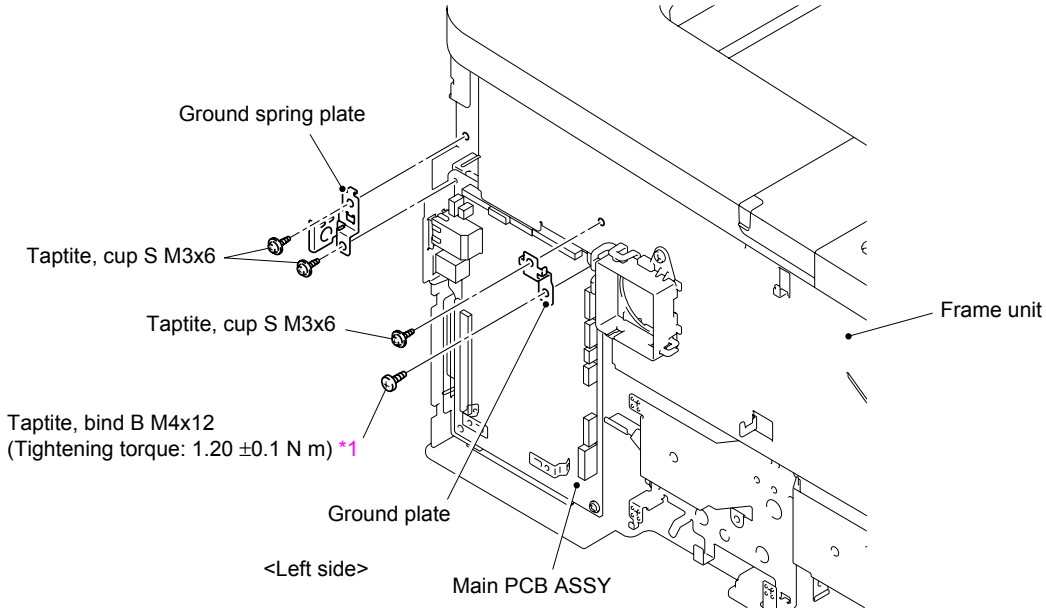
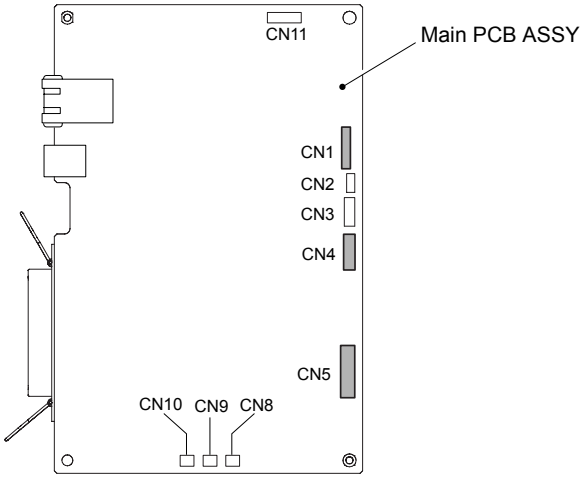


Fig. 3-103

*1 **Tightening Note:**
When tightening the screw, slowly turn it counterclockwise (in the direction to loosen the screw) with your hand until you feel that the screw is a little dropped in the hole. Then, slightly turn it clockwise (in the direction to tighten the screw) with your hand and tighten it according to the specified torque with a screwdriver.

(3) Disconnect all the connectors from the Main PCB ASSY.

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



(HL-4050CDN/ 4070CDW)

Fig. 3-104

(4) Remove the cup S M3x6 Taptite screw and two screws (for the parallel interface: HL-4050CDN/4070CDW only), and then remove the Main PCB ASSY as shown by arrows 4a and 4b.

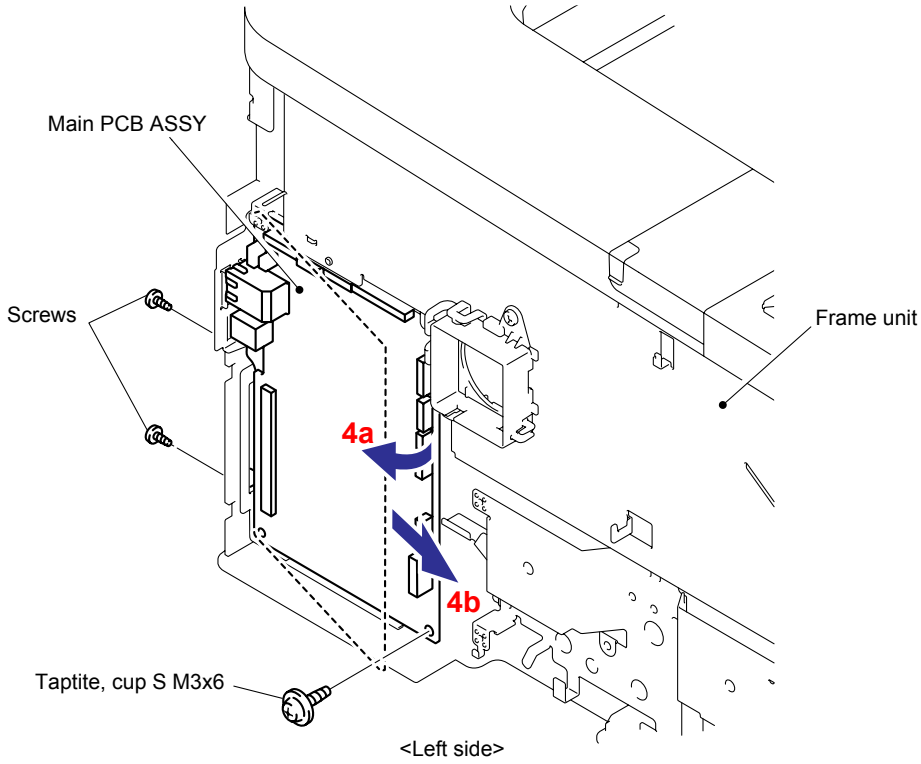


Fig. 3-105

8.34 Waste Toner Near/Full Sensor ASSY

(1) Move the Positioning pin 1a as shown, and slide the Hooks to the direction of the arrow 1b, and then remove the Waste toner sensor holder from the Middle plate.

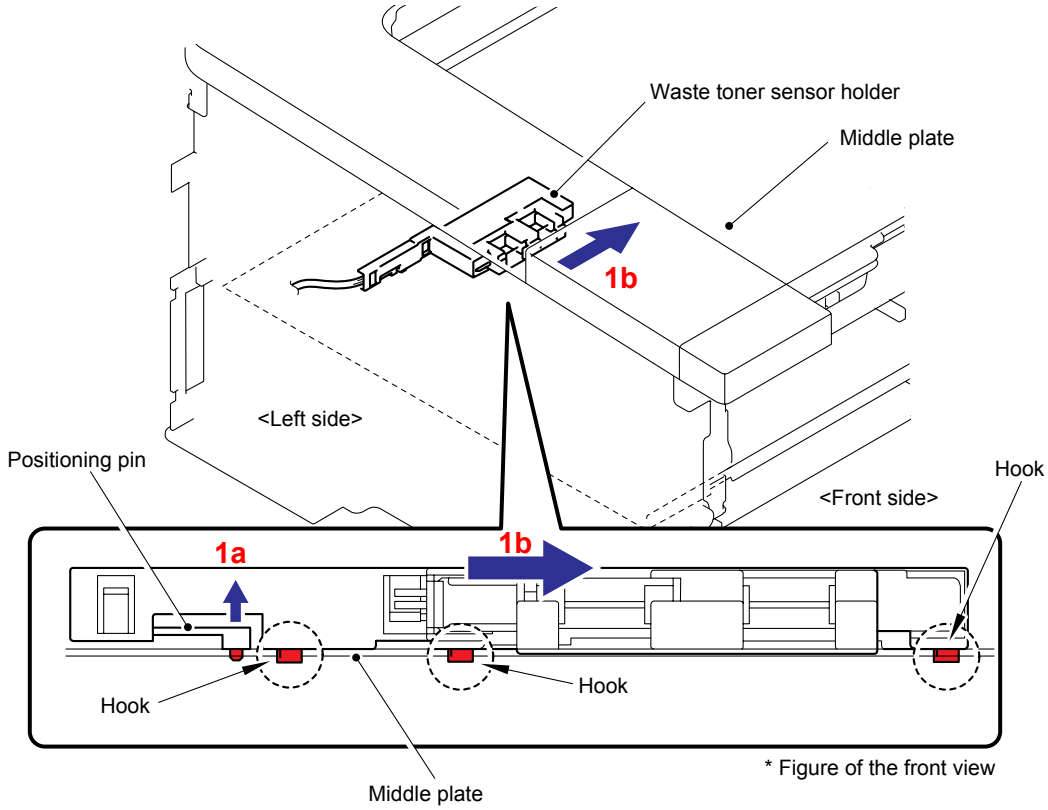


Fig. 3-106

(2) Release the Hook to remove the Waste toner sensor cover from the Waste toner sensor holder.

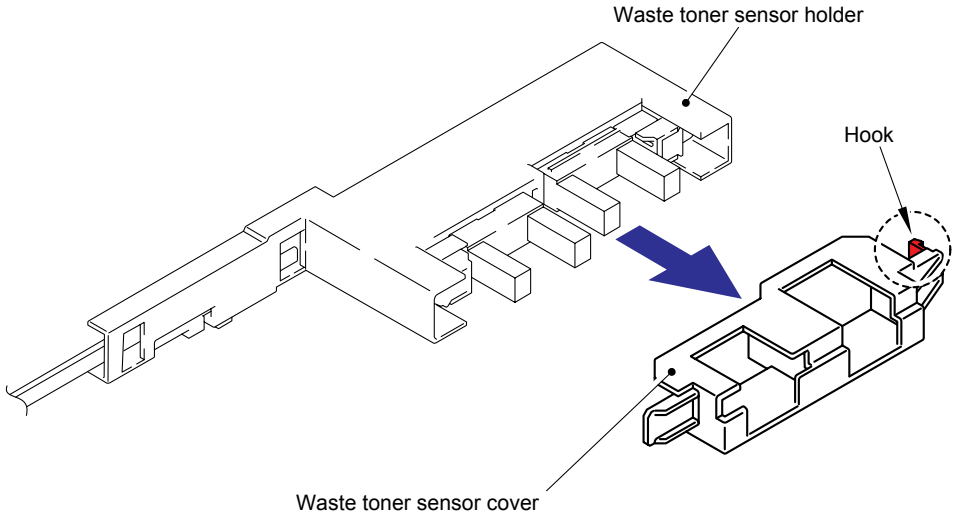


Fig. 3-107

(3) Release the three Hooks of each Waste toner sensor to remove the two Waste toner sensors from the Waste toner sensor holder.

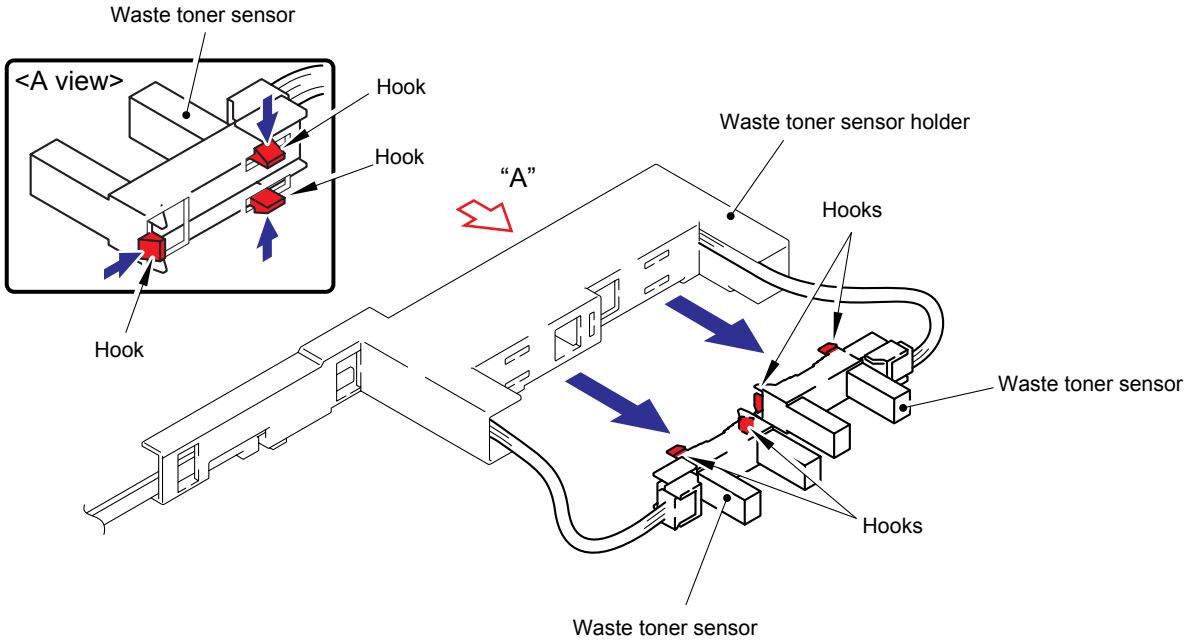


Fig. 3-108

(4) Disconnect the Connectors (yellow and blue) from each of the Waste toner sensors.

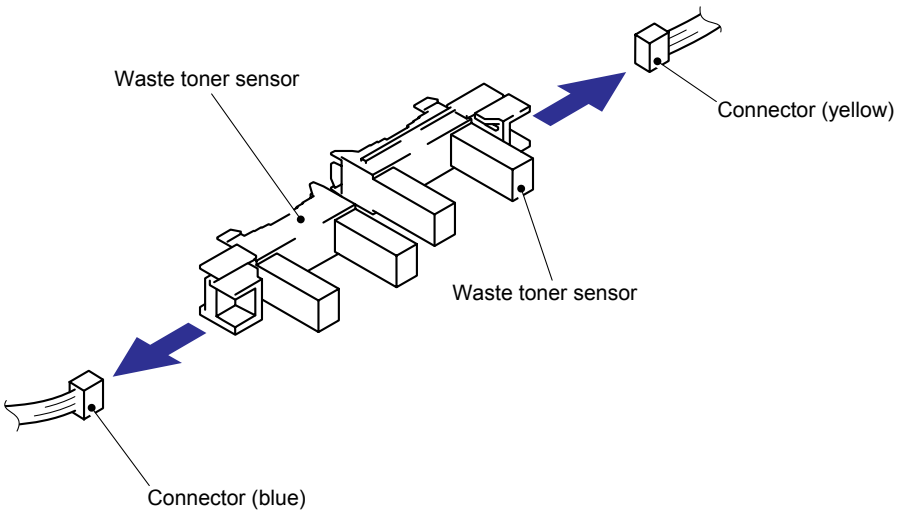


Fig. 3-109

8.35 Top Cover ASSY

(1) Remove the two cup B M4x14 Taptite screws from the back side of the Top cover ASSY.

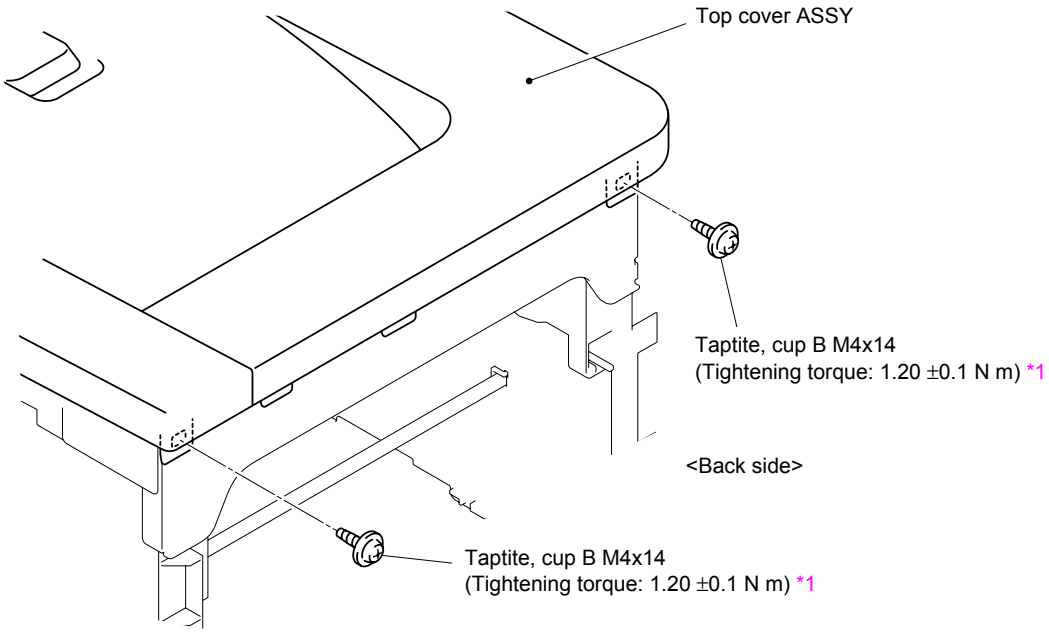


Fig. 3-110

*1 **Tightening Note:**
When tightening the screw, slowly turn it counterclockwise (in the direction to loosen the screw) with your hand until you feel that the screw is a little dropped in the hole. Then, slightly turn it clockwise (in the direction to tighten the screw) with your hand and tighten it according to the specified torque with a screwdriver.

(2) Remove the three cup S M3x8 Taptite screws from the front side of the Top cover ASSY.

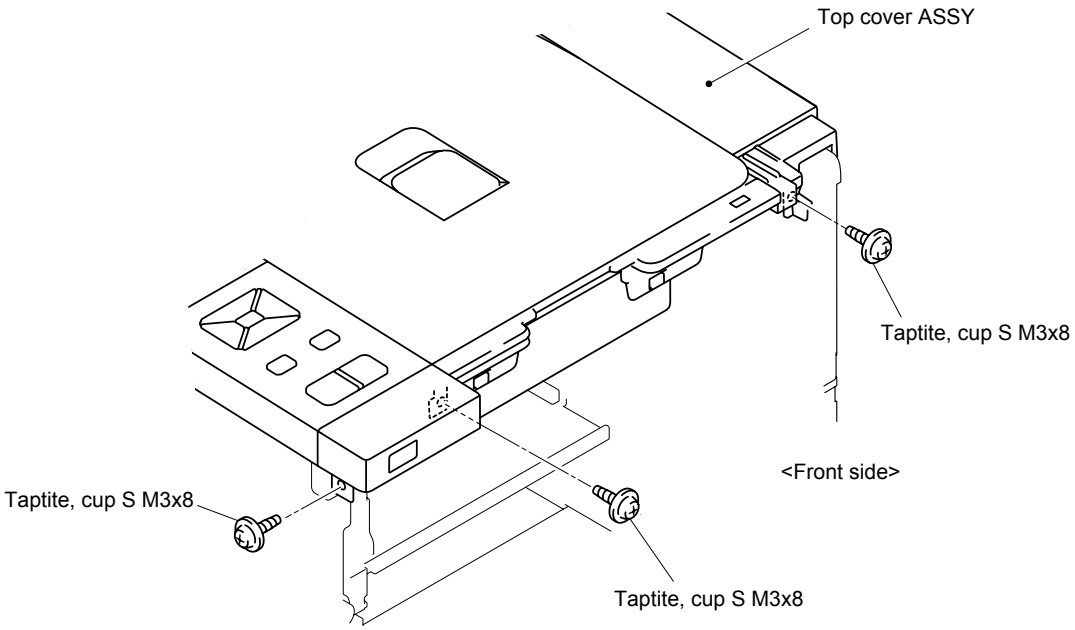


Fig. 3-111

(3) Release the six Hooks in the order of 3a to 3f. Then, incline the Top cover ASSY 45° to 90° to the left hand side and remove it from the Frame unit.

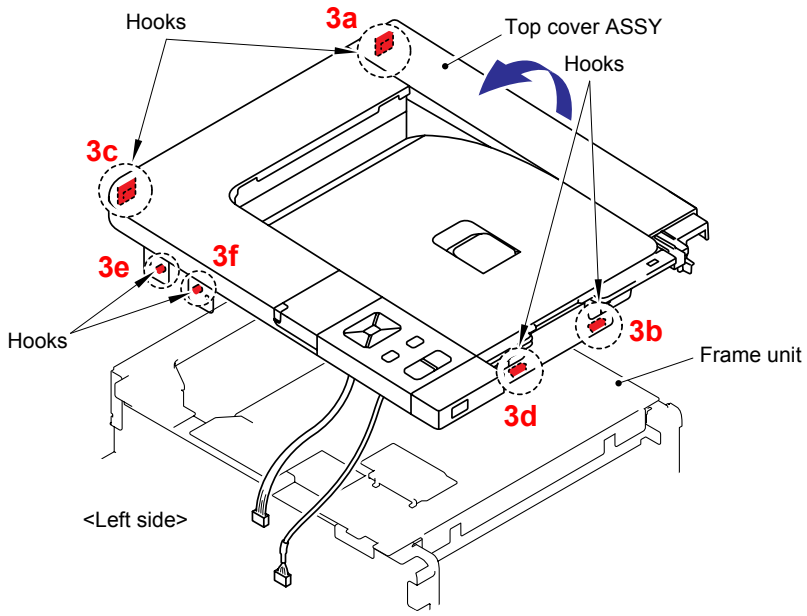


Fig. 3-112

8.36 Top Cover Panel ASSY

(1) Disconnect the Flat cable and connector (5pin) from the LCD panel PCB ASSY and the connector (6pin) from the USB host relay PCB ASSY.

Note:

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

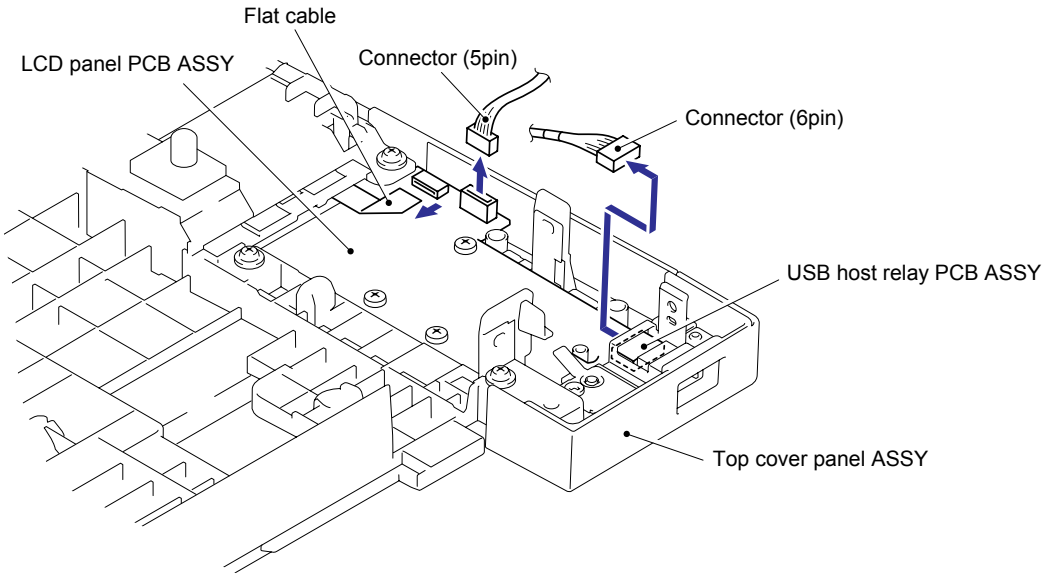


Fig. 3-113

(2) Remove the three cup B M4x12 Taptite screws, and then remove the Top cover panel ASSY from the Top cover ASSY.

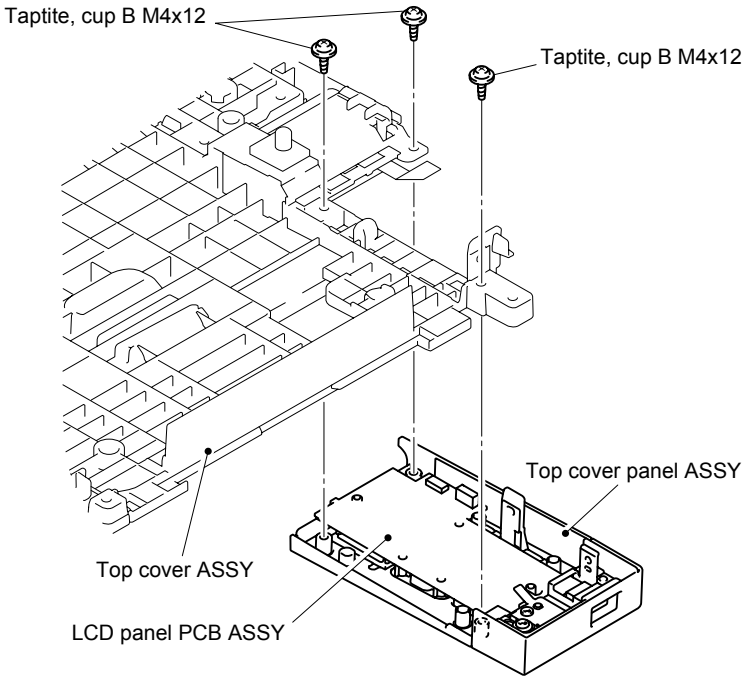


Fig. 3-114

8.37 LCD Panel PCB ASSY

(1) Remove the three bind B M3x8 Taptite screws, and then remove the LCD panel PCB ASSY.

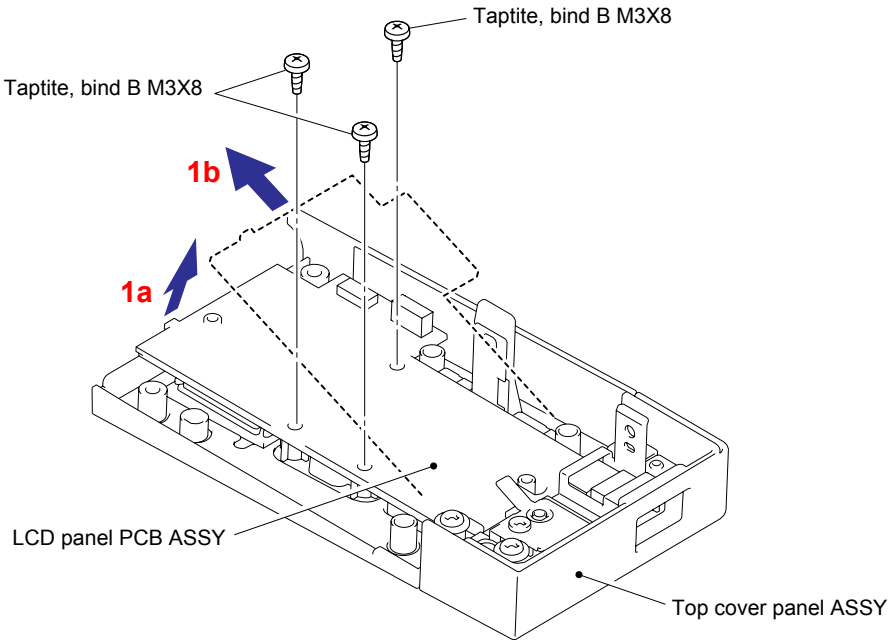


Fig. 3-115

8.38 Rubber Key Printed ASSY

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

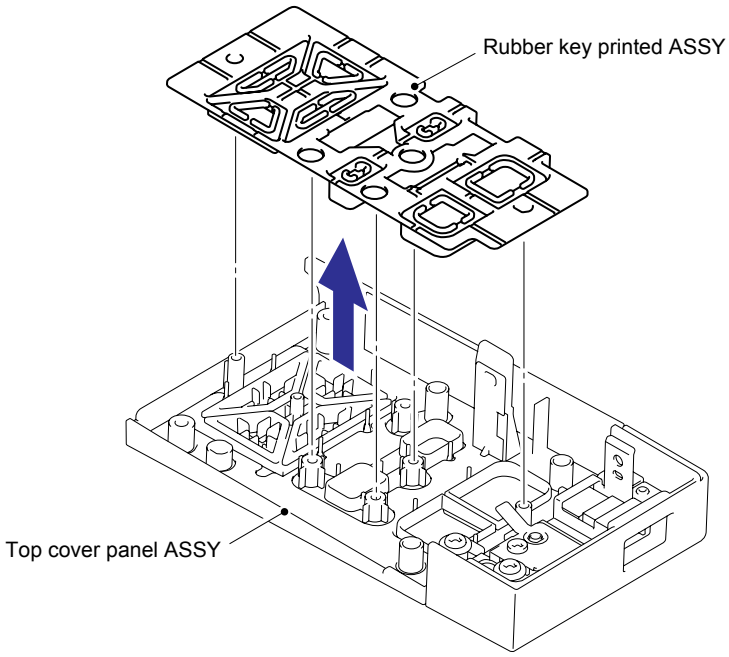


Fig. 3-116

8.39 Key Cap Up, Down, L, R

(1) Remove the Key cap up, down, L and R from the Top cover panel ASSY.

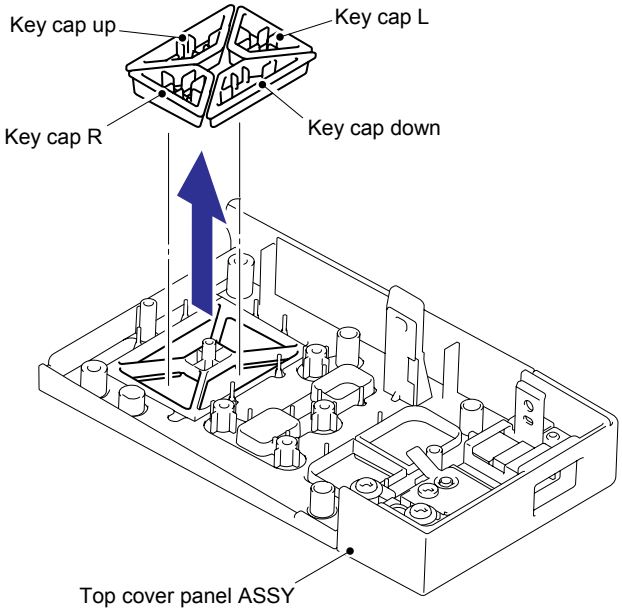


Fig. 3-117

8.40 USB Host Relay PCB ASSY

(1) Remove the two bind B M3x8 Taptite screws and then remove the USB holder.

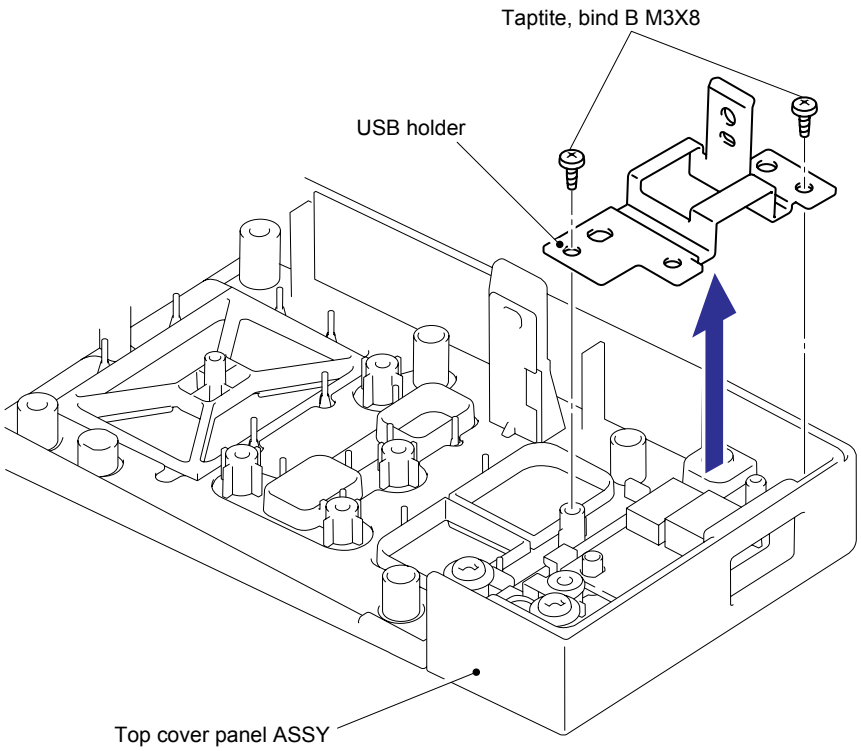


Fig. 3-118

(2) Remove the USB host relay PCB ASSY from the Top cover panel ASSY.

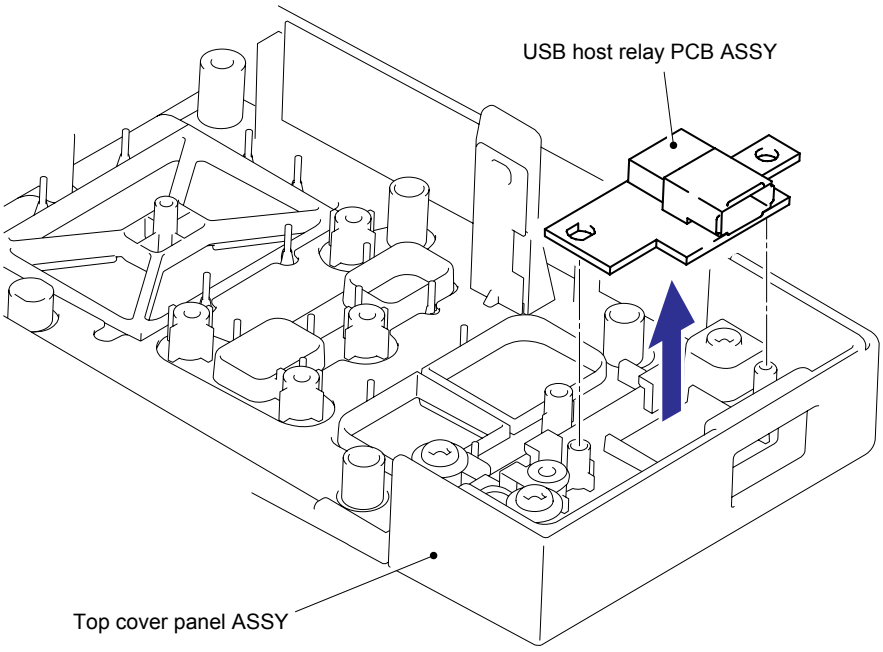


Fig. 3-119

8.41 LCD Panel ASSY/ LCD Stopper

(1) Release the two Pins of the LCD stopper from the Top cover ASSY while putting up the LCD panel ASSY.

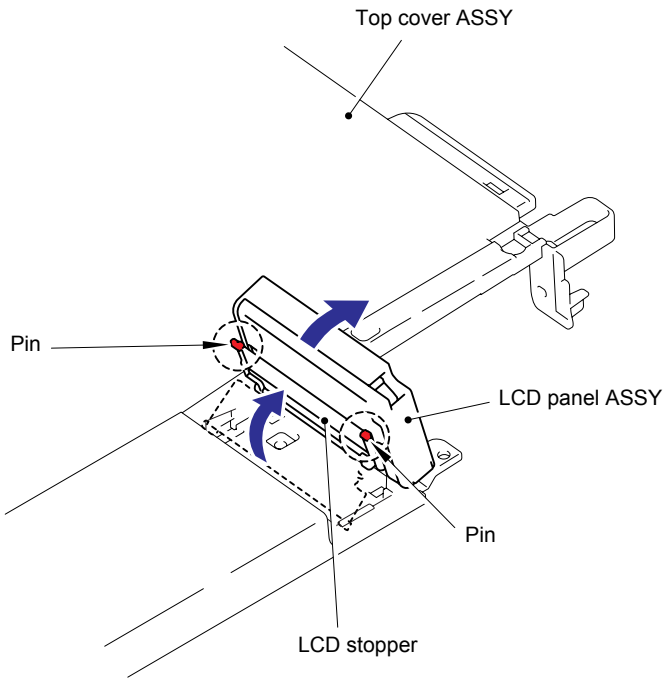


Fig. 3-120

(2) Release the two Bosses of the Top cover ASSY from the LCD panel ASSY as shown in the figure below. Then, remove the LCD panel ASSY from the Top cover ASSY.

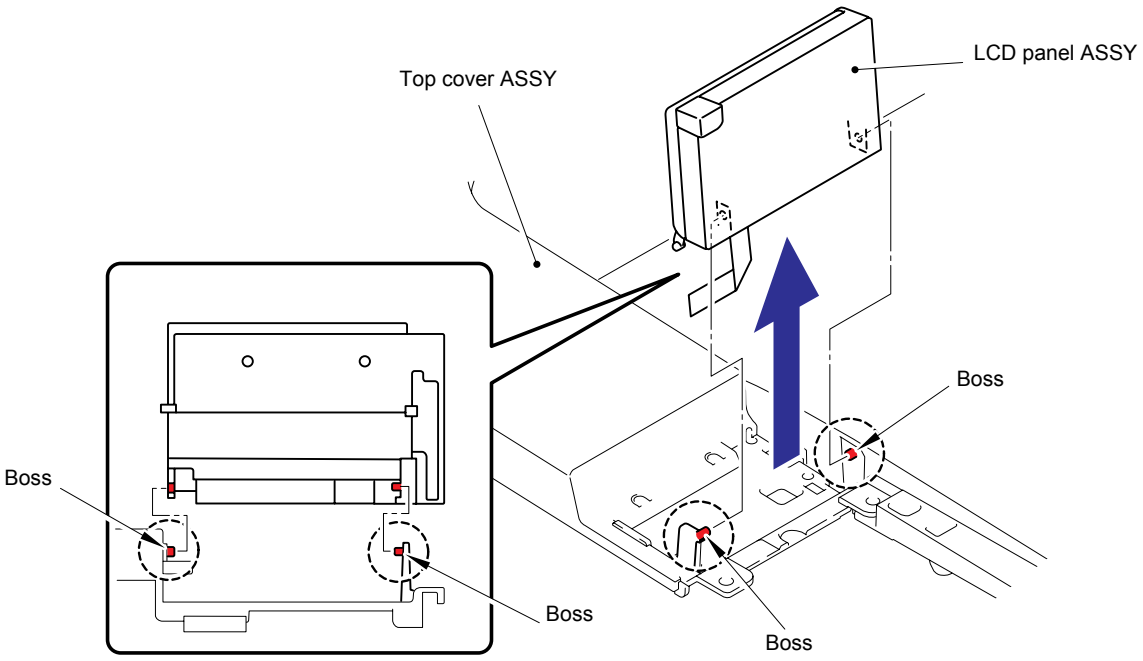


Fig. 3-121

(3) Bend the LCD stopper to release the Pins, and then remove the LCD stopper from the LCD panel ASSY.

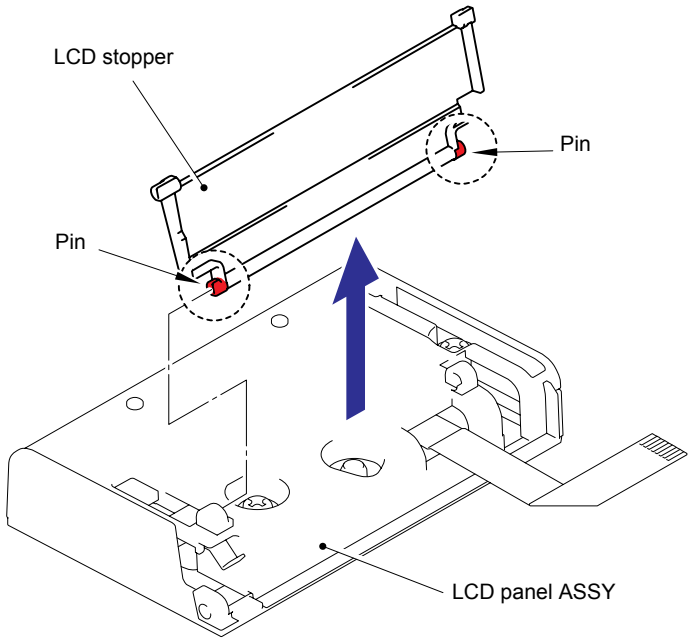


Fig. 3-122

8.42 Paper Chute

(1) Remove the six cup B M4x12 Taptite screws.

(2) Release the nine Hooks to remove the Paper chute from the Top cover panel ASSY.

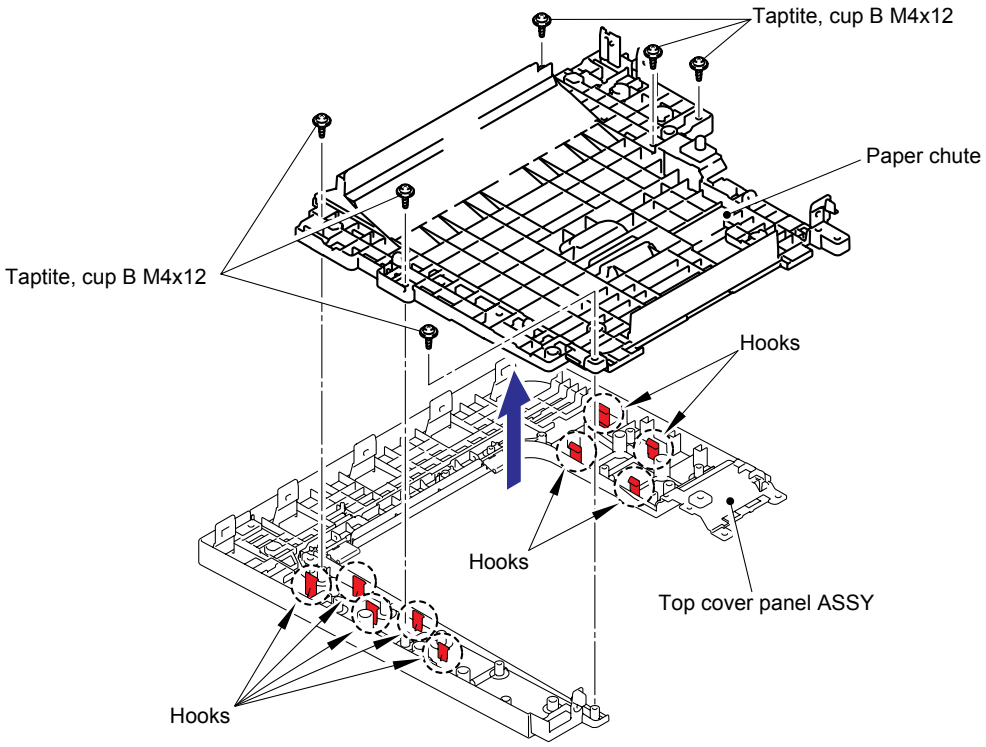


Fig. 3-123

(3) Remove the LCD stopper rubber from the Paper chute.

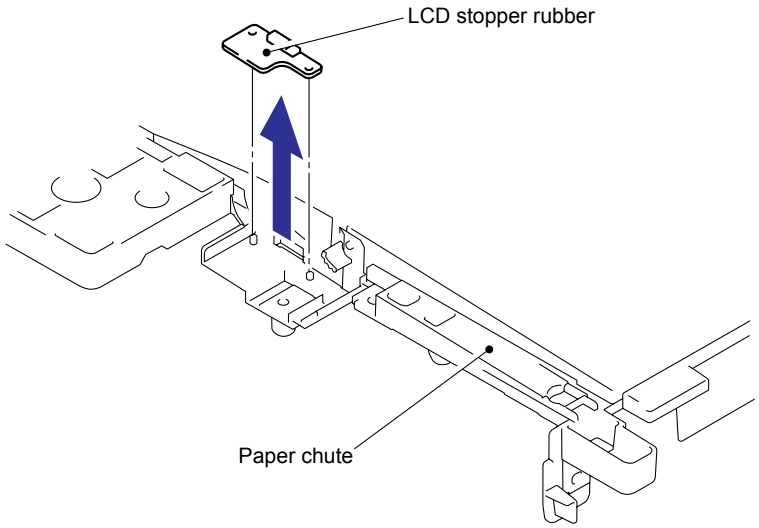


Fig. 3-124

(4) Release the two Pins of the Paper stopper at the right and left hand sides and remove the Paper stopper from the Paper chute.

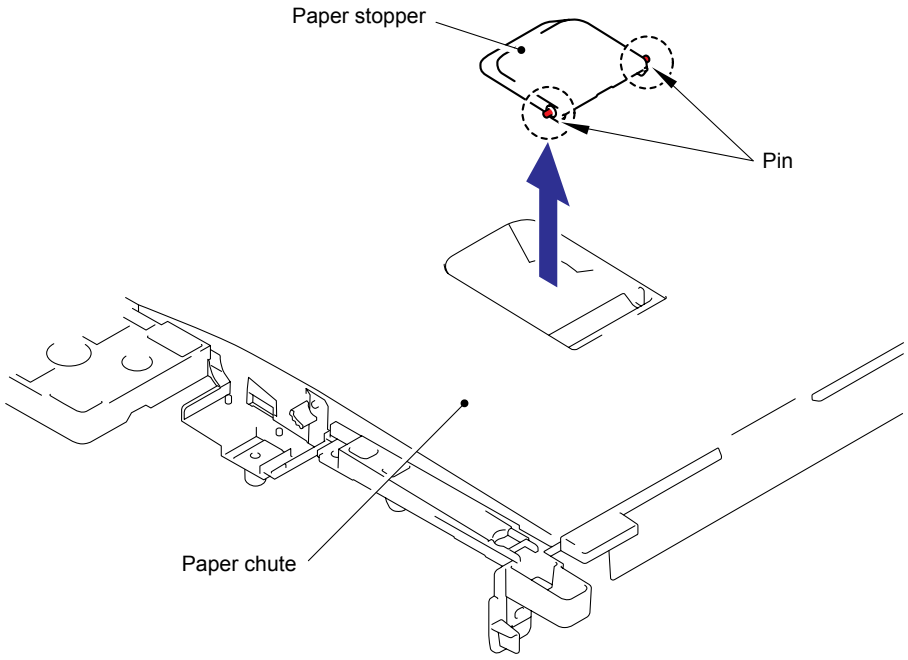


Fig. 3-125

8.43 Top Cover R

(1) Remove the cup B M4x12 Taptite screw, and then remove the Top cover R.

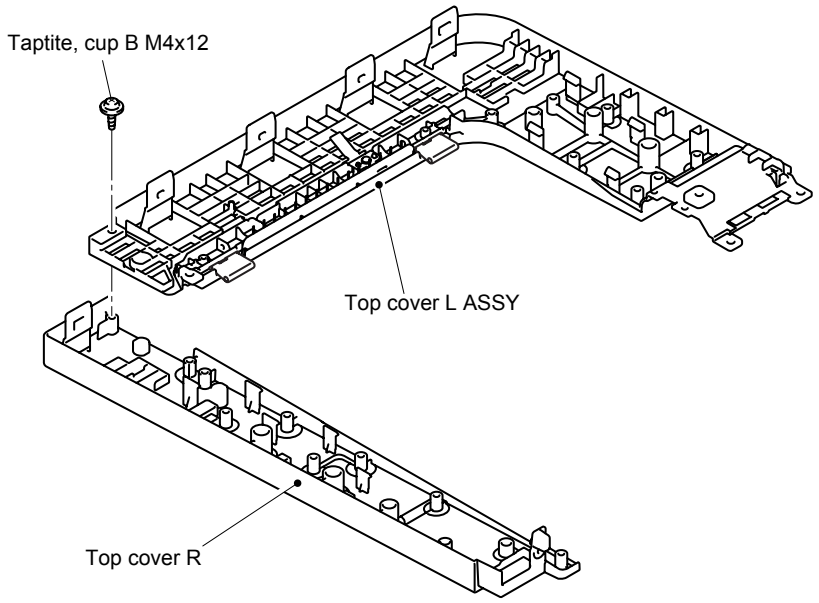


Fig. 3-126

8.44 Top Cover L ASSY

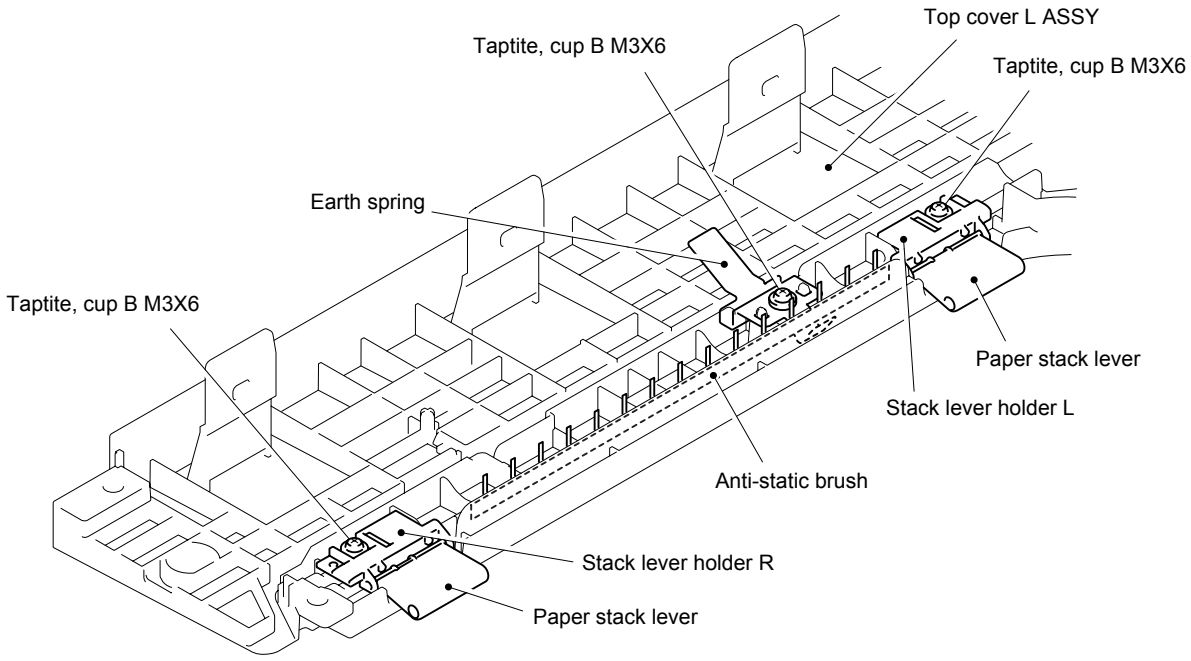


Fig. 3-127

8.45 Wireless LAN PCB ASSY (HL-4070CDW only)

(1) Disconnect the Connector from the Wireless LAN PCB ASSY.

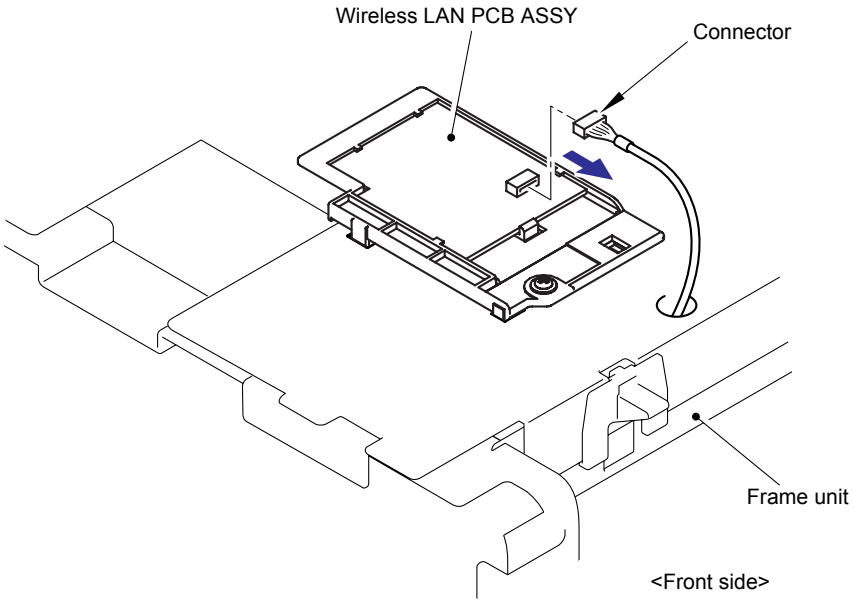


Fig. 3-128

(2) Remove the cup S M3x8 Taptite screw.

(3) Release the three Hooks to remove the Wireless LAN holder from the Frame unit.

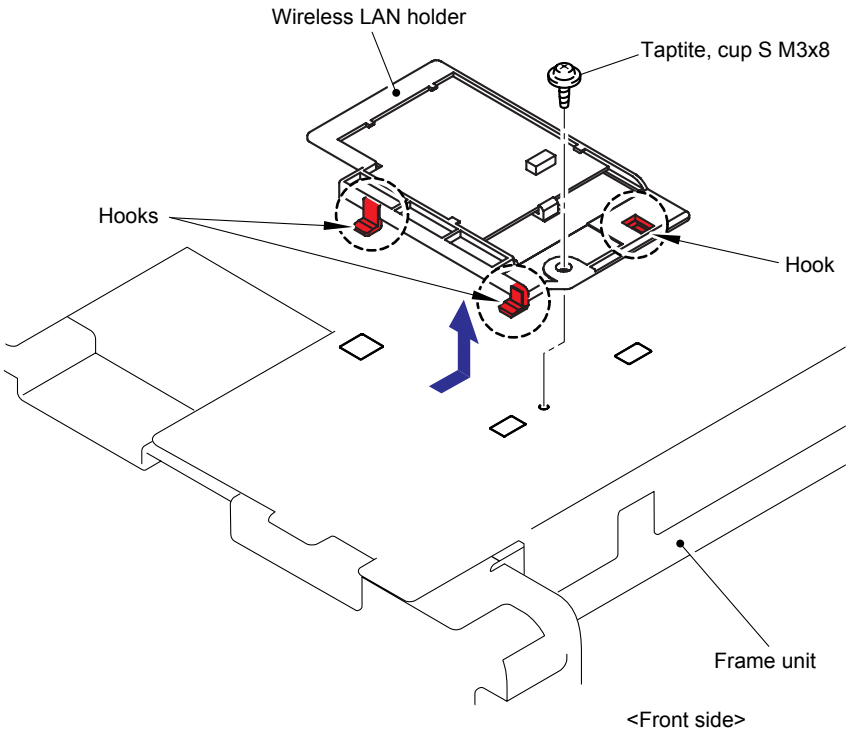


Fig. 3-129

(4) Release the Hook to remove the Wireless LAN PCB ASSY from the Wireless LAN holder.

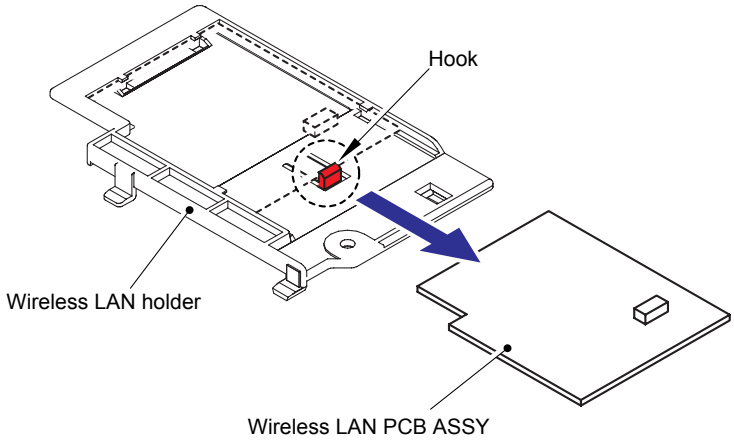


Fig. 3-130

8.46 Laser Unit/ Hook Slope

(1) Remove the four cup S M3x8 Taptite screws, and then remove the two Hook slopes.

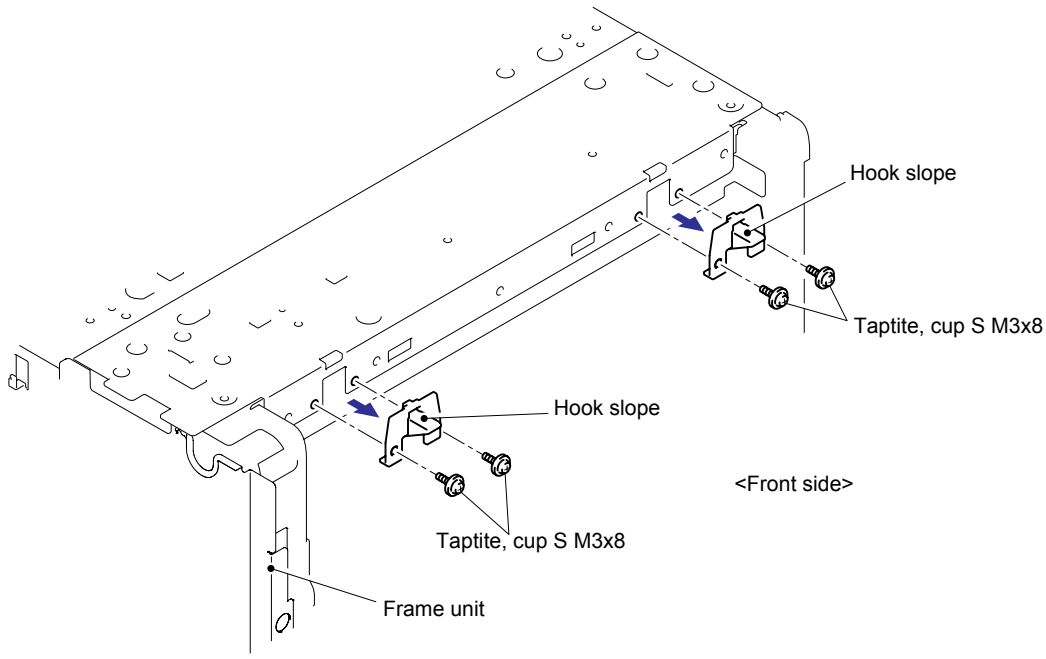


Fig. 3-131

(2) Remove the nine cup S M3x6 Taptite screws (8 pieces from the top and 1 piece from the front side), and then remove the Scanner cover.

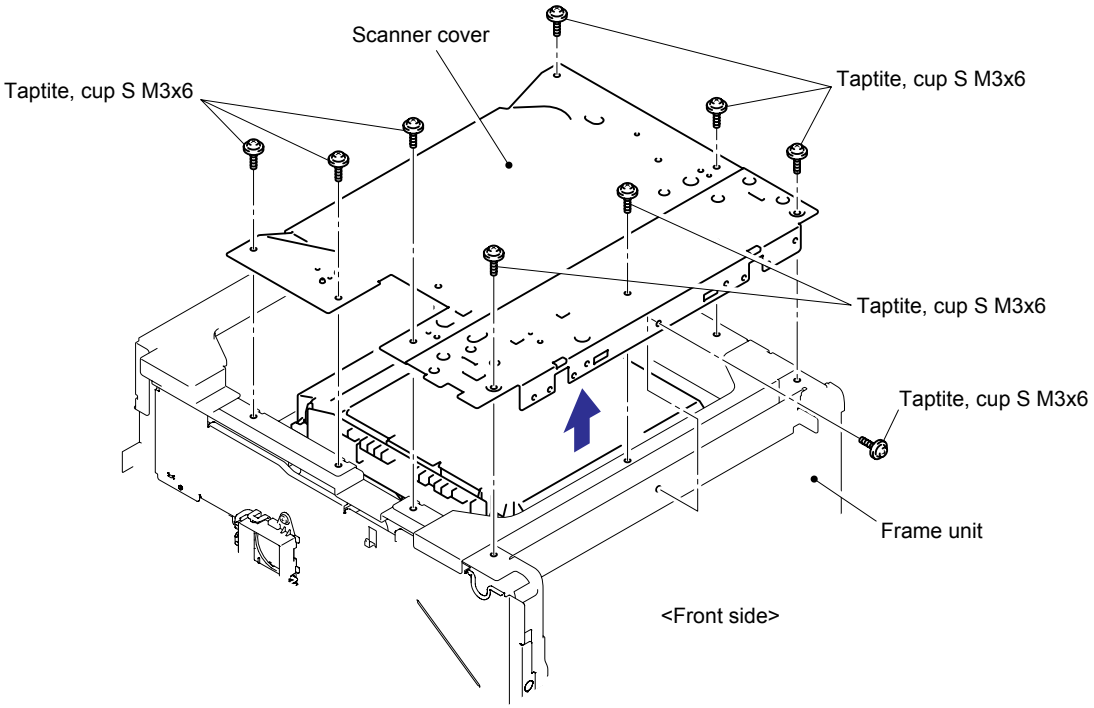


Fig. 3-132

Assembling Note:

When assembling the Scanner cover, secure the screws in the order of the numbers which are indicated on the Scanner cover.

(3) Disconnect the two flat cables (CN1, CN4) and connector (CN8) from the Laser unit.

Note:

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

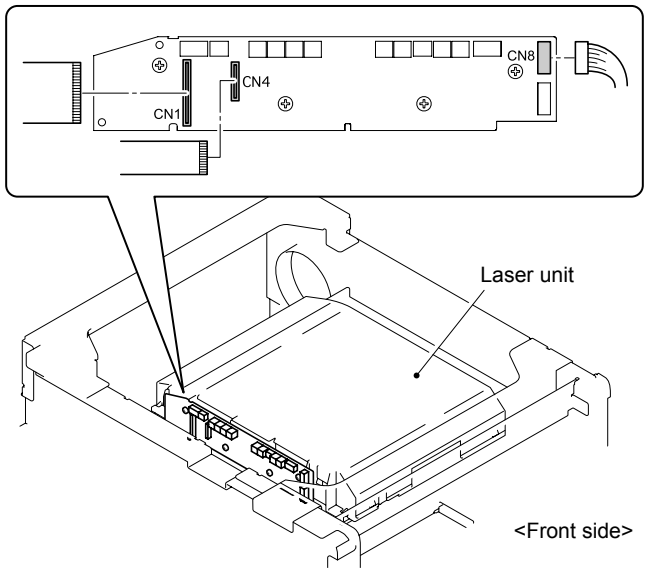


Fig. 3-133

(4) Remove the seven cup S M3x6 SR Taptite screws, and then remove the four Scanner holders and Laser unit.

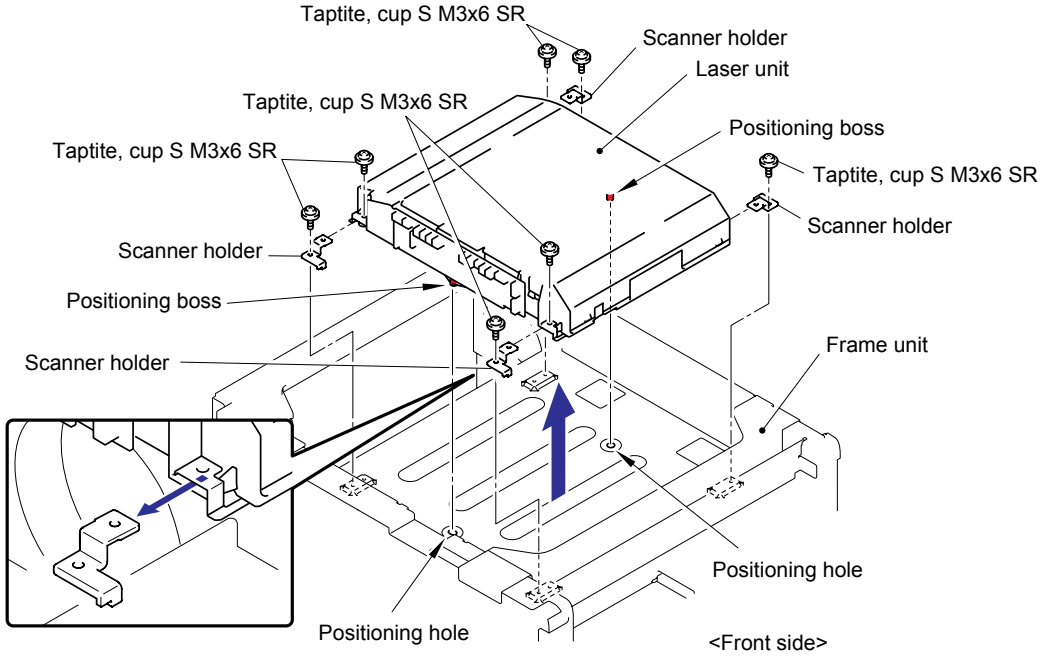


Fig. 3-134

Assembling Note:

When assembling the Laser unit with the Scanner holders, ensure to put the positioning boss of the Laser unit into the positioning hole referring to the figure above.

8.47 Develop Drive Motor ASSY

(1) Remove the Rack gear 27 from the Frame unit.

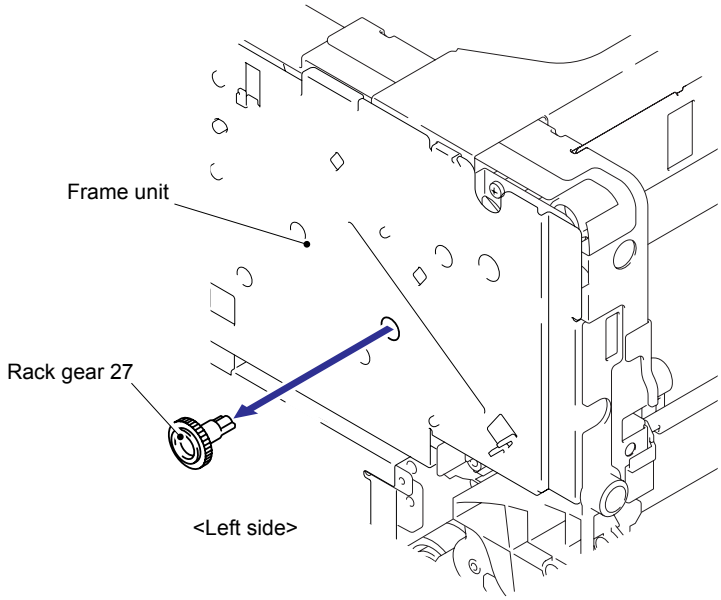


Fig. 3-135

(2) Remove the Alum sheet frame from the Develop gear plate ASSY.

(3) Remove the seven cup S M3x6 Taptite screws, and then remove the Develop gear plate ASSY from the Frame unit. Disconnect the Connector from the Develop drive motor ASSY.

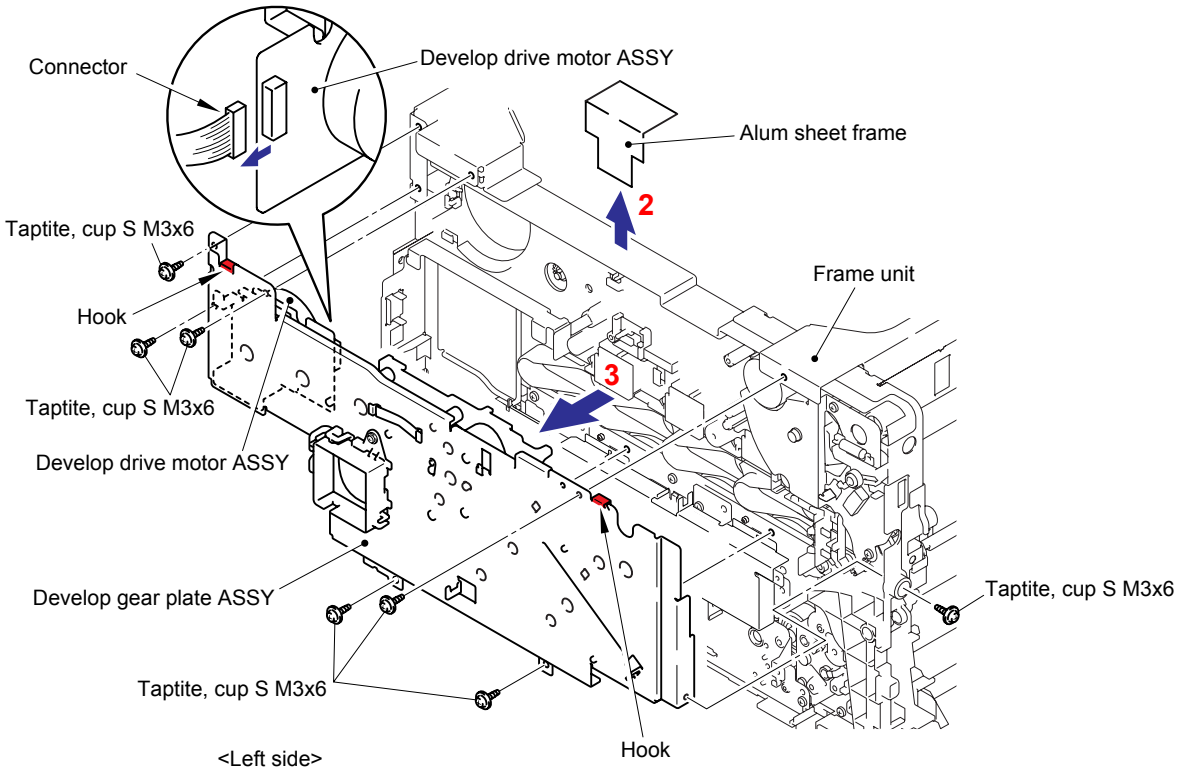


Fig. 3-136

(4) Remove the three cup S M3x6 Taptite screws, and then remove the Develop drive motor ASSY from the Develop gear plate ASSY.

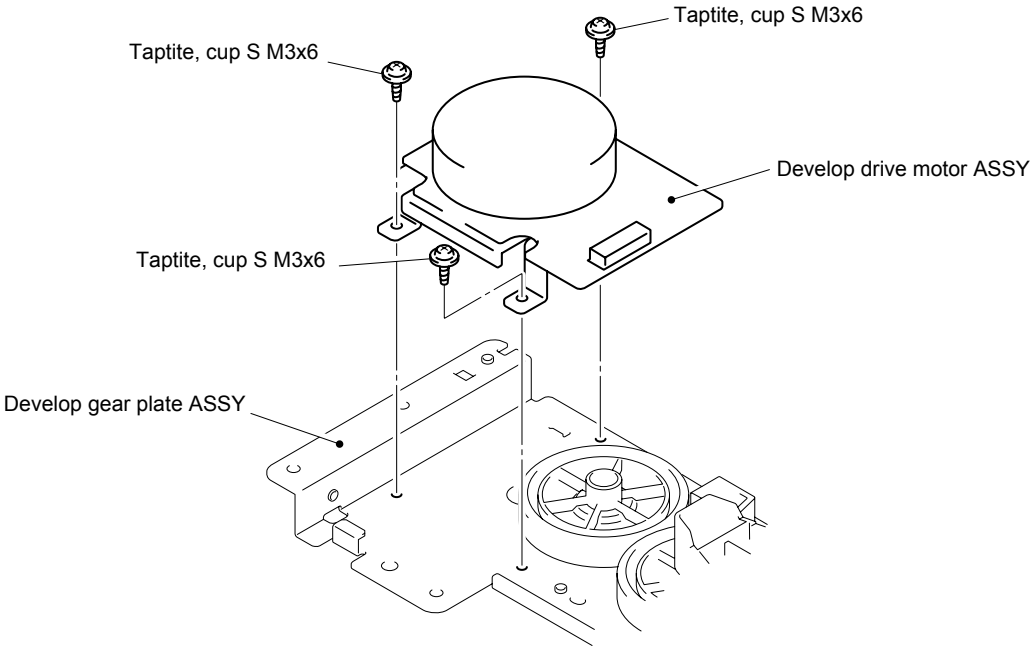


Fig. 3-137

(5) Remove the five cup B M3x10 Taptite screws, and then remove the Gear guide holder from the Develop gear plate ASSY.

Note:

Since the gears on the Gear guide holder and the Coupling gears 50 on the Develop gear plate ASSY come off easily, be careful not to lose them.

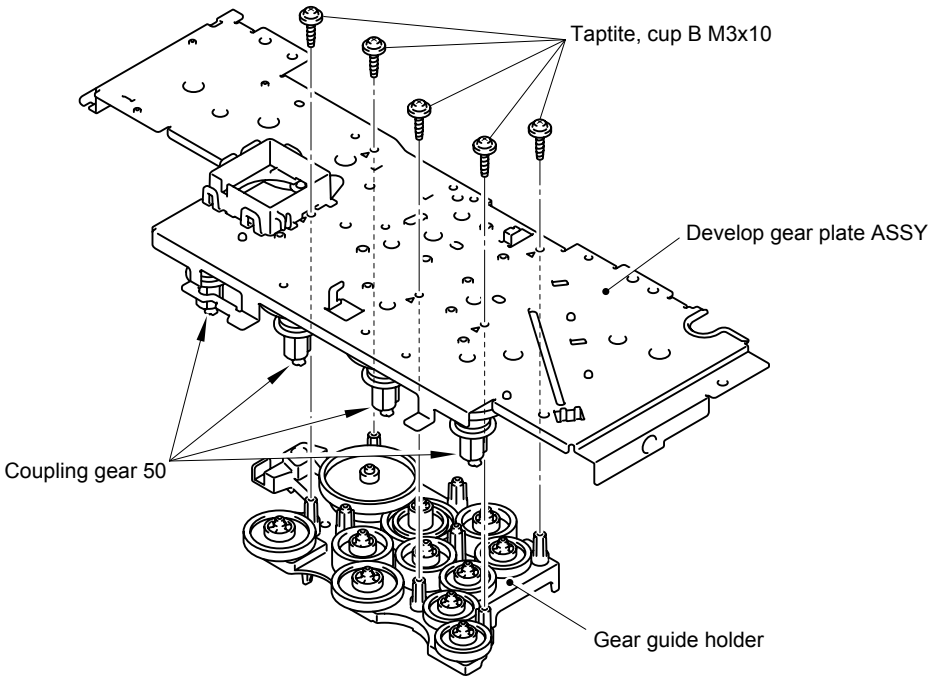


Fig. 3-138

(6) Remove the Friction cap from the Develop gear plate ASSY.

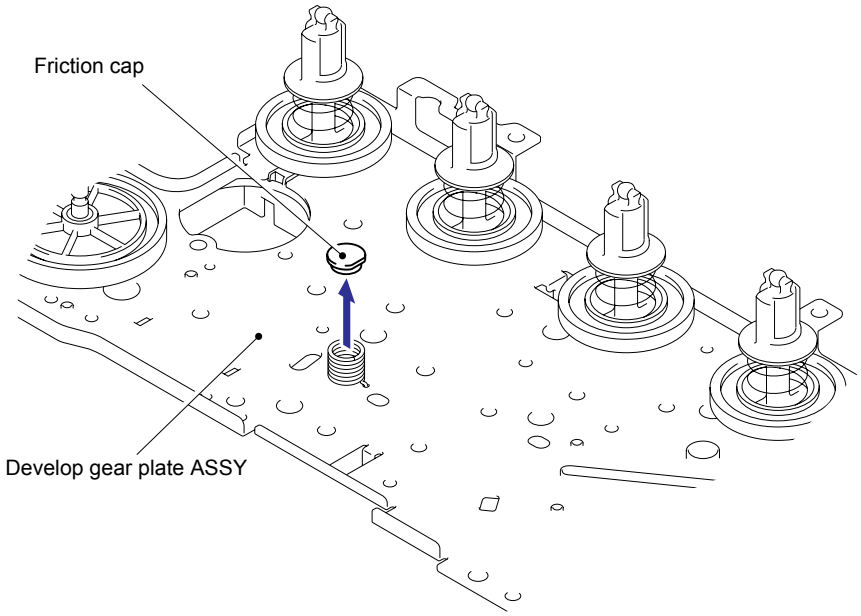


Fig. 3-139

Assembling Note:

- When assembling the Develop gear plate ASSY onto the Frame unit, secure the screws in the order of the numbers which are indicated on the plate.

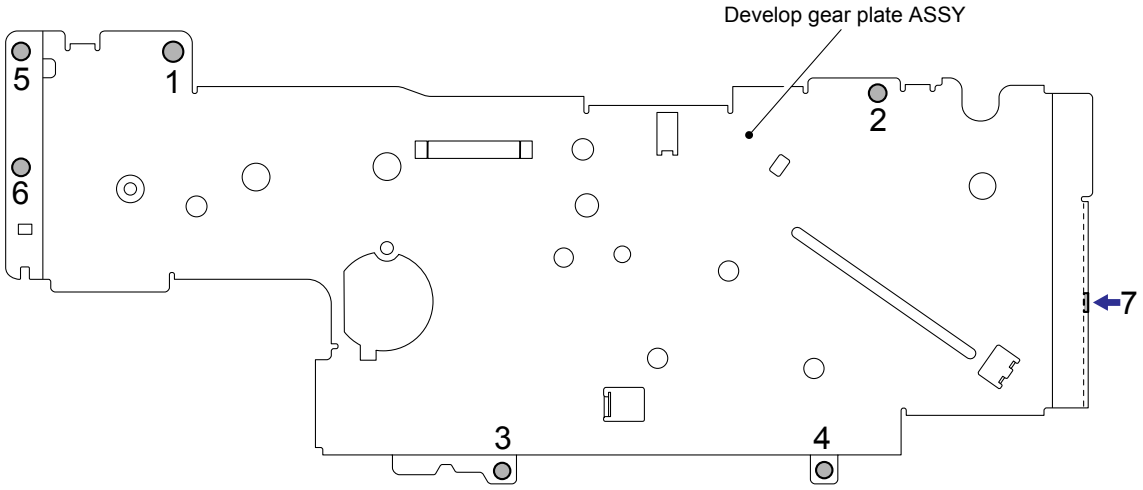


Fig. 3-140

Assembling Note:

- When assembling the Develop gear pate ASSY, make sure to keep the Harness and Flat cable out of the Frame unit to prevent them from going into the Develop gear plate ASSY.

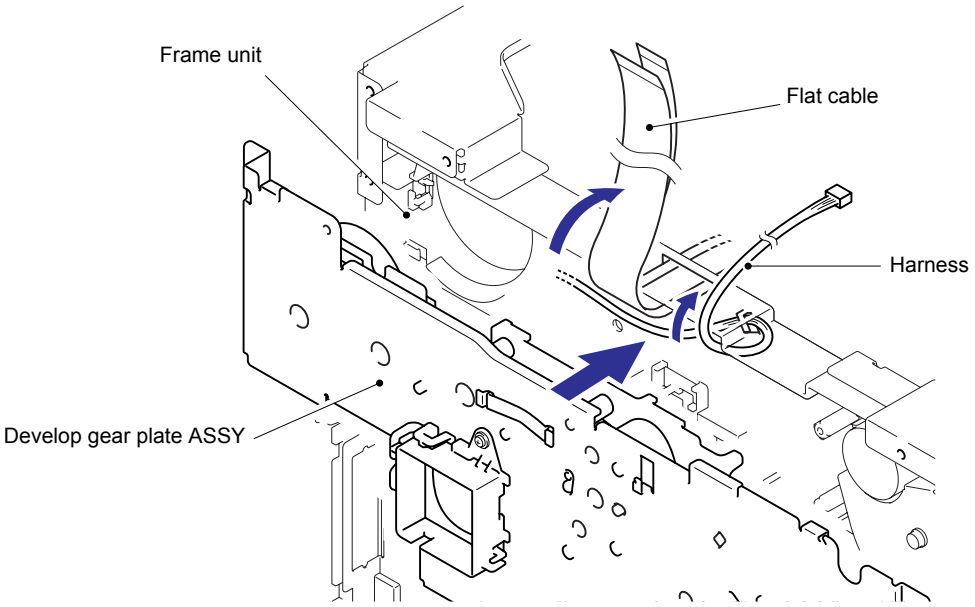


Fig. 3-141

- If the Joint release lever is protruding from the Develop gear plate ASSY, push the Joint release lever back into the inside of the Develop gear plate ASSY.

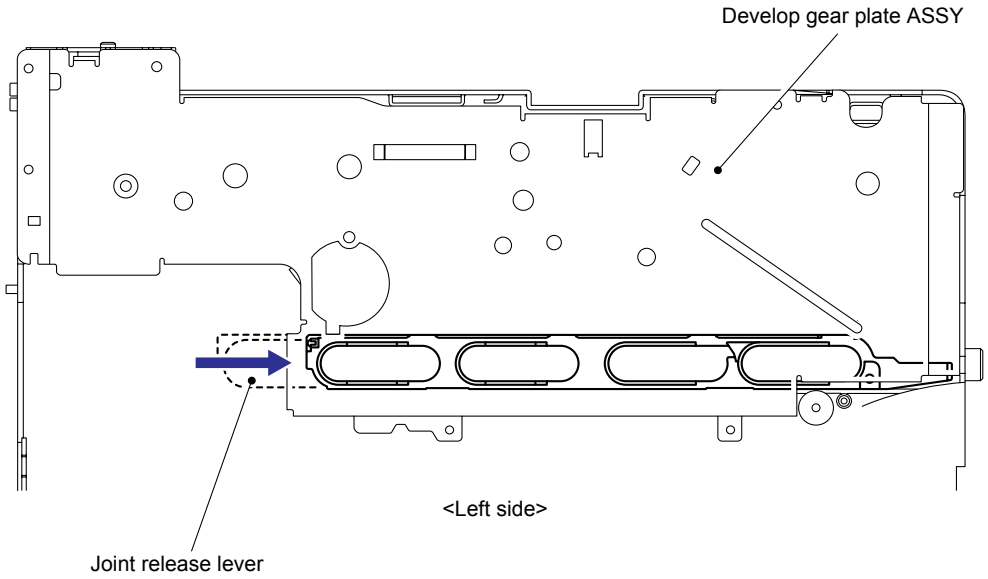


Fig. 3-142

Assembling Note:

- Always make sure to attach the Alum sheet frame after assembling the Develop gear plate ASSY and Flat cable. Attach the Alum sheet frame so that it is aligned with the corner of the square hole as shown in the figure below.

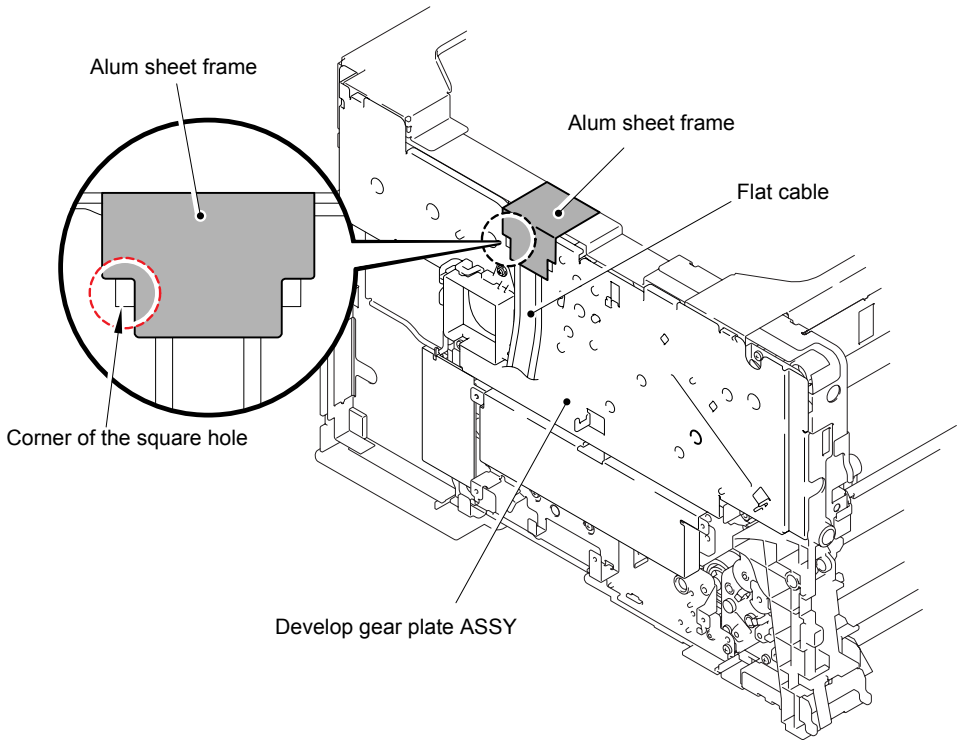


Fig. 3-143

8.48 Drum Drive ASSY/ Drum Phase Sensor PCB ASSY 1, 2

(1) Remove the Engine insulation sheet from the Harness shield plate, which is fixed with a two-sided adhesive tape.

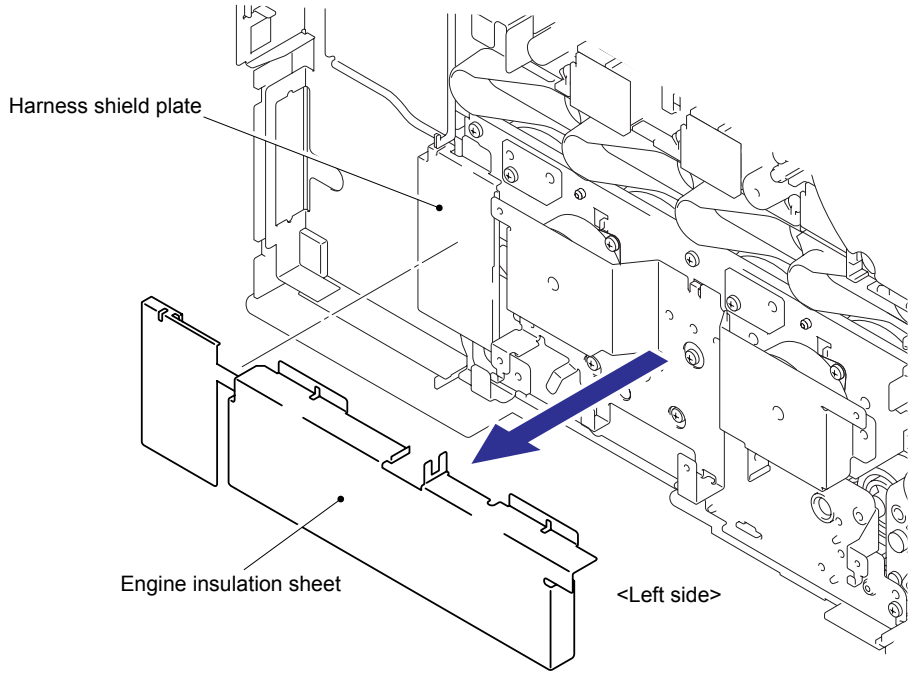


Fig. 3-144

(2) Remove the three cup S M3x6 Taptite screws, and then remove the Harness shield plate from the Frame unit.

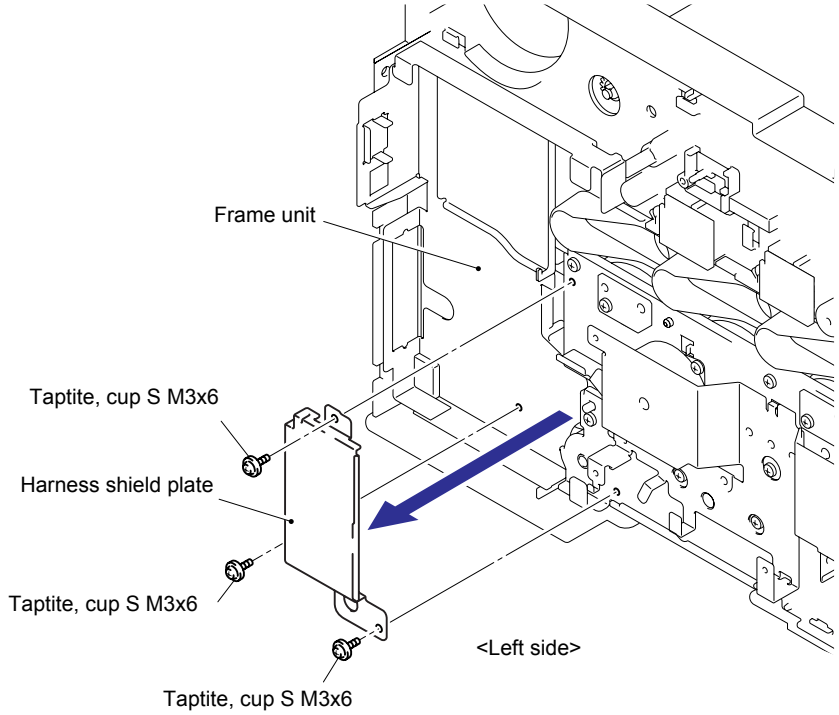


Fig. 3-145

(3) Remove the four cup S M3x6 Taptite screws, and then remove the Engine PCB plate.

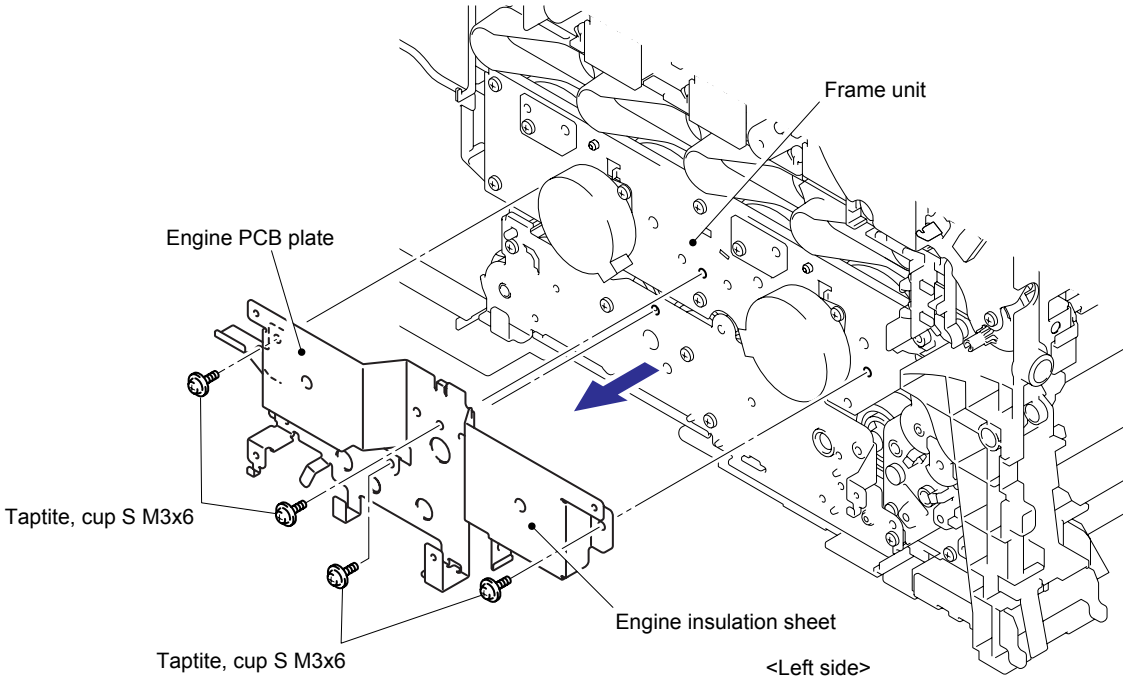


Fig. 3-146

Assembling Note:

When assembling the Engine PCB plate, make sure that the section “A” is caught on the Hook of the Drive frame unit ASSY.

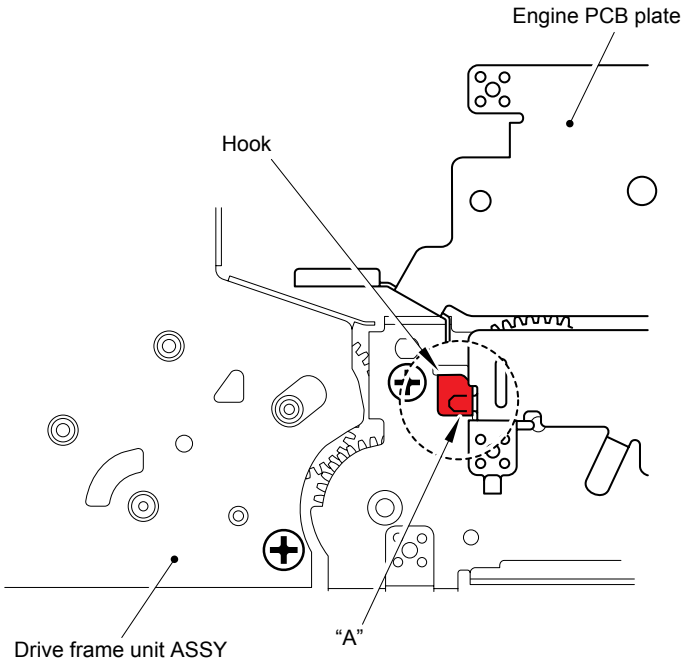


Fig. 3-147

(4) Remove the two cup S M3x6 Taptite screws, and then remove the Drum drive motor 1.

(5) Remove the two cup S M3x6 Taptite screws, and then remove the Drum drive motor 2.

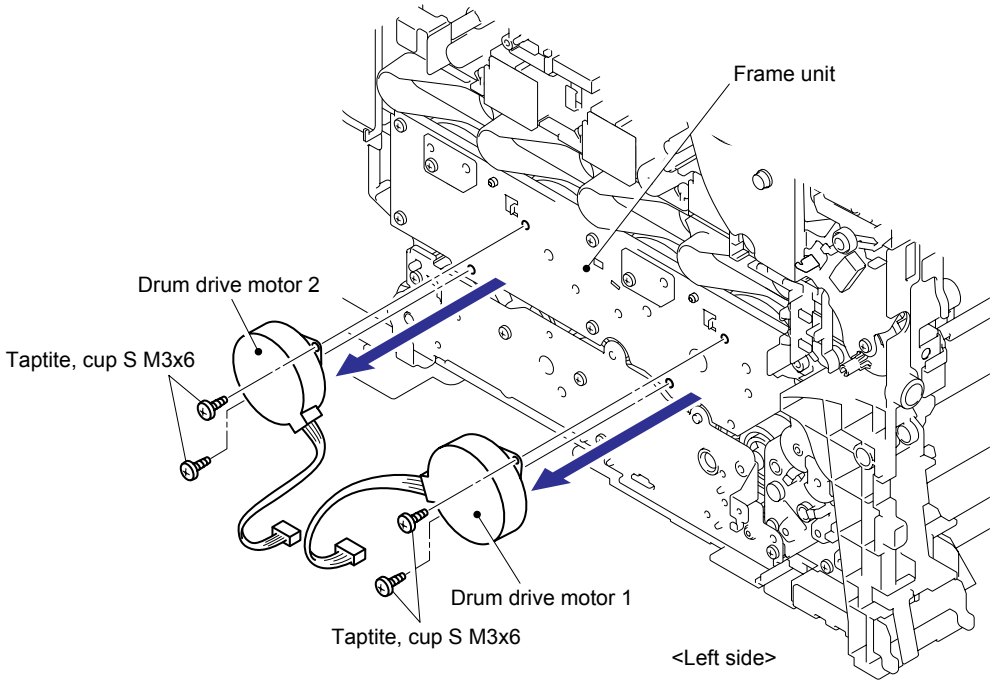


Fig. 3-148

Assembling Note:

The two Gears 39/121 which are engaged with the same motor are phased with each other when assembling the Drum drive ASSY. If removing the motor to replace it, the gears may be out of phase. When replacing the motor, therefore, be sure to phase the Gears 39/121, and then assemble the motor. For the method how to phase the gears, refer to the figure below (Fig. 3-149).

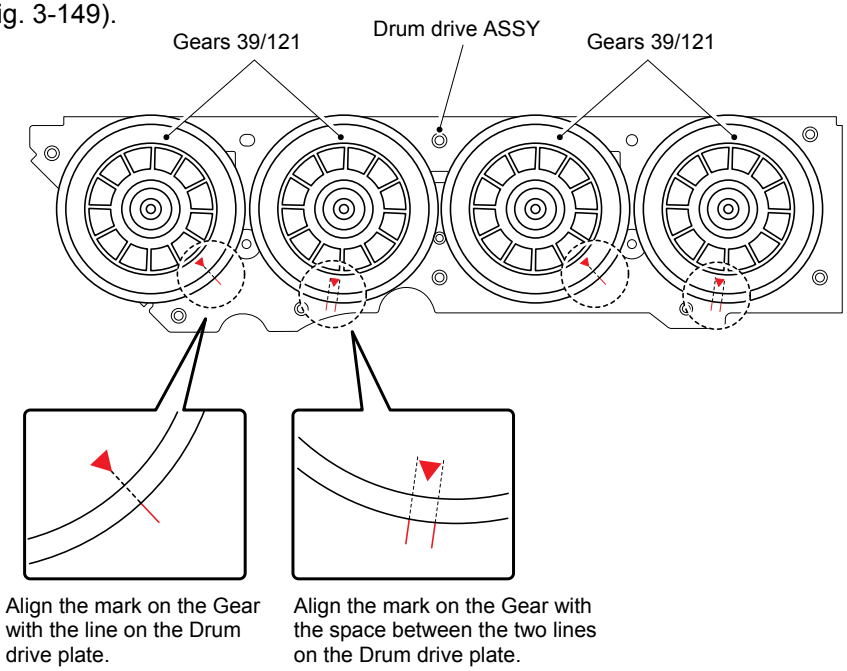


Fig. 3-149

(6) Remove the six bind B M4x12 Taptite screws, and then remove the Drum drive ASSY from the Frame unit.

Note:

Since the four Gears 39/121 of the Drum drive ASSY are assembled together, which makes one set, DO NOT replace only one gear. If their replacement is required, replace the complete Drum drive ASSY.

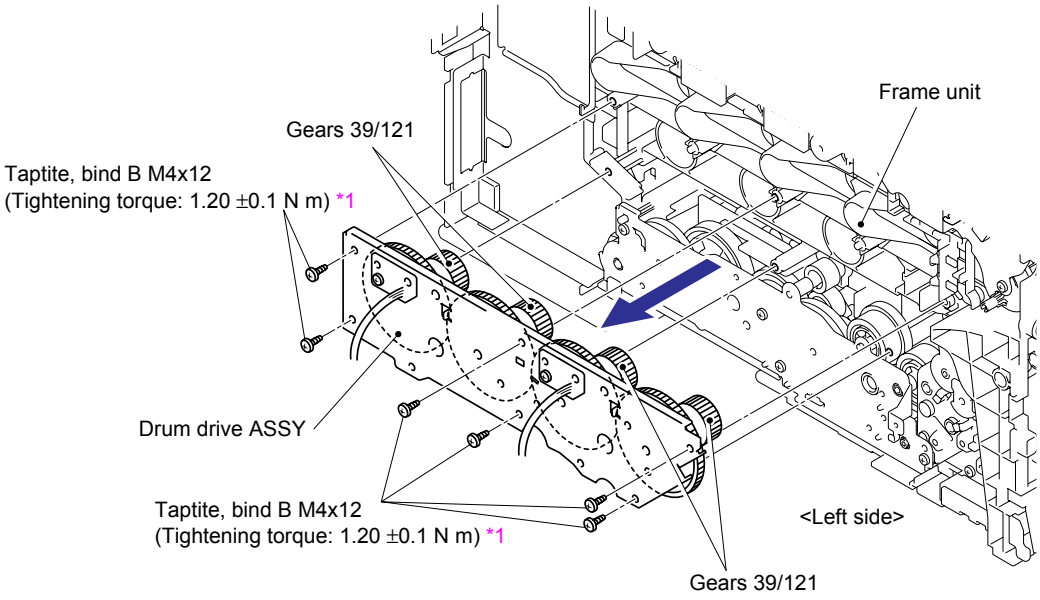


Fig. 3-150

*1 **Tightening Note:**

When tightening the screw, slowly turn it counterclockwise (in the direction to loosen the screw) with your hand until you feel that the screw is a little dropped in the hole. Then, slightly turn it clockwise (in the direction to tighten the screw) with your hand and tighten it according to the specified torque with a screwdriver.

(7) Remove the bind S M3x6 Taptite screw, and then remove the Drum phase sensor PCB ASSY 2 (whose harness is longer) from the Drum drive ASSY.

(8) Remove the Drum phase sensor PCB 1 (whose harness is shorter) in the same way.

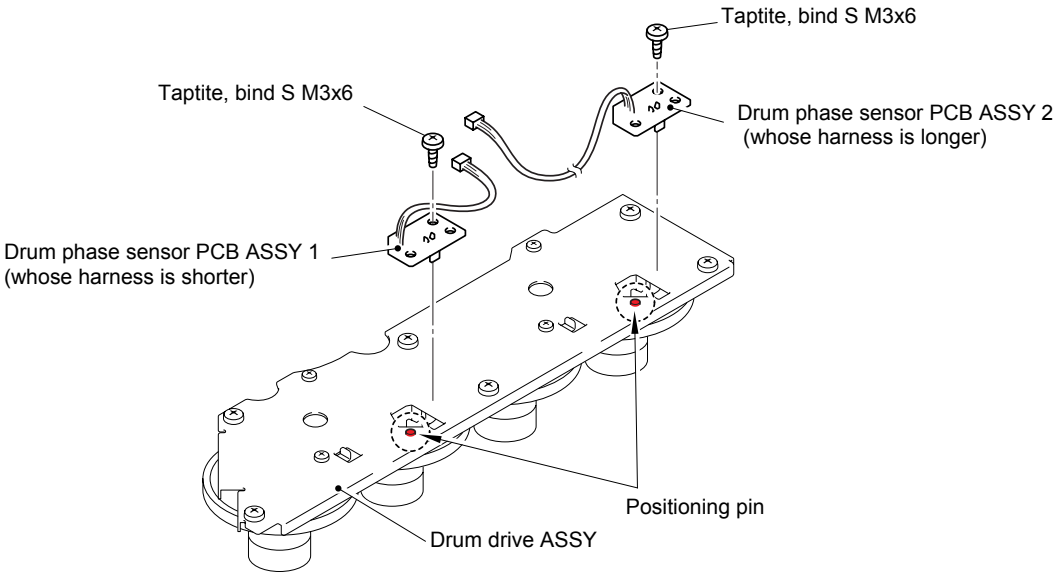


Fig. 3-151

8.49 Drive Frame Unit ASSY

(1) Remove the three bind B M4x12 Taptite screws, and then remove the Drive frame unit ASSY from the Frame unit.

(2) Disconnect the Connector from the Drive frame unit ASSY.

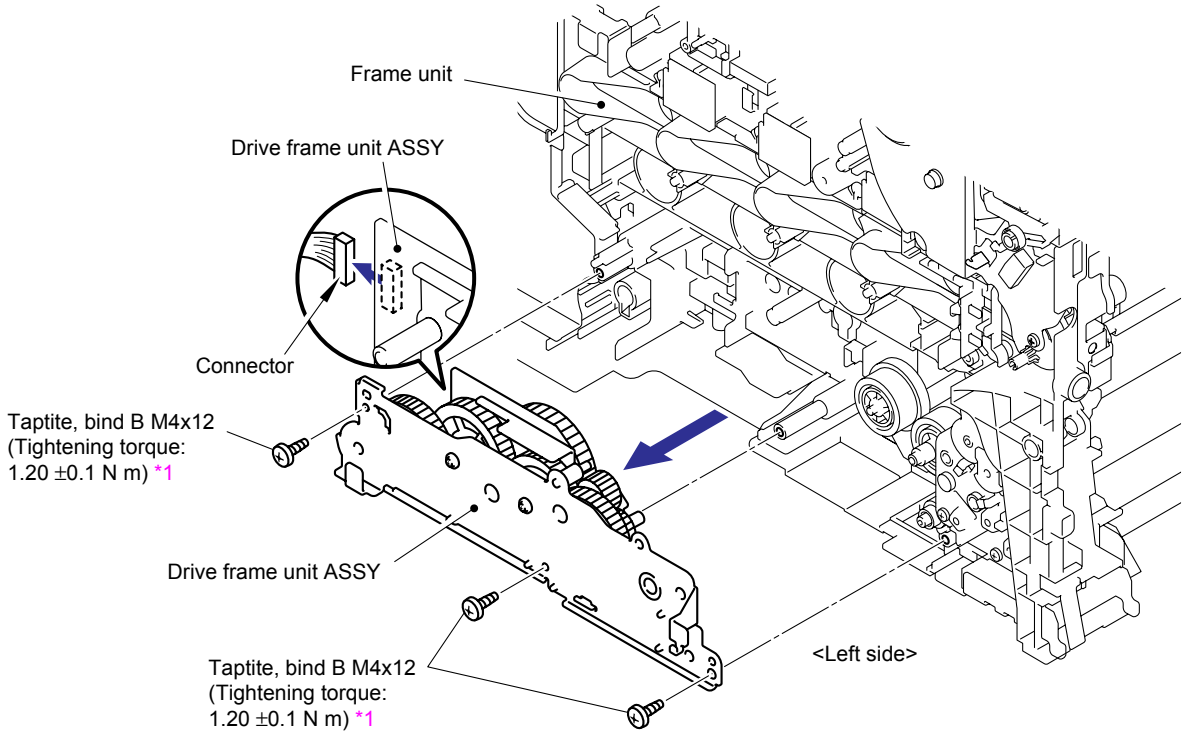


Fig. 3-152

*1 **Tightening Note:**
When tightening the screw, slowly turn it counterclockwise (in the direction to loosen the screw) with your hand until you feel that the screw is a little dropped in the hole. Then, slightly turn it clockwise (in the direction to tighten the screw) with your hand and tighten it according to the specified torque with a screwdriver.

8.50 Paper Feed/Belt Cleaner Motor ASSY

(1) Remove the four cup S M3x6 Taptite screws (2 pieces provided on each of the front and back sides), and then remove the Paper feed/belt cleaner motor ASSY from the Drive frame unit ASSY.

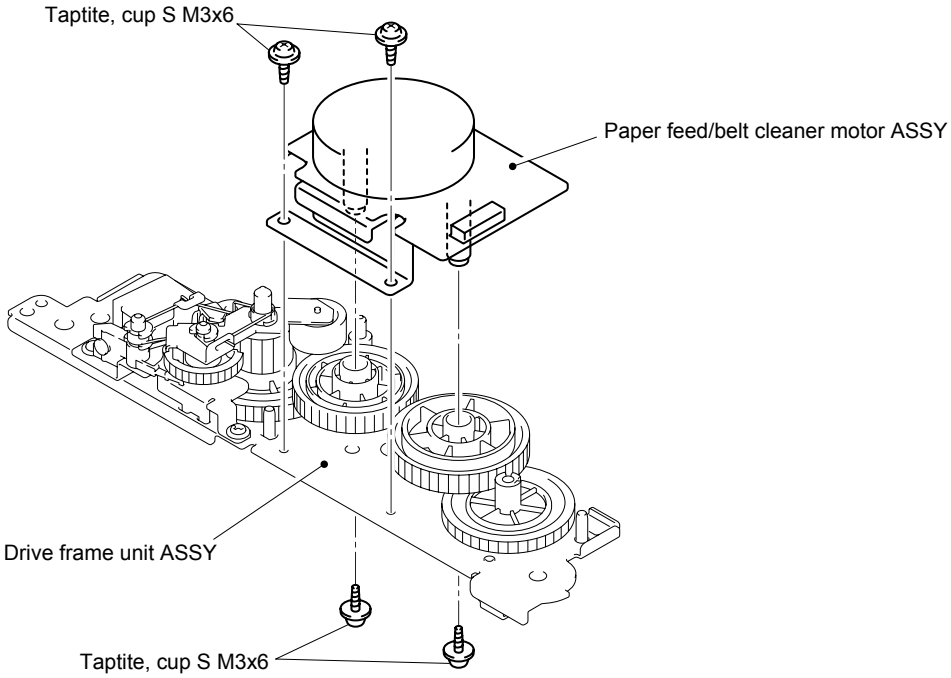


Fig. 3-153

Assembling Note:

Be sure to hook the harness of the Paper feed/belt cleaner motor ASSY onto the Rib of the Frame L as shown in the figure below.

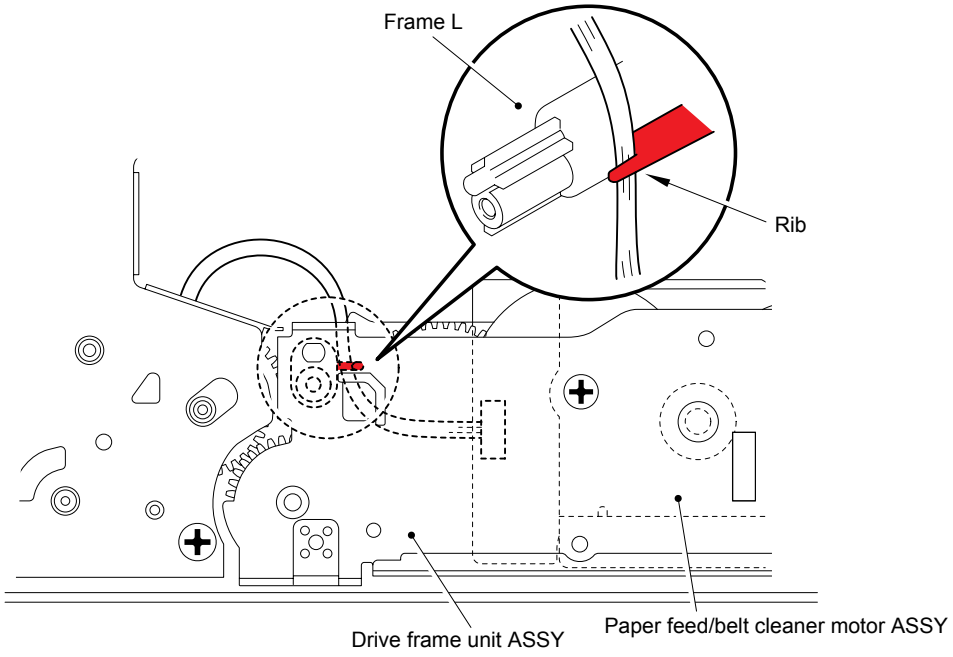


Fig. 3-154

8.51 Develop Release Sensor PCB ASSY

(1) Remove the cup B M3x8 Taptite screw.

(2) Remove the Develop release sensor PCB ASSY from the Frame unit. Disconnect the Connector from the Develop release sensor PCB ASSY.

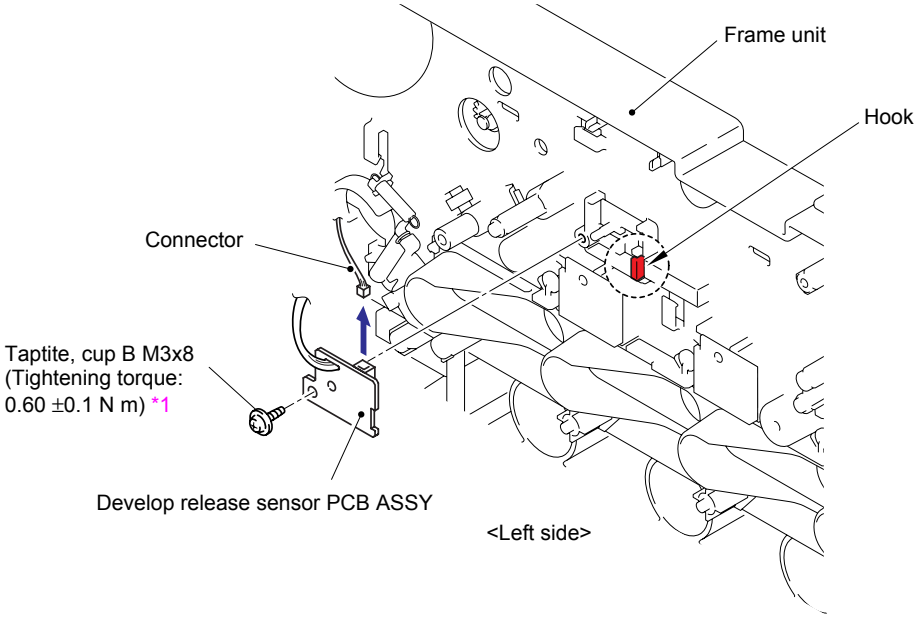


Fig. 3-155

*1 **Tightening Note:**
When tightening the screw, slowly turn it counterclockwise (in the direction to loosen the screw) with your hand until you feel that the screw is a little dropped in the hole. Then, slightly turn it clockwise (in the direction to tighten the screw) with your hand and tighten it according to the specified torque with a screwdriver.

8.52 Develop Press Drive L ASSY

(1) Remove the Pull up lever spring (for L) from the Hook of Develop press drive L ASSY.

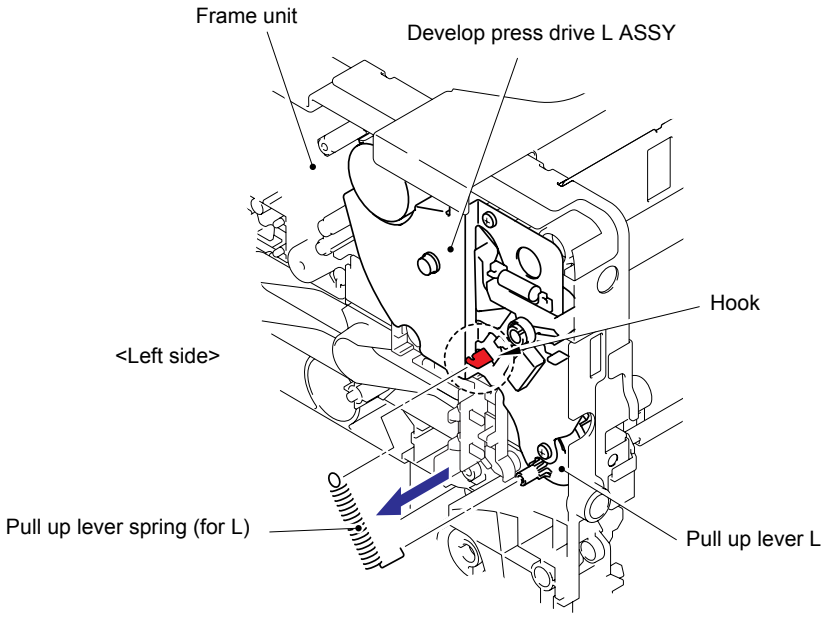


Fig. 3-156

(2) Remove the three bind B M3x12 Taptite screws and cup B M3x12 Taptite screw, and then remove the Develop press drive L ASSY.

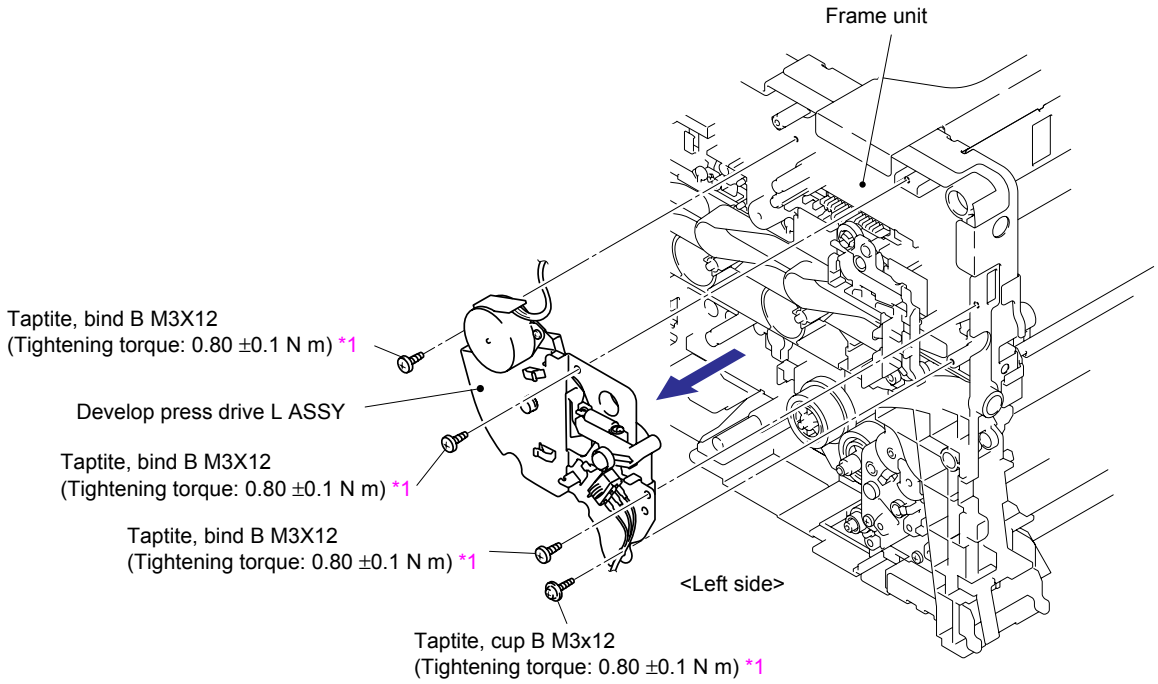


Fig. 3-157

*1 **Tightening Note:**
When tightening the screw, slowly turn it counterclockwise (in the direction to loosen the screw) with your hand until you feel that the screw is a little dropped in the hole. Then, slightly turn it clockwise (in the direction to tighten the screw) with your hand and tighten it according to the specified torque with a screwdriver.

(3) Remove the bind S M3x6 Taptite screw, and then remove the Develop release motor ASSY from the Develop press drive L ASSY.

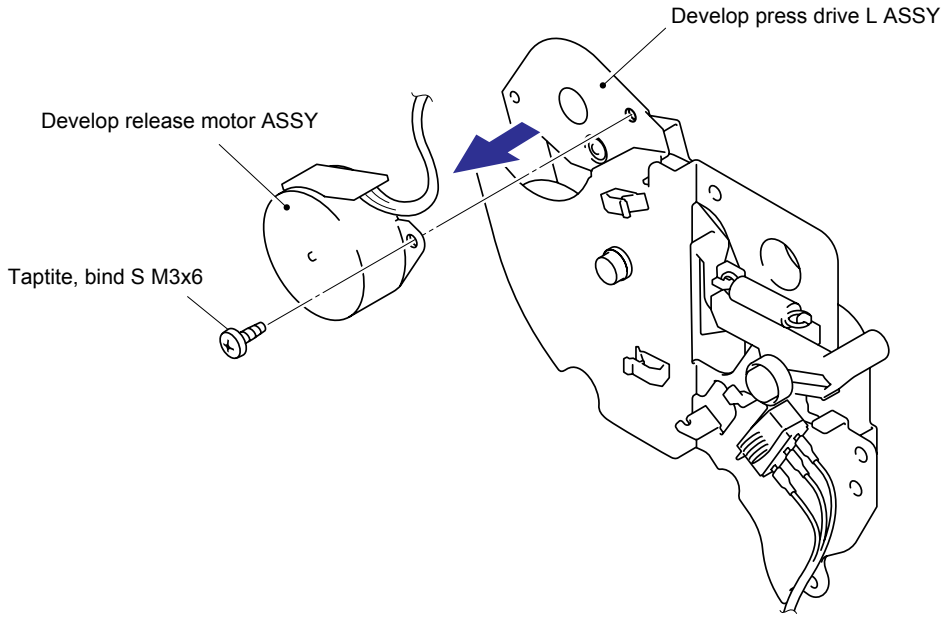


Fig. 3-158

Assembling Note:

- Assemble the Develop press drive L ASSY so that the section of the Pull up lever L, where the spring is hooked is placed as shown in the figure below.

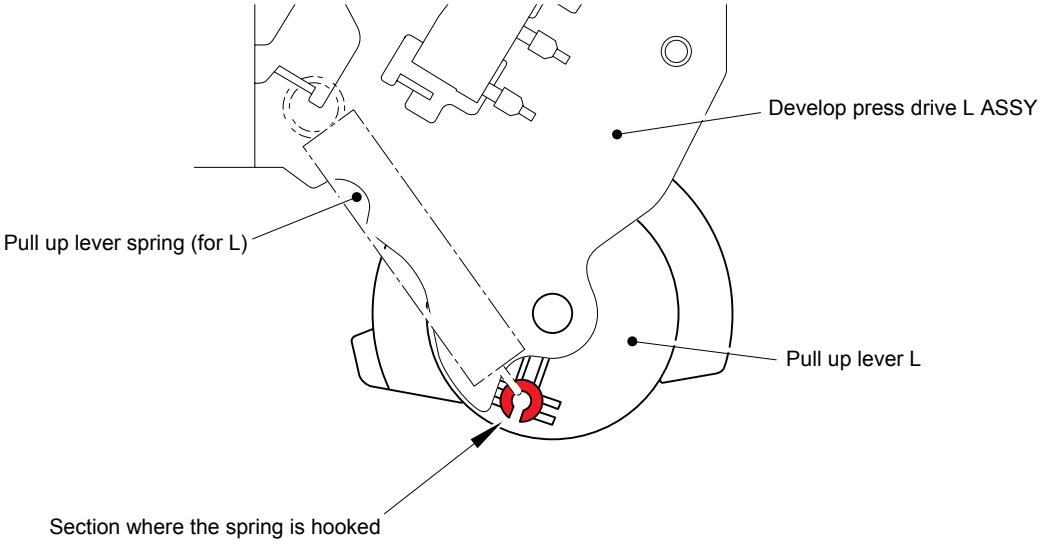


Fig. 3-159

- Catch the harness from the Laser unit onto the hook as shown in the figure below, and then assemble the Develop press drive L ASSY.

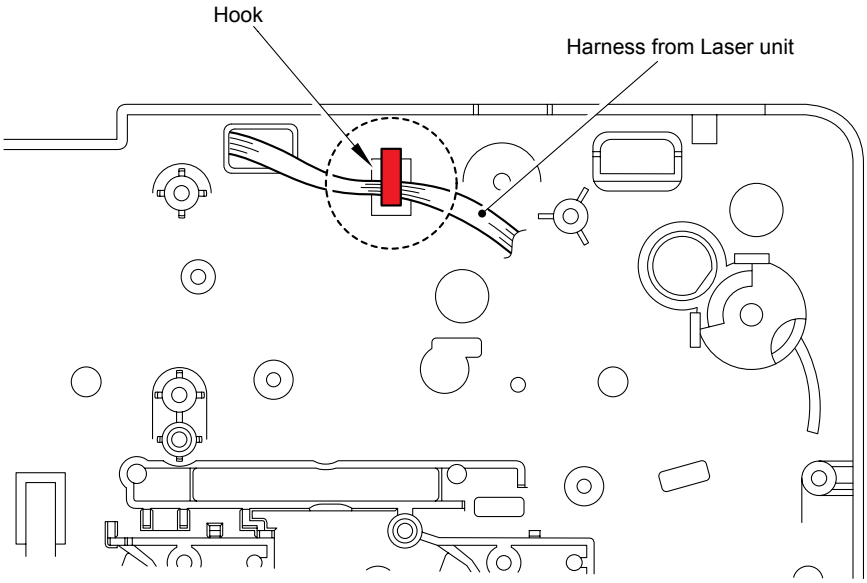


Fig. 3-160

8.53 Front Cover Interlock Switch ASSY

(1) Remove the Interlock switch holder spring and Interlock harness guide from the Develop press drive L ASSY.

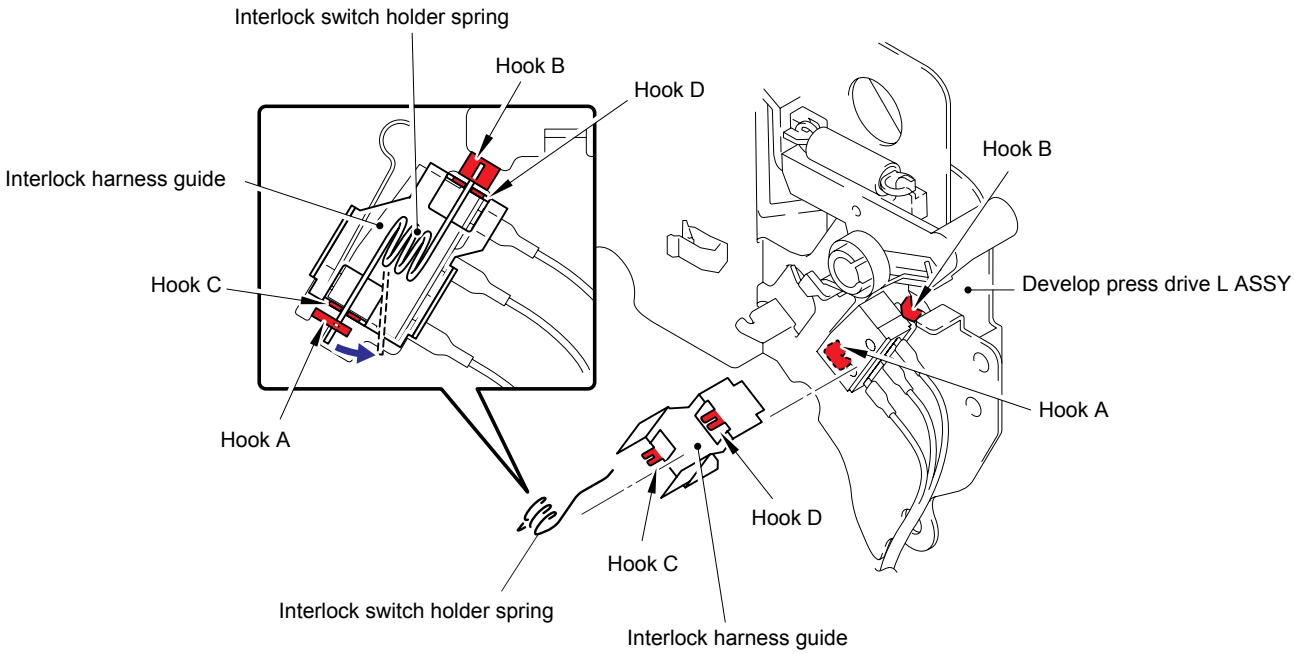


Fig. 3-161

(2) Remove the Front cover interlock switch ASSY from the Develop press drive L ASSY.

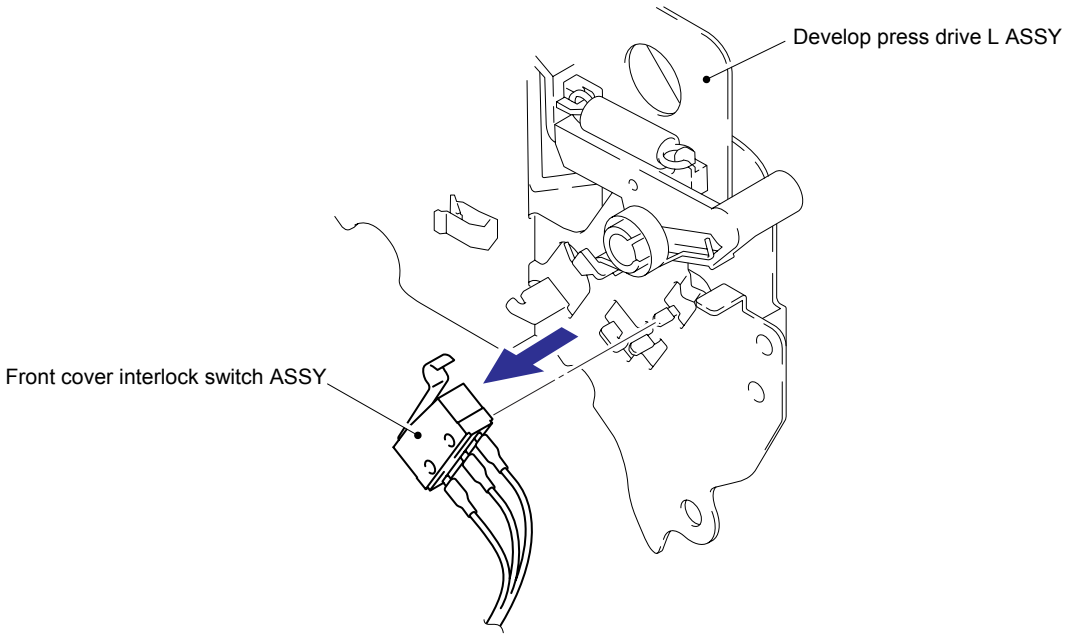


Fig. 3-162

8.54 Toner Sensor PCB ASSY K, Y, M, C (TE/NEW)

(1) Remove the three cup B M3x10 Taptite screws, and then remove the Release drive holder from the Frame unit.

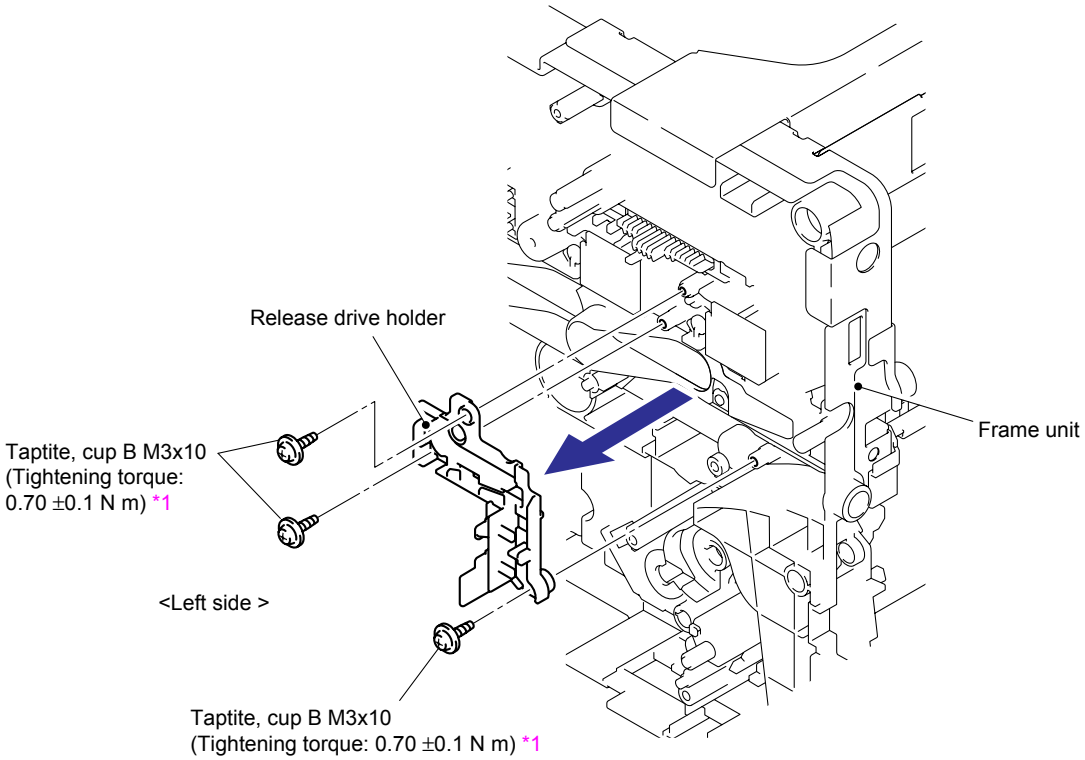


Fig. 3-163

*1 **Tightening Note:**
When tightening the screw, slowly turn it counterclockwise (in the direction to loosen the screw) with your hand until you feel that the screw is a little dropped in the hole. Then, slightly turn it clockwise (in the direction to tighten the screw) with your hand and tighten it according to the specified torque with a screwdriver.

(2) Remove the bind B M3x8 Taptite screw, and then remove the Toner sensor PCB ASSY K (TE/NEW) from the Frame unit.

(3) Remove the cup B M3x8 Taptite screw, and then remove the TE protect film 2 and Toner sensor PCB ASSY Y (TE/NEW) from the Frame unit.

(4) Remove the bind B M3x8 Taptite screw, and then remove the Toner sensor PCB ASSY M (TE/NEW) from the Frame unit.

(5) Remove the bind B M3x8 Taptite screw, and then remove the Toner sensor PCB ASSY C (TE/NEW) from the Frame unit.

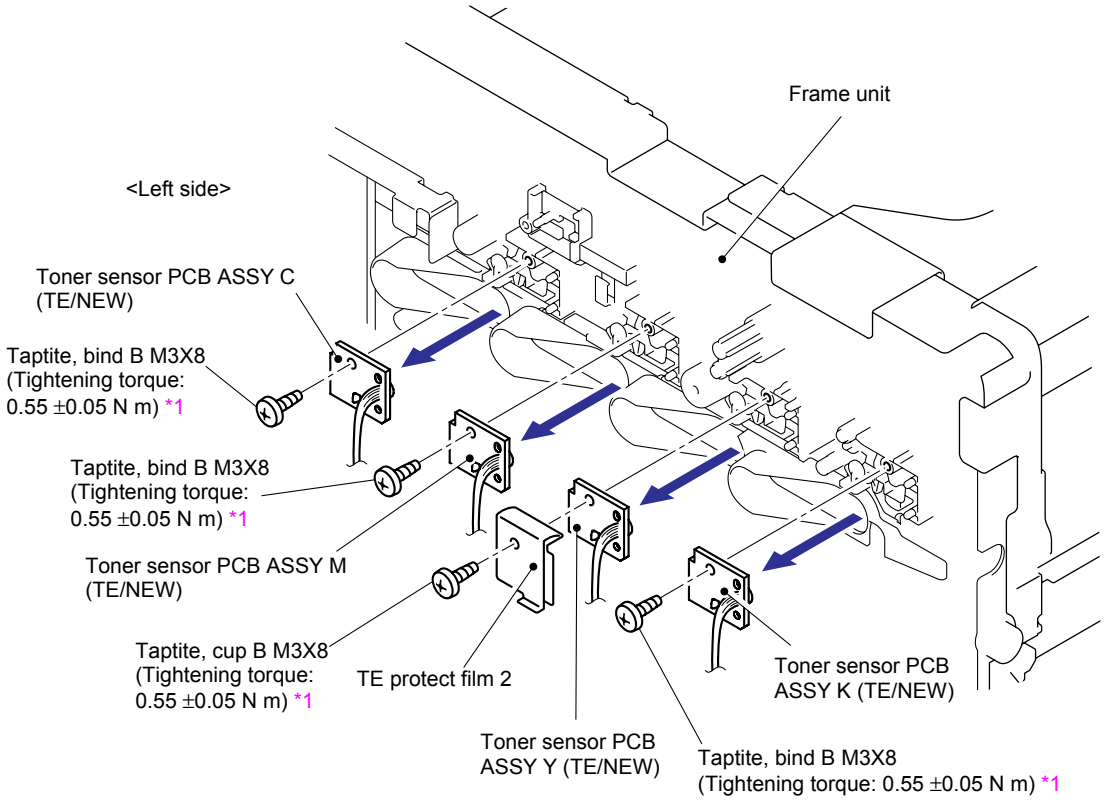


Fig. 3-164

*1 **Tightening Note:**
When tightening the screw, slowly turn it counterclockwise (in the direction to loosen the screw) with your hand until you feel that the screw is a little dropped in the hole. Then, slightly turn it clockwise (in the direction to tighten the screw) with your hand and tighten it according to the specified torque with a screwdriver.

Assembling Note:

Assemble the Toner sensor PCB ASSY K, Y, M, C (TE/NEW) as shown in the figure below.

For the method to arrange the harnesses, refer to "7. Toner sensor PCB ASSY K, Y, M, C (TE/NEW)".

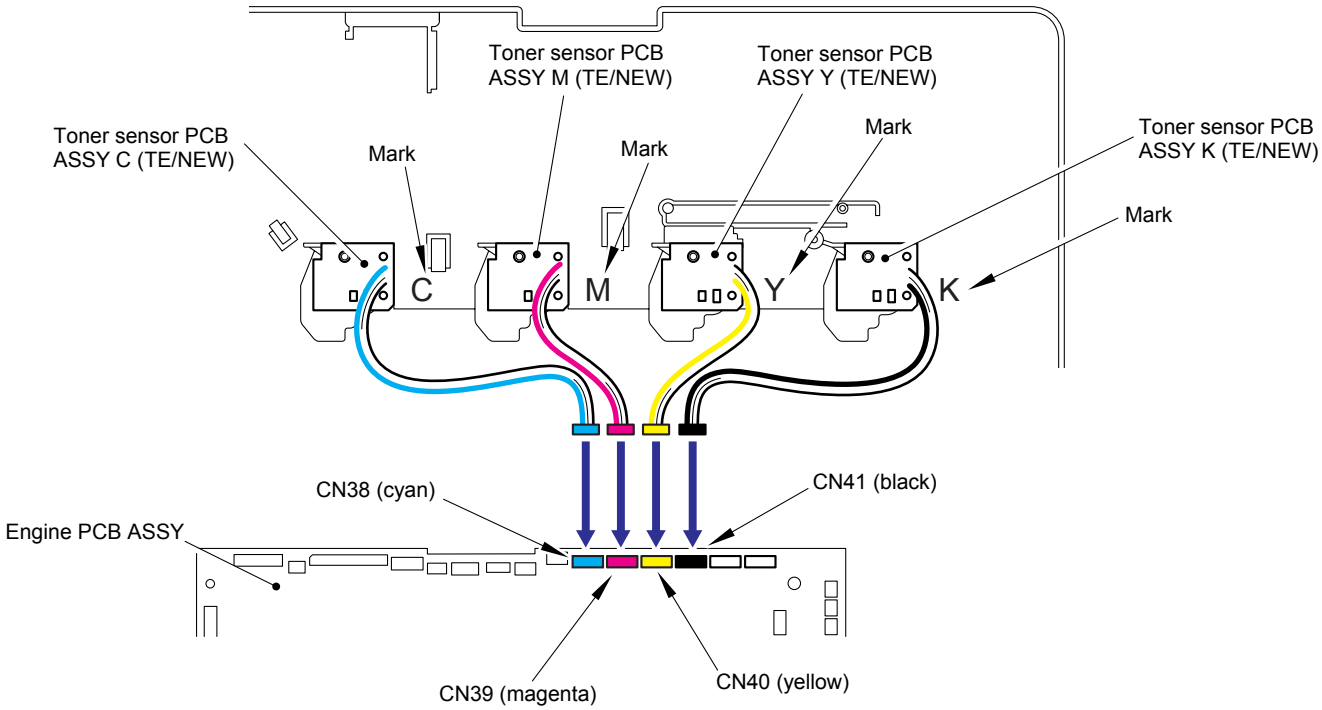


Fig. 3-165

(6) Release the two Hooks of the LED holder to remove it from each of the four Toner sensor PCB ASSYs (TE/NEW).

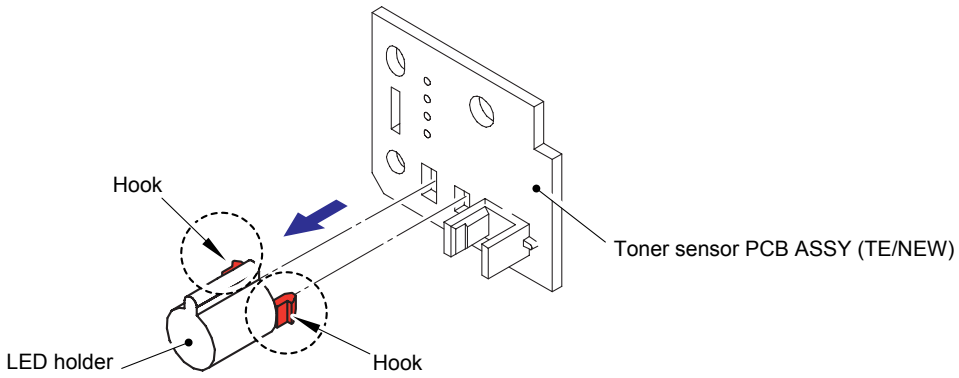


Fig. 3-166

Assembling Note:

Assemble the Toner sensor PCB ASSY (TE/NEW) so that the Shutter of the New toner actuator is put into the sensor section of the Toner sensor PCB ASSY (TE/NEW).

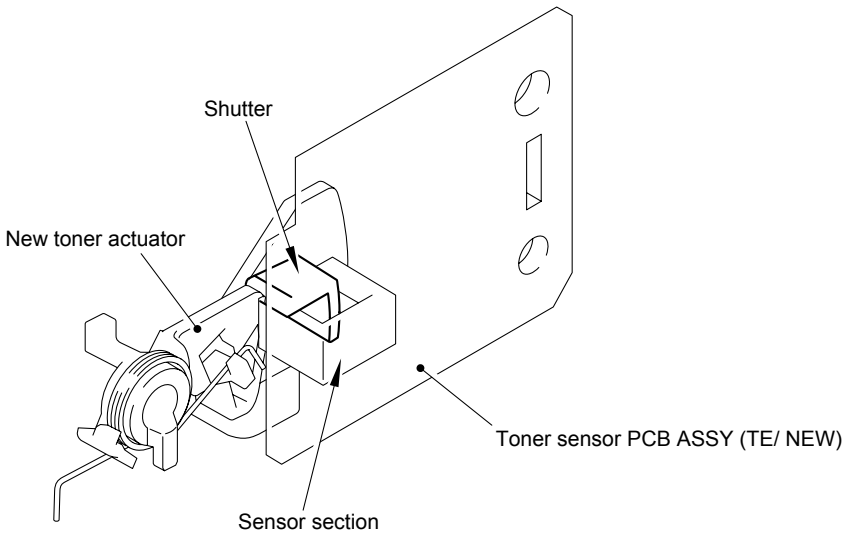


Fig. 3-167

8.55 New Toner Actuator/ New Toner Actuator Spring

(1) Release the section “A” of the New toner actuator spring from the Hook of the Frame unit, and then remove the New toner actuator from the Fame unit.

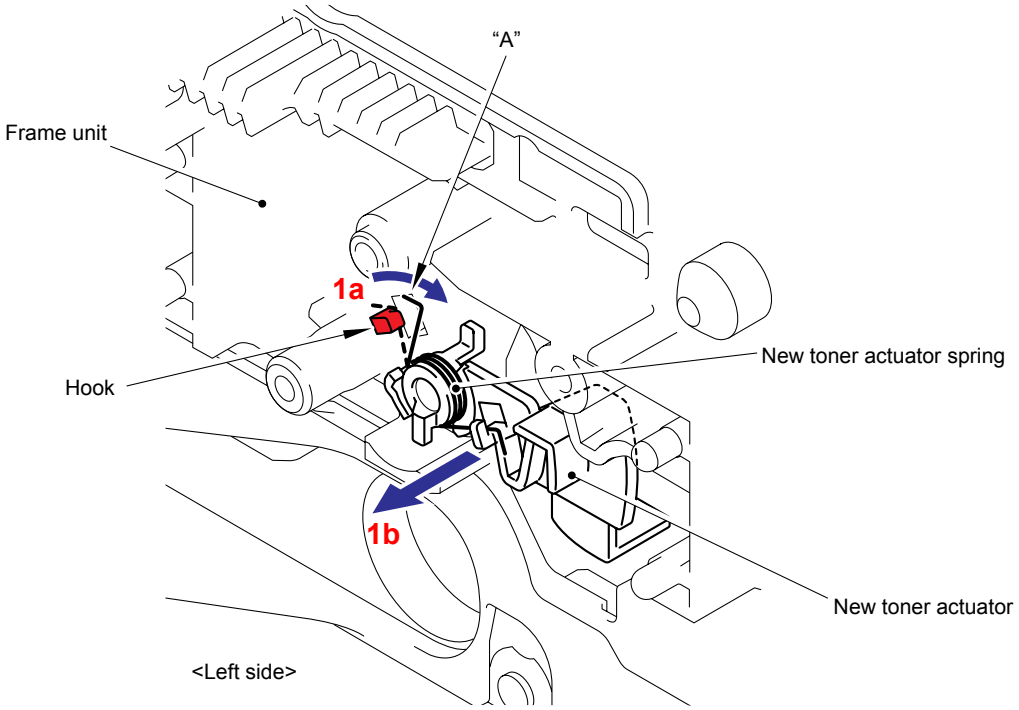


Fig. 3-168

(2) Remove the New toner actuator spring from the New toner actuator.

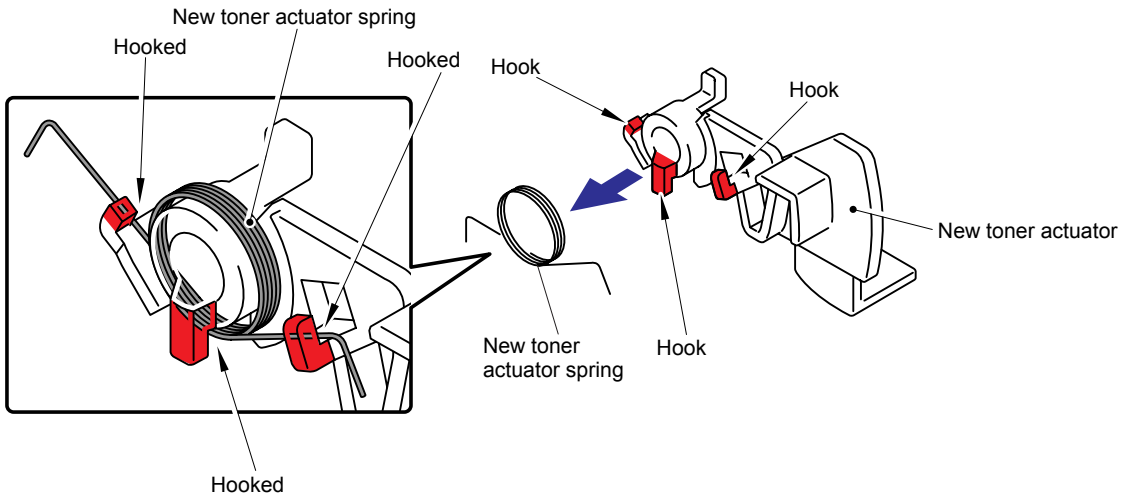


Fig. 3-169

8.56 Side Plate R ASSY

(1) Remove the four cup S M3x6 Taptite screws, four cup B M4x12 Taptite screws and screw pan (S/P washer) M4x8.

(2) Remove the cup S M4x8 Taptite screw and screw pan (S/P washer) M4x8, and then remove the Side plate R ASSY from the Frame unit.

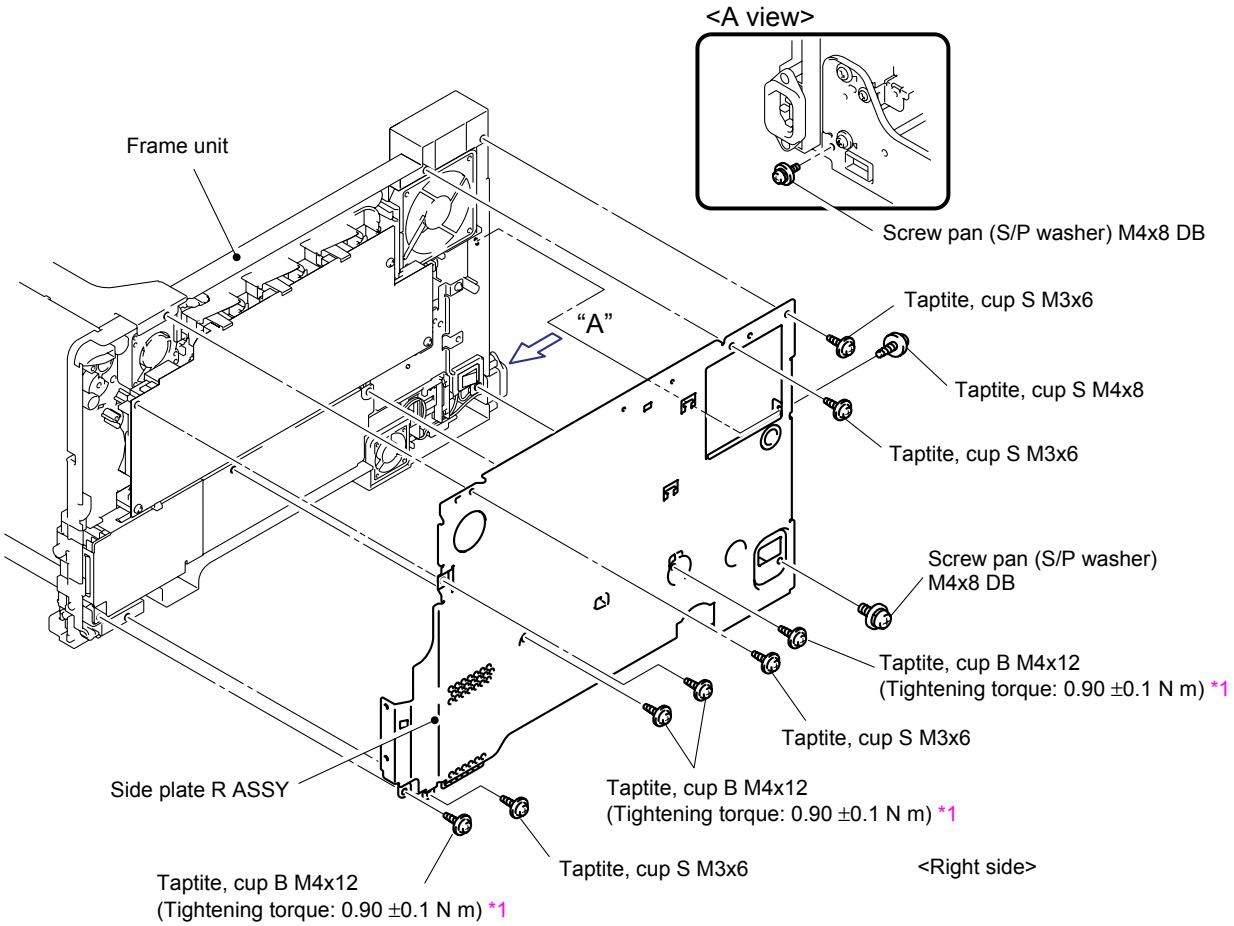


Fig. 3-170

*1 **Tightening Note:**
When tightening the screw, slowly turn it counterclockwise (in the direction to loosen the screw) with your hand until you feel that the screw is a little dropped in the hole. Then, slightly turn it clockwise (in the direction to tighten the screw) with your hand and tighten it according to the specified torque with a screwdriver.

8.57 Drum Lock Lever L

(1) Remove the Screw, bind M3x8, and remove the Drum lock lever plate L ASSY and then remove the Drum lock spring and Drum lock lever L from the Frame unit.

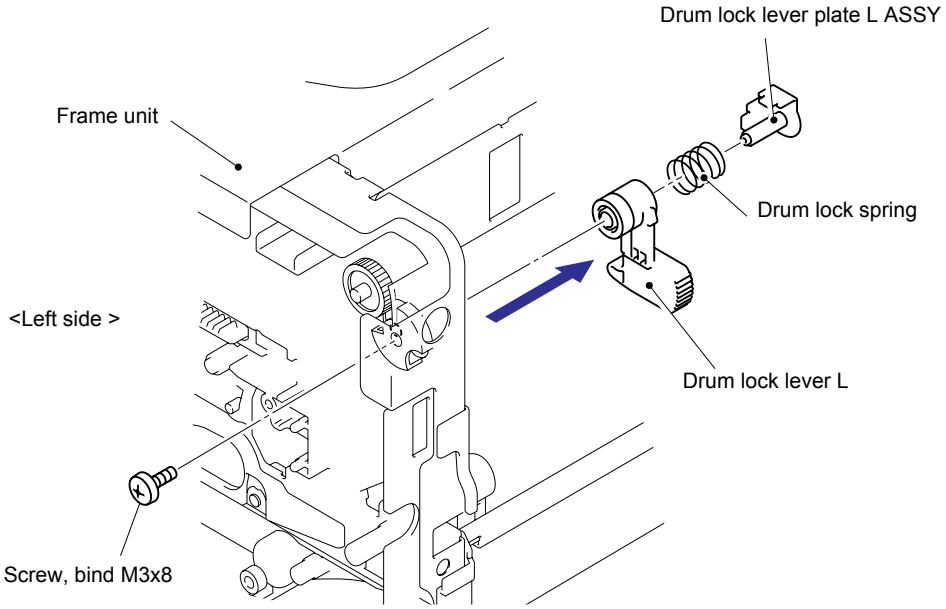


Fig. 3-171

Assembling Note:

Assemble the Drum lock lever so that both Drum lock lever R and L are in the same direction.

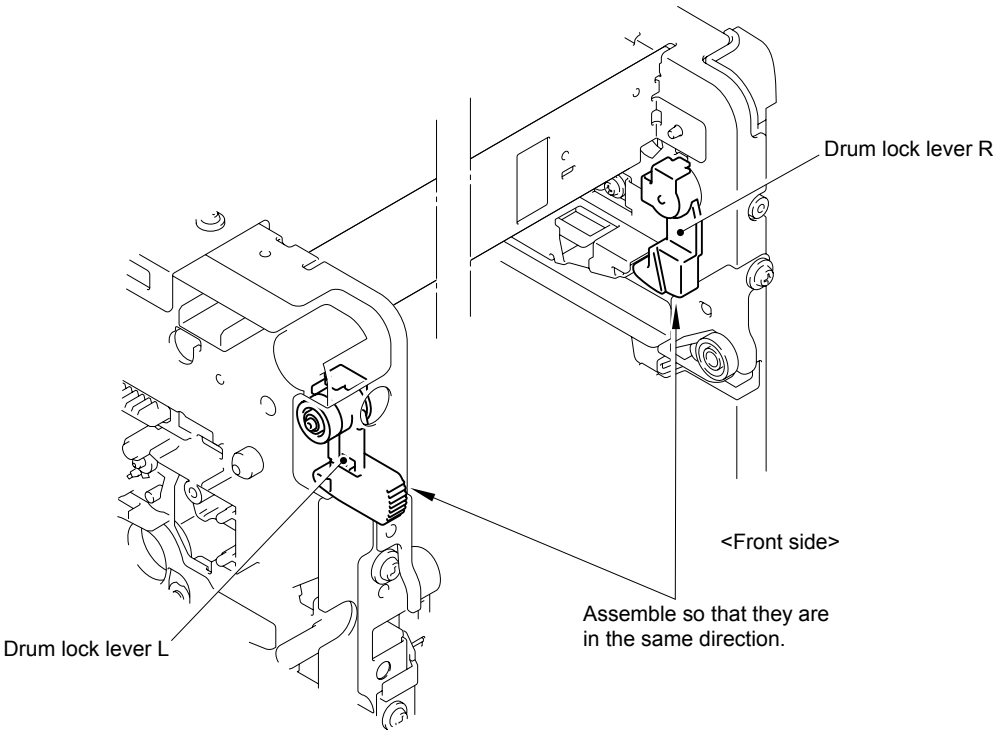


Fig. 3-172

8.58 Drum Lock Lever R

(1) Remove the Screw, bind M3x8, and remove the Drum lock lever plate R ASSY and then remove the Drum lock lever R from the Frame unit.

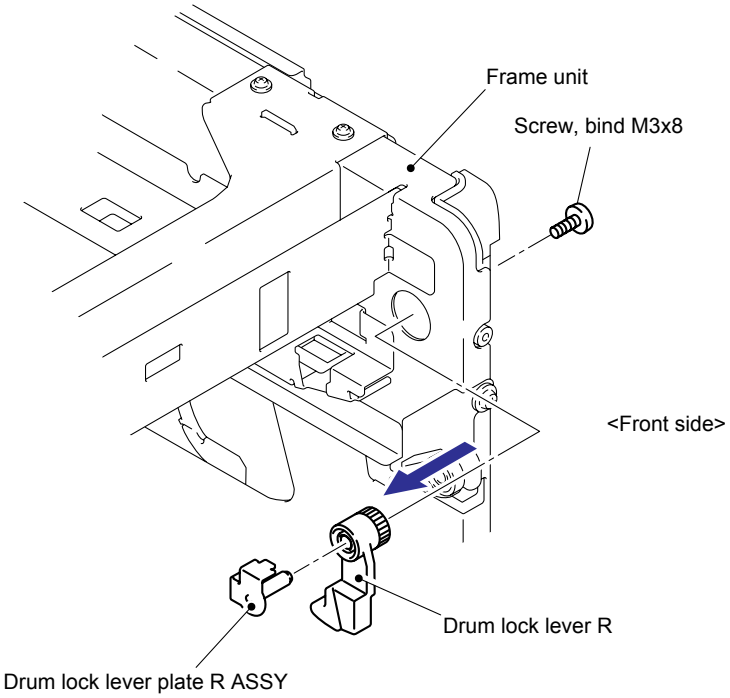


Fig. 3-173

Assembling Note:

Assemble the Drum lock lever so that both Drum lock lever R and L are in the same direction.

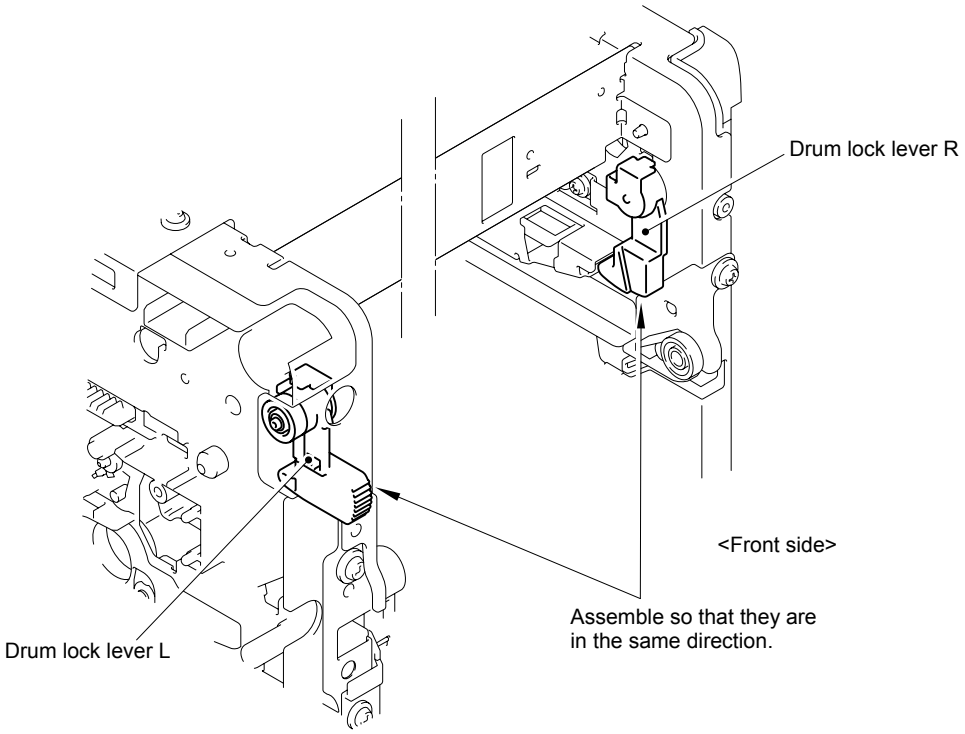


Fig. 3-174

8.59 Charge HVPS PCB ASSY

(1) Remove the cup S M3x6 Taptite screw and two bind B M4x12 Taptite screws, and then release the four Hooks to remove the Charge HVPS PCB ASSY from the Frame unit.

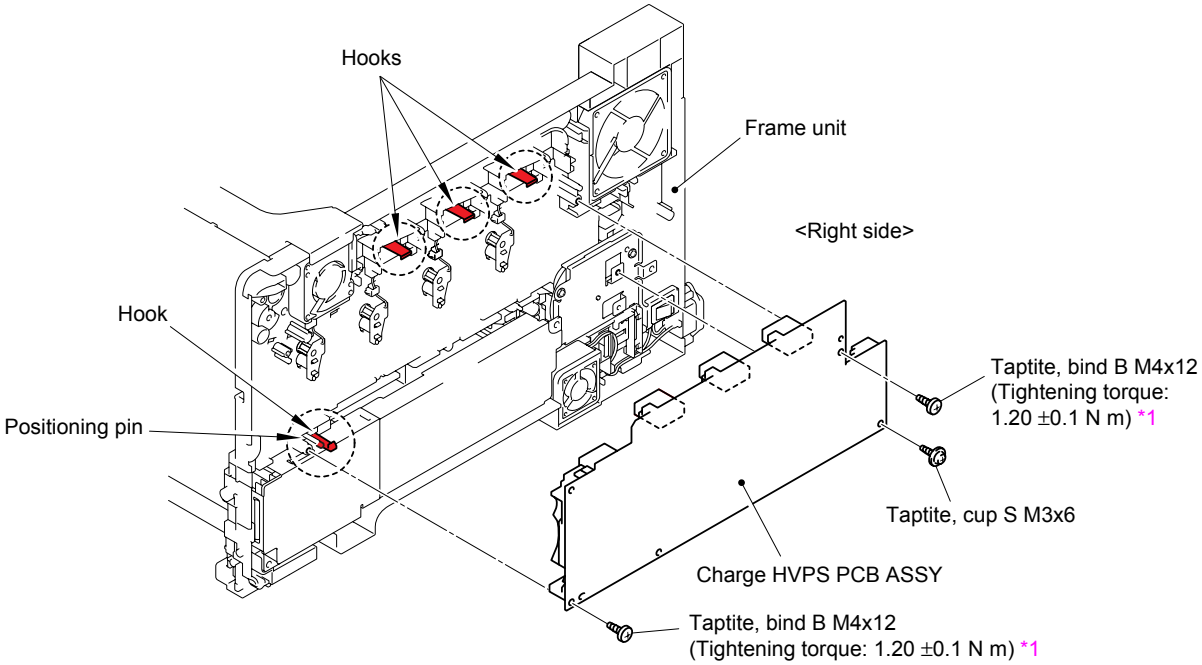


Fig. 3-175

*1 **Tightening Note:**
When tightening the screw, slowly turn it counterclockwise (in the direction to loosen the screw) with your hand until you feel that the screw is a little dropped in the hole. Then, slightly turn it clockwise (in the direction to tighten the screw) with your hand and tighten it according to the specified torque with a screwdriver.

(2) Disconnect the eight connectors and flat cable from the Charge HVPS PCB ASSY.

Note:

- When disconnecting the connectors, they may be damaged if pulling the Charge HVPS PCB ASSY by force.
- After disconnecting the flat cable(s), check that each cable is not damaged at its end or short-circuited.
- When connecting the flat cable(s), do not insert it at an angle. After insertion, check that the cable is not at an angle.

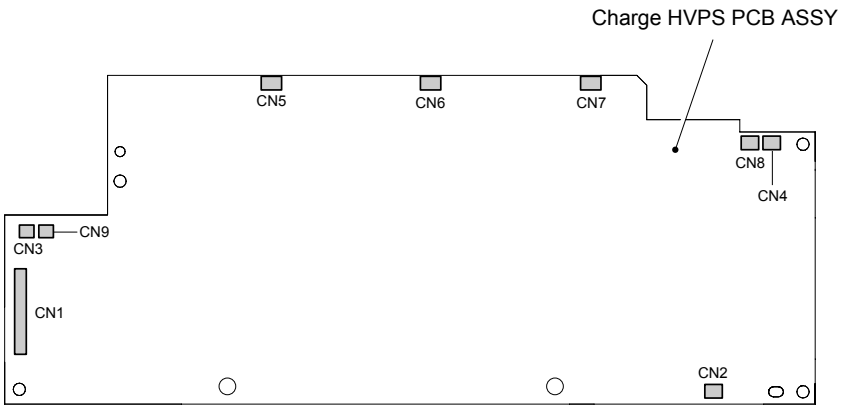


Fig. 3-176

Assembling Note:

- Be careful not to loose the HVPS charge head, HVPS charge head spring, HVPS DEV head and HVPS DEV head spring. Before assembling the Charge HVPS PCB ASSY, check that these four parts are complete, and that they move smoothly.

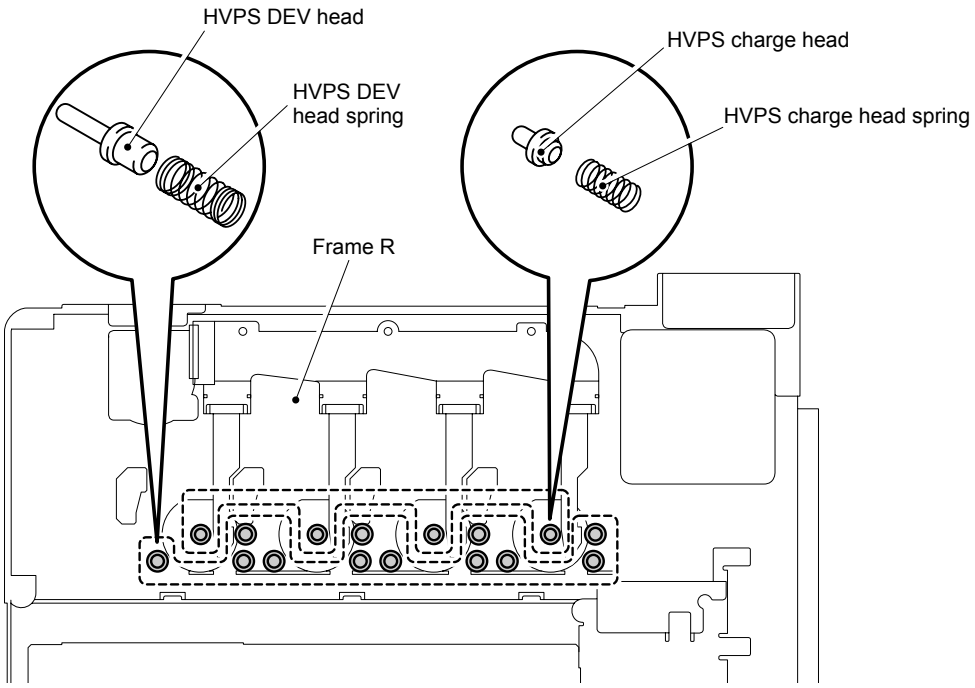


Fig. 3-177

- When assembling the Charge HVPS PCB ASSY, be careful not to catch the harness of the Air intake fan (AIR) in the Charge HVPS PCB ASSY.

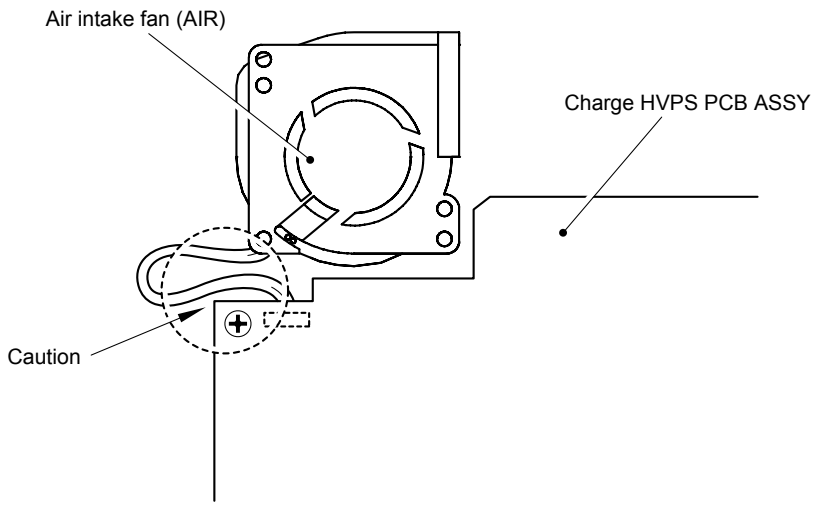


Fig. 3-178

8.60 Toner LED PCB ASSY

(1) Remove the Screw pan (S/P washer) M3x16, and then remove the Toner LED PCB from the Frame unit.

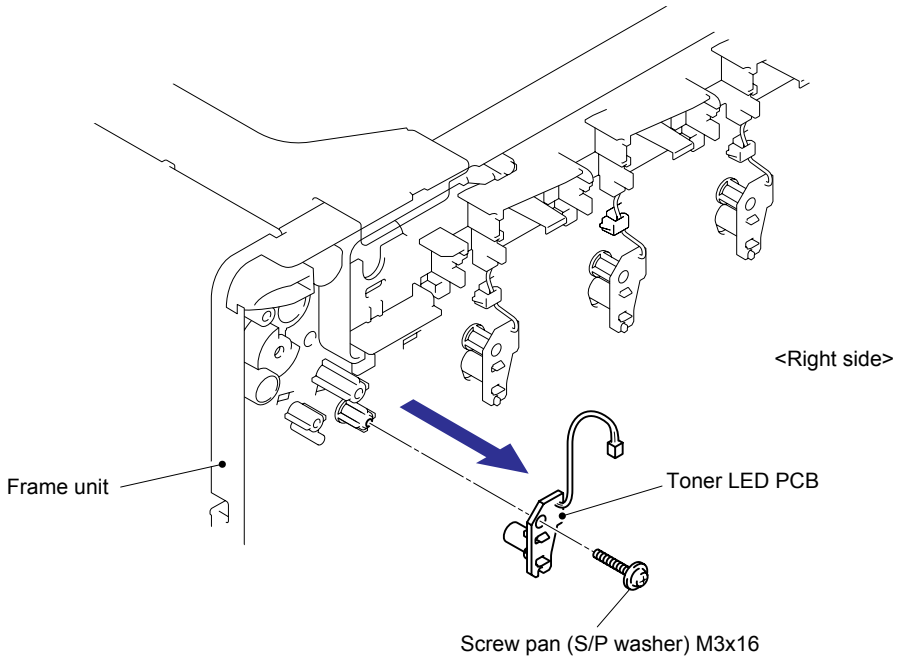


Fig. 3-179

(2) Release the two Hooks to remove the LED holder from the Toner LED PCB.

(3) Remove the other three Toner LED PCBs in the same way.

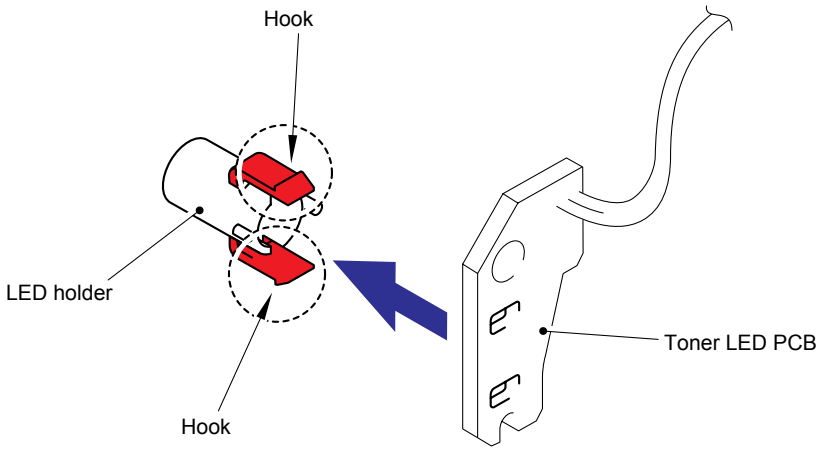


Fig. 3-180

8.61 Fuser Unit Fan (FU)

(1) Remove the Fuser unit fan (FU) from the Frame unit.

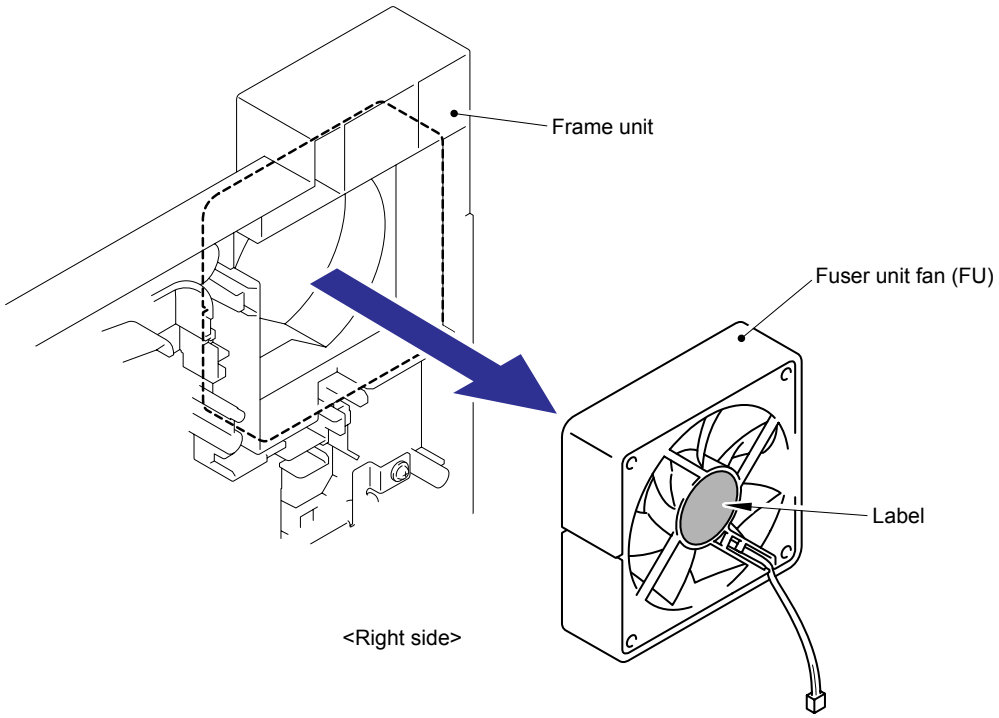


Fig. 3-181

Assembling Note:

When assembling the Fuser unit fan (FU), place it so that the attached Label faces outwards.

8.62 LVPS Fan(PS)

(1) Remove the LVPS fan (PS) from the Frame unit.

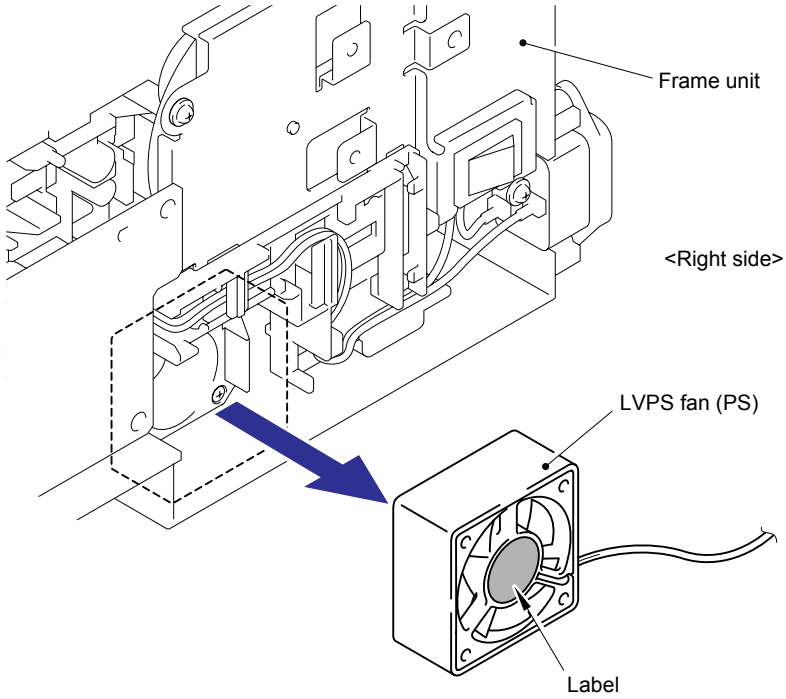


Fig. 3-182

Assembling Note:

When assembling the LVPS fan (PS), place it so that the attached Label faces outwards.

8.63 Air Intake Fan (AIR)

(1) Remove the Air intake fan (AIR) from the Frame unit.

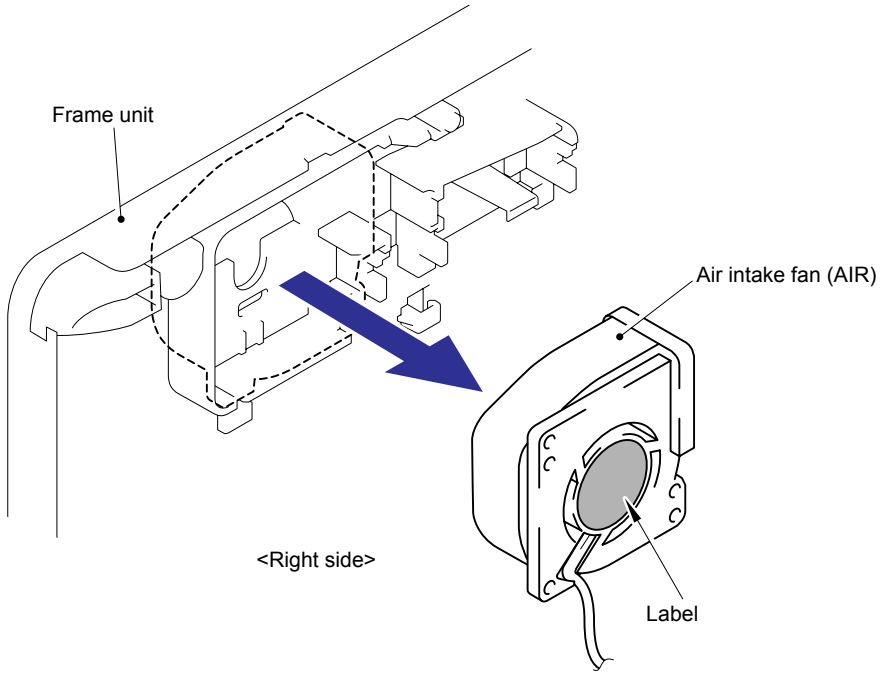


Fig. 3-183

Assembling Note:

When assembling the Air intake fan (AIR), place it so that the attached Label faces outwards.

8.64 PS PCB Unit

(1) Remove the LVPS insulation sheet and LVPS V0 insulation sheet from the PS PCB unit.

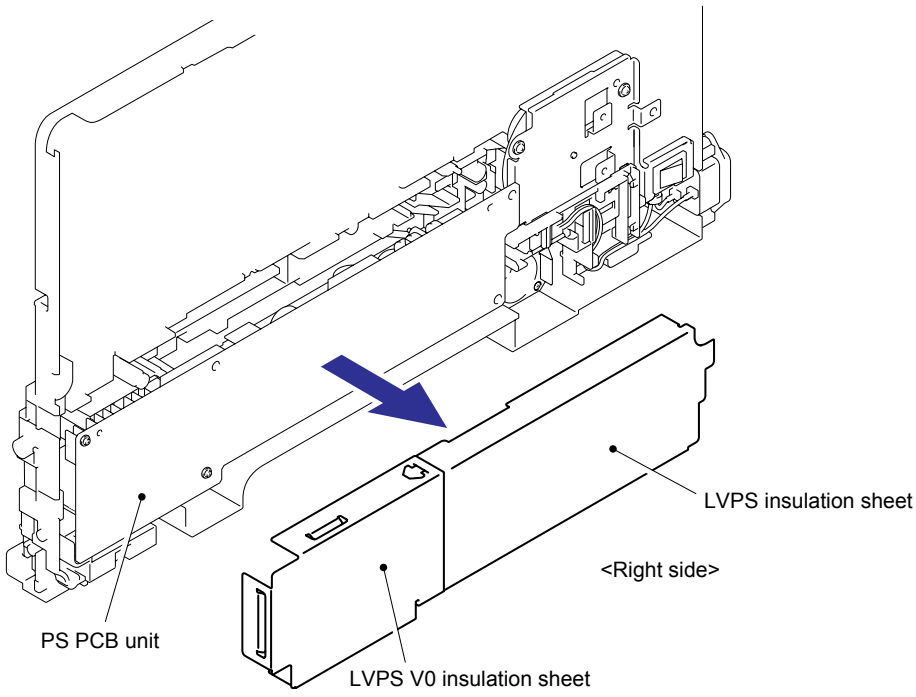


Fig. 3-184

(2) Remove the Power supply switch from the Belt gear plate ASSY by pushing the Hooks inwards.

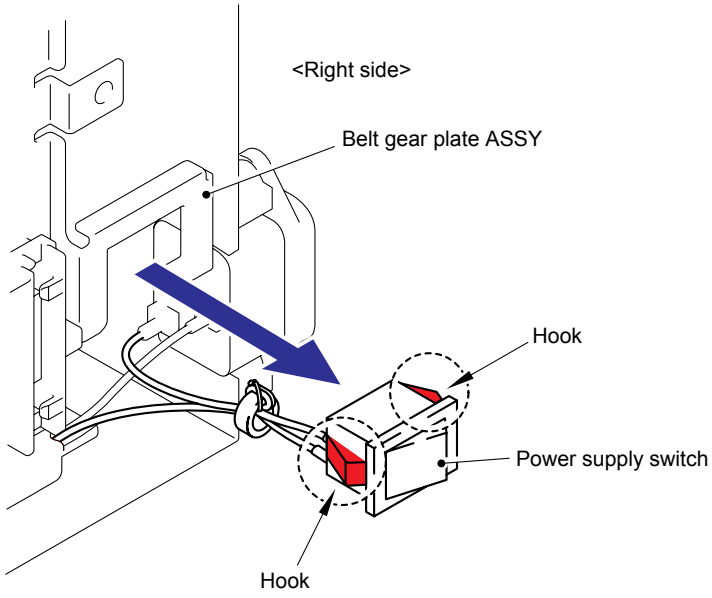


Fig. 3-185

(3) Remove the Screw pan (S/P washer) M4x8, and then remove the Ground terminal.

(4) Remove the two Taptite, flat B M3x10, and then remove the Power inlet socket from the Frame unit.

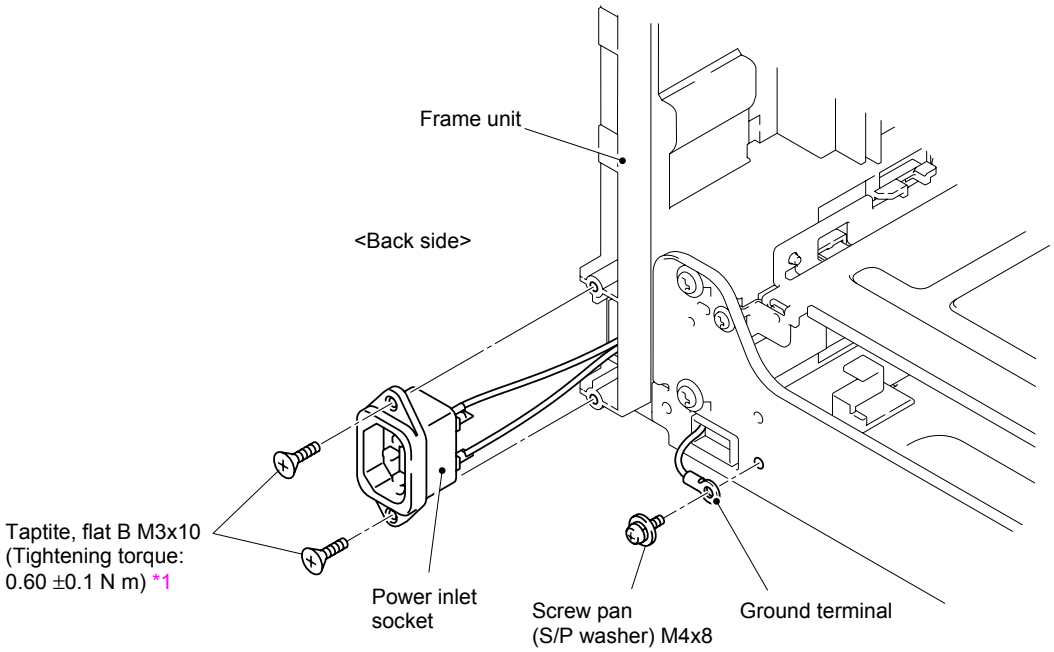


Fig. 3-186

(5) Remove the three bind B M4x12 Taptite screws, and then release the Hook to remove the PS PCB unit from the Frame unit.

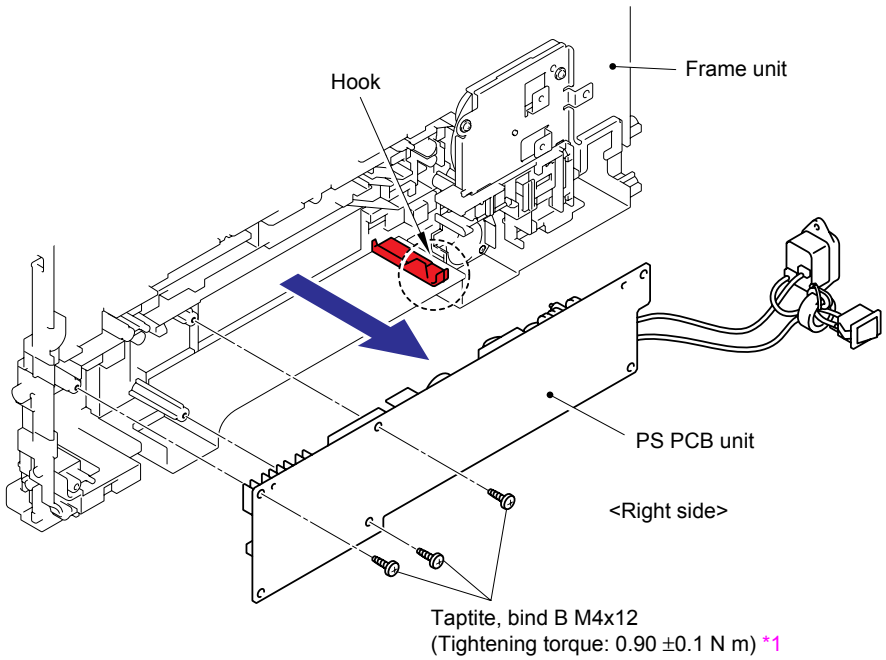


Fig. 3-187

*1 **Tightening Note:**

When tightening the screw, slowly turn it counterclockwise (in the direction to loosen the screw) with your hand until you feel that the screw is a little dropped in the hole. Then, slightly turn it clockwise (in the direction to tighten the screw) with your hand and tighten it according to the specified torque with a screwdriver.

(6) Disconnect the four Connectors (CN2, CN101, CN102, CN103) from the PS PCB unit.

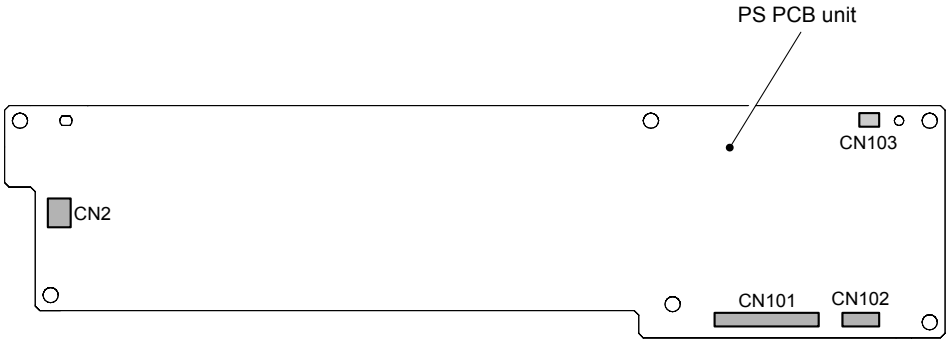


Fig. 3-188

Assembling Note:

- Assemble the LVPS insulation sheet so that the section “A” is in the position as shown in the figure below.

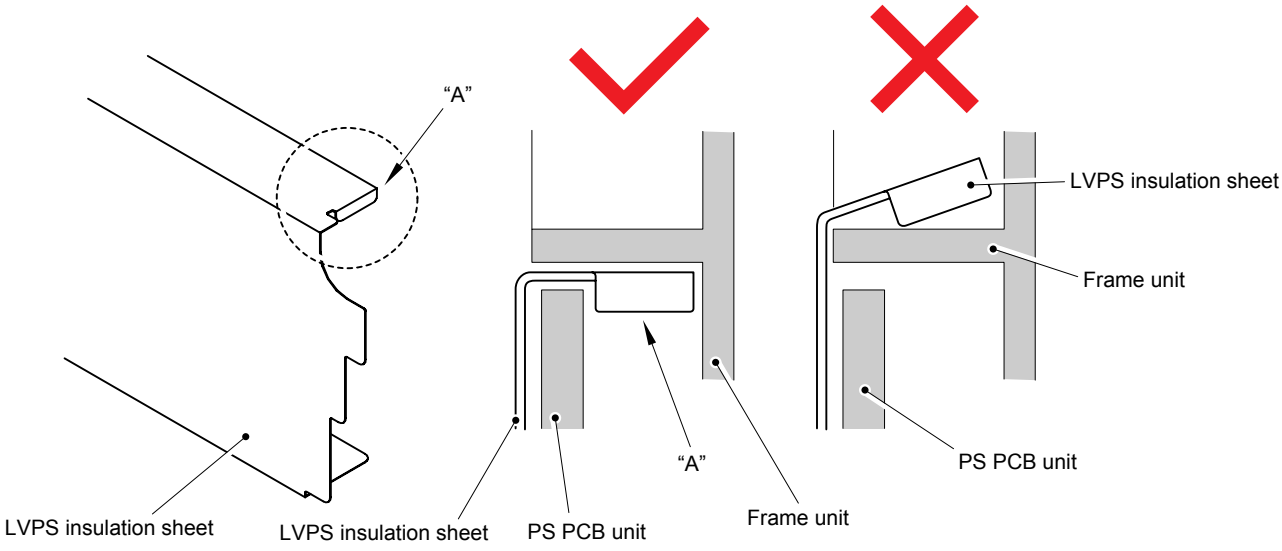


Fig. 3-189

Assembling Note:

- Assemble the Power supply switch so that the ON/OFF mark on the Power supply switch is aligned with the ON/OFF mark imprinted on the Belt gear plate ASSY.

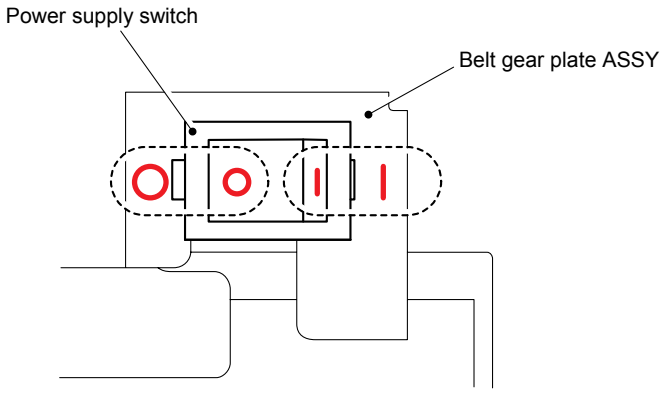


Fig. 3-190

- When assembling the PS PCB unit, align it with the two Bosses on the Frame unit.

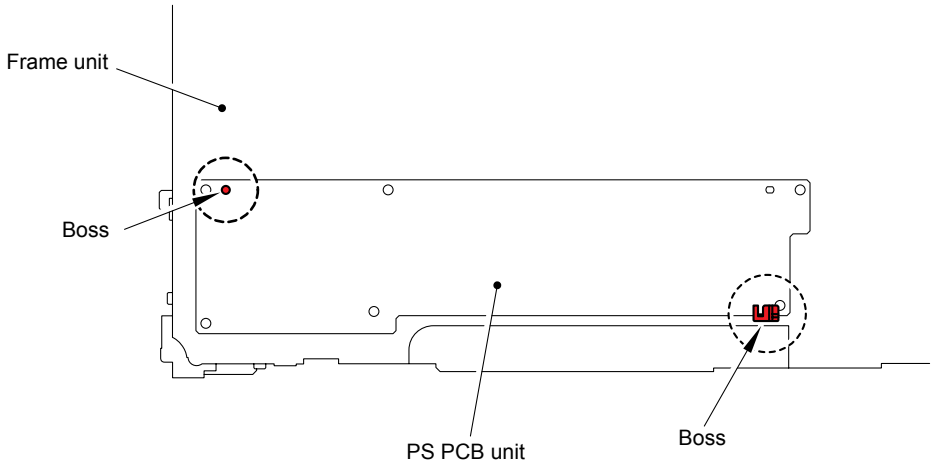


Fig. 3-191

8.65 Belt Unit Drive Motor ASSY

(1) Release the three Hooks to remove the Harness holder 16AWG from the Belt gear plate ASSY.

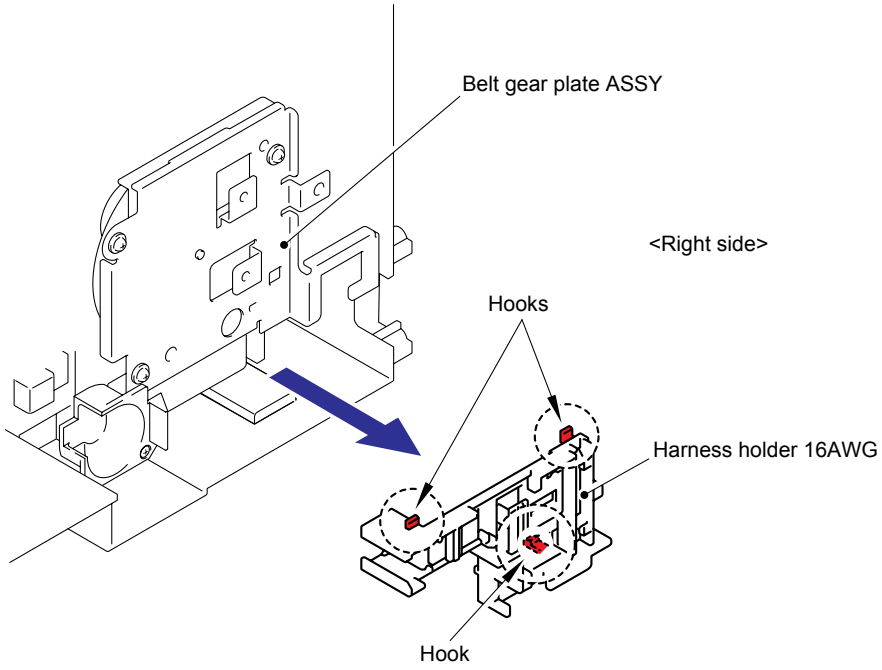


Fig. 3-192

(2) Remove the three cup B M4x12 Taptite screws and Screw, cup M3x6, and then remove the Belt gear plate ASSY from the Frame unit.

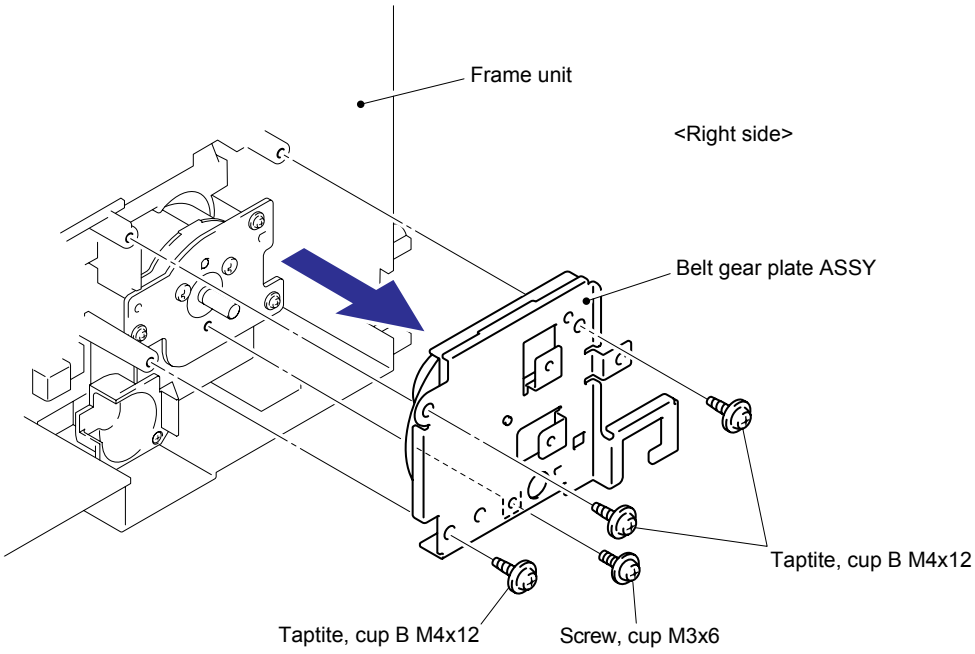


Fig. 3-193

(3) Remove the bind B M3x10 Taptite screw, and then remove the LV fan duct from the Frame unit.

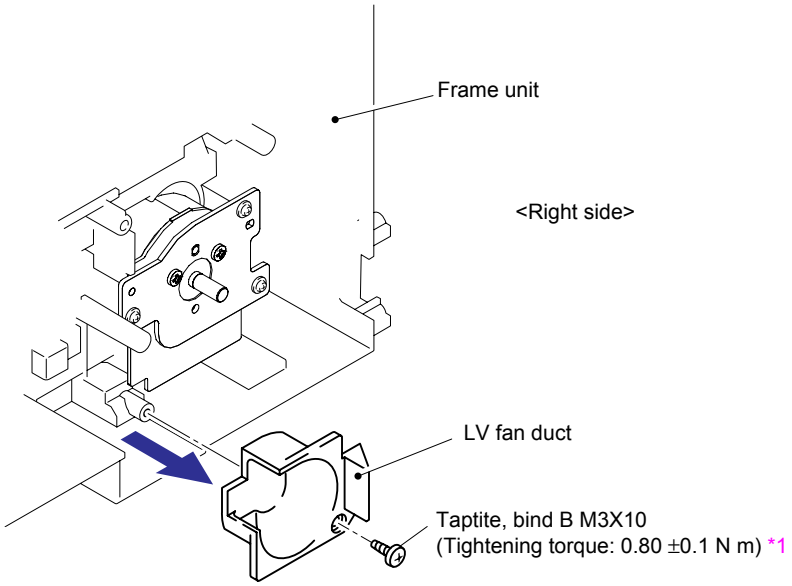


Fig. 3-194

(4) Remove the three cup B M4x12 Taptite screws, and then remove the Belt unit drive motor ASSY from the Frame unit.

(5) Disconnect the Connector from the Belt unit drive motor ASSY.

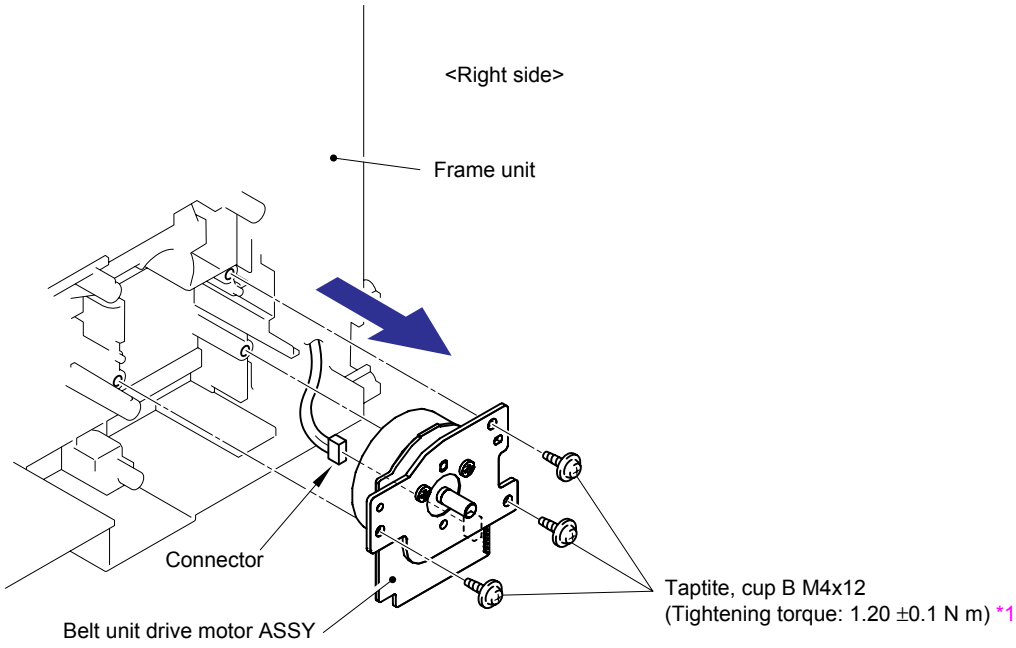


Fig. 3-195

*1 **Tightening Note:**
When tightening the screw, slowly turn it counterclockwise (in the direction to loosen the screw) with your hand until you feel that the screw is a little dropped in the hole. Then, slightly turn it clockwise (in the direction to tighten the screw) with your hand and tighten it according to the specified torque with a screwdriver.

(6) Remove the two Screws bind M3x5, and then remove the Belt unit drive motor from the Motor plate P.

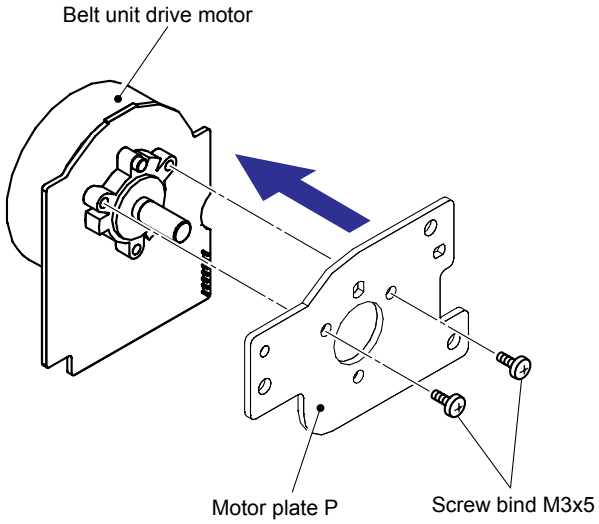


Fig. 3-196

9. DISASSEMBLY PROCEDURE (LT-100CL) (HL-4050CDN/ 4070CDW ONLY)

9.1 LT Paper Tray

(1) Pull out the LT paper tray, and remove the paper from the LT paper tray.

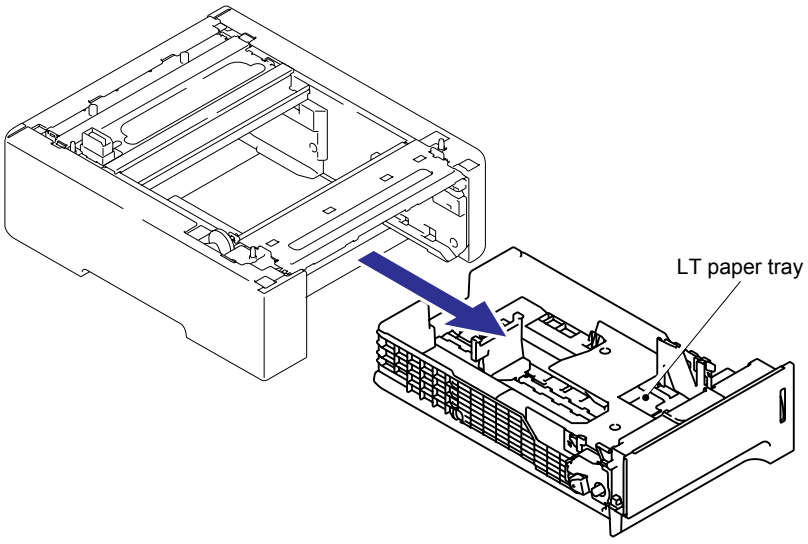


Fig. 3-197

(2) Release the two Hooks of the LT separation pad ASSY, and then lift up the LT separation pad ASSY.

Note:

Be careful not to loose the LT Separation pad spring.

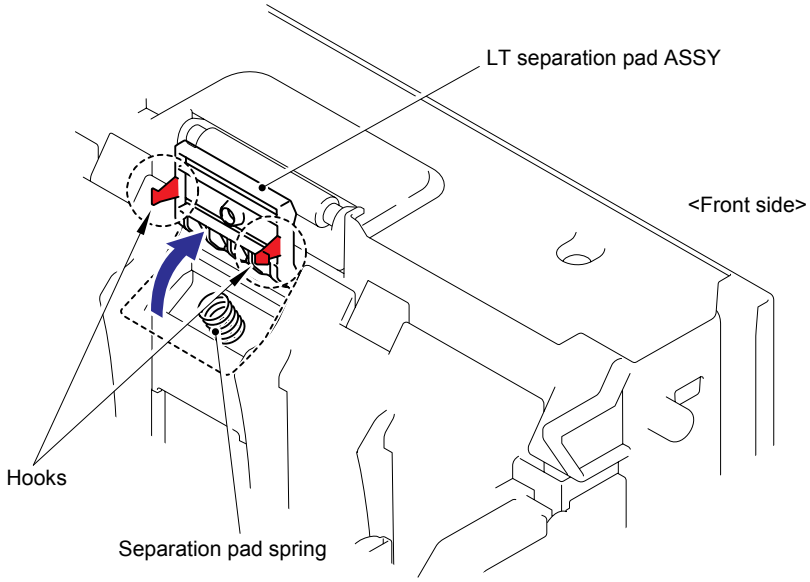


Fig. 3-198

(3) Push both sides of the LT separation pad ASSY inwards to release the Pins and remove the LT separation pad ASSY from the LT paper tray.

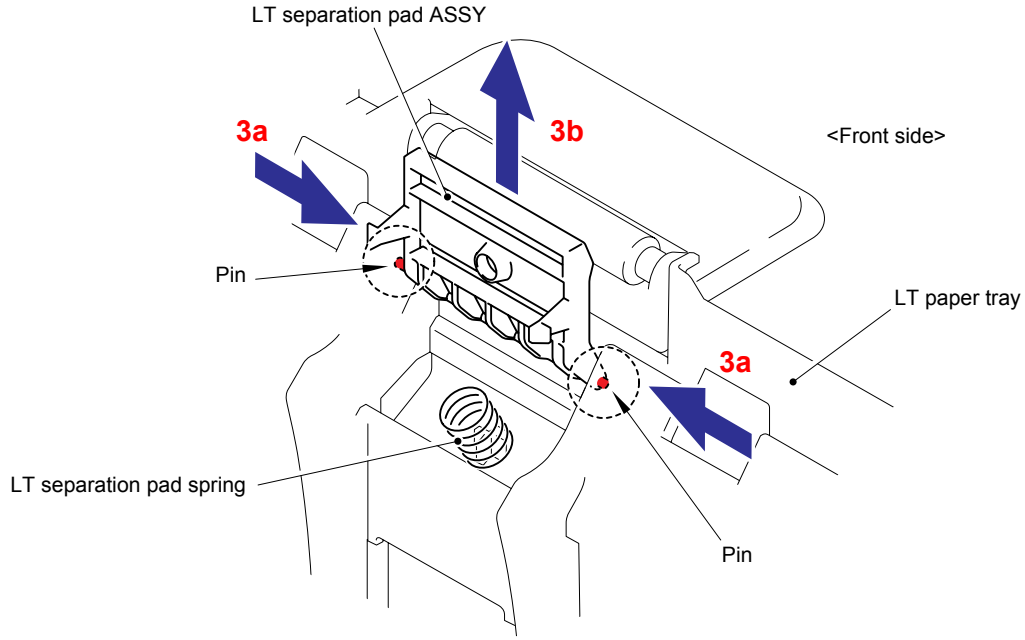


Fig. 3-199

(4) Remove the LT separation pad spring from the LT paper tray.

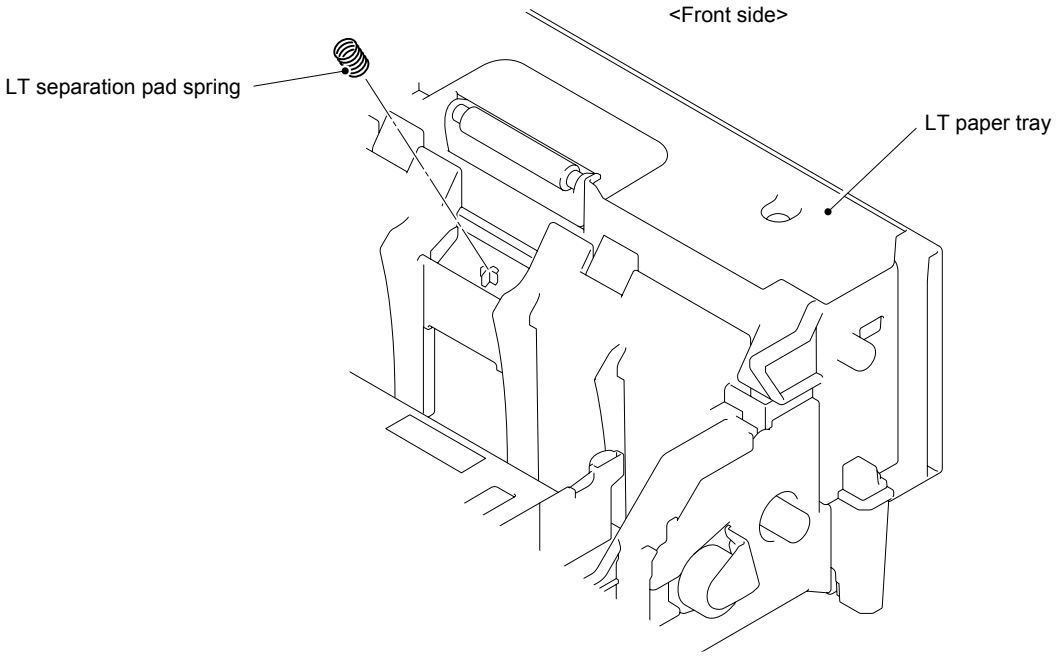


Fig. 3-200

(5) Remove the two bind B M4x10 Taptite screws from the Pinch roller holder cover LT.

(6) Release the four Hooks to remove the Pinch roller holder cover LT from the LT paper tray.

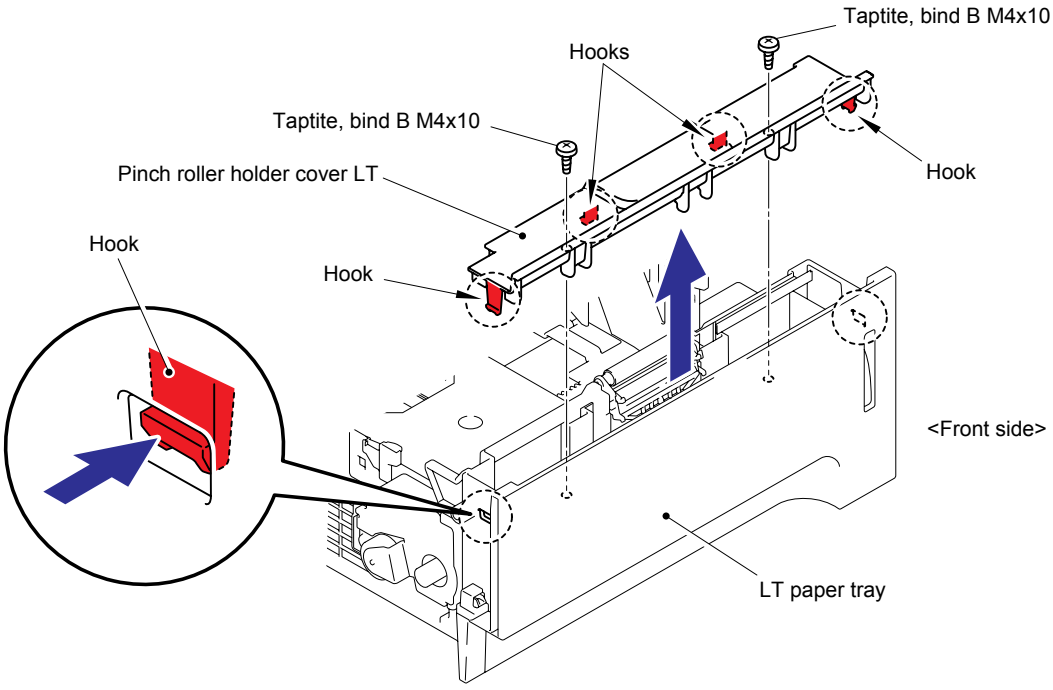


Fig. 3-201

(7) Remove the Pinch roller holder spring from the Rib of the LT paper tray.

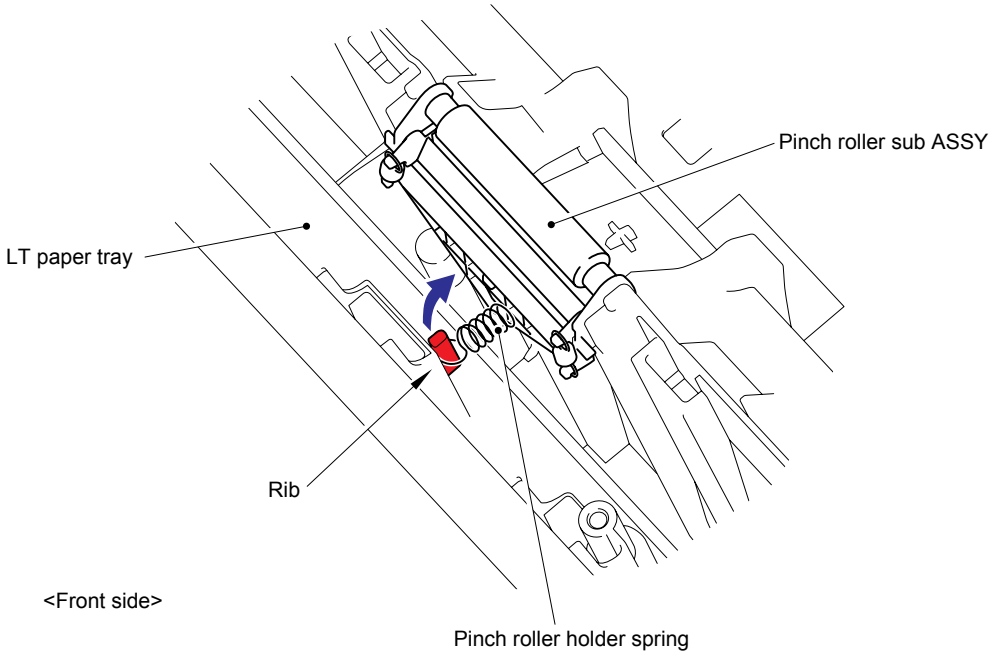


Fig. 3-202

(8) Release the Pin to remove the Pinch roller sub ASSY from the LT paper tray.

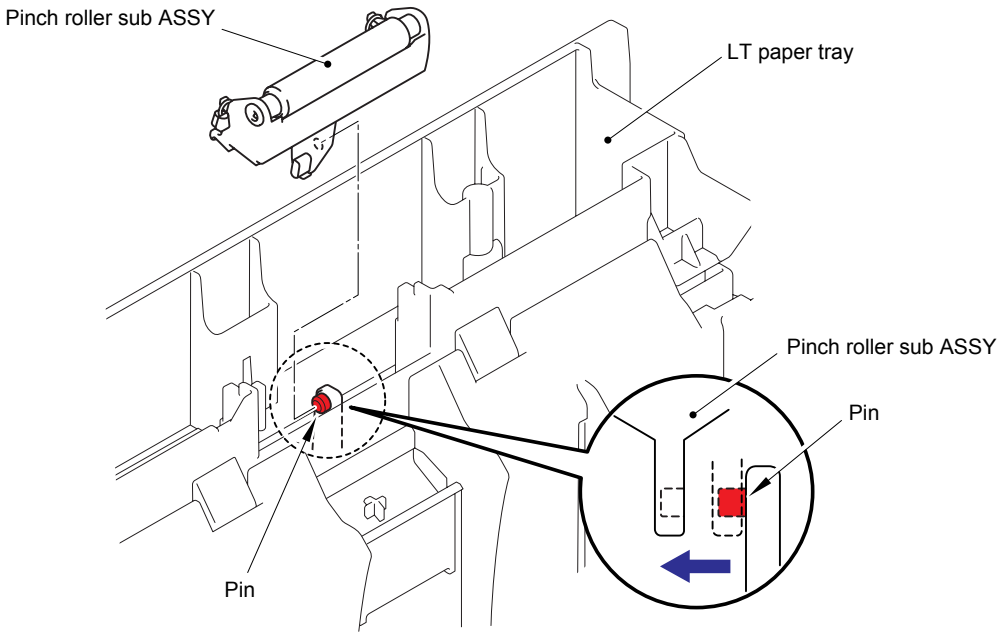


Fig. 3-203

9.2 LT Cover Rear

(1) Remove the four Shoulder screws from the LT cover rear.

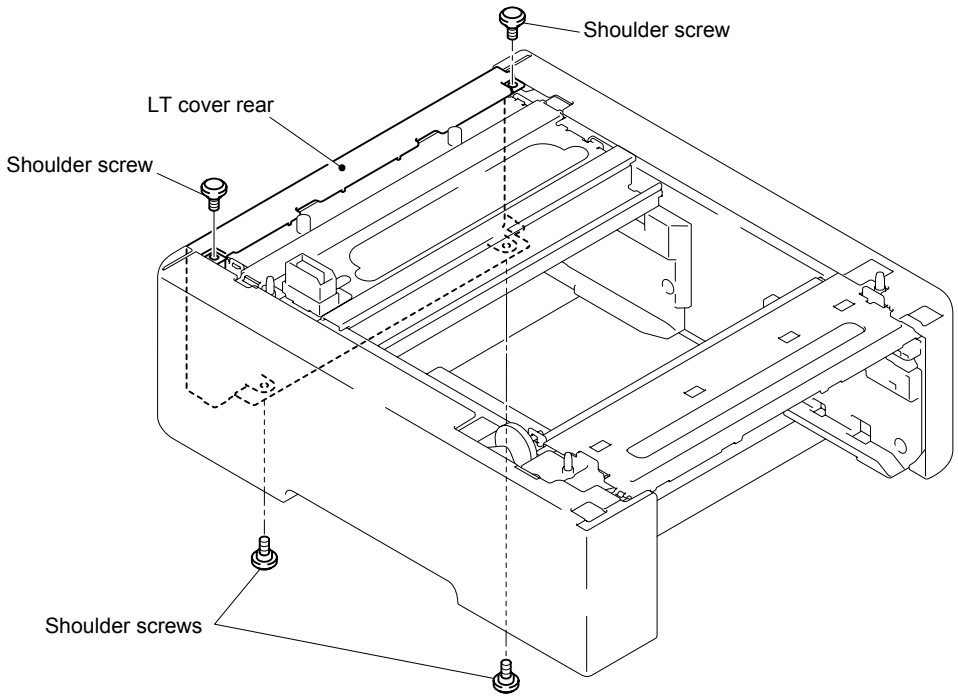


Fig. 3-204

(2) Release the two Pins on the bottom to remove the LT cover rear.

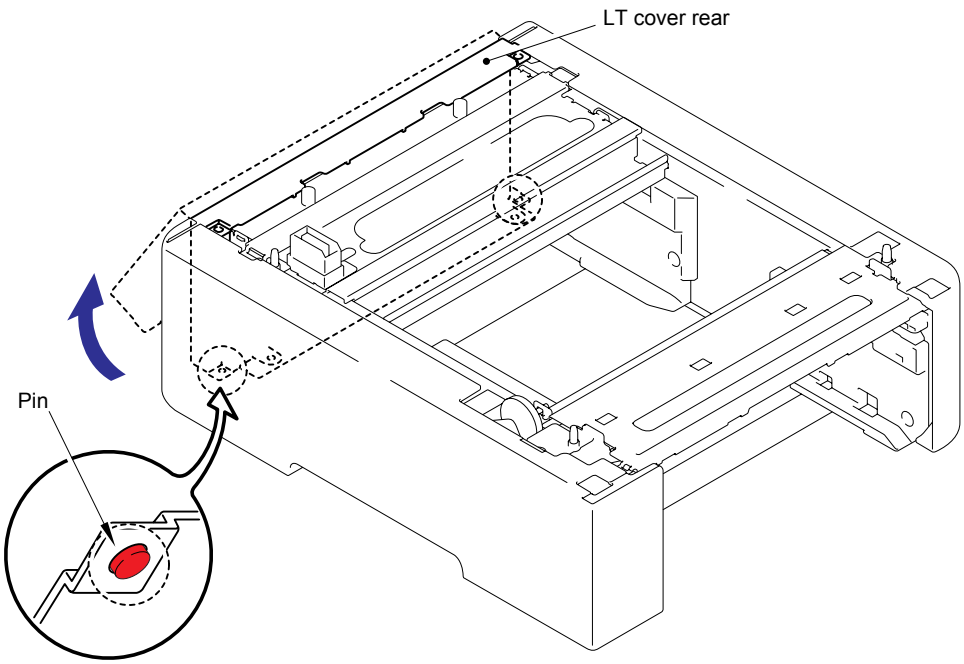


Fig. 3-205

9.3 LT Cover Left

(1) Remove the three Shoulder screws from the LT cover left.

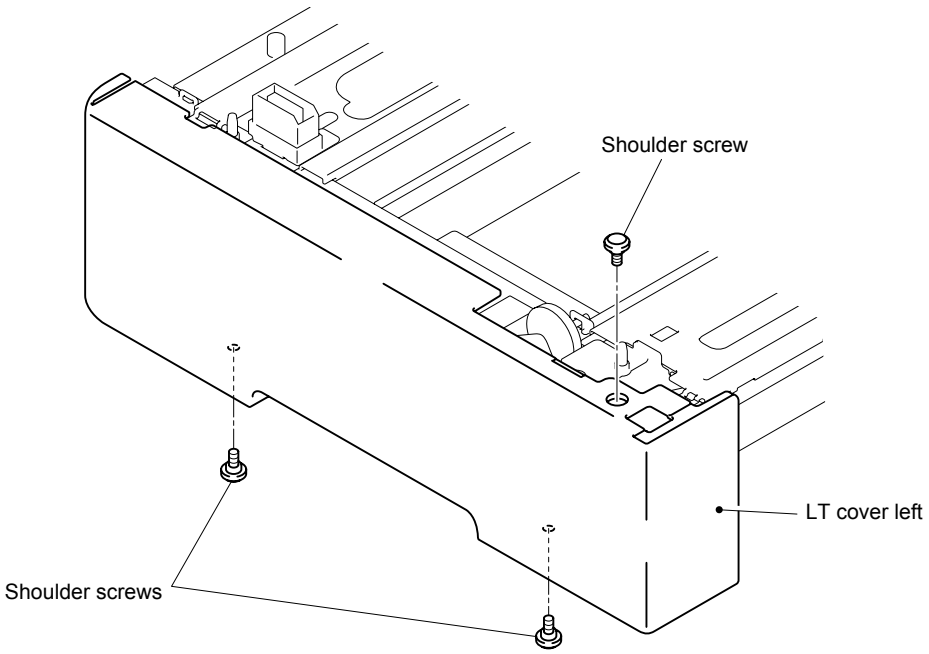


Fig. 3-206

(2) Release the two Hooks on the upper side and the two Hooks on the back side to remove the LT cover left.

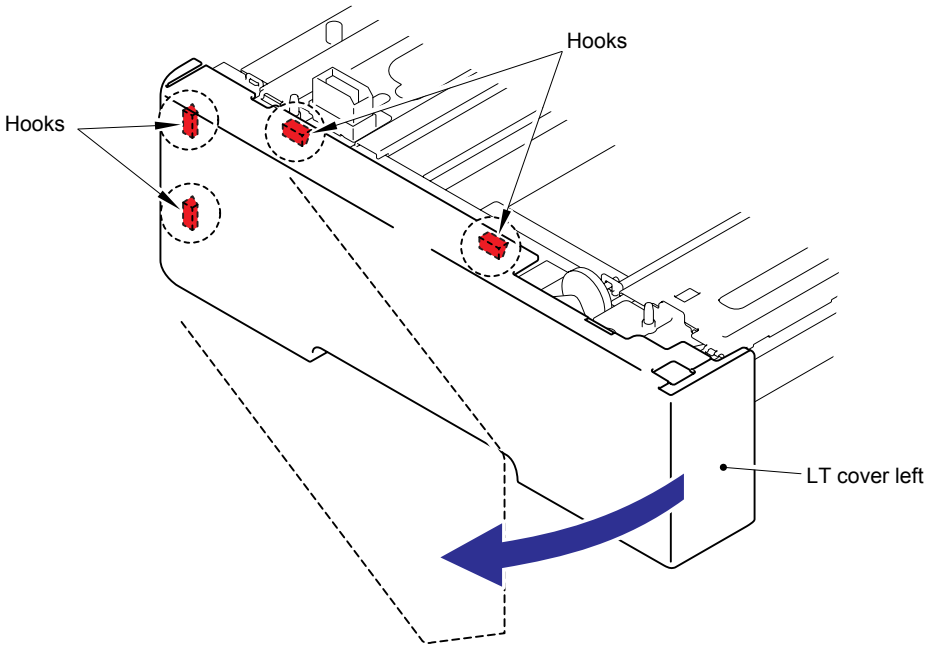


Fig. 3-207

9.4 LT Cover Right

(1) Remove the three Shoulder screws from the LT cover right.

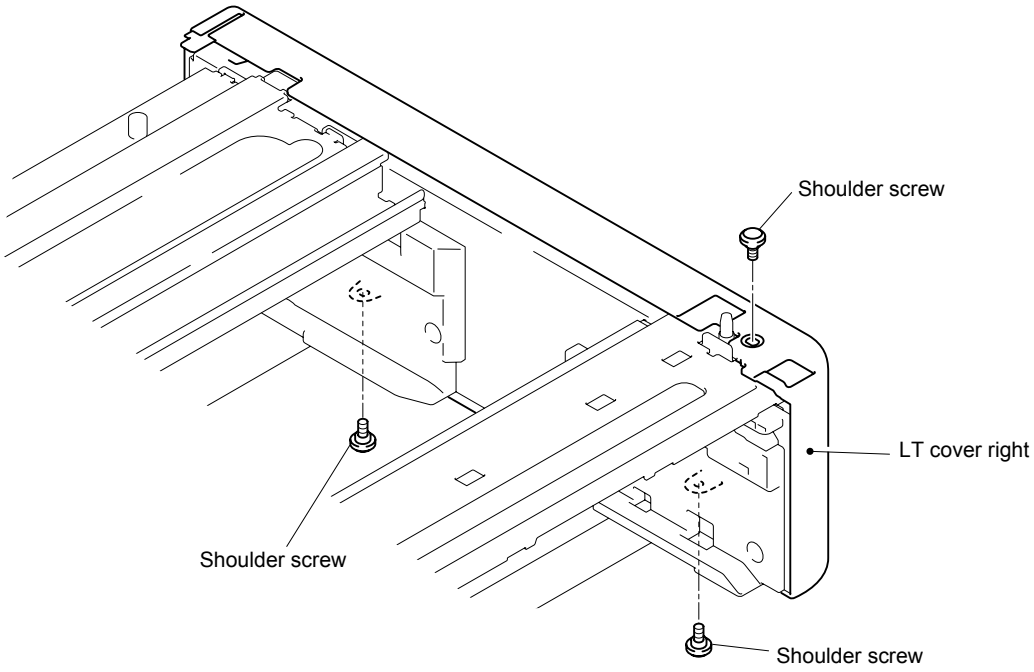


Fig. 3-208

(2) Release the two Hooks on the upper side and the two Hooks on the back side to remove the LT cover right.

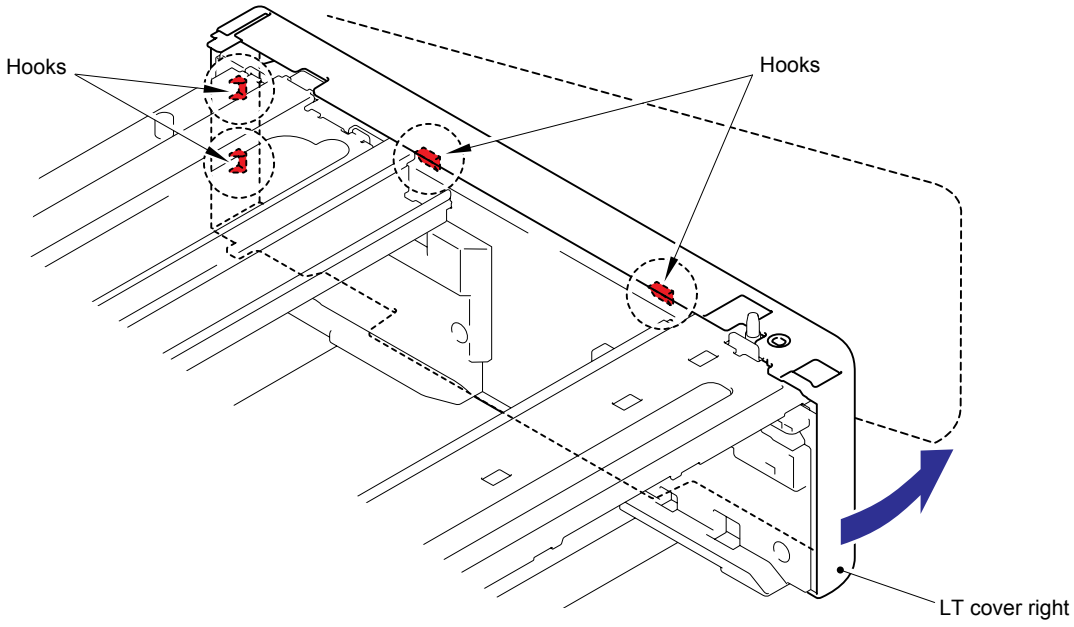


Fig. 3-209

9.5 LT Relay PCB ASSY

(1) Disconnect the all connectors from the LT relay PCB ASSY.

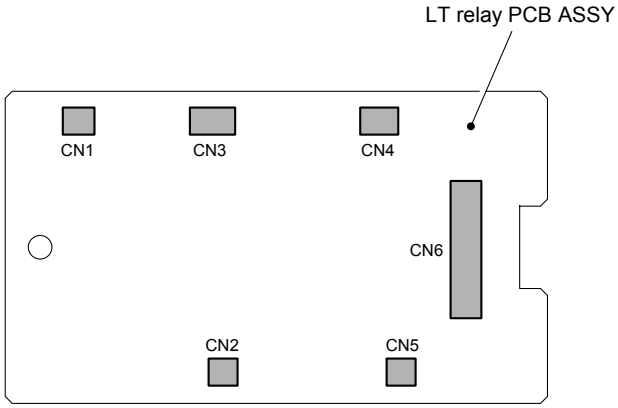


Fig. 3-210

(2) Remove the cup S M3x6 Taptite screw, and then remove the LT relay PCB ASSY.

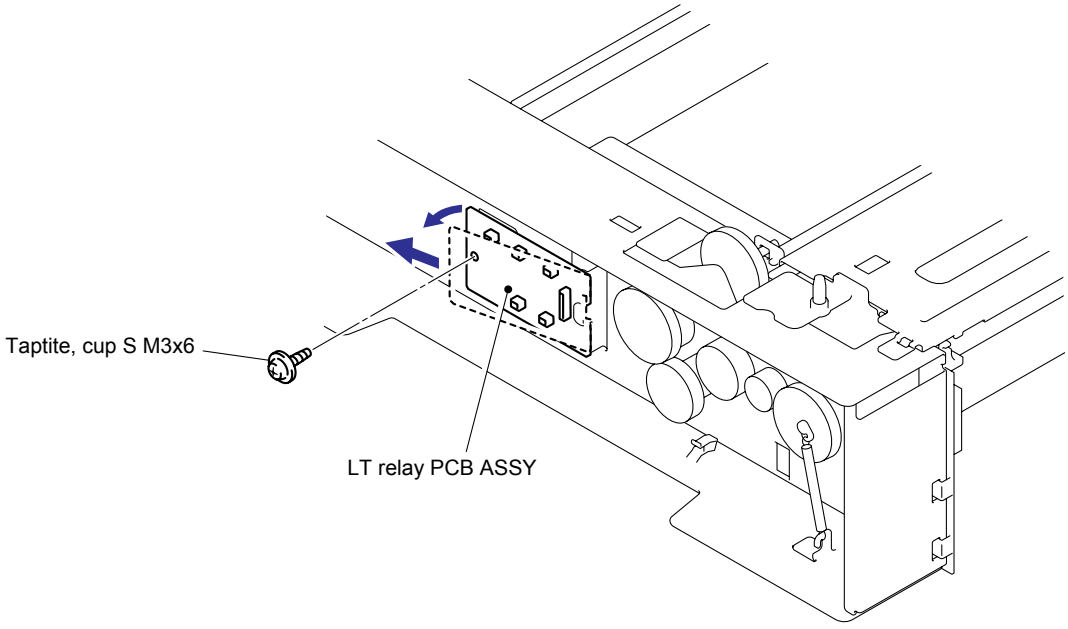


Fig. 3-211

9.6 LT Solenoid ASSY

(1) Remove the cup S M3x6 Taptite screw, and then remove the Solenoid holder ASSY.

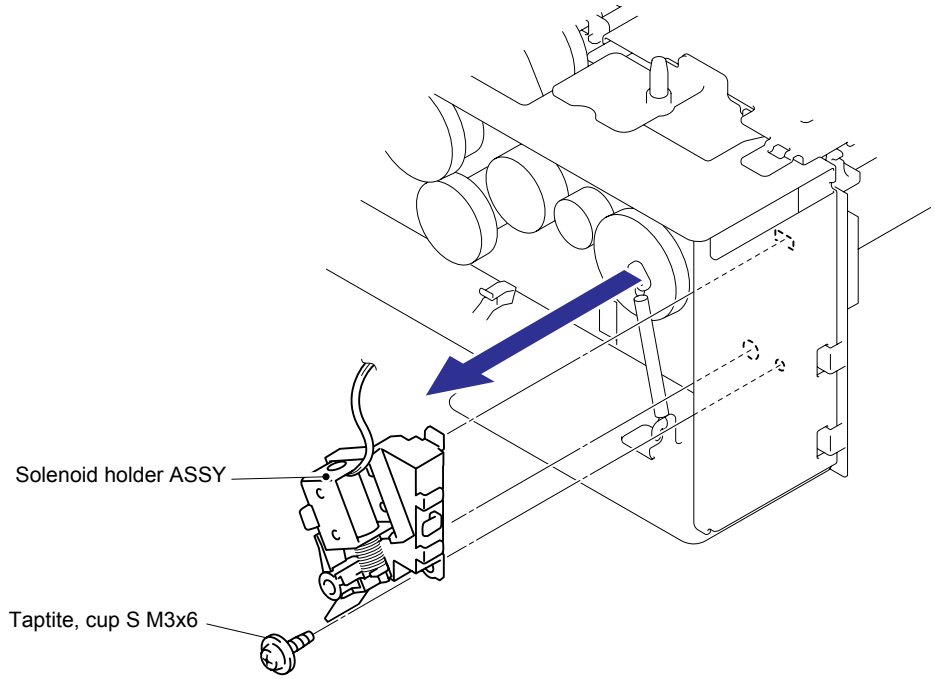


Fig. 3-212

(2) Remove the Screw flanged M3X3.5, and then remove the LT solenoid ASSY and Solenoid spring MP from the LT solenoid holder.

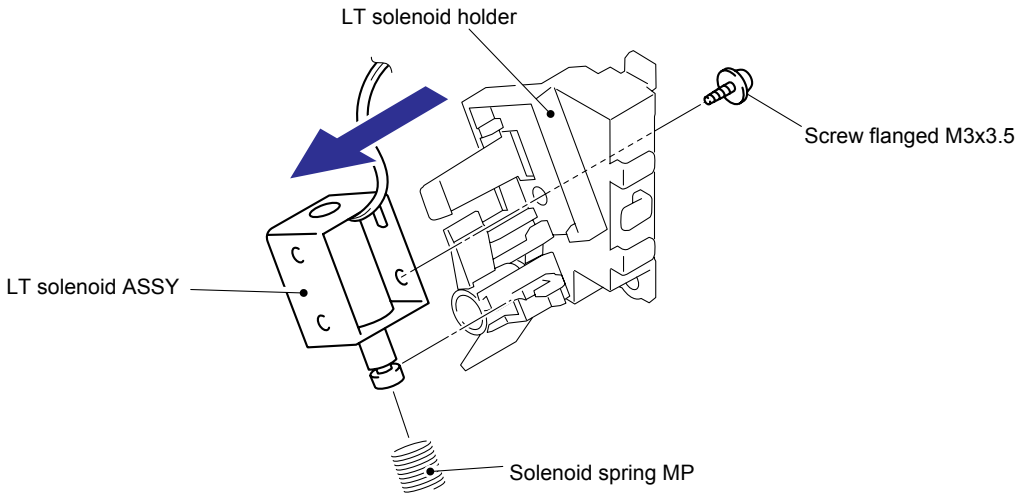


Fig. 3-213

9.7 Collar 6

(1) Remove the two Collars 6 from the Fittings shaft.

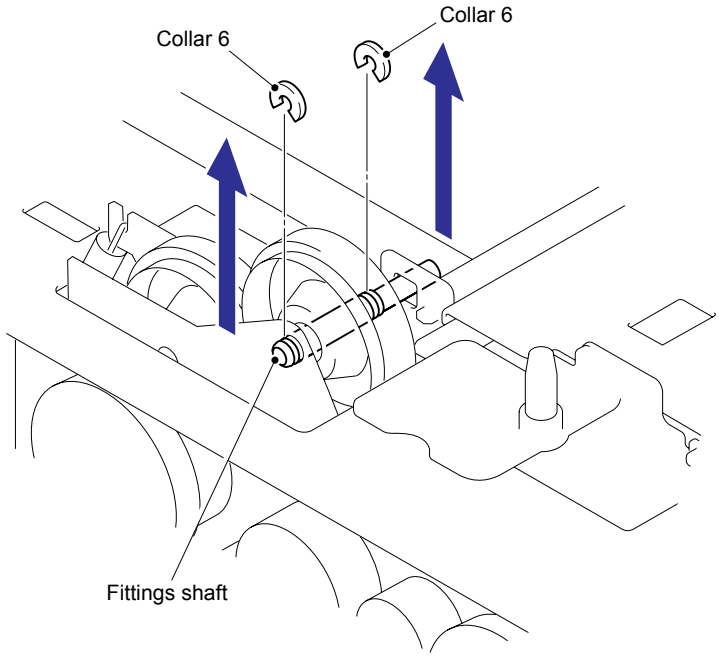


Fig. 3-214

9.8 Cassette Switch ASSY

(1) Remove the three cup S M3x6 Taptite screws and release the Hook. Then, remove the LT tray guide left rear ASSY.

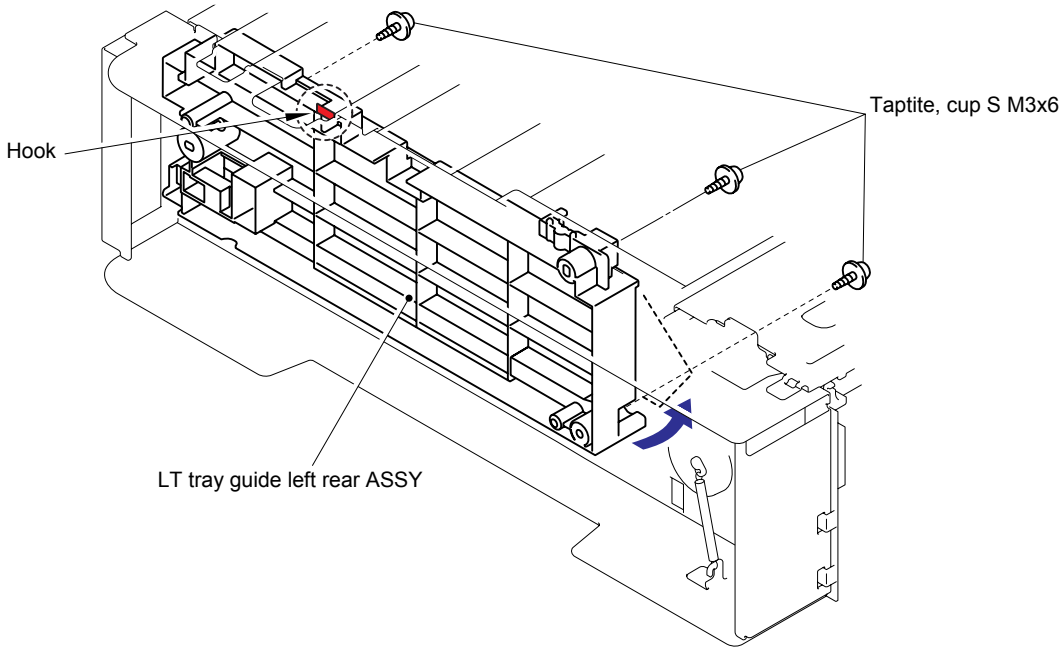


Fig. 3-215

(2) Release the Hook to remove the Cassette actuator and Cassette actuator spring.

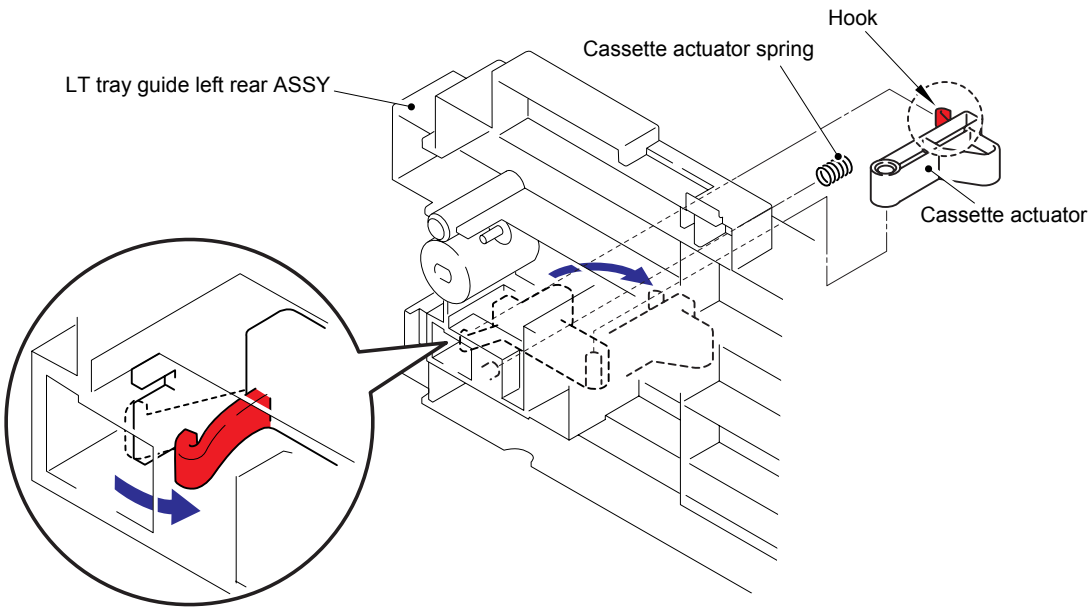


Fig. 3-216

(3) Release the two Hooks to remove the Cassette switch ASSY.

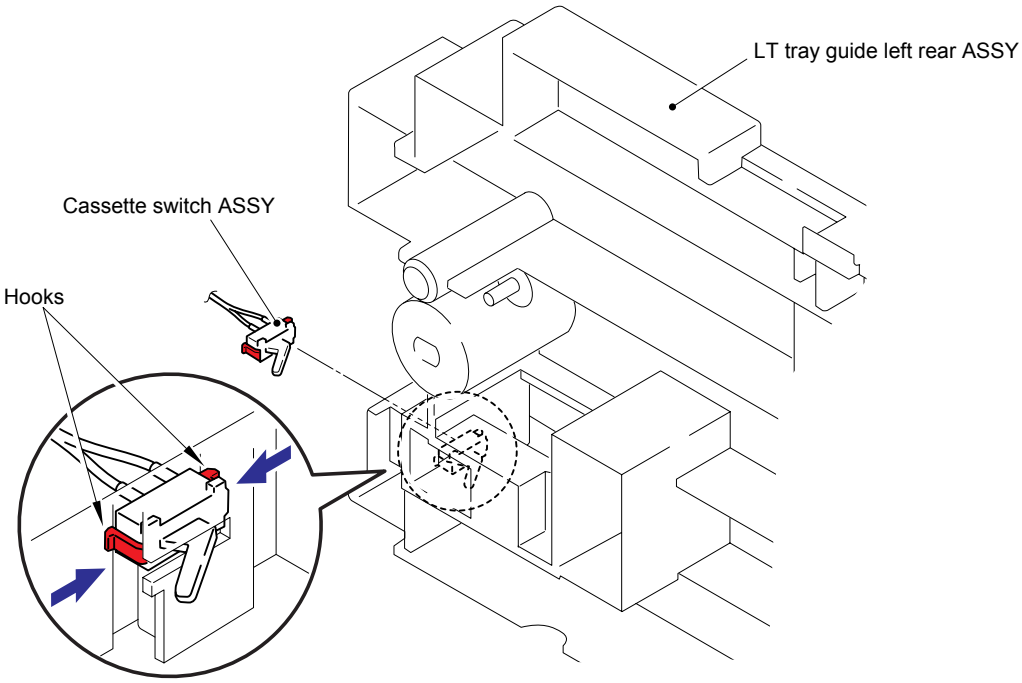


Fig. 3-217

9.9 LT Paper Feed Frame Unit

(1) Remove the four cup S M3x6 Taptite screws, and then remove the LT front cover and LT beam F from the LT frame unit.

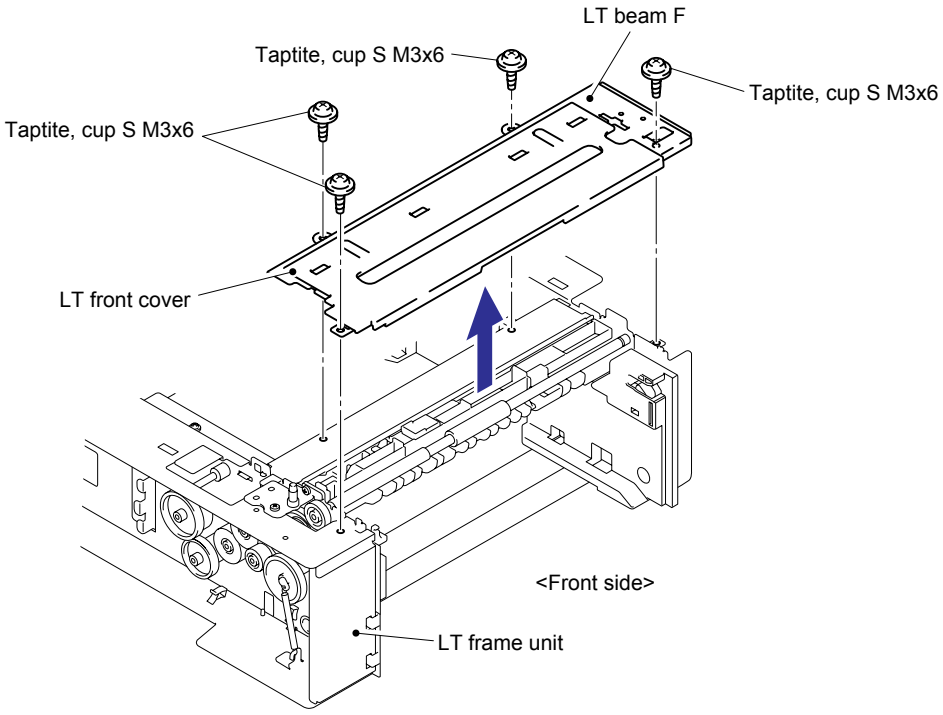


Fig. 3-218

(2) Remove the Retaining ring E4 from the F roller shaft LT and remove the Gear 24 LT and FR bush.

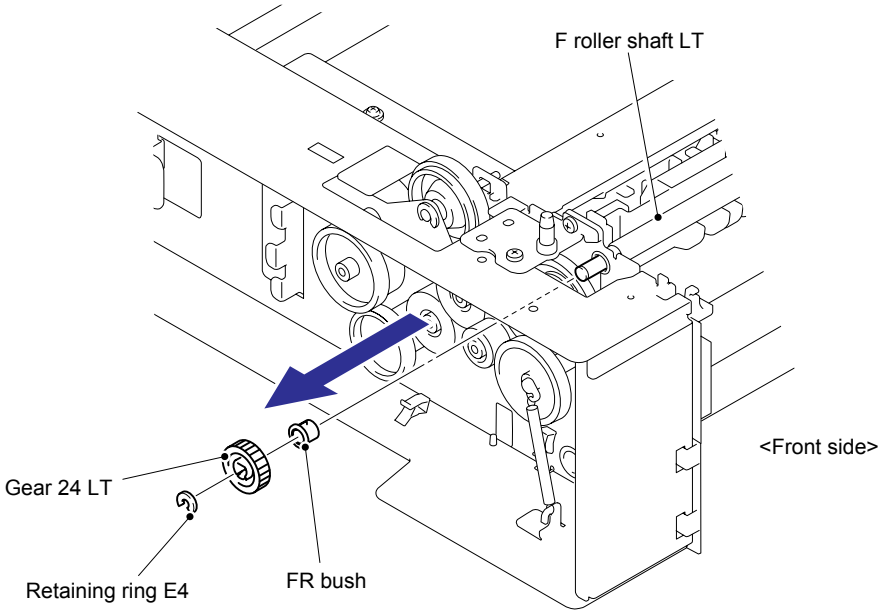


Fig. 3-219

(3) Remove the Retaining ring E3 from the F roller shaft LT and remove the FR bush TR.

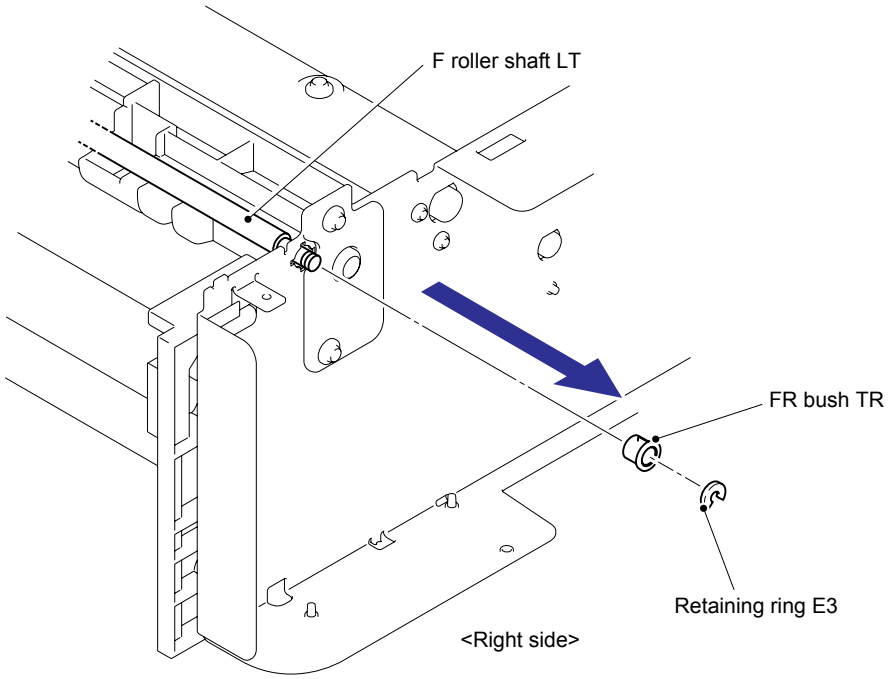


Fig. 3-220

(4) Remove the Lift spring from the Hook of the Lift lever A.

(5) Remove the F roller shaft LT from the LT frame unit by pushing right (5a), pull left end forward (5b) and remove leftwards (5c).

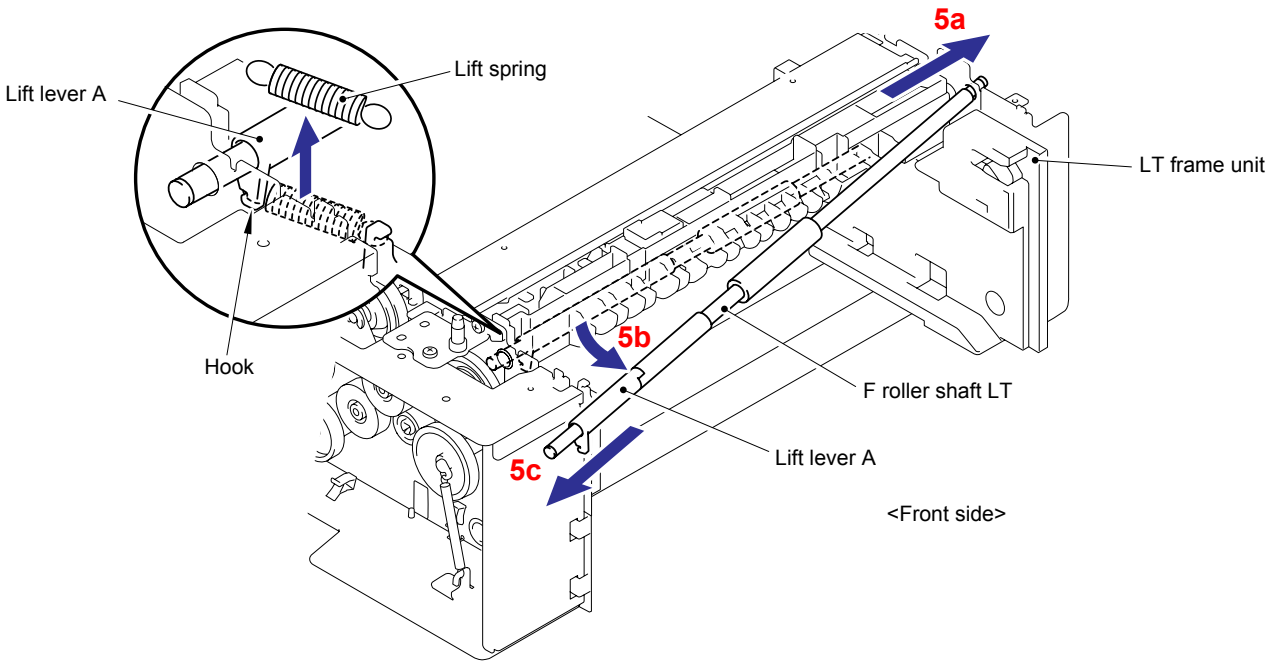


Fig. 3-221

Assembling Note:
When assembling the F roller shaft LT, place the Rib of the Paper feed frame unit between the section “A” and “B” of the Lift lever B and align the section “B” with the Lever of the Paper feed holder.

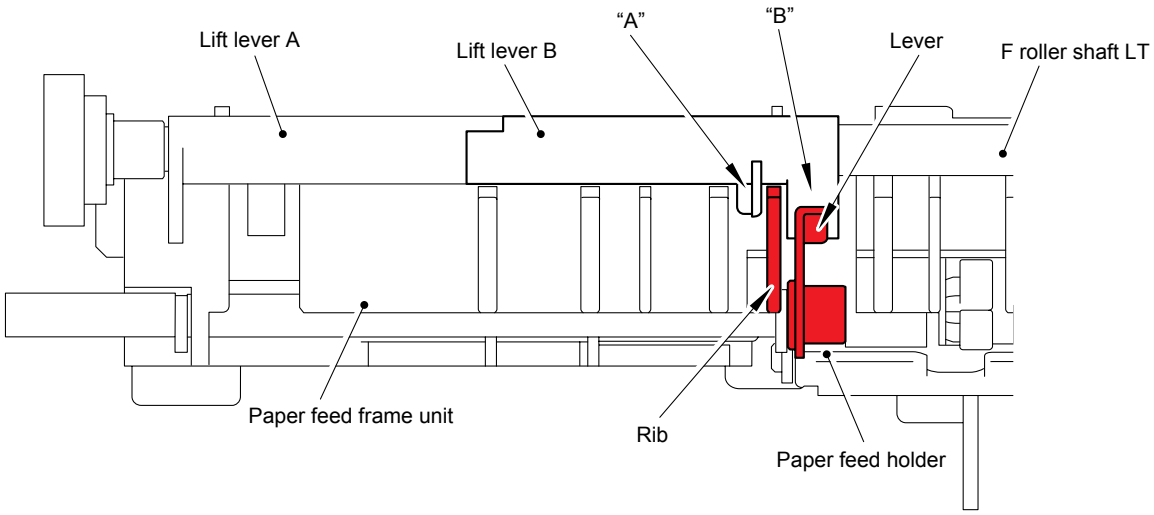


Fig. 3-222

(6) Remove the two cup S M3x6 Taptite screws from the LT frame unit.

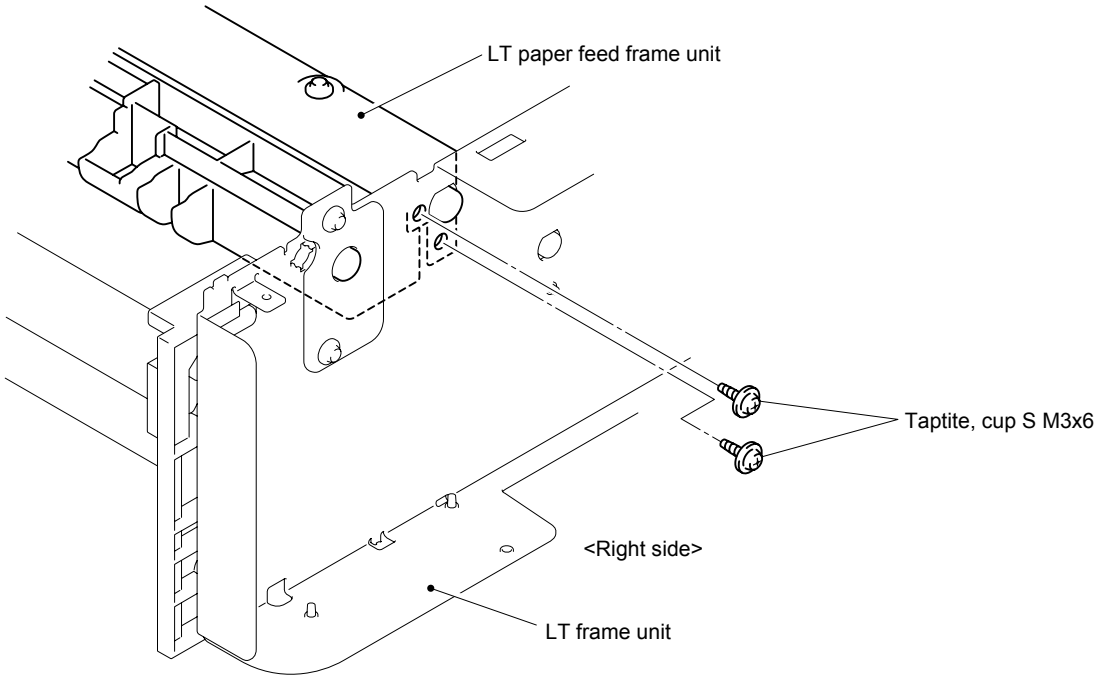


Fig. 3-223

(7) Remove the Gear 20A from the Drive unit by releasing the Hook.

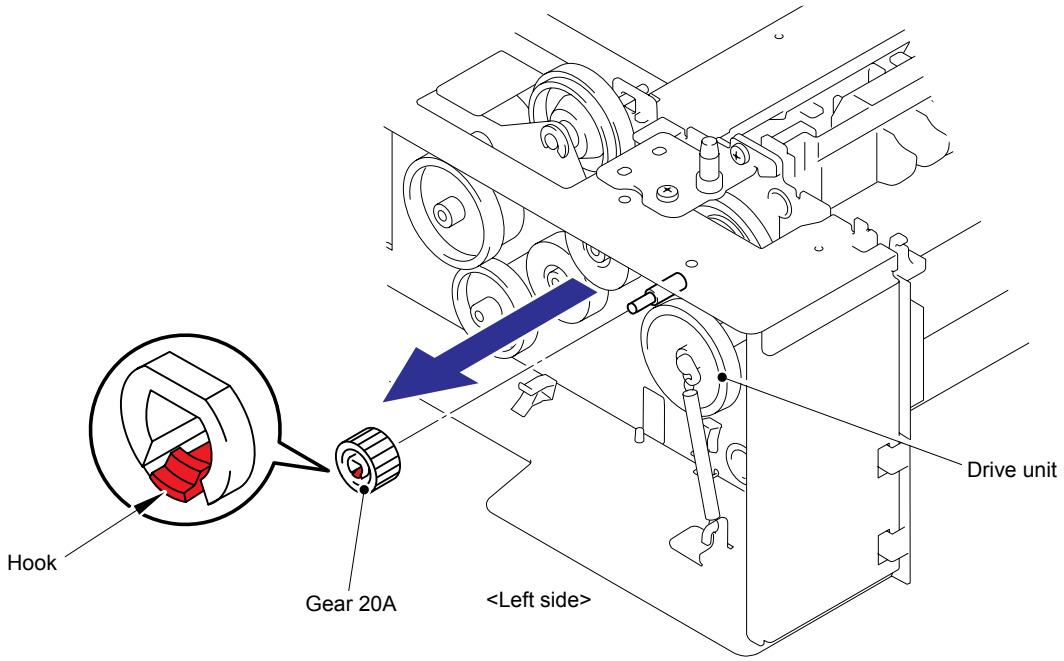


Fig. 3-224

(8) Remove the Gear 33 from the Drive unit by releasing the Hook.

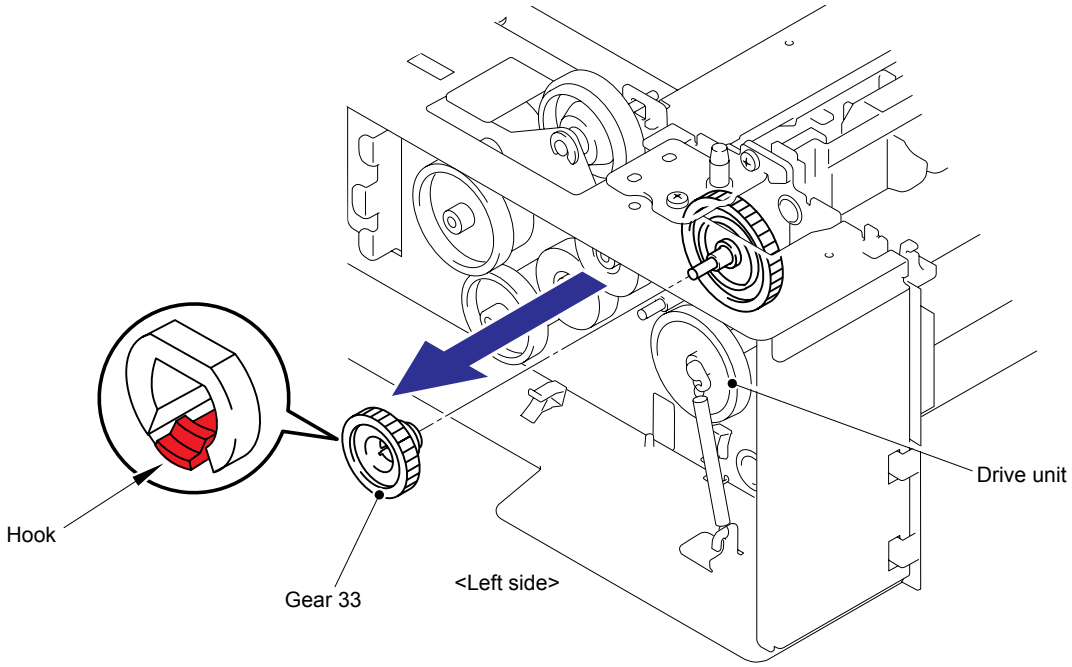


Fig. 3-225

(9) Remove the Extension spring LT from the Spring hook and remove the Gear 46/55 from the Drive unit by releasing the Hook.

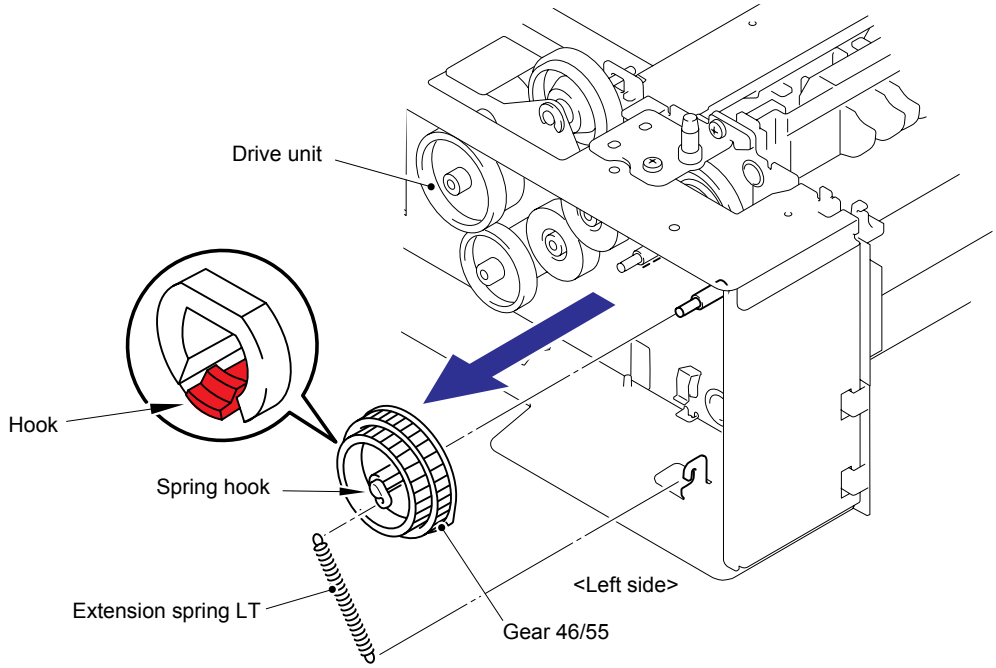


Fig. 3-226

(10) Remove the Gear 46 LT from the Drive unit.

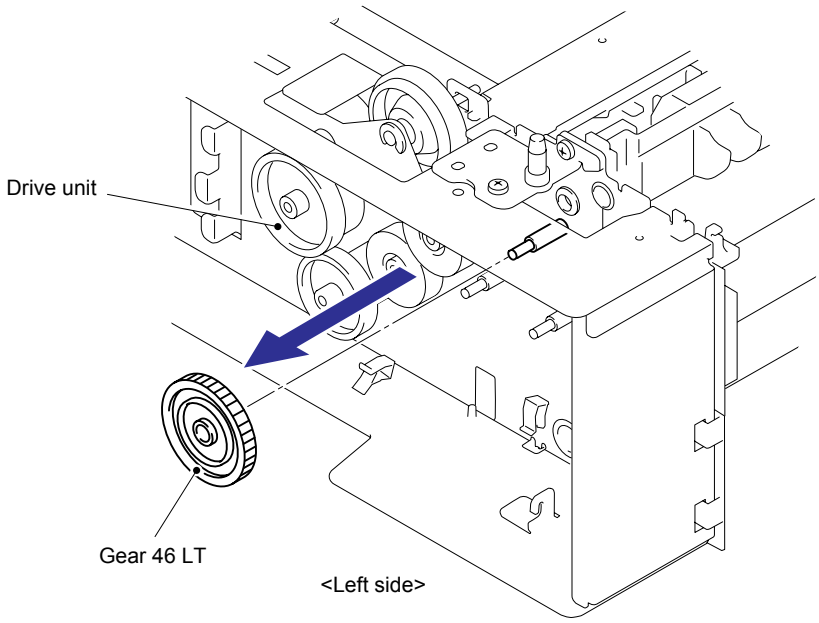


Fig. 3-227

(11) Remove the two cup S M3x6 Taptite screws and one bind B M4x10 Taptite screw from the LT frame L unit.

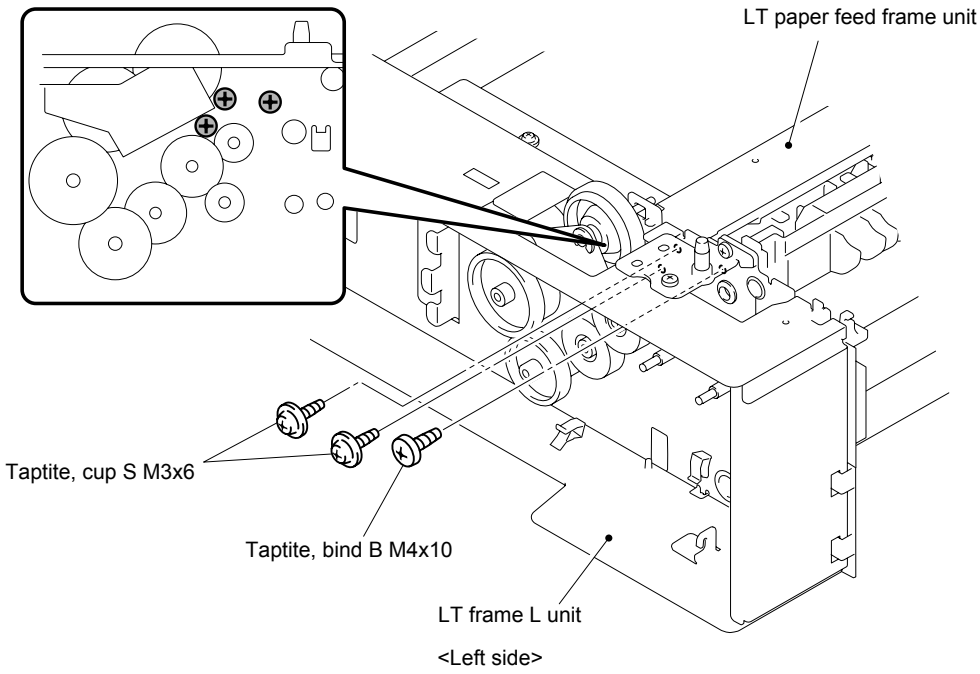


Fig. 3-228

(12) Turn the LT frame unit upside down.

(13) Remove the two cup S M3x6 Taptite screws from the LT frame unit.

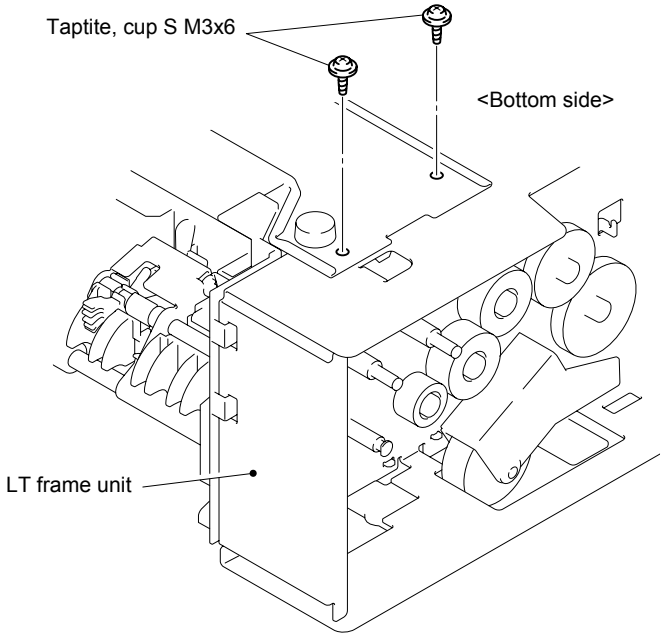


Fig. 3-229

(14) Turn the LT frame unit the correct way up.

(15) Remove the two cup S M3x6 Taptite screws from the LT beam R.

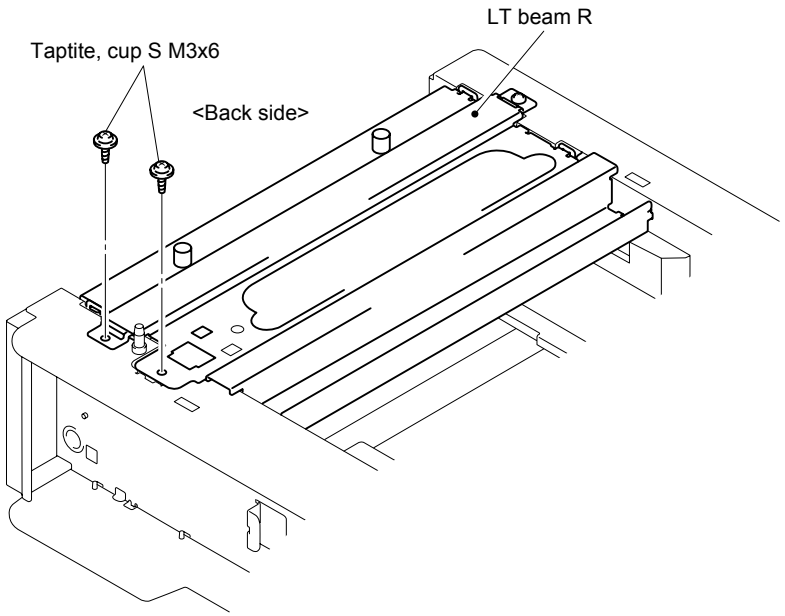


Fig. 3-230

(16) Remove the cup S M3x6 Taptite screw from the LT frame unit.

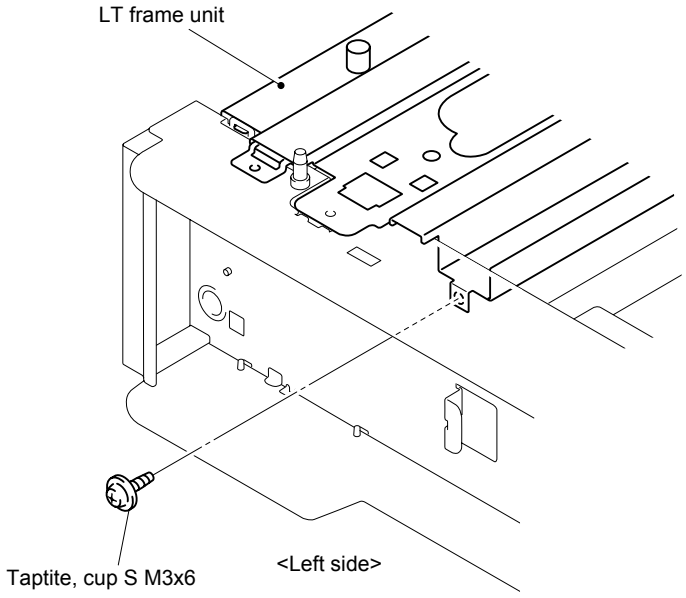


Fig. 3-231

(17) Remove the LT paper feed frame unit from the LT frame unit by 17a and 17b.

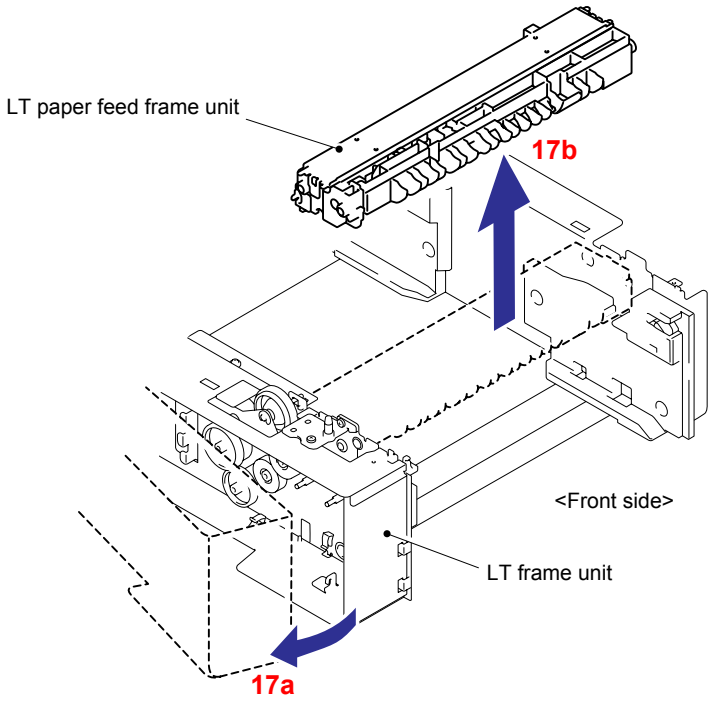


Fig. 3-232

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

1. IF YOU REPLACE THE MAIN PCB

<What to do when replacing the main PCB>

- **Rewriting the firmware (Main firmware, Sub firmware (PCL/PS))**
- **Setting by country**
- **Setting the serial number**
- **Performing the Auto Registration**

<Which parts to use>

Main PCB: The table below shows the ROM type.

Main PCB (For a spare parts)	ROM 0 (8 Mbyte)	Main firmware (Controller Program, Network Program)
	ROM 1 (8 Mbyte)	Sub firmware (PCL/PS) (Emulation, Font data)

<What you need to prepare>

(1) Computer (Windows® XP/2000 or later)

Create a “hl4000” folder on the C drive, for example.

(2) HL-4040CN/4040CDN/4050CDN/4070CDW target machine

(3) A USB flash memory drive

(4) The Firmware

Main firmware: LZ0827_A.djf or LZ0827_A.upd	LZXXXX_$.djf or LZXXXX_$.upd LZXXXX: First six digits are a parts number of the firmware. $: Alphabet representing the revision of the firmware.
Sub firmware (PCL/PS): LZ0828_A.djf or LZ0828_A.upd	

(5) The Maintenance Tool (Mainte.zip)

Copy it into the “hl4000” folder that has been created in the C drive. Extract the copied file and run “brmainte.exe” file by double-clicking.

(6) The Files to set by country (HL-4000.zip)

Copy it into the “hl4000” folder that has been created in the C drive. Extract the copied file.

	Country	HL-4040CN	HL-4040CDN	HL-4050CDN	HL-4070CDW
00101	USA	HL-4040CN_00101.pjl	HL-4040CDN_00101.pjl	---	HL-4070CDW_00101.pjl
00102	Canada	HL-4040CN_00102.pjl	HL-4040CDN_00102.pjl	HL-4050CDN_00102.pjl	HL-4070CDW_00102.pjl
00103	Germany	HL-4040CN_00103.pjl	---	HL-4050CDN_00103.pjl	HL-4070CDW_00103.pjl
00104	UK	HL-4040CN_00104.pjl	---	HL-4050CDN_00104.pjl	HL-4070CDW_00104.pjl
00106	Australia	HL-4040CN_00106.pjl	---	HL-4050CDN_00106.pjl	---
00110	Switzerland	HL-4040CN_00110.pjl	---	HL-4050CDN_00110.pjl	HL-4070CDW_00110.pjl
00116	Italy	HL-4040CN_00116.pjl	---	HL-4050CDN_00116.pjl	HL-4070CDW_00116.pjl
00117	Israel	HL-4040CN_00117.pjl	---	HL-4050CDN_00117.pjl	---
00120	China	HL-4040CN_00120.pjl	---	HL-4050CDN_00120.pjl	---
00124	South Africa	HL-4040CN_00124.pjl	---	HL-4050CDN_00124.pjl	---
00131	Chile / Argentina	---	---	HL-4050CDN_00131.pjl	---
00141	Gulf	HL-4040CN_00141.pjl	---	HL-4050CDN_00141.pjl	---
00142	Brazil	HL-4040CN_00142.pjl	---	---	---
00148	Russia	HL-4040CN_00148.pjl	---	HL-4050CDN_00148.pjl	---
00157	Pan-Nordic	HL-4040CN_00157.pjl	---	HL-4050CDN_00157.pjl	HL-4070CDW_00157.pjl
00160	France / Belgium / Netherlands	HL-4040CN_00160.pjl	---	HL-4050CDN_00160.pjl	HL-4070CDW_00160.pjl
00165	Spain	HL-4040CN_00165.pjl	---	HL-4050CDN_00165.pjl	HL-4070CDW_00165.pjl
00188	EEU	HL-4040CN_00188.pjl	---	HL-4050CDN_00188.pjl	---

* “---” indicates “Not supported”.

(7) A USB cable

(8) The Download Utility (FILEDG32.EXE)

Copy it into the “hl4000” folder that has been created in the C drive.

(9) 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.

<Procedures>

■ **Rewriting the firmware (Main firmware, Sub firmware (PCL/PS))**

■ **Setting by country**

- How to rewrite the firmware by using the USB flash memory drive

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 and set the country.

Note:

- Make sure that the USB flash memory drive has enough space to save the program file.
- If you want to print an index of the files, choose “Index Print”. The “Index Print” selection can be found after you scroll down through all the file names. Press the **OK** or **Go** button.

(1) Copy the necessary program files to be prepared in the “hl4000” folder (such as Main firmware, Sub firmware (PCL/PS) and “Files to set by country”) the USB flash memory drive.

(2) Connect the USB flash memory drive to the USB direct interface on the front of the machine.

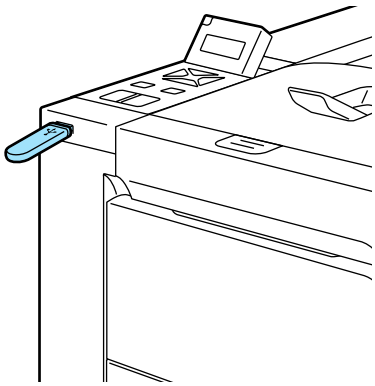


Fig. 4-1

(3) When the machine has recognized the USB flash memory drive, the “Checking device/ Please wait” message appears on the LCD.

(4) “Direct Print” is displayed on the first line of the LCD message, and the file names will be shown on the second line of the LCD. Press the ▲ or ▼ button to choose the necessary program file, and press the **OK** button.

(5) “Program Update/ Press Go” appears on the LCD. Press the **OK** or **Go** button to start. “Program Updating/ Do not turn OFF” message appears on the LCD with Data LED blinking while rewriting the firmware. DO NOT turn off the machine.

(6) After the completion of the firmware rewriting, the machine will reboot automatically. “Direct Print” is displayed on the first line of the LCD message, and the file names will be shown on the second line of the LCD again.

(7) Choose the necessary program file to rewrite next, and then follow the steps from (4) to (6).

Note:

It is recommendable to rewrite 1) Sub firmware (PCL/PS), 2) Main firmware and 3) File to set by country in this order.

(8) Remove the USB flash memory drive from the USB direct interface once the update have finished.

Note:
You can check the firmware version of the Main firmware and the Sub firmware (PCL/PS) by printing the Printer Settings (“2.3 Printout of Printer Settings” in Chapter 5).

- If rewriting the firmware files

If rewriting the firmware using a USB flash memory drive fails and an error message appears on the LCD, or no message appears on the LCD, it will be necessary to rewrite the firmware using the “FILEDG32.EXE”. Follow the steps below.

<Installing the maintenance driver>

To identify machines connected via USB interface, the PC requires the corresponding driver for the virtual USB device. If you connect any number of machines to your PC, the same number of virtual USB devices will be automatically configured on your PC. To prevent many virtual USB devices from being configured, use the unique driver installation procedure described below that enables your PC to identify terminals via one single virtual USB device.

Note:
Once this installation procedure has been carried out for a PC, no more driver/software installation will be required for that PC to identify machines. If the Brother Maintenance USB Printer Driver has been already installed to your PC according to this procedure, skip this section.

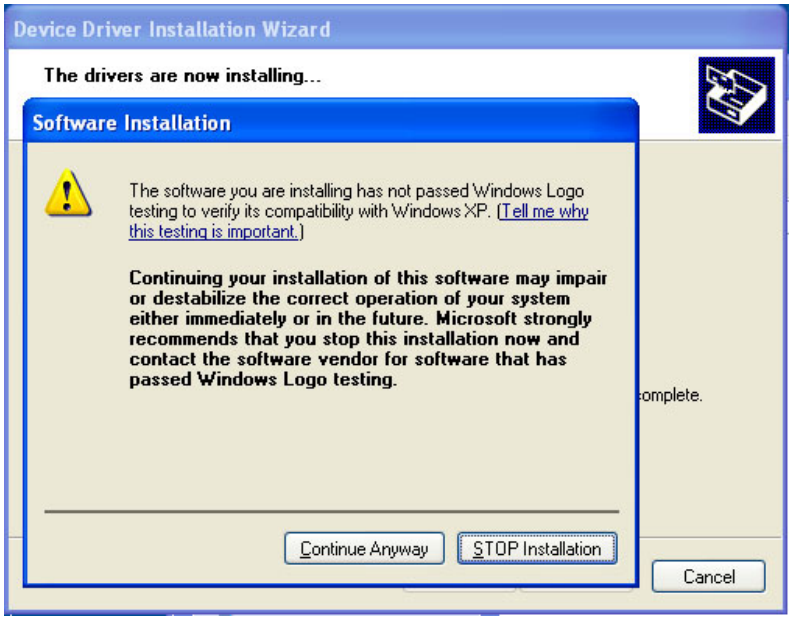
(1) With the machine in the Ready state press the **OK** button, then within 2 seconds of pressing the **OK** button press the **Go** button, and within 2 seconds of pressing the **Go** button, press the ▲ button four times to make the machine enter the maintenance mode.

(2) “▮▮ MAINTENANCE ▮▮▮” appears on the LCD, and the machine goes into the “Flash Rom Rewriting Mode”.

(3) Click the “Setup.exe” of the Brother Maintenance USB Printer Driver to run.

(4) The following screen appears, indicating the detection of device driver installation wizard. Click **Next** to proceed.

(5) Alert warning message of WHQL appears three times, Click **Continue Anyway** to proceed.

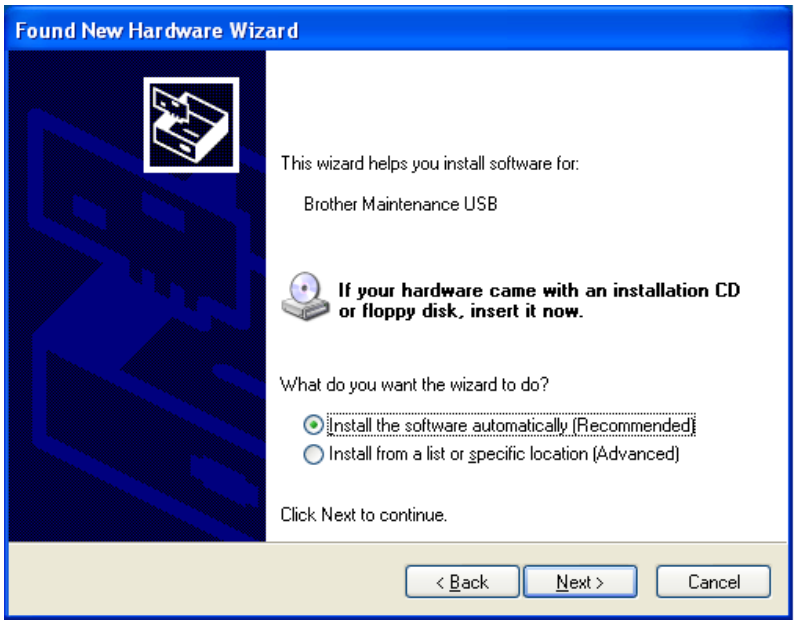


(6) If the device driver is successfully installed, the following message screen appears. Click **Finish** to return.

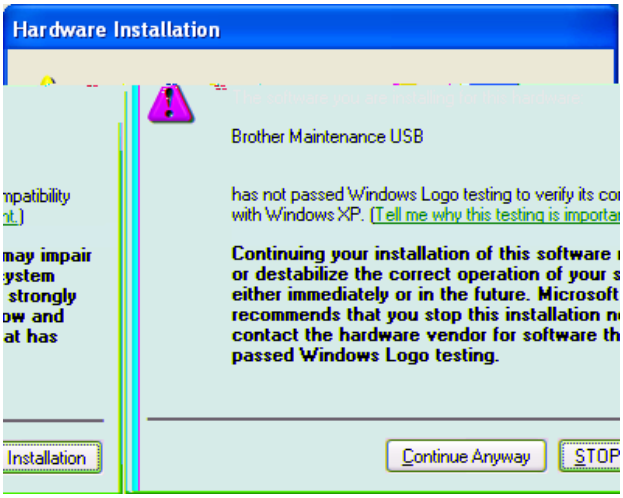
(7) Connect the machine to your PC using the USB cable.

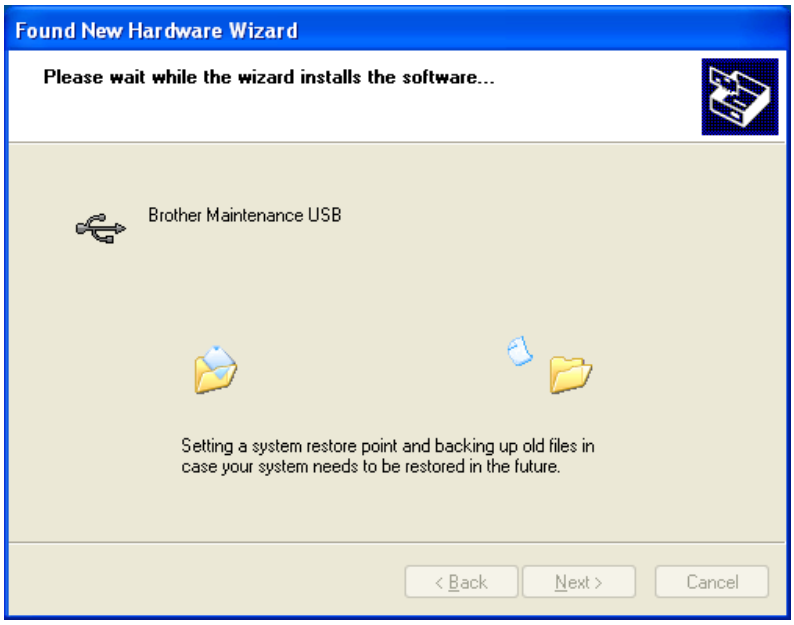
(8) The following screen appears, indicating the detection of new hardware device by the system. Select “No, not this time.” And click **Next**.

(9) Select “Install the software automatically (Recommended)” and click **Next**.



(10) Alert warning message of WHQL 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.

<How to rewrite the firmware (Main firmware, Sub firmware (PCL/PS) and "File to set up by country")>

After the installation procedure of the Brother Maintenance USB Printer driver is completed, refer to the following steps for the detailed procedures to rewrite the program files. If the Brother Maintenance USB Printer Driver has already been installed to your PC according to this procedure, start to rewrite the program files.

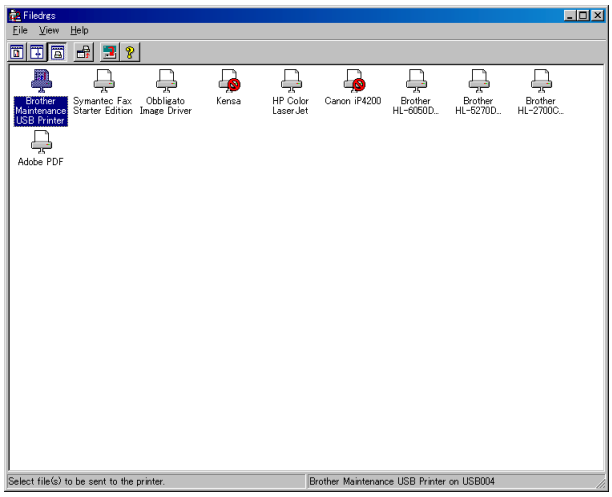
Note:

- DO NOT unplug the power cord of the machine or your PC or disconnect the USB cable while rewriting the program files.
- If you are using the "FILEDG32.EXE", the following firmware files are needed to rewrite the firmware.

Main firmware: LZ0827_A.upd	LZXXXX_$.upd LZXXXX: First six digits are a parts number of the firmware. $: Alphabet representing the revision of the firmware.
Sub firmware (PCL/PS): LZ0828_A.upd	

(1) Check that "▮▮▮▮▮▮▮▮" appears on the LCD. If not, turn the power switch of the machine off. Then, turn it on while pressing the **Go** and **Cancel** buttons at the same time.

(2) Double-click the "FILEDG32.EXE" to start. The following screen appears. Make sure that there is the "Brother Maintenance USB Printer" icon.



(3) Click the "Brother Maintenance USB Printer" icon to select. Drag the necessary firmware program file such as LZ0827_A.upd and drop it.

Note:

- It is recommendable to rewrite 1) Sub firmware (PCL/PS), 2) Main firmware and 3) File to set by country in this order.
- After rewriting Sub firmware (PCL/PS) or Main firmware is completed, the machine returns to the Ready state. To continue rewriting the other program files, turn off the power switch of the machine, 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.

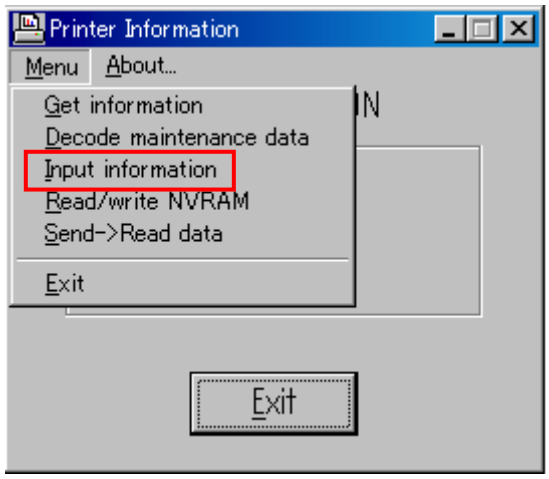
(4) Upon completion of rewriting, the machine is rebooted and returns to the Ready state automatically.

■ Setting the serial number

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

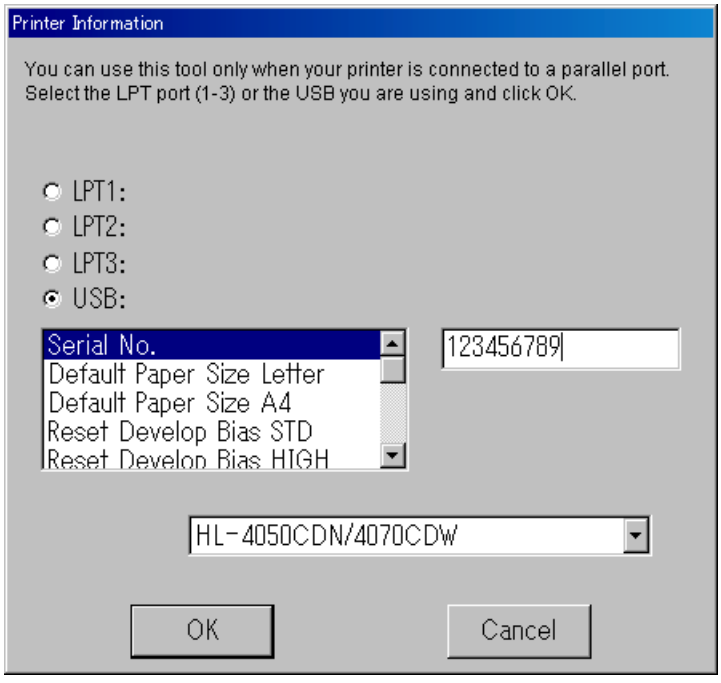
(2) Double-click the brmainte.EXE file (maintenance utility) which has been copied in the "hl4000" folder to start.

(3) Select "Input Information" from Menu. Select the applicable model name.



(4) Check the port (USB) that the machine is connected through and click "Serial No." in the lower box.

Enter the serial number (the last nine digits) of the machine into the box on the right hand side and click the **OK** button.



A confirmation window opens and shows the serial number. Check that it is correct and click the **OK** button.

Note:

Refer to Appendix 3 to know how to read the serial number of the machine.

■ **Performing the Auto Registration**

(1) Press any of the Menu buttons (▲,▼, **OK** or **Back**) to resume.

(2) Press the ▲ or ▼ button to choose “Color Correction”.

(3) Press the **OK** button to the next menu level. Press the ▲ or ▼ button to choose “Auto Regist.”. Press the **OK** button.

(4) “Auto Regist./ Registration” appears on the LCD, and then press the **OK** button.

(5) “Registration/ OK?” appears on the LCD, and press the **OK** button to start.

2. IF YOU REPLACE THE ENGINE PCB

<What to do when replacing the engine PCB>

■ **Rewriting the firmware (Engine firmware)**

■ **Performing the Color Calibration**

■ **Performing the Auto Registration**

<Which parts to use>

- Engine PCB: The table below shows the ROM type.
  Flash ROM 0 (512 Kbyte): Engine firmware

<What you need to prepare>

(1) Computer (Windows® XP/2000 or later)
Create a “hl4000” folder on the C drive, for example.

(2) HL-4040CN/4040CDN/4050CDN/4070CDW target machine

(3) A USB flash memory drive

(4) The Firmware:

Engine firmware: LZ0833_A.djf	LZXXXX_$.djf LZXXXX: First six digits are a parts number of the firmware. $: Alphabet representing the revision of the firmware.

<Procedures>

■ **Rewriting the firmware (Engine firmware)**

Note:

- Make sure that the USB flash memory drive has enough space to save the program file.
- If you want to print an index of the files, choose “Index Print”. The “Index Print” selection can be found after you scroll down through all the file names. Press the **OK** or **Go** button.

(1) Copy the necessary program file (Engine firmware) to the USB flash memory drive.

(2) Connect the USB flash memory drive to the USB direct interface on the front of the machine.

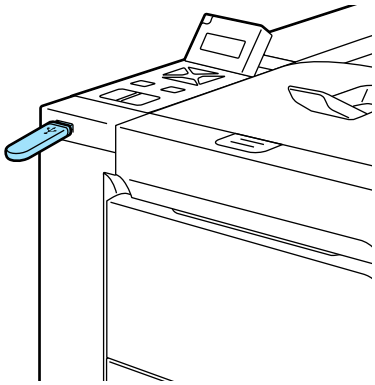


Fig. 4-2

(3) When the machine has recognized the USB flash memory drive, the “Checking device/ Please wait” message appears on the LCD.

(4) “Direct Print” is displayed on the first line of the LCD message, and the file names will be shown on the second line of the LCD. Press the ▲ or ▼ button to choose the necessary program file, and press the **OK** button.

(5) “Program Update/ Press Go” appears on the LCD. Press the **OK** or **Go** button to start.

“Program Updating/ Do not turn OFF” message appears on the LCD with Data LED blinking while rewriting the firmware. DO NOT turn off the machine.

(6) After the completion of the firmware rewriting, the machine will reboot automatically. “Direct Print” is displayed on the first line of the LCD message, and the file names will be shown on the second line of the LCD again.

(7) Remove the USB flash memory drive from the USB direct interface once the update have finished.

Note:

- You can check the firmware version of the Engine firmware by printing the Printer Settings (“2.3 Printout of Printer Settings” in Chapter 5).
- If rewriting the firmware using a USB flash memory drive fails, turn the power of the machine off and on. Follow the steps (1) to (7) again.

■ **Performing the Color Calibration**

(1) Press any of the Menu buttons (▲,▼, **OK** or **Back**) to resume.

(2) Press the ▲ or ▼ button to choose “Color Correction”.

(3) Press the **OK** button to the next menu level. “Color Correction/ ColorCalibration” appears on the LCD, and then press the **OK** button.

(4) “ColorCalibration/ Calibrate” appears on the LCD, and then press the **OK** button.

(5) “Calibrate/ OK?” appears on the LCD, and press the **OK** button to start.

■ **Performing the Auto Registration**

(1) Press any of the Menu buttons (▲,▼, **OK** or **Back**) to resume.

(2) Press the ▲ or ▼ button to choose “Color Correction”.

(3) Press the **OK** button to the next menu level. Press the ▲ or ▼ button to choose “Auto Regist.”. Press the **OK** button.

(4) “Auto Regist./ Registration” appears on the LCD, and then press the **OK** button.

(5) “Registration/ OK?” appears on the LCD, and press the **OK** button to start.

3. IF YOU REPLACE THE TRANSFER HVPS PCB UNIT OR REGISTRATION-MARK SENSOR PCB ASSY 1, 2

<What to do when replacing the transfer HVPS PCB unit or registration-mark sensor PCB ASSY 1, 2>

■ **Adjustment of Color Registration (Function code 66)**

<Procedures>

■ **Adjustment of Color Registration (Function code 66)**

Refer to "1.4.12 Adjustment of Color Registration" in Chapter 5, and perform the automatic adjustment of color registration.

Note:
If an error occurs after executing Function code 66, upgrade the firmware to the latest one. (Refer to "Rewriting the firmware (Main firmware, Sub firmware (PCL/PS))" in this chapter.)
After upgrading the firmware, execute Function code 66 again.

4. IF YOU REPLACE THE LASER UNIT

<What to do when replacing the laser unit>

When an old-type laser unit is replaced with a new laser unit, it is necessary to rewrite the firmware. Make sure to rewrite the firmware with the following procedure.

< How to identify old and new laser unit >

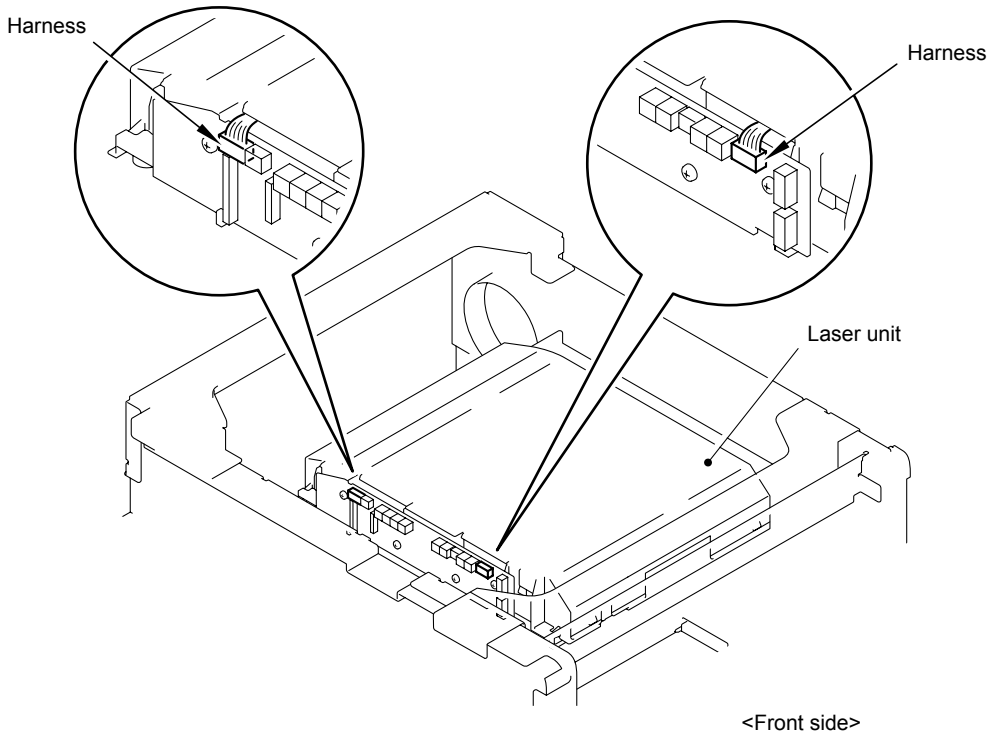


Fig. 4-3

Check the colors of the harnesses shown in the figure above.

Old: Red, Blue, White, Blue, White

New: Brown, Red, Orange, Yellow, Green

<Procedures>

■ **Rewriting the firmware (Main firmware, Sub firmware (PCL/PS), Engine firmware)**

Refer to "Rewriting the firmware (Main firmware, Sub firmware (PCL/PS))", "Rewriting the firmware (Engine firmware)" in this chapter and rewrite it.

CHAPTER 5 SERVICE FUNCTIONS

1. MAINTENANCE MODE

The maintenance mode is exclusively designed for the checking, setting and adjustments of the machine by using the buttons on the control panel. You can perform operational checks of sensors, perform a print test, display the log information or error codes, and modify the worker switch (WSW).

1.1 How to Enter the Maintenance Mode

(1) With the machine in the Ready state press the **OK** button, then within 2 seconds of pressing the OK button press the **Go** button, and within 2 seconds of pressing the Go button, press the ▲ button four times to make the machine enter the maintenance mode.

(2) The machine displays "▮▮ MAINTENANCE ▮▮▮" on the LCD, indicating that it is placed in the initial stage of the maintenance mode, a mode in which the machine is ready to accept entry from the buttons.

(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, 31, 45, 72, 75, 77, 80, 82 and 91)

(1) Press the **OK**, **Go** and **OK** buttons in this order when the machine is in the ready status. "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 machine automatically returns to the standby state. As for the codes 12, 25, 28, 31, 72, 75, 80 and 82, press the **Cancel** button to switch the machine back to the standby state.

Note:

Although Function code 72 is indicated on the LCD, do not use it.

1.3 List of Maintenance-mode Functions

Function Code	Function	Refer to:
01	EEPROM Parameter Initialization	1.4.1 (5-3)
09	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] (5-6)
12	Operational Check of LCD	1.4.4 (5-7)
13	Operational Check of Control Panel Button	1.4.5 (5-8)
25	ROM Version Check	1.4.6 (5-9)
28	“One Push Demo” Setting	1.4.7 (5-10)
31	Drum Unit Cleaning	1.4.8 (5-10)
32	Operational Check of Sensors	1.4.9 (5-11)
40	Printout of EEPROM Log	1.4.10 (5-14)
45	USB Transfer Speed Change in the PictBridge Mode	1.4.11 (5-15)
66	Adjustment of Color Registration	1.4.12 (5-16)
67	Paper Feeding and Ejecting Test	1.4.13 (5-18)
72	Sensitivity Adjustment of Density Sensor (Don’t use)	1.4.14 (5-18)
75	Sensitivity Adjustment of Registration-mark Sensor	1.4.15 (5-19)
77	Printout of Maintenance Information	1.4.16 (5-21)
78	Operational Check of Fans	1.4.17 (5-22)
80	Display of the Machine’s Log	1.4.18 (5-24)
82	Error Code Indication	1.4.19 (5-27)
83	Developing Bias Voltage Correction	1.4.20 (5-27)
91	EEPROM Parameter Initialization	1.4.1 (5-3)
99	Exit from the Maintenance Mode	1.4.21 (5-27)

* 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>

The machine initializes the parameter, user switches, worker switches and assurance mode switch settings registered in the EEPROM, to the initial values. Entering function code 01 initializes almost all of the EEPROM areas, but entering 91 does not initialize some areas, as listed below.

<table>
<tr><th>Function code
Data item</th><th>01</th><th>91</th></tr>
<tr><td>User switches (Items to be initialized when resetting to the factory default settings)</td><td rowspan="6">All of these will be initialized.</td><td>These will be initialized.</td></tr>
<tr><td>Worker Switch (Refer to APPENDIX 1.)</td><td>These will not be initialized.</td></tr>
<tr><td>Function settings except User switches (Items except the factory default settings)
- Languages
- Reprint
- Interfaces</td><td rowspan="4">These will be initialized.</td></tr>
<tr><td>LAN area (Network settings)</td></tr>
<tr><td>PCL core area
(Emulation settings)</td></tr>
<tr><td>Operation lock of the control panel
Password</td></tr>
</table>

<Operating Procedure>

(1) Press the ▲ or ▼ button to display “MAINTENANCE 01” (or “MAINTENANCE 91” according to your need) on the LCD in the initial stage of the maintenance mode. Then, press the **OK** button.
The “PARAMETER INIT” appears on the LCD.

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

1.4.2 Test Pattern (Function code 09)

<Function>

This function prints out a test pattern (Print Quality Check sheet) to allow the service personnel to check the print quality.

<Operating Procedure>

(1) Press the ▲ or ▼ button to display “MAINTENANCE 09” on the LCD in the initial stage of the maintenance mode. Then, press the **OK** button.

(2) Upon completion of test pattern printout, the machine returns to the initial stage of the maintenance mode.

The figure below shows a test pattern that is printed.

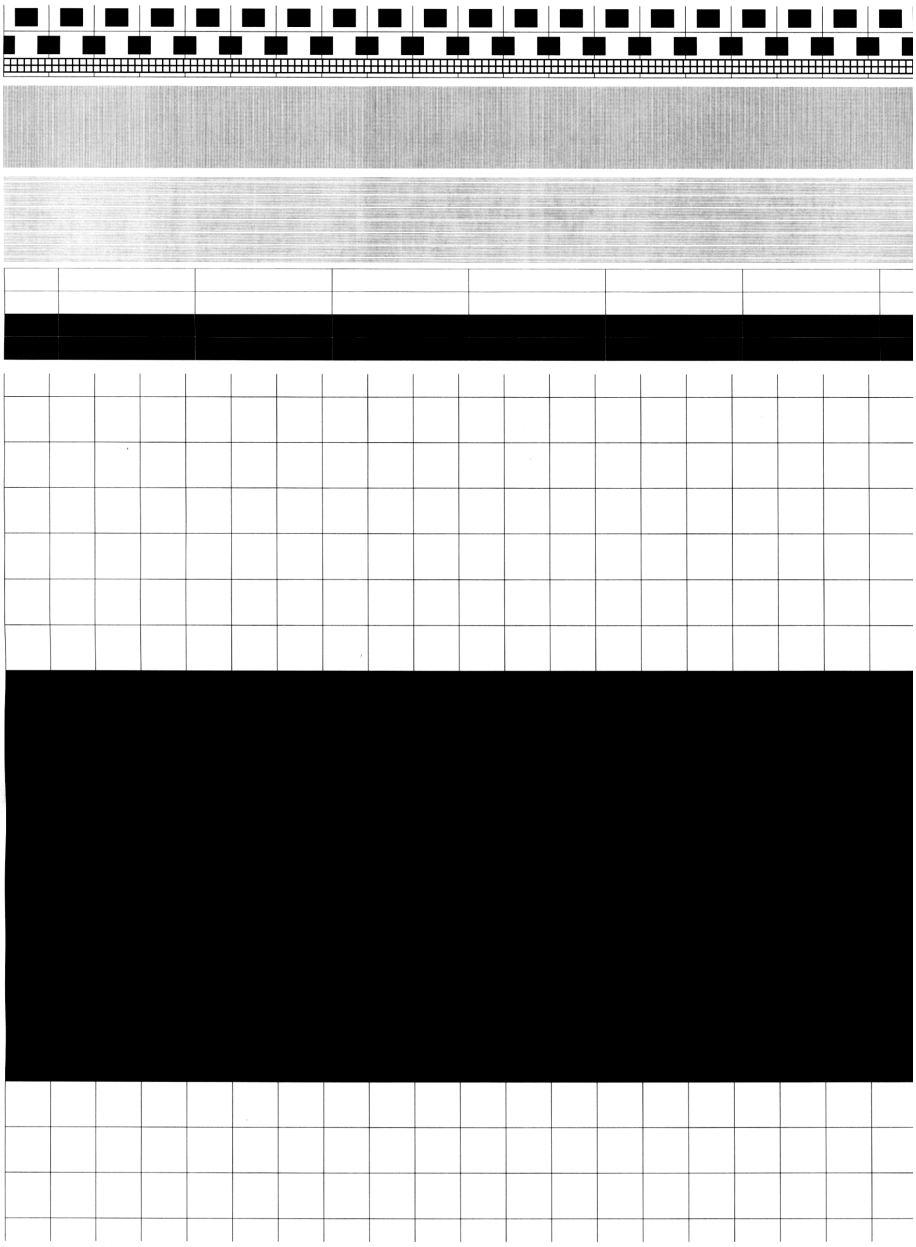


Fig. 5-1

1.4.3 Worker Switch (WSW) Setting and Printout

[1] Worker Switch Setting (Function code 10)

<Function>

The following worker switches activated with the procedures using the control panel buttons allow you to set. The worker switches have been set at the factory in conformity to each country.

CAUTION:
DO NOT change any other worker switches except below.

■ **Worker Switches**

WSW No.	Function	Refer to:
WSW54	PictBridge command delay time	App. 1-2
WSW55	Interval of time required for the developing bias voltage correction	App. 1-2
WSW56	PS emulation function setting (HL-4040CN/ 4040CDN only)	App. 1-3
	"Last Job Reprint" function setting	App. 1-3

*** Details of Worker Switch (WSW)**

Refer to APPENDIX 1. The service personnel accessible selectors of the worker switches are shaded.

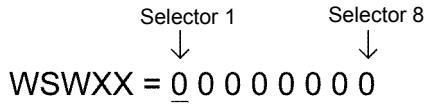
<Operating Procedure>

(1) Press the ▲ or ▼ button to display "MAINTENANCE 10" on the LCD in the initial stage of the maintenance mode. Then, press the **OK** button.

(2) The machine 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.



(5) Enter the desired number on the Selector 1 by pressing ▲ button as "1" or ▼ button as "0".

(6) The cursor moves to the right onto the Selector 2. Repeat to enter the desired number as described step (5) until the modification for the desired worker switches is completed till the Selector 8.

* Press the **Back** button to go back to the previous selector if there is a mistake. Then, enter the desired number again.

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

(8) Press the **Cancel** button to return to the machine to the initial stage of the maintenance mode.

Note:

- To cancel this operation and return to the machine to the initial stage of the maintenance mode during the above procedure, press the **Cancel** button.
- If there is a pause of more than one minute, the machine will automatically return to the initial stage of the maintenance mode.

[2] Printout of Worker Switch Data (Function code 11)

<Function>

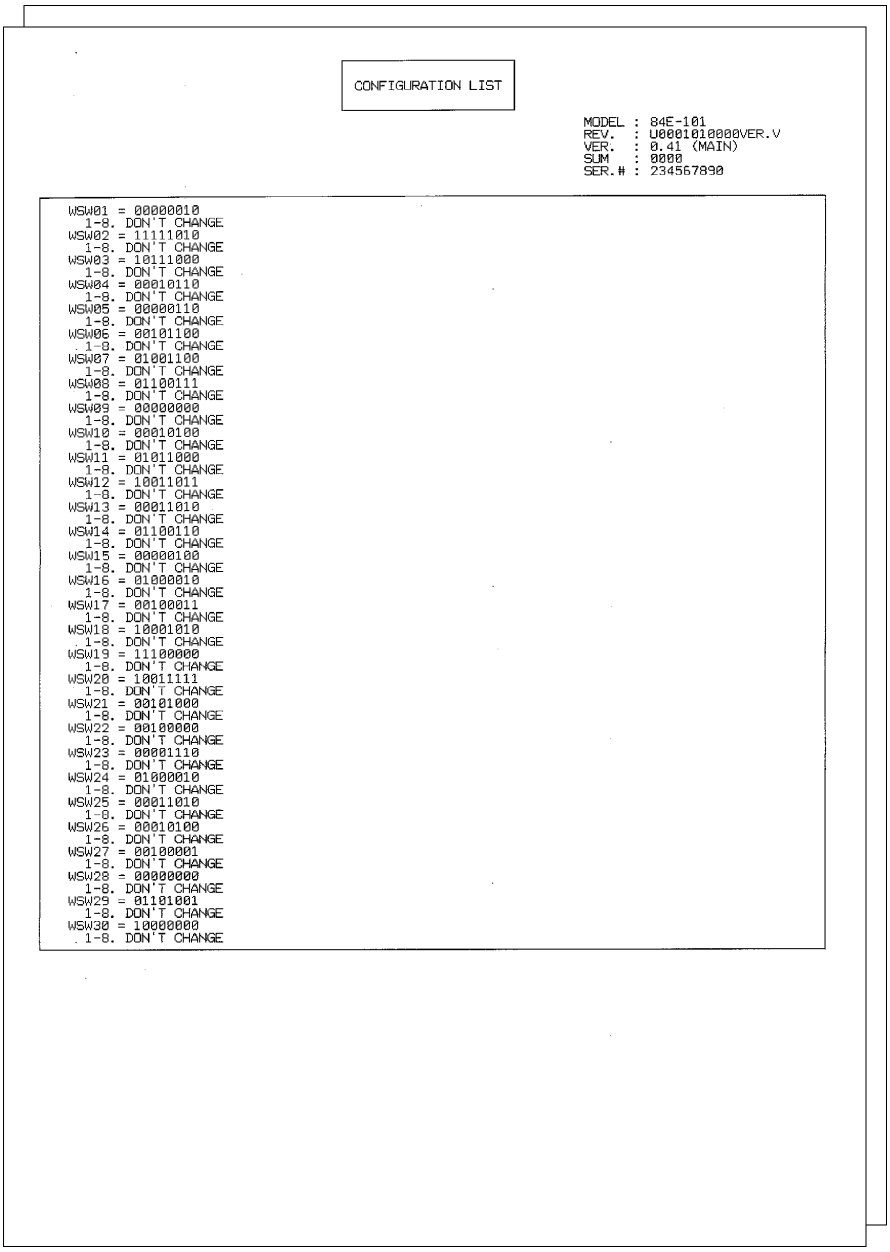
The machine prints out the setting items of the worker switches and their contents specified.

<Operating Procedure>

(1) Press the ▲ or ▼ button to display “MAINTENANCE 11” on the LCD in the initial stage of the maintenance mode. Then, press the **OK** button.
The machine displays “PRINTING” on the LCD.

(2) The machine prints out the configuration list as shown below.

(3) Upon completion of printing, the machine returns to the initial stage of the maintenance mode.



CONFIGURATION LIST

MODEL : 84E-101
REV. : U0001010000VER.V
VER. : 0.41 (MAIN)
SUM : 0000
SER.# : 2345678900

WSW01 = 00000010
1-8. DON'T CHANGE
WSW02 = 11111010
1-8. DON'T CHANGE
WSW03 = 10111000
1-8. DON'T CHANGE
WSW04 = 00010110
1-8. DON'T CHANGE
WSW05 = 00000110
1-8. DON'T CHANGE
WSW06 = 00101100
1-8. DON'T CHANGE
WSW07 = 01001100
1-8. DON'T CHANGE
WSW08 = 01100111
1-8. DON'T CHANGE
WSW09 = 00000000
1-8. DON'T CHANGE
WSW10 = 00010100
1-8. DON'T CHANGE
WSW11 = 01011000
1-8. DON'T CHANGE
WSW12 = 10011011
1-8. DON'T CHANGE
WSW13 = 00011010
1-8. DON'T CHANGE
WSW14 = 01100110
1-8. DON'T CHANGE
WSW15 = 00000100
1-8. DON'T CHANGE
WSW16 = 01000010
1-8. DON'T CHANGE
WSW17 = 00100011
1-8. DON'T CHANGE
WSW18 = 10001010
1-8. DON'T CHANGE
WSW19 = 11100000
1-8. DON'T CHANGE
WSW20 = 10011111
1-8. DON'T CHANGE
WSW21 = 00101000
1-8. DON'T CHANGE
WSW22 = 00100000
1-8. DON'T CHANGE
WSW23 = 00001110
1-8. DON'T CHANGE
WSW24 = 01000010
1-8. DON'T CHANGE
WSW25 = 00011010
1-8. DON'T CHANGE
WSW26 = 00010100
1-8. DON'T CHANGE
WSW27 = 00100001
1-8. DON'T CHANGE
WSW28 = 00000000
1-8. DON'T CHANGE
WSW29 = 01101001
1-8. DON'T CHANGE
WSW30 = 10000000
1-8. DON'T CHANGE

Fig. 5-2

1.4.4 Operational Check of LCD (Function code 12)

<Function>

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

<Operating Procedure>

(1) Press the ▲ or ▼ button to display “MAINTENANCE 12” on the LCD in the initial stage 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 machine returns to the initial stage of the maintenance mode.

Backlight	: Orange lighting
Data LED	: Orange blinking
Direct Print LED	: Blue blinking

Backlight	: Red lighting
Data LED	: Orange blinking
Direct Print LED	: Blue blinking

Backlight	: Green lighting
Data LED	: Orange blinking
Direct Print LED	: Blue blinking

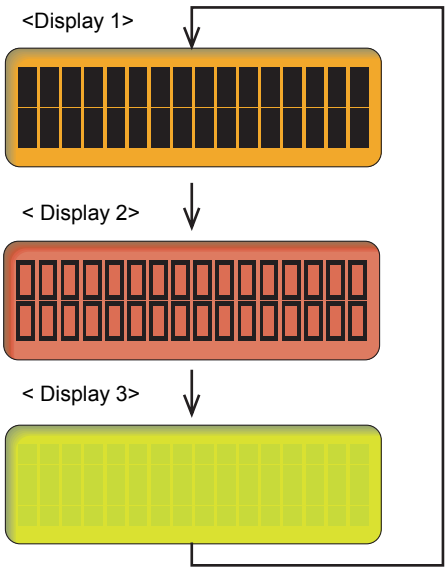


Fig. 5-3

1.4.5 Operational Check of Control Panel Button (Function code 13)

<Function>

This function allows you to check the control panel PCB for normal operation.

<Operating Procedure>

(1) Press the ▲ or ▼ button to display “MAINTENANCE 13” on the LCD in the initial stage of the maintenance mode. Then, press the **OK** button.
The machine 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 machine displays the "INVALID OPERATE" on the LCD. To return to the status ready to accept button entry for operational check, press the **Cancel** button.

(3) After the last number button is pressed, the machine beeps and returns to the initial stage of the maintenance mode.

To terminate this operation, press the **Cancel** button. The machine returns to the initial stage of the maintenance mode.

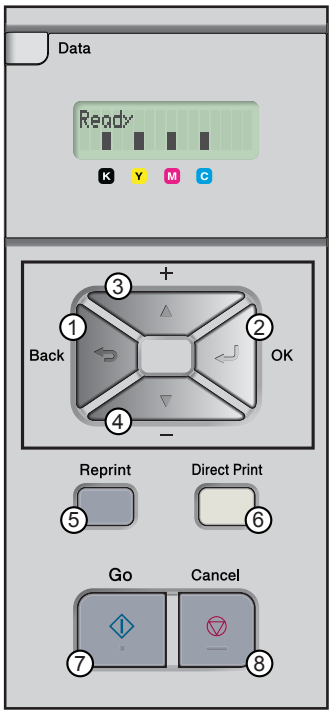


Fig. 5-4

1.4.6 ROM Version Check (Function code 25)

<Function>

This function allows you to check the management information of the software programs such as version information, check sum.

<Operating Procedure>

(1) Press the ▲ or ▼ button to display “MAINTENANCE 25” on the LCD in the initial stage of the maintenance mode. Then, press the **OK** button.

The machine displays each of terms described below on the LCD.

(2) Press the **Go** or ▲ or ▼ button to check the next term.

LCD	Description
MAIN: Ver1.00(A)*	Main firmware version information (Revision information)
PCL : Ver1.00*	Sub firmware (PCL/PS) version information (ROM size)
ENG : Ver1.01	Engine firmware version information
NET : Ver1.00	Network version information
PICT: Ver1.00	PictBridge version information
B0608071049:5708*	Boot program creation date& check sum information
U0612271600:7B0A*	Main firmware creation date& check sum information
D0611301115:E6C3*	Demo firmware creation date& check sum information
P0612271602:BD40*	Sub firmware (PCL/PS) creation date& check sum information

- How to display the check sum information

Terms displayed with “*” have the check sum information as well. Press the **OK** button when its version information is displayed on the LCD. Press the **OK** button again to go back to the version information display. Press the **Go**, ▲ or ▼ buttons to check the next term.

Note:

If you press the **OK** button when each version information of Engine, Network and PictBridge is displayed on the LCD, you cannot check the check sum information.

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

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 PC 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 stage of the maintenance mode. Then, press the **OK** button.
The machine displays “One Push Demo=ON” on the LCD.

(2) Press the **OK** button so that the One Push Demo function is set to be enabled.

(3) The machine automatically returns to the initial stage of the maintenance mode.

Note:

- To terminate this operation, press the **Cancel** button. The machine returns to the initial stage of the maintenance mode.
- For the DX model (HL-4040CDN/ 4050CDN/ 4070CDW), pressing the **Reprint** button allows you to implement duplex demo printing.

1.4.8 Drum Unit Cleaning (Function code 31)

<Function>

This function allows you to remove the dust attached on the surface of the exposure drum by using the drum cleaning sheet.

<Operating Procedure>

(1) Press the ▲ or ▼ button to display “MAINTENANCE 31” on the LCD in the initial stage of the maintenance mode. Then, press the **OK** button.
The machine displays “DRUM CLEANING” on the LCD.

(2) Load the drum cleaning sheet into the MP tray.

(3) Press the **Go** button.

(4) When the machine ejects the drum cleaning sheet and finishes cleaning the drum unit, “DRUM CLEANING/ COMPLETED” appears on the LCD.

(5) Press the **Cancel** button to terminate this operation. Then, the machine returns to the initial stage of the maintenance mode.

1.4.9 Operational Check of Sensors (Function code 32)

<Function>

This function allows you to check each of the sensors.

<Operational Procedure>

(1) Press the ▲ or ▼ button to display “MAINTENANCE 32” on the LCD in the initial stage of the maintenance mode. Then, press the **OK** button.

(2) If the sensing status are as listed below, the LCD will show “C1P1R1C2P2R2L2T2” when LT is installed. “C1P1R1**********” appears on the LCD when LT 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 status.

LCD	Sensors	Sensing status (ON/OFF)
C1	T1 sensor	Paper tray installed/ not installed
P1	T1 PE sensor	Paper detected/ not detected
R1	T1 edge sensor	Paper not detected/ detected
C2*	LT sensor	Paper tray installed/ not installed
P2*	LT PE sensor	Paper detected/ not detected
R2*	LT edge sensor	Paper not detected/ detected
L2*	LT plate-up detection sensor	Plate-up detected / not detected
T2*	LT connector	LT connected/ not connected
MR	MP registration front sensor	Paper detected/ not detected
MP	MP PE sensor	Paper detected/ not detected
CV	Front cover	Front cover closed/ open
RC	Back cover	Back cover closed/ open
RM	T1 registration front sensor	Paper not detected/ detected
RA	Registration rear sensor	Paper not detected/ detected
PO	Paper eject sensor	Paper not detected/ detected
NK	Toner sensor K (NEW)	Toner cartridge(K) used/ new
NY	Toner sensor Y (NEW)	Toner cartridge(Y)used/ new
NM	Toner sensor M (NEW)	Toner cartridge(M) used/ new
NC	Toner sensor C (NEW)	Toner cartridge(C) used/ new
KC	Toner sensor K (TE)	Toner(K) detected/ not detected
YC	Toner sensor Y (TE)	Toner(Y) detected/ not detected
MC	Toner sensor M (TE)	Toner(M) detected/ not detected
CC	Toner sensor C (TE)	Toner(C) detected/ not detected
DV	Develop release sensor	Release/ Welding
BC	Belt cleaner release sensor	Release/ Contact
NW	Waste toner sensor 1	Toner not detected/ nearly full
FW	Waste toner sensor 2	Toner not detected/ full

Terms displayed with “*” are for HL-4050CDN/ 4070CDW only.

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 term.
- The machine makes a sound when operating the toner sensor K (NEW) and toner sensor Y (NEW) while the cover is opened.

LCD	Temperature and humidity sensors	Sensing status (OK/NG)
TMP	THM sensor	XX°C/NG
HUM	HUM sensor	XX%/NG
MAC	Internal temperature sensor	XX°C /NG
BT	Belt unit temperature sensor	XX°C /NG

Note:

If the sensor detects the abnormal value, the machine 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 sensor, open the front cover or the back cover, remove the toner cartridge, jam paper at the paper outlet, insert paper from the MP and load trays, etc.

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

■ Location of sensors

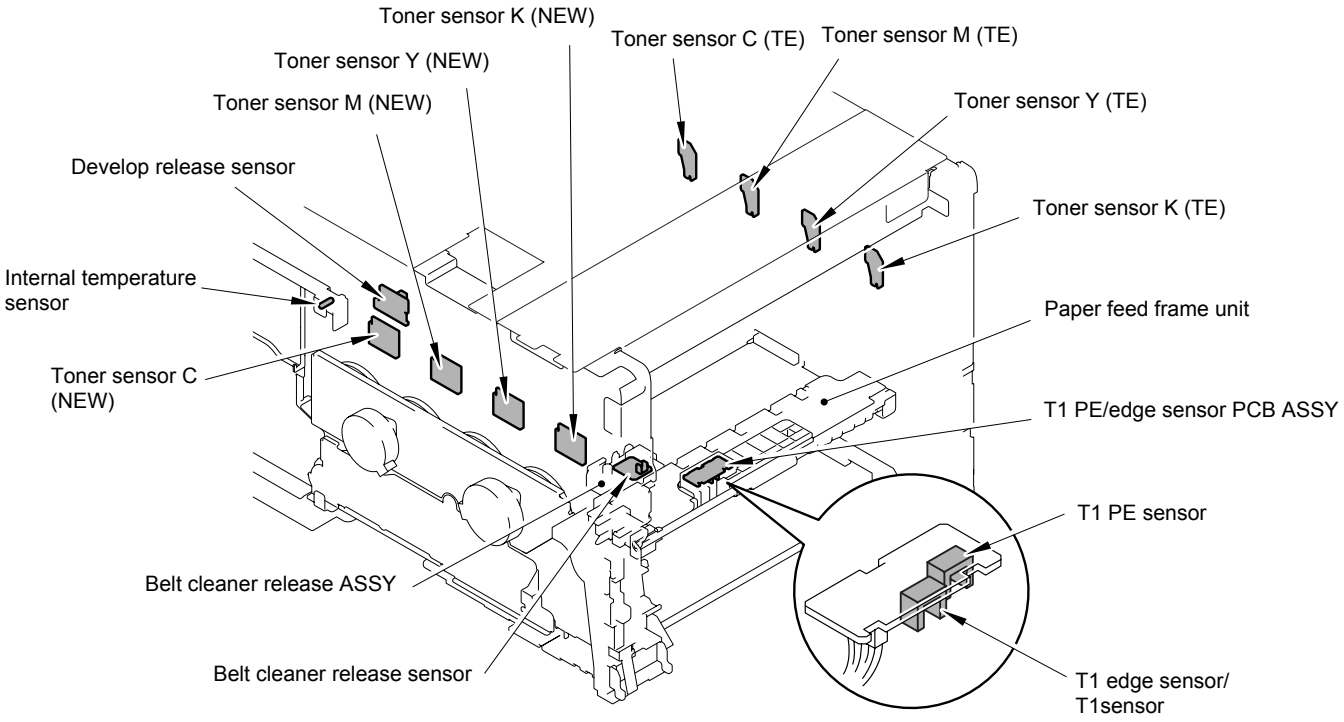


Fig. 5-5

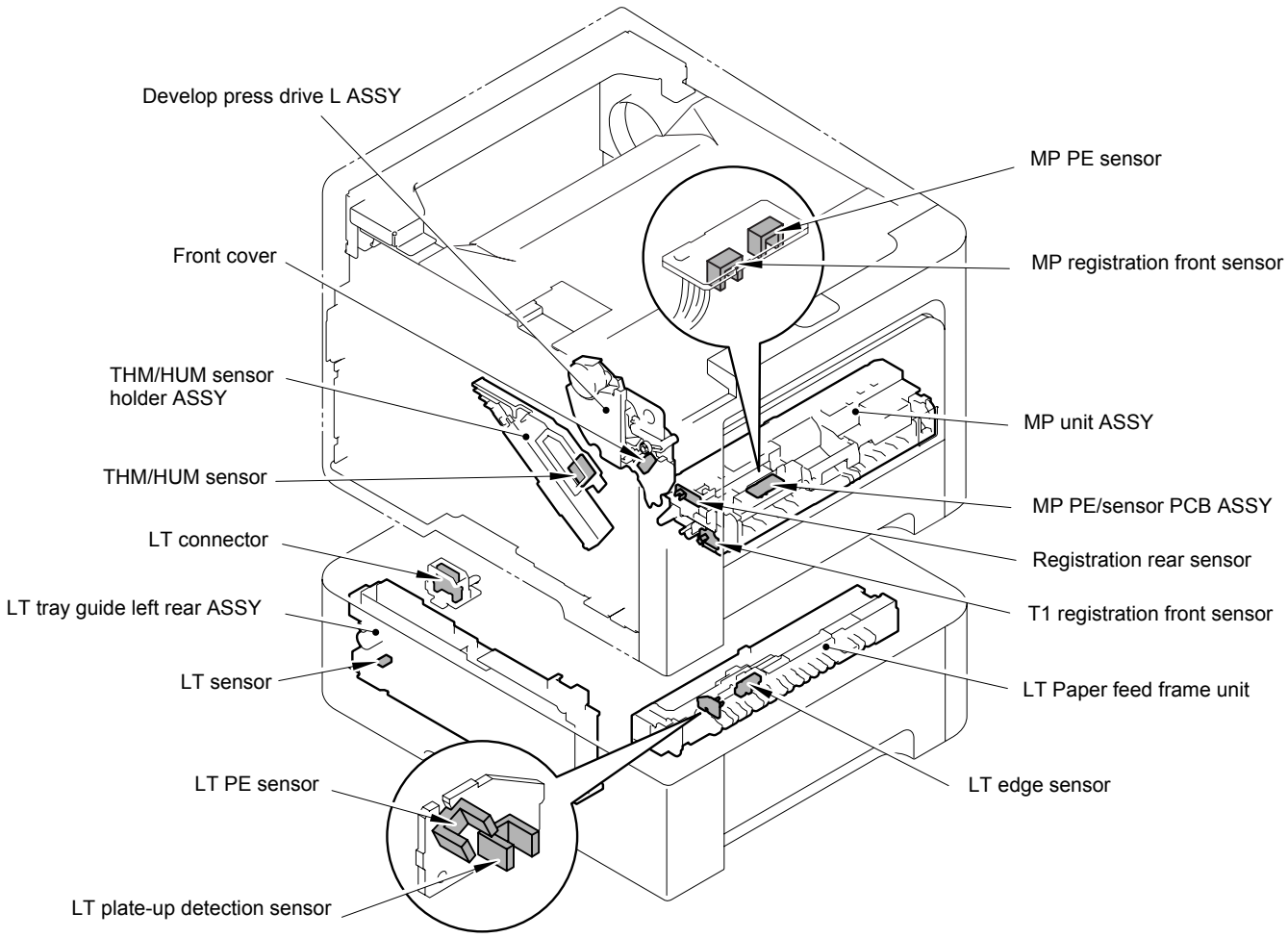


Fig. 5-6

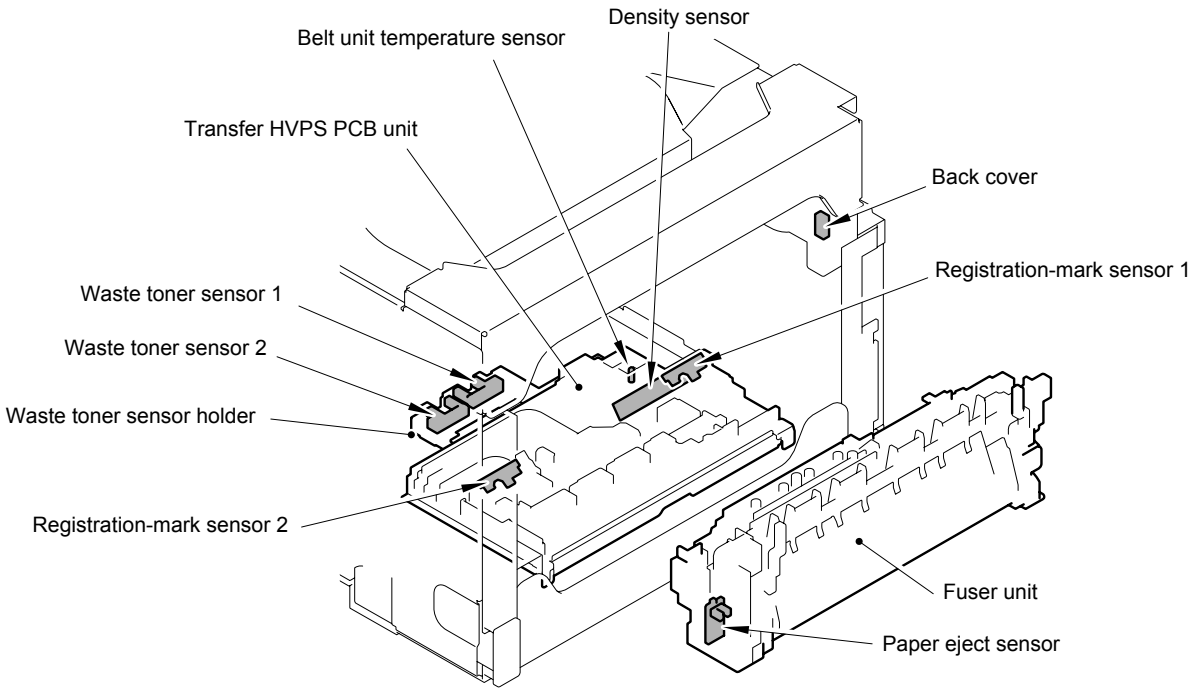


Fig. 5-7

1.4.10 Printout of EEPROM Log (Function code 40)

<Function>

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

- ENG E2PDUMP: EEPROM of the ENGINE PCB (512byte)
- MAIN E2PDUMP: EEPROM of the Main PCB (16Kbyte)

<Operating Procedure>

(1) Press the ▲ or ▼ button to display “MAINTENANCE 40” on the LCD in the initial stage of the maintenance mode. Then, press the **OK** button.

(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 machine starts to print the EEPROM log.

The terms of EEPROM logs on the LCD are as follows;

LCD	Description
E2PDUMP ENGN ALL	Print all EEPROM logs of the Engine PCB. (One page is printed.)
E2PDUMP MAIN TOP	Print top 1Kbyte EEPROM logs of the Main PCB. (One page is printed.)
E2PDUMP MAIN BTM	Print end 1Kbyte EEPROM logs of the Main PCB. (One page is printed.)
E2PDUMP MAIN ALL	Print all EEPROM logs of the Main PCB. (16 pages are printed.)

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

Note:

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

1.4.11 USB Transfer Speed Change in the PictBridge Mode (Function code 45)

<Function>

This function allows you to change the USB transfer speed in the PictBridge mode. If the digital camera which a user uses cannot be connected in the PictBridge mode, this function may make it possible.

- PB.Speed=AUTO: Adapts the speed to the capability of the USB device. (Full Speed or High Speed)
- PB.Speed=FULL: Fixes the speed to Full Speed. The capability of the USB device is not depended on.

(An asterisk "*" appears beside the current setting.)

<Operating Procedure>

(1) Press the ▲ or ▼ button to display "MAINTENANCE 45" on the LCD in the initial stage of the maintenance mode. Then, press the **OK** button.
"PB.USBspeed" will appear on the LCD.

(2) Press the **OK** button. Then, select the required function by pressing the ▲ or ▼ button and press the **OK** button.

(3) The machine returns to the initial stage of the maintenance mode.

Memo:

Users can change the USB transfer speed with the easier panel operation than the above. The operating procedure is as follows.

(1) Press the **Go** and ▼ buttons at the same time while the machine is in the ready status.

(2) "PB.USBspeed/ AUTO" appears on the LCD. Press the ▲ or ▼ button to select the required function. Then, press the **OK** or **Go** button.
The machine returns to the ready status after a few seconds.

(3) Turn the power switch of the machine off and turn it on again.

CAUTION:

When a user sets the USB transfer speed by either of both operations described above, indicate the user to turn the power switch of the machine OFF and ON after the machine returns to the ready status so that the setting is enabled.

1.4.12 Adjustment of Color Registration (Function code 66)

<Function>

This function automatically adjusts color registration. If automatic adjustment of color registration fails, you can adjust color registration manually.

<Operating Procedure>

Automatic Adjustment of Color Registration

(1) Press the ▲ or ▼ button to display “MAINTENANCE 66” on the LCD in the initial stage of the maintenance mode. Then, press the **OK** button.
”REGISTRATION” is displayed on the LCD.

(2) Press the **OK** button.
”REGISTRATION/ PLEASE WAIT” is displayed on the LCD, and adjustment of color registration is automatically done.

(3) When this operation is completed without an error, “REGISTRATION/ COMPLETED” is displayed on the LCD. When you press the **Cancel** button, the machine returns to the initial stage of the maintenance mode.

When an error message is displayed on the LCD, take the measures described in the table below.

Error message	Measure
REGISTRATION FAILD	Adjust color registration manually in accordance with the procedure for manual adjustment of color registration given below.
REGISTRATION TONER EMPTY <color>	Replace the empty toner cartridge, and then conduct the auto adjustment of color registration again.
REGISTRATION LOAD <size> PAPER	Replenish paper of the size specified in the display on the tray, and then conduct the auto adjustment of color registration again.

* In the <color> field, the toner color of which cartridge becomes empty is displayed.
* In the <size> field, “LETTER” or “A4” is displayed. “LETTER” is displayed on the models of which default size is LETTER, and “A4” is displayed on the models of which default size is A4.

Manual Adjustment of Color Registration

(1) Press the ▲ or ▼ button to display “MAINTENANCE 66” on the LCD in the initial stage of the maintenance mode. Then, press the **OK** button. ”REGISTRATION” is displayed on the LCD.
On the tray, load LETTER-size paper in the case of the models of which default size is LETTER, and A4-size paper in the case of the models of which default size is A4.

(2) Press the ▲ or ▼ button to display “PRINT CHART” on the LCD, and then press the **OK** button.

(3) Display “PRINT CHART/ PRINTING” on the LCD, and print the color registration adjustment chart (next page).

(4) Press the ▲ or ▼ button to display “OFFSET ADJSUT” on the LCD, and then press the **OK** button. “1. M LEFT/ 0” is displayed on the LCD.

(5) With the printed color registration adjustment chart, check the numeric value where the color is the darkest among the pattern 1 (Magenta Left). Press the ▲ or ▼button to display that numeric value, and then press the **Go** button.

(6) In the same way, enter the numeric value of the pattern 2, 3, 7, 8, and 9.

(7) When you enter the numeric value of the pattern 9 (Yellow Right), “SET REGISTRATION/ COMPLETED” is displayed. When you press the **Cancel** button, the machine returns to the initial stage of the maintenance mode.

■ Color registration adjustment chart

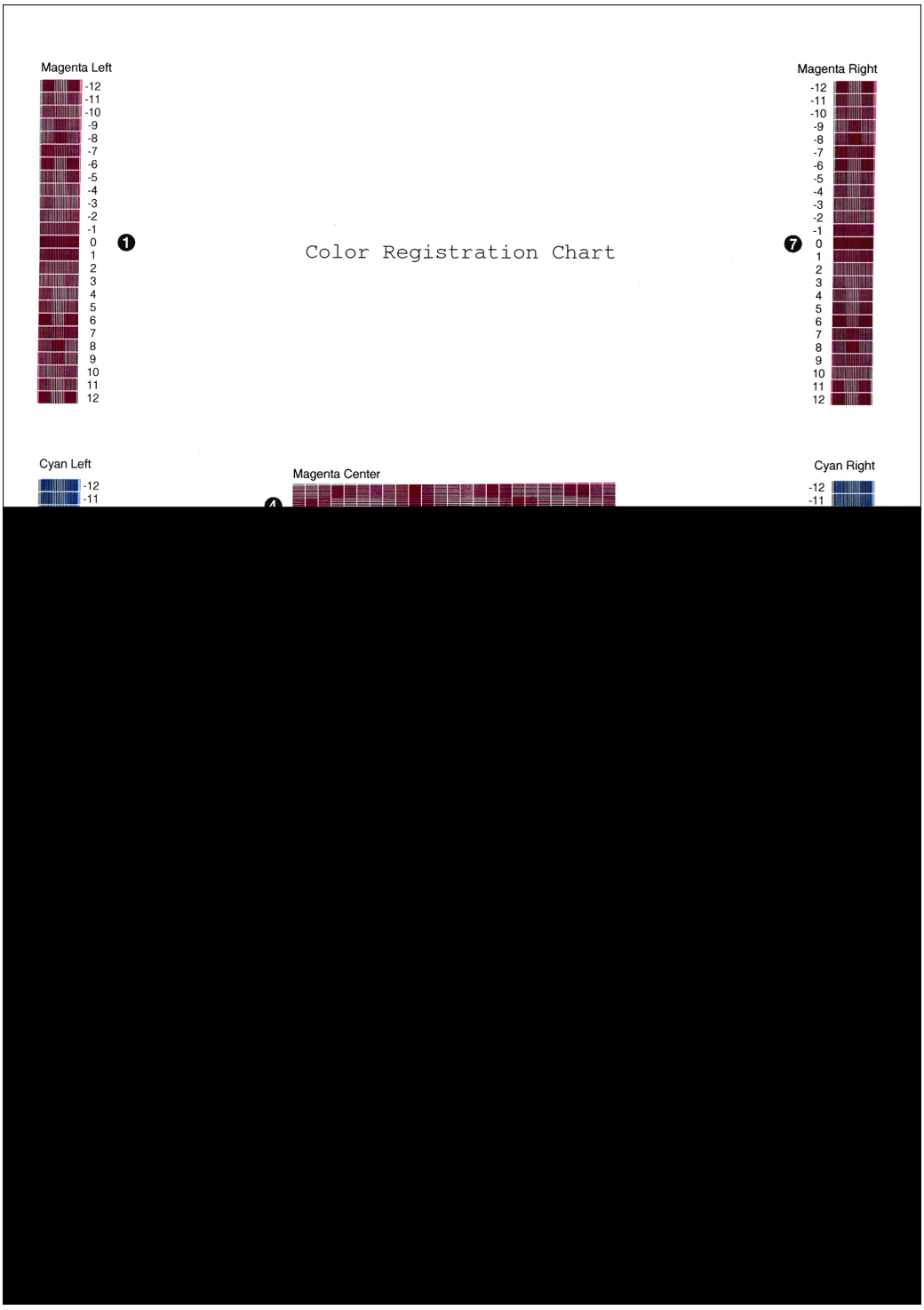


Fig. 5-8

1.4.13 Paper Feeding and Ejecting Test (Function code 67)

<Function>

This function allows you to check that a sheet of paper is fed and ejected correctly by printing the grid pattern on a page.

<Operating Procedure>

(1) Press the ▲ or ▼ button to display “MAINTENANCE 67” on the LCD in the initial stage of the maintenance mode. Then, press the **OK** button.

(2) Press the ▲ or ▼ buttons to select the testing term and then press the **OK** button.
The testing terms are as follows;

LCD	Description
SELECT: TRAY1	Continuous one-side printing from Tray 1.
SELECT: TRAY2	Continuous one-side printing from Tray 2.
SELECT: MP	Continuous one-side printing from MP Tray.
SELECT: TRAY1 DX	Continuous two-sided printing from Tray 1.
SELECT: TRAY2 DX	Continuous two-sided printing from Tray 2.
SELECT: MP DX	Continuous two-sided printing from MP Tray.

(3) The “PAPER FEED TEST” appears on the LCD. The selected test printing is started, and the grid pattern is printed.

(4) To return the machine to the initial stage of the maintenance mode, press the **Cancel** button.

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.
- In the case that the error occurs during test printing, the test printing is stopped.

1.4.14 Sensitivity Adjustment of Density Sensor (Function code 72) (Don’t use)

<Function>

Although this function can be carried out, the machine does not adjust the sensitivity of the density sensor. Once the function is performed, the machine prints the patch data onto the belt unit. It may remain on the belt unit if the power switch is turned off before the performance is completed. Therefore, it is prohibited to use this function.

1.4.15 Sensitivity Adjustment of Registration-mark Sensor (Function code 75)

<Function>

This function makes the registration-mark sensor to adjust its sensitivity compulsory. This function makes the machine to check the surface of the belt unit by using the registration-mark sensor as well.

	LCD	Description
1	REGI_SENS ADJUST BELT OFF	Adjust the sensitivity of the registration-mark sensor when the belt unit is not operated. This is to check whether the registration-mark sensor's operation is okay or not.
2	REGI_SENS ADJUST BELT CHECK	Check whether there is no scratch on the surface of the belt unit within the detectable range of registration-mark sensor.
3	REGI_SENS ADJUST BELT ON	Adjust the sensitivity of the registration-mark sensor when the belt unit is operated. (This adjustment is the same as the operation before the color registration.)

<Operating Procedure>

(1) Press the ▲ or ▼ button to display "MAINTENANCE 75" on the LCD in the initial stage of the maintenance mode. Then, press the **OK** button.
"REGI SENS ADJUST" appears on the LCD.

(2) Press the ▲ or ▼ button to select the appropriate term.

(3) Press the **Go** button, and then the sensitivity adjustment is started. Upon completion of this adjustment, the "OK" appears on the LCD. Press the **Cancel** button to return the machine to the initial stage 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.

< During the 1 or 3 adjustments >

Error Messages	Description	Solution
REGI_SENS ADJUST Write Err	Failure in writing the electron volume to NVRAM	Replace the engine PCB ASSY.
REGI_SENS ADJUST Belt Left Err	The measured data is abnormal when the sensitivity of the left registration-mark sensor is adjusted.	Replace the belt unit. If the belt unit is not replaced, set the auto color registration OFF and implement the manual color registration.
REGI_SENS ADJUST Belt Right Err	The measured data is abnormal when the sensitivity of the right registration-mark sensor is adjusted.	

< During the 2 adjustment >

LCD	Description	Solution
REGI_L_SENS: XXX REGI_R_SENS: OK	Check result of the surface of the belt unit within the detectable range of the left registration-mark sensor.	Replace the belt unit. If the belt unit is not replaced, set the auto color registration OFF and implement the manual color registration.
REGI_L_SENS: OK REGI_R_SENS: XXX	Check result of the surface of the belt unit within the detectable range of the right registration-mark sensor.	
REGI_L_SENS: XXX REGI_R_SENS: XXX	Check result of the surface of the belt unit within the detectable range of the left and right registration-mark sensors.	

* XXX describes the number of time (1~999) to detect the scratched on the surface of the belt unit. If the number of time is more, the condition of the belt unit is worse.

1.4.16 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 following terms are printed on the maintenance information only.

Average Coverage	Average coverage on each color (C/ M/ Y/ K). The average of the total printed area against the printable are on the Letter-size paper. The coverage is calculated when up to 1 million pages are printed, and it is not updated after this.
Engine Sensor Log	Operation logs of the following sensors located in the paper path. KO : Edge sensor MN : Registration front sensor RS : Registration rear sensor EJ : Paper eject sensor
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.

<Operating Procedure>

(1) Press the ▲ or ▼ button to display “MAINTENANCE 77” on the LCD in the initial stage of the maintenance mode. Then, press the **OK** button.

(2) Upon completion of printing, the machine returns to the initial stage of the maintenance mode.

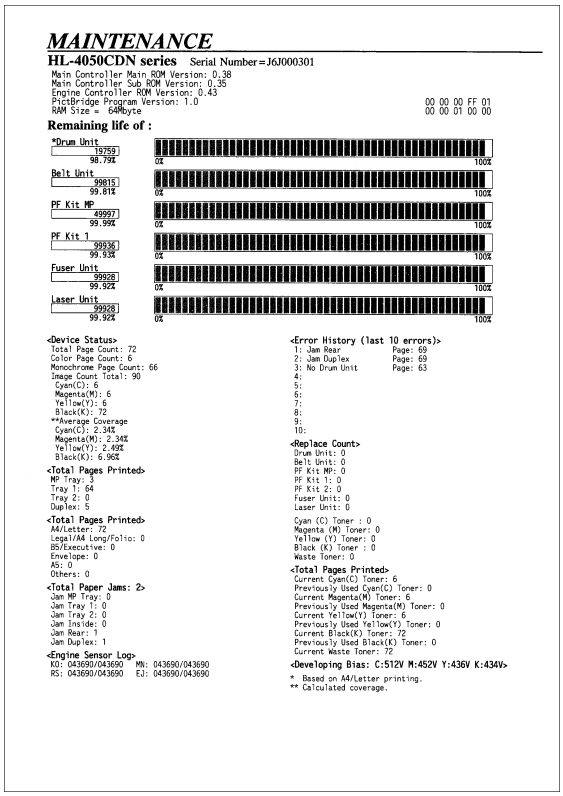


Fig. 5-9

1.4.17 Operational Check of Fans (Function code 78)

<Function>

This function is to check whether each of fans is operating correctly or not. The following fans are checked.

LCD	Parts Name	Description
FU	Fuser unit fan	Evacuate hot air of the fuser unit.
OPC	Drum unit fan	Evacuate hot air of the drum unit drive motor.
PS	LVPS fan	Evacuate hot air of the LVPS unit.
AIR	Air intake fan	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 stage 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.

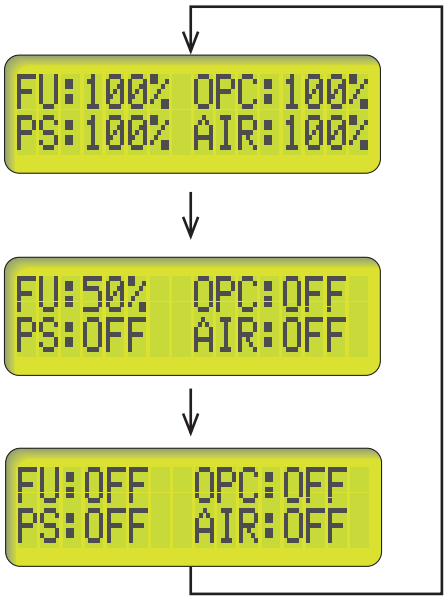


Fig. 5-10

(3) Press **Cancel** button in any process of the display cycle. The machine returns to the initial stage of the maintenance mode.

Note:

If the air intake fan (AIR) error occurs, the following error message appears on the LCD.

If you press the **Cancel** button, the machine returns to the initial stage of the maintenance mode without recovering from this error. To recover from this error, turn the power switch of the machine off and then turn it on again.

Fig. 5-11

■ Location of fans

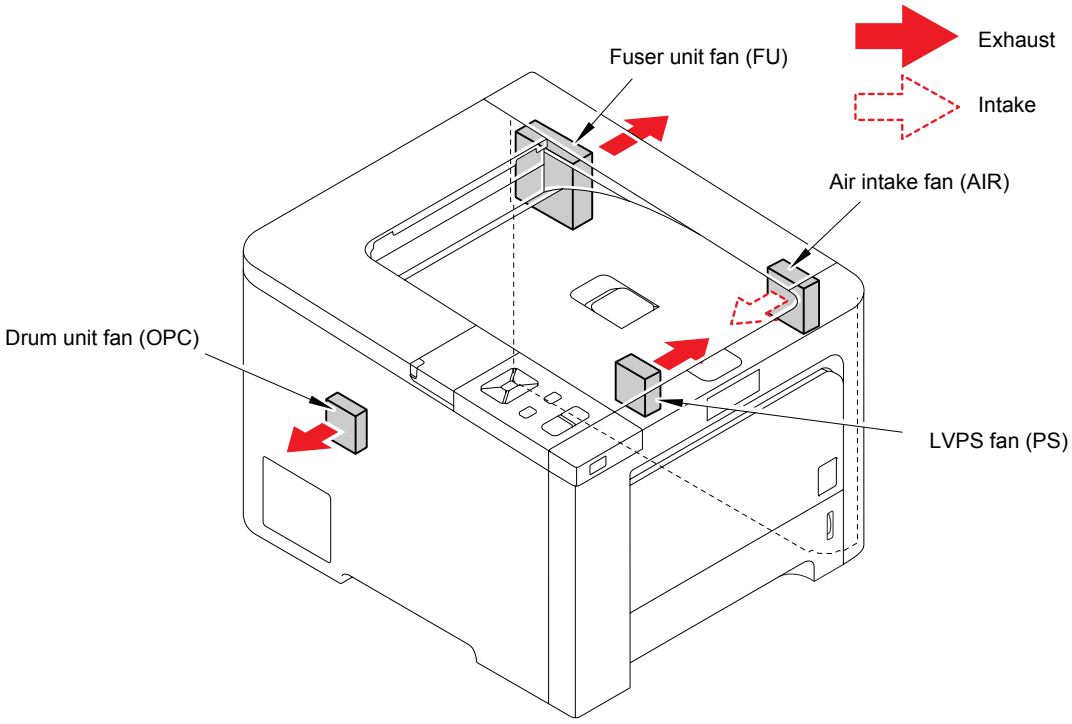


Fig. 5-12

1.4.18 Display of the Machine's Log (Function code 80)

<Function>

The machine can display its log information on the LCD. This procedure allows you to reset the count when the parts are replaced or initialize the information.
The representative terms and terms enable to initialize are given below.

LCD	Reset		Description
	Individually	Collectively	
USB:	X	X	Serial number
DRUM:	X	X	Drum count
CCOVERAGE:	X	X	Average Cyan Coverage (%)
MCOVERAGE:	X	X	Average Magenta Coverage (%)
YCOVERAGE:	X	X	Average Yellow Coverage (%)
KCOVERAGE:	X	X	Average Black Coverage (%)
TTL_PG:	X	X	Total number of printed pages
TTL_CO:	X	X	Total number of color printed pages
TTL_MO:	X	X	Total number of monochrome printed pages
TTL_CI:	X	X	Cyan total number of printed pages
TTL_MI:	X	X	Magenta total number of printed pages
TTL_YI:	X	X	Yellow total number of printed pages
TTL_KI:	X	X	Black total number of printed pages
TR1_PG:	X	X	Number of pages picked up from the T1.
TR2_PG:	X	X	Number of pages picked up from the LT.
MP_PG:	X	X	Number of pages picked up from the MP.
DX_PG:	X	X	Number of pages picked up from the DX.
A4+LTR:	X	X	Number of A4/Letter size sheets picked up.
LG+A4L:	X	X	Number of LEGAL/A4 LONG size sheets picked up.
B5+EXE:	X	X	Number of B5/Executive size sheets picked up.
ENVLOP:	X	X	Number of envelopes picked up.
A5:	X	X	Number of A5 size sheets picked up.
OTHER:	X	X	Number of other-size sheets picked up.
CTN_CH:	X	X	Number of times the Cyan toner cartridge has been replaced.
CTN_PG1:	O	X	Number of printed pages with the Cyan toner cartridge.
CTN_PG2:	X	X	Previous number of printed pages with the Cyan toner cartridge.
MTN_CH:	X	X	Number of times the Magenta toner cartridge has been replaced.
MTN_PG1:	O	X	Number of printed pages with the Magenta toner cartridge.
MTN_PG2:	X	X	Previous number of printed pages with the Magenta toner cartridge.
YTN_CH:	X	X	Number of times the Yellow toner cartridge has been replaced.
YTN_PG1:	O	X	Number of printed pages with the Yellow toner cartridge.
YTN_PG2:	X	X	Previous number of printed pages with the Yellow toner cartridge.
KTN_CH:	X	X	Number of times the Black toner cartridge has been replaced.
KTN_PG1:	O	X	Number of printed pages with the Black toner cartridge.
KTN_PG2:	X	X	Previous number of printed pages with the Black toner cartridge.

LCD	Reset		Description
	Individually	Collectively	
WTNR_CH:	X	X	Number of times the waste toner box has been replaced.
WTNR_PG:	O	X	Number of printed pages with the waste toner box.
DRUM_CH:	X	X	Number of times the drum unit has been replaced.
DRUM_PG:	O	X	Number of printed pages with the drum unit.
BELT_CH:	X	X	Number of times the belt unit has been replaced.
BELT_PG:	O	X	Number of printed pages with the belt unit.
PFMP_CH:	X	X	Number of times the MP paper feeding kit has been replaced.
PFMP_PG:	O	X	Number of printed pages with the MP paper feeding kit.
PFK1_CH:	X	X	Number of times the T1 paper feeding kit has been replaced.
PFK1_PG:	O	X	Number of printed pages with the T1 paper feeding kit.
PFK2_CH:	X	X	Number of times the LT paper feeding kit has been replaced.
PFK2_PG:	O	X	Number of printed pages with the LT paper feeding kit.
FUSR_CH:	X	X	Number of times the fuser unit has been replaced.
FUSR_PG:	O	X	Number of printed pages with the fuser unit.
LASR_CH:	X	X	Number of times the laser unit has been replaced.
LASR_PG:	O	X	Number of printed pages with the laser unit.
CDEV_BIAS:	X	X	Cyan developing bias voltage
MDEV_BIAS:	X	X	Magenta developing bias voltage
YDEV_BIAS:	X	X	Yellow developing bias voltage
KDEV_BIAS:	X	X	Black developing bias voltage
TTL_JAM:	X	O	Total number of jams
TR1_JAM:	X	O	Number of jams that occurred at the T1.
TR2_JAM:	X	O	Number of jams that occurred at the LT.
MP_JAM:	X	O	Number of jams that occurred at the MP.
DX_JAM:	X	O	Number of jams that occurred at the DX.
IN_JAM:	X	O	Number of jams that occurred inside the machine.
RE_JAM:	X	O	Number of jams that occurred at the ejecting.
MACHINEERR_01: *	X	O	Last machine error code/ Number of pages that this error occurred.
MACHINEERR_02: *	X	O	Last machine error code/ Number of pages that this error occurred.
MACHINEERR_03: *	X	O	Last machine error code/ Number of pages that this error occurred.
MACHINEERR_04: *	X	O	Last machine error code/ Number of pages that this error occurred.
MACHINEERR_05: *	X	O	Last machine error code/ Number of pages that this error occurred.
MACHINEERR_06: *	X	O	Last machine error code/ Number of pages that this error occurred.
MACHINEERR_07: *	X	O	Last machine error code/ Number of pages that this error occurred.
MACHINEERR_08: *	X	O	Last machine error code/ Number of pages that this error occurred.
MACHINEERR_09: *	X	O	Last machine error code/ Number of pages that this error occurred.
MACHINEERR_10: *	X	O	Last machine error code/ Number of pages that this error occurred.

<Operating Procedure>

(1) Press the ▲ or ▼ button to display “MAINTENANCE 80” on the LCD in the initial stage of the maintenance mode. Then, press the **OK** button.

(2) Each time the **Go** button is pressed, one of the following log information terms appears on the LCD in the order. If pressing the **Back** button, the previous log information will appear.

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

Note:

If you press the **OK** button when the machine code with “*” in the list displays on the LCD, you can check the number of pages that this error occurred. Press the **OK** button again to return to the machine code display.

<How to Reset the Maintenance Information>

■ How to reset the maintenance information displayed in the LCD individually

Terms with “O” in the individually list are possible to reset with inputting the password “2783”.

(1) Display the maintenance information you wish to reset.

(2) Press the ▲ or ▼ button to set the first password as “2”, and then press the **OK** button.

(3) Again, the maintenance information is displayed. Press the ▲ or ▼ button to set the second password as “7”, the thrid password as “8” and the last one as “3” in the same way.

(4) Upon completion of password input correctly, the maintenance information displayed on the LCD is reset.

■ How to reset the maintenance information related errors collectively

Terms with “O” in the collectively list are possible to reset all together with inputting the password ”0529”.

(1) Display terms of the error history or the number of jams.

(2) Press the ▲ or ▼ button to set the first password as “0”, and then press the **OK** button.

(3) Again, the maintenance information is displayed. Press the ▲ or ▼ button to set the second password as “5”, the thrid password as “2” and the last one as “9” in the same way.

(4) Upon completion of password input correctly, the maintenance information related errors is reset collectively.

1.4.19 Error Code Indication (Function code 82)

<Function>

This function displays an error code of the machine on the LCD.

<Operating Procedure>

(1) Press the ▲ or ▼ button to display “MAINTENANCE 82” on the LCD in the initial stage of the maintenance mode. Then, press the **OK** button. The machine displays “MACHINE ERROR X X” on the LCD.
(Refer to “2. Error Code” in Chapter 1.)

(2) Press the **Cancel** button to return the machine to the initial stage of the maintenance mode.

1.4.20 Developing Bias Voltage Correction (Function code 83)

<Function>

The developing bias voltage correction is performed.

<Operating Procedure>

(1) Press the ▲ or ▼ button to display “MAINTENANCE 83” on the LCD in the initial stage of the maintenance mode. Then, press the **OK** button.

The machine displays “CALIBRATE/ PLEASE WAIT” on the LCD and starts the developing bias voltage correction.

(2) Upon completion of the developing bias voltage correction, the machine returns to the initial stage of the maintenance mode.

Note:

- Ignore all of the panel operation during the developing bias voltage correction.
- If an error occurs during the developing bias voltage correction, the following error message appears. Press the **Go** button to clear the error, and then the machine returns to the initial stage of the maintenance mode.

Fig. 5-13

- If an error - except for the developing bias voltage correction - such as “Cover is Open” occurs, follow the messages on the LCD to clear the error. If you clear the error, the machine returns to the initial stage of the maintenance mode. Again, start from the beginning to perform the developing bias voltage correction.

1.4.21 Exit from the Maintenance Mode (Function code 99)

<Function>

Exit from the Maintenance Mode.
If the error related to the fuser unit occurs, clear the error.
(Refer to “2.4 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 stage of the maintenance mode. Then, press the **OK** button.

(2) The machine exits from the maintenance mode and return to the ready state.

2. OTHER SERVICE FUNCTIONS

2.1 Hidden Function Menus Enabled by Pressing Button(s) When Turning the Machine On

The following settings and functions will be available by holding down the specified button(s) while turning the machine on.

■ Press one button when turning the machine on

Button	Function
Go	Not Used
Reprint	Not Used
Back	Not Used
▼ (-)	Hex Dump Mode
▲ (+)	Not Used
OK	Maintenance Mode for PIT3 (Don't use)
Cancel	Not Used
Direct Print	Not Used

Hex Dump Mode

You can print data from the PC as hexadecimal code. It is useful to analyze print data itself whether it is okay or not.

■ Press two buttons when turning the machine on

Panel Operation		Function
OK	Back	Flash Rom Updates Mode (UPD file/ Model classification is not available) (Don't use)
OK	▲ (+)	Not Used
Go	Back	Engine Non-startup Mode
▼ (-)	▲ (+)	Line Test Mode (Don't use)
▼ (-)	OK	HVPS Check Mode (Don't use)
Go	OK	Not Used
Go	Cancel	Flash Rom Updates mode (UPD file/ Model classification is available.)

Engine Non-startup Mode

This mode is to start-up the machine without using the engine. When the error related to the engine occurs, you can ignore the error and get the error history or the other counter information though it is impossible to print. When the machine 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.

■ Pressing the two buttons while the machine is in the ready state

Panel Operation		Function
Go	▲ (+)	Parts life reset mode for the periodical replacement parts (Refer to "2.3 Parts Life Reset Function" in Chapter 2.)
Go	▼ (-)	USB transfer speed change mode in the PictBridge mode (Refer to "1.4.11 USB Transfer Speed Change in the PictBridge Mode (Function code 45)" in this chapter.)
Cancel	Back	Drum Unit Cleaning Mode

Drum Unit Cleaning Mode

This mode is to remove the dust attached on the exposure drum. When white spots appear on the printout, perform this operation to remove the dust by using the drum cleaning sheet.

<Operating Procedure>

(1) Load the drum cleaning sheet into the MP tray.

(2) Make sure that "Ready" appears on the LCD and press the **Cancel** and **Back** buttons at the same time.
"DRUM CLEANING" will appear on the LCD.

(3) Press the **Go** button. The machine starts cleaning the drum unit. "DRUM CLEANING/ PLEASE WAIT" appears on the LCD during cleaning.

(4) When finishing cleaning normally, "DRUM CLEANING/ COMPLETE" appears on the LCD.

(5) Press the **Cancel** button so that the machine returns to the ready state.

■ Pressing the two buttons while the front cover is opened

Panel Operation		Function
Reprint	Cancel	Develop roller counter reset mode (Refer to "2.2 Develop Roller Counter Reset Function" in this chapter.)
Cancel	▼ (-)	Fuser Motor Speed Adjustment Mode

Fuser Motor Speed Adjustment Mode

The problem such as dirt on the paper bottom or the unexpected print image due to a paper crease may be occurred when printing the thin paper. This mode allows you to change the speed of the fuser motor (Paper feed/belt cleaner motor ASSY) according to the respective problems.

<Operating Procedure>

(1) Press the **Cancel** and ▼ buttons at the same time while the front cover is opened.

(2) "FU MOTOR SPEED" will appear on the LCD. Press the ▲ or ▼ buttons to change the setting value and press the **OK** button.

- Dirt on the paper bottom
  Increase the fuser motor speed. (Setting value: 1, 2, 3)
- Unexpected print image due to a paper crease
  Reduce the fuser motor speed. (Setting value: -1, -2, -3)

Note:

Make sure to return the setting value to "0" after printing the thin paper.
Failure to do so may cause color misregistration or dirt on the paper.

2.2 Develop Roller Counter Reset Function

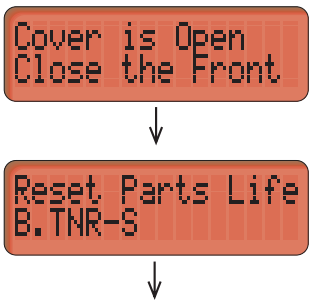
Since print density is likely to become darker as the toner gets older, the developing bias is lowered by degrees (bias voltage is reduced) according to the number of develop roller rotations so that an almost fixed density can be maintained from the beginning to the end. You can check the developing bias voltage by printing the maintenance information (Function code 77 in the maintenance mode).

In the case that the toner cartridge is replaced with a new one, the develop roller counter and developing bias voltage are reset at the same time. This function allows you to reset these manually.

■ Front Cover is Open

Panel Operation	Function
Pressing Reprint & Cancel at the same time	Menus of the develop roller counter reset

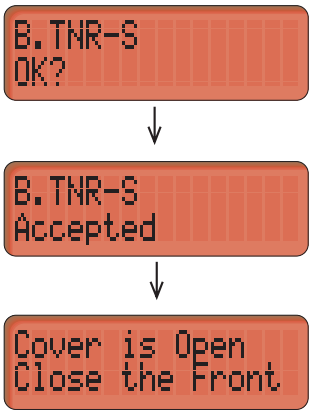
<Operating Procedure>



(1) Press the **Reprint** and **Cancel** buttons at the same time when the front cover is open.

(2) "Reset Parts Life" appears on the LCD. Press the ▲ or ▼ buttons to select the appropriate toner cartrige, and then press the **OK** button.

LCD	Description
B.TNR-S	Reset the develop roller counter of standard black toner cartridge.
B.TNR-H	Reset the develop roller counter of high-capacity black toner cartridge.
C.TNR-S	Reset the develop roller counter of standard cyan toner cartridge.
C.TNR-H	Reset the develop roller counter of high-capacity cyan toner cartridge.
M.TNR-S	Reset the develop roller counter of standard magenta toner cartridge.
M.TNR-H	Reset the develop roller counter of high-capacity magenta toner cartridge.
Y.TNR-S	Reset the develop roller counter of standard yellow toner cartridge.
Y.TNR-H	Reset the develop roller counter of high-capacity yellow toner cartridge.



(3) Once "OK?" appears on the LCD; press **OK** button.

(4) The develop counter is reset.

(5) The machine displays "Cover is Open/ Close the Front Cover." Close the front cover.

Note:
If there is no operation for 30 seconds or more, the machine automatically returns to step (1).

2.3 Printout of Printer Settings

The machine prints “Printer Settings”. The “Printer Settings” is configured with three pages for HL-4040CN/ 4040CDN/ 4050CDN and four pages for HL-4070CDW (three pages if the wireless LAN is set to OFF). All pages have following terms in common; Title, Model name, Serial number. The setting indication is the same as the LCD setting information, supporting the following 18 languages. (ENG/ FRE/ GER/ DUT/ ITA/ SPA/ NOR/ SWE/ DAN/ POR/ FIN/ CZE/ POL/ HUN/ RUS/ BUL/ ROM/ SLV)

Memo:

- The descriptions printed in Printer Settings vary depending on the countries.
- There are some terms printed on the maintenance information only (Function code 77 in the maintenance mode).

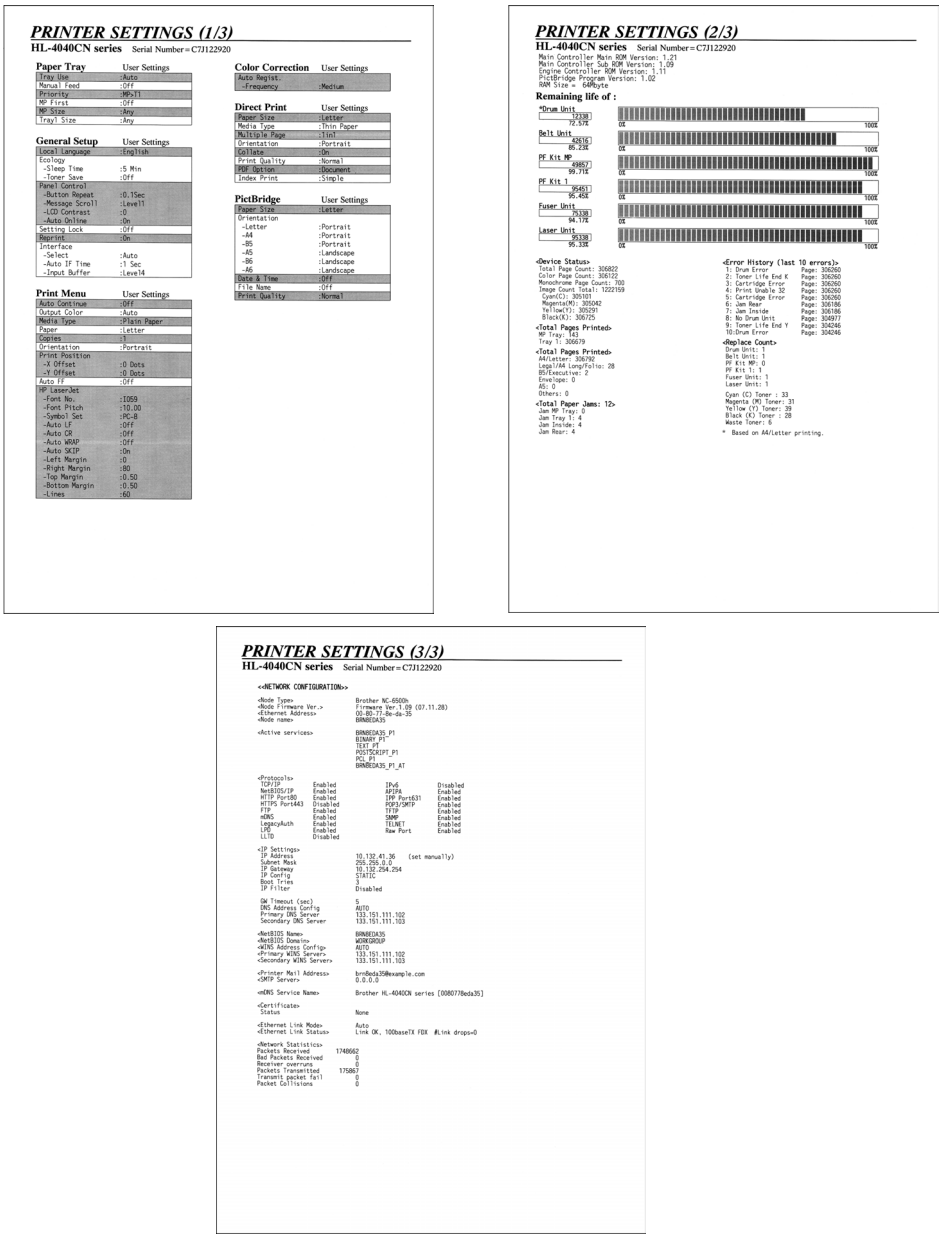


Fig. 5-14

<Operating Procedure>

(1) Press the **OK** button three times when the machine is in the ready state.

(2) The machine displays “Print Settings/ Printing” on the LCD, and starts to print. Upon completion of printing, the machine returns to the ready state.

Page 1

This page includes various setting information of the machine. Each term is indicated when it fulfills the condition.

Page 2

This page includes the printer information and the maintenance information in the following order.

(1) Printer information

The following terms are indicated in the order.

- Main Controller Main ROM Version (Main controller firmware version)
- Main Controller Sub ROM Version (Sub firmware version)[PCL/PS]
- Engine Controller ROM Version (Engine controller firmware version)
- PictBridge Program Version
- RAM SIZE (Mbyte)

(2) Maintenance information

1) Consumable information

The printable pages remained for the consumable part is indicated. Also, the percentage of life remained over the total printable pages is indicated in numerical value and bar graph.

A sample indication (PF Kit MP) is as follows:

From the top left, the consumable part name, the number of printable pages remained, and the percentage of life remained are indicated. The right column is a band graph separated into 50 scale marks.

Fig. 5-15

The consumable parts indicated are as follows:

- Drum Unit
- Belt Unit
- PF Kit MP
- PF Kit 1
- PF Kit 2 * indicated only when Tray 2 is installed.
- Fuser Unit
- Laser Unit

■ Life of Drum Unit

<How to read the drum unit life>

- It initially indicates 100% and gradually decreases.
- It indicates 0% when the “Drum End Soon” appears on the LCD.
- It stays at 0% even if further printing is done.

<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 Chapter 2.) 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 27. The number of drum rotations per one page for the second or later page printed (continuous printing) is 4.6. Using these figures, the page counter is calculated as follows:

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))) / 27

(* The number of drum rotations per one page continuous printing.)

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

Continuous printing	Page counter based on the number of drum rotations (Pages)
1 page/job	(27 + (4.6 x (1 - 1))) / 27 = 1
2 pages/job	(27 + (4.6 x (2 - 1))) / 27 = 1.17
18 pages/job	(27 + (4.6 x (18 - 1))) / 27 = 3.89

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

The number of drum rotations required for the developing bias voltage correction = 40 rotations.

Example: Performs the developing bias voltage correction and starts to print after leaving the machine without printing for a long time.

Continuous printing	Page counter based on the number of drum rotations (Pages)
1 page/job	(40 + 27 + (4.6 x (1 - 1))) / 27 = 2.48
2 pages/job	(40 + 27 + (4.6 x (2 - 1))) / 27 = 2.65
18 pages/job	(40 + 27 + (4.6 x (18 - 1))) / 27 = 5.37

The number of drum rotations required for the color registration = 104 rotations

Example: Performs the color registration adjustment and starts to print after leaving the machine without printing for a long time.

Continuous printing	Page counter based on the number of drum rotations (Pages)
1 page/job	(104 + 27 + (4.6 x (1 - 1))) / 27 = 4.85
2 pages/job	(104 + 27 + (4.6 x (2 - 1))) / 27 = 5.02
18 pages/job	(104 + 27 + (4.6 x (18 - 1))) / 27 = 7.75

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

■ **Life of Belt Unit**

The belt unit life is decided according to the page counter based on the actual “number of belt rotations”.

<How to calculate the page counter>

The page counter based on the number of belt rotations is calculated as follows:

Page counter based on the number of belt rotations = (Number of belt rotations for the first page printed + (Number of belt rotations per one page for the second or later page printed x (Number of pages in continuous printing –1))) / 1.25

The number of belt rotations for the first page printed is 3.6.

The number of belt rotations per one page for the second or later page printed is 0.63.

The number of belt rotations per one page in printing five pages continuously is 1.25.

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

Continuous printing	Page counter based on the number of belt rotations (Pages)
1 page/job	(3.6 + (0.63 x (1 - 1))) / 1.25 = 2.88
2 pages/job	(3.6 + (0.63 x (2 - 1))) / 1.25 = 3.38
18 pages/job	(3.6 + (0.63 x (18 - 1))) / 1.25 = 11.45

If you leave the machine without printing for a long time, the number of belt rotations is increasing because the developing bias voltage correction and the color registration are performed. If you print one page per one job every time after leaving the machine without printing for a long time, the belt unit life is shorter than usual.

The number of belt rotations required for the developing bias voltage correction = 5.3 rotations.

Example: Performs the developing bias voltage correction and starts to print after leaving the machine without printing for a long time.

Continuous printing	Page counter based on the number of belt rotations (Pages)
1 page/job	(5.3 + 3.6 + (0.63 x (1 - 1))) / 1.25 = 7.12
2 pages/job	(5.3 + 3.6 + (0.63 x (2 - 1))) / 1.25 = 7.62
18 pages/job	(5.3 + 3.6 + (0.63 x (18 - 1))) / 1.25 = 15.69

The number of belt rotations required for the color registration = 14 rotations

Example: Performs the color registration adjustment and starts to print after leaving the machine without printing for a long time.

Continuous printing	Page counter based on the number of belt rotations (Pages)
1 page/job	(14 + 3.6 + (0.63 x (1 - 1))) / 1.25 = 14.08
2 pages/job	(14 + 3.6 + (0.63 x (2 - 1))) / 1.25 = 14.58
18 pages/job	(14 + 3.6 + (0.63 x (18 - 1))) / 1.25 = 22.65

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 term are included. When it reaches the maximum count, each term 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. 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 (C/M/Y/K). The maximum count is 1 million pages.
Total Pages Printed	The number of times that each of the Tray1, Tray2, MP tray and Duplex tray is used. (For the Duplex tray, the number of times is printed only for the models supporting the Duplex tray, and it is not printed for HL-4040CN.) The maximum count for each item is 1 million times. The information above is not cleared when replacing the PF kit.
Total Pages Printed	The number of A4/Letter, A4Long/Legal/Folio, B5/Excutine, Envelope, A5 and other paper types used. The maximum count for each item is 1 million times.
Total Paper Jams	The number of paper jam occurrence in each of the Tray1, Tray2, MP tray, Duplex tray, Inside and Rear. (For the Duplex tray, the number of paper jam occurrence is printed only for the models supporting the Duplex tray, and it is not printed for HL-4040CN.) The paper jam occurs when the machine is turned ON is not counted. The maximum count for each item is 65535 times.
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 Open, Manual Feed, No Paper XX and No Tray XX are not included.
Replace Count	The number of replacement of each of Drum Unit, Belt Unit, PF Kit MP, PF Kit 1, PF Kit 2, Fuser Unit, Laser Unit, Toner (C/M/Y/K), Waste Toner Box. The maximum count for each item is 255 times. (PF Kit 2 is not available for HL-4040CN/ 4040CDN.)

Page 3, 4

These pages include various network settings information of the machine.

HL-4040CN/ 4040CDN/ 4050CDN	Page 3: Wired Network Information
HL-4070CDW	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: Wired Network Information Page 4: Not Available
	LAN: Wired Enable setting = OFF, LAN: WLAN Enable setting = OFF Page 3&4: Not Available

2.4 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.

Note:

When clearing an error, be sure that the fuser unit is cooled down sufficiently.

2.5 How to Clear and Delete the Password for "Setting Lock"

<Remedy if forgetting the password>

If a user forgets the password which has been registered, it is possible to clear the password by entering the hidden password.

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

(2) Press the ▲ or ▼ button to display "MAINTENANCE 80" on the LCD. Then, press the **OK** button.

(3) Press the **Go** button to display "TTL_PG:" (Total number of printed pages) on the LCD and check the last four digits of the value.

(4) Press the **Cancel** button so that the machine returns to the ready status.

(5) Select "General Setup" and "Setting Lock" on the LCD by using the ▲ or ▼ button and press the **OK** button.

(6) The machine displays "Setting Lock/ Password:XXXX" on the LCD. Press the ▲ or ▼ button to enter the value of the total printed pages (four digits), which has been checked in Step (3).
If the total printed pages do not reach four digits, the password is the value which "0" is entered into the higher digit(s). (Ex: If the total pages are 12, the password is "0012".)

(7) Enter the first digit and press the **OK** button so that the cursor is moved to the second digit. Enter the four digits in the same way. If entering the incorrect value, return the cursor with the **Back** button and enter the correct one again.

(8) Press the **OK** button after entering the four digits. The machine displays "Setting Lock/Off" on the LCD. Press the **OK** or **Go** button so that it displays "Setting Lock/Accepted" and clears the registered password.

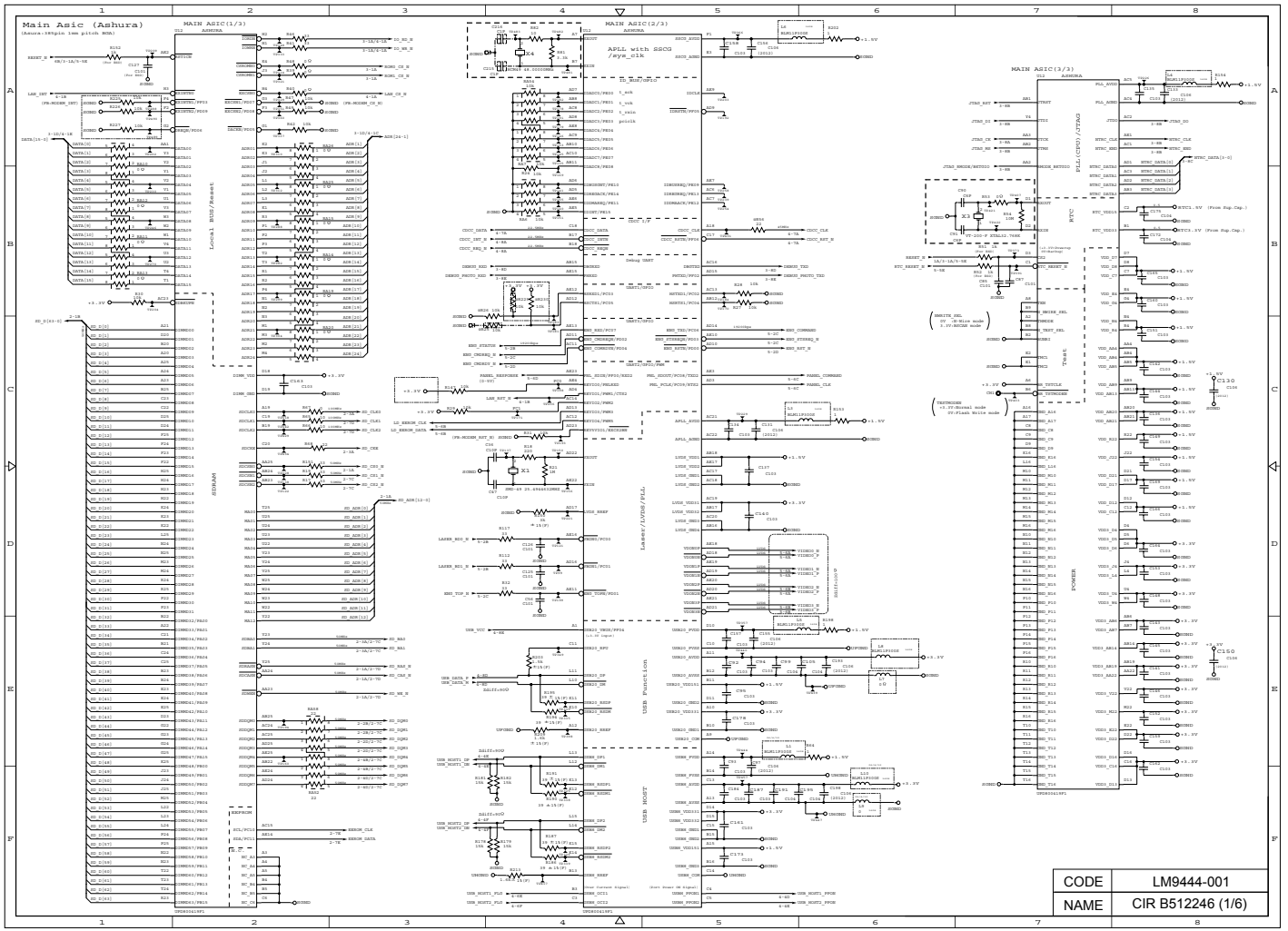
<How to delete the password>

Users are not allowed to delete the password which has been registered by the panel operation. It is required to implement "Maintenance mode 01" in order to delete the registered password.

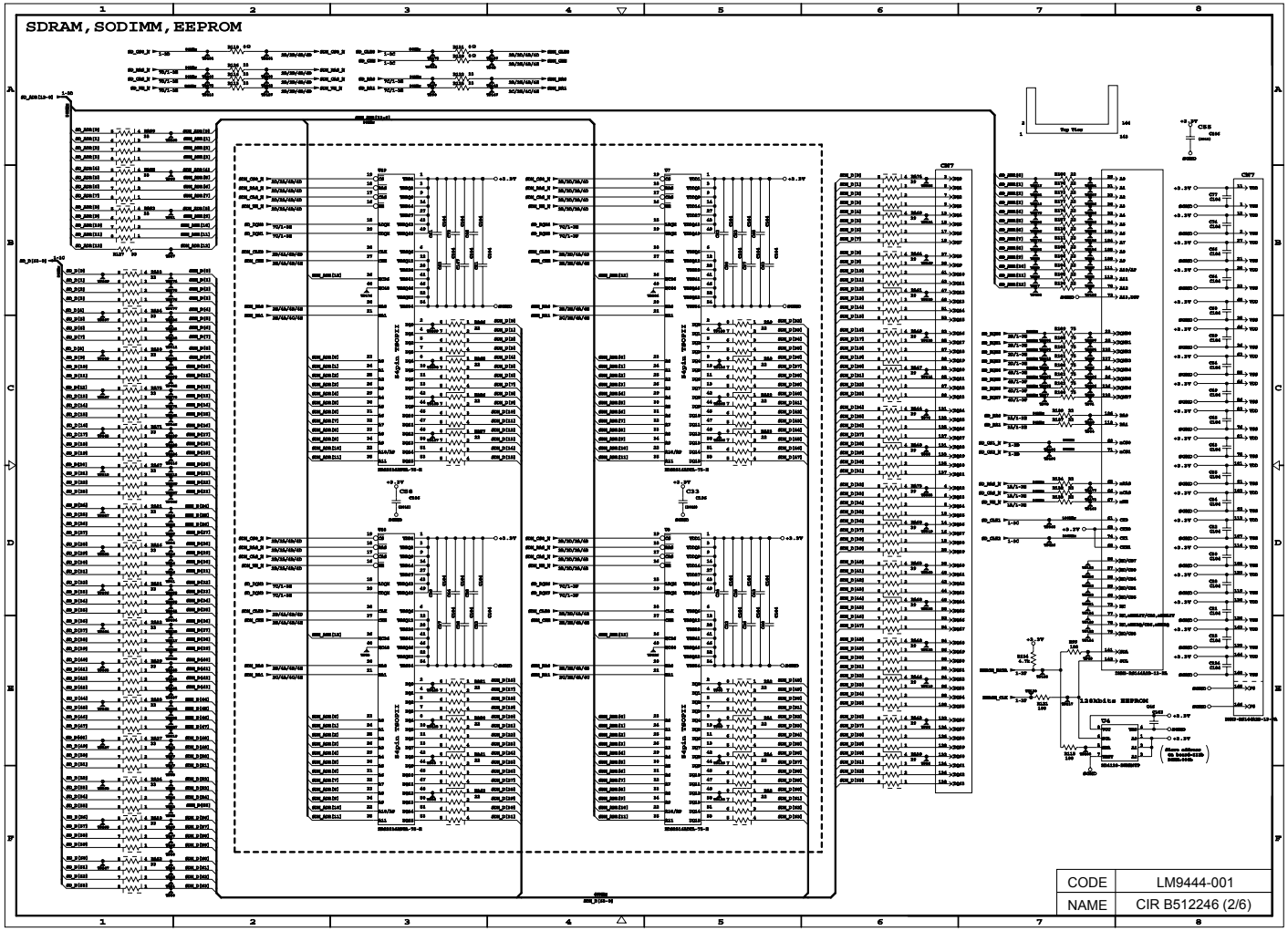
Since some items are initialized by implementing "Maintenance mode 01", however, refer to "1.4.1 EEPROM Parameter Initialization" in this chapter.

CHAPTER 6 CIRCUIT DIAGRAMS, WIRING DIAGRAM

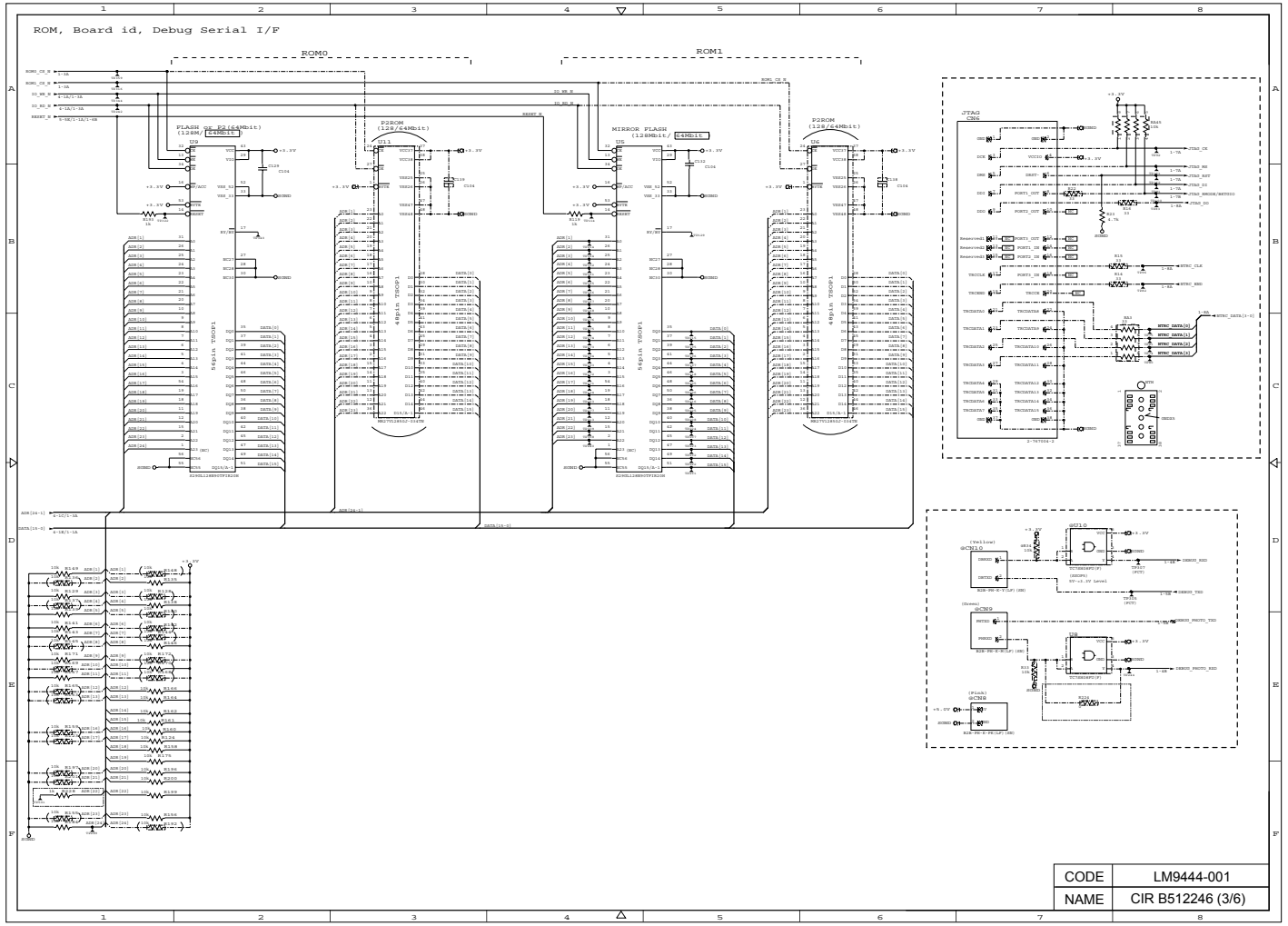
■ Main PCB Circuit Diagram (1/6)



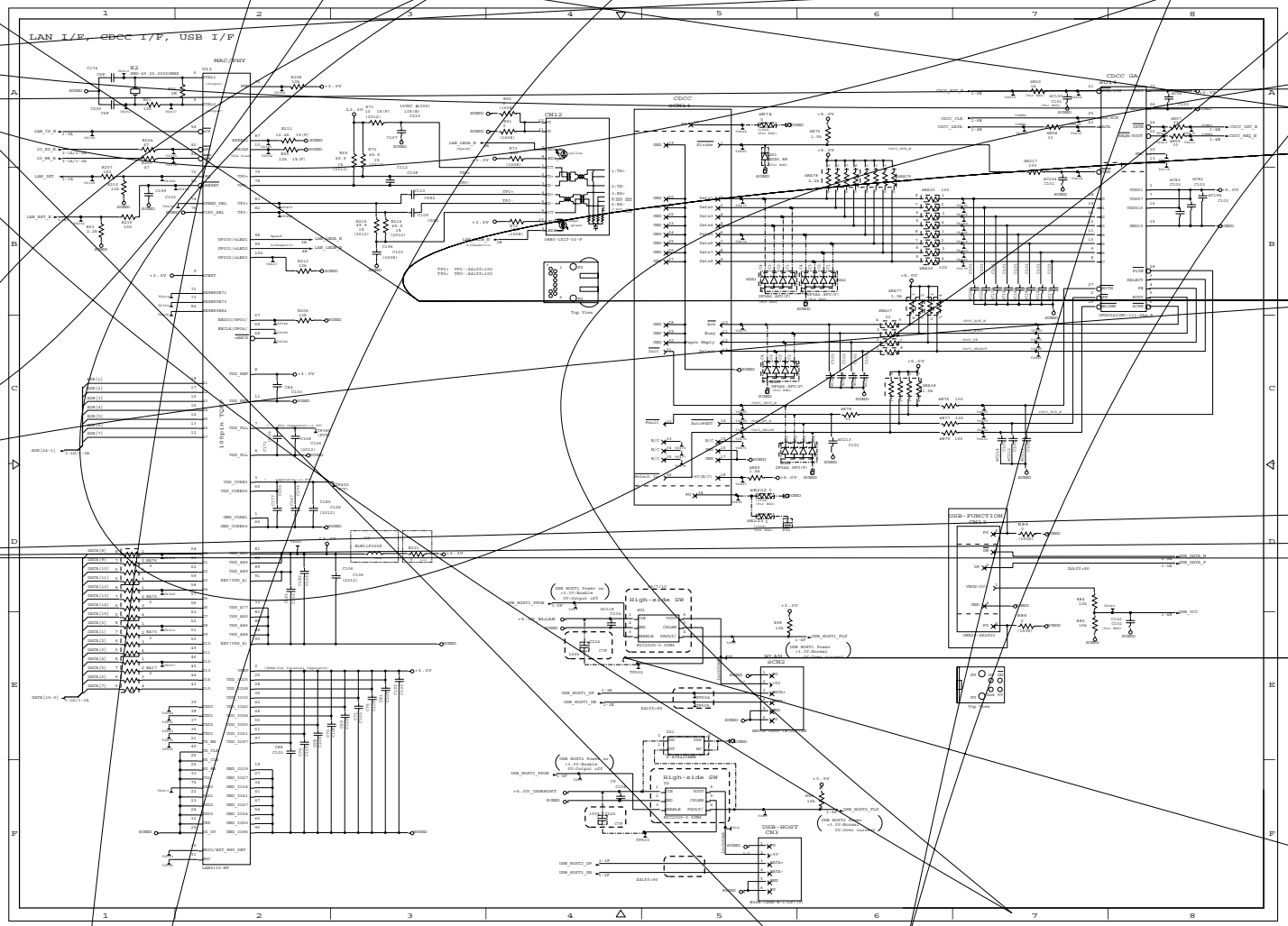
■ Main PCB Circuit Diagram (2/6)



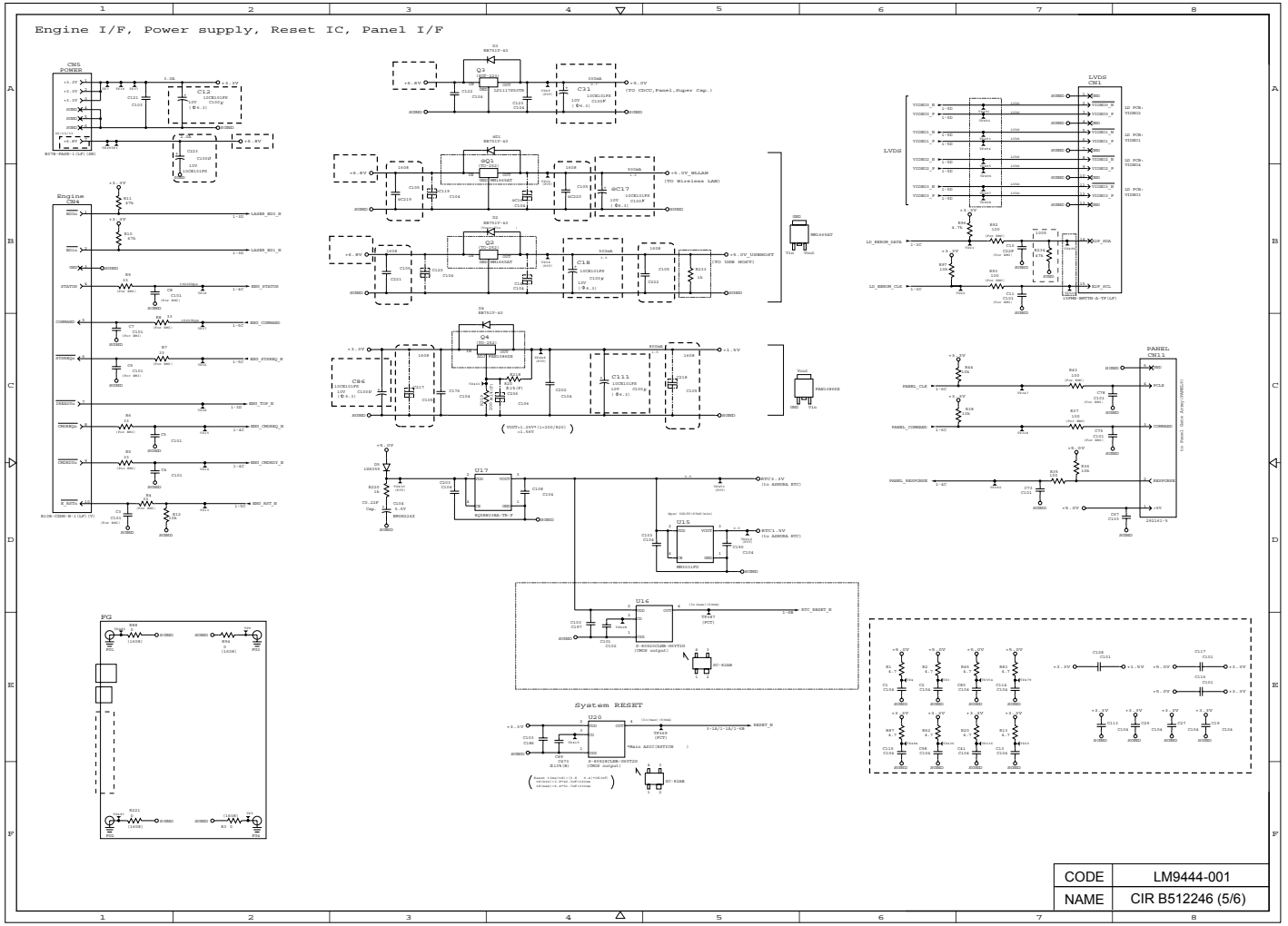
■ Main PCB Circuit Diagram (3/6)



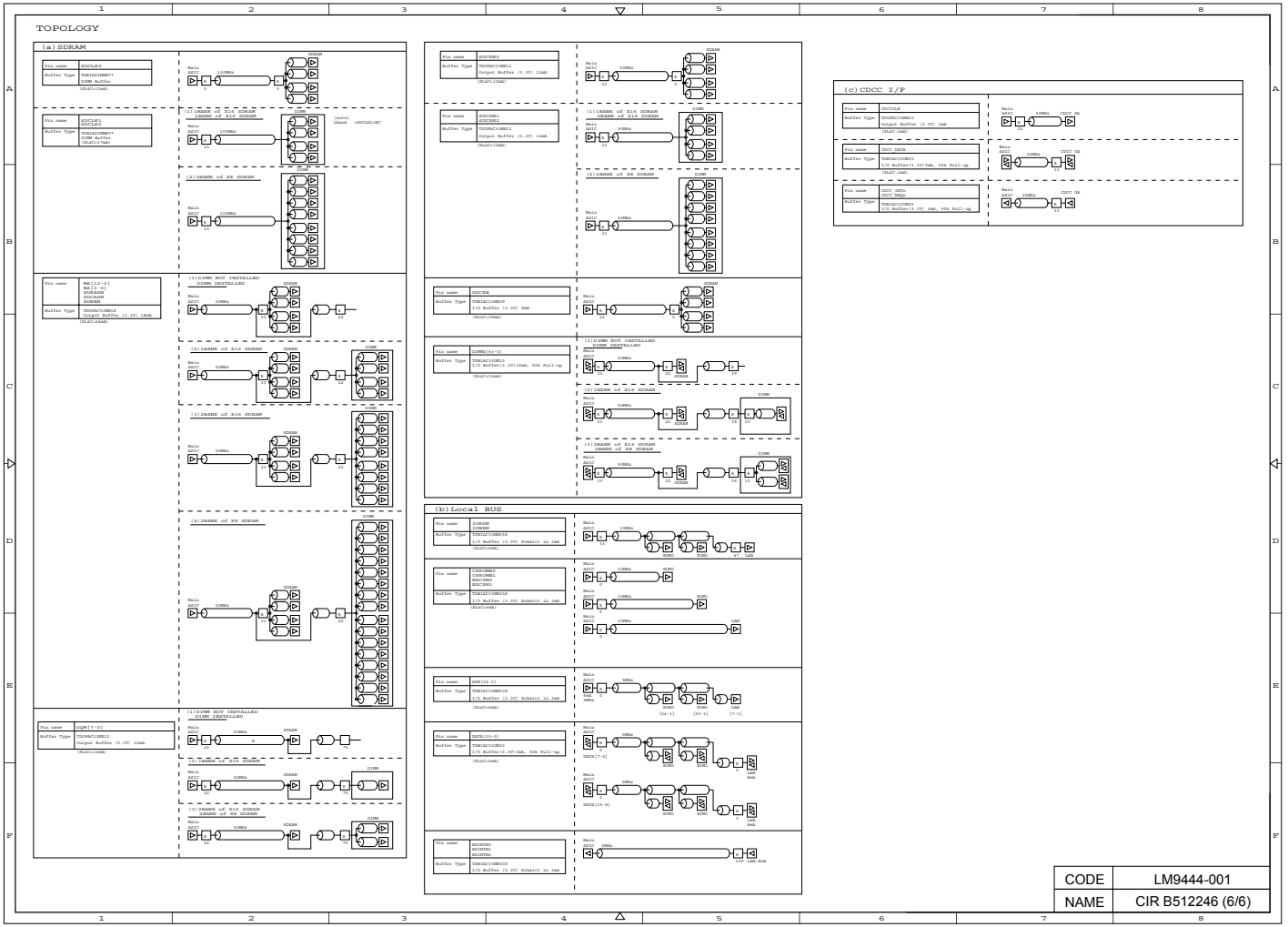
■ Main PCB Circuit Diagram (4/6)



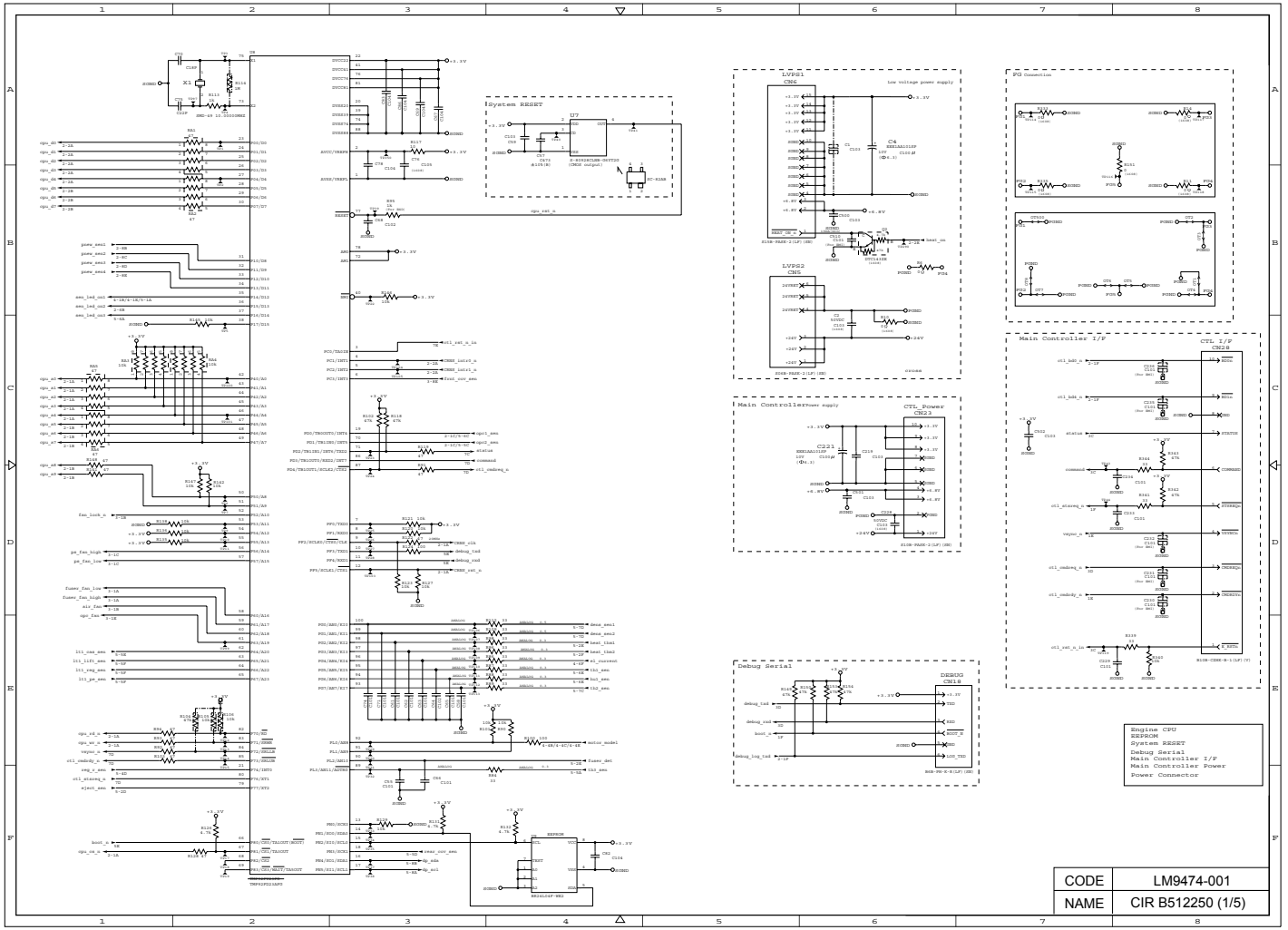
■ Main PCB Circuit Diagram (5/6)



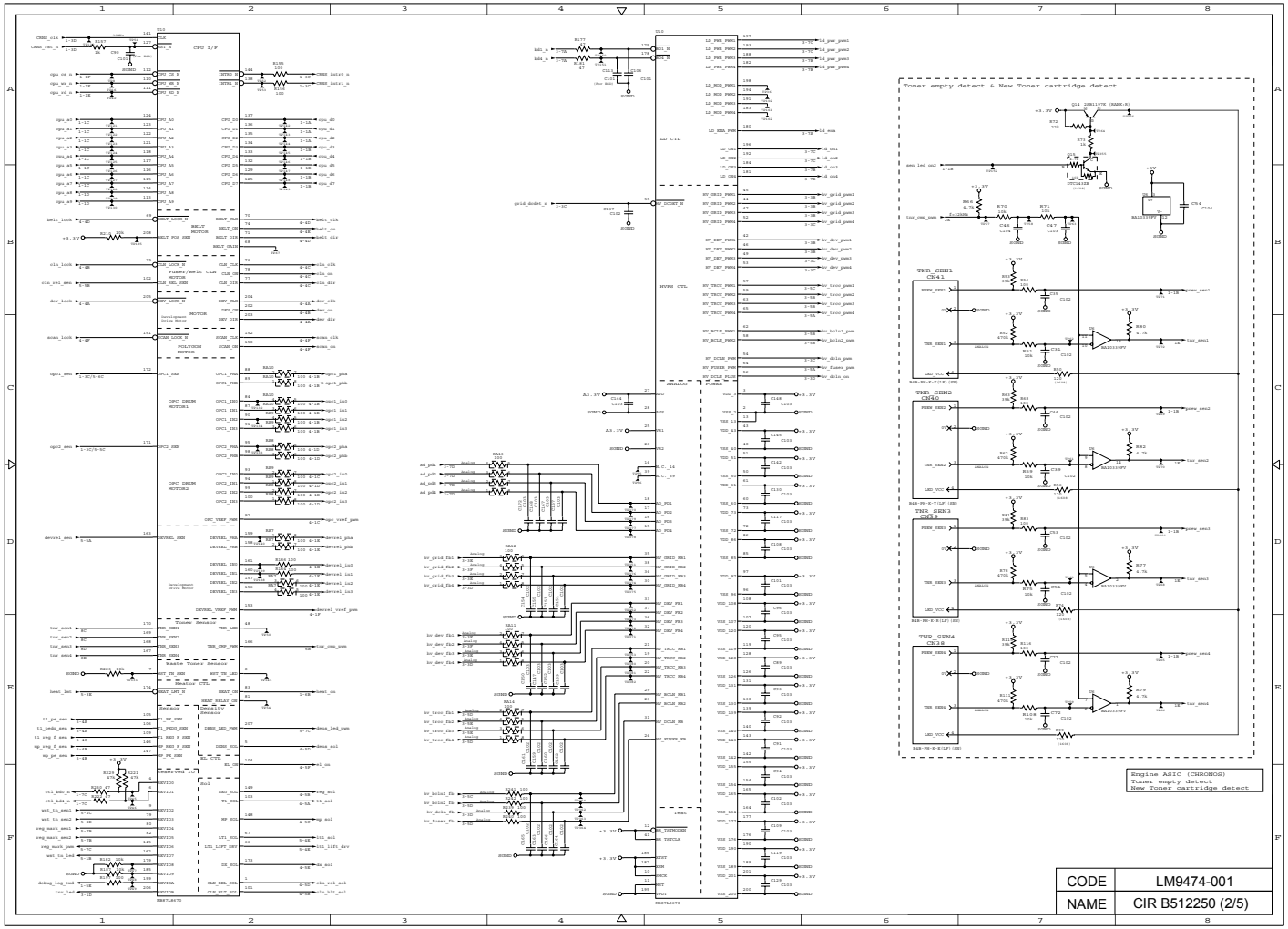
■ Main PCB Circuit Diagram (6/6)



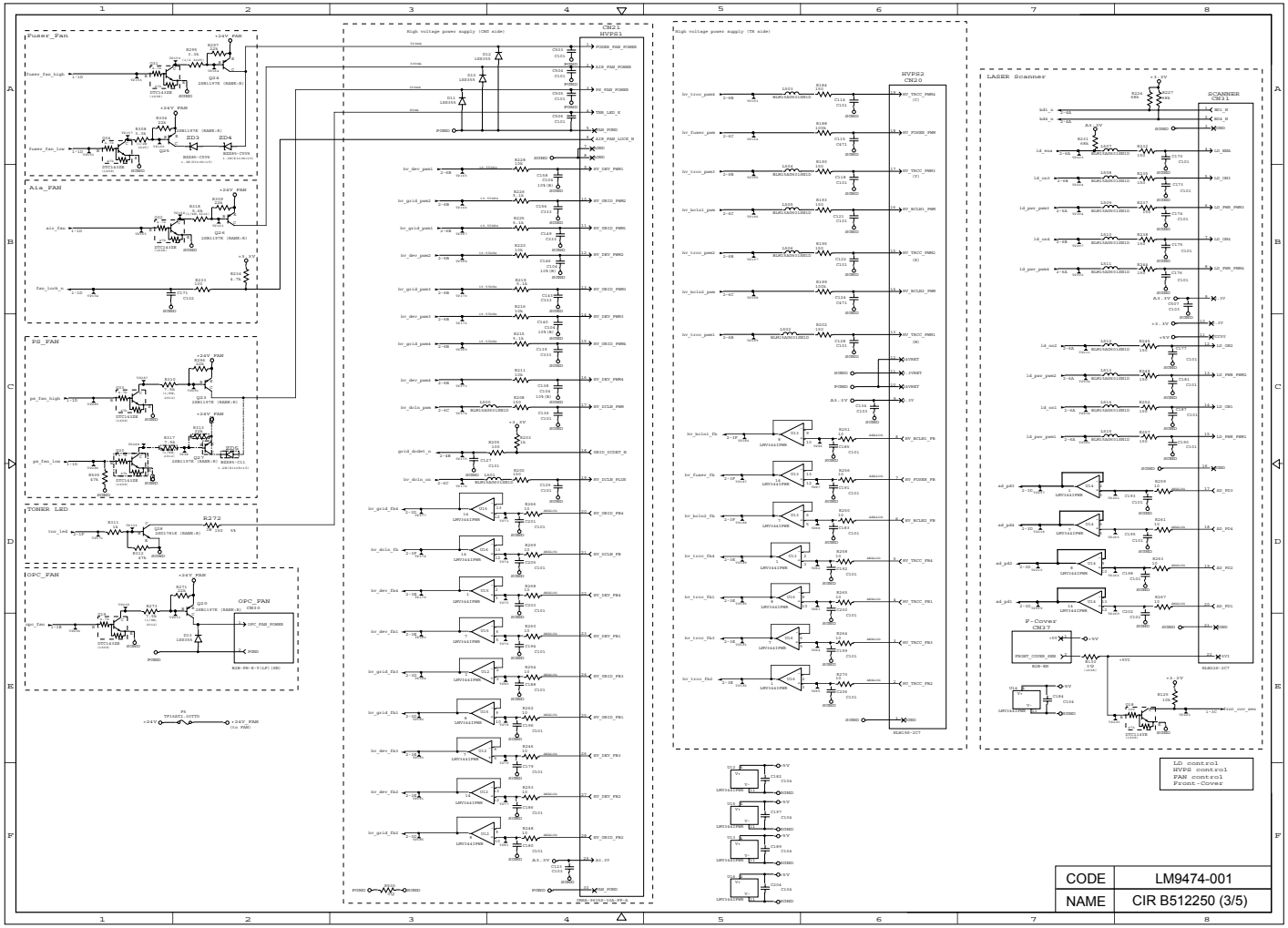
■ Engine PCB Circuit Diagram (1/5)



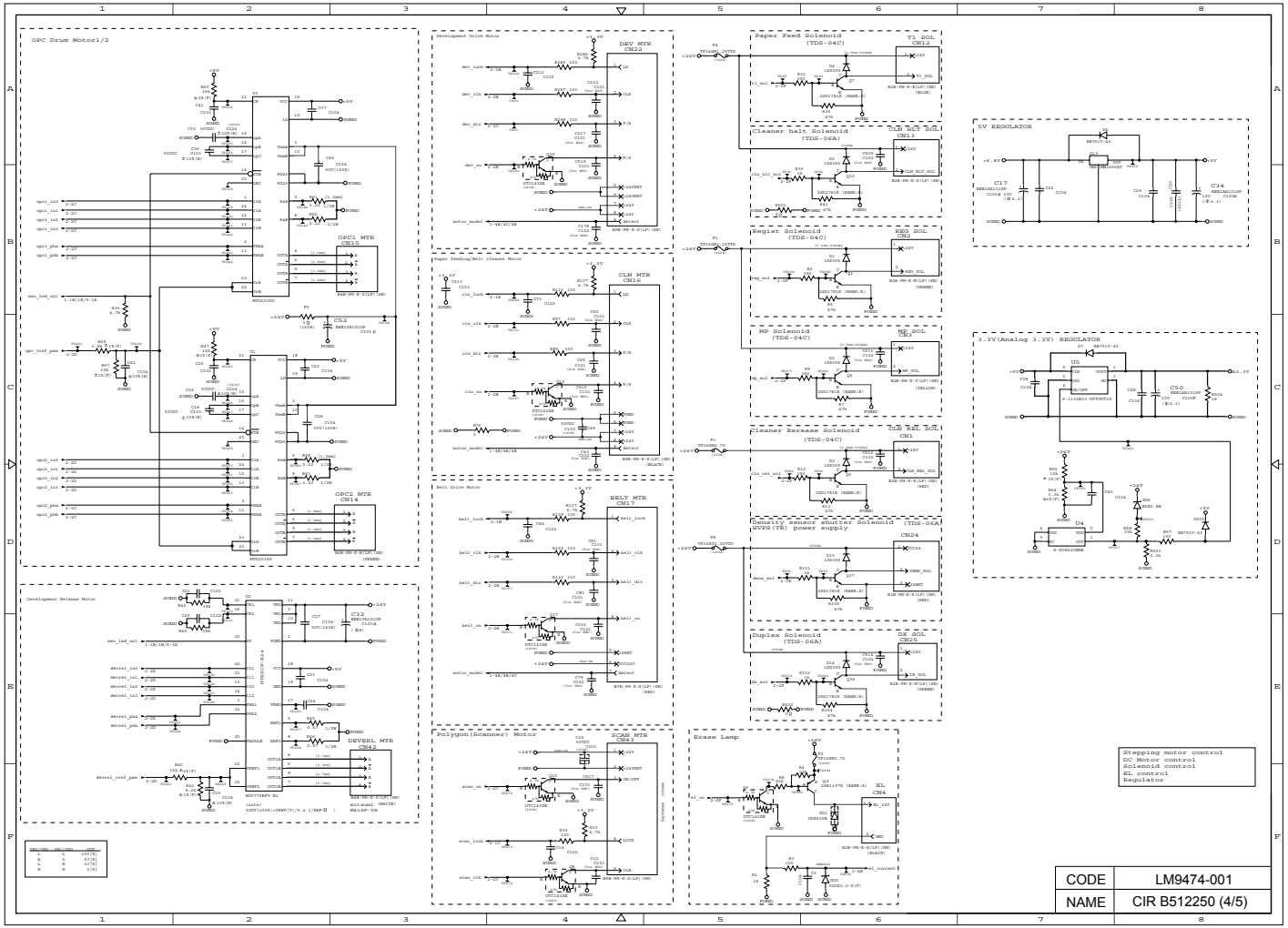
■ Engine PCB Circuit Diagram (2/5)



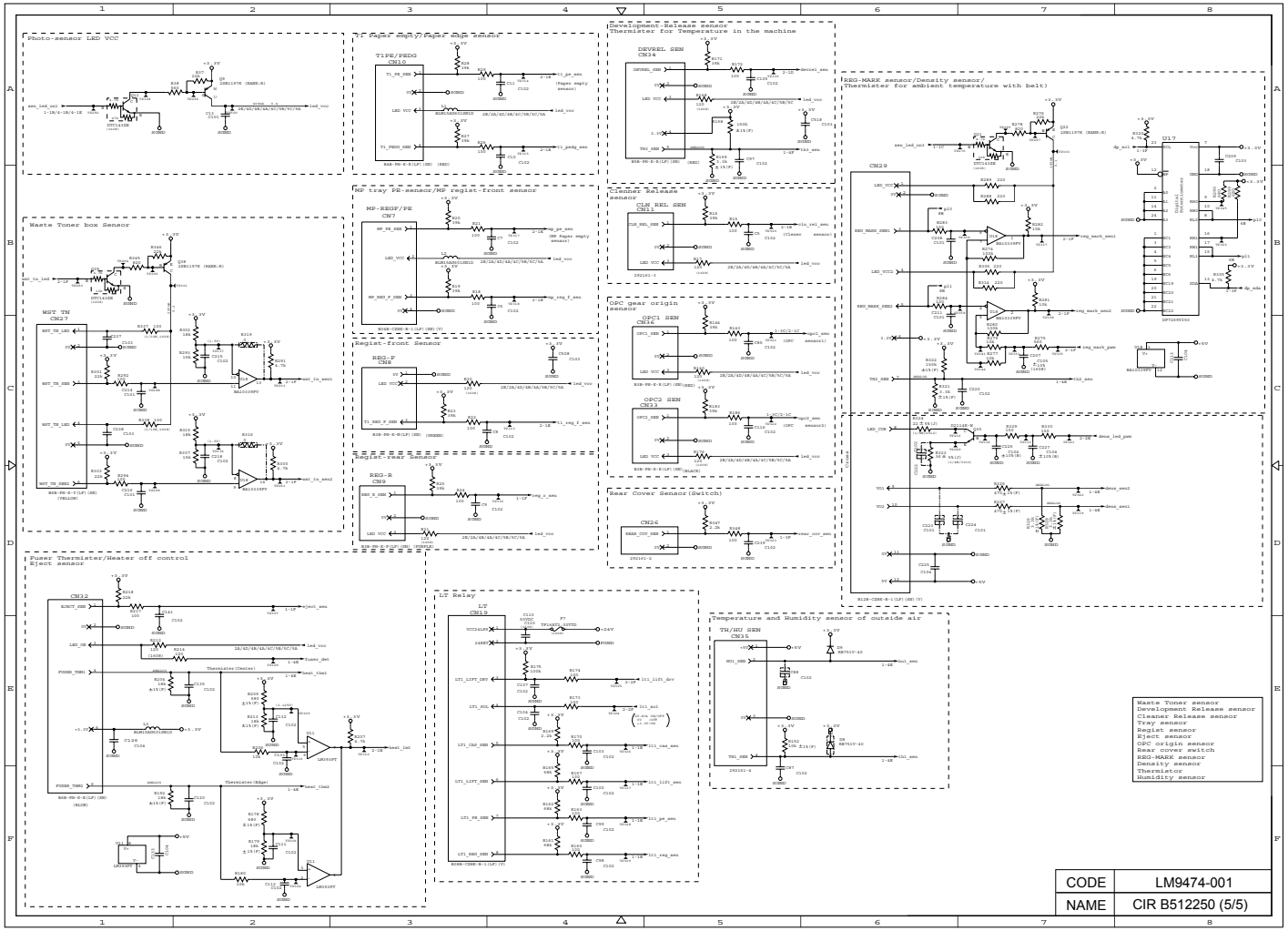
■ Engine PCB Circuit Diagram (3/5)



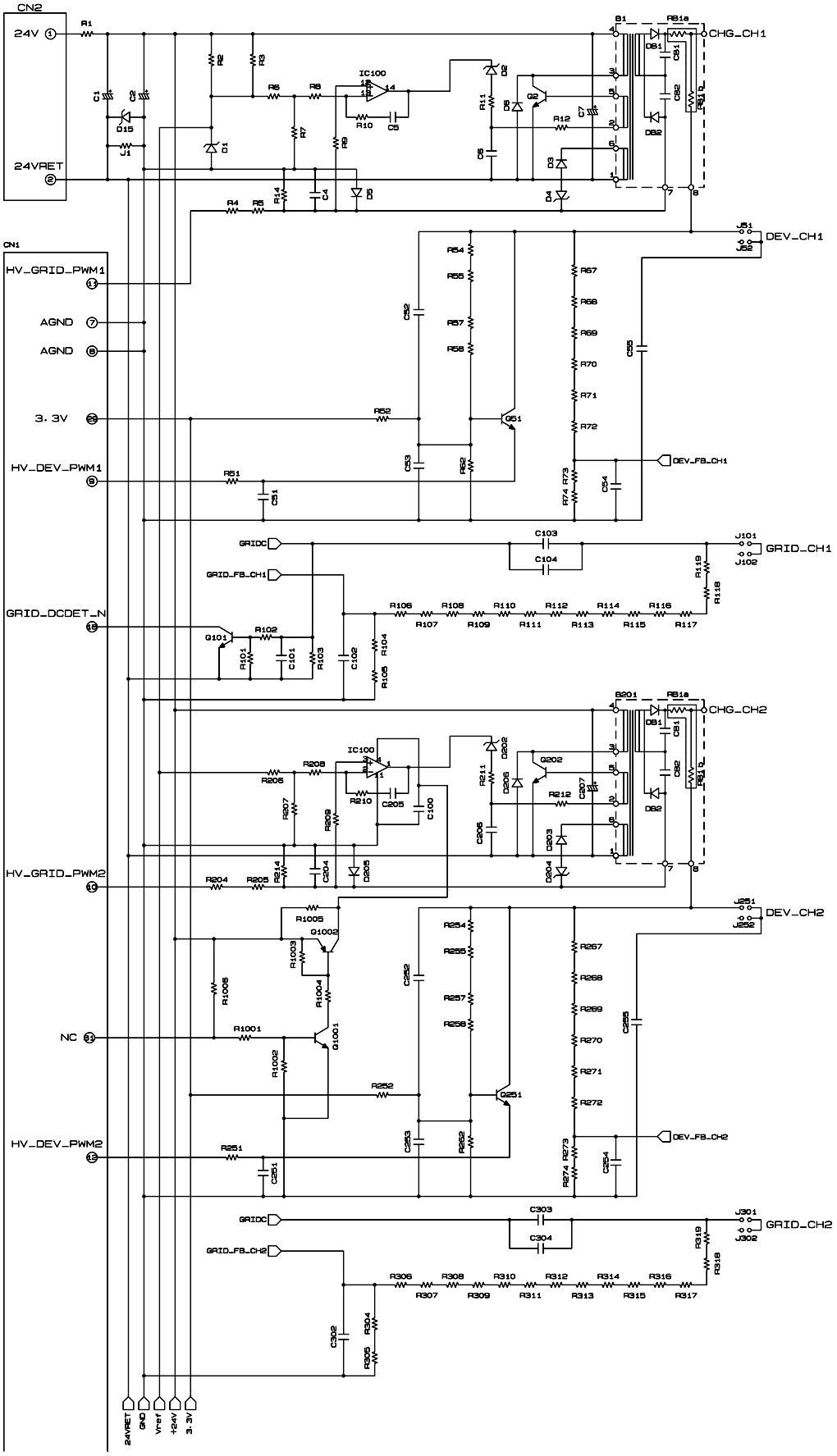
■ Engine PCB Circuit Diagram (4/5)



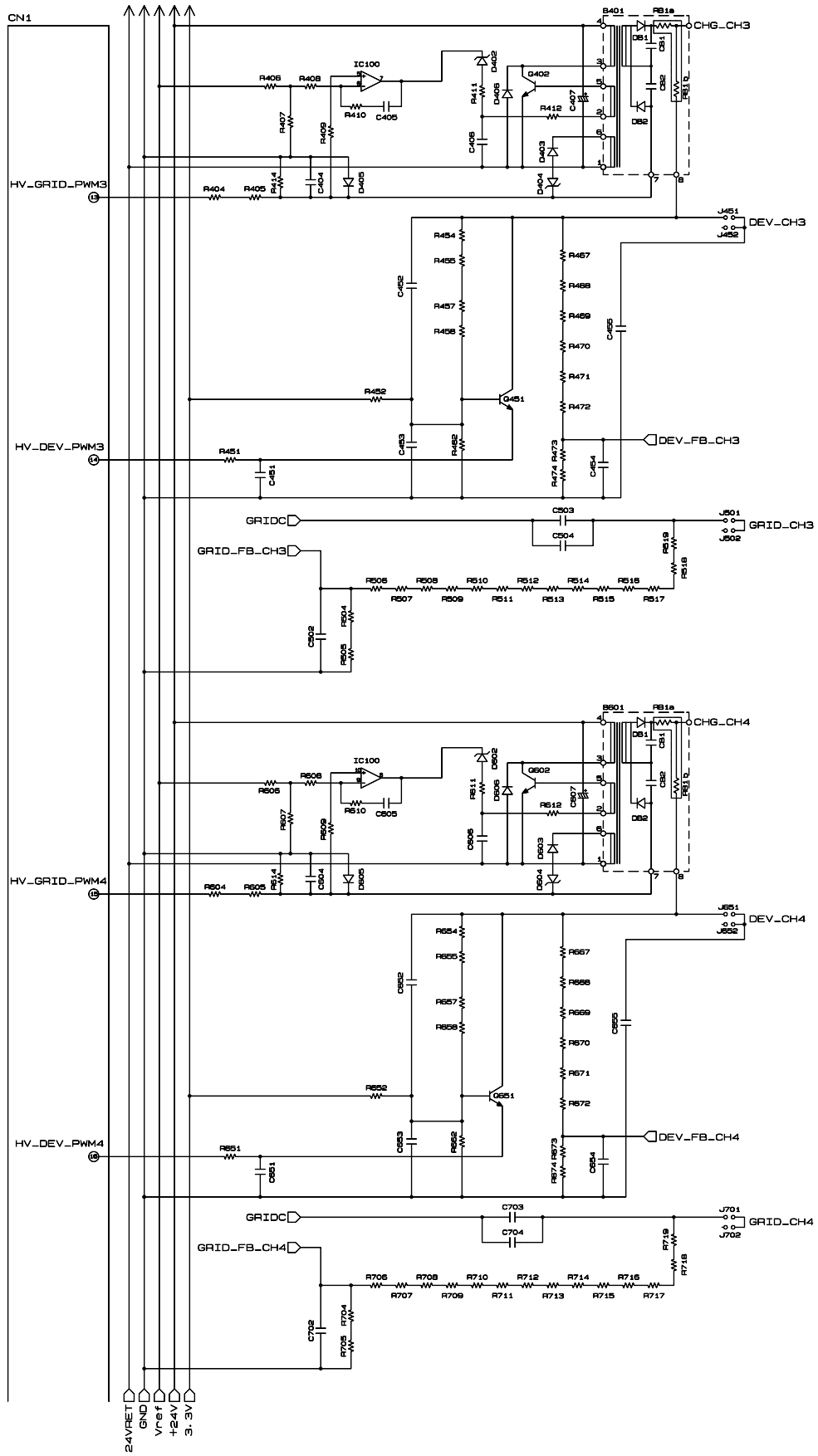
■ Engine PCB Circuit Diagram (5/5)



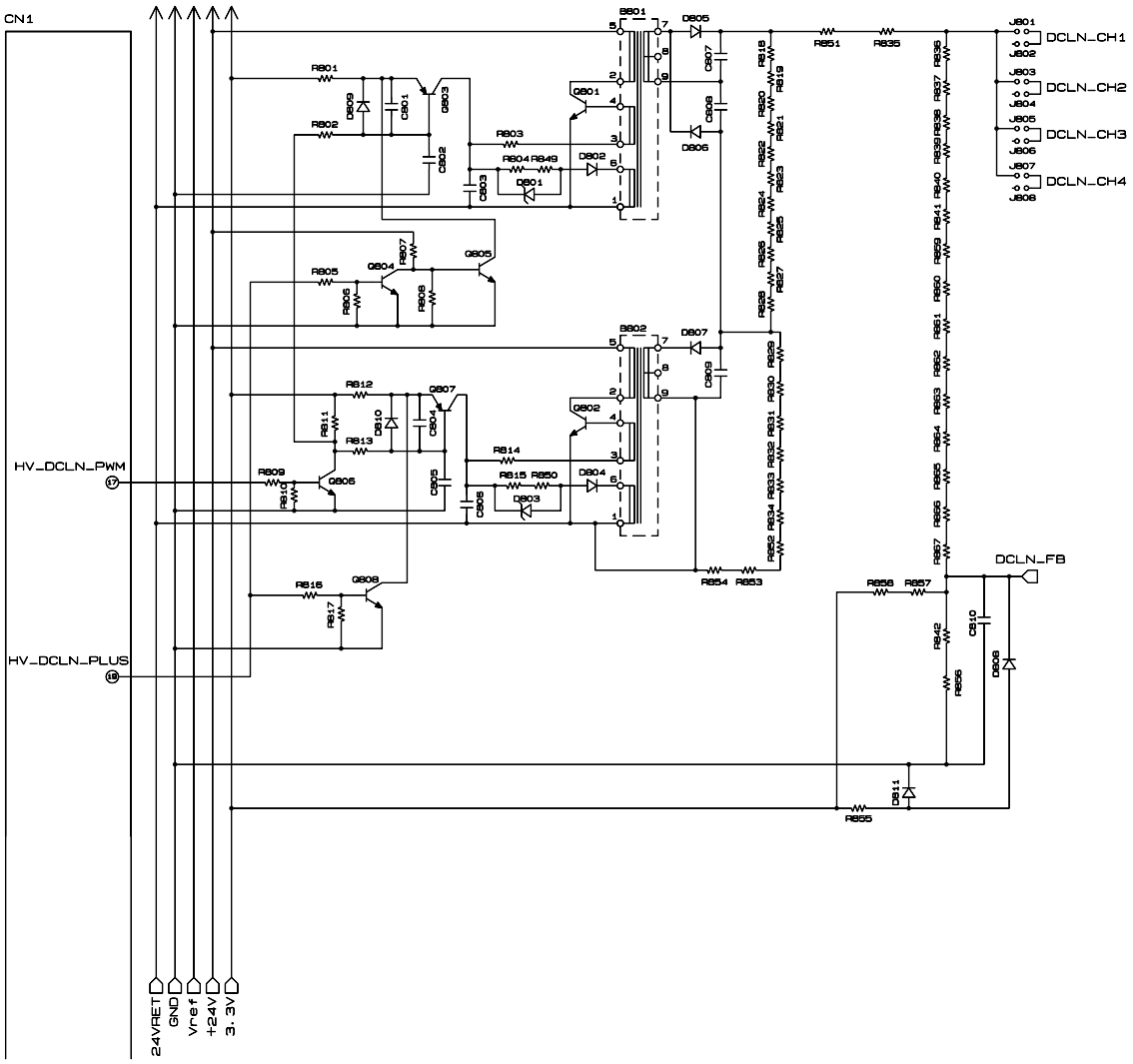
■ Charge High-voltage Power Supply PCB Circuit Diagram (1/4)



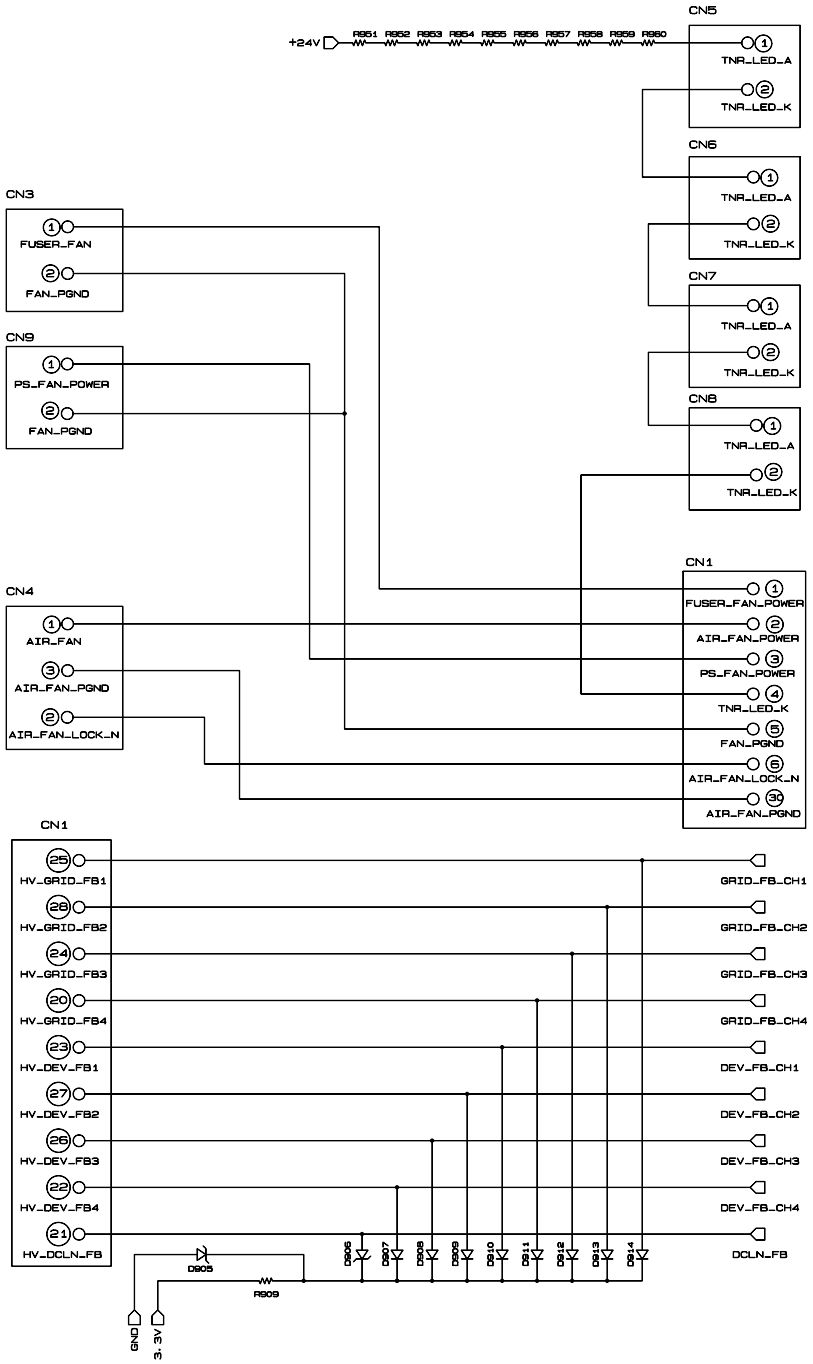
■ Charge High-voltage Power Supply PCB Circuit Diagram (2/4)



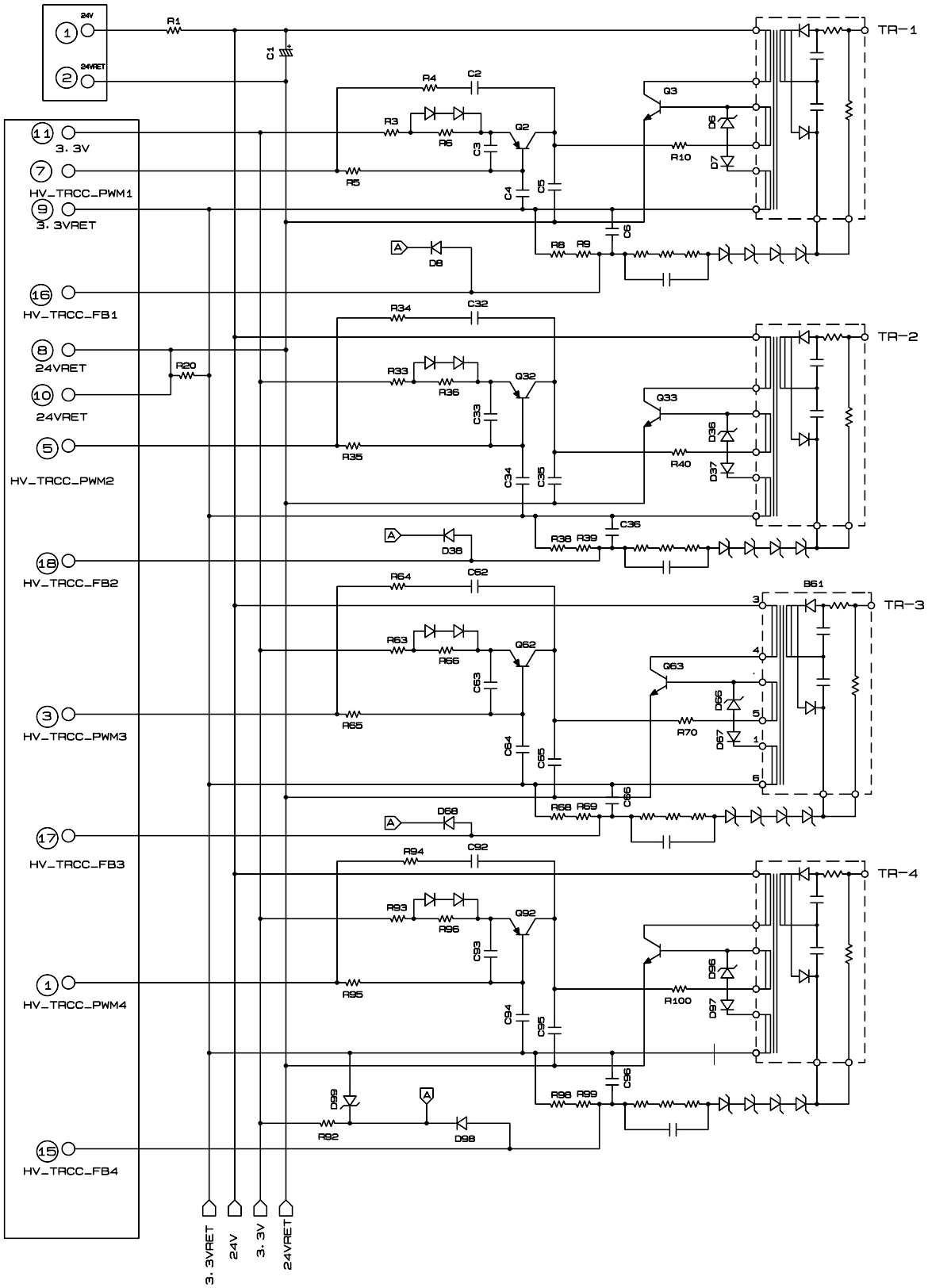
■ Charge High-voltage Power Supply PCB Circuit Diagram (3/4)



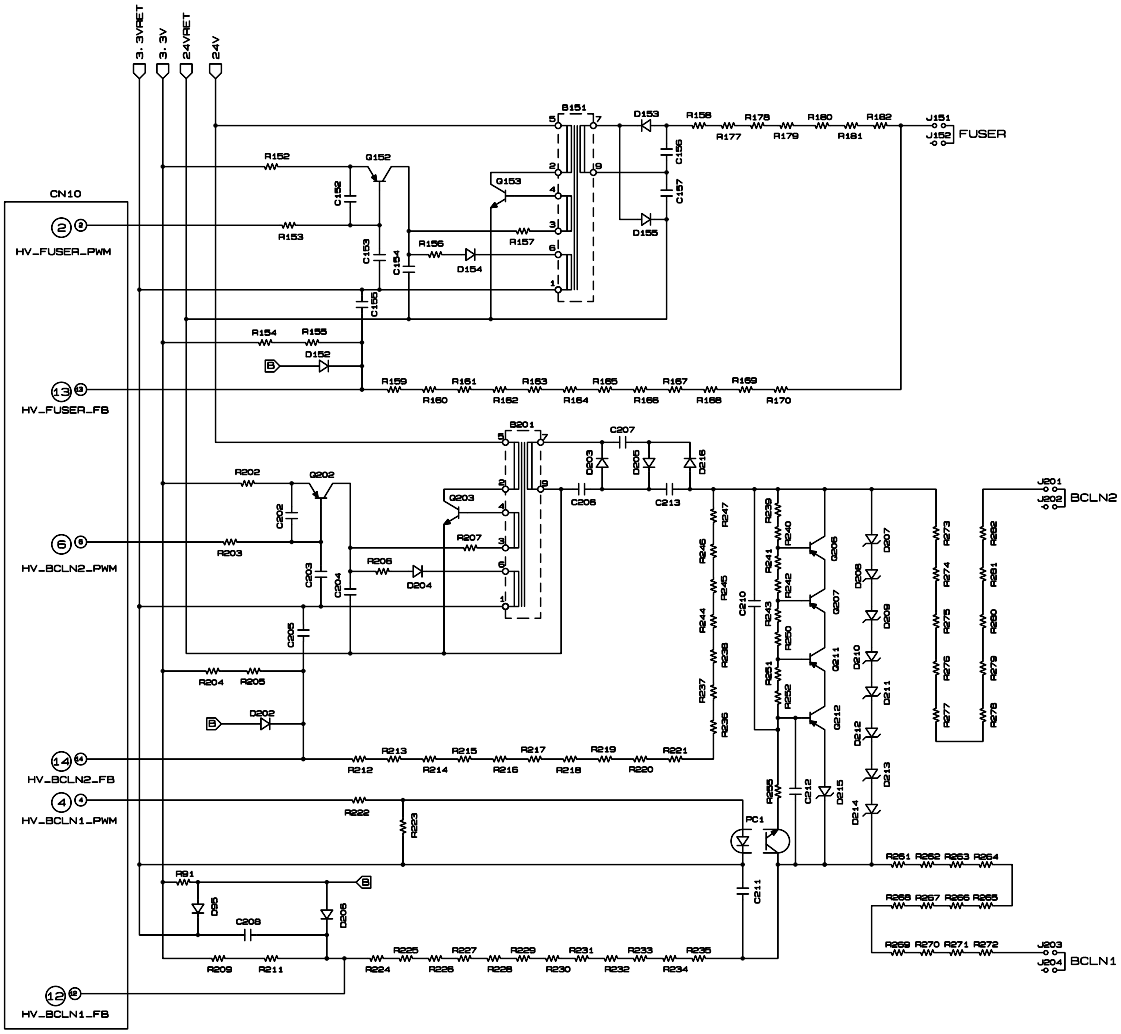
■ Charge High-voltage Power Supply PCB Circuit Diagram (4/4)



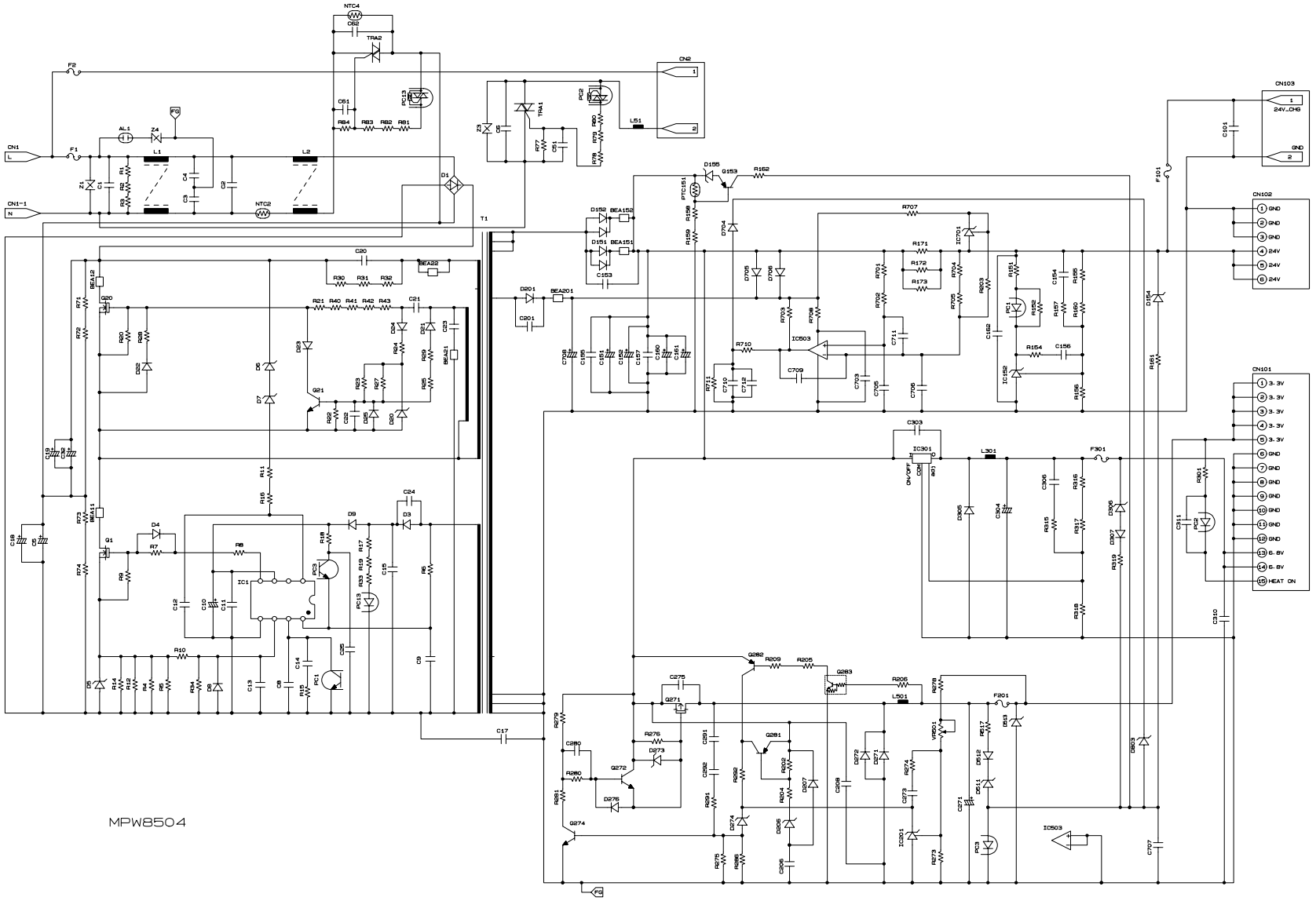
■ Transfer High-voltage Power Supply PCB Circuit Diagram (1/2)



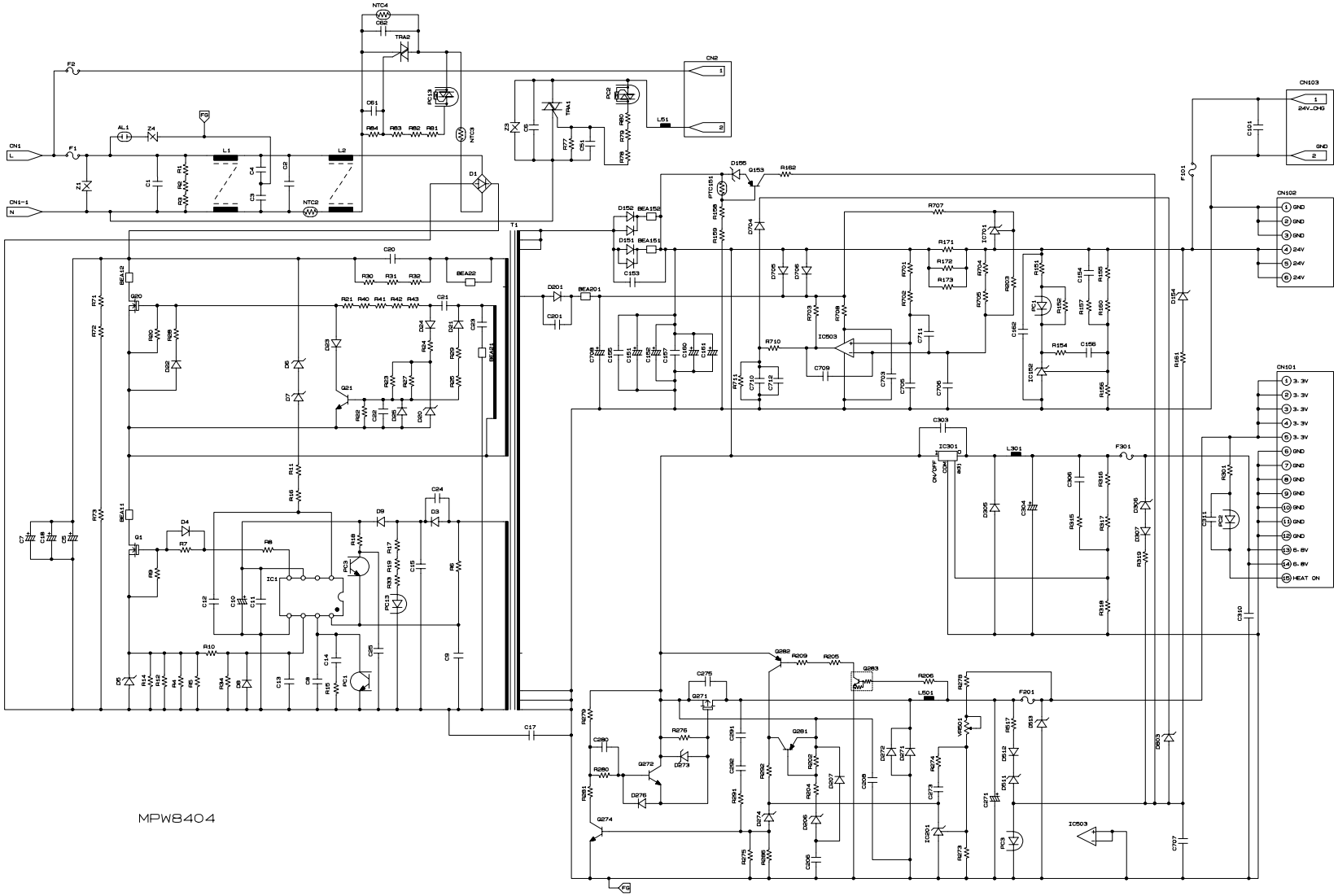
■ Transfer High-voltage Power Supply PCB Circuit Diagram (2/2)



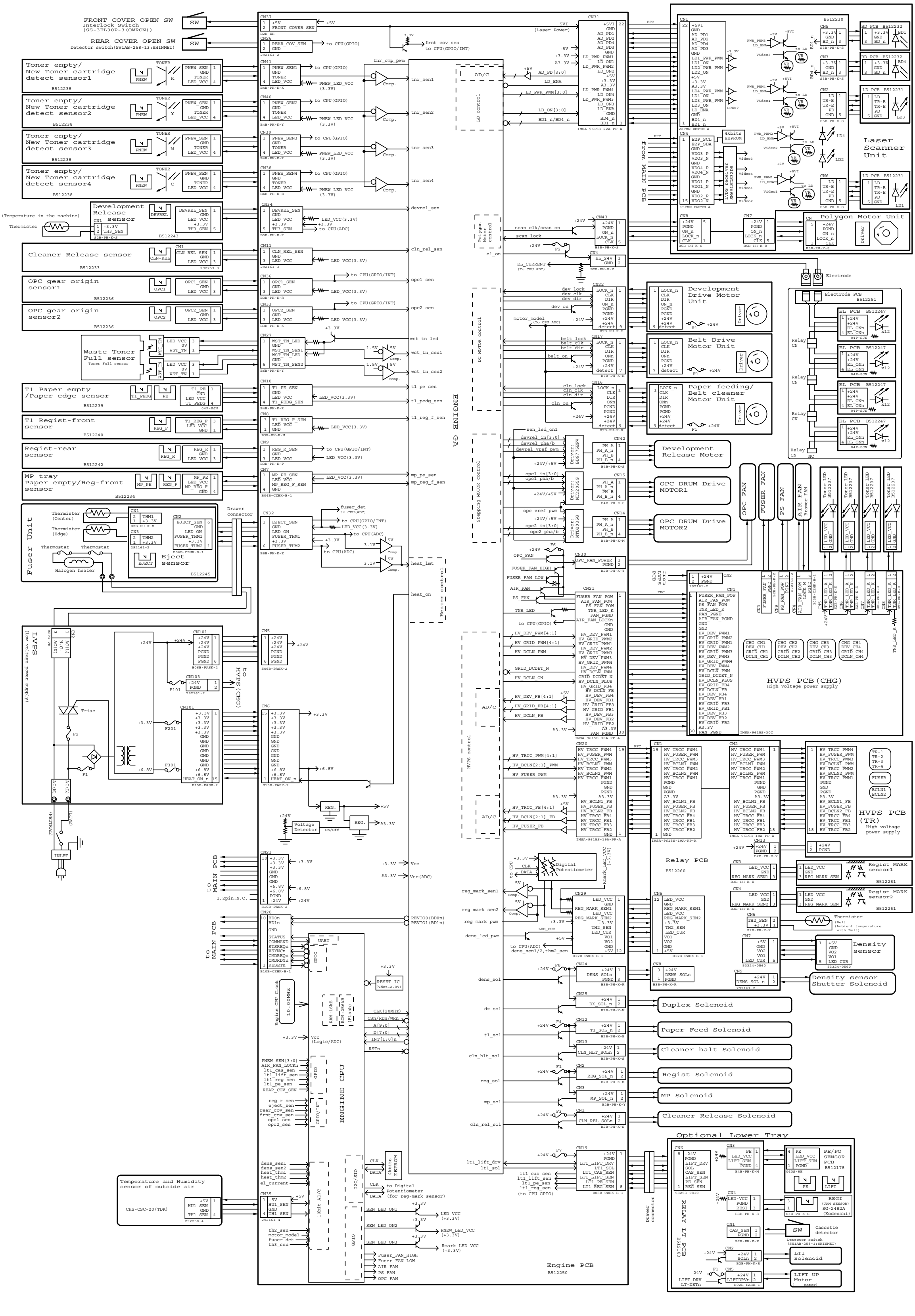
■ Low-voltage Power Supply PCB Circuit Diagram (100V)



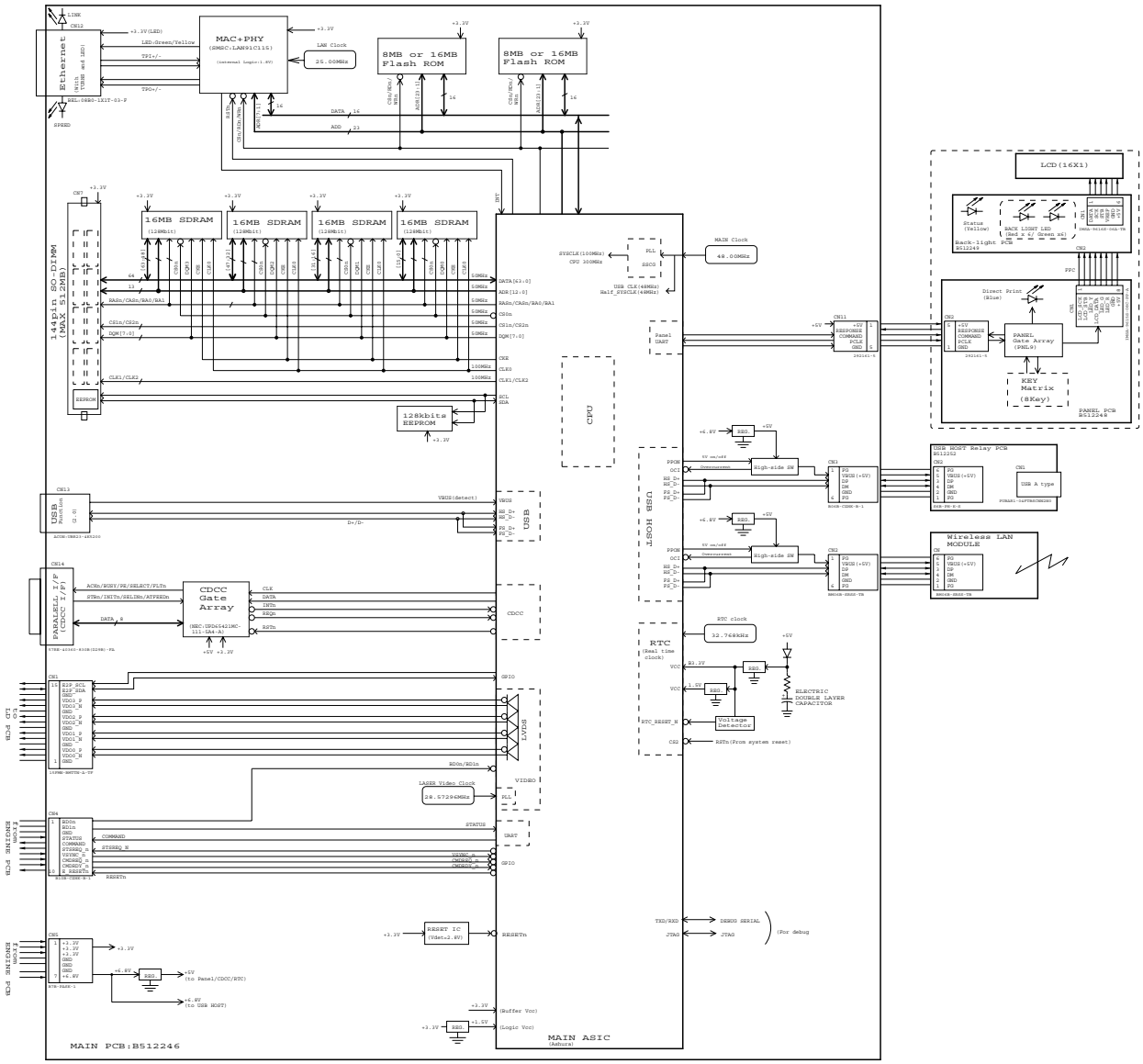
■ Low-voltage Power Supply PCB Circuit Diagram (200V)



■ Wiring Diagram (1/2)



■ Wiring Diagram (2/2)



APPENDIX 1 WORKER SWITCH (WSW)

The worker switch (as described “WSW”) is for modifying preferences that match the machine to the environmental conditions. Use this function if the machine malfunctions due to mismatching.

It is not allowed to access all of those selectors, but it is allowed to access the selectors **shaded** in the worker switch table.

■ Worker Switch

WSW No.	Function	Refer to:
WSW54	PictBridge command delay time	App. 1-2
WSW55	Interval of time required for the developing bias voltage correction	App. 1-2
WSW56	PS emulation function setting (HL-4040CN/ 4040CDN only)	App 1-3
	“Last Job Reprint” function setting	App 1-3

The functions and settings for each worker switch (WSW) are described below;

< WSW54 >

Selector No.	Function	Setting and Specifications
1 2	PictBridge command delay time	0 0 : 100 msec (default) 0 1 : 0 msec 1 0 : 50 msec 1 1 : 200 msec
3 | 8	Not used	

Selector 1 and 2: PictBridge command delay time

These selectors specify the PictBridge command delay time that applies when the machine responds to the digital camera connected via PictBridge during negotiation. If the machine fails to receive data from the digital camera, change the delay time.

< WSW55 >

Selector No.	Function	Setting and Specifications
1 | 8	Interval of time required for the developing bias voltage correction (hour)	0: The developing bias voltage correction is performed on each print job. 1-72: The developing bias voltage correction is performed when a print job occurs at specified time or later. (24: default) 73-254: Not allowed to set. 255: The developing bias voltage correction is not performed.

The setting example of the selector number is as follows;

No.1 2 3 4 5 6 7 8

0 0 0 0 0 0 0 0 : The developing bias voltage correction is performed on each print job.

0 0 0 1 1 0 0 0 : The developing bias voltage correction is performed when a print job occurs after 24 hours (default value) or later.

0 0 0 1 0 0 1 0 : The developing bias voltage correction is performed when a print job occurs after 72 hours or later.

1 1 1 1 1 1 1 1 : The developing bias voltage correction is not performed.

Selector 1 to 8: Interval of time required for the developing bias voltage correction

To keep the density of four colors evenly, the developing bias voltage correction is performed when a print job occurs at specified time or later.

< WSW56 >

Selector No.	Function	Setting and Specifications
1	PS emulation function setting (HL-4040CN/ 4040CDN only)	0: Invalid (default) 1: Valid
2	Not used	
3	"Last Job Reprint" function setting	0: Invalid 1: Valid (default)
4 | 8	Not used	

Selector 3: "Last Job Reprint" function setting

Setting this selector to "0" deactivates the "Last Job Print".

Setting this selector to "1" activates the "Last Job Print".

APPENDIX 2 DELETION OF PERSONAL INFORMATION

Personal information such as wired and wireless network settings in the machine is recorded in the EEPROM on the Main PCB. Use Function code 01 in maintenance mode to delete this information with a single operation.

(Refer to "1.4.1 EEPROM Parameter Initialization" in Chapter 5.)

<Operating Procedure>

(1) With the machine in the Ready state press the **OK** button, then within 2 seconds of pressing the **OK** button press the **Go** button, and within 2 seconds of pressing the **Go** button, press the ▲ button four times to make the machine enter the maintenance mode.

(2) The machine displays "▮▮ MAINTENANCE ▮▮▮" on the LCD. Press the ▲ or ▼ button to select "MAINTENANCE 01".

(3) Press the **OK** button. The "PARAMETER INIT" appears on the LCD. Upon completion of parameter initialization including the wired and wireless network settings, the machine returns to the initial stage of the maintenance mode.

(4) Press the ▲ or ▼ button to select "MAINTENANCE 99". Press the **OK** button to exit from the maintenance mode.

APPENDIX 3 SERIAL NUMBERING SYSTEM

Each machine has a serial number label for the machine itself and property labels for some other parts. Refer to the information below for the meaning of the serial number and property codes and the location of each label.

■ Serial number labels for the machine itself

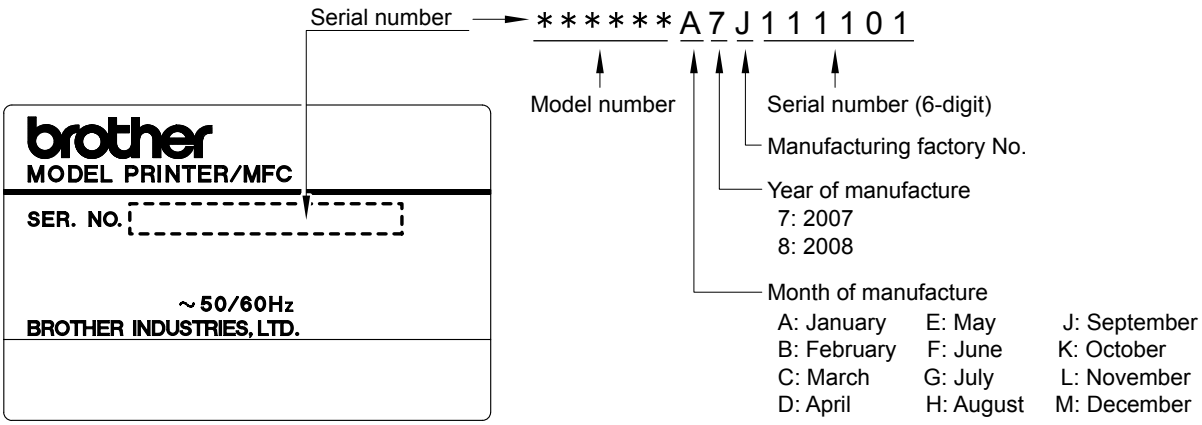


Fig. App3-1

<Location>

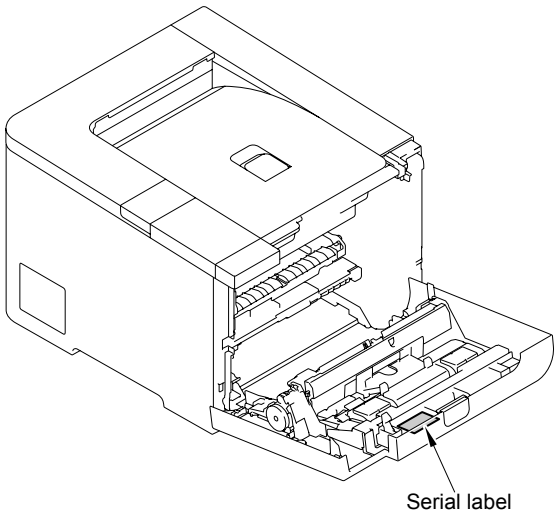


Fig. App3-2

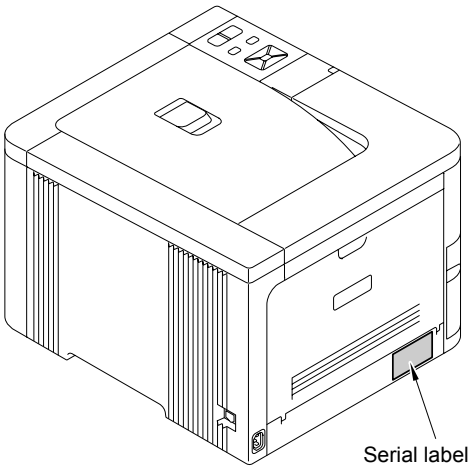


Fig. App3-3

■ Waste toner box serial label

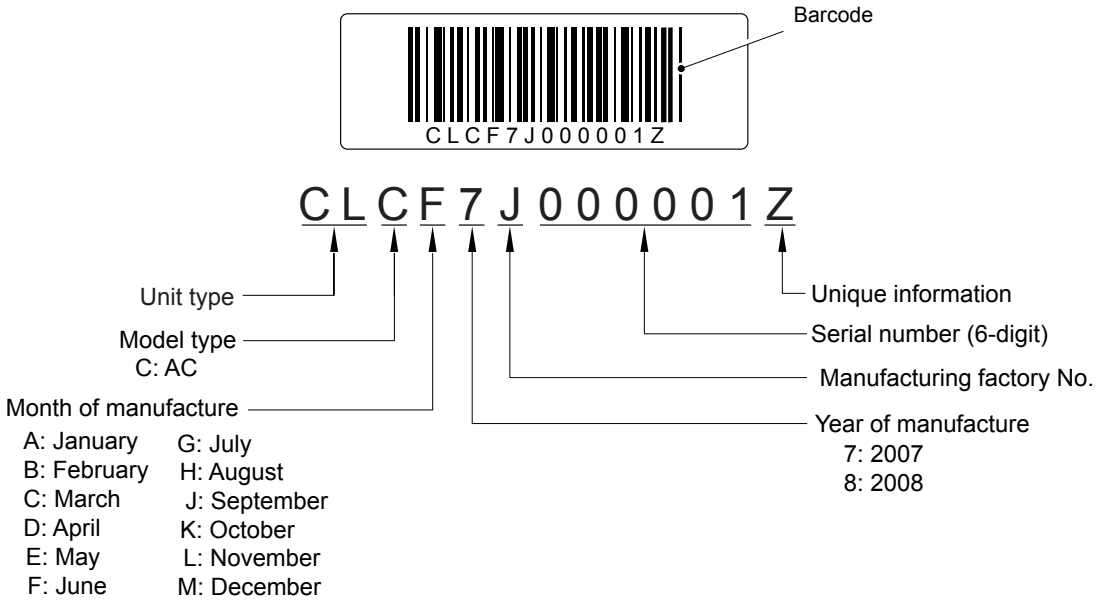


Fig. App3-4

<Location>

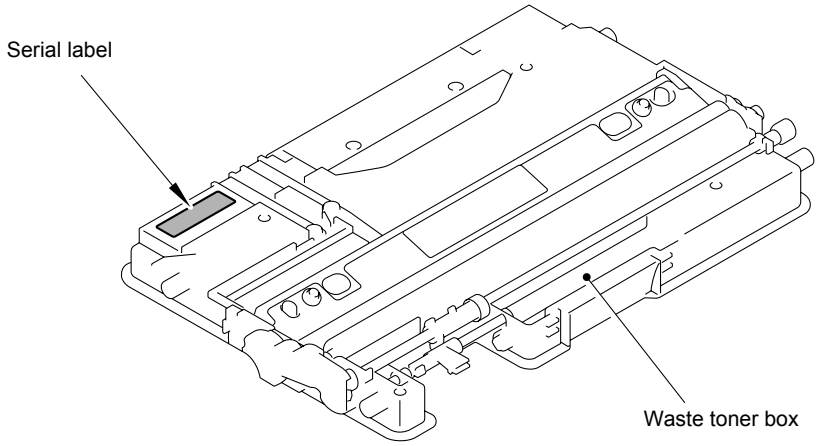


Fig. App3-5

■ Belt unit serial label

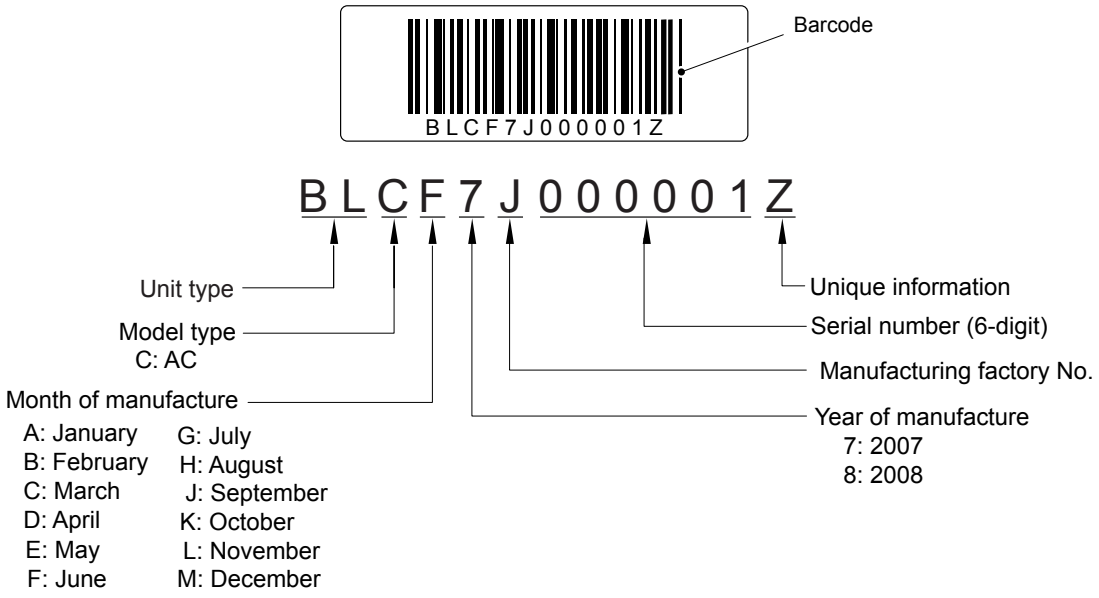


Fig. App3-6

<Location>

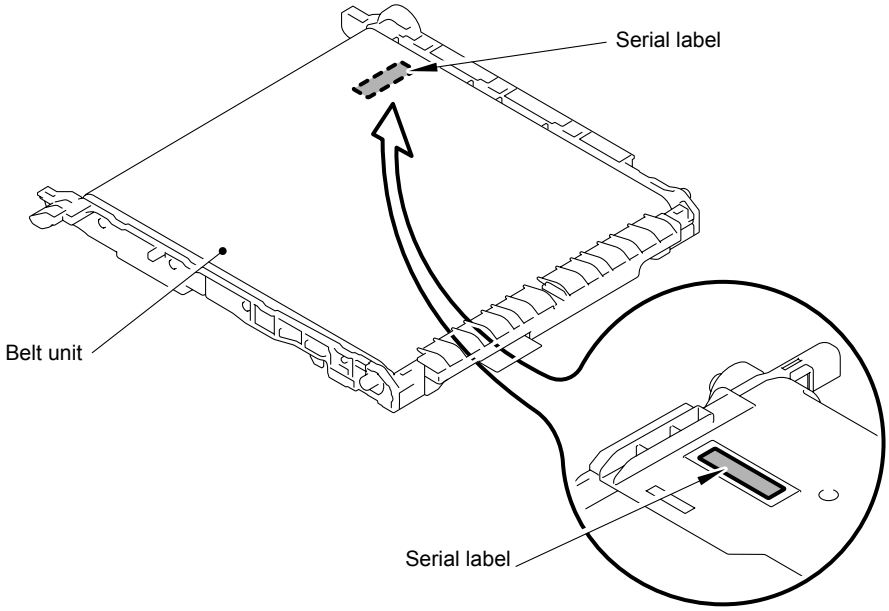


Fig. App3-7

■ Toner cartridge(K, Y, M, C) and Drum unit serial label

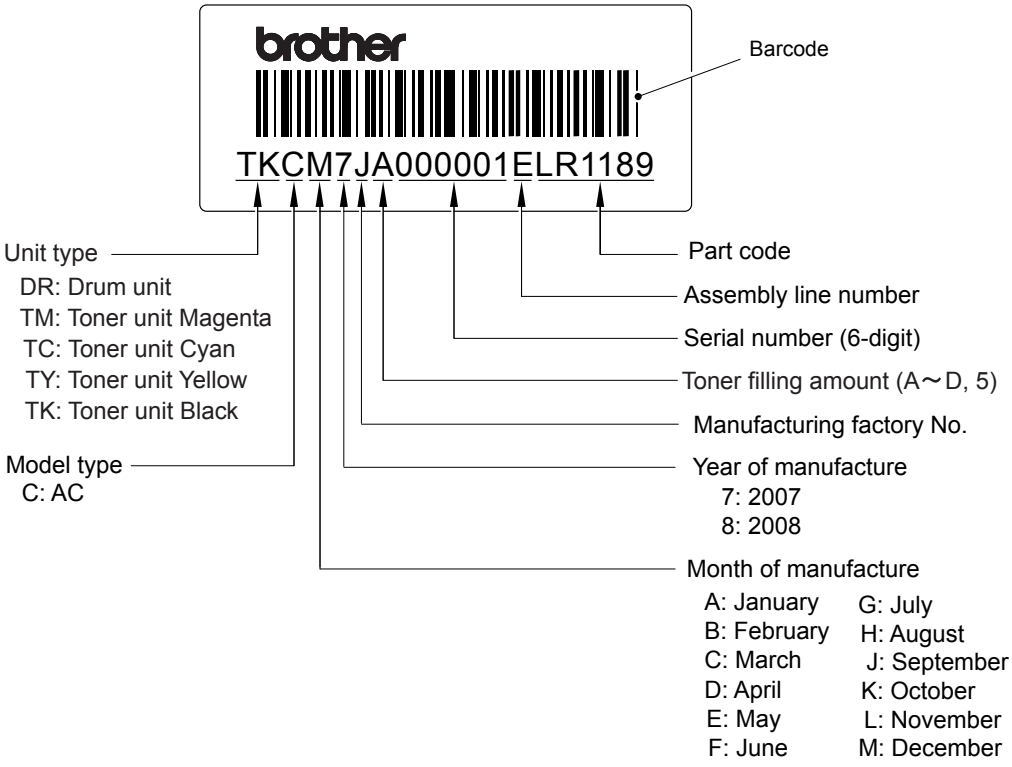


Fig. App3-8

<Location>

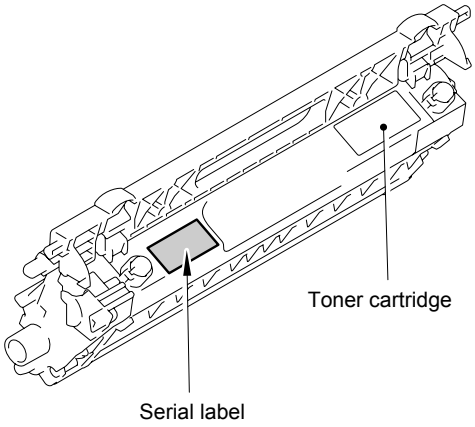


Fig. App3-9

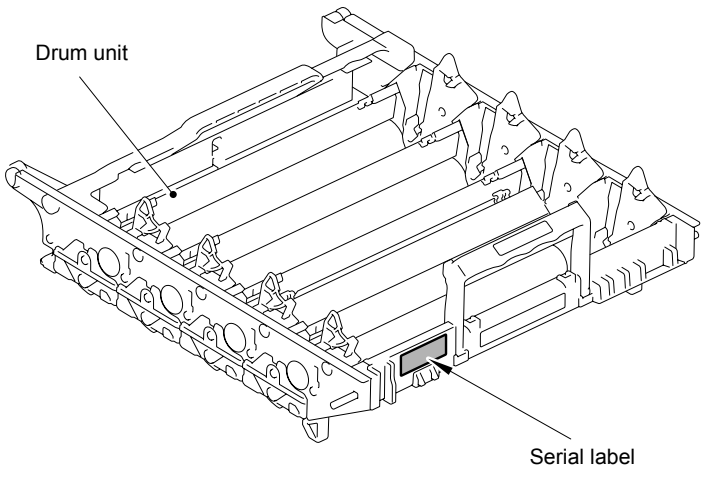
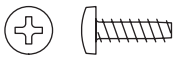
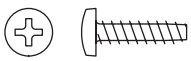
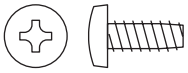
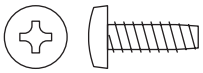


Fig. App3-10

APPENDIX 4 SCREW CATALOGUE

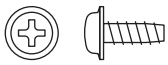
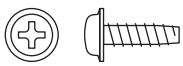
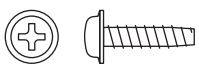
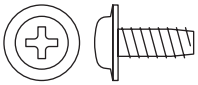
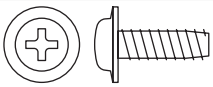
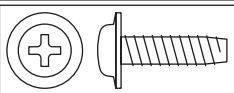
Taptite, bind B

Taptite, bind B M3x6	
Taptite, bind B M3x8	
Taptite, bind B M3x10	
Taptite, bind B M3x12	
Taptite, bind B M4x10	
Taptite, bind B M4x12	

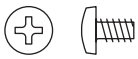
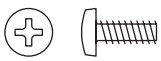
Taptite, bind S

Taptite, bind S M3x6	

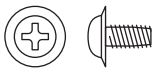
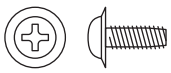
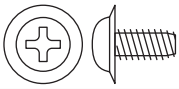
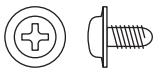
Taptite, cup B

Taptite, cup B M3x8	
Taptite, cup B M3x10	
Taptite, cup B M3x12	
Taptite, cup B M4x10	
Taptite, cup B M4x12	
Taptite, cup B M4x14	

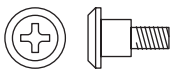
Screw, bind

Screw, bind M3x5	
Screw, bind M3x8	

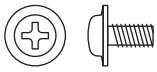
Taptite, cup S

Taptite, cup S M3x6	
Taptite, cup S M3x8	
Taptite, cup S M4x8	
Taptite, cup S M3x6 SR	

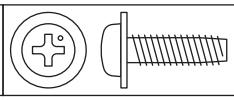
Shoulder screw

Shoulder screw	
Shoulder screw	

Screw, cup

Screw, cup M3x6	

Taptite, pan

Taptite, pan B M4X14	

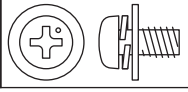
Taptite, flat B

Taptite, flat B M3x10	

Screw flanged

Screw flanged M3x3.5	

Screw pan (S/P washer)

Screw pan(S/P washer) M3x16	
Screw pan(S/P washer) M4x8	

APPENDIX 5 HOW TO MAKE THE DRUM UNIT REMOVE SHEET

Make the drum unit remove sheet following the procedures below and use it when packing the drum unit.

< Requirements >

- A3 or ledger-size paper
- A4 or letter-size paper

< Procedures >

(1) Cut the A3 or ledger-size paper and attach the double-faced adhesive tape referring to the figure below.

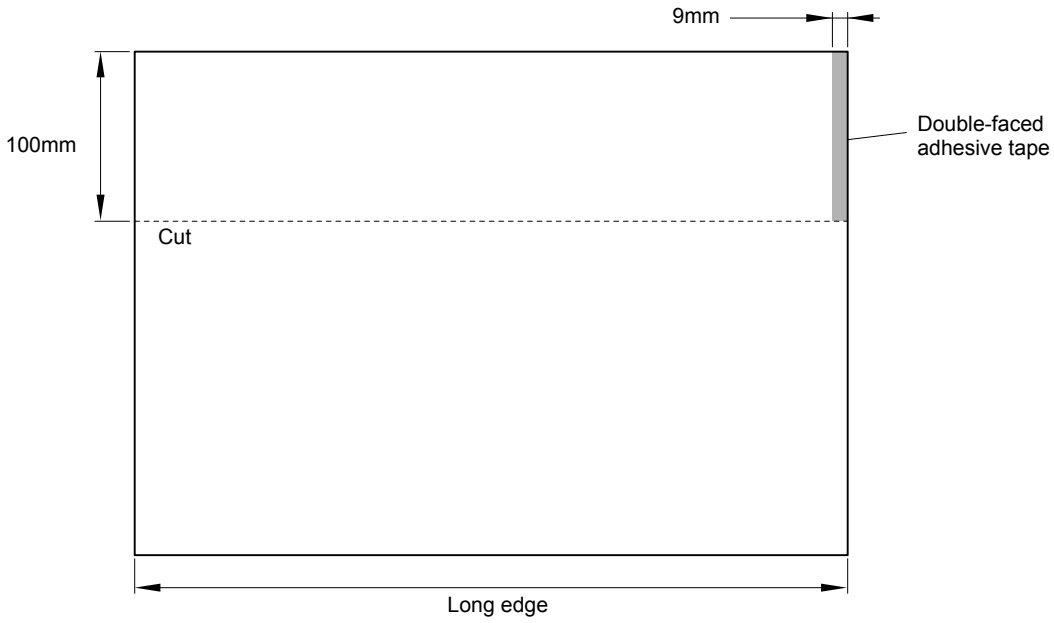


Fig. App5-1

(2) Attach the double-faced adhesive tape onto the A4 or letter-size paper.

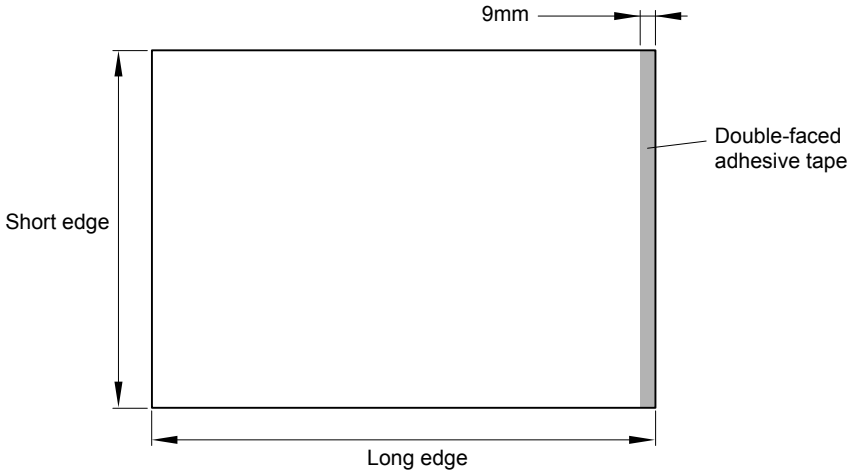


Fig. App5-2

(3) Align those two sheets of paper with the marking lines on the drum unit remove sheet and attach them.

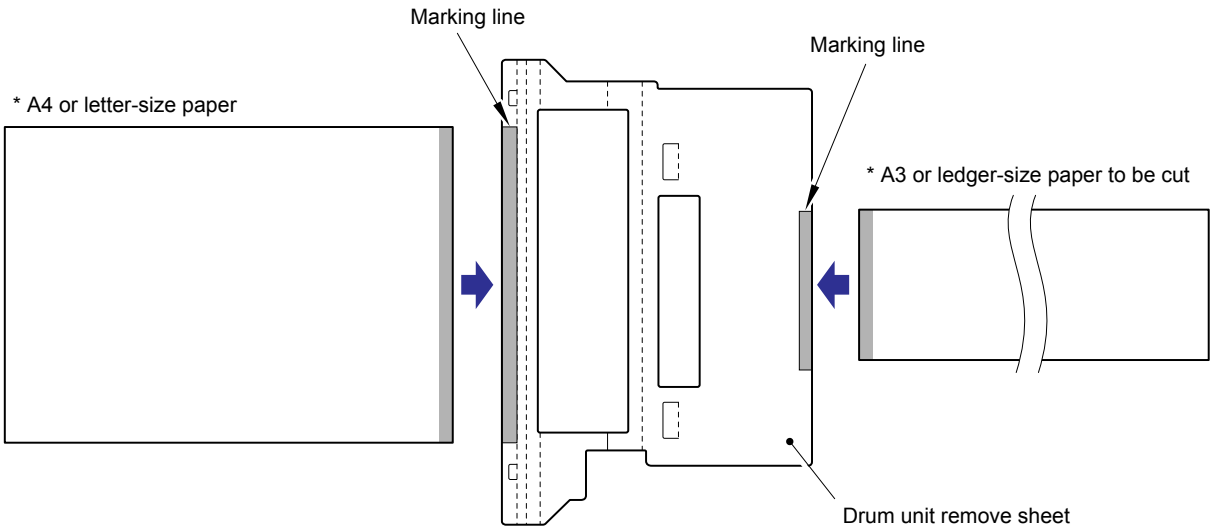


Fig. App5-3

APPENDIX 6 REFERENCES

This page provides reference information. It is possible to get the full instructions of the subjects by just clicking on the links below.

1. Error codes

(Refer to "2.1 Error Indication", Chapter 1 of the Service Manual.)

2. Error message

(Refer to "2.2 Error Cause and Remedy", Chapter 1 of the Service Manual.)

3. Diameter of rollers

(Refer to "4.2 Diameter of Rollers", Chapter 1 of the Service Manual.)

4. Periodical replacement parts

(Refer to "2.1 Periodical Replacement Parts", Chapter 2 of the Service Manual.)

5. Reset parts life

(Refer to "2.3 Parts Life Reset Function", Chapter 2 of the Service Manual.)

6. Machine specification

(Refer to "2. SPECIFICATIONS LIST", Reference 1 of the Service Reference Manual.)

7. Paper specification

(Refer to "2.6 Paper", Reference 1 of the Service Reference Manual.)

8. Toner cartridge weight information

(Refer to "APPENDIX 1 TONER CARTRIDGE WEIGHT INFORMATION" of the Service Reference Manual.)