



Brother Laser Printer **SERVICE MANUAL**

**MODEL:
HL-5240/5240L/5250DN/
5270DN/5280DW**



Read this manual thoroughly before maintenance work.

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

September 2005
SM-PRN057
(17)

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PREFACE

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

This service manual covers the **HL-5240/5250DN/5270DN/5280DW** printers.

This manual consists of the following chapters:

- CHAPTER 1: GENERAL**
Features, specifications, etc.
- CHAPTER 2: THEORY OF OPERATION**
Basic operation of the mechanical system, the electrical system and the electrical circuits.
- CHAPTER 3: PERIODIC MAINTENANCE**
Periodical replacement parts, consumable parts, etc.
- CHAPTER 4: TROUBLESHOOTING**
Reference values and adjustments, troubleshooting image defects, troubleshooting malfunctions, etc.
- CHAPTER 5: DISASSEMBLY AND RE-ASSEMBLY**
Procedures for disassembling and re-assembling the mechanical system.
- CHAPTER 6: ADJUSTMENTS AND UPDATING OF SETTING, REQUIRED AFTER PARTS REPLACEMENT**
- CHAPTER 7: SERVICE SUPPORT SOFTWARE**
Test print mode and Service menu mode, etc.
- APPENDIX:** Diagrams etc...

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

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

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REGULATION

LASER SAFETY (100 - 120V MODEL ONLY)

This printer 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 printer does not produce hazardous laser radiation.

Since radiation emitted inside the printer 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 (100 - 120V MODEL ONLY)

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. One of the following labels on the back of the printer indicates compliance with the FDA regulations and must be attached to laser products marketed in the United States.

The label for Japanese manufactured products

MANUFACTURED:
Brother Industries, Ltd.,

15-1 Naeshiro-cho Mizuho-ku Nagoya, 467-8561 Japan
This product complies with FDA performance standards
for laser products except for deviations pursuant to Laser
Notice No.50, dated July 26, 2001.

The label for Chinese manufactured products

MANUFACTURED:
Brother Corporation (Asia) Ltd. Brother Buji Nan Ling
Factory

Gold Garden Ind., Nan Ling Village, Buji, Rong Gang,
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.

Caution

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

IEC 60825 (220-240V MODEL ONLY)

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



This printer has a laser diode which emits invisible laser radiation in the Laser Unit. The Laser Unit should not be opened without disconnecting the two connectors connected with the AC power supply and laser unit. Since the variable resistor in the laser unit is adjusted in accordance with the standards, never touch it.

Caution

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

For Finland and Sweden**LUOKAN 1 LASERLAITE****KLASS 1 LASER APPARAT**

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

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

Internal laser radiation

Maximum radiation power: 5 mW

Wave length: 770 – 810 nm

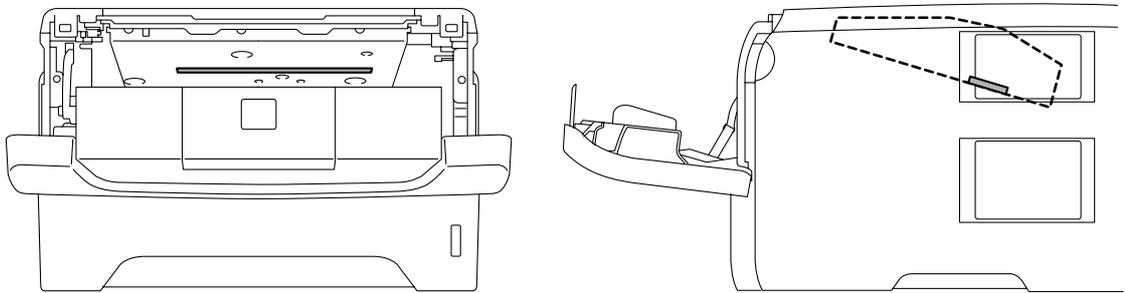
Laser class: Class 3B

SAFETY INFORMATION

CAUTION FOR LASER PRODUCT (WARNHINWEIS FÜR LASER DRUCKER)

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

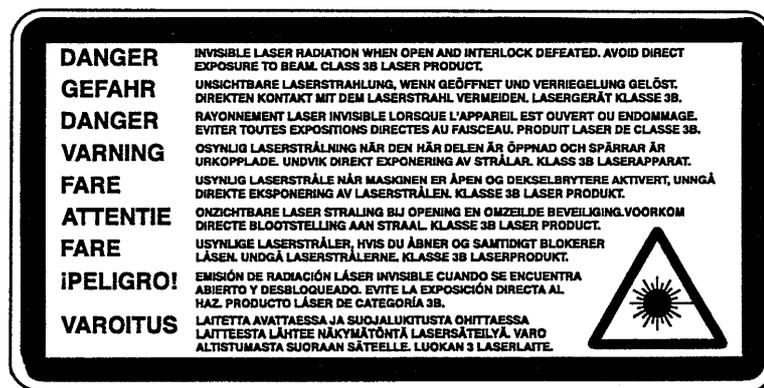
<Location of the laser beam window>



ADDITIONAL INFORMATION

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

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



DEFINITIONS OF WARNINGS, CAUTIONS AND NOTES

The following conventions are used in this service manual:

WARNING

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

CAUTION:

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

NOTE:

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

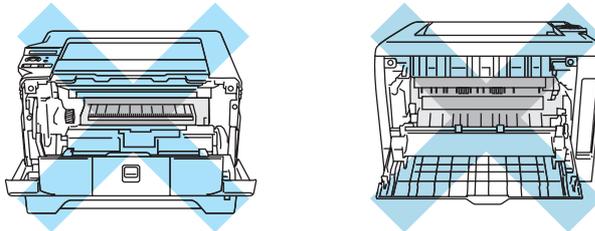
**Listed below are the various kinds of “WARNING” messages included in this manual.

WARNING

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

WARNING

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



WARNING

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

WARNING

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



CHAPTER 1 GENERAL

1. FEATURES

This printer has the following features.

High Resolution and Fast Print Speed

True 600 x 600 dots, true 300 x 300 dots per inch (dpi), HQ1200 and 1200 x 1200 dpi for graphics with microfine toner and up to 28 pages per minute (ppm) print speed for printing on A4 size paper, and up to 30 pages per minute (ppm) print speed for Letter- size paper.

Versatile Paper Handling

The printer loads paper automatically from the paper tray. The paper tray can hold A4, letter, B5 (ISO), B5 (JIS), A5, B6 (ISO), A6, Executive, Folio and Legal* size of paper. You can use a variety of types and sizes of paper when printing from the Multi-purpose tray. Width: 69.9 to 215.9 mm (2.75 to 8.5 in) Length: 116 to 406.4 mm (4.57 to 16 in). A4, Letter, Legal sizes of paper can be held when automatic duplex print. *Legal paper is not available in some regions.

Front Operation

Basic operation of the printer can be controlled from the control panel.

Enhanced Printing Performance and User-Friendly Operation for Windows®

The dedicated printer driver for Microsoft® Windows® 95/98/Me, Windows® NT 4.0 and Windows® 2000/XP Home Edition/XP Professional/XP Professional x64 Edition are available on the CD-ROM supplied with your printer. You can easily install them into your Windows® system using our installer program. The driver supports our unique compression mode to enhance printing speed in Windows® applications and allows you to choose various printer settings including toner save mode, custom paper size, sleep mode, gray scale adjustment, resolution, water mark and many layout functions. You can easily setup these print options through the Printer Setup Menu.

Printer Status Monitor with Bi-directional Parallel Interface

The printer driver can monitor the status of your printer using bi-directional parallel communications. IEEE-1284 bi-directional parallel printer cable is recommended.

The printer status monitor program can show the current status of your printer. The animated dialog box appears on your computer screen to show the current printing process when printing. If an error occurs, a dialog box will appear to let you know what to correct. If you have turned on the Interactive Help (Windows only) you can get visual guidance on your PC screen on the actions in the event of certain printer errors. The default setting is OFF.

Quick Print Setup

The Quick Print Setup is a convenient utility to allow you to make changes to frequently used driver settings easily without having to open the printer properties selection box every time. It is launched automatically when this printer driver is selected. You can change the settings by clicking on the icon with the right mouse button. The default setting is OFF.

Enhanced Memory Management

The printer provides its own data compression technology in its printer hardware and the supplied printer driver software, which can automatically compress graphic data and font data efficiently into the printer's memory. You can avoid memory errors and print most full pages 1200 dpi graphic and text data, including large fonts, with the standard printer memory.

USB Interface (for Windows® 98/Me/2000/XP Home Edition/XP Professional/XP Professional X64 Edition, Mac OS® 9.1-9.2/ Mac OS® X 10.2.4 or greater)

The printer can be connected using the Universal Serial Bus (USB) interface to a PC or Mac which has a USB interface. Drivers that allow you to use the USB port are provided on the CD-ROM supplied with the printer.

Popular Printer Emulation Support

These printers support the following printer emulation modes.
BR-Script 3, HP LaserJet (PCL6), Epson FX-850 and IBM Proprinter XL.

Environment-Friendly

<Economy Printing Mode (Toner Save Mode)>

This feature will cut your printing cost by saving toner. It is useful for obtaining draft copies for proof-reading. You can select the toner saving economy mode through the Windows® printer driver supplied with your printer.

<Sleep Mode (Power Save Mode)>

Sleep mode automatically reduces power consumption when the printer is not in use for a certain period of time. The printer consumes less than 8.5W when in sleep mode.

<Low Running Cost>

Since the toner cartridge is separate from the drum unit, you need to replace only the toner cartridge after printing around 3,500 (Standard cartridge) pages or 7,000 (High yield cartridge) at 5% coverage for A4 paper for the standard cartridge, which is both cost effective and ecologically friendly.

Bar Code Print

The printer can print the following 11 types of bar codes

- Code 39
- US-PostNet
- EAN-8
- Code 128
- ISBN
- EAN-13
- Interleaved 2 of 5
- UPC-A
- EAN-128
- Codabar
- UPC-E

Network Feature (for HL-5250DN/5270DN/5280DW)

The Brother printer has built in multi protocol network capability as standard. This allows multiple host computers to share the printer on a 10/100Mb wired Ethernet or IEEE 802.11b/802.11g wireless Ethernet network. Any users can print their jobs as if the printer was directly connected to their computer. Users on Windows® 95/98/Me, Windows® NT4.0, Windows® 2000/XP Home Edition/XP Professional/XP Professional x64 Edition, Mac OS® 9.1 to 9.2, Mac OS® X 10.2.4 or greater simultaneously can access this printer. For further information, see the Network User's Guide supplied with the printer. The wireless network function is supported by the HL-5280DW only.

2. PARTS NAMES AND FUNCTIONS

2.1 Overview

(HL-5240/5250DN)

<Front View>

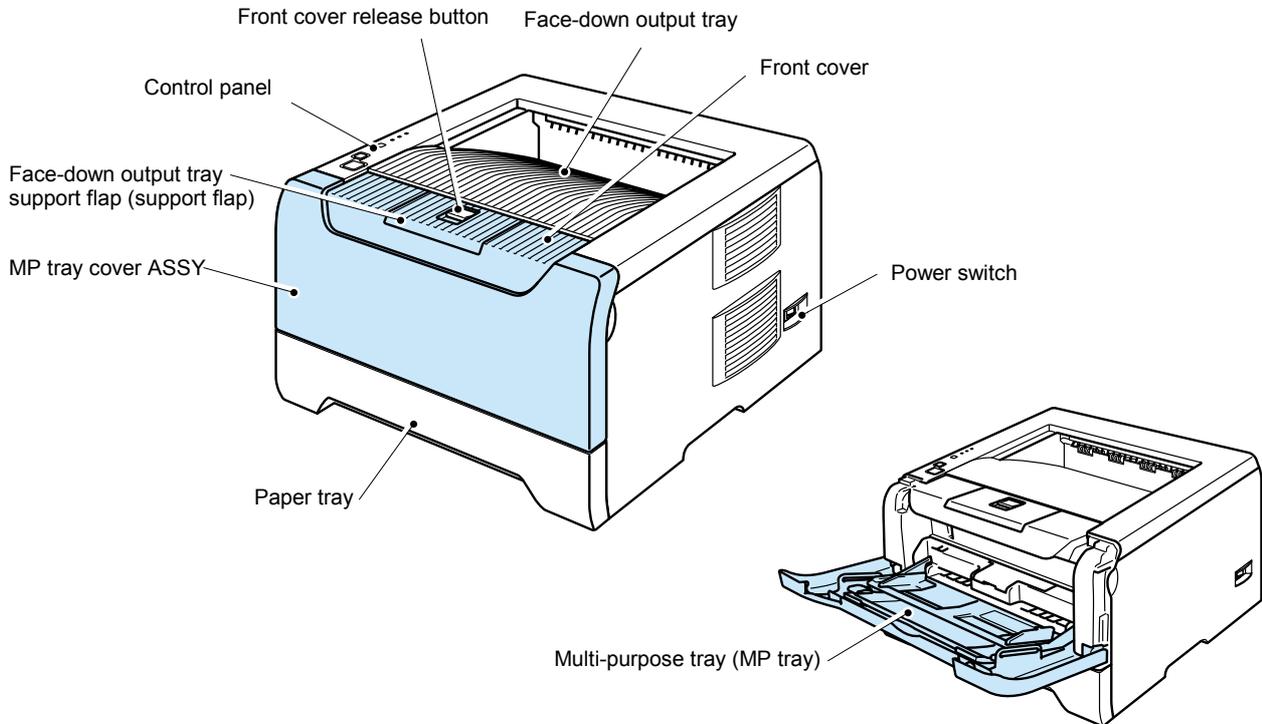
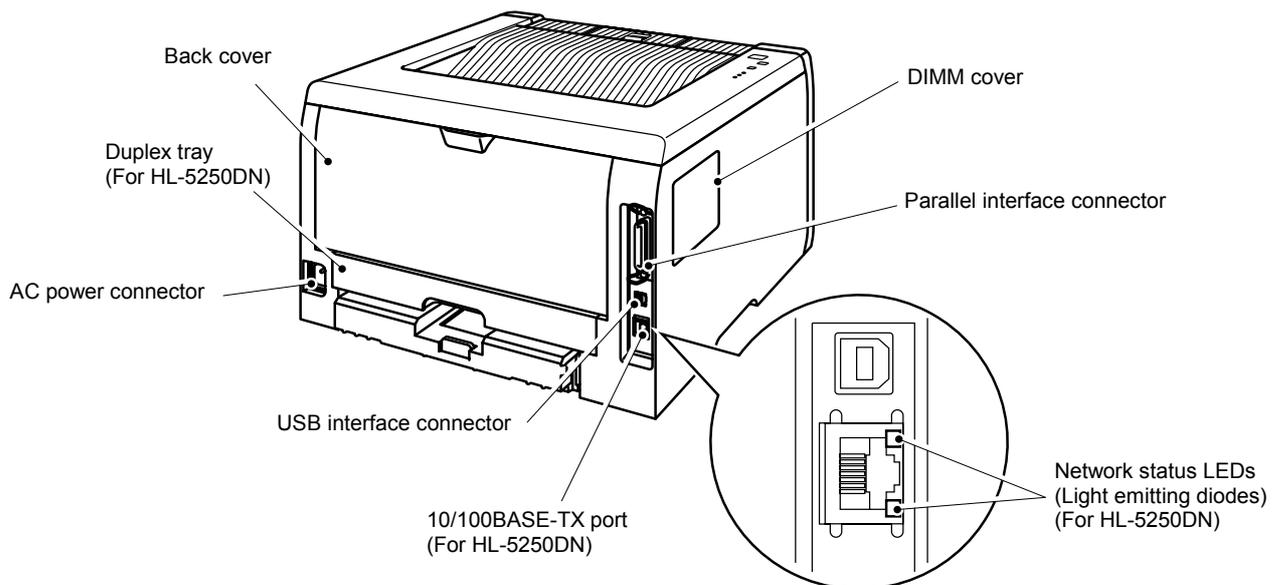


Fig. 1-1

<Rear View>



*The printer illustration is based on HL-5250DN.

Fig. 1-2

(HL-5270DN/5280DW)

<Front View>

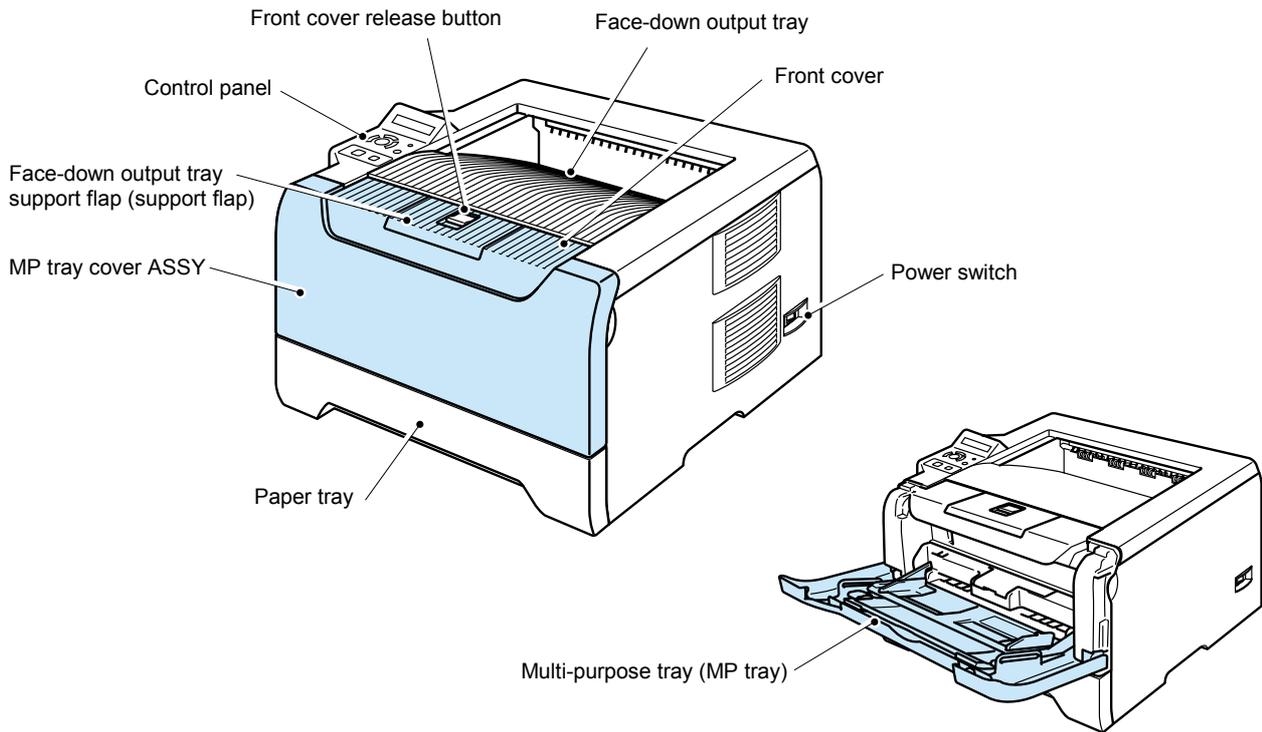


Fig. 1-3

<Rear View>

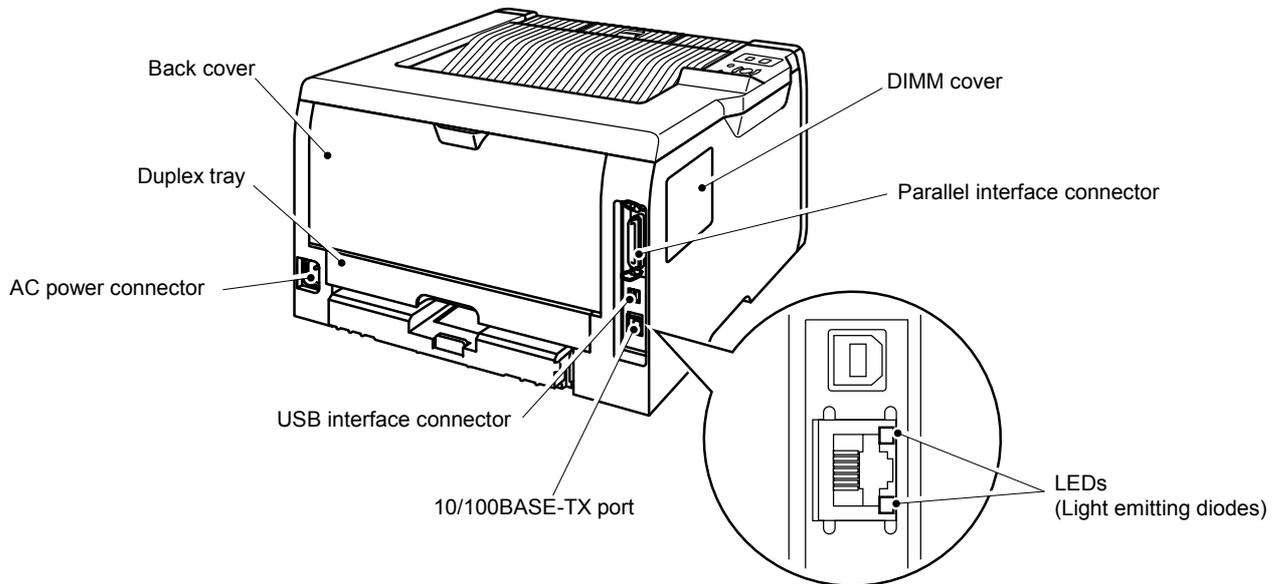


Fig. 1-4

2.2 Control Panel

(HL-5240/5250DN)

There are the four Light Emitting Diodes (LEDs) (**Toner**, **Drum**, **Paper** and **Status**) and two control buttons (**Go** and **Job Cancel**) on the control panel.



Fig. 1-5

1. **Toner**
LED indicates when the Toner is low or at the end of its life.
2. **Drum**
LED indicates when the Drum is nearing the end of its life.
3. **Paper**
LED indicates when the paper tray is empty or there is a paper jam.
4. **Status**
LED will flash and change color depending on the printer status.
5. **Job Cancel button**
will stops and cancels the print operation in progress.
6. **Go button**
Wake-up / Error recovery / Form feed / Reprint

(HL-5270DN/5280DW)



Fig. 1-6

1. **LCD**

- Off: The printer is off or in sleep status.
- Green (General): Ready to print.
Printing
Warming up
Job canceling
- Red (Error): There is a problem with the printer.
- Orange (Setting): The printer is offline.
Choosing a menu
Setting number of reprints.
Pause

2. **Data LED: Orange**

- On: Data is in the printer memory.
- Blinking: Receiving or processing data.
- Off: No remaining data in the memory.

3. **Go button**

Exit from the control panel menu and reprint setting.
Clear error messages.
Pause and Continue printing.

4. **Job Cancel button**

Stop and cancel the printing operation in progress.

5. **Reprint button**

Choose the reprint menu and the number of extra copies (1-999).
Please enhance the RAMDISK size when you want to use the Reprint functions.

6. **Menu buttons**

- **+**: Move forward through menus.
Move forward through the available options.
- **-**: Move backward through menus.
Move forward through the available options.
- **Set**: Choose the control panel menu.
Set the chosen menus and settings.
- **Back**: Go back one level in the menu structure.

3. SPECIFICATIONS

3.1 Printing

| | |
|----------------------|---|
| Print method | Electrophotography by semiconductor laser beam scanning |
| Laser | Wavelength: 770 - 810nm Output: 5mW max Laser class: Class B |
| Resolution | <Windows® 95, WindowsNT® 4.0, Windows® 98/Me, Windows® 2000, Windows® XP Home Edition/XP Professional/XP Professional x64 Edition and Mac OS®> 1200 dpi*/ HQ1200/ 600dpi/ 300dpi <DOS> 600dpi <Linux> 600dpi/ 300dpi * When you choose the higher print quality setting, the print speed will be slower. |
| Print quality | Normal printing mode Economy printing mode (Toner saving mode) |
| Print speed | Normal Up to 28 pages/minute (A4 size paper) Up to 30 pages/minute (Letter-size paper) |
| Warm-up | Less than 18 seconds at 23°C (73.4°F) |
| First print | Less than 8.5 seconds when the printer is in the ready state. (when loading A4 or Letter-size paper from the standard paper tray) |
| Consumables | <Toner cartridge> Life expectancy: Standard 3,500 pages / cartridge High yield 7,000 pages / cartridge * when printing A4 or Letter-size paper at 5% print coverage. Shelf life: 2 years (6 months after opening) <Drum unit> Life expectancy: 25,000 pages/ drum unit (1 page/ job) * when printing A4 or Letter-size paper at 5% print coverage. Shelf life: 2 years The shelf life is guaranteed under the normal condition as below; (Temperature) Normal condition: 0 to 40°C *Storage condition at the temperature of 40 to 50°C: Up to 5 days *Storage condition at the temperature of -20 to 0°C: Up to 5 days (Humidity) Normal condition: 35 to 85% *Storage condition at the humidity of 85 to 95%: Up to 5 days *Storage condition at the humidity of 10 to 35%: Up to 5 days |

NOTE:

Print speed varies depending on the paper size or media type. For details, refer to [3.8 'Print Speeds with Various Settings' in this Chapter.](#)

3.2 Functions

<Controller>

Processor 266MHz

Emulation BR-Script 3 (PostScript® 3™), HP LaserJet (PCL6), Epson FX-850 and IBM Proprinter XL

Memory <Standard>
16 MB (HL-5240) 32MB (HL-5250DN/5270DN/5280DW)

<Option>

DIMM

(HL-5240)

The HL-5240 printer has 16 MB of standard memory and one slot for optional memory expansion. You can expand the memory up to 528 MB by installing dual in-line memory modules (DIMMs).

(HL-5250DN/5270DN/5280DW)

The HL-5250DN/5270DN/5280DW printer has 32 MB of standard memory and one slot for optional memory expansion. You can expand the memory up to 544 MB by installing dual in-line memory modules (DIMMs).

“DIMM types”

You can install the following DIMMs:

- 128 MB Buffalo Technology VN133-D128/ VN133-X128
- 256MB Buffalo Technology VN133-D256
- 512MB Buffalo Technology VN133-D512
- 64 MB TechWorks 12165-0004
- 128 MB TechWorks 12462-0001
- 256MB TechWorks 12485-0001
- 512MB TechWorks 12475-0001

In general, the DIMM must have the following specifications:

- Type: 144 pin and 64 bit output
- CAS latency: 2
- Clock frequency: 100 MHz or more
- Capacity: 64, 128, 256 or 512 MB
- Height: 31.75 mm (1.25 in.)
- Dram Type: SDRAM 2 Bank
- SDRAM can be used.

NOTE:

There might be some DIMMs that will not work with the printer.

Interface

Standard:

| HL-5240 | HL-5250DN/5270DN | HL-5280DW |
|--|--|--|
| Hi-Speed USB 2.0 IEEE 1284 Parallel | Hi-Speed USB 2.0 IEEE 1284 Parallel 10/100 BASE-TX | Hi-Speed USB 2.0 IEEE 1284 Parallel 10/100 BASE-TX Wireless LAN IEEE802.11 b/g |

Option:

| HL-5240 | HL-5250DN/5270DN | HL-5280DW |
|---------------------------------------|------------------|-----------|
| 10/100 BASE-TX Ethernet (NC-2100p) | N/A | N/A |

Resident Fonts

(HL-5240/5250DN)

66 scalable fonts, 12 bitmap fonts, 11 bar codes;
Code39, Interleaved 2 of 5, EAN-8, EAN-13, UPC-A, EAN-128,
Codabar, FIM (US-PostNet), ISBN, Code128

(HL-5270DN/5280DW)

<PCL>

66 scalable fonts, 12 bitmap fonts, 11 bar codes;
Code39, Interleaved 2 of 5, EAN-8, EAN-13, UPC-A, EAN-128,
Codabar, FIM (US-PostNet), ISBN, Code128

<PostScript® 3™>

66 fonts

Option Font

(HL-5240/5250DN/5270DN/5280DW)

BT-1000 (Agfa Barcode Font)

<Software>**Printer driver**

<Windows®>

- PCL Driver for Windows® 95/98/Me, Windows NT® 4.0, Windows® 2000 and Windows® XP Home Edition/XP Professional/XP Professional x64 Edition *
- * Download the printer driver for Windows® XP Professional x64 Edition from <http://solutions.brother.com>
- Generic PCL Driver for Windows NT® 4.0, Windows® 2000 and Windows® XP Home Edition/XP Professional/XP Professional x64 Edition
- BR-Script 3 (PPD file) for Windows® 95/98/Me, Windows NT® 4.0

<Macintosh®>

- Brother Laser Driver for Mac OS® 9.1 to 9.2 and Mac OS® X 10.2.4 or greater
- BR-Script 3 (PPD file) for Mac OS® 9.1 to 9.2 and Mac OS® X 10.2.4 or greater

<Linux*>

- LPR Driver for Linux
- CUPS driver for Linux

* Download the printer driver for Linux from
<http://solutions.brother.com>

Utilities

(HL-5240)

Interactive Help*

(HL-5250DN/5270DN/5280DW)

Interactive Help*, Driver Deployment Wizard**

* Interactive Help: Instructional animations for problem solving.

** The Driver Deployment Wizard automates the installation of a printer in a peer-to-peer network.

System Requirements

| Computer Platform & Operating System Version | | Processor Speed | Minimum RAM | Recommended RAM | Available Hard Disk Space |
|--|---|---|-------------|-----------------|---------------------------|
| Windows® | 95* ¹ , 98, 98SE | 486/66 MHz | 8 MB | 16 MB | 40 MB |
| | NT®Workstation 4.0 * ¹ | Intel® Pentium® 75 MHz | 16 MB | 32 MB | 50 MB |
| | 2000 Professional | Intel® Pentium® 133 MHz | 64 MB | 128 MB | 50 MB |
| | Me | Intel® Pentium® 150 MHz | 32 MB | 64 MB | 50 MB |
| | XP Home Edition | Intel® Pentium® 300 MHz | 128 MB | 128 MB | 50 MB |
| | XP Professional | | | | |
| XP Professional x64 Edition * ² | AMD Opteron™ AMD Athlon™ 64 Intel® Xeon™ with Intel® EM64T Intel® X Pentium® with 4 Intel® EM64T | 256 MB | 256 MB | 50 MB | |
| Apple® Macintosh®* ³ | OS® 9.1-9.2 | All base models meet minimum requirements | 32 MB | 64 MB | 50 MB |
| | Mac OS® X10.2.4 or greater | | 128 MB | 160 MB | 50 MB |

*1 USB is not supported under Windows® 95 or Windows NT® 4.0.

*2 Download the printer driver for Windows® XP Professional x64 Edition from <http://solutions.brother.com>

*3 Power Macintosh with an Apple original pre-installed USB port.

3.3 Electronics and Mechanics

| | |
|--------------------------|---|
| Power source | U.S.A. and Canada: AC 110 to 120V, 50 Hz/60 Hz Europe and Australia: AC 220 to 240V, 50 Hz/60 Hz |
| Power consumption | Printing: Average 610 W at 25°C (77°F) Average 620 W at 25°C (77°F) (HL-5280DW) Standing by: Average 80 W at 25°C (77°F) Sleep: Average 8 W (HL-5240) Average 9 W (HL-5250DN/5270DN) Average 12 W (HL-5280DW) |
| Noise level | <Sound pressure> Printing: 53dB (A) Standing by: 27dB (A) <Sound power> Printing: LWAd=6.4 Bell (A) Standing by: 4.0 Bell (A) |
| Temperature | Operating: 10 to 32.5°C (50 to 90.5°F) Non operating: 0 to 40°C (38 to 104°F) Storage: -20 to 40°C (-4 to 104°F) |
| Humidity | Operating: 20 to 80% (non condensing) Storage: 10 to 85% (non condensing) |
| Dimensions | (HL-5240/5250DN) <W x D x H> 371 x 384 x 246 mm (14.6 x 15.1 x 9.7 inches) (HL-5270DN/5280DW) <W x D x H> 393 x 384 x 259 mm (15.5 x 15.1 x 10.2 inches) |
| Weight | (HL-5240) Approximately 8.3 kg (18.3 lb.), not including the drum unit and toner cartridge. Approximately 9.5 kg (20.9 lb.) including the drum unit and toner cartridge. (HL-5250DN) Approximately 8.6 kg (19.0 lb.), not including the drum unit and toner cartridge. Approximately 9.8 kg (21.6 lb.) including the drum unit and toner cartridge. (HL-5270DN/5280DW) Approximately 8.8 kg (19.4 lb.), not including the drum unit and toner cartridge. Approximately 10.0 kg (22.0 lb.) including the drum unit and toner cartridge |

NOTE:

The power consumption figure quoted for sleep mode is when the fan has stopped.

3.4 Service Information

These are key service information to maintain the product.

Machine life: 200,000 pages/ 5 years

MTBF (Meantime between failure): Up to 4000 hours

MTTR (Meantime to repair): Average 30 minutes

Monthly volume: 20,000 pages

Periodical replacement parts:

| Parts | Approximate Life |
|-------------------------------|------------------|
| Fuser Unit | 100,000 pages |
| Separator pad holder assembly | 100,000 pages |
| Pick up roller assembly | 100,000 pages |
| Laser Unit | 100,000 pages |

* As for periodical replacement parts, refer to [Chapter 3](#).

3.5 Network Connectivity

<Print server>

- NC-6400h (HL-5250DN/5270DN/5280DW)

| | | |
|--------------------------|---|--|
| Operating system support | Windows [®] 95/98/Me, Windows NT [®] 4.0, Windows [®] 2000/XP Home Edition/XP Professional/XP Professional x64 Edition, Mac OS [®] 9.1 to 9.2, Mac OS [®] X 10.2.4 or greater | |
| Protocol support | TCP/IP: IPv4 | APR, RARP, BOOTP, DHCP, APIPA (Auto IP), WINS, NetBIOS name resolution, DNS Resolver, mDNS, LPR/LPD, Custom Raw Port/Port9100, SMB Print, IPP, FTP Server, Telnet, SNMP, HTTP, TFTP, SMTP Client |
| | TCP/IP: IPv6 | NDP, DNS Resolver, mDNS, LPR/LPD, Custom Raw Port/Port9100, IPP, FTP Server, Telnet, SNMP, HTTP, TFTP, SMTP Client |
| Network type | 10/100BASE-TX Ethernet network | |
| Network printing | Windows [®] 95/98/Me Peer-to-Peer printing, Windows NT [®] 4.0 and Windows [®] 2000/XP Home Edition/XP Professional/XP Professional x64 Edition TCP/IP printing, Macintosh [®] printing | |
| Management utilities | BRAdmin Professional utility | Windows [®] 95/98/Me, Windows NT [®] 4.0, Windows [®] 2000/XP Home Edition/XP Professional/XP Professional x64 Edition |
| | BRAdmin Light | Mac OS [®] X 10.2.4 or greater |
| | Web BRAdmin | Windows [®] 2000 Professional / Server / Advanced Server, Windows [®] XP Home Edition/XP Professional/XP Professional x64 Edition Professional |

NOTE:

NC-6400h is a network controller of the printer built-in type.

- NC-2100p (HL-5240) (Option)
An optional network print server (NC-2100p) allows you to connect to your network through the parallel interface.

| | |
|---------------------|--|
| Network interface | 10/100BASE-TX Ethernet |
| Printer interface | Parallel |
| Support protocol | TCP/IP, NetBEUI |
| Management features | Embedded web server support |
| | SNMP / MIB support |
| | TELNET remote console |
| | BRAdmin Professional compatible |
| | Flash memory for easy updating of firmware |

<Ethernet wireless network>

| | | |
|--|--|--|
| Network node type | NC-7200w | |
| Operating system support | Windows [®] 98/Me, Windows NT [®] 4.0, Windows [®] 2000/XP Mac OS [®] X 10.2.4 or greater | |
| Protocol support | TCP/IP: IPv4 | APR, RARP, BOOTP, DHCP, APIPA (Auto IP), WINS, NetBIOS name resolution, DNS Resolver, mDNS, LPR/LPD, Custom Raw Port/Port9100, SMB Print, IPP, FTP Server, Telnet, SNMP, HTTP, TFTP, SMTP Client |
| | TCP/IP: IPv6 | NDP, DNS Resolver, mDNS, LPR/LPD, Custom Raw Port/Port9100, IPP, FTP Server, Telnet, SNMP, HTTP, TFTP, SMTP Client |
| Network type | IEEE 802.11b/g wireless | |
| Frequency | 2412-2472 MHz | |
| RF channels | USA/Canada | 1-11 |
| | Europe/Oceania | 1-13 |
| | Japan | 1-14 |
| Communication mode | Infrastructure, Ad-hoc 802.11 | |
| Data rates | 802.11b | 11/5.5/2/1 Mbps |
| | 802.11g | 54/48/36/24/18/12/9/6 Mbps |
| Link distance | 70 m (233 ft.) at lowest data rate (The distance rate will vary upon environment and other equipment location.) | |
| Network security | SSID/ESSID, 128 (104) / 64 (40) bit WEP, WPA-PSK (TKIP/AES), LEAP | |
| Network printing | Windows [®] 95/98/Me Peer-to-Peer printing Windows NT [®] 4.0 and Windows [®] 2000/XP TCP/IP printing Macintosh [®] printing (Mac OS [®] 10.2.4 or greater supporting TCP/IP) | |
| Computer requirements (for drivers, BRAdmin Professional, Peer-to-Peer software, etc.) | Processor Minimum Speed | Pentium [®] II or equivalent for Windows [®] 98/Me, Windows NT [®] 4.0, Windows [®] 2000/XP |
| | Minimum RAM | 24MB for Windows [®] 98/Me 32MB for Windows [®] 2000 64MB for Windows [®] XP |
| | Recommended RAM | 32MB for Windows [®] 98/98SE/Me 64MB for Windows [®] 2000 128MB for Windows [®] XP |
| Macintosh [®] connection | Computer | Wireless (AirPort) ready Power Macintosh [®] |
| | Processor Minimum Speed | All base models meet minimum requirements |
| | Minimum RAM | 128MB for Mac OS [®] X 10.2.4 or greater |
| | Recommended RAM | 160MB for Mac OS [®] X 10.2.4 or greater |
| Management utilities | BRAdmin Professional | Windows [®] 98/Me, Windows NT [®] 4.0, Windows [®] 2000/XP |
| | BRAdmin Light | Mac OS [®] X 10.2.4 or greater |
| | Web BRAdmin ^{*1} | Windows [®] 2000 Professional / Server / Advanced Server, Windows [®] XP Professional |

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

3.6 Paper

3.6.1 Paper handling

| Paper Input* | All models |
|-----------------------|------------|
| Multi-purpose tray | 50 sheets |
| Paper tray (Standard) | 250 sheets |
| Lower tray (Option) | 250 sheets |

* Calculated with 80 g/m² (21 lb) paper.

| Paper Output* | All models |
|---------------|------------|
| Face-down | 150 sheets |

* Calculated with 80 g/m² (21 lb) paper.

| Duplex | HL-5240 | HL-5250DN/ 5270DN/ 5280DW |
|------------------|---------|---------------------------|
| Manual Duplex | Yes | |
| Automatic Duplex | N/A | Yes |

3.6.2 Media specifications

(1) Media types

The printer loads paper from the installed paper tray or the multi-purpose tray. The feedable media type and size are different depending on the paper tray installed. The names for the paper trays in the printer driver and this guides are as follows;

| | |
|---|----------------|
| Paper tray | Tray 1 |
| Multi-purpose tray | MP Tray |
| Optional lower tray unit | Tray 2/ Tray 3 |
| Duplex tray for automatic duplex printing (for HL-5250DN/5270DN/5280DW) | DX |

The table in the next page shows the feedable media of each paper tray described above.

| | Tray 1/2/3 | MP Tray | DX | Choose the media type from the printer driver |
|---|---|---|-----|---|
| Plain paper 75 g/m ² to 105 g/m ² (20 to 28 lbs.) | Yes | Yes | Yes | Plain paper |
| Recycled paper | Yes | Yes | Yes | Recycled paper |
| Bond paper Rough paper- 60 g/m ² to 161 g/m ² (16 to 43 lbs.) | Yes 60 g/m ² to 105 g/m ² (16 to 28 lbs.) | Yes 60 g/m ² to 161 g/m ² (16 to 43 lbs.) | N/A | Bond paper |
| Thin paper 60 g/m ² to 75 g/m ² (16 to 20 lbs.) | Yes | Yes | Yes | Thin paper |
| Thick paper 105 g/m ² to 161 g/m ² (28 to 43 lbs.) | N/A | Yes | N/A | Thick Paper or Thicker Paper |
| Transparency | Yes Up to 10 sheets A4 or Letter ** | Yes Up to 10 sheets A4 or Letter | N/A | Transparencies |
| Labels | N/A | Yes A4 or Letter | N/A | Thicker Paper |
| Envelopes | N/A | Yes | N/A | Envelopes, Env. Thin, Env. Thick |

* Up to 10 sheets

** Not available for the optional Tray 2/3.

(2) Media size

| MP Tray | Tray 1 (Standard) | Tray 2, Tray3 (Option) | DX |
|---|--|--|--------------------|
| Width: 69.9 to 215.9 mm (2.75 to 8.5 in.) Length: 116 to 406.4 mm (4.57 to 16 in.) | A4, Letter, Legal*, B5 (ISO), Executive, A5, A6, B6 (ISO) | A4, Letter, Legal*, B5 (ISO), Executive, A5, B6 (ISO) | A4, Letter, Legal* |

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

(3) Media weights

| Tray 1 | MP Tray | DX | Tray 2/3 Lower tray unit (Option) (LT-5300) |
|--|--|--|---|
| 60 to 105 g/m ² (16 to 28 lb.) | 60 to 161 g/m ² (16 to 43 lb.) | 60 to 105 g/m ² (16 to 28 lb.) | 60 to 105 g/m ² (16 to 28 lb.) |

(4) Recommended paper

| | Europe | USA |
|-----------------------|--|--|
| Plain paper | Xerox Premier 80 g/m ² Xerox Business 80 g/m ² M-real DATACOPY 80 g/m ² | Xerox 4200DP 20lb Hammermill Laser Paper 24lb |
| Recycled paper | Xerox Recycled Supreme | N/A |
| Transparency | 3M CG3300 | 3M CG 3300 |
| Label | Avery laser label L7163 | Avery laser label #5160 |

* This printer can use recycled paper that meets the DIN 19309 specification.

(5) Moisture content

| | |
|-------------------------|--------------------|
| Moisture content | 4% to 6% by weight |
|-------------------------|--------------------|



CAUTION:

When you are choosing print media, be sure to follow the information given below to prevent any paper jams, print quality problems or printer damage;

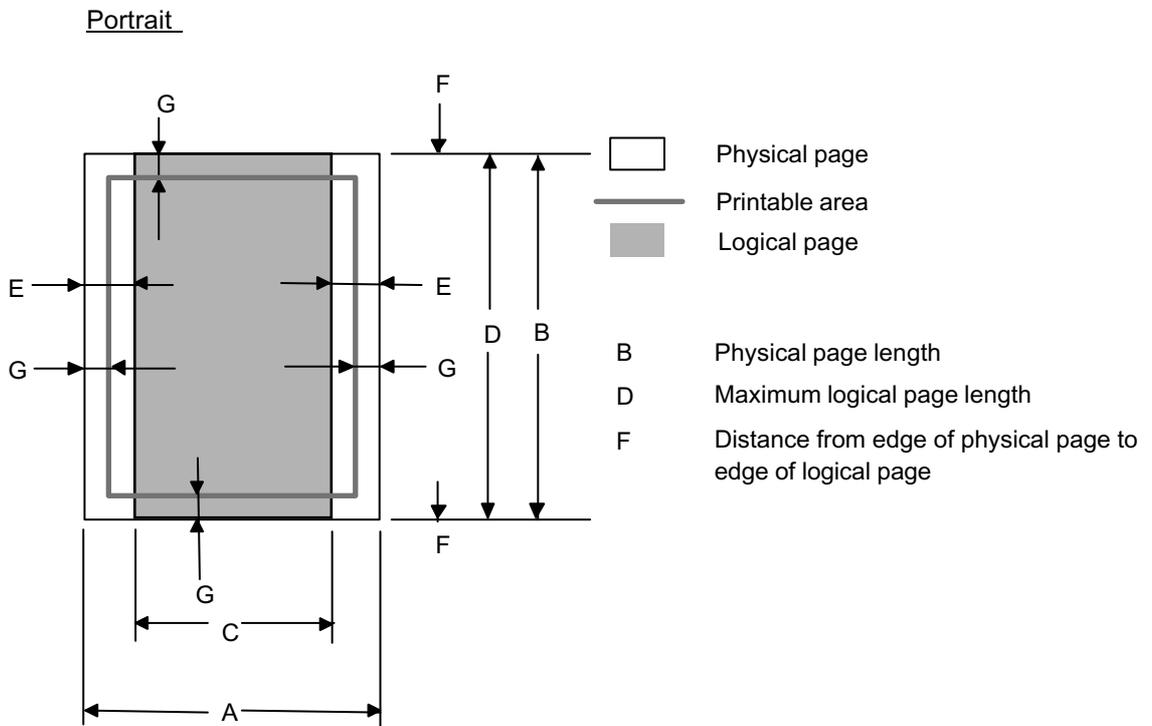
- *It is recommended to use long-grained paper for the best print quality. If short-grained paper is being used, it might be the cause of paper jams.*
- *Use neutral paper. Do not use acid paper to avoid any damage to the drum unit.*
- *Avoid using coated paper such as vinyl coated paper.*
- *Avoid using preprinted or highly textured paper.*
- *It is recommended to use labels or transparencies which are designed for use in laser printers.*
- *Avoid feeding labels with the carrier sheet exposed, or the printer will be damaged.*
- *Before loading paper with holes such as organizer sheets, be sure to fan the stack well.*
- *Do not use organizer sheets that are stuck together. The glue that is used might caused damaged to the printer.*
- *When printing on the back of pre-printed paper, if the paper is curled, be sure to straighten the paper as much as possible.*

Different types of paper should not be loaded at the same time in the paper tray to avoid any paper jams or misfeeds.

3.7 Printable Area

3.7.1 PCL5e/EPSON/IBM emulation

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



NOTE:

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

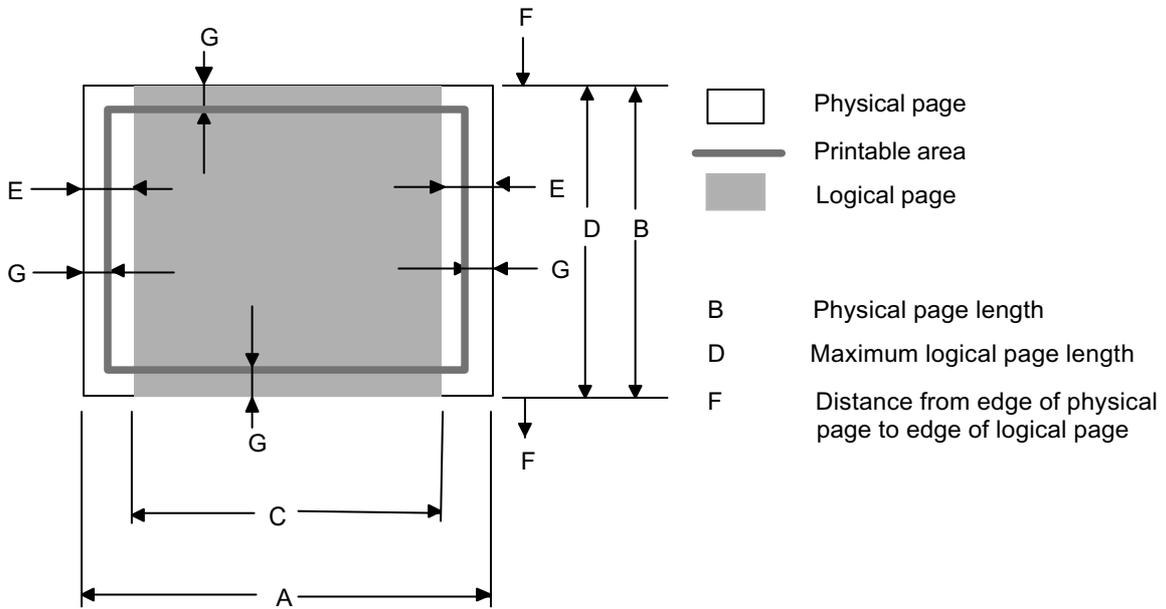
The table below shows the printable areas when printing on Portrait for each paper size.

| Size | A | B | C | D | E | F | G |
|------------------|-------------------------------------|------------------------------------|-----------------------------------|------------------------------------|-------------------------------|------|-------------------------------|
| Letter | 215.9 mm 8.5" (2,550 dots) | 279.4 mm 11.0" (3,300 dots) | 203.2 mm 8.0" (2,400 dots) | 279.4 mm 11.0" (3,300 dots) | 6.35 mm 0.25" (75 dots) | 0 mm | 4.2 mm 0.16" (50 dots) |
| Legal | 215.9 mm 8.5" (2,550 dots) | 355.6 mm 14.0" (4,200 dots) | 203.2 mm 8.0" (2,400 dots) | 355.6 mm 14.0" (4,200 dots) | ↑ | 0 mm | 4.2 mm 0.16" (50 dots) |
| Folio | 215.9 mm 8.5" (2,550 dots) | 330.2mm 13.0" (3,900 dots) | 203.2 mm 8.0" (2,400 dots) | 330.2mm 13.0" (3,900 dots) | ↑ | 0 mm | 4.2 mm 0.16" (50 dots) |
| Executive | 184.15 mm 7.25" (2,175 dots) | 266.7 mm 10.5" (3,150 dots) | 175.7 mm 6.92" (2,025 dots) | 266.7 mm 10.5" (3,150 dots) | 6.35 mm 0.25" (75 dots) | 0 mm | 4.2 mm 0.16" (50 dots) |
| A 4 | 210.0 mm 8.27" (2,480 dots) | 297.0 mm 11.69" (3,507 dots) | 198.0 mm 7.79" (2,338 dots) | 297.0 mm 11.69" (3,507 dots) | 6.01 mm 0.24" (71 dots) | 0 mm | 4.2 mm 0.16" (50 dots) |
| A 5 | 148.5 mm 5.85" (1,754 dots) | 210.0 mm 8.27" (2,480 dots) | 136.5 mm 5.37" (1,612 dots) | 210.0 mm 8.27" (2,480 dots) | ↑ | 0 mm | 4.2 mm 0.16" (50 dots) |
| A 6 | 105.0 mm 4.13" (1,240 dots) | 148.5 mm 5.85" (1,754 dots) | 93.0 mm 3.66" (1,098 dots) | 148.5 mm 5.85" (1,754 dots) | ↑ | 0 mm | 4.2 mm 0.16" (50 dots) |
| B 5 (JIS) | 182.0 mm 7.1" (2,130 dots) | 257.0 mm 10.11" (3,033 dots) | 170.0 mm 6.69" (2,007 dots) | 257.0 mm 10.11" (3,033 dots) | ↑ | 0 mm | 4.2 mm 0.16" (50 dots) |
| B 5 (ISO) | 176.0 mm 6.93" (2,078 dots) | 250.0 mm 9.84" (2,952 dots) | 164.0 mm 6.46" (1,936 dots) | 250.0 mm 9.84" (2,952 dots) | ↑ | 0 mm | 4.2 mm 0.16" (50 dots) |
| B 6 (ISO) | 125.0 mm 4.92" (1,476 dots) | 176.0 mm 6.93" (2,078 dots) | 164.0 mm 4.44" (1,334 dots) | 176.0 mm 6.93" (2,078 dots) | ↑ | 0 mm | 4.2 mm 0.16" (50 dots) |
| COM10 | 104.78 mm 4.125" (1,237 dots) | 241.3 mm 9.5" (2,850 dots) | 92.11 mm 3.63" (1,087 dots) | 241.3 mm 9.5" (2,850 dots) | 6.35 mm 0.25" (75 dots) | 0 mm | 4.2 mm 0.16" (50 dots) |
| MONARCH | 98.43 mm 3.875" (1,162 dots) | 190.5 mm 7.5" (2,250 dots) | 85.7 mm 3.37" (1,012 dots) | 190.5 mm 7.5" (2,250 dots) | ↑ | 0 mm | 4.2 mm 0.16" (50 dots) |
| C 5 | 162.0 mm 6.38" (1,913 dots) | 229.0 mm 9.01" (2,704 dots) | 150.0 mm 5.9" (1,771 dots) | 229.0 mm 9.01" (2,704 dots) | 6.01 mm 0.24" (71 dots) | 0 mm | 4.2 mm 0.16" (50 dots) |
| DL | 110.0 mm 4.33" (1,299 dots) | 220.0 mm 8.66" (2,598 dots) | 98.0 mm 3.86" (1,157 dots) | 220.0 mm 8.66" (2,598 dots) | ↑ | 0 mm | 4.2 mm 0.16" (50 dots) |
| DL L | 220.0 mm 8.66" (2,598 dots) | 110.0 mm 4.33" (1,299 dots) | 207.4 mm 8.17" (2,450 dots) | 110.0 mm 4.33" (1,299 dots) | 6.27 mm 0.25" (74 dots) | 0 mm | 6.27 mm 0.25" (74 dots) |

NOTE:

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

Landscape



NOTE:

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

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

| Size | A | B | C | D | E | F | G |
|------------------|------------------------------------|-------------------------------------|-----------------------------------|-------------------------------------|-------------------------------|------|-------------------------------|
| Letter | 279.4 mm 11.0" (3,300 dots) | 215.9 mm 8.5" (2,550 dots) | 269.3 mm 10.6" (3,180 dots) | 215.9 mm 8.5" (2,550 dots) | 5.0 mm 0.2" (60 dots) | 0 mm | 4.2 mm 0.16" (50 dots) |
| Legal | 355.6 mm 14.0" (4,200 dots) | 215.9 mm 8.5" (2,550 dots) | 345.5 mm 13.6" (4,080 dots) | 215.9 mm 8.5" (2,550 dots) | ↑ | 0 mm | 4.2 mm 0.16" (50 dots) |
| Folio | 330.2mm 13.0" (3,900 dots) | 215.9 mm 8.5" (2,550 dots) | 320.0mm 12.6" (3,780 dots) | 215.9 mm 8.5" (2,550 dots) | ↑ | 0 mm | 4.2 mm 0.16" (50 dots) |
| Executive | 266.7 mm 10.5" (3,150 dots) | 184.15 mm 7.25" (2,175 dots) | 256.6 mm 10.1" (3,030 dots) | 184.15 mm 7.25" (2,175 dots) | 5.0 mm 0.2" (60 dots) | 0 mm | 4.2 mm 0.16" (50 dots) |
| A 4 | 297.0 mm 11.69" (3,507 dots) | 210.0 mm 8.27" (2,480 dots) | 287.0 mm 11.2" (3,389 dots) | 210.0 mm 8.27" (2,480 dots) | 4.8 mm 0.19" (59 dots) | 0 mm | 4.2 mm 0.16" (50 dots) |
| A 5 | 210.0 mm 8.27" (2,480 dots) | 148.5 mm 5.85" (1,754 dots) | 200.0mm 7.87" (2,362 dots) | 148.5 mm 5.85" (1,754 dots) | ↑ | 0 mm | 4.2 mm 0.16" (50 dots) |
| A 6 | 148.5 mm 5.85" (1,754 dots) | 105.0 mm 4.13" (1,240 dots) | 138.5 mm 5.45" (1,636 dots) | 105.0 mm 4.13" (1,240 dots) | ↑ | 0 mm | 4.2 mm 0.16" (50 dots) |
| B 5 (JIS) | 257.0 mm 10.11" (3,033 dots) | 182.0 mm 7.1" (2,130 dots) | 247.0 mm 9.72" (2,916 dots) | 182.0 mm 7.1" (2,130 dots) | ↑ | 0 mm | 4.2 mm 0.16" (50 dots) |
| B 5 (ISO) | 250.0 mm 9.84" (2,952 dots) | 176.0 mm 6.93" (2,078 dots) | 240.0 mm 9.44" (2,834 dots) | 176.0 mm 6.93" (2,078 dots) | ↑ | 0 mm | 4.2 mm 0.16" (50 dots) |
| B 6 (ISO) | 176.0 mm 6.93" (2,078 dots) | 125.0 mm 4.92" (1,476 dots) | 166.4 mm 6.55" (1,960 dots) | 125.0 mm 4.92" (1,476 dots) | ↑ | 0 mm | 4.2 mm 0.16" (50 dots) |
| COM10 | 241.3 mm 9.5" (2,850 dots) | 104.78 mm 4.125" (1,237 dots) | 231.1 mm 9.1" (2,730 dots) | 104.78 mm 4.125" (1,237 dots) | 5.0 mm 0.2" (60 dots) | 0 mm | 4.2 mm 0.16" (50 dots) |
| MONARCH | 190.5 mm 7.5" (2,250 dots) | 98.43 mm 3.875" (1,162 dots) | 180.4 mm 7.1" (2,130 dots) | 98.43 mm 3.875" (1,162 dots) | ↑ | 0 mm | 4.2 mm 0.16" (50 dots) |
| C 5 | 229 mm 9.01" (2,704 dots) | 162 mm 6.38" (1,913 dots) | 219.0 mm 8.62" (2,586 dots) | 162 mm 6.38" (1,913 dots) | 4.8 mm 0.19" (59 dots) | 0 mm | 4.2 mm 0.16" (50 dots) |
| DL | 220 mm 8.66" (2,598 dots) | 110 mm 4.33" (1,299 dots) | 210.0 mm 8.26" (2,480 dots) | 110 mm 4.33" (1,299 dots) | ↑ | 0 mm | 4.2 mm 0.16" (50 dots) |
| DL L | 110 mm 4.33" (1,299 dots) | 220 mm 8.66" (2,598 dots) | 97.5 mm 3.84" (1,151 dots) | 220 mm 8.66" (2,598 dots) | 6.27 mm 0.25" (74 dots) | 0 mm | 6.27 mm 0.25" (74 dots) |

NOTE:

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

3.7.2 PCL6 emulation

You can not print within 4.2 mm (50dots in 300 dpi mode) on all four sides of the paper.

3.8 Print Speeds with Various Settings

Print speed is up to 28 ppm for A4 size and 30 ppm for Letter size when loading A4 or Letter size paper from the paper tray in the plain paper mode.

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

<A4 / Letter size>

| Media type setting | All models |
|----------------------------------|------------|
| Transparency | 28/30 ppm |
| Thin Paper | 28/30 ppm |
| Plain Paper | 28/30 ppm |
| Recycled Paper | 28/30 ppm |
| Thick Paper, Envelopes, Env.Thin | 14 ppm |
| Thicker/Bond Paper, Env.Thick | 3 ppm |

<Smaller size than A4 or Letter>

| Media type setting | All models |
|-------------------------------|---------------------------|
| Transparency | 28/30 ppm |
| Thin Paper | 28/30 ppm |
| Plain Paper | 90 sec 28/30 ppm → 14 ppm |
| Recycled Paper | 90 sec 28/30 ppm → 14 ppm |
| Env.Thin | 14 ppm |
| Thick Paper, Envelopes | 14 ppm |
| Thicker/Bond Paper, Env.Thick | 3 ppm |

NOTE:

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

3.9 Toner Cartridge Weight Information

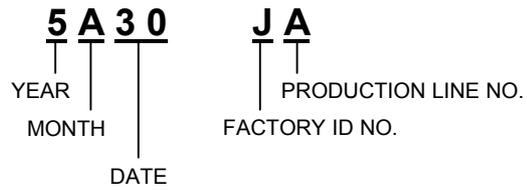
Toner Cartridge Weight (approximate weight)

| High yield toner cartridge (TN580 US, TN-3170 EUR/EEU TN-3185 AP) | From the first production | From the serial number: M5JD021965D~ |
|--|---------------------------|--|
| Brand new Toner Cartridge Weight | 727g (± 15g) | 787g (± 15g) |
| Toner Weight at Brand New Toner Cartridge | 190g | 190g |
| Toner Cartridge Weight at Toner Near Empty | 617g (± 15g) | 677g (± 15g) |
| Remain Toner Weight at Toner Near Empty | 77g | 77g |
| Toner Cartridge Weight at Toner Life End | 605g (± 15g) | 665g (± 15g) |
| Remain Toner Weight at Toner Life End | 68g | 68g |
| Standard toner cartridge (TN-550 US, TN-3130EUR/EEU TN-3145 AP) | From the first production | From the serial number: M5JV030390D~ |
| Brand new Toner Cartridge Weight | 663g (± 15g) | 723g (± 15g) |
| Toner Weight at Brand New Toner Cartridge | 126g | 126g |
| Toner Cartridge Weight at Toner Near Empty | 617g (± 15g) | 677g (± 15g) |
| Remain Toner Weight at Toner Near Empty | 77g | 77g |
| Toner Cartridge Weight at Toner Life End | 602g (± 15g) | 662g (± 15g) |
| Remain Toner Weight at Toner Life End | 65g | 65g |
| You can print about 630 pages with 10g toner. (A4 size, 5% coverage, continuous printing) | | |
| NOTE: | | |
| <i>The figure has varied quite a bit, for example from 590 pages to 720 pages, on a comparison of printing test results.</i> | | |

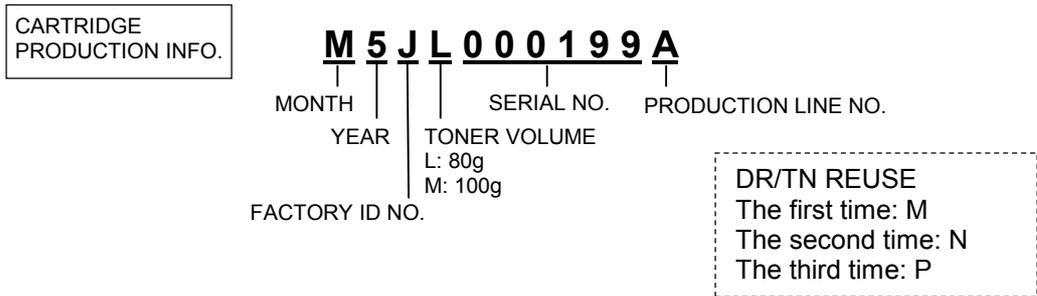
NOTE:

- Without yellow protector, DR cover.
- Toner weight may vary within 2 to 3g.
- From the serial number "M5JV030390D~" for the standard toner cartridge and "M5JD021965D~" for the high yield toner cartridge, 60g is over in the total weight of a toner cartridge because of a different type of the Develop Roller.

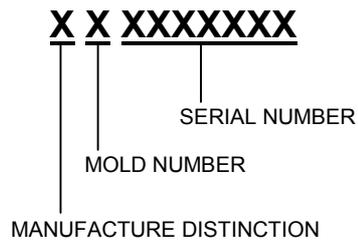
(4) Toner cartridge: Imprinted on the aluminum bag



Printed on the bar code label attached on the toner cartridge



(5) Laser unit: On the laser unit



CHAPTER 2 THEORY OF OPERATION

1. OVERALL

1.1 General Block Diagram

Fig. 2-1 shows a general block diagram.

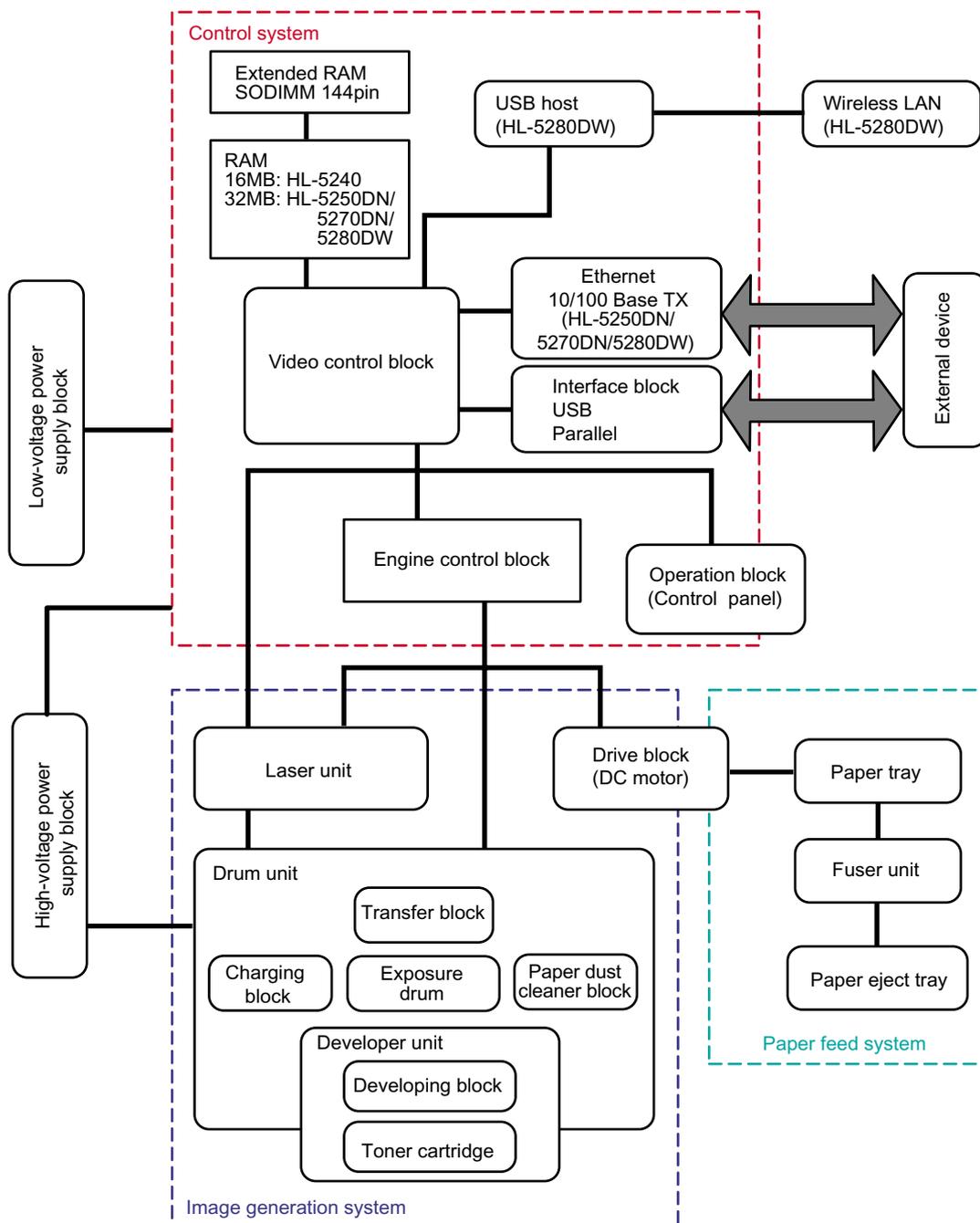


Fig. 2-1

2. ELECTRONICS

2.1 General Block Diagram

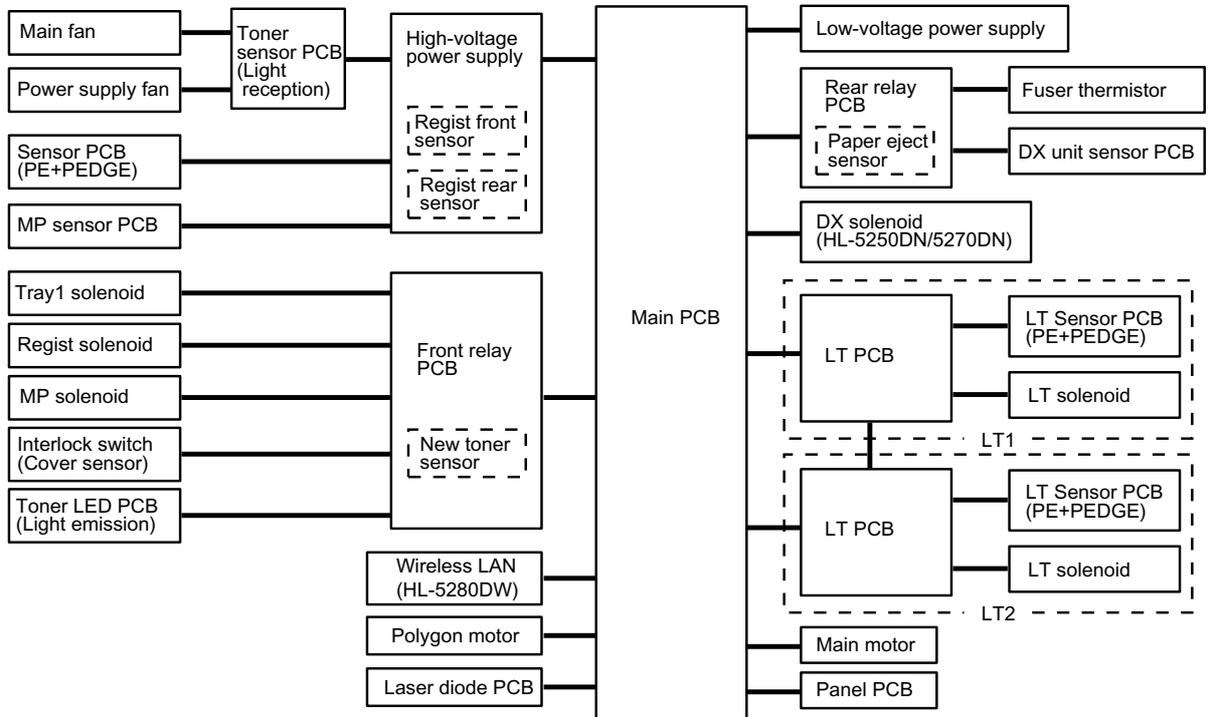


Fig. 2-2

2.2 Main PCB Block Diagram

Fig. 2-3 shows the block diagram of the main PCB.

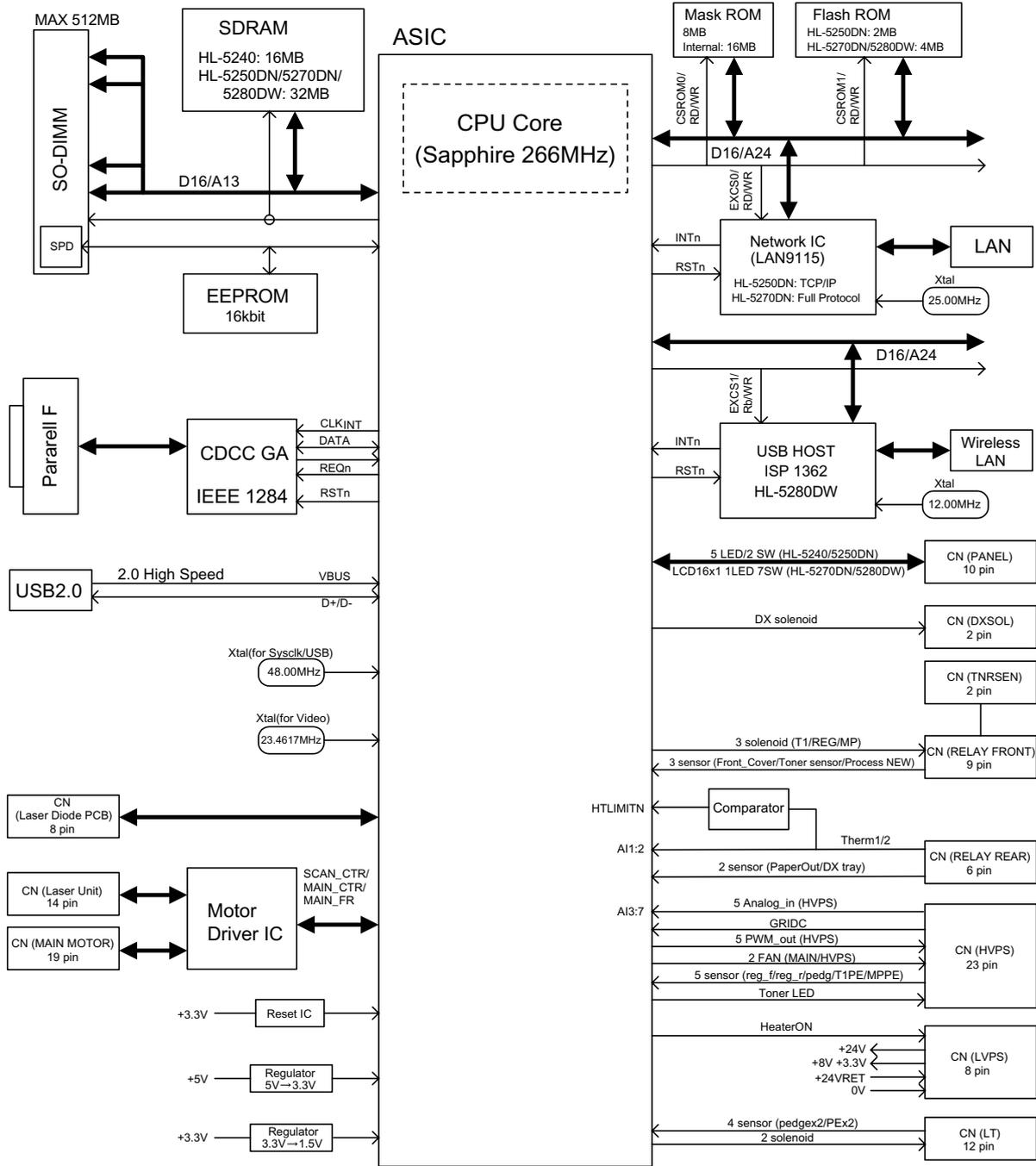


Fig. 2-3

2.3 Main PCB

For the entire circuit diagram of the main PCB.

2.3.1 CPU

A Sapphire – 266 MHz (Vr5500) is built into the CPU in the ASIC. It runs at a clock frequency of 266 MHz.

The functions of the interface block communication with external devices are described below;

2.3.2 USB interface (2.0 High Speed)

Stores the data received from the PC into DRAM as controlled by the DMA controller. The transmission speed is 12Mbps.

2.3.3 IEEE1284 interface

Stores the data received from the PC into DRAM by DMA using the Gate Array (UPD65421MC-11) exclusive for parallel I/F. It is for the normal reception and dual direction communication (nibble mode, byte mode, ECP mode).

2.3.4 Network interface

It uses the National Semiconductor brand 10 Base-T/100 Base-TX network controller (LAN9115). The pulse transformer and the Link/Active LED are built in the RJ-45 connector.

2.3.5 ROM

< ROM 0 >

64 Mbit ROM (8 MB) is fitted.

The main program is written into the ROM.

< ROM 1: Demo Specification For US, Canada >

16 Mbit ROM (2 MB) is fitted. (HL-5240)

32 Mbit ROM (4 MB) is fitted. (HL-5250DN)

< ROM 1: Standard Specification >

16 Mbit ROM (2 MB) is fitted. (HL-5250DN)

32 Mbit ROM (4 MB) is fitted. (HL-5270DN/5280DW)

2.3.6 SDRAM

16 MB SDRAM (128 Mbits x 1) is used as the RAM. (HL-5240)

32 MB SDRAM (256 Mbits x 1) is used as the RAM. (HL-5250DN/5270DN/5280DW)

2.3.7 Optional RAM

1 DIMM (144pin) slot can be fitted as optional expansion RAM. The main PCB has one slot and the capacity of DIMM can be from 64MB to 512MB.

2.3.8 EEPROM

The EEPROM is M24C16 type of two-wire method with a 16kbit configuration.

2.3.9 Reset circuit

The reset IC is a S-80928CLNB. The reset voltage is 2.8V (typ.) and the low period of reset is 260ms (typ.).

2.3.10 Panel I/O

The interface with the panel board is connected to ASIC.

2.3.11 Video I/O

The video signal is directly output from ASIC to laser unit.

2.3.12 Power supply

+3.3V is supplied from LVPS. +3.3V is used by logic circuit.

In addition, +3.3V is generated by the voltage regulator from +8V supplied from the LVPS. +1.5V is used for the CPU within the ASIC and the logic circuit.

24V is used for the motors and solenoids and fan.

2.3.13 Wireless LAN

The wireless LAN is conformable to 802.11 b/g. It is also conformable to WEP, WPA-PSK, LEAP and Secure Easy Setup.

2.4 Power Supply

2.4.1 Low-voltage power supply

The power supply uses a switching regulation system to generate the regulated DC power (+5V and +24V), which are converted from the AC line.

The regulated output and the production code of each power supply are listed below;

| Regulated Output | Production Code |
|-------------------------|-----------------|
| +3.3V / 1.5A | 100V: SRP1828UC |
| +24V / 2.4A, +8V / 0.8A | 200V: SRP1829EK |

2.4.2 High-voltage power supply

The high-voltage power supply generates and outputs the voltages and currents for the charging, development and transfer functions.

3. MECHANICS

3.1 Overview of Printing Mechanism

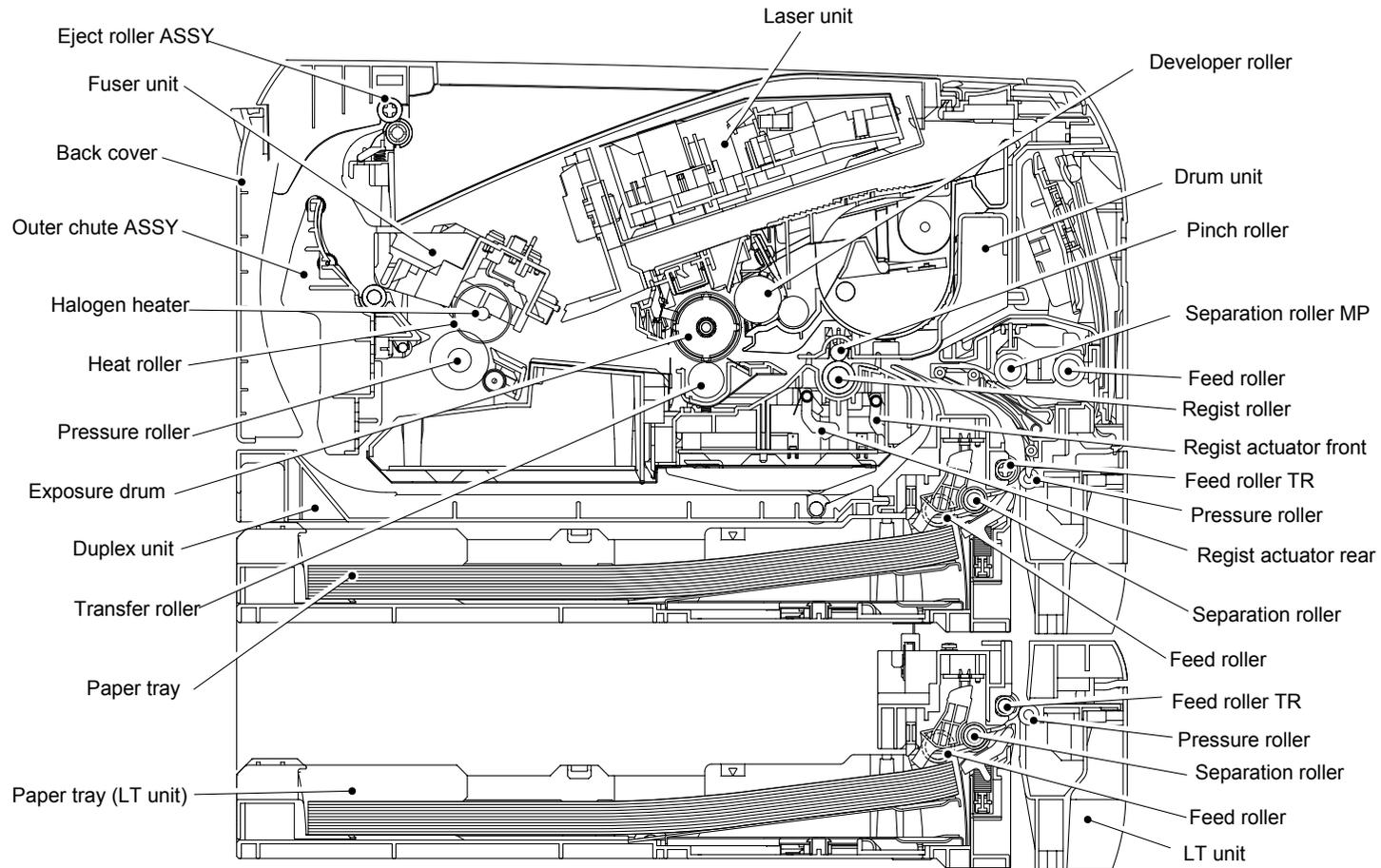


Fig. 2-4

3.2 Overview of Gears

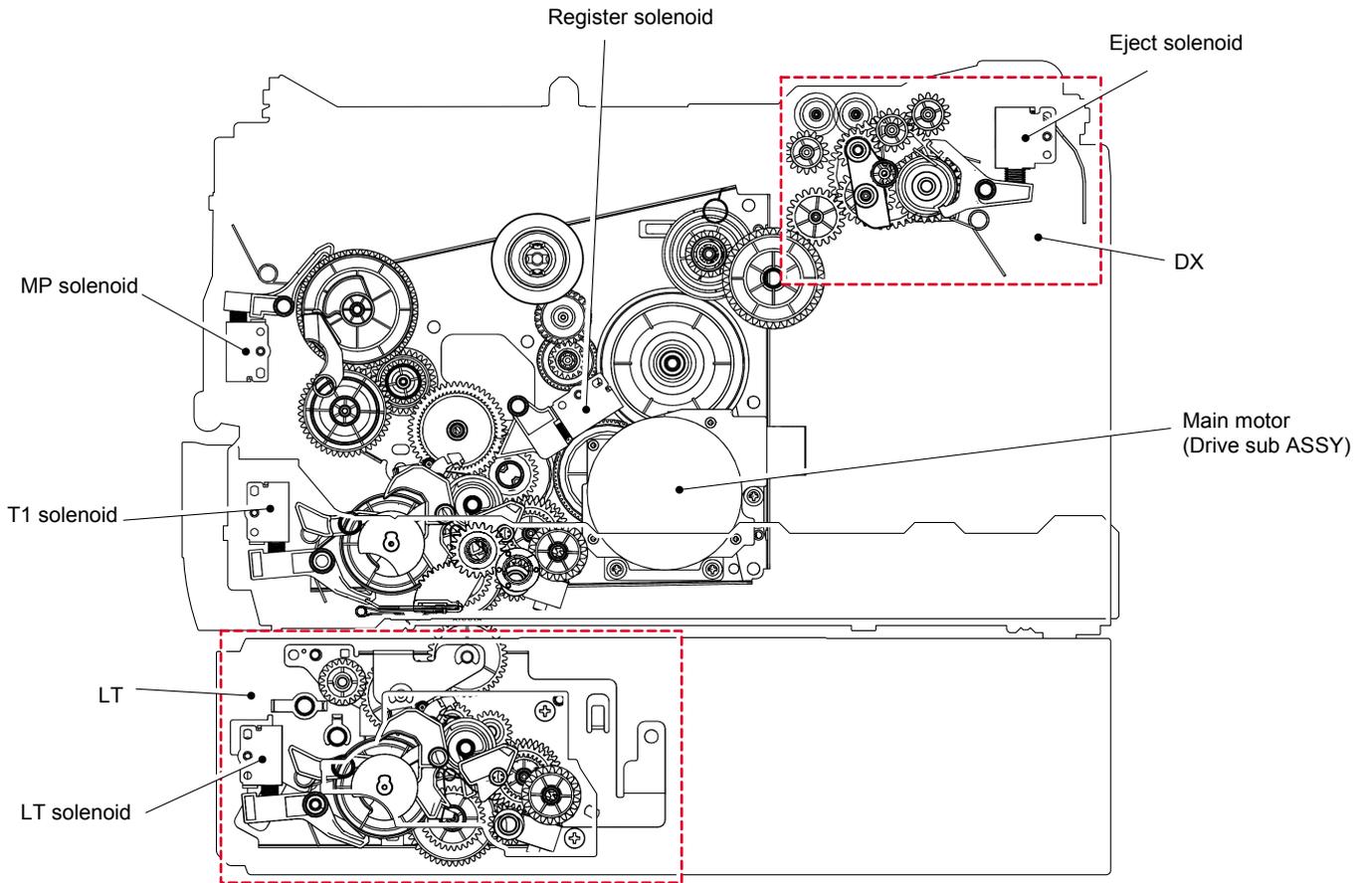


Fig. 2-5

3.3 Paper Transfer

3.3.1 Paper supply

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

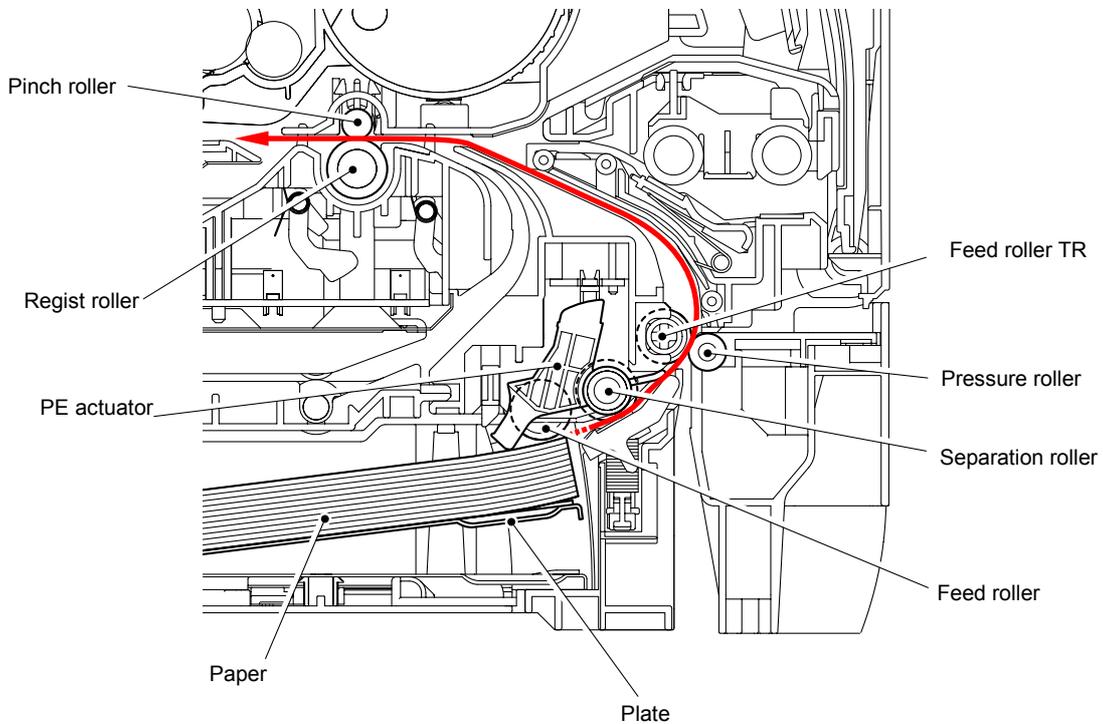


Fig. 2-6

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

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

The plate ASSY in the paper tray is pushed up with the motor drive and not with the spring in order to maintain the constant paper feeding performance regardless the number of sheet remained in the tray.
 When the paper tray (Tray1 cassette) is installed into the printer, the lift gear 46 is rotated, and the motor drive is transmitted to the plate ASSY so that it is pushed up.

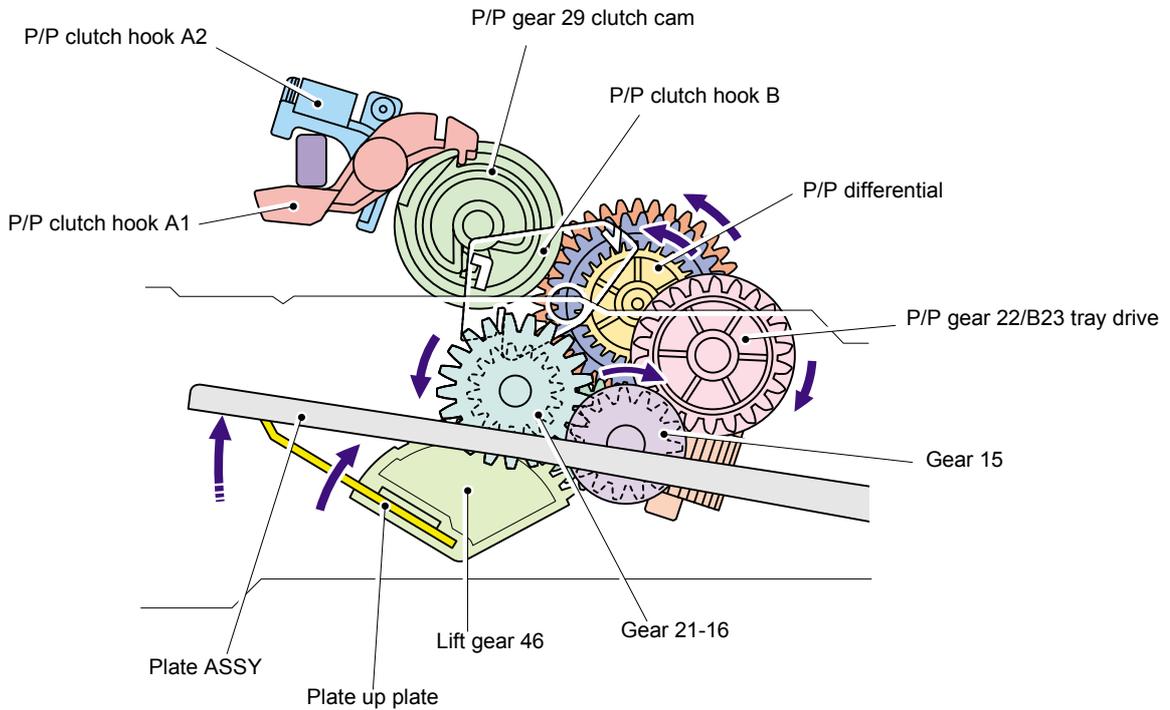


Fig. 2-7

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

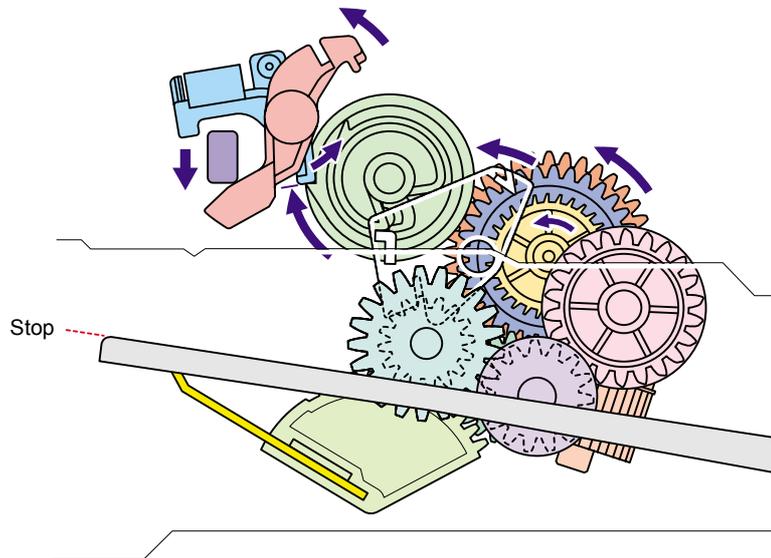


Fig. 2-8

When a paper jam occurs, the nips between the pressure roller and feed roller TR and between the pinch roller and regist roller are released, which allows you to remove the jammed recording paper easily.

3.3.2 Paper registration

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

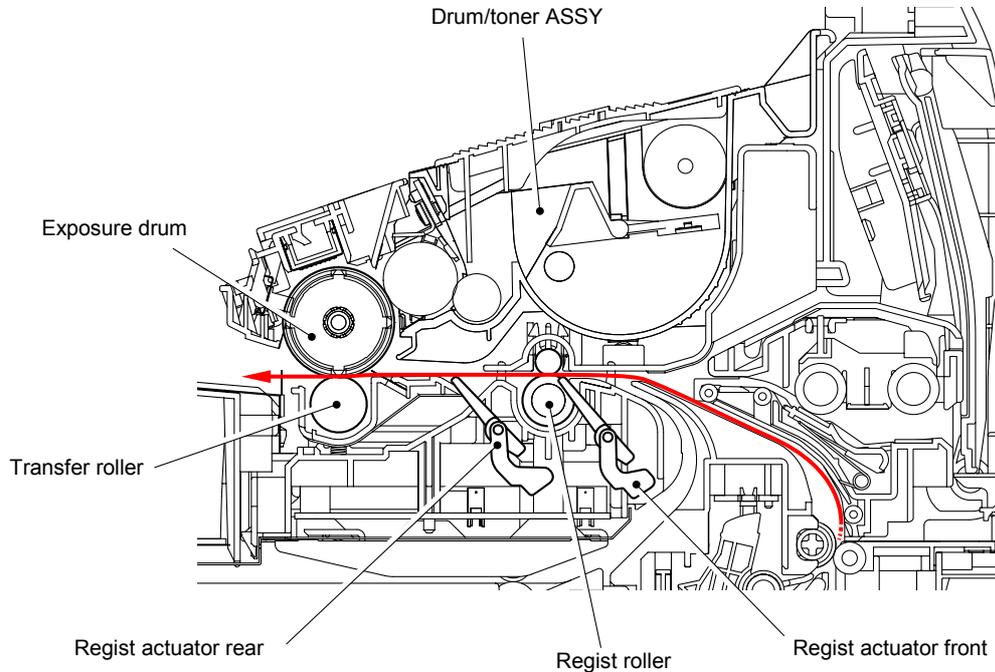


Fig. 2-9

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

3.3.3 Drum unit

■ Exposure drum

Generates the latent electrostatic image and develops the image on the drum surface.

■ Primary charger

Forms a uniform charge on the drum surface.

- (1) Corona wire
Generates the ion charge on the drum.
- (2) Grid
Spreads the ion charge evenly over the drum surface.

■ Transfer roller

Transfers the toner image to the paper from the drum surface.

■ Cleaner

Removes the paper dust or dirt on the surface of the exposure drum.



3.3.5 Fixing stage

The image transferred to the paper by static electricity is fixed by heat and pressure when passing through the heat roller and the pressure roller in the fuser unit. The thermistor keeps the surface temperature of the heat roller constant by detecting the surface temperature of the heat roller and turning on or off the halogen heater lamp.

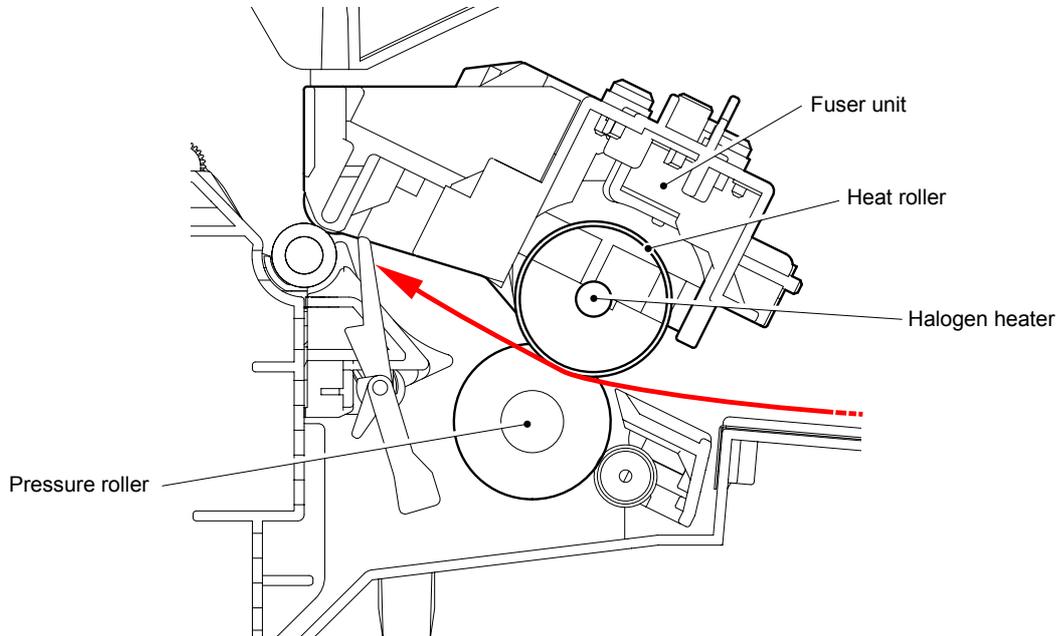


Fig. 2-11

3.3.6 Paper eject

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

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

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

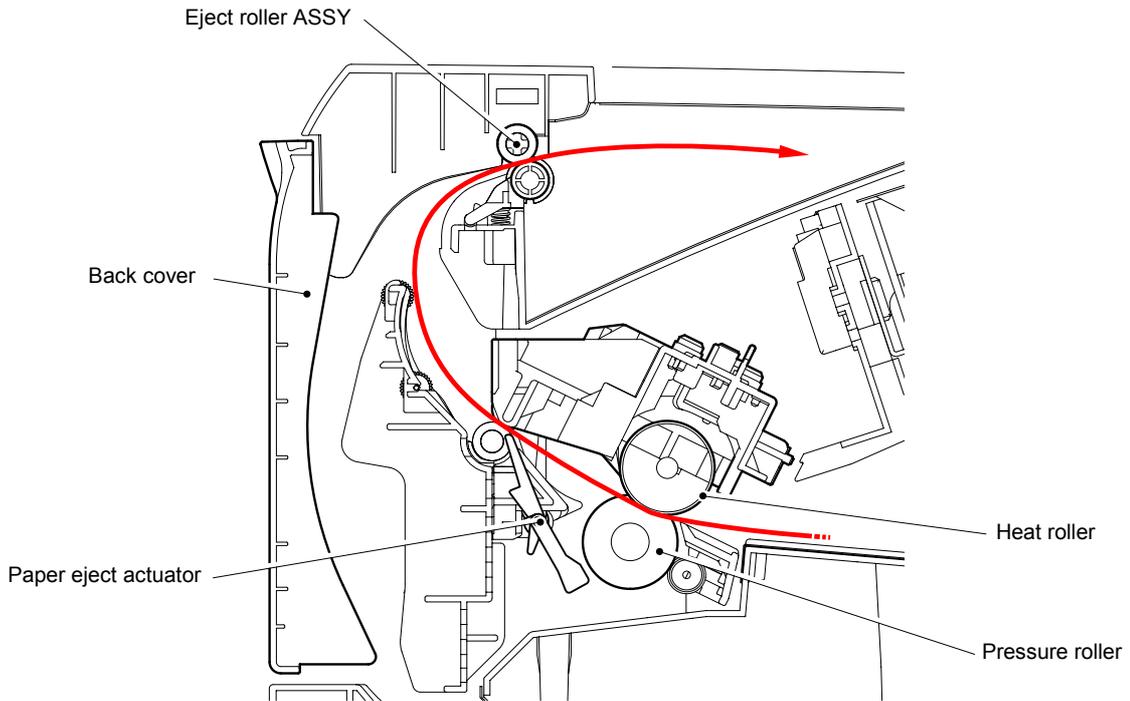


Fig. 2-12

When a paper jam occurs, the roller in the eject roller ASSY is released to remove the jammed recording paper easily.

3.3.7 Duplex printing (HL-5250DN/5270DN/5280DW)

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

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

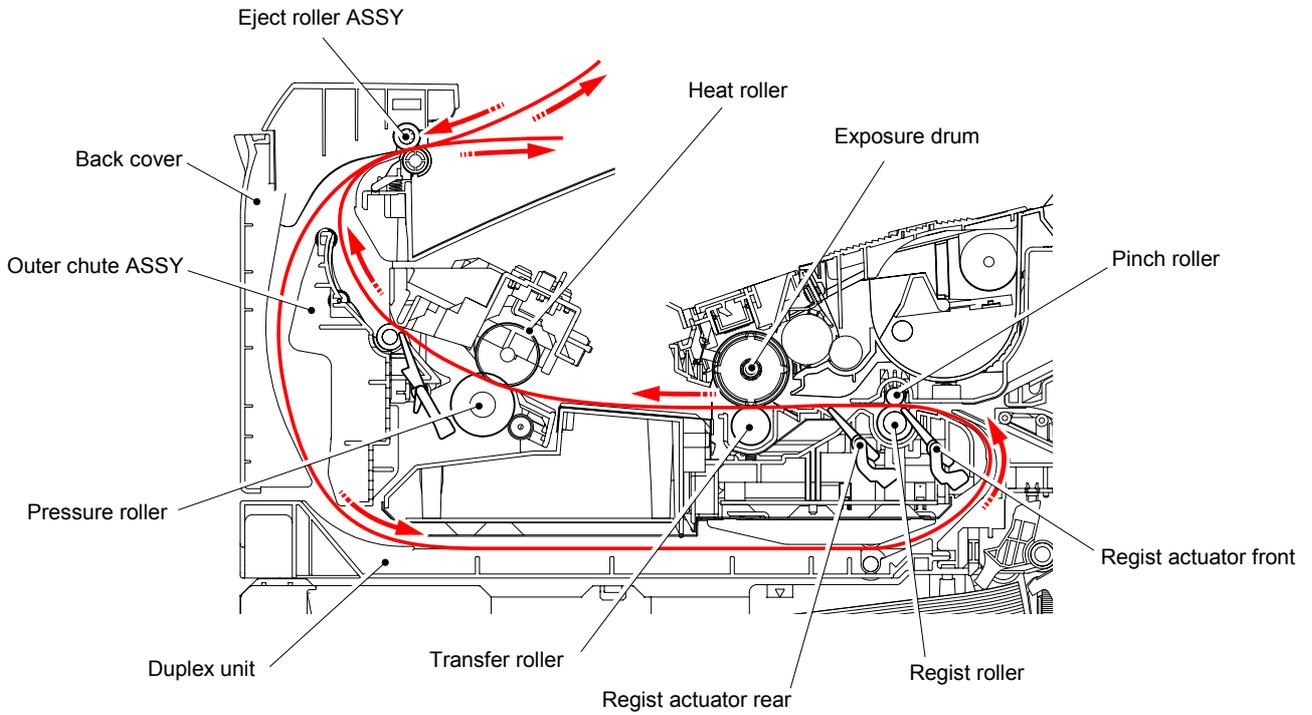


Fig. 2-13

3.3.8 Paper feeding from the MP tray

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

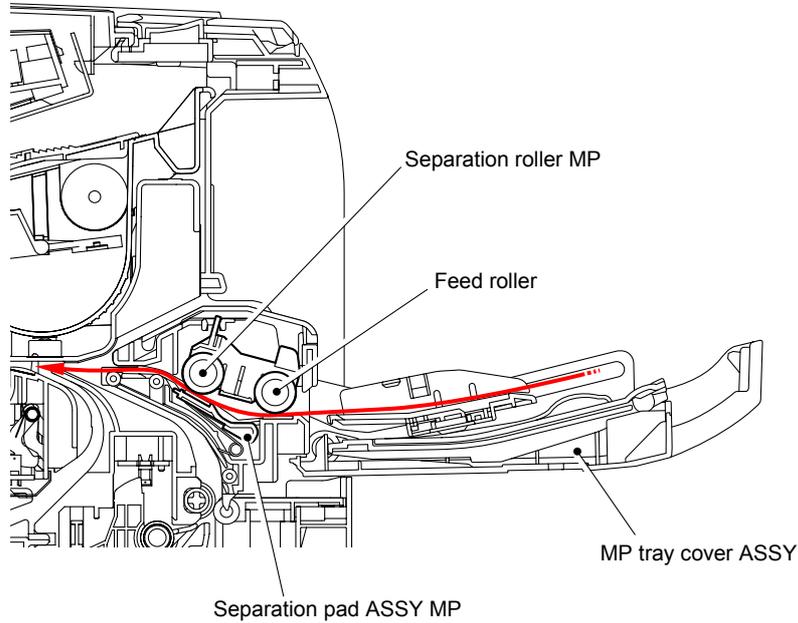


Fig. 2-14

3.3.9 LT tray

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

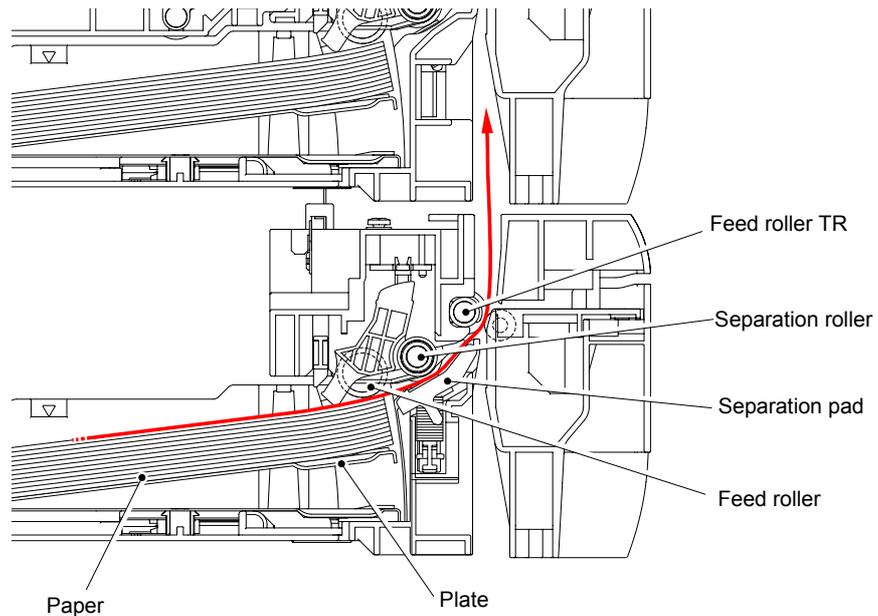


Fig. 2-15

3.4 Toner Cartridge

Develops the electrostatic latent image on the exposure drum with toner and forms the visible image.

3.4.1 Toner life end mode

A new toner cartridge can print approximately 3,500 (standard toner) or approximately 7,000 (high yield toner) A4 or Letter size single-sided pages at 5% coverage. In the case of low-duty printing, "Toner Life End" is indicated by lighting Toner LED (HL-5240/5250DN) or "TONER LIFE END" message appears on the LCD panel (HL-5270DN/5280DW) before the toner runs out because the developer roller surface or other toner sealing is worn out due to a rotation of the rollers. The upper limit of the drum rotation is 46,200 = 4,200 sheets x 11 rotations (standard toner), 92,400 = 8,400 sheets x 11 rotations (high yield toner).

The following graph shows the number of printable pages in the case of A4 printing.

HL-5240/5250DN/5270DN/5280DW(Standard (3.5K) toner)

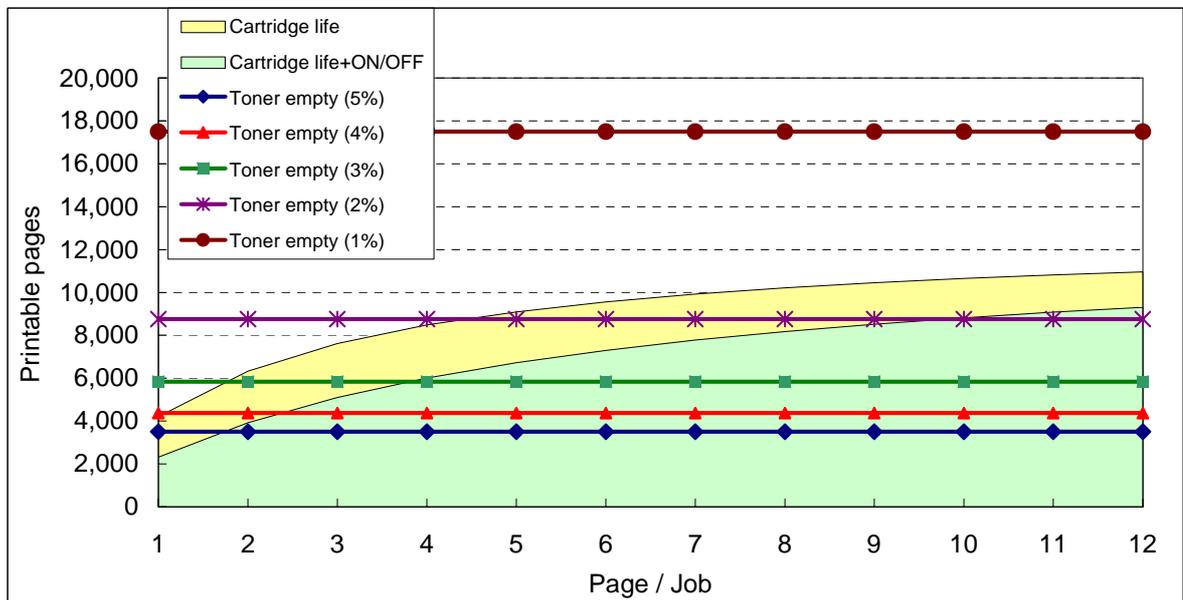
| Page/job | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|-----------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Cartridge life | 4,200 | 6,329 | 7,615 | 8,477 | 9,094 | 9,559 | 9,920 | 10,210 | 10,447 | 10,645 | 10,813 | 10,957 |
| Cartridge life+ON/OFF | 2,310 | 3,915 | 5,096 | 6,000 | 6,715 | 7,295 | 7,774 | 8,177 | 8,520 | 8,817 | 9,075 | 9,302 |
| Toner empty (5%) | 3,500 | 3,500 | 3,500 | 3,500 | 3,500 | 3,500 | 3,500 | 3,500 | 3,500 | 3,500 | 3,500 | 3,500 |
| Toner empty (4%) | 4,375 | 4,375 | 4,375 | 4,375 | 4,375 | 4,375 | 4,375 | 4,375 | 4,375 | 4,375 | 4,375 | 4,375 |
| Toner empty (3%) | 5,833 | 5,833 | 5,833 | 5,833 | 5,833 | 5,833 | 5,833 | 5,833 | 5,833 | 5,833 | 5,833 | 5,833 |
| Toner empty (2%) | 8,750 | 8,750 | 8,750 | 8,750 | 8,750 | 8,750 | 8,750 | 8,750 | 8,750 | 8,750 | 8,750 | 8,750 |
| Toner empty (1%) | 17,500 | 17,500 | 17,500 | 17,500 | 17,500 | 17,500 | 17,500 | 17,500 | 17,500 | 17,500 | 17,500 | 17,500 |

$$\text{Cartridge life} = 11a \times 4200 / (3.6 \times (a - 1) + 11)$$

a : Page / job

$$\text{Cartridge life+ON/OFF} = (11a \times 4200) / (3.6 \times (a - 1) + 11 + 9)$$

$$\text{Cartridge life (Mechanical limit)} : 4200 \text{ (1page / job)}$$



HL-5240/5250DN/5270DN/5280DW(High Capacity (7K) toner)

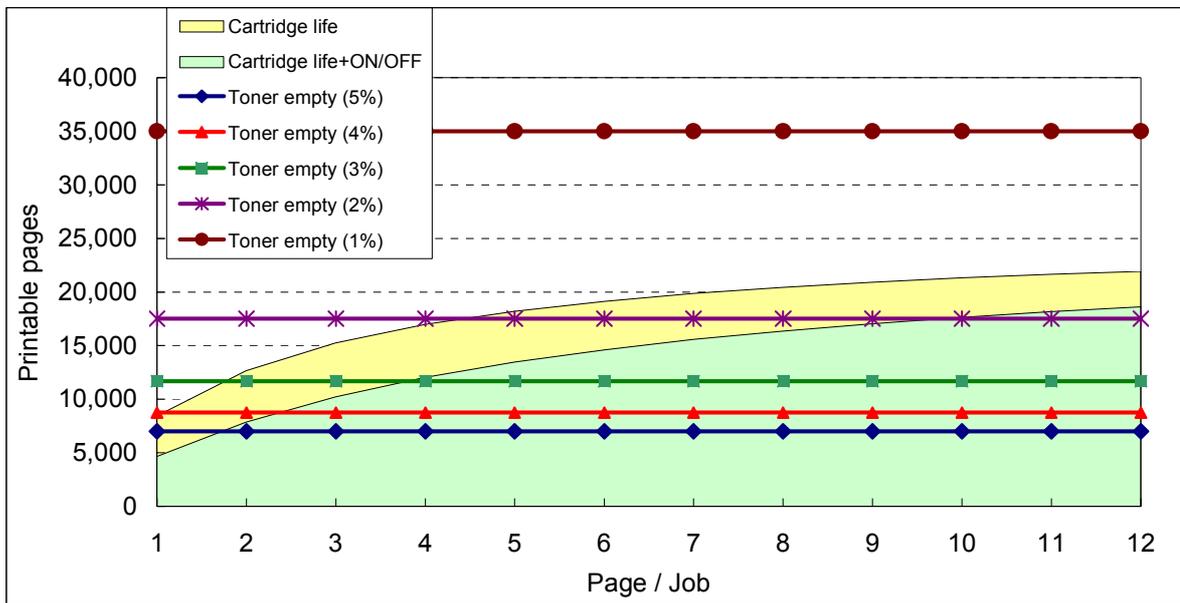
| Page/job | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|-----------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Cartridge life | 8,400 | 12,658 | 15,231 | 16,954 | 18,189 | 19,117 | 19,840 | 20,420 | 20,894 | 21,290 | 21,626 | 21,913 |
| Cartridge life+ON/OFF | 4,620 | 7,831 | 10,191 | 12,000 | 13,430 | 14,589 | 15,548 | 16,354 | 17,041 | 17,634 | 18,150 | 18,604 |
| Toner empty (5%) | 7,000 | 7,000 | 7,000 | 7,000 | 7,000 | 7,000 | 7,000 | 7,000 | 7,000 | 7,000 | 7,000 | 7,000 |
| Toner empty (4%) | 8,750 | 8,750 | 8,750 | 8,750 | 8,750 | 8,750 | 8,750 | 8,750 | 8,750 | 8,750 | 8,750 | 8,750 |
| Toner empty (3%) | 11,667 | 11,667 | 11,667 | 11,667 | 11,667 | 11,667 | 11,667 | 11,667 | 11,667 | 11,667 | 11,667 | 11,667 |
| Toner empty (2%) | 17,500 | 17,500 | 17,500 | 17,500 | 17,500 | 17,500 | 17,500 | 17,500 | 17,500 | 17,500 | 17,500 | 17,500 |
| Toner empty (1%) | 35,000 | 35,000 | 35,000 | 35,000 | 35,000 | 35,000 | 35,000 | 35,000 | 35,000 | 35,000 | 35,000 | 35,000 |

Cartridge life = $11a \times 8400 / (3.6 \times (a - 1) + 11)$

a : Page / job

Cartridge life+ON/OFF = $(11a \times 8400) / (3.6 \times (a - 1) + 11 + 9)$

Cartridge life (Mechanical limit) : 8400 (1page / job)



- The number of rotation of the developer roller per page is as follows;
 1. One printed page only or the first page of continuous printing = 11 rotations
 2. The second page or later = 3.6 rotations
- Number of idling rotation when the printer is turned ON = 9 rotations

3.4.2 New toner detection mechanism

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

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

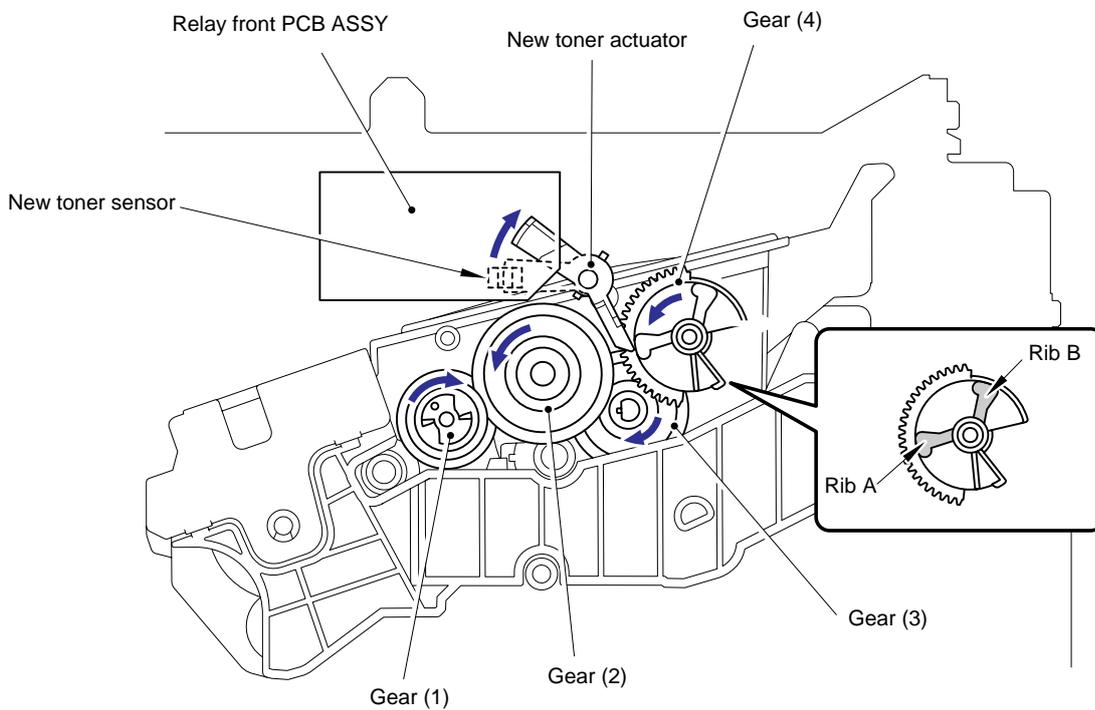
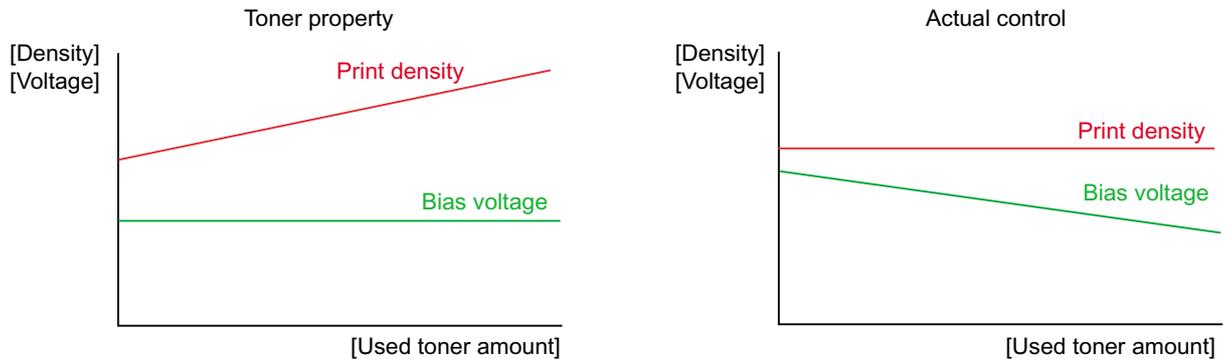


Fig. 2-16

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

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



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

The bias voltage is changed with the steps described below:

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

3.4.3 Counter reset during indication of “Toner Life End”

The counter resetting method during indication of “Toner Life End” depends on the cause of toner life end and the condition of the inserted toner cartridge. Refer to the following table for details.

| | Toner Life End (Toner empty) | Toner Life End (Developer count full) |
|--|---|---------------------------------------|
| When a used toner is inserted (Reset gear is at the position of in use.) | Toner exchange count: +0 Page counter of each toner: Continued Coverage of each toner: Continued Development bias: Reset (Default) | Not used. |
| When a new toner is inserted (Reset gear is at the position of factory set.) | Toner exchange count: +1 Page counter of each toner: Reset (0) Coverage of each toner: Reset (0) Development bias: Reset (Default) | |

3.5 Print Process

3.5.1 Charging

The drum is charged to approximately 900V by an ion charge which is generated by the primary charger. The charge is generated by ionization of the corona wire, which has a DC bias from the high-voltage power supply applied to it. The flow of the ion charge is controlled by the grid to ensure it is distributed evenly on the drum surface. The aluminum drum sleeve in the exposure drum is grounded.

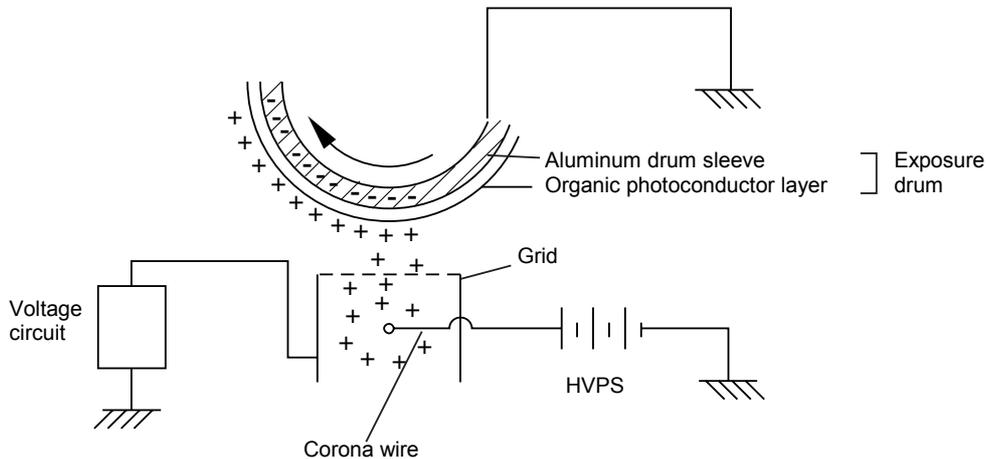


Fig. 2-17

The primary charge uses a corona wire, but since the drum is positively charged, only less than 1/10 of the usual quantity of ozone is generated compared with the negatively charged drum. The level of ozone expelled from the printer is therefore not harmful to the human body. Applicable safety standards have been complied with.

3.5.2 Exposure stage

After the drum is positively charged, it is exposed to the light emitted from the laser unit.

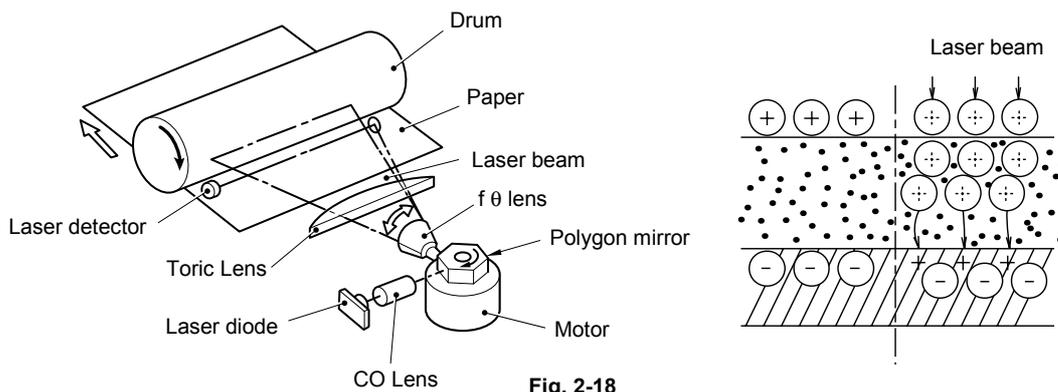


Fig. 2-18

< Laser exposure unit >

1. The laser beam radiated from a laser diode inside the laser unit are concentrated into a constant width by a slit in the CO lens cell and then reflected by a polygon mirror rotating at high speed.
2. The laser beam reflected by the polygon mirror are refracted by the f-theta lens and radiated from the right through to the left end of the reflection mirror as the polygon mirror rotates. At this time, blur of the vertical direction of the laser beam by inclination of a polygon mirror is corrected by passing a Toric lens.

3. The laser beams reflected by the reflection mirror go straight toward the exposure drum below it, then expose the exposure drum.

The area exposed to the laser beam is the image to be printed. The surface potential of the exposed area is reduced, forming the electrostatic image to be printed.

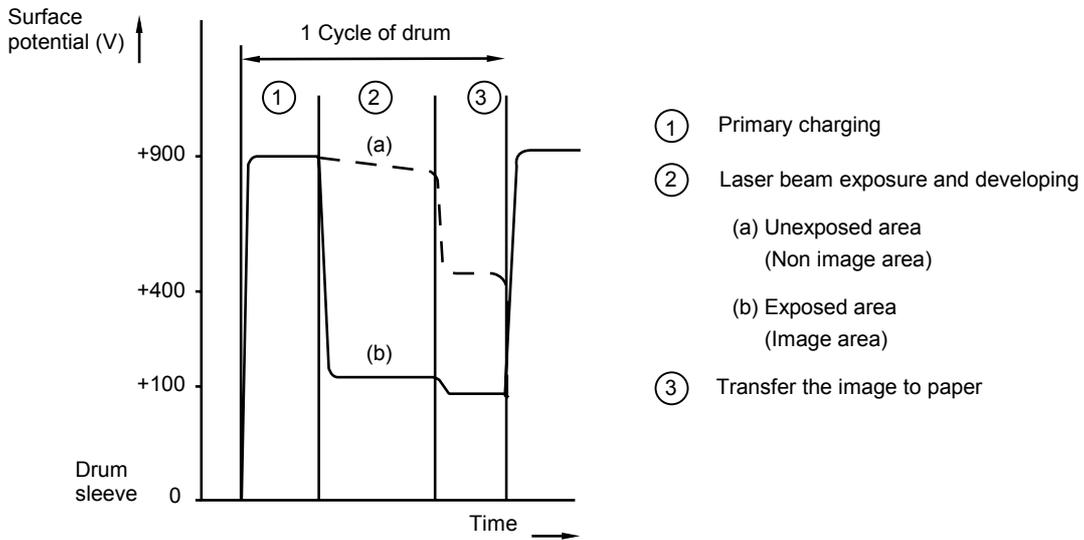


Fig. 2-19

3.5.3 Transfer

- (1) Transfer process

After the drum has been charged and exposed, and has received a developed image, the toner formed is transferred onto the paper by applying a negative charge to the back of the paper. The negative charge applied to the paper causes the positively charged toner to leave the drum, and adhere to the paper. As a result, the image is visible on the paper.

- (2) Cleaning process of transfer roller

If the toner is not transferred onto the paper perfectly it is possible that there may be residual toner on the drum which will adhere to the transfer roller. The transfer roller voltage changes to a positive voltage during non-printing rotation of the drum. Therefore the transfer roller is cleaned by returning the positively charged toner adhering to the transfer roller onto the exposure drum.

3.6 Sensors

| Sensor name | Type | Located on |
|---------------------------------------|-------------------|---------------------|
| Regist front sensor | Photo sensor | High-voltage PS PCB |
| Regist rear sensor | Photo sensor | High-voltage PS PCB |
| Paper eject sensor | Photo sensor | Relay rear PCB |
| New toner sensor | Photo sensor | Relay front PCB |
| Toner LED PCB (Light emission) | Photo sensor | Frame R |
| Toner sensor PCB (Light reception) | Photo sensor | Frame L |
| Front cover sensor | Mechanical switch | Frame L |
| PE sensor | Photo sensor | PE EG sensor ASSY |
| Edge sensor | Photo sensor | PE EG sensor ASSY |
| MP PE sensor | Photo sensor | MP PE sensor ASSY |
| DX tray sensor | Mechanical switch | Relay rear PCB |

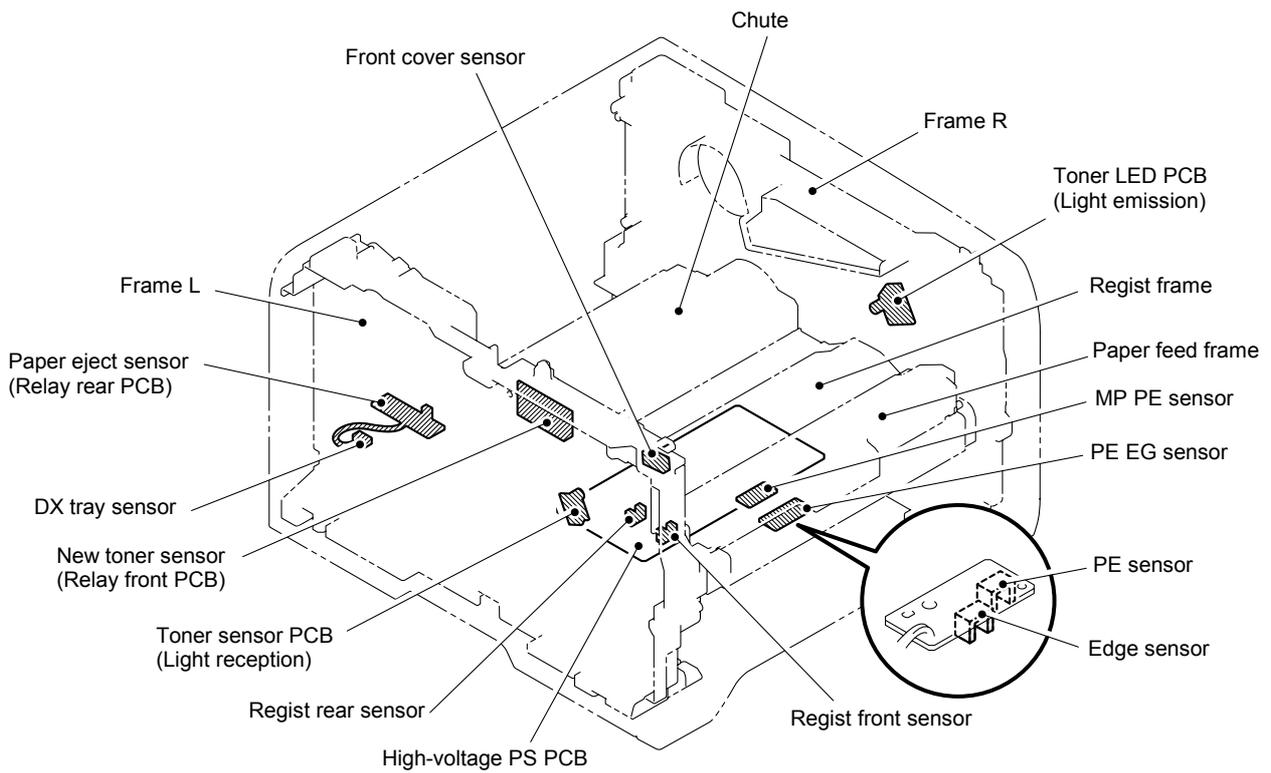


Fig. 2-20

3.7 Heat Control of Fuser Unit

The printer controls the temperature in the fuser unit in order to keep the constant image quality when printing on any type or size of paper.

< Fixing temperature of each media type >

| Media type | Fixing temperature (°C) (approximately) [Full speed / Half speed] |
|-------------------------------|---|
| Plain paper | 213/185 |
| Plain paper (Small size) | 200/185 |
| Plain paper (Duplex) | 195/180 |
| Recycled paper | 195/180 |
| Recycled paper (Small size) | 189/170 |
| Recycled paper (Duplex) | 189/170 |
| OHP | 185 |
| OHP (Small size) | 185 |
| OHP (Duplex) | 185 |
| Thin paper | 195 |
| Thin paper (Small size) | 195 |
| Thin paper (Duplex) | 181 |
| Thick paper | 200 |
| Thick paper (Small size) | 195 |
| Thick paper (Duplex) | 195 |
| Envelope (Thin) | 200 |
| Envelope (Thin, small size) | 200 |
| Envelope (Thin, duplex) | 195 |
| Envelope (Others) | 220 |
| Envelope (Others, small size) | 220 |
| Envelope (Others, duplex) | 205 |

NOTE:

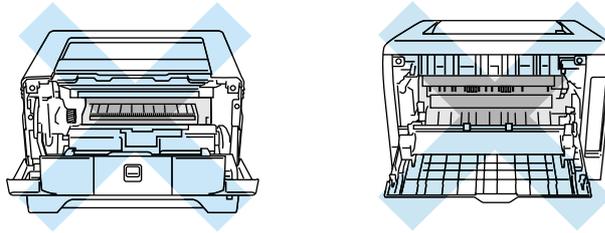
The values described in the table above are approximate and vary depending on the conditions such as the operation environment or the like.

CHAPTER 3 PERIODIC MAINTENANCE

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

! WARNING

- *If your clothes are smeared with toner, wipe the toner with a dry cloth immediately and wash the clothes in cold water to avoid stains.*
- *Be careful to inhale toner.*
- *Always turn off the power switch and unplug the power cord from the power outlet before accessing any parts inside the printer.*
- *Some parts inside the printer are extremely hot immediately after the printer is used.*
- *When opening the front cover or back cover to access any parts inside the printer, never touch the shaded parts shown in the following figures.*



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.

1.1 Toner Cartridge

A new toner cartridge can print up to 3,500 (standard cartridge) or up to 7,000 (high yield cartridge) A4 or Letter size single-sided pages at about 5% coverage.

NOTE:

- * *The amount of toner used varies according to what is printed on the page and the print density setting.*
- * *If the print density setting for lighter or darker printing is changed, the amount of toner used will change.*
- * *Wait to unpack the toner cartridge until immediately before putting it into the printer.*
- * *There are many factors that determine the actual toner life, such as temperature, humidity, type of paper used, the number of pages per print job, etc.*

<Toner Low Message>

(HL-5240/5250DN)

The **Toner** LED alternates turning on for 2 seconds and off for 3 seconds.

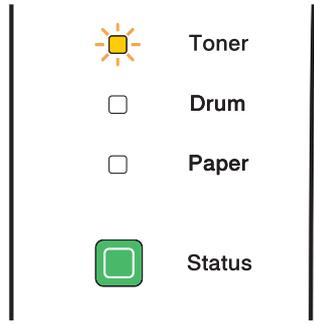


Fig. 3-1

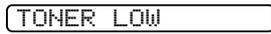
If the LED shows this message, the printer has nearly run out of toner. Buy a new toner cartridge and have it ready before you get a “Toner Life End” message.

NOTE:

*The **Toner** LED will blink continuously if the toner cartridge is nearly empty.*

(HL-5270DN/5280DW)

Appears at intervals.



If the LCD shows “TONER LOW”, the printer has nearly run out of toner. Buy a new toner cartridge and have it ready before you get a “TONER LIFE END” message.

<Toner Life End Message>

(HL-5240/5250DN)

If the LED shows the message below, the printer has run out of toner or the toner is not evenly distributed inside the cartridge.

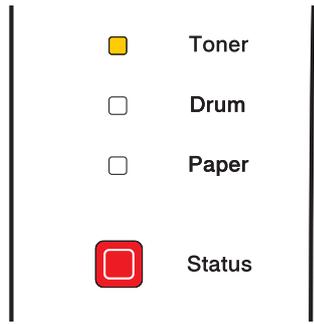


Fig. 3-2

(HL-5270DN/5280DW)

Appears at intervals.



If the LCD shows “TONER LIFE END”, the printer has run out of toner or the toner is not evenly distributed inside the cartridge.

In both situations, the printer will stop printing until a new toner cartridge has been put into the printer. “TONER LIFE END” can only be cleared by putting a new toner cartridge into the drum unit.

<Replacement Procedure>**NOTE:**

* To ensure high quality printing, make sure to use genuine Brother toner cartridges.

* It is recommended to clean the printer when replacing the toner cartridge.

- (1) Press the front cover release button and then open the front cover.

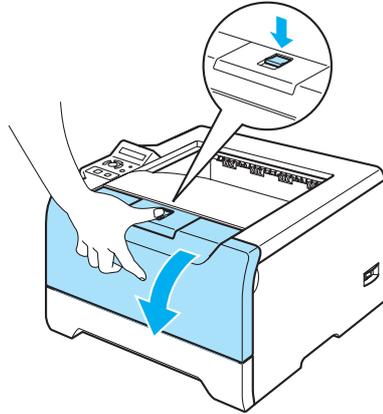


Fig. 3-3

- (2) Take out the drum unit and toner cartridge assembly.

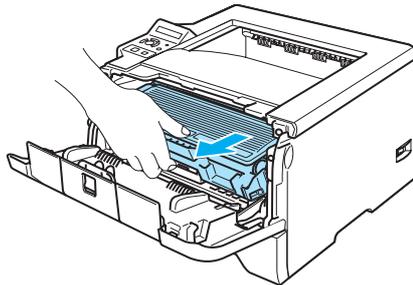
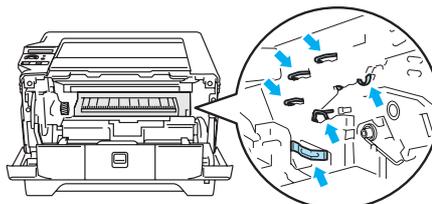


Fig. 3-4

! CAUTION:

* We recommend that you put the drum unit and toner cartridge assembly on a piece of disposable paper or cloth in case you accidentally spill or scatter toner.

* To prevent damage to the printer from static electricity, DO NOT touch the electrodes shown in the illustration.



(3) Push down the blue lock lever and take the toner cartridge out of the drum unit.

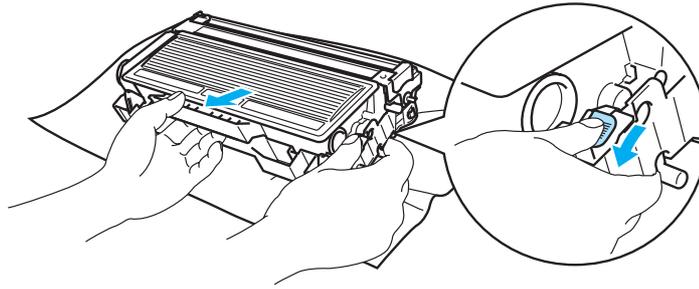
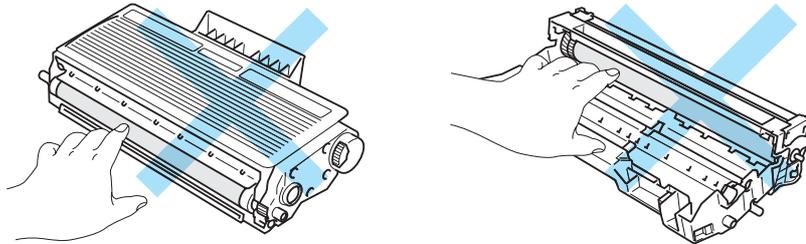


Fig. 3-5

! CAUTION:

* Handle the toner cartridge carefully. If toner scatters on your hands or clothes, wipe or wash it off with cold water at once.

* To avoid any degradation of the print quality, DO NOT touch the shaded parts shown in the illustrations.

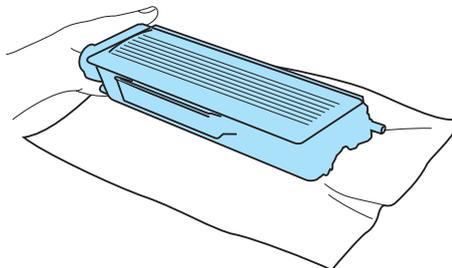


NOTE:

* Be sure to seal up the toner cartridge tightly in a bag so that toner powder does not spill out of the cartridge.

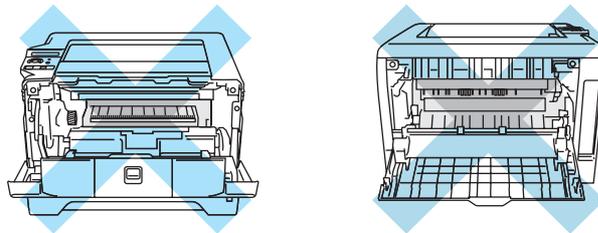
* Discard the used toner cartridge according to local regulations, keeping it separate from domestic waste. If you have questions, call your local waste disposal office.

(4) Unpack the new toner cartridge. Hold the cartridge level with both hands and gently rock it from side to side five or six times to spread the toner evenly inside the cartridge.



! CAUTION:

- * Wait to unpack the toner cartridge until immediately before you put it in the printer. If toner cartridges are left unpacked for a long time the toner life will be shortened.
- * If an unpacked drum unit is put in direct sunlight or room light, the unit may be damaged.
- * Brother strongly recommends that you do not refill the toner cartridge provided with your printer. We also strongly recommend that you continue to use only genuine Brother brand replacement toner cartridges. Using or trying to use potentially incompatible toner and/or toner cartridges in your printer may cause damage to the printer itself and/or may result in unsatisfactory print quality. Our warranty coverage does not apply to any problem that was caused by the use of unauthorized third party toner and toner cartridges. To protect your investment and guarantee print quality, continue to replace consumed toner cartridges with only genuine Brother branded supplies.
- * Printing with a third-party toner or third-party toner cartridge may reduce not only the print quality but also the quality and life of the printer itself. It may also cause serious damage to the performance and life of the drum unit. Warranty coverage does not apply to problems caused by the use of third-party toner or third-party toner cartridges.
- * Put the toner cartridge in the drum unit immediately after you have removed the protective cover. To prevent any degradation to the print quality, DO NOT touch the shaded parts shown in the illustrations.



- (5) Pull off the protective cover.

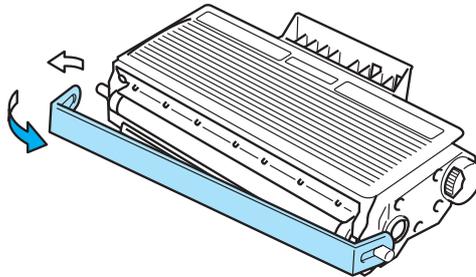


Fig. 3-7

- (6) Put the new toner cartridge firmly into the drum unit until you hear it lock into place. If you put it in properly, the lock lever will lift automatically.

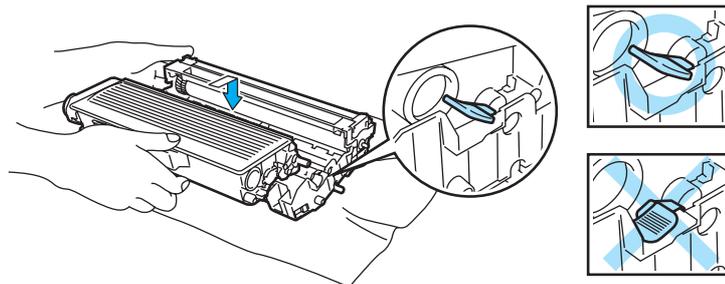


Fig. 3-8

! CAUTION:

Make sure that you put in the toner cartridge properly or it may separate from the drum unit.

- (7) Clean the primary corona wire inside the drum unit by gently sliding the blue tab from right to left and left to right several times.

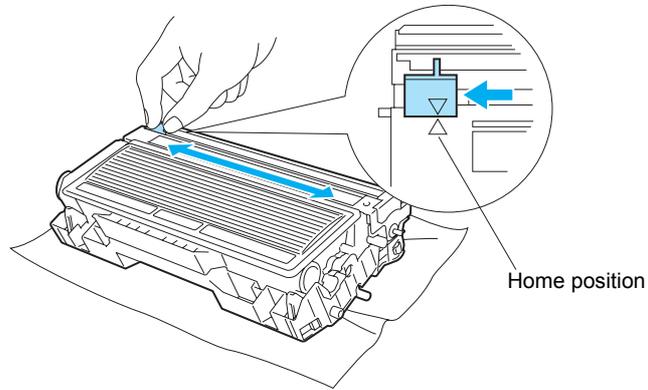


Fig. 3-9

! CAUTION:

Be sure to return the tab to the home position (▲). If you do not, printed pages may have a vertical stripe.

- (8) Put the drum unit and toner cartridge assembly back in the printer. Close the front cover.

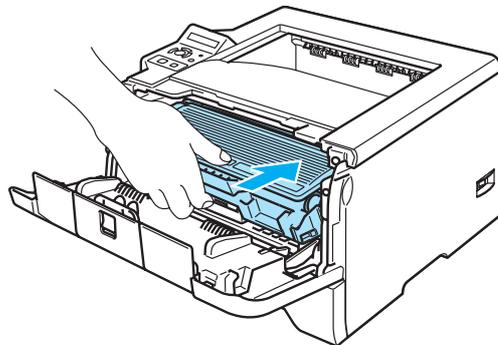


Fig. 3-10

1.2 Drum Unit

A new drum unit can print approximately 25,000 A4 or Letter size single-sided pages at 5% coverage.

NOTE:

* *There are many factors that determine the actual drum life, such as the temperature, humidity, type of paper, type of toner used, number of pages per print job and so on. Under ideal conditions, the average drum life is estimated at approximately 25,000 pages. The actual number of pages that your drum will print may be significantly less than this estimate. Because we have no control over the many factors that determine the actual drum life, we cannot guarantee a minimum number of pages that will be printed by your drum.*

* *For the best performance, use only genuine Brother toner. The printer should be used only in a clean, dust-free environment with adequate ventilation.*

* *Printing with a third-party drum unit may reduce not only the print quality but also the quality and life of the printer itself. Warranty coverage does not apply to problems caused by the use of a third-party drum unit.*

<Change Drum Message>

(HL-5240/5250DN)

If the LED shows the message below, it means the drum unit is near the end of its life.

We recommend that you replace the drum unit with a new one before there is a noticeable deterioration in the print quality.

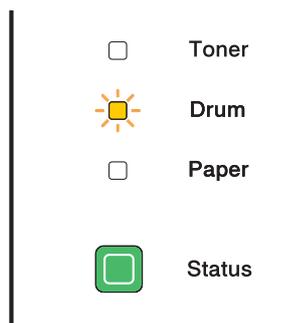


Fig. 3-11

(HL-5270DN/5280DW)

Appears at intervals.

DRUM NEAR END

If the LCD shows “DRUM NEAR END”, it means the drum unit is near the end of its life. We recommend that you replace the drum unit with a new one before there is a noticeable deterioration in the print quality.

<Replacement Procedure>

! CAUTION:

- * While removing the drum unit, handle it carefully as it may contain toner.
- * Every time you replace the drum unit, be sure to clean the inside of the printer.

When you replace the drum unit with a new one, you need to reset the drum counter by completing the following steps:

(HL-5240/5250DN)

- (1) Make sure that the printer is turned on and the **Drum** LED is blinking. Press the front cover release button and then open the front cover.

(HL-5270DN/5280DW)

- (1) Make sure that the LCD shows "DRUM NEAR END". Press the front cover release button and then open the front cover.

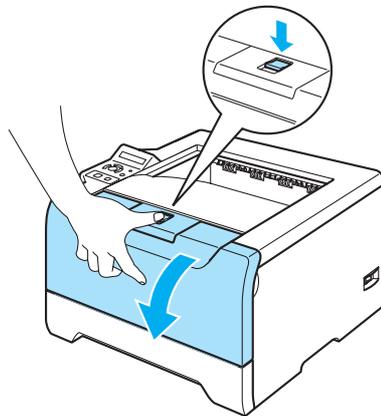


Fig. 3-12

(HL-5240/5250DN)

- (2) Press and hold down **Go** for about 4 seconds until all the LEDs light up. Once all four LEDs are lit, release **Go**.

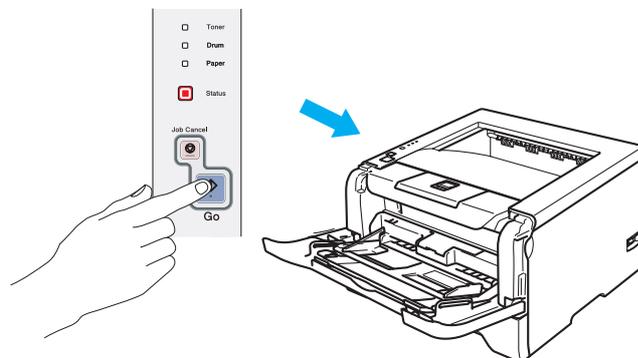


Fig. 3-13

(HL-5270DN/5280DW)

- (2) Hold down **Go** until the message “DRUM CLEAR” is displayed on the LCD, then release **Go**.

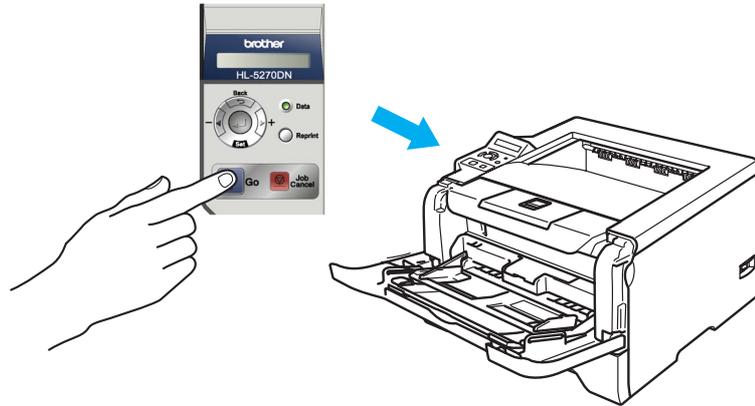


Fig. 3-14

Improper Setup:

Do not reset the drum counter when you only replace the toner cartridge.

- (3) Take out the drum unit and toner cartridge assembly.

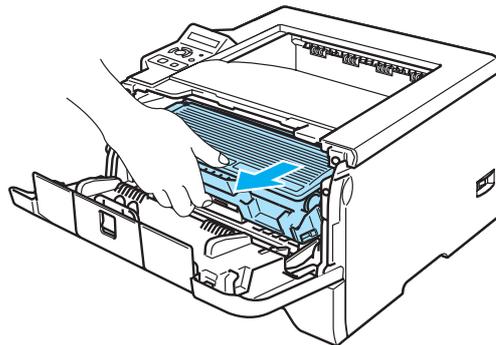
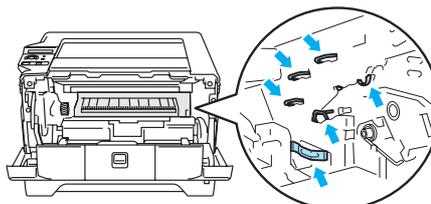


Fig. 3-15

! CAUTION:

* We recommend that you put the drum unit and toner cartridge assembly on a piece of disposable paper or cloth in case you accidentally spill or scatter toner.

* To prevent damage to the printer from static electricity, DO NOT touch the electrodes shown in the illustration.



(4) Push down the blue lock lever and take the toner cartridge out of the drum unit.

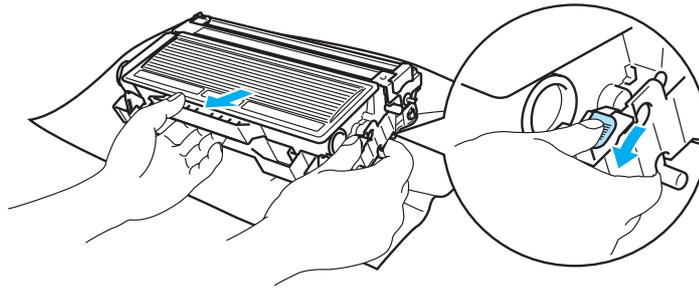
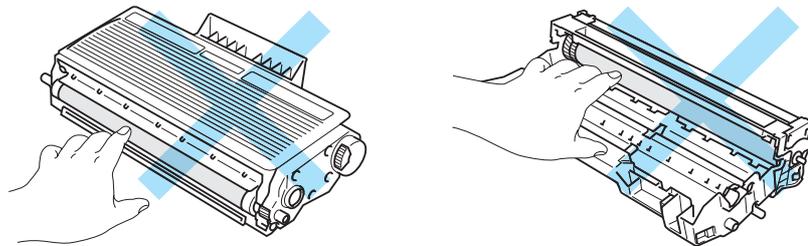


Fig. 3-16

! CAUTION:

* Handle the toner cartridge carefully. If toner scatters on your hands or clothes, wipe or wash it off with cold water at once.

* To avoid any degradation of the print quality, DO NOT touch the shaded parts shown in the illustrations.



NOTE:

* Be sure to seal up the toner cartridge tightly in a bag so that toner powder does not spill out of the cartridge.

* Discard the used toner cartridge according to local regulations, keeping it separate from domestic waste. If you have questions, call your local waste disposal office.

(5) Unpack the new drum unit.

! CAUTION:

Wait to unpack a drum unit until immediately before you put it in the printer. Exposure to direct sunlight or room light may damage the drum unit.

- (6) Put the toner cartridge firmly into the new drum unit until you hear it lock into place. If you put the cartridge in properly, the blue locklever will lift automatically.

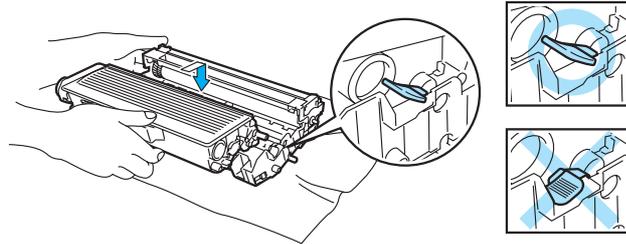


Fig. 3-17

! CAUTION:

Make sure that you put in the toner cartridge properly, or it may separate from the drum unit.

- (7) Put the drum unit and toner cartridge assembly back in the printer.

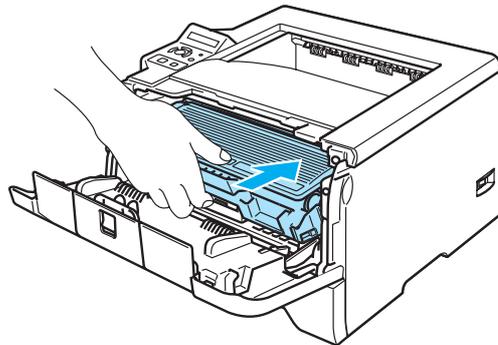


Fig. 3-18

(HL-5240/5250DN)

- (8) Close the front cover.
Make sure that the **Drum** LED is now off.

(HL-5270DN/5280DW)

- (8) Close the front cover. Make sure that the "DRUM NEAR END" message on the LCD is now off.

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 greatly if they lost their function even if they do not appear to be damaged or there is no change in their appearance.

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

| Parts Name | LCD Message (HL-5270DN /5280DW) | Qty | Approximate Life *1 (number of prints) | Replacement Procedure |
|----------------------------------|---------------------------------|-----|--|---|
| Fuser Unit | REPLACE FUSER | 1 | 100,000 pages | See subscription 2.2.1, Chapter 3 |
| Laser Unit | REPLACE LASER | 1 | 100,000 pages | |
| Paper feeding kit for Tray 1 *3 | REPLACE PF KIT1 | 1 | 100,000 pages | See subscription 2.2.2, Chapter 3 |
| Paper feeding kit for Tray 2 *3 | REPLACE PF KIT2 | 1 | 100,000 pages | |
| Paper feeding kit for Tray 3 *3 | REPLACE PF KIT3 | 1 | 100,000 pages | |
| Paper feeding kit for MP tray *2 | REPLACE PF KITMP | 1 | 100,000 pages | See subscription 2.2.3, Chapter 3 |

NOTE:

*1

At 5% print coverage (A4 or Letter size). The actual number of printed pages will vary depending on the print jobs and paper you use.

*2

Paper feeding kit MP means the MP roller holder ASSY and the separation pad ASSY MP.

*3

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

NOTE:

* Always turn off the power switch of the printer and unplug the power cord from the power outlet before replacing the periodical replacement parts.

* If the Fuser Unit is replaced after errors related to the Fuser Unit occur, it is necessary to leave the printer power ON for ten minutes after part replacement. This will make the printer to be released from errors.

* To reset the count of each periodical replacement parts, refer to [“2.IF YOU REPLACE THE PERIODICAL MAINTENANCE PARTS”, Chapter 6](#).

* 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 and laser unit

< Uninstalling Procedure >

- (1) Disconnect the AC cord from the Printer.

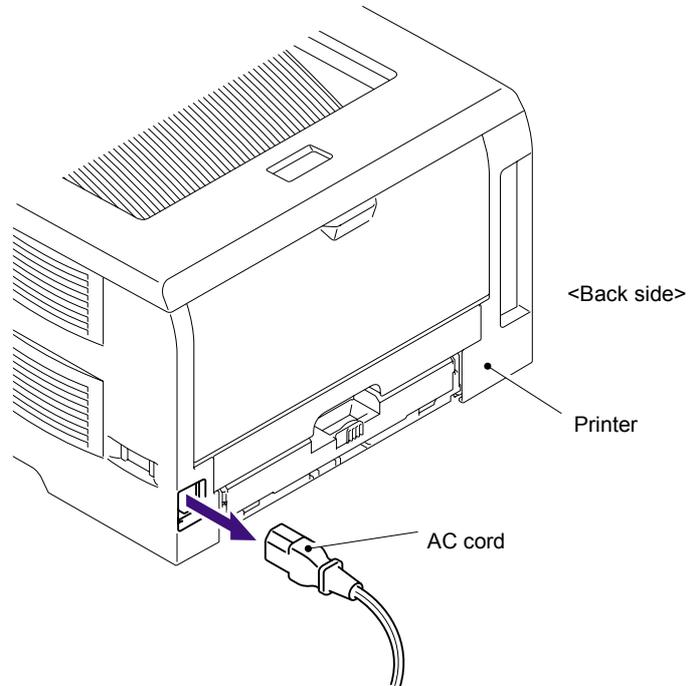


Fig. 3-19

- (2) Press the front cover release button.
- (3) Open the Front cover.
- (4) Remove the Drum/toner ASSY.

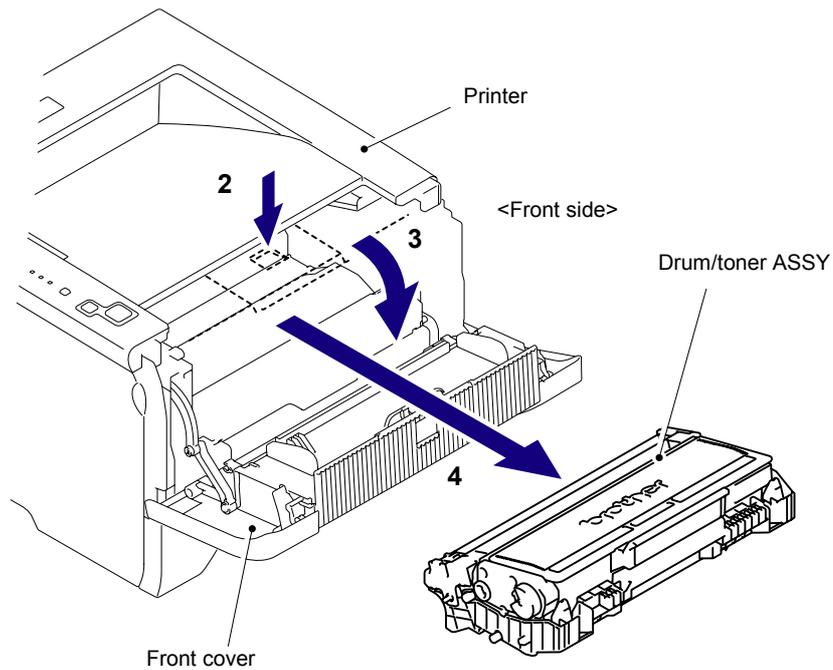


Fig. 3-20

- (5) Remove the DX feed ASSY or DX blank cover.

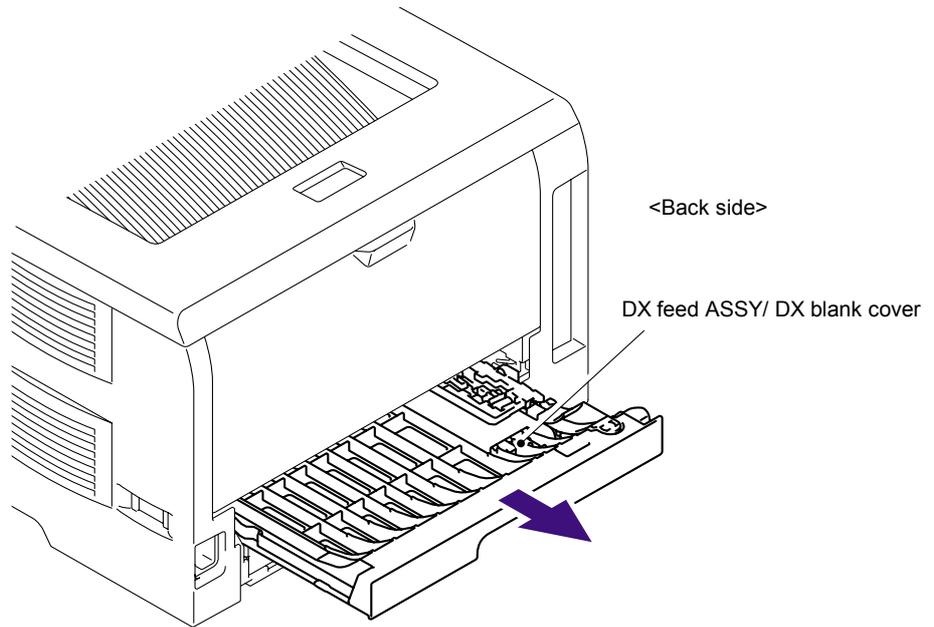


Fig. 3-21

- (6) Close the Front cover.
- (7) Pull out the Paper tray.
- (8) Remove the paper if it is remained in the Paper tray.

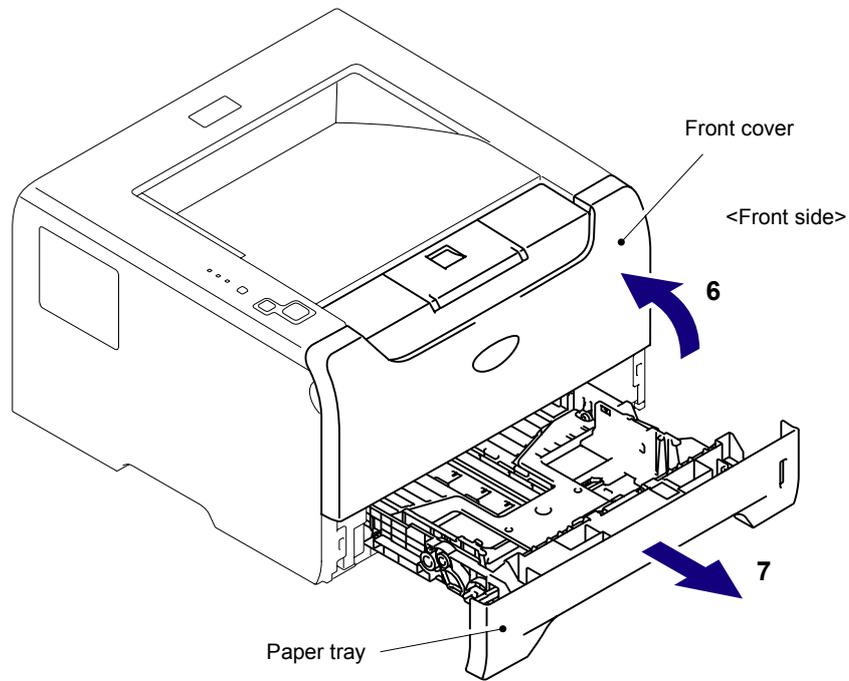


Fig. 3-22

- (9) Open the Back cover.
- (10) Remove the Arms of the Back cover from the Pins.
- (11) Remove the Back cover.

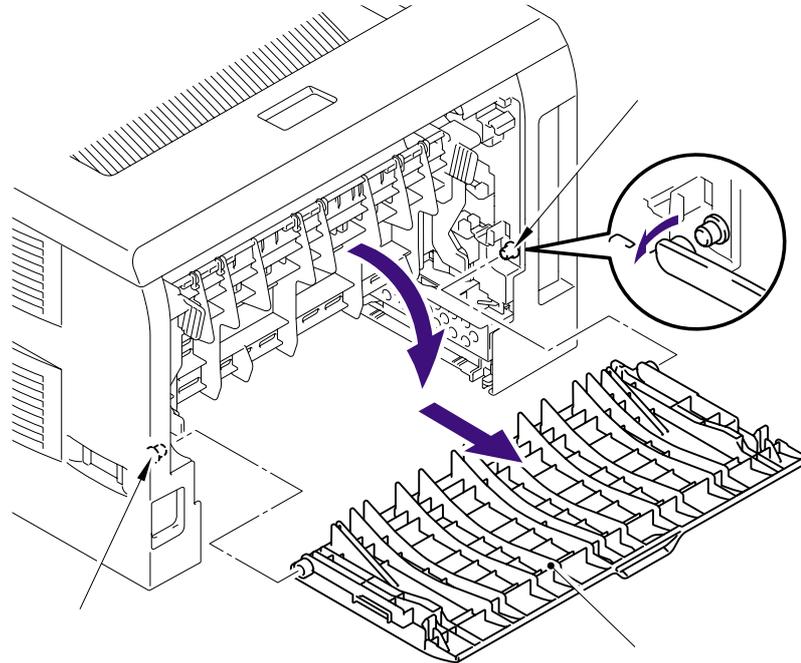
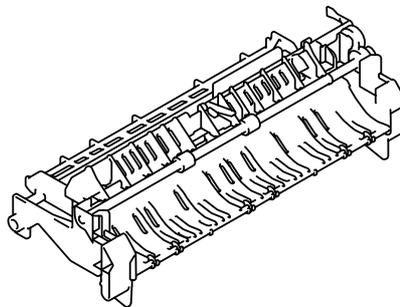


Fig. 3-23

- (12) Hold the Knobs on the Outer chute ASSY and pull down this to your side.
- (13) Remove the Arms of the Outer chute ASSY from the Pins.
- (14) Remove the Outer chute ASSY.



- (15) Open the Front cover, remove the two bind B M4x12 Taptite screws, and then remove the Side cover L by releasing the Hooks in the order of 15a to 15d.

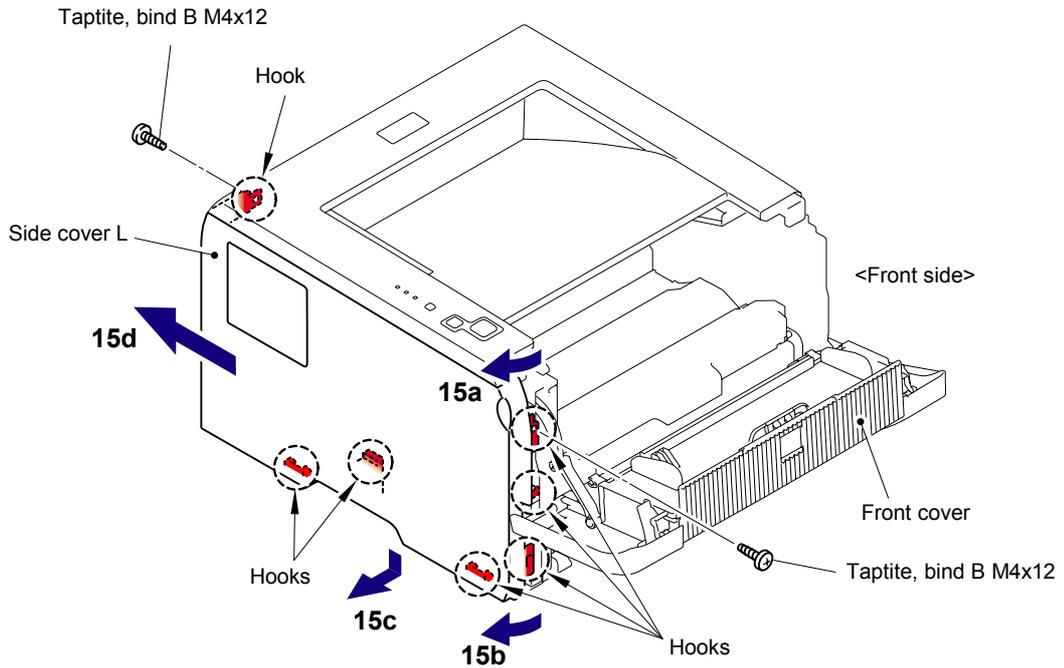


Fig. 3-25

- (16) Remove the four cup S M3x6 SR Taptite screws to remove the Shield cover and the FG harness.

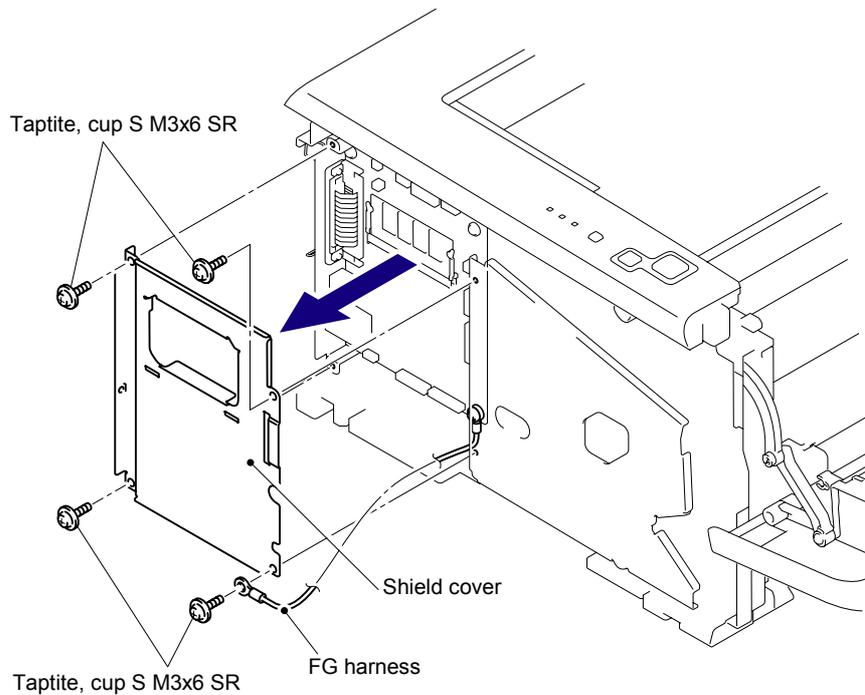


Fig. 3-26

- (17) Remove the two bind B M4x12 Taptite screws, and then remove the Side cover R by following the direction from 17a to 17d.

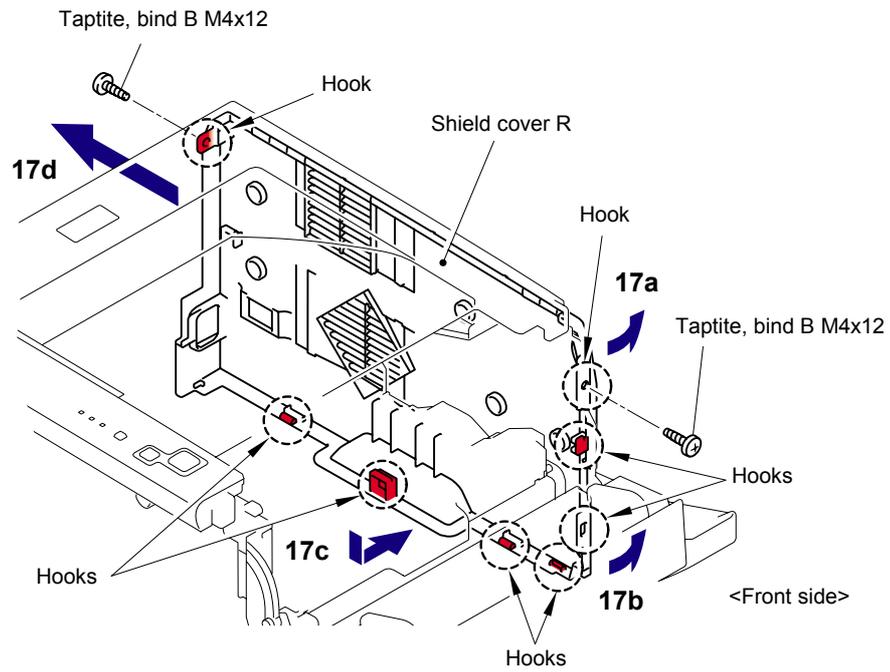


Fig. 3-27

- (18) Disconnect the Connector of the Panel PCB.

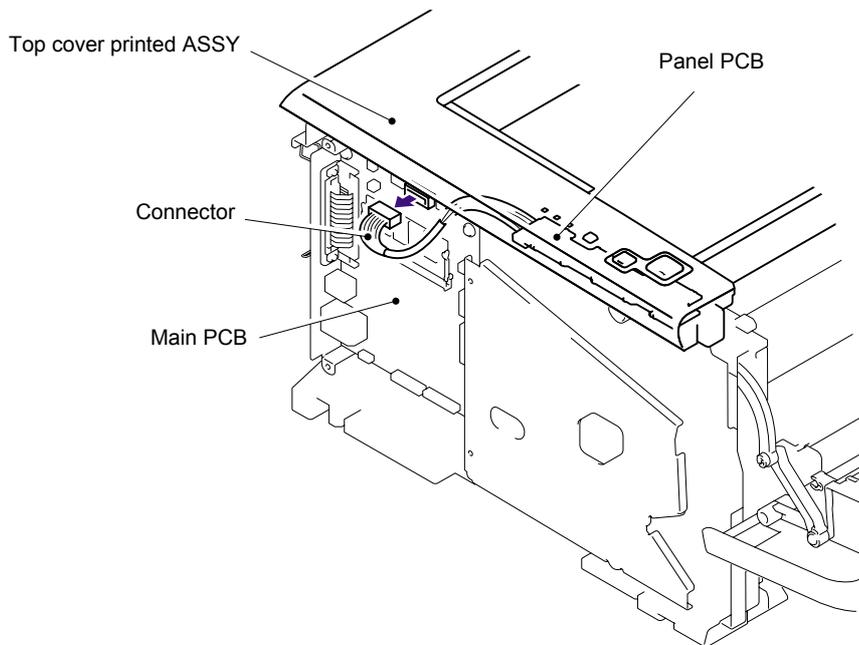


Fig. 3-28

- (19) Remove the two bind B M4x12 Taptite screws from Top cover printed ASSY.
- (20) Release all Hooks of the Top cover printed ASSY and lift up the front side of the Top cover printed ASSY.
- (21) Remove the Top cover printed ASSY.

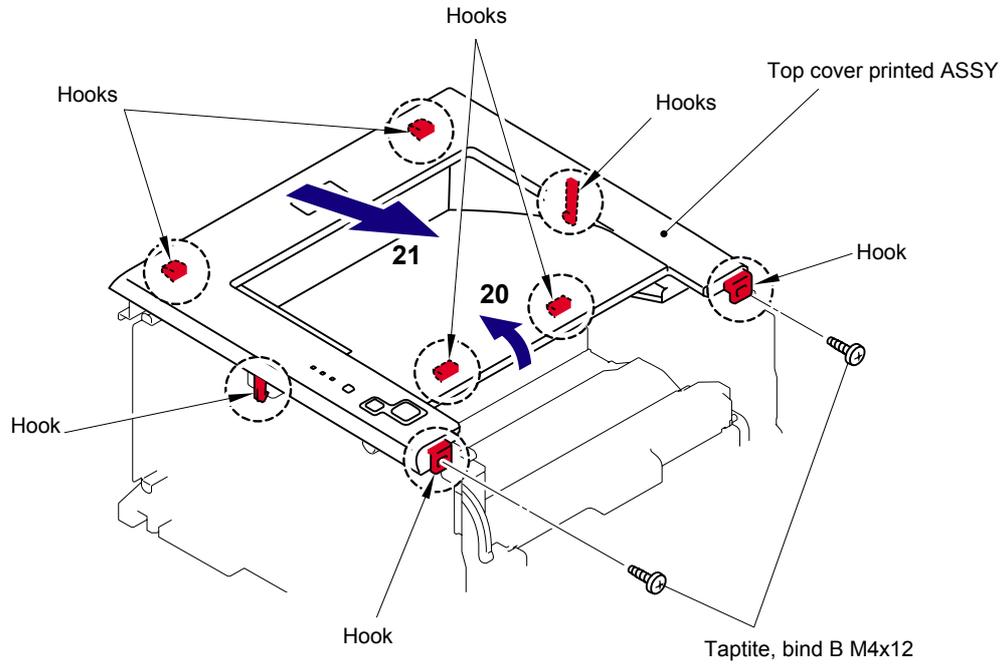


Fig. 3-29

- (22) Remove the bind B M4x16 Taptite screw. Release the Hooks in the order of 22a, 22b and 22c. Remove the FU harness cover 1.

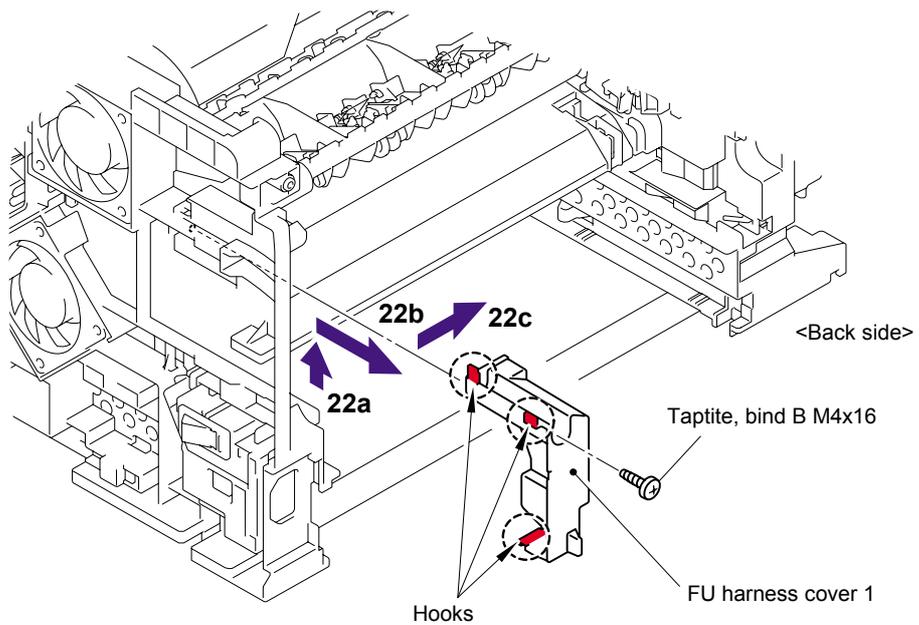


Fig. 3-30

- (23) Remove the Heater terminal L and Heater terminal S from the Fuser unit while holding the Fuser unit.

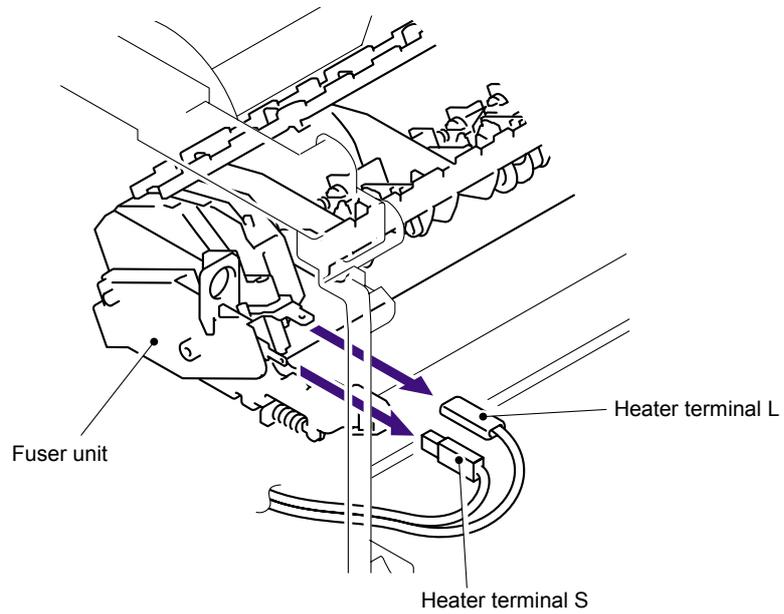


Fig. 3-31

- (24) Pull the FU harness cover 2 to the direction of 24a while pressing the Hook and pull out the FU harness cover 2 from the back of the printer.

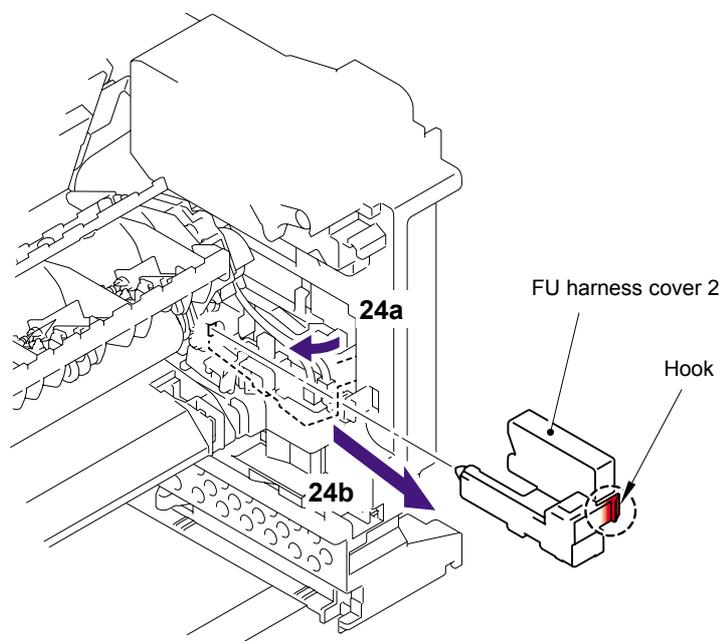


Fig. 3-32

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

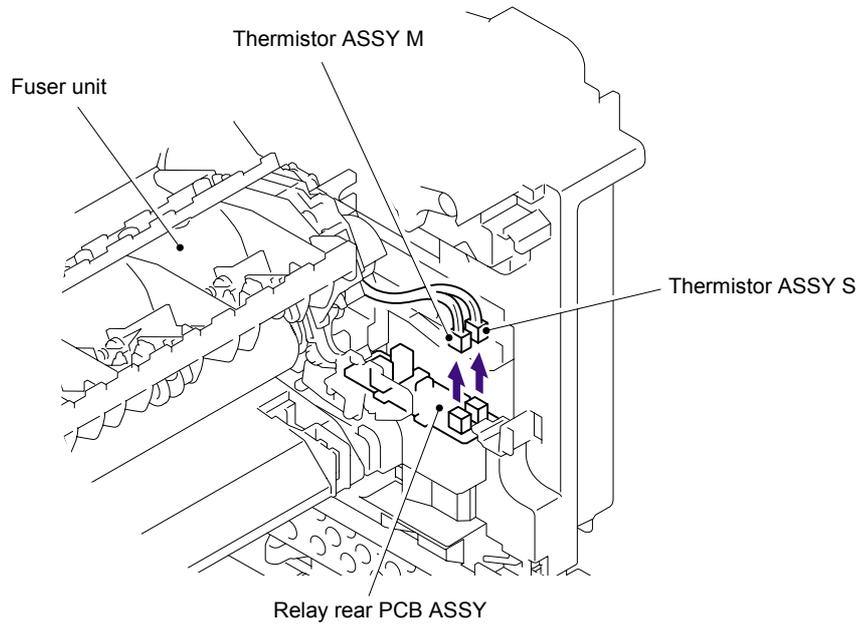


Fig. 3-33

(26) Remove the cup B M4x16 Taptite screw to remove the Fuser unit.

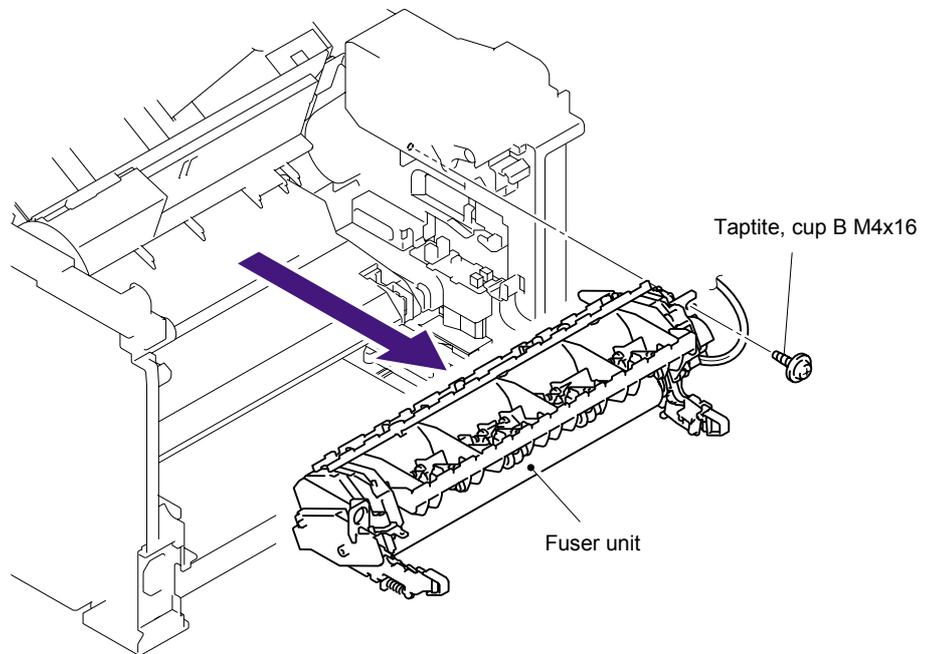


Fig. 3-34

- (27) Slide the Sub duct to the direction of 27b while pressing the three Hooks and remove the Sub duct from the Air duct.

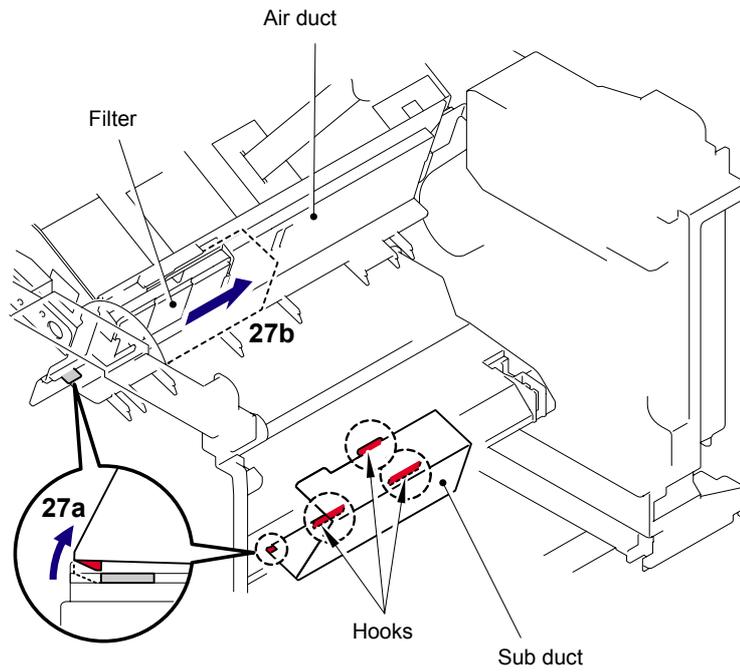


Fig. 3-35

- (28) Remove the Filter from the Air duct.

NOTE:

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

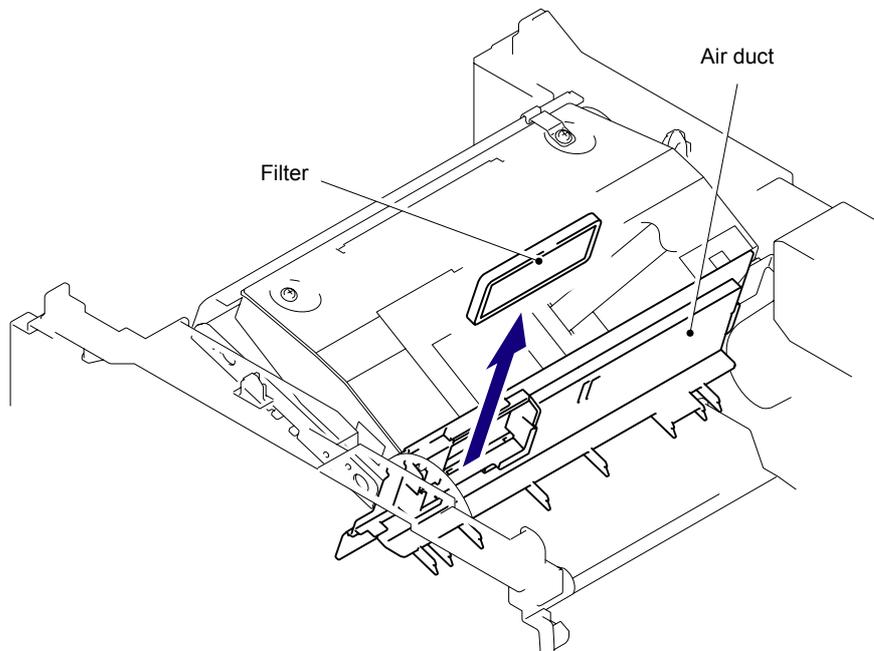


Fig. 3-36

(29) Remove the Pin of the Air duct from the frame. Slide the Air duct to the direction of 29b and remove the Air duct.

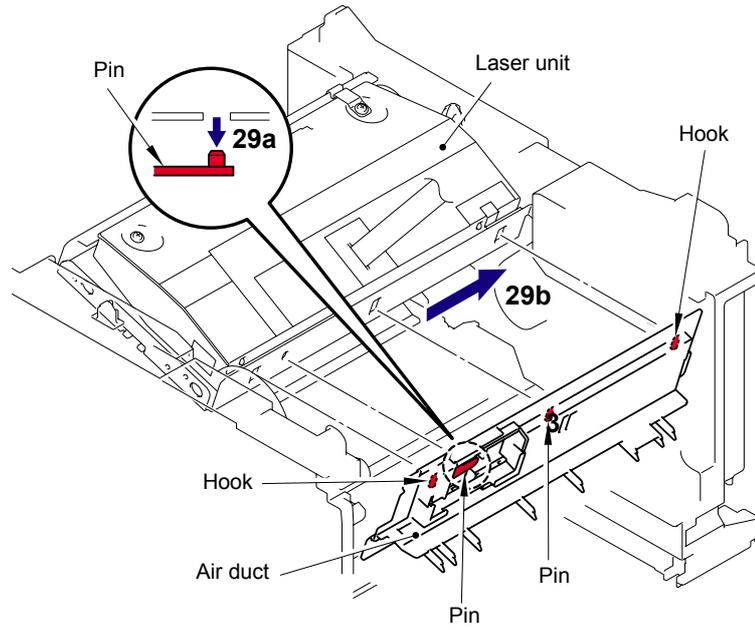


Fig. 3-37

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

(31) Remove the two Flat cable from the Main PCB.

NOTE:

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

(32) Remove the Protective film.

(33) Pull out the flat cable from the Core.

(34) Remove the Laser unit.

NOTE:

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

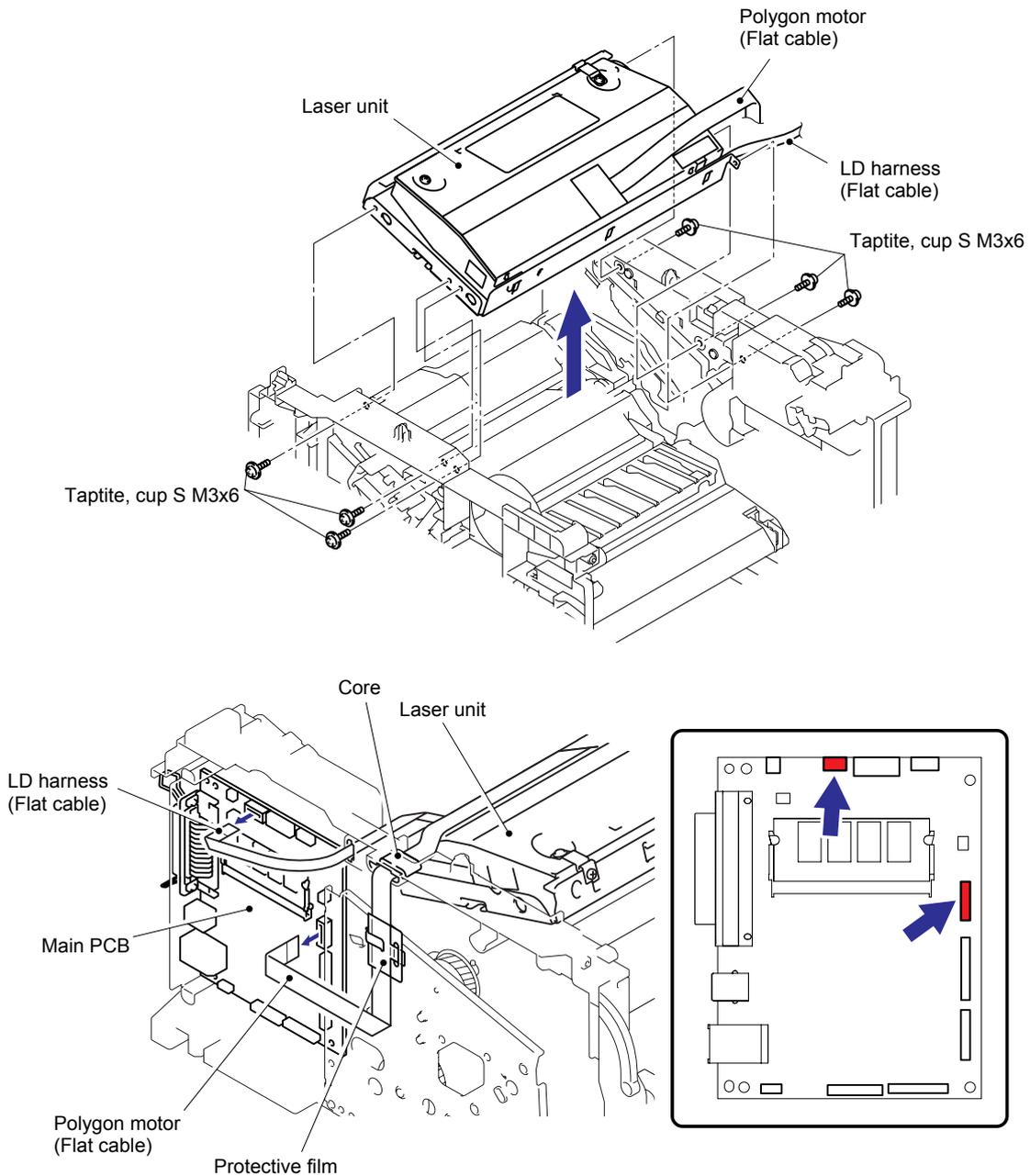


Fig. 3-38

< Installing Procedure >

- (1) Secure the Laser unit with the six cup S M3x6 Taptite screws.
- (2) Put the flat cable through the Core and Protective film.
- (3) Install the flat cable. (Refer to "4. HARNESS ROUTING" in Chapter 5.)

NOTE:

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

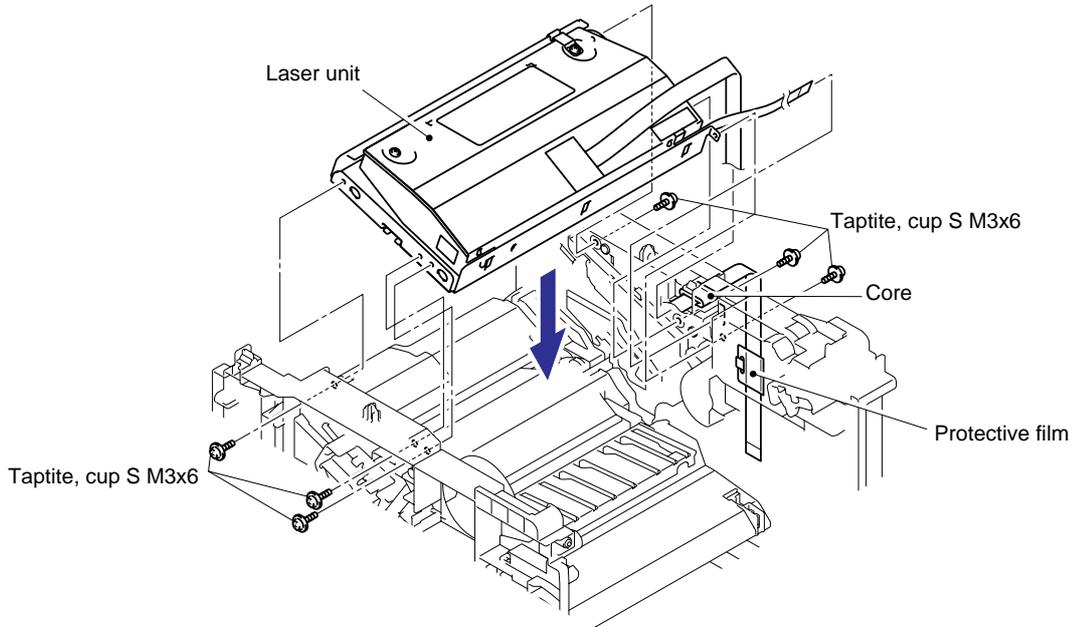


Fig. 3-39

- (4) Install the Air duct into the Laser unit.

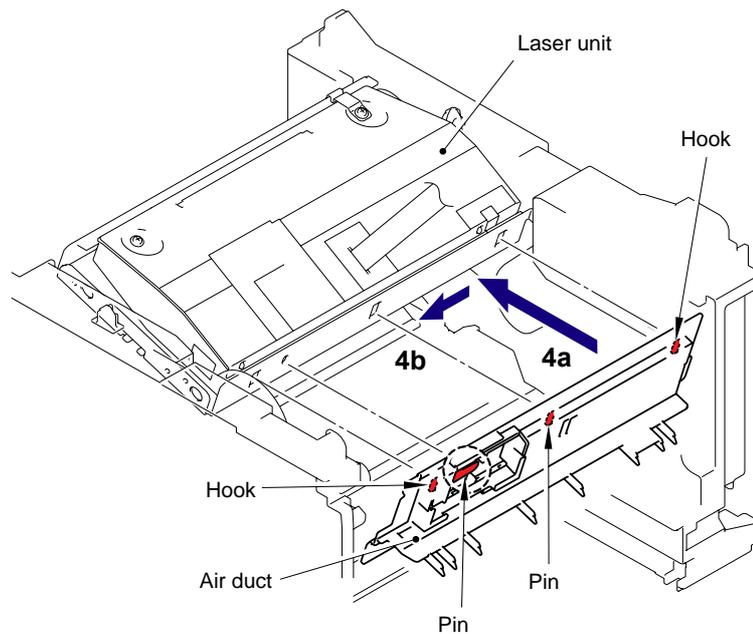


Fig. 3-40

(5) Install the Filter into the Air duct.

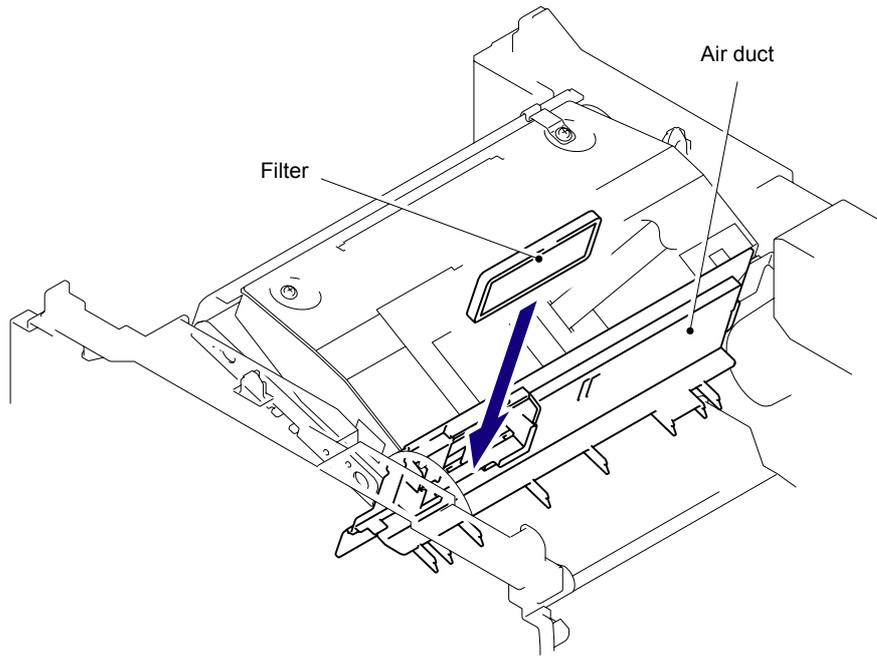


Fig. 3-41

(6) Install the Sub duct into the Air duct.

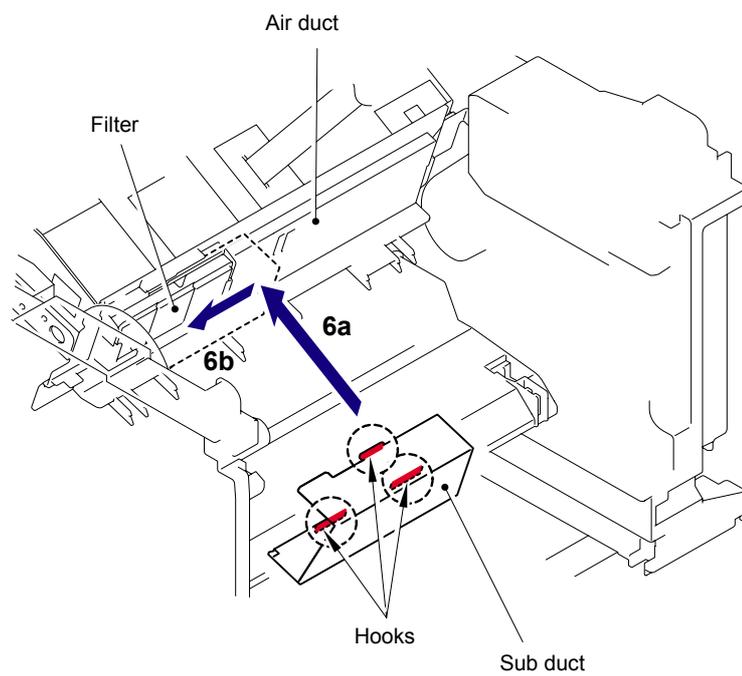
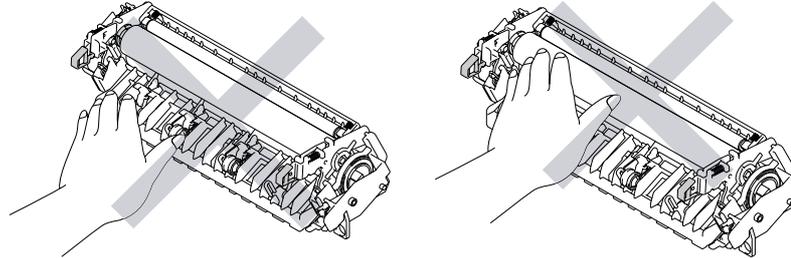


Fig. 3-42

! WARNING

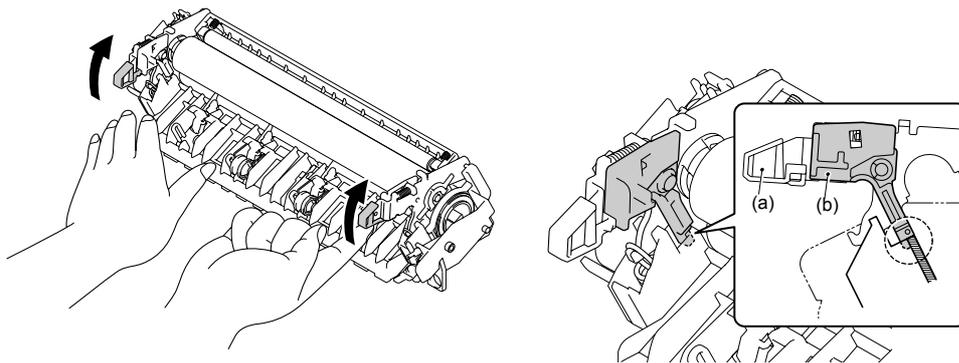
- **DO NOT** subject the fuser unit to strong physical shocks or vibrations.
- **DO NOT** touch the rollers and the electrodes to prevent damage to the fuser unit In the following figures.



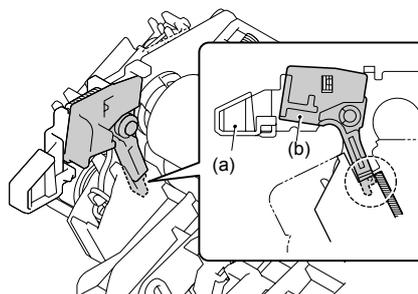
! CAUTION:

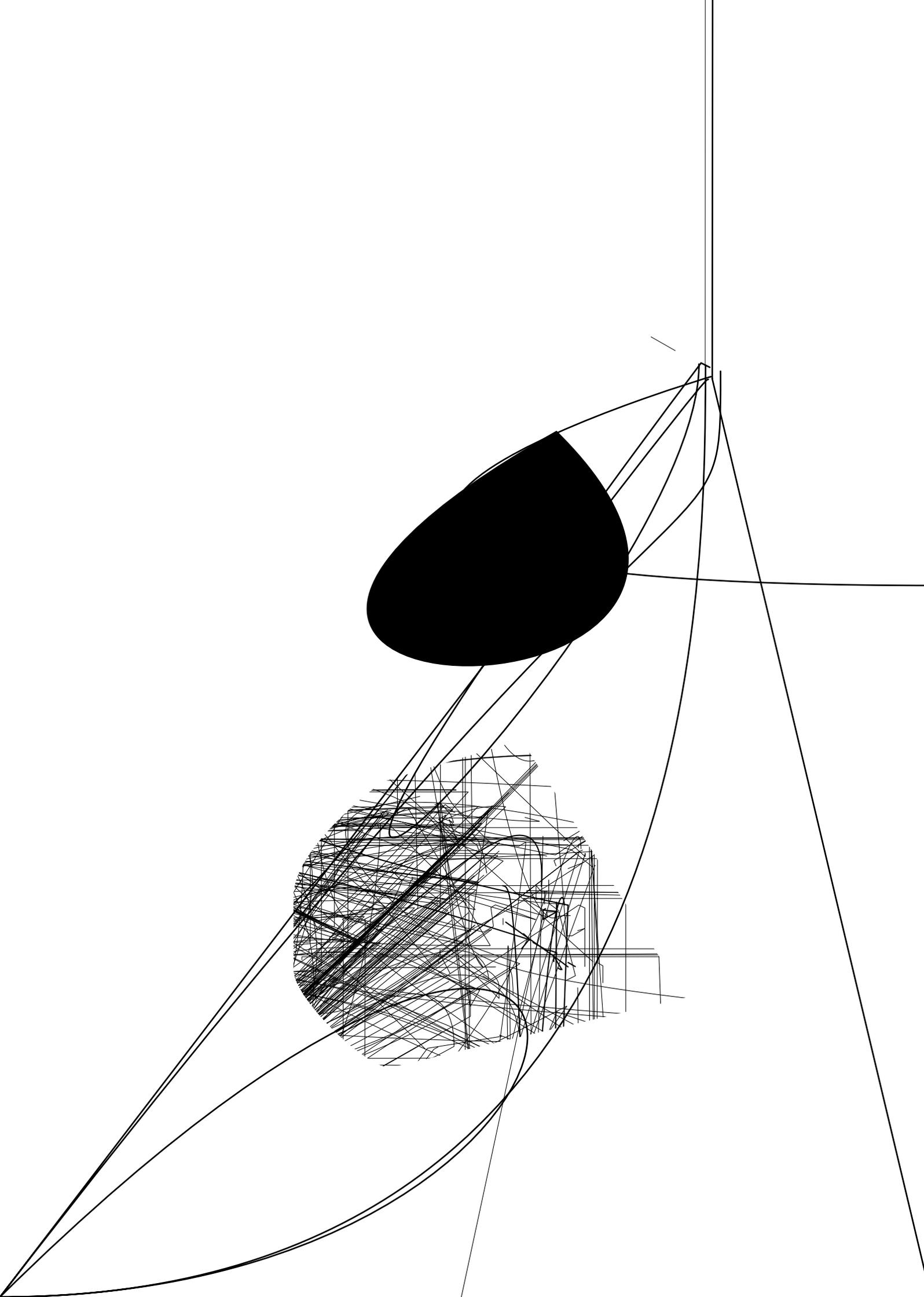
To prevent the deformation of the pressure roller, the fuser unit spare part is shipped with its pressure roller at low nip pressure. Before installing the fuser unit, turn back the levers to the normal position by following instructions below.

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



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





(9) Install the FU harness cover 2.

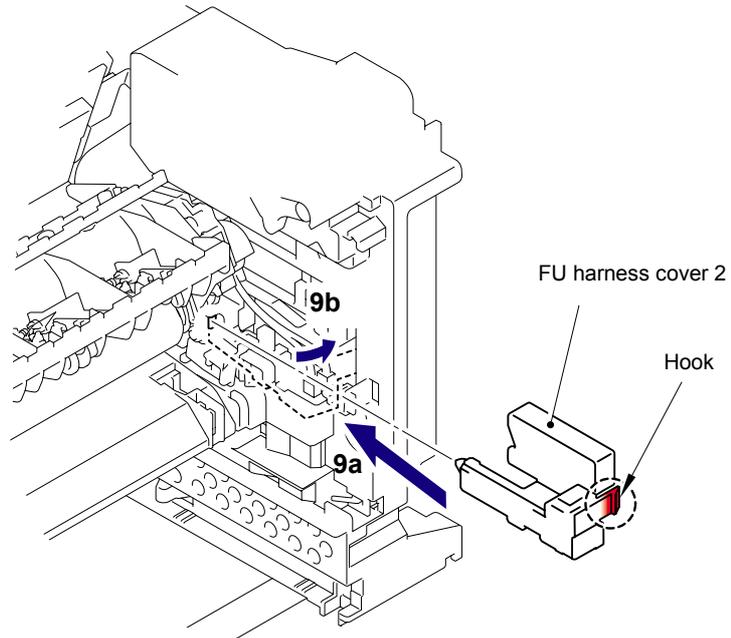


Fig. 3-45

(10) Install the Heater terminal L and Heater terminal S.

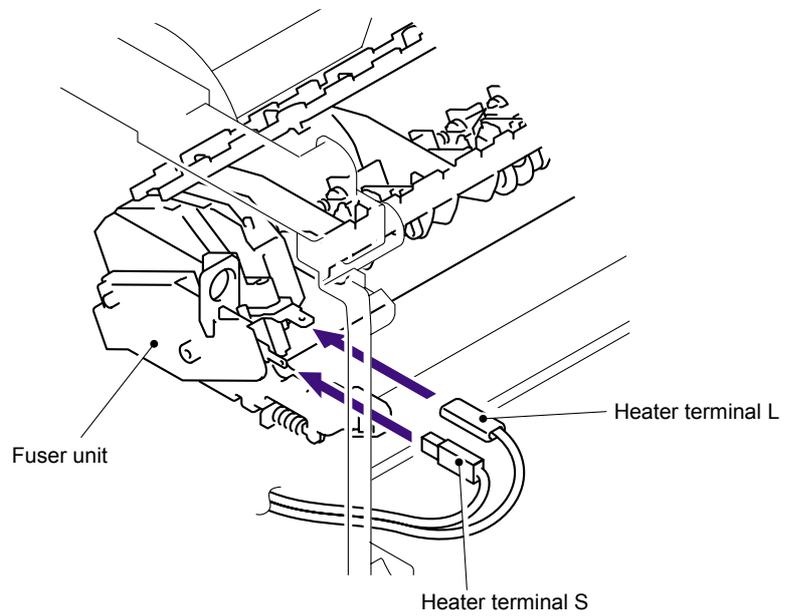


Fig. 3-46

(11) Secure the FU harness cover 1 with the bind B M4x16 Taptite screw.

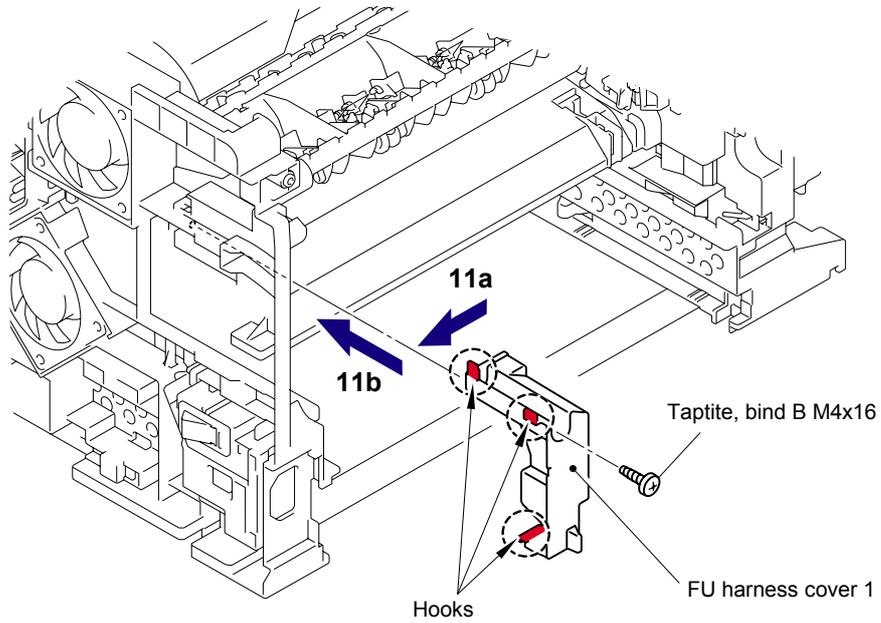


Fig. 3-47

(12) Secure the Top cover printed ASSY with the two bind B M4x12 Taptite screws.

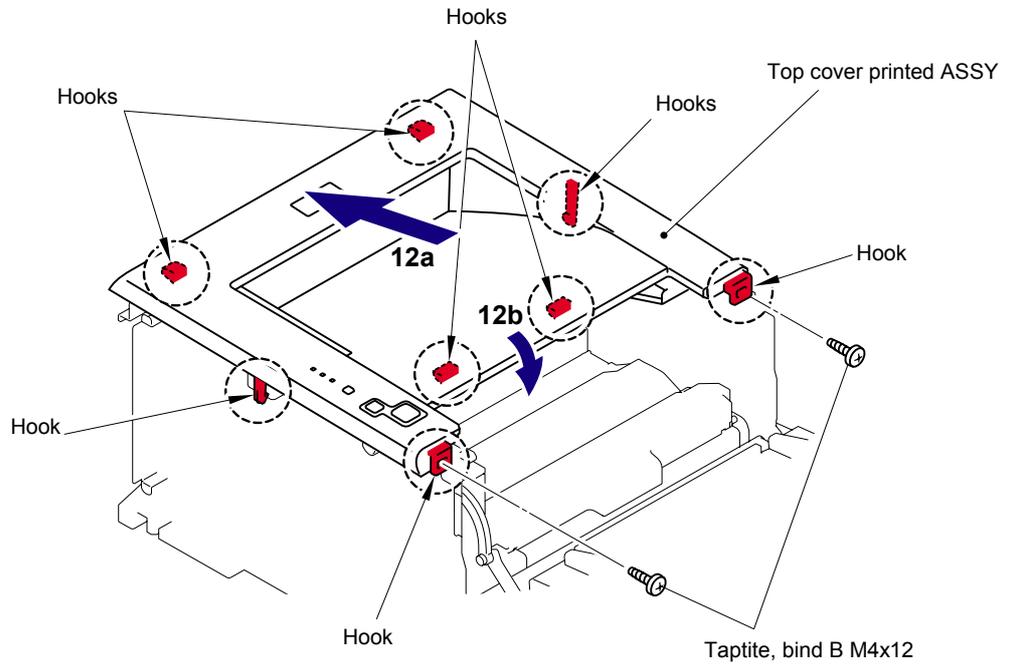


Fig. 3-48

(13) Connect the Connector of the Panel PCB.

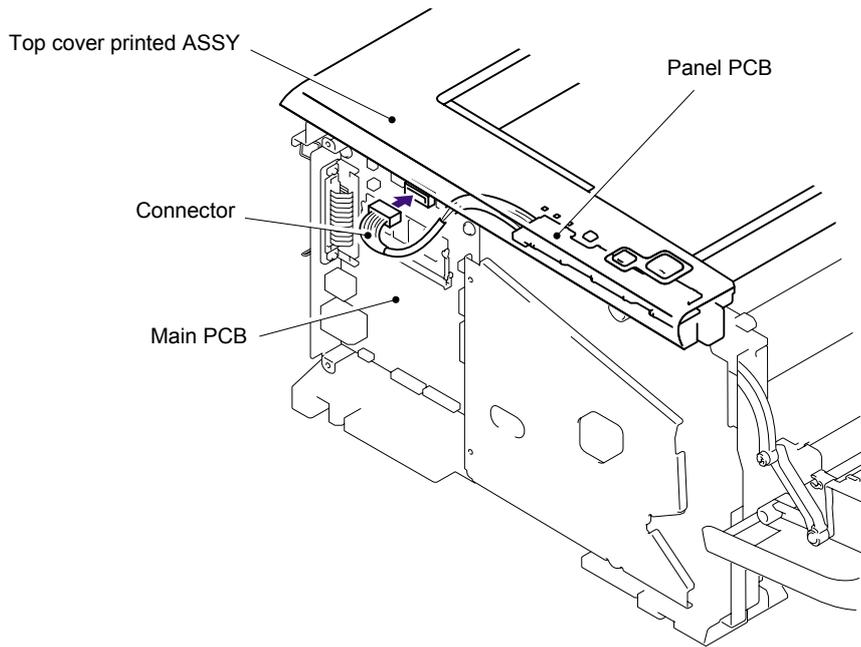


Fig. 3-49

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

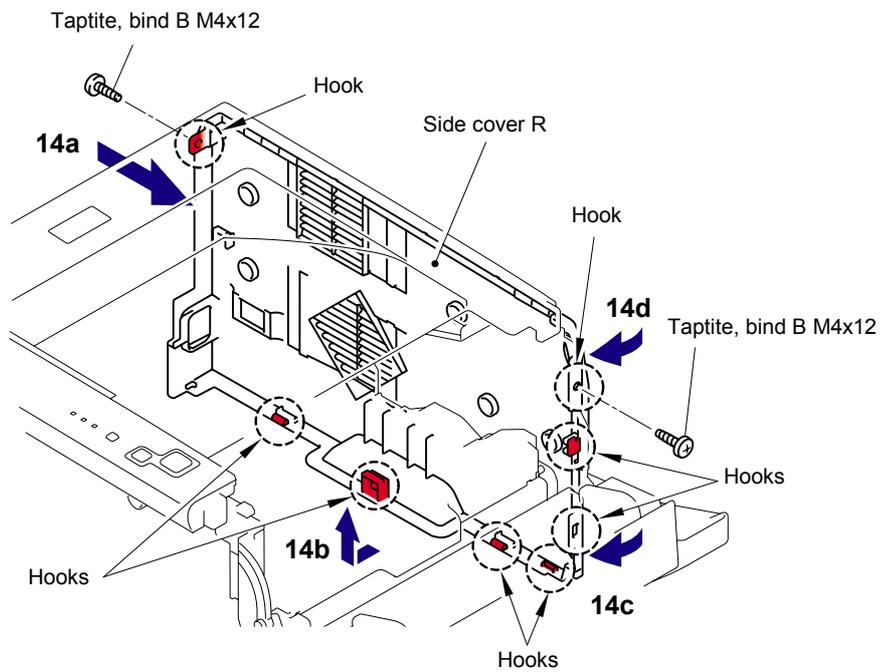


Fig. 3-50

(15) Secure the Shield cover and FG harness with the four cup S M3x6 SR Taptite screws.

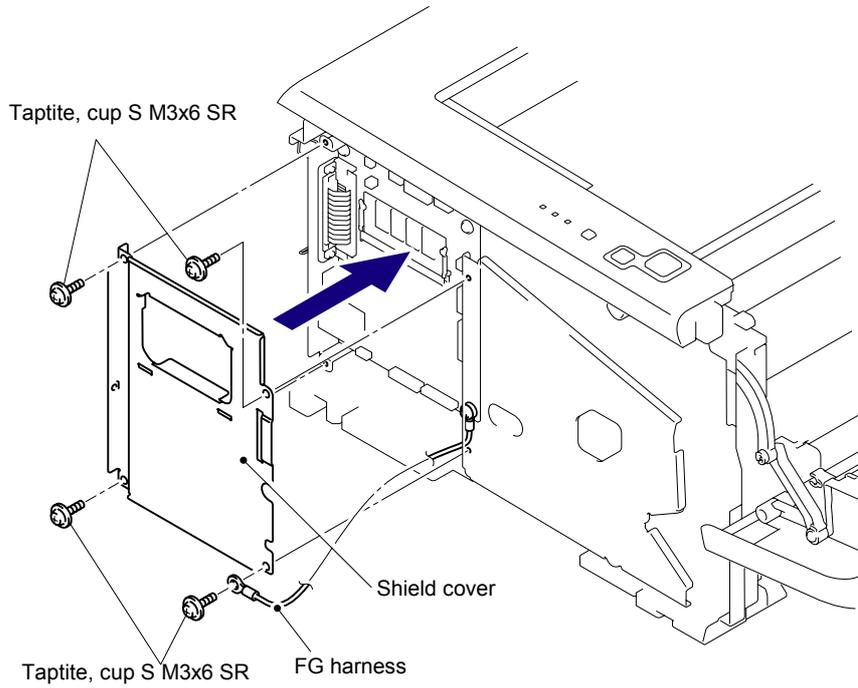


Fig. 3-51

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

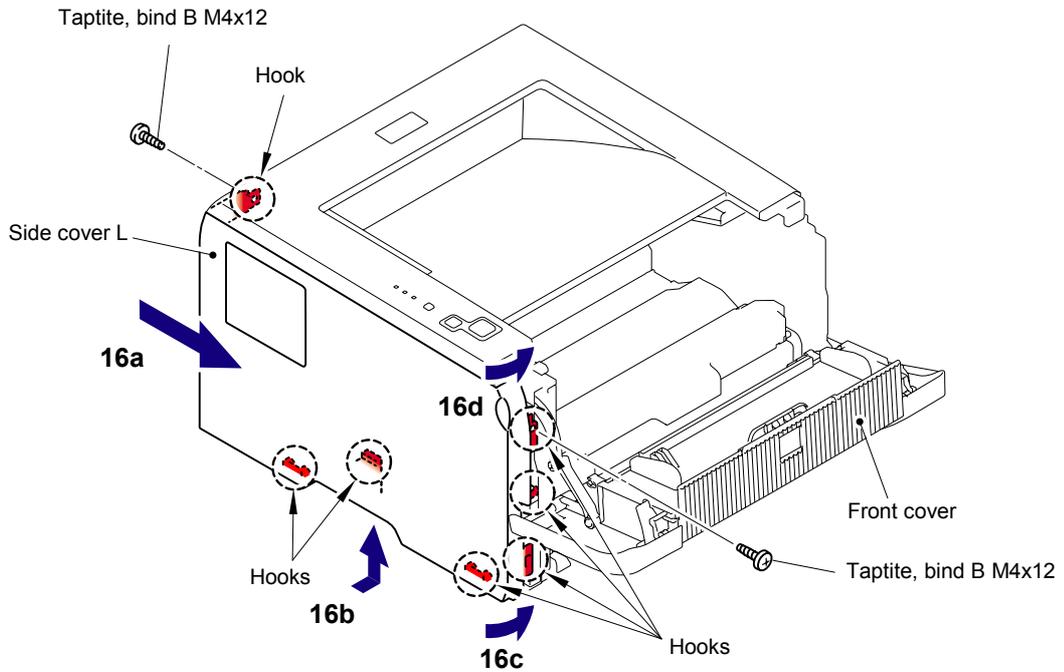


Fig. 3-52

- (17) Catch the Arm of the Outer chute ASSY onto the Pin of the machine body and install the Outer chute ASSY.

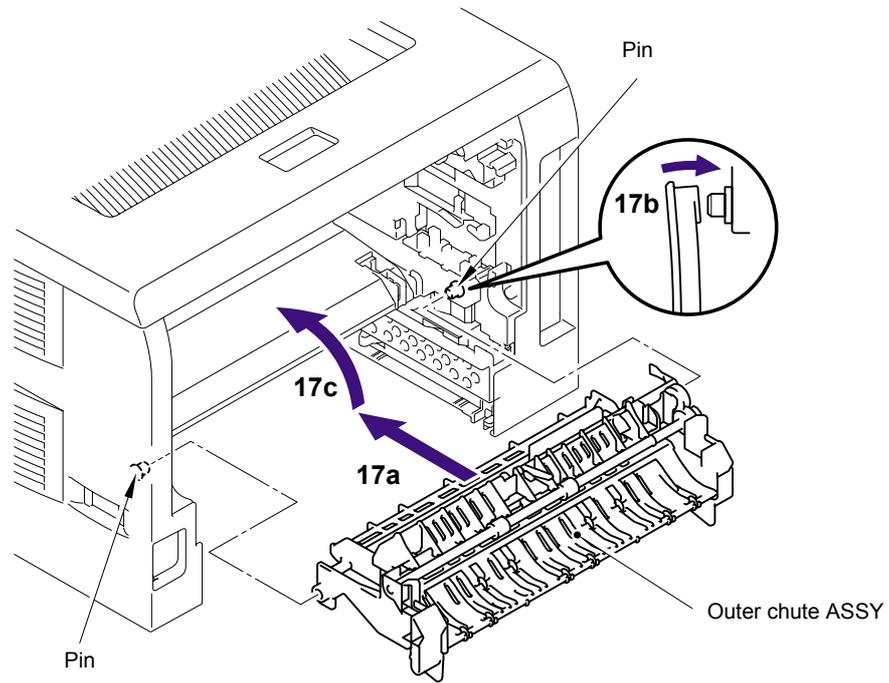


Fig. 3-53

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

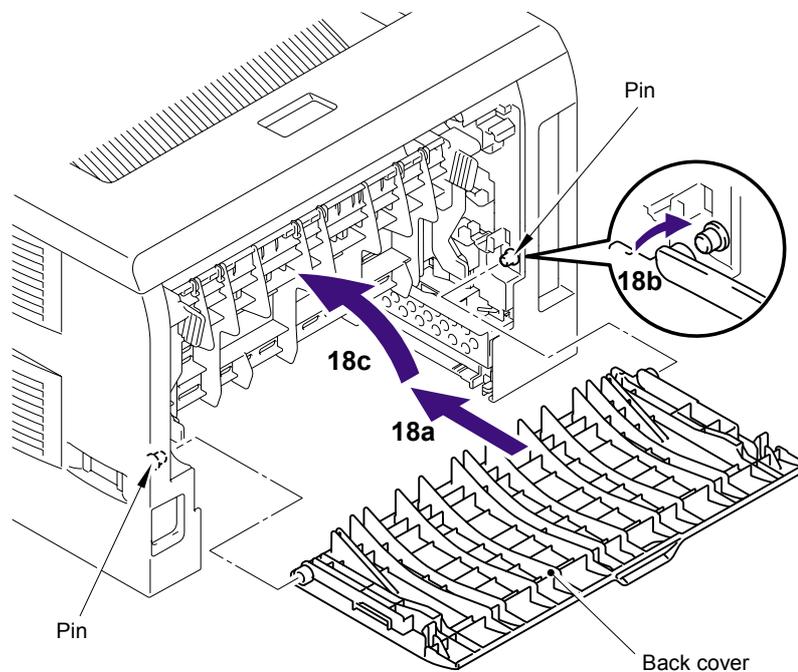


Fig. 3-54

(19) Install the DX feed ASSY or DX blank cover.

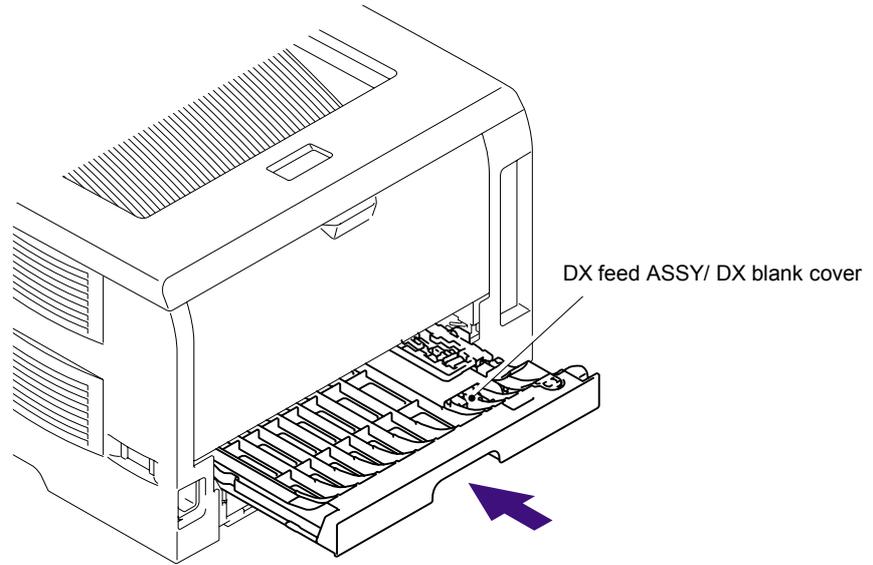


Fig. 3-55

(20) Install the Drum/toner ASSY into the Printer.

(21) Close the Front cover.

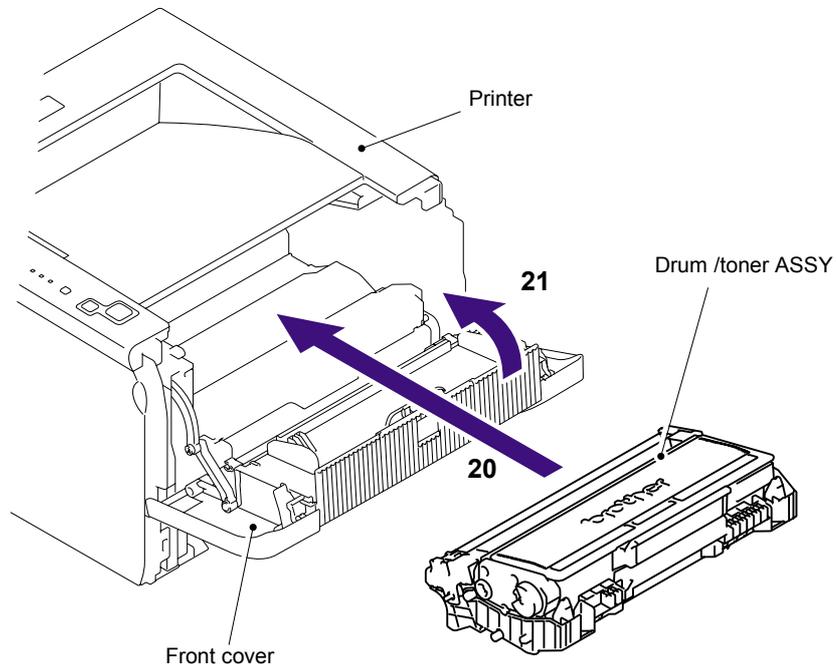


Fig. 3-56

(22) Put the Paper tray into the Printer.

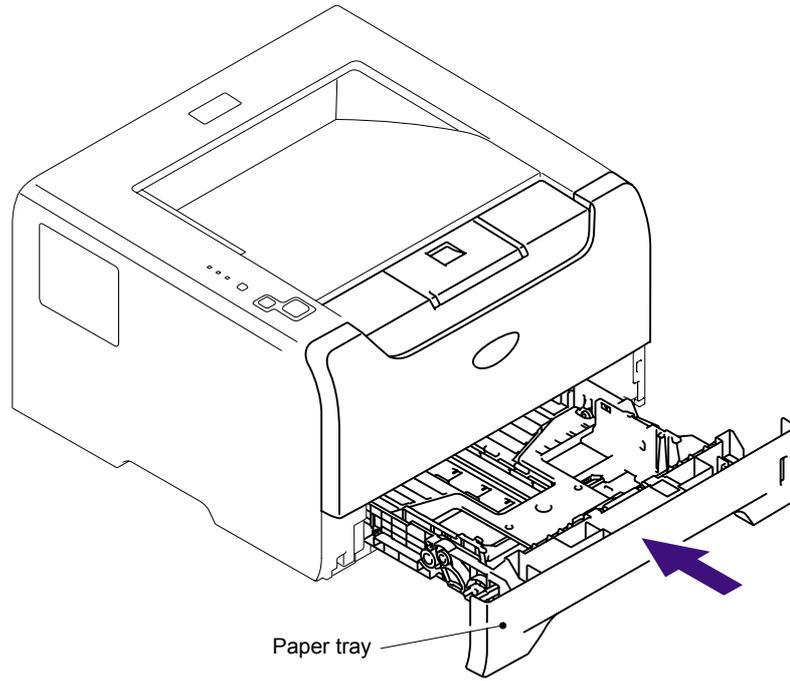


Fig. 3-57

(23) Connect the AC cord into the Printer.

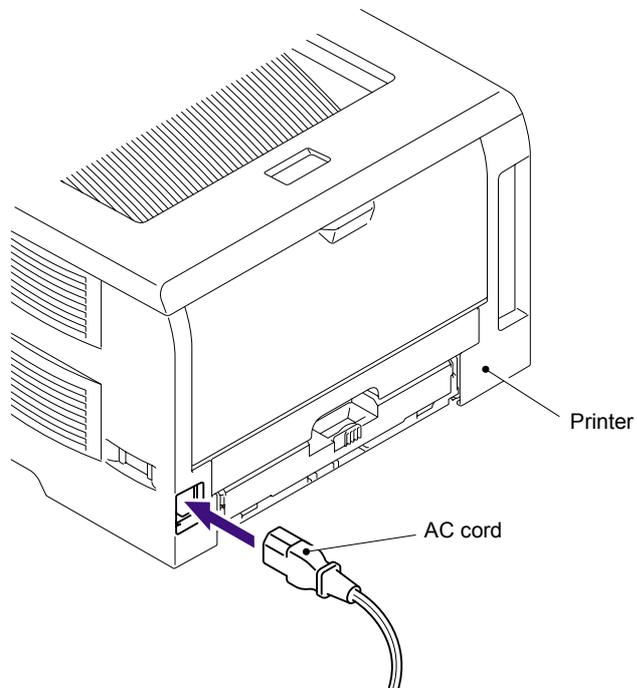


Fig. 3-58

2.2.2 Paper feeding kit for tray 1, 2, 3

< Uninstalling Procedure >

- (1) Disconnect the AC cord from the Printer.

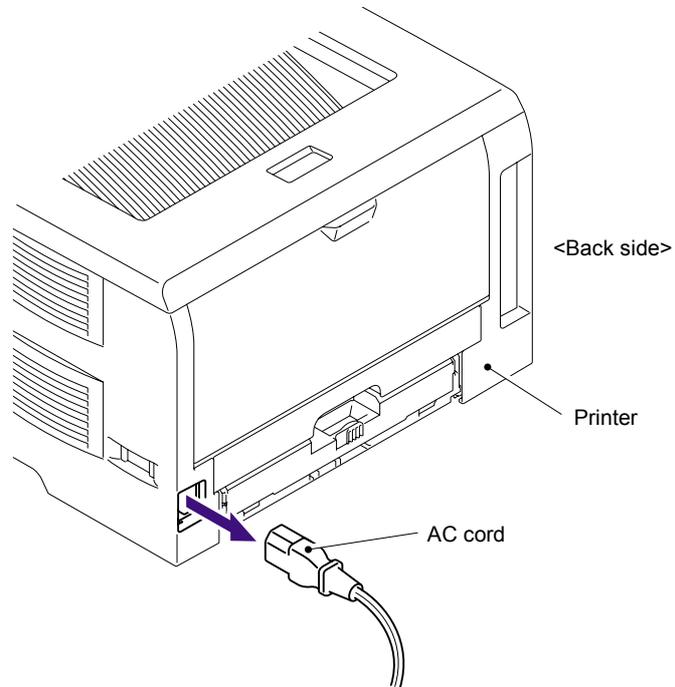


Fig. 3-59

- (2) Press the front cover release button.
- (3) Open the Front cover.
- (4) Remove the Drum/toner ASSY.

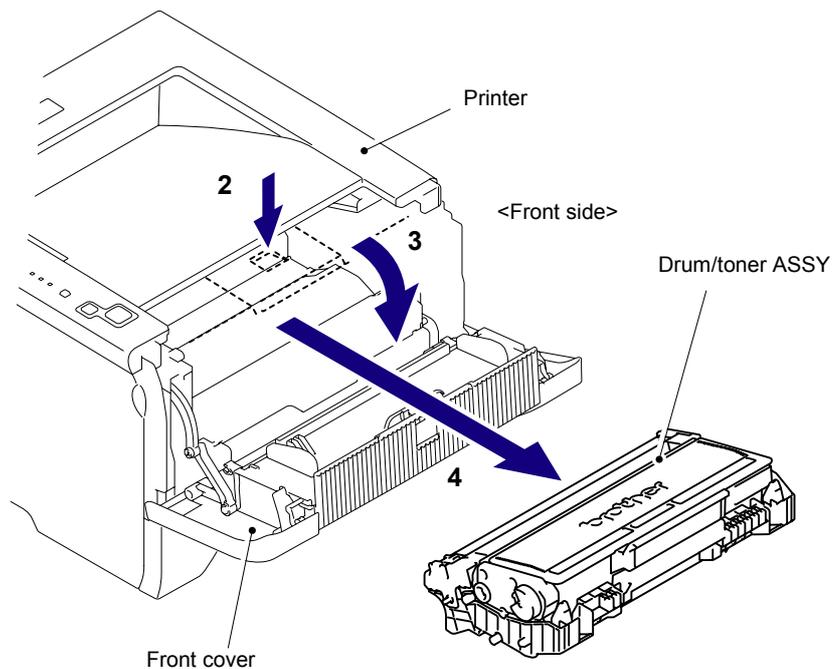


Fig. 3-60

- (5) Remove the DX feed ASSY or DX blank cover.

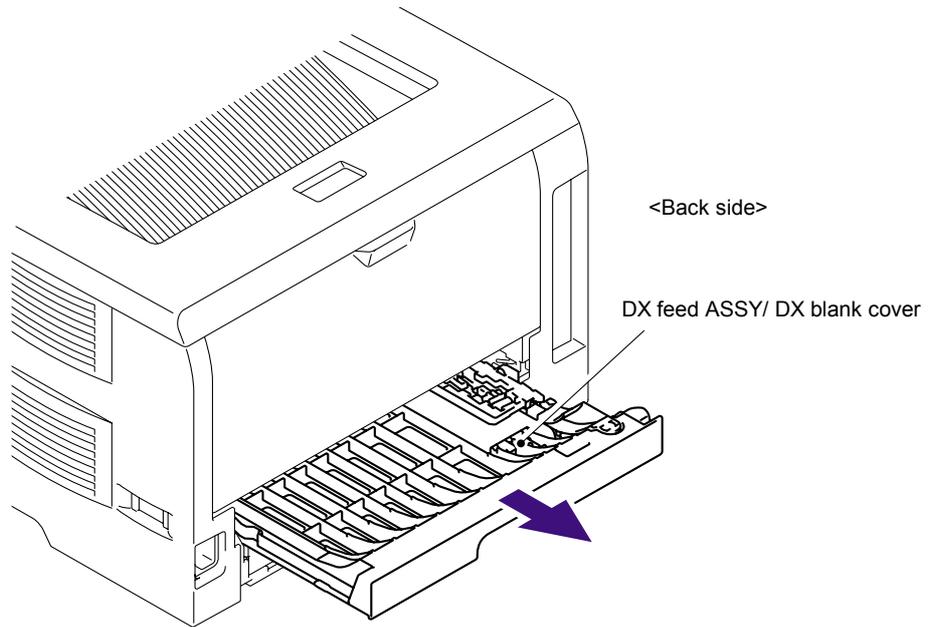


Fig. 3-61

- (6) Close the Front cover.
- (7) Pull out the Paper tray.
- (8) Remove the paper from the Paper tray.

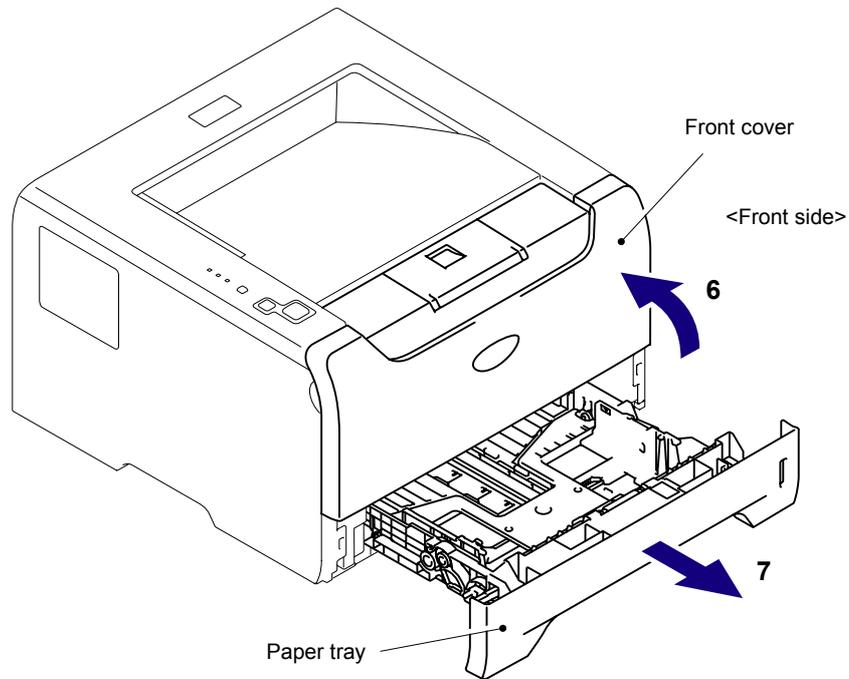


Fig. 3-62

- (9) Pull up the back side of the Separation pad ASSY.
- (10) Push the Hooks provided on both sides of the Separation pad ASSY inwards.
- (11) Pull up the Separation pad ASSY.
- (12) Remove the Separation pad spring.

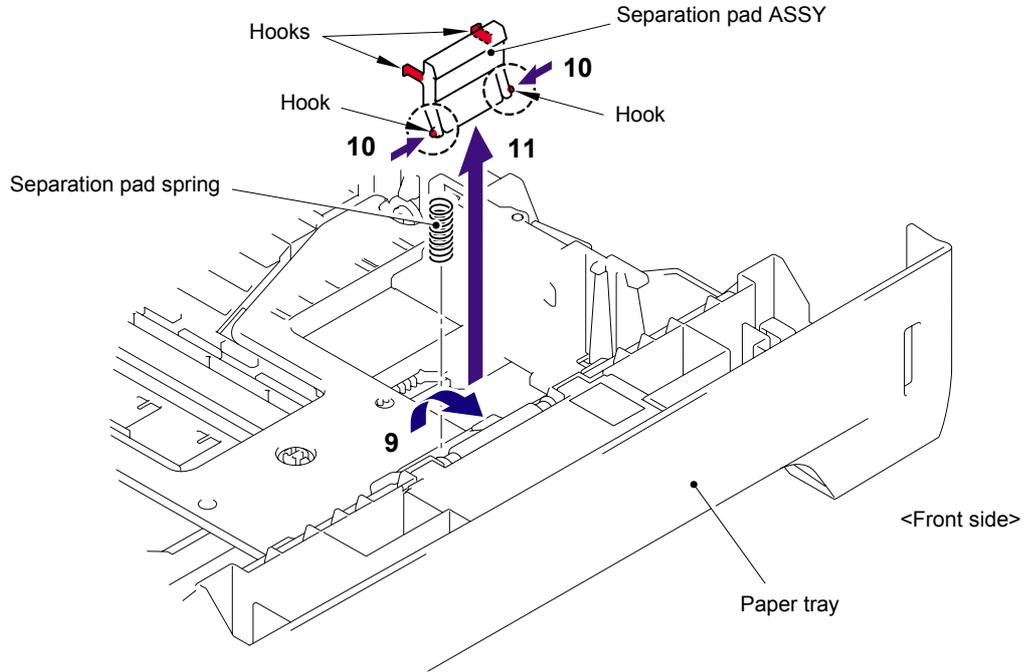


Fig. 3-63

(13) Turn the Printer upside down.

NOTE:

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

(14) Push the Lift arm to the direction of the arrow 14a and pull out the pin of the Roller holder ASSY. Then, turn the Roller holder ASSY to the direction of the arrow 14b.

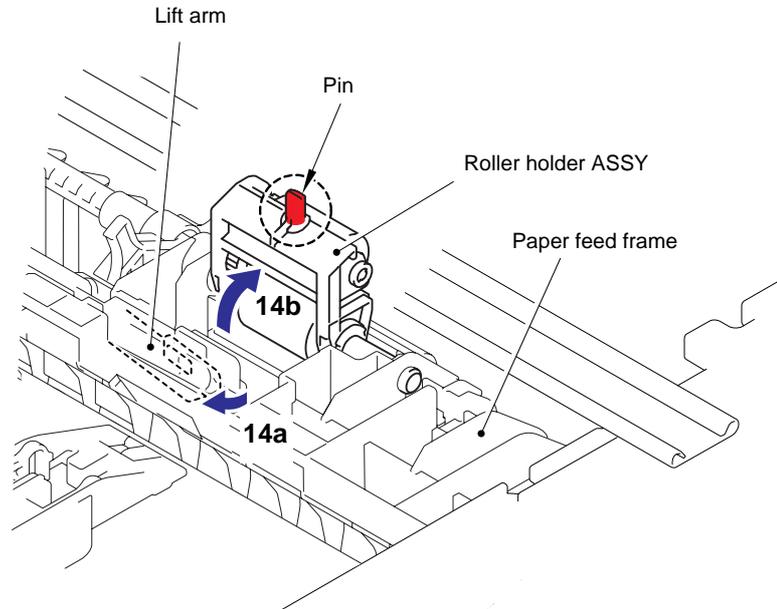


Fig. 3-64

(15) Slide the Roller holder ASSY to the direction of the arrow 15a. Then, lift up the gear side of the Roller holder ASSY to the direction of the arrow 15b and pull it out to the direction of the arrow 15c to remove.

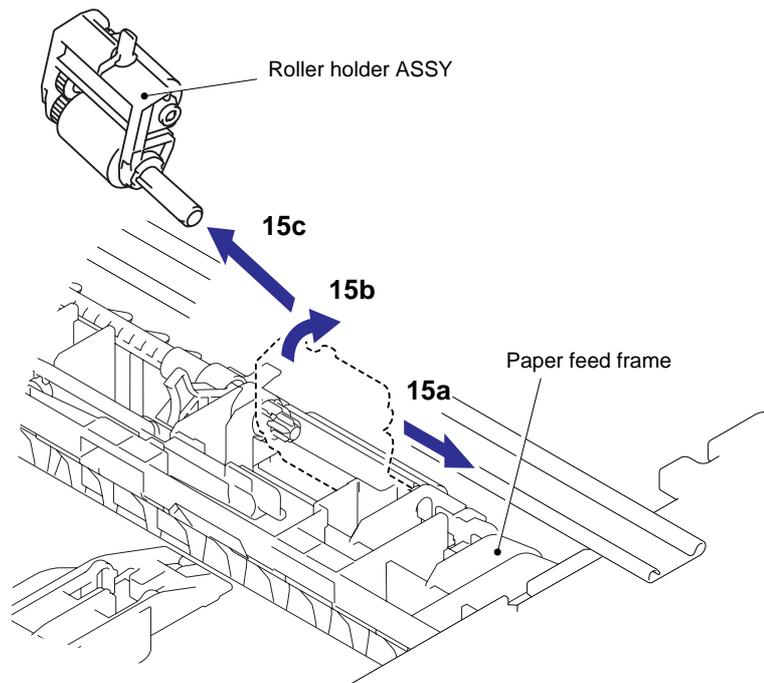


Fig. 3-65

< Installing Procedure >

- (1) Install the Roller holder ASSY.

NOTE:

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

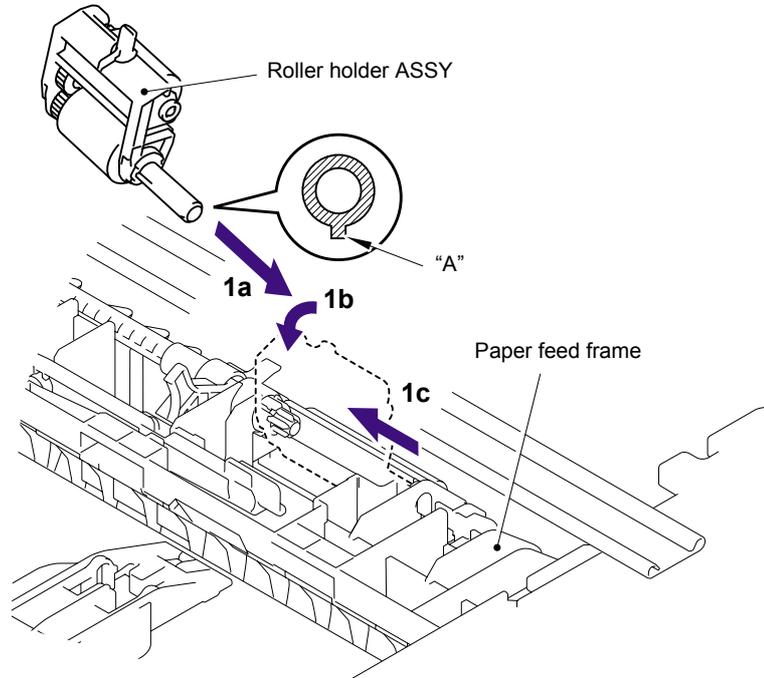


Fig. 3-66

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

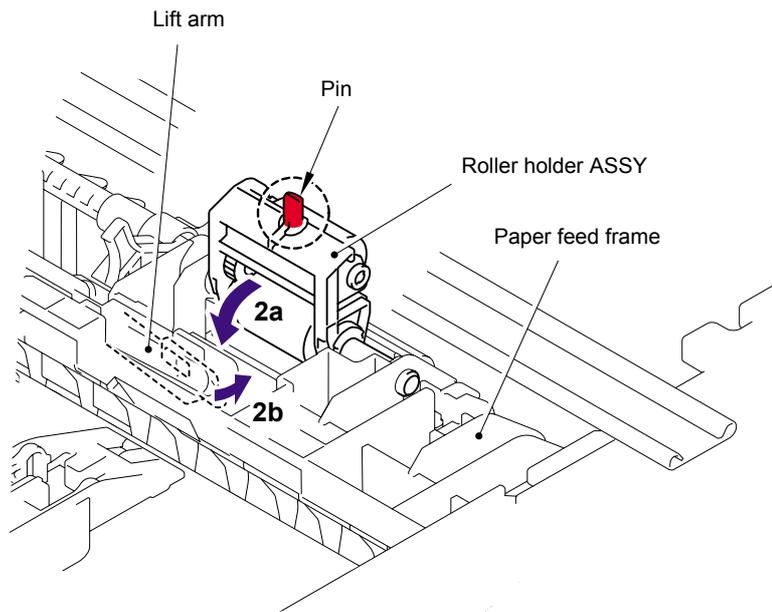
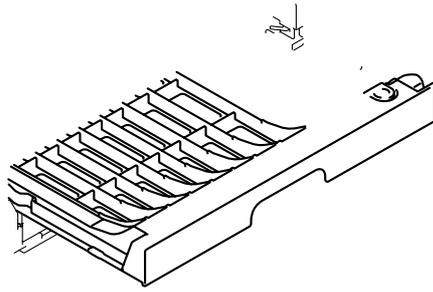


Fig. 3-67

(4) Install the DX feed ASSY or DX blank cover.



- (6) Set the Separation pad spring.
- (7) Put the Hooks of the Separation pad ASSY into the Paper tray, and turn the Separation pad ASSY to the direction of the arrow 7c to catch the Hooks into the Paper tray.

NOTE:

Check that the Separation pad spring is assembled correctly.

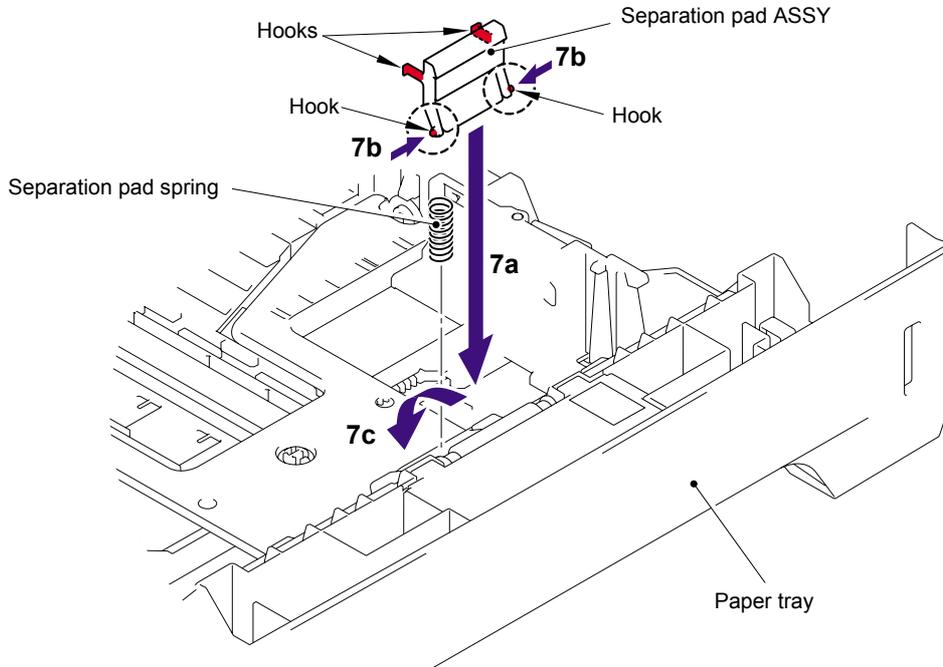


Fig. 3-70

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

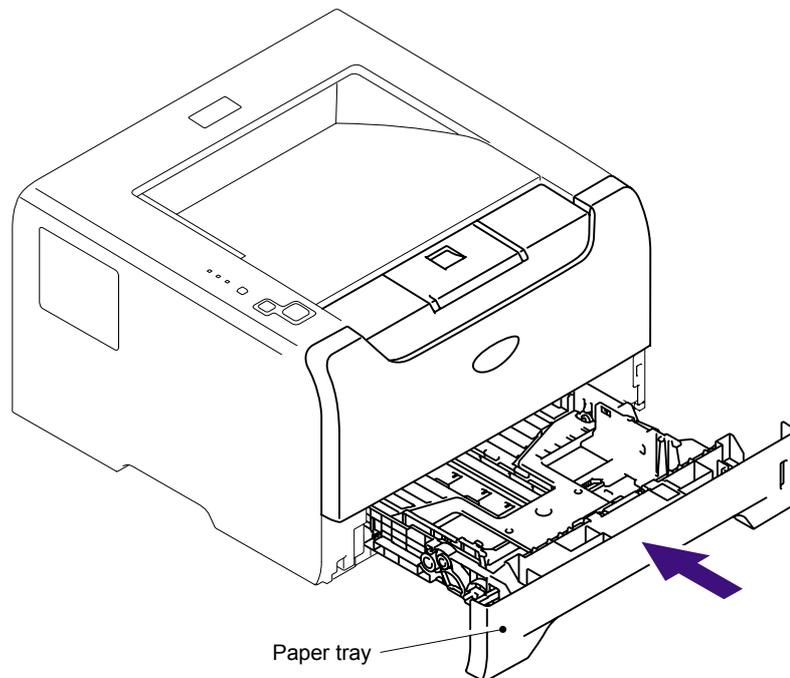


Fig. 3-71

(9) Connect the AC cord into the Printer.

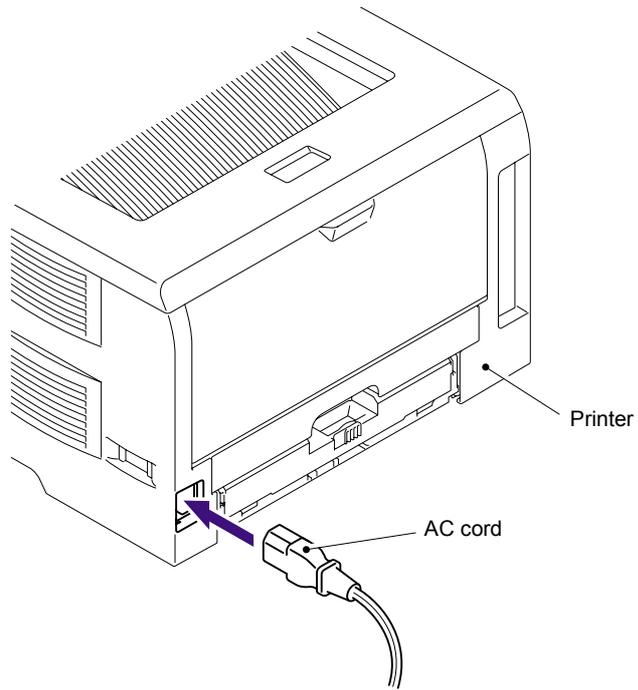


Fig. 3-72

2.2.3 Paper feeding kit for MP tray

< Uninstalling Procedure >

- (1) Disconnect the AC cord from the Printer.

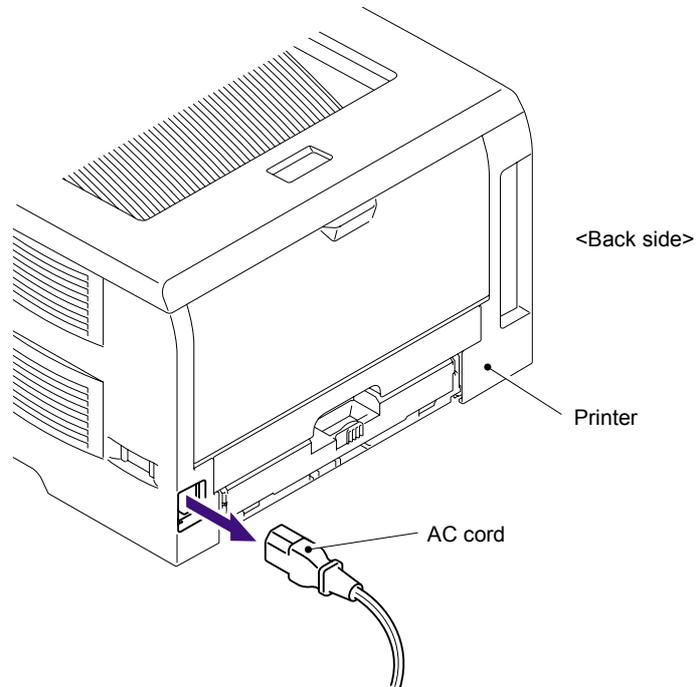


Fig. 3-73

- (2) Press the front cover release button.
- (3) Open the Front cover.
- (4) Remove the Drum/toner ASSY.

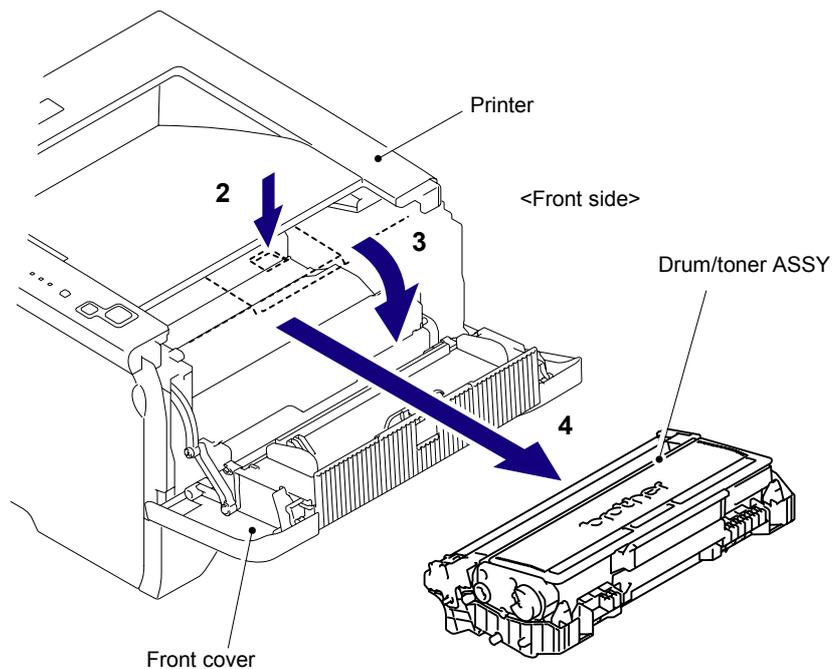


Fig. 3-74

(5) Open the MP feed frame cover.

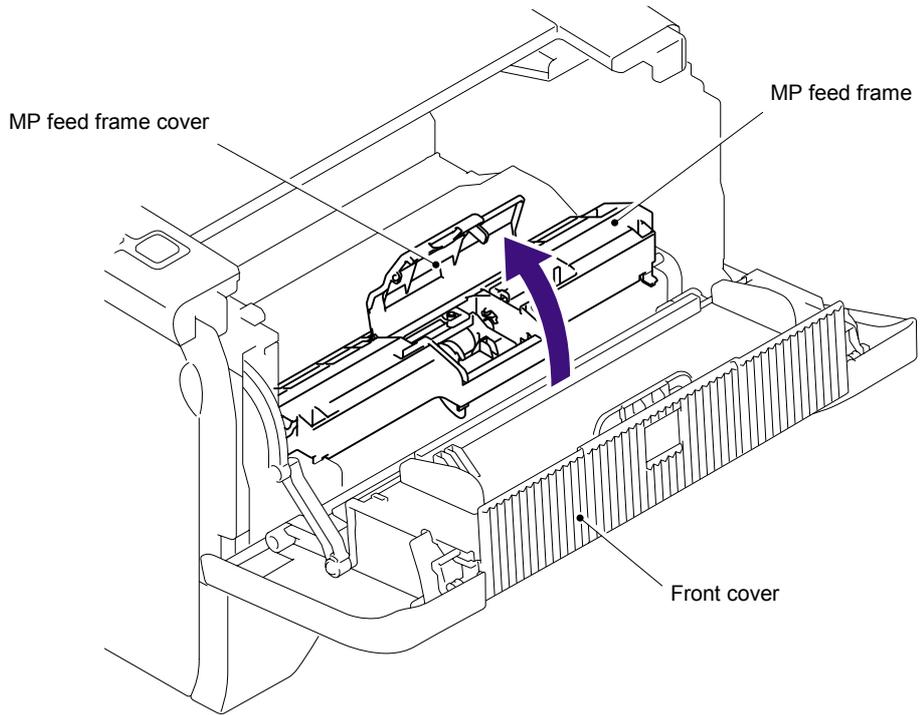


Fig. 3-75

(6) Remove the Holder bearing MP.

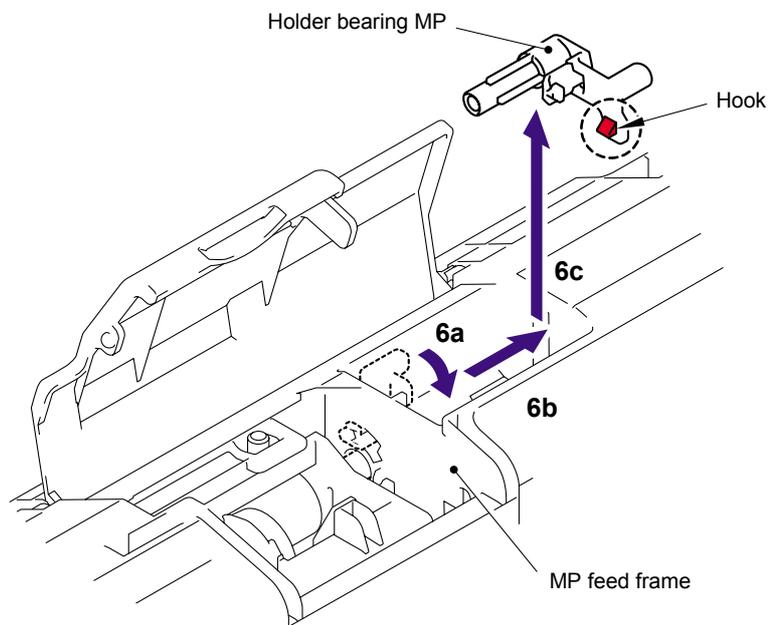


Fig. 3-76

- (7) Lift up the Lift arm MP to release it from the Pin of the MP roller holder ASSY.
- (8) Slide the MP roller holder ASSY to the direction of the arrow 8a and put it up to remove.

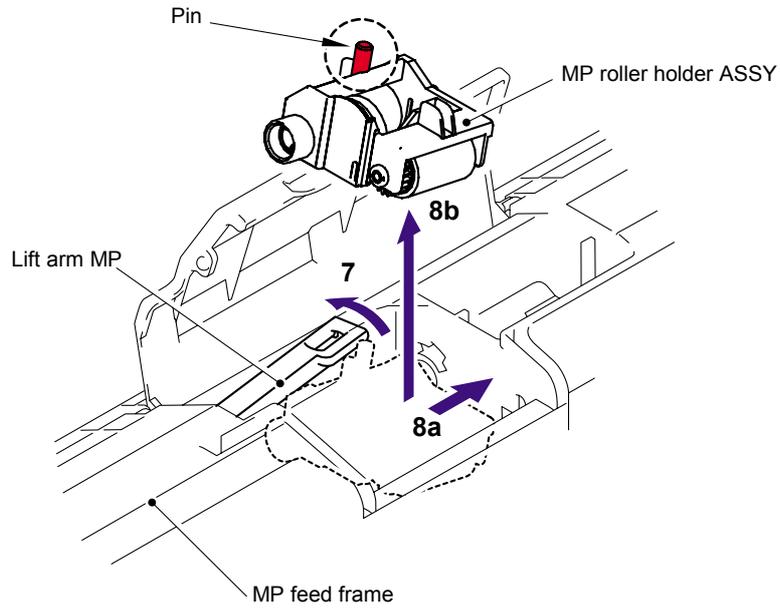


Fig. 3-77

- (9) Turn the back side of the Separation pad ASSY MP to the direction of the arrow 9a and put it up to remove.

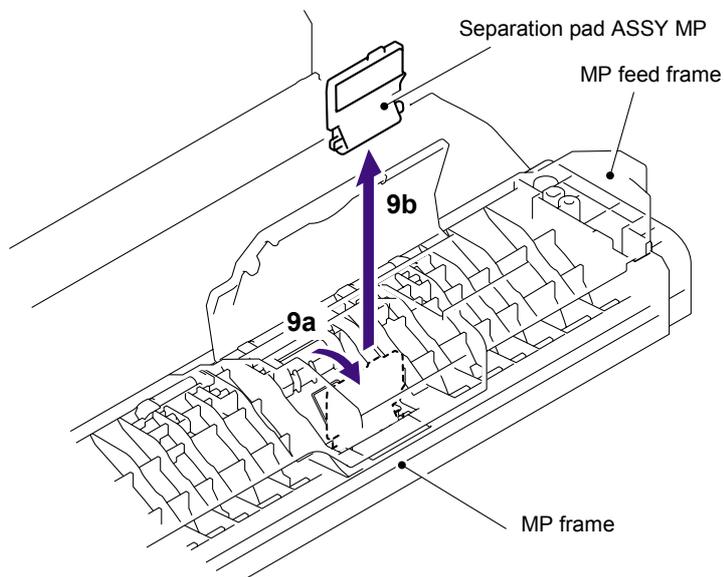


Fig. 3-78

< Installing Procedure >

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

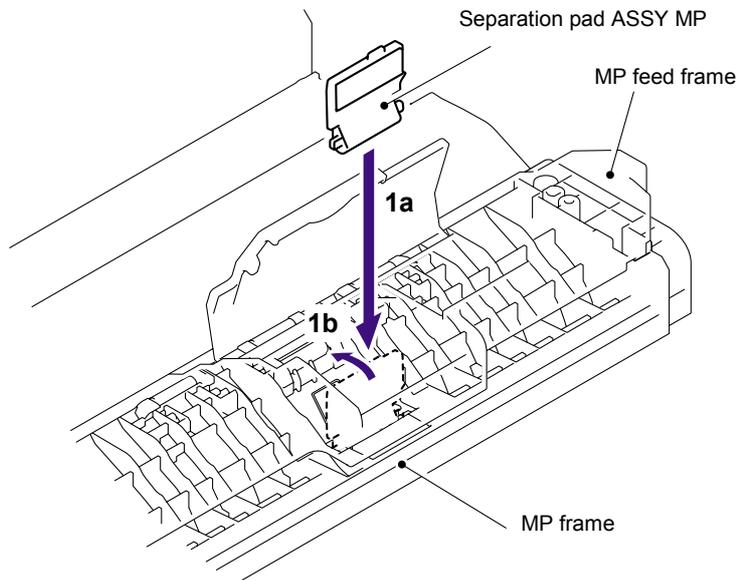


Fig. 3-79

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

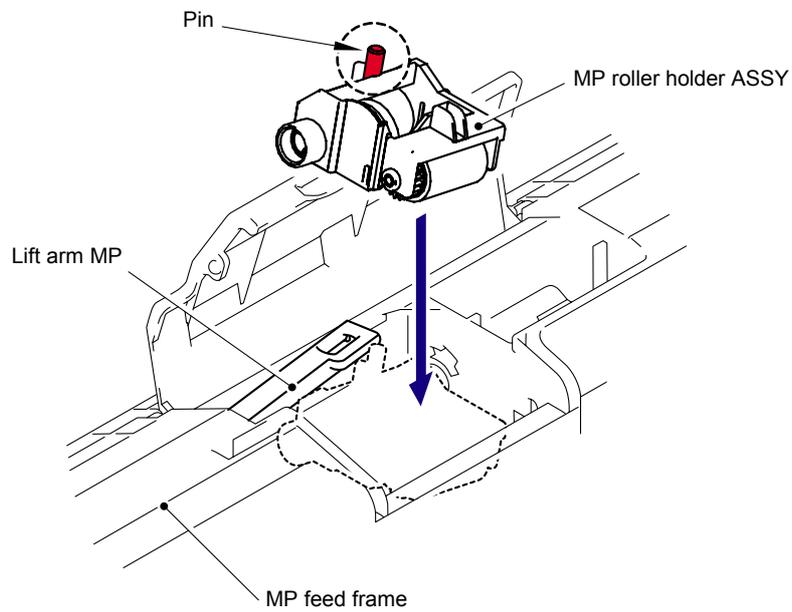


Fig. 3-80

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

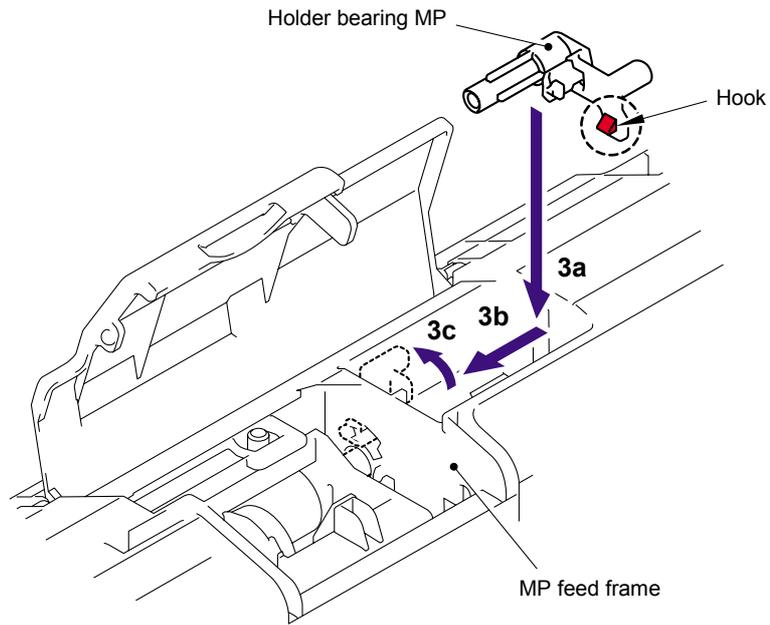


Fig. 3-81

- (4) Close the MP feed frame cover.

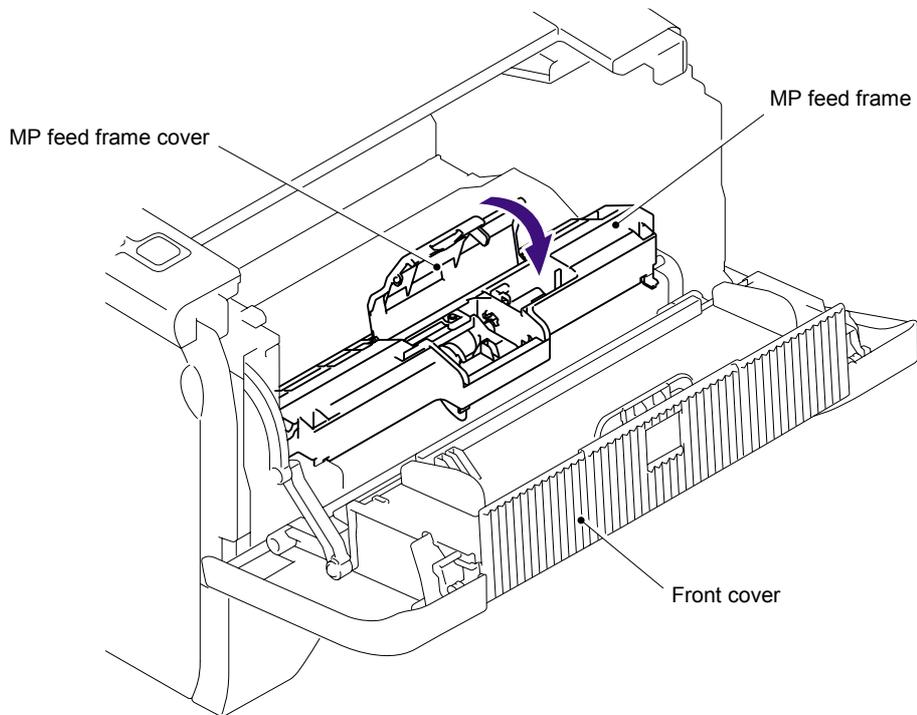


Fig. 3-82

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

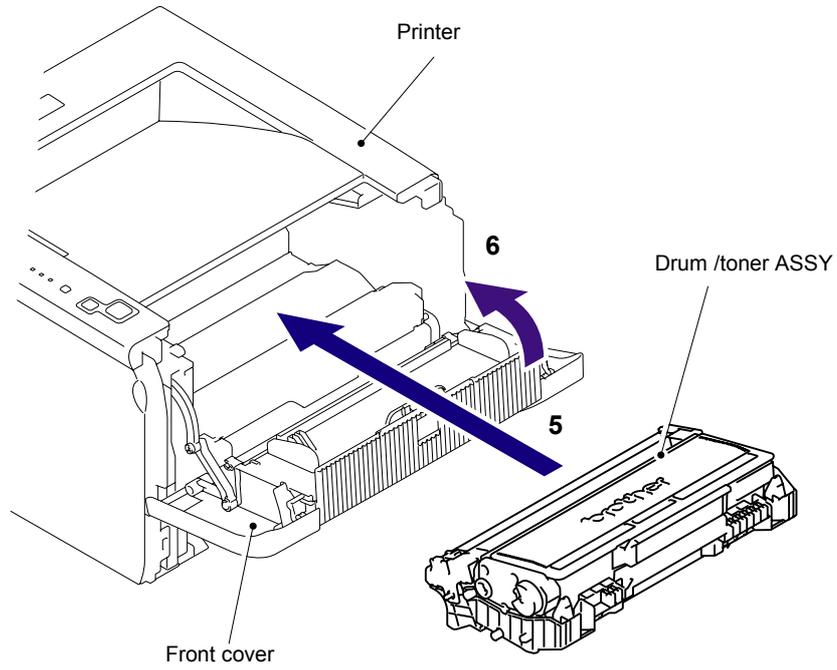


Fig. 3-83

- (7) Connect the AC cord into the Printer.

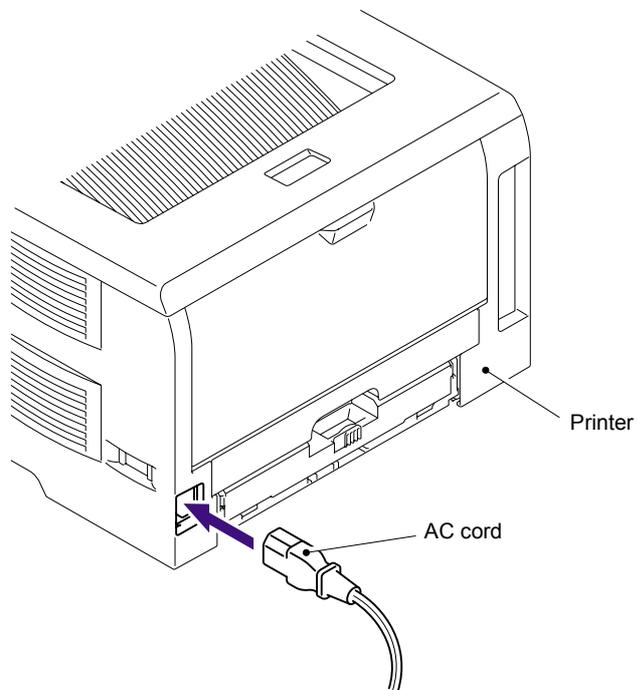


Fig. 3-84

3. PERIODICAL CLEANING

Clean the outside and inside of the printer regularly with a dry soft cloth. When you replace the toner cartridge or the drum unit, make sure you clean the inside of the printer. If printed pages are stained with toner, clean the inside of the printer with a dry soft cloth.

! CAUTION:

While drum/toner ASSY and scanner window cleaning can be implemented by the end user, the electrical terminals inside the printer and on the drum/toner ASSY should be cleaned by a service technician. Instruct the users not to touch those terminals.

! WARNING

There are high voltage electrodes inside the printer. Before cleaning the printer, make sure that the power switch has been turned off and the power cord has been unplugged from the power outlet.

3.1 Cleaning the Inside of the Printer

- (1) Turn off the printer power switch and then unplug the printer.

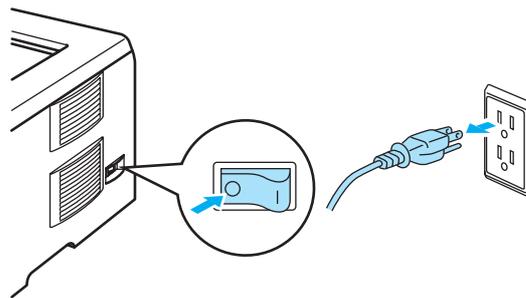


Fig. 3-85

- (2) Press the front cover release button and then open the front cover.

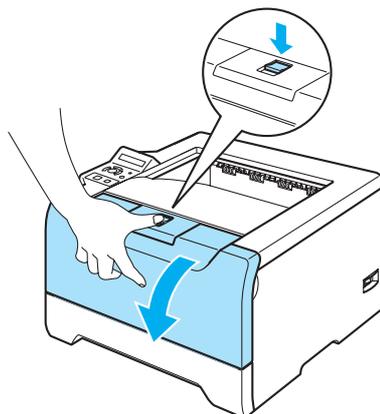


Fig. 3-86

(3) Take out the drum unit and toner cartridge assembly.

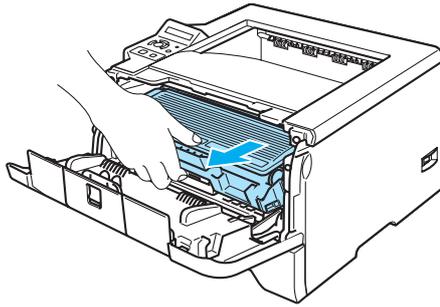
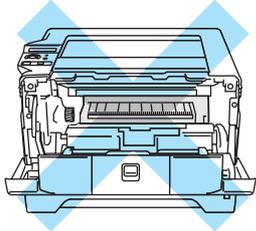


Fig. 3-87

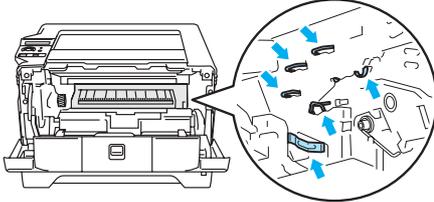
 **HOT SURFACE:**

After you have just used the printer, some internal parts of the printer will be extremely hot. Wait for the printer to cool down before you touch the internal parts of the printer.



 **CAUTION:**

- * We recommend that you put the drum unit and toner cartridge assembly on a piece of disposable paper or cloth in case you accidentally spill or scatter toner.*
- * Handle the toner cartridge carefully. If toner scatters on your hands or clothes, wipe or wash it off with cold water at once.*
- * To prevent damage to the printer from static electricity, DO NOT touch the electrodes shown in the illustration.*



- (4) Wipe the scanner window with a dry, lint-free cloth.

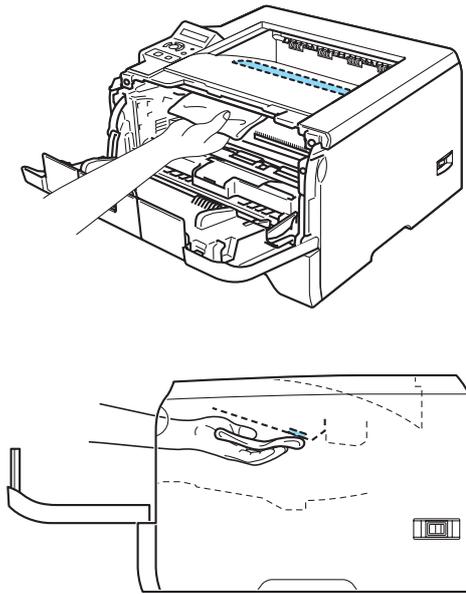


Fig. 3-88

- (5) Put the drum unit and toner cartridge assembly back in the printer.
- (6) Close the front cover.
- (7) Plug the printer back in, and then turn on the power switch.

3.2 Cleaning the Corona Wire

! CAUTION:

It is recommended to place the drum/toner ASSY on a piece of disposable paper or cloth in case you accidentally spill or scatter toner.

If you have print quality problems, clean the corona wire as follows:

- (1) Press the front cover release button and then open the front cover.

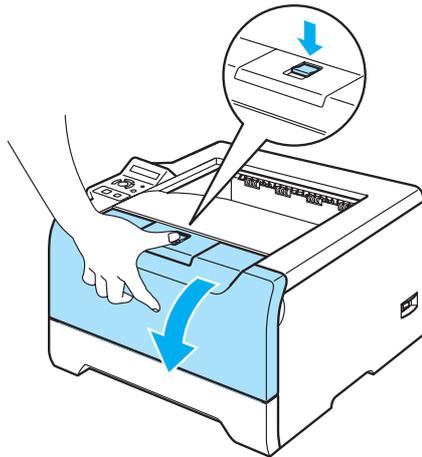


Fig. 3-89

- (2) Take out the drum unit and toner cartridge assembly.

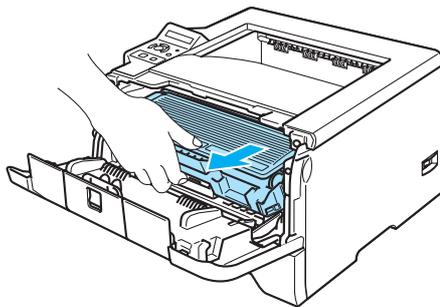
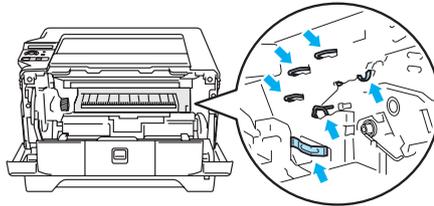


Fig. 3-90

! CAUTION:

- * We recommend that you put the drum unit and toner cartridge assembly on a piece of disposable paper or cloth in case you accidentally spill or scatter toner.
- * To prevent damage to the printer from static electricity, DO NOT touch the electrodes shown in the illustration.



- (3) Clean the primary corona wire inside the drum unit by gently sliding the blue tab from right to left and left to right several times.

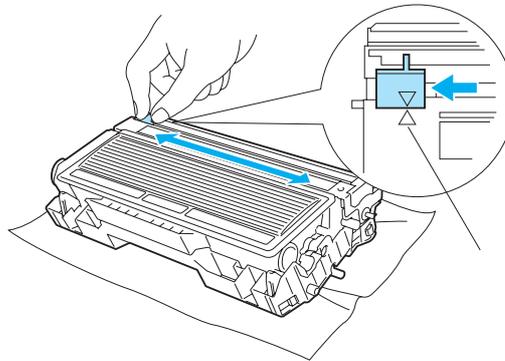


Fig. 1

! CAUTION:

Be sure to return the tab to the home position. Do not touch the vertical stripe.

Do not have a

- (4) Put the drum unit and toner cartridge assembly back into the printer cover.

CHAPTER 4 TROUBLESHOOTING

1. INTRODUCTION

1.1 Initial Check

(1) Operating environment

Check if :

- The source voltage stays within $\pm 10\%$ from the rated voltage shown on the rating plate.
- The printer is installed on a solid, level surface.
- The room temperature is maintained between 10°C and 32.5°C. The relative humidity is maintained between 20% and 80%.
- The printer is not located in a dusty place.
- The printer is not exposed to ammonia fumes or other harmful gases.
- The printer is not located in a hot or humid area (such as near water or a humidifier).
- The printer is not exposed to direct sunlight.
- The room is well-ventilated.
- The printer is not placed where the ventilation hole of the printer is blocked.

(2) Print paper

Check if :

- A recommended type of print paper is being used. [If the paper is too thick or too thin, or tends to curl, paper jams or paper feed problems may occur, or printed images may be blurred.]
- The print paper is damp. [If so, use fresh paper, and check whether the print quality improves or not.]
- The print paper is short-grained paper or acid paper. [If so, print quality problems may occur.]

For further information on paper, refer to [3.6 "Paper" in Chapter 1](#).

(3) Consumable parts

Check if :

(HL-5240/5250DN)

- The LEDs on the printer control panel indicate "Toner Life End". If the LEDs indicate "Toner Life End", replace the toner cartridge with a new one.

(HL-5270DN/5280DW)

- The LCD shows "TONER LIFE END" the printer has run out of the toner is not evenly distributed inside the cartridge.

For further information on consumable parts, refer to [1. "CONSUMABLE PARTS" in Chapter 3](#).

(4) Others

Condensation:

When the printer is moved from a cold room into a warm room in cold weather, condensation may occur inside the printer, causing various problems as listed below:

- Condensation on the optical surfaces such as the scanning mirror, 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 corona unit may cause corona charge leakage.
- Condensation on the pressure plate and separation pad may cause paper feed troubles.

If condensation has occurred, print several pages or leave the printer for 2 hours to allow it to reach room temperature.

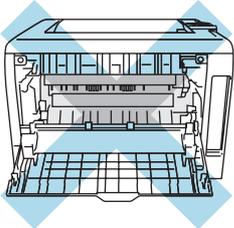
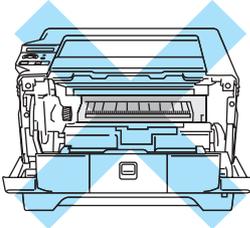
If the drum unit is unpacked soon after it is moved from a cold room to a warm room, condensation may occur inside the unit, which may cause incorrect images. Instruct the user to allow the unit to come to room temperature before unpacking it. This will take one or two hours.

1.2 Warning for Maintenance Work

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

! WARNING

- ***Always turn off the power switch and unplug the power cord from the power outlet before accessing any parts inside the printer.***
- ***Some parts inside the printer are extremely hot immediately after the printer is used. When opening the front cover or back cover to access any parts inside the printer, never touch the shaded parts shown in the following figures.***

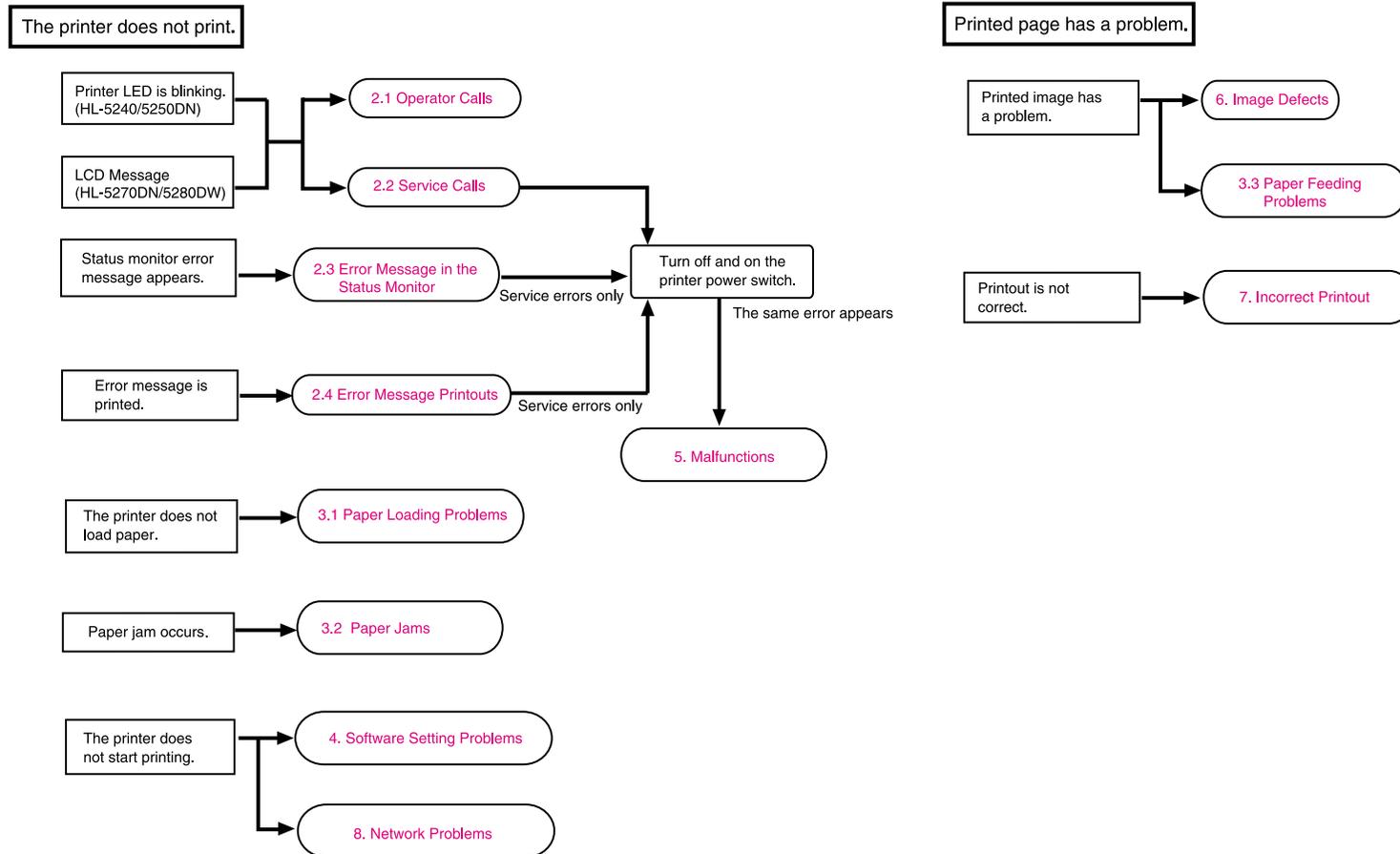


1.3 Identify the Problem

If you encounter any printer error or problem, first identify it referring to the chart below, then see the appropriate section.

NOTE:

The following troubleshooting sections contain both the actions which users should take or check and the ones which service technicians should perform.



2. ERROR MESSAGE

2.1 Operator Calls

2.1.1 Operator calls for HL-5240/5250DN

When an operator call occurs, the red **Status** LED blinks to indicate. An 'operator call' which the printer indicates on the LEDs is user recoverable. Identify the error from the table below and take the corrective action described for each indication to correct it. The printer automatically recovers from most errors. If not, the error is cleared by holding down the **Go** button.

| LED | Type of error | Error clearance by pressing the Go button. | Remedy |
|--|---|---|--|
| <ul style="list-style-type: none">  Toner <input type="checkbox"/> Drum <input type="checkbox"/> Paper  Status | Toner low | --- | The Toner LED will turn on for 2 seconds and off for 3 seconds. Replace the toner cartridge. |
| <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Toner <input type="checkbox"/> Drum <input type="checkbox"/> Paper  Status | Toner life end | N/A | Replace the toner cartridge with a new one. |
| | Cartridge position error | N/A | The drum unit ASSY is not installed correctly. Put the drum unit ASSY back in. |
| <ul style="list-style-type: none"> <input type="checkbox"/> Toner  Drum <input type="checkbox"/> Paper  Status | Drum near end | --- | The drum unit is near the end of its life. We recommend that you get a new drum unit to replace the current one. The Drum LED will turn on for 2 seconds and off for 3 seconds. |
| <ul style="list-style-type: none"> <input type="checkbox"/> Toner <input type="checkbox"/> Drum  Paper  Status | No paper fed tray | N/A | Put paper in the tray. Press the Go button. |
| | Paper jam | N/A | Clear the paper jam. If the printer does not start printing, press the Go button. |
| | Incorrect Paper size for Duplex (HL5250DN/5270DN/5280DW) | Yes | Press the Go or Job Cancel . Set the correct paper that you want to use, or load the same paper size paper that you selected in the current driver setting. The paper size you can use for automatic duplex printing is A4, Letter or Legal. |
| | Duplex disabled | Yes | Close the back cover of the printer and put the duplex tray back in. |

| LED | Type of error | Error clearance by pressing the Go button. | Remedy |
|---|---------------------|---|--|
| <input type="checkbox"/> Toner <input type="checkbox"/> Drum <input type="checkbox"/> Paper <input checked="" type="checkbox"/> Status | Front cover is open | N/A | Close the front cover of the printer. |
| | Fuser cover is open | N/A | Close the back cover of the printer. |
| | Dust on drum | N/A | The corona wire needs to be cleaned. |
| | | | Clean the electrodes of the main body and drum unit. (Refer to 6.4 "Location of Ground Contacts" in this Chapter.) |
| | Too many trays | N/A | Maximum number of optional trays is two. Remove additional trays. |
| | Buffer error | Yes | Check the cable connection between the PC and the printer. |
| | Memory full | Yes | The printer memory is full and the printer cannot print full pages of a document. |
| | Print overrun | Yes | A print overrun occurred and the printer cannot print full pages of a document. |
| | Download full | Yes | The download buffer or the printer is full. Add more memory to the printer. |
| | Font full | Yes | The font memory area is full. Delete fonts or add more memory to the printer. |

2.1.2 Operator calls for HL-5270DN/5280DW

An “Operator call” which the printer indicates on the LCD display is user recoverable. Identify the error from the table below and take the corrective action described for each indication to correct it. The printer automatically recovers from most errors. If not, the error is cleared by holding down the **Go** button on the control panel.

The LCD names for the paper trays are as follows.

- Upper paper tray: TRAY 1
- Multi-purpose tray: MP
- Optional Lower tray: TRAY 2 or TRAY 3

● Error message

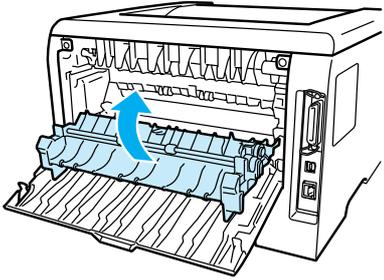
| Error message | Remedy |
|------------------|---|
| BUFFER ERROR | Check the Interface settings. |
| CARTRIDGE ERROR | The drum unit ASSY is not installed in properly. Take out the drum unit ASSY and put it back into the printer again. |
| DIMM ERROR | Re-installed the DIMM correctly. Turn off the printer. Wait a few seconds, and then turn it on again. If this error message appears again, replace the DIMM with a new one. |
| DOWNLOAD FULL | Add more memory. |
| DUPLEX DISABLED | Close the back cover of the printer and put the duplex tray back in. |
| DUST ON DRUM | Open the front cover. Take out the drum unit and toner cartridge ASSY. Gently slide the blue tab of the drum unit across several times. |
| | Clean the electrodes of the main body and drum unit. (Refer to 6.4 “Location of Ground Contacts” in this Chapter.) |
| FONT FULL | Add more memory. |
| FRONT COVER OPEN | Close the front cover of the printer. |
| FUSER COVER OPEN | Close the fuser cover located behind the back cover of the printer.  |
| JAM XXX | Carefully pull out the jammed paper from the area shown in the “Paper jams and how to clear them” refer to 3.2 “Paper Jams” in this Chapter. |
| MANUAL FEED | Put the same size of paper in the MP tray as is shown on the LCD. If the printer is “paused”, press the Go button. |
| MEMORY FULL | Add more memory. |

Fig. 4-1

| Error message | Remedy |
|----------------|--|
| NO PAPER | Put paper in the empty tray. If the error was not cleared when you put paper in the tray, match the size of paper that you selected in the application with the TRAY SIZE or set the TRAY SIZE to ANY using the control panel. |
| NO PAPER XXX | Put paper in the empty tray. |
| NO TRAY XXX | Put the paper tray in the printer. |
| PRINT OVERRUN | Cut the resolution or add the optional memory. Set Page Protection to the correct size. |
| SIZE ERROR DX | You can only use A4, Letter and Legal size for duplex printing. Check the printer driver setting and put the correct sized paper in the paper tray or MP tray that is selected in the printer driver. |
| SIZE MISMATCH | Put the same size paper in the paper tray or MP tray that is selected in the printer driver, and then press Go button, or set the size of paper you loaded in by using the control panel. |
| STORAGE FULL | The RAMDISK size is set to 0 MB. Increase the RAMDISK size. Or there is no space to store jobs. Delete unnecessary macros or fonts. |
| TOO MANY TRAYS | Maximum number of optional trays is two. Remove additional trays. |

- Maintenance message

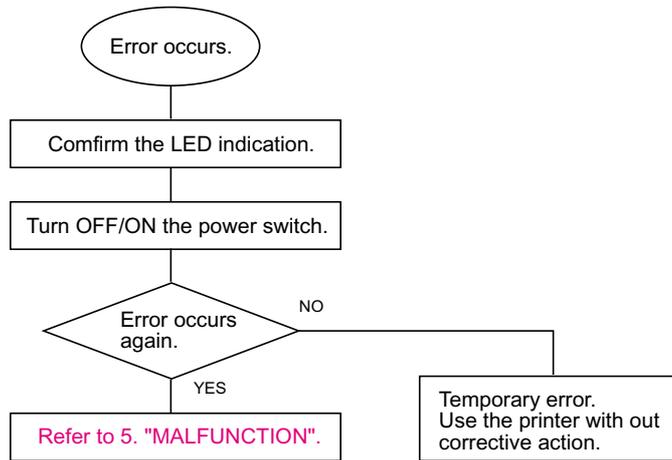
| Maintenance message | Remedy |
|---------------------|--|
| DRUM NEAR END | The drum unit is near the end of its life. Replace it with a new one. |
| TONER LOW | Buy a new toner cartridge and have it ready before you get a TONER LIFE END message. |
| TONER LIFE END | Replace the toner cartridge with a new one. |
| REPLACE PF KITMP | Replace the paper feeding kit (separation pad ASSY MP, MP roller holder ASSY) for MP tray. |
| REPLACE PF KIT 1 | Replace the paper feeding kit. (Separation pad ASSY, roller holder ASSY and separation pad spring) |
| REPLACE PF KIT 2 | |
| REPLACE KIT 3 | |
| REPLACE FUSER | Replace the fuser unit. |
| REPLACE LASER | Replace the laser unit. |

2.2 Service Calls

2.2.1 Service calls for HL-5240/5250DN

If service calls occur, all four LEDs blink on and off to notice it. In this state execute the operation described on the top of Table 1 to notify a fault location from the specific combination of ON/OFF and status color of the LED.

Instruct the user to turn off the power switch, wait a few seconds and then turn it on again and try to print again. If the error is not cleared and the same service call appears, refer to 5. "MALFUNCTIONS" to take the corrective action.



<To show the service call type>

If **Go** and **Job Cancel** buttons are pressed together, the LEDs will be lighted up as shown in the table below to identify the error.

| LED | Type of service call | LED | Type of service call |
|---|----------------------------------|---|--------------------------|
| <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Toner <input type="checkbox"/> Drum <input type="checkbox"/> Paper <input checked="" type="checkbox"/> Status | Fuser unit failure ^{*1} | <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Toner <input checked="" type="checkbox"/> Drum <input type="checkbox"/> Paper <input checked="" type="checkbox"/> Status | Main PCB failure |
| <ul style="list-style-type: none"> <input type="checkbox"/> Toner <input checked="" type="checkbox"/> Drum <input type="checkbox"/> Paper <input checked="" type="checkbox"/> Status | Laser unit failure | <ul style="list-style-type: none"> <input type="checkbox"/> Toner <input type="checkbox"/> Drum <input checked="" type="checkbox"/> Paper <input checked="" type="checkbox"/> Status | Main motor failure |
| <ul style="list-style-type: none"> <input type="checkbox"/> Toner <input checked="" type="checkbox"/> Drum <input checked="" type="checkbox"/> Paper <input checked="" type="checkbox"/> Status | High voltage error | <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Toner <input type="checkbox"/> Drum <input checked="" type="checkbox"/> Paper <input checked="" type="checkbox"/> Status | DIMM error ^{*2} |

<Table 1>

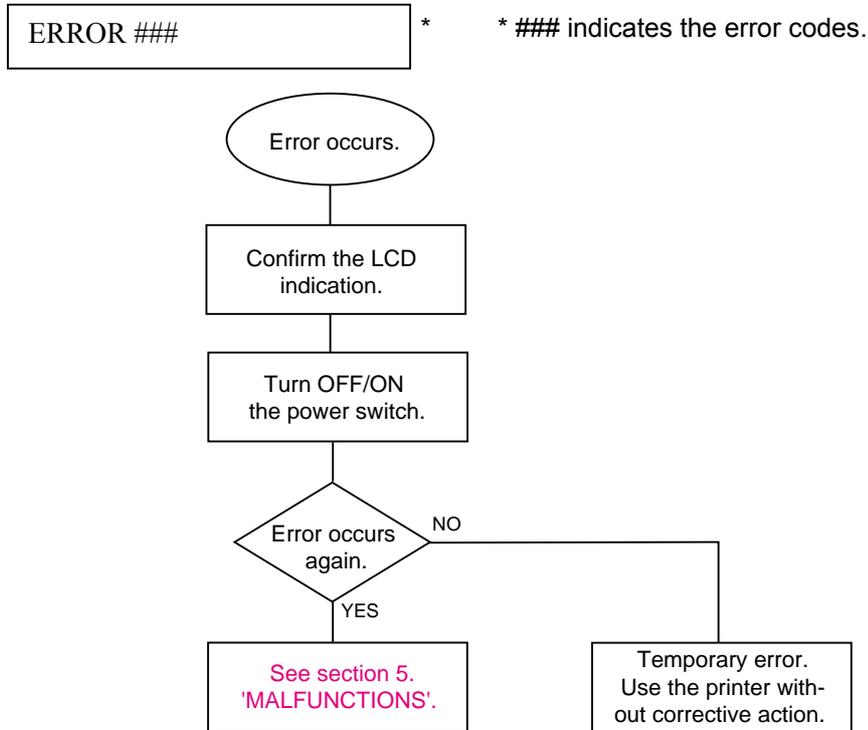
*1: If this error occurs, turn off the printer power switch, wait a few seconds, and then turn it on again. Leave the printer for 10 minutes with the power on.

*2: If this error occurs, ensure that the DIMM is installed correctly.

2.2.2 Service calls for HL-5270N/5280DW

When each of the following messages appears alternately on the LCD, a user unrecoverable error may have occurred.

Instruct the user to turn off the power switch, wait 5 seconds and then turn it on again. If the error is not cleared and the same service call appears, identify the error from the table on the next page and take the corrective action described for each indication to correct it.



| Error message (Print Settings) | Error descriptions | Remedy |
|--------------------------------|-------------------------|--|
| ERROR S01 | FATAL ERROR EX | Turn off the printer. Wait a few seconds, then turn it on again. If still remains, replace the main PCB. |
| ERROR S02 | ADRL ERROR EX | Turn off the printer. Wait a few seconds, then turn it on again. If still remains, replace the main PCB. |
| ERROR S03 | ADRS ERROR EX | Turn off the printer. Wait a few seconds, then turn it on again. If still remains, replace the main PCB. |
| ERROR S04 | BUS ERROR EX (INSTRUCT) | Turn off the printer. Wait a few seconds, then turn it on again. If still remains, replace the main PCB. |
| ERROR S05 | BUS ERROR EX (DATA L/S) | Turn off the printer. Wait a few seconds, then turn it on again. If still remains, replace the main PCB. |
| ERROR S06 | SYSCALL EX | Turn off the printer. Wait a few seconds, then turn it on again. If still remains, replace the main PCB. |
| ERROR S07 | BREAKPOINT EX | Turn off the printer. Wait a few seconds, then turn it on again. If still remains, replace the main PCB. |
| ERROR S08 | RESERVED INSTRUCT EX | Turn off the printer. Wait a few seconds, then turn it on again. If still remains, replace the main PCB. |
| ERROR S09 | COPROCESSOR UNUSAB EX | Turn off the printer. Wait a few seconds, then turn it on again. If still remains, replace the main PCB. |
| ERROR S10 | ARITHMETIC OVERFLOW EX | Turn off the printer. Wait a few seconds, then turn it on again. If still remains, replace the main PCB. |

| Error message (Print Settings) | Error descriptions | Remedy |
|--------------------------------|---------------------------------------|---|
| ERROR S11 | UNDEFINED INTERRUPT | Turn off the printer. Wait a few seconds, then turn it on again. If still remains, replace the main PCB. |
| ERROR S12 | SOFTWARE1 INTERRUPT | Turn off the printer. Wait a few seconds, then turn it on again. If still remains, replace the main PCB. |
| ERROR S13 | SOFTWARE2 INTERRUPT | Turn off the printer. Wait a few seconds, then turn it on again. If still remains, replace the main PCB. |
| ERROR E49 | FUSER UNIT MALFUNCTION | Turn off the printer. Wait a few seconds, then turn it on again. If the same error occurs, replace the fuser unit. If still remains, replace the relay PCB R. |
| ERROR E50 | FUSER UNIT MALFUNCTION | Turn off the printer. Wait a few seconds, then turn it on again. If the same error occurs, replace the fuser unit. If still remains, replace the relay PCB R. |
| ERROR E51 | LASER BEAM DETECTION ERROR | Turn off the printer. Wait a few seconds, then turn it on again. If the same still occurs, replace the laser unit. If still remains, replace the main PCB. |
| ERROR E52 | SCANNER MOTOR MALFUNCTION | Turn off the printer. Wait a few seconds, then turn it on again. If the same still occurs, replace the laser unit. If still remains, replace the main PCB. |
| ERROR E54 | MAIN MOTOR LOCK ERROR | Turn off the printer. Wait a few seconds, then turn it on again. If the same error occurs, replace the main motor. If still remains, replace the main PCB. |
| ERROR E55 | HIGH-VOLTAGE POWER SUPPLY MALFUNCTION | Turn off the printer. Wait a few seconds, then turn it on again. If the same error occurs, replace the high-voltage power supply PCB ASSY. If still remains, replace the PS PCB unit. |
| ERROR H61 | ROM CHECKSUM ERROR | Turn off the printer. Wait a few seconds, then turn it on again. If still remains, replace the main PCB. |
| ERROR H63 | DRAM ACCESS ERROR | Turn off the printer. Wait a few seconds, then turn it on again. If still remains, replace the main PCB. |
| ERROR H66 | NVRAM WRITE ERROR | Turn off the printer. Wait a few seconds, then turn it on again. If still remains, replace the main PCB. |
| ERROR H67 | NVRAM READ ERROR | Turn off the printer. Wait a few seconds, then turn it on again. If still remains, replace the main PCB. |
| ERROR H68 | NVRAM BUS ERROR | Turn off the printer. Wait a few seconds, then turn it on again. If still remains, replace the main PCB. |

<Recovering from the service call>

Turn off the printer. Wait a few seconds, then turn it on again. For an unrecoverable error, however, the printer detects a service call again and indicates it.

2.3 Error Message in the Status Monitor

The Status Monitor will report problems with the printer. Take the corrective actions listed in the following table for the error message that the Status Monitor reports.

The default setting for the Status Monitor is off. If you would like to turn the status monitor on, you can change the setting of the Status Monitor in the **Device Options** of the **Advanced** tab.

| Error message | Remedy |
|---|--|
| Toner Low | <ul style="list-style-type: none"> • Purchase a new toner cartridge and have it ready for when the Toner Life End status is indicated. |
| Toner Life End | <ul style="list-style-type: none"> • Refer to 1.1 “Toner Cartridge” in Chapter 3. |
| Cartridge Error | <ul style="list-style-type: none"> • Take out the toner cartridge and put it back into the printer again. |
| Drum Near End | <ul style="list-style-type: none"> • The drum is near the end of its life. Purchase a new drum unit to replace the current one. Refer to 1.2 “Drum Unit” in Chapter 3. |
| No Paper Fed Tray No Paper Fed Manual No Paper Multi Purpose Tray No Paper Tray 1/2/3 | <ul style="list-style-type: none"> • The paper tray may be out of paper or not properly installed. If it is empty, put a new stack of paper in the paper tray and then press the Go button. • If there is paper in the paper tray, make sure it is straight. If the paper is curled, straighten it before printing. Sometimes it is helpful to remove the paper, turn the stack over and put it back in the paper tray. • Reduce the amount of paper in the paper tray, and then try again. • Make sure you use paper that meets Brother’s recommended paper specifications. Refer to 3.6 “Paper” in Chapter 1. |
| Jam MP Tray Jam Tray 1/2/3 Jam Inside Jam Rear Jam Duplex | <ul style="list-style-type: none"> • Take out the jammed paper from the indicated area. Refer to 3.2 “Paper Jams” in this Chapter. |
| Incorrect Paper Size for DX | <ul style="list-style-type: none"> • Press the Go button or Job Cancel button. Set the correct paper that you want to use, or load the same size paper that you selected in the current driver setting. The paper size you can use for automatic duplex printing is A4, Letter or Legal. |
| Duplex Disabled | <ul style="list-style-type: none"> • Close the back cover of the printer and put the duplex tray back in. |
| Front cover open | <ul style="list-style-type: none"> • Close the front cover of the printer. |
| Fuser cover open | <ul style="list-style-type: none"> • Close the fuser cover located behind the back cover of the printer. <div data-bbox="805 1624 1189 1892" data-label="Image"> </div> |

Fig. 4-2

| Error message | Remedy |
|--------------------|--|
| Dust On Drum | <ul style="list-style-type: none"> • Refer to 3.2 “Cleaning the Corona Wire” in Chapter 3. |
| Print Overrun | <ul style="list-style-type: none"> • Press the Go button to print the data left in the printer. Cancel the print job if you want to delete the data remaining in the printer. • If this does not clear the error, reduce the complexity of your document or reduce the print resolution. • Set page protection to AUTO by using the supplied Windows® driver or Remote Printer Console program. • Change the following settings in the supplied Windows® driver and try again. The best combination of these settings will vary depending on your document: <ul style="list-style-type: none"> • Graphics Mode • TrueType mode • Use Printer TrueType® Fonts |
| Service Call Error | <ul style="list-style-type: none"> • Check the LED indication or the LCD message to identify the error. Refer to 2.2 “Service Calls” in this Chapter. |

2.4 Error Message Printouts

The printer will report problems by printing an error message as defined in the following table. Take the corrective actions for the error message.

| Error message | Remedy |
|---|---|
| MEMORY FULL | <ul style="list-style-type: none"> • Press the Go button to print the data left in the printer. Cancel the print job if you want to delete the data remaining in the printer. • Reduce the print resolution or reduce the complexity of your document. • Add more memory. |
| PRINT OVERRUN | <ul style="list-style-type: none"> • Press the Go button to print the data left in the printer. Cancel the print job if you want to delete the data remaining in the printer. • If this does not clear the error, reduce the complexity of your document or reduce the print resolution. • Add more memory. • Set page protection to AUTO by using the supplied Windows[®] driver or Remote Printer Console program. • Change the following settings in the supplied Windows[®] driver and try again. The best combination of these settings will vary depending on your document: <ul style="list-style-type: none"> • Graphics Mode • TrueType mode • Use Printer TrueType[®] Fonts |
| RESOLUTION REDUCED TO ENABLE PRINTING (The printer has printed the document at a reduced resolution) | <ul style="list-style-type: none"> • Reduce the complexity of your document before you print to prevent automatic reduction in the resolution. |

*** NOTE:**

The communication parameter settings are printed on the Print Settings sheet. For details on how to print the Print Settings page, refer to "Print Settings" in Chapter 7.

3. PAPER PROBLEMS

3.1 Paper Loading Problems

First, make sure that you are using paper that meets Brother recommended paper specifications. Refer to 3.6 "Paper" in Chapter 1.

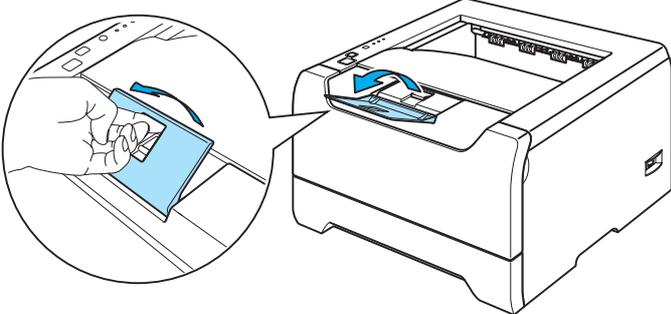
| Problem | Remedy |
|--|---|
| The printer does not feed paper. | <ul style="list-style-type: none"> • If there is paper in the paper tray, make sure it is straight. If the paper is curled, straighten it before printing. Sometimes it is helpful to remove the paper, turn the stack over and put it back in the paper tray. • Reduce the amount of paper in the paper tray, and then try again. • Check that manual feed mode is not selected in the printer driver. |
| The printer does not feed paper from the MP tray. | <ul style="list-style-type: none"> • Fan the paper well and put it back in firmly. • Make sure that you have chosen the MP Tray in the Paper Source of the printer driver. |
| The printer does not feed envelopes. | <ul style="list-style-type: none"> • The printer can feed envelopes from the multi-purpose tray. Your application software must be set up correctly to print on the envelope size you are using. This is usually done in the page setup or document setup menu of your software. Please see your software application manual. |
| A paper jam has occurred. | <ul style="list-style-type: none"> • Clear the jammed paper. Refer to 3.2 "Paper Jams" in this Chapter. |
| When printing on normal paper, it creases. | <ul style="list-style-type: none"> • Change the printer driver setting in Media Type to a thin setting. |
| When printing on Legal size paper or longer sized paper, the paper slides off the top output tray. | <ul style="list-style-type: none"> • Pull out and lift up the output tray support flap.  <p>The diagram, labeled Fig. 4-3, shows a top-down view of the printer's output tray. A circular inset on the left provides a magnified view of the support flap mechanism. A hand is shown pulling the flap outwards and upwards, as indicated by blue arrows. The main diagram shows the printer with the flap extended and supported, holding a sheet of paper in place. The flap is a blue-colored component that can be adjusted to accommodate different paper sizes.</p> |

Fig. 4-3

3.2 Paper Jams

NOTE:

Refer to the Cautions described in the following pages.

3.2.1 Paper jams and how to clear them for HL-5240/5250DN

If a paper jam occurs, the printer will flash the **Paper** LED as shown below.

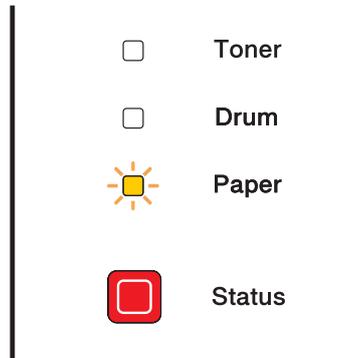


Fig. 4-4

Clear the jammed paper as follows.

If the jammed paper is removed completely by following the steps below, you can install the paper tray first, and then close the front cover. The printer will resume printing automatically.

If the printer does not start printing automatically, press the **Go** button. If the printer still does not start printing, please check that all the remaining jammed paper has been removed from the printer. Then try printing again.

NOTE:

Always remove all paper from the paper tray and straighten the stack when you add new paper. This helps to prevent multiple sheets of paper from feeding through the printer at one time and reduces paper jams.

- (1) Press the cover release button and then open the front cover.
- (2) Slowly take out the drum unit and toner cartridge ASSY. The jammed paper will be pulled out with them drum unit and toner cartridge ASSY.
- (3) Pull the paper tray completely out of the printer.
- (4) Close the front cover.
- (5) Pull the jammed paper up and out of the printer.
- (6) Open the front cover again.
- (7) Open the back cover.
- (8) Pull the tabs at the left and right hand sides toward you to open the fuser cover.
- (9) Pull the jammed paper out of the fuser unit. If the jammed paper cannot be pulled out easily, push down the blue tab with one hand as you gently pull the paper out with the other.
- (10) Close the back cover.
- (11) Pull the duplex tray completely out of the printer.
- (12) Pull the jammed paper out of the printer or the duplex tray. Put the duplex tray back in the printer.

- (13) Push down the blue lock lever and take the toner cartridge out of the drum unit. Clear the jammed paper if there is any inside the drum unit.
- (14) Put the toner cartridge back into the drum unit until you hear it lock into place. If you put the cartridge in properly, the blue lock lever will lift automatically.
- (15) Pull the drum unit and toner cartridge ASSY back in the printer.
- (16) Put the paper tray firmly back in the printer.
- (17) Close the front cover.
- (18) Make sure that the **Paper** LED is now off and the printer is ready.

3.2.2 Paper jams and how to clear them for HL-5270DN/5280DW

If paper jams inside the printer, the printer will stop. One of the following LCD messages will appear to tell you where to find the jammed paper.

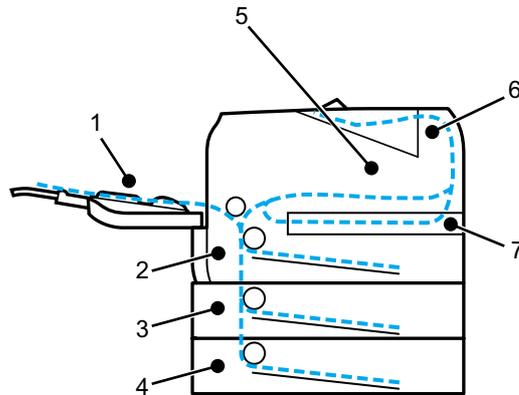


Fig. 4-5

- 1. JAM MP TRAY : Paper jam in the MP tray.
- 2. JAM TRAY1 : Paper jam in the upper paper tray (TRAY 1).
- 3. JAM TRAY2 : Paper jam in the lower tray (TRAY 2).
- 4. JAM TRAY3 : Paper jam in the lower tray (TRAY 3).
- 5. JAM INSIDE : Paper jam inside the printer.
- 6. JAM REAR : Paper jam where the paper comes out of the printer.
- 7. JAM DUPLEX : Paper jam in the duplex tray.

Check where the jam is and clear the jammed paper as follows.

If the error message still appears on the LCD after you remove the jammed paper, there may be more paper jammed somewhere else. Check the printer thoroughly.

After you have removed all the jammed paper, open the front cover and then close it again to start printing.

NOTE:

Always remove all paper from the paper tray and straighten the stack when you add new paper. This helps prevent multiple sheets of paper from feeding through the printer at one time and prevents paper jams.

1. JAM MP TRAY (Paper jam in the MP tray)

JAM MP TRAY

If a paper jam occurs inside the MP tray, follow these steps:

- (1) Press the cover release button and then open the front cover.
- (2) Take out the drum unit and toner cartridge ASSY.
- (3) Remove the paper from the MP tray.
- (4) Fan the paper stack, then put it back in the MP tray.



Fig. 4-6

- (5) When loading paper in the MP tray, make sure that it touches the back of the tray and stays under the maximum paper height guides on both sides of the tray.
- (6) Open the front cover and close it, or press **Go** button to start printing.

2. JAM TRAY 1 / TRAY 2 / TRAY 3 (Paper jam inside the paper tray)

NOTE:

The LCD names for the paper trays are as follows.

- Upper paper tray: TRAY1
- Optional Lower tray: TRAY2 or TRAY3

JAM TRAY1

JAM TRAY2

JAM TRAY3

If a paper jam occurs inside the paper tray, follow these steps:

- (1) Pull the paper tray completely out of the printer.

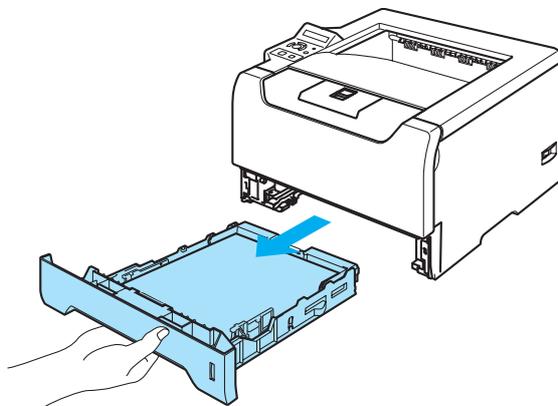


Fig. 4-7

- (2) Use both hands to slowly pull out the jammed paper.

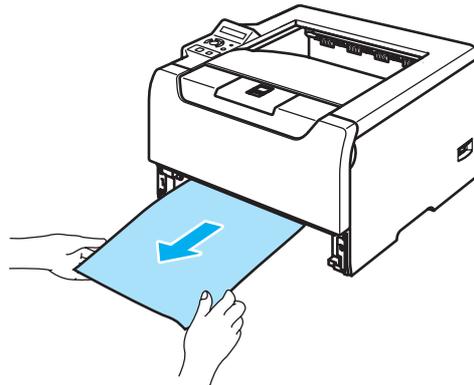


Fig. 4-8

- (3) Put paper below the maximum paper mark (▼). While pressing the blue paper-guide release lever, slide the paper guides to fit the paper size. Make sure that the guides are firmly in the slots.
- (4) Put the paper tray firmly back in the printer.
- (5) Open the front cover and close it to resume printing.

! CAUTION:

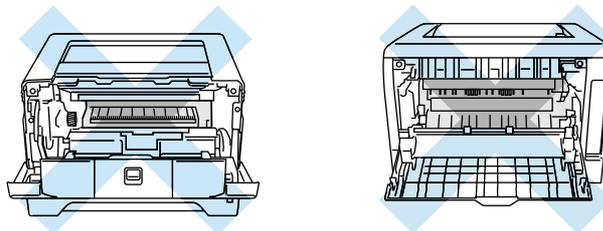
DO NOT take out the upper paper tray while paper is feeding from a lower paper tray because this may cause a paper jam.

3. JAM INSIDE (Paper jam inside the printer)

JAM INSIDE

! HOT SURFACE:

After you have just used the printer, some internal parts of the printer will be extremely hot. When you open the front cover or back cover of the printer, DO NOT touch the shaded parts shown in the illustrations.



If a paper jam occurs inside the MP tray, follow these steps:

- (1) Press the front cover release button and then open the front cover.

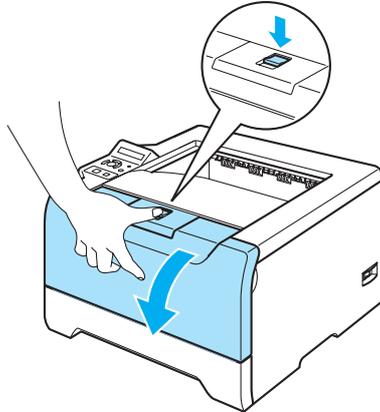


Fig. 4-9

- (2) Slowly take out the drum unit and toner cartridge ASSY. The jammed paper will be pulled out with the drum unit and toner cartridge ASSY.

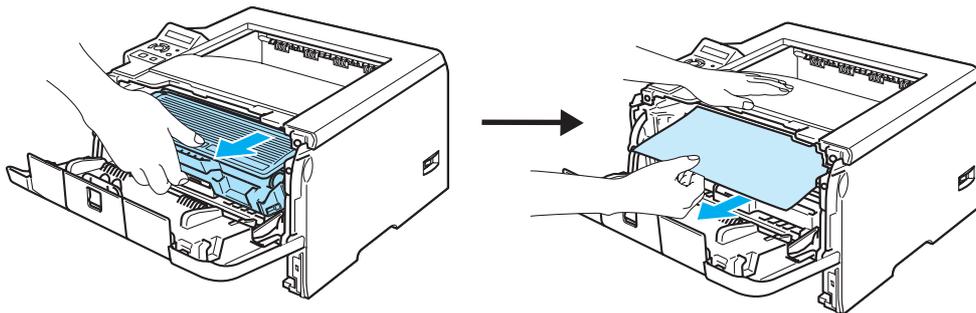
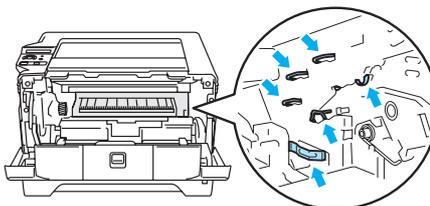


Fig. 4-10

! CAUTION:

- * After you have removed the jammed paper, print a few test pages. This is to make sure that the printed pages have no toner stains on them before you restart the print job.
- * Remove the jammed paper carefully so you do not spread toner.
- * Take care not to stain your hands and clothes with toner. Wash toner stains at once with cold water.
- * We recommend that you put the drum unit and toner cartridge ASSY on a piece of disposable paper or cloth in case you accidentally spill the toner.
- * To prevent damage to the printer caused by static electricity, DO NOT touch the electrodes shown in the illustration.



- (3) Push down the blue lock lever and take the toner cartridge out of the drum unit. Clear the jammed paper if there is any inside the drum unit.

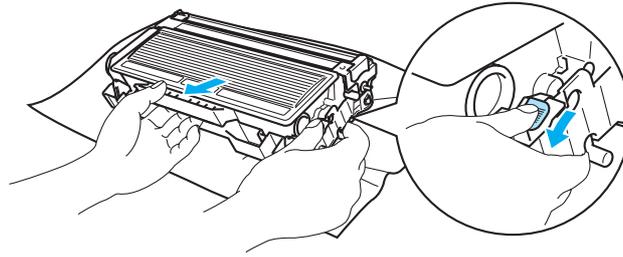
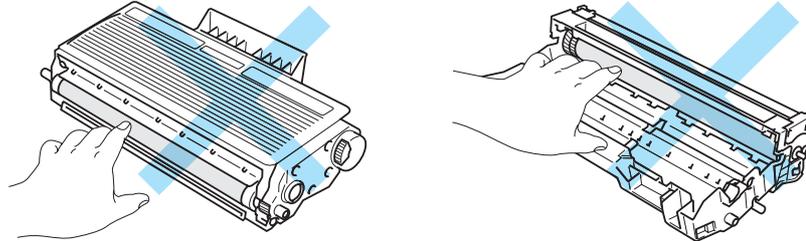


Fig. 4-11

CAUTION:

* Handle the toner cartridge carefully. If toner scatters on your hands or clothes, wipe or wash it off with cold water at once.

* To avoid print quality problems, DO NOT touch the shaded parts shown in the illustrations.



- (4) Put the toner cartridge back into the drum unit until you hear it lock into place. If you put the cartridge in properly, the blue lock lever will lift automatically.

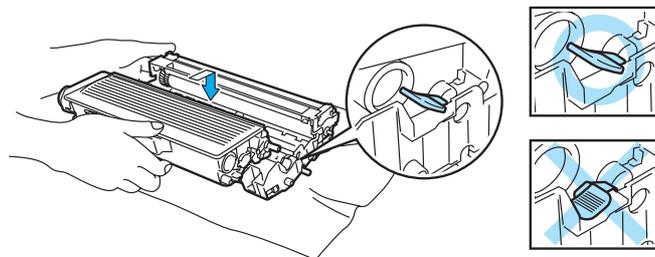


Fig. 4-12

- (5) Close the front cover.

4. JAM REAR (Paper jam behind the back cover)

JAM REAR

HOT SURFACE:

After you have just used the printer, some internal parts of the printer will be extremely hot. When you open the front cover or back cover of the printer, DO NOT touch the shaded parts shown in the illustrations.

If a paper jam occurs behind the face-up output tray, follow these steps:

- (1) Press the cover release button and then open the front cover.

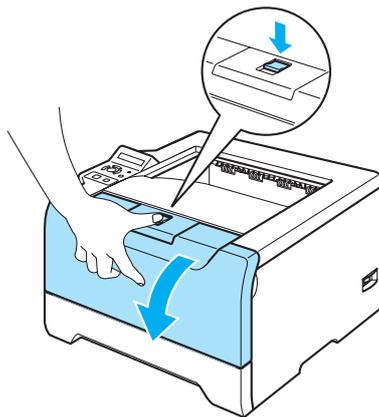


Fig. 4-13

- (2) Slowly take out the drum unit and toner cartridge ASSY. The jammed paper will be pulled out with the drum unit and toner cartridge ASSY.

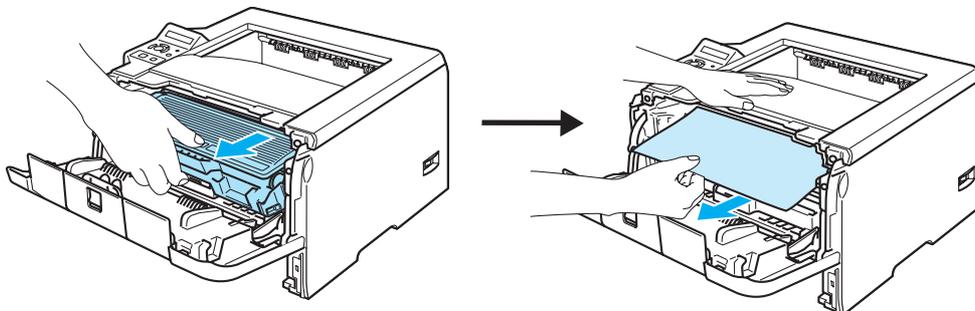
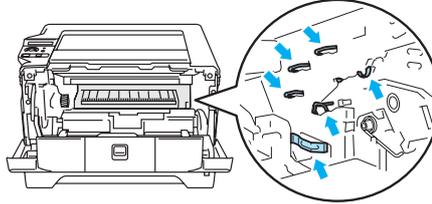


Fig. 4-14

! CAUTION:

* We recommend that you put the drum unit and toner cartridge ASSY on a piece of disposable paper or cloth in case you accidentally spill or scatter toner.

* To prevent damage to the printer from static electricity, DO NOT touch the electrodes shown in the illustration.



(3) Open the back cover.

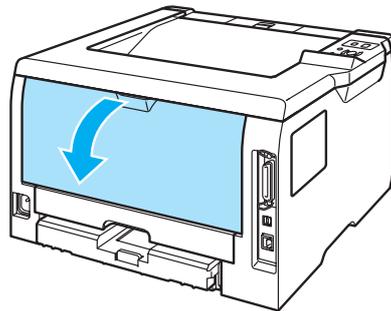


Fig. 4-15

(4) Pull the tabs at the left and right hand sides toward you to open the fuser cover (1).

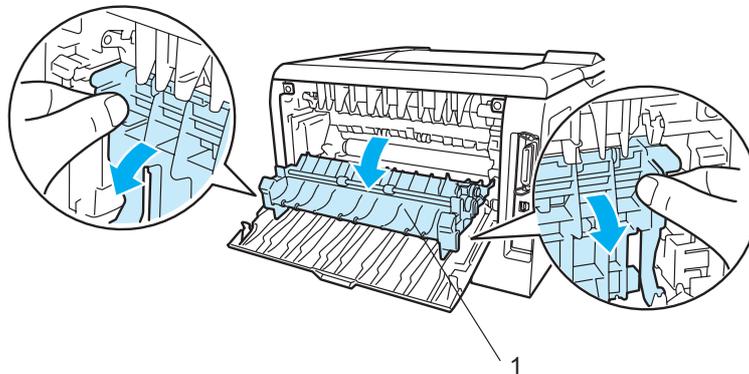
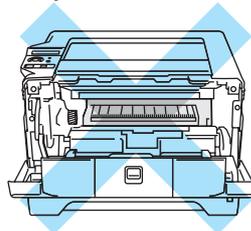


Fig. 4-16

(5) Using both hands, gently pull the jammed paper out of the fuser unit.

⚠ HOT SURFACE:

After you have just used the printer, some internal parts of the printer will be extremely hot. Wait for the printer to cool down before you touch the internal parts of the printer.



- (6) Close the back cover.
- (7) Put the drum unit and toner cartridge ASSY back in the printer (press firmly).
- (8) Close the front cover.

5. JAM DUPLEX (Paper jam in the duplex tray)

JAM DUPLEX

If a paper jam occurs inside the duplex tray, follow these steps:

- (1) Pull the duplex tray completely out of the printer.

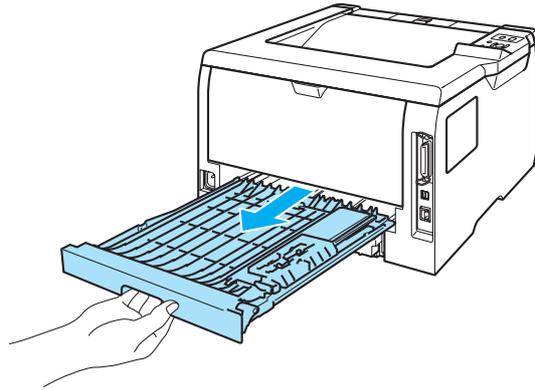


Fig. 4-17

- (2) Pull the jammed paper out of the printer or the duplex tray.

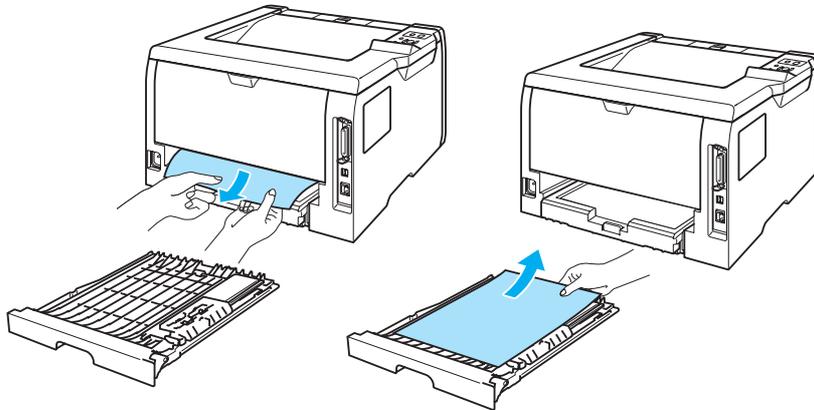


Fig. 4-18

- (3) Put the duplex tray back in the printer.

3.2.3 Causes & countermeasures

The causes for paper jam problems vary depending on the location of the paper jam. When a paper jam occurs inside the printer, you have to find the location of the paper jam first, remove the jammed paper and then take the appropriate countermeasure referring to the table below;

| Problem | Type of Jam | Cause | Remedy |
|---|--|---|---|
| Jam when the printer is turned on. | Paper stuck | The regist front sensor or paper eject sensor is turned on. | Remove the paper inside the printer. If there is no paper, check the suspect sensors refer to "Factory Inspection Mode" in Chapter 7. |
| Paper stopped in the middle of feeding. | Jam caused by paper length detected as longer than 410mm (16 in). | The regist front sensor is not returning properly and is not turning off. | Check front registration sensor motion refer to "Factory Inspection Mode" in Chapter 7. |
| Bottom of paper stopped around the transfer roller. | Jam caused by paper length detected as shorter than 80mm. | The regist front sensor was turned off early. Malfunction of actuator or hardware noise. | Check the front registration sensor refer to "Factory Inspection Mode" in Chapter 7. |
| Top of paper stopped between the paper feed roller and the pick-up roller. | Jam caused by a paper feed delay. | Paper was not fed in at the proper timing due to paper dust or wear of the rubber pick-up roller. | Remove the paper dust attached to the pick-up roller. If the rubber is worn out, replace it with a new one. |
| Top of paper stopped at 60mm from the contact point of the heat roller and pressure roller. | Jam caused by the paper not being sensed when ejected from the paper eject sensor. | The paper eject sensor is not working properly and has not turned off. (single printing) | Check sensor motion refer to "Factory Inspection Mode" in Chapter 7. |
| Jam after paper is ejected. | Jam caused by the paper not being sensed when ejected from the paper eject sensor. | The paper eject sensor or front registration sensor is not working properly and has not turned off. (continuous printing) | Check sensor motion refer to "Factory Inspection Mode" in Chapter 7. |

3.3 Paper Feeding Problems

Even if the paper is printed and ejected without any problems such as paper jams, paper feeding problems below may appear.

Users can clear these problems by following the 'User Check' items for each problem. Even if the same problem occurs again, follow the procedures in the table below.

(1) Double feeding

| |
|--|
|  User Check Check the paper used meets the recommended paper specifications. (Refer to 3.6 "Paper" in Chapter 1.) |
|--|

| Possible cause | Step | Check | Result | Remedy |
|----------------|------|--|--------|-----------------------------|
| Separation pad | 1 | Is the surface of the separation pad worn out? | Yes | Replace the separation pad. |

(2) Wrinkles or creases

| |
|---|
|  User Check (1) Check that paper is loaded into the paper tray correctly. (2) Check the paper used meets the recommended paper specifications. (Refer to 3.6 "Paper" in Chapter 1.) (3) Try printing using the straight-through output path. (4) Turn over the stack of paper in the tray or try rotating the paper 180° in the tray. (5) For the envelope, check the setting of the nip action in the fuser unit. |
|---|

| Possible cause | Step | Check | Result | Remedy |
|---------------------------|------|---|--------|---|
| Paper | 1 | Is the problem solved if new paper is used? | Yes | Instruct the user how to store paper so that it does not absorb moisture. |
| Fuser unit entrance guide | 2 | Is the entrance guide dirty? | Yes | Clean the entrance guide. |
| Fuser unit | 3 | Is the pressure roller dirty? | Yes | Clean the pressure roller. |
| | | | No | Replace the fuser unit. |

(3) Page skew

| |
|--|
|  User Check (1) Check that the paper or other media is loaded into the paper tray correctly and that the paper guides are not too tight or too loose against the paper stack. (2) If using the manual feed slot, check how to load paper into the manual feed slot correctly. (3) The paper tray may be too full. Load paper below ▼ mark in depth. (4) Check the paper used meets the recommended paper specifications. (Refer to 3.6 "Paper" in Chapter 1.) (5) Check that the levers on the left and right hand sides for the nip action in the fuser unit are nipped equally. |
|--|

(4) Curl or Wave

 **User Check**

(1) Check the paper used meets the recommended paper specifications. Both high temperature and humidity will cause paper to curl.

(2) If the printer is used infrequently, the paper may have sat for too long in the paper tray. Turn over the stack of paper in the paper tray. Also, try rotating the paper 180° in the paper tray.

(3) Check that the paper used meets the Media Type setting in the driver.

NOTE:

For no paper supplied as the cause of a malfunction, refer to 5. "MALFUNCTIONS" in this Chapter.

(5) Prints only single side of the paper when duplex-printing

 **User Check**

Check the size of the paper used meets the recommended paper specifications (A4 or Letter, Legal).

(6) Paper pickup

| Possible cause | Step | Check | Result | Remedy |
|--|------|---|--------|----------------------------------|
| Disconnection of the pickup solenoid harness | 1 | Is the harness of the pickup solenoid disconnected? | Yes | Reconnect the harness. |
| Pickup solenoid harness failure | 2 | Does the harness of the pickup solenoid work correctly? | No | Replace the pickup solenoid. |
| Pressure plate gear damage | 3 | Is the pressure plate gear damaged? | Yes | Replace the pressure plate gear. |
| Clutch gear damage | 4 | Is the clutch gear damaged? | Yes | Replace the gear unit. |

4. SOFTWARE SETTING PROBLEMS

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

(1) “There was an error writing to LPT1: (or BRUSB) for the printer” error message appears.



User Check

- (1) Check that the printer cable is not damaged or broken. Check also that the cable is connected to the correct interface connectors of both the printer and PC.
- (2) Check that the correct printer is selected if you have an interface switching device.
- (3) Check that the appropriate printer driver is selected as 'Set as Default'. Check also that the correct print port is set for the selected printer driver.
- (4) Check that the printer is not connected to the same port which is also connected to a mass storage device or scanner. Remove all other devices and connect the port to the printer only. Turn off the printer status monitor in the device options tab in the printer driver.
- (5) If the print port is set as an ECP port, change it to a normal port.
- (6) Try printing the test page refer to 'Test Sample Page' in Chapter 7.
- (7) Try resetting the factory settings.

| Possible cause | Step | Check | Result | Remedy |
|----------------------------|------|--|--------|--|
| Failure inside the printer | 1 | Is it possible to print the test page with the method of 'Test Sample Page' in Chapter 7.? | No | Identify the error type, then refer to the specified section of this chapter. |
| Main PCB failure | 2 | Is it possible to print with another PC and printer cable? | No | Replace the main PCB. |
| | | | Yes | This problem may appear under the specified system environment. Check the environment which the user used. |

(2) Although the USB driver is installed, it is unable to find the BRUSB: port. (Windows98/Me only)

 **User Check**

(1) Re-install the USB driver by following the steps below;

- i) Turn the printer off.
- ii) Double-click the file “Deins USB.exe” in the USB directory of the CD-ROM.
- iii) Re-boot the PC.
- iv) Turn the printer on.
- v) “Add New Hardware Wizard” is launched again, follow the instructions in the Wizard to re-install the driver.

(2) Try to connect the printer directly to the computer if it is connected through a USB hub.

| Possible cause | Step | Check | Result | Remedy |
|---------------------------|------|---|--------|--|
| Computer Operating System | 1 | Windows 95 or Windows NT4.0? | Yes | The operating system does not support USB. |
| Computer settings | 2 | Does ‘Universal Serial Bus Controllers’ appear in the Device Manager tab of ‘System Properties’ in Control Panel? | No | This problem can be caused by your computer settings. See the computer manual. |
| USB cable/ printer damage | 3 | Does “Add New Hardware Wizard” appear on the screen or Does test print complete? | No | The USB cable is damaged. Replace the cable. If the same problem appears, the printer will be damaged. |

(3) The print speed slows down under BR-Script 3

 **User Check**

Add optional memory.

(4) Unable to print EPS data under BR-Script 3.

 **User Check**

Follow the steps below;

- (1) In the printer folder, choose the printer you use.
- (2) Press the **Advanced** button on the Post Script® tab.
- (3) Choose **Tagged binary communication protocol** in data format.

 **CAUTION:**

Not following the instructions for using the printer may cause you to be responsible for all repairs.

(5) This printer does not appear in Chooser (Mac OS® 9.1 to 9.2), Print center (Mac OS® X 10.2) or Printer Setup Utility (Mac OS® X 10.3 or greater).

 **User Check**

- (1) Check the printer is turned on.
- (2) Check USB cable is connected correctly.
- (3) Check the printer driver is installed correctly.

| Possible cause | Step | Check | Result | Remedy |
|---------------------|------|--|--------|--|
| Printer connection | 1 | Select 'Apple System Profiler' in Apple Menu. Are the following items indicated in the USB box of the Device and Volumes tab? <ul style="list-style-type: none"> • Product ID: 002A (HL-5240), 002B (HL-5250DN), 002C (HL-5270DN), 002D (HL-5280DW) • Vender: Brother International Corporation (or 0x4f9) | No | Check the printer is turned on and the USB cable is connected correctly. Check that the USB cable used is the shielded twisted pair type and 5 m or less. Try to connect the printer and PC with the USB cable directly. |
| Driver installation | 2 | Are there the following files in the Extensions Folder of System Folder? <For System 9.1 – 9.2> <ul style="list-style-type: none"> • BR_PrintMonitor (laser) • Brother Laser | No | Try to re-install the printer driver. |
| | | | Yes | Turn off the printer and PC power switch, and check all connections between them. Then, turn them on again. |

(6) Unable to print from the application when using Macintosh with USB

 **User Check**

Make sure that the supplied Macintosh® printer driver is installed in the Hard Disk and that it is selected with Chooser (Mac OS® 9.1 to 9.2), Print Center (Mac OS® X 10.2.4 or greater) or Print Setup Utility (Mac OS® X 10.3 or greater).

(7) Unable to print from the application software under DOS.

 **User Check**

- (1) Make sure that the DOS application interface settings match those of your printer. For example, if you are using a parallel printer cable, you would set your DOS application printer port to LPT1.
- (2) Check if the printer has any printer alarms.
- (3) Make sure that you have chosen the proper printer in your application.

5. MALFUNCTIONS

When taking countermeasures for malfunctions as described in this section, check connectors for contact failure before measuring the voltage at the specified connector pins.

(1) No AC power supplied

| Possible cause | Step | Check | Result | Remedy |
|----------------|------|---|--------|--|
| Supply voltage | 1 | Is the correct voltage present at the outlet? | No | Inform the user that the correct voltage is not supplied at the outlet. |
| Power plug | 2 | Is the power cord securely plugged into the outlet? | No | Plug the power cord securely into the outlet. |
| Fuse (F1, F2) | 3 | Is the fuse blown? | Yes | If the fuse blows again immediately after replacing the low-voltage power supply PCB, check that there is not a short circuit somewhere in the AC power supply line. |
| Wiring | 4 | Unplug the power supply plug. Is there a broken wire between the AC input connector of the low-voltage power supply and the power plug? | Yes | Replace the AC power cord. |

(2) No DC power supplied

| Possible cause | Step | Check | Result | Remedy |
|------------------------------|------|---|--------|--|
| AC power supply | 1 | Is AC power supplied between connectors CN1-L and CN1-N when the power plug is plugged into the outlet? | No | Follow the same check procedure of (1) "No AC power supplied". |
| Wiring, DC load | 2 | Turn on the power switch. Measure the voltages between the terminals. Do the measured voltage satisfy the prescribed valued in the table below? | Yes | Turn off the power switch, reconnect the connector and turn the power switch on again. If the protector circuit is activated, check the connector, the wiring from the connector, and the DC load. |
| Low-voltage power supply PCB | 3 | Refer to the chart *1 below. | No | Replace the low-voltage power supply PCB. |

*1

| PCB | +lead pin | - lead pin | Voltage |
|------|----------------------------------|--|---|
| Main | CN8-4 CN8-5 CN8-6 CN8-7 | CN8-2, CN8-3 CN8-2, CN8-3 CN8-8 CN8-8 | Approx. 24V Approx. 24V Approx. 6.5V to 13V Approx. 3.3V |

**WARNING**

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

(3) Main motor failure

| Possible cause | Step | Check | Result | Remedy |
|----------------------|------|---|--------|--------------------------|
| Failure of connector | 1 | Is the connection of connector CN4 on the main PCB correct? | No | Reconnect the connector. |
| Main motor | 2 | Is the problem solved by replacing the main motor? | Yes | Replace the main motor. |
| Main PCB | 3 | Is the problem solved by replacing the main PCB? | Yes | Replace the main PCB. |

(4) No paper supplied

| Possible cause | Step | Check | Result | Remedy |
|--|------|---|--------|---|
| Separation pad / pickup roller failure | 1 | Is the surface of the separation pad or the pickup roller dirty or worn out? | Yes | 1) Clean the surface of the separation pad or pickup roller. 2) Replace the separation pad or pickup roller. |
| Failure of connector | 2 | Is the contact of the solenoid connector on the relay front PCB good? | No | Reconnect the connector. |
| HVPS circuit | 3 | Set paper in the manual feed slot and make a test print by pressing the Go button. | Yes | Replace the relay front PCB. |
| Paper pickup clutch solenoid | | Does the voltage between pins 1(SOLENOID) and 2 (24V) of the CN1 TRAY1, CN3 MP connector on the relay front PCB change from approx. 24V DC to 0V within the specified time? | No | Replace the paper pickup clutch solenoid. |
| Main PCB | 4 | Is the problem solved by replacing the main PCB? | Yes | Replace the main PCB. |

(5) Insufficient output from high-voltage power supply unit

| Possible cause | Step | Check | Result | Remedy |
|-------------------------------|------|--|--------|---|
| High-voltage contact | 1 | Do any of the terminals on the high-voltage contacts have dirt or contact burns? | Yes | Clean the terminals. |
| High-voltage power supply PCB | 2 | Check the connections of the connector between the high-voltage power supply and the main PCB are secured correctly? | Yes | Replace the high-voltage power supply PCB. |
| | | | No | Reconnect the connector between the high-voltage power supply and the main PCB. |

(6) Fixing heater temperature failure

| Possible cause | Step | Check | Result | Remedy |
|---------------------------------|------|--|--------|--------------------------|
| Poor thermistor harness contact | 1 | Is the contact of connector CN1 and CN2 on the relay rear PCB good? | No | Reconnect the connector. |
| | 2 | Is the contact of connector CN3 on the main PCB good? | No | Reconnect the connector. |
| Blown thermostat | 3 | Remove the fuser unit and measure the resistance of the thermostat. Is it open circuit? | Yes | Replace the fuser unit. |
| Halogen heater lamp failure | 4 | Remove the fuser unit and measure the resistance of the halogen heater lamp. Is it open circuit? | Yes | Replace the fuser unit. |

(7) Laser Unit failure

| Possible cause | Step | Check | Result | Remedy |
|--------------------------------|------|---|--------|-----------------------------------|
| Harness connection failure (1) | 1 | Is connector CN18 on the main PCB secured correctly? | No | Reconnect the connector securely. |
| | | | Yes | Replace the laser unit. |
| Harness connection failure (2) | 2 | Is the connection of the scanner motor connector CN10 on the main PCB secure? | No | Reconnect the connector securely. |
| | | | Yes | Replace the laser unit. |

(8) Fuser unit failure

| Possible cause | Step | Check | Result | Remedy |
|-----------------------------------|------|--|--------|------------------------------------|
| Poor thermistor harness contact | 1 | Is the contact of connector CN1 and CN2 on the relay rear PCB good? | No | Reconnect the connector. |
| | 2 | Is the contact of connector CN3 on the main PCB good? | No | Reconnect the connector. |
| Thermistor assembling failure | 3 | Is the thermistor installed properly? | Yes | Replace the fuser unit. |
| | | | No | Reinstall the thermistor properly. |
| Halogen heater lamp failure | 4 | Remove the fuser unit and measure the resistance of the halogen heater lamp. Is it open circuit? | Yes | Replace the fuser unit. |
| Heater harness connection failure | 5 | Is the heater harness connector connected to the low-voltage power supply PCB and fuser unit secure? | No | Reconnect the connectors securely. |

NOTE:

- *This problem will be cleared if leaving the printer power ON for ten minutes.*
- *If the heater is cooled down sufficiently, this problem may be cleared by following steps; 1) Check that the front cover is open. 2) Turn on the printer power switch while pressing the **Go** button. **Be warned, however, that this operation will melt the fuser unit if the heater is hot.***

(9) Main PCB failure

| Possible cause | Step | Check | Result | Remedy |
|----------------|------|--|--------|--|
| Main PCB | 1 | Is it possible to print the test page with the method of 'Test Sample Page' in Chapter 7? | No | Replace the main PCB. |
| Software bug | 2 | Does this problem appear when printing specific data or printing under a specific environment? | Yes | Inform the Brother office of the used specific data, printer condition and system environment. |

(10) Pickup function of paper tray does not work

| Possible cause | Step | Check | Result | Remedy |
|---|------|---|--------|--|
| Link lever does not move smoothly. | 1 | Does the link lever work? Isn't the link lever bent? | Yes | Remove the cause of non-smooth operation of the link lever. Replace the link lever. |
| Pickup roller holder ASSY does not move smoothly. | 2 | Does the pickup roller holder ASSY move up and down? | No | Replace the pickup roller holder ASSY. |
| Main motor failure | 3 | Does the main motor work? | No | Replace the main motor. |
| Pressure plate drive cam failure | 4 | Does the pressure plate drive cam rotate? | No | Replace the main frame L ASSY. |

(11) The new toner is not sensed

| Possible cause | Step | Check | Result | Remedy |
|--|------|--|--------|-----------------------|
| The toner cartridge is not set to the main body correctly. | 1 | The toner cartridge is not inserted completely. | Yes | Reset the cartridge. |
| New toner detection switch failure | 2 | Isn't the toner sensed even if the switch is held? | Yes | Replace the switch. |
| Main PCB failure | 3 | Is the problem solved by replacing the main PCB? | No | Replace the main PCB. |

(12) Maximum speed is slow

| Possible cause | Step | Check | Result | Remedy |
|---|------|---|--------|---------------------------------|
| Two or more sheets of the paper in the tray are pulled to feed. | 1 | Does paper double feeding occur? | Yes | Replace the separation pad. |
| Foreign body attached to the tail edge actuator | 2 | Is a foreign body caught on the tail edge actuator? | Yes | Remove a foreign body. |
| Tail edge actuator failure | 3 | Is the tail edge actuator deformed? | Yes | Replace the tail edge actuator. |
| Tail edge sensor malfunction | 4 | Is the tail edge sensor turned ON? | Yes | Replace the tail edge sensor. |

(13) LED failure

| Possible cause | Step | Check | Result | Remedy |
|---|------|---|--------|--|
| Three LEDs light up after turning the power ON. | A1 | Is the printer in the service mode? | Yes | Check that the Go button has been pressed or not. |
| Panel PCB failure | A2 | Does any LED light up when pressing the Go button? | No | Replace the panel PCB. |
| Disconnection of the panel PCB harness | B1 | Is the harness connected securely? | No | Reconnect the harness securely. |
| Regist front sensor failure | B2 | Does the regist front sensor work correctly? | No | Replace the regist front sensor. |
| Regist rear sensor failure | B3 | Does the regist rear sensor work correctly? | No | Replace the regist rear sensor. |
| Paper eject sensor failure | B4 | Does the paper eject sensor work correctly? | No | Replace the paper eject sensor. |
| Main cover switch malfunction | B5 | Is the main cover switch closed securely? | Yes | Check the switch. |

(14) Service error indication when turning the power ON

| Possible cause | Step | Check | Result | Remedy |
|--|------|--|--------|---------------------------------|
| Disconnection of the main motor harness | 1 | Is the harness of the main motor connected? | No | Reconnect the harness securely. |
| Disconnection of the scanner motor harness | 2 | Is the harness of the scanner motor connected? | No | Reconnect the harness securely. |
| Fuser unit failure | 3 | Does the printer resume after opening the cover, turning the power ON and leaving the printer for ten minutes? | No | Replace the fuser unit. |

(15) The printer stops while idling

| Possible cause | Step | Check | Result | Remedy |
|------------------------------------|------|---|--------|---|
| Front cover failure | 1 | Is the cover opened by vibration during idling? | Yes | Replace the front cover. |
| New toner detection switch failure | 2 | Does the new toner detection switch work correctly? | No | Replace the new toner detection switch. |
| Process unit terminal failure | 3 | Are the terminals of the process unit dirty? | Yes | Clean the terminals. |
| Laser unit failure | 4 | Does the laser unit work correctly? | No | Replace the laser unit. |

6. IMAGE DEFECTS

6.1 Image Defect Examples

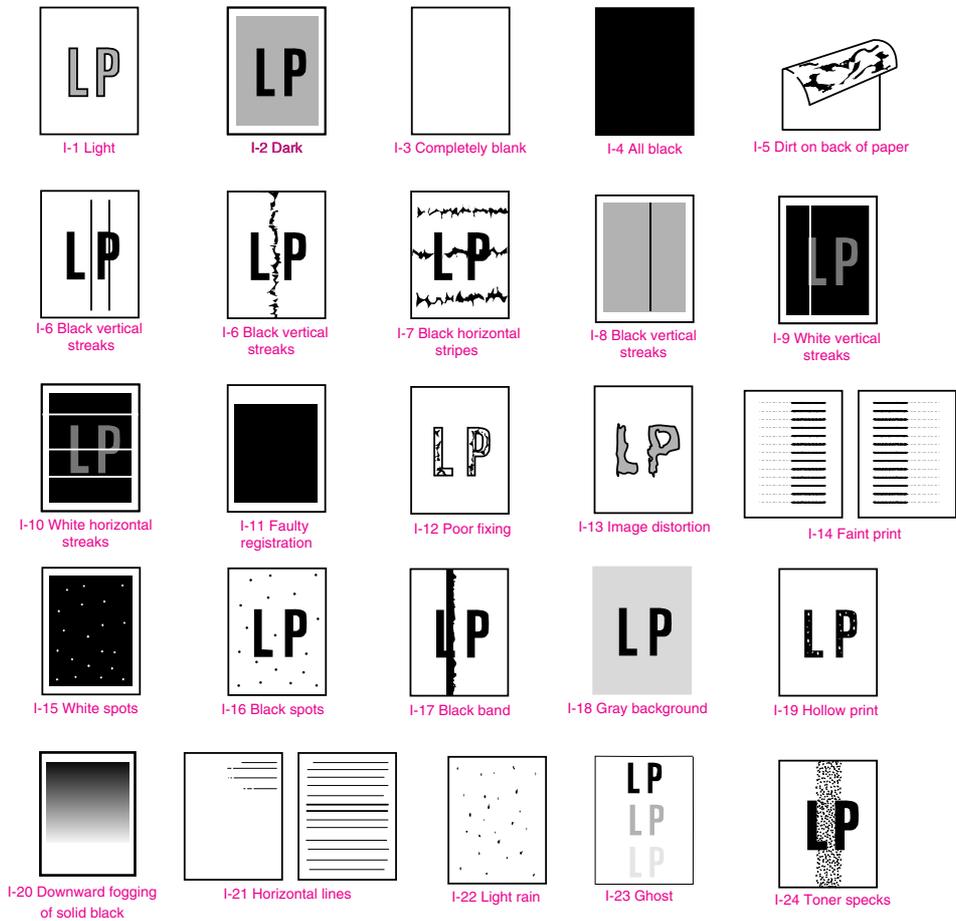


Fig. 4-19

6.2 Diameter of Rollers

The diameter of each roller and the pitch which appears in the image are listed below.

| No. | Parts Name | Diameter (The pitch which appears in the image) |
|-----|------------------|---|
| 1 | Regist Roller | Ø 14.0 mm (44.0 mm) |
| 2 | Transfer Roller | Ø 15.2 mm (48.2 mm) |
| 3 | Exposure Drum | Ø 30.0 mm (94.2 mm) |
| 4 | Heat Roller | Ø 25.0 mm (78.5 mm) |
| 5 | Pressure Roller | Ø 25.0 mm (78.5 mm) |
| 6 | Developer Roller | Ø 20.0 mm (42.5 mm) |

6.3 Troubleshooting Image Defect

Several types of the image defects can be cleared by end users. For those defects, instruct the user to check the 'User Check' items described in each table. Even if the same image defect appears, the following procedures should be followed in the event of specific image defects.

See also 6.4 "Location of Ground Contacts" in this Chapter for information about the location of the grounding contacts.



CAUTION:

When using the printer for a special job, such as printing of name cards, print quality cannot be guaranteed.

(I-1) Light



User Check

- (1) Check the printer's environment. Conditions such as humidity, high temperatures, etc. may cause this situation to occur.
- (2) If the whole page is light, toner save mode may be on. Disable toner save mode within Printer Properties tab of the driver.
- (3) Try installing a new toner cartridge or drum unit.

| Possible cause | Step | Check | Result | Remedy | Ground contacts |
|---|------|--|--------|---|--------------------|
| Toner sensor failure (printer side) | 1 | Can printing be started with the drum unit and toner cartridge removed? | Yes | Check if the toner sensor is dirty and check the toner sensor connection. | |
| Toner sensor failure (toner cartridge side) | 2 | Is the problem solved when 4 or 5 pages are printed after the toner cartridge is replaced with a full one? | Yes | The wiper of the toner cartridge is defective. Replace the toner cartridge. | |
| Drum connection failure | 3 | Are all the contacts between the drum unit and printer body connected correctly? | No | Clean contact electrodes both on the drum unit and in the printer body. | (1), (4), (5), (6) |
| HVPS / Main PCB failure | 4 | Is the harness connection between the HVPS and the main PCB correct? | Yes | Replace the HVPS or the main PCB. | |
| Dirt on the scanner window | 5 | Is there any dirt on the scanner window? | Yes | Wipe it off with a soft clean paper. | |
| Laser unit failure | 6 | Is the problem solved after replacing the laser unit? | Yes | Replace the laser unit. | |

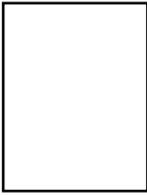
(I-2) Dark



✔ User Check

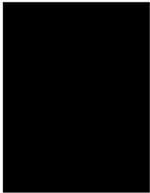
- (1) Check the paper used meets the recommended paper specifications.
- (2) Check the printer's environment. High temperature and high humidity conditions can increase the amount of background shading.
- (3) Clean the corona wire with the wire cleaner.
- (4) Try installing a new toner cartridge or drum unit.

| Possible cause | Step | Check | Result | Remedy | Ground contacts |
|---------------------------------------|------|---|--------|---|-----------------|
| Corona failure (contact failure) | 1 | Are the charge electrodes between the printer body and the drum unit dirty? | Yes | Clean both electrodes. | (3) |
| Drum unit failure | 2 | Is the problem solved after replacing the drum unit? | Yes | Replace the drum unit with a new one. | |
| Toner cartridge failure | 3 | Is the problem solved after replacing the toner cartridge? | Yes | Replace the toner cartridge with a new one. | |
| High-voltage power supply PCB failure | 4 | Is the connections of the connector between the high-voltage power supply PCB and the main PCB secured correctly? | Yes | Replace the high-voltage power supply PCB. | |
| Main PCB failure | 5 | Are there any disconnected connectors? | No | Replace the main PCB. | |

(I-3) Completely blank

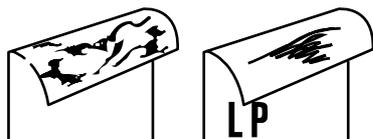
| Possible cause | Step | Check | Result | Remedy | Ground contacts |
|------------------------------------|------|--|--------|---|-----------------|
| Developing bias contact failure | 1 | Are the developing bias contacts between the printer body and drum unit dirty? | Yes | Clean the electrodes at both sides. | (4) |
| Drum unit | 2 | Are the drum shaft and drum electrode of the printer body connected correctly? | Yes | Clean the shaft and the electrode. | (1) |
| | | | No | Check the connection between the shaft and the electrode. | (1) |
| Drum unit failure | 3 | Is the problem solved after replacing the drum unit? | Yes | Replace the drum unit. | |
| Toner cartridge failure | 4 | Is the problem solved after replacing the toner cartridge? | Yes | Replace the toner cartridge with a new one. | |
| Scanner harness connection failure | 5 | Is the scanner harness connected securely? (Check if there is any play in the connection.) | No | Reconnect the connector correctly. | |
| Main PCB failure | 6 | Are printing signals being input to the laser unit? Is the problem solved after replacing the main PCB? | Yes | Replace the main PCB. | |
| Laser unit failure | 7 | Is the scanner interlock lever damaged? Is the scanner mirror broken or loose? | Yes | Replace the laser unit. | |
| | | | No | Replace the high-voltage power supply PCB. | |

(I-4) All black



✓ User Check
 (1) Clean the corona wire of the drum unit.
 (2) The drum unit may be damaged. Install a new drum unit.

| Possible cause | Step | Check | Result | Remedy | Ground contacts |
|---------------------------------------|------|---|--------|--|-----------------|
| Corona failure | 1 | Is the corona wire dirty? | Yes | Clean the corona wire with the wire cleaner. | (2) |
| | 2 | Is the corona wire broken? | Yes | Replace the drum unit. | |
| | 3 | Are the charge electrodes between the printer body and the drum unit dirty? | Yes | Clean both electrodes. | (3) |
| Harness connection | 4 | Is the laser unit connected to the main PCB correctly? | No | Connect the harness between the laser unit and the main PCB correctly. | |
| High-voltage power supply PCB failure | 5 | Is the problem solved after replacing the high-voltage power supply PCB? | Yes | Replace the high-voltage power supply PCB. | |
| Main PCB failure | 6 | Is the problem solved after replacing the main PCB? | Yes | Replace the main PCB. | |
| Laser unit failure | 7 | Is the problem solved after replacing the laser unit? | Yes | Replace the laser unit. | |

(I-5) Dirt on the back of paper

| Possible cause | Step | Check | Result | Remedy |
|-----------------------|------|---|--------|---|
| Fuser unit dirty | 1 | Is the pressure roller dirty? Is any other area in the printer dirty? | Yes | Clean the pressure roller referring to the following procedure. |
| Dirt in the drum unit | 2 | Is the transfer roller dirty? Is the problem solved after replacing the drum unit? | Yes | Replace the drum unit |
| | | | No | Replace the high-voltage power supply PCB. |

NOTE:

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

How to clean the pressure roller

Clean the pressure roller as follows;

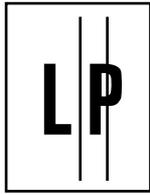
(HL-5240/5250DN)

- (1) Set five or more sheets of paper in the paper tray.
- (2) Open the front cover, and turn on the power switch while holding down the **Go** button.
- (3) All LEDs light up, and keep the **Go** button pressed down until the **Status** LED goes off. Then, release the **Go** button and make sure that all LEDs are off.
- (4) Press the **Go** button once and make sure that **Toner**, **Drum** and **Paper** LEDs light up.
- (5) Press the **Go** button twice and wait for two seconds. Then, the printer starts printing the grid pattern continuously.
- (6) Close the front cover, and print approximately five pages.
- (7) Press the **Job Cancel** button after printing.

(HL-5270DN/5280DW)

- (1) Set five or more sheets of paper in the paper tray.
- (2) Open the front cover, and turn on the power switch while holding down the **Go** button.
- (3) "USERS MODE" message appears on the LCD panel.
- (4) Release the **Go** button and make sure that all LEDs are off.
- (5) Press the **Go** button once and make sure that "USERS MODE" message appears on the LCD panel with the orange backlight.
- (6) Press the **Go** button twice and wait for two seconds. Then, the printer starts printing the grid pattern continuously.
- (7) Close the front cover, and print approximately five pages.
- (8) Press the **Job Cancel** button after printing.

(I-6) Black and blurred vertical streaks



User Check

- (1) Clean the corona wire in the drum unit.
- (2) Check that the wire cleaner is at the home position.
- (3) Check that the toner cartridge is not empty.
- (4) The drum unit may be damaged. Install a new drum unit.
- (5) The toner cartridge may be damaged. Install a new toner cartridge.

| Possible cause | Step | Check | Result | Remedy |
|-------------------------------|------|---|--------|---|
| Corona failure | 1 | Is the corona wire dirty? | Yes | Clean the corona wire with the wire cleaner. |
| Corona failure | 2 | Is the vertical block streak about 10mm wide? (Check if the wire cleaner is at its home position.) | Yes | Return the wire cleaner to its home position. |
| Dirt in the paper feed system | 3 | Is the paper tray or feed system on the drum unit dirty with toner? | Yes | Clean the toner off. |
| Scratch on the drum | 4 | Is the surface of the drum scratched? | Yes | Replace the drum unit. |
| Cleaning failure | 5 | Is the surface of the drum dirty with toner in streaks? | Yes | Replace the drum unit. |
| Scratch on the heat roller | 6 | Is the surface of the heat roller scratched? | Yes | Replace the fuser unit. |

NOTE:

- *If you print the same pattern (especially vertical streaks) continuously, electrostatic charge performance of the drum will decrease temporarily and black vertical streaks may appear on the paper.*
- *This problem may occur with noise due to the corona wire being dirty. In that case, clean the corona wire with the wire cleaner.*

(I-7) Black and blurred horizontal stripes

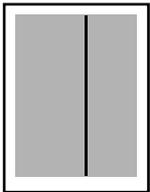


User Check

- (1) The drum unit may be damaged. Install a new drum unit.
- (2) Check the paper used meets the recommended paper specifications.
- (3) Clean inside of the printer and the corona wire in the drum unit.

| Possible cause | Step | Check | Result | Remedy | Ground contacts |
|---------------------------------------|------|---|--------|--|-----------------|
| Scratch on the drum | 1 | Are the horizontal stripes at 74mm (exposure drum) intervals? | Yes | The exposure drum was scratched. Replace the drum unit. | |
| Toner stuck on the developer roller | 2 | Are the horizontal stripes at 62.8mm (developer roller) intervals? | Yes | After printing several pages, the problem will disappear. If not, replace the toner cartridge. | |
| Scratch on the heat roller | 3 | Are the horizontal stripes at 79mm (heat roller) intervals? | Yes | Replace the fuser unit. | |
| Corona contact failure | 4 | Are the charge electrodes between the printer body and the drum unit dirty? | Yes | Clean both electrodes. | (3) |
| High-voltage power supply PCB failure | 5 | Is the problem solved after replacing the high-voltage power supply PCB? | Yes | Replace the high-voltage power supply PCB. | |

(I-8) Black vertical streaks (in a gray background)



| Possible cause | Step | Check | Result | Remedy | Ground contacts |
|---|------|--|--------|--|-----------------|
| Translucent stain on the scanner window | 1 | Is there any dirt on the scanner window? | Yes | 1) Clean the scanner window. 2) If it is not effective, replace the laser unit. | |
| Corona failure | 2 | Is the corona wire dirty? | Yes | Clean the corona wire with the wire cleaner. | (2) |

(I-9) White vertical streaks

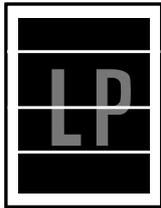


User Check

- (1) Try to wipe the scanner window with a soft cloth.
- (2) The toner cartridge may be damaged. Install a new toner cartridge.
- (3) Check the printer's environment. High temperature and high humidity conditions can cause this problem.
- (4) Damp (wet) paper might be used. Try to change to freshly unpacked paper.

| Possible cause | Step | Check | Result | Remedy |
|---|------|---|--------|--|
| Translucent stain on the scanner window | 1 | Is there any dirt on the scanner window? | Yes | 1) Clean the scanner window. 2) If it is not effective, replace the laser unit. |
| Transfer failure | 2 | Is the transfer roller scratched? | Yes | Replace the drum unit. |
| Condensation | 3 | Has condensation occurred inside the printer? | Yes | Try to print several pages or leave the printer 2 hours to allow it to reach room temperature. |

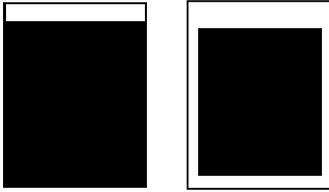
(I-10) White horizontal streaks



User Check

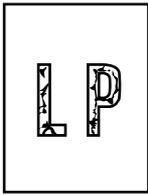
- (1) Check the paper used meets the recommended paper specifications. A rough surfaced paper, damp paper or thick media can cause the problem.
- (2) Check that the appropriate media type is selected in the printer driver.
- (3) The problem may disappear by itself. Try printing about 10 pages to clear this problem especially if the printer has not been used for a long time.
- (4) The drum unit may be damaged. Install a new drum unit.

| Possible cause | Step | Check | Result | Remedy | Ground contacts |
|---------------------------------|------|--|--------|-------------------------------------|-----------------|
| Developing bias contact failure | 1 | Are the developing bias contacts between the printer body and toner cartridge dirty? | Yes | Clean the electrodes at both sides. | (4) |

(I-11) Faulty registration

| Possible cause | Step | Check | Result | Remedy |
|---------------------------------------|------|--|--------|---|
| Excessive paper load | 1 | Is the paper loaded in the paper tray more than 27mm high? | Yes | Instruct the user to keep paper loads below 27mm in depth. |
| Print paper | 2 | Is the specified weight of the recommended paper being used? | No | Recommend to use the specified types of paper. |
| | 3 | Is the first printing position within ± 1 mm of the tolerance specification? | Yes | Adjust the Y offset by using the utility software supplied. |
| Regist rear sensor position incorrect | 4 | Is the regist rear sensor off from the correct position? | Yes | Reposition the sensor to the correct position. |
| Drum unit failure | 5 | Is the rotation torque of the drum unit heavy? | Yes | Replace the drum unit. |

(I-12) Poor fixation



| Possible cause | Step | Check | Result | Remedy |
|---|------|--|--------|--|
| Print paper | 1 | Is thick paper of more than 43lb being used? | Yes | Recommend to use the specified types of paper. |
| Nip release lever | 2 | Does the position of the nip release levers in the fuser unit decompress the nip pressure? | Yes | Return the nip release levers to the original position. |
| Toner sensor failure (When printing is faint.) | 3 | Is the problem solved by replacing the drum unit or the toner cartridge? | Yes | 1) Toner is empty. 2) The toner sensor is defective. Clean the toner sensor. 3) If the wiper in the toner cartridge is broken, replace the toner cartridge with a new one. |
| Fuser unit thermistor failure | 4 | Is the thermistor fitted correctly? | No | Replace the fuser unit. |
| Low-voltage power supply PCB failure | 5 | Is the problem solved by replacing the low-voltage power supply PCB? | Yes | Replace the low-voltage power supply PCB. |

- Open the back cover and fuser cover. Push down the blue tab (1). Repeat this process on the other side. Make sure that the top of the tab and the white lever (2) are not level with each other. Close the back cover and try printing again.

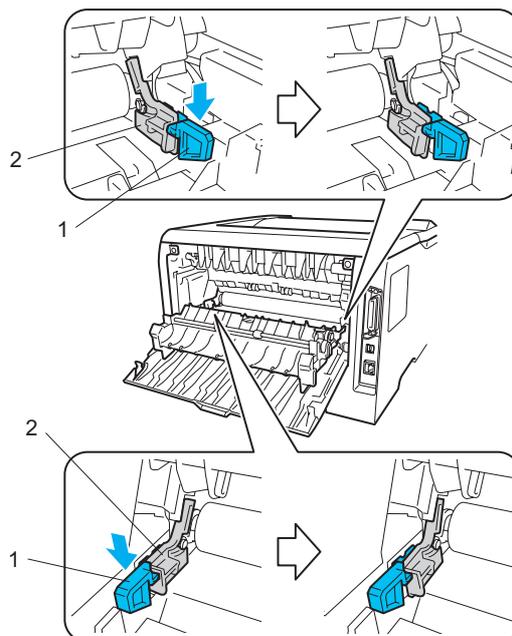
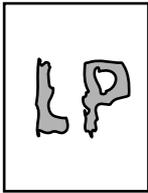


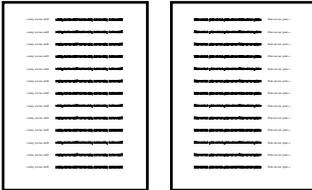
Fig. 4-20

(I-13) Image distortion



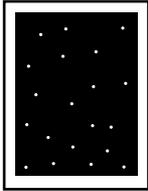
| Possible cause | Step | Check | Result | Remedy |
|---|------|--|--------|---|
| Laser unit installation | 1 | Is the laser unit secured to the frame incorrectly? (Check if there is any play.) | Yes | Secure the unit correctly and tighten the screws. |
| Scanner LD emission failure Scanner motor rotation failure | 2 | Is the laser diode or the scanner motor defective? | Yes | Replace the laser unit. |
| Scanner connection failure | 3 | Is the scanner harness connected properly? (Check if it is coming loose.) | No | Connect the harness correctly. |

(I-14) Faint print



| Possible cause | Step | Check | Result | Remedy |
|----------------------|------|---|--------|--|
| Printer installation | 1 | Is the printer placed horizontally? | No | Place the printer on a flat surface. |
| Toner cartridge | 2 | Does the problem happen immediately after replacing the toner cartridge with a new one? | Yes | Remove and carefully shake the toner cartridge horizontally. |
| Scanner window dirty | 3 | Is the scanner window dirty? | Yes | Clean the scanner window with a soft dry cloth. |
| Laser unit failure | 4 | Is the problem solved by replacing the laser unit? | Yes | Replace the laser unit. |

(I-15) White spots



 **User Check**

- (1) If the problem is not solved after printing a few pages, the drum unit may have glue from label stock on the exposure drum surface. Refer to Step 1 in the table below and **NOTE** in the next page.
- (2) The drum unit may be damaged. Install a new drum unit.

| Possible cause | Step | Check | Result | Remedy |
|-------------------|------|---|--------|---|
| Drum unit failure | 1 | Are the white spot at 94.2mm intervals? | Yes | 1) If toner or glue remains stuck, wipe it off gently with a cotton swab. (Refer to NOTE in the next page.) 2) If the drum surface is scratched, replace the drum unit. |
| | 2 | Is the problem solved after replacing the drum unit? | Yes | Replace the drum unit. |
| No toner | 3 | Is the toner in the toner cartridge almost empty? | Yes | Replace the toner cartridge with a new one. |
| Print paper | 4 | Is the problem solved after changing to specified freshly unpacked paper? | Yes | Damp (wet) paper might be used. Recommend to change freshly unpacked paper. |
| Environment | 5 | Does the problem still appear after the printer has warmed up? | Yes | 1) Replace the drum unit. 2) Advise the user of the specified print environment. |

NOTE:

Clean the drum unit as follows.

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

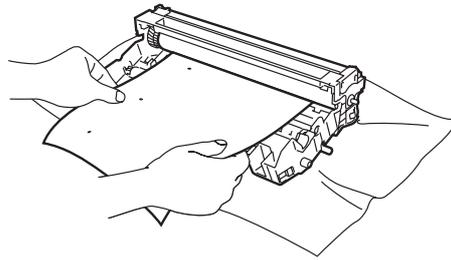
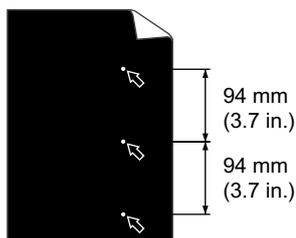
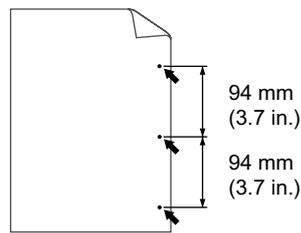


Fig. 4-21

< Examples of poor print quality >



White Spots on black text and graphics at 94 mm (3.7 in.) intervals



Black Spots at 94 mm (3.7 in.) intervals

Fig. 4-22

- (2) Turn the drum unit gear by hand while looking at the surface of the OPC drum.

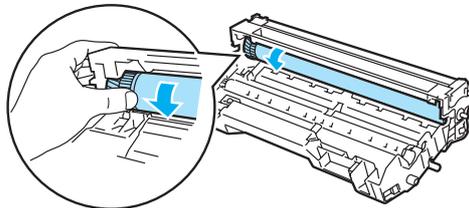


Fig. 4-23

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

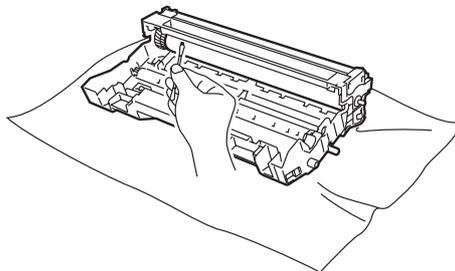


Fig. 4-24

CAUTION:

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

(I-16) Black spots



✓ User Check

(1) If the problem is not solved after printing a few pages, the drum unit may have glue from label stock on the exposure drum surface. Refer to Step 1 in the table below and **NOTE** in the previous page.

(2) The drum unit may be damaged. Install a new drum unit.

| Possible cause | Step | Check | Result | Remedy | Ground contacts |
|---------------------------------------|------|---|--------|--|-----------------|
| Drum unit | 1 | Are the spots at 94.2mm intervals? (The problem is not solved after printing a few pages.) | Yes | 1) If toner or glue remains stuck, wipe it off gently with a cotton swab. (Refer to NOTE in the previous page.) 2) If the exposure drum is scratched or deteriorated (exposed), replace the drum unit. | |
| Drum connection failure | 2 | Is the contact between the drum unit and printer body connected correctly? | No | Clean contact electrode both on the drum unit and in the printer body. | (7) |
| Fuser unit | 3 | Are the spots at 79mm intervals? (The problem is not solved after printing a few pages.) | Yes | 1) Check and clean the heat roller with a cloth dampened with alcohol. 2) Replace the fuser unit. | |
| High-voltage power supply PCB failure | 4 | Is the problem solved after replacing the high-voltage power supply PCB? | Yes | Replace the high-voltage power supply PCB. | |

(I-17) Black band

| Possible cause | Step | Check | Result | Remedy | Ground contacts |
|----------------|------|---|--------|---|-----------------|
| Corona failure | 1 | Is the wire cleaner at its home position? | No | Return the wire cleaner to its home position. | (2) |
| Corona dirty | 2 | Is the corona wire dirty? | Yes | 1) Clean the corona wire. 2) If the problem still appears after cleaning, replace the drum unit. | (2) |

(I-18) Gray background

| Possible cause | Step | Check | Result | Remedy |
|-------------------------------------|------|---|--------|---|
| Print paper | 1 | Does the paper being used meet the paper specification (weight, etc.). | No | Recommend to use the specified types of paper. |
| | | | Yes | Recommend to change to freshly unpacked paper. |
| Toner sensor failure (printer side) | 2 | Is Ready LED still lighted after the toner cartridge and drum unit are taken out? (The front cover is closed.) | Yes | Toner sensor failure. Clean the toner sensor and check the toner sensor connection. |
| Toner cartridge failure | 3 | Is the problem solved after replacing the toner cartridge? | Yes | Replace the toner cartridge. |
| Drum unit failure | 4 | Is the problem solved after replacing the drum unit? | Yes | Replace the drum unit. |
| | | | No | Replace the high-voltage power supply PCB. |

NOTE:

The following cases increase the possibility of this problem.

- Acid paper is being used.
- The drum unit is at the end of its life.
- There is dust or paper powder.

(I-19) Hollow print



User Check

(1) Check the paper used meets the recommended paper specifications.

(2) Select the 'Thick paper mode' in the printer driver, or use thinner paper than you are currently using.

(3) Check the printer's environment, conditions such as high humidity may cause this situation to occur.

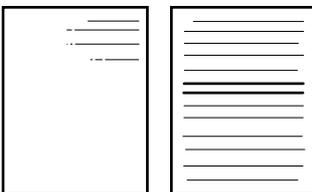
| Possible cause | Step | Check | Result | Remedy |
|----------------|------|---|--------|--|
| Print paper | 1 | Is thick paper of more than 43lb being used or extremely rough surface paper? | Yes | Recommend to use the specified types of paper. |
| | | | No | Refer and compare with I-15. |

(I-20) Downward fogging of solid black



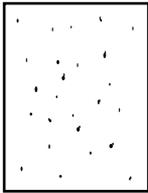
| Possible cause | Step | Check | Result | Remedy |
|---------------------------------------|------|--|--------|--|
| Toner cartridge failure | 1 | Is the problem solved after replacing the toner cartridge? | Yes | Replace the toner cartridge. |
| High-voltage power supply PCB failure | 2 | Is the problem solved after replacing the high-voltage power supply PCB? | Yes | Replace the high-voltage power supply PCB. |

(I-21) Horizontal lines



| Possible cause | Step | Check | Result | Remedy |
|---------------------|------|---|--------|---------------------|
| Paper tray contacts | 1 | Are the ground contacts on the right side of the paper tray connecting correctly? | No | Clean the contacts. |
| Drum unit | 2 | Are the high-voltage power supply and drum unit contacted correctly? | No | Clean the contacts. |

(I-22) Light rain



| Possible cause | Step | Check | Result | Remedy | Ground contact |
|---------------------------------------|------|--|--------|--|----------------|
| Drum unit failure | 1 | Is the problem solved after replacing the drum unit? | Yes | Replace the drum unit. | |
| Drum connection failure | 2 | Is the contact between the drum unit and printer body connected correctly? | No | Clean contact electrode both on the drum unit and in the printer body. | (7) |
| High-voltage power supply PCB failure | 3 | Is the problem solved after replacing the high-voltage power supply PCB? | Yes | Replace the high-voltage power supply PCB. | |

(I-23) Ghost



User Check

(1) Check the paper used meets the recommended paper specifications. Damp paper, thick media or rough surfaced paper can cause the problem.

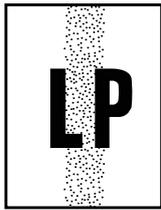
(2) Check the printer's environment. High temperature and high humidity conditions can cause the problem.

(3) Check that the appropriate media type is selected in the printer driver.

(4) Try installing a new drum unit.

| Possible cause | Step | Check | Result | Remedy |
|---------------------------------------|------|---|--------|---|
| Driver setting | 1 | Is thin paper such as 64g/m ² used under the thick paper mode? | Yes | 1) Change the current mode to the normal mode from the driver setting. 2) Print 5 or 6 blank pages if this problem occurs. |
| Drum unit failure | 2 | Is the problem solved after replacing the drum unit? | Yes | Replace the drum unit. |
| High-voltage power supply PCB failure | 3 | Is the problem solved after replacing the high-voltage power supply PCB? | Yes | Replace the high-voltage power supply PCB. |

(I-24) Toner specks



User Check

- (1) Check the paper used meets the recommended paper specifications. A rough surfaced paper may cause the problem.
- (2) The toner cartridge may be damaged. Install a new toner cartridge.
- (3) The drum unit may be damaged, or may be nearly at the end of life. Install a new drum unit.

6.4 Location of Grounding Contacts

6.4.1 Drum unit

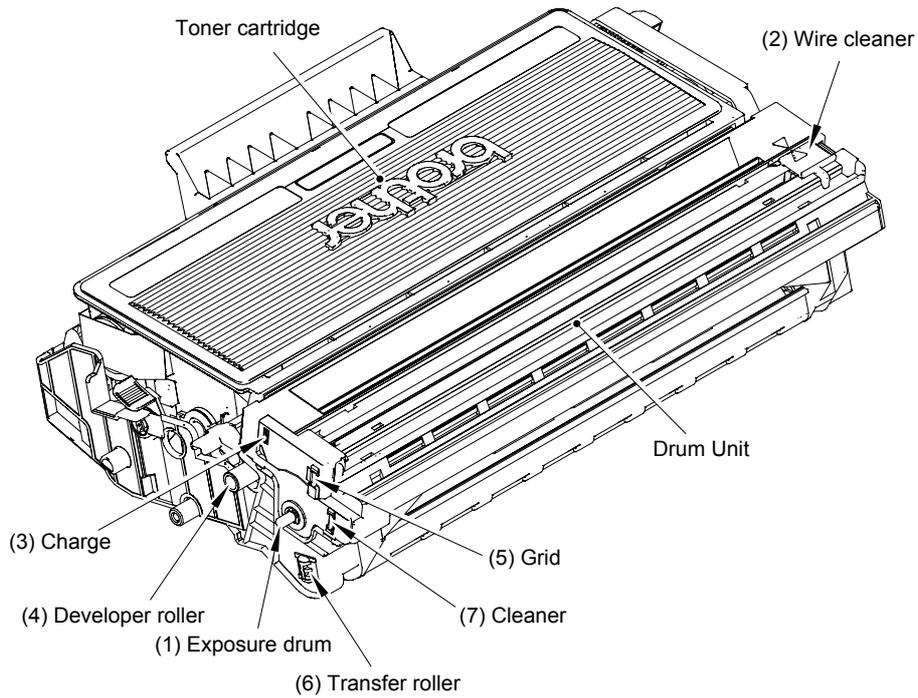


Fig. 4-25

6.4.2 Printer body & paper tray

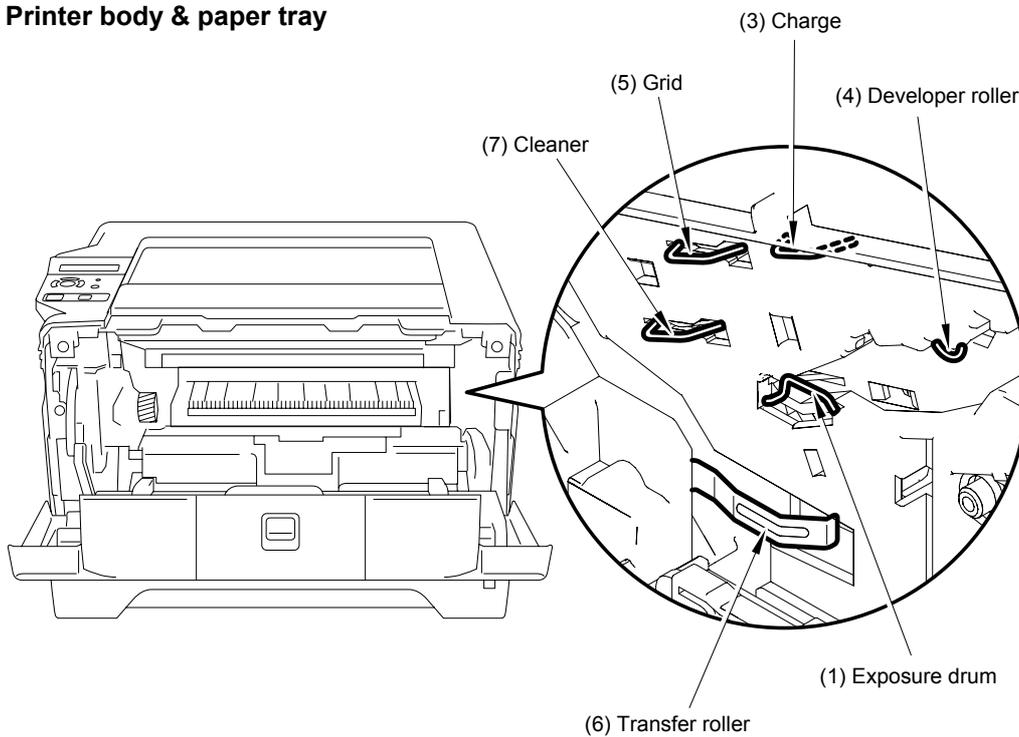


Fig. 4-26

<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.

7. INCORRECT PRINTOUT

When the data is not printed correctly as it is seen on the PC screen, follow the procedures below in the event of a specific error.

(P-1) The printer prints unexpectedly or it prints garbage data.

User Check

- (1) Check if the printer cable is not too long. It is recommended to use a parallel cable or USB cable that is no longer than 2 meters (6.6 feet) in length.
- (2) Check that the printer cable is not damaged or broken. Check also that the printer cable is connected to the correct interface connectors of both the printer and PC.
- (3) If an interface switching device is used, remove it and connect the computer directly to the printer and try again.
- (4) Check that the appropriate printer driver is selected as 'Set as Default'. Check also that the correct print port is set for the selected printer driver.
- (5) Check that the printer is not connected to the same port which is also connected to a mass storage device or scanner. Remove all other devices and connect the port to the printer only.
- (6) Turn off the **Status Monitor** in the **Device Options** tab in the printer driver.
- (7) Try printing the test page referring to '[Test Sample Page](#)' in Chapter 7.
- (8) Try resetting the factory settings.

| Possible cause | Step | Check | Result | Remedy |
|----------------------------|------|---|--------|---|
| Failure inside the printer | 1 | Is it possible to print the test page with the method of ' Test Sample Page ' in Chapter 7? | No | Identify the error type, then refer to the specified section of this chapter. |

(P-2) Unable to print full pages of a document with the "PRINT OVERRUN" message.

User Check

- (1) Press the **Go** button on the control panel to print the data remaining in the printer.
- (2) If this does not clear the error, reduce the complexity of your document or reduce the printer resolution.
- (3) Add more memory.
- (4) Set page protection to **AUTO** by using the supplied printer driver or Remote Printer Console program.
- (5) Change the following setting in the printer driver and try again. The best combination of settings below will vary depending on your document.

Graphic Mode / TrueType™ mode / Use Printer TrueType™ Fonts

NOTE:

This problem may appear if the data is too complex. If it is not cleared by taking the actions above, it will be impossible to print such data under the printer specifications.

(P-3) Unable to print full pages of a document with the “MEMORY FULL” message.

 **User Check**

- (1) Press the **Go** button on the control panel to print the data remaining in the printer.
- (2) Reduce the complexity of your document or reduce the printer resolution.
- (3) Add more memory.

NOTE:

This problem may appear if the data is too complex.

| Possible cause | Step | Check | Result | Remedy |
|------------------|------|--|--------|-----------------------|
| Main PCB failure | 1 | Is it possible to print after reducing the data of a document? | Yes | Replace the main PCB. |

(P-4) Headers or footers are not printed out even though they are viewed on PC screen.

 **User Check**

Most laser printers have a restricted area that cannot be printed on. Usually the first two lines and last two lines of text cannot print (leaving 62 printable lines). Adjust the top and bottom margins in your document to allow for this.

(P-5) The printer sometimes prints a couple of characters and then ejects the page.

 **User Check**

(For DOS environment only)

The application printer emulation setting and the printer’s emulation do not match. Check in the application software which printer you have selected to make sure the printer is set up correctly. Remember that the printer emulates widely used printer selections:

HP Laser Jet 6P, HP Laser Jet 6P, Epson FX-850, IBM Proprinter XL

Try setting the printer into HP emulation and then select the HP LaserJet 6P printer in the application software.

(P-6) The headers or footers appear when the document displays on the screen but they do not show up when it is printed.

 **User Check**

Adjust the top and bottom margins of your document.

8. NETWORK PROBLEM

If the error related to network occurs, refer to the following sections;

8.1 Installation Problem

The Brother print server is not found during setup of the network print software installation or from the printer driver of the Brother printer in Windows®.

The Brother print server is not found using the Simple Network Configuration capabilities of Mac OS® X.

Make sure you have completed the IP address setting of the Brother print server according to Chapter 2 of this User's Guide before installing the network print software or printer driver.

Check the following:

1. Make sure that the printer is powered on, is on-line and ready to print.
2. Check to see if there is any LED activity. Brother print servers have two LEDs on the back panel of the printer.

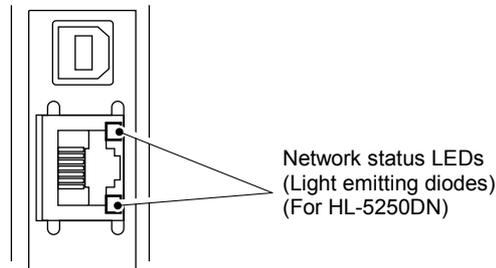


Fig. 4-27

Both LEDs are off: the print server is not connected to the network.

The upper LED is on: Link status

The upper LED is blinking: Activity status

The lower side LED is on: Link speed is 100M.

The lower side LED is off: Link speed is 10M.

3. Print the Printer Settings Page and check if the settings such as IP address settings are correct for your network. The problem may be the result of mismatched or duplicate IP address. Verify that the IP address is correctly loaded into the print server. And make sure that no other nodes on the network have this IP address. For information on how to print the Printer Settings Page, see Printing the Printer Settings Page on page 7-6.
4. Verify that the print server is on your network as follows:

For Windows®

Try pinging the print server from the host operating system command prompt with the command:

```
ping ipaddress
```

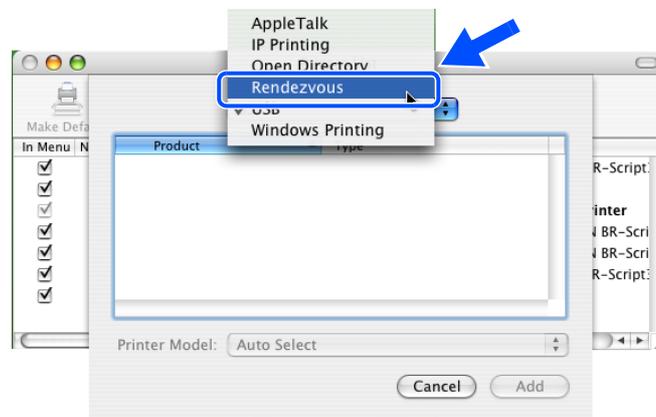
Where `ipaddress` is the print server IP address (note that in some instances it can take up to two minutes for the print server to load its IP address after setting the IP address).

For Macintosh®**For Mac OS® 9.1 to 9.2**

- (1) From the **Apple** menu, open the **Chooser**.
- (2) Click the **Brother Laser (IP)** icon, and make sure that your print server name appears in the right frame. If it is visible, then the connection is good. Otherwise, go to Step 5.

For Mac OS® X 10.2.4 or greater

- (1) From the **Go** menu, select **Applications**.
- (2) Open the **Utilities** folder.
- (3) Double-click the **Printer Setup Utility** icon.
- (4) Click **Add**.
(For Mac OS® X 10.2.4 to 10.3) Go to (5).
(For Mac OS® X 10.4) Go to (6).
- (5) (For Mac OS® X 10.2.4 to 10.3)
Make the following selection.



- (6) Make sure that your print server appears. If it is visible, then the connection is good. Otherwise, go to Step 5.
5. If you have tried 1 to 4 above and it does not work, then reset the print server back to the default factory settings and try from the initial setup again. For information how to reset to the default factory settings, see Restoring the network settings to factory default on page 7-7.
6. (For Windows®) Firewall setting on your PC may be rejecting the necessary network connection. Follow the instructions below to disable the Firewall. If you are using a personal Firewall software, see the User's Guide for your software or contact the software manufacturer.

Windows XP SP2 users

- (1) Click the **Start** button, **Settings**, and then **Control Panel**.
- (2) Double click **Windows Firewall**.
- (3) Click the **General** tab. Verify that **Off (not recommended)** is selected.
- (4) Click **OK**.

Windows® XP SP1 users

- (1) Locate the “Windows” key on your keyboard. These are the keys with the Windows logo on it.



- (2) Press the “Windows” key plus the “E” key to open **My Computer**.
- (3) On the left, right click **My Network Places**, click **Properties**, then right click **Local Area Connection** and click **Properties**.
- (4) Click the **Advanced** tab. Under **Internet Connection Firewall**, verify that the box next to **Protect my computer...** is unchecked. If the box is selected, click the box to remove the check. Then, click **OK**.
- (5) Once your firewall is disabled, try reinstalling the Brother software package. For instructions on how to install from the CD-ROM, use the Quick Setup Guide we have provided with the machine.
- (6) If the installation completed successfully, the Firewall on your computer is rejecting the necessary network connection. In this case, you will need to disable the Firewall on your computer whenever you install the network drivers.

NOTE:

After the Brother software package is installed, enable again your Firewall. For instructions on how to re-enable your Firewall software, refer to your User’s Guide or contact the Firewall software manufacturer.

8.2 Printing Problem

<Print job is not printed>

Make sure the status and configuration of the print server. Check following:

1. Make sure that the printer is powered on, is on-line and ready to print.
2. Print the Printer Settings Page of the printer and check if the settings such as IP address settings are correct for your network. The problem may be the result of mismatched or duplicate IP address. Verify that the IP address is correctly loaded into the print server. And make sure that no other nodes on the network have this IP address.
3. Verify that the print server is on your network as follows:

For Windows®

- (1) Try pinging the print server from the host operating system command prompt with the command:

```
ping ipaddress
```

Where `ipaddress` is the print server IP address (note that in some instances it can take up to two minutes for the print server to load its IP address after setting the IP address).

- (2) If a successful response is received, then proceed to Windows® 95/98/Me and Windows NT® 4.0 Peer-to-Peer print (LPR) troubleshooting, and Windows® 2000/XP IPP troubleshooting. Otherwise, proceed to Step 4.

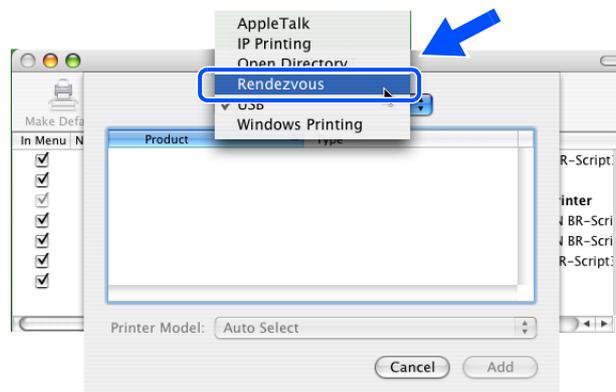
For Macintosh®

For Mac OS® 9.1 to 9.2

- (1) From the **Apple** menu, open the **Chooser**.
- (2) Click the **Brother Laser (IP)** icon, and make sure that your print server name appears in the right frame. If it is visible, then the connection is good. Otherwise, go to Step (4).

For Mac OS® X 10.2.4 or greater

- (1) From the **Go** menu, select **Applications**.
- (2) Open the **Utilities** folder.
- (3) Double-click the **Printer Setup Utility** icon.
- (4) Click **Add**.
(For Mac OS® X 10.2.4 to 10.3) Go to (5).
(For Mac OS® X 10.4) Go to (6).
- (5) (For Mac OS® X 10.2.4 to 10.3)
Make the following selection.



- (6) Make sure that your print server appears. If it is visible, then the connection is good. Otherwise, go to Step 4.
4. If you have tried 1 to 4 above and it does not work, then reset the print server back to the default factory settings and try from the initial setup again. For information how to reset to the default factory settings, see Restoring the network settings to factory default on page 7-7.

<Error during printing>

If you try to print while other users are printing large amounts of data (e.g. many pages or color pages with high resolution), the printer is unable to accept your print job until the ongoing printing is finished. If the waiting time of your print job exceeds a certain limit, a time out situation occurs, which causes the error message. In such situations, execute the print job again after the other jobs are completed.

8.3 Protocol-Specific Troubleshooting

<Windows® 95/98/Me and Windows NT® 4.0 Peer-to-Peer print (LPR) troubleshooting>

If you are having trouble printing on a Windows® 95/98/Me, Windows NT® 4.0 or later Peer-to-Peer network (LPR method), check the following:

1. Make sure that the Brother LPR Port driver is correctly installed and configured according to the Windows® 95/98/Me or Windows NT® 4.0 Peer-to-Peer chapters.
2. Try to turn the **Byte Count** on in the **Configure port** area of printer driver properties.

You may find that during the installation of BLP software, the screen that prompts you for a Port name is not displayed. This may happen on some Windows® 95/98/Me and Windows NT® 4.0 computers. Press the ALT and TAB keys to make it appear.

<Windows® 95/98/Me and Windows NT® 4.0 Peer-to-Peer print (NetBIOS) troubleshooting>

If you are having trouble printing on a Windows® 95/98/Me, Windows NT® 4.0 or later Peer-to-Peer network (NetBIOS), check the following:

1. Make sure that the Brother NetBIOS Port driver is correctly installed and configured according to the Windows® 95/98/Me or Windows NT® 4.0 Peer-to-Peer (NetBIOS) chapters. You may find that during the installation of the port driver, the screen that prompts you for a Port name is not displayed. This happens on some Windows® 95/98/Me and Windows NT® 4.0 computers. Press the ALT and TAB keys to make it appear.
2. Make sure that the print server is configured to be in the same workgroup or domain as the rest of your computers. It may take several minutes for the print server to appear in the network neighborhood.

<Windows® 2000/XP IPP troubleshooting>

Want to use a different Port number other than 631.

If you are using Port 631 for IPP printing, you may find that your firewall may not let the print data through. If this is the case, use a different port number (port 80), or configure your Firewall to allow Port 631 data through.

To send a print job using IPP to a printer using Port 80 (the standard HTTP port) enter the following when configuring your Windows® 2000/XP system.

```
http://ip_address/ipp
```

Get More Info option in Windows® 2000 not working

If you are using a URL of:

```
http://ip_address:631 or http://ip_address:631/ipp ,
```

the **Get More Info** option in Windows® 2000 will not function. If you wish to use the **Get More Info** option, use the following URL:

```
http://ip_address
```

This will then force Windows® 2000/XP to use Port 80 to communicate with the Brother print server.

<Web browser troubleshooting (TCP/IP)>

1. If you can not connect to the print server using your web browser it may be worth checking the Proxy Settings of your browser. Look in the Exceptions setting and if necessary, type in the IP address of the print server. This will stop your PC from trying to connect to your ISP or proxy server every time you wish to look at the printer server.
2. Make sure that you are using the proper web browser, we recommend Microsoft Internet Explorer version 6.0 (or higher) or Netscape® version 7.1 (or higher).

8.4 Wireless Network Troubleshooting

<Wireless setup problems>

The Brother print server is not found during setup using the automatic installer application on the CD-ROM.

1. Make sure that the printer is powered on, is on-line and ready to print.
2. Move your Brother printer closer to the computer and try again.
3. Reset the print server back to its default factory settings and try again. For the information how to reset to the factory default settings.

<Wireless connection problem>

The wireless network connection is sometimes disabled.

The wireless network connection status is affected by the environment where the Brother printer and other wireless devices are located. The following conditions may cause connection problems:

- A concrete or metal framed wall is installed between the Brother printer and the access point.
- Electric appliances such as televisions, computer appliances, microwave ovens, intercoms, mobile/cellular phones and the battery chargers and AC power adapters are installed close to your network.
- A broadcast station or high-tension wire is located close to your network.
- A fluorescent light is being switching ON or OFF.

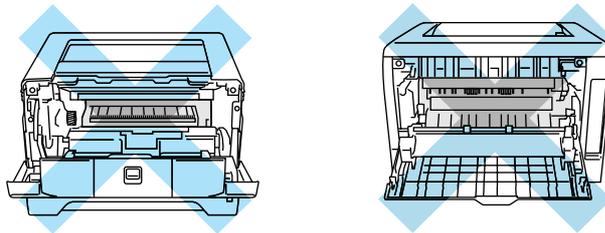
CHAPTER 5 DISASSEMBLY AND RE-ASSEMBLY

1. SAFETY PRECAUTIONS

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

WARNING

- **Always turn off the power switch and unplug the power cord from the power outlet before accessing any parts inside the printer.**
- **Some parts inside the printer are extremely hot immediately after the printer is used. When opening the front cover or back cover to access any parts inside the printer, never touch the red colored parts shown in the following figures.**



CAUTION:

- (1) Be careful not to lose screws, washers, or other parts removed.
- (2) Be sure to apply grease to the gears and applicable positions specified in this chapter.
- (3) When using soldering irons or other heat-generating tools, take care not to accidentally damage parts such as wires, PCBs and covers.
- (4) Static electricity charged in your body may damage electronic parts. When transporting PCBs, be sure to wrap them in conductive sheets.
- (5) 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.
- (6) Be sure to replace self-tapping screws correctly, if removed. Unless otherwise specified, tighten screws to the following torque values.
 - TAPTITE, BIND or CUP B
 - M3: 0.5N • m
 - M4: 0.8N • m
 - TAPTITE, CUP S
 - M3: 0.5N • m
- (7) After disconnecting flat cables, check that each cable is not damaged at its end or short-circuited.
- (8) When connecting flat cables, do not insert them at an angle. After insertion, check that the cables are not at an angle.
- (9) 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.
- (10) 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

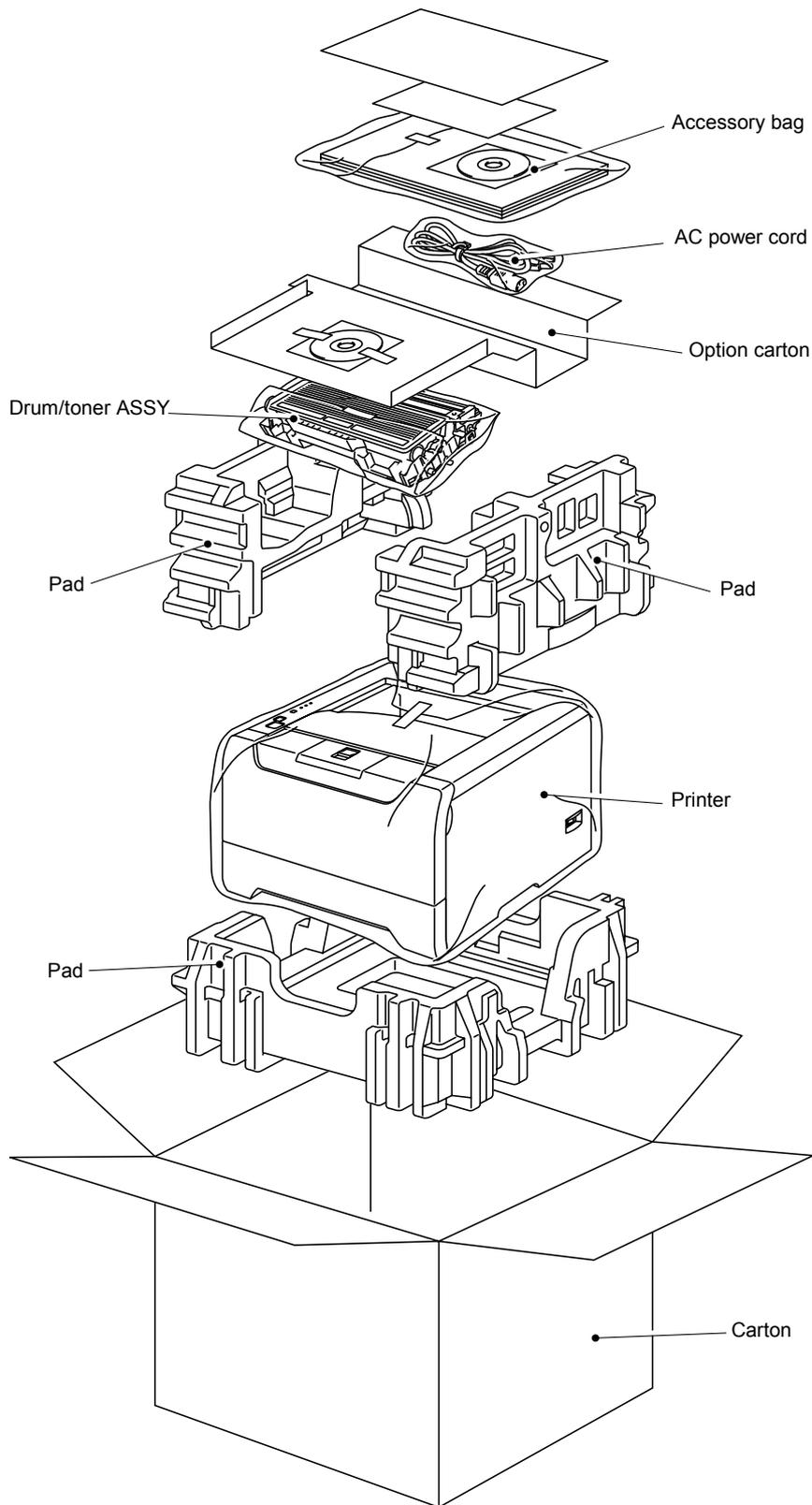


Fig. 5-1

3. SCREW TORQUE LIST

1 Frame L/Drive Unit

| No. | Parts code | Parts name | Location | Pcs. | Tightening torque N m (kgf • cm) |
|-----|------------|-------------------------|---------------------------|------|-------------------------------------|
| 1 | 085311016 | Taptite, bind B M3 x 10 | Ejector solenoid | 1 | 0.5 ±0.1(5±1) |
| 2 | 087320616 | Taptite, cup S M3 x 6 | Main motor | 4 | 0.7 ±0.1(7±1) |
| 3 | 085311016 | Taptite, bind B M3 x 10 | T1, MP, Register solenoid | 3 | 0.5 ±0.05(5±0.5) |
| 4 | 085411216 | Taptite, bind B M4 x 12 | Gear plate | 8 | 0.9 ±0.05(9±0.5) |
| 5 | 085411216 | Taptite, bind B M4 x 12 | Main shield | 3 | 0.9 ±0.1(9±1) |

2 Frame Unit

| No. | Parts code | Parts name | Location | Pcs. | Tightening torque N m (kgf • cm) |
|-----|------------|-------------------------------------|-----------------|------|-------------------------------------|
| 1 | LM2048001 | Screw, pan (S/P washer) M3.5 x 6 | Ground wire | 1 | 0.5 ±0.05 (5±0.5) |
| 2 | 085411216 | Taptite, bind B M4 x 12 | SW holder | 1 | 0.8 ±0.1(8±1) |
| 3 | 085411216 | Taptite, bind B M4 x 12 | Under bar | 4 | 0.7 ±0.1(7±1) |
| 4 | 085411216 | Taptite, bind B M4 x 12 | Paper feed unit | 8 | 0.8 ±0.1(8±1) |
| 5 | 085411216 | Taptite, bind B M4 x 12 | HVPS | 2 | 0.8 ±0.1(8±1) |
| 6 | 085411216 | Taptite, bind B M4 x 12 | LVPS | 2 | 0.8 ±0.1(8±1) |
| 7 | 085411216 | Taptite, bind B M4 x 12 | Base plate | 9 | 0.8 ±0.1(8±1) |
| 8 | LM5867001 | Taptite, cup S M3 x 6 SR | Main PCB | 4 | 0.75 ±0.1(7.5±1) |
| 9 | LM5867001 | Taptite, cup S M3 x 6 SR | Shield cover | 4 | 0.75 ±0.1(7.5±1) |
| 10 | 087320616 | Taptite, cup S M3 x 6 | Scanner plate | 6 | 0.7 ±0.1(7±1) |

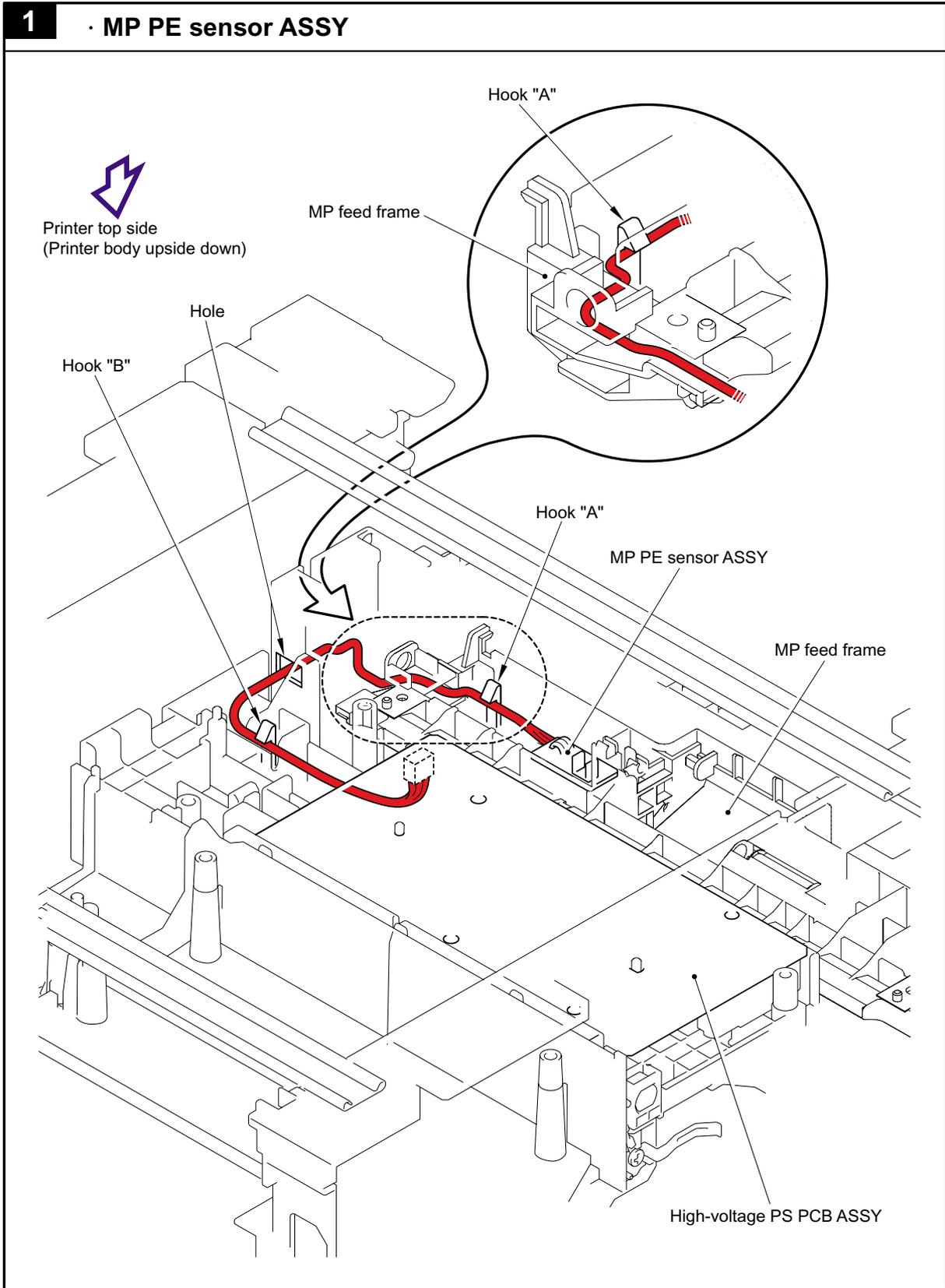
3 Paper Feeder

| No. | Parts code | Parts name | Location | Pcs. | Tightening torque N m (kgf • cm) |
|-----|------------|-------------------------|---|------|-------------------------------------|
| 1 | 085310816 | Taptite, bind B M3 x 8 | PE EG sensor | 1 | 0.5 ±0.1(5±1) |
| 2 | 085310816 | Taptite, bind B M3 x 8 | MP PE sensor | 1 | 0.5 ±0.1(5±1) |
| 3 | 085310816 | Taptite, bind B M3 x 8 | MP feed frame | 2 | 0.5 ±0.1(5±1) |
| 4 | 085411216 | Taptite, bind B M4 x 12 | Regist frame (2), MP tray unit (2), Chute 2 (2) | 6 | 0.7 ±0.1(7±1) |

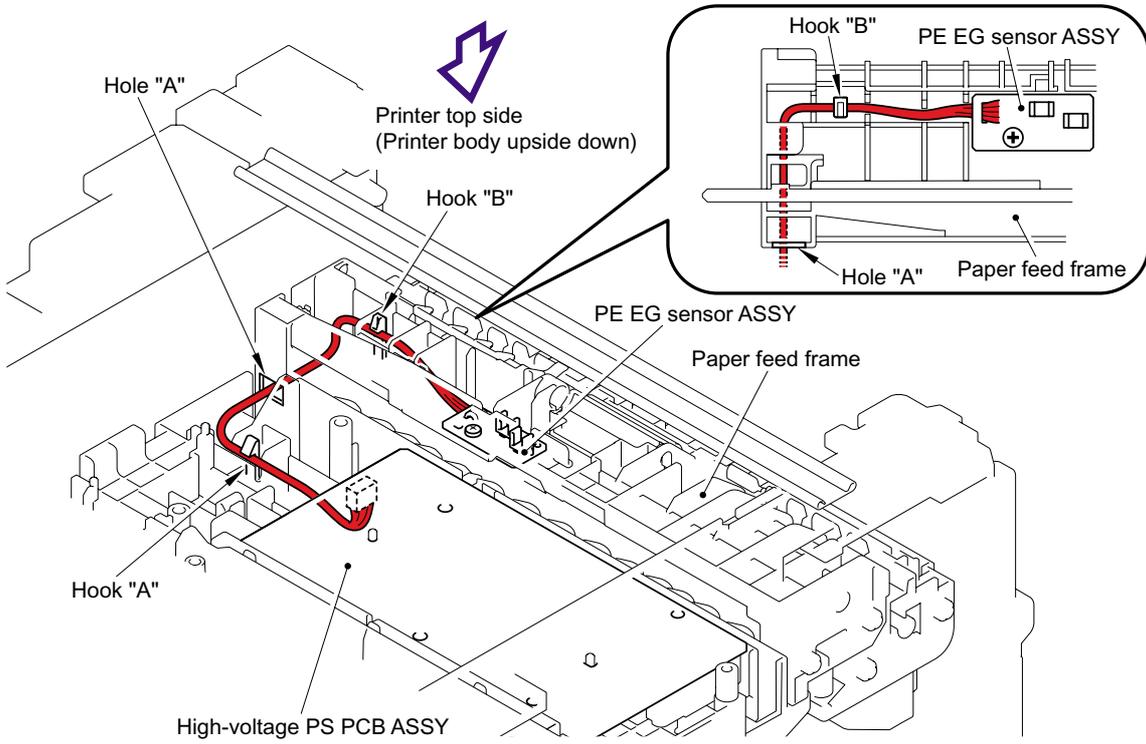
4 Cover

| No. | Parts code | Parts name | Location | Pcs. | Tightening torque N m (kgf • cm) |
|-----|------------|-------------------------|-------------|-------|-------------------------------------|
| 1 | 085411216 | Taptite, bind B M4 x 12 | Inner chute | 6 (7) | 0.8 ±0.1(8±1) |
| 2 | 087310816 | Taptite, cup B M3 x 8 | Panel PCB | 3 | 0.5 ±0.1(5±1) |
| 3 | 085411216 | Taptite, bind B M4 x 12 | Cover | 6 | 0.7 ±0.1(7±1) |

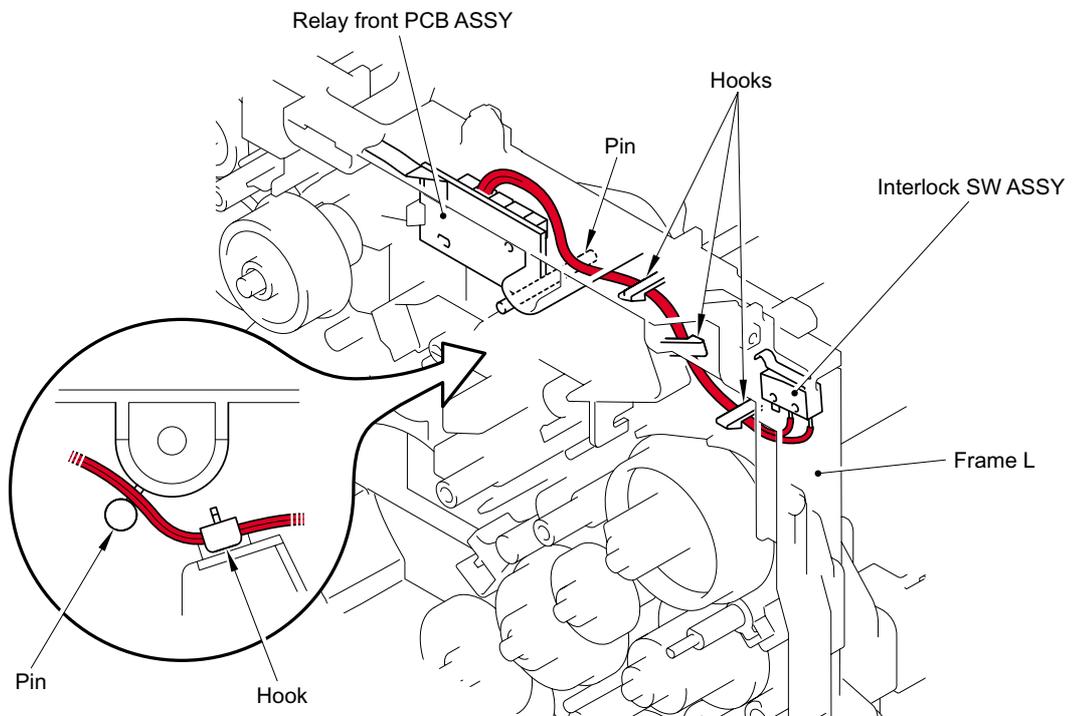
4. HARNESS ROUTING

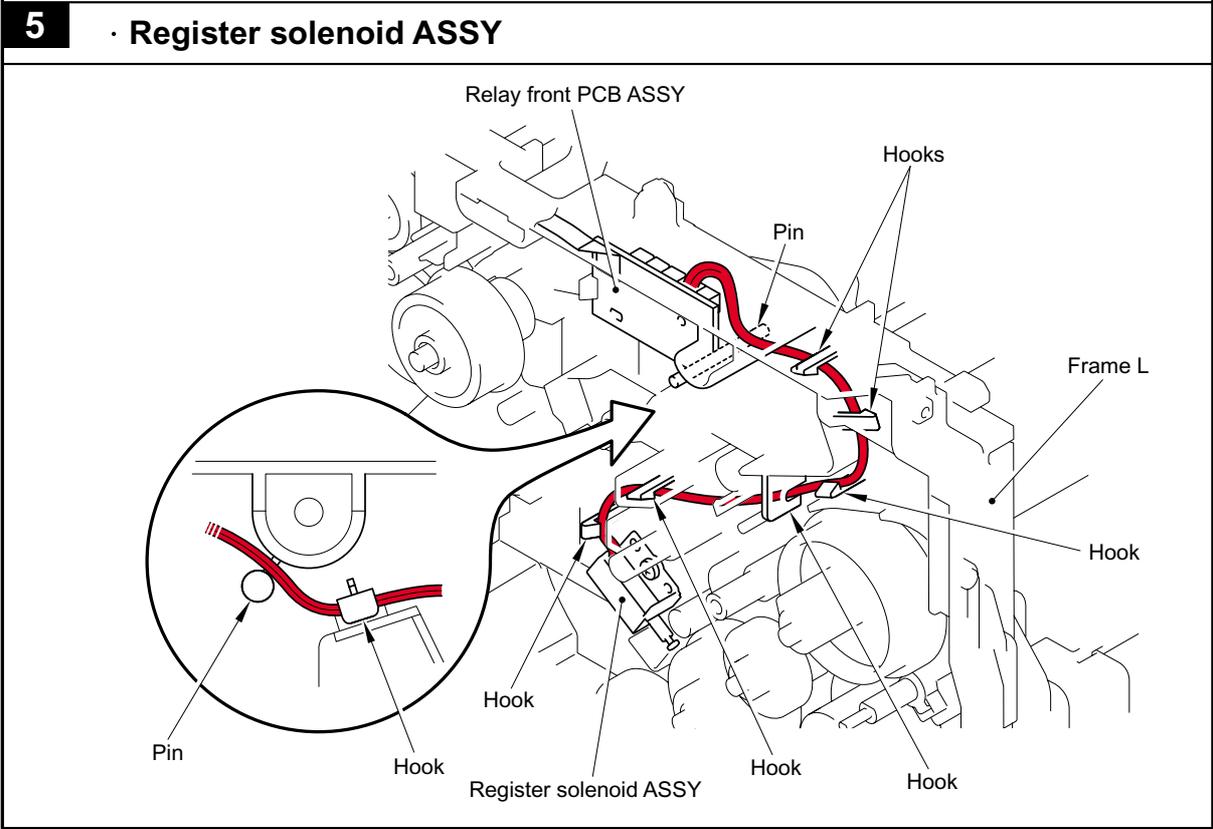
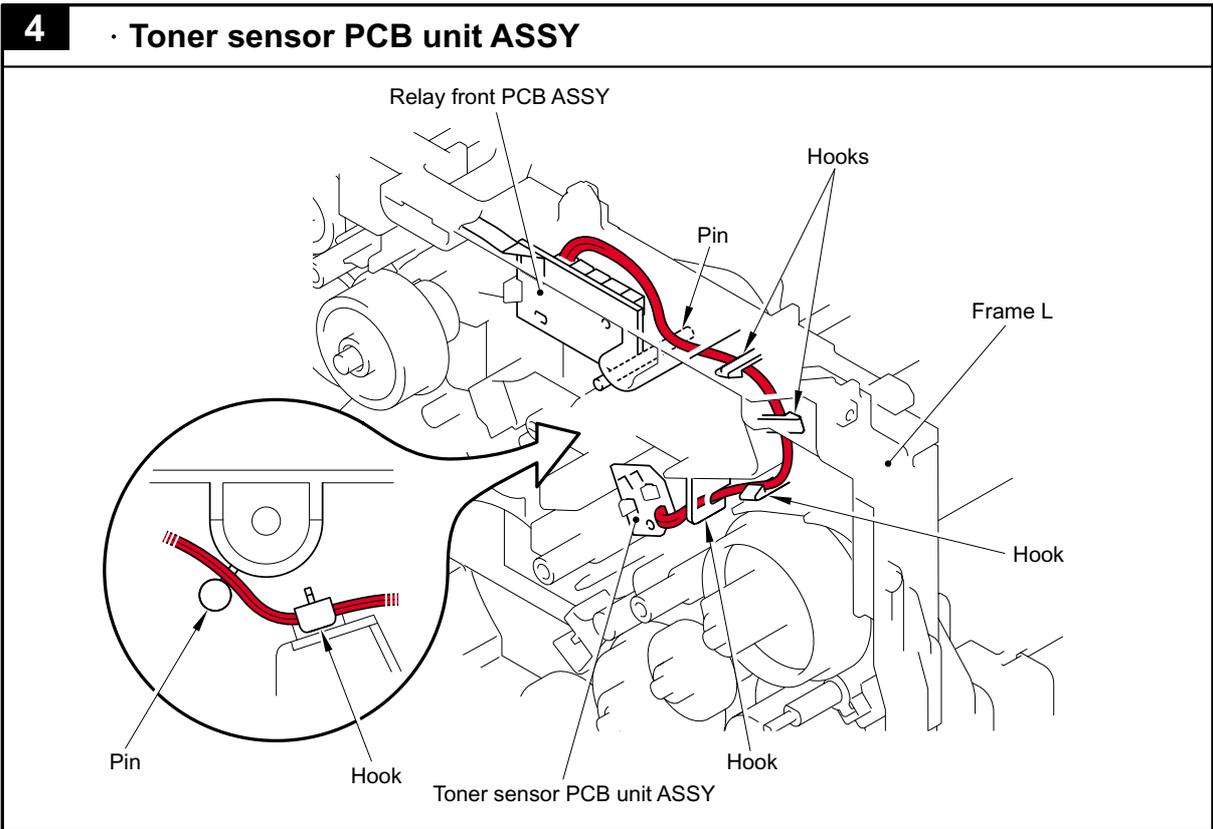


2 · PE EG sensor ASSY

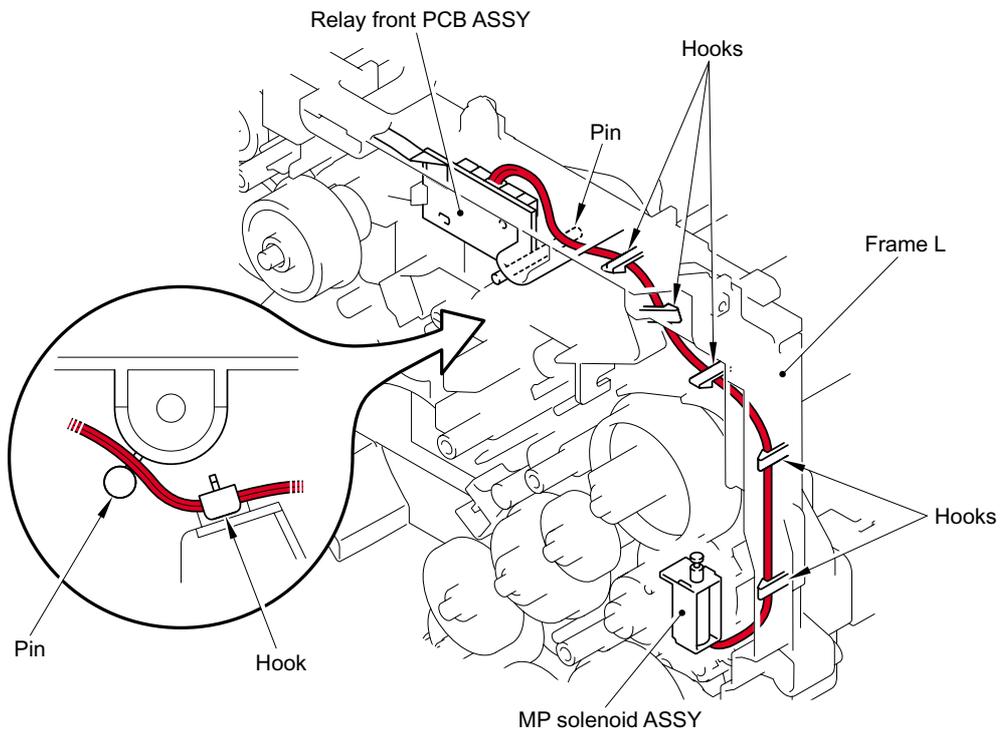


3 · Interlock SW ASSY

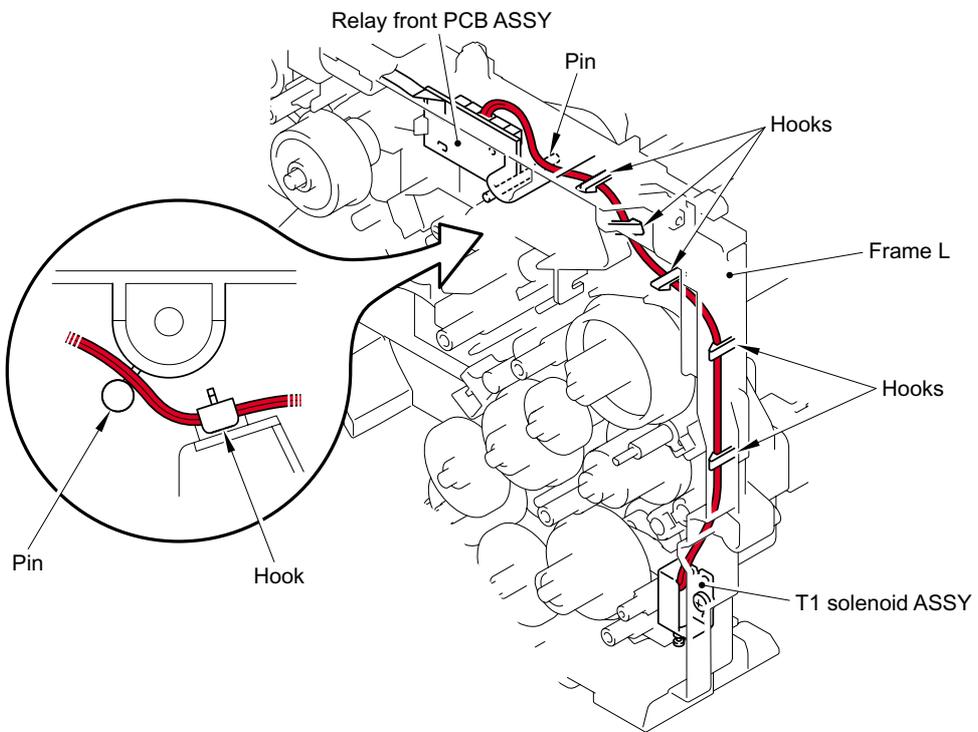




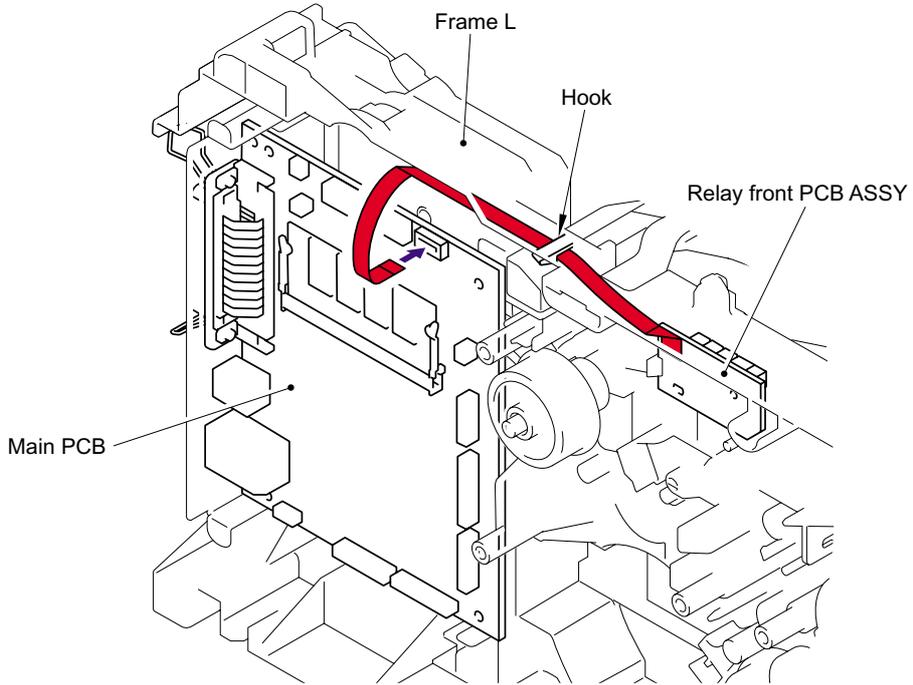
6 · MP solenoid ASSY



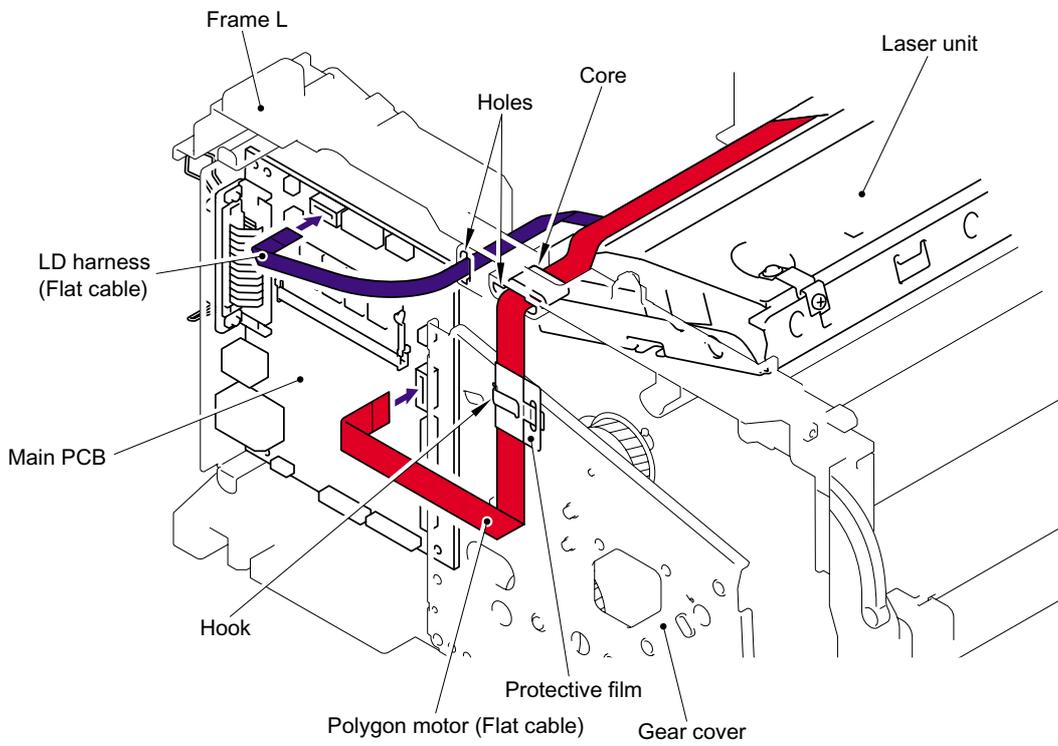
7 · T1 solenoid ASSY



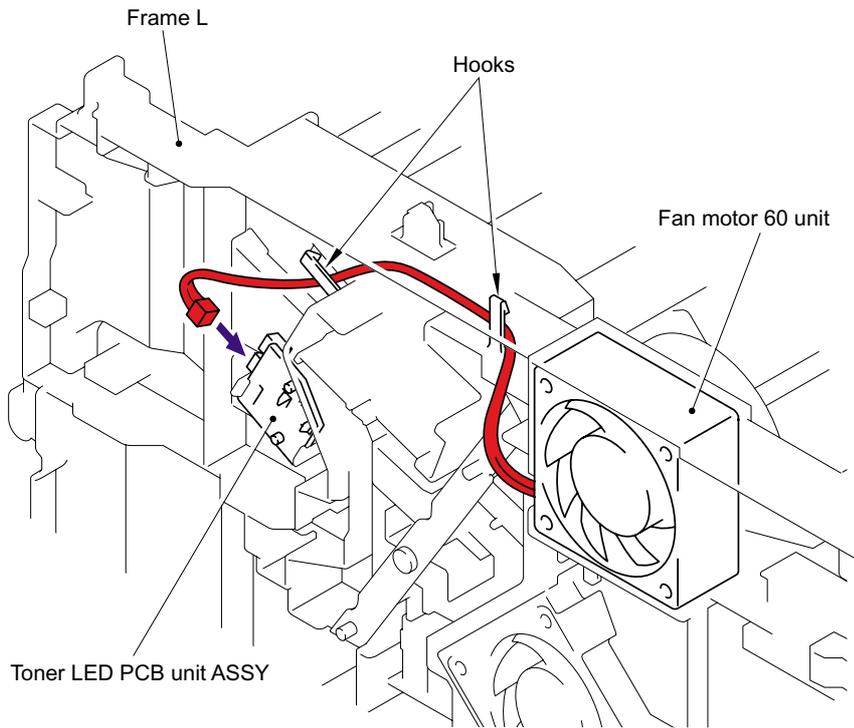
8 · Relay front PCB ASSY



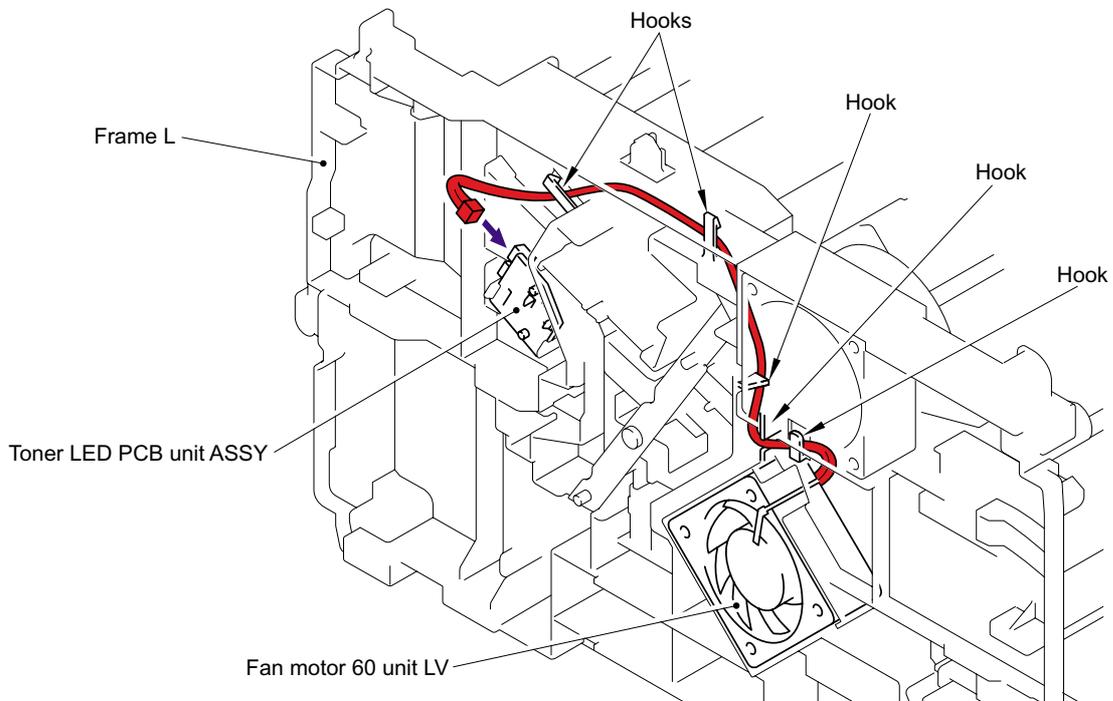
9 · Laser unit



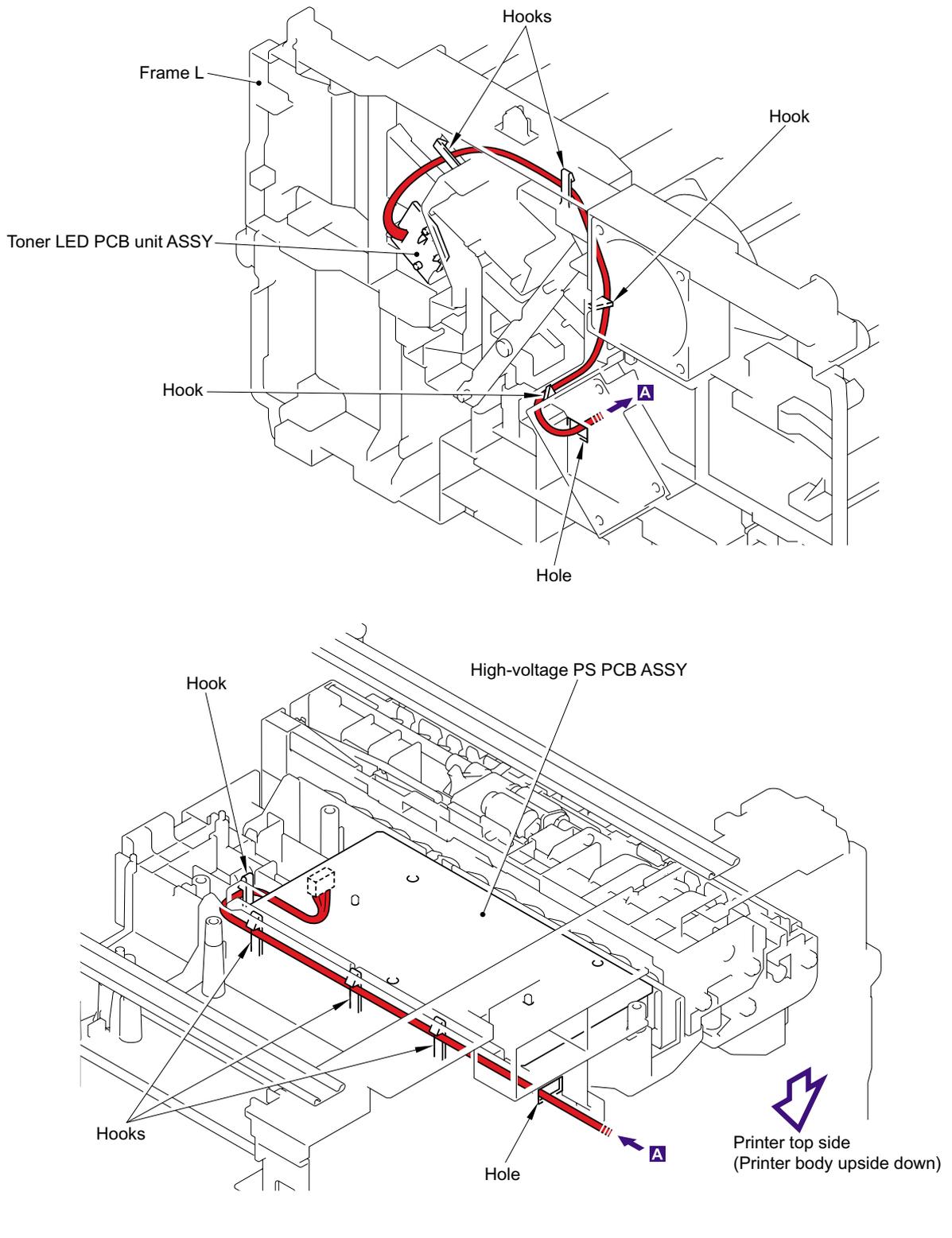
10 · Fan motor 60 unit



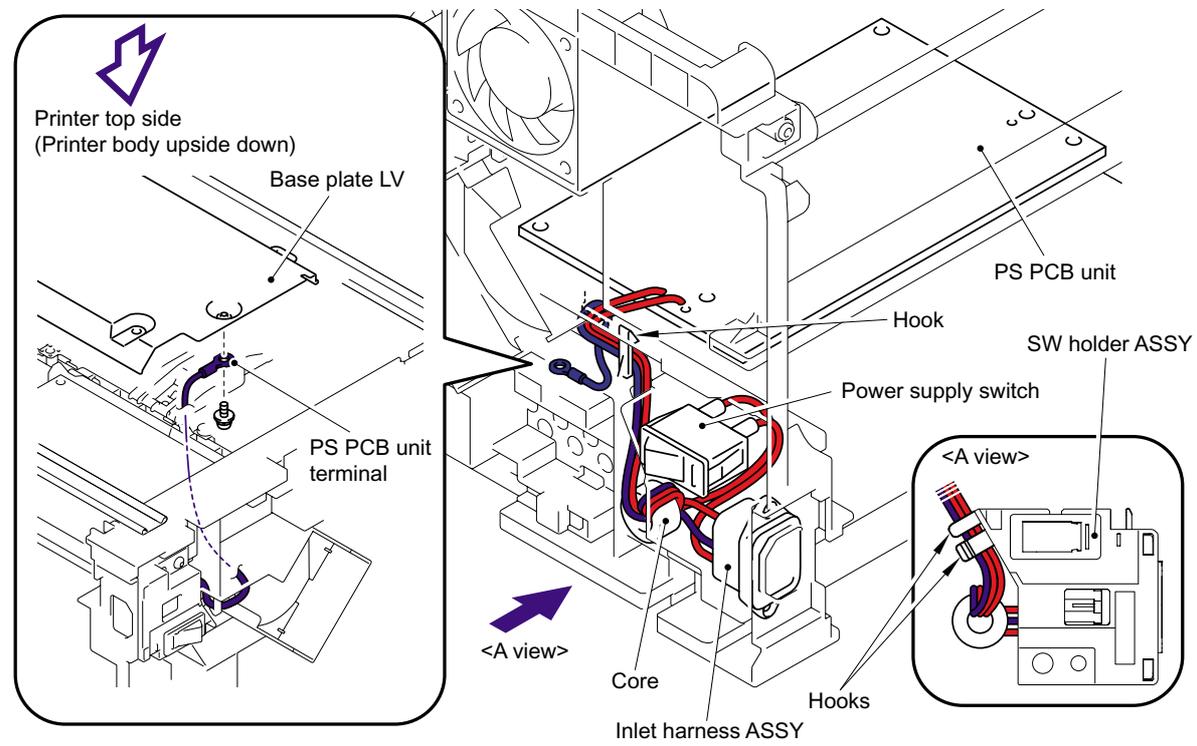
11 · Fan motor 60 unit LV



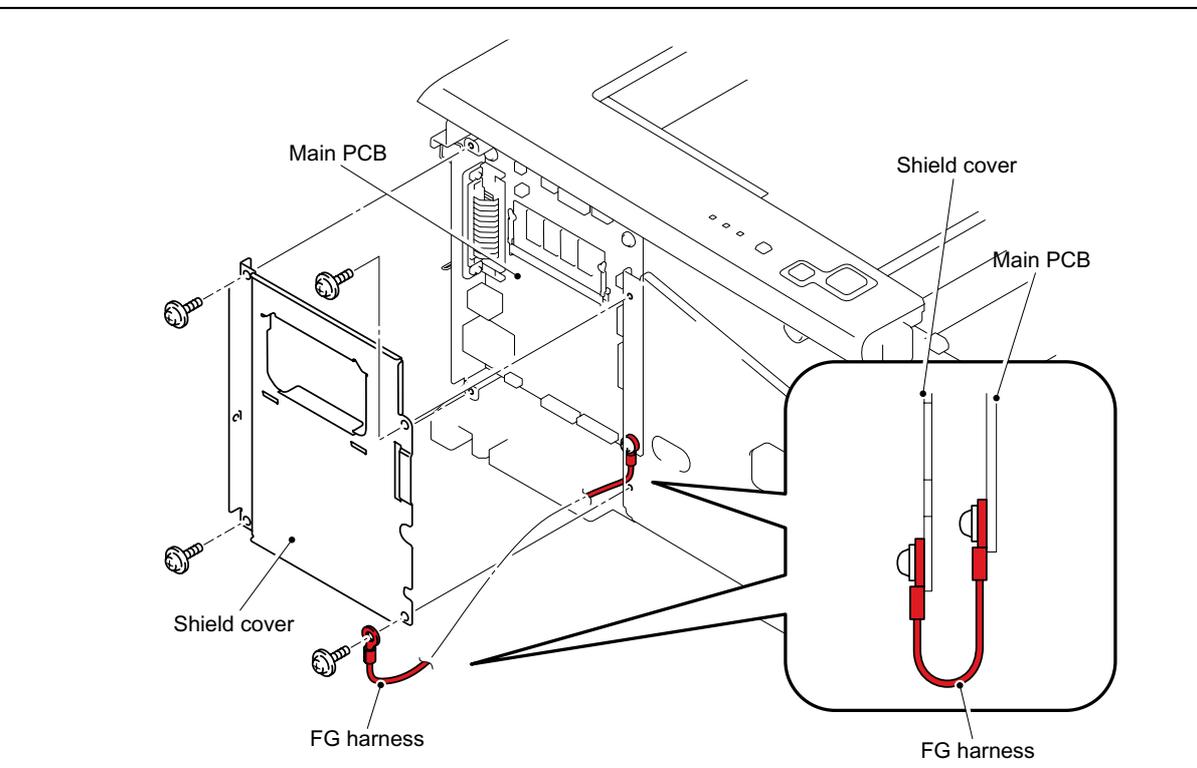
12 · Toner LED PCB unit ASSY



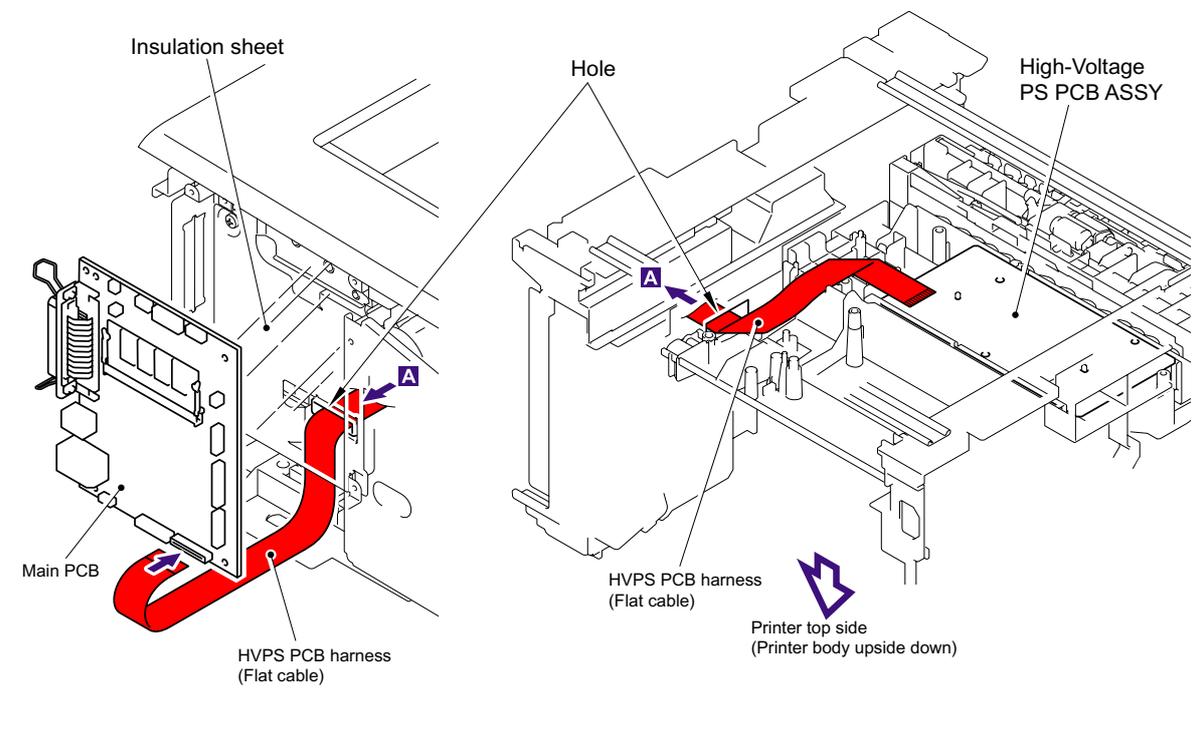
13 · PS PCB unit



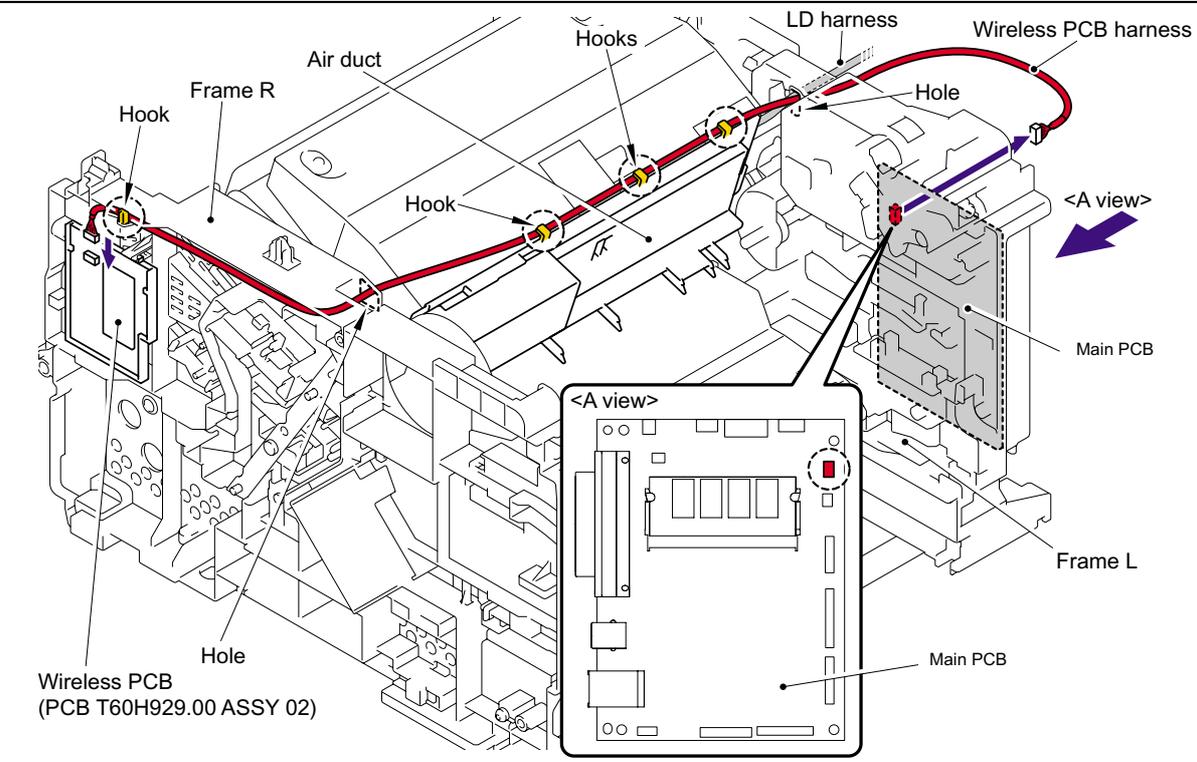
14 · FG harness



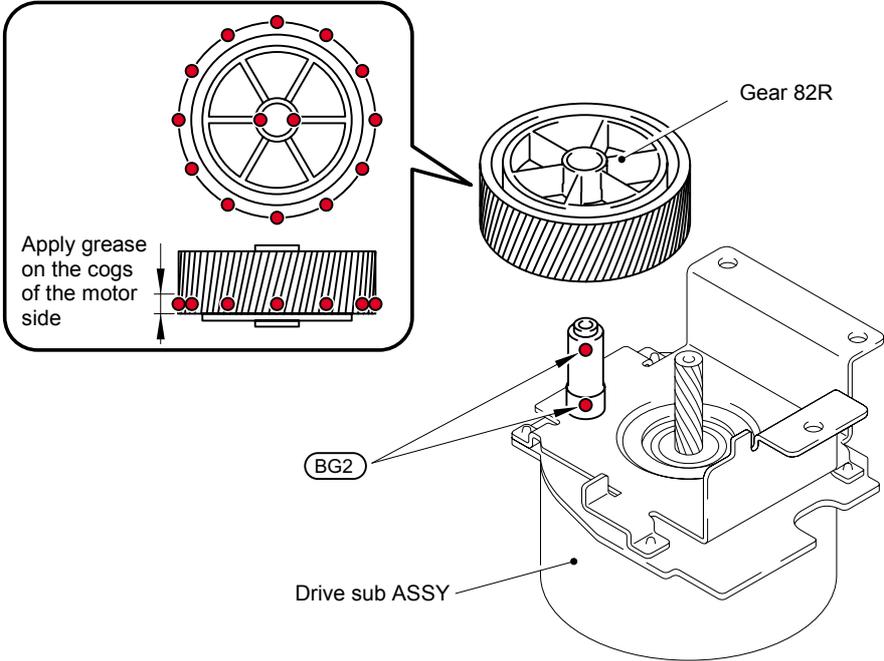
15 · High-Voltage PS PCB ASSY



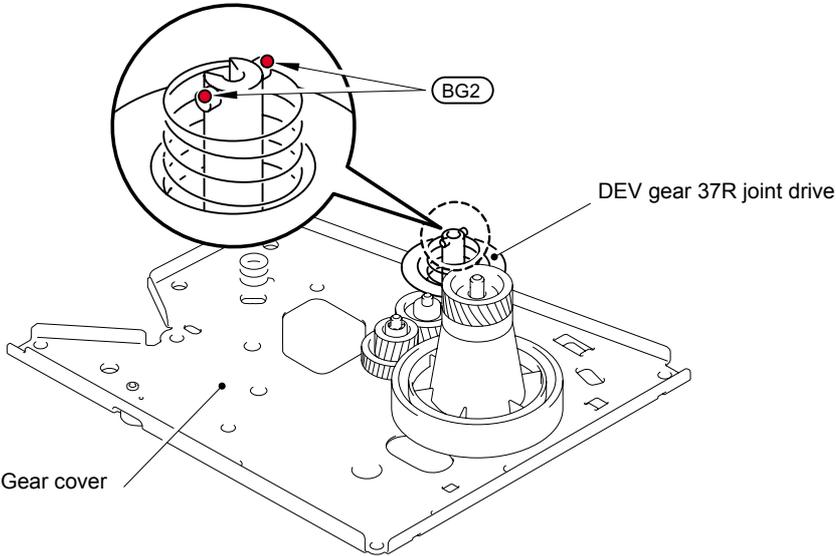
16 · Wireless PCB (PCB T60H929.00 ASSY 02)



5. LUBRICATION

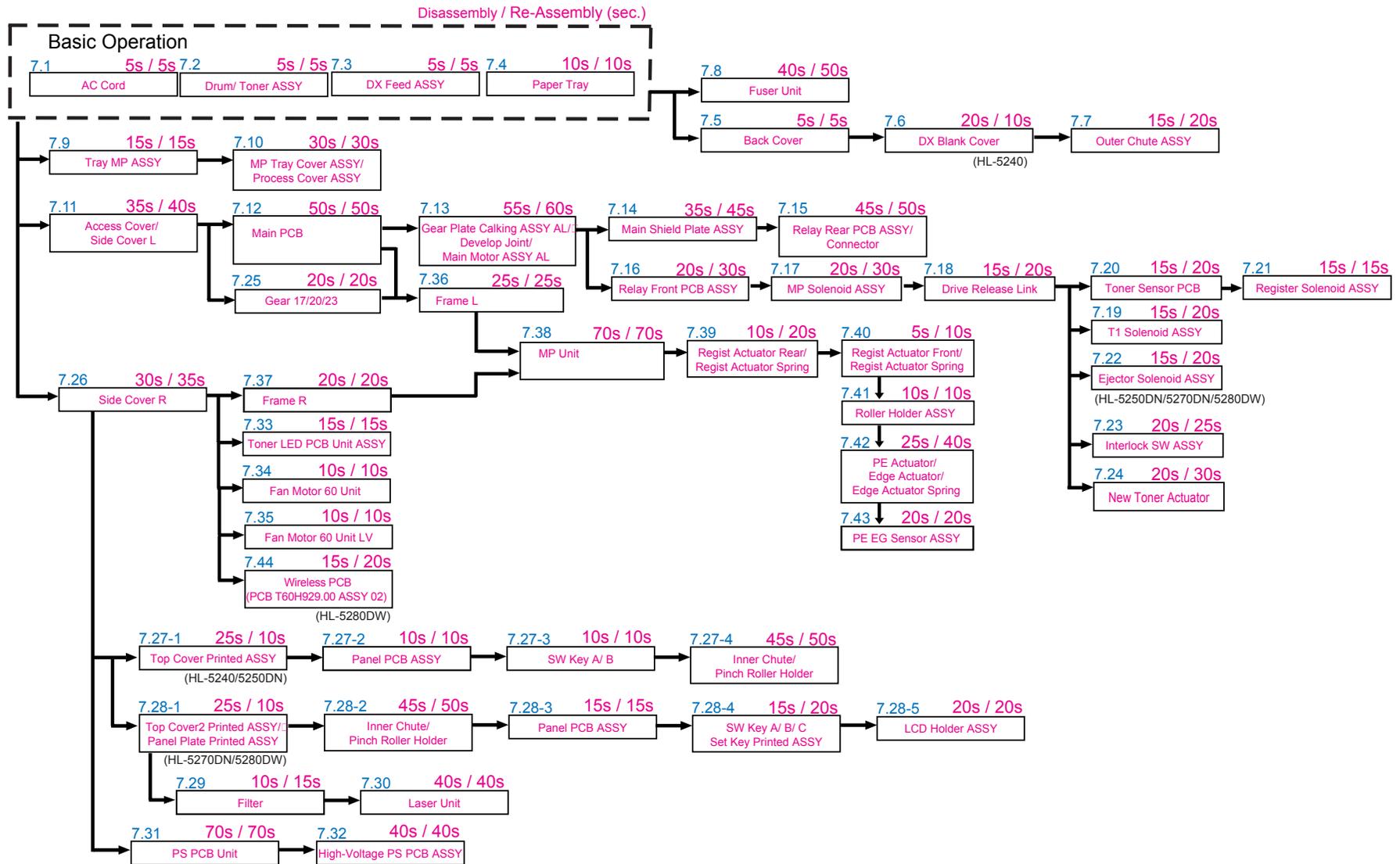


* BG2: KANTO KASEI BG- MU (2 mm dia. Ball)



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

6. DISASSEMBLY FLOW



7. DISASSEMBLY PROCEDURE

7.1 AC Cord

- (1) Disconnect the AC cord from the Printer.

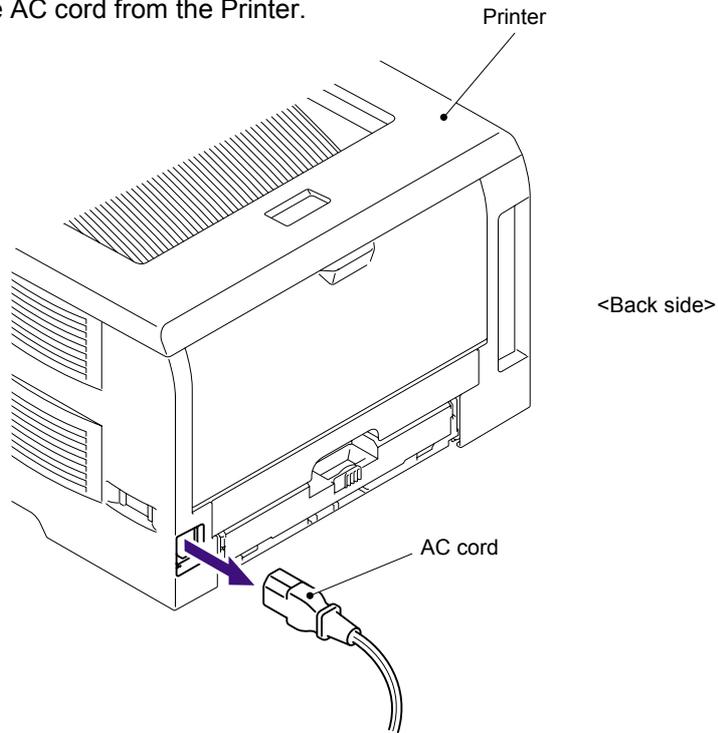


Fig. 5-2

7.2 Drum/Toner ASSY

- (1) Press the front cover release button.
- (2) Open the Front cover.
- (3) Remove the Drum/toner ASSY.

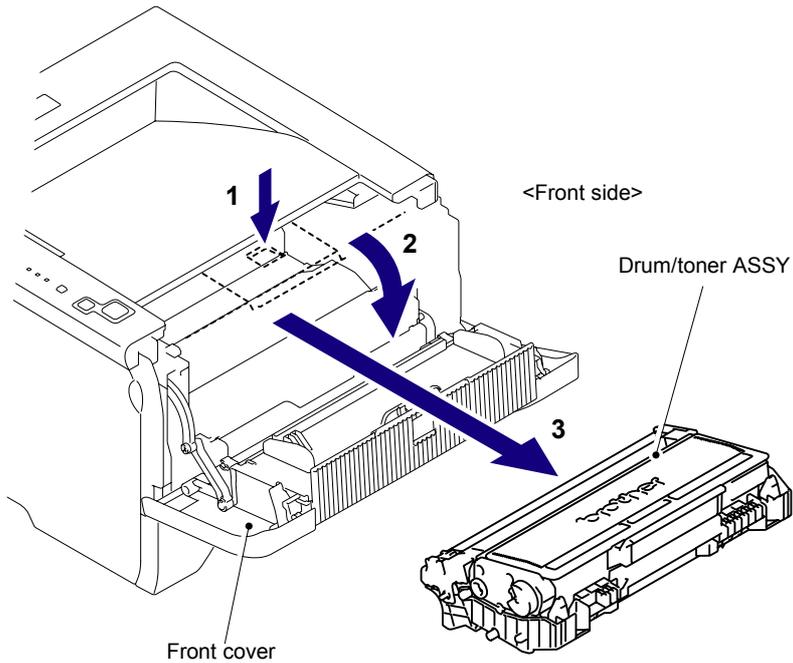


Fig. 5-3

7.3 DX Feed ASSY

- (1) Remove the DX feed ASSY.

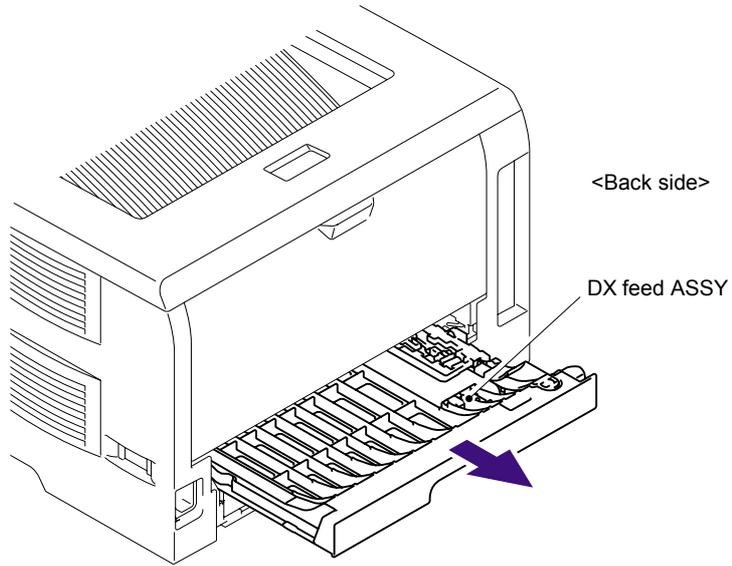


Fig. 5-4

7.4 Paper Tray

- (1) Close the Front cover.
- (2) Pull out the Paper tray.
- (3) Remove the paper from the Paper tray.

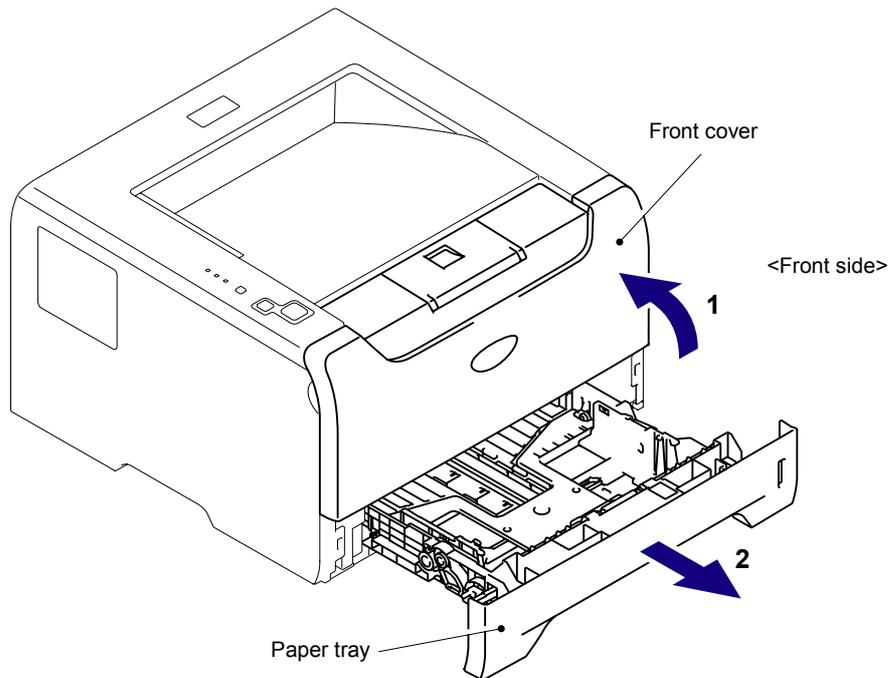


Fig. 5-5

- (4) Pull up the back side of the Separation pad ASSY.
- (5) Push the Hooks provided on both sides of the Separation pad ASSY inwards.
- (6) Pull up the Separation pad ASSY.

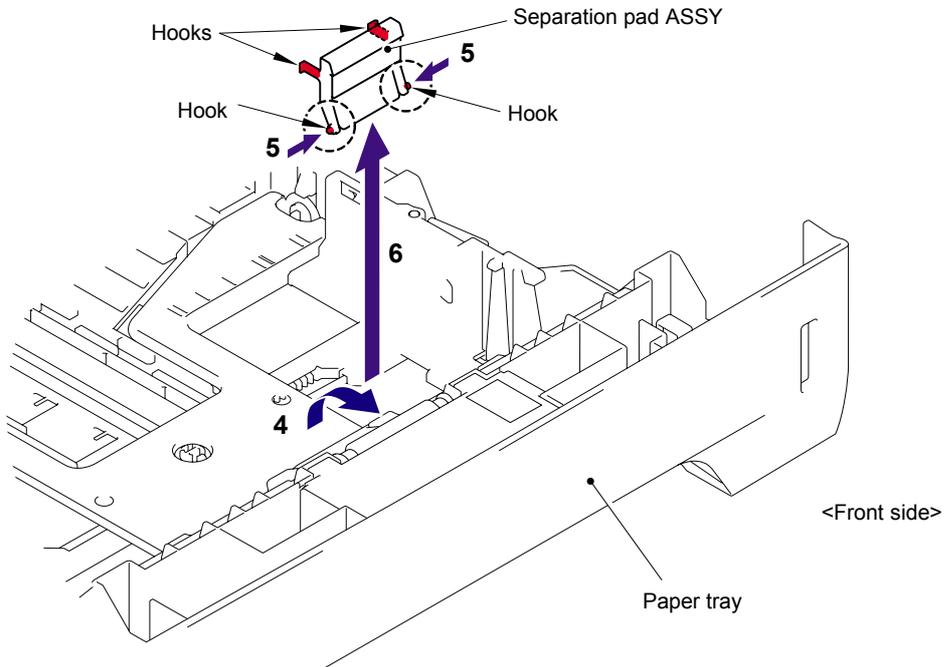


Fig. 5-6

- (7) Remove the Separation pad spring.

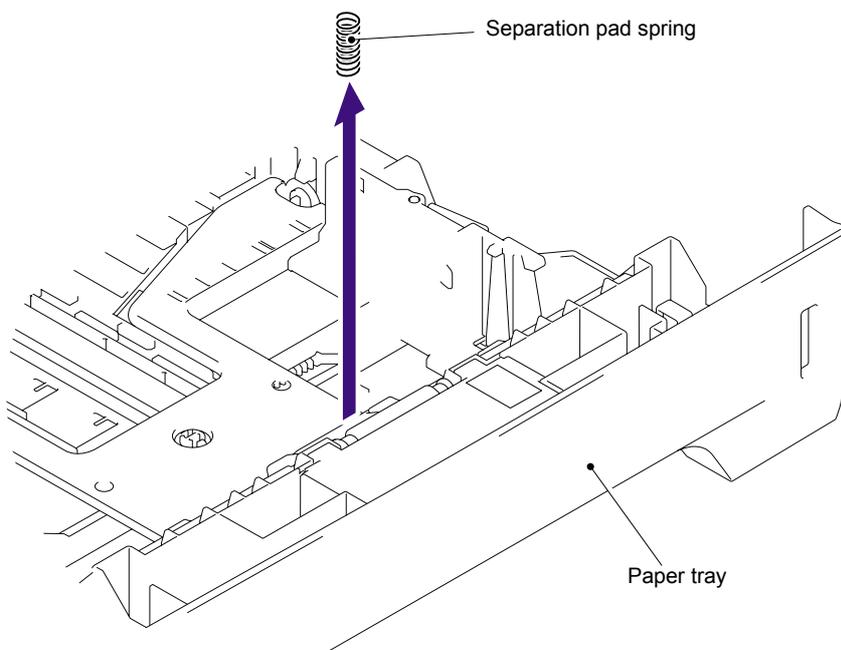


Fig. 5-7

(8) Remove the Lift gear 46.

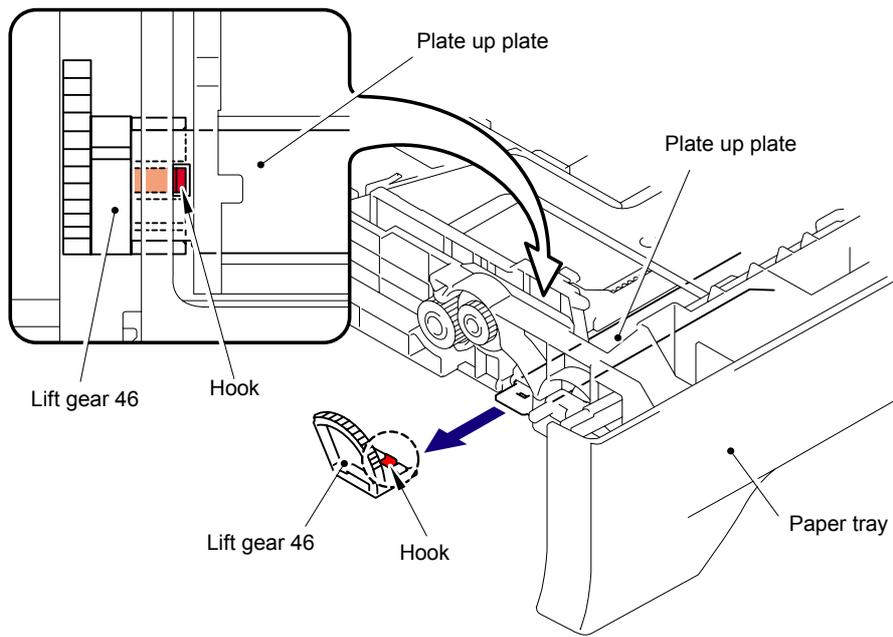


Fig. 5-8

(9) Remove the Gear 21-16.

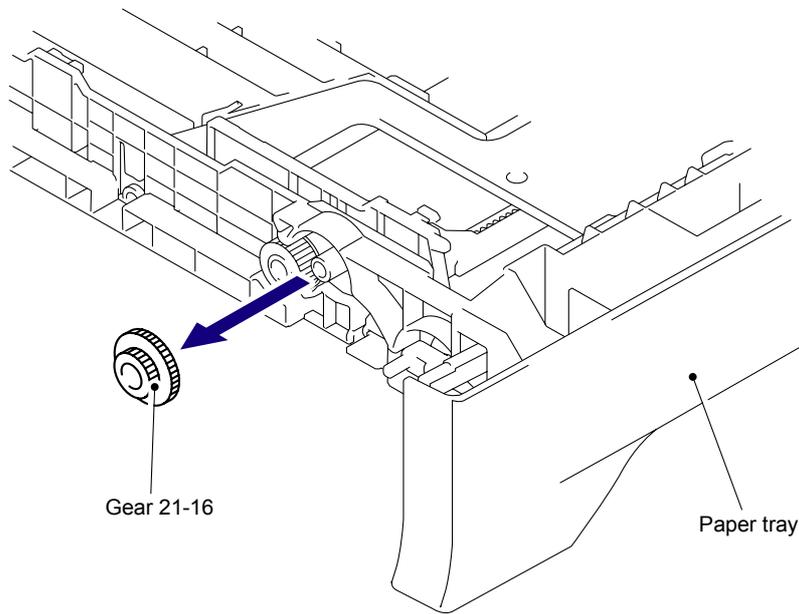


Fig. 5-9

(10) Remove the Gear 15.

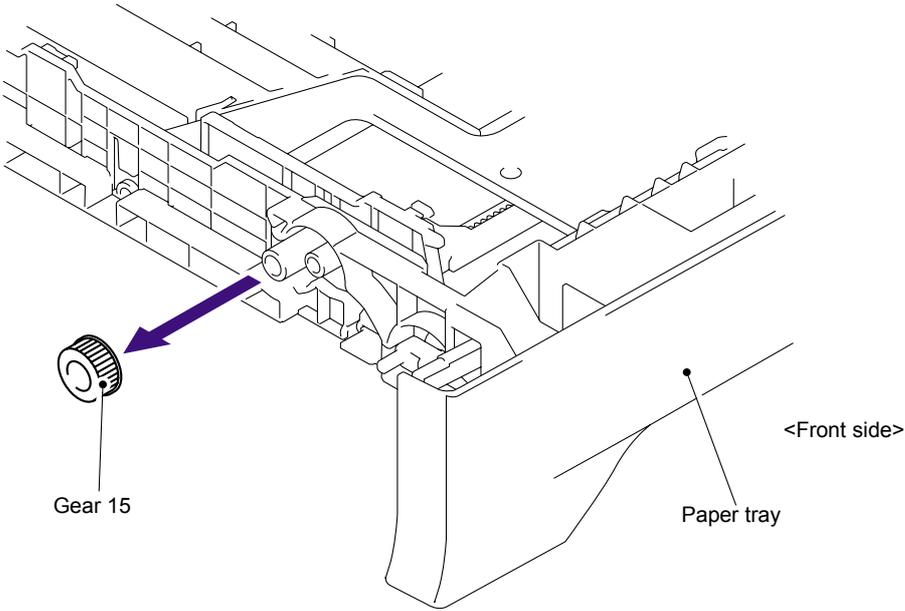


Fig. 5-10

7.5 Back Cover

- (1) Open the Back cover.
- (2) Remove the Arms of the Back cover from the Pins.
- (3) Remove the Back cover.

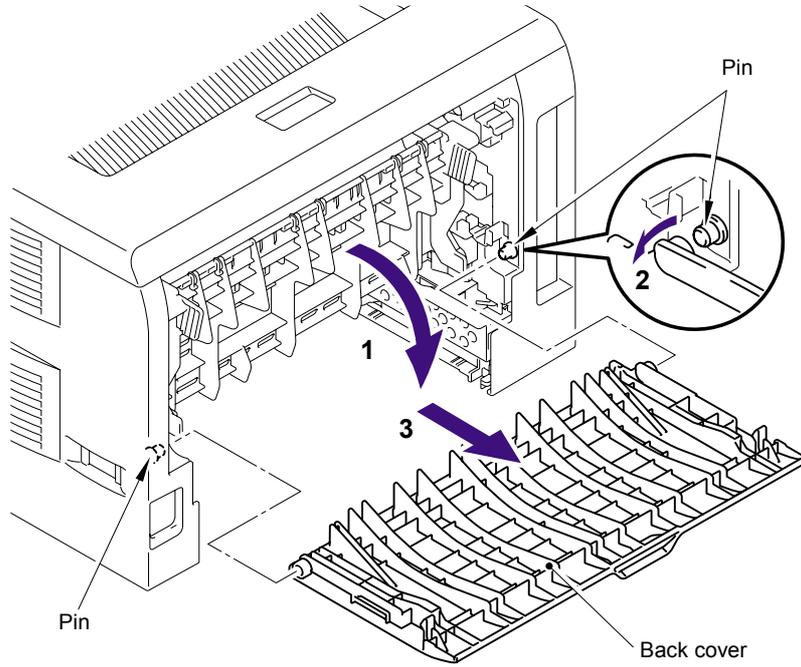


Fig. 5-11

7.6 DX Blank Cover (For HL-5240)

- (1) Push the Hooks on both sides of the DX blank cover inwards to release them, and remove the DX blank cover.

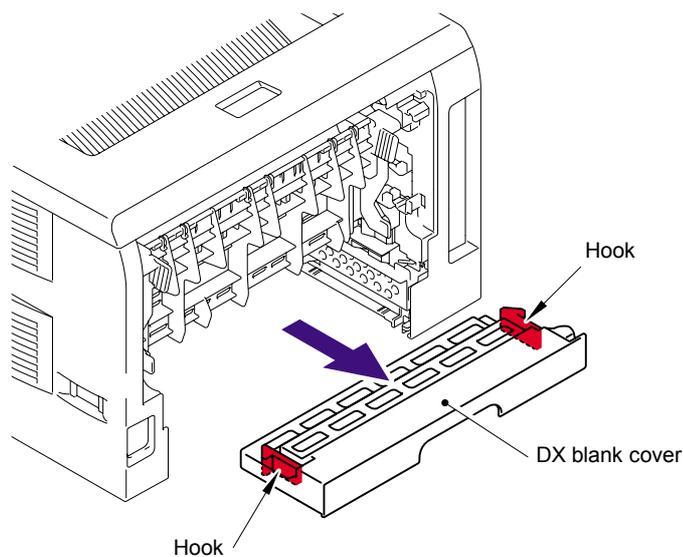


Fig. 5-12

7.7 Outer Chute ASSY

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

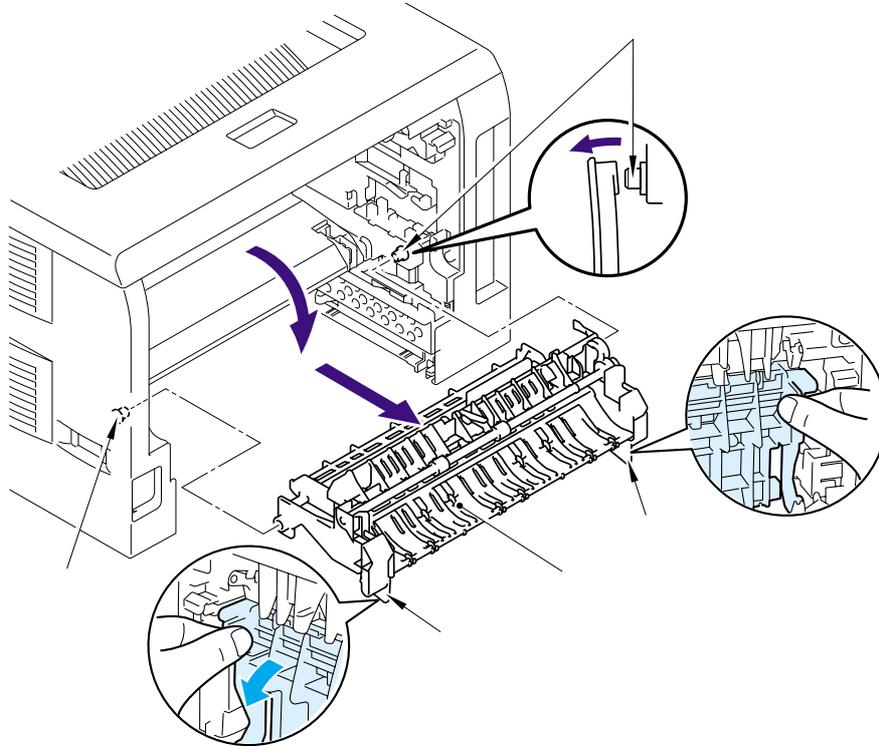


Fig. 5-13

- (4) Remove the bind B M3x8 Taptite screw.
- (5) Lift up the side where the eject actuator is assembled of the Sub outer chute slightly (to the direction of 5a), and move the Sub outer chute to the direction of 5b.
- (6) Lift up the Sub outer chute to remove.

•

- (7) Push the Hook of the Sub outer chute (indicated by the arrow 7a), and move the Eject actuator to the direction of 7b.
- (8) Lift up the Eject actuator to remove.
- (9) Remove the Eject actuator spring.

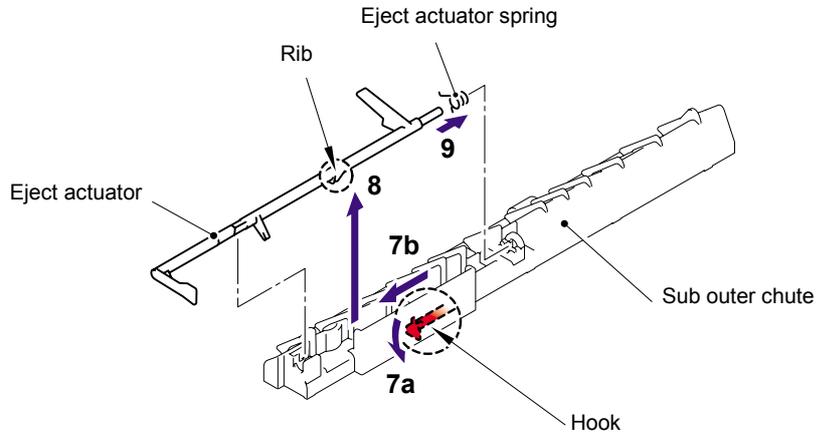


Fig. 5-15

Assembling Note:

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

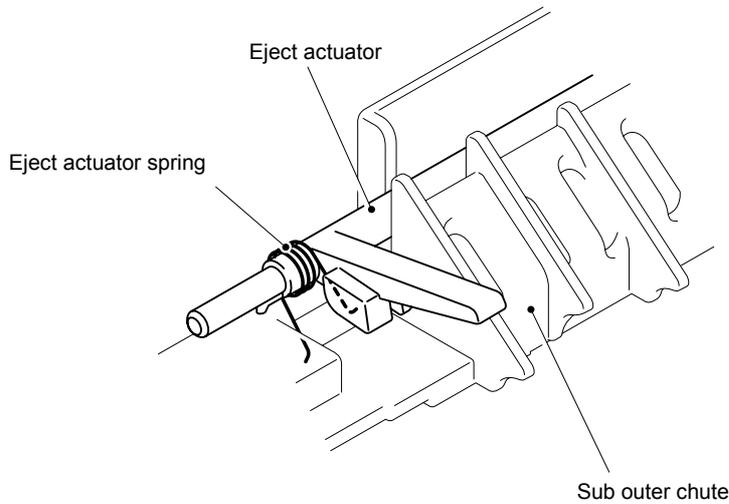


Fig. 5-16

7.8 Fuser Unit

- (1) Remove the bind B M4x16 Taptite screw. Release the Hooks in the order of 1a, 1b and 1c. Remove the FU harness cover 1.

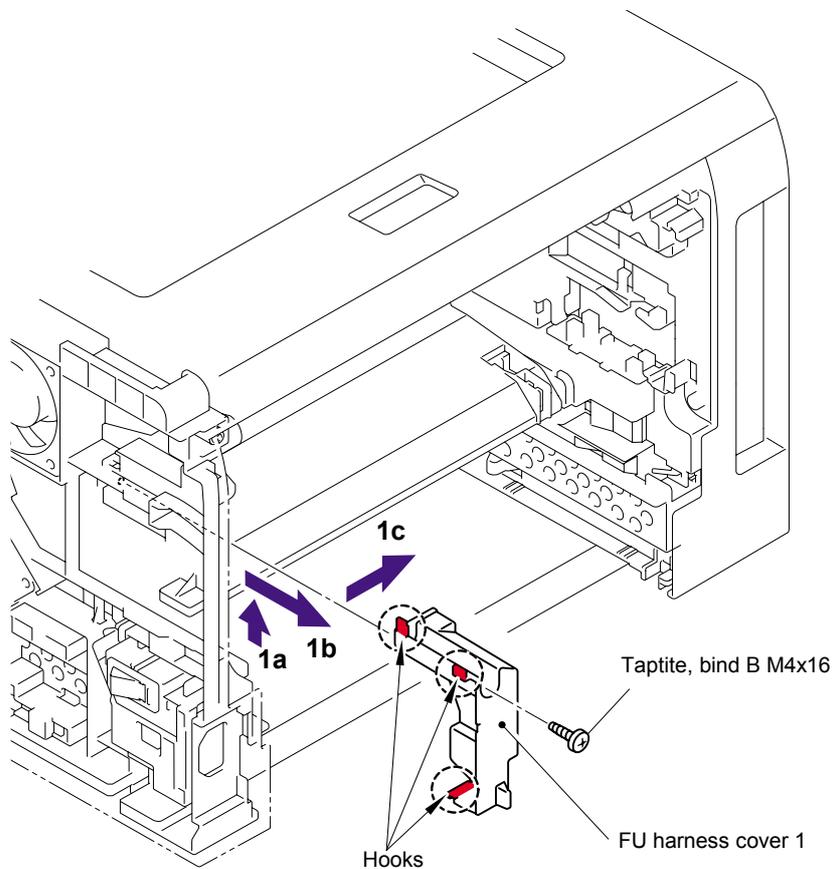


Fig. 5-17

- (2) Remove the Heater terminal L and Heater terminal S from the Fuser unit while holding the Fuser unit.

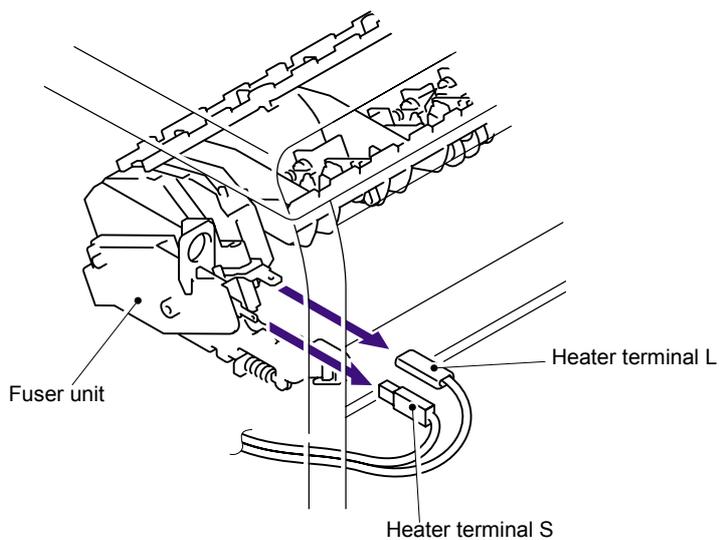


Fig. 5-18

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

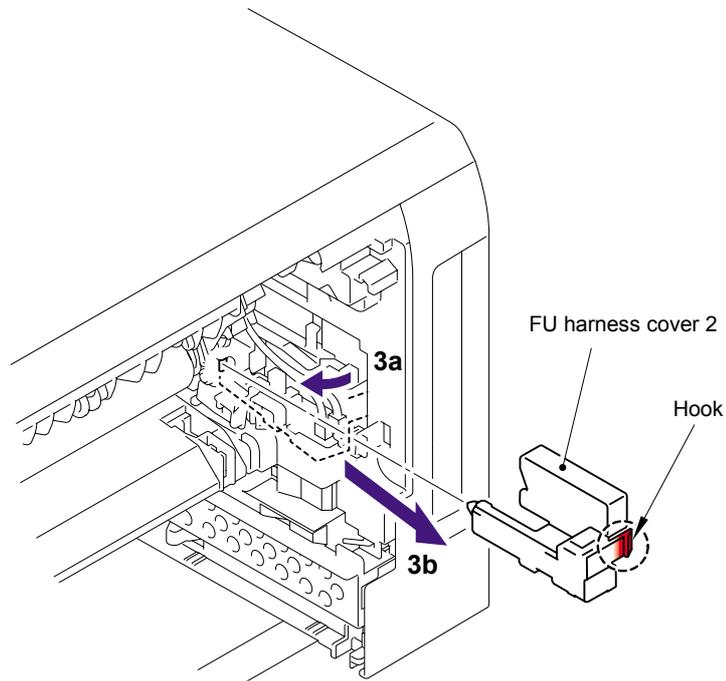


Fig. 5-19

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

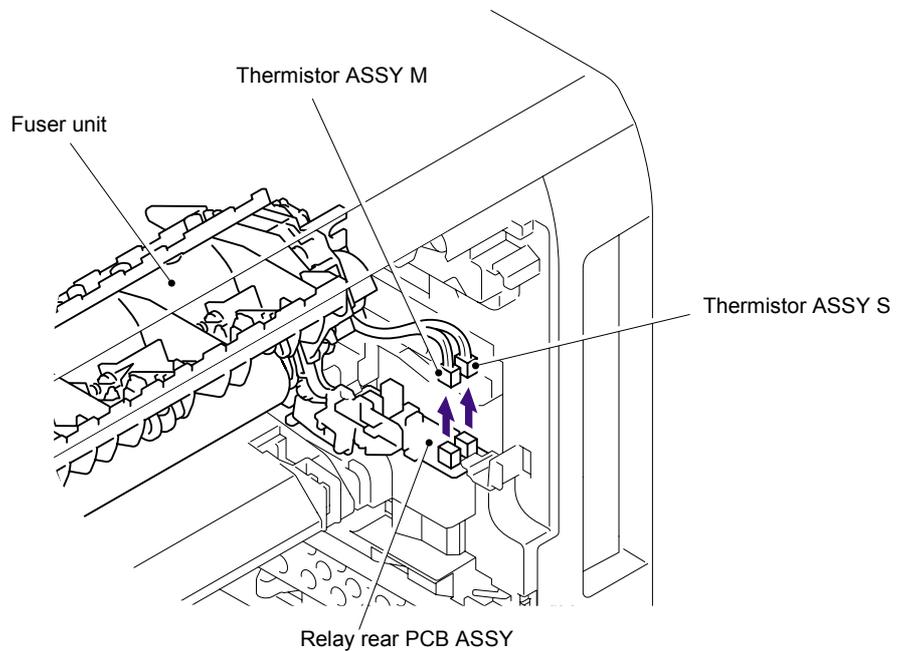


Fig. 5-20

- (5) Remove the cup B M4x16 Taptite screw, and then remove Fuser unit.

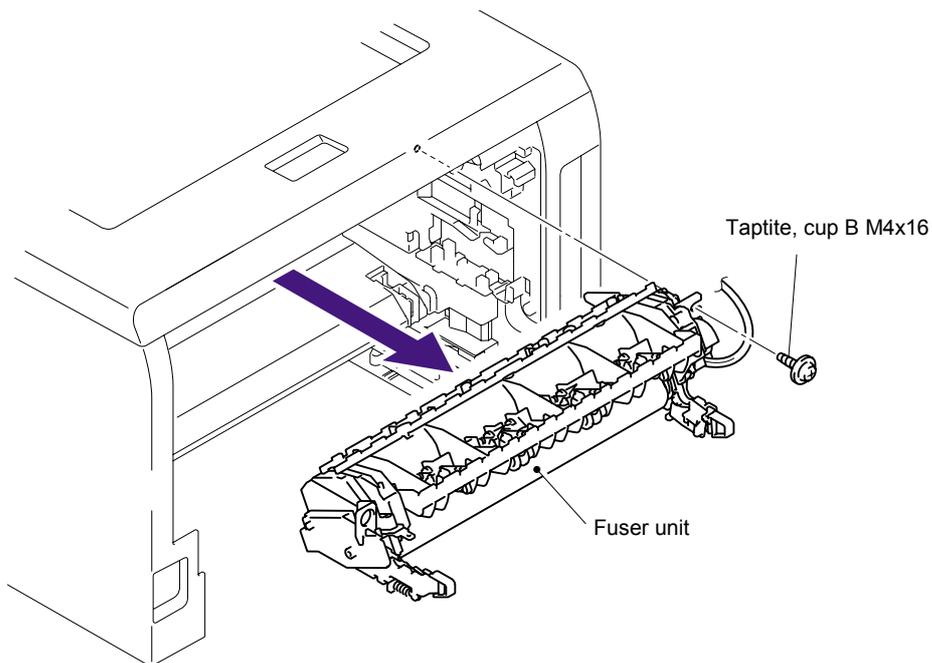


Fig. 5-21

7.9 Tray MP ASSY

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

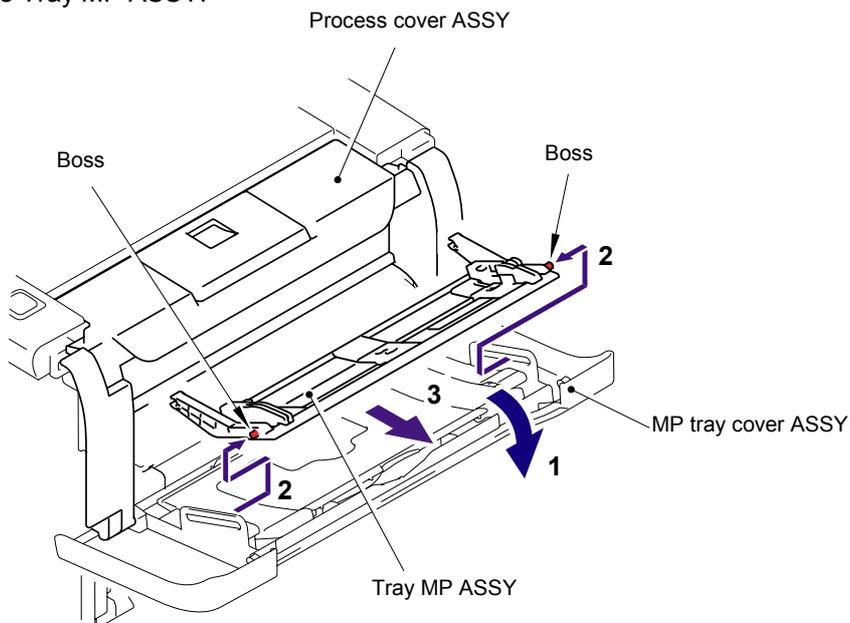


Fig. 5-22

7.10 MP Tray Cover ASSY/Process Cover ASSY

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

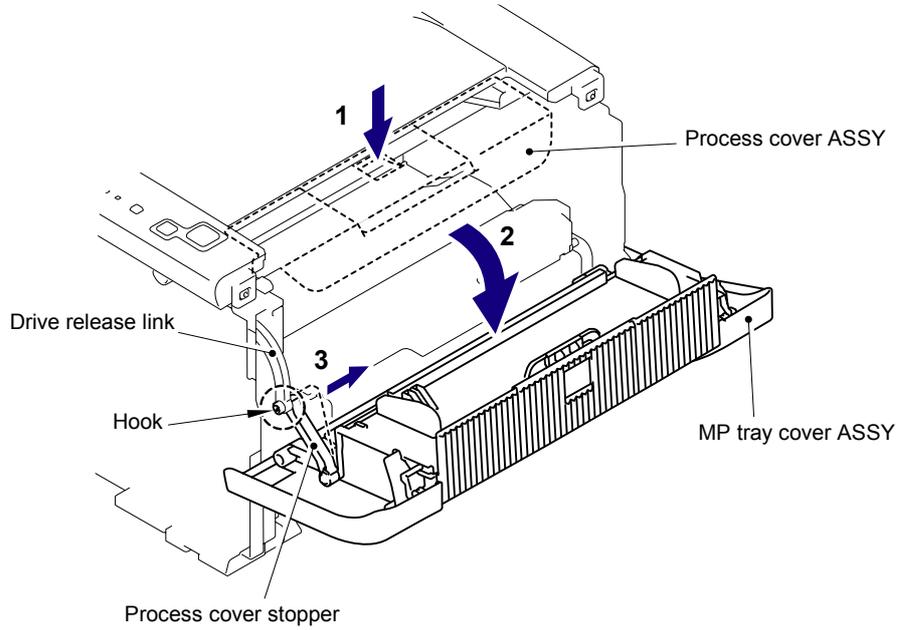


Fig. 5-23

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

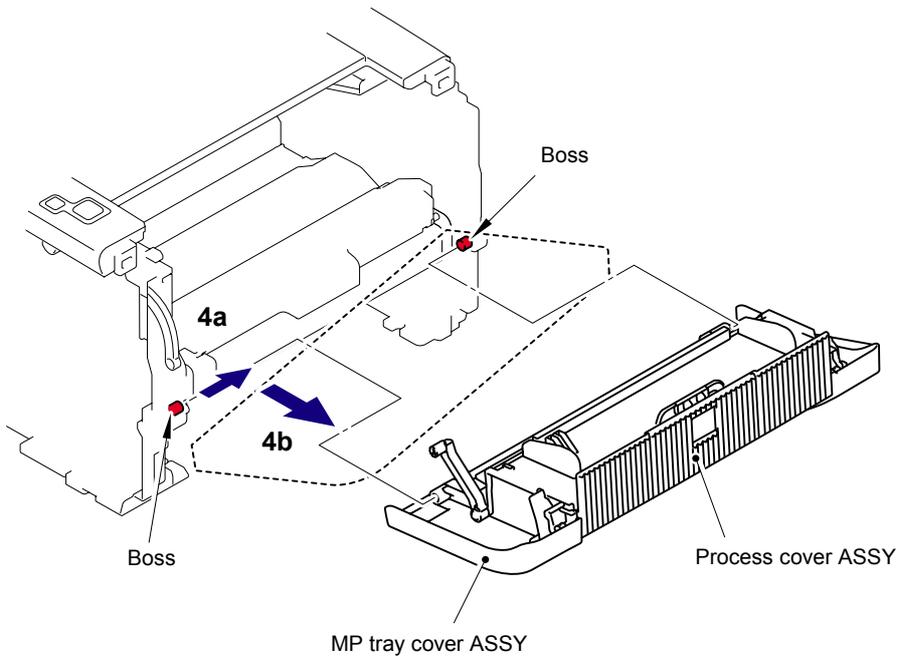


Fig. 5-24

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

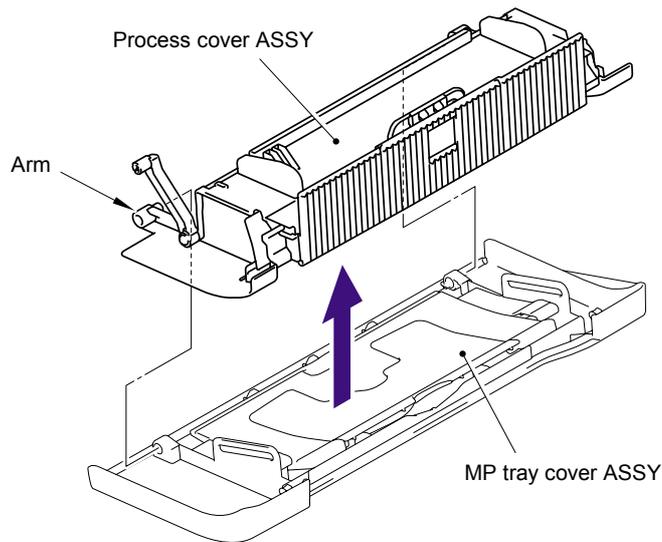


Fig. 5-25

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

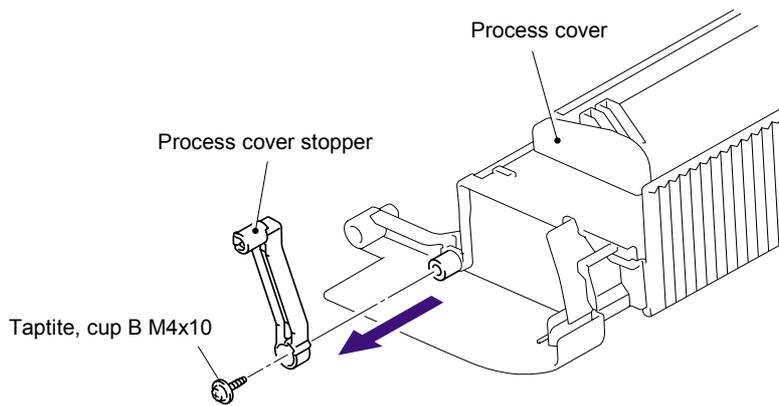


Fig. 5-26

- (7) Remove the Support lap from the Process cover.

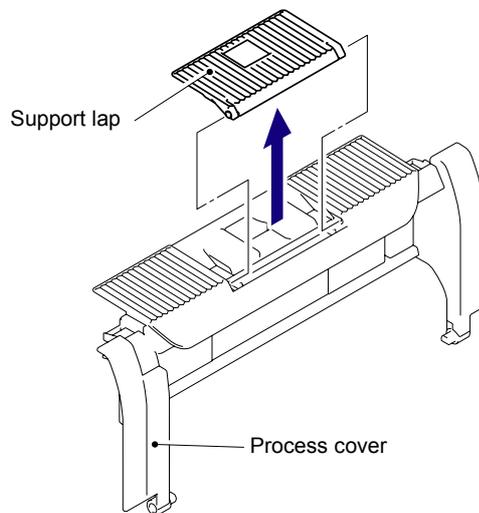


Fig. 5-27

7.11 Access Cover/Side Cover L

(1) Remove the Access cover.

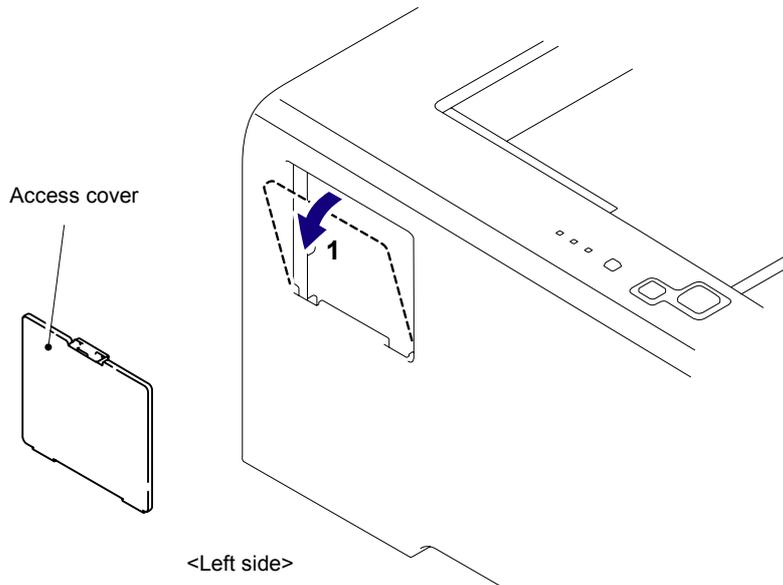


Fig. 5-28

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

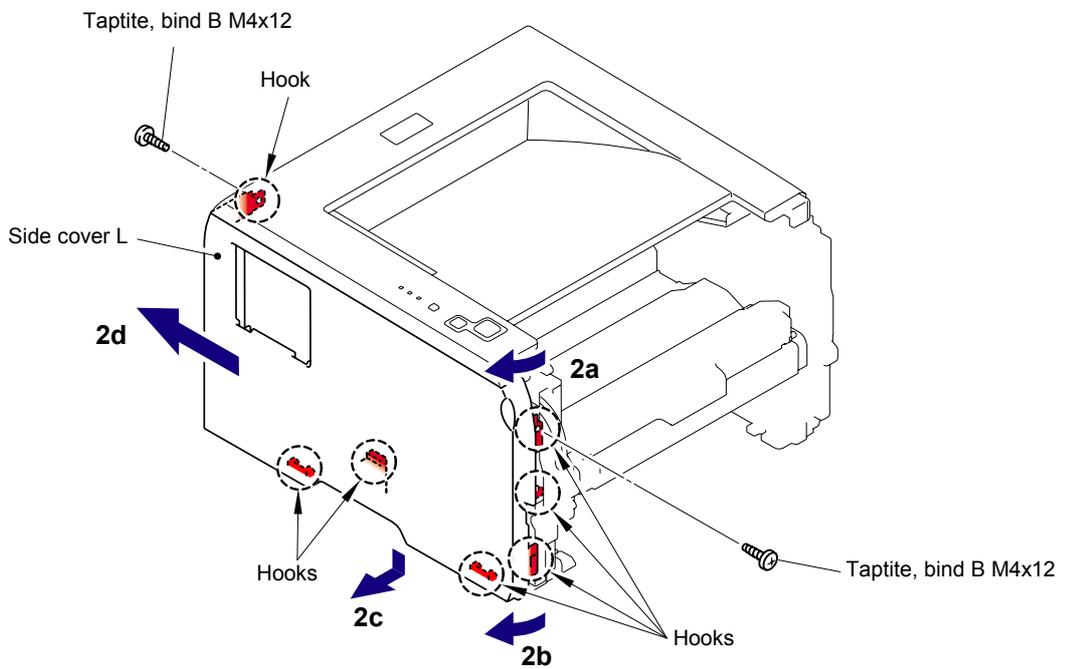


Fig. 5-29

7.12 Main PCB

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

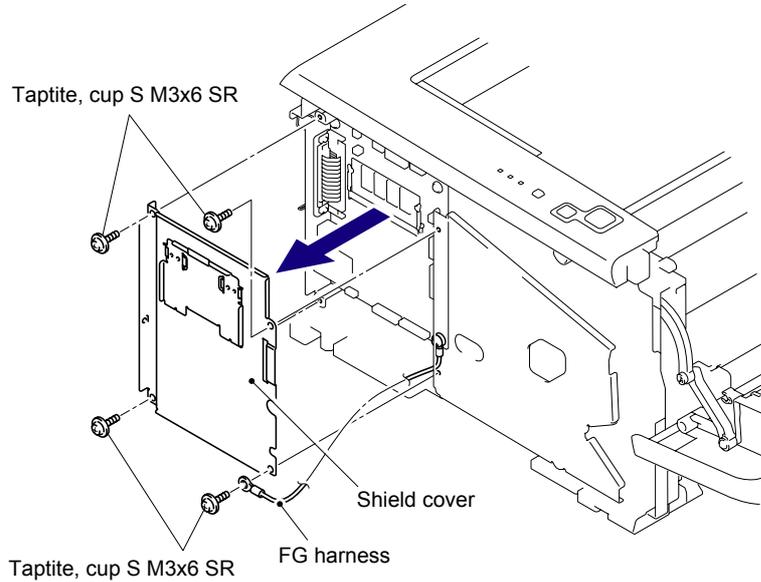


Fig. 5-30

- (2) Disconnect the five connectors and six flat cables from the Main PCB.

NOTE:

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

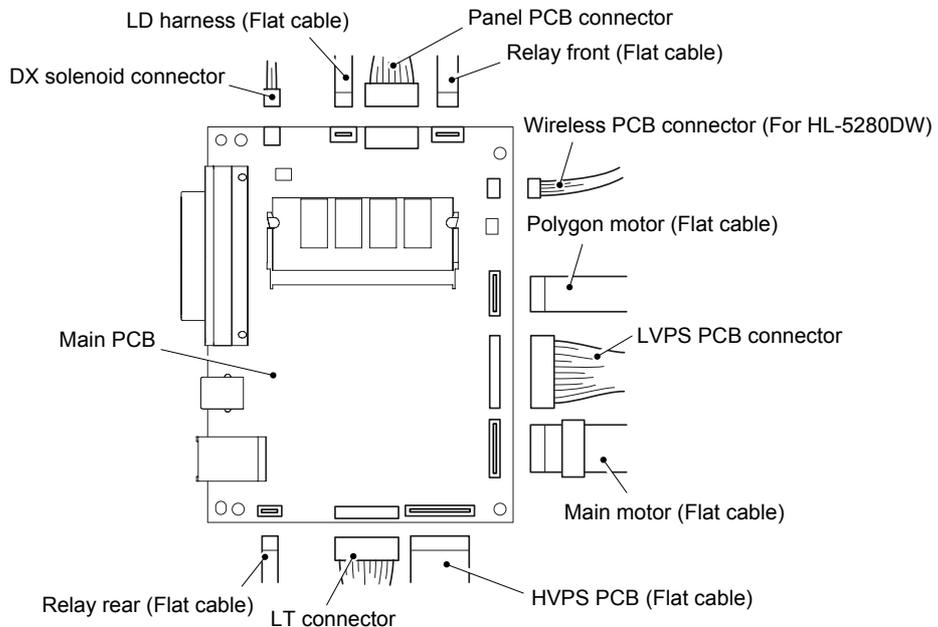


Fig. 5-31

Assembling Note:

When assembling the Main PCB, ensure to place the Ferrite Core correctly. Refer to **“APPENDIX 7.LOCATION OF THE FERRITE CORE”** in details.

- (3) Remove the four cup S M3x6 SR Taptite screws and two Screws to remove the Main PCB by following the direction of 3a and 3b.

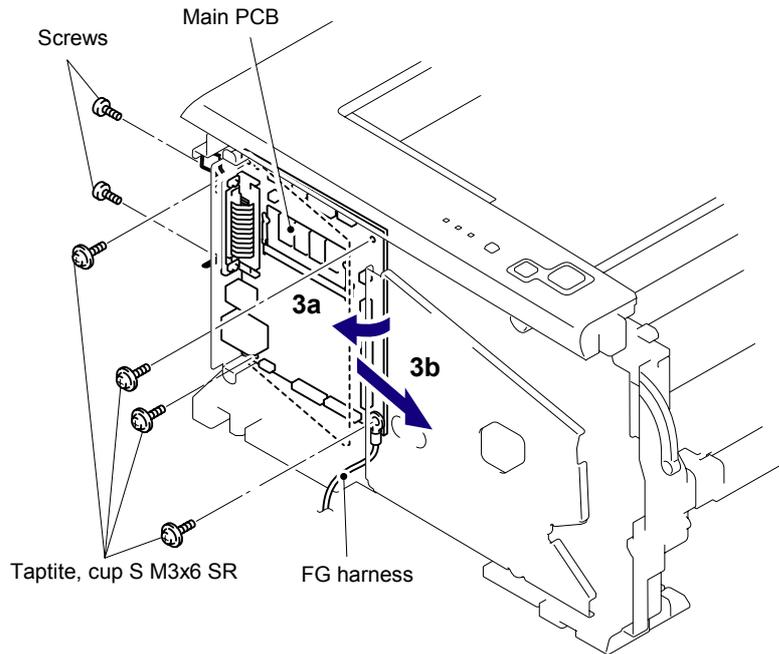


Fig. 5-32

7.13 Gear Plate Calking ASSY AL/Develop Joint/ Main Motor ASSY AL

- (1) Place the printer body so that the Frame L is at the top.
- (2) Remove the eight bind B M4x12 Taptite screws and one cup S M3x6 taptite screw.
- (3) Remove the Gear plate calking ASSY AL from the Frame L.

NOTE:

Be careful not to drop the gear.

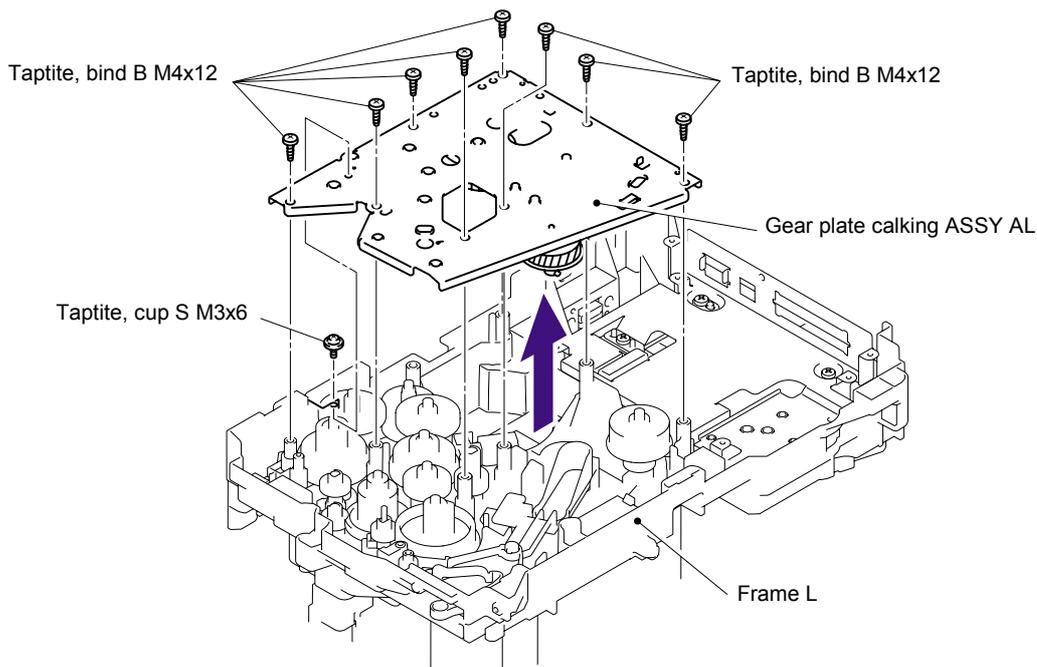


Fig. 5-33

- (4) Remove the four cup S M3x6 Taptite screws, and then remove the Main motor ASSY AL.

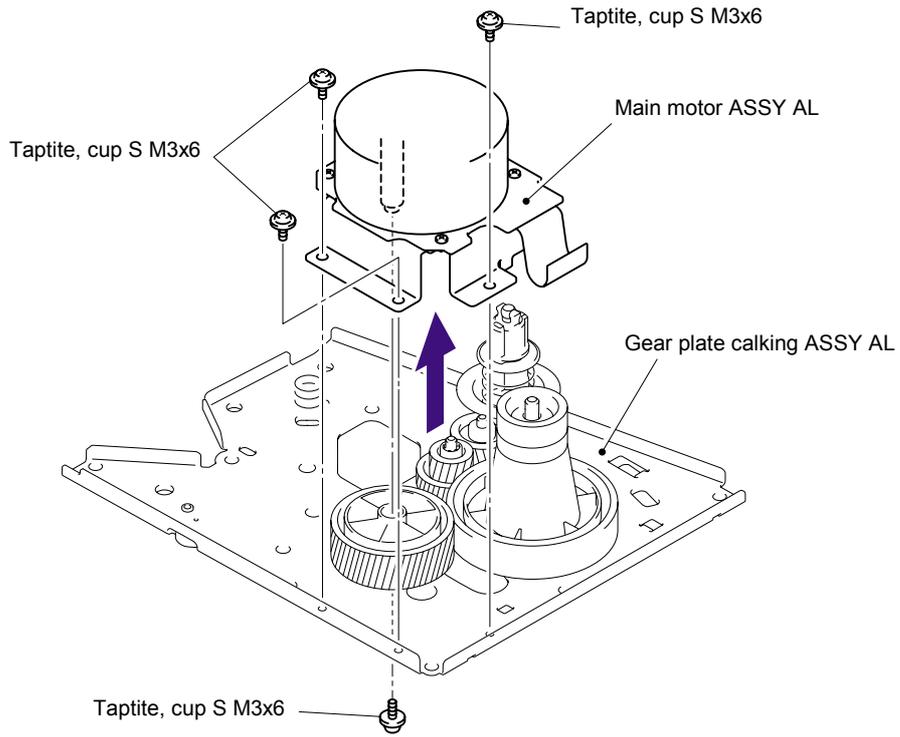


Fig. 5-34

- (5) Remove the Develop joint from the Gear plate calking ASSY AL.

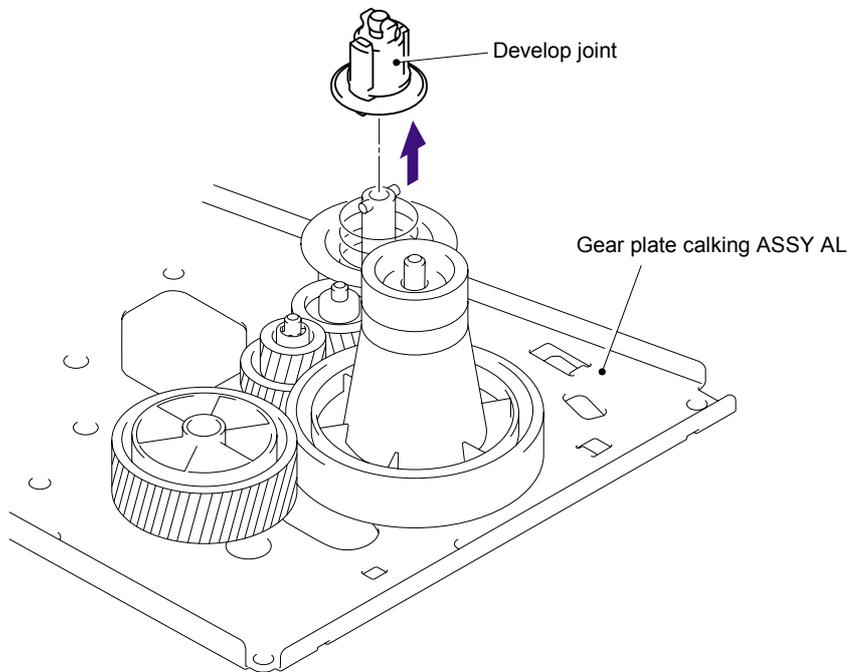


Fig. 5-35

7.14 Main Shield Plate ASSY

- (1) Remove the Insulation sheet.

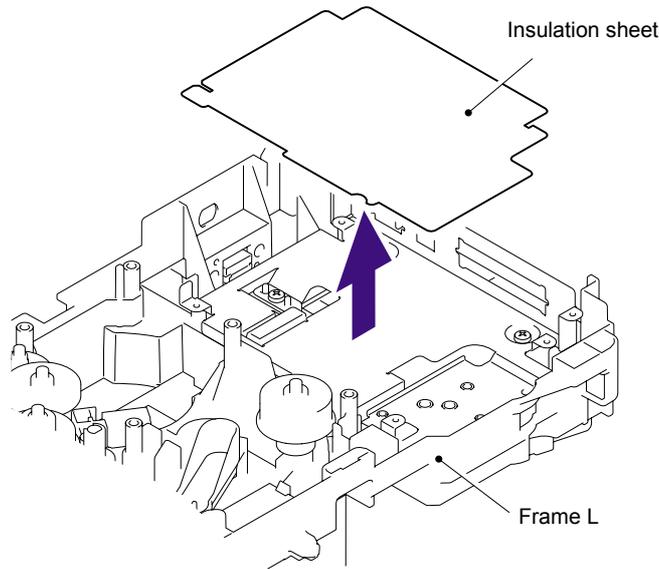


Fig. 5-36

- (2) Remove the bind B M4x12 Taptite screw.
- (3) Remove the bind B M4x12 Taptite screw, and then remove the Plate.

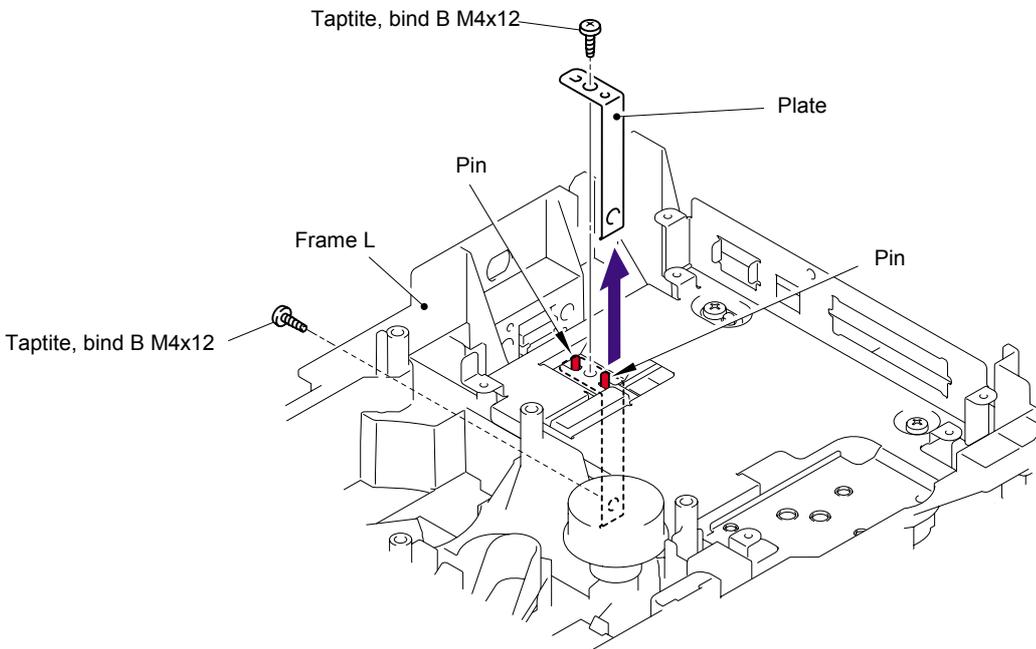


Fig. 5-37

Assembling Note:

- When assembling the Plate, ensure to put the Plate into the base plate LV.
- When assembling the Plate, secure the screw at the Frame L side first, then the screw at the base plate LV side.

- (4) Remove the three bind B M4x12 Taptite screws and cup S M3x6 Taptite screw, and then remove the Main shield plate ASSY.

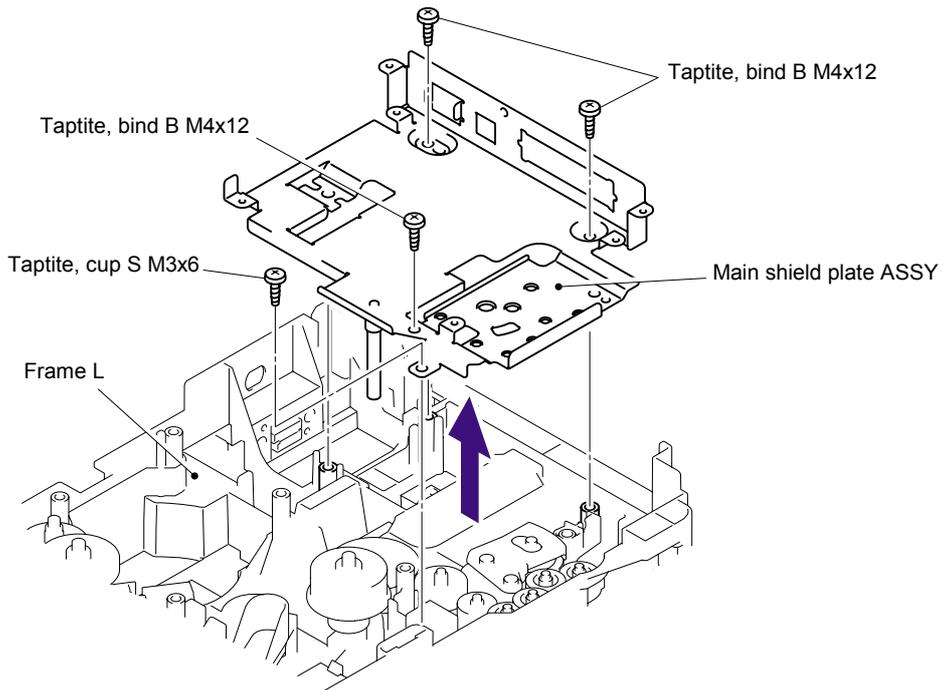


Fig. 5-38

Assembling Note:

When assembling the Main shield plate ASSY, be careful not to bend the Ground wire AL of the Frame L.

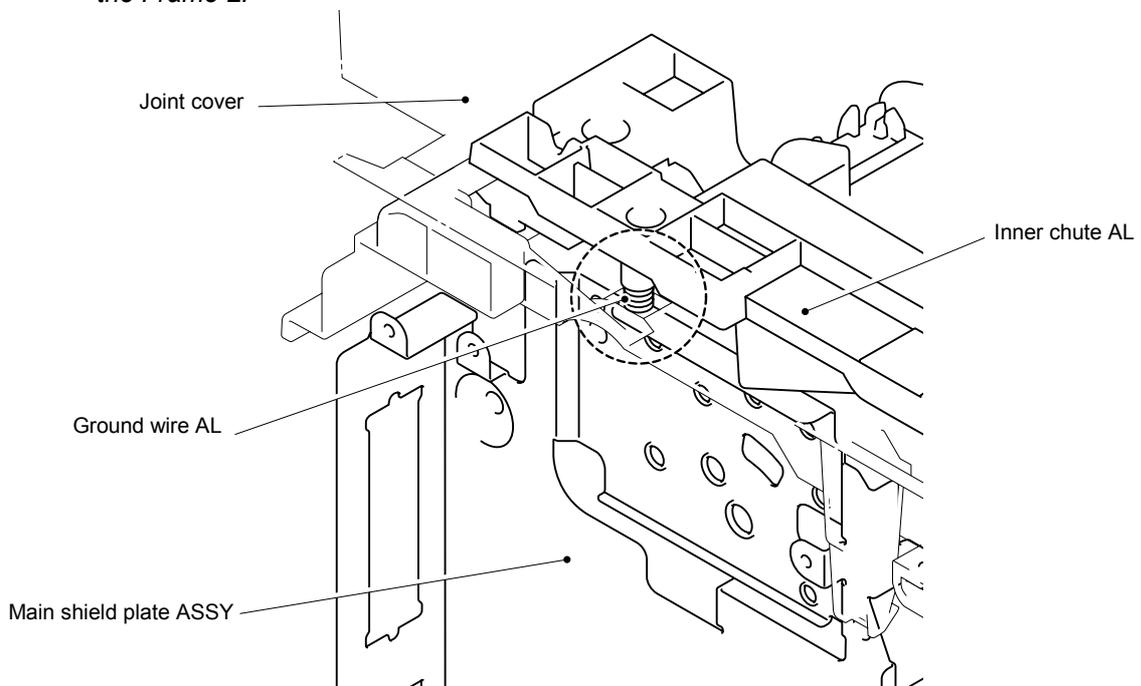


Fig. 5-39

7.15 Relay Rear PCB ASSY/Connector

- (1) Remove the Relay rear PCB ASSY.

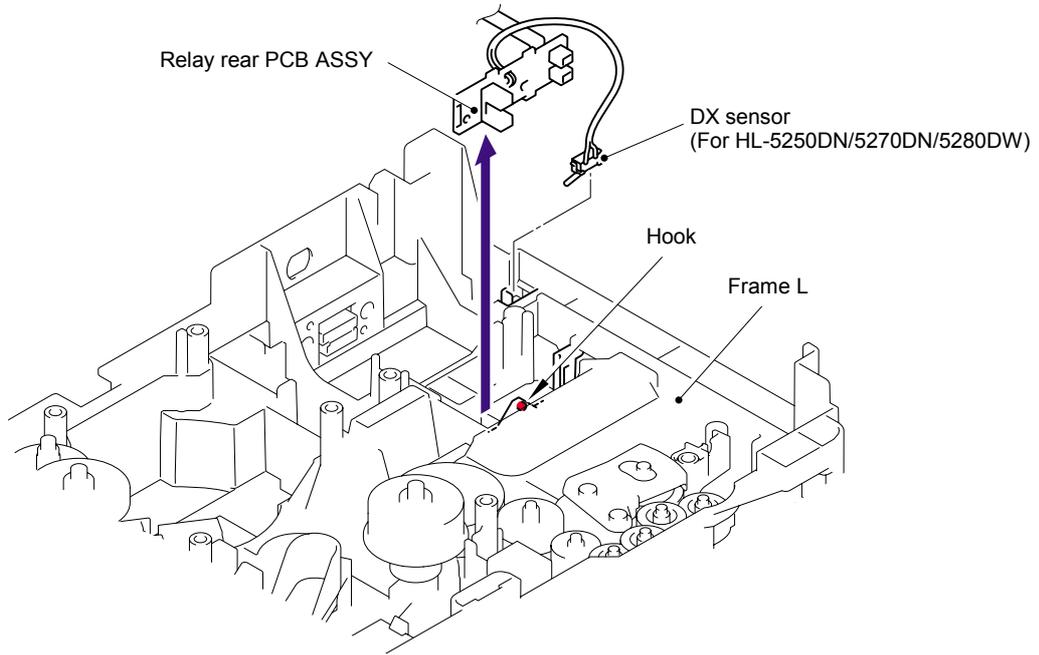


Fig. 5-40

- (2) Remove the Connector harness.
- (3) Disconnect the LT connector while pressing the Hook inwards.

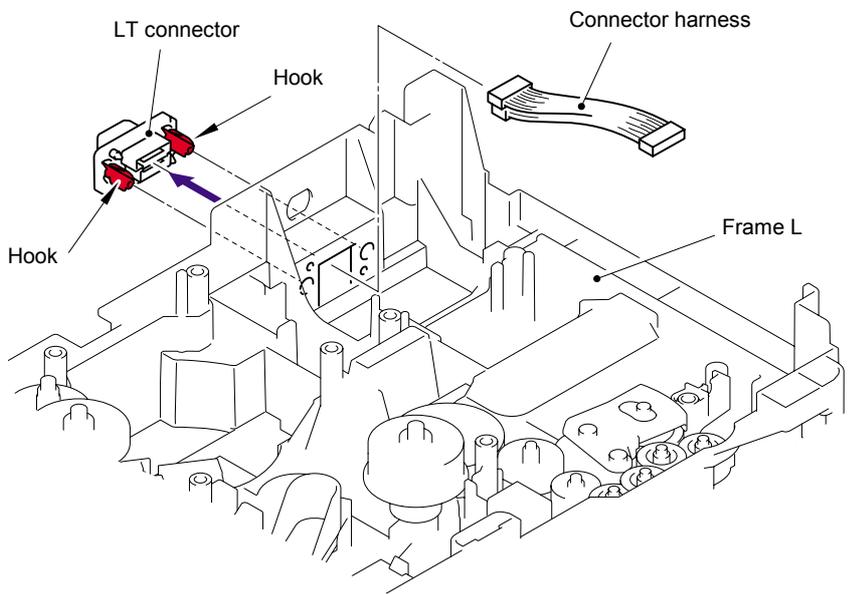


Fig. 5-41

Assembling Note:
When assembling the LT connector, ensure that its direction is correct referring to the figure below.

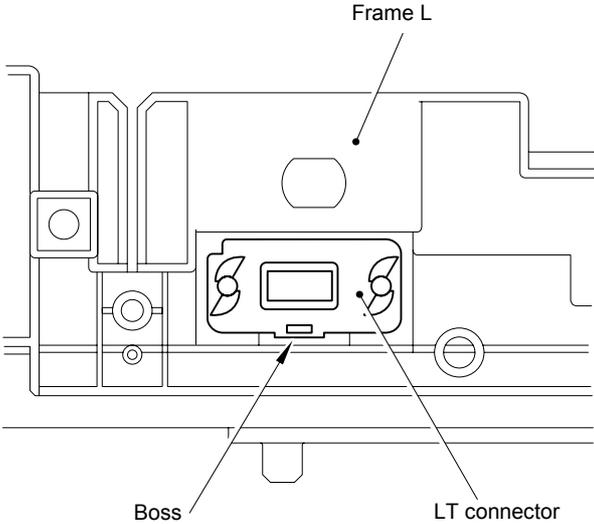


Fig. 5-42

7.16 Relay Front PCB ASSY

- (1) Remove the Relay front PCB ASSY.
- (2) Disconnect the five connectors from the Relay front PCB ASSY.

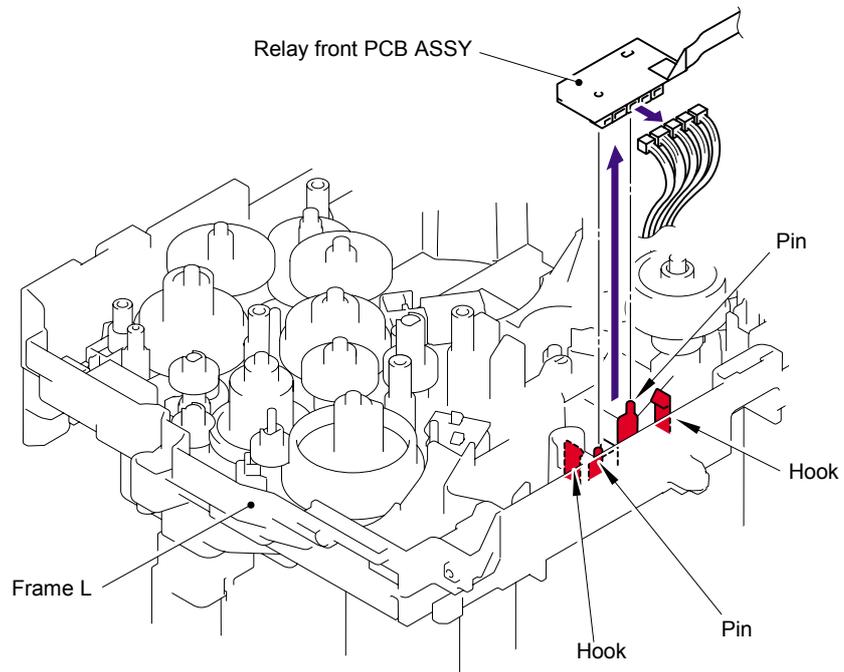


Fig. 5-43

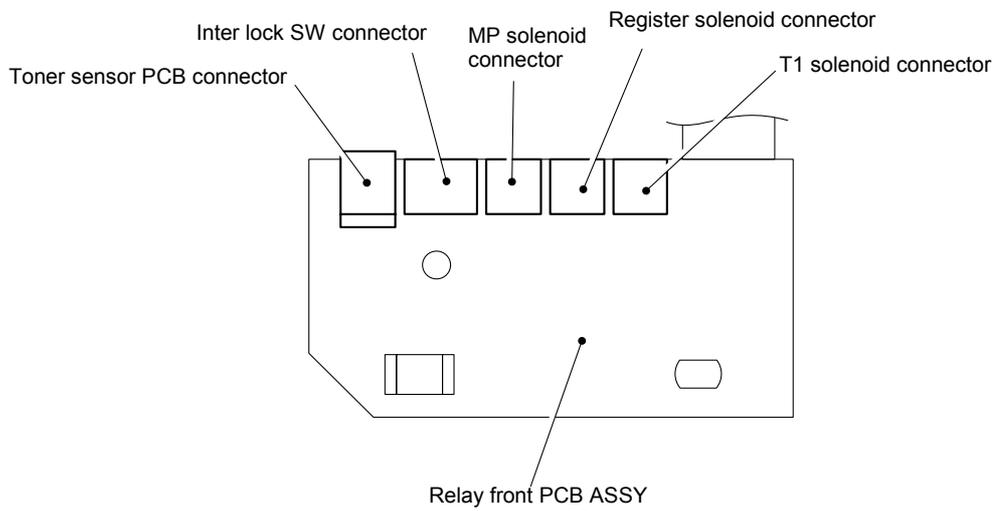


Fig. 5-44

7.17 MP Solenoid ASSY

- (1) Remove the cup B M3x8 Taptite screw, and then remove the Spring.

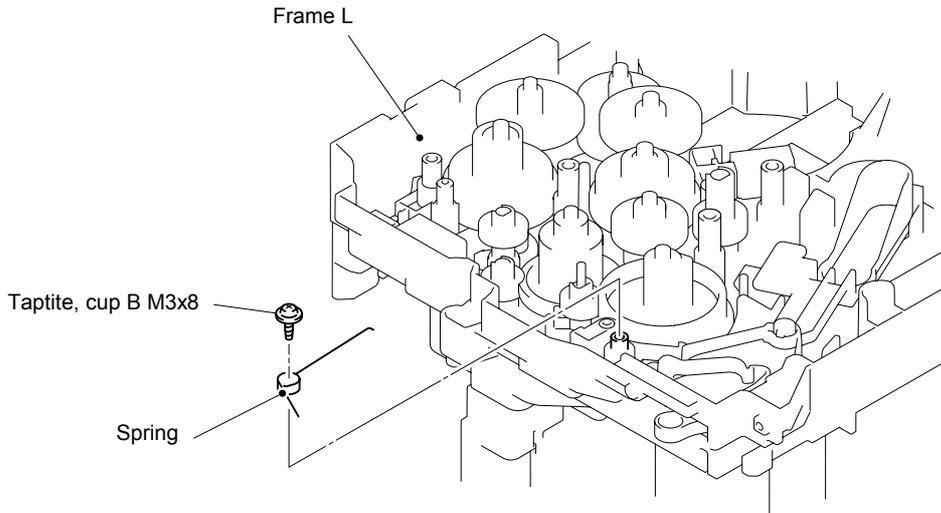


Fig. 5-45

Assembling Note:

When assembling the Spring, ensure that its direction is correct referring to the figure below.

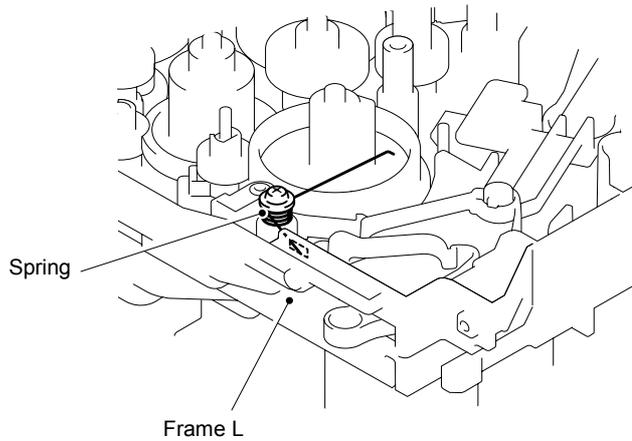


Fig. 5-46

- (2) Remove the bind B M3x10 Taptite screw.
- (3) Remove the MP solenoid ASSY, Solenoid release spring P/R and MP solenoid lever.

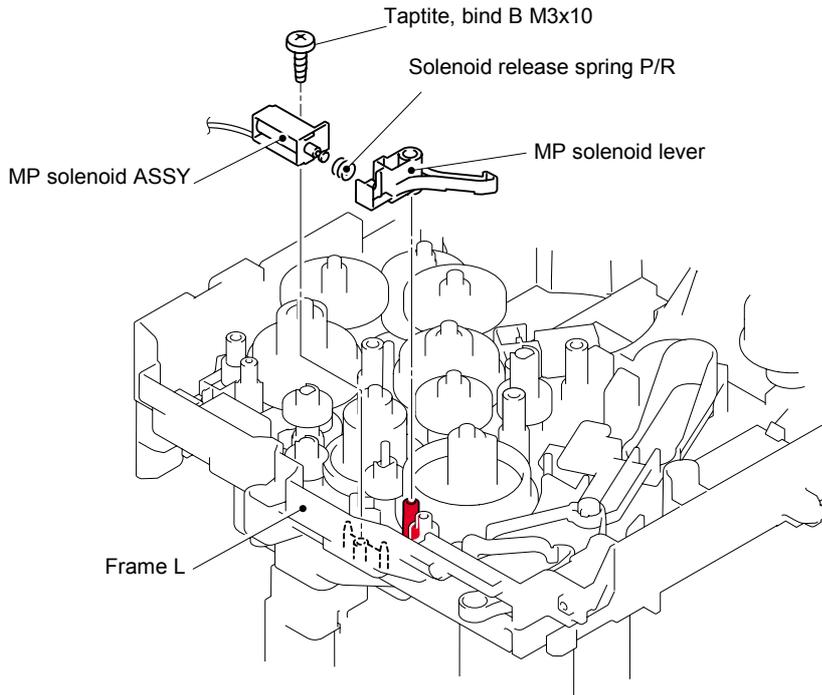


Fig. 5-47

7.18 Drive Release Link

- (1) Lift up the back end of the Drive release cam slightly and remove the Drive release cam from the Frame L.
- (2) Turn the Drive release link to the direction of the arrow 2 until the groove of the Drive release link is aligned with the guide of the boss as shown in the figure below.
- (3) Remove the Drive release cam.

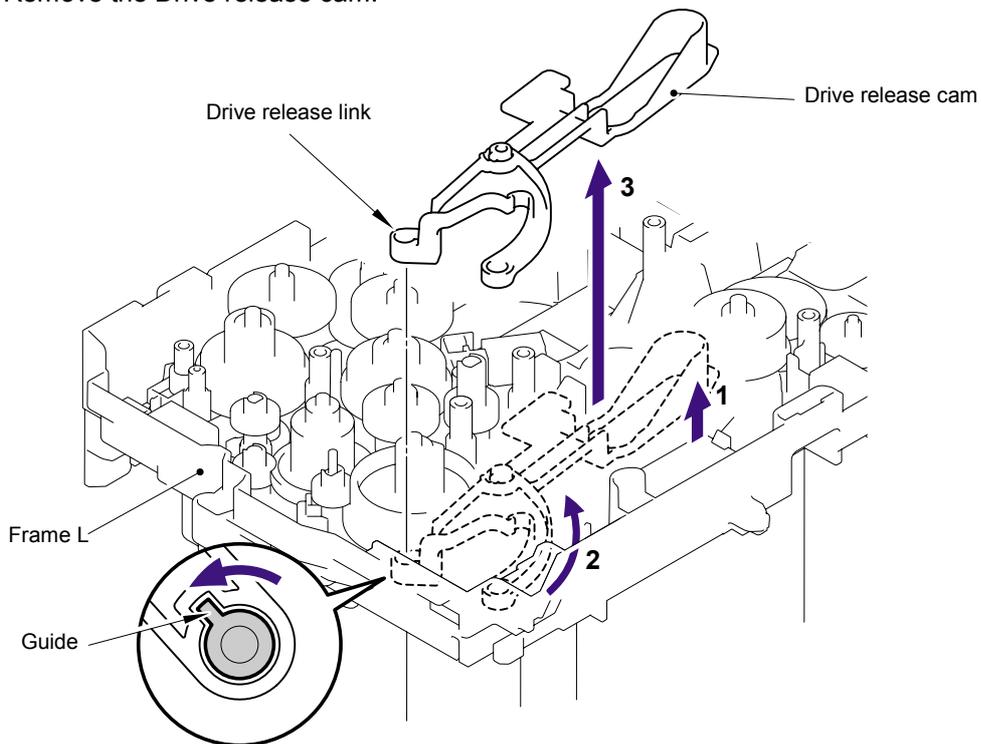


Fig. 5-48

7.19 T1 Solenoid ASSY

- (1) Remove the bind B M3x10 Taptite screw.
- (2) Remove the T1 solenoid ASSY and the Solenoid release spring.

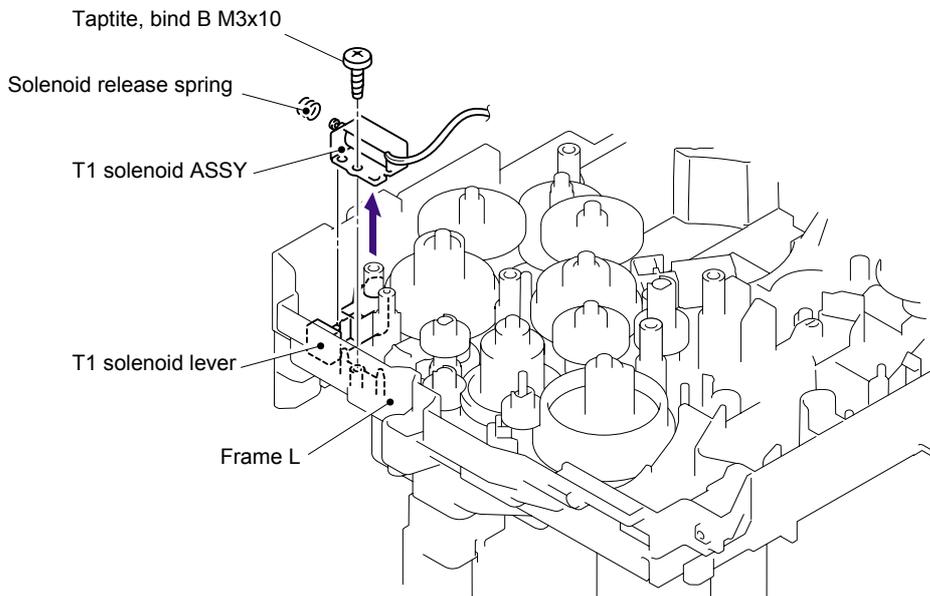


Fig. 5-49

7.20 Toner Sensor PCB

- (1) Remove the Toner sensor PCB unit ASSY from the Frame L.

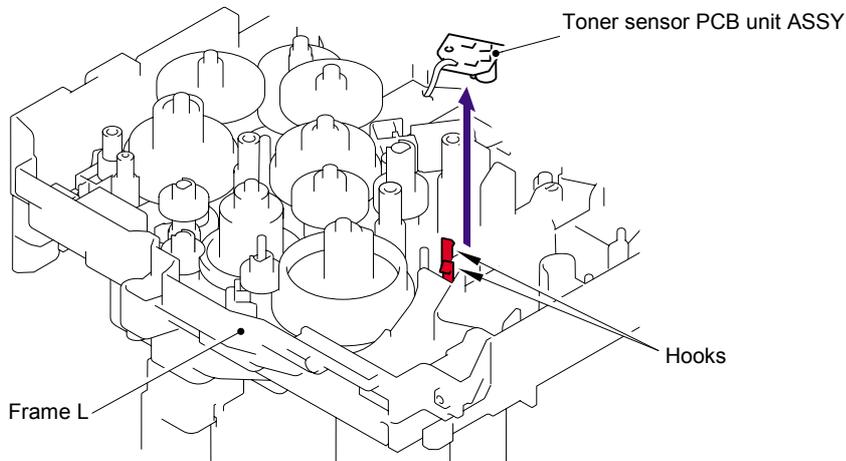


Fig. 5-50

- (2) Remove the PT sensor holder from the Toner sensor PCB ASSY AL.

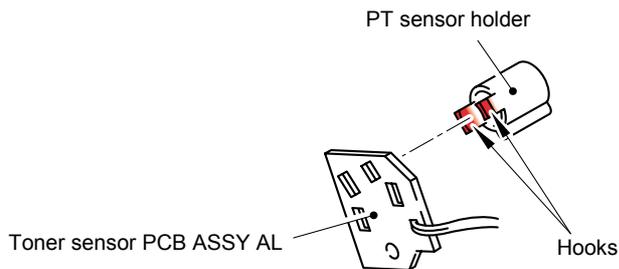


Fig. 5-51

7.21 Register Solenoid ASSY

- (1) Remove the bind B M3x10 Taptite screw.
- (2) Remove the Register solenoid ASSY and the Solenoid release spring.

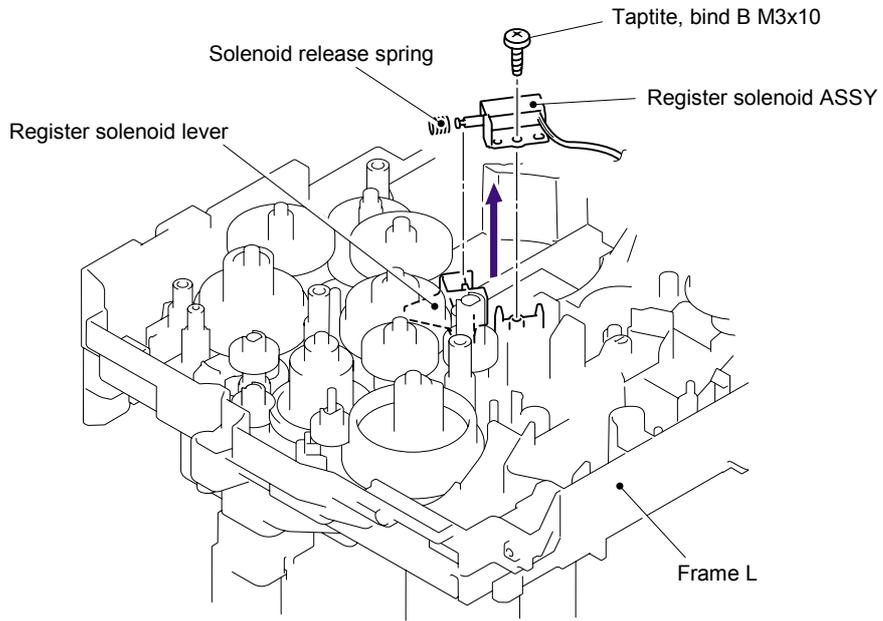


Fig. 5-52

7.22 Ejector Solenoid ASSY (For HL-5250DN/5070DN/5280DW)

- (1) Remove the bind B M3x10 Taptite screw.
- (2) Remove the Ejector solenoid and the Solenoid release spring.

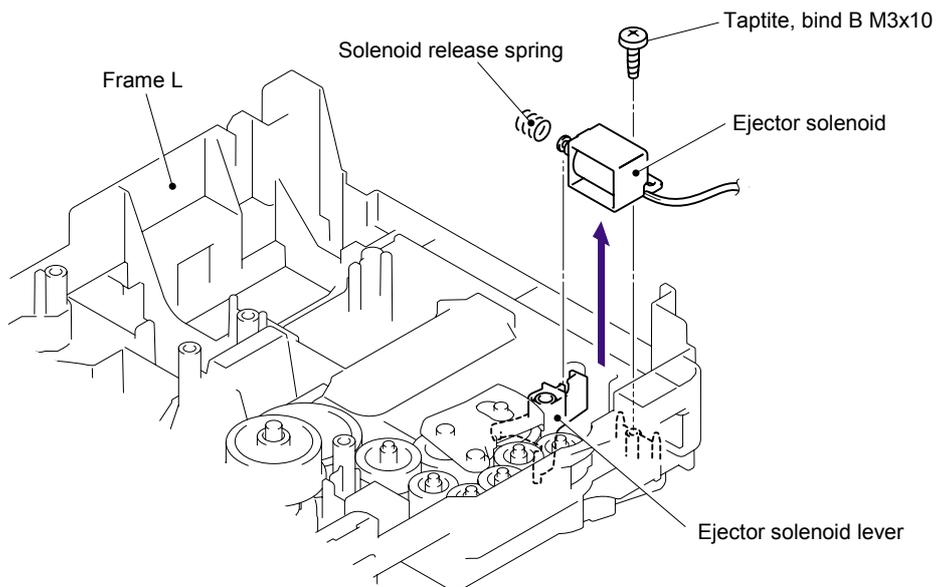


Fig. 5-53

7.23 Interlock SW ASSY

- (1) Remove the Interlock SW ASSY from the Frame L.

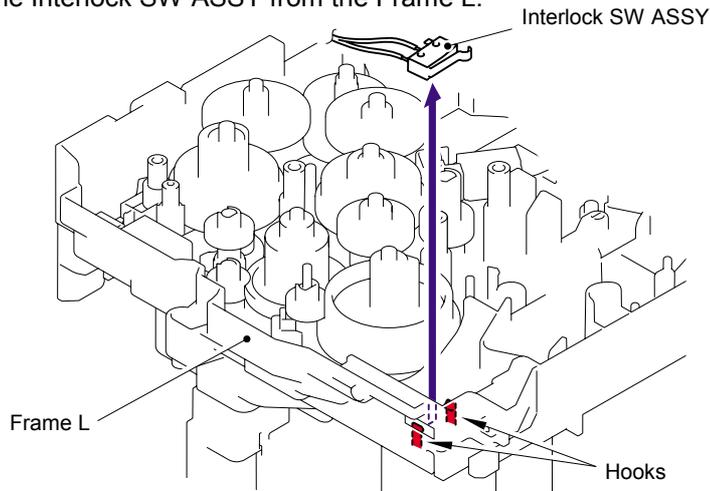


Fig. 5-54

7.24 New Toner Actuator

- (1) Remove the New toner actuator and the New toner actuator spring.

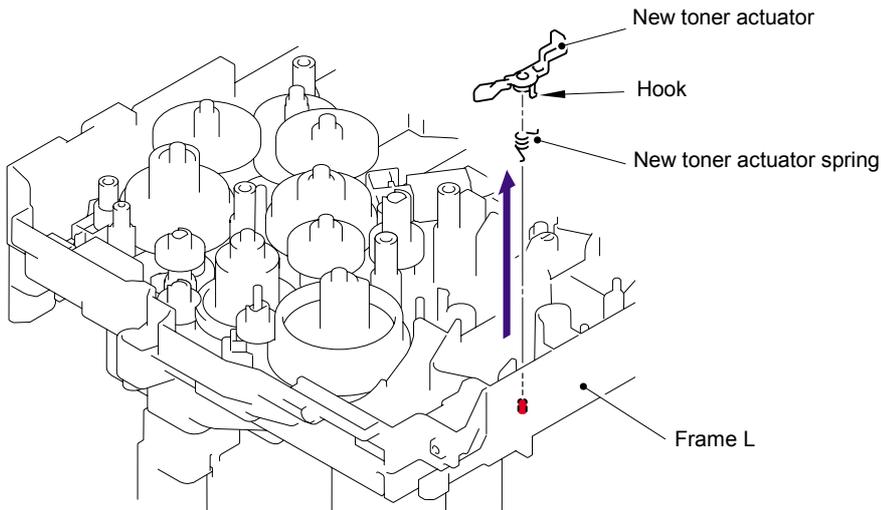


Fig. 5-55

Assembling Note:

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

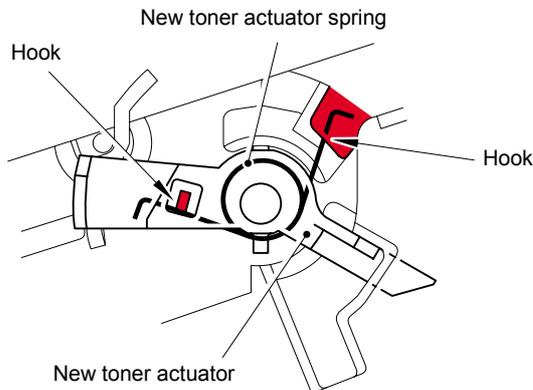


Fig. 5-56

7.25 Gear 17/20/23

(1) Remove the Gear 23.

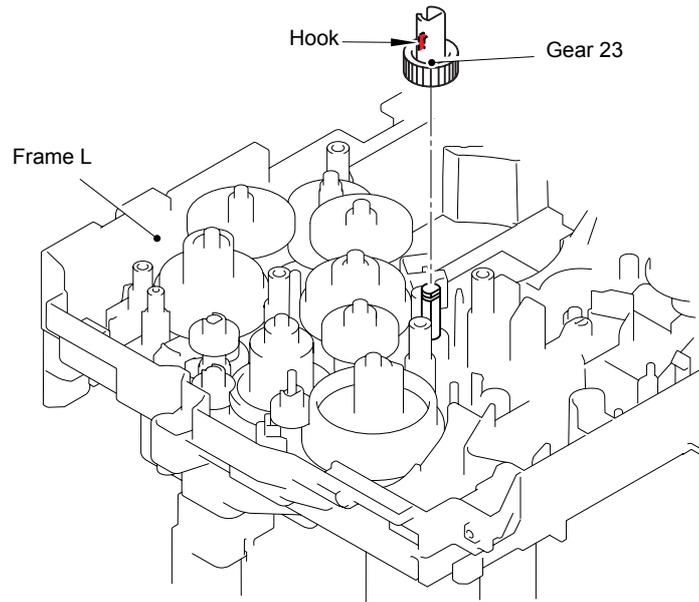


Fig. 5-57

(2) Remove the Gear 20.

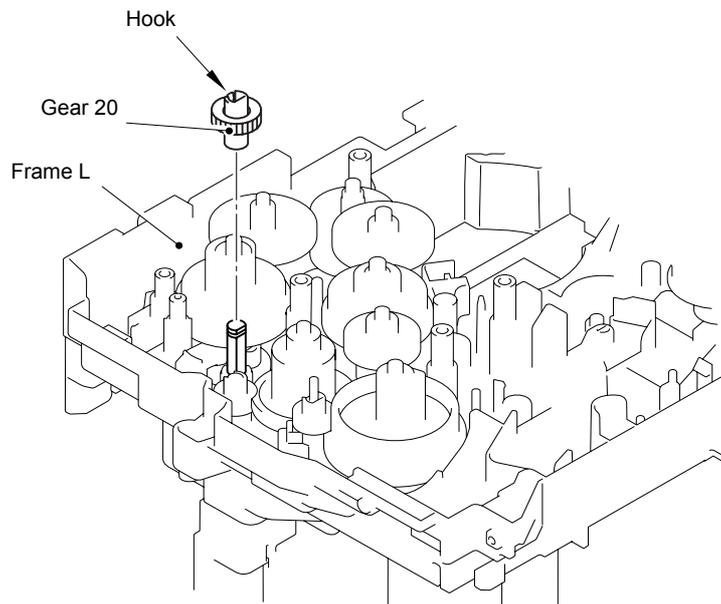


Fig. 5-58

(3) Remove the Gear 17 (black).

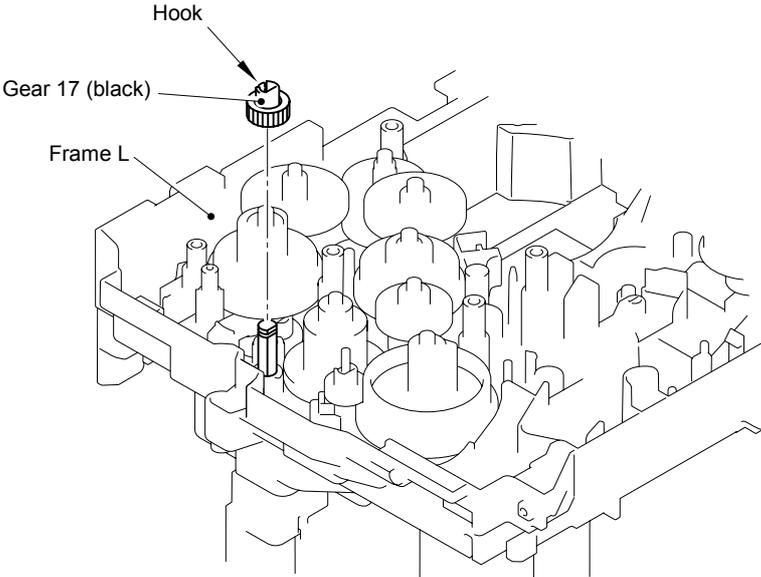


Fig. 5-59

(4) Remove the Gear 17 (white).

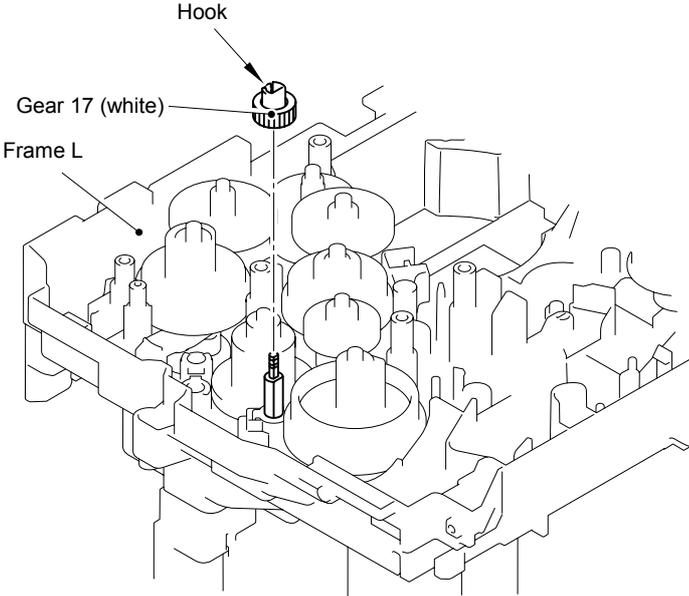


Fig. 5-60

7.26 Side Cover R

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

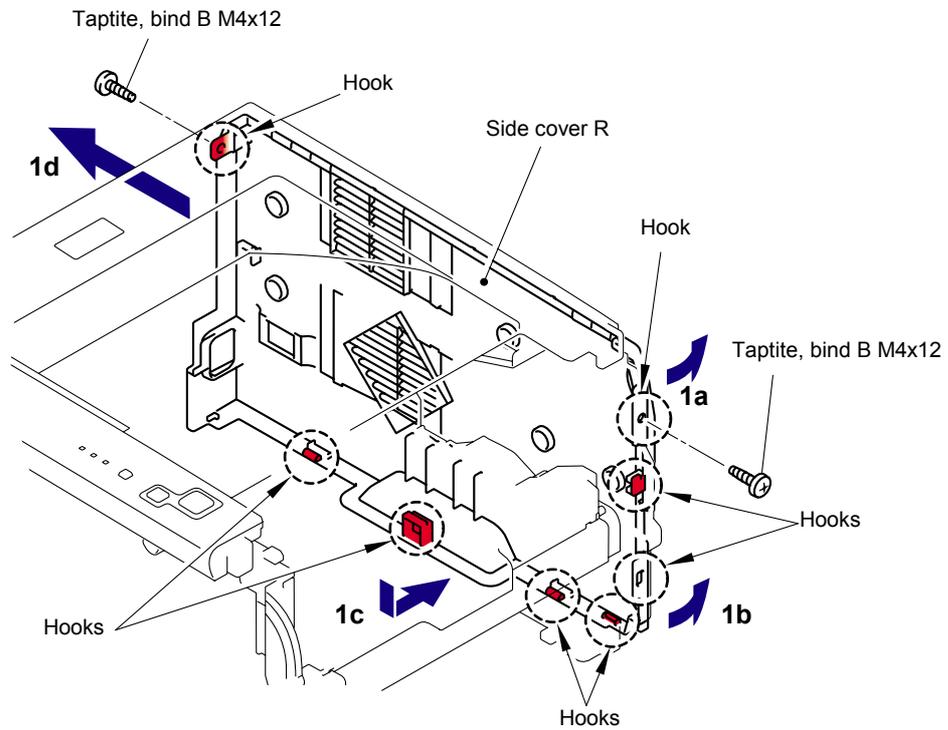


Fig. 5-61

7.27-1 Top Cover Printed ASSY (For HL-5240/5250DN)

- (1) Remove the two bind B M4x12 Taptite screws from the Top cover printed ASSY.
- (2) Release all Hooks of the Top cover printed ASSY and lift up the front side of the Top cover printed ASSY.
- (3) Remove the Top cover printed ASSY.

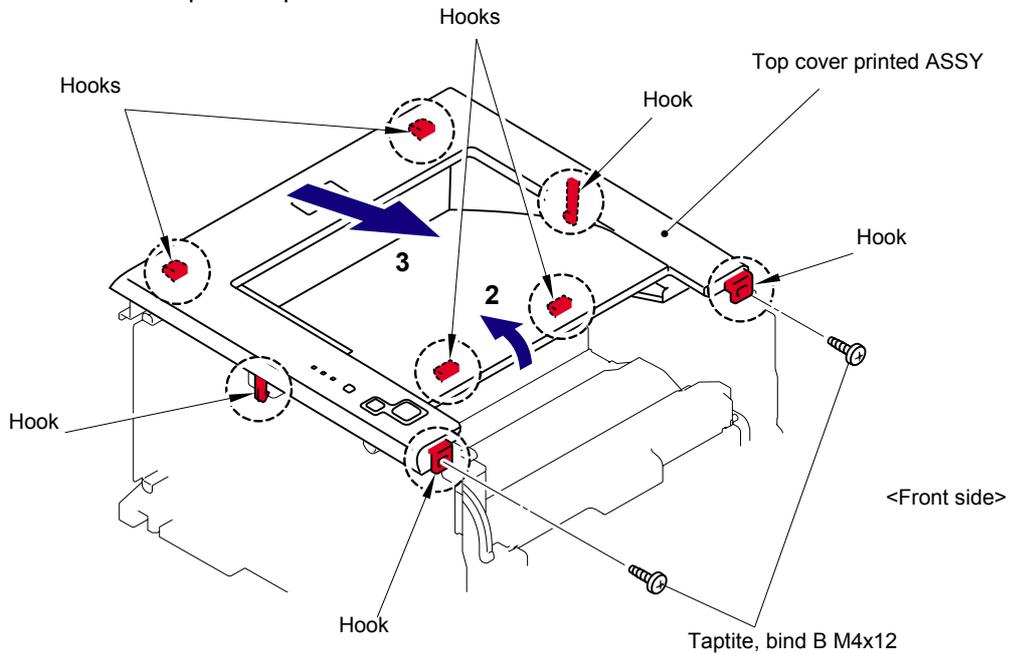


Fig. 5-62

7.27-2 Panel PCB ASSY

- (1) Turn the Top cover printed ASSY upside down.
- (2) Remove the three cup B M3x8 Taptite screws, and then remove the Panel PCB ASSY.

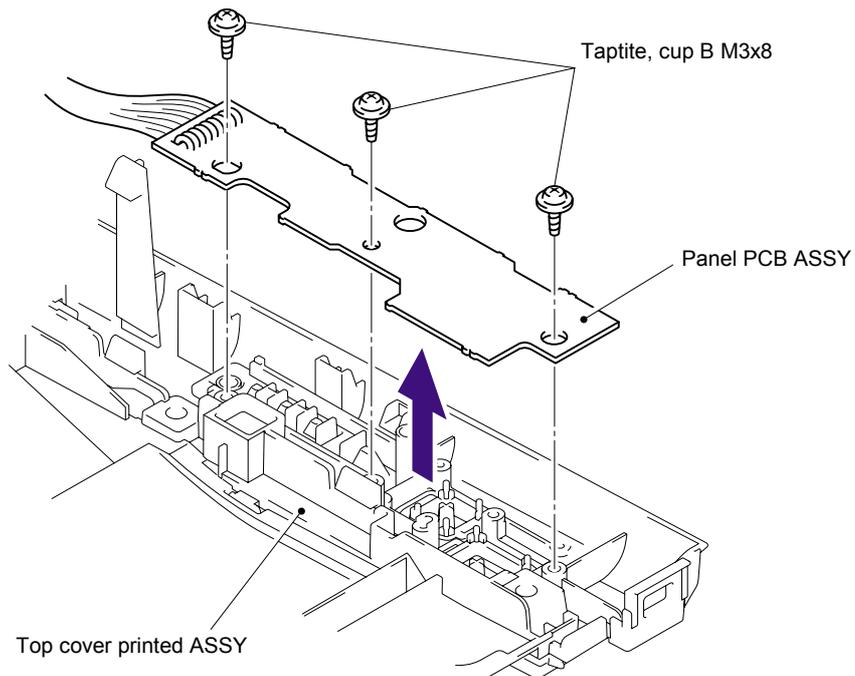


Fig. 5-63

7.27-3 SW Key A/B

- (1) Remove the SW key A from the Top cover printed ASSY.

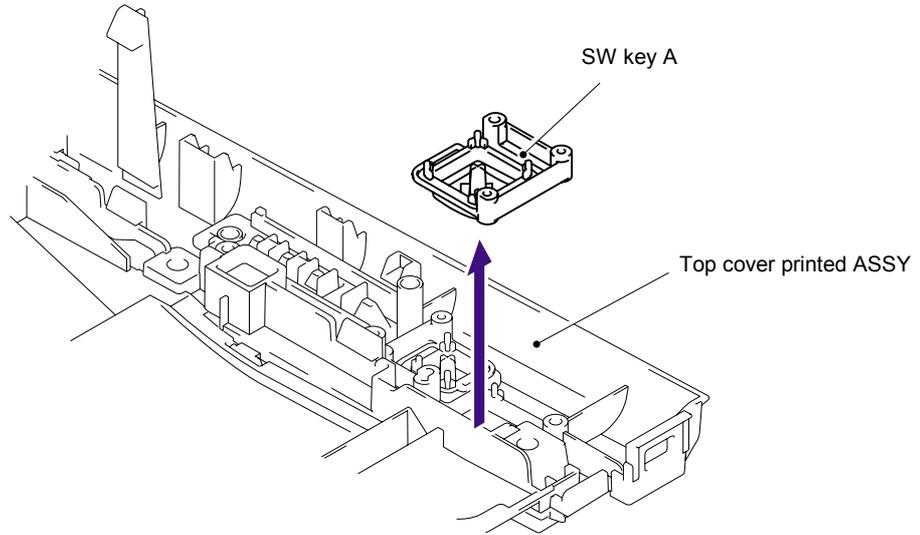


Fig. 5-64

- (2) Remove the SW key B from the Top cover printed ASSY.

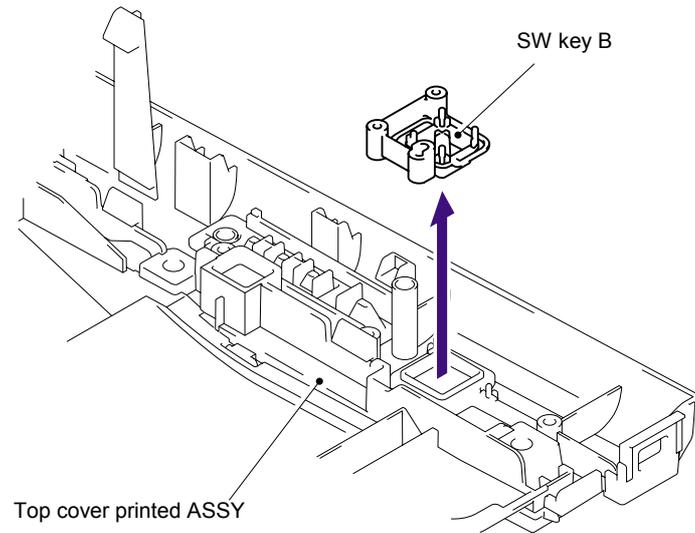


Fig. 5-65

7.27-4 Inner Chute/Pinch Roller Holder

- (1) Remove the six bind B M4x12 Taptite screws, and then remove the Inner chute.
- (2) Release all Hooks of the Inner chute and lift up the front side of the Inner chute.
- (3) Pull out the Inner chute to the front side.

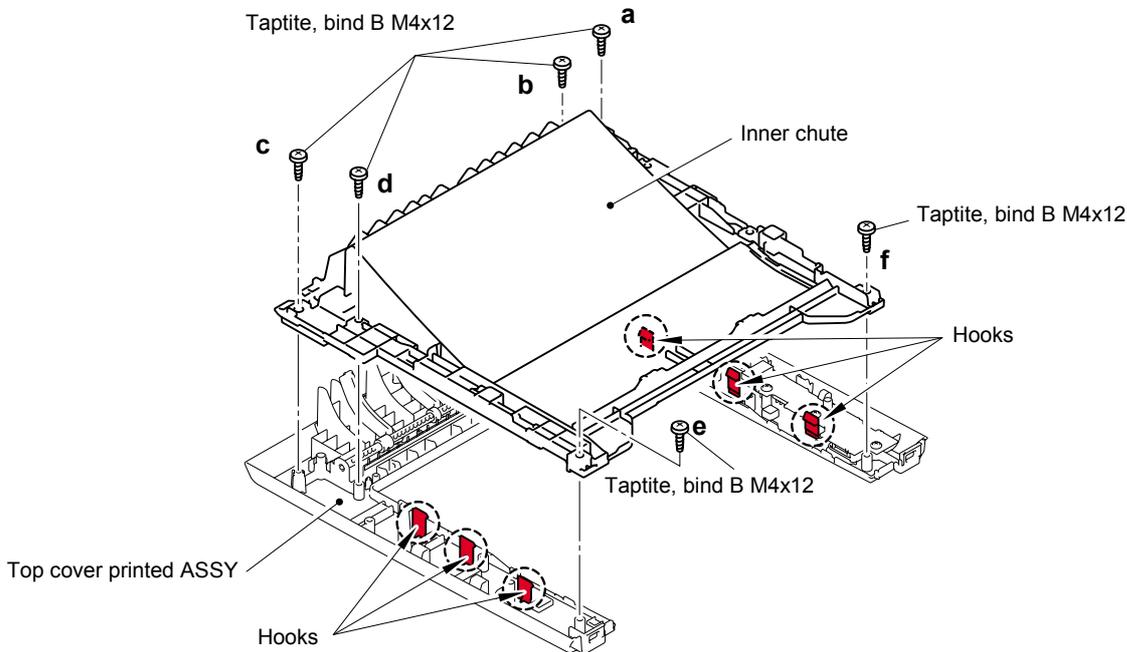


Fig. 5-66

Assembling Note:

When assembling the Inner chute, secure the screws according to the order of alphabet described in the figure above.

- (4) Turn the Inner chute upside down.
- (5) Remove the Pinch roller holder from the Inner chute.

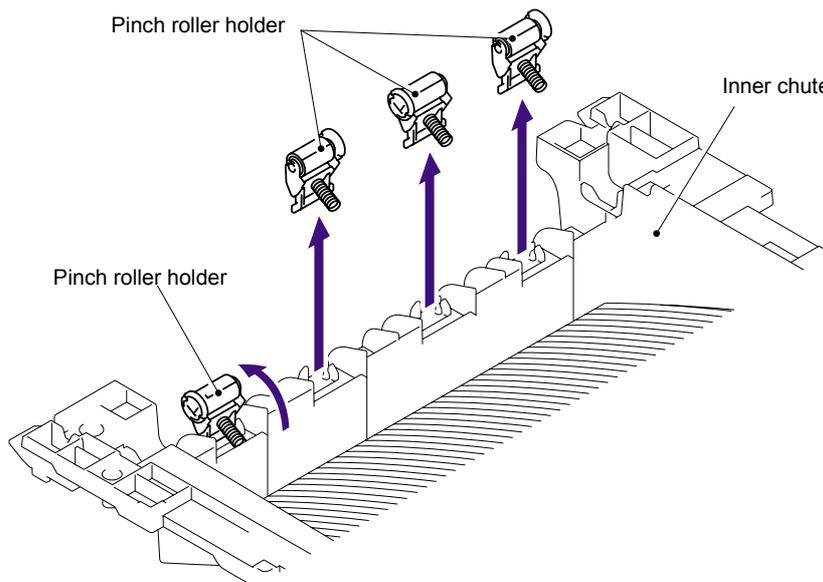


Fig. 5-67

Assembling Note:

When assembling the Pinch roller holder, be sure that its direction is correct as shown in the figure above.

7.28-1 Top Cover 2 Printed ASSY/Panel Plate Printed ASSY (For HL-5270DN/5280DW)

- (1) Remove the two bind B M4x12 Taptite screws from the Top cover 2 printed ASSY.
- (2) Release all Hooks of the Top cover 2 printed ASSY and lift up the front side of the Top cover 2 printed ASSY.
- (3) Remove the Top cover 2 printed ASSY.

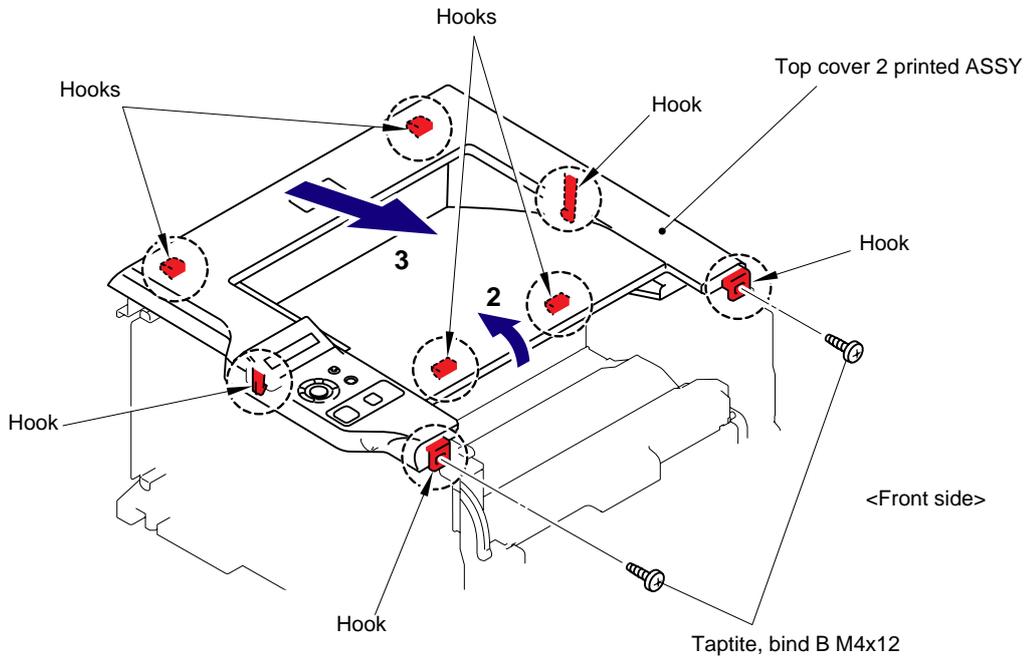


Fig. 5-68

- (4) Remove the Panel Plate Printed ASSY from the Top cover 2 printed ASSY.

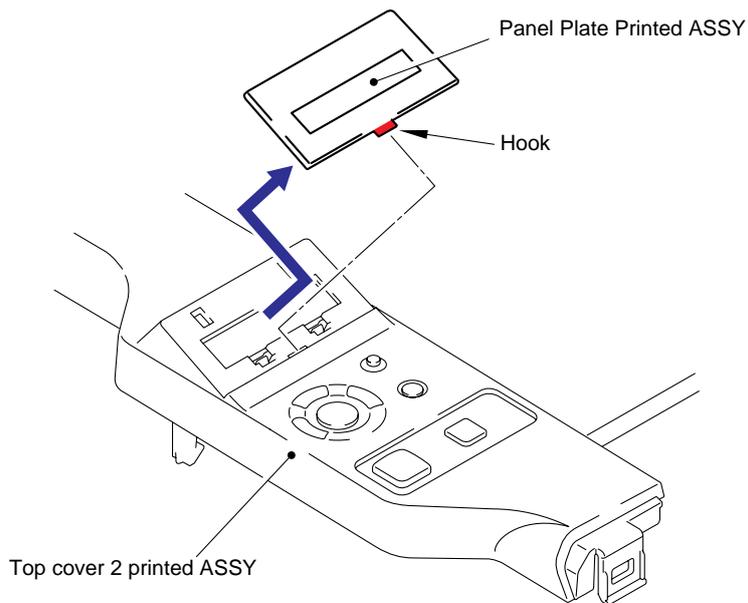


Fig. 5-69

7.28-2 Inner Chute/Pinch Roller Holder

- (1) Remove the seven bind B M4x12 Taptite screws, and then remove the Inner chute.
- (2) Release all Hooks of the Inner chute and lift up the front side of the Inner chute.
- (3) Pull out the Inner chute to the front side.

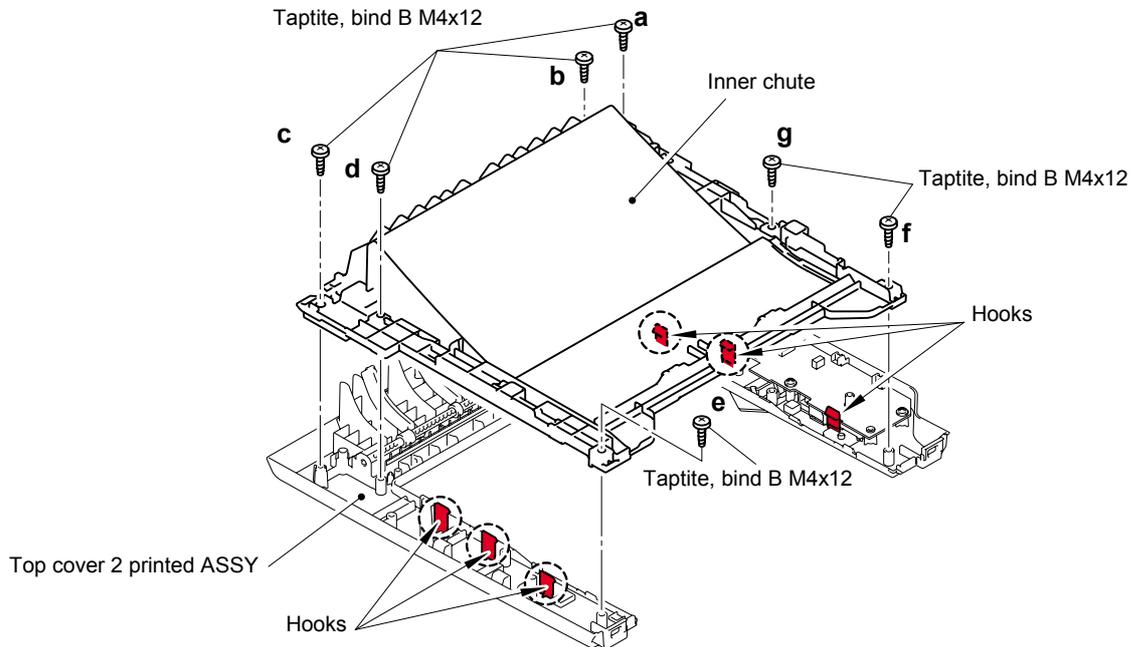


Fig. 5-69

Assembling Note:

When assembling the Inner chute, secure the screws according to the order of alphabet described in the figure above.

- (4) Turn the Inner chute upside down.
- (5) Remove the Pinch roller holder from the Inner chute.

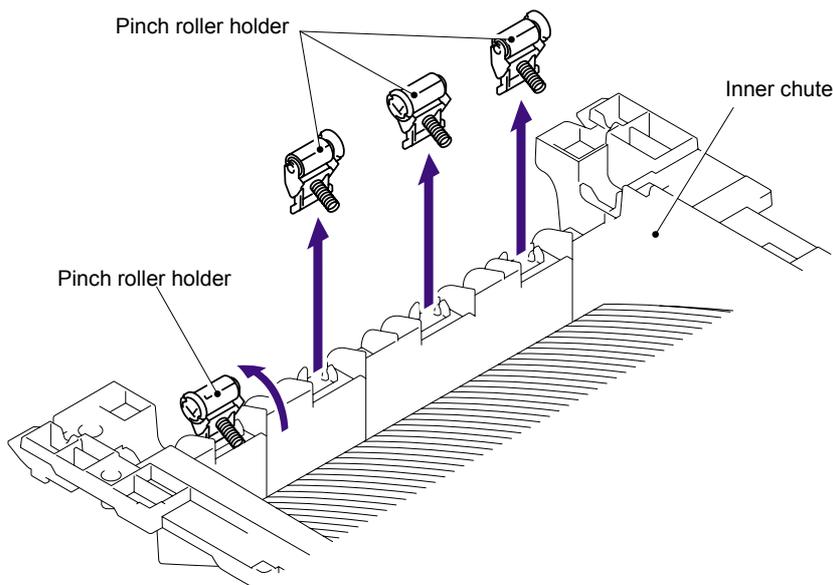


Fig. 5-70

Assembling Note:

When assembling the Pinch roller holder, be sure that its direction is correct as shown in the figure above.

7.28-3 Panel PCB ASSY

- (1) Disconnect the LCD panel PCB harness and Back light PCB harness from the LCD panel PCB ASSY.

NOTE:

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

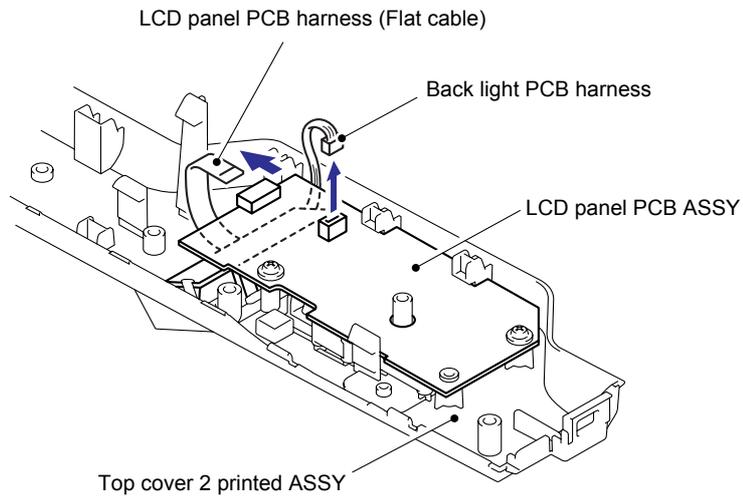


Fig. 5-72

- (2) Remove the three cup B M3x8 Taptite screws, and then remove the LCD panel PCB ASSY.

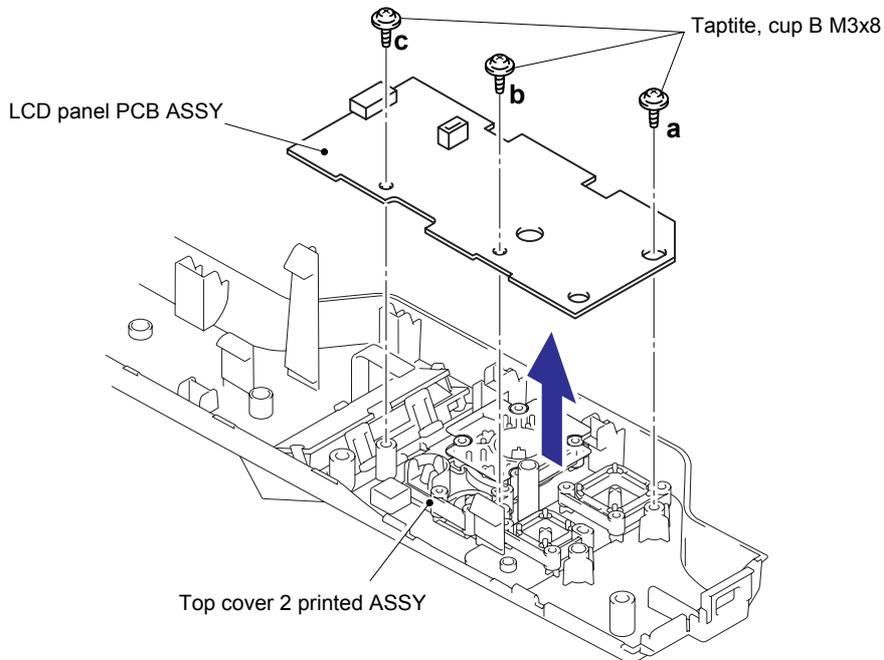
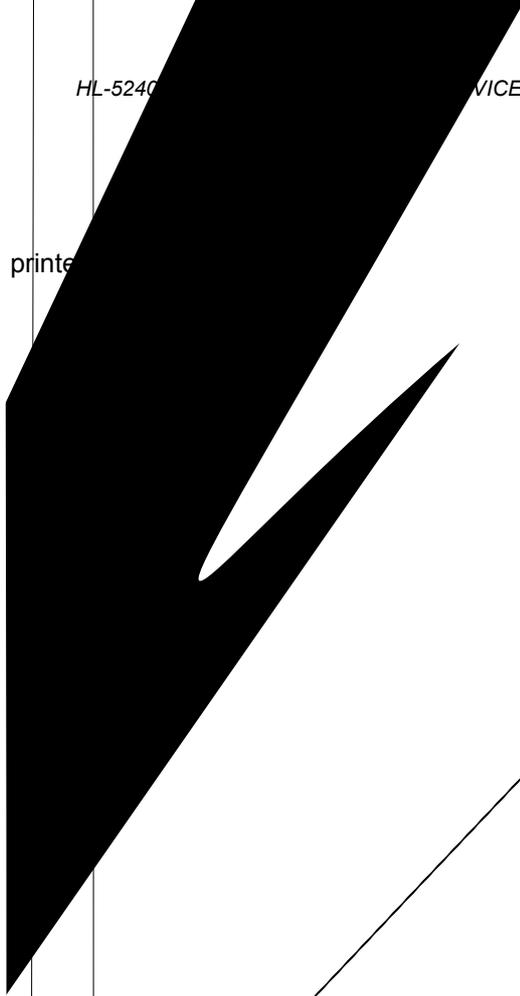


Fig. 5-73

Assembling Note:

When assembling the LCD panel PCB ASSY, secure the screws according to the order of alphabet described in the figure above.

printe



(4) Remove the Set key film.

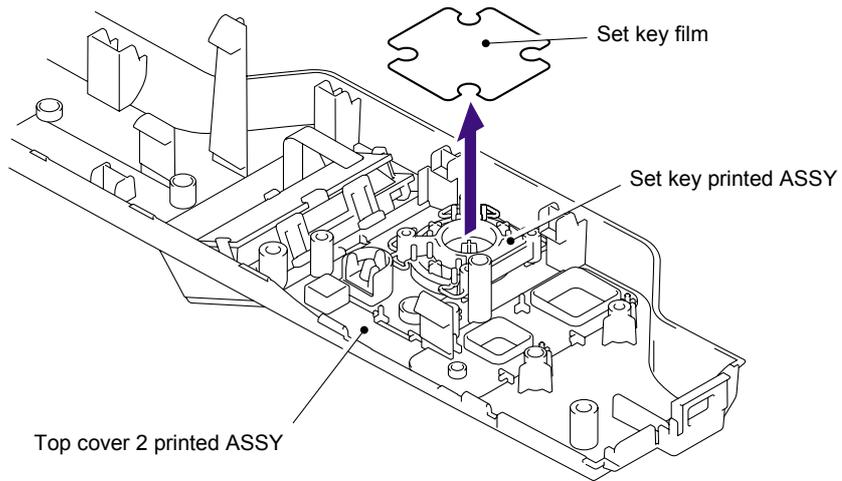


Fig. 5-76

(5) Remove the Set key printed ASSY from the Top cover 2 printed ASSY.

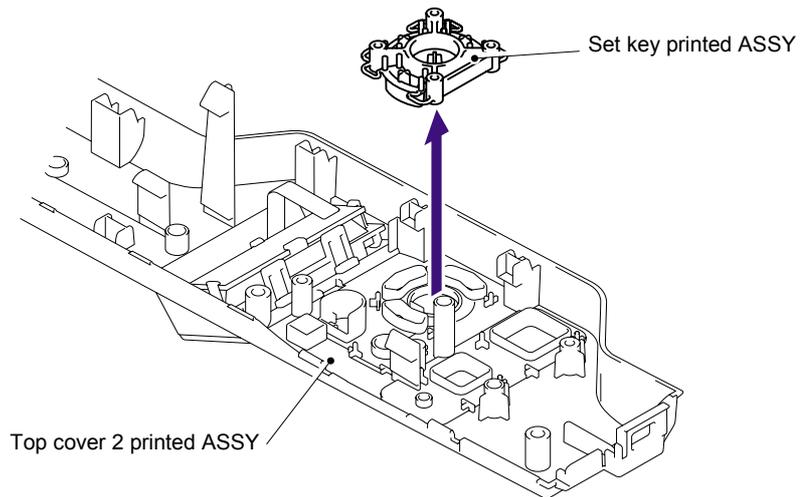


Fig. 5-77

(6) Remove the Key top from the Set key printed ASSY.

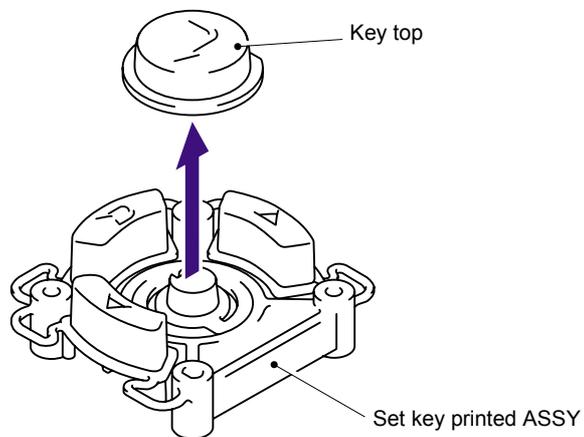


Fig. 5-78

7.28-5 LCD Holder ASSY

- (1) Remove the LCD holder from the Top cover 2 printed ASSY.

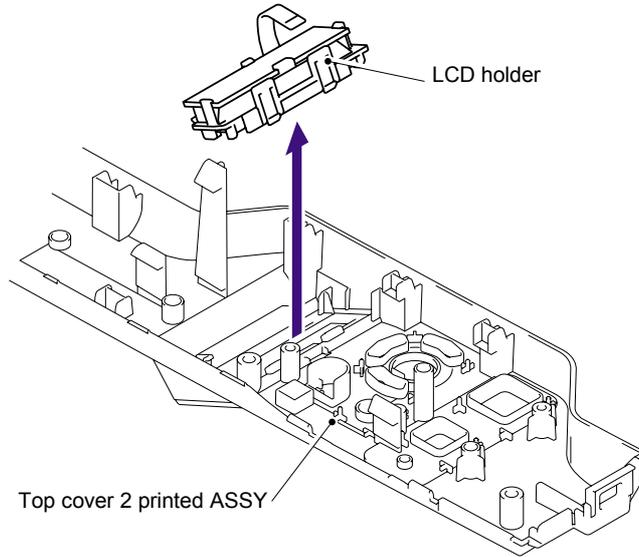


Fig. 5-79

- (2) Remove the Back light PCB ASSY from the LCD holder.

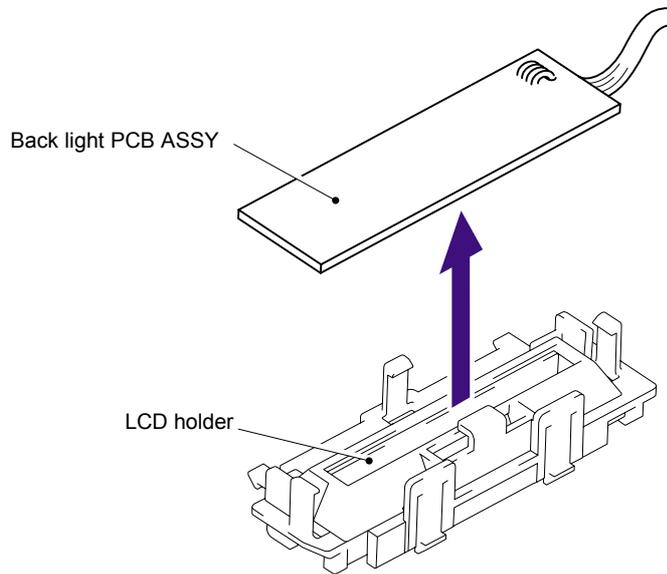


Fig. 5-80

(3) Remove the LCD from the LCD holder.

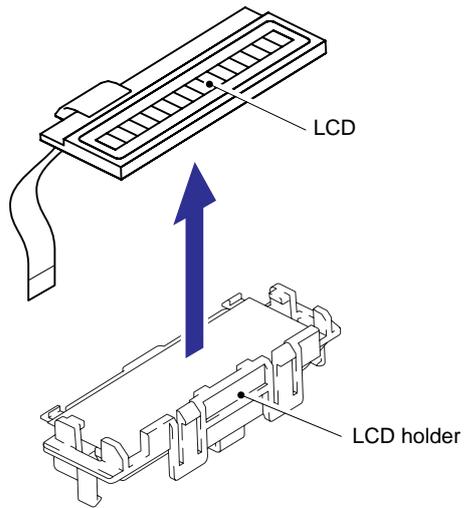


Fig. 5-82

(4) Remove the Back light film from the LCD holder.

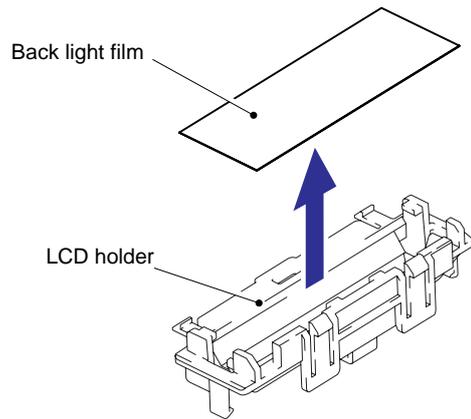


Fig. 5-83

7.29 Filter

- (1) Slide the Sub duct to the direction of 1b while pressing the three Hooks and remove the Sub duct from the Air duct.

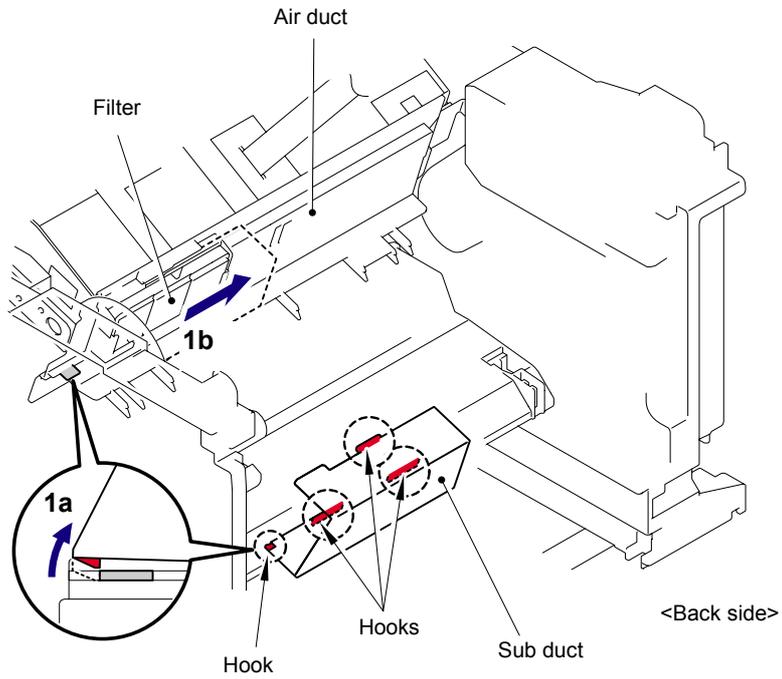


Fig. 5-83

- (2) Remove the Filter from the Air duct.

NOTE:

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

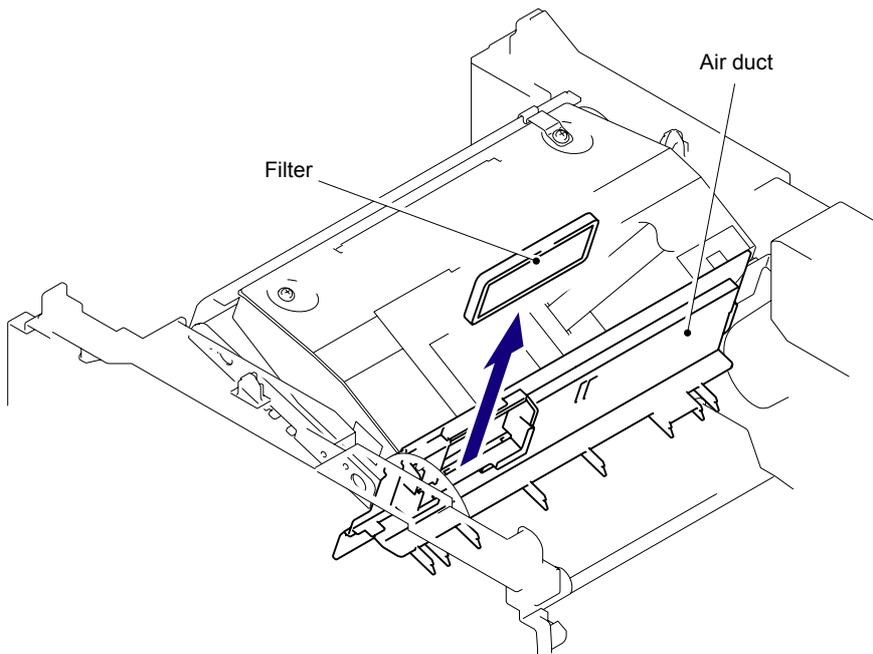


Fig. 5-84

7.30 Laser Unit

- (1) Remove the Hooks of the Air duct from the frame. Slide the Air duct to the direction of 1b and remove the Air duct.

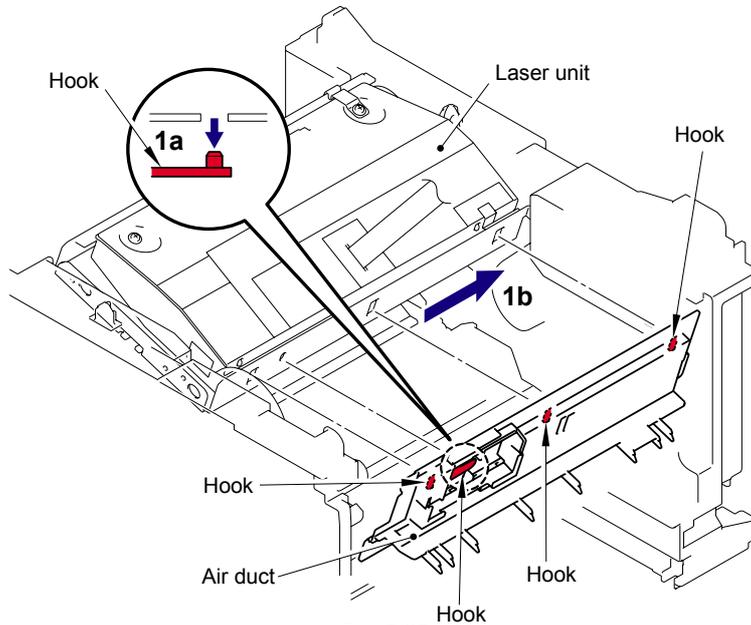


Fig. 5-85

- (2) Remove the five cup S M3x6 Taptite screws
- (3) Remove the Protective film.
- (4) Pull out the flat cable from the Core.
- (5) Remove the Laser unit.

NOTE:

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

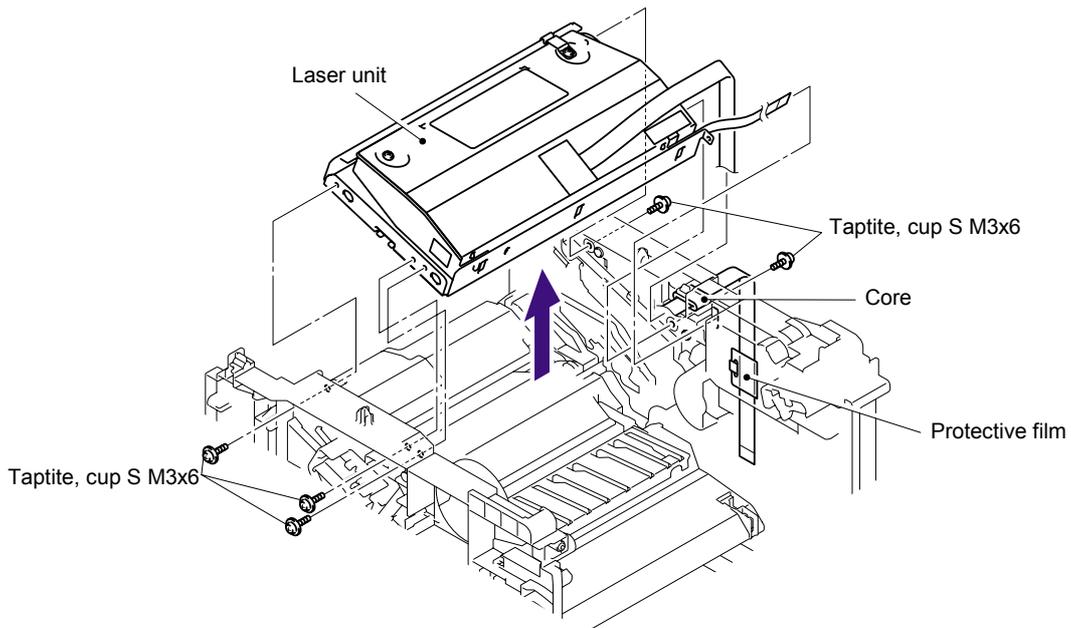


Fig. 5-86

Assembling Note:

Before assembling the Laser unit, make sure put on the Core.

7.31 PS PCB Unit

- (1) Turn the Printer upside down.
- (2) Remove the five bind B M4x12 Taptite screws, and then remove the Base plate LV.
- (3) Remove the Screw pan (S/P washer) M3.5x6 from the Base plate LV to remove the PS PCB unit terminal.

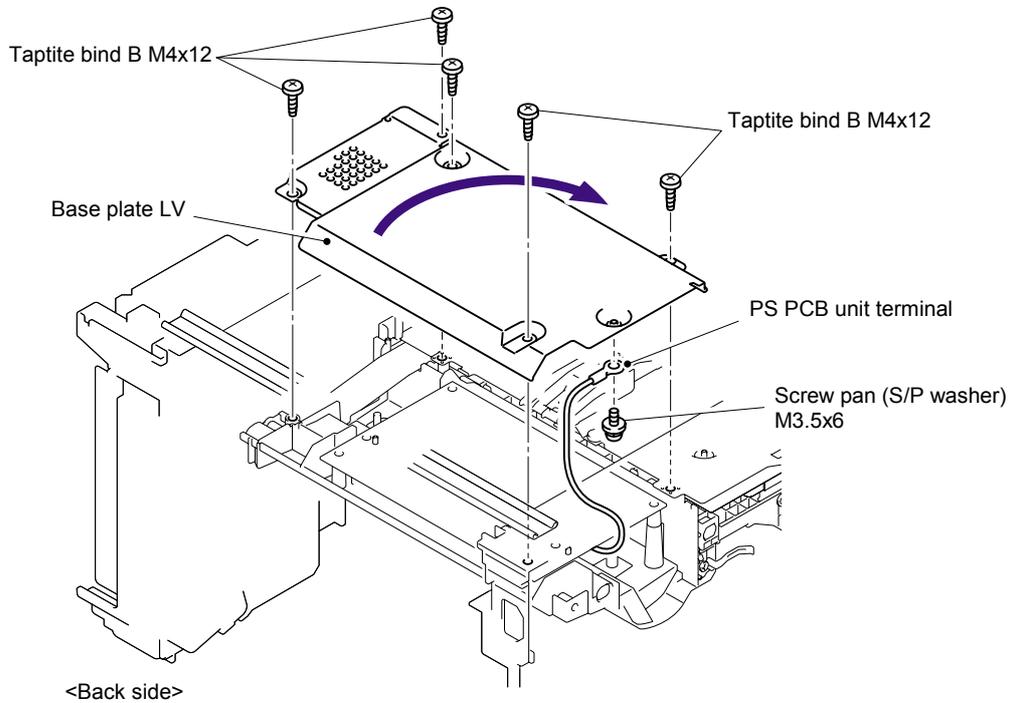


Fig. 5-87

- (4) Remove the two bind B M4x12 Taptite screws, and then remove the LV insulation sheet.

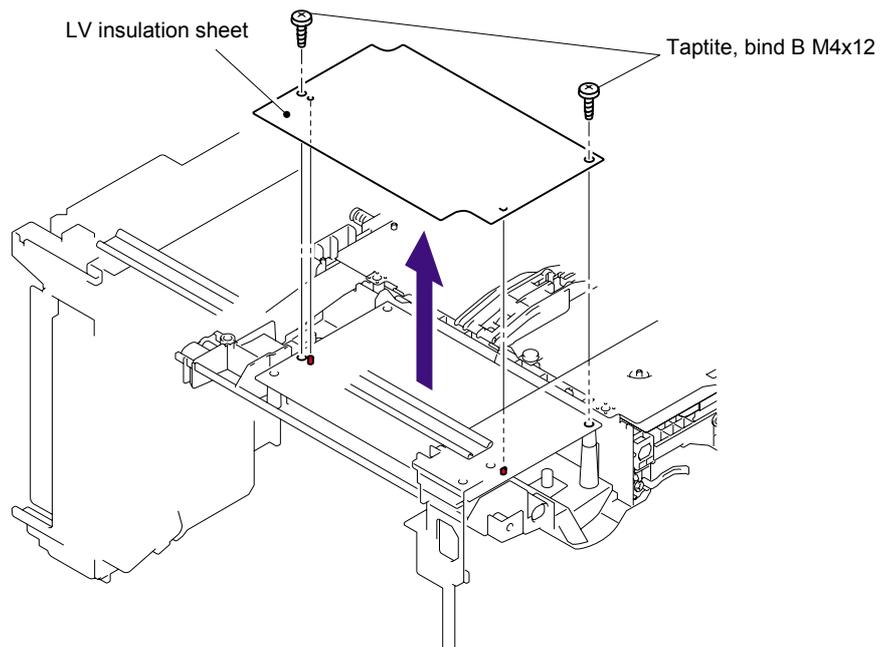


Fig. 5-88

- (5) Remove the bind B M4x12 Taptite screw, and then remove the SW holder ASSY.
- (6) Float the Fan motor 60 unit LV from the Frame R.

NOTE:

Do not remove the Fan motor 60 unit LV at the above step.

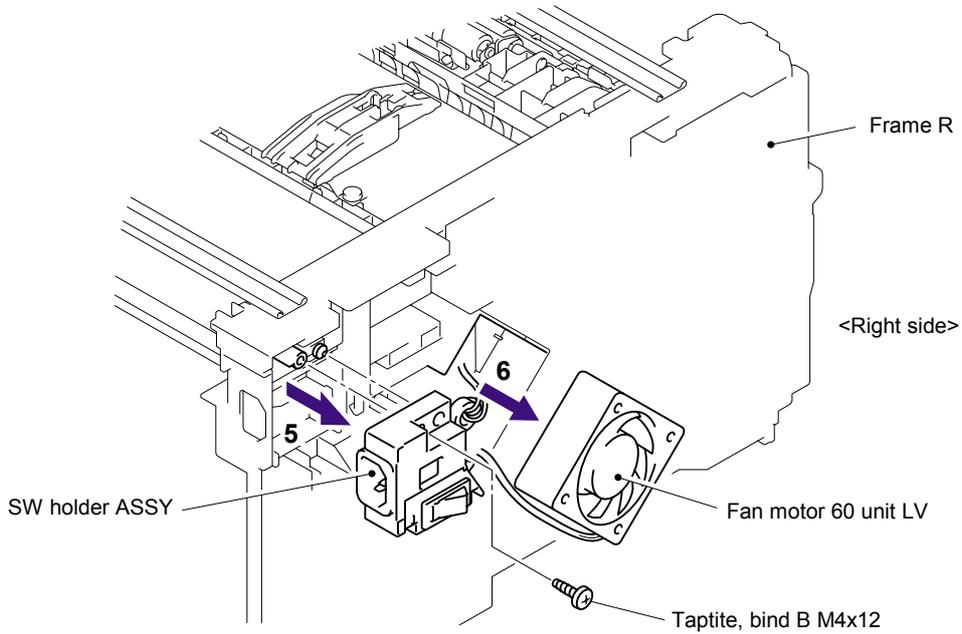


Fig. 5-89

- (7) Remove the Inlet harness ASSY from the SW holder.
- (8) Press the Hooks on both sides of the Power supply switch, pull out the Power supply switch to the direction of 8a and pull the wire out of the groove on the SW holder.

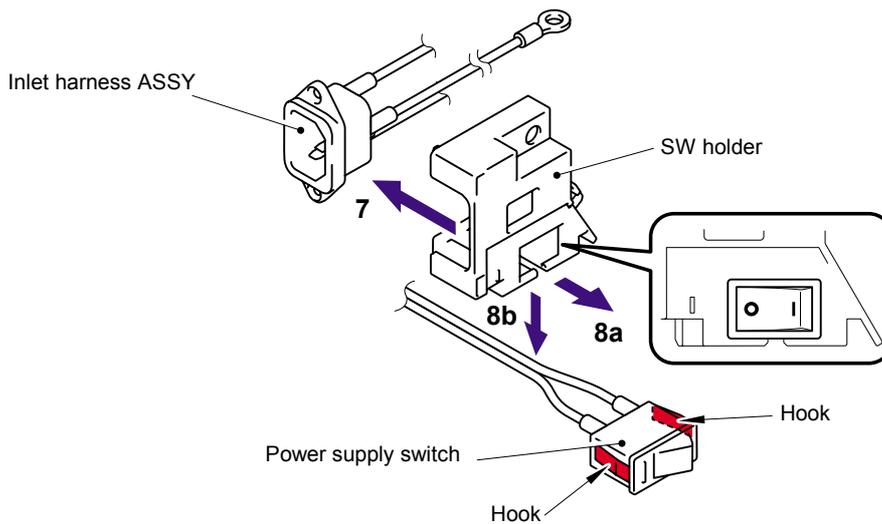


Fig. 5-90

Assembling Note:

When assembling the power supply switch onto the SW holder, give attention to the direction of the switch.

- (9) Remove the harness of the fuser unit and power supply harness.
- (10) Put each harness through the space where the fan 60 unit is assembled and remove the PS PCB unit.
- (11) Remove the harness from the PS PCB unit.

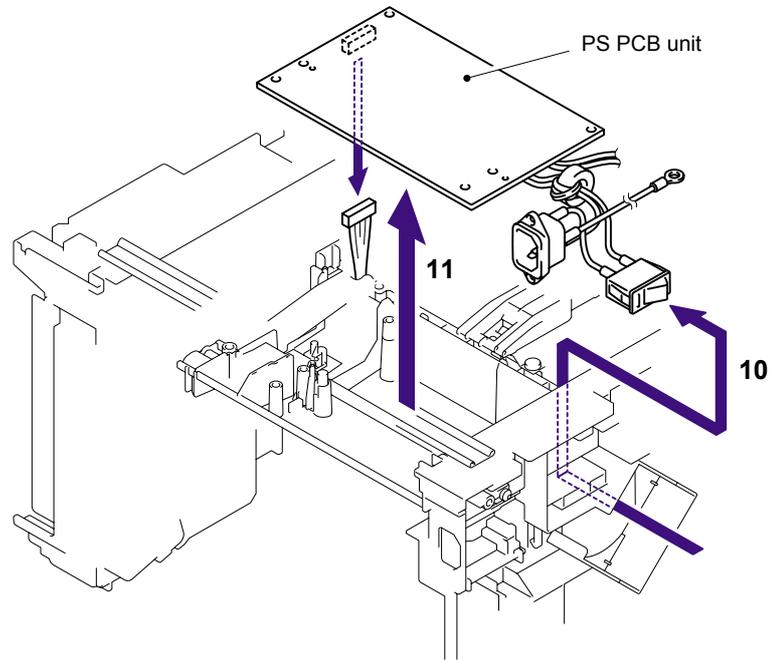


Fig. 5-91

7.32 High-Voltage PS PCB ASSY

(1) Remove the four bind B M4x12 Taptite screws, and then remove the Base plate HV.

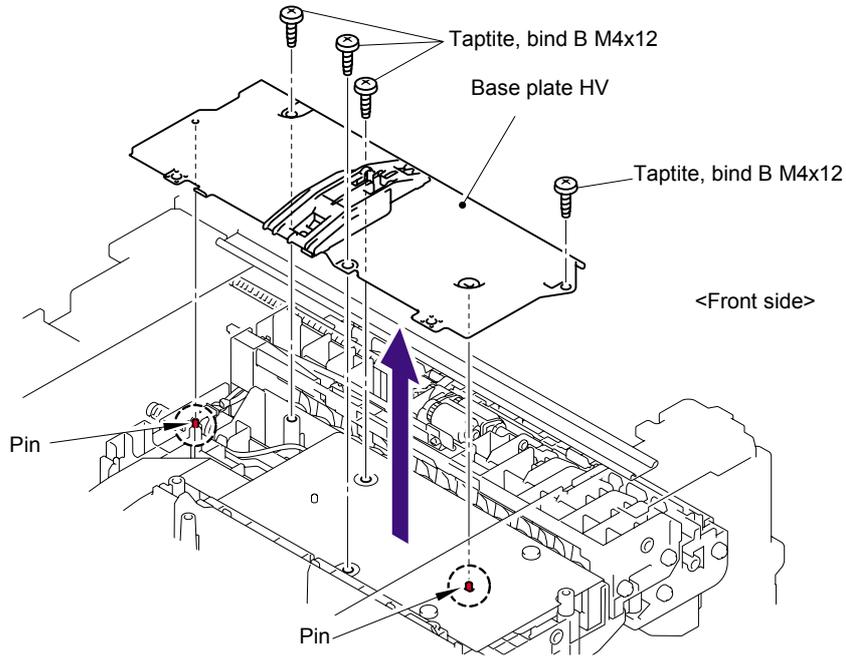


Fig. 5-92

(2) Remove the bind B M4x12 Taptite screw, and then remove the HV insulation sheet.

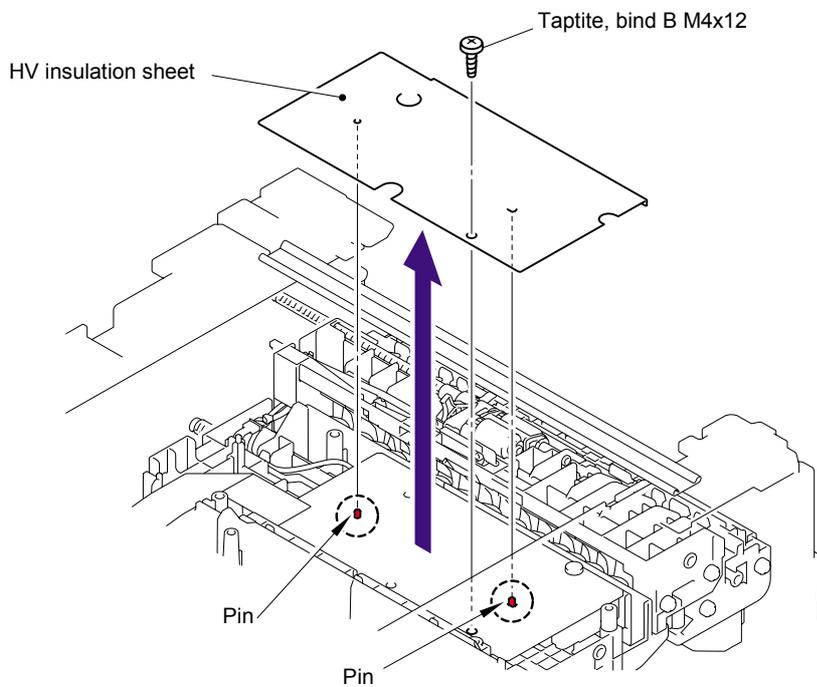


Fig. 5-93

- (3) Remove the bind B M4x12 Taptite screw, and then remove the High-voltage PS PCB ASSY.
- (4) Disconnect the three connectors from the High-voltage PS PCB ASSY.

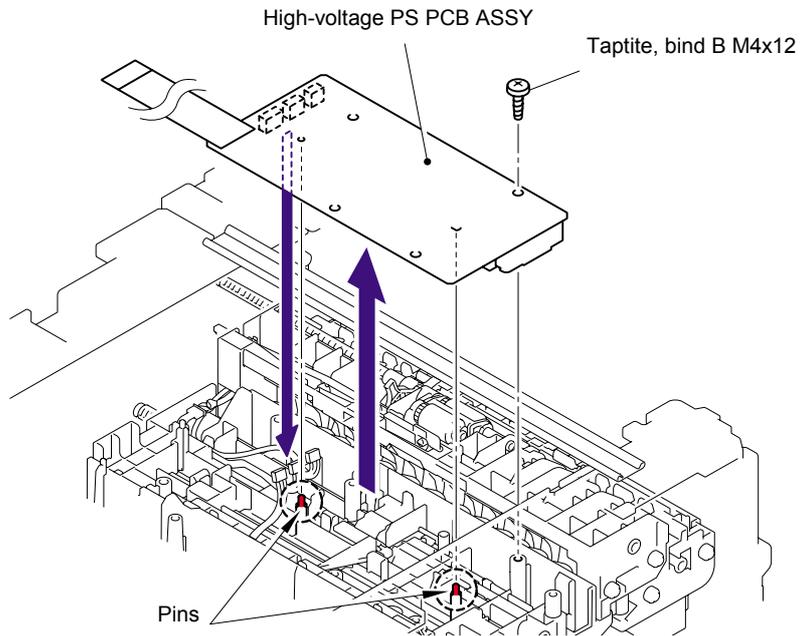


Fig. 5-94

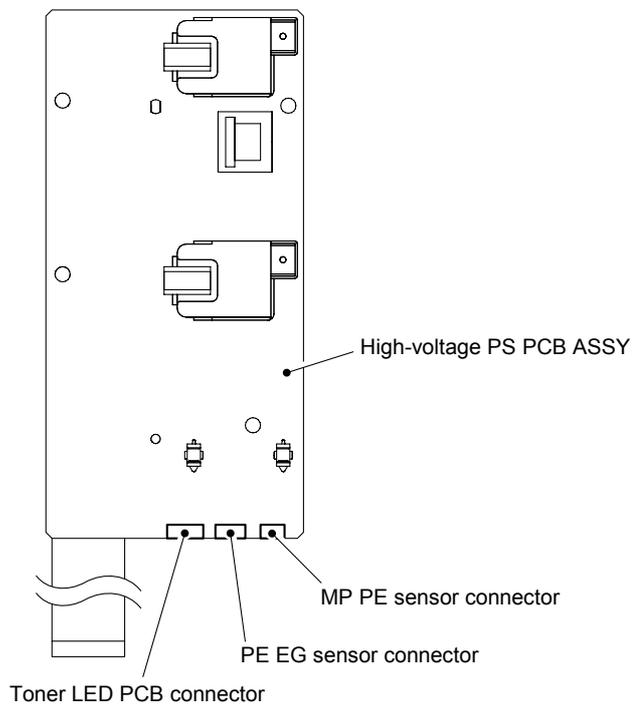
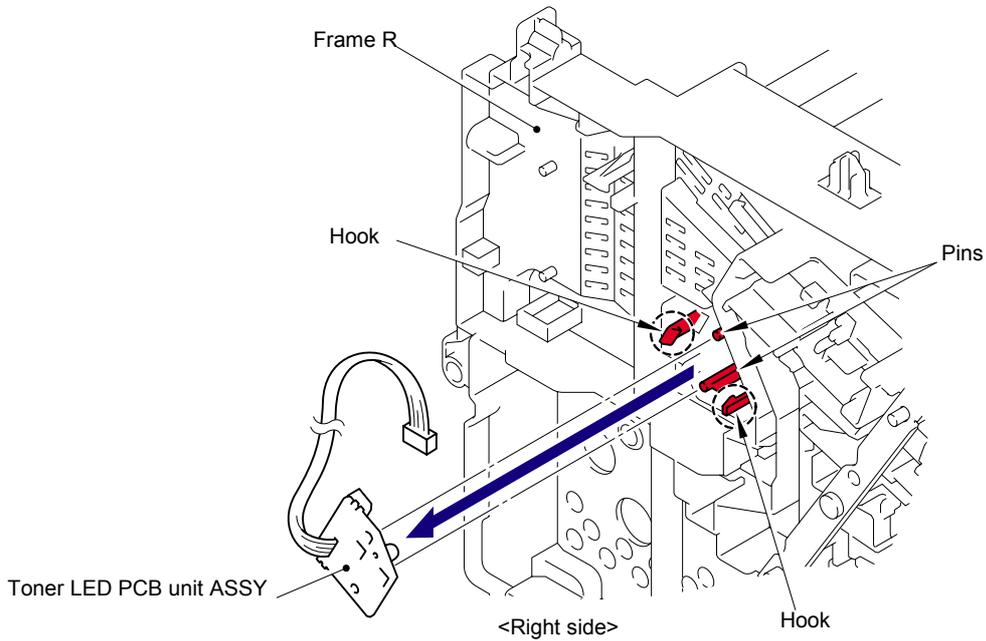


Fig. 5-95

7.33 Toner LED PCB Unit ASSY

- (1) Release the two Hooks to remove the Toner LED PCB unit ASSY from the Frame R.
- (2) Disconnect the two connectors from the Toner LED PCB.



Fan motor 60 unit LV connector

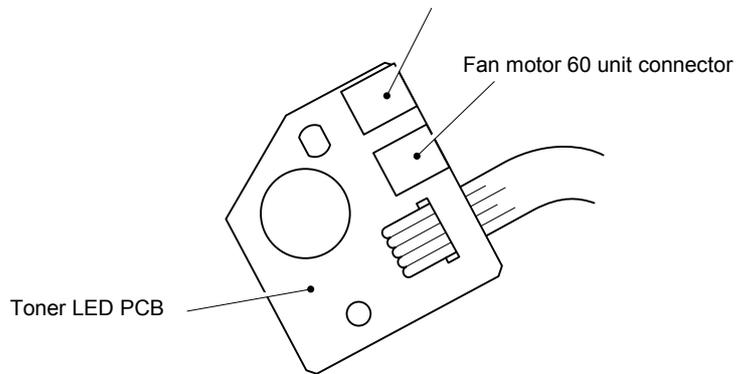


Fig. 5-96

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

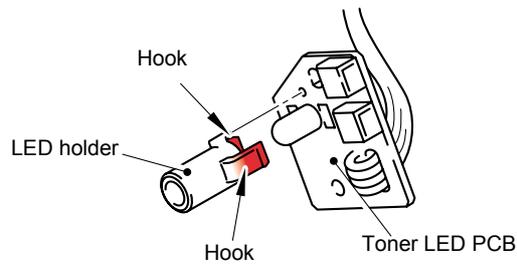


Fig. 5-97

7.34 Fan Motor 60 Unit

(1) Remove the Fan motor 60 unit from the Frame R.

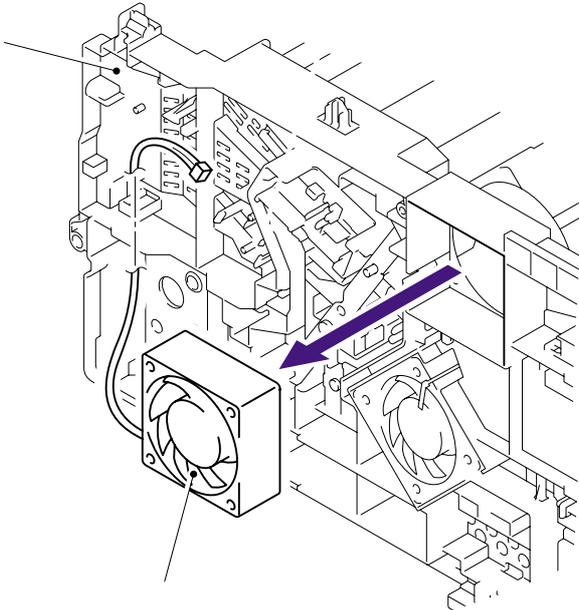
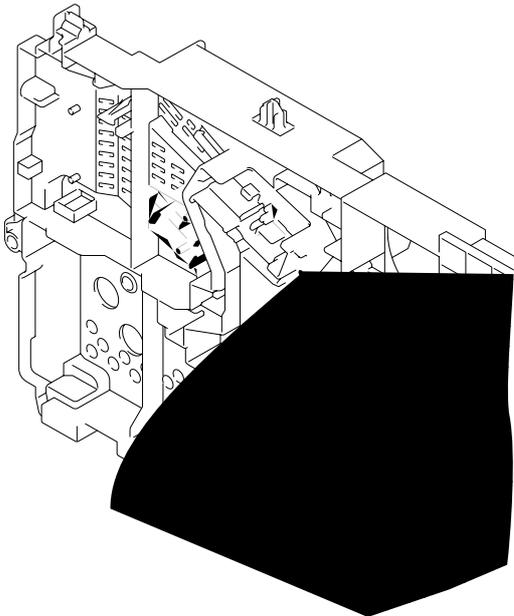


Fig. 5-98

7.35 Fan Motor 60 Unit LV

(1) Remove the Fan motor 60 unit LV from the Frame R.



7.36 Frame L

- (1) Remove the six bind B M4x12 Taptite screws from the Frame L.
- (2) Remove the Frame L.

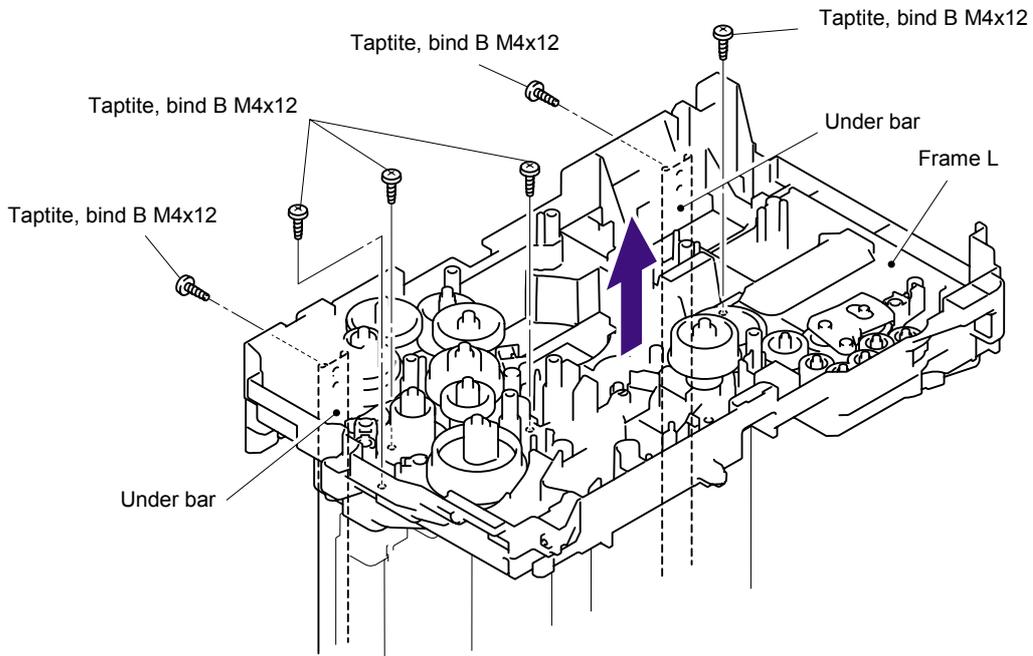


Fig. 5-100

7.37 Frame R

- (1) Remove the five bind B 4x12 Taptite screws from the Frame R.
- (2) Remove the Frame R.

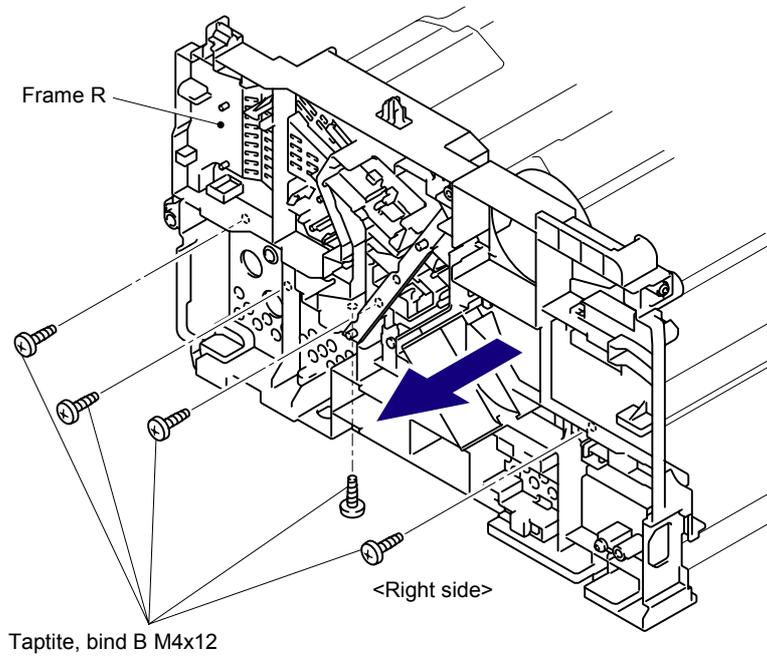


Fig. 5-101

7.38 MP Unit

- (1) Cut the Binder bundling the harnesses with nippers.

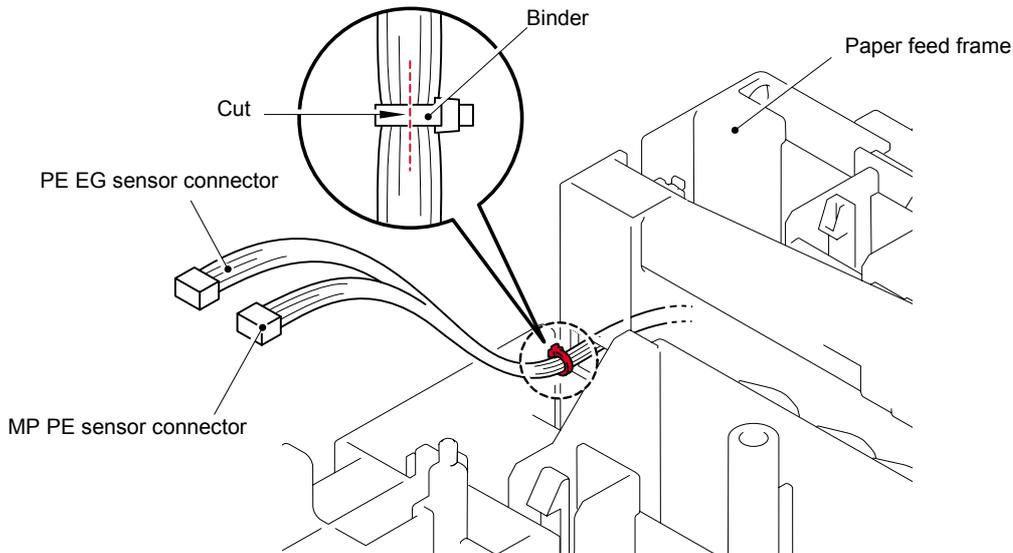


Fig. 5-102

- (2) Remove the two bind B M3x8 Taptite screws.
- (3) Lift up the back side of the MP feed frame and pull up the MP feed frame to remove.

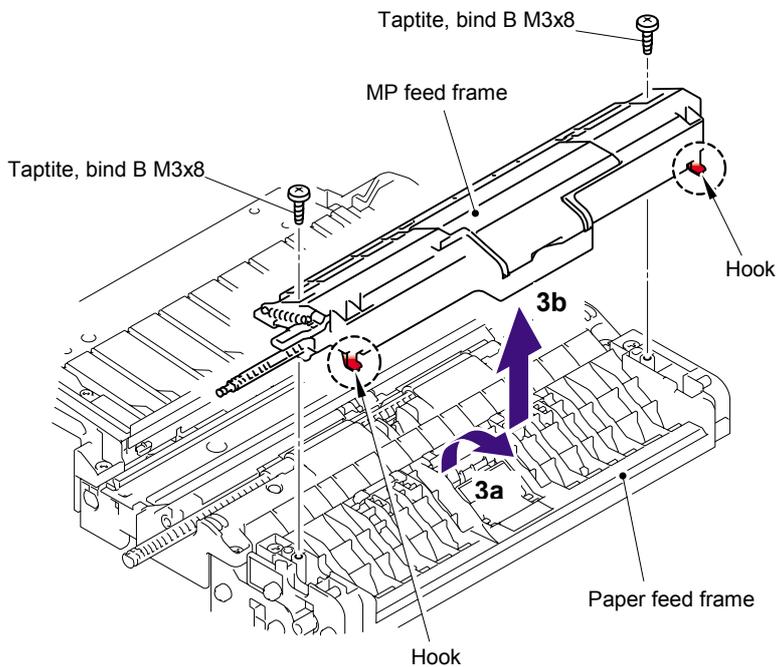


Fig. 5-103

(4) Open the MP feed frame cover.

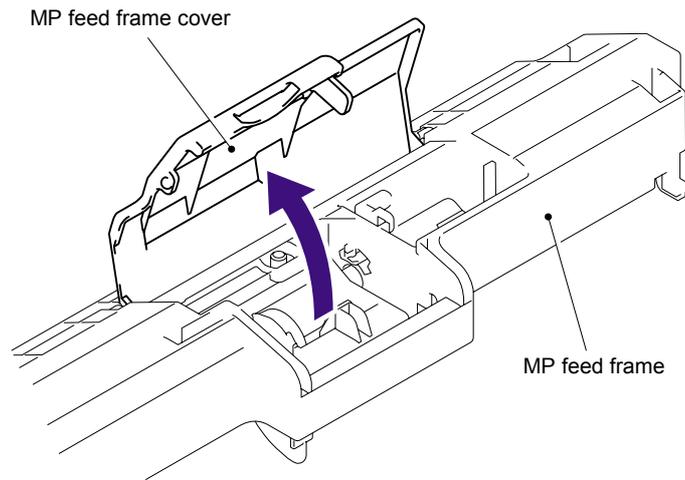


Fig. 5-104

(5) Release the Hook to remove the Holder bearing MP from the MP feed frame.

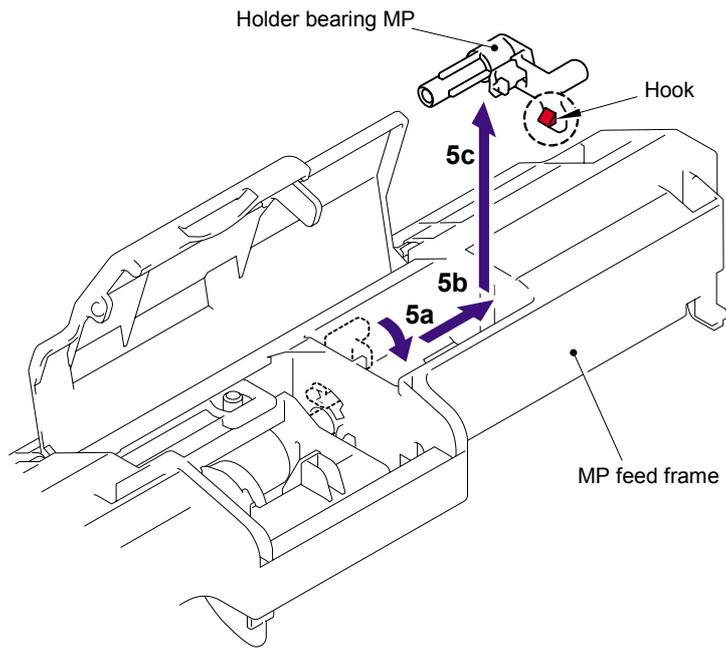


Fig. 5-105

- (6) Slide the MP roller holder ASSY to the direction of 6a and pull it up to remove.

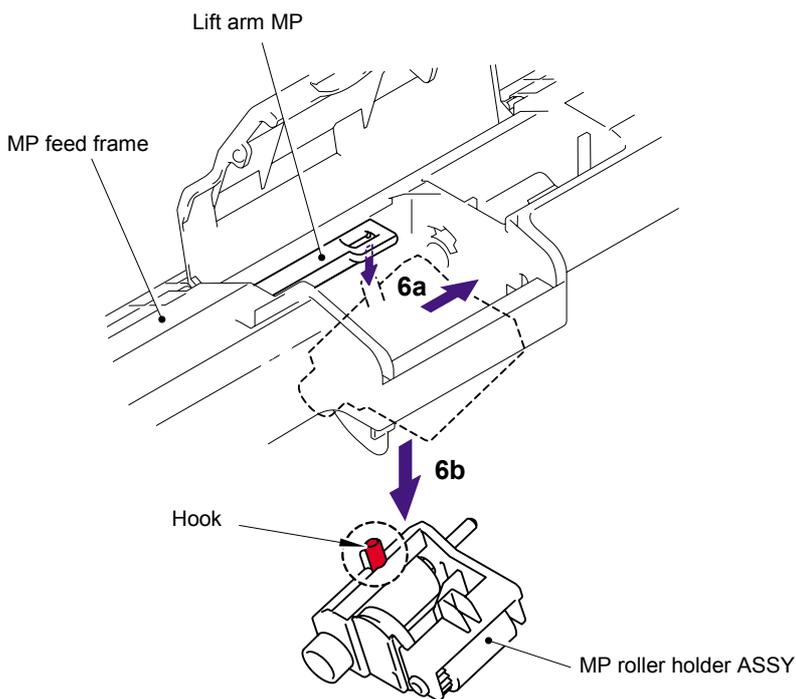


Fig. 5-106

- (7) Turn the MP feed frame upside down.
 (8) Slide the PE actuator MP B to the direction of 8b while pressing the Hook to the direction of 8a, and pull it up to remove.

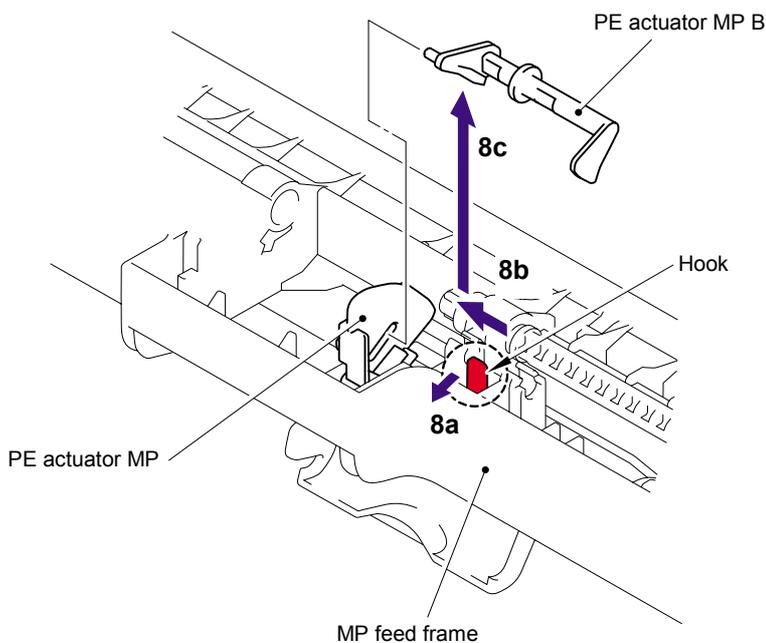


Fig. 5-107

(9) Turn the PE actuator MP to the direction of 9a and pull it up to remove.

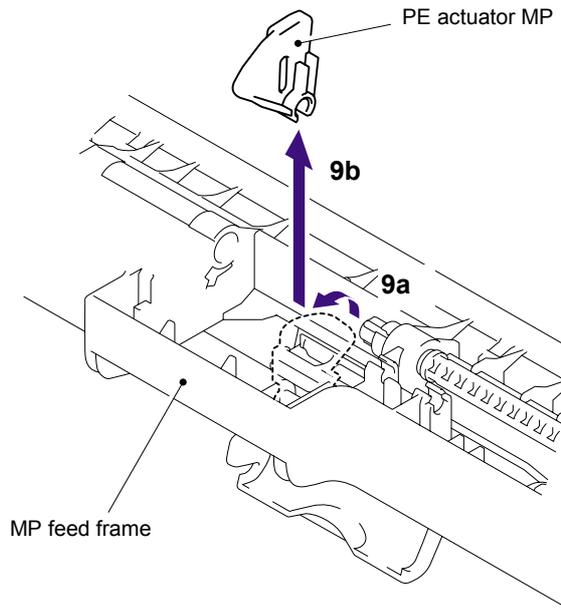


Fig. 5-108

(10) Remove the bind B M3x8 Taptite screw, and then remove the MP PE sensor ASSY.

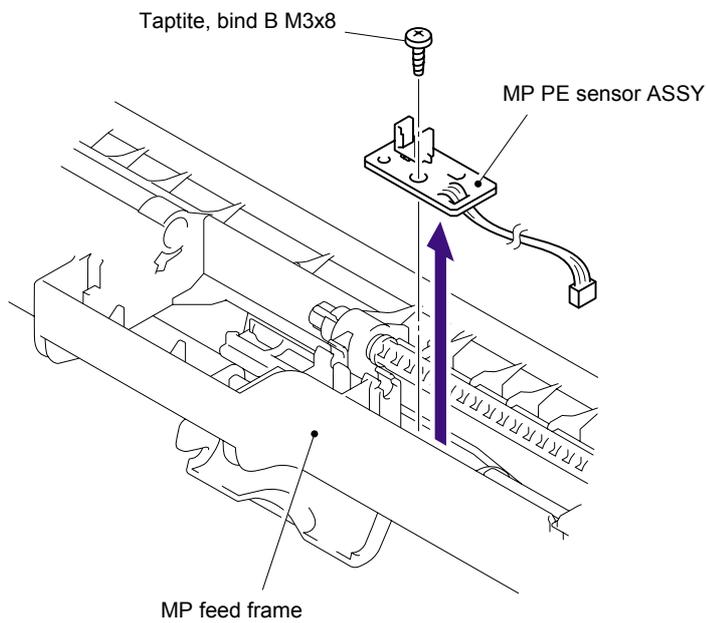


Fig. 5-109

- (11) Lift up the back of the Separation pad ASSY MP to the direction of 11a and pull up the Separation pad ASSY MP to remove.

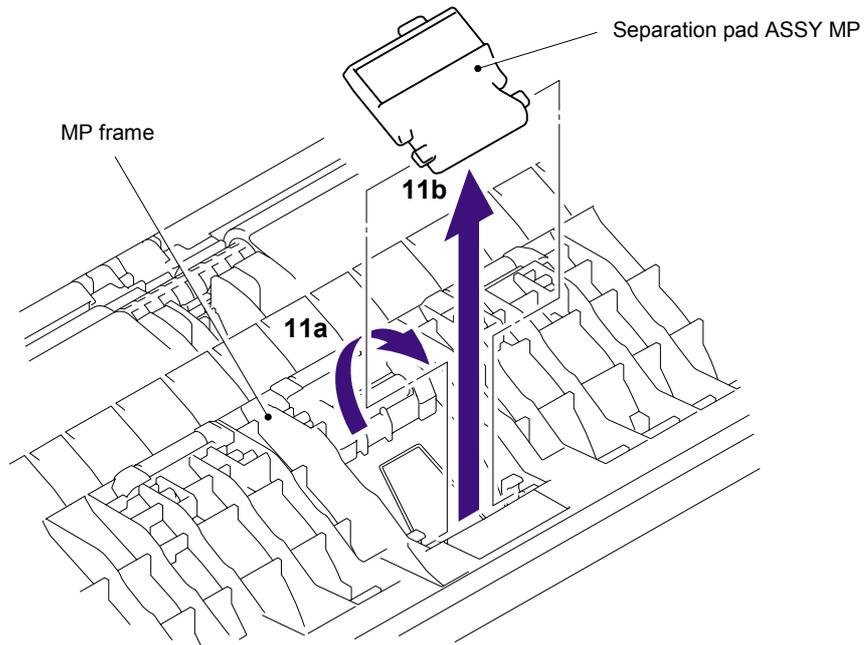


Fig. 5-110

- (12) Remove the MP separation spring from the MP frame.

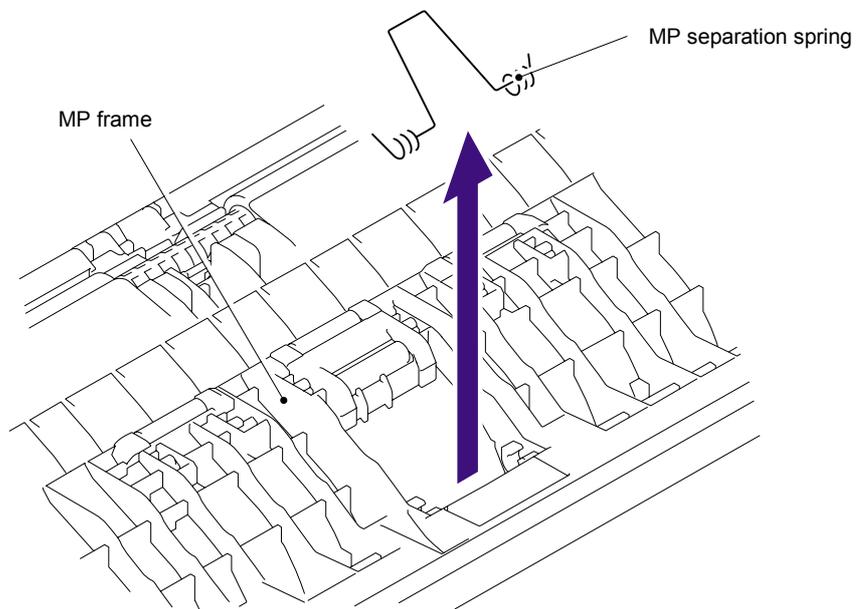


Fig. 5-111

Assembling Note:

When assembling the MP separation spring, ensure that its direction is correct referring to the figure below.

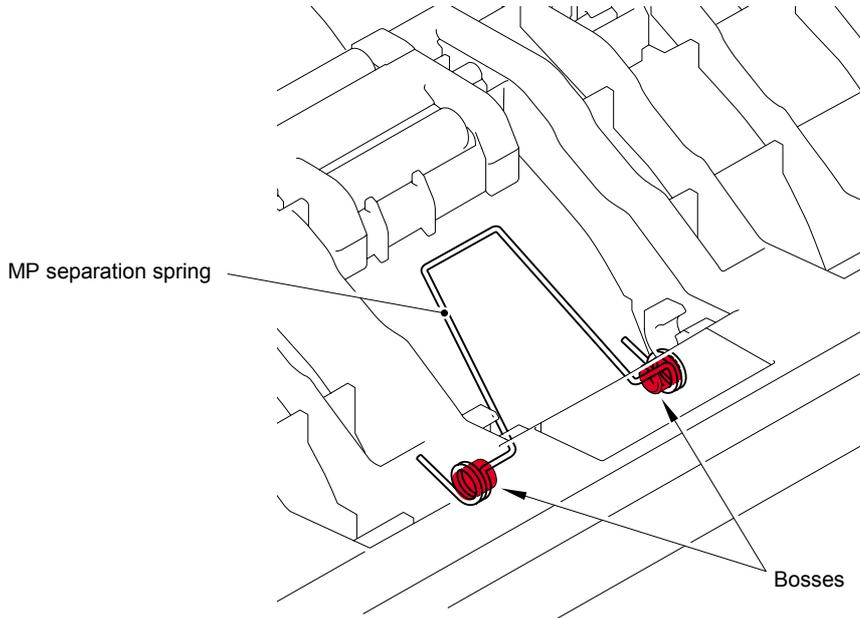


Fig. 5-112

7.39 Regist Actuator Rear/Regist Actuator Spring

- (1) Turn the Paper feed unit upside down.
- (2) Release the Hook A of the Actuator cover to pull up the Actuator cover to remove.

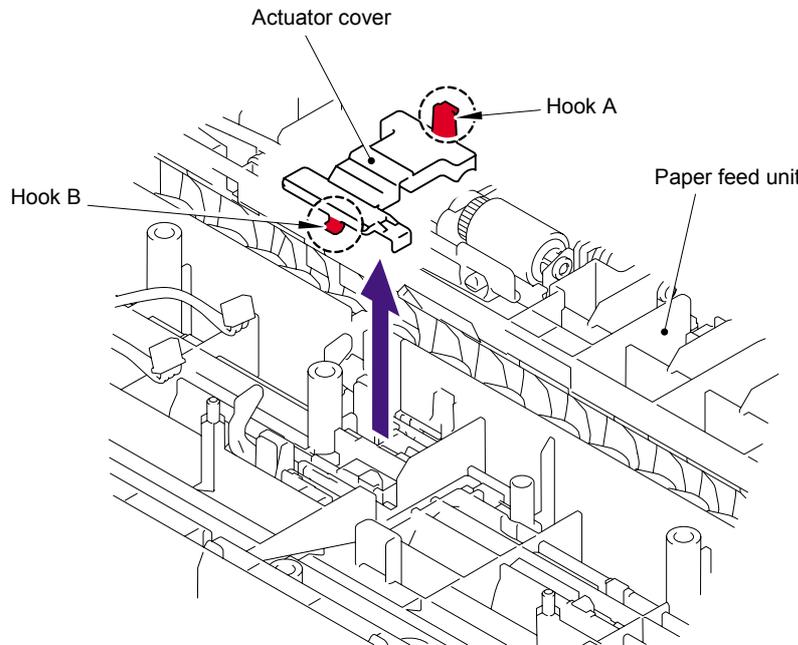


Fig. 5-113

- (3) Slide the Regist actuator rear to the direction of 3b while pressing the Hook to the direction of 3a and pull up the Regist actuator rear to remove. Then, remove the Regist actuator spring from the Regist actuator rear.

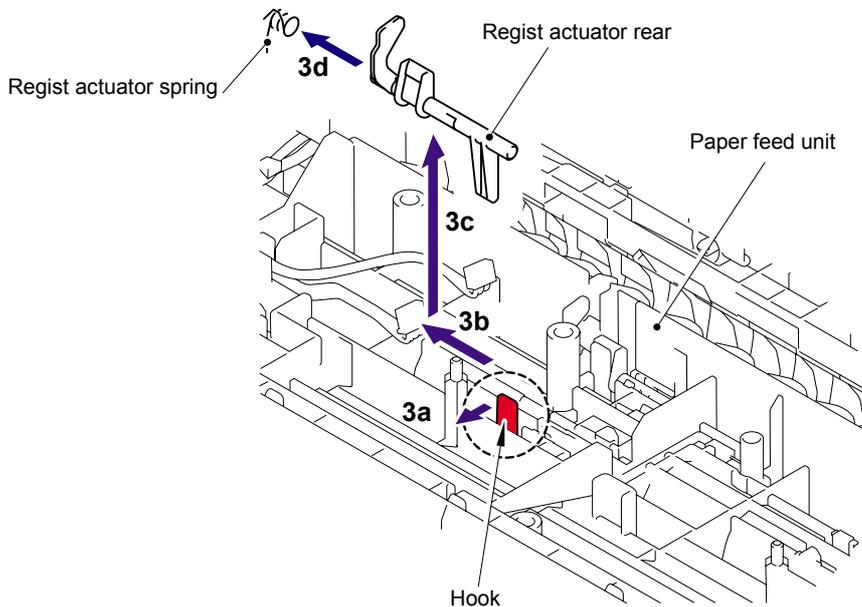


Fig. 5-114

Assembling Note:

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

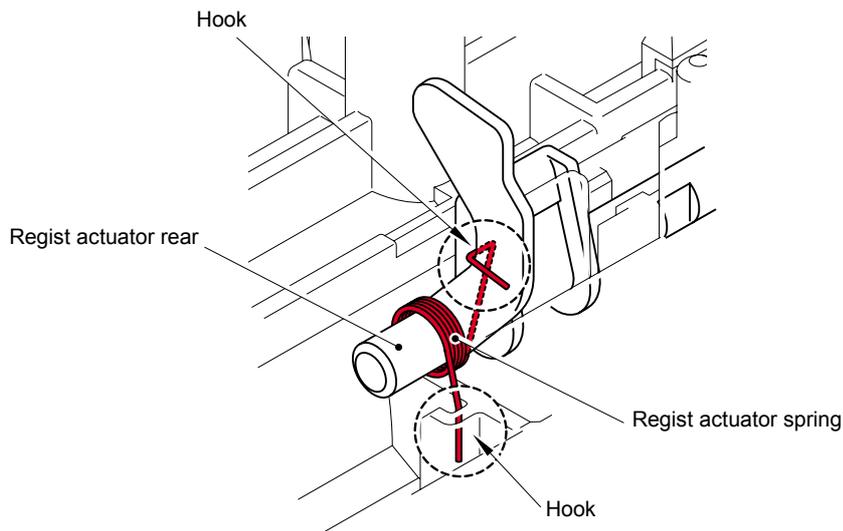


Fig. 5-115

7.40 Regist Actuator Front/Regist Actuator Spring

- (1) Slide the Regist actuator front to the direction of 1b while pressing the Hook to the direction of 1a and pull up the Regist actuator front to remove. Then, remove the Regist actuator spring from the Regist actuator front.

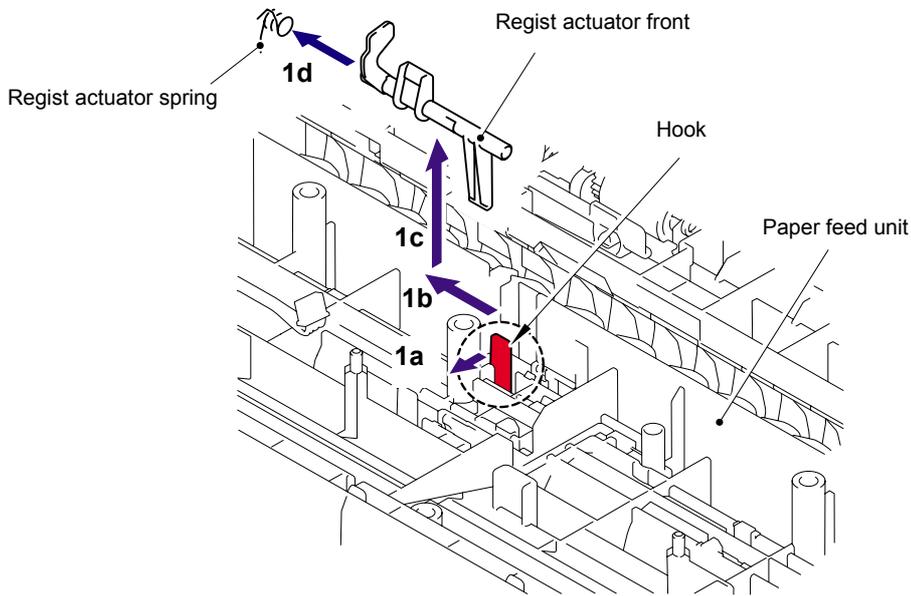


Fig. 5-116

Assembling Note:

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

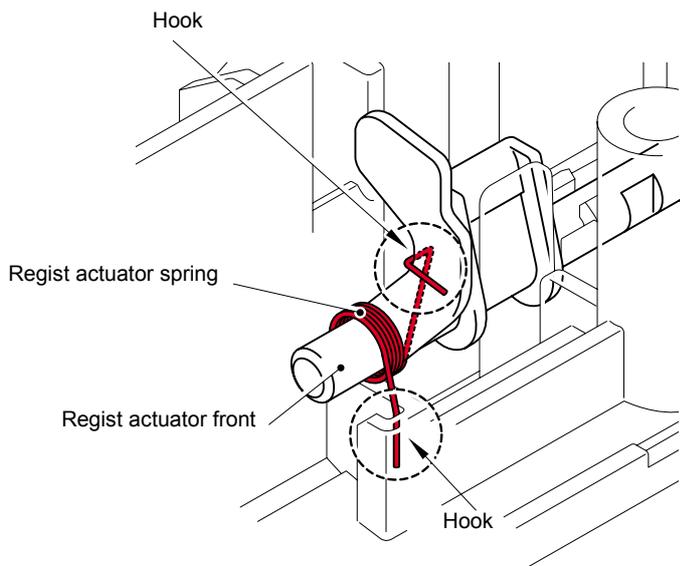


Fig. 5-117

7.41 Roller Holder ASSY

- (1) Push the Lift arm to the direction of 1a and pull out the pin of the Roller holder ASSY. Then, turn the Roller holder ASSY to the direction of 1b.

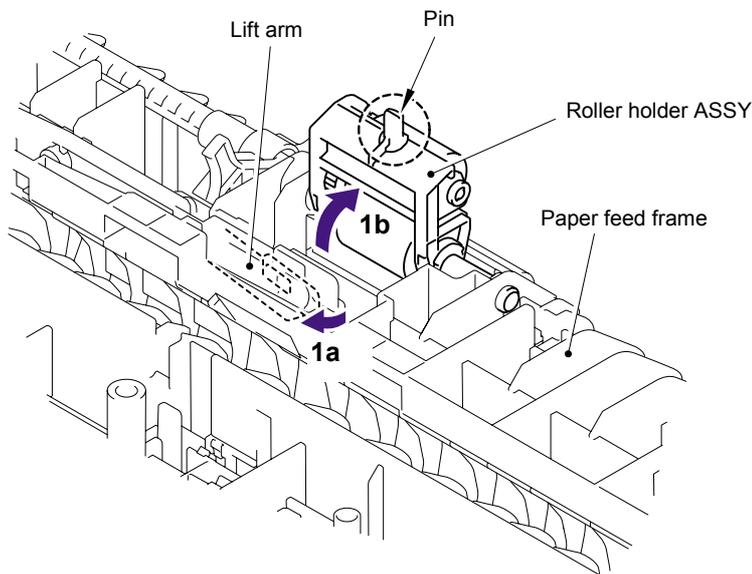


Fig. 5-118

- (2) Slide the Roller holder ASSY to the direction of 2a. Then, lift up the gear side of the Roller holder ASSY to the direction of 2b and pull it out to the direction of 2c to remove.

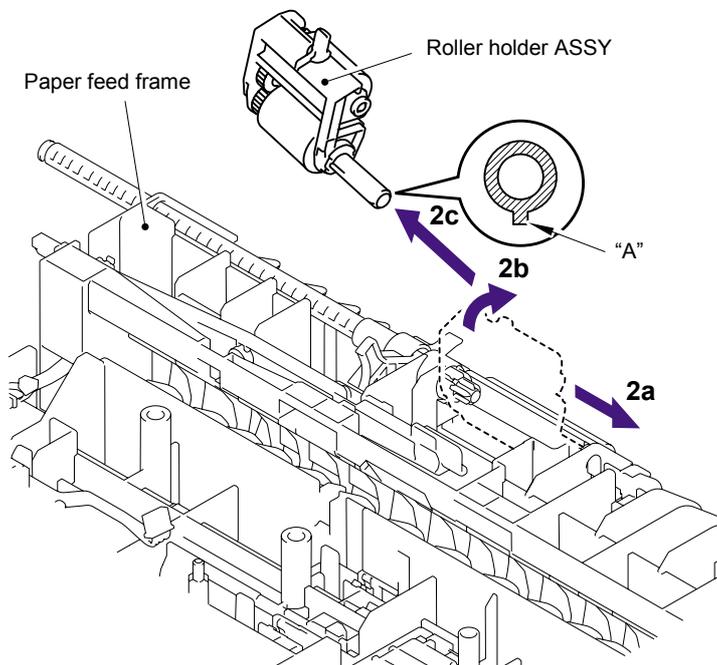


Fig. 5-119

Assembling Note:

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

7.42 PE Actuator/Edge Actuator/Edge Actuator Spring

(1) Remove the Edge actuator spring.

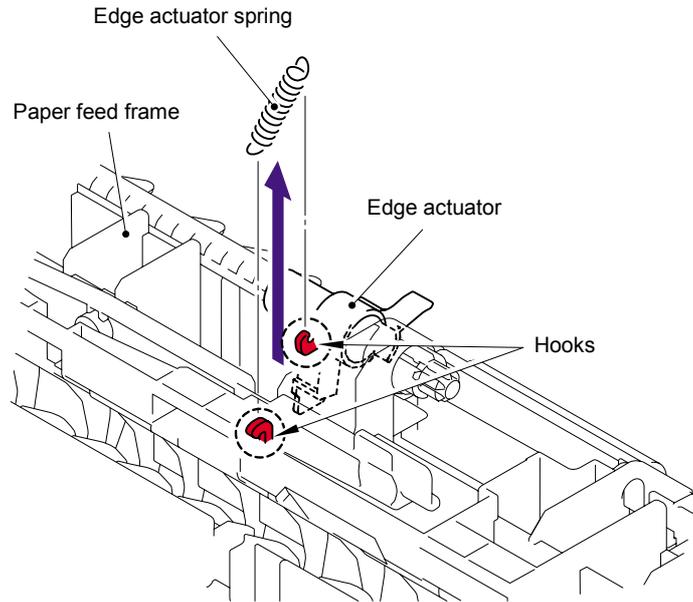


Fig. 5-120

(2) Release the hook and remove the Separation R shaft bearing.

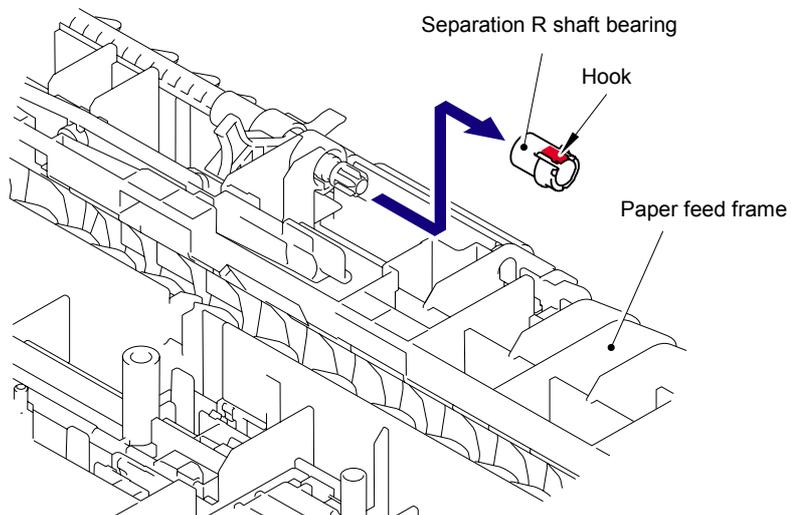


Fig. 5-121

- (3) Pull out the Separation roller drive shaft to the direction of the arrow and remove the Edge actuator and PE actuator.

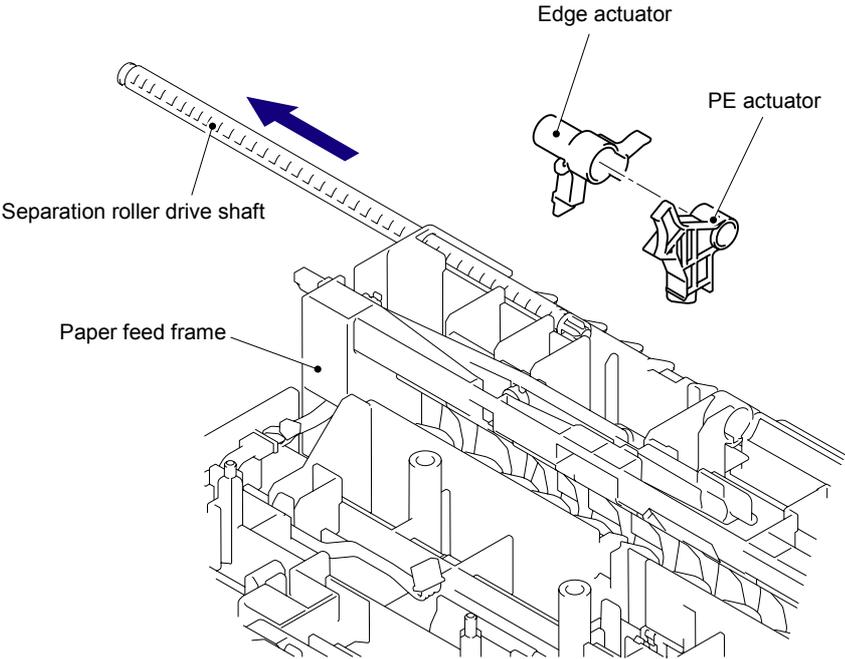


Fig. 5-122

7.43 PE EG Sensor ASSY

- (1) Remove the two bind B M3x8 Taptite screws, and then remove the MP frame.

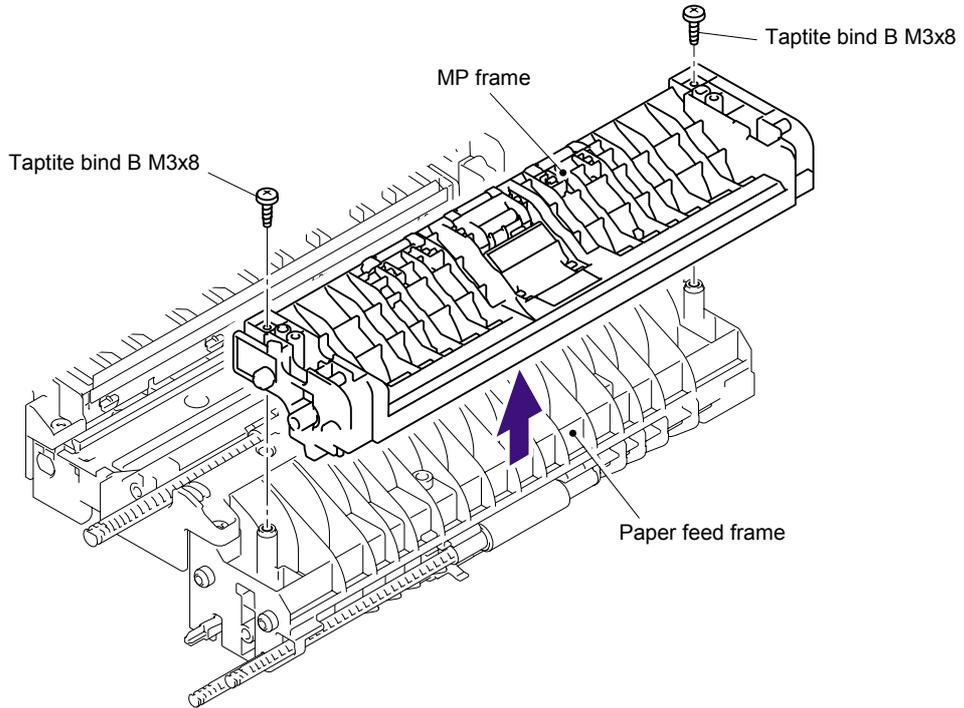


Fig. 5-123

- (2) Remove the bind B M3x8 Taptite screw, and then remove the PE EG sensor ASSY.

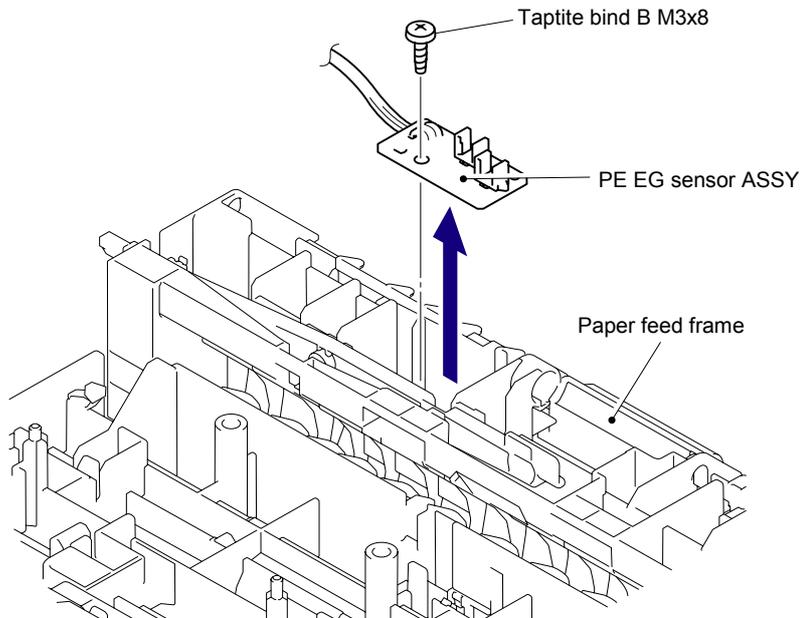


Fig. 5-124

7.44 Wireless PCB (PCB T60H929.00 ASSY 02) (For HL-5280DW)

- (1) Disconnect the connector from the Wireless PCB harness.
- (2) Remove the Wireless PCB (PCB T60H929.00 ASSY 02) and Wireless PCB holder from the Frame R.

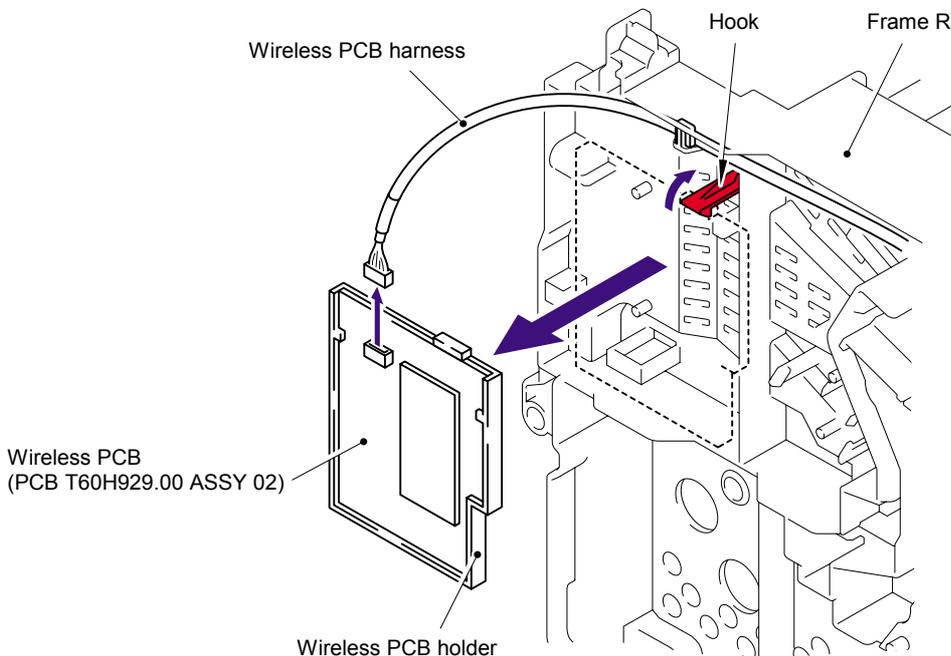


Fig. 5-125

- (3) Remove the Wireless PCB (PCB T60H929.00 ASSY 02) from the Wireless PCB holder.

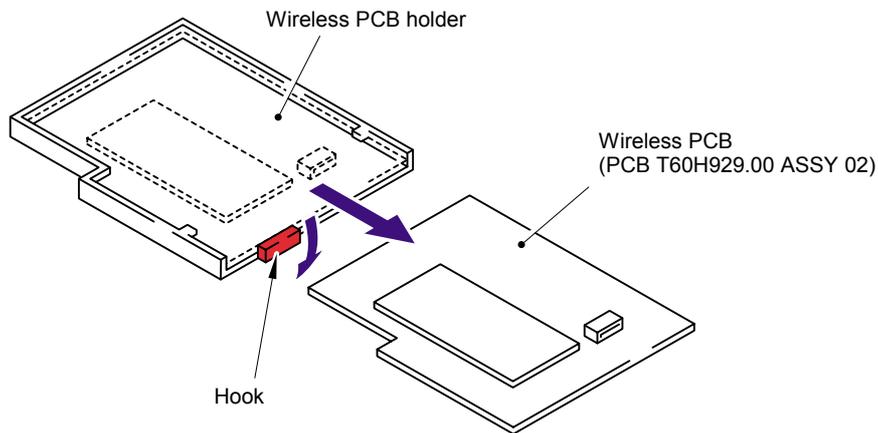


Fig. 5-126

8. DISASSEMBLY PROCEDURE (LT-5300)

8.1 Paper Tray

- (1) Pull out the Paper tray from the LT-5300.

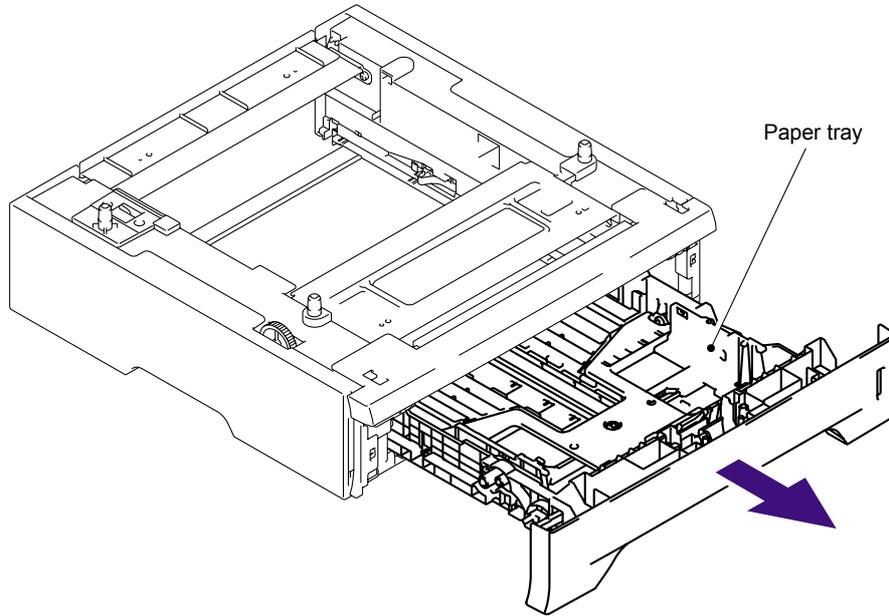


Fig. 5-127

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

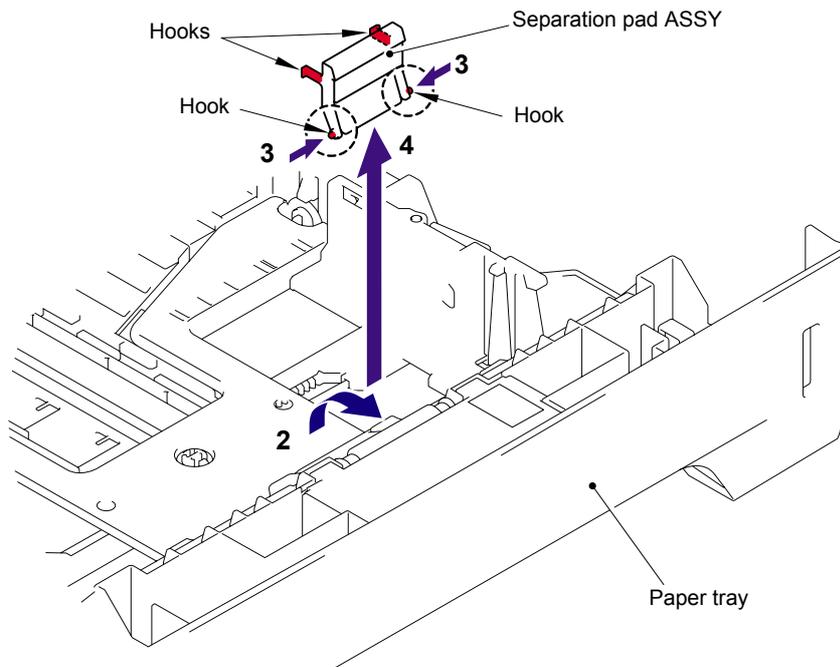
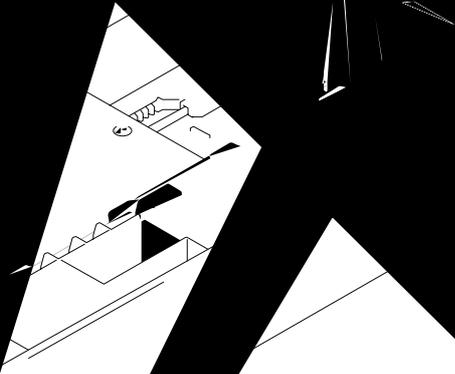


Fig. 5-128

(5)



(7) Remove the Gear 21-16.

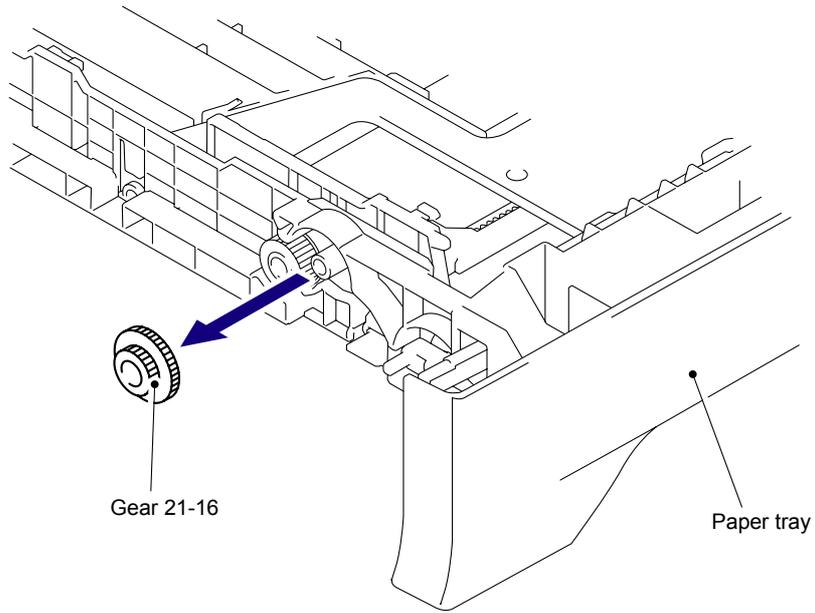


Fig. 5-131

(8) Remove the Gear 15.

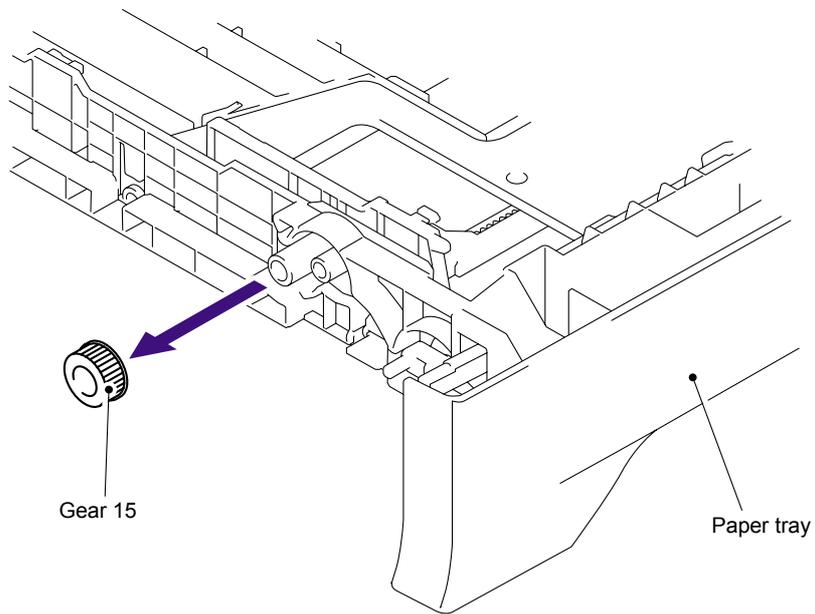


Fig. 5-132

8.2 LT Front Cover ASSY

- (1) Remove the two bind B M4x12 Taptite screws.
- (2) Remove the LT front cover ASSY.

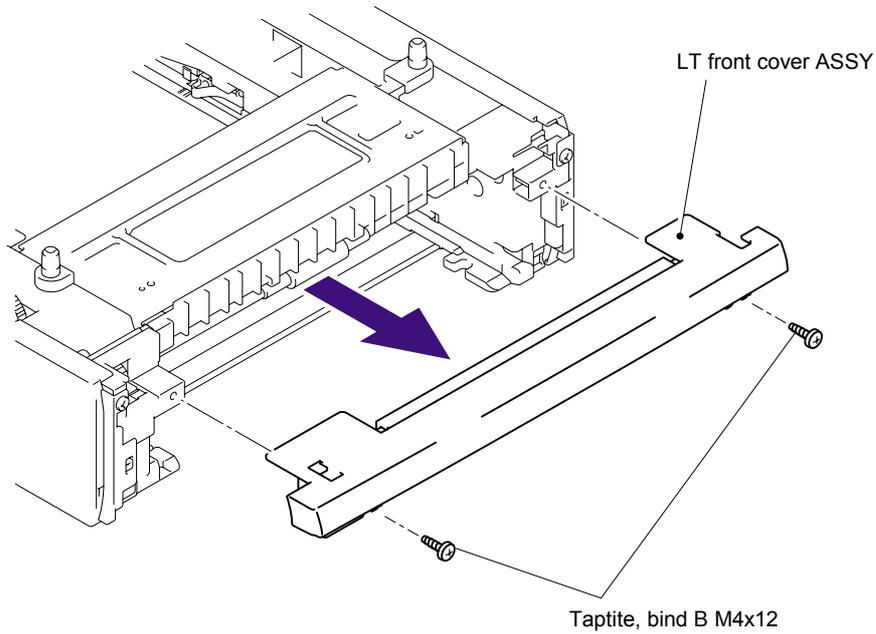


Fig. 5-133

- (3) Remove the LT front paper guide from the LT front cover ASSY while pulling the two hooks inwards.

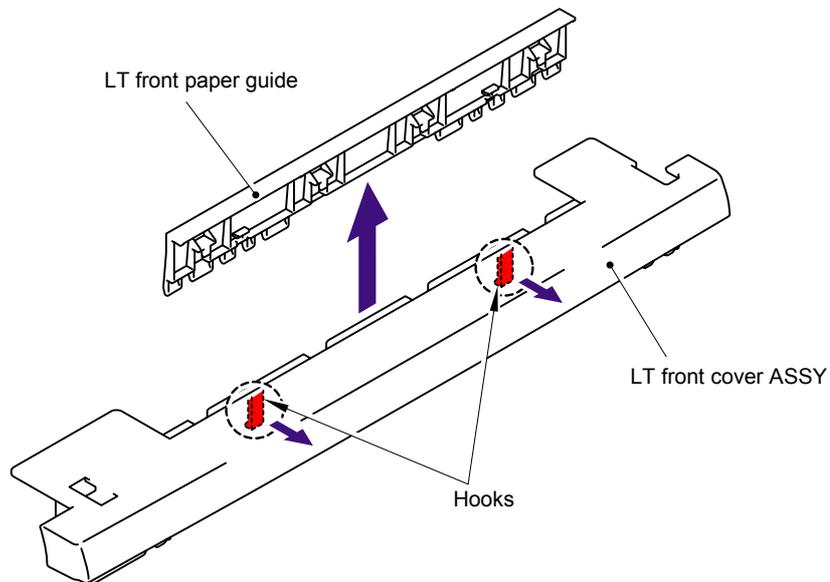


Fig. 5-134

8.3 LT Rear Cover

- (1) Remove the two cup S M3x6 Taptite SR screws.
- (2) Remove the LT rear cover.

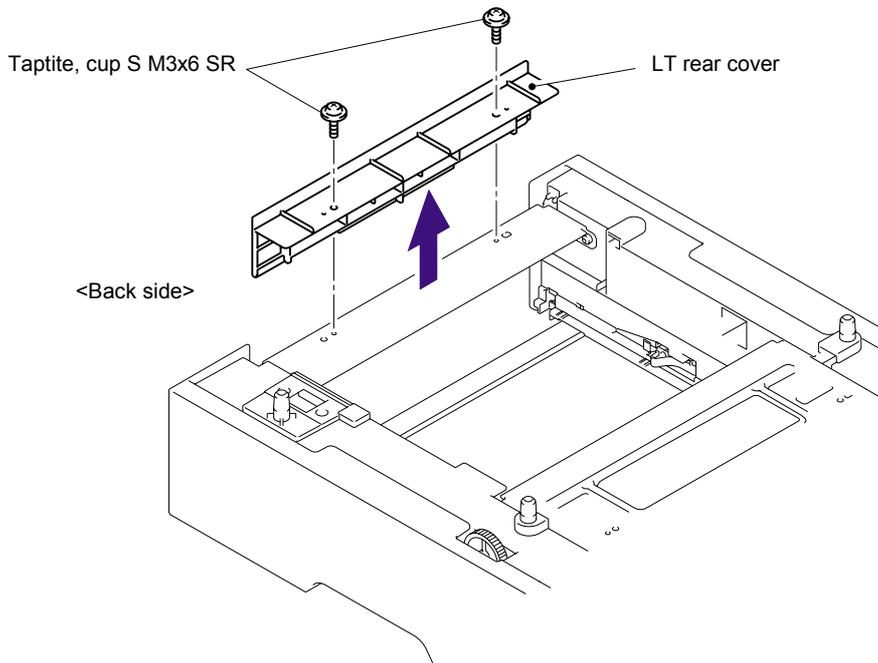


Fig. 5-135

8.4 LT Side Cover L

- (1) Remove the bind B M4x12 Taptite screw.
- (2) Remove the cup S M3x6 Taptite SR screw.
- (3) Release the Hooks in the order of the arrows and remove the LT side cover L.

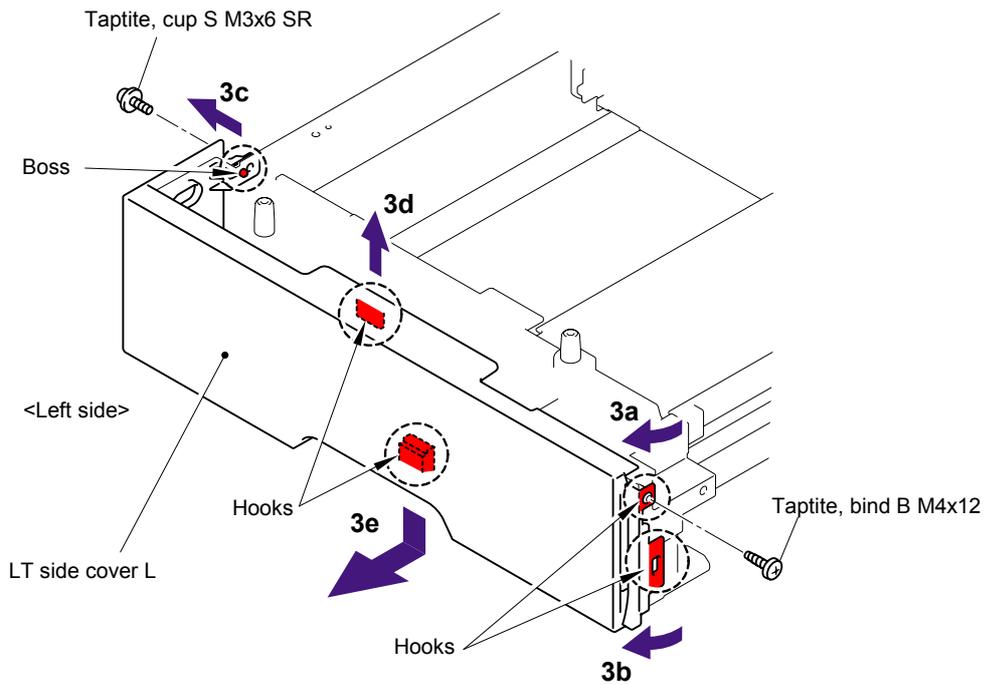


Fig. 5-136

8.5 LT Side Cover R

- (1) Remove the bind B M4x12 Taptite screw.
- (2) Remove the cup S M3x6 Taptite SR screw.
- (3) Release the Hooks in the order of the arrows and remove the LT side cover R.

Taptite, cup S M3x6 SR

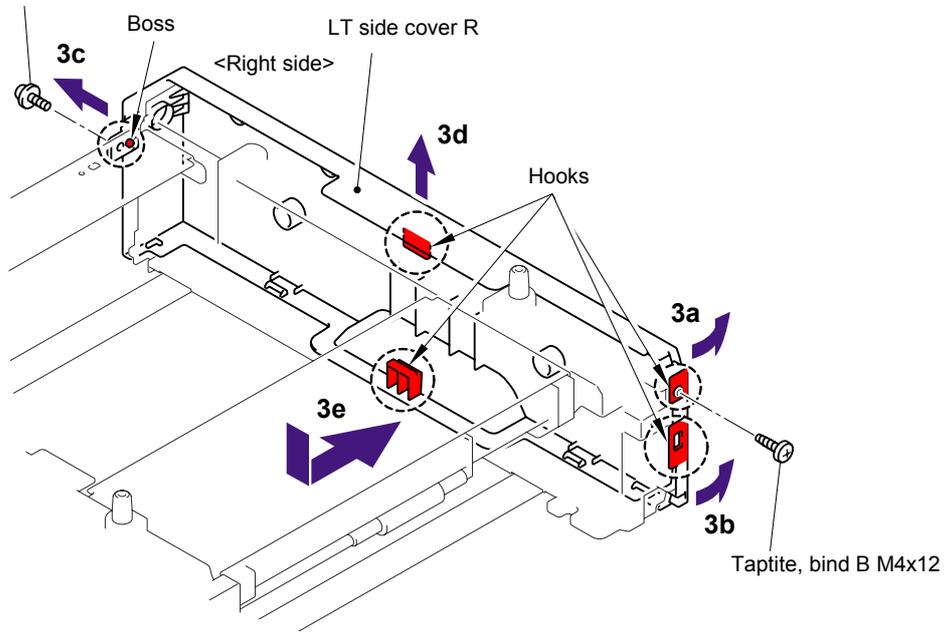


Fig. 5-137

8.6 LT PCB ASSY

- (1) Disconnect the connectors from the LT PCB ASSY.
- (2) Remove the bind B M4x12 Taptite screw, and then remove the LT PCB ASSY.

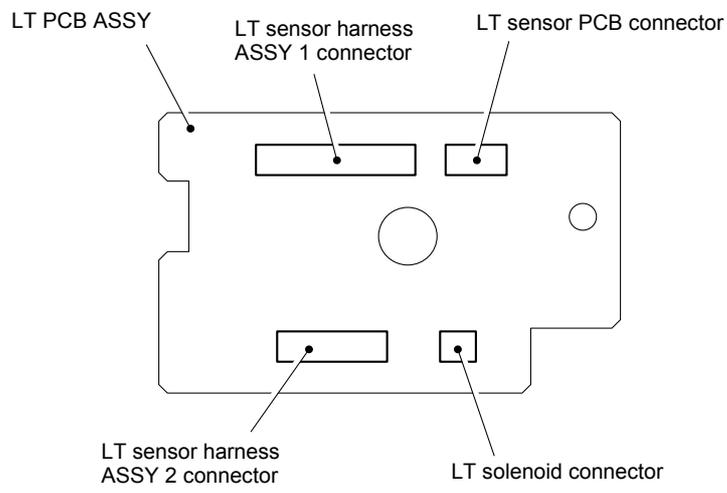
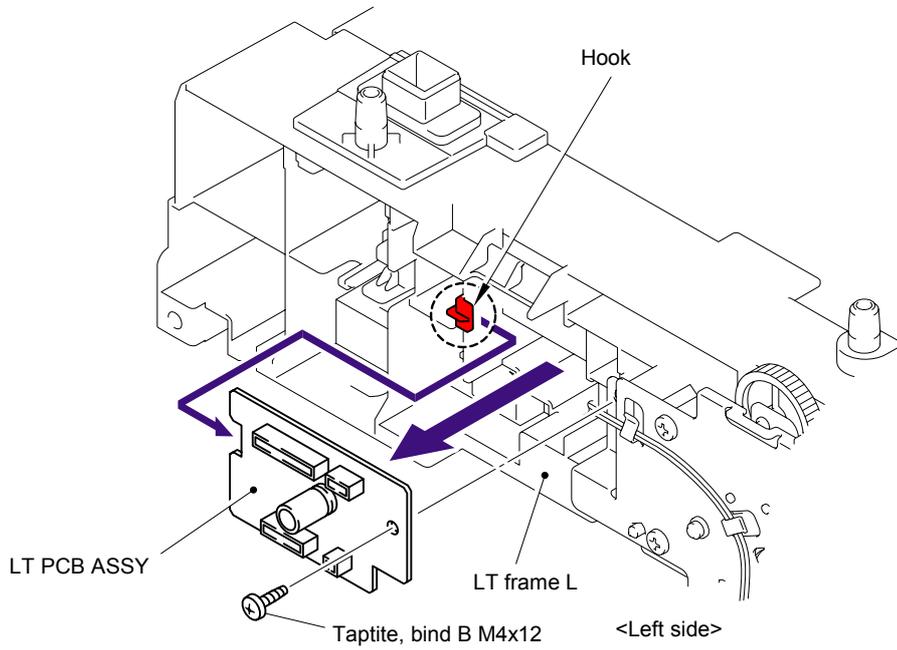


Fig. 5-138

8.7 Connector: 55533-1219

- (1) Remove the LT sensor harness ASSY 1 from the Connector: 55533-1219.
- (2) Disconnect the Connector: 55533-1219 while pressing the Hooks inwards.

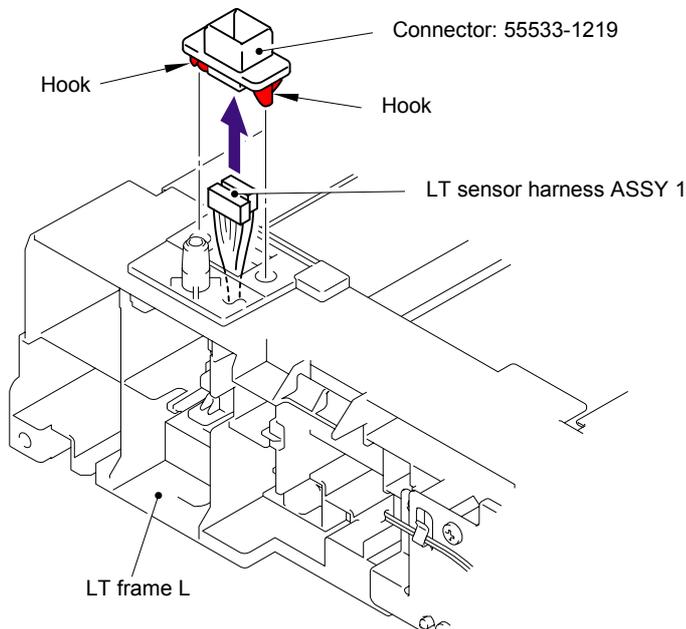


Fig. 5-139

8.8 Connector: 54702-1219

- (1) Remove the LT sensor harness ASSY 2 from the Connector: 54702-1219.
- (2) Disconnect the Connector: 54702-1219 while pressing the Hooks inwards.

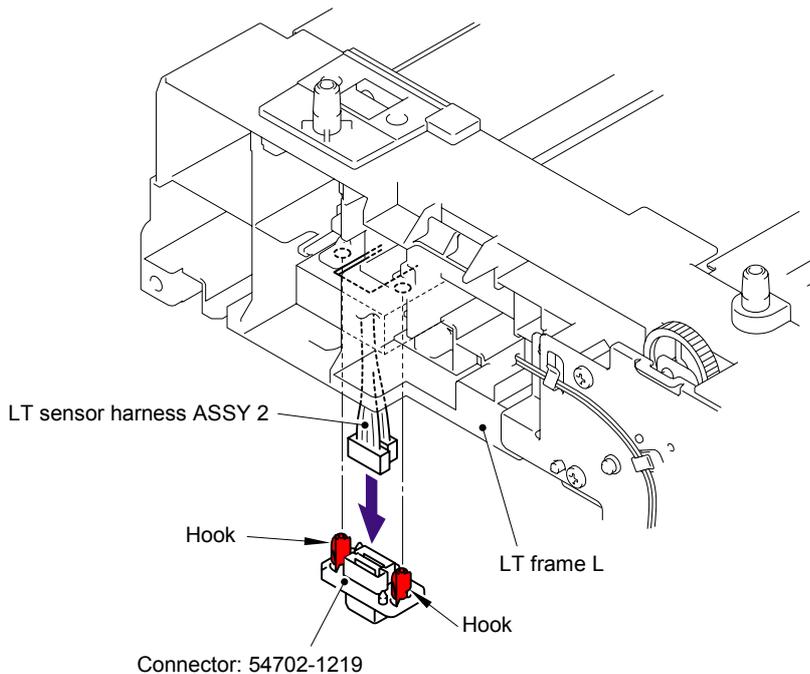


Fig. 5-140

8.9 Gear 24 LT

- (1) Place the LT so that the LT frame L is at the top.
- (2) Release the Hook to remove the Gear 20 T1 roller drive from the LT frame L.

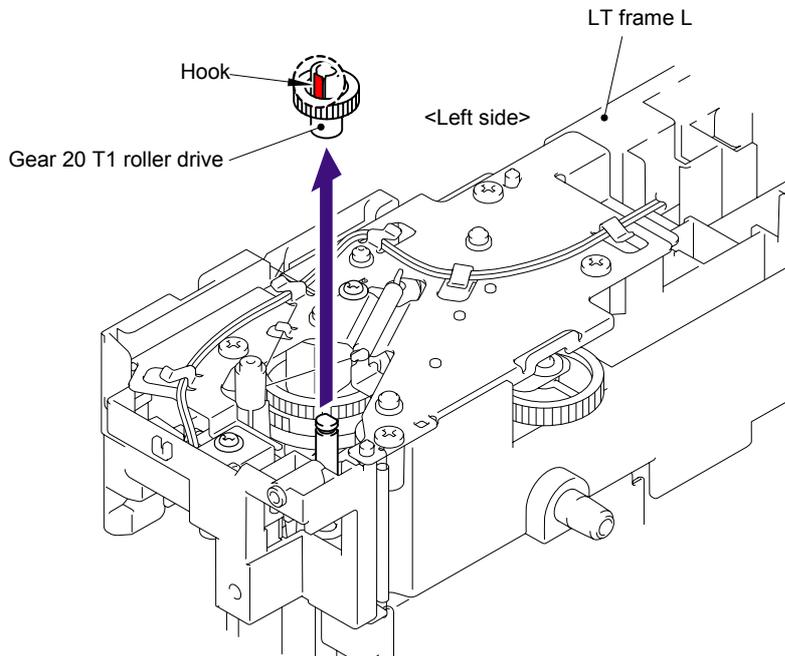


Fig. 5-141

- (3) Remove the Retaining ring E4.
- (4) Remove the Gear 24 LT from the LT frame L.

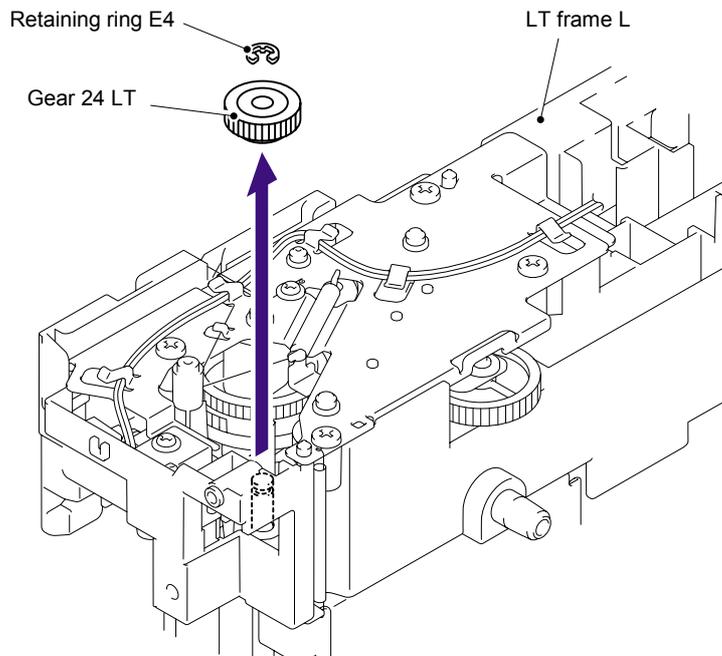


Fig. 5-142

8.10 Collar 6

- (1) Remove the Gear plate ground spring from the LT frame L.

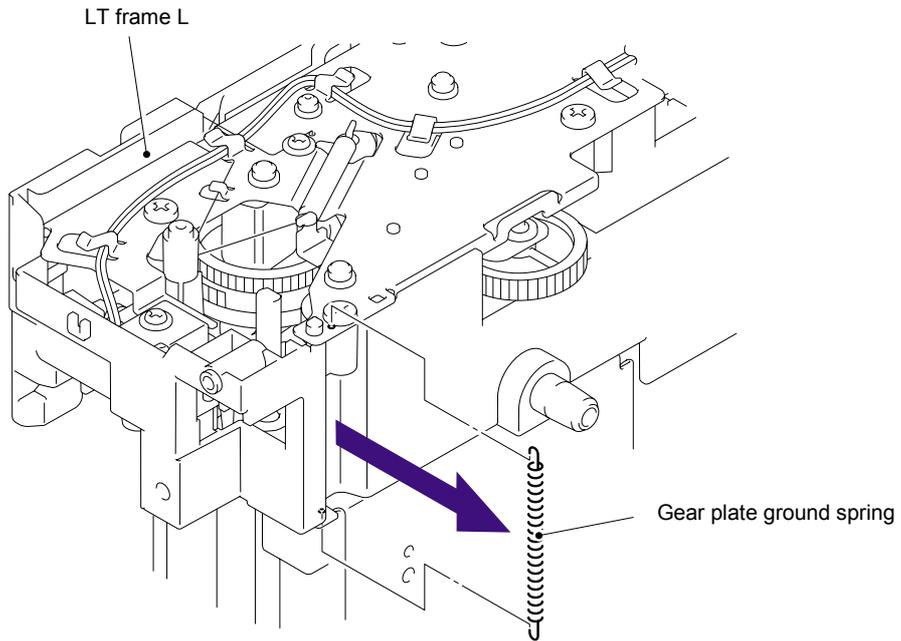


Fig. 5-143

- (2) Remove the cup S M3x6 Taptite SR screw, and then remove the Feed roller ground plate.

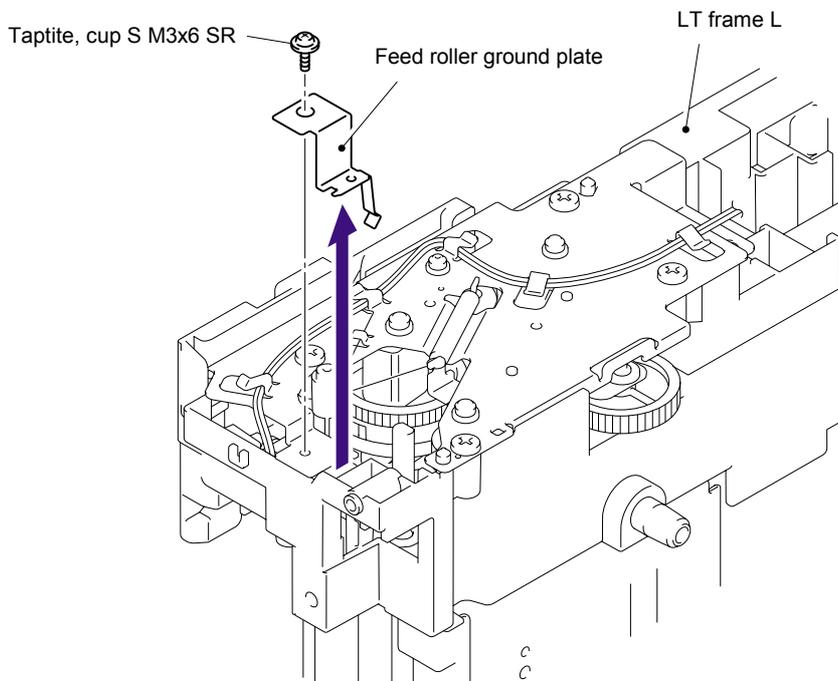


Fig. 5-144

(3) Remove the T1 sector gear spring LT from the LT frame L.

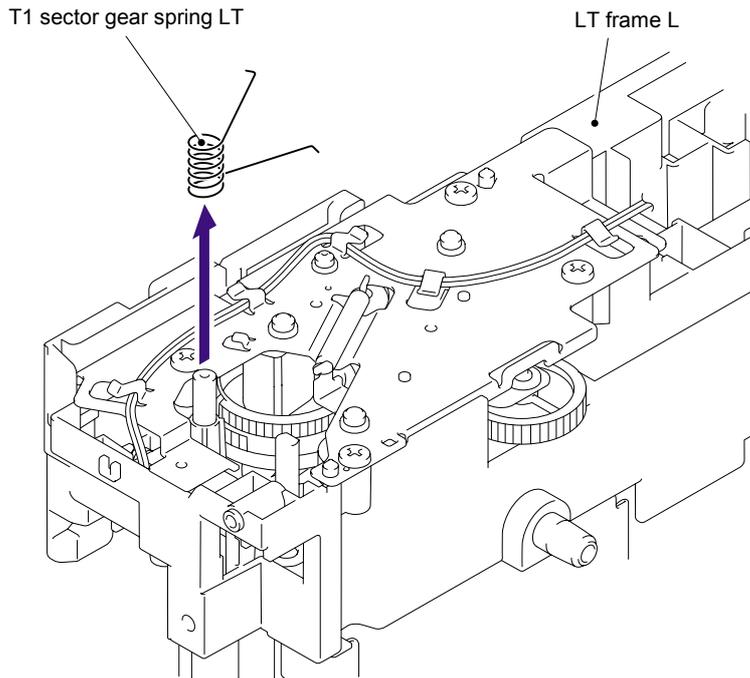


Fig. 5-145

Assembling Note:

When assembling the T1 sector gear spring LT, ensure that its direction is correct referring to the figure below.

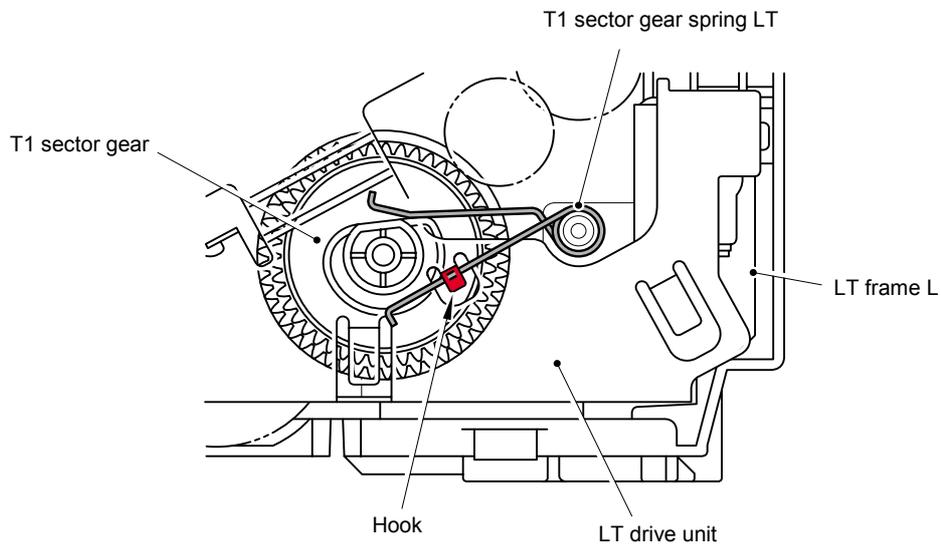


Fig. 5-146

- (4) Remove the LT solenoid harness from the hooks of the LT drive unit.

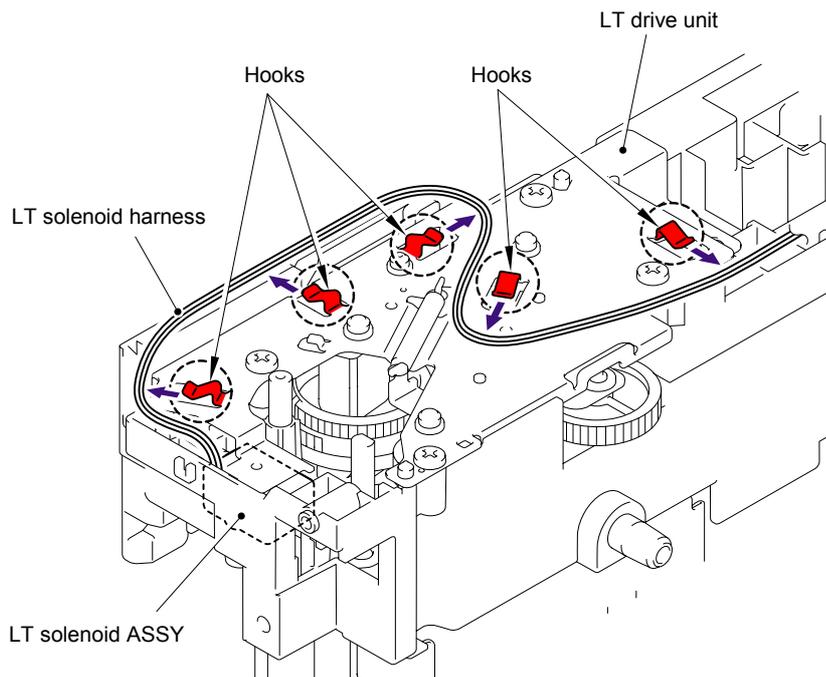


Fig. 5-147

- (5) Remove the cup S M3x6 Taptite screw.
 (6) Remove the four bind B M4x12 Taptite screws, and then remove the LT drive unit.

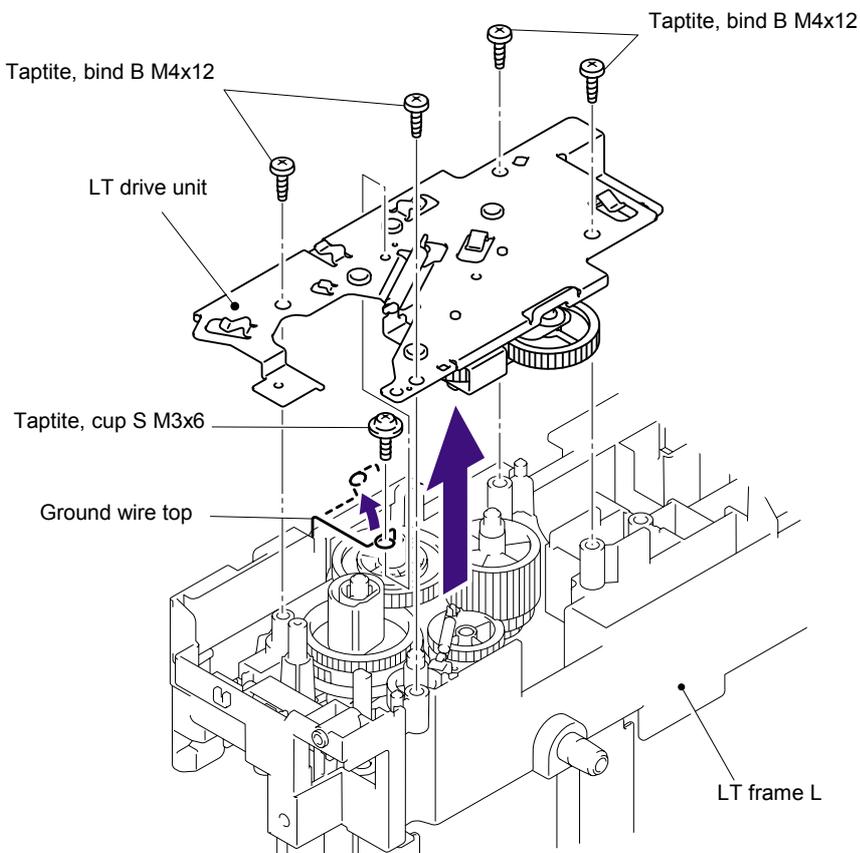


Fig. 5-148

(7) Remove the Clutch spring from the LT drive unit.

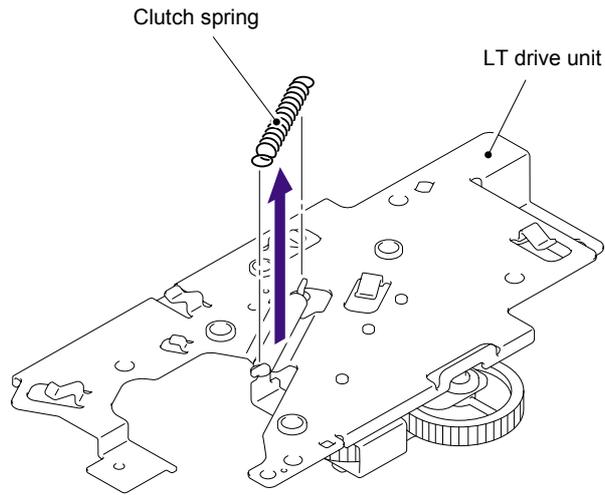


Fig. 5-149

(8) Remove the Collar 6.

(9) Remove the Clutch arm ASSY from the LT drive unit.

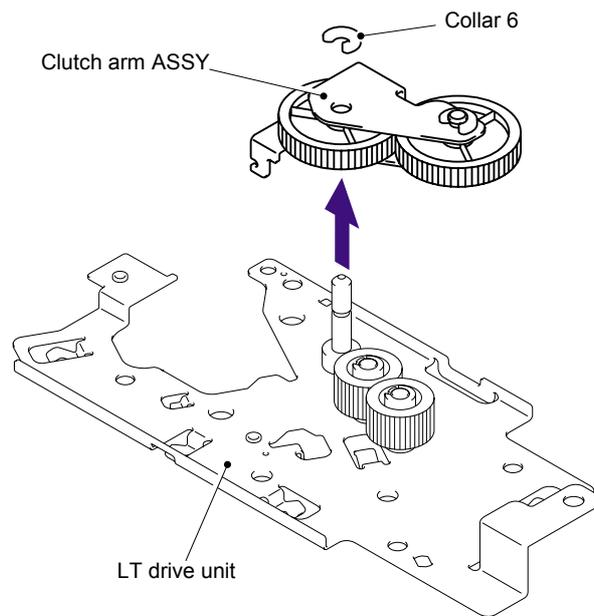


Fig. 5-150

(10) Remove the Collar 6 from the Clutch arm ASSY.

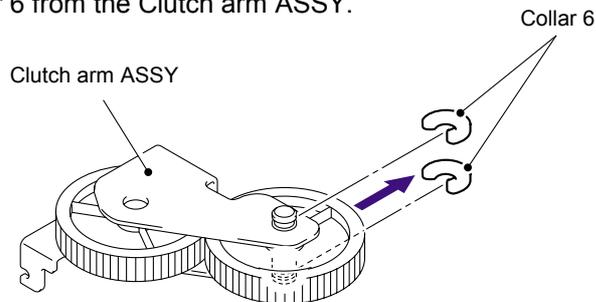


Fig. 5-151

8.11 LT Solenoid ASSY

- (1) Remove the bind B M3x10 Taptite screw, and then remove the LT solenoid ASSY.
- (2) Remove the Solenoid release spring P/R from the LT solenoid ASSY.

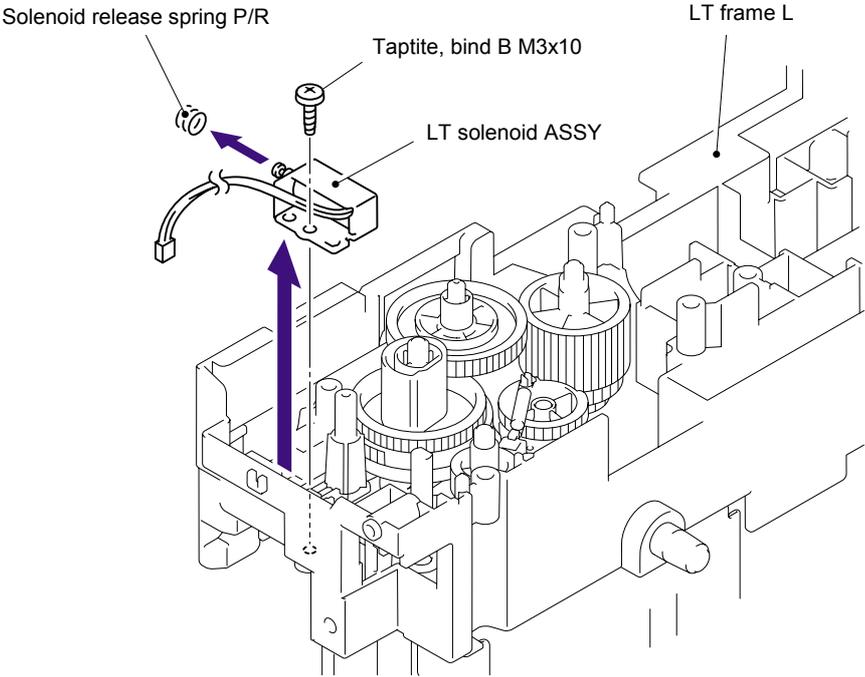


Fig. 5-152

8.12 Roller Holder ASSY

- (1) Push the Lift arm to the direction of the arrow 1a and pull out the pin of the Roller holder ASSY. Then, turn the Roller holder ASSY to the direction of the arrow 1b.

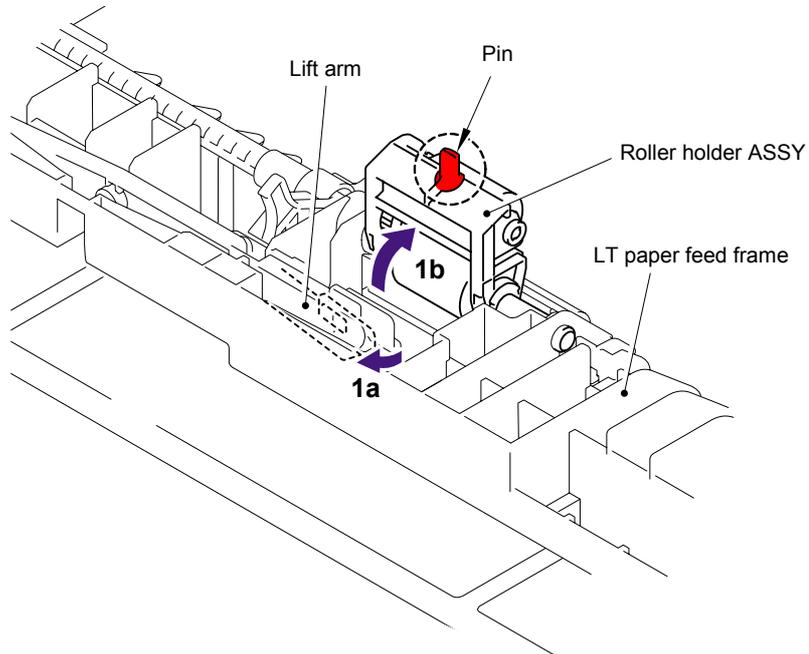


Fig. 5-153

- (2) Slide the Roller holder ASSY to the direction of the arrow 2a. Then, lift up the gear side of the Roller holder ASSY to the direction of the arrow 2b and pull it out to the direction of the arrow 2c to remove.

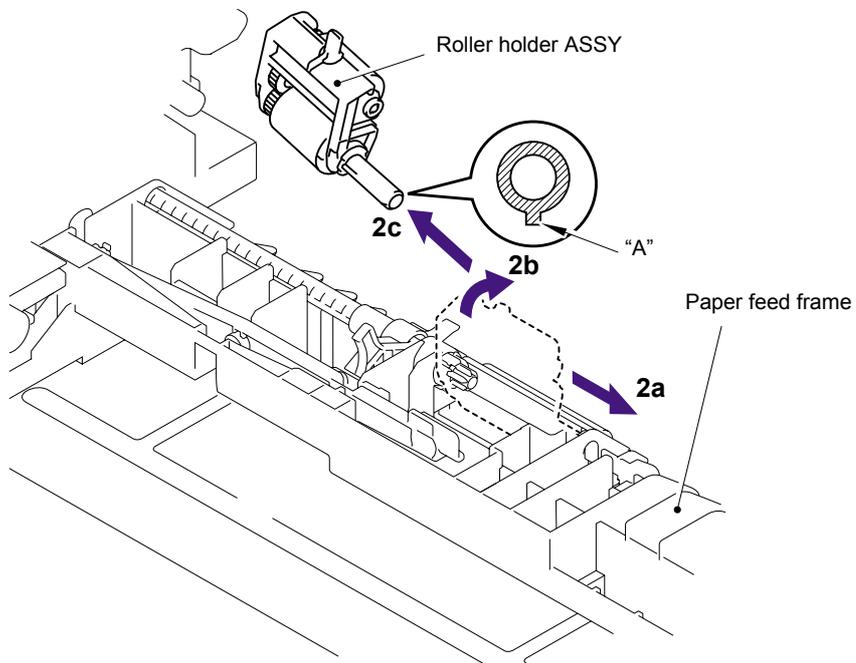


Fig. 5-154

Assembling Note:

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

8.13 Edge Actuator Spring

(1) Remove the Edge actuator spring.

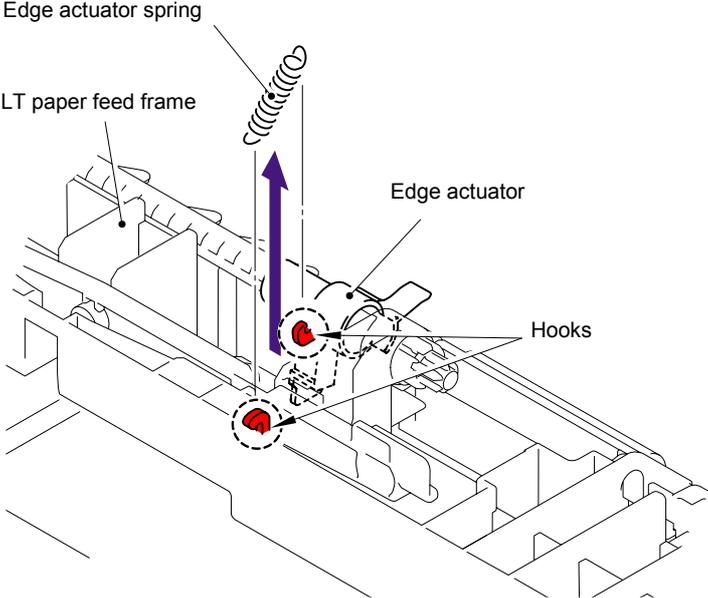


Fig. 5-155

8.14 PE Actuator , Edge Actuator

- (1) Release the Hook and remove the Separation R shaft bearing.

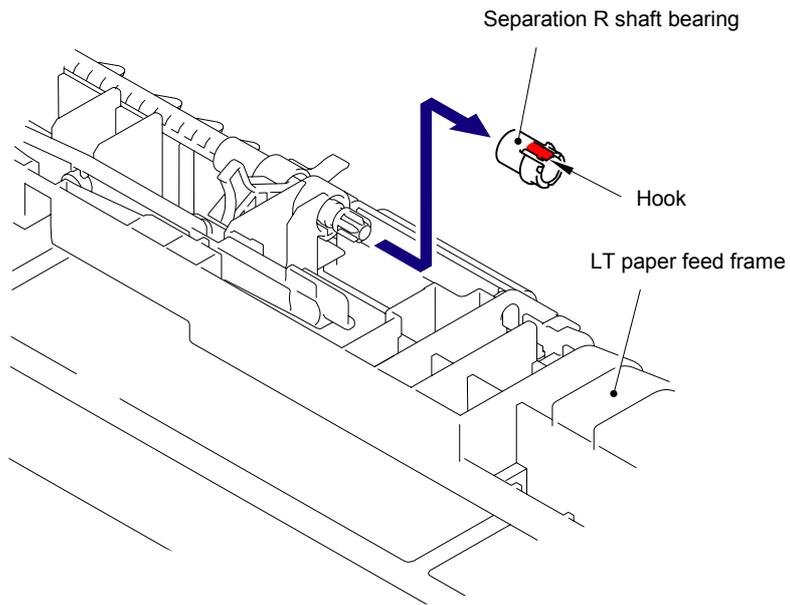


Fig. 5-156

- (2) Pull out the Separation roller drive shaft to the direction of the arrow and remove the Edge actuator and PE actuator.

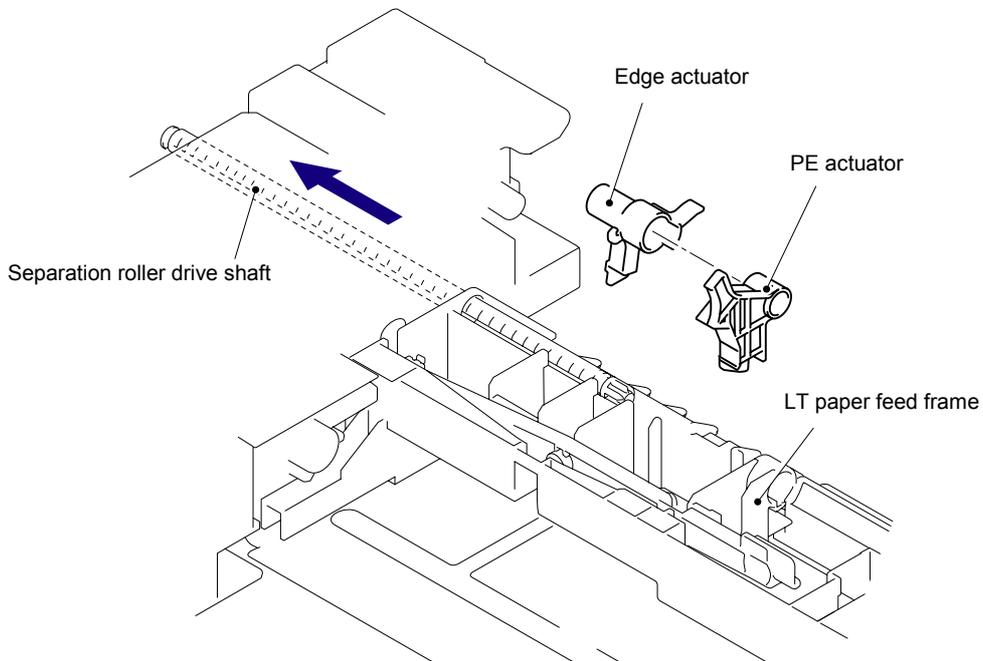


Fig. 5-157

8.15 LT Sensor PCB ASSY

- (1) Remove the two bind B M4x12 Taptite screws.
- (2) Remove the four cup S M3x6 Taptite SR screws, and then remove the LT frame L.

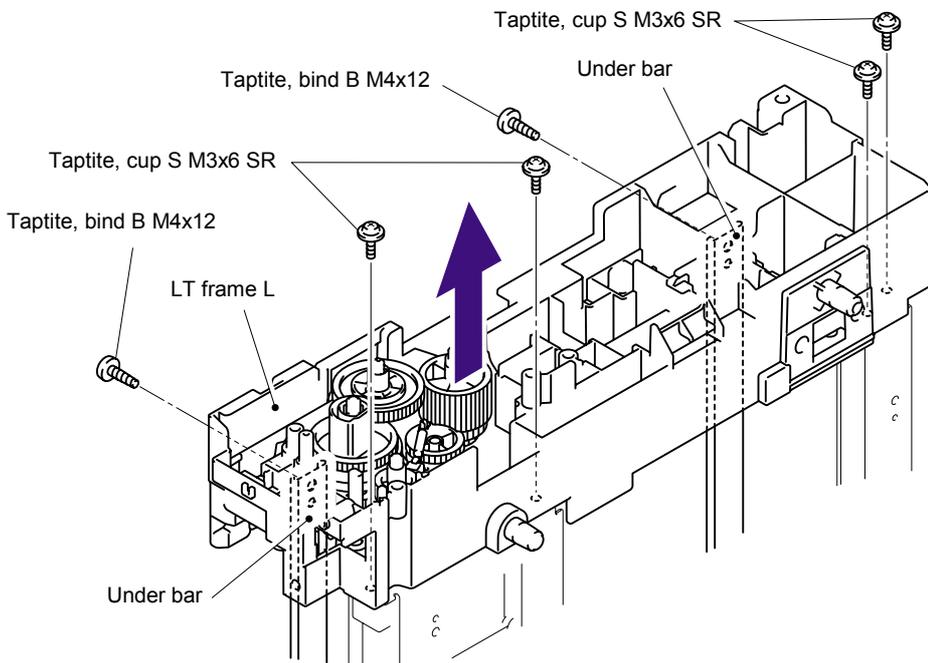


Fig. 5-158

- (3) Remove the two cup S M3x6 Taptite SR screws, and then remove the LT paper feed frame.

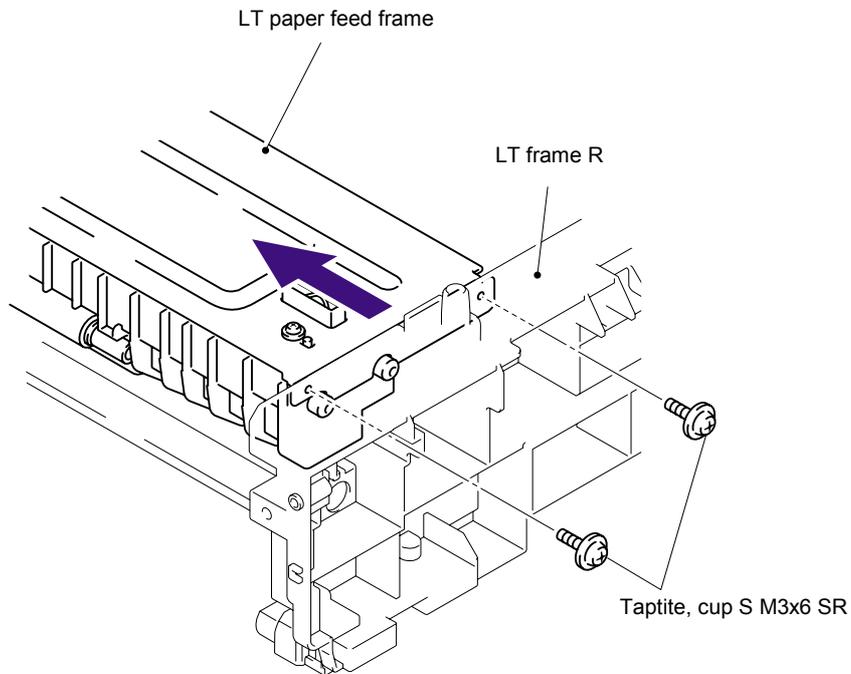


Fig. 5-159

- (4) Remove the two cup B M3x12 Taptite screws, and then remove the LT front beam.

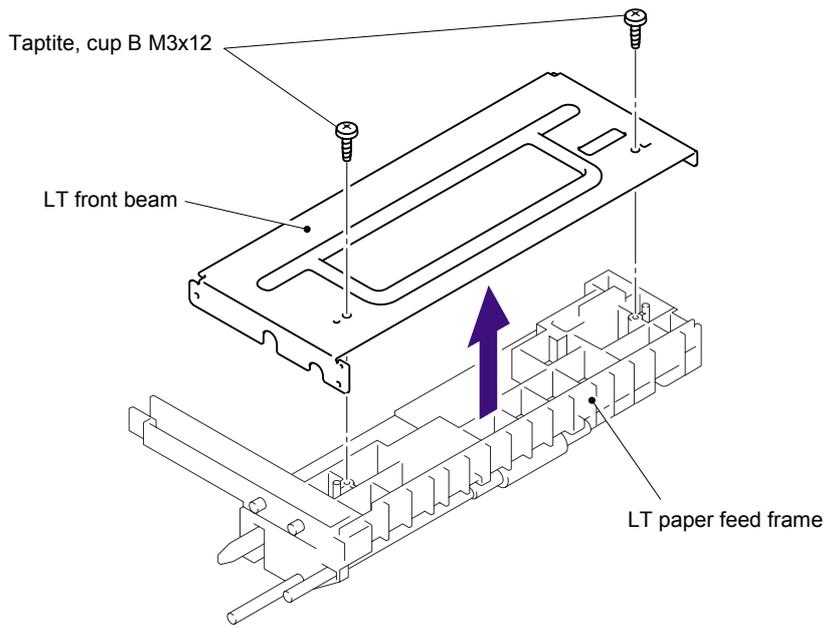


Fig. 5-160

- (5) Remove the bind B M3x8 Taptite screw, and then remove the LT sensor PCB ASSY.

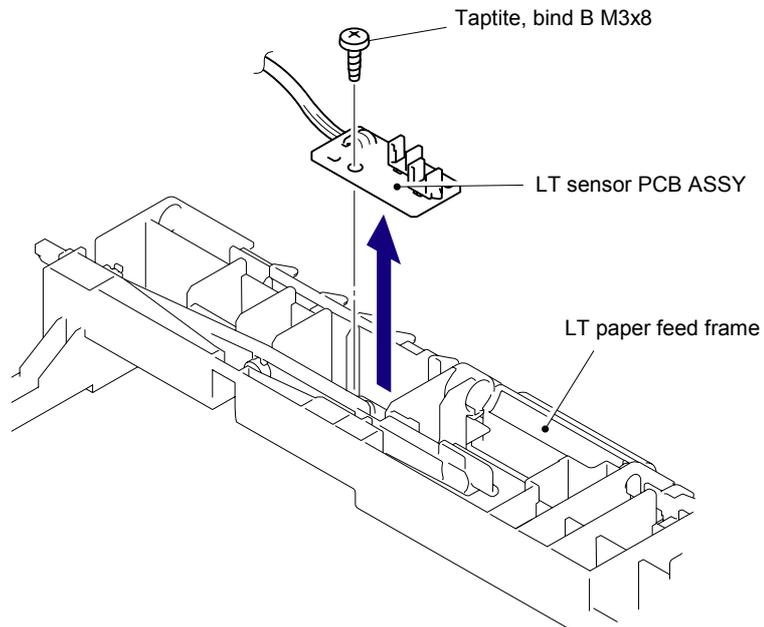


Fig. 5-161

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

1. IF YOU REPLACE THE MAIN PCB

The table below shows the ROM type of each main PCB.

| Model | Main PCB (For a supplied part) | |
|-----------|--------------------------------|-----------------------|
| | ROM 0 | ROM 1 |
| HL-5240 | 8 Mbyte Flash ROM x 1 | N/A |
| HL-5250DN | 8 Mbyte Flash ROM x 1 | 2 Mbyte Flash ROM x 1 |
| HL-5270DN | 8 Mbyte Flash ROM x 1 | 4 Mbyte Flash ROM x 1 |
| HL-5280DW | 8 Mbyte Flash ROM x 1 | 4 Mbyte Flash ROM x 1 |

<What to do when replacing the main PCB>

- Rewriting the firmware (ROM) of the printer
- Setting the default paper size.
- Setting the serial number.

<Which part to use for the operation>

| | |
|-----------|---|
| HL-5240 | MAIN PCB ASSY 5240 FW: MAIN CONTROLLER AL |
| HL-5240L | MAIN PCB ASSY 5240L FW: MAIN CONTROLLER 5240L |
| HL-5250DN | MAIN PCB ASSY 5250 FW: MAIN CONTROLLER AL FW: BRNET AL |
| HL-5270DN | MAIN PCB ASSY 5270 FW: MAIN CONTROLLER AL FW: BRNET AL |
| HL-5280DW | MAIN PCB ASSY 5280DW US MAIN PCB ASSY 5280DW EU FW: MAIN CONTROLLER AL FW: BRNET ALW |

<What you should prepare>

- 1) Computer (Windows® XP/2000 or later)
Create the "hl5200" folder in the C drive, for example.
- 2) HL-5240/5250DN/5270DN/5280DW target printer
- 3) USB cable (one piece)
- 4) FILEDG32.EXE file
Copy the installed program into the "hl5200" folder that has been created in the C drive.
- 5) Target firmware: LZXXXX_\$.BLF (firmware of the printer)

| | |
|---------------|--|
| LZXXXX_\$.BLF | LZXXXX: First six digits of the part number of the firmware \$: Alphabet representing the revision of the firmware. |
|---------------|--|

Extract it and copy the extracted files into the "hl5200" folder that has been created in the C drive.

- 6) Setting file of the default paper size:
Extract this file to set the default paper size.
S5200E (A4 size), s5200U (Letter size), s5200I (A4 size, Israeli font setting for Israel),
AL_CHN.pjl (A4 size, Thin paper setting for China)
- 7) BR_DEVELOP.zip file
Copy it into the "hl5200" folder that has been created in the C drive. Extract the copied file.
- 8) MAINTE.EXE file
Copy it into the "hl5200" folder that has been created in the C drive. Extract the copied file and run the bramainte.exe file by double-clicking.

Refer to the following steps for installing the printer driver.

- **Installing the printer driver**

To identify terminals connected via USB interface, the PC requires the corresponding virtual USB devices to be implemented by driver. If you connect any number of printers to your PC, therefore, the same number of virtual USB devices will be automatically configured on your PC. To prevent virtual USB devices from being configured limitlessly, use the unique driver installation procedure described below that enables your PC to identify terminals via single virtual USB device.

NOTE:

Once this installation procedure is carried out for the PC, no more driver installation will be required for that PC to identify machines.

1. Unplug the USB cable, if the printer is connected to the PC.
2. (HL-5240/5250DN)
Turn the power supply of the printer on while holding down the **Go** button and the **Job Cancel** button. Make sure that all LEDs are on. The **Status LED** lights up when releasing the **Go** button and the **Job Cancel** button.* Press the **Go** button for five times (ROM 0). A few seconds later, the printer goes into the ROM rewriting mode.
* The printer goes back to the normal mode automatically when the printer remains no operation while the **Status LED** is lighting.
(HL-5270DN/5280DW)
Turn the power supply of the printer on while holding down the **Set** key and the **Back** key. Select the appropriate mode by pressing the ◀ ▶ keys.
Make sure that “**PRL->ROM0 W**” on the LCD panel and press the **Set** key to be set. “**Send BLF file..**” message appears on the LCD panel. A few seconds later, the printer goes into the ROM rewriting mode.
3. Connect the USB cable with the printer. The following screen appears, indicating the detection of new hardware device by the system.



4. Select “Search for a suitable driver for my device (recommended)” and click **Next**.



5. Select “Specify a location” and click **Next**.



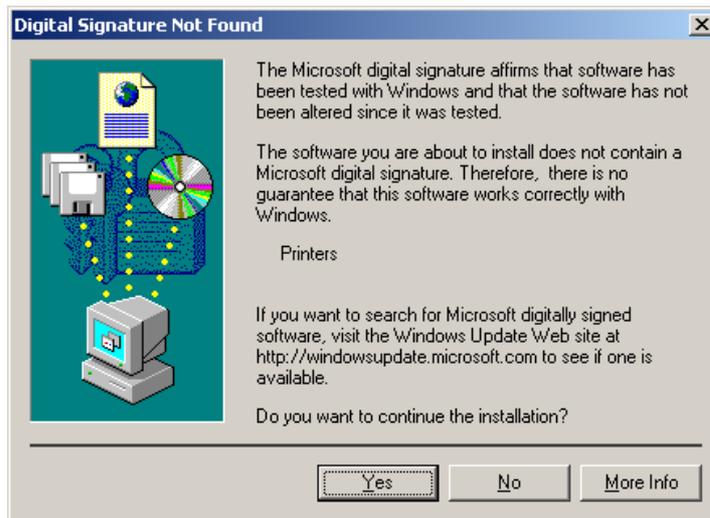
6. Select the “BR_DEVELOP” folder in the C drive, then click **OK**.



7. Click **Next**.



8. To proceed, click **Yes**.



9. If the driver is successfully installed, the following message window appears. Click **Finish** to return Windows.



<Procedures>

After the installation procedure of the printer driver is completed, refer to the following steps for the detailed procedures to rewrite the firmware.

■ **Rewriting the firmware (ROM) of the printer**

(HL-5240/5250DN)

- 1) Connect the PC and printer with the USB cable.
- 2) Turn the power supply of the printer on while holding down the **Go** button and the **Job Cancel** button. Make sure that all LEDs are on. The **Status** LED lights up when releasing the **Go** button and the **Job Cancel** button.* Press the **Go** button for five times (ROM 0) or six times (ROM 1). A few seconds later, the printer goes into the ROM rewriting mode.

* The printer goes back to the normal mode automatically when the printer remains no operation while the **Status** LED is lighting.

- 3) Start the PC.
- 4) Open the “hl5200” folder and double-click the FILEDG32 icon to start. Make sure that there is the “kensa” icon, and that no error occurs.

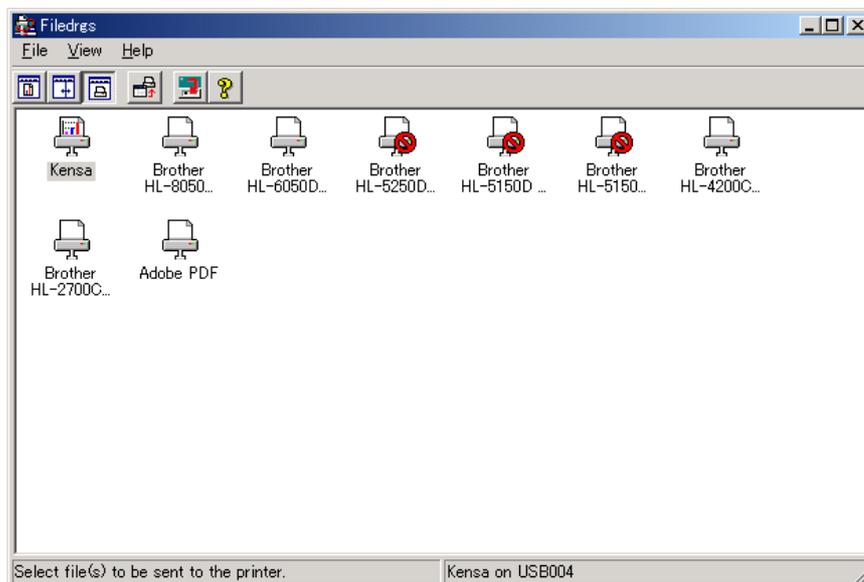


Fig. 6-1

- 5) Click the “kensa” icon in FILEDG32 to select.
- 6) Drag the firmware (LZ.....) in the same folder and drop it onto the icon of the applicable model in FILEDG32.
The files in the firmware are sent to the printer so that they are started to write into the flash ROM automatically. After finishing receiving the files, the printer starts to rewrite the firmware.
- 7) The **Status** LED blinks irregularly while the firmware being written. Then, be sure not to disconnect the USB cable or to turn off the power supply of the PC before all LEDs are ON to indicate that this firmware rewriting is done.
- 8) Turn the power supply of the printer off.

NOTE:

If the error related to the BLF file or the printer occurs, the red **Status** LED lights up.

(HL-5270DN/5280DW)

- 1) Connect the PC and printer with the USB cable.
- 2) Turn the power supply of the printer on while holding down the **Set** key and the **Back** key. Select the appropriate mode by pressing the ◀ ▶ keys.
 “PRL->ROM0 W” (For rewriting the ROM 0)
 “PRL->ROM1 W” (For rewriting the ROM 1)
 Press the **Set** key to be set. Make sure that “Send BLF file..” message appears on the LCD panel.
- 3) Start the PC.
- 4) Open the “hl5200” folder and double-click the FILEDG32 icon to start. Make sure that there is the “kensa” icon, and that no error occurs.

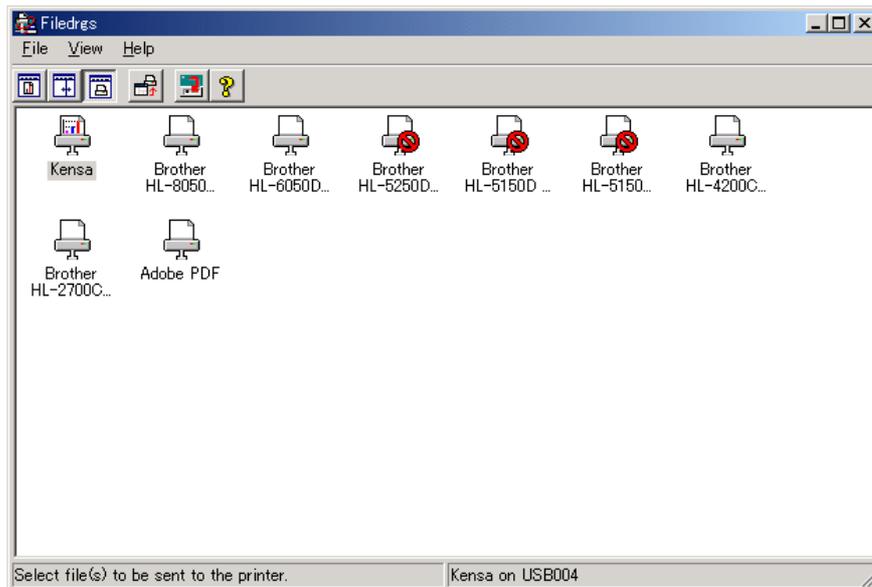


Fig. 6-2

- 5) Click the “**kensa**” icon in FILEDG32 to select.
- 6) Drag the firmware (LZ.....) in the same folder and drop it onto the icon of the applicable model in FILEDG32.
 The files in the firmware are sent to the printer so that they are started to write into the flash ROM automatically. After finishing receiving the files, the printer starts to rewrite the firmware.
- 7) The address messages appear on the LCD panel while the firmware being written. Then, be sure not to disconnect the USB cable or to turn off the power supply of the PC before all LEDs are ON to indicate that this firmware rewriting is done. The “....**Complete**....” message appears on the LCD panel when the firmware rewriting is done properly.
- 8) Turn the power supply of the printer off.

NOTE:

If the error related to the BLF file or the printer occurs, the red backlight of the LCD panel lights up and the error message appears.

■ **Setting the default paper size**

- 1) Open the “hl5200” folder and double-click the FILEDG32 icon to start. Select the applicable printer and click it. (Make sure that there is the icon of the connected printer and that no error occurs.)
- 2) Drag “s5200E” (A4 size), “s5200U” (Letter size), “s5200I” (A4 size, Israeli font for Israel) or “AL_CHN.pjl” (A4 size, Thin paper for China) in the same folder and drop it onto the icon of the applicable model in FILEDG32. When the **Status** LED (HL-5240/ 5250DN) or the **Data** LED (HL-5270DN/5280DW) of the printer lights up for an instant and goes off immediately after dropping it, the setting is completed. Then, set the serial number following the steps described in the next section.

Refer to the following step to set the serial number.

■ **Setting the serial number**

Operation of printer

(HL-5240/5250DN)

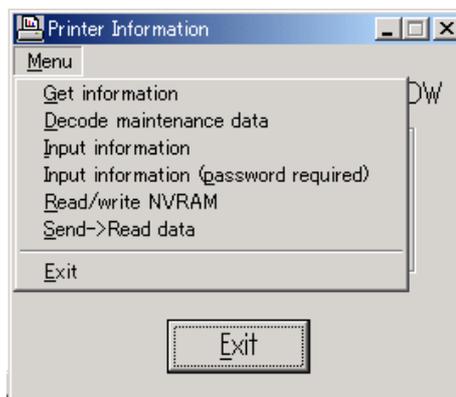
- 1) Check that the front cover is open.
- 2) Turn ON the power switch while the **Go** button is held.
- 3) After all LEDs on the panel are lit, only the **Status** LED goes out.
- 4) Release the **Go** button and check that all LEDs are out.
- 5) Press the **Go** button for a while. Make sure that the **Paper** LED lights up.
- 6) Close the front cover of the printer.

(HL-5270DN/5280DW)

- 1) Check that the front cover is open.
- 2) Turn ON the power switch while the **Go** button is held.
- 3) The message “**USERS MODE**” is shown on the LCD panel.
- 4) Release the **Go** button.
- 5) Press the **Go** button for a while. Make sure that the **Data** LED lights up.
- 6) The message “**PIT3 MODE**” is shown on the LCD panel.
- 7) Close the front cover of the printer.

Operation of computer

- 8) Connect the computer to the printer with the USB cable.
- 9) Double-click the brmainte.EXE file (maintenance utility) which has been copied in the “hl5200” folder to start.
- 10) Select “Input Information” from Menu. Select the applicable model name.



- 11) Check the port (USB) that the printer is connected through and click "Serial No." in the lower box.

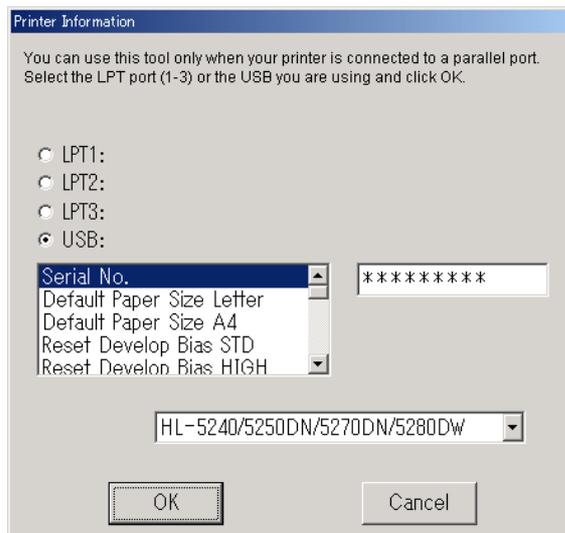


Fig. 6-3

Enter the serial number (the last nine digits) of the printer into the box at the right hand side. The serial number is shown in the window, and check that it is correct. Follow the next step without clicking the **OK** button.

2. IF YOU REPLACE THE PERIODICAL MAINTENANCE PARTS

If any of periodical replacement parts are replaced, it is necessary to change the count of total pages on each periodical maintenance parts to zero, and to modify a number of times for replacing each periodical maintenance parts according to the procedures below.

NOTE:

As for HL-5270DN/5280DW models, it is possible to reset the count of each periodical maintenance parts by operating the LCD panel. Refer to "2.2 Reset Parts Life Menu" on Chapter 7.

<What you should prepare>

- 1) Computer (Windows® XP/2000 or later)
Create the "hl5200" folder in the C drive, for example.
- 2) HL-5240/5250DN/5270DN/5280DW target printer
- 3) MAINT.EXE
Download the above files from the databank and copy it into the "hl5200" folder that has been created in the C drive. Extract the copied file and run the "brmaint.exe" file by double-clicking.

<Procedures>

Operation of printer

(HL-5240/5250DN)

- 1) Check that the front cover is open.
- 2) Turn ON the power switch while the **Go** button is held.
- 3) After all LEDs on the panel are lit, only the **Status** LED goes out.
- 4) Release the **Go** button and check that all LEDs are out.
- 5) Press the **Go** button for a while. Make sure that the **Paper** LED lights up.
- 6) Close the front cover of the printer.

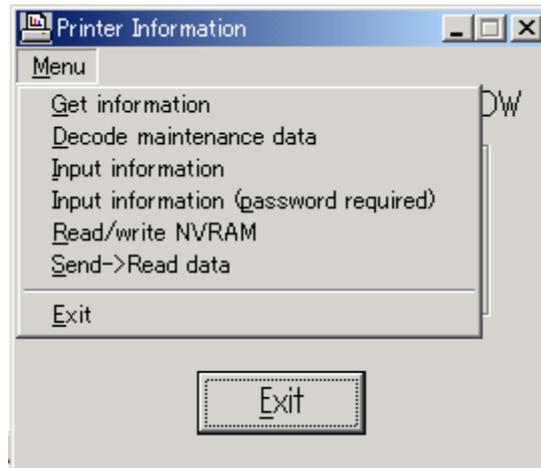
(HL-5270DN/5280DW)

- 1) Check that the front cover is open.
- 2) Turn ON the power switch while the **Go** button is held.
- 3) The message "**USERS MODE**" is shown on the LCD panel.
- 4) Release the **Go** button.
- 5) Press the **Go** button for a while. Make sure that the **Data** LED lights up.
- 6) The message "**PIT3 MODE**" is shown on the LCD panel.
- 7) Close the front cover of the printer.

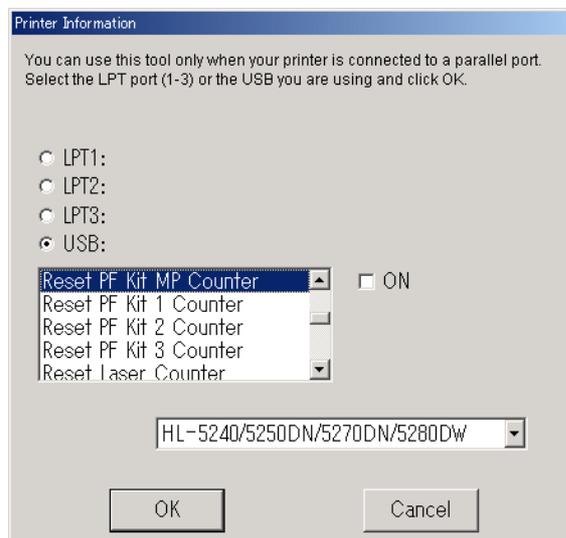
Operation of computer

- 8) Connect the computer to the printer with the USB cable.
- 9) Double-click the "brmaint.EXE" (maintenance utility) which has been copied in the "hl5200" folder to start.

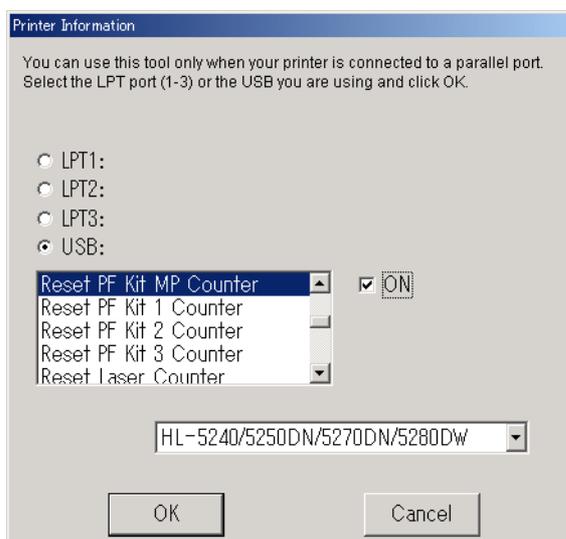
10) Select "Input Information" from Menu.



11) Select the applicable model name. And check the port (USB) that the printer is connected through.



12) Select the item of each periodical maintenance parts and check "ON" and click OK.



| Periodical Maintenance Parts Name | Item |
|-----------------------------------|-------------------------|
| Fuser Unit | Reset Fuser Counter |
| Laser Unit | Reset Laser Counter |
| Paper feeding kit for Tray 1 | Reset PF Kit 1 Counter |
| Paper feeding kit for Tray 2 | Reset PF Kit 2 Counter |
| Paper feeding kit for Tray 3 | Reset PF Kit 3 Counter |
| Paper feeding kit for MP tray | Reset PF Kit MP Counter |

After resetting any of counts, print the Print Settings to make sure a bar graph indicating the remaining life of each periodical maintenance parts full up.

PRINT SETTINGS (2/3)
 HL-5250DN series SER.NO=0
 CONT. ROM VERSION :0.31
 RAM SIZE : 32Mbyte

Remaining life of :

| Part Name | Count | Percentage |
|-----------|--------|------------|
| PF KITMP | 99983 | 99.9% |
| PF KIT 1 | 99534 | 99.5% |
| FUSER | 99409 | 99.4% |
| LASER | 199409 | 99.7% |
| DRUM | 24409 | 97.6% |

<Device Status>
 Page Count: 591

<Total Pages Printed>
 MP TRAY:17
 TRAY1:466
 TRAY2:0
 TRAY3:604
 DUPLEX TRAY:108

<Total Pages Printed>
 A4/LETTER:473
 LGL/A4LONG/FOLIO:0
 BS/EXECUTIVE:0
 ENVELOPE:0
 A5:0
 OTHERS:10

<Total Paper Jams:12 >
 JAM MP TRAY:0
 JAM TRAY1:2
 JAM TRAY2:0
 JAM TRAY3:0
 JAM INSIDE:4
 JAM REAR:1
 JAM DUPLEX:5

<Error History (last 10 errors)>
 1:JAM DUPLEX Page:554
 2:JAM REAR Page:444
 3:JAM INSIDE Page:380
 4:FUSER COVER OPEN Page:350
 5:JAM DUPLEX Page:347
 6:SIZE ERROR DX Page:347
 7:FUSER COVER OPEN Page:212
 8:JAM DUPLEX Page:188
 9:FUSER COVER OPEN Page:138
 10:JAM DUPLEX Page:132

<Replace Count>
 PF KITMP:1
 PF KIT 1:0
 PF KIT 2:0
 PF KIT 3:0
 FUSER:0
 LASER:0
 DRUM:0
 TONER:0

* Based on A4/Letter printing.

CHAPTER 7 SERVICE SUPPORT SOFTWARE

1. CONTROL PANEL

Various modes can be used if the power switch is set to ON while the **Go** button is held. There are two types of modes: Users Mode and Service Mode.

1.1 Users Mode

Operation procedure of Users Mode is shown below. The function change depends on number of times the **Go** button is pressed.

<HL-5240/5250DN>

1. Check that the front cover is closed.
2. Turn ON the power switch while holding down the **Go** button.
3. After all LEDs on the panel are lit, only the **Status** LED goes out.
4. Release the **Go** button and check that all LEDs are off.
5. Press the **Go** button. (If the **Go** button is pressed, the **Status** LED is lighted. If the **Go** button is released, the LED is out.)

<HL-5270DN/5280DW>

1. Check that the front cover is closed.
2. Turn ON the power switch while holding down the **Go** button.
3. The message "**USERS MODE**" is shown on the LCD panel with the orange backlight.
4. Release the **Go** button and check that the **Data** LED is off.
5. Press the **Go** button. (If the **Go** button is pressed, the **Data** LED is lighted. If the **Go** button is released, the LED is out.)

| Press the Go button | Each mode starts after 2 seconds. |
|----------------------------|--|
| Once | (1) Test Sample Page |
| Twice | (2) Print Fonts |
| Three times | (3) Hex Dump Mode |
| Four times | (4) PCB ONLY Mode |
| Five times | (5) 1push Printing Recovery Mode * All LEDs are lit for 1 second and the printer returns to the ready status. |
| Six times | (6) Network Factory Reset 1 (APIPA: ON) * All LEDs are lit for 1 second and the printer returns to the ready status. |
| Seven times | (7) Network Factory Reset 2 (APIPA: OFF) * All LEDs are lit for 1 second and the printer returns to the ready status. |
| Eight times | (8) NV-RAM Factory Reset * All LEDs are lit for 1 second and the printer returns to the ready status. |
| More than nine times | (1) Test Sample Page |

NOTE:

* Each mode starts 2 seconds after pressing the **Go** button.

* Both “Network Factory Reset 1” and “Network Factory Reset 2” functions are not available for HL-5240.

Explanation of functions of each Users Mode is shown below.

< Functions of each “Users Mode” >

- (1) Test Sample Page**
The printer prints a demo page. The printer returns to the ready status after printing.
- (2) Print Fonts**
The printer prints a list of the internal fonts. The printer returns to the ready status after printing.
- (3) Hex Dump Mode**
You can print data as hexadecimal code. To exit from this mode, you have to turn off the printer.
- (4) PCB ONLY Mode**
Even when the engine error occurs and PCB exchange is required for recovery, the printer can be started, ignoring the engine error if this mode is used. NVRAM data can be obtained.
- (5) 1push Printing Recovery Mode**
Demo page print is possible by pressing **Go** button after the power supply is turned on.
- (6) Network Factory Reset 1 (APIPA: ON)**
The network setting is reset to its factory setting. (APIPA is ON)
- (7) Network Factory Reset 2 (APIPA: OFF)**
The network setting is reset to its factory setting. (APIPA is OFF)
- (8) NV-RAM Factory Reset**
The printer is restored to the factory setting and permanent fonts and macros are cleared. The printer returns to the ready status after printing.

1.2 User Maintenance Mode

This section describes what the user should do when replacing the consumable parts.

<Resetting the drum counter>

The printed image may deteriorate when using the drum unit to a certain degree. The printer detects how much the drum unit is used with the drum counter and lights up the **Drum** LED when the drum unit life is nearly at the end of its life to indicate to the user that the drum unit life reaches the end of its life soon, in order to prevent the printed image defects due to drum unit deterioration.

The printer does not provide the function which resets the drum counter automatically when the drum unit is replaced with a new one. If replacing the drum unit with a new one without resetting the drum counter, the counted value of the old drum unit is used continuously so that the **Drum** LED is not off.

When replacing the drum unit with a new one, it is required to reset the drum counter following the steps below:

<HL-5240/5250DN>

- (1) Make sure that the printer is turned on and the **Drum** LED is blinking. Press the front cover release button and then open the front cover.
- (2) Press and hold down the **Go** button for about four seconds until all the LEDs light up. Once all four LEDs are lit, release the **Go** button.
- (3) Take out the drum unit and toner cartridge ASSY.
- (4) Put the new drum unit and toner cartridge ASSY back into the printer.
- (5) Close the front cover.

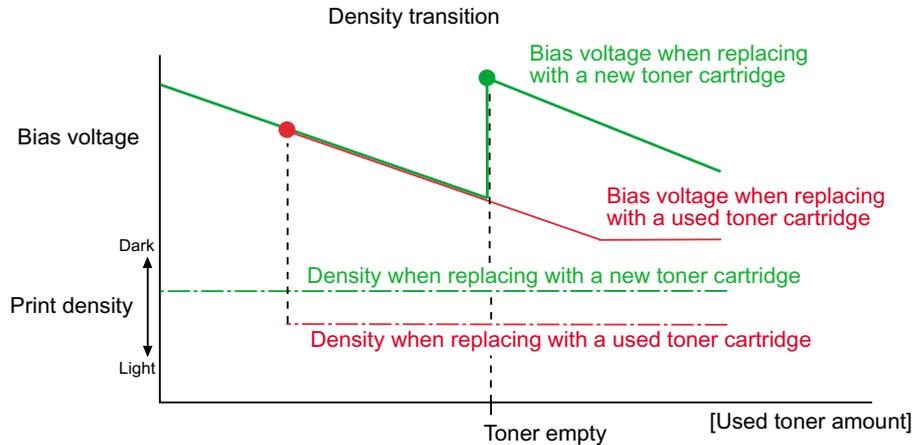
<HL-5270DN/5280DW>

- (1) Press the front cover release button and then open the front cover.
- (2) Keep pressing the **Go** button for about four seconds. When the message of finishing resetting the drum counter, release the **Go** button.
- (3) Take out the drum unit and toner cartridge ASSY.
- (4) Put the new drum unit and toner cartridge ASSY back into the printer.
- (5) Close the front cover.

<Initializing the developing bias>

When replacing the toner cartridge with a new one, the new toner sensor detects that the toner cartridge is replaced, and the developing bias is initialized automatically. Therefore, the user is not necessary to initialize the developing bias.

If replacing the toner cartridge which contains enough toner with a used one, the new toner sensor cannot detect that the toner cartridge is replaced so that the developing bias is not initialized. In this case, the print density may be lighter than usual.



In such a case, follow the steps below in order to initialize the developing bias forcedly.

<Standard Cartridge>

- (1) Open the front cover.
- (2) Take the drum unit out of the printer.
- (3) Press the **Go** button.
- (4) Install the drum unit into the printer.
- (5) Press the **Go** button.
- (6) Close the front cover.

<High Yield Cartridge>

- (1) Open the front cover.
- (2) Take the drum unit out of the printer.
- (3) Press the **Go** button.
- (4) Install the drum unit into the printer.
- (5) Press the **Go** button twice.
- (6) Close the front cover.

1.3 Service Mode

Operation procedure of Service Mode is shown below. The function change depends on number of times the **Go** button is pressed.

<HL-5240/5250DN>

1. Check that the front cover is open.
2. Turn ON the power switch while the **Go** button is held.
3. After all LEDs on the panel are lit, only the **Status** LED goes out.
4. Release the **Go** button and check that all LEDs are out.
5. (1st step) Press the **Go** button once or twice. (If the **Go** button is pressed, the **Status** LED is lit. If the **Go** button is released, the LED is out.)
6. Check that **Toner/Drum/Paper** LEDs are lighted.
7. (2nd step) Press the **Go** button. Each mode starts after 2 seconds. (If the **Go** button is pressed, the **Status** LED is lit. If the **Go** button is released, the LED is out.)

<HL-5270DN/5280DW>

1. Check that the front cover is open.
2. Turn ON the power switch while the **Go** button is held.
3. The message "**USERS MODE**" is shown on the LCD panel.
4. Release the **Go** button and check that the **Data** LED is out.
5. (1st step) Press the **Go** button once or twice. (If the **Go** button is pressed, the **Data** LED is lit. If the **Go** button is released, the LED is out.)
6. Check that the message "**USERS MODE**" is shown on the LCD panel with orange backlight.
7. (2nd step) Press the **Go** button. Each mode starts after 2 seconds. (If the **Go** button is pressed, the **Data** LED is lit. If the **Go** button is released, the LED is out.)

| 1 st step | 2 nd step | Each mode starts after 2 seconds. |
|-----------------------------------|----------------------|---|
| Press the Go button once. | Once | (1) Factory Inspection Mode |
| | Twice | (2) Continuous Grid Pattern Print Mode |
| | Three times | (3) Fuser Unit Test Print |
| | Four times | (4) NV-RAM Value Dump Mode |
| | Five times | (5) RAM Check |
| | Six times | (6) QA process inspection printing |
| | Seven times | (7) DX (ShortBind) ON/OFF switching |
| Press the Go button twice. | Once | (8) Printing for Maintenance * The machine starts printing after closing the front cover. |
| | Twice | (9) Print Settings * The machine starts printing after closing the front cover. |
| | Three times | (10) Sleep Mode Indication (OFF/Dimmed) |
| | Four times | (11) Sleep Mode Setting (ON/OFF) * All LEDs are lit for 1 second and the printer returns to the ready status. |
| | Five times | (12) Developer Roller Counter Reset 1 (For the standard toner) * All LEDs are lit for 1 second and the printer returns to the ready status. |
| | Six times | (13) Developer Roller Counter Reset 2 (For the high capacity toner) * All LEDs are lit for 1 second and the printer returns to the ready status. |
| | Seven times | (14) Fixed USB Speed * All LEDs are lit for 1 second and the printer returns to the ready status. |
| | Eight times | (15) USB Speed Indication (ON/OFF) * All LEDs are lit for 1 second and the printer returns to the ready status. |

The procedure from 1 to 4 is the same as the above.

| Number of times of pressing the Go button | |
|---|---|
| Press the Go button for 2 seconds (long push). (HL-5240/5250DN) Check that Paper LED is lighted. (HL-5270DN/5280DW) Check that the " PIT3 MODE " message is shown. | PIT3 Inspection Mode * Factory use. |

NOTE:

* Each mode starts 2 seconds after pressing the **Go** button.

< Functions of each “Service Mode” >**(1) Factory Inspection Mode**

This mode is to check each sensor at the assembly line.

< Sensor Inspection Check Procedure >

- (1) Print “Print Settings” by clicking the **Go** button three times. If a failure such as paper jams occurs, activate each sensor manually when the machine goes into the inspection mode.
- (2) Procedures to go into the factory inspection mode are as follows.

< HL-5240/5250DN >

1. Check that the front cover is open.
2. Turn ON the power switch while the **Go** button is held.
3. After all LEDs on the panel are lit, only the **Status** LED goes out.
4. Release the **Go** button and check that all LEDs are out.
5. Press the **Go** button once. (If the **Go** button is pressed, the **Status** LED is lit. If the **Go** button is released, the LED is out.)
6. Check that **Toner/Drum/Paper** LEDs are lighted.
7. Press the **Go** button once. Each mode starts after 2 seconds. (If the **Go** button is pressed, the **Status** LED is lit. If the **Go** button is released, the LED is out.)

< HL-5270DN/5280DW >

1. Check that the front cover is open.
2. Turn ON the power switch while the **Go** button is held.
3. The message “**USERS MODE**” is shown on the LCD panel.
4. Release the **Go** button and check that the **Data** LED is out.
5. Press the **Go** button once. (If the **Go** button is pressed, the **Data** LED is lit. If the **Go** button is released, the LED is out.)
6. Check that the message “**USERS MODE**” is shown on the LCD panel with orange backlight.
7. Press the **Go** button once. Each mode starts after 2 seconds. (If the **Go** button is pressed, the **Data** LED is lit. If the **Go** button is released, the LED is out.)

- (3) Activate each sensor listed below manually and verify that the **Status LED** (HL-5240/5250DN) or the **Data LED** (HL-5270DN/5280DW) is lit. In the inspection mode, the LED blinks once when the state of a sensor or a switch is changed from ON to OFF, or from OFF to on. When the state is changed continuously, the LED keeps blinking.
- (Regist front sensor, Regist rear sensor, Paper eject sensor, New toner sensor, Toner sensor, Front cover sensor, PE sensor, Edge sensor, MP PE sensor, DX tray sensor)

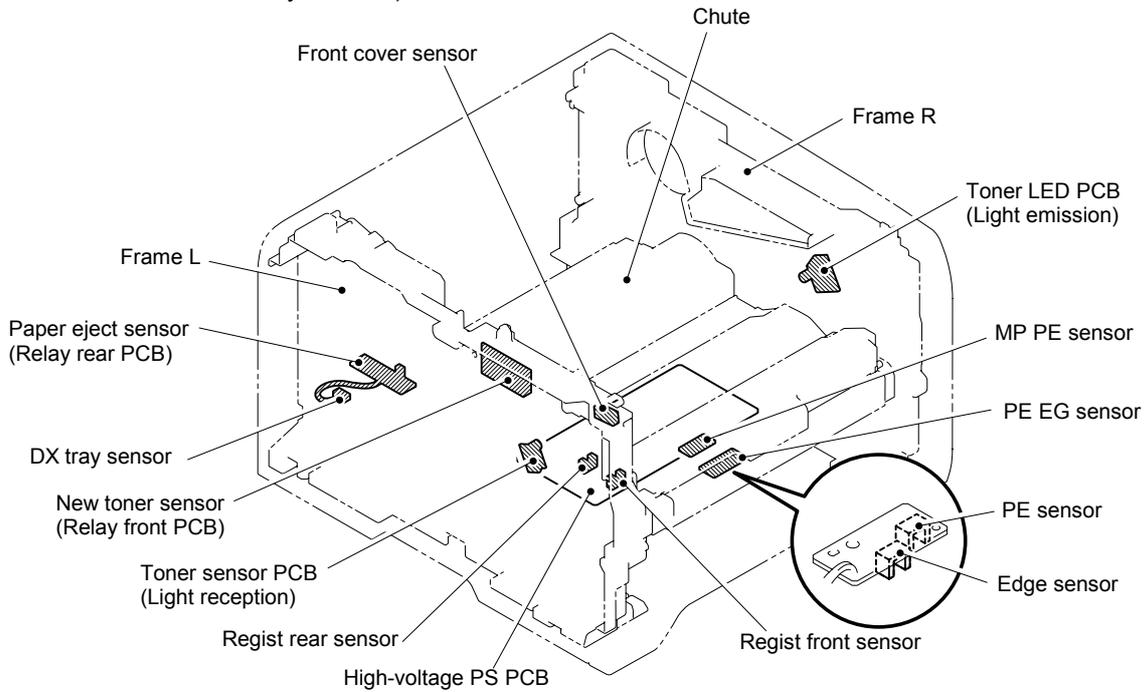


Fig. 7-1

- (4) When the verification of all the sensors is completed, then the power off.

(2) Continuous Grid Pattern Print Mode

This mode is to print a grid pattern continuously with a serial number on it. The number of grid pattern prints is displayed at the same time. The machine does not go back to the ready state unless the power is turned off and on. To finish the continuous grid pattern print mode, press the **Job Cancel** button.

(3) Fuser unit Test Print

This is to print the following three patterns to check the fuser unit.

- Grid pattern with a serial number on it
- Gray pattern
- Black pattern

When this operation is completed, the machine automatically goes back to the ready state.

(4) NV-RAM Value Dump Mode

This is to collectively print the present state of the NV-RAM of all printers. When this operation is completed, the machine automatically goes back to the ready state.

(5) RAM Check

This is to execute a stricter RAM check than a standard one. If the result turns out unaccepted, it considers an error, and all the LEDs blink. If it turns out accepted, the **Ready** LED keeps blinking.

The machine does not go back to the ready state unless the power is turned off and on.

(6) QA Process Inspection Printing

This is to print the four patterns in order to check the printer quality. The printer automatically returns to the normal status after this function is completed.

(7) DX (ShortBind) ON/OFF Switching

This is to switch ON (ShortBind) or OFF (LongBind (invalid for some models)) of the duplex setting. Whenever switching the setting, the current setting is changed to the other one.

(8) Printing for Maintenance

This is to print a list of all maintenance information including printer coverage information.

- Series name
- Serial Number:
- Cont. ROM VERSION
- RAM SIZE
- Remaining life of periodical replacement parts
- <Device Status>
 - Page Count:
 - Average Coverage:
- <Total Pages Printed>
 - MP TRAY:
 - TRAY 1:
 - TRAY2:
 - TRAY3:
 - DUPLEX:
- <Total Pages Printed>
 - A4/LETTER:
 - LGL/A4LONG/FOLIO:
 - B5/EXECUTIVE:
 - ENVELOPE:
 - A5:
 - OTHERS:
- <Error History (last 10 errors)>
 - The page counter when each error occurred is also indicated.
- <Total Pages Jams>
 - JAM MP TRAY:
 - JAM TRAY 1:
 - JAM TRAY2:
 - JAM TRAY3:
 - JAM INSIDE:
 - JAM REAR:
 - JAM DUPLEX:

- <Replace count>
PF KITMP:
PF KIT 1:
PF KIT 2:
PF KIT 3:
FUSER:
LASER:
DRUM:
TONER:
- <Total Pages Printed>
Previously Used Toner:
Current Toner:
- <Developing Bias>

NOTE:

** Some margin of error must be taken into consideration because coverage for the printable area of A4-size paper is calculated using video signals*

** If the firmware version is 1.02 or before, the maintenance information gives out false information on the remaining life of Drum. To know the accurate information of Drum, print the Print Settings or upgrade the firmware version.*

(9) Print Settings

If you want to know the drum unit life or the number of printed pages, you should print out the Print Settings.

1. Contents overview

The “Print Settings” is configured with two pages for HL-5240 and more than three pages for HL-5250DN/5270DN/5280DW.

All pages have following terms in common:

- * Title
- * Model name
- * Serial number

The setting indication is the same as the panel setting information, supporting 17 languages.

(ENG / FRE / GER / DUT / ITA / SPA / NOR / FIN / DAN / POR / SWE / CZE / POL / HUN / RUS / BUL / RUM)

The descriptions on the third page or later are indicated in English only.

NOTE:

- *The descriptions printed in Print Settings vary depending on the countries.*
- *It is also allowed you to print the print settings by pressing the **Go** button three times continuously when the front cover is closed and when the printer is in the ready mode.*
- *Select Information, then Print Settings by pressing the **Set** button three times. (HL-5270DN/5280DW)*

< Page 1 >

This page includes various setting information of the printer. Each term is indicated when it fulfills the condition.

< Page 2 >

This page includes the printer and maintenance information in the following order.

(1) Printer information

The following terms are indicated in the order.

- Controller version (CONT.ROM VERSION)
- RAM SIZE (Mbyte)
- Device information (RAMDISK)

(2) Maintenance information

(i) 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 band graph.

A sample (PF KIT MP) is as follows:

From the top left, the consumable part name, number of printable pages remained, and percentage of life remained are indicated. The right column is a band graph separated into 50 scale marks.



The consumable part indicated is as follows:

- PF KIT MP
- PF KIT 1
- PF KIT 2 (indicated only when the Tray2 is installed.)
- PF KIT 3 (indicated only when the Tray3 is installed.)
- FUSER
- LASER
- DRUM

< How to Read the Drum Unit Life >

The drum unit life is shown by the band graph at the center of Print Settings;

- It initially indicates 100% and gradually decreases.
- It indicates 0% when the **Drum** LED is blinking.
- It stays at 0% even if further printing is done.

< The difference of the Drum Unit Life and the Drum Counter >

The drum unit life is based on the page counter. If the average number of drum rotations is more than the number of drum rotations in non-continuous printing, however, the drum unit life is counted by the number of drum rotations.

Since the drum counter printed in Print Settings is an actual page counter after a new drum unit is replaced, the drum unit life may be different from the drum counter.

For details on the difference between the drum unit life and drum counter, refer to the drum unit life calculation below;

< How to calculate Drum Unit Life >

The number of drum rotations per one page printing is about 11 rotations.

(Page counter reduced by the number of drum rotations) =

(the number of drum rotations) ÷ 11

- The number of drum rotations per one page printing continuously = 3.6 rotations.

- The number of drum rotations while warming-up = 9 rotations

Example:

| | The number of pages calculated from drum rotations | |
|--------------|--|------------------------------------|
| | Cold start (page) | Hot start (page) |
| 1 page/job | $(9 + 11) / 11 = 1.82$ | $11 / 11 = 1$ |
| 2 pages/job | $(9 + 11 + 3.6) / 11 = 2.15$ | $(11 + 3.6) / 11 = 1.33$ |
| 18 pages/job | $(9 + 11 + 3.6 \times 17) / 11 = 7.38$ | $(11 + 3.6 \times 17) / 11 = 6.56$ |

If printing 1 page per job with cold start, the drum unit life is decreased earlier.

(ii) 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.

- Page counter
The total number of pages printed. The maximum count is 1 million pages.
- Coverage on the Letter-size paper
Average printing rate. The average of the total printed area against the printable area on the Letter-size paper. The coverage is calculated when up to 1 million pages are printed, and it is not updated after this. It is not printed on the Print Settings by default. (It is printed on the maintenance sheet by default.)
- Total pages printed (TRAY)
The number of times that each of the Tray1, Tray2, Tray3, 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-5240.)
The maximum count for each item is 1 million times.
The information above is not cleared when replacing the PF kit.
- Total pages printed (PAPER)
The number of A4/Letter, A4Long/Legal/Folio, B5/Excute, 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, Tray3, MP tray and Duplex tray. (For the Duplex tray, the number of occurrence is printed only for the models supporting the Duplex tray, and it is not printed for HL-5240.)
The paper jam which occurs when the printer is turned ON is not counted.
The maximum count for each item is 255 times.
- Replace count
The number of replacement of each of the drum unit, toner cartridge, PF Kit, Tray 1/2/3, MP tray, fuser unit and laser unit. The maximum count for each item is 65535 times.

- Error history
The error history including the 10 latest 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. The list is updated until the 1 millionth error occurs, and it is not even when more than 1 million errors occur.
The page counter when each error occurred is also indicated.
- Developing bias
The current developing bias is indicated. It is not printed on the Print Settings by default.
(It is printed on the maintenance sheet by default.)
- Number of prints for each toner cartridge
The number of printed pages for each of the toner cartridges used currently and last. (It is printed only in the maintenance sheet.) The maximum count is 65535 pages.

< Page 3 ~ >

This page includes various network settings information of the printer.

(10) Sleep Mode Indication (OFF/Dimmed)

This is to select whether the **Status** LED is turned off completely or lit in green with low light intensity during the Sleep mode. Whenever you switch this mode, the setting is changed over from the present one to the other. When you take your finger off from this switch, the **Status** LED is lit in 100% light intensity or low light intensity according to the setting so that you can verify the present setting.

(11) Sleep Mode Setting (ON/OFF)

This is to allow you to turn on and off the sleep mode of the printer. The default setting is ON. The machine automatically goes back to the ready state after the operation is completed.

(12) Developer Roller Counter Reset 1 (For the standard toner)

(13) Developer Roller Counter Reset 2 (For the high yield toner)

Since print density is likely to become darker as toner is getting older, the developing bias is lowered by degrees according to the number of prints so that an almost fixed density can be maintained from the start of the use of brand-new toner to the end of it. The value of the developing bias is printed on the maintenance sheet. The developing bias is a parameter which depends on the developing assembly, so it needs to be reset when the developing assembly is replaced. At that time, the developing roller counter reading is also reset. This mode is to enable to execute these operations (equivalent to those done when the developing assembly is replaced) manually from the service mode.

(14) Fixed USB Speed

This allows you to switch the setting of Full fixed / Auto switching (HIGH/FULL) of the USB speed. Whenever switching, the current setting is changed to the other one. The default setting is Auto switching.

It also allows you to check the selected setting by the **Toner** or **Drum** LED being lit for 1 second when releasing the button. The former shows that the setting is Full fixed, and the latter shows Auto switching.

(15) USB Speed Indication (ON/OFF)

This allows you to switch whether the current USB speed is indicated with the LED or not. Whenever switching, the current setting is changed to the other one. The USB speed is not indicated by default.

It also allows you to check the selected setting by the **Toner** and **Drum** LEDs being lit for 1 second or all LEDs being lit for 1 second when releasing the button. The former shows that the USB speed indication is ON, and the latter shows OFF.

2. HIDDEN FUNCTION MENUS

The three hidden function menus are provided for the HL-5270DN/5280DW printer with the LCD.

- Professional Menu: by pressing the **Go** and **Set** buttons at the same time.
- Reset Parts Life Menu: by pressing the **Go** and **+** buttons at the same time.
- Service Menu: by pressing the **+** and **Set** buttons in this order while holding down the **Go** button.

The method to enter the special mode by the button operation is as follows:

<Pressing the **1** button when the printer is turned ON>

| Panel | Function |
|----------------|--------------------------|
| Go | To Users Mode |
| Reprint | Continuous test printing |
| + | Version Check |
| - | Hex Dump Mode |
| Set | Initializing the NVRAM |

<Pressing the **2** button when the printer is turned ON>

| Panel | Function |
|-----------------------|--|
| Set & Back | Rewriting the Flash ROM |
| Go & + | Checking the hardware (DRAM check, etc.) |
| Go & Back | |
| - & + | Factory Line Inspection Mode |
| Go & Set | Clearing the E50 (FUSERMULF) |

<Pressing the **2** button in the normal status>

| Panel | Function |
|---------------------|---|
| Go & + | RESET PARTS LIFE (Clearing the counters of the periodical replacement parts) |
| Go & Set | Professional Menu |
| - & Set | Indicating the error descriptions (The details of the service call or paper jam occurrence section are indicated in English.) |

<Others in the normal status>

| Panel | Function |
|-----------------------------|---|
| Go & (+, Set) | Service Menu (Acquiring the service information such as the number of replacement or paper jam occurrence, error, etc.) |
| Go & (-, +, Set) | Developer Menu (Setting the specific function for the engineers) |

2.1 Professional Menu

The main purpose of the professional menu is to customize the printer function which is opened to the users as per request.

How to enter the Professional Menu

Turn the machine on.

Press the **Go** switch and **Set** switch together to enter the Professional Menu.

How to access the Required Menu

Use either “+” or “-” switch to scroll through the menu listing. To select an item, press the “**Set**” switch. Then the sub-menu will appear.

Scroll through the sub menu items using the “+/-” switches. To go back to a higher level, select the “exit ...” menu in the same level using the “+/-” switches.

How to input a Value or set for a Professional Menu Mode

Enter the required mode as explained above. The setting appearing on the display is the current setting.

Select the required setting using the “+/-” switches, then press the “**Set**” switch. The previous value remains if the “**Set**” switch is not pressed.

How to exit the Professional Menu Mode

There are three options to exit the Professional Menu mode; either to press “**Go**” switch at any sub menus, to press the “-” switch consecutively to go up roots till exiting the Professional Menu mode, or to go down the menu using “+/-” switches till the menu “exit MENU” appears, and then press the “**Set**” switch to exit the mode.

< Function Table >

| Title & Subtitle | Item to be Set | Description |
|---|------------------|--|
| TRAY SETTING | | |
| MANUAL FEED | PAPER IN=CONT* | Feeds paper automatically when printing using the manual feed function. |
| | PAPER IN=STOP | Feeds paper by pressing the Go button when printing using the manual feed function. |
| RESET SETTINGS | RESET SETTING1 | Selects the "User setting 1" as the current printer setting. |
| SAVE SETTINGS | SAVE SETTING1 | Saves the current printer setting as the "User setting 1". |
| SAVE FONT | | |
| PRIMARY FONT | SET ID=#### | Saves the current primary fonts in LaserJet Emulation into the storage devices (ROM Disk). After fixing the first three digits with the Set button, set the last two digits. |
| SECONDARY FONT | SET ID=#### | Saves the current secondary fonts in LaserJet emulation into the storage devices (ROM Disk). After fixing the first three digits with the Set button, set the last two digits. |
| DOWNLOAD FONT | DOWNLOAD=#### | Saves the downloaded fonts in LaserJet emulation into the storage devices (ROM Disk). After fixing the first three digits with the Set button, set the last two digits. |
| SAVE MACRO (When a macro is registered if the LaserJet emulation is selected.) | SET ID=#### | Saves the macro in LaserJet emulation into the storage devices (ROM Disk). After fixing the first three digits with the Set button, set the last two digits. |
| TRAYCOMMAND MODE | TRAY COM.=NORM.* | HP LaserJet 4 compatible. |
| | TRAY COM.=SPEC. | HP LaserJet 3 compatible. |
| READOUT SELECT | READOUT=ON | When receiving DC3 in FX emulation, ignores the data received before DC1. |
| | READOUT=OFF* | Not ignore the data even DC3 is received. |

| Title & Subtitle | Item to be Set | Description |
|--|-------------------|--|
| FONT SELECT | | |
| SCALABLE FONT (Only when the LaserJet emulation is selected.) | FONT=ALL* | Enables all scalable fonts when selecting PCL font setting. |
| | FONT=LJ4 | Disables the fonts below when selecting PCL font setting. Atlanta, Bermuda Script, PC Brussels, Copenhagen, Germany, Portugal, Calgary, San Diego, US Roman |
| FONT SELECT | PRIMARY FONT | Selects primary fonts in LaserJet emulation. |
| | SECONDARY FONT | Selects secondary fonts in LaserJet emulation. |
| IBM CHR SET MODE | IBM E1H=Esszet* | Places "Esszet" on E1h of IBM character set. |
| | IBM E1H=Beta | Places "Beta" on E1h of IBM character set. |
| W BOLD ON/OFF | W BOLD=OFF* | Does not convert into bold even if the same character is entered into the same position in the FX or XL emulation. |
| | W BOLD=ON | Converts into bold if the same character is entered into the same position in the FX or XL emulation. (The print speed is lowered.) |
| DLFNT Bd/It | DLFNT Bd/It=NO* | Creates the bold and italic letters from the download font. |
| | DLFNT Bd/It=YES | Does not create the bold and italic letters from the download font. |
| B PROD ON/OFF | B PROD=ON* | Creates the bold and italic letters from the bitmap font. |
| | B PROD=OFF | Does not create the bold and italic letters from the bitmap font. |
| CONDENCE SELECT | CONDENC=16.66p* | Sets the pitch of the condense letter in the EPSON/IBM emulation to 16.66 pitches. |
| | CONDENC=17.14p | Sets the pitch of the condense letter in the EPSON/IBM emulation to 17.14 pitches. |
| OEM FONT SELECT | OEMFONT=DISABLE* | Disables the European Parliament fonts. |
| | OEMFONT=ENABLE | Enables the European Parliament fonts. |
| DARKFONT SELECT | DARKFONT=DISABLE* | Disables the bold brougham font. |
| | DARKFONT=ENABLE | Enables the fold brougham font. |

| Title & Subtitle | Item to be Set | Description |
|--|------------------|--|
| FONT SELECT | | |
| BRO FONT SELECT | BROBITM=DISABLE* | Disables the internal brougham bitmap fonts of 10 and 12 pitches. |
| | BROBITM=ENABLE | Enables the internal brougham bitmap fonts of 10 and 12 pitches. |
| ISR FONT SELECT | ISRFONT=DISABLE | Normal mode |
| | ISRFONT=ENABLE | Israel Mode |
| 300DPI PRIORITY | 3B PRIO=LOW* | The priority of selection for 300dpi bitmap fonts is standard (=low). Command <ESC><CR>!1T |
| | 3B PRIO=HIGH | The priority of selection for 300dpi bitmap fonts is high. Command <ESC><CR>!2T |
| FX/XL SCALE FONT (Setting related to the default font and font selected on the panel in the EPSON/IBM emulation.) | SCAL.F=NORMAL* | Only similar size fonts are selectable as scalable is selected. |
| | SCAL.F=ALL SIZE | All size fonts are selectable as scalable font is selected. |
| FX/XL SCALE ITA. (Setting related to italic of scalable font when the EPSON/IBM emulation.) | ITA=OBLIQUE* | Makes upright font oblique to have italic as scalable font is selected. |
| | ITA=ITALIC SEL | Uses the upright font to have italic as scalable font is selected. |
| PAPER&TRAY SIZE | DEF PAPER=A4 | Printers to be shipped to the other area than USA and Canada have the A4 size setting by default. |
| | DEF PAPER=LT | Printers to be shipped to USA and Canada have the Letter size setting by default. |
| PARALLEL MENU | | |
| STB/ACK DELAY | CDCC BSSL=L* | ACK signal is sent out before BUSY signal goes down. |
| | CDCC BSSL=H | ACK signal is sent out when BUSY signal goes down. |
| REPRINT ON/OFF | REPRINT=ON* | The ON/OFF setting of the reprint function follows the setting of the user menu. |
| | REPRINT=OFF | Turns the reprint function OFF forcibly. |
| PS BINARY SELECT | PS BINARY=ASCII* | Default setting. A problem may occur when printing the binary data though Ctrl-T, Ctrl-C and the like are enabled. |
| | PS BINARY=BIN | Allows you to print the binary data though Ctrl-T and the like are disabled. |

| Title & Subtitle | Item to be Set | Description |
|------------------|--------------------------|--|
| PS QUOTE BINARY | PS QUOTE BIN=OFF* | Not accept the binary data even with special codes. |
| | PS QUOTE BIN=ON | Accepts the binary data with special codes. |
| PS IMAGE MASK | PS IMAGE MSK=OFF* | Does not rewrite the IMAGE MSK procedure. |
| | PS IMAGE MSK=ON | Rewrites the IMAGE MSK procedure. |
| PS CELL MODE | PS CEIL=FLOOR* | |
| | PS CEIL=CEIL | |
| PS STATUS ECHO | STATUS ECHO=ON* | |
| | STATUS ECHO=OFF | |
| PROTECT OFF MODE | PRO.OFF=AUTO* | Carries out the page protect if it is turned OFF. (Memory full, Print overrun) |
| | PRO.OFF=NORMAL | Specification up to the fourth Mask ROM. |
| HP ESC E COMMAND | HP ESC E=RESET* | Normal resetting. |
| | HP ESC E=F/F | Form feeds a printable page only. |
| DPX FF SUP. MODE | DPX SUP. =NOMAL* | Deletes all white pages having no data. |
| | DPX SUP. =SPEC. | Deletes only the page that both sides of paper is white. |
| PS300RESO | PS300RESO=NO* | Does not reduce the resolution automatically. |
| | PS300RESO=IF 2M | Reduces the resolution to 300dpi when the total memory is 2Mbytes. |
| | PS300RESO=FORCE | Reduces the resolution to 300dpi. |
| COPY PAGES | COPY PAGES=ON* | OFF: 1 page is fixed for the copy page number. |
| | COPY PAGES=OFF | |
| JOB TIMEOUT SEL | TIMEOUT=ON* | PJL JOB TIMEOUT is effective. |
| | TIMEOUT=OFF | PJL JOB TIMEOUT does not carry out. |
| PICKUP RETRY SET | PICKUP RETRY=2* (0-7) | |
| JOB CANCEL TIME | TIME OUT=???sec | |
| PSCOPYPAGE | PSCOPYPAGE=L3* | Changes the PS cypypage operator from Level3 to Level2. |
| | PSCOPYPAGE=L2 | |
| 1JOB1PAGE SEL | 1JOB1PAGE= SX* | Duplex=ON makes the printing speed of 1 page of data faster. Sets up the printing mode. (Simplex/Duplex) |
| | 1JOB1PAGE=DX | |
| APPLEUSBPS | BINARY=OFF* | Enables to print PS Pure Binary data via Mac USB. |
| | BINARY=ON | |

| Title & Subtitle | Item to be Set | Description | |
|---|------------------|--|---|
| MP CAS ADJUST | MPTRAY YADJUST | Adjusts the position of starting scanning in each paper tray. -50 to 50 dot (300dpi) | |
| | PCTRAY YADJUST | | |
| | DUPLEX YADJUST | | |
| | MPTRAY XADJUST | MPTRAY XADJUST | Adjusts the position of starting scanning in each paper tray. -100 to 750 dot (300dpi) |
| | | TRAY1 XADJUST | |
| | | TRAY2 XADJUST | |
| | | TRAY3 XADJUST | |
| | | DUPLEX XADJUST | |
| NET HEAP SIZE | HEAPSIZE=xxxxK* | Changes the size of the beep area used on Web. Allows you to change the size by 15 degrees. (The value from 0 to 14 is stored in the NVRAM internally.) | |
| PS FONT CACHE | CLEAR CACHE=OFF* | Controls whether the font cache is cleared or not when finishing a job in the PS emulation. When setting to OFF, the font cache is not cleared and is enabled for the next job. When setting to ON, the font cache is cleared and disabled for the next job. | |
| | CLEAR CACHE=ON | | |
| POWER SAVE | POWER SAVE=ON* | Implements the power save setting. It is not allowed to set the power save setting to OFF on the panel. When the setting to OFF, the power save time is not displayed on the panel. | |
| | POWER SAVE=OFF | | |
| TONER LOW Changes the timing when the toner low error is detected. | TONERLOW=ON* | Checks toner with the duty level of 2%. (Default) | |
| | TONERLOW=DELAY | Checks toner with the duty level of 8%. | |
| | TONERLOW=OFF | Does not detect the toner low error. | |
| T1 MEDIA FIX Selects the media type of Tray1. The default setting is OFF. When fixing the media to any type of setting, the printer ignores the media type set in the print data (driver) and prints with the media type set in the printer. | T1 FIX=OFF* | The media type of Tray1 follows the one set in the print data. | |
| | T1 FIX=PLAIN | Fixes the media of Tray1 to plain paper. | |
| | T1 FIX=TRANS. | Fixes the media of Tray1 to transparencies. | |
| | T1 FIX=THIN | Fixes the media of Tray1 to thin paper. | |
| | T1 FIX=BOND | Fixes the media of Tray1 to bond paper. | |
| | T1 FIX=RECYCLED | Fixes the media of Tray1 to recycled paper. | |

| Title & Subtitle | Item to be Set | Description |
|--|------------------|--|
| T2 MEDIA FIX Selects the media type of Tray2. The default setting is OFF. When fixing the media to any type of setting, the printer ignores the media type set in the print data (driver) and prints with the media type set in the printer. | T2 FIX=OFF* | The media type of Tray2 follows the one set in the print data. |
| | T2 FIX=PLAIN | Fixes the media of Tray2 to plain paper. |
| | T2 FIX=TRANS. | Fixes the media of Tray2 to transparencies. |
| | T2 FIX=THIN | Fixes the media of Tray2 to thin paper. |
| | T2 FIX=BOND | Fixes the media of Tray2 to bond paper. |
| | T2 FIX=RECYCLED | Fixes the media of Tray2 to recycled paper. |
| T3 MEDIA FIX Selects the media type of Tray3. The default setting is OFF. When fixing the media to any type of setting, the printer ignores the media type set in the print data (driver) and prints with the media type set in the printer. | T3 FIX=OFF* | The media type of Tray3 follows the one set in the print data. |
| | T3 FIX=PLAIN | Fixes the media of Tray3 to plain paper. |
| | T3 FIX=TRANS. | Fixes the media of Tray3 to transparencies. |
| | T3 FIX=THIN | Fixes the media of Tray3 to thin paper. |
| | T3 FIX=BOND | Fixes the media of Tray3 to bond paper. |
| | T3 FIX=RECYCLED | Fixes the media of Tray3 to recycled paper. |
| DEF PCL ERRPRT Sets the default value of PCL error print. The setting value is reflected on the setting value of PCL error print when implementing PjL initialization or factory reset. | DEF ERRPRT=AUTO* | Identifies the model and determines the default value automatically. HL-5240/5250DN: ON HL-5270DN/5280W: OFF |
| | DEF ERRPRT=OFF | Sets the default value of PCL error print to OFF. |
| | DEF ERRPRT=ON | Sets the default value of PCL error print to ON. |

2.2 Reset Parts Life Menu

The reset parts life menu is used when the service personnel replace the periodical replacement parts. This menu is divided into the service menu described in the next section since it is supposed that a user replaces such parts if the replacement operation is easy. To enter the reset parts life menu, press the **Go** and **+** buttons at the same time until the menu "RESET PARTS LIFE" appears on the LCD display. Select the required item (part name) using the "+/-" switches, then press the **Set** switch.

< Function Table >

| Title | Item to be Set | Description |
|-----------------------|----------------|--|
| Reset Parts Life Menu | DRUM UNIT | Initializes the drum unit remaining life. |
| | PF KITMP | Initializes the paper feeding kit MP remaining life. |
| | PF KIT 1 | Initializes the paper feeding kit 1 remaining life. |
| | PF KIT 2 | Initializes the paper feeding kit 2 remaining life. |
| | PF KIT 3 | Initializes the paper feeding kit 3 remaining life. |
| | FUSER UNIT | Initializes the fuser unit remaining life. |
| | LASER UNIT | Initializes the laser unit remaining life. |

2.3 Service Menu

The main purpose of the service menu is to provide the service personnel with the printer information.

How to enter the Service Menu

Turn the machine on.

Press the **+** and **Set** buttons in this order while holding down the **Go** button.

How to access the Required Menu

Use either “**+**” or “**-**” switch to scroll through the menu listing. To select an item, press the “**Set**” switch. Then the sub-menu will appear.

Scroll through the sub menu items using the “**+/-**” switches. To go back to a higher level, press the **Back** button.

How to exit the Service Menu

There are two options to exit the Professional Menu mode; either to press “**Go**” switch at any sub menus, to press the “**Back**” button consecutively to go up roots till exiting the Service Menu.

< Function Table >

| Title | Subtitle | Description |
|---------------|---|---|
| SERVICE INFO | PAGE COUNT | Displays the number of printing pages. |
| | JAM COUNT JAM MP TRAY JAM TRAY1 JAM TRAY2 JAM TRAY3 JAM INSIDE JAM REAR JAM DUPLEX | Displays the number of jam occurrence. |
| | REPLACE COUNT | |
| | TONER | Displays the number of the toner cartridge unit replacement. |
| | DRUM UNIT | Displays the number of the drum unit replacement. |
| | PF KIT MP | Displays the number of the PF kit replacement. PF kit MP/1/2/3 = PF kit for MP Tray / Tray1 / Tray2 / Tray3. |
| | PF KIT 1 | |
| | PF KIT 2 | |
| | PF KIT 3 | |
| | FUSER UNIT | Displays the number of the fuser unit replacement. |
| | LASER UNIT | Displays the number of the laser unit replacement. |
| | COVERAGE | Displays the average coverage (when printing Letter size paper at 100% print coverage). |
| | PRINT PAGES | Displays the number of pages when printing each paper size. PRINT PAGES counter will be effective until it counts up to 100,000 pages for each paper size. A4/LTR: A4, Letter LGL/A4LONG: Legal, A4 long, FOLIO B5/EXE: ISO B5, JIS B5, Executive ENVELOPE: C5, COM10, DL, DLL, MONARCH A5: A5 OTHER: Other paper than the ones described above. |
| | A4/LTR PAGE | |
| | LGL/A4LONG PAGE | |
| | B5/EXE PAGE | |
| | ENVELOPE PAGE | |
| A5 PAGE | | |
| OTHER PAGE | | |
| ERROR HISTORY | 1:##### 2:##### 3:##### 10:##### | Displays the 10 latest errors in order of newest to the oldest. |

| Title | Subtitle | Description |
|---|--|---|
| LIFE PERIOD | DRUM UNIT | Displays the drum unit life period. (page) |
| | PF KIT | Displays the PF kit life period. (page) |
| | FUSER UNIT | Displays the fuser unit life period. (page) |
| | LASER UNIT | Displays the laser unit life period. (image) |
| DRUM LIFE CHK % | | Sets up the timing of showing "CHANGE DRUM SOON" message. Default setting: 90%, Setting range: 1 to100% |
| MODIFY COUNT (When setting the number of remaining life, the cursor moves to upper digits every time the Set button is pressed. The counter is set by pressing the Set button when the cursor is placed at the top digit.) | JAM COUNT | Displays the total number of paper jam occurrence. |
| | JAM MP TRAY JAM TRAY1 JAM TRAY2 JAM TRAY3 JAM INSIDE JAM REAR JAM DUPLEX | The number of paper jam occurrence can be changed only to 0. (Reset only) |
| | REPLACE COUNT | |
| | TONER | Displays the number of the toner cartridge replacement. |
| | DRUM UNIT | Displays the number of the drum unit replacement. |
| | PF KIT MP | Displays the number of the PF kit replacement. PF kit MP/1/2/3 = PF kit for MP Tray / Tray1 / Tray 2 / Tray 3. |
| | PF KIT 1 | |
| | PF KIT 2 | |
| | PF KIT 3 | |
| | FUSER UNIT | Displays the number of the fuser unit replacement. |
| | LASER UNIT | Displays the number of the laser unit replacement. |
| | REMAIN LIFE | |
| | DRUM UNIT | Displays the drum unit remaining life counters. (page) |
| | DRUM UNIT2 | Displays the drum unit remaining life counters. (rotation) |
| | PF KIT MP | Displays the PF kit remaining life counters. PF kit MP/1/2/3 = PF kit for MP Tray / Tray1 / Tray 2 / Tray 3. |
| | PF KIT 1 | |
| | PF KIT 2 | |
| | PF KIT 3 | |
| | FUSER UNIT | Displays the fuser unit remaining life counters. |
| | LASER UNIT | Displays the laser unit remaining life counters. |

| Title | Subtitle | Description |
|--------------|------------------------------------|--|
| RESET COUNT | CLEAR COVERAGE | Initialize average coverage counter. |
| | CLEAR ERROR HIST | Initialize error history. |
| NV-RAM DEBUG | NV-RAM HEX PRINT | Prints NV-RAM HEX dump. |
| PPDS SUBSET | ON/OFF | Supports the PPDS Subset command in the FX Emulation mode. |
| TEST MENU | FAN TEST | Carries out movement test of FANs. |
| | FAN 1=ON/OFF* | Carries out movement test of main fan, LVPS fan. |
| | MOTOR TEST | |
| | MAIN MOTOR=ON/OFF* | Carries out movement test of main motor. |
| | SCAN MOTOR=ON/OFF* | Carries out movement test of scanner motor. |
| | SENSOR TEST | |
| | FRONT COVER=ON/OFF | Front cover sensor (ON: Close) |
| | T1 KOUTAN=ON/OFF | T1 tail edge sensor |
| | T2 KOUTAN=ON/OFF | T2 tail edge sensor |
| | T3 KOUTAN=ON/OFF | T3 tail edge sensor |
| | REGI-MAE=ON/OFF | Regist front sensor |
| | REGI-ATO=ON/OFF | Regist rear sensor |
| | EJECT=ON/OFF | Paper eject sensor |
| | T1 PAPER=ON/OFF | Tray 1 paper sensor |
| | T2 PAPER=ON/OFF | Tray 2 paper sensor |
| | T3 PAPER=ON/OFF | Tray 3 paper sensor |
| | MP PAPER=ON/OFF | MP Tray paper sensor |
| | DX UNIT=ON/OFF | The DX unit is closed. (ON: Close) |
| | REAR COVER=ON/OFF | Back cover sensor (ON: Close) |
| | NEW TONER=ON/OFF | New toner sensor |
| | T2 CONNECT=ON/OFF | Tray 2 connect sensor |
| | T3 CONNECT=ON/OFF | Tray 3 connect sensor |
| | T4 CONNECT=ON/OFF | Tray 4 connect sensor |
| TONER=ON/OFF | Toner sensor (ON: Light reception) | |

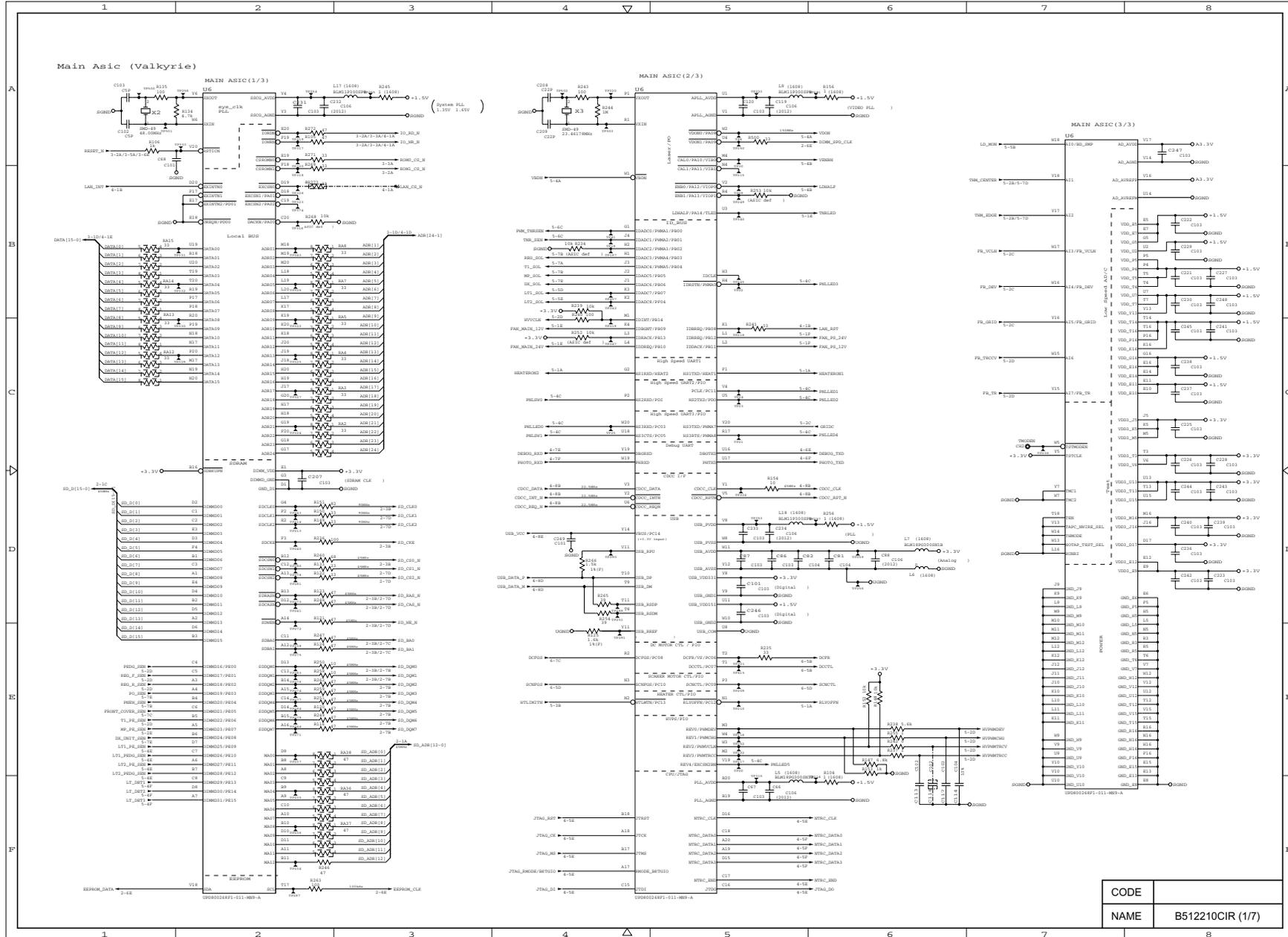
| Title | Subtitle | Description |
|------------------------------|----------|--|
| <p>MAINTENANCE PRINT</p> | | <p>Always prints the maintenance and consumable parts information on the second page of the Print Settings.</p> <p><Developing Bias: xxx V> is added to the end of the page.</p> <p>The xxx characters show 400 V when the developer counter is 0 page, and it is designed that they are changed gradually from 400V to 300V at 4,000 pages (for standard cartridge) or 7,000 pages (for high yield cartridge). They remain 300V after 4,000 pages (for standard cartridge) or 7,000 pages (for high yield cartridge).</p> |

3. NVRAM DEFAULT VALUE

The default values for the main items to be set in NVRAM are as follows;

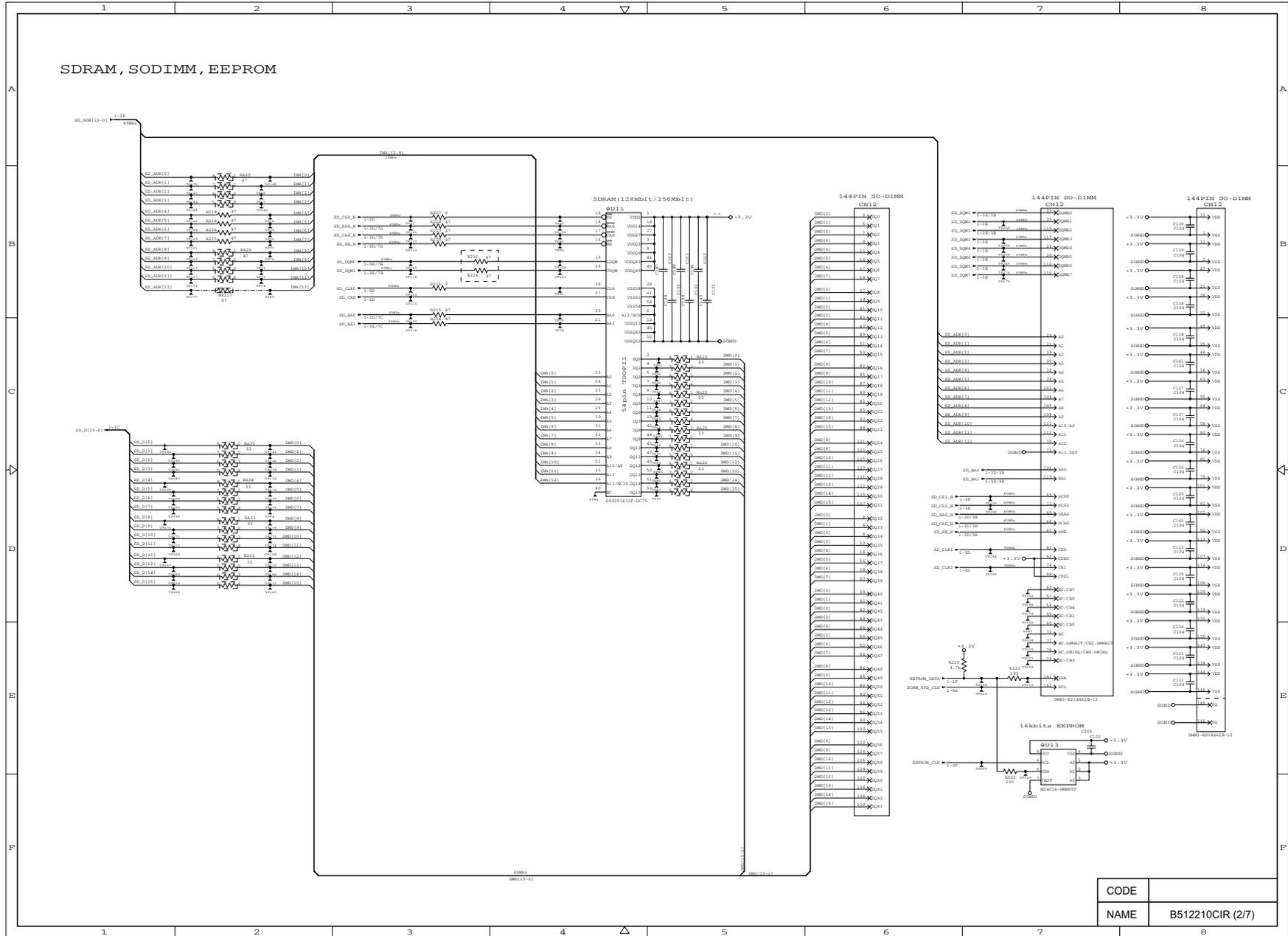
| Items | Descriptions |
|------------------------------|--|
| Timing of Drum LED ON | 25,000 pages (Counted from the drum unit life.) |
| Development switching timing | The developing bias is switched from 400V to 300V gradually when 4,000 pages (Standard cartridge), 7,000 pages (High yield cartridge) are printed. It is switched to 400V again when the toner cartridge is replaced with the new one. (Counted from the number of the drum rotation in non-continuous printing) |
| Fixing temperature | <ul style="list-style-type: none"> • Transparency: 185°C • Thin paper: 195°C • Plain paper: 213°C • Thick paper: 200°C • Thicker/Bond paper: 200°C (in non-continuous printing) |
| Smaller size mode | Refer to 3.8 'PRINT SPEEDS WITH VARIOUS SETTINGS' in Chapter 1. |
| Paper size | The default paper size is "A4". The paper size needs to be changed in US and other countries. |

Appendix 1. Main PCB Circuit Diagram, HL-5240/5250DN/5270DN/5280DW (1/7)

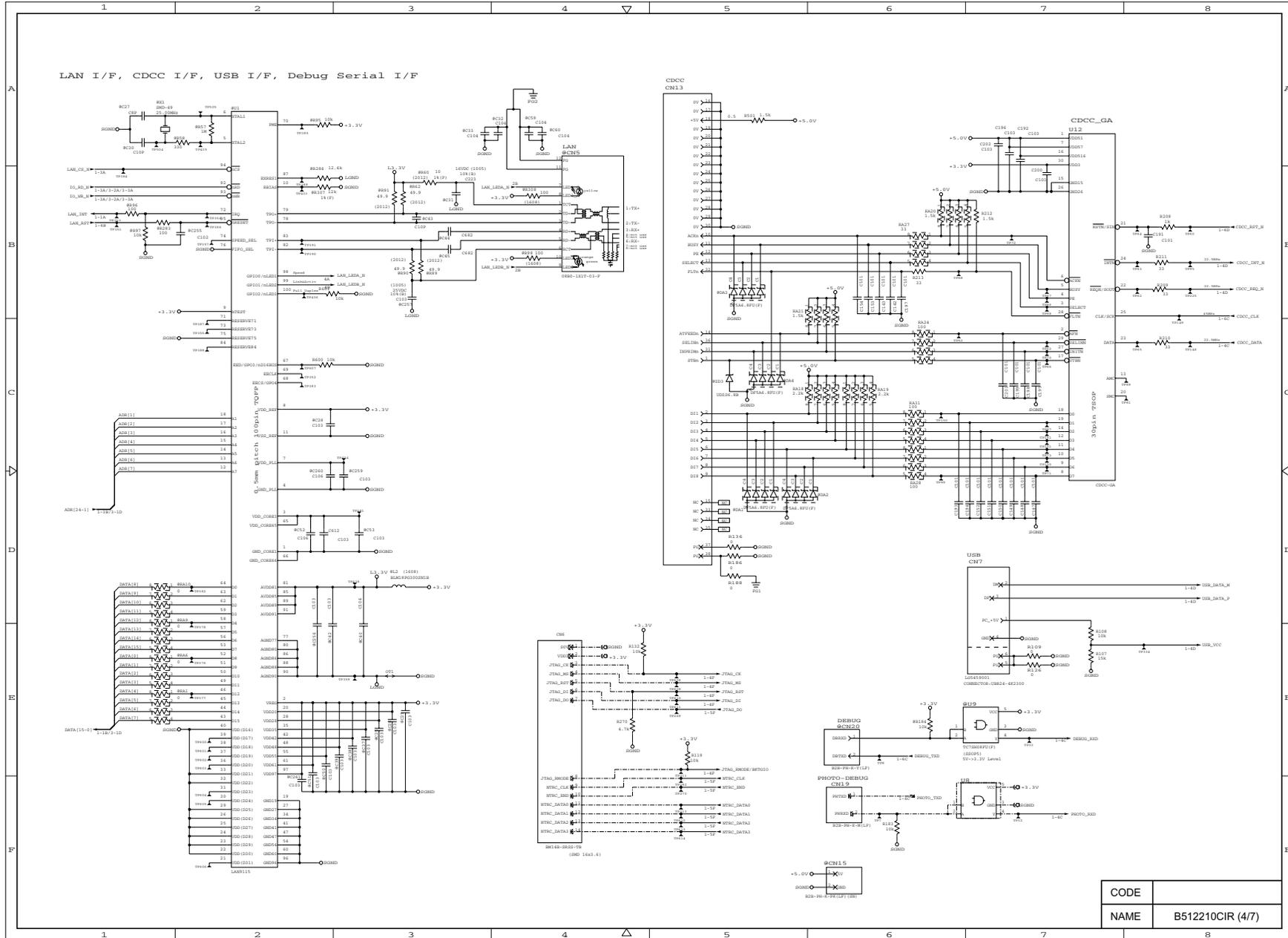


| CODE | NAME |
|------|------------------|
| | B512210CIR (1/7) |

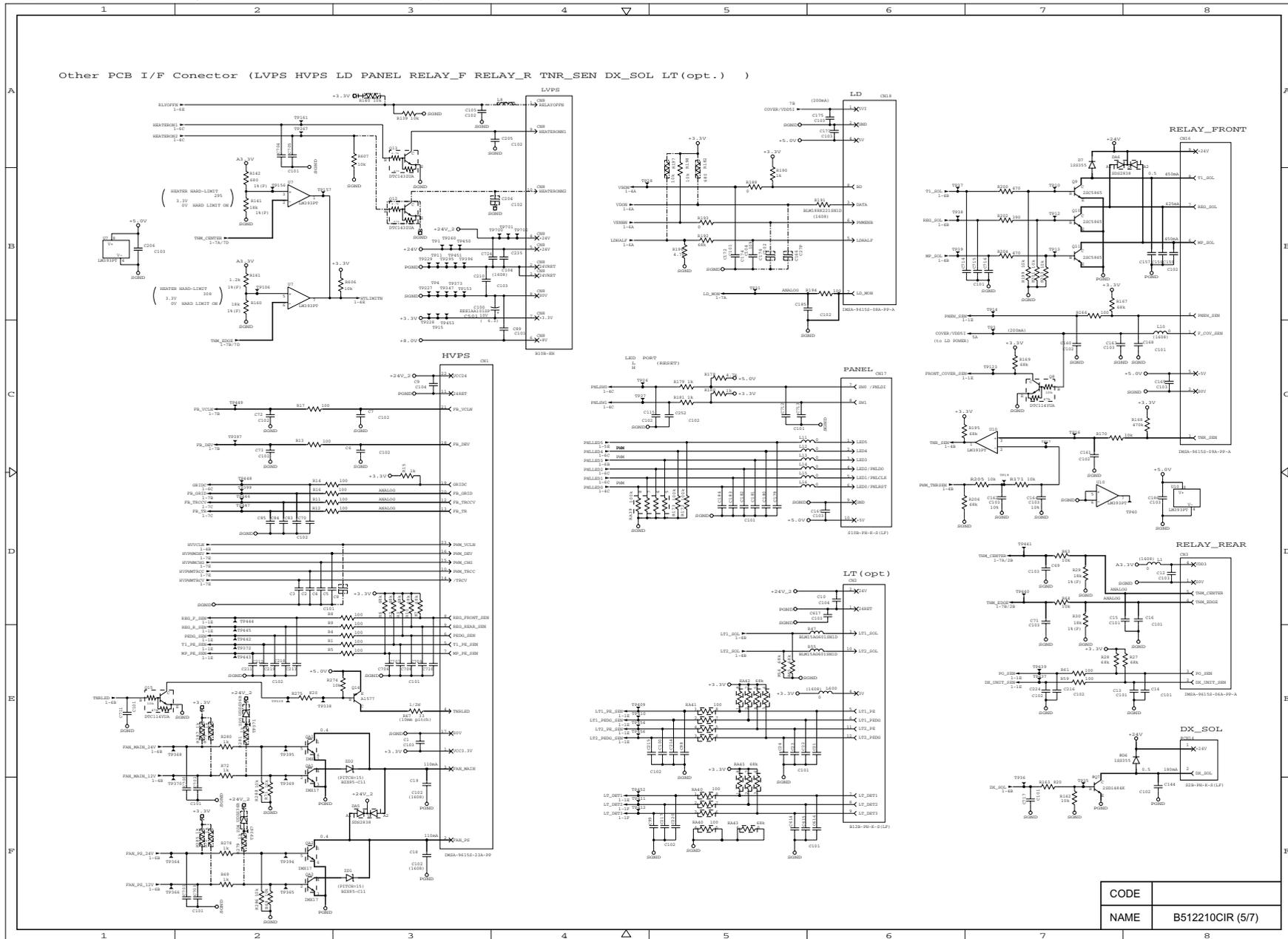
Appendix 1. Main PCB Circuit Diagram, HL-5240/5250DN/5270DN/5280DW (2/7)



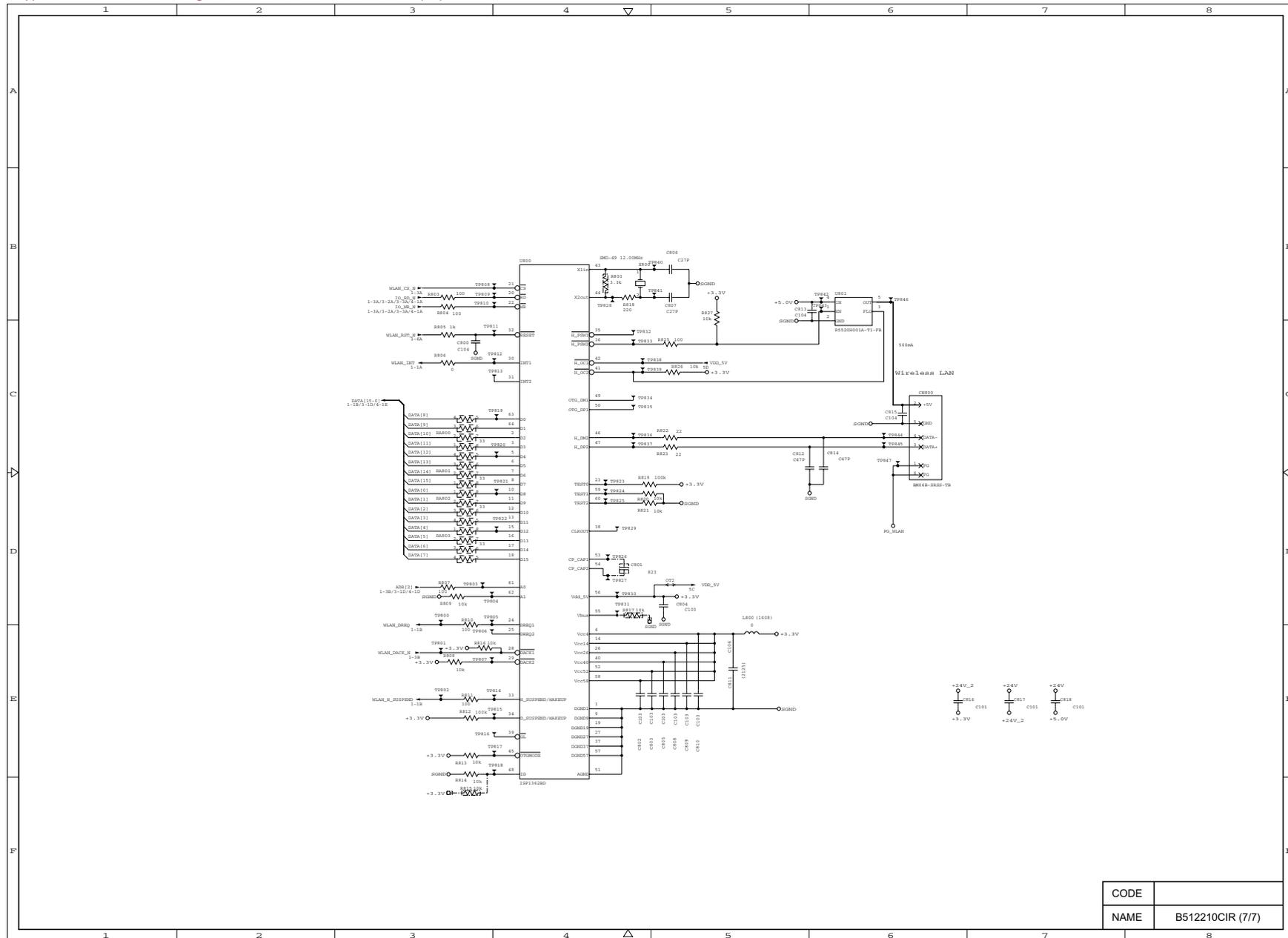
Appendix 1. Main PCB Circuit Diagram, HL-5240/5250DN/5270DN/5280DW (4/7)



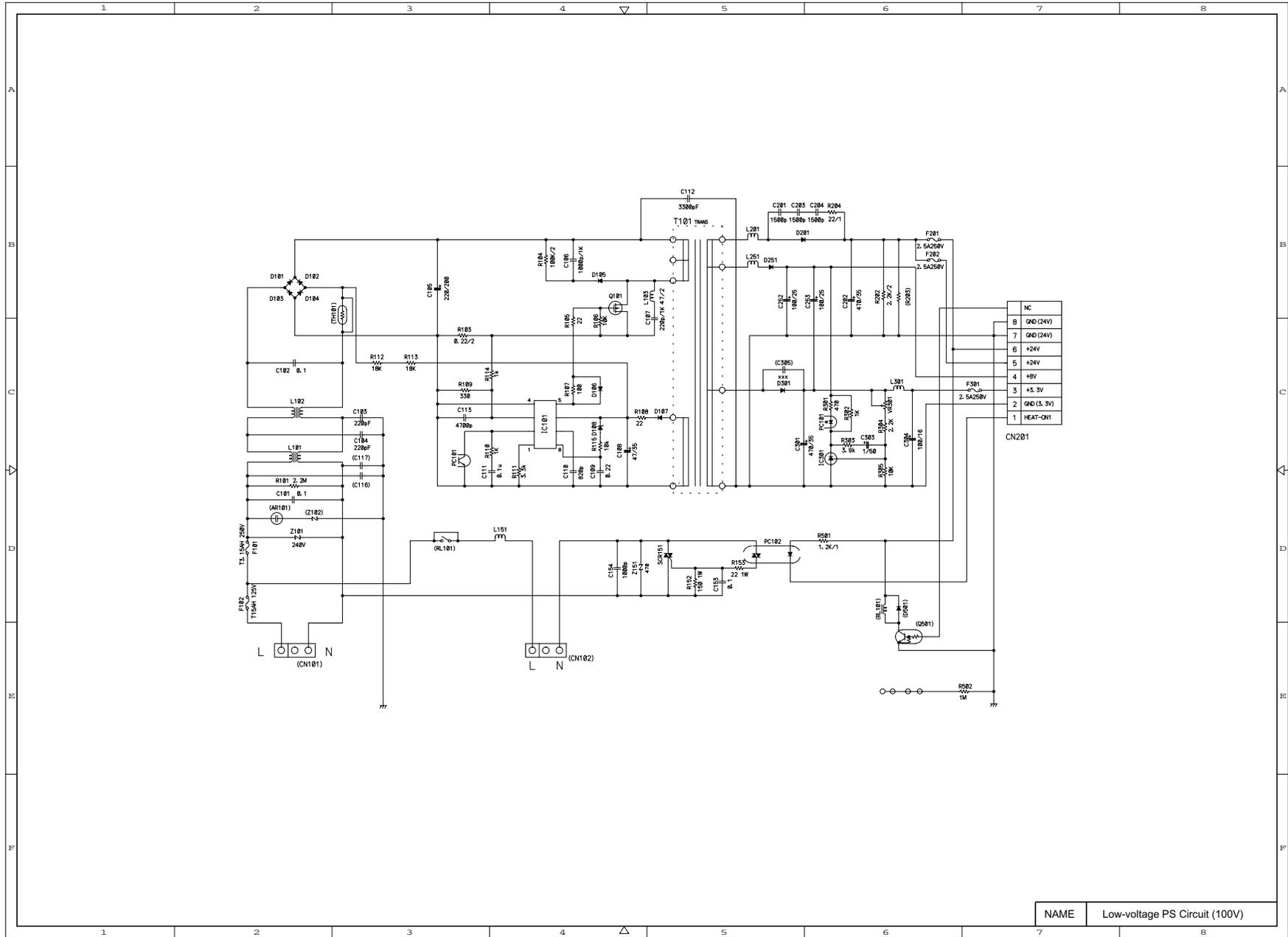
Appendix 1. Main PCB Circuit Diagram, HL-5240/5250DN/5270DN/5280DW (5/7)



Appendix 1. Main PCB Circuit Diagram, HL-5240/5250DN/5270DN/5280DW (7/7)

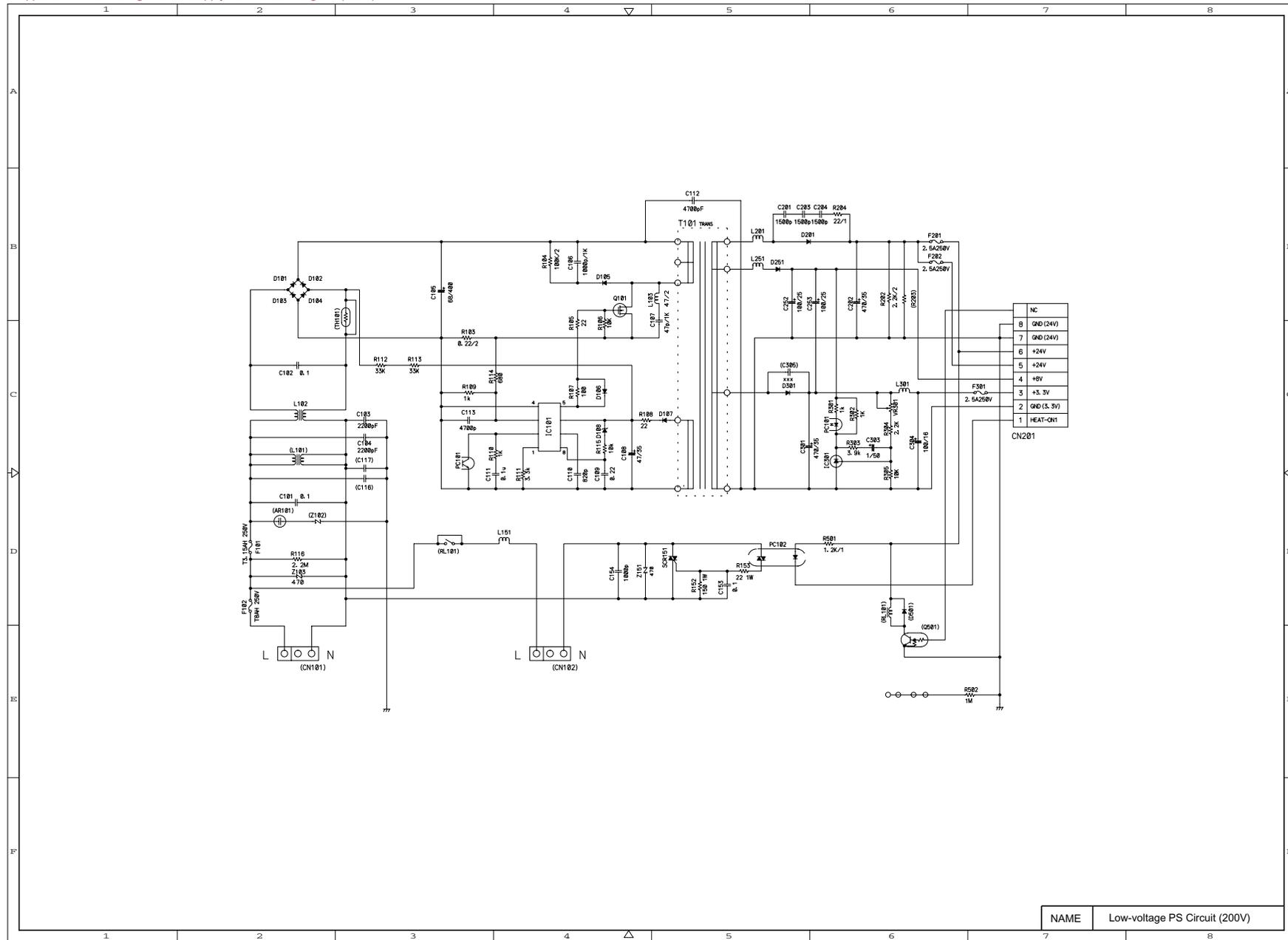


Appendix 2. Low-voltage Power Supply PCB Circuit Diagram (100V)

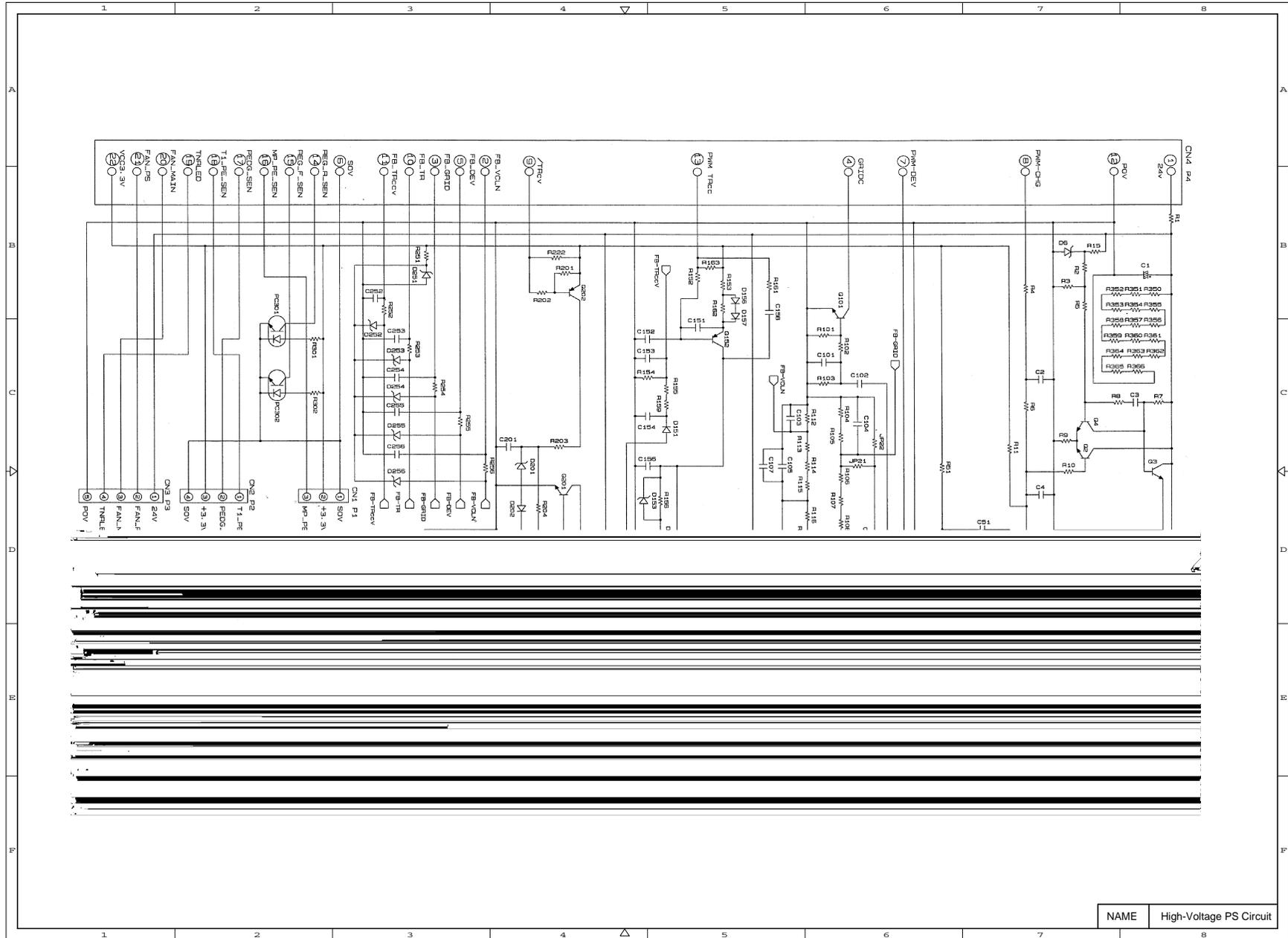


| | |
|------|-------------------------------|
| NAME | Low-voltage PS Circuit (100V) |
|------|-------------------------------|

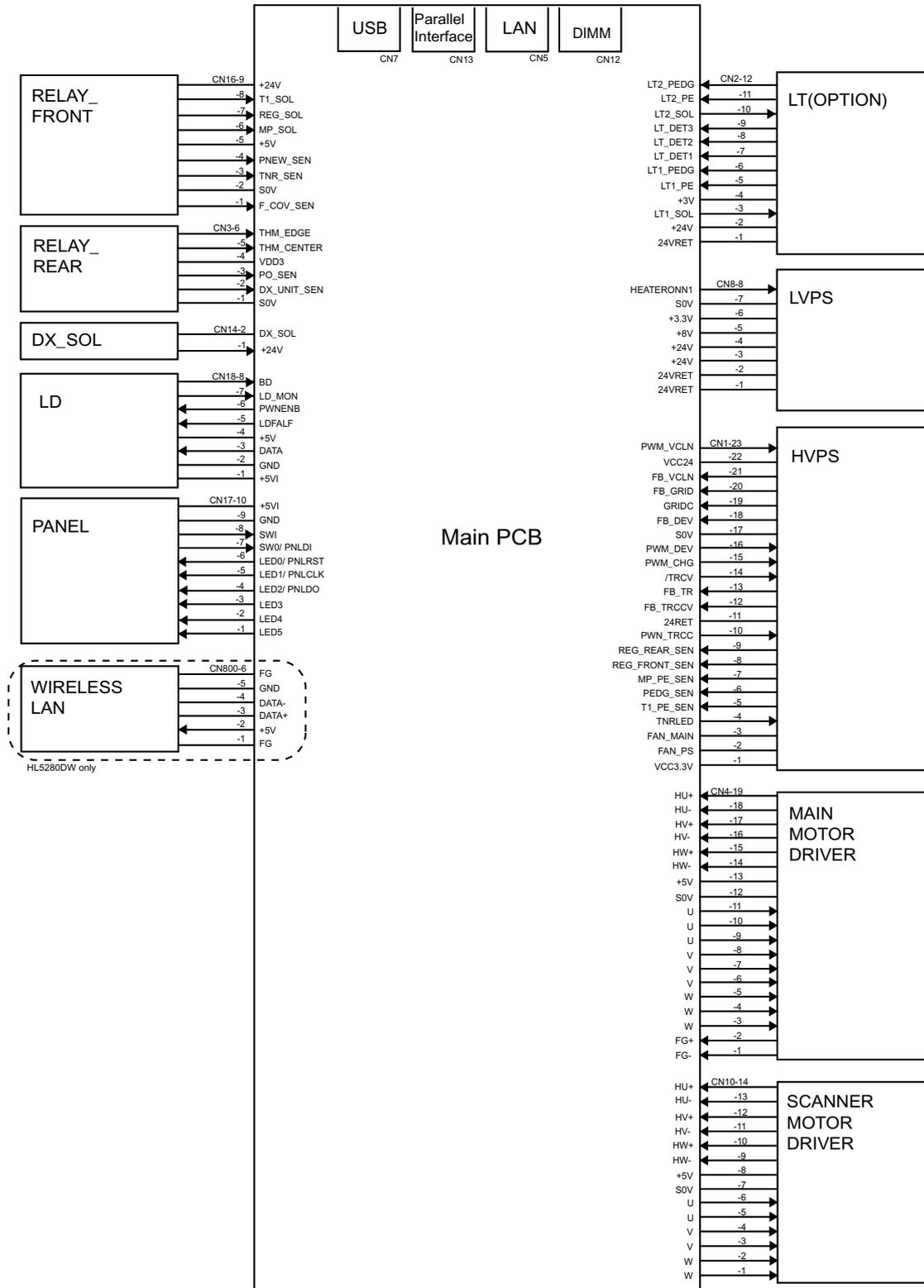
Appendix 2. Low-voltage Power Supply PCB Circuit Diagram (200V)



Appendix 3. High-Voltage Power Supply Circuit Diagram

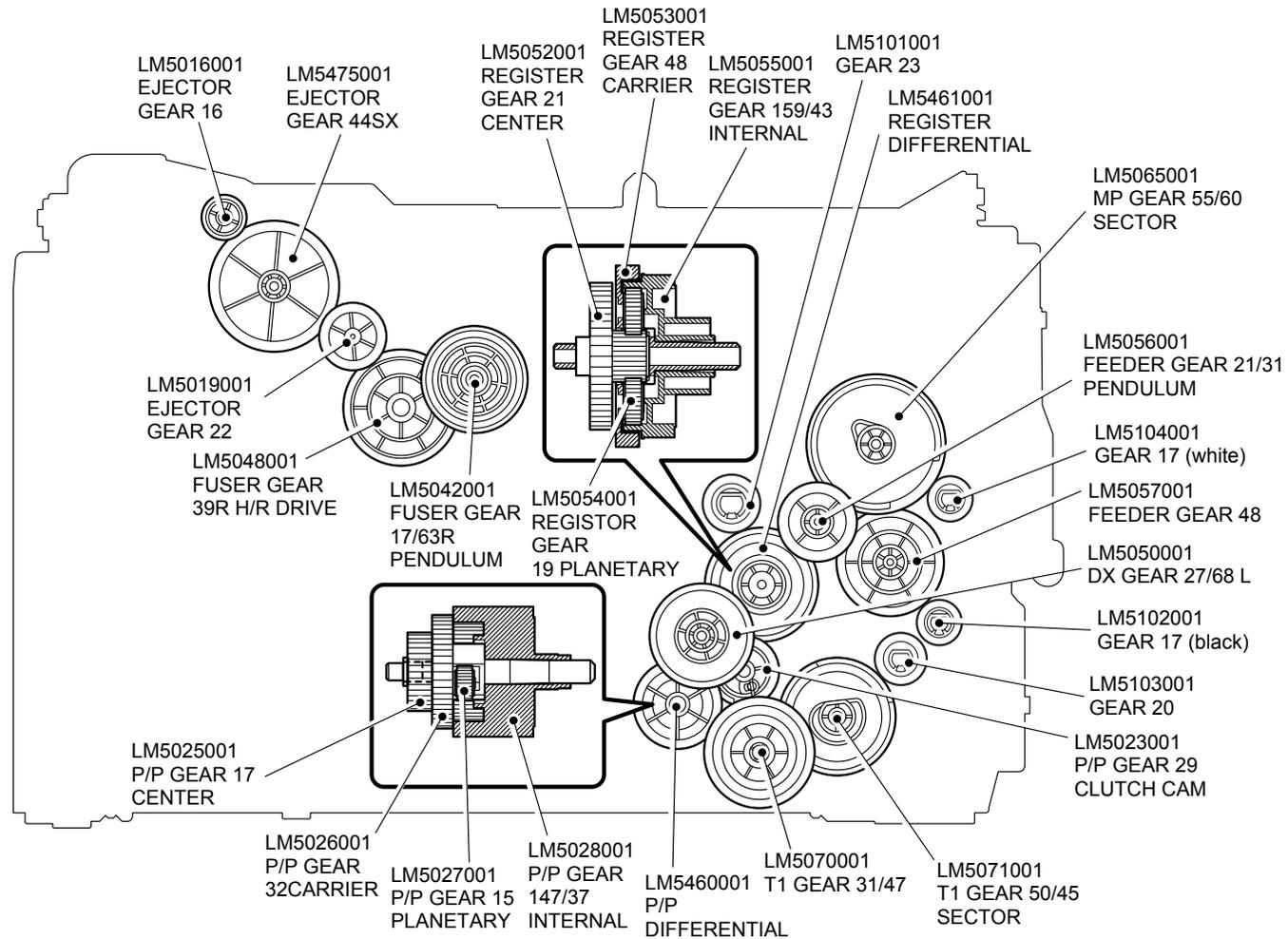


APPENDIX 4 POINT TO POINT CONNECTION DIAGRAM

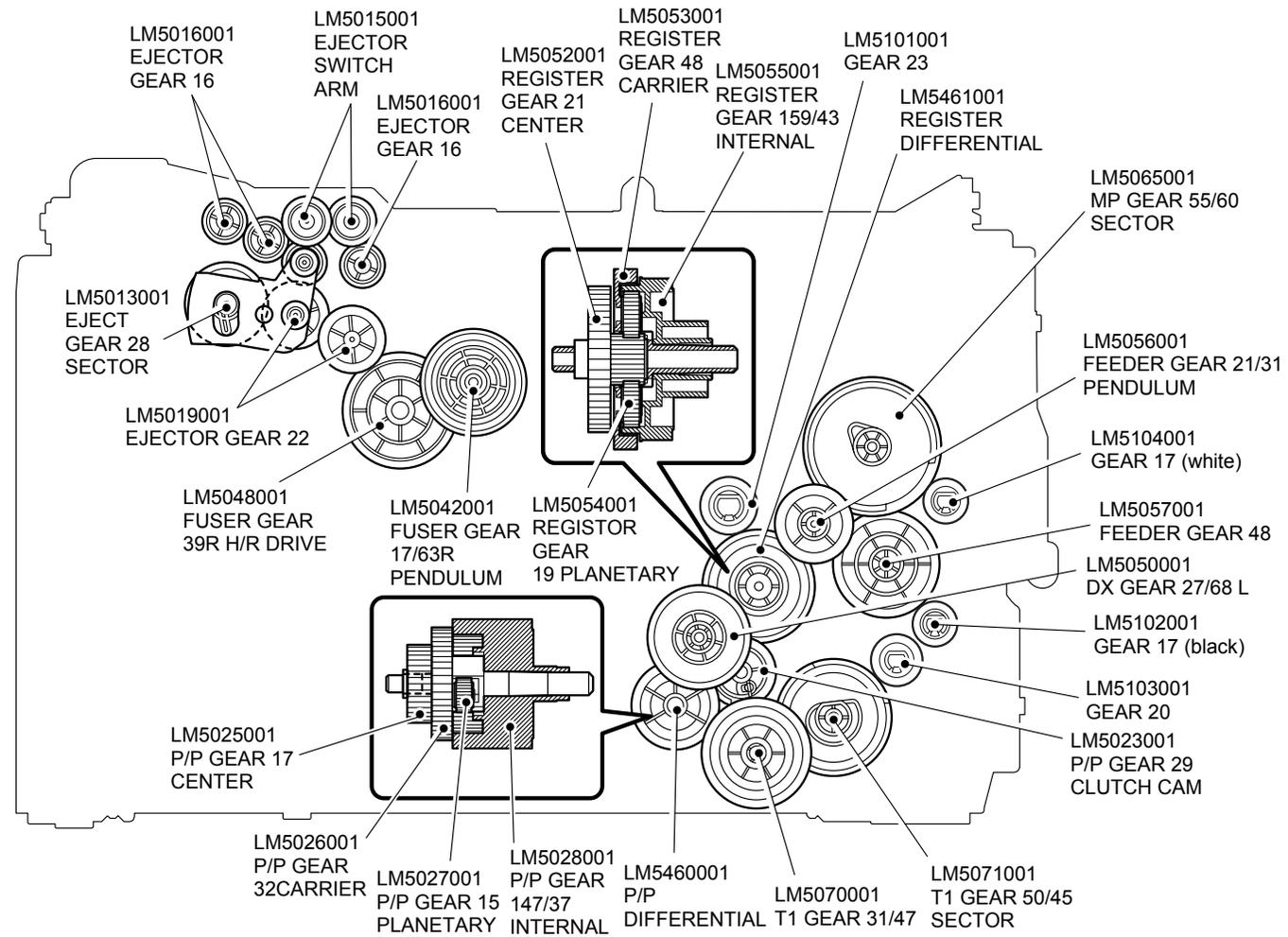


APPENDIX 5 GEAR LAYOUT DRAWING

1. HL-5240



2. HL-5250DN/ 5270DN/ 5280DW



APPENDIX 6 READMARKS

This page provides the retrieve information. It is possible to get the instruction of the subject by just clicking on the link below.

1. Error codes (HL-5270DN/5280DW)

(Refer to [“2.2.2 Service calls for HL-5270N/5280DW”](#), Chapter 4.)

2. Error message

- **HL-5240/5250DN**

(Refer to [“2.1.1 Operator calls for HL-5240/5250DN”](#), Chapter 4.)

- **HL-5270DN/5280DW**

(Refer to [“2.1.2 Operator calls for HL-5270DN/5280DW”](#), Chapter 4.)

3. Reset parts life

- **HL-5240/5250DN**

(Refer to [“2. IF YOU REPLACE THE PERIODICAL MAINTENANCE PARTS”](#), Chapter 6.)

- **HL-5270DN/5280DW**

(Refer to [“2.2 Reset Parts Life Menu”](#), Chapter 7.)

4. Paper specification

(Refer to [“3.6 Paper”](#), Chapter 1.)

5. Machine specification

(Refer to [“3. SPECIFICATIONS”](#), Chapter 1.)

6. Diameter of rollers

(Refer to [“6.2 Diameter of Rollers”](#), Chapter 4.)

7. Periodical replacement parts

(Refer to [“2.1 Periodical Replacement Parts”](#), Chapter 3.)

8. Toner cartridge weight information

(Refer to [“3.8 Toner Cartridge Weight Information”](#), Chapter 1.)

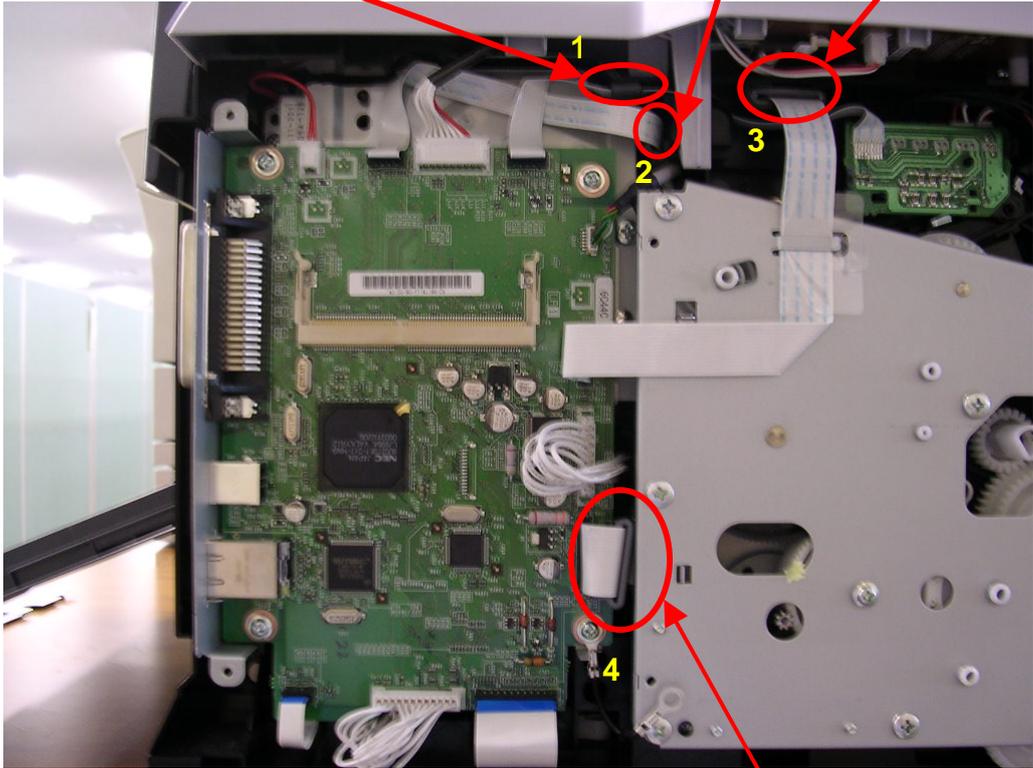
APPENDIX 7 LOCATION OF THE FERRITE CORE

It is necessary to place the ferrite core correctly in order to comply with the EMI (Electromagnetic interface) standard when assembling. Refer to the following chart as well to know the necessary ferrite core depending on models.

RELAY-FRONT HARNESS AL
FERRITE CORE:16X9X5X0.5

LD HARNESS AL
FERRITE CORE:16X9X5X0.5

Polygon Motor FFC
CORE:23.8X15X6.3X
1.1



Main Motor FFC

FERRITE CORE:26.0X9.5X5.0X1.2

| Models | Ferrite Core 1 | Ferrite Core 2 | Ferrite Core 3 | Ferrite Core 4 |
|-----------------------|-----------------------|----------------|-----------------------|-----------------------|
| HL-5240 US | <input type="radio"/> | | <input type="radio"/> | <input type="radio"/> |
| HL-5240 CAN | <input type="radio"/> | | <input type="radio"/> | <input type="radio"/> |
| HL-5240 GER | <input type="radio"/> | | <input type="radio"/> | <input type="radio"/> |
| HL-5240 UK | <input type="radio"/> | | <input type="radio"/> | <input type="radio"/> |
| HL-5240 ARL | <input type="radio"/> | | <input type="radio"/> | <input type="radio"/> |
| HL-5240 SWI | <input type="radio"/> | | <input type="radio"/> | <input type="radio"/> |
| HL-5240 SPA/POR | <input type="radio"/> | | <input type="radio"/> | <input type="radio"/> |
| HL-5240 ITA | <input type="radio"/> | | <input type="radio"/> | <input type="radio"/> |
| HL-5240 ISR | <input type="radio"/> | | <input type="radio"/> | <input type="radio"/> |
| HL-5240 CHN | <input type="radio"/> | | <input type="radio"/> | <input type="radio"/> |
| HL-5240 PHL | <input type="radio"/> | | <input type="radio"/> | <input type="radio"/> |
| HL-5240 SAF | <input type="radio"/> | | <input type="radio"/> | <input type="radio"/> |
| HL-5240 CHI | <input type="radio"/> | | <input type="radio"/> | <input type="radio"/> |
| HL-5240 SGP/GULF | <input type="radio"/> | | <input type="radio"/> | <input type="radio"/> |
| HL-5240 KOR | <input type="radio"/> | | <input type="radio"/> | <input type="radio"/> |
| HL-5240 IND | <input type="radio"/> | | <input type="radio"/> | <input type="radio"/> |
| HL-5240 RUS | <input type="radio"/> | | <input type="radio"/> | <input type="radio"/> |
| HL-5240 PAN-NORDIC | <input type="radio"/> | | <input type="radio"/> | <input type="radio"/> |
| HL-5240 BEL/FRA/NL | <input type="radio"/> | | <input type="radio"/> | <input type="radio"/> |
| HL-5240 EEU GENERAL | <input type="radio"/> | | <input type="radio"/> | <input type="radio"/> |
| HL-5240 MOF BEL | <input type="radio"/> | | <input type="radio"/> | <input type="radio"/> |
| HL-5240 CONSIP ITA | <input type="radio"/> | | <input type="radio"/> | <input type="radio"/> |
| HL-5250DN US | <input type="radio"/> | | <input type="radio"/> | <input type="radio"/> |
| HL-5250DN CAN | <input type="radio"/> | | <input type="radio"/> | <input type="radio"/> |
| HL-5250DN GER | <input type="radio"/> | | <input type="radio"/> | <input type="radio"/> |
| HL-5250DN UK | <input type="radio"/> | | <input type="radio"/> | <input type="radio"/> |
| HL-5250DN ARL | <input type="radio"/> | | <input type="radio"/> | <input type="radio"/> |
| HL-5250DN SWI | <input type="radio"/> | | <input type="radio"/> | <input type="radio"/> |
| HL-5250DN SPA/POR | <input type="radio"/> | | <input type="radio"/> | <input type="radio"/> |
| HL-5250DN ITA | <input type="radio"/> | | <input type="radio"/> | <input type="radio"/> |
| HL-5250DN ISR | <input type="radio"/> | | <input type="radio"/> | <input type="radio"/> |
| HL-5250DN CHN | <input type="radio"/> | | <input type="radio"/> | <input type="radio"/> |
| HL-5250DN PHL | <input type="radio"/> | | <input type="radio"/> | <input type="radio"/> |
| HL-5250DN SAF | <input type="radio"/> | | <input type="radio"/> | <input type="radio"/> |
| HL-5250DN SGP/GULF | <input type="radio"/> | | <input type="radio"/> | <input type="radio"/> |
| HL-5250DN IND | <input type="radio"/> | | <input type="radio"/> | <input type="radio"/> |
| HL-5250DN RUS | <input type="radio"/> | | <input type="radio"/> | <input type="radio"/> |
| HL-5250DN PAN-NORDIC | <input type="radio"/> | | <input type="radio"/> | <input type="radio"/> |
| HL-5250DN BEL/FRA/NL | <input type="radio"/> | | <input type="radio"/> | <input type="radio"/> |
| HL-5250DN EEU GENERAL | <input type="radio"/> | | <input type="radio"/> | <input type="radio"/> |
| HL-5255DN-MICR US | <input type="radio"/> | | <input type="radio"/> | <input type="radio"/> |
| HL-5250DN HY GER | <input type="radio"/> | | <input type="radio"/> | <input type="radio"/> |
| HL-5250DN CONSIP ITA | <input type="radio"/> | | <input type="radio"/> | <input type="radio"/> |

| Models | Ferrite Core 1 | Ferrite Core 2 | Ferrite Core 3 | Ferrite Core 4 |
|-----------------------|----------------|----------------|----------------|----------------|
| HL-5270DN GER | ○ | | ○ | ○ |
| HL-5270DN UK | ○ | | ○ | ○ |
| HL-5270DN ARL | ○ | | ○ | ○ |
| HL-5270DN SWI | ○ | | ○ | ○ |
| HL-5270DN SPA/POR | ○ | | ○ | ○ |
| HL-5270DN ITA | ○ | | ○ | ○ |
| HL-5270DN ISR | ○ | | ○ | ○ |
| HL-5270DN PHL | ○ | | ○ | ○ |
| HL-5270DN SAF | ○ | | ○ | ○ |
| HL-5270DN SGP/GULF | ○ | | ○ | ○ |
| HL-5270DN RUS | ○ | | ○ | ○ |
| HL-5270DN PAN-NORDIC | ○ | | ○ | ○ |
| HL-5270DN BEL/FRA/NL | ○ | | ○ | ○ |
| HL-5270DN EEU GENERAL | ○ | | ○ | ○ |
| HL-5280DW US | ○ | | ○ | ○ |
| HL-5280DW CAN | ○ | | ○ | ○ |
| HL-5280DW GER | ○ | ○ | ○ | ○ |
| HL-5280DW UK | ○ | ○ | ○ | ○ |
| HL-5280DW SWI | ○ | ○ | ○ | ○ |
| HL-5280DW GENERAL | ○ | ○ | ○ | ○ |
| HL-5280DW PAN-NORDIC | ○ | ○ | ○ | ○ |
| HL-5250DNT US | ○ | | ○ | ○ |

APPENDIX 8 HL-5240L

The Brother HL-5240L is functionally equivalent to the Brother HL-5240.

Refer to the information for the HL-5240 in this manual.

When visiting any Brother support sites, refer to information on the Brother HL-5240L.

<Specifications>

■ The differences between the HL-5240 and HL-5240L

| HL-5240L | |
|---------------------------------------|-------------------------------------|
| Print Speed | Up to 24ppm (A4 size) ^{*1} |
| Starter Toner Cartridge ^{*2} | Approx. 2,000 pages A4 @ 5%coverage |

*1 From the standard paper tray and optional paper tray 2.

*2 The toner cartridge supplied with the HL-5240 is able to print approx. 3,500 A4 pages at 5% coverage.

■ Print Speeds with Various Settings

A4 / Letter size

| Media type setting | HL-5240L |
|----------------------------------|----------|
| Transparency, Thin Paper | 24 ppm |
| Plain Paper, Recycled Paper | 24 ppm |
| Thick Paper, Envelopes, Env.Thin | 14 ppm |
| Thicker/Bond Paper, Env.Thick | 3 ppm |

Smaller size than A4 or Letter

| Media type setting | HL-5240L |
|----------------------------------|------------------------|
| Transparency, Thin Paper | 24 ppm |
| Plain Paper, Recycled Paper | 90 sec 24 ppm → 14 ppm |
| Thick Paper, Envelopes, Env.Thin | 14 ppm |
| Thicker/Bond Paper, Env.Thick | 3 ppm |

<Information for the Starter Toner Cartridge>

■ Toner Cartridge Weight Information

Also refer to “3.9 Toner Cartridge Weight Information”, Chapter 1.

- Brand New Toner Cartridge Weight: 629g (± 15g)
- Toner Weight at Brand New Toner Cartridge: 100g (± 2.5g)
- Toner Cartridge Weight at Toner Near Empty: 606g (± 15g)
- Remaining Toner Weight at Toner Near Empty: 77g (± 2.5g)
- Toner Cartridge Weight at Toner Life End: 594g (± 15g)
- Remaining Toner Weight at Toner Life End: 65g (± 2.5g)

NOTE:

The information shows approximate weight of the toner cartridge and toner. It is subject to change due to redesign of the machine.

■ Toner life end mode

Also refer to “3.4.1 Toner life end mode”, Chapter 2.

The upper limit of the drum rotation for the starter toner is 26,400 = 2,400 sheets x 11 rotations. The following graph shows the number of printable pages in the case of A4 printing.

HL-5240L(Starter (2.0K) toner)

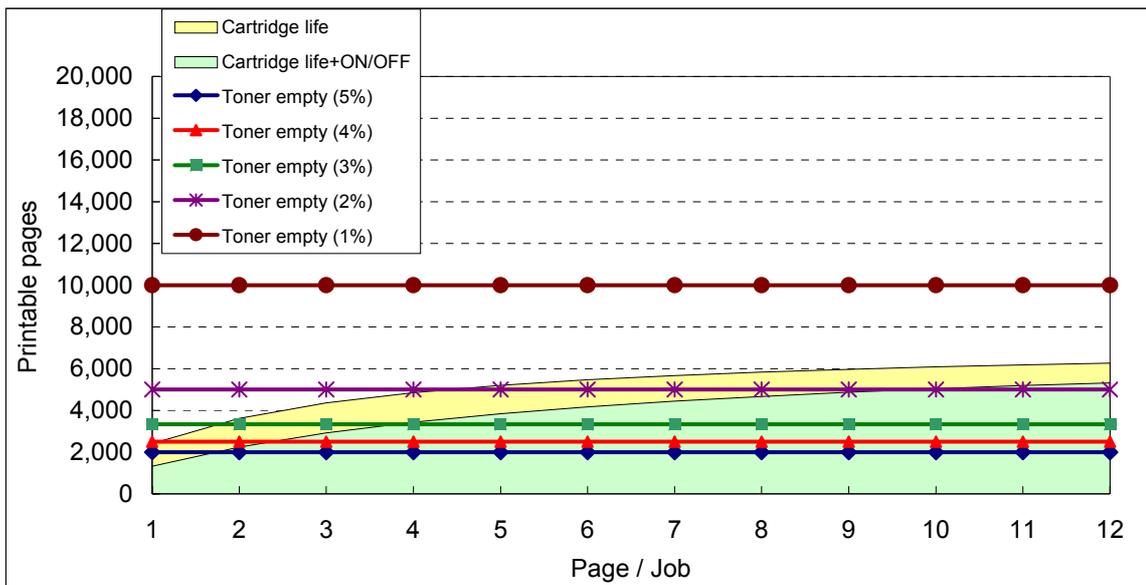
| Page/job | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|-----------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Cartridge life | 2,400 | 3,616 | 4,352 | 4,844 | 5,197 | 5,462 | 5,669 | 5,834 | 5,970 | 6,083 | 6,179 | 6,261 |
| Cartridge life+ON/OFF | 1,320 | 2,237 | 2,912 | 3,429 | 3,837 | 4,168 | 4,442 | 4,673 | 4,869 | 5,038 | 5,186 | 5,315 |
| Toner empty (5%) | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 |
| Toner empty (4%) | 2,500 | 2,500 | 2,500 | 2,500 | 2,500 | 2,500 | 2,500 | 2,500 | 2,500 | 2,500 | 2,500 | 2,500 |
| Toner empty (3%) | 3,333 | 3,333 | 3,333 | 3,333 | 3,333 | 3,333 | 3,333 | 3,333 | 3,333 | 3,333 | 3,333 | 3,333 |
| Toner empty (2%) | 5,000 | 5,000 | 5,000 | 5,000 | 5,000 | 5,000 | 5,000 | 5,000 | 5,000 | 5,000 | 5,000 | 5,000 |
| Toner empty (1%) | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 |

Cartridge life = $11a \times 2400 / (3.6 \times (a - 1) + 11)$

a : Page / job

Cartridge life+ON/OFF = $(11a \times 2400) / (3.6 \times (a - 1) + 11 + 9)$

Cartridge life (Mechanical limit) : 2400 (1page / job)



■ New Toner Detection Mechanism

Also refer to [“3.4.2 New toner detection mechanism”, Chapter 2.](#)

The starter toner does not have parts for the new toner detection. When turning on the HL-5240L for the first time after shipment, it is premised on that the starter toner cartridge is attached.

■ Developer Roller Counter Reset 3 (For the starter toner)

Also refer to [“Developer Roller Counter Reset”, Chapter 7.](#)

1. Check that the front cover is open.
2. Turn ON the power switch while the **Go** button is held.
3. After all LEDs on the panel are lit, only the **Status** LED goes out.
4. Release the **Go** button and check that all LEDs are out.
5. Press the **Go** button twice. (If the **Go** button is pressed, the **Status** LED is lit. If the **Go** button is released, the LED is out.)
6. Check that **Toner/Drum/Paper** LEDs are lighted.
7. Press the **Go** button 9 times. (If the **Go** button is pressed, the **Status** LED is lit. If the **Go** button is released, the LED is out.) The mode starts after 2 seconds. (All LEDs are lit for 1 second and the printer returns to the ready status.)