

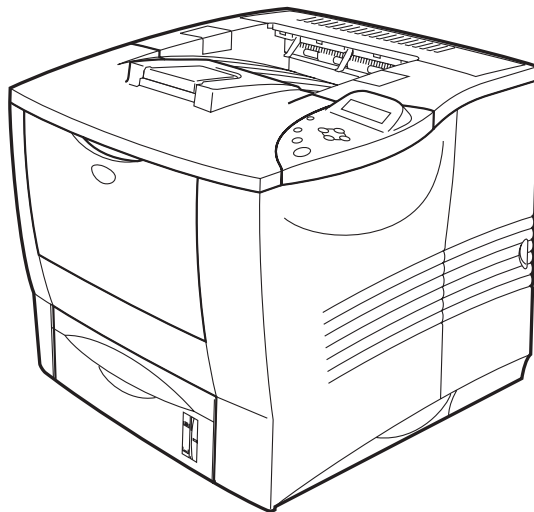


# Brother Laser Printer **SERVICE MANUAL**

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**MODEL: HL-7050/7050N**



Read this manual thoroughly before maintenance work.

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

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SM-PRN031

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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-7050/7050N** printers.

This manual consists of the following chapters:

**CHAPTER 1: GENERAL**

Features, specifications, etc.

**CHAPTER 2: INSTALLATION AND BASIC OPERATION**

Installation conditions, Installation procedures, basic operation of the printer etc.

**CHAPTER 3: THEORY OF OPERATION**

Basic operation of the mechanical system, the electrical system and the electrical circuits and their timing information.

**CHAPTER 4: DISASSEMBLY AND RE-ASSEMBLY**

Procedures for disassembling and re-assembling the mechanical system.

**CHAPTER 5: MAINTENANCE**

Periodical replacements parts, consumable parts, etc.

**CHAPTER 6: TROUBLESHOOTING**

Reference values and adjustments, troubleshooting image defects, troubleshooting malfunctions, etc.

**CHAPTER 7: HIDDEN FUNCTIONS**

Professional Menu mode and Service Menu mode, etc.

**APPENDICES:** Serial No. descriptions, page counter, Diameter / circumference of rollers, Connection diagrams, PCB circuit 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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## INDEX

## REGULATION

### LASER SAFETY (110 - 120V MODEL ONLY)

This printer is certified as a Class I laser product under the US 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 the protective housing and external covers. The laser beam cannot escape from the machine during any phase of user operation.

### FDA REGULATIONS (110 - 120V MODEL ONLY)

The US 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

<p>MANUFACTURED: BROTHER INDUSTRIES, LTD.</p> <p>15-1, Naeshiro-cho, Mizuho-ku, Nagoya 467-8561, Japan.</p> <p>This product complies with FDA radiation performance standards, 21 CFR Subchapter J.</p>	K
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The label for Chinese manufactured products

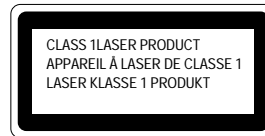
<p>MANUFACTURED: BROTHER Corporation (Asia) Ltd. Shenzen Buji Nan Ling Factory</p> <p>Gold Garden Ind., Nan Ling Village, Buji, Rong Gang, Shenzen, CHINA</p> <p>This product complies with FDA radiation performance standards, 21 CFR Subchapter J.</p>	C
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### Caution

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

**IEC 825 (220-240V MODEL ONLY)**

This printer is a Class I laser product as defined in IEC 825 specifications. The label shown below is attached in countries where 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.

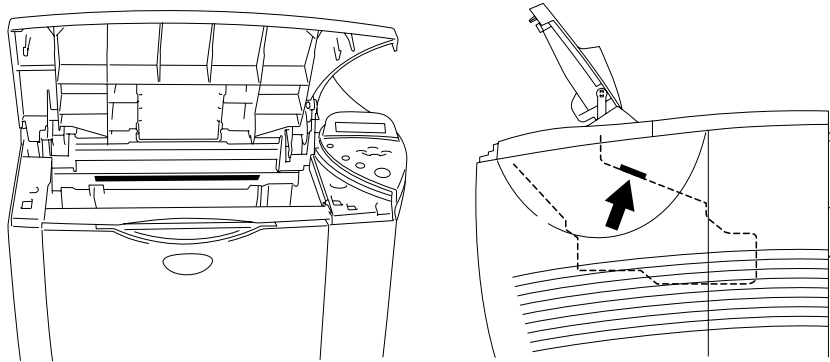
Varning – Om apparaten används på annat sätt än i denna Bruksanvisning specificerats, kan användaren utsättas för osynlig laserstrålning, som överskrider gränsen för laserklass 1.

## 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>



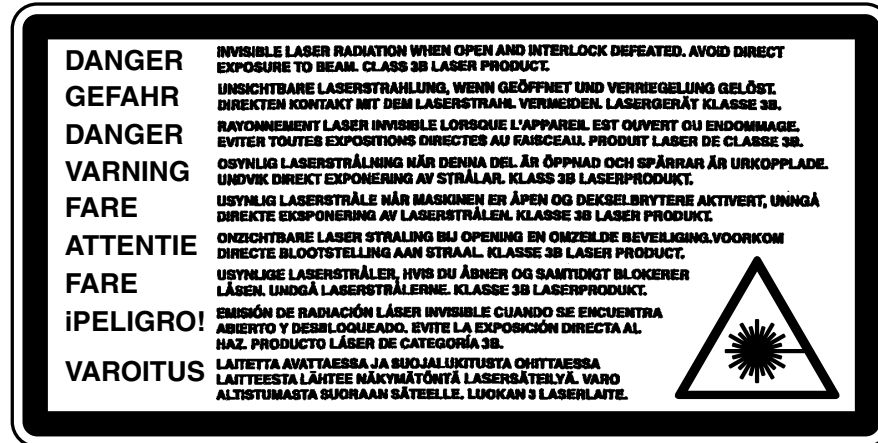
### LITHIUM BATTERIES

- CAUTION:** DANGER OF EXPLOSION IF BATTERY IS INCORRECTLY REPLACED. REPLACE ONLY WITH THE SAME OR EQUIVALENT TYPE RECOMMENDED BY THE MANUFACTURER. DISPOSE OF USED BATTERIES ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.
- VORSICHT:** EXPLOSIONSGEFAHR BEI UNSACHGEMÄßEM AUSTAUSCH DER BATTERIE. ERSATZ NUR DURCH DENSELBELEN ODER EINEN VOM HERSTELLER EMPFOHLENELEN ÄHNLICHEN TYP. ENTSORGUNG GEBRAUCHTER BATTERIEN NACH ANGABEN DES HERSTELLERS.

**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:



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



*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.

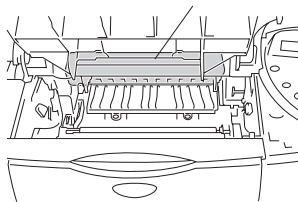


*Always turn off the power switch and unplug the power cord from the power outlet before accessing any parts inside the printer.*

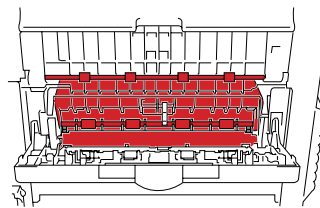


*Some parts inside the printer are extremely hot immediately after the printer is used. When opening the front cover or rear cover to access any parts inside the printer, never touch the red colored parts shown in the following figures.*

Fuser is HOT!



Inside the printer



Open the face-up output tray



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

---

## CHAPTER 1 GENERAL

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### 1. FEATURES

---

This printer has the following features;

#### **High Resolution and Fast Print Speed**

True 1200 X 1200 dots per inch (dpi), 600 x 600 dots per inch (dpi) and true 300 x 300 dots per inch (dpi) for graphics with microfine toner and up to 28 pages per minutes (ppm) print speed (A4) and 30 pages per minutes (ppm) print speed (Letter 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 and Legal size paper. The manual feed tray allows manual paper loading sheet by sheet so you can use a variety of types and sizes of paper.

#### **Front Operation**

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

#### **Enhanced Printing Performance and User-Friendly Operation for Windows®**

The dedicated printer driver for Microsoft® Windows® 95/98/Me and Windows® NT 4.0/2000/XP 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 allows you to choose various printer settings including toner save mode, custom paper size, sleep mode, gray scale adjustment, resolution, watermark and many other layout functions. You can easily setup these print options through the Printer Setup Menu.

#### **Printer Status Monitor**

The printer status monitor program can show the current status of your printer. When printing, the animated dialog box appears on your computer screen to show the current printing process. If an error occurs, a dialog box will appear to let you know what to correct. If you have turned on the interactive Help, you can get visual guidance on your PC screen on the actions to take in the event of certain printer errors.

#### **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.

#### **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-page 1200 dpi graphic and text data, including large fonts, with the standard printer memory.

#### **USB Interface (for Windows® 98/2000/XP, iMac and Power Macintosh with USB installed)**

The printer can be connected using the Universal Serial Bus (USB) interface to a PC or Macintosh, which has the 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**

The printer supports the following printer emulation modes; HP LaserJet (PCL6), Epson FX-850, IBM Proprinter XL, HP-GL and PostScript® Level 3 language emulation (Brother BR-Script Level 3).

When you use DOS application software or Windows® version 3.0 or earlier, you can use any of these emulations to operate the printer. The printer also supports auto-emulation switching between HP, Brother BR-Script 3, HP-GL and Epson or HP, BR-Script 3, HP-GL and IBM. If you want to set the printer emulation, you can do it by operating the front panel.

### **High Resolution Control & Advanced Photoscale Technology**

High Resolution Control (HRC) technology provides clear and crisp printouts. Use this function to get smooth text print quality.

Advanced Photoscale Technology (APT) enables the printer to print graphics in 256 grayscales, producing nearly photographic quality. Use this function when you want to print photographic images.

### **Environment-Friendly**

<Economy Printing Mode>

This feature will cut your printing cost by saving toner. It is useful for obtaining draft copies for proof-reading.

<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 16W when in sleep mode.

### **Bar Code Print**

The printer can print the following 11 types of bar codes;

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

### **Network Feature**

The Brother network printer has a built in multi protocol network capability as standard. This allows multiple host computers to share the printer on a 10/100Mbit 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® NT/2000/XP, UNIX, Novell, Apple Macintosh, LAN server and OS/2 Warp server computer simultaneously can access this printer. For further information, see the Network User's Guide supplied with the printer.



## 2. OVERVIEW

### <Front View>

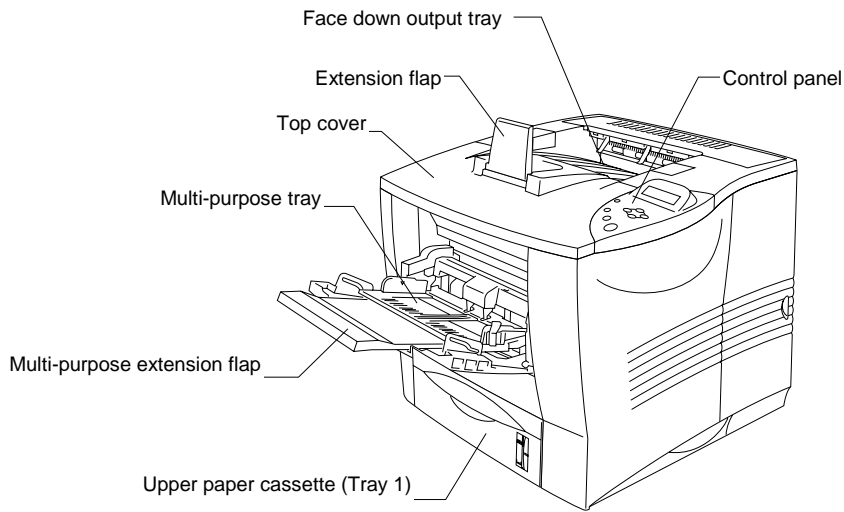


Fig. 1-1

### <Rear View>

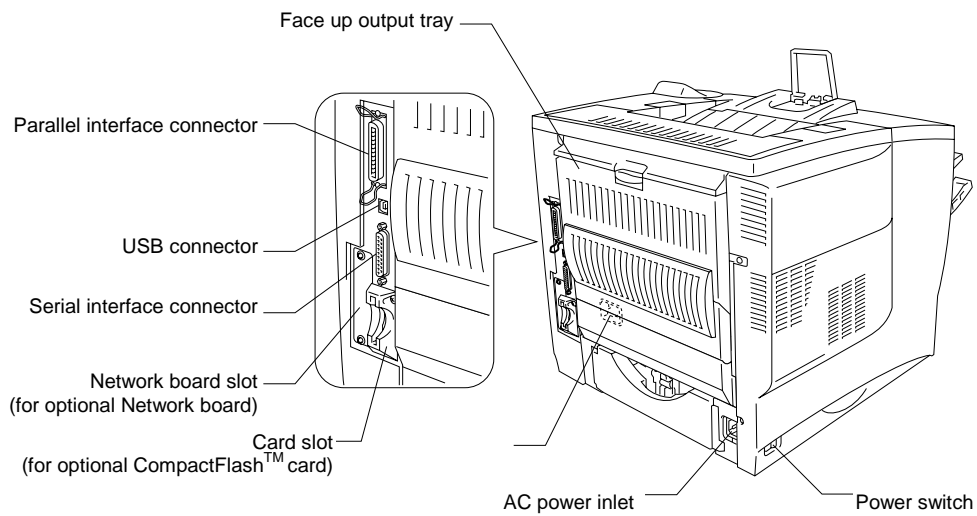


Fig. 1-2

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### 3. SPECIFICATIONS

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#### 3.1 Printing

Print method	Electrophotography (single-component dry toner)
Laser	Semiconductor laser Wave length: 788 nm Output: 15mW max
Resolution	1200dpi (for Windows® 95/98/Me, WindowsNT® 4.0, Windows® 2000, Windows® XP and Mac OS) 600 dpi (for Windows® 95/98/Me, WindowsNT® 4.0, Windows® 2000, Windows® XP, DOS and Mac OS) 300 dpi (for Windows® 95/98/Me, WindowsNT® 4.0, Windows® 2000, Windows® XP and Mac OS)
Print quality	Normal printing mode Economy printing mode (up to 20% toner saving)
Print speed	Up to 28 ppm* (When loading A4 )  Up to 30 ppm* (When loading Letter-size paper.)
Warm-up	Max. 20 seconds at 23°C (68°F)
First print	Approx. 11 seconds (When loading A4 or Letter-size paper using face down print delivery from the paper tray.)
Consumables	Toner cartridge Life expectancy: 12,000 single-sided pages/cartridge Drum unit Life expectancy: 40,000 single-sided pages/unit (When printing A4 or Letter-size paper with the print density set at level 0 with about 5% print coverage)

**\*NOTE:**

*Print speed varies depending on the paper size or print paper type. For details, refer to **APPENDIX 18 'PRINT SPEEDS WITH VARIOUS SETTINGS'**.*

### 3.2 Functions

CPU	Toshiba TMPR4955 266MHz
Emulation	Brother Printing Solution for Windows® Automatic emulation selection among HP LaserJet 5(PCL 6), Brother BR-Script 3, HP-GL, EPSON FX-850 or IBM Proprinter XL
Printer driver	<PCL Driver> Windows® 95/98/Me, Windows® NT 4.0/2000/XP driver, supporting Brother Native Compression mode <PS Driver> PPD file driver for Windows® 95/98/Me, Windows NT® 4.0/2000/XP driver and Macintosh driver
Interface	<ul style="list-style-type: none"> <li>• Bi-directional parallel</li> <li>• Universal Serial Bus (USB)</li> <li>• RS-232C</li> <li>• Network</li> </ul>
Memory	HL7050/HL7050N : 32.0 Mbytes* <sup>1</sup> Expandable up to 288 Mbytes by installing an industry standard DIMM* <sup>2</sup>
Control Panel	<ul style="list-style-type: none"> <li>• Display LCD: 2 lines by 16-column liquid crystal display with a three color back light LED: 1 LED</li> <li>• Buttons: 7 buttons</li> </ul>
Diagnostics	Self-diagnostic program

<sup>1</sup>NOTE:

The standard memory installed varies depending on the country.

<sup>2</sup>NOTE:

The DIMM (Dual in Line Memory Module) must have the following specifications: -

Type: 100 pin  
Access time: 60 nsec - 80 nsec  
Capacity: 16, 32, 64, 128 Mbytes  
Height: 35.0 mm (1.38 inches) or less  
Output: 32 bit or 36 bit (independent of parity)

### 3.3 Options

Paper handling	<ul style="list-style-type: none"> <li>• Lower tray unit (LT-7000); Maximum 500 sheets x 3 trays</li> <li>• Duplex unit for duplex printing (DX-7000)</li> <li>• Mailbox unit for output source (MX-7000 series)</li> </ul>
Stabilizer	Stabilizer for safe installation of the printer with options fitted (SB-4000)
Storage Device	Hard Disk Drive (HD-EX), CompactFlash Card (Not provided by Brother)

**3.4 Electrical and Mechanical**

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):	690 W or less (when printing plain paper at 25°C)
	Standing by:	110 W or less (at 25°C)
	Sleep* <sup>1</sup> :	16 W or less (default activation time: 30 min.)
Noise	Printing:	L <sub>wad</sub> = about 67 dB (A) * <sup>2</sup> L <sub>wad</sub> = about 48 dB (A)
Temperature	Operating:	10 to 32.5°C (50 to 90.5°F)
	Storage:	0 to 35°C (38 to 95°F)
Humidity	Operating:	20 to 80% (non condensing)
	Storage:	10 to 80% (non condensing)
Dimensions	Printer:	485 x 480 x 421 mm (W x D x H) (19.1 x 18.9 x 16.6 inches)
	Carton:	575 x 665 x 570 mm (W x D x H) (22.6 x 26.2 x 22.4 inches)
Weight	Printer:	Approx. 24.1 kg (53.1 lb.) (Excluded Toner and Drum)
	Carton:	Approx. 30.6 kg (67.5 lb.) (Included Toner, Drum and Carton)

**\*<sup>1</sup>NOTE:**

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

**\*<sup>2</sup>NOTE:**

*You might want to install printers with a sound power level of L<sub>wad</sub> 63 dB (A) or more in a separate room or cubicle.*

### 3.5 Network

Type / Speed	Ethernet 10BaseT/100BaseTX Print server (NC-4100h) Auto speed detection
Protocols	TCP/IP (DHCP, BOOTP, RARP, APIPA, NetBIOS over IP LPR/LPD, Port9100, Custom Port, POP3/SMTP, SMB Print TELNET, SNMP, HTTP, TFTP, FTP, IPP, SSDP), EtherTalk, IPX/SPX, DEC LAT, Banyan VINES, NetBEUI, DLC/LLC
Management	<ul style="list-style-type: none"> <li>• Web Based Management</li> <li>• BRAdmin Professional Windows<sup>®</sup> based management utility</li> <li>• Web BRAdmin Server Software</li> </ul>
Firmware update	4MB flash ROM. Use BRAdmin Professional when upgrading print server software or FTP, TFTP PUT/GET or IPX for Netware.
Supplied software	<ul style="list-style-type: none"> <li>• BRAdmin Professional management utility (for Windows<sup>®</sup> 95/98/NT 4.0/2000/XP)</li> <li>• Port driver for Windows<sup>®</sup> 95/98/Me/NT 4.0/2000/XP LPR port driver (for Windows<sup>®</sup> 95/98/Me/NT4.0 only) NetBIOS port driver, SMTP port driver</li> <li>• Web BRAdmin Server Software</li> </ul>

### 3.6 Paper

#### 3.6.1 Feedable paper

We recommend the following paper types and sizes for each paper tray or print method.

(1) Paper type

<b>Paper type</b>	<b>Tray 1</b> 60- 105 g/m <sup>2</sup> (16 - 28 lbs.)	<b>MP tray</b> 60- 200 g/m <sup>2</sup> (16 - 53 lbs.)	<b>Tray 2/3/4</b> 60- 105 g/m <sup>2</sup> (16 - 28 lbs.)	<b>DX</b> 60- 105 g/m <sup>2</sup> (16 - 28 lbs.)	<b>MX</b> 60- 105 g/m <sup>2</sup> (16 - 28 lbs.)	<b>Select the media type from the printer driver</b>
Plain paper	✓	✓	✓	✓	✓	Plain paper
Thin paper	✓	✓	✓	✓	✓	Thin paper
Recycled paper	✓	✓	✓	✓	✓	Plain paper
Bond paper	✓	✓	✓		✓	Bond paper
Thick paper		✓				Thick paper or thicker paper
Transparency		✓ Only A4 or Letter size				Transparency
Labels		✓ Only A4 or Letter size				Thick paper
Envelope		✓				Envelope
Card stock		✓				Thick paper or thicker paper

## (2) Paper size

	Tray 1	MP tray	Tray 2/3/4	DX	MX
<b>Paper size</b>	A4, Letter, Legal, B5(JIS), B5(ISO), Executive, A5, A6, B6	A4, Letter, Legal, B5(JIS), B5(ISO), Executive, A5, A6, B6, COM-10, Monarch, C5, DL Width: 105 to 216 mm (4.13 to 8.5 in.) Height: 148.5 to 356 mm (5.85 to 14.0 in.)	A4, Letter, Legal, B5(JIS), B5(ISO), Executive, A5	A4, Letter, Legal, B5(JIS), Executive	A4, Letter, B5(JIS), B5(ISO), Executive
<b>Capacity</b>	500 sheets (80 g/m <sup>2</sup> or 20 lbs.)	100 sheets (80 g/m <sup>2</sup> or 20 lbs.) Transparencies: 10 sheets Envelopes: 10 sheets Label stock: 10 sheets	500 sheets (80 g/m <sup>2</sup> or 20 lbs.)		100 sheets per bin (80 g/m <sup>2</sup> or 20 lbs.)

## (3) Other paper specifications

**Paper Tray**

	Cut sheet
Basis weight	60 to 105 g/m <sup>2</sup> (16 to 28 lb.)
Caliper	0.08 to 0.13 mm (0.003 to 0.005 in.)
Moisture content	4% to 6% by weight

**MP Tray**

	Cut sheet	Envelope
Basis weight	60 to 200 g/m <sup>2</sup> (16 to 53 lb.)	75 to 90 g/m <sup>2</sup> (20 to 24 lb.) single thickness
Caliper	0.08 to 0.2 mm (0.003 to 0.008 in.)	0.084 to 0.14 mm (0.003 to 0.005 in.) single thickness
Moisture content	4% to 6% by weight	4% to 6% by weight

## (4) Recommended paper

	<b>Europe</b>	<b>USA</b>
Plain paper *	Xerox Premier 80 g/m <sup>2</sup>	Xerox 4200DP 20 lb.
Transparency	3M CG3300	3M CG3300
Label	Avery laser label L7163	Avery laser label #5160

\* Recommended paper should have the following technical specifications:

Basis Weight 75-90 (g/m<sup>2</sup>)  
 Thickness 80-110 (micrometer)  
 Roughness Higher than 20 (sec.)  
 Stiffness 90-150 (cm<sup>3</sup>/100)  
 Grain Direction Long Grain  
 Volume Resistivity 10e<sup>9</sup> – 10 e<sup>11</sup> (ohm)  
 Surface Resistivity 10e<sup>10</sup> – 10 e<sup>12</sup> (ohm-cm)  
 Filler CaCO<sub>3</sub> (Neutral)  
 Ash Content below 23 (wt%)  
 Brightness higher than 80 (%)  
 Opacity higher than 85 (%)

As a general guidance, paper that is suitable for a photocopier is generally suitable.



**! 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 cause damage 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.

**3.6.2 Print delivery**

## (1) Face down output tray

Capacity: Maximum 500 sheets (80 g/m<sup>2</sup>)  
Face down only

## (2) Face up output tray

Capacity: 100 sheet \*\*Thicker paper printing is recommended.  
Face up only

**NOTE:**

Face down: Delivery with the printed face of the paper downwards.

Face up: Delivery with the printed face of the paper upwards.

(3) We recommend the following print methods (output tray) for each paper type.

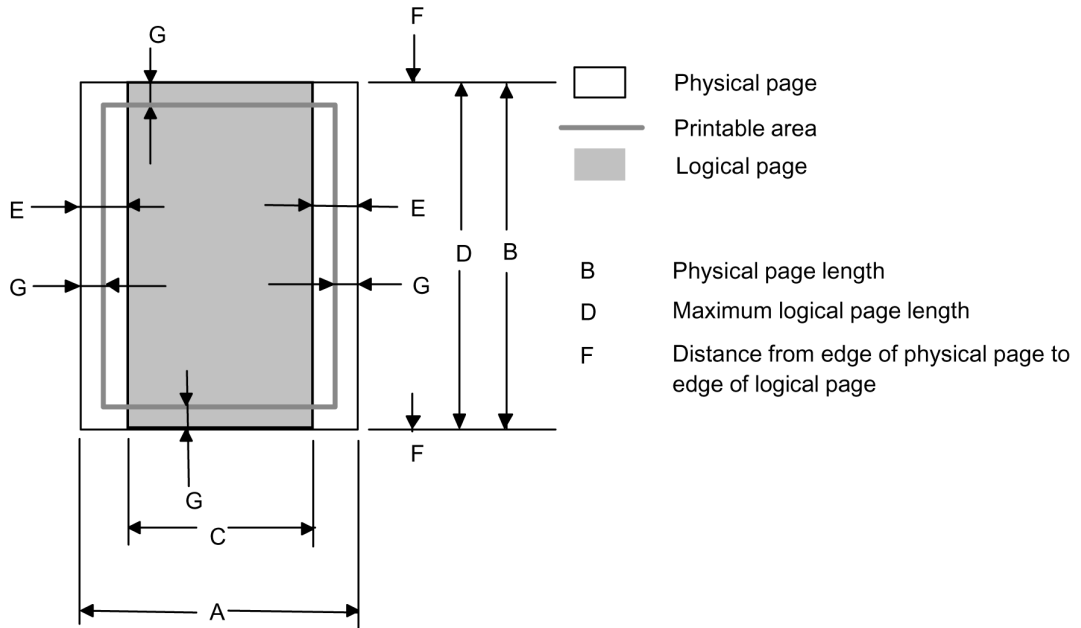
Paper type	Paper output		Notes
	Face down	Face up	
Plain paper	✓	✓	70g/m <sup>2</sup> to 90 g/m <sup>2</sup> (19 to 24lb.)
Thin paper	✓	✓	60g/m <sup>2</sup> to 70 g/m <sup>2</sup> (16 to 19lb.)
Recycled paper	✓	✓	
Bond paper	✓	✓	Rough paper – 60g/m <sup>2</sup> to 200 g/m <sup>2</sup> (16 to 53lb.)
Thick paper	✓	✓	90g/m <sup>2</sup> to 120 g/m <sup>2</sup> (24 to 32lb.)
Thicker paper	✓	✓	120g/m <sup>2</sup> to 200 g/m <sup>2</sup> (32 to 53lb.)
Transparency	✓	✓	Overhead projector film
Labels		✓	
Envelope		✓	
Card stock		✓	

### 3.7 Printable Area

#### 3.7.1 PCL5e/EPSON/IBM emulation

The figure below shows the printable area each emulation guarantees when printing on Portrait and Landscape.

Portrait



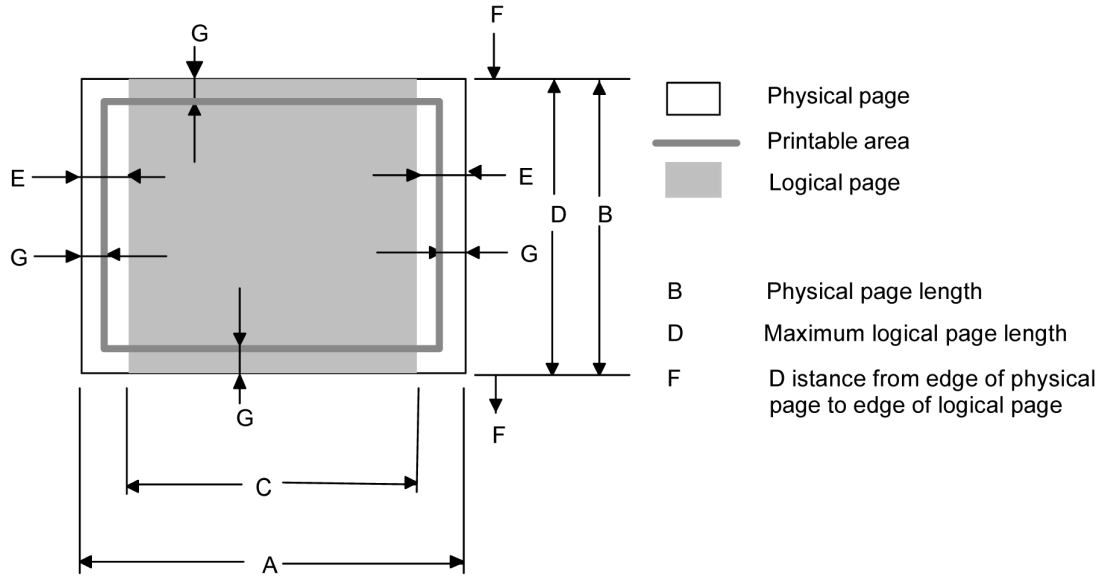
The table below shows the printable areas when printing on Portrait for each paper size.

Size	A	B	C	D	E	F	G
<b>Letter</b>	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)
<b>Legal</b>	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)
<b>Executive</b>	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)
<b>A 4</b>	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)
<b>A 5</b>	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)
<b>A 6</b>	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>B 5 (JIS)</b>	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>B 5 (ISO)</b>	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>B 6</b>	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)
<b>COM10</b>	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)
<b>MONARCH</b>	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)
<b>C 5</b>	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)
<b>DL</b>	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)

**NOTE:**

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

Landscape



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

Size	A	B	C	D	E	F	G
<b>Letter</b>	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)
<b>Legal</b>	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)
<b>Executive</b>	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)
<b>A 4</b>	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)
<b>A 5</b>	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)
<b>A 6</b>	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>B 5 (JIS)</b>	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>B 5 (ISO)</b>	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>B 6</b>	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)
<b>COM10</b>	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)
<b>MONARCH</b>	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)
<b>C 5</b>	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)
<b>DL</b>	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)

**NOTE:**

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

### 3.7.2 PCL6/BR-Script3 emulation

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

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## CHAPTER 2 INSTALLATION AND BASIC OPERATION

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### 1. CONDITIONS REQUIRED FOR INSTALLATION

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#### 1.1 Power Supply

- The source voltage must stay within  $\pm 10\%$  of the rated voltage shown on the rating plate.
- The power cord, including extensions, should not exceed 3 meters (10 feet).
- Do not share the same power circuit with other high-power appliances, particularly an air conditioner, copier or shredder. If it is unavoidable that you must use the printer with these appliances, it is recommended that you use an isolation transformer or a high-frequency noise filter.
- Use a voltage regulator if the power source is not stable.

#### 1.2 Environment

- The printer should be installed near a power outlet, which is easily accessible.
- The room temperature is maintained between 10°C and 32.5°C. The relative humidity is maintained between 20% and 80%.
- The printer should be used in a well ventilated room.
- Place the printer on a flat, horizontal surface.
- Keep the printer clean. Do not place the printer in a dusty place.
- Do not place the printer where the ventilation hole of the printer is blocked. Keep approximately 100 mm (4 inches) between the ventilation hole and the wall.
- Do not place the printer where it is exposed to direct sunlight. Use a blind or a heavy curtain to protect the printer from direct sunlight when the printer is unavoidably set up near a window.
- Do not place the printer near devices that contain magnets or generate magnetic fields.
- Do not subject the printer to strong physical shocks or vibrations.
- Do not expose the printer to open flames or salty or corrosive gasses.
- Do not place objects on top of the printer.
- Do not place the printer near an air conditioner.
- Keep the printer horizontal when carrying.
- Do not cover the slots in the side cover.

### 1.3 System Requirements for Brother Printer Solution for Windows®

Check the following system requirements to setup and operate the printer using Brother Printing Solution for Windows®:

<b>Operating system</b>	<b>Computer / Processor</b>	<b>Memory</b>
Windows® 95	486DX / 66MHz or higher processor	24MB
Windows® 98	Pentium 150MHz or higher processor	32MB
Windows® Me	Pentium 150MHz or higher processor	32MB
Windows® NT 4.0	Pentium 150MHz or higher processor	24MB
Windows® 2000	Pentium 133MHz or higher processor	64MB
Windows® XP	Pentium 300MHz or higher processor	128MB



## 2. UNPACKING

When unpacking the printer, check to see that all of the following components are included in the carton.

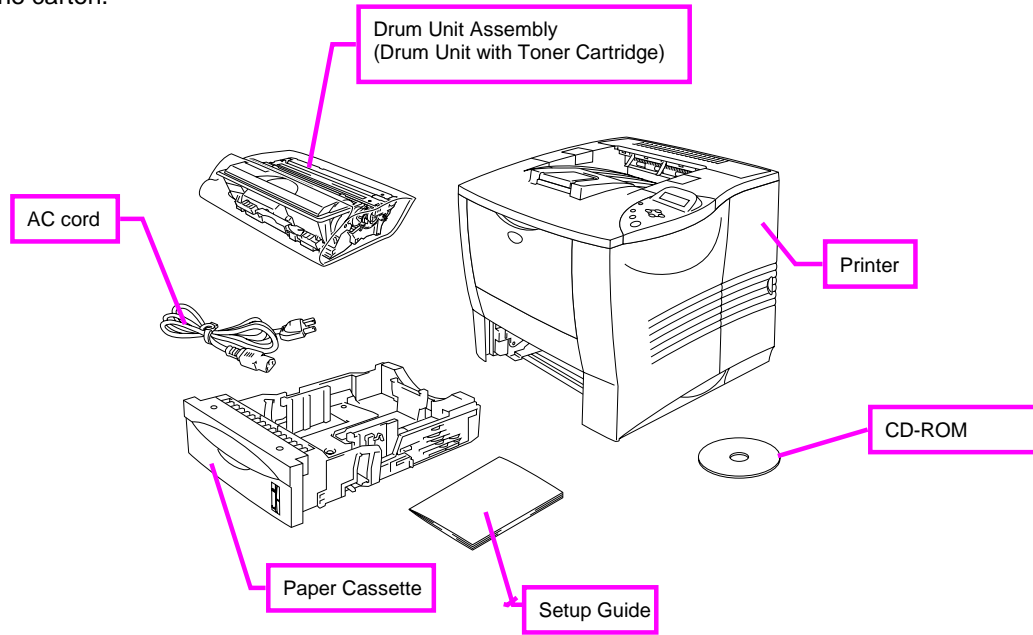


Fig. 2-1

**NOTE:**

*Components may vary depending on the country.*

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### 3. INSTALL THE PRINTER

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Implementation of hardware setup and driver installation is necessary to use the printer.

Firstly, identify the Operating System on the computer (Windows® 95/98/Me, Windows NT® 4.0/2000/XP, Macintosh® OS versions from 8.6 to 9.2 or Mac OS X 10.1). Then, buy the appropriate interface cable (parallel, USB or network) for the computer.

When printing from a Macintosh computer, connect it to the printer via a Network (Brother recommends using the NC-4100h network board).

The installation programs for the hardware setup and driver installation are contained on the supplied CD-ROM.

#### 3.1 For All Users

##### **For Windows® Users**

- (1) Turn on the PC power. Close all the applications running on the PC.
- (2) Insert the supplied CD-ROM into the CD-ROM drive.
- (3) The opening screen will appear automatically.

**NOTE:**

*If the opening screen does not appear; click **Start** and select **Run**, enter the CD drive letter and type \START.EXE (for example: D:\START.EXE).*

- (4) Select the appropriate language.
- (5) Click the Initial Setup icon.
- (6) The Initial Setup instructions will appear on the display.

##### **For Macintosh® Users**

- (1) Turn on the PC power. Close all the applications running on the PC.
- (2) Insert the supplied CD-ROM into the CD-ROM drive.
- (3) Click the **Initial Setup** icon.
- (4) Select the language you want.
- (5) The initial Setup instructions will appear on the display.

### 3.1.1 Remove the protective parts

- (1) Open the top cover of the printer.
- (2) Remove the protective parts from the printer.
- (3) Close the top cover of the printer.
- (4) Pull out the paper tray, and then remove the tape.

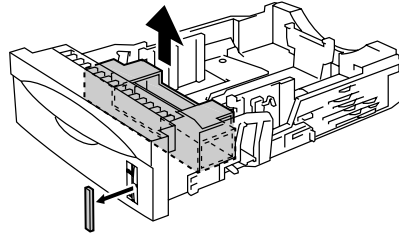


Fig. 2-2

- (5) Put the paper tray back into the printer.

### 3.1.2 Install the drum unit assembly

- (1) Open the top cover of the printer.

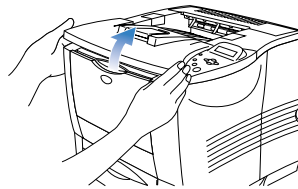


Fig.2-3

- (2) Unpack the drum unit assembly. Remove the protective part.

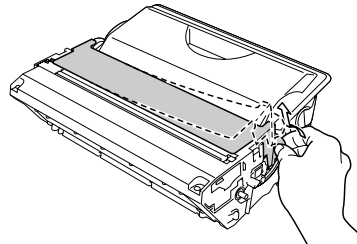


Fig.2-4

- (3) Rock it from side to side 5 or 6 times to distribute the toner evenly inside the assembly.

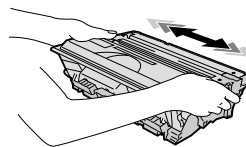


Fig.2-5

- (4) Put the drum unit assembly into the printer.

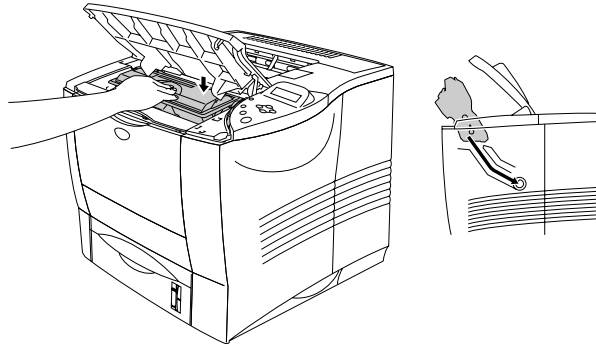


Fig.2-6

- (5) Close the top cover of the printer.

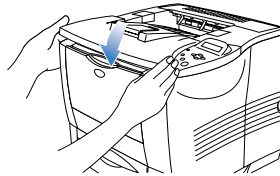


Fig.2-7

### 3.1.3 Load paper in the paper tray

- (1) Pull the paper tray out of the printer.
- (2) While pressing the paper guide release lever, slide the adjusters to fit the paper width size. Check that they fit correctly into the slots.

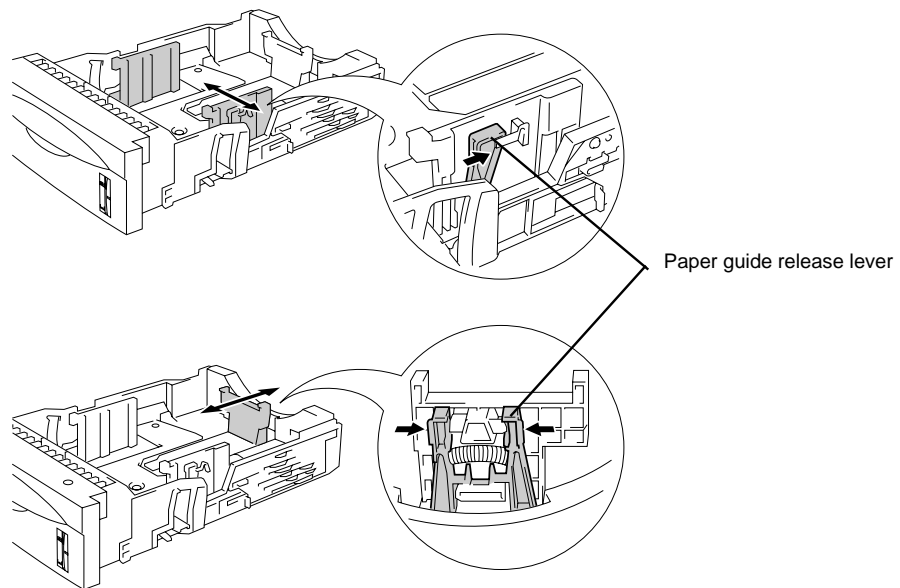
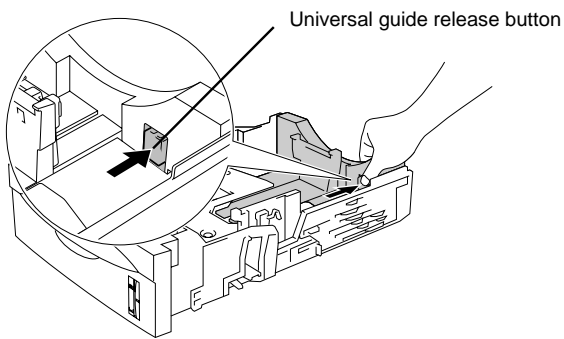


Fig. 2-8

**NOTE:**

*For legal size paper, press the universal guide release button and pull out the rear of the paper tray.*



**Fig. 2-9**

- (3) Load paper in the paper tray. Check that the paper is flat in the tray and below the maximum paper mark.
- (4) Put the paper tray back into the printer.

### 3.1.4 Print a test page

- (1) Make sure the printer power switch is off. Connect the AC power cord to the printer. Do NOT connect the interface cable.

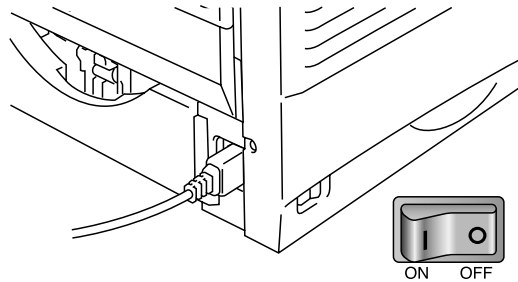


Fig. 2-10

- (2) Plug the AC power cord into an AC outlet, and then turn on the power switch.
- (3) After the printer has finished warming up, the **READY** message appears on the LCD display of the control panel.
- (4) Press the **Go** button. The printer prints a test page. Check that the test page has printed correctly.

*NOTE:*

*This function cannot be used if data is sent from PC after connecting the interface cable.*

### 3.2 For Parallel Interface Cable Users (for Windows® users only)

Follow the steps below only after completing steps 3.1.1 through to 3.1.4 above.

#### Connect the printer to your PC & Install the printer driver

- (1) Turn off the printer power switch.
- (2) Connect the parallel interface cable to your PC, and then connect it to your printer.
- (3) Turn on the printer power switch.

*Note:*

*If the "Found New Hardware Wizard" appears on your PC, click the Cancel button.*

- (4) Put the CD-ROM into your CD-ROM drive. The opening screen will appear automatically. Follow the instruction on the screen.

- (5) Click "Install Software" icon on the Menu screen.



Fig. 2-11

- (6) Click "Printer Driver".



Fig. 2-12

- (7) Click the Next button. Follow the instructions on the screen.

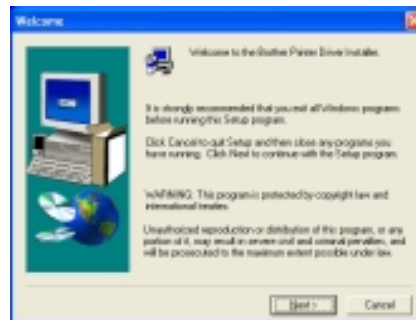


Fig. 2-13

- (8) Select "Standard Installation", and then click the Next button.



Fig. 2-14

(9) Select "Local Printer", and then click the Next button.

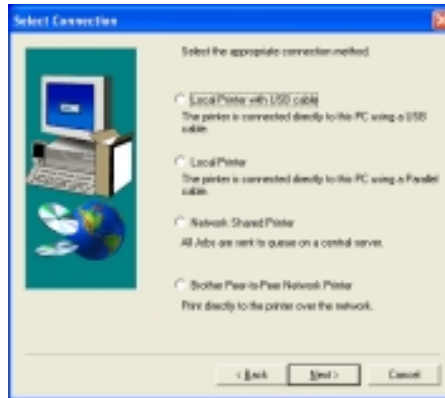


Fig. 2-15

(10) Select the port where your printer is connected, and then click the Next button.

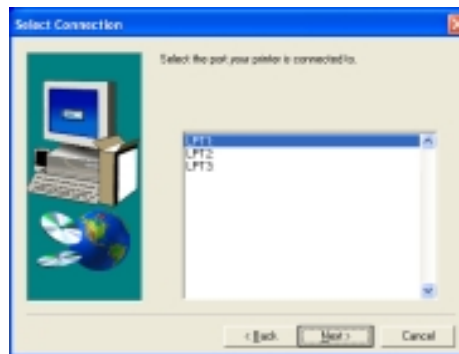


Fig. 2-16

(11) Click the Finish button to restart your PC.



Fig. 2-17

\*The Setup is now complete.



### 3.3 For USB Interface Cable Users (for Windows® users only)

Follow the steps below only after completing steps 3.1.1 through to 3.1.4 above.

#### 3.3.1 Install the driver & connect the printer to your PC

*NOTE:*

*If the "Found New Hardware Wizard" appears on your PC, click the Cancel button.*

- (1) Make sure the USB interface cable is NOT connected to the printer, and then begin installing the driver. If you have already connected the cable, remove it.
- (2) Put the CD-ROM into your CD-ROM drive. The opening screen will appear automatically. Follow the instructions on the screen.
- (3) Click the "Install Software" icon on the Menu screen.
- (4) Click "Printer Driver".
- (5) Click the Next button. Follow the instructions on the screen.
- (6) Select "Standard Installation", and then click the Next button.
- (7) Select "Local Printer with USB cable", and then click the Next button.
- (8) When this screen appears, make sure the printer power switch is on. Connect the USB interface cable to your PC, and then connect it to the printer. Click the Next button.

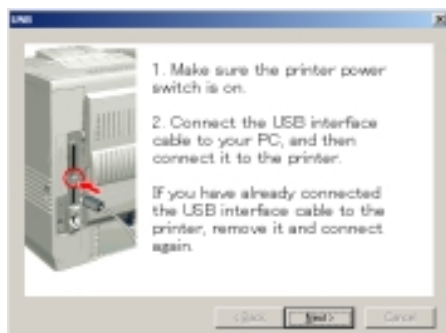


Fig.2-18

- (9) Click the finish button.

\*For Windows 98/Me users:

The setup is now complete.

\*For Windows 2000/XP users:

Go to "3.3.2. Setting Your Printer as the Default Printer".

### 3.3.2 Setting Your Printer as the Default Printer

#### ***For Windows® 2000/XP Users only***

- (1) Click Start and Printers and Faxes.

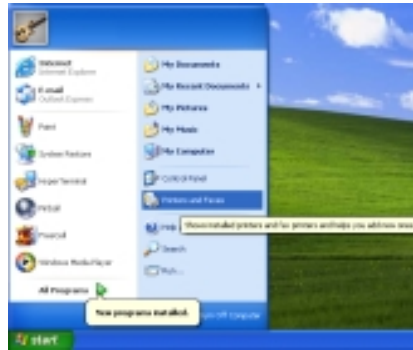


Fig.2-19

- (2) Select the Brother HL-7050 (Copy2) icon.

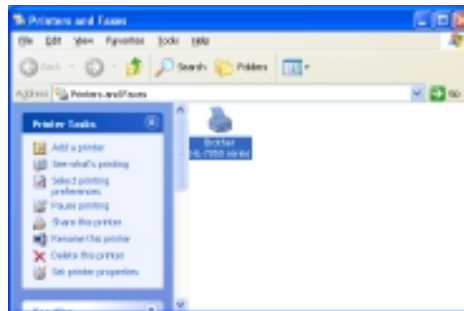


Fig.2-20

- (3) Click the File menu, and then select **Set as Default printer**.

\*The setup is now complete.

### 3.3.3 Installing the Driver (For Mac OS 8.6 to 9.2 Users)

- (1) Make sure the printer power switch is on.
- (2) Connect the USB interface cable to your Macintosh, and then connect it to the printer.

#### NOTE:

*Do not connect the USB cable to the keyboard USB Port or a non-powered USB Hub.*

- (3) Put the CD-ROM into your CD-ROM drive.
- (4) Double-click the Start Here! Icon. Follow the instructions on the screen.
- (5) Click the "Install Software" icon on the Menu screen. Follow the instructions on the screen.
- (6) Open the Macintosh HD icon.
- (7) **For Mac OS 8.6 to 9.04 Users:**  
Open the Apple Extras folder.  
Open the Apple LaserWriter Software folder.
- For Mac OS 9.1 to 9.2 Users:**  
Open the Application (Mac OS 9) folder.  
Open the Utilities folder.
- (8) Open the Desktop Printer Utility icon.

- (9) Select Printer (USB), and then click the OK button.
- (10) Click the Change...button in PostScript Printer Description (PPD) file. Select Brother HL-7050 series, and then click the Select button.
- (11) Click the Change...button in USB Printer Selection. Select HL-7050 series, and then click the OK button.
- (12) Click the Create...button.
- (13) Enter your printer name (HL-7050 series), and then click the Save button.
- (14) Select Quit from the File menu.

### 3.3.4 Setting Your Printer as the Default Printer (For Mac OS8.6 to 9.2 Users)

- (1) Click the HL-7050 series icon on the Desktop.
- (2) Select **Set Default Printer** from the Printing menu.

\*The setup is now complete.

### 3.3.5 Connecting the Printer to Your Macintosh & Installing the BR-Script PPD File

- (1) Make sure the printer power switch is on.
- (2) Connect the USB interface cable to your Macintosh, and then connect it to the printer.

**NOTE:**

*Do not connect the USB cable to the keyboard USB Port or a non-powered USB Hub.*

- (3) Insert the CD-ROM into your CD-ROM drive. Open the Mac OS X folder.
- (4) Double click the PPD\_Installer.pkg icon. Follow the instructions on the screen.
- (5) Open the Macintosh HD icon.
- (6) Open the Applications folder. Open the Utilities folder.
- (7) Open the Print Center icon.
- (8) Click the Add Printer.... Button.
- (9) Select USB.
- (10) Select HL-7050 series, and then click the ADD button.
- (11) Select **Quit Printer Center** from the Printer Center menu.

\*The setup is now complete.

## 3.4 For Network Users

**NOTE:**

- *For connecting the printer to a network, it is recommended to contact the system administrator prior to installation.*
- *For the administrator: Configure the printer referring to the following instructions.*
- *For installing the driver on the PC, refer to the following instructions once the administrator has configured the printer.*

### 3.4.1 For the administrator

#### **Install the BRAdmin Professional Configuration utility**

The BRAdmin Professional software is designed to manage your Brother network connected devices. For example, Brother network ready printers and Brother network ready Multifunction devices can be managed using the BRAdmin Professional software. The BRAdmin Professional software can also be used to manage devices from other manufactures whose products support the SNMP (Simple Network Management Protocol). For more information on the BRAdmin Professional utility, go to <http://solutions.brother.com>

- (1) Put the CD-ROM into your CD-ROM drive. The opening screen will appear automatically. Follow the instructions on the screen.
- (2) Click the "Install Software" icon on the Menu screen.
- (3) Follow the instructions on the screen. Click the "BRAdmin Professional".

**NOTE:**

*The default password for the print server is 'access'. You can use the BRAdmin Professional software or a web browser to change this password.*

#### **Driver Development Wizard: Useful utility for peer-to-peer users**

Use the Brother Driver Development Wizard software to automate the installation of Brother networked printers in a TCP/IP environment. The Wizard can create an Executable file that can be sent to other network users, when run, the Executable file installs the appropriate printer driver and network printing software.

To access the Driver Development Wizard:

- (1) Insert the CD-ROM supplied with the printer.
- (2) Click the **Install Software** icon and select the **Driver Development Wizard**.

### 3.4.2. Installing the driver for Windows® users only

- (1) Turn off the printer power switch.
- (2) Connect the network interface cable to the printer, and then connect it to a free port on your hub.
- (3) Turn on the printer power switch.
- (4) Put the CD-ROM into your CD-ROM drive. The opening screen will appear automatically. Follow the instructions on the screen.
- (5) Click “Install Software” icon on the Menu screen.
- (6) Click “Printer Driver”.
- (7) Click the Next button. Follow the instructions on the screen.
- (8) Select “Standard Installation”, and then click the Next button.

#### For Network shared printer users

- (1) Select the “Network Shared Printer”, and then click the Next button.
- (2) Select your printer’s queue, and then click the OK button.

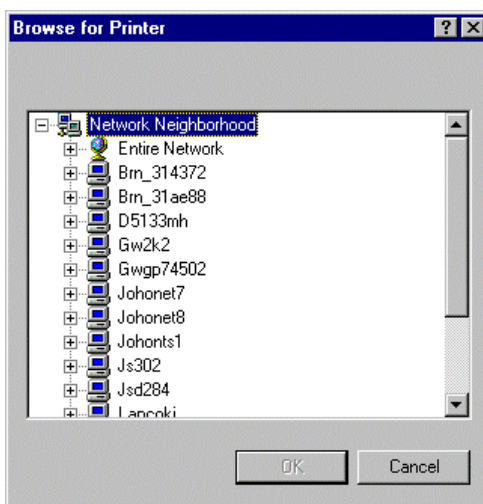


Fig. 2-21

- (3) Click the Finish button.
- \* The setup is now complete.

**For Brother Peer-to-Peer network printer users (LPR-recommended Peer-to-Peer printing method)**

- (1) Select Brother Peer-to-Peer Network Printer”, and then click the Next button.
- (2) Select “Search from a list of available printers” or enter your printer IP address. Click the Next button.

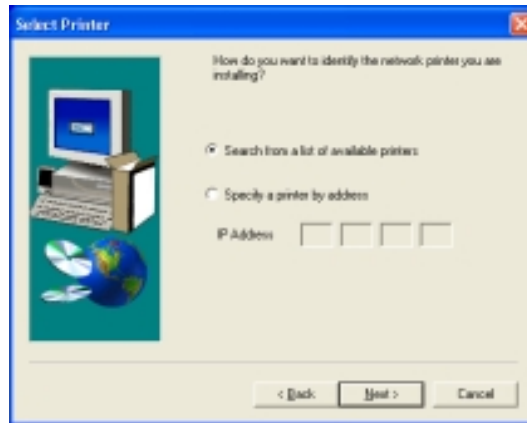


Fig. 2-22

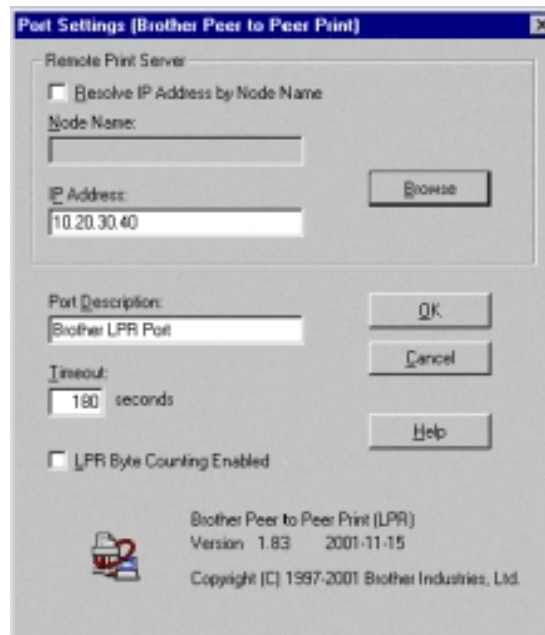


Fig. 2-23

- (3) Select the IP address of your printer and LPR, and then click the Next button.

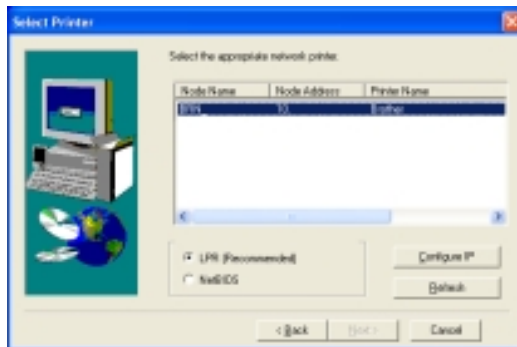


Fig.2-24

- (4) Click the Finish button.  
 \*For Windows NT4.0 and Windows 2000/XP users:  
 The set up is now complete.  
 \*For Windows 95/98/Me users:  
 After your PC has restarted, setup will be complete.

**For Brother Peer-to-Peer network printer users (NetBIOS)**

- (1) Select "Brother Peer-to-Peer Network Printer", and then click the Next button.  
 (2) Select "Search from a list of available printers" or enter your printer IP address. Click the Next button.  
 (3) Select the IP address of your printer and NetBIOS, and then click the Next button.  
 (4) Click the Finish button.  
 \*For Windows NT 4.0 and Windows 2000/XP users:  
 The setup is now complete.  
 \*For Windows 95/98/Me users:  
 After your PC has restarted, setup will be complete.

**3.4.3 Installing the driver for Macintosh® users only**

**Connect the printer to your Macintosh & install the BR-Script PPD file**

- (1) Turn off the printer power switch.  
 (2) Connect the network interface cable to the printer, and then connect it to a free port on your hub.  
 (3) Turn on the printer power switch.

**For Mac OS 8.6 to 9.2 Users**

- (1) Put the CD-ROM into your CD-ROM drive.  
 (2) Double-click the Start Here! icon. Follow the instructions on the screen.  
 (3) Click the "Install Software" icon on the Menu screen. Follow the instructions on the screen.  
 (4) Open the Chooser from the Apple Menu.  
 (5) Click the LaserWriter8 \* icon, and then select BRN\_XXXXXX\_P1\_AT. \*\* Click the Setup... button. Close the Chooser.

\* If the Apple Laser Writer8 Driver is not already installed on your system, you can download it from <http://www.apple.com>

\*\* xxxxxx are the last six digits of the Ethernet address.

The set up is now complete.

**For Mac OS X 10.1 Users**

- (1) Insert the CD-ROM into the CD-ROM drive. Open the Mac OS X folder.
  - (2) Double-click the PPD\_Installer.pkg icon. Follow the instruction on the screen.
  - (3) Open the Macintosh HD icon.
  - (4) Open the Applications folder. Open the Utilities folder.
  - (5) Open the Print Center icon.
  - (6) Click the Add Printer... button.
  - (7) Select Apple Talk.
  - (8) Select BRN\_XXXXXX\_P1\_AT \*, and then click the Add button.
- \* XXXXXX are the last six digits of the Ethernet address.
- (9) Select Quit Printer Center from the Printer Center menu.

The setup is now complete.



## 4. PRINTING METHODS

The printer provides two types of printing method; printing from paper tray and printing from the multi-purpose (MP) tray,

### 4.1 Printing from the Paper Tray (Face down printing)

Plain paper, recycled paper or transparencies can be loaded into the paper tray. If paper is loaded into the paper tray, the printer automatically feeds paper sheet by sheet and ejects the printed page into the output tray.

For the details on paper tray loading, refer to [subsection 3.1.3 'Load paper in the paper tray' in this chapter](#) and [subsection 3.6 'Paper' in CHAPTER 1](#).

**NOTE:**

*If the paper is misfed or multi pages frequently feed at once when printing on small size paper or thick paper, change the paper thickness switches on the floor of the paper tray using a coin pushing down the plate of the tray as follows:*

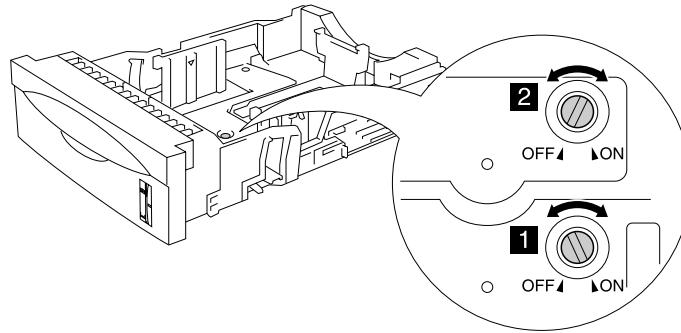


Fig. 2-25

The switches shown in this illustration are in the default setting position.

A6	Switch 1: OFF Switch 2: OFF
A4 100 g/m <sup>2</sup> (26.7 lbs) Letter 105 g/m <sup>2</sup> (28 lbs) Legal 105 g/m <sup>2</sup> (28 lbs)	Switch 1: ON Switch 2: ON
Executive, A5, B6	Switch 1: OFF Switch 2: ON

**Tray ID setting (Only if the lower tray unit is installed)**

If someone moves the paper tray into another tray position and even if the data is still printed without knowing this has been done, the driver automatically selects the correct tray and prints according to this setting.

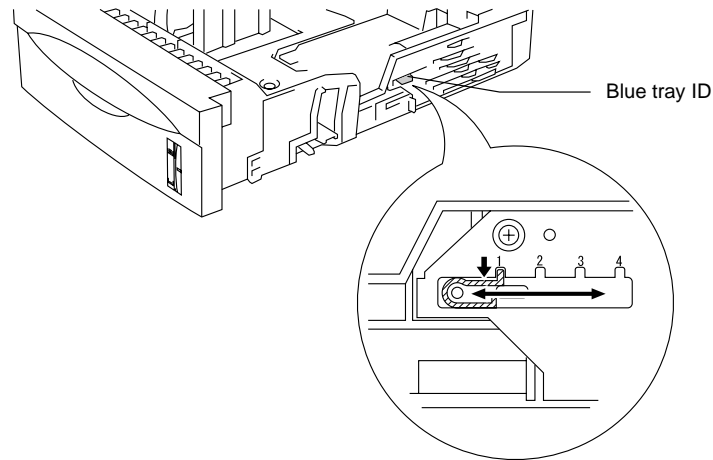


Fig. 2-26

**4.2 Printing from the MP Tray**

Plain paper, thin paper, recycled paper, bond paper, thick paper, transparency, labels, envelope and card stock can be fed into the MP tray. (For details on feedable paper, see [subsection 3.6 'Paper' in CHAPTER 1.](#))

**NOTE:**

- For correct printing, select the same paper size from within the software application as the paper in the tray.
- If the application software does not support paper size selection in its print menu, the paper size can be changed on the printer's control panel under the PAPER menu. For more information, see [subsection 5.5.2 'Paper' in this chapter.](#)

When using the MP tray, follow the steps below:

- (1) Open the MP tray and lower it gently.

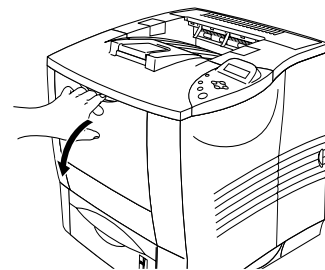


Fig. 2-27

- (2) Pull out the MP extension flap.

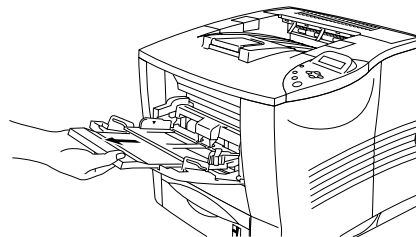


Fig. 2-28

- (3) When loading paper in the MP tray, make sure it touches the back of the tray and remains below the limit mark.

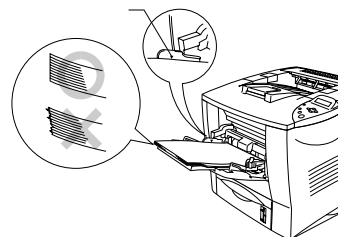


Fig. 2-29

**NOTE:**

*Make sure that the neatly stacked paper is correctly seated on the MP tray, otherwise paper may not be fed correctly, resulting in a skewed printout or a paper jam.*

- (4) While pressing the paper guide release lever, slide the adjuster to fit the paper size.

When printing on special paper such as envelopes, thick paper, labels and so on, open the face up output tray to print face up. See 'Printing on Envelopes' or 'Printing on Label, Transparency, etc.' in this chapter.

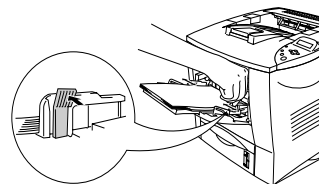


Fig. 2-30

**NOTE:**

*When placing paper on the MP tray, note the following:*

- *When printing, the inside tray automatically rises to feed paper into the printer.*
- *The print surface must be face up.*
- *Insert the leading edge of the paper first and push it gently into the tray.*
- *The top of the paper stack must be under the guides that are on both sides of the tray. The maximum thickness is 10 mm (or 0.39 inch).*

- (5) Change the settings in the printer driver.

### 4.3 Printing on Envelopes (Face up printing)

Use of any of the envelopes listed below may cause damage to your printer. Such damage is not covered under any warranty or service agreement.

- Envelopes that are damaged, curled, wrinkled, or irregularly shaped
- Envelopes that are extremely shiny or highly textured
- Envelopes with clasps, snaps or tie strings
- Envelopes with self-adhesive closures
- Envelopes of baggy construction
- Envelopes that are not sharply creased
- Embossed envelopes
- Envelopes that were previously printed by a laser printer
- Envelopes that are pre-printed on the inside
- Envelopes that cannot be arranged uniformly when placed in a pile
- Envelopes constructed with paper that exceeds the paper weight specifications for the printer.
- Poorly manufactured envelopes with edges that are not straight or consistently square.
- Envelopes with transparent windows, holes, cutouts or perforations.

**NOTE:**

- *Before printing envelopes, fan the stack well to avoid paper jams and misfeeds.*
- *Do not load different types of paper at the same time in the paper tray because it may cause paper jams or misfeeds.*
- *Do not print envelopes using duplex printing.*
- *For correct printing, select the same paper size from within the software application as the paper in the tray.*
- *If the application software does not support paper size selection on its print menu, the paper size on the printer's control panel under the PAPER menu can be changed. For more information, see [subsection 5.5.2 'Paper' in this chapter](#).*

- (1) Open the MP tray and lower it gently.

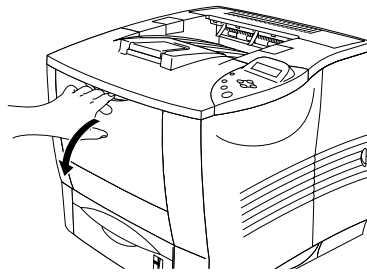


Fig. 2-31

- (2) Pull out the MP tray support flap.

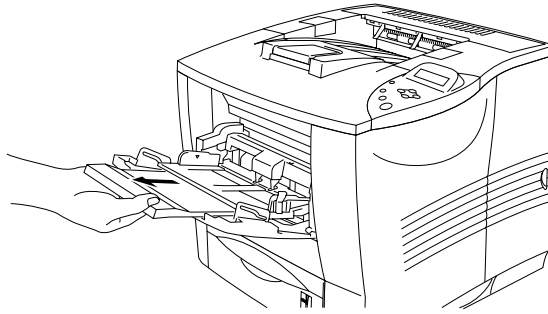


Fig. 2-32

- (3) Open the face up output tray.

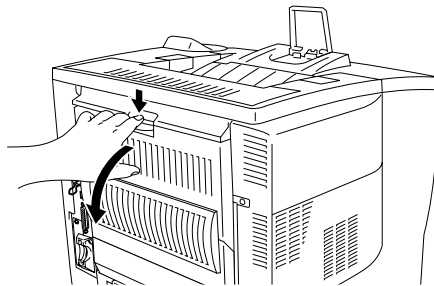


Fig. 2-33

- (4) Pull out the face up output tray support if necessary.

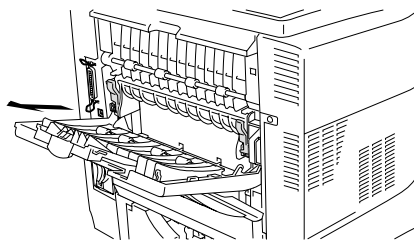


Fig. 2-34

- (5) Push down the two blue tabs at the left and right hand sides.

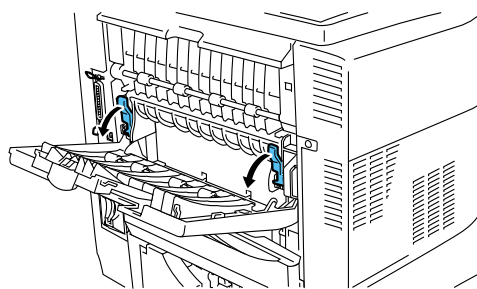


Fig. 2-35

- (6) Place the envelopes in the MP tray so they touch the back of the tray and remain below the limit mark.

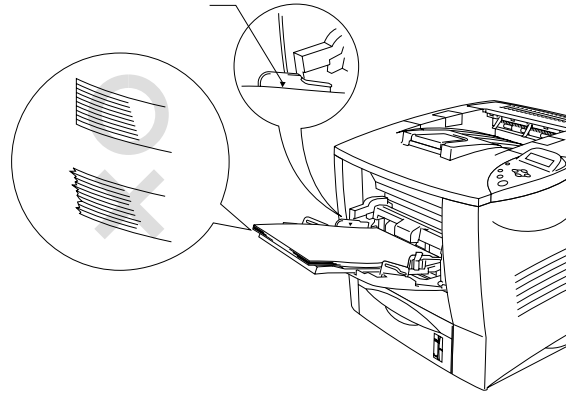


Fig. 2-36

- (7) Press and slide the paper width adjuster to fit the envelope size.

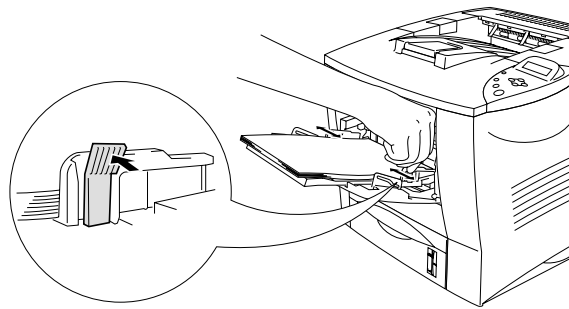


Fig. 2-37

- (8) Change the settings in the printer driver.  
<PCL driver>

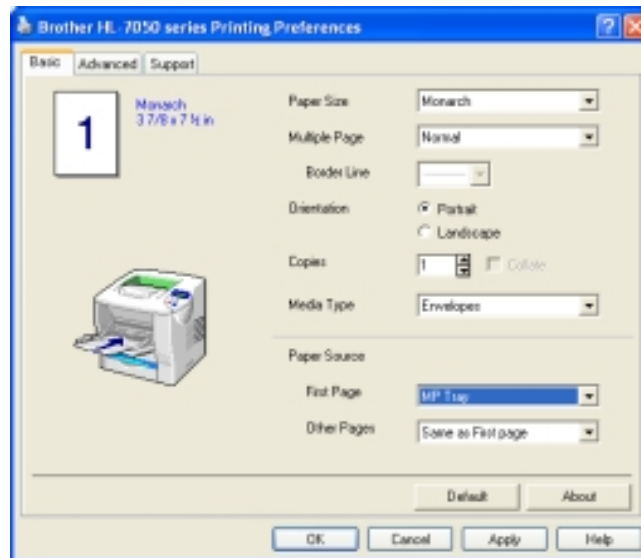


Fig. 2-38

&lt;PS driver&gt;

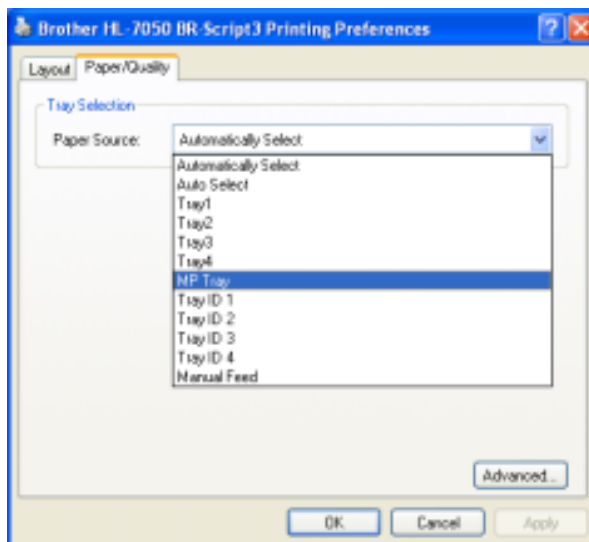


Fig. 2-39

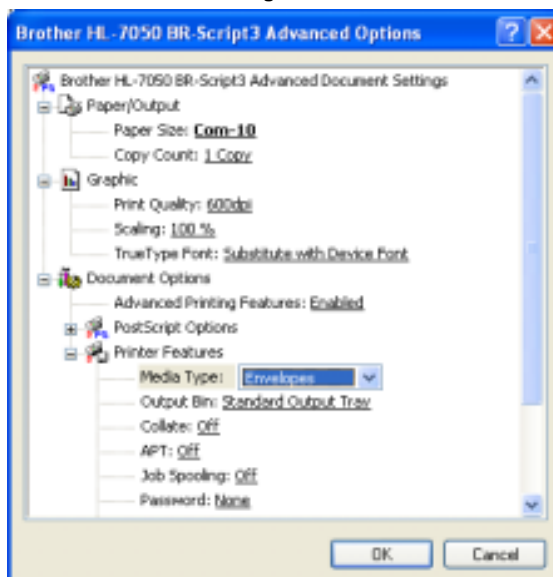


Fig. 2-40

**NOTE:**

- When you have finished printing your envelopes, close the face-up output tray to reset the two blue tabs automatically. To reset the blue tabs manually, push the blue tabs back to their original position.
- When printing, the inside tray automatically rises to feed paper into the printer.
- If envelopes get smudged during printing, set the print density to a higher value in the QUALITY mode with the control panel setting for darker printouts. To adjust the print density setting, see [subsection 5.5.3 'Quality' in this chapter](#).
- Envelope joints that are sealed by the manufacturer should be secure.
- All sides should be properly folded without wrinkles or creases.

Most envelopes will perform acceptably on the HL-7050 printer. However, some envelopes will have feed and print quality problems because of their construction. A suitable envelope should have edges with straight, well creased folds and should not have more than two thicknesses of paper along the leading edge. The envelope should lie flat and not have baggy or flimsy construction. Purchase quality envelopes only from a supplier who understands that the envelopes will be used in a laser printer. All envelopes should be tested prior to use to ensure desirable print results.

**NOTE:**

*The manufacturer neither warrants nor recommends the use of a particular envelope because envelope properties are subject to change by the envelope manufacturer. The entire responsibility for the quality and performance of envelopes lies with the customer.*

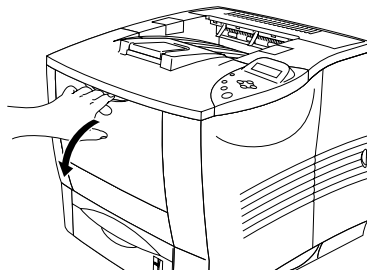
#### 4.4 Printing on Label, Transparency, etc.

*Use of any of the types of paper listed below may cause damage to your printer. Such damage is not covered under any warranty or service agreement.*

**NOTE:**

- *Before using paper with holes, such as organizer sheets, fan the stack well to avoid paper jams and misfeeds.*
- *Do not use paper with perforations at the edges.*
- *Do not place the punch hole near the actuator (paper sensor).*
- *Do not use organizer sheets that are stuck together. The glue that is used might cause damage to the printer.*
- *Do not load different types of paper at the same time in the paper tray because it may cause paper jams or misfeeds.*
- *For correct printing, select the same paper size from within the software application as the paper in the tray.*
- *If the application software does not support paper size selection on its print menu, the paper size on the printer's control panel under the PAPER menu can be changed. For more information, see [subsection 5.5.2 'Paper' in this chapter](#).*

- (1) Open the MP tray and lower it gently.



**Fig.2-41**



- (2) Pull out the MP tray extension flap.

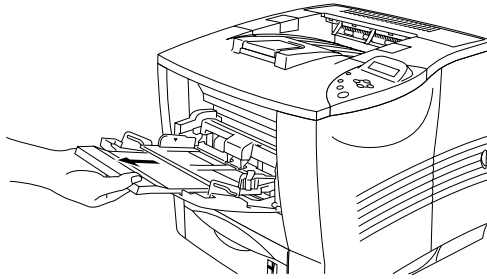


Fig.2-42

- (3) Open the face up output tray.

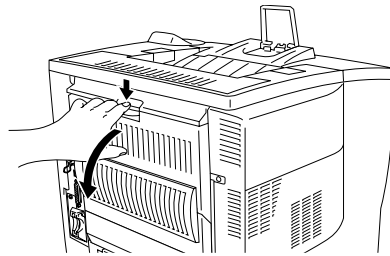


Fig.2-43

- (4) Pull out the face up output tray extension.

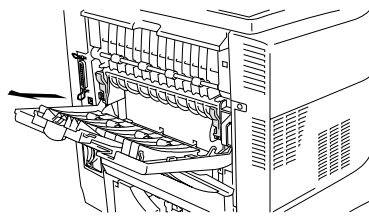


Fig.2-44

- (5) When loading paper in the MP tray, make sure it touches the back of the tray and remains below the limit mark.

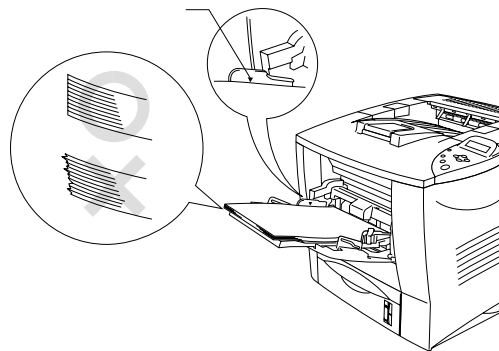


Fig.2-45

**NOTE:**

*Make sure that the neatly stacked paper is correctly seated on the MP tray, otherwise paper may not be fed correctly, resulting in a skewed printout or a paper jam*

- (6) While pressing the paper guide release lever, slide the adjuster to fit the paper size.

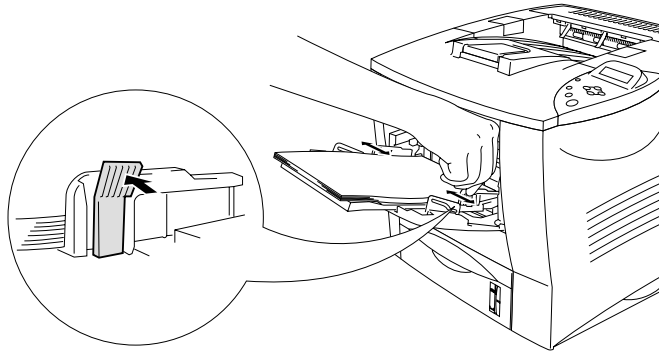


Fig.2-46

**!** **CAUTION:**

*Do not touch transparencies that have just been printed because they are very **HOT**.*

**NOTE:**

*When placing paper in the MP tray, note the following:*

- *When printing, the inside tray automatically rises to feed paper into the printer.*
- *The print surface must be face up.*
- *The leading edge (Top of the paper) must be placed inside first so it rests lightly against the printer.*
- *The top of the paper stack must be under the guides that are on both sides of tray.*

(7) Change the settings in the printer driver.

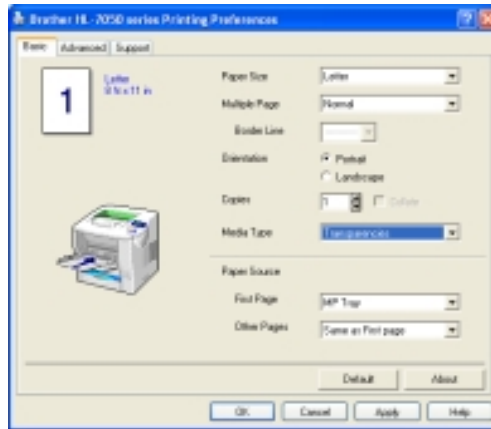


Fig. 2-47

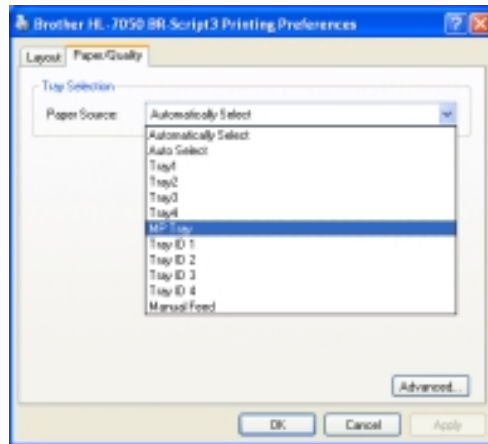


Fig. 2-48

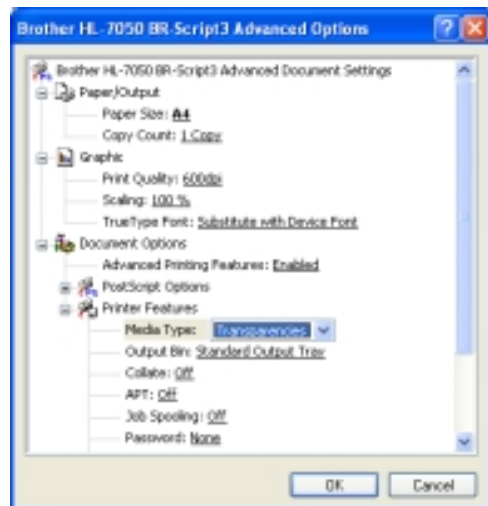


Fig. 2-49

#### 4.5 Printing to the Face up Output Tray (Face up printing)

When the face up output tray is open, the printer has a straight paper path from the paper tray or MP tray through to the back of the printer. Use this output method when you want to print on special media that is thick or should not be bent, such as thick paper, labels, card stock or envelopes.

- (1) Open the face up output tray.

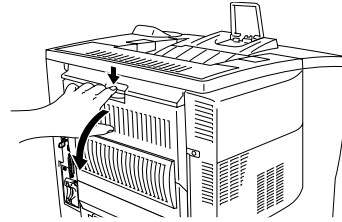


Fig. 2-50

- (2) Pull out the face up output tray extension.

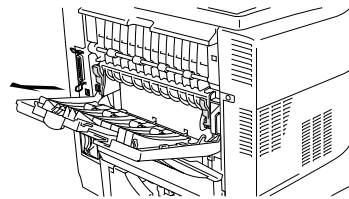


Fig. 2-51

- (3) Put the paper in the paper tray or the MP tray.
- (4) After the printer ejects all the printed pages, remove them and close the face up output tray.

#### 4.6 Manual Feed

If paper is placed in the MP tray when the setting MANUAL FEED = ON has been set in PAPER mode using the control panel, the printer will load paper only from the MP tray.

**NOTE:**

*When feeding paper manually, note the following:*

- *If the application software supports a manual feed selection in the print menu, it can be selected through the software. Since the software or command setting overrides the switch setting, it is unnecessary to set the MANUAL FEED mode and the paper size with the PAPER mode.*
- *When using pre-printed paper in the MP tray, the paper should be inserted top edge (Top of the paper) first with the pre-printed side face up.*

## 5. CONTROL PANEL OPERATION

There is one LED and 7 buttons on the control panel. The LED and LCD display indicate the printer status, and pressing the buttons enables several functions in the printer.

The display also shows the current printer status. When you use the control panel buttons, the display will change.

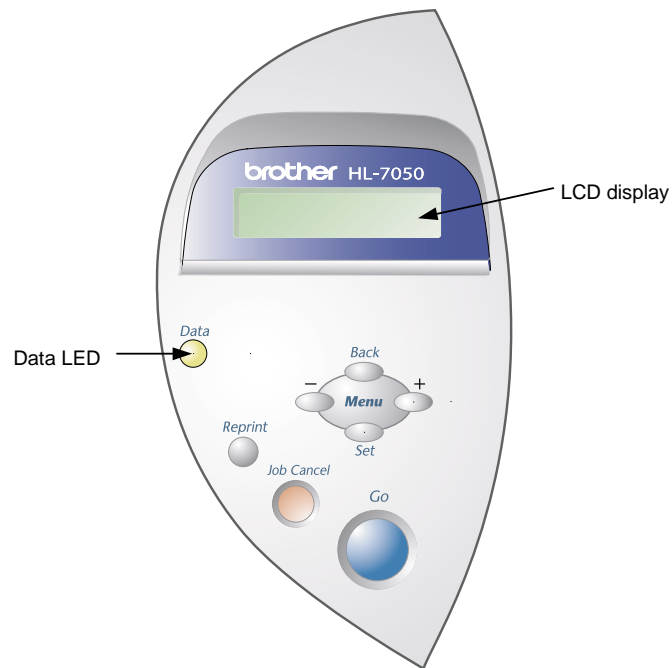


Fig. 2-52

### 5.1 Data LED Indications

The Data LED indicates with orange lamp the current status of the printer.

LED	Printer status
On	Data remains in the printer buffer.
Blinking	Receiving or processing data.
Off	No remaining data.

## 5.2 Panel Buttons Functions

7 control panel buttons (**Go**, **Job Cancel**, **Reprint**, **+**, **-**, **Set** and **Back**) enable to control the basic printer operations and change various printer settings.

Key	Function
<b>Go</b>	Exit from the control panel menu. Reprint settings and Error messages. Pause / Continue printing.
<b>Job Cancel</b>	Stop and cancel the printer operation in progress.
<b>Reprint</b>	Select the reprint menu. (1-999)
<b>+</b>	Move forward through menus. Move forward through selectable options.
<b>-</b>	Move backward through menus. Move backward through selectable options.
<b>Set</b>	Select the control panel menu. Set the selected menus and settings.
<b>Back</b>	Go back one level in the menu structure.

### 5.2.1 Go button

The panel indications can be changed from the current status (MENU, ERROR and REPRINT settings) by pressing the **Go** button once. For ERROR indications, the panel changes only when the error is cleared.

Printing can be paused with the **Go** button. Pressing the **Go** button again restarts the print job and clears the PAUSE. During PAUSE, the printer is in the off-line state.

*NOTE:*

*If you do not wish to print the remaining data when the printer is in PAUSE, the job can be canceled by pressing the **Job Cancel** button. Press the **Go** button to clear the PAUSE and return the printer to the "Ready" state.*

### 5.2.2 Job Cancel button

The processing or printing of data can be canceled with the **Job Cancel** button. The display shows JOB CANCELING until canceling is completed. After canceling the job, the printer returns to the READY state.

When the printer is in any state except receiving data or printing, the display shows "NO DATA!!!" and the job cannot be canceled.

### 5.2.3 Reprint button

Pressing the **Reprint** button enables to reprint a document that has just been printed. Also, by simply spooling a document to a non-secure area of the printer, the document can be shared with colleagues.

This document can then be re-printed by anyone who is on the network or at the printer control panel.

The reprint function can be used when the printer is **READY** or in the settings menu.

For printing **PROOF**, **PUBLIC** or **SECURE** data, we recommend installing the optional HDD or CompactFlash card.

The reprint function can be also used from RAM if a HDD or CompactFlash card is not installed. The print data in RAM will be deleted when the printer is turned off.

When you use RAM to reprint:

- i) Press the **Set** button on the control panel to exit from the **READY** status and select "RAMDISK SIZE" in the **SETUP** mode.
- ii) The default RAM size is 0MB. Press the **+** button to increase the reprint RAM size in increments of 1MB steps.

**NOTE:**

- *When increasing the RAM size to use for secure printing, the work area of the printer is decreased and the printer performance will be reduced. Ensure to reset the "RAMDISK SIZE" to 0MB when secure printing has finished being used.*
- *When data is stored in RAM, the data is deleted when the printer power is turned off.*
- *It is also recommended adding additional RAM for printing a large amount of secure data.*

(1) Reprinting the last job

The last print job data can be reprinted without sending it from the computer again.

**NOTE:**

- *When **REPRINT** is selected off on the panel and the **Reprint** button is pressed, the LCD shows "NO DATA STORED" for a short time."*
- *For canceling reprinting, press the **Job Cancel** button.*
- *If the printer does not have enough memory to spool the print job, it prints the last page only.*
- *Pressing the **-** or **+** button makes the number of reprint copies decrease or increase. You can select between **COPIES= 1** and **COPIES=999**.*

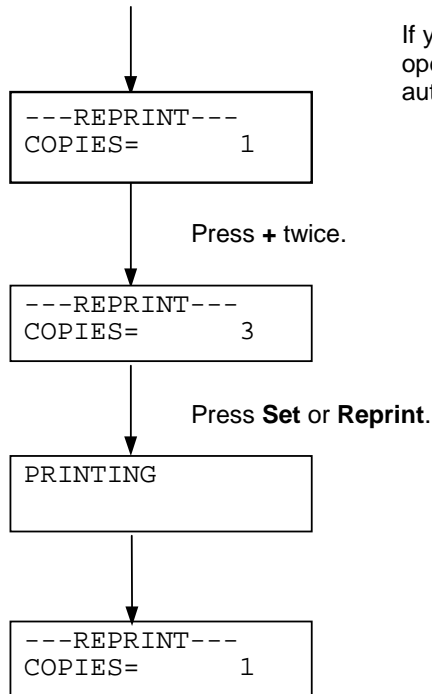
**Reprint the last job 3 times**

1. Set the REPRINT menu ON with SETUP mode using the control panel.

**NOTE:**

*If you print using the driver supplied with the printer, the settings for Job Spooling in the printer driver will take priority over the settings made on the control panel.*

2. Press the **Reprint** button.



If you wait too long to continue the button panel operation, the display exits the REPRINT menu automatically.

**NOTE:**

- If you press the **Go** button, the printer will exit from the reprint menu.
- If you want to reprint the data and have pressed the **Go** button, the display shows "PRESS SET TO PRINT". Press the **Set** button to start reprinting, or press the **Go** button to cancel the reprint job.



## (2) Printing PROOF data

You can use this function to reprint PROOF data that has just been printed and has no security settings. Documents that are placed in the PROOF area are available to anyone. This function can also be used for a document that will be moved to a public folder at a later date.

When the area to spool data is full, the earliest data is automatically deleted first. The order of deleting data is not connected to the order of reprinting.

When you reprint PROOF data, refer also to '[Operations for printing SECURE data](#)' in this chapter.

## NOTE:

- *If the optional HDD or CompactFlash has not been installed, the reprint data will be deleted when the printer is turned off.*
- *If there is data in the job information that cannot be displayed on the LCD, the display shows "?".*

## (3) Printing PUBLIC data

You can use this function to reprint documents stored in a PUBLIC area of the printer memory. Documents here will not be password protected and anyone can access them using the front panel or a web browser. The printer will not print a PUBLIC document when you send it to the printer. You must use the control panel of the printer or connect to the printer through a web browser.

PUBLIC data can be deleted using the control panel of the printer or from the web-based management software.

When you reprint PUBLIC data, refer also to '[Operations for printing SECURE data](#)' in this chapter.

## NOTE:

*If there is data in the job information that cannot be displayed on the LCD, the display shows "?".*

## (4) Printing SECURE data

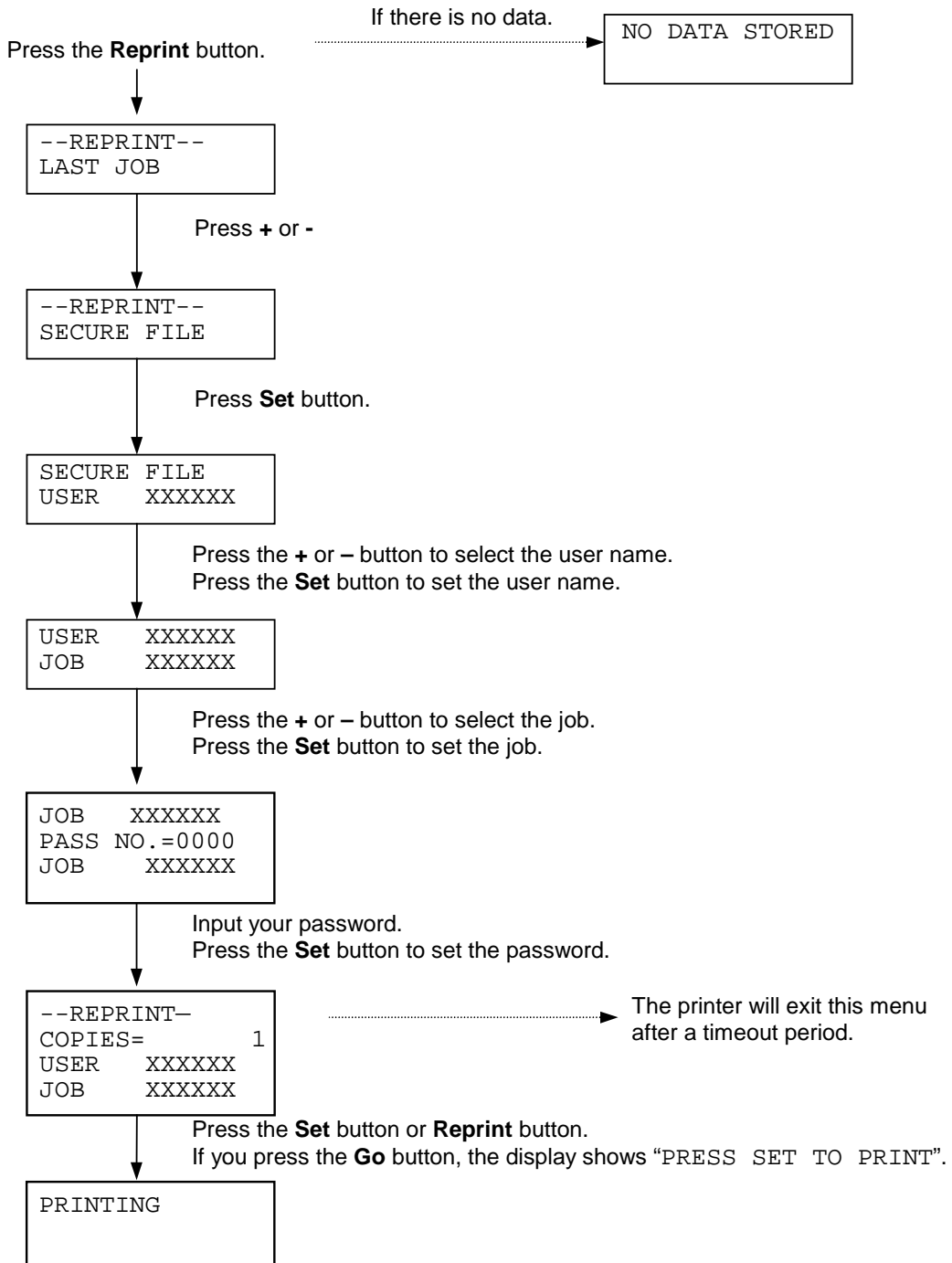
Secure documents are password protected and only those people that know the password will be able to print the document. The printer will not print the document when you send it for printing; to print the document you must use the control panel of the printer (with password) or connect to the printer using a web browser.

When you want to delete the spooled data, you can carry out this operation using the control panel or in the web-based management software.

## NOTE:

*If there is data in the job information that cannot be displayed on the LCD, the display shows "?".*

**Operations for printing SECURE data**



**When there is no reprint data in memory**

If the printer does not have reprint data in buffer memory and you press the **Reprint** button, the LCD shows "NO DATA STORED."

**To cancel the reprint job**

Pressing the **Job Cancel** button allows you to cancel the current reprint job. The **Job Cancel** button also allows you to cancel a paused reprint job.

**5.2.4 + & - button**

If you press the **+** or **-** button when the printer is in the on-line state (READY), it goes off-line and the LCD displays the menu.

**(1) To display menus in the current mode**

If you press the **+** or **-** button when the printer is in the on-line state (READY), it goes off-line and the LCD displays the current mode.

You can enter other menus in the current mode by pressing the **+** or **-** button. Pressing the **+** or **-** button allows you to scroll forward or backward through the menus and settings on the display. Press or keep pressing the button until you access the desired item.

**(2) To set numbers**

There are two ways to input numbers. You can use the **+** or **-** button to scroll up or down one number at a time, or you can hold down the **+** or **-** button to scroll faster. When you see the number you want, press the **Set** button.

**5.2.5 Set button**

If you press the **Set** button when the printer is in the on-line state (READY), it goes off-line and the LCD goes to the menu display.

Pressing the **Set** button allows you to set the selected menu or number. After changing the menu or the number, an asterisk appears briefly on the right hand side of the message.

**5.2.6 Back button**

If you press the **Back** button when the printer is in the on-line state (READY), it goes off-line and the LCD goes to the menu display.

Pressing the **Back** button allows you to return to the previous level from the current menu level. The **Back** button also allows you to select the next digit while inputting numbers. When the leftmost digit is selected, the **Back** button allows you to go up one level in the menu. When a menu or number without an asterisk (**Set** button not pressed) is selected, the **Back** button allows you to return to the previous menu level with the original setting unchanged.

**NOTE:**

*When you press the **Set** button to select a setting, an asterisk appears briefly at the end of the display. Since the asterisk indicates the selection, you can easily find the current setting as you scroll through the display.*

### 5.3 LCD Display

The display shows the current printer status. When you use the control panel buttons, the display will change.

If you take the printer off-line, the display changes to show the selected emulation.

If any problems occur, the display shows the corresponding error message, maintenance message, or call service message to prompt you to take an action. For more information about these messages, see **CHAPTER 6 'TROUBLESHOOTING'**.

#### 5.3.1 Backlights

The backlight of the LCD shows the current printer status with the different colors and the light indications (on, off and blinking).

Light indication	Meaning
Off	The printer is off-line or in sleep status.
Green (General)	Ready to print
	Printing
	Warming up
Red (Error)	Some problem has occurred at the printer.
Orange (Setting)	Selecting menu
	Setting reprint times
	Pause

#### 5.3.2 LCD message

You can choose the messages that display on the second line of the LCD message as shown below.

Choose `NONE/PAGE/JOB` in the lower LCD menu of the `SETUP` mode.

**Printer status messages**

The following table shows the printer status messages that are displayed during normal operation:

Printer Status Message	Meaning
READY	Ready to print.
PROCESSING	Busy processing data.
SLEEP	In sleep status (power save mode).
PRINTING	Printing.
PROGRAM-WAIT	Accessing CompactFlash card or HDD.
SELF TEST	Performing self-diagnostics.
PAUSE	The printer has suspended feeding forms. Pressing the <b>Go</b> button resumes form feed.
NOW INITIALIZING	The printer is setting up.
WARMING UP	The printer is warming up.
MEMORY SIZE=XX MB	This printer has XX MB memory.
JOB CANCELING	Canceling the job.
RESOLUTION ADAPT	Printing with reduced resolution.
PRESS SET TO PRINT	Press the <b>Set</b> button to start printing.
RESET TO FACTORY SETTING	The printer setting returns to the factory setting.
FAX SENDING	Sending fax data (Fax function: see Brother Solutions Center: <a href="http://solutions.brother.com">http://solutions.brother.com</a> )
FAX RECEIVING	Receiving fax data (Fax function: see Brother Solutions Center: <a href="http://solutions.brother.com">http://solutions.brother.com</a> )

## 5.4 How to Use the Control Panel

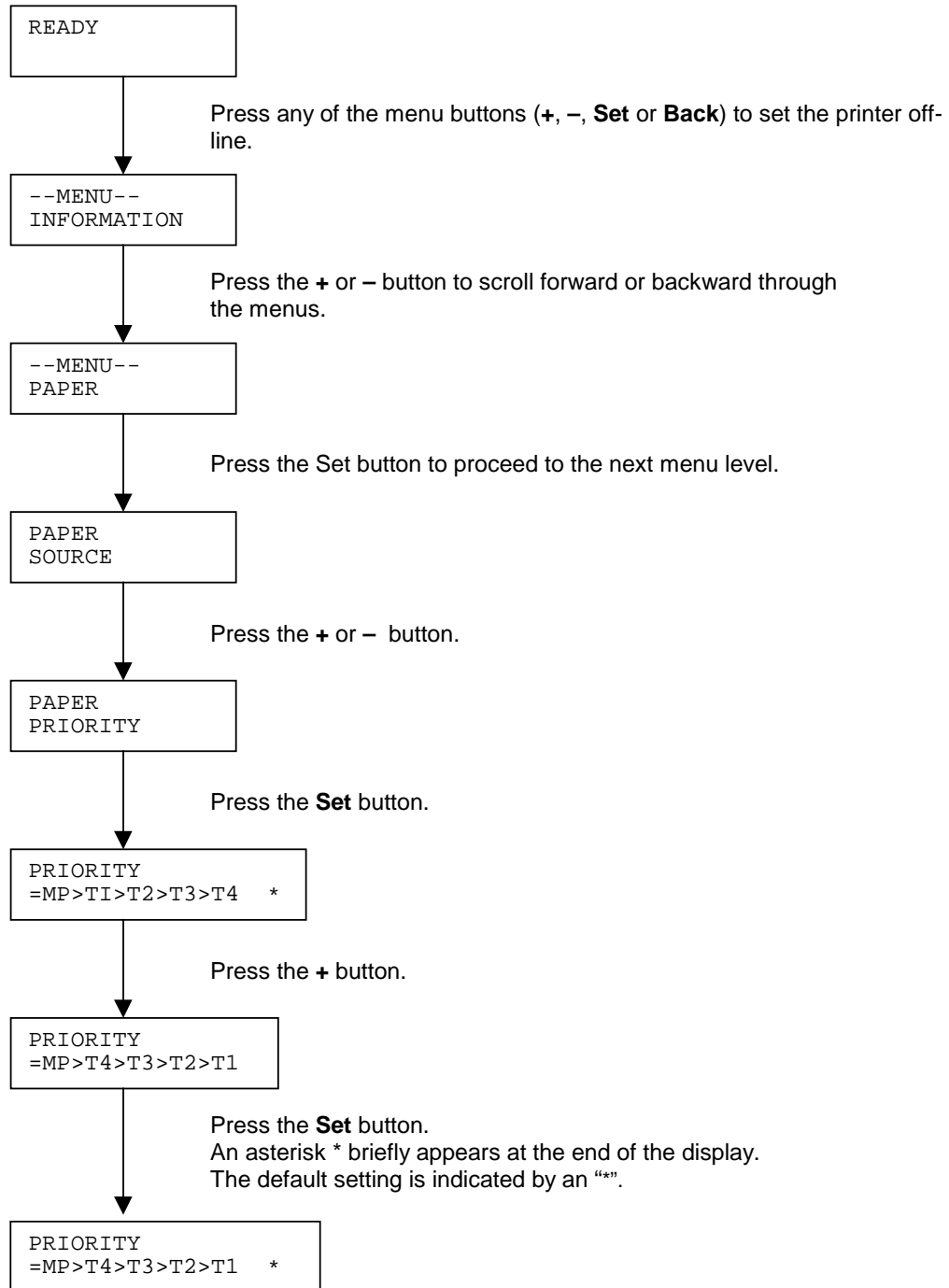
The followings are the basic steps when operating the menu buttons; **+**, **-**, **Set**, and **Back**.

- If no control panel operation is performed for 30 seconds, the LCD automatically returns to READY.
- When pressing the **Set** button to select a setting, an asterisk appears at the end of the display for a short time. After that, the display returns to the previous menu level.
- After changing the status or number, pressing the **Back** button before pressing the **Set** button will cause the display to return to the previous menu with the original setting unchanged.
- Numbers can be input by scrolling through the available setting range or by setting digits one at a time. When setting digits one at a time, the blinking digit is the changeable digit.

**Example for operation:** When turning the 'MP FIRST' setting ON

**NOTE:**

Choose this setting to load paper from the MP tray first.



## 5.5 Control Panel Setting Menu

There are 8 modes. For more information about the selections available for each mode, refer to the pages listed below.

### INFORMATION:

For more information, see [subsection 5.5.1 'INFORMATION'](#) in this Chapter.

### PAPER:

For more information, see [subsection 5.5.2 'PAPER'](#) in this Chapter.

### QUALITY:

For more information, see [subsection 5.5.3 'QUALITY'](#) in this Chapter.

### SETUP:

For more information, see [subsection 5.5.4 'SET UP'](#) in this Chapter.

### PRINT MENU:

For more information, see [subsection 5.5.5 'PRINT MENU'](#) in this Chapter.

### NETWORK:

For more information, see [subsection 5.5.6 'NETWORK'](#) in this Chapter.

### INTERFACE:

For more information, see [subsection 5.5.7 'INTERFACE'](#) in this Chapter.

### RESET MENU:

For more information, see [subsection 5.5.8 'RESET MENU'](#) in this Chapter.

## 5.5.1 Information

<b>Display Shows</b>	<b>Description</b>		
<b>PRINT SETTINGS</b>	Prints the print settings page.		
<b>PRINT TEST</b>	Prints the test page.		
<b>PRINT DEMO</b>	Prints the demonstration sheet.		
<b>PRINT FILE LIST</b>	Prints the card list.		
<b>PRINT FONTS</b>	Prints the font list and samples.		
	<b>Subsetting</b>	<b>Description</b>	
<b>VERSION</b>	<b>SER.NO=#####</b>	Shows Printer serial number.	
	<b>ROM VER=####</b>	Shows ROM version.	
	<b>ROM DATE##/##/##</b>	Shows ROM date.	
	<b>NET VER=####</b>	Shows Network version (only Network users).	
	<b>NET DATE##/##/##</b>	Shows Network build date (only Network users).	
	<b>RAM SIZE=###MB</b>	Shows the size of memory in this printer.	
<b>MAINTENANCE</b>	<b>PAGE COUNTER</b>	<b>=#####</b>	Shows the current total printed pages.
	<b>DRUM COUNT</b>	<b>=#####</b>	Shows the pages printed with drum unit.
	<b>REMAIN DRUM</b>	<b>=#####</b>	Shows the pages left to print with drum unit.
	<b>REMAIN PF KIT MP</b>	<b>=#####</b>	Shows the pages left to print with PF kit MP.
	<b>REMAIN PF KIT 1</b>	<b>=#####</b>	Shows the pages left to print with PF kit 1.
	<b>REMAIN PF KIT 2</b>	<b>=#####</b>	Shows the pages left to print with PF kit 2.
	<b>REMAIN PF KIT 3</b>	<b>=#####</b>	Shows the pages left to print with PF kit 3.
	<b>REMAIN PF KIT 4</b>	<b>=#####</b>	Shows the pages left to print with PF kit 4.
	<b>REMAIN FUSER</b>	<b>=#####</b>	Shows the pages left to print with fuser unit.
	<b>REMAIN LASER</b>	<b>=#####</b>	Shows the pages left to print with laser unit.



## 5.5.2 Paper

Display Shows	Description
<b>SOURCE</b>	=AUTO/MP TRAY/TRAY 1/TRAY 2/TRAY 3/TRAY 4 Select which paper tray the paper will be fed from.
<b>PRIORITY</b>	=MP>T1>T2>T3>T4* MP>T4>T3>T2>T1 T1>T2>T3>T4>MP T4>T3>T2>T1>MP
<b>MP FIRST</b>	=ON/OFF Select whether to feed paper from the MP tray as a priority.
<b>MP SIZE</b>	=ANY/LETTER/LEGAL/A4.... Select the size of paper you loaded in the MP tray, for example, A4/Letter/Legal/...
<b>MANUAL FEED</b>	=OFF/ON Select whether or not you want to feed paper manually.
<b>DUPLEX</b>	=OFF/ON(LONG BIND)/ON(SHORT BIND) Select whether you want to automatically print on both sides of the paper.
<b>OUTPUT</b>	=STANDARD/MAILBOX1-10/MX STACK/ MX SORT Select where you want the printed pages to go.

\* MP TRAY = Multi-purpose tray, TRAY1 = Upper paper tray, TRAY2/3/4= Optional lower tray

## 5.5.3 Quality

Display Shows	Description
<b>RESOLUTION</b>	=300/600/1200 You can select a print resolution of 300, 600 or 1200 dpi (dots per inch).
<b>HRC</b>	=OFF/LIGHT/MEDIUM/DARK HRC: High Resolution Control (HRC) offers improved print quality of letters, numbers and graphics that conventional laser printers cannot achieve, with a resolution of 300 or 600 dpi.
<b>TONER SAVE</b>	=OFF/ON
<b>DENSITY</b>	=-2:0:2 Increase or decrease the print density.

## 5.5.4 Setup

<b>Display Shows</b>	<b>Description</b>	
<b>LANGUAGE</b>	= ENGLISH /FRANÇAIS /...	
<b>PANEL CONTROL</b>	<b>Subsetting</b>	<b>Description</b>
	LOWER LCD	=NONE/PAGE COUNTER/JOB NAME
	LCD DENSITY	=1/2
	AUTO ONLINE	=ON/OFF
	BUTTON REPEAT	Set the time for the display message to change when holding the + or – button at intervals of: 0.1, 0.2, 0.3, 0.4, 0.5, 1.0, 1.5 or 2.0 seconds. The factory setting is 0.1.
	MESSAGE SCROLL	Set the time in seconds that an LCD message will scroll across the display. From Level 1=0.2 to level 10=2.0. The factory setting is Level 1.
<b>POWER SAVE TIME</b>	=1MIN:240MIN	
<b>TONER LOW</b>	=CONTINUE/STOP CONT: Continue printing even if there is a TONER LOW error. STOP: Stop printing if there is a TONER LOW error.	
<b>AUTO CONTINUE</b>	=OFF/ON	
<b>LOCK PANEL</b>	=OFF/ON Turn the lock panel setting ON or OFF.	
	PASS NO.=###	
<b>REPRINT</b>	=ON/OFF	
<b>PAGE PROTECTION</b>	PROTECT = AUTO	AUTO, OFF, LETTER, A4 OR LEGAL
<b>EMULATION</b>	=AUTO (EPSON)/AUTO (IBM)/HP LASER JET/...	
<b>KEEP PCL</b>	=OFF/ON	
<b>JAM RECOVERY</b>	=OFF/ON	
<b>RAMDISK SIZE</b>	=0/1/2/...MB	RESTART PRINTER?

## SETUP (continued)

<b>Display Shows</b>	<b>Description</b>	
<b>DELETE STORAGE</b>	Delete the data in CompactFlash card or HDD.	
	<b>Subsetting</b>	<b>Description</b>
	SECURE FILE	Select the user name, job name and password.
	PUBLIC FILE	Select the user name and job name.
	PROOF FILE	Select the user name and job name.
	DATA ID (HD)	=####
	DATA ID (CF)	=####
	MACRO ID (HD)	=####
	MACRO ID (CF)	=####
	FONT ID (HD)	=####
	FONT ID (CF)	=####
	FORMAT (HD)	OK?
	FORMAT (CF)	OK?
<b>TIME STYLE</b>	=YY /MM /DD or MM /DD /YY or DD /MM /YY	
<b>DATE &amp; TIME</b>	DISPLAY	YYYY/MM/DD HH/MM
	YEAR	=####
	MONTH	=##
	DAY	=##
	HOUR	=##
	MINUTE	=##

## 5.5.5 Print menu

<b>Display Shows</b>	<b>Description</b>	
<b>MEDIA TYPE</b>	=PLAIN PAPER/TRANSPARENCIES/THICK PAPER/THICKER PAPER/ BOND PAPER/ENVELOPES/THIN PAPER	
<b>PAPER</b>	Set the paper size to LETTER, LEGAL, A4, EXECUTIVE, COM-10, DL, JIS B5, B5, A5, B6, A6, MONARCH C5 and A4 LONG.	
<b>COPIES</b>	You can check the total number of printed pages.	
	Shows the number of printed pages (1 to 999).	
<b>ORIENTATION</b>	This printer can print pages in portrait or landscape orientation.	
	PORTRAIT or LANDSCAPE	
<b>PRINT POSITION</b>	This printer can be adjusted to align the page format.	
	<b>Subsetting</b>	<b>Description</b>
	<b>X OFFSET=0</b>	=-500:+500 Move the print start position (at the top-left corner of pages) horizontally up to -500 (left) to +500 (right) dots in 300 dpi.
	<b>Y OFFSET=0</b>	=-500:+500 Move the print start position (at the top-left corner of pages) vertically up to -500 (up) to +500 (down) dots in 300 dpi.
<b>AUTO FF TIME</b>	=OFF/1:99 (sec) Allows you to print the remaining data without pressing the <b>Go</b> button.	
<b>FF SUPPRESS</b>	=OFF/ON Turns the feed suppress (PAUSE) setting ON or OFF.	

## PRINT MENU (continued)

<b>Display Shows</b>	<b>Description</b>	
HP LASERJET	<b>Subsetting</b>	<b>Description</b>
	FONT NO.	=I000:####
	FONT PITCH	=##.##
	SYMBOL SET	PC-8/... Set the symbol set or the character set.
	TABLE PRINT	Print code table.
	AUTO LF	=OFF/ON ON: CR→CR+LF, OFF: CR→CR
	AUTO CR	=OFF/ON ON: LF→LF+CR, FF+CR, or VT→VT+CR OFF: LF→LF, FF→FF, or VT→VT
	AUTO WRAP	=OFF/ON Select whether a line feed and carriage return will happen when the printer reaches the right margin.
	AUTO SKIP	=ON/OFF Select whether a line feed and carriage return will happen when the printer position reaches the bottom margin.
	LEFT MARGIN	=## Set the left margin at column 0 to 70 columns at 10 cpi.
	RIGHT MARGIN	=## Set the right margin at column 10 to 80 columns at 10 cpi.
	TOP MARGIN	=#.## Set the top margin at a distance from the top edge of the paper: 0, 0.33, 0.5, 1.0, 1.5 or 2.0. The factory setting is 0.5.
	BOTTOM MARGIN	=#.## Set the bottom margin at a distance from the bottom edge of the paper – 0, 0.33, 0.5, 1.0, 1.5 or 2.0. The factory setting is 0.33(None-HP), 0.5(HP).
	LINES	=### Set the number of lines on each page from 5 to 128 lines.

## PRINT MENU (continued)

<b>Display Shows</b>	<b>Description</b>	
<b>EPSON FX-850</b>	<b>Subsetting</b>	<b>Description</b>
	<b>FONT NO.</b>	=I000:####
	<b>FONT PITCH</b>	=##.##
	<b>CHARACTER SET</b>	PC-8/... Set the symbol set or the character set.
	<b>TABLE PRINT</b>	Print code table.
	<b>AUTO LF</b>	=OFF/ON ON: CR→CR+LF OFF: CR→CR
	<b>AUTO MASK</b>	=OFF/ON
	<b>LEFT MARGIN</b>	Set the left margin at column 0 to 70 columns at 10 cpi.
	<b>RIGHT MARGIN</b>	Set the right margin at column 10 to 80 columns at 10 cpi.
	<b>TOP MARGIN</b>	Set the top margin at a distance from the top edge of the paper – 0, 0.33, 0.5, 1.0, 1.5 or 2.0. The factory setting is 0.33.
	<b>BOTTOM MARGIN</b>	Set the bottom margin at a distance from the bottom edge of the paper – 0, 0.33, 0.5, 1.0, 1.5 or 2.0. The factory setting is 0.33.
	<b>LINES</b>	Set the number of lines on each page from 5 to 128 lines.

## PRINT MENU (continued)

Display Shows	Description	
IBM PROPRINTER	<b>Subsetting</b>	<b>Description</b>
	FONT NO.	=I000:####
	FONT PITCH	=##.##
	CHARACTER SET	PC-8/... Set the symbol set or the character set.
	TABLE PRINT	Print code table.
	AUTO LF	=OFF/ON ON: CR→CR+LF, OFF: CR→CR
	AUTO CR	=OFF/ON
	AUTO MASK	=OFF/ON
	LEFT MARGIN	Set the left margin at column 0 to 70 columns at 10 cpi.
	RIGHT MARGIN	Set the right margin at column 10 to 80 columns at 10 cpi.
	TOP MARGIN	Set the top margin at a distance from the top edge of the paper – 0, 0.33, 0.5, 1.0, 1.5 or 2.0. The factory setting is 0.33.
	BOTTOM MARGIN	Set the bottom margin at a distance from the bottom edge of the paper – 0, 0.33, 0.5, 1.0, 1.5 or 2.0. The factory setting is 0.33.
	LINES	Set the number of lines on each page from 5 to 128 lines.
HP-GL	<b>Subsetting</b>	<b>Description</b>
	CHAR SET(STD)	=####
	CHAR SET(ALT)	=####
	PEN # SIZE	PEN1 to 6  (Set size and gray percentage for the selected pen.)
	PEN # GRAY	PEN1 to 6  15, 30, 45, 75, 90 or 100 % (# is the selected pen number)
BR-SCRIPT 3	ERROR PRINT	=OFF/ON

## 5.5.6 Network (Only on a Network)

<b>Display Shows</b>	<b>Description</b>	
<b>TCP/IP</b>	<b>Subsetting</b>	<b>Description</b>
	TCP/IP ENABLE	=ON/OFF
	IP ADDRESS=	###.###.###.###
	SUBNET MASK=	###.###.###.###
	GATEWAY=	###.###.###.###
	IP BOOT TRIES	=#
	IP METHOD	=AUTO/STATIC/RARP/BOOTP/DHCP
<b>NETWARE</b>	NETWARE ENABLE	=ON/OFF
	NET FRAME	=AUTO/8023/ENET/8022/SNAP
<b>APPLETALK</b>	=ON/OFF	
<b>NETBEUI</b>	=ON/OFF	
<b>DLC/LLC</b>	=ON/OFF	
<b>BANYAN</b>	=ON/OFF	
<b>LAT</b>	=ON/OFF	
<b>NETBIOS/IP</b>	=ON/OFF	
<b>APIPA</b>	=ON/OFF	
<b>ENET</b>	=AUTO/100B-FD/100B-HD/10B-FD/10B-HD	



## 5.5.7 Interface

<b>Display Shows</b>	<b>Description</b>	
<b>SELECT</b>	=AUTO/PARALLEL/RS-232C/USB/NETWORK	
<b>AUTO IF TIME</b>	= 1:99 (sec) You need to set the time-out period for the auto interface selection.	
<b>INPUT BUFFER</b>	= Level1:15 Increase or decrease the input buffer capacity.	RESTART PRINTER?
<b>PARALLEL</b>	When using the parallel interface	
	<b>Sub-setting Menu</b>	<b>Description</b>
	<b>HIGH SPEED</b>	=ON/OFF Turns high-speed parallel communications on or off.
	<b>BI-DIR</b>	=ON/OFF Turns bi-directional parallel communications on or off.

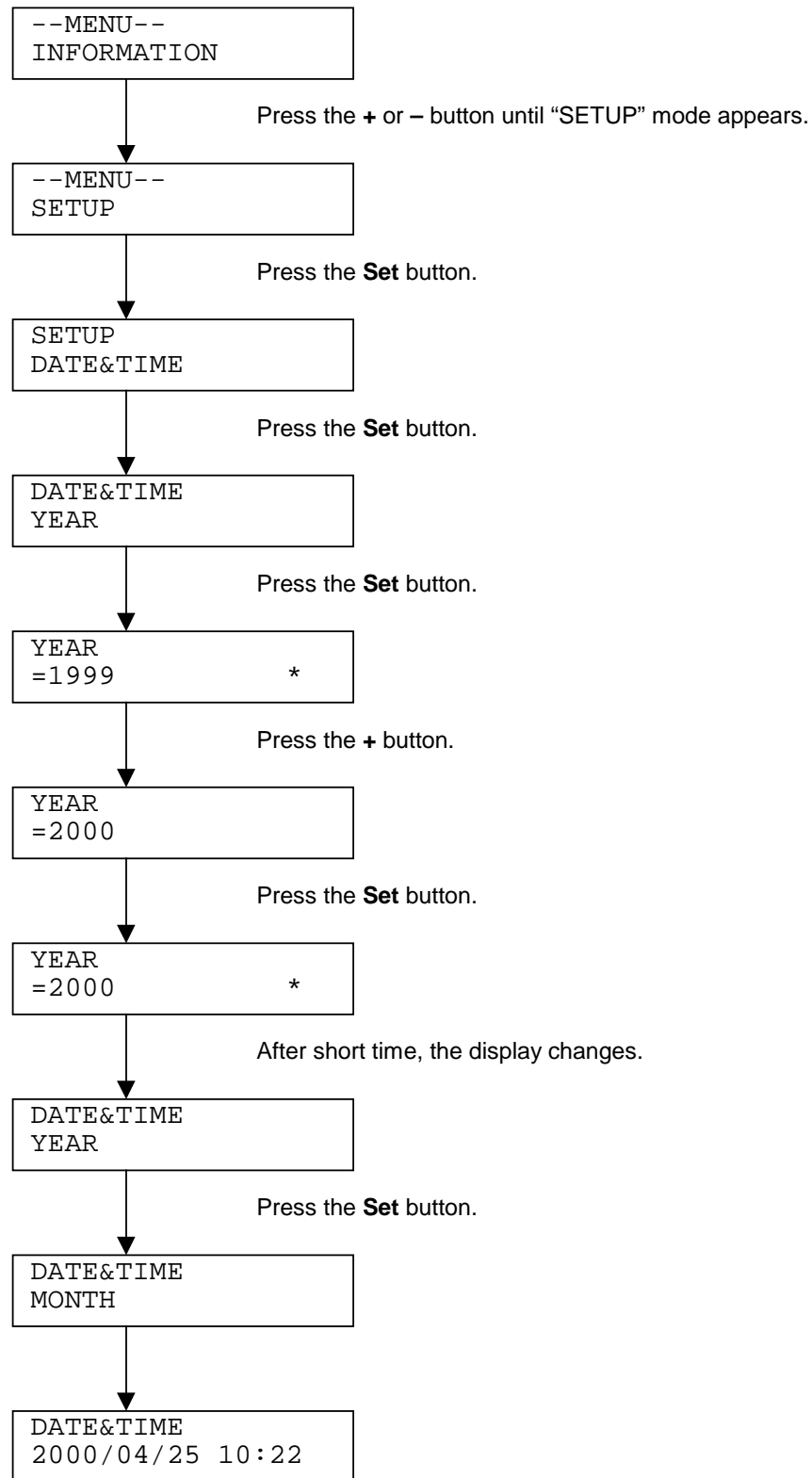
## INTERFACE (continued)

Display Shows	Description	
RS-232C	When using the serial interface	
	Sub-setting Menu	Description
	FAX MODE	=OFF/ON      RESTART PRINTER?
	BAUDRATE	Data transfer speed can be set to 150/300/600/1200/2400/4800/9600/19200/38400/57600/115200 baud.
	CODETYPE	=8 BITS/7 BITS The data length can be set to 7 or 8 bits.
	PARITY	=NONE/ODD/EVEN The data error check can be set to NONE, ODD or EVEN.
	STOP BIT	=1 BITS/2 BITS The data separator can be set to 1 or 2 stop bits.
	XON/XOFF	=ON/OFF Handshake protocol can be set to on or off.
	DTR(ER)	=ON/OFF
	ROBUST XON	=OFF/ON
	RING DELAY	=0/1/2/3/4
	REDUCTION	=AUTO/OFF/90%
	RAM SIZE	=1:##MBYTE
	RECEIVE	=ON/OFF
INTERVAL	=OFF/6H/12H/24H/2D/4D/7D	

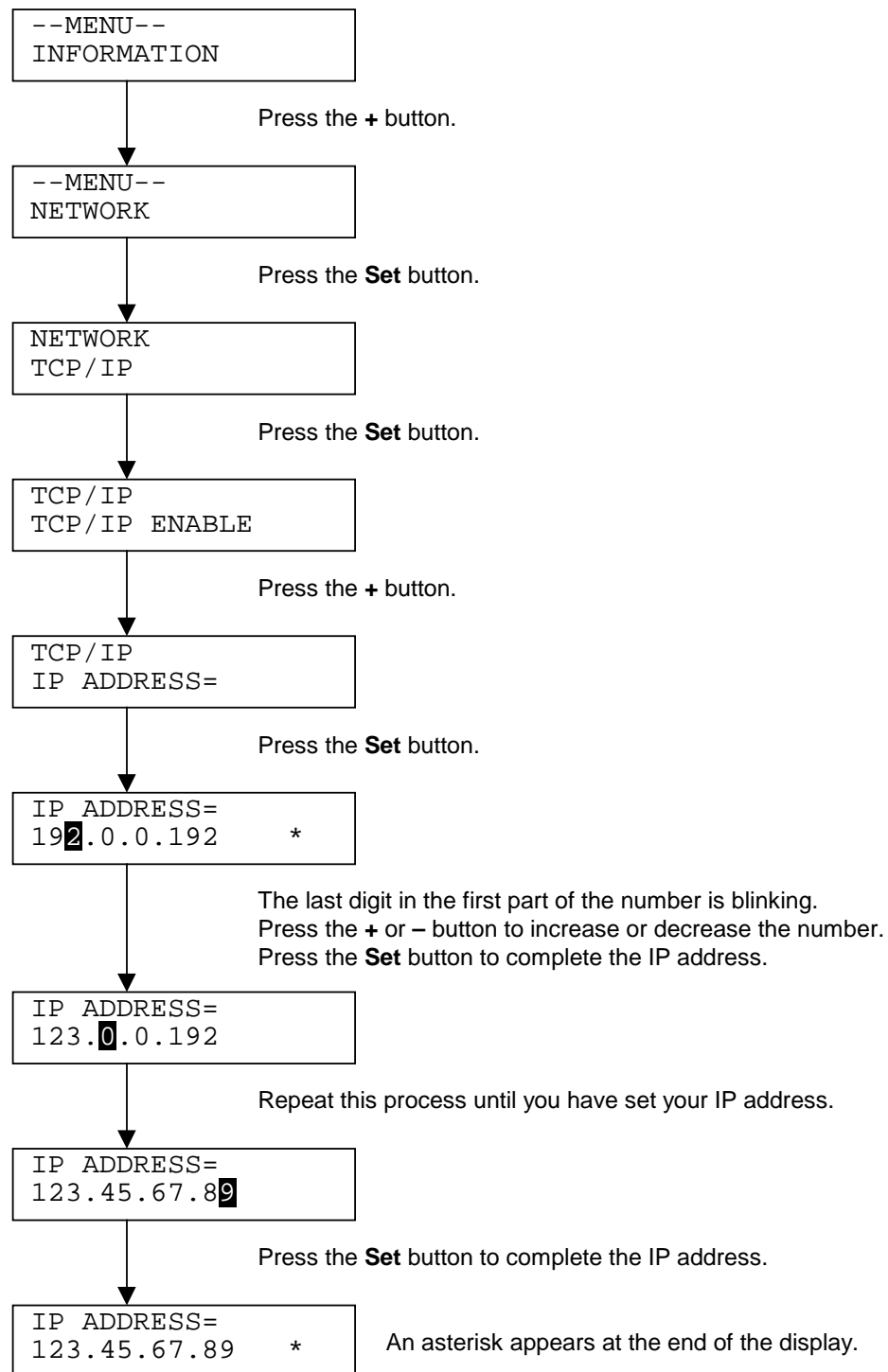
## 5.5.8 Reset menu

Display Shows	Description
RESET PRINTER	Resets the printer and restores all printer settings – including command settings – to settings you have previously made with the control panel buttons.
FACTORY RESET	Resets the printer and restores all printer settings – including command settings – to the factory settings. See <a href="#">subsection 5.5.12 'List of factory settings' in this chapter</a> .

### 5.5.9 Set date and time



### 5.5.10 Set IP address



### 5.5.11 About emulation modes

This printer has the following emulation modes.

#### [HP LaserJet Mode](#)

The HP LaserJet mode (or HP mode) is the emulation mode in which this printer emulates the Hewlett-Packard LaserJet laser printer. Many software applications support this type of laser printer. Using this mode will allow your printer to operate at its optimum performance with those applications.

#### [BR-Script 3 Mode](#)

BR-Script is an original page description language and a PostScript language emulation interpreter. This printer supports level 3. The BR-Script interpreter of this printer enables full and satisfactory control of text and graphics on pages.

See the following commercial manuals for more technical information about PostScript commands.

- Adobe Systems Incorporated. *PostScript Language Reference Manual, 3rd Edition*. Menlo Park: Addison-Wesley Publishing Company, Inc., 1999.
- Adobe Systems Incorporated. *PostScript Language Program Design*. Menlo Park: Addison-Wesley Publishing Company, Inc., 1988.
- Adobe Systems Incorporated. *PostScript Language Reference Manual*. Menlo Park: Addison-Wesley Publishing Company, Inc., 1985.
- Adobe Systems Incorporated. *PostScript Language Tutorial and Cookbook*. Menlo Park: Addison-Wesley Publishing Company, Inc., 1985.
- Adobe Systems Incorporated. *PostScript Language Reference Manual, third Edition*. Addison-Wesley Longman, Inc., 1999.

#### [HP-GL Mode](#)

The HP-GL mode is the emulation mode in which this printer emulates the Hewlett-Packard plotter model HP-7475A. Many graphics and CAD applications support this type of plotter. Use this mode for optimum performance when printing from those types of applications.

#### [EPSON FX-850 and IBM Proprinter XL Mode](#)

The EPSON FX-850 and IBM Proprinter XL modes are the emulation modes that this printer emulates to meet the industry-standard for dot matrix printers of their respective manufactures. Some applications support these dot matrix printer emulations. Use these emulation modes for optimum performance when printing from those types of applications.

### 5.5.12 List of factory settings

The following table shows the initial factory default settings.

**NOTE:**

- The emulation mode affects the setting. Effective modes are shown in brackets in the following table.
- The following settings cannot be restored to the factory settings with the reset menu in the factory settings mode – interface mode, HRC setting, page protection, scalable font, lock panel, page counter and local language for display messages.
- The COPY setting is always restored to the factory setting when the printer is turned off and on again.
- It is not possible to reset the network settings using the control panel. If you want to reset the print server to its factory settings (resetting all information such as the password and IP address information), hold down the Network Test button on the Network board (NC-4100h) for more than 5 seconds.

<b>Menu</b>	<b>Submenu</b>	<b>Factory setting</b>
<b>PAPER</b>	<b>SOURCE</b>	=AUTO
	<b>PRIORITY</b>	=MP>T1>T2>T3>T4
	<b>MP FIRST</b>	=OFF
	<b>MP SIZE</b>	=ANY/A4/LETTER
	<b>MANUAL FEED</b>	=OFF
	<b>DUPLEX</b>	=OFF
	<b>OUTPUT</b>	=STANDARD
<b>QUALITY</b>	<b>RESOLUTION</b>	=600
	<b>HRC</b>	=MEDIUM
	<b>TONER SAVE</b>	=OFF
	<b>DENSITY</b>	0

<b>Menu</b>	<b>Submenu</b>	<b>Factory setting</b>
<b>SETUP</b>	<b>LANGUAGE</b>	=ENGLISH
	<b>PANEL CONTROL</b>	LOWER LCD=NONE LCD DENSITY=1 AUTO ONLINE=ON BUTTON REPEAT=0.1 SEC MESSAGE SCROLL= LEVEL 1
	<b>LCD Density</b>	=1
	<b>POWER SAVE TIME</b>	=30MIN
	<b>TONER LOW</b>	CONTINUE
	<b>AUTO CONTINUE</b>	=OFF
	<b>LOCK PANEL</b>	=OFF
	<b>REPRINT</b>	=ON
	<b>PAGE PROTECTION</b>	=AUTO
	<b>EMULATION</b>	=AUTO(EPSON)
	<b>KEEP PCL</b>	=OFF
	<b>RAMDISK SIZE</b>	=0MB
	<b>TIME STYLE</b>	=YY/MM/DD hh:mm

<b>Menu</b>	<b>Submenu</b>	<b>Factory setting</b>	
<b>PRINT MENU</b>	<b>MEDIA TYPE</b>	=PLAIN PAPER	
	<b>PAPER</b>	=A4/LETTER	
	<b>COPIES</b>	=1	
	<b>ORIENTATION</b>	=PORTRAIT	
	<b>PRINT POSITION</b>	X OFFSET=0 Y OFFSET=0	
	<b>AUTO FF TIME</b>	=5	
	<b>FF SUPPRESS</b>	=OFF	
	<b>HP LASERJET</b>		FONT NO.=59
			FONT PITCH=10.00/12.00
			SYMBOL SET=PC8
			AUTO LF=OFF
			AUTO CR=OFF
			AUTO WRAP=OFF
	AUTO SKIP=ON		



<b>Menu</b>	<b>Submenu</b>	<b>Factory setting</b>
<b>PRINT MENU (continued)</b>	<b>HP LASERJET (continued)</b>	LEFT MARGIN=####
		RIGHT MARGIN=####
		TOP MARGIN=####
		BOTTOM MARGIN=####
		LINES=####
	<b>EPSON FX-850</b>	FONT NO.=59
		FONT PITCH/POINT=10.00/12.00
		SYMBOL/CHARACTER SET=US ASCIF
		AUTO LF=OFF
		AUTO MASK=OFF
		LEFT MARGIN=####
		RIGHT MARGIN=####
		TOP MARGIN=####
		BOTTOM MARGIN=####
		LINES=####
	<b>IBM PROPRINTER</b>	FONT NO.=59
		FONT PITCH=10.00/12.00
		SYMBOL SET=PC8
		AUTO LF=OFF
		AUTO CR=OFF
		LEFT MARGIN=####
		RIGHT MARGIN=####
		TOP MARGIN=####
		BOTTOM MARGIN=####
		LINES=####
	<b>HP-GL</b>	CHAR SET(STD)=####
		CHAR SET(ALT)=####
		PEN # SIZE
		PEN # GRAY
	<b>BR-SCRIPT</b>	ERROR PRINT=OFF

<b>Menu</b>	<b>Submenu</b>	<b>Factory setting</b>
<b>NETWORK</b>	<b>TCP/IP</b>	TCP/IP ENABLE=ON
		IP ADDRESS=192.0.0.192
		SUBNET MASK=0.0.0.0
		GATEWAY=0.0.0.0
		IP BOOT TRIES=3
		IP METHOD=AUTO
	<b>NETWARE</b>	NETWARE ENABLE = ON
		NET FRAME = AUTO
	<b>APPLETALK</b>	=ON
	<b>NETBEUI</b>	=ON
	<b>DLC/LLC</b>	=ON
	<b>BANYAN</b>	=ON
	<b>LAT</b>	=ON
	<b>NETBIOS/IP</b>	=ON
	<b>APIPA</b>	=OFF
<b>ENET</b>	=AUTO	
<b>INTERFACE</b>	<b>SELECT</b>	=AUTO
	<b>AUTO IF TIME</b>	=5
	<b>INPUT BUFFER</b>	=LEVEL 3
	<b>PARALLEL</b>	HIGH SPEED=ON
		BI-DIR=ON
	<b>RS-232C</b>	FAX MODE=OFF
		BAUD RATE=9600
		CODE TYPE=8 BITS
		PARITY=NONE
		STOP BIT=1 BITS
X ON/X OFF=ON		
DTR(ER)=ON		
ROBUST XON=OFF		

<b>MODE</b>	<b>MENU</b>	<b>Factory Setting</b>
<b>INTERFACE (continued)</b>	<b>RS-232C (continued)</b>	RING DELAY=0
		REDUCTION=AUTO
		RAM SIZE=1MB
		RECEIVE=ON
		INTERVAL=OFF

## 5.6 Other Control Features

The printer has the following useful features:

### 5.6.1 Sleep mode

When the printer does not receive data for a certain period of time (timeout), it enters sleep mode. The default timeout is 5 minutes and it is automatically adjusted to the most suitable time-out setting depending on the frequency of your printer use (Intelligent Sleep Mode).

While the printer is in sleep mode, the data LED and the LCD back light are off and it is as if they were turned off, but the printer can still receive data from the computer. Receiving a print file or document automatically wakes up the printer to start printing. Pressing any button on the control panel also wakes up the printer.

#### NOTE:

- *When the printer goes into sleep mode, the fan will not stop until the printer engine has cooled down. The fan running time varies depending on the sleep mode timeout because the fan running conditions are defined as follows;*

- 1) *The fan runs for 10 minutes whenever printing finishes.*
- 2) *The fan runs while the printer is in ready status.*
- 3) *The fan runs for at least 5 minutes after the printer goes into sleep mode.*

*(EX: If the timeout is 5 minutes, the fan will be running for 5 minutes after the printer goes into sleep mode.)*

- *Sleep mode allows the print engine to cool, so the temperature of the room and how long the printer has been in sleep mode affects the warm-up time. This warm-up time can take up to 45 seconds. The LCD back light turns green with the "WARMING UP" message on the display to indicate that the printer is warming up.*

### 5.6.2 Inspection mode

The printer incorporates various inspection modes. The printer enters into each inspection mode by panel button operation.

For details on inspection mode, see [section 9. 'INSPECTION MODE' in CHAPTER 6](#).

See also [subsection 3.1.4 'Print a test page' in this chapter](#).

## 6. NETWORK BOARD OPERATION (HL-7050N AND OPTION FOR HL-7050)

Installing the network board enables you to use the printer in the TCP/IP, IPX/SPX, AppleTalk, DLC/LLC, Banyan VINES, DEC LAT and NetBEUI environments. Also, useful utilities such as BR-Admin32 and network printing software for the administrator are included. For more information about set up, see [section 3. 'INSTALL THE PRINTER' in this chapter](#).

### 6.1 Installing the Network Board

- (1) Turn off the printer power, and then unplug the power cord. Disconnect the interface cable (printer cable) from the printer.
- (2) Open the side cover.

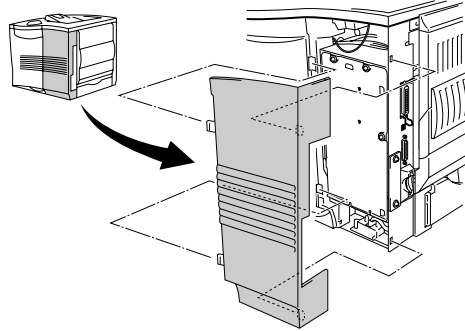


Fig. 2-53

- (3) Loosen the three screws, and then remove the metal plate by lifting up slightly.

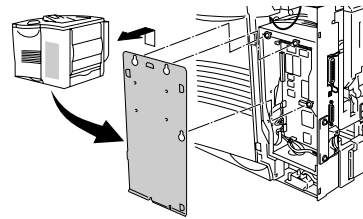


Fig. 2-54

- (4) Unscrew the two screws, and then remove the network cover plate.

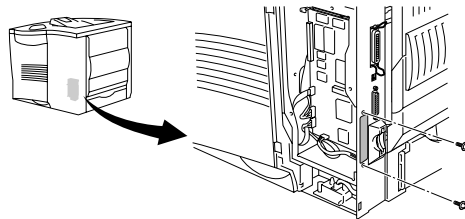


Fig. 2-55

- (5) Insert the network board connector firmly into the connector of the main controller board, and then secure it with the two screws.

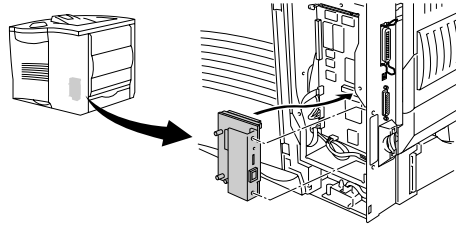


Fig. 2-56

- (6) Secure the metal plate with the three screws.

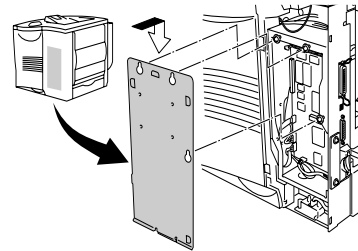


Fig. 2-57

- (7) Close the side cover.
- (8) Connect one end of the Ethernet Cable to the network port of the printer.
- (9) Plug the power cord into the AC outlet, and then turn on the power switch.

**Print configuration page**

Press the network test button for less than 5 seconds to print a configuration page.

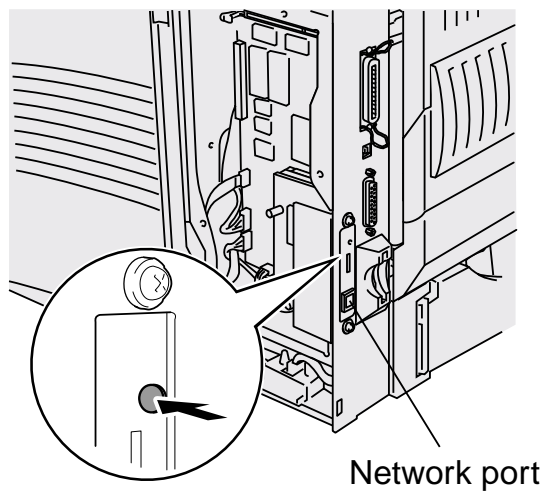


Fig. 2-58

## 6.2 Functions

### 6.2.1 LED functions

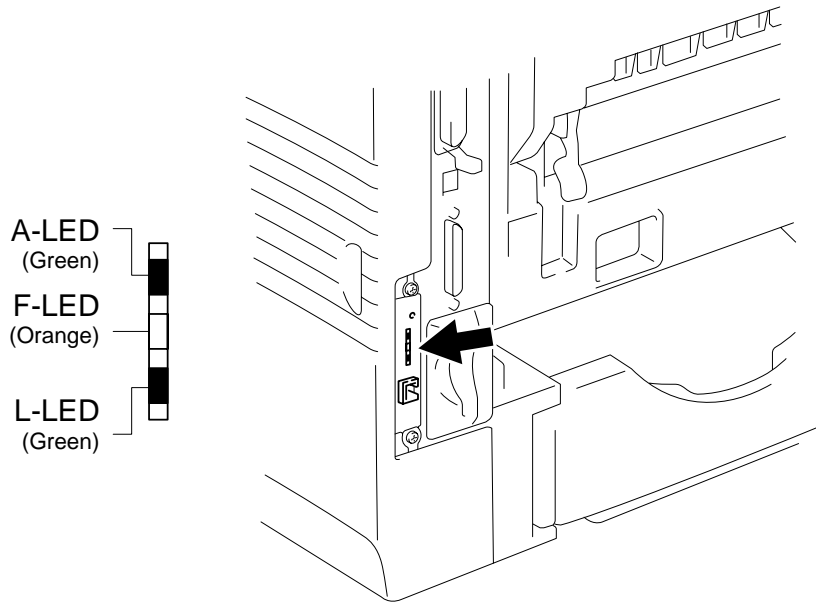


Fig. 2-59

#### L-LED (Green): Link activity

This LED is on if there is a valid connection to the network (either 10BaseT or 100BaseTX). It is off if no network is detected.

#### F-LED (Orange): Fast Ethernet

This LED will be on if the print server is connected to a 100BaseTX Fast Ethernet network. It is off if the print server is connected to a 10BaseT network.

#### A-LED (Green): Transmission activity

This LED will blink as the print server receives or transmits data.

### 6.2.2 Factory default setting

If you wish to reset the print server back to its default factory settings (resetting all information such as the password and IP address information), hold down the Network Test button for more than 5 seconds.

## CHAPTER 3 THEORY OF OPERATION

### 1. ELECTRONICS

#### 1.1 General Block Diagram

Fig. 3-1 shows a general block diagram of the HL-7050/7050N printer.

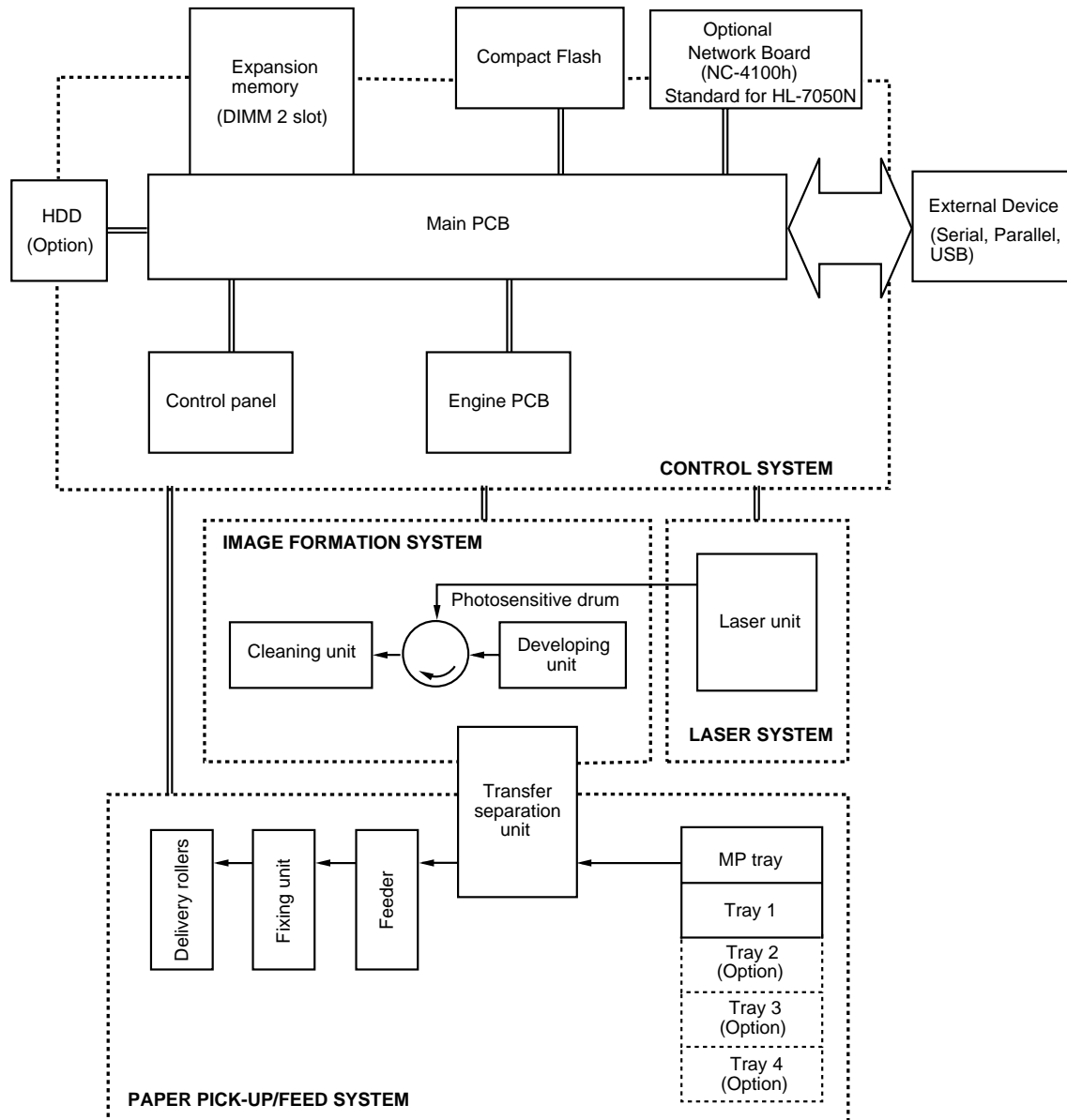


Fig. 3-1



## 1.2 Main PCB (Video Controller PCB)

For the entire circuit diagram of the main PCB, see [APPENDIX 2 to 10 'MAIN PCB CIRCUIT DIAGRAM, HL-7050'](#).

### 1.2.1 Outline

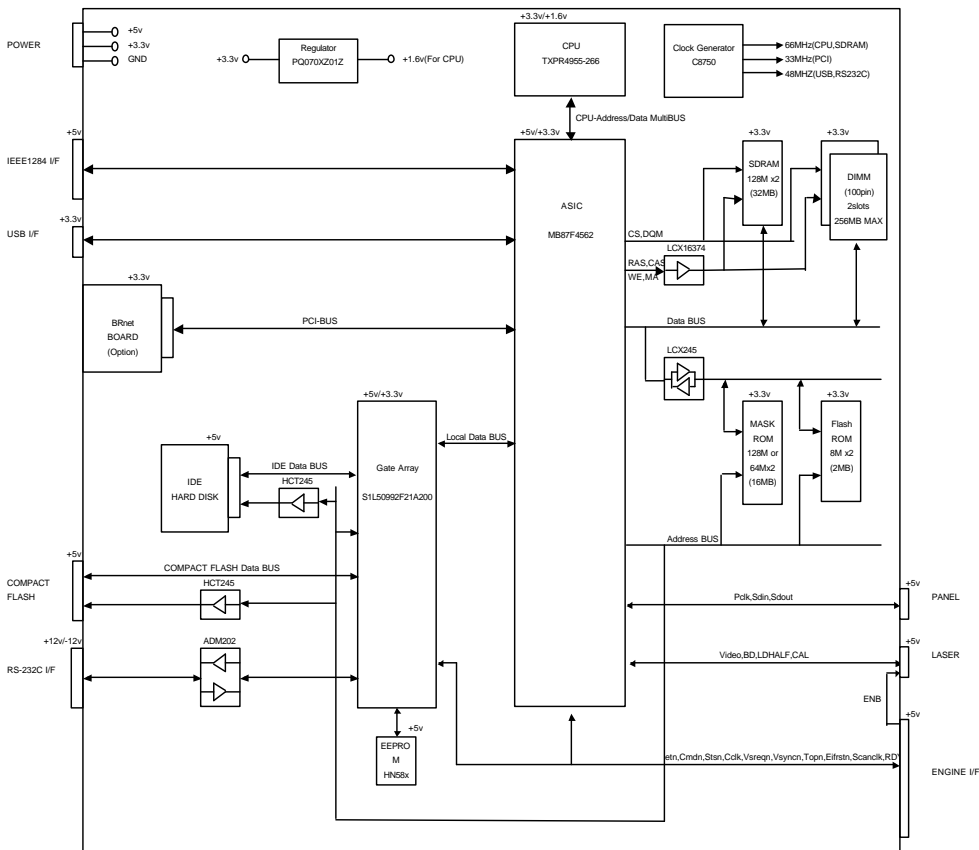
The Main PCB consists of the circuits which perform the following functions;

- Receive the printing data from the computer.
- Convert the received data to the bitmap data such as characters or graphics.
- Control the engine and send the generated bitmap data as a video signal.

The control panel is controlled by communicating with the engine CPU to display LCD messages, light the LEDs and display the button status, etc.

The power for the Main PCB is supplied from the low-voltage power supply.

### Main PCB Block Diagram



## 1.2.2 Circuit

### (1) CPU block

- Model name: TXPR4955-266, MIPS 64bit RISC CPU manufactured by Toshiba
- Clock speed: 66.7 MHz (external) / 266 MHz (internal)
- Cache memory: 32KB (Command cache) / 32KB (Data cache)
- Bus width: 32 bit (external) / 64 bit (internal)  
Internal Floating Point Unit (FPU)
- Appearance: 160-pin QFP

### (2) ASIC block

- Model name: MF87F4562 manufactured by Fujitsu
- Appearance: 420 pin BGA
- Functions:
  - Controls CPU
  - Controls memory
  - Controls interrupts
  - Timer
  - External interfaces (iEEE1284 \*<sup>1</sup>, USB \*<sup>2</sup>, BR-NET \*<sup>3</sup>, IDE, CompactFlash)
  - Engine interface (Video signal control)
  - Supports Software

\*1 Stores the data received from the PC into DRAM as controlled by the DMA controller. It is applicable to both normal receiving and bi-directional communication (nibble mode, byte mode, ECP mode).

\*2 Stores the data received from the PC into DRAM as controlled by the DMA controller. The transmission speed is 12 Mbps.

\*3 Compatible with PCI bus of 33 MHz clock speed

### (3) Gate Array block

- Model name: S1L50992F21A200 manufactured by Epson
- Appearance: 160 pin QFP
- Functions: Engine control (Clock synchronous serial transmission)  
RS-232C

### (4) ROM block

The ROM stores the CPU control program and font data. ROMs used are 16Mbytes masked ROM, and a 4Mbytes flash ROM which can be rewritten on the board.

<Masked ROM>

- Access time: Less than 120 nsec. (Page access: Less than 50 nsec)
- Appearance: 48 pin TSOP

<Flash ROM>

- Model name: SST39VF800A-70-4C-EKE manufactured by SST
- Access time: Less than 90 nsec.
- Appearance: 48 pin TSOP

## (5) DRAM block

DRAMs are used for the receiving buffer and the working area of the CPU. The DRAM block contains eight 128Mbit SDRAM, thus having 32MB memory capacity in total.

- Model name: K4S281632D-UC75 manufactured by SAMSUNG (or equivalent)
- Type: 128Mbit SDRAM
- Access time: CL2, PC66 or higher
- Appearance: 54 pin TSOP

## (6) DIMM block

DIMM (Dual-inline-memory-module) allows memory extension by up to 256MB.

2 DIMM sockets are available.

The following type of DIMM can be installed into each slot.

- Appearance: 100 pin
- Memory type: SDRAM
- Access time: CL2, PC66
- Parity: Either parity or non-parity can be used
- Memory capacity: 16MB, 32MB, 64MB, 128MB

<Recommended DIMM type>

16MB: Techworks PM-HP 16M  
 32MB: Techworks PM-HP 32M  
 64MB: Techworks PM-HP 64M  
 128MB: Techworks PM-HP 128M

Any combination of DIMM size can be installed into any slot in any order but it is recommended that the larger DIMM is installed in Slot 1.

PM-HP 16M is installed in Slot 2 for HL-7050N.

## (7) EEPROM

HN58X24128FPI type of two-wire method with a 16K x 8 bits configuration

## (8) Reset circuit

The reset IC is a 3112N281A. The reset voltage is 2.8V (typ.) and the LOW period of reset is 100ms (typ.).

## (9) External interface block

- IEEE1284 interface
- USB interface
- RS-232C interface
- CompactFlash interface
- IDE interface

### 1.3 Engine PCB

The engine PCB controls the following parts by using signal data that the CPU (8 bit M38869) obtains through correspondence with the main PCB. The engine PCB also corresponds with the optional parts to give operational commands to the CPU.

- Main motor
- Fan motor
- Thermistor
- Polygon motor
- Paper feed motor
- Paper feed solenoid
- Multi paper tray solenoid
- Registration clutch
- High-voltage power supply
- Release motor
- Release home position sensor
- Feeder clutch
- Cover open sensor
- Pre-registration sensor
- Registration sensor
- Multi purpose tray paper empty sensor
- Tray paper empty sensor
- Face up open sensor
- Full stack sensor
- Fuser exit sensor
- Eject sensor
- Paper size sensor
- Tray ID sensor
- Developer clutch

For the entire circuit diagram of the engine PCB, see [APPENDIX 11 to 13 'ENGINE PCB CIRCUIT DIAGRAM, HL-7050'](#).

### 1.4 Power Supply

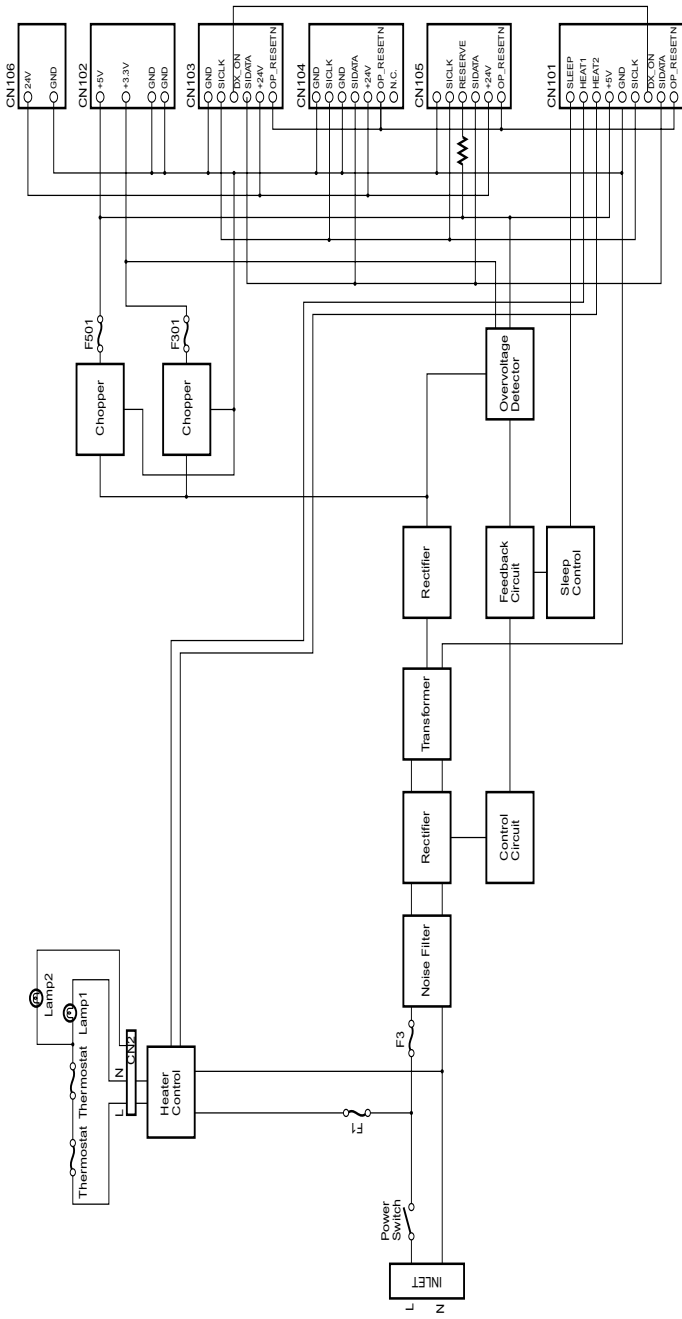
#### 1.4.1 Low-voltage power supply

The power supply uses a switching regulation system to generate the regulated DC power (+3.3V, +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 / 3.0A	100V: MPS3516
+5V / 1.5A	200V: MPS3416
+24V / 7.8A	

For the circuit diagram of the low-voltage power supply PCB, see [APPENDIX 14, 15 'LOW-VOLTAGE POWER SUPPLY PCB CIRCUIT DIAGRAM, HL-7050'](#).



LVPS\_block.eps

Fig. 3-2

### 1.4.2 High-voltage power supply

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

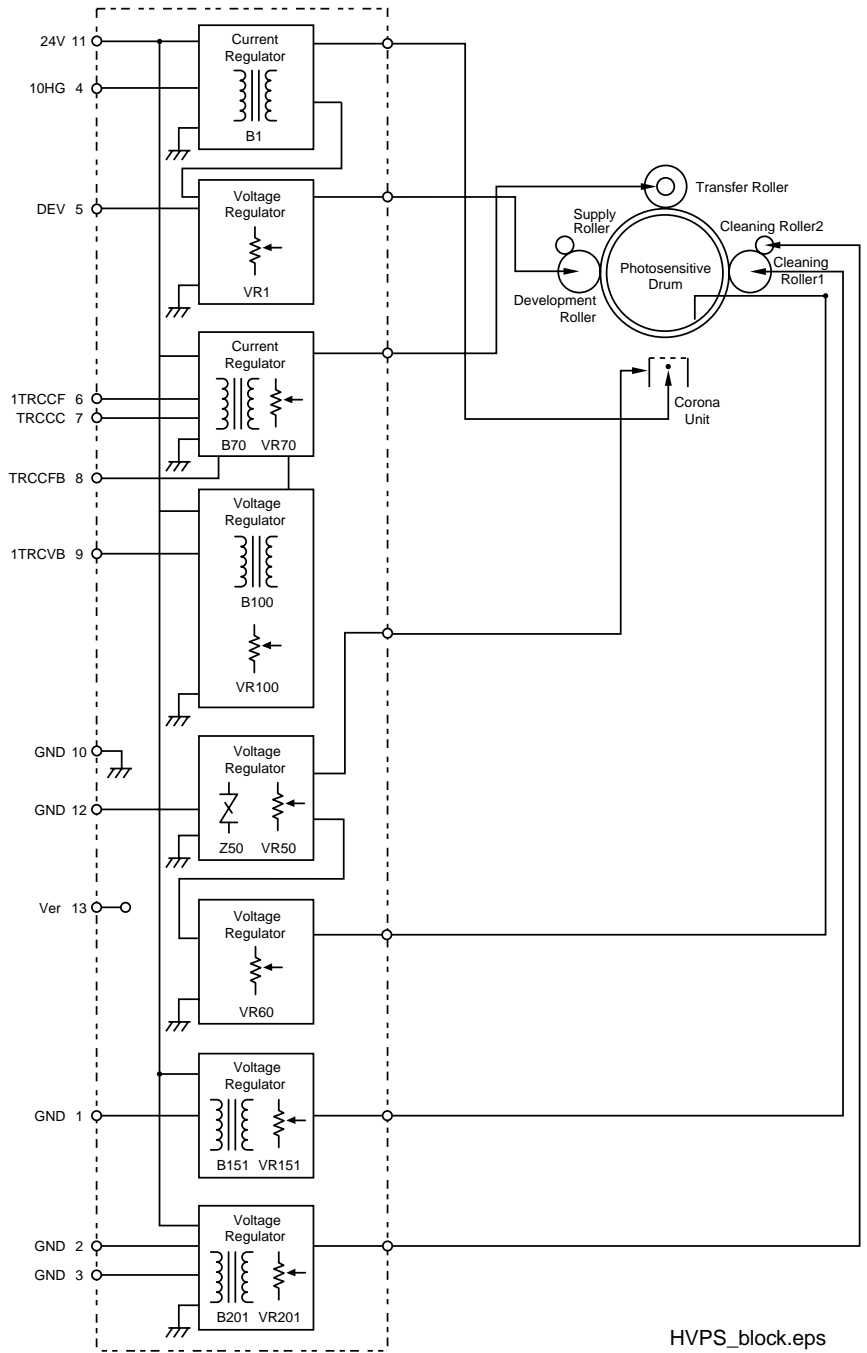


Fig. 3-3

## 2. MECHANICS

### 2.1 Overview of Printing Mechanism

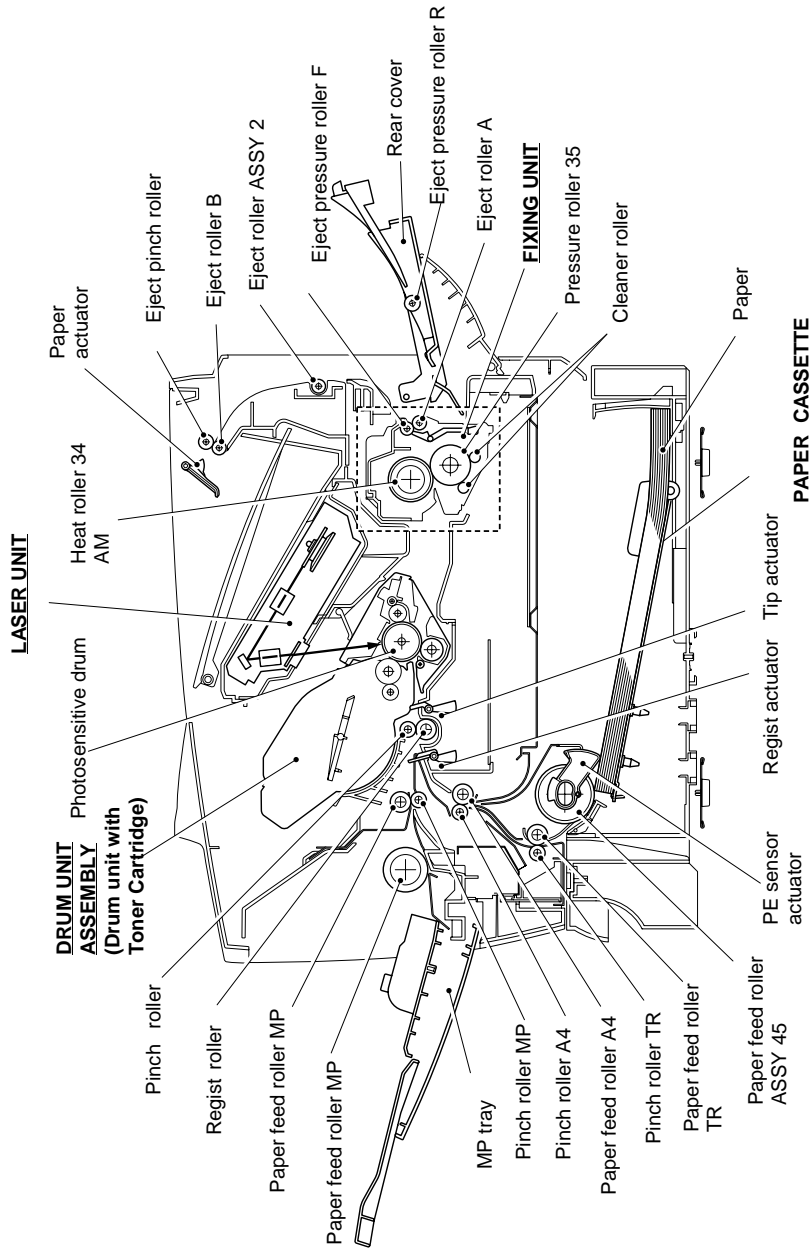


Fig. 3-4



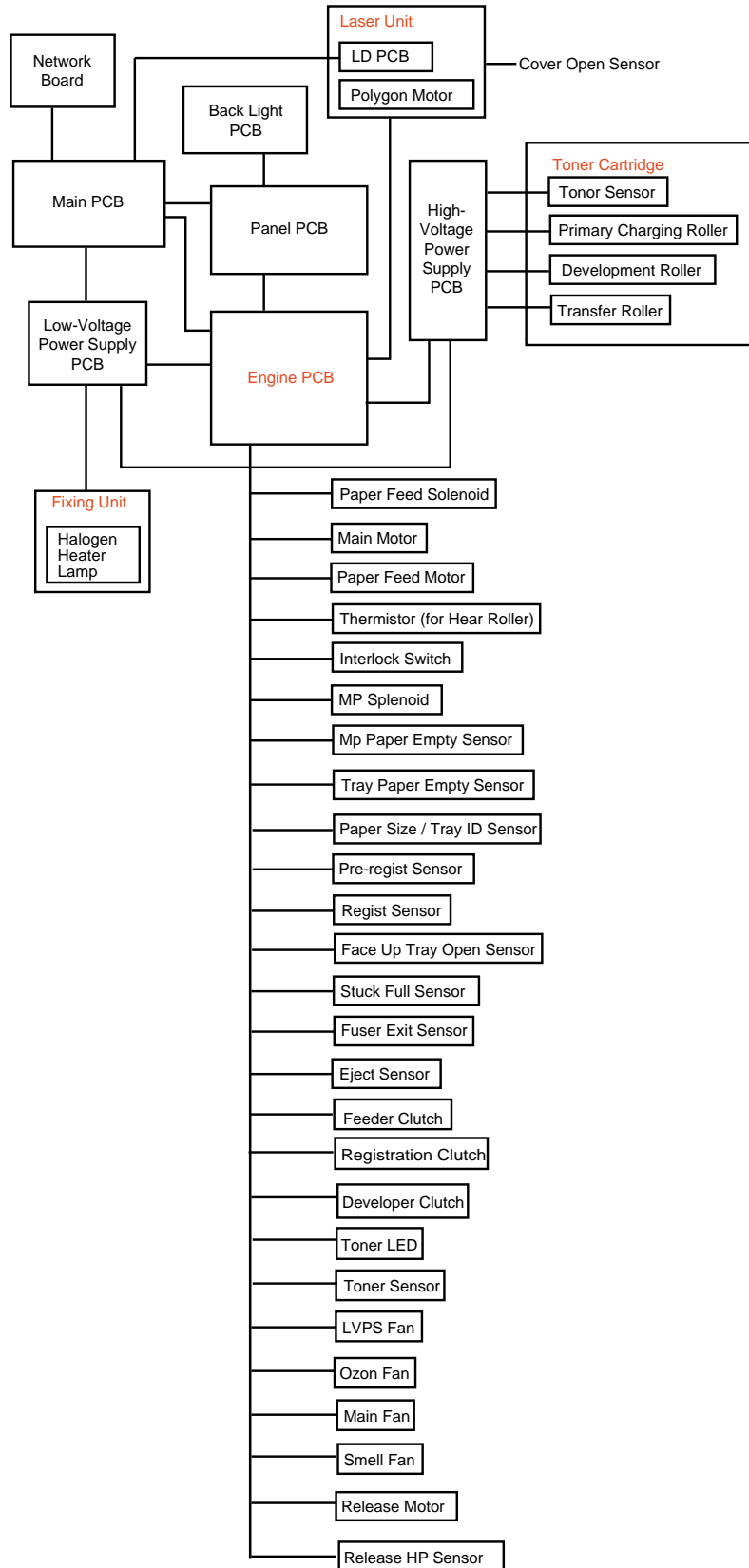


Fig. 3-5

## 2.2 Paper Transfer

### 2.2.1 Paper supply

The paper feed roller A picks up one sheet of paper from the paper cassette every time it is rotated and feeds it to paper feed roller B.

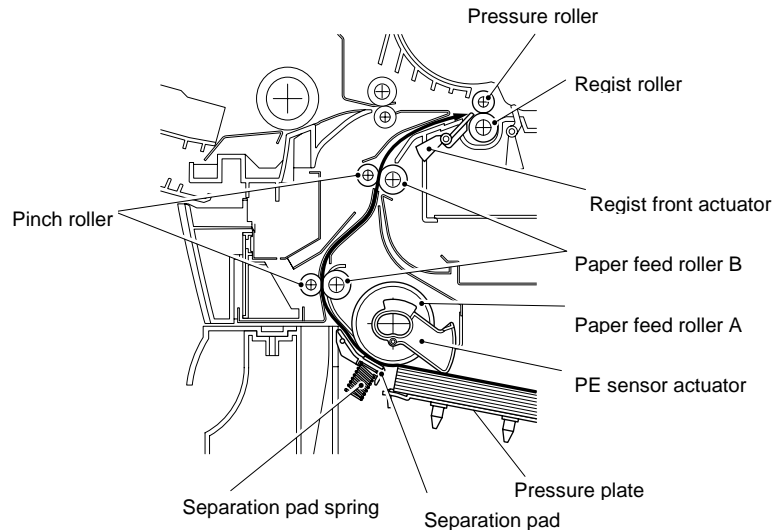


Fig. 3-6

The paper is gripped between the paper feed roller A and the separation pad and separated into individual sheets.

The paper feed roller A is directly connected to the clutch mechanism, whose rotation is stopped by the stopper arm. When the pick-up solenoid is activated, the clutch mechanism is engaged by the solenoid action and the paper feed roller A is driven. The paper drawn out of the tray by the paper feed roller A, pushes against the regist front actuator lever and the paper top position or absence of paper is detected by sensing the motion of the lever.

### 2.2.2 Paper registration

After the paper top position is detected by the regist front actuator, the paper, separated into individual sheets by the paper feed roller A, 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 solenoid is turned off, the regist roller starts turning, and the paper is fed to the transfer block in the toner cartridge.

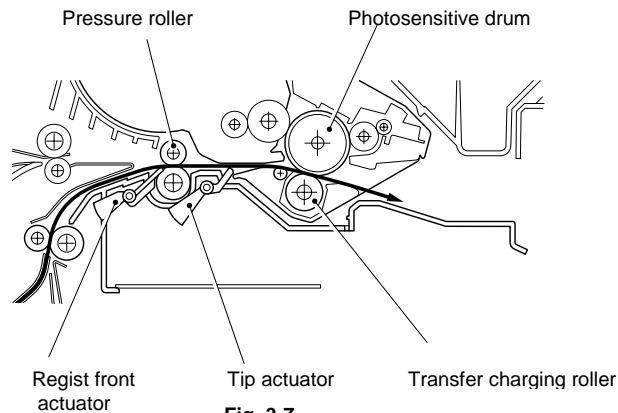


Fig. 3-7

The tip actuator in the path from the pressure roller to the transfer charging roller controls the first print position on the paper.

### 2.2.3 Paper eject

After the printing image on the photosensitive drum is transferred onto the paper, the paper is then fed to the fixing unit to fix the unfixed toner onto the paper.

Afterwards, the paper is ejected from the fixing unit by the first eject roller A in the fixing unit. The FU actuator detects whether the paper is ejected correctly or not.

After the paper exits from the eject roller A, the paper is directed by the back cover and ejected face down into the top output tray through the eject roller B. If the back cover is open, the paper is ejected face up straight to the back of the printer.

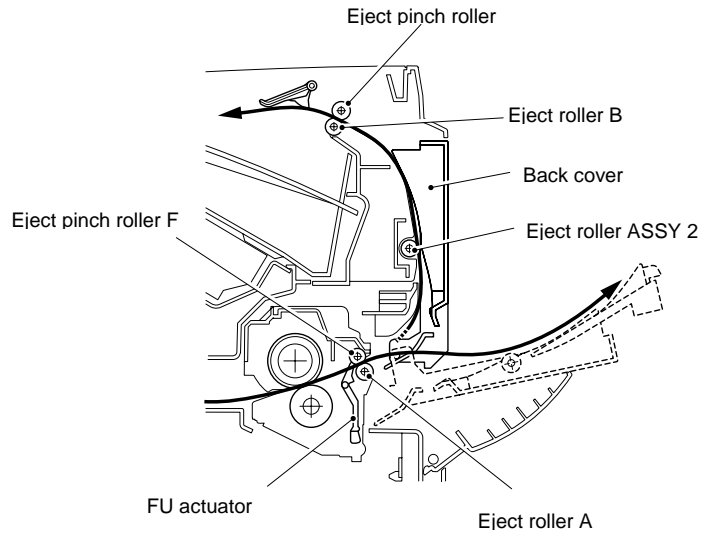


Fig. 3-8

## 2.3 Sensors

### 2.3.1 Cover open sensor

Detects opening and closing of the front cover.

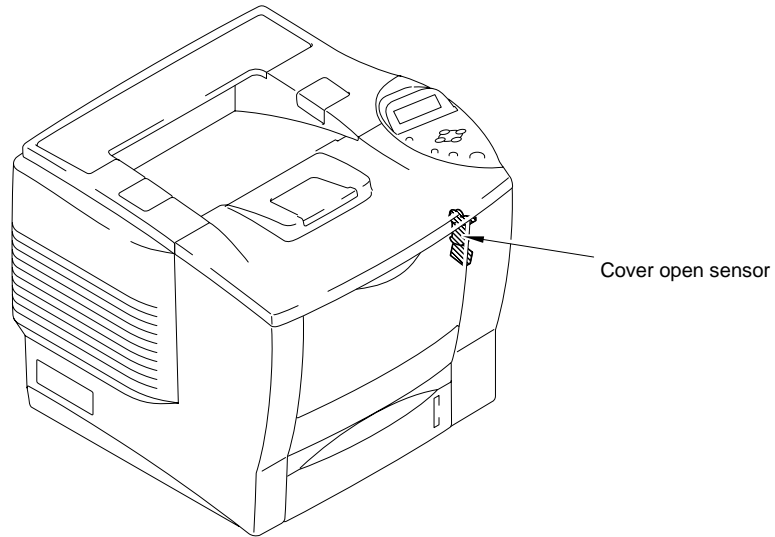


Fig. 3-9

### 2.3.2 Multi paper tray paper empty sensor

Detects if there is paper in the MP tray.

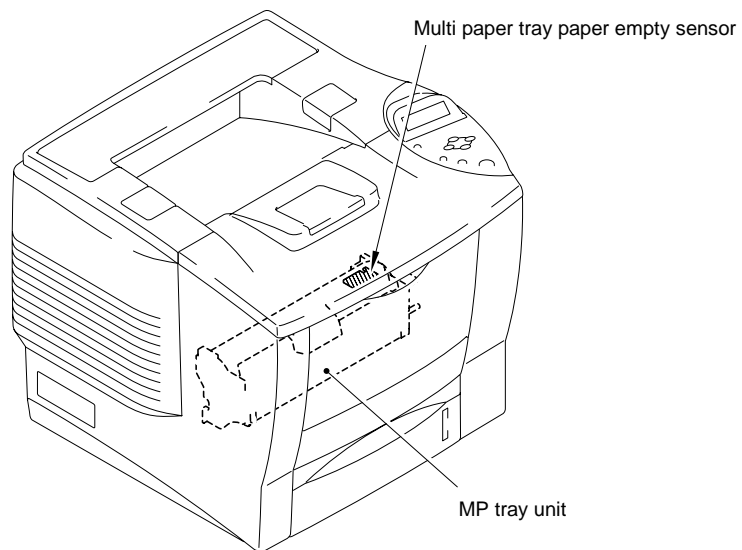


Fig. 3-10

### 2.3.3 Tray paper empty sensor

Detects if there is paper in the paper tray.

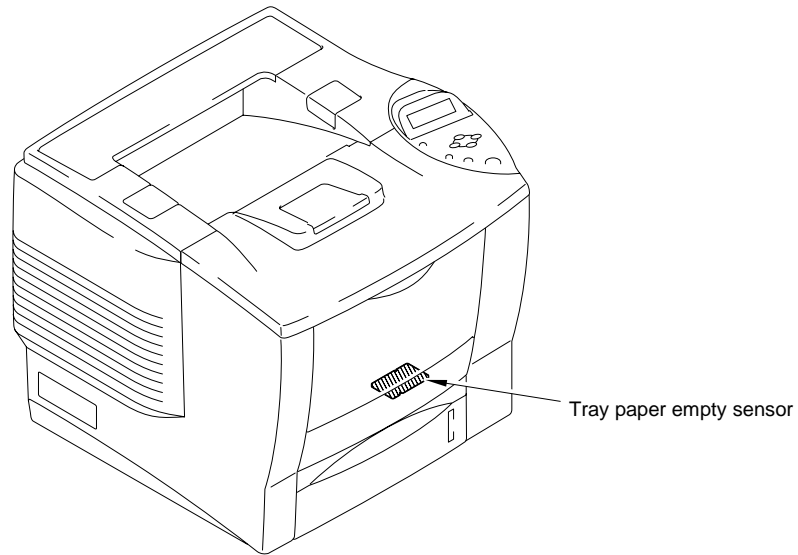


Fig. 3-11

### 2.3.4 Face up open sensor / Fuser exit sensor

Detects opening and closing of the back cover. It also detects if there is any jammed paper in the fixing unit.

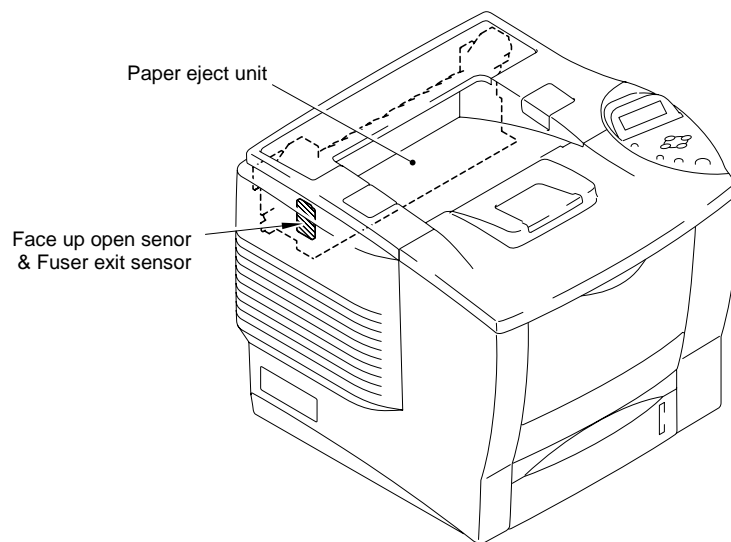


Fig. 3-12

### 2.3.5 Full stack sensor

Detects if paper that is output onto the face down output tray exceeds 500 (For normal 80g/m<sup>2</sup> paper).

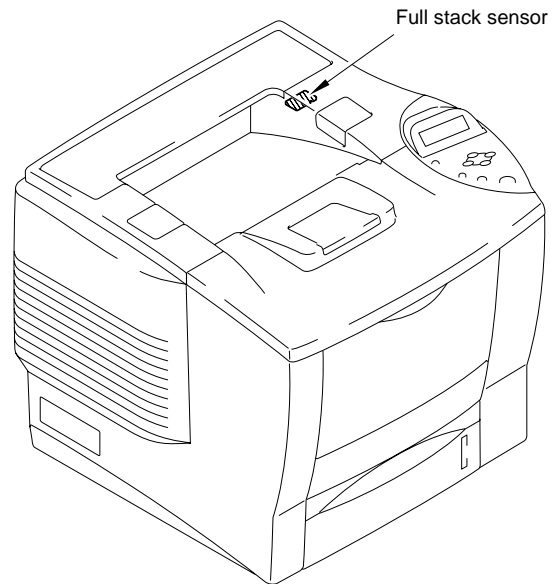


Fig. 3-13

### 2.3.6 Eject sensor

Detects if paper is ejected from the fixing unit.

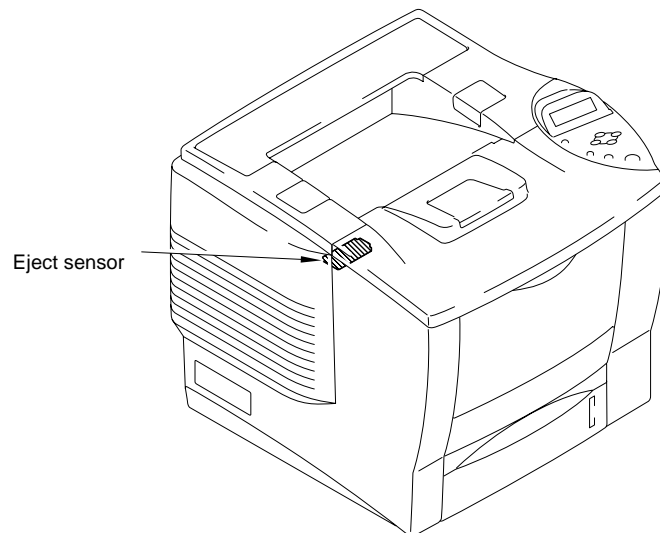


Fig. 3-14

### 2.3.7 Paper size sensor / Tray ID sensor

Detects if the correct size of paper and the correct tray ID is selected.

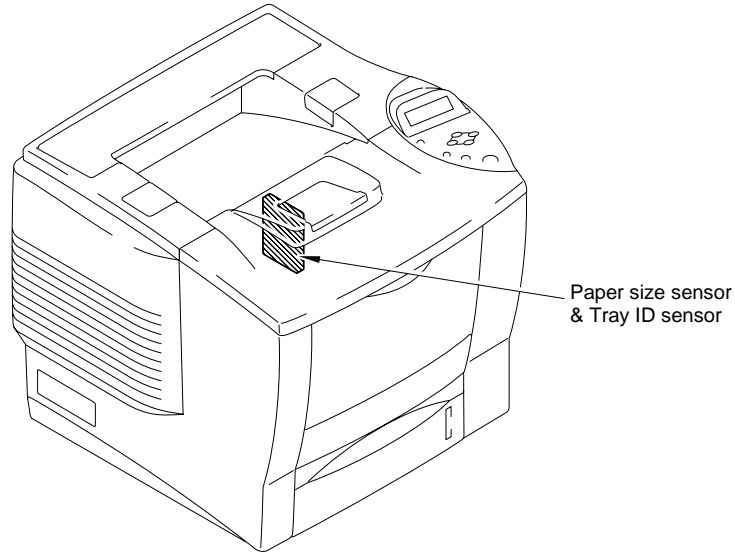


Fig. 3-15

### 2.3.8 Toner sensors

Detects if there is toner in the toner cartridge. The toner sensor on the left side emits light through the window on the left side of the toner cartridge, then the toner sensor on the right side receives it when the toner is low. They also detect whether or not the drum unit is installed. (The toner cartridge is installed in the drum unit.)

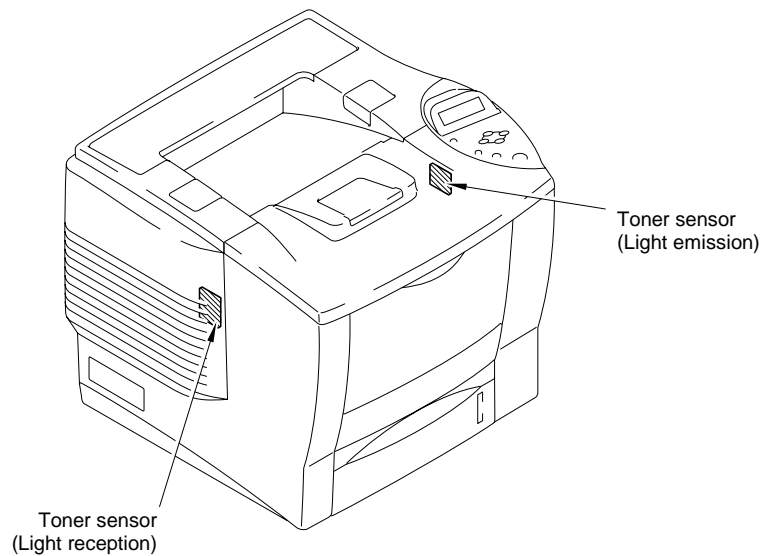


Fig. 3-16

## **2.4 Drum Unit**

### **2.4.1 Photosensitive drum**

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

### **2.4.2 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.

### **2.4.3 Transfer roller**

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

### **2.4.4 Cleaner**

Removes the toner and the paper dust or dirt on the surface of the photosensitive drum.

## **2.5 Toner Cartridge**

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



## 2.6 Print Process

### 2.6.1 Charging

The drum is charged to approximately 975V 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 photosensitive drum is 100V.

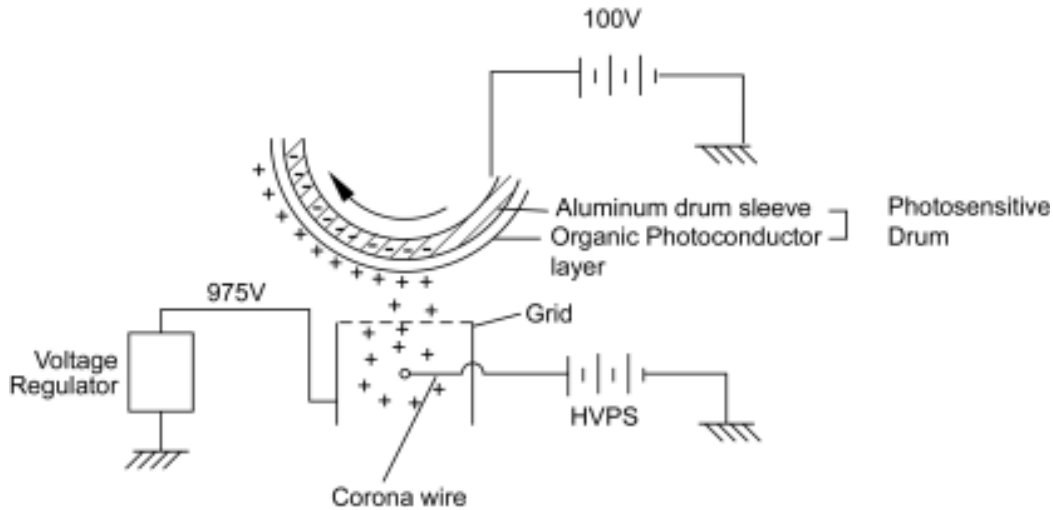


Fig. 3-17

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.

### 2.6.2 Exposure stage

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

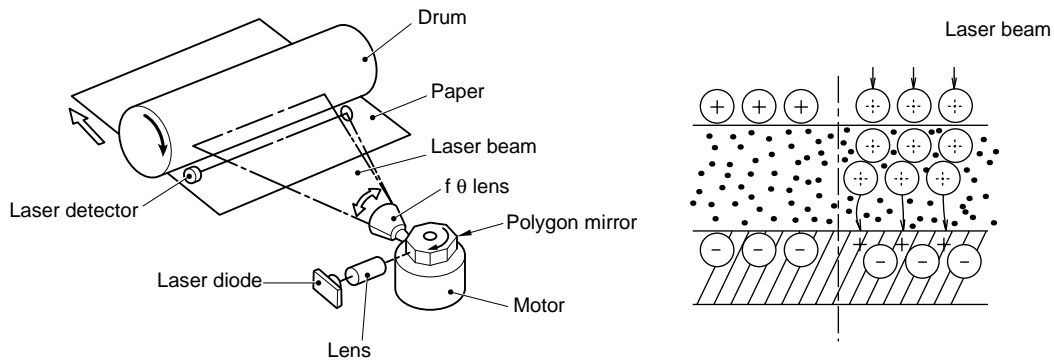


Fig. 3-18

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.

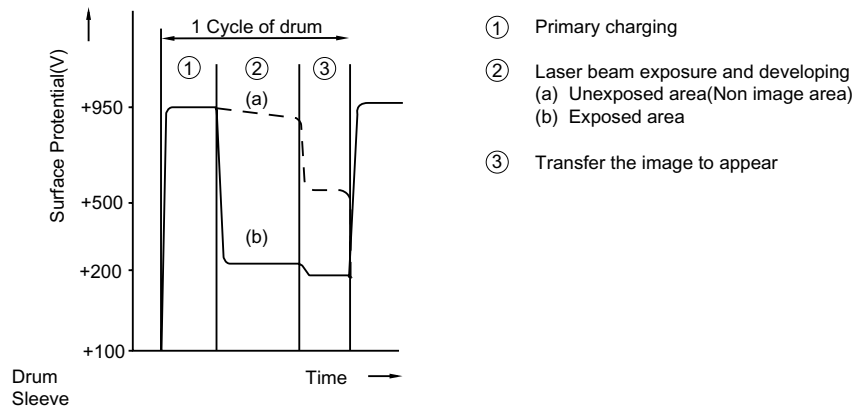


Fig. 3-19

### 2.6.3 Developing

Developing causes the toner to be attracted to the electrostatic image on the drum so as to transform it into a visible image.

The developer consists of a non-magnetic toner. The development roller is made of conductive rubber and the supply roller (which is also made of conductive sponge) rotate against each other. The toner is charged and carried from the supply roller to the development roller. The toner adheres to the development roller and is conveyed to the photosensitive drum at an even thickness controlled by the blade. The toner is nipped between the development roller and the drum and developed onto the latent image on the drum. The electrostatic field between the drum and the development roller, which is DC-biased from the high-voltage power supply, creates the electrostatic potential to attract toner particles from the development roller to the latent image area on the drum surface.

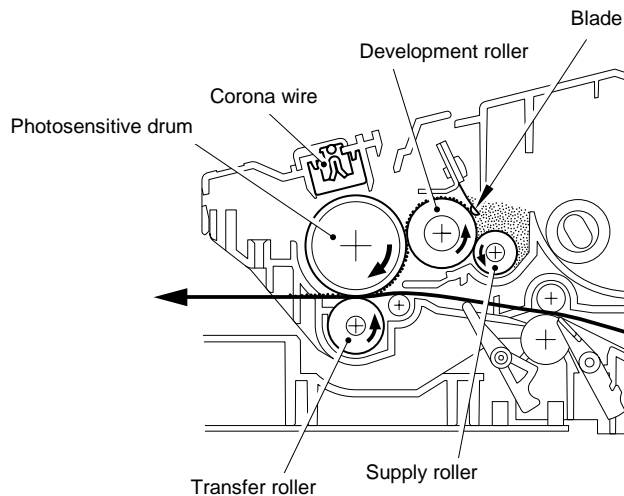


Fig. 3-20

### 2.6.4 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 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 photo-conductive drum.

### 2.6.5 Cleaning

If the toner is not transferred onto the paper perfectly, it is possible that there may be residual toner and the paper dust on the photo-conductive drum.

The residual toner is drawn to the cleaning roller by charging lower voltage compared to the electric potential of the drum surface.

The residual paper dust is drawn to the cleaning roller by charging higher voltage compared to the electric potential of the drum surface. At this time, the cleaning shaft is charged 100V higher voltage compared to the voltage charged to the cleaning roller. The paper dust drawn to the cleaning roller moves to the cleaning shaft, and it is collected by the sponge. The paper dust collected by the sponge is kept into the front part of the drum unit.

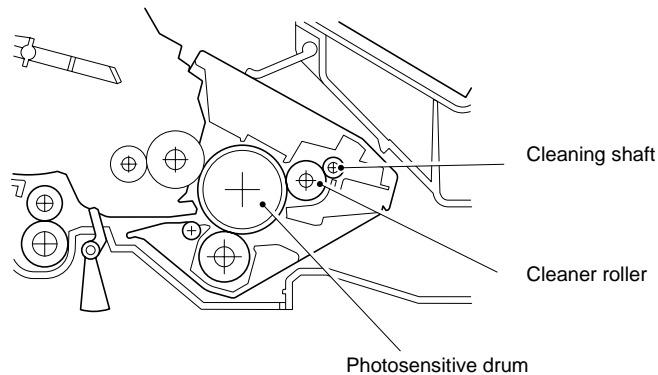


Fig.3-21

### 2.6.6 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 fixing unit.

The heat roller of the fixing unit is heated by two heaters. (two halogen lamps)

One of the heaters (center heater) mainly heats the central part of the heat roller, and the other heater (side heater) mainly heats the outer edges of the heat roller. The heatroller temperature is detected by two corresponding thermistors (center thermistor, side thermistor).

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.

These two heaters are controlled independently to keep the heat roller temperature uniform through the longitudinal direction of the heat roller regardless of the paper width.

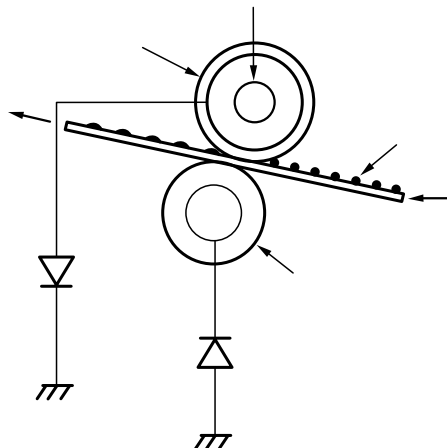


Fig. 3-22

(1) Longitudinal cross-section of heat roller

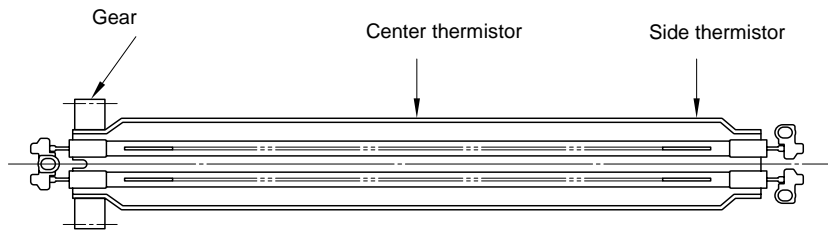


Fig.3-23

(2) Longitudinal power distribution of heaters

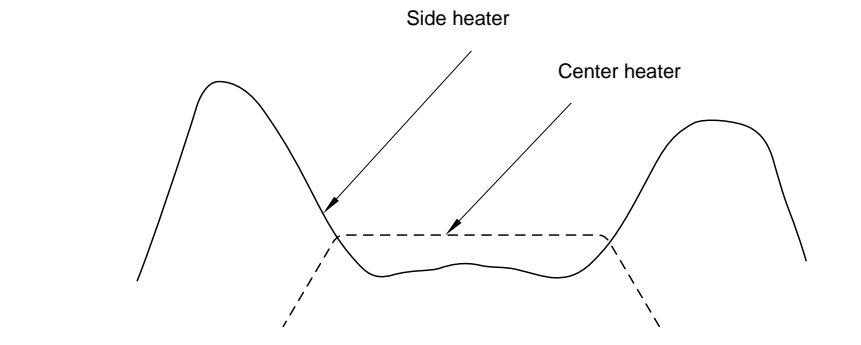


Fig.3-24

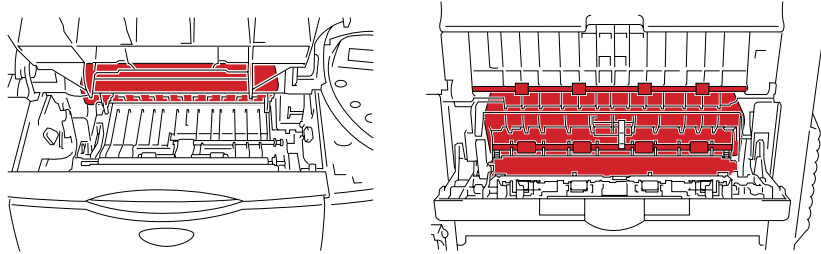
## CHAPTER 4 DISASSEMBLY AND RE-ASSEMBLY

### 1. SAFETY PRECAUTIONS

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

#### **WARNING**

- (1) *Always turn off the power switch and unplug the power cord from the power outlet before accessing any parts inside the printer.*
- (2) *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) *Before handling any PCBs, touch a metal portion of the equipment to discharge any static electricity charge on your body, or the electronic parts or components may be damaged.*
- (5) *When transporting PCBs, be sure to wrap them in the correct protective packaging.*
- (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: 70N • cm
    - M4: 80N • cm
  - TAPTITE, CUP S
    - M3: 80N • cm
  - SCREW
    - M3: 70N • cm
    - M4: 80N • cm
- (7) *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.*
- (8) *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.*

## Tightening Torque List

Part code	Screw type	Q'ty	Location	Tightening torque N.m (kgf.cm)	Loosening torque N.m (kgf.cm)
<b>MAIN PCB</b>					
087320616	Tapitite, cup S M3x6	4	Main PCB	0.8±0.1(8.2±1.0)	Min. 0.35(3.6)
UL8258001	Bolt	2	Serial port	0.7±0.1(7.1±1.0)	Min. 0.2(2.0)
UK1529001	Screw, pan M3x6	2	Parallel port	0.7±0.1(7.1±1.0)	Min. 0.2(2.0)
<b>ENGINE PCB</b>					
087320616	Tapitite, cup S M3x6	2	ENGINE PCB	0.8±0.1(8.2±1.0)	Min. 0.4(4.1)
<b>HIGH-VOLTAGE</b>					
087320616	Tapitite, cup S M3x6	1	HVPS	0.8±0.1(8.2±1.0)	Min. 0.4(4.1)
085411015	Tapitite, bind B M4x10	2	HVPS	1.0±0.1(10.2±1.0)	Min. 0.35(3.6)
<b>LOW-VOLTAGE</b>					
084320815	Screw, Flat S M3x8	2	Inlet	0.8±0.1(8.2±1.0)	Min. 0.4(4.1)
0A5350606	Screw, PAN (S/P) Washer) M3.5x6	1	FG harness	0.8±0.1(8.2±1.0)	Min. 0.4(4.1)
087320616	Tapitite, cup S M3x6	3	Inlet(1) Power supply switch(2)	0.8±0.1(8.2±1.0)	Min. 0.4(4.1)
<b>COVER</b>					
087320816	Tapitite, cup S M3x8	14	Top cover(4) Front cover(4) Side cover L(4), Side cover R(2)	0.8±0.1(8.2±1.0)	Min. 0.4(4.1)
<b>SW PANEL</b>					
LJ0097001	Shoulder screw	2	Rear cover	0.8±0.1(8.2±1.0)	Min. 0.35(3.6)
087310816	Tapitite, cup B M3x6	5	Panel rear cover LCD holder	0.4±0.1(4.1±1.0)	Min. 0.2(2.0)
087320816	Tapitite, cup S M3x8	1	Switch panel unit	0.8±0.1(8.2±1.0)	Min. 0.4(4.1)
087311016	Tapitite, cup B M3x10	2	Panel holder	0.8±0.1(8.2±1.0)	Min. 0.3(3.1)
087311016	Tapitite, cup B M3x10	1	Switch panel unit	0.5±0.1(5.1±1.0)	Min. 0.2(2.0)
<b>PAPER EJECT</b>					
087310815	Tapitite, cup B M3x8	1	Rear tray sensor	0.7±0.1(7.1±1.0)	Min. 0.3(3.1)
085310815	Tapitite, bind B M3x8	2	Eject roller ground plate	0.7±0.1(7.1±1.0)	Min. 0.3(3.1)
087320816	Tapitite, cup S M3x8	2	Paper eject frame	0.8±0.1(8.2±1.0)	Min. 0.4(4.1)
<b>PAPER POWDER REMOVAL</b>					
085310815	Tapitite, bind B M3x8	6	Front cover 2	0.5±0.1(5.1±1.0)	Min. 0.2(2.0)
087321015	Tapitite, cup S M3x10	2	Front cover 2	0.8±0.1(8.2±1.0)	Min. 0.4(4.1)
087320816	Tapitite, cup S M3x8	2	Front cover 2	0.8±0.1(8.2±1.0)	Min. 0.4(4.1)
<b>PAPER EJECT DRIVE</b>					
087320616	Tapitite, cup S M3x6	3	Ejection gear plate B(2), Ejection gear cover (1)	0.8±0.1(8.2±1.0)	Min. 0.4(4.1)
<b>PCB ACCESSORIES</b>					
087320616	Tapitite, cup S M3x6	8	Main shield plate (4) Engine shield plate (4)	0.8±0.1(8.2±1.0)	Min. 0.35(3.6)
087320616	Tapitite, cup S M3x6	3	Main shield cover	0.4±0.1(4.1±1.0)	Min. 0.1(1.0)
LJ0748001	Tapitite, pan (S/P washer) S M3x8	4	Base plate	0.8±0.1(8.2±1.0)	Min. 0.3(3.1)

FRAME					
087310816	Tapite, cup B M3x6	6	DEV pressure point holder L,R, Guide electrode	0.7±0.1(7.1±1.0)	Min. 0.3(3.1)
087310816	Tapite, cup B M3x6	7	Paper feed ground plate, Ground plate, Varistor assy, Chute plate, Electrode plate TR	0.7±0.1(7.1±1.0)	Min. 0.2(2.0)
087311016	Tapite, cup B M3x10	9	Process guide L,R	0.5±0.1(5.1±1.0)	Min. 0.2(2.0)
		2	Paper feed guide, Regist chute	0.7±0.1(7.1±1.0)	
085310815	Tapite, bind B M3x8	2	Fuse electrode	0.7±0.1(7.1±1.0)	Min. 0.3(3.1)
UF9823001	Shoulder screw	2	Front guide	0.7±0.1(7.1±1.0)	Min. 0.25(2.6)
LJ0822001	Tapite, cup S M3x4	3	Size SW spring	0.8±0.1(8.2±1.0)	Min. 0.4(4.1)
087411015	Tapite, cup B M4x10	8	Tray guide LF, LR, RF, RR	0.9±0.1(9.2±1.0)	Min. 0.3(3.1)
087320616	Tapite, cup S M3x6	63	Front plate1(4) Bottom plate(8) Fan holder(2) Lock plate(4) Stiffner plate(6) Paper feed guide1(4), Scanner plate(8), Power supply plate(8), Drive release holder(2), Ejection gear plate(4), Rear senso(1), Left side PCB assy(2), Ozone duct(2), Sub duct(3) Electrode(1), Release sensor(1) Size SW PCB(1), Front plate 2(2) Interlock SW	0.8±0.1(8.2±1.0)	Min. 0.3(3.1)
LJ0941001	Screw, bind P Tite 2.3x16	1		0.23±0.03 (2.3±0.3)	Min. 0.05(0.5)
LJ0670001	Tapite, pan B M3x35	2	Fan motor	0.7±0.1(7.1±1.0)	Min. 0.25(2.6)
085411015	Tapite, bind B M4x10	2	LT connector holder	0.7±0.1(7.1±1.0)	Min. 0.3(3.1)
002300616	Screw, pan M3x6	2	Option blind plate	0.8±0.1(8.2±1.0)	Min. 0.3(3.1)
085320616	Tapite, bind S M3x6	2	CF slot	0.7±0.1(7.1±1.0)	Min. 0.3(3.1)
087320816	Tapite, cup S M3x8	2	Rear plate	0.8±0.1(8.2±1.0)	Min. 0.3(3.1)

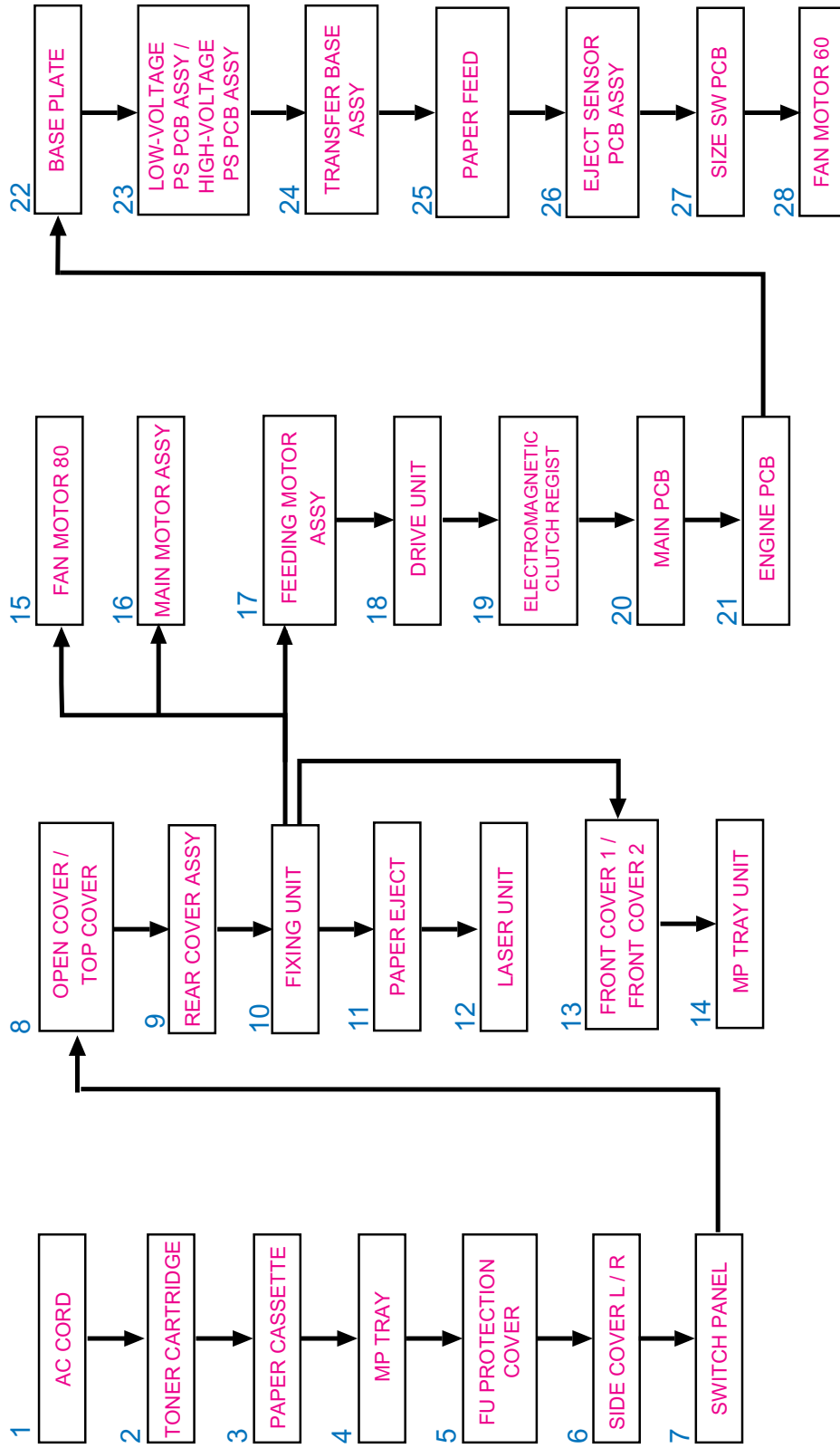


CHAPTER 4 DISASSEMBLY AND RE-ASSEMBLY

PAPER DRIVE						
087320616	Taprite, cup S M3x6	2	Developing gear plate assy	0.8±0.1(8.2±1.0)	Min. 0.4(4.1)	
087320616	Taprite, cup S M3x6	4	Main motor	0.8±0.1(8.2±1.0)	Min. 0.4(4.1)	
087320616	Taprite, cup S M3x6	5	Main gear plate	0.8±0.1(8.2±1.0)	Min. 0.3(3.1)	
U11776001	Screw, flanged M3x3.5	1	Solenoid assy	0.8±0.1(8.2±1.0)	Min. 0.3(3.1)	
087320616	Taprite, cup S M3x6	2	Feeding motor Assy	0.8±0.1(8.2±1.0)	Min. 0.4(4.1)	
087320616	Taprite, cup S M3x6	5	Feeding gear plate assy	0.8±0.1(8.2±1.0)	Min. 0.3(3.1)	
087320616	Taprite, cup S M3x6	2	Feeding motor assy (upper)	0.8±0.1(8.2±1.0)	Min. 0.4(4.1)	
087320616	Taprite, cup S M3x6	3	Separating gear plate assy	0.8±0.1(8.2±1.0)	Min. 0.3(3.1)	
087320616	Taprite, cup S M3x6	12	Feeding guide 2(4), 3(2), 4(2), Paper feed guide front	0.8±0.1(8.2±1.0)	Min. 0.35(3.6)	
PAPER FEED						
MP TRAY						
085310815	Taprite, bind B M3x8	5	Roller frame MP, Solenoind holder	0.7±0.1(7.1±1.0)	Min. 0.3(3.1)	
U11776001	Screw, flanged M3x3.5	1	Solenoid assy MP	0.8±0.1(8.2±1.0)	Min. 0.4(4.1)	
085320816	Taprite, bind S M3x8	4	MP tray unit	0.8±0.1(8.2±1.0)	Min. 0.35(3.6)	
087310615	Taprite, cup B M3x6	1	Side guide gear	0.25±0.05 (2.6±0.5)	Min. 0.1(1.0)	
PAPER TRAY						
LJ1506001	Taprite, B 3x8	2	Side guide R plate	0.7±0.1(7.1±1.0)	Min. 0.3(3.1)	
083310815	Taprite, pan B M3x8	1	Side guide R pawl	0.7±0.1(7.1±1.0)	Min. 0.3(3.1)	
UU0552001	Taprite, cup B 3x8	1	Side guide gear	0.3±0.1(3.1±1.0)	Min. 0.1(1.0)	
083310815	Taprite, pan B M3x8	1	Rear guide knob	0.7±0.1(7.1±1.0)	Min. 0.3(3.1)	
085411015	Taprite, bind B M4x10	6	EX rear tray, Paper tray cover	0.5±0.1(5.1±1.0)	Min. 0.25(2.6)	
UU0552001	Taprite, cup B 3x8	4	Extension, Side guide rack	0.5±0.1(5.1±1.0)	Min. 0.2(2.0)	
087310615	Taprite, cup B M3x6	1	Side guide rack	0.4±0.1(4.1±1.0)	Min. 0.2(2.0)	
087321615	Taprite, cup S M3x16	4	Cam detection guide plate Scanner unit	0.8±0.1(8.2±1.0)	Min. 0.3(3.1)	

FIXING									
087311016	Taprite, cup B M3x10	7	Fuse plate RA(1), Fuse plate MA(2), Fuse plate LA(1) Heater harness(1), Regulator plate(2)	0.7±0.1(7.1±1.0)	Min. 0.2(2.0)				
LJ1353001	Screw, pan (washer) M3x6	3	Fixing heater C, S	0.5±0.05(5.1±0.5)	Min. 0.2(2.0)				
087270515	Taprite, cup B M2.6x5	2	Separation guide	0.2±0.05(2.0±0.5)	Min. 0.05(0.5)				
087310615	Taprite, cup B M3x6	2	Cleaner roller plate	0.35±0.05(3.6±0.5)	Min. 0.15(1.5)				
087311415	Taprite, cup B M3x14	2	Fuser frame upper, lower	0.7±0.1(7.1±1.0)	Min. 0.2(2.0)				
087312015	Taprite, cup B M3x20	2	Fuser frame upper, lower	0.7±0.1(7.1±1.0)	Min. 0.2(2.0)				
087311016	Taprite, cup B M3x10	2	Switching H assy L, R	0.7±0.1(7.1±1.0)	Min. 0.2(2.0)				
087320616	Taprite, cup S M3x6	1	Eject sensor PCB assy	0.6±0.05(6.1±0.5)	Min. 0.25(2.6)				
085311215	Taprite, bind B M3x12	2	Thermistor AMC, AMS	0.7±0.1(7.1±1.0)	Min. 0.2(2.0)				

## 2. DISASSEMBLY FLOW



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### 3. DISASSEMBLY PROCEDURE

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#### 3.1 AC Cord

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

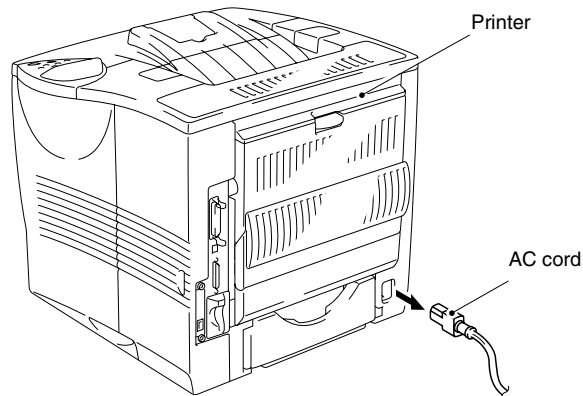


Fig. 4-1

#### 3.2 Drum unit assembly

- (1) Open the open cover and remove the drum unit assembly from the printer.

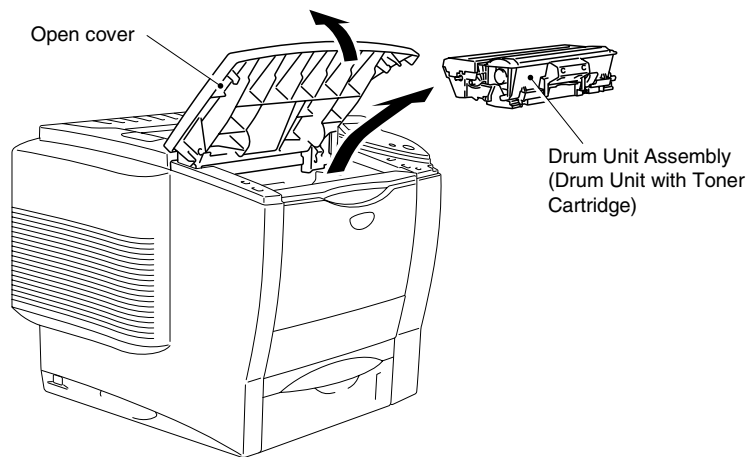


Fig. 4-2

### 3.3 Paper Tray

- (1) Close the open cover, pull out the paper tray unit from the printer and remove the paper from the paper tray unit.

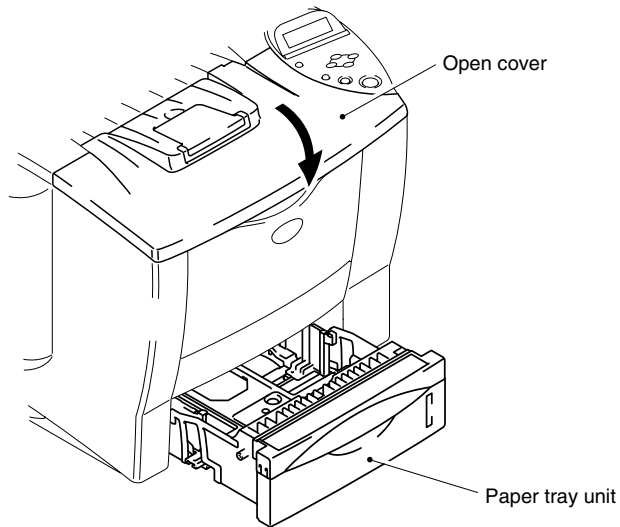


Fig. 4-3

- (2) Push the hooks of the separation pad ASSY inwards to release them and stand the separation pad ASSY. Remove the separation pad spring, release the two pins of the separation pad ASSY and remove the separation pad ASSY.

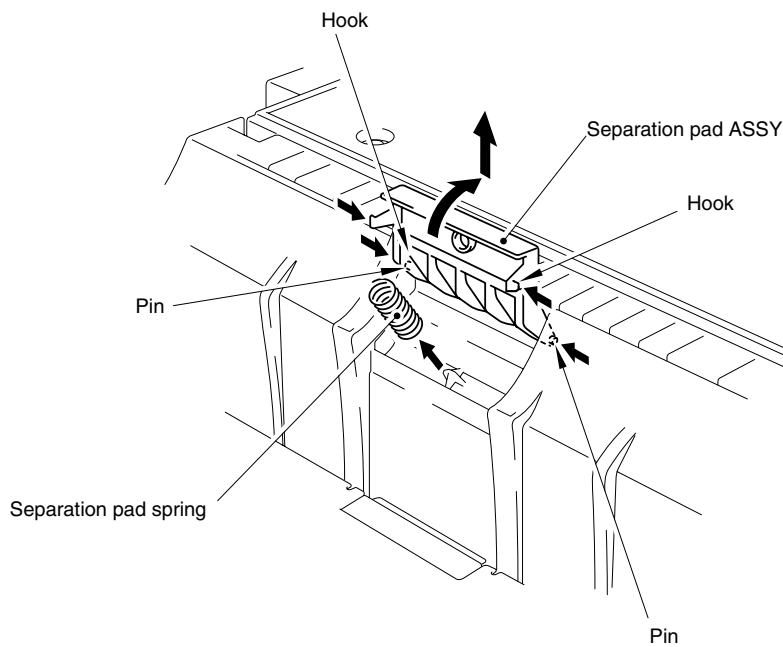


Fig. 4-4

- (3) Peel the paper tray label. Remove the two bind B M4x10 Taptite screws, release the hooks at the right and left hand sides and remove the paper tray cover.

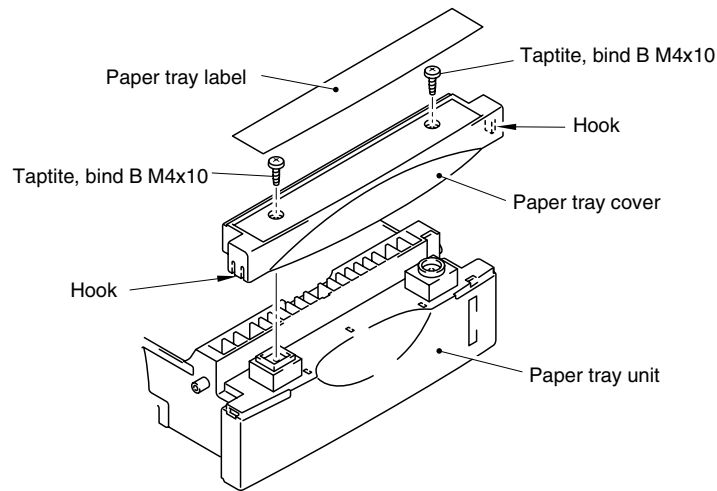


Fig. 4-5

- (4) Pull the supporter stoppers L at the right and left hand sides toward you and release the plate unit.
- (5) Turn the paper tray unit upside down and remove the two cup B 3x8 Taptite screws of the side guide rack 2 at the right and left hand sides. Release the hooks of the side guide R ASSY and the side guide L from the side guide rack 2.

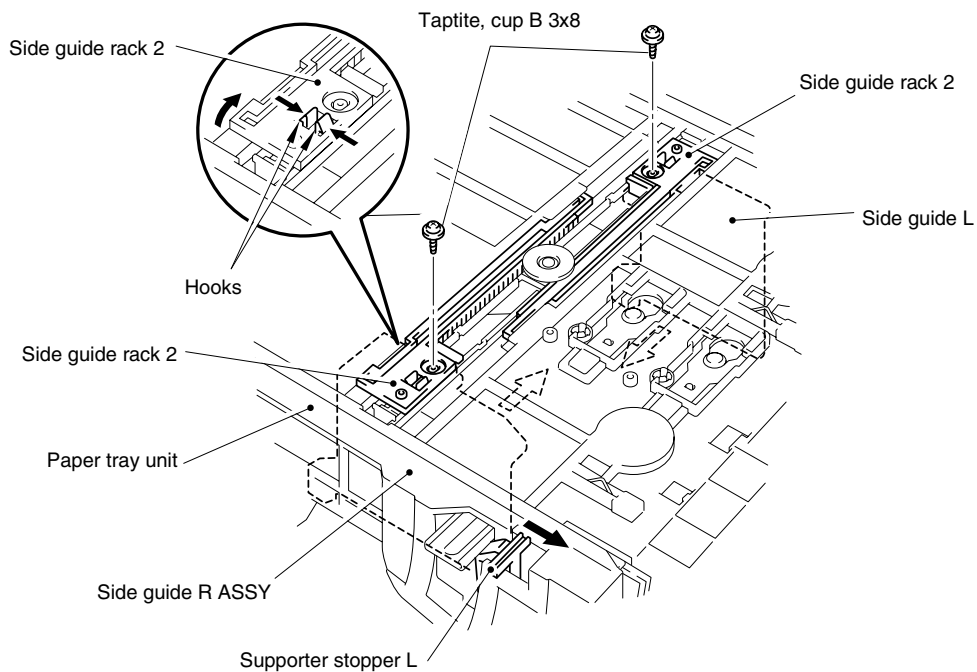


Fig. 4-6

- (6) Place the paper tray unit the correct way up and slide the side guide R ASSY and the side guide L to the center. Remove the side guide R ASSY and the side guide L from the paper tray.

**NOTE:**

When replacing the side guide R ASSY, be sure to replace the size detection cam also. Refer to (16) in this section.

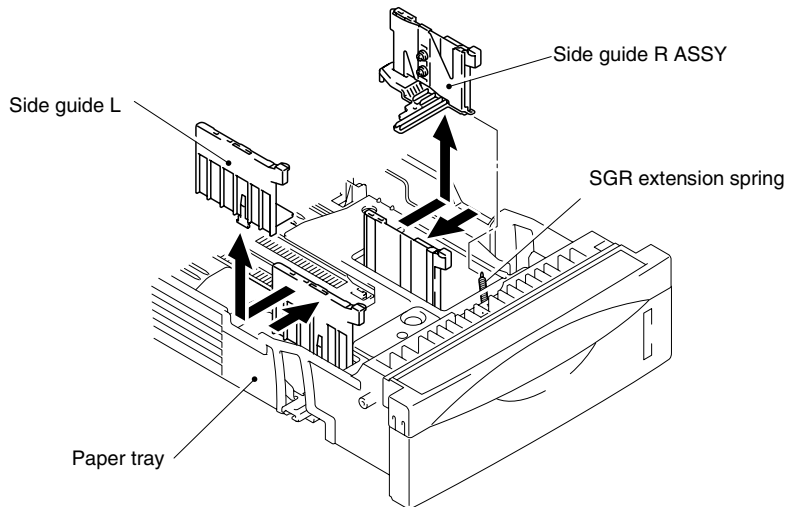


Fig. 4-7

- (7) Remove the four bind B M4x10 Taptite screws from the EX rear tray guides at the right and left hand sides of the paper tray. While pushing up the boss of the EX rear tray guide on the back of the paper tray, slide the EX rear tray guide and EX rear tray together backwards in the tray to remove them. Since the plate unit also is released at the same time, unhook the hooks at the right and left hand sides by pulling the paper tray frame outwards to remove the plate unit from the paper tray unit.

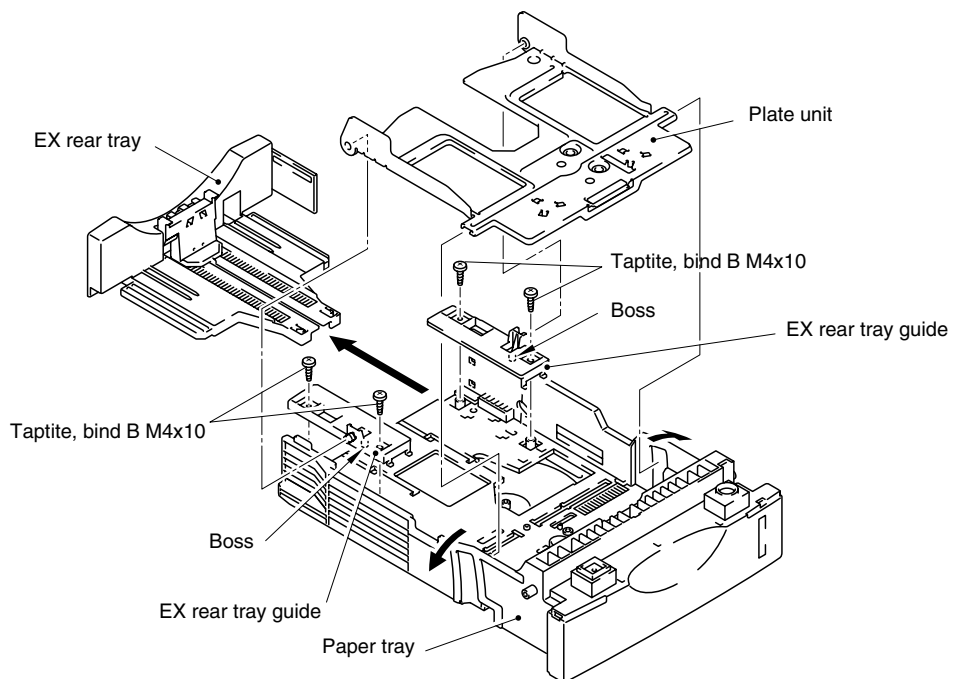
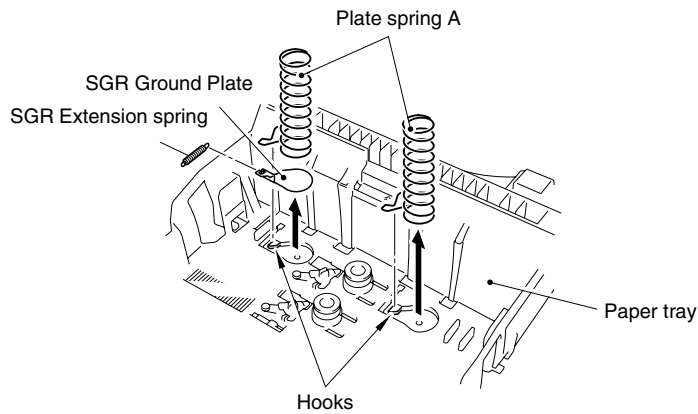


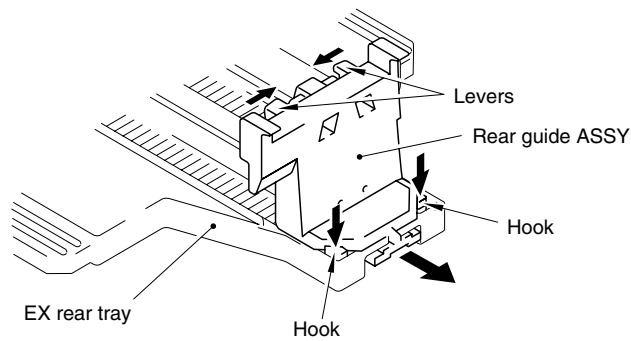
Fig. 4-8

- (8) Unhook the two plate springs A from the hooks of the tray to remove them from the paper tray.
- (9) Remove the SGR ground plate from the paper tray. Then remove the SGR extension spring from the SGR ground plate.



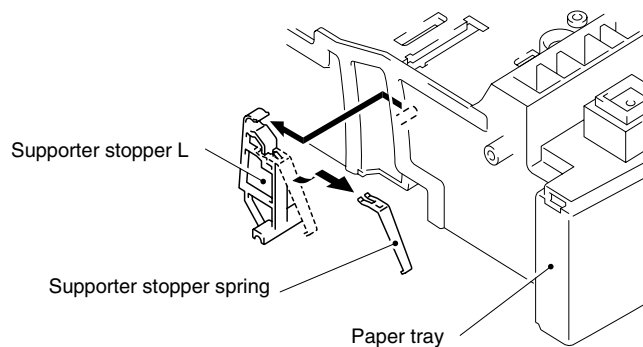
**Fig. 4-9**

- (10) Slide the rear guide ASSY on the EX rear tray by pushing the levers inwards and remove the rear guide ASSY.



**Fig. 4-10**

- (11) Unhook the catches from the shaft of the supporter stoppers L at both sides by pushing the catches with a screwdriver and remove the supporter stoppers L. Then remove the supporter stopper spring from the boss of the supporter stopper L by pushing the spring upwards.



**Fig. 4-11**



- (12) Turn the paper tray upside down. Remove the cup B 3x8 Taptite screw to remove the side guide gear.
- (13) Remove the two side guide rack 2 from the paper tray.

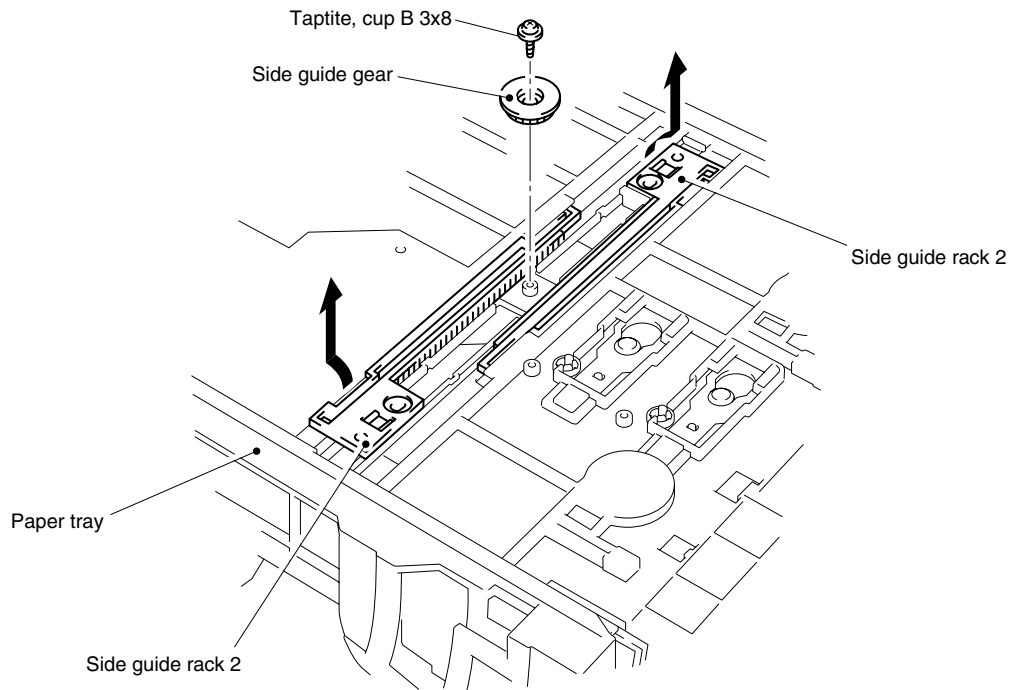


Fig. 4-12

- (14) Pull the edge of the paper indicator outwards and pull the paper indicator upwards.

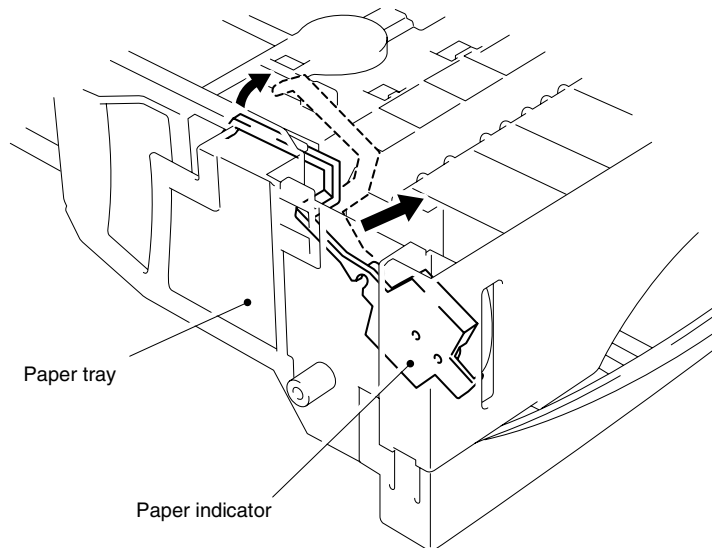
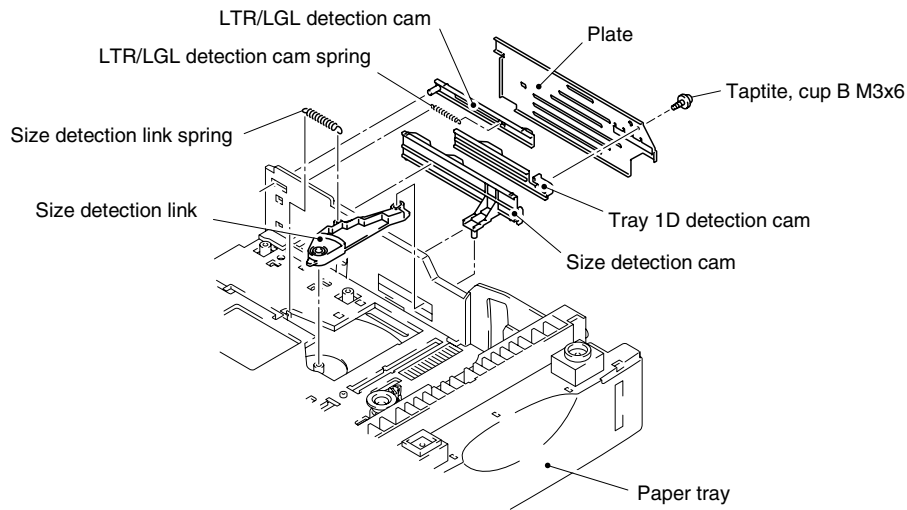


Fig. 4-13

- (15) Remove the cup B M3x6 Taptite screw from the right-hand side of the tray to remove the plate.
- (16) Remove the size detection cam, tray 1D detection cam, LTR/LGL detection cam, and LTR/LGL detection cam spring.
- (17) Remove the size detection link spring. Then remove the size detection link.

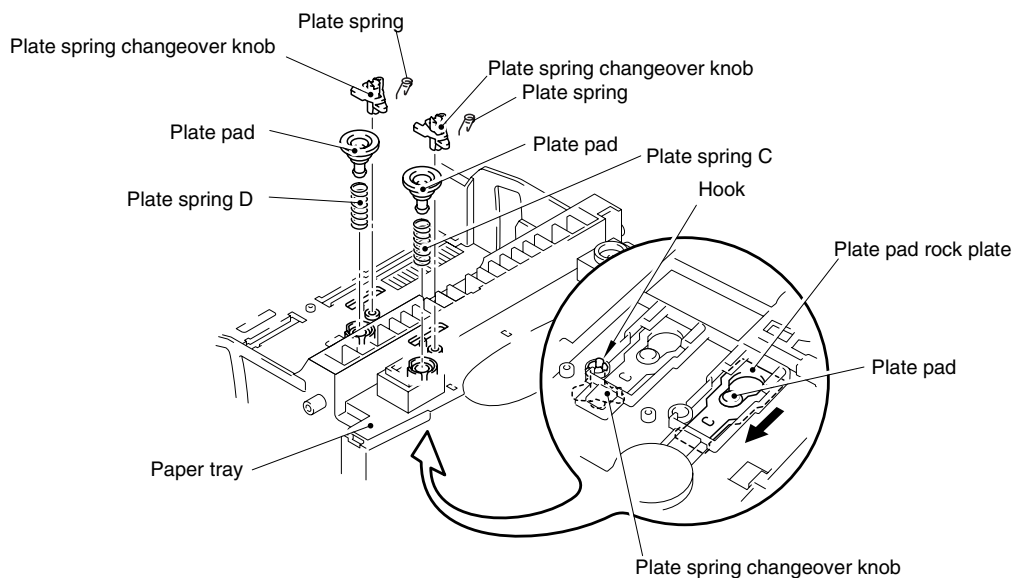
**NOTE:**

*When replacing the size detection cam, be sure to replace the side guide R ASSY also. Refer to (6) in this section.*



**Fig. 4-14**

- (18) Turn the paper tray upside down and remove the plate pad, the plate spring C and the plate spring D by sliding the plate pad rock plate.
- (19) Push the hooks of the two plate spring changeover knobs, and remove the knob and the plate spring. Then remove the plate spring from the knob.



**Fig. 4-15**

### 3.4 MP Tray

- (1) Open the tray cover ASSY MP. Release the bosses at the right and left hand sides of the tray ASSY MP by bending the tray cover ASSY MP slightly and pull out the tray ASSY MP in the direction of the arrow as shown in the figure below.

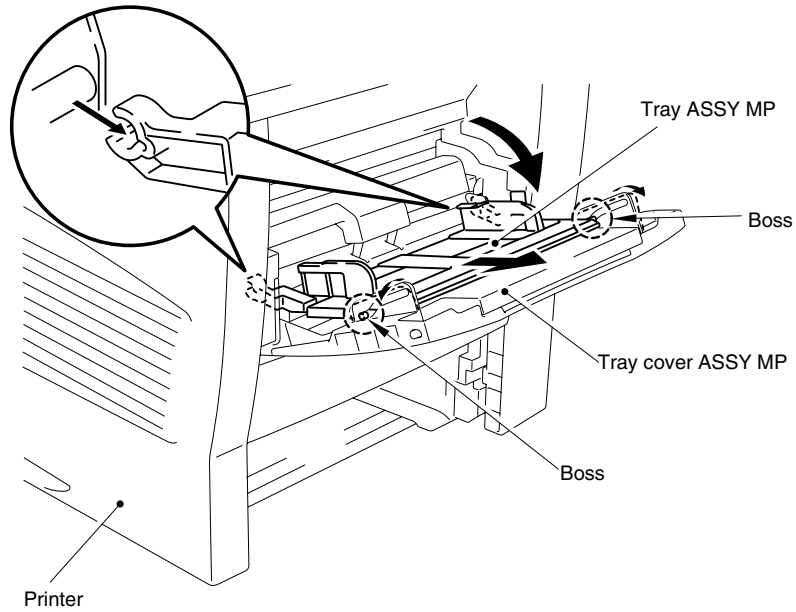


Fig. 4-16

- (2) Pull out the tray cover ASSY MP in the direction of the arrow as shown in the figure below.

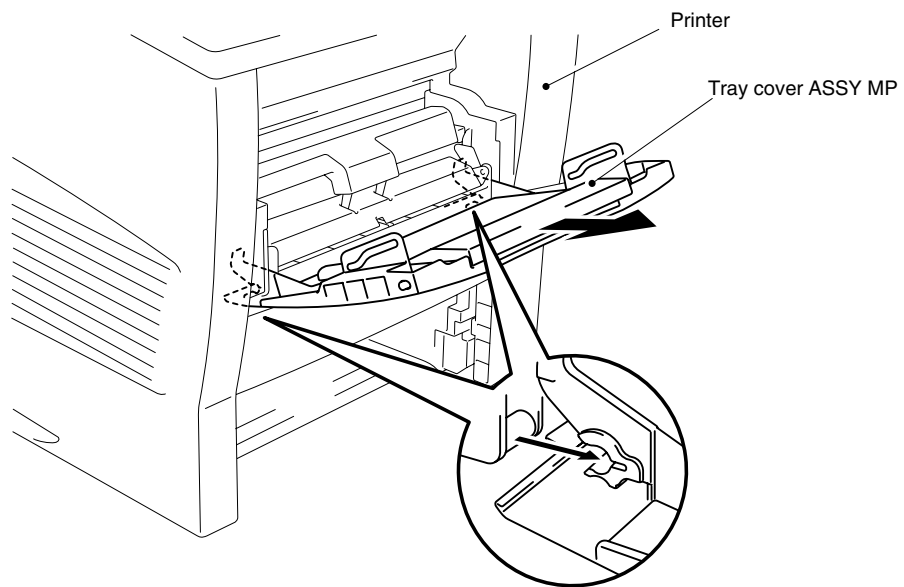


Fig. 4-17

(3) Remove the two tray cover rock springs from the tray cover ASSY MP.

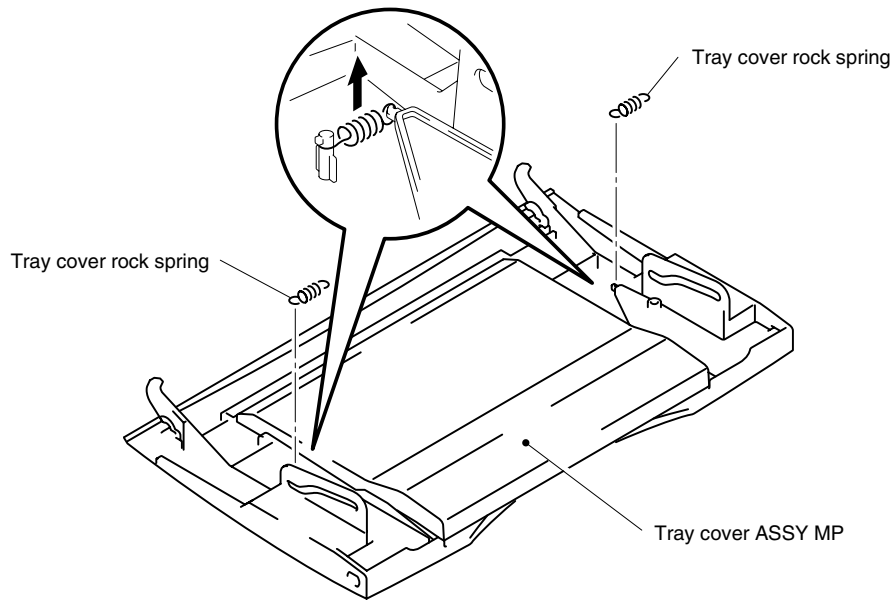


Fig. 4-18

### 3.5 FU Protection Cover

- (1) Lift up the bottom of the FU protection cover lower and release the two hooks on the back of the FU protection cover upper.
- (2) Pull the FU protection cover toward you.

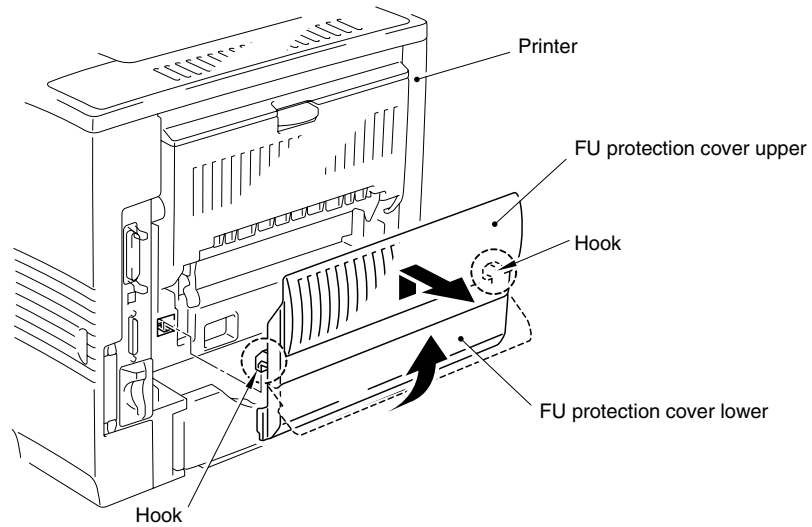


Fig. 4-19

- (3) Release the bosses of the FU protection cover lower by pulling one of the boss holes of the FU protection cover upper outwards.
- (4) Remove the FU protection cover springs R and L from the bosses.

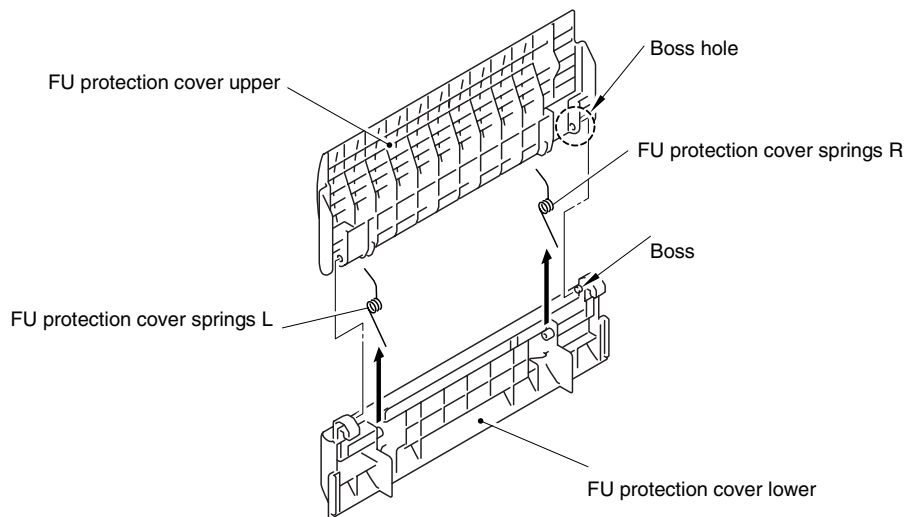


Fig. 4-20

### 3.6 Side Cover L / R

- (1) Open the open cover. Remove the four M3x8 Taptite screws, release the three hooks inside of the cover and remove the side cover L by pulling the bottom of the side cover outwards slightly.

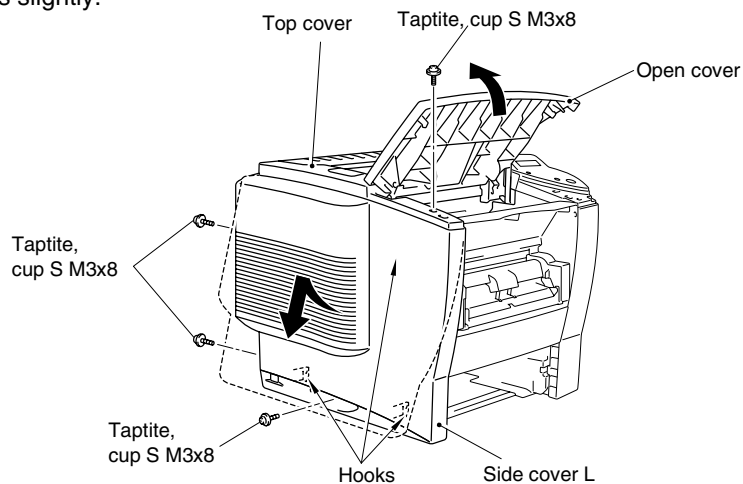


Fig. 4-21

- (2) Slide the side cover R2, then remove the two M3x8 Taptite screws and one cup B M3x10 Taptite screws to remove the side cover R1.

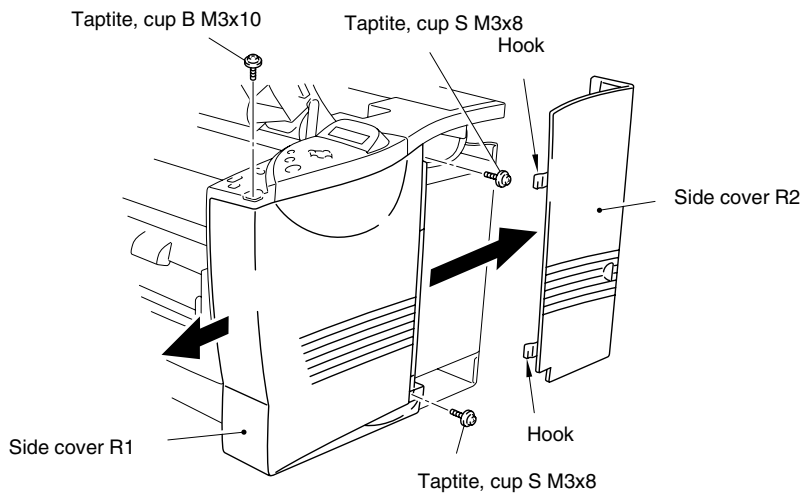


Fig.4-22

- (3) Remove the four cup S M3x6 Taptite screws securing the plate on the left-hand side to remove the engine shield plate.

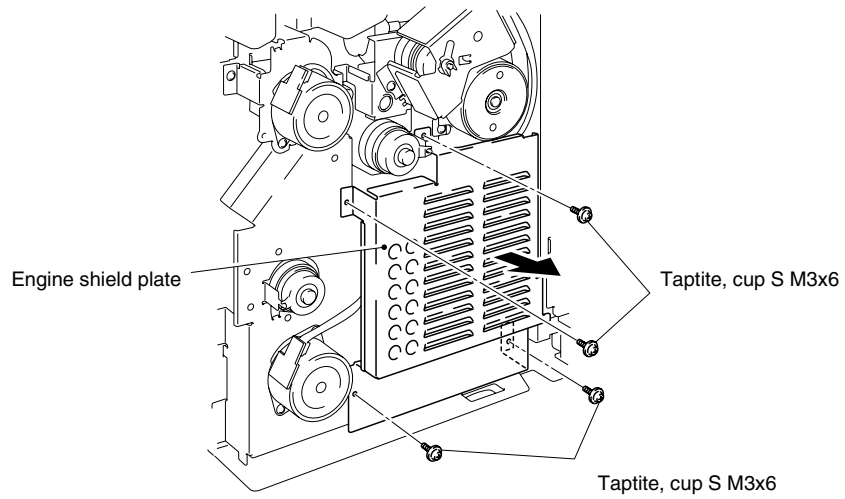


Fig. 4-23

- (4) Loosen the three screws to remove the main shield cover.

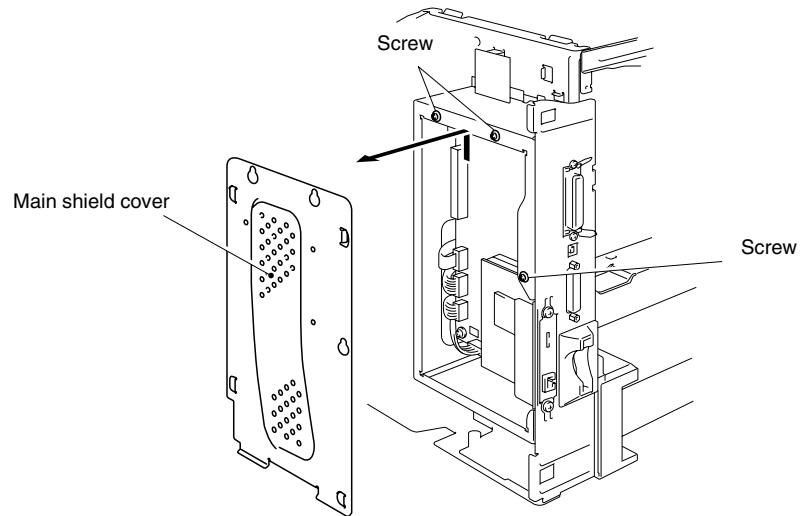


Fig.4-24

### 3.7 Switch Panel

- (1) Release the engine-panel harness unit 2P and main-panel harness unit from the three clamps. Then disconnect the connectors from the engine PCB and the main PCB.
- (2) Remove the cup S M3x8 Taptite screw to remove the SW panel unit from the frame.

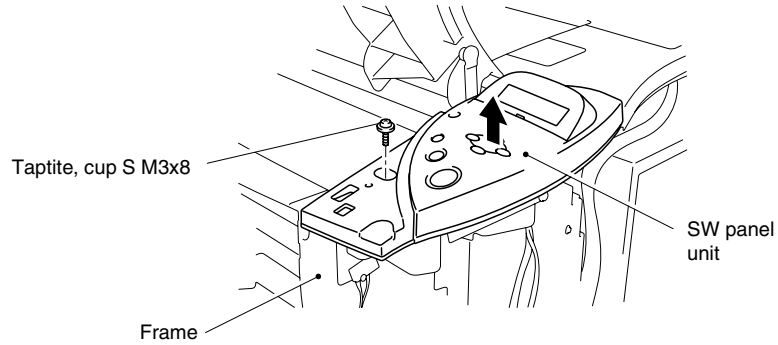


Fig. 4-25

- (3) Turn the SW panel unit upside down. Remove the four cup B 3x8 Taptite screws to remove the panel rear cover.
- (4) Release the rock of the connector and remove the LCD harness on the back of the panel PCB ASSY.
- (5) Disconnect the engine-panel harness unit 2P and main-panel harness unit from the panel PCB ASSY.

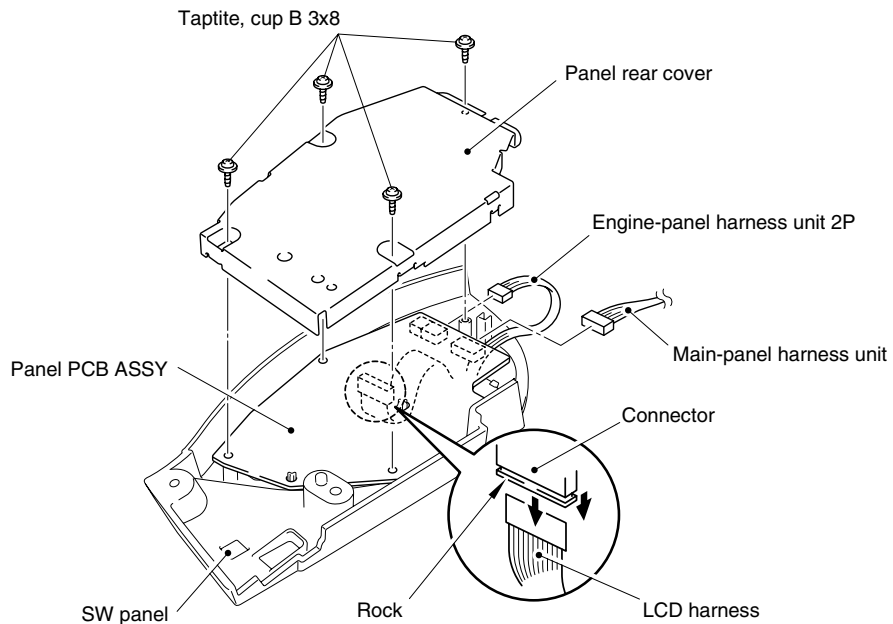


Fig. 4-26



- (6) Remove the cup B M3x8 Taptite screw to remove the LCD holder.

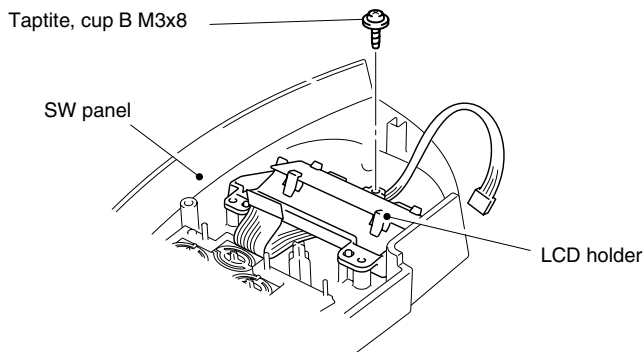


Fig. 4-27

- (7) Release the two hooks from the LCD holder and remove the LCD and diffusion film.
- (8) Release the two hooks on the back of the LCD holder and remove the back light PCB ASSY.

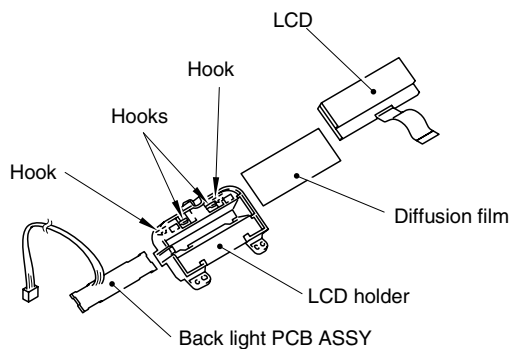


Fig. 4-28

- (9) Remove the key and panel light guide from the SW panel.
- (10) Remove the key top A and B from the key.

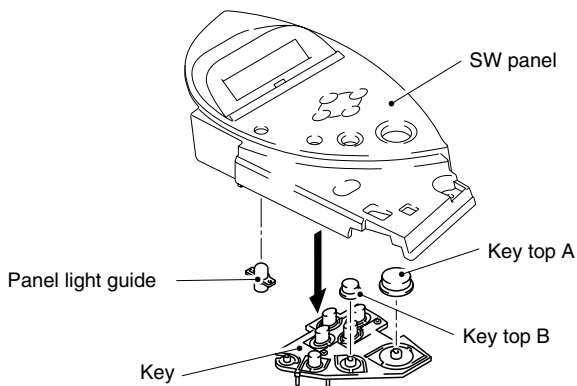


Fig. 4-29

### 3.8 Open Cover / Top Cover

- (1) Remove the MX cap A, B and C from the top cover.
- (2) Remove the two M3x8 Taptite screws securing the actuator plate. Unhook the hooks at the right and left hand sides to remove the actuator plate from the top cover.

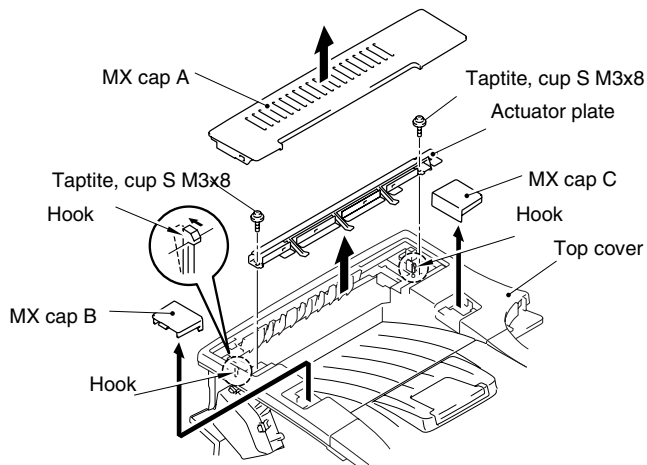


Fig. 4-30

- (3) Turn the paper actuator to align the notches of the actuator plate and paper actuator as shown in the figure below. Pull the paper actuator toward you slightly and pull out the other end of the shaft to remove the paper actuator from the actuator plate.
- (4) Remove the eject discharging brush and actuator plate film.

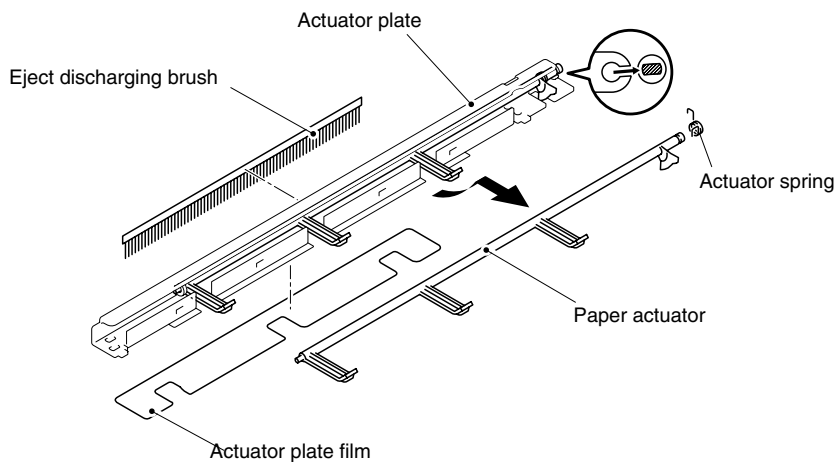


Fig. 4-31

- (5) Remove the drum gear link at the right hand side from the open cover side by releasing the hook.
- (6) Remove the two M3x8 Taptite screws.

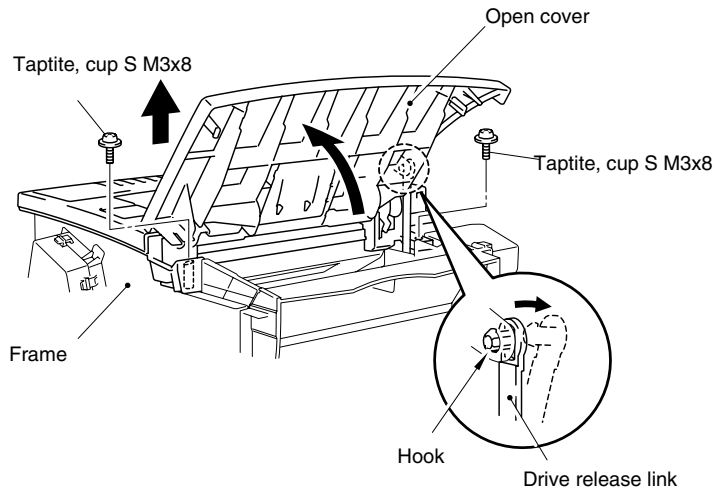


Fig. 4-32

- (7) Remove the two cup S M3x8 Taptite screws securing the paper eject unit and the two shoulder screws securing the rear cover ASSY. Then remove the rear cover ASSY from the frame.

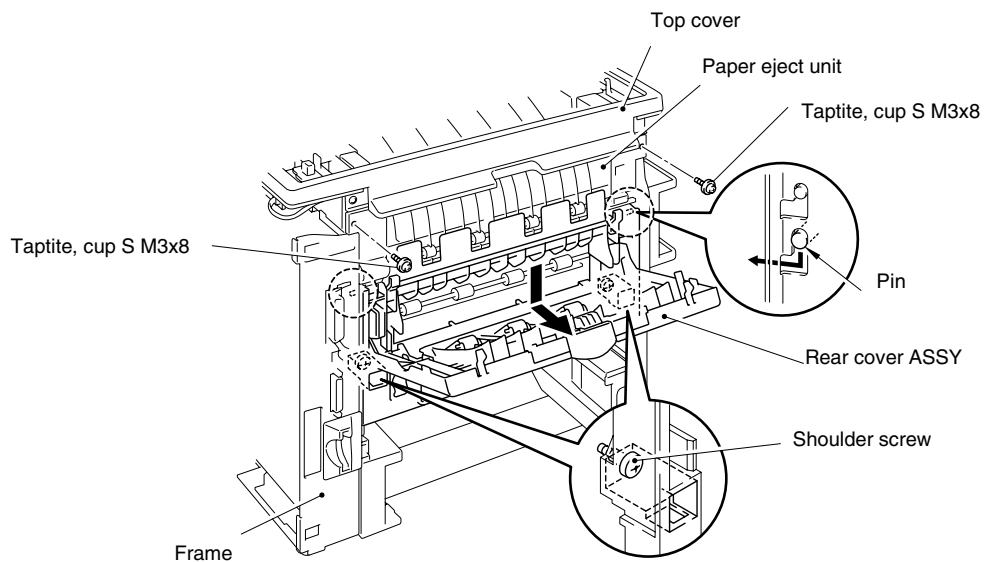


Fig.4-33

- (8) Disconnect the two MX harnesses (white) from the connectors on the top cover, then release the full sensor PCB harness from the rear relay PCB assy.

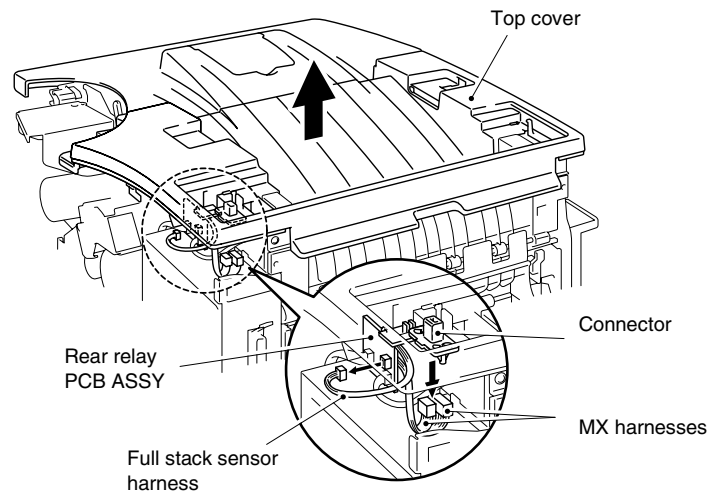


Fig. 4-34

- (9) Remove the top cover with open cover.
- (10) Turn the top cover and open cover upside down, then push the left ends to remove the top cover from the open cover.

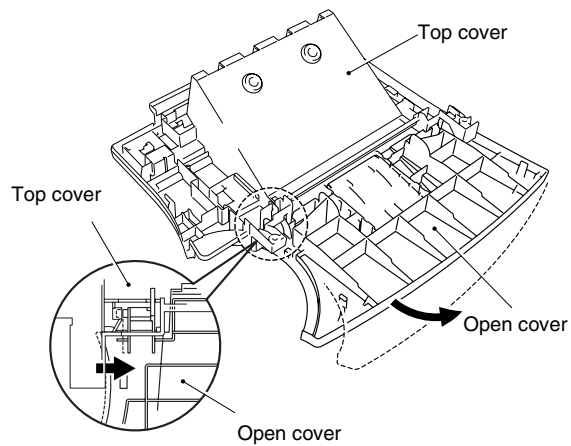


Fig. 4-35

(11) Unlock the two hooks to remove the full sensor PCB ASSY.

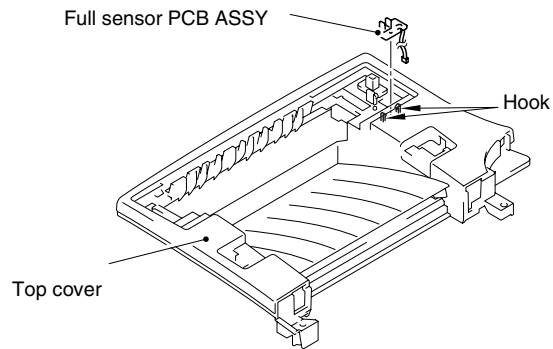


Fig. 4-36

(12) Bend the swing paper tray to remove it from the top cover and remove the two swing paper tray springs.

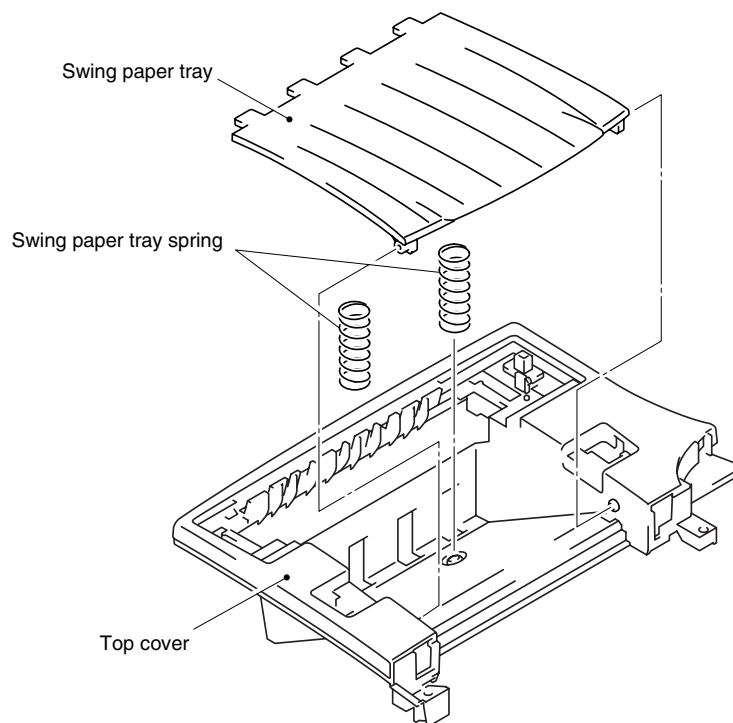


Fig. 4-37

- (13) Pull out the paper stopper guide from the open cover and unlock the hooks on the back of the guide to remove the paper stopper guide.

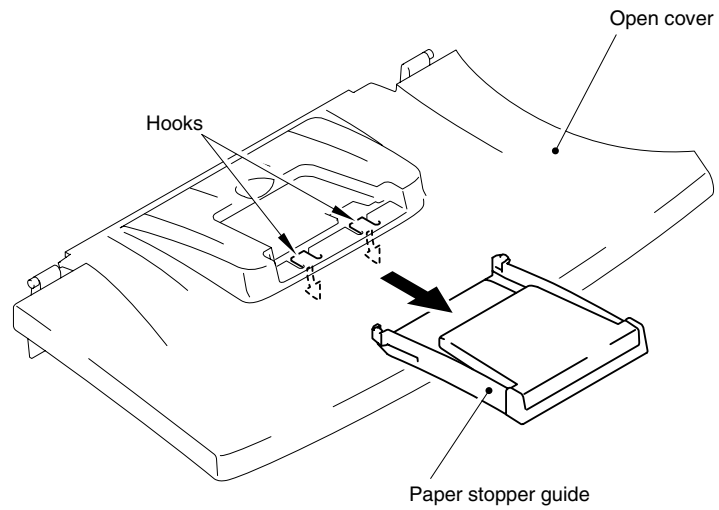


Fig. 4-38

- (14) Pull one of the sides of the paper stopper guide outwards to remove the paper stopper.

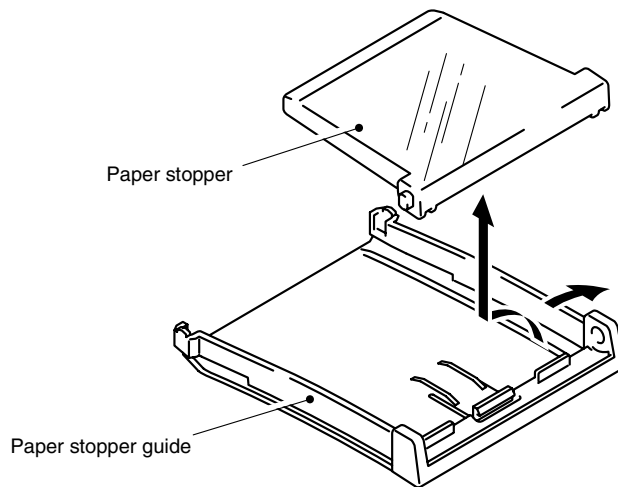


Fig. 4-39

### 3.9 Back Cover ASSY

- (1) Remove the back tray ASSY by bending the shaft of the back tray ASSY inwards.

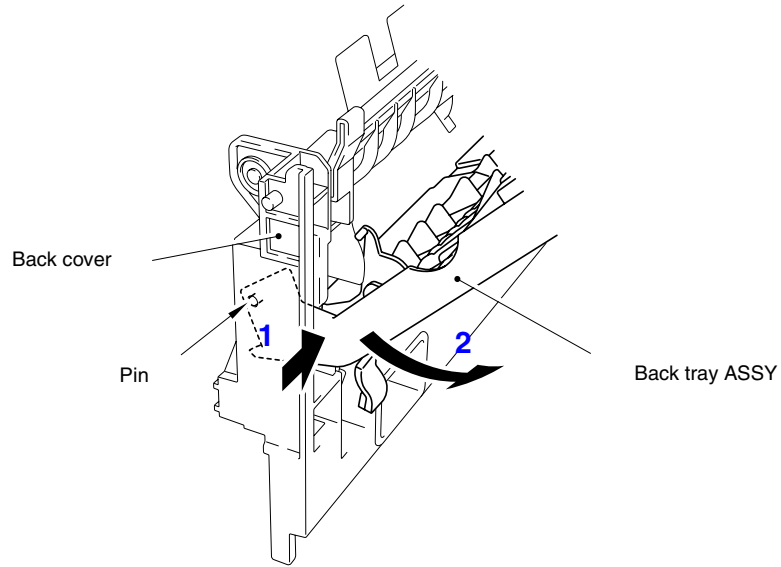


Fig. 4-40

- (2) Remove the flap with the flap springs L, R from the back tray ASSY by bending the flap.
- (3) Remove the flap springs L, R from the flap.

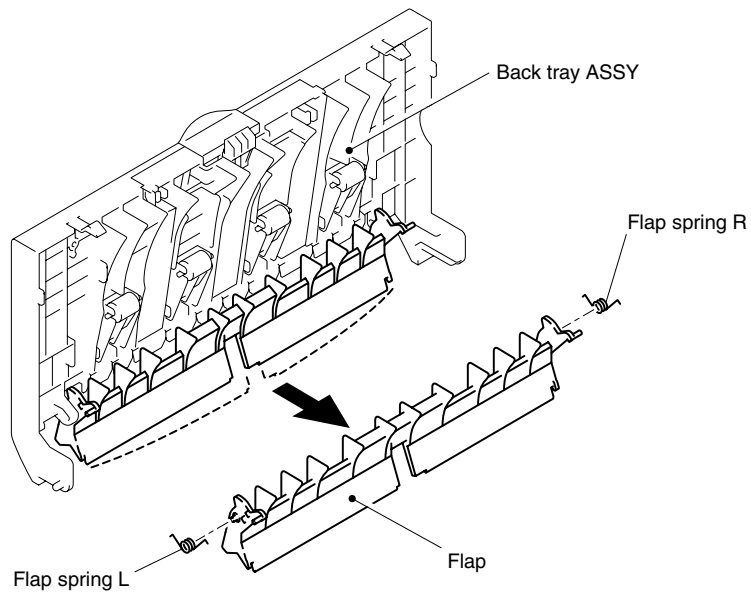


Fig. 4-41

- (4) Unhook the hooks of the rock lever to remove the rock lever and rock spring from the back tray ASSY.

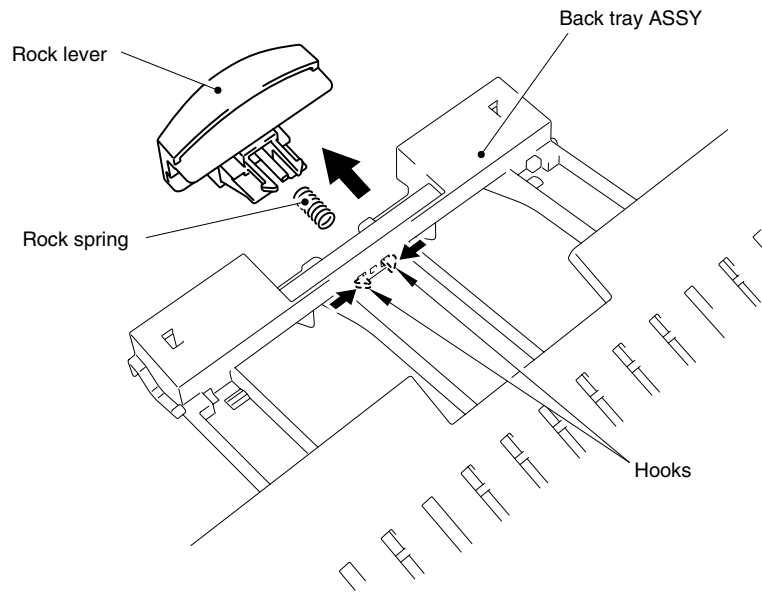


Fig. 4-42

- (5) Peel the back film from the back cover.

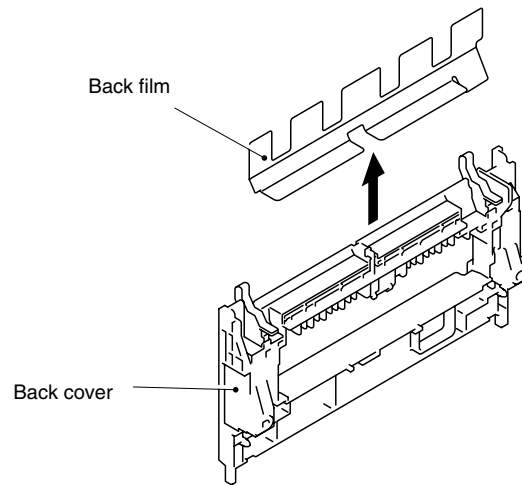


Fig. 4-43



### 3.10 Fixing Unit

- (1) Release the thermistor harness from the hooks. Disconnect the thermistor harness and the heater harness. Remove the fixing unit from the frame.

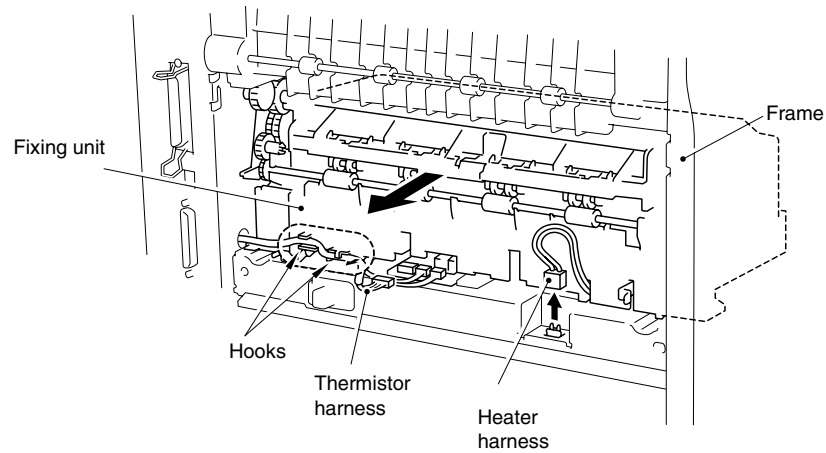


Fig. 4-44

- (2) Disconnect the connector of the thermistor harness, then release the thermistor harness from the three hooks on the fuser frame lower.
- (3) Remove the two cup B M 3x10 Taptite screws on both sides of the fuser frame lower. Then remove the two regulate plates.

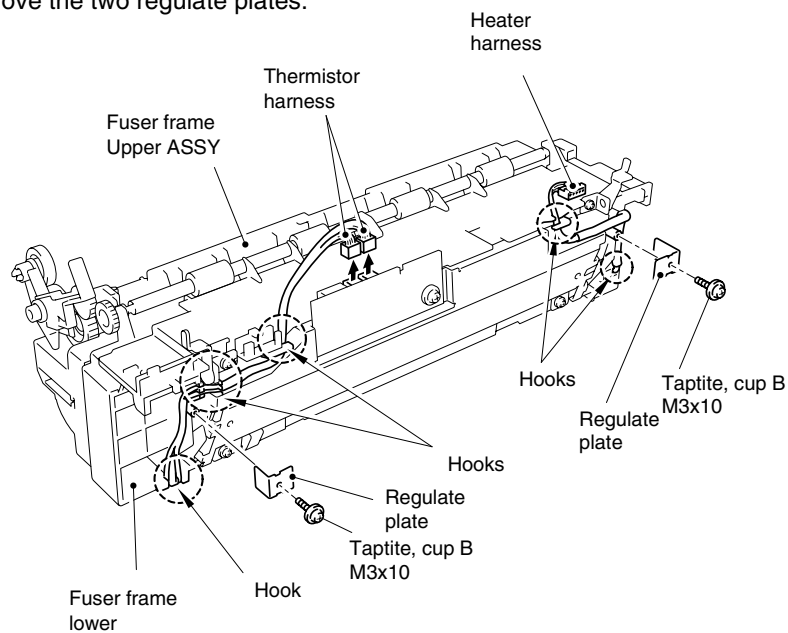
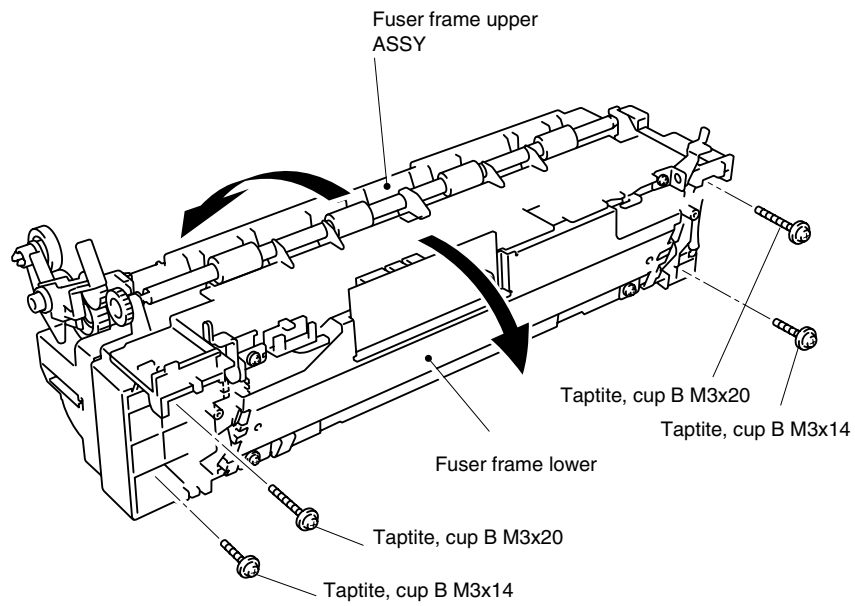


Fig.4-45

- (4) Release the heater harness from the two hooks on the fuser frame lower.
- (5) Remove the two cup B M3x14 screws and two cup B M3x20 screws. Then remove the fuser frame upper from the fuser frame lower.



**Fig. 4-46**

- (6) Loosen the two pan (washer) M3x6, screws securing the connector plate at the side of the H/R gear 45 and remove the cup B M3x14 Taptite screw at the other side. Remove the heater harness.
- (7) Lift the right hand end of the heat roller 34 AM(at the opposite side of the H/R gear 30) and remove the fixing heater from the heat roller 34 AM.
- (8) Remove the heat roller 34 AM from the fuser frame upper. Remove the H/R gear 45.

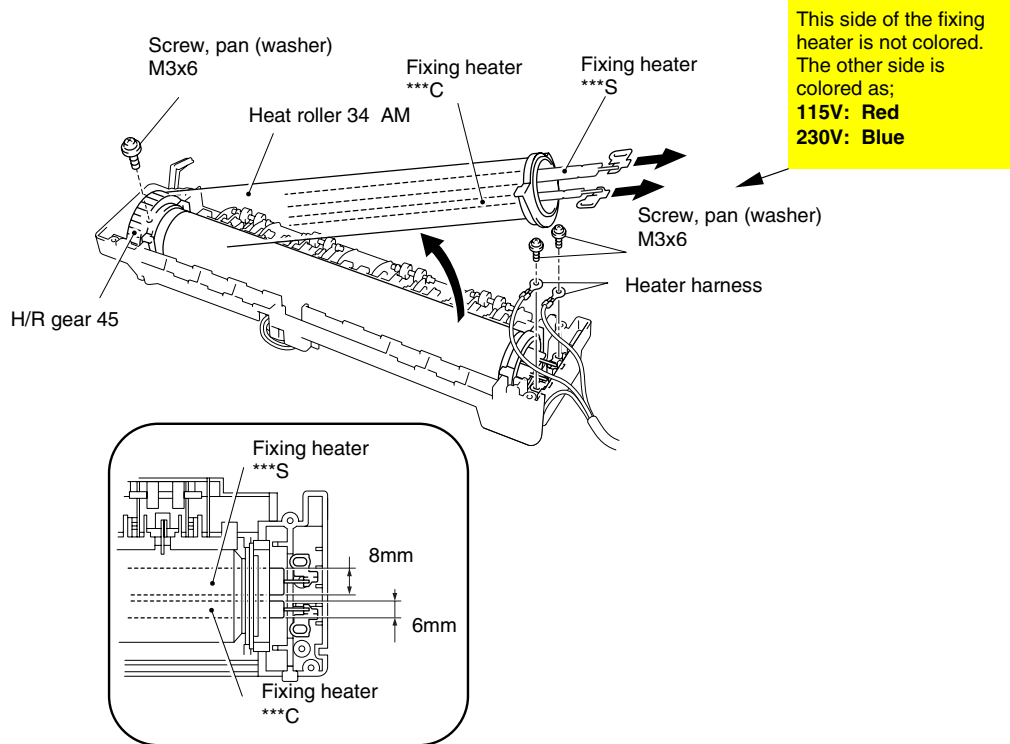


Fig. 4-47

**NOTE:**

When re-assembling the fixing heater, ensure that the direction of the fixing heater is correct referring to the figure above.

(9) Push back the bent crimps of heat roller 34 AM with pliers.

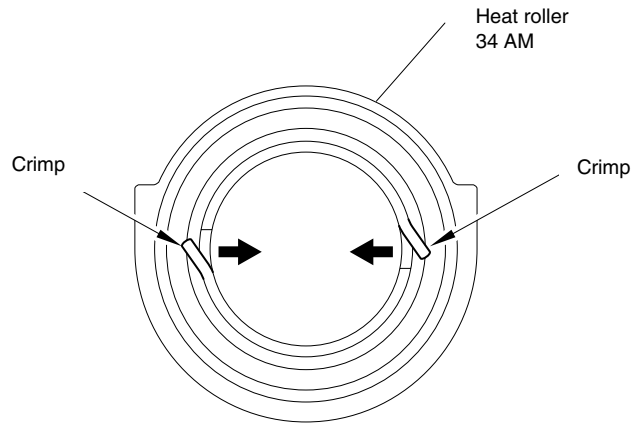


Fig. 4-48

(10) Remove the H/R ground ring, H/R ball bearing, H/R bearing holder, and H/R ground plate B.

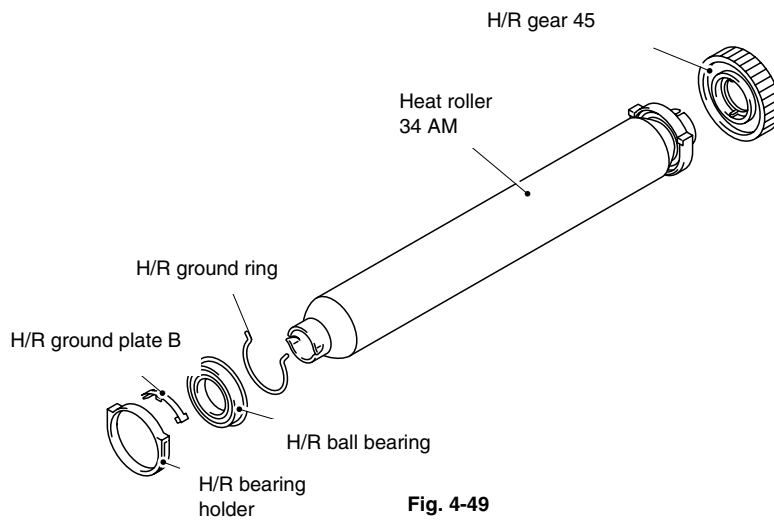


Fig. 4-49

- (11) Remove the stop ring 3 securing the thermistor harness from the hook.
- (12) Remove the screw from the thermistor ASSY AMS.
- (13) Remove the bind B M3x12 Taptite screw from the thermistor ASSY AMC.
- (14) Unhook the thermistor harness from the three hooks to remove them from fuser frame upper ASSY.

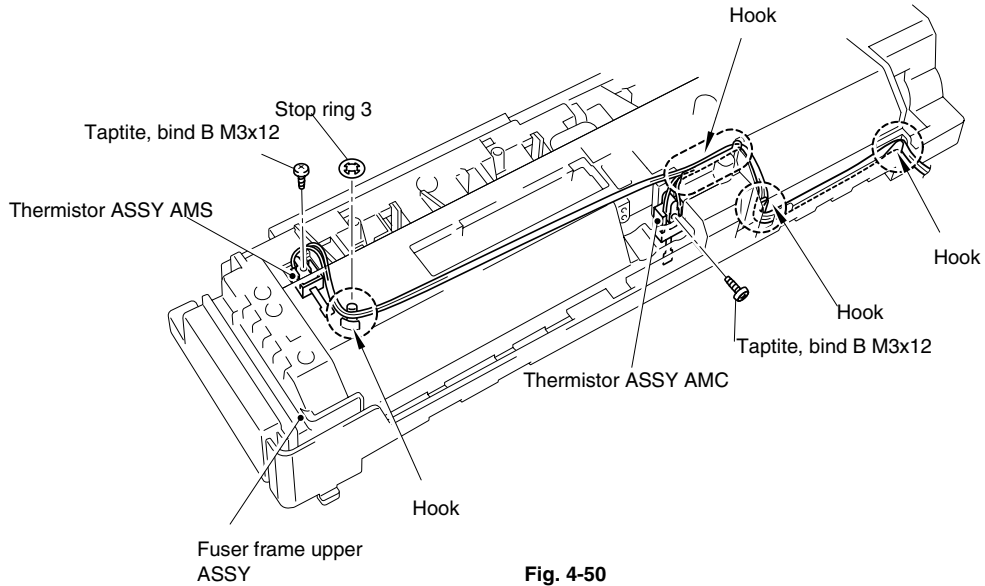


Fig. 4-50

- (15) Remove the four cup B M3x14 Taptite screws from the FU frame upper to remove the thermostat A,B.

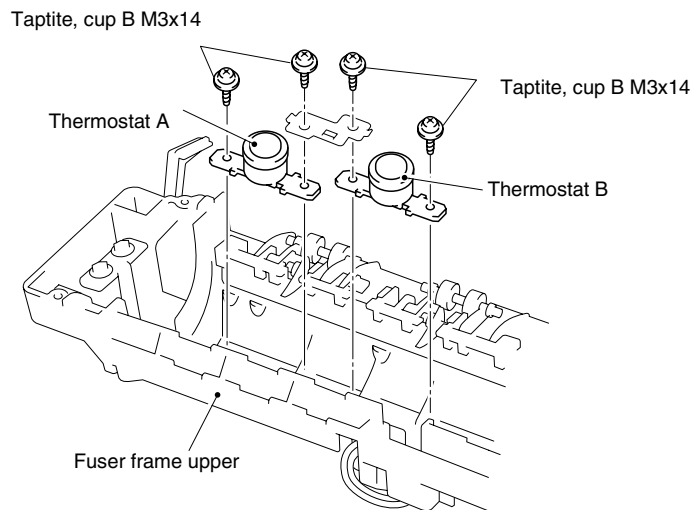


Fig.4-51

- (16) Remove the pressure spring from the hook and remove the eject pressure roller and pressure spring.
- (17) Stick up and lift the separate pawl AM to remove it. Then remove the separate pawl spring AM.

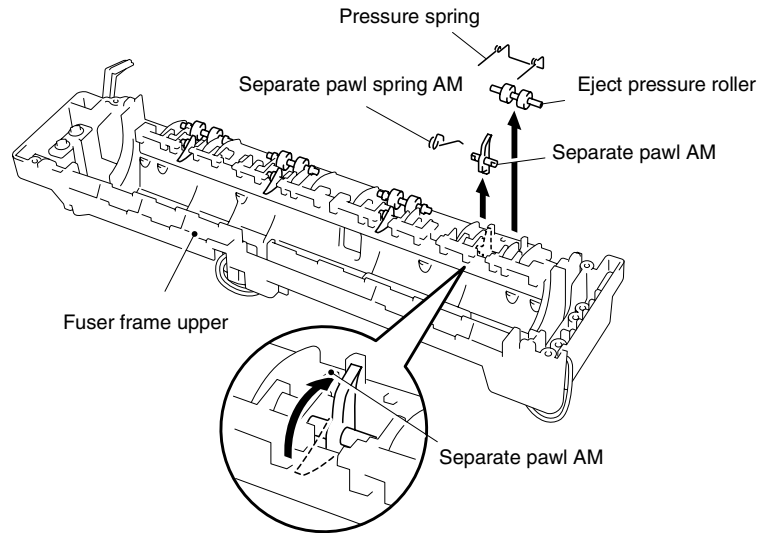


Fig. 4-52

- (18) Remove the two cup B M3x10 taptite screws, then remove the Switching Plate L, R.
- (19) Remove the two cup B M3x6 taptite screws, then remove the cleaner roller plate from the fuser frame lower.
- (20) Remove the CRP ground spring.

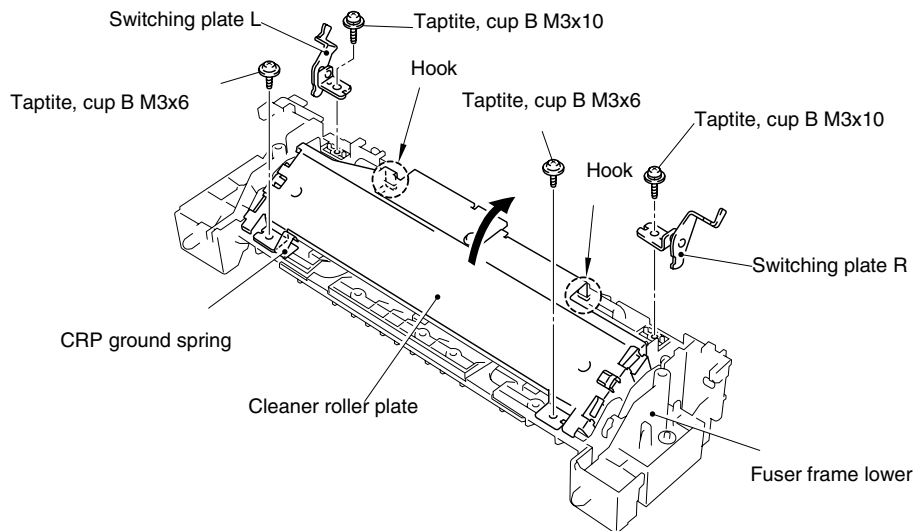


Fig. 4-53

- (21) Turn over the cleaner roller ASSY, remove the edge of the cleaner roller ASSY AMs as shown in the figure below while pushing down the cleaner roller bearings.

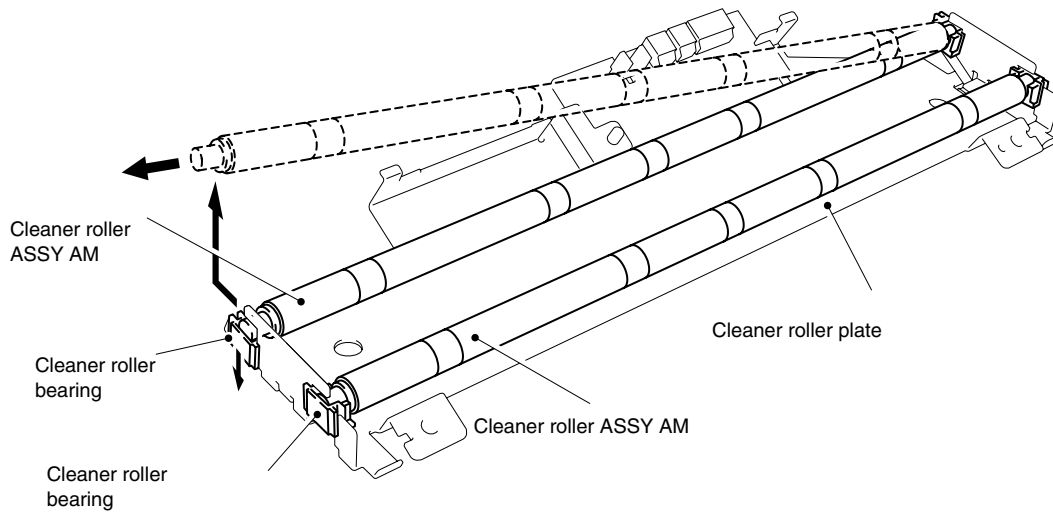


Fig. 4-54

- (22) Remove the ejection roller stopper AM from the fuser frame lower A by releasing the hook from the back of the frame and remove the idle gear 14. Slide the eject roller ASSY to align the notch of the eject roller to the one of the frame and pull out the eject roller ASSY toward you to remove it.

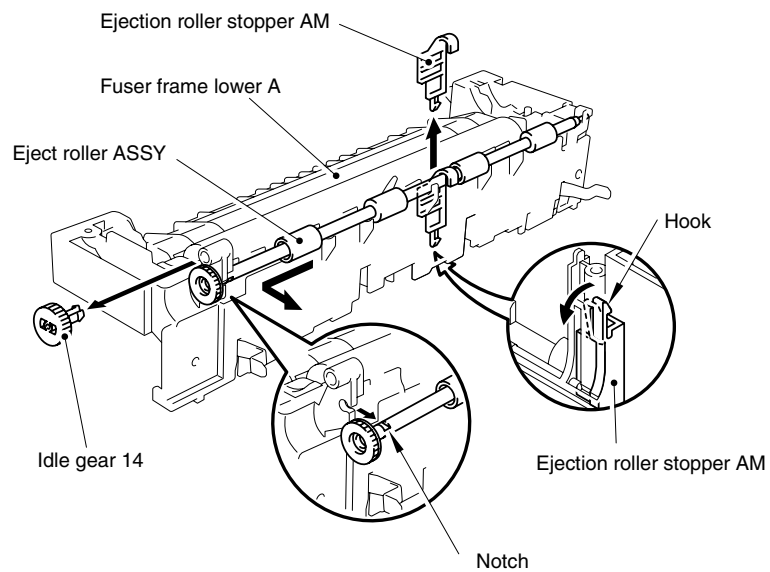


Fig. 4-55

- (23) Release the FU actuator AM from the hook of the fuser frame lower A, slide the FU actuator AM and remove it from the frame.
- (24) Remove the FU actuator spring from the FU actuator AM.

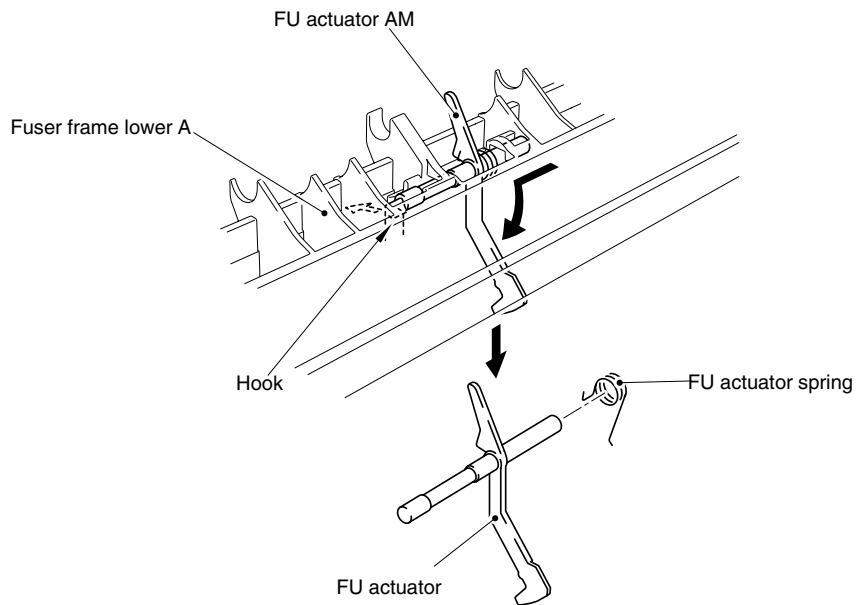


Fig. 4-56

- (25) Turn the fuser frame upside down. Release the two hooks from the two springs as shown in the drawing below.

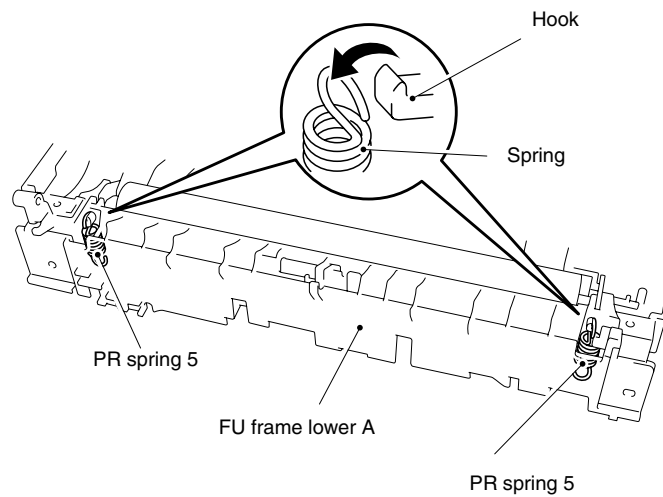


Fig. 4-57



- (26) Place the FU frame lower the correct way up. Remove the ground wire 2 from the plate by pushing A at the bottom. Push up the two plates, release the two hooks from the plates, and then remove the pressure roller 35 from the FU frame lower A.

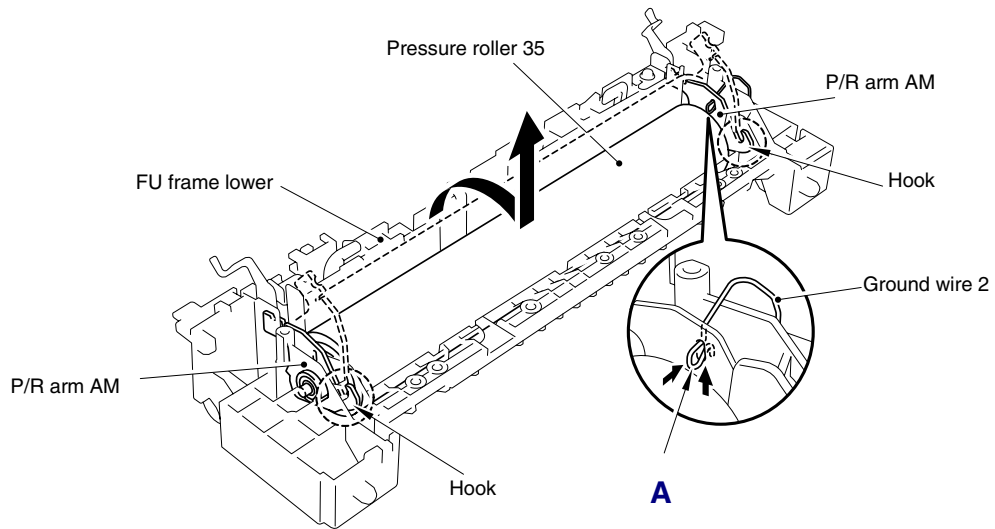


Fig. 4-58

- (27) Remove the two plates and the two bearings from the pressure roller 35.  
 (28) Remove the two P/R shaft bearing holders to remove the P/R ball bearings from the P/R arm AMs.

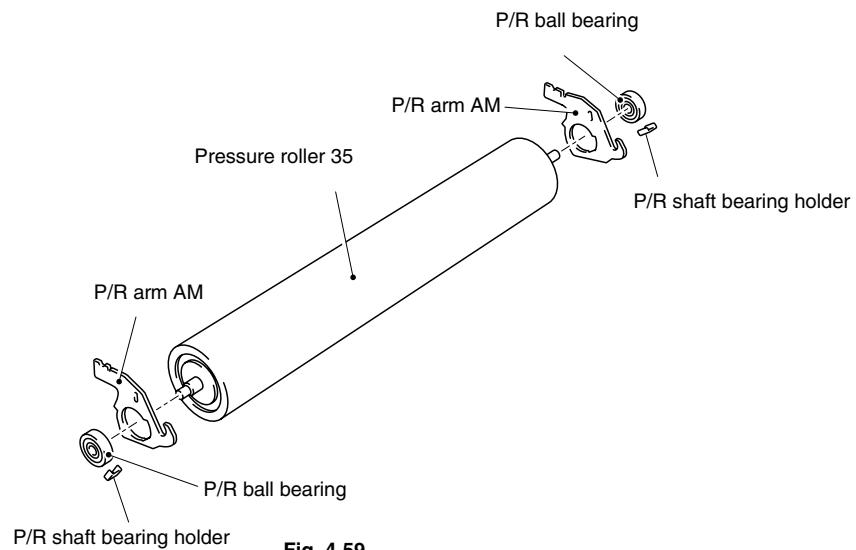


Fig. 4-59

### 3.11 Paper Eject

- (1) Disconnect the back sensor harness ASSY from the back relay PCB ASSY.
- (2) Release the pin and pull out the paper eject unit from the frame.

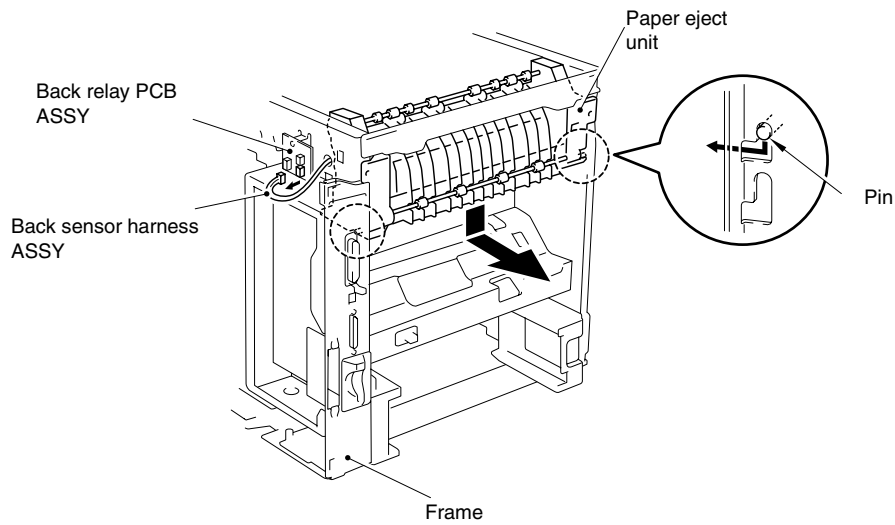


Fig. 4-60

- (3) Unhook the hooks of the three gear 26s, then remove them from the paper eject frame.
- (4) Unhook the hooks of the two idle gear 17s, then remove them from the paper eject frame.
- (5) Remove the retaining ring to remove the gear 14 and bearing 6 from the eject roller ASSY.
- (6) Remove the retaining ring to remove the gear 14 and bearing 6 from the eject roller ASSY 2.

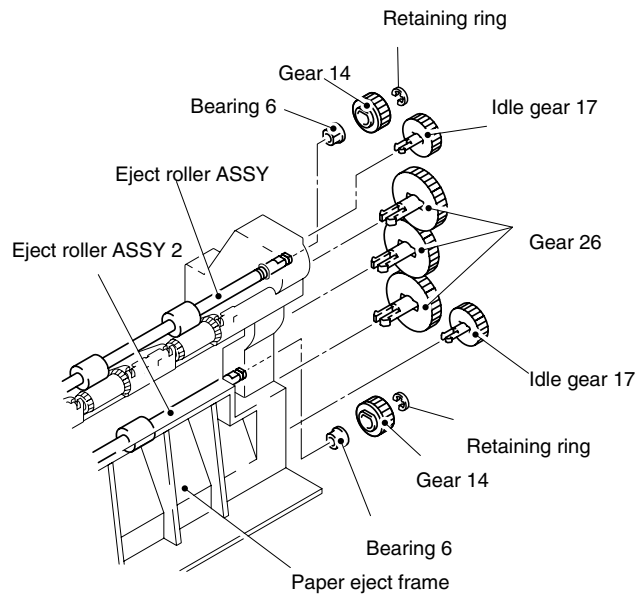


Fig. 4-61

- (7) Remove the bind B tite 3x8 screws from the left hand side of the paper eject frame to remove the eject roller ground plate. (at the end of eject roller ASSY)
- (8) Remove the bearing 6 from the eject roller ASSY.
- (9) Remove the eject roller ASSY from the paper eject frame as shown in the figure below.
- (10) Remove the bind B tite 3x8 screws from the left hand side of the paper eject frame to remove the eject roller ground plate. (at the end of eject roller ASSY 2)
- (11) Remove the bearing 6 from the eject roller ASSY 2.
- (12) Remove the eject roller ASSY 2 from the paper eject frame as shown in the figure below..

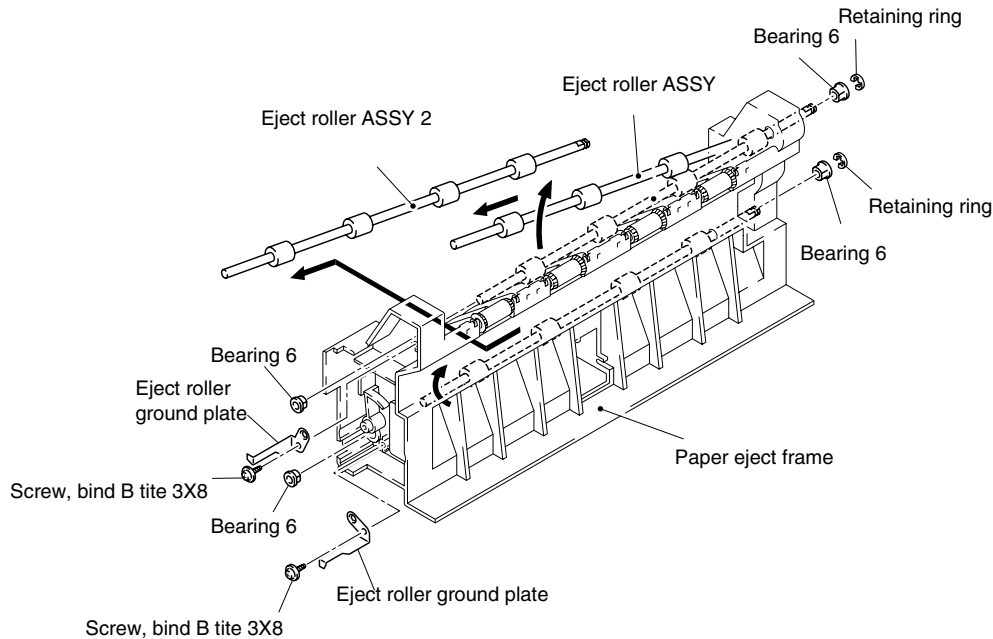


Fig. 4-62

- (13) Remove the eject pinch roller ASSY with the pinch spring by lifting them upwards until the springs are released from the frame. Then remove the pinch spring from the eject pinch roller ASSY.

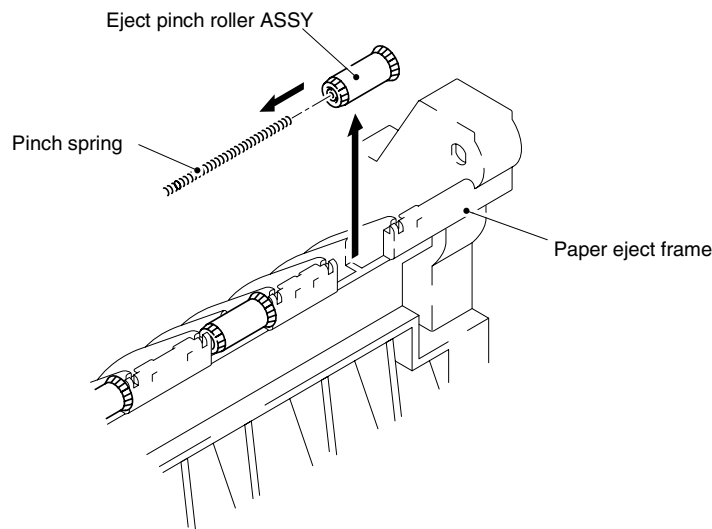
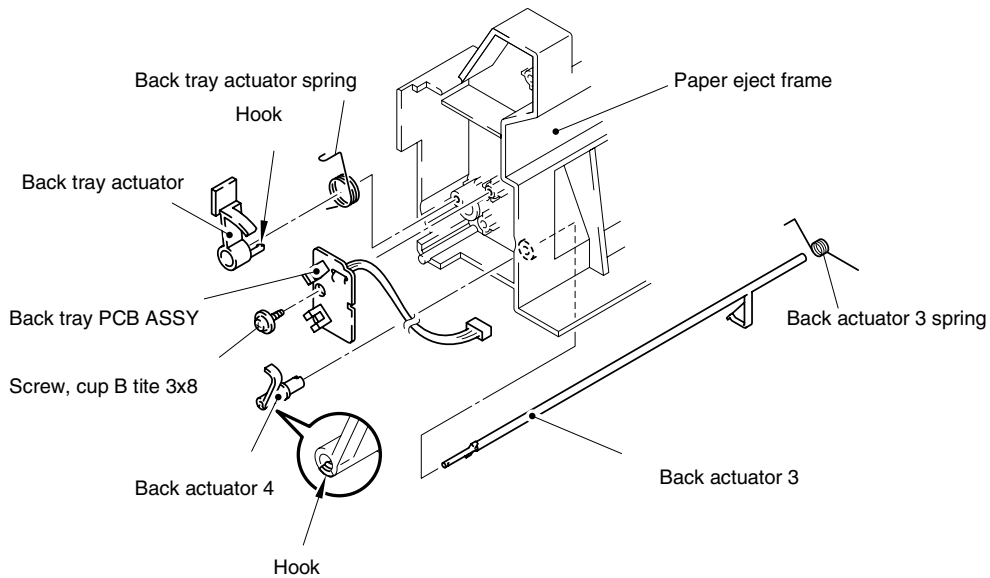


Fig. 4-63

- (14) Unhook the hook of the back tray actuator to remove the back tray actuator and the back tray actuator spring from the paper eject frame. Remove the back tray actuator spring from the back tray actuator.
- (15) Unhook the hook of the back actuator 4 to remove the back actuators 4, 3 and back actuator 3 spring.
- (16) Remove the back actuator 3 spring from the back actuator 3.
- (17) Remove the cup B tite 3x8 screw to remove the back tray PCB ASSY.



**Fig. 4-64**

### 3.12 Laser Unit

- (1) Remove the four Taptite, cup S 3x16 from the laser unit.
- (2) Disconnect the scanner motor harness from the Engine PCB.

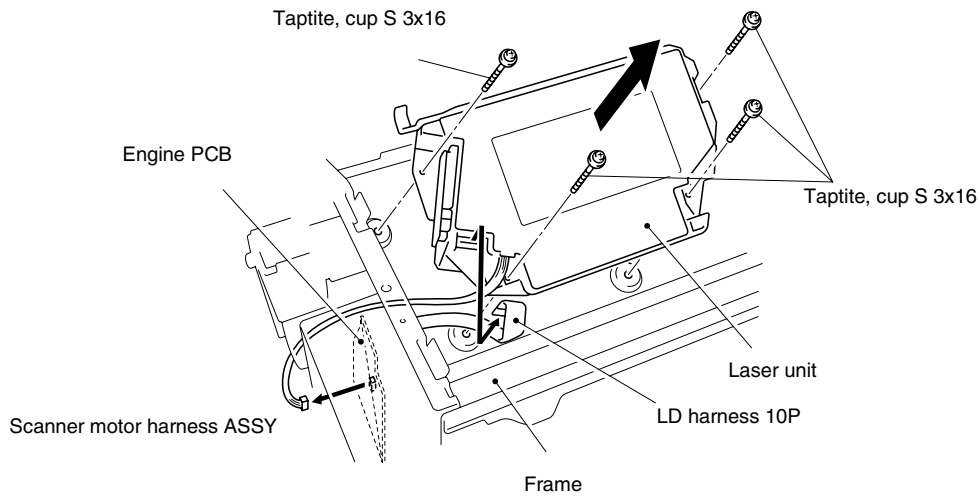
**NOTE:**

*The cover of the Engine PCB should be removed before disconnecting the scanner motor harness from the Engine PCB. Refer to 3.6 (3) in this chapter.*

- (3) Disconnect the LD harness 10P from the laser unit.
- (4) Remove the laser unit from the frame.

**NOTE:**

*When removing the laser unit from the frame, never touch the glass.*



**Fig. 4-65**

**NOTE:**

*After replacing the laser unit, be sure to carry out the scanner check. Refer to Chapter 6 (9.2 Line Inspection Mode Procedure)*

### 3.13 Front Cover 1 / Front Cover 2

- (1) Disconnect the SW connector at the right hand side of the front cover 1 from the engine PCB.
- (2) Remove the two cup S M3x10 Taptite screws and two cup S M3x8 Taptite screws to remove the front cover 2 from the frame.
- (3) Remove the four cup S M3x8 Taptite screws to remove the front cover 1 from the frame.

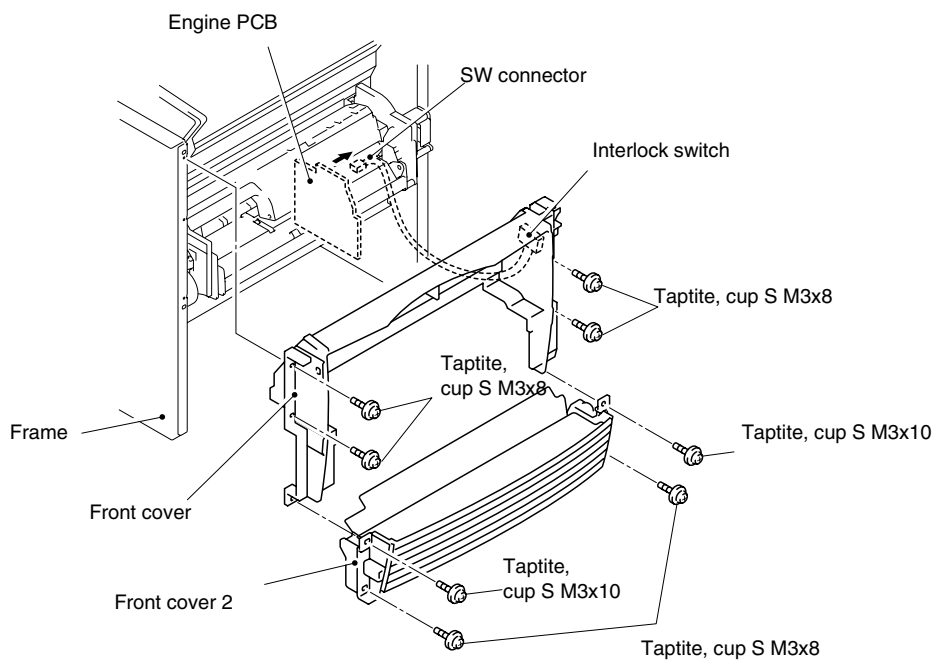


Fig. 4-66

- (4) Remove the bind P tite 2.3x16 screw, then remove the interlock SW ASSY from the front cover.

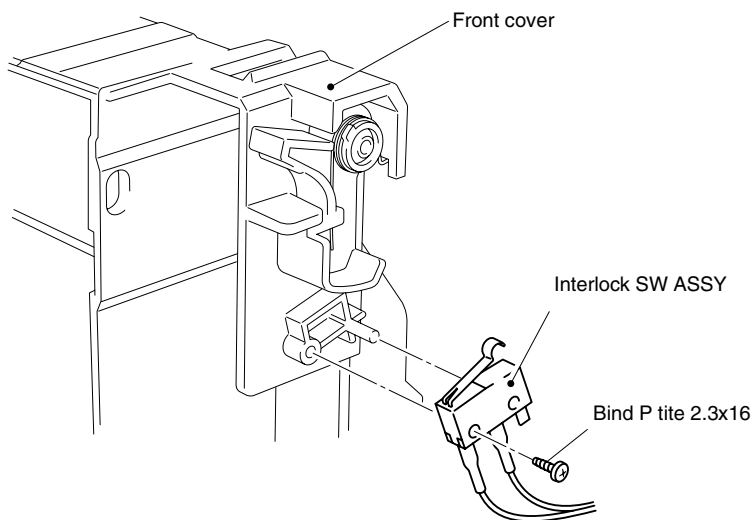
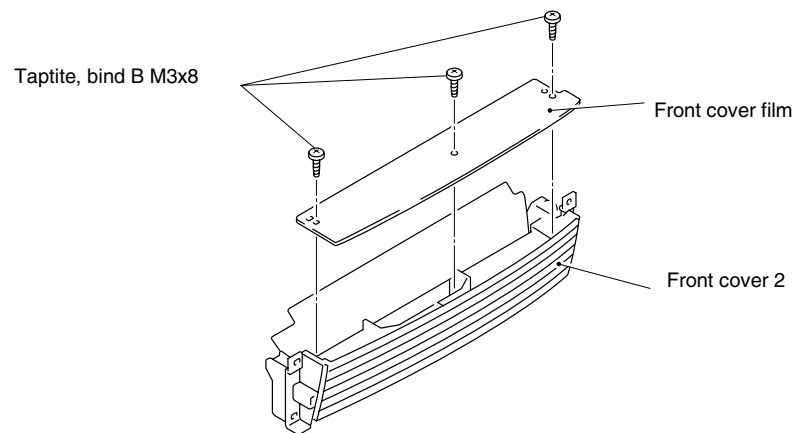


Fig.4-67

- (5) Remove the three bind B M3x8 taptite screws, then remove the front cover film.



**Fig.4-68**

**Note:**

*After removing the front cover film, clean the paper dust collected in the front cover 2.*

### 3.14 MP Tray Unit

- (1) Remove the four bind S M3x8 Taptite screws and remove the MP tray unit from the frame by disconnecting the two connectors.
- (2) Remove the two bind B M3x8 Taptite screws to remove the solenoid ASSY MP at the right hand side of the unit. Then remove the solenoid spring MP.
- (3) Bend the roller cover ASSY MP to release both ends of the shaft from the unit and remove the roller cover ASSY MP from the unit.

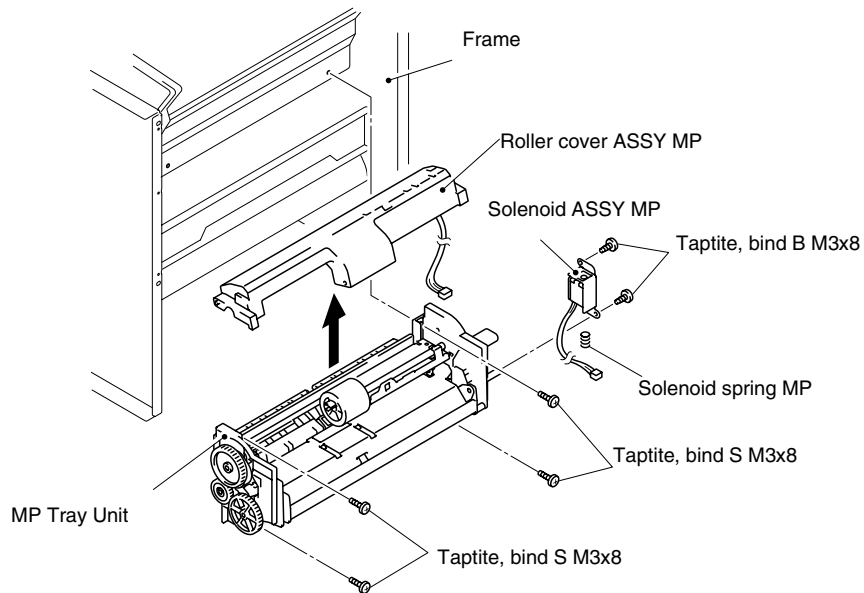


Fig. 4-69

**NOTE:**

*When re-assembling the MP tray unit, be sure to close the roller cover MP completely.*



- (4) Turn the roller cover ASSY MP upside down. Unhook the hooks and bend the PE sensor actuator 2 MP to release both ends of the shaft. Then remove the PE sensor actuator 2 MP from the cover while releasing the pin of the PE sensor actuator MP.
- (5) Turn the PE sensor actuator MP so that the shutter is at the top. While bending the hook on the roller cover slightly, slide the PE sensor actuator MP to the left to align the notch of the actuator to the one of the cover and pull the PE sensor actuator MP upwards.
- (6) Pull the two hooks of the roller cover outwards and remove the MP PE sensor PCB ASSY.

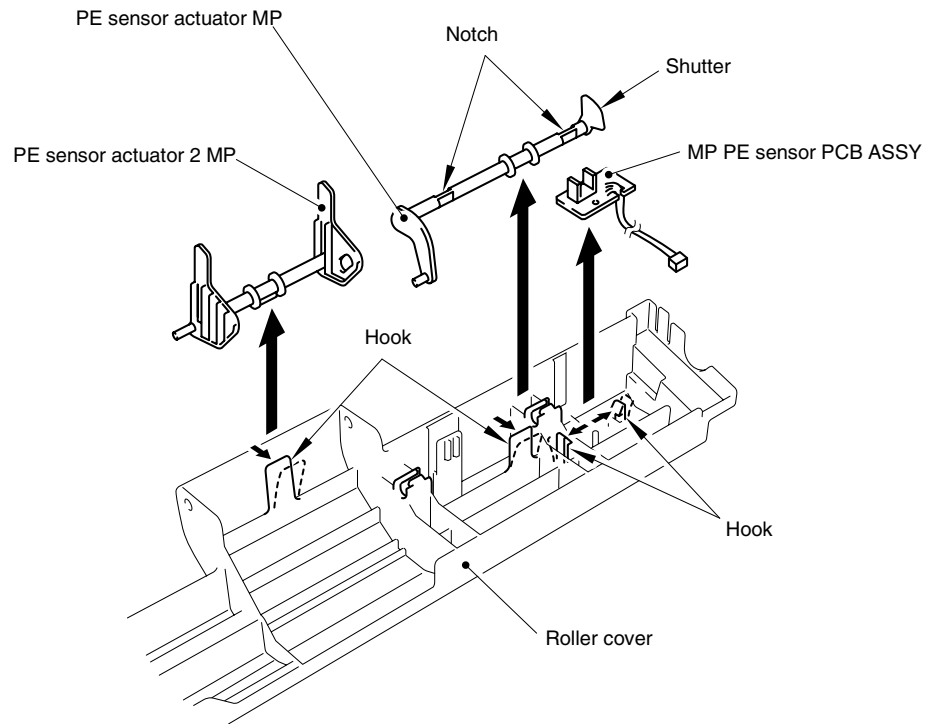


Fig. 4-70

- (7) Release the hook and pull out the paper feed roller ASSY MP in the direction of the arrow as shown in the figure blow.
- (8) Unhook the hook to remove the gear 44 at the right hand side from the MP tray frame. Unhook the hook to remove the plate cam gear 28. Then remove the paper feed idle gear 28 and plate cam MPR.
- (9) Remove the bearing L MP at the right hand side, then remove the paper feed roller shaft MP and bearing L MP (at the left hand side) from MP tray frame.
- (10) Unhook the hooks to remove the bearing L MP from the paper feed roller shaft MP.

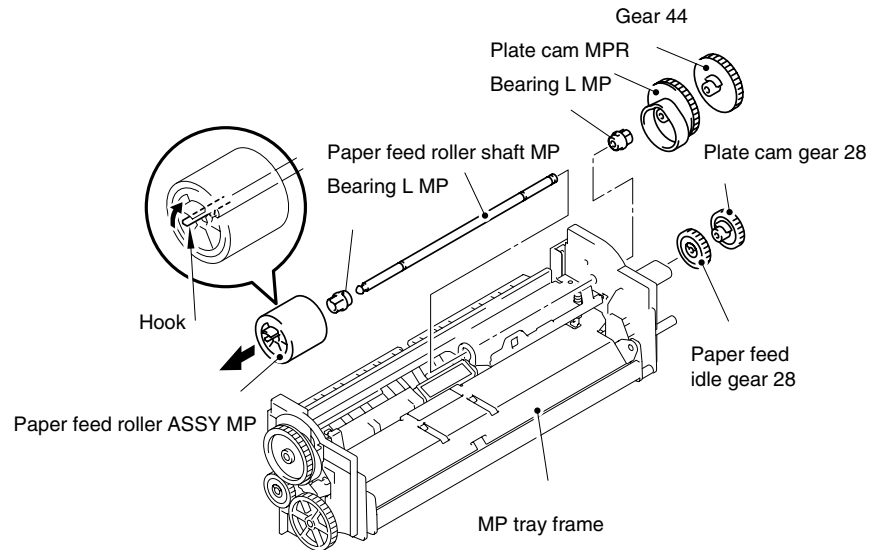


Fig. 4-71

**NOTE:**

After replacing the paper feed roller ASSY MP, be sure to close the roller cover MP completely.

**NOTE:**

When re-assembling gears, follow the direction below:

- (1) Fit the cam gear 44 to the MP tray frame, then turn it counterclockwise until it stops.
- (2) Fit the plate cam MPR to the MP tray frame.
- (3) Fit the paper feed idle gear 28 to the MP tray frame aligning notches of the paper feed idle gear 28 to the plate cam MPR and the cam gear 44.
- (4) Fit the plate cam gear 28 and the gear 44, and then MP gear 15 to the MP tray frame.

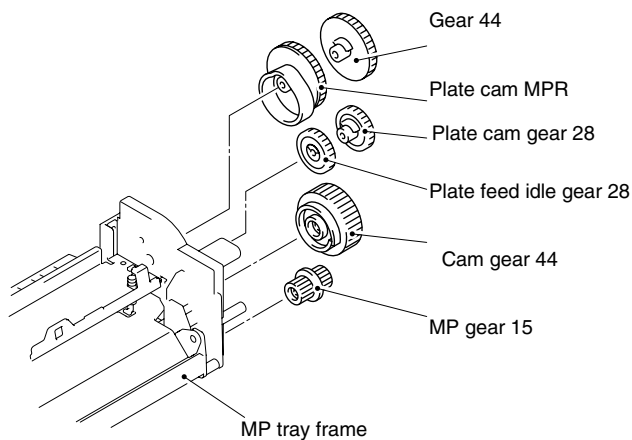


Fig. 4-72

- (11) Unhook the hook to remove the plate cam gear 28 with the plate cam L at the left-hand side.
- (12) Remove the two plate spring MP from the plate. Remove the three bind B M3x8 Taptite screws to remove the plate from the MP tray frame.
- (13) Pull the boss of the MP tray frame outwards to release the plate ASSY MP from the MP tray frame.
- (14) Remove the right side of the plate ASSY MP from the MP tray frame first while pulling the MP tray frame outwards and remove the plate ASSY MP completely.

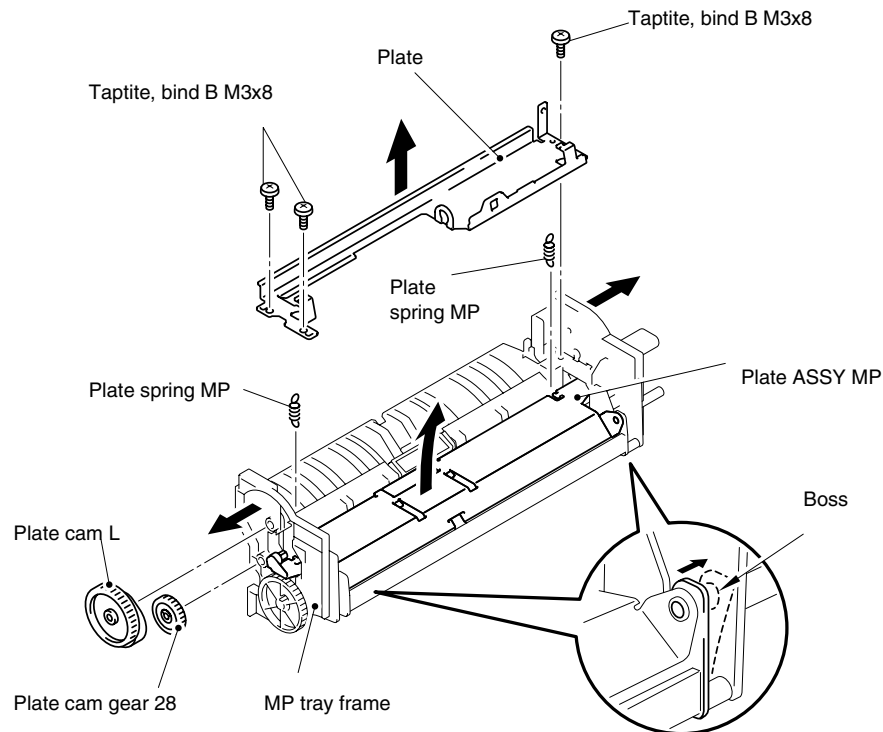


Fig. 4-73

**NOTE:**

When re-assembling gears, follow the direction below:

- (1) Fit the cam gear 44 to the MP tray frame.
- (2) Fit the plate cam L to the MP tray frame.
- (3) Fit the plate cam gear 28 to the MP tray frame aligning notches of the plate cam gear 28 to the gear 44 and the plate cam L.

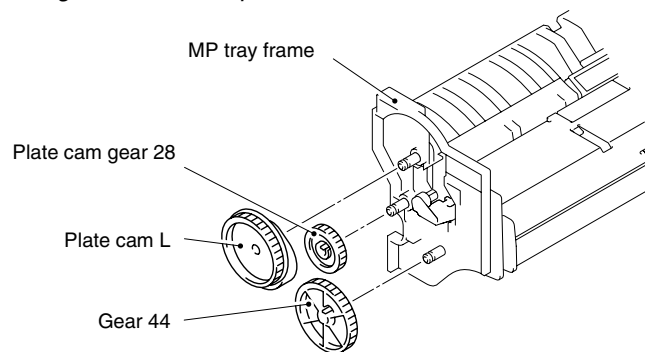


Fig. 4-74

- (15) Stand the separation plate ASSY MP toward you, release one of the two bosses and remove the separation plate ASSY MP from the MP tray frame.

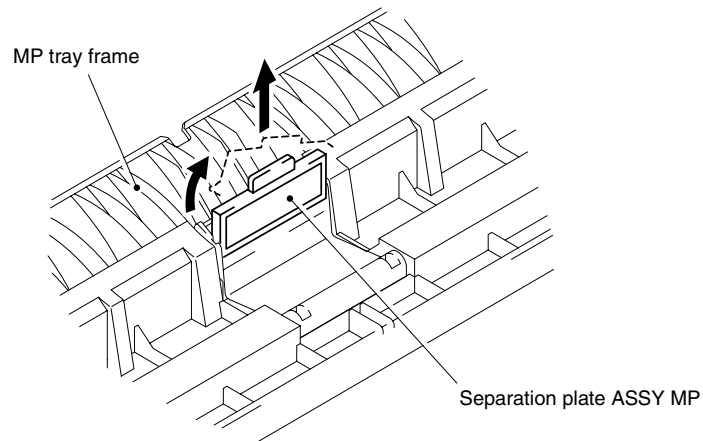


Fig. 4-75

**NOTE:**

*After replacing the separation plate ASSY MP, be sure to close the roller cover MP completely.*

- (16) Unhook the two hooks of the separation pad spring MP and stand the separation pad holder MP toward you to remove it. Remove the separation pad spring MP.

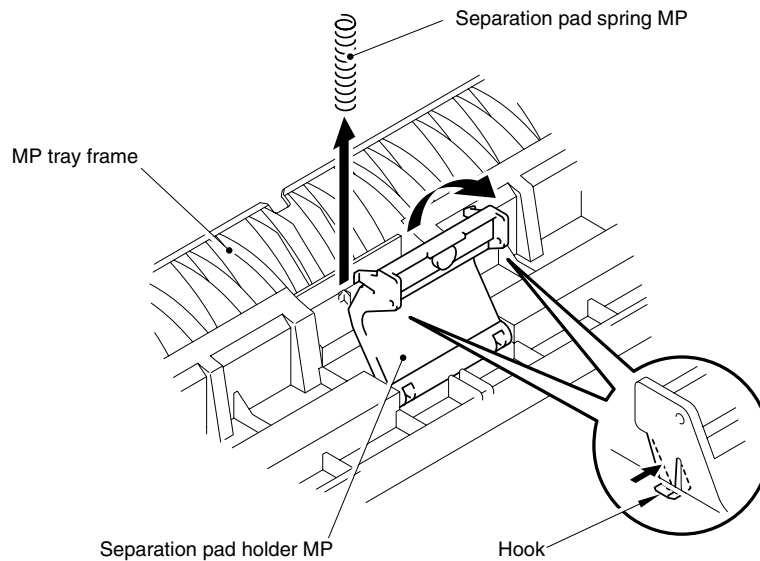


Fig. 4-76

### 3.15 Fan Motor 80

- (1) Disconnect the connector from the left side PCB ASSY.
- (2) Remove the two cup S M3x6 taptite screws to remove the fan motor unit upper from the frame.

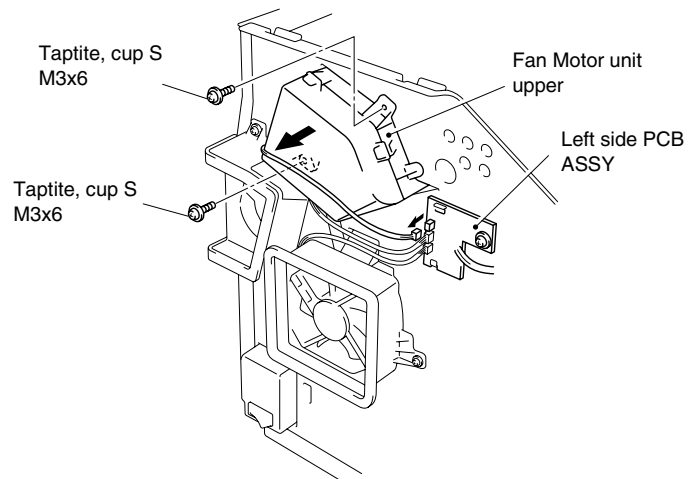


Fig.4-77

- (3) Disconnect the two connectors from the left side PCB ASSY.
- (4) Remove the three screws to remove the sub duct 1 from the frame.

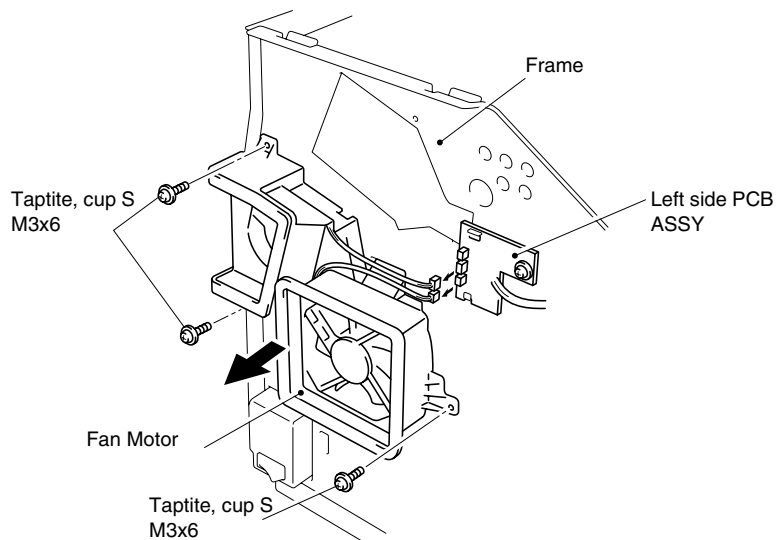
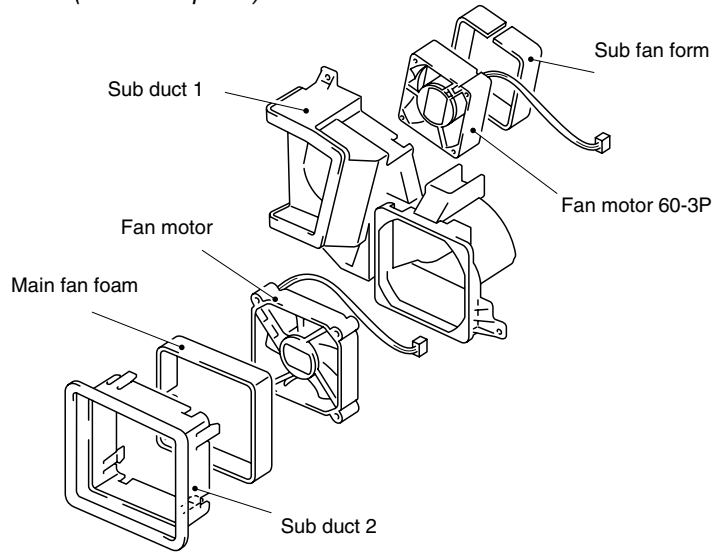


Fig. 4-78

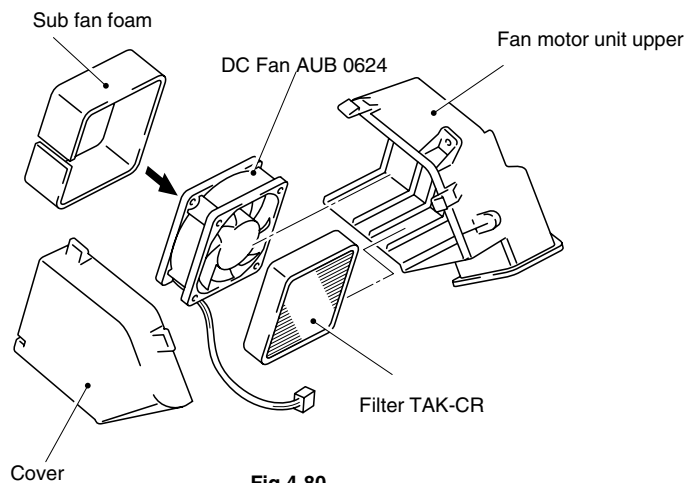
- (5) Unhook the four hooks to remove the sub duct 2 from the sub duct 1.
- (6) Remove the fan motor from the sub duct 2.
- (7) Peel the main fan foam from the fan motor.
- (8) Remove the fan motor 60-3P from the sub duct 1.
- (9) Peel the sub fan foam from the fan motor 60-3P.

*Note: When re-assembling the fan motor unit, be sure to fit the fan motors as shown in the figure below (harness-upside).*



**Fig.4-79**

- (10) Unhook the 4 hooks on the fan motor unit upper, then remove the cover.
- (11) Remove the DC fan AUB 0624 and the filter TAK-CR from the fan motor unit upper.
- (12) Peel the sub fan foam from the DC fan AUB 0624.



**Fig.4-80**

### 3.16 Main Motor ASSY

- (1) Disconnect the main motor harness from the engine PCB.
- (2) Remove the four cup S M3x6 Taptite screws to remove the main motor ASSY from the frame.

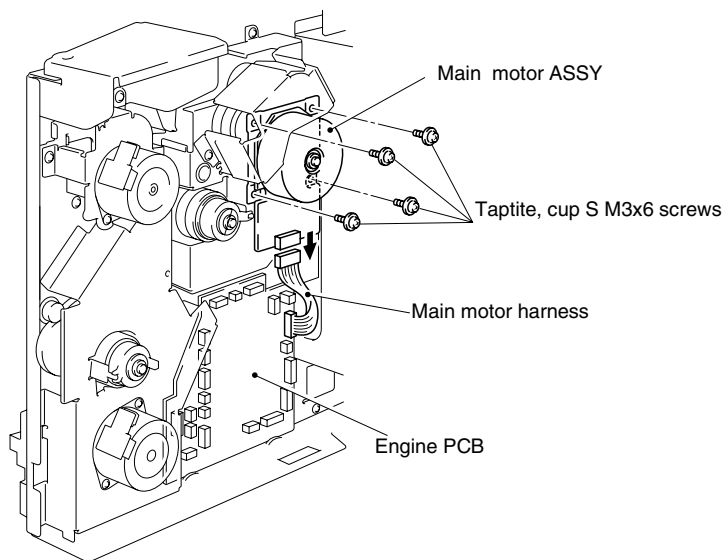


Fig. 4-81

### 3.17 Feeding Motor ASSY A/B

- (1) Disconnect the feed motor harness ASSY from the engine PCB.
- (2) Remove the two cup S M3x6 Taptite screws to remove the feeding motor ASSY (lower) from the paper feed gear plate ASSY.

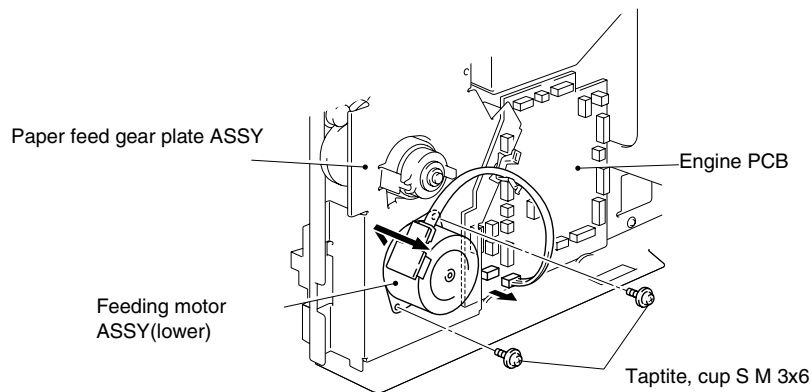


Fig.4-82

- (3) Disconnect the release motor harness ASSY from the engine PCB.
- (4) Remove the two cup S M3x6 Taptite screws to remove the feeding motor ASSY (upper) from the frame.

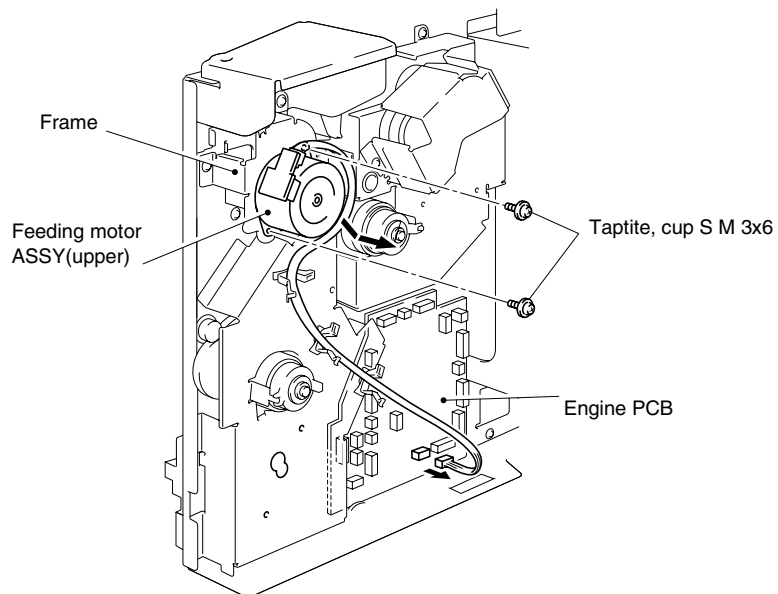


Fig. 4-83



### 3.18 Drive Unit

- (1) Disconnect the connector from the electro magnetic feed clutch.
- (2) Remove the collar, then remove the electro magnetic feed clutch from the paper feed gear plate ASSY.
- (3) Disconnect the connector of the solenoid harnesses from the engine PCB.
- (4) Remove the five cup S M3x6 Taptite screw to remove the paper feed gear plate ASSY from the frame.

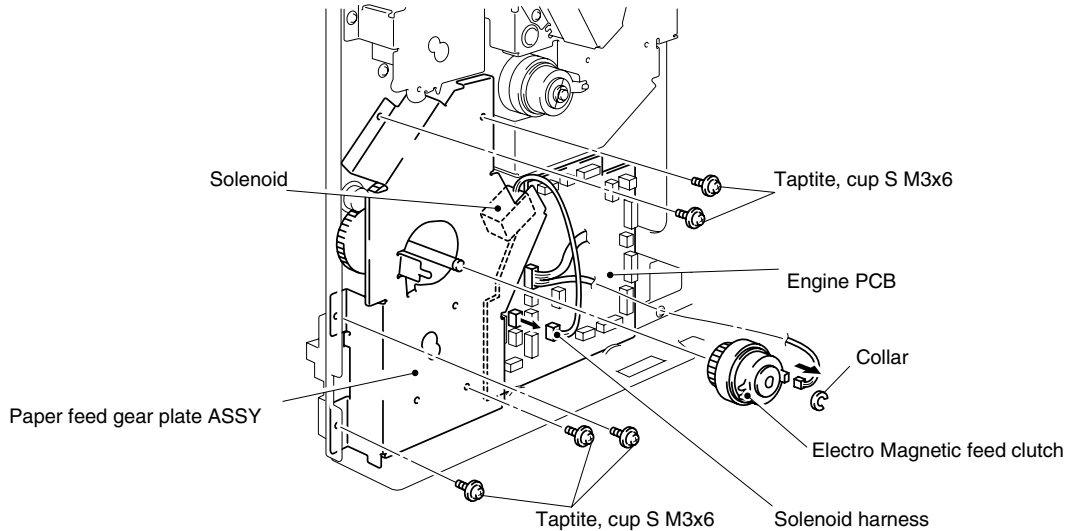


Fig. 4-84

- (5) Remove the friction spring from the spring hook and paper feed gear plate ASSY and remove the spring hook from the sector gear 35.

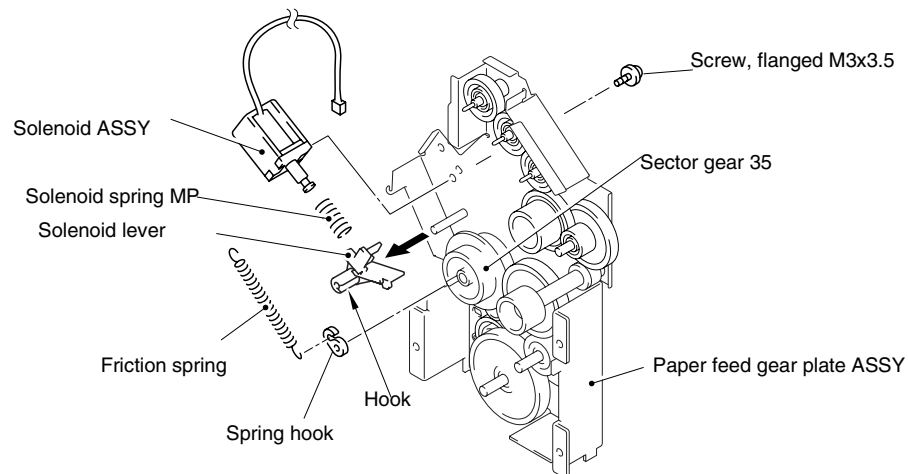
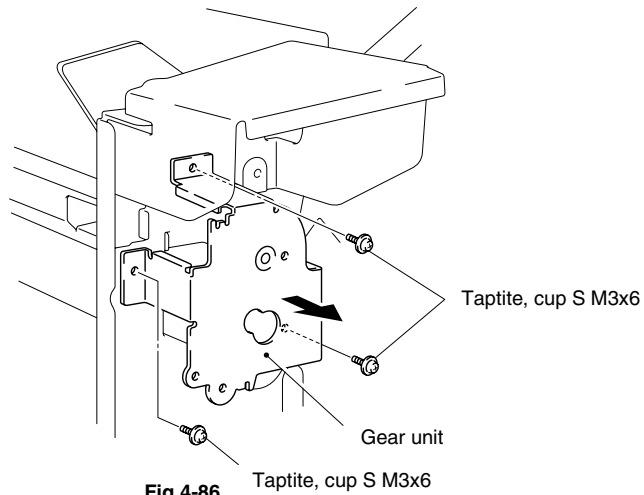
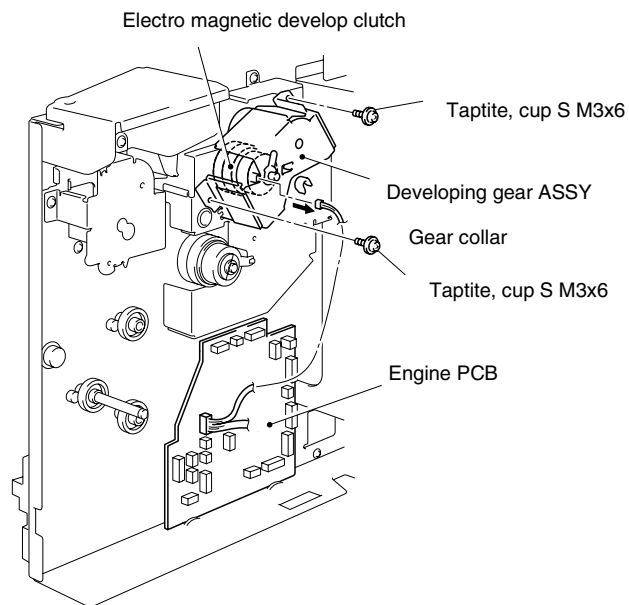


Fig. 4-85

- (6) Remove the three cup S M3x6 taptite screws to take off the gear unit from the frame.



- (7) Disconnect the harness of the release motor sensor PCB ASSY from the engine PCB.  
(8) Remove the screw to take off the release motor sensor PCB ASSY from the frame.  
(9) Disconnect the connector from the developing gear ASSY.  
(10) Remove the gear collar, then remove the two cup S M3x6 taptite screws to take off the developing gear ASSY from the main gear plate ASSY.  
(11) Take off the electro magnetic develop clutch from the developing gear ASSY.



- (12) Disconnect the connector from the electro magnetic develop clutch.
- (13) Remove the collar, then take off the electro magnetic develop clutch from the frame.
- (14) Remove the five cup S Mx6 Taptite screw to remove the main gear plate ASSY from the frame.
- (15) Unhook the hook of the toner sensor PCB, then remove the toner sensor PCB from the frame.

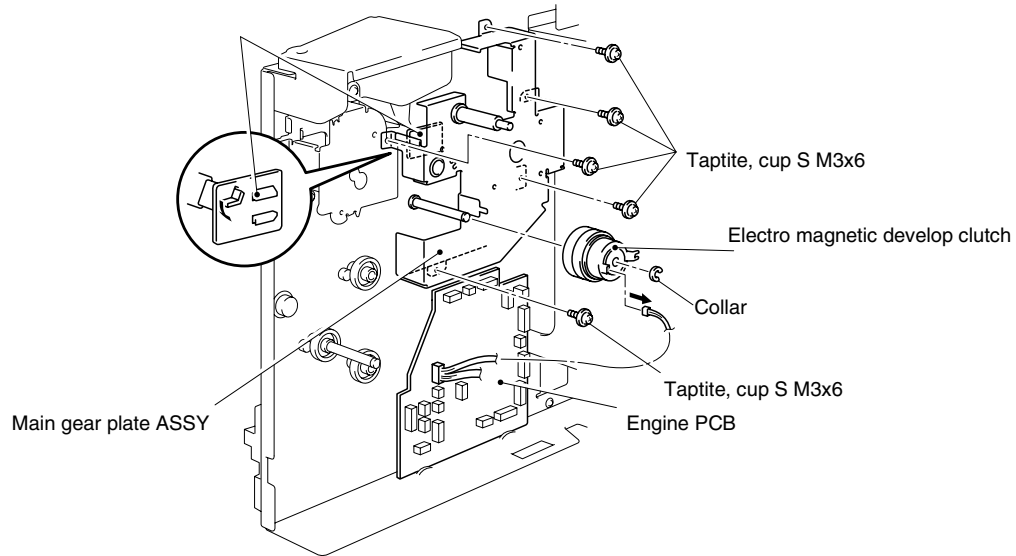


Fig.4-88

- (16) Unhook the two hooks to remove the drum gear link with the drum gear cam.
- (17) Align the joint of the drum gear link and the drum gear cam as shown in the figure below to remove the drive release cam lever from the drive release link.

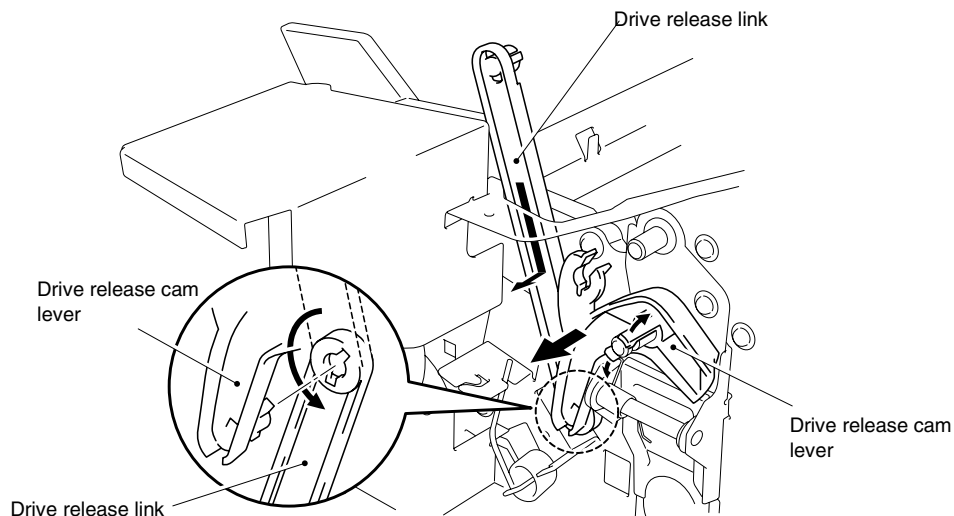


Fig. 4-89

### 3.19 Electromagnetic Clutch Regist

- (1) Remove the collar and the electromagnetic clutch regist from the frame.

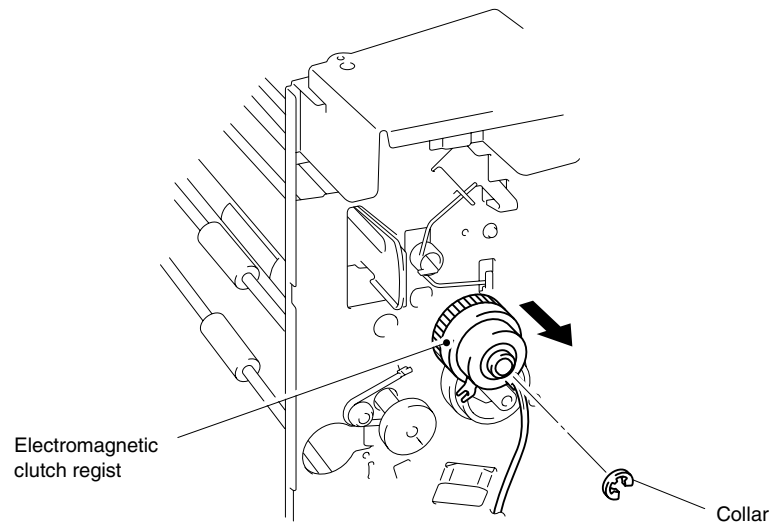


Fig. 4-90

### 3.20 Main PCB

- (1) Remove the two bind S M3x6 Taptite screws from the back of the frame to remove the CF slot.
- (2) Disconnect the four connectors from the main PCB.
- (3) Remove the four cup S M3x6 Taptite screws from the main PCB assy and remove the two screws and two bolts from the connectors at the back of the frame. Then remove the main PCB assy from the frame.

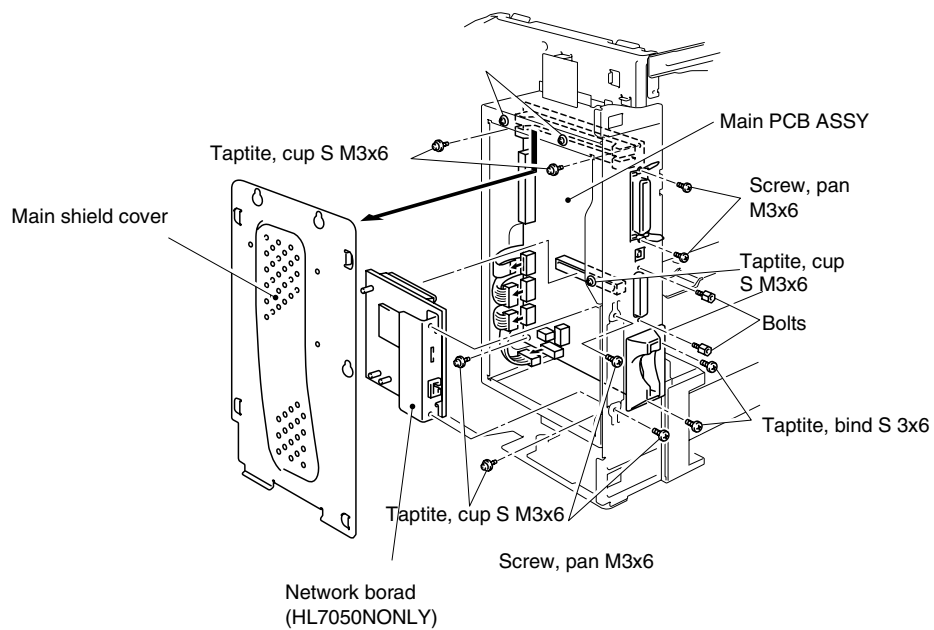


Fig. 4-91

**NOTE:**

After replacing the Main PCB, be sure to carry out the scanner check. Refer to Chapter 6 (9.2 Line Inspection Mode Procedure)

### 3.21 Engine PCB

- (1) Disconnect the connectors from the engine PCB.
- (2) Remove the two cup S M3x6 Taptite screws, release the engine PCB from the slits at the bottom of the frame and remove the engine PCB from the frame.

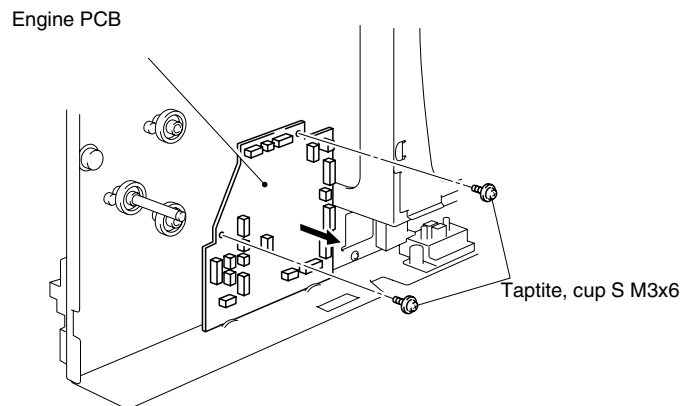


Fig. 4-92

### 3.22 Base Plate

- (1) Place the frame so that the base plate is at the top.
- (2) Remove the four pan (S/P washer) S M3x8 Taptite screws and slide the base plate in the direction of the arrow as shown in the figure below to remove it.

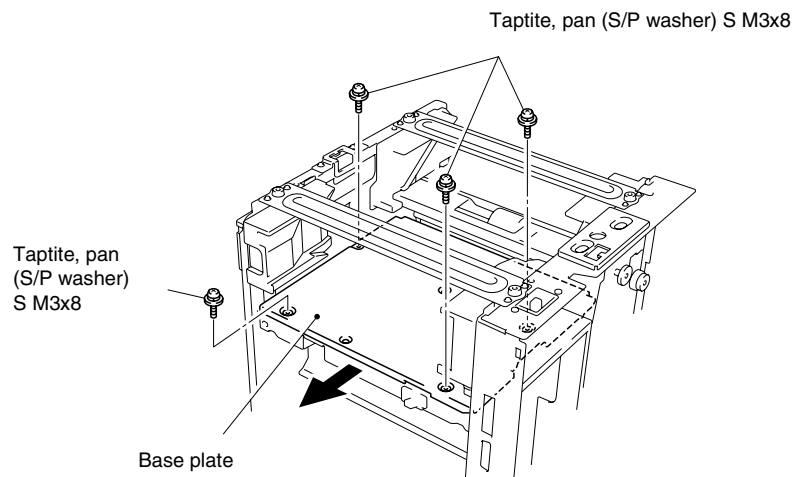


Fig. 4-93

### 3.23 Low-voltage Power Supply PCB ASSY / High-voltage Power Supply PCB ASSY

- (1) Remove the PCB insulation sheet.
- (2) Remove the two bind B tite 4x10 Taptite screws and remove the tray guides left back from the frame by inclining the tray guide left back in the direction of the arrow.

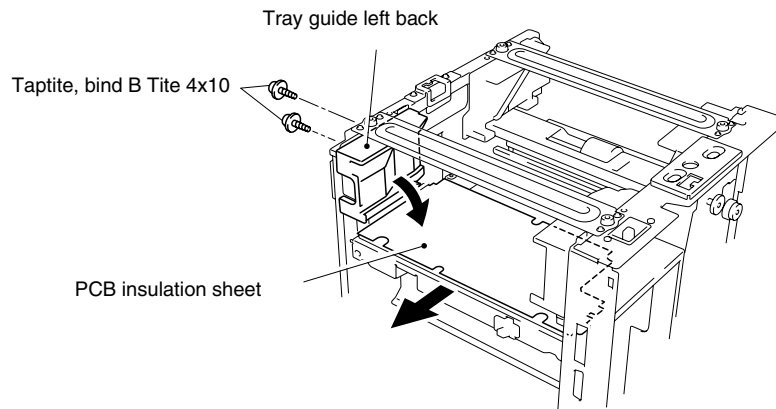


Fig. 4-94

- (3) Remove the cup S M3x6 Taptite screw securing the inlet unit and one pan (S/P washer) M3.5x6 screw securing the ground wire.
- (4) Remove the cup S M3x6 Taptite screw from the low-voltage power supply PCB ASSY to remove the low-voltage power supply PCB ASSY with the inlet from the frame.
- (5) Disconnect the connectors from the low-voltage power supply PCB ASSY.

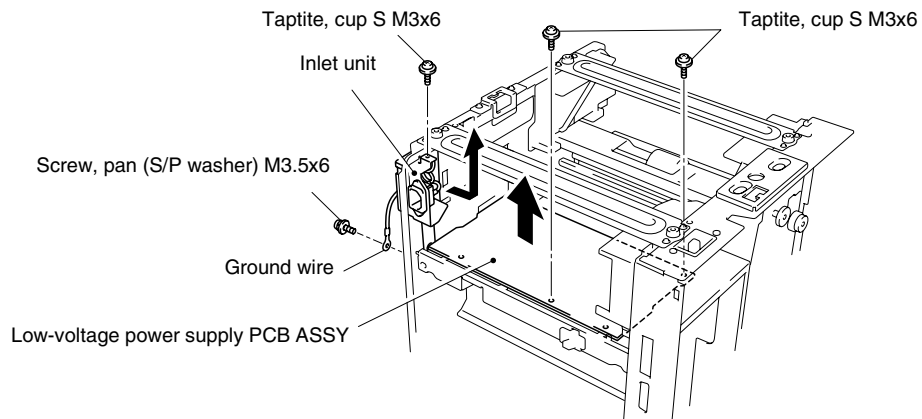


Fig. 4-95

- (6) Remove the two bind B M4x10 screws and the cup S M3x6 Taptite screw, unhook the high-voltage power supply PCB from the hooks of the transfer base and disconnect the connectors to remove the high-voltage power supply PCB from the frame.

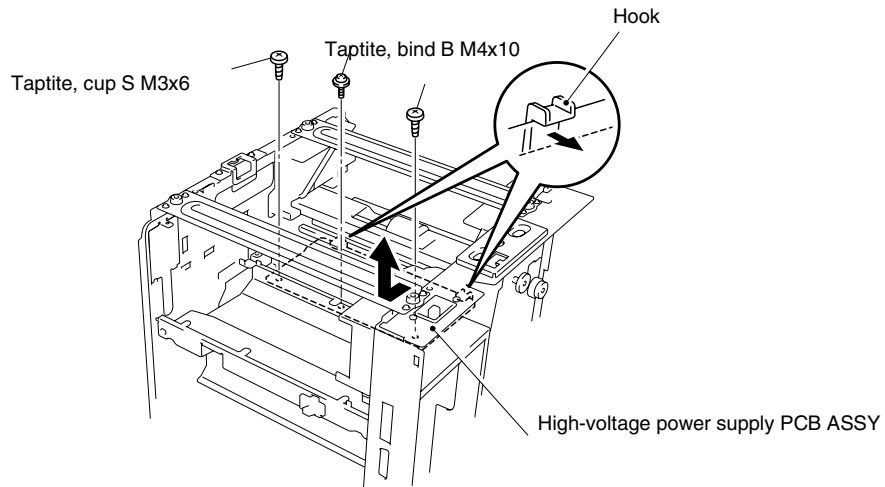


Fig. 4-96

- (7) Remove the transfer plate from the high-voltage power supply PCB ASSY.

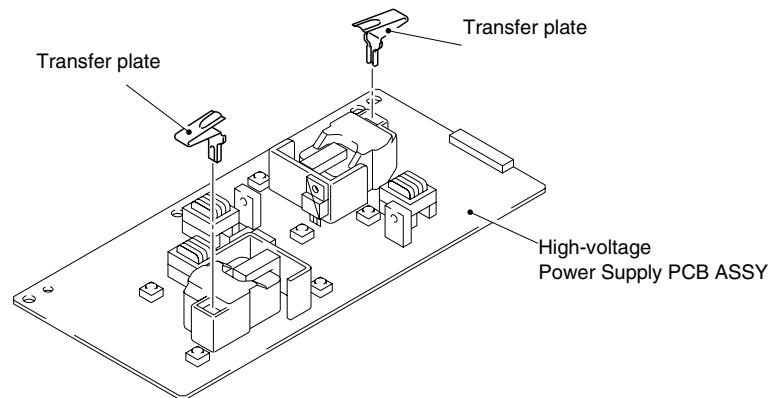


Fig. 4-97

**NOTE:**

*When re-assembling the High-voltage power supply PCB ASSY, ensure that the direction of the transfer plate is correct referring to the figure above.*



### 3.24 Front Guide ASSY

- (1) Disconnect the connector from the left side PCB ASSY on the Frame.
- (2) Remove the two shoulder screws to take off the front guide ASSY.

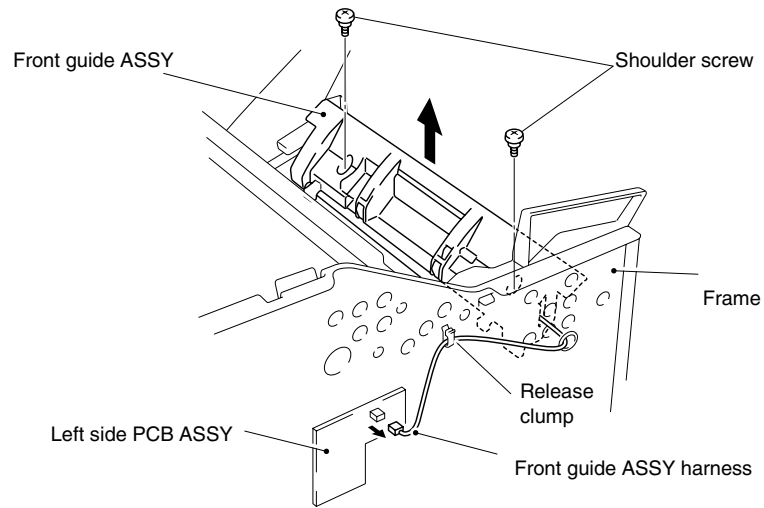


Fig.4-98

### 3.25 Transfer Base ASSY

- (1) Remove the pressure spring R and L from the both sides of the frame.

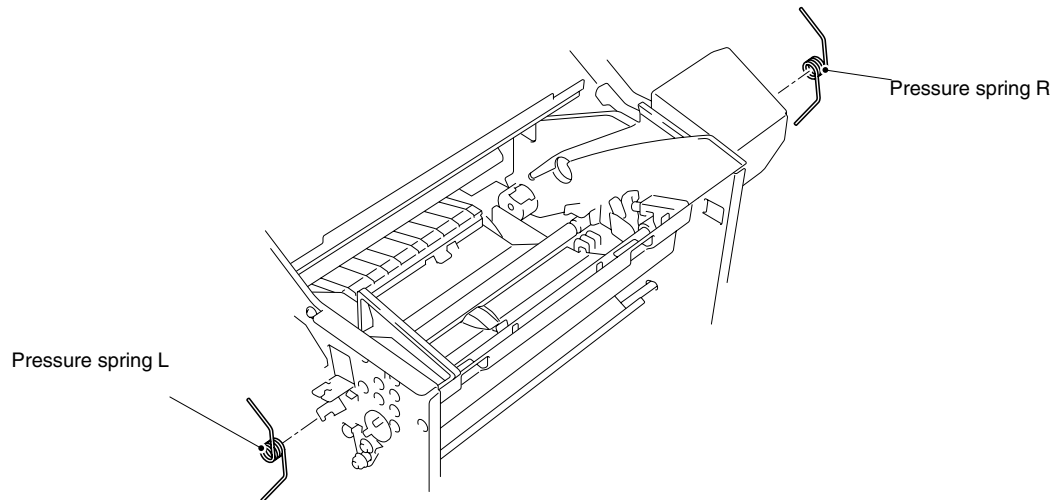


Fig. 4-99

- (2) Disconnect the connector of the left side PCB ASSY from the engine PCB.
- (3) Release the connector of the left side PCB ASSY from the three clumps.
- (4) Remove the two screws to take off the left side PCB ASSY.

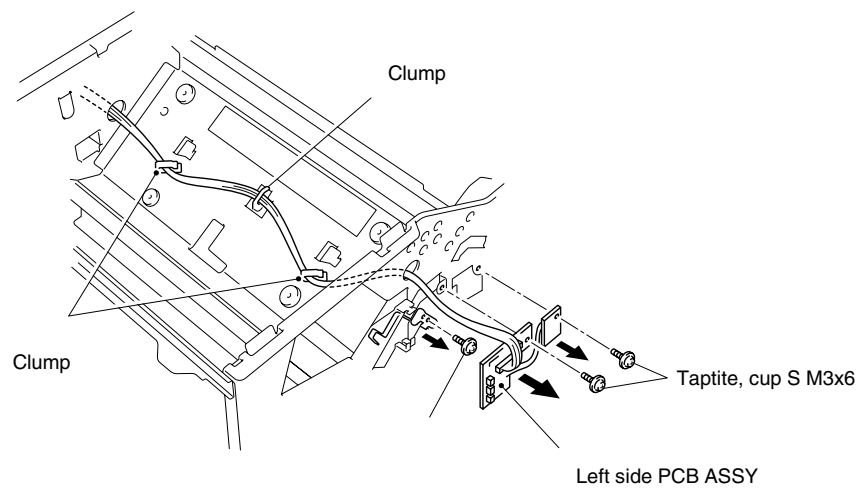


Fig. 4-100

- (5) Remove the nine cup B3x8 Taptite screws from the process guide R and L, and unhook the seven hooks to remove the process guide R and L from the frame.

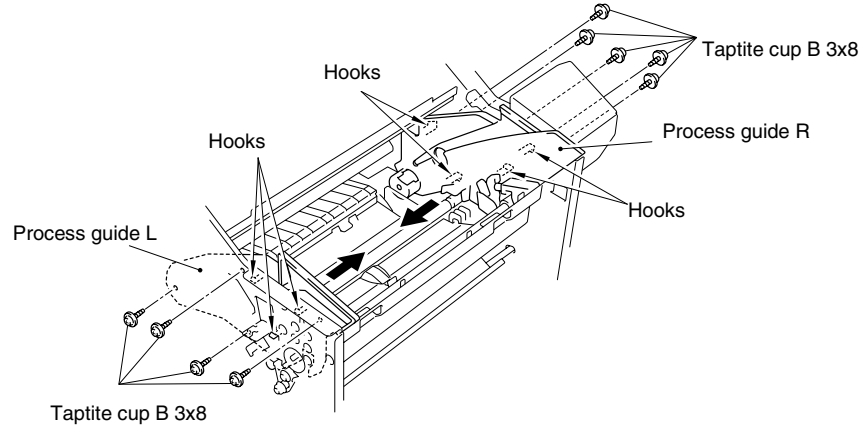


Fig.4-101

- (6) Remove the spring(gold) on the left side of the frame.
- (7) Remove the spring(gold) and the gear on the right side of the frame.

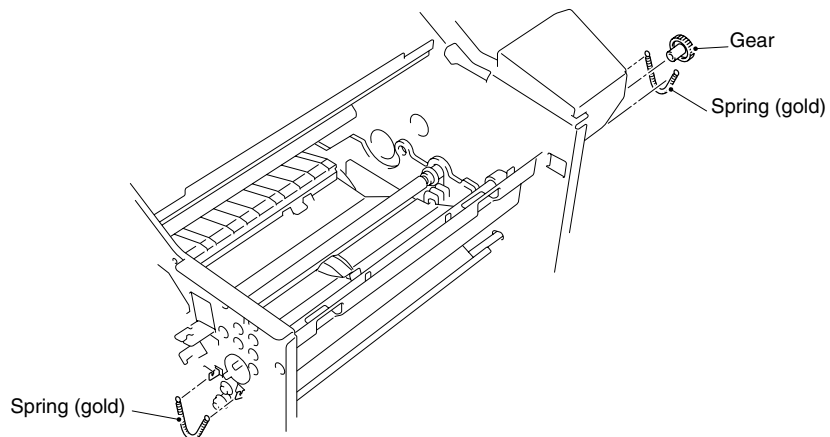
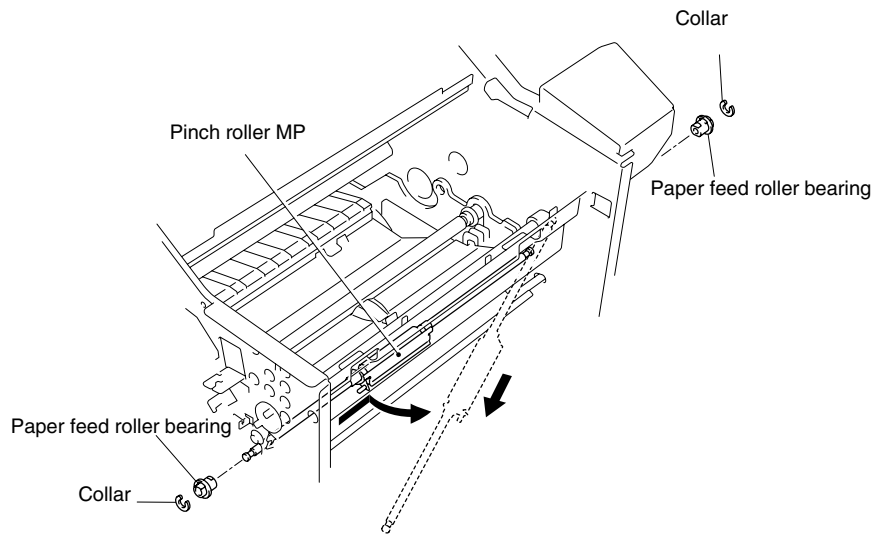


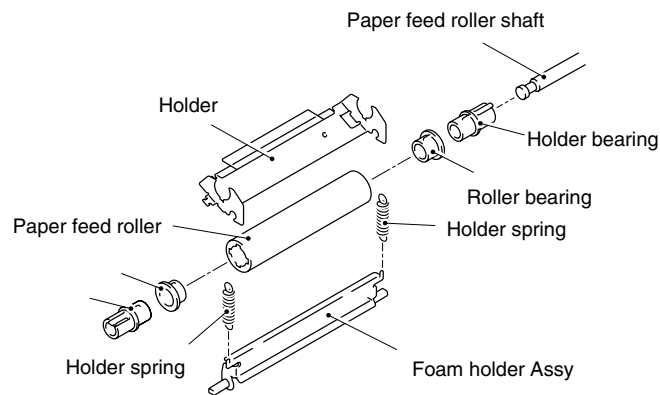
Fig.4-102

- (8) Remove the two collars and the two bearings from the both sides of the pinch roller MP.
- (9) Remove the pinch roller MP from the frame as shown in the figure below.



**Fig.4-103**

- (10) Remove the two holder springs, then remove the foam holder assy by turning it. Release the hooks of the holder bearings to remove them from the paper feed roller shaft.
- (11) Remove the holder, then pull the paper feed roller with roller bearings from the paper feed roller shaft.
- (12) Remove the roller bearings from the paper feed roller.



**Fig.4-104**

- (13) Release the hook of the cover, then remove the cover from the plate A.
- (14) Remove the two screws to take off the plate A and plate B from the frame.

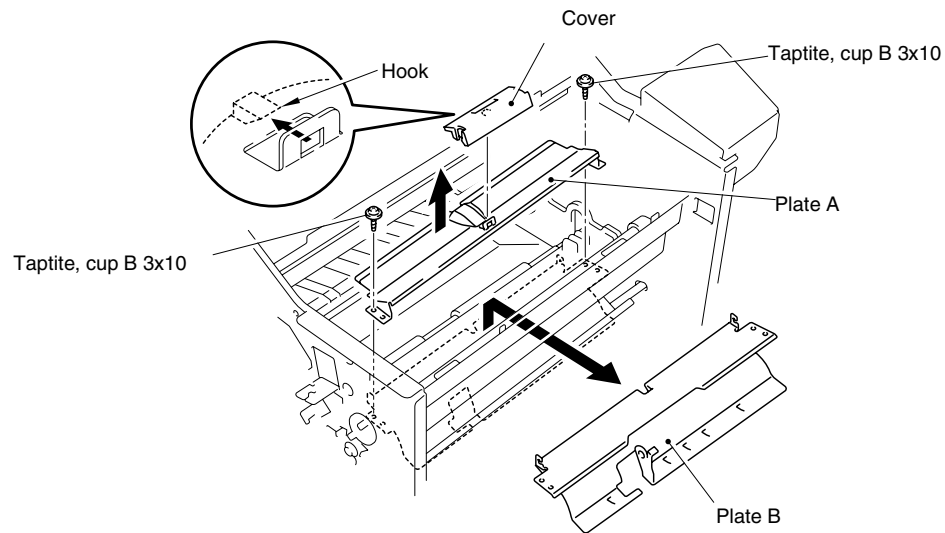


Fig.4-105

- (15) Remove the two collars and the two bearings from the both sides of the paper feed roller MP.
- (16) Slide the paper feed roller MP to the right until the left end of the ASSY is released from the frame and pull it out to the oblique direction.

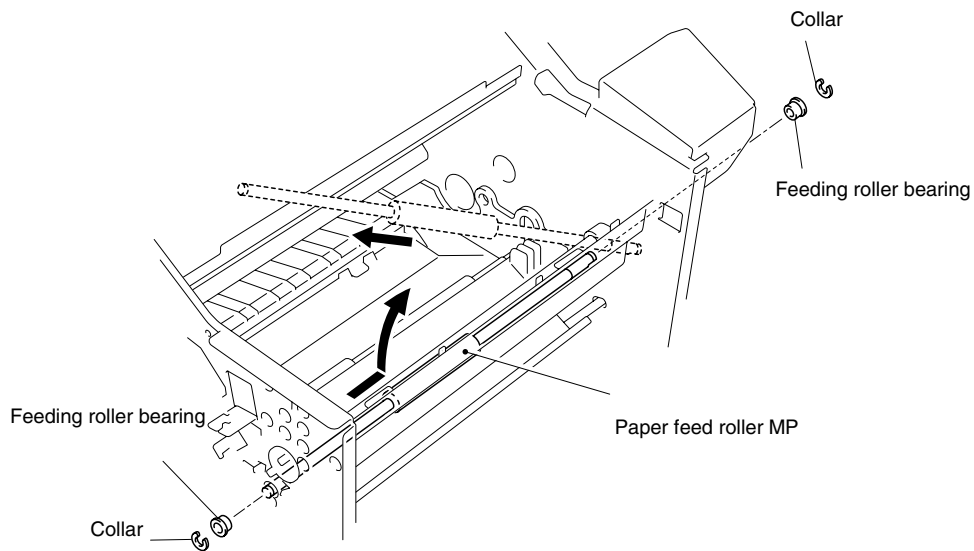
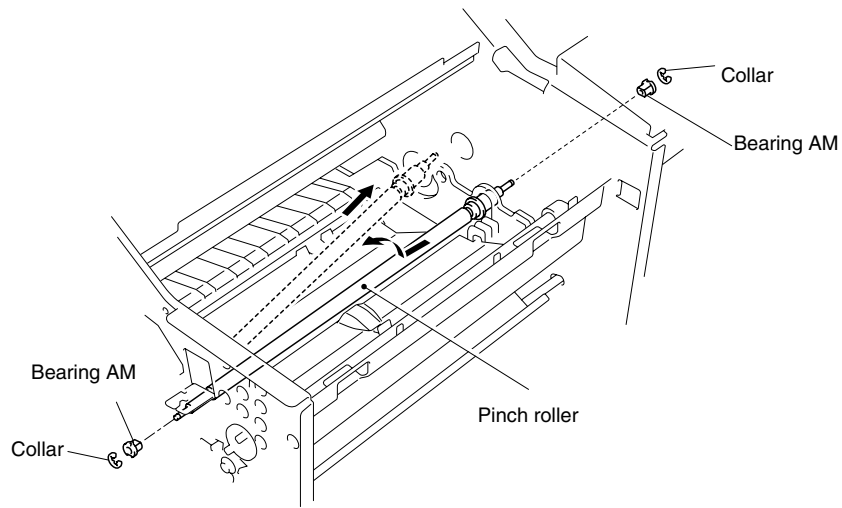


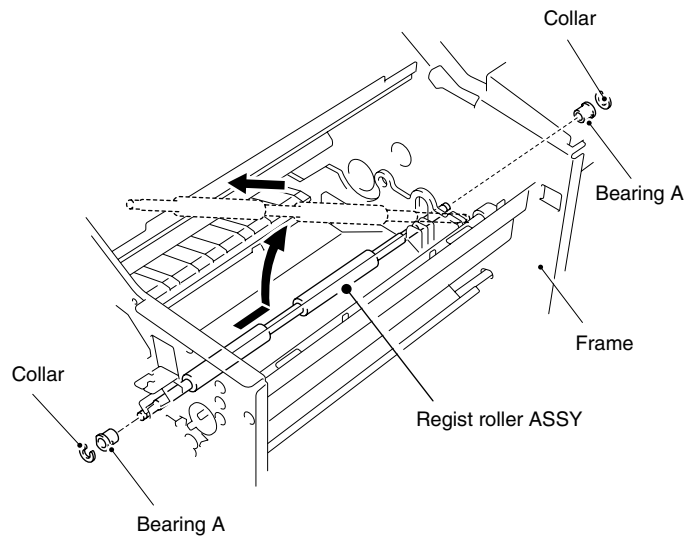
Fig. 4-106

- (17) Remove the two collars and the two bearing AM from the both sides of the pinch roller.
- (18) Remove the pinch roller from the frame as shown in the figure below.



**Fig. 4-107**

- (19) Remove the two collars and the two bearings A from the both sides of the regist roller ASSY.
- (20) Slide the regist roller ASSY to the right until the left end of the ASSY is released from the frame and pull it out to the oblique direction.



**Fig.4-108**

(21) Remove the transfer base ASSY by pulling towards you.

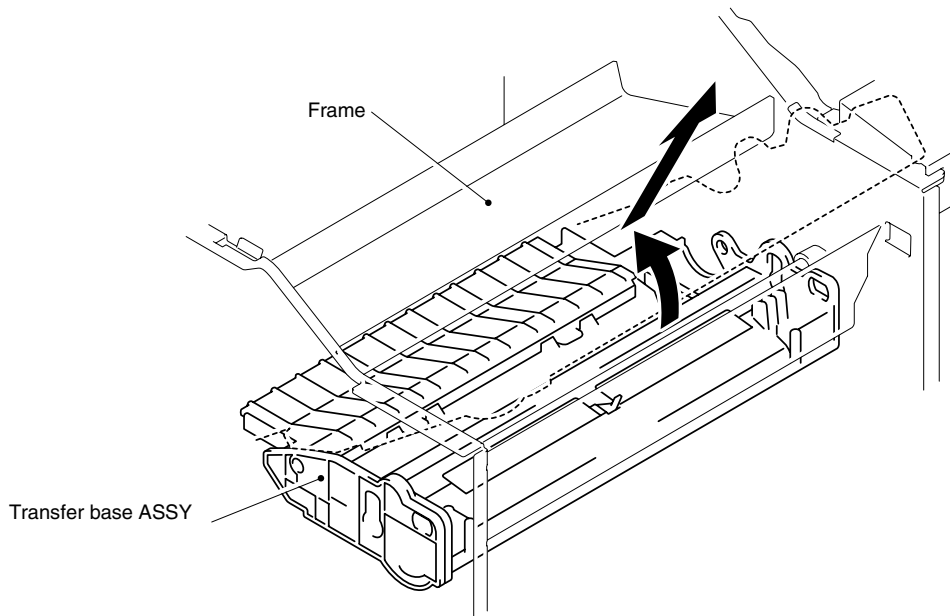


Fig. 4-109

(22) Turn the transfer base ASSY upside down, and then remove the hook to remove the resist sensor PCB ASSY.

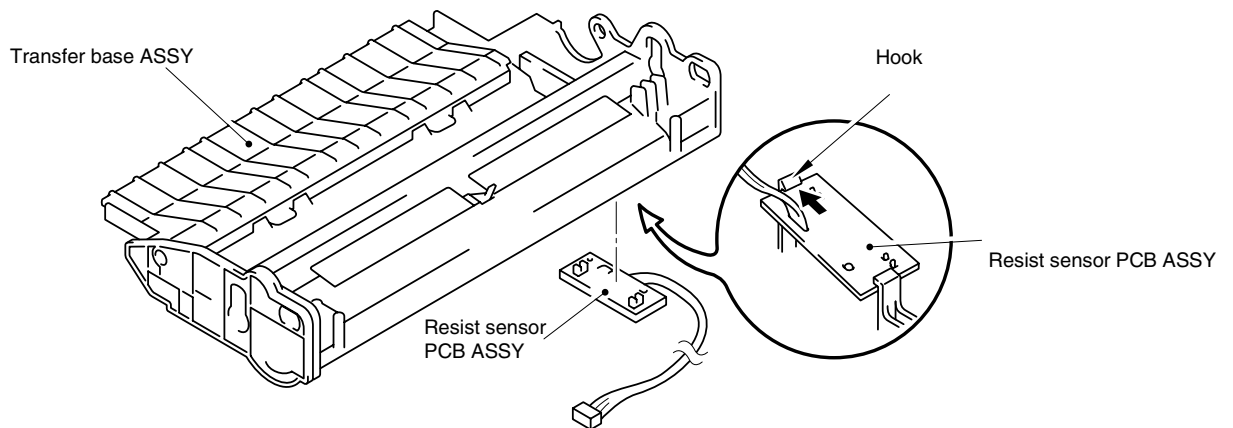


Fig. 4-110

### 3.26 Paper Feed

- (1) Remove the two springs (Black) from both sides of the pinch roller TR, then remove the two collars.
- (2) Unhook the hooks of the bearings to remove them from both sides of the pinch roller TR.
- (3) Remove the pinch roller TR as shown in the figure below.

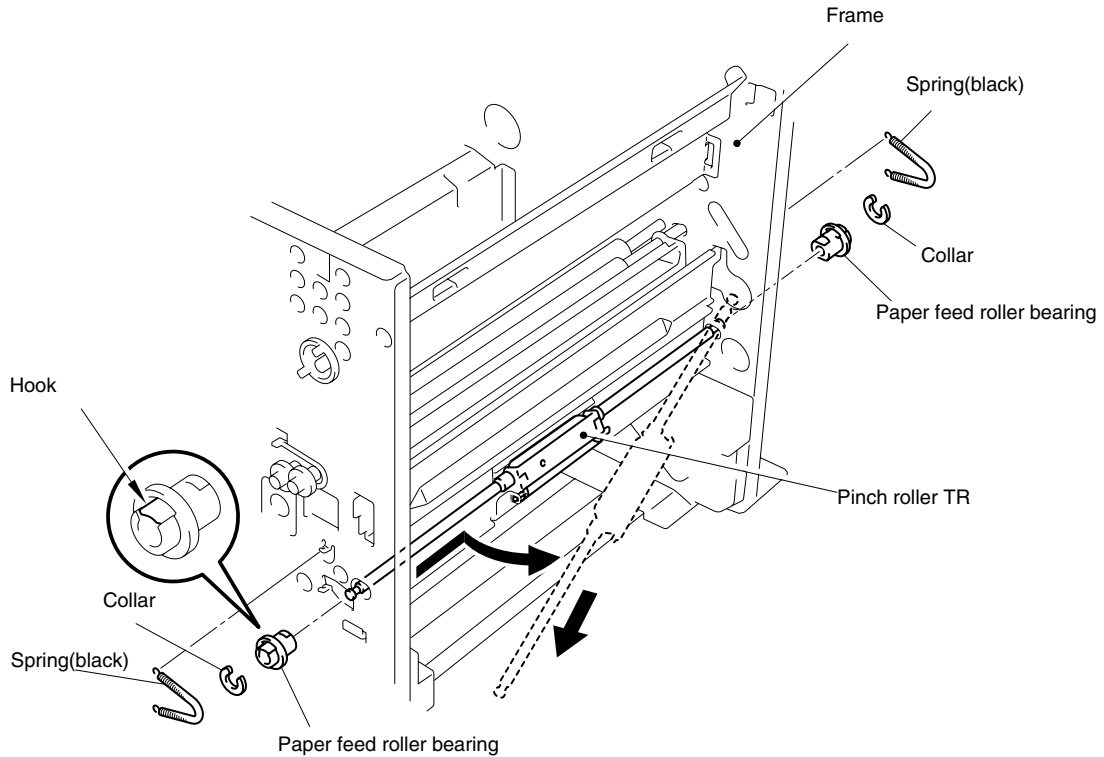


Fig. 4-111

- (4) Remove the two holder springs, then remove the foam holder assy by turning it. Release the hooks of the holder bearings to remove them from the paper feed roller shaft.
- (5) Remove the holder, then pull the paper feed roller with roller bearings from the paper feed roller shaft.
- (6) Remove the roller bearings from the paper feed roller.

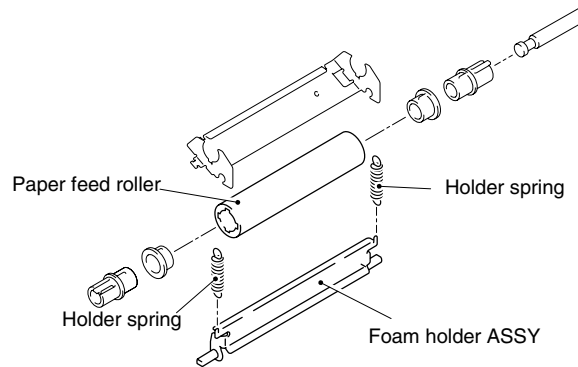


Fig.4-112



- (7) Remove the two cup S M 3x6 taptite screws to take off the plate from the frame.

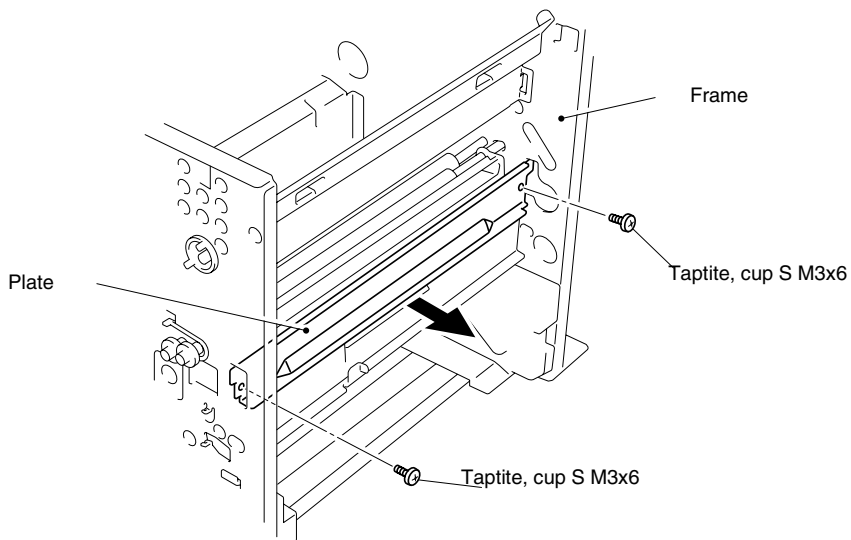


Fig. 4-113

- (8) Remove the two springs (Silver) and the two retaining rings from both ends of the Foam holder A4 ASSY.
- (9) Unhook the hook of the gear to remove it from Foam holder A4 ASSY.
- (10) Unhook the hooks of the bearings to remove them from both ends of the Foam holder A4 ASSY.
- (11) Remove the Foam holder A4 ASSY from the frame as shown in the figure below.

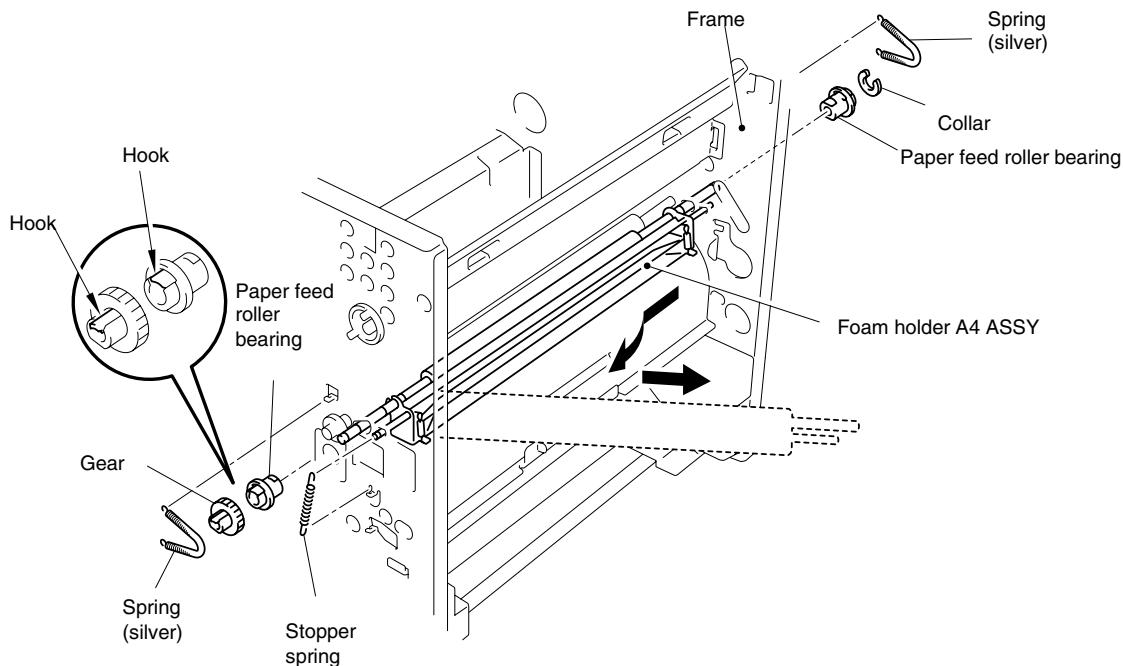


Fig. 4-114

- (12) Remove the two holder springs A4, then remove the two holder bearings.
- (13) Slide the pinch roller A4 to the right, then pull it out in the oblique direction.
- (14) Remove the foam holder A4 assy by turning it. Then slide the holder plate to the right, then pull it in the oblique direction.
- (15) Remove the two foam holder bearings. Slide the pinch roller A4 to the right, then pull it out in the oblique direction.

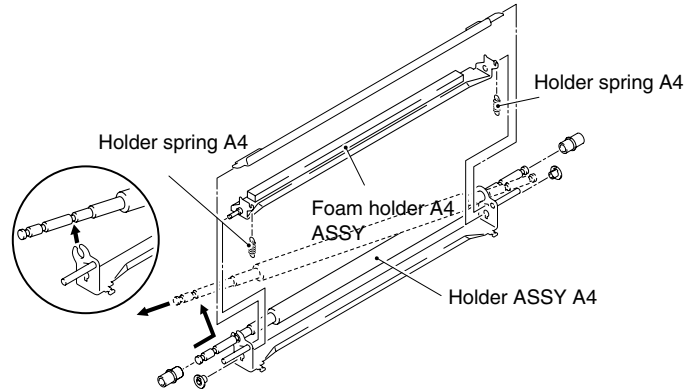


Fig.4-115

- (16) Unhook the hooks of the 2 kinds of gears from both ends of the paper feed roller A4.
- (17) Remove the collar from right end of the paper feed roller A4.
- (18) Remove the two bearings from both ends of the paper feed roller A4.
- (19) Slide the paper feed roller A4 as shown in the figure below, and remove it from the frame.

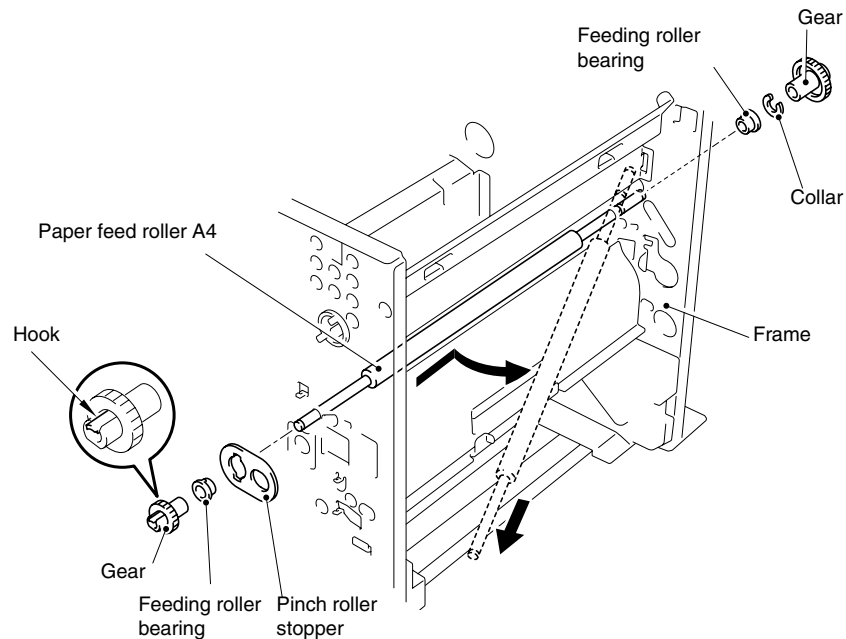


Fig. 4-116

- (20) Remove the four cup S M3x6 taptite screws from the chute.
- (21) Remove the chute from the frame.

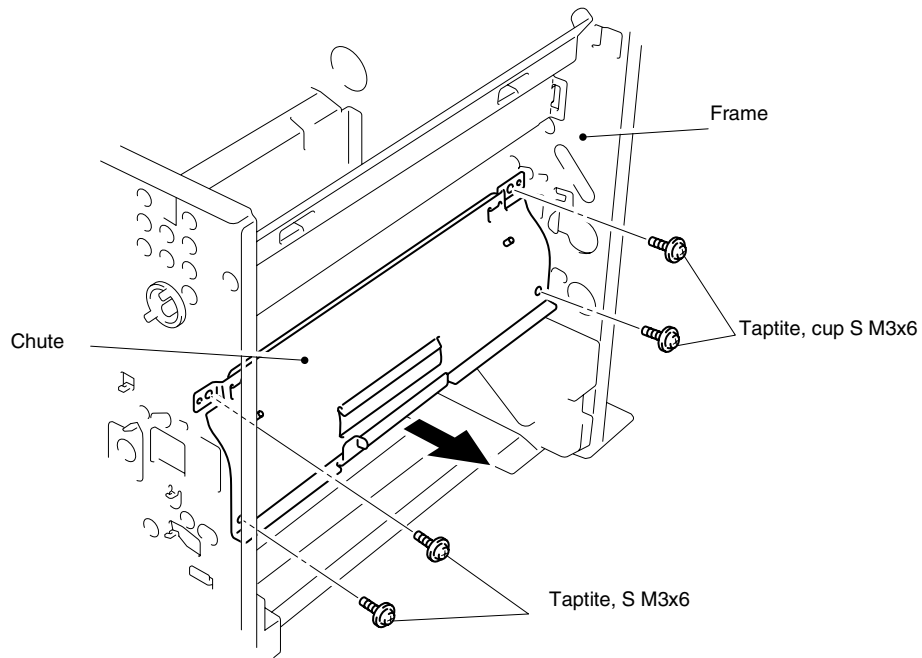


Fig. 4-117

- (22) Turn the frame upside down, and remove the paper feed roller ASSY 45 from the paper feed roller shaft by releasing the hook.

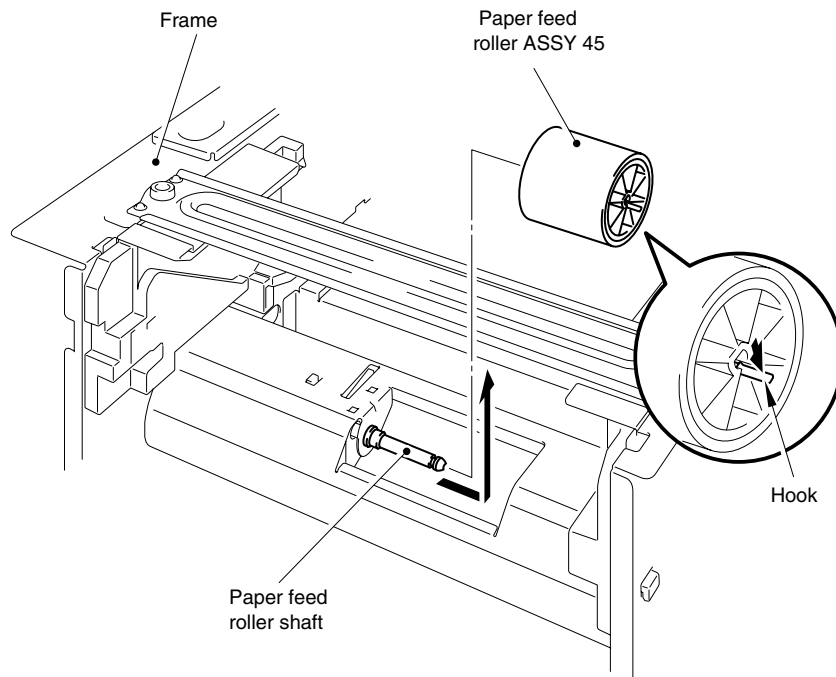
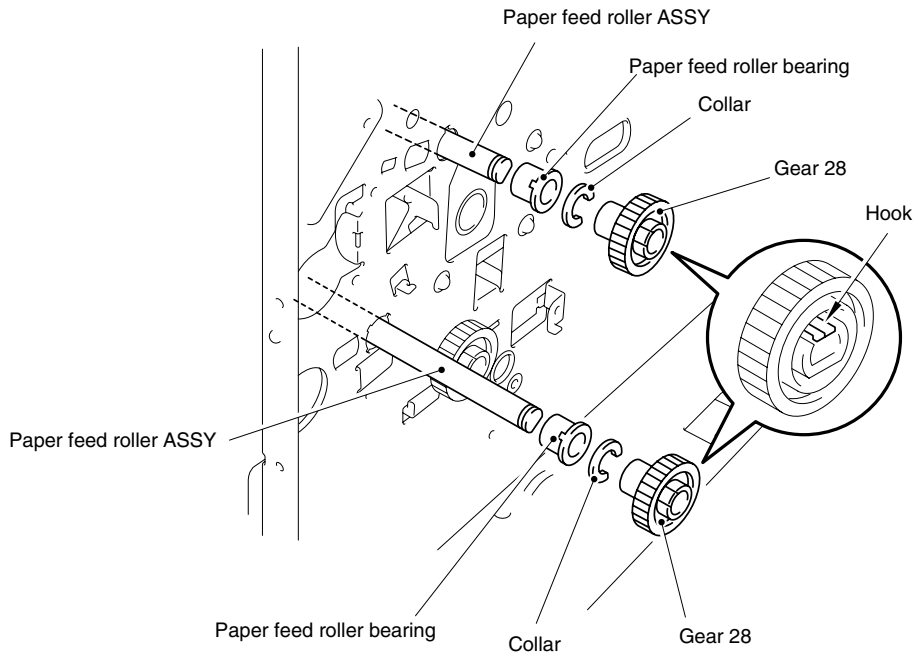


Fig. 4-118

- (23) Place the frame the correct way up.
- (24) Remove the gear 28 from the paper feed roller ASSY of the upper side of the frame by releasing the hook.
- (25) Remove the retaining ring and the bearing from the paper feed roller ASSY of the upper side of the frame.
- (26) Remove the gear 28 from the paper feed roller ASSY of the lower side of the frame by releasing the hook.
- (27) Remove the collar and the bearing from the paper feed roller ASSY of the lower side of the frame.



**Fig. 4-119**

- (28) Unhook the hook of the gear 28, then remove the gear 28 from the right end of the paper feed roller.
- (29) Remove the two retaining rings and the two bearings from both ends of the paper feed roller.
- (30) Slide the paper feed roller ASSY to the right until the left end of the ASSY is released from the frame, and pull it out in the oblique direction.

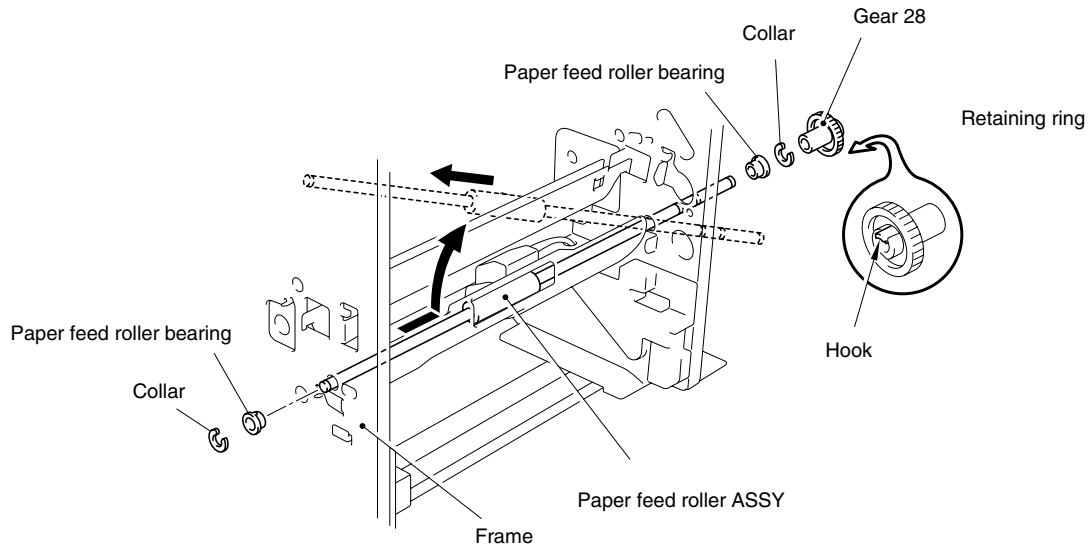


Fig. 4-120

- (31) Remove the four cup S M3x6 taptite screws from both sides of the plate.
- (32) Remove the plate from the frame.

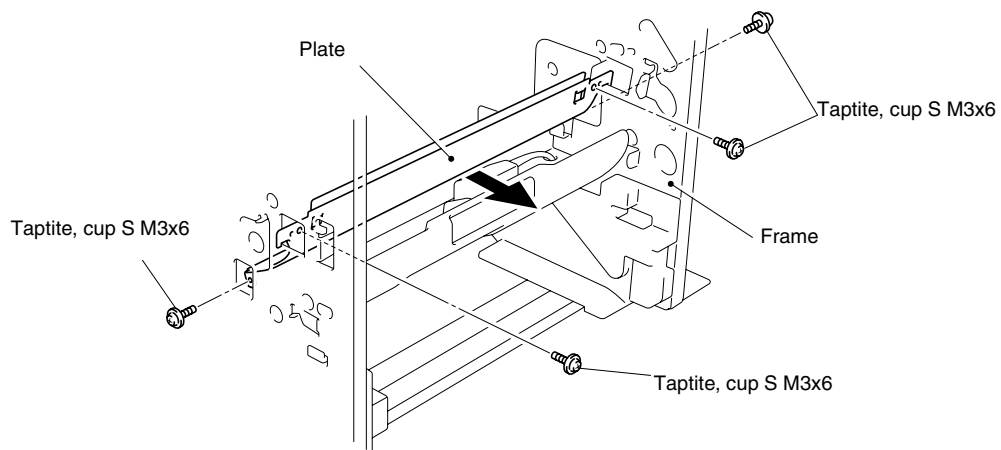
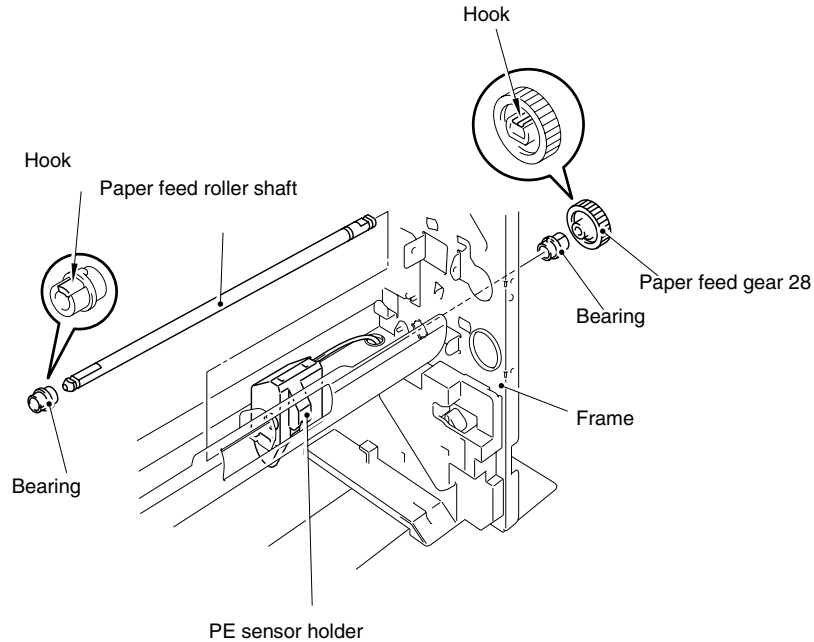


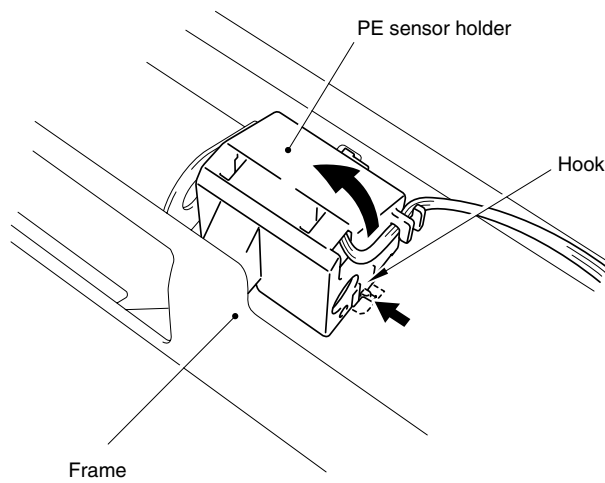
Fig. 4-121

- (33) Remove the paper feed gear 28 from the paper feed roller shaft by releasing the hook of the gear.
- (34) Remove the bearing from the right end of the paper feed roller shaft by releasing the hook of the bearing.
- (35) Remove the paper feed roller shaft from the frame, and then remove the bearing from the left end of the paper feed roller shaft by releasing the hook.



**Fig. 4-122**

- (36) Disconnect the PE sensor connector from the engine PCB.
- (37) Remove the PE sensor holder from the frame by releasing the hook.



**Fig. 4-123**

- (38) Remove the PE sensor actuator from the holes of the PE sensor holder by pulling the holder outwards in the direction of the arrows shown in the drawing below.
- (39) Remove the tray PE sensor PCB ASSY from the PE sensor holder by releasing the two hooks.

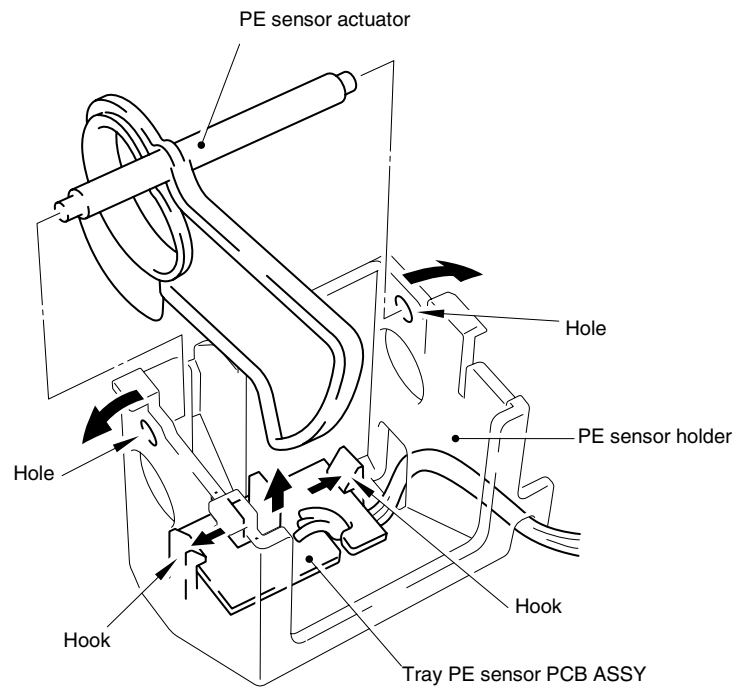


Fig. 4-124

### 3.27 Size SW PCB

- (1) Remove the two bind B tite 4x10 taptite screws from the frame on the left side of the printer and remove the tray guide right rear from the frame by inclining it in the direction of the arrow.

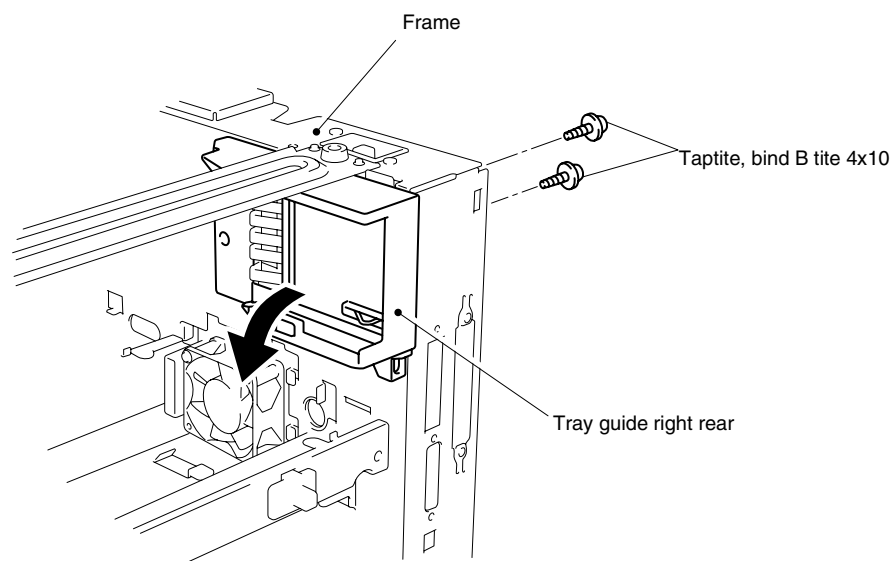


Fig. 4-125

- (2) Remove the guide plate spring from the tray guide right rear.

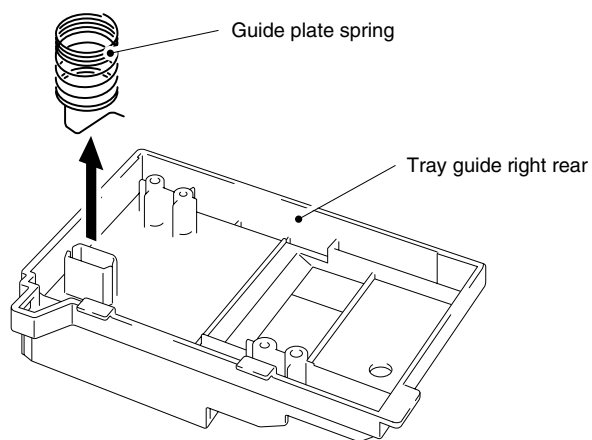


Fig. 4-126



- (3) Remove the cup S M3x6 Taptite screw from the outside of the frame, release the size SW PCB from the frame by pulling the size switch spring slightly inwards to the arrow 1 direction and remove the size SW PCB as shown in the figure below.

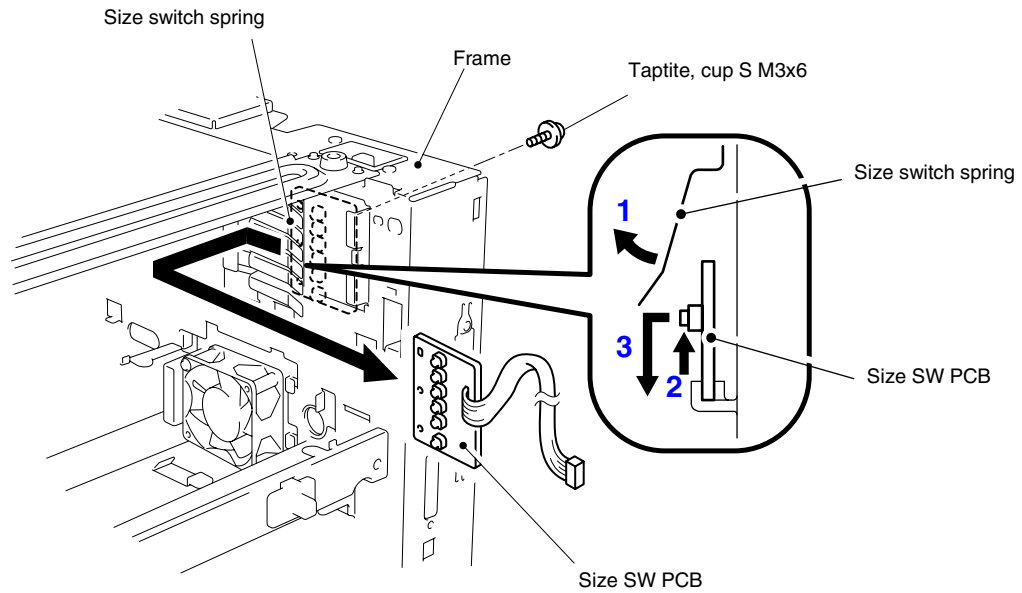


Fig. 4-127

- (4) Remove the three cup S M3x4 Taptite screws to remove the size switch spring from the frame.

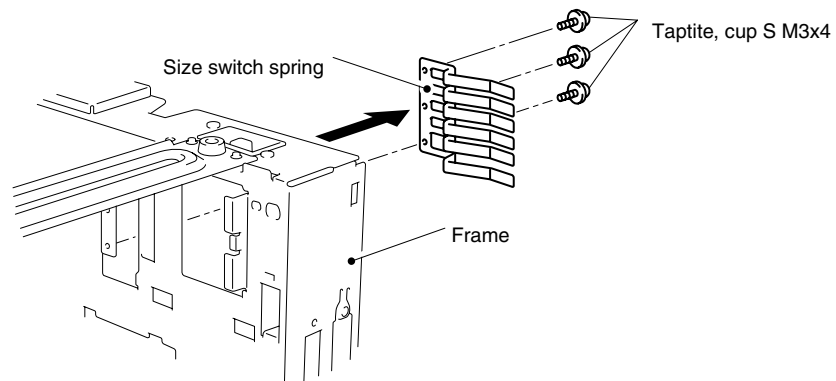


Fig. 4-128

### 3.28 Fan Motor 60

- (1) Remove the two pan B M3x35 Taptite screws to remove the fan motor 60 from the frame.

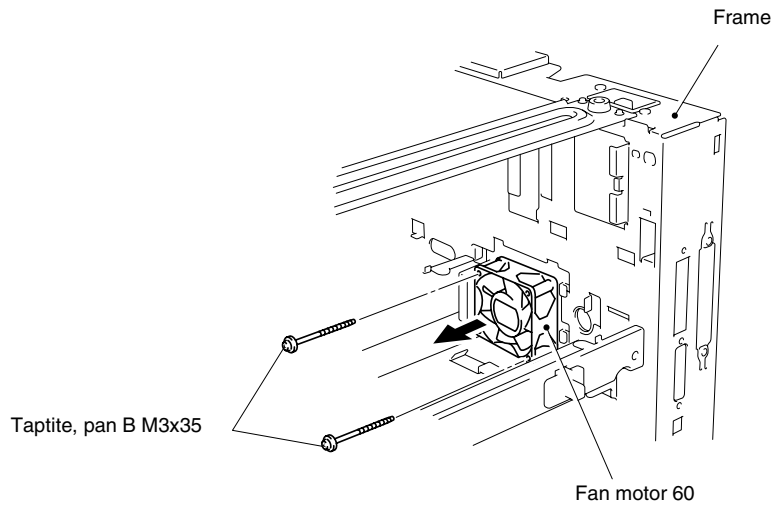


Fig. 4-129

### 3.29 Ejection Gear Unit

- (1) Push the hooks of the main duct. Slide the main duct to the right, then remove it.
- (2) Remove the shutter from the main duct.

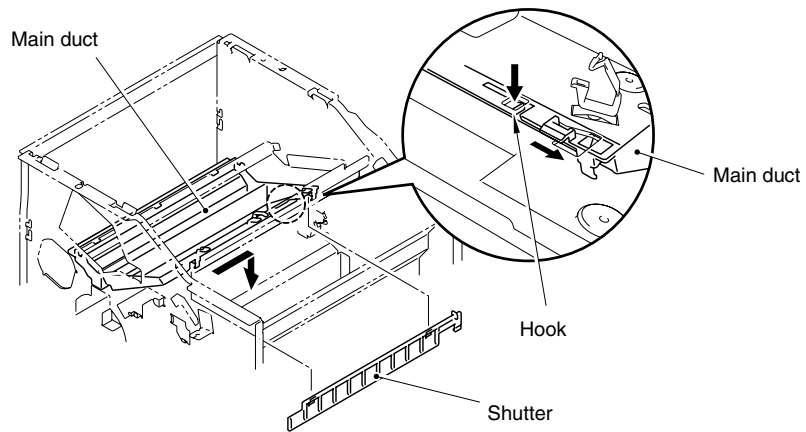


Fig. 4-130

- (3) Remove the gear collar C, then remove the gear 18/60.
- (4) Remove the four cup S M 3x6 taptite screws.

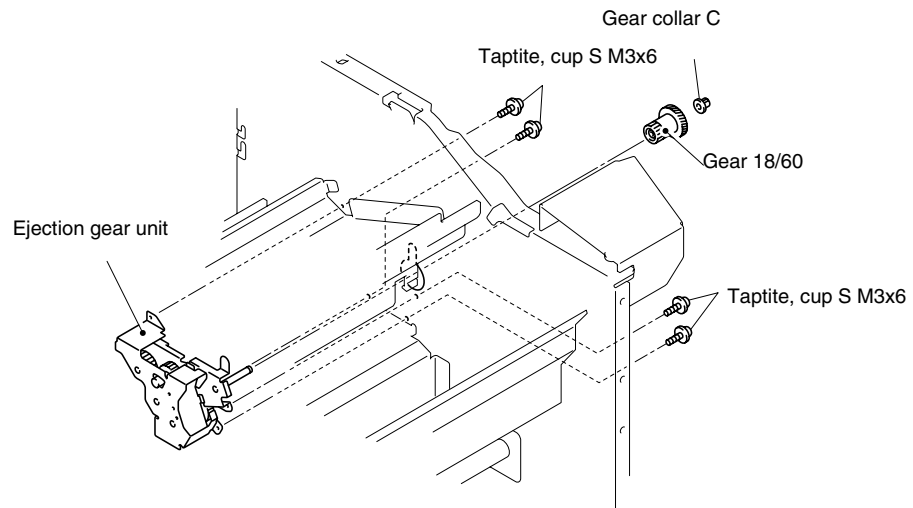


Fig. 4-131

## 4. LUBRICATION

Apply the specified lubricants to the lubrication points as shown below.

Lubricant type (Manufacturer)	Lubricant amount						
	Thin coat of grease with a brush	0.5 mm dia. ball	1 mm dia. ball	2 mm dia. ball	3 mm dia. ball (Rice-sized pinch of grease)	4 mm dia. ball	5 mm dia. ball
FLOIL GE-676	—	—	—	GE2	—	—	—
FLOIL BG-1M (Kanto Kasei Ltd.)	—	—	—	—	—	BG4	—
FG-80H (Kanto Kasei Ltd.)	—	—	—	—	—	FG4	—

[ 1 ] Pinch roller MP

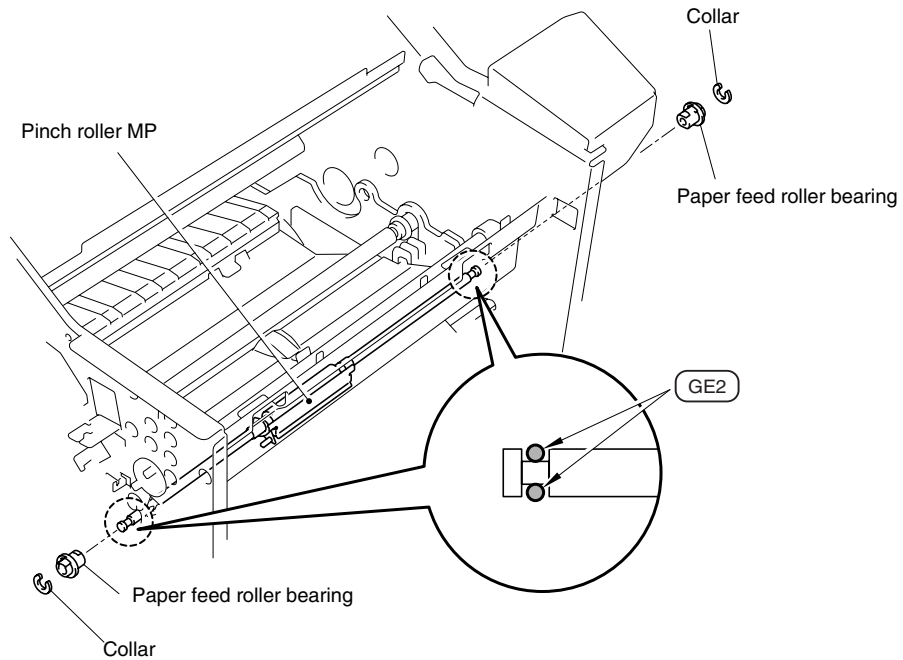


Fig.4-132

[ 2 ] Pinch roller TR

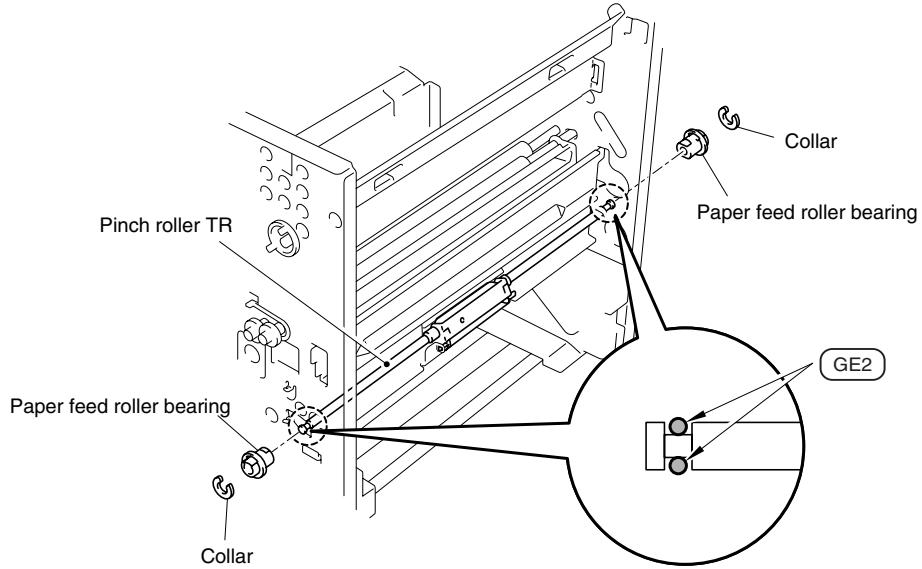


Fig.4-133

[ 3 ] Foam holder A4 ASSY

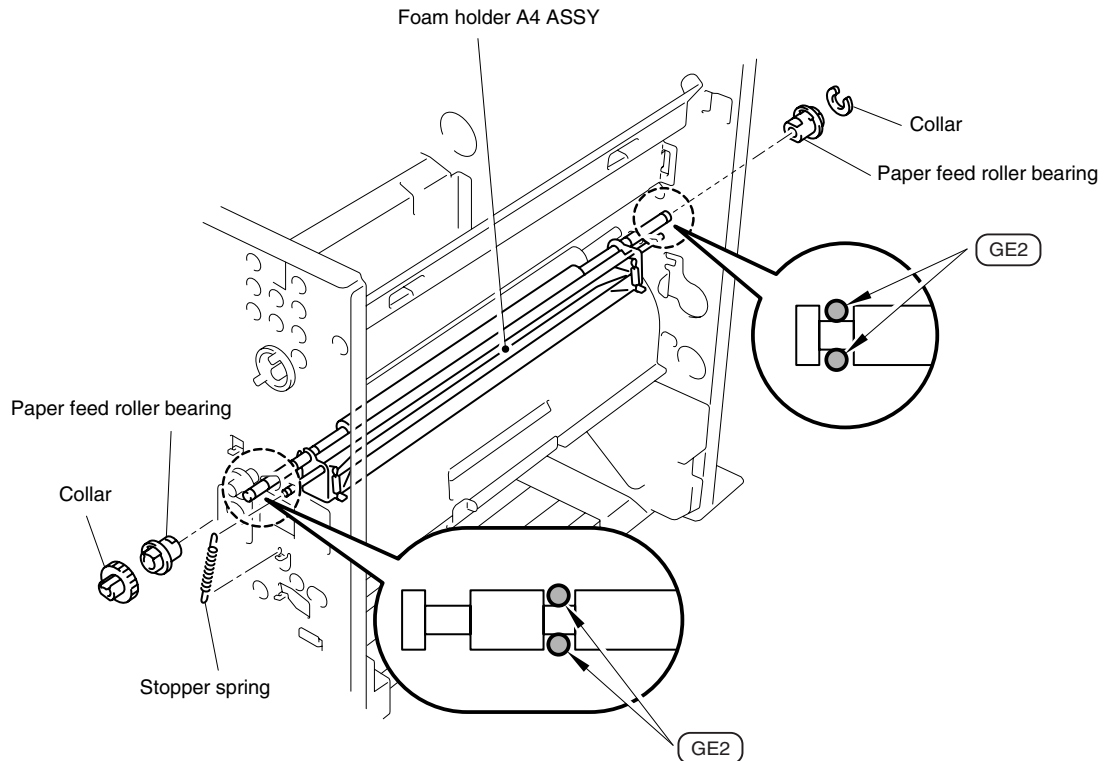


Fig.4-134

[ 4 ] Feeding gear unit

**NOTE:**

*When you insert each gear to each shaft, be sure to insert in rotating the gear 90 degrees or more so that grease may be spread.*

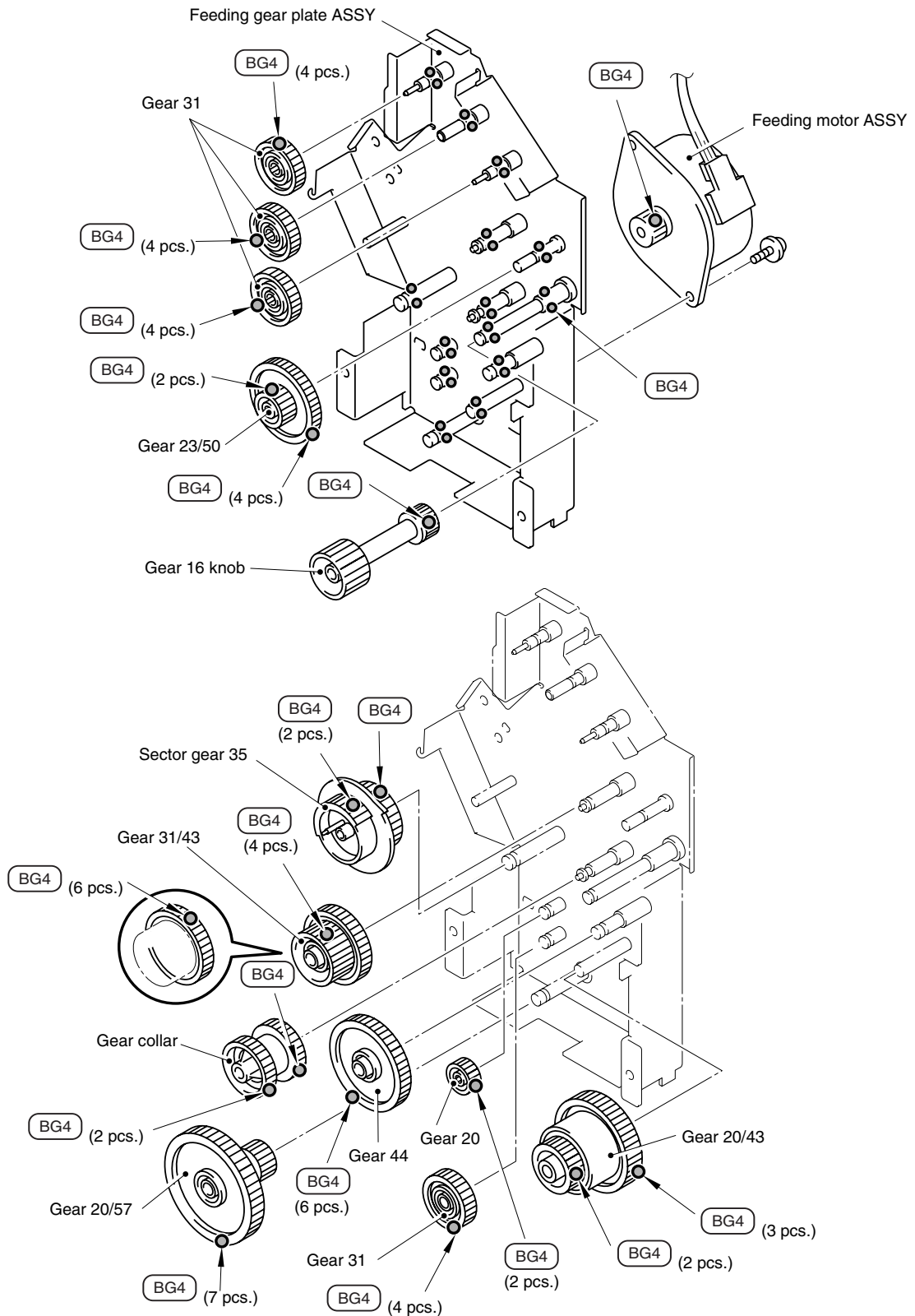
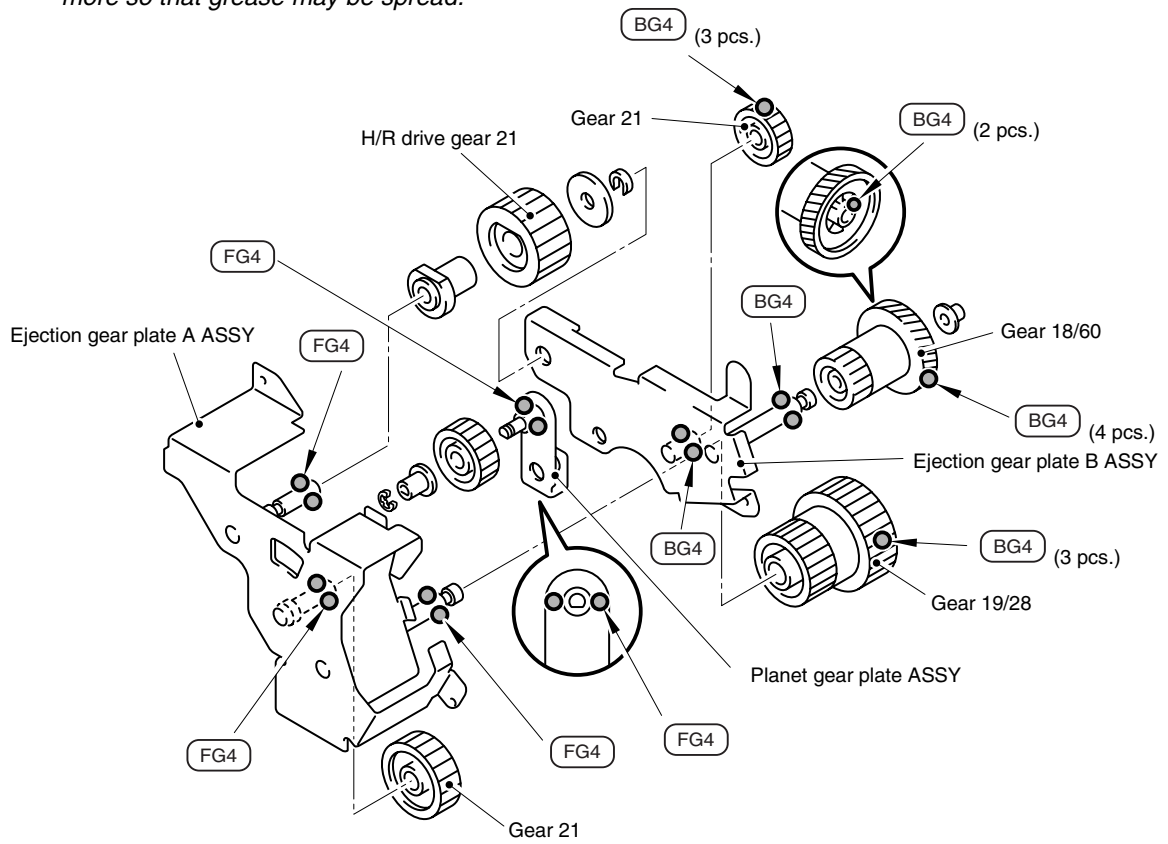


Fig.4-135

[ 5 ] Ejection gear unit

**NOTE:**

*When you insert each gear to each shaft, be sure to insert in rotating the gear 90 degrees or more so that grease may be spread.*

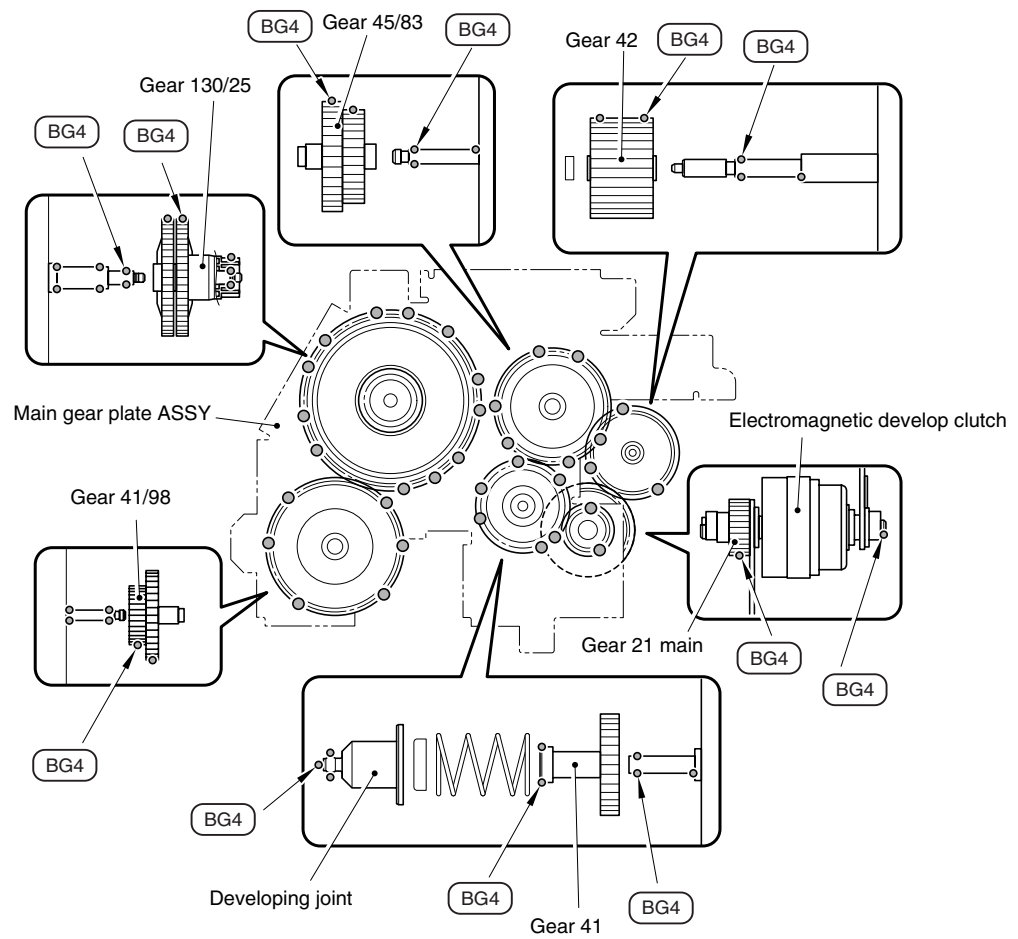


**Fig.4-136**

[ 6 ] Main gear unit

**NOTE:**

*When you insert each gear to each shaft, be sure to insert in rotating the gear 90 degrees or more so that grease may be spread.*



**Fig.4-137**



## 5. PACKING

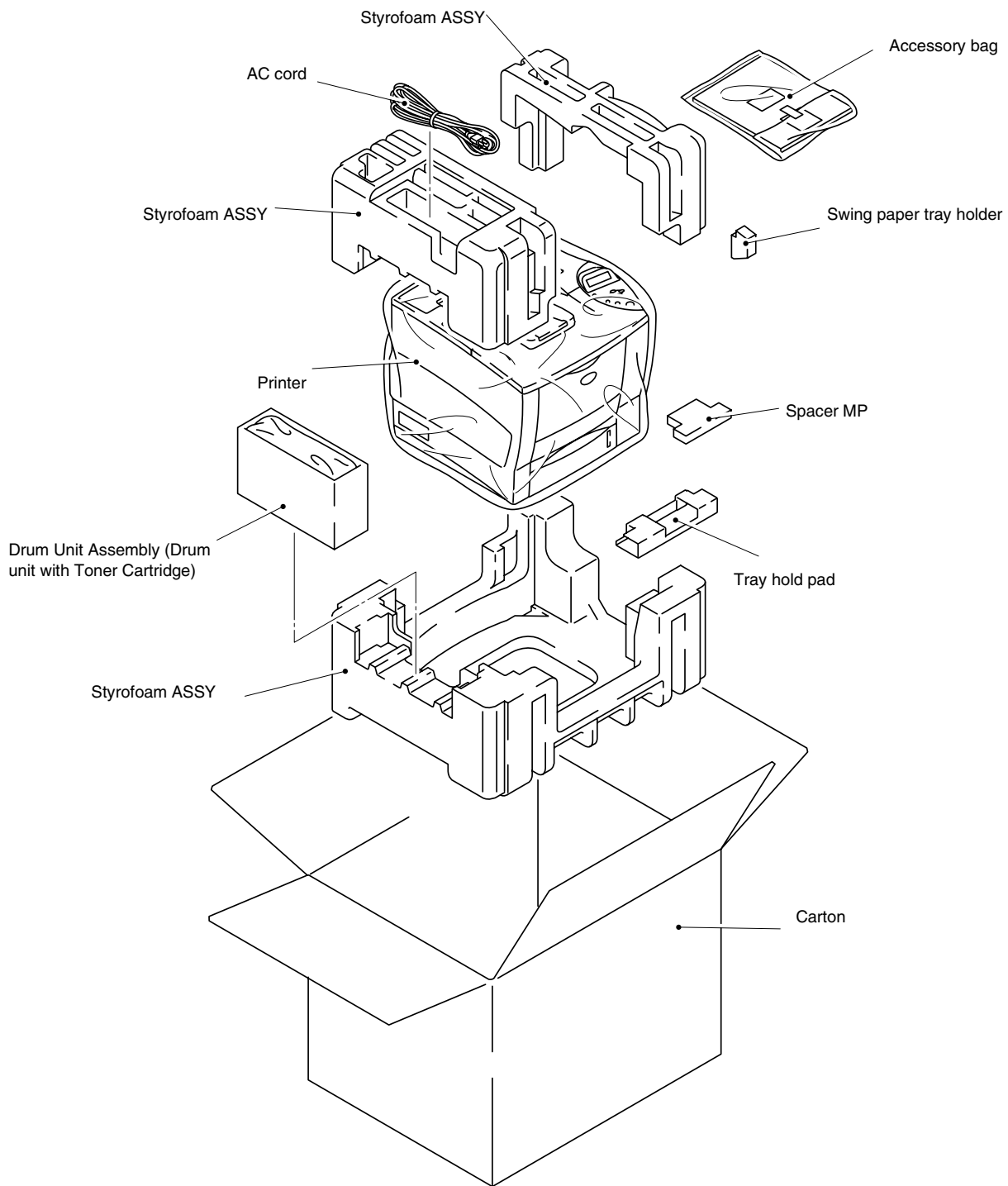


Fig. 4-138

## CHAPTER 5 PERIODIC MAINTENANCE

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

### **WARNING**

- (1) **Always turn off the power switch and unplug the power cord from the power outlet before accessing any parts inside the printer.**
- (2) **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.**



## 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 print quality problem appears.

### 1.1 Drum Unit

The "CHANGE DRUM SOON" message appears on the LCD display when the drum unit is nearly at the end of its life.

Life expectancy: 40,000 pages  
(When printing A4 or Letter size paper at 5% print coverage)

**NOTE:**

*There are many factors that determine the actual drum life, such as temperature, humidity and type of paper that you use, etc.*

**<Replacement Procedure>**

- (1) Open the top cover of the printer.
- (2) Pull out the drum unit assembly (drum unit with the toner cartridge). (Fig.5-1)

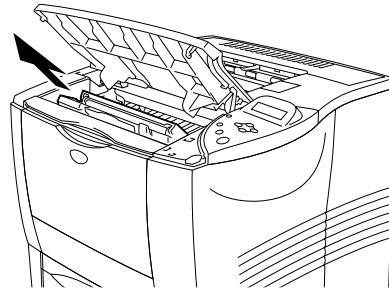


Fig. 5-1

**! CAUTION:**

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

- (3) While pressing the Blue lock lever, pull the toner cartridge out of the drum unit assembly. (Fig.5-2)

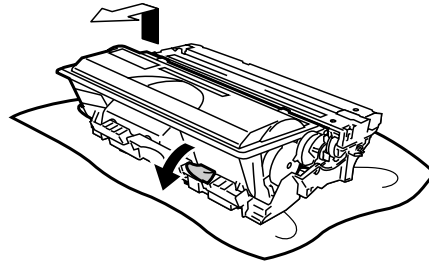


Fig. 5-2

- (4) Unpack the new drum unit, and remove the protective materials.
- (5) Install the toner cartridge into the new drum unit until you hear it lock into place with a click. When the toner cartridge is installed correctly, the Blue lock lever is lifted automatically. (Fig.5-3)

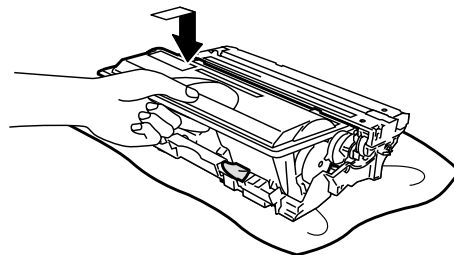


Fig. 5-3

- (6) Put the drum unit assembly back in the printer.
- (7) Reset the page counter referring to the instructions supplied with the new drum unit.
- (8) Close the front cover.

**! CAUTION:**

- For best performance, use only genuine Brother toner. The product should only be used in a clean, dust-free environment with adequate ventilation..
- Only unpack a drum unit immediately before you need to install it into the printer. If an unpacked drum unit is subjected to excessive direct sunlight or room light, the unit may be damaged.
- Handle the drum unit and toner cartridge carefully. If toner scatters on your hands or clothes, wipe or wash it off with cold water immediately.
- Discard the used drum unit according to local regulations. Be sure to seal up the drum unit tightly so that toner powder does not spill out of the unit.
- Do not reset the page counter when replacing the toner cartridge only.
- It is recommended to clean the printer when you replace the drum unit. Refer to [subsection 3. 'PERIODICAL CLEANING' in this Chapter.](#)

**1.2 Toner Cartridge**

Toner low:	The "TONER LOW" message appears at intervals on the LCD display when the toner cartridge has nearly run out of toner.
Toner life end:	The "TONER LIFE END" message appears on the LCD display when the printer has run out of toner or the toner is not evenly distributed inside the cartridge.
Life expectancy:	12,000 pages / toner cartridge (When printing A4 or Letter size paper at 5% print coverage)

**NOTE:**

*There are many factors that determine the actual toner life, such as temperature, humidity, type of paper that you use, the number of pages per print job, etc.*

**<Replacement Procedure>**

- (1) Open the top cover of the printer.
- (2) Push down the blue lock lever and take out the Toner Cartridge. (Fig.5-4)

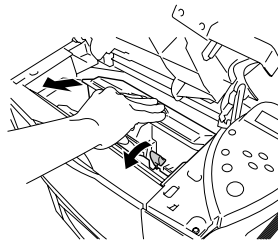


Fig. 5-4



**CAUTION:**

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

- (3) Unpack the new toner cartridge.  
Keeping the cartridge horizontal, gently rock it from side to side five or six times. (Fig.5-5)

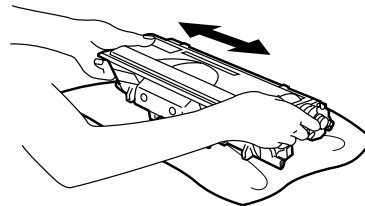


Fig. 5-5

- (4) Remove the yellow plastic protective cover. (Fig.5-6)

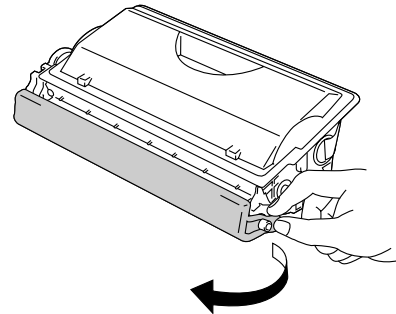


Fig. 5-6

- (5) Put the new toner cartridge into the printer. When the toner cartridge is installed correctly, the Blue lock lever is lifted automatically.

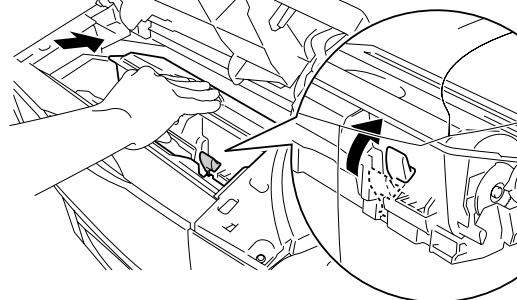


Fig. 5-7

- (6) Close the top cover of the printer.

**! CAUTION:**

- Handle the drum unit and toner cartridge carefully. If toner scatters on your hands or clothes, wipe or wash it off with cold water immediately.
- Be sure to seal the toner cartridge tightly so that toner powder does not spill out of the cartridge.
- Dispose of the used toner cartridge in accordance with local plastic waste regulations.
- Only unpack a toner cartridge immediately before you need to install it into the printer. If a toner cartridge is left unpacked for a long period of time, the toner life is shortened
- If an unpacked drum unit is subjected to excessive direct sunlight or room light, the unit may be damaged.
- Use a Brother genuine toner cartridge which is specially formulated to ensure top print quality.
- Printing with a 3rd party toner or toner cartridge may reduce not only the printing quality but also the quality and life of the printer itself. It may also cause serious damage to the performance and life of a genuine Brother drum unit. Warranty cover is not applied to problems caused by the use of 3rd party toner or toner cartridges.
- Make sure that the wire cleaner on the drum unit is returned to the home position (▲ mark position) before putting the drum unit back into the printer, or printed pages may have a vertical stripe. (Refer to Fig. 5-8.)
- Install the toner cartridge immediately after you remove the protective cover. Do not touch the development roller and photosensitive drum shaded as shown below;

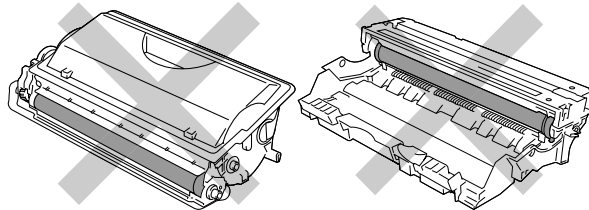


Fig. 5-8

**NOTE:**

It is recommended to clean the printer when you replace the toner cartridge. Refer to subsection 3. 'PERIODICAL CLEANING' in this Chapter.

## 2. 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. For the procedures to replace these parts, refer to CHAPTER 4 "DISASSEMBLY AND RE-ASSEMBLY".

Parts Name	Part No.	Qty	Service life (Number of prints)	Replacement Procedure
Fixing Unit (115V)	LJ1343001	1	200,000 pages	See below.
Fixing Unit (230V)	LJ1487001	1	200,000 pages	
Paper Feeding Kit (Separation Pad ASSY and Paper Feed Roller ASSY)	LJ0977001	1	100,000 pages	See 3.3 'PaperTray' in CHAPTER 4 for Separation Pad ASSY and 3.26 'Paper Feed' in CHAPTER 4 for Paper Feed Roller ASSY.
Laser Unit (Scanner Unit)	LJ1443001	1	200,000 pages	See 3.12 'Laser Unit' in CHAPTER 4.

**NOTE:**

The above table shows only estimated values. They are subject to change without prior notice.

Fixing unit can be replaced by the following steps.

- 1) Remove the FU Protection cover.(Fig.4.19)
- 2) Loosen the two shoulder screws securing the Back cover ASSY.(Fig.4.30) Remove the Back cover ASSY. (Fig.4.30)
- 3) Replace the Fixing Unit. Refer to the section 3.10 in CHAPTER 4.

### 3. PERIODICAL CLEANING

Clean the following parts periodically to avoid any printer problems or print image defects.

**! CAUTION:**

- *While printer exterior and interior cleaning basically can be implemented by the end user, the electrical terminals inside the printer and on the drum unit should be cleaned by a service technician. Instruct the users not to touch those terminals.*
- *Clean the printer exterior and interior periodically with a dry soft cloth. When replacing the toner cartridge, be sure to clean the printer interior. If printed pages are stained with toner, clean the printer interior with a dry soft cloth.*

#### 3.1 Cleaning the Printer Exterior

Clean the printer exterior to keep the printer clean.

- 1) Turn off the power switch and unplug the power cord.
- 2) Pull the paper tray out of the printer, and then open the multi-purpose tray.
- 3) Wipe the printer body with a soft cloth to remove dust.

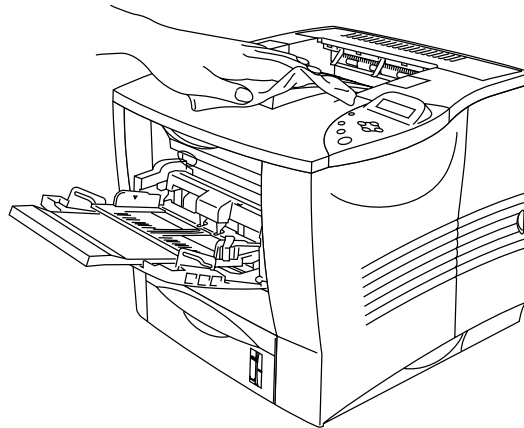


Fig. 5-9

- 4) If paper and foreign objects are stuck in the paper tray, remove them.

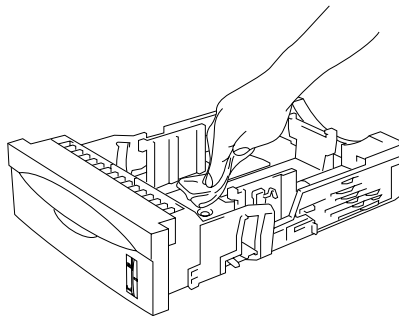


Fig. 5-10

- 5) Put the paper tray back into the printer, and then close the MP tray.
- 6) Plug the power cord into the AC outlet, and then turn on the printer.



### 3.2 Cleaning the Printer Interior

When replacing the toner cartridge with a new one, be sure to clean the scanner window.

- 1) Turn off the power switch and unplug the power cord.
- 2) Remove the toner cartridge.
- 3) Wipe off toner and paper dust from the metal plate in the printer with a dry, soft cloth.

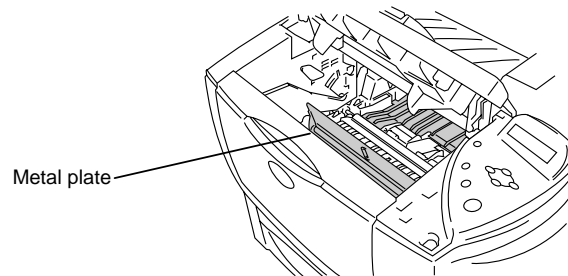


Fig. 5-11

- 4) Wipe the scanner window with a dry, soft cloth.

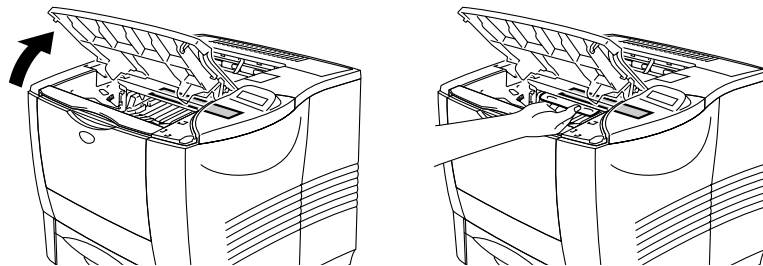


Fig. 5-12

- 5) Install the toner cartridge into the printer.
- 6) Close the top cover, plug the power cord into the AC inlet, and then turn on the printer.

**⚠ CAUTION:**

- Do not touch the scanner window with your fingers.
- Do not wipe the scanner window with cleaning alcohol (isopropyl).
- Be careful not to inhale the toner.

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#### 4. MTBF / MTTR

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The meantime between failure (MTBF) and the meantime to repair (MTTR) for this printer are as follows:-

MTBF: Up to 4,000 hours

MTTR: Average 30 minutes

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## CHAPTER 6 TROUBLESHOOTING

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### 1. INTRODUCTION

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#### 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 [subsection 3.6 'Paper' in CHAPTER 1](#).

##### (3). Consumable parts

Check if:

- The message 'TONER LIFE END' appears on the LCD display of the printer control panel when a toner cartridge is installed in the printer. [If the message appears, replace the cartridge with a new one.]

For further information on consumable parts, refer to [subsection 1 'CONSUMABLE PARTS' in CHAPTER 5](#).

## (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 photosensitive 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 hopper 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.

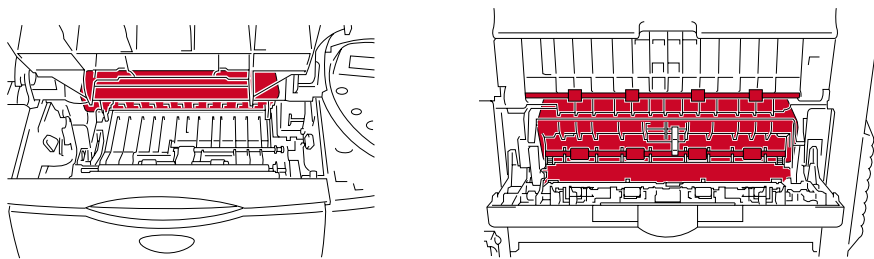
## 1.2 Warnings for Maintenance Work

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



### WARNING

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

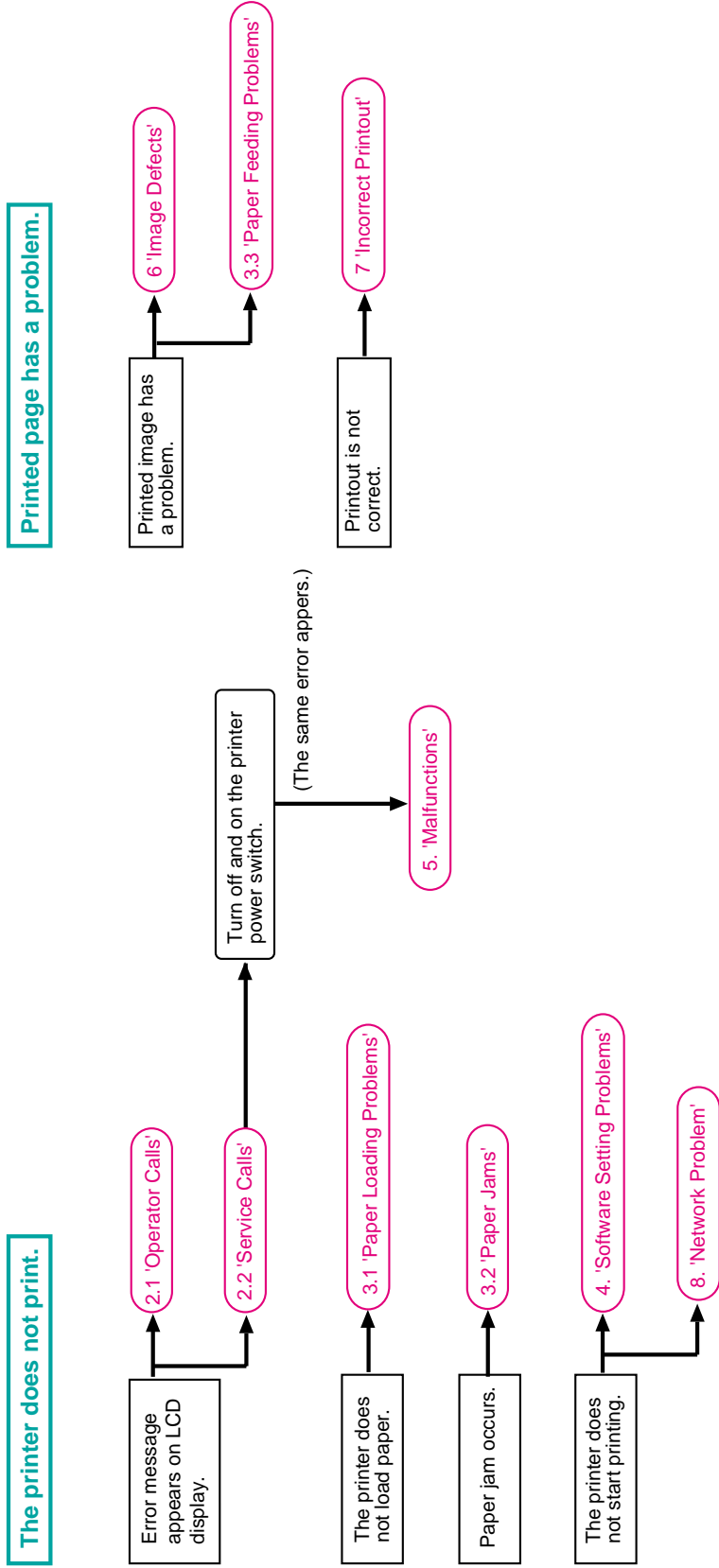


### 1.3 Identify the Problem

If you encounter any printer error or problem, first identify it referring to the chart below, and 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. OPERATOR CALLS & SERVICE CALLS

### 2.1 Operator Call Messages

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, but it may also be necessary to reset the printer with the control panel button.

<b>Error Message</b>	<b>Action</b>
<b>TONER LIFE END</b>	Replace the toner cartridge with a new one.
<b>CARTRIDGE ERROR</b>	Take out the toner cartridge and put it back into the printer again.
<b>NO PAPER XXX</b>	Put paper in the empty tray.
<b>NO TRAY XXX</b>	Put the paper tray in the printer.
<b>COVER OPEN</b>	Close the top cover of the printer. Close the Duplex cover. Close the back cover of the mailbox.
<b>FACE UP OPEN</b>	Close the face-up output tray.
<b>FACE UP CLOSE</b>	Open the face-up output tray. Push down the two blue levers, and then press <b>Go</b> .
<b>JAM XXX</b>	Carefully pull out the jammed paper from the indicated area as shown in Paper jams and how to clear them.
<b>STACKER FULL</b>	Take some paper out of the output tray.
<b>SIZE MISMATCH</b>	Put the same size paper in the paper tray or multi-purpose tray that is selected in the printer driver, and then press <b>Go</b> .
<b>TOO MANY TRAYS</b>	You can only have up to three lower trays. Remove any extra lower trays.
<b>JAM XX</b>	Carefully pull out the jammed paper from the indicated area as shown in Paper jams and how to clear them.
<b>MEDIA TYPE ERROR</b>	Specify the correct type of media (paper).
<b>MANUAL FEED</b>	Put the same size of paper in the multi-purpose tray as is shown on the LCD. If the printer is 'paused', press <b>Go</b> .
<b>SIZE ERROR XXX</b>	Put the same size paper in the paper tray or multi-purpose tray that is selected in the printer driver.
<b>NO TRAY ID XXX</b>	The tray you are trying to print has been taken out. Put the tray back in the printer.
<b>SIZE ERROR DX</b>	The DX unit can not handle the selected paper size. Change the paper size.
<b>SIZE ERROR MX</b>	The MX unit can not handle the selected paper size. Change the paper size.

<b>Error Message</b>	<b>Action</b>
<b>NO DX UNIT</b>	Put the Duplex unit on the printer properly. See the User's Guide for the Duplex unit.
<b>DX LEVER ERROR</b>	Move the Duplex lever to the correct position.
<b>NO MX UNIT</b>	Change the job properties or install the Mailbox unit correctly.
<b>DIMM ERROR</b>	Re-install 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.
<b>CARD ERROR</b>	<p>Make sure of the following:</p> <ul style="list-style-type: none"> <li>• The CompactFlash card is installed properly.</li> <li>• The installed CompactFlash card is formatted properly</li> </ul> <p>Turn off the printer. Wait a few seconds, then turn it on again. If this error message appears again, replace the CompactFlash card with a new one.</p>
<b>HDD ERROR</b>	<p>Make sure of the following points:</p> <ul style="list-style-type: none"> <li>• The cable is connected correctly.</li> <li>• The HDD is installed correctly.</li> <li>• The installed HDD is formatted correctly.</li> </ul> <p>Turn off the printer. Wait a few seconds, then turn it on again. If this error message appears again, replace the HDD with a new one.</p>
<b>CARD REMOVAL</b>	Turn off the printer. Wait a few seconds, then turn it on again. If this error message appears again, replace the CompactFlash card with a new one.
<b>LINE ERROR</b>	Check the serial interface settings (baud rate, code type, parity and handshake protocols).
<b>BUFFER ERROR</b>	Check the Interface settings.
<b>STORAGE FULL</b>	Delete unnecessary macros or fonts, or replace the CompactFlash card or HDD with a new one.

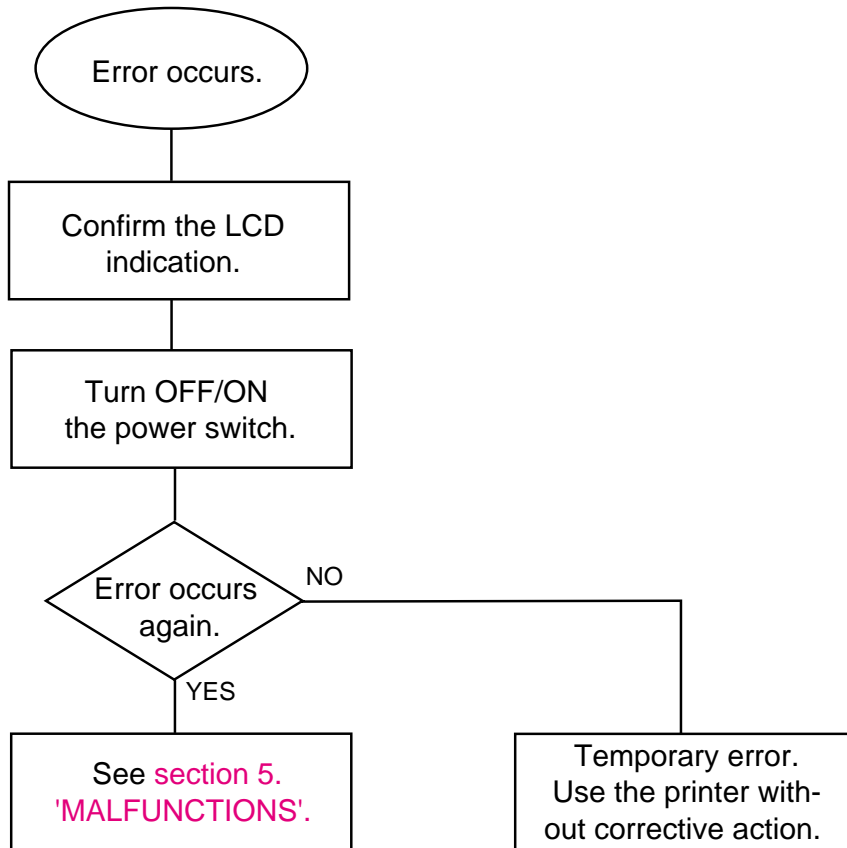
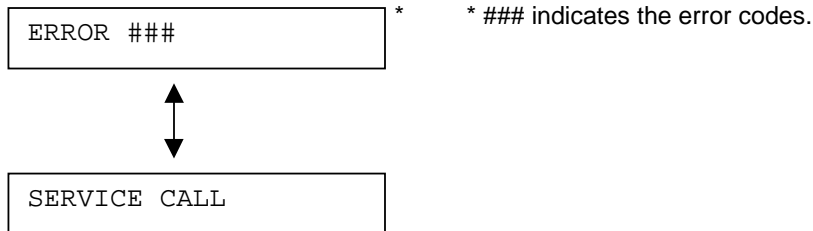
<b>Error Message</b>	<b>Action</b>
<b>DOWNLOAD FULL</b>	Add more memory.
<b>FONT FULL</b>	Add more memory.
<b>MEMORY FULL</b>	Add more memory.
<b>IGNORE DATA</b>	Add more memory.
<b>ACCESSORY ERROR</b>	The accessory you added was not installed properly.
<b>OPTION MISMATCH</b>	Your Duplex unit is not a DX-7000. Change to a DX-7000. Your Lower tray is not an LT-7000. Change to an LT-7000. Your Mailbox unit is not a MX-7000 series. Change to a MX-7000 series.
<b>CLEAN DRUM UNIT</b>	Open the top cover. Pull out the Drum unit assembly. Gently slide the blue tab across several times.
<b>CHANGE DRUM SOON</b>	The drum unit is almost at the end of life. Prepare a new drum unit.
<b>TONER LOW</b>	Purchase a new toner cartridge and have it ready before you get a TONER LIFE END message.
<b>TONER LIFE END</b>	Replace the new toner cartridge.
<b>REPLACE PF KIT MP</b>	Call your dealer for a replacement paper feeding kit.
<b>REPLACE PF KIT1</b>	Call your dealer for a replacement paper feeding kit.
<b>REPLACE PF KIT2</b>	Call your dealer for a replacement paper feeding kit.
<b>REPLACE PF KIT3</b>	Call your dealer for a replacement paper feeding kit.
<b>REPLACE PF KIT4</b>	Call your dealer for a replacement paper feeding kit.
<b>REPLACE FUSER</b>	Call your dealer for a replacement fuser unit.
<b>REPLACE LASER</b>	Call your dealer for a replacement laser unit.



## 2.2 Service Call Messages

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 a few 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.



Holding down the – switch and the **Set** switch at the same time while the error messages display will cause the type of the error appears on the LCD display.

<b>Error Messages</b>	<b>Meaning</b>	<b>Remedy</b>
<b>ERROR S01</b>	FATAL ERROR EX	Turn off the printer. Wait a few seconds, then turn it on again. If still remains, replace the main PCB.
<b>ERROR S02</b>	ADRL ERROR EX	Turn off the printer. Wait a few seconds, then turn it on again. If still remains, replace the main PCB.
<b>ERROR S03</b>	ADRS ERROR EX	Turn off the printer. Wait a few seconds, then turn it on again. If still remains, replace the main PCB.
<b>ERROR S04</b>	BUS ERROR EX (INSTRUCT)	Turn off the printer. Wait a few seconds, then turn it on again. If still remains, replace the main PCB.
<b>ERROR S05</b>	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.
<b>ERROR S06</b>	SYSCALL EX	Turn off the printer. Wait a few seconds, then turn it on again. If still remains, replace the main PCB.
<b>ERROR S07</b>	BREAKPOINT EX	Turn off the printer. Wait a few seconds, then turn it on again. If still remains, replace the main PCB.
<b>ERROR S08</b>	RESERVED INSTRUCT EX	Turn off the printer. Wait a few seconds, then turn it on again. If still remains, replace the main PCB.
<b>ERROR S09</b>	COPROCESSOR UNUSAB EX	Turn off the printer. Wait a few seconds, then turn it on again. If still remains, replace the main PCB.
<b>ERROR S10</b>	ARITHMETIC OVERFLOW EX	Turn off the printer. Wait a few seconds, then turn it on again. If still remains, replace the main PCB.
<b>ERROR S11</b>	UNDEFINED INTERRUPT	Turn off the printer. Wait a few seconds, then turn it on again. If still remains, replace the main PCB.
<b>ERROR S12</b>	SOFTWARE 1 INTERRUPT	Turn off the printer. Wait a few seconds, then turn it on again. If still remains, replace the main PCB.
<b>ERROR S13</b>	SOFTWARE 2 INTERRUPT	Turn off the printer. Wait a few seconds, then turn it on again. If still remains, replace the main PCB.

<b>Error Messages</b>	<b>Meaning</b>	<b>Remedy</b>
<b>ERROR E41</b>	Error in communication with the engine controller	Turn off the printer. Wait a few seconds, then turn it on again. Refer to <a href="#">M-12 'Engine interface error'</a> in this chapter.
<b>ERROR E49</b>	Malfunction of fuser detected by hardware.	Turn off the printer. Wait a few seconds, and then turn it on again. Refer to <a href="#">M-9 'Fuser failure'</a> in this chapter.
<b>ERROR E50</b>	Malfunction of fuser detected	Turn off the printer. Turn it on again. "ERROR E 50" message appears on the LCD display. Wait approximately 12 minutes. Refer to <a href="#">M-9 'Fuser failure'</a> in this chapter.
<b>ERROR E51</b>	Malfunction of laser beam detector	Turn off the printer. Wait a few seconds, and then turn it on again. Refer to <a href="#">M-8 'Scanner failure'</a> in this chapter.
<b>ERROR E52</b>	Malfunction of laser unit motor	Turn off the printer. Wait a few seconds, and then turn it on again. Refer to <a href="#">M-8 'Scanner failure'</a> in this chapter.
<b>ERROR E54</b>	Malfunction of main motor	Turn off the printer. Wait a few seconds, and then turn it on again. Refer to <a href="#">M-4 'No paper supplied'</a> in this chapter.
<b>ERROR E55</b>	Malfunction of high-voltage power supply Malfunction of transfer roller ASSY	Turn off the printer. Wait a few seconds, and then turn it on again. Refer to <a href="#">M-5 'Insufficient output from high-voltage power supply unit'</a> in this chapter.
<b>ERROR E56</b>	Malfunction of option I/F	Turn off the printer. Wait a few seconds, and then turn it on again.
<b>ERROR E57</b>	I/O GA I/F error	Turn off the printer. Wait a few seconds, and then turn it on again. Replace the Engine PCB.
<b>ERROR E58</b>	Malfunction of TR Release Motor	Turn off the printer. Wait a few seconds, and then turn it on again. Refer to <a href="#">M-14 'TR Release Motor error'</a> in this chapter.
<b>ERROR E60</b>	Malfunction of Fan	Turn off the printer. Wait a few seconds, and then turn it on again. Replace the Smell fan.

<b>ERROR H60</b>	Bus error	Turn off the printer. Wait a few seconds, and then turn it on again.
<b>ERROR H61</b>	Program ROM checksum error	Turn off the printer. Wait a few seconds, and then turn it on again.
<b>ERROR H63</b>	D-RAM error	Turn off the printer. Wait a few seconds, and then turn it on again. Refer to <b>M-10 'ROM error / D-RAM error / NV-RAM error'</b> in this chapter.
<b>ERROR H66</b>	NV-RAM writing error	Turn off the printer. Wait a few seconds, and then turn it on again. Refer to <b>M-10 'ROM error / D-RAM error / NV-RAM error'</b> in this chapter.
<b>ERROR H67</b>	NV-RAM reading error	Turn off the printer. Wait a few seconds, and then turn it on again. Refer to <b>M-10 'ROM error / D-RAM error / NV-RAM error'</b> in this chapter.
<b>ERROR H68</b>	NV-RAM bus error	Turn off the printer. Wait a few seconds, and then turn it on again. Refer to <b>M-10 'ROM error / D-RAM error / NV-RAM error'</b> in this chapter.
<b>ERROR H73</b>	Flash reading error	Turn off the printer. Wait a few seconds, and then turn it on again.
<b>ERROR H74</b>	Flash writing error	Turn off the printer. Wait a few seconds, and then turn it on again.
<b>ERROR H38</b>	PCI bus error	Turn off the printer. Wait a few seconds, and then turn it on again. Refer to <b>M-13 'PCI BUS error'</b> in this chapter.
<b>ERROR H39</b>	BR-NET typing error	Turn off the printer. Wait a few seconds, and then turn it on again.

### 3. PAPER PROBLEMS

When any paper related problem occurs, ensure that the paper used meets the recommended paper specifications referring to [subsection 3.6 'Paper' in CHAPTER 1](#).

#### 3.1 Paper Loading Problems

Problem	Remedy
The printer does not load paper.	<ol style="list-style-type: none"> <li>(1) Check that paper in the paper cassette is straight. If it is curled, straighten it before printing. Sometimes it is helpful to remove the paper, turn the stack over and put it back into the paper cassette.</li> <li>(2) Reduce the amount of paper in the cassette.</li> <li>(3) Check that manual feed mode is not selected in the printer driver.</li> <li>(4) Check that the pickup roller or separation pad needs to be replaced.</li> </ol>
The printer does not load paper from the multi-purpose tray.	<ol style="list-style-type: none"> <li>(1) Fan the paper, and re-install the paper firmly.</li> <li>(2) Make sure the manual feed mode is selected in the printer driver.</li> </ol>
The printer does not load envelopes.	The printer can load envelopes from the multi-purpose tray. The application software must be set up to print on the envelope size being used. This is usually done in the page setup or document setup menu of the software. See the software application manual.
A paper jam has occurred.	<ol style="list-style-type: none"> <li>(1) Clear the jammed paper referring to 'Paper jams and how to clear them.'</li> <li>(2) Check that the pickup roller or separation pad needs to be replaced.</li> </ol>
The printer feeds multiple pages.	Check that the pickup roller or separation pad needs to be replaced.
The printer does not print to the face down output tray.	Close the face up output tray.
The printed pages are curled, so the face down output tray cannot hold the prescribed number of sheets.	<ol style="list-style-type: none"> <li>(1) Turn paper in the paper cassette over.</li> <li>(2) Check that printer driver setting in Media Type into thicker setting level than current setting.</li> </ol>
The printer does not print.	<ol style="list-style-type: none"> <li>(1) Check that the cable is connected to the printer.</li> <li>(2) Check that the appropriate printer driver is selected.</li> </ol>

### 3.2 Paper Jams

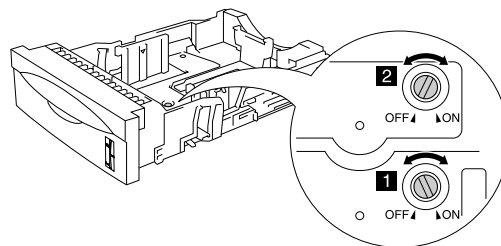
- If paper jams in the printer, it will stop printing and display the following messages on the LCD display.

JAM A2 - A5	➤ Paper jam in the upper paper tray (Tray1) or lower tray (Tray 2/3/4)
JAM A1	➤ Paper jam in the multi-purpose tray
JAM B	➤ Paper jam inside the printer
JAM C	➤ Paper jam at the paper exit ➤ Paper jam in the face up output tray
JAM D	➤ Paper jam in the duplex unit
JAM E	➤ Paper jam in the mailbox unit

- The shaded areas in Fig. 6-1 show the location of jammed paper.
- Check the jam location and follow the instructions to remove the jammed paper. Refer to subsection 3.2.1 'Clearing jammed paper' in this chapter. If the printer does not resume printing even after clearing jammed paper, follow further instructions as shown in subsection 3.2.2 'Countermeasures for paper jams'.

**NOTE:**

If the paper is misfeeding or multiple pages frequently feed at once when printing on small-sized or thick paper, it is recommended to change the adjustment levers in the paper cassette using a coin by pushing down the plate of the cassette as follows:



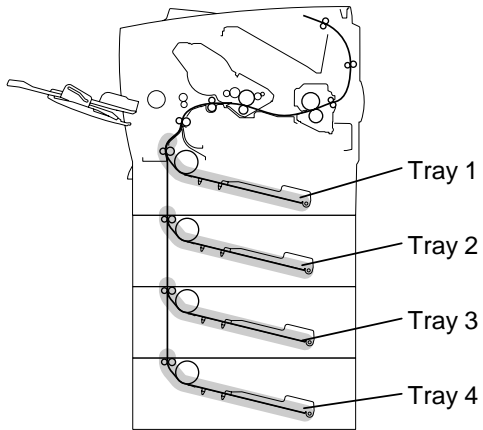
The switches in this illustration are shown in the default setting position.

A6	Switch 1: OFF Switch 2: OFF
A4 100 g/m <sup>2</sup> (27 lbs) Letter 105 g/m <sup>2</sup> (28 lbs) Legal 105 g/m <sup>2</sup> (28 lbs)	Switch 1: ON Switch 2: ON
Executive, A5, B6	Switch 1: OFF Switch 2: ON

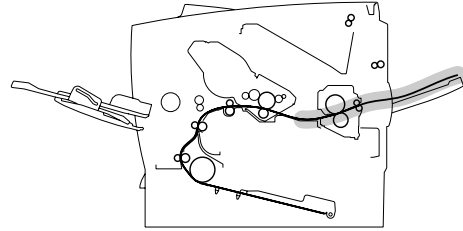
Do not use the following paper:

- Bent paper
- Moist paper
- Paper that does not meet specifications

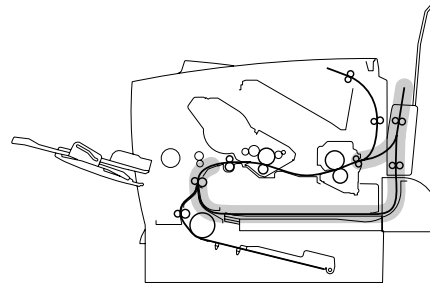
**JAM A2 – A5**



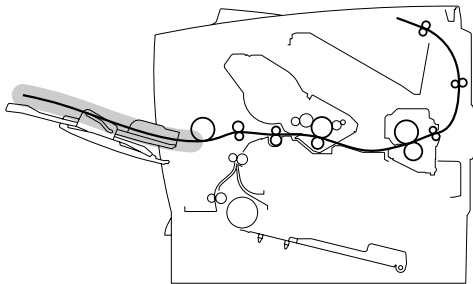
**JAM C**



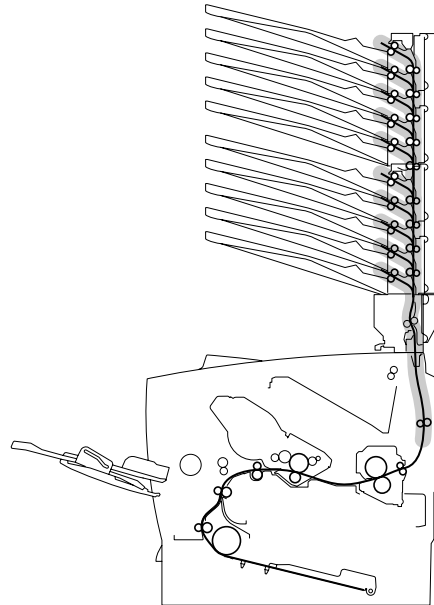
**JAM D**



**JAM A1**



**JAM E**



**JAM B**

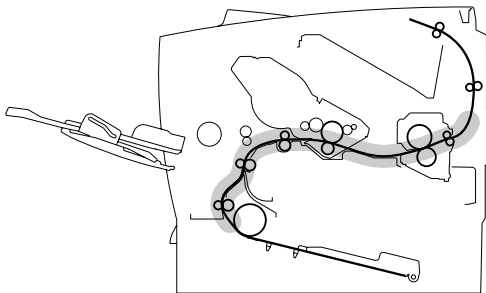


Fig. 6-1

### 3.2.1 Clearing jammed paper

Clear the jammed paper following the procedures below;

#### **JAM XXXX**

XXXX indicates the tray number that contains jammed paper; Tray A2, Tray A3, Tray A4 or Tray A5.

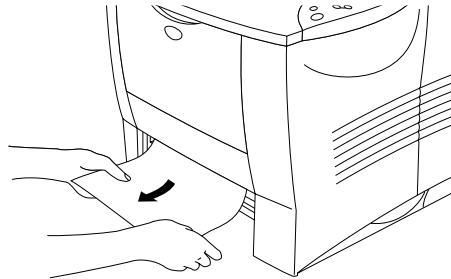
#### **NOTE:**

*The paper trays and LCD panel descriptions in this manual are named as shown below.*

*Upper paper tray: Tray A2*

*Optional lower tray: Tray A3, Tray A4 or Tray A5*

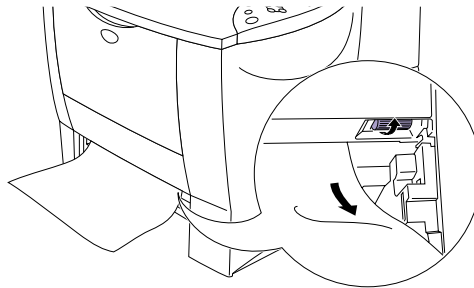
- (1). Pull the paper tray out of the printer.
- (2). Pull out the jammed paper.



**Fig. 6-2**

#### **Note**

*If you cannot pull out a small piece of jammed paper, you can remove it by turning the dial to the lower position, as shown below.*



**Fig.6-3**

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



**Caution**

Do not pull out the upper paper tray while paper is feeding from a lower paper tray because this will cause a paper jam.

**JAM A1**

- (1). Remove the paper from the multi-purpose tray.
- (2). Fan the paper stack, then put it back in the multi-purpose tray.

**Fig. 6-4**

- (3). When loading paper in the multi-purpose tray, make sure it touches the back of the tray and stays below the maximum paper mark.
- (4). Open the top cover of the printer and close it, or press **Go** to start printing.

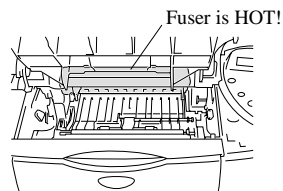
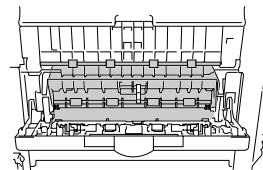
**JAM INSIDE**

- (1). Open the top cover of the printer.
- (2). Take out the drum unit assembly (drum unit with the toner cartridge).

**Warning**

**After you have just used the printer, some parts inside the printer are extremely hot.**

**When you open the top cover of the printer, never touch the fuser or the fixing roller.**

**Inside the printer****Open the face-up output tray****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 immediately with cold water.

- (3). Use both hands to slowly pull out the jammed paper from inside the printer.

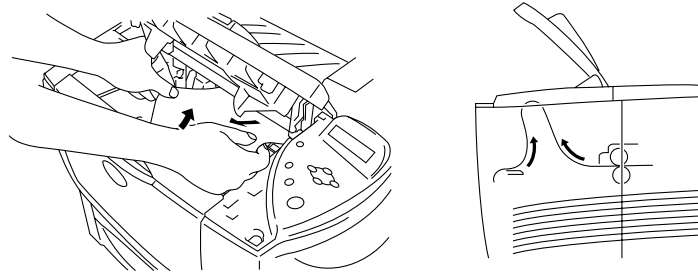


Fig. 6-5

- (4). Push down the blue lock lever of the drum unit assembly and take the toner cartridge out of the drum unit assembly. Remove a piece of jammed paper if there is any inside the drum unit.

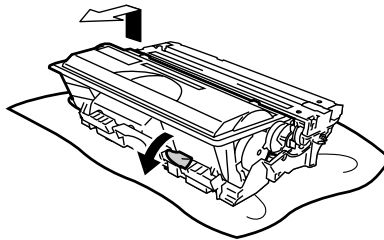


Fig. 6-6



**Caution**

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

Do not touch the shaded parts shown in Figure 6-7 and 6-8.

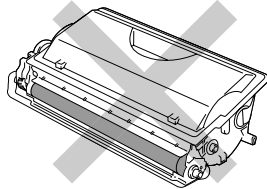


Figure 6-7

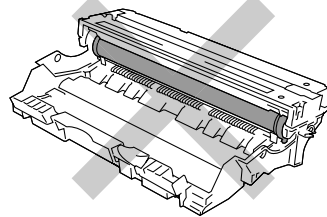
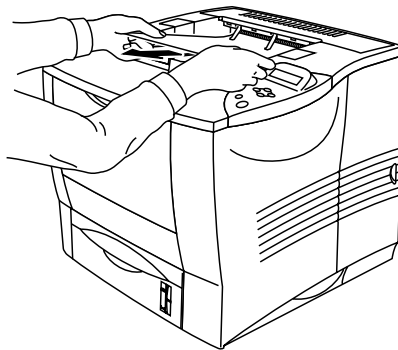


Figure 6-8

- (5). Put the drum unit assembly back in the printer (press firmly).
- (6). Close the top cover of the printer.

***JAM REAR (at paper exit/in the face-up output tray)***

- (1). Use both hands to slowly pull the jammed paper from the paper exit.

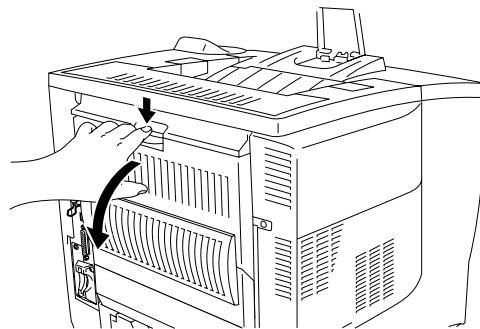


**Fig. 6-9**

*Note*

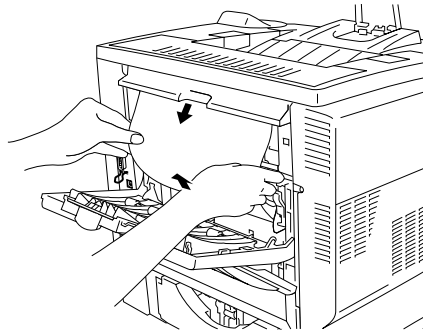
*If a Duplex unit is on the printer, take it off the printer. After you pull out the jammed paper, put the Duplex unit back on the printer.*

- (2). Open the face-up output tray.



**Fig. 6-10**

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

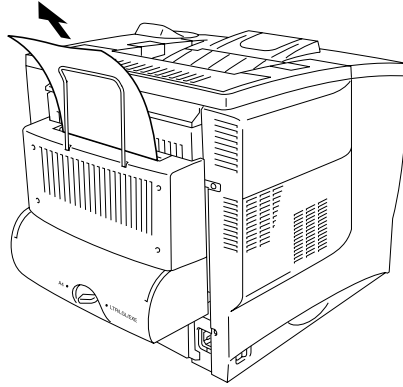


**Fig. 6-11**

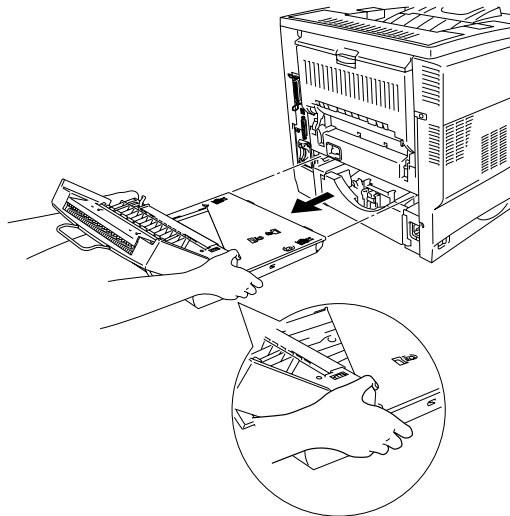
- (4). Close the face-up output tray.
- (5). Open the top cover of the printer, and then close it to resume printing.

**JAM DUPLEX**

- (1). Use both hands to slowly pull the jammed paper from the paper exit of the Duplex unit.

**Fig. 6-12**

- (2). Use both hands to gently open the Duplex unit cover.
- (3). Use both hands to pull the Duplex unit out of the printer.

**Fig. 6-13****NOTE:**

*Look inside the printer's slot for the duplex unit to make sure that the jammed paper is not in there.*

**! CAUTION:**

When you pull out the Duplex unit, be sure to hold it firmly with both hands (the shaded part in the illustration is heavier).

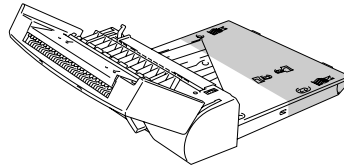


Fig. 6-14

- (4). Pull out the jammed paper from inside the Duplex unit.

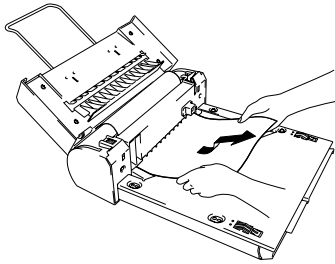


Fig. 6-15

- (5). Put the Duplex unit back in the printer.

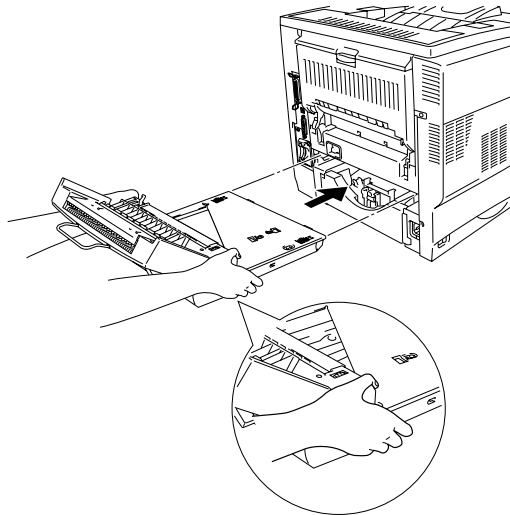
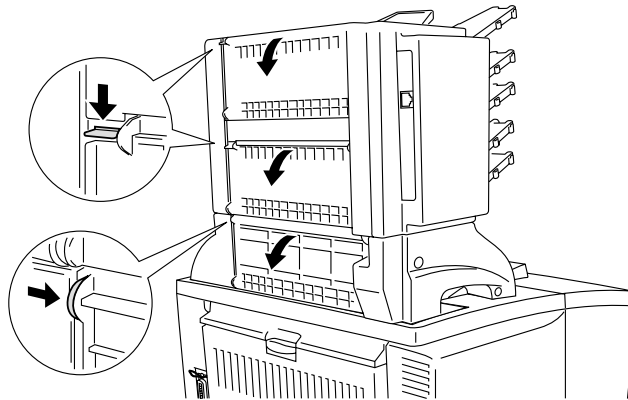


Fig. 6-16

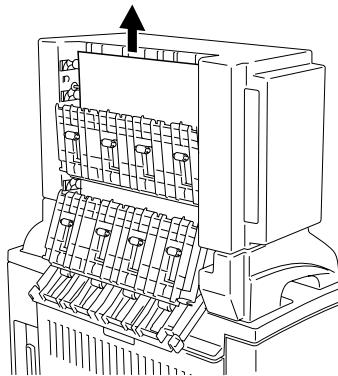
- (6). Gently close the Duplex unit cover.

**JAM MAILBOX**

- (1). Open the back cover of the Mailbox unit.

**Fig. 6-17**

- (2). Pull out the jammed paper.

**Fig. 6-18**

- (3). Close the back cover of the mailbox.
- (4). Open the top cover of the printer, and then close it to restart printing.

### 3.2.2 Countermeasures for paper jams

If the printer still displays the message on the LCD display even after the jammed paper is removed, take the appropriate countermeasures referring to the table below;

Message	Cause	Remedy
JAM A2 - A5	The paper feed roller ASSY 45 and the separation pad ASSY may be worn out.	Replace the paper feed roller ASSY 45 and the separation pad ASSY referring to <a href="#">subsection 3.3 'Paper Tray'</a> and <a href="#">3.26 'Paper Feed'</a> in CHAPTER 4.
	The regist front actuator or the tip actuator is not working properly and has not turned off.	Check actuator motion and replace it with a new one if it is broken.
JAM A1	The paper feed roller ASSY MP and the separation plate ASSY MP may be worn out.	Replace the paper feed roller ASSY MP and the separation plate ASSY MP referring to <a href="#">subsection 3.14 'MP Tray Unit'</a> in CHAPTER 4.
	The regist front actuator or the tip actuator is not working properly and has not turned off.	Check actuator motion and replace it with a new one if it is broken.
JAM B	The regist front actuator, the tip actuator or the eject sensor is not working properly and has not turned off.	Check actuator or sensor motion and replace it if it is broken.
JAM C	The eject sensor or the fuser exit sensor is not working properly and has not turned off.	Check sensor motion and replace it with a new one if it is broken.
JAM D	Any of the all sensors or actuators is not working properly has not turned off.	Check actuator or sensor motion and replace it with a new one if it is broken.
JAM E	The eject sensor, fuser exit sensor, or the photo interrupter 1241 or the actuator U of the mailbox unit is not working properly and has not turned off.	Check actuator or sensor motion and replace it with a new one if it is broken.



### 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.

F-1	Double feeding
-----	----------------

#### User Check

Check the paper used meets the recommended paper specifications.

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

**NOTE:**

*Paper with high surface resistance have a tendency to double feed. This problem is solved by setting the spring pressure of the Paper Tray to OFF/OFF.*

F-2	Wrinkles or creases
-----	---------------------

#### User Check

- (1) Check that paper is loaded into the paper cassette correctly.
- (2) Check the paper used meets the recommended paper specifications.
- (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.

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.
Fixing unit entrance guide	2	Is the entrance guide dirty?	Yes	Clean the entrance guide.
Fixing unit	3	Is the pressure roller dirty?	Yes	Clean the pressure roller.
			No	Replace the fixing unit.

F-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 cassette may be too full. Load paper below 27mm in depth.
- (4) Check the paper used meets the recommended paper specifications.

F-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) Try printing using the straight-through output path.

**NOTE:**

*For no paper supplied as the cause of a malfunction, see 'M-4 No paper supplied' in section 5 'MALFUNCTIONS' in this chapter.*

## 4. SOFTWARE SETTING PROBLEMS

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

S-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 referring to [subsection 5.5 ‘Control Panel Setting Menu’ in CHAPTER 2](#).
- (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 <a href="#">subsection 5.5 ‘Control Panel Setting Menu’ in CHAPTER 2</a> ?	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.

S-2	Unable to print from application software <u>with the serial interface.</u>
-----	---

 **User Check**

Check that the serial interface settings are correctly set up with the panel switches.

Possible cause	Step	Check	Result	Remedy
Failure inside the printer	1	Is it possible to print the test page with the method of <a href="#">subsection 5.5 'Control Panel Setting Menu' in CHAPTER 2?</a>	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.

S-3	Unable to print from application software <u>under DOS.</u>
-----	---

 **User Check**

- (1) Check that the DOS application software interface settings match that of your printer.
- (2) Check if the printer has any printer alarms active.
- (3) Check if the appropriate printer is selected in your application software.
- (4) If the serial interface is used, check that the interface settings are correctly set up with the proper panel switches. Check that the serial parameters of baud rate, parity and stop bits match between your application software and the printer.

Possible cause	Step	Check	Result	Remedy
Failure inside the printer	1	Is it possible to print the test page with the method of <a href="#">subsection 5.5 'Control Panel Setting Menu' in CHAPTER 2?</a>	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.

S-4	Although the USB driver is installed, it is unable to find the BRUSB: port.
-----	---

 **User Check**

- (1) Re-install the USB driver by following the steps below;
- i) Double-click the file "DeinsUSB.exe" in the USB directory of the CD-ROM or the floppy disk.
  - ii) Turn the printer off and on again.
  - iii) "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 network.

Possible cause	Step	Check	Result	Remedy
Computer settings	1	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	2	Does the 'BRUSB' port appear in the Device Manager tab of 'System Properties' in Control Panel?	No	The USB cable is damaged. Replace the cable. If the same problem appears, the printer will be damaged.

## 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.

M-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.

M-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 M-1 "No AC power supplied".
Wiring, DC load	2	Turn off the power switch and disconnect the CN26, CN29. Connectors on the engine PCB. Turn on the power again. Measure the voltages between the terminals. Do the measured voltage satisfy the prescribed value 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
Engine	P26-1	P26-2	Approx. 24V
	P29-5	P29-6	Approx. 5V
Main	CN1-1	CN1-4	Approx. 5V
	CN1-2	CN1-4	Approx. 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.***

M-3	Main motor does not rotate
-----	----------------------------

Possible cause	Step	Check	Result	Remedy
Failure of connector	1	Is the connection of connector CN28 on the engine PCB correct?	No	Reconnect the connector.
Main motor	2	Is the problem solved by replacing the main motor?	Yes	Replace the main motor.
Engine PCB	3	Is the problem solved by replacing the engine PCB?	Yes	Replace the engine PCB.
Main PCB	4	Is the problem solved by replacing the main PCB?	Yes	Replace the main PCB.

M-4	No paper supplied
-----	-------------------

Possible cause	Step	Check	Result	Remedy
Failure of connector	1	Is the contact of the solenoid and feed motor connector on the engine PCB good?	No	Reconnect the connector.
Engine PCB circuit	2	Set paper in the manual paper slot and make a test print by pressing the control panel button.	Yes	Replace the engine PCB.
Registration Clutch (CN31) Feeder Clutch (CN31) MP solenoid (CN10) Paper pick-up solenoid (CN4)		Does the voltage between pins 2 (SOLENOID) and 1 (24V) of the connectors on the engine PCB change from approx. 24V DC to 0V within the specified time?	No	Replace the paper pick-up solenoid or clutch.
Feed Motor	3	Does the Feed Motor work properly?	No	Replace the engine PCB or Feed Motor.
Separation pad / pick-up roller failure	4	Is the surface of the separation pad or the pick-up roller dirty or worn out?	Yes	1) Clean the surface of the separation pad or pick-up roller. 2) Replace the separation pad or pick-up roller.
Main PCB	5	Does replacing the main PCB solve the problem?	Yes	Replace the main PCB.

M-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 engine PCB are secured correctly.	Yes	Replace the high-voltage power supply PCB
			No	Reconnect the connector between the high-voltage power supply and the engine PCB.

M-6	Fixing heater temperature failure
-----	-----------------------------------

Possible cause	Step	Check	Result	Remedy
Poor thermistor harness contact	1	Is the contact of connector CN7 on the engine PCB good?	No	Reconnect the connector.
Blown thermostat	2	Remove the fixing unit and measure the resistance of thermostat. Is it open circuit?	Yes	Replace the fixing unit.
Thermistor failure	3	Is the thermistor installed properly?	Yes	Replace the fixing unit.
			No	Reinstall the thermistor properly.
Halogen heater lamp failure	4	Remove the fixing unit and measure the resistance of the halogen heater lamp. Is it open circuit?	Yes	Replace the halogen heater lamp.

M-7	BD failure
-----	------------

Possible cause	Step	Check	Result	Remedy
Harness connection failure	1	Is connector P7 on the main PCB secured correctly?	No	Reconnect the connector securely.
			Yes	Replace the laser unit.



M-8	Scanner failure
-----	-----------------

Possible cause	Step	Check	Result	Remedy
Harness connection failure	1	Is the connection of the scanner motor connector CN21 on the engine PCB secure?	No	Reconnect the connector securely.
Power supply input	2	Is the voltage between pins 5 (+24V DC) and 4 (GND) of connector CN21 on the engine PCB 24V DC?	No	Check if +24V DC is supplied between pins 1 (+24V DC) and 2 (+24V RET) of connector CN26 on the engine PCB. If not, check the power supply output on the low-voltage power supply PCB.
			Yes	Replace the laser unit.

M-9	Fuser failure
-----	---------------

Possible cause	Step	Check	Result	Remedy
Poor thermistor harness contact	1	Is the contact of connector CN7 on the engine PCB good?	No	Reconnect the connector.
Blown thermostat	2	Remove the fixing unit and measure the resistance between the input connectors. Is it open circuit?	Yes	Replace the fixing unit.
Thermistor failure	3	Is the thermistor installed properly?	Yes	Replace the fixing unit.
			No	Reinstall the thermistor properly.
Halogen heater lamp failure	4	Remove the fixing unit and measure the resistance of the halogen heater lamp. Is it open circuit?	Yes	Replace the halogen heater lamp.
Heater harness connection failure	5	Is the heater harness connector connected to the low-voltage power supply PCB and fixing 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 turning on the printer power switch while pressing the panel button. **Be warned, however, that this operation will melt the fixing unit if the heater is hot.**

M-10	ROM error / D-RAM error / NV-RAM error
------	--

Possible cause	Step	Check	Result	Remedy
Main PCB	1	Is it possible to print the test page with the method of subsection 5.5 'Control Panel Setting Menu' in CHAPTER 2?	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.

M-11	Address error / BUS error / CPU runtime error
------	---

Possible cause	Step	Check	Result	Remedy
Main PCB	1	Is it possible to print the test page with the method of subsection 5.5 'Control Panel Setting Menu' in CHAPTER 2?	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.

M-12	Engine interface error
------	------------------------

Possible cause	Step	Check	Result	Remedy
Fixing unit ground wire connection	1	Is the ground wire on the fixing unit secured with the shoulder screw correctly?	No	Secure the ground wire correctly with the shoulder screw.
Harness connection failure	2	Is the connection between connector P6 on the main PCB and connector CN27 on the engine PCB secure?	No	Reconnect the connectors securely.
Engine PCB	3	Does replacing the engine PCB solve the problem?	Yes	Replace the engine PCB.
Main PCB	4	Does replacing the main PCB solve the problem?	Yes	Replace the main PCB.

M-13	PCI BUS error
------	---------------

Possible cause	Step	Check	Result	Remedy
Harness connection failure	1	Is the connection between connector CN10 on the main PCB and connector P1 on the network board secure?	No	Reconnect the connectors securely.
Network board	2	Does replacing the network board solve the problem?	Yes	Replace the network board.
Main PCB	3	Is the problem solved by replacing the main PCB?	Yes	Replace the main PCB.

M-14	TR Release Motor Error
------	------------------------

Possible cause	Step	Check	Result	Remedy
Connection failure of TR Release Motor connector and TR Release Motor sensor	1	Is the contact of connector CN20 and CN3 on the engine PCB good?	No	Reconnect the connector.
Power on	2	Does the TR Release Motor work properly?	Yes	Replace the TR Release Motor Sensor or the engine PCB.
			No	Replace the engine PCB or the TR Release Motor

## 6. IMAGE DEFECTS

### 6.1 Image Defect Examples

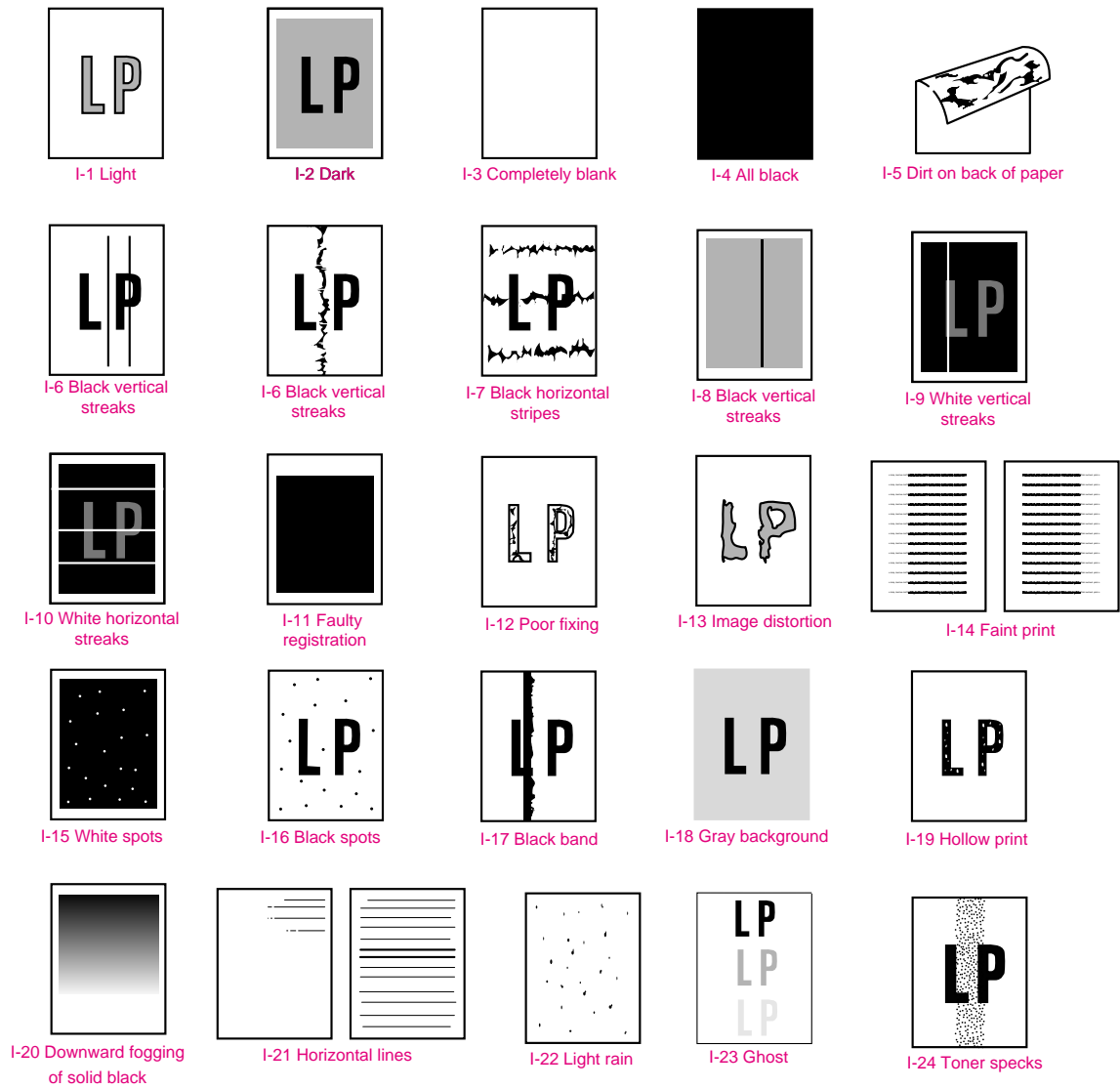


Fig. 6-19

## 6.2 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.

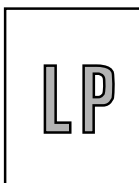
See also [subsection 6.3 'Location of Ground Contacts' in this Chapter](#) for information about the location of the grounding contacts.



### CAUTION:

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

I-1	Light
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### 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 sensing 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 sensing 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)
High-voltage power supply PCB failure	4	Is the harness connection between the high-voltage power supply PCB and the engine PCB correct?	Yes	Replace the high-voltage power supply PCB.	
Engine PCB / Main PCB failure	5	Is the harness connection between the engine PCB and the main PCB correct?	Yes	Replace the engine PCB or the main PCB.	
Dirt on the scanner window	6	Is there any dirt on the scanner window?	Yes	Wipe it off with a soft clean paper.	
Laser unit failure	7	Is the problem solved after replacing the laser unit?	Yes	Replace the laser unit.	

I-2	Dark
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**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 engine 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.	
Engine PCB failure	6	Are there any disconnected connectors?	No	Replace the engine 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?	Yes	Replace the laser unit.	
		Is the scanner mirror broken or loose?	No	Replace the high-voltage power supply PCB.	

I-4	All black
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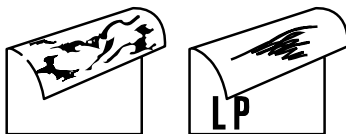
 **User Check**

- (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.	



I-5	Dirt on the back of paper
-----	---------------------------



Possible cause	Step	Check	Result	Remedy
Fixing unit dirty	1	Is the pressure roller dirty? Is any other area in the printer dirty?	Yes	Clean the pressure roller referring to <a href="#">the following procedure</a> .
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:**

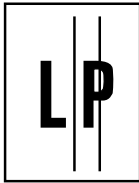
*This problem may disappear after printing approximately 10 pages of completely blank sheets.*

**How to clean the pressure roller**

Clean the pressure roller as follows;

- (1) Set three or more sheets of paper in the paper cassette.
- (2) Turn off the power switch of the printer.
- (3) While holding down the **Go** switch, press – switch, + switch, and then **Set** switch. The LCD display shows “TEST MENU”.
- (4) Press the **Set** switch and “SINGLE TEST PRINT” will appear on the LCD display.
- (5) Press the + switch and “REPEAT TEST PRINT” will appear on the LCD display.
- (6) Press the **Set** switch and “TEST PRINT NORMAL” will appear on the LCD display.
- (7) Press the + switch four times and “TEST PRINT WHITE” will appear on the LCD display.
- (8) Press the **Set** switch and release it immediately. A blank page is printed while cleaning the pressure roller.
- (9) Press the **Job Cancel** switch after printing three or more pages to stop printing.

I-6	Black and blurred vertical streaks
-----	------------------------------------



**User Check**

- (1) Clean the corona wire in the drum unit.
- (2) Check that the corona 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 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	2	Is the paper cassette or feed system on the drum unit dirty with toner?	Yes	Clean the toner off.
Scratch on the drum	3	Is the drum surface scratched?	Yes	Replace the drum unit.
Cleaning failure	4	Is the drum surface dirty with toner in streaks?	Yes	Replace the drum unit.
Scratch on the heat roller	5	Is the surface of the heat roller scratched?	Yes	Replace the fixing unit.

**NOTE:**

- *If you print the same pattern continuously, the drum will be worn and black vertical streaks will 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

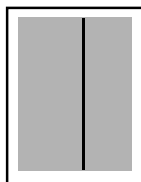


**User Check**

- (1) The drum unit may be damaged. Install a new drum unit.
- (2) Check the paper used meets the recommended paper specifications.
- (3) Clean the printer interior 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 94mm (photosensitive drum) intervals?	Yes	The photosensitive drum was scratched. Replace the drum unit.	
Toner stuck on the developer roller	2	Are the horizontal stripes at 47mm (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 108mm (heat roller) intervals?	Yes	Replace the fixing 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)

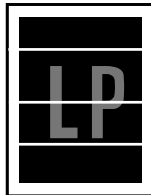
I-9	White vertical streaks
-----	------------------------



- ✓ 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
Transfer failure	1	Is the transfer roller scratched?	Yes	Replace the drum unit.
Condensation	2	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 stripes
------	--------------------------



- ✓ 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 multiple 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.

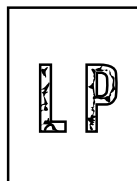
Possible cause	Step	Check	Result	Remedy	Ground contacts
Developing bias contact failure	1	Are the developing bias contacts between the printer body and toner cartridge dirty?	Yes	Clean the electrodes at both sides.	(4)

I-11	Faulty registration
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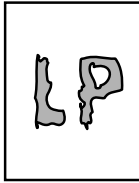
Possible cause	Step	Check	Result	Remedy
Excessive paper load	1	Is the paper loaded in the paper cassette more than 27mm high?	Yes	Instruct the user to keep paper loads below 27mm in depth.
Print paper	2	Is the specified weight of the recommended paper being used?	No	Recommend to use the specified types of paper.
	3	Is the first printing position within $\pm 1$ mm of the tolerance specification?	Yes	Adjust the Y offset by using the utility software supplied.
Rear regist sensor position incorrect	4	Is the position of the rear registration sensor normal?	No	Reposition the sensor to the correct position.

I-12	Poor fixing
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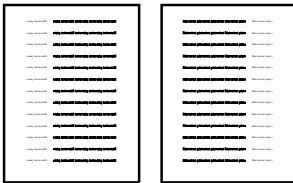
Possible cause	Step	Check	Result	Remedy
Print paper	1	Is thick paper of more than 43lb being used?	Yes	Recommend to use the specified types of paper.
Toner sensing failure (When printing is faint.)	2	Is the problem solved by replacing the drum unit or the toner cartridge?	Yes	1) Toner is empty. 2) The toner sensing is defective. Clean the toner sensor. 3) If the wiper in the toner cartridge is broken, replace the toner cartridge with a new one.
Fixing unit thermistor failure	3	Is the thermistor fitted correctly?	No	Fit the thermistor correctly.
Low-voltage power supply PCB failure	4	Is the problem solved by replacing the low-voltage power supply PCB?	Yes	Replace the low-voltage power supply PCB.

I-13	Image distortion
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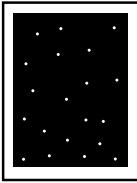
Possible cause	Step	Check	Result	Remedy
Laser unit installation	1	Is the laser unit secured to the frame incorrectly? (Check if there is any play.)	Yes	Secure the unit correctly and tighten the screws.
Scanner LD emission failure Scanner motor rotation failure	2	Is the laser diode or the scanner motor 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
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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 photosensitive 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 94mm intervals?	Yes	1) If toner or glue remains stuck, wipe it off gently with a cotton swab. (Refer to <b>NOTE</b> in the next page.) 2) If the drum surface is scratched, replace the drum unit.
Drum unit failure	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) Remove the toner cartridge from the drum unit. Place the printing samples in front of the drum unit, and find the exact position of the image defect.

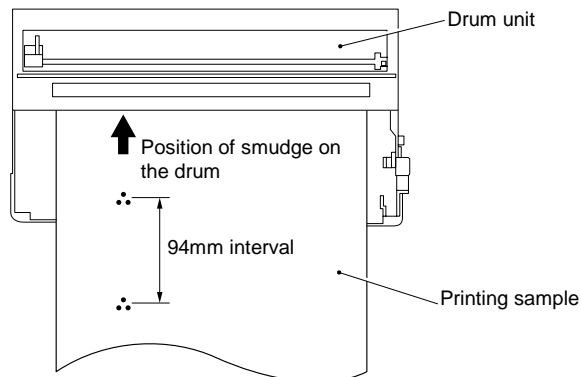


Fig. 6-20

- (2) Turn the drum gear by hand while looking at the surface of the photosensitive drum. Be sure to turn the drum gear in the direction of an arrow.

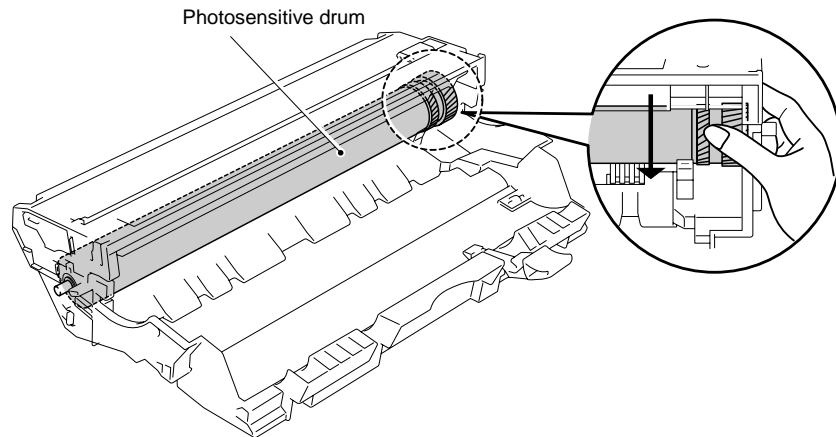


Fig. 6-21

- (3) Wipe the surface of the photosensitive drum with a cotton swab until the dust or paper powder on the surface comes off.

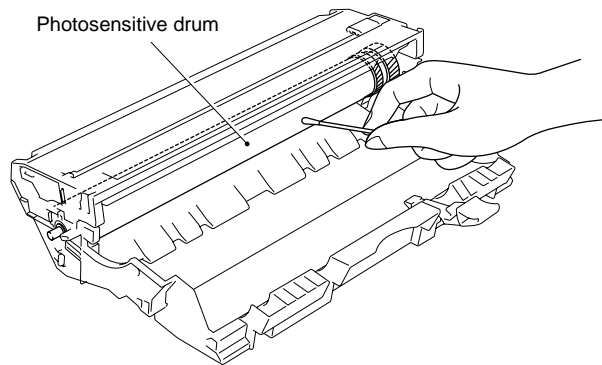


Fig. 6-22

**CAUTION:**

- Do not wipe the surface of the photosensitive drum with something sharp. (ball-point pen etc.)
- Use cleaning liquid which is a 50-50 mixture of ethyl alcohol and pure water.



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 photosensitive 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 94mm 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 <b>NOTE</b> in the previous page.) 2) If the photosensitive 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.	(8)
Fixing unit	3	Are the spots at 108mm 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 fixing 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
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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 failure	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
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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 sensing failure (printer side)	2	Does the "Ready" message appear on the LCD display even after removing the drum unit and toner cartridge?	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
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**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.

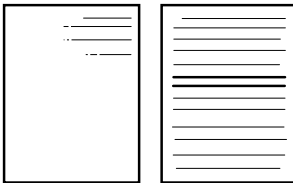
Possible cause	Step	Check	Result	Remedy
Print paper	1	Is thick paper of more than 43lb being used or extremely rough surface paper?	Yes	Recommend to use the specified types of paper.
			No	Refer and compare with <a href="#">I-15</a> .

I-20	Downward fogging of solid black
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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
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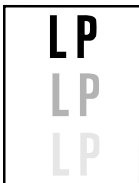
Possible cause	Step	Check	Result	Remedy	Ground contacts
Paper feed roller	1	Are the feed roller shaft and the ground contact connected correctly?	No	Check the connection between the shaft and the ground contact.  Also check the ground contact on the back of the feed roller.	
Paper cassette contacts	2	Are the ground contacts on the back side of the paper cassette connecting correctly?	No	Clean the contacts.	(7)

I-22	Light rain
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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.	(8)
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
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**User Check**

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

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

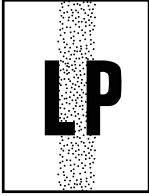
(4) Check that the appropriate media type is selected in the printer driver.

(5) Try installing a new drum unit.

Possible cause	Step	Check	Result	Remedy
Driver setting	1	Is thin paper such as 64g/m <sup>2</sup> 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.

### 6.3 Location of Grounding Contacts

#### 6.3.1 Drum unit

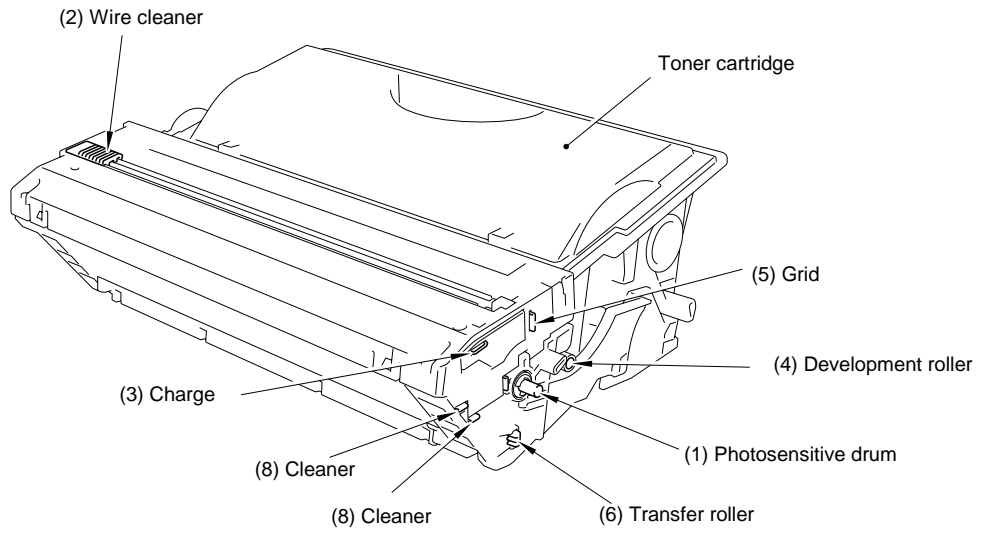


Fig. 6-23

#### 6.3.2 Printer body & Paper tray

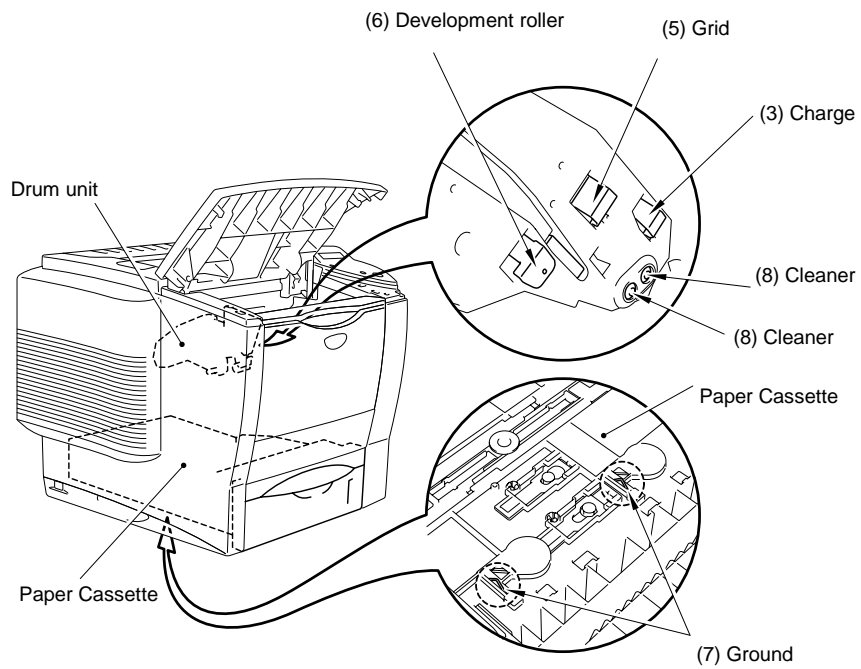


Fig. 6-24



## 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.
-----	---

### User Check

- (1) Check if the printer cable is not too long. It is recommended to use a parallel cable of less 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. Turn off the printer status monitor in the device options tab in the printer driver.
- (6) If the print port is set as an ECP port, change it to a normal port.
- (7) Try printing the test page referring to [subsection 5.5 'Control Panel Setting Menu' in CHAPTER 2](#).
- (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 <a href="#">subsection 5.5 'Control Panel Setting Menu' in CHAPTER 2</a> ?	No	Identify the error type, then refer to the specified section of this chapter.

### NOTE:

*If the printer prints garbage or incorrect fonts, instruct the user to use the 'Troubleshooting for Printer won't print' tool of the self-diagnostics tools. If the problem cannot be solved, instruct user to use the 'Diagnostics' tool described in the Appendix so that you can get a log file to investigate the cause of the problem. For details on the self-diagnostics tools, see [APPENDIX 20 'HOW TO USE SELF-DIAGNOSTICS TOOLS'](#).*

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

 **User Check**

- (1) Press the panel button 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) Expand the printer memory by adding a recommended DIMM.
- (4) 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 or the "LIMIT CHECK" message when using BR-Script driver.
-----	---

 **User Check**

- (1) Press the panel button to print the data remaining in the printer.
- (2) Reduce the complexity of your document or reduce the printer resolution.
- (3) Expand the printer memory by adding a recommended DIMM.

**NOTE:**

*This problem may appear if the data is too complex. Take the following procedures.*

Possible cause	Step	Check	Result	Remedy
Unable to recognize DIMM	1	Check the memory size in Print Configuration. Is it the default size?	Yes	Expand the memory size by adding DIMM.  If the memory is already at the maximum size, it will be impossible to print the data under the printer specifications.
DIMM / main PCB failure	2	Try installing DIMM into another printer, then check the memory size in Print Configuration.  Is it possible to print the data?	Yes	Replace the DIMM.
			No	Replace the main PCB.
RAM disk setting failure	3	Check the RAM disk setting. Is the RAM disk available?	Yes	Select "0" for the RAM disk setting.

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 prints the first couple of pages correctly, then some pages have text missing.
-----	--

** User Check**

A problem related to serial interface setting. The PC is not recognizing the printer's input buffer full signal. Causes could be incorrect serial cable (incorrectly wired or too long) or incorrect setting of the computer serial interface.

P-6	The printer sometimes prints a couple of characters and then ejects the page.
-----	---

** User Check**

This problem sometimes occurs when the PC power is turned off while the printer power is on. Turn off the printer power first before turning off the PC.

---

## 8. NETWORK PROBLEM

---

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

### 8.1 Installation Problem

If you cannot print over the network, check the following:

- (1) Make sure that the printer is powered on, is on-line and ready to print.
 

Verify that the printer and the configuration are good by printing the Network Configuration page. (To print the Configuration page press the Network Test button for less than 5 seconds. See [section 6 'NETWORK BOARD OPERATION' in CHAPTER 2.](#))

  - a) If the LED is not blinking after connected to the network, then the network firmware settings may be corrupted. Please refer to Step (3).
  - b) In this event, try to restore the factory default settings of the print server by pressing the Network Test button on the back panel of the printer for more than 5 seconds. Once you have done that, turn the printer power off and then on again, and try to print out the Network Configuration page.
- (2) If the Configuration page is printed but you cannot print documents, try the following

**NOTE:**

*If none of the following steps are successful, there is almost certainly a hardware or network problem!*

- a) If you are using TCP/IP:
 

Try pinging the print server from the host operating system prompt with the command *ping IP address*

,where *IP address* 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. If a successful response is received, then proceed to the *UNIX, TCP/IP Windows NT/LAN Server, Windows98/95/Me Peer to Peer (LPR), Internet Printing or Web Browser troubleshooting section.* Otherwise, proceed to [step \(3\)](#), and then go to [subsection 8.3 'TCP/IP Troubleshooting'](#).
- b) If you are using Novell system:
 

Verify that the print server can be seen on the network. To do this, login as the SUPERVISOR (not as someone with supervisor privileges) or ADMIN (for Netware 4 or later servers), go into PCONSOLE or NWADMIN, select PRINT SERVER INFORMATION, and select the name of the print server (make sure that you have entered the print server name). If you can see `Print Server Status` and `Control` in the menu, then the Brother print server is visible to the network, proceed to [subsection 8.11 'Novell NetWare Troubleshooting'](#). Otherwise, go to [step \(3\)](#).
- c) If you are running AppleTalk for Macintosh:
 

Make sure that you can see the print server name under the LaserWriter 8 icon in the Chooser. If it is visible, then the connection is good, so proceed to [subsection 8.12 'AppleTalk Troubleshooting'](#). Otherwise, go to [step \(3\)](#).

- (3) If you cannot make any of the connections in step (2), check the following:
- a) Make sure the printer is turned on and on-line.
  - b) Check the cabling, network connection, and print out a configuration page in the Network STATISTICS information to see if bytes are being transmitted and received.
  - c) Check to see if there is any LED activity.

The print server has three LEDs. These can be used to diagnose problems.

- L-LED (green): Link activity  
This LED is on if there is a valid connection to the network (either 10BaseT or 100BaseTX). It is off if no network is detected.
  - F-LED (orange): Fast Ethernet  
This LED will be on if the print server is connected to a 100BaseTX Fast Ethernet network. It is off if the print server is connected to a 10BaseT network.
  - A-LED (green): Transmission Activity  
This LED will blink synchronized to the transmission or receive status.
- (4) If you are using a repeater or hub, make sure that SQE (heartbeat) is turned off at the hub (if applicable). Also, if you have a hub or multi-port repeater, verify that the hub or repeater port is good by trying the print server on a different port or on the other hub or multi-port repeater.
  - (5) If you have a bridge or router located between the print server and host computer, make sure that the device is set up to allow the print server to send and receive data from the host. For example, a bridge can be set up to only allow certain types of Ethernet addresses to pass through (a process known as filtering); therefore, such a bridge must be configured to allow Brother print server addresses. Likewise, a router can be set up to pass only certain protocols, so be sure that the desired protocol can be passed through to the print server.
  - (6) If the job exits the queue but does not print, make sure that you are not trying to print a text job to a PostScript printer. If you have a printer that is capable of automatic language switching, make sure that the printer is not forced into PostScript mode.

## 8.2 Intermittent Problem

If the print server and printer start up OK, but you intermittently have problems printing, check the following:

- (1) If you can print small jobs but large graphics jobs are distorted or incomplete, make sure that you have adequate memory in your printer and the latest printer driver installed on your computer. The latest Brother printer drivers can be downloaded from <http://solutions.brother.com>
- (2) Check the individual protocol troubleshooting sections in this chapter for additional causes of intermittent printer problems.

### 8.3 TCP/IP Troubleshooting

If you are using TCP/IP and cannot print to the print server and you have checked the hardware and network as described in the previous steps, then check the following:

NOTE:

*It is always a good idea to try the following in order to eliminate the possibility of setup errors.*

- Turn off the printer and then on again,
  - Delete and recreate the print server and create a new print queue in order to eliminate the possibility of setup errors.
- (1) The problem may be the result of mismatched or duplicate IP address. Verify that the IP address is correctly loaded into the print server (via the configuration page). Make sure that no other nodes on the network have this address (DUPLICATE IP ADDRESS ARE THE BIGGEST CAUSE OF TCP/IP PRINTING PROBLEMS).
  - (2) If you used BRCONFIG or NCP to enter the IP address, make sure that you exited the remote console properly with a CTRL-D or EXIT and that you turned the printer off and then on again (it may take up to two minutes for the IP address to take effect).
  - (3) Make sure that the TCP/IP protocol of the print server is enabled.
  - (4) If you used rarp, make sure that you started the rarp daemon on any workstation using the rarpd, rarpd-a, or equivalent command. Verify that the `/etc/ethers` file contains the correct Ethernet address and that the print server name matches the name in the `/etc/hosts` file.
  - (5) If you used bootp, make sure that you started the bootp daemon on any UNIX workstation and bootp is enabled (i.e., the “#” is removed from the bootp entry) in the `/etc/bootptab` file is correctly configured.
  - (6) Also verify that host computer and the print server are either on the same subnet, otherwise that that router is properly configured to pass data between the two devices.

### 8.4 UNIX Troubleshooting

- (1) Make sure that the `/etc/printcap` file (if applicable) is typed in correctly. In particular, look for missing “.” and “\” characters, because a small error *anywhere* in the file can have *major* consequences. Also check the `/usr/spool` directory to make sure that you have created a valid spool directory.
- (2) If you are using a Linux operating system, the X-Window Print tool program that is included with Linux may not properly configure the `etc/printcap` file for lpd operation, then you might also edit the `etc/printcap` file and change the following line in the entry for the printer.

```
if
:lp = /dev/null: \
```

```
then to
:lp = :\
```

- (3) If you are using a Berkeley-based UNIX, make sure that the daemon is started on Berkeley based systems with the command `lpc start printer`, where *printer* is the name of the local print queue.

- (4) If you are using an AT&T-based UNIX, make sure the printer is enabled (enable *printer*, where *printer* is the name of the local print queue).
- (5) Make sure that the lpr/lpd remote line printer service are running on the host computer (refer to your host computer documentation for information on how to do this).
- (6) If you are having trouble printing more than one job at a time, try increasing the IP timeout using the SET IP TIMEOUT command or using BRAdmin.
- (7) If text or PCL jobs are run together, try setting the service (remote printer) with EOT set to string number 2 (<ESC>E). For example:  

```
SET SERVICE BRN_XXXXXX_P1 EOT 2
```
- (8) If PostScript jobs fail to print or are run together, try setting the service (remote printer) with EOT set to string number 3 (control-D). For example:  

```
SET SERVICE BRN_XXXXXX_P1 EOT 3
```
- (9) If the lines of a text file are staggered, make sure that you have specified a remote printer (rp) name of TEXT in your `/etc/printcap` file.
- (10) If you are using Sun Solaris V2.4 or earlier, there is a bug which causes long print jobs to fail when using a print server. If you are having trouble printing long jobs (over 1MB), add the line `mx#0` to your `etc/printcap` file entry.
- (11) If you cannot print from DEC TCP/IP Service for VMS (UCX), make sure that you have version 2.0B or later of this software, because earlier versions will not work with Brother print servers.

## 8.5 Windows NT/LAN Server (TCP/IP) Troubleshooting

If you are having trouble printing with Windows NT or LAN Server, check the following:

- (1) Make sure that TCP/IP and TCP/IP print service are installed and running on the Windows NT system or the LAN Server file server.
- (2) If you are using DHCP and you have not created a reservation for the print server, make sure that you enter the NetBIOS name of the print server in the **Name or address of server providing lpd** box.

## 8.6 Windows 95/98/Me Peer to Peer Print (LPR) Troubleshooting

If you are having trouble printing on a Windows 95/98/Me 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 Peer to Peer chapters in the Network User's Guide.
- (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 computers. Press the ALT and TAB keys to make it appear.

### 8.7 Windows 95/98/Me Peer to Peer (HP JetAdmin Compatible Method) Troubleshooting

If you are having trouble printing on a Windows 95/98/Me Peer to Peer network, check the following (HP JetAdmin compatible method):

- (1) If the print server does not show up under JetAdmin on a Windows 95/98/Me Peer to Peer network, try removing all of the Windows 95/98/Me network software from the Network Control panel and then reinstalling them as follows:
  - First install the IPX/SPX-Compatible Protocol (or the TCP/IP protocol if you are using a later version of JetAdmin), the Client for Microsoft Networks, and the network adapter card driver.
  - Install the Latest HP JetAdmin software
  - Restart the system, and then add the HP JetAdmin service.

### 8.8 Windows 95/98/Me/NT 4.0/2000/XP Peer to Peer Print (NetBIOS) Troubleshooting

If you are having trouble printing on a Windows 95/98/Me/NT 4.0/2000/XP Peer to Peer network (NetBIOS), check the following:

- (1) Make sure that the Brother NetBIOS Port driver is securely installed and configured according to the Windows 95/98/Me/NT 4.0/2000/XP 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/NT 4.0/2000/XP 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 test of your computers. It may take several minutes for the print server to appear in the network neighborhood.

### 8.9 Internet Print (TCP/IP) Troubleshooting

- (1) The first step in troubleshooting is to make sure that you have a valid E-mail connection on both the sending PC and the receiving print server. Try sending an E-mail message from the PC to a user at the remote site who can receive mail via the POP3 server. If this does not work, there may be an E-mail configuration problem on the PC, on the local E-mail server, or on the remote POP3 server. Double check to make sure that the E-mail parameters that you configured on the PC and on the remote print server match those that are configured on the E-mail servers.
- (2) If you can print small files OK but are having problems printing large files, the problem may be in the e-mail system. Some E-mail systems have difficulties printing large files. If the file does not reach its destination intact, then the problem is with the E-mail system.
- (3) You can also enable the partial e-mail print facility on your client PC, this will split the e-mail up into fragments, which should then not overwhelm your e-mail server. To do this, select the property dialog of the Brother Internet Print Port.



## 8.10 Windows 95/98/Me/2000/XP IPP Trouble shooting

### 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 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](http://ip_address:631) or [http://ip\\_address:631/ipp](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 to use the following URL:

[http://ip\\_address](http://ip_address)

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

### Windows 95/98/Me clients not able to get the driver from a Windows 2000/XP system.

You must be using version 4.0 or later of Internet Explorer and the **Microsoft Internet Print Services** software must be installed on your client computers.

## 8.11 Novell Netware Troubleshooting

If you cannot print from NetWare and you have checked the hardware and network as described in the previous steps, first verify that the Brother print server is attached to the server queue by going to PCONSOLE, selecting PRINT QUEUE INFORMATION, and then CURRENTLY ATTACHED SERVERS. If the print server does not appear in the list of attached servers, then check the following:

### NOTE:

*It is always a good idea to try followings in order to eliminate the possibility of setup errors*

- *Turn the printer off and then on again to force the printer to rescan the Netware queue.*
  - *Delete and recreate the print server and create a new print queue in order to eliminate the possibility of setup errors.*
- (1) If you changed the login password, you must change the password in *both* the Brother print server (using the SET NETWARE PASSWORD command if you are using the BRConfig software) or by using a web browser or the BRAdmin utility and in the file server (using the PCONSOLE Print Server Information Change Password command).
  - (2) If you created the print queue using PCONSOLE and instead of BRAdmin, make sure that you have enabled at least one NetWare file server using the SET NETWARE SERVER *servername* ENABLED command.
  - (3) Have you exceeded your NetWare user limit?
  - (4) Make sure that the print server name you used in PCONSOLE *exactly* matches the name that is configured in the print server, and make sure it is defined as a Queue Server for the print queue.
  - (5) If you are running both 802.3 and Ethernet II frames on different file servers on your network, there is a possibility that the print server may not make a connection to the desired file server. Try forcing the frame type to the desired one using the SET NETWARE FRAME command from the print server remote console or using BRAdmin.
  - (6) If you are using DOS CAPTURE statement and losing portions of your print job, try setting the TIMEOUT parameter in your CAPTURE statement to a higher value (at least 50 seconds for Windows).

### 8.12 AppleTalk Troubleshooting

If you cannot print from an AppleTalk for Macintosh computer and you have checked the hardware and network as described in the previous steps, then check the following:

- (1) Make sure that you are running Phase 2 AppleTalk and that you have selected the correct network interface from the Network Control Panel on the Macintosh.
- (2) Make sure that the AppleTalk protocol of the print server is enabled.
- (3) If you have a large network, make sure that you have the Laser Writer V8.xx or equivalent driver, since earlier versions may cause PostScript errors. Also, verify that you get the correct printer information when you select **Printer Info** from the **Setup** button in the Chooser.
- (4) Make sure that you have selected the correct Printer Description File (PPD) from the Chooser (otherwise PostScript errors may result)
- (5) Verify that you have selected the correct AppleTalk zone. Because the print server gets its zone information from router broadcasts, it may not be in the zone you expect, and will therefore not show up in the Chooser. If this is the case, you may need to force the zone name using BRAdmin, a web browser or the *SET APPLETALK ZONE* command from *TELNET*.

### 8.13 Apple TCP/IP Printing (System 8.6 or later)

- (1) From system 8.6 or later, Apple introduced the Desktop Printer Utility. This utility allows TCP/IP printing from a Macintosh, which has the USB interface.
- (2) From the "Internet Printer" dialogue, please ensure that you enter the correct service name in the "Queue" option. For example, for NC-4100h series network cards enter BRN\_XXXXXX\_P1\_AT (where XXXXXX is the last six digits of the MAC address of the NC-3000 series card). For NC-2000 series network cards enter BRO\_XXXXXX\_P1\_AT (where XXXXXX is the last six digits of the MAC address of the NC-4100h network card).
- (3) This method of printing requires that the printer supports PostScript. If your printer does not support PostScript printing. Please consult your printer manual to see if your printer supports PostScript.

### 8.14 DLC/LLC Troubleshooting

If you are having trouble printing with DLC/LLC, check the following:

- (1) Make sure that the DLC/LLC protocol is enabled using either BRAdmin, a web browser or TELNET.
- (2) Make sure that the MAC address of the Windows setting is the same as shown in the **print configuration page** printout.

### 8.15 LAT Troubleshooting

If you cannot print from a VMS system and you have checked the hardware and network as described in the previous steps, then check the following (note that it is always a good idea to try creating a new queue with a different LAT port to reduce the possibility of setup errors):

- (1) If the queue pauses when you try to print, check that the print server node name and port name (or service name) agree with the names defined for the VMS print queue in LARCP or for ULTRIX print queue in the */etc/printcap* file (ts parameter) and *lcp -s* command. The names MUST EXACTLY agree in order for printing to work.
- (2) Make sure LAT is enabled for outgoing connections. For VMS, enter LATCP and type SHOW NODE at the Latcp> prompt. The display should show Outgoing Connections Enabled. If it does not, you should type *SET NODE/CONNECTIONS=BOTH*. If you are using ULTRIX, make sure that you have started LAT with the *lcp -s* command and that you have enabled host-initiated connections with the *lcp -h* command.
- (3) Make sure that there are no duplicate LAT node names or LATport numbers. Try changing the node name to a different name and/or creating a different LAT port to fix the problem. Also avoid having multiple print queues that use the same LAT port.
- (4) If you are running ULTRIX, make sure that the */etc/printcap* files is typed in correctly. In particular, look for missing ":" and "\" characters, because a small error anywhere in the file can have major consequences. Also check the */usr/spool* directory to make sure that you have created a valid spool directory.
- (5) If you are running ULTRIX, check your tty device to make sure that:
  - The tty is a valid LAT tty (execute the command file */dev/ tty\* | grep LAT* and observe if the device has a "39" in its description).
  - The device is in the */etc/ttys* file and in the */dev* directory.
  - The same tty number was entered throughout the configuration process.
- (6) Intermittent random queue pauses can be caused if the VMS LAT port is not set up as spooled device. Type *SHOW DEVICE LTAxxx* from the VMS console; if the device is not spooled, type *SET DEVICE/SPOOL LTAxxx* command. (One exception: PATHWORKS for MACINTOSH queues should not be set up with the LTA device set as spooled).
- (7) Make sure that PROCESSOR=LATSYM is enabled on your VMS print queue if you get any of the following symptoms:
  - The queue pauses when you power off the print server for no apparent reason.
  - The print server generates excessive LAT traffic on the network.
  - Only one host computer can access the print server, others are locked out.
- (8) If the VMS LAT symbiont abruptly terminates and shut down one or more queues, the problem may be the result of the inability of the LAT symbiont to handle the load (particularly if you are printing heavy graphics). Try creating multiple LAT processors (copy the LATSYM.EXE file) and splitting the load among these processors.
- (9) If your VMS graphics printouts are distorted, make sure that you have the LTA port set for PASSALL, PASTHRU, and TAB.
- (10) If you are having trouble printing PostScript files with VMS (PostScript errors or no printout), make sure that you have the form set for NOTRUNCATE and NOWRAP. Also, make sure you are not trying to print a flag page (unless you are using DCPS) since the flag page in the LAT symbiont is a non-PostScript text file.
- (11) If you are having trouble printing PostScript files (for example, from DECprint Supervisor or from a Windows-based PATHWORKS PC), try disabling binary mode on the printer with the command *SET PORT P1 BINARY DISABLED*.
- (12) If you are printing across a wide area network bridge (for example, Vitalink) and you get paused or stalled queues, increase the print server circuit timer to 120 milliseconds with the command *SET SERVER TRAYSMIT 120*.
- (13) If you can print successfully from PATHWORKS using DOS but have problems printing from Windows, try increasing the Device Not Selected and Transmission Retry timeouts from the Windows Printer Manager (select Printer Setup, select the desired printer, and press the Connect button).

### 8.16 Banyan VINES Troubleshooting

If you are having trouble printing with Banyan VINES, check the following:

- (1) Make sure that you have the Banyan VINES PCPrint software option installed.
- (2) Make sure that the Banyan protocol is enabled.
- (3) If there are more than two hops (i.e., more than two routers) between the print server and the file server, make sure that you have changed the hop count to the appropriate number via BRAdmin or the print server console.
- (4) Use the VINES MUSER or MANAGE utility to verify that the print server has logged in. If it has not, make sure that the StreetTalk login name configured in the print server exactly matches the login name that was configured using the MUSER or MANAGE utility on the file server.
- (5) Verify that the StreetTalk name associated with the print server service name exactly matches the name of the print queue that was configured using the MSERVICE or MANAGE utility on the file server.
- (6) Check to see that you have not exceeded the user limit on your Banyan file server (because the print server must login as a user), that printing is enabled on the queue, and that there are no security restrictions on the file server that would prevent the print server from logging in.

### 8.17 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 Netscape Navigator version 4.0 or later/ Microsoft Internet Explorer version 4.0 or later.

## 9. INSPECTION MODE

### 9.1 Before the Operation

Before operating the inspection mode, do the followings:

- (1) Confirm that CompactFlash card is installed into the printer.
- (2) Confirm that the optional lower tray, the mailbox and the duplex unit are installed into the printer if the optional unit connection test is performed.

### 9.2 Line Inspection Mode Procedure

- (1) Enter and exit Line Inspection Mode

While pressing the – and the + switch together, turn the power on.  
The LCD will display the following message:

```
LINE TEST
LT MX DX
```

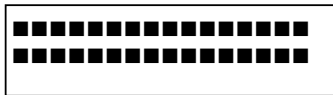
“LT”, “MX” or “DX” is displayed when the optional lower tray, the mailbox or the duplex unit is installed into the printer.

**NOTE:**

*For exiting the line inspection mode, press the Back switch at any sub menu.*

- (2) Check LCD and LED display condition

Press the **Set** switch to check if the LCD comes on as follows:



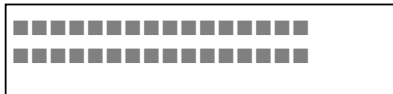
Confirm that all the LEDs turn on.

(The model with buzzer)

Confirm that the sound is small.

- (3) Change LCD optic angle <1>

Press the **Set** switch to check if the LCD comes on. Confirm that the column color has lightened.



(The model with buzzer)

Confirm that the sound is big.

- (4) Check control panel switch function and backlight display

Press the **Set** switch to check if all the LEDs go out.  
 Press all the 7 control panel switches one by one to check if the character and the backlight color will display respectively as the table shows below:

Switch	Character	Backlight color
<b>+</b>	1	Red
<b>Go</b>	2	Green
<b>Back</b>	3	Orange
<b>Set</b>	4	Red
<b>-</b>	5	Green
<b>Job Cancel</b>	6	Orange
<b>Reprint</b>	7	Red

(5) Check sensors

Press the **Set** switch.  
 Change status of the sensors and the following characters appear if the each sensor in the printer is functioning correctly.

ABCDEF

- A: Eject sensor
- B: Multi purpose tray paper empty sensor
- C: Tray paper empty sensor
- D: Rear cover sensor
- E: Cover open sensor
- F: Toner empty sensor

(6) Check scanners

Press the **Set** switch.  
 The LCD will display the following message:

SCAN CHECK



SCAN OK

SCAN NG

The automatic correction of twin laser has been finished correctly.

There is a problem in the scanner.

(7) Check fan (1)

Press the **Set** switch.

Check the DENGEN fan rotate at the full speed.

FAN CHECK DENGEN FAN
-------------------------

(8) Check fan (2)

Press the **Set** switch. The DENGEN fan stops its rotation.  
Check the OZONE fan rotate at the full speed.

FAN CHECK OZONE FAN
------------------------

(9) Check fan (3)

Press the **Set** switch. The OZONE fan stops its rotation.  
Check the MAIN fan rotate at the full speed.

FAN CHECK MAIN FAN
-----------------------

(10) Displays paper sizes in the tray and the tray ID status

Press the **Set** switch.  
Check if the correct tray size ID is selected for the paper size in the paper tray which is displayed in the LCD.

T1 SIZE	ID
A4/LTR	1

1.NOTRAY 2.LEGAL&ID=3 3.A6&ID=1 4.A4/LTR&ID=1

Use the **Set** switch to select the type of the tray. Status of Tray 2, 3 and 4 will be displayed if they are installed.

Refer to [subsection 4 'PRINTING METHODS' in CHAPTER 2](#) for the tray ID switch.

**NOTE:**

*The backlight turns red when paper empty is detected, and it remains green if paper empty is not detected.*

In the Inspection mode, the jig for inspection is installed.

The LCD will display the following message:

T2 SIZE	ID
NO TRAY	

(11) Check reading / writing on CompactFlash card

Press the **Set** switch.

CARD1 R/W START	Checks reading/writing on Card 1 ID.
-----------------	--------------------------------------



CARD1 R/W OK	The flash card works correctly.
--------------	---------------------------------

CARD1 R/W ERROR	There is a problem in reading/writing from the flash memory card 1.
-----------------	---

NO FLASH CARD1	No flash memory card is installed.
----------------	------------------------------------

(12) Top cover open.

(13) Install the Developer.

(14) Install the Jig.

(15) Check RIKAN motor

Press the **Set** switch.

The LCD will display the following message:

RIKAN MOTOR TEST MOTOR START
---------------------------------

Confirm that the Developer (both right and left sides) moves in front and in back.



COVER OPEN	There is a problem in installing the jig.
------------	---

MOTOR ERROR	There is a problem with the motor.
-------------	------------------------------------

(16) Exit the line test mode

Press the **Set** switch to exit the line test mode.

(17) Remove the Jig.

(18) Remove the Developer.

(19) Turn off the power.



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## CHAPTER 7 HIDDEN FUNCTIONS

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### 1. ENTERING HIDDEN FUNCTION MENU MODES

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HL-7050 has 3 entrances into the hidden function menu;

1. Power on.  
Press the **Go** switch and the **Set** switch (Professional Menu mode).  
See [section 2. 'PROFESSIONAL MENU MODE' in this chapter.](#)
2. Power on.  
While holding down the **Go** switch, press the **+** switch once and then the **Set** switch (Service Menu mode). See [section 3. 'SERVICE MENU MODE' in this chapter.](#)
3. Power on and press the specified switch(es) and others. See [section 4. 'OTHER HIDDEN FUNCTION MENUS' in this chapter.](#)

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## 2. PROFESSIONAL MENU MODE

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The Professional Menu mode enables to customize various functions for specific users and may be opened to users if necessary.

### 2.1 Enabling and Disabling Professional Menu Mode

#### *Entering the Professional Menu Mode*

Turn the machine on.

Press the **Go** switch and **Set** switch together to enter the Professional Menu mode.

#### *Accessing 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.

#### *Inputting a Value or Setting 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.

#### *Exiting 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.

## 2.2 Function Table

The following printer settings and function will be available with this operation.

Title & Subtitle	Item to be Set	Description	
TRAY SETTING	PAPER IN=CONT*	Feeds paper automatically when printing using the manual feed function.	
	PAPER IN=STOP	Feeds paper by pressing the <b>Go</b> switch 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		This menu is effective when CompactFlash or HDD is installed in LaserJet emulation.	
	PRIMARY FONT	FONT ID=####	Saves the current primary fonts in LaserJet emulation into the storage devices; CompactFlash or HDD.
	SECONDARY FONT	FONT ID=####	Saves the current secondary fonts in LaserJet emulation into the storage devices; CompactFlash or HDD.
	DOWNLOAD FONT	FONT ID=####	Saves the downloaded fonts in LaserJet emulation into the storage devices; CompactFlash or HDD.
SAVE MACRO	MACRO ID=####	Saves the macro in LaserJet emulation into the storage devices; CompactFlash or HDD.  This menu is effective when CompactFlash or HDD is installed and macro is effective in LaserJet emulation.	
SPOOL PRINT	COLLATE=ON*	Enables and disables collating function when re-printing; secure print, proof print or public print	
	COLLATE=OFF		
TRAYCOMMAND MODE	TRAY COM.=NORM*	HP LaserJet 4 compatible.	
	TRAY COM.=SPEC.	HP LaserJet 3 compatible.	

Title & Subtitle	Item to be Set	Description
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.
FONT SELECT		
SCALABLE FONT  This menu is effective when CompactFlash or HDD is installed in LaserJet emulation	FONT=ALL*	Enables all scalable fonts when selecting PCL font setting.
	FONT=LJ4	Disables the fonts below when selecting PCL font setting. <i>Atlanta, Bermuda Script, PC Brussels, Copenhagen, Germany, Portugal, Calgary, San Diego, US Roman</i>
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*	ON: Makes a reprinted character bold. (Print speed would get slow.)
	W BOLD=ON	
DLFNT Bd/It	DLFNT Bd/It=NO*	YES: Creates bold and italic font from download fonts.
	DLFNT Bd/It=YES	
B PROD ON/OFF	B PROD=ON*	ON: Creates bold and italic font from bitmap fonts.
	B PROD=OFF	
CONDENCE SELECT	CONDENC=16.66p*	Selects the pitch for EPSON / IBM condensed characters.
	CONDENC=17.14p	
OEM FONT SELECT	OEMFONT=DISABLE*	Enables and disables to select European Parliament fonts.
	OEMFONT=ENABLE	
DARK FONT SELECT	DARKFONT=DISABLE	Enables and disables to select bold brougham.
	DARKFONT=ENABLE	
BRO FONT SELECT	BROBITM=DISABLE*	Enables and disable the built-in 10/12 pitch Brougham bitmap font.
	BROBITM=ENABLE	
ISR FONT SELECT	ISRFONT=DISABLE*	Enables and disables to select Hebrew font.
	ISRFONT=ENABLE	

Title & Subtitle	Item to be Set	Description
<b>FONT SELECT</b>		
300DPI PRIORITY	3B PRIO=LOW*	The priority of selection for 300dpi bitmap fonts is standard (=low).
	3B PRIO=HIGH	The priority of selection for 300dpi bitmap fonts is higher than scalable font. The compatibility of font selection manner with HP LaserJet 4 is not maintained if you choose 3B PRIO=HIGH.
FX/XL SCALE FONT  (EPSON/IBM Emulation mode)	SCAL.F=NORMAL*	Only similar size fonts are selectable as scalable is selected.
	SCAL.F=ALL SIZE	All fonts are selectable.
FX/XL SCALE ITA.  (Epson/IBM Emulation mode)	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.
exit FONT		
<b>PAPER&amp;TRAY SIZE</b>		
	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.
<b>PARALLEL MENU</b>		
PARALLEL TIMING	CDCC PSW=H*	BUSY signal gets high when STROBE signal goes down. This is chosen by default.
	CDCC PSW=L	BUSY signal gets high when STROBE signal goes up.
STB/ACK DELAY	CDCC BSSL=L*	ACK signal is sent out before BUSY signal goes down. This is chosen by default.
	CDCC BSSL=H	ACK signal is sent out when BUSY signal goes down.
INPUT PRIME	INPUT PRIME=OFF*	Not resets the printer upon INPUT PRIME signal.
	INPUT PRIME=ON	Resets the printer upon INPUT PRIME signal
exit PARALLEL		

Title & Subtitle	Item to be Set	Description
<b>RS-232C MENU</b>		
DSR(DR) ON/OFF	DSR(DR)=OFF*	Not check DSR (DR) signal when a printer send back data to a host through RS-232C. This is chosen by default.
	DSR(DR)=ON	Check DSR (DR) signal when a printer send back data to a host through RS-232C.
RCV XON/XOFF SEL	RCV XONXOFF=OFF*	Handle Xon / Xoff as a data to be printed. This is chosen by default.
	RCV XONXOFF=ON	Handle Xon / Xoff as a protocol.
KEEP DTR SEL	KEEP DTR=OFF*	Maintains normal DTR signal output operation.
	KEEP DTR=ON	Maintains DTR signal ready to be output except when the printer is in the off line mode.
XOFF TIMING SEL		This allows you to set the timing to send out Xoff depending on the free receiving data buffer of the printer.
	XOFF TGM=NORMAL*	This is chosen by default.
	XOFF TMG=11K	Send out Xoff at 11k bytes of the free space remaining.
	XOFF TMG=21K	Send out Xoff at 21k bytes of the free space remaining.
	XOFF TMG=101K	Send out Xoff at 101k bytes of the free space remaining.
exit SERIAL		
REPRINT ON/OFF	REPRINT=ON*	Follows the user menu's setting which selects either enabling or disabling reprint function.
	REPRINT=OFF	Disables reprint function.
AUTO HRC ON/OFF	AUTO HRC=OFF*	Enables and disables automatic HRC control.
	AUTO HRC=ON	
APPLETALK AT/PS	APPLE TALK=PS*	Switches the emulation to the PS mode when AppleTalk receives data.
	APPLE TALK=AUTO	The auto emulation function switches emulations.
PS BINARY SELECT	PS BINARY=ASCII*	Handle the data as ASCII. Ctrl-T, Ctrl-C etc. are handled as the control codes. This is chosen by default.
	PS BINARY=BIN	Binary data can be printed. Ctrl-T, Ctrl-C etc. does not work.

Title & Subtitle	Item to be Set	Description
PS QUOTE BINARY	PS QUOTE <sub>BIN</sub> =OFF*	Not accept the binary data even with special codes.
	BS QUOTE <sub>BIN</sub> =ON	Accepts the binary data with special codes.
PS IMAGE MASK	PS IMAGE <sub>MSK</sub> =OFF*	ON: Makes print speed faster with an OS/2 driver.
	BS IMAGE <sub>MSK</sub> =ON	
PS CELL MODE	PS CEIL=FLOOR*	Modulates calculation diffusion of PostScript.
	PS CEIL=CEIL	
PS STATUS ECHO	STATUS ECHO=ON*	Enables and disables PS calculation.
	STATUS ECHO=OFF	
PROTECT OFF MODE	PRO.OFF=AUTO*	Carries out the page protect if it is turned OFF.
	PRO.OFF=NORMAL	Carries out the page protect.
HP ESC E COMMAND	HP ESC E=RESET*	Reset a printer with ESC E.
	HP ESC E=F/F	Carries out form feed with ESC E.
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	
PANEL RESET MODE	RESET=NORMAL*	JOB: Changes "reset printer" function to "job cancel" function.
	RESET=JOB	
JOB TIMEOUT SEL	TIMEOUT=ON*	PJL JOB TIMEOUT is effective.
	TIMEOUT=OFF	PJL JOB TIMEOUT does not carry out.
DEMO PAGE ON/OFF	DEMO PAGE=ON*	Adds and removes "DEMO PAGE" into the user menu.
	DEMO PAGE=OFF	
PICKUP RETRY SET	PICKUP RETRY=2*	Set number of re-trying of paper feeding. The number can be selected in the range from 0 to 7. 2 is chosen by default.
TOWERFEED ON/OFF	TowerFeed=OFF*	TowerFeed is not attached. This is chosen by default.
	TowerFeed=ON	TowerFeed is attached.
JOB CANCEL TIME	TIME OUT=???sec	Selects time (1 to 255 seconds) "job cancel" job becomes time out

<b>PSCOPYPAGE</b>	<b>PSCOPYPAGE=L3*</b>	L2: Changes the PS copypage operator from Level3 to Level2.
	<b>PSCOPYPAGE=L2</b>	
<b>1JOB1PAGE SEL</b>	<b>1 JOB1PAGE= SX*</b>	Duplex=ON makes the printing speed of 1 page of data faster. Sets up the printing mode. (Simplex/Duplex)
	<b>1 JOB1PAGE=DX</b>	
<b>APPLEUSBPS</b>	<b>BINARY=OFF</b>	Enables to print PS Pure Binary data via Mac USB.
	<b>BINAY=ON</b>	
<b>MP-CAS ADJUST</b>	<b>MPTRAY YADJUST</b>	Adjusts the position of starting scanning in each paper tray. -100 to100 dot (300dpi)
	<b>PCTRAY YADJUST</b>	
	<b>DUPLEX YADJUST</b>	
	<b>MPTRAY XADJUST</b>	
	<b>T1TRAY XADJUST</b>	
	<b>T2TRAY XADJUST</b>	
	<b>T3TRAY XADJUST</b>	
	<b>T4TRAY XADJUST</b>	
<b>Net Heap Size</b>	<b>HeapSize=xxxxK</b>	Changes the size of Heap size area used in BR-Net. (K byte)
<b>PS FONT CACHE</b>	<b>CLEAR CACHE=OFF*</b>	ON: Clears the Font Cache when the Job is complete.
	<b>CLEAR CACHE=ON</b>	



### 3. SERVICE MENU MODE

By enabling the Service Menu mode provides, you will get various printer information. This mode is not open to users.

#### 3.1 Entering the Service Menu Mode

Turn the machine on.

While holding down the **Go** switch, press the **+** switch once and then the **Set** switch until the menu "-- SERVICE MENU --" appears on the LCD display.

#### 3.2 Function Table

The following information will be available with this operation.

Title	Subtitle	Description
SERVICE INFO	PAGE COUNT	Displays the number of printing pages.
	JAM COUNT	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/1/2/3/4 = PF kit for MP Tray/Tray 1/Tray 2/Tray 3/Tray4.
	PF KIT 1	
	PF KIT 2	
	PF KIT 3	
	PF KIT 4	
	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). COVERAGE counter will be effective until the page counter counts up to 100,000 pages.	

Title	Subtitle	Description
	<b>PRINT PAGES</b> <b>A4/LTR PAGE</b> <b>LEGAL PAGE</b> <b>B5/EXE PAGE</b> <b>A5 PAGE</b> <b>A6 PAGE</b> <b>B6 PAGE</b> <b>ENVELOPE PAGE</b> <b>OTHER PAGE</b>	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. B6:ISO B6 ENVELOPE PAGE: C5, COM10, DL/ MONARCH OTHER PAGE: User defined size, MP Tray size=ANY
<b>ERROR HISTORY</b>	<b>1:#####</b> <b>2:#####</b> <b>3:#####</b> ..... <b>10:#####</b>	Displays the 10 latest errors in order of newest to the oldest. <i>NOTE: "COVER OPEN" and "NVRAM ERROR" are not displayed in the history. If an error occurs consecutively, it will be displayed only once.</i>
<b>LIFE PERIOD</b>	<b>DRUM UNIT</b> <b>PF KIT</b> <b>FUSER UNIT</b> <b>LASER UNIT</b> <b>DEVELOPER</b>	Displays the drum unit life period. Displays the PF kit life period. Displays the fixing unit life period. Displays the laser unit life period. Displays the Developer life period.
<b>DRUM LIFE CHK %</b>		Sets up the timing of showing "CHANGE DRUM SOON" message. Default setting: 80%
<b>DEVELOPER</b>	<b>ON*/OFF</b>	ON: Makes the developer counter to treat TONER LOW and TONER LIFE END.
<b>TONER LIFE DISP</b>	<b>OFF*/ON</b>	ON: Displays the toner life in the PRINT SETTINGS.

<b>MODIFY COUNT</b>	<b>JAM COUNT</b>	Displays the number of paper jam occurrence.
	<b>DEVELOPER</b>	Displays the number of the Developer turning.
	<b>REPLACE COUNT</b>	
	<b>TONER</b>	Displays the number of the toner cartridge replacement.
	<b>DRUM UNIT</b>	Displays the number of the drum unit replacement.
	<b>PF KIT MP</b>	Displays the number of the PF kit replacement. PF kit MP/1/2/3/4 = PF kit for MP Tray/Tray 1/Tray 2/Tray 3/Tray 4.
	<b>PF KIT 1</b>	
	<b>PF KIT 2</b>	
	<b>PF KIT 3</b>	
	<b>PF KIT 4</b>	
<b>FUSER UNIT</b>	Displays the number of the fixing unit replacement.	
<b>MODIFY COUNT</b>	<b>REMAIN LIFE</b>	
	<b>DRUM UNIT</b>	Displays the drum unit remaining life counters.
	<b>PF KIT MP</b>	Displays the PF kit remaining life counters. PF kit MP/1/2/3/4 = PF kit for MP Tray/Tray 1/Tray 2/Tray 3/Tray 4.
	<b>PF KIT 1</b>	
	<b>PF KIT 2</b>	
	<b>PF KIT 3</b>	
	<b>PF KIT 4</b>	
	<b>FUSER UNIT</b>	Displays the fixing unit remaining life counters.
<b>LASER UNIT</b>	Displays the laser unit remaining life counters.	
<b>RESET COUNT</b>	<b>CLEAR COVERAGE</b>	Initialize average coverage counter.
	<b>CLEAR ERROR HIST</b>	Initialize error history.
<b>NV-RAM DEBUG</b>	<b>NV-RAM HEX PRINT</b>	Prints NV-RAM HEX dump.
<b>SCANNER UNIT</b>	<b>START TUNING</b>	Carries out the automatic correction of twin laser.

<b>TEMPER CONTROL</b>	<b>CENTER TEMPER</b>	
	<b>THICK PAPER</b>	Adjusts the toner fixing temperature for thick paper. (-15, -10, -5, 0, 5, 10, 15 or 20)
	<b>PLAIN PAPER</b>	Adjusts the toner fixing temperature for plain paper. (-15, -10, -5, 0, 5, 10, 15 or 20)
	<b>TRANSPARENCIES</b>	Adjusts the toner fixing temperature for transparencies. (-15, -10, -5, 0, 5, 10, 15 or 20)
	<b>ENVELOPES</b>	Adjusts the toner fixing temperature for envelopes. (-15, -10, -5, 0, 5, 10, 15 or 20)
	<b>SIDE TEMPER</b>	
	<b>THICK PAPER</b>	Adjusts the toner fixing temperature for thick paper. (-15, -10, -5, 0, 5, 10, 15 or 20)
	<b>PLAIN PAPER</b>	Adjusts the toner fixing temperature for plain paper. (-15, -10, -5, 0, 5, 10, 15 or 20)
	<b>TRANSPARENCIES</b>	Adjusts the toner fixing temperature for transparencies. (-15, -10, -5, 0, 5, 10, 15 or 20)
	<b>ENVELOPES</b>	Adjusts the toner fixing temperature for envelopes. (-15, -10, -5, 0, 5, 10, 15 or 20)
<b>PPDS SUBSET</b>	<b>ON/OFF</b>	SUPPORTS the PPDS Subset command in the FX Emulation mode.
<b>TEST MENU</b>	<b>FAN TEST</b>	Carries out movement test of FAN, MOTOR and SENSOR.
	<b>MOTOR TEST</b>	
	<b>SENSOR TEST</b>	
<b>BUZZER</b>	<b>BUZZER=OFF*</b>	OFF: Sets the buzzer function to "OFF" compulsory.
	<b>BUZZER=ON</b>	

## 4. OTHER HIDDEN FUNCTION MENUS

### 4.1 Hidden Function Menus Enabled by Pressing Switch(es) When Turning the Machine on

The following settings and function will be available by holding down the specified switch(es) while turning the machine on.

Switch(es)	Display	Description
Go	DEMO MODE=OFF* DEMO MODE=ON	Enables and disables DEMO MODE. If this function is ON (default setting), the user can set a printer to work as a demo machine. It turns OFF automatically when the printing data is sent to the printer.
Reprint		Continuously print the test pattern sheet.
Back		PCB ONLY Mode (Ignores the printer error such as "COVER OPEN", and starts by main PCB.)
-	HEX DUMP MODE	Hex dump mode. Printer reset is needed to exit this function.
+		Version check
Set		Clears NVRAM. <b>This function is not normally used.</b>
Set & Back		Rewrites the data on the ROM.
Go & +	DRAM CHECK START	Checks DRAM.
Go & Back		Rewrites the data on the Rom by Compact Flash Card. Skips the function of NVRAM Clear Card.
- & +	LINE TEST LT MX DX	Printer test mode. <b>DO NOT USE.</b>
- & Set	HIGHVOLT CHECKER	Checks the high-voltage power supply. <b>DO NOT USE.</b>
+ & Set		Cancellation of E50 (FUSER MULF)

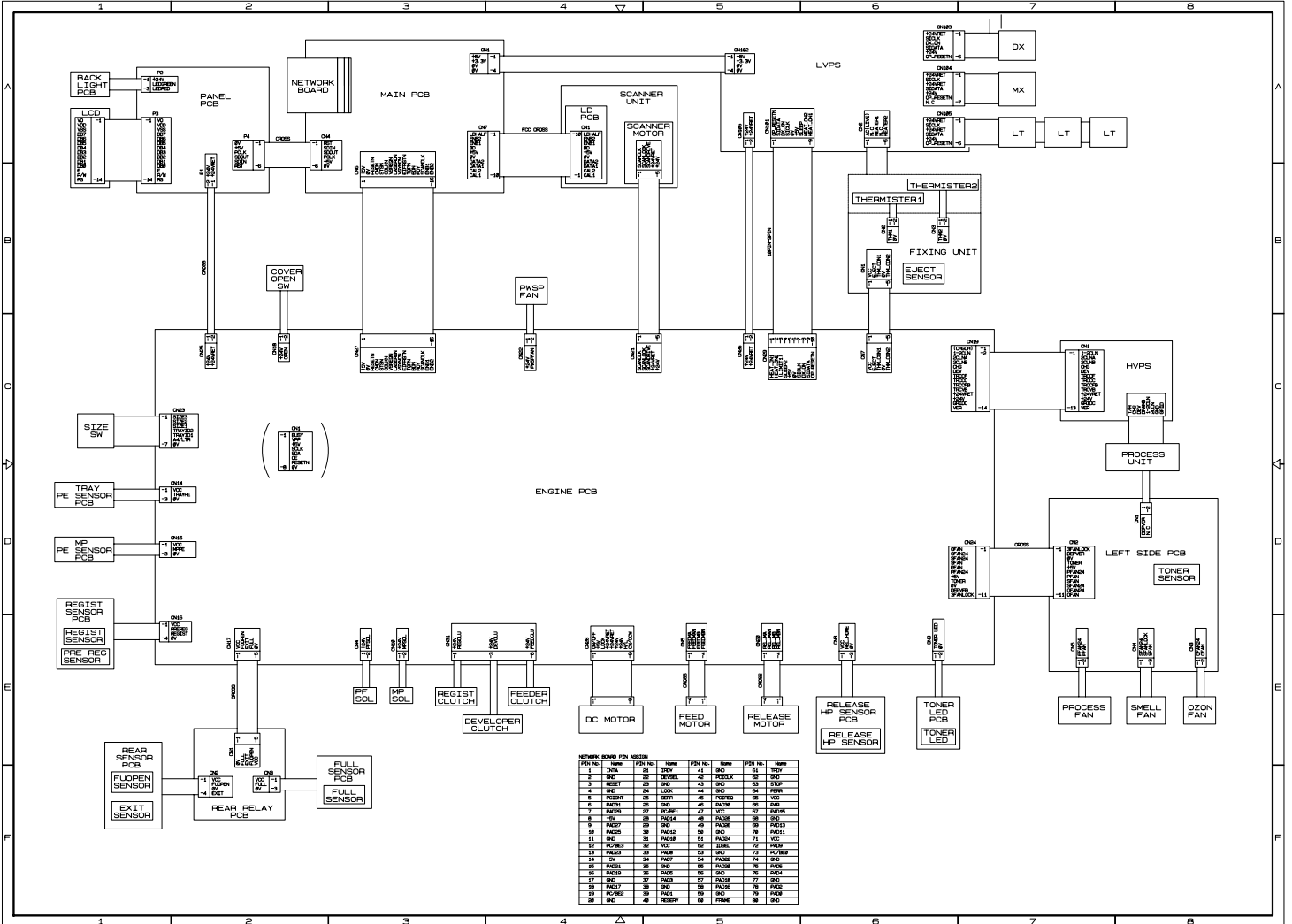
## 4.2 Parts Life Reset Function

This function is used by service specialists only when changing the periodical replacement parts to clear the life counter.

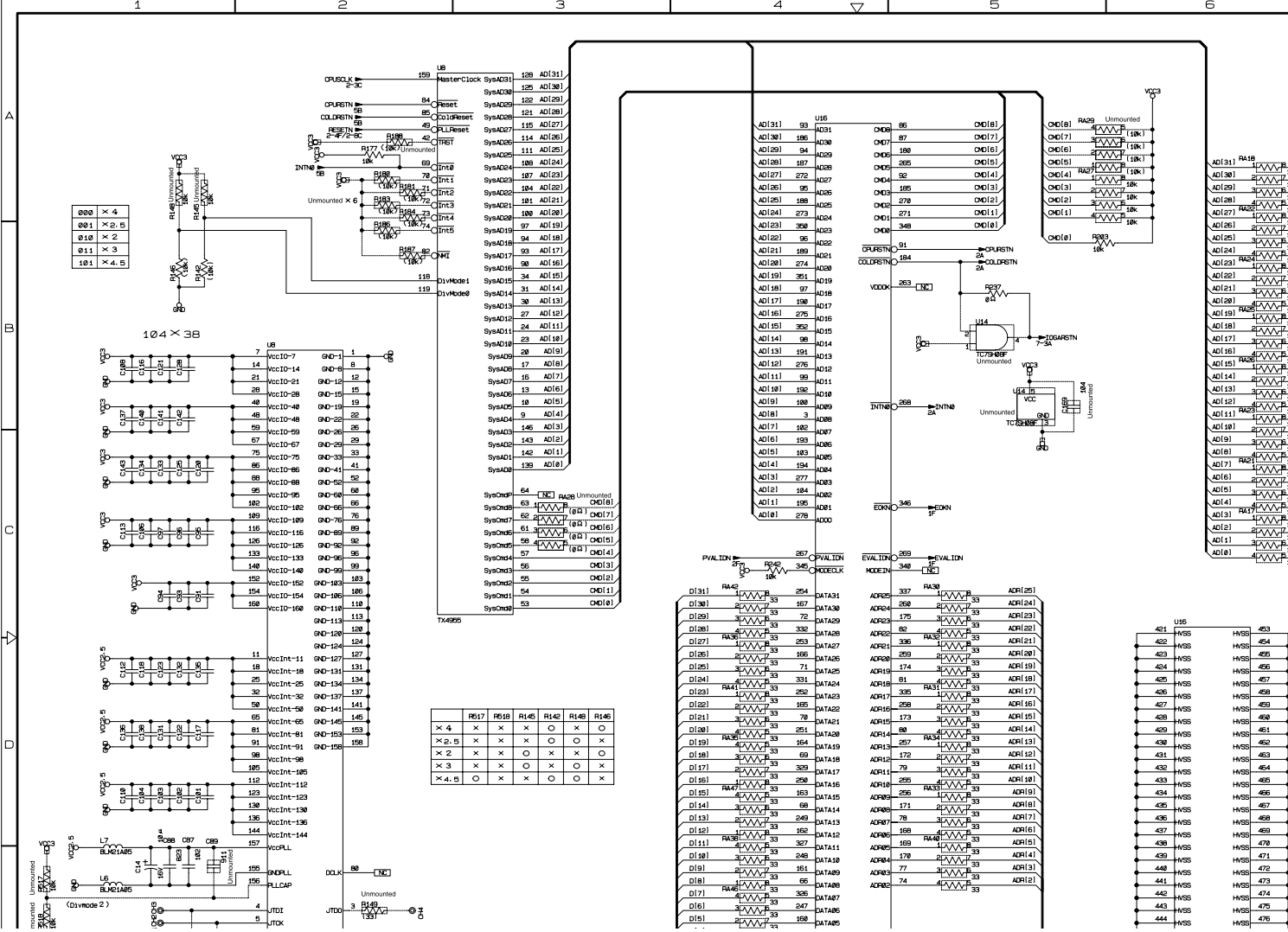
To operate this function, press the “Go” and “+” switches together until the menu “RESET PARTS LIFE” appears on the LCD display. Select the required item (part name) using the “+/-” switches, then press the “Set” switch. See [subsection 2 'PERIODICAL REPLACEMENT PARTS' in CHAPTER 5](#) for more information about the periodical replacement parts.

Title	Subtitle	Description
RESET PARTS LIFE	PF KITMP	Initializes the counter of the paper feeding kit to zero. PF kit MP/1/2/3/4 = PF kit for MP Tray/Tray 1/Tray 2/Tray 3/Tray 4.
	PF KIT1	
	PF KIT2	
	PF KIT3	
	PF KIT4	
	FUSER UNIT	Initializes the counter of the fixing unit to zero.
	LASER UNIT	Initializes the counter of the laser unit to zero.
	DRUM UNIT	Initializes the counter of the drum unit to zero.

APPENDIX 1. CONNECTION DIAGRAM, HL-7050

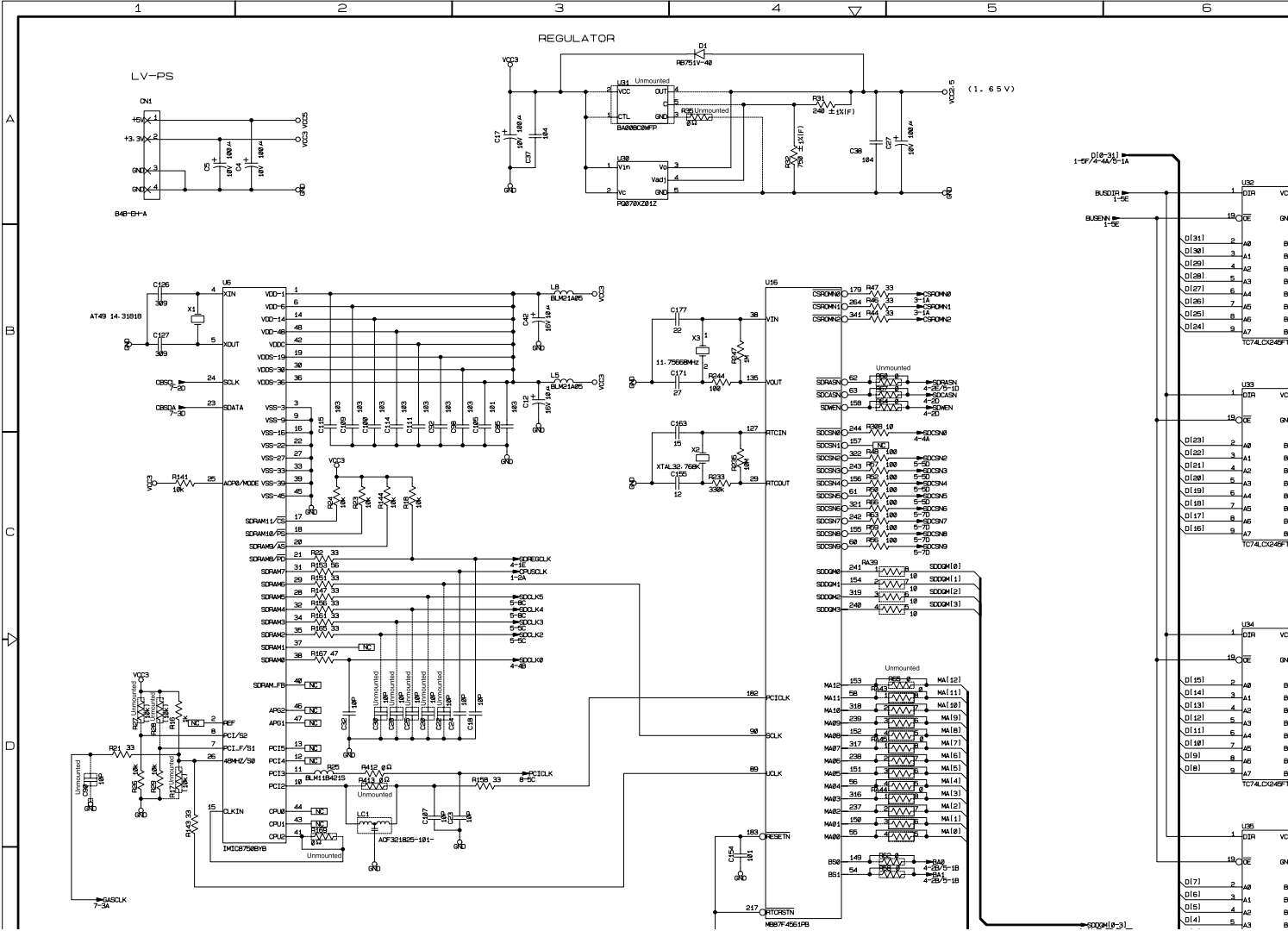


APPENDIX 2. MAIN PCB CIRCUIT DIAGRAM, HL-7050 (1/9)

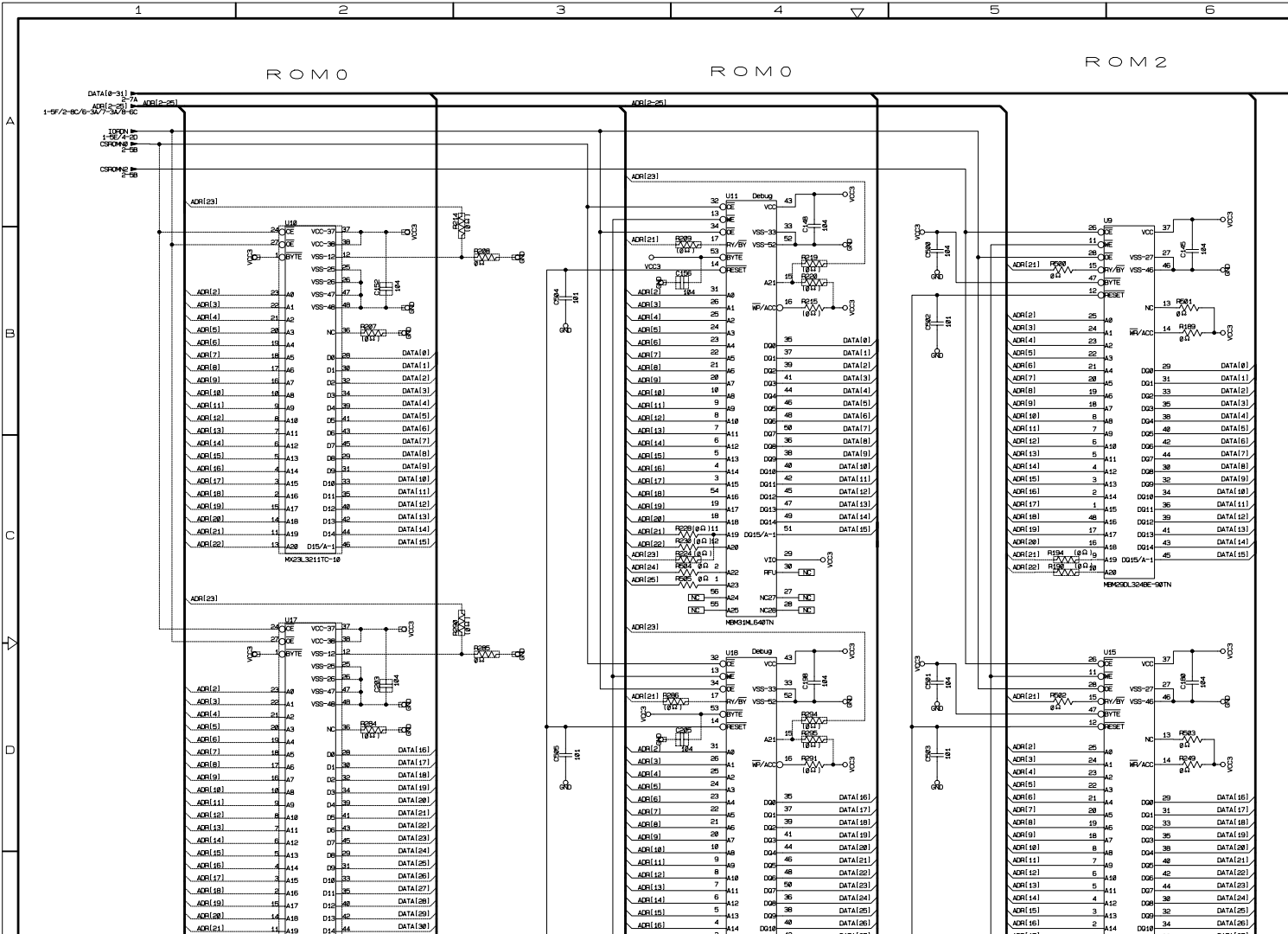




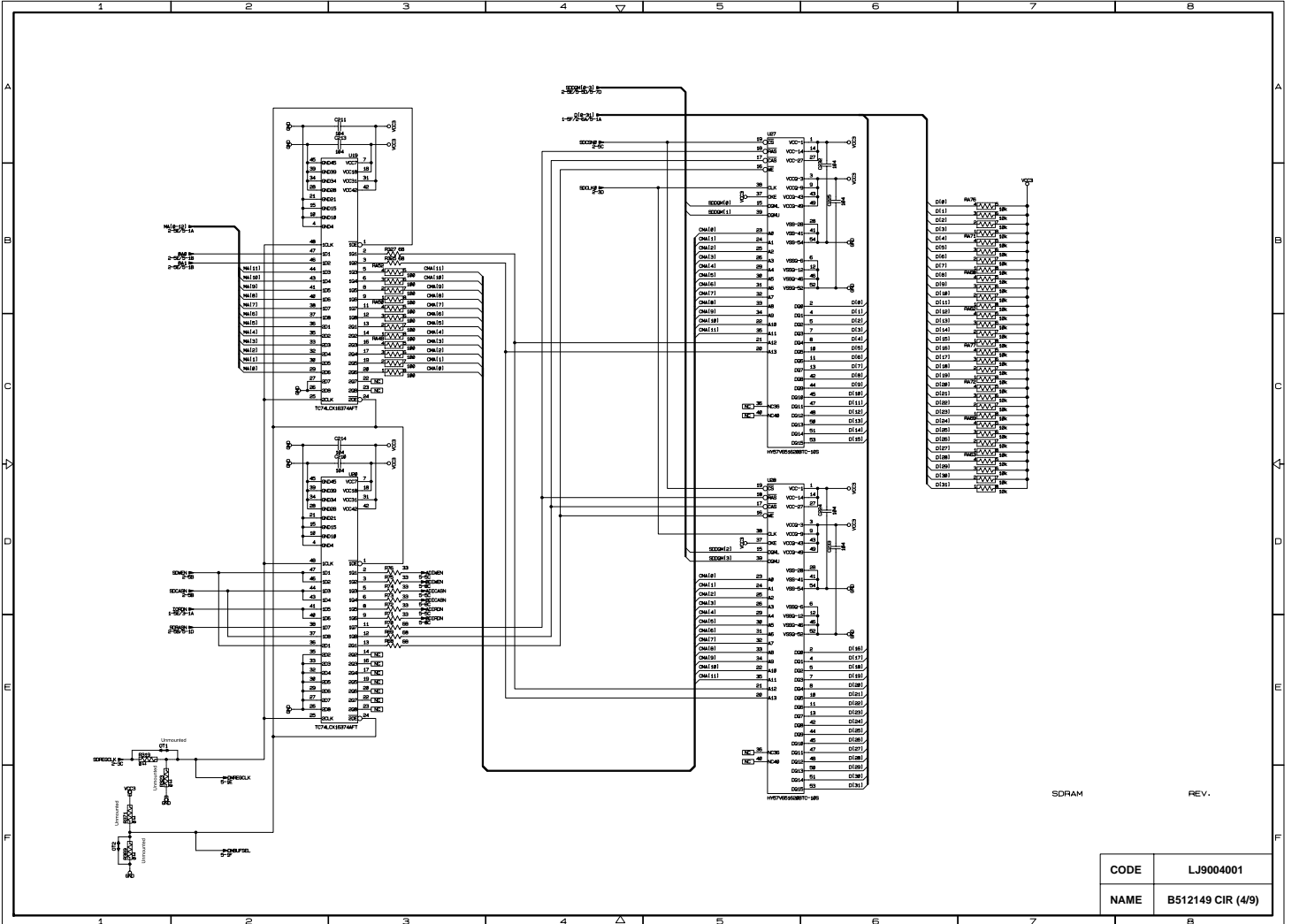
APPENDIX 3. MAIN PCB CIRCUIT DIAGRAM, HL-7050 (2/9)



APPENDIX 4. MAIN PCB CIRCUIT DIAGRAM, HL-7050 (3/9)

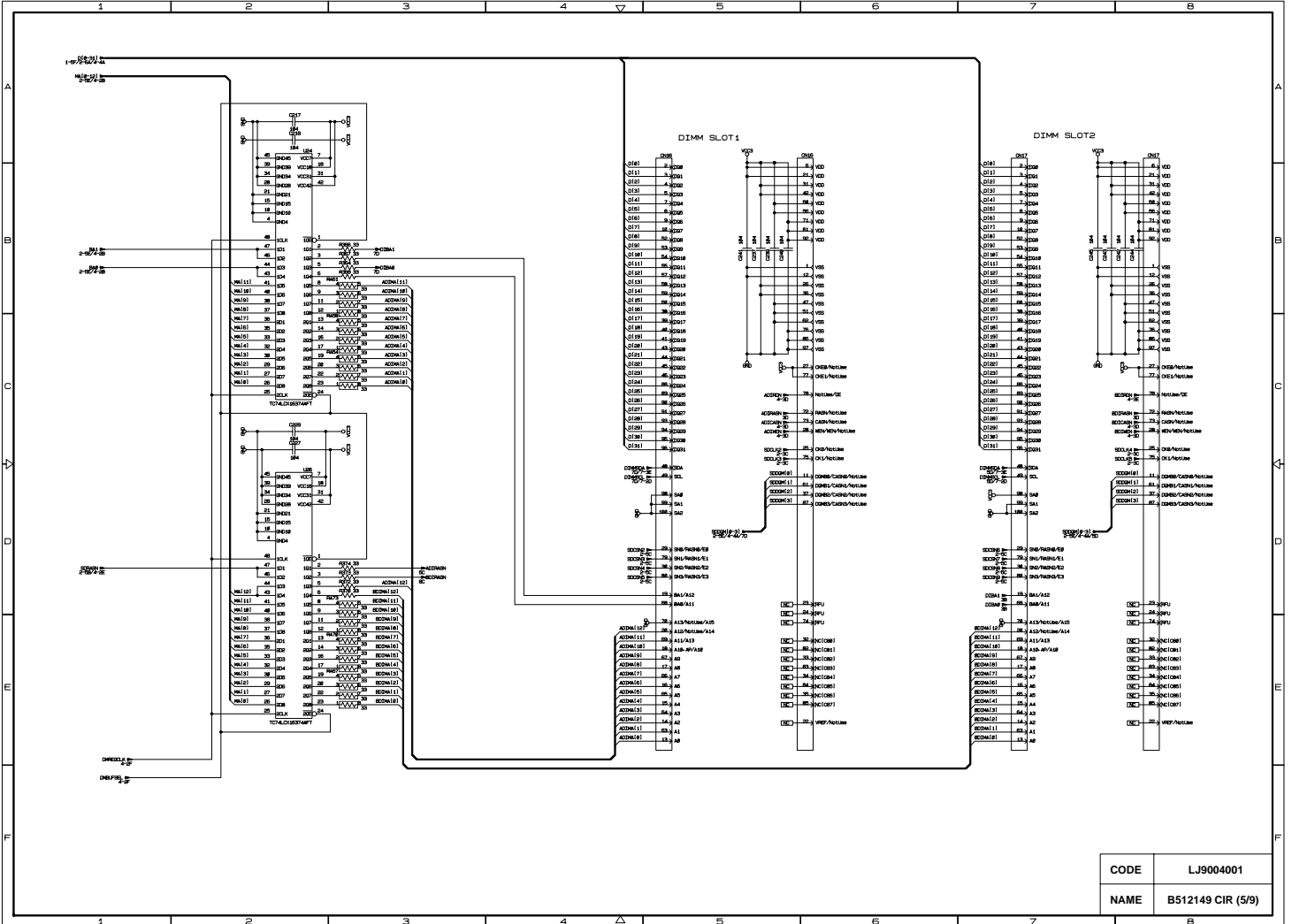


APPENDIX 5. MAIN PCB CIRCUIT DIAGRAM, HL-7050 (4/9)



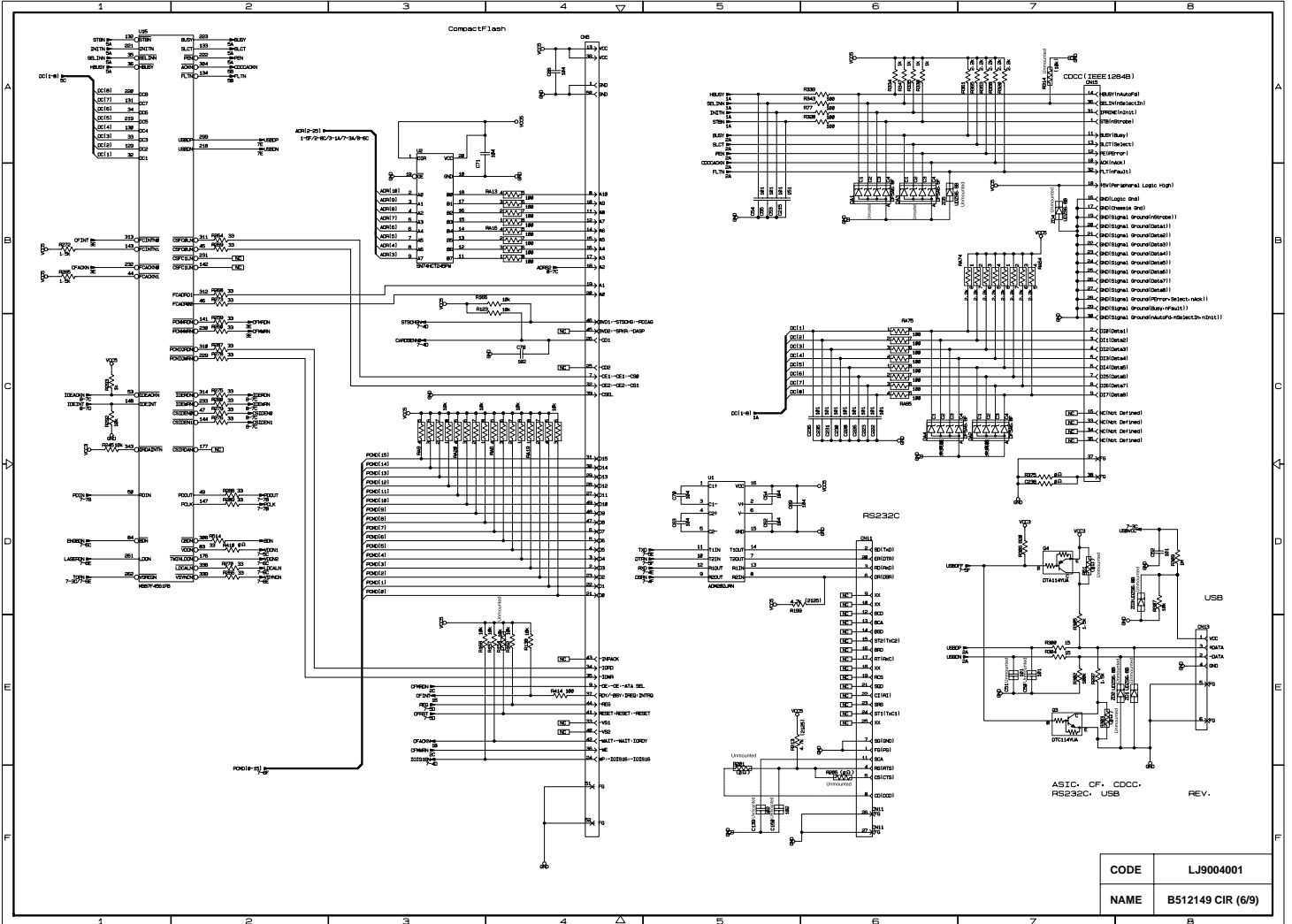
CODE	LJ9004001
NAME	B512149 CIR (4/9)

APPENDIX 6. MAIN PCB CIRCUIT DIAGRAM, HL-7050 (5/9)



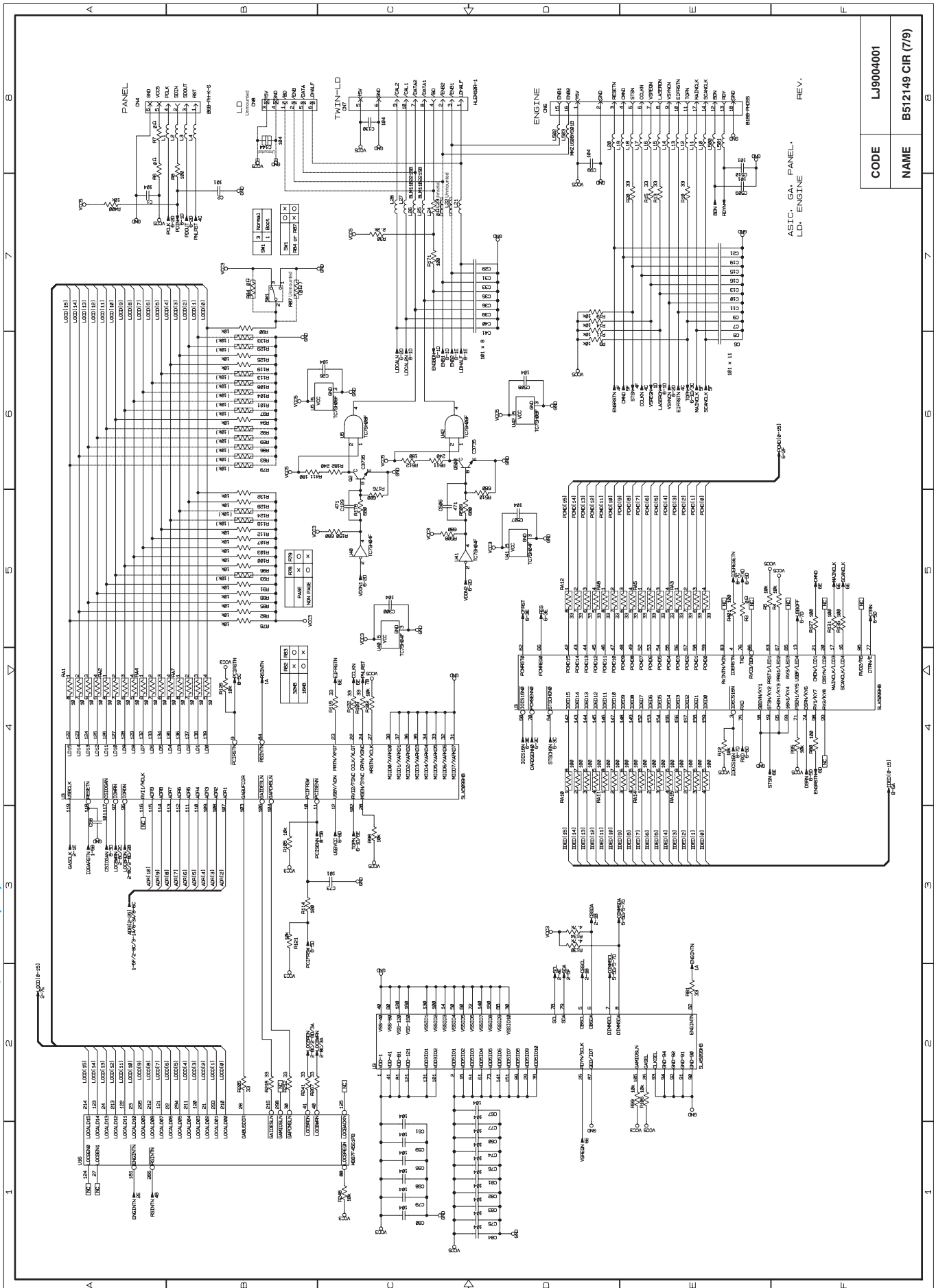
CODE	LJ9004001
NAME	B512149 CIR (5/9)

APPENDIX 7. MAIN PCB CIRCUIT DIAGRAM, HL-7050 (6/9)



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NAME	B512149 CIR (6/9)

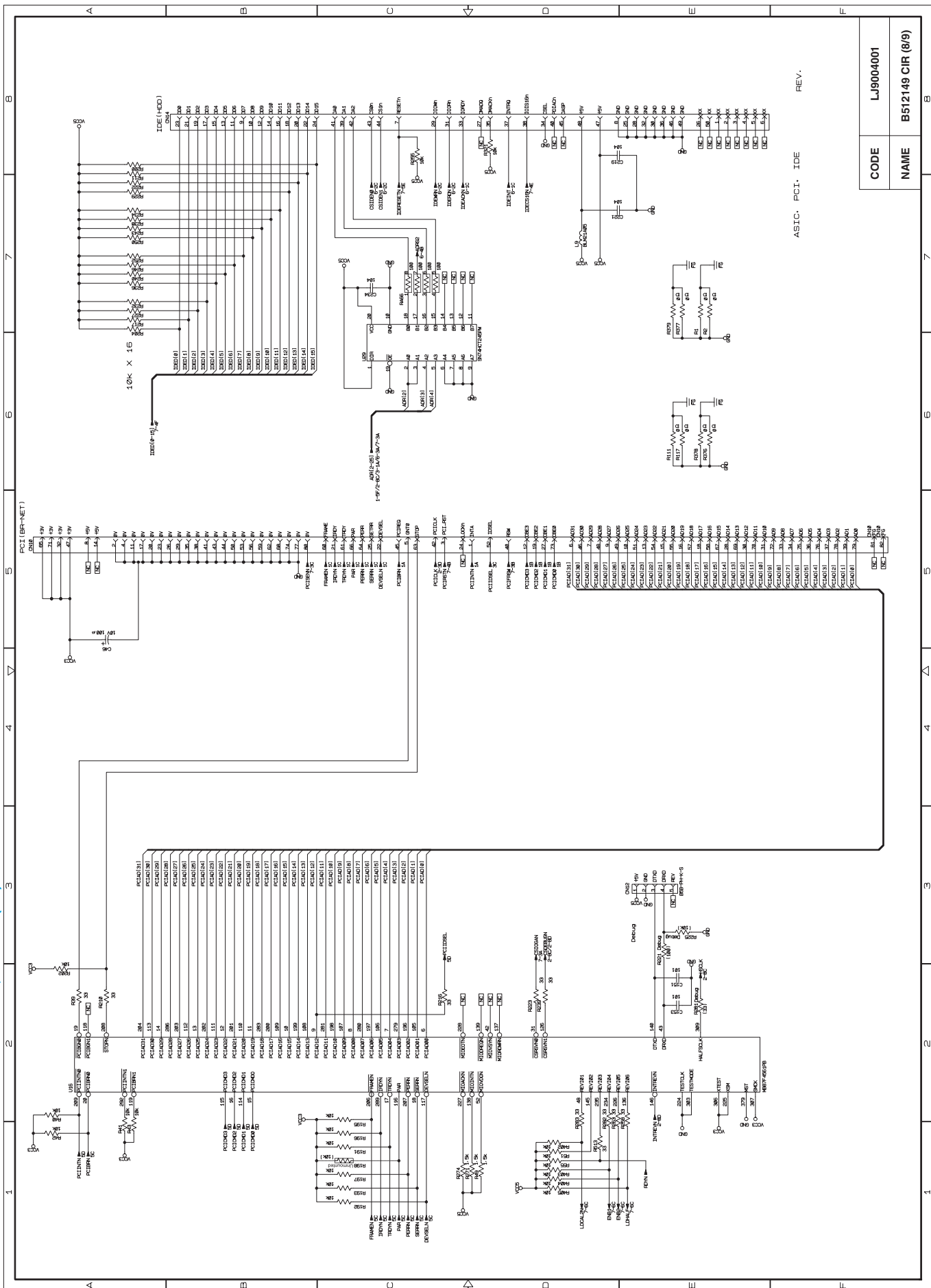
APPENDIX 8. MAIN PCB CIRCUIT DIAGRAM, HL-7050 (719)



CODE	LJ9004001
NAME	B512149 CIR (719)

ASIC - GA - PANEL - LD - ENGINE REV.

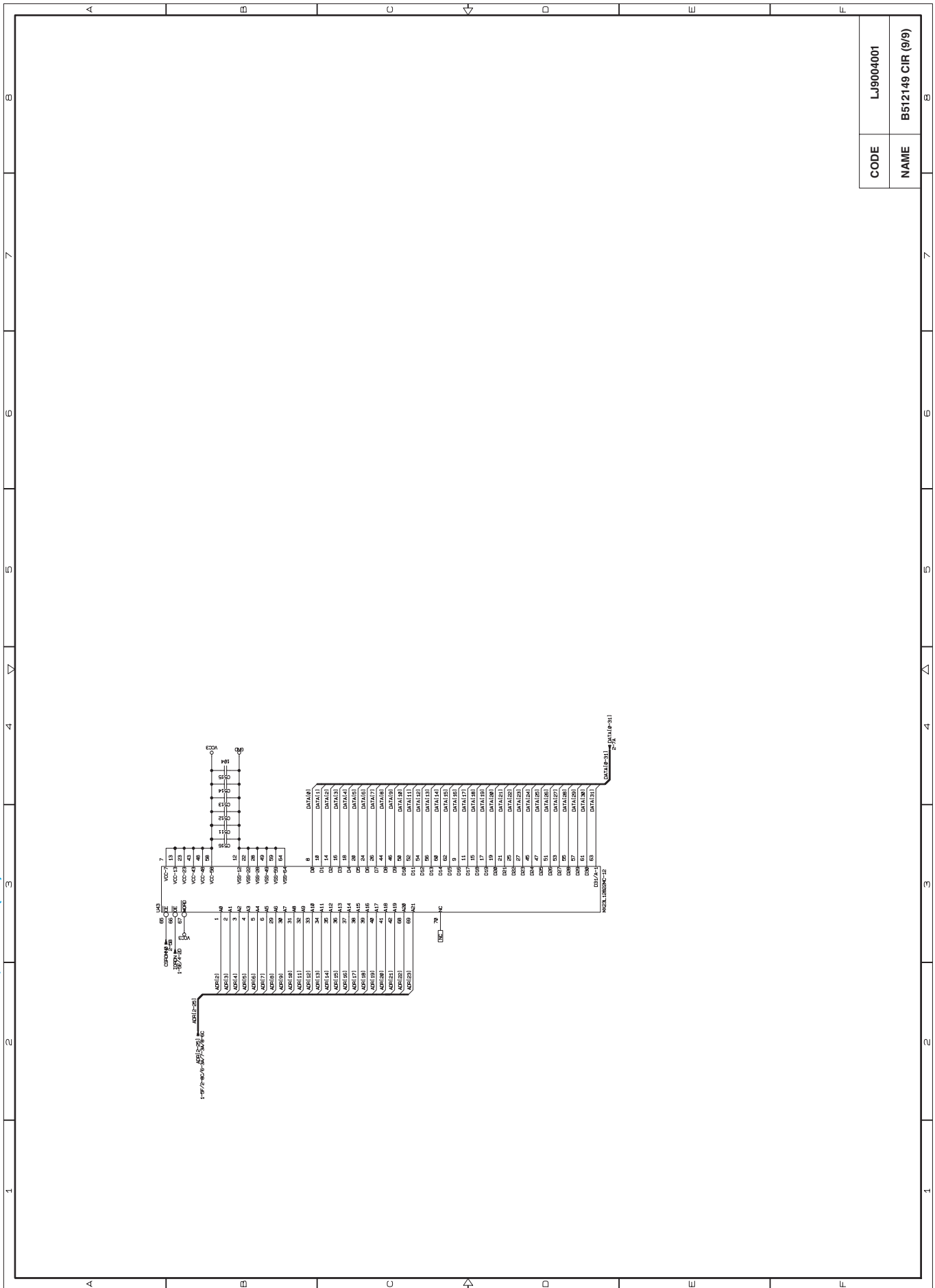
APPENDIX 9. MAIN PCB CIRCUIT DIAGRAM, HL-7050 (8/9)



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NAME	B512149 CIR (8/9)

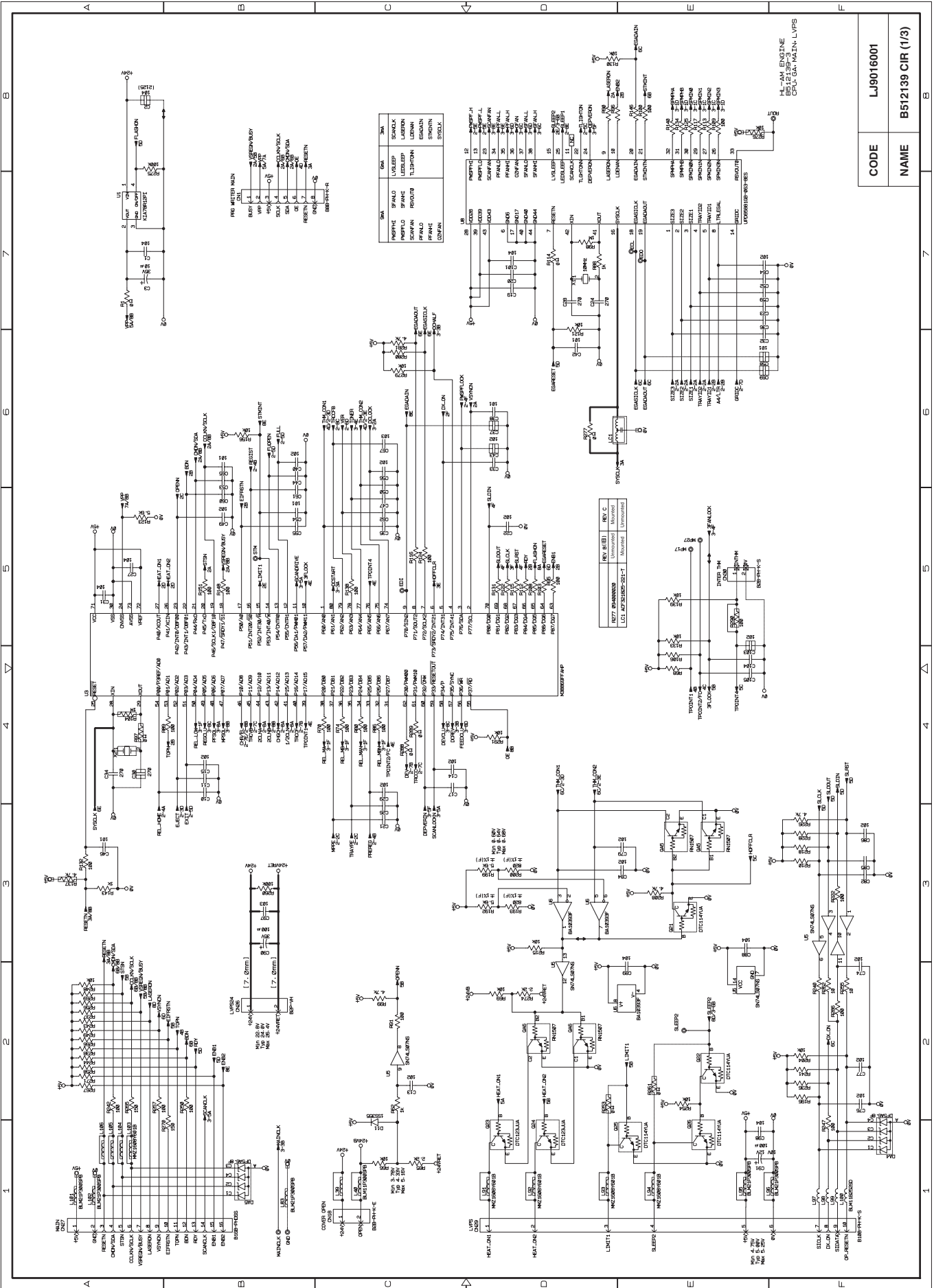
REV. ASIC. PCI. IDE

APPENDIX 10. MAIN PCB CIRCUIT DIAGRAM, HL-7050 (9/9)



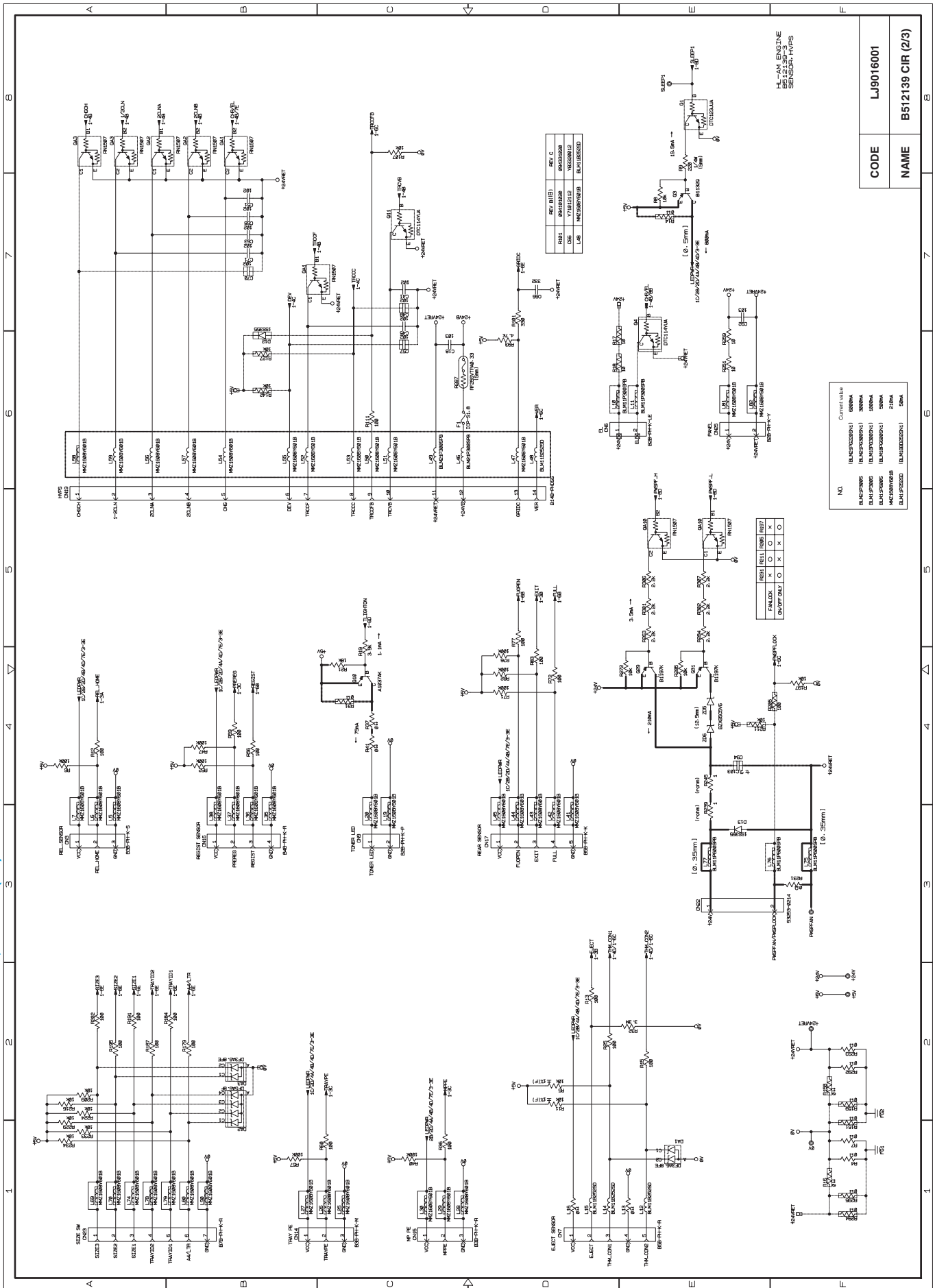


APPENDIX 11. ENGINE PCB CIRCUIT DIAGRAM, HL-7050 (1/3)

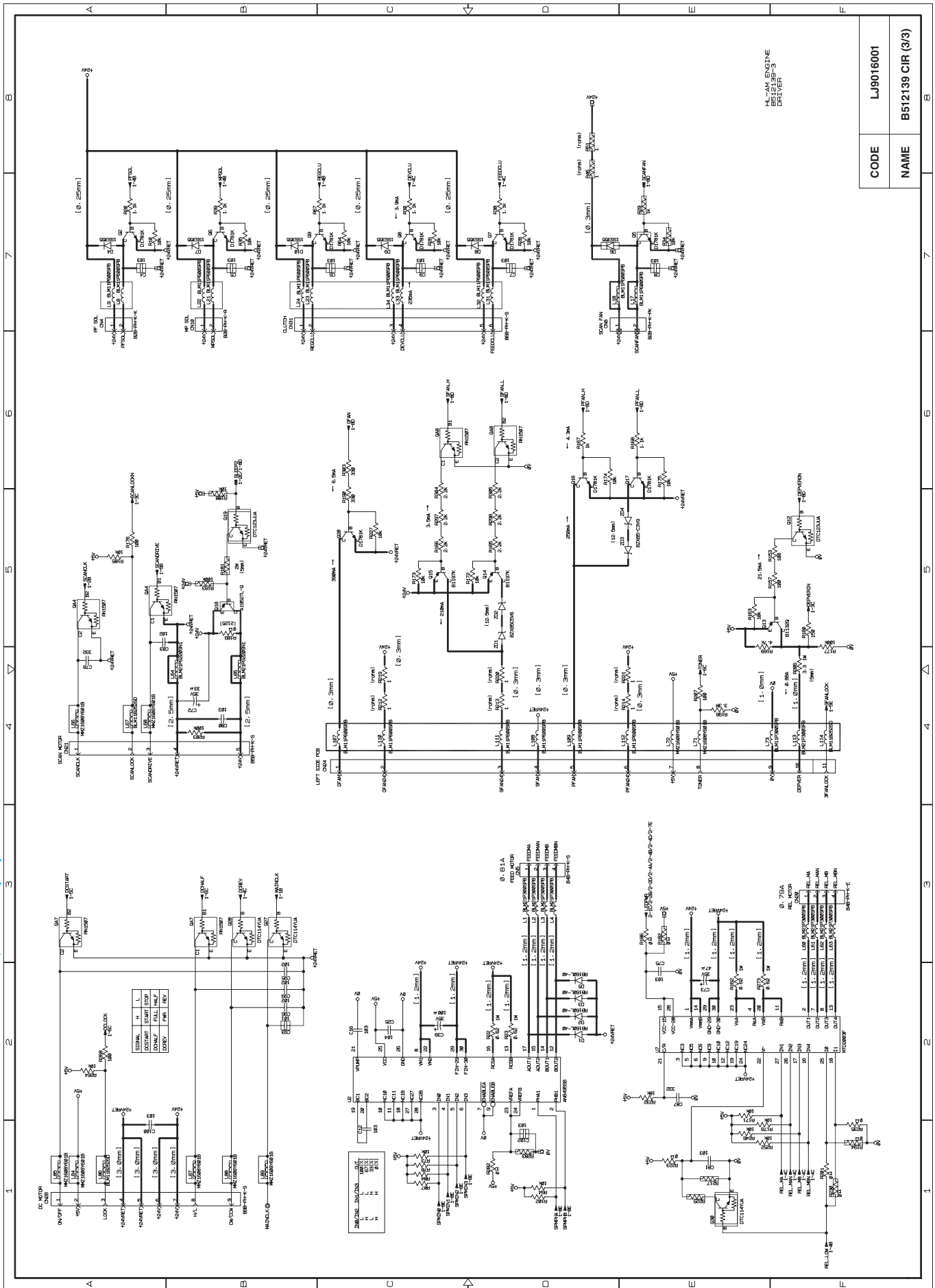


CODE	LJ9016001
NAME	B512139 CIR (1/3)

APPENDIX 12. ENGINE PCB CIRCUIT DIAGRAM, HL-7050 (2/3)

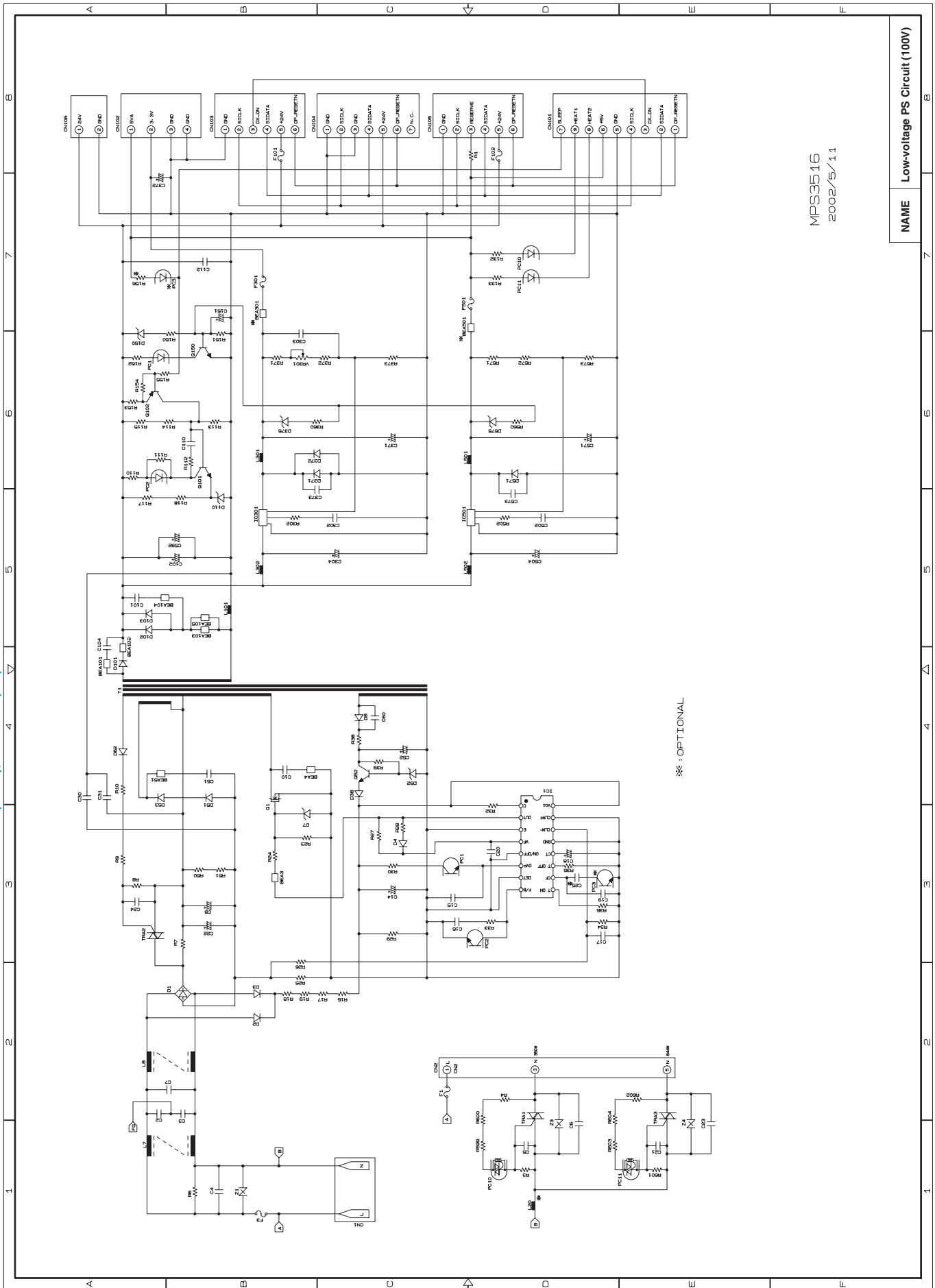


APPENDIX 13. ENGINE PCB CIRCUIT DIAGRAM, HL-7050 (3/3)



CODE	LJ9016001
NAME	B512139 CIR (3/3)

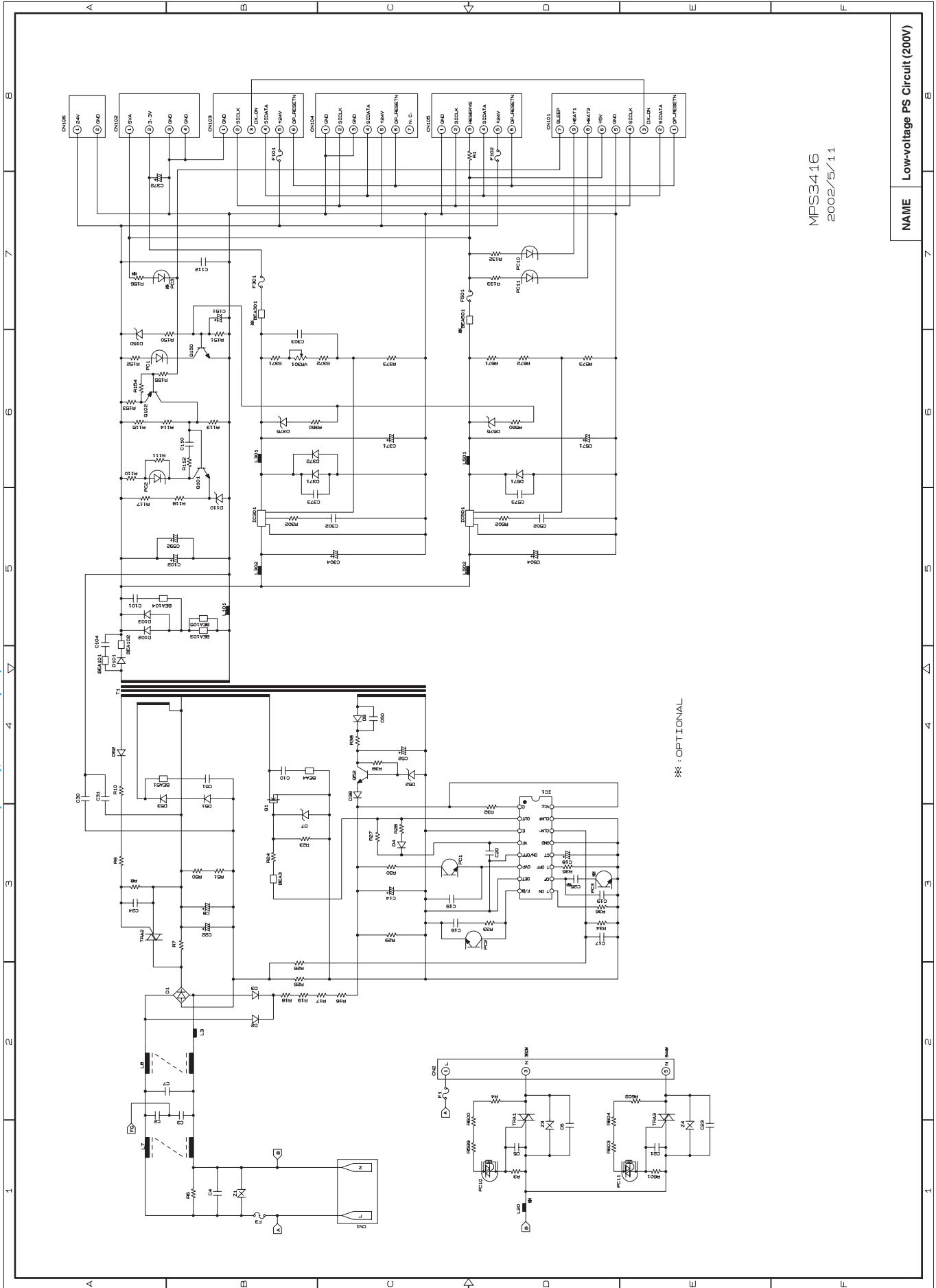
APPENDIX 14. LOW-VOLTAGE POWER SUPPLY CIRCUIT DIAGRAM (100V), HL-7050 (1/2)



MPS3516  
2002/5/11

NAME	Low-voltage PS Circuit (100V)
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APPENDIX 15. LOW-VOLTAGE POWER SUPPLY CIRCUIT DIAGRAM (200V), HL-7050 (2/2)



MPS3416  
2002/5/11

※ : OPTIONAL

NAME	Low-voltage PS Circuit (200V)
------	-------------------------------

## APPENDIX 16. SERIAL NO. DESCRIPTIONS

The descriptions below show how to understand the meanings of the numbers printed on the labels or bag of the printer and printer parts:

< ID for production month >

A: January	B: February	C: March	D: April
E: May	F: June	G: July	H: August
J: September	K: October	L: November	M: December

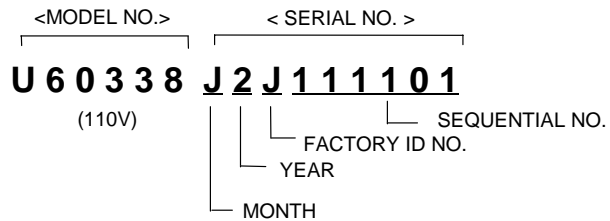
< ID for year >

2: 2002	3: 2003
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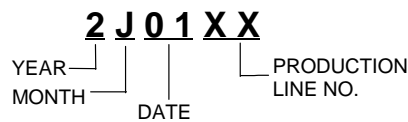
< ID for factory >

9: Kariya Plant	A: Mie Brother	C: BIUK
J: Buji Nan Ling Factory		

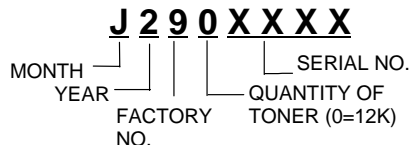
(1) Printer: Printed on the label attached on the rear of the main body



(2) Toner cartridge (consumable) : Sealed up in aluminum bag.

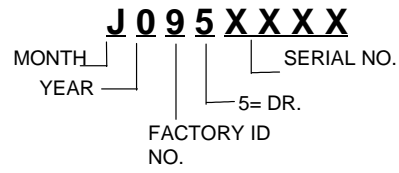


(printed on aluminum bag)



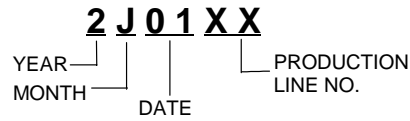
(printed on the label attached on the toner cartridge)

- (3) Drum (Consumable) : Packed in black plastic bag.



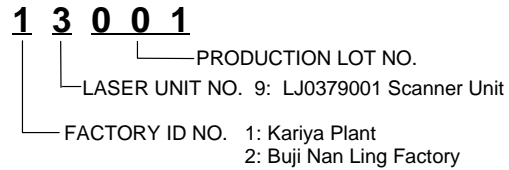
(printed on the label attached on the drum)

- (4) Drum unit with toner cartridge (Attachment) : Sealed up in aluminum bag.



(printed on aluminum bag)

- (5) Laser unit: On the laser unit



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**APPENDIX 17. DIAMETER / CIRCUMFERENCE OF ROLLERS**

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The diameter and circumference of each roller are listed below;

<b>No.</b>	<b>Parts Name</b>	<b>Diameter (Circumference)</b>
<b>1</b>	First Paper Feed Roller	$\phi$ 13.8 mm (43.3 mm)
<b>2</b>	Paper Feed Roller	$\phi$ 14.0 mm (44.0 mm)
<b>3</b>	Transfer Roller	$\phi$ 17.7 mm (55.6 mm)
<b>4</b>	Photosensitive Drum	$\phi$ 29.97 mm (94.1 mm)
<b>5</b>	Heat Roller	$\phi$ 34.32 mm (107.8 mm)
<b>6</b>	Pressure Roller	$\phi$ 35.0 mm (110 mm)
<b>7</b>	Development Roller	$\phi$ 20.0 mm (43.2 mm)*

\* The circumference of Development Roller is not in agreement with the numerical value which applied the circular constant to the diameter.



## APPENDIX 18. PRINT SPEEDS WITH VARIOUS SETTINGS

Print speed of the HL-7050 printers is up to 28 ppm when loading A4 or Letter size paper from the regular paper cassette in the Regular mode.

Actual print speed varies depending on the paper type, paper size, print method (output tray type) as shown in the tables below;

(1) Print speeds (ppm) when loading paper from the **regular paper cassette**;

Paper type	Legal A4Long	Letter A4	Executive B5	A5	B6	A6	Envelope
Transparency	24	28	28	28	28	28	28
Regular	24	28	28	28	28	28	28
Thick paper	24	28	28	28	28	28	28
Thicker paper	24	28	28	28	28	28	28
Bond paper	24	28	28	28	28	28	28
Envelope	–	–	–	–	–	–	14
Thin paper	24	28	28	28	28	28	28

(2) Print speeds (ppm) when loading paper from the **optional lower tray (LT-7000)**;  
(Lower Tray 1/Lower Tray 2,3)

Paper type	Legal A4Long	Letter A4	Executive B5	A5	B6	A6	Envelope
Transparency	23/22	27/26	27/26	27/26	27/26	–	–
Regular	23/22	27/26	27/26	27/26	27/26	–	–
Thick paper	–	–	–	–	–	–	–
Thicker paper	–	–	–	–	–	–	–
Bond paper	23/22	27/26	27/26	27/26	27/26	–	–
Envelope	–	–	–	–	–	–	–
Thin paper	23/22	27/26	27/26	27/26	27/26	–	–

(3) Print speeds (ppm) when using the **optional duplex unit (DX-7000)**;

Paper type	Legal A4Long	Letter A4	Executive B5	A5	B6	A6	Envelope
Transparency	–	–	–	–	–	–	–
Regular	10	12	12	–	–	–	–
Thick paper	–	–	–	–	–	–	–
Thicker paper	–	–	–	–	–	–	–
Bond paper	–	–	–	–	–	–	–
Envelope	–	–	–	–	–	–	–
Thin paper	10	12	12	–	–	–	–

(4) Print speeds (ppm) when using the **optional mail box (MX-7000)**;

Paper type	Legal A4Long	Letter A4	Executive B5	A5	B6	A6	Envelope
Transparency	–	–	–	–	–	–	–
Regular	24	28	28	–	–	–	–
Thick paper	–	–	–	–	–	–	–
Thicker paper	–	–	–	–	–	–	–
Bond paper	24	28	28	–	–	–	–
Envelope	–	–	–	–	–	–	–
Thin paper	24	28	28	–	–	–	–

**NOTE:**

- When a smaller size paper than A4 or Letter is printed, the temperature on both edges of the fixing 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.
- All the figures are the maximum print speeds.

## APPENDIX 19. HOW TO KNOW PAGE COUNTER & PARTS LIFE

If you want to know the number of printed pages and the parts remaining life, you should either enter the Service Menu mode or print out the Print Configuration page. For more information about the Service Menu mode, see section 3 'SERVICE MENU MODE' in CHAPTER 7.

### 1. Printing out the Print Configuration Page

- (1) Press the **Set** switch three times.
- (2) Print the Print Configuration page (3 pages with the network card fitted).

### 2. How to Read the Page counter & the Parts Life.

The page counter is printed on page two, in the top left hand corner of the Print Configuration page. (Refer to the figure below.)

Parts remaining life is shown on page two of the print configuration page as below.

<Sample>

<b>PRINT SETTINGS (1/3)</b>			
HL-7050 SER.NO-123123123		1998/01/01 00:00	
<b>PAPER</b>	<b>USER SETTINGS</b>	<b>PRINT MENU</b>	<b>USER SETTINGS</b>
SOURCE	:AUTO	MEDIA TYPE	:PLAIN PAPER
PRIORITY	:MP+T1+T2+T3+T4	PAPER	:A4
MP FIRST	:OFF	COPIES	:1
MP SIZE	:NONE	ORIENTATION	:PORTRAIT
MANUAL FEED	:OFF	PRINT POSITION	
DUPLEX	:OFF	-X OFFSET	:0 DOTS
OUTPUT	:MK STACK	-Y OFFSET	:0 DOTS
		AUTO FF TIME	:OFF
		FF SUPPRESS	:OFF
<b>QUALITY</b>	<b>USER SETTINGS</b>	HP LASERJET	
RESOLUTION	:600 DPI	-FONT NO.	:1059
HRC	:MEDIUM	-FONT PITCH	:10.00
TONER SAVE	:OFF	-SYMBOL SET	:PC-8
DENSITY	:0	-AUTO LF	:OFF
		-AUTO CR	:OFF
<b>SETUP</b>	<b>USER SETTINGS</b>	-AUTO WRAP	:OFF
LANGUAGE	:ENGLISH	-AUTO SKIP	:ON
PANEL CONTROL		-LEFT MARGIN	:0
-LOWER LCD	:NONE	-RIGHT MARGIN	:78
-LCD DENSITY	:1	-TOP MARGIN	:0.50
-AUTO ONLINE	:ON	-BOTTOM MARGIN	:0.50
-BUTTON REPEAT	:0.1 SEC	-LINES	:66
-MESSAGE SCROLL	:LEVEL 1	EPSON FX-850	
POWER SAVE TIME	:30 MINUTE	-FONT NO.	:1059
TONER LOW	:CONTINUE	-FONT PITCH	:10.00
AUTO CONTINUE	:OFF	-CHARACTER SET	:US ASCII
LOCK PANEL	:OFF	-AUTO LF	:OFF
REPRINT	:ON	-AUTO MASK	:OFF
PAGE PROTECTION	:OFF	-LEFT MARGIN	:0
EMULATION	:AUTO(EPSON)	-RIGHT MARGIN	:80
KEEP PCL	:OFF	-TOP MARGIN	:0.33
LINK RECOVERY	:ON	-BOTTOM MARGIN	:0.33
HARDISK SIZE	:0 MB	-LINES	:66
TIME STYLE	:YY/MM/DD hh:mm	IBM PROPRINTER	
DATE & TIME		-FONT NO.	:1059
-YEAR	:1998	-FONT PITCH	:10.00
-MONTH	:1	-CHARACTER SET	:PC-8
-DAY	:1	-AUTO LF	:OFF
-HOUR	:0	-AUTO CR	:OFF
-MINUTE	:0	-AUTO MASK	:OFF
		-LEFT MARGIN	:0
<b>INTERFACE</b>	<b>USER SETTINGS</b>	-RIGHT MARGIN	:80
SELECT	:AUTO	-TOP MARGIN	:0.33
AUTO LF TIME	:3 SEC	-BOTTOM MARGIN	:0.33
INPUT BUFFER	:LEVEL 3	-LINES	:66
PARALLEL		HP-GL	
-HIGH SPEED	:ON	-CHAR SET(STD)	:ANSI ASCII
-BI-DIR	:ON	-CHAR SET(ALT)	:ANSI ASCII
RS-232C		-PEN 1 SIZE	:3 DOTS
-FAX MODE	:OFF	-PEN 1 GRAY	:100%
-BAUDRATE	:9600 BAUD	-PEN 2 SIZE	:3 DOTS
-CODE TYPE	:8 BITS	-PEN 2 GRAY	:100%
-PARITY	:NONE	-PEN 3 SIZE	:3 DOTS
-STOP BIT	:1 BITS	-PEN 3 GRAY	:100%
-XON/XOFF	:ON	-PEN 4 SIZE	:3 DOTS
-DTR(ER)	:ON	-PEN 4 GRAY	:100%
-ROBUST XON	:OFF	-PEN 5 SIZE	:3 DOTS
		-PEN 5 GRAY	:100%
		-PEN 6 SIZE	:3 DOTS
		-PEN 6 GRAY	:100%
		BR-SCRIPT3	
		-ERROR PRINT	:OFF

Fig. A-1

**NOTE:**

The descriptions printed in Print Configuration vary depending on the countries.

Page counter is printed here.  
This not printed in some countries.

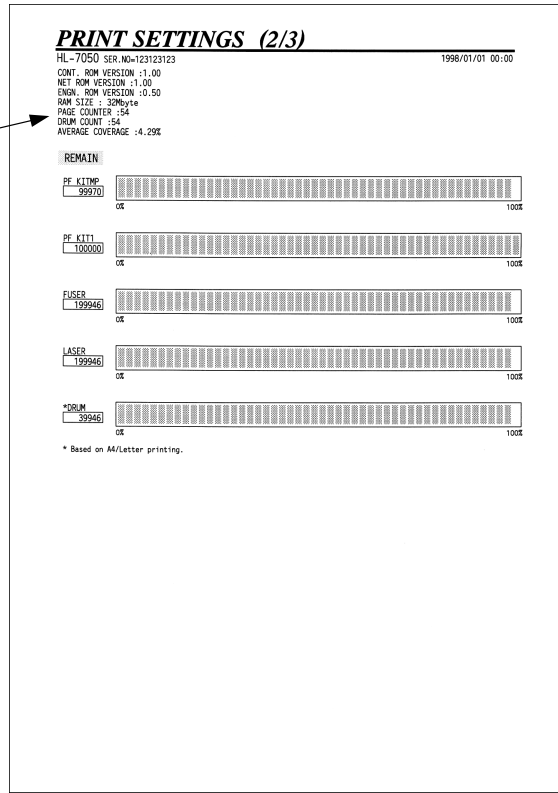


Fig. A- 2

## APPENDIX 20. HOW TO USE THE SELF-DIAGNOSTICS TOOLS

There are three self-diagnostics tools, which are automatically installed when the printer driver is installed: -

- 1) Troubleshooting for Printer won't print
- 2) Diagnostics
- 3) Printer Information

The following sections describe the details on each tool.

### 1. Troubleshooting for Printer won't print

This tool instructs you how to clear the problem such as 'The printer can't print' or 'The printer prints garbage or incorrect fonts'.

- (1) When you start the program, the Help dialog box shown below appears.



Fig. A- 3

- (2) Select the problem you have had, then the specified window appears.
- (3) Follow the instructions that appear on the PC screen.

If the problem cannot be solved, start the "Diagnostics" tool to create a log file which should be sent to the authorized service center to investigate the cause of problem. For the details on the "Diagnostics" tool, see the following section, [2 'Diagnostics'](#).

## 2. Diagnostics

This tool helps you to report your PC environment to investigate the cause of problem such as 'Printer won't print' or 'Printer prints garbage or incorrect fonts'. Before using this tool, however, you have to check if you can clear the problem using the 'Troubleshooting for printer won't print' tool described in the previous section.

- (1) When you start the program, the dialog box shown below appears. Follow the steps described in the box, then click the **OK** button.

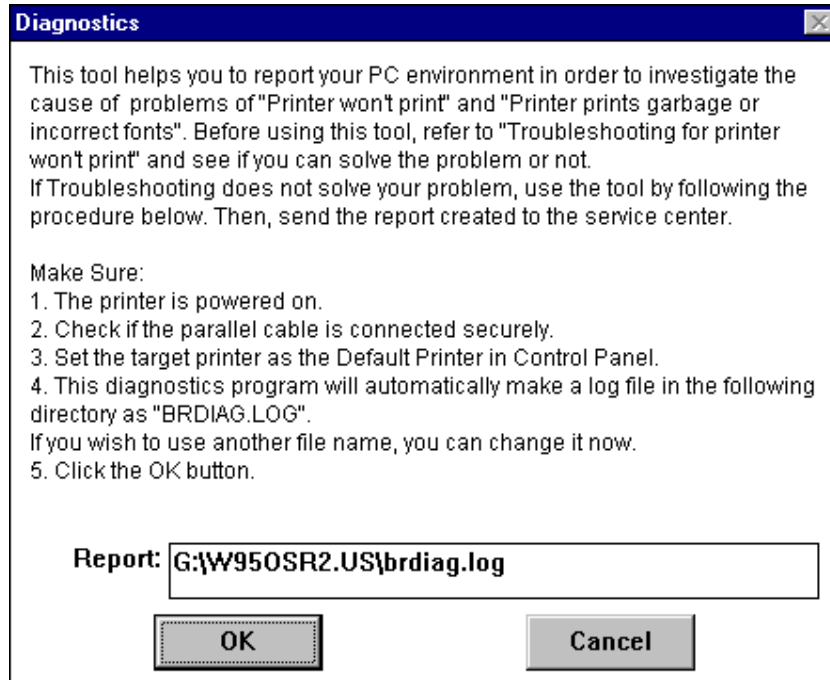


Fig. A-4

- (2) The message below appears, click the **OK** button if you want to check whether there is any incorrect data or not. If you do not want to check it, click the **Cancel** button.

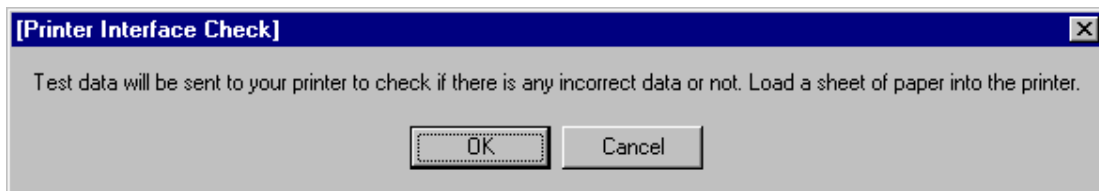


Fig. A-5

- (3) If you click the **OK** button in Step 2, the dialog box below appears.

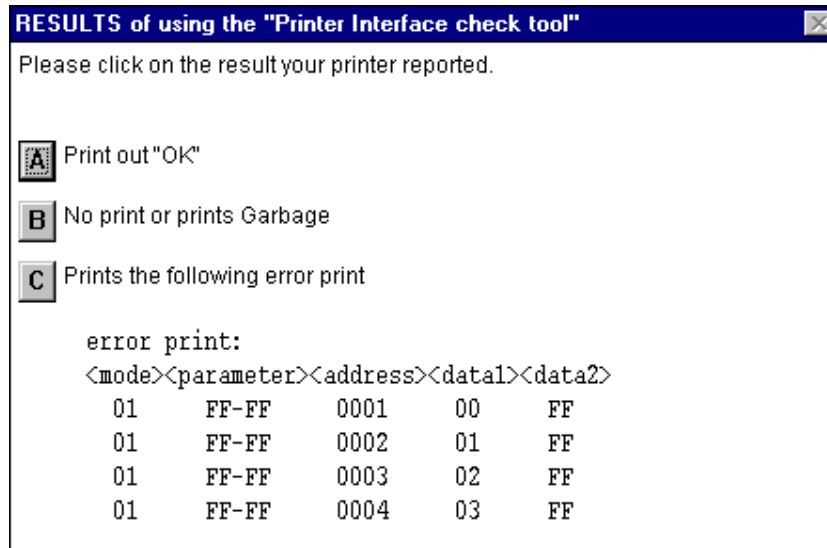


Fig. A-6

- (4) Check the result that the printer reported and click the **A**, **B** or **C** button depending on the result.
- (5) The created log file is shown on the PC screen. (The software will ask whether you wish to print the log file or not.)

Send the log file created with this tool to investigate the problem to the authorized service center.

### 3. Printer Information

The drum unit life or page counter is printed on Print Configuration in some countries as described in [APPENDIX 18 'HOW TO KNOW PAGE COUNTER & PARTS LIFE'](#).

This tool also shows the printer information such as printer version or page counter for all models only when the printer is connected to a parallel port.

(1) When you start the program, the dialog box shown below appears.

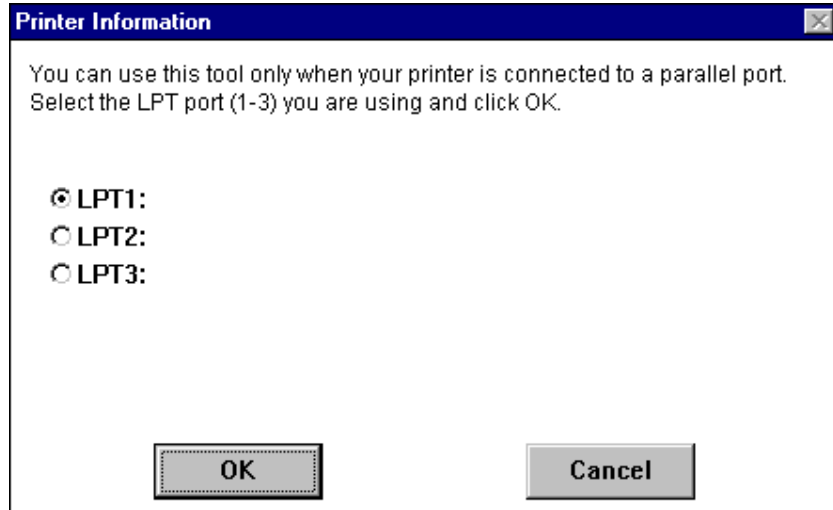


Fig. A-7

(2) Select the LPT port you are using and click the **OK** button.

(3) The dialog box below appears and indicates from top to bottom, the printer ID, version, fixing unit life, PF kit life, laser unit life and transfer unit life.

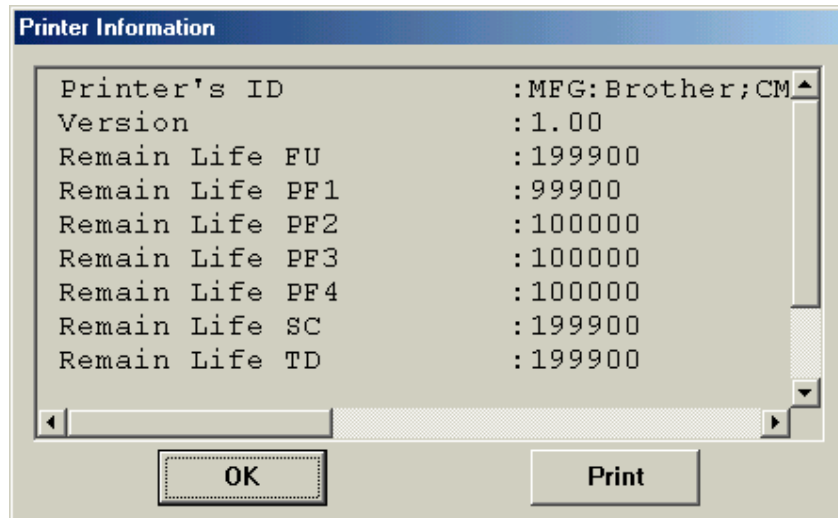


Fig. A-8



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**APPENDIX 21. NVRAM DEFAULT VALUE**


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The default values for the main items to be set in NVRAM are as follows;

Items	Descriptions
Development switching timing	<p>The developing bias is switched from 400V to 300V when 5,000 pages are printed. It is switched to 400V again when the toner cartridge is replaced following the "TONER LIFE END" error message</p> <p>(Counted from the number of the drum rotation in non-continuous printing)</p>
Fixing temperature	<ul style="list-style-type: none"> <li>• Transparency: 170°C</li> <li>• Thin paper: 185°C</li> <li>• Regular paper: 208°C (195°C when printing using duplex function)</li> <li>• Thick paper: 220°C</li> <li>• Thicker/Bond paper: 220°C (in non-continuous printing)</li> </ul>

## APPENDIX 22. PAPER TRAY INFORMATION (FOR EUROPE ONLY)

The paper tray fitted to the printer is different from the service manual information for printers shipped to Europe as follows:

- (1) The paper tray supplied with the HL-7050 printer has a plastic rib on the paper tray cover as shown below;

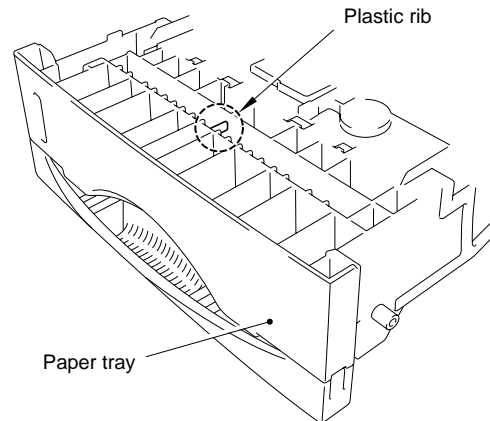


Fig. A- 9

- (2) The plastic rib is removed from the tray cover for the paper cassette supplied with the LT-7000, (optional Lower Tray Unit) as shown below;

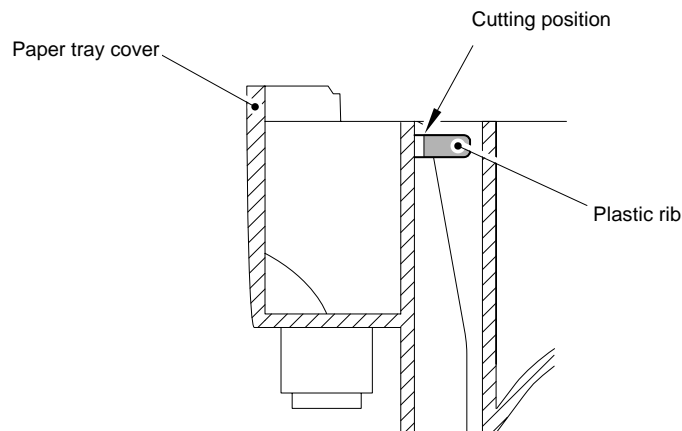


Fig. A- 10

- (3) If the optional LT-7000 Lower Tray Unit is installed onto the HL-7050 printer, it is necessary to exchange the cassette supplied with the LT-7000 Unit with the upper cassette already fitted into the printer. Install the cassette originally fitted in the printer into the LT-7000 Unit.

Failure to do so will cause paper jams, as the paper cannot be fed from the lower tray to the printer body because the plastic rib on the paper tray cover is blocking the paper path.

- (4) For paper cassettes supplied as spare parts, the plastic rib has been cut off so that you can use it as both an upper tray and lower tray.

## APPENDIX 23. GUIDELINES FOR LEAD FREE SOLDER

All components are soldered using lead free solder, be sure to use **lead free solder** that meets the following specification in the case of repair.

### Lead free solder ; NIHON GENMA DHB-RMA3 NP303

**(This can be distinguish from the lead free identification sign “LFH” on the MAIN PCB ASSY REV.)**

However, the solder side of the MAIN PCB ASSY and other PCBs are soldered using lead content solder, use conventional lead content solder in the case of repair.

Since the reliability of soldering cannot be guaranteed if lead free solder and lead content solder are mixed, take care not to use the incorrect solder or mix the solder types.

### Information on Manually Repairing PCB Soldered with Lead-Free Solder

This document provides information on how to correctly make manual repairs to a printed circuit board (PCB) soldered with lead-free solder.

#### 1. Characteristics of lead-free solder

Melting point higher than that of conventional tin-lead solder

(Lead-free solder: approx. 220°C, Conventional tin-lead solder: approx. 180°C)

Relatively poor solder wettability and spread (difficult to wet and spread), and hard

Appearance (dull and grainy surface) different from that of conventional solder

Relatively poor wettability, rough surface (bumps are likely to be formed), and solder dragging

Poor solder elevation

Poor thermal conductivity and heat resistant (difficult to melt)

#### 2. Metal composition & wire solder

The metal composition of lead-free solder allowed for use on PCBs for Brother's products is following.

LF Indication		Compositon	Manufacturer	Origin	Name
1		Sn/Ag/Cu	Nihon Genma	Japan	DHB-RMA3 NP303
H	only Component-side	Sn/Ag/Cu	Nihon Genma	Japan	DHB-RMA3 NP303

We use wire solder which is indicated by digit after LF indication on PCB.

Wire solder made in the contries except Japan are under investigation, and will be evaluated.

#### 3. Appearance quality criteria

The appearance of the surface of portions soldered with lead-free solder is basically the same as that for those soldered with conventional lead-tin solder, except for the following points.

- 1) The surface of a portion soldered with lead-free solder is dull and not smooth.
- 2) Shrinkage cracks can be observed on the surface of a portion soldered with lead-free solder. (They can be observed using a magnifying glass with approx. 10x magnification.)

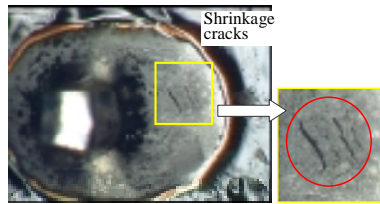


Figure 1 Shrinkage Cracks

#### 4. Identification of lead-free solder on PCBs

For PCBs that use lead-free solder, "LF" is indicated by silk-screen printing or attaching a label. "LF" stands for lead free and indicates that the PCBs bearing such an indication have been soldered with lead-free solder. A digit is given in a box following "LF" if produced by silk-screen printing or follows "LF" without a box on an attached label, the digit indicating the metal composition and wire solder.

#### 5. Precautions for hand soldering operations

- 1) Soldering operations using lead-free solder are basically the same as those using tin-lead solder, however, due to the lead-free solder's characteristics of being difficult to melt, wet, and spread, as well as being hard, a soldering iron needs to be applied for a longer period of time than when soldering with conventional tin-lead solder. While soldering is being performed, it must be confirmed that the lead-free solder is spreading. When solder needs to be added when repairing PCBs, the solder must only be added after sufficiently melting the previously soldered area. When poor soldering is repaired, the solder of the poorly soldered area must be sufficiently removed and lead-free solder newly supplied.
- 2) Before starting soldering operations, it must be determined whether or not the PCB has an "LF" indication. If the PCB has an "LF" indication, lead-free solder corresponding to the digit following "LF" must be used. Conventional solder including lead (tin-lead solder) must not be used on a PCB that has an "LF" indication. (Use of tin-lead solder on a PCB having an "LF" indication is prohibited.)
- 3) A soldering iron for exclusive use with lead-free solder must only be used; a soldering iron used for soldering with tin-lead solder must not be used with lead-free solder. The use of soldering irons designed for lead-free solder is desirable (see "7. Soldering iron" below).
- 4) The requirement for the temperature of the soldering iron's tip is the same as that for soldering using conventional solder; the temperature of the soldering iron's tip must not be raised even though the melting point of the lead-free solder is higher. The temperature of the soldering iron's tip is restricted to the temperature that the component to be soldered can resist. It should be noted that the temperature that the components to be soldered with lead-free solder can resist has not increased even though the melting point of the solder has.
- 5) A soldering iron must be correctly applied. Even though the melting point of the solder has increased, soldering operations must be performed with the soldering iron's tip at the same temperature as prescribed before. Therefore, heat needs to be effectively applied from the tip of the soldering iron to the base metal. For effective heat application, the shape of the soldering iron's tip and application of the soldering iron (position and angle relative to the base metal) need to be more strictly controlled than before.
- 6) The soldered point must be left as it is after the soldering iron is removed for a period of time longer than that required when soldering is performed with conventional solder. The amount of heat applied to the base metal increases due to the higher melting point of the lead-free solder, and the base metal is heated to higher temperatures. Consequently, it takes time for the melted solder to cool and to solidify and, therefore, the soldered area must be left as it is after the soldering iron is removed for a longer period of time.

- 7) A localized ventilation system and gloves are required for soldering operations. Lead-free solder does not contain the toxic substance lead, however, inhalation of the fumes may adversely affect the health of workers. The silver contained in lead-free solder is also a toxic substance, though it is not as toxic as lead, and, therefore, a localized ventilation system and gloves are required for lead-free solder soldering operations, as required for those with conventional solder.
6. Soldering irons  
 When soldering is performed manually using lead-free solder, a soldering iron that has little reduction in its temperature needs to be used. This refers to a soldering iron that has a smaller degree of decrease in the temperature at the soldering iron's tip, such as when the soldering iron is applied to the base metal or solder is supplied, and the temperature is soon returned to the specified temperature.  
 With soldering operations using lead-free solder, the requirement for the temperature of the soldering iron's tip is the same as that for conventional solder, however, the melting point of lead-free solder is higher than that of conventional solder so productivity will decrease with conventional soldering irons.  
 Some tool manufacturers sell soldering irons designed for lead-free solder and that can maintain the productivity of the soldering operations.  
 The soldering irons used at BIL are model no. 941 manufactured by HAKKO and M6-SIC-40 manufactured by BONKOTE. The prices of these soldering irons for use with lead-free solder are three to four times higher than those for conventional soldering irons with a temperature controller built in.
7. No mixing of different solders  
 When repairs are made on a PCB with an "LF" indication on it, lead-free solder with the same metal composition, which is expressed by the digit following "LF", must be used on a single PCB. For a PCB with an "LF" indication on it, neither tin-lead solder nor lead-free solder with a different metal composition must be used.

**Compatible solder for each countries are listed below. Solders are freely available from each manufacturer. Visit the web site below for more detail.**

Countries	Manufacturer	Origin	Name	Web site
For Japan, UK, Finland, Germany, France, Sweden	ALMIT	JAPAN	KR-19 SH RMA LFM-48	<a href="http://www.almit.com">http://www.almit.com</a>
For World wide except Australia, New Zealand	KESTER	U.S.A.	KESTER245 KESTER285	<a href="http://www.kester.com">http://www.kester.com</a>
For Worldwide	AIM	CANADA	CASTIN RMA2	<a href="http://www.aimsolder.com">http://www.aimsolder.com</a>

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**APPENDIX 24. TONER CARTRIDGE WEIGHT INFORMATION**


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### Toner Cartridge Weight (approx weight)

	<b>TN5500/TN700</b>
Brand new Toner Cartridge Weight	1075g
Toner Weight at Brand New Toner Cartridge	345±5g
Toner Cartridge Weight at Toner Near Empty	865g
Remain Toner Weight at Toner Near Empty	135g
Toner Cartridge Weight at Toner Empty	850g
Remain Toner Weight at Toner Empty	120g
You can print 500 to 600 pages with 10g toner.	

\*Without yellow protector

\*Toner cartridge weight may vary within 2 to 3g depending on the cartridge weight.