

Pantum
Monochrome Laser Printer
Service Manual
P1000/P2000 Series

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Safety Information

In the course of maintenance you will see warning labels on the printer. These labels are for your safety. Pay attention to the warning labels.

In order to ensure the safety of the service technician and the printer, please comply with the following safety measures.

High temperature

The yellow high temperature warning symbols illustrated below signify this part of the printer may have an operating temperature of up to 180°C (356° F). Don't touch that part or you may be injured.



High voltage

There are high voltage boards, power boards and engine control boards in the printer. You may get an electric shock if you touch these parts. Do not plug anything into or pull any parts out while power is being delivered to the printer since the printer may be a fire hazard.

Laser Safety Statement and Safety Information

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

These warnings and precautions are included in order to prevent injury to you and others, as well as preventing any potential damage to your machine. Be sure to read and understand all of these instructions before working on the printer.

Use common sense when operating any electrical appliance and whenever working on the printer. Also, follow all warnings and instructions marked on the machine and in the accompanying literature. After reading this section, keep it in a safe place for future reference.

NOTE: Using controls, making adjustments, or performing procedures other than those specified in this service manual may result in exposure to hazardous radiation.

The label shown below is attached to the laser scanner unit (LSU) inside the machine.



The LSU will produce a strong laser beam as the printer is working. Do not operate the printer without the protective housing in place or the laser may damage the service operators' eyes. When servicing the printer, make sure all parts are accounted for and properly reassembled or the printer may not operate properly.

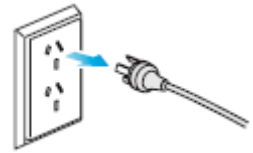
Make sure the photosensitive drum in the print cartridge is not exposed to strong light.

Warning notice

Please comply with all warnings in this manual and on labels on the printer to avoid personal injury.



There is high voltage electric current in the equipment. Before servicing the printer, please ensure the power supply plug is pulled out from the electrical outlet.



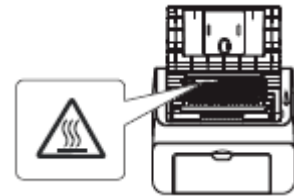
Touching the power supply plug with a wet hand can result in an electric shock.



Parts of the printer will be hot after printer operation. Do not touch the fuser unit when opening the front or rear covers.



The Caution label warns of areas that will get hot. Please don't remove or damage this label.



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Chapter 1 Product description

1.1 Features

1.2 Overview

1.3 Specification

1.1 Features

1) Long life

Pantum printers offer as much as four times the duty cycle of comparable products and an incredible 100,000 page average engine life providing many years of satisfying use.

2) Exceptional print quality

Using Pantum original toner and printing with 1200x600 dpi resolution your Pantum printer will deliver crisp, clear lines and text plus solid blacks for impressive images.

3) Low operating costs

Economically priced printer cartridges and an impressive 2,300 page high yield printer cartridge option provide low operating cost with minimal interruptions to the printing process.

4) Broad media support

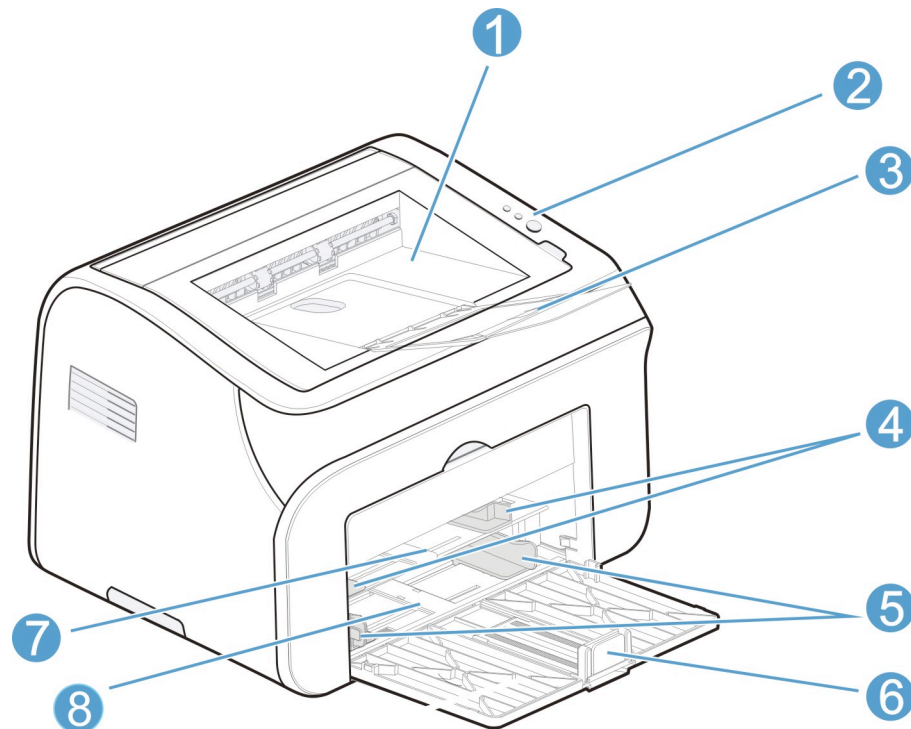
Support for a wide range of media weights and sizes means you can print almost any document easily and efficiently.

5) Create professional documents

Powerful driver features such as standard and user defined watermarks and multi-page printing on a single sheet of paper allows you to create professional looking documents right from your desktop.

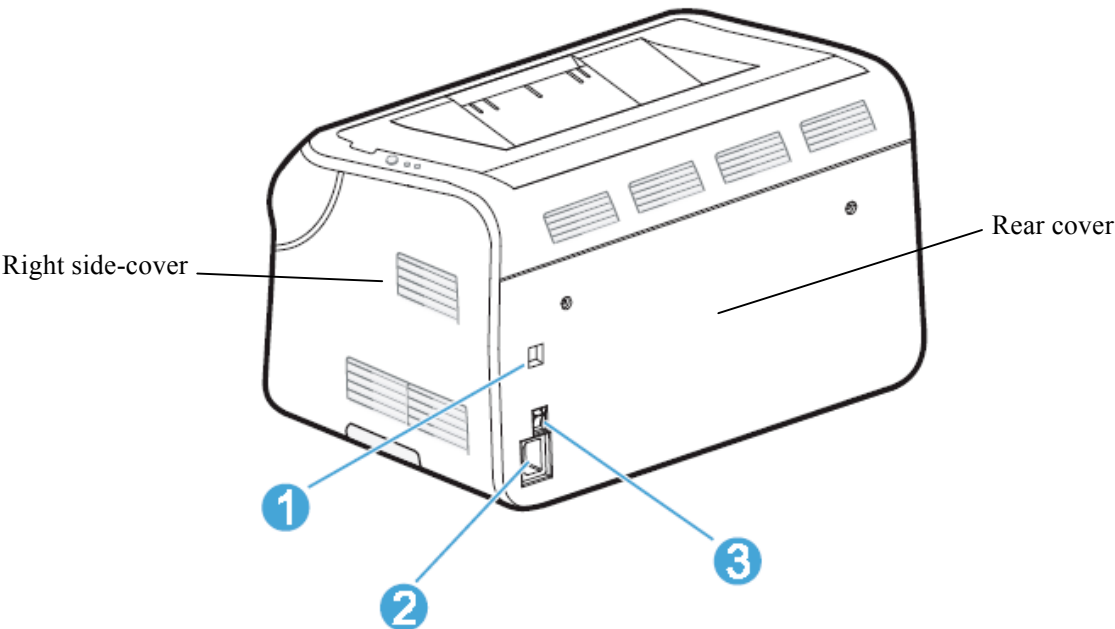
1.2 Overview

1.2.1 Front view



1	Output bin / Cartridge cover
2	Control panel
3	Paper discharge tray
4	Manual feed guide
5	Automatic feed guide
6	Paper stop
7	Manual feed slot
8	Automatic paper tray

1.2.2 Rear view



1	USB interface connector
2	Power receptacle
3	Power switch

1.3.1 Specifications

Type	Item	Content		Remark
Method	Title	Monochrome laser printer		
	Type	Desk-top		
	Recording	Electronic recording		
	Exposure	Single laser beam		Exposure
	Photosensitive	OPC photosensitive		
	Charged	Charging roller charged		
	Transfer	Roller transfer		
	Separation	Curve separation		
	Cleaning	Rubber pressure		
	Fixing	Heat pressure		
	Paper feed	Separated by separating crawl		
	Paper discharge	Printed-face down		
Basic features	Warm-up	24 seconds		
	Print first sheet	P1000 Series	11seconds below	
		P2000 Series	10seconds below	A4 80g/m ²
	Print speed	P1000 Series	16ppm	A4 80g/m ²
		P2000 Series	20ppm A4 21ppm Letter	A4 80g/m ²
	Resolution	1200dpi*600dpi		
Basic size	Size	380 mm×261 mm×236 mm		
	Weight	5.3kg without print cartridge		
Affiliated functions	Manual duplex printing	Yes		
	Print cartridge test	Yes		
	Remaining toner test	No		
	Discharge load test	No		
	Paper scope test	Yes		Check paper transport
	Paper thickness test	No		
	Temperature modified mode	No (Thick paper and small paper)		
	Calculator	Yes		

Paper options	Paper type	Generally reprographic papers		
	Special paper	Label, thick, transparencies, postcard, Kraft paper, envelop, preprinted paper		Manual insertion
		Envelope		Manual insertion
	Paper weight	60g/m ² - 105g/m ²		Automatic insertion
		60g/m ² - 163g/m ²		Manual insertion
	Sheet size	Max:216*356(LGL)		
		Min:105*148(A6)		
	Envelop size	Min C6: 162mm×114mm		
		Max C5: 229mm×162mm		
	Recommended paper	A4 80g/m ²		
Paper feed tray	Tray 1 (automatic feed)	Applicable sheet: weight: 60g/m ² ~105g/m ² Max size: 216*356(LGL) Min size:105*148(A6)		
	Tray 2 (manual feed)	Applicable sheet: weight: 60g/m ² ~163g/m ² Max size: 216*356(LGL) Min size:105*148(A6)		Only one paper allowed
Power	Max power consumables	100V		
		110-127V		
		220-240V		Below 660W
	Average power consumables	Working	100V	
			110-127V	
			220-240V	350W
		Standby	100V	
			110-127V	
			220-240V	Below 6W
	Voltage	AC 100V 50/60Hz		
		AC 110~127V 50/60Hz		
		AC 220~240V 50/60Hz		
	Heat lamp power	600W		
	Time from standby to sleep	5mins		
	Nominal frequency	50Hz		
	Rated voltage	220V		

Other	Environment	Temperature	10 ℃ - 32.5 ℃	
		Humidity	20%RH - 80%RH	

	Print cartridge life	OPC	10000 sheet	
		Toner	1000-2300 sheets	
	Printer life	100000 sheets or 5years		

1.3.2 Printing type and tray

Type	Specification	Size	Weight
Recommended	A4	210 x 297 mm	80g/m ²
Plain paper: 75 g~80 g Thin paper: 60 g~70 g Thick paper: 90 g~163 g	Letter	216 x 279 mm	Automatic feed: 60~105g Manual feed: 60~163g
	Legal	216 x 356 mm	
	Folio	216 x 330 mm	
	A4	210 x 297 mm	
	Oficio	216 x 343 mm	
	JIS B5	182 x 257 mm	
	ISO B5	176 x 250 mm	
	Executive	184 x 267 mm	
	Statement	140 x 216 mm	
	A5	148 x 210 mm	
	A6	105 x 148 mm	
Envelope	No.10 Env.	105×241 mm	
	Monarch Env.	98×191 mm	
	DL Env. (No.5 Env.)	110×220 mm	
	C5 Env. (No.7 Env.)	162×229 mm	
	C6 Env.	114×162 mm	
	ZL (No.6 Env.)	230×120 mm	
	B6 Env. (No.3 Env.)	176×125 mm	
Card	Postcard	165×102 mm	105~163g
	Japanese Postcard	148×100 mm	
Label	Letter, A4	Same as plain paper	120~150g
Transparency	Letter, A4	Same as plain paper	138~146g
Others			

Note:

- Paper weight of 105g/m² can be placed on the paper tray for printing automatically.
- Please flatten label or envelop if they are curved or tracked, and then put them on the paper tray.
- Please discharge any air that may be trapped inside an envelop before printing.

Chapter 2 Installation and basic operation

2.1 Installation Requirements

2.2 Unpack the Box

2.3 Printer Installation

2.4 Printing Method

2.5 Control Panel Operation

2.1 Installation requirements

2.1.1 Power supply

The voltage of the power supply must be between 220V and 240V and between 50HZ±1HZ and 60HZ±1HZ. (Power voltage may vary according to different power standards in different countries.)

The printer power supply should not share the power circuit with other high power appliances (such as air-conditioners, copiers, shredders, etc.). If you must, it is recommended you use a voltage transformer or a high frequency noise filter.

Please use a voltage regulator if the power voltage is unstable.

The power cord, including extensions, should be no longer than 5 meters (16.5 feet).

2.1.2 Environment

Please place the equipment on a flat, stable surface free of vibration and shock, for example a desk.

Place the equipment near a standard power supply socket so it can easily be unplugged in the event of an emergency.

Only use the printer within the following temperature and humidity ranges:

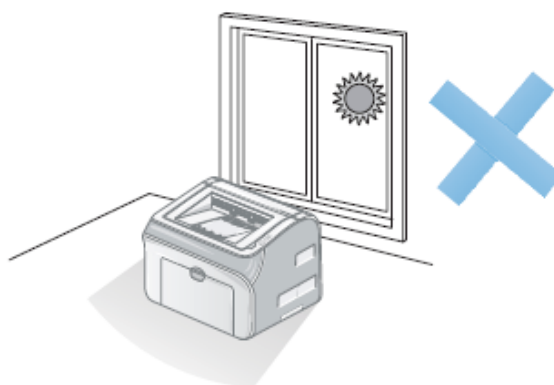
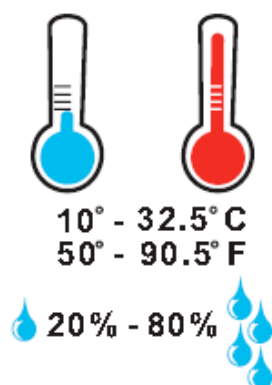
Temperature: 10°C to 32.5°C (50°F to 90.5°F)

Humidity: 20%-80% (without condensation).

Notice:

- *Avoid placing the equipment near a heater, water, chemicals, or a refrigerator.*
- *Please don't expose the equipment to direct sunshine, excessive heat, moisture or dust.*

- *Interrupting power supply will cause the loss of information in the loss of memory in the printer.*
- *Use the printer in a well ventilated room.*
- *Please don't place the printer near a magnet or magnetic field.*
- *Do not subject the printer to shock or vibration.*
- *Please don't put the printer near a visible fire or expose to salty or corrosive air.*
- *Please don't place an object on the top of the printer.*
- *Please keep the printer horizontal when carrying it.*
- *Please don't cover the air-inlet on the side-cover.*


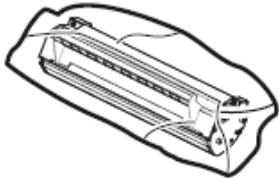







2.1.3 Supported operating system

P1000/P2000 series can support the following operating systems:

Windows 2000-32 bit-Chinese
Windows XP-32 bit-Chinese
Windows XP-64 bit-Chinese
Windows server2003-32 bit-Chinese
Windows server2003-64 bit-Chinese
Windows server2008-32 bit-Chinese
Windows server2008-64 bit-Chinese
Vista-32 bit-Chinese
Vista-64 bit-Chinese
Windows7-32 bit-Chinese
Windows7-64 bit-Chinese
Windows 2000-32 bit-English
Windows XP-32 bit-English
Windows XP-64 bit-English
Windows server2003-32 bit-English
Windows server2003-64 bit-English
Windows server2008-32 bit-English
Windows server2008-64 bit-English
Vista-32 bit-English
Vista-64 bit-English
Windows7-32 bit-English
Windows7-64 bit-English

2.2 Unpack the box

	Printer	1pcs
	Print cartridge	1pcs
	USB interface cable	1pcs
	Power cord	1pcs
	CD-ROM	1pcs
	Quick setup guide	1pcs
	Pantum warranty	1pcs

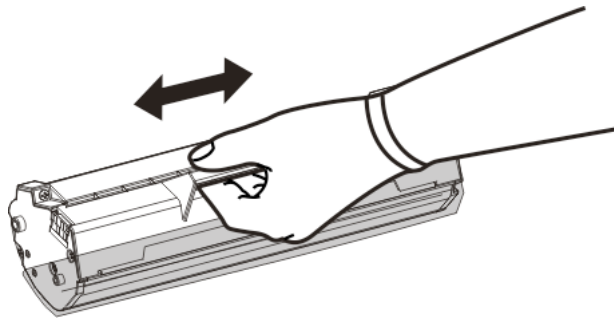
Note:

Some parts and components will vary in different countries.

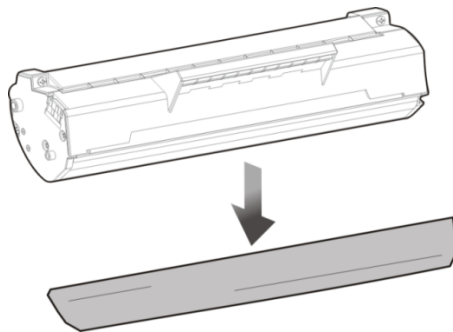
2.3 Printer installation

2.3.1 Install print cartridge subassembly

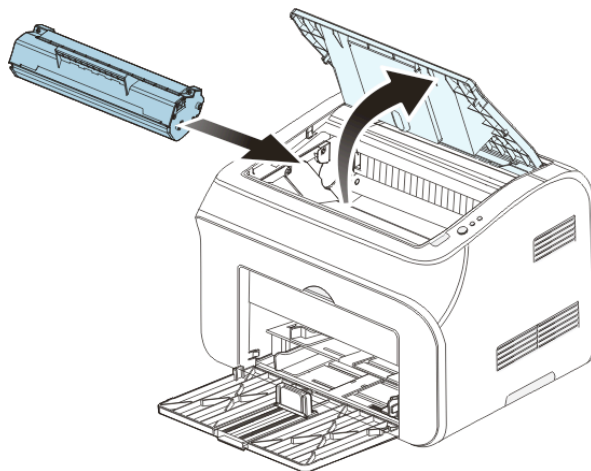
- (1) Remove the package (black sealed bag) and take out the print cartridge.
- (2) Rock it gently and evenly to disperse the toner in the print cartridge.



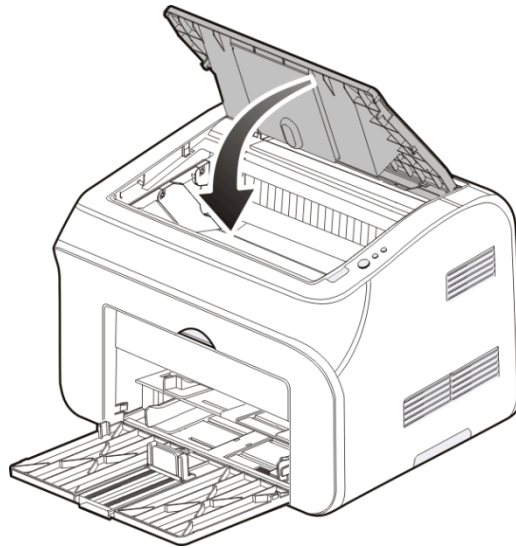
- (3) Remove the protective cover (transport lock) on the bottom of the cartridge.



- (4) Open the cartridge cover and use the guides along the sides inside the printer to insert the new print cartridge. When seated, push firmly until you hear a click assuring you the print cartridge is fully inserted.



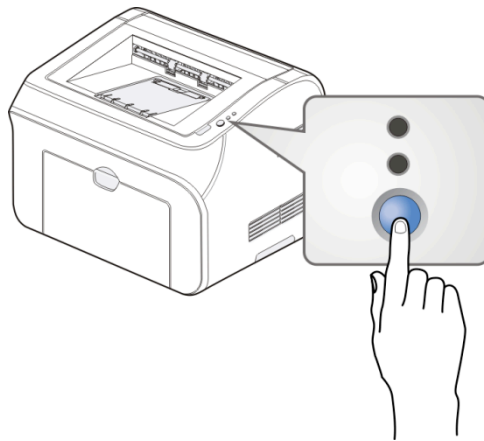
(5) Close the cartridge cover and power on the printer. The yellow indicator light should be off.



(6) Print a test page.

2.3.2 Print a test page

- (1) Switch off the printer.
- (2) Check that the discharge cover is closed and the AC power supply cable is plugged into the wall and into the printer.
- (3) Switch on the printer; check whether the indicator light is ready.
- (4) Press the button on the control panel for 3 seconds and the printer test sheet will print.



2.3.3 Driver installation

All users

Switch on the PC; insert the accompanying CD-Rom into the CD drive. Installation program window will automatically appear. Select the printer type and language.

Note:

It is not recommended to connect the power cable or USB cable when installing the driver,

If prompted by the User Account control interface in Microsoft Windows Vista/Windows-7/Windows Server 2008, please click 'Allow' or 'Yes'.

If the installation setup screen doesn't appear, please click My Computer, and open CD-ROM, and then double-click Setup.exe.

To install the printer driver:

- 1) Put the CD-ROM that came with your printer in the CD drive of your PC. The setup window will appear automatically.
- 2) For Windows 7, Windows Vista and Windows Server 2008 users:
 - a) When you see the prompt '*User account control interface*' click **Allow** or **Yes**.
 - b) If the PANTUM P1000/P2000 Installation screen does not appear click **My Computer**, open the installation CD-ROM and double click **Setup.exe** then follow the installation steps on the screen.

The installation steps are:

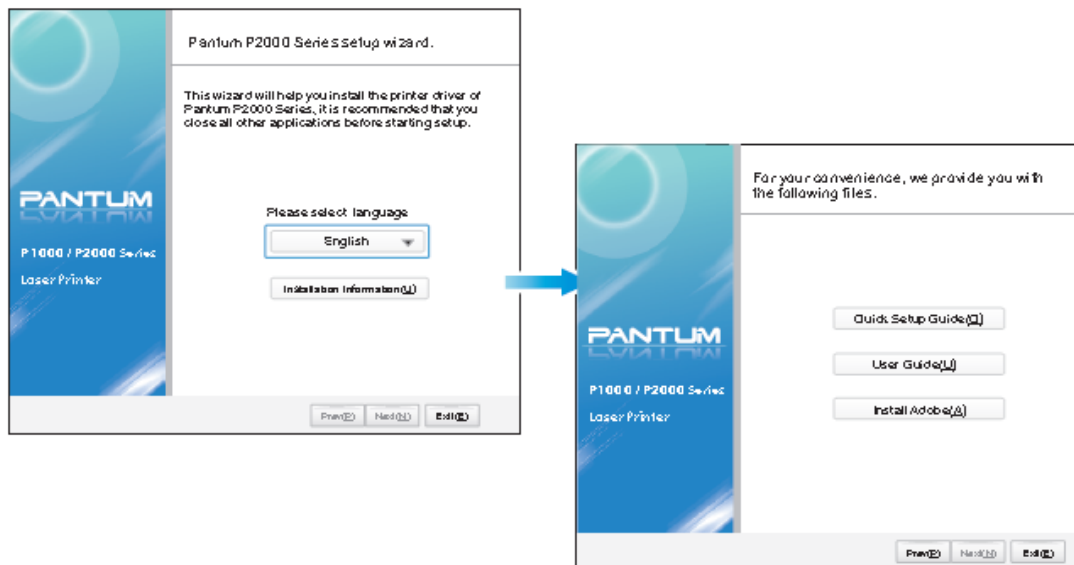
- (1) Click the **Printer Driver** button to begin the installation.



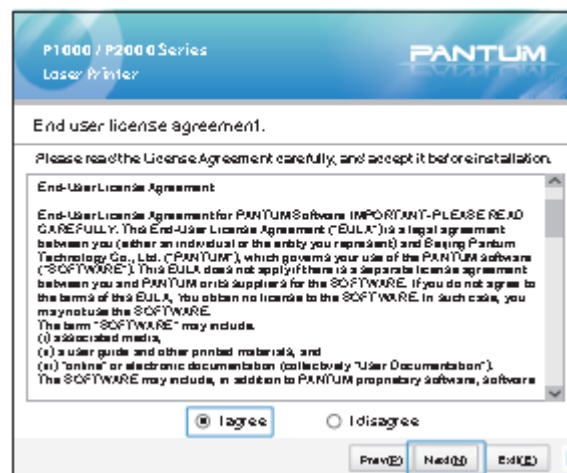
(2) Select the printer type. If you select a printer type different than the printer being installed the driver installation will fail.



(3) Select the language from the drop down list then click “Next”. Before clicking “Next” you can click the Installation Information button to see the printer's “User Guide” and “Quick Setup Guide”



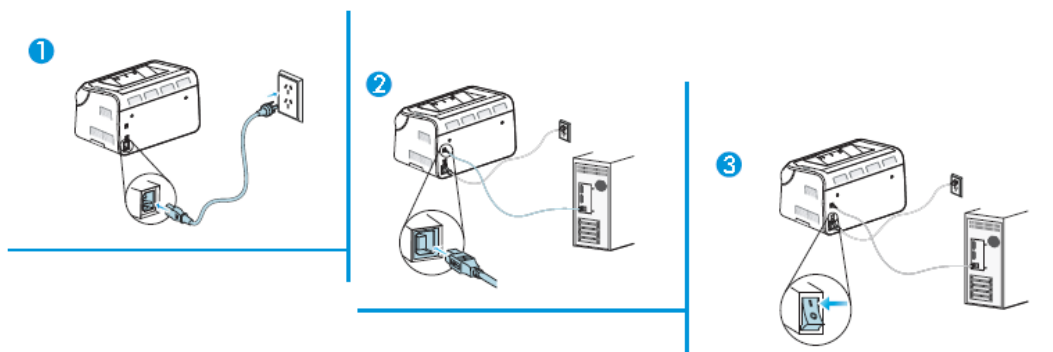
(4) The End User License Agreement window will appear. Please read and accept the agreement by choosing “I agree” and “Next”. If you choose “I disagree” the installation will terminate.



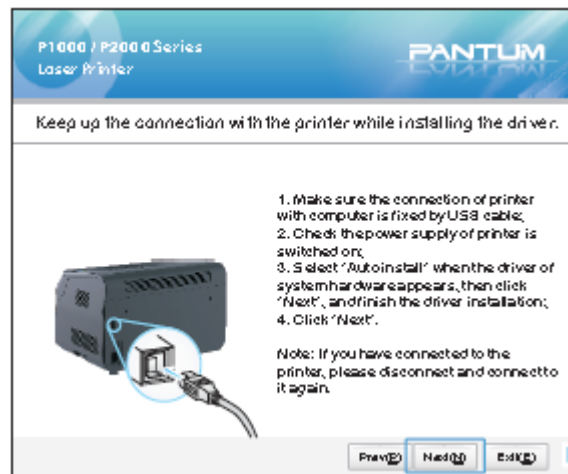
(5) The installation will begin copying files to your computer. Do not turn off the computer or run other operations while the driver is copying files to your computer.



(6) When all files have been copied you will be prompted to plug in the power cord, connect the USB cable between the printer and the PC, and then switch on the printer.



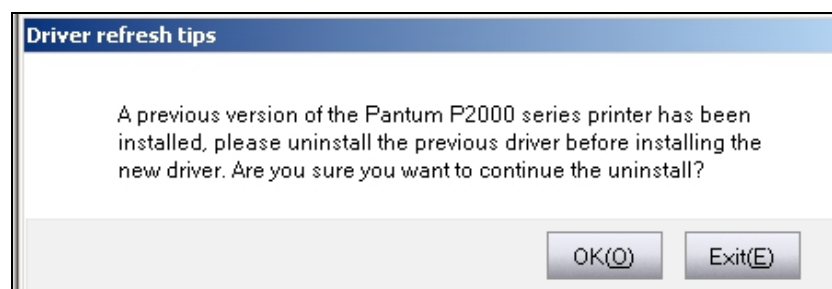
(7) When you have powered up and connected the printer click “Next”.



(8) Click “Done” to exit set-up, or select “Register product online” to go the product registration website. We recommend registering your product in order to be notified about the latest driver updates and other alerts to keep your printer up to date.



If you want to reinstall or update the driver, remove the old driver first. If you do not remove the previous driver before reinstallation, the following window will appear during the reinstallation. Click “OK ” to remove the old driver. We suggest you restart your computer after removal of the previously installed driver and installation of a new driver or reinstallation of the previous driver.



2.4 Printing method

The printer has two methods for printing. One is printing from the automatic insertion tray, the other is printing from the manual insertion tray.

Note: it is recommended the printer use 80g/m² A4 Top Gun sheets as the standard type paper.

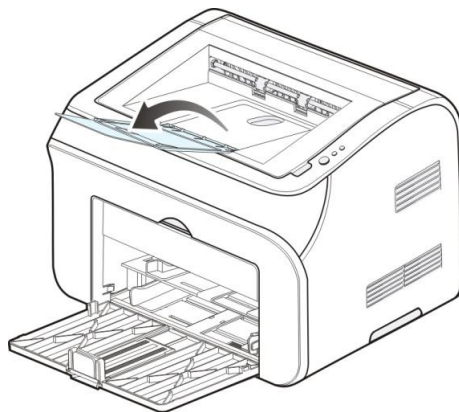
When loading paper:

- 1) Envelopes, card stock, labels and transparencies should be fed from the manual feed tray.
- 2) Before loading paper into the automatic paper tray... fan, jiggle, and smooth the stack so that it will lay flat in the tray. Tray capacity is 150 sheets of 20 lb bond / 80 g/m² paper. Load fewer sheets for heavier bond.
- 3) After loading paper into the automatic paper tray or manual feed slot, adjust the feed guides snugly against the sides of the paper.

2.4.1 Printing from automatic insertion tray

Load paper into the automatic paper tray and make sure there is no paper in the manual feed slot, then print the document.

Note: Raise the document discharge extender to prevent the document slipping out from the document discharge tray. If you choose not to raise the extender, we suggest you remove the document discharge tray immediately.



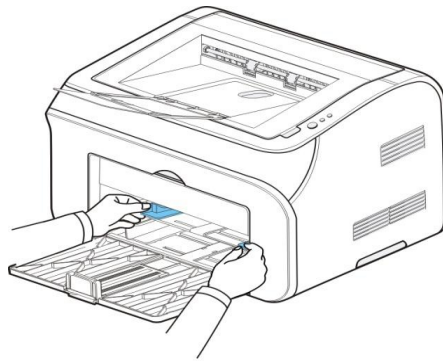
If you place more than 150 sheets at once, it may cause a paper jam or paper non-feed.

For double-sided printing, please turn over the sheet with the unprinted surface upward and the previously printed side facing down.

2.4.2 Printing from manual feed slot

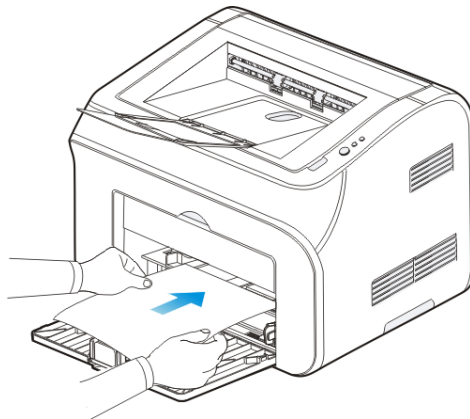
1) Load the first page of media to be printed into the manual feed slot, then print the document.

- Adjust the manual insertion tray guide with both hands to fit the paper width that you will load.



Note: The printer will start manual feed mode automatically when you load the paper into manual feed slot. The manual feed slot has priority over the automatic paper tray. If any media is present in the manual feed slot the printer will always print to that media first.

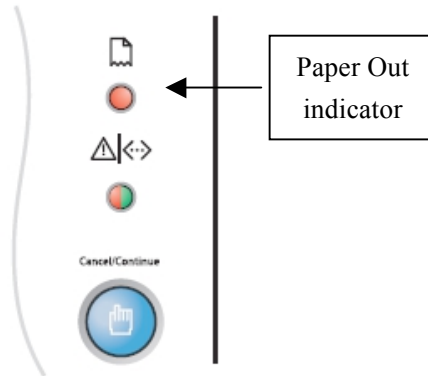
- Load a piece of paper or an envelope into the manual insertion tray using both hands.



Note:

- 1) Load the paper on the manual insertion tray with the print side face up.
 - 2) Make sure that the paper or transparencies are straight and in the correct position on the manual insertion tray. Otherwise, it cannot feed the paper or transparencies correctly and can cause output font inclination or paper jams.
 - 3) Do not put multiple sheets on manual insertion tray; it may cause a paper jam.
- After finishing one sheet, load another sheet and repeat the above steps to continue printing.

The Paper Out indicator on the control panel is on when no paper is fed in the manual insertion slot, and it will be on until you load the paper or transparencies into manual insertion tray.



2) For a multi-page document, load additional media into the manual feed slot one page at a time as soon as the previous page has fed completely through the slot, until all pages have been completed.

Note:

- Make sure the paper discharge extender is raised to avoid documents slipping for the output bin. We suggest that you take each piece of media out of the document bin immediately if you do not raise the paper discharge extender.
- When printing on transparencies please remove the printed output immediately because stacked sheets of transparencies can lead to paper jams or paper stacking problems.

2.4.3 Printing on envelopes and transparencies

Printing on envelopes

When printing envelopes Zhuhai Seine Technology Co., Ltd. recommends using envelopes specifically designed for use in laser printers.

Note: Insert envelopes carefully, lining up in the paper guides to avoid paper jams and paper feed failure.

- Envelopes should be rectangular and smooth (but not glossy) without creases, folds or windows. If any embossed manufacturer's seal is present it should be where the seams cross in the back of the envelope. The feed edge should be square and flat, no thicker than two sheets of paper.
- Make sure you have selected the same size envelope in the driver as the envelopes you plan to print.
- Do not use manual duplex printing with envelopes.
- Most envelopes will work properly in the printer. But some may have problems in feeding and printing due to different production methods.
- The printer will be damaged if you use envelopes as follows:
 - Envelopes that are damaged, curved, folded or irregular shape, too smooth or too rough.
 - Envelopes with buttons, sealing glue, convex surfaces.
 - Envelopes that have been previously printed inside or out.
 - Overweight envelopes.
 - Envelopes with low-quality, rough or not squared edges.
 - Envelopes with transparent windows, holes, incisions or perforations.



WARNING

The printer may be damaged if you use any type of envelopes described above. Damage caused by improper envelopes will void the warranty.

Please remove the printed output immediately because stacked sheets of special media can lead to paper jams or paper stacking problems.

Printing on transparencies

When printing on transparencies only use transparencies specially designed for laser printers such as 3M type CG3300.



WARNING

Please remove the printed output immediately because stacked sheets of special media can lead to paper jams or paper stacking problems.

2.4.4 Duplex

To manually duplex a document (print on both sides of the paper)

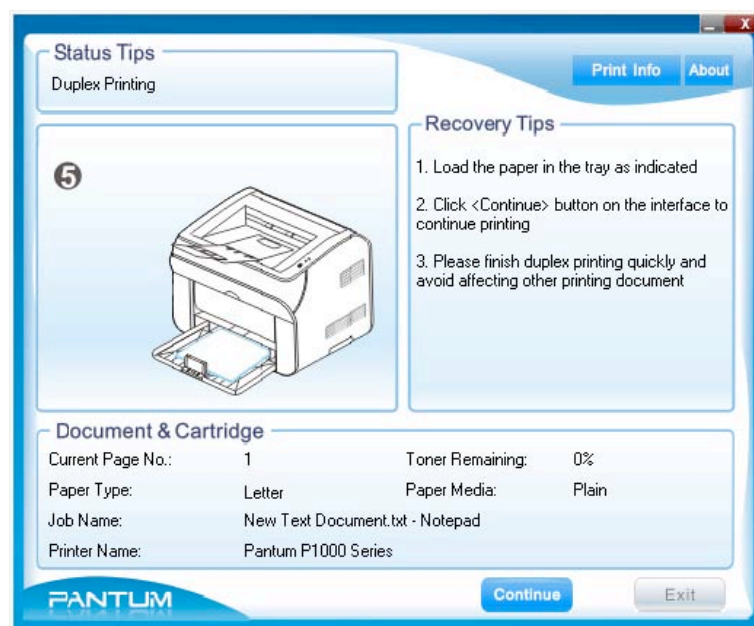
Note:

- Some paper media is not suitable for duplex printing. Attempts to duplex media other than those specified in Section 1.3 can cause damage to the printer, especially when the media is thick paper or transparencies.
- When you select printing a 2*2 poster in the Properties or Printing Preferences dialog box, manual duplex printing is not supported.
- Thin paper can lead to paper curl. If the paper is curled, flatten it before putting it back into the printer,
- Using the manual duplex printing function can lead to paper jams or poor printing quality. For information about how to deal with paper jams refer to Section 6.3.

Using the automatic paper tray

- 1) Load the appropriate media into the automatic paper tray before printing.
- 2) Check the Manual Duplex Printing box in the Duplex area of the Properties dialog box . The default setting is unchecked.
- 3) Click the OK button to close the Properties dialog box, then OK again (or Print from some applications) to print the document.

The printer will print all the back pages of the document first. When finished printing the back pages the printer will show a Status Alert on the computer screen as shown below:



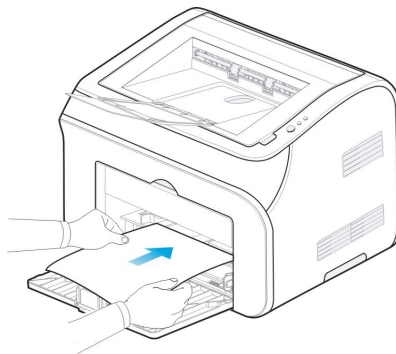
- 4) Remove the documents from the output bin then put them into the automatic paper tray with the back side up and the leading edge (top of the page) feeding into the printer first.

Note: Don't change the order of the documents when you remove the stack of paper from the output bin, turn the stack over and put it into the automatic paper tray in the same order and in the same direction as the stack was removed from the output bin.

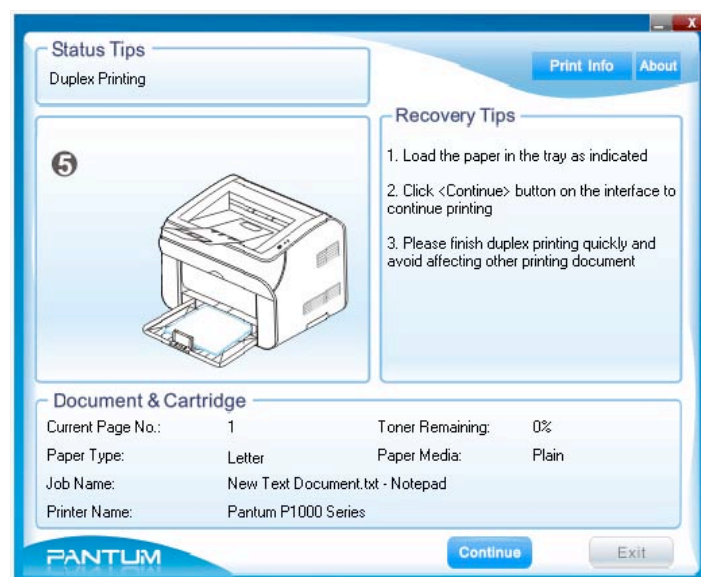
- 5) Click **Continue** on the Status Monitor.
- 6) The printer will print the front pages of the document in order on the other side of the paper.

Using the manual feed slot

- 1) Load the appropriate media into the manual feed slot before printing. The printer will start in manual feed mode automatically when you complete this step.



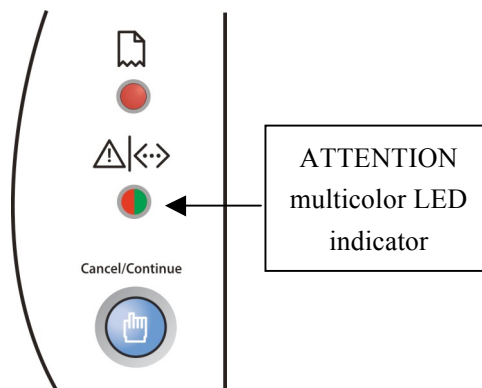
- 2) Check the Manual Duplex Printing box in the Duplex area. The default setting is unchecked.
- 3) Click the OK button to close the Properties dialog box, then OK again (or Print from some applications) to print the document.
- 4) The printer will start printing all the back pages of the document first. Feed each sheet of media into the manual feed slot once the previous sheet of media has completely cleared the slot until all the back pages of the document have been printed.
- 5) When finished printing the back pages the printer will show a Status Alert on the computer screen as shown below:



- 6) Remove the documents from the output bin then put then put the first sheet from the stack into the manual feed slot with the back side up and the leading edge (top of the page) feeding into the printer first.
- 7) Click Continue on the Status Monitor.
- 8) Continue feeding each sheet of paper one page at a time with the back side up and the leading edge (top of the page) feeding into the printer first. The printer will print the front side of the pages in order on the other side of the paper.

2.5 Control panel operation

The control panel includes an ATTENTION multicolor LED indicator (multicolor LED indicators will display red, green, orange and yellow), a PAPER OUT red LED light and a Cancel / Continue button as shown in the figure below.



2.5.1 Indicators

1) The Cancel/Continue button

The Cancel/Continue button is used to cancel a print job or continuing a job that may have been interrupted due to a paper out condition, finishing the first side of a manual duplex job or other similar reason.















2) The ATTENTION indicator

- Red indicates an error;
- Orange indicates that the print cartridge is installed improperly or the print cartridge is low, or some problem relating to the print cartridge;
- Green indicates normal.

3) The PAPER OUT indicator.



The Paper Out indicator shows that a paper out condition, paper jam error or some other problem relating to paper has occurred.

The meaning of the LED indicators

State		Description
Paper (the red LED indicator)	Data/print cartridge (the multi-color LED indicator) print	
		Ready
		Printer warming up
		Standby mode. Press the key to change the printer from standby mode to warming up mode. After warm up the printer is in the Ready state.
		Receiving data. Printer is receiving data from the computer, processing data in memory, or printing.
		Data has been transferred to the printer but it is not printing. If the Ready LED indicator is flashing continually with no output, press the Continue/cancel button to print the data currently residing in memory.
		There is no paper in the paper tray, or the paper in the tray doesn't match the paper specified in the driver and the single red indicator and the multi-color (green) indicator light is flashing.
		Paper jam. The single red indicator stays on, and the multi-color (green) indicator flashes.
		The flashing orange indicator when the printer is in ready mode means the printer is low on toner.
		Print cartridge error or toner is run out.
		Other printer errors.

2.5.2 Maintenance call display

If there are errors that the user cannot fix, the two red indicators will blink every 250 ms. as shown below

		Debug state, the two red indicators blink every 250 ms. Please contact a service centre or technical personnel for further maintenance.
---	---	---

2.5.3 Control panel button (Delete/Continue button)

The button on the control panel is used for canceling print jobs, continuing paused print jobs and printing a test page.

The functions of the Delete/Continue button		
Printer status		Operation
Power Saving Mode		Press
Printing		Press and hold
Error	There is a job printing	Press and hold
	Out of paper	Load paper
	Mismatched paper	Correct the mismatched paper error, then press
	Other errors	
Ready		Press and hold
Power Off		Press and hold
Debug Mode		Press and hold
Other Condition		

2.5.4 Other control features

The printer also has the following features:

Print Test Page

A test page may be printed by using the control panel button or the printer driver.

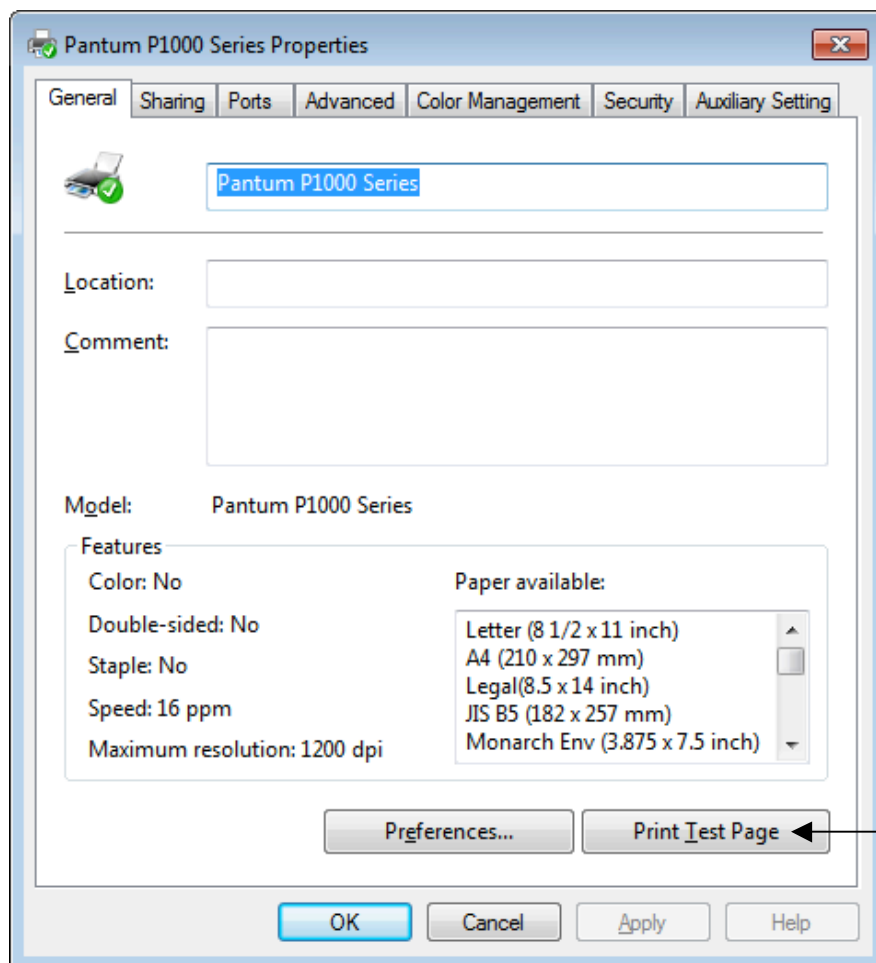
To print test page using the Control Panel button:

Hold down the button for 3 minutes, the printer will print a test page automatically.

To print test page using the printer driver:

If you are using the Pantum printer driver:

Click “**Start**” → “**Control Panel**” → “**Printer and Fax**” → “**Pantum printer**”, then right-click “**Property**”, and click “**Test Page**” located in the lower-right of the General Options menu.



Print Status Page

Print the current settings by using the printer driver:

Select “Pantum P1000/P2000 series” in Start menu, and find P1000/P2000SM.EXE. Then double-click this item to open the following status page and click “Print Info” for the current status page.



Chapter 3 Operation Theory

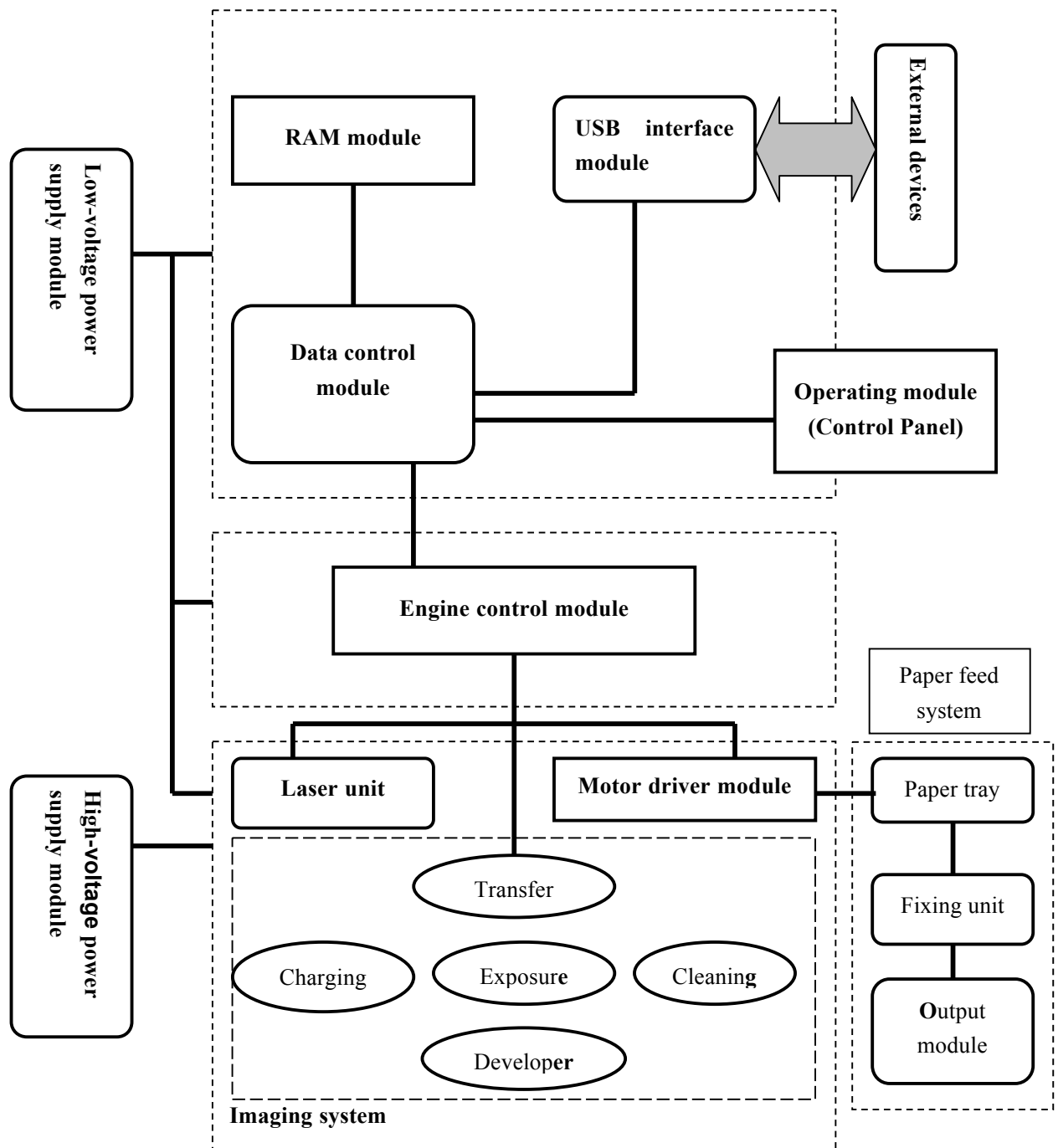
3.1 Electronic Configuration

3.2 Structure

3.1 Electrical configuration

3.1.1 System diagram

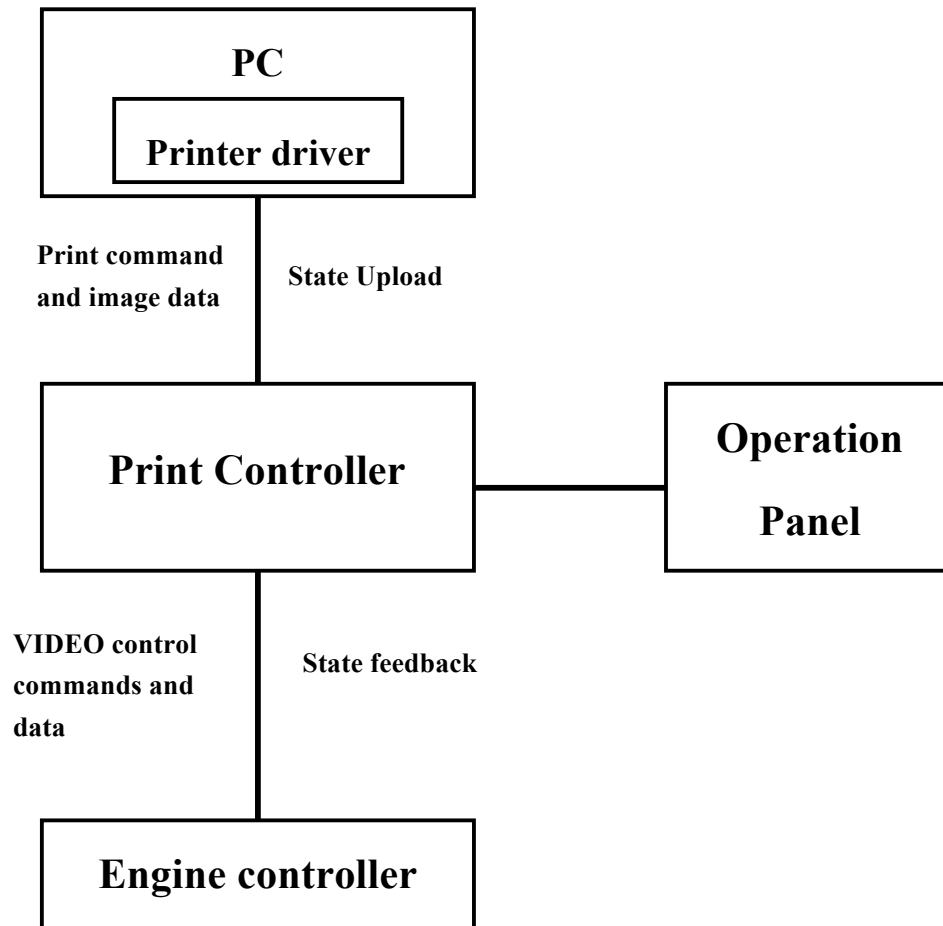
The following diagram shows a summary of the functional layout of the printer's circuitry.



3.1.2 Block diagram of data controller

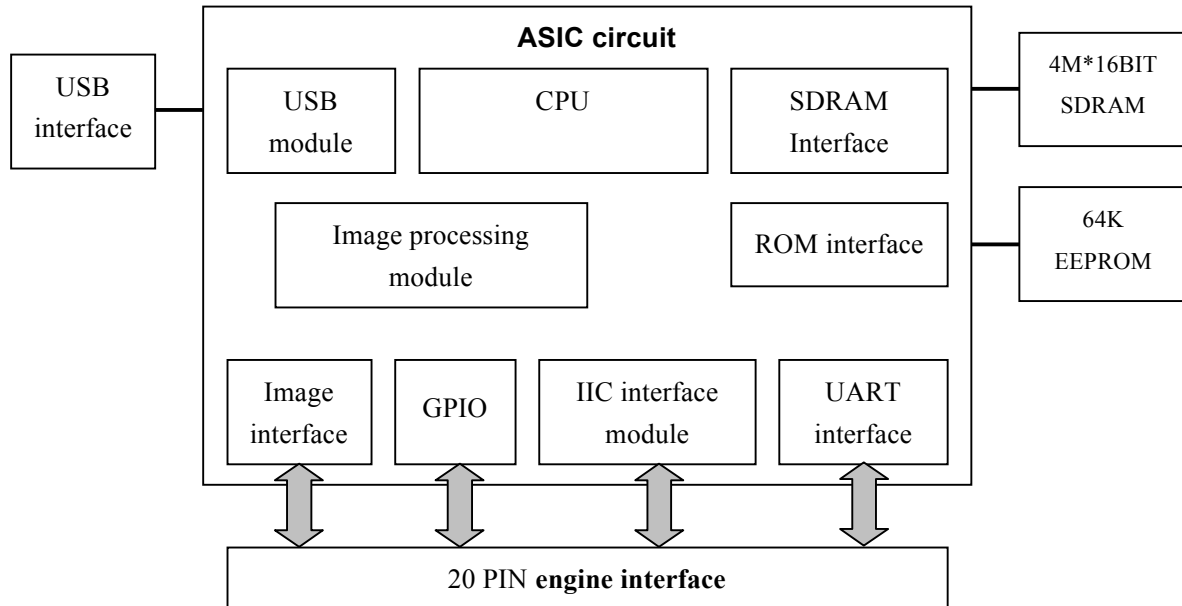
Data controller operation theory

The print controller manages the entire printing process as illustrated below:



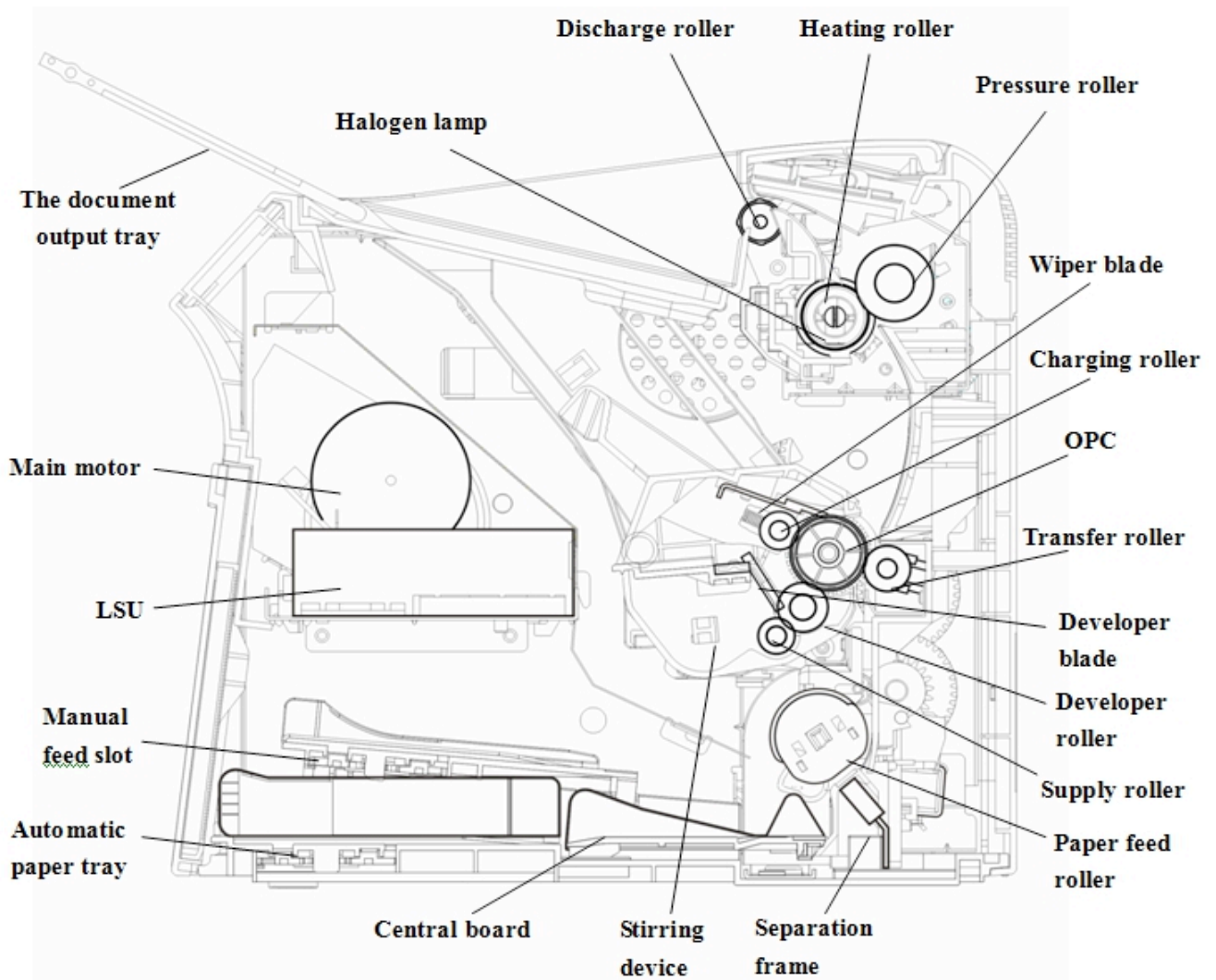
3.1.3 Print controller diagram

Block diagram of the print controller:

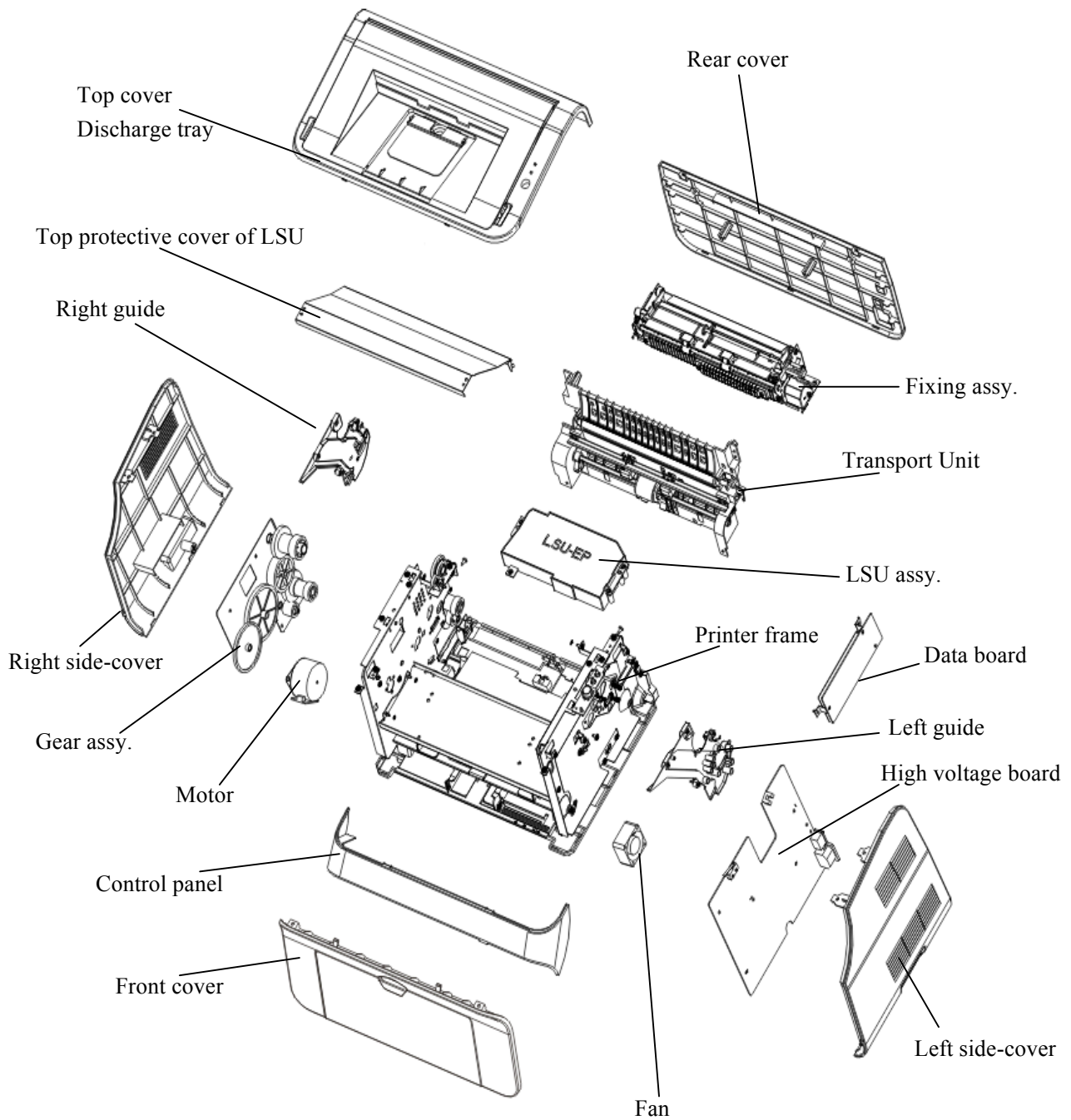


3.2 Construction

3.2.1 Print engine imaging system



3.2.2 Printer structure



3.2.3 Photosensitive drum

1 Photosensitive Drum (OPC)

The printed images are formed electro-photographically by the LSU and then developed on the surface of the OPC.

2 Charge Roller

The charge roller creates a charge on the surface of the OPC.

3 Cleaning Blade

After the image is transferred from the OPC to the media the cleaning blade scrapes any residual toner from the OPC surface into the waste toner bin.

4 Developer Roller

The developer roller develops the electrophotographic image on the surface of the OPC after it has been exposed.

5 Supply Roller

- (1) Removes any residual toner on the developer roller from the previous print image.
- (2) Supplies new toner for the developer roller.
- (3) Charges the toner with a small charge.

6 Developer Blade

- (1) Controls the amount of toner on the developer roller.
- (2) Rubs against the developer roller to smooth and level toner and to charge the toner at the same time.

7 Stirring Device

- (1) Brings the toner in the toner bin to the surface of the supply roller.
- (2) Charges the toner with a small charge because of friction between toner and stirring device.

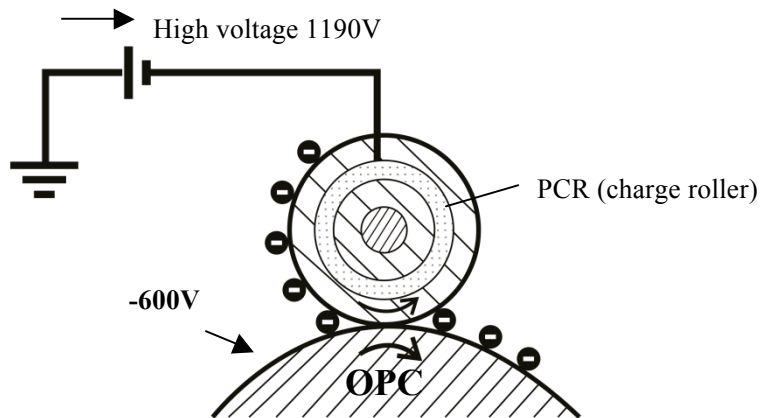
8 Chip

- (1) Checks that the proper print cartridge has been installed.
- (2) Checks the amount of toner remaining in the cartridge.

3.2.4 Printing process

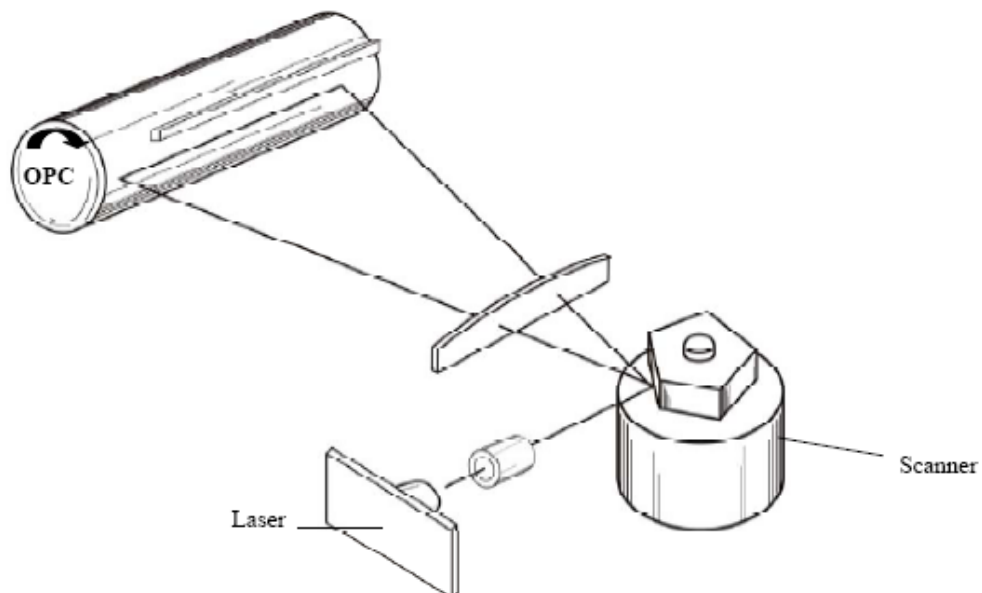
Charging

The steel shaft of the charger roller applies a high-voltage DC bias to the OPC and creates a -600V negative charge on the surface of the OPC.



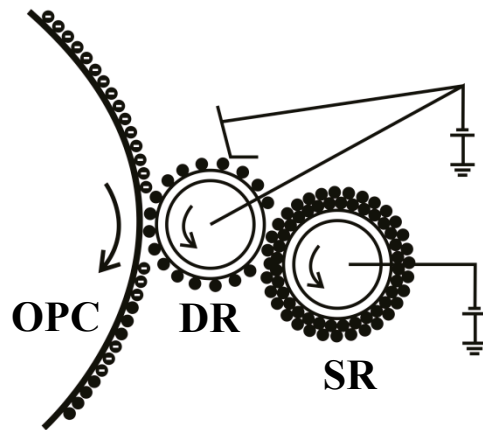
Exposure

When the photoconductor (OPC) is exposed to the laser beam the charge on the OPC is removed. The area on the OPC that was not exposed maintains its charge, creating an image of electric potential difference. That's usually called an "electrostatic latent image".



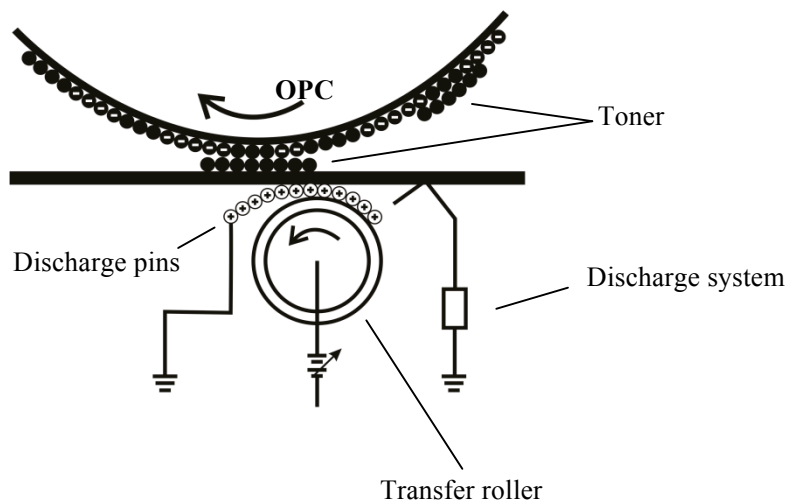
Developer

The surface of developer roller adheres to a layer of charged toner by rubbing against the feed roller. After the OPC is exposed, a voltage is supplied to the developer roller (DR) when the exposed OPC contacts it. The supplied voltage is higher than the exposed area of OPC but lower than the unexposed area. The electrostatic field between the OPC and the DR causes the toner to adhere to the area of the exposed OPC to form a visible image.



Transfer

When the sheet to be printed on goes between the transfer roller (TR) and OPC, a high voltage is exerted on the transfer roller opposite the toner charge which causes an electric field between the TR and OPC that affects the toner and the toner is transferred to the sheet. Because the back of the sheet going through the transfer roller has the opposite charge of the OPC the toner adheres to the printing sheet.



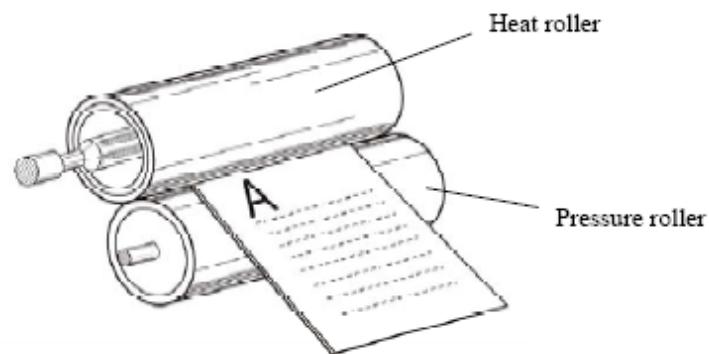
Separation

The printing sheet has a positive electrical charge and will be attracted to the negative charge of the OPC when it separates from the transfer roller. A serrated separation pad near the paper guide path has a ground or negative voltage that caused the sheet to separate from the OPC.

Fix

A heating roller set at the designated temperature melts the toner onto the sheet when the sheet passes between it and the pressure roller. The pressure roller solidifies the toner by pressing the toner into the texture of the sheet.

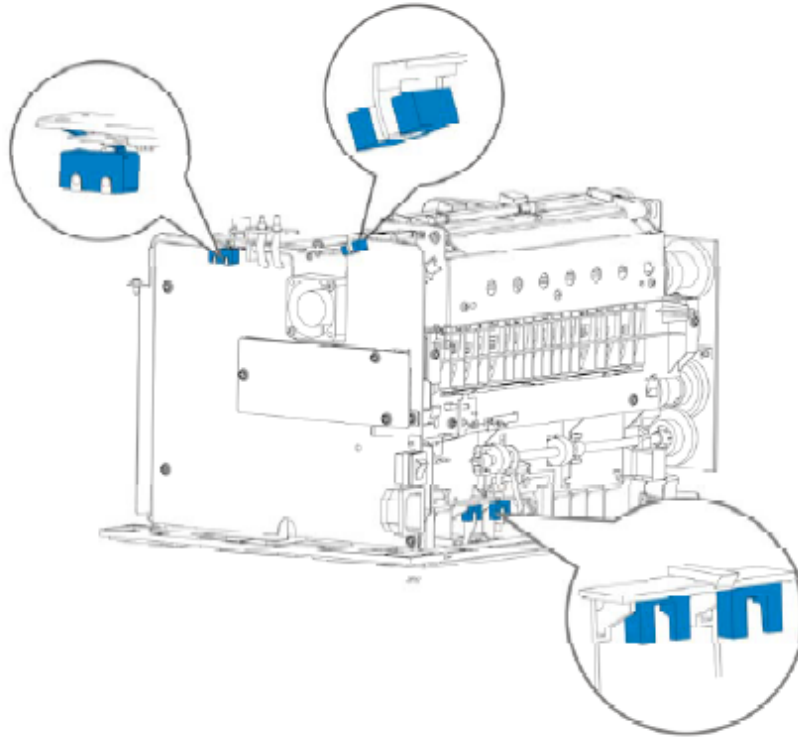
Note: the effects of toner fixation can be affected by too-high or too-low fixing temperatures.



Clean

The toner on the surface of the OPC is not completely transferred to the sheet so the wiper blade cleans the OPC before the next sheet is printed.

3.2.5 Sensors



Sensor name	Type	Location
Empty Sensor	Optical Sensor	Bottom-right of the transport unit
Feed Sensor	Optical Sensor	Bottom-right of the transport unit
Exit Sensor	Optical Sensor	Top-left of the engine board
Print cartridge top cover switch	Mechanical Switch	Top-right of the engine board

Chapter 4 Disassembly and reassembly

4.1 Safety precautions

4.2 Disassembly process fig

4.3 Disassembly process

4.4 Lubrication

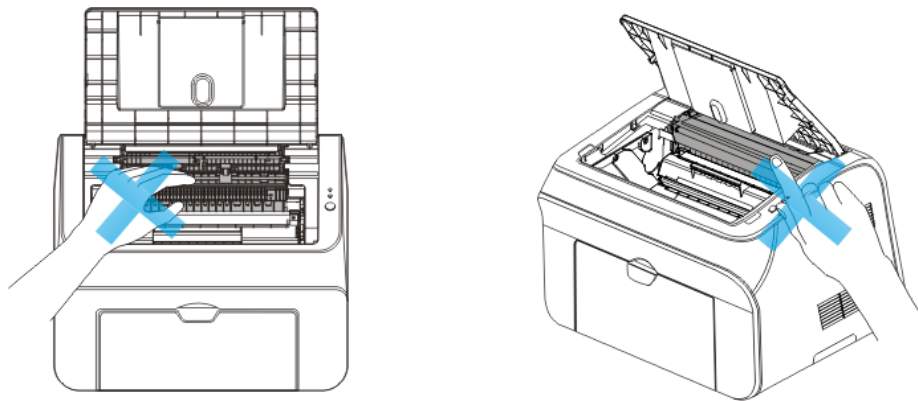
4.5 Lead-free solder instruction

4.1 Safety Precautions

Warning

In order to avoid additional damage caused by improper operation make sure to unplug the printer before servicing.

The printer reaches a high temperature after a very short operating time. Please do not touch the shaded parts illustrated below when opening the discharge plate to access the inner parts of the printer.



- (1) Pay attention to the warning labels on the printer.
- (2) Do not lose screws, gaskets or the other disassembled parts and accessories.
- (3) Lube the gears properly as described in this chapter.
- (4) Do not damage wires, the PCB, connectors or covers while using a soldering iron or other heated tools.
- (5) Ground yourself to the printer's metal parts to release any electrostatic charge on your person to avoid damaging sensitive electronic parts or accessories before working on PCBs.
- (6) Use the correct protective packaging to transport PCBs.

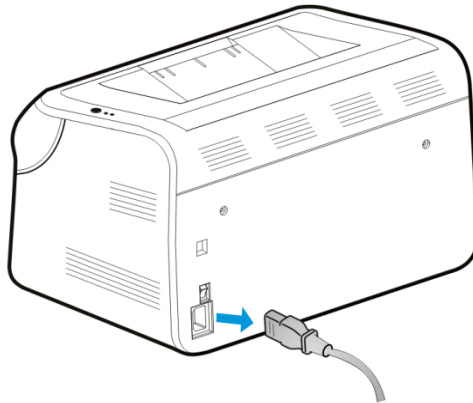
4.2 Disassembly flow chart



4.3 Disassembly steps

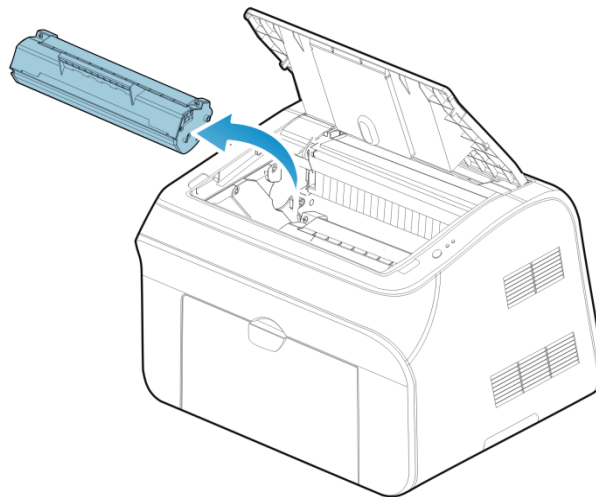
4.3.1 Alternating current (AC) power cord

(1) Unplug the AC power cord from the printer port.



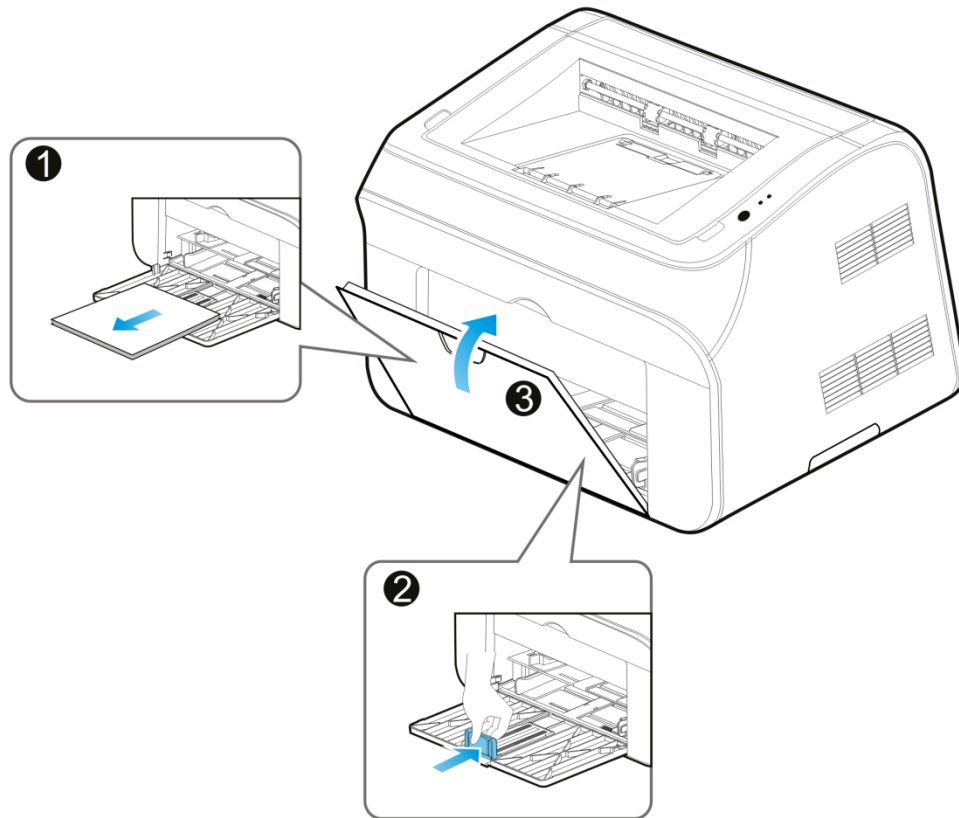
4.3.2 Print cartridge subassembly

(1) Remove the print cartridge after opening the discharge tray, add the protective cover to the bottom of the print cartridge. Be careful to avoid directly exposing the OPC to strong light.



4.3.3 Paper tray

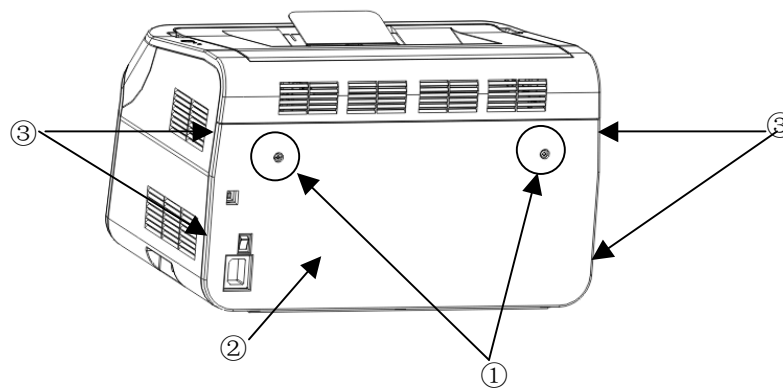
Remove any sheets from the automatic paper tray or manual feed slot and push the paper stop to its innermost position then close the automatic paper tray.



4.3.4 Rear cover

Unscrew the two screws ① in the rear cover, disengage four claws in total ③, remove the rear cover ②.

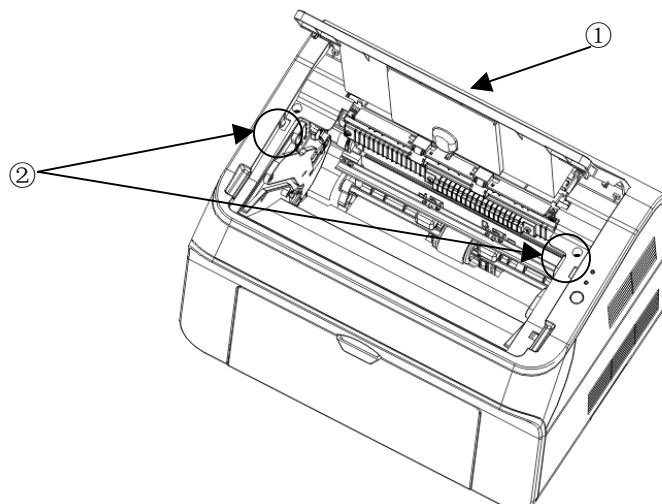
Note: avoid damage to the tabs, and don't use hard tools. Please use a smooth, rounded tool with a thickness of about 1 mm to 1.5mm.



4.3.5 Top cover

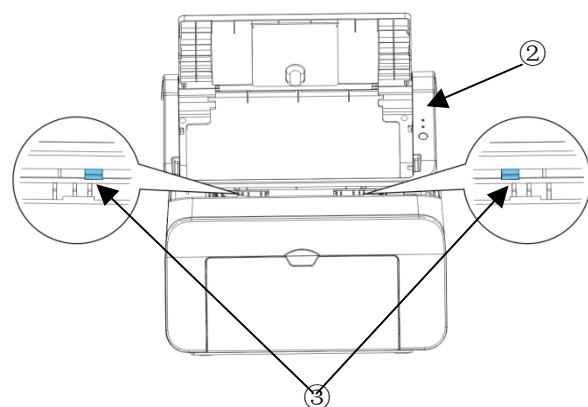
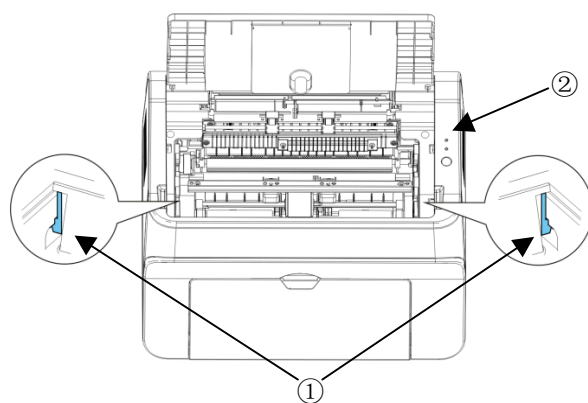
(1) (See section 4.3.4 above) After removing the rear cover, you can open the discharge tray ① to release the top cover screws ②.

Note: remove toner cartridge before removing the top cover.



(2) After removing the screws, raise the top cover ② slightly to see the hooking tabs ① and

then release them to remove the top cover.

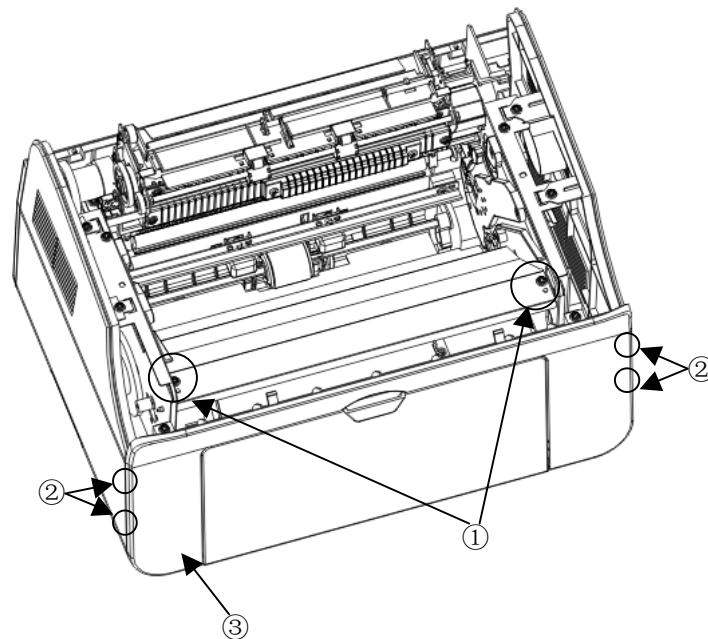


4.3.6 Front cover

(1) (See section 4.3.5) hold the front cover after disassembling the top cover, then push it firmly with both hands to release it.

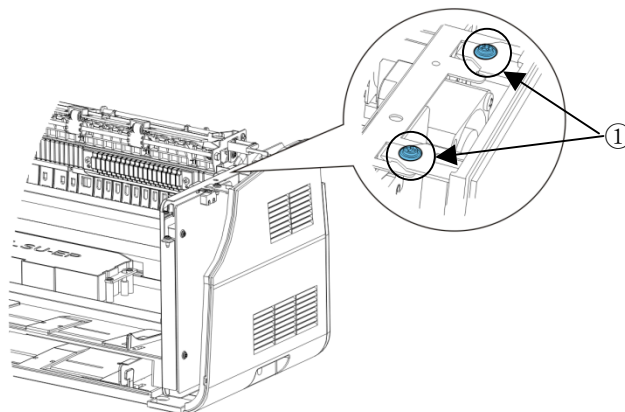
(2) Remove two screws ① after releasing the front cover, then loosen four hooking tabs ②, and remove the front cover ③.

Note: To avoid damaging the hooking tabs, please use a soft, rounded tool with thickness of about 1-1.5mm instead of hard tools such as a screwdriver.

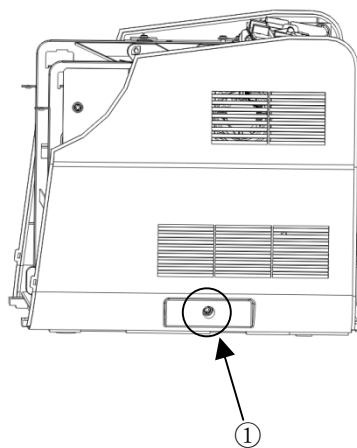


4.3.7 Disassemble right side-cover

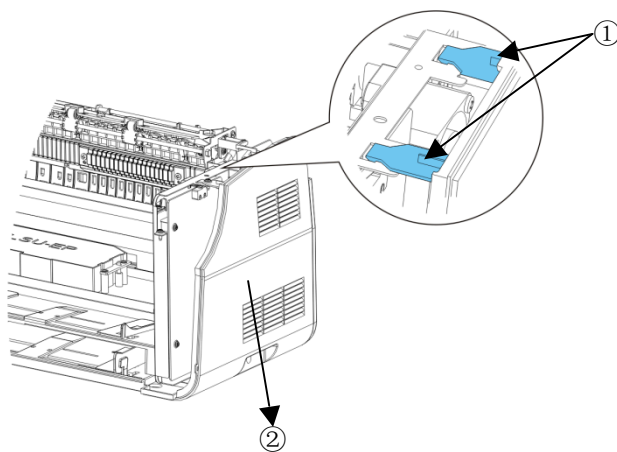
(1) (See section 4.3.6) Release two top screws ① after removing front cover.



(2) Release bottom screws ①.

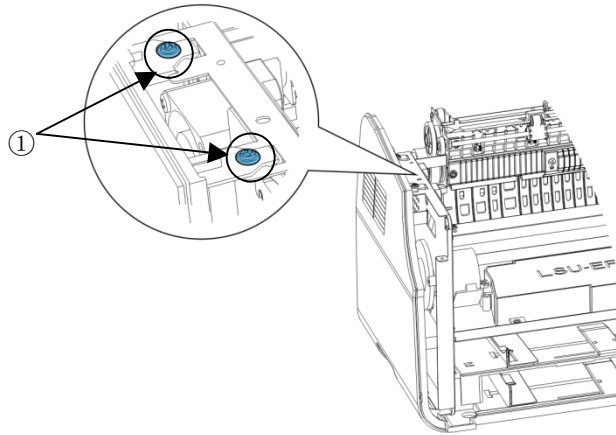


(3) Loosen hooking tabs ① gently and then remove the right side-cover ②.

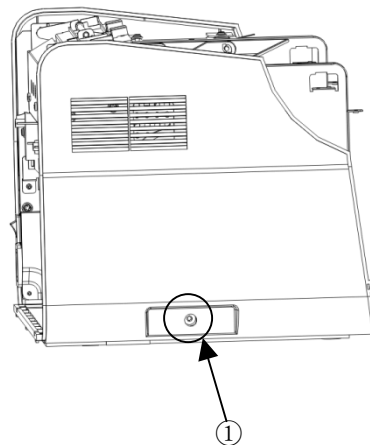


4.3.8 Disassemble left side-cover

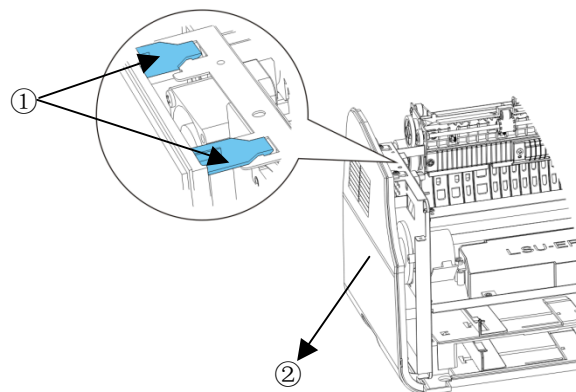
(1) (See section 4.3.6) Release two top screws ① after removing front cover.



(2) Release bottom screws ①.

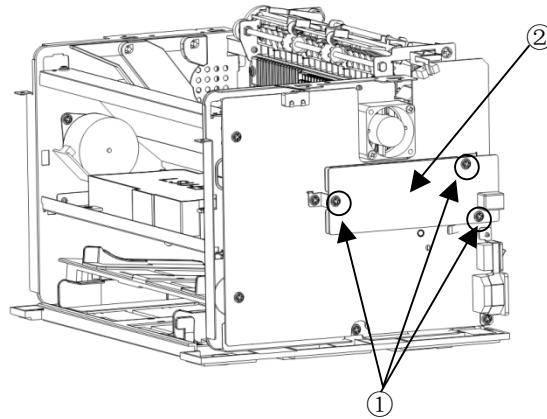


(3) Loosen the hooking tabs ① gently and then remove the left side-cover ②.



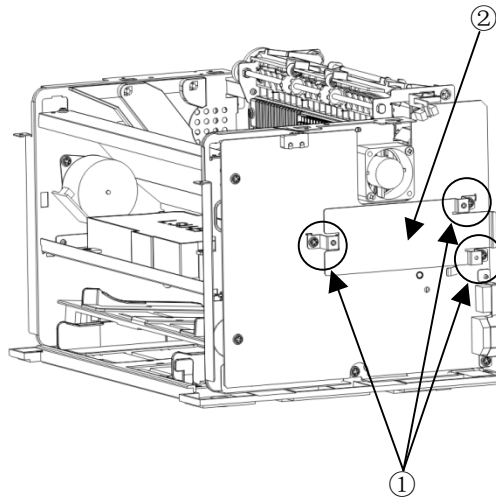
4.3.9 Disassemble data board

(See section 4.3.7) Release the three screws ① after removing right side-cover, and then remove the data board ②.

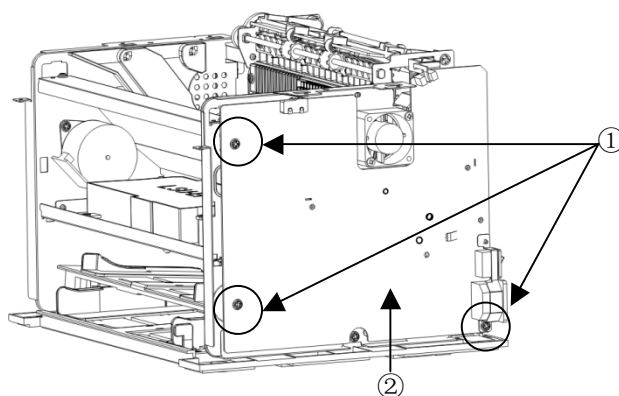


4.3.10 Disassemble engine panel

(1) (See section 4.3.9) Release the three screws ① after removing data board, and then disassemble data board frame ②.

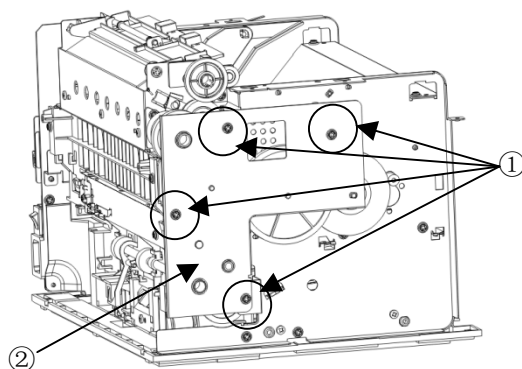


(2) Release the three screws ①, then remove the panel ②.



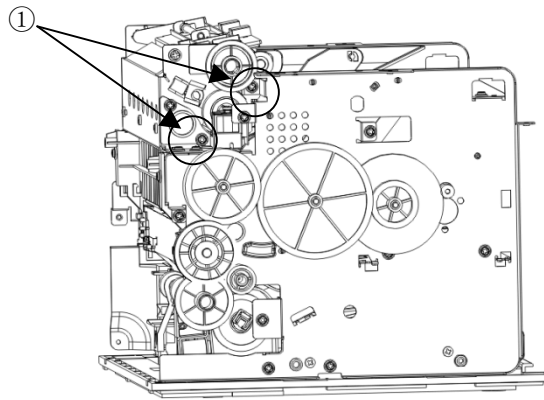
4.3.11 Disassemble fixing unit

(1) (See sections 4.3.7 and 4.3.8) Release four screws ① after removing right side-cover and left side-cover separately, and then disassemble engine side-board ②.

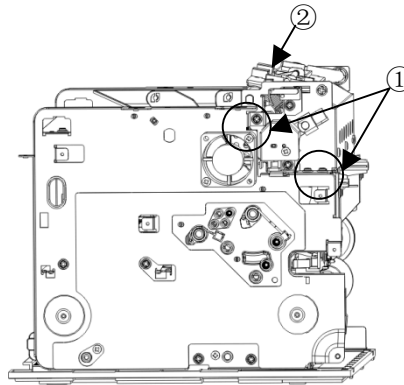


Note: When disassembling engine side-panel, some gears will be removed with it; please maintain those gears.

(2) Release three screws ① on the left.

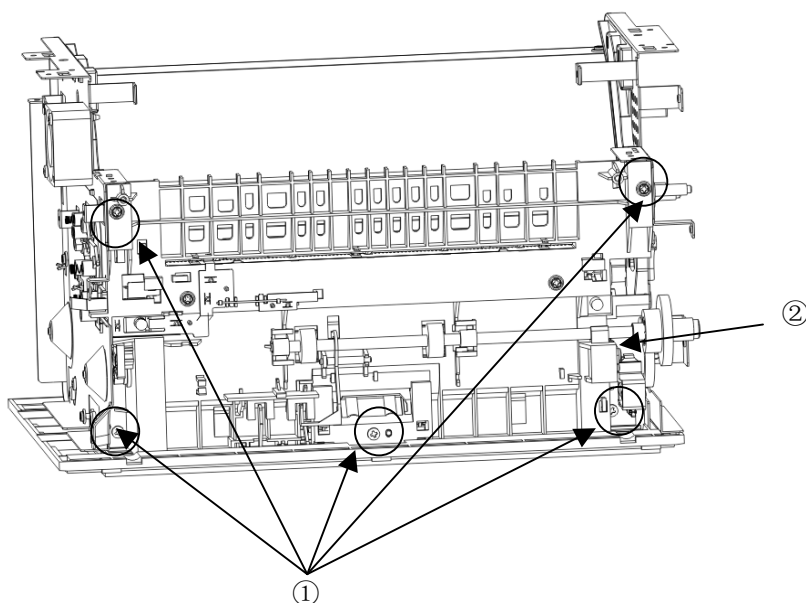


(3) Release three screws ① on the right and then disassemble fixing unit ②.



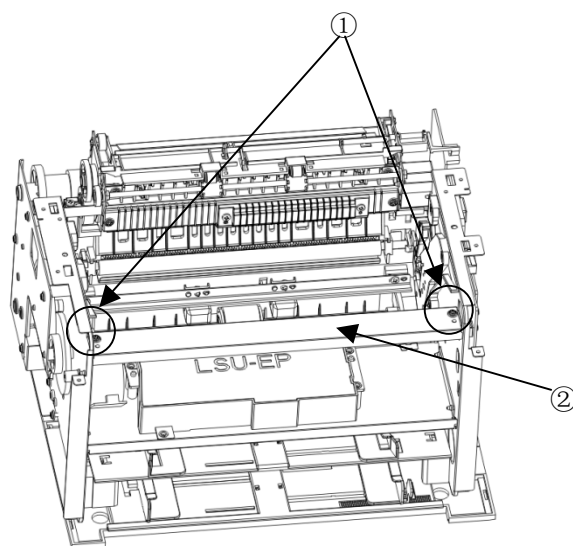
4.3.12 Disassemble transfer unit

(1) (See section 4.3.11) Remove five screws ① at corners and bottom of development unit, and then remove the whole transfer unit.

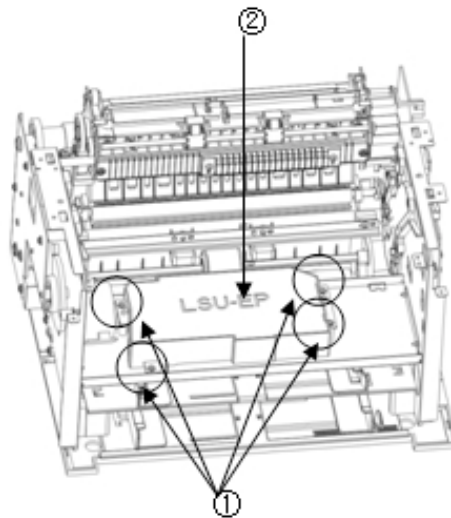


4.3.13 Disassemble LSU

(1) (See section 4.3.6) Remove two screws ① at right and left after disassembling front cover, and then remove LSU upper frame cover.

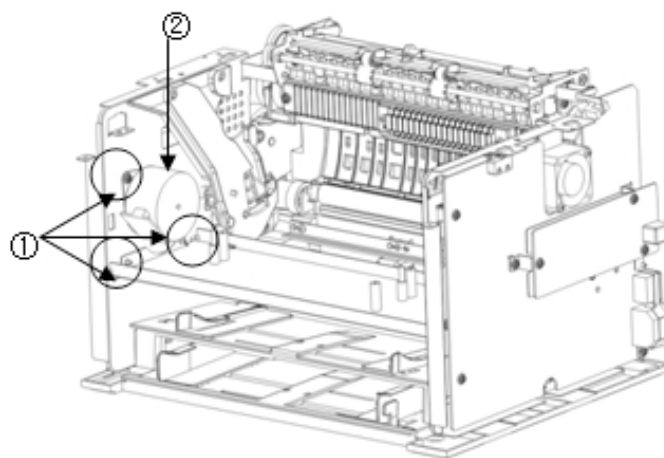


(2) Please release four screws ① which fix the LSU, and then remove the LSU ②.



4.3.14 Main motor

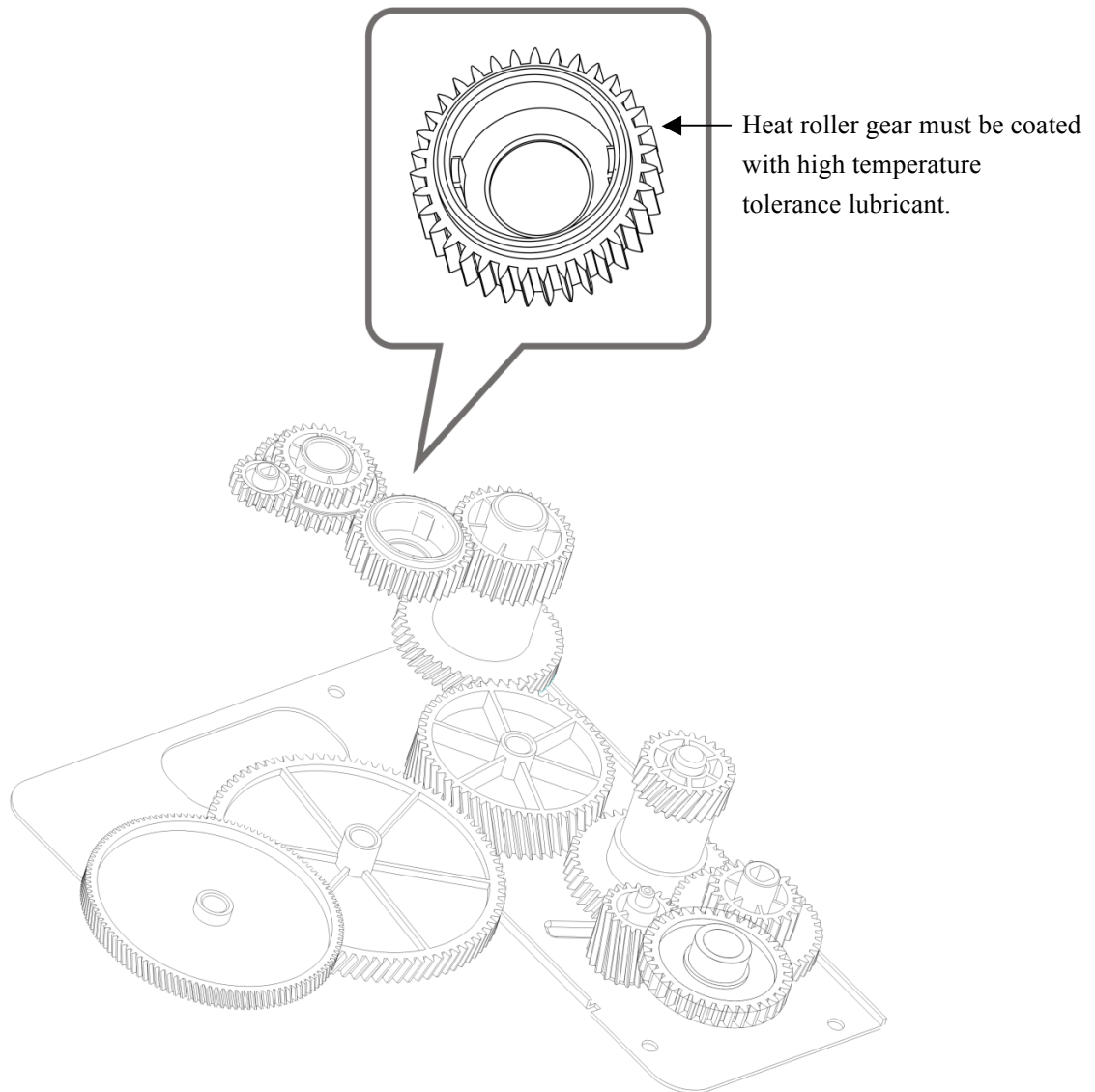
Remove three screws ① which fix the motor after removing LSU and then disassemble motor



4.4 Lubrication

To ensure the smooth movement of mechanical parts and the electric transport of printer, lubrication oil must be applied to certain components. If you want to replace those components, please re-apply this lubrication again.

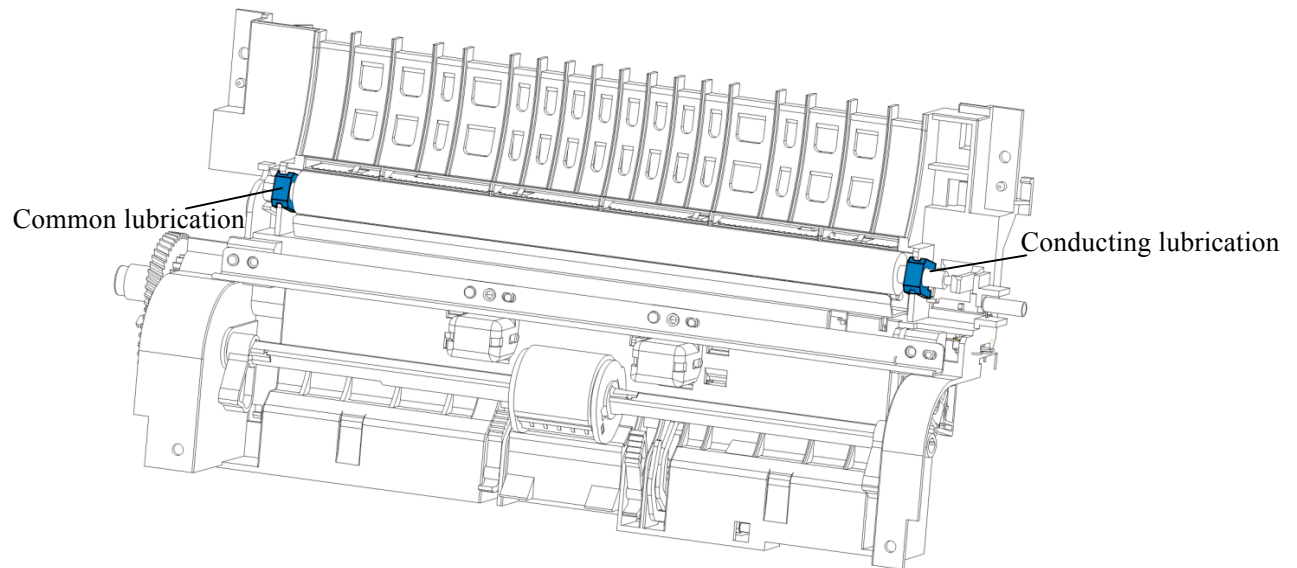
4.4.1 Gear lubrication



Note: Heat roller gear must be coated with high temperature tolerance lubricant.

4.4.2 Shaft lubricating

The lubrication should be applied to shaft and gears, and the different shafts need different lubrications.



4.5 Lead-free solder instructions

Components of this printer requiring solder in its manufacture use lead-free soldering technology. Please apply lead-free solder to weld panel when repairing it.

NOTE: Mixing different types of soldering materials, such as lead-free with leaded solder, is prohibited.

The following information explains how to use lead-free solder to weld PCB when repairing:

1. The characteristics of lead-free solder

- Melting temperature of lead-free solder is higher than that of ordinary solder. (Lead-free solder: about 220°C. Ordinary lead solder: about 180°C)
- Compared with ordinary solder, lead-free solder takes more time to solidify making fusing more difficult.
- Compared with ordinary solder, lead-free solder has relatively lighter welding dampness and infusibility (hard to dampen and spread) and also has a hard surface (dark grainy surface).
- Greater welding time.
- Inferior heat-conduction and greater heat-resistance (hard to melt)

2. The printer exterior

The exterior parts of printer with lead-free solder appear the same as those with lead-based solder, except the following items:

- The part with lead-free solder is darker and rougher.
- The part with lead-free solder will display shrinkage cracking. (Observed by 10 times magnification.)

3. The “lead-free” mark on PCB

Mark “LF” with silkscreen printing or with a label on the PCB that uses lead-free solder: “LF” refers to “lead-free” and also indicates that PCB with this mark is welded by lead-free solder.

4. Precautions for manual solder operation

- 1) The application of lead-free solder is the same as lead solder, however, because lead-free solder is difficult to melt, damp, spread and harden, it takes longer for welding with lead-free than with ordinary lead solder. Please make sure that the lead-free solder is spread sufficiently when welding. The amount of solder needs to be increased when repairing the PCB and it is better to wait for the previous weld area to be completely melted, and then do so. When the repair is unsatisfactory, the unsatisfactory part of the soldering must be cleared completely, and then use new lead-free solder.
- 2) Before welding, please verify whether there is a “LF” mark on PCB. If there is a mark identified “LF” on PCB, please use lead-free solder which corresponds with the figure on the back of “LF” mark. Please do not use ordinary solder which contains lead (lead solder) on PCB with the “LF” mark. (It is forbidden to apply lead solder to PCB which is marked by “LF”.)

- 3) Please use exclusive soldering iron with lead-free solder: The iron used for lead solder is not for lead-free soldering. Please use soldering iron which is specially designed for lead-free soldering.
- 4) The temperature at the tip of soldering iron is required to be the same as ordinary solder. Although the lead-free melting point is higher than that of ordinary solder, it doesn't need to rise to the temperature at the soldering iron tip. The temperature of iron tip must be controlled in the tolerant range of the components/parts.

Note: The tolerant temperature of lead-free is raised while the tolerant temperature of parts or components to be welded is not raised.

- 5) Use soldering iron correctly
Although the melting point of lead-free solder is higher, the welding must be operated in the range of designated temperature at the soldering iron tip. The heat accumulated by the part via the soldering iron tip must be applied effectively especially for low-cast metal. For more effective heat application, the shape of soldering iron tip and the operation of soldering iron (the relative position and angle of low-cast metal) needs to be controlled more strictly.
- 6) When applying soldering iron, it must be maintained longer at the welding joint than ordinary solder. This is because the amount of heat must be accumulated and provide a higher temperature in low-cast metal due to the high melting point of lead-free solder. Additionally it takes a longer period for the melted solder to cool down and solidify, and it must be maintained longer in the welding area after removing the soldering iron.
- 7) The welding operation needs local ventilation system and special gloves
Lead-free solder doesn't contain lead (Pb) but breathing the smoke may be hazardous. The silver contained in lead-free solder is also a hazardous substance, although its toxicity is lower than Pb. Therefore the requirement for lead-free solder operation is the same as using ordinary solder, which requires a local ventilation system and special gloves.

5. Soldering iron

When manual welding with lead-free solder, it needs a higher temperature soldering iron. It is indicated that the soldering iron tip temperature is relatively higher, but if the soldering iron is applied to low-cast metal or solders, it will recover to the designed temperature quickly. Then the required temperature of soldering iron tip is the same as the ordinary solder, however the efficiency would be decreased when using the lead-free solder, the melting point of which is higher than ordinary solder. Some tool manufacturers sell soldering irons that are specially designed for lead-free solder to maintain the efficiency of welding operation. The price of those with a temperature controller inside for lead-free soldering is 3 or 4 times higher than ordinary irons.

6. Make sure not to mix different types of solders

When repairing a PCB marked with "LF", you must use lead-free solder containing the metal corresponding to that in the figures on the back of the "LF" mark. Lead solder or lead-free solders containing metals different than listed on the LF label are forbidden on a PCB with the "LF" mark.

Chapter 5 Regular maintenance

5.1 Cleaning Inside Printer

5.2 Consumables Replacement

Regular Maintenance

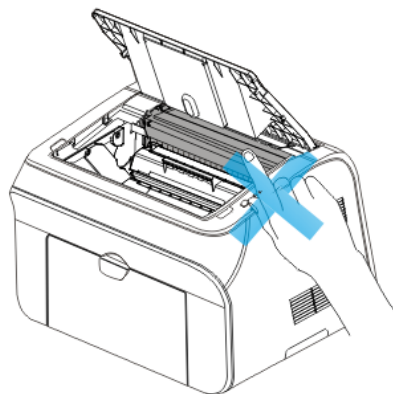
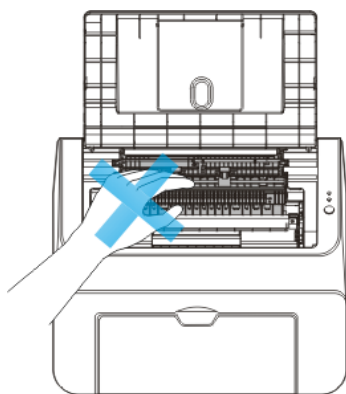
There could be debris such as toners and dust inside and outside the printer after prolonged usage. These may cause the machine to be unable to work normally, so regular cleaning is recommended.



Warnings

To avoid damage due to wrong operation, please comply with the warnings as follows during any repair procedure:

- Make sure your printer is powered off before repairing to avoid injury or damage.



- Do not attempt to touch the fixing unit which is very hot after printing to avoid burns !

5.1 Internal cleaning of printer

There will have been many toner cartridges used in the printer over prolonged use. Because toner can accumulate in some parts, the printer may not work properly:

- Paper Feed Roller

It will fail to feed paper if you have not cleaned the paper feed roller for a long time. Please disassemble the paper feed roller and lightly clean away the dust with cotton dipped in alcohol. Please change with a new roller if its surface is heavily abraded or badly worn.

- Separation Pad

It is also an important part of the paper feed component. If it becomes dirty, many sheets will be fed into the machine simultaneously. Then you should disassemble the separation pad and clear it lightly with a damp cloth.

- Paper Path

Affects printing feed. The output isn't clear if the paper path is dirty. You can lightly brush the toner and dust from inside the paper path.

- Transfer Roller

Dirty transfer roller will also affect printing quality. You can remove the dirt with linen paper.

- Fixing entrance

May cause paper jam when dirt accumulates here. You can brush the dirt lightly from the printer.

- Heating Roller

The heating roller won't stick to toners, although some residual toner on it is unavoidable. If paper jam occurs, remove it and clean away the dirt using cotton dipped with water after the printer is cooled down. Remember not to scrape the heating roller to avoid damage to the coating film.

- Pressure Roller

The pressure roller would be covered with much dirt such as toner and dust after prolonged use, which makes it easier to cause a paper jam. You may clean them with linen paper.

- Sensors

Sensors are also an important part of printer, if they are dirty, various kinds of problems may occur such as paper jam and error reporting, etc. You should check the sensors and clean them regularly. Remove any dirt lightly with alcohol swab.

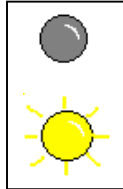
- LSU Glass

LSU is the important part of imaging system. Once the LSU glass is contaminated by the toner and other polluting matter, it will cause poor printing quality; so the cleaning of LSU glass is a necessary job during common usage and service maintenance. You can clean the LSU glass with a cloth and cotton with a little alcohol.

5.2 Consumables replacement

When the LED indicator shows the following status it means the print cartridge has come to the end of its life. Please replace with a new cartridge before running out of toner.

The Indicator



The steps to replace print cartridge are as follows:



Warning: Be careful when removing the cartridge, because the toner in it may stain your cloths.

- 1) Make sure the printer is powered off.
- 2) Open the discharge tray, grasp toner cartridge handle and pull cartridge out.



Place the cartridge on a piece of paper, to avoid dropping the cartridge accidentally.

- 3) Unpack a new cartridge, and shake the print cartridge gently a few times to distribute toner evenly inside.
- 4) Remove the drum shutter from the new cartridge and place the cartridge in the printer. Insert the cartridge into the guides, then push gently but firmly until the cartridge snaps into place.

Note: Remember to install the cartridge in the printer immediately after taking off the drum shutter to minimize exposure to light, since the light will damage the OPC drum.

- 5) Cover discharge plate, switch on the printer and the “Toner Error” indicator should be off. Please check that print cartridge installation is correct if the indicator is still on; if the installation is incorrect, please reinstall it correctly. Please contact the service centre if the problem is still not resolved,
- 6) Print a test page.

Chapter 6 Error indications and troubleshooting

6.1 Introduction

6.2 Error Indications

6.3 Trouble shooting

6.1 Introduction

In this section, some methods for dealing with problems are introduced so the repair technician can use them when trouble occurs. Since we cannot foresee every problem, we illustrate solutions to some common problems as a reference. If the repair technician is able to analyze and diagnose trouble correctly, the following examples are helpful for solving other problems not described in this service manual.

6.1.1 Initial inspection

(1) Operating environment

Check and verify that:

- Power supply voltage is nominal voltage between 220V and 240V as shown on the label.
- Printer is placed on firm and horizontal surface.
- Room temperature is between 10°C and 32.5°C and relative humidity between 20% and 80%.
- Printer is not placed in dusty environments.
- Printer is not exposed to ammonia or other harmful gas.
- Printer is not placed in hot or moist area (such as near to water or humidifier)
- Printer is not exposed under direct sunlight.
- The room where the printer is placed should be well-ventilated.
- The printer shall not be placed where it might block ventilator.

(2) Printing paper

Please check and verify that:

- Using the recommended paper types. If paper is too thick, too thin or curved, it will cause paper jam, feed trouble, or blurred image.
- Whether the printing paper is moist or not. If it is moist, please change a new sheet, and check that the printing quality is improved.
- Whether the printing paper has texture or is acid. If so, it may cause a printing quality problem.
- For further information about paper, please refer to “paper” in section 1.3.2.

(3) Consumables

Please check and confirm that:

- The indicator on control panel is on. Please refer to Indicator in 2.5.1 if the indicator shows low toner.

For further information please refer to Consumables in section 5.2.

(4) Others

Dewing

When printer is moved to warm room from cold one, dewing may occur in the printer, and it will cause problems as follows:

- Dewing on the surface of optical component such as scanner mirror, lens, reflecting mirror, and protective glass etc, may cause lighter image when printing.
- Low temperature of photosensitive drum would increase the resistance of photosensitive layer, causing incorrect contrast in printing process.
- Dewing on corona may leads to leakage of corona charge.
- Dewing on pressure plate and separation pad may cause problems on feeding.

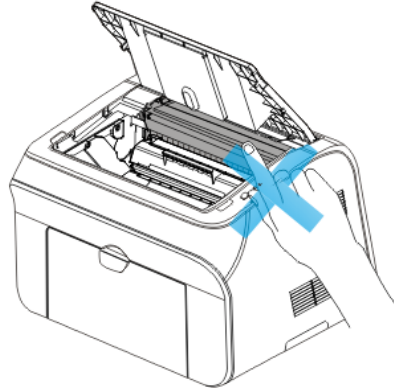
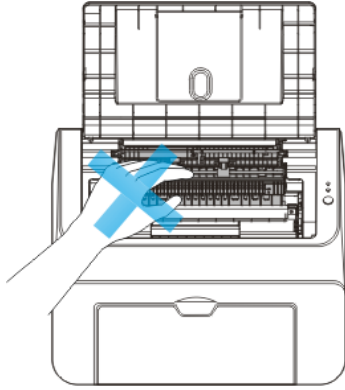
If there is dewing, please print several pages or waiting for 2 hours until the printer reaches room temperature.

Dewing on its internal units may cause incorrectly printed images if the print cartridge unit is moved to warm room from cold room and unpacked immediately. Please open the package only when the temperature of this unit reaches room temperature, which takes two hours.

6.1.2 Warnings for repairing

To avoid damage due to improper operation, please comply with the following warnings during any repair work.

- Make sure your printer is powered off before repairing to avoid damage or injury.



- The printer is at a high temperature shortly after usage. Do not touch the shaded areas when opening the discharge tray to access internal parts !

6.2 Error indications

This printer provides related self-diagnostic functions to indicate equipment malfunctions and communication errors to help repair technician locate problems.

The machine will print a confirmation report and communications report about communications errors.

6.2.1 List of errors in printer and driver status monitor

The errors listed here describe the status shown by indicator and the printer monitor:

Type	Trouble type	Indication of printer status	Shown on status monitor
Warning	Low toner supply in cartridge	The red indicator is off while the bicolor indicator blinks yellow.	Indicates that toner supply is low in cartridge
General trouble	No paper (printing)	The red indicator blinks while the bicolor indicator is off.	Indicates the lack of paper
	Feed paper error	The red indicator blinks while the bicolor indicator is off.	Indicates that paper feed failed
	Paper doesn't match	The red indicator is on while the bicolor indicator is off.	Indicates mismatch of paper
	A paper jam in the printer	The red indicator is on while the bicolor indicator is off.	Indicates paper jams at the print cartridge unit.
	A paper jam near the discharge tray	The red indicator is on while the bicolor indicator is off.	Indicates a paper jam near the discharge tray.
	Discharge tray opened	The red indicator is off while the bicolor indicator shows red.	Indicates the cover plate above print cartridge is open.
	Print cartridge not installed	The red indicator is off while the bicolor indicator shows yellow.	Indicates print cartridge hasn't been installed.
	Print cartridge doesn't match	The red indicator is off while the bicolor indicator shows yellow.	Indicates print cartridge doesn't match.
	Toner out	The red indicator is off while the bicolor indicator shows yellow.	Indicates toner has run out.
	Communication error	No signal.	Indicates communication error.
Major failure	Engine code mismatch	The red indicator is off while the bicolor indicator shows red.	Indicates internal error of printer, error code NO.1.
	Motor error	The red indicator is off while the bicolor indicator shows red.	Indicates internal error of printer, error code NO.3.
	LSU unit error	The red indicator is off while the bicolor indicator shows red.	Indicates internal error of printer, error code NO.4.
	paper sensor	The red indicator is off while the bicolor indicator shows red.	Indicates internal error of printer, error code NO.5.
	Fixing unit error		Indicates internal error of printer, error code NO.6.

Note:

1. Paper doesn't match

The trouble would be reported after printing the first page.

Because detection of error is on chip, it can only report the event when the 'size of paper' setting and the feed paper being used are different.

2. Communication error

It mainly refers to the state of power failure or disconnection of the USB cable in printing process when communication error is shown on status monitor of driver.

6.2.2 Cause analysis and methods of treatment for printer

Warnings (General Trouble)

- Indicator blinks as red

Trouble causes: Low toner supply in cartridge

Solutions: Please replace cartridge soon to guarantee high quality printing.

- No paper (in printer)

Trouble causes: 1. There is no paper in paper tray.

2. The paper sensor doesn't work.

Solutions: 1. Load printing paper.

2. Change the paper sensor.

- Paper feed failure

Trouble causes: 1. Papers are placed improper.

2. There is something wrong with the printing paper.

3. There are some troubles on paper sensor.

Solutions: 1. Rearrange the paper and put them properly.

2. Change better printing paper.

3. Change the paper sensor.

- Paper mismatching

Trouble causes: 1. The paper type in paper tray is different from that of setting.

Solutions: 1. Load the same paper type as the setting.

- Paper jam at the print cartridge unit

Trouble causes: 1. Damaged paper is used.

2. The delivery paper sensor is damaged.

3. Fixing device error.

4. Print cartridge isn't installed.

Solutions: 1. Print with intact paper.

2. Change the discharge paper sensor.

3. Change the fixing device.

4. Install the print cartridge

- Paper jam at the discharge roller
 - Trouble causes: 1. The exit is piled with paper.
 - 2. There is trouble with the paper discharge sensor.
 - Solutions: 1. Take out the paper piled at the exit.
 - 2. Replace engine board.
- The discharge tray open
 - Trouble causes: 1. The discharge tray is open.
 - 2. Position switch of the discharge tray is damaged.
 - 3. Power supply error.
 - Solutions: 1. Close the discharge tray.
 - 2. Change position switch of the print cartridge cover.
 - 3. Replace engine board.
- No print cartridge
 - Trouble causes: 1. Print cartridge isn't installed or installed incorrectly.
 - 2. Chip on print cartridge isn't installed.
 - 3. Chip on print cartridge is damaged.
 - 4. There is a poor contact on chip of print cartridge.
 - Solutions: 1. Install the print cartridge correctly.
 - 2. Install the chip in print cartridge correctly.
 - 3. Install an intact chip into print cartridge.
 - 4. Check the probe is in contact with print cartridge.
- Print cartridge mismatch
 - Trouble causes: The print cartridge installed is unfit for the printer.
 - Solutions: Install the correct print cartridge.
- Toner out
 - Trouble causes: Toner in cartridge has run out, and the print cartridge is expired.
 - Solutions: Replace with a new cartridge.
- Communication error
 - Trouble causes: 1. Data link is connected incorrectly.
 - 2. Power supply cord is connected incorrectly.
 - Solutions: 1. Connect the data cable correctly.
 - 2. Connect the power supply cord correctly

Major Trouble

- Fixing unit error

Trouble causes: 1. Fixing unit cable error.
2. There is trouble on the data board.
3. Fixing unit error

Solutions: 1. Connect heating conductive cord correctly.
2. Repair the data board.
3. Replace fixing unit.

- LSU errors

Trouble causes: 1. Scanning unit connection error.
2. Trouble in data board.
3. LSU error

Solutions: 1. Connect the conductive cord correctly.
2. Replace data board.
3. Replace the LSU

- Engine board mismatched

Trouble causes: 1. Data board mismatches with engine board;

Solutions: 1. Substitute for proper data board or engine board;

- Internal communication error

Trouble causes: 1. The connection between engine board and data board is bad;
2. The engine board circuit is bad
3. Engine board error

Solutions: 1. Link the conductive cable correctly;
2. Change the engine board;
3. Replace the data board

6.3 Troubleshooting

6.3.1 Paper deed and delivery

Users can carry out “User-check” program aimed at each problem to finish troubleshooting. Even if a similar problem turns out a second time, you can solve it by following the steps described in the tables below.

M1 Not feeding

Trouble causes	Solution
There is no electromagnet signal.	Check the input signal of electromagnet; make sure the signal wire of electromagnet is connected correctly.
Feed roller is soiled.	Clean the feed roller or change it.
Feed roller is worn.	Change feed roller.

M2 Endless feeding

Trouble causes	Solution
Wrong electromagnet signal.	Check input signal of electromagnet, make sure the signal wire of electromagnet is normal.
Weak spring in electromagnet.	Change the spring in electromagnet.
Incorrect assembly of single-pair clutch.	Check the single-pair clutch; make sure it is assembled correctly.

M3 Inclined feeding

Trouble causes	Solution
Paper path is soiled.	Check the Paper path, make sure it's unblocked.
Feed roller is soiled.	Clean the feed roller.

M4 Feeding difficult

Trouble causes	Solution
Paper isn't loaded properly.	Make sure paper is loaded properly.
The feed roller is soiled or worn.	Clean the feed roller.
The paper path is soiled.	Clean the paper path.

M5 Second feed

Trouble causes	Solution
Paper isn't loaded properly.	Make sure paper is loaded properly.
Separation pad is soiled or worn.	Clean or replace the separation pad.

6.3.2 Software configuration problem

If the software is configured incorrectly, the device will be unable to print data correctly:

S1 After switching on the printer, it is not working in the printing mode.

Trouble causes	Solution
There is trouble in the printer hardware.	Perform the Self-Diagnostic before printing when the printer is powered on; Make sure there is no trouble in the printer itself.
The PC and the printer are connected improperly, while the print cartridge is installed properly.	Check the printer cable; make sure it's assembled correctly. Check print cartridge, and make sure it is installed into the printer properly.
Printer software error	<p>Check whether the connection between PC and printer port is proper or not. Check whether the printer driver is installed or not. If using Windows OS check the OS program causes printer not working if the printer driver is installed properly.</p> <p>Adjust the settings as the program requires if the printer is not working for a certain program. Sometimes the output is normal in the basic programs of Windows OS but abnormal in a particular program, then you should install driver again. If it doesn't work in the basic program of Windows OS, please check whether the setting of the printer port is proper or not. Open the port setting in "printer properties", check whether it's the USB port or not.</p>

S2 Abnormal printing, strange character occurs repeatedly.

Trouble causes	Solution
USB cable is broken	Replace USB cable
Wrong settings in the printing port setting.	Open the port settings of "printer properties" make sure it is set properly.
Printer driver error.	Reinstall the driver.

6.3.3 Other troubles

F1 No AC power supply.

Trouble causes	Solution
Abnormal supply voltage.	Make sure supply voltage is proper/normal.
Power cord is not inserted into the plug firmly.	Make sure the power cord is inserted into the socket firmly.
Fuse is broken.	Change the fuse, please check whether there is a short circuit on AC power cord if it breaks again as soon as you change the low-voltage engine board.

F2 No DC power supply.

Trouble causes	Solution
No AC power supply.	Make sure supply voltage is proper/normal.
Abnormal low-voltage power supply.	Replace engine board.

F3 Motor error.

Trouble causes	Solution
Bad connective wire.	Make sure the wire is connected properly, and good quality wire.
Bad main motor.	Change other motors, check whether the main motor is normal or not, change it if not.
Wrong connection on the main board.	Change a connector.

F4 Heating lamp doesn't work.

Trouble causes	Solution
High voltage board is disconnected.	Connect it firmly, make sure it's normally supplied with AC 220V.
Jammed paper in printer.	Check the printer and clear away the jammed paper.
Discharge sensor can't be closed	Clean or replace the discharge sensor
The feed sensor actuator is unable to close.	Clean or change the feed sensor actuator.
Position switch error.	Check the switch.
Thermistor error	Replace fixing unit.
Thermostat is off.	Change fixing unit.

F5 Fixing unit troubles

Trouble causes	Solution
Thermistor not connected.	Reconnect the connector.
Thermostat is burnt out.	Change fixing unit.
Halogen heating lamp error.	Change fixing unit.

F6 Laser scanning error

Trouble causes	Solution
The wire is connected improperly or broken.	Connect the wire properly, or change it.
The connectors CN3 and CN4 error.	Replace the connectors CN3 and CN4.
LSU damaged	Replace LSU

F7 Unable to supply paper

Trouble causes	Solution
Separation pad or feed roller error.	1) Clean the surface of the separation pad or feed roller. 2) Change the separation pad or feed roller.
Connecting wire on electromagnet breaks.	Make sure the connecting wire on electromagnet is connected properly.
High-voltage power supply error.	Change the engine board.
Electromagnet error.	Change electromagnet.
Actuator no paper error.	Change actuator no paper.

F8 Insufficient high-voltage output

Trouble causes	Solution
Wires are unconnected or bad contact or damaged.	Ensure the wires are connected well.
High-voltage contacting point polluted.	Clear the electrode.
Engineer board error.	Replace engineer board.

F9 USB cannot be identified by PC

Trouble causes	Solution
The power cord is not plugged in or poorly connected or damaged.	Make sure the power cord is connected properly.
The USB cable poorly contacted or damaged.	Make sure the USB cable is connected properly .
Power supplied from engine board to data board error.	Replace data board.
Reset signal supplied from engine board to data board error.	Detect the data board to make it provide correct reset signal.
Engine board damaged.	Change for a new engine board.

F10 The output image is 'random' character string.

Trouble causes	Solution
The FFC connecting engine board and data board is badly contacted or unreliable.	Replace data board.
Engine board damaged.	Change for a new engine board.

F11 No image output.

Trouble causes	Solution
FFC connecting movement control card and printing control card poorly contacted or unreliable.	Replace data board.
Engine board damaged.	Change for a new engine board.
Data board error.	Replace Data board.
Print cartridge error.	Replace the print cartridge.
LSU error.	Replace LSU.

F12 Button does not function.

Trouble causes	Solution
FFC connecting engine board and data board is badly contacted or unreliable.	Replace data board
Buttons damaged.	Replace with new buttons.
Engine board damaged.	Replace with a new engine board.

F13 The LED indicator off.

Trouble causes	Solution
The FFC connecting engine board and data board is badly contacted or unreliable.	Make sure the FFC is contacted reliable, change it if necessary.
The LED indicator damaged.	Change for a new LED indicator.
Engine board damaged.	Change for a new engine board.

F14 Fresh toner cannot be sensed.

Trouble causes	Solution
Print cartridge improperly installed in the printer.	Reinstall the print cartridge.
Chip on new print cartridge error.	Change the chip on cartridge.
Data control board error.	Change the data board.

6.3.4 Paper jam

Causes and solutions of paper jamming

The causes for paper jams are varied with the jammed locations. When a paper jam occurs in the printer, look for the location and remove the jammed paper, then take proper actions according to the following list:

Problem	Description	Cause	Measures
Paper jam when starting the printer.	Paper blocked.	The actuator feed or actuator exit is blocked.	Take out paper in the printer.
Jammed in feeding process.	Detect the length of paper over 400mm (16 in).	The actuator feed hasn't resumed as usual and not closed.	Check the operation of actuator feed.
Paper bottom stays near the transfer roller.	Detect the length of paper less than 80mm.	The actuator feed is closed too early.	Check the actuator feed.
Paper top stays between the feed roller and the transporting roller.	Feeding delayed.	Scrapes or aging rubber on transport roller lead to delayed feeding.	Remove the scrapes on the transport roller. Change for a new transport roller if the rubber aged.
Paper top stays 60mm away from the contact of heating roller and pressure roller.	It's not detected when the paper is discharged from the actuator exit.	The actuator exit doesn't work normally, and not closed. (one copy printing)	Check the actuator.
Jammed after the paper discharge.	It's not detected when the paper is discharged by the actuator exit.	The actuator exit or front locating actuator doesn't work, and not closed.(continuous printing)	Check the actuator.

Paper Jams Removal

Please follow the steps below to clear the jammed paper:

1. Remove all the jammed paper as in the following steps, then close the discharge tray and load paper into the paper tray, the printer should resume working automatically.
2. Press the button on the control panel if it doesn't work, and check if the jammed papers are all cleared.

After that, you can print again.

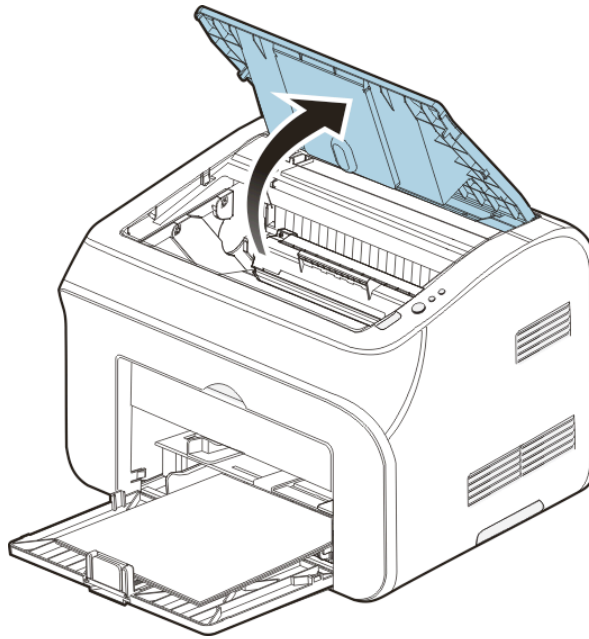
NOTE:

You should take out all the paper in paper tray and feed them in order when loading.

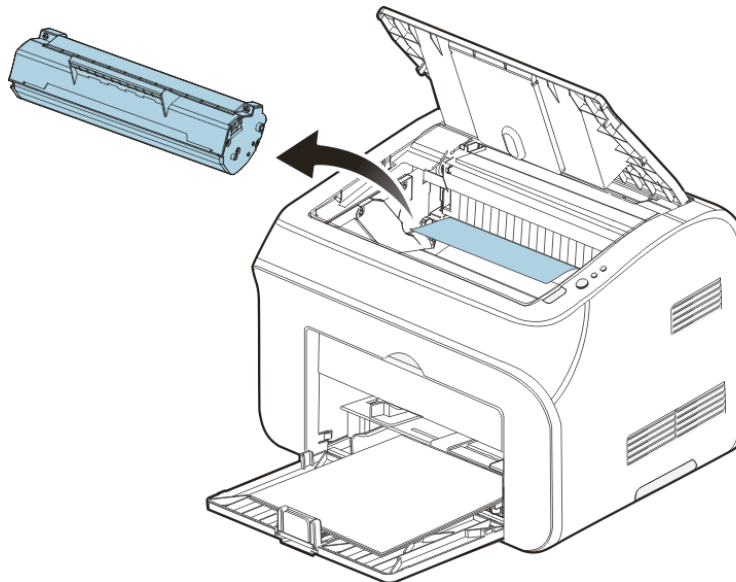
This is helpful to avoid paper jam by not feeding several sheets once.

Paper Jam at the print cartridge unit

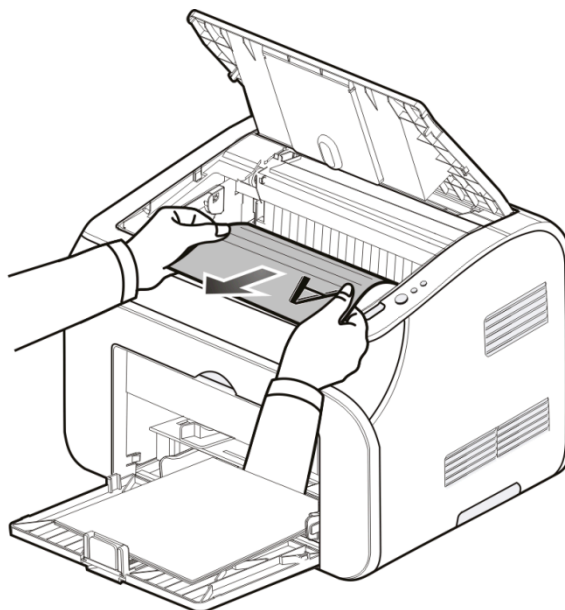
(1) Open the discharge tray.



(2) Release the print cartridge.



(3) Pull the jammed paper out slowly along the feeding directions.

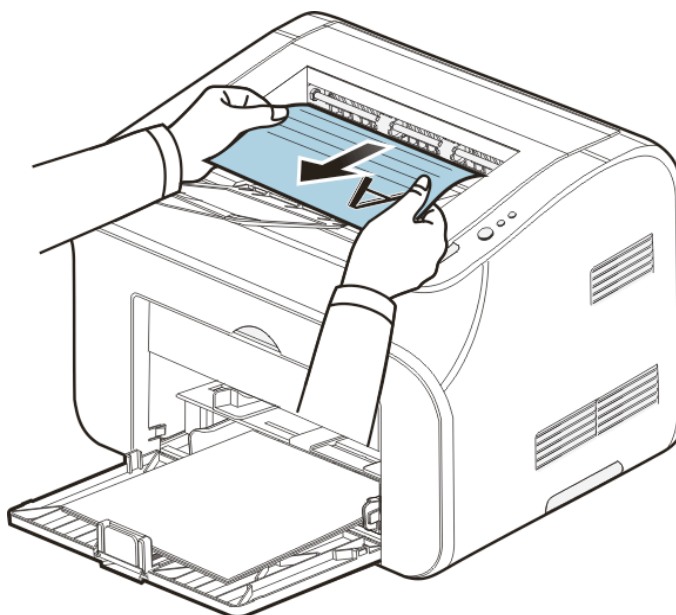


(4) Reinstall the print cartridge after pulling out the paper.



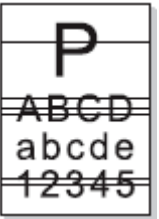
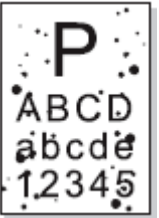
(5) Put the paper in paper tray in order, and conduct the next printing job only after the indicator recovers to the ready state.

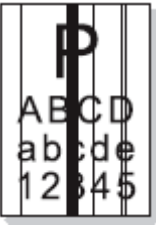
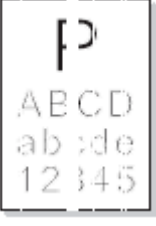

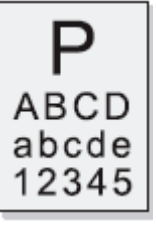
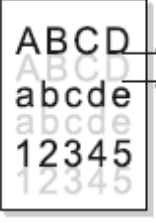
Paper Jam at the Paper Exit


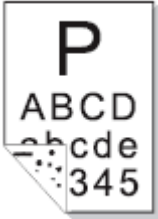

Pull the jammed paper out from the fixing unit. If you cannot pull it out easily, open the discharge tray and take it out, then pull again.



6.3.5 Image defects

Status	Check and causes	Solutions
Light image 	<ol style="list-style-type: none"> 1. Developing roller is stained when the toner is almost consumed. 2. Bad contact caused by the toner stains between the high voltage terminal in the HVPS and the one in the set. 3. Abnormal output from the HVPS. 	<ol style="list-style-type: none"> 1. Replace the print cartridge 2. Check whether the Economy mode is off. 3. Clean up HVPS terminals or replace engine board.
Dark image 	<ol style="list-style-type: none"> 1. Charging voltage from engine board is abnormal. 2. Charge roller is abnormal; 	<ol style="list-style-type: none"> 1. Clean the high voltage charge terminal or replace engine board. 2. Replace the print cartridge.
Horizontal Black Band 	<ol style="list-style-type: none"> 1. Bad contacts of the voltage terminals to developer. 2. The developing roller may be stained; OPC or charge roller is damaged. 3. The transport unit is smoothly and slipping 	<ol style="list-style-type: none"> 1. Clean each voltage terminal of the charge, supplies, or replace engine board. 2. Replace print cartridge. 3. Clean or replace transporting roller.
Black/white spot 	<ol style="list-style-type: none"> 1. Some parts in Print cartridge unit may be contaminated or OPC is damaged. (Charge roller : 37.7 mm Supply roller : 47.5 mm Developing roller : 35.2 mm OPC drum : 75.4 mm) 2. If black spots appear periodically at 45.2 mm interval, the high voltage on transferring is abnormal or transfer roller is damaged. 	<ol style="list-style-type: none"> 1. Replace the print cartridge. 2. Clean transfer high voltage terminals or replace the transfer roller. 3. Clean the inner set regularly against the paper particles and foreign matter in order to avoid the trouble.

Vertical black line or band 	<ol style="list-style-type: none"> 1. Wipe blade is deformed or damaged. 2. OPC is damaged. 3. There is foreign matte between developing roller and development blade. 	<ol style="list-style-type: none"> 1. Replace the print cartridge
Vertical white line 	<ol style="list-style-type: none"> 1. the window of internal lenses of LSU mirror is soiled. 2. Foreign matter or toner particles between the developer roller and blade. 3. Fixing unit is abnormal. 	<ol style="list-style-type: none"> 1. Clean the LSU window. 2. Replace print cartridge. 3. Clean or replace fixing unit.
Density uneven in the left and right 	<ol style="list-style-type: none"> 1. Developing blade is damaged. 2. The spring pressure of transfer roller's on left side and right side is not equivalent, and the springs are damaged, transfer roller are installed improperly or transfer roller's coating or its bottom part is damaged. 	<ol style="list-style-type: none"> 1. Replace developing roller and try again. 2. Replace the left and right spring or shaft.
Light black background 	<ol style="list-style-type: none"> 1. Check whether the unspecified paper is used. 2. Check whether the life of print cartridge is expired. 3. Check whether HVPS is normal. 	<ol style="list-style-type: none"> 1. Make sure the specified print media is used. 2. Replace the print cartridge. 3. Cleaning the high voltage terminal or replace engine board.
Ghost occurs periodically 	<ol style="list-style-type: none"> 1. If ghost occurs at the interval 75.4 mm. the OPC is damaged. 2. If ghost occurs at the interval 62.3 mm. the heat roller is soiled. 3. output High voltage from engine board is abnormal. 	<ol style="list-style-type: none"> 1. Replace print cartridge. 2. Clean the surface of heat roller. If it is not resolved, please replace fixing unit 3. Replace the engine board.

Stains on the face of pages 	<ol style="list-style-type: none"> 1. Transfer roller is soiled. 2. The fixing and pressure roller is soiled. 	<ol style="list-style-type: none"> 1. Clean or replace the transfer roller. 2. Clean fixing and pressure roller, or replace fixing unit.
Stains on the back of pages 	<ol style="list-style-type: none"> 1. Transfer roller has been smudged. 2. Fixing and pressure roller has been smudged. 	<ol style="list-style-type: none"> 1. Clean or replace transfer roller. 2. Clean fixing and pressure roller, or change fixing unit.
Print blank pages 	<ol style="list-style-type: none"> 1. Malfunction of OPC discharge. 2. LSU is damaged. 	<ol style="list-style-type: none"> 1. Clean the high voltage terminal or replace engine board. If the problem is still not resolved, replace print cartridge. 2. Replace the LSU.