LBP-2000

SERVICE MANUAL

REVISION 0

Canon

AUG. 2001 FY8-13HQ-000

Use of this manual should be strictly supervised to avoid disclosure of confidential information.

INTRODUCTION

This Service Manual provides basic facts and figures needed to service the laser beam printer LBP-2000 (hereafter, the Printer), performed to ensure initial product quality and performance.

The following options may be used in combination with the Printer:

- Universal Cassette UC-65
- Paper Feeder Unit PF-65
- Hard Disk HD-65
- Ether Board EB-65

This Service Manual also covers these options. For others, see their respective Service Manuals.

This Service Manual consists of the following chapters:

Chapter 1, 'Product Outline,' introduces features and specifications as well as how to install and use the Printer.

Chapter 2, 'Operation,' explains the principles of operation used in the mechanical/electrical systems of the Printer according to function as well as timing at which associated mechanisms operate.

Chapter 3, 'Mechanical System,' shows the mechanical construction of the Printer and how to disassemble/assemble and adjust its components.

Chapter 4, 'Troubleshooting,' indicates how to correct various faults and make checks/adjustments, and provides standards to follow.

APPENDIX contains a general timing chart, general circuit diagrams, and list of signals.

Changes made to the descriptions because of product improvement or the like will be communicated in the form of Service Information bulletins as they occur.

All service persons are expected to go through this Service Manual and Service Information bulletins for a full understanding of the Printer while equipping themselves with skills and knowledge used to identify and correct faults in the Printer.

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CHAPTER 1 PRODUCT OUTLINE

CHAPTER 2 OUTLINE OF OPERATION

CHAPTER 3 MECHANICAL SYSTEM

CHAPTER 4 TROUBLESHOOTING

APPENDIX

CHAPTER 1

PRODUCT OUTLINE

I. FEATURES

1. High-speed printing

Although compact in design, the Printer is a high-speed printer capable of generating 20 pages per minute.

2. Various sources of paper with the addition of options

In addition to the cassette and the multifeeder that come as standard, the Printer may be combined with three 250-sheet paper feeders (PF-65; hereafter, paper feeder) to enable 5-way pickup, each source with different types of paper.

3. Continuous printing of large volumes of work

As many as three option paper feeders may be installed to the Printer. Combined with the standard cassette and multifeeder, a maximum of about 1,100 sheets of paper (64 g/m^2) may be accommodated for continuous, large-volume printing work.

4. Power saving, toner saving design

The printer is designed to enter sleep mode (power saving mode) after remaining in standby mode for a specific period of time, thereupon automatically cutting the power to the fixing heater and ultimately limiting the total consumption of power.

The printer is also able to print in toner save mode, in which it prints using less toner (lighter output) to save on toner.

5. Auto interface switching mechanism

In addition to the parallel interface (Centronics compatible) and USB (V1.0 slave only) that come as standard, the printer allows the connection of a build-in print server (option; 10Base-T/100Base-TX). Depending on which interface board to use, the Printer will automatically switch among parallel, USB, and Ethernet (option) interfaces.

6. Auto emulation switching

This printer supports the Hewlett-Packard'fs PCL5e and PCL-XL printer language. Also, Adobe PostScript 3 can be provided by installing the optional Canon Adobe PostScript 3 Module A-65. This enables auto emulation switching for PCL and PostScript based on the received data.

II. SPECIFICATIONS

A. Printer

1. Printer engine

1)	Type	Desktop page printer
2)	Printing method	Electrophotostatic
3)	Printing speed (Note 1)	20 pages/min (A4, horizontal), 11 pages/ min (A3)
4)	First print time (Note 2)	11.0 sec (approx.; A4, horizontal)
5)	Wait time (Note 3)	30 sec or less
6)	Resolution	
	Main scanning direction	600 dpi
	Sub scanning direction	600 dpi
7)	Image formation system	
	Laser	Semiconductor laser
	Scanning method	6-face mirror
	Photosensitive drum	OPC (30-mm dia.)
	Charging	Roller charging
	Exposure	Laser scanning
	Toner	Magnetic, 1-component, dry
	Development	1-component toner projection
	Toner supply	Cartridge replacement (EP-65; good for about 10,000 A4 pages, dot ratio at 4% and print ratio at 5%)
	Transfer	Roller transfer
	Separation	Curvature separation
	Cleaning	Rubber blade
	Fixing	Heat roller fixing
8)	Pickup	Multifeeder tray Cassette Paper feeder (option)
	Paper type	Plain paper, thick paper, colored paper, label sheet, recycled paper, transparency film, envelopes
	Paper size	
	Multifeeder tray	Plain paper (64 g/m^2 to 90 g/m^2, recommended) or thick paper (91 g/m^2 to 157 g/m^2, recommended) or label sheets of following dimensions: 76.2 (W) x 98 (L) to 297 (W) x 431.8 (L) mm
	Cassette	Plain paper (64 g/m^2 to 90 g/m^2, recommended) of following sizes: B3, B4, A4, A4R (vertical), B5, A5, 11 x 17, LGL, LTR, Executive; label sheets
	Stack multifeeder	10 mm high (about 100 sheets of 64 g/m^2 paper)
	Cassette	25 mm deep (about 250 sheets of 64 g/m^2 paper)
	Cassette type	Universal cassette designed for following: A3, B4, A4, A4R (vertical), B5, A5, 11 x 17, LGL, LTR, Executive
9)	Delivery	Face-down (250 sheets max. of 64 g/m^2 paper)
10)	Operating environment	
	Temperature	7.5 to 32.5ºC (45.5 to 90.5ºF)
	Humidity	5% to 90% RH
	Atmospheric pressure	746 to 1013 hPa (560 to 760 mmHg)
11)	Power consumption (at 20ºC room temp, at rated supply voltage)	Sleep mode: 16 W (avr) In standby: 118 W (avr) In printing: 448 W (avr)
	Maximum:	850 W or less

12) Noise (published noise by ISO9296)	Sound power level	67 dB or less (printing) 57 dB or less (standby)
	Sound pressure level (bystander position)	53 dB or less (printing) 38 dB or less (standby)
13) Dimensions	488 (W) x 455 (D) x 311 (H) mm/18.9 (W) x 17.7 (D) x 12.2 (H) in. (w/o options)	
14) Weight	15 kg/33 lb (approx.; including 250-sheet cassette), 2 kg/4 lb (approx.; cartridge)	
15) Power supply	120 to 127 V, 220 to 240 V 50/60 Hz	
16) Options	Paper Feeder Unit PF-65 (3 units max.) Universal Cassette UC-65 Hard Disk HD-65 Ether Board EB-65	

Notes: 1. Based on test prints made at 20ºC room temperature with the rated supply voltage. May be longer depending on the type of paper and the fixing mode selected.

2. Time required (room temperature at 20ºC and printer in standby) from when the print signal arrives form the video controller to when a single A4 sheet is received and delivered to the delivery tray. May be longer depending on the type of paper and the fixing mode selected.

3. At 20ºC room temperature, without an expansion RAM.

The above specifications are subject to change for product improvements.

2. Video Controller

1) CPU	Power PC 405 (200 MHz)	
2) Memory (RAM)	8 MB (built-in; may be expanded to 72 MB max. with option)	
3) Memory (ROM)	8 MB (build-in; may be expanded to 16 MB max. with option)	
4) RAM slot	1	
5) ROM slot	3	
6) Host interface		
Standard	• Centronics (IEEE1284 compatible) • USB (V1.0 slave only)	
Option	• 10Base-T/100Base-TX	
7) Translator		
Standard	PCL5e, PCL-XL	
Option	Adobe PostScript Level 3 Module A-65	
8) Resident font	45 scalable fonts (MicroType fonts), 32 TrueType fonts, 9 Bitmap fonts	
9) Optional font	136 fonts for A-65 module	
10) Scaler	UFST	
11) Option	Flash ROM Module FR-65 (4MB: for fonts and macros storage)	

The above specifications are subject to change for product improvements.

B. Options

1. Built-in print server

a. Hardware

1)	Interface	10Base-T, 100Base-TX
2)	CPU	AXIS: EXTRAX100LX (32-bit RISC CPU 100 MHz)
3)	ROM	2 MB
4)	RAM	4 MB
5)	Dimensions	100 (W) x 85.5 (D) x 24 (H) mm/3.9 (W) x 3.1 (D) x 0.8 (H) in.
6)	Weight	100 g/0.2 lb (approx.)
7)	Power supply	3.3 VDC (from printer)

b. Software

1)	Protocol	IPX/SPX, TCP/IP, AppleTalk (EtherTalk), NetBEUI/NetBIOS
2)	Frame type	IPX/SPX : 802.2, 802.3, Ethernet II, 802.2 Snap TCP/IP : Ethernet II AppleTalk : 802.2 SNAP (Phase II) NetBEUI/NetBIOS : 802.2
5)	Print application	IPX/SPX : Bindery Server, NDS PServer, NPritner, RPrinter TCP/IP : LPD, FTP, RAW, IPP AppleTalk : CAP (Canon AppleTalk PrintServer)

The above specifications are subject to change for product improvements.

2. Paper feeder

1)	Pickup paper size	A3, B4, A4, A4R (vertical), B5, A5, 11 x 17, LGL, LTR, Executive (plain paper; 64 g/m^2 to 90 g/m^2, recommended)
2)	Cassette size	25 mm deep (about 250 sheets of 64 g/m^2 paper)
3)	Cassette type	Universal (may be configured for following: A3, B4, A4, A4R (vertical), B5, A5, 11 x 17, LGL, LTR, Executive
4)	Dimensions	488 (W) x 406 (D) x 118 (H) mm/18.9 (W) x 15.7 (D) x 4.7 (H) in.
5)	Weight	5 kg/11 lb (approx., including cassette)
6)	Power supply	24 VDC, 5 VDC (from printer)

The above specifications are subject to change for product improvement.

3. Hard disk

1)	Memory	10 GB
2)	Interface	ATA-3
3)	Dimensions	112 (W) x 136 (D) x 28 (H) mm/4.3 (W) x 5.1 (D) x 1.1 (H) in.
4)	Power supply	5 VDC (from printer)

The above specifications are subject to change for product improvements.

III. SAFETY

A. Safety of the Laser Unit

Although invisible, laser light is used inside the laser/scanner unit. Do not disassemble the laser/scanner unit, as exposure to laser light can damage your eyes.

The Printer's laser/scanner unit is not designed for adjustment in the filed. The following shows the label attached to the cover of the laser/scanner unit.

Figure 1-3-1

B. Safety of Toner

Toner is a non-toxic material composed of plastic and small amounts of colorings. If your skin or clothes came into contact with toner, remove as much of it as possible using dry tissues; then, rinse with cold water. (Do not use warm water. The toner will turn into jelly, and will not come off.)

Do not bring toner into contact with vinyl material. They tend to react with each other.

C. Safety of Ozone

The Printer's charging roller generates a minute amount of ozone gas (O^3) because of corona discharge (only when the Printer is in operation).

The Underwriters' Laboratory (UL) provides standards for amounts of ozone discharge, and the Printer is verified to satisfy the requirements at time of shipment from the factory.

IV. NAMES OF PARTS

A. External View

1. Printer engine

- **Front of the printer**

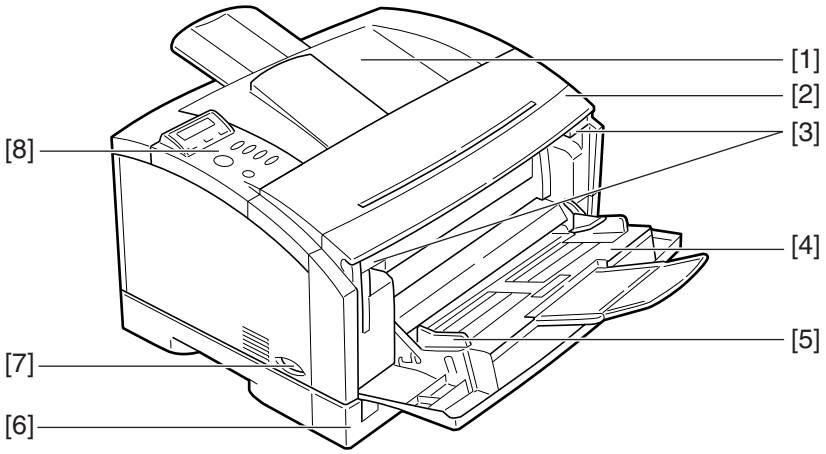


Figure 1-4-1

1: Delivery tray
2: Front cover
3: Open/close lever
4: Multifeeder tray
5: Paper guide
6: Cassette
7: Power supply switch
8: Control panel

- **Rear of the printer**

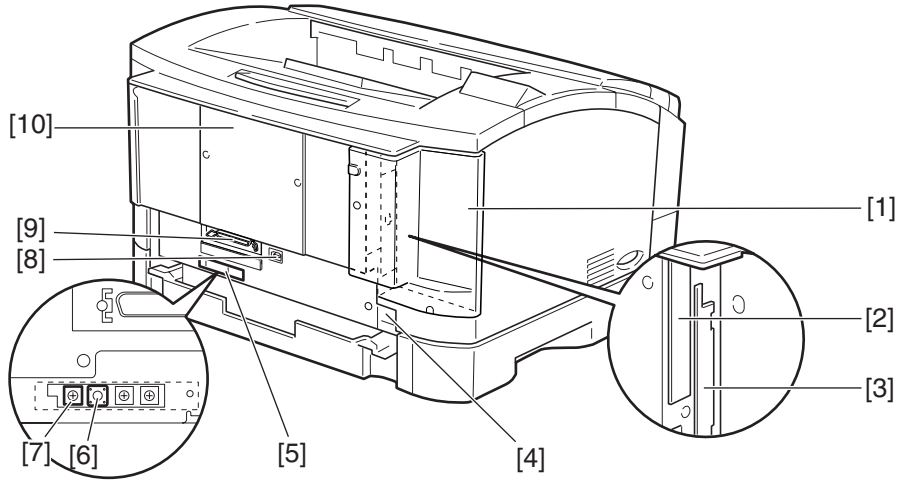


Figure 1-4-2

1: Expansion board slot cover
2: Expansion board slot 1
3: Expansion board slot 2
4: Power receptacle
5: Test Print switch
6: Test Print switch
7: Leading edge margin adjusting volume (VR101)
8: USB interface connector
9: Parallel interface connector
10: Slot cover

- **Behind the front cover**

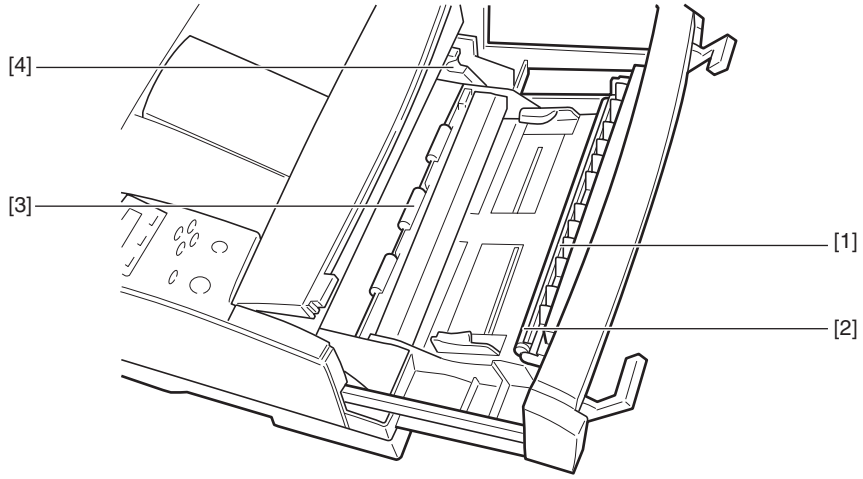


Figure 1-4-3

1: Static eliminating brush
2: Transfer charging roller
3: Toner cartridge guide
4: Registration roller

2. Paper feeder

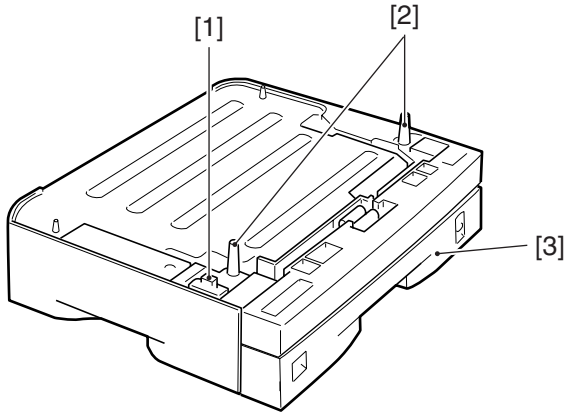


Figure 1-4-4

1: Connector
2: Positioning pin
3: Cassette

B. Cross Section

1. Printer engine

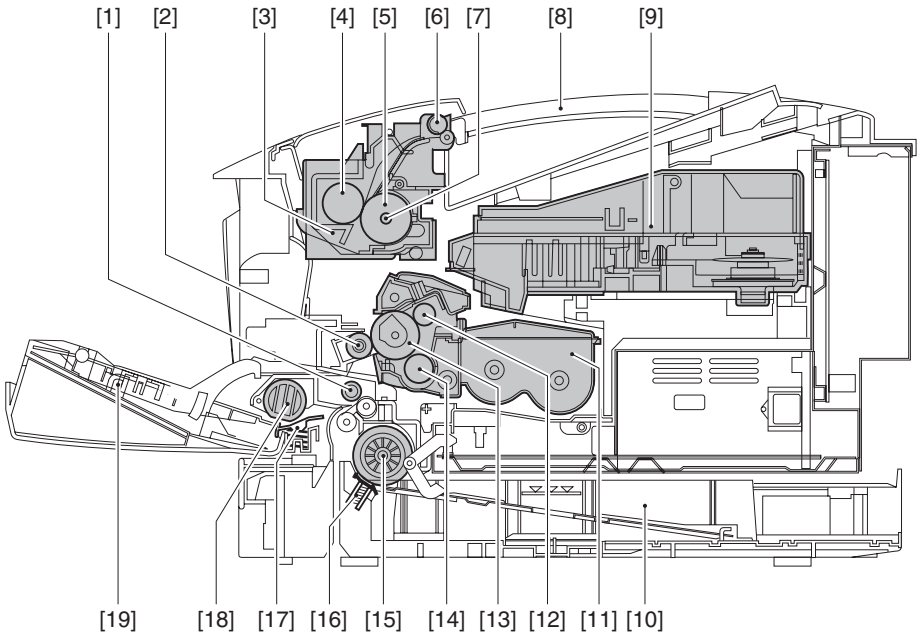


Figure 1-4-5

1: Registration roller
2: Transfer charging roller
3: Fixing assembly
4: Pressure roller
5: Fixing roller
6: Delivery roller
7: Fixing heater
8: Control panel
9: Laser/scanner unit
10: Cassette
11: Cartridge
12: Primary charging roller
13: Photosensitive drum
14: Developing cylinder
15: Cassette pickup roller
16: Cassette separation pad
17: Manual feed separation pad
18: Manual feed pickup roller
19: Multifeeder tray

2. Paper feeder

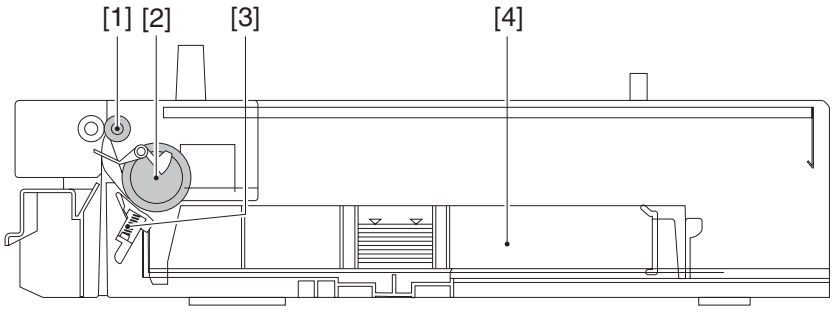


Figure 1-4-6

1: Feeding roller
2: Cassette pickup roller
3: Cassette separation pad
4: Cassette

V. INSTALLATION

A. Points to Note About Installation

The Printer is thoroughly adjusted and inspected at the factory before it is packed and shipped. Installation work is important in that the Printer must perform in the field as it did when it passed the factory inspection.

The service engineer must have a full understanding of the machine, and install it in an appropriate site using specific steps, following up the work with a thorough inspection.

B. Selecting the Site

The site of installation must meet the following requirements; if possible, visit the site of installation before the Printer is delivered.

1. Power supply

The power supply must satisfy the following:

- AC: ±10% of ratings
- Frequency: 50/60 ±2 Hz

2. Operating environment

The site must satisfy the following:

- Its floor must be level.
- Its temperature and humidity are as follows:
  Ambient temperature: 7.5ºC to 32.5ºC (45.5 to 90.5ºF)
  Ambient humidity: 5% to 90% RH (There must not be condensation.)
- It must be well ventilated, without accumulation of heat.

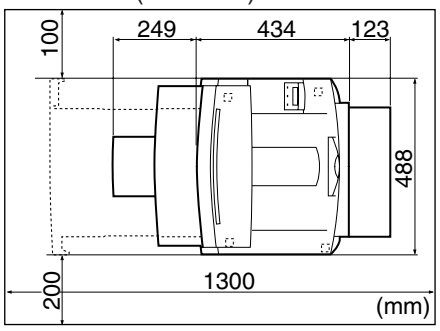
Avoid the following areas:

- subject to direct rays of the sun; as necessary, provide thick curtains to block out the sun.
- subject to magnetism (magnet, magnetic filed).
- subject to vibration.
- subject to dust.
- near a source of fire or water.

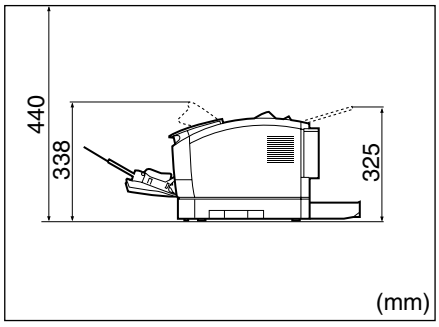
3. Spatial requirements

Allow an appropriate distance from all walls, thus ensuring unobstructed work space. (Figure 1-5-1) If the Printer is to be installed on a table, be sure that the table is wide enough to accommodate the Printer's feet (rubber pads) and strong enough to withstand the Printer's weight.

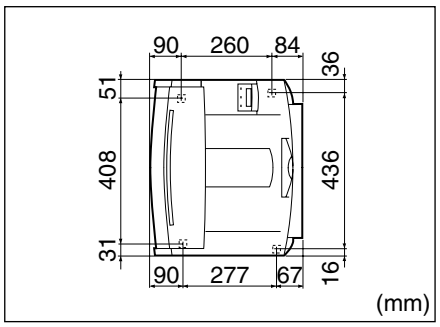
Dimensions Around the Printer (standard)



View from the Side (standard)



Locations of the Feet



(Each rubber foot is 5 mm in height, and its tip is a square of 18 x 18 mm.)

View form the side (with 3 paper feeders)

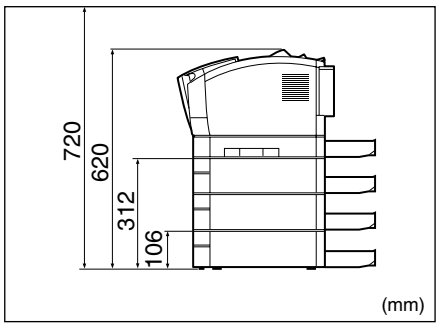


Figure 1-5-1

C. Unpacking and Installing

When a piece of metal is brought in from a cold to warm place, droplets of water can develop on its surface. This phenomenon is known as condensation, and the use of an LBP suffering from condensation can cause various printing faults.

If the Printer has been brought in from a cold place, leave it alone for at least one hour before unpacking it.

1. Unpacking the printer

1) Unpack the Printer.
2) Check to make sure that none of the following is missing:
   1. power cord
   2. toner cartridge
   3. dust cover
   4. CD-ROM
   5. documentation
3) Remove the plastic bag used to cover the Printer, and check to make sure that the covers and the like are free of image and deformation from transportation.
4) Slide out the cassette, and move the Printer to the site of installation.
5) Place the Printer at the site of installation. (Take care.)

• If the Printer is to be laid on a paper feeder, be sure that the position pins on the paper feeder fit into the openings in the Printer's bottom.

6) Remove the tape used to keep the parts in place.
7) Open the multifeeder tray, and pull the open/close lever to the front to slide out the front cover.
8) Remove the protective tape used to keep the transfer charging roller in place.
9) Lock the open/close lever, and close the front cover and the multifeeder tray.
10) Slide in the cassette.

2. Unpacking and installing the cartridge

1) Open the bag used to pack the cartridge, and take out the cartridge.
2) Holding the cartridge as shown in Figure 1-5-13, shake it gently up and down about 5 to 6 times so that the toner inside it will be even.
3) Place the cartridge on a level surface. While holding the top of the cartridge with one hand, pull the tab carefully with the other hand; then, pull straight out the sealing tape.
4) Open the multifeeder tray, and pull the open/close lever to the front to draw out the front cover.
5) Holding the cartridge with both hands, fit it in the Printer. At this time, be sure to slide in the cartridge carefully until it butts against the rear of the Printer.

3. Unpacking and installing the hard disk

Note: Before handling the hard disk, be sure to touch a metal area of the Printer to avoid damaging the PCBs by static charges.

1) Turn off the Printer, and disconnect the power cord and the interface cable.
2) Take out the hard disk from its packaging box.
3) Remove the vinyl bag used to cover the hard disk.
4) Remove the screw [1], and detach the expansion board slot cover [2].

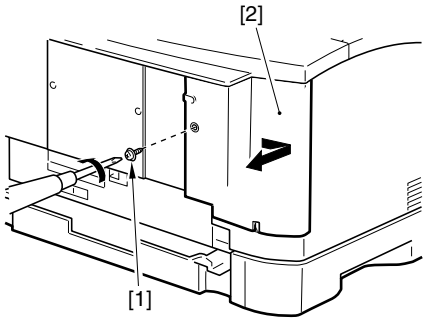


Figure 1-5-2

5) Remove the screw [3], and detach the expansion board slot 1 cover [4].

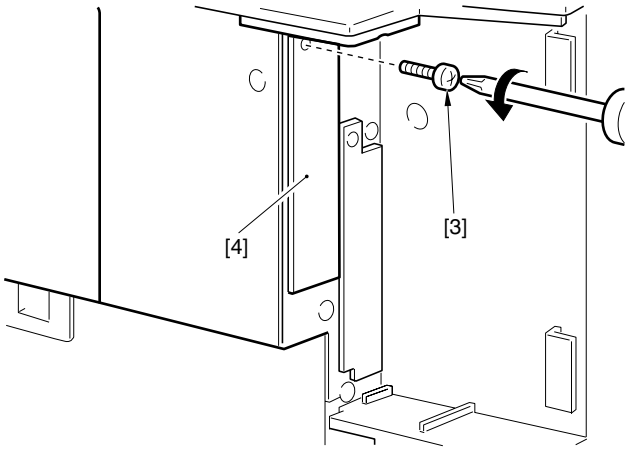


Figure 1-5-3

6) Holding the metal cover area [5] of the hard disk, slide in the hard disk along the guide rail.

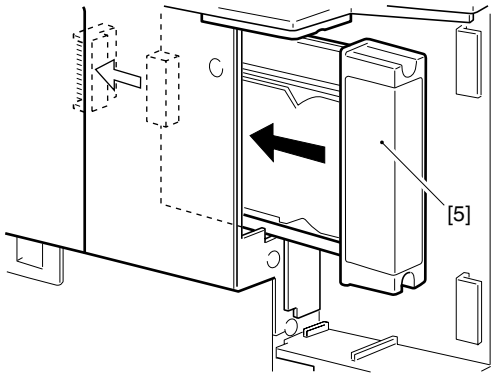


Figure 1-5-4

7) Secure the top and bottom of the hard disk with the 2 screws [6] that come with the hard disk.

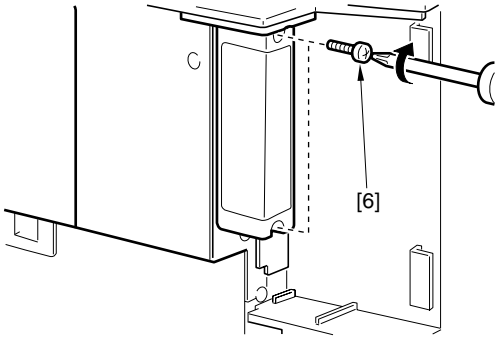


Figure 1-5-5

8) Attach the expansion board slot cover and the power cord.
9) Connect the Printer's power cord to the power outlet.

4. Unpacking and installing the built-in print server (Ether Board EB-65)

Caution: If possible, wear a wrist strap designed to prevent damage by static charges. The static charges in your body can damage the electric mechanisms when you install the built-in print server to the Printer.
Take particular care not to touch the parts in electric circuits.

1) Unpack the print server.
2) Take out the print sever from its packaging box.
3) Remove the vinyl bag used to cover the print server.
4) Remove the screw [1], and detach the expansion board slot cover [2].

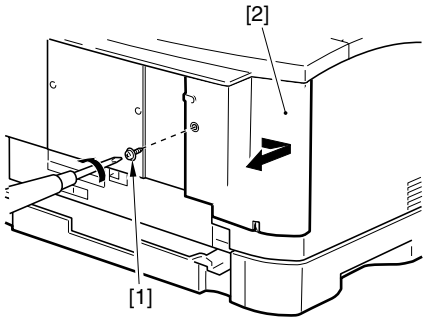


Figure 1-5-6

5) Remove the screw [3], and detach the expansion board slot 2 cover [4].

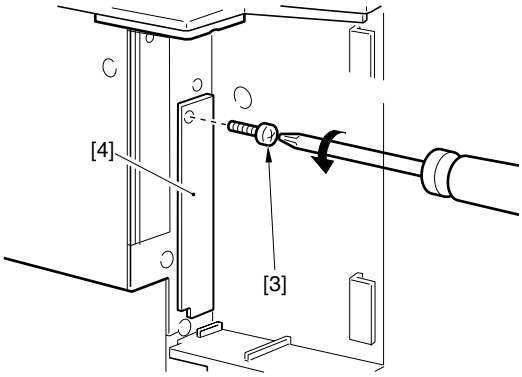


Figure 1-5-7

6) Slide in the print sever [5] into the expansion board slot 2 along the groove found inside.

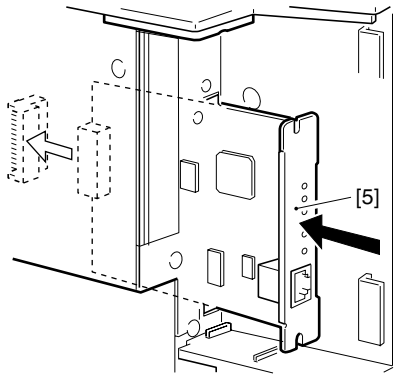


Figure 1-5-8

7) Secure the top and bottom of the print server using the two screws [6] that come with the print server.

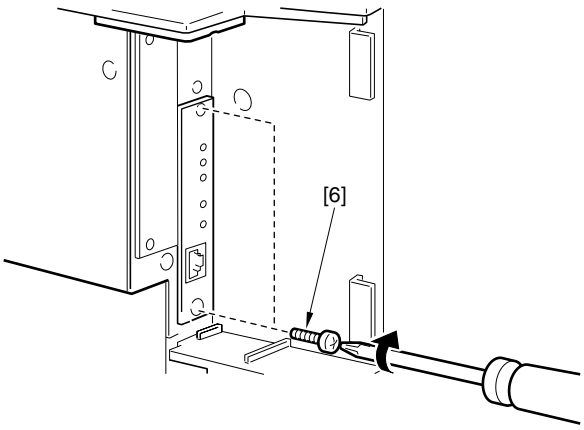


Figure 1-5-9

8) Connect the network cable to the connector of the print server to suit the network environment.

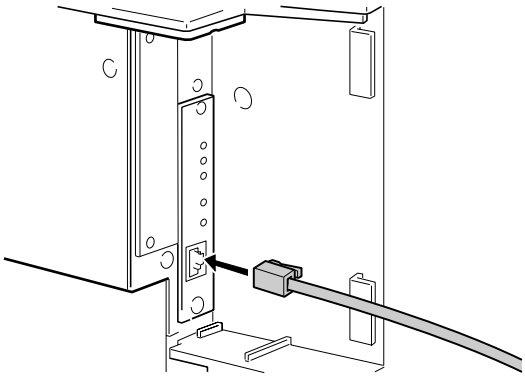


Figure 1-5-10

9) Connect the power cord.
10) Connect the Printer's power cord to the power outlet.

11) Turn on the power switch, and check to make sure that the LNK lamp (green) of the print server is ON.
- In the case of 10Base-T, check to make sure that the LNK lamp is ON.
- In the case of 100Base-T, check to make sure that the LNK lamp and the 100 lamp are ON.

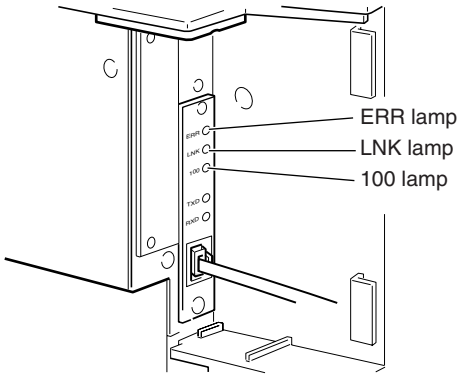


Figure 1-5-11

12) Turn on the power switch.
13) Thread the LAN cable through the groove in the expansion board slot cover, and secure the expansion board slot cover with a screw.

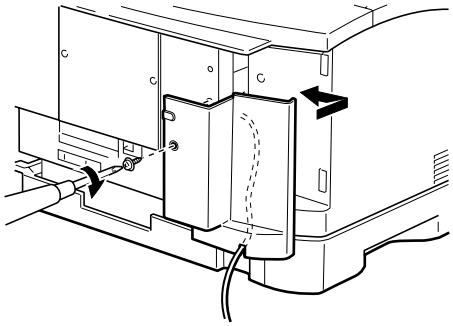


Figure 1-5-12

5. Checking the operation

1) Put paper in the cassette.
2) Connect the grounding wire to the Printer.
3) Connect the power cord to the Printer and the power outlet, and turn on the power switch. Be sure that the power cord is one designed for the Printer.
4) When the Printer is in standby state, press the Go key so that it enters off-line state.
5) Press the Menu key once, and press the Item key until the status indicator panel indicates 'TEST PRINT'.
6) Press the Enter key to execute 'TEST PRINT'. Check the test print for faulty images. If an option has been installed, check to make sure that its presence is indicated.
7) Clean up the area around the Printer, and set the Printer ready for use.

6. Points to note when using the printer

1. When turning on the power switches, be sure to start with the external devices and then the Printer. To turn off the power switches, be sure to start with the Printer and then the external devices. If you turn on/off an external device while the printer is ON, noise can be introduced to the Printer through the cable connecting the device and the Printer, causing an error in the Printer.
2. Whenever connecting the Printer with an external device, be sure to turn off the power switches of both and disconnect the power cords from the outlets. A fault can occur if the connector is connected or disconnected while the power switch is ON.
3. Be sure to turn off the power switch of the Printer before installing or removing the following: flash memory (option), Adobe PostScript Level 3 Module (option), expansion RAM DIMM (option), hard disk (option), built-in print server (option).
4. Be sure to use a shielded cable when connecting the Printer's parallel interface connector and an external device. Moreover, make sure that the parallel interface cable is no longer than 3 m.
5. Be sure to use a twisted-pair LAN cable of Category 3 or higher when connecting the Printer's 10Base-T/100Base-TX port and an external device to a 10Base-T network environment.
6. Be sure to use a twisted-pair LAN cable of Category 5 when connecting the Printer's 10Base-T/100Base-TX port and an external device to a 100Base-TX network environment.
7. Be sure not to touch the metal area of the connector before connecting or disconnecting the USB cable while the power switch is ON.
8. Be sure to use SHUT DOWN MENU to shut down the printer if the optional Hard Disk HD-65 has been installed.

D. When Storing or Handling the EP-65 Cartridge

The cartridge is subject to the effects of the environment it is in whether it remains packaged or installed in the Printer, and it takes on changes over time regardless of how many pages it has printed. The rate of change depends on the site of installation or storage, requiring full care when handling and storing it.

a. Before taking out of the package (removing the signal)

When storing the cartridge in a warehouse or a workshop, be sure that the environment meets the requirements in Table 1-5-1; in addition,

1. Avoid direct rays of the sun.
2. Avoid a place subject to vibration.
3. Avoid shocks as by hitting or dropping it.

Table 1-5-1 Temperature/Humidity Requirements for Storage

Temperature	Normal (9/10 of total storage period)		0 to 35˚C
	Severe (1/10 of total storage period)	High	35 to 40˚C
		Low	-20 to 0˚C
Change in temperature (within about 3 min)			40˚C→15˚C -20˚C→25˚C
Humidity	Normal (9/10 of total storage period)		35 to 85%RH
	Severe (1/10 of total storage period)	High	85 to 95% RH
		Low	10 to 35% RH
Atmospheric pressure			345 to 1013 hPa (460 to 760 mmHg)
Total storage period			2.5 yr

Note: The total storage period refers to the period from the date of manufacture indicated on the cartridge package.

b. After taking out of the package (removing the seal)

The photosensitive drum is made of photoconducting material (OPC), and tends to deteriorate when exposed to strong light. The toner is also kept inside the cartridge, requiring care after the cartridge has been taken out its the package. Advise the user to take full care when handling/ storing the cartridge.

1. Storing the cartridge after taking out of the package (removing the seal)

1. Be sure to keep it in a protective bag.
2. Avoid areas exposed to direct rays of the sun or near windows. Do not leave it in side a car for a long time, as the rise in temperature can be extreme.
3. Avoid areas subject to high/low temperature/humidity or areas subject to extreme changes in temperature or humidity.
4. Avoid areas subject to corrosive gases (e.g., insecticide) or areas subject to briny air.
5. Make sure that the temperature is between 0ºC and 35ºC.
6. Avoid CRT displays, disk drives, or floppy disks.
7. Keep it out of reach of children.

2. Effective period

The cartridge is verified to remain good for 2.5 years after the date of manufacture, indicated on its body using an abbreviated notation. For the user, the period is indicated on the package and the packing boxes (year, month; 2.5 years after the date of manufacture).

The use of a cartridge after the date indicated may not bring about expected print quality, making it desirable to use it up before the date indicated.

c. Points to note when handling

1. When fitting a new cartridge, or if some areas of the output image show white spots because of an uneven level of the toner inside the cartridge, hold the cartridge as shown, and shake it carefully to the left and right [1] about 5 to 6 times then up and down [2] about 5 to 6 times to even out the toner.

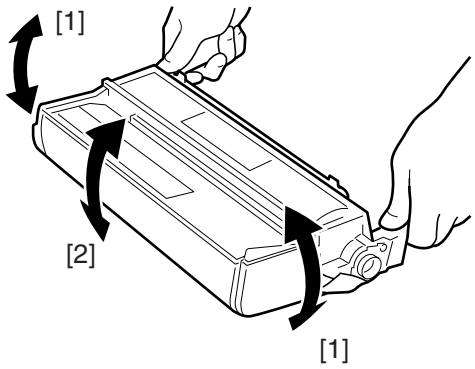


Figure 1-5-13

2. When transporting the Printer after taking out the cartridge from it, be sure to secure the transfer charging roller in place for protection. Keep the cartridge in a protective bag to avoid light. (See VI. 'Relocating the Printer.')
3. Do not place the cartridge near a CRT display, disk drive, or floppy disk. The magnetism from the cartridge can damage the data.
4. The photosensitive drum is vulnerable to strong light. Avoid subjecting it to direct rays of the sun or light 1500 lux or higher in strength. When exposed, it can produce images with white spots or black bands. (If they occur, leave the machine alone for a while to correct the faults. If the exposure is long, however, white spots or black bands may continue.)

5. Do not attempt to touch the surface of the photosensitive drum of the cartridge. Further, do not clean the photosensitive drum.

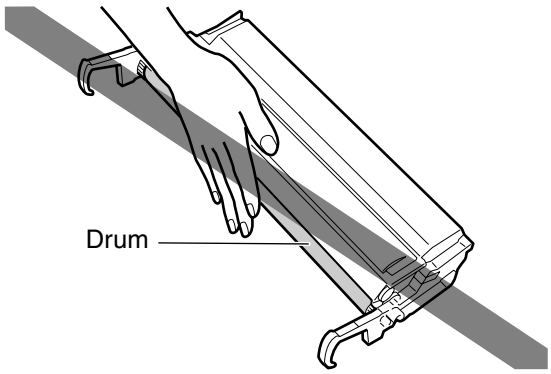


Figure 1-5-14

6. Do not place the cartridge upright or turn it over. Be sure it is laid with the label surface facing upward.
7. Do not disassemble the cartridge.

Reference: If the photosensitive drum is exposed to light of 1500 lux (general lighting) for 5 min and then left alone in the dark for 5 min, the faults can be corrected to a level satisfactory to practical uses. It is nevertheless important to avoid direct rays of the sun, which is about 10000 to 30000 lux in intensity.

VI. RELOCATING THE PRINTER

If the Printer must be relocated after installation by truck or other means of transportation, take note of the following:

1. Moving the printer with the cartridge removed

Once the cartridge is removed, the transfer charging roller can become displaced. Secure the transfer charging roller in place using tape as follows before starting to move the Printer:

- If shipping tape is used, be sure to attach it so that the tape protection is over the gears and the bushings, thus protecting the gears and the bushings of the transfer charging roller from adhesive.
- If common tape is to be used, be sure to put a protective material (e.g., lint-free paper) between the tape and the gears/bushings, thus protecting the gears and the bushings of the transfer charging roller form adhesive.

Note: If the adhesive of the tape came into contact with a gear or a bushing, be sure to clean it before using it.

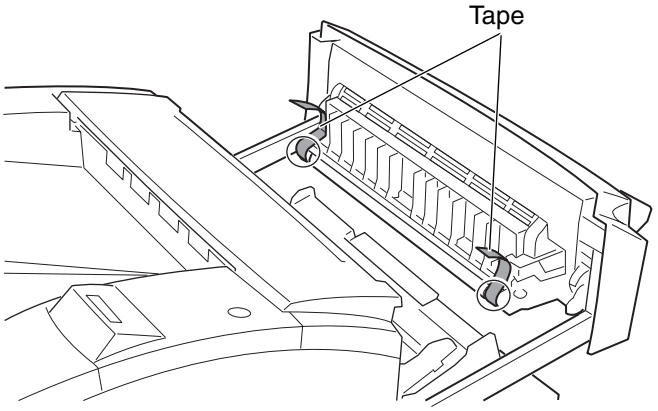


Figure 1-6-1

VII. ROUTINE MAINTENANCE/INSPECTION BY THE USER

To ensure that the Printer remains in its best condition, advise the user to provide the following maintenance:

1. Cartridge
If the images are fuzzy or show white spots, or the cartridge is running out of toner, shake or replace the cartridge.

2. Cassette pickup poller/cassette separation pad
If pickup faults tend to occur, wipe the pickup roller/separation pad with a cloth moistened with water, and then dry wipe it. If the faults still occur, replace both cassette pickup roller and cassette separation pad at the same time (at about 80,000th page; see Chapter 3 IV-A-1/2 "Replacing the Cassette Pickup Roller" and "Replacing the Cassette Separation Pad.")

3. Fixing roller
If the back or face of printed sheets have black dots, clean the fixing roller as follows:
1) Prepare an A4 or LTR sheet of paper for printing.
2) Press the Go key so that the Printer enters off-line state.
3) Press the Menu key until the status indicator panel indicates 'TEST MENU'.
4) Press the Item key until the status indicator panel indicates 'TEST MENU CLEANING PAGE'. Then, press the Enter key so that a cleaning sheet (Figure 1-7-1) will be printed.

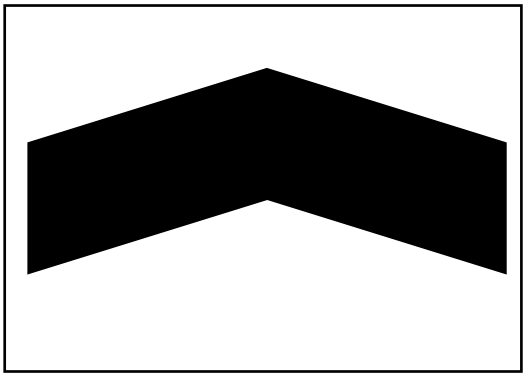


Figure 1-7-1

5) Press the Go key so that the Printer enters on-line state, then press the Menu key.
6) Open the multifeeder tray, and place the cleaning sheet generated in step 2) with its arrow side facing upward and the arrow pointing at the rear of the Printer.

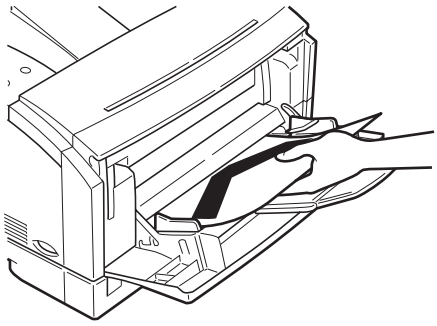


Figure 1-7-2

7) Press the Go key so that the Printer starts cleaning the fixing roller.

Note: Allow about 5 min before the cleaning sheet is delivered to the delivery tray after cleaning is started.

8) Press Go key to bring the printer on-line state.

4. Manual feed pickup roller

If pickup faults start to occur often because of glue or lint from recycled paper, advise the user to purchase the following for cleaning the pickup roller; if faults still occur after cleaning, the manual feed pickup roller and the manual feed separation pad must be replaced at the same time (about 50,000 pages).

1) Obtain a manual feed tray cleaning tool and a cleaning sponge.

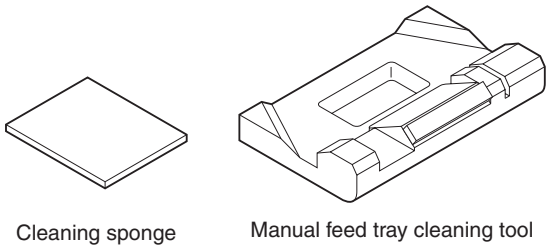


Figure 1-7-3

2) Peel the sticker from the cleaning sponge, and attach it as shown to the manual feed cleaning tool.

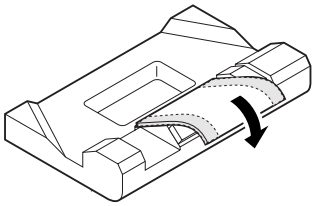


Figure 1-7-4

3) Moisten the sponge portion of the manual feed tray cleaning tool with water.

Note: Be sure the sponge is no more than moist. If water shows when the sponge portion is touched, shake it well to rid it of water.

4) Open the manual feed tray; while pushing down the holding plate, fit the manual feed cleaning tool in place as shown.

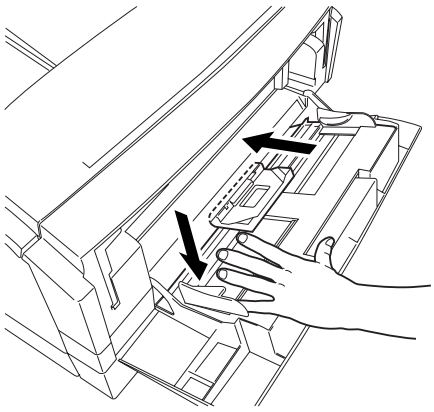


Figure 1-7-5

5) Set the paper guide of the multifeeder manual feed tray to postcard size.

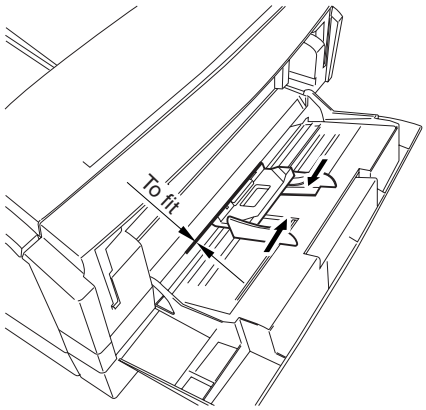


Figure 1-7-6

Note: After fitting the manual feed tray cleaning tool in place, check to make sure that it has been pushed so that the edge of the pickup guide and the step of the manual feed tray cleaning tool. match. Otherwise, the dirt of the manual feed pickup roller cannot be removed.

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5) Press the Go key so that the Printer enters off-line state.
6) Press the Menu key until the status indicator panel indicates 'TEST MENU'.
7) Press the Item key until the status indicator panel indicates 'CLEANING ROLLER'. Then, press the Enter key so that the Printer starts to clean the roller.

Note:
1. Check to make sure that no paper exists in the multifeeder tray before executing 'CLEANING ROLLER'. Otherwise, the paper will be picked up, causing a jam.
2. Be sure to detach the cleaning tool after cleaning the manual feed pick up roller.
3. Allow about 10 sec between the start and the end of cleaning.
4. After using it for thee cleaning sessions, or if its surface has become excessively soiled, replace it with a new cleaning sponge.

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7) Open the paper guide, and detach the cleaning tool while pushing down the Holding plate.
8) Press the Go key so the Printer enters on-line state.