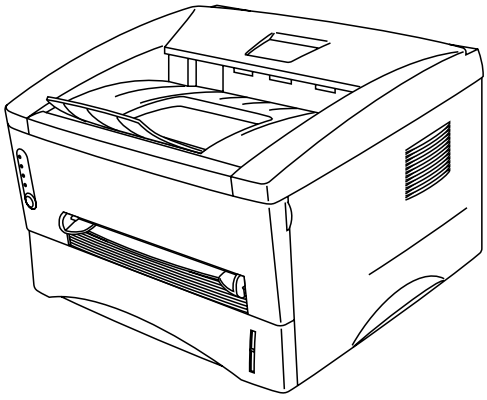
brother

Brother Laser Printer

HL-1270N

Network built in model

User's Guide



Please read this manual thoroughly before using the printer. You can print or view this manual from the CD-ROM at any time, please keep the CD-ROM in a convenient place for quick and easy reference at all times.

TABLE OF CONTENTS

CHAPTER 1 ABOUT THIS PRINTER

What is included in the carton? 1-1
Carton Components 1-1
About your printer 1-2
Features of your printer 1-3
What are the available printer options? 1-8
Choosing a location 1-9
Power Supply 1-9
Environment 1-9
System Requirements for the Brother Printing Solution for Windows ® 1-10
What kind of paper can I use? 1-11
How to load paper in the Paper Cassette 1-16
How to use the Manual Feed Slot 1-19
How to print on both sides of the paper (Manual Duplexing) 1-24
What do the LED indications mean? 1-27
Ready (Paper) LED indications 1-28
Data (Toner) LED indications 1-29
Drum LED indications 1-31
Alarm LED indications 1-31
Control Panel Button Operations 1-32
More Features 1-33

CHAPTER 2 OPTIONS

Optional Accessories and Supplies.....2-1

The Lower Tray unit 2-2
How to add extra Memory..... 2-3
How to install additional SIMM memory 2-4

CHAPTER 3 MAINTENANCE

How to replace the Toner Cartridge.....3-3

How to replace the Drum Unit 3-9
How to clean the printer 3-14
Cleaning the printer exterior 3-14
Cleaning the printer interior and Drum Unit..... 3-16

CHAPTER 4 TROUBLESHOOTING

Identifying your problem.....4-1

Control Panel Indications 4-2
- Operator calls and how to clear them.....4-2
- Service call indications.....4-4

Error Messages in the Status Monitor 4-6
Error Message Printouts 4-8
Paper Handling..... 4-9
PAPER JAMS and how to clear them 4-10
Other 4-15
- For DOS users.....4-15
- For Apple Macintosh Computers user 4-16
- For iMac and Power Macintosh G3 with USB 4-16

Improving the print quality..... 4-17
How to print correctly 4-23
- For DOS users.....4-24

APPENDIX

Printer Technical Specifications A-1
- Printing A-1
- Functions A-3
- Electrical and Mechanical A-4

Parallel Interface Specifications A-5

USB (Universal Serial Bus) Interface A-7

Network Interface A-8

Emulation Modes A-9

Resident Font A-10
- Bitmapped Fonts A-10
- Scalable Fonts A-11
- 75 Scalable and 12 Bitmapped Fonts A-11

Symbol Sets / Character Sets A-13
- OCR Symbol Sets A-13
- HP LaserJet 6P Mode A-13
- EPSON Mode A-14
- IBM Mode A-14

Definitions of Warnings, Cautions, and Notes

The following conventions are used in this User's Guide:

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

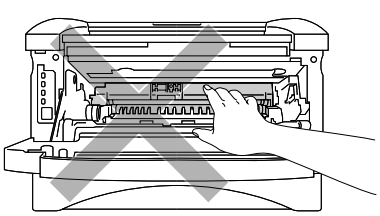
> **Caution**
> Indicates cautions that must be observed to use the printer properly or prevent damage to the printer.

> **Note**
> Indicates notes and useful tips to remember when using the printer.

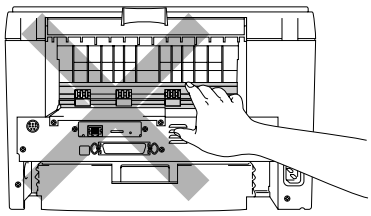
To Use the Printer Safely

⚠ Warning

- **After you have just used the printer, some internal parts of the printer are extremely HOT. When you open the front cover or rear cover of the printer, never touch the shaded parts shown in the following illustration.**

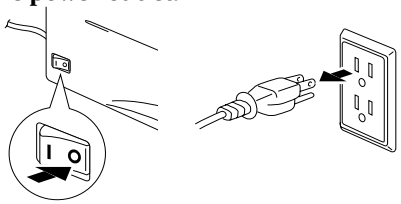


High Temperature
Front view



High Temperature
Rear view

- **There are high voltage electrodes inside the printer. Before cleaning the printer, make sure you have turned off the power switch and unplugged the power cord from the power outlet.**



Turning off the Power Switch and Unplug the Printer

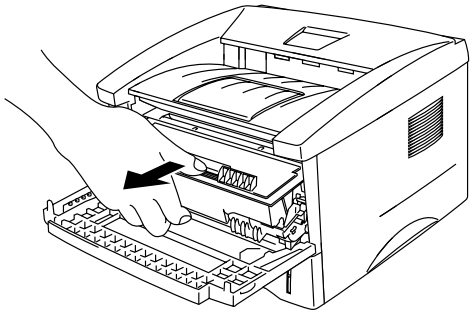
Shipment of the Printer

If for any reason you must ship your Printer, carefully package the Printer to avoid any damage during transit. It is recommended that you save and use the original packaging. The Printer should also be adequately insured with the carrier.

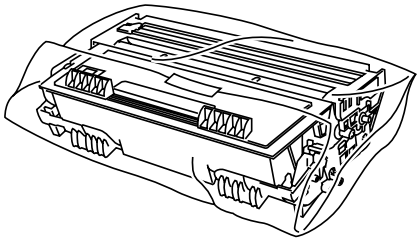
Caution

When shipping the Printer, the DRUM UNIT assembly including the TONER CARTRIDGE must be removed from the Printer and placed in the plastic bag. **Failure to remove the unit and place it in the plastic bag during shipping will cause severe damage to the Printer and will VOID THE WARRANTY.**

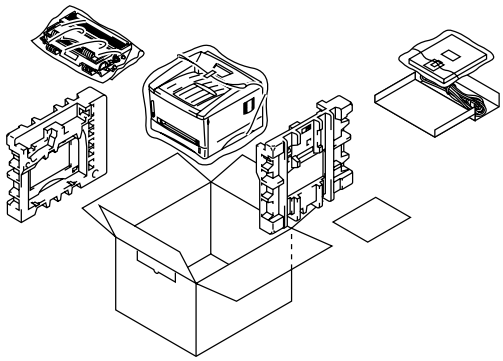
1 Remove the Drum unit assembly.



2 Place it in the plastic bag and seal the bag completely.



3 Remove the AC cord from the printer. Re-pack the printer.



(For USA & CANADA Only)

For technical and operational assistance, please call:

In USA	1-800-276-7746	(outside California)
	949-859-9700 Ext. 329	(within California)
In CANADA	1-800-853-6660	
	514-685-6464	(within Montreal)

If you have comments or suggestions, please write us at:

In USA
Printer Customer Support
Brother International Corporation
15 Musick
Irvine, CA 92718

In CANADA
Brother International Corporation (Canada), Ltd.
- Marketing Dept.
1, rue Hôtel de Ville
Dollard-des-Ormeaux, PQ, Canada H9B 3H6

BBS
For downloading drivers from our Bulletin Board Service, call:
In USA 1-888-298-3616
In CANADA 1-514-685-2040
Please log on to our BBS with your first name, last name and a four digit number for your password. Our BBS supports modem speeds up to 14,400, 8 bits no parity, 1 stop bit.

Fax-Back System
Brother Customer Service has installed an easy to use Fax-Back System so you can get instant answers to common technical questions and product information for all Brother products. This is available 24 hours a day, 7 days a week. You can use the system to send the information to any fax machine, not just the one you are calling from.
Please call 1-800-521-2846 (U.S.A) or 1-800-681-9838 (Canada) and follow the voice prompts to receive faxed instructions on how to use the system and your index of Fax-Back subjects.

DEALERS/SERVICE CENTERS (USA only)
For the name of an authorized dealer or service center, call 1-800-284-4357.

SERVICE CENTERS (Canada only)
For service center addresses in Canada, call 1-800-853-6660

INTERNET ADDRESS
For technical questions and downloading drivers: **http://www.brother.com**

CHAPTER 1
ABOUT THIS PRINTER

What is included in the carton?

Carton Components

When you unpack the printer, check to see that you have all of the following items:

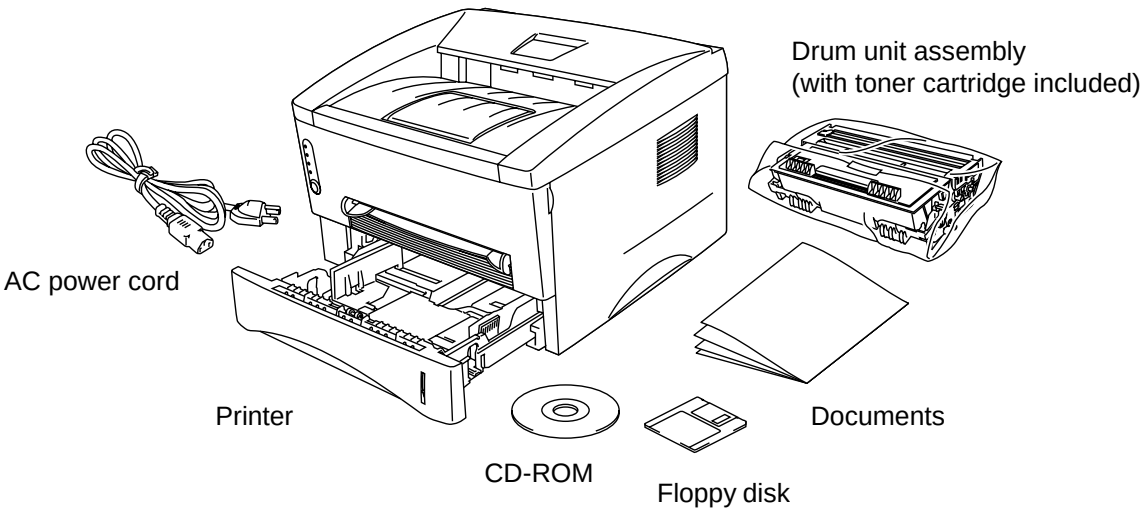


Fig. 1-1 Components in the Printer Carton

Components may differ from one country to another.

About your printer

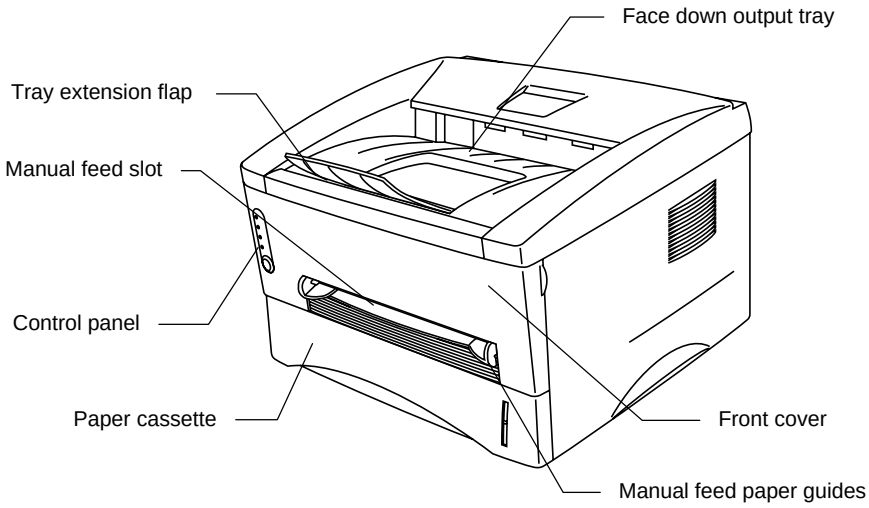


Fig. 1-2 Front View

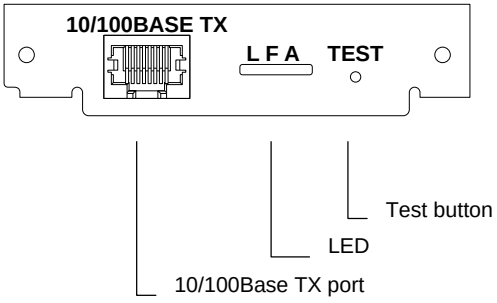


Fig. 1-3 Network Board

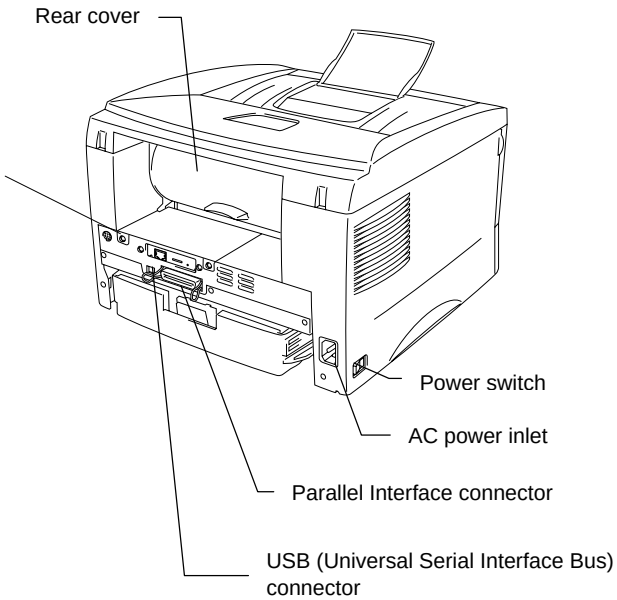


Fig. 1-4 Rear View

Features of your printer

❑ High Resolution and Fast Printing Speed

True 600 x 600 dots per inch (dpi) and 1200 x 600 dpi for graphics with microfine toner and up to 12 pages per minute (ppm) print speed (A4 or Letter paper).

❑ Front Operation

Basic operation of the printer can be done from the front of you..

❑ Versatile Paper Handling

This printer loads paper automatically from the paper cassette. The paper cassette can hold A4, letter, B5, Executive, A5 and A6 size paper. The manual feed slot allows you to load paper one sheet at a time, so you can use a variety of types and sizes of paper. For additional information, see “What kind of paper can I use?” in Chapter 1.

❑ Enhanced Printing Performance and User-Friendly Operation for Windows®

The dedicated printer drivers for Microsoft® Windows® 95/98, Windows® 3.1x and Windows NT® 4.0 are available on the CD-ROM supplied with your printer. You can easily install them into your Windows® system using our installer program. The driver supports our unique compression mode to enhance the printing speed in Windows® applications and allows you to choose various printer settings including toner save mode, custom paper size, sleep mode, gray scale adjustment, resolution and many layout functions. You can easily set these print options through the Printer Setup Menu.

❑ Quick Print Setup

In a small selection window on your screen, you can easily make changes to settings that you need to change frequently.

❑ Popular Printer Emulation Support

This printer supports four popular printer emulation modes, HP LaserJet 6P (PCL6), PostScript® Level 2 language emulation (Brother BR-Script Level 2), Epson FX-850 and IBM Proprinter XL. When you use DOS application software or Windows® version 3.0 or earlier, you can use any of these emulations to operate the printer. The printer also supports auto-emulation switching between HP, Brother BR-Script 2 and Epson or HP, Brother BR-Script 2 and IBM. To select the printer emulation, use the Remote Printer Console Program.

❑ Printer Status Monitor

The printer driver can monitor the status of your printer using bi-directional communications via parallel, USB and Ethernet Network.

The printer status monitor program can show the current status of your printer. If an error occurs, the status monitor will let you know what to correct. For example, when your printer is out of paper, the status monitor will display “No Paper” and instructions for loading paper.

❑ USB Interface (For Windows® 98, iMac and Power Macintosh G3 Using USB)

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

❑ High Resolution Control & Advanced Photoscale Technology

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

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

❑ Enhanced Memory Management

The printer provides its own data compression technology in the printer hardware and the supplied printer driver software, which automatically compresses graphic and font data efficiently into the printer's memory. With the printer's standard memory, you can avoid memory errors and print most full page 600 dpi graphic and text data, including larger fonts.

❑ Network Ready

The Brother printer has built in multi protocol network capability as standard. This allows multiple host computers to share the printer on a 10/100Mbit Ethernet network. Any user can print their job as if the printer was directly connected to their computer. Users on Windows 95/98, Windows NT, Unix, Novell, Apple Macintosh, LAN server and OS/2 Warp server computer can simultaneously access this printer.
For further information, please refer to the 'Network manual' supplied with the printer.

Type/Speed	10/100Base TX Ethernet Auto speed detection
Protocols	TCP/IP DHCP, BOOTP, RARP, NetBIOS over IP LPR/LPD, Port9100, Custom Port, POP3/SMTP SMB Print TELNET, SNMP, HTTP, TFTP Novell IPX.SPX (Bindery/NDS) AppleTalk
Management	Web Based Management BRAdmin32 Windows based management utility TELNET and Netware Command Console SNMP/MIB II HP JetAdmin/ Web JetAdmin Compatible
Firmware update	2MB FLASH ROM. Use BRAdmin32 when upgrading print server software or BOOTP, TFTP PUT/GET or IPX for NETWARE
Other Features	*Windows 95/98 Peer to Peer printing software included as standard.* *Brother Card Monitor software included for easy macro/font management.* *Brother Internet Print (Printing via Email)* *Network Print Configuration button* *Password protection for Management Access* *Factory reset* Features for providing multiple service creation with custom setup and rest strings.

❑ Remote Printer Console Program for DOS

The Remote Printer Console (RPC) utility program is available on the CD-ROM supplied with your printer. When you operate your computer in a DOS (Disk Operating System) environment, this RPC program allows you to easily change the default settings of the printer such as fonts, page setup, and emulations.

This RPC program also provides a status monitor program, which is a Terminate-and-Stay Resident (TSR) program. It can monitor the printer status while running in the background and report the current status or errors on your computer screen.

❑ Environment-Friendly

Economy Printing Mode
This feature will cut your printing cost by saving toner. For example, you can print draft copies for proof-reading. You can select from two economy modes—25% toner save and 50% toner save—through the Windows® printer driver supplied with your printer.

Sleep Mode (Power Save Mode)
When the printer is not used for a certain period of time, sleep mode automatically reduces power consumption. This printer consumes less than 6 Watts when in sleep mode.

Low Running Cost
Since the toner cartridge is separate from the drum unit, you must replace only the toner cartridge after approximately 3,000 pages, which is both cost effective and ecologically friendly. (**An optional high capacity toner cartridge that will print up to 6,000 pages is also available for this printer.**)

The actual number of pages printed with a toner cartridge may vary depending on your average type of print job. The figures quoted are based on 5% coverage per page.

You can print up to 20,000 pages with the drum unit, however there are many factors that determine the actual drum life.

❑ Bar Code Print

This printer can print the following 11 types of bar codes:

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

What are the available printer options?

❑ Lower Tray Unit (LT-400)

A lower tray unit expands the paper source capacity. You can load extra paper and switch between the upper and lower paper cassette automatically. See "The Lower Tray Unit" in Chapter 2.

❑ SIMM (Memory)

The printer has 4.0 Mbytes of standard memory and one slot for optional additional memory. The memory can be expanded up to 36 Mbytes by installing a commercially available single in-line memory modules (SIMM). We recommended that you add memory if you want to print graphics at higher resolutions. . See "How to add extra Memory" in Chapter 2.

Choosing a location

Please take note of the following before using the printer.

Power Supply

- Use the printer within the specified power range.
  AC power: ±10% of the rated power voltage in your country
  Frequency: 50 Hz (220 V– 240 V) or 50/60 Hz (110–120 V)
  Check the rating plate on the back of the printer for your model's specification.
- The power cord, including extensions, should not exceed 5 meters (16.5 feet).
- Do not share the same power circuit with other high-power appliances, particularly an air conditioner, copier, shredder and so on. If it is unavoidable that you must use the printer with these appliances, it is recommended that you use an isolation transformer or a high-frequency noise filter.
- Use a voltage regulator if the power source is not stable.

Environment

- The printer should be installed near a power outlet, that is easily accessible.
- Use the printer only within the following ranges of temperature and humidity.
  Ambient temperature: 10_C to 32.5_C (50_F to 90.5_F)
  Ambient humidity: 20% to 80% (without condensation)
- The printer should be used in a well ventilated room.
- Place the printer on a flat, horizontal surface.
- Keep the printer clean. Do not place the printer' in a dusty place.
- Do not place the printer where the ventilation hole of the printer's fan is obstructed. Allow approximately 100 mm (4 inches) of space between the printer's fan and the wall.
- Do not place the printer where it is exposed to direct sunlight. If the printer is must be set up near a window, cover the window with a blind or heavy curtain to protect the printer from direct sunlight.
- Do not place the printer near devices that contain magnets or generate magnetic fields.
- Do not subject the printer to strong physical shocks or vibrations.
- Do not expose the printer to open flames or salty or corrosive gasses.
- Do not place objects on top of the printer.
- Do not place the printer near an air conditioner.
- Keep the printer horizontal when you move it.
- Do not cover the slots in the top cover.

System Requirements for the Brother Printing Solution for Windows®

The following tables list the system requirements needed to setup and the printer using the Brother Printing Solution for Windows®:

- IBM PC or compatible with 80486 SX or higher microprocessor
- 10 MB of space available on your hard disk for the printer driver and all fonts
- Microsoft Windows® 3.1/3.11, Windows® 95/98 or Windows NT® 4.0

What kind of paper can I use?

Media Type

	Paper type	Paper size
Paper Cassette (standard)	Cut Sheet Transparency	letter, A4, ISO B5, Executive, A5, A6, legal (US and Canada Only) and A4 and letter
Manual feed sFeed Slot	Cut sheet Envelope Organizer Transparencies Labels Other Sizes	letter, A4, B5 (JIS/ISO), Executive, A5, A6, legal COM 10, Monarch, C5, DL and ISO B5 Day-Timer® J, K, L A4, Letter A4, Letter 70-216 x 116-356 mm, 2.75-8.5 x 4.57 -14 inches
Optional Lower Paper Cassette	Cut Sheet	letter, A4, ISO B5, Executive, A5 and legal (US and Canada Only)

Paper Specifications

Paper Cassette

	Cut Sheet
Basis Weight	64 to 105 g/m^2 (17 to 28 lb.)
Caliper	0.08 to 0.13 mm (0.003 to 0.005 inches)
Moisture Content	4% to 6% by weight

Manual Feed Slot

	Cut Sheet	Envelope
Basis Weight	64 to 158 g/m^2 (17 to 43 lb.)	75 to 90 g/m^2 single thickness (20 to 24 lb.)
Basis Weight	64 to 158 g/m^2	75 to 90 g/m^2 single thickness
Caliper	0.08 to 0.2 mm (0.003 to 0.008 inches)	0.084 to 0.14 mm (0.003 to 0.005 inches) single thickness
Moisture Content	4% to 6% by weight	4% to 6% by weight

> **Note**
> - We recommend that you use only labels or transparencies that are designed for laser printer use.
> - To avoid damage to the printer, the printing speed may change for the paper size you are using.

Paper Capacity

Upper Paper Cassette

A4/Letter paper:	Approx. 250 sheets of 80 g/m^2	Up to 27 mm (1.06 inches) in height (up to the mark)
Transparency	10 sheets	

Output tray (printed pages are face down)

A4/Letter paper:	Approx. 150 sheets of 80 g/m^2

Rear Output tray (printed pages are face up)

Thicker paper:	Single sheet of thicker paper

Recommended Paper

Cut Sheet:	Xerox 4200 (in USA) / Xerox 80 Premier Paper (in Europe) or equivalent
Label:	Avery laser label or equivalent
Transparency:	3M CG3300 or equivalent

Remarks

We recommend that you test paper on this printer before purchasing large quantities, especially paper of a special type, size or thickness.

Avoid using coated paper, for example, vinyl coated paper.

Avoid using preprinted or highly textured paper.

For optimum print quality, use only the recommended type of paper, especially when using plain paper or transparencies. For more information on paper specifications, consult your nearest Brother authorized sales representative or place of purchase.

If the paper has difficulty feeding from the paper cassette, use the manual feed slot and try again.

To avoid damage to the printer drum unit, do not use acid paper. Use neutral paper.

For optimum print quality, make sure you have selected the appropriate media type in the printer driver.

Using the printer for special print jobs (for example, printing name cards) for long periods of time, may degrade the print quality or shorten the life of the drum unit.

Cut Sheet

For best print quality we recommend you use long-grained. Using short-grained paper may cause a paper jam.
If you are using short-grained paper, it may be the cause of paper jams.

Labels / Transparencies

Do not feed labels with the carrier sheet exposed because it will damage your printer.

We recommend you use only labels or transparencies that are designed for use in laser printers.

Special Paper

To avoid paper jams and misfeeds when using paper with punched holes (for example, organizer sheets), fan the paper well.

Do not use organizer sheets that are stuck together. The glue that is used may cause damage to the printer.

Before using any paper, make sure that it is not curled. If it is curled, straighten the paper as much as possible. Feeding curled paper can cause paper jams and misfeeds.

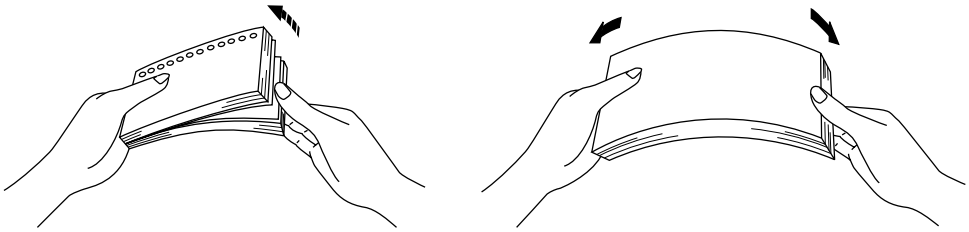


Fig. 1-5 Fan the Paper and Straighten the Paper

Do not load different types of paper in the paper cassette at the same time, this may cause paper jams or misfeeds.

Envelopes

The following types of envelopes are not recommended.

- Damaged, curled, wrinkled, or irregularly shaped envelopes
- Extremely shiny or highly textured envelopes
- Envelopes with clasps
- Envelopes with self-adhesive closures
- Envelopes of baggy construction
- Envelopes not sharply creased
- Embossed envelopes
- Envelopes already printed by a laser printer
- Envelopes pre-printed on the inside
- Envelopes that cannot be arranged uniformly when placed in a pile

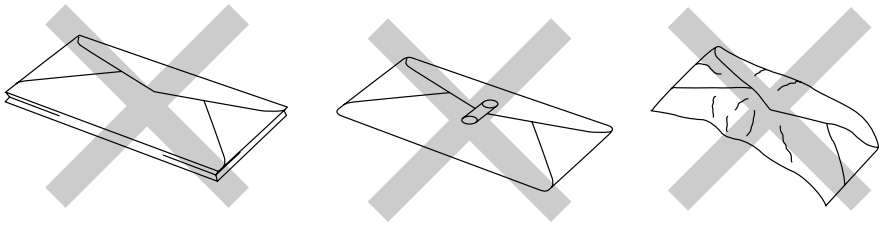


Fig. 1-6 Envelopes

Printable Area

The figure below shows the physically printable area.

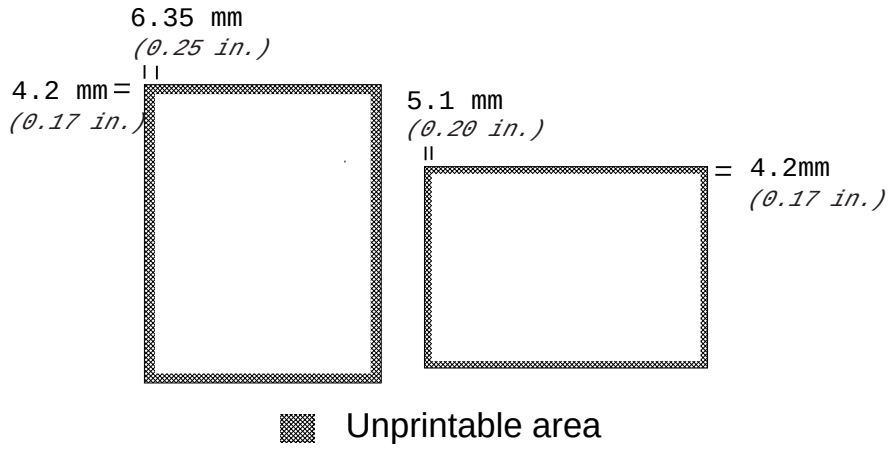


Fig. 1-7 Printable Area

How to load paper in the Paper Cassette

☛ **1.** Pull the paper cassette completely out of the printer.

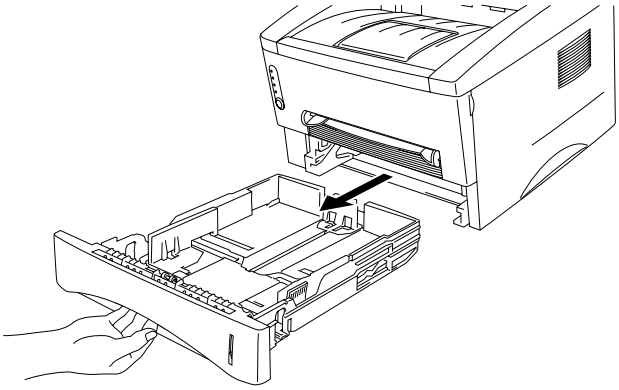


Fig. 1-8 Pull out the paper cassette

☛ **2.** Slide the width and length paper guides to fit the size of paper you want to load. Make sure the tip of the paper guides fit into the slots correctly.

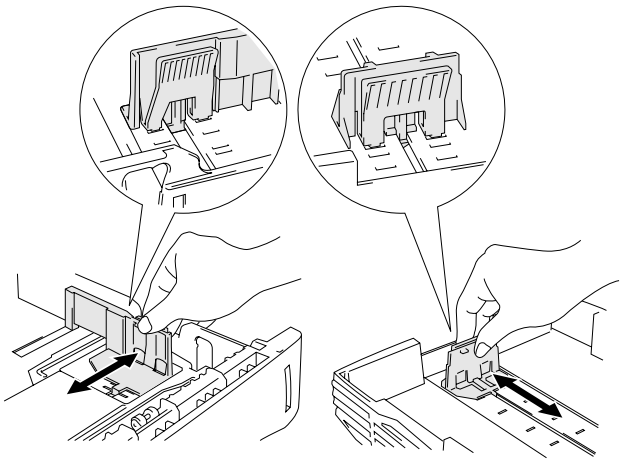


Fig. 1-9 Adjust the paper guides

☛ **3.** Load paper into the paper cassette. Make sure that the paper is flat in the cassette in all four corners.

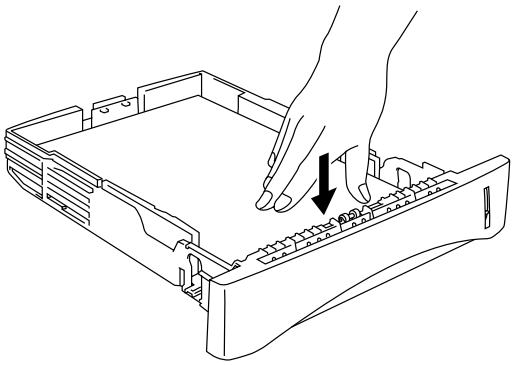


Fig. 1-10 Load the paper

✒ **Note**
Do not load more than 250 sheets of paper (80 g/m^2) in the cassette, or paper jams may occur. Paper can be loaded up to the maximum paper height guide.

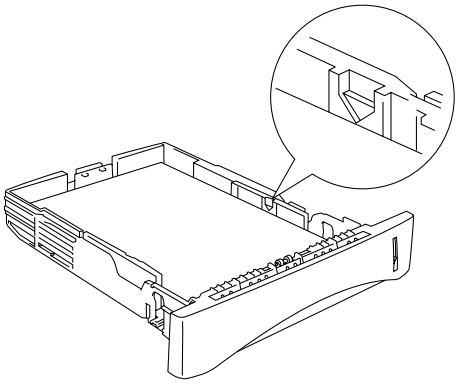


Fig. 1-11 Maximum Paper Height Guide

☛ **4.** Slide the paper cassette into the printer until it locks into place.

✒ **Note**

- Unfold the output tray extension to prevent the paper from sliding off the front output tray.

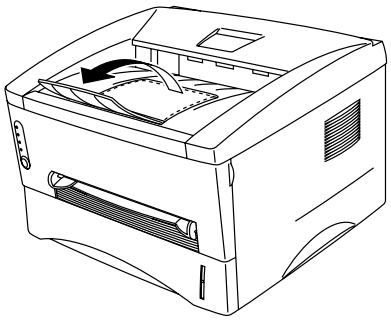


Fig. 1-12 Unfold the output tray extension

- If you choose not to use the output tray extension, we recommend that you remove printed pages immediately they exit the printer.

Caution

Remove each sheet immediately especially when you use special paper such as transparencies.

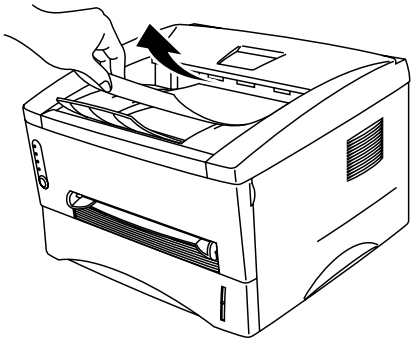


Fig. 1-13 Remove each sheet

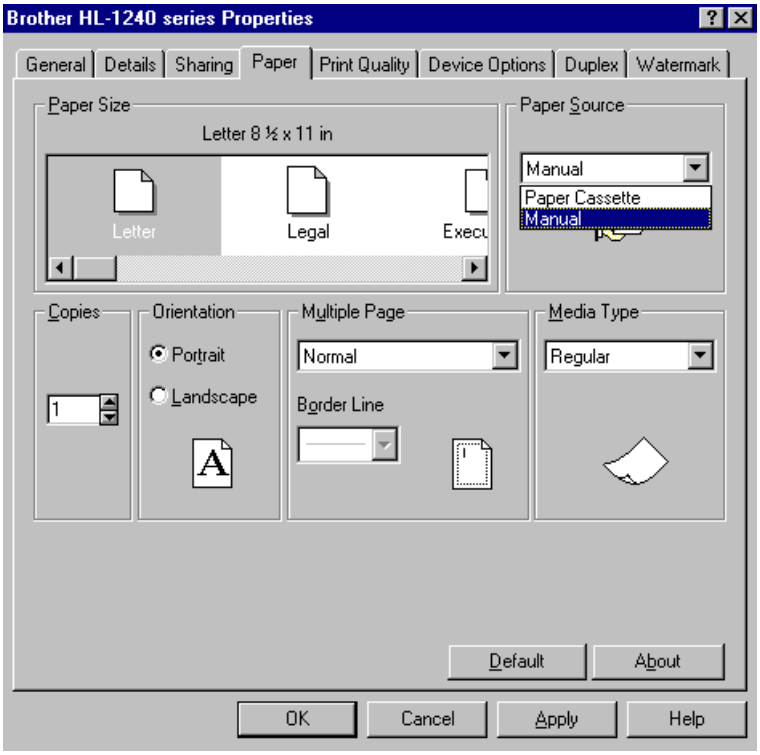
How to use the Manual Feed Slot

> ✒ **Note**
> - Use both hands to insert the paper into the manual feed slot.
> - When you insert paper into the manual feed slot, the printer turns on the manual feed mode.
> - We recommended you use the paper cassette when you are using paper that is between A4 and A6 in size and between 64 g/m^2 and 105 g/m^2.

You can also view the technique of manually loading one sheet of paper at a time in the instructional video on the supplied CD-ROM.

☛ **1.** Select Manual feed mode in the printer driver.

<Windows® 95 / 98 and Windows 3.1x>



<WindowsNT® 4.0>

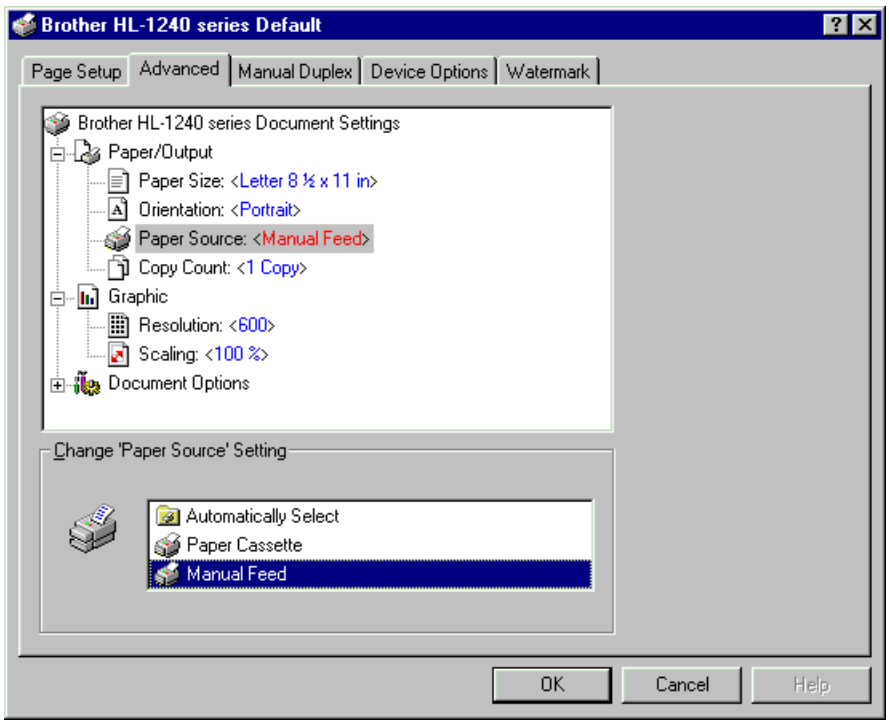


Fig. 1-14 Select manual feed mode

☛ **2.** Send the print data to the printer.

> ✒ **Note**
> A “NO PAPER” message is shown in the Status Monitor until you insert a sheet of paper into the manual feed slot.

☛ **3.** Use both hands to slide the manual feed slot paper guides to the paper width to be used.

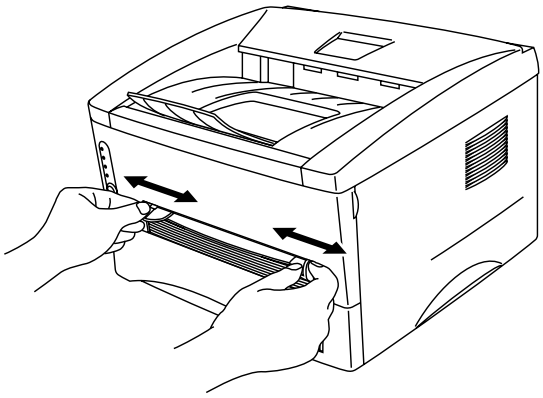


Fig. 1-15 Set the width of the manual feed slot paper guides

☛ **4.** Using both hands, insert the paper into the manual feed slot until the front edge of the paper touches the paper feed roller. Hold the paper in this position until the printer feeds in the paper a short distance, then let go of the paper.

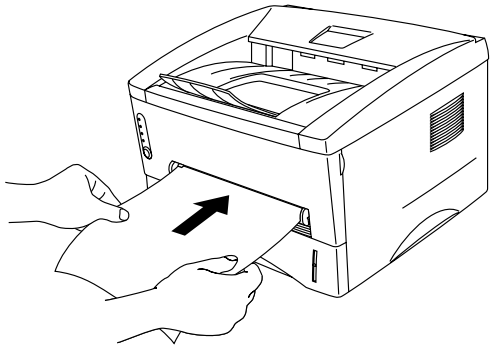


Fig. 1-16 Insert the paper

☛ **5.** After the printer ejects the printed page, repeat Step 4 for each sheet of paper you want to print.

To print on thicker paper and card stock

When you rear cover is lifted up, the printer has a straight paper path from the manual feed slot to the rear of the printer. Use this paper feed and output method when you want to print on thicker paper or card stock.

☛ **1.** Select manual feed mode in the printer driver.

☛ **2.** Lift up the rear cover at the rear of the printer.

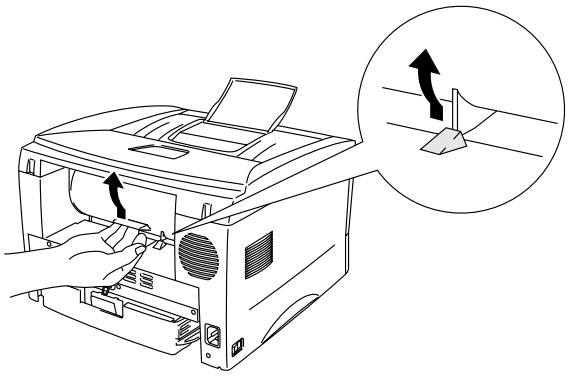


Fig. 1-17 Lift up the rear cover

☛ **3.** Send the print data as usual.

> **Note**
> A “NO PAPER” message is shown in the Status Monitor until you insert a sheet of paper into the manual feed slot.

☛ **4.** Use both to slide the manual feed slot paper guides to the paper width be used.

☛ **5.** Using both hands, insert the paper into the manual feed slot until the front edge of the paper touches the paper feed roller. Hold the paper in this position until the printer feeds in the paper a short distance, then let go of the paper.

☛ **6.** After the printer ejects the printed page, repeat Step 5 for each sheet of paper you want to print.

☛ **7.** Close the rear cover of the printer.

Caution

- Remove each sheet immediately after it exits printer. Stacking the sheets may cause them to curl or jam.

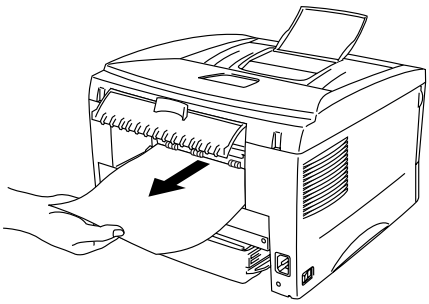


Fig. 1-18 Remove each sheet immediately

How to print on both sides of the paper (Manual Duplexing)

The supplied printer drivers for Windows® 95/98, Windows® 3.1x and Windows NT® 4.0 all enable manual duplex printing. For more information about how to make the settings, see the Help text in the printer driver.

Guidelines for printing on both sides of the paper

1 It may cause wrinkling if the paper is too thin.

2 If paper is curled, straighten it and then place it in the paper cassette.

3 The paper type should be regular paper. Do not use bond paper.

4 When placing paper in the paper cassette, empty the cassette first, then insert the printed paper only, printed side face up. (Do not add printed paper on top of unprinted paper.)

5 If the paper is not feeding correctly, it is possible that the paper is curled. Remove the paper and straighten it.

To print on both sides of the paper from the paper cassette

☛ **1.** Select the required manual duplex printing mode from the driver.

☛ **2.** The printer automatically will print all the even numbered pages on one side of the paper first.

☛ **3.** Remove the printed even numbered pages from the output tray and re-insert them into the paper cassette, loading the paper with the side to be printed (blank side) face down, and the top edge toward you. Follow the instructions on the computer screen.

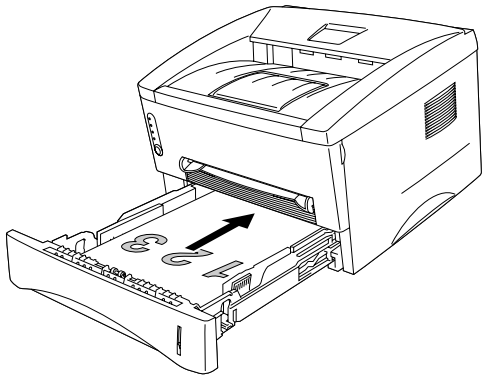


Fig. 1-19 Paper orientation for the paper cassette

☛ **4.** The printer now automatically will print all the odd pages on the reverse side of the paper.

To print on both sides of the paper from the manual feed slot

> **Caution**
> - Before re-inserting the sheets, straighten them, or you may get paper feed errors.
> - The use of very thin or very thick paper is not recommended.
> - When you use the Manual Duplex function, it is possible that paper jams may occur or print quality may not be satisfactory. If a paper jam occurs, please see to "PAPER JAMS and how to clear them" in Chapter 4.

☛ **1.** Select the required manual duplex printing mode and manual feed mode from the driver.

☛ **2.** Using both hands, insert the paper into the manual feed slot with the side to be printed first facing up.
Follow the instructions on the computer screen.
Repeat this process until you have printed all the even numbered pages.

☛ **3.** Remove the printed even numbered pages from the output tray and re-insert them in order into the manual feed slot, loading the paper with the side to be printed (blank side) face up, and the top of the printed side towards the printer. Follow the instructions on the computer screen.

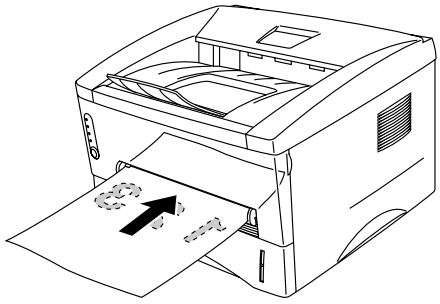


Fig. 1-20 Paper operation for the manual feed slot

☛ **4.** Repeat Step 3 until you have printed all the odd numbered pages on the reverse side of the paper.

What do the LED indications mean?

This section refers to the LED and button on the printer control panel.

The LED indications shown in the table below are used in the illustrations in this chapter.

○	LED is Off
☼	LED is Blinking
●	LED is On

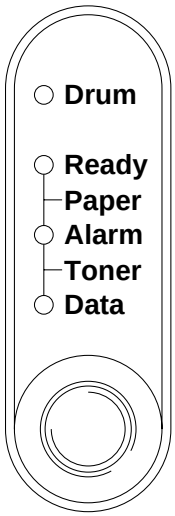


Fig. 1-21 LEDs and Button on the Control Panel

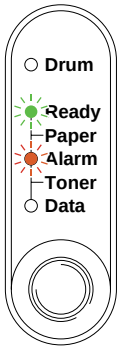
> **Note**
> When the power switch is off or the printer is in sleep mode, all LEDs including the **Ready** LED will be off.

Ready (Paper) LED indications

The **Ready** LED indicates the current status of the printer.

LED	Printer status
Off ❍	The power switch is off or the printer is in sleep mode. If the printer is in sleep mode, it will wake up automatically when it receives data or when you press the control panel button.
Blinking 	(Blinking at 1 second intervals) The printer is warming up. (Blinking at 2 seconds intervals) The printer is cooling down and stops printing until the internal temperature of the printer is lower.
On 	The printer is ready to print.

The **Ready** LED also works as the **Paper** LED when the **Alarm** LED is also lit. They will blink simultaneously to indicate a paper error

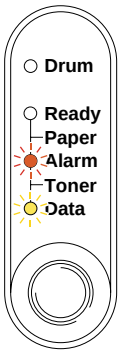
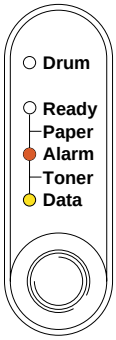
LED	**Error**	**Action**
	Paper jam	Clear the paper jam referring to Chapter. See Chapter 4 “PAPER JAMS and How to clear them” and press the panel button if the printer does not automatically resume printing.
	No paper	Load paper in the printer. See “How to load paper into the Paper cassette” in Chapter 1. Then press the panel button.
	Misfeed	Reinstall the paper and press the panel button.
	No paper	Load paper in the printer referring to “How to load paper into the Paper cassette” in Chapter 1 and press the panel button.

Data (Toner) LED indications

The **Data** LED indicates the current status of the print data process.

LED	Printer status
Off ❍	The printer has no print data.
Blinking	The printer is receiving data from the computer or the printer is processing data in memory.
On	Print data remains in the printer memory. If the **Data** LED is on for a long period of time and nothing has printed, press the button to print the remaining data.

This LED also works as the **Toner** LED when the **Alarm** LED is also lit. They will blink simultaneously to indicate a toner error. See “How to replace the Toner cartridge” in Chapter 3 .

LED	Error	Action
 Blinking every 5 seconds	Toner low	Indicates that the toner cartridge is nearly empty. Purchase a new toner cartridge and have it ready for when Toner empty is indicated.
	Toner empty	Replace the toner cartridge with a new one. See “How to replace the Toner Cartridge” in Chapter 3.

Drum LED indications

The **Drum** LED indicates the drum unit is nearly at the end of its life.

LED	Printer status
❍	The drum unit can be used.
●	The drum unit is near the end of its life. Purchase a new drum unit to replace the current one. See “How to replace the drum unit” in Chapter 3.

Alarm LED indications

The **Alarm** LED blinks (with no other LEDs) to indicate a printer error status such as “COVER OPEN” or “MEMORY FULL.” If any other error occurs, the printer indicates the error by blinking the **Alarm** LED with another LED or by printing an error report. For additional information, see “Control Panel Indications” in Chapter 4.

Control Panel Button Operations

The control panel button is used for the following purposes depending on the situation.

Cancel Printing

If you press the button during printing, the printer immediately stops printing and ejects the paper.

Wake-Up

If the printer is in sleep mode, pressing the button wakes it up into the Ready mode. It will take up to 45 seconds for the printer to go into the **Ready** mode.

Form Feed

If the **Data** LED is on, press the button. The printer prints any data that is remaining in the printer memory: this operation is called “Form Feed.”

Error Recovery

If an error occurs, the printer will recover from some errors automatically. If the error does not clear automatically, then press the button to clear the error and continue print.

More Features

The printer has the following useful features:

Sleep Mode

When the printer does not receive data for a certain period of time (timeout), it enters sleep mode. Sleep mode acts as though the printer was turned off. The default timeout is 5 minutes, it is automatically adjusted to the most suitable time-out setting depending on the frequency of your printer use (Intelligent Sleep Mode). While the printer is in sleep mode, all the LEDs are off and it is as if the printer was turned off, however the printer can still receive data from the computer. The printer automatically wakes up when it receives at print file or document. Pressing the button also wakes up the printer.

Note

- When the printer goes into sleep mode, the fan will not stop until the printer engine has cooled down.
- Sleep mode allows the print engine to cool, so the temperature of your room and how long the printer has been in sleep mode affects the warm-up time. This warm-up time can take up to 45 seconds. The **Ready** LED will blink to indicate that the printer is warming up.
- You can change the timeout for sleep mode with the supplied printer driver (all models) or Remote Printer Console program. Refer to the Help section in the printer driver or RPC program for more information about the sleep mode setting.

Test Print Mode

The printer has the following test print modes. Follow these steps:

☛ **1.** Make sure that the front cover is closed.

☛ **2.** Hold down the control panel button and turn on the power switch. Keep the button depressed until the **Drum** LED comes on.

The **Drum** LED illuminates to indicate that the printer is in the test print mode.

☛ **3.** Release the button and then press it again to execute the test print, or hold down the button to select another option as shown in the table below and then release the button and press it again to execute the selected option.

LED Lit	Choice	Function
Drum	Test Sample Page	The printer prints a test sample page. The printer returns to the Ready status after printing.
Ready	Print Config & Print Fonts I	The printer prints the current configuration of the printer and a list of the internal fonts. The printer returns to the Ready status after printing.
Alarm	Factory Reset	The printer is restored to the factory setting and permanent fonts and macros are cleared. The printer returns to the Ready status after printing.
Data	Hex Dump Print	The printer can print data as hexadecimal values so that you can check data errors and problems. To exit from this mode, you must turn off the printer.

CHAPTER2
OPTIONS

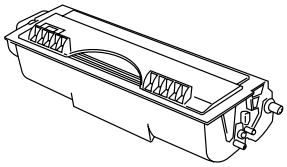
Optional Accessories and Supplies

This printer has the following optional accessories and supplies, and you can increase the capabilities of the printer with these items.

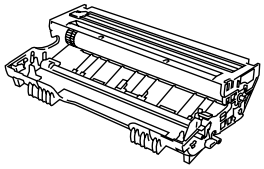
Supplies

	Item	Information
1	Toner cartridge	See page 3-3
2	Drum unit	See page 3-9

1

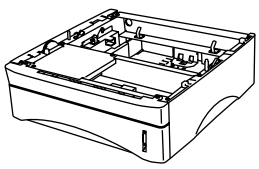


2

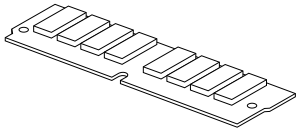


	Item	Features	Information
1	Lower Tray Unit	Paper feeder and 250 sheet tray	See page 2-2
2	SIMM	The memory can be expanded up to 36 Mbytes	See page 2-3

1



2



The Lower Tray unit

The lower tray unit is an optional device that functions as a third paper source. It can hold a maximum of 250 sheets of paper (80 g/m^2).
To purchase the optional lower tray unit, please see the dealer or store where you purchased the printer.

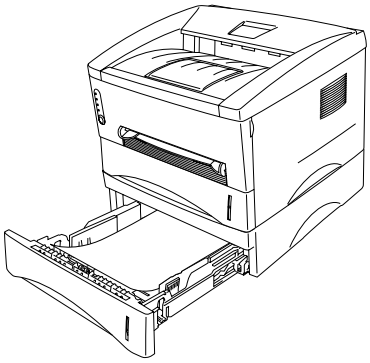


Fig. 2-1 Loading Paper in the Lower Tray Unit

With the lower tray unit installed, load paper in the lower paper cassette in exactly the same way that you load paper in the upper paper cassette.

As shown below, the paper sizes that may be used in the lower paper cassette are not the same as the paper sizes for the upper paper cassette.

Paper type	Available size	Weight and capacity
Cut sheet	letter, A4, ISO B5, Executive, A5 and legal (US and Canada Only)	64 to 105 g/m^2 plain paper (17 to 28 lb.) 250 sheets

Caution

If a paper jam occurs when using the lower tray unit, check for correct installation of the paper cassette.

How to add extra Memory

This printer has 4 Mbytes of standard memory and a slot for optional additional memory. The memory can be expanded up to a total of 36 Mbytes by installing a commercially available single in-line memory module (SIMM).

Additional memory is useful and may be necessary if you are using the Page Protection function.

It will also help if you are printing a page that is complex or at high resolution or is a complex PostScript Document.

This printer can accept memory SIMM with the following specifications:

Speed	60 nsec - 80 nsec
Pin Type	72 pin
Height	35.00 mm (1.38”) or less
Output	32 bit or 36 bit

Note
This printer can also support a resolution of true 600 dpi and 1200 x 600 dpi under Windows® 95/98, Windows® 3.1x and Windows NT® 4.0 with the supplied printer driver. We recommend that you expand the printer memory to avoid any memory full errors.

Note
The printer has only one slot for a SIMM upgrade. If you want to increase your printer memory again after you have already installed a SIMM module into the slot, you must remove the previously installed SIMM first. For example, if you had previously increased the printer memory from the standard 4MB to 12MB by adding an 8MB SIMM and you wish to increase your total memory to 36 MB, you must remove the installed 8MB SIMM and install a new 32MB SIMM into the printer.

How to install additional SIMM memory

To install the SIMM, follow these steps:

☛ **1.** Turn off the power switch and unplug the AC cord from the AC outlet. Disconnect the cable from the printer.

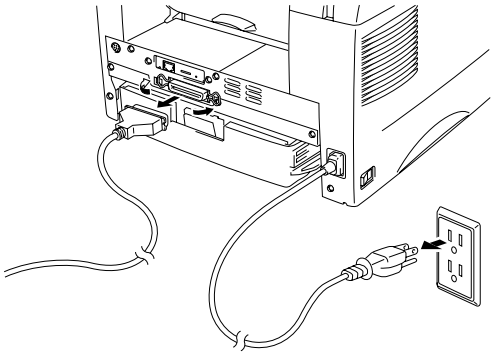


Fig. 2-2 Unplug the AC Cord and Disconnect the Interface Cable

Caution

Be sure to turn off the power switch and unplug the AC cord to the printer before installing or removing the SIMM to/from the main controller PCB.

☛ **2.** Open the Rear Paper exit cover. Unscrew the screws securing the access cover and remove it.

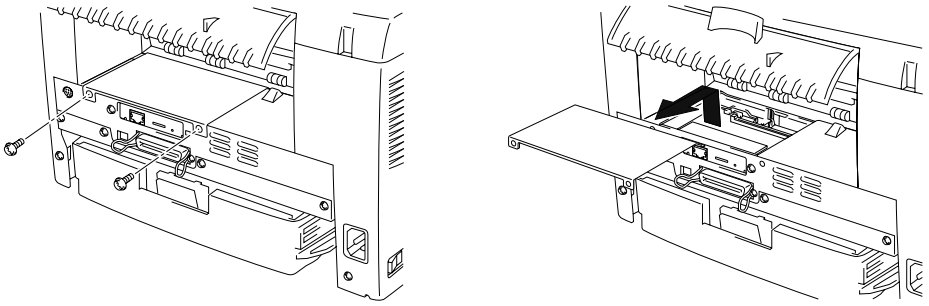


Fig. 2-3 Removing the Main Controller PCB

☛ **3.** Unscrew the network board securing screws and remove it.

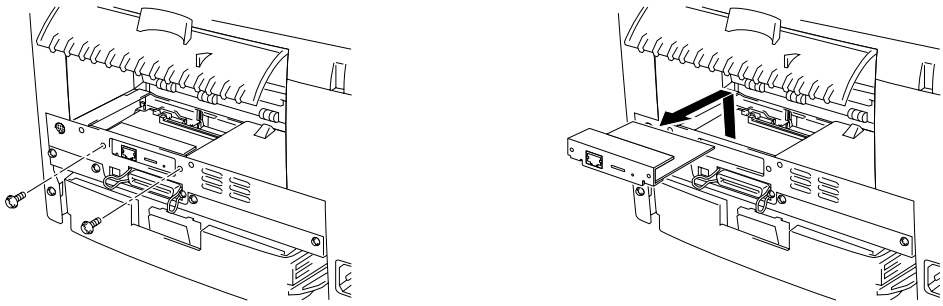


Fig. 2-4 Removing the Network Board

☛ **4.** Unpack the SIMM and hold it by its edge.

> **Caution**
> SIMM boards may be damaged by even a small amount of static electricity. Do not touch the memory chips or the board surface. When handling the board and before installing or removing it, wear an antistatic wrist strap, or frequently touch the surface of the antistatic package or bare metal on the printer.

☛ **5.** Install the SIMM into the slot at an angle and then gently push it toward the vertical until it clicks into place.

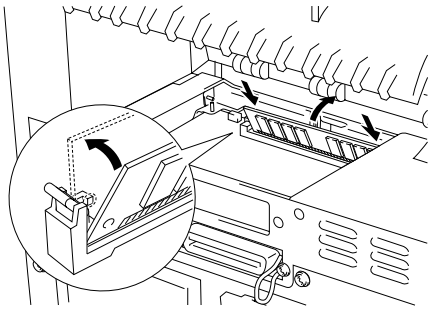


Fig. 2-5 Install the SIMM

☛ **6.** Re-install the network board and secure it with the screws removed in 3 above.

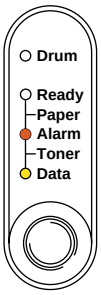
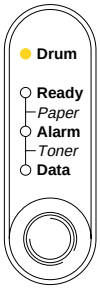
☛ **7.** Secure the access cover with the two screws. Close the Rear Paper exit cover.

☛ **8.** Reconnect the cable from your computer. Plug the power cord into the AC outlet and turn on the power switch.

☛ **9.** To check that the SIMM is installed correctly, perform a Test Print “Print Configuration” to see if the current total memory size has been updated.

CHAPTER3
MAINTENANCE

The following are maintenance messages that appear on the LEDs. These messages prompt you to replace each of the consumables before they run out.

LED Maintenance Message	Consumable to Replace	Approximate Life	How to Replace
Toner empty 	Toner cartridge	3,000 pages * (Standard toner cartridge) 6,000 pages * (High Capacity toner cartridge)	See 3-3
Drum life 	Drum unit	Up to 20,000 pages *	See 3-9

Periodic maintenance parts

To maintain print quality, the parts listed below should be replaced after printing the following number of pages.

Item	Approximate Life	To purchase replacement
Fixing unit	50,000 pages *	Call Customer Support, see page ix
Separator pad holder assembly	50,000 pages *	Call Customer Support, see page ix
Pick up roller assembly	50,000 pages *	Call Customer Support, see page ix

* The actual number of printed pages may vary depending on your average type of print job and type of paper. The figures quoted are based upon 5% coverage per page.

How to replace the Toner Cartridge

When the Standard Capacity toner cartridge is used, the printer can print approximately 3,000 pages at 5% coverage on A4/Letter size paper with one toner cartridge. When the High Capacity toner cartridge is used, approximately 6,000 pages can be printed under the same conditions. When the toner cartridge is running low, the **Alarm** and **Data** (Toner) LEDs blink once every 5 seconds to indicate the toner is depleted and will soon run out.

Note

- Actual page count will vary depending on your average document type. (i.e. standard letter, detailed graphics, etc.)
- We recommend that you always keep a new toner cartridge ready for use in case you get a toner low warning.
- Discard the used toner cartridge according to your local regulations. If you are not sure of them, consult your local dealer. Be sure to seal the toner cartridge tightly so that toner powder does not spill out of the cartridge. Dispose of the used toner cartridge in accordance with local plastic waste regulations.
- We recommend that you clean the printer when you replace the toner cartridge. See "How to clean the printer" in this chapter. You can view a demonstration on the CD video.
- There are many factors that determine the actual toner life, such as temperature, humidity, the type of paper that you use, the number of pages per print job, etc. Under ideal conditions, the average toner life is estimated at approximately 3,000 pages (Standard Capacity toner cartridge) / 6,000 pages (High Capacity toner cartridge). The actual number of pages that your toner will print may be significantly less than this estimate. Because we have no control over the many factors that determine the actual toner life, we cannot guarantee a minimum number of pages that will be printed by your toner.

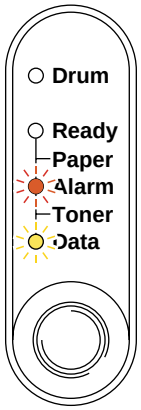


Fig. 3-1 Toner low indication

Note
Both **Alarm** and **Data** (Toner) LEDs will blink continuously to indicate that the toner is nearly empty. This blinking does not stop until you have installed a new toner cartridge.

The toner cartridge is replaced in the following way. You can also view the toner cartridge replacement method in the instructional video on the supplied CD-ROM:

☛ **1.** Open the front cover. Pull out the drum unit assembly.

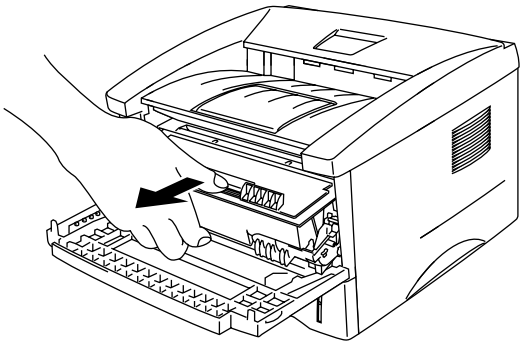


Fig. 3-2 Removing the drum unit

Caution

- It is a good idea to place the drum unit assembly on a piece of cloth or disposable paper in case you accidentally spill or scatter the toner.
- To prevent damage to the printer caused by static electricity, do not touch the electrodes shown below.

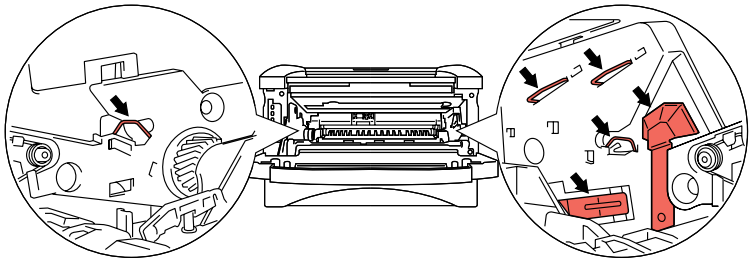


Fig 3-3 Electrodes

☛ **2.** Place the drum unit assembly on a piece of cloth or disposable paper that is on a flat, horizontal surface. Pull the toner cartridge out of the drum unit assembly while holding down the lock lever with your right hand.

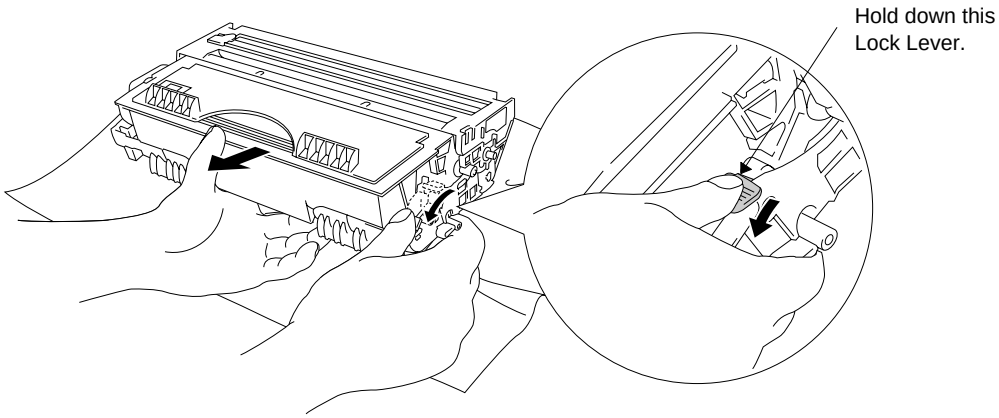


Fig. 3-4 Removing the old toner cartridge

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

☛ **3.** Unpack the new toner cartridge. Keeping it horizontal, gently rock it from side to side 5 or 6 times to distribute the toner evenly inside the cartridge.

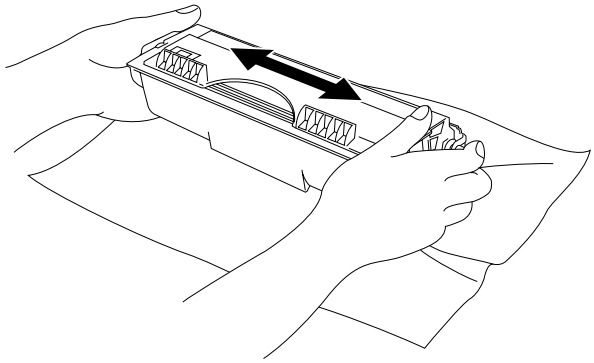


Fig. 3-5 Rocking the toner cartridge

☛ **4.** Remove the protective cover.

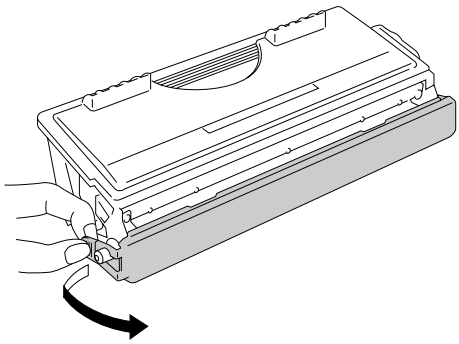


Fig.3-6 Remove the protective cover

Caution

- Wait to unpack the toner cartridge until immediately before you are ready to install it into the printer. If toner cartridges are left unpacked for a long period of time, the toner life is shortened.
- If an unpacked drum unit is subjected to excessive direct sunlight or room light, the unit may be damaged.
- Use only a genuine Brother toner cartridge which is specially formulated to ensure top print quality.
- Printing with a 3rd party toner or 3rd party toner cartridge may reduce not only the print quality but also the quality and life of the printer itself. It may also cause serious damage to the performance and life of a genuine Brother drum unit. Warranty coverage does not apply to problems caused by the use of 3rd party toner or 3rd party toner cartridges.
- Printing with a 3rd party drum unit or OPC drum may reduce not only the print quality but also the quality and life of the printer itself. It may also cause serious damage to the performance and life of a genuine Brother drum unit. Warranty coverage does not apply to problems or damage caused by the use of a 3rd party drum unit or OPC drum.
- Install the toner cartridge immediately after you remove the protective cover. Do not touch the shaded part shown below.

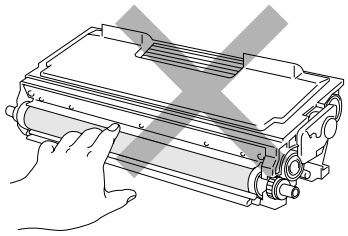


Fig. 3-7 Developer roller

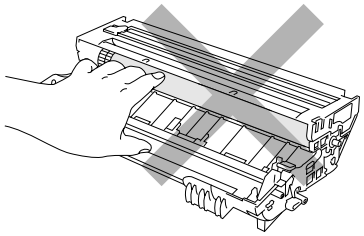


Fig. 3-8 OPC drum

☛ **5.** Install the new toner cartridge into the drum unit until it clicks into place. When the toner cartridge is installed correctly, the lock lever is lifted and locks automatically.

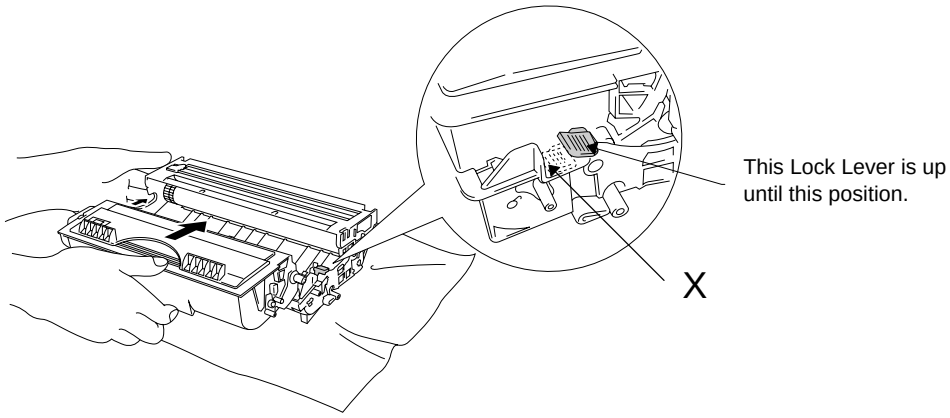


Fig. 3-9 Installing the toner cartridge into the drum unit

> **Caution**
> Make sure the toner cartridge is installed correctly, or the toner cartridge may separate from the drum unit when you hold the drum unit assembly.

☛ **6.** Clean the primary corona wire inside the drum unit by gently sliding the blue tab to the right and the left ends several times. Return the tab to the Home position before reinstalling the drum unit assembly.

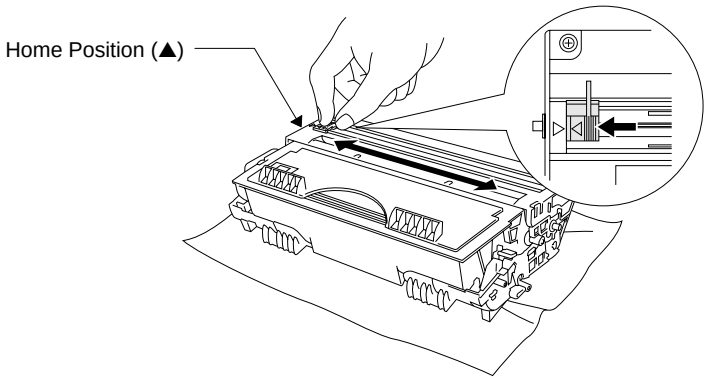


Fig. 3-10 Cleaning the primary corona wire

> **Caution**
> Make sure that you return the tab to the home position (▲ mark position) before reinstalling the drum unit assembly into the printer otherwise printed pages may have vertical stripes.

☛ **7.** Re-install the drum unit assembly into the printer and close the front cover.

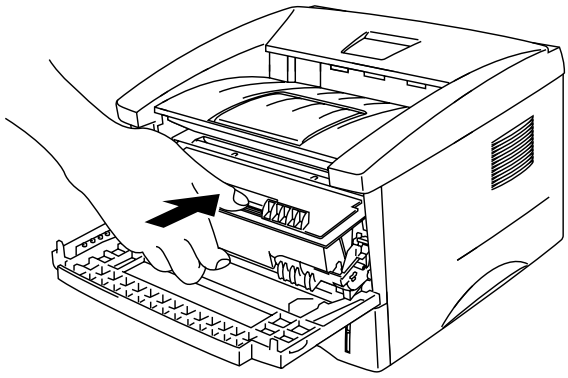


Fig 3-11 Re-install the drum unit assembly

How to replace the Drum Unit

The printer uses a drum unit to create the print images on paper. If the **Drum** LED is lit it indicates the drum unit is near the end of its life. Purchase a new drum unit to replace the current one. Even if the **Drum** LED is on, you may be able to continue to print without replacing the drum unit for a while. However, if there is a noticeable deterioration in the output print quality even before the **Drum** LED lights, then the drum unit should be replaced. You should clean the printer when you replace the drum unit. See "How to clean the printer" in this chapter and in the instructional video on the supplied CD-ROM.

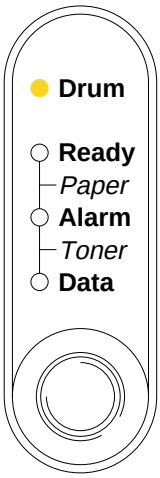


Fig. 3-12 Drum unit near the end of its Life

Caution

When removing the drum unit, handle it carefully because it contains toner.

Note

- The drum unit is a consumable, and it is necessary to replace it periodically.
- There are many factors that determine the actual drum life, such as temperature, humidity, type of paper and toner that you use, the number of pages per print job, etc. Under ideal conditions, the average drum life is estimated at approximately 20,000 pages. The actual number of pages that your drum will print may be significantly less than this estimate. Because we have no control over the many factors that determine the actual drum life, we cannot guarantee a minimum number of pages that will be printed by your drum.
- For best performance, use only genuine Brother toner. The product should be used only in a clean, dust-free environment with adequate ventilation.

You can also view the drum unit replacement method in the instructional video on the supplied CD-ROM.

Follow these steps to replace the drum unit.

☛ **1.** Open the front cover of the printer and pull out the drum unit assembly.

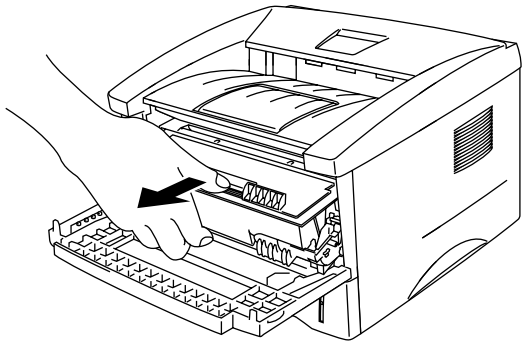


Fig. 3-13 Removing the drum unit assembly

Caution

To prevent damage to the printer caused by static electricity, do no touch the electrodes shown below.

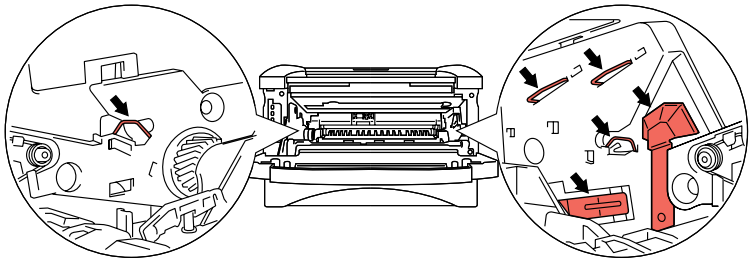


Fig 3-14 Electrodes

☛ **2.** Place the drum unit assembly on a piece of cloth or disposable paper that is on a flat, horizontal surface. Pull the toner cartridge out of the drum unit assembly while holding down the lock lever with your right hand.

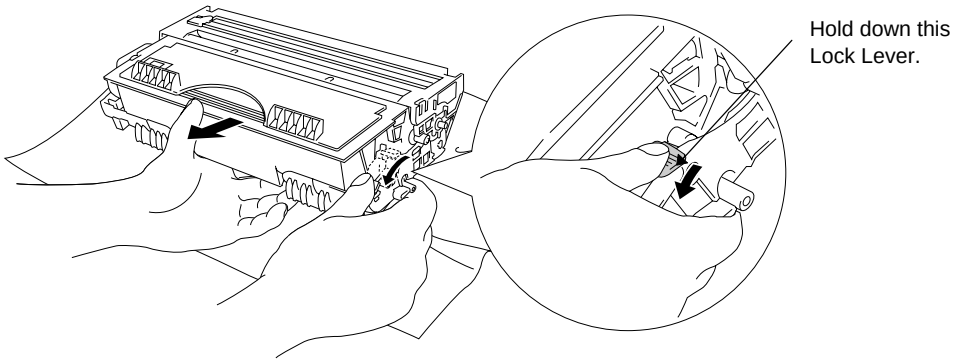


Fig. 3-15 Removing the toner cartridge

Note
- Discard the used drum unit according to local regulations. If you are not sure of them, consult your local dealer/retailer. Be sure to seal up the drum unit tightly so that toner powder does not spill out of the unit.
- It is recommended to put the drum unit on a piece of disposable paper or cloth in case of accidental toner spill or scatter.
- Handle the toner cartridge carefully as it contains toner. If toner scatters and your hands or clothes get dirty, wipe or wash it off with cold water immediately.

☛ **3.** Unpack the new drum unit.

Caution
- Only unpack a drum unit immediately before you need to install it into the printer. If an unpacked drum unit is subjected to excessive direct sunlight or room light, the unit may be damaged.
- Handle the drum unit carefully. If toner scatters on your hands or clothes, wipe or wash it off with cold water immediately.

☛ **4.** Install the toner cartridge into the new drum unit until it locks into place, indicated by a click. When the toner cartridge is installed correctly, the lock lever is lifted automatically.

> **Caution**
> Make sure that the toner cartridge is installed correctly, or the toner cartridge may separate from the drum unit when you hold the drum unit assembly.

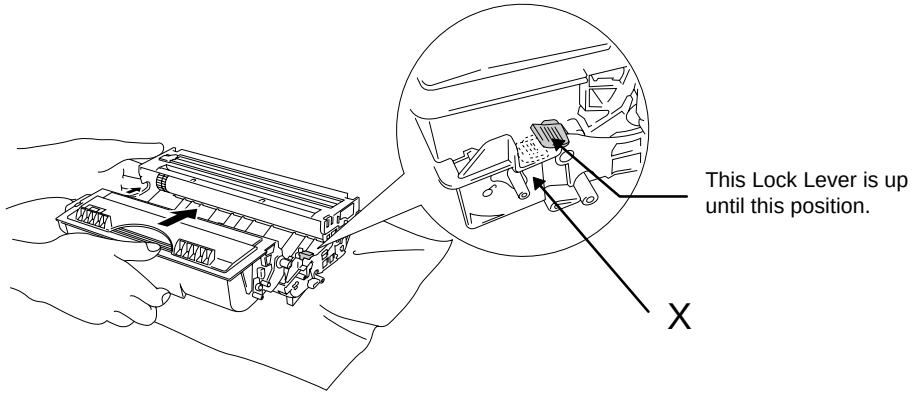


Fig. 3-16 Install the toner cartridge into the drum unit

☛ **5.** Install the drum unit assembly into the printer.

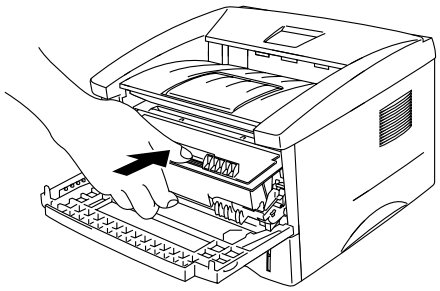


Fig. 3-17 Installing the drum unit

☛ **6.** Make sure the printer is turned on, the front cover is open and the **Drum** and **Alarm** LEDs are illuminated.

☛ **7.** Reset the page counter. See the instructions supplied with the new drum unit.

> **Caution**
> When you replace only the toner cartridge, do not reset the page counter.

☛ **8.** Close the front cover.

☛ **9.** Make sure that the **Drum** LED is now off.

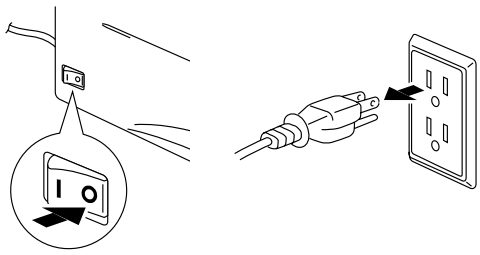
How to clean the printer

Clean the printer exterior and interior periodically. If printed pages get stained with toner, clean the printer interior and drum unit.

Cleaning the printer exterior

> **Note**
> Clean the printer exterior using the information in the following instructions. This procedure is demonstrated in the instructional video on the supplied CD-ROM.

☛ **1.** Turn off the power switch and unplug the power cord.

> **⚠ Warning**
> **There are high voltage electrodes inside the printer. Before cleaning the printer, make sure you have turned off the power switch and unplugged the power cord from the power outlet.**
>
> 
>
> **Fig. 3-18 Turning off the switch and unplugging the power cord**

☛ **2.** Use a damp cloth for cleaning.

Caution

Use water or neutral detergents for cleaning. Cleaning with volatile liquids such as thinners or benzene will damage the surface of the printer.

☛ **3.** Wipe dirt and dust away from the printer exterior with the damp cloth and allow the printer to dry completely before turning the power on again.

☛ **4.** Plug in the power cord.

Cleaning the printer interior and Drum Unit

> **Note**
> Clean the printer interior and the drum unit following the instructions below. You can view this procedure in the instructional video on the supplied CD-ROM.

☛ **1.** Turn off the power switch and unplug the power cord.

> **⚠ Warning**
> - **There are high voltage electrodes inside the printer. Before cleaning the printer, make sure you have turned off the power switch and unplugged the power cord from the outlet.**

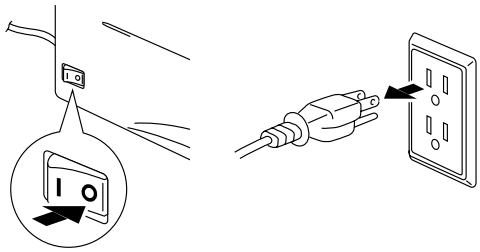


Fig. 3-19 Turning off the switch and unplugging the power cord

☛ **2.** Open the front cover of the printer.

☛ **3.** Take the drum unit assembly out of the printer and place it to one side.

⚠ Warning

After you have just used the printer, some internal parts of the printer are extremely HOT. When you open the front cover of the printer, never touch the shaded parts shown in the following illustration.

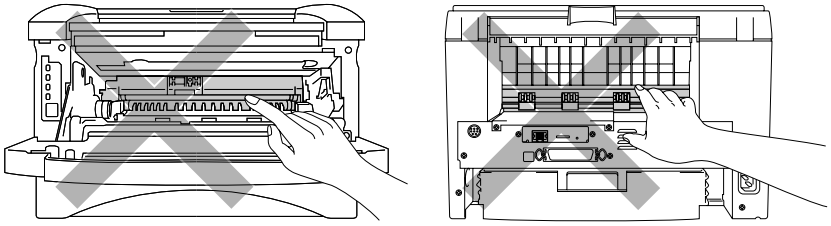


Fig. 3-20 Inside the printer

☛ **4.** Gently wipe the scanner window with a soft dry cloth.

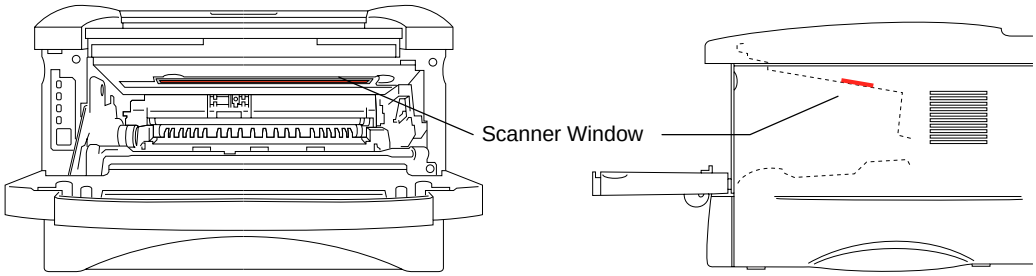


Fig. 3-21 Cleaning the scanner window

❗ Caution

- Do not touch the scanner window with your fingers.
- Do not wipe the scanner window with cleaning alcohol (isopropyl).
- Handle the drum unit carefully because it contains toner. If toner scatters and your hands or cloths get dirty, immediately wipe or wash it off with cold water.

Note

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

☛ **5.** Clean the primary corona wire inside the drum unit by gently sliding the tab to the right hand end and left hand end several times.

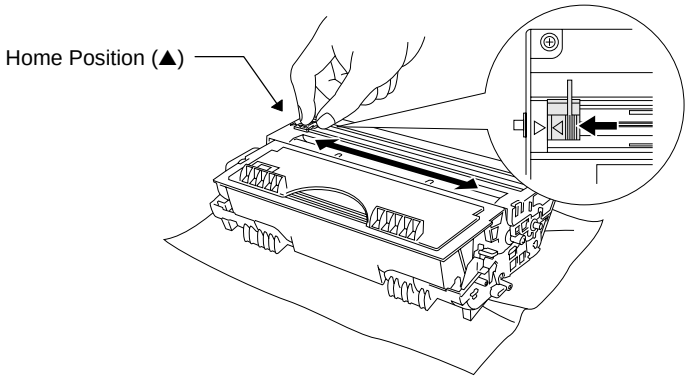


Fig. 3-22 Cleaning the primary corona wire

☛ **6.** Return the tab to the Home position before reinstalling the drum unit assembly into the printer.

> **Caution**
> Be sure to position the tab at the Home position, or printed pages may have vertical stripes.

☛ **7.** Install the drum unit assembly into the printer.
See the section “How to replace the Drum unit” earlier in this Chapter.

☛ **8.** Close the front cover.

☛ **9.** Plug in the power cord and turn on the power switch.

CHAPTER4 TROUBLESHOOTING

Identifying your problem

First, check the following:

- The power plug is connected correctly and the printer is turned on.
- All of the protective parts have been removed.
- The toner cartridge and drum unit are installed correctly.
- The Front Cover is completely closed.
- Paper is loaded correctly in the paper cassette.
- The interface cable is securely connected between the printer and computer.
- The correct driver for the printer is installed and selected.
- The PC is set up to connect to the correct printer port.

Printer does not print

If you did not solve your problem with the above checks, please find your problem in the following list and go to the recommended section.

- **Printer LED is blinking** — Go to **"Control Panel Indications"** on page 4-2.
- **Status Monitor Error Message appears** — Go to **"Error messages in the Status Monitor"** on page 4-6.
- **Printed Error Message** — Go to **"Error Messages printouts"** on page 4-8.
- **Paper Handling** — Go to **"Paper Handling"** on page 4-9, or "**PAPER JAMS and how to clear them"** on page 4-10.
- **Other** — Go to "**Others**" on page 4-15.

Pages are printed, however there are problems with:-

- **Print quality** — Go to **"Improving the print quality"** on page 4-17.
- **Printout is incorrect** — Go to **"How to Print correctly"** on page 4-23.

Network Problems — Please see Network User's Guide

Control Panel Indications

Operator calls and how to clear them

The LED indications as shown in the table below are used in the illustrations in this chapter.

○	LED is Off
☼	LED is Blinking
●	LED is On

If a recoverable error occurs, the printer indicates an ‘operator call’ by the LED indications as shown in the table below.

Identify the error from the table below and take the action described for each indication to correct it. The printer automatically recovers from most errors, but you may also need to reset the printer with the panel button as described below.

For example, the following are the indications when the toner is low.

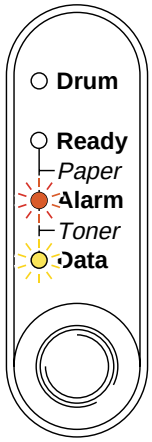
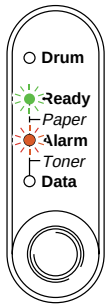
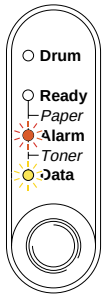
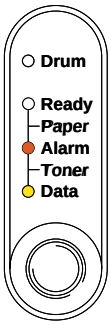


Fig. 4-1 LED indications caused by low toner

LED	Error	Action
	Paper jam	Clear the paper jam. See the next section "PAPER JAMS and how to clear them". Press the panel button if the printer does not automatically resume printing.
	No paper	Load paper into the printer . See Chapter 1, then press the panel button.
	Misfeed	Reinstall the paper and press the panel button.
 (every 5 seconds)	Toner Low	Indicates that the toner cartridge is nearly empty. Purchase a new toner cartridge and have it ready for when Toner Empty status is indicated.
	Toner empty	Replace the toner cartridge with a new one. See Chapter 3.

Service call indications

If an unrecoverable error occurs, the printer will indicate the need for a service call by illuminating all the LEDs, followed by a combination of LEDs as shown below:

For example, the following are the indications when a Fuser malfunction error occurs.

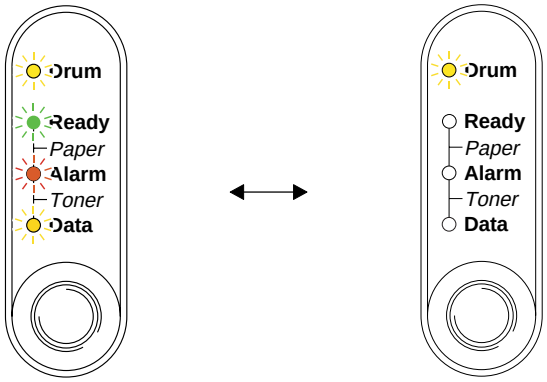


Fig. 4-2 LED indications caused by a fuser malfunction error

Service Call	Fuser Malfunction	Laser BD Malfunction	Scanner Malfunction	ROM Error
Drum	☼	❍	☼	❍
Ready	❍	☼	☼	❍
Alarm	❍	❍	❍	☼
Data	❍	❍	❍	❍

Service Call	D-RAM Error	Service A	Service B	Engine Interface Error
Drum	☼	❍	☼	❍
Ready	❍	☼	☼	❍
Alarm	☼	☼	☼	❍
Data	❍	❍	❍	☼

Service Call	NV-RAM Error	Main motor Malfunction	CPU Runtime Error
Drum	☼	❍	☼
Ready	❍	☼	☼
Alarm	☼	☼	☼
Data	☼	☼	☼

If you see any of these service call indications, turn off the power switch, wait a few seconds, then turn it on and try to print again.

If you cannot clear the error and see the same service call indication after turning on the printer, consult your dealer or our authorized service representative. Please note the indication and report the error status and problem by referring to the above table.

> **Note**
> Make sure the front cover is completely closed before requesting a Service call.

Error Messages in the Status Monitor

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

Error Message	Action
COVER OPEN	• Close the front cover of the printer.
NO PAPER or MISFEED	• The paper cassette may be out of paper or not properly installed. If it is empty, load a new stack of paper into the paper cassette. • If there is paper in the paper cassette, make sure it is straight. If the paper is curled, straighten it before printing. Sometimes it is helpful to remove the paper, turn the stack over and place it back in the paper cassette. • Reduce the amount of paper in the paper cassette, then try again. • Make sure you use paper that meets Brother's recommended paper specifications. See "What kind of paper can I use" in Chapter 1.
PAPER JAM	• See "PAPER JAMS and how clear them".
TONER LOW	• Purchase a new toner cartridge and have it ready for when the Toner Empty status is indicated.
TONER EMPTY	• Refer to "How to replace the Toner cartridge" in Chapter 3 or view the instructional video on the CD-ROM.
PRINT OVERRUN	• Press the panel button to print the data remaining in the printer. • If this does not clear the error, reduce the complexity of your document or reduce the print resolution. • Expand the printer memory by adding a commercially available SIMM. See "How to add extra Memory" in Chapter 2. Set page protection to ON by using the supplied Windows driver or RPC program. • Change the following settings in the supplied Windows driver and try again. The best combination of settings below will vary depending on your document. Graphics Mode True Type™ mode Use Printer True Type™ Fonts

Error Message	Action
MEMORY FULL	• Press the panel button to print the data remaining in the printer. • Reduce the print resolution or reduce the complexity of your document. • Expand the printer memory by adding a commercially available SIMM. Refer to "How to add extra Memory" in Chapter 2.
RESOLUTION ADAPTED (The printer has printed the document at a reduced resolution.)	• Reduce the complexity of your document before you print to prevent automatic reduction of the resolution. • Expand the printer memory by adding a commercially available SIMM memory. Refer to "How to add extra Memory" in Chapter 2.
FUSER MALFUNCTION	• Turn the power switch off, wait a few seconds and then turn it on again. • Leave the printer for 10 minutes with the power on. If the error occurs again, consult your dealer.
LASER BD MALFUNCTION	• Turn the power switch off, wait a few seconds and then turn it on again. If the error occurs again, consult your dealer.
SCANNER MALFUNCTION	• Turn the power switch off, wait a few seconds and then turn it on again. If the error occurs again, consult your dealer.
D-RAM ERROR	• Turn the power switch off, wait a few seconds and then turn it on again. If the error occurs again, consult your dealer.
NV-RAM ERROR	• Turn the power switch off, wait a few seconds and then turn it on again. If the error occurs again, consult your dealer.
MAIN MOTOR ERROR	• Turn the power switch off, wait a few seconds and then turn it on again. If the error occurs again, consult your dealer.
ENGINE INTERFACE ERROR	• Turn the power switch off, wait a few seconds and then turn it on again. If the error occurs again, consult your dealer.

Error Message Printouts

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

Error Message	Action
MEMORY FULL	• Press the panel button to print the data remaining in the printer. • Reduce the print resolution or reduce the complexity of your document. • Expand the printer memory by adding a commercially available SIMM. See "How to add extra Memory" in Chapter 2.
PRINT OVERRUN	• Press the panel button to print the data remaining in the printer. • If this does not clear the error, reduce the complexity of your document or reduce the print resolution. • Expand the printer memory by adding a commercially available SIMM. Refer to "How to add extra Memory" in Chapter 2. Set page protection to ON by using the supplied Windows driver or RPC program. • Change the following settings in the supplied Windows driver and try again. The best combination of settings below will vary depending on your document. Graphics Mode True Type™ mode Use Printer True Type™ Fonts
RESOLUTION ADAPTED (The printer has printed the document at a reduced resolution)	• Reduce the complexity of your document before you print to prevent automatic reduction in the resolution. • Expand the printer memory by adding a commercially available SIMM. See "How to add extra Memory" in Chapter 2.

Paper Handling

First, ensure that you are using paper that meets Brother recommended paper specifications. See "What kind of paper can I use" in Chapter 1.

Problem	Recommendation
The printer does not load paper.	• If there is paper in the paper cassette, make sure it is straight. If the paper is curled, you should straighten it before printing. Sometimes it is helpful to remove the paper, turn the stack over and put it back into the paper cassette. • Reduce the amount of paper in the paper cassette, then try again. • Check that manual feed mode is not selected in the printer driver.
The printer does not feed paper from the manual feed slot.	• Re-insert the paper firmly, one sheet at a time. • Make sure the manual feed mode is selected in the printer driver.
The printer will not feed envelopes.	• The printer can feed envelopes from the manual feed slot. Make sure your application software is set up correctly to print on the envelope size you are using. This is usually done in the page setup or document setup menu of your software. See your software application manual.
A paper jam has occurred.	• See "PAPER JAMS and how to clear them" below or the paper jam instructional video on the CD-ROM.
The printer does not print to the output tray.	• Close the rear cover.
The printer does not print on the specified paper. **(Optional Lower Tray Unit Only)**	• Make sure that the cable is connected to the printer • Make sure that the appropriate printer driver is selected.

PAPER JAMS and how to clear them

When a paper jam occurs, the printer notifies you by illuminating the LEDs as shown below.

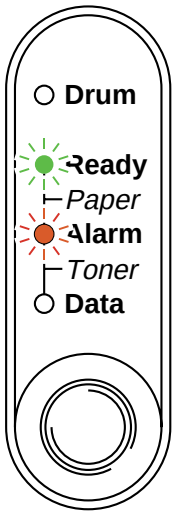
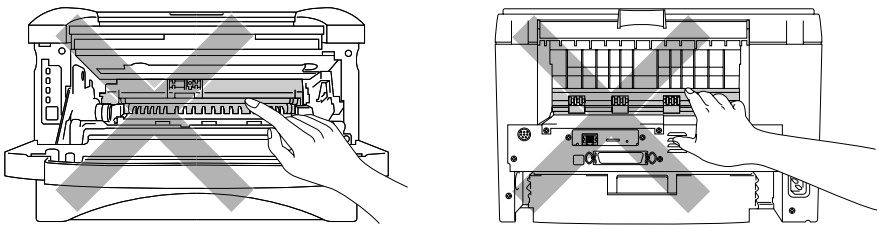


Fig. 4-3 LED indication caused by a paper jam

⚠ Warning

After you have just used the printer, some internal parts of the printer are extremely HOT. When you open the front or rear cover of the printer, never touch the shaded parts shown in the following diagram.



High temperature
Front view

High temperature
Rear view

Fig 4-4 Inside the printer

Clear the jammed paper. See the following instructions or view the paper jam instructional video on the CD-ROM.

If the jammed paper is removed completely by using these steps, you can close the paper cassette first, then close the front cover. The printer should resume printing. If the printer does not resume printing automatically, press the control panel button. If the printer still does not resume printing, please check that all the jammed paper has been removed from the printer. Then try printing again.

Note
- If a paper jam occurs when using the lower tray unit, check for correct installation of the upper paper cassette.
- Always remove all paper from the paper cassette and straighten the stack when new paper is added. This helps prevent multiple sheets of paper from feeding through the printer at once and reduces paper jams.

☛ **1.** Completely remove the paper cassette from the printer.

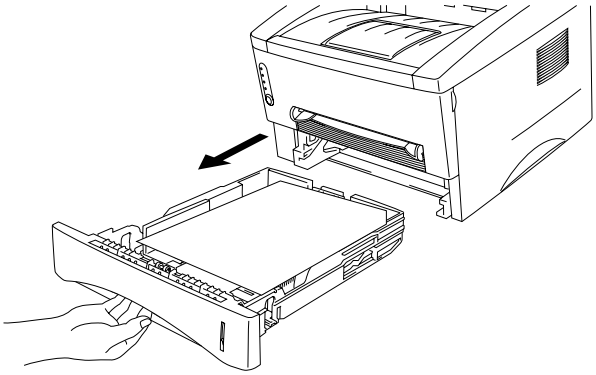


Fig. 4-5 Remove the paper cassette

☛ **2.** Pull any jammed paper up and out of the printer.

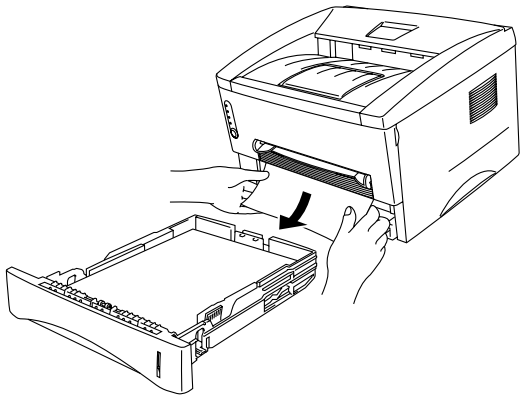


Fig. 4-6 Pull the jammed paper up and out

☛ **3.** Open the front cover.

☛ **4.** Remove the drum unit assembly. Pull any jammed paper up and out of the printer. Do not use additional force to remove the drum unit assembly if you cannot remove it easily. Instead, pull the edge of the jammed paper from the paper cassette.

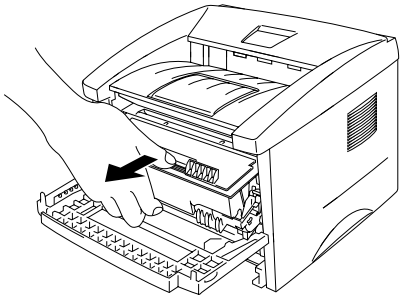


Fig. 4-7 Remove the drum unit assembly

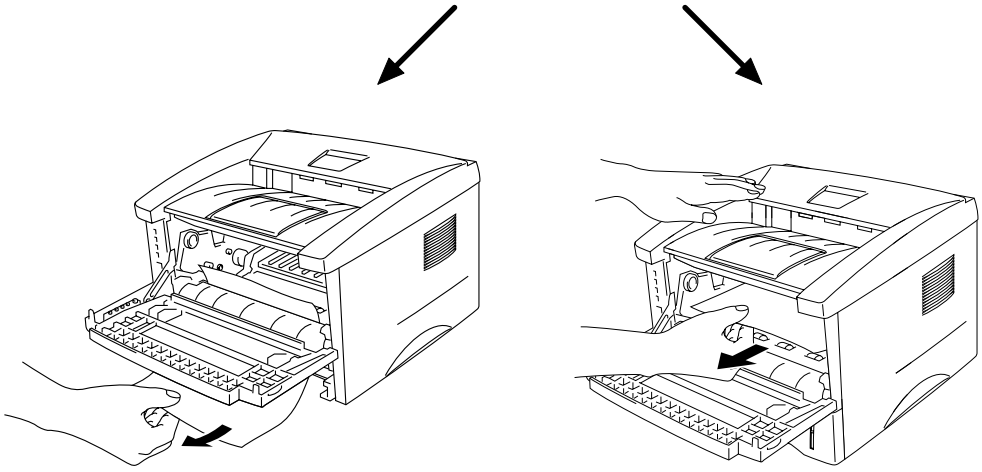


Fig. 4-8 Pull out the jammed paper

Caution

To prevent damage to the printer caused by static electricity, do not touch the electrodes shown below.

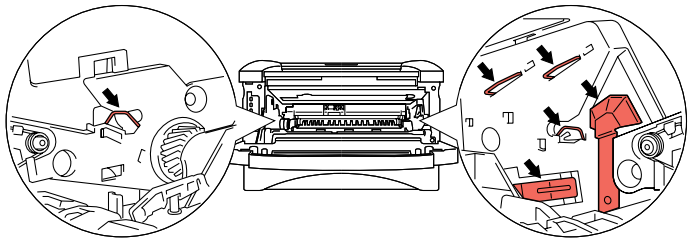


Fig. 4-9 Electrodes

☛ **5.** Open the rear cover and pull the jammed paper out of the fuser unit.
If you have to pull the paper toward the back of the printer, the fuser may get dirty with toner powder and may result in scattered toner on the next printed page or pages. Print a few copies of the test page until the toner scatter on the printed pages stops.

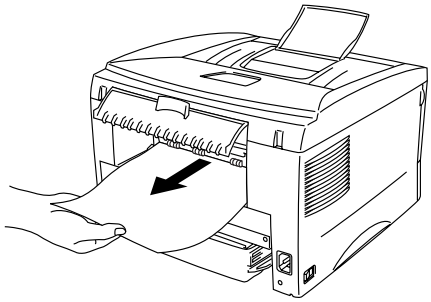


Fig. 4-10 Pull out the jammed paper

☛ **6.** Close the rear cover.

☛ **7.** Re-install the drum unit assembly and close the front cover.

Other

Problem	Recommendation
The printer cannot print. "There was an error writing to LPT1: (or BRUSB) for the printer." error message appears on your PC.	• Check that the printer cable is not damaged or broken. • If you have an interface switching device, make sure the correct printer is selected.

For DOS users

Problem	Recommendation
Unable to print from application software.	• Check that the DOS application software interface settings match that of your printer : for example, if you are using a parallel printer cable, you would most likely set your DOS software printer port to LPT1. • Check if the printer has any printer alarms. • Check if the appropriate printer is selected in your application software.

For Apple Macintosh Computers user

Problem	Recommendation
Unable to print from application software.	• Make sure the supplied Macintosh printer driver is installed in the System Folder and it is selected with Chooser. • Check the PORT selection within the Chooser : it should match the port to which you physically attached the printer cable. • Check the printer cable type : you cannot use a Local Talk or straight-through cable.

For iMac and Power Macintosh G3 with USB

Problem	Recommendation
This printer does not appear in Chooser.	• Check the printer is turned on. • Check the USB interface cable is connected correctly. • Check the printer driver is installed correctly.
Unable to print from application software.	Make sure that the supplied Macintosh printer driver is installed in the System Folder and it is selected with Chooser.

Improving the print quality

> **Caution**
> If the **Drum** LED is lit you can clear a print quality problem by replacing the drum unit with a new one. The Drum LED indicates that the drum unit is at the end of life.

This section provides information on the following topics:

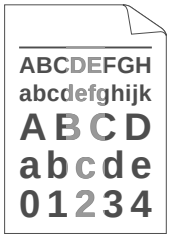
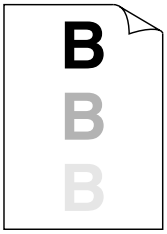
Image defect examples	Recommendation
 **Faint**	• Check the printer's environment. Conditions such as high humidity, high temperatures, etc. may cause this print defect to occur. • If the whole page is too light, toner save mode may be on. Disable toner save mode within the Printer Properties tab of the Driver. • Try installing a new toner cartridge. See “How to replace the Toner cartridge” in Chapter 3. • Try installing a new drum unit. See "How to replace the Drum unit" in Chapter 3.
Gray background	• Make sure that you use paper that meets the Brother recommended specifications. See “What kind of paper can I use” in Chapter 1. • Check the printer's environment; high temperature and high humidity conditions can increase the amount of background shading. • Installing a new toner cartridge. See "How to replace the Toner cartridge" in Chapter 3. • Installing a new drum unit. See "How to replace the Drum unit" in Chapter 3.
 **Ghost**	• Make sure that you use paper that meets the specifications. A rough surfaced paper, paper that has absorbed moisture or thick media can cause the problem. • Make sure that you select the appropriate media type in the printer driver. See “What kind of paper can I use” in Chapter 1. • Try installing a new drum unit. See “How to replace the Drum unit” in Chapter 3.

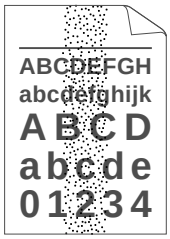
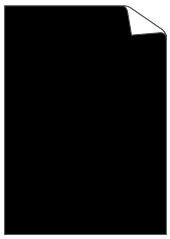
Image defect examples	Recommendation
 **Toner specks**	• Make sure that you use paper that meets the specifications. A rough surfaced paper may cause the problem. See “What kind of paper can I use” in Chapter 1. • The drum unit may be damaged. Install a new drum unit. See "How to replace the Drum unit" in Chapter 3.
 Hollow print	• Make sure you use paper that meets the specifications. See “What kind of paper can I use” in Chapter 1. • Select the ‘Thick paper mode’ in the printer driver, or use thinner paper than you are currently using. • Check the printer’s environment as conditions such as high humidity may cause this situation to occur.
 **All black**	• Clean the primary corona wire of the drum unit. See "How to clean the printer interior and Drum unit" in Chapter 3. • The drum unit may be damaged. Install a new drum unit. See "How to replace the Drum unit" in Chapter 3.

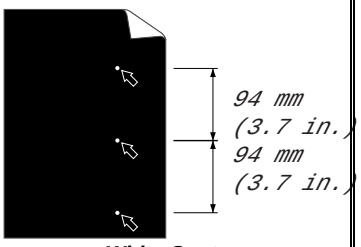
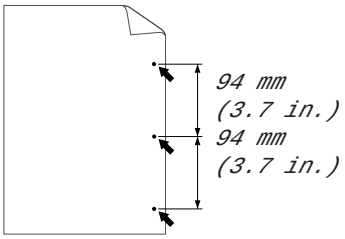
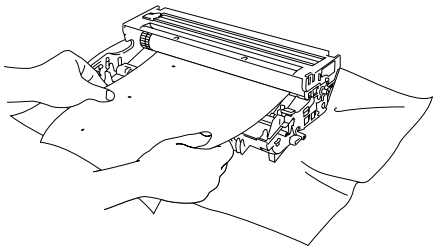
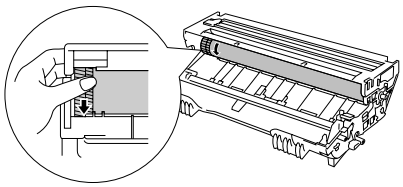
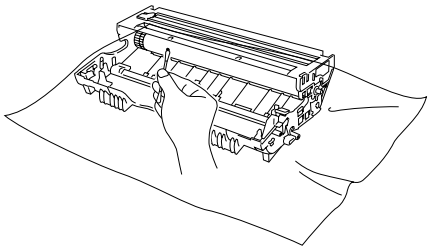
Image defect examples	Recommendation
 **White Spots** Printed pages have white spots in black text and graphics at intervals of 94 mm.  **Black Spots** Printed pages have black spots at intervals of 94 mm.	• If the problem is not solved after printing a few pages, the drum unit may have glue from label stock on the OPC drum surface. Clean the drum unit as follows 1. Position the print sample in front of the drum unit, and find the exact position of the image defect.  **Fig.4-11 Find the exact position of the image defect** 2. Turn the drum unit gear by hand while looking at the surface of the OPC drum.  **Fig. 4-12 Turn the drum gear** 3. When you have located the mark on the drum that matches the print sample, wipe the surface of the OPC drum with a cotton swab until the dust or paper powder on the surface comes off.  **Fig. 4-13 Wipe the surface of the OPC drum**

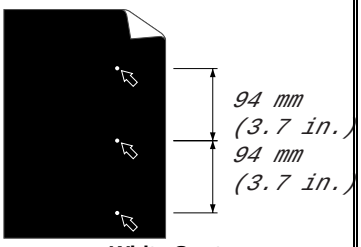
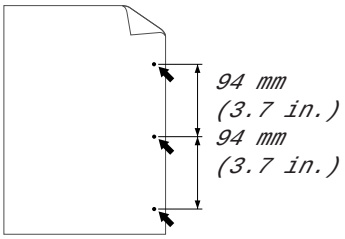
Image defect examples	Recommendation
 **White Spots** Printed pages have white spots in black text and graphics at intervals of 94 mm.  Printed pages have black spots at intervals of 94 mm.	**Caution** Do not try to clean the surface of the photosensitive drum with anything sharp such as a ball-point pen etc. • The drum unit may be damaged. Install a new drum unit. See "How to replace the Drum unit" in Chapter 3.

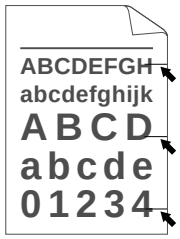
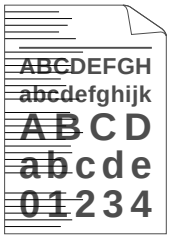
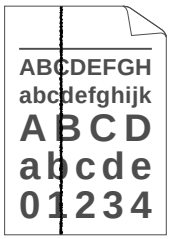
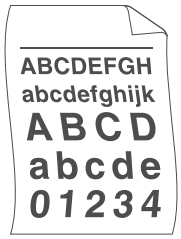
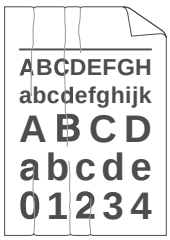
Image defect examples	Recommendation
 **Black Horizontal repetitive defects** Toner scatters and stains the printed page.	• The drum unit may be damaged. Install a new drum unit. See "How to replace the Drum unit" in Chapter 3. • Make sure you use paper that meets specifications. See "What kind of paper can I use" in Chapter 1. **Note** • If you use label sheets for laser printers, the glue from the sheets may sometimes stick to the OPC drum surface. Clean the drum unit. See the previous page. • Do not use paper that has paper clips or staples because they will scratch the surface of the drum. • If the unpacked drum unit is subjected to excessive direct sunlight or room light, the unit may be damaged.
 White horizontal stripes	• Make sure you use paper that meets the specifications. A rough surfaced paper or thick media can cause the problem. • Make sure you select the appropriate media type in the printer driver. • The problem may disappear by itself. Try printing multiple pages to clear this problem, especially if the printer has not been used for a long time. • The drum unit may be damaged. Install a new drum unit. See "How to replace the Drum unit" in Chapter 3.
 **Horizontal Lines**	• Clean the printer interior and the primary corona wire in the drum unit. See "How to clean the printer" in Chapter 3. • The drum unit may be damaged. Install a new drum unit. See "How to replace the Drum unit" in Chapter 3.
 **Black Vertical lines** Printed pages are stained with toner or have vertical stripes.	• Clean the primary corona wire of the drum unit. See "How to clean the printer interior and Drum unit" in Chapter 3. • Make sure that the primary corona wire cleaner is at the home position. • The drum unit may be damaged. Install a new drum unit. See "How to replace the Drum unit" in Chapter 3. • The toner cartridge may be damaged. Install a new toner cartridge. See "How to replace the Toner cartridge" in Chapter 3. Make sure that a torn piece of paper is not covering the scanner window inside the printer. • The fixing unit may be smudged. Call Customer Support.

Image defect examples	Recommendation
. **White Vertical streaks**	• You may clear the problem by wiping the scanner window with a soft cloth. See “How to clean the printer” in Chapter 3. • The toner cartridge may be damaged. Install a new toner cartridge. See "How to replace the Toner cartridge" in Chapter 3.
  Page skew	• Make sure the paper or other media is loaded into the paper cassette correctly and that the guides are not too tight or too loose against the paper stack. • Set the paper guides correctly. Make sure that the tip of the paper guides fit into the slot correctly. See “How to load paper into the Paper cassette” in Chapter 1. • If you are using the manual feed slot see "How to use the Manual Feed Slot" in Chapter 1. • The paper cassette may be too full. See "How to load paper into the paper cassette" in Chapter 2. • Check the paper type and quality. See "What kind of paper can I use" in Chapter 1.
 **Curl or wave**	• Check the paper type and quality. Both high temperature and humidity will cause paper to curl. See “What kind of paper can I use” in Chapter 1. • If you use the printer infrequently, the paper may have remained in the paper cassette too long. Turn over the stack of paper in the paper cassette. Also, try rotating the paper 180° in the paper cassette. • Try printing using the straight-through output path. See "How to use the Manual Feed Slot" in Chapter 1.
 **Wrinkles or creases**	• Make sure that paper is loaded properly. See "How to load paper into the paper cassette" in Chapter 1. • Check the paper type and quality. See “What kind of paper can I use” in Chapter 1. • Try printing using the straight-through output path. See "How touse the Manual Feed Slot" in Chapter 1. • Turn over the stack of paper in the tray or try rotating the paper 180° in the input tray.

How to print correctly

Problem	Recommendation
The printer prints unexpectedly or it prints garbage data.	• Make sure the printer cable is not too long. We recommend using a parallel cable of less than 2 metres (6.6 feet) in length. • Check if the printer cable is damaged or broken. • If you are using an interface switching device, remove it and connect your computer directly to your printer, then try again. • Check that the appropriate printer driver is selected for 'Set as Default'. • Check that the printer is not connected to the same port that is also connected to a mass storage device or scanner. Remove all other devices and connect the port to the printer only. Turn off printer status reporting in the device options tab in the printer driver.
The printer cannot print full pages of a document. An error message "PRINT OVERRUN" occurs.	• Press the panel button to print the data remaining in the printer. • If this does not clear the error, reduce the complexity of your document or reduce the print resolution. • Expand the printer memory by adding a commercially available SIMM. See "How to add extra Memory" in Chapter 2. Set page protection to ON by using the supplied Windows driver or RPC program. • Change the following settings in the supplied Windows driver and try again. The best combination of settings below will vary depending on your document. Graphics Mode True Type™ mode Use Printer True Type™ Fonts
The printer cannot print full pages of a document. A "MEMORY FULL" error message occurs.	• Press the panel button to print the data remaining in the printer. • Reduce the print resolution or reduce the complexity of your document. • Expand the printer memory by adding a commercially available SIMM. See "How to add extra Memory" in Chapter 2.
My headers or footers appear when I view my document on screen but do not show up when I print them.	• Most laser printers have a restricted area that cannot be printed on. Usually the first two lines and the last two lines of a page cannot have print (leaving 62 printable lines). Adjust the top and bottom margins in your document to allow for this.

For DOS users

Problem	Recommendation
The printer prints, but it prints incorrect information. Sometimes it prints a couple of characters and then ejects the page, etc.	• This is an indication that your application printer emulation setting and the printer's emulation do not match. Check in your application software which printer you have selected to make sure the printer is set up correctly. Remember the printer emulates widely used printer selections: HP LaserJet 6P, Brother BR-Script Level 2, Epson FX-850 and IBM Proprinter XL. Try setting the printer into HP emulation and then select the HP LaserJet 6P printer in your application software.

APPENDIX

Printer Technical Specifications

Printing

Print Method	Electrophotography by semiconductor laser beam scanning	
Laser	Wavelength: Output:	780 nm 5 mW max
Resolution		1200 (H) x 600 (V) dots/inch (for Windows® DIB graphics) 600 (H) x 600 (V) dots/inch (for Windows® and DOS)
Print Quality	Normal printing mode Economy printing mode (up to 25% and 50% toner saving)	
Print Speed	Up to 12 pages per minute	When A4 or letter-size paper is loaded from the paper cassette.
	NOTE: Maximum print speed is obtained by printing several copies of the same page. Print speed may vary depending on interface type, emulation, processing power of the computer, memory allocated to the print job, paper size and graphic quality.	
Warm-Up	Max. 45 seconds at 23°C (73.4°F)	The warm up time depends on the ambient temperature and humidity.
First Print	15 seconds	When A4 or letter-size paper is loaded from the paper cassette

Print Media	Toner cartridge:	3,000 pages/standard capacity toner cartridge
Life Expectancy:		6,000 pages/high capacity toner cartridge (When printing A4- or letter-size paper at 5% print coverage.)
	NOTE: Toner life expectancy will vary depending on the type of average print job printed.	
Life Expectancy:	Drum unit:	Average up to 20,000 pages
	NOTE: There are many factors that determine the actual drum life, such as temperature, humidity, type of paper and toner that you use, the number of pages per print job, etc.	

Functions

TrueType Fonts on CD	TrueType-compatible soft-fonts for Windows are provided on the supplied CD. Quantity of fonts is 35.	
Emulation	Brother Printing Solution for Windows® Automatic emulation selection among HP LaserJet6P (PCL 6), Brother BR-Script Level 2, EPSON FX-850 or IBM Proprinter XL.	
Printer Driver	PCL driver: Windows® 3.1/3.11, Windows® 95/98 and Windows NT® 4.0 driver, supporting Brother Native Compression mode Windows® 3.1/3.11, Windows 95/98® driver, supporting bi-directional capacity PS driver: PPD file driver for Windows® 95/98 and Windows NT® 4.0 driver iMac, Power Macintosh G3 with USB printer driver Apple Macintosh (ppd file for Apple LaserWriter driver)	
Interface	Bi-directional parallel USB interface 10/100 BaseTX Ethernet network interface	
Memory	4 MB	Expandable up to 36 MB by installing an industry standard SIMM
Diagnostics	Self-diagnostic program	

Electrical and Mechanical

Power Source	USA and Canada: Europe and Australia:	AC 110 to 120 V, 50 / 60 Hz AC 220 to 240 V, 50 /60 Hz
Power Consumption	Printing (average): Stand-by: Sleep	340 W or less 80 W or less 12 W or less
Noise	Printing: Sleep:	49 dB A or less 27 dB A or less
Temperature	Operating: Storage:	10 to 32.5°C (50 to 90.5°F) 0 to 40°C (38 to 104°F)
Humidity	Operating: Storage:	20 to 80% (without condensation) 20 to 80% (without condensation)
Dimensions (W x D x H)	A4 or letter-size paper cassette: Legal paper cassette: (USA and Canada Only)	360 x 370 x 235 mm (14.2 x 14.6 x 9.3 inches) 360 x 430 x 235 mm (14.2 x 16.9 x 9.3 inches)
Weight		Approx. 9.3 kg (20.5 lbs) including the drum unit and toner cartridge

Parallel Interface Specifications

Note

- To ensure best quality performance use an IEEE 1284 compliant parallel cable between the printer and your computer. Only IEEE 1284 cables support all of the advanced printing capabilities, such as bi-directional communication. These cables will be clearly marked with “IEEE-1284”.
- We recommend that you use a parallel cable that is 2.0 meters (6.6 feet) or less.

Interface Connector Printer Side: Amphenol 57RE-40360-730B (D12) or equivalent
A shielded cable should be used.

Pin Assignment

Pin No.	Signal	Direction	Pin No.	Signal	Direction
1	$\overline{\text{DATA STROBE}}$	Input	19	0V (S.G.)	–
2	DATA 1	Input	20	0V (S.G.)	–
3	DATA 2	Input	21	0V (S.G.)	–
4	DATA 3	Input	22	0V (S.G.)	–
5	DATA 4	Input	23	0V (S.G.)	–
6	DATA 5	Input	24	0V (S.G.)	–
7	DATA 6	Input	25	0V (S.G.)	–
8	DATA 7	Input	26	0V (S.G.)	–
9	DATA 8	Input	27	0V (S.G.)	–
10	$\overline{\text{ACKNLG}}$	Output	28	0V (S.G.)	–
11	BUSY	Output	29	0V (S.G.)	–
12	PE	Output	30	0V (S.G.)	–
13	SLCT	Output	31	$\overline{\text{INPUT PRIME}}$	Input
14	$\overline{\text{AUTO FEED}}$	Input	32	$\overline{\text{FAULT}}$	Output
15	N.C.	–	33	N.C.	–
16	0V (S.G.)	–	34	N.C.	–
17	0V (S.G.)	–	35	N.C.	–
18	+5V	–	36	$\overline{\text{SLCT IN}}$	Input

Note
To use bi-directional communication, you must set up an interface cable that has the pin connections listed above.

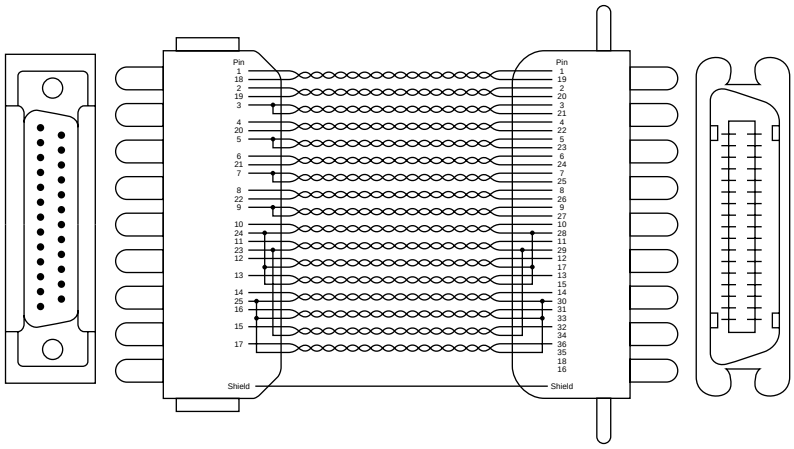


Fig. A-1 Parallel interface cable

USB (Universal Serial Bus) Interface

Universal Serial Bus (USB) Interface

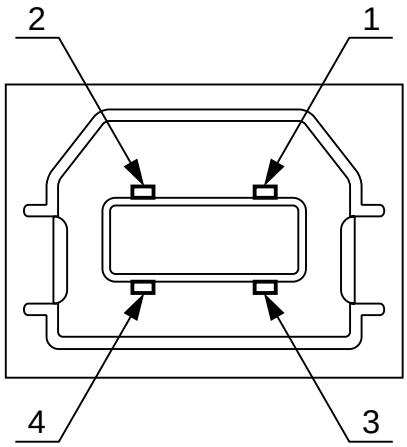


Fig. A-2 USB interface connector

Pin Assignment

Pin No.	Signal	
1	Vcc (+5V)	
2	- Data	Serial Data -
3	+ Data	Serial Data +
4	Ground	

Network Interface

Network Interface

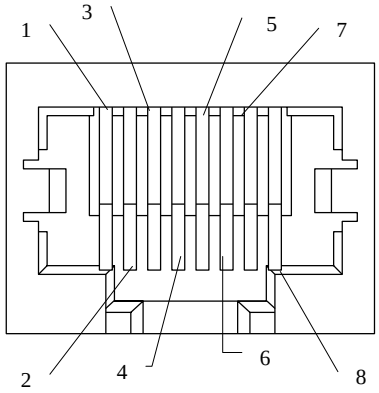


Fig. A-3 10/100Base TX Port

Pin Assignment

RJ45 pin	Signal
1 TX+	Transmit Data +
2 TX–	Transmit Data –
3 RX+	Receive Data +
4	N.C.
5	N.C.
6 RX–	Receive Data –
7	N.C.
8	N.C.

For more information, see the “Network User’s Guide” on the CD-ROM.

Emulation Modes

This printer has the following emulations modes:

■ HP LaserJet Mode

This printer uses the HP LaserJet mode (or HP mode) that emulates the Hewlett-Packard LaserJet laser printer. Since many application software packages support the HP LaserJet printer, your printer will operate at its optimum performance in this mode.

■ BR-Script 2 Mode

BR-Script is a Brother original page description language and is a PostScript® language emulation interpreter. This printer supports level 2. This BR-Script interpreter enables full and satisfactory control of text and graphics on the pages.

Average users will not need extensive knowledge of the PostScript® language. However, if you want to obtain technical information about PostScript® commands, see the following commercial manuals:

- Adobe Systems Incorporated. *PostScript® Language Reference Manual, 2nd Edition.* Menlo Park: Addison-Wesley Publishing Company, Inc., 1990.
- Adobe Systems Incorporated. *PostScript® Language Program Design*. Menlo Park: Addison-Wesley Publishing Company, Inc., 1988.
- Adobe Systems Incorporated. *PostScript® Language Reference Manual*. Menlo Park: Addison-Wesley Publishing Company, Inc., 1985.
- Adobe Systems Incorporated. *PostScript® Language Tutorial and Cookbook*. Menlo Park: Addison-Wesley Publishing Company, Inc., 1985.

■ EPSON FX-850 and IBM Proprinter XL Mode

The EPSON FX-850 and IBM Proprinter XL modes are the emulation modes this printer uses to emulate the industry-standard dot matrix printers of their respective manufacturer. Since most applications support these printers, you do not have to be concerned about compatibility.

Resident Fonts

The following bitmapped fonts are resident in this printer.

Bitmapped Fonts

This printer has the following bitmapped fonts. They can be used in the HP LaserJet 6P, EPSON FX-850, and IBM Proprinter XL modes. They have the following characteristics.

- Letter Gothic 16.66 Normal, Italic, Bold, BoldItalic (Portrait & Landscape)
- OCR-A(Portrait & Landscape)
- OCR-B(Portrait & Landscape)

Scalable Fonts

The following scalable fonts can be used in the HP LaserJet 6P, EPSON FX-850 and IBM Proprinter XL modes.

75 Scalable and 12 Bitmapped Fonts

This printer has the following scalable fonts and bitmapped fonts. The fonts that can be used will vary according to the current emulation mode.

■ HP LaserJet, EPSON FX-850 and IBM Proprinter XL Modes

Scalable Fonts:

Intellifont Compatible Fonts:

- Alaska, Extrabold
- Antique Oakland, Oblique, Bold
- Brougham, Oblique, Bold, BoldOblique
- Cleveland Condensed
- Connecticut
- Guatemala Antique, Italic, Bold, BoldItalic
- Letter Gothic, Oblique, Bold
- Maryland
- Oklahoma, Oblique, Bold, BoldOblique
- PC Brussels Light, LightItalic, Demi, DemiItalic
- PC Tennessee Roman, Italic, Bold, BoldItalic
- Utah, Oblique, Bold, BoldOblique
- Utah Condensed, Oblique, Bold, BoldOblique

Microsoft® Windows® 3.1 / Windows 95 TrueType™

Compatible Fonts:

- BR Symbol
- Helsinki, Oblique, Bold, BoldOblique
- Tennessee Roman, Italic, Bold, BoldItalic
- W Dingbats

Type 1 Font Compatible Fonts:

- Atlanta Book, BookOblique, Demi, DemiOblique
- Calgary MediumItalic
- Copenhagen Roman, Italic, Bold, BoldItalic
- Portugal Roman, Italic, Bold, BoldItalic

Brother Original Fonts:

- Bermuda Script
- Germany
- San Diego
- US Roman

Bitmapped Fonts (Portrait and Landscape):

- LetterGothic16.66 Medium, Italic, Bold, BoldItalic
- OCR-A
- OCR-B

■ BR-Script 2 Mode

Scalable Fonts:
- Atlanta Book, BookOblique, Demi, DemiOblique
- Alaska, Extrabold
- Antique Oakland, Oblique, Bold
- Bermuda Script
- BR Dingbats
- BR Symbol
- Brougham, Oblique, Bold, BoldOblique
- Brussels Light, LightItalic, Demi, DemiItalic
- Calgary MediumItalic
- Cleveland Condensed
- Connecticut
- Copenhagen Roman, Italic, Bold, BoldItalic
- Germany
- Guatemala Antique, Italic, Bold, BoldItalic
- Helsinki, Oblique, Bold, BoldOblique
- Helsinki Narrow, Oblique, Bold, BoldOblique
- Letter Gothic, Oblique, Bold
- Maryland
- Oklahoma, Oblique, Bold, Bold Oblique
- Portugal Roman, Italic, Bold, BoldItalic
- San Diego
- Tennessee Roman, Italic, Bold, BoldItalic
- US Roman
- Utah, Oblique, Bold, BoldOblique
- Utah Condensed, Oblique, Bold, BoldOblique

Symbol Sets / Character Sets

OCR Symbol Sets

When the OCR-A or OCR-B font is selected, its corresponding symbol set is always used.

- OCR-A
- OCR-B

HP LaserJet 6P Mode

- Roman 8 (8U)
- ISO Latin1 (0N)
- ISO Latin2 (2N)
- ISO Latin5 (5N)
- ISO Latin6 (6N)
- PC-8 (10U)
- PC-8 D/N (11U)
- PC-850 (12U)
- PC-852 (17U)
- PC-775 (26U)
- PC-1004 (9J)
- PC-8 Turkish (9T)
- Windows Latin1 (19U)
- Windows Latin2 (9E)
- Windows Latin5 (5T)
- Windows Baltic (19L)
- Legal (1U)
- Ventura Math (6M)
- Ventura Intl (13J)
- Ventura US (14J)
- PS Math (5M)
- PS Text (10J)
- Math-8 (8M)
- Pi Font (15U)
- MS Publishing (6J)
- Windows 3.0 (9U)
- Desktop (7J)
- MC Text (12J)
- Symbol (19M)
- Windings (579L)
- ISO2 IRV
- ISO4 UK
- ISO6 ASCII
- ISO10 Swedish
- ISO11 Swedish
- ISO14 JIS ASCII
- ISO15 Italian
- ISO16 Portuguese
- ISO17 Spanish
- ISO21 German
- ISO25 French
- ISO57 Chinese
- ISO60 Norwegian1
- ISO61 Norwegian2
- ISO69 French
- ISO84 Portuguese
- ISO85 Spanish
- HP German
- HP Spanish

EPSON Mode

- US ASCII
- PC-8
- PC-8 D/N
- PC-850
- PC-852
- PC-860
- PC-863
- PC-865
- PC-8 Turkish
- German
- UK ASCII I
- French I
- Danish I
- Italy
- Spanish
- Swedish
- Japanese
- Norwegian
- Danish II
- UK ASCII II
- French II
- Dutch
- South African

IBM Mode

- PC-8
- PC-8 D/N
- PC-850
- PC-852
- PC-860
- PC-863
- PC-865
- PC-8 Turkish

> **Note**
> If you want to know the characters that are available in each symbol/character set, print the CHARSETS.PRN file from the “Print form” option in the Direct Access Menu of the Remote Printer Console Program.

❑ HP LaserJet IIP / HP LaserJet 6P

Roman8

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0				0	@	P	`	p				_	â	Å	Á	Þ
1			!	1	A	Q	a	q			À	Ý	ê	î	Ã	þ
2			"	2	B	R	b	r			Â	ý	ô	Ø	ã	·
3			#	3	C	S	c	s			È	°	û	Æ	Đ	µ
4			$	4	D	T	d	t			Ê	Ç	á	å	ð	¶
5			%	5	E	U	e	u			Ë	ç	é	í	ý	¾
6			&	6	F	V	f	v			Î	Ñ	ó	ø	Ì	-
7			'	7	G	W	g	w			Ï	ñ	ú	æ	Ó	¼
8			(	8	H	X	h	x			´	¡	à	Ä	Ò	½
9			)	9	I	Y	i	y			`	¿	è	ì	Õ	ª
A			*	:	J	Z	j	z			^	¤	ò	Ö	Š	º
B			+	;	K	[	k	{			¨	£	û	Ü	š	«
C			,	<	L	\	l	|		~	¥	ä	É	ý	■
D			-	=	M	]	m	}			Ù	§	ë	ï	Ú	»
E			.	>	N	^	n	~			Û	ƒ	ö	ß	Ÿ	±
F			/	?	O	_	o	▒			£	¢	ü	Ô	ÿ	

ISO Latin1

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0				0	@	P	`	p				°	À	Ð	à	ð
1			!	1	A	Q	a	q			¡	±	Á	Ñ	á	ñ
2			"	2	B	R	b	r			¢	²	Â	Ò	â	ò
3			#	3	C	S	c	s			£	³	Ã	Ó	ã	ó
4			$	4	D	T	d	t			¤	´	Ä	Ô	ä	ô
5			%	5	E	U	e	u			¥	µ	Å	Õ	å	õ
6			&	6	F	V	f	v			|	¶	Æ	Ö	æ	ö
7			'	7	G	W	g	w			§	·	Ç	×	ç	÷
8			(	8	H	X	h	x			¨	¸	È	Ø	è	ø
9			)	9	I	Y	i	y			©	¹	É	Ù	é	ù
A			*	:	J	Z	j	z			ª	º	Ê	Ú	ê	ú
B			+	;	K	[	k	{			«	»	Ë	Û	ë	û
C			,	<	L	\	l	|		¬	¼	Ì	Ü	ì	ü
D			-	=	M	]	m	}				½	Í	Ý	í	ý
E			.	>	N	^	n	~			®	¾	Î	Þ	î	þ
F			/	?	O	_	o	▒			¯	¿	Ï	ß	ï	ÿ

Windows Latin1

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0				0	@	P	`	p	€			°	À	Ð	à	ð
1			!	1	A	Q	a	q		‘	¡	±	Á	Ñ	á	ñ
2			"	2	B	R	b	r	‚	’	¢	²	Â	Ò	â	ò
3			#	3	C	S	c	s	ƒ	“	£	³	Ã	Ó	ã	ó
4			$	4	D	T	d	t	„	”	¤	´	Ä	Ô	ä	ô
5			%	5	E	U	e	u	…	•	¥	µ	Å	Õ	å	õ
6			&	6	F	V	f	v	†	–	|	¶	Æ	Ö	æ	ö
7			'	7	G	W	g	w	‡	—	§	·	Ç	×	ç	÷
8			(	8	H	X	h	x	ˆ	˜	¨	¸	È	Ø	è	ø
9			)	9	I	Y	i	y	‰	™	©	¹	É	Ù	é	ù
A			*	:	J	Z	j	z	Š	š	ª	º	Ê	Ú	ê	ú
B			+	;	K	[	k	{	‹	›	«	»	Ë	Û	ë	û
C			,	<	L	\	l	|	Œ	œ	¬	¼	Ì	Ü	ì	ü
D			-	=	M	]	m	}				½	Í	Ý	í	ý
E			.	>	N	^	n	~			®	¾	Î	Þ	î	þ
F			/	?	O	_	o	▒		Ÿ	¯	¿	Ï	ß	ï	ÿ

Windows Latin2

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0				0	@	P	`	p	€			°	Ŕ	Đ	f	đ
1			!	1	A	Q	a	q		‘	ˇ	±	Á	Ń	á	ń
2			"	2	B	R	b	r	‚	’	˘	˛	Â	Ň	â	ň
3			#	3	C	S	c	s	„	“	Ł	ł	Ă	Ó	ă	ó
4			$	4	D	T	d	t	…	”	¤	´	Ä	Ô	ä	ô
5			%	5	E	U	e	u	†	•	Ą	µ	Ĺ	Ő	ĺ	ő
6			&	6	F	V	f	v	‡	–	|	¶	Ć	Ö	ć	ö
7			'	7	G	W	g	w		—	§	·	Ç	×	ç	÷
8			(	8	H	X	h	x			¨	¸	Č	Ř	č	ř
9			)	9	I	Y	i	y	‰	™	Ş	ą	É	Ů	é	ů
A			*	:	J	Z	j	z	Š	š	«	ş	Ę	Ú	ę	ú
B			+	;	K	[	k	{	‹	›	¬	»	Ë	Ű	ë	ű
C			,	<	L	\	l	|	Ś	ś		Ľ	Ě	Ü	ě	ü
D			-	=	M	]	m	}			®	˝	Í	Ý	í	ý
E			.	>	N	^	n	~			Ż	ľ	Î	Ţ	î	ţ
F			/	?	O	_	o	▒		Ź	ż	ź	Ď	ß	đ	˙

The following table shows characters available only in the corresponding character set. The numbers at the top of the table are code values with which characters are to be replaced in the Roman 8 character set. For other characters, see the Roman 8 character set.

SYMBOL SET	23	24	40	5B	5C	5D	5E	60	7B	7C	7D	7E
ISO2 IRV	#	¤	@	[	\	]	^	`	{	|	}	~
ISO4 UK	£	$	@	[	\	]	^	`	{	|	}	~
ISO6 ASCII	#	$	@	[	\	]	^	'	{	|	}	~
ISO10 Swedish	#	¤	@	Ä	Ö	Å	Ü	é	ä	ö	å	ü
ISO11 Swedish	#	¤	É	Ä	Ö	Å	Ü	é	ä	ö	å	ü
ISO14 JIS ASCII	#	$	@	[	¥	]	^	`	{	|	}	~
ISO15 Italian	£	$	§	°	ç	é	^	ù	à	ò	è	ì
ISO16 Portuguese	#	$	§	Ã	Ç	Õ	^	`	ã	ç	õ	~
ISO17 Spanish	£	$	§	¡	Ñ	¿	^	`	°	ñ	ç	~
ISO21 German	#	$	§	Ä	Ö	Ü	^	`	ä	ö	ü	ß
ISO25 French	£	$	à	°	ç	§	^	`	é	ù	è	¨
ISO57 Chinese	#	¥	@	[	\	]	^	`	{	|	}	~
ISO60 Norwegian1	#	$	@	Æ	Ø	Å	^	`	æ	ø	å	~
ISO61 Norwegian2	§	$	@	Æ	Ø	Å	^	`	æ	ø	å	¦
ISO69 French	£	$	à	°	ç	§	^	µ	é	ù	è	¨
ISO84 Portuguese	#	$	´	Ã	Ç	Õ	^	`	ã	ç	õ	~
ISO85 Spanish	#	$	·	¡	Ñ	Ç	¿	`	´	ñ	ç	¨
HP German	£	$	§	Ä	Ö	Ü	^	`	ä	ö	ü	ß
HP Spanish	#	$	@	¡	Ñ	¿	°	`	{	ñ	}	~

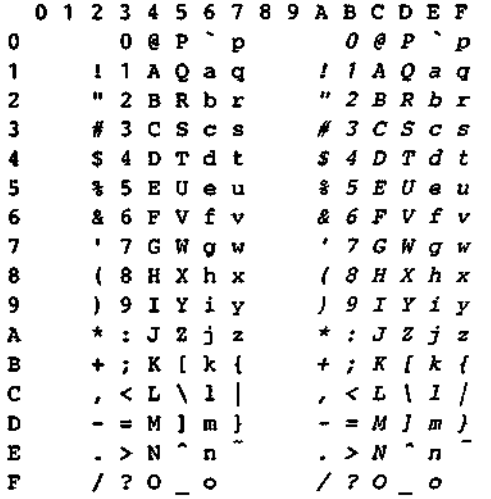
❑ HP LaserJet IIP/6P, EPSON FX-850, IBM Proprinter XL

PC-8

PC-850

❑ EPSON FX-850

US ASCII



The following table shows characters available only in the corresponding character set. The numbers at the top of the table are code values with which characters are to be replaced in the US ASCII character set. For other characters, see the US ASCII character set.

SYMBOL SET	23	24	40	5B	5C	5D	5E	60	7B	7C	7D	7E
German	#	$	§	Ä	Ö	Ü	^	`	ä	ö	ü	ß
UK ASCII I	£	$	@	[	\	]	^	`	{	|	}	~
French I	#	$	à	°	ç	§	^	`	é	ù	è	¨
Danish I	#	$	@	Æ	Ø	Å	^	`	æ	ø	å	~
Italy	#	$	@	°	\	é	^	ù	à	ò	è	ì
Spanish	₧	$	@	¡	Ñ	¿	^	`	¨	ñ	}	~
Swedish	#	¤	É	Ä	Ö	Å	Ü	é	ä	ö	å	ü
Japanese	#	$	@	[	¥	]	^	`	{	|	}	~
Norwegian	#	¤	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
Danish II	#	$	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
UK ASCII II	#	£	@	[	\	]	^	`	{	|	}	~
French II	#	â	à	î	ç	ê	û	ô	é	ú	è	ï
Dutch	#	$	@	[	]	ƒ	^	`	é	ij	è	¨
South African	#	ê	É	Ê	Ö	è	Ü	é	ë	ö	ô	ü

Trademarks

The Brother logo is a registered trademark of Brother Industries, Ltd.

Apple, the Apple Logo, and Macintosh are trademarks, registered in the United States and other countries, and TrueType is a trademark of Apple Computer, Inc.
Epson is a registered trademark and FX-80 and FX-850 are trademarks of Seiko Epson Corporation.
Hewlett Packard is a registered trademark and HP LaserJet 6P, 6L, 5P, 5L, 4, 4L 4P, III, IIIP, II, and IIP are trademarks of Hewlett-Packard Company.
IBM, IBM PC and Proprinter are registered trademarks of International Business Machines Corporation.
Microsoft and MS-DOS are registered trademarks of Microsoft Corporation.
Windows is a registered trademark of Microsoft Corporation in the U.S. and other countries.
ENERGY STAR is a U.S. registered trademark.

All other brand and product names mentioned in this User's Guide are registered trademarks of their respective companies.

Compilation and Publication Notice

Under the supervision of Brother Industries Ltd., this manual has been compiled and published, covering the latest product descriptions and specifications.

The contents of this manual and the specifications of this product are subject to change without notice.

Brother reserves the right to make changes without notice in the specifications and materials contained herein and shall not be responsible for any damages (including consequential) caused by reliance on the materials presented, including but not limited to typographical and other errors relating to the publication.

©1999 Brother Industries Ltd.

REGULATIONS

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

Responsible Party : Brother International Corporation
100 Somerset Corporate Boulevard
Bridgewater, NJ 08807-0911, USA
TEL : (908) 704-1700

declares, that the products
Product Name : Brother Laser Printer HL-1240, HL-1250, HL-1270N
Model Numbers : HL-12
Product Options : ALL

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

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

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

Important

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

Industry Canada Compliance Statement (For Canada Only)

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

International ENERGY STAR Compliance Statement

The purpose of the International ENERGY STAR Program is to promote the development and popularization of energy-efficient office equipments, which includes computers, monitors, printers, facsimile receivers and copy machines world-wide.
As an International ENERGY STAR partner, Brother Industries, Ltd. has determined that this product meets the guidelines of the program.
ENERGY STAR is a U.S. registered trademark.

Radio Interference (220-240 V Model Only)

This printer complies with EN55022(CISPR Publication 22)/Class B.

Before this product is used, ensure that you use a double-shielded interface cable with twisted-pair conductors and that it is marked “IEEE 1284 compliant”. We recommend that you use a parallel cable that is 2.0 meters (6.6 feet) or less.

Laser Safety (For 110–120 V Model Only)

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

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

FDA Regulations (For 110-120 V Model Only)

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

MANUFACTURED:
Brother Corporation (Asia) Ltd. Brother Buji Nan Ling Factory
Gold Garden Ind., Nan Ling Village, Buji, Rong Gang, Shenzhen, CHINA
This product complies with FDA radiation performance standards, 21 CFR Subchapter J

MANUFACTURED:
BROTHER INDUSTRIES (USA) INC.
2950 Brother Blvd., Bartlett, TN 38133, U.S.A.
This product complies with FDA radiation performance standards, 21 CFR Subchapter J

MANUFACTURED:
BROTHER INDUSTRIES LTD.
15-1 Naeshiro-cho Mizuho-ku Nagoya, 467-8561 Japan
This product complies with FDA radiation performance standards, 21 CFR Subchapter J

Caution

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

Declaration of Conformity (For Europe)

We, Brother Industries, Ltd.,
15-1, Naeshiro-cho, Mizuho-ku, Nagoya 467-8561, Japan

declare that this product is in conformity with the following normative documents.

Safety:	EN 60950,	EN 60825
EMC:	EN 55022 Class B,	EN 55024
	EN 61000-3-2,	EN 61000-3-3

following the provisions of the Low Voltage Directive 73/23/EEC and the Electromagnetic Compatibility Directive 89/336/EEC (as amended by 91/263/EEC and 92/31/EEC).

Issued by:
Brother Industries, Ltd.
Printer Products Division

IEC 825 Specification (For 220–240 V Model Only)

This printer is a Class 1 laser product as defined in IEC 825 specifications. The label shown below is attached in countries where it is required.

This printer has a Class 3B Laser Diode that emits invisible laser radiation in the Scanner Unit. The Scanner Unit should not be opened under any circumstances.

Caution

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

(For Finland and Sweden)
LUOKAN 1 LASERLAITE
KLASS 1 LASER APPARAT

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

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

IMPORTANT - For Your Safety

To ensure safe operation the supplied three-pin electrical plug must be inserted only into a standard three-pin power point that is properly grounded through normal household wiring.

Extension cords used with the equipment must be the three-pin plug type and correctly wired to provide proper grounding. Incorrectly wired extension cords may cause personal injury and equipment damage.

The fact that this equipment operates satisfactorily does not imply that the power is grounded and that the installation is completely safe. For your safety, if in any doubt about the effective grounding of the power, consult a qualified electrician.

Disconnect device

This printer must be installed near a power outlet that is easily accessible. In case of emergencies, you must disconnect the power cord from the power outlet in order to shut off power completely.

Geräuschemission / Acoustic Noise Emission (For Germany Only)

Lpa < 70 dB (A) DIN 45635-19-01-KL2

IMPORTANT - Wiring Information (For U.K. only)

If the power cord supplied with this printer is not suitable for your electrical outlet, remove the plug from the mains cord and fit an appropriate three pin plug. If the replacement plug is intended to take a fuse then fit a fuse with the same rating as the original.

If a moulded plug is severed from the power cord then it should be destroyed because a plug with cut wires is dangerous if plugged into a live socket outlet. Do not leave it where a child might find it.

In the event of replacing the plug fuse, fit a fuse approved by ASTA to BS1362 with the same rating as the original fuse.

Always replace the fuse cover. Never use a plug with the cover omitted.

WARNING - THIS PRINTER MUST BE PROPERLY EARTHED.

The wires in the mains cord are coloured in accordance with the following code:

Green and yellow:	Ground
Blue:	Neutral
Brown:	Live

The colours of the wiring in the power lead of this printer may not correspond with the markings which identify the terminals in your plug. If you need to fit a different plug, proceed as follows.

Remove a length of the cord outer sheath, taking care not to damage the coloured insulation of the wires inside.

Cut each of the three wires to the appropriate length. If the construction of the plug permits, leave the green and yellow wire longer than the others so that, in the event that the cord is pulled out of the plug, the green and yellow wire will be the last to disconnect.

Remove a short section of the coloured insulation to expose the wires.

The wire which is coloured green and yellow must be connected to the terminal in the plug which is marked with the letter “E” or by the earth symbol or coloured green or green and yellow.

The wire which is coloured blue must be connected to the terminal which is marked with the letter “N” or coloured black or blue.

The wire which is coloured brown must be connected to the terminal which is marked with the letter “L” or coloured red or brown.

The outer sheath of the cord must be secured inside the plug. The coloured wires should not hang out of the plug.

INDEX

-A-

advanced photoscale technology..... 1-5
Alarm lamp 4-2
Alarm LED 1-31
APT 1-5
auto-emulation switching..... 1-4

-B-

bar code 1-7
bitmapped font..... A-10, A-11
BR-Script 2 mode A-9
button 1-27

-C-

card 1-22
character set A-14
control panel 1-2, 1-27
control panel button 1-32

-D-

data compression technology..... 1-5
Data LED 1-29
dpi 1-3
Drum LED 1-31
drum unit..... 3-9
drum unit life A-2
duplex printing..... 1-24

-E-

emulation 1-4, A-3
error recoverable..... 4-2
EPSON FX-850 mode..... A-9
error unrecoverable..... 4-4

-F-

Factory Reset 1-34
front cover..... 1-2

-H-

hex dump print..... 1-34
high resolution control..... 1-5
HRC 1-5

-I-

IBM ProprinterXL mode..... A-9
interface..... A-3

-L-

LED..... 1-27
LEDs 1-27
lower paper cassette 1-11
lower tray unit 1-8

-M-

manual feed paper guide 1-2
manual feed slot 1-2, 1-11, 1-19
manual feed slot paper guide..... 1-21
memory A-3
memory SIMM..... 2-3

-N-

Network Interface A-8

-O-

operator call..... 4-2

-P-

paper
  empty..... 1-28, 4-3
  jam..... 1-28, 4-3
paper capacity..... 1-12
paper cassette 1-11, 1-16
paper guides 1-16
Paper lamp..... 1-28
paper LED 1-28
paper recommended 1-12
paper size..... 1-11
paper type..... 1-11
parallel interface pin assignment..... A-5
parallel interface specification..... A-5
ppm..... 1-3
primary corona wire 3-8, 3-18
Print Config..... 1-34
Print Fonts I..... 1-34
print method A-1
print quality A-1
printable area..... 1-15
printer driver A-3
printer status monitor 1-4

-Q-

quick print setup..... 1-4

-R-

Ready LED 1-28
resident font A-10
resolution 1-3, A-1

-S-

scalable font A-11
scanner window 3-17
service call 4-4
SIMM..... 2-3
sleep mode 1-7, 1-33
symbol set A-13, A-14

-T-

test print mode 1-34
test sample page 1-34
thicker paper 1-22
timeout 1-33
toner
  empty 1-30, 4-3
  low 1-30, 4-3
toner cartridge 3-3
toner cartridge high capacity..... 1-7
toner cartridge life..... A-2
toner LED 1-29

-U-

universal serial bus interface..... 1-5
Upper paper cassette 1-12
USB (universal serial bus) interface . A-7

-W-

warm-up A-1
Windows DIB graphic A-1