**brother**®

**Brother Laser Printer**
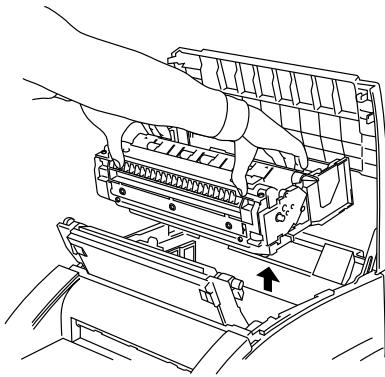
# HL-660 Series

## User's Guide

## 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.
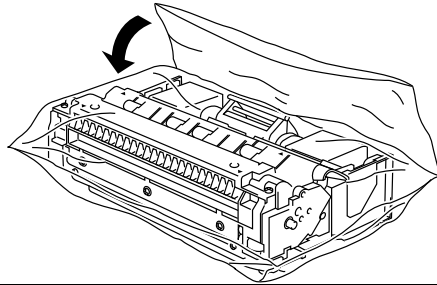
## Warning

When shipping the Printer, the DRUM UNIT assembly including the TONER CARTRIDGE must be removed from the Printer and placed it in the plastic bag. Failure to remove it and place it in the plastic bag during shipping will cause severe damage to the Printer and will VOID THE WARRANTY.
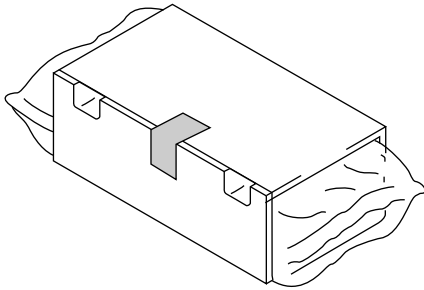
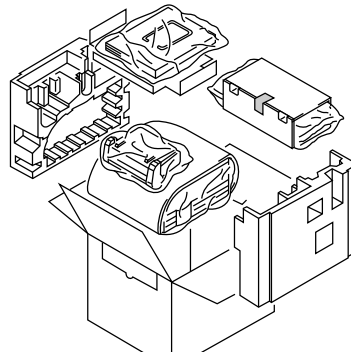| | |
|---|---|
| 1  Remove the drum unit. | 2  Place it in the plastic bag and fold the plastic bag under the drum unit. |
| 3  Wrap it in the corrugated cardboard. | 4  Re-pack the printer. See "REPACKING THE PRINTER" in Chapter 5. |

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# Laser Printer HL-660 Series User's Guide

**(For USA & CANADA Only)**

For technical and operational assistance, please call:

In USA          1-800-276-7746                    (outside California)
                      714-859-9700 Ext. 329   (within California)
In Canada     1-800-361-6466

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, Ltd.
                      1, Rue Hôtel De Ville
                      Dollard-des-Ormeaux P.Q.
                      Canada H9B3H6

BBS
For downloading drivers from our Bulletin Board Service, call 1-714-859-2610.  Please logon 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.

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

## Trademarks

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## 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.

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# REGULATIONS

## Federal Communications Commission Compliance Notice (For USA Only)

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 – About the Interface Cable
This printer has been certified to comply with FCC standards, which are applied to the U.S.A. only. A shielded interface cable should be used according to FCC 15.27(C). In addition, a grounded plug should be plugged into a grounded AC outlet after checking the rating of the local power supply for the printer to operate properly and safely.

### Caution
Changes or modifications not expressly approved by Brother Industries, Ltd. could void the user's authority to operate the equipment.

## 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.

## Radio Interference (For 220 - 240 V Model Only)

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

## FDA Regulations

U.S. Food and Drug Administration (FDA) implemented regulations for laser products manufactured from August 2, 1976. These regulations apply to laser products manufactured from August 1, 1976. Compliance is mandatory for products marketed in the United States. The label shown 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 INDUSTRIES, LTD.
15-1 Naeshiro-cho Mizuho-ku Nagoya, 467 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 invisible radiation exposure.

## For Your Safety

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

Extension cords used with the equipment must be three-conductor and be correctly wired to provide connection to ground. Incorrectly wired extension cords are a major cause of fatalities.

The fact that the 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.

## DECLARATION OF CONFORMITY (EUROPE)

We,      Brother International Europe Ltd.,
             Brother House 1 tame Street, Guide Bridge, Audenshaw, Manchester M34 5JE, UK.

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

Safety:          EN 60950,              EN 60825
EMC:            EN 55022 Class B,      EN 50082-1

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).

Manufacture at the following facilities is carried out under a Quality System which is registered by BSI Quality Assurance and JQA Quality Assurance.

             Brother Industries, Ltd., Kariya Plant
             1-5, Kitajizoyama, Noda-cho, Kariya-shi,
             Aichi-ken 448, Japan.
             BSI Certificate of Registration No. FM27391
             JQA Certificate of Registration No. 0340

Issued by :
Brother International Europe Ltd.
European Development and Technical Services Division

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## IEC 825 Laser Class (For 220–240 V Model Only)

> CLASS 1 LASER PRODUCT.
> APPAREIL Å LASER DE CLASSE 1.
> LASER KLASSE 1
> LUOKAN 1 LASERLAITE
> KLASS 1 LASER APPARAT
> KLASS 1 : LASER
> KLASSE 1 LASER PRODUKT

### For Finland and Sweden

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.

The following caution label is attached near the scanner unit.
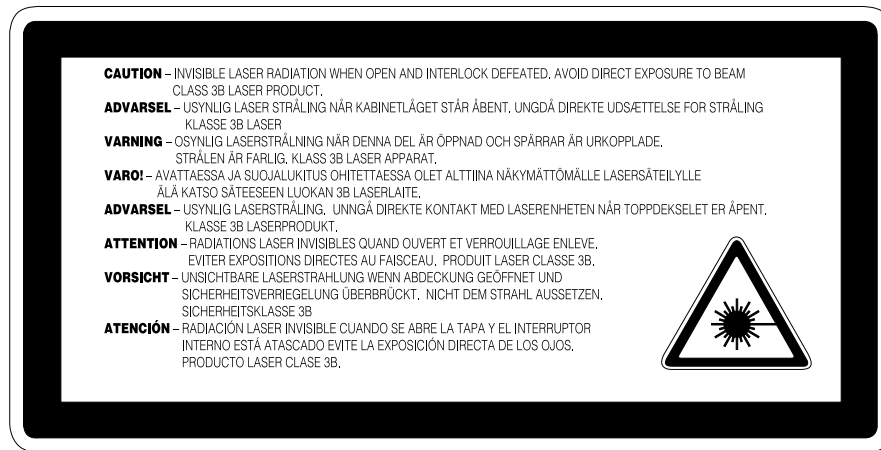


## Disconnect device

The equipment must be installed near the socket outlet which must be easily accessible.

## Manufactured at

Brother Industries Ltd.
Kariya Plant
1-5, Kitajizoyama, Noda-cho, Kariya-shi, Aichi-ken 448, Japan.

Manufacturing at Kariya Plant is carried out under a Quality System which is registered by JQA Quality Assurance and BSI Quality Assuarance.

> JQA Certificate of Registration No. 0340.
> BSI Certificate of Registration No. FM27391

## Canadian Department of Communications Compliance Statement

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus as set out in the interference-causing equipment standard entitled "Digital Apparatus", ICES-003 of the Department of Communications.

## IMPORTANT (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 the same fuse 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 orginal 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.

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*x*

# CHAPTER 1
# INTRODUCTION

## ABOUT THE GUIDEBOOKS

### Learning How to Use the Printer

You have three guidebooks for this printer. Read each guidebook in the following order:

1.  Read the Quick Setup Guide to set up your printer and connect it to your computer.

2.  Read the Software Setup Guide to set up your computer for your printer by installing the printer driver, fonts and Remote Printer Console Program.

3.  Read the User's Guide to get information about the following:

    • Features and operating environment requirements of your printer – Chapter 1
    • Paper Handling – Chapter 2
    • Control Panel – Chapter 3
    • Options – Chapter 4
    • Maintenance – Chapter 5
    • Troubleshooting – Chapter 6
    • Specifications – Appendices
    • Index

### 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 or damage to the printer.

> ☞ **Caution**
> Indicates cautions that must be observed to use the printer properly.

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

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# ABOUT YOUR PRINTER

## Printer Overview

Paper Support

Multi-Purpose Sheet Feeder

Paper Guide

Top Cover

Manual Feed Slot

Control Panel

Output Tray

Paper Support Wire

**Fig. 1-1 Front View**

Power Cord

Print Density Dial
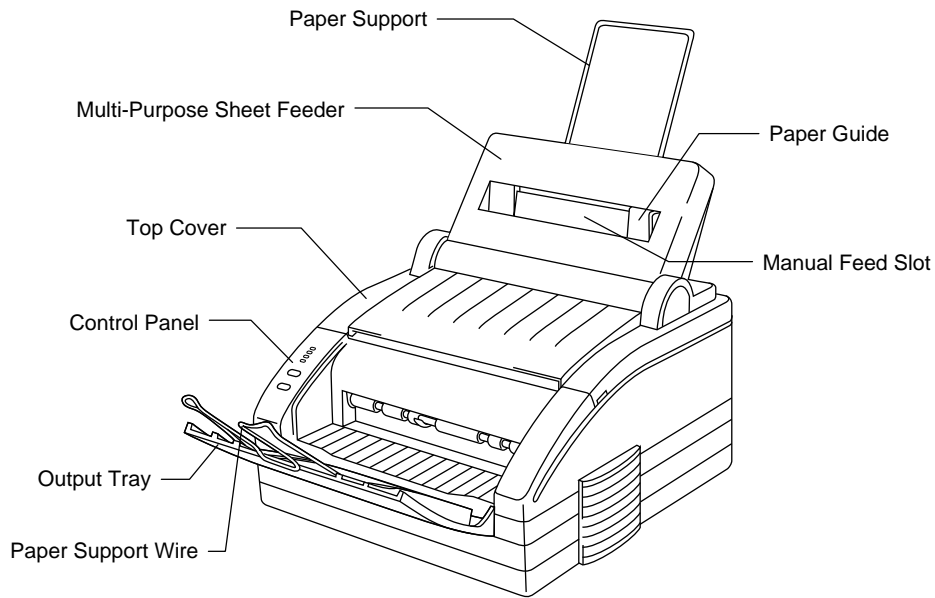
Parallel Interface Port

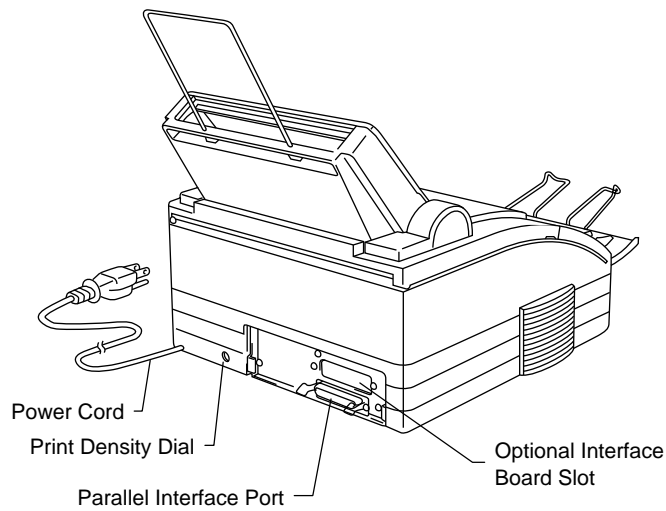Optional Interface
Board Slot

**Fig. 1-2 Rear View**

✎ **Note (*)**
The AppleTalk interface is available optionally. Some models have this
option pre-installed.

# Features

This printer has the following features:

❑ **600 dpi Resolution and 6ppm Printing Speed**
600 dots per inch (dpi) with microfine toner and six pages per minute (ppm) printing speed (A4 or Letter size paper).

❑ **Versatile Paper Handling**
The printer has a multi-purpose sheet feeder and straight paper path mechanism. Using this mechanism, you can load A4, letter, legal, B5, A5, and executive sizes of paper, along with various types of paper including envelopes, postcards, organizer paper, or a custom paper size. The multi-purpose sheet feeder also allows manual paper loading, so you can also use labels and transparencies.

❑ **Windows® Printing**
The dedicated printer driver and TrueType™-compatible screen fonts for Microsoft® Windows 3.1 are available on the floppy disk supplied with your printer. You can easily install them into your Windows system using our installer program. The driver supports our unique compression mode to enhance printing speed in Windows applications, and allows you to set various printer settings including economy printing mode, custom paper size, sleep mode settings, Advanced Photoscale Technology, Page Protection or Resolution.

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

❑ **Popular Printer Emulation Support**
This printer supports three printer emulation modes, HP LaserJet 4, 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. This printer has an optional BR-Script 2 ROM board which adds a PostScript Level 2 language emulation to your printer. The printer also supports Auto-emulation switching between HP, optional BR-Script 2 and Epson or HP, optional BR-Script 2 and IBM. If you want to set the printer emulation, you can do it using the Remote Printer Console program.

❏ **Bi-Directional Parallel Interface**

The parallel interface of this printer allows bi-directional communication with a computer. This interface allows the printer to communicate back to the computer with useful information such as the amount of memory installed, and other printer setup conditions. As the supplied Remote Printer Console or Windows 3.1 driver both support the bi-directional mode, they can both report the printer status.

❏ **Many Scalable and Bitmapped Fonts**

39 LaserJet 4 Intellifont Compatible
- Albertville, 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 Tennessee Roman, Italic, Bold, BoldItalic
- PC Brussels Light, Italic, Demi, DemiItalic
- Utah, Oblique, Bold, BoldOblique
- Utah Condensed, Oblique, Bold, BoldOblique

10 Windows TrueType™ Compatible
- BR Symbol
- Helsinki, Oblique, Bold, BoldOblique
- Tennessee Roman, Italic, Bold, BoldItalic
- W Dingbats

Bitmapped fonts (Portrait and Landscape)
- Letter Gothic 16.66 Medium, Italic, Bold, BoldItalic
- OCR-A
- OCR-B

35 BR-Script Font (Available when the BR-Script 2 ROM board is installed.)
- Atlanta Book, BookOblique, Demi, DemiOblique
- BR Dingbats
- BR Symbol
- Brougham, Oblique, Bold, BoldOblique
- Brussels Light, LightItalic, Demi, DemiItalic
- Calgary MediumItalic
- Copenhagen Roman, Italic, Bold, BoldOblique
- Helsinki, Oblique, Bold, BoldItalic
- Helsinki Narrow, Oblique, Bold, BoldOblique
- Portugal Roman, Italic, Bold, BoldItalic
- Tennessee Roman, Italic, Bold, BoldItalic

❏ **APT (Advanced Photoscale Technology)**
This printer can print graphics saved in the tagged image file format (TIFF) in 256 shades of gray in HP LaserJet 4 emulation, producing photographic like quality.

❏ **Optional AppleTalk™ Interface (Pre-installed in some countries)**
An optional AppleTalk interface is available for this printer. This allows your printer to connect with an Apple Macintosh computer. To connect with an Apple Macintosh, you also need to install the optional BR-Script 2 ROM board.

❏ **Optional BR-Script 2 ROM board (Pre-installed in some countries)**
The optional BR-Script 2 ROM board is available for the printer. With this option fitted, the printer has a PostScript level 2 language emulation - BR-Script 2. You can connect the printer to an Apple Macintosh Computer with the optional AppleTalk interface board.

❏ **Enhanced Memory Management**
The printer has its own Data Compression Technology, which can automatically compress graphic data and download font data efficiently into the printer's memory. You can avoid memory errors and print most full page 600 dpi graphic and text data, including larger fonts, with the printer's standard memory.

❏ **Environmentally Friendly**
**Economy Printing Mode**
This feature will cut your printing cost by saving toner. This feature is useful when draft copies are used for proof-reading. You can select two economy mode which is 25% toner saving or 50% toner saving through the Remote Print Console program or the Windows printer driver supplied with your printer.

**Sleep Mode**
Sleep mode automatically reduces power consumption when the printer is not in use. The printer consumes less than 12W when in sleep mode.

**Low Running Cost**
The toner cartridge is separate from the Drum Unit. You need to replace only the toner cartridge after around 3,000 pages, which is cost effective and ecologically friendly.

# OPERATING AND STORAGE ENVIRONMENT

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 district
   Frequency:    50 Hz (220 V– 240 V) or 60 Hz (110–120 V)

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 etc. If it is unavoidable that you must use the printer with these appliances, it is recommended that you use a voltage transformer or a high-frequency noise filter.

Use a voltage regulator if the power source is not stable.

## Environment

Use the printer only within the following ranges of temperature and humidity:
   Ambient temperature:    10°C to 32.5°C (59°F to 90.5°F)
   Ambient humidity:        20% to 80% (without condensation)

Ventilate the room where you use the printer.

Place the printer on a flat, horizontal surface.

Keep the printer clean. Do not place the printer in a dusty place.

Do not place the printer where the ventilation hole of the printer is blocked.

Do not place the printer where it is exposed to direct sunlight. Use a blind or a heavy curtain to protect the printer from direct sunlight when the printer is unavoidably set up near a window.

Do not place the printer near devices that contain magnets or generate magnetic fields.

Do not subject the printer to strong physical shocks or vibrations.

Do not expose the printer to open flames or salty or corrosive gasses.

Do not place objects on top of the printer.

Do not place the printer near an air conditioner.

Keep the printer horizontal when carrying.

# CHAPTER 2
# PAPER HANDLING

## PAPER SPECIFICATIONS

The printer can handle paper that conforms to the following specifications.

| Paper Type | Paper Size | Paper Weight | Sheet Feeder | Manual |
|---|---|---|---|---|
| Cut sheet | A4, Letter, Legal, B5, A5, Executive, Custom size 70-216 x 127-356 mm, 2.75"-8.5" x 5"-14" inches | 60-135 g/m$^2$ (16-36 lbs) | ● | ● |
| Envelopes | DL, C5, COM-10, Monarch | | ● | ● |
| Organizer | Day-Timer® J,K,L,M 70-216 x 127-356mm 2.75"-8.5" x 5"-11" inches | | ● | ● |
| Labels Trans-parencies | 70-216 x 127-356 mm, 2.75"-8.5" x 5"-14" inches | | | ● ● |

Paper Capacity in Feeder
            Multi-purpose
            Sheet Feeder :      Up to 22 mm (0.87 inch) in Height ( below the mark ▼. )
                                Approx. 200 sheets of 75 g/m$^2$ (20 lbs) A4/Letter paper or 10 envelopes
            Output Tray :       Approx. 100 sheets of 75 g/m$^2$ (20 lbs) A4/Letter paper

**Remarks**      It is recommended that you test paper, especially special sizes and types of paper, on this printer before purchasing large quantities.

Avoid feeding labels with carrier sheets exposed or your printer will be damaged.

Use a recommended type of paper, especially plain paper and transparencies, for optimum printing. For more information on paper specifications, consult your nearest authorized sales representative or the place where you purchased your printer.

We recommend you use labels or transparencies which are designed for laser printers.

We recommend you use long-grained paper for the best print quality.

If the paper will not load from the multi-purpose sheet feeder, use the manual feed slot and try again.

Before using paper with holes such as organizer sheets, you must fan the stack well to avoid paper jams and misfeeds.

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



**Fig. 2-1 Fan the Paper and
Straighten the Paper**

The following types of envelopes are not recommended for use:
- Damaged, curled, wrinkled, or irregularly shaped envelopes
- Extremely shiny or highly textured envelopes
- Envelopes with clasps
- Envelopes of baggy construction
- Envelopes not sharply creased
- Embossed envelopes
- Envelopes already printed with a laser printer
- Envelopes pre-printed on the inside
- Envelopes that cannot be arranged uniformly when placed in a pile
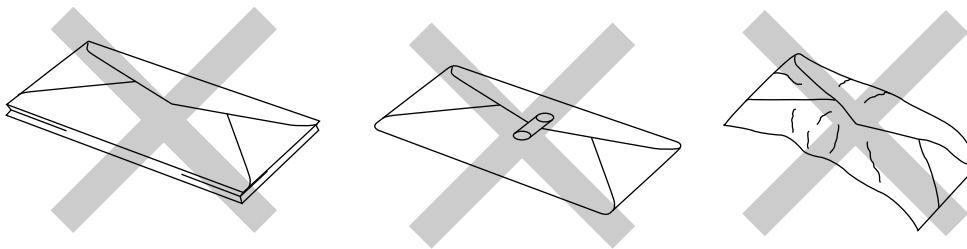


**Fig. 2-2 Envelopes**

Printable Area                    The figure below shows the physical printable area.



☐ Unprintable area
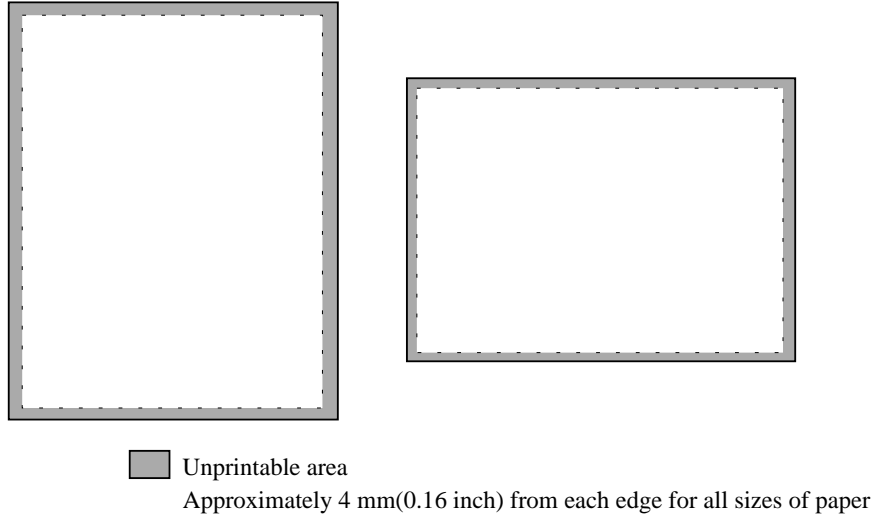Approximately 4 mm(0.16 inch) from each edge for all sizes of paper

**Fig. 2-3 Printable Area**

# MULTI-PURPOSE SHEET FEEDER

The printer has a multi-purpose sheet feeder that can feed plain paper, envelopes and organizer paper.

---

☛ **Caution**

When you use labels or transparencies for overhead projectors, be sure to use the manual feed slot. See the next section "MANUAL FEED SLOT" for more details.

---

To use the multi-purpose sheet feeder, follow these steps:

1. Make sure that you have selected the proper paper source, paper size and orientation.

---

✎ **Note**
- You may select the proper paper source, paper size, and orientation in your application software.
- If your application software does not support your custom paper size, select the next paper size up that is closest but larger than the custom size. Then adjust the print area by changing right and left margins in your application software.

---

2. Make sure that the multi-purpose sheet feeder contains the selected size of paper in the selected orientation. If necessary, change the paper in the feeder.

3. Make sure that the multi-purpose sheet feeder is properly placed in the printer.

4. Choose a print command to send a file or document to the printer.

   When the printer receives data, it begins the print process by loading paper from the multi-purpose sheet feeder. If the printer is in sleep mode when it receives data, it wakes up and starts the printing process automatically.

## Loading Paper into the Feeder

To load paper into the feeder, follow these steps.

1.  Open the multi-purpose sheet feeder. ( ① )

2.  Load paper into the multi-purpose sheet feeder with the printing surface face down. ( ② )

> ☞ **Caution**
> *   The feeder can hold up to 200 sheets of plain paper. If you load too many sheets, paper jams might occur.
> *   Make sure that the paper is stacked below the ▼ mark.
> *   If there is still some paper in the feeder, you must first remove it, put it together with the new paper and then insert the stack into the feeder.
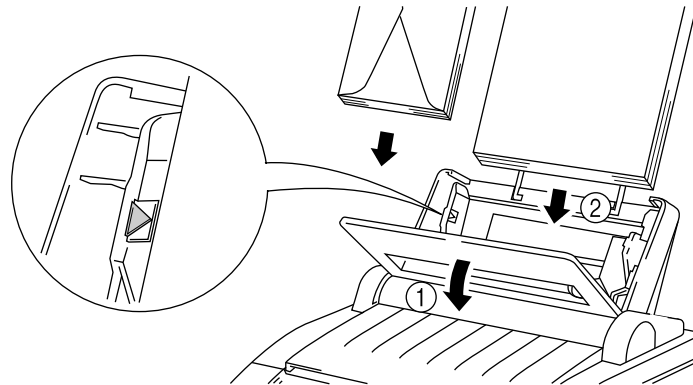
**Fig. 2-4 Opening the Feeder and
Loading Paper or Envelope in the Feeder**

> ✒ **Note**
> If you load envelopes in the feeder, make sure they are inserted in the direction shown above with the flap on the left side.

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3.  Move the paper guide to the appropriate paper width. ( ① )

4.  Close the multi-purpose sheet feeder. ( ② )
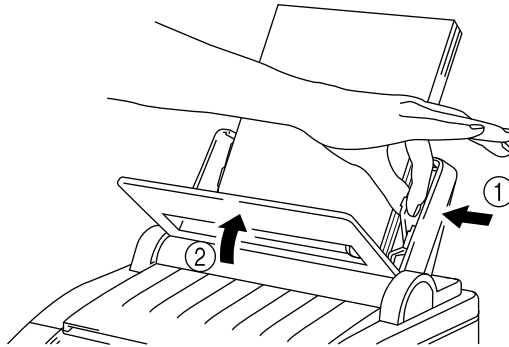


**Fig. 2-5 Moving the Paper Guide
and Closing the Feeder**

> ✒ **Note**
> If the multi-purpose sheet feeder runs out of paper when you try to print,
> the ALARM and PAPER lamps blink to alert you with a paper empty
> error. You have to load paper into the feeder and push the FF/CONT
> switch to cancel the alarm and continue printing. If paper jams in the
> printer, the ALARM and PAPER lamps also blink. If the error is a paper
> jam, clear it referring to "PAPER JAMS" in Chapter 6.

### Two Side Printing (Manual Duplexing)

The supplied printer driver for Windows 3.1 enables manual duplex printing. For more information about settings, see the help text of the printer driver.

The printer prints all the even numbered pages on one side of the paper first and then prints all the odd pages on the reverse side of the paper.

When you have finished printing on oneside of the paper, the driver instructs you to re-insert the paper by a pop-up message on the computer. Follow the instructions on how to reinsert the paper.

---

☞ **Caution**
- Before re-inserting the paper, you have to straighten it well or you may get paper misfeed errors.
- Use of very thin or very thick paper is not recommended.
- If you encounter a double feeding error, we recommend that you hold the paper in the sheet feeder except for the front sheet while the printer is feeding it.
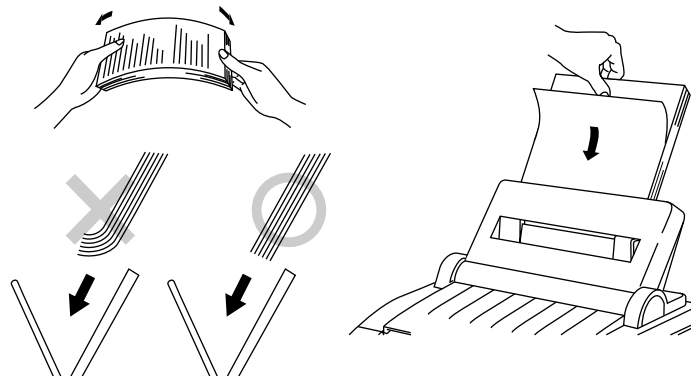
---



**Fig. 2-6 Notes for Manual Duplexing**

---

✎ **Note**
When you use the Manual Duplex function, it is possible that a paper jam may occur or print quality may not be satisfactory.

---

# MANUAL FEED SLOT

The multi-purpose sheet feeder also has a manual feed slot. You can manually load paper sheet by sheet into this slot. You do not need to remove paper from the multi-purpose sheet feeder when using the manual feed slot.

When you use labels or transparencies, be sure to use this slot. For information on paper specifications, see "PAPER SPECIFICATIONS" in the previous section.

Load paper manually as follows:

1. Make sure that you have selected the manual paper feed, paper size and orientation in your software application.

---

✒ **Note**
- You may be able to select manual paper feed, paper size, and orientation in your application software. If your application software does not allow these settings, you should choose them by using the RPC program on a disk supplied with your printer.
- If you do not select manual paper feed and insert a page in the manual feed slot, the printer loads the first page from the manual feed slot and loads the subsequent pages from the multi-purpose sheet feeder.
- If your application software does not support your custom paper size, select the next paper size up that is closest but larger than the custom size. Then adjust the print area by the changing the right and left margins in your application software.

---

2. Choose a print command to send a file or document to the printer.

   If the printer is in sleep mode, receiving data awaken it.

   A blinking MANUAL lamp alerts you to insert a sheet of paper into the manual paper feed slot.

3. Holding the selected size of paper in the selected orientation (Portrait or Landscape),place the side of the paper you wish to print on face down into the manual feed slot. Align the paper to the left side of the feed slot, while inserting it all the way into the manual feed slot. ( ① ) Move the paper guide of the manual feed slot to the paper width you are using.
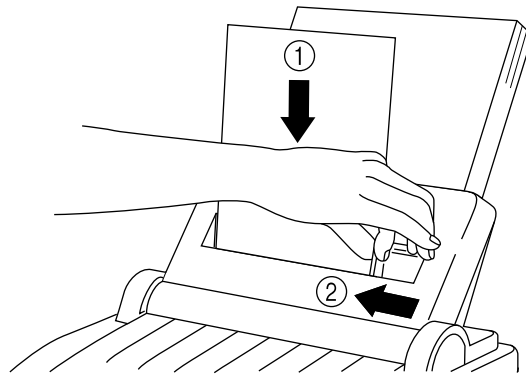( ② )



**Fig. 2-7 Moving the Paper Guide**

> ✎ Note:
> Insert the paper firmly into the manual feed slot.

4. Press the FF/CONT switch.

   The printer loads the paper from the manual feed slot and starts printing.

   After the printer ejects the first page, the MANUAL lamp blinks again to alert you to insert the paper.

5. Insert the next sheet of paper all the way into the manual feed slot, aligning it as straight as possible.

6. Press the FF/CONT switch for the next page.

   You need to press the FF/CONT switch for every sheet of paper you load manually. Repeat steps 5 and 6 until you have printed all the pages.

# OUTPUT TRAY AND PAPER SUPPORT WIRE

The printer ejects paper with printed surfaces face down into the output tray at the front of the printer.

When the output tray is closed, the ejected paper comes out sheet by sheet through the slit at the front. When you open the tray, sheets can be stacked on the tray.

Follow these steps to open the output tray:

1. Pull the top of the tray down.

2. Extend the paper support wire.
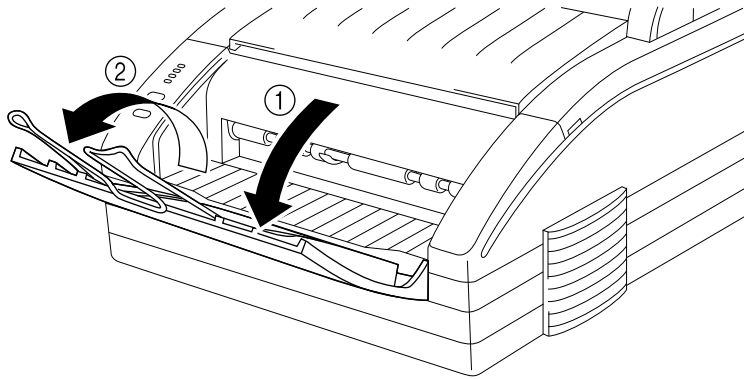


**Fig. 2-8 Opening the Output Tray and
Extending the Paper Support Wire**

You can stack up to 100 sheets in the output tray.

---

☞ **Caution**
- When you use transparencies, remove each sheet immediately after printing. Stacking sheets may cause toner to smear onto the back of the previous sheet.
- When the output tray is closed, you need to remove the ejected sheet or you will get a paper jam when the second sheet is ejected.

---

# CHAPTER 3
# CONTROL PANEL

## LAMPS

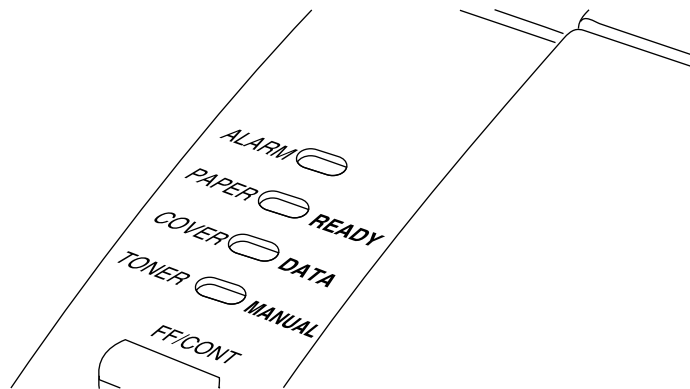This section refers to the following lamps on the printer control panel.



**Fig. 3-1 Lamps on Control Panel**

> ✎ **Note**
> When the power cord is not plugged into the AC outlet or the printer is in sleep mode, all lamps including the READY lamp are off.

## READY Lamp

The green READY lamp indicates the current status of the printer.

The printer will wake up automatically from sleep mode when data is received, a switch is pressed, or with the power cord is plugged in.

| Lamp | Printer status |
| --- | --- |
| Off | The power cord is not plugged into the AC outlet. |
| ❍ | The printer is in the sleep mode. |
| Blinking | The printer is warming up. |
| ❍↔● | (Blinking at 0.5 seconds intervals) |
| Blinking | The printer is off-line. |
| ❍↔● | (Blinking at 1 seconds intervals) |
| On | The printer is on-line. |
| ● | |

## DATA Lamp

The amber DATA lamp indicates the current status of the print data process.

| Lamp | 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 the memory. |
| On ● | Print data remains in the printer memory. If the DATA lamp is on for a long period of time and nothing has printed, you need to press the SELECT switch to take the printer off-line and then press the FF/CONT switch to print the data. |

## MANUAL Lamp

The yellow MANUAL lamp indicates the current paper source or paper feed method.

| Lamp | Printer status |
|------|----------------|
| Off ❍ | The printer can print continuously by loading paper from the multi-purpose sheet feeder. |
| Blinking ❍↔● | Manual paper feed is selected and the printer prompts you to insert paper in the manual paper feed slot and press the FF/CONT switch. |

## ALARM Lamp

The red ALARM lamp blinks to indicate a printer error status. If any error occurs, the printer indicates the error by blinking the ALARM lamp with another lamp or by printing an error report.

> ✎ **Note**
> The READY, DATA and MANUAL lamps are used with the ALARM lamp to indicate printer errors. See "ALARM INDICATIONS AT A GLANCE" in Chapter 6 and take corrective action for the error.

# SWITCHES

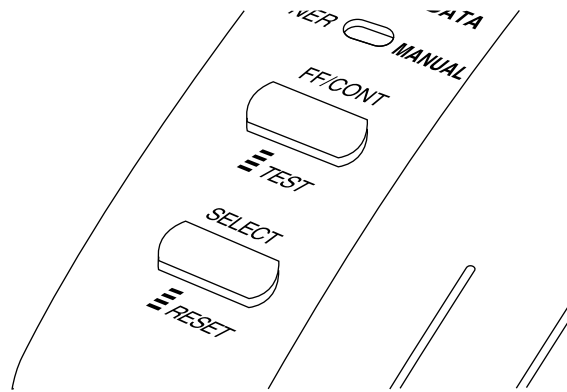This printer has the following control panel switches.



**Fig. 3-2 Switches on Control Panel**

---

✎ **Note**

This printer has no power switch. You just plug the power cord into the AC outlet. The sleep mode feature handles all power control. For more information on sleep mode, see "OTHER CONTROL FEATURES" in this chapter.

---

## SELECT (RESET) Switch

The lower switch on the control panel can work as the SELECT or RESET switch.

### SELECT Switch

The SELECT switch alternately turns the printer on-line and off-line. When the printer is on-line, the READY lamp is on. When the printer is off-line, the READY lamp is blinking.

If you press the SELECT switch during printing, the printer immediately stops printing even if the printer has started to print. It ejects the page, and then enters the off-line status. Press the SELECT switch again and the printer will reprint the complete page.

### RESET Switch

Depress and hold the RESET switch until all four lamps arelit. The printer is then reset and restored to the user default settings. While the switch is being depressed, the printer ignores any data. If the switch is released before all the lamps are turned on, the reset function does not work. The RESET switch may be able to cancel an error status.

---

☛ **Caution**
Remember that the RESET switch clears data from the printer memory and puts the printer into sleep mode.

---

## FF/CONT(TEST) Switch

The upper switch on the control panel can work as the Form Feed (FF), Continue (CONT) or Test print (TEST) switch.

### FF/CONT Switch

If the DATA lamp is on, press the FF/CONT switch. The printer prints any data remaining in the printer memory.

When you use the manual feed slot, the FF/CONT switch is used as the Form Feed (FF) switch. When you see the MANUAL lamp blinking, insert paper all the way into the manual feed slot and press the FF/CONT switch. After pressing the FF/CONT switch the printer loads the paper and begins printing. Remember that you need to press this switch to load every sheet manually.

If an error occurs, the printer can recover from recoverable errors such as cover open error automatically. If the error does not clear automatically, press the FF/CONT switch to clear the error and continue the operation.

### TEST Switch

Keep the TEST switch depressed until all lamps are turned on to execute the test printing. If the printer is on-line and print data remains in the printer memory, the printer cannot print a test sample page. If the printer is off-line and data remains in the printer memory, the printer prints the remaining data first and then prints a sample page.

## OTHER CONTROL FEATURES

The printer has the following useful features:

### Reprint Function

You can use the FF/CONT switch as a Reprint switch, so you can reprint the last printed page without sending it again from your computer.

After you have finished printing, press the SELECT switch to turn the printer off-line and press the FF/CONT switch. The printer starts reprinting the last printed page. If you press the FF/CONT switch one or more times during reprinting, the printer reprints the page as many times as you pressed the switch.

---

✒ **Note**
- The reprint data remains in the printer's memory until the printer is reset, the emulation is changed, or some other settings are changed. After you have printed confidential data, be sure to reset the printer to clear it from the printer's memory.
- You can enable or disable this reprint function with the supplied Remote Printer Console program. See the software setup guide for more information about RPC.

---

### Sleep Mode

Whether the printer is in the on-line or off-line state and the printer does not receive data for a certain period of time (time out), it enters sleep mode. Sleep mode acts as though the printer has been turned off. The factory set default time out is 15 or 2 minutes. (The default value varies depending on the area.) While the printer is in sleep mode, all the lamps are off, however the printer can still receive data from the computer. Receiving a print file or document automatically awakens the printer to start printing. Pressing any switch also awakens the printer.

---

✒ **Note**
- This printer has no power switch. The sleep mode handles the power control.
- 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 from 5 seconds to 60 seconds. The READY lamp blinks to indicate that the printer is warming up.
- You can change the time out for the sleep mode with the supplied printer driver and Remote Printer Console program. See the Software setup guide for more information about drivers.

---

### Test Print Mode

The printer has a test print mode where you can select and perform any of three test prints. Follow these steps:

1. Press the SELECT switch to turn the printer off-line.

2. Hold down the FF/CONT switch and press the SELECT switch.

   The printer enters the test print mode. The ALARM lamp blinks to indicate that the first choice, Test sample page, is selected. See the table below.

3. Press the FF/CONT switch to select another test.

   Every time you press the switch, the blinking lamp changes to select another choice. See the table below.

4. Press the SELECT switch to perform the selected choice.

| Blinking Lamp | Choice | Function |
|---|---|---|
| ALARM | Test sample page | The printer prints a test sample page. |
| READY | Print Fonts I & P | The printer prints a list of the internal or resident fonts of the printer. If permanent fonts are downloaded into the printer memory, the printer also prints a list of permanent download fonts. |
| DATA | Print Config | The printer prints the current settings that configure or set up the printer. |
| MANUAL | Enable/disable the test print | The test print set by TEST switch is enabled or disabled. |

After printing the desired test sample page, the printer returns to the ready status.

**Reset/Hex Dump Mode**

The printer has a reset/hex dump mode where you can select and perform any of three resets or a hex dump print. Follow these steps:

1.  Press the SELECT switch to turn the printer off-line.

2.  Hold down the SELECT switch and press the FF/CONT switch.

    The printer enters the reset/hex dump mode. The ALARM lamp blinks to indicate that the first choice, User Reset 1, is selected. See the table below.

3.  Press the FF/CONT switch to select another choice.

    Every time you press the switch, the blinking lamp changes to indicate another choice. See the table below.

4.  Press the SELECT switch to perform the selected choice.

| Blinking Lamp | Choice | Function |
| --- | --- | --- |
| ALARM | User Reset 1 | The printer is restored to the user default settings without clearing permanent fonts and macros. You can execute this by holding down the RESET switch. |
| READY | User Reset 2 | The printer is restored to the user default settings and permanent fonts and macros are cleared. |
| DATA | Factory Reset | The printer is restored to the factory settings and permanent fonts and macros are cleared. |
| MANUAL | 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 have to reset the printer. |

After resetting, the printer returns to the ready status.

> **✎ Note**
> User settings are the printer settings that you change with the remote printer console program. See the software setup guide for details.

# OTHER FEATURES SET BY OUR DRIVERS

### Page Protection

If printed images are too complex to print, the printer may print a partical image on the paper. If this occurs, the printer loses print data and indicates the "print overrun error" by printing the error report. (See the chapter 6 "ALARM INDICATION AT A GLANCE".)

The page protection feature allows the printer to create the image to be printed in memory before physically moving the paper through the printer. Therefore, page protection may eliminate the "PRINT OVERRUN" error.

The setting "AUTO" does not require the additional memory and it automatically uses page protection only when it is necessary. Occationally, when AUTO page protection is on, processing complex print data may be slightly delayed.

---

✒ **Note**:
When you set this setting to A4, Letter or Legal, the following capacity of memory is required.

|  | 300 dpi | 600 dpi |
|---|---|---|
| Letter/A4 | 2 Mbytes | 6 Mbytes |
| Legal | 3 Mbytes | 6 MBytes |

If your printer does not have enough memory for page protection, your document may be printed at 300 dpi.

---

You can set this function through the followings.
- The supplied printer driver for Windows 3.1
- The supplied RPC program for DOS

For the details of the setting, see the relevant help screen for each.

### APT (Advanced Photoscale Technology)

APT allows your printer produce fine gray scales to improve the appearance of print outs containing photographic image.
Using this feature, the image is printed at 256 shades of gray at nearly like photographic quality.

This setting can be made by using the suppled Windows driver. Also, the demo file which can be opened within Windows Write is included on the supplied disk. Try printing it with the APT feature.

For the details of the setting, see the relevant help screen of RPC or Windows driver.

# CHAPTER 4
# OPTIONS

## BR-SCRIPT 2 ROM BOARD

This option is a PostScript Level 2 language emulation.  By Installing this ROM board in your printer allows your printer to  print PostScript data.

PostScript is the most famous vendor-independent page description language in the world.  Once you have installed both the BR-Script 2 ROM board and AppleTalk interface board (see the next section), you can connect your printer to an Apple Macintosh computer.

With a BR-Script 2 ROM board installed,  the automatic emulation switching function will work among HP LaserJet 4, BR-Script 2 and EPSON FX-850 or HP LaserJet 4, BR-Script 2 and IBM Proprinter XL.

---

✎ Note
The BR-Script 2 ROM Board and AppleTalk interface board may have been installed by either the factory or dealer in some countries.
The BR-Script 2 ROM board is installed on the main controller board inside the printer.  For details about the installation, see the instruction guide which was provided with the BR-Script 2 ROM board.

---

# APPLETALK INTERFACE BOARD

To connect the printer to an Apple Macintosh computer, you need to install the optional AppleTalk interface board. When you have installed an AppleTalk interface board, you can share your printer between a DOS computer and an Apple Macintosh using the parallel and AppleTalk interfaces at the same time. Automatic interface selection is a standard feature. For the printer to be functional with an Apple Macintosh, you need to install the BR-Script 2 ROM board.

---

✒ **Note**

The AppleTalk interface board and BR-Script 2 ROM board for this printer are optional, but in some countries these options may have been installed by either the factory or dealer.

---

The AppleTalk interface board is installed onto the main controller board inside the printer. For details about installation or connecting the cables, see the instruction guide which is provided with the AppleTalk interface board.

## ADDITIONAL MEMORY

This printer has 2 MBytes of standard memory and a slot for optional additional memory. The memory can be expanded up to 10 MBytes by installing a commercially available single in-line memory module (SIMM).

---

✏ **Note**
In some countries, 6MBytes standard model is available.

---

Additional memory is useful and may be necessary if you are using the optional BR-Script 2 emulation or Page Protection function. ( For details about Page Protection, see Chapter 3 "Other Features".)

**Minimum Memory Recommendation (including resident memory)**

■ HP LaserJet 4, EPSON FX-850, and IBM Proprinter XL

Page Protect = AUTO or Off

|  | 300 dpi | 600 dpi |
|---|---|---|
| Letter/A4 | 2 MBytes | 2 MBytes |
| Legal | 2 MBytes | 2 MBytes |

Page Protect = Letter, A4, or Legal

|  | 300 dpi | 600 dpi |
|---|---|---|
| Letter/A4 | 2 MBytes | 6 MBytes |
| Legal | 3 MBytes | 6 MBytes |

■ BR-Script 2 (when the BR-Script 2 ROM board is installed.)

|  | 300 dpi | 600 dpi |
|---|---|---|
| Letter/A4 | 2 MBytes | 6 MBytes |
| Legal | 3 MBytes | 6 MBytes |

The following type of SIMMs can be installed:
• 1 MByte HITACHI HB56D25632B-6A, -7A
• 2 MByte HITACHI HB56D51232B-6A, -7A
• 4 MByte HITACHI HB56A132BV-7A, 7AL, -7B, -7BL
• 8 MByte HITACHI HB56A232BT-7A, -7AL, -7B, -7BL

This printer can accept the following types of SIMMs;

| | |
|---|---|
| Speed | 60 nsec - 80 nsec |
| Pin Type | 72 pin |
| Height | 45.72 mm (1.8") or less |
| Output | 32 bit or 36 bit |

---

✒ **Note**
The printer has only one slot for SIMM, therefore if you want to increase your printer memory again after you have installed a SIMM module into the slot, you will need to remove the previously installed SIMM first.  For example if you have previously increased your memory from the standard 2MB to 4 MB by adding a 2MB SIMM and you wish to increase your total memory to 6MB, you need to remove the installed 2MB SIMM and install the new 4MB SIMM into the printer.

---

### Installing the SIMM

When you install the SIMM, follow these steps:

1   Unplug the power cord from the AC outlet and disconnect the
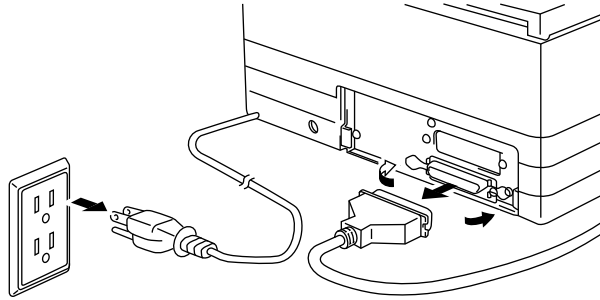    interface cable from the printer.



**Fig. 4-3 Unplug the power cord and
Disconnect the interface cable**

> ✎ **Note**
> Be sure to unplug the power cord to the printer before installing or
> removing the SIMM and the main controller board.

2   Unscrew the three screws securing the rear plate of the main
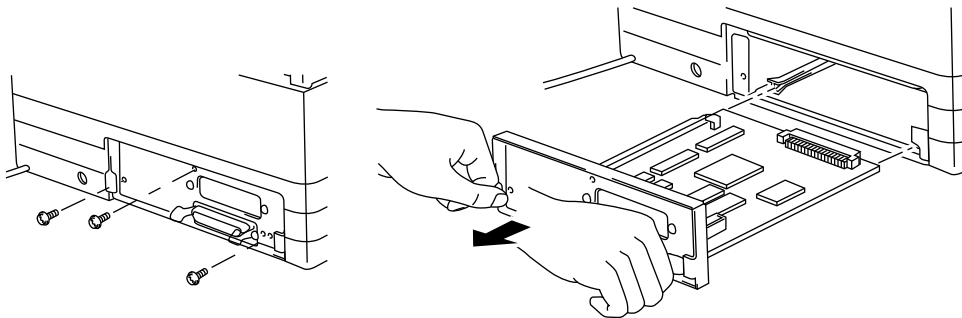    controller board and pull out the main controller board.



**Fig. 4-4 Remove the main controller board**

3   Unpack the SIMM and hold it on its edge.

> ✒ **Note**
> Do not touch the memory chips and the surface of the main controller
> board.   If static electricity collects,  it damages the memory.

4   Install the size of SIMM as you need into the slot and push gently
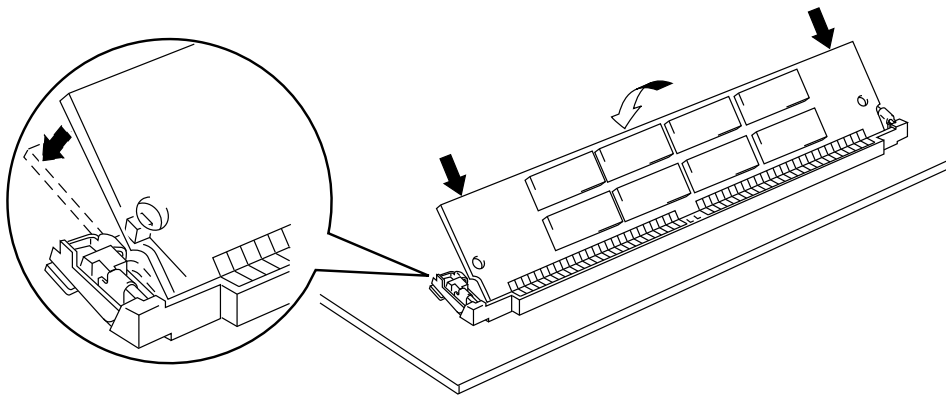    until it clicks into place.

**Fig. 4-5 Install the SIMM**

5   Install the main controller board into the printer by sliding it into the
    guide rails.

6   Secure the main controller board with the three screws.

7   Reconnect the interface cable from your computer and plug the power
    cord into the AC outlet.

# CHAPTER 5
# MAINTENANCE

## REPLACING THE TONER CARTRIDGE

The printer includes a starter toner cartridge which is expected yield 1,000 pages. The printer can print 3,000 pages after replacing toner cartridge (TN-100). When the toner cartridge is running low, the ALARM and TONER lamps blink once every 5 seconds to indicate that the toner is low.

> ✎ **Note**
> - It is recommended that you always keep a new toner cartridge ready to use for when you get the toner low warning.
> - Discard the used toner cartridge according to local regulations. If you are not sure of them, consult your local dealer.
> - It is recommended that you clean the printer at the same time as you replace the toner cartridge. See "CLEANING THE PRINTER" in this chapter.
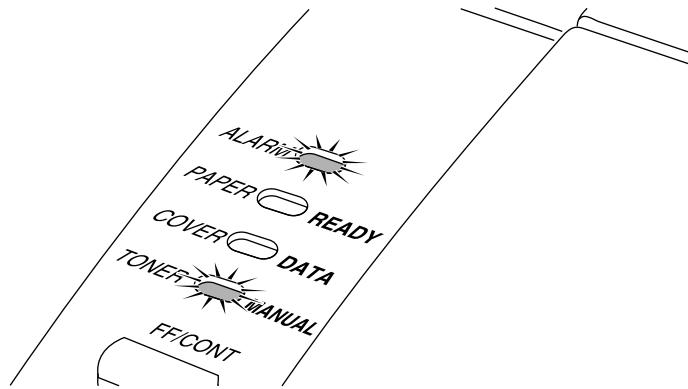


**Fig. 5-1 Toner Low and Empty Indication**

> ☞ **Caution**
> Approximately 100 pages can be printed after the first toner low indication. Both the ALARM and TONER lamps will blink to indicate that the toner is empty. Although this indication appears, you can print some pages by pressing the FF/CONT switch. Prepare the new toner cartridge and replace the old unit with a new one to eliminate the toner low or empty indication.

Follow these steps to replace the toner cartridge:

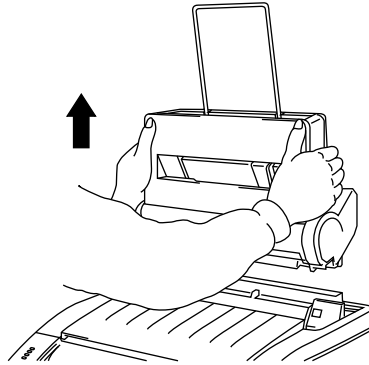1. Lift the multi-purpose sheet feeder from the printer to remove it.



**Fig. 5-2 Removing the Multi-Purpose Sheet Feeder**

2. Gently push the toner cartridge shutter lever all the way to the rear of the printer.

> ✎ **Note**
> The toner cartridge cannot be removed unless the shutter is completely closed by pushing the lever fully to the rear.
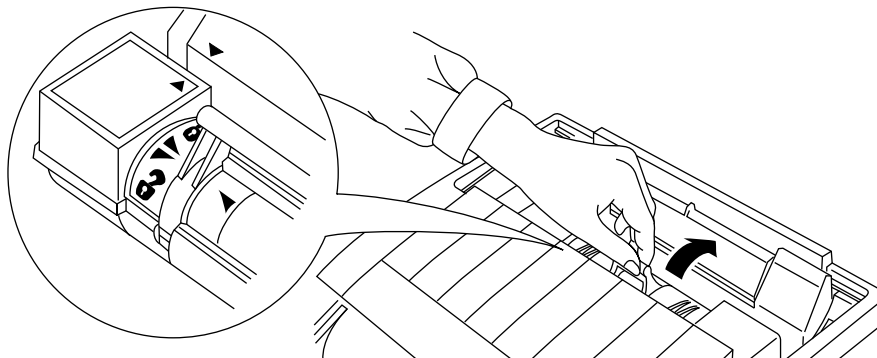


**Fig. 5-3 Closing the Shutter of the Toner Cartridge**
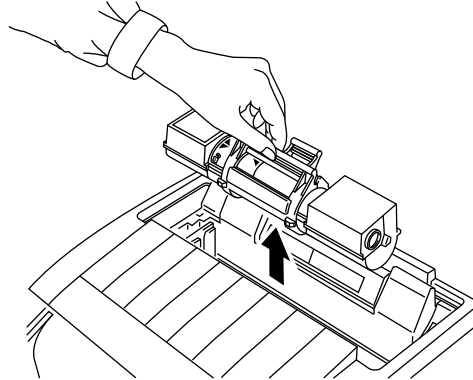
3.  Remove the old toner cartridge from the printer.



**Fig. 5-4 Removing the Old Toner Cartridge**

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

4.  Unpack the new toner cartridge, gently shake it well before installing and then remove the protective seal.

> ☞ **Caution**
> Unpack the toner cartridge immediately before installing it into the printer. If toner cartridges are left unpacked for a long period of time, the toner life is shortened.

> ✔ **Warning**
> You can use only a genuine Brother toner cartridge. Using another brand of toner cartridge could void your printer's warranty.
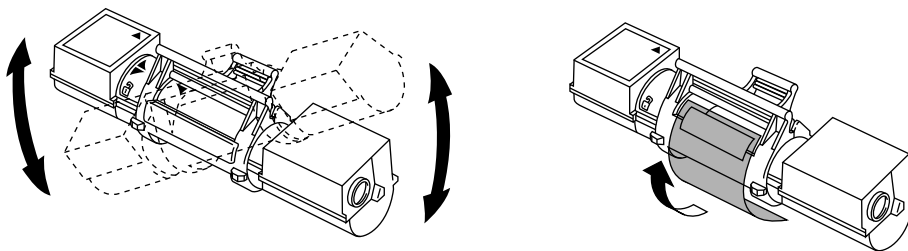


**Fig. 5-5 Shaking the Toner Cartridge and
Remove the Protective Parts**

5.  Install the new toner cartridge into the drum unit inside the printer.
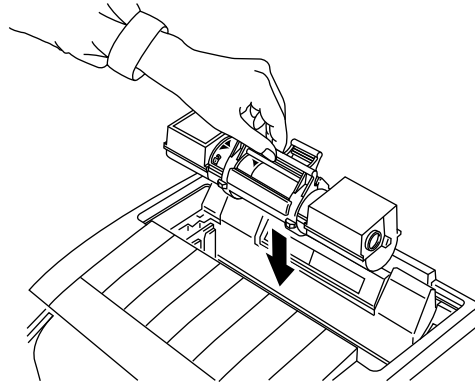    Make sure that the ▲ marks are aligned.



**Fig. 5-6 Installing the Toner Cartridge
into the Drum Unit**

6.  Gently pull the blue shutter lever on the toner cartridge forward until
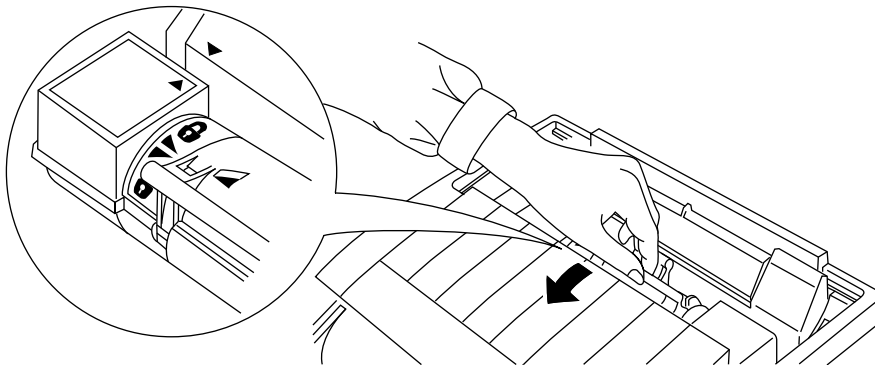    the red arrow marks are aligned.



**Fig. 5-7 Opening the Toner Cartridge Shutter**

7.  Re-install the multi-purpose sheet feeder.
    See the section "MULTI-PURPOSE SHEET FEEDER" in Chapter 2.

# REPLACING THE DRUM UNIT

The printer uses a drum unit to create the print images. Check the print quality. If there has been a noticeable deterioration in the output print quality then the drum unit should be replaced.

---

✎ **Note**
- When removing the drum unit, handle carefully as it may contain toner.
- You should clean the printer at the same time as you replace the drum unit. See "CLEANING THE PRINTER" in this chapter.
- Discard the used drum unit according to local regulations. If you are not sure of them, consult your local dealer.

---

Follow these steps to replace the drum unit:

1. Unplug the printer.

2. Remove the multi-purpose sheet feeder. Remove the toner cartridge and keep it in a safe place.
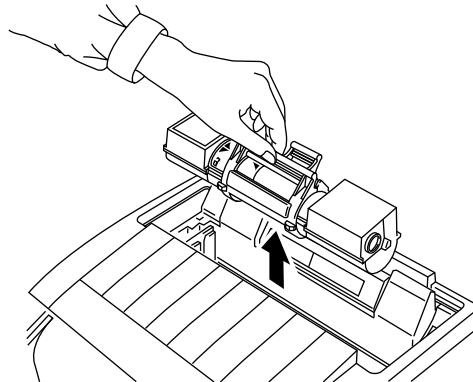   See the chapter "REPLACING THE TONER CARTRIDGE" for more information.

**Fig. 5-8 Removing the Toner Cartridge**

3.  Open the top cover and drum cover of the printer.

☞ **Caution**

After you have used the printer, some internal parts of the printer are extremely hot. When you open the top cover of the printer, never touch the shaded parts shown in the following diagram.
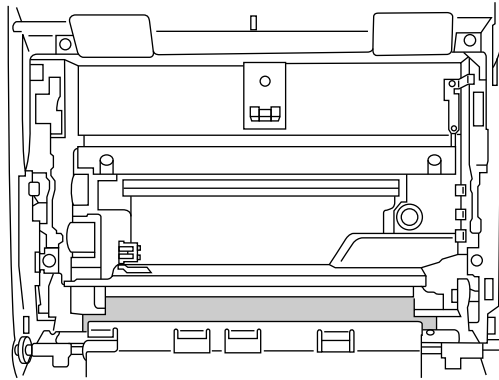


**Fig. 5-9 Inside the printer**

4.  Remove the old drum unit by lifting it gently. Make sure that you grasp the ▲ marks.
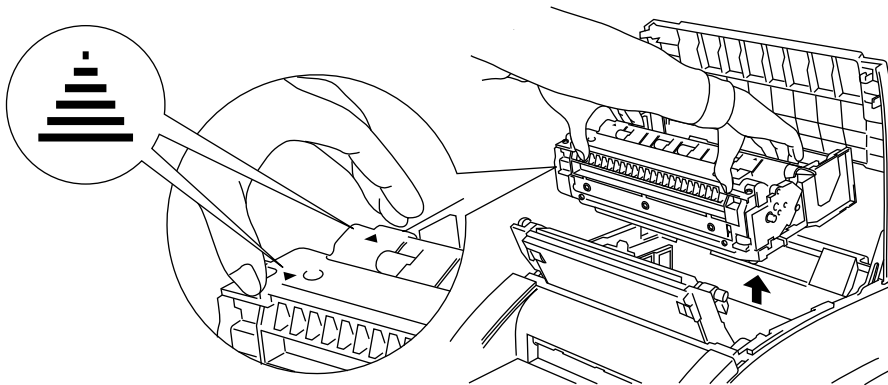


**Fig. 5-10 Removing the Drum Unit**

5.  Unpack the new drum unit and gently shake it from side to side five or six times.
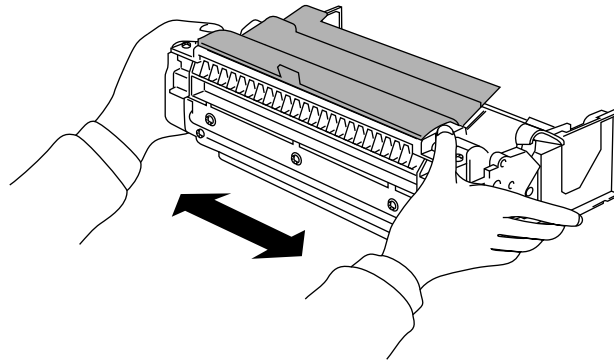


**Fig. 5-11 Unpacking the Drum Unit**

6.  Remove the protective parts ① - ⑥ in order as shown below.
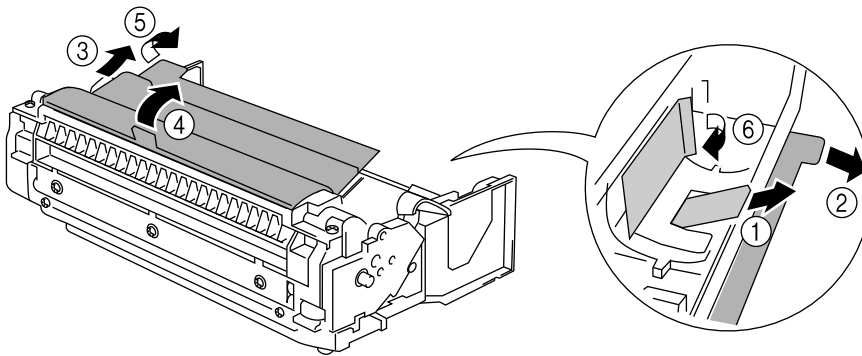


**Fig. 5-12 Removing the Protective Parts**

☞ **Caution**
- Unpack a drum unit immediately before installing it into the printer. If an unpacked drum unit is subjected to direct sunlight or room light, the unit may be damaged.
- Handle the toner cartridge and the drum unit carefully as it may contain toner. If toner scatters and your hands or clothes get dirty, wipe or wash it off with cold water immediately.

7.  Hold the drum unit flat and install the new drum unit into the printer.
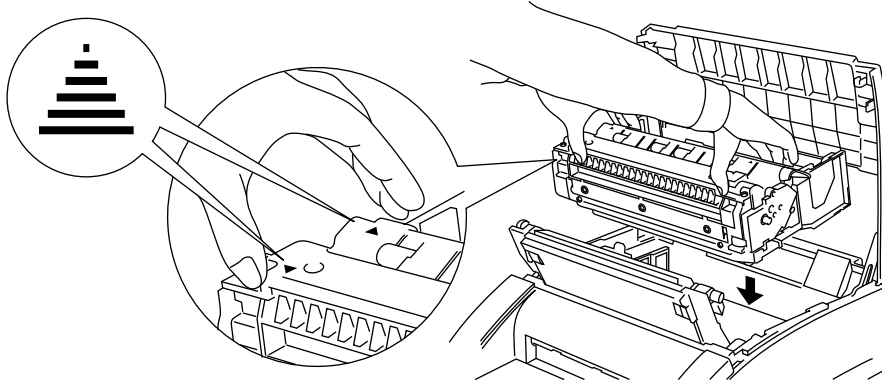


**Fig. 5-13 Installing the Drum Unit**

8.  Close the drum cover and press until the locking pegs click into position and then close the top cover.

9.  Install the toner cartridge into the drum unit inside the printer. See the chapter "REPLACING THE TONER CARTRIDGE" for more information. Install the multi-purpose sheet feeder.

10. Plug in the power cord.

# ADJUSTING THE PRINT DENSITY

The print density dial is located near the power cord on the back of the printer. You can use it to adjust the amount of toner applied to the paper.

When the toner cartridge and drum unit are replaced or if the operating temperature and humidity are high or low, print conditions may change causing darker or lighter printouts.

Use a screwdriver to turn the print density dial clockwise for darker printouts and counterclockwise for lighter printouts. The dial has been set to the middle position.
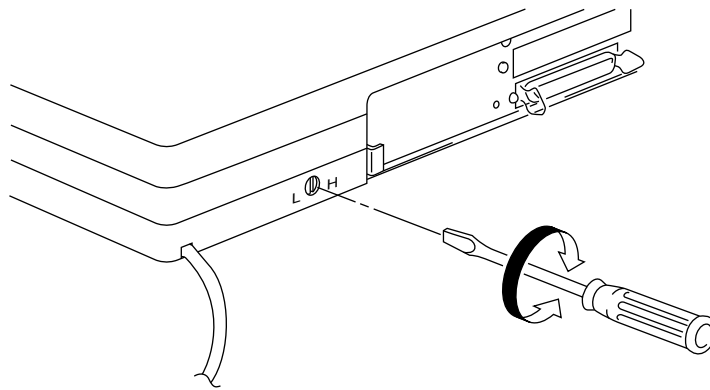


**Fig. 5-14 Adjusting the Print Density Dial**

# CLEANING THE PRINTER

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

---

✔ **Warning**
Before cleaning the printer, unplug the power cord.

---

## Cleaning the Printer Exterior

Clean the printer exterior as follows:

1. Unplug the power cord.

2. Remove the paper from the multi-purpose sheet feeder.

3. Use a damp cloth for cleaning.

---

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

---

4. Wipe dirt and dust away from the printer exterior and feeder with a cloth.

5. Load paper into the multi-purpose sheet feeder and plug in the power cord.

## Cleaning the Printer Interior and Drum Unit

Clean the printer interior and the drum unit as follows:

1. Unplug the power cord.

2. Remove the multi-purpose sheet feeder.

3. Open the top cover of the printer.

4. Open the drum cover.

---

✒ **Note**

After you have used the printer, some internal parts of the printer are extremely hot. When you open the top cover of the printer, never touch the shaded parts shown in the following diagram.
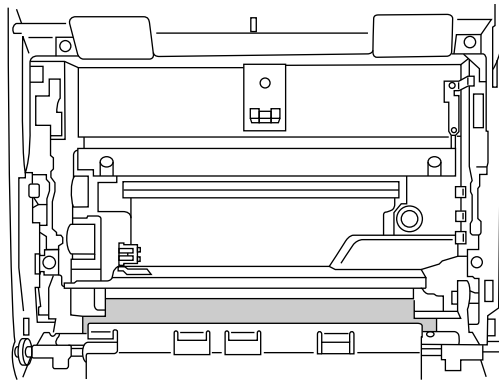
**Fig. 5-15 Inside the printer**

---

5. Wipe dirt and dust away from the drum cover and printer inside with a soft cloth. You may use cleaning alcohol (isopropyl) with a cotton swab to wipe the rollers ( ① ) and pinch rollers ( ② ) of the drum cover.

Drum Cover

Pinch Rollers
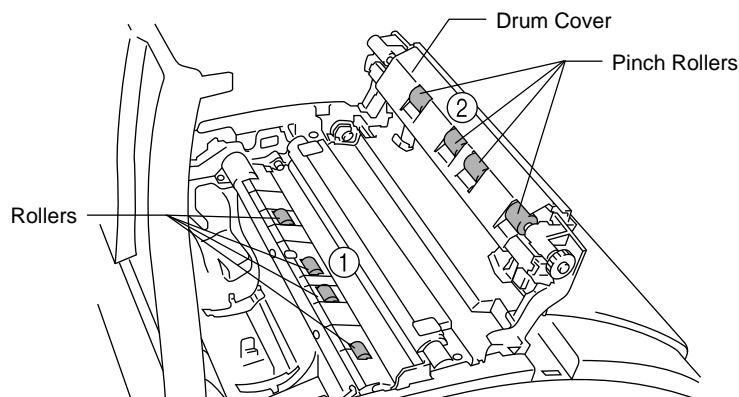
Rollers

**Fig. 5-16 Cleaning the Drum Cover and Rollers**

> ✔ **Warning**
> Use water or neutral detergents for cleaning. Cleaning with volatile liquids such as thinners or benzene will damage the internal surfaces of the printer.

6.  Take the drum unit out of the printer.

7.  Wipe the following electric plates ③, ④, ⑤ with cleaning alcohol on a cotton swab. Wipe the scanner window ⑥ and the toner sensor ⑦ with a soft dry cloth.
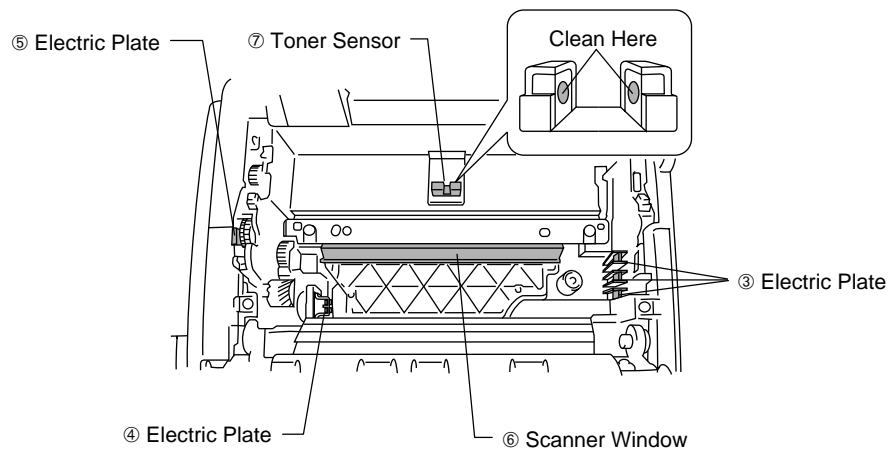


**Fig. 5-17 Cleaning the Printer Interior**

> ✔ **Warning**
> • Do not wipe the scanner window with cleaning alcohol (isopropyl).
> • Make sure that the arrow marks on the toner cartridge are aligned with each other before turning the drum unit upside down. See the section "REPLACE THE TONER CARTRIDGE" in Chapter 5.

8.  Turn the drum unit upside down carefully.

> ☞ **Caution**
> Handle the drum unit carefully as it contains toner. If toner scatters and your hands or cloths get dirty, wipe or wash it off with cold water immediately.

9.  Clean the primary corona wire inside the drum unit by gently sliding the tab right and left several times.

Home Position (▲)

Bottom view of drum unit
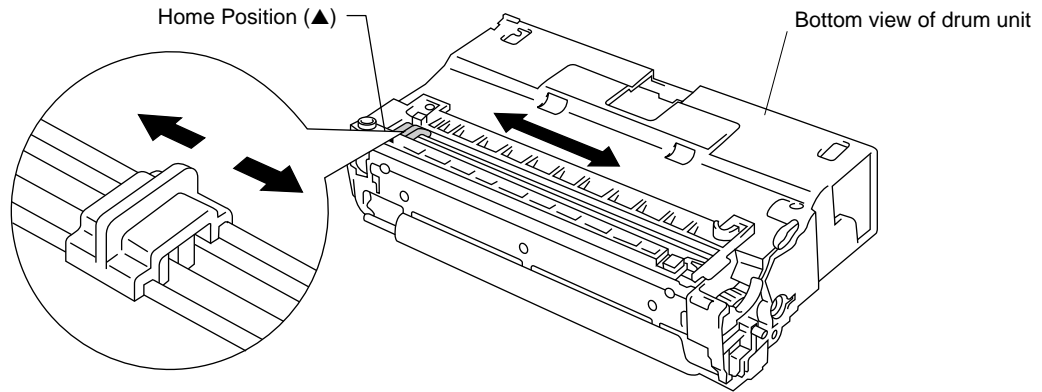
**Fig. 5-18 Cleaning the Primary Corona Wire**

10. Position the tab at the left end of the drum unit (▲ mark position.)

---

✔ **Warning**

Be sure to position the tab at the home position to the left end of the drum after cleaning.

---

11. Re-install the drum unit into the printer.
    See the section "REPLACING THE DRUM UNIT" in Chapter 5.

12. Close the drum cover and top cover.

13. Install the multi-purpose sheet feeder.
    See the section "MULTI-PURPOSE SHEET FEEDER" in Chapter 2.

14. Plug in the power cord.

# RE-PACKING THE PRINTER

> ☛ **Caution**
> Whenever you transport the printer, use the packing materials which are provided with your printer. Also, follow the steps below to re-pack the printer or the printer will be damaged.

1. Unplug the printer from the AC outlet.

2. Remove the multi-purpose sheet feeder and wrap it in the plastic bag.

3. Open the top cover and the drum cover.

4. Remove the drum unit assembly, referring to the previous section.

> ✒ **Note**
> Remove the drum unit assembly with the toner cartridge included.
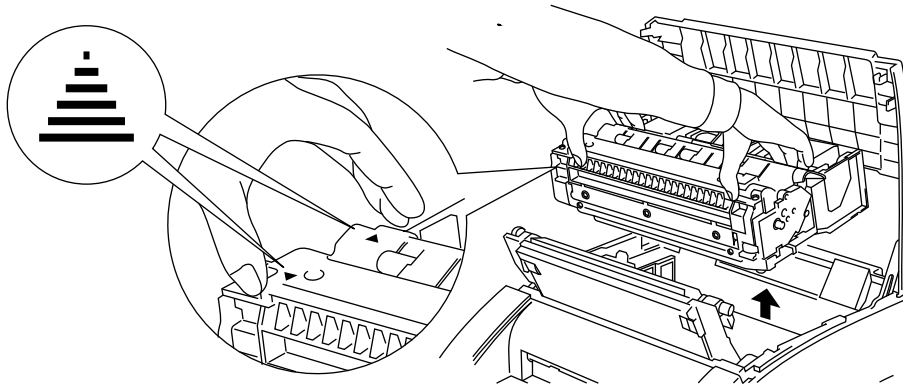


**Fig. 5-19 Removing the Drum Unit Assembly**

5. Place the drum unit assembly in the plastic bag, hold the plastic bag under the drum unit assembly and wrap it in the corrugated cardboard.
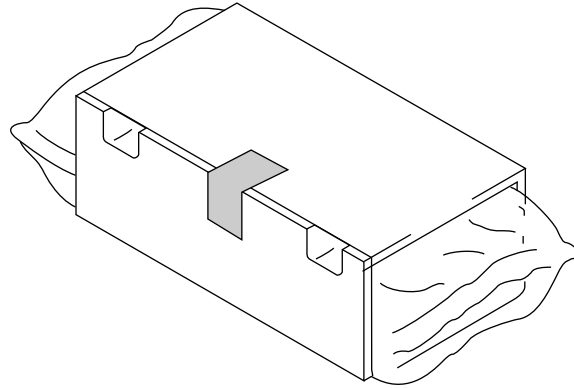


**Fig. 5-20 Placing the Drum in the Plastic Bag
and Wrapping it in the Corrugated Cardboard**

6. Close the top cover, the drum cover, the paper support wire and the output tray.

7. Wrap the printer in the plastic bag and place it in the carton in the Styrofoam packing.

8. Place the multi-purpose sheet feeder, documents, and drum unit assembly in the carton as shown below.

9. Close the carton and tape it.
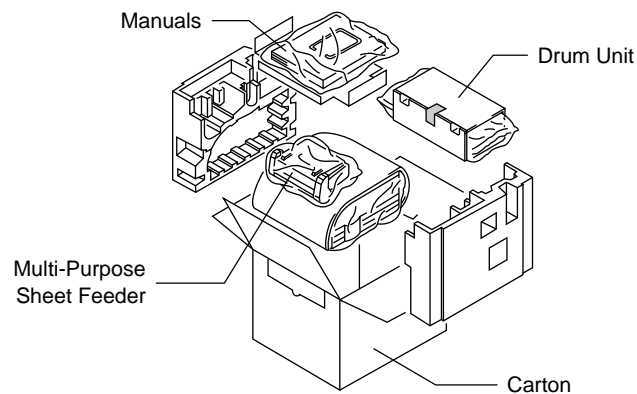


**Fig. 5-21 Repacking the Printer**

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# CHAPTER 6 TROUBLESHOOTING

## ALARM INDICATIONS AT A GLANCE

### Operator Calls

If an error occurs, the printer indicates an 'operator call' by blinking the ALARM lamp and any of the following lamps.

Find the error and take the proper action to correct it. The printer automatically recovers from most errors, but you may need to reset the printer with the switches as described below.

| Blinking Lamp | Error | Action |
|---|---|---|
| PAPER ❍↔● ALARM❍↔● | Paper jam | Clear the paper jam referring to the next section "PAPER JAMS" and press the FF/CONT switch if the printer does not automatically resume printing. |
| | Paper empty | Load paper into the printer referring to Chapter 2 and press the FF/CONT switch. |
| | Mis Feed | Reinstall the paper and press the FF/CONT switch. |
| COVER ❍↔● ALARM❍↔● | Cover open | Close the top cover of the printer or press firmly on the multi-purpose sheet feeder to make sure it is properly installed. |
| TONER ❍↔● ALARM❍↔● ( every 5 seconds) | Toner low | Indicates that the printer has approximately 100 pages of printing left before the toner cartridge is empty. |
| TONER ❍↔● ALARM❍↔● | Toner Empty | Replace the toner cartridge with a new one. |

❍ OFF ● ON

For errors shown below, the printer indicates an operator call by blinking the ALARM lamp and printing the error messages on paper.

| Error | Action |
|---|---|
| Memory Full | • Press the FF/CONT switch to print the data remaining in the printer. |
| | • If you are using the supplied Windows driver, try again after changing the following settings. The best combination of the settings below varies depending on your document.<br>Graphics Mode<br>TrueType mode<br>User Printer TrueType™ Fonts<br>Page Protection |
| | • Expand the printer memory by adding a commercially available SIMM. |
| | • Reduce the print resolution or reduce the complexity of your document. |
| Print Overrun | • Press the FF/CONT switch to print the data remaining in the printer. |
| | • If you use the supplied Windows driver, try again after changing the following settings. The best combination of the settings below varies depending on your document.<br>Graphics Mode<br>TrueType mode<br>User Printer TrueType™ Fonts<br>Page Protection |
| | • If this does not clear the error, reduce the complexity of your document or reduce the print resolution. |
| | • Expand the printer memory by installing SIMM and set page protection ON by using the supplied Windows driver or RPC program. |
| Centronics Interface Line Error | • Press the FF/CONT switch to resume printing. |
| | • Check that the connection between your computer and printer is secure and correct, and check the interface cable. |

> ✎ **Note**
> If the printer does not operate as you expect it to, it is recommended that you perform a user reset or factory reset with the switches or unplug the printer, wait a few seconds and then plug it in again. If you still have problems, consult your dealer or our authorized service representative.

## Service Calls

If an unrecoverable error occurs, the printer indicates the need for a service call by lighting all the lamps and then the following combination of lamps alternately:

| Service Call | Fuser mal-function | Laser BD malfunction | Program error | D-RAM error |
|---|---|---|---|---|
| ALARM | ● | ○ | ○ | ● |
| READY | ○ | ● | ○ | ○ |
| DATA | ○ | ○ | ● | ● |
| MANUAL | ○ | ○ | ○ | ○ |

| Service Call | Service A | Service B | Service C | Service D |
|---|---|---|---|---|
| ALARM | ○ | ● | ○ | ● |
| READY | ● | ● | ○ | ○ |
| DATA | ● | ● | ○ | ○ |
| MANUAL | ○ | ○ | ● | ● |

| Service Call | Service E0 | Service E1 | Service P | NV-RAM error | AppleTalk error |
|---|---|---|---|---|---|
| ALARM | ○ | ● | ○ | ● | ○ |
| READY | ● | ● | ○ | ○ | ● |
| DATA | ○ | ○ | ● | ● | ● |
| MANUAL | ● | ● | ● | ● | ● |

● ON    ○ OFF

If you see any of these service call indications, reset the printer in either of the following ways:

1. Reset the printer using the RESET switch or the FF/CONT switch and try to print again.

2. Unplug and plug in the power cord and then try to print again.

If you cannot clear the error and see the same service call indication after resetting the printer, consult your dealer or our authorized service representative. Report the error status and situation referring to the above table.

---

✒ **Note**
Check the top cover, the multi-purpose sheet feeder and the main controller board to verify that they are firmly installed.

---

# PAPER JAMS

Before you can clear a paper jam error, you need to find the location of the paper jam. Locate the position referring to the following figure.
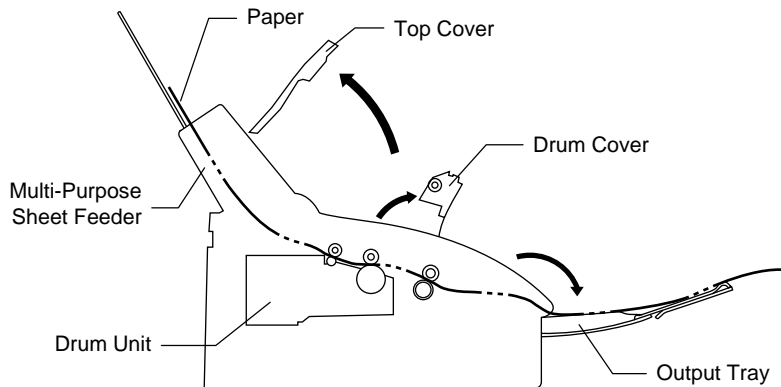


**Fig. 6-1 Locating Paper Jam Position**

After locating the position, clear the jammed paper, referring to the following descriptions. If the jammed paper is removed completely, the printer may resume printing. If the printer does not resume printing, press the FF/CONT switch.

❏ Paper Jam at the Paper Output Tray

---

☞ **Caution**
Do not pull the jammed paper from the output tray. Be sure to open the drum cover inside the printer to remove the jam or the jammed paper may tear and pieces of paper may remain inside the printer. See the next page for instructions on how to remove the jammed paper.

---
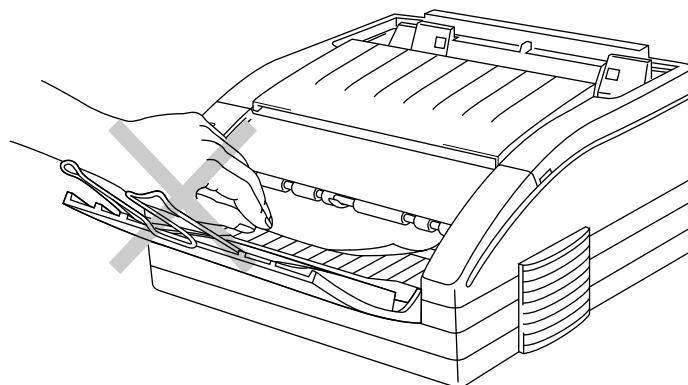


**Fig. 6-2 Paper Jam at the Paper Output Tray**

❏ Paper Jam in the Multi-Purpose Sheet Feeder

If a paper jam has occurred inside the multi-purpose sheet feeder, open the multi-purpose sheet feeder to pull the jammed paper upward out of the feeder; then close the multi-purpose sheet feeder. Also, open the top cover and check that a torn piece doesn't remain inside the printer referring to the next section for assistance.
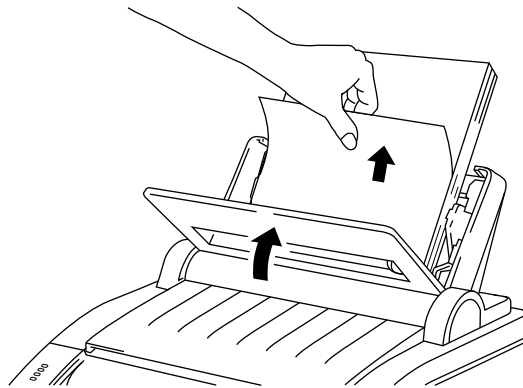


**Fig. 6-3 Paper Jam in the Feeder**

If the paper cannot be pulled up, see the next section "Paper Jam Under the Drum Cover."

❏ Paper Jam under the Drum Cover

If a paper jam has occurred under the drum cover, remove the multi-purpose sheet feeder, open the top cover and the drum cover. Then pull the jammed paper upwards and out of the printer. Close the covers.
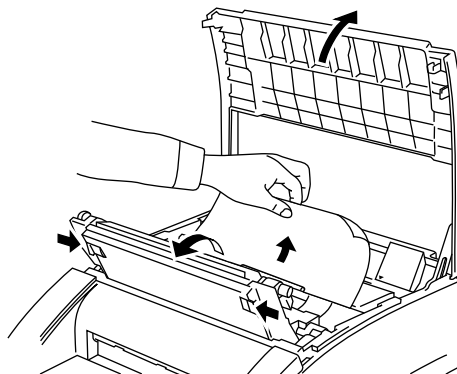


**Fig. 6-4 Paper Jam under the Drum Cover**

❏ Paper Jam Inside the Printer

If a paper jam has occurred under the drum unit, you must remove the multi-purpose sheet feeder, open the top cover and the drum cover, remove the drum unit, and pull the jammed paper out of the printer. Then re-install the drum unit and close the covers.
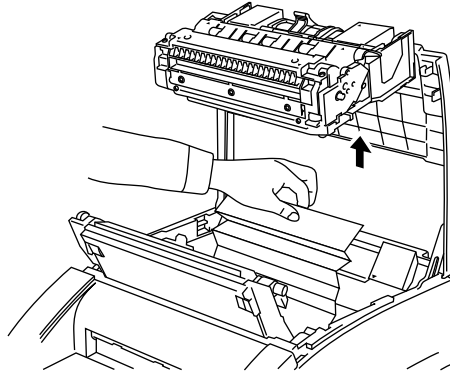


**Fig. 6-5 Paper Jam Inside the Printer**

☛ **Caution**
After you have used the printer, some internal parts of the printer are extremely hot. When you open the top cover of the printer, never touch the shaded parts shown in the following diagram.
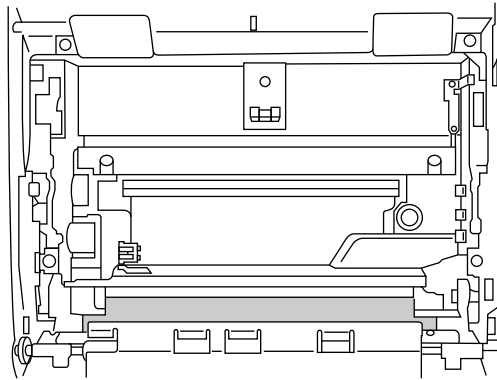


**Fig. 6-6 Inside the Printer**

# Q & A

This section contains questions and answers for using your printer. If you have encountered a problem, find the question relating to your problem and take the steps recommended to correct the problem.

## Setting up the Printer Hardware

| Question | Recommendation |
|---|---|
| The printer does not work. All lamps are off. | The printer may be in sleep mode. Press any switch to wake up printer. |
| The printer does not print. | Check the following:<br>• The protective parts have been removed.<br>• The toner cartridge and drum unit are installed properly.<br>• The interface cable is securely connected between the printer and computer.<br>• Check to see if any lamps are blinking. Notice which lamps are blinking and refer to Operator Call section of this manual. |

## Setting up the Printer for DOS

| Questions | Recommendation |
|---|---|
| I cannot print from my application software | • Check if the DOS application software interface settings match that of your printer. ( i.e., if you are using a parallel printer cable, then you would most likely set your DOS software printer port to LPT1.)<br>• Check to see if the printer has any printer alarms active. |

| Questions | 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 to see which printer you have selected and to make sure the printer is set up correctly. Remember this printer emulates three widely used printer selections : HP LaserJet 4, Epson FX-850, and IBM Proprinter XL. A suggestion is to reset the printer to factory settings by using the RESET switch or by using the RPC to set the printer into HP emulation and then select the HP LaserJet 4 printer in your application software. |
| The printer does not print when I press the Print Screen Key. (DATA lamp On) | Press the SELECT switch to turn the printer off-line and press the FF/CONT switch. The data has been sent to the printer but the printer did not receive the Page Eject command (print screens do not send this command.) |
| The printer prints the first part of my document but doesn't print the last page. (DATA lamp On) | This was a common problem with database software and spreadsheet software when not correctly set up. The data has been sent to the printer but the printer did not receive the Page Eject command. Press the SELECT switch to turn the printer off-line and press the FF/CONT switch to eject the page. Then check with your software supplier on how to add a Page Eject ( or Form Feed) command to the end of your print job. |
| How can I change the User settings or default settings of the printer? | Use the remote printer console (RPC) program. |

## Setting up the Printer for Windows

| Questions | Recommendation |
|---|---|
| The printer does not work. | Check the followings:<br>• The printer is plugged in.<br>• The interface cable is securely connected between the printer and computer.<br>• There are no alarm conditions (blinking lamps.) |

| Questions | Recommendation |
|---|---|
| I cannot print from my application software. | • If you are using Windows 3.1, make sure the supplied printer driver is installed and selected with your application software.<br>• If you are using Windows 3.0 or earlier, make sure that proper printer driver is insatlled and selected to match the printer emulation. |
| How can I change the printer's default settings? | Exit to DOS and use the remote printer console program. |
| Sometimes I get a Print Overrun error when printing certain documents from Windows. | • Change the following settings on the driver and try again.<br>    Page Protection<br>    Graphics Mode<br>    TrueType™ Mode<br>    User Printer TrueType™ Fonts<br>• Reduce the print resolution or reduce the complexity of your document and try again.<br>• Expand the printer memory by installing SIMM and turn page protection A4, Letter or Legal through the supplied Windows driver or RPC. |
| Sometimes I get the Memory Full message. How can I correct this? | • Change the following settings on the driver and try again.<br>    Page Protection<br>    Graphics Mode<br>    TrueType™ Mode<br>    User Printer TrueType™ Fonts<br>• Another solution is to purchase more memory.<br>• Reduce the print resolution or reduce the complexity of your document and try again. |

## Setting up the Printer for Apple Macintosh Computers

(When AppleTalk interface board and BR-Script 2 ROM board are installed.)

| Questions | Recommendation |
|---|---|
| The printer does not print. | Check the following:<br>• The printer is plugged in.<br>• Paper is loaded.<br>• No error conditions are active (any blinking lamps on printer.)<br>• Printer is on-line. |

| Questions | Recommendations |
|---|---|
| I cannot print from my application software. | • Check the PORT selection within the Chooser : it should match the port you physically attached the printer cable to.<br>• Check the printer cable type (you should be using a Local-Talk type cable.) |

## Paper Handling

| Questions | Recommendations |
|---|---|
| The printer does not load paper. | • Note if the ALARM and PAPER lamps are blinking. If so, the multi-purpose sheet feeder is out of paper. Load a new stack of paper into the feeder.<br>• If there is paper in the multi-purpose sheet feeder, make sure it is straight. If the paper is curled, you should straighten it before printing.<br>• Reduce the stack of paper in the multi-purpose sheet feeder, then try again. |
| The printer does not load paper from the manual feed slot. | When the MANUAL lamp is blinking, press the FF/CONT switch for manual loading.<br>Re-insert the paper firmly. |
| How can I load envelopes? | You can load envelopes from either the multi-purpose sheet feeder or the manual feed slot. Your application software must be set up correctly to print on the envelope size you are using. This is usually done in the page setup or document setup menu of your software. Refer to your application manual. |
| What paper can I use? | You can use plain paper, envelopes, transparencies, labels, and organizer paper. For information on loading paper, see "Paper Handling" in Chapter 2. |
| How can I clear paper jams? | See "PAPER JAMS" in this chapter. |

## Printing

| Questions | Recommendations |
|-----------|-----------------|
| The printer prints unexpectedly or it prints garbage. | • Make sure your application software is correctly set up to use this printer and check the printer driver settings or printer settings in your application software.<br>• Check the printer emulation settings. If you can use the supplied RPC program, use it to change the settings as required. Also, you can print the current setting list from the RPC program or Printer Control Panel.<br>• You may clear the problem by resetting the printer to user or factory settings. See "Reset/Hex Dump Mode" in Chapter 3. |
| The printer cannot print full pages of a document. An error message "Print Overrun" occurs. | The printer received a very complex print job and could not process part of the page. This may be solved by the following ways.<br>• If you are using Windows 3.1 with the supplied printer driver, change the settings for "Graphics Mode", "TrueType™ Mode" and "Use Printer TrueType™ Font".<br>• Set the page protection mode to "AUTO" or your document size.<br>• Reduce the complexity of your document or reduce the print resolution. |
| The printer cannot print my spreadsheet. A "Memory Full" error message occurs. | Some applications download several types and sizes of fonts. This can use up your printer memory very quickly. Set the Page Protection to AUTO or your document size, reduce the number of font sizes within your application, reduce resolution, or purchase additional SIMM for the printer. |
| 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 last two lines of text cannot print. Adjust the top and bottom margins in your document to allow for this. |

## Print Quality

| Questions | Recommendations |
|---|---|
| Printouts are too dark or light. | Turn the print density dial counterclockwise for lighter images and clockwise for darker images. It has been factory set to the middle position. See "ADJUSTING THE PRINT DENSITY" in Chapter 5. |
| Printed pages contains white stripes. | You may clear the problem by wiping the scanner windows with a soft cloth. ( See "Cleaning the printer interior and Drum unit.") If the same problem occurs after cleaning, replace the drum unit with a new one. |



**Fig. 6-7 White Stripes or Faint Images**

| Printed pages have white spots in black text and graphics area. | • Make sure that you use paper that meets the specifications. Rough surface or thick media can cause the problem.<br>• If you still have the same problem, replace the drum unit with a new one. |
|---|---|



**Fig. 6-8 White Spots**

| | |
|---|---|
| Printed pages are stained with toner or has vertical stripes. | • Clean the printer interior and the primary corona wire of the toner cartridge. See "Cleaning the Printer Interior and Drum Unit" in Chapter 5.<br>• Make sure that the tab of the corona wire is at the home posision.<br>• Remove the drum unit with the toner cartridge installed. Hold it horizontally with both hands and tap it firmly against a flat surface 3 or 4 times.<br>If the same print problem occurs after cleaning, replace the drum unit with a new one. |
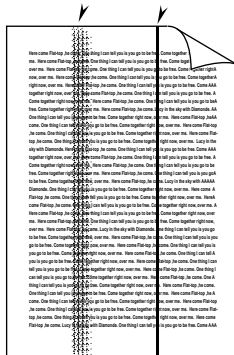


**Fig. 6-9 Dark Stripes or Toner Stains**

| | |
|---|---|
| The whole page is printed in black. | Wipe the contact plates with cleaning alcohol. See "Cleaning the printer interior and Drum Unit" in Chapter 5. Never use heat-sensitive paper as it will cause this problem.<br><br>If the same problem occurs after cleaning, replace the drum unit with a new one. |



**Fig. 6-10 Black Page**

| Toner scatters and stains the printed page. | If toner scatters over the whole printing surface, adjust the print density dial inside the printer counterclockwise. See "ADJUSTING THE PRINT DENSITY" in Chapter 5.<br><br>Clean the printer interior. See "Cleaning the Printer Interior and Drum Unit" in Chapter 5.<br><br>Make sure that you use paper that meets specifications.<br><br>If you still have the same problem, replace the drum unit with a new one. |
|---|---|
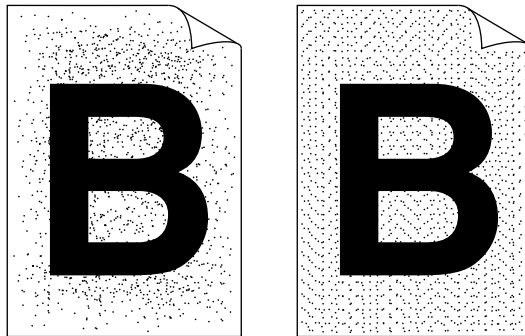


**Fig. 6-11 Scattering Toner**

| Nothing is printed on the page. | • Make sure that the toner cartridge is not empty and that the sealing tape has been removed from the toner cartridge.<br>• Wipe the contact plates with cleaning alcohol. See "Cleaning the printer interior and Drum Unit" in Chapter 5. |
|---|---|
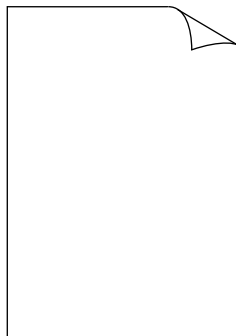


**Fig. 6-12 White Page**

| | |
|---|---|
| Printed pages are stained at fixed intervals. | The problem may disappear . Try printing multiple pages to clear this problem, if the printer has not been used for a long time. The surface of the drum has been scratched or exposed to light. Replace the Drum Unit with a new one. |
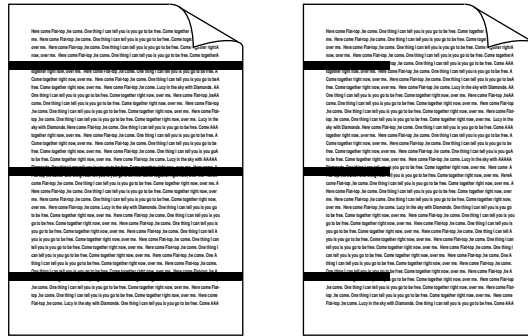


**Fig. 6-13 Stained at Fixed Interval**

Certain environmental conditions such as humidity, high temperatures, etc. may cause the following situation to occur.

| | |
|---|---|
| Printed pages are blurred at the center or either edge. | • Make sure that the printer is placed on a flat, horizontal surface.<br>• Remove the drum unit with the toner cartridge installed.  Hold the unit horizontally with both hands and tap it firmly against a flat surface 3 or 4 times. Re-install the drum/toner unit and try printing again. If the print quality is not acceptable, please contact Brother customer cervice or your local authorized service center for further assistance. |
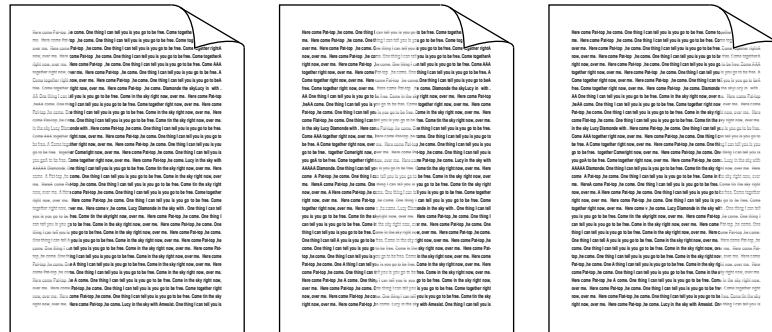


**Fig. 6-14 Blurred Page**

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# APPENDICES

## PRINTER SPECIFICATIONS

### Printing

| | |
|---|---|
| Print Method | Electrophotography by semiconductor laser beam scanning |
| Laser | Wavelength : 780 nm<br>Output : 5 mW max |
| Resolution | 600 dots/inch with APT (Advanced Photoscale Technology) |
| Print Quality | Normal printing mode<br>Economy printing mode (up to 50% toner saving) |
| Print Speed | 6 pages/minute (when loading A4 or letter-size paper from the multi-purpose sheet feeder) |
| Warm-Up | Approximately 1 minute at 23°C (73.4°F) |
| First Print | 20 seconds (when loading A4 or letter-size paper from the multi-purpose sheet feeder) |
| Print Media | Toner in a cartridge<br>Life   3,000 pages/cartridge (TN-100 - Replacement toner cartridge)<br>       1,000 pages/cartridge (Starter toner cartridge)<br>(when printing A4 or letter size paper at 5% print coverage). |

## Functions

| | |
|---|---|
| CPU | MC68EC020 25 MHz |
| Emulation | Automatic emulation selection among HP LaserJet 4 (PCL level 5e), EPSON FX-850, or IBM Proprinter XL<br>BR-Script 2 is optionally available. (pre-installed in some countries.) |
| Printer Driver | Windows 3.1 driver, supporting bi-directional capability<br>TrueType™ compatible screen-fonts for Microsoft Windows |
| Interface | Bi-directional parallel<br>AppleTalk interface is optionally available.  (Pre-installed in some countries.) |
| Memory | 2.0 MB (subject to the printer model)<br>Expandable up to 10 MB with industry standard SIMMs. |
| Control Panel | 2 switches and 4 lamps |
| Diagnostics | Self-diagnostic program |

## Electrical and Mechanical

| | | |
|---|---|---|
| Power Source | U.S.A. and Canada:<br>Europe and Australia: | AC 110 to 120 V, 60 Hz<br>AC 220 to 240 V, 50 Hz |
| Power Consumption | Printing:<br>Stand-by:<br>Sleep: | 480 W or less<br>55 W or less<br>12 W or less |
| Noise | Printing:<br>Stand-by: | 50 dB A or less<br>41 dB A or less |
| Temperature | Operating:<br>Storage: | 10 to 32.5°C (59 to 90.5°F)<br>0 to 40°C (38 to 104°F) |
| Humidity | Operating:<br>Storage: | 20 to 80% (without condensation)<br>20 to 80% (without condensation) |
| Dimensions (W x H x D) | 364.9 x 182.5 x 362.8 mm (14.4 x 7.2 x 14.3 inches)<br>(when the output tray is closed and the Multi-purpose sheet feeder is removed.) | |
| Weight | Approx. 7.5 kg (16.6 lbs.) | |

# PARALLEL INTERFACE SPECIFICATION

Interface Connector        Printer Side:  Amphenol 57RE-4036-7308 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, an interface cable which has the pin
> connection above should be used.

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Computer side                                          Printer side
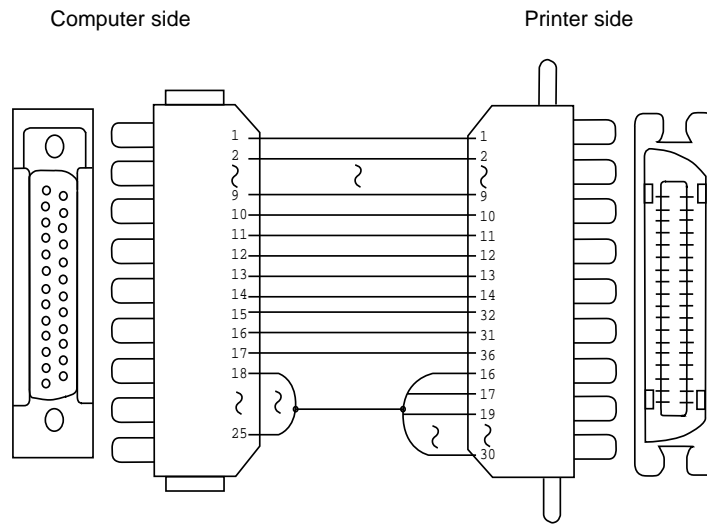


**Fig. A-1 Parallel interface cable**

## RESIDENT FONTS

### Bitmapped Fonts

This printer has the following bitmapped fonts. They can be used in the
HP LaserJet 4, EPSON FX-850, and IBM Proprinter XL modes. They
have the following characteristics.

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

### Scalable Fonts

■ The following scalable fonts can be used in the HP LaserJet 4,
  EPSON FX-850, and IBM Proprinter XL modes.

#### Intellifont Compatible Fonts

- Albertville (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 Tennessee Roman (Italic, Bold, BoldItalic)
- PC Brussels Light (Italic, Demi, DemiItalic)
- Utah (Oblique, Bold, BoldOblique)
- Utah Condensed (Oblique, Bold, BoldOblique)

#### Microsoft Windows 3.1 TrueType Compatible Fonts

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

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■  The following scalable fonts can be used in the BR-Script mode.
   ( Only when you have installed the BR-Script 2 ROM board.)

Atlanta Book (BookOblique, Demi, DemiOblique)
BR Dingbats
BR Symbol
Brougham (Oblique, Bold, BoldOblique)
Brussels Light (LightItalic, Demi, DemiItalic)
Calgary MediumItalic
Copenhagen Roman (Italic, Bold, BoldItalic)
Helsinki (Oblique, Bold, BoldOblique)
Helsinki Narrow (Oblique, Bold, BoldOblique)
Portugal Roman (Italic, Bold, BoldItalic)
Tennessee Roman (Italic, Bold, BoldItalic)

## SYMBOL SETS/ CHARACTER SETS

### OCR Symbol Sets

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

- OCR-A
- OCR-B

### HP LaserJet 4 Mode

- Roman 8 (8U)
- ISO Latin1 (0N)
- ISO Latin2 (2N)
- ISO Latin5 (5N)
- PC-8 (10U)
- PC-8 D/N (11U)
- PC-850 (12U)
- PC-852 (17U)
- PC-8 Turkish (9T)
- Windows Latin1 (19U)
- Windows Latin2 (9E)
- Windows Latin5 (5T)
- 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

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✎ **Note**
If you want to know what characters are in each symbol/character set, print CHARASET.PRN file from "Print form" option in Direct Access Menu of the Remote Printer Console Program.

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## ❏ HP LaserJet 4

### Roman 8

|   | 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 | Ð | µ |   |   |
| 4 |   |   | $ | 4 | D | T | d | t | Ê | Ç | á | å | ð | ¶ |   |   |
| 5 |   |   | % | 5 | E | U | e | u | Ë | ç | é | í | Í | 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 | õ | º |   |   |
| B |   |   | + | ; | K | [ | k | { | ¨ | £ | ù | Ü | Š | « |   |   |
| C |   |   | , | < | L | \ | l | \| | ~ | ¥ | ä | É | š | ■ |   |   |
| 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 |   |   |

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 character set of Roman 8.

| 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 | ^ | ` | ä | ö | å | ‾ |
| 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 4, EPSON FX-850, IBM Propritner XL**

PC-8

```
     0 1 2 3 4 5 6 7 8 9 A B C D E F
0      ▶ 0 @ P ` p Ç É á ▒ └ ╨ α ≡
1    ☺ ◀ ! 1 A Q a q ü æ í ▓ ┴ ╤ ß ±
2    ☻ ↕ " 2 B R b r é Æ ó ▒ ┬ ╥ Γ ≥
3    ♥ ‼ # 3 C S c s â ô ú │ ├ ╙ π ≤
4    ♦ ¶ $ 4 D T d t ä ö ñ ┤ ─ ╘ Σ ⌠
5    ♣ § % 5 E U e u à ò Ñ ╡ ┼ ╒ σ ⌡
6    ♠ ▬ & 6 F V f v å û ª ╢ ╞ ╓ µ ÷
7    • ↨ ' 7 G W g w ç ù º ╖ ╟ ╫ τ ≈
8    □ ↑ ( 8 H X h x ê ÿ ¿ ╕ ╚ ╪ Φ °
9    ○ ↓ ) 9 I Y i y ë Ö ⌐ ╣ ╔ ┘ Θ ∙
A    ◙ → * : J Z j z è Ü ¬ ║ ╩ ┌ Ω ·
B    ♂ ← + ; K [ k { ï ¢ ½ ╗ ╦ █ δ √
C    ♀ ∟ , < L \ l | î £ ¼ ╝ ╠ ▄ ∞ ⁿ
D    ♪ ↔ - = M ] m } ì ¥ ¡ ╜ ═ ▌ φ ²
E    ♫ ▲ . > N ^ n ~ Ä ₧ « ╛ ╬ ▐ ε ∎
F    ☼ ▼ / ? O _ o ⌂ Å ƒ » ┐ ╧ ▀ ∩
```

PC-850

```
     0 1 2 3 4 5 6 7 8 9 A B C D E F
0      ▶ 0 @ P ` p Ç É á ▒ └ ð Ó
1    ☺ ◀ ! 1 A Q a q ü æ í ▓ ┴ Ð ß ±
2    ☻ ↕ " 2 B R b r é Æ ó ▒ ┬ Ê Ô ‗
3    ♥ ‼ # 3 C S c s â ô ú │ ├ Ë Ò ¾
4    ♦ ¶ $ 4 D T d t ä ö ñ ┤ ─ È õ ¶
5    ♣ § % 5 E U e u à ò Ñ Á ┼ ı Õ §
6    ♠ ▬ & 6 F V f v å û ª Â ã Í µ ÷
7    • ↨ ' 7 G W g w ç ù º À Ã Î þ ¸
8    □ ↑ ( 8 H X h x ê ÿ ¿ © ╚ Ï Þ °
9    ○ ↓ ) 9 I Y i y ë Ö ® ╣ ╔ ┘ Ú ¨
A    ◙ → * : J Z j z è Ü ¬ ║ ╩ ┌ Û ·
B    ♂ ← + ; K [ k { ï ø ½ ╗ ╦ █ Ù ¹
C    ♀ ∟ , < L \ l | î £ ¼ ╝ ╠ ▄ ý ³
D    ♪ ↔ - = M ] m } ì Ø ¡ ¢ = ¦ Ý ²
E    ♫ ▲ . > N ^ n ~ Ä × « ¥ ╬ ▐ Ì ■
F    ☼ ▼ / ? O _ o ⌂ Å ƒ » ┐ ¤ ▀ ´
```

❏ **EPSON FX-850**

US ASCII

```
     0 1 2 3 4 5 6 7 8 9 A B C D E F
0        0 @ P ` p       0 @ P ` p
1        ! 1 A Q a q     ! 1 A Q a q
2        " 2 B R b r     " 2 B R b r
3        # 3 C S c s     # 3 C S c s
4        $ 4 D T d t     $ 4 D T d t
5        % 5 E U e u     % 5 E U e u
6        & 6 F V f v     & 6 F V f v
7        ' 7 G W g w     ' 7 G W g w
8        ( 8 H X h x     ( 8 H X h x
9        ) 9 I Y i y     ) 9 I Y i y
A        * : J Z j z     * : J Z j z
B        + ; K [ k {     + ; K [ k {
C        , < L \ l |     , < L \ l /
D        - = M ] m }     - = M ] m }
E        . > N ^ n ~     . > N ^ n ~
F        / ? O _ o       / ? O _ o
```

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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 character set of US ASCII.

| 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 |

# INDEX

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                714-859-9700 Ext.329   (within California)
In Canada       1-800-361-6466

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, Ltd.
                1, Rue Hôtel De Ville
                Dollard-des-Ormeaux P.Q.
                Canada H9B3H6

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For downloading drivers from our Bulletin Board Service, call 1-714-859-2610.  Please logon 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.

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