

star 

# *LaserPrinter 4 III*

OPERATIONS MANUAL

## **Safety Notices**

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.

The Center for Devices and Radiological Health (CDRH) of the U.S. Food and Drug Administration implemented regulations for laser products on August 2, 1976. These regulations apply to laser products marketed in the United States. The label on the printer indicates compliance with the CDRH regulations and must be attached to laser products marketed in the United States.

Caution-use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

## **Federal Communications Commission Radio Frequency Interference Statement**

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of 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.

For compliance with the Federal Noise Interference Standard, this equipment requires a shielded cable.

*The above statements apply only to printers marketed in the U.S.A.*

## **Self Declaration**

Radio interference regarding this equipment has been eliminated according to Vfg 1056/1984 announced by the DBP.

DBP has been informed of the introduction of this special equipment and has been granted the right to examine the whole series.

It is the user's responsibility to see that his own assembled system is in accordance with the technical regulations under Vfg 1046/1984.

To conform to FTZ-regulations it is necessary to make all connections to the printer with shielded cable.

The equipment may only be opened by qualified service representatives.

*The above statement applies only to printers marketed in Germany.*

**Statement of  
The Canadian Department of Communications  
Radio Interference Regulations**

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe B prescrites dans le Règlement sur le brouillage radioélectrique édicté par le Ministère des Communications du Canada.

*The above statement applies only to printers marketed in Canada.*

**Safety Notices for Finland**

Tämä Kirjoitin LUOKAN I LASERLAITE.

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

DENNA SKRIVARE ÄR EN KLASS I LASERAPPARAT.

Om apparaten används på annat sätt än i denna bruksanvisning specificerats, kan användaren utsättas för osynlig laserstrålning, som överskrider gränsen för laseklass I.

*The above statement applies only to printers marketed in Finland.*

**Trademark Acknowledgements**

**LaserPrinter 4III:** Star Micronics Co., Ltd.

**HP LaserJet III:** Hewlett Packard Company

**Lotus 1-2-3:** Lotus Development Corporation

**Microsoft Word, Microsoft Windows:** Microsoft Corporation

**PageMaker:** Aldus Corporation

**WordPerfect:** WordPerfect, Inc.

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- All efforts have been made to ensure the accuracy of the contents of this manual at the time of press. However, should any errors be detected, STAR would greatly appreciate being informed of them.
- The above notwithstanding, STAR can assume no responsibility for any errors in this manual.

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# *How to Use This Manual*

# CHAPTER 1

Congratulations on purchasing a Star LaserPrinter 4III. You will be delighted with both the quality of the printed images and the ease of operation. With your computer and this printer, you can create professional-looking documents.

This Operations Manual is one of two that explore the entire range of printing possibilities of the Star LaserPrinter 4III. This manual is for beginners and for those who plan to concentrate on the basics. Advanced users and those interested in programming should refer to the Applications Manual.

Chapter 2 begins with an overview of the manual and of the Star Laser printer. This chapter explains how to unpack your new printer and prepare it for initial operation. Chapter 3 explains how to operate the printer's control panel and display screen.

Some people like to skip the preliminary explanations and begin using the printer immediately. Chapter 4 provides the information for such a fast start. If you begin with Chapter 4, at some later time you should read the rest of the manual in sequence, for a more complete picture of your printer and its operations.

Chapter 5 describes the type characteristics that will enable you to give your printed pages that professional look.

The Star LaserPrinter 4III emulates the operation of the HP LaserJet III.

With this capability, the Star LaserPrinter 4III will operate with a wide range of applications programs on the market. Chapter 6 provides the information that will allow you to use your printer with four popular applications programs: Lotus 1-2-3, WordPerfect, Microsoft Word, and Microsoft Windows.

Chapter 7 and 8 describe the maintenance and troubleshooting operations to keep your Star LaserPrinter 4III working in "perfect" condition.

## 1.1 LASER PRINTING

Before you begin learning about your new Star LaserPrinter 4III, you may find it helpful to know something about laser printing itself.

A laser is actually a beam of light of just one wavelength (Laser is an acronym for Light Amplification by Stimulated Emission of Radiation). Such a beam of light, described as “highly coherent”, can be focused very sharply. Lasers, generated by gases, liquids or semiconductors, are widely used in applications ranging from surgery to the visual arts.

Laser printing is a process that uses a laser beam — in this case, generated by a semiconductor — to activate portions of an electrically charged surface. These activated parts represent the words, numbers, or graphics being sent from the computer for printing. Other parts of the printer transfer this image to paper, then clean the surface and prepare it to receive more information to be printed.

In other words, this process is a type of laser-activated temporary engraving.

In the Star LaserPrinter 4III, two interconnected units produce the complete printing process: the toner cartridge and the printer body.

The toner cartridge contains the drum, which is the rotating surface. In the darkness of the toner cartridge, the drum holds a negative charge placed on it by the primary corona wire in the printer. Shutters on the bottom of the toner cartridge assure that no unwanted light penetrates its interior.

When text or graphics are sent by the computer to the printer, laser beam is generated by a semiconductor laser diode. This beam is focused by special scanning mirrors that turn the light beam into a tool that “writes” or “prints” on the surface of the drum. The areas of the drum touched by the laser beam lose their negative charge and contain a reverse image of the information sent from the computer. As the drum rotates, it passes a developer unit that is also rotating, but in the opposite direction. The surface of the developer unit is covered with toner (“ink”) which has a negative charge. The neutralized portions of the drum, containing the information to be printed, pick up negatively charged toner from the developer unit.



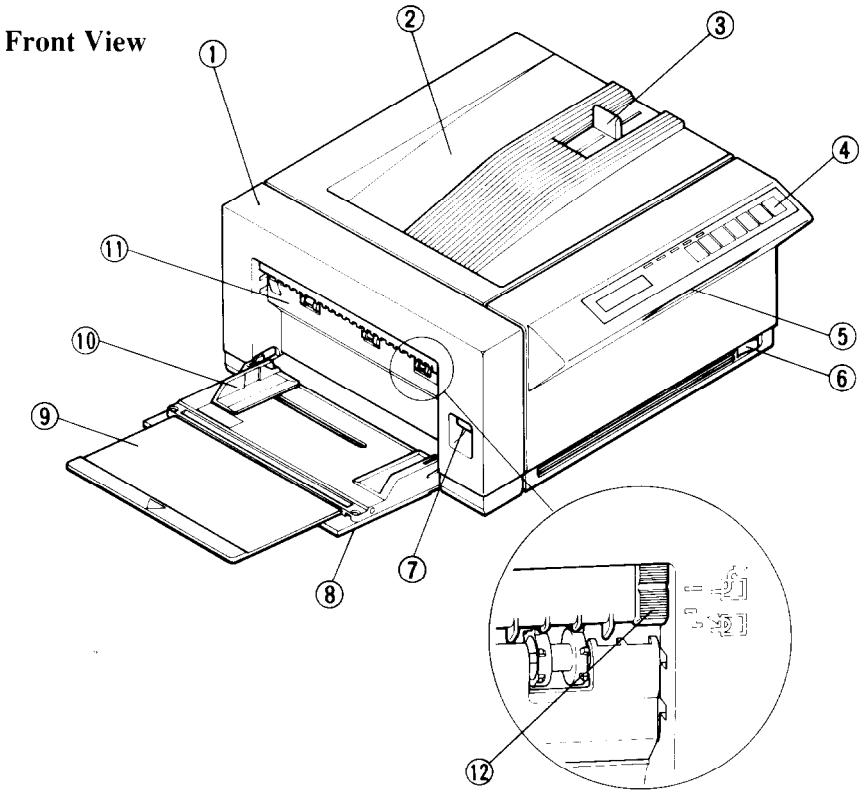
At this point, paper fed from the paper cassette moves through the transfer unit, from which it receives a positive charge. As the drum rotates, the negatively charged particles of toner are attracted to the positively charged surface of the paper.

A combination of heat and pressure fuse the image to the paper. The paper is then ejected from the printer.

Finally, a cleaning mechanism in the toner cartridge cleans excess toner from the drum, and a special light beam neutralizes its entire surface. Then the entire process can begin again.

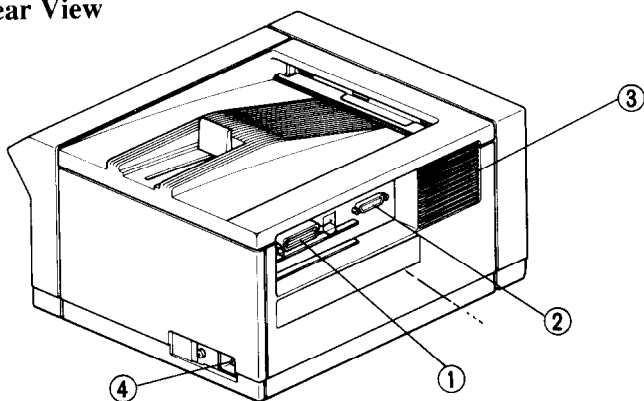
## 1.2 THE STAR LASERPRINTER 4III — AN INTRODUCTION

You will meet each portion of your Star LaserPrinter 4III as you read this manual, but a brief introduction is in order here. The following figures show the front, rear and inside views of the printer.



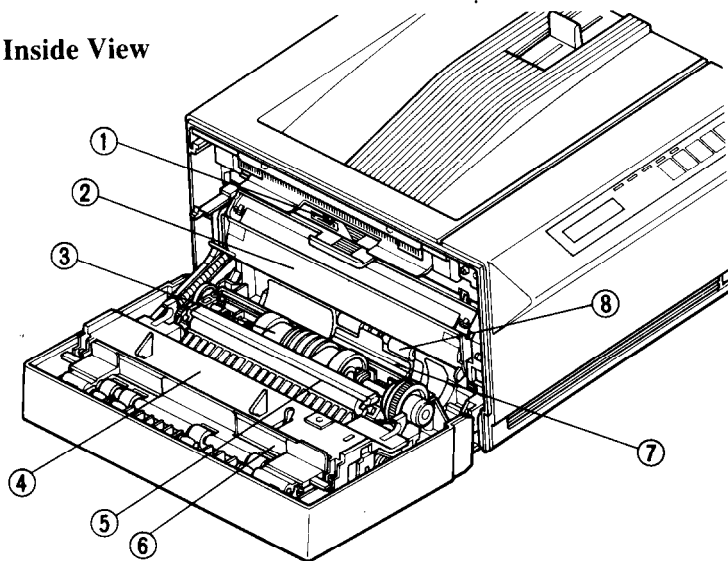
- |                  |                                |
|------------------|--------------------------------|
| ① Side Cover     | ⑦ Release Button               |
| ② Face-down Tray | ⑧ Multi-purpose Tray (MP Tray) |
| ③ Paper Stop     | ⑨ Extension Tray               |
| ④ Control Panel  | ⑩ Paper Guide                  |
| ⑤ Cartridge Slot | ⑪ Front Upper Door             |
| ⑥ Power Switch   | ⑫ Paper Delivery Selector      |

## Rear View



- |                                |                    |
|--------------------------------|--------------------|
| ① Parallel Interface Connector | ③ Air Vent         |
| ② Serial Interface Connector   | ④ Power Receptacle |

## Inside View



- |                            |                     |
|----------------------------|---------------------|
| ① Density Adjustment Lever | ⑤ Transfer Roller   |
| ② EP-L Cartridge           | ⑥ Paper Access Door |
| ③ Pick-up Roller           | ⑦ Separation Pad    |
| ④ Fixing Assembly Cover    | ⑧ Feed Roller       |

# MEMO

# Setting Up the Star LaserPrinter 4III

## CHAPTER 2

The fact that you're now reading this manual shows that you've got at least as opening the carton containing your new Star LaserPrinter 4III. This chapter will help you to unpack the printer, set it up, and get it running.

First, though, you should make some preparations. You may already have decided on the printer's new location. Whether you have or have not, run through this checklist of requirements:

- **Environmental control**

The printer and toner cartridge should never be exposed to strong sunshine or other direct heat sources. It should also be located away from air conditioning ducts, dust and fumes. Excessive moisture should be avoided, such as humidity in excess of 80% or less than 20%. If it is comfortable for you, then it will be comfortable for your printer.

- **A large, strong table or stand**

The printer weighs approx. 22.5lbs (10kg) and must be firmly supported. Also, the printer will need more room than it takes up in the shipping carton, because the paper tray will extend forward from the front; so plan for a space at least  $2 \times 3.2$  ft ( $0.6\text{m}^2$ ).

- **A three-pronged outlet**

The outlet should be no more than 8 feet (2.5m) from the printer (the length of the power cord), preferably one shielded from power fluctuations. In any case, no motor-driven appliance should be connected to the same outlet, to avoid interface with the printer's operations.

- **A fresh toner cartridge (product #EP-L)**

- **Paper**

A package of 16-20lb ( $60\text{-}135\text{g/m}^2$ ) photocopier paper is best to start with; however, the printer can use thicker paper, as well as special media, such as envelopes and transparent sheets.

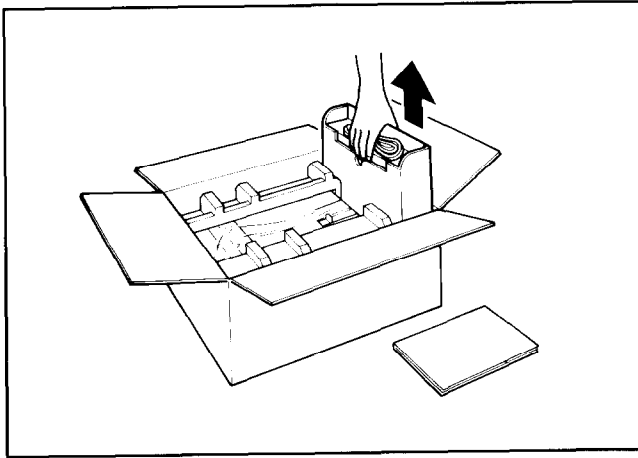
## 2.1 UNPACKING

The printer comes in two boxes. The large box contains the printer and its accessories, and the smaller one contains the EP-L cartridge. Follow these instructions when unpacking.

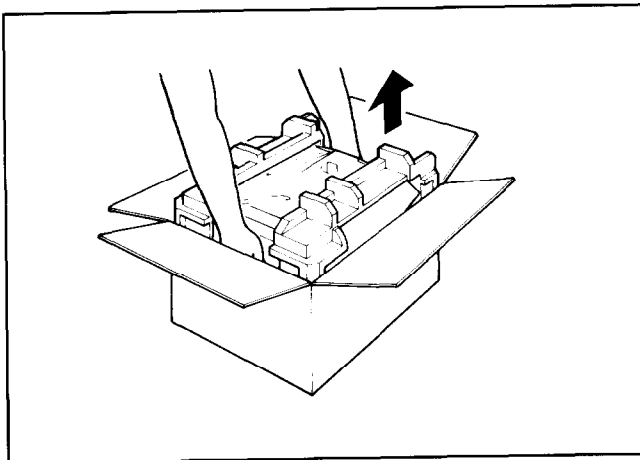
### 2.1.1 Unpacking the Printer

Follow the instructions below to unpack the printer.

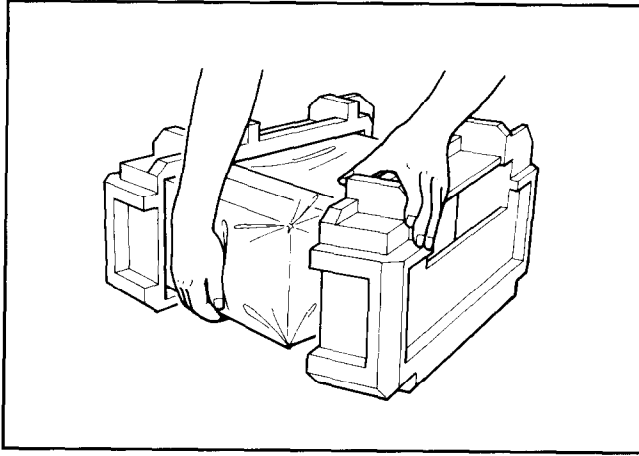
1. Open the large box, and remove the accessories box.



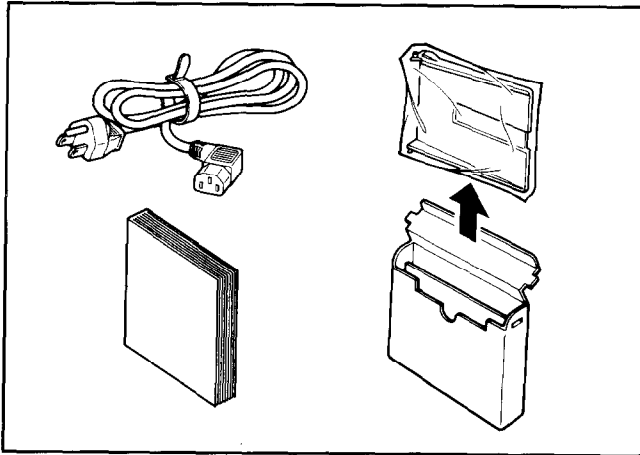
2. Remove the printer from the box.



3. Remove the packing material from round the printer.



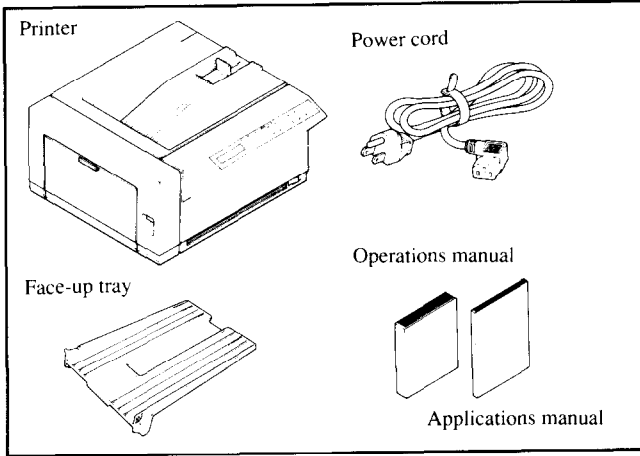
4. Open the accessories box. Remove the face-up tray, power cord, Operations Manual and Applications Manual.



**NOTE:** Save the packing boxes and materials. If you need to move the printer (for new location or service etc.), use these materials to protect the printer from damage.

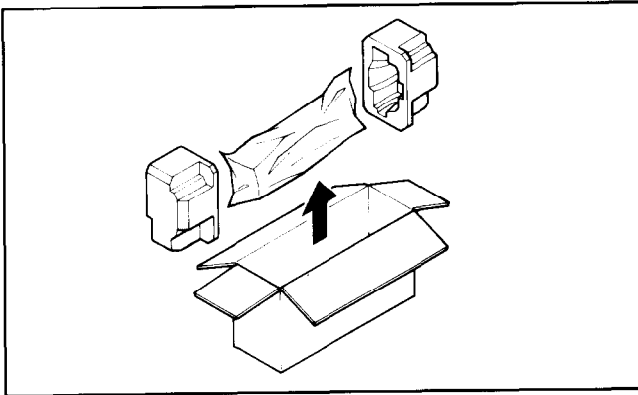
## 2.1.2 Checking the Parts

Before setting up the printer, make sure that all standard items shown below are provided and they are free from damage. If any of these items are missing or damaged, contact your supplier.



## 2.1.3 Unpacking the EP-L Cartridge

Open the small box (see the illustration below) and remove the packing material from the EP-L cartridge.



- CAUTION:**
- 1) Do not open the aluminum bag containing the cartridge until you are ready to install it in the printer.
  - 2) Do not lean the cartridge against anything or turn it upside down.



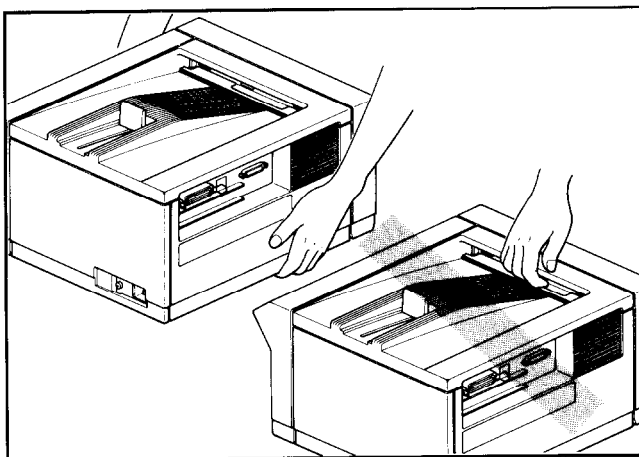
## 2.1.4 Optional Items

Some of the following items may have been ordered. Unpack them. For details, refer to “Chapter 9. Options”.

- Paper feeder
- Cassette (A4, Letter, Legal, Executive size)
- RAM board (1, 2 or 4MB)
- Font cartridge

## 2.1.5 Carrying the Printer

Whenever moving the printer from one place to another, always make sure the multi-purpose tray is closed, and carry the printer firmly at the bottom with two hands.



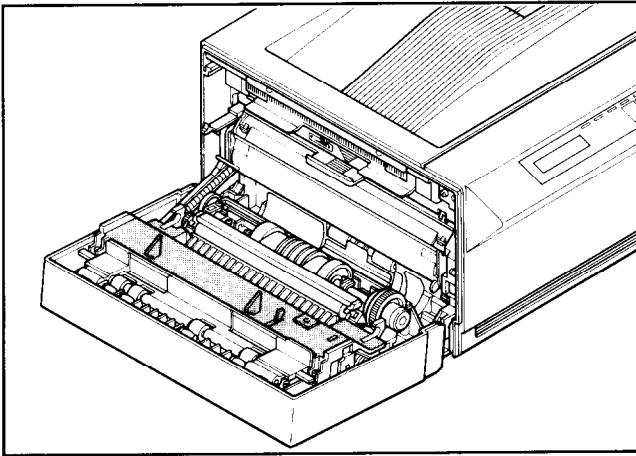
**CAUTION:** Never attempt to carry the printer using the face-down slot.

**NOTE:** When moving the printer, remove the EP-L cartridge from the printer. After removing the cartridge from the printer, replace it in the aluminum bag in which it was originally packed, or cover it with a thick cloth to protect it from direct light.

## 2.1.6 Opening and Closing the Printer

- When opening the printer's side cover, do not stop it in the half-way. This will open the protective shutter of the drum, and light will permanently damage the drum.
- Do not place anything beside the printer. It may damage the multi-purpose tray when the tray is opened.
- Do not put anything in or on the multi-purpose tray except paper, and do not press the tray downward.

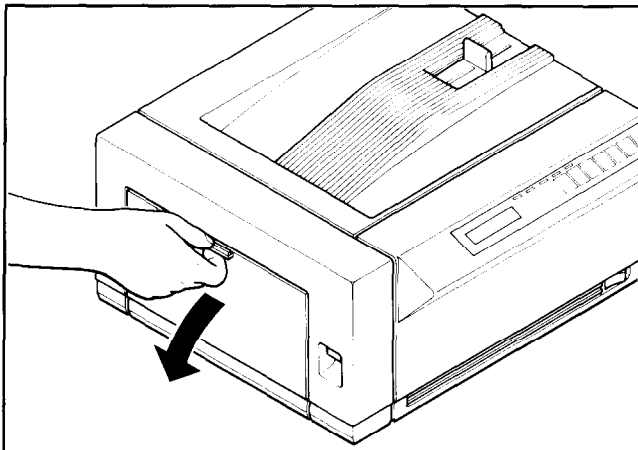
**CAUTION:** The parts of the printer shaded in the illustration below become extremely hot when the printer is used. To avoid any personal injury, do not touch these parts when the printer is open.



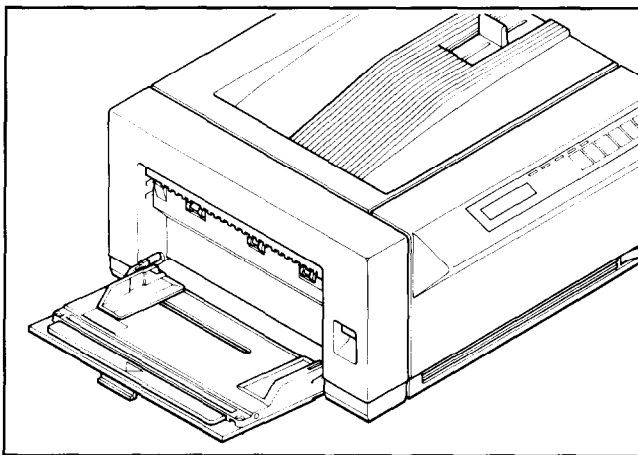
Although the printer's cover is closed while printing, it will need to be opened when replacing the EP-L cartridge when clearing paper jams. Open or close the cover in the following way:

## *Opening the Cover*

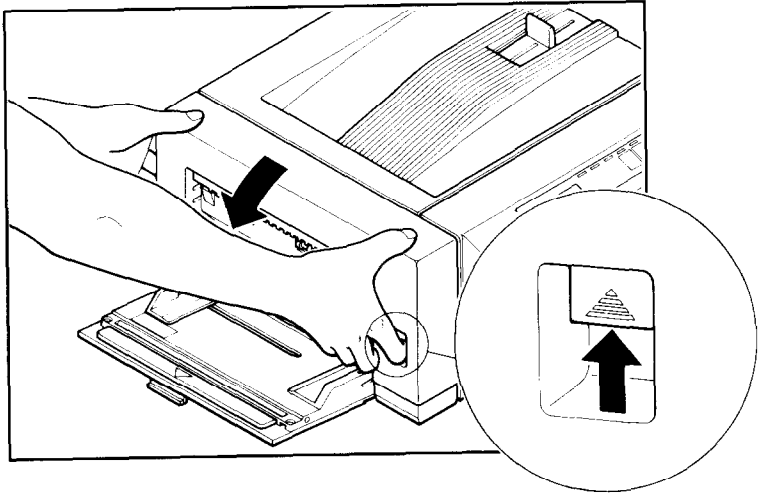
1. Hold the knob of the multi-purpose tray and pull it to open the tray.



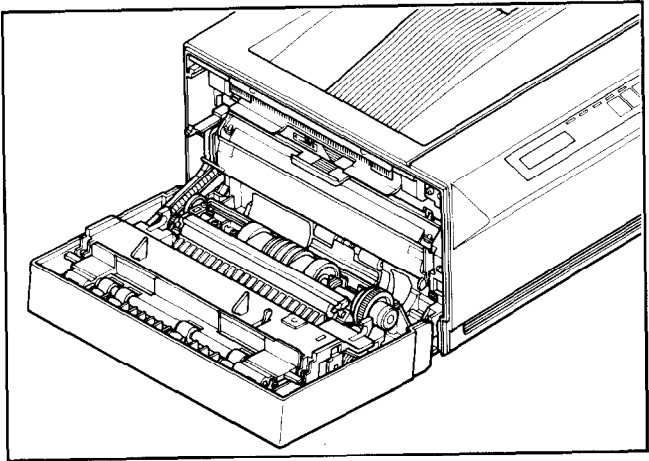
2. The tray opens to about 80 degrees.



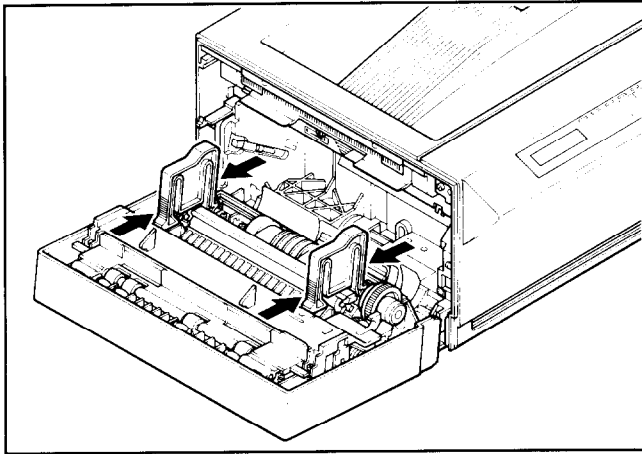
3. Press the release button (at the right) upwards and open the cover.



The cover opens to about 80 degrees (the multi-purpose tray then opens to about 90 degrees.).

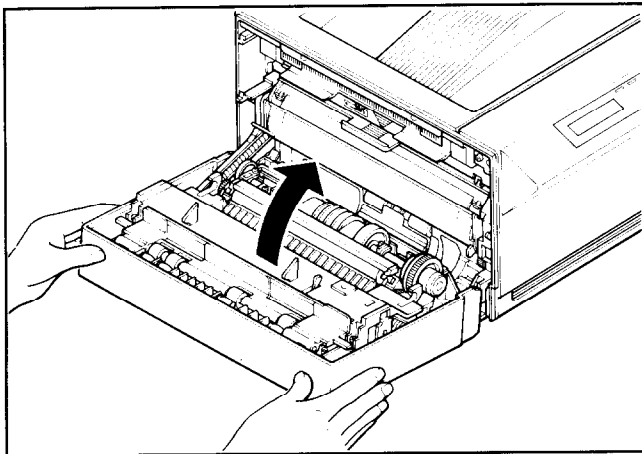


**NOTE:** Remove the two orange stoppers by pushing the lower part of the stoppers upwards and removing it (as shown in the illustration below).

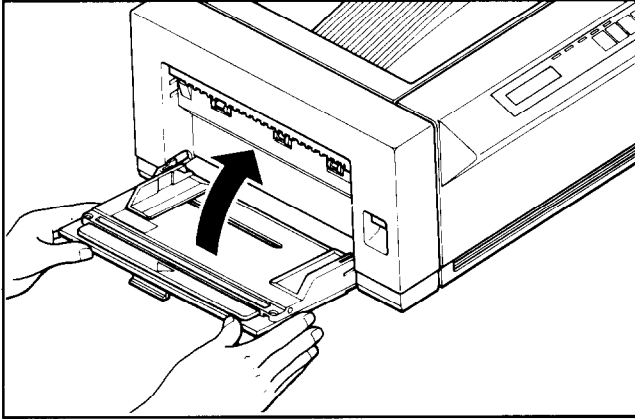


### *Closing the Cover*

1. Using both hands, lift the cover and close it gently until it latches.



2. Lift the multi-purpose tray and close it until it latches on both sides.



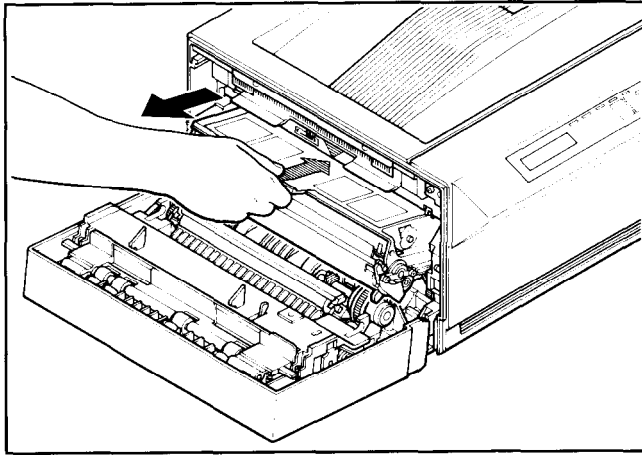
## 2.2 INSTALLING THE EP-L CARTRIDGE

### *Important Notice*

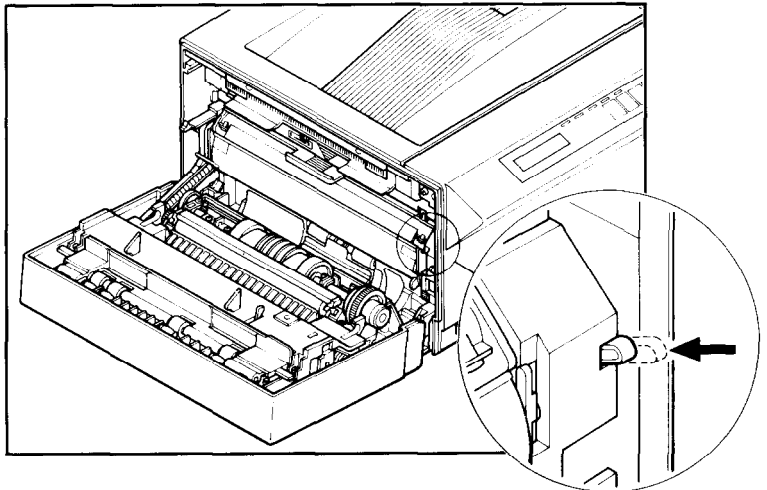
- Install the EP-L cartridge immediately after opening the aluminum bag. Permanent damage can be caused by light to the photosensitive drum. NEVER expose the cartridge to the strong light (more than 15000 lux) or room lighting (1000 lux) for more than five minutes.
- Do not open the drum protective shutter on the EP-L cartridge.
- Keep the cartridge away from CRTs, disk drives, diskettes, etc. Otherwise, CRTs and disk drives can be damaged, and data on diskettes can be destroyed by the magnet inside the cartridge.
- When handling the cartridge, do not touch the bottom of the EP-L cartridge. Print quality will be adversely affected if the protective shutter is open and the drum is damaged. The drum can also be damaged if it exposed to light.
- Always keep the EP-L cartridge with the label facing up. Do not turn it upside down or stand it on end. The toner may become caked, and this causes print quality to deteriorate.
- Use the cartridge before the expiry date printed on the carton. Otherwise, print quality may deteriorate.
- Use only genuine EP-L cartridges as recommended by your supplier.

Follow the instructions below to install the EP-L cartridge for the first time, or replace an used one.

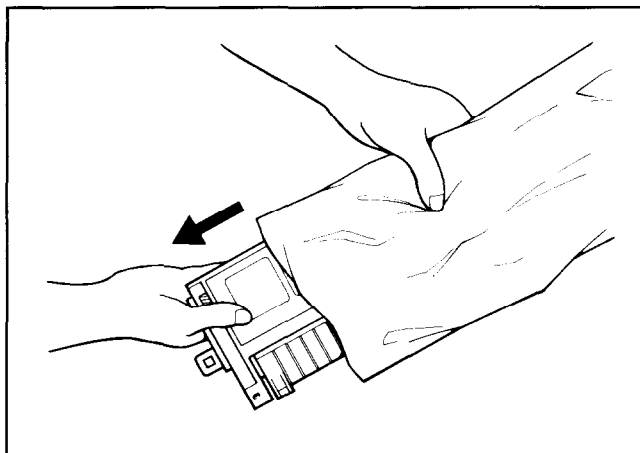
1. Open the multi-purpose tray and the side cover as described in “2.1.6 Opening and Closing the Printer”.
2. If you are installing the EP-L cartridge for the first time, skip to step 3. If you are replacing the old EP-L cartridge, remove it by pulling it by the tab.



**NOTE:** If it is difficult to remove the EP-L cartridge, press the green lever located at the right, and try again.

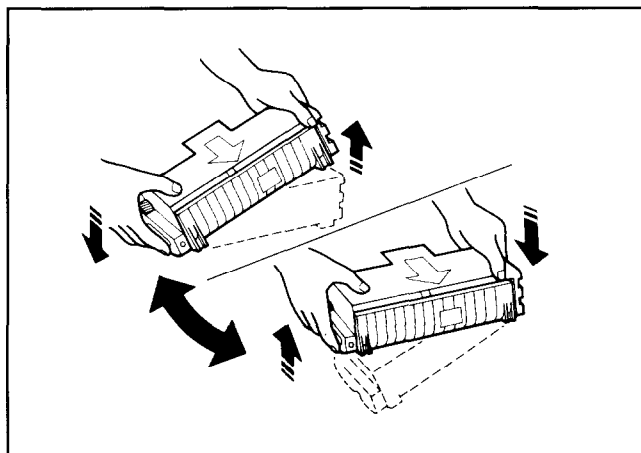


3. Open the aluminum bag containing the EP-L cartridge and remove it.



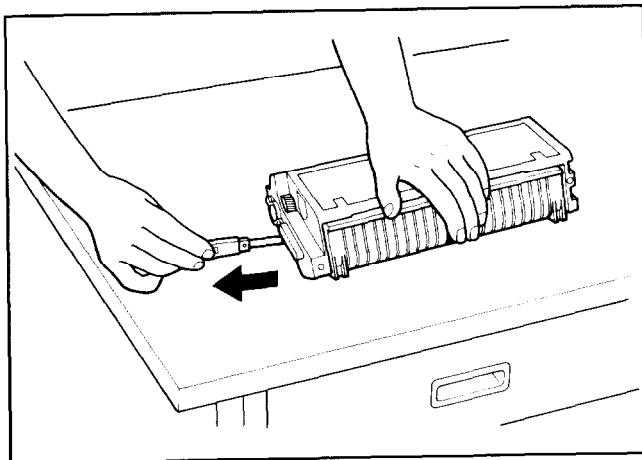
**NOTE:** Save the aluminum bag, as you may need it for storing the cartridge when you move the printer to another place in the future.

4. Holding the cartridge with both hands, rock it gently from end to end, 5 or 6 times, to distribute the toner evenly. If the toner is not distributed evenly in the cartridge, it may adversely affect print quality.



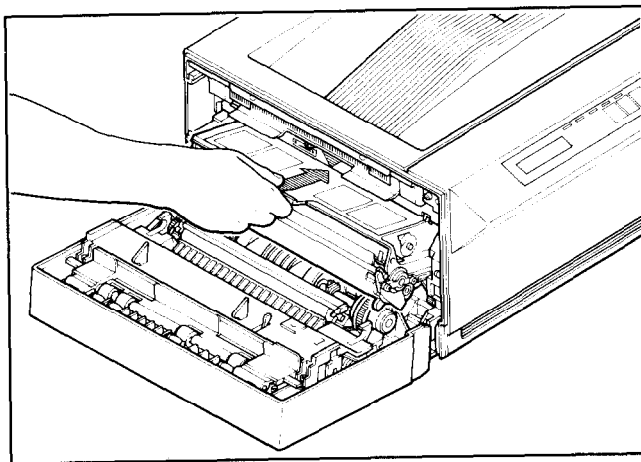


5. Place the cartridge on a flat surface. While holding down the cartridge with one hand, use the other hand to pull the orange tab to remove the seal.

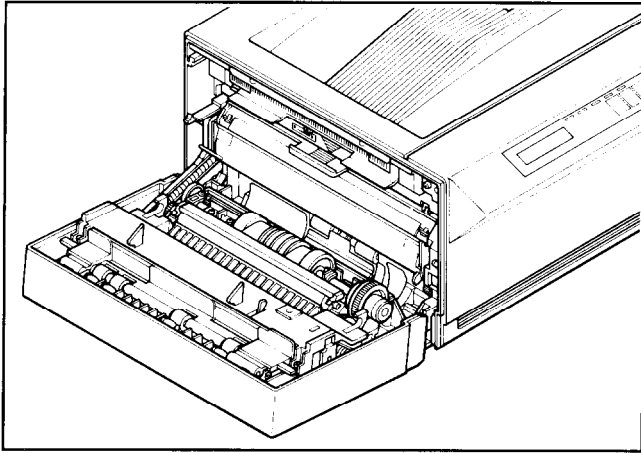


Make sure that the tab is pulled smoothly in a direction parallel to the flat surface. Otherwise, the tape may break or snap, making the cartridge unusable.

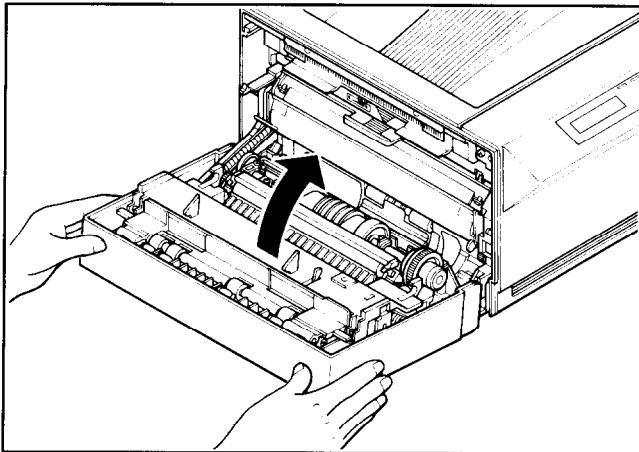
6. Holding the cartridge by the tab, align the arrow on the cartridge with the ▼ mark on the printer.



7. Slide the cartridge into the printer gently.



8. Make sure that the cartridge is securely seated, then close the cover gently.



- NOTE:**
- 1) If you have purchased optional accessories, install them in accordance with their installation manuals.
  - 2) When replacing the cartridge, clean the fixing assembly, as described in “7.3 Cleaning the Fixing Assembly”.

## 2.3 LOADING PAPER

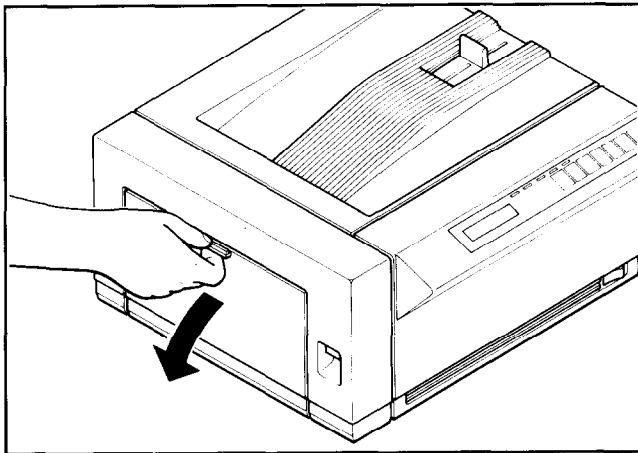
### 2.3.1 About Paper

Print quality and printer life are greatly affected by the paper used. Paper can be fed into the printer either from the multi-purpose tray or paper cassette (if cassette is installed). Types and sizes of paper can be used with the multi-purpose tray are listed below.

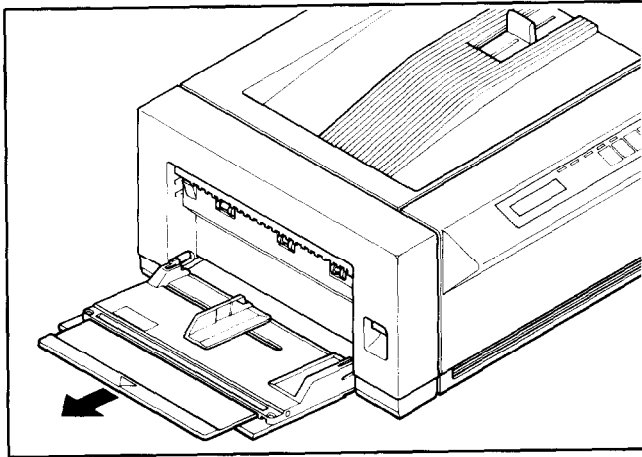
Type	Size	Weight	Print delivery
Plain paper	97 × 148 - 216 × 356mm (Letter, Legal, A4, B5, Executive)	60 - 105g/m <sup>2</sup>	Face-down/up
Transpar- ency films	Letter, A4		Face-up
Labels	Letter, A4		Face-up
Envelopes	97 × 148 - 216 × 356mm	60 - 90g/m <sup>2</sup>	Face-up

### 2.3.2 Loading Paper Into the Multi-purpose Tray

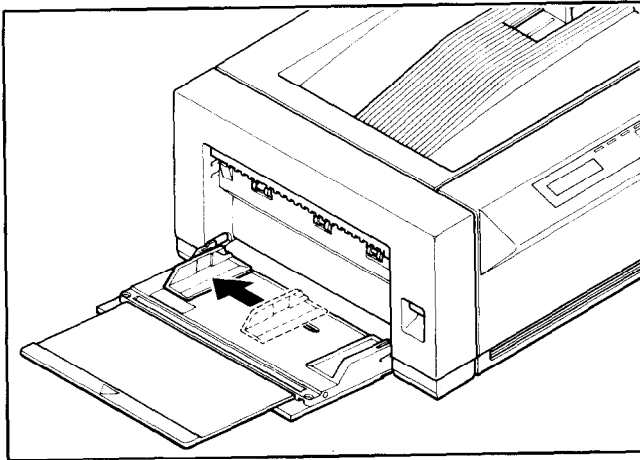
1. If the multi-purpose tray is not open, open it by unlatching and bringing it forward.



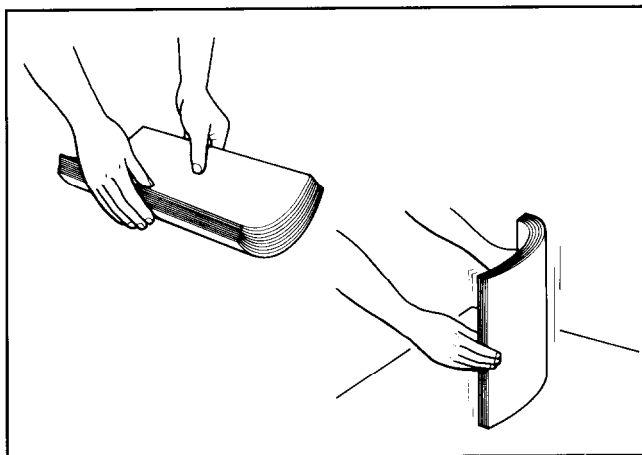
2. Hold the arrow at the center of the multi-purpose tray, then pull out the extension tray.



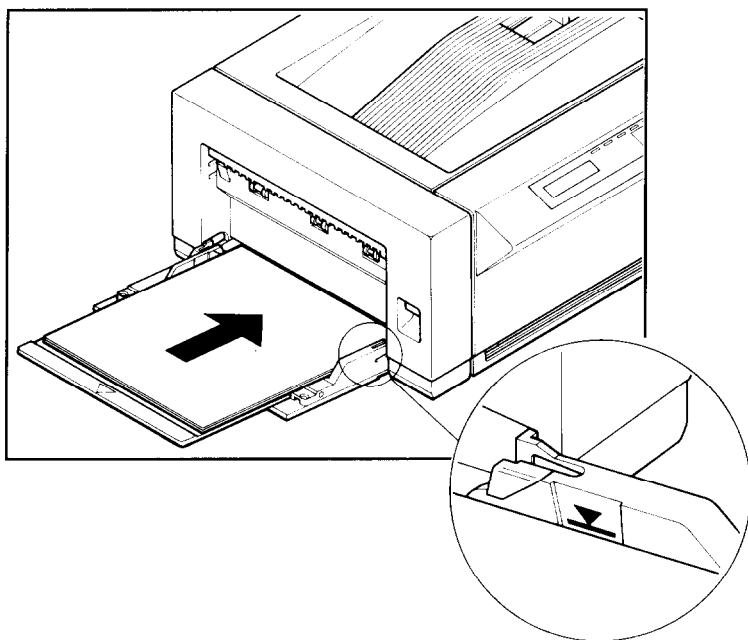
3. Slide the paper guide to the left.



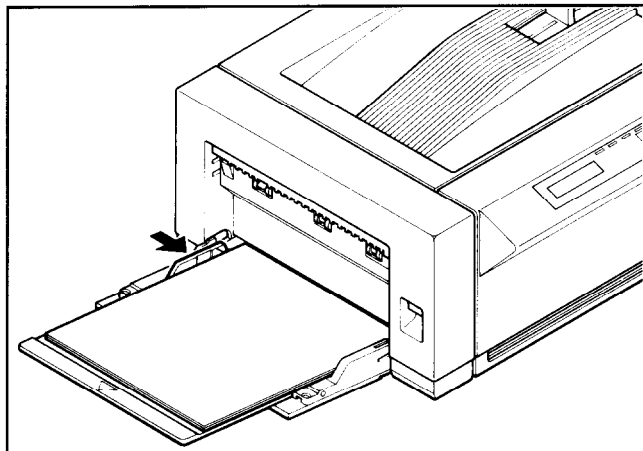
4. Take a small stack of paper and align the edges by tapping it on a flat surface.



5. Align the right side of the stack of paper with the right-hand paper guide. Slide the paper stack gently into the printer as far as it will go. Make sure that the height of the paper stack does not exceed the mark on the paper guide.



- Slide the left-hand paper guide so that it touches the left side of the paper stack. Make sure that the paper guide does not press too tightly or fit too loosely against the paper stack. Otherwise, this can cause paper jams or other problems.



## 2.4 SELECTING PAPER DELIVERY

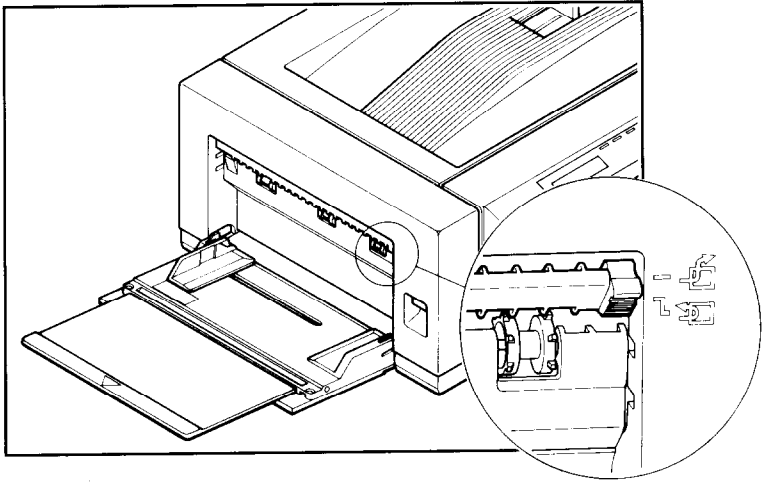
The printer provides two types of paper delivery; face-up and face-down. With face-down delivery, the paper is ejected from the printer with the printed side facing downward. With face-up delivery, the paper is ejected with the printed side facing upward.

### *Selecting Face-down Delivery*

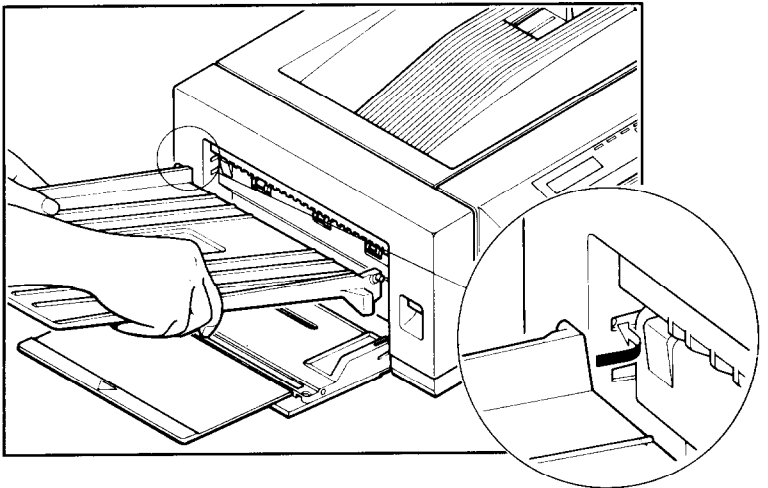
- Open the multi-purpose tray by unlatching and bringing it forward.
- For face-down delivery, simply open the multi-purpose tray.
- Adjust the paper stop located on the top of the printer to the position which matches the paper size.

## Selecting Face-up Delivery

1. Open the multi-purpose tray by unlatching and bringing it forward.
2. Switch the paper delivery selector for the face-up position.



3. Attach the face-up print tray to the side cover of the printer. Fit the pegs at the sides of the tray into the holes in the printer.

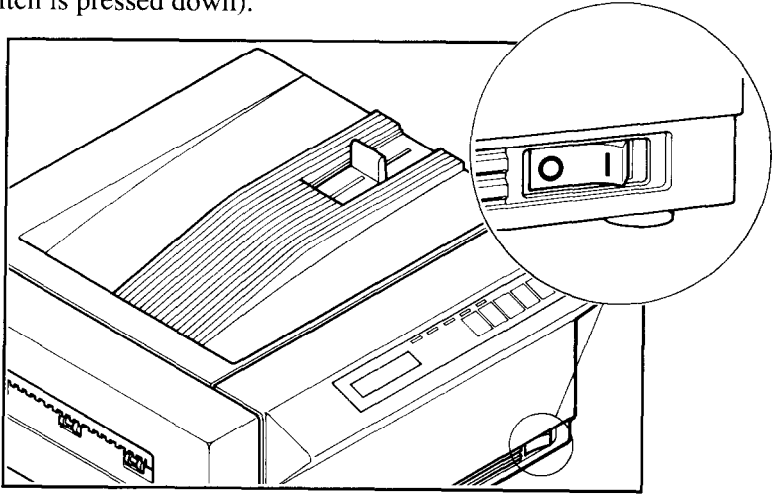


When face-up printing is finished and the multi-purpose tray is closed, the printer automatically switches back to face-down delivery.

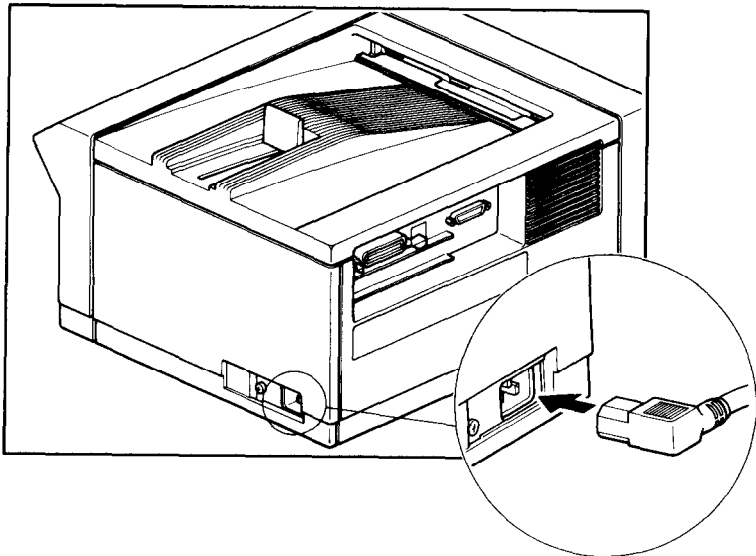
## 2.5 CONNECTING THE POWER CORD

Make sure that the power switch on the printer is set to OFF, then connect the power cord to the printer and a AC power outlet as shown below:

1. Make sure that the power switch of the printer is off (that the "O" side of the switch is pressed down).



2. Plug the power cord into the power connector, then plug the other end into the AC outlet.





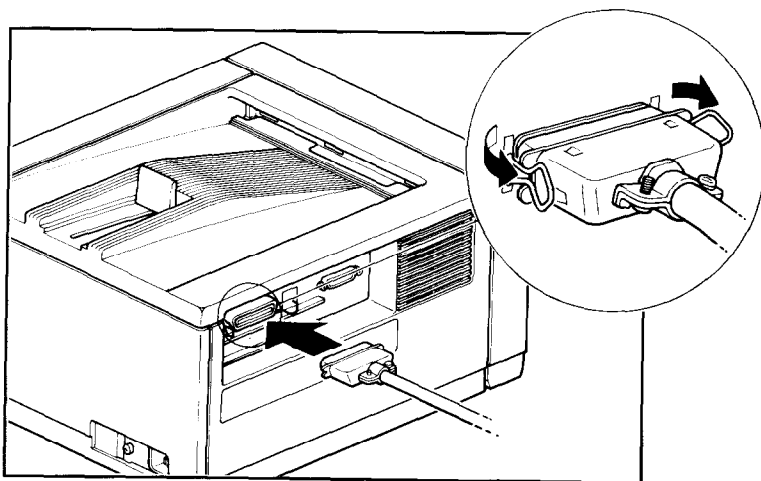
Only use the power cable supplied with the printer. Note that this power cable is fitted with a ground pin. This grounding is an important safety feature and should not be ignored. If a suitable grounded socket is not available, contact a qualified electrician to rectify the situation.

## 2.6 CONNECTING THE INTERFACE CABLE

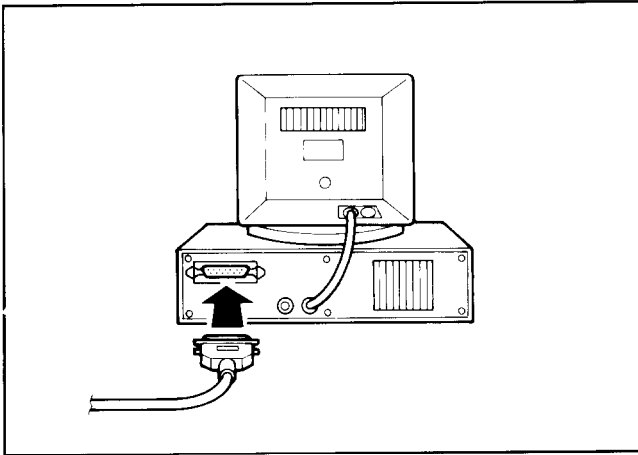
The host computer transmits information to the printer along an interface cable. The printer is provided with two types of interface (serial and parallel).

No interface cable is supplied as standard with the printer. Determine the kind of interface cable (serial or parallel) you want to use, and purchase the appropriate cable from your supplier.

1. Before connecting the interface cable, make sure that the power to the printer and the computer is turned off.
2. Plug one end of the interface cable into the appropriate connector on the rear side of the printer.
3. For parallel (Centronics) interface, secure the cable connector using connector clips. For serial interface, fasten the cable connector using screws.



4. Connect the other end of the cable to the appropriate interface on the host computer.

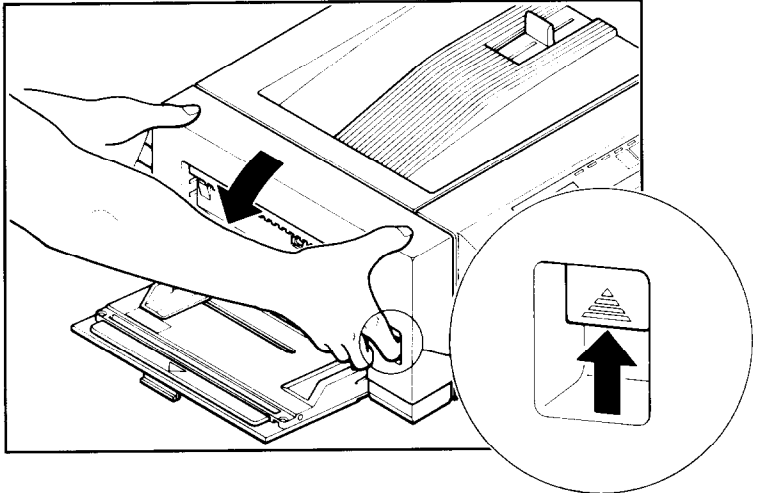


**NOTE:** The printer's factory setting is for a parallel interface. If the serial interface is to be used, you need to select the interface on the control panel. See "4.3.1 Selecting the Serial Interface" for selecting the type of interface.

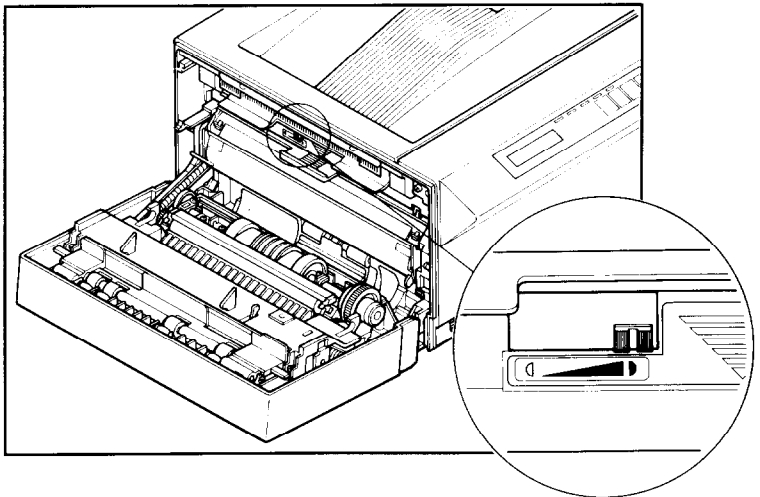
## 2.7 ADJUSTING PRINT QUALITY

At some time you may find that the quality of the printing is not what you want. You may run test prints and then make the printing lighter or darker by adjusting the the print density adjustment lever located inside the printer.

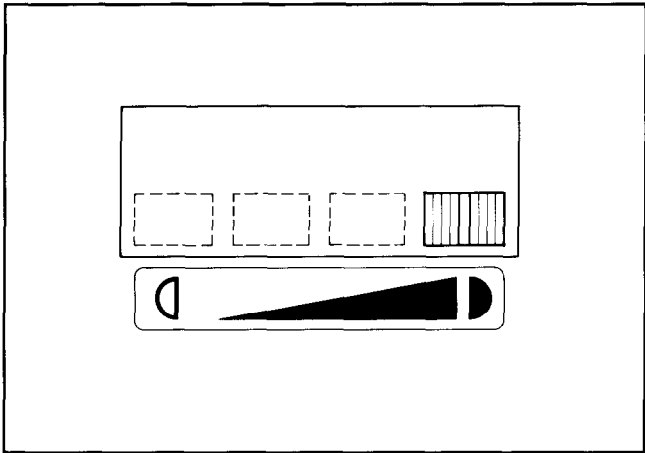
1. Hold the knob of the multi-purpose tray and pull it to open the tray.
2. Press the release button (at the right) upwards and open the cover.



3. To increase print density, move the density adjustment lever to the right. To reduce the density, move the lever to the left.



**NOTE:** The density adjustment lever has four settings from left to right. As you move the lever, it clicks at each of the two positions in the middle.



# Initial Operation

## CHAPTER

# 3

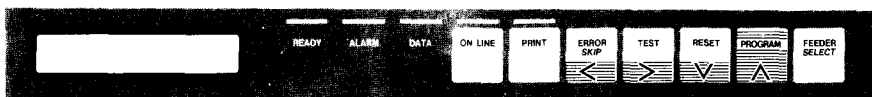
### 3.1 FRONT PANEL

The front panel of the Star LaserPrinter 4III is a combination control board and interactive message center. The panel consists of:

- a 1 line, 16 character LCD display screen
- 5 LED lights, 1 orange and 4 green
- 7 momentary contact buttons

The momentary contact buttons permit you to instructions to the printer. In turn, the printer uses the display screen and the light indicators to convey information to you.

The screen display is the primary way the printer communicates with the operator. It informs the operator about the machine's state, the printer's status, alarm conditions that require some action by the operator, "soft" errors, and messages when selecting current, initial and default printer parameters. The LEDs provide an "at glance" summary of the printer's status.



The printer operates in two main modes when the printer is Off Line:

1. Normal Mode (white buttons) - performs function labeled on the button.
2. Program Mode (brown buttons) - press the [**PROGRAM**] button to enter menu selections.

The meaning and use of the panel buttons depends on the mode in which the printer is operating.

### 3.1.1 Powering Up

Take note of the following points when turning on or off.

- When the printer is connected directly to a computer:  
Power on: First turn on the computer, and then turn on the printer.  
Power off: First turn off the printer, and then turn off the computer.
- When the printer is connected to a computer through other devices:  
Power on: First turn on the computer, then other devices, and finally turn on the printer.  
Power off: First turn off the printer, then other devices, and finally turn off the computer.

**CAUTION:** Always wait at least three seconds between turning off and turning on again.

Turn on the printer by pressing the “I” side of the power switch. The printer will begin its internal diagnostics and warming up, displaying a series of message on the screen as follows.

1. All LEDs are lit and the LCD display screen turns black.
2. The screen displays “LaserPrinter 4III”.
3. Then the screen displays “Memory Test 1 MB”.

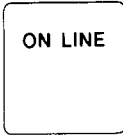
If an optional 1 MB RAM board has been installed, the message will display “Memory Test 2 MB”. The actual value will depend on the size of the RAM board installed (1, 2 or 4 megabytes).

4. After a short while, the screen displays “EEPROM LOAD DONE” for a moment. This means that default parameters have been read from the EEPROM and the EEPROM CRC has been checked.
5. “PRINTER WARMUP” is displayed, the READY indicator starts blinking and the ON LINE lights up.
6. When the printer is ready, the screen displays “PRINTER READY” and the READY indicator is now continuously lit.

### 3.1.2 The Buttons

This section explains the various meaning and uses of the buttons, including their light indicators, where present. Keep in mind that the buttons' functions depend on the mode the printer is in: the Normal Mode and Program Mode.

#### [ON LINE]

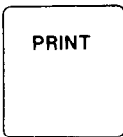


Pressing this button switches the printer from Off Line to On Line or vice versa. When the printer is On Line (ON LINE LED is lit), the printer is able to receive information from the computer and print it. All other buttons (except for the **[ERROR SKIP]** button under certain conditions) are inactive when the printer is On Line. When the printer is Off Line, the printer is unable to receive information and print, but the other switches can be used. If the printer is in the Program Mode, pressing this button exits from the Program Mode, and enters to the Normal Mode.

When the printer is On Line, the LED is on.

When the printer is Off Line, the LED is off.

#### [PRINT]



This button is active only when the printer is Off Line. Pressing the switch will print any page. If there is no page, the depression of the switch will be ignored. When printing is in operation, the LED is on.

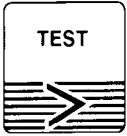
#### [ERROR SKIP/<]



This button is basically active only when the printer is Off Line. In the Normal Mode, a depression of this button has no effect if no alarm condition exists. However, if an alarm or warning condition exists, pressing this switch causes the printer to return to the previous state after corrective action has been taken.

When the printer is Off Line and in the Program Mode, this key is called NEXT. During programming, pressing this button displays the various items under a category for the operator to select next in the sequence.

## [TEST/>]



This button has two functions when the printer is Off Line.

- Pressing this button when the printer is in the Non-menu Mode will operate in the following sequence:

- 1) Pressing this button displays "HOLD FOR TEST". If the button is released while this message is displayed, the printer returns to the previous state.
- 2) If the button is held down for two seconds, the screen will display "STATUS SHEET". If the button is released, the printer will print a status sheet (see 3.2.1 Printing Test Sheets).
- 3) If the button is pressed for more two seconds, the screen will display "FONTLIST", and a font list will be printed (see 3.2.1 Printing Test Sheets).
- 4) If the button is pressed for more two seconds, "CLEANING PAPER" will be displayed and a cleaning paper will be printed (see 3.2.1 Printing Test Sheets).

- In the Program Mode, pressing the [TEST] button as PREVIOUS presents the available items in reverse sequence.

## [RESET/v]



This button has three functions when the printer is Off Line.

- Pressing and holding this button when the printer is in the Normal Mode displays "HOLD FOR RESET". If this button is held for more than three seconds, "REINITIALIZE" message is displayed and the printer is reinitialized to the initial settings of the emulation currently selected. This will also clear the input buffer, any page in composition, and composed pages queued up.
- When the printer is in the Program Mode, this button is called ENTER. Pressing the button selects the value with a @.
- Turning on the power while holding down the button causes the printer to enter the display language selection mode. (See "4.9 Selecting Display Language".)



## [PROGRAM/Δ]



To start using the Program Mode, you must first set the printer Off Line, then press the **[PROGRAM]** button. Within a programming sequence, pressing the **[PROGRAM]** button takes the programming Menu to the next higher level, or exits from the Program Mode and displays "PRINTER READY". For details, refer to 3.3 Programming from the Control Panel.

This printer keeps two types of user default settings: Mode 1 and Mode 2.

The Mode 1 is the normal default set on power-up or hard reset. You can select either Mode 1 or Mode 2 by using **[PROGRAM]** button in normal Off Line mode.

Pressing and holding this button for two seconds, the screen will display "NO CHANGE". Release the button and press it again. Now the screen will display "MODE 1". If you release and press the button once more, "MODE 2" is shown on the screen.

When you press the other button, the initial setting is changed to the displayed mode setting.

## [FEEDER SELECT]



This button controls from where the printer will expect paper when printing. To change from one source to another, the printer must be Off Line, press the **[ON LINE]** button if the ON LINE LED is on, then hold down the **[FEEDER SELECT]** button for a while. The screen will display "FEEDER SELECT".

1) If the button is released while this message is displayed, the screen displays the current feeder selection (e.g. multi-purpose tray). Further presses will cycle through the options below:

Cassette Only

Auto Selection

Cassette

MP Tray

Manual Feed

Cassette Only

**NOTE:**

- (1) The screen display will indicate only available selection. If the LC Cassette unit is not installed, only MP TRAY and MANUAL FEED are displayed.
  - (2) The Factory Setting is MP Tray. However, when the LC Cassette unit is installed, the Factory Setting will be changed to CASSETTE ONLY.
  - (3) If the DATA LED is lit or blinking, the new selection will be stored in Initial Setting and issued at the top of the first page stored in the printer.
- 2) Holding down this button for more than 2 seconds causes the screen to display "MP TRAY SIZE". If the button is released while this message is displayed, the screen will display the current multi-purpose tray size. Further presses will cycle through the options below:

Paper: Letter

Paper: Legal

Paper: A4

Paper: Executive

Paper: B5

ENV: Monarch

ENV: COM-10

ENV: Intntnl DL

ENV: Intntnl C5

Paper: Letter

**NOTE:**

- (1) The paper size selected by this button will be stored in Current and Initial Settings.
- (2) This option is available in all feeder selections except Cassette Only.

To exit from this mode, press the [ON LINE], [TEST], [RESET] or [PROGRAM] button.

### **3.1.3 Light Indicators**

#### **[READY]**



**READY**

The READY LED indicates that the printer is ready for use when it is lit. This LED flashes the printer is warming up, then lights continuously.

#### **[ALARM]**



**ALARM**

The ALARM LED will light up in the event of an error which requires operator to take action (e.g. paper out). The bell will sound for 2 seconds whenever this LED lights up.

#### **[DATA]**



**DATA**

The DATA LED shows the data status of the printer. It is continuously lit when data has been received and not printed yet, and it flashes when the printer is waiting for more data. The DATA LED will go out when all received data has been processed. Do not turn the printer off while the DATA LED is lit, otherwise data will be lost.

#### **[ON LINE]**



**ON LINE**

The ON LINE LED shows that the printer is ready to receive data (the printer is set On Line) when this LED is lit. This LED is off when the printer is not ready for receiving data (the printer is set Off Line). The LED flashes when the printer is printing a page or when the printing is switching from On Line to Off Line.

#### **[PRINT]**



**PRINT**

This LED is continuously lit while a page is being transferred through the printer. Otherwise, the LED is always off.

### **3.1.4 Hex Dump**

The Star LaserPrinter 4III can also operate in the hexadecimal mode. This means that it will print information sent to it in its equivalent hexadecimal notation (in base 16 numbers). This mode is useful in correcting communication incompatibilities between some computers and Star LaserPrinter 4III, that can result in incorrect text or formatting. For information on performing a Hex Dump, see the Applications Manual.

## **3.2 SELF TEST**

The Star LaserPrinter 4III's test print provides a complete summary of what it is currently capable doing for you. It shows the quality of the printing of text. It summarizes the printer's configuration, including amount of memory and which fonts are installed or available. It explains how the printed page will look at the current settings. This includes paper size and page layout. It tells whether the parallel or serial interface is active.

### **3.2.1 Printing Test Sheets**

There are three stages to the self test. Also refer to [TEST/>] of 3.1.2 The Buttons.

#### 1) Printing a status sheet

Hold the [TEST] button until the screen displays "HOLD FOR TEST" then "STATUS SHEET".

Releasing the button will print the 1 page status sheet.

#### 2) Printing a font list

Hold the [TEST] button for four seconds, until the screen displays "FONT LIST".

When you release the button, the printer will produce a font list.

#### 3) Printing a cleaning paper

Hold the [TEST] button for six seconds, until the screen displays "CLEANING PAPER".

When you release the button, the printer will produce a cleaning paper. This paper is used to clean the fixing assembly (see 7.3 Cleaning the Fixing Assembly).

### **3.2.2 Status Sheet Description**

You can tell several things about the printer's settings by just looking at the print, without reading any of it. First (and obviously) the printer is operating. Second, the page is printed in the portrait orientation. That is, the printing runs on the page the way portraits are usually painted, higher than they are wide. When the printed area is wider than it is high, the orientation is referred to as landscape. If the printer is set for landscape orientation, the sample is printed that way.

The status sheet is divided into two sections. The first section summarizes your printer's basic configuration, identifying the version of its operating system (Firmware rev.) and specifying the amount of total RAM (memory) and the amount of RAM available for your use. If your printer has an optional RAM expansion board, its memory size will also be listed here.

The latter portion of the status sheet provides information on the options for printer operation that are currently active, in the order you are most likely to need the information. You can change any of these by programming from the front panel.

Three sets of selected (or default) options are listed:

- **Initial** - the settings that were selected when the printer was first turned on.
- **Power-up** - the settings that are stored in EEPROM (see Glossary).
- **Mode 2** - the settings that are stored in NVRAM (see Glossary).

The function of the EMULATION GROUP is:

- **Emulation** - the printer whose functions the Star LaserPrinter 4III is set to emulate.

The NUMBER OF COPIES GROUP function includes;

- **Number of copies** - the number of copies of each page to be printed.

The function of CHARACTER GROUP is:

- **Character** - character source, number, point, pitch, symbol set.

The function of PAGE SIZE GROUP is:

- **Page Size** - the size of paper.
- **Right End** - the width of printable area for A4 size.

The functions of the LAYOUT are:

- **Orientation** - portrait or landscape.
- **Margin settings** - left, right and top in relation to the available page area, and page (text) length in number of lines.
- **VMI** - Vertical Motion Index. VMI refers to the smallest increment that can be made in the vertical or y axis. Line spacing is a multiple of VMI.
- **End of line** - whether auto wrap function is on or off.
- **Auto line feed** - whether there is an automatic carriage return (CR) at a paragraph break, an automatic line feed (LF) at the end of each line, and a form feed (FF) after each page.

The PAPER FEED GROUP includes:

- **Feeder** - whether the paper will be fed from the cassette or manually.
- **MP tray size** - the size of paper to be used by the multi-purpose tray.

The function of PRINTER COMMANDS GROUP is:

- **Printer Commands** - whether the printer recognizes both PCL and GL/2, or GL/2 only.

The REP is an acronym for Resolution Enhancement Procedure. This function is:

- **REP** - whether the resolution enhancement is active or not.

The PAGE MODE GROUP function includes:

- **Page Mode** - partial or full

The INPUT BUFFER GROUP function includes:

- **Input Buffer** - memory capacity of the input buffer

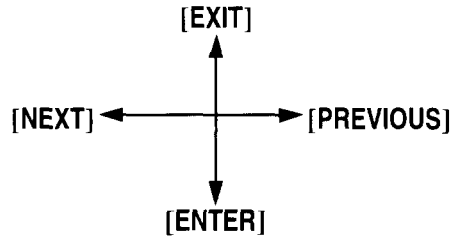
The function of the INTERFACE GROUP is:

- **Interface** - parallel or serial

### **3.3 PROGRAMMING FROM THE CONTROL PANEL**

As the status report indicates, the various functions that you can select from the control panel are arranged in an outline form, or a hierarchy. This means there are main groups and several levels within each one.

Remember: you enter (by pressing [v]) or exit (by pressing [^]) a Level to select the previous (by pressing [>]) or next (by pressing [<]) Item within a Group.



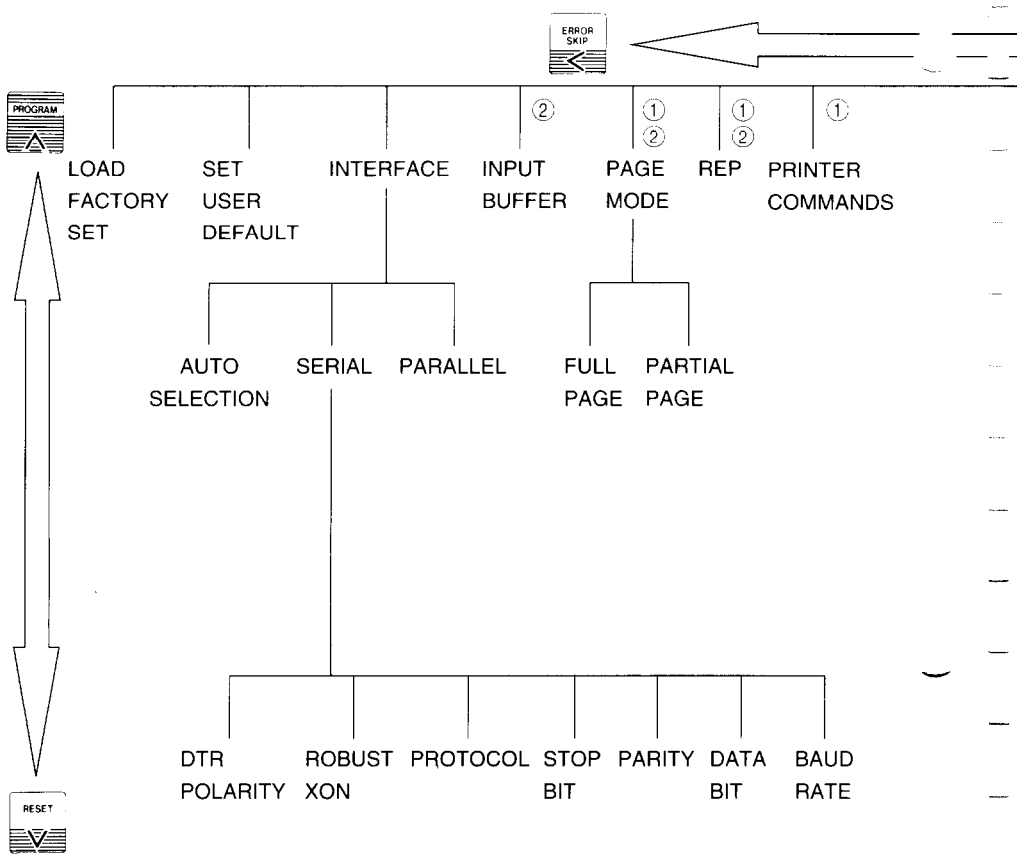
To get into the Program Mode, you must perform two actions:

- Press [**ON LINE**] to go off the light, then
- Press [**PROGRAM**]. This will cause the screen to respond by displaying the phrase “NUMBER OF COPIES”.

The order of the main categories within Program Mode is:

CHARACTER  
PAGE SIZE  
LAYOUT  
PAPER FEED  
EMULATION  
PRINTER COMMANDS  
REP  
PAGE MODE  
INPUT BUFFER  
INTERFACE  
SET USER DEFAULT  
LOAD FACTORY SET

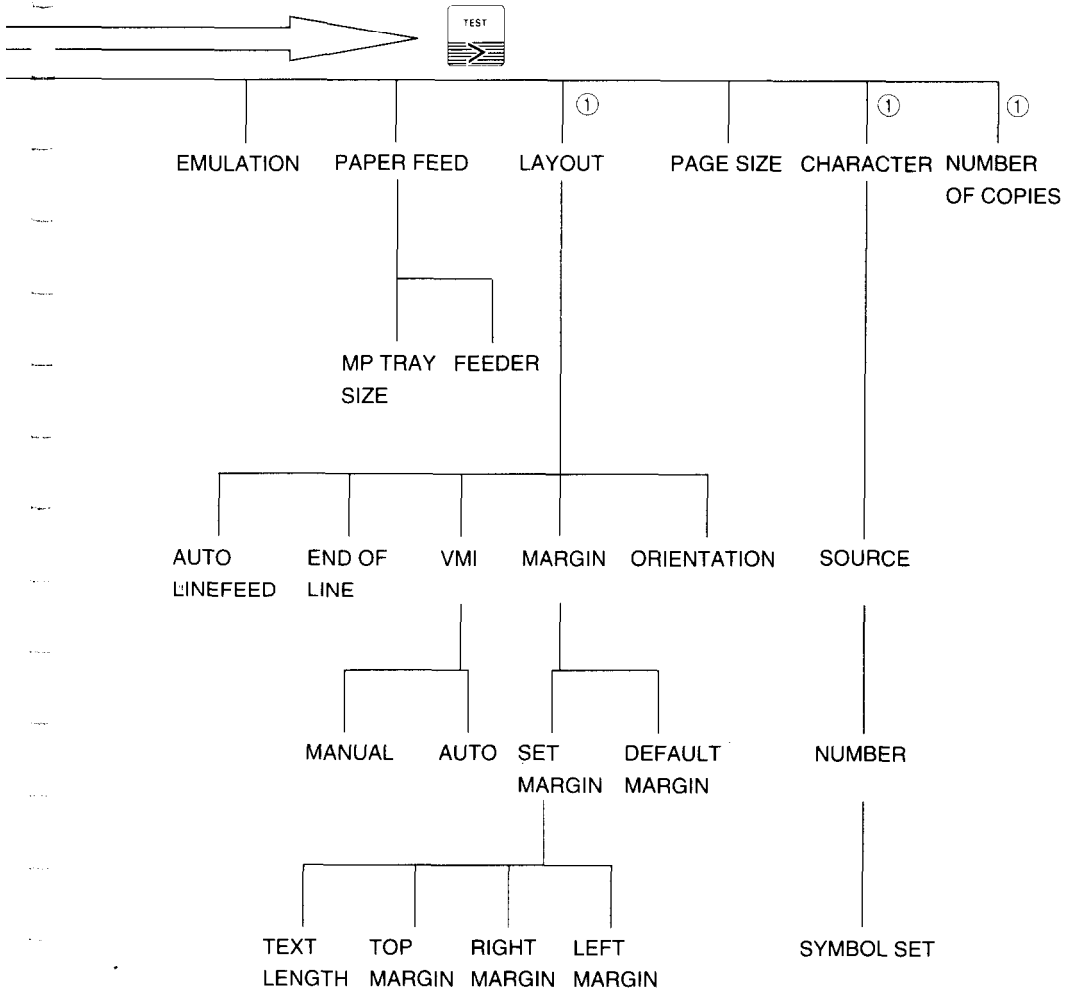
You move from one item to the next in this level by pressing [<]. Pressing [<] displays the next item of the next higher level. If no such item exists, [v] displays the value that is to be selected with @ added. [**ON LINE**] ends the Program Mode. Pressing [>] returns the display to the previous item at the same level you are currently in. Pressing [^] displays the next lower (previous) level.





NOTE:

- ① Skip in Hex Dump mode
- ② Skip without Expansion RAM Board



# MEMO

# **Quick Start with the Star LaserPrinter 4III: A Tutorial**

## **CHAPTER 4**

This chapter is designed for dual use, since most computer users fall into one of two categories. Some people like to read the documentation through from beginning to end. Others like to plunge right into the hands-on mode, using documentation as a quick reference, at most.

This chapter is for both groups. It can be read in sequence with the rest of the book, or it can be used as a stand-alone aid.

### **4.1 PRELIMINARIES**

Your Star LaserPrinter 4III comes in two basic parts:

- **the printer body**
- **the EP-L cartridge**

When you place your printer for use with your computer, be sure that:

- **it sits on a strong, stable table**
- **there is circulation on all sides, including the bottom**
- **you remove all the packing material before you use the printer.**

If you are just setting up your Star LaserPrinter 4III, and have not read the material in Chapter 2, please take the time to read the section “2.2 Installing the EP-L Cartridge”. It is very vital that you handle and install this component precisely, because it contains important laser printing devices, as well as the toner (“ink”) that actually prints on the paper.

In addition to the multi-purpose tray that is provided as a standard feature, various types of paper can be fed into the printer using an optional paper feeder unit. Five different cassettes are available for use with the feeder unit; A4, Letter, Legal, Executive and Envelope. For installing the feeder unit and cassettes, see separate manuals.

The printer’s on-off switch is located at the front.

## 4.2 CONTROL PANEL

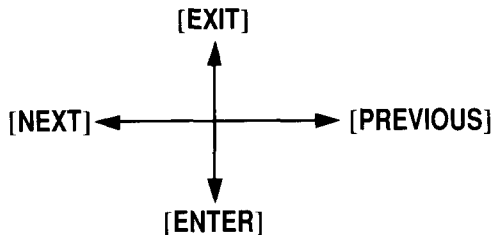
The front panel of the printer provides information about the printer's internal and operating status. It also allows you to program it for your (and your computer's) specific needs. The Star LaserPrinter 4III works in two basic modes when the printer is off line:

Normal mode—using the white buttons

Program mode—using the brown buttons

The buttons have different functions in each mode:

BUTTON	FRONT PANEL MODE (WHITE BUTTONS)	PROGRAM MODE (BROWN BUTTONS)
[ON LINE]	When light is on printer can print. When light is off all other buttons are enabled	Fastexit (termination) of Program Mode (returns to Printer Ready)
[PRINT]	Print information in memory	No function
[ERROR SKIP/<]	Continue printing or display error code	Display next item within current level of menu selections
[TEST/>]	Initiate tests	Display previous item within current level of menu selections
[RESET/v]	Discard information	Display next level within current item of menu selection. When in last level of current item, executes function
[PROGRAM/^]	Enter program mode or select default setting	Display previous level within current item of menu selection
[FEEDER SELECT]	Select paper source for printing	No function



Remember: you enter (by pressing [**v**]) or exit (by pressing [**▲**]) a Level to select the previous (by pressing [**>**]) or next (by pressing [**<**]) Item within a Group.

The front panel also has some lights. When lit they mean:

- READY (green) — the printer is ready for printing or for programming
- ALARM (orange) — an error condition exists and the printer is Off Line
- DATA (green) — information received, not yet printed
- ON LINE (green) — the printer is ready for printing
- PRINT (green) — the printer is printing information

## 4.2.1 Basic operations

There are four basic operations performed from the panel:

- **On Line and Off Line** — The printer can receive information from the computer and print it only when it is On Line. When the printer is On Line, the light on the [**ONLINE**] button will be lit. For all other functions, the printer must be Off Line. This is accomplished by pressing the [**ON LINE**] button until its light is *out*.
- **Form feed** — The printer may have unprinted information in its memory. This is indicated by the lighted DATA light. To clear it from the printer, take the printer Off Line. Then press [**PRINT**]. When all the remaining information is printed, the paper will be ejected and the DATA light will go *out*.
- **Error Skip** — In case of an error, the printer will go Off Line and stop printing. If the error is minor, it is possible to continue printing. To do this, press [**ERROR SKIP**], then [**ON LINE**] until its light is *on*. If the error was minor, printing will resume. If the error was more serious, the panel will provide information on how to handle it.
- **Reset** — To clear the printer memory and restore settings to emulation defaults, press [**RESET**].

Before you begin printing, at any time, but especially when you are new to the process, it is a good idea to run a test or sample print. To do this, take the printer Off Line. Then press and hold [TEST] until the display reads Status Sheet. The printer will provide a status sheet showing.

- its configuration
- the quality of its text printing, and
- a summary of its settings — initial and power-up preset.

### 4.3 CONNECTING THE PRINTER TO THE COMPUTER

The Star LaserPrinter 4III comes equipped with a standard Centronics parallel interface, and an RS-232 serial interface. They can be connected simultaneously, though only one can be active at any one time.

The printer comes from the factory pre-set with the Centronics parallel interface active. You can confirm this by looking at the Interface Group portion of the sample print.

Star LaserPrinter 4III Status and Setup Report			
Configuration			
Firmware rev.:	1.00		
Page count:	1210		
RAM size:			
On-board	1024K bytes		
Expansion	0K bytes		
Available	628K bytes		
Selected Setup Options			
Printer Set			
PAPER FEED		DR=CR	
FEEDER	MP Tray	MP Tray	MP Tray
MP TRAY SIZE	Paper: A4	Paper: A4	Paper: A4
PRINTER COMMANDS	PCL+GL/2	PCL+GL/2	PCL+GL/2
REP	Off	Off	Off
INPUT BUFFER	1K bytes	1K bytes	1K bytes
INTERFACE	Parallel	Parallel	Parallel
Error History			

This means that the Centronics parallel interface is active. If the serial port were active, that line would state serial.

If you are going to use a Centronics interface, you don't need to make any changes. If you want to use an RS-232 interface, you must perform a programming sequence. Programming will involve pressing various panel keys and following the information provided on the display screen. The control panel indicates the selected function with the @ symbol following the function displayed.

### **4.3.1 Selecting the Serial Interface**

- Take the printer Off Line by pressing the [ON LINE] button until the button's light is *off*
- Then press [PROGRAM].
- Press [◀] until the display screen reads  
INTERFACE
- Press [v]. Now the screen will read  
PARALLEL @
- Now press [◀]. The screen will change to  
SERIAL
- With the display reading SERIAL, this time press [v]. The screen will show  
BAUD RATE
- Pressing [v] now displays  
9600 baud
- Press [◀] to display a series of options, from 300 to 38400. Keep pressing until the one you want appears on the screen.
- Pressing [v] now displays  
9600 baud @

- Then press [▲] displays BAUD RATE. Pressing [◀] displays these options:

DATA BIT

PARITY

STOP BIT

PROTOCOL

ROBUST-XON

DTR POLARITY

The settings from the factory for these options are:

8 bit

no parity

1 stop bit

DTR

High

Whenever you want to change any of the serial parameters, follow the same sequence as for selecting the baud rate. For example, to change the data bit, at SERIAL press [▼] then [◀] until DATA BIT is displayed on the screen. Pressing [▼] will display the first option, and [◀] will give the rest of them. Press [▼] when your choice appears on the screen. Finally, press [ON LINE], which readies the Star LaserPrinter 4III for printing.

If your applications program requires an X<sub>ON</sub>/X<sub>OFF</sub> handshake (“software” rather than DTR “hardware”), set it from the SERIAL menu by

- Pressing [▼] then [◀] until you see

PROTOCOL

- Pressing [▼] displays

DTR

- Pressing [◀] until the display reads X<sub>ON</sub>/X<sub>OFF</sub>. Press [▼] to execute.



### **4.3.2 Activating the Parallel Interface**

To return to a parallel interface, do this:

- Take the printer Off Line by pressing the [**ON LINE**] button until the button's light is *off*
- Then press [**PROGRAM**].
- Press [**<**] until the screen displays  
INTERFACE
- Press [**v**], which displays  
SERIAL @
- Press [**<**] which gives  
PARALLEL
- Press [**v**] to select parallel.
- Pressing [**ON LINE**] will allow the Star LaserPrinter 4III to begin printing through the parallel interface.

### **4.3.3 Saving the Setting**

The new setting will remain in the printer's RAM memory until it is turned *off*. To understand why, you should realize that there are four different types of settings stored in the printer's memories.

- The **FACTORY SETTINGS**, which are those put into the printer's unchangable ROM memory at the factory.
- The **POWER-UP SETTINGS**, which the user can create, then store in a permanent memory called EEPROM, even when the power is turned off at the end of the session in which they are created. These settings will then override the Factory Settings, being activated when the printer is turned off, then on again.
- The **INITIAL SETTINGS**, which the user can create and use as long as the printer is not turned off. These are stored in temporary or volatile RAM memory. They override the Power-up Settings.
- The **CURRENT SETTINGS**, which are those stored in temporary RAM memory. These may be issued by software commands that override all other settings.

To make the setting permanent, you must save it in EEPROM! Perform this programming sequence, after taking the printer Off Line.

- Press [**PROGRAM**].
- Press [**<**] until the screen displays  
SET USER DEFAULT
- Press [**v**], after which the screen will display  
MODE 1
- Press [**<**] when you want to store the new setting to the other mode.
- Press [**v**] when the desired mode is selected.  
Now the screen will display  
EEPROM LOAD DONE
- Finally, press [**ON LINE**]. Your new settings are now saved, and you can continue with other printing, if desired.

#### ***4.3.4 Returning to Factory Settings***

If for some reason you want to start from the beginning, with the original factory settings, follow this procedure:

- In the Program mode, press [**<**] until the screen reads  
LOAD FACTORY SET
- Press [**v**]. The screen will display  
EC Set @
- Pressing [**<**] display the other option:  
US Set  
Select the one you want.
- Press [**v**]. The screen will display briefly  
LOAD FROM ROM OK  
then  
LOAD FACTORY SET

The factory settings are now restored, and you can go On Line for other activities.

## 4.4 RESOLUTION ENHANCEMENT PROCEDURE

The Resolution Enhancement refines the print quality of characters and graphics by “smoothing” the fine gradations along the edge of the printed image.

When the optional expansion RAM board is installed into the Star LaserPrinter 4III, you can select this Resolution Enhancement Procedure.

- Take the printer Off Line by pressing the **[ON LINE]** button.
- Then press the **[PROGRAM]** to enter the program mode.
- Press **[<]** until the display screen reads  
REP
- Press **[v]**. Now the screen will read  
OFF@
- Press **[<]** to display  
ON
- Press **[v]** to select it.
- Pressing **[ON LINE]** will allow the Star LaserPrinter 4III to use the resolution enhancement procedure.

## 4.5 MANUAL FEED

The Star LaserPrinter 4III can feed paper automatically using an optional cassette. If an optional cassette is installed, the factory default of feeder is Cassette Only. To change this setting from the control panel, put the printer Off Line, and press **[PROGRAM]**.

- Press **[<]** until the screen displays:  
PAPER FEED
- Press **[v]**, and the screen will now display:  
FEEDER
- Press **[v]**, which will display  
Cassette Only@

- Pressing [**<**] displays these options:  
 Auto Selection  
 Cassette  
 MP Tray  
 Manual Feed
- Press [**<**] to display  
 Mp Tray            or            Manual Feed
- Pressing [**v**] confirms the change.
- Finally, press the [**ON LINE**] button to make the Star LaserPrinter 4III ready for printing.

Manual paper feeding should always be done from the multi-purpose tray (MP tray). If OHP transparencies, label sheets or envelopes are to be fed manually, the face-up tray should be used.

If during either manual or automatic feed, you get a paper jam, refer to the chapter on "Troubleshooting," for ways to clear the machine.

## 4.6 PAPER SIZE

The factory default of MP TRAY SIZE is A4 paper. If you want to use other size of paper or envelopes, you must first instruct the printer. After going Off Line and pressing [**PROGRAM**]:

- Press [**<**] until the screen reads  
 PAPER FEED
- Press [**v**], which will display  
 FEEDER
- Pressing [**<**] displays  
 MP TRAY SIZE
- Press [**v**], which will display  
 Paper : A4 (for EC set) or Letter (for US set)@

- Pressing [**<**] repeatedly will list the other choices,

Paper	: Letter	Env.	: Monarch
Paper	: Legal	Env.	: COM-10
Paper	: A4	Env.	: Intntnl DL
Paper	: Executive	Env.	: Intntnl C5
Paper	: B5		

- Press [**v**] when the required paper/envelope size is displayed on the screen.
- Finally, press [**ON LINE**], which readies the Star LaserPrinter 4III for printing.

Before you start printing, refill the cassette with the appropriate paper.

## 4.7 PRINTING IN LANDSCAPE ORIENTATION

If you want to change from portrait to landscape orientation for your printed page, follow this procedure, after going Off Line and pressing [**PROGRAM**]:

- Press [**<**] until you get  
LAYOUT
- Press [**v**], which will display  
ORIENTATION
- Press [**v**] for  
Portrait@
- Pressing [**<**] gives  
Landscape
- Pressing [**v**] selects Landscape.

## 4.8 CHANGING CHARACTER SET

If you want to use a character set other than that provided at the factory, follow this procedure:

- After going Off Line and pressing [**PROGRAM**]

- Press [**<**] until you see  
CHARACTER
- Press [**v**], which displays  
SOURCE R (or SOURCE C or SOURCE S)@  
(SOURCE R means Resident, SOURCE C for Cartridge, and SOURCE S for Soft font)
- Press [**v**] displays  
NUMBER 1@
- Pressing [**v**] again gives various options for SYMBOL SET.
- Pressing [**<**] until you see the desired one.
- Then press [**v**].
- Press [**ON LINE**].

## 4.9 SELECTING DISPLAY LANGUAGE

The language for display can be selected from English, French, German, Italian or Spanish. To select the display language, turn off the printer then follow the procedure below.

1. Hold down [**RESET/v**] and turn on the printer (make sure that [**RESET/v**] is held at least until the screen displays “SELECT LANGUAGE”). The screen displays

SELECT LANGUAGE

Memory Test 1 MB

ENGLISH@

2. Pressing [**ERROR SKIP/<**] or [**TEST/>**] changes the language as displayed in the screen.
3. Press [**ON LINE**] after selecting new language. The language will be saved and the printer goes On Line.

If [**RESET/v**] is released before “SELECT LANGUAGE” message is displayed, the printer will not enter the display language mode (i.e. normal startup operation will be carried out). The factory setting of display language is English.

# Font Selection

## CHAPTER

# 5

The style of printing that appears in your finished work consists of four elements:

- **the symbol/character set** — the letters, numbers, and symbols available for use
- **the fonts present in the Star LaserPrinter 4III** — some fonts come as standard equipment, while others are available in cartridges that are installed in the cartridge slot of the printer; you may also purchase fonts on a disk and load them down (downloading) from the computer to the Star LaserPrinter 4III's RAM (for more information consult a software dealer)
- **font attributes** — consisting of character spacing, pitch, point size, style, stroke weight, and typeface
- **the capabilities of your applications software.**

The Star LaserPrinter 4III comes equipped with many families of fonts. Try to print out the Font List with control panel operation. (Refer to "3.2 SELF TEST".)

You will get the Font List as shown in next page.

Many of the available fonts can be selected from the control panel. The ultimate in printing flexibility is provided by programming with the command sets. For more on this, see the chapter 6 "Interfacing With Applications Programs" and the Applications Manual.

There are default print styles that the Star LaserPrinter 4III will use if you do not make other choices. In the material that follows, the default values will first be presented together, for your convenience. Then the entire range of choices for each attribute without an optional Font Cartridge will be presented; the default values will be marked with an \*.







### ***Default Values, primary and secondary fonts:***

Character number: 1 (Courier, 10cpi, 12point, Medium)  
Symbol set: Roman-8

### ***Available Values, primary and secondary fonts:***

Character number: 1\* ~ 15  
Symbol set: Roman-8\*  
ECMA94  
IBM PC  
IBM DN  
PC-850  
Legal  
Ventura Math  
Ventura Intl  
Ventura US  
PS Math  
PS Text  
Math-8  
Pi Font  
Microsoft Publ  
Windows  
DeskTop  
ISO 2: IRV  
ISO 4: UK  
ISO 6: USASCII  
ISO 10: Swedish  
ISO 11: Swedish  
ISO 14: JIS ASCII  
ISO 15: Italian  
ISO 16: Portug  
ISO 17: Spanish  
ISO 21: German  
ISO 25: French  
ISO 57: Chinese  
ISO 60: Norweg  
ISO 61: Norweg  
ISO 69: French  
ISO 84: Portug  
ISO 85: Spanish  
HP German  
HP Spanish

# **Interfacing With Applications Programs**

## **CHAPTER 6**

If this were the best of all possible computer worlds, every software application would run automatically on the Star LaserPrinter 4III or any other printer. The fact is that software applications—word processing, spreadsheets, databases, or others—are designed to work with a specific printer or a limited group of printers.

Some very popular software applications were written before laser printers became common, and require a dot-matrix or daisy-wheel printer. Some software is linked to a particular brand of computer and printer. And some can be used on only one brand of laser printer.

As you have read, some of the commands needed for printing are resident in the Star LaserPrinter 4III. Some can be programmed from the control panel. And some must be issued by the computer, from within a program. Some applications programs allow the user to specify a printer or printers, either by name or by type. Once the selection is made, it becomes part of the program file. As a result, printing usually requires nothing more than issuing a one or two keystroke command.

In this chapter you will learn how to specify the Star LaserPrinter 4III for four popular applications programs for IBM-compatible computers: Lotus 1-2-3, WordPerfect, Microsoft Word, and Microsoft Windows. The Star LaserPrinter 4III will print graphics as well as words and numbers, emulating Hewlett Packard graphics. It can also be used with the two popular desktop publishing programs, Aldus PageMaker, and Xerox Ventura Publisher, which uses the GEM desktop environment. Both are compatible with the HP LaserJet III. For further information consult the Applications Manual.

Before you begin printing, be sure your Star LaserPrinter 4III is correctly configured for your computer by having either the parallel or serial interface selected and the correct cabling. Prior to printing, make sure that you have selected the same emulation from the front panel as the one you specified in the application.

## 6.1 LOTUS 1-2-3 RELEASE 2

This section explains how to installing Lotus 1-2-3 for use with your Star LaserPrinter 4III. For detailed information, refer to the Lotus Getting Started manual.

First, add the following commands to the AUTOEXEC.BAT file, depending on parallel or serial interface used.

Parallel: If your printer is connected to the computer's parallel port LPT1, add the following command to the AUTOEXEC.BAT file:

```
MODE LPT1:.,P
```

Serial: If your printer is connected to the computer's serial port COM1, add the following command to the AUTOEXEC.BAT file:

```
MODE COM1:9600,N8,1,P
```

```
MODE LPT1:=COM1
```

- Installing the Lotus 1-2-3 INSTALL Program

If the Lotus 1-2-3 has not been installed, you must install it before proceeding. At the DOS prompt, type LOTUS and press [RETURN]. This causes the computer to display the 1-2-3 Access System.

Move the cursor to "Install", then press [RETURN] to run the INSTALL program. Lotus may ask you to insert the UTILITY disk. This will display the MAIN MENU. You can select your printer following the procedure below.

- 1) Select "Change Selected Equipment" and press [RETURN], which displays the Selected Equipment screen.
- 2) Select "Text Printer(s)" and press [RETURN], which displays the Text Printer(s) screen.
- 3) Select "HP" and press [RETURN]. This displays the Text Printer(s) screen.
- 4) Select "2686 LaserJet or LaserJet+" and press [RETURN].

The printer type for texts has been selected. To select the printer type for graphics, go back to the Selected Equipment screen.

- 5) Select "Graphics Printer(s)" and press **[RETURN]**, which displays the Graphics Printer(s) screen.
- 6) Select "HP" and press **[RETURN]** to display the Graphics Printer(s) screen.
- 7) For 150 or 300DPI, select "LaserJet+" and press **[RETURN]**. For 75DPI, select "LaserJet" and press **[RETURN]**.

When you have completed the selection of a graphics printer, press **[F10]**. Your current selections will be displayed. Make sure that the selections are correct. If not, repeat the installation process.

To save your selections, press **[Esc]** to return to the Selected Equipment screen.

- 1) Select "Save Changes" and press **[RETURN]**, which displays the Saving Changes screen.
- 2) Read message and press **[RETURN]**.
- 3) Now, you have saved the changes you made. Press **[F9]** to go to the Main Menu, or press **[RETURN]** to leave the install program. The EXIT screen will be displayed.
- 4) Select "YES" and press **[RETURN]**.

- Selecting Default Settings

After running the INSTALL program, you must select printer defaults.

At the DOS prompt, type LOTUS and press **[RETURN]** to display the 1-2-3 Access System. Move the cursor to "1-2-3", then press **[RETURN]** to run the 1-2-3 program. Lotus may ask you to insert the SYSTEM disk.

At the opening screen, press **[/]** to access the spreadsheet menu. Then, type **[W]**orksheet, **[G]**lobal, **[D]**efault and **[P]**rinter. The configuration menu will be displayed. Now you are ready to make some selections about the configuration of your Star LaserPrinter 4III.

- 1) Type **[I]** Interface and select the number which corresponds to the interface for your printer.

For parallel, type "1", and for serial, type "2" (for example).

- 2) Select appropriate settings for auto linefeed, left margin, right margin, top margin, bottom margin, page length, wait, setup and name.

- 3) When you have completed, type [Q]uit, then [U]pdate. The 1-2-3 will save your selections and use these defaults when printing.

Now, you are ready to use your Star LaserPrinter 4III.

## 6.2 WORDPERFECT VERSION 5.0

WordPerfect must be installed before you can select a printer. Refer to the "Installation" section in your WordPerfect Manual. Once this is done, follow the procedure below to select a printer.

- 1) Press [Shift] and [F7], then select [S] Select Printer.
- 2) Select [2] Additional Printers, which displays the Select Printer screen.
- 3) From the list of defined printers, select either HP LaserJet IIP or HP LaserJet II, then press [RETURN].
- 4) Press [RETURN] to accept the displayed printer filename or enter a new name, then press [F7] Exit. The Select Printer: Edit screen will be displayed.
- 5) Now you must specify the interface connection. Select [2] Port at the Select Printer: Edit menu, which displays a list of ports.
- 6) If you are using a parallel interface, for LPT1, type "1".
- 7) If you are using a serial interface, for COM1, type "4". The WordPerfect will display the Select Printer: COM port menu.

You must now specify the serial parameters, including baud rate, parity, stop bits, character length and X<sub>ON</sub>/X<sub>OFF</sub> function. Be sure that you specify the same values in WordPerfect as you do for the Star LaserPrinter 4III. To save your WordPerfect selections, press [F7] to exit the program.

## 6.3 MICROSOFT WORD 4.0

To use Microsoft Word with your Star LaserPrinter 4III, appropriate Printer Descriptions (PRDs) must be installed. PRDs are found on Supplemental Printer Diskettes. These PRDs provide (1) internal and cartridge fonts in both orientations and (2) Hewlette-Packard soft fonts. Install them following the procedure described in Microsoft Word manuals.

In Microsoft Word, you can make your printer selections through the Print Menu.

- 1) At the text screen, type [E]sc and [P]rint.
- 2) In the resulting menu, select OPTIONS by typing [O]ptions.

A list of available printers appears at the top of the screen. Each of these printers is the subject of a Printer Description (PRD) file.

## 6.4 MICROSOFT WINDOWS

Microsoft Windows is a program that coordinates the use of various programs that might not otherwise be compatible on the screen. Windows can be configured for your printer, but you should also be aware that any applications program that you use may have its own printer requirements, which must be taken into consideration.

To choose a printer for Windows, at the initial Menu select  
CONTROL PANEL.

From the resulting Menu, select the

INSTALLATION

Menu, then

ADD A PRINTER.

The screen will display a box that reads:

Add printer

Insert the disk with the printer file

you wish to add into drive A, or choose

an alternative drive/directory:

A:\ \_\_\_\_\_

OK    CANCEL

Insert the Utilities disk in drive A and press

OK

Now the screen displays this box:

Available Printers      Printer File: \_\_\_\_\_

Epson FX-80

NEC 3550

HP LaserJet

HP LaserJet Plus

HP 7470A

Add    Cancel

Highlight HP LaserJet Plus and select

ADD

Another box appears in response:

Copy associated printer file HPLASERP.DRV

to drive/directory:

C:\Windows (if you have a hard disk)

Yes    No    Cancel

selecting YES confirms your printer choice and returns you to the CONTROL PANEL Menu.

If you are just starting with Windows, you should select SETUP from the CONTROL PANEL Menu. This will present a Menu with three options.

You should first select PRINTER and from the list choose the printer you wish to use.

Next, from SETUP select CONNECTIONS. This will let you designate the parallel or serial port for the printer, clicking OK to confirm it.

If you are using a serial printer, go to SETUP once again, and select



## COMMUNICATIONS

After you indicate the active port you have already chosen, Windows will present a series of settings options. Type in the desired baud rate and “push the button” for your selection of word (bit) length, parity, stop bits, handshake, and port.

Select HARDWARE handshake and 1 stop bit.

Be sure that the other selections match the printer settings shown under Interface Group on the Star LaserPrinter 4III's sample print.



# Maintaining the Star LaserPrinter 4III

## CHAPTER 7

The LaserPrinter 4III does not require much care and maintenance. However, it is important to perform a few cleaning tasks to maintain your printer in good condition. This chapter will explain procedures for replacing the EP-L cartridge, handling the EP-L cartridge and printer, and cleaning the printer.

### 7.1 REPLACING THE EP-L CARTRIDGE

Replace the EP-L cartridge in the following cases:

- If print quality is still low, even after you have redistributed the toner by removing the cartridge and rocking it gently from end to end about five or six times.
- If transparency films show stain problem at either the top or bottom of the films.

**NOTE:** For directions on replacing the EP-L cartridge, refer to “2.2 Installing the EP-L cartridge”.

### 7.2 STORAGE AND HANDLING PRECAUTIONS FOR THE EP-L CARTRIDGE

The EP-L cartridge contains both the photosensitive drum and toner used for printing. Since the drum is extremely sensitive to the light, it may be permanently damaged if it is exposed to the direct sunlight or strong light. Caked or unevenly distributed toner may result in poor print quality. Therefore, always observe the following rules:

- Always keep the EP-L cartridge in the aluminum bag in which it was originally packed. And do not open the bag until you are ready to install it in the printer.

- Do not store the cartridge where it will be exposed to direct sunlight.
- Store the cartridge with the label facing up. Do not turn it upside down or stand it on end.
- Store the cartridge at a temperature of between 0°C and 35°C (32°F and 95°F).
- Do not store the cartridge in salty air, or where there are corrosive gases such as ammonia.
- Keep the cartridge away from CRTs, disk drives and floppy disks. The magnet in the cartridge can adversely affect them.
- Always keep the cartridge away from children.
- Be sure to use the cartridge before its expiration date. Otherwise, print quality will be affected.

When handling the EP-L cartridge, also pay attention to the following points, in addition to the above.

- Do not touch the bottom of the cartridge when handling the cartridge.
- Do not open the drum protective shutter. If it is opened, print quality may be affected.

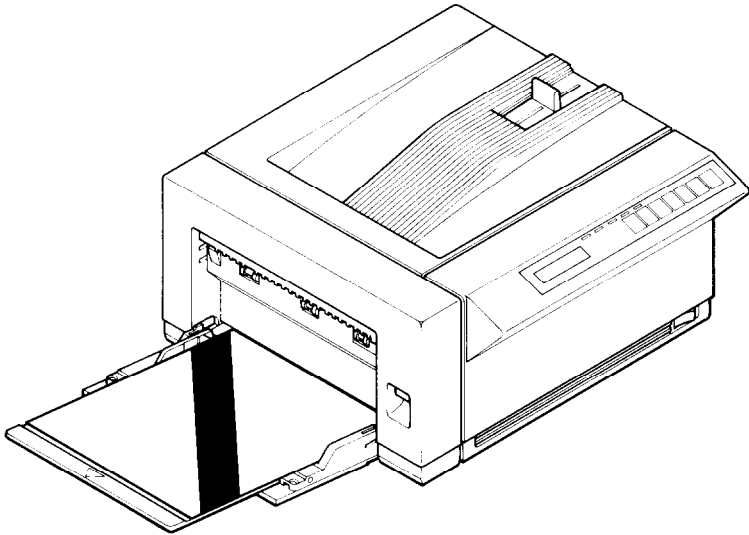
## 7.3 CLEANING THE FIXING ASSEMBLY

Transparency films may sometimes show stain problem at either the top or bottom of the films. This problem may be caused by a dirty paper path or the flaw on the EP-L cartridge. In this case, clean the fixing assembly, and replace the EP-L cartridge if necessary. Regular cleaning of the fixing assembly will reduce the possibility of paper jam and will prolong the life of the printer. The fixing assembly can be cleaned using cleaning paper.

First print a sheet of "CLEANING PAPER" on letter, A4, or legal size paper according to the following procedure (see "3.2.1 Printing Test Sheets").

- 1) Hold the [TEST] button until the screen displays "CLEANING PAPER".
- 2) Releasing the button will produce a cleaning paper. When the cleaning paper is produced, the screen displays "MP LOAD THE PAP".

- 3) Now place the cleaning paper face up in the multi-purpose tray, inserting it as far as it will go without forcing it. Make sure that the paper guides are aligned with the paper.
- 4) Press the **[TEST]** button. The printer will feed the paper and the screen displays “NOW CLEANING”.
- 5) When cleaning is done, the screen will display “CLEANING DONE” for one second.



## **7.4 CLEANING THE EXTERIOR OF THE PRINTER**

Before cleaning, make sure that the power cord is removed.

Use only water and neutral detergent to remove marks and spots from the printer, then wipe the printer dry with a soft dry cloth. Use of any other cleaning solution may damage the printer.

The printer does not require lubrication. Never attempt to lubricate any internal or external parts of the printer. Otherwise, lubrication may affect the operation of the printer and damage the printer.

# MEMO

An important key to reliable operation of your Star LaserPrinter 4III is knowing how to respond when trouble occurs. Some problem conditions can be handled on the spot by the printer operator. Others require servicing by trained personnel. This chapter will explain when to do what. It will also help you deal with the paper jamming and other operational problems.

## **8.1 ERROR MESSAGES DISPLAYED ON THE SCREEN**

The control panel screen may display a variety of messages during the course of operation of the Star LaserPrinter 4III. You are already familiar with the display sequence during power-up, and when programming the printer. Some messages provide information about the paper supply in the cassette or the condition of the EP-L cartridge. Others have to do with fonts or emulations.

Another way of considering errors is that some of them result from failures in hardware or software. Other errors are functional, meaning that either the printer operator or the host computer has commanded the controller to perform an operation that is beyond its designed capabilities.

If the printer malfunctions for some reason, warning messages will appear on the screen, recommending what action you should take. The most serious are messages that tell you to call for repair service. Some messages concern less serious conditions that can be handled by the printer operator. Information messages relate a communication problem with the host computer, but do not affect the printer's operation. These messages are summarized here.

## 8.2 SERVICE CALL MESSAGES

### 8.2.1 Engine Service Call Messages

Engine service call messages are related to the interface with engine. They can result from either a communication failure, or a halt in the engine's ready level.

<i>Message</i>	<i>Meaning</i>	<i>Action</i>
<b>CALL SERVICE 01</b>	fixing assembly; status 2, bit 2	processing stops; alarm beeps; press [ERROR SKIP] to reset engine and recheck
<b>CALL SERVICE 02</b>	faulty BD; status 2, bit 3	processing stops; alarm beeps; press [ERROR SKIP] to reset engine and recheck
<b>CALL SERVICE 03</b>	scanner motor malfunction, status 2, bit 4	processing stops; alarm beeps; press [ERROR SKIP] to reset engine and recheck
<b>CALL SERVICE 04</b>	improper communication	processing stops; alarm beeps; turn off the power then on to reset engine and recheck

### 8.2.2 Controller Service Call Messages

Controller error messages result from failure in either hardware or software. Some controller error messages occur during startup tests. The messages mean that the controller is malfunctioning, but is still able to display the error message. Certain conditions can also be detected during controller reset, on insertion of a cartridge, and at other times after the completion of power-up initialization. An error stops the test sequence, the unit goes off line, and the alarm sounds. The controller will attempt to recover, if possible. If the problem is not found during initialization, but recurs during operation, most likely the fault is in the hardware.



<i>Message</i>	<i>Meaning</i>	<i>Action</i>
<b>CALL SERVICE 05</b>	CRC error in controller main ROM program	program halts; fatal
<b>CALL SERVICE 06</b>	CRC error in resident font ROM	program halts; fatal
<b>CALL SERVICE 07</b>	read/write test error in on-board RAM	program halts; fatal
<b>CALL SERVICE 08</b>	read/write test error in expansion RAM	sequence stops; alarm beeps; shut off power and fix problem; or press [ERROR SKIP] to continue, in which case the expansion RAM will be ignored
<b>CARTRIDGE BAD</b>	CRC error in Cartridge (if installed)	sequence stops; alarm beeps; shut off power and fix problem; or press [ERROR SKIP] to continue, in which case the cartridge will be ignored
<b>CALL SERVICE 10</b>	CRC error in EEPROM	sequence stops; alarm beeps; shut off power and fix problem; or press [ERROR SKIP] to continue, in which case program uses factory settings as power-up settings
<b>CALL SERVICE 11</b>	read/write test error in EEPROM	sequence stops; alarm beeps; shut off power and fix problem; or press [ERROR SKIP] to continue, in which case program uses factory settings as power-up settings
<b>NO FONT PRESENT</b>	no font present	program halts; fatal

## 8.3 OPERATOR CALL MESSAGES

Whenever the screen displays operator call messages, the printer goes off line and the alarm sounds. The problem is one that the operator should be able to resolve. After making any corrections, you should press **[ERROR SKIP]** to recheck the status. If the error message is not displayed again, you may continue printing straight away (if the error was one of the Engine Problems below). If the error message was of any other type, you should press **[ON LINE]** before continuing the print job.

### 8.3.1 Engine Problems

These are mechanical problems that prevent the engine from being ready to print.

<i>Message</i>	<i>Meaning</i>	<i>Action</i>
<b>CASS: REFILL X</b> (X means the current page size)	cassette is current feeder; out of paper	printing stops; refill paper
<b>TRAY: REFILL X</b> (X means the current page size)	no paper in the multi-purpose tray	printing stops; refill paper
<b>LOAD X CASS (X means the current page size)</b>	cassette is current feeder; no cassette in LC slot	printing stops; install the cassette
<b>PAPER JAMMING</b>	paper is jammed within; status 1, bit 5	follow printer procedure in "8.6 Paper Jamming"
<b>SET EP/CLOSE</b>	side cover is open or no EP-L cartridge	close the side cover or install the EP-L cartridge

### 8.3.2 Font Cartridge Problems

The font cartridge is plugged into the printer. It can should not be inserted or withdrawn while the DATA LED is continuously lit. If someone does this, the screen will indicate "CARTRIDGE ERROR". The printer must be reinitialized by turning off the power and then on again.

If a font cartridge is removed while the DATA LED is blinking, the screen will display "REINSERT CART". In this case, the operator must insert the font cartridge or press [ERROR SKIP]. If [ERROR SKIP] is pressed, the printer will select the closest font.

<i>Message</i>	<i>Meaning</i>	<i>Action</i>
<b>CARTRIDGE ERROR</b>	font cartridge is removed while DATA LED is on	Turn the power off then on again to initialize the printer
<b>REINSERT CART</b>	font cartridge is removed while DATA LED is blinking	insert the cartridge or press [ERROR SKIP]

### 8.3.3 Optional Hardware

The following messages will be displayed if necessary optional hardwares (e.g. RAM expansion board) have been removed.

<i>Message</i>	<i>Meaning</i>	<i>Action</i>
<b>INSUFFICIENT RAM</b>	full page mode as power-up setting; no expansion RAM installed	repower-up with expansion RAM board, or press [ERROR SKIP]
<b>NO EMUL. CART.</b>	cartridge emulation mode as power-up setting; no emulation cartridge installed	repower-up with the emulation cartridge, or press [ERROR SKIP]

### 8.3.4 Change Paper Size

Certain emulations permit page size to be specified by the host computer. Also, page size can be selected from the menu. If a change in page size is required, the screen will display a message to that effect. The alarm will beep and the printer will go Off Line. You may have the printer ignore such a message by pressing [ERROR SKIP]. (In this case, the printer will print the page size image on the different size paper.) If the current feeder is cassette, inserting the correct paper cassette causes the printer to start printing automatically. If the current feeder is the multi-purpose tray, changing the multi-purpose tray size via panel starts printing automatically.

<i>Message</i>	<i>Meaning</i>	<i>Action</i>
<b>CASS: CHANGE A4</b>	A4 size is required; cassette	follow procedure above
<b>TRAY: CHANGE A4</b>	A4 size is required; multi-purpose tray	follow procedure above
<b>CASS: CHANGE LTR</b>	Letter size is required; cassette	follow procedure above
<b>TRAY: CHANGE LTR</b>	Letter size is required; multi-purpose tray	follow procedure above
<b>CASS: CHANGE LGL</b>	Legal size is required; cassette	follow procedure above
<b>TRAY: CHANGE LGL</b>	Legal size is required; multi-purpose tray	follow procedure above
<b>CASS: CHANGE EXE</b>	Executive size is required; cassette	follow procedure above
<b>TRAY: CHANGE EXE</b>	Executive size is required; multi-purpose tray	follow procedure above
<b>CASS: CHANGE B5</b>	B5 size is required; cassette	follow procedure above
<b>TRAY: CHANGE B5</b>	B5 size is required; multi-purpose tray	follow procedure above

<i>Message</i>	<i>Meaning</i>	<i>Action</i>
<b>CASS: CHANGE MON</b>	Monarch size is required; cassette	follow procedure above
<b>TRAY: CHANGE MON</b>	Monarch size is required; multi-purpose tray	follow procedure above
<b>CASS: CHANGE COM</b>	Com-10 size is required; cassette	follow procedure above
<b>TRAY: CHANGE COM</b>	Com-10 size is required; multi-purpose tray	follow procedure above
<b>CASS: CHANGE DL</b>	DL size is required; cassette	follow procedure above
<b>TRAY: CHANGE DL</b>	DL size is required; multi-purpose tray	follow procedure above
<b>CASS: CHANGE C5</b>	C5 size is required; cassette	follow procedure above
<b>TRAY: CHANGE C5</b>	C5 size is required; multi-purpose tray	follow procedure above

### 8.3.5 Manual Paper Feed

Certain emulations permit specifying manual paper feed from the host computer. Also, you may select manual feed from the menu. The following message tell you to hand feed paper of a specific size. The alarm beeps and the printer goes Off Line. When you feed the appropriate paper into the multi-purpose tray and press [**ON LINE**], the message will be turned off and printing will continue. The operator has the option of pressing [**ERROR SKIP**], which turns off the message and causes the printer to continue printing.

If there is no paper in the multi-purpose tray, pressing [**ERROR SKIP**] turns off the message and causes the printer to feed paper from cassette and then displays the message again.

<i>Message</i>	<i>Meaning</i>	<i>Action</i>
<b>M-FEED A4</b>	A4 paper to be hand fed	follow procedure above
<b>M-FEED LTR</b>	Letter paper to be hand fed	follow procedure above
<b>M-FEED LGL</b>	Legal paper to be hand fed	follow procedure above
<b>M-FEED EXE</b>	Exec. paper to be hand fed	follow procedure above
<b>M-FEED B5</b>	B5 paper to be hand fed	follow procedure above
<b>M-FEED MON</b>	Monarch paper to be hand fed	follow procedure above
<b>M-FEED COM</b>	COM-10 size paper to be hand fed	follow procedure above
<b>M-FEED DL</b>	DL size paper to be hand fed	follow procedure above
<b>M-FEED C5</b>	C5 paper to be hand fed	follow procedure above

## 8.4 OPERATOR INFORMATION MESSAGES

Certain problems with communication with the host computer may be detected. Messages listed below provide information, but do not halt the printing process. The printer uses a default value if necessary. You may remove the message by pressing [ERROR SKIP]. Note that if there are multiple errors, the last one detected is displayed.

### 8.4.1 Host Communication problem

<i>Message</i>	<i>Meaning</i>	<i>Action/Status</i>
<b>LINE ERROR</b>	parity error in host data	follow procedure above
<b>INPUT OVERFLOW</b>	input buffer overflow	follow procedure above
<b>BAD FONT DATA</b>	downloaded font bad	downloaded font ignored
<b>BAD FONT CODE</b>	downloaded font in error	downloaded font ignored
<b>BAD CHAR CODE</b>	loaded character outside of index	downloaded font ignored

### 8.4.2 Function or Size Incompatibility

There are problems that occur when the host computer requests a function not provided or a function that requires more memory than is available.

<i>Message</i>	<i>Meaning</i>	<i>Status</i>
<b>PAGE OVERFLOW</b>	page buffer memory overflow	partial page currently composed is printed and ejected; remaining data for page is printed on next sheet
<b>CANNOT ROTATE</b>	insufficient memory to rotate font	font rotation aborted; printing continues using closest available font
<b>CANNOT DOWNLOAD</b>	insufficient memory to download font	font download is aborted; printing continues using closest available font
<b>CHAR NOT IN FONT</b>	received character not in currently selected font	blank space is printed for that character

### 8.4.3 Font Cartridge

The font cartridge is plugged into the printer. The operator may insert or withdraw a cartridge only when the DATA LED is off or blinking. The following messages acknowledge the change.

<i>Message</i>	<i>Meaning</i>	<i>Status</i>
<b>CART. CHANGED</b>	font cartridge is inserted or removed when DATA LED is off	message will remain for one second
<b>CART. CHANGED</b>	font cartridge is inserted when DATA LED is blinking	message will remain for one second



## 8.5 STATUS MESSAGES

Status messages are low priority messages that either indicate normal conditions or provide warnings that need not be acted upon immediately. These conditions should not occur when the printer is On Line. If they do, however, the alarm will beep and the printer will go Off Line. For some conditions however, there is the possibility of a condition occurring when the printer is On Line. If it does, the alarm will not sound and the printer will remain On Line.

<i>Message</i>	<i>Meaning</i>	<i>Action/Status</i>
<b>PRINTER WARMUP</b>	printer is warming up but service call not necessary	—
<b>ENGINE TEST</b>	operator has initiated a test of the printing	test in progress
<b>ENGINE RESET</b>	engine is being reset	—
<b>REINITIALIZE</b>	controller soft initialization	occurs when [RESET] is pressed or emulation is changed; may also occur when printer is on line if emulation is changed
<b>STATUS SHEET</b>	status sheet printout	occurs when [TEST] is held for at least 2 but less than 4 seconds
<b>FONT LIST</b>	font list printout	occurs when [TEST] is held at least 4 seconds but less than 6 seconds
<b>CLEANING PAPER</b>	cleaning paper printout	occurs when [TEST] is held for at least 6 seconds
<b>MP LOAD THE PAP</b>	waiting for cleaning paper	occurs after printing the cleaning paper
<b>NOW CLEANING</b>	feeding cleaning paper	occurs when the cleaning paper is being fed
<b>CLEANING DONE</b>	finished cleaning	occurs after cleaning; remaining for one second

<i>Message</i>	<i>Meaning</i>	<i>Action/Status</i>
<b>REPRINT LOST PGS</b>	retransmission of lost sheets	may occur after paper jamming
<b>ROTATING FONT</b>	wait for font rotation	may occur when on line
<b>PRINTER READY</b>	all condition normal and proper but printer is not operation; no unused data in controller or pages in printing	
<b>PRINTER ACTIVE</b>	all condition normal and proper; printer is in operation; no unused data in controller or pages in printing	

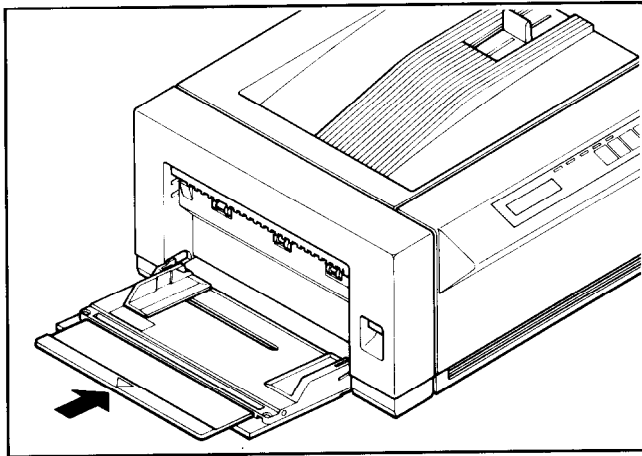
## 8.6 PAPER JAMMING

As paper travels from the multi-purpose tray (or cassette if installed) through the printing area and is ejected, it can jam at the following locations:

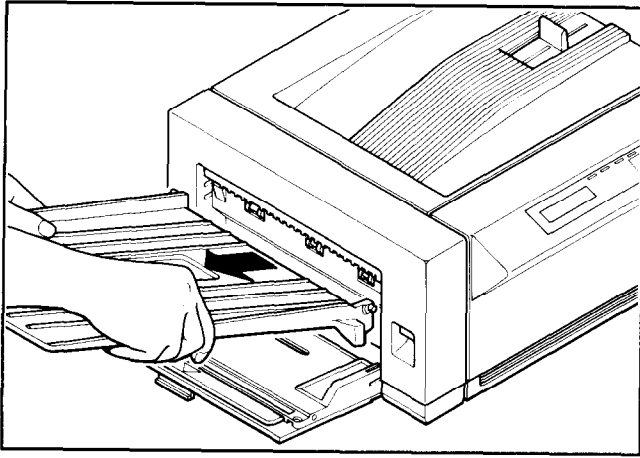
- A : Paper pick-up area (multi-purpose tray)
- B : Paper pick-up area with optional cassette paper feeder
- C : Fixing assembly area
- D : Face-up print delivery area
- E : Paper access door

### 8.6.1 Clearing paper jams

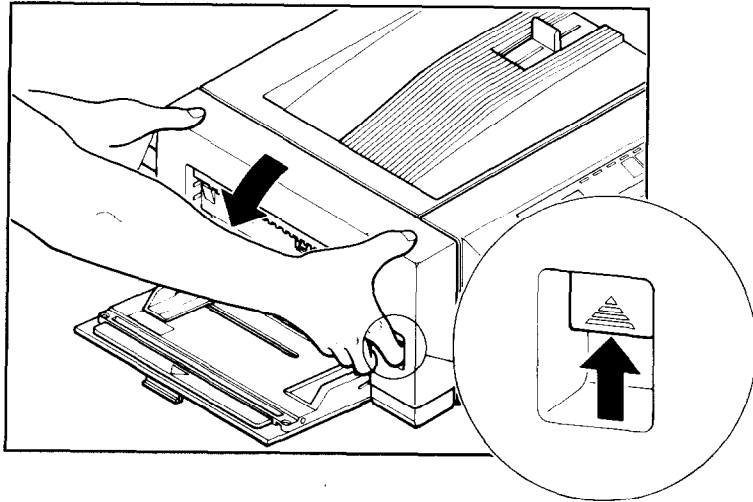
- 1) Remove any paper from the multi-purpose tray and close the extension tray. Leaving paper in the tray causes the paper position to shift during disposal of jam, resulting in further paper jams when printing is re-started.



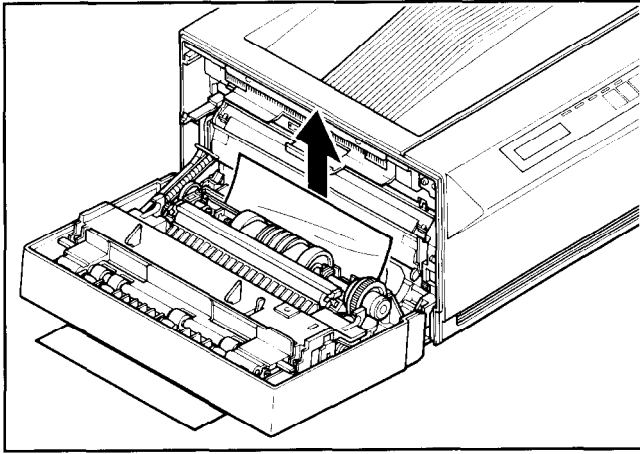
2) If the face-up tray is installed, remove it.



3) Open the side cover by pressing the release button upwards.

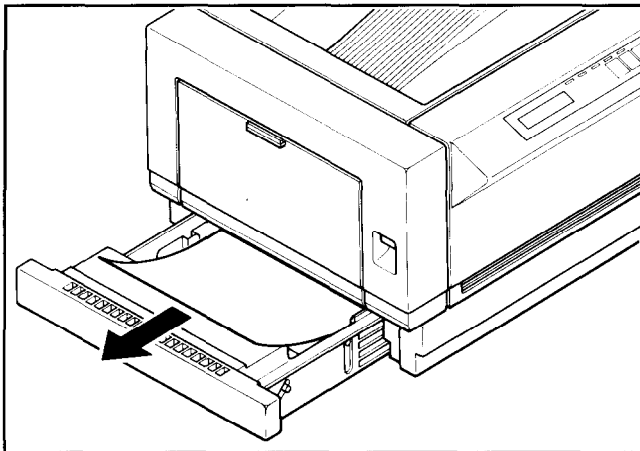


- 4) If you have been printing with the multi-purpose tray, check the paper pick-up area first. If there is a paper jam here, remove the paper by pulling it in the direction of the arrow.

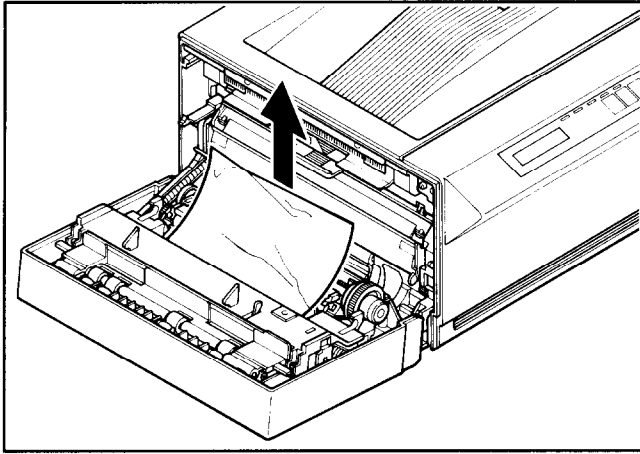


**CAUTION:** The fixing assembly area becomes extremely hot when the printer has been operated for some time. Never touch this area when the printer is open. Otherwise, personal injury may result.

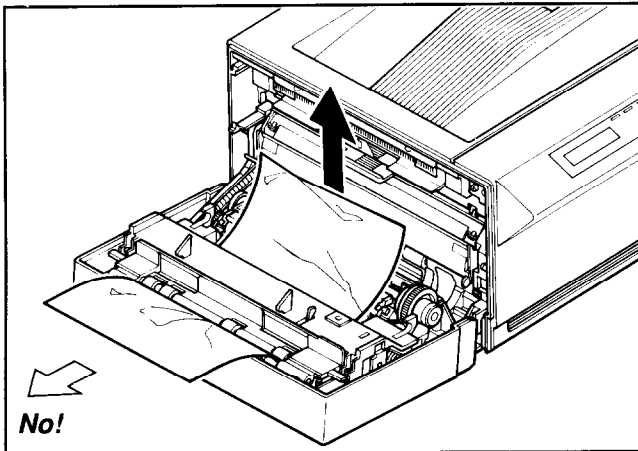
- 5) If you are using the cassette paper feeder, pull out the cassette and check the paper pick-up area. If there is a paper jam here, remove the jammed paper before replacing the cassette.



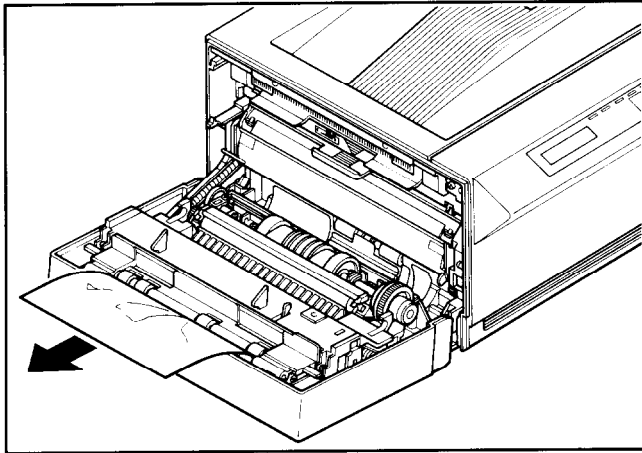
- 6) If paper is jammed in the fixing assembly area, pull the paper back into the printer and remove it.



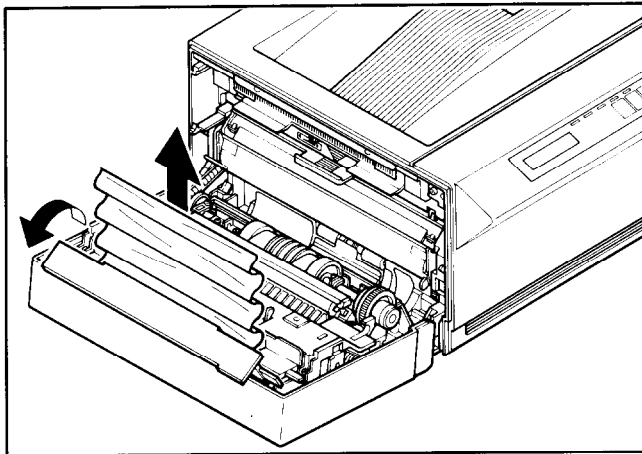
- 7) If the paper does not extend from the side of the fixing assembly area, pull it in the direction of the black arrow. If the paper is extracted in the opposite direction, infused toner can be deposited inside the printer, staining the back of subsequently printed pages.



- 8) If the paper has passed completely through the fixing assembly area, pull it out in the direction of the arrow.

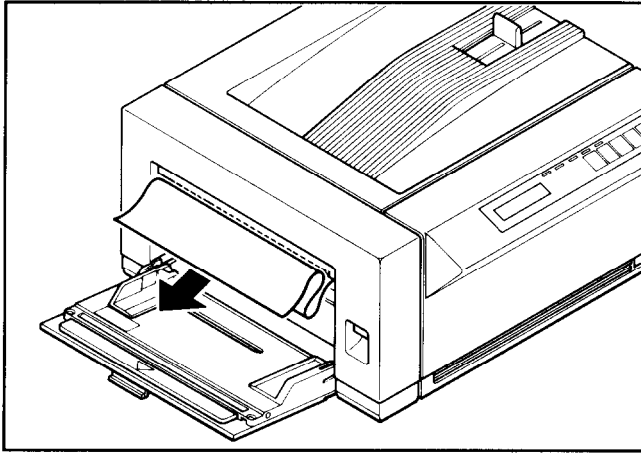


- 9) If a paper jam has occurred in the face-up delivery area, put the paper straight upwards to remove it.



- 10) After checking all the areas described here, close the side cover, replace the face-up tray (if it is being used), pull out the extension tray and refill the multi-purpose tray. Printing will restart.

11) If the jam is still present, a small torn piece of paper may be remaining inside the printer. Check the side upper door for any such paper.



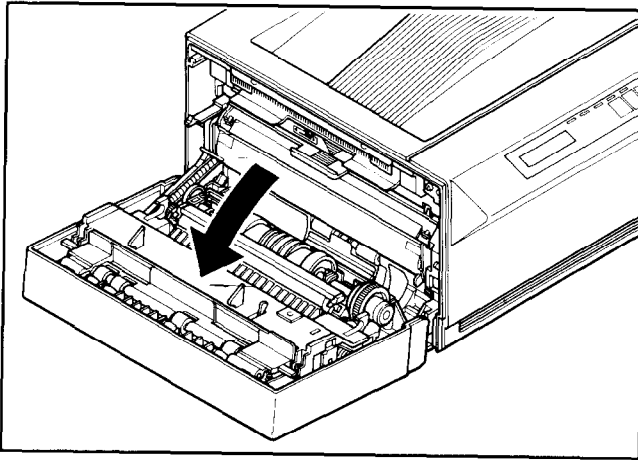


## 8.7 STREAKY PRINTS

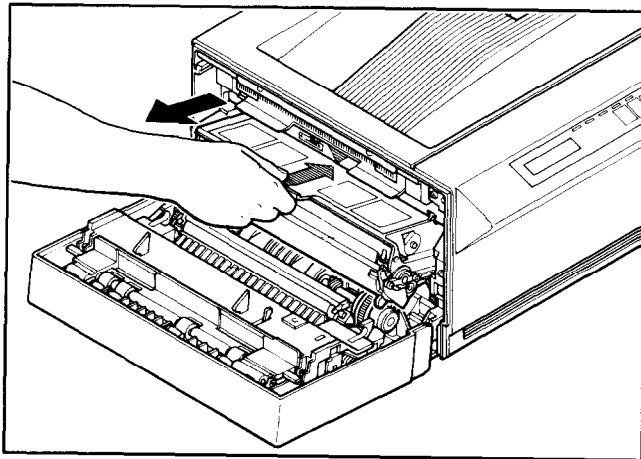
### 8.7.1 White Streaks

White streaks occur if the toner level is low and the toner inside the EP-L cartridge is not distributed evenly. They can be eliminated by re-distributing the toner.

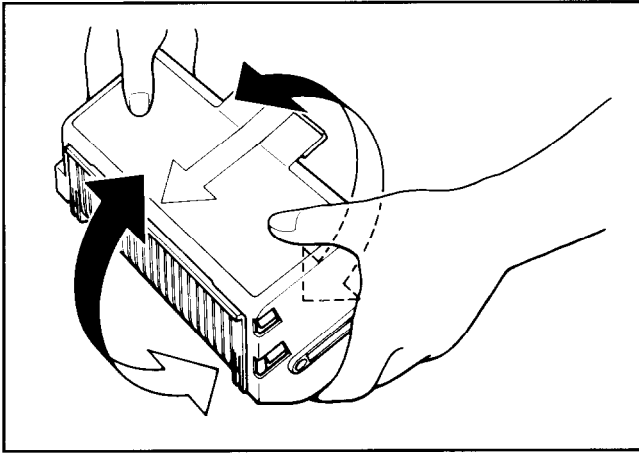
- 1) Leave the printer power on to prevent data corruption during a print operation. Remove any paper in the multi-purpose tray and close the extension tray. Press the release button upwards to open the side cover.



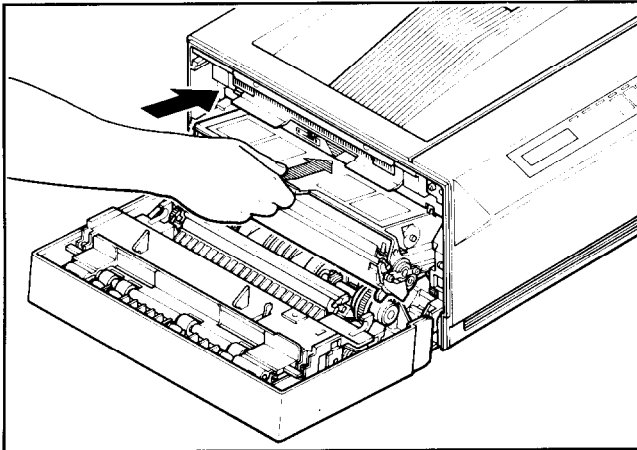
- 2) Remove the EP-L cartridge by pulling the tab.



- 3) Hold the EP-L cartridge as shown below, then rock it gently back and forth about 45 degrees in each direction, about 5 or 6 times. This will re-distribute the toner inside the cartridge.



- 4) Replace the EP-L cartridge in the printer, then close the side cover.



If vertical white streaks still appear after the toner inside the cartridge has been re-distributed, the cartridge needs to be replaced. See “2.2 Installing the EP-L cartridge” for replacing the cartridge.

## **8.7.2 Stains on Transparency Films**

Transparency films may sometimes show stains at either the top or bottom of the films. These stains may be caused by a dirty paper path or the flaw on the EP-L cartridge.

- Clean the fixing assembly. The fixing roller inside the fixing assembly may have been stain with toner. For cleaning, refer to “7.3 Cleaning the Fixing Assembly”. If the stains still appear, use a different type of transparency film.
- Replace the EP-L cartridge. The photosensitive drum in the cartridge may have been damaged due to exposure to the bright light. For replacing the cartridge, see “Installing the EP-L cartridge”.

# MEMO

The following options are available for the printer. This chapter provides brief explanation for these options. For details on installation and maintenance, please refer to their own manuals.

- Paper feeder
- Cassette (A4, Letter, Legal, Executive and Envelope)
- Expansion RAM board (1, 2 or 4MB)
- Font cartridge

## 9.1 PAPER FEEDER AND CASSETTES

The optional paper feeder is used with one of optional paper cassettes, to feed paper from the paper cassette into the printer. The paper feeder can be attached easily to the bottom of the printer using screws.

Cassettes are available following paper sizes: A4, Letter, Legal, Executive and Envelope. Once the paper feeder is installed, paper size can be changed easily by replacing the cassette.

Each cassette can hold up to 250 sheets of plain paper (paper weight:80 g/m<sup>2</sup>), and the envelope cassette holds about 25mm stack of envelopes or about 20 envelopes.

Types and sizes of paper can be used with the cassettes are listed below.

Type	Size	Weight	Print delivery
Plain paper	Letter, Legal, A4, B5, Executive	60 ~ 105g/m <sup>2</sup>	Face-down/up
Transparency films	Letter, A4		Face-up
Labels	Letter, A4		Face-up
Envelopes	98 × 190 - 162 × 250mm	60 ~ 90g/m <sup>2</sup>	Face-up

## 9.2 EXPANSION RAM BOARD

Three kinds of memory expansion board are available for the printer: a 1 MB RAM board, a 2 MB RAM board and a 4 MB RAM board. These RAM board permit printing of full page graphics. To tell whether a board is installed in your printer, watch the printer display screen during power-up. If no board has been installed, the display will read:

Memory Test 1 MB

If a memory board has been already installed, the display will give the total amount of memory available (for example):

Memory Test 5 MB

## 9.3 FONT CARTRIDGE

Fonts can be added to the printer by installing an optional font cartridge. The font cartridge is installed in the slot beneath the control panel of the Star LaserPrinter 4III.

Insert the font cartridge with the arrow label facing up. If the font cartridge is inserted upside down, the cartridge and/or printer may be damaged.

**CAUTION:** The Font Cartridges for LaserPrinter 8 series cannot be used with this printer.

## 10.1 SPECIFICATIONS

- Type  
Laser beam page printer
- Engine  
Resolution: 300 × 300 dots per inch  
Speed: 4 pages per minute (A4)  
Warm up: under 1 minute (at 68°F or 20°C)
- Emulation  
PCL 5 (HP LaserJet III)  
HP-GL/2
- RAM  
Resident : 1 megabyte  
Optional: 1, 2, or 4 megabytes on RAM Expansion Board
- Host Interface  
Serial: RS-232C  
Parallel: Centronics
- Default Settings : Changeable using the control panel
- Fonts  
Resident: Courier  
LinePrinter  
CG Times  
Univers  
Option: Font cartridges

- Paper

Manual feed: 97 × 148mm ~ 216 × 356mm

Cassette feed (Option)

Legal/Letter/Executive/A4/B5/Envelope

Output Face down: approx. 50 sheets

Face up: approx. 20 sheets

Weight: 60 ~ 105g/m<sup>2</sup> (plain paper)

Special: OHP film  
Adhesive labels  
Postal cards  
Envelopes

- Printing Area: top and left margins: 2.5mm

bottom margin: 4.5mm

right margin: 4.0mm

- Acoustic noise: stand by: max. 43dB

printing: max. 53dB

- Environment

Operating: 50°F to 90°F (10°C to 32.5°C)

20 to 80% relative humidity, no condensation

Standby: 32°F to 95°F (0°C to 35°C)

10 to 80% relative humidity, no condensation

Storage: -4°F to 140°F (-20°C to 60°C)

10 to 95% relative humidity, no condensation

- Power Source: 100/115V (50/60Hz) for North America and Japan

200/240V (50Hz) for Europe, Asia and

Oceania

- Power Consumption: max. 550W (when operating)

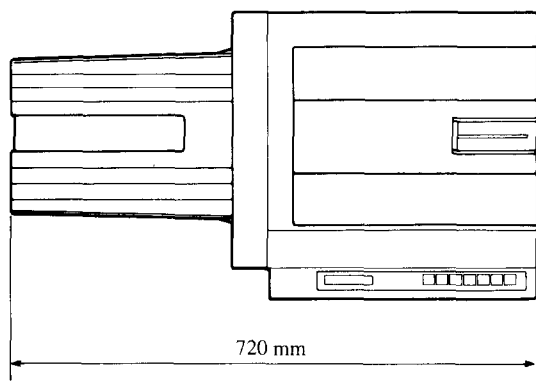
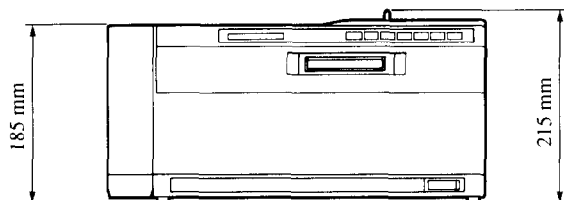
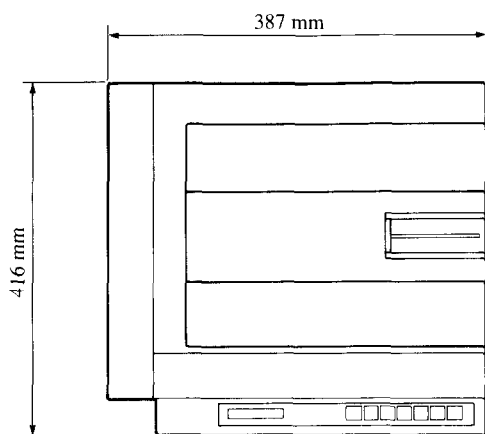
- Weight : Print engine 10kg

Cassette 2.4kg

EP-L cartridge 1kg (toner and drum cartridge)



- Dimensions



## 10.2 RELIABILITY

- Suggested monthly print volume  
2500 prints
- Definition of failure  
Any loss of operation that requires calling a service person.  
Operation errors and installation failures are not included.
- Product life  
Five years or 150,000 prints, whichever comes first.
- Mean time between failures  
4,000 hours or less
- Mean time to repair  
30 minutes or less
- Paper feed reliability

Type	Frequency
Paper	1/2000 or less
Multifeed	1/1000 or less
Others	1/2000 or less
- Toner cartridge life (EP-L cartridge)  
3,500 prints at 5% print duty (A4/Letter size)

## 10.3 PIN FUNCTIONS ON INTERFACES

- Parallel Interface

Pin No.	Signal Name	Direction	Function
1	STROBE	IN	Goes from High to Low (for at least 0.5 microseconds) when data are valid.
2	DATA1	IN	Eight-bit character data. DATA8 is the most significant bit; DATA1 is the least significant bit. High is logic 1 and Low is logic 0.
3	DATA2	IN	
4	DATA3	IN	
5	DATA4	IN	
6	DATA5	IN	
7	DATA6	IN	
8	DATA7	IN	
9	DATA8	IN	
10	ACK	OUT	A low pulse acknowledges receipt of data.
11	BUSY	OUT	Low when the printer is ready to accept data.
12	PAPER OUT	OUT	Goes High if the printer runs out of paper.
13	SELECTED	OUT	High when the printer is on line
14~15	N/C		Unused
16	SIGNAL GND		Signal ground.
17	CHASSIS GND		Printer's chassis ground, isolated from signal ground.
18	+5VDC	OUT	External supply of +5VDC
19~30	GND		Twisted pair return signal ground level.
31	RESET	IN	Low input resets the printer to its power-on condition.
32	ERROR	OUT	Goes low to signal that the printer cannot print due to an error condition.
33~36	N/C		Unused

- Serial interface

Pin No.	Signal Name	Direction	Function
1	GND	—	Chassis ground.
2	TXD	OUT	Carries data from the printer.
3	RXD	IN	Carries data to the printer.
4	RTS	OUT	On when the printer is ready to receive data.
5~6	N/C		Unused.
7	GND	—	Signal ground.
8~19	N/C		Unused.
20	DTR	OUT	On when the printer is ready to receive data.
21~25	N/C		Unused.

# Glossary

**ASCII (as' kee)** — a standardized and commonly accepted numerical code that represents letters, numbers, and symbols, as well as command sets. ASCII stands for *American Standard Code for Information Interchange*.

**Baud**— a measure of the speed at which information is transmitted. The baud rate, which is set for serial transmissions, is approximately the number of characters transmitted per second multiplied by 10.

**Byte** — a series of 8 bits that represents one character.

**Centronics interface** — a standard wiring configuration for parallel data transmission. *Centronics* is often used as a synonym for the parallel standard developed by Centronics Inc.

**Character Set** — the complete set of characters available in a font.

**Data Bits** — the number of bits in a transmitted byte that actually contains data.

**EEPROM** — Electrically Erasable Programmable Read Only Memory. It has an internal switch to permit a user to erase the contents and write new contents into it by means of electrical signals.

**EP-L Cartridge** — A disposable type of process cartridge which contains the photosensitive drum and toner.

**Emulation** — behaving like something else. The Star LaserPrinter 4III can emulate, or behave like the HP LaserJet III laser printer.

**Expansion RAM board** — An available option that is easily attached to the LaserPrinter 4III to expand its RAM to a maximum of 5 MB. Three kinds of memory expansion board are available: a 1MB RAM board, a 2MB RAM board and a 4MB RAM board.

**Face-down delivery** — A type of paper delivery in which the paper is ejected from the printer with the printed side facing downward.

**Face-up delivery** — A type of paper delivery in which the paper is ejected from the printer with the printed side facing upward. Face-up delivery is used for printing envelopes, transparency films and labels.

**Fixing assembly** — The assembly used to fix the toner on to the paper or other material using heat and pressure in printing process. It is located inside the printer and it gets extremely hot during the operation.

**Font** — a set of letters, numbers, and symbols of the same typeface design.

**Font cartridge** — Font cartridges contain fonts which can supplement the available resident fonts of the printer to increase the variety of typefaces.

**Glyph** — a graphic symbol that conveys information.

**Handshaking** — in data communication, the automatic acknowledging by the receiving device of information that has been sent to it, either by signals and the interface (“hard”) or by software control (“soft”).

**Hex dump** — conversion by the printer of ASCII symbols into their hexadecimal (base 16) equivalent. This is useful for programmers or other users who want to troubleshoot the communications between the computer and the printer.

**HMI (Horizontal Motion Index)** — refers to dot spacing in the smallest increment that can be made in the horizontal or *x* axis.

**Interface** — a hardware plug that allows cable connections of two devices. For instance, a cable from a computer parallel port to a printers parallel port.

**Landscape** — printing on paper across its wider dimension, such as a spreadsheet that is 11 in. wide and 8.5 in. high; landscape pictures are usually wider than they are tall.

**NV RAM** — NV(Non-volatile) Random Access Memory is the permanent storage by the Star LaserPrinter 4III of settings programmed from the front panel, even when the power is turned off. When the printer is turned on again, these settings become the current settings.

- Parallel** — a communications interface that sends or receives 8 bits of information plus control signals at a time.
- Parity** — a bit in a serial information that allows a computer and printer to automatically check for errors in transmission.
- Pitch** — the width of a typeface measured in characters per inch.
- Point** — the height of a type font, measured in points, or 1/72 of an inch.
- Portrait** — printing on paper across its narrower dimension, such as a letter on paper that is 8.5 in. wide and 11 in. high; portrait pictures are usually taller than they are wide.
- Proportional type** — a typeface in which some letters take up more room on a printed line than others, such as *W* taking more space than *I*. The spacing of the letters is also intended to enhance the esthetic quality of the printed page.
- RAM** — Random Access Memory, or memory that can be used to store information temporarily, such as text or printing configurations. RAM-stored information is erased when the power is turned off.
- ROM** — Read Only Memory, or memory in which information can be stored permanently, whether the power is on or off.
- RS-232** — a wiring configuration for sending and receiving serial transmissions, including data and acknowledgments between sending and receiving equipment (“handshaking”).
- Serial** — a communications interface that sends or receives 1 bit of information at a time at a specified baud rate.
- Stop Bit** — 1 or 2 bits used by the computer for the timing of a transmission of information.
- Stroke weight** — the intensity of a printed character, such as *light*, *medium*, or *bold*. Normal printing is medium weight.
- Symbol Set** — the entire list of ASCII letters, numbers, and symbols used with a particular language, such as English or Spanish.
- VMI (Vertical Motion Index)** — refers to line spacing, the smallest increment that can be made in the vertical or y axis.

# MEMO



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