Printer Parts

printer cover latch

AC inlet

LocalTalk/Serial
interface connector
(option)

Parallel C interface
connector

Type-B interface
connector
(option)

Parallel B interface
connector

printer cover

grooves for imaging cartridge

control panel

fuser

front cover

paper stopper

power switch

EPSON®

Laser Printer

EPL-N1200

Reference Guide

Declaration of Conformity

According to ISO/IEC Guide 22 and EN 45014

Manufacturer: SEIKO EPSON CORPORATION
Address: 3-5, Owa 3-chome, Suwa-shi,
Nagano-ken 392 Japan

Representative: EPSON EUROPE B.V.
Address: Prof. J. H. Bavincklaan 5 1183
AT Amstelveen
The Netherlands

Declares that the Product:

    Product Name: Laser Printer
    Type Name: EPL-N1200
    Model: L250A

Conforms to the following Directive(s) and Norm(s):

    Directive 89/336/EEC:
             EN 55022 Class B
             EN 50082-1
               IEC 801-2
               IEC 801-3
               IEC 801-4
             EN 61000-3-2
             EN 61000-3-3

    Directive 73/23/EEC:
             EN 60950

August 1996

M. Hamamoto
President of EPSON EUROPE B.V.

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Getting Started

The EPSON EPL-N1200 printer combines high performance and reliability with a wide range of features.

To get started with your laser printer, please:

❏ Read the safety information, laser printer precautions, and important safety instructions in this section.

❏ Use your *Getting Ready!* guide to set up and test your new printer.

See this guide for detailed information about your printer.

About This Guide

This guide contains information about using your printer. For information about installing and setting up the printer, see the *Getting Ready!* guide.

Chapter 1, "Paper Handling," contains information on loading paper. Also consult this chapter when you need information about printing on special paper.

Chapter 2, "Understanding Your Printer," describes how to use the printer's control panel.

Chapter 3, "Making Printer Driver Settings," describes the features of the Windows printer driver packed with your printer. If you need information on how to install the driver, see the *Getting Ready!* guide.

Chapter 4, "Options," gives step-by-step instructions for installing the options available for the printer.

Chapter 5, "Remote Control Panel Utility," describes the printer settings that can be modified with the Remote Control Panel utility. Read this chapter if you are not able to modify a printer setting from your software.

Chapter 6, "SelecType," contains detailed information on the settings you can make in SelecType. Read this chapter if you are not able to modify a printer setting from your software.

Chapter 7, "Troubleshooting and Maintenance," gives helpful information for what to do if you encounter a printer error and provides instructions on how to maintain your printer.

Appendix A, "Technical Specifications," contains the technical specifications about the printer.

Appendix B, "Symbol Sets," lists the symbol sets available in each emulation mode with the tables of the characters for each set.

Appendix C, "Command Summary," lists the commands that can be embedded in print jobs to control the printer. This appendix is intended for advanced users only.

Appendix D, "Working with Fonts," describes the steps you need to follow to add more fonts and lists the available fonts with samples.

Appendix E, "Map of SelecType Menus," lists the SelecType menus and the order in which you access them. This appendix is useful when you use SelecType.

About Your Printer

Your printer is the latest in EPSON's advanced line of laser printers. It emulates the Hewlett-Packard® LaserJet 4™ (LJ4) printer, allowing you to print using the wide variety of software programs that support HP LaserJet printers.

The printer's 600-dpi (dots per inch) resolution is enhanced by EPSON's Resolution Improvement Technology (RITech), which smoothes the jagged edges of diagonal lines in both text and graphics. This gives your documents a clean, crisp look that contributes to a professional appearance.

The printer is easy to install and use. You simply set up the printer, connect it to your computer, and install the printer driver as described in the *Getting Ready!* guide.

The printer supports ECP mode in Windows 95. ECP mode is useful for high-speed data transfer and bidirectional communication with your computer.

Features

The printer comes with a full set of features that contributes to ease of use and consistent, high-quality output. The main features are described below.

High-quality printing

Your printer provides 600-dpi printing at a speed of up to 12 pages per minute. You'll appreciate the professional print quality produced by your printer and its quick processing speed.

Wide variety of fonts

The printer comes with a selection of 14 scalable TrueType® fonts, 31 LaserJet-compatible scalable fonts, and one bitmap font in LJ4 emulation mode to provide you with the fonts you need to create professional-looking documents. The fonts included with the printer are listed in Appendix D.

Toner Save Mode

To reduce the amount of toner used in printing documents, you can print rough drafts using the Toner Save Mode.

Options

The printer comes with two built-in bidirectional parallel interfaces and 2 MB of memory, which can be expanded up to 64 MB. You can also install an additional Type-B serial, coax, or twinax interface. The 500-Sheet Lower Paper Cassette (C81262✽: A4, C81263✽: Letter), automatically feeds up to 500 A4 or letter size sheets without reloading. Using two lower paper cassettes (the maximum), you can preload up to 1,250 sheets of paper with the MP Tray (250 sheets). See Chapter 4 for more information on printer options.

ENERGY STAR Compliance

As an International ENERGY STAR Partner, EPSON has determined that this product meets the International ENERGY STAR Program guidelines for energy efficiency.

The International ENERGY STAR Program promotes the voluntary development of energy-efficient computers, printers, and other peripheral equipment.

About Making Printer Settings

To print, you will need to make some printer settings. This printer offers four way to make printer settings:

❏ Printer driver

❏ Remote Control Panel utility

❏ OneTouch modes

❏ SelecType

If you use a Windows application, use the printer driver that came with the printer to make printer settings. For details on your printer driver, see "Making Printer Driver Settings" in Chapter 3.

If you use a DOS application, make the print settings in the application. For details, see your DOS application manual.

If you cannot make all the settings you need through the Windows printer driver or DOS application, use SelecType (OneTouch modes) or Remote Control Panel utility. The OneTouch modes are part of SelecType.

Printer Driver

Use the printer driver to easily and conveniently make new printer settings. Most users may never need to use anything besides their application software and the printer driver to make printer settings. You can access the printer driver through an application's Print command or directly through the Printers folder/program group in your operating system. Be aware that settings you make in your application overide other settings. See "Making Printer Driver Settings," Chapter 3, for more information.

OneTouch Modes

Use the OneTouch modes on the printer control panel to make printer settings when you cannot make a setting in your application software. The OneTouch modes are the easiest way to make several basic settings from the printer's control panel; however, your software application and printer driver in some cases override these settings. See "Using the OneTouch Modes" on page 6-20 for more information.

SelecType

Use the SelecType buttons and display on the printer control panel to make printer settings when you cannot make a setting in your application software. SelecType has more detailed options than the OneTouch modes but may be slower depending on the settings you make. See "Using SelecType," Chapter 6, for more information.

Remote Control Panel utility

Use the Remote Control Panel utility when the printer is not easily accessible and you want to make SelecType settings. This utility allows you to make SelecType settings from your computer. It only works in DOS. See "Using the Remote Control Panel Utility," Chapter 5, for more information.

Safety Information

Laser safety

This printer is certified as a Class 1 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 by the laser is completely confined within protective housings and external covers, the laser beam cannot escape from the machine during any phase of user operation.

For European users

United Kingdom

The EPL-N1200 is a page printer which utilizes a semiconductor laser.

There is no possibility of danger from the laser, provided the printer is operated according to the instructions in the guides provided.

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

> **Warning:**
> *Use of controls or adjustments or performance of procedures other than those specified in this guide, may result in hazardous radiation exposure.*

This is a semiconductor laser. The maximum power of the laser diode is 5.0×10^{-4} W and the wavelength is 780 ± 20 nm.

Denmark

Advarsel
Usynlig laserstråling ved åbning, når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for stråling.

Klasse 1 laser produkt der opfylder IEC825 sikkerheds kravene.

Finland and Sweden

EPL-N1200 on lasertoiminen sivukirjoitin. Laserista ei aiheudu käyttäjälle vaaraa, kun kirjoitinta käytetään käyttöohjeiden mukaisesti.

Laserin aiheuttama säteily jää kokonaisuudessaan suojarakenteiden sisäpuolelle, eikä lasersäde pääse laitteen ulkopuolelle sit käytettäessä.

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

VARNING!
Om apparaten används på annat sätt än i denna bruksanvisning specificerats, kan användaren utsättas för osynlig laserstrålning, som överskrider gränsen för laser
klass 1.

LUOKAN 1 LASERLAITE
KLASS 1 LASER APPARAT

Kirjoittimen taakse kuvan osoitamiin paikkoihin on kiinnitetty tarrat, jotka osoittavat, että kirjoitin on B.S.7192 ja IEC 825-määräysten mukainen luokan 1 laserlaite. Jos kirjoittimen kuori poistetaan, näkyviin tulee kolmas, alla oleva tarra.

Norway

Advarsel
Dersom apparatet brukes på annen måte enn spesifisert i denne bruksanvisning, kan brukeren utsettes for unsynlig laserstråling som overskrider grensen for laser klasse 1.

Dette er en halvleder laser. Maksimal effeckt til laserdiode er 5.0×10^{-4} W og bolgelengde er 780 ± 20 nm.

CDRH regulations

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. Compliance is mandatory for products marketed in the United States. The label shown below indicates compliance with the CDRH regulations and must be attached to laser products marketed in the United States.

This laser product conforms to the applicable
requirement of 21 CFR
Chapter I, subchapter J.

   SEIKO EPSON CORP.
   Hirooka Office
   80 Hirooka, Shiojiri-shi, Nagano-ken,
   Japan
MANUFACTURED:

Laser safety labels

> **Warning:**
> *Use of controls, adjustments, or performance of procedures other than those specified in this guide may result in hazardous radiation exposure.*

Your printer is a Class 1 laser product as defined in IEC 825 specifications. The label shown below is attached in countries where required.
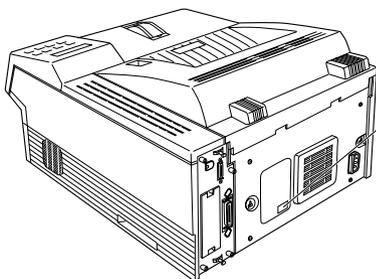
LASER KLASSE 1 NACH IEC 825
CLASS 1 LASER PRODUCT TO IEC 825
KLASSE 1 LASER PRODUKT I.H.T. IEC 825
LUOKAN 1 LASERLAITE

Internal laser radiation

Max. Radiation Power $\qquad$ 5.0×10^{-4} W

Wave Length $\qquad$ 780 ± 20 nm

This is a Class IIIb Laser Diode Assembly that has an invisible laser beam. The printer head unit is NOT A FIELD SERVICE ITEM. Therefore, the printer head unit should not be opened under any circumstances.

For Denmark, Finland, Sweden, and Norway users

An additional laser warning label is affixed to the inside of the printer, as shown below.
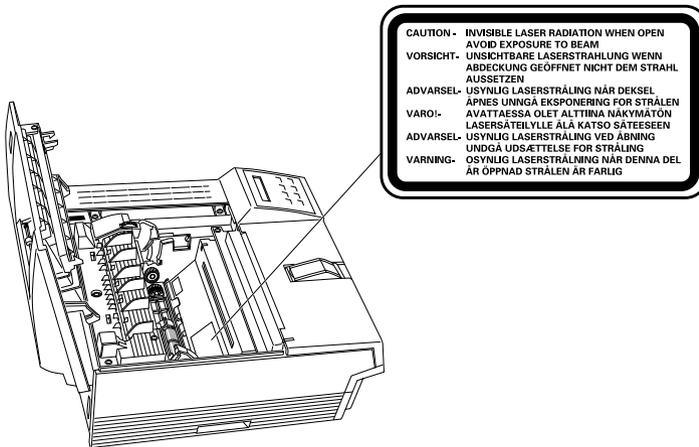
Ozone safety

Ozone emission

Ozone gas is generated by laser printers as a by-product of the printing process. Ozone is produced only when the printer is printing.

Ozone exposure limit

The recommended exposure limit for ozone is 0.1 parts per million (ppm) expressed as an average time-weighted concentration over an eight (8) hour period.

The EPL-N1200 laser printer generates <0.01ppm for 8 hours of continuous printing when considering a closed room of approximately 1000 cu ft (8' × 10' × 12').

Minimize the risk

To minimize the risk of exposure to ozone, you should avoid the following conditions:

❏ Use of multiple laser printers in a confined area (see above)

❏ Operation in conditions of extremely low humidity

❏ Poor room ventilation

❏ Long, continuous printing together with any of the above

Printer location

The printer should be located so that the exhaust gases and heat generated are:

❏ Not blown directly into the user's face

❏ Vented directly out of the building whenever possible

Laser Printer Precautions

This printer uses laser technology. The following list of precautions applies whenever you open the printer cover. Even if you are familiar with other types of printers, be sure to follow these precautions carefully to ensure safe, efficient operation.

❏ Be careful not to touch the fuser, which is marked CAUTION HOT SURFACE. If the printer has been in use, the fuser can be very hot.

CAUTION HOT SURFACE ATENCION EXTERIOR CALIENTE
VORSICHT HEISS ATTENTION SURFACE CHAUDE
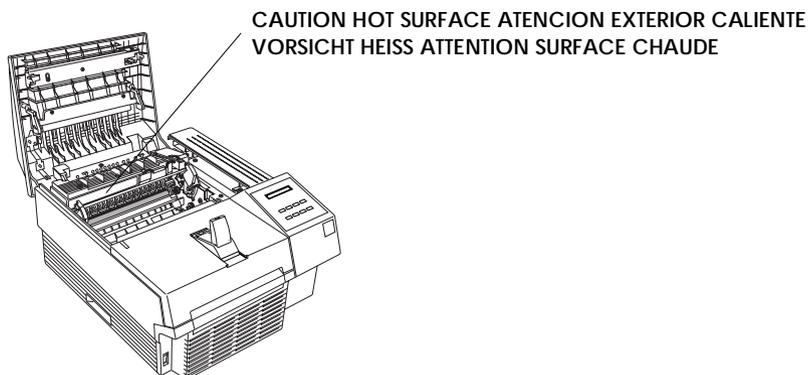
❏ Avoid touching the components inside the printer unless instructed to do so in this guide.

❏ Never force the printer's components into place. Although the printer is designed to be sturdy, rough handling can damage it.

❏ Be sure not to scratch the surface of the drum. When you remove the imaging cartridge from the printer, always set the unit on a clean, smooth surface. Also, avoid touching the drum, since oils from your skin can permanently damage its surface and may affect print quality.

❏ Do not turn the cartridge upside down or stand it on its sides.

❏ Protect the light-sensitive drum from exposure to light. Avoid exposing the imaging cartridge to room light any longer than necessary. Do not open the drum's protective cover. Overexposing the drum may cause abnormally dark or light areas to appear on the printed page and reduce the service life of the drum.
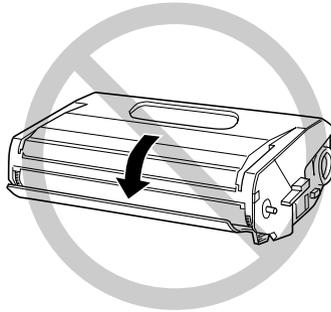
❏ When handling the cartridge, always set it on a clean, smooth surface.

❏ Do not attempt to modify or take apart the cartridge. It cannot be refilled.

❏ Try not to touch the toner and avoid all contact with your eyes.

❏ Do not use a cartridge for at least one hour after moving it from a cool to a warm environment.

❏ Avoid touching the glass in front of the laser beam; otherwise, print quality may decline.
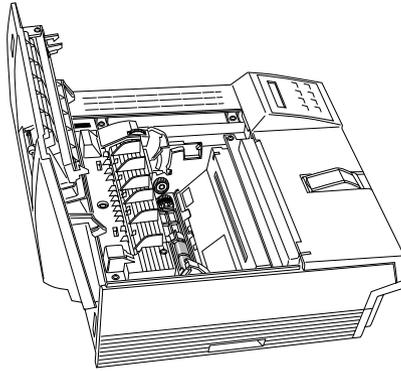
To get the best print quality, do not store the imaging cartridge in an area subject to direct sunlight, dust, salty air, or corrosive gasses (such as ammonia). Avoid locations subject to high temperatures or humidity or abrupt changes in temperature or humidity. Also, be sure to keep the consumable components out of the reach of children.

Hinweis:
Die Geräteanschlußleitung muß den einshlägigen Normen genügen.
Es muß eine dreiadrige Leitung verwendet werden.
Die Anshlußleitung darf nicht leichter als H05VV-F order H05VVH2-F sein.

Maschinenlärminformations-Verordnung-3. GSGV, 18. 01. 1991: Der arbeitsplatzbezogene schalldruckpegel beträgt 70 dB (A) oder weniger gemäß ISO 7779.

Important Safety Instructions

Read all of these instructions before operating your printer.

❏ Follow all warnings and instructions marked on the printer.

❏ Unplug this printer from the wall outlet before cleaning.
Use a damp cloth for cleaning and do not use liquid or aerosol cleaners.

❏ Do not use this printer near water.

❏ Do not place the printer on an unstable cart, stand, or table.

❏ Slots and openings in the cabinet and the back or bottom are provided for ventilation. Do not block or cover them. Do not put the printer on a bed, sofa, rug, or other similar surface or in a built-in installation unless proper ventilation is provided.

❏ Use the type of power source indicated on the label. If you are not sure of the type of power available, consult your dealer or local power company.

❏ If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet.

❏ Do not put your printer where the cord will be walked on.

❏ If you use an extension cord, make sure that the total of the ampere ratings on the products plugged into the extension cord does not exceed the extension cord ampere rating. Also, make sure that the total of all products plugged into the wall outlet does not exceed 15 amperes.

❏ Never push objects of any kind through cabinet slots as they may touch dangerous voltage points or short out parts that could result in a risk of fire or electric shock. Never spill liquid of any kind on the printer.

❏ Except as specifically explained in this guide, do not attempt to service this product yourself. Opening or removing those covers that are marked "Do Not Remove" may expose you to dangerous voltage points or other risks. Refer all servicing in those compartments to service personnel.

❏ Unplug this printer from the wall outlet and refer servicing to qualified service personnel under the following conditions:

A. When the power cord or plug is damaged or frayed.

B. If liquid has been spilled into it.

C. If it has been exposed to rain or water.

D. If it does not operate normally when the operating instructions are followed. Adjust only those controls that are covered by the operating instructions since improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to normal operation.

E. If it has been dropped or the cabinet has been damaged.

F. If it exhibits a distinct change in performance, indicating a need for service.

For United Kingdom Users

Use of options

Epson (UK) Limited shall not be liable against any damages or problems arising from the use of any options or consumable products other than those designated as Original EPSON Products or EPSON Approved Products by Epson (UK) Limited.

Safety information

Warning: *This appliance must be earthed. Refer to rating plate for voltage and check that the appliance voltage corresponds to the supply voltage.*

Important: *The wires in the mains lead fitted to this appliance are coloured in accordance with the following code:*

Green and yellow—Earth
Blue—Neutral
Brown—Live

If you need to fit a plug:
As the colours of the mains lead of this appliance may not match any coloured markings used to identify the terminals in a plug, please proceed as follows:

❏ The green and yellow wire must be connected to the terminal in the plug which is marked with the letter E or the Earth symbol (⏚).

❏ The blue wire must be connected to the terminal in the plug marked with the letter N.

❏ The brown wire must be connected to the terminal in the plug marked with the letter L.

If damage occurs to the plug, replace the cord set or consult a qualified electrician.

Replace fuses only with a fuse of the correct size and rating.

Warnings, Cautions, and Notes

![Warning icon] ***Warnings*** *must be followed carefully to avoid bodily injury.*

![Caution icon] ***Cautions*** *must be observed to avoid damage to your equipment.*

Notes *contain important information and useful tips on the operation of your printer.*

Chapter 1
Paper Handling

1

Introduction

You can feed paper into your printer from the MP
(Multi Purpose) Tray or from an optional lower paper cassette.
This chapter describes how to

❑ load paper

❑ switch the paper source

❑ print on special media, such as labels or envelopes.

The following section, "Loading Paper," describes the steps
required to load paper.

Loading Paper

This section covers how you load regular paper using the MP
Tray. To load paper in an optional lower paper cassette, see
page 4-5.

Note:
If the weight of your paper is not between 60 to 90 g/m²
(16 to 24 lb), decrease the number of sheets you load.

Loading paper for automatic feeding in the MP (Multi Purpose) Tray

This section describes loading a stack of regular paper. For
instructions on loading paper one sheet at a time, see
"Manually loading paper" on page 1-4.

You can load up to 250 sheets of paper in the MP Tray.

1. Open the front cover.

2. Fan a stack of paper and tap the edges of the stack on a flat surface to even it up.

3. Adjust the paper guides to match the size of your paper. Load the stack of paper into the MP Tray with the printable side up.
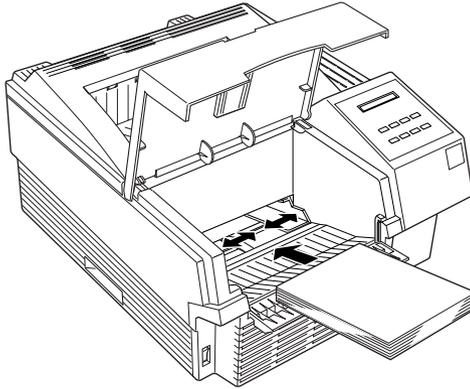
4. Close the front cover.

5. Slide the paper stopper to match the size of your paper.
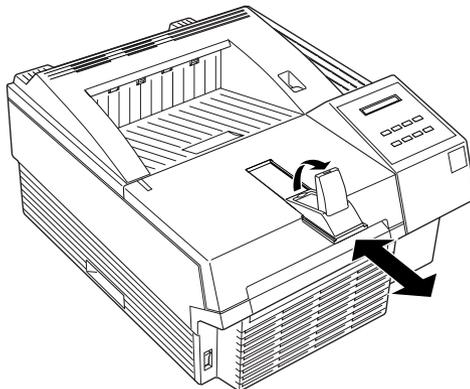
Manually loading paper

Manually loading paper is useful when you want to check the print quality after each page is printed.

You can manually load paper ranging in size from 92×148.5 mm (3.6×6 inches) to 216×356 mm (8.5×14 inches). You can also load up to 10 envelopes in the MP Tray.

Note:
Because thickness and surface characteristics are especially important for envelopes, test a sample for print quality and proper feeding before you buy a large number of envelopes.

This loading procedure is almost the same as the procedure for automatic paper feeding, except you load paper sheet-by-sheet in the MP Tray, send print data to print the first page, and press the On Line button to print each following page. To load paper manually, follow the steps below.

1. Access the printer driver menus in one of the following ways:

   Note:
   If you have not installed the printer driver, see your Getting Ready! *guide for installation instructions.*

   ❑ For access through your application software, click the Print or Printer Setup command in the File menu. You also may need to click Setup, Options, Properties, or a combination of these buttons.

   ❑ For direct access through Windows 3.1 and Windows NT, double-click the Printers icon in the Control Panel dialog box. Next, click Epson EPL-N1200 in the Installed Printers list box, and then click the Setup button.

❑ For direct access through Windows 95, click Start, point to Settings, and click Printers. Next, right-click the Epson EPL-N1200 icon and click Properties in the menu that appears. Be sure to right-click the printer icon.

2. The Print Settings menu appears. Click on the arrow next to the Paper Source box to see the list of sources available. Click Manual feed.

3. Click the Paper tab to see the Paper menu. Click the arrow next to the Paper Size box to see the list of available paper sizes.

    Scroll through this list and click on the paper size that matches the paper you will load in the printer.

4. Open the front cover. Remove any paper remaining in the MP Tray.

5. Adjust the paper guides to match the paper size you are using. Insert a sheet into the MP Tray with the printable side up, as far as it will go. Close the front cover.
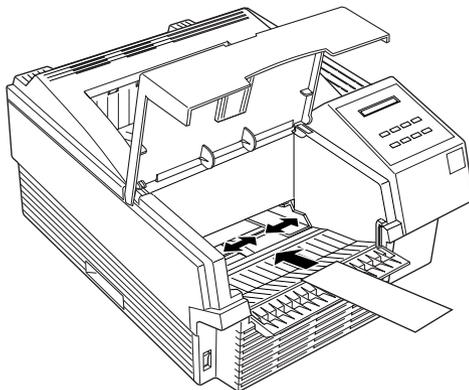
6. Send a print job from your application. The control panel display shows Manual Feed and the selected page size.

7. Press On Line to print. A sheet of paper is loaded and printed.

8. Insert another sheet and press On Line again to print the next page of print data, if necessary. Repeat this step for every page to be printed.

Selecting the paper size

By default, the printer driver is set up for A4 size paper to be loaded in the Multi Purpose Tray. If you load paper of a different size, you may need to change the paper size setting using one of the following methods.

Using the printer driver:
Choose the paper size in the Print Settings tab, or the Paper tab. For more information on using the printer driver, see Chapter 3.

Using the Remote Control Panel utility:
Bring up the Remote Control Panel by typing EPRCPO at the DOS prompt. Select the appropriate emulation from the main Remote Control Panel window and click the Page Setup button. Then choose the paper size.

Using the SelecType mode:
For information on changing the paper size in SelecType mode, see Chapter 6.

Note:
If you want to use a custom-size paper from 92 × 148.5 mm (3.6 × 6 inches) to 216 × 356 mm (8.5 × 14 inches), use the MP Tray and make the size setting according to one of the following methods.

❑ *Access the printer driver (see Chapter 3), click inside the paper size box on the paper menu, and type an original name for your paper. When you finish adjust the Width, Height, and Measurement Unit settings to match your custom paper, press the* Enter *key and your custom paper size will be saved.*

❑ *Access SelecType mode (see Chapter 6) and set page size to* CTM *(custom).*

❑ *Access the Remote Control Panel utility (see Chapter 5) and set page size to* Custom.

Choosing Paper

Note:
Since the quality of any particular brand or type of paper may be changed by the manufacturer at any time, EPSON cannot guarantee the quality of any type of paper. Always test samples of paper stock before purchasing large quantities or printing large jobs.

You can use many kinds of media including stock paper, envelopes, labels, and overhead projector transparencies. The printer feeds most types of media automatically from the MP Tray. This section describes the paper feed and delivery choices and how to select and load paper.

The type of paper you use in your printer can affect the quality of your printed output. The smoother the paper you use, the smoother and sharper your printing looks.

For best results, store your paper supply in its original wrapper. Your printout can be marred by moisture absorbed in the paper. Do not store paper in a humid or damp environment.

Below are some recommendations for selecting paper and other print media for the printer.

Labels

Use only labels designed for laser printers or plain-paper copiers.

To prevent the adhesive from coming into contact with printer parts, always use labels that completely cover the backing sheet so that no gaps occur between the individual labels.

You should test the label sheet for leaking adhesive by pressing a sheet of paper on top of a sheet of labels. If the paper sticks, do not use the labels.

Envelopes

Load envelopes with the print surface facing up. The printing quality on envelopes may be irregular because different parts of an envelope have different thicknesses. If the printing is too light, adjust the print density with the printer driver, the Remote Control Panel utility, or SelecType.

Colored paper

You can use colored paper as long as it meets the weight limits shown in the paper specifications. Do not, however, use coated paper (paper to which a clear or colored coating has been added).

Transparencies

You can use overhead projector transparencies and adhesive drafting film if they are made for use with plain-paper copiers or laser printers. Use the MP Tray to print on these materials.

Chapter 2
Understanding Your Printer

2

This chapter tells you how to:

❑ Control the printer from your computer

❑ Use the control panel

Getting acquainted with your printer's control panel may help you get more from your printer. For more information on the SelecType settings availabe from the control panel, including the OneTouch modes, see Chapter 6.

Appendix E shows all SelecType menu categories and options. It can be used as a guide whenever you use SelecType.

The Control Panel

Overview

The printer control panel gives you easy control over most common printer operations. The panel is made up of three elements: a liquid crystal display, indicator lights, and buttons. The display and indicator lights tell you the current status of the printer, and you can use the buttons to select printer settings and functions. However, software settings override these settings.

Display

The display shows the following:

❑ Status messages, such as Warming Up, indicate the printer's current status.

❑ Error messages, such as Paper Out, identify maintenance procedures you must perform or error conditions you need to correct.

❑ SelecType options, such as Emulation, allow you to control printer mode, font selection, paper handling, and several other printer functions.

For solutions to error messages and maintenance information, see Chapter 7. For full information on SelecType, see Chapter 6.
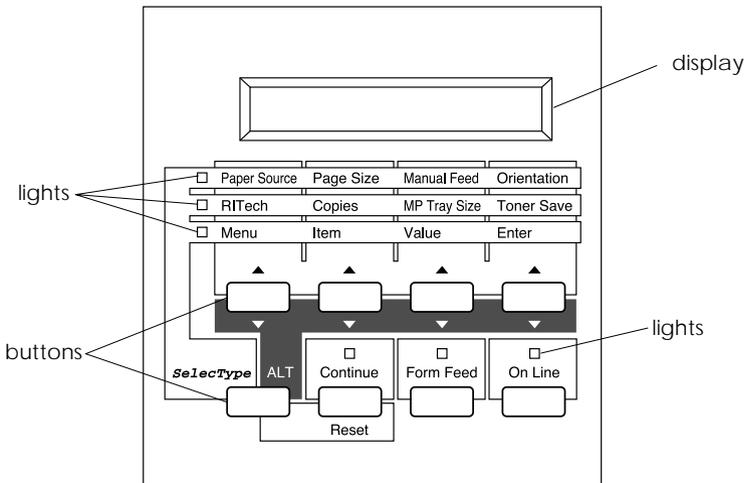
Indicator lights

On Line — On when the printer is on line, indicating the printer can receive and print data. When the printer is off line, this light is off. The light flashes as the system switches between on-line and off-line status.

Form Feed — On when data is received and stored in the printer's buffer but not yet printed. Flashing indicates the printer is processing data. When no data remains in the printer buffer (the section of memory reserved for receiving data), this light is off.

Continue — Flashes when an error is detected or a maintenance procedure must be performed. At the same time, an error or maintenance message appears on the display.

OneTouch mode 1 — On when the printer is in OneTouch mode 1. For details on the OneTouch modes, see page 6-20.

☐ Paper Source	Page Size	Manual Feed	Orientation

OneTouch mode 2 — On when the printer is in OneTouch mode 2. For details on the OneTouch modes, see page 6-20.

☐ RITech	Copies	MP Tray Size	Toner Save

SelecType — On when the printer is in SelecType mode. See Chapter 6 for more information.

☐ Menu	Item	Value	Enter

Buttons
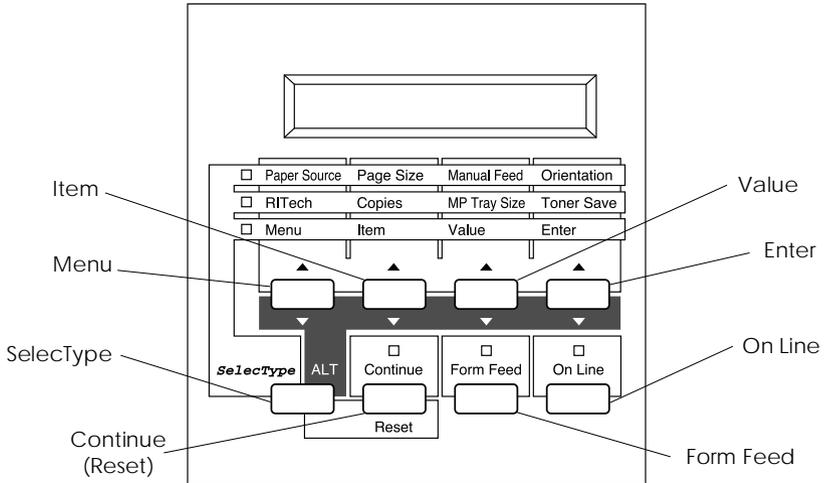
On Line	Switches the printer between on line and off line status.
SelecType (ALT)	Selects a OneTouch mode or SelecType mode. Press this button once to enter OneTouch mode 1. Press this button again to enter OneTouch mode 2. Press this button once more to enter SelecType mode. Pressing this button while in SelecType mode returns the printer to on line status. See Chapter 6 for more information.
ALT + Menu, Item, Value, or Enter	Advances the parameter or setting shown to the next value in each group. If used in combination with the ALT button in SelecType mode, it returns the parameter or setting shown to its previous value.

Menu	Selects the corresponding OneTouch mode setting listed above this button, or selects the SelecType menu if in SelecType mode. Press this button when the printer is on line to enter SelecType mode.
Item	Selects the corresponding OneTouch mode setting listed above this button or selects the function available within the current menu after entering the SelecType mode.
Value	Selects the corresponding OneTouch mode option listed above this button, or selects the parameter available within the current item, after entering the Item of the SelecType mode.
Enter	Selects the corresponding OneTouch mode option listed above this button, or accepts the setting currently shown on the display as a new setting when in SelecType mode. Press this button two times when the printer is on line to print the status sheet.
Form Feed	When the printer is off line and data remains in the printer's memory, prints out the data and clears the buffer.
Continue (Reset)	Enables the printer to resume printing after certain maintenance-required conditions or errors have been cleared. If the Continue light is flashing, read the status or error message on the display and correct the problem as described in Chapter 7. If used in combination with the ALT button, the printer is reset.

Making Printer Driver Settings

3

This chapter describes the available settings for your Microsoft® Windows® printer driver. For information on installing the printer driver and making basic settings, see the *Getting Ready!* guide that came with your printer.

A printer driver is a custom-designed program that works with the software on your computer to send codes that run (or "drive") your printer. These software codes select the graphic resolution, orientation, copies, and other features of the document you are printing.

Using the Printer Driver

Printer driver settings are divided among four menus that are identified by the tabs on the tops of the menus: Print Settings, Paper, Printer SelecType, and Printer Options. Each menu has a variety of settings that affect printing as described in "Driver Setting Descriptions" on page 3-7.

The Driver Settings window, shown below, contains all the settings you can make through the driver.
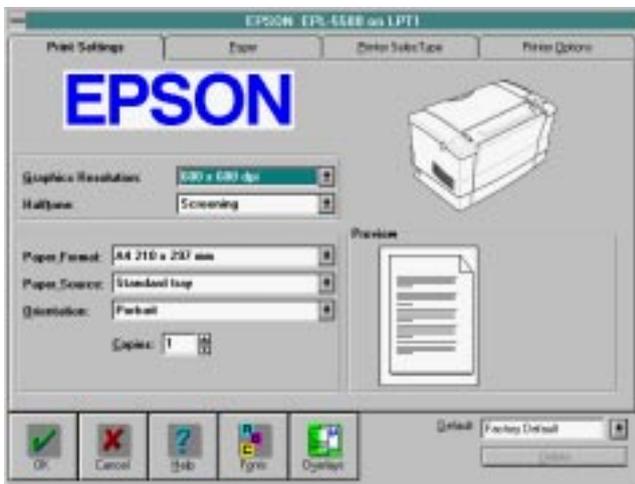
Understanding the required settings

Before printing, you must make a few required settings. These are listed below. Choose the settings to match your document requirements. For more detailed information, see "Driver Setting Descriptions" on page 3-7.

Print Settings Menu

Graphic Resolution	Sets the degree of detail in your printout. The numbers stand for the horizontal and vertical dots per inch (dpi). The higher the numbers, the more detailed the printout.
Halftone	Sets the pattern, or method, your printer uses to print graphics. This is also called grayscale.
Paper Format	Indicates the size of the paper to be printed.
Paper Source	Tells the printer which tray to take paper from.
Orientation	Sets the direction of printing on the page, portrait or landscape. This page is portrait.
Copies	Sets the number of copies to be printed.

Accessing the driver menus

Printer driver menus contain organized groups of print options. There are three ways to access the driver menus, choose the one that best suits your needs.

❑ For access through your application software, click the Print or Printer Setup command in the File menu. You also may need to click Setup, Options, Properties, or a combination of these buttons.

❑ For direct access through Windows 3.1 and Windows NT, double-click the Printers icon in the Control Panel dialog box. Next, click Epson EPL-N1200 in the Installed Printers list box, and then click the Setup button.

❑ For direct access through Windows 95, click Start, point to Settings, and click Printers. Next, right-click the Epson EPL-N1200 icon and click Properties in the menu that appears. Be sure to right-click the printer icon. Select the Details tab at the top of the window, and then click the Setup button.

When you access the Driver Settings window, the Print Settings menu appears. To bring another menu to the front of the window, click the tab for that menu near the top of the screen.

How to Make settings on the menus

You can make settings in any of the following ways:

❑ Click the option button or name.

❑ Click the check box.

❑ Click the scroll box on the scroll bar and drag it.

❑ Click on the pointer to open a drop-down list, and then highlight an item on the list to select it.

❑ Click the text box, then enter a number or text.

❑ Hold down the Alt key and type the underlined character representing the setting.

If you need more information, see your Windows *User's Guide*.

Saving settings

When you have selected the settings you want and you're ready to print, click the OK button. This exits you from the driver setup and saves your selections. Your settings stay in effect until you make additional changes and choose the OK button again.

If you want to save your new settings, after making the choices you want, type a unique name for the new settings in the Default box on the Print Settings menu and click OK. Then when you are ready to print, open the Default drop-down list by clicking the arrow next to the Default box and select the name of the settings you want to make.

Deleting settings

If you decide you want to delete your settings, select the name of the settings that you want to delete in the Default box on the Print Settings menu and click the Delete button.

Restoring the driver default settings

If you decide you want to use the original factory settings, select Driver default in the Default drop-down list.

Getting help from the printer driver

If you are ever unsure about the meaning or purpose of an item in a window, do one of the following:

❑ Hold the mouse pointer over an item in the window for a couple of seconds. A short description of that item appears.

❑ Click the Help button. This displays help information for the current window.

Exiting the printer driver

There are two ways to exit the Driver Settings window:

❑ Click the OK button at the bottom of the window to save all the settings you made and exit the printer driver.

❑ Click the Cancel button to ignore all the current changes you made and exit the printer driver.

Accessing the Font Manager window

Click the Fonts button at the bottom of the Driver Settings window to access the Font Manager window. See page 3-17 for more detailed information about the Font Manager.

Accessing the Softtray Manager window

Click the Overlays button at the bottom of the Driver Settings window to access the Softtray Manager window. See page 3-25 for more information about the Softtray Manager.

Accessing the Overlay Manager window

Click the Overlays button at the bottom of the Driver Settings window to access the Softtray Manager window. Then click the Manage Overlays button on the Overlay menu to display the Overlay Manager. See page 3-27 for more information about the Overlay Manager.

Driver Setting Descriptions

This section describes the settings you can make with the printer driver and provides a general overview of each menu.

Printer Settings menu

Use this menu to select general print settings. When you access the Driver Settings window, the Print Settings menu appears by default.

Graphics Resolution

Use this drop-down list to select the resolution you want to use for printing graphics. However, your choices for graphics resolution depend on your selection from the Device Resolution drop-down list in the Printer SelecType menu. If you set Device Resolution to High (600 dpi), you can choose 600 × 600 dpi, 300 × 300 dpi, or 150 × 150 dpi in the Graphics Resolution list. If you set the Device Resolution to Low (300 dpi), you can choose 300 × 300 dpi, 150 × 150 dpi or 75 × 75 dpi from the Graphics Resolution list.

Halftone

Use this drop-down list to select a halftoning method when printing graphics. The following settings are available in this list.

Dithering
This method uses the standard Windows dithering patterns, and is the one you should normally select.

Screening (default)
This method controls color intensity by using variable dot sizes. It is similar to the rastering method used to produce newspaper images. You should use this method for scanned images, for bitmap printing, or when your output will be photocopied.

Error Diffusion
You should use this method for photographic images or equivalent drawings. This setting is not available if you select EPSON GL/2 in the Graphics Mode drop-down list in the Printer SelecType menu.

Paper Format

Use this drop-down list to select the paper size you have loaded in the current paper source. See the section below for more information. The illustration next to the list changes according to the paper size you select. Your choices are:

A4	210×297 mm
Envelope C6	114×162 mm
A5	148×210 mm
Letter	8.5×11 inches
Executive	7.25×10.5 inches
Legal	8.5×14 inches
International B5	176×250 mm
JIS B5 Paper	
Envelope DL	
Commercial-10	
Monarch	
C5	6.36×9.02 inches
US half	
Government Legal	
Government Letter	
F4	

Paper Source

Use this drop-down list to select the paper source. The usual selections available in this list are: Multi Purpose Tray (default), Manual feed, and Auto. However, if you install the optional lower paper cassette and select Lower paper cassette or 2 Lower paper cassettes in the Feeder drop-down list of the Printer Options tab, your choice of paper sources will be: Lower Cassette [2 or 1] or MP/Lower Cassette [2 or 1].

Orientation

Use this drop-down list to select the orientation: either Portrait
(default) or Landscape.

Copies

Use the scroll arrows or click the text box and enter a number
using your keyboard to specify the number of copies you
want. You can enter from 1 to 999.

Paper menu

Use this menu to select duplex (double-sided) printing, paper
size, and printable area.

Duplexing

Use this drop-down list to select the duplex mode for double-sided printing. The selections available in this list are: Duplex OFF (default), Top Binding, and Left Binding.

Top Binding is useful to bind the printout at the top, while Left Binding is useful for binding on the left side. Duplexing tells the printer to print every other page; then, after you flip over and reinsert the pages, the printer prints the alternate pages on the back of the previously printed pages.

Paper Size

Use this drop-down list to select a paper size for printing. You can use any of the standard paper sizes that are automatically listed by the printer driver, or you can edit the list to create your own selection of paper sizes.

For more information on how to create your own selection, see "Adding a new size to the Paper Size list" on page 3-12.

Remove

Click this button to delete the paper size that is selected in the Paper Size list. You can use this button to shorten the list to contain only the paper sizes you need.

Restore

Click this button to restore the Paper Size list so it includes all of the preset paper sizes.

Size

The two boxes in this block show the vertical and horizontal dimensions of the paper selected in the Paper Size list. You can also input values into these boxes to change the dimensions.

Measurement Unit

Use this drop-down list to select the unit of measurement you want to use. The settings available in this list are: cm (**default**), inch, Pixel, Pica, Point.

As soon as you change the measurement unit, the values in the Size block change automatically to match.

Adding a new size to the Paper Size list

Use the following procedure to specify a custom paper size of your own and add it to the Paper Size list.

1. In the Driver Settings window, click the Paper tab.

2. Move the cursor over the Paper Size box, click once, and input the name of the paper size.

3. Use the Measurement Unit drop-down list to specify the unit of measurement you want to use.

4. Click on the dimension boxes in the Size block and input values for the horizontal and vertical dimensions of the paper you are adding.

5. Click the OK button at the bottom of the window to save the new paper size.

Printer SelecType menu

Use this menu to set resolution, toner usage, power consumption, and other options.

Graphics Mode

Use this drop-down list to select a graphics mode. The selections available in this list are: Raster - internal Fonts, EPSON GL/2, and Pure Raster.

Device Resolution

Use this drop-down list to select device resolution. The available settings are: High (600 dpi) (default) and Low (300 dpi). For information on how these settings affect your printout, see "Graphics Resolution" on page 3-8.

RITech

Use this drop-down list to select the RITech (Resolution Improvement Technology) setting you want to use. The settings available in this list are: Dark, Medium (default), Light, Off. For normal printing, the default is sufficient.

Density

Adjust the print density to make the printout darker or lighter. The settings available in this list are: Darkest, Dark, Medium (default), Light, and Lightest.

Show all font names

When this checkbox is selected, EPSON fonts are added to your application's font lists. If you deselect this option, the printer's internal fonts will not be displayed in the font list.

BiDi Mode

Use this drop-down list to enable the bidirectional interface to send printer status back to the PC. Leave the default value set to "Bidi OFF" if your system hangs when you try to print.

Time-out

Use this drop-down list to specify how long the printer should wait for data before terminating the current print job. You can specify a time as short as 5 seconds or as long as 300 seconds.

Toner Save Mode

Use this drop-down list to switch the Toner Save Mode on and off. When the Toner Save Mode is switched on, the printer consumes less toner but print quality is reduced.

Low Power Consumption

When Low Power Consumption is turned on, the printer goes into a standby mode after being idle for 30 minutes. It takes about 60 seconds for the printer to warm up again.

Auto Continue

Use this drop-down list to switch Auto Continue on and off. This permits the printer to automatically recover from a print overrun or insufficient memory error. The printer then continues printing after a wait of five seconds.

When Auto Continue is off, you must press the button on the printer control panel to resume printing. In most cases, leave Auto Continue off so you are aware of the error messages and can make the necessary corrections. You might want to set Auto Continue on when printing long jobs or when you are away from the printer for long periods.

Printer Options menu

Use this menu to set printer options such as available memory and paper source.

Memory

Use this drop-down list to check the amount of memory installed in your printer.

Page Protect

Use this list to make use of the Page Protect function. This allows you to allocate additional printer memory for printing data, as opposed to receiving it. You may need to use Page Protect if you are printing a highly complex page and do not have sufficient memory. If a memory error occurs, change the setting to ON and reprint your data. This reduces the amount of memory reserved for receiving data so your computer may take longer to send the print job, but it will allow you to print complex jobs. Page Protect usually works best if set to Auto. You will need to increase your printer's memory if memory errors continue to occur.

Note:
Changing the Page Protect setting reconfigures the printer's memory which causes any downloaded fonts to be erased.

Image Optimum

Use this drop-down list to reduce the amount of graphics data when the data reaches the memory limit, allowing complex documents to be printed. When this mode is on, the graphics quality is reduced. The options are: OFF, ON, and Auto.

Feeder

Use this drop-down list to select the feeder. The selections available in this list are: Standard (default), Lower Paper Cassette, and 2 Lower Paper Cassette.

Installed Cartridge

Not available with this printer.

Advanced...

Click here to print a status sheet or a font sample.

Font Manager Window
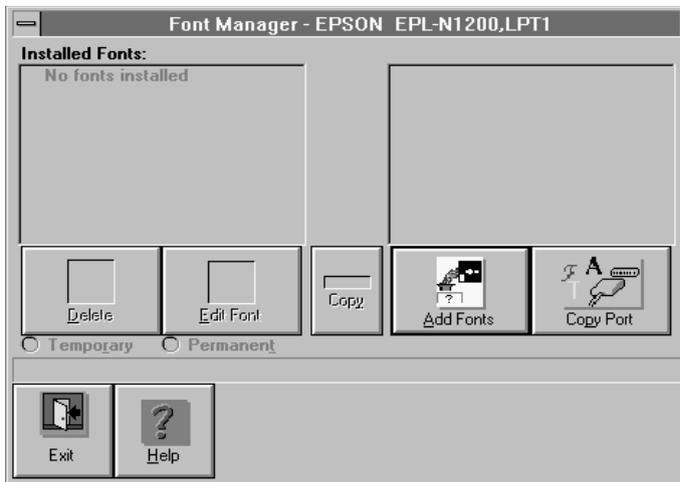
The Font Manager window handles the installation and all administration of printer fonts. Fonts of various formats can be added, deleted, and copied using this window. You can also specify whether the font being installed is temporary or permanent.

Installed Fonts

This list shows all the fonts that are already installed. Fonts whose names are marked with a check are permanent. Whenever you highlight a font name in this list, the font's format, character set, name, and other information appear in the status line.

Use the procedure described under "Adding fonts" on page 3-20 to install fonts and add their names to the Installed Fonts list.

Available Fonts

This list is next to the Installed Fonts list and shows all fonts that are currently available for installation. Each font name includes an icon or abbreviation that indicates the format of that font. Whenever you select a font by highlighting its name in this list, the font's format, character set, name, and other information appear in the status line.

Delete

Click this button to delete (de-install) the font whose name is highlighted in the Installed Fonts list.

Edit Font

Click this button to display the Edit Font window to edit the highlighted font in the Installed Fonts list. You can use the Edit Font window to change the name of the font, the font description, and ID.

Temporary/Permanent

Click on these radio buttons to specify whether the font selected in the Installed Fonts list is temporary or permanent. Permanent fonts remain in printer memory until power is switched off. Temporary fonts must be downloaded to the printer for each print job.

Add Fonts

Click this button to open the Add Fonts window. Use this window to select the drive and directory that contains the fonts you want to add. For details on using this window, see "Adding fonts" on page 3-20.

After selecting the directory that contains the fonts you want to add, click OK to return to the Font Manager window. The names of the fonts contained in the directory you selected will appear in the Available Fonts list.

You can also exit the Add Fonts window by clicking Cancel. This returns you to the Font Manager window.

Copy Port

Click this button to open the Copy Port window. Use this window to copy or move installed fonts to another printer port. For details on using this window, see "Copying and moving fonts to another printer port" on page 3-23.

Exit

Click this button to exit the Font Manager window and return to the Driver Settings window.

Adding fonts

Use the following procedure to install soft (downloadable)
fonts. You can also specify certain fonts as being permanent,
which means they are kept in printer memory until power is
switched off.

1. Open the Font Manager window.

2. Click Add Fonts.

    Initially, the list in the Add Fonts window contains drive
    names.

3. Select the drive that contains the fonts you want to add by
    double-clicking on its drive name, or by highlighting the
    drive name and then clicking OK.

    The list changes to show all of the directories contained on the
    drive you selected, in addition to the drive names.

4. Choose the name of the directory that contains the fonts you
    want to add and highlight its name in the list.

    To open a directory, double-click on the directory name, or
    highlight the directory name and then click OK.

    The directory name followed by [..] on the list indicates the
    previous directory. By selecting [..], you can backstep
    through the directories.

5. After you highlight the name of the directory that contains
    the fonts you want to add, click OK to return to the Font
    Manager window.

    The names of the fonts contained in the directory you selected
    using the Add Fonts window are shown in the Available
    Fonts list.

6. Select the fonts you want to install by highlighting their names in the Available Fonts list.

   As soon as you highlight a font name, the arrow button between the two lists points to the left, indicating the fonts will be transferred to the Installed Fonts list.

7. After selecting all of the fonts you want to install, click on the left-pointing arrow button to begin the installation.

   The fonts are copied into a directory named PCLFNT, which is created by the Font Manager. If you want to use a different directory name, specify the name you want to use before clicking OK.

8. Now you can specify permanent fonts (fonts that stay in printer memory until you switch power off). Select a font name in the Installed Fonts list by highlighting its name, and click on the Permanent radio button.

   Note:
   You must specify permanent fonts one-by-one. If you select more than one font name in the Installed Fonts list, the Temporary *and* Permanent *radio buttons will become dimmed on the display (which indicates they cannot be used). If you want to make more than one font permanent, you must repeat the above step as many times as necessary. Permanently installed fonts may make printing quicker, but they also reduce the amount of memory available for printing graphics and complex pages.*

9. After you finish installing the fonts, click Exit to return to the Driver Settings window.

Deleting fonts

The following procedure deletes fonts from printer memory. It also gives you the option of deleting the font file from the temporary file on your computer's hard disk. Unless you plan to use a font later, it is a good idea to remove it from the hard disk to free up storage space.

1. Open the Font Manager window.

2. Select the font you want to delete by highlighting its name in the Installed Fonts list.

3. After selecting the font, click Delete.

   A message appears asking if you want to delete the selected font from your computer's hard disk.

4. Click Yes to delete the selected font from both printer memory and your computer's hard disk.

   Selecting No deletes the selected font from printer memory but leaves it on the hard disk. The font name will not appear in any menus, but the font will continue to take up hard disk space.

5. After you finish deleting the font, click Exit to return to the Driver Settings window.

Note:
The above delete operation does not remove factory default fonts from printer memory.

Changing a font name

This feature comes in handy when you want to add a font that has the same name as an already installed font. You should change the name of the installed font before adding the new one.

1. Click the Fonts button at the bottom of the Driver Settings window to open the Font Manager window.

2. Select the font whose name you want to change by highlighting its name in the Installed Fonts list.

3. After selecting the font, click Edit Font.

4. Type in the new name for the selected font in the window that appears.

5. After typing in the new name, click OK.

   The new name appears in the Font Manager's Installed Fonts list and in all Windows applications.

6. After you finish renaming the font, click Exit to return to the Driver Settings window.

Copying and moving fonts to another printer port

Use the following procedure to copy or move installed fonts to another printer port when you are using more than one EPSON printer or if you change the port to which your printer is connected.

1. Click the Fonts button at the bottom of the Driver Settings window to open the Font Manager window.

2. Click Copy Port.

   A window appears with a list of ports.

3. Select the port to which you want to copy or move the fonts by highlighting the port name in the list.

4. After selecting a port name, click OK to return to the Font Manager window.

    Move and Copy buttons have been added. Also, the Copy Port button is now a Close Port button.

    You can use the Close Port button to abort the font copy/move operation at any time.

5. Select the fonts you want to copy or move by highlighting their names in the Installed Fonts list.

6. After selecting the fonts, click Move or Copy.

    Clicking Move causes the fonts to be moved to the list on the right for the port you selected. The move operation deletes the fonts from the Installed Fonts list.

    Clicking Copy causes the fonts to be copied to the list on the right for the port you selected. The copy operation leaves the fonts in the Installed Fonts list.

7. After you finish copying or moving the fonts, click Exit to return to the Driver Settings window.

Softtray Manager Window

If your application program does not include a softtray management function, use the Softtray Manager window to merge your document files with a previously defined overlay and assign the overlay to specified pages of the document.

The button functions for this window are described below.
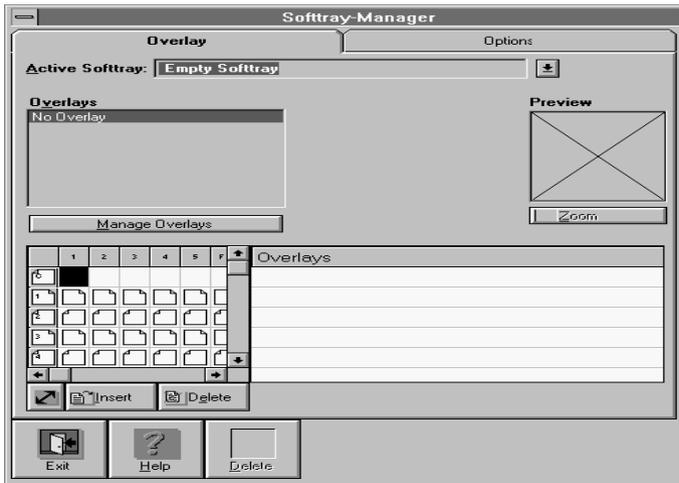
Note:
If your application software has a Header/Footer function, use that instead of Softtray Manager and Overlay Manager.

Manage Overlays

Click this button to switch to the Overlay Manager window.

Zoom

Click this button to show a full-page preview of the selected page.

Delete

Click this button to delete an overlay.

Exit

Click this button to close the Softtray Manager window and return to the previous window.

Creating a softtray

After creating an overlay, follow these steps to create and assign a softtray. See the next section for details about overlays.

1. In the Driver Settings window, click the Overlays button; you see the Overlay menu of Softtray Manager.

2. Click on the page or pages (represented by page icons) that you want the overlay to print on. If you want to assign the overlay to print on a range of pages, click on the Options tab and then enter the desired values in the Start with page or Page range from 1 to option boxes.

3. Click the Overlay tab. From the list of available overlays above the page icons, select the overlay you want.

4. Open the Active Softtray list by clicking the arrow next to it.

5. Choose a softtray from this list or assign a unique name to the softtray by entering text in the box.

6. Click Exit.

    All subsequent documents will be printed with this softtray. To stop overlay printing, open the printer driver and deselect the overlay. You can always delete previously defined softtrays and overlays.

Overlay Manager Window

The Overlay Manager window lets you define, create, and manage overlays. Overlays are stored on the hard disk of your computer, and make it possible to include company logos, forms, and other types of overlays in a printed document. You can assign previously defined overlays to specific pages with the Softtray Manager. The Overlay Manager also lets you assign one overlay to different softtrays.

Creating an overlay

To create an overlay, follow these steps:

1. From the Driver Settings window, click the Overlays button.

2. Click the Manage Overlays button. Then the Overlay Manager window appears.

3. Make sure the Create menu is selected, then input a name for the overlay you want to define in the Description box.

4. Click Create.

5. If you are using the Overlay Manager or Softtray Manager for the first time, a dialog box appears showing you the name of the default overlay directory. Click OK to save your overlay in the default directory.

    If you want to store your overlay in a different directory, click Cancel and then input the entire path to the directory in the Description box. Make sure the Capture Printout radio button is checked. Next, click Create.

6. In the dialog box that appears, click OK. The next file you send to the printer from an application program, such as Windows Write or Notepad, will be saved as the overlay using the name you entered earlier. If you want to stop the procedure, click Cancel.

7. Exit the printer driver and open the application that you will use to create the overlay.

8. Print the file that you want to save as the overlay. It is possible to save any kind of file as an overlay. When printing starts, a message appears telling you the overlay was programmed successfully.

Deleting an overlay

To delete an overlay, follow these steps:

1. Click the Edit/Delete tab in the Overlay Manager window.

2. Use the Available Overlays list to select the overlay that you want to delete.

3. Click Delete.

4. Click Yes in the dialog box that appears to delete the highlighted overlay.

Note:
If you check the Delete Overlays from disk radio box and you click the Delete *button, the highlighted overlay will be deleted from your hard disk.*

Chapter 4

Options

4

Printer Options

You can add to your printer's capabilities by installing any of the following options:

❑ 500-Sheet Lower Paper Cassette (C81262✽: A4, C81263✽: Letter) increases paper feeding capacity. Each cassette can hold up to 500 sheets of one kind of paper: A4 or Letter. You can't switch back and forth between paper sizes in one cassette. However, you can use up to two optional cassettes at the same time. See page 4-3.

Note:
The asterisk (✽) is a substitute for the last digit of the product number, which varies by country.

❑ EpsonScript Level 2 ROM module (C83219✽) generates crisp PostScript output. See page 4-11.

❑ Optional memory modules expand your printer's memory. See page 4-7.

❑ Optional interface cards and modules provide a link that enables you to use the EPL-N1200 with a Macintosh, LocalTalk network, IBM mainframe, and so on. See page 4-12.

If you purchased your printer and options at the same time, first set up the printer and run the print test by following the instructions in the *Getting Ready!* guide. Then install the options.

⚠ ***Caution:***
Before installing an option, carefully read the manual that comes with the option.

500-Sheet Lower Paper Cassette

The optional lower paper cassette gives you a second paper source, in addition to the MP Tray. You can install up to 2 optional cassettes (for a maximum of 1,250 sheets loaded in the printer, including the MP Tray). This section describes how to install the cassette and load paper.

Installing the lower paper cassette

1. Turn off the printer.

2. Unplug the printer's power cord from the electrical outlet and from the printer.

3. Remove all interface cables from the interface connectors.

4. Lift the printer. Make sure the printer and cassette are facing the same way. Align the pins on the cassette with the holes on the bottom of the printer, and then lower the printer until it rests securely on the cassette.
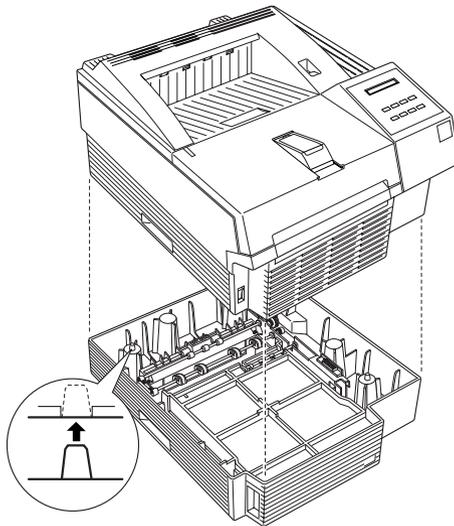
Note:
❏ *The printer is heavy, so you may need to have someone help you lift it.*

❏ *If you are installing the second optional cassette, lift the printer off the first cassette, fit one cassette on top of the other, and replace the printer as described above.*

5. Reconnect any interface cables you removed.

6. Make sure the power is turned off and then plug the power cord into the printer and into an electrical outlet.

7. Turn on the printer.

To confirm that the lower paper cassette is installed correctly, print a status sheet. If the cassette is not listed on the status sheet, try reinstalling it.

Be sure to select the paper source in your application program. Since the selection method varies from application to application, see your software documentation for more information.

Loading paper into the 500-sheet lower paper cassette

1. Pull out the paper tray from the paper cassette.
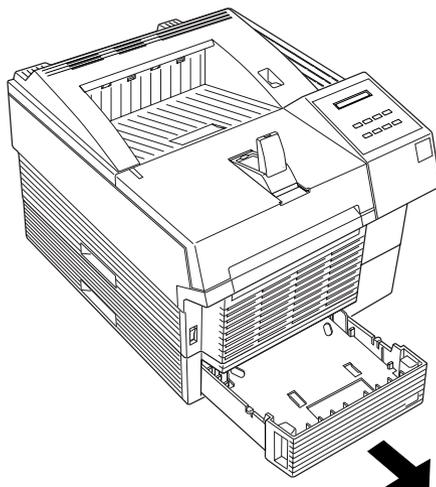
2. Press down the plate in the paper tray until it locks into position.
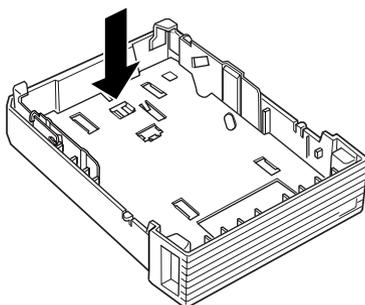
3. Fan a stack of paper and tap it on a flat surface to even the edges. Insert the paper face-up into the tray.
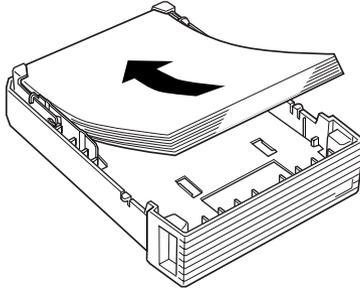
4. Replace the paper tray in the paper cassette.
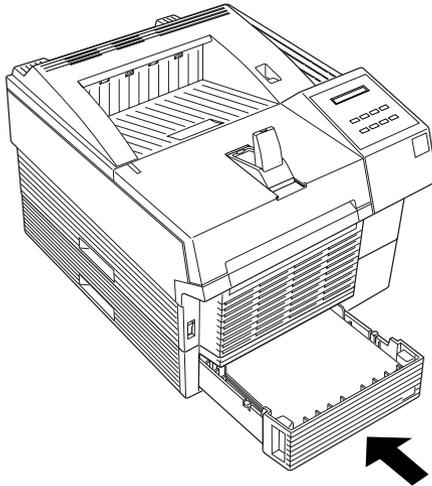
You are now ready to print using the lower paper cassette.

Memory Modules

By installing a Single In-line Memory Module (SIMM) in both open slots, you can increase printer memory up to 64 MB. You may want to add additional memory if you are having difficulty printing complex, graphics-intensive pages or if you regularly use numerous downloaded fonts.

You can purchase SIMMs from various vendors. Be sure the SIMM you purchase meets the following requirements:

❑ 72-pin type

❑ Capacity of 1, 2, 4, 8, 16, or 32 MB

❑ Access speed of 70ns or less

❑ Dimensions within 108 mm (4.25 inches) × 39 mm (1.53 inches), with a thickness of 10 mm (0.4 inch)

Installing a memory module

1. Turn off the printer.

   Warning:
   To avoid electrical shock, do not attempt to install a SIMM unless the printer is turned off.

2. Unplug the power cable from the electrical outlet.

3. Facing the back of the printer, remove the four screws that secure the interface bracket.
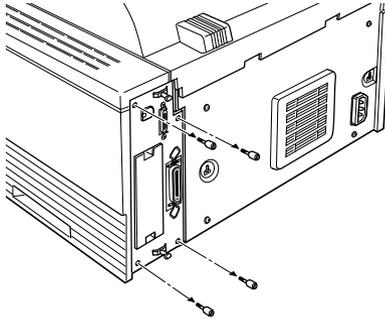
4. Pull the tab on the bracket to release the controller board, as shown below.
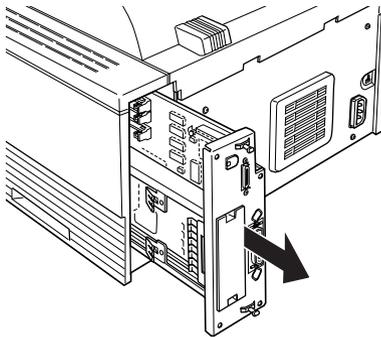
![warning icon] ***Warning:***
Avoid touching the electrical components that are exposed. They may be very hot if the printer has been used recently.

5. Place the controller board on a clean, stable surface.

6. Locate the two memory module slots as shown below.

ROM SLOT
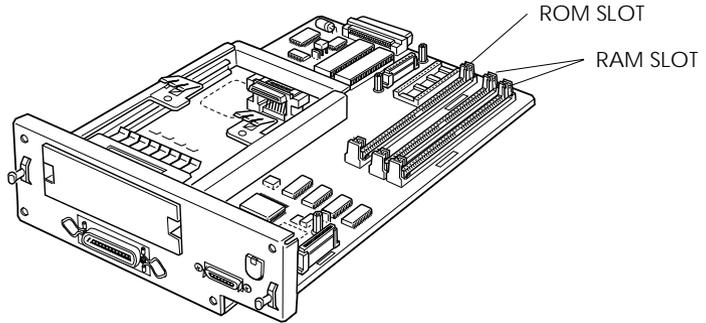
RAM SLOT

7. Insert the SIMM module into either RAM SLOT (CN1,CN6), making sure the pin numbers of the slot and the SIMM match, either 1 or 72.

Note:
You can insert the SIMM module in either RAM slot.
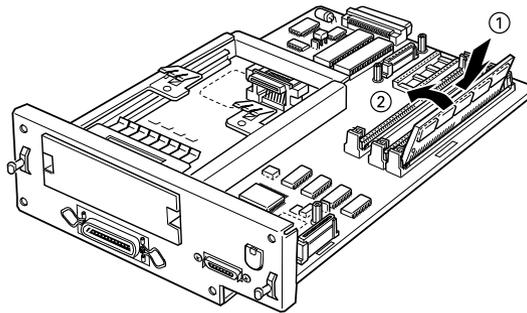
8. Press the module in firmly until it clicks into place. Do not apply too much force.

9. With the component side of the controller board facing the outside of the printer, fit it on the top and bottom guide rails.
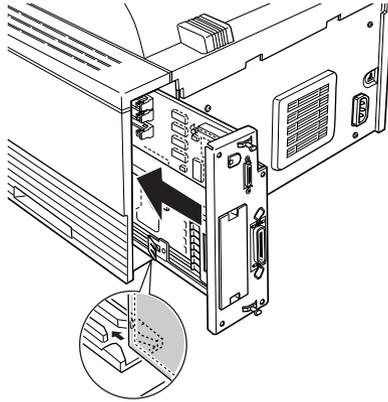
10. Slide the controller board into the printer. Press it firmly on both sides of the bracket to lock the board into place. If the controller board does not fit smoothly into the printer, do not force it. Remove it and make sure the edges fit properly into the grooves inside the slot.

11. Secure the interface bracket with the four retaining screws that you removed earlier.
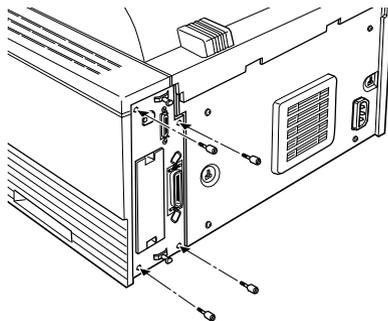
Removing a memory module

1. Perform steps 1 through 6 in the previous section to access the printer's SIMM socket.

2. Pull the metal clips on each side of the SIMM socket outward to release the memory module.
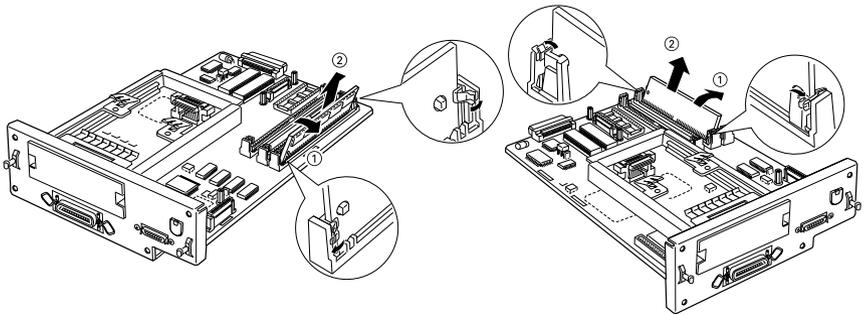
3. Grasp both sides of the SIMM and pull it out as shown above.

4. Follow steps 9 through 12 in the previous section to complete the procedure.

ROM Module

You can install the EpsonScript Level 2 module (C83219✳) using the same basic steps as those used to install the memory module. See "Installing a memory module" for installation instructions. However, this must be installed in the ROM SLOT rather than in the RAM SLOT.

Optional Interfaces

This section describes how to install the LocalTalk/Serial modules and optional interface cards listed below.

❑ To add a serial or parallel interface to your printer, use one of the following:

LocalTalk/Serial module   C82334✽
32 KB Serial Interface Card   C82307✽
32 KB Parallel Interface Card   C82310✽

The LocalTalk/Serial module provides your printer with either an RS-232C or current loop serial connection.

❑ To add a direct connection to an IBM mini or mainframe system, use one of the following:

Coax Interface Card   C82314✽
Twinax Interface Card   C82315✽

The coax and twinax connectors each contain a parallel interface. Since the printer's built-in parallel interface remains active, this gives you three parallel interfaces and a coax or twinax interface. Print jobs can be sent to any connection, and the printer automatically switches between the active ports.

The twinax interface is compatible with the following IBM systems: AS-400, System 36, 5251 (model 12), System 34, System 38, and 5294. When equipped with an EPSON twinax interface, the printer can be used in place of the following IBM system printers: 4210, 5224 (models 1 and 2), 5256 (models 1, 2, and 3), 3218 (non IPDS), 4214 (model 2), 5225 (models 1, 2, 3, and 4), and 5219 D01, D02.

The coax interface allows the printer to be connected to the following IBM control units and mainframe systems: 3174, 3276, 4274, and 3270.

❑ To add a direct connection to an Ethernet system, use the Ethernet Card (C82331✱).

❑ To add a direct connection to a Macintosh computer with the optional EpsonScript Level 2 module, use either the LocalTalk/Serial module or the AppleTalk Interface Card (C82312✱).

Note:
If you reset the printer while it is receiving data through the AppleTalk Interface Card, you need to turn the printer off and then on again before it can communicate properly.

❑ To add a direct connection to your GPIB network, use the GPIB Interface Card (C82323✱).

Installing the LocalTalk/Serial module

1. Perform steps 1 to 5 in "Installing a memory module," page 4-7, to access the printer's SIMM SLOT.

2. Remove the connector cover as shown.
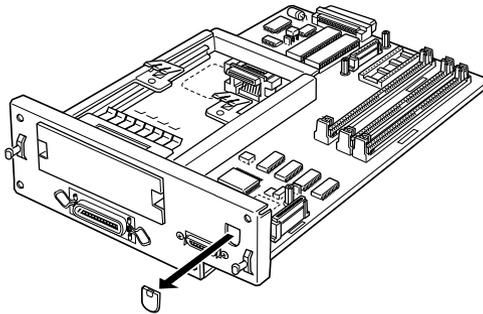
3. Select one of the following interface settings: RS-232C type serial interface, current loop type serial interface, or LocalTalk interface, using a jumper switch and the two slide switches on the module. The default selection is LocalTalk. If you want to select the serial interface settings, change the jumper and the two slide switches to the serial interface positions as shown below.

Note:
Make sure both slide switches are set to the same position; otherwise, the printer will not operate correctly.
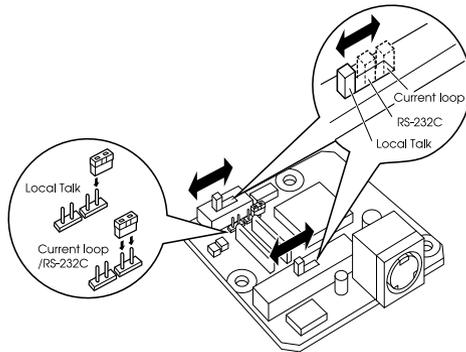
4. Position the module as shown below; then carefully insert its connector into printer connector CN4. Secure the module with the two screws that come with it.
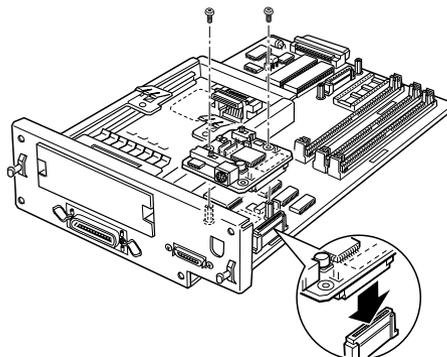
5. Perform steps 9 to 11 on page 4-10 to complete procedure.

You can verify whether the interface is correctly installed by printing a status sheet.

Installing an optional interface card

1. Turn off the printer.

   ⚠ *Warning:*
   High voltages are present inside the printer when the power is on. Do not attempt to install the card unless the printer is turned off.

2. Unplug the power cable from the electrical outlet.

3. Turn the printer so its back faces you.

4. Remove the two screws that secure the Type-B slot cover and remove the cover.
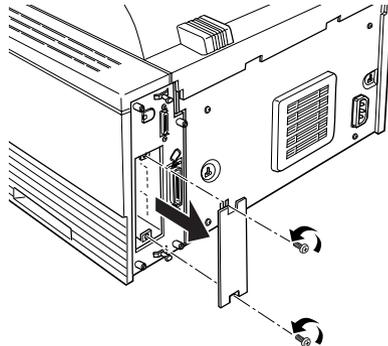
5. With the component side of the optional interface card facing the inside of the printer, slide the interface card into the grooves in the interface slot as shown below. Push it in firmly to lock the card into place.
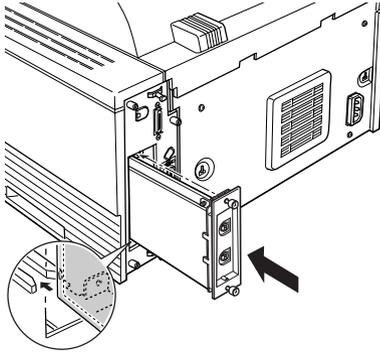
6. Secure the interface card with the two retaining screws.
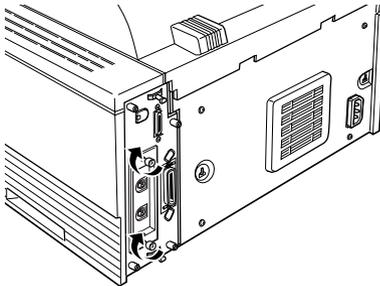
You can verify the interface is correctly installed by printing a status sheet.

Using the Serial Interface

To use a serial interface, you must purchase an appropriate interface cable. EPSON supplies several types of interface cables. You can use any interface cable that meets the printer specifications listed below. See your computer manual for any special computer requirements.

❑ RS-232C Cable (9 pin) C836152 (2.0 m) from mini DIN (printer) to D-SUB 9-pin (computer) for RS-232C; for direct printer to computer connection

❑ RS-232C Cable (25 pin) C836151 (2.0 m) form mini DIN (printer) to D-SUB 25-pin (computer) for RS-232C; for direct printer to computer connection

❑ Current Loop Cable C836141 (0.4 m) from mini DIN (printer) to D-SUB 25-pin (interface cable) for both RS-232C and Current loop; a cable extension for printer to interface cable connection

If you installed a serial interface, you need to ensure that the printer and the computer are using the same serial settings. If the serial settings do not match, you must make the appropriate settings. The settings can be changed either in the printer or computer. See the next section for information about the serial interface utility that comes with your printer.

The default serial settings for the optional serial interface are listed below. To change the serial settings, see the interface card's manual if you are using a Type-B serial interface or if you installed a LocalTalk/Serial module. For information about your computer's serial settings, see your computer manual.

Serial type:	RS-232C
Word length:	8
Baud rate:	9600
Parity:	NONE
Stop bit:	1
DTR:	OFF
XON/XOFF:	ON

You also need to change the port setting of your computer if it is not already set to the serial port. The following procedures describe how to change the port setting in Windows 3.1 and 95. To change the setting using non-Windows software, see your software manual.

For Windows 3.1

1. In the Main window, double-click the Control Panel icon.

2. Double-click the Printers icon.

3. In the Printers dialog box that appears, click the Connect button.

4. Select a COM (serial) port.

5. Click the OK button.

6. Close the Printers dialog box.

For Windows 95

1. Click the Start **button, point to** Settings, **and then click** Printers.

2. Right-click the Epson EPL-N1200 **icon, and click** Properties **in the menu that appears. Be sure to right-click your printer.**

3. Select the Details **tab.**

4. Click the arrow next to the Printer Port drop-down list. Then select a COM (serial) port.

5. Click OK **to save this setting.**

Using the serial interface utility

You can use the serial interface utility that comes with your printer to specify the port and the baud rate of your computer for the serial interface connection.

This utility is included in the Remote Control Panel utility. For details on installation of the Remote Control Panel utility, see Chapter 5.

Your printer supports the following serial interface baud rates: 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, and 57600. If you want to use your printer with a higher baud rate that is supported by your computer system, you can use the utility to match the baud rate between the computer and printer.

Note:
This utility may not work with all computer systems.

1. Type HSERIAL at the DOS prompt and press Enter to bring up the list of parameters for the port and the baud rate selection.

    C:\HSERIAL

2. Select the appropriate parameters from the list and type the following:

    C:\HSERIAL /P=**n** /B=**m**

    n = parameter for the port selection
    m = parameter for the baud rate selection

    For example, if you would like to use the COM1 port with the 57600 baud rate, type the following:

    C:\HSERIAL /P=1 /B=576

    If you need help, type the following:

    C:\HSERIAL\?

Remote Control Panel Utility

5

Remote Control Panel Utility Overview

The Remote Control Panel utility is software that allows you to change printer settings, such as the print quantity, paper size, and RITech setting.

When to use the Remote Control Panel utility

You do not normally need to use the Remote Control Panel to change printer settings. Most software programs let you change settings that affect the final printed output, and any settings you make from your software override those made from the Remote Control Panel.

However, if you are not able to change printer settings from your software program or if you are running DOS, the Remote Control Panel will allow you to:

❑ specify the size of paper loaded in the paper tray

❑ turn the Toner Save Mode on and off

❑ change the density setting or RITech setting

❑ change the emulation mode

❑ turn the Standby mode on and off

❑ specify the Top Offset and Left Offset

***Note**:*
When the printer is shared by more than one user, the settings may be changed by other users. Even if the Remote Control Panel window shows your desired setting, always click the Send *button.*

Installing the Remote Control Panel utility

To install the utility, follow these steps:

1. Insert the floppy disk containing the utility into your computer's disk drive.

2. Type SETUP at the DOS prompt and press Enter.

    A:\SETUP

3. Follow the instructions on the screen to install the utility.

Accessing the Remote Control Panel

To start the Remote Control Panel, type the following at the DOS prompt and press Enter. (If you changed the default directory during installation, type that directory instead.)

    C:\EPSONRCP\EPRCPO

The main Remote Control Panel menu appears.
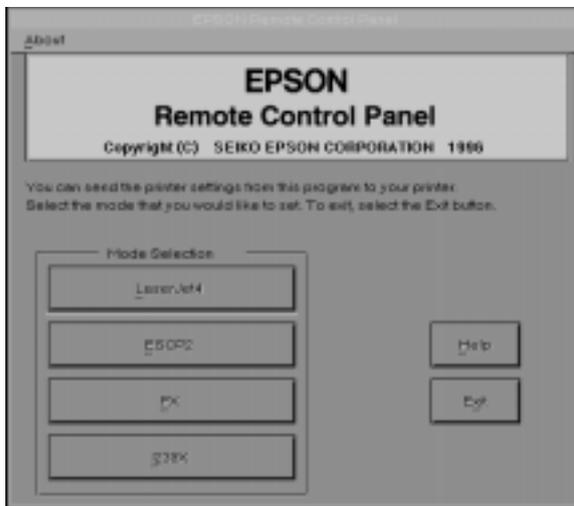
Click the button for the emulation mode you want to configure.

Note:
EpsonScript Level 2 is available only when the EpsonScript Level 2 option is installed.

LaserJet 4/EpsonScript Level 2 Mode
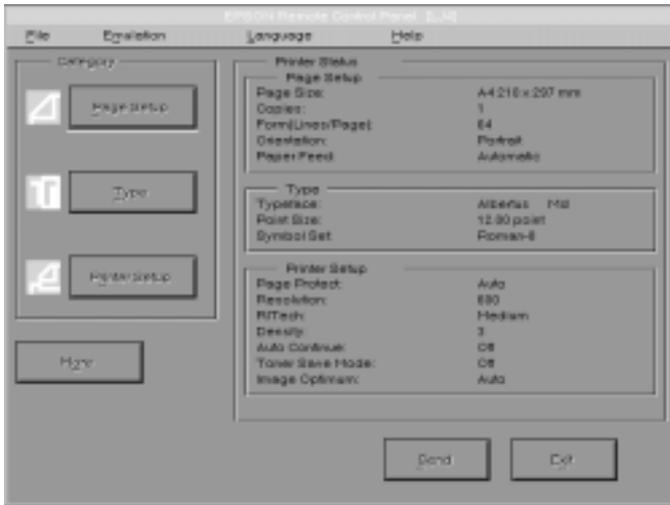
The main menu displays the current printer settings for the selected printer mode. The buttons on the left open dialog boxes so you can change the settings listed under Printer Status.

Print ERR SHEET for EpsonScript*

Turn this setting on if you want a printed record of EpsonScript Level 2 errors. When an error is detected, the printer prints a sheet listing the type of error.

*Available only when the EpsonScript Level 2 option is installed

ESCP2 Mode
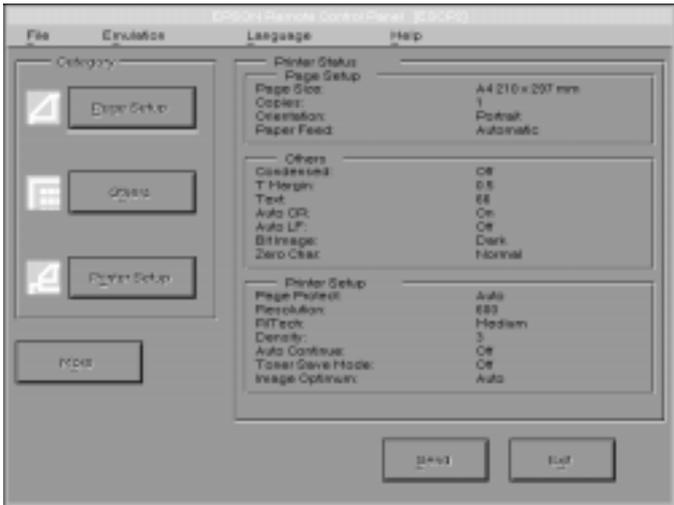
FX Mode

I239X Mode

Page Setup Options

Clicking the Page Setup button on the Remote Control Panel menu opens the following menu:
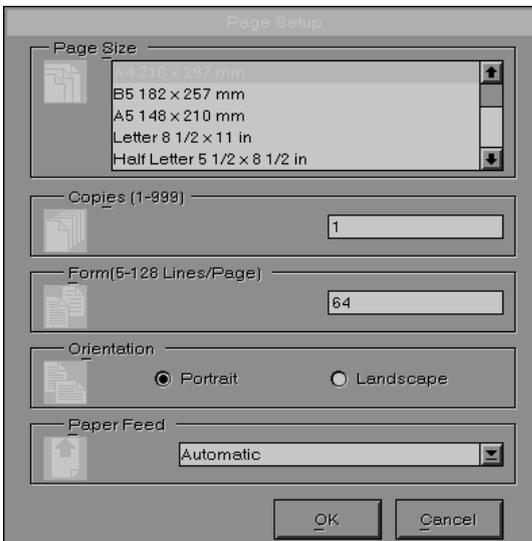
If you are unable to make the settings that are availabe on the Page Setup menu from your software program, make the settings on this menu as follows:

Page Size

Selects the default paper size. You should change this item only if you cannot change the paper size from your software program.

If your paper size is not listed below, you can define a new size using the Custom setting. Use the following settings when defining a custom page size: 92 to 216 mm × 148.5 to 356 mm.

The Page Size options are as follows:

LT (Letter)
A4
A5
B5
HLT (Half letter)
LGL (Legal)
GLT (Government letter)
GLG (Government legal)
EXE (Executive)
F4
MON (Monarch)
C10 (Commercial 10)
DL
C5
IB5 (International B5)
C6
Custom

Copies

Selects the number of copies to be printed. You can enter any number from 1 to 999. You should specify the number of copies from your software program.

Form

Specifies the number of horizontal lines on a page. You can enter any number from 5 to 128. This setting is available only in LJ4 mode.

Orientation

Specifies whether the page is printed in portrait (default) or landscape orientation. The pages in this manual are printed in portrait orientation.

Paper Feed

Allows you to select how paper is fed into the printer or where paper is fed from. Your choices are Automatic (paper is fed from whichever tray has the correct paper size), Manual (you must manually feed paper in the MP Tray), MP Tray, Lower Cassette 1 (if installed), and Lower cassette 2 (if installed). The default is Automatic.

Type Options

Clicking the Type button on the Remote Control Panel menu opens the following menu.

Note:
The Type menu is available only in LJ4 mode.

If you are unable to make the settings that are availabe on the Type menu from your software program, make the settings on this menu as follows:

Typeface

Specifies the typeface to use.

Pitch / Point Size

Specifies the point size for proportional and scalable fonts. The range of point sizes is 4.00 to 999.75. It also specifies the pitch for fixed pitch fonts. The range of pitch is 0.44 to 99.99.

Symbol Set

Specifies the symbol set to use. If the typeface you selected is not available for the symbol set you select, the typeface is replaced with the currently selected symbol set. The following symbol sets are available:

Roman-8	Norweg1
Italian	ECM94-1
Swedis2	ANSI ASCII
UK	French2
German	Legal
8859-2 ISO	Spanish
PsMath	8859-9 ISO
WiTurkish	MsPublishing
VeMath	DeskTop
Math-8	WiE.Europe
PcTk437	Windows
PsText	IBM-US
IBM-DN	VeInternational
PcMultilingual	PiFont
VeUS	Other
PcE.Europe	
WiAnsi	

Note:
- *The following symbol sets cannot be selected with the Swiss 721 SWM and Dutch 801 SWM fonts: PsMath, MsPublishing, VeMath, Math-8, and PiFont.*

- *The characters 9Bh to 9Fh in the VeInternational and VeUS symbol sets cannot be printed when either the Swiss 721 SWM or Dutch 801 SWM font is selected.*

Printer Setup Options

Clicking the Printer Setup button on the Remote Control Panel menu opens the following menu:
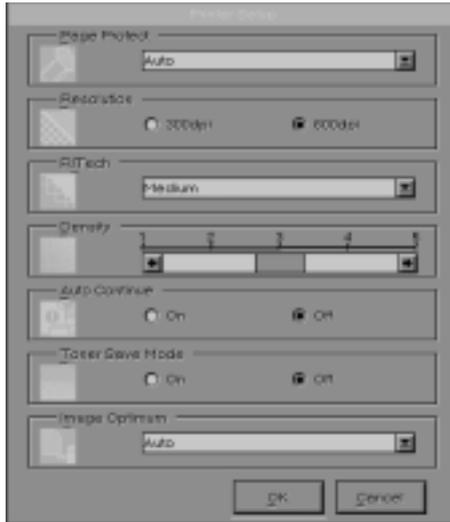
If you are unable to make the settings that are available on the Printer Setup menu from your software program, make the settings on this menu as follows:

Page Protect

Use this list to make use of the Page Protect function. This allows you to allocate additional printer memory for printing data, as opposed to receiving it. You may need to use Page Protect if you are printing a highly complex page. If a Print Overrun error occurs, change the setting to ON and reprint your data. This reduces the amount of memory reserved for receiving data so your computer may take longer to send the print job, but it will allow you to print complex jobs. Page Protect usually works best if set to Auto. You will need to increase your printer's memory if memory errors continue to occur.

Note:
Changing the Page Protect setting reconfigures the printer's memory which causes any downloaded fonts to be erased.

Resolution

Selects the resolution you want to use for printing. The available settings are 600 dpi (default) and 300 dpi.

RITech

Allows you to adjust the RITech (Resolution Improvement Technology) setting or turn it off. See "Optimizing Print Quality" on page 7-27 for more information about RITech. Ordinarily, the RITech setting should not have to be changed.

The RITech options are Light, Medium, Dark, and Off.

Density

Adjusts the print density to make the printout darker or lighter. Click the appropriate arrow key to darken or lighten the output.

Auto Continue

Permits the printer to automatically recover from a Print Overrun, Mem Overflow, or Paper Set error. The printer continues printing within a few seconds after one of these problems occurs.

When Auto Continue is off, you must press the button on the control panel to resume printing. In most cases, leave Auto Continue off so you can tell when an error occurs and make the necessary corrections. You might want to set Auto Continue on when printing long jobs or when you are away from the printer for long periods.

Toner Save Mode

Turns the Toner Save mode on. When turned on, the printer saves toner by substituting a gray shade for the black inside of characters. The characters are outlined in full black on the right and lower edges.

Note:
You can also make the Toner Save setting item directly from OneTouch Mode 2.

Image Optimum

Reduces the amount of graphics data when the data reaches the memory limit, allowing complex documents to be printed. When this mode is on, graphics quality is reduced. The options are Off, On, and Auto. On and Auto are the same.

Other Options

Clicking the Other button brings up the following dialog box. This menu is available only in ESC/P 2, FX, or I239X emulation modes.

Condensed (ESCP2, FX only)

Use this option to change the character spacing. Condensed printing is useful for spreadsheets and other applications that need to fit a large amount of information on each line. However, 15-cpi characters cannot be condensed.

T.Margin

Use this option to specify the distance from the top of the sheet to the baseline of the first printable line. This is measured in 0.05 inch increments.

Text

Use this option to set the page length in lines. The unit of measure for this option is a 1/6 inch line.

If you change the Orientation, Page Size, or T.Margin settings, the page length setting automatically returns to the default setting for each paper size.

AutoCR

Use the automatic carriage return option to perform a carriage-return line-feed (CR-LF) operation whenever the print position exceeds the right margin. If Auto CR is Off, the printer does not print characters beyond the right margin, and it does not perform a linewrap until it receives a CR. Most software programs take care of this function.

AutoLF

If you set AutoLF to Off, the printer does not send an automatic line feed (LF) command with each carriage return (CR). When you set AutoLF to On, the printer adds a line feed to each carriage return it receives. If your text lines overprint each other, set AutoLF to On.

BitImage

With BitImage set to Dark or Light, your printer can correctly emulate the graphics densities set with the printer commands. If you select Dark, the bit image density is high. If you select Light, the bit image density is low.

With BitImage set to BarCode, your printer converts bit images to bar codes by automatically filling in any vertical gaps between dots. This produces unbroken vertical lines that can be read by a bar code reader. BarCode is not available in I239X mode.

This mode reduces the size of the image being printed and may cause some distortion when printing bit-image graphics.

ZeroChar

> This option determines whether the printer prints a slashed zero (∅) or an unslashed zero (0). This feature is useful for clearly distinguishing between an uppercase letter O and zero when printing documents such as program lists.

Alt.Graphics (I239X only)

> Turns the Alternate Graphics option on or off. The default setting is OFF.

Character Set (I239X only)

> Selects the character table 1 or 2.

Next (I239X only)

> Turn to the next page.

Prev (I239X only)

> Turn to the previous page.

More Options

Clicking the More button on the Remote Control Panel menu opens the following menu:
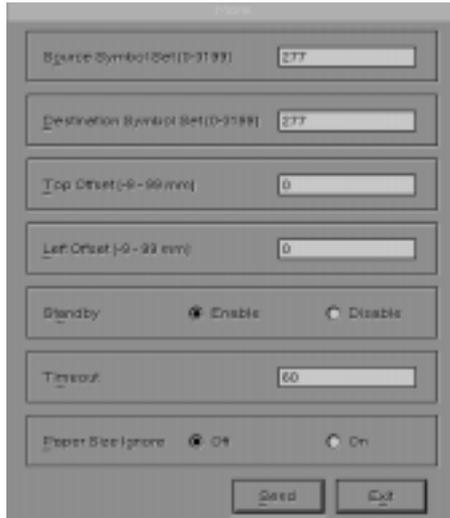
If you are unable to make the settings available on the More menu from your software program, make the settings on this menu as follows:

Source Symbol Set (LJ4 only)

Available only when an optional font ROM is installed while in the LJ4 emulation mode.

Destination Symbol Set (LJ4 only)

Available only when an optional font ROM is installed while in the LJ4 emulation mode.

Top Offset

> Allows you to adjust the vertical printing position on the page. The setting is in millimeters. You can move the printing position by approximately 0.5 mm increments from the top edge (the parameters are from -9 to 99).

Left Offset

> Allows you to adjust the horizontal printing position on the page. The setting is in millimeters. You can move the printing position by approximately 0.5 mm increments from the left edge (the parameters are from -9 to 99).

Standby

> Sets the Standby mode to Enable or Disable. When Standby is enabled, the printer goes into a sleep mode if it is not used for 30 minutes. The printer begins warming up as soon as you send data; it warms up and is ready to print in about 60 seconds. When Standby is disabled, the printer stays warmed up and ready to print.

Timeout

> Sets the length of time the printer waits before looking for the next print job. If the printer is online and receives no new data for the number of seconds specified, the printer automatically switches to the next channel that receives data.

Paper Size Ignore

> Selects whether a paper size error is ignored when it occurs. Turning this item on causes the printer to print even if the image size exceeds the printable area for the specified size of paper. This may cause smudges, because of toner that is not transferred onto the paper properly. When this item is off, the printer stops printing if a paper size error occurs.

Country (ESCP2, FX only)

Selects the international character set.

CG Table (ESCP2, FX only)

Selects the character tables. Character tables contain the characters and symbols used in different languages. The printer prints text based on the selected character table.

Code Page (I239X only)

Selects the character tables. Character tables contain the characters and symbols used in different languages. The printer prints text based on the selected character table.

6

When to Use SelecType

In general, use SelecType only for settings you cannot make in your software, including the following:

❑ Changing the emulation modes and selecting the IES (Intelligent Emulation Switching) mode

❑ Specifying the channel and configuring the interface

❑ Choosing the size of the memory buffer used to receive data

You should keep in mind the following points when using SelecType settings.

❑ A number of SelecType settings can also be made using the OneTouch modes, printer driver, and Remote Control Panel utility.

❑ Application programs may send commands to the printer that override SelecType settings. If you are not getting the results you expect, check your application software settings.

❑ To see the current SelecType settings, print a status sheet.

❑ A map of all available SelecType menus is included in Appendix E.

SelecType

Before entering and using SelecType, you should understand how the buttons on the printer's control panel work.

Buttons

The functions of the control panel buttons on the printer change when in SelecType mode.
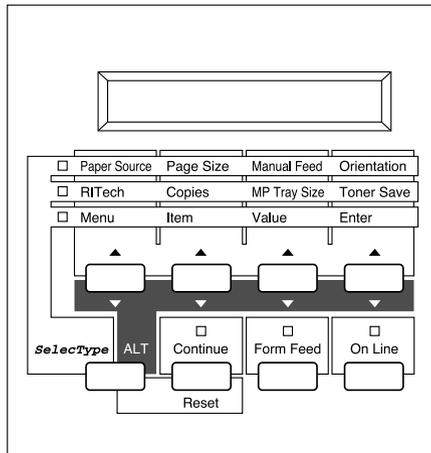
Using SelecType

Note:
You can directly access certain menu items using the OneTouch modes. For more information, see "Using the OneTouch Modes" on page 6-20.

1. To enter SelecType mode, press Menu while the printer is on line.

2. To change the settings, press Menu, Item, or Value.

❑   To select a new menu (menu category), press Menu.

❑   To select an item (setting) in a menu, press Item.

❑   To select a value (parameter) for an item, press Value.

❑   To accept a new setting, press Enter.

❑   Press ALT to select a menu, item, or parameter in reverse order. See Appendix E for a map showing the order that selecType menus are displayed in.

3. To exit SelecType mode, press On Line or SelecType.

SelecType menus

This section gives a brief description of the menus in SelecType and lists the settings available on each menu. For more detailed descriptions of the settings, see "Understanding SelecType Settings" on page 6-8.

Test Menu

These settings select and perform the printer's internal test printing. You can obtain information on the printer's current settings, available fonts, and a brief summary of features. Also see page 6-8.

Status Sheet, LJ4 Font Sample, ESCP2 Font Sample, FX Font Sample, I239X Font Sample, PS Status Sheet*, PS Font Sample*, Ext Printer Info**

* available only when the EpsonScript Level 2 is installed
**available only when there is the data

Emulation Menu

These settings select the default emulation for each interface. Also see page 6-9.

Parallel B, Parallel C, Serial*, L/T*, AUX**

* available only when the LocalTalk/Serial module is installed
**available only when the optional interface is installed.

Printing Menu

These settings are made in everyday use. Most can be set using your software. Always check the software settings, because the software settings override the Printing Menu settings. Also see page 6-9.

Paper Source, Page Size, Orientation, Copies, Manual Feed, Resolution

Tray Size Menu

These settings display the paper size loaded in each paper tray. This may be different from the size set in Page Size, which specifies the size of the image the printer produces internally. Also see page 6-11.

MP Tray Size, LC1 Size, LC2 Size

Config Menu

These settings affect the printer's performance. Also see page 6-12.

RITech, Toner Save, Density, Top Offset, Left Offset, Size Ignore, Auto Cont, Page Protect, Image Optimum

Setup Menu

These settings provide the printer with information necessary for printing. Also see page 6-14.

Interface, Time Out, Standby, Lang, Toner, Toner Count Clear, Page Count, SelecType Init

Parallel B, Parallel C Menu

These settings control communication between the printer and the computer when using a parallel interface. Also see page 6-16.

Speed, Bi-D*, Buffer Size

*Available only in Parallel B Menu.

Serial Menu*

These settings control the serial interface settings. These settings are necessary for correct communication between the printer and the computer. Also see page 6-16.

Word Length, Baud Rate, Parity, Stop Bit, XOn/XOff, DTR, Buffer Size

*Available only when the LocalTalk/Serial module is installed and the SelecType Emulation menu is set to **Serial**. See Chapter 4, "Options," for more information.

L/T*, AUX** Menu

This setting controls the optional interface settings. Also see page 6-18.

Buffer Size

* Available only when the LocalTalk/Serial module is installed and the SelecType Emulation menu is set to **L/T** (LocalTalk). See Chapter 4, "Options," for more information.
**Available only when the Type B interface is installed.

LJ4 Menu

These settings control the fonts and symbol sets when in LJ4 mode. Also see page 6-18.

FontSource, Font Number, Pitch, Height, SymSet, Form, Source SymSet, Dest SymSet

PS Menu

These settings are available only when EpsonScript Level 2 is installed. For more information, refer to the EpsonScript Level 2 manual.

ESCP2 Menu

These settings are available only when the printer is in ESC/P 2 mode. Also see page 6-22.

FX Menu

These settings are available only when the printer is in FX mode. Also see page 6-22.

I239X Menu

These settings are available only when the printer is in I239X mode. Also see page 6-26.

Understanding SelecType Settings

Read this section for a complete description of the settings available on the SelecType menus.

Test menu

For the settings below, press Enter to print. No values are selectable by pressing Value.

> **⚠ Caution:**
> *After you print these samples, user-defined data stored in the printer such as download fonts may be erased depending on which sample you printed.*

Status Sheet, PS Status Sheet*

Prints a sample printout describing the current printer features. Use this option to check whether your printer is working correctly.

LJ4 Font Sample, ESCP2 Font Sample, FX Font Sample, I239X Font Sample, PS Font Sample*

Prints a sample of the fonts available for your selected printer emulation.

*Available only when Epson Script Level 2 is installed.

EXT PRINT INFO

Prints information concerning the optional ROM. This item is available only when the optional ROM is installed.

Emulation menu

Use this menu to select the printer emulation mode. You can
specify different emulations for each interface; in other words,
for each computer you connect. Since each emulation mode has
its own specific options, make settings in the LJ4, ESCP2, FX,
GL2, or I239X menus, as necessary. The options you can set are
the same for every interface.

Setting	Parameter
Parallel B, Parallel C, Serial, L/T, AUX	LJ4, ESCP2, FX, I239X, PS*1, GL2, Auto

*1 Available only when the EpsonScript Level 2 module is installed.

Note:
*The default setting may change depending on which option is
installed. Print a status sheet to confirm the current default settings.*

Printing menu

The settings in the Printing Menu can be set from within your
software. The settings you make in your software override
SelecType settings.

All items in the Printing Menu except Resolution can be
accessed directly with the OneTouch Modes. See "Using the
OneTouch Modes" later in this chapter.

Paper Source

Specifies whether paper feeds into the printer from the MP
Tray or from an optional lower paper cassette.

If you select Auto, paper feeds from the tray containing the
paper that matches the paper selected in the Page Size setting.

Page Size

Specifies the paper size.

Orientation

Specifies whether the page is printed in portrait or landscape orientation. This page is printed in portrait orientation.

Copies

Selects the number of copies to be printed, up to 999.

Manual Feed

This item selects manual feed mode for the MP Tray. For details on manual feed mode, see Chapter 1.

Resolution

Switches the resolution between 300 and 600 dpi.

Setting	Parameter
Paper Source	Auto, MP, LC1, LC2
Page Size	A4, A5, B5, LT, HLT, LGL, GLT, GLG, EXE, F4, MON, C10, DL, C5, C6, IB5, CTM
Orientation	Port, Land
Copies	1- 999
Manual Feed	Off, On
Resolution	600, 300

Tray Size menu

Use this menu to make the MP Tray paper size setting and check the currently loaded paper size in the optional paper cassettes if installed.

MP Tray Size

Allows you to set the paper size for the MP Tray.

Note:
You can also make the MP Tray Size setting directly from OneTouch Mode 2.

LC1 Size

Displays the actual paper size loaded in the optional Lower Paper Cassette 1.

Note:
LC1 Size and LC2 Size only display the currently loaded paper size. You cannot change this parameter, it is set automatically.

LC2 Size

Displays the actual paper size loaded in the optional Lower Paper Cassette 2.

Setting	Parameter
MP Tray Size	A4, A5, B5, LT, HLT, LGL, GLT, GLG,EXE, F4, MON, C10, DL, C5, C6, IB5
LC1, LC2	A4, LT

Config menu

RITech

Allows you to adjust the RITech setting. RITech produces smoother and crisper lines, text, and graphics. If you change this setting, you can check the print quality by printing a status sheet from the SelecType Test Menu.

Note:
You can also make the RITech setting directly from OneTouch Mode 2.

Toner Save

Turns the Toner Save mode on. When turned on, the printer saves toner by substituting a gray shade for the black inside of characters. The characters are outlined in full black on the right and lower edges.

Note:
You can also make the Toner Save setting item directly from OneTouch Mode 2.

Density

Use this option to adjust the print density if your print is too light or too dark.

Note:
Increasing the print density increases toner consumption. If you select darker print, you may need to replace the imaging cartridge more often.

Top Offset

Use this option to make fine adjustments to the vertical position of the printing on the page.

> **! Caution:**
> *Be sure that the printed image does not exceed the edge of paper. Otherwise, you may damage the printer.*

Left Offset

Use this option to make fine adjustments to the horizontal position of the printing on the page. This is useful for fine adjustment when you are using the manual feed mode.

> **! Caution:**
> *Be sure that the printed image does not exceed the edge of paper. Otherwise, you may damage the printer.*

Size Ignore

Selects whether a paper size error is ignored. Turning this item on causes the printer to print even if the image size exceeds the printable area for the specified size of paper. This may cause smudges because of toner that is not transferred onto the paper properly. When this item is off, the printer stops printing if a paper size error occurs.

Auto Cont

Permits the printer to automatically continue printing after a certain period of time when one of the following errors occurs: Paper Set, Print Overrun and Mem Overflow. When this option is off, you must press the Continue button to resume printing. In most cases, it is best to leave this option set to Off.

Page Protect

> Use this list to make use of the Page Protect function. This allows you to allocate additional printer memory for printing data, as opposed to receiving it. You may need to use Page Protect if you are printing a highly complex page. If a Print Overrun error occurs, change the setting to ON and reprint your data. This reduces the amount of memory reserved for receiving data so your computer may take longer to send the print job, but it will allow you to print complex jobs. Page Protect usually works best if set to Auto. You will need to increase your printer's memory if memory errors continue to occur.
>
> ***Note:***
> *Changing the Page Protect setting reconfigures the printer's memory which causes any downloaded fonts to be erased.*

Image Optimum

> Reduces the amount of graphics data when the data reaches the memory limit, allowing complex documents to be printed. When this mode is on, graphics quality is reduced.

Setup menu

Interface

> Specifies whether the printer can receive data through all the interfaces available or only through the one selected.

Time Out

> Sets the length of the printer waits when it it on line and no new data is received. When this time is up, the printer searches for new print data on other channels.

Standby

Saves power by reducing the power to the fixing heater if the printer receives no data for 30 minutes. In this mode, the printer begins warming up as soon as you press send print data; it then warms up and is ready to print in about 60 seconds.

Lang

Specifies the language displayed on the control panel and printed on the status sheet.

Toner

Displays the amount of toner left in the imaging cartridge.

E****F	(100-75%)
E*** F	(75-50%)
E** F	(50-25%)
E* F	(25-0%)
E F	(0%)

Toner Count Clear

Resets the toner counter, when you replace the imaging cartridge.

Page Count

Displays the total number of sheets printed by this printer.

SelecType Init.

Erases all the SelecType settings you have changed, and resets them to the factory default settings.

Parallel B menu, Parallel C menu

Speed

> Specifies the transfer speed by selecting the delay period from the STROBE to the ACKNLG signal. For more information on the parallel interface signal, see "Interface Specifications" in Appendix A.

Bi-D

> Enables or disables bidirectional communication.
>
> *Note:*
> *This options is available only when the Parallel B Menu is selected.*

Buffer Size

> Determines the amout of memory to be used for receiving data and printing data. If set to Maximum, more memory is allocated for receiving data. If set to Minimum, more memory is allocated for printing data. The factory default setting is Normal.

Serial menu

Word Length

> You can select an 8-bit or 7-bit word length. See your computer manual and software documentation for the proper setting. The factory setting is 8-bit.

Baud Rate

> Use this option to set the data transfer rate (baud) for the serial interface. The baud rate is measured in bits per second (bps). See your computer manual and software documentation for the proper setting.

Parity

When this option is set to None, parity checking is disabled. The parity bit, if used, provides a basic form of error detection. See your computer manual and software documentation for the proper setting.

Stop Bit

Use this option to set the number of stop bits for each character of information sent to the printer. Stop bits signal the end of a character.

XOn/XOff

Use this option to set the XOn/XOff communications protocol to On, Off, or Robust. You can use XOn/XOff protocol in combination with the DTR option setting. If set to Robust, the printer sends an XOn signal when the printer is available to receive data.

DTR

Use DTR (Data Terminal Ready) to turn the printer's DTR communications protocol on or off. You can use DTR protocol in combination with the XOn/XOff option setting.

Buffer Size

Determines the amount of memory to be used for receiving data and printing data. If set to Maximum, more memory is allocated for receiving data. If set to Minimum, more memory is allocated for printing data. The factory default setting is Normal.

L/T menu, AUX menu

Buffer Size

> Determines the amount of memory to be used for receiving
> data and printing data. If set to Maximum, more memory is
> allocated for receiving data. If set to Minimum, more memory
> is allocated for printing. The factory default setting is Normal.

LJ4 menu

> *Note:*
> *If you always use the HP LaseJet 4 printer driver in your software,*
> *you should change settings using your software. The software*
> *settings always override the LJ4 menu options.*

FontSource

> Selects the default font source.

Font Number

> Selects the default font number from the default font source.

Pitch

> Specifies the default font pitch if the font is scalable and
> fixed-pitch. You can select from 0.44 to 99.99 CPI, in increments
> of 0.01 CPI.

Height

> Specifies the default font height if the font is scalable and
> proportional. You can select from 4.00 to 999.75 points, in
> increments of 0.25 points.

SymSet

Selects the default symbol set. If the font you selected in FontSource and Font Number is not available in the new SymSet setting, the Fontsource and the Font Number values are automatically replaced with the default value.

Form

Selects the number of lines for the selected paper size and orientation. This causes a line spacing (VMI) change also, and the new VMI value is stored in the printer. This means that later changes in the Page Size or the Orientation settings cause changes in the Form value, based on the stored VMI.

Source SymSet

Available only when an optional font ROM is installed.

Dest SymSet

Available only when an optional font ROM is installed.

Setting	Parameter
FontSource	Resident, SIMM, Download
Font Number	0 ~ 65535
Pitch	0.44 ~ 99.99 cpi
Height	4.00 ~ 999.75 pt.
SymSet	Roman-8, ECM94-1, 8859-2 ISO, 8859-9 ISO, IBM-US, IBM-DN, PcMultiling, PcE.Europe, PcTk437, Wiansi, WiE.Europe, WiTurkish, DeskTop, PsText, VeInternati, VeUS, MsPublishin, Math-8, PsMath, VeMath, PiFont, Legal, UK, ANSI ASCII, Swedis2, Italian, Spanish, German, Norweg1, French2, Window
Form	5 ~ 128 Lines
Source SymSet	0 ~ 3199
Dest SymSet	0 ~ 3199

For details on the ESCP2, FX, and I239X menus, refer to "Using Other Emulations" on page 6-22.

Using the OneTouch Modes

The OneTouch modes are part of SelecType mode, but they are more limited and easier to use. The settings you make in these modes and SelecType are reflected in each other.

To enter OneTouch mode 1, press the SelecType button (repeatedly if necessary) until the light next to Paper Source comes on indicating the printer is now in OneTouch mode 1. The current OneTouch mode 1 settings for Paper Source, Page Size, Manual Feed, and Orientation are shown on the display above the corresponding setting. For example, Port or Land is shown above Orientation.

OneTouch mode 1

☐ Paper Source	Page Size	Manual Feed	Orientation

To enter OneTouch mode 2, press the SelecType button (repeatedly if necessary) until the indicator light next to RITech comes on indicating the printer is now in OneTouch mode 2. The current OneTouch mode 2 settings for RITech, Copies, MP Tray Size, and Toner Save are shown on the display above the corresponding setting. For example, On or Off is shown above Toner Save.

OneTouch mode 2

☐ RITech	Copies	MP Tray Size	Toner Save

To make OneTouch settings, access one of the modes as described above and press the button located under the setting you want to change to cycle forward through the available options. You can also press ALT (SelecType) and the button to cycle backward through the available options.

Paper Source

Specifies whether paper feeds into the printer from the MP Tray or from an optional lower paper cassette (if installed). If you select Auto, the paper source containing the paper that matches the setting in the Page Size menu will be used.

Page Size

Specifies the paper size.

Manual Feed

Turns Manual Feed on or off for the MP Tray. For details on the Manual Feed mode, see Chapter 2.

Orientation

Specifies whether the page is printed in portrait (Port) or landscape (Land) orientation.

RITech

Allows you to make the RITech setting: Dark, Medium, Light, Off. RITech produces smoother and crisper lines, text, and graphics. If you change this setting, you can check the print quality by printing a status sheet from the SelecType Test Menu.

Copies

Selects the number of copies to be printed, up to 999.

MP Tray Size

Allows you to set paper size for the MP Tray.

Toner Save

Turns the Toner Save mode on or off. When turned on, the printer saves toner by substituting a gray shade for the black inside of characters. The characters are outlined in full black on the right and lower edges.

Using Other Emulations

Your printer is designed to work best in its LJ4 emulation mode, so LJ4 emulation mode is recommended whenever possible. If you want to use an emulation other than LJ4, you can select ESC/P 2, FX, I239X, or GL/2 emulation mode.

Match the emulation mode in the Emulation Menu with drivers or print data already formatted for EPSON LQ or FX series printers, or IBM printers.

Note:
The printer's intelligent emulation switching (IES) feature automatically switches between emulation modes, depending on the received data. The available emulation modes are LJ4, GL2, I239X, ESC/P 2, and FX.

To enable intelligent emulation switching, select Auto on the Emulation Menu using the printer driver, the Remote Control Panel utility, or the SelecType mode.

ESC/P 2 or FX Mode

This section lists the ESCP2 menu and FX menu options. Unless specifically mentioned, the same items are available for either mode.

Font

The Font option selects a font by typeface.

The factory default font is Courier. After selecting the desired font, you can also adjust the character spacing and size of the font with the Pitch and Condensed options described below.

Pitch

You can select a character pitch of 10, 12, or 15 characters per inch (cpi), or choose proportional spacing.

Condensed

Use this option to change the character spacing. Condensed printing is useful for spreadsheets and other applications that need to fit a large amount of information on each line. However, 15-cpi characters cannot be condensed.

T.Margin

Use this option to specify the distance from the top of the sheet to the baseline of the first printable line. This is measured in 0.05 inch increments.

Text

Use this option to set the page length in lines. The unit of measure for this option is a 1/6 inch line.

If you change the Orientation, Page Size, or T.Margin settings, the page length setting automatically returns to the default setting for each paper size.

CG Table

Use the character generator table option to select the graphics character table, or the italics table. The graphics table contains graphic characters for printing lines, corners, shaded areas, international characters, Greek characters, and mathematical symbols. Selecting the italics table defines the upper half of the character table as italic characters.

Country

Use this option to select one of the fifteen international symbol sets. See "Symbol Sets" in the Appendix for samples of the characters in each country's symbol set.

AutoCR

Use the automatic carriage return option to perform a carriage-return line-feed (CR-LF) operation whenever the print position exceeds the right margin. If Auto CR is Off, the printer does not print characters beyond the right margin, and it does not perform a linewrap until it receives a CR. Most software programs take care of this function.

AutoLF

When you set AutoLF to Off, the printer does not send an automatic line feed (LF) command with each carriage return (CR). When you set AutoLF to On, the printer adds a line feed to each carriage return it receives. If your text lines overprint each other, set AutoLF to On.

Bit Image

With BitImage set to Dark or Light, your printer can correctly emulate the graphics densities set with the printer commands. When you select Dark, the bit image density is high. When you select Light, the bit image density is low.

The BarCode setting converts bit images to bar codes by automatically filling in any vertical gaps between dots. This produces unbroken vertical lines that can be read by a bar code reader. BarCode is not available in I239X mode.

This mode reduces the size of the image being printed and may cause some distortion when printing bit-image graphics.

ZeroChar

This option determines whether the printer prints a slashed zero (0) or an unslashed zero (0). This feature is useful for clearly distinguishing between an uppercase letter O and zero when printing documents such as program lists.

The table below shows the available parameters for each setting in ESC/P 2 and FX modes. See the previous pages for a detailed description of each setting.

Setting	Parameter
Font	Courier, Prestige, Roman, Sans Serif, Roman T*, Orator S, Sans H*, Script, OCR B
Pitch	10 cpi, 12 cpi, 15 cpi, Prop.
Condensed	Off, On
T. Margin	0.40 - 1.50 inch
Text	1 - 81 Lines
CG Table	PcUSA, Italic, PcMultilin, PcPortugue, PcCanFrenc, PcNordic, PcTurkish2, PcE. Europe, BpBRASII, BpAbicomp
Country	USA, France, Germany, UK, Denmark, Sweden, Italy, Spain1, Japan, Norway, Denmark2, Spain2, LatinAmeric, Korea, Legal*
Auto CR	On, Off
Auto LF	Off, On
Bit Image	Dark, Light, BarCode
ZeroChar	0, Ø

*Available only in ESC/P 2 mode.

I239X Mode

I239X mode emulates IBM 2390/2391 Plus commands. For detailed information on most of the settings and parameters in the table below, refer to the previous section.

Setting	Parameter
Font	Courier, Prestige, Gothic, Orator, Script, Presentor, Sans serif
Pitch	10 cpi, 12 cpi, 15 cpi, 17 cpi, 20 cpi, 24 cpi, Prop.
Code Page	437, 850, 860, 863, 865
T. Margin	0.30 - 1.50 inch
Text	1 - 81 Lines
Auto CR	Off, On
Auto LF	Off, On
Alt. Graphics	Off, On
BitImage	Dark, Light
ZeroChar	0, Ø
Character Set	1, 2

Code Page (I239X only)

Selects the character tables. Character tables contain the characters and symbols used in different languages. The printer prints text based on the selected character table.

Alt.Graphics (I239X only)

Turns the Alternate Graphics option on or off. The default setting is OFF.

Character Set (I239X only)

Selects character table 1 or 2.

EPSON GL/2 Mode

Note:
You cannot change the GL/2 Mode items by SelecType. To change
these items, use the GL/2 command listed in Appendix C.

In EPSON GL/2 mode, you can use your printer with plotter
applications. This mode is similar to the GL/2 mode supported
in HP LaserJet 4 mode. EPSON GL/2 mode emulates some of
the HP-GL plotter commands and includes all of the
commands found in HP's GL/2 mode, plus two additional
commands.

The table below shows the differences between these modes.
For more information on GL/2 commands in LJ4 emulation
mode, see Appendix C.

Command	HP GL/2 mode	EPSON GL/2 mode
Orientation	Printer setting	Landscape only
Plotter unit	1/1016 inch	1/1021 inch
Picture frame	Same as LaserJet 4 mode	Depends on the hard-clip limit
Default position of P1 and P2	Lower left and lower right corners, respectively, of picture frame	inside of picture frame
Undefined commands	First character is ignored	First two characters are ignored
CS, CA commands	Not supported	Partially supported
PG, AF commands	Not supported	Supported
Results when a DT command with no second parameter is sent	Terminator is not plotted	Terminator is plotted
ESC %#A commands	Supported	Not supported

Before printing in the EPSON GL/2 mode

You may need to change printer settings depending on your output needs. Always check the printer's setting to make sure they match the data you are trying to print. Before you switch conflicts with the printer's settings:

Paper size: Printer's paper size setting

Driver (plotter selection): HP-GL/2 or HP-GL plotters

If you need to configure the printer settings, first switch the emulation and then change the settings using the printer driver, the Remote Control Panel utility, or SelecType.

> *Caution:*
> *Settings or data saved in printer RAM (such as download fonts) may be erased when you switch emulation.*

Chapter 7
Troubleshooting and Maintenance

7

Introduction

This chapter provides the information necessary for you to keep the printer in optimum condition. This chapter tells you how to

❑ Solve problems you may encounter

❑ Replace consumables

❑ Optimize print quality

Also included is a complete description of the status, error, and warning messages shown on the printer's control panel display.

Paper Jam and Feeding Problems

The printer stops and the Feed Jam message appears.

1. Open the front cover. Carefully remove all the paper in the MP tray along with any sheets that have fed part way into the printer.
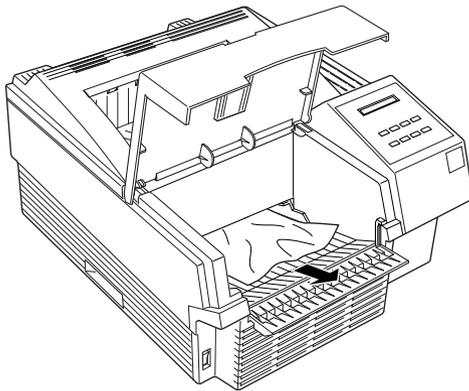
2. Open the printer cover. Be sure to remove any pieces of paper that may have torn off or are remaining in the printer.

> ⚠ **Warning:**
> *Opening the printer cover exposes the fuser, which is marked by a CAUTION HOT SURFACE label. Be careful not to touch the fuser.*

If necessary, remove the imaging cartridge and any paper left in the paper feed path, and then reinsert the imaging cartridge.

3. Close the printer cover. Tap the edges of the paper stack on a flat surface and carefully reload it into the paper bin. (Do not reload curled or wrinkled sheets.) Close the front cover.

4. The jammed page's print data is automatically reprinted.

The printer stops and the Paper Jam message appears.

1. Open the printer cover and remove the imaging cartridge.

> ⚠ **Warning:**
> *Opening the printer cover exposes the fuser, which is marked by a CAUTION HOT SURFACE label. Be careful not to touch the fuser.*

2. Gently pull out the paper. If it tears, make sure you remove any pieces remaining in the printer.
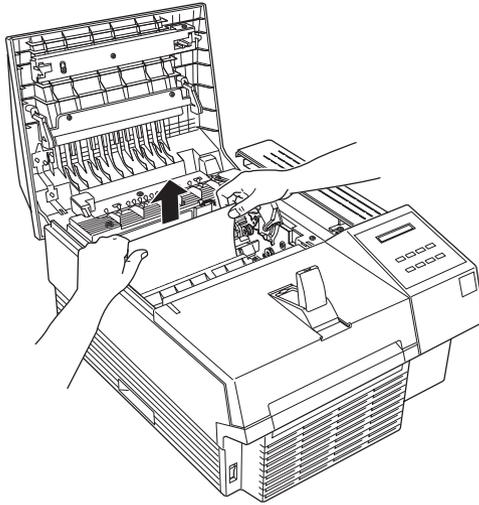
Note:
Because the toner on the paper inside the printer may not have been fixed on the page, toner may come off on your hands when you remove the paper. If you spill toner on your clothing, rinse it off with cold water. Using hot water may leave a permanent stain.

3. Reinstall the imaging cartridge. Then close the printer cover.

4. After a paper jam, the jammed page's print data is automatically reprinted.

Preventing paper feed and paper jam problems

If you have frequent paper feed or paper jam problems, use this checklist of corrective measures:

❑ Use a higher-quality paper, one that is not too thin or rough.

❑ Fan the stack of paper and then tap its edges to align it before you load it.

❑ Be sure that you do not load too much paper in the tray.

❑ Be sure to adjust the paper guides so that the paper can slide in and out freely.

❑ Never let more than 250 sheets accumulate in the output tray on top of the printer.

❑ Try turning over the stack of paper in the tray. Most packages of paper indicate the best side with an arrow on the end of the package. Make sure the best side is loaded face up.

The display panel stays blank when you turn the printer on.

Turn off the printer and check the power cable connections between the printer and the electrical outlet; then turn the printer back on.

If the electrical outlet is controlled by an outside source such as a wall switch, make sure the switch is turned on or plug another electrical device into the outlet to check whether the outlet is operating properly.

The On Line light is on but nothing prints.

Your computer may not be properly connected to the printer. Perform the procedure described in "Testing the computer-to-printer connection" in the *Getting Ready!* booklet.

The interface cable may not be plugged in securely. Check both ends of the cable between the printer and the computer.

Make sure that your interface cable meets the specifications for the printer and computer.

If you are using the serial interface, set the baud rate, protocol, data bit, and related settings. See your computer manual for the correct settings and interface requirements.

If you are using the parallel interface, set the Speed setting (on either the Parallel B or C menu) to match the value the computer requires.

Make sure that your software is properly set up for your printer.

The imaging cartridge may be empty. Replace it as described at the end of this chapter.

The printer doesn't print and the On Line light is off.

Press On Line once to put the printer on line (the On Line light comes on).

The font selected with software commands won't print.

The selected font is not supported by your printer. Be sure you have installed the correct font. See Appendix D for more information.

Some or all of the output is garbled or printed as asterisks.

If you use the Remote Control Panel, check whether any Remote Control Panel settings have been changed by another user.

Make sure that both ends of the interface cable are plugged in securely.

Make sure you use a double-shielded, twisted-pair interface cable no longer than six feet in length for Parallel B; no longer than 30 feet in length for Parallel C.

If you are using an optional serial interface, set the parity, baud rate, number of data bits, and number of stop bits to match the computer.

The Image Optimum setting may be set to Auto or On. If it is, fonts other than you expect may be printed to increase the printing speed. Turn the Image Optimum setting off in the printer driver, the Remote Control Panel utility, or SelecType.

The emulation setting for that port may not be correct. Specify the emulation mode with the Remote Control Panel utility or SelecType.

If the printer still does not print correctly, contact your dealer or a qualified service person.

The position of the printout is not correct.

Make sure that you are using the correct page length and margin settings in your application program.

Graphics don't print correctly.

Make sure that your software program is set for the printer emulation you are using. For example, if you are using the LJ4 emulation, be sure that your graphics software is set for a LaserJet 4 printer.

If you are using a serial interface, make sure that you set the appropriate protocol settings in the SelecType Serial Menu.

Graphics require large amounts of memory; see "Memory Problems" in this chapter for more help.

The Remote Control Panel utility does not function as expected.

Your settings may have been changed by your software program, which overrides the Remote Control Panel utility. Initialize the printer as described later in this chapter.

SelecType does not function as expected.

Software programs override SelecType settings. Use software settings instead of SelecType settings whenever possible.

Your settings may have been changed by your software program. Perform a factory reset (initialize) with the SelecType Init function in the SelecType Setup Menu. For more information, see Chapter 6.

You may not have reset the printer after making settings. Press the Alt button and Continue button at the same time to reset the printer and enable the new settings.

When transporting the printer

! Caution:
Whenever you ship or transport the printer, first remove the Imaging cartridge and place it in a plastic bag. Seal the bag to prevent the fine toner particles from spilling into the printer or onto your clothing.

Print Quality Problems

Dark or dirty background

Lighten the Density setting using the Remote Control Panel utility, the printer driver, or the SelecType Config Menu.

Clean the paper path inside the printer with a clean, dry cloth.

Clean internal printer components by printing three pages with only one character per page.

There may be a problem with the imaging cartridge. Remove the cartridge, shake it from side to side, and then reinstall it. If this does not solve the problem, replace the imaging cartridge as described later in this chapter.

Vertical black or white bands or lines

Clean the printer lens. Remove the imaging cartridge and place it on a clean, flat surface. Clean the lens as shown below.
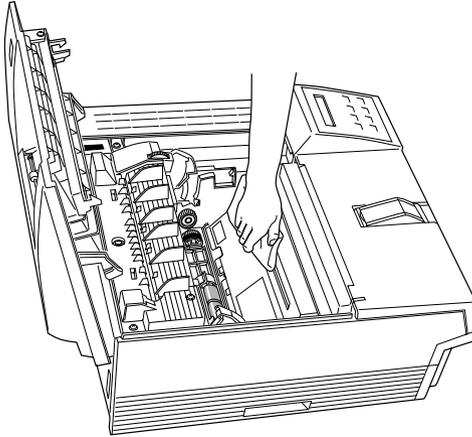
Wipe the lens from end to end with a dry, lint-free cloth. Then reinsert the imaging cartridge in the printer and close the printer cover. If the problem persists, install a new imaging cartridge as described later in this chapter and print several pages to check the print quality.

Horizontal black or white bands, or a black page

Install a new imaging cartridge as described later in this chapter.

Uneven darkness

Take out the imaging cartridge, shake it from side to side, and reinstall it.

Your paper may be moist or damp. Printing is sensitive to moisture absorbed by the paper. Do not store your paper in a humid or damp environment.

Install a new imaging cartridge as described later in this chapter. Then print several pages to check the print quality.

Toner smudges

Remove the imaging cartridge, shake it from side to side to distribute the toner, and wipe the bottom of it with a clean, dry cloth.

Clean the paper path inside the printer using a clean, dry cloth.

Clean internal printer components by printing three pages with only one character per page.

If the problem remains, replace the imaging cartridge as described later in this chapter.

Missing areas on printed image

Your paper may be moist or damp. Printing is sensitive to moisture absorbed by the paper. The higher the moisture content in the paper, the lighter the printed output. Do not store your paper in a humid or damp environment.

You may not be using the correct type of paper for your printer. If the surface of your paper is too rough, printed characters appear distorted or broken. Smooth, high-quality copier paper is recommended for best results. See "Paper Specifications" in Appendix A for information on choosing paper.

Completely blank pages

If after checking the SelecType Toner option in the Setup Menu, the Toner message indicates that the amount of toner is low (E* F), read "Replacing the Imaging Cartridge" starting on page 7-24.

Check that the imaging cartridge is installed as described in the *Getting Ready!* booklet or in "Replacing the Imaging Cartridge" later in this chapter.

The problem may be with your software program or interface cable. Print out a status sheet. If blank pages continue to print, the problem may be with the printer. Turn off the printer and contact your dealer.

Printed image is light or faint

Darken the Density setting using the printer driver, Remote Control Panel utility, or the SelecType Config Menu.

Your paper may be moist or damp. Printing is sensitive to moisture absorbed by the paper. The higher the moisture content in the paper, the lighter the printed output. Do not store your paper in a humid or damp environment.

Take out the imaging cartridge, shake it from side to side to distribute the toner, and then reinstall it. If the problem persists, replace the imaging cartridge as described at the end of this chapter.

The Toner Save mode may be on. Turn off the Toner Save mode using the printer driver, the Remote Control Panel utility, OneTouch mode 2, or SelecType.

Image is too dark

The Density setting may be incorrect. Change the print density using the printer driver, the Remote Control Panel utility, or the SelecType Config Menu.

If the problem persists, replace the imaging cartridge as described at the end of this chapter.

Non-printed side of the page is dirty

Toner may have spilled in the paper feed path. Remove the imaging cartridge and then clean the paper path of the printer using a soft, lint-free cloth.

> **!** ***Caution:***
> *Opening the printer exposes the fuser, which is marked by a CAUTION HOT SURFACE label. Be careful not to touch the fuser.*

Memory Problems

Mem Overflow

This message indicates that you need to simplify the page you are trying to print, change your memory allocation, or add more memory to your printer.

Try simplifying your page by reducing the number or size of fonts or the number or size of graphics, or both.

Image Optimum

The printer cannot print at the requested quality level because of insufficient memory, and the printer reduces the quality automatically so that the printer can continue printing. Check to see if the printout is acceptable. If not, add more memory (for a permanent solution) or set Device Resolution to Low (300 dpi) and Page Protect to OFF temporarily in the printer driver.

Option Problems

The message Illegal AUX I/F Card or Illegal I/F Module appears

The message Illegal AUX I/F Card means that the printer cannot read the installed optional interface card. Turn off the printer, then remove the card.

The message Illegal I/F Module means that the printer cannot read the installed optional LocalTalk/Serial module. Turn off the printer, then remove the module.

Illegal AUX I/F Card indicates both the LocalTalk/Serial module (set in LocalTalk) and the LocalTalk Type B I/F card are installed simultaneously. Remove one of them.

Make sure the I/F card is listed in the table of installable ones in Appendix A.

Paper does not feed from the optional lower paper cassette

Be sure you have selected the proper paper tray in your software.

There may be no paper in the lower paper cassette. Load it with paper.

Be sure that the lower paper cassette is properly installed and that you have not tried to load it with too many sheets of paper. The cassette can hold a maximum of 500 sheets of $75g/m^2$ (20 lb) paper.

The lower paper cassette may not be installed properly. See Chapter 4 for instructions on installing the lower paper cassette.

Feed Jam when using the optional lower paper cassette

1. Remove the paper tray from the lower paper cassette.

2. Remove any folded paper from the paper cassette, and discard any curled or wrinkled sheets.
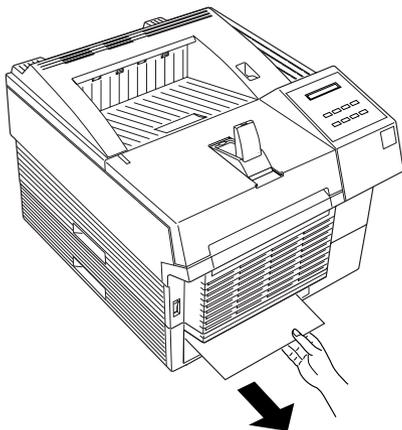
3. Tap the edge of the paper stack. Then reinsert it into the cassette making sure the paper is evenly aligned and rests below the maximum paper mark.

4. Make sure you are using the correct paper size. Your cassette can contain only A4 (A4 size cassette) or letter size (LT size cassette) paper. Also make sure you are using paper that meets the specifications for this printer.

5. Press the Continue button. The jammed page's print data is automatically reprinted.

Even with additional memory installed, complex pages don't print and the Mem Overflow **message still appears.**

The Page Protect setting in the printer driver, the Remote Control Panel utility, or SelecType may need to be changed. See "Memory Problems" in this chapter for more information.

You may not have installed enough memory. If you are printing at 600 dpi, printing at 300 dpi may solve the problem.

Status and Error Messages

This section contains an alphabetical list of status, error, and warning messages that appear in the control panel display.

Check Paper Size

The paper size setting is different from the size loaded in the printer. Check to see if the correct size of paper is loaded in the tray; then press the Continue button to clear the message.

If you turn on Size Ignore on the SelecType Config menu, this error does not occur.

Feed Jam

Paper is not feeding into the printer from the specified feeder (or cassette) or has jammed on its way into the printer. Remove the jammed paper. See page 7-2 for feed jams in the printer. See page 7-15 for feed jams in the optional paper cassette. See page 7-5 for advice on preventing this problem.

Form Feed

When the printer is off line and data remains in the printer's memory, pressing Form Feed prints out the data and clears the buffer. After printing, Ready appears on the display.

Illegal AUX I/F Card

The printer cannot read the installed optional interface card. Turn off the printer, then remove the card.

Illegal I/F Module

The printer cannot read the installed optional LocalTalk/Serial module. Turn off the printer, then remove the module.

Image Optimum

The printer cannot print at the requested quality level because of insufficient memory, and the printer reduces the quality automatically so that the printer can continue printing. Check to see if the printout is acceptable. If not, add more memory (for a permanent solution) or set Device Resolution to Low (300 dpi) and Page Protect to OFF temporarily in the driver.

Manual Feed XXX

Manual Feed mode is specified for the current print job. Make sure the paper size indicated by XXX is loaded in the MP Tray, then press On Line.

If you do not want to print this job in manual mode, press Continue. The printer feeds paper according to the Paper Source setting.

For detailed information on the Manual Feed mode, see Chapter 1.

Mem Overflow

The printer has insufficient memory available for the current task. To correct the error, press Continue. If the message remains, press Reset.

You can also clear this error by turning the printer off and back on again. However, it may be necessary to reduce the number or size of fonts, reduce the number or size of graphics, lower the resolution, or add more memory to the printer.

Paper Jam

Paper is jammed in the paper path. Open the printer cover and clear the jammed paper as described on page 7-2 or 7-15. After the jam is cleared, the jammed page's print data is automatically reprinted.

Warning:
Opening the printer cover exposes the fuser, which is marked by a CAUTION HOT SURFACE label. Be careful not to touch the fuser.

Paper Out XXX YY

There is no paper in the specified paper source (XXX). Load paper of the indicated size (YY) into the source and press Continue. See Chapter 1 for instructions on loading paper.

Paper Set XXX YY

The paper loaded in the tray (XXX) does not match the required
paper size, (YY). Replace the paper with the correct size of
paper and press Continue.

Print Overrun

The time required to process data exceeds the print engine
speed because the volume of data is too great. Press Continue
to resume printing. If this message appears again, change the
Page Protect setting in SelecType Config Menu.

Printer Open

The printer cover is open. Close the printer cover to continue
printing.

Ready

The printer is ready to receive data or print.

Reset

The printer's current interface has been reset and the buffer is
cleared. However, other interfaces are still active and retain
their settings and data.

Reset All

All printer settings have been reset to the user default configuration.

Reset to Save

You have changed the SelecType setting but the new setting is not activated immediately after exiting SelecType. To activate the new setting, do one of the following: (1) exit SelecType by pressing Continue or On Line (the new setting is activated after the current print job is finished), or (2) reset the printer by pressing ALT and Reset at the same time.

Self Test

The printer is performing its internal check cycle. It finishes soon.

ROM Check

The printer is checking the ROM.

RAM check

The printer is checking the RAM.

Service Req.CXXX
Service Req.EXXX

A controller error or a print engine error has been detected. Write down the error number listed on the display and turn off the printer. Wait at least five seconds and then turn it back on. If the error message still appears, turn off the printer, unplug the power cord, and contact a qualified service person.

Standby

The printer is in its low power state; however, it is still on line if the On Line light is on.

Toner Low

The printer is almost out of toner. You should prepare a new imaging cartridge; the toner will be out soon.

Toner Out

You must replace the imaging cartridge. Replace it as described later in this chapter.

Press Continue to print one more page.

Warming Up

The printer is warming up.

Hex Dump Mode

Hex dump mode (also called data dump) is a special feature that makes it easy for experienced users to find the cause of communication problems between the printer and the computer. In hex dump mode the printer produces an exact printout of the codes it receives.

1. Make sure the paper is loaded and the printer is off.

2. Hold down the Form Feed button while you turn on the printer. Make sure you hold the button down until you see the message HEX Dump on the display.

3. Run any program that causes the printer to print. Your printer prints out all the codes it receives in hexadecimal format.

4. To turn off the hex dump mode, turn off the printer or reset it by pressing and holding the ALT and Continue buttons at the same time. When Reset All appears on the display, release the buttons.

Replacing the Imaging Cartridge

The imaging cartridge prints up to 6,000 pages depending upon the complexity of your print jobs.

If your printed images become faint, enter the SelecType Setup Menu to use the Toner function to find out approximately how much toner remains in the imaging cartridge.

Simply count the asterisks between the E (empty) and the F (full) on the display. Each asterisk represents about 25% of the total toner capacity. If you see only one asterisk on the display, indicating that there is less than 25% toner left, you should get ready to replace the imaging cartridge.

When replacing a cartridge, be sure to use the S051016 imaging cartridge. Even if you have a cartridge labeled S051011, do not use it; order the S051016 cartridge that is specially designed for your high-quality 600 dpi printer.

> **Warning:**
> *Do not touch the fuser, which is marked with a CAUTION HOT SURFACE label.*

1. Make sure the printer is turned on.

2. Gently open the printer cover and remove the imaging cartridge by pulling it up toward you.

3. Dispose of the used imaging cartridge with nonburnable items.

> **Caution:**
> *Do not turn the imaging cartridge upside down. Do not expose the imaging cartridge to light any longer than necessary.*

4. Remove the new imaging cartridge from its aluminum bag. While holding the cartridge horizontally, gently shake it a few times to distribute the toner evenly.
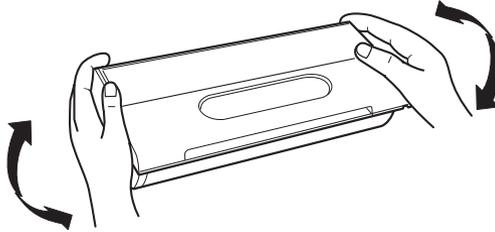
5. Set the imaging cartridge on a clean, flat surface. Firmly grip the tab on the left side of the imaging cartridge. Pull the clear seal all the way out with firm, even pressure as shown.
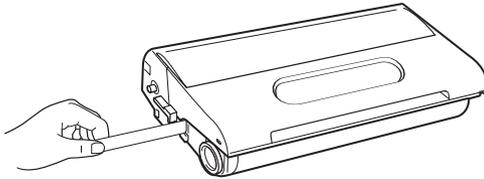
6. Hold the imaging cartridge and gently shake the cartridge from front to back.
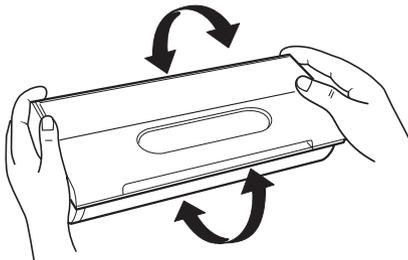
7. Insert the imaging cartridge into the printer by placing the pins on each side of the cartridge into the grooves inside the printer. Slide it gently into the opening until it stops.
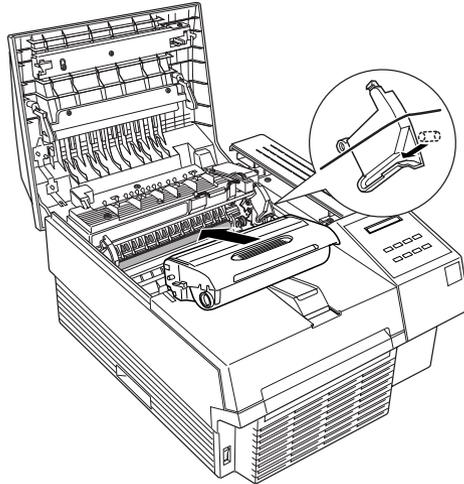
8. Gently press down on the printer cover until it clicks into the closed position.

> **Caution:**
> *Never transport the printer with the imaging cartridge installed.*

Note:
Be sure to select Toner Count Clear *on the SelecType Setup menu when installing or replacing a new imaging cartridge.*

Optimizing Print Quality

Adjusting RITech

Resolution Improvement Technology (RITech) is EPSON's new
printer technology that improves the appearance of printed
lines, text, and graphics.

The RITech setting

The factory setting for RITech gives the best quality text and
graphics for nearly all purposes. You may not need to set or
adjust anything. Occasionally, however, adjusting the RITech
setting may further improve the print quality. For example,
you may want to change the setting after you replace an
imaging cartridge or if you notice that your printing is not as
smooth and crisp as it should be. Before adjusting the RITech
setting, print a status sheet for a RITech test pattern to help you
in determining which setting is best for you.

Note:
Before printing a status sheet, turn the Toner Save Mode off with the
Windows driver, the Remote Control Panel, or the SelecType mode.
The RITech test pattern is not printed when the Toner Save Mode is
on.
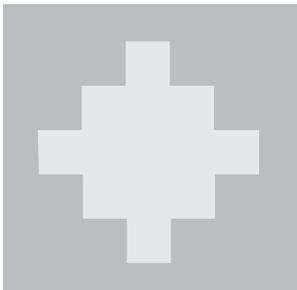
out of adjustment   optimal setting

If the test pattern seems too heavy, change the setting to Light as described below; if it seems too light, change the setting to Dark; if you are printing gray shading or screen patterns, change the setting to Off.

To change the RITech setting, follow these steps:

Using the printer driver:
Changing the RITech setting on the Printer SelecType menu in the printer driver.

Using the Remote Control Panel utility:
Bring up the Remote Control Panel utility by typing EPRCPO at the DOS prompt; select the appropriate emulation from the main Remote Control Panel window; click the Printer Setup button; then change the RITech setting.

Using SelecType:
For information on using SelecType, see Chapter 6.

If the pattern still needs to be improved, you may have to change the print density setting. For a darker RITech setting, make the print density lighter and vice versa. See the next section for more information.

Adjusting print density

Do not change the print density unless it is necessary. Changing the print density affects all text and graphics, so check the new setting by printing several pages with various kinds of text and graphics.

If your test pages are too light or too dark, adjust the print density by using the printer driver, the Remote Control Panel utility, or the SelecType mode.

Using the printer driver:
Change the Density setting on the Printer SelecType menu in the printer driver.

Using the Remote Control Panel utility:
Bring up the Remote Control Panel utility by typing EPRCPO at the DOS prompt; select the appropriate emulation from the main Remote Control Panel window; click the Printer Setup button; then change the Density setting.

Using the SelecType mode:
For information on using SelecType, see Chapter 6.

Note:
Increasing the print density increases toner consumption. If you select darker print, you may need to replace the imaging cartridge more often.

Resetting the Printer

There are two ways to reset (return to a fixed set of conditions) the printer.

Reset
Reset the settings for the emulation mode and interface you are using now by holding down Alt and Reset until Reset appears on the display. You can reset the printer anytime a printout is not being sent on the interface you are using.

Reset all
Reset the settings for all emulation modes and interfaces by holding down Alt and Reset until Reset All appears on the display. You can also reset all emulation modes and interfaces by turning off and turning on the printer.

Note:
Reset all clears all print jobs received from all interfaces, so be careful not to disrupt someone else's print job.

Cleaning the Printer

The printer needs only minimal cleaning. If you notice a decline in print quality, clean the glass lens and the inside of the printer, as described in this section.

You should also clean the paper feeder and the printer cover every few months. These procedures are described later in this section.

Follow the steps below to clean the inside of the printer and the paper feeder:

1. Make sure the printer is turned off.

2. Open the printer cover.

> ⚠ **Warning:**
> *Opening the printer exposes the fuser, which is marked by a caution label. If you have used the printer recently, the fuser may be hot; be careful not to touch it. Let the printer cool before you clean the inside.*

3. Remove the imaging cartridge from the printer.

4. Remove any dirt with a soft cloth.
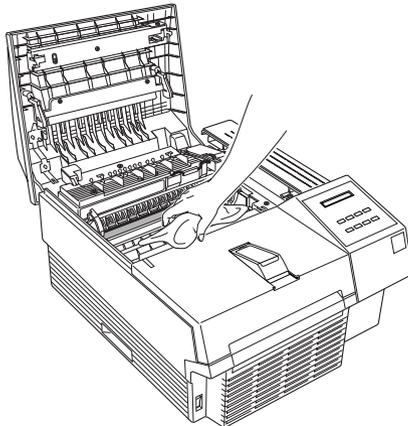
5. Replace the imaging cartridge.

6. Close the printer cover.

7. Open the front cover and clean the paper feeder with a soft cloth.

Removing spilled toner

If toner spills inside the printer, do not use the printer until you remove all the spilled toner. Follow these steps:

1. If only a small amount of toner is present, carefully wipe out the inside of the printer with a dry cloth.

2. If a large amount of toner is present, use a small vacuum cleaner (available from computer supply stores) to remove it.

Caution:
Toner or any other fine powder can damage some vacuum cleaners. Be sure to read the instructions for your vacuum cleaner before you use it on spilled toner.

Note:
If you spill toner on your clothing, rinse it off with cold water. Do not use hot water; it may cause the toner to leave a permanent stain.

Cleaning the printer case

If the printer's outer case is dirty or dusty, turn off the printer and clean it with a soft, clean cloth dampened with a mild detergent.

> **Caution:**
> *Never use alcohol or thinner to clean the printer cover; these chemicals can damage the components and the case. Be careful not to get water on the printer mechanism or any electronic components.*

Transporting the Printer

If you need to transport your printer some distance, carefully repack it using the original box and packaging materials as follows:

1. Turn off the printer.

2. Open the printer cover and remove the Imaging cartridge.

3. Unplug the power cord from the electrical outlet; then disconnect the interface cable from the printer.

4. Remove the optional lower paper cassette, if installed.

5. Attach the protective materials to the printer; then repack the printer in its original box.

> **Caution:**
> *Do not expose the Imaging cartridge to light any longer than necessary.*

Appendix A
Technical Specifications

A

Paper

Specifications

Note:
Since the quality of any particular brand or type of paper may be changed by the manufacturer at any time, EPSON cannot guarantee the guality of any type of paper. Always test samples of paper stock before purchasing large quantities or printing large jobs.

Paper Types: Plain paper, recycled paper, labels, envelopes, transparencies, colored paper, card stock, letter head

Note:
Use recycled paper under normal temperature and humidity conditions only. Poor quality paper may reduce print quality, cause paper jams and other problems.

Paper weight:

    Plain paper   60 to 90 g/m^2, 16 to 24 lb
    Card stock   90 to 157 g/m^2, 24 to 42 lb

Paper size:

    Paper   A4 (210 mm × 297 mm)
                                 A5 (148 mm × 210 mm)
                                 B5 (182 mm × 257 mm)
                                 Letter (8.5 × 11 inches)
                                 Half-Letter (5.5 × 8.5 inches)
                                 Legal (8.5 × 14 inches)
                                 Government Letter (8.5 × 10.5 inches)
                                 Government Legal (8.5 × 13 inches)
                                 Executive (7.25 × 10.5 inches)
                                 F4 (210 mm × 330 mm)
                                 Custom (92 ~ 216 mm   148.5 ~ 356 mm)

Envelopes:	Monarch (3 7⁄8 × 7 1⁄2 inches)
	Commercial 10 (4 1⁄8 × 9 1⁄2 inches)
	DL (110 mm × 220 mm)
	C5 (162 mm × 229 mm)
	International B5 (176 mm × 250 mm)
	C6 (114 mm × 162 mm)

❗ Caution:
Only load paper sizes that are listed above.

| Printable area: | 95 dots from paper edge based on 600 dpi |

Note:
Printable area varies according to the emulation mode.

Printer

General

Printing method:	Laser beam scanning and dry electrophotographic process
Resolution:	600 × 600 dpi
Printing speed:	Up to 12 pages per minute depending on the font and quantity of data
First print:	Less than 16 seconds with A4/letter
Warm-up time:	About 60 seconds at normal temperature
Paper feed:	Automatic or manual feed
Paper feed alignment:	Center alignment for all sizes
Input paper supply ($75g/m^2$ paper):	Up to 250 sheets in the MP Tray
	Up to 500 sheets per optional lower paper cassette (up to two optional cassettes)
	Up to 10 envelopes, depending on thickness
Paper eject:	Face down

Paper eject capacity (75g/m^2 paper):	200 sheets
Internal emulation:	HP LaserJet4 emulation (LJ4 mode) HP-GL/2 emulation (GL2 mode) ESC/P 24-pin printer emulation (ESC/P2 mode) ESC/P 9-pin printer emulation (FX mode) IBM Proprinter emulation (I239X mode)
Optional emulation:	EpsonScript Level 2
Resident fonts:	45 scalable fonts, and one bitmap font (in LJ4 mode)
RAM:	2 MB, expandable up to 64 MB

Environmental

Temperature:	Operation: Storage:	10 to 35ºC (50 to 95ºF) 0 to 35ºC (32 to 95ºF)
Humidity:	Operation: Storage:	15 to 85% RH 15 to 85% RH
Altitude:	2,500 meters (8200 feet) maximum	

Mechanical

Dimensions and weight:	Height: Width: Depth: Weight:	265 mm (10.4 inches) 411 mm (16.2 inches) 484 mm (19.0 inches) Approx. 15 kg (33.1 lb) including the imaging cartridge
Durability:	5 years or 300,000 sheets, whichever comes first	

Electrical

	110 V model	230 V model
Voltage	90 V to 132 V	198 V to 264 V
Rated frequency	50 Hz to 60 Hz ± 3 Hz	50Hz to 60Hz ± 3Hz
Rated current	7 A	4 A
Power consumption	Less than 900 W	Less than 900 W
Power consumption * in Standby mode	Less than 30 W	Less than 30 W

* No option installed

Note:
Check the label on the back of the printer for the voltage of your printer.

Interface

Parallel B interface

The parallel B (IEEE 1284-I compliant) interface connector pin assignments are shown in the table below.

Pin No.	Direction	IEEE 1284-B connector	
		Compatibility	Nibble
1	IN	nStorbe	HostClk
2	IN	DATA1	
3	IN	DATA2	
4	IN	DATA3	
5	IN	DATA4	
6	IN	DATA5	
7	IN	DATA6	
8	IN	DATA7	
9	IN	DATA8	
10	OUT	nACK	PtrClk
11	OUT	Busy	PrtBusy

Pin No.	Direction	IEEE 1284-B connector	
		Compatibility	Nibble
12	OUT	PError	AckDataReq
13	OUT	Select	Xflag
14	IN	nAutoFd	HostBusy
15		NC	
16		GND	
17		CG	
18	OUT	PeripheralLogic High	
19 - 30		GND	
31	IN	nInit	
32	OUT	nFault	nDataAvail
33		GND	
34		NC	
35	OUT	+5V	
36	IN	nSelectIn	IEEE1284active

Note:
The column heading "Direction" refers to the direction of signal flow as viewed
from the printer.

Parallel C interface

The parallel C (IEEE 1284-II compliant) interface connector pin assignments and a description of the interface signals are shown in the table below.

Pin No.	Direction	IEEE1284-C connector		
		Compatibility	Nibble	ECP
1	OUT	Busy	PtrBusy	PeriphAck
2	OUT	Select	Xflag	
3	OUT	nAck	PtrClk	PeriphClk
4	OUT	nFault	nDataAvail	nPeriphRequest
5	OUT	PError	AckDataReq	nAckReverse
6	IN/OUT	DATA1		
7	IN/OUT	DATA2		
8	IN/OUT	DATA3		
9	IN/OUT	DATA4		
10	IN/OUT	DATA5		
11	IN/OUT	DATA6		
12	IN/OUT	DATA7		
13	IN/OUT	DATA8		
14	IN	nInit		nReverseRequest
15	IN	nStrobe	HostClk	
16	IN	nSelectIn	IEEE1284active	
17	IN	nAutoFd	HostBusy	HostAck
18	IN	HostLogicHigh		
19 - 35		GND		
36	OUT	PeripheralLogic High		

Note:
The column heading "Direction" refers to the direction of signal flow as viewed from the printer.

nStrobe/HostClk

Compatibility mode: Latch pulse used to read in print data. When low, DATA is valid.

negotiation phase: Latch pulse used to read in extensibility request values.

Nibble mode: Always high.

ECP mode: Used to transfer data and addresses from the host to the printer with handshaking via PeriphAck (Busy).

DATA1 to DATA8 (bidirectional, but may always be an input if ECP or EPP mode is not supported)

Compatibility mode: Forward channel data.

negotiation phase: Extensibility request value.

Nibble mode: Not used.

ECP mode: Bi-directional data.

nACK/PtrClk/PeriphClk

All modes: DTA8 is the MSB, DATA1 is the LSB.

Compatibility mode: Acknowledgment low pulse in order to indicate that data was transferred from the host.

negotiation phase: Low signal indicates IEEE 1284 is supported; set to high afterwards to indicate that the Xflag and "data available" flag are valid.

reverse data transfer phase: In nibble mode, a low signal indicates that the nibble data is valid.

reverse idle phase: When switched from low to high, generates an interrupt that notifies the host that there is data available.

ECP mode: Used to transfer data from the printer to the host with handshaking via HostAck (nAutoFd).

Busy/PtrBusy/PeriphClk

Compatibility mode: High signal indicates that the printer is not ready to receive data.

negotiation phase: Reflects the BUSY status of the forward channel.

reverse data transfer phase: In nibble mode, this signal serves as nibble data bit 3 and then 7.

reverse idle phase: Reflects the BUSY status of the forward channel.

ECP mode: Used for forward direction flow control. In reverse direction, this signal is used as a ninth data bit that indicates whether the data signals indicates a command or data.

PError/AckDataReq/nAckReverse

Compatibility mode: High signal indicates that a feed jam occurred in the paper supply section, or that there is no paper in the paper tray.

negotiation phase: High signal indicates whether or not IEEE 1284 is supported or not. Afterwards, this signal conforms with nDataAvail (nFault).

reverse data transfer phase: In nibble mode, this signal serves as nibble data bit 2 and then 6.

reverse idle phase: High until the host requests a data transfer. Afterwards, this signal conforms with nDataAvail (nFault).

ECP mode: Low signal authorizes nReverseRequest. The host looks at this signal in order to determine whether or not it has permission to drive the data signals.

Select/Xflag

Compatibility mode: Always high.

negotiation phase: Xflag indicates the extensibility flag. Used to respond to the extensibility request value sent from the host.

reverse data transfer phase: In nibble mode, this signal serves as nibble data bit 1 and then 5.

reverse idle phase: Same as negotiation phase.

ECP mode: Same as negotiation phase.

nAutoFd/HostBusy/HostAck

Compatibility mode: Not used.

negotiation phase: In order to request 1284 mode, this signal is set low and IEEE 1284active (nSelectln) is set high. Afterwards, this signal is set high when PtrClk (nAck) is set low.

reverse data transfer phase: In nibble mode, setting this signal low indicates to the printer that the host is ready to receive data. When this signal is subsequently set high, it indicates that the host received the data.

reverse idle phase: This signal is set high in response to a PtrClk (nAck) low pulse in order to return to the reverse data phase. If this signal is set high at the same time that IEEE 1284active (nSelectln) is set low the IEEE 1284 idle phase is aborted and the interface returns to compatibility mode.

ECP mode: Used for reverse direction flow control. Also used for handshaking via PeriphClk (nAck).

NC

Not used.

PeripheralLogicHigh

Parallel B: NC.

Parallel C: Pull up to +5V with 3.9 KΩ.

nInit/nReverseRequest

Compatibility mode: When a low signal is detected, the printer is deemed to be BUSY until the low signal is released.

negotiation phase: Always high.

reverse data transfer phase: Always high.

ECP mode: Low when switching to reverse direction. The peripheral device has permission to drive the data signals only when this signal is low and 1284active is high.

nFault/nDataAvail/nPeriphRequest

Compatibility mode: Low signal indicates that an error occurred.

negotiation phase: This signal is set high in order to authorize 1284 compatibility. In nibble mode, after the host sets HostBusy (nAutoFd) high, this signal is set low in order to indicate that the transmission data is ready.

reverse data transfer phase: This signal is set low in order to indicate to a nibble mode host that the transmission data is ready. Afterwards, this signal serves as nibble data bit 0 and then 4.

reverse idle phase: Indicates whether or not the data is valid.

ECP mode: This signal is set low to request communications with the host. Valid in both forward and reverse direction.

nSelectIn/IEEE1284active

Compatibility mode: Always low.

negotiation phase: This signal is set high at the same time that HostBusy is low in order to request 1284 mode.

reverse data transfer phase: This signal is set high to indicate that the bus direction is from the printer to the host. This signal is set low to terminate 1284 mode, setting the bus direction from the host to the printer.

reverse idle phase: Same as reverse data transfer phase.

ECP mode: Always high. This signal is set low to terminate ECP mode and return to compatibility mode.

HostLogicHigh

NC. (Not used.)

GND

Twisted pair return signal.

CG

Connected to the printer chassis. This signal and GND are connected.

+5V

Pull up to +5V with 1 kΩ

Using the ECP mode in Windows 95

To use the ECP mode with a Parallel C (IEEE 1284 level II compliant) connector, your computer must support the ECP mode.

Note:
The ECP mode is not available with Windows 3.1 and Windows NT.

To use the ECP mode, follow these steps:

1. Make the ECP mode settings in the BIOS setting program that comes with your computer. (For details of the settings and the program, see your computer's manual.)

2. Click the Start button, point to Settings, and then click Control Panel.

3. Right-click the System icon, and click Open in the menu that appears.

4. Select the Device Manager tab.

5. Select the ECP Printer Port under Ports [COM & LPT], then click the Properties button.

6. Select the Resources tab.

7. Make the appropriate setting in the Resource settings dialog box. (This setting depends on your computer system. For details, see your computer manual.)

8. Click OK to save the settings.

Serial Interface

The printer's resident serial interface can be set for either RS-232C or current loop operation. This interface has the following characteristics:

Data format

Word length:	7 or 8 bits
Parity:	None, odd, or even
Stop bits:	1 or 2
Printer ready protocol:	Enabled (XON/XOFF protocol set to ON)

You can set the data format using options and menu items in the SelecType mode.

Baud rate (bits per second):	300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600

Note:
When using the serial interface as RS-232C, the availability of baud rates over 38400 depends on your computer's hardware reliability (including the interface cable). When using the serial interface as Current loop, the availability of baud rates over 2400 depends on your computer's hardware reliability (including the interface cable). EPSON does not recommend or guarantee the use of any particular brand of computer.

Signal level:

RS-232C:	Conforms to EIA

Connector

D-sub 25-pin connector (computer)/mini DIN (printer)

Handshaking

The printer's serial interface can use DTR (Data Terminal Ready) signal levels and XON/XOFF communication protocols either separately or in combination. When the vacant area for data in the input buffer drops to 256 bytes, the printer outputs an XOFF code or sets the DTR signal level to low (MARK), indicating that it cannot receive more data.

Once the vacant area for data in the buffer recovers to 512 bytes, the printer outputs the XON code or sets the DTR flag to high (SPACE), indicating that it is again ready to receive data.

Error handling

A * character is printed if a parity error, framing error, or overrun error is detected.

Pin assignments

The serial interface connector pin assignments and a description of the interface signals are shown in the table below. The direction of signals is given as viewed from the printer.

Signal pin	RS-232C	Current loop	Direction	Description
2	TXD		OUT	Transmits data. This pin transmits serial data from the printer to the computer.
3	RXD		IN	Received data. This pin transmits data from the computer to the printer.
5	CTS		IN	Always ignored
17		TTY-TXD	OUT	Transmits data. This pin transmits serial data from the printer to the computer.

Signal pin	RS-232C	Current loop	Direction	Description
20	DTR		OUT	Data terminal ready. This pin indicates whether or not the printer is ready to receive data. If the printer ready protocol is not selected, the printer is always ready to receive data (this pin is always HIGH.) If the printer ready protocol is selected, the printer can accept data when the pin level is HIGH and cannot accept data when the pin level is LOW. When the DTR signal goes LOW, the host computer must stop sending data within 256 characters. This function can be set on or off with the default-setting mode of the printer.
23		TTY-RXD Return		Received data. This pin transmits serial data from the computer to the printer.
24		TTY-RXD Return		Transmits data. This pin transmits serial data from the printer to the computer.
25		TTY-RXD	IN	Received data. This pin transmits serial data from the computer to the printer.

Note:
The column heading "Direction" refers to the direction of signal flow as viewed from the printer.

Options and Consumables

500-Sheet Lower Paper Cassette

Paper size:	A4 (C81262✽) or Letter (C81263✽)
Paper weight:	60 to 90 g/m^2 (16 to 24 lb)
Paper feed:	Automatic feed delivery system Cassette capacity up to 500 sheets (75 g/m^2 or 20 lb paper)
Feeding speed:	For the first sheet, 22 seconds or less; subsequent sheets, 12 pages per minute
Paper types:	Plain paper, such as copier paper, and recycled paper
AC power supply:	DC 5 V supplied by the printer
Dimensions and weight:	
Height	107 mm (4.2 inches)
Width	405 mm (15.9 inches)
Depth	477 mm (18.9 inches) including the cassette
Weight	4.0 kg (8.8 lb) including the cassette

Imaging cartridge (S051016)

Storage temperature:	0 to 35℃ (32 to 95℉)
Storage humidity:	35 to 85% RH
Shelf life:	18 months after production
Life:	Up to 6000 pages under the following conditions: Letter or A4-size paper, continuous printing, and 5% print ratio

The number of pages you can print with an imaging cartridge varies depending on the type of printing. If you print a few pages at a time or print dense text exceeding the 5% print ratio, your cartridge may print fewer pages.

Appendix B
Symbol Sets

B

Introduction to Symbol Sets

Your printer can access a variety of symbol sets. Many of these symbol sets differ only in the international characters specific to each language.

Note:
Normally, your software handles fonts and symbols, so you probably never need to adjust the printer's settings. If you are writing your own printer control programs, or if you are using older software that cannot control fonts, refer to the following sections for symbol set details.

When you are considering which font to use, you should also consider which symbol set to combine with the font. Available symbol sets vary depending on which emulation mode you use and which font you choose.

In LJ4 Emulation Mode

The following table lists the symbol sets available in LJ4 emulation mode. A table of the characters for each set is included later in this chapter.

Symbol set name	Symbol set ID for ESC (	Available typefaces (see next page)
Roman-8* (includes another 19 sets)	8U	43 typefaces + bitmap**
Roman Extension	0E	bitmap
ECM94-1	0N	43 typefaces + bitmap
Legal	1U	43 typefaces + bitmap
8859-2 ISO	2N	43 typefaces + bitmap
PsMath	5M	35 typefaces
8859-9 ISO	5N	43 typefaces + bitmap
WiTurkish	5T	43 typefaces
MsPublishing	6J	35 typefaces
VeMath	6M	35 typefaces
DeskTop	7J	43 typefaces
Math-8	8M	35 typefaces
WiE.Europe	9E	43 typefaces
PcTk437	9T	43 typefaces
Windows	9U	43 typefaces
PsText	10J	43 typefaces
IBM-US	10U	43 typefaces + bitmap
IBM-DN	11U	43 typefaces + bitmap
McText	12J	43 typefaces
PcMultilingual	12U	43 typefaces + bitmap
VeInternational	13J	43 typefaces
VeUS	14J	43 typefaces
PiFont	15U	35 typefaces
PcE.Europe	17U	43 typefaces
Symbol	19M	Symbol Set SWA
WiAnsi	19U	43 typefaces
Wingdings	579L	More WingBats SWM

* The other 19 sets are the following: Norweg1, Italian, Swedish, ANSI ASCII, UK, French, German, Spanish, Norweg2, French2, HP German, JIS ASCII, HP Spanish, Chinese, IRV, Swedis2, Portuguese, IBM Portuguese, and IBM Spanish. These are partial variations of the Roman-8 set.

**"Bitmap" means the "Line Printer" typeface. All other typefaces are scalable.

The 35 and 43 typefaces refer to those shown in the table below:

	Typefaces	
	35	**43**
Flareserif 821 SWC Incised 901 SWC Clarendon Condensed SWC Ribbon 131 SWC Original Garamond SWC Audrey Two SWC Zapf Humanist 601 SWC Swiss 742 Condensed SWC	○ ○ ○ ○ ○ ○ ○ ○	 ○ ○ ○ ○ ○ ○ ○ ○
Swiss 721 SWM Dutch 801 SWM	— —	○ ○
Courier SWC Letter Gothic SWC Dutch 801 SWC Swiss 742 SWC	○ ○ ○ ○	○ ○ ○ ○

Roman-8 (8U)

ECM94-1 (0N)

Legal (1U)

8859-2 ISO (2N)

PsMath (5M)

8859-9 ISO(5N)

WiTurkish (5T)

MsPublishing (6J)

VeMath (6M)

DeskTop (7J)

Math-8M

WiE.Europe (9E)

PcTk437 (9T)

Windows (9U)

PsText (10J)

IBM-US (10U)

IBM-DN (11U)

McText (12J)

PcMultilingual (12U)

VeInternational (13J)

VeUS (14J)

PiFont (15U)

PcE.Europe (17U)

Symbol (19M)

WiAnsi (19U)

Wingdings (579L)

International Set for ISO sets

To obtain the symbol sets listed below, substitute the characters in the ANSI ASCII sets with the characters in the table below.

Iso set	ASCII code hex											
	23	24	40	5B	5C	5D	5E	60	7B	7C	7D	7E
ANSI ASCII (0U)												
Norweg 1 (0D)												
French (0F)												
HP German (0G)												
Italian (0I)												
JIS ASCII (0K)												
Swedis 2 (0S)												
Norweg 2 (1D)												
UK (1E)												
French 2 (1F)												
German (1G)												
HP Spanish (1S)												
Chinese (2K)												
Spanish (2S)												
IRV (2U)												
Swedish (3S)												
Portuguese (4S)												
IBM Portuguese (5S)												
IBM Spanish (6S)												

In ESC/P 2 or FX Modes

	PC 437, 850, 860, 863, 865	857, 852, BRASCII, Abicamp	PC 437
EPSON Roman	○	×	×
Courier SWC	○	○	×
EPSON Sans serif	○	×	×
EPSON Prestige	○	×	×
EPSON Script	○	×	×
Letter Gothic SWC	○	○	×
Swiss 721 SWM	○	○	×
Dutch 801 SWM	○	○	×
OCR B	×	×	○

*Available only in ESC/P 2 mode.

PC437 (U.S./Standard Europe)

PC850 (Multilingual)   *PC860 (Portuguese)*

PC863 (Canadian-French)   *PC865 (Norwegian)*

PC857 (PcTurk2)   PC852 (East Europe)

BRASCII   Abicomp

Italic

No characters are available for hex code 15 in the italic character table.

International Character Sets

You can select one of the following international character sets using either SelecType or the ESC R command. For example, when you select "Italic France" in SelecType, the characters in the "France" row in the table below are used in the italic character table.

Country	ASCII code hex											
	23	24	40	5B	5C	5D	5E	60	7B	7C	7D	7E
USA												
France												
Germany												
UK												
Denmark												
Sweden												
Italy												
Spain												
Japan												
Norway												
DenmarkII												
Spain II												
Latin America												
Korea*												
Legal*												

* Available for ESC/P 2 emulation only

Characters available with the ESC (^ command

To print the characters in the table below, use the ESC (^ command.

In I239X Emulation Mode

Available symbol sets in I239X mode are PC437, PC850, PC860, PC863, and PC865.

Refer to "ESC/P 2 or FX modes" in the previous section.

Available fonts are EPSON Sans Serif, Courier SWC, EPSON Prestige, EPSON Gothic, EPSON Presentor, EPSON Orator, and EPSON Script.

In EPSON GL/2 Mode

Available symbol sets in EPSON GL/2 mode are the same as those in LaserJet 4 emulation mode. Refer to the section on LaserJet 4 mode.

Appendix C
Command Summary

C

Your printer has the ability to emulate the following printers in each printer mode:

LJ-4   Hewlett-Packard LaserJet 4 (PCL5e)

ESC/P 2   EPSON LQ-570 (24-pin)

FX   EPSON FX-870/1170, or LX-100 (9-pin)

GL/2   Hewlett-Packard GL/2 graphics language

In addition, the following printer control languages are supported:

PJL   Printer Job Language

EJL   EPSON Job Control Language

This appendix lists the printer commands for these modes. Most of the commands closely emulate the original printer or the control language; however, some have operational differences because the printers use different technologies. Additional information is provided in the descriptions of control commands with these differences.

For more information on emulation modes, refer to the following sections:

Changing the emulation mode   Chapter 6

Available symbol sets or character tables   Appendix B

Using the printer as an ESC/P 2 printer   Chapter 6

Using the printer as an FX printer   Chapter 6

Using the printer as a GL/2 plotter   Chapter 6

LaserJet 4 (LJ4) Emulation Commands

This section lists the printer commands supported in the LJ4 emulation mode. For more information on printer commands, see Hewlett-Packard's LaserJet 4 reference manual.

Job control

Reset	ESC E
Number of copies	ESC &l#X
Universal exit language	ESC%#X
Long-edge (left) offset registration	ESC &l#U
Short-edge (right) offset registration	ESC &l#Z
Unit of measure	ESC &u#D

Page control

Paper source	ESC &l#H
Page size	ESC &l#A
Page length	ESC &l#P
Orientation	ESC &l#O
Print direction	ESC &a#P
Top margin	ESC &l#E
Text length	ESC &l#F
Left margin	ESC &a#L
Right margin	ESC &a#M
Clear horizontal margins	ESC 9
Perforation skip	ESC &l#L
Horizontal Motion Index (HMI)	ESC &k#H
Vertical Motion Index (VMI)	ESC &l#C
Line spacing	ESC &l#D

Cursor positioning

Vertical position	ESC &a#R
	ESC *p#Y
	ESC &a#V
Horizontal position	ESC &a#C
	ESC *p#X
	ESC &a#H
Half line feed	ESC =
Line termination	ESC &k#G
Push/pop position	ESC &f#S

Font selection

Primary symbol set	ESC (id
Secondary symbol set	ESC)id
Primary spacing	ESC (s#P
Secondary spacing	ESC)s#P
Primary pitch	ESC (s#H
Secondary pitch	ESC)s#H
Set pitch mode	ESC &k#S
Primary height	ESC (s#V
Secondary height	ESC)s#V
Primary style	ESC (s#S
Secondary style	ESC)s#S
Primary font stroke weight	ESC (s#B
Secondary font stroke weight	ESC)s#B
Primary typeface family	ESC (s#T
Secondary typeface family	ESC)s#T
Primary font default	ESC (3@
Secondary font default	ESC)3@
Enable underline	ESC &d#D
Disable underline	ESC &d@
Transparent print data	ESC &p#X[data]

Font management

Assign font ID	ESC *c#D
Font and character control	ESC *c#F
Set symbol set	ESC *c#R
Define symbol set	ESC (f#W[data]
Symbol set control	ESC *c#S
Select primary font with ID#	ESC (#X
Select secondary font with ID#	ESC)#X

Soft font creation

Font descriptor	ESC)s#W[data]
Download character	ESC (s#W[data]
Character code	ESC *c#E

Raster Graphics

Raster resolutions	ESC *t#R
Raster graphics presentations	ESC *r#F
Start raster graphics	ESC *r#A
Raster Y offset	ESC *b#Y
Set raster compression mode	ESC *b#M
Transfer raster data by row	ESC *b#W[data]
End raster graphics (version B)	ESC *rB
End raster graphics (version C)	ESC *rC
Raster height	ESC *r#T
Raster width	ESC *r#S

Print model

Select current pattern	ESC *v#T
Select source transparency mode	ESC *v#N
Select pattern transparency mode	ESC *v#O
Rectangle width (PCL unit)	ESC *c#A
Rectangle width (decipoints)	ESC *c#H
Rectangle height (PCL unit)	ESC *c#B
Rectangle height (decipoints)	ESC *c#V
Fill rectangular area	ESC *cP

User-defined pattern management/creation

Pattern ID	ESC *c#G
Define pattern	ESC *c#W[data]
User-defined pattern control	ESC *c#Q
Set pattern reference point	ESC *p#R

Macros

Macro ID	ESC &f#Y
Macro control	ESC &f#X

Status readback

Set status readback location type	ESC *s#T
Set status readback location unit	ESC *s#U
Inquire status readback entity	ESC *s#I
Flush all pages	ESC &r#F
Free memory space	ESC *s1M
Echo	ESC *s#X

Programming hints

End-of-line wrap	ESC &s#C
Enable display functions	ESC Y
Disable display functions	ESC Z

PCL vector graphics switching / set-up picture frame

Enter PCL mode	ESC %#A
Enter GL/2 mode	ESC %#B
GL/2 plot horizontal size	ESC*c#K
GL/2 plot vertical size	ESC*c#L
Set picture frame anchor point	ESC*c0T
Picture frame horizontal size	ESC*c#X
Picture frame vertical size	ESC*c#Y

GL/2 context commands

Dual context extensions

Enter PCL mode	ESC %#A
Reset	ESC E
Primary font	FI
Secondary font	FN
Scalable or bitmapped fonts	SB

Palette extensions

Transparency mode	TR
Screened vectors	SV
Number of Pens	NP

Vector Group

Arc absolute	AA
Arc relative	AR
Absolute arc three point	AT
Bezier absolute	BZ
Bezier relative	BR
Plot absolute	PA
Plot relative	PR
Pen down	PD
Pen up	PU
Relative arc three point	RT
Polyline encoded	PE

Polygon Group

Circle	CI
Fill rectangle absolute	RA
Fill rectangle relative	RR
Edge rectangle absolute	EA
Edge rectangle relative	ER
Fill wedge	WG
Edge wedge	EW
Polygon mode	PM
Fill polygon	FP
Edge polygon	EP

Character Group

Select standard font	SS
Select alternate font	SA
Absolute direction	DI
Relative direction	DR
Absolute character size	SI
Relative character size	SR
Character slant	SL
Extra space	ES
Standard font definition	SD
Alternate font definition	AD
Character fill mode	CF
Label origin	LO
Label	LB
Define label terminator	DT
Character plot	CP
Transparent data	TD
Define variable text path	DV

Line and fill attribute group

Line type	LT
Line attribute	LA
Pen width	PW
Pen width unit selection	WU
Select pen	SP
Symbol mode	SM
Fill type	FT
Anchor corner	AC
Raster fill definition	RF
User defined line type	UL

Configuration and status group

Scale	SC
Input window	IW
Input P1 and P2	IP
Input relative P1 and P2	IR
Default values	DF
Initialize	IN
Rotate coordinate system	RO
Comment	CO

ESC/P 2 and FX Commands

This section lists the printer commands supported in the ESC/P 2 and FX emulation modes.

ESC/P 2 mode

General operation

Initialize printer	ESC @
Control paper loading/ejecting	ESC EM *n*

Paper feeding

Carriage return	CR
Form feed	FF
Line feed	LF
Select 1/8-inch line spacing	ESC 0
Select 1/6-inch line spacing	ESC 2
Set n/180-inch line spacing	ESC 3 *n*
Set n/360-inch line spacing	ESC + *n*

Page format

Set page format	ESC (c *nn*
Set page length in defined units	ESC (C *nn*
Set page length in lines	ESC C *n*
Set page length in inches	ESC C 0 *n*
Set bottom margin for continuous paper	ESC N *n*
Cancel top/bottom margin for continuous paper	ESC O
Set left margin	ESC l *n*
Set right margin	ESC Q *n*

Print position motion

Set absolute horizontal print position	ESC $ *n1 n2*
Set relative horizontal print position	ESC \ *n1 n2*
Set absolute vertical print position	ESC (V *nn*
Set relative vertical print position	ESC (v *nn*
Set horizontal tabs	ESC D *nn*
Tab horizontally	HT
Set vertical tabs	ESC B *nn*
Tab vertically	VT
Advance paper n/180 inch	ESC J *n*
Reverse paper n/180 inch	ESC j *n*

Font selection

Select typeface	ESC k *n*
Select font by pitch and point	ESC X *nn*
Select 10.5 point, 10 cpi	ESC P
Select 10.5 point, 12 cpi	ESC M
Select 10.5 point, 15 cpi	ESC g
Turn proportional mode on/off	ESC p 1/0
Select LQ or draft	ESC x *n*
Select italic font	ESC 4
Cancel italic font	ESC 5
Select bold font	ESC E
Cancel bold font	ESC F
Master select	ESC ! *n*
Control code set/clear	ESC I 1/0
Select print Pitch	ESC c

Font enhancement

Select condensed printing	SI
Cancel condensed printing	DC2
Select double-width printing (one line)	SO
Turn double-width printing on/off	ESC W 1/0
Cancel double-width printing (one line)	DC4
Turn double-height printing on/off	ESC w 1/0
Select double-strike printing	ESC G
Cancel double-strike printing	ESC H
Select superscript printing	ESC S 0
Select subscript printing	ESC S 1
Cancel superscript/subscript printing	ESC T
Select line/score	ESC (- *nn*
Turn underline on/off	ESC - 1/0
Select character style	ESC q *n*

Spacing

Set intercharacter space	ESC SP *n*
Define unit	ESC (U *nn*

Character handling

Assign character table	ESC (t *nn*
Select character table	ESC t *n*
Select an international character set	ESC R *n*
Define download character	ESC & *nn*
Copy ROM to RAM	ESC : 0 *n* 0
Select user-defined set	ESC % *n*
Enable printing of upper control codes	ESC 6
Enable upper control codes	ESC 7
Print data as characters	ESC (^ *nn*

Bit image

Selection and printing of bit image	ESC * *nn*
Select graphic mode	ESC (G *nn*
Print raster graphics	ESC . c v hm

FX mode

Printer commands arranged by topic

The following section lists and describes all FX and LQ commands by topic.

Printer operation

Initialize printer	ESC @
Control paper loading/ejecting	ESC EM n

Data control

Carriage return	CR

Vertical motion

Form feed	FF
Set page length in lines	ESC C n
Set page length in inches	ESC C 0 n
Set skip over perforation	ESC N n
Cancel skip over perforation	ESC O
Line feed	LF
Select 1/8-inch line spacing	ESC 0
Select 7/72-inch line spacing	ESC 1
Select 1/6-inch line spacing	ESC 2
Select n/216-inch line spacing	ESC 3 n
Perform n/216-inch line spacing	ESC J
Tab vertically	VT
Set vertical tabs	ESC B nn

Note:
Your printer will not print characters beyond one page length (set with the ESC C or ESC C0 commands), while an FX printer might print them.

Horizontal motion

Set absolute horizontal print position	ESC $ *n1 n2*
Set relative horizontal print position	ESC*n1 n2*
Set left margin	ESC l *n*
Set right margin	ESC Q *n*
Tab horizontally	HT
Set horizontal tabs	ESC D *nn*

Overall printing style

Select letter quality or draft	ESC x *n*

Note:
The print quality and speed cannot be changed even if you send the ESC x command.

Select typeface family	ESC k *n*
Master select	ESC ! *n*

Print size and character width

Select 10 cpi	ESC P
Select 12 cpi	ESC M
Turn proportional mode on/off	ESC p 1/0
Select condensed mode	SI
Cancel condensed mode	DC2
Select double-width mode (one line)	SO
Cancel double-width mode (one line)	DC4
Turn double-width mode on/off	ESC W 1/0
Turn double-height printing on/off	ESC w 1/0

Font enhancement

Select emphasized mode	ESC E
Cancel emphasized mode	ESC F
Select double-strike mode	ESC G
Cancel double-strike mode	ESC H

Note:
The ESC G and ESC E commands produce identical effects, so you cannot obtain darker print by combining the two.

Select superscript/subscript mode	ESC S 0/1
Cancel superscript/subscript mode	ESC T
Select italic mode	ESC 4
Cancel italic mode	ESC 5
Turn underline mode on/off	ESC - 1/0

Word processing

Set intercharacter space	ESC SP *n*
Select character tables	ESC t *n*
Assign character tables	ESC (t *nn*
Select international character set	ESC R *n*
Printable code area expansion	ESC 6
Enable upper control codes	ESC 7

User Defined Characters

Define user-defined characters	ESC & *nn*

Note:
The appearance of characters defined using ESC & may differ slightly from an actual FX printer.

Copy ROM to RAM	ESC : 0 *n* 0
Select user-defined set	ESC % *n*
Printable code area expansion	ESC I *n*

Bit image

Select graphics mode	ESC * m *n*
Selection and printing of bit image	ESC ^ m *n*

PJL Commands

This section lists the available commands for printer job language mode (PJL). For more information on PJL, refer to the Printer Job Language Technical Reference Manual from Hewlett-Packard.

COMMENT	@PJL COMMENT [words] [<CR>] <LF>
DEFAULT	@PJL DEFAULT [LPARM: ***] variable = value [<CR>] <LF>
DINQUIRE	@PJL DINQUIRE [LPARM: ***] variable [<CR>] <LF>
ECHO	@PJL ECHO [Words] [<CR>] <LF>
ENTER	@PJL ENTER LANGUAGE = *** [<CR>] <LF>
EOJ	@PJL EOJ [NAME= ***] [<CR>] <LF>
INFO	@PJL INFO read only variable [<CR>] <LF>
INITIALIZE	@PJL INITIALIZE [<CR>] <LF>
INQUIRE	@PJL INQUIRE [LPARM: ***] variable [<CR>] <LF>
JOB	@PJL JOB [NAME = ***][START = ***][END = ***][<CR>] <LF>
OPMSG	@PJL OPMSG DISPLAY = *** [<CR>] <LF>
RDYMSG	@PJL RDYMSG DISPLAY = *** [<CR>] <LF>
RESET	@PJL RESET [<CR>] <LF>
SET	@PJL SET [LPARM: ***] variable = value [<CR>] <LF>
STMSG	@PJL STMSG DISPLAY = *** [<CR>] <LF>
UEL	<ESC>%-12345X
USTATUS	@PJL USTATUS variable = value [<CR>] <LF>
USTATUSOFF	@PJL USTATUSOFF [<CR>] <LF>
PJL	@PJL [<CR>] <LF>

EJL Mode

This section lists the commands for EJL (EPSON Job Control Language). EJL can perform the following operations:

❑ Switch the printer emulation

❑ Transfer the printer's system information to the computer

EJL can switch the printer emulation with a unidirectional interface, but a bidirectional interface is required for the computer to receive system information from the printer.

Function	Command
Universal exit language	<ESC><SOH>
Enter printer emulation	@EJL<WS>ENTER[<WS>]LANGUAGE[<WS>]=[<WS>] LANGUAGE[<CR>]<LF>
	LANGUAGE:LJ4, EPSONGL2, PS*, ESCP2, FX, I239X *Available only when the appropriate option module is installed.
Comment	@EJL<WS>COMMENT<WS><comment strings>[<CR>]<LF>
Inquire name	@EJL<WS>INQUIRE<WS>NAME[<CR>]<LF>
ID	@EJL<WS>ID[<WS>][<CR>]<LF>
Select language	@EJL<WS>SELECT<WS>Option[<WS>]= [<WS>]Value[<WS>][<CR>]<LF>
Set option	@EJL<WS>[SET<WS>Option[<WS>]= [<WS>]Value][<WS>][<CR>]<LF>
Default	@EJL<WS>DEFAULT[<WS>Option[<WS>]= [<WS>]Value][<WS>][<CR>]<LF>
Print	@EJL<WS>PRINT[<WS>Option][<WS>][<CR>]<LF>

Overview of the EJL commands

EJL commands must be sent immediately after the printer receives the universal exit command; otherwise the printer returns to its currently selected emulation mode.

Every EJL command starts with the string @EJL, which must be in uppercase letters, although other commands can be both uppercase and lowercase.

You must send the LF code at the end of an EJL command; only an LF code terminates the EJL command. If the EJL command is not followed by an LF code, the printer does not recognize it as an EJL command; it is then printed as a character string in the currently selected printer emulation mode.

If the printer emulation you attempt to switch to is not available, the printer switches to the currently selected printer emulation mode.

Note:
If the emulation setting is set to Auto*, the printer switches automatically between emulation modes, depending on the recieved data. If a specific emulation setting is selected, the printer switches to that mode.*

EJL command summary

<ESC><SOH>

   Description: Exit current printer emulation and enter EJL mode

@EJL<WS>ENTER<WS>Option[<WS>]=
[<WS>]Value[<CR>]<LF>

   Option (Value): LANGUAGE (LJ4, EPSONGL2, PS*, ESCP2, FX, I239X)

        *Available only when the appropriate option module
         is installed.

   Description: Enter printer emulation from EJL mode

@EJL<WS>COMMENT<WS>comment strings[<CR>]<LF>

   Description: Enter comments

@EJL<WS>INQUIRE<WS>NAME[<WS>][<CR>]<LF>

Description: Inquire printer name. If you are using a bidirectional interface between the computer and the printer, your printer outputs the following answer strings:

@EJL ANSWER NAME = Printer name <CR> <LF>

@EJL<WS>ID[<WS>][<CR>]<LF>

Description: Send the device ID to host computer

@EJL<WS>SELECT<WS>Option[<WS>]=
[<WS>]Value[<WS>][<CR>]<LF>

Option (Value):   LANGUAGE (LJ4, ESCP2, FX, I239X)

Description: Specify the available language under EJL mode

@EJL<WS>SET[<WS>Option[<WS>]=
[<WS>]Value][<WS>][<CR>]<LF>

Description: Specify the setting

Option (Value):   TOPOFFSET (-9 to 99.0), LEFTOFFSET (-9 to 99.0), PAGESIZE (LT, LGL, A4, EXE, MON, C5, DL, A5, B5, HLT, GLT, GLG, F4, C6, COM10, IB5, CTM), PRINTERMODE (LJ4, EPSONGL2, AUTO, PS*, I239X, ESCP2, FX), AUTOCONTINUE (OFF, ON), PANELLOCK (OFF, ON), PAPERUNIT (1 to 15, AUTO), SIZEIGNORE (OFF, ON).

Other values depend on the LANGUAGE.

*Available only when the appropriate option module is installed.

LJ4:	DESTSYMSET (0 to 3199), SRCSYMSET (0 to 3199)
ESCP2, FX:	AUTOCR (OFF, ON), AUTOLF (OFF, ON), BITIMAGE (BCODE, DARK, LIGHT), CGTABLE (BPABICOMP, BPBRASCII, BULGARIAN*, CODEMJK*, HEBREW7*, HEBREW8*, ISO8859-7*, ISO8859-9*, ITALIC, MAZOWIA*, PCAR864*, PCCANF, PCCY855*, PCCY866*, PCEEUROPE, PCGK437*, PCGK851*, PCGK869*, PCHE862*, PCICELANDIC*, PCMULT, PCNORD, PCPORT, PCSL427*, PCTURKISH1*, PCTURKISH2, PCUSA), CONDENSED (OFF, ON), COUNTRY (DENMARK, DENMARK2, FRANCE, GERMANY, ITALY, JAPAN, KOREA, LANTINAMERIC, LEGAL, NORWAY, SPAIN1, SPAIN2, SWEDEN, UK, USA), FONT (COURIER, OCRB, ORATORS, PRESTIGE, ROMAN, ROMAN-T, SANS, SANS-H, SCRIPT), PITCH (10, 12, 15, PROP), TEXT (1 to 81), TMARGIN (0.4, 0.4 to 1.5), ZERO (NORMAL, SLASHEDZERO)

* Available only in ESC/P 2 mode.

I239X:	ALTGRAPHICS (OFF), AUTOCR (OFF, ON), AUTOLF (OFF, ON), BITIMAGE (DARK, LIGHT), CODEPAGE (437, 850, 860, 863, 865), FONT (COURIER, GOTHIC, ORATOR, PRESENTOR, PRESTIGE, SANS, SCRIPT), PITCH (10, 12, 15, 17, 20, 24, PROP), TEXT (1 to 81), TMARGIN (0.3, 0.35 to 1.5), ZERO (NORMAL, SLASHEDZERO)

**@EJL<WS>DEFAULT[<WS>Option[<WS>]=
[<WS>]Value][<WS>][<CR>]<LF>**

Description:	Save the setting in EEPROM as the default of the EJL mode settings
Option (Value):	Same as SET command

@EJL<WS>PRINT[<WS>Option][<WS>][<CR>]<LF>

Description:	Print the printer's current status sheet
Option:	STATUSSHEET, PSFONTSHEET*, PSSTATUSSHEET*, ESCP2 FONTSHEET, FXFONTSHEET, I239X FONTSHEET, LJ4 FONTSHEET, OPTROM1-INFO-SHEET*, SIMM1-INFO-SHEET*

*Available only when the appropriate option module
 is installed.

Example with @EJL<WS>ENTER<WS>Option[<WS>]=
[<WS>]<Value>[<WS>][<CR>]<LF>

Decimal:	64 69 74 76 32 69 78 84 69 82 32 76 65 78 71 85 65 71 69 [32] 61 [32] <ASCII strings> [13] 10
Hexadecimal:	40 45 4A 4C 20 45 4E 54 45 52 20 4C 41 4E 47 55 41 47 45 [20] 3D [20] <ASCII strings> [0D] 0A

Note:
<WS> represents spaces (decimal 32) or Horizontal Tab (HT) (decimal 9).
Commands marked with brackets can be omitted.

I239X Emulation Commands

This section lists the printer commands supported in the I239X emulation mode. For more information on these commands, see IBM's 2390/2391 reference manual.

Page format

Printable area

Set page length in lines	ESC C n
Set page length in inches	ESC C NUL n
Set skip perforation	ESC N n
Cancel skip perforation	ESC O
Set horizontal margins	ESC X

Line spacing

Set line space to 1/8-inch	ESC 0
Set line space to 7/72-inch	ESC 1
Activate line spacing for text	ESC 2
Set line spacing for graphics (n/180, n/216, or n/360 inch)	ESC 3 n
Set line spacing for text (n/72 inch)	ESC A n

Unit definition

Set vertical units
(1/180, 1/216, or 1/360 inch)   ESC [\

Tab

Set vertical tab stops   ESC B
Set default tab stops   ESC R
Set horizontal tab stops   ESC D

Paper feeding/print position motion

Carriage return   CR
Line feed   LF
Form feed   FF
Move paper vertically
(n/180, n/216, or n/360 inch)   ESC J
Automatic line feed   ESC 5
Reverse line feed   ESC]
Back space   BS
Space   SP
Horizontal tab   HT
Vertical tab   VT
Move current print position
(1/120 inch)   ESC d
Set top of form   ESC 4

Text

Font selection

Select 10 pitch font	DC2
Select 12 pitch font	ESC:
Start 17 cpi printing	SI
Start 17 cpi printing	ESC SI
Proportional spacing	ESC P
Begin subscript/superscript	ESC S
End subscript/superscript	ESC T
Select font and pitch	ESC[I
Select print or font	ESC I
Select character set 2	ESC 6
Select character set 1	ESC 7
Select page code	ESC[T
Print one character	ESC ^
Print character from A Code Page	ESC \

Font enhancement

Continuous overscore	ESC_
Continuous underline	ESC-
Score select	ESC[-
Select print type style	ESC[@
Begin double-width printing by line	SO
Begin double-width printing by line	ESC SO
End double-width printing by line	DC4
Double-width printing	ESC W
Begin empahsized (bold) print	ESC E
End empahsized (bold) print	ESC F
Begin double-strike print	ESC G
End double-strike print	ESC H

Bit image

Normal density bit image graphics	ESC K
Double-density bit image graphics (half speed)	ESC L
Double-density bit image graphics (normal speed)	ESC Y
High-density bit image graphics	ESC Z
Graphic print mode	ESC [g

Bar code

Bar code set up	ESC [f
Bar code transfer	ESC [P-

Auxiliary Functions

Initialize

Set initial conditions	ESC [K

Data input control

Cancel 1 line	CAN

Auxiliary function

Select paper tray	ESC [F

AGM Mode

Line spacing

Set line spacing for graphics (n/180, n/216, or n/360 inch)	ESC 3
Set line spacing for text (n/60 inch)	ESC A

Paper feeding/print position motion

Move paper vertically (n/180, n/216, or n/360 inch)	ESC J
Line feed	LF

Bit image

Normal-density bit image graphics	ESC K
Double-density bit image graphics (half speed)	ESC L
Double-density bit image graphics (normal speed)	ESC Y
High-density bit image graphics	ESC Z
Graphic print mode	ESC [g
Select graphic mode	ESC *

Appendix D
Working with Fonts

D

Read this section if you would like to know more about fonts and see samples of the installed fonts.

To select a font, use your application program.

Font problems are uncommon but some may occur, such as:

❑   The printer substitutes a font other than the one you selected with your software.

❑   The printed page does not exactly match what is on screen.

These kinds of problems usually occur if you use an emulation other than LJ4 or when you are trying to print fonts that are not installed in the printer. If you have font problems, read "Printer and Screen Fonts," below, to find out how to fix them.

Printer and Screen Fonts

Fonts are installed on both the printer and the computer. The printer fonts, which reside in printer memory, are used by the printer to print text. Screen fonts, which are stored on your computer's media, are used to display text on screen to represent the fonts that will print.

Two separate sets of fonts are needed because the monitor and printer have different requirements for producing fonts. The monitor normally uses bitmap fonts that are specially designed for the screen's resolution. A bitmap is a dot-by-dot representation of an image or character. The printer, however, uses an outline font that is created from a mathematical formula that describes the outline of each character. Using outline fonts allows the printer to render any character in the requested size.

| printer font | screen font |

Note:
The distinction between printer and screen fonts is not as important
when you are using TrueType fonts, which are included with
Windows. TrueType is an outline font format that can be used by
both the printer and the screen.

Available Fonts

The following table lists the fonts that are installed on your
printer. The names of all the fonts appear in your software's
font list if you are using the driver provided with the printer.
(If you are using a different driver, all of these fonts may not be
available.)

The fonts provided with the printer are shown in the following
table.

LJ4/GL2 mode

Font name	Scalable font	HP equivalent
Dutch 801 SWC	Roman, Bold, Italic, Bold Italic	CG Times®
Zapf Humanist 601 SWC	Demi, Bold, Demi Italic, Bold Italic	CG Omega®
Ribbon 131 SWC	-	Coronet
Clarendon Condensed SWC	-	Claredon Condensed
Swiss 742 SWC	Medium, Bold, Italic, Bold Italic, Condensed, Bold Condensed, Condensed Italic, Bold Condensed Italic	Univers®
Incised 901 SWC	Medium, Black, Italic	Antique Olive

Font name	Scalable font	HP equivalent
Original Garamond SWC	Medium, Bold, Italic, Bold Italic	Garamond
Andrey Two SWC	-	Marigold
Flareserif 821 SWC	Medium, Extra Bold	Albertus
Swiss 721 SWM	Roman, Bold, Oblique, Bold Oblique	Arial®
Dutch 801 SWM	Roman, Bold, Italic, Bold Italic	Times New
Symbol Set SWA	-	Symbol
More WingBats SWM	-	Wingdings
Courier SWC	Medium, Bold, Italic, Bold Italic	Courier
Letter Gothic SWC	Roman, Bold, Italic	Letter Gothic

Font name	Bitmap font	HP equivalent
Line Printer	–	Line Printer

When selecting fonts in your software program, choose the font name listed in the HP equivalent column.

ESC/P 2 and FX modes

Font name	Scalable font
EPSON Roman	-
EPSON Sans serif	-
Courier SWC	Medium, Bold
EPSON Prestige	-
EPSON Script	-
Swiss 721 SWM*	Roman, Bold
Dutch 801 SWM*	Roman, Bold
Letter Gothic SWC	Roman, Bold

* Available only in ESC/P 2 mode.

Font name	Bitmap font
OCR B	-

I239X mode

Font name	Scalable font
EPSON Sans serif	-
Courier SWC	Medium, Bold
EPSON Prestige	-
EPSON Gothic	-
EPSON Presentor	-
EPSON Orator	-
EPSON Script	-

Font name	Bitmap font
OCR B	-

To see the font samples, use the Test Menu in SelecType.

1. Make sure that paper is loaded.

2. Press Menu while the printer is on line.

3. Press Item until the font sample you want appears.

4. Press Enter; a Font Sample sheet is printed.

Adding More Fonts

Fonts that reside on your computer's hard disk can be downloaded, or transferred, to the printer so they can be printed. Downloaded fonts, also called soft fonts, remain in printer memory until you turn off the printer or otherwise reinitialize it. If you plan on downloading many fonts, make sure your printer has sufficient memory.

Downloading fonts

Most font packages make it easy to install fonts by providing their own installer. The installer gives you the option of having the fonts automatically downloaded whenever you start your computer or having fonts downloaded only when you need to print a particular font.

If you're running Windows, you can also install fonts by clicking on the Fonts icon in the Control Panel. Once installed, the fonts are available in all your Windows applications.

Selecting Fonts

Whenever possible select fonts from the font list in your software application. See your software documentation for instructions.

If you are sending unformatted text to the printer directly from DOS or if you are using a simple software package that does not include font selection, you can select fonts with the Remote Control Panel utility. For instructions, see Chapter 5.

Note:
Selecting a font using the Remote Control Panel utility is not recommended. Selecting fonts from your software program is easier, and any font selection you make from your software overrides the selection you make from the Remote Control Panel.
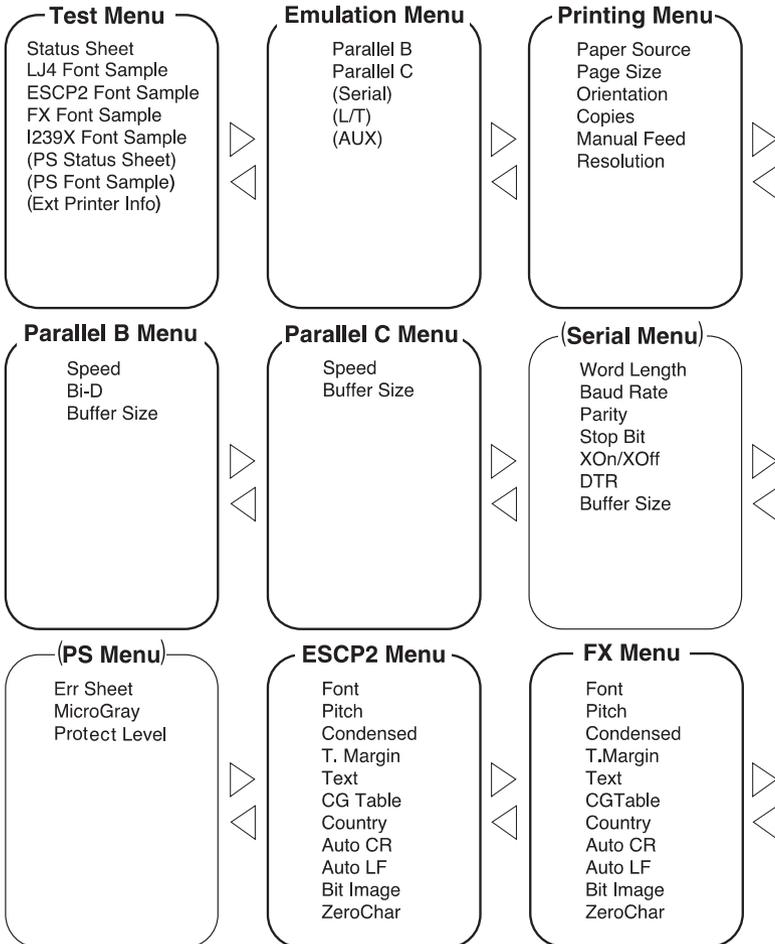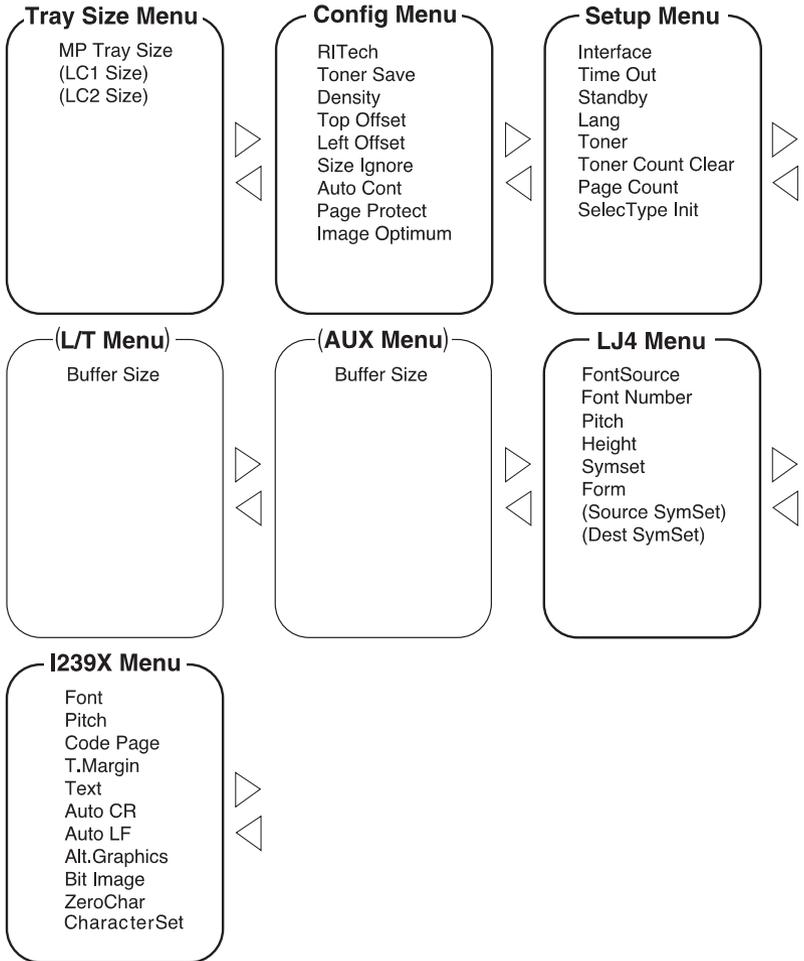
Appendix E
Map of SelecType Menus

E

Switching between SelecType Menus

The following menu maps show the possible menus and options in SelecType.

KEY

▷ Pressing the Menu button displays the next menu.

◁ Pressing the Alt + Menu buttons displays the prior menu.

(   ) This is only available with option.

Test Menu

Status Sheet
LJ4 Font Sample
ESCP2 Font Sample
FX Font Sample
I239X Font Sample
(PS Status Sheet)
(PS Font Sample)
(Ext Printer Info)

Emulation Menu

Parallel B
Parallel C
(Serial)
(L/T)
(AUX)

Printing Menu

Paper Source
Page Size
Orientation
Copies
Manual Feed
Resolution

Parallel B Menu

Speed
Bi-D
Buffer Size

Parallel C Menu

Speed
Buffer Size

(Serial Menu)

Word Length
Baud Rate
Parity
Stop Bit
XOn/XOff
DTR
Buffer Size

(PS Menu)

Err Sheet
MicroGray
Protect Level

ESCP2 Menu

Font
Pitch
Condensed
T. Margin
Text
CG Table
Country
Auto CR
Auto LF
Bit Image
ZeroChar

FX Menu

Font
Pitch
Condensed
T.Margin
Text
CGTable
Country
Auto CR
Auto LF
Bit Image
ZeroChar

Tray Size Menu

MP Tray Size
(LC1 Size)
(LC2 Size)

Config Menu

RITech
Toner Save
Density
Top Offset
Left Offset
Size Ignore
Auto Cont
Page Protect
Image Optimum

Setup Menu

Interface
Time Out
Standby
Lang
Toner
Toner Count Clear
Page Count
SelecType Init

(L/T Menu)

Buffer Size

(AUX Menu)

Buffer Size

LJ4 Menu

FontSource
Font Number
Pitch
Height
Symset
Form
(Source SymSet)
(Dest SymSet)

I239X Menu

Font
Pitch
Code Page
T.Margin
Text
Auto CR
Auto LF
Alt.Graphics
Bit Image
ZeroChar
CharacterSet

Glossary

ASCII
American Standard Code for Information Interchange. A standardized way of assigning codes to characters and control codes. The system is widely used by manufacturers of computers, printers, and software.

auto line feed
A printer feature in which each carriage return code (CR) is automatically accompanied by a line feed (LF) code.

bitmap font
The dot-by-dot representation of a font. Bitmap fonts are displayed on computer screens and printed on dot matrix printers. See *outline font*.

buffer
See *memory*.

character set
A collection of letters, numbers, and symbols used in a particular language.

cpi (characters per inch)
A measure of the size of fixed-width text characters.

default
A value or setting that takes effect when the printer is turned on, reset, or initialized.

dots per inch (dpi)
The number of dots per inch is a measure of printer resolution. The higher the number of dots, the higher the resolution.

download
To transfer information from the computer to the printer.

download font
A font that is loaded into the printer's memory from an outside source, such as a computer. Also called soft font.

dpi
See *dots per inch.*

driver
The part of a software program that converts commands from the program into commands used by the printer. Also known as the printer driver.

drum
The part of the printer mechanism where the image is formed and transferred to the paper.

emulation
See *printer emulation*.

fixed-width font
A font whose characters are allotted the same amount of horizontal space, no matter the width of the character. Thus the uppercase M receives the same amount of space as the letter l.

font
A set of characters and symbols that share a common typographic design and style.

font family
The collection of all sizes and styles of a font.

halftone
A grayscale image that is composed of small dots. The dots can be close together to create black or more widely spaced to create gray or white areas in the image. Newspaper photographs are common examples of halftones.

imaging cartridge
The imaging cartridge contains a photosensitive print drum and a supply of toner.

initialization
The act of returning the printer to its defaults (fixed set of conditions).

interface
The connection between the printer and the computer. A parallel interface transmits data one character or code at a time, and a serial interface transmits data one bit at a time.

landscape
Printing that is oriented sideways on the page. This orientation gives you a page that is wider than it is high and is useful for printing spreadsheets.

memory
The part of the printer's electronic system that is used to store information. Some information is fixed and is used to control how the printer operates. Information that is sent to the printer from the computer (such as downloaded fonts) is stored in memory temporarily. See also *RAM* and *ROM*.

orientation
Refers to the direction in which characters are printed on a page. This direction is either portrait, like this page, or landscape with the text printed on a page turned sideways.

outline font
A font whose outline is described mathematically, allowing it to be rendered (printed or drawn) smoothly at any size.

PCL
The command language built into the Hewlett-Packard LaserJet series printers.

photoconductor unit
A component of the printer that contains a photosensitive print drum.

pitch
A measure of the number of *characters per inch* (cpi) for fixed-width fonts.

point size
The height of a particular font as measured from the top of the tallest character to the bottom of the lowest. A point is a typographic unit of measure equivalent to 1/72 of an inch.

portrait
Printing that is oriented upright on the page (as opposed to landscape, in which printing is oriented sideways on the page). This is the standard orientation for printing letters or documents.

printer driver
See *driver*.

printer emulation
A set of operating commands that determines how data sent from the computer is interpreted and acted upon. Printer emulations replicate existing printers, such as the HP LaserJet 4.

proportional font
A font whose characters have varying amounts of horizontal space depending on the width of the character. Thus the uppercase M takes up more horizontal space than the lowercase l.

RAM
Random Access Memory (RAM) is where temporary information is stored.

Remote Control Panel
A software utility used to make changes to printer settings, including print quality, paper size, and RITech.

reset
To refresh the printer's memory and erase the current print jobs.

resident font
A font that is stored permanently in the printer's memory.

resolution
A measure of the fineness and clarity of images produced by the printer or monitor. Printer resolution is measured in dots per inch. Monitor resolution is measured in pixels.

RITech
Resolution Improvement Technology. A feature that smooths the jagged edges of printed lines or shapes.

ROM
Read Only Memory (ROM) is where permanent information is stored.

sans serif font
A font lacking serifs.

scalable font
See *outline font*.

SelecType
A feature of the printer that allow you to set printer values and control most of the printer's function from the control panel.

serif
The small decorative strokes that come off the main lines of a character.

status sheet
A report that lists the printer settings and other printer information.

symbol set
A collection of symbols and special characters. Symbols are assigned to specific codes in a character table.

TrueType
An outline font format that was developed jointly by Apple Computer and Microsoft Corporation. TrueType fonts are outline fonts that can be easily resized for screen display or for printing.

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