ML-1650 Series User's Guide

SAMSUNG

SAMSUNG LASER PRINTER

User's Guide

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everyone's invited™

LASER PRINTER

ML-1650
ML-1651N

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Home

P/N. JC68-00694A Rev.1.00

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Environmental and Safety Consideration

Laser Safety Statement

The printer is certified in the U.S. to conform to the requirements of DHHS 21 CFR, chapter 1 Subchapter J for Class I(1) laser products, and elsewhere, is certified as a Class I laser product conforming to the requirements of IEC 825.

Class I laser products are not considered to be hazardous. The laser system and printer are designed so there is never any human access to laser radiation above a Class I level during normal operation, user maintenance, or prescribed service condition.

WARNING

Never operate or service the printer with the protective cover removed from Laser/Scanner assembly. The reflected beam, although invisible, can damage your eyes.

CAUTION - INVISIBLE LASER RADIATION WHEN THIS COVER OPEN. DO NOT OPEN THIS COVER.

VORSICHT - UNSICHTBARE LASERSTRAHLUNG, WENN ABDECKUNG GEÖFFNET. NICHT DEM STRAHL AUSSETZEN.

ATTENTION - RAYONNEMENT LASER INVISIBLE EN CAS D'OUVERTURE.EXPOSITION DAN GEREUSE AU FAISCEAU.

ATTENZIONE -RADIAZIONE LASER INVISIBILE IN CASO DI APERTURA. EVITARE L'ESPOSIZIONE AL FASCIO.

PRECAUCION -RADIACION LASER IVISIBLE CUANDO SE ABRE. EVITAR EXPONERSE AL RAYO.

ADVARSEL. - USYNLIG LASERSTRÅLNING VED ÅBNING NÅR SIKKERHEDSBRYDERE ER UDE AF FUNKTION. UNDGÅ UDSAETTELSE FOR STRÅLNING.

ADVARSEL. - USYNLIG LASERSTRÅLNING NÅR DEKSEL ÅPNES. STIRR IKKE INN I STRÅLEN. UNNGÅ EKSPONERING FOR STRÅLEN.

VARNING - OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPAND OCH SPÄRREN ÄR URKOPPLAD. BETRAKTA EJ STRÅLEN. STRÅLEN ÄR FARLIG.

VARO! - AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE ÄLÄ KATSO SÄTEESEEN.

Ozone Safety

During normal operation, the ML-1650 Series printer produces ozone. The ozone produced does not present a hazard to the operator. However, it is advisable that the machine be operated in a well ventilated area.

If you need additional information about ozone, please contact your nearest Samsung dealer.

Power Saver

This printer contains advanced energy conservation technology that reduces power consumption when it is not in active use.

When the printer does not receive data for an extended period of time, power consumption is automatically lowered.

The energy star emblem does not represent EPA endorsement of any product or service.

Radio Frequency Emissions

FCC regulations

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

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

CAUTION: Changes or modifications not expressly approved by the manufacturer responsible for compliance could void the user's authority to operate the equipment.

Canadian Radio Interference Regulations

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

Cet appareil numérique respecte les limites de bruits radioélectriques applicables aux appareils numériques de Classe B prescrites dans la norme sur le matériel brouilleur: "Appareils Numériques", ICES-003 édictée par l'Industrie et Sciences Canada.

Declaration of Conformity (European Countries)

Approvals and Certifications

CE

The CE marking applied to this product symbolises Samsung Electronics Co., Ltd. Declaration of Conformity with the following applicable 93/68/EEC Directives of the European Union as of the dates indicated:

January 1, 1995: Council Directive 73/23/EEC Approximation of the laws of the member states related to low voltage equipment.

January 1, 1996: Council Directive 89/336/EEC (92/31/EEC), approximation of the laws of the Member States related to electromagnetic compatibility.

March 9, 1999: Council Directive 1999/5/EC on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity.

A full declaration, defining the relevant Directives and referenced standards can be obtained from your Samsung Electronics Co., Ltd. representative.

EC Certification

Certification to 1999/5/EC Radio Equipment & Telecommunications Terminal Equipment Directive (FAX)

This Samsung product has been self-certified by Samsung for pan-European single terminal connection to the analogue public switched telephone network (PSTN) in accordance with Directive 1999/5/EC. The product has been designed to work with the national PSTNs and compatible PBXs of the European countries:

In the event of problems, you should contact the Euro QA Lab of Samsung Electronics Co., Ltd. in the first instance.

The product has been tested against TBR21 and TBR 38. To assist in the use and application of terminal equipment which complies with this standard, the European Telecommunication Standards Institute (ETSI) has issued an advisory document (EG 201 121) which contains notes and additional requirements to ensure network compatibility of TBR21 terminals. The product has been designed against, and is fully compliant with, all of the relevant advisory notes contained in this document.

chapter 1

Introduction

Congratulations on the purchase of your ML-1650 series printer! This chapter provides information on the following topics:

- Special Features
- Printer Components

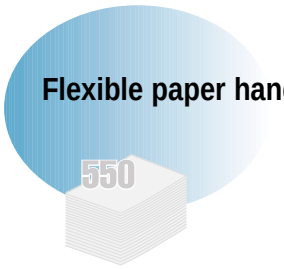
Special Features

1

Your new Samsung ML-1650 series printer is equipped with special features that improve print quality, giving you a competitive edge. You can:

Print with excellent quality and high speed

- Prints at **1200 dots per inch** (dpi). See page 5.19.
- Prints **16 pages-per-minute(A4 size), 17 pages-per-minute(Letter size)**.
- The **PCL 6** printer language enables fast printing performance.



Flexible paper handling

- A 100-sheet **Multi-Purpose Tray** supports letterheads, envelopes, labels, transparencies, custom-sized media, postcards, and heavy paper.
- Standard **550-sheet input tray** (Tray 1) and **optional 550-sheet input tray** (Tray 2) supports all standard sizes of paper.
- Two output tray: Select either **the top face-down output** or **the rear face-up output tray** for the most convenient access.
- **Straight-through paper path** capability from the Multi-Purpose Tray to the rear output tray.

Create professional documents

- Customizes your documents by using **Watermark**s such as “Confidential.”
- Prints **Booklet**s. This feature enables you to easily print the pages required to create books. Once printed, all you have to do is fold and staple the pages.
- Prints **Poster**s. The text and pictures of each page of your document are magnified and printed across the selected sheet of paper. After the document has printed, trim off the white edges of each sheet. Tape the sheets together to form a poster.

Save time and money

- Allows you to use the **Toner Save** mode to save toner. See page 5.6.
- Allows you to print on both sides of the paper to save paper (**Manual Duplexing**). See page 5.7.
- Allows you to print multiple pages on one single sheet of paper to save paper (**N-Up printing**). See page 5.10.
- Preprinted forms and letterheads can be printed on plain paper. See 'Using Page Overlay' on page 5.24.
- One-touch **last page printing** is available when the printer is in ready mode.
- This printer automatically **conserves electricity** by substantially reducing power consumption when not printing.
- This printer meets **Energy Star** guidelines for energy efficiency.

Expand the printer capacity

- The ML-1650 series printer has 16 MB of memory which can be expanded to **144 MB**.
- **PostScript 3 Emulation*** (PS) DIMM adds PS printing.
- Optional **network interface** enables network printing. (ML-1651N comes with a built-in network interface.)

OAK TECHNOLOGY

*PostScript 3 Emulation
IPS-PRINT_Printer language Emulation© Copyright 1995-2001, Oak Technology, Inc., All rights reserved

Print in various environments

- Prints in **Windows**, **DOS**, and **Macintosh**.
- Supports **Linux**.
- ML-1650 series printer comes with **Parallel** and **USB.** You can install an optional **network interface**(ML-1651N have a built-in network interface).

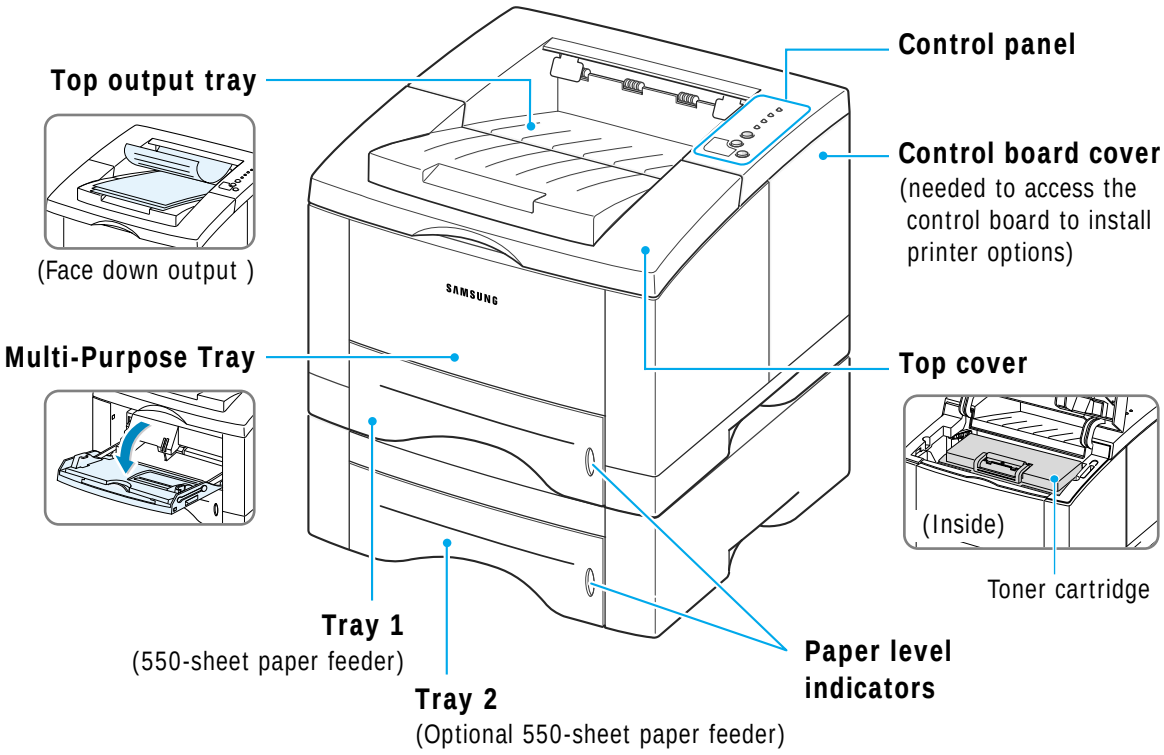
Printer Features

Table below lists a general overview of features supported by the ML-1650 series printer.

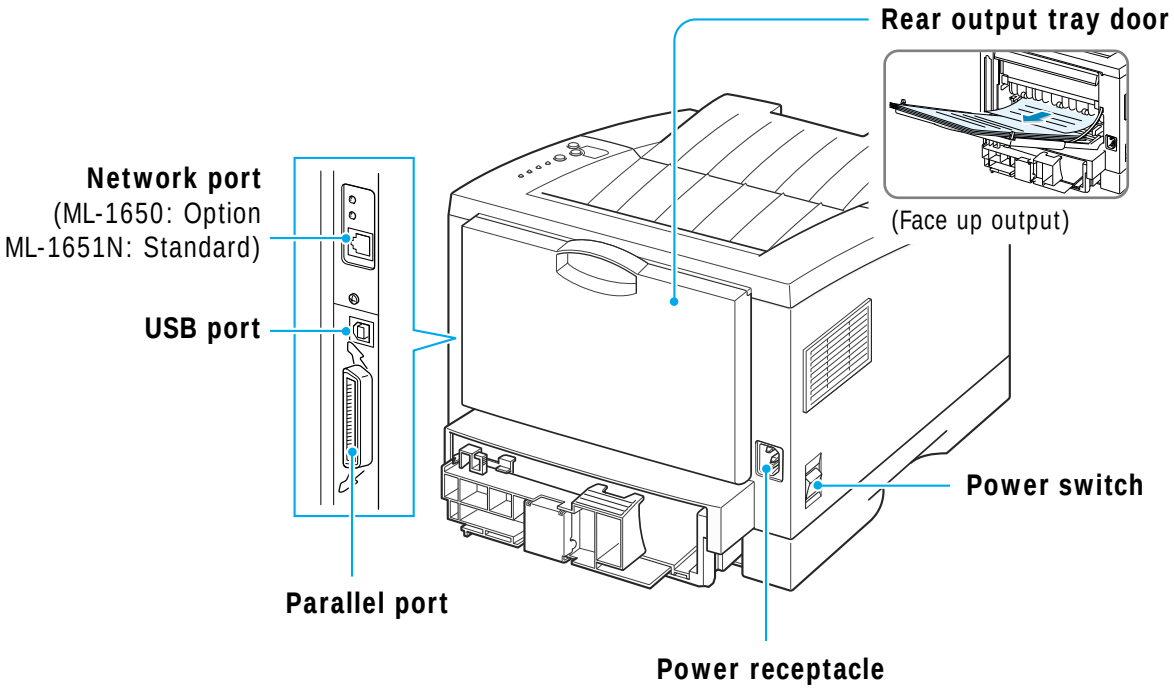
	Network Card	PostScript DIMM
ML-1650	N	N
ML-1651N	Y	N

Printer Components

Front View



Rear View


Rear output tray door
(Face up output)
Network port
(ML-1650: Option
ML-1651N: Standard)
USB port
Parallel port
Power switch
Power receptacle

chapter 2

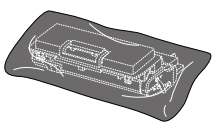
Setting Up Your Printer

This chapter provides step by step information on setting up your printer. Topics included in this chapter are:

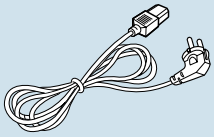
- ***step 1***: Unpack Your Printer
- ***step 2***: Install the Toner Cartridge
- ***step 3***: Load Paper
- ***step 4***: Connect to the Computer with a Parallel Cable
- ***step 5***: Turn on the Printer
- ***step 6***: Print a Demo Page!
- ***step 7***: Install the Printer Software

STEP 1 Unpack Your Printer

1 Remove the printer and all accessories from the packing carton. Make sure that your printer has been packed with the following items:



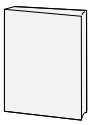
Toner cartridge



Power cord

CD-ROM

Quick Guide

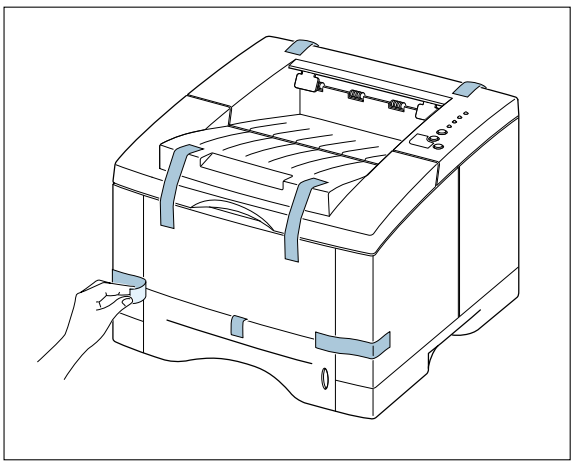


This manual

Notes:

- If any items are missing or damaged, notify your dealer immediately.
- **Components may differ from one country to another.**
- The CD-ROM contains the printer driver, the User's Guide, the Adobe Acrobat Reader program and the Make Your Own Diskette setup software.

2 Carefully remove all packing tapes from the printer.

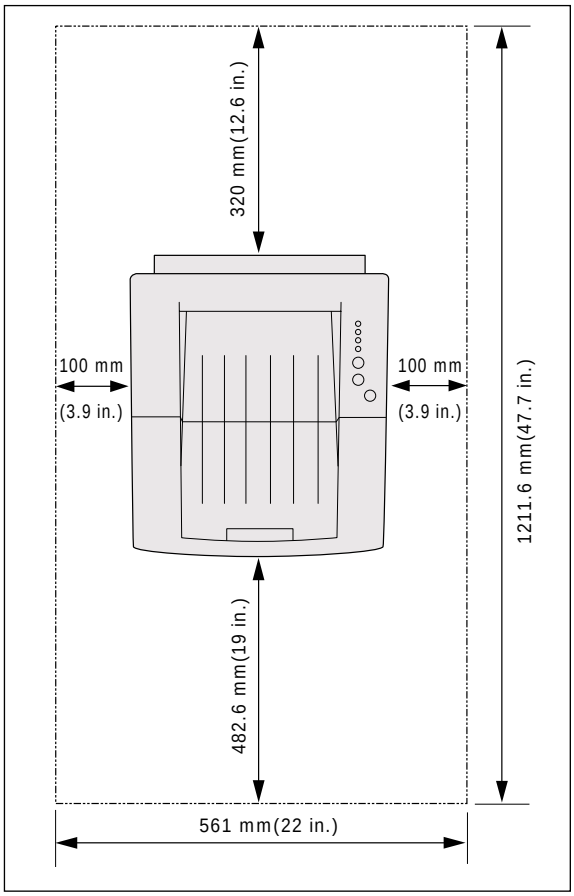


Selecting a Location

Select a level, stable place with adequate space for air circulation. Allow extra space for opening covers and trays. The area should be well-ventilated and away from direct sunlight or sources of heat, cold, and humidity. See the image below for clearance space. Do not set the printer close to the edge of your desk or table!

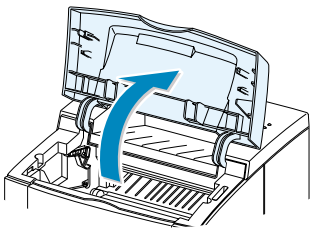
Clearance Space

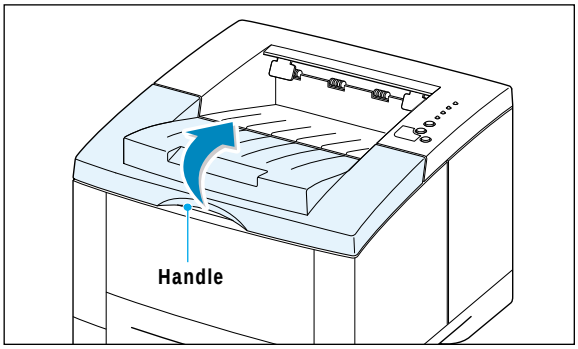
Front: 482.6 mm(enough space so that trays can be removed)
Back: 320 mm(enough space to allow opening of the Back Cover)
Right: 100 mm
Left: 100 mm(enough space for ventilation)



Install the Toner Cartridge

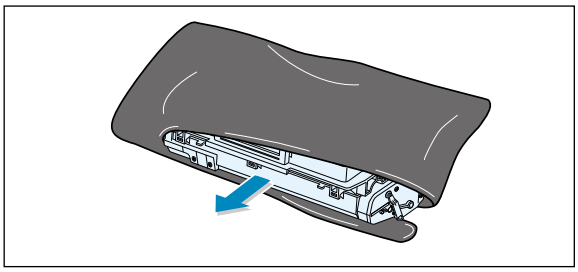
1 Open the top cover lid. Pull up on the handle to open the lid.



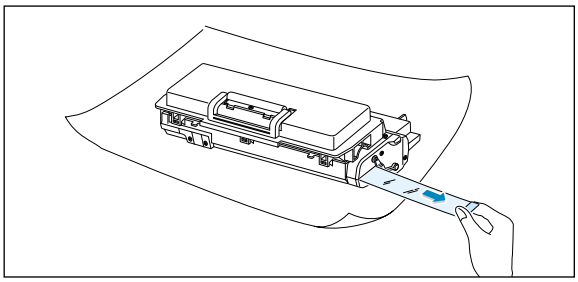


2 Carefully tear one end of the plastic bag.

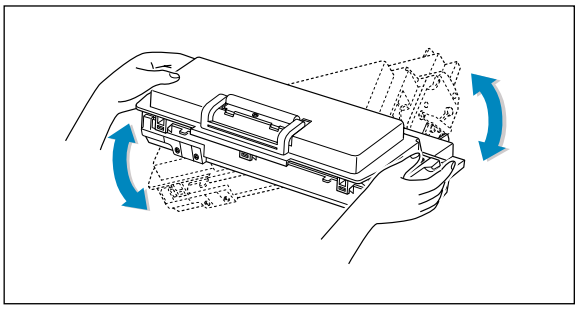
Don't use a knife or other sharp objects as they might scratch the drum of the cartridge.



3 Locate the sealing tape at the end of the toner cartridge. Carefully pull the tape completely out of the cartridge. Discard the tape.



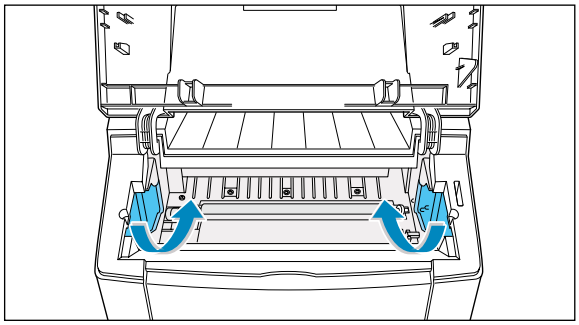
4 Gently shake the cartridge from side to side to distribute the toner evenly inside the cartridge.



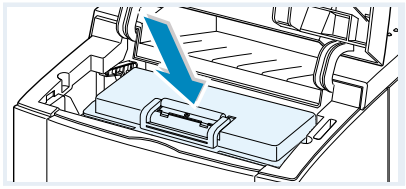
CAUTION:
To prevent damage, do not expose the toner cartridge to light for more than a few minutes. Cover it with a piece of paper if left exposed for more than a few minutes.

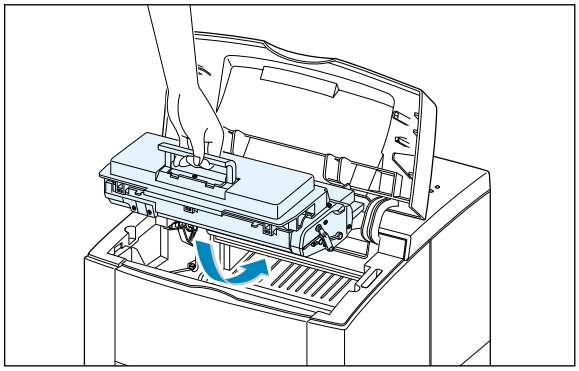
If toner gets on your clothing, wipe it off with a dry cloth and wash clothing in cold water. Hot water sets toner into fabric.

5 Locate the cartridge slots inside the printer, one on each side.

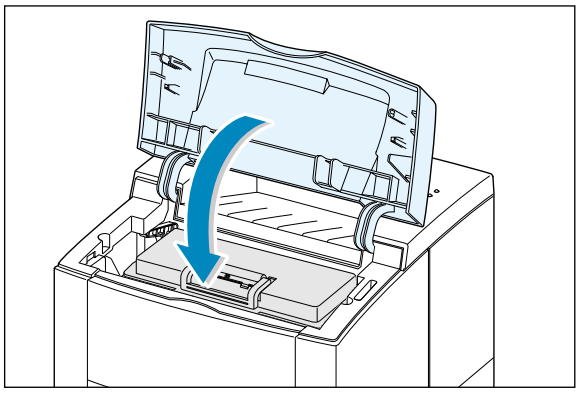


6 Grasp the handle and insert the cartridge in the printer until it drops into place.





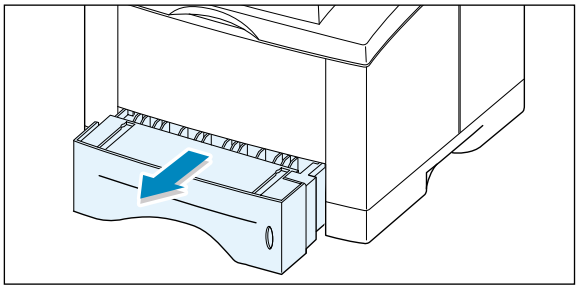
7 Close the top cover. Make sure that the cover is securely closed.



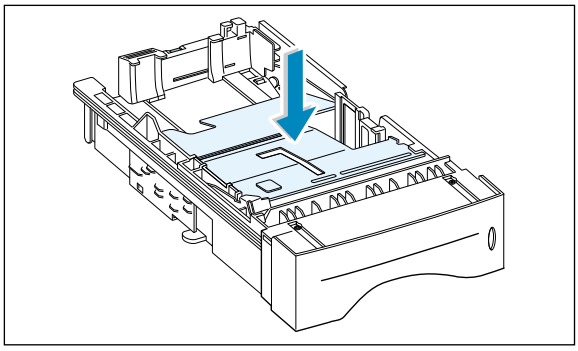
Note: When printing text at 5% coverage, you can expect a toner cartridge life of approximately 8,000 pages (4,000 pages for the toner cartridge that is shipped with the printer).

Load Paper

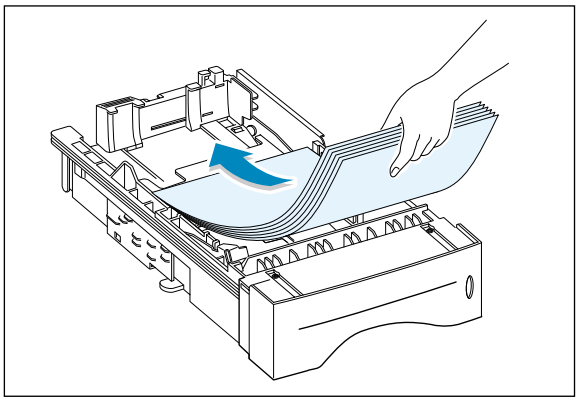
1 Pull the paper tray out of the printer.



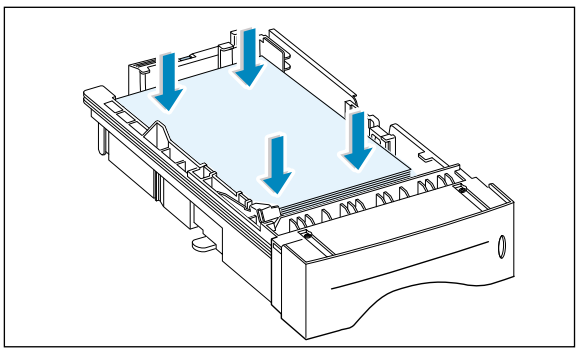
2 Push down on the metal paper lift plate to lock it in place.



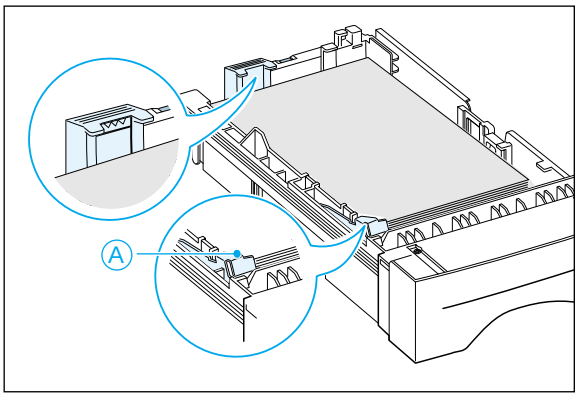
3 Load paper **with the print side facing down**.



Make sure that all four corners are flat in the tray.

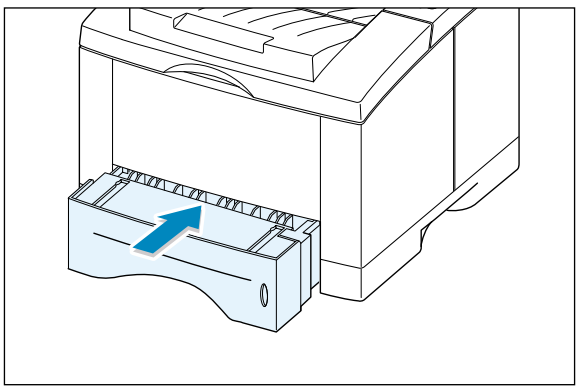


4 Make sure that the stack goes under the metal retaining clip Ⓐ and the plastic tabs on the end guides.
Pay attention to the paper limit make on the left inside wall of the tray.
Paper overloading may cause paper jams.



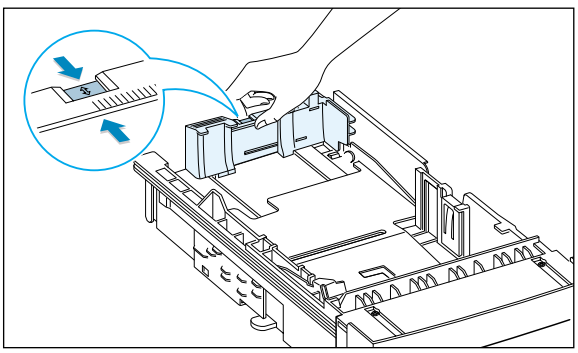
Note: If you want to change the paper size in the tray, refer to: "To Change Paper Size in Tray"

5 Slide the tray back into the printer.

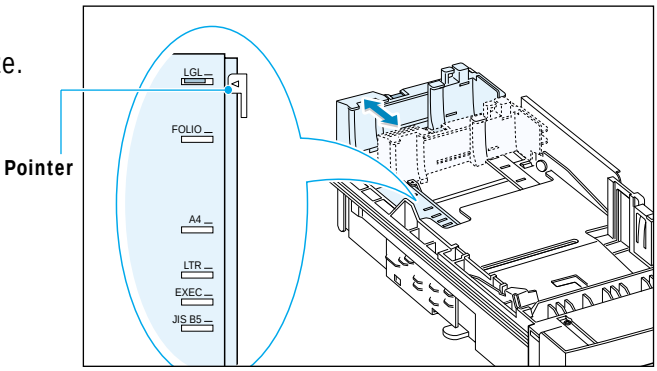


To Change Paper Size in Tray

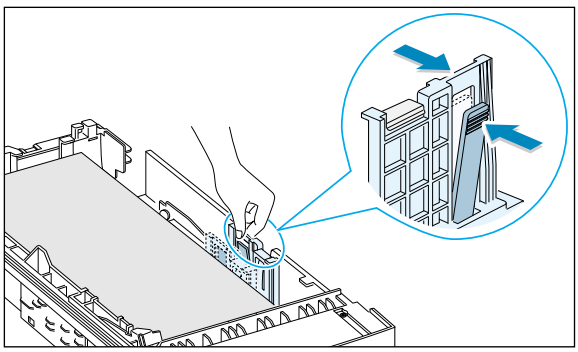
1 Squeeze the metal tab on the rear paper guide to adjust for the paper length.



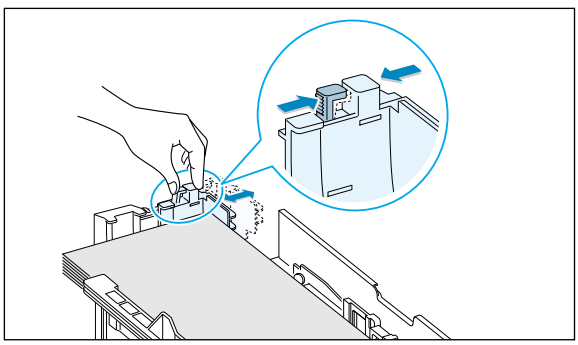
2 Adjust the paper length guide so the pointer matches the desired paper size.



3 After loading paper, squeeze the side guide as shown and slide it to the left flush against the paper.

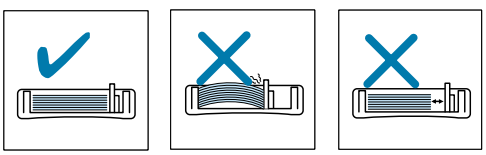


4 If necessary, use the rear width guide. Squeeze the rear width guide as shown and slide it to the left.



Notes:

- Do not push the width guide far enough to cause the media to warp.
- If you do not adjust the width guide, it may cause a paper jam.



STEP 4

Connect to the Computer with a Parallel Cable

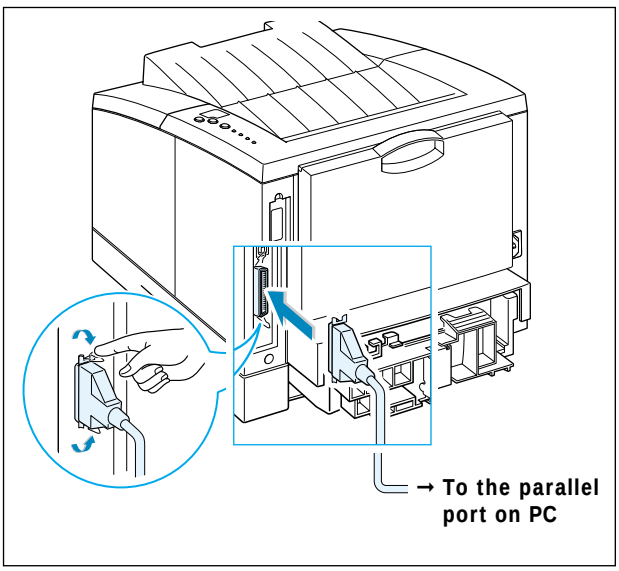
1 Make sure that both the printer and the computer are turned off.

2 Plug the parallel printer cable into the connector on the back of the printer.

Push the metal clips down to fit inside the notches on the cable plug.

3 Connect the other end of the cable to the parallel interface port on your computer, and tighten the screws.

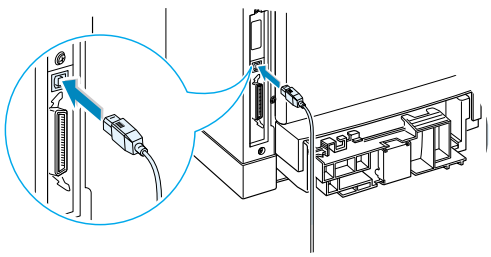
See your computer documentation if you need help.



Note: To connect the printer to the parallel port of the computer requires a certified parallel cable. You will need to buy the IEEE1284 compliant cable.

If you are using a USB interface

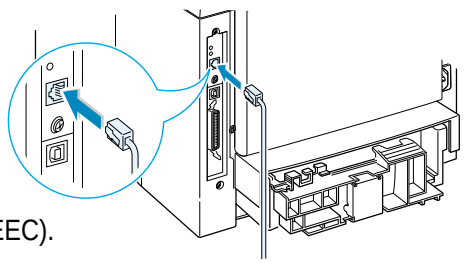
Go to Appendix B, “Using Your Printer with a USB Cable.”



Note: USB cable shorter than 3m is recommended.

If you are using a network interface

Go to Appendix F, “Using Your Printer on a Network.”



Notes:

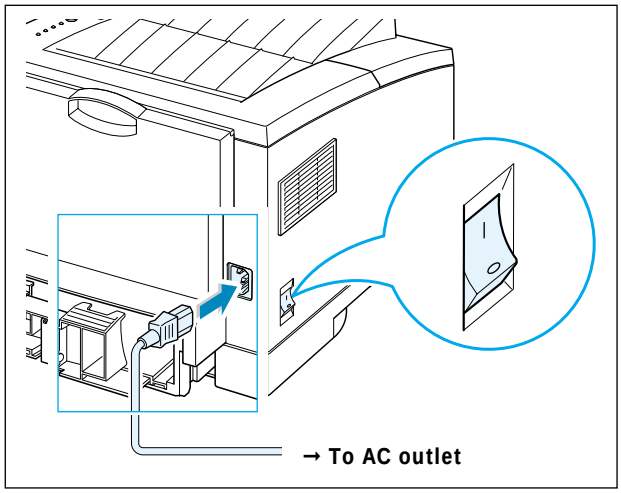
- ML-1651N comes with a built-in network interface.
- Shielded cables must be used with this equipment to maintain compliance with the EMC Directive (89/336/EEC).

STEP 5 Turn on the Printer

1 Plug the power cord into the power receptacle on the back of the printer.

2 Plug the other end into a properly grounded AC outlet.

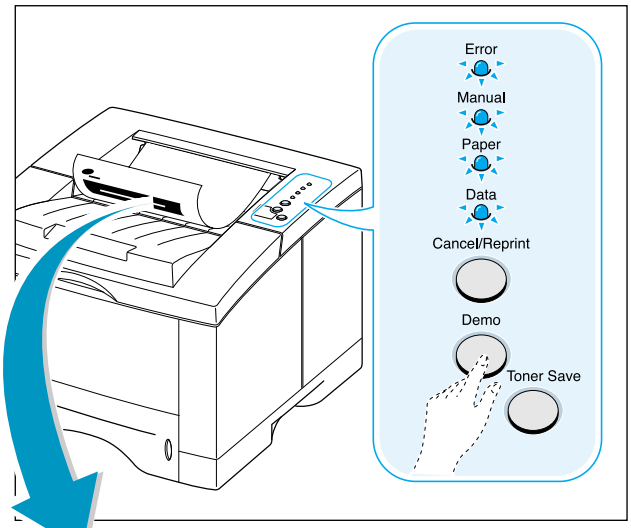
3 Turn on the power.



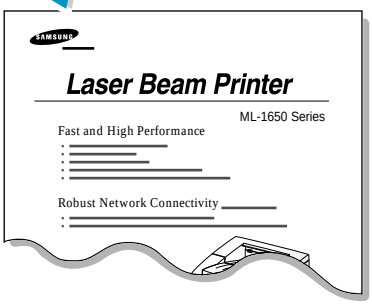
STEP 6 Print a Demo Page!

As the printer powers up, all the printer control panel lights turn on briefly. When only the **Data** light remains on, press and hold the **Demo** button.

Hold the **Demo** button down until all the lights blink (for about 2 seconds) and then release. The demo page will print.



The demo page provides a sample of the print quality to help you verify that the printer is printing correctly.



STEP 7

Install the Printer Software

Included with your printer is a CD-ROM containing the printer drivers for some of the most popular Windows software applications. To operate your printer, you must install a printer driver, which translates data from your application into data that the printer understands.

The CD-ROM shipped with your printer contains the following:

- **PCL 6 printer driver** for Windows. Use this driver to take full advantage of your printer's features.
- **PostScript Printer Description (PPD) file** for Windows and Macintosh to allow installation of the PostScript driver.

If you are printing from a computer with a parallel cable

Go to page 2.11 for information on installing the printing software on a computer that is attached directly to the printer with a parallel cable.

If you are printing with a USB

Go to Appendix B, "Using Your Printer with a USB Cable", for information on installing the print software on a USB-enabled computer.

If you are printing from a Macintosh

Go to Appendix C, "Using Your Printer with Macintosh", for information on installing the PostScript option for Macintosh.

If you are printing from DOS

Go to Appendix D, "Printing from DOS Applications", for information on installing the DOS print software and printing from DOS application.

If you are printing with PostScript driver

Go to Appendix E, "Using Windows PostScript Driver", for information on installing the PPD file.

If you are using Linux

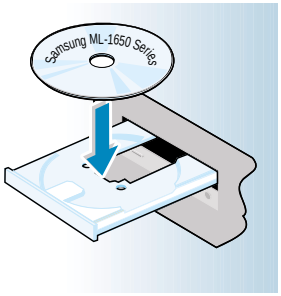
Go to Appendix I, "Using Your Printer in Linux", for information on installing the Linux driver.

Before Installing the Printer Software

Verify the following:

- At least **32 MB or more of RAM** is installed on your PC.
- There is at least **200 MB of free disk space** on your PC.
- All applications are closed on your PC before beginning installation.
- Windows 95, Windows 98, Windows Me, Windows NT 4.0 or Windows 2000.

Installing the Printer Software from the CD-ROM



1 Place the CD-ROM in the CD-ROM drive. Installation will start automatically.

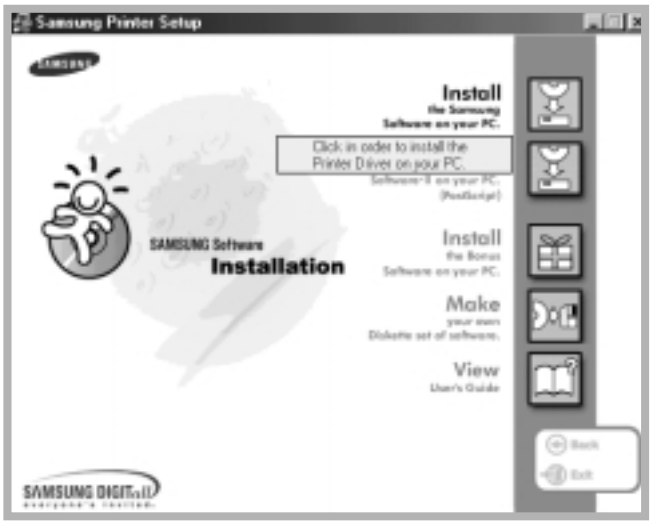
If the CD-ROM drive does not automatically run:

Select **Run** from the **Start** menu, and type **x:\cdsetup.exe** in the Open box (where **x** is the drive letter for the CD-ROM drive), then click **OK**.

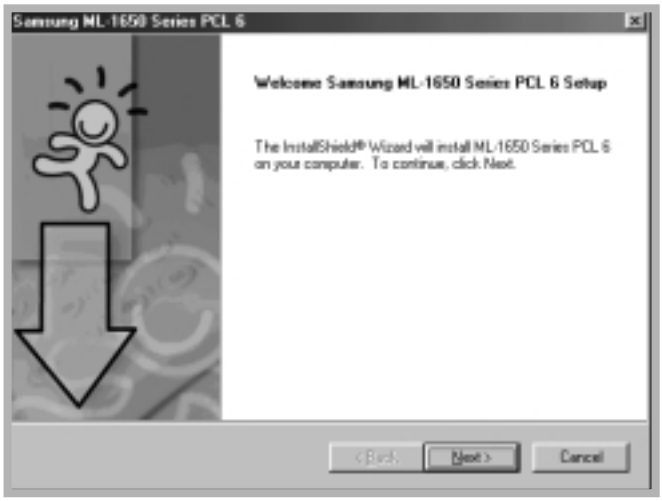
Note: If the New Hardware Found box appears during the installation procedure, click the [x] in the upper right corner of the box, or click **Cancel**.

2 When the opening screen appears, select the appropriate language.

3 Click **Install the Samsung Software on your PC**.



4 The Welcome window opens. Click **Next**.



5 Follow the instructions on the screen to complete the installation.

Printer Driver Features

ML-1650 series printer drivers will support the following standard features:

- Input tray selection
- paper size, orientation and media type
- number of copies

Table below lists a general overview of features supported by the ML-1650 series printer drivers.

Features \ Driver	PCL				PostScript			
	Win2000	Win9x	NT4.0	Macintosh	Win2000	Win9x	NT4.0	Macintosh
Toner save	Y	Y	Y	N	Y	Y	Y	N
Print quality option	Y	Y	Y	Y	Y	Y	Y	Y
Graphic mode	Y	Y	Y	N	N	N	N	N
Halftoning	Y	Y	Y	N	N	Y	Y	N
Manual duplex	Y	Y	Y	N	N	N	N	N
Booklet printing	Y	Y	Y	N	N	N	N	N
Poster printing	Y	Y	Y	N	N	N	N	N
Multiple pages per sheet (N-up)	Y	Y	Y	Y	Y	Y	N	Y
Fit to page printing	Y	Y	Y	Y	Y	Y	Y	Y
Different source for first page	Y	Y	Y	N	N	N	N	Y
Watermark	Y	Y	Y	Y	N	N	N	N
Overlay	Y	Y	Y	N	N	N	N	N
TrueType fonts option	Y	Y	Y	N	Y	Y	Y	Y
Error reporting	Y	Y	Y	N	Y	Y	Y	Y

Software Installation Tips

I do not have a CD-ROM drive

If you have access to another computer with a CD-ROM drive, you can use the make diskette utility in Windows to create the disks you need for the installation. Go to Appendix G, "Installing Software from Diskettes".

How do I remove the printing software ?

In Windows, after installation, the Uninstall icon in the ML-1650 series program group allows you to select and remove any or all of the Windows ML-1650 printing system components.

Starting the Uninstaller:

1. In the **Samsung ML-1650 Series PCL 6** Program group, select **Samsung ML-1650 Series PCL 6 driver Maintenance.**
2. Check **Remove** and click **Next**.
3. Select the ML-1650 printing system components you want to uninstall.
4. Click **Finish**.
5. Follow the on-screen instructions.

How do I access printer features ?

Some printer features, such as paper size and page orientation, may be available through your application settings. Use application settings, if available, because they override printer driver settings.

Access advanced printer features through your printer driver. See Chapter 5, "Printing Tasks" for instructions on using your printer driver features.

If you have problems installing

- Exit your software programs. Then turn off the computer and the printer. Turn on the printer, then turn on the computer.
- Close any virus protection programs that are running on your computer.
- Uninstall the printer software following the instructions above, then repeat the installation procedure.

chapter 3

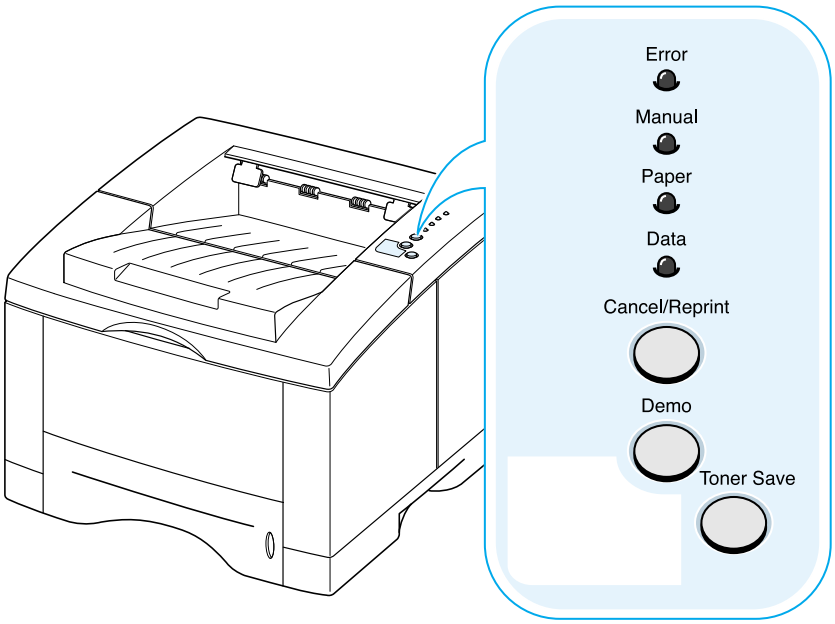
Using the Control Panel

This chapter describes how to use the printer's control panel. It provides information on the following topics:

- Control Panel Buttons
- Control Panel Lights

Control Panel Buttons

The printer has three buttons: **Cancel/Reprint**, **Demo** and **Toner Save**.



Toner Save

(on)

Toner Save

(off)

Toner Save

Press **Toner Save** to turn the toner save mode on or off. The printer must be in the ready mode.

- If the button backlight is on, toner save mode activates and the printer uses less toner to print a document.
- If the button backlight is off, toner save mode is disabled and you will print in normal quality. For further information on Toner Save mode, see page 5.6.

Cancel/Reprint

Cancel job

Press **Cancel/Reprint** and hold until the control panel lights blink to cancel a job the printer is currently printing. The **Error** light will blink while the print job is cleared from both the printer and the computer, and the printer will then return to the ready mode. This may take some time, depending on the size of the print job.

Note: If the Cancel/Reprint button is accidentally pushed, the job must be reprinted. There is no undo function.

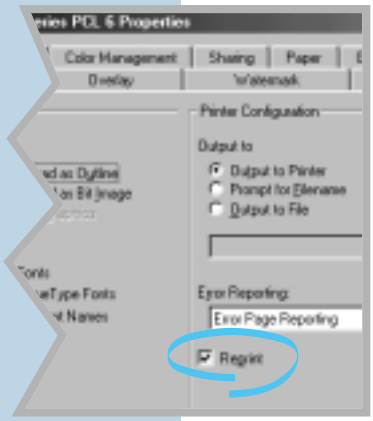
Reprint last page of the job

If you press **Cancel/Reprint** in the ready mode, the printer prints the last page of the last print job.

Note: If you want to prevent somebody from reprinting your document, you can turn the Reprinting feature off in the printer's properties dialog box. When you turn the feature off in the printer's properties, the Cancel/Reprint button on the control panel does not perform the reprinting operation.

To disable this feature:

1. From the **Start** menu, select **Settings** and then **Printers**.



2. Click the right mouse button on the **Samsung ML-1650 Series PCL 6** printer icon and select **Properties** to open the properties window.

3. From the **Printer** tab, click **Reprint** to empty the checkbox.

   With the box empty, you cannot reprint the last page from the control panel.

   When you want to reprint the last page on the control panel, you must put a check mark on this check box.

4. Click **OK**.

Demo

Print demo page and configuration sheet

Press and hold **Demo** for about 2 seconds until the control panel lights blink slowly to print a demo page. The printer must be in the ready mode.

Press and hold **Demo** for about 6 seconds until the control panel lights blink rapidly to print a configuration sheet. The printer must be in the ready mode. For further information, see page 7.6.

Start manual feeding

When you select **Manual Feed** for **Paper Source** from your software application, you should press **Demo** each time you feed a sheet of paper manually. For further information, see page 4.10.

Cleaning the inside of the printer

Press and hold **Demo** for about 10 seconds until the control panel lights remain illuminated to automatically clean the inside of the printer. After cleaning the printer, one cleaning sheet prints. For further information, see page 7.6.

Ignoring Mismatched Paper

When the size of paper you're using is different from the one you have set in the printer's properties, press the **Demo** button to ignore the message and feed paper from the corresponding input tray.

Control Panel Lights

The control panel lights indicate the status of your printer. If the **Error** light is on, the printer is experiencing an error. See “Troubleshooting Error Messages” on page 7.22.

Control Panel Light Message

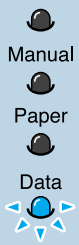
Light status legend

- symbol for “light off”
- symbol for “light on”
- symbol for “light blinking”

Ready Mode

The **Data** light is on and the printer is ready to print.

No action is needed. If you press and hold the **Demo** button for about 2 seconds, a demo page will print. If you press and hold the button for about 6 seconds, a configuration sheet will print.



Processing

The printer is receiving or processing data. Wait for the job to print.

Pressing the **Cancel/Reprint** button cancels the current job. One or two pages may print as the printer clears the print job. The printer will return to the ready mode after the job has been canceled.

Data

The **Data** light blinks rapidly. Data is in the printer memory waiting to be printed.

Pressing the **Cancel/Reprint** button cancels the current job and the printer returns to the ready mode.

Paper out

The printer is out of paper. The **Paper** light blinks until paper is added.

Load paper into the printer. There is no need to press any button to reset.

Manual feed mode

The printer is set to **Manual Feed** mode. You have to feed paper manually through the Multi-Purpose Tray. If you do not want to be in the Manual Feed mode, change the setting from your printer properties. For details on the Manual Feed mode, see page 4.10.

Paper out in the manual feed mode

In the Manual Feed mode, the printer picks up paper from the Multi-Purpose Tray, one sheet at a time.

Feed the correct paper in the Multi-Purpose Tray, and press the **Demo** button to start printing.

Printing in the manual feed mode

The printer is processing data in the Manual Feed mode. Wait for the job to print.

Paper Mismatch

The size of the paper in the input tray is mismatched to the Paper Size setting in printer's properties. Remove the paper from the tray and load the paper of the same size as you have set in the properties.

chapter 4

Print Media

This chapter will help you understand what kind of paper you can use with the ML-1650 series printer and how to properly load paper in the different paper trays for the best print quality.

Topics included in this chapter are:

- Choosing Paper and Other Media
- Selecting the Output Tray
- Loading Paper
- Printing on Envelopes
- Printing on Labels
- Printing on Transparencies
- Printing on Preprinted Paper
- Printing on Card Stock or Custom-sized Media

Choosing Paper and Other Media

You can print on a variety of print media, such as plain paper, envelopes, labels, transparencies, card stocks and so on. See “Paper Specifications” on page A.2. To get the best possible print quality, use only high-quality copier-grade paper.

When you choose print media, consider the following:

- **Desired outcome**: The paper you choose should be appropriate for the project.
- **Size**: You can use any size paper that fits easily within the paper adjusters of the paper tray.
- **Weight** : Your printer supports paper weight as follows:
  - 16~28 lbs bond for Tray 1 or optional Tray 2
  - 16~43 lbs bond for Multi-Purpose Tray
- **Brightness**: Some papers are whiter than others and produce sharper, more vibrant images.
- **Surface smoothness**: The smoothness of the paper affects how crisp the printing looks on the paper.
- **Opacity**: Opacity refers to the degree to which printing on one side of the paper shows through the other side. Use paper high in opacity (or thicker paper) for two-sided (duplex) printing.

Always test a sample of paper before purchasing large quantities.

CAUTION: Using media that does not confirm to the specification listed in the paper specification can cause problems that may require service. This service is not covered by the warranty or service agreements.

Media Sizes and Capacities

Media Size	Input Source/Capacity*1		
	Tray 1 or Optional Tray 2	Multi-Purpose Tray	Manual Feed
Plain Paper			
Letter (8.5 x 11 in.)	550	100	1
Legal (8.5 x 14 in.)	550	100	1
Executive (7.25 x 10.5 in.)	550	100	1
Folio (8.5 x 13 in.)	550	100	1
A4 (210 x 297 mm)	550	100	1
B5 (182 x 257 mm)	550	100	1
A5 (148 x 210 mm)	–	100	1
Envelopes			
No. 10 (4.12 x 9.5 in.)	40 (Tray 2)	10	1
Monarch (3.87 x 7.5 in.)	40 (Tray 2)	10	1
C5 (162 x 229 mm)	40 (Tray 2)	10	1
DL (110 x 220 mm)	40 (Tray 2)	10	1
B5 (176 x 250 mm)	40 (Tray 2)	10	1
Labels*2			
Letter (8.5 x 11 in.)	–	25	1
A4 (210 x 297 mm)	–	25	1
Transparency films*2			
Letter (8.5 x 11 in.)	–	20	1
A4 (210 x 297 mm)	–	20	1
Card stocks*2	–	10	1
Bond*2			1

*1 Depending on paper thickness, maximum capacity may be reduced.

*2 If you are experiencing excessive jamming, feed one sheet at a time through the Multi-Purpose Tray.

Paper Guidelines

When selecting or loading paper, envelopes, or other special media, keep these guidelines in mind:

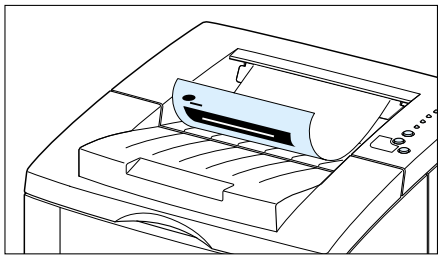
- Attempting to print on damp, curled, wrinkled, or torn paper can **cause paper jams** and poor print quality.
- **Use** cut-sheet paper **only**. You cannot use multi-part paper.
- **Use only** high-quality, copier grade paper.
- **Do not** use paper that has been already printed on or that has been fed through a photocopier.
- **Do not** use paper with irregularities, such as tabs or staples.
- **Do not** attempt to load any tray during printing and never overfill the tray. This could cause a paper jam.
- **Avoid** paper with embossed lettering, perforations, or texture that is too smooth or too rough.
- Colored paper should be of the same high quality as white photocopy paper. The pigments must withstand the printer's fusing temperature of 400°F (205°C) for 0.1 second without deterioration. **Do not** use paper with a colored coating that was added after the paper was produced.
- Preprinted forms must be printed with nonflammable, heat-resistant ink that will not melt, vaporize, or release hazardous emissions when subjected to the printer's approximately 400°F (205°C) fusing temperature for 0.1 second.
- Store paper in its ream wrapper until it is ready to use. Place cartons on pallets or shelves, not on the floor.
- **Do not** place heavy objects on top of the paper, whether it is packaged or unpackaged.
- **Keep** paper away from moisture, direct sunlight or other conditions that can cause it to wrinkle or curl.

Selecting the Output Tray

The printer has two output locations: the **rear output tray** and the **top output tray**. To use the top output tray, be sure the rear output tray is closed. To use the rear output tray, open it.

- If paper coming out of the top output tray has problems, such as excessive curl, **try printing to the rear output tray.**
- To avoid paper jams, **do not open or close the rear output tray** while the printer is printing.

Printing to the Top Output Tray (Face down)

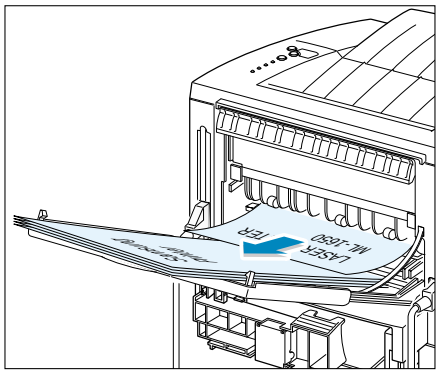


▲ Top output tray

The top output tray collects paper **face-down**, **in correct order**. The top output tray should be used for most print jobs and is recommended for printing the following:

- over 250 sheets of paper, continuously

Printing to the Rear Output Tray (Face up)



▲ Rear output tray

The printer always prints to the rear output tray if it is open. Paper comes out of the printer **face-up**, **with the last page on top**.

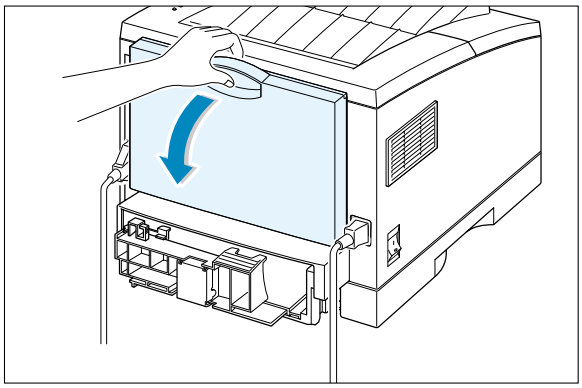
Printing from the Multi-Purpose Tray to the rear output tray provides the **straight paper path**. Opening the rear output tray might improve output quality with the following:

- over 100 sheets of paper, continuously
- envelopes
- labels
- small custom-size paper
- postcards
- paper lighter than 16 lb (60 g/m^2) or heavier than 28 lb (105 g/m^2)
- transparencies:

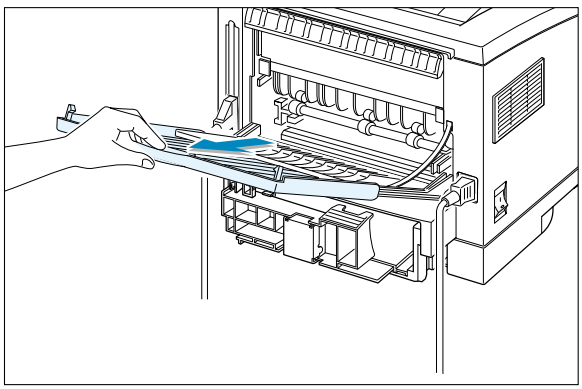
  Note: Some special transparencies may have stacking problem by curl. In that case, please use the face down tray.

To open the rear output tray:

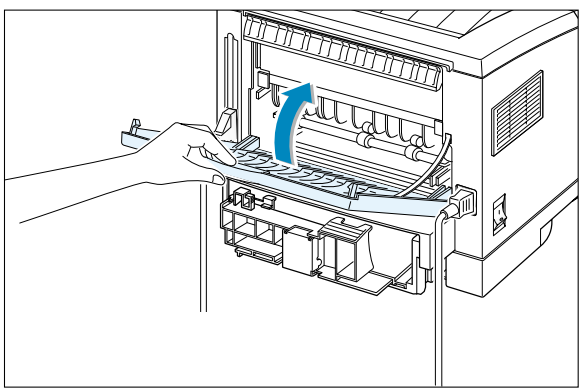
1 Open the rear door by pulling it down. The cover functions as the output tray.



2 Pull the extender to extend the output tray to its full-length position. This will allow the tray to hold longer paper.



3 If you do not want to stack the printed pages on the rear output tray, slide the extender back into place and close the tray. The pages will then stack on the top output tray.

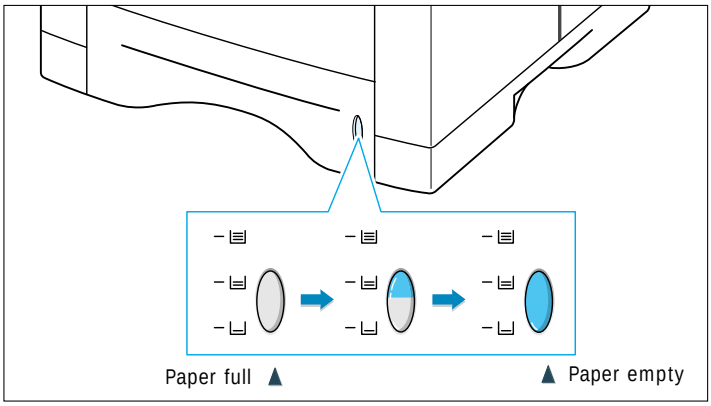


Note: The capacity of the rear output tray is the same as that of the Multi-Purpose Tray. If the tray is overloaded with printed pages, it may fall from the printer. Remove the pages so that the tray is not overloaded.

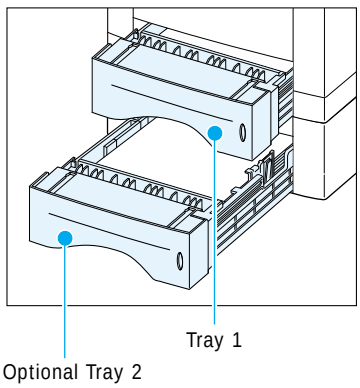
Loading Paper

Proper paper loading helps to prevent paper jams and ensure trouble-free printing. **Do not** remove paper tray(s) while a job is printing. Doing so may cause a paper jam.

The paper level indicator on the front of the paper tray(s) shows the amount of paper currently left in the tray. When the tray is empty, the indicator turns red.



Using Tray 1 or the Optional Tray 2



Tray 1 holds 550 sheets of paper. See “Media Sizes and Capacities” on page 4.2 for acceptable paper size and capacities of each trays.

Load a stack of paper into the Tray 1 or optional Tray 2 and print. For details on loading paper in the Tray 1 or optional Tray 2, see “Load Paper” on page 2.5.

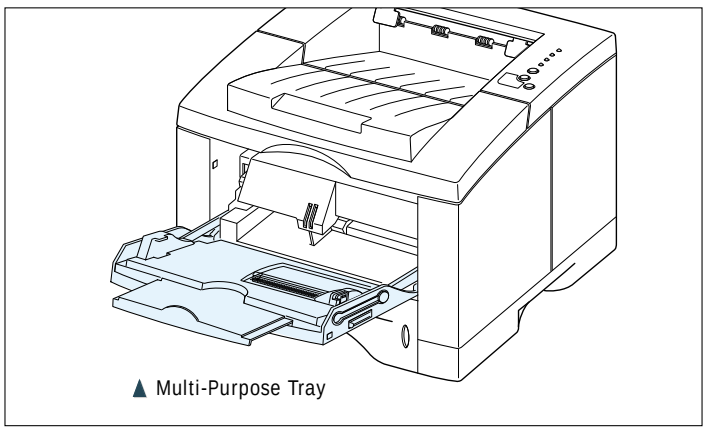
Using the Multi-Purpose Tray

The Multi-Purpose Tray is located in the front of your printer. It can be closed when you are not using it, making the printer more compact. The Multi-Purpose Tray can hold several sizes and types of paper, such as transparencies, cards, and envelopes. You may also want to use the Multi-Purpose Tray for single page print jobs on letterheads, colored paper for use as separator sheets, or other special paper that you do not normally keep in the paper tray.

You can load approximately 100 sheets of paper, 10 envelopes, 20 transparencies, 10 card stocks or 25 labels at a time.

When you print from the Multi-Purpose Tray, you must select **Multi-Purpose Tray** for **Paper Source** from your software application, and then select the paper size and type from the software application for the paper you have loaded. See page 5.3.

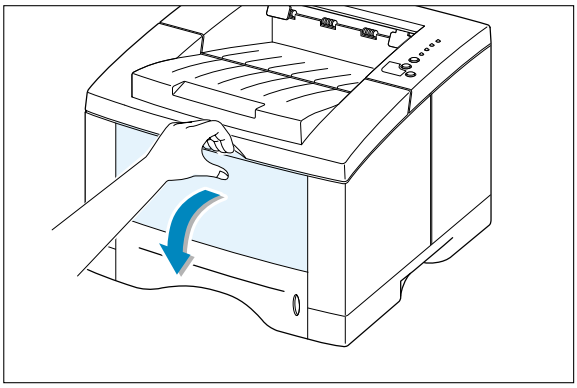
- Load only one size of print media at a time in the Multi-Purpose Tray.
- To prevent paper jams, do not add paper when there is still paper in the Multi-Purpose Tray. This also applies to other types of print materials.
- Print media should be loaded face up with the top of the print media going into the Multi-Purpose Tray first and be placed against the left edge of the tray.
- Do not place objects on the Multi-Purpose Tray. Also avoid pressing down or applying excessive force on it.



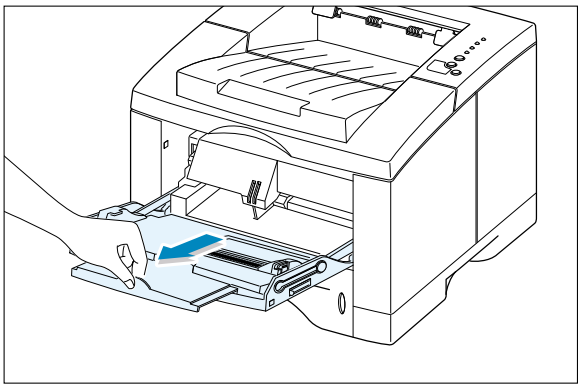
▲ Multi-Purpose Tray

To load paper in the Multi-Purpose Tray:

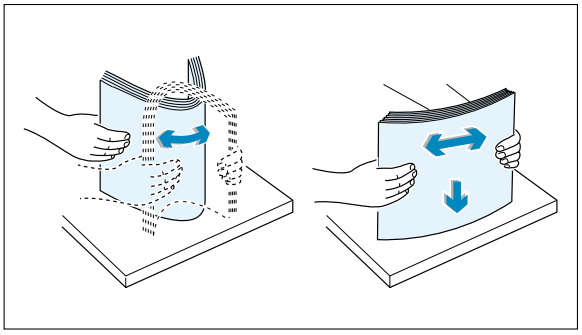
1 Pull the Multi-Purpose Tray down towards you.



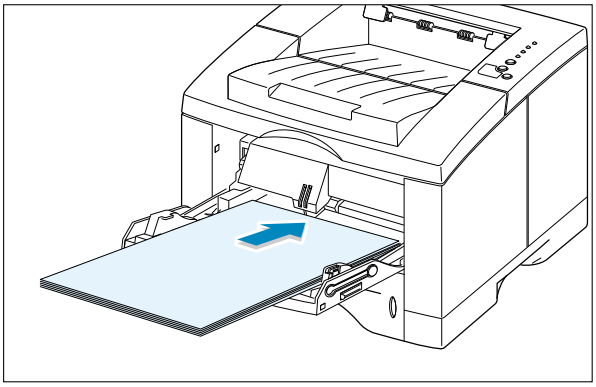
2 Slide the extender to extend the tray to its full-length position to hold longer paper.



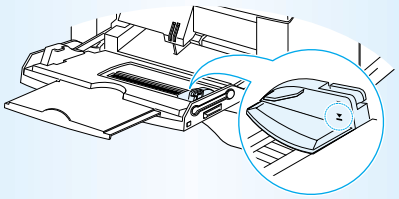
3 Prepare a stack of paper for loading by flexing or fanning them back and forth. Straighten the edges on a level surface.



4 Place paper **with the print side face up**, and against the left edge of the tray.

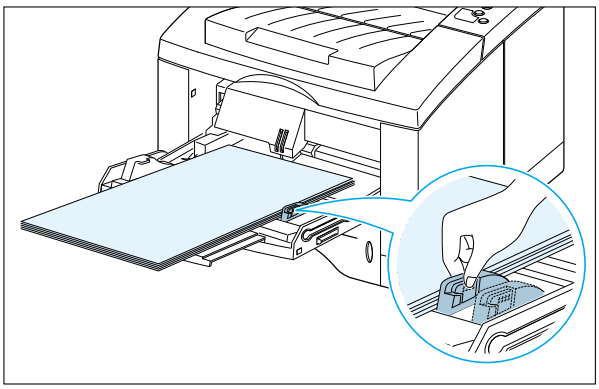


Note: Make sure that you have not loaded too much print media. The stack should be under the stack height limit mark. The print media buckles if you load a stack that is too deep, or push it in too far.

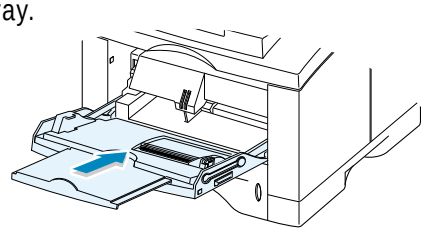


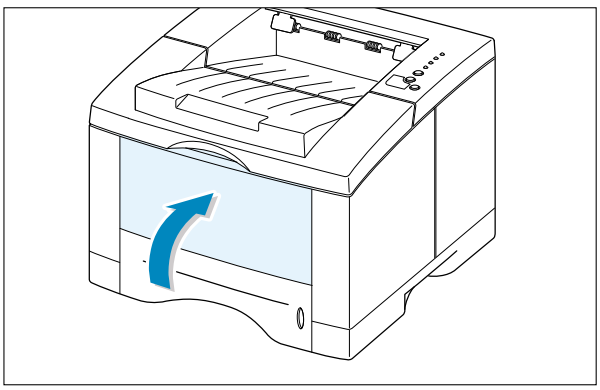
Stack height limit mark

5 Slide the paper width guide to the left flush against the stack of print material without bending.



6 After printing, push the extender back to its place and close the Multi-Purpose Tray.



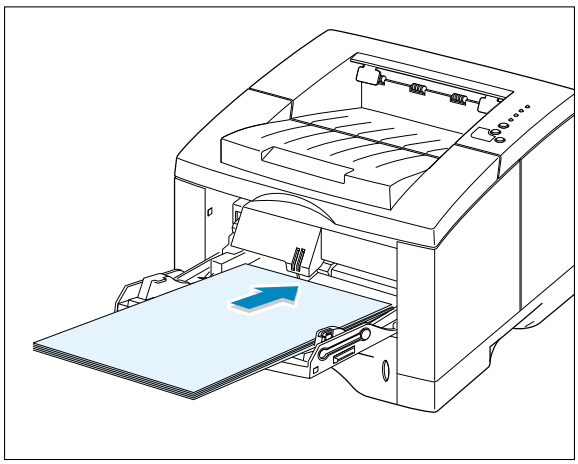


Using the Manual Feed

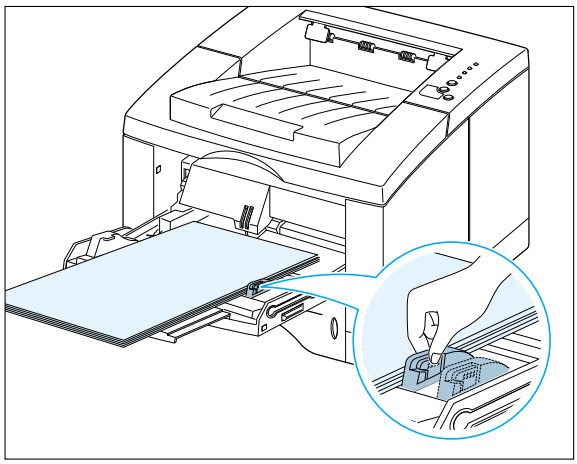
When you change the print settings, if you select **Manual Feed** in the **Paper Source** option, you can manually load paper in the Multi-Purpose Tray. Manually loading paper can be helpful when you want to check the print quality after each page is printed.

This loading procedure is almost the same as the procedure for loading in the Multi-Purpose Tray except you load paper sheet-by-sheet in the Multi-Purpose Tray, send print data to print the first page, and press the **Demo** button to print each following page.

1 Load the paper in the Multi-Purpose Tray **with the print side up**.



2 Slide the paper width guide to the left flush against the stack of print media without bending.

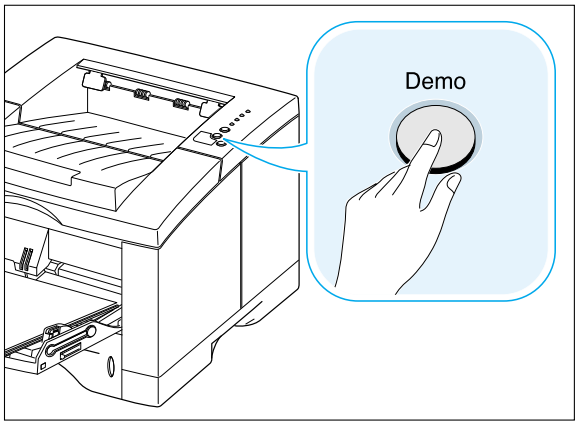


3 When you print a document, you must select **Manual Feed** for **Paper Source** from the software application, and then select the correct paper size and type. For details, see page 5.3.

4 Print the document.

5 The **Manual** light on the control panel blinks. Press the **Demo** button on the control panel.

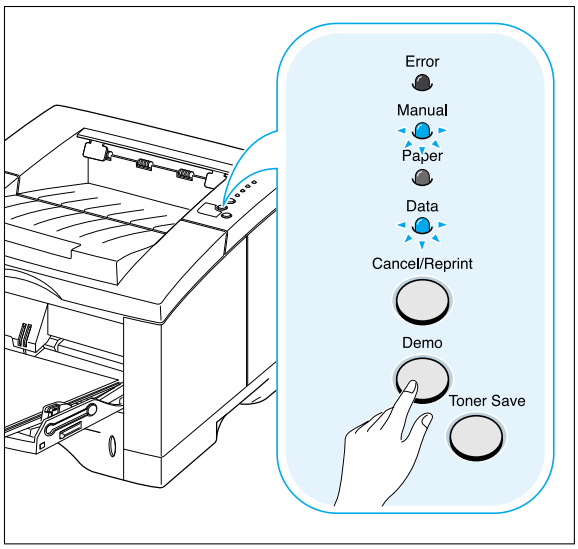
The sheet of paper is loaded and printed.



6 After one page is printed, the **Manual** light on the control panel blinks again.

Feed the next sheet into the Multi-Purpose Tray and press **Demo**.

Repeat this step for every page to be printed.

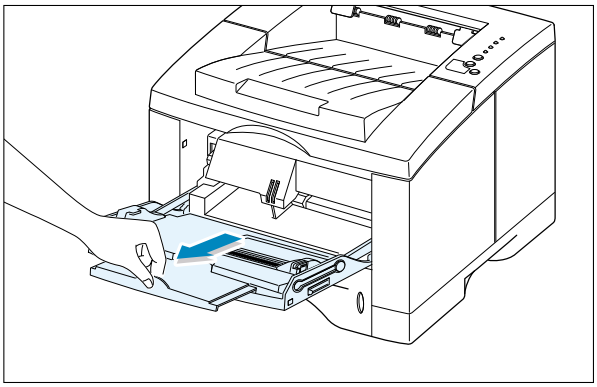


Printing on Envelopes

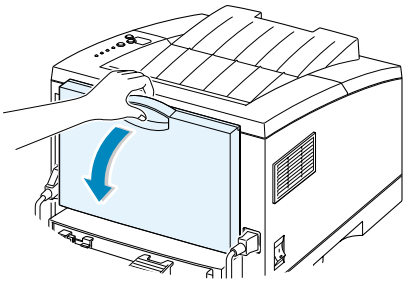
Guidelines

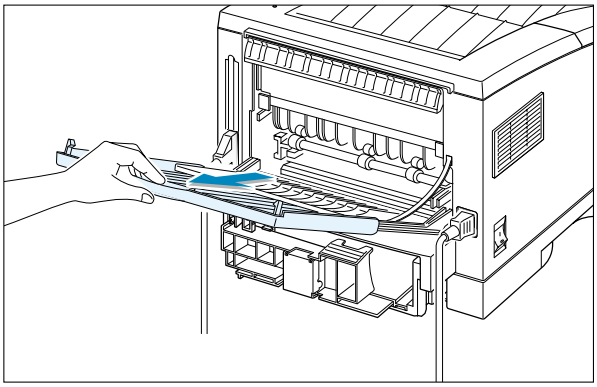
- Only use envelopes recommended for laser printers. Before you load envelopes in the Multi-Purpose Tray, make sure that they are undamaged and are not stuck together.
- Do not load more than 10 envelopes into the Multi-Purpose Tray.
- Do not feed stamped envelopes.
- Never use envelopes with clasps, snaps, windows, coated lining, or self-stick adhesives. These envelopes may severely damage the printer.

1 Open the Multi-Purpose Tray and slide the extender to its full-length position.

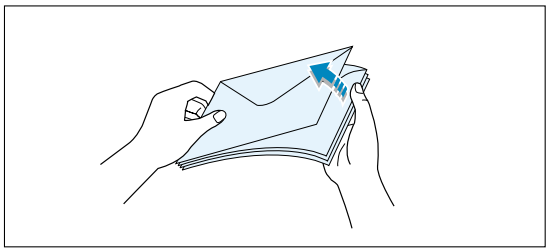


2 Open the rear output tray and pull the extender.



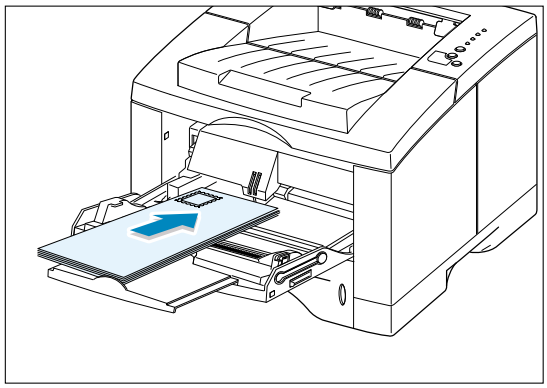


3 Flex or fan the envelopes to supply air through them for loading.

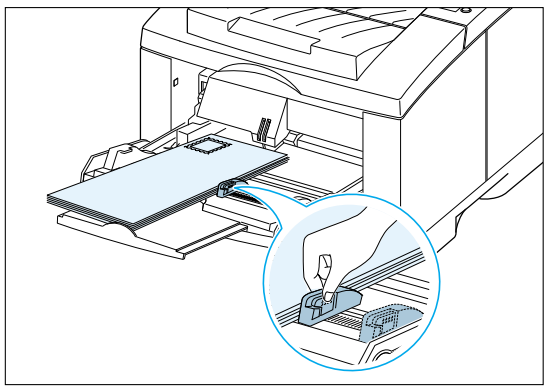


4 Load the envelopes **with the flap side down**, and against the left edge of the tray.

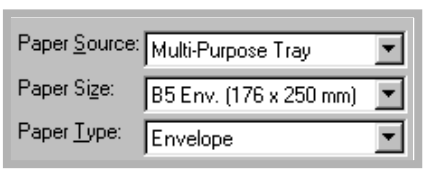
The stamp area is **on the left side** and the end of the envelope **with the stamp area enters the Multi-Purpose Tray first**.



5 Adjust the guide to the left edge of the envelope stack.



6 When you print on envelopes, configure the paper source, type and size properly in the software application. For details, see page 5.3.



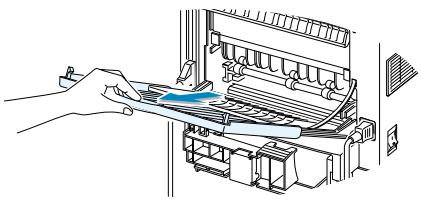
7 After printing, close the Multi-Purpose Tray and the rear output tray.

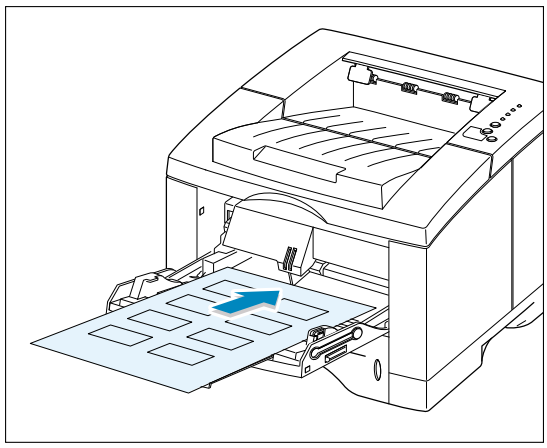
Printing on Labels

Guidelines

- Only use labels recommended for laser printers.
- Do not load more than 25 labels into the Multi-Purpose Tray at a time.
- Verify that the labels' adhesive material can tolerate fusing temperature of 200°C (392°F) for 0.1 second.
- Make sure that there is no exposed adhesive material between the labels. Exposed areas can cause labels to peel off during printing, which can cause paper jams. Exposed adhesive can also cause damage to printer components.
- Do not feed a sheet of labels through the printer more than once. The adhesive backing is designed for one pass through the printer.
- Do not use labels that are wrinkled, bubbled, separated from the backing sheet, or damaged in any way.

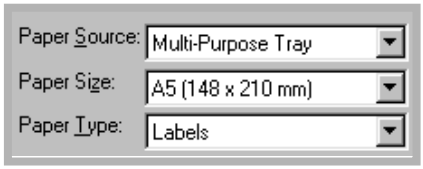
1 Open the Multi-Purpose Tray and the rear output tray.





2 Load labels **with print side up**, and against the left edge of the tray. Adjust the guide to fit the width of the labels.

3 When you print on labels, configure the paper source, type and size in the software application. For details, see page 5.3.



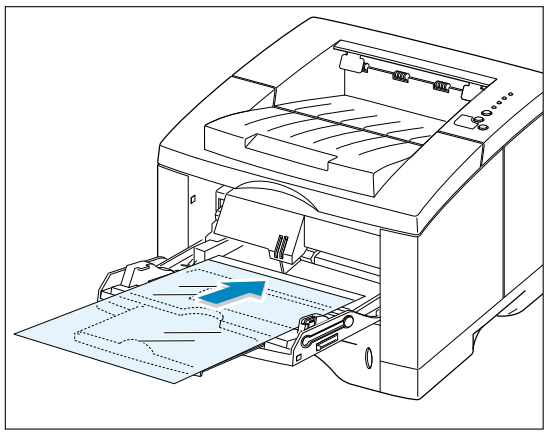
Note: To prevent them from sticking together, remove label sheet from the output tray as they are printed out.

Printing on Transparencies

Guidelines

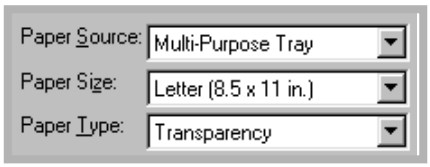
- Only use transparencies recommended for use in laser printers.
- Do not load more than 20 transparencies into the Multi-Purpose Tray at a time.
- Make sure that the transparencies are not wrinkled or curled, and that they do not have any torn edge.
- Hold the transparencies by the edges and avoid touching the print side. Oils from your fingers that are deposited on the transparency can cause print quality problems.
- Be careful not to scratch or leave fingerprints on the print side.

1 Open the Multi-Purpose Tray and pull the extender out of its full-length position.



2 Load transparencies **with print side up**, and **the top with the adhesive strip entering the printer first**. Adjust the guide to fit the width of the transparencies.

3 When you print on transparencies, configure the paper source, type and size in the software application. For details, see page 5.3.



Notes:

- To prevent transparencies from sticking together, remove them from the output tray as they are printed.
- Place transparencies on a flat surface after removing them from the printer.

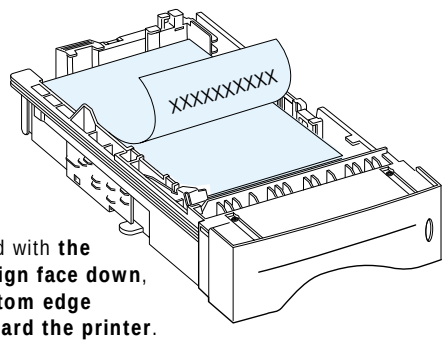
Printing on Preprinted Paper

Preprinted paper is paper that has some type of printing placed on it before it is sent through the printer (paper that has a preprinted logo at the top of the page, for exsample).

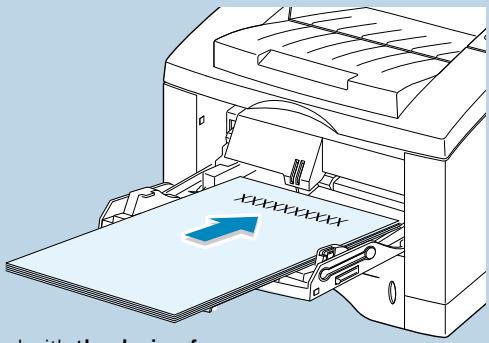
Guidelines

- Letterheads must be printed with heat-resistant ink that will not melt, vaporize, or release hazardous emissions when subjected to the printer's fusing temperature of 400°F (205°C) for 0.1 second.
- Ink on letterheads must be non-flammable and should not adversely affect any printer rollers.
- Forms and letterheads should be sealed in a moisture-proof wrapping to prevent changes during storage.
- Before you load preprinted paper as forms and letterheads, verify that the ink on the paper is dry. During the fusing process, wet ink can come off preprinted paper.

1 Load letterheads into the tray you want to use as shown in the figures. Adjust the guide to fit the width of the paper stack.

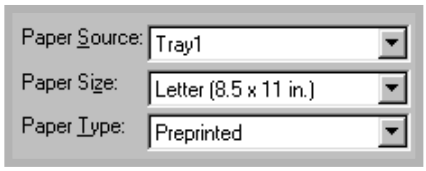


Load with **the design face down, bottom edge toward the printer**.



Load with **the design face up, top edge toward the printer**.

2 When you print a document on the paper, configure the paper source, type and size in the software application. For details, see page 5.3.



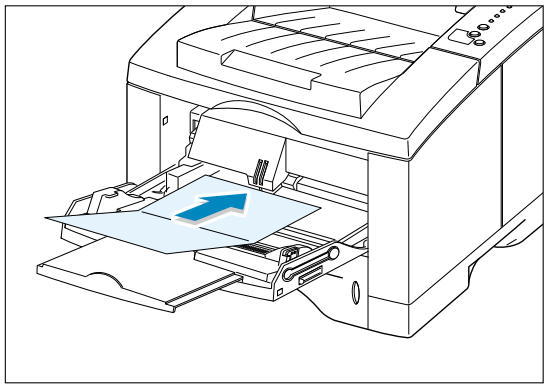
Printing on Card Stock or Custom-sized Media

Postcards, 3.5 by 5.83 in.(index) cards and other custom-sized media can be printed with the ML-1650 series printer. The minimum size is 90 by 148 mm (3.5 by 5.83 in.) and the maximum size is 216 by 356 mm (8.5 by 14 in.).

Guidelines

- Always insert the short-edge into the Multi-Purpose Tray first. If you want to print in landscape mode, make this selection through your software. Inserting paper long-edge first may cause a paper jam.
- Do not load more than 10 cards into the Multi-Purpose Tray at a time.
- Do not print on media smaller than 90 mm (3.5 in.) wide or 148 mm(5.83 in.) long.
- Set margins at least 6.4 mm (0.25 in.) away from the edges of the media in the software application.

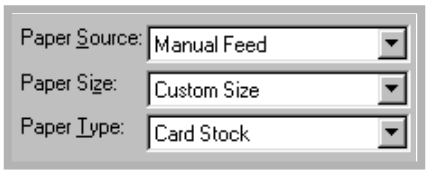
1 Open the Multi-Purpose Tray and the rear output tray and pull the extenders out to its full-length position.



2 Load print media **with print side up**, **short edge first** and against the left edge of the tray.

Adjust the guide to fit the width of the media.

3 Configure the paper source, type and size in the printer driver's properties (see page 5.3) and print.



Note: If the size of your print media is not listed in the **Paper Size** box in the **Paper** tab of the printer driver properties, select **Custom Size** and set the paper size manually.

chapter 5

Printing Tasks

This chapter explains your printing options and covers common printing tasks.

Topics included in this chapter are:

- Printing a Document
- Using Toner Save Mode
- Printing on Both Sides of the Paper (Manual Duplexing)
- Printing Multiple Pages on One Sheet of Paper (N-Up Printing)
- Printing Booklets
- Printing on Different Paper for the First Page
- Fitting Your Document To a Selected Paper Size
- Printing Posters
- Setting Graphic Properties
- Printing Watermarks
- Using Page Overlay

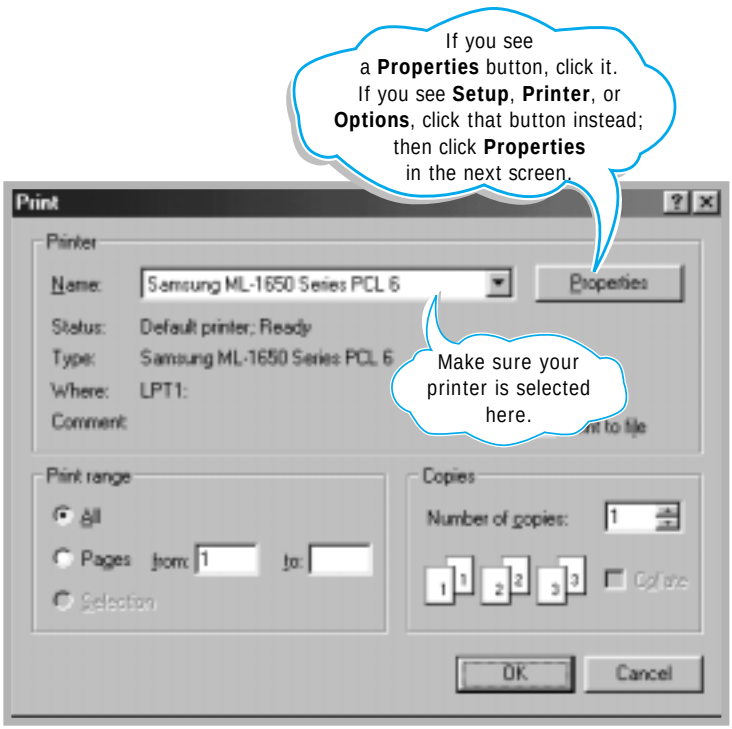
Printing a Document

The following procedure describes the general steps required for printing from various Windows applications. The exact steps for printing a document may vary depending on the application program you are using. Refer to your software application's documentation for the exact printing procedure.

1 Open the document you want to print.

2 Select **Print** from the **File** menu. The Print dialog box for your application will be displayed (the Print dialog box for your application may look slightly different).

The basic print settings you will need are usually selected within this Print dialog box. These settings include the number of copies, paper size, and page orientation.

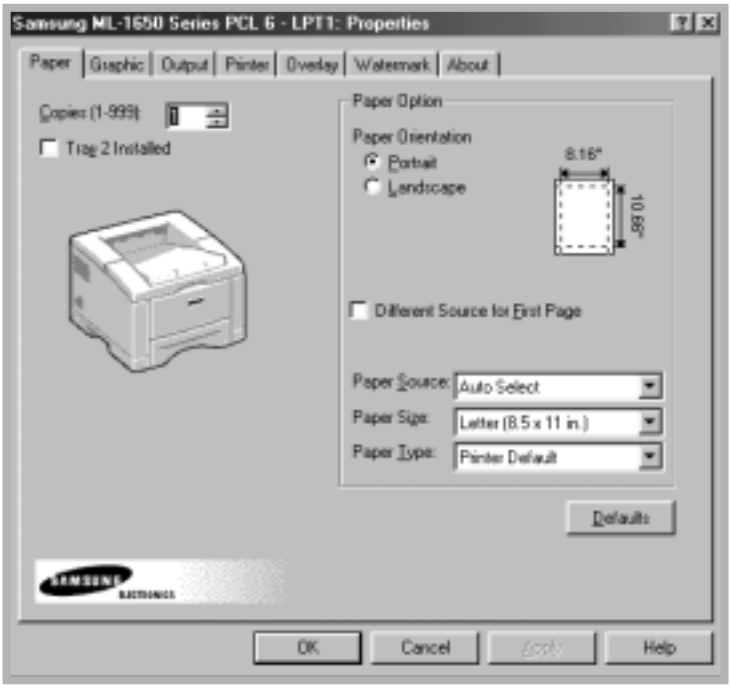


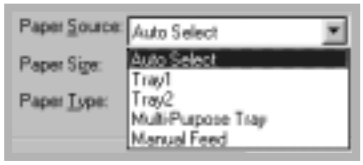
3 To take full advantage of the printer features provided by your ML-1650 series printer, click **Properties** in the application's Print dialog box and go to step 4.

If you see **Setup**, **Printer**, or **Options**, click that button instead. Then click **Properties** in the next screen.

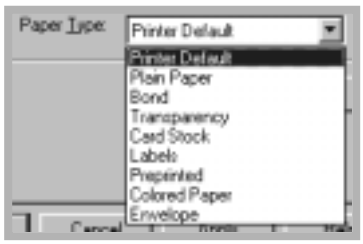
4 Now you see the Samsung ML-1650 Series printer's Properties dialog box. The Properties dialog box allows you to access all the information you will need when using your printer.

If necessary, click the **Paper** tab to display the settings shown below. The **Paper** tab contains the options for setting the basic paper handling.

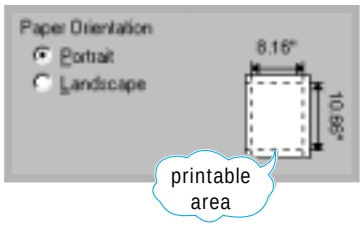




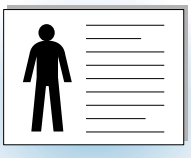
Make sure the **Paper Source** is set to **Tray 1**. If you use paper in the Multi-Purpose Tray or optional Tray 2, select the corresponding paper source.
Manual Feed source is used when printing to special media. You have to feed one sheet at a time into the printer. See page 4.10.
If the paper source is set to **Auto Select**, the printer automatically selects the print media according to the following order: Multi-Purpose Tray, Tray 1, Tray 2 (option).



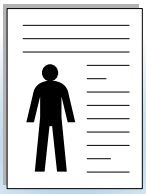
Make sure the **Paper Type** is set to **Printer Default**. If you load a different type of print media, select the corresponding paper type. For further information on print media, refer to chapter 4 'Print Media'.
Also, select the paper size you have loaded in your printer.



The **Paper Orientation** option allows you to select the direction in which information is printed on a page. **Portrait** prints across the width of the page, letter style. **Landscape** prints across the length of the page, spreadsheet style.



Landscape



Portrait

You can also see the printable area.

5 Click other tabs on the top of the Properties dialog box to access other features, if needed.

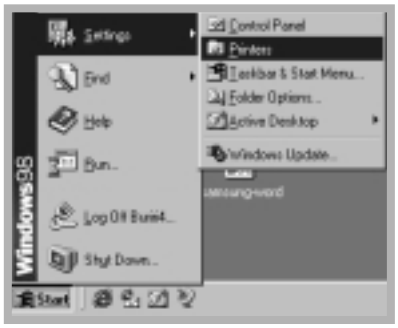
6 When you complete the print settings, click **OK** until the Print dialog box is displayed.

7 Click **OK** to start printing.

Notes:

- Most Windows applications will override settings you specify in the printer driver. Change all print settings available in the software application first, and change any remaining settings using the printer driver.
- The settings you change remain in effect only while you are using the current program. **To make your changes permanent**, make them in the Printers folder. Follows this procedure:

1. Click the Windows **Start** button.
2. Select **Settings**, then **Printers** to open the Printers window.



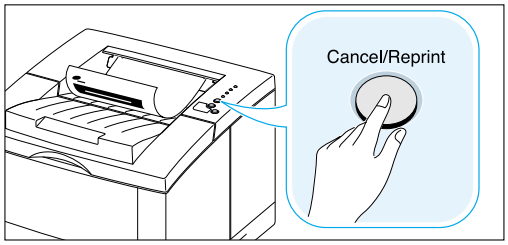
3. Select the **Samsung ML-1650 Series PCL 6**.
4. Click the right mouse button and select **Properties** to open the properties window.

Canceling a Print Job

There are two ways to stop a print job.

To stop a print job from the ML-1650 series printer

Press the **Cancel/Reprint** button on the control panel.



The printer will finish printing the page that is moving through the printer and delete the rest of the print job. Pressing **Cancel/Reprint** cancels only the current job in the printer. If more than one print job is in printer memory, **Cancel/Reprint** must be pressed once for each job.

To stop a print job from the Printers folder

1. From the **Start** menu, select **Settings**.
2. Select **Printers** to open the Printers window, then double-click the **Samsung ML-1650 Series PCL 6**.
3. From the **Document** menu, select **Cancel Printing** (Windows 9x) or **Cancel** (Windows NT 4.0).

Printing Help

The Samsung ML-1650 series printer has a help screen that can be activated by the **Help** button in the printer Properties dialog box. These help screens give detailed information about the printer features provided by the ML-1650 series printer driver.

From the upper right hand corner, click [?] then click on a setting for more information.

If you want to restore the default printer properties settings when you change the print settings, click **Defaults** in the Properties dialog box.

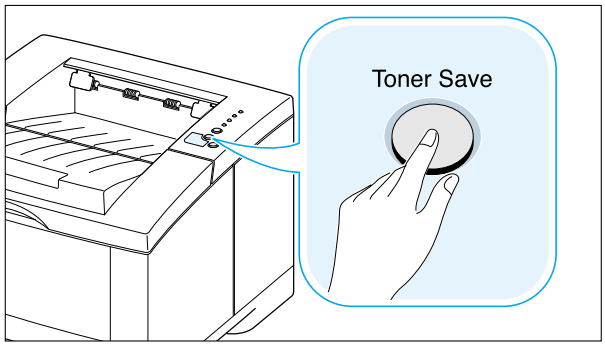
Using Toner Save Mode

Toner Save mode allows the printer to use less toner on each page. Selecting this option will extend the life of your toner cartridge and reduce your cost per page, but will reduce print quality. This setting is not available with 1200 dpi settings.

There are two ways to enable the Toner Save mode.

To enable this feature from the ML-1650 series printer

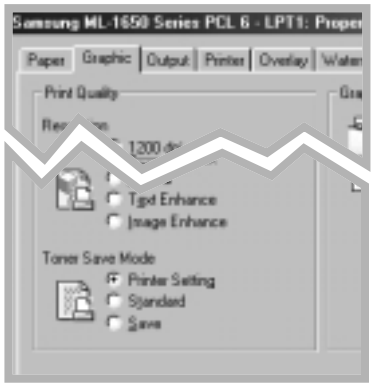
Press the **Toner Save** button on the control panel. The printer must be in the ready mode (**Data** light is on).



- If the button backlight is on, toner save mode activates and the printer uses less toner to print a page.
- If the button backlight is off, toner save mode is disabled and the printer prints in the normal mode.

To enable this feature from the software application

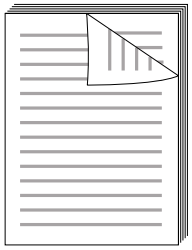
1. When you change the print settings from your software application, access the printer properties. See page 5.2 to access the printer properties.



2. Click the **Graphic** tab, and select the **Toner Save Mode** option. You can select from:
   - **Printer Setting**: If you select this option, this feature is determined by the setting you've made on the control panel of the printer.
   - **Standard**: If you don't need to save toner to print a document, select this option.
   - **Save**: Select this option to allow the printer to use less toner on each page.

3. Click **OK**.

Printing on Both Sides of the Paper (Manual Duplexing)



To print on both sides of the paper (manual duplexing), you must run the paper through the printer twice. You can print using the top output tray (face down tray) or the rear output tray (face up tray). Samsung recommends using the top output tray for light-weight paper. Use the rear output tray for any heavy media or media that tends to curl when printed, such as envelopes and card stock.

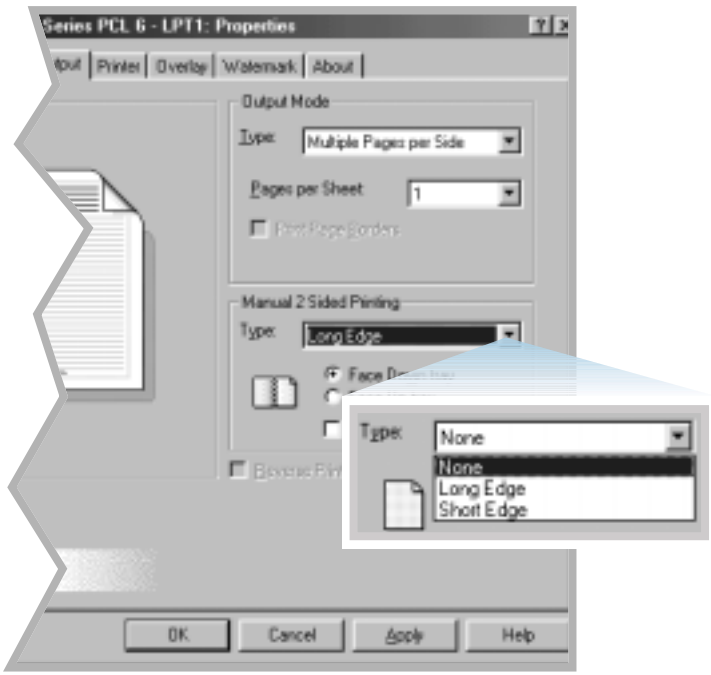
Note: To print on both sides of the paper, **you must use the Multi-Purpose Tray** for the paper input source. Load paper in the Multi-Purpose Tray.

5

1 When you change the print settings from your software application, access the printer properties. See page 5.2 to access the printer properties.

From the **Paper** tab, select the paper orientation, source, size and type.

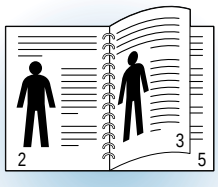
2 Click the **Output** tab, then choose **Long Edge** or **Short Edge** from the **Type** drop-down list in the **Manual 2 Sided Printing** section.



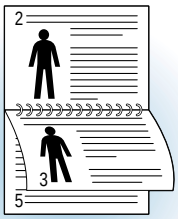
Note: If you can not see **Long Edge** in the **Type** drop-down list, set the **Type** box in the **Output Mode** section to **Multiple Pages per Side** or **Fit to Page**.

Choosing **Long Edge** lets you place the binding orientation along the long edge of the paper as in a magazine.

Choosing **Short Edge** lets you place the binding orientation along the short edge of the paper, as in a calendar.

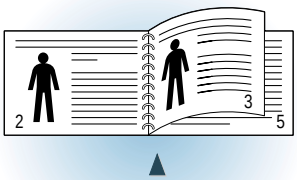


Long Edge in the **Portrait** orientation

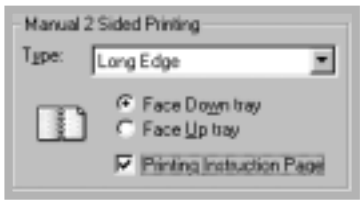


Long Edge in the **Landscape** orientation

Short Edge in the **Portrait** orientation



Short Edge in the **Landscape** orientation



3 Select **Face Down Tray** (top output tray) or **Face Up Tray** (rear output tray) in which the printed media is to be stacked. According to this option, the printer will determine the print page order when the second sides are printed.

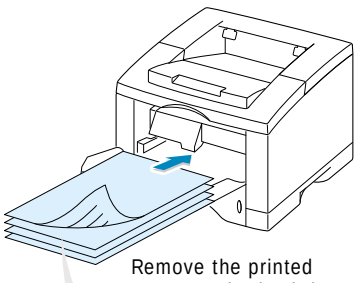
4 If you want to print the instruction page which tells you how to load the paper, click **Printing Instruction Page**. If the box is checked, the printer prints the instruction page before the duplexing job is printed. If the box is empty, this feature is disabled.

5 Start printing. The printer automatically prints only the odd-numbered pages.

6 After the first side has been printed, remove the remaining paper from the Multi-Purpose Tray and set it aside until after you finish your manual duplexing job.

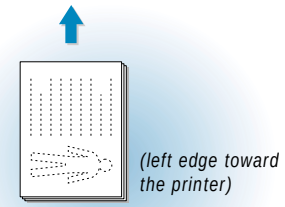
7 Gather up the printed pages, flip the stack, and then straighten the stack before placing it back in the Multi-Purpose Tray.

Note: If you have selected the **Face Up Tray** option in Step 3, the last page is placed on the top of the stack. **Do not** rearrange the pages before reloading them to print the second side. Your printer knows the stacked page order and will print the corresponding second side for each page.



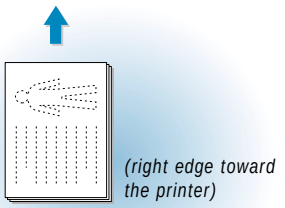
Remove the printed pages, and reload them into the Multi-Purpose Tray with the **printed side face down**.

The following illustrations show you how to put the printed pages back into the printer.



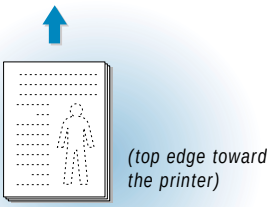
(left edge toward the printer)

Long Edge in the **Landscape** orientation



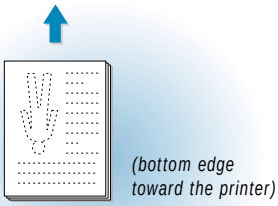
(right edge toward the printer)

Short Edge in the **Landscape** orientation



(top edge toward the printer)

Long Edge in the **Portrait** orientation



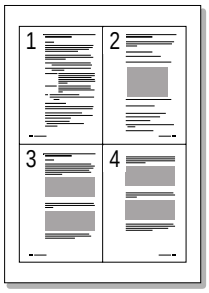
(bottom edge toward the printer)

Short Edge in the **Portrait** orientation

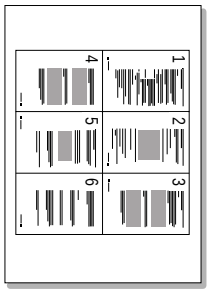
Note: Manual duplexing can cause the printer to become dirty more quickly and can therefore reduce print quality. See “Cleaning the Printer” on page 6.4 if the printer becomes dirty.

8 You are prompted to reinsert the paper into the Multi-Purpose Tray. Click **OK** on the screen to start printing the second side. The printer automatically prints only the even-numbered pages.

Printing Multiple Pages on One Sheet of Paper (N-Up Printing)



▲ 4 pages per sheet



▲ 6 pages per sheet

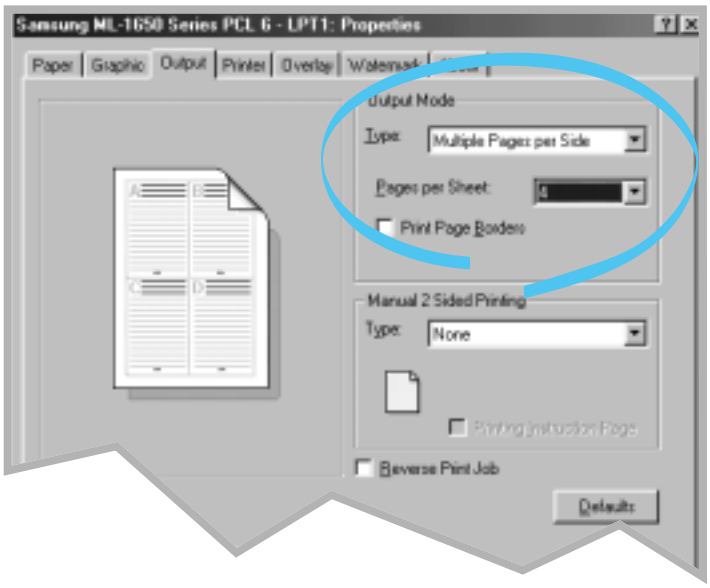
You can select the number of pages that you want to print on a single sheet of paper. If you choose to print more than one page per sheet, the pages will appear decreased in size and arranged on the sheet. You can specify up to 16 pages.

1 When you change the print settings from your software application, access the printer properties. See page 5.2 to access the printer properties.

From the **Paper** tab, select the paper orientation, source, size and type.

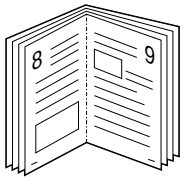
2 Click the **Output** tab, and choose **Multiple Pages per Side** in the **Type** drop-down list. Then select the number of pages you want to print per sheet (1, 2, 4, 6, 9 or 16) in the **Pages per Sheet** drop-down list.

3 Click **Print Page Borders** if you want to print a border around each page on the sheet. **Print Page Borders** is enabled only if **Pages per Sheet** is 2, 4, 6, 9, or 16.

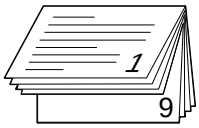


4 Click **OK**, then start printing.

Printing Booklets



Portrait orientation



Landscape orientation

The Booklet printing feature allows you to print your document as a 2-sided (duplex) job and to arrange the pages so that the paper can be folded in half after printing to produce a booklet.

Note: To print booklet, you **must use the Multi-Purpose Tray** for the paper input source. Load paper in the Multi-Purpose Tray.

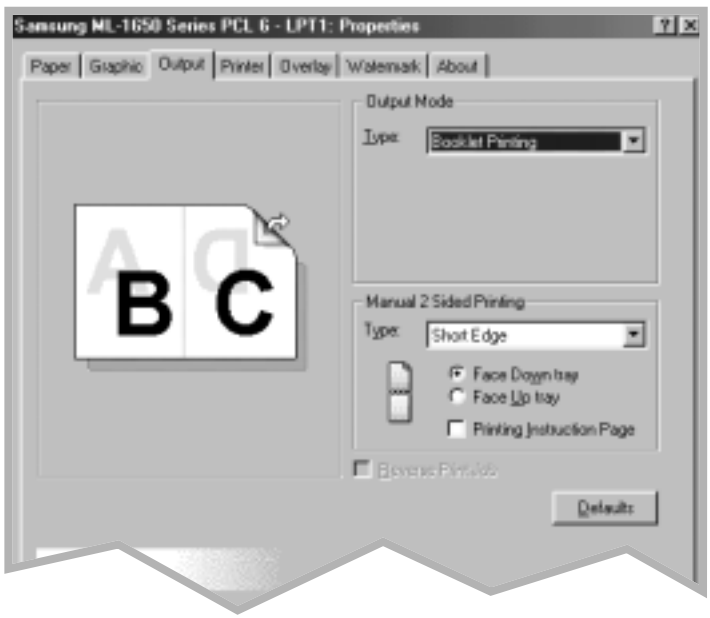
1 When you change the print settings from your software application, access the printer properties. See page 5.2 to access the printer properties.

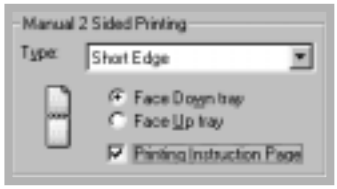
From the **Paper** tab, select the paper orientation, source, size and type.

Note: For booklet printing, only four paper sizes are supported: Letter, A4, Legal, and Executive.

2 Click the **Output** tab, then choose **Booklet Printing** from the **Type** drop-down list.

When you select **Booklet Printing**, the **Manual 2 Sided Printing** option automatically changes to **Short Edge**. This setting is required to format the printed pages correctly.





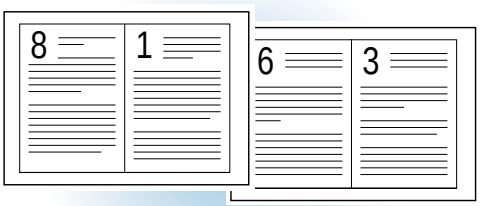
3 Select **Face Down Tray** (top output tray) or **Face Up Tray** (rear output tray) in which the printed media will be stacked. According to this option, the printer will determine the print page order when the second sides are printed.

4 If you want the instruction page which tells you how to load the paper, click **Printing Instruction Page**. If the box is checked, the printer prints the instruction page before the duplexing job is printed. If the box is empty, this feature is disabled.

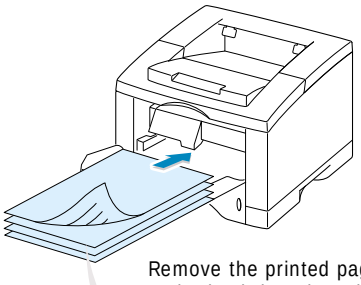
5 Print the document.

6 After side one has been printed, remove the remaining paper from the Multi-Purpose Tray and set it aside until your booklet job is complete.

The printer prints side one as shown below for an 8-page document.

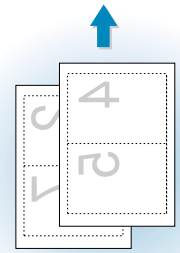


▲ 8 page document



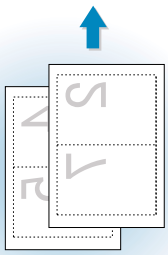
Remove the printed pages, and reload them into the Multi-Purpose Tray with **printed side face down**.

7 Gather up the printed pages, flip the stack, and then straighten the stack before placing it back in the multi-purpose tray. The following illustrations show how to put the paper back into the printer.

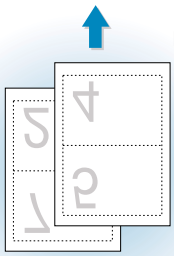


▲ **Face Up Tray** output

In **Portrait** orientation, insert the pages with **left edge** toward the printer.

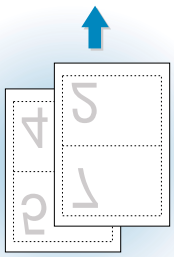


▲ **Face Down Tray** output



▲ **Face Up Tray** output

In **Landscape** orientation, insert the pages with **bottom edge** toward the printer.

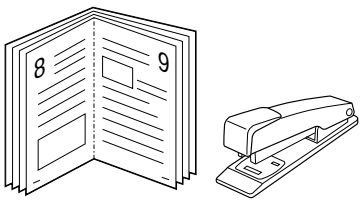


▲ **Face Down Tray** output

Note: If you have selected the **Face Up tray** option at Step 3, the last page is placed on the top of the stack. **Do not** rearrange the pages before reloading the pages. Your printer knows the stacked page order and will print the corresponding second side for each page.

8 You are prompted to reinsert the paper into the Multi-Purpose Tray. Click **OK** on the screen. The printer will finish printing.

9 Fold and staple the pages.

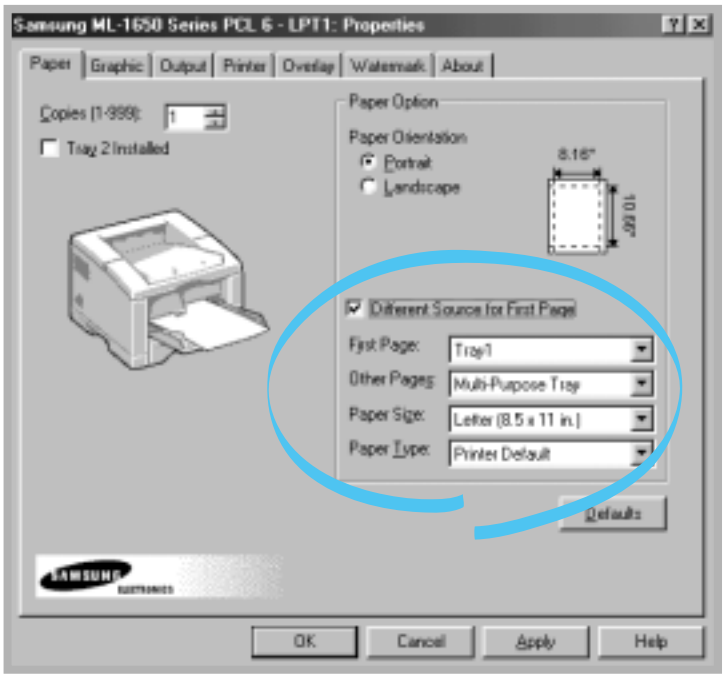


Printing on Different Paper for the First Page

1 When you change the print settings from your software application, access the printer properties. See page 5.2 to access the printer properties.

2 Click the **Paper** tab, and click **Different Source for First Page**.

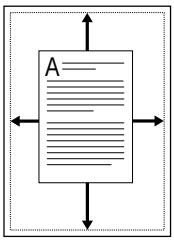
If the box is checked, this feature is enabled and the dialog box allows you to select the desired paper source for the **First Page** and **Other Pages** independently. If the box is empty, this feature is disabled.



3 Click **OK**, then start printing.

Note: The paper size for all pages of the print job must be the same.

Fitting Your Document To a Selected Paper Size

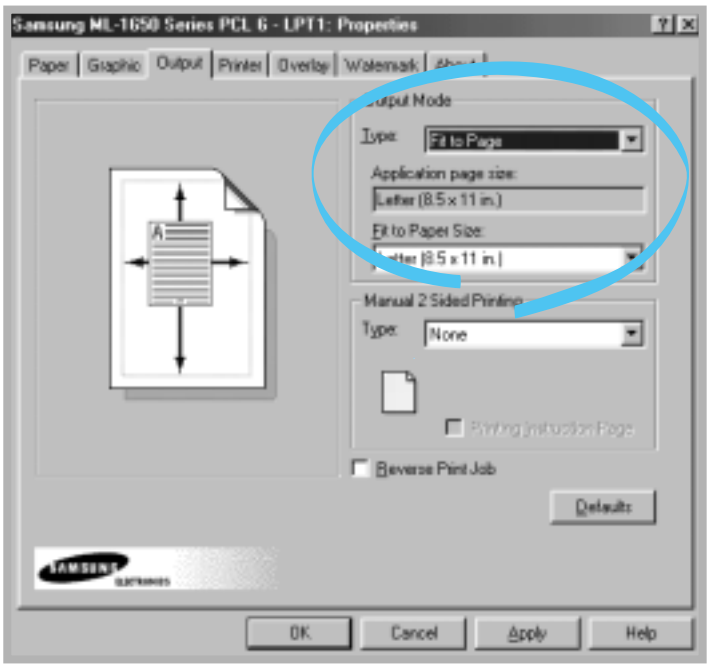


This printer feature allows you to scale your print job to any selected paper size regardless of the digital document size. This can be useful when you want to check fine details on a small document.

1 When you change the print settings from your software application, access the printer properties. See page 5.2 to access the printer properties.

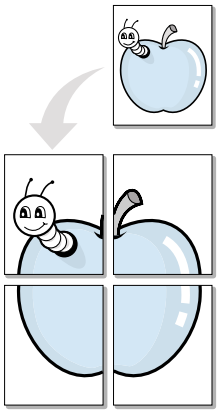
2 Click the **Output** tab, and select **Fit to Page** in the **Type** drop-down list.

3 You'll see the **Application page size** and then you will be prompted to select the **Fit to Paper Size**. Select the correct size from the drop-down list.



4 Click **OK**, then start printing.

Printing Posters



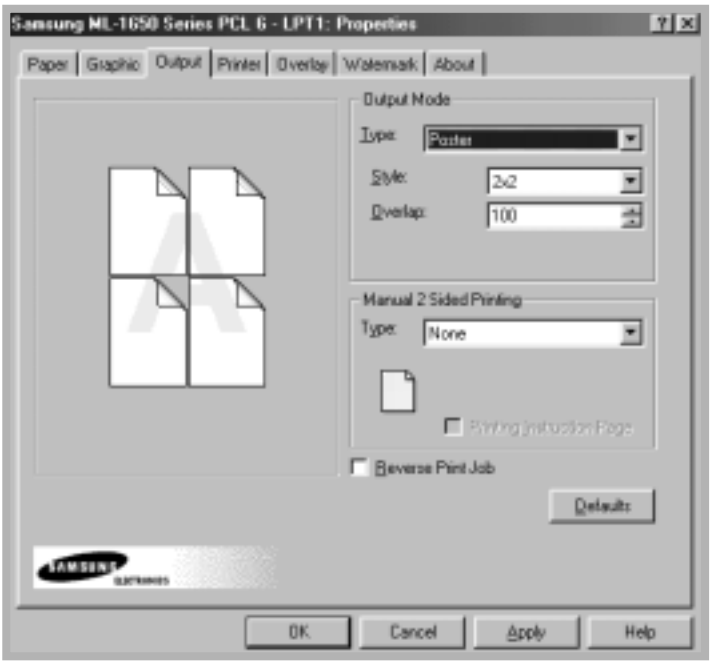
Poster printing
with 2x2 style

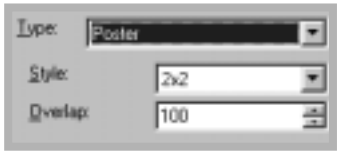
This feature allows you to print a single-page document onto 4, 9, or 16 sheets of paper, for the purpose of pasting the sheets together to form one poster-size document.

1 When you change the print settings from your software application, access the printer properties. See page 5.2 for more information on accessing printer properties.

From the **Paper** tab, select the paper orientation, source, size and type.

2 Click the **Output** tab, and select **Poster** in the **Type** drop-down list.

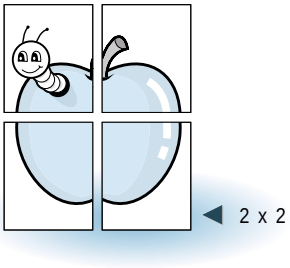


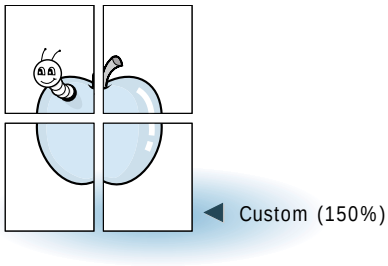


3 To determine the scaling factor, select the **Style**; **2x2**, **3x3**, **4x4** or **Custom**.

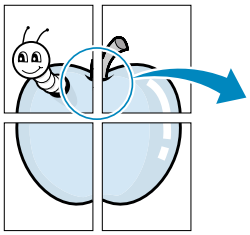
For example, if you select **2x2**, the output will be automatically stretched to cover 4 physical pages.

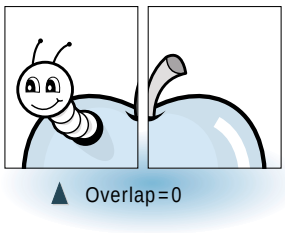
If you select **Custom**, you can adjust the scaling factor manually. For example, if you specify 150%, the image will be printed across 4 pages with 150% scaled.

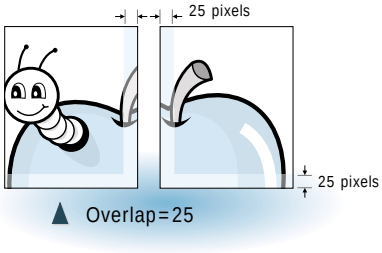




4 You may specify an overlap in pixel to make it easier to reconstruct the resulting poster.





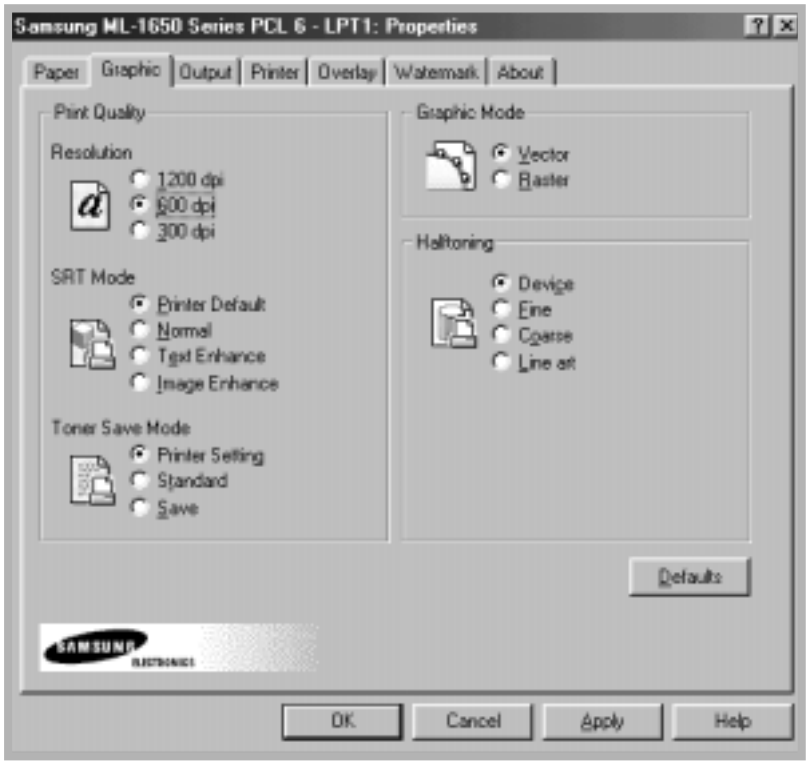


5 Click **OK**, then start printing.

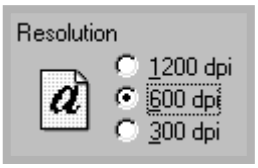
Setting Graphic Properties

Use the following options to adjust the print quality for your specific printing needs when you access the printer properties. See page 5.2 for more information on accessing printer properties.

If necessary, click the **Graphic** tab to display the settings shown below.

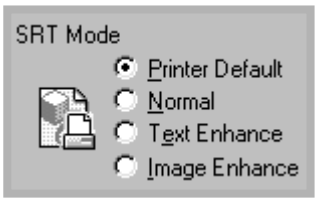


Resolution



You can select the printing resolution; **1200 dpi**, **600 dpi**, **300 dpi**. The higher the setting, the sharper the clarity of printed characters and graphics. Higher settings may increase the time it takes to print a document.

SRT Mode

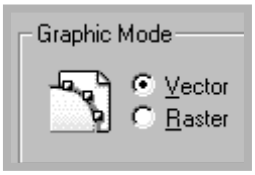


Some printed characters or images can appear to have jagged or uneven edges. Set this Samsung Resolution enhancement Technology (SRT) option to improve the print quality of your text and image and make the characters and images appear smoother.

Note: SRT Mode is disabled when the 1200 dpi settings are selected.

- **Printer Default** – Choose this setting to use SRT that your printer provides.
- **Normal** – SRT mode is disabled. Choose this setting if graphics, particularly scanned images, are not printing clearly.
- **Text Enhance** – This setting refines the print quality of characters by smoothing out jagged edges that can occur on the angles and curves of each character.
- **Image Enhance** – This setting refines the print quality of photo images using SRT.

Graphic Mode



This option can be used for configuring the printer to process graphics as raster or vector images. Setting this option tells Windows how to send graphic images to the printer. All graphics can be printed as raster images, however some geometric shapes or patterns print faster if they are printed as vector graphics.

- **Vector** – If you select the **Vector** setting, Windows will send graphics to the printer as a mixture of vector and bitmap images.
- **Raster** – When you select the **Raster** setting, Windows will send all graphics to the printer as bit map images.

Note: Not all graphic images can print using the Vector setting. If you are using the Vector setting, and your graphic images do not print as they appear on your computer screen, select the Raster setting and reprint your graphic.

Halftoning

This option can be used for configuring the halftone of the printed illustration. The best way to choose a Halftoning setting for your graphic image is to experiment. Print a graphic image at each setting and choose the one you like best.

- **Device** – Choose this setting for printed graphic image that printer provides.
- **Fine** – Choose this setting for printed images that you want to have a smooth, realistic and photographic appearance. This setting provides soft contrasts between various shades of gray. This setting also works well for images originally designed with color.
- **Coarse** – Choose this setting if your graphic images were originally scanned in through a scanner.
- **Line art** – Choose this setting for graphic images with intricate lines and fine detail, like clip art graphics. This setting provides solid lines and sharp contrasts between shaded areas.

Printing Watermarks

The Watermark option allows you to print text over an existing document. For example, you may want to have large gray letters reading “DRAFT” or “CONFIDENTIAL” printed diagonally across the first page or all pages of a document.

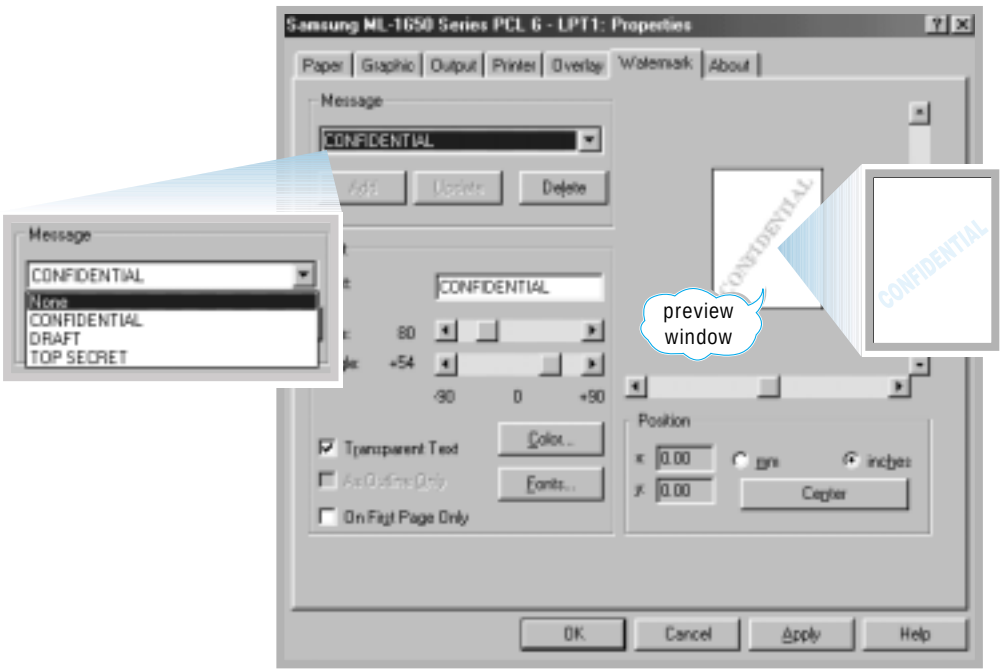
There are several predefined watermarks that come with the ML-1650 series printer, and they can be modified or you can add new ones to the list.

5

To use an existing watermark

1 When you change the print settings from your software application, access the printer properties. See page 5.2 for more information on accessing printer properties.

2 Click the **Watermark** tab, and select the desired watermark in the **Message** drop-down list. You will see the selected watermark in the preview window.



3 Click **OK**, then start printing.

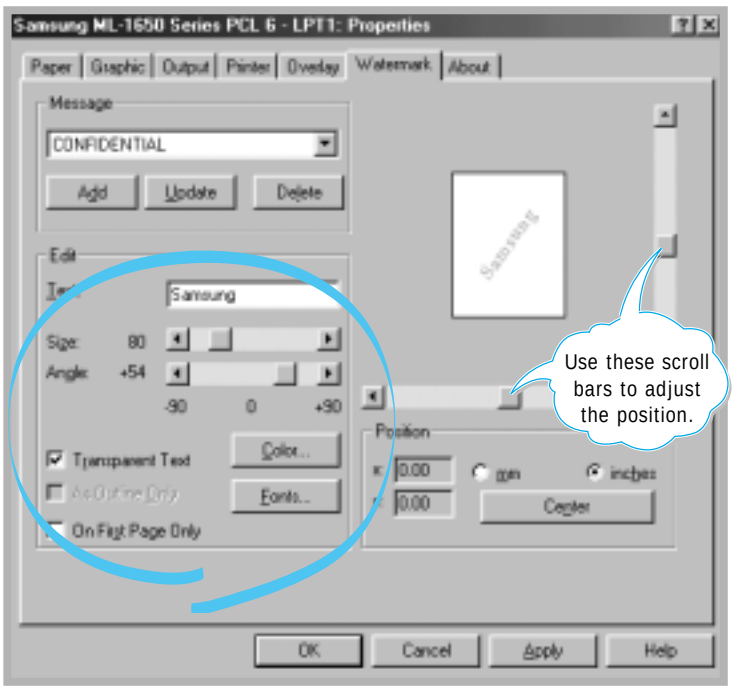
To create or edit a watermark

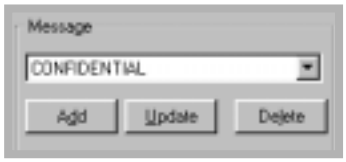
1 When you change the print settings from your software application, access the printer properties. See page 5.2 for more information on accessing the printer properties.

2 Click the **Watermark** tab, and enter the desired text message in the **Text** field. This will be displayed in the preview window. The preview window is provided so that you can see how the watermark will appear on the printed page.

3 Select the desired watermark options. You can select the font type and size, color and angle. There are three checkboxes at the bottom of the dialog box:

- **Transparent Text** – Allows the document to show through the watermark.
- **As Outline Only** – Prints the text outline of the watermark. This setting globally effects all watermarks in the list.
- **On First Page Only** – Prints the watermark only on the first page.





4 If you have created a new or edited an existing watermark, the **Add** and **Update** button is enabled.

To add a new watermark to the list, click **Add**.

5 If you want to edit, select the desired watermark from the list, edit, then click **Update**.

6 When you complete the edit, click **OK**, then start printing.

To stop printing the watermark, select **None** in the Message drop-down list.

To delete a watermark

1 When you change the print settings from your software application, access the printer properties. See page 5.2 for more information on accessing the printer properties.

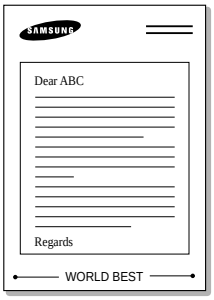
2 From the **Watermark** tab, select the watermark you want to delete in the **Messages** drop-down list.

3 Click **Delete**.

4 Click **OK**.

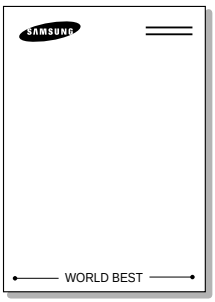
Using Page Overlay

What is an Overlay?



An overlay is text and/or images stored in the computer HDD as a special file format that can be printed on any document you choose. Overlays are often used to take the place of preprinted forms and letterhead paper. Rather than using preprinted letterhead, for example, you can create an overlay containing the exact same information that is currently on your letterhead. Then when you want to print a letter with your company's letterhead, you do not need to load preprinted letterhead paper in the printer. You need only to tell the printer to print the letterhead overlay on your document.

Creating a New Page Overlay

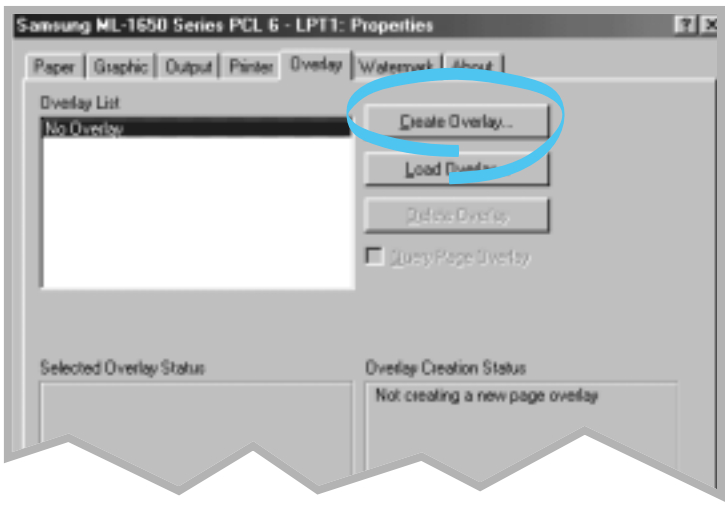


To use a page overlay, you must create a new page overlay containing your logo or image.

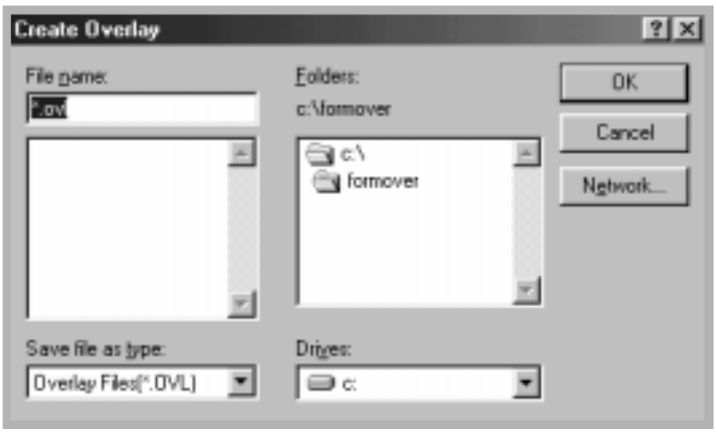
1 Create or open a document containing a text or image you want to use for page overlay. Position the items exactly as you wish them to appear when printed as an overlay. If needed, save the file for later use.

2 Select **Print** from the **File** menu. Then click **Properties** in the application's Print dialog box to access the printer properties. For details, see page 5.2.

3 Click the **Overlays** tab, and click **Create Overlay**.



4 In the Create Overlay dialog box, type a name of up to eight characters in the **File name** box. Select the destination path if necessary. (The default is C:\FORMOVER).



5 Click **OK**. You will see the name in the **Overlay List** box.

6 Click **OK** or **Yes** until you complete the creation.

The file is not printed out. Instead it will be stored on your computer HDD disk.

Note: The overlay document size must be the same as documents you will print with the overlay.

Using Page Overlay

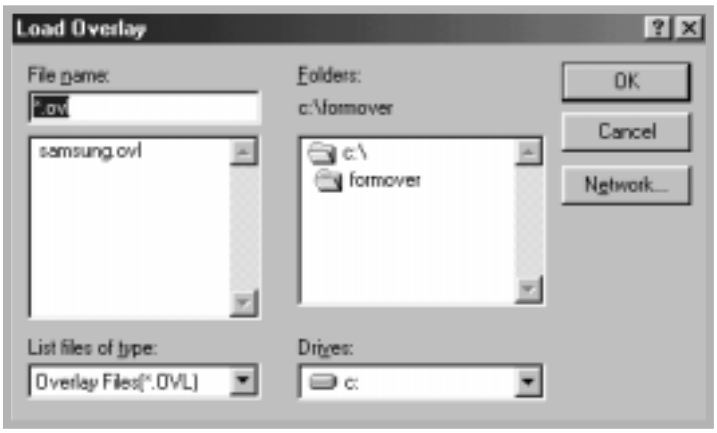
After an overlay has been created, it is ready to be printed with your document. To print an overlay with a document:

1 Create or open the document you want to print.

2 When you change the print settings from your software application, access the printer properties. See page 5.2 to access the printer properties.

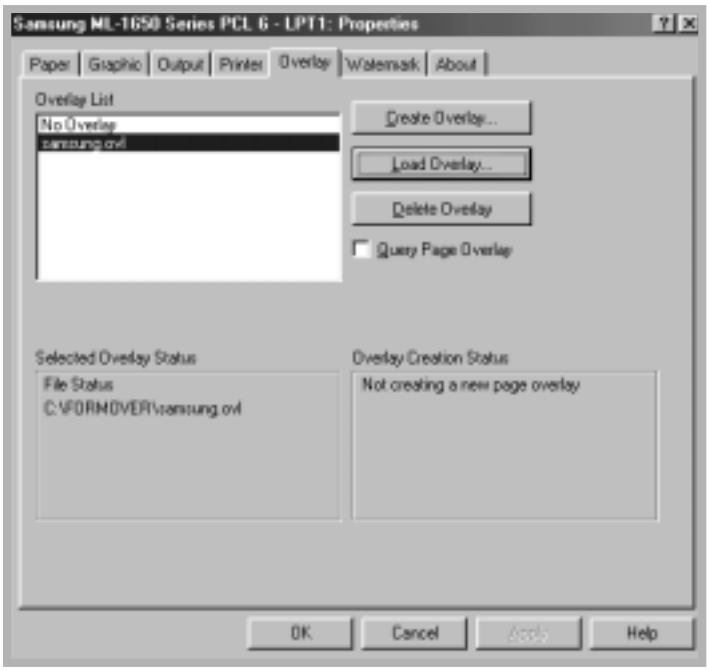
3 Click the **Overlays** tab, and select the desired overlay from the **Overlay List** box.

4 If the desired overlay file does not appear in the **Overlay List** box, click **Load Overlay**, and select the overlay file.



If you have stored the overlay file you want to use into an external source, you can also load the file when you access this Load Overlay window.

After you select the file, click **OK**. The file is now shown in the **Overlay List** box and is available for printing. Select the overlay from the **Overlay List** box.



5 If necessary, click **Query Page Overlay**. If this box is checked, a message box will appear each time you submit a document for printing, asking you to confirm your wish to print an overlay on your document.

Answering **Yes** to the message box means that the selected overlay will be printed with your document.
Answering **No** to the message box cancels overlay printing.

If this box is empty, and an overlay has been selected, the overlay will be automatically printed with your document.

6 Click **OK** or **Yes** until the printing starts.

The selected overlay will be downloaded with your print job and printed on your document.

Deleting a Page Overlay

You can delete page overlays that are no longer used.

1 In the printer properties dialog box, click the **Overlay** tab.

2 Select the overlay you want to delete from the **Overlay List** box.

3 Click **Delete Overlay**.

4 Click **OK** until you exit the Print dialog box.

chapter 6

Maintaining Your Printer

This chapter provides suggestions for high-quality and economical printing and information for maintaining the toner cartridge and the printer.

Topics included in this chapter are:

- Maintaining Toner Cartridge
- Cleaning the Printer

Maintaining Toner Cartridge

Toner cartridge storage

To get the most from the toner cartridge, keep the following guidelines in your mind.

- Do not remove the toner cartridge from its package until you are ready to use it. The shelf life of a cartridge in an unopened package is approximately 2 years. The shelf life of a cartridge in an opened package is approximately 6 months.
- Do not refill toner cartridges. **The printer warranty does not cover damage caused by using a refilled cartridge.**
- Store toner cartridges in the same environment as the printer.
- Do not remove a toner cartridge from the printer except to replace it, clean it or clear a paper jam. Replace the cartridge immediately.
- To prevent damage to the toner cartridge, do not expose it to light for more than a few minutes.

Toner cartridge life expectancy

The life of the toner cartridge depends on the amount of toner that print jobs require. When printing text at 5 % coverage, a new toner cartridge lasts an average of 8,000 pages. (But, the toner cartridge supplied with the printer lasts an average of 4,000 pages.)

Recycling toner cartridge

After you install a new toner cartridge (see page 2.3), follow the instructions included in the toner cartridge box to recycle the old cartridge.

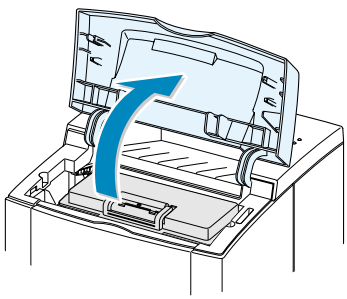
Saving toner

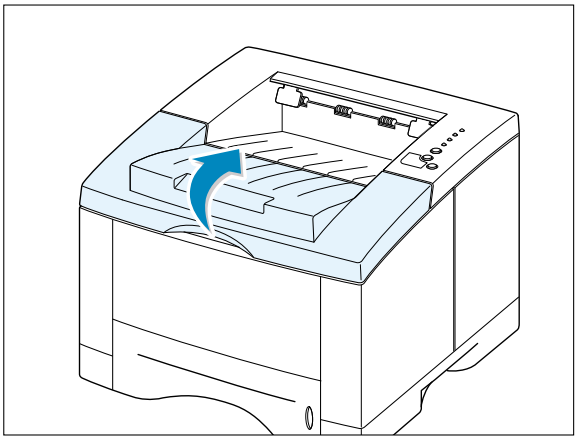
To save toner, press the **Toner Save** button on the printer control panel. The button will be lit. You can also enable the **Toner Save Mode** in your printer properties. Refer to “Using Toner Save Mode” on page 5.6. Selecting this option will expand the life of the toner cartridge and reduce your cost per page, but will reduce print quality.

Redistributing Toner

When toner is low, faded or light areas may appear on a printed page. You may be able to temporarily improve print quality by redistributing the toner. The following procedures may allow you to finish the current print job before replacing the toner cartridge.

1 Open the top cover.

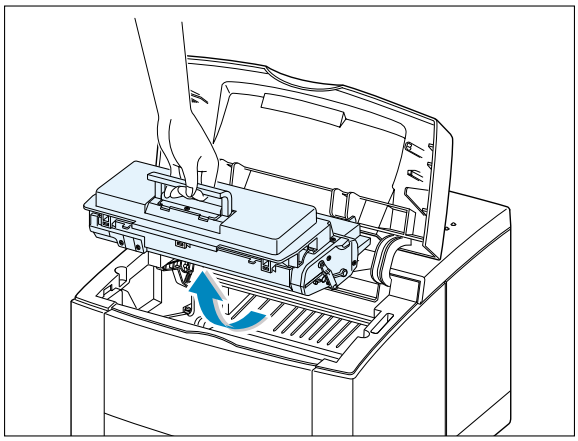




2 Remove the toner cartridge from the printer.

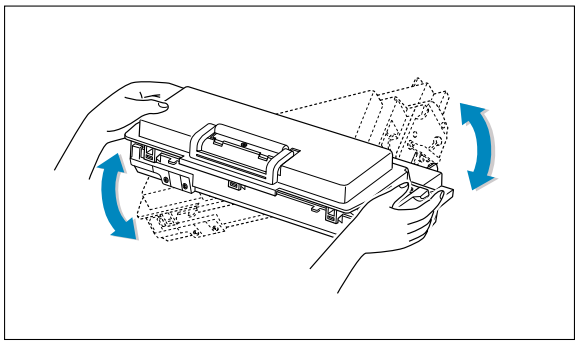
CAUTIONS:

- Avoid reaching too far into the printer. **The fusing area may be hot**.
- To prevent damage to the toner cartridge, **do not expose it to light for** more than a few minutes.

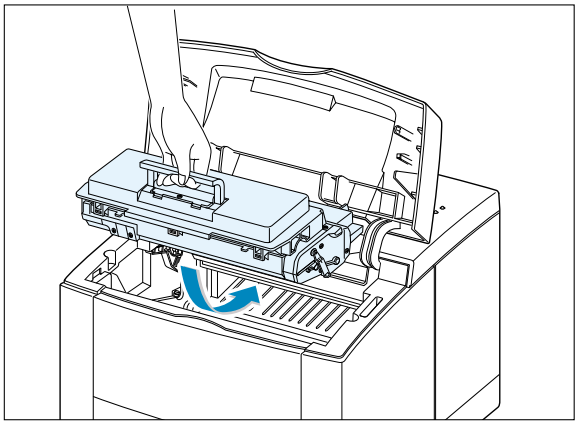


3 Gently shake the toner cartridge from side to side 5 or 6 times to redistribute the toner.

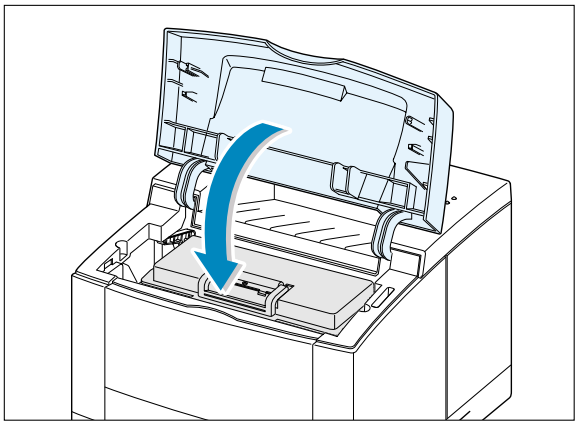
Note: If the toner gets on your clothing, wipe it off with a dry cloth and wash clothing in cold water. **Hot water sets toner into fabric**.



4 Reinsert the toner cartridge into the printer. Be sure that the toner cartridge is firmly in its place.



5 Firmly close the cover.



If the print remains light

Remove the old cartridge and install a new toner cartridge. See “Install the Toner Cartridge” on page 2.3.

Cleaning the Printer

To maintain print quality, follow the cleaning procedures below every time the toner cartridge is replaced or whenever print quality problems occur. As much as possible, keep the printer free from dust and debris.

Notes:

- Do not use ammonia-based cleaners or volatile solvents such as thinner, on or around the printer. These can damage the printer.
- While cleaning the inside of the printer, be careful not to touch the transfer roller (located underneath the toner cartridge). The oil from your hands on the roller can cause print quality problems.

Cleaning the Outside

Wipe the outside surface of the printer with a soft, clean, lint-free cloth. You can dampen the cloth slightly with water, but be careful not to be let any water drip onto the printer or inside of it.

Cleaning the Inside

During the printing process, paper, toner, and dust particles can accumulate inside the printer. Over time, this buildup can cause print quality problems such as toner specks or smearing. Cleaning inside the printer will eliminate or reduce these problems.

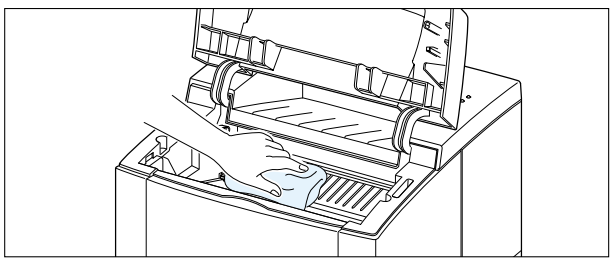
Cleaning inside the printer

Note: To prevent damage to the toner cartridge, do not expose it to light for more than a few minutes. Cover it with a piece of paper, if necessary. Also, do not touch the black transfer roller inside the printer. By doing so, you can damage the printer.

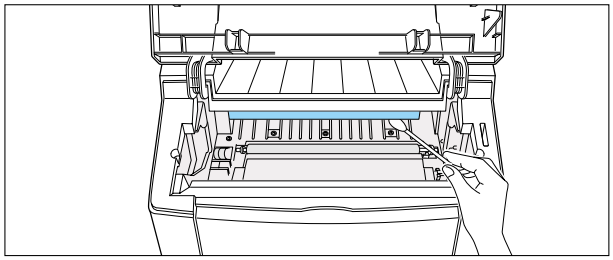
1 **Turn the printer off** and unplug the power cord, then wait for the printer to cool.

2 Open the top cover and remove the toner cartridge.

3 With a dry, lint-free cloth, wipe away any dust and spilled toner from the toner cartridge area and the toner cartridge cavity.



4 Locate the long strip of glass (LSU) inside the top of the cartridge compartment, and gently swab the glass to see if dirt turns the white cottom black.



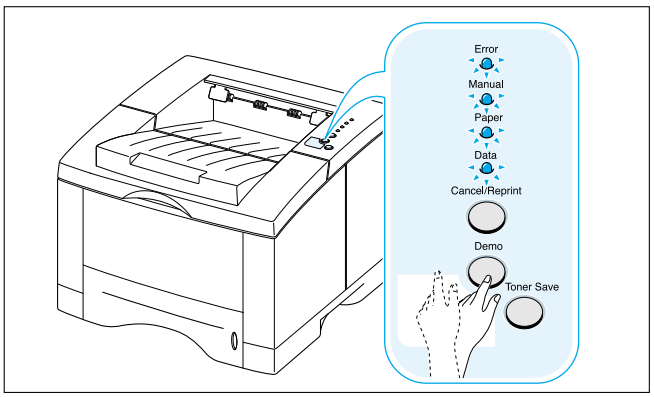
5 Reinsert the toner cartridge and close the top cover. Then, turn the printer on.

Printing a cleaning sheet

Printing a cleaning sheet cleans the drum inside the toner cartridge. Use this process if you are experiencing blurred, faded or smeared printouts. This process will produce a page with toner debris, which should be discarded.

1 Make sure the printer is turned on and in the ready state and that there is paper loaded in the paper tray.

2 Press and hold **Demo** on the control panel for about 10 seconds until all control panel lights remain steadily lit, then release.



3 Your printer automatically picks up a sheet of paper from the paper tray and prints out a cleaning sheet with the dust or toner particles on it.

chapter 7

Problem Solving

This chapter gives helpful information for what to do if you encounter a printer error. It provides information on the following topics:

- Troubleshooting Checklist
- Solving General Printing Problems
- Printing Special Pages
- Clearing Paper Jams
- Solving Print Quality Problems
- Troubleshooting Error Messages
- Common Windows Problems
- Common Macintosh Problems
- Troubleshooting PS Errors

Troubleshooting Checklist

If the printer is not working properly, complete the following checklist in order. If the printer does not pass a step, follow the corresponding troubleshooting suggestions.

Check	Solution
Make sure that the **Data** light on the control panel is on.	• If no lights are on, check the power cord connection. Check the power switch. Check the power source by plugging into another outlet. • If other lights are on, go to "Troubleshooting Error Messages" on page 7.22.
Press the **Demo** button to print a demo page to verify that the printer is feeding paper correctly. See page 7.6.	• If a demo page does not print, check the paper supply in the paper tray. • If the paper jams in the printer, go to " Clearing Paper Jams" on page 7.7. • If the **Error** indicator light is illuminated on the control panel, go to "Troubleshooting Error Messages" on page 7.22.
Check the demo page to see if it is printed correctly.	If there is a print quality problem, go to "Solving Print Quality Problems" on page 7.16.
Print a short document from a software application to verify that the computer and printer are connected and are communicating correctly.	• If the page does not print, check the cable connection between the printer and computer. • Check the print queue or print spooler (print monitor in Mac) to see if the printer has been paused. • Check the software application to make sure you are using the proper printer driver and communication port. If the page is interrupted during printing, go to "Solving General Printing Problems" on page 7.2.
If completing the checklist did not diagnose the problem with the printer, check the following troubleshooting sections.	• "Solving General Printing Problems" on page 7.2. • "Troubleshooting Error Messages" on page 7.22. • "Common Windows Problems" on page 7.25. • "Common Macintosh Problems" on page 7.26. • "Troubleshooting PS Errors" on page 7.27.

Solving General Printing Problems

If you have any problems with the operation of your ML-1650 series printer, refer to the table for suggested solutions.

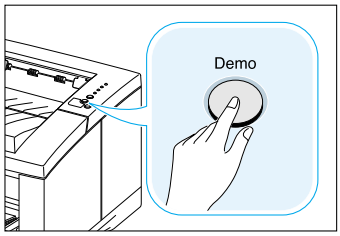
Problem	Possible Cause	Solution
The printer does not print.	The printer is not receiving power.	If no lights are on, check the power cord connections. Check the power switch and the power source.
	Your printer is not selected as the default printer.	Select **Samsung ML-1650 Series PCL 6** or **Samsung ML-1650 Series PS** as your default printer.
	Check the printer for the following:	• The printer cover is not closed. • Paper is jammed. • No paper is loaded. • Toner cartridge is not installed. • Printer system error occurs. Contact a service representative.
	The printer may be in manual feed mode and out of paper. (The **Manual** and the **Data** lights are blinking.)	Add paper to the Multi-Purpose tray, and press the **Demo** button on the printer's control panel.
	The connection cable between the computer and the printer is not connected properly.	Disconnect the printer cable and reconnect it.
	The connection cable between the computer and the printer is defective.	If possible, attach the cable to another computer that is working properly and print a job. You may also try using a different printer cable.
	The port setting is incorrect.	Check the Windows printer setting to make sure that the print job is sent to the correct port (for example, LPT1). If the computer has more than one port, make sure the printer is attached to the correct one.

Problem	Possible Cause	Solution
The printer does not print. (continued)	The printer may be configured incorrectly.	Check the printer properties to make sure that all print settings are correct.
	The printer driver may be incorrectly installed.	Uninstall the printer driver, then reinstall the printer driver. Try printing a demo page.
	The printer is malfunctioning.	Check the lights on the control panel to determine if the printer is indicating a system error.
Printer selects media from the wrong paper source.	The paper source selection in the printer properties may be incorrect.	For many software applications the paper source selection is found under the **Paper** tab within the printer properties. Select the correct paper source.
Paper does not feed into the printer.	Paper has not been loaded correctly.	Remove paper from the paper tray and reload it correctly.
	There is too much paper in the paper tray.	Remove excess paper from the tray .
	The paper is too thick.	Use only paper that meets the specifications required by the printer.
Print job is extremely slow.	The job may be very complex. The maximum speed of 16 pages per minute cannot be exceeded even when more memory is added.	Reduce the complexity of the page or try adjusting the print quality settings. If this problem occurs frequently, add memory to the printer.
	If using Windows 9x, the Spooling Setting may be set incorrectly.	From the **Start** menu, choose **Settings** and **Printers**. Right-click the Samsung ML-1650 series printer icon, choose **Properties**, click the **Details** tab, and then choose the **Spool Settings** button. Select the desired spool setting from the available choices.

Problem	Possible Cause	Solution
Print job is extremely slow. (continued)	The computer may have insufficient random-access memory (RAM).	Install more random-access memory (RAM) in your computer. See “Memory and PostScript DIMMs” on page H.2.
Half of the page is blank.	The page layout is too complex.	Simplify the page layout and remove any unnecessary graphics from the document, if possible. Install more memory. See “Memory and PostScript DIMMs” on page H.2.
	The page orientation setting may be incorrect.	Change the page orientation in your application.
	The paper size and the paper size settings do not match.	Make sure that the paper size in the print settings matches the paper in the paper tray.
The paper keeps jamming.	There is too much paper in the paper tray.	Remove excess paper from the tray. If printing special media, use the Multi-Purpose Tray.
	An incorrect type of paper is being used.	Use only paper that meets the specifications required by the printer.
	An incorrect output method is being used.	Media such as thick paper should not be printed using the standard face-down stacker. Use the rear face-up output tray instead.
	There may be debris inside the machine.	Open the top cover and remove the debris.

Problem	Possible Cause	Solution
The printer prints, but the text is wrong, garbled, or incomplete.	The printer cable is loose or defective.	Disconnect the printer cable and reconnect it. Try a print job that you know works. If possible, attach the cable and printer to another computer and try a print job that you know works. Finally, try a new printer cable.
	The wrong printer driver was selected.	Check the application's printer selection menu to make sure that your printer is selected.
	The software application is malfunctioning.	Try printing a job from another application.
	The operating system is malfunctioning.	If printing from Windows (any version), exit to a Dos prompt and verify functionality with the following command: At a **C:** prompt, type **Dir LPT1**, then press **Enter**. (This assumes you are connected to LPT1.) Exit Windows and reboot the computer. Turn the printer off and then back on again.
Pages print, but are totally blank.	The toner cartridge is defective or out of toner.	Replace the toner cartridge.
	The sealing tape may still be in the toner cartridge.	Remove the toner cartridge and pull out the sealing tape. Reinstall the toner cartridge, and check by printing a demo page.
	The file may have blank pages.	Check the file to make sure that it does not contain blank pages.
	Some parts, such as the controller or the board may be defective.	Contact a service representative.

Printing Special Pages



There are special pages within the memory of the printer that will help you to diagnose and learn about problems with your printer.

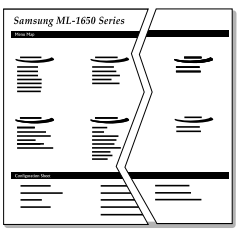
Use the **Demo** button on the printer control panel to print these special pages. The printer must be in the ready mode.

Demo Page

Printing the demo page will help you check if the printer is properly working.

Press and hold **Demo** for about 2 seconds until the control panel lights blink slowly.

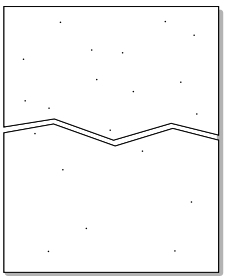
Configuration Sheet



The configuration sheet lists many of the current settings and properties of the printer.

To print the configuration sheet, press and hold **Demo** for about 6 seconds until the control panel lights blink rapidly.

Cleaning Sheet



This printing cleans the drum of the toner cartridge. Use this process if you are experiencing blurred, faded or smeared printouts.

Press and hold **Demo** for about 10 seconds until the control panel lights remain illuminated. Discard the blank page produced from the cleaning process.

Note: The cartridge cleaning process takes some time. To stop the printing, **turn the power off**.

Clearing Paper Jams

Occasionally, paper can become jammed during a print job. Some of the causes include:

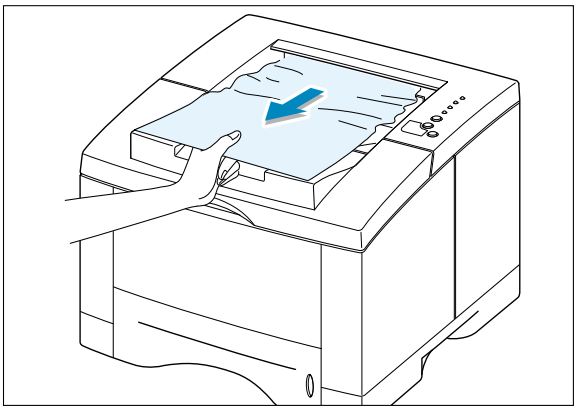
- The paper tray is loaded improperly or overfilled.
- The paper tray has been pulled out during a print job.
- The top cover has been opened during a print job.
- Paper that does not meet paper specifications has been used. See “Paper Specifications” on page A.2.
- Paper that is outside of the supported size range has been used. See “Paper Specifications” on page A.2.

If a paper jam occurs, the **Paper** and the **Error** lights remain lit on the control panel. Find and remove the jammed paper. If the location of the paper jam is not obvious, look inside the printer.

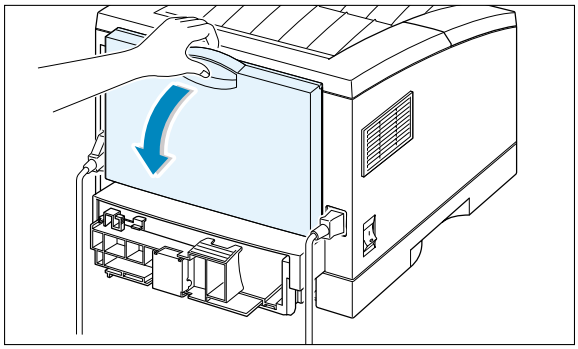
Output Area

Note: Paper jams in this area may result in loose toner on the page. If you get any toner on your clothes, wash them in cold water because hot water will set the toner into the fabric.

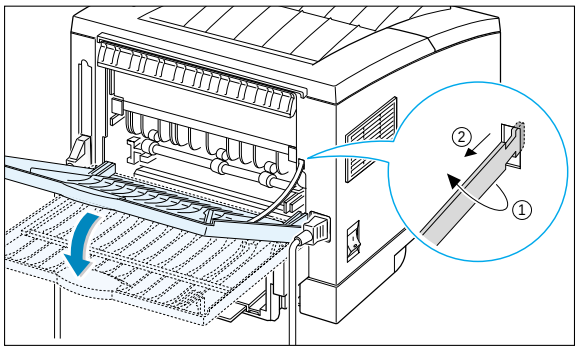
1 If the paper is almost completely visible from the top output tray, pull the remaining paper carefully out of the printer.



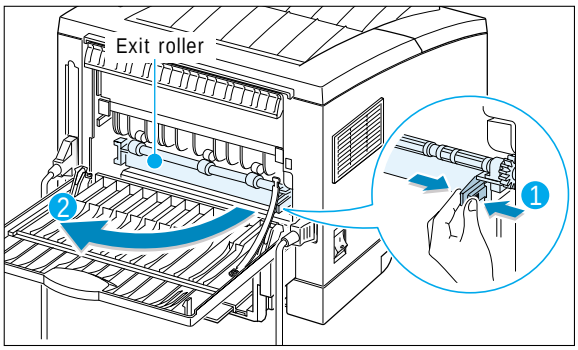
2 If the jammed paper is not visible or there is resistance when you pull the paper, open the rear output tray.



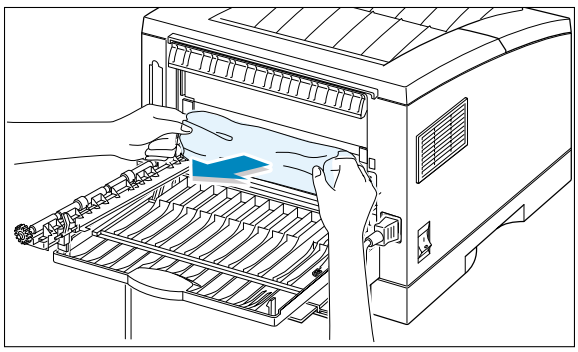
3 Remove the stopper fastening the rear output tray, and push the tray down so that it is open at 90 degrees angle.



4 If there is resistance when you pull the paper, squeeze the handle on the right end of the exit roller ❶, then pull the roller in the direction of arrow ❷ .

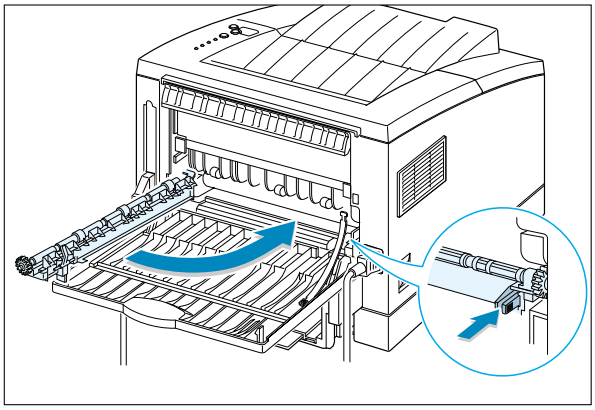


5 Remove the jammed paper.

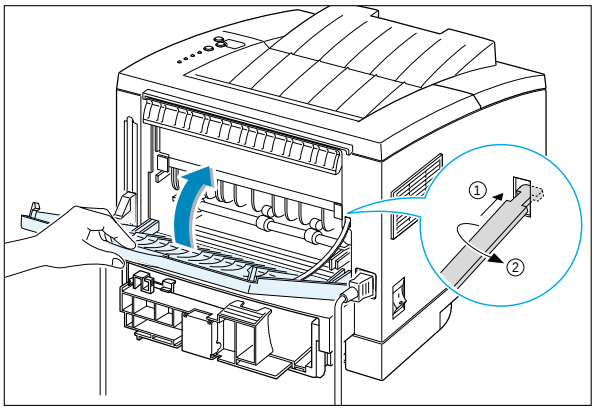


6 Replace the exit roller.

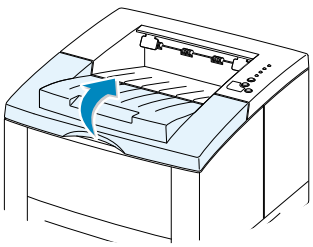
Make sure that you click the right end of the roller back in place. If you fail to do so, the printer system will recognizes that the printer cover is open or that a system fuser error has occurred, and the **Error** light on the control panel will turn on.

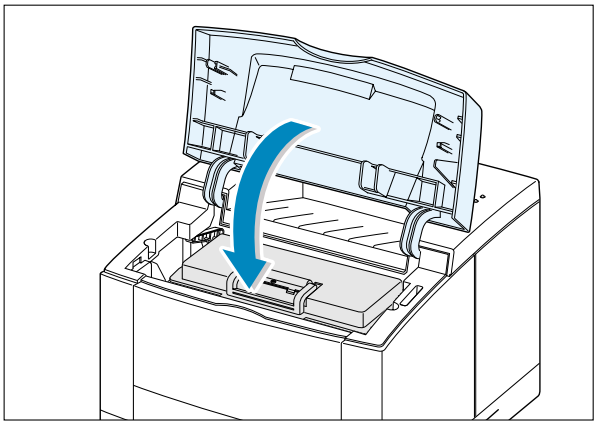


7 Replace the stopper and close the rear output tray.



8 To resume printing, open the top cover, and then close it close it again.



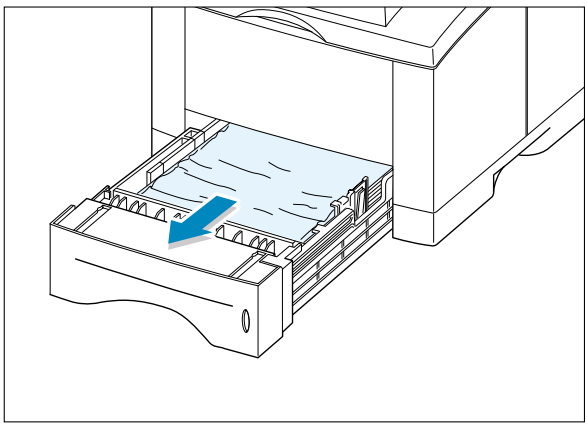


Note: If the **Paper** and the **Error** lights do not turn off, there is still jammed paper inside the printer. Check the input area and the inside of the printer.

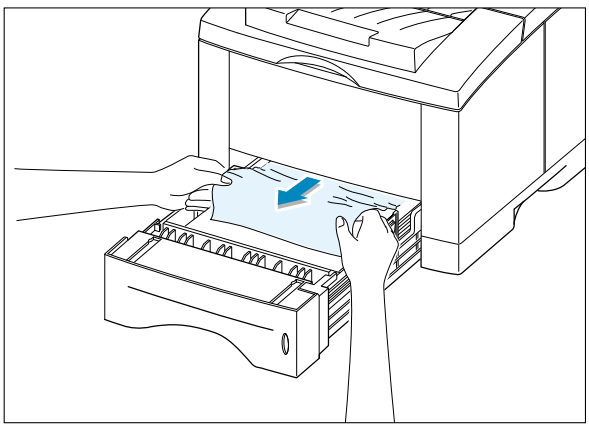
Input Area

Note: If paper has entered the toner cartridge area, follow the instructions on page 7.12. It is easier to remove such jams from the inside of the printer than the paper input area.

1 Slide out Tray 1 to expose the jammed paper.

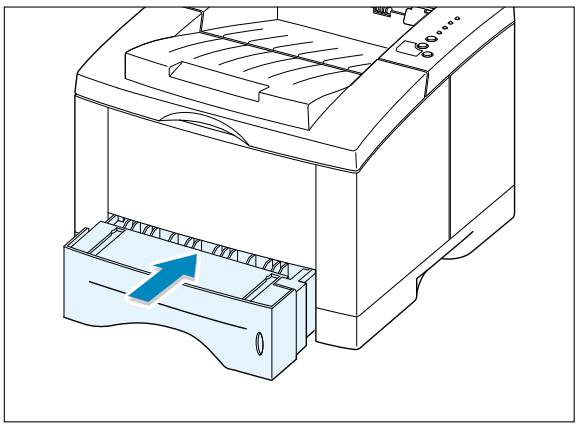


2 Remove any misfed paper by pulling it out by the visible edge from the tray. Make sure that all of the paper is properly aligned in the tray.

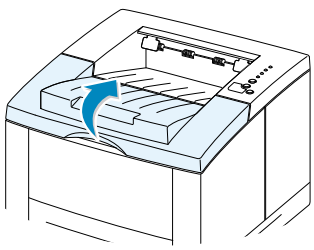


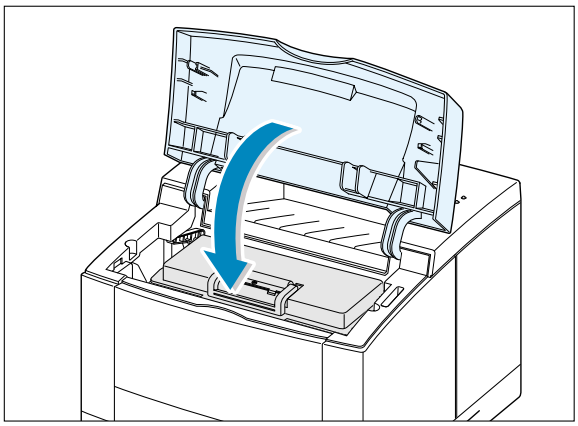
Note: If the paper is jammed in the paper feed area and cannot be accessed from inside the printer, remove Tray 1 from the printer and carefully pull the jammed paper free from the printer.

3 Slide the tray back into the printer.



4 To resume printing, open the top cover, and then close in again.



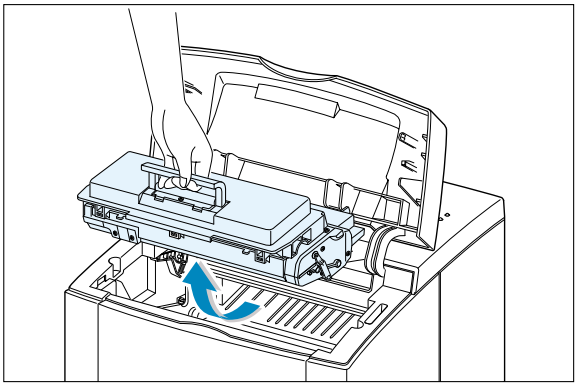


Note: If the **Paper** and the **Error** lights do not turn off, there is still jammed paper inside the printer. Check the inside of the printer.

Inside the Printer

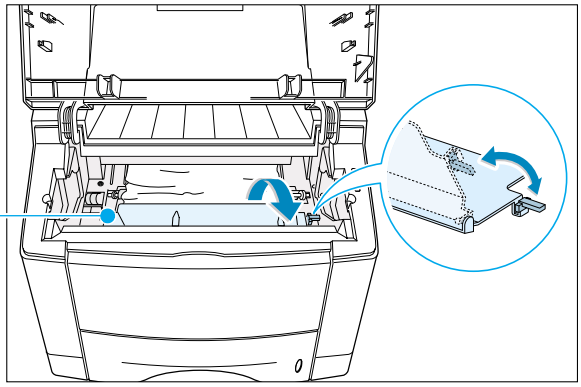
Note: Paper jams in this area may result in loose toner on the page. If you get any toner on your clothes, wash them in cold water because hot water will set the toner into the fabric.

1 Open the top cover and remove the toner cartridge.

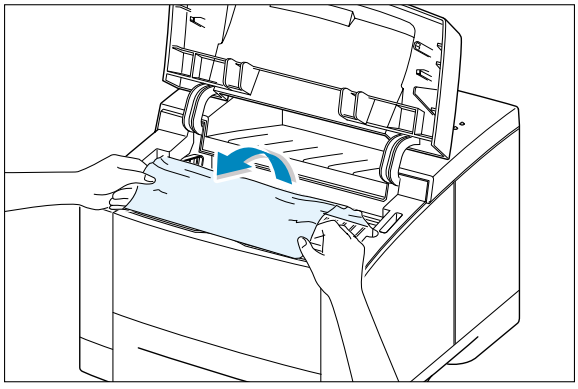


CAUTION: To prevent damage to the toner cartridge, do not expose it to light for more than a few minutes. Place a piece of paper over the top of the toner cartridge to shield it while it is out of the printer.

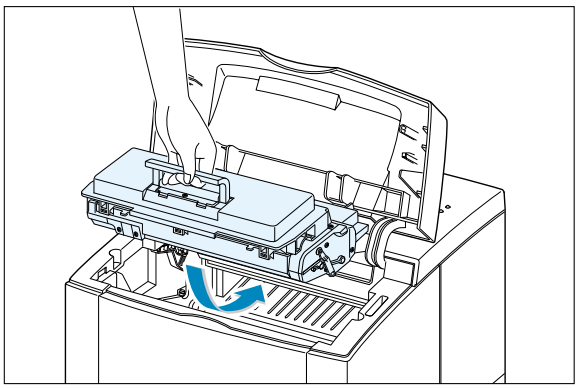
2 Carefully lift up the guide feed.



3 Gently pull the paper toward you to remove it from the printer.

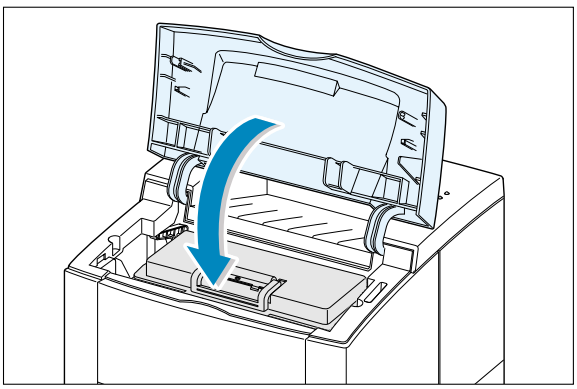


4 Flip down the guide feed, and reinstall the toner cartridge.



Note: If the toner cartridge is difficult to reinstall, make sure the guide feed has been flipped back down into position.

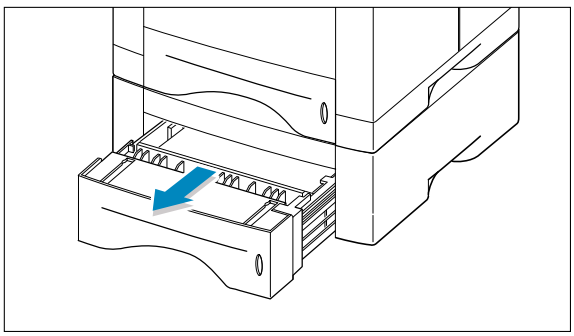
5 Close the top cover. Printing can be resumed.



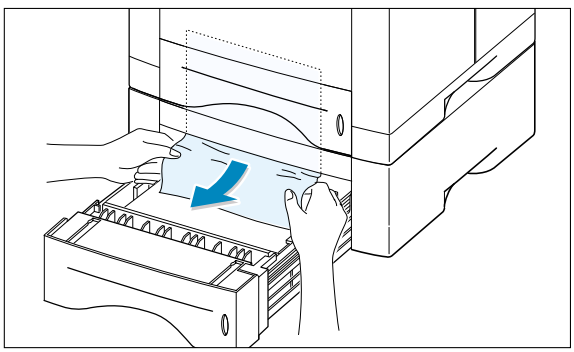
Note: If you have the optional Tray 2 installed, and cannot find the jammed paper in the output or input area, or inside the printer, the paper jam may have occurred in the optional Tray 2. See the next page to clear the jammed paper in the optional tray.

In the Optional Tray 2

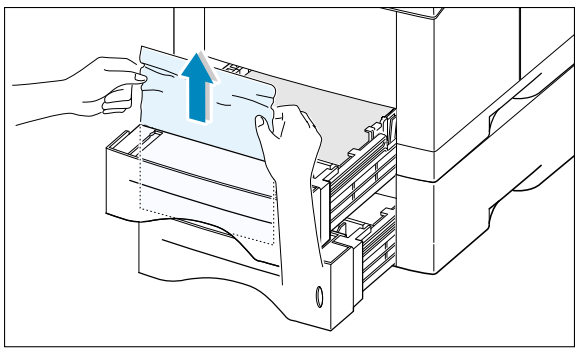
1 Pull the option Tray 2 out of the printer.



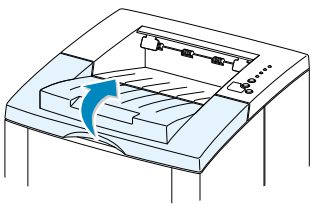
2 If you see the jammed paper, remove the paper from the tray.

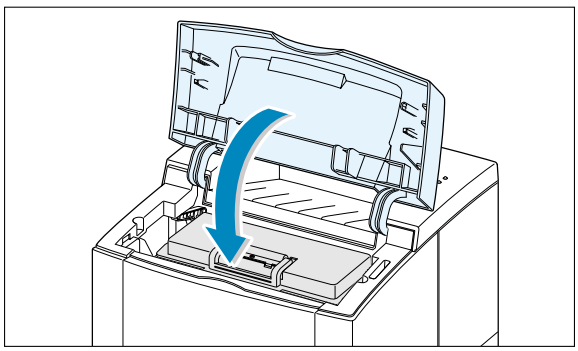


3 If you cannot find the jammed paper in the Tray 2, pull the upper Tray 1 half way out of the printer, and remove the paper as shown in the figure at right.



4 Slide the trays back into the printer. Open the top cover, then close it again. Printing can be resumed.





Tips for Avoiding Paper Jams

By selecting correct paper types and loading them properly, you should be able to avoid most paper jams. If paper jams occur, follow the steps outlined in "Clearing Paper Jams" on page 7.7. If jams occur frequently, make sure you are following these tips to avoid jams.

- Follow the procedures in "**Load Paper**" on page 2.5 to load the paper properly. Make sure the adjustable guides are positioned correctly.
- Do not overload the paper tray. Make sure the paper is under the paper capacity mark on the inside of the paper tray.
- Do not pull out the paper tray while print jobs are in process.
- Flex, fan and straighten the paper before loading it.
- Do not load stacks of labels or transparencies in Tray 1. Labels or transparencies must be fed using the Multi-Purpose Tray.
- Do not load wrinkled, creased, damp or highly curled paper.
- Do not mix paper types in the paper tray.
- Use only recommended print media. See "Paper Specifications" on page A.2.
- Make sure that the recommended print side is facing down when loading the paper into Tray 1 or optional Tray 2 and facing up when loading into the Multi-Purpose Tray.
- Keep print media stored in an acceptable environment.

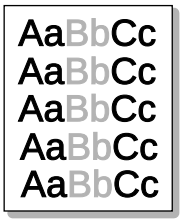
Solving Print Quality Problems

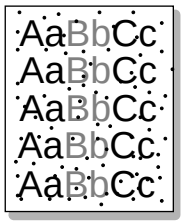
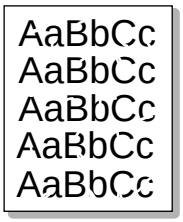
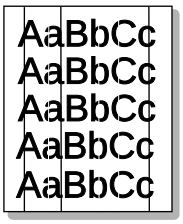
Print Quality Checklist

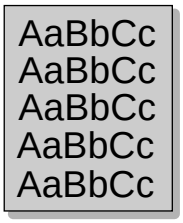
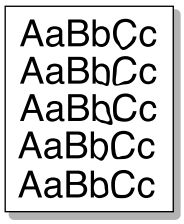
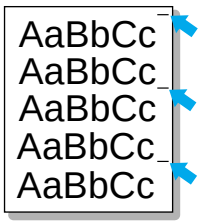
General print quality problems can be solved by following the checklist below.

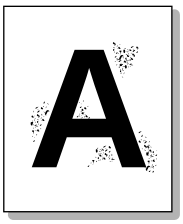
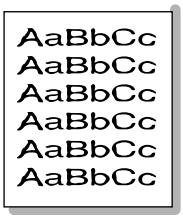
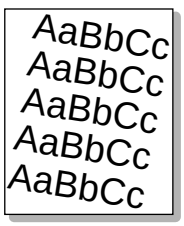
- Check the printer properties to make sure that you are using the best available print quality option (see page 5.18).
- Redistribute the toner in the toner cartridge (see page 6.2).
- Clean the inside of the printer (see page 6.4).
- Adjust the print resolution from the printer properties (see page 5.19).
- Check to make sure that Toner Save Mode is off (see page 5.6).
- Troubleshoot general printing problems (see page 7.2).
- Install a new toner cartridge, then check print quality again (see page 2.3).

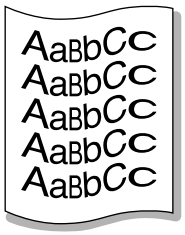
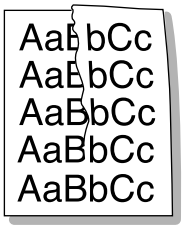
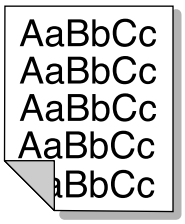
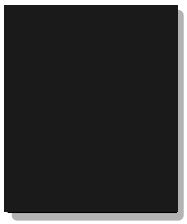
Solving Print Quality Problems

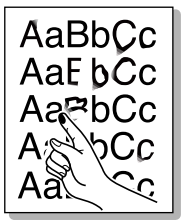
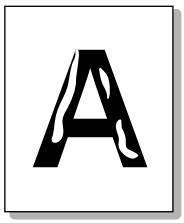
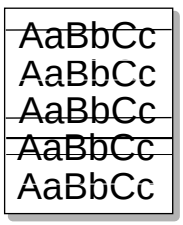
Problem	Solution
Light or feded print 	If a vertical white streak or faded area appears on the page: • The toner supply is low. You may be able to temporarily extend the toner cartridge life. See “Redistributing Toner” on page 6.2. If this does not improve the print quality, install a new toner cartridge. • The paper may not meet paper specifications (for example, the paper is too moist or too rough). See “Paper Specifications” on page A.2. • If the whole page is light, the print resolution setting is too light or Toner Save Mode may be on. Adjust the print resolution and Toner Save Mode within the printer properties. See page 5.18. • A combination of faded and smeared defects may indicate that the toner cartridge needs cleaning. See “Cleaning the Printer” on page 6.4. • The surface of the LSU part inside the printer may be dirty. Clean the LSU (see page 6.5).

Problem	Solution
Toner specks 	• The paper may not meet paper specifications (for example, the paper is too moist or too rough). See “Paper Specifications” on page A.2. • The transfer roller may be dirty. See “Cleaning the Inside” on page 6.4. • The paper path may need cleaning. See “Cleaning the Inside”.
Dropouts 	If faded areas, generally rounded, occur randomly on the page: • A single sheet of paper may be defective. Try reprinting the job. • The moisture content of the paper is uneven or the paper has moist spots on its surface. Try a different kind or brand of paper. See “Paper Specifications” on page A.2. • The paper lot is bad. The manufacturing processes can cause some areas to reject toner. Try a different kind or brand of paper. • The toner cartridge may be defective. See Repetitive vertical defects” on page 7.18. • If these steps do not correct the problems, contact a service representative.
Vertical lines 	If black vertical streaks appear on the page: • The photosensitive drum inside the toner cartridge has probably been scratched. Install a new toner cartridge. If white vertical streaks appear on the page: • The surface of the LSU part inside the printer may be dirty. Clean the LSU (see page 6.5).

Problem	Solution
Gray background 	If the amount of background toner shading becomes unacceptable, the procedures below may help to clear the condition: • Change the paper to a lighter basis weight. See “Paper Specifications” on page A.2. • Check the printer’s environment; very dry (low humidity) or high humidity (higher than 80 % RH) conditions can increase the amount of background shading. • Install a new toner cartridge.
Toner smear 	• Clean the inside of the printer. See “Cleaning the Inside” on page 6.4. • Check the paper type and quality. See “Paper Specifications” on page A.2. • Try installing a new toner cartridge.
Repetitive vertical defects 	If marks repeatedly appear on the printed side of the page at even intervals: • The toner cartridge may be damaged. If a repetitive mark occurs every 95 mm or 38 mm on the page, print the cleaning sheet several times to clean the cartridge (see page 6.5). If you still have the same problems, install a new toner cartridge. • Parts in the printer may have toner on them. If the defects occur on the back of the page, the problem will likely correct itself after a few more pages. • The fusing assembly may be damaged. Contact a service representative.

Problem	Solution
Background scatter 	Background scatter results from bits of toner distributed on the printed page. • The paper may be too damp. Try printing with a different batch of paper. Do not open packages of paper until necessary so that the paper does not absorb too much moisture from the air. • If background scatter occurs on an envelope, change your printing layout to avoid printing over areas that have overlapping seams on the reverse side. Printing on seams can cause this problem. • If background scatter covers the entire surface of a printed page, adjust the print resolution through your software application or the printer properties.
Misformed characters 	• If characters are improperly formed, producing hollow images, the paper stock may be too slick. Try a different paper. See “Paper Specifications” on page A.2. • If characters are improperly formed, producing a wavy effect, the scanner unit may need service. Check to see if it also occurs on a demo page by pressing the **Demo** button on the control panel when the printer is ready. If you need service, contact a service representative.
Page skew 	• Check the paper type and quality. See “Paper Specifications” on page A.2. • Make sure that the paper or other media is loaded correctly and the guides are not too tight or too loose against the paper stack.

Problem	Solution
Curl or wave 	• Check the paper type and quality. Both high temperature and humidity will cause paper curl. See “Paper Specifications” on page A.2. • Turn over the stack of paper in the paper tray. Also try rotating the paper 180° in the paper tray. • Open the rear output tray and try printing to the face up output tray.
Wrinkles or creases 	• Make sure that paper is loaded properly. • Check the paper type and quality. See “Paper Specifications” on page A.2. • Open the rear output tray and try printing to the face up output tray. • Turn over the stack of paper in the paper tray. Also try rotating the paper 180° in the tray.
Back of printouts dirty 	• The transfer roller may be dirty. See “Cleaning the Inside” on page 6.4. • Check if the toner is leaking. Clean inside the printer.
Black pages 	• The toner cartridge may not be installed properly. Remove the cartridge and reinsert it. • The toner cartridge may be defective and need replacing. Install a new toner cartridge. • The printer may require repairs. Contact a service representative.

Problem	Solution
Loose toner 	• Clean the inside of the printer. • Check the paper type and quality. See “Paper Specifications” on page A.2. • Try installing a new toner cartridge. • If the problem persists, the printer may require repairs. Contact a service representative.
Character Voids 	Character voids are white areas within the parts of characters that should be solid black: • If you are using transparencies when you experience this problem, try another type of transparency. (Because of the composition of transparency media, some character voids are normal.) • You may be printing on the wrong surface of the paper. Remove the paper and turn it around. • The paper may not meet paper specifications. See “Paper Specifications” on page A.2.
Horizontal stripes 	If horizontally aligned black streaks or smears appear: • The toner cartridge may be installed improperly. Remove the cartridge and reinsert it. • The toner cartridge may be defective. Install a new toner cartridge. • If the problem persists, the printer may require repairs. Contact a service representative.

Troubleshooting Error Messages

When the printer detects an error, the control panel indicator lights will indicate error messages. Find the light pattern below that matches the printer light pattern and follow the solutions to clear the error.

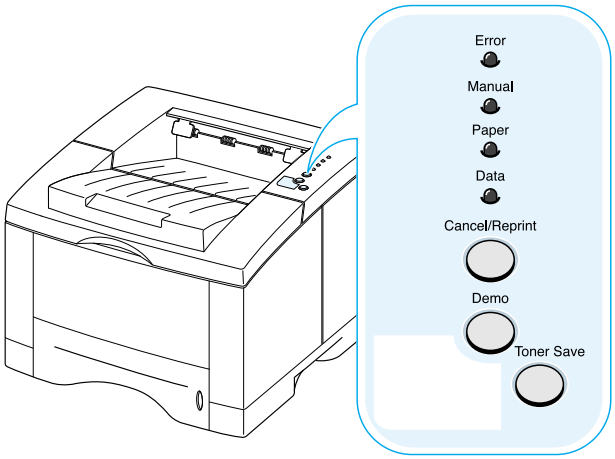
Printer Light Patterns

Light status legend

symbol for “light off”

symbol for “light on”

symbol for “light blinking”



Error
Manual
Paper
Data

Power off

- Check the power cord and the power switch if your printer does not generate a response.
- Make sure that the printer is powered with the specified AC voltage.

Error
Manual
Paper
Data

Paper out

The printer is out of paper in the paper tray. The **Paper** light blinks until paper is added.

- Loading paper into the tray will cancel this message and allow you to continue with the print job.

Paper out in the manual feed mode

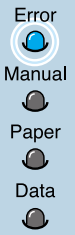
While printing in the manual feed mode, the printer is out of paper in the Multi-Purpose Tray.

- Load the correct paper into the Multi-Purpose Tray and press the **Demo** button on the control panel to print each page.

Paper jam

Paper is jammed inside the printer.

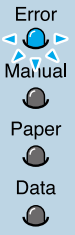
- Clear the paper jam. See “Clearing Paper Jams” on page 7.7.



Door open, no toner cartridge, or outputbin full

The printer top cover may be opened or the toner cartridge is not installed.

- Check that the printer top cover door and rear door (face-up output tray) are closed properly.
- Make sure that the toner cartridge is correctly installed in the printer.
- Remove the printed papers, if overstacked, from the top output tray.



Memory out (Insufficient Memory)

The printer ran out of memory in the middle of a print job. The page being printed may have been too complex for the memory capacity of the printer. Press the **Cancel/Reprint** button to cancel the current job.

- Turn the printer power off and back on to remove any unnecessary fonts, macros, or any data currently in printer memory.
- Add more printer memory. See “Memory and PostScript DIMMs” on page H.2.
- For a temporary solution, simplify the image or print at a lower resolution.

System error

- Reset the printer by briefly turning the printer off and back on again.
- If the error persists, contact the service representative.

Paper Mismatch

The size of the paper in the input tray is mismatched to the Paper Size setting in printer's properties. Remove the paper from the tray and load the paper of same size as you have set in the properties. Press the **Demo** button to ignore the message and feed paper from the corresponding input tray.

Common Windows Problems

Problem	Possible Cause and Solution
"File in Use" message appears during installation.	Quit all software applications. Remove all software from the StartUp Group, then restart Windows. Reinstall the printer driver.
"Error Writing to LPTx" message appears.	• Make sure that the cables are connected correctly, the printer is on, and the **Data** light on the control panel is on. • If bi-directional communication is not turned on in the driver, it will also cause this message. • From the **Start** menu, select **Settings**, then **Printers**. Right-click on the Samsung ML-1650 series printer icon and select **Properties**. From the **Details** tab, click on **Port Settings**. Remove check from **Check Port State before Printing** box and click **OK**. From **Spool Settings**, select **Print Directly to Printer** and click **OK**. Try printing again.
"General Protection Fault", "Exception OE", "Spool32", or "Illegal Operation" messages appears.	• Close all other applications, reboot Windows, and try printing again. • Delete all temp files from the Temp sub-directory. You can determine the name of the directory by editing the AUTOEXEC.BAT file and locking for the statement, "**Set Temp =**". The name after this statement is the temp directory. It is usually **C:\temp** by default, but can be redefined.

Note: Refer to Microsoft Windows 9x, Me, NT 4.0 or 2000 documentation that came with your PC for further information on Windows error messages.

Common Macintosh Problems

Problems in the Chooser

Problem	Possible Cause and Solution
The printer driver icon does not appear in the **Chooser**.	Software is not installed correctly. • The LaserWriter driver should be present as a part of the Macintosh OS. Make sure that the LaserWriter driver is in the **Extensions** folder within the **Systems** folder. If not, install the LaserWriter driver component from the Macintosh OS CD. • Make sure that you are using a high-quality cable. • Make sure that the printer is on the correct network. Select **Network** or **AppleTalk Control Panel** from **Control Panels** in the **Apple** menu and then choose the correct network.
The printer name does not appear in the **Select a PostScript Printer** box in the **Chooser**.	• Make sure that the cables are connected correctly, the printer is on, and the **Data** light is on. • Make sure that the correct printer driver has been selected in the **Chooser**. • If the printer resides on a network with multiple zones, make sure that the correct zone is selected in the **AppleTalk Zones** box in the **Chooser**. • Make sure **AppleTalk** is on. (The button next to **Active** is selected in the **Chooser**.) You may need to restart the computer to activate the change.

Printing Errors

Problem	Possible Cause and Solution
You cannot use the computer while the printer is printing.	Background Printing has not been selected. • For LaserWriter 8.3, turn **Background Printing** on in the **Chooser**. Status messages will now be redirected to the **Print Monitor** allowing you to continue working while the computer is processing data to be sent to the printer. • For LaserWriter 8.4 or higher, turn **Background Printing** on at the Print dialog box.

Troubleshooting PS Errors

The following situations are PS language specific and may occur when several printer languages are being used.

Note: To receive a printed or screen displayed message when PS errors occur, open the Print Options dialog box and click the desired selection next to the **PostScript errors** section.

Problem	Possible Cause	Solution
PostScript file can not be printed.	The PostScript option may not be installed.	• Print a configuration page and verify that the PS version is available for printing. • If PostScript is not available, install the PostScript option. See "Memory and PostScript DIMMs" on page H.2.
"This job contains binary data..." message appears.	The pure binary data option is not supported by the PostScript driver.	Open the Properties of the PostScript driver, click on **PostScript**, and click on **Advanced** button. The pure binary data option is not supported. Choose another.
A PS error page prints.	Print job may not be PS.	Make sure that the print job is a PS job. Check to see whether the software application expected a setup or PS header file to be sent to the printer.
The optional Tray 2 is not selected in the driver.	The printer driver has not been configured to recognize the optional Tray 2.	Open the PostScript driver properties and set the Option Tray item of Device option to **Installed**.

Appendix A

Specifications

This appendix provides information on the following topics:

- Printer Specifications
- Paper Specifications

Printer Specifications

Item	Specification and Description
Print Speed	16 PPM (A4), 17 PPM (Letter)
Resolution	1200 dpi
First Printing Time	Less than 14 seconds
WarmUp Time	Less than 40 seconds
Power Rating	AC 100 ~ 127 V (USA, Canada) / 220 ~ 240 V (Others), 50 / 60 Hz
Power Consumption	300 W average during operation / Less than 20 W in power-save mode
Acoustic Noise	Stand by: Less than 35 dB; Operating: Less than 49 dB
Toner Supply	Single cartridge
Toner Cartridge Life	8,000 pages (for starter, 4,000 pages), 5% area coverage
Duty Cycle	Monthly: 40,000 pages maximum
Weight	12.4 Kg / 27.3 lb.
Package Weight	Paper: 1.83 Kg Plastic: 0.33 Kg
External Dimensions	361 (W) x 409 (D) x 294.5 (H) mm (without options)
Operating Environment	Temperature:10 ~ 32 °C / 50 ~ 90 °F; Humidity: 20 ~ 80 % RH
Emulation	PCL 6, PostScript 3 optional
Random Access Memory (RAM)	Standard 16 MB Expandable to 144 MB : 100 pin, SDRAM, 3.3V; 16 MB, 32 MB, 64 MB, or 128 MB available
Fonts	1 bitmap, 45 scalable (136 PS fonts)
Interface Switching	Automatic (Parallel, USB, Network)
Interface	• 16PPM (A4) Bidirectional Parallel Standard - Modes supported: Compatible, Nibble, Byte, ECP • USB Interface Standard - USB 1.1 compliant - 12Mbps 1 port • Network Optional (standard for ML-1651N) - Ethernet 10/100M Base T - Novell - TCP/IP and AppleTalk - LPD

Paper Specifications

Overview

This printer accepts a variety of media, such as cut-sheet paper (including up to 100 % recycled fiber content paper), envelopes, labels, transparencies and custom-size paper. Properties such as weight, composition, grain and moisture content are important factors affecting printer performance and output quality. Paper that does not meet the guidelines outlined in this manual can cause the following problems:

- Poor print quality
- Increased paper jams
- Premature wear on the printer, requiring repairs.

Notes:

- Some paper may meet all of the guidelines in this manual and still not produce satisfactory results. This might be the result of improper handling, unacceptable temperature and humidity levels, or other variables over which Samsung has no control.
- Before purchasing large quantities of paper, make sure that the paper meets the requirements specified in this user guide. Always test paper before buying large quantities.

CAUTION: Using paper that does not meet that stated specifications may cause problems for the printer, requiring repairs. Repairs made necessary by the use of paper not specified in this manual are not covered by the Samsung warranty or service agreements.

Supported Sizes of Paper

Tray 1 or Optional Tray 2	Dimensions[a]	Weight	Capacity[b]
Letter	8.5 X 11 in. (216 X 279 mm)	16 to 28 lb Bond (60 to 105 g/m²)	550 sheets of 20 lb Bond (75 g/m²) paper
A4	210 X 297 mm (8.3 X 11.7 in.)		
Executive	7.3 X 10.5 in. (191 X 267 mm)		
Legal	8.5 X 14 in. (216 X 356 mm)		
B5 (JIS)	182 X 257 mm (7.2 X 10 in.)		
Folio	216 X 330 mm (8.5 X 13 in.)		

a. The printer supports a wide range of media sizes. See “Printing on Card Stock or Custom-sized Media” on page 4.17.

b. Capacity may vary depending on media weight and thickness, and environmental conditions.

Multi-Purpose Tray	Dimensions[a]	Weight	Capacity[b]
Minimum Size (custom)	90 X 148 mm (3.5 X 5.83 in.)	60 to 163 g/m² Bond (16 to 43 lb)	100 sheets of 75 g/m² Bond (20 lb) paper
Maximum Size (custom)	216 X 356 mm (8.5 X 14 in.)		
Transparency	Same minimum and maximum paper sizes as listed above.	Thickness: .10 X .14 mm (0.0039 X 0.0055 in.)	20 typical
Labels[c]		Thickness: .10 X .14 mm (0.0039 X 0.0055 in.)	25 typical
Envelopes		up to 90 g/m² (16-24 lb)	up to 10

a. The printer supports a wide range of media sizes. See “Printing on Card Stock or Custom-sized Media” on page 4.17.

b. Capacity may vary depending on media weight and thickness, and environmental conditions.

c. Smoothness - 100 to 250 (Sheffield)

Note: You may experience some paper jams when using any media with a length of less than 148 mm (5.83 in.). For optimum performance, make sure you are storing and handling the paper correctly. Please refer to “Printer and Paper Storage Environment” on page A.6.

Guidelines for Using Paper

For best results, use conventional 90 g/m^2 (24 lb) paper. Make sure the paper is of good quality, and free of cuts, nicks, tears, spots, loose particles, dust, wrinkles, voids, and curled or bent edges.

If you are unsure of what type of paper you are loading (such as bond or recycled), check the label on the package of the paper.

The following problems with paper can cause print quality deviations, jamming, or even damage to the printer.

Symptom	Problem with Paper	Solution
Poor print quality or toner adhesion Problems with feeding	Too moist, too rough, too smooth, or embossed; faulty paper lot	Try another kind of paper, between 100 ~ 250 Sheffield, 4 ~ 5 % moisture content.
Dropout, jamming, curl	Stored improperly	Store paper flat in its moisture-proof wrapping.
Increased gray background shading /printer wear	Too heavy	Use lighter paper, open the rear output tray.
Excessive curl problems with feeding	Too moist, wrong grain direction or short-grain construction	• Open the rear output tray. • Use long-grain paper.
Jamming, damage to printer	Cutouts or perforations	Do not use paper with cutouts or perforations.
Problems with feeding	Ragged edges	Use good quality paper

Notes:

- Do not use letterhead paper that is printed with low-temperature inks, such as those used in some types of thermography.
- Do not use raised or embossed letterhead.
- The printer uses heat and pressure to fuse toner to the paper. Make sure that any colored paper or preprinted forms use inks that are compatible with this fusing temperature (200 °C or 392 °F for 0.1 second).

Paper Specifications

Category	Specifications
Acid Content	5.5 ~ 8.0 pH
Caliper	.094 ~ .18 mm (3.0 ~ 7.0 mils)
Curl in Ream	Flat within 5 mm (.02 in.)
Cut Edge Conditions	Cut with sharp blades with no visible fray.
Fusing Compatibility	Must not scorch, melt, offset, or release hazardous emissions when heated to 200 °C (392 °F) for .1 second.
Grain	Long Grain
Moisture Content	4 % ~ 6 % by weight
Smoothness	100 ~ 250 Sheffield

A

Paper Output Capacity

Output Tray	Capacity
Top output (Face-down) tray	250 sheets of 20 lb bond (75 g/m^2) paper
Rear output (Face-up) tray	100 sheets of 20 lb bond (75 g/m^2) paper

Printer and Paper Storage Environment

Ideally, the printer and paper storage environment should be at or near room temperature, and not too dry or humid. Remember that paper absorbs and loses moisture rapidly.

Heat works with humidity to damage paper. Heat causes the moisture in paper to evaporate, while cold causes it to condense on the sheets. Heating systems and air conditioners remove most of the humidity from a room. As paper is opened and used, it loses moisture, causing streaks and smudging. Humid weather or water coolers can cause the humidity to increase in a room. As paper is opened and used it absorbs any excess moisture, causing light print and dropouts. Also, as paper loses and gains moisture it can distort. This can cause paper jams.

As a result, paper storage and handling are as important as the paper-making process itself. Paper storage environmental conditions directly affect the feed operation.

Care should be taken not to purchase more paper than can be easily used in a short time (about 3 months). Paper stored for long periods may experience heat and moisture extremes, which can cause damage. Planning is important to prevent damage to a large supply of paper.

Unopened paper in sealed reams can remain stable for several months before use. Opened packages of paper have more potential for environment damage, especially if they are not wrapped with a moisture-proof barrier.

The paper storage environment should be properly maintained to ensure optimum printer performance. The required condition is 20 ° to 24 °C (68° to 75 °F), with a relative humidity of 45 % to 55 %. The following guidelines should be helpful when evaluating the paper's storage environment:

- Paper should be stored at or near room temperature.
- The air should not be too dry or too humid (due to the hygroscopic properties of paper).
- The best way to store an opened ream of paper is to rewrap it tightly in its moisture-proof wrapping. If the printer environment is subject to extremes, unwrap only the amount of paper to be used during the day's operation to prevent unwanted moisture changes.

Envelopes

Envelope construction is critical. Envelope fold lines can vary considerably, not only between manufacturers, but also within a box from the same manufacturer. Successful printing on envelopes depends upon the quality of the envelopes. When selecting envelopes, consider the following components:

- **Weight:** The weight of the envelope paper should not exceed 90 g/m^2 (24 lb) or jamming may occur.
- **Construction:** Prior to printing, envelopes should lie flat with less than 6 mm (0.25 in.) curl, and should not contain air.
- **Condition:** Envelopes should not be wrinkled, nicked, or otherwise damaged.
- **Temperature:** You should use envelopes that are compatible with the heat and pressure of the printer.
- **Size:** You should only use envelopes within the following size ranges.

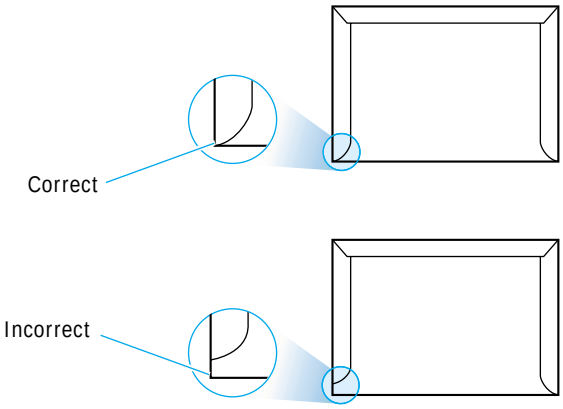
	Minimum	Maximum
Multi-Purpose Tray	90 X 148 mm (3.5 X 5.83 in.)	216 X 356 mm (8.5 X 14 in.)
Optional Tray 2	90 X 148 mm (3.5 X 5.83 in.)	216 X 356 mm (8.5 X 14 in.)

Notes:

- Use only the Multi-Purpose Tray to print envelopes.
- You may experience some paper jams when using any media with a length less than 148 mm (5.83 in.). This may be caused by paper that has been affected by environmental conditions. For optimum performance, make sure you are storing and handling the paper correctly. Please refer to “Printer and Paper Storage Environment” on page A.6.

Envelopes with Double Side Seams

Double side-seams construction has vertical seams at both ends of the envelope rather than diagonal seams. This style may be more likely to wrinkle. Be sure the seam extends all the way to the corner of the envelope as illustrated below.



Envelopes with Adhesive Strips or Flaps

Envelopes with a peel-off adhesive strip or with more than one flap that folds over to seal must use adhesives compatible with the heat and pressure in the printer. The extra flaps and strips might cause wrinkling, creasing, or even jams and may even damage the fuser.

Envelope Margins

The following gives typical address margins for a commercial #10 or DL envelope.

Type of Address	Minimum	Maximum
Return address	15 mm (0.6 in.)	51 mm (2 in.)
Delivery address	51 mm (2 in.)	89 mm (3.5 in.)

Notes:

- For best print quality, position margins no closer than 15 mm (0.6 in.) from the edges of the envelope.
- Avoid printing over the area where the envelope's seams meet.

Envelope Storage

Proper storage of envelopes helps contribute to print quality. Envelopes should be stored flat. If air is trapped in an envelope, creating an air bubble, then the envelope may wrinkle during printing. See "Printing on Envelopes" on page 4.12.

Labels

CAUTIONS:

- To avoid damaging the printer, use only labels recommended for laser printers.
- To prevent serious jams, always use the Multi-Purpose Tray to print labels and always use the rear output tray.
- Never print on the same sheet of labels more than once and never print on a partial sheet of labels.

When selecting labels, consider the quality of each component:

- **Adhesives:** The adhesive material should be stable at 200 °C (392 °F), the printer's fusing temperature.
- **Arrangement:** Only use labels with no exposed backing between them. Labels can peel off sheets with spaces between the labels, causing serious jams.
- **Curl:** Prior to printing, labels must lie flat with no more than 13 mm (.5 in.) of curl in any direction.
- **Condition:** Do not use labels with wrinkles, bubbles, or other indications of separation.

See "Printing on Labels" on page 4.14.

Transparencies

Transparencies used in the printer must be able to withstand 200 °C (392 °F), the printer's fusing temperature.

CAUTION: To avoid damaging the printer, use only transparencies recommended for use in laser printers.

See "Printing on Transparencies" on page 4.15.

Appendix B

Using Your Printer with a USB Cable

If you have a USB (Universal Serial Bus) port enabled on your computer, and if your computer is running Windows 98, you can connect your ML-1650 series printer to the USB chain of devices.

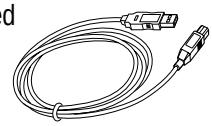
This appendix provides information on the following topics:

- Installing the Printer Software
- Frequently Asked Questions About USB

Installing the Printer Software

If you have a USB (Universal Serial Bus) port enabled on your computer, and if your computer is running Windows 98, you can connect your ML-1650 series printer to the USB chain of devices.

Note: Connecting the printer to the USB port of the computer requires a certified USB cable. You will need to buy the USB 1.0 or 1.1 compliant cable.



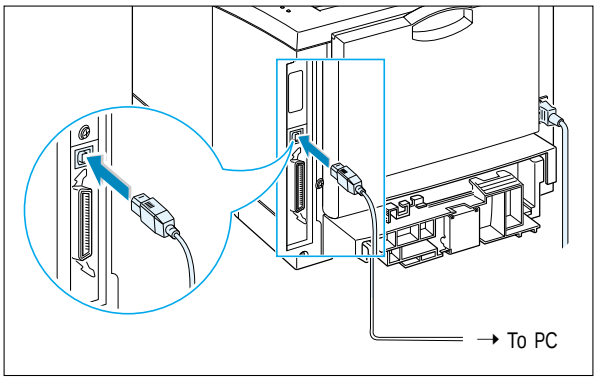
1. Install PCL driver

To operate your printer with Windows PC, you must install the PCL printer driver. Place the CD-ROM in the CD-ROM drive and perform the instructions on page 2.11.

2. Connect printer with USB cable and install USB driver

1 Make sure that both the printer and computer are turned **ON**.

2 Plug one end of the USB cable into the USB port on the printer.



3 Plug the other end into the USB port on the computer.

4 The Add New Hardware Wizard dialog box appears. Click **Next**.

5 Check **Search for the best driver for your device** and click **Next**.

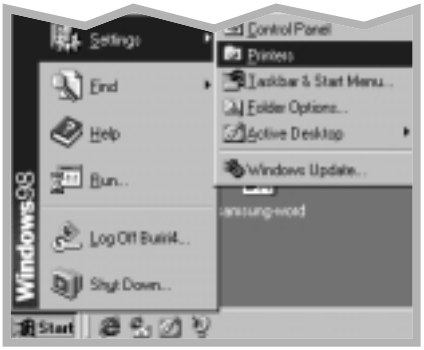
6 Check **CD-ROM drive** and click **Browse**, then choose **x:\1650\Eng** (or the desired language code, see page D.2.)**\USB** (where **x** is the drive letter for the CD-ROM drive).

7 Click **Next**. The USB driver will be installed.

8 Follow the instructions on the screen to complete the installation.

3. Set your PC printer port

1 From the **Start** menu, select **Settings**, then select **Printers**.



2 Select the **ML-1650 Series PCL 6** printer icon in the **Printers** folder.

3 Select **Properties** from the **File** menu.

4 Click the **Details** tab. Select **SSUSB: (ML-1650)** in the **Print to the following port** box. Click **OK**. The setup is now completed.

B

Frequently Asked Questions About USB

Q What is USB?

A Universal Serial Bus (USB) makes it easy to connect devices to your computer without having to open your PC. USB uses a standard port and plug combination for connecting devices like printers, modems, scanners, and digital cameras. It also offers the benefit of being able to easily add, remove, and move devices.

Because USB is a relatively new technology, we recommended using a parallel printing connection. However, USB is an option to customers who want to print from Windows 98, Macintosh using a USB cable. If your computer's USB port is enabled and properly setup, you can connect your printer to it or to a chain of USB devices via a USB cable.

Q How can I determine if my computer's USB port is enabled?

A

1. In Windows 98, select **Start** → **Settings** → **Control Panel**.
2. Double-click the **System** icon.
3. Click the **Device Manager** tab.
4. Click the plus (+) icon before the **Universal Serial Bus Controller** item.

If you see a USB host controller and a USB root hub listed, USB is properly enabled. If you have multiple hubs on the USB chain, try connecting your printer to a different hub or to another USB device. Also, make sure the cable connections are firm. (USB hubs are hardware devices into which you can plug multiple USB cables.)

If you do not see these devices listed, refer to your computer's documentation or contact the manufacturer for more information on enabling and setting up USB. Remember, you can always use a parallel cable to connect your printer's parallel port to your computer. (If you decide to switch to a parallel cable connection, you may need to remove and reinstall the printer software.)

Q Can other users on my USB chain print to my ML-1650 series printer?

A Yes. Windows 98 allows you to “share” your printer using software settings on your computer. After others on the USB chain have installed the printer software for your specific printer, they can print to your shared printer.

Q After I install my printer, why isn’t my ML-1650 series printer assigned to an LPT printer port in the Print dialog box of my software application?

A USB uses a different naming convention for USB devices. After the printer has been installed, you see **SSUSB:(your printer name)** instead of **LPT**.

Q How can I increase printing speed and quality?

A When operated on a USB chain, your printer may become slower if other USB devices are being used while you’re printing. For optimal print performance, avoid using other devices in the USB chain while printing.

Appendix C

Using Your Printer with a Macintosh

Your printer supports Macintosh systems with a built-in USB interface or 10/100 Base-TX network interface card (option for ML-1650). When you print a file from Macintosh, you can use the PCL driver to support your printer's major printing features. You can also use PostScript driver by installing the PPD file.

Topics included in this appendix are:

- Macintosh Installation
- Using PCL Driver
- Using PS Driver

Macintosh Installation

System Requirements

To use your ML-1650 Series printer and its software with a Macintosh, your system should have:

Macintosh Hardware Requirement

- One of the following Macintosh models:
  -Power Macintosh series (for network connection only)
  -Power Macintosh G3, G4
  -iMac series
  -iBook series
- USB interface or network interface (for network connection only)

Macintosh System Requirement

- For network connection: System 7.6 or later
- For USB connection: System 8.0 or later

Printer Hardware Requirement

- PS DIMM (for PS driver user only. PS DIMM is option)
- Network interface (for network connection only. Network interface is option for ML-1650. ML-1651N cames with a built-in network interface.)

C

Connecting To Macintosh

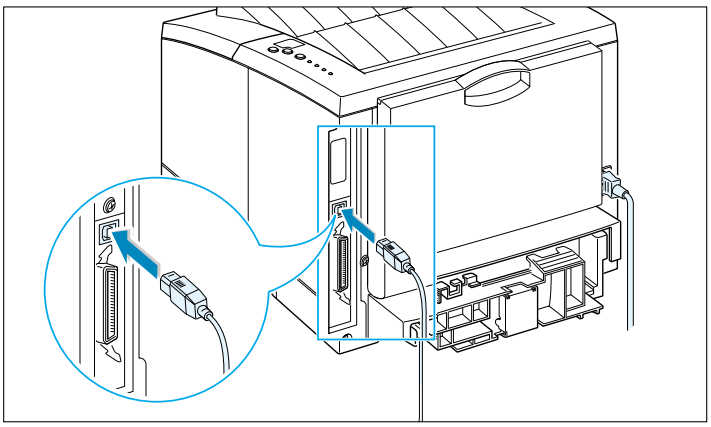
You can connect the printer to your Macintosh using the USB interface or network interface.

USB Connection

USB cable is not provided in your printer. Purchase a certified USB 1.0 or 1.1 compliant cable.

1 Turn off the printer and computer.

2 Hold the USB cable so the icon faces up and connect it to your printer's USB connector.



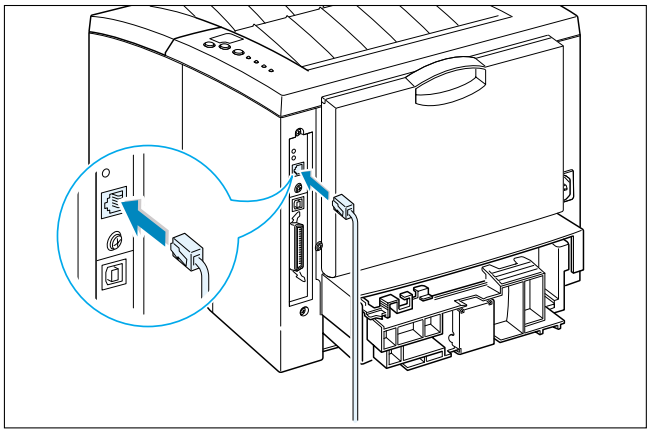
3 Connect the other end of the cable to an available USB port on your Macintosh computer. If you have any connecting problems, please refer to your computer documentation.

Note: If you are using a USB hub, connect the printer's cable to the first tier of the hub or the printer may malfunction. If the printer doesn't work with the hub, connect it directly to the USB port.

Network Connection

If you have a printer with 10/100Base-TX network interface card installed (standard for ML-1651N, option for ML-1650), you can connect to an Ethernet network. Use a Category 5 twisted pair cable with RJ-45 connectors for 10/100Base-T Ethernet.

1 Plug one end of the network cable into the twisted-pair connector on the back of the printer.



2 Connect the other end to the network hub.

Note: You must configure your printer for the network. For information about configuring your printer, refer to the Network User's Guide.

Installing Software for Macintosh

1 Turn on your computer and printer.

2 Insert the CD-ROM which came with your printer into the CD-ROM drive.

3 Double-click **Samsung ML-1650** on your Macintosh desktop.

4 Select the correct language, then click **Continue**.

5 The Samsung Laser Printer Installer opens. Select installation type. The installer provides two options for software installation:

- **Easy Install** (recommended method): This option loads PPD, installs PCL driver.
- **Custom Install** : This option allows you to choose which components will be installed. If you want to use the PCL driver, you must install it. If you want to use PostScript driver, you must install the PPD file.

6 Click **Install**.

7 After installation is complete, click **Quit**.

Using PCL Driver

If you want to use your printer's PCL driver on your Macintosh computer, take the following steps:

Choosing PCL Driver

1 From the **Apple** menu, select **Chooser**.

2 From the left pane of the Chooser window, click **SAMSUNG PCL**. Then the Samsung PCL driver name will appear in the right pane of the Chooser window.

3 Click the Samsung PCL driver, and close the Chooser window.

4 You see the message box indicating that you have changed your current printer. Click **OK**.

5 A Samsung PCL printer icon will be created on your desktop.

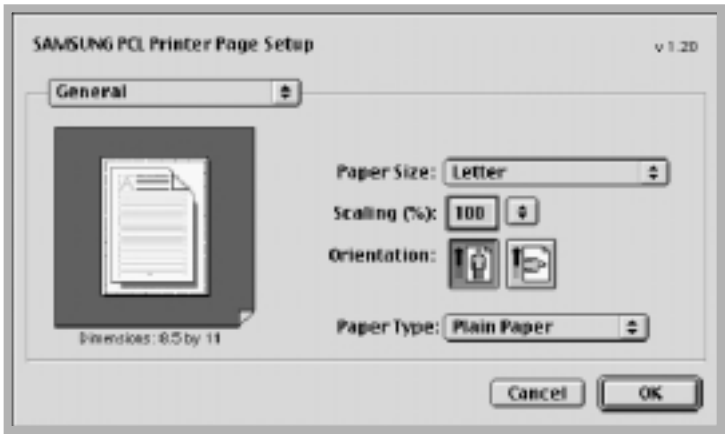
Printing from a Macintosh

When you print with a Macintosh, you need to check the printer software setting in each application you use. Follow these steps to print from a Macintosh:

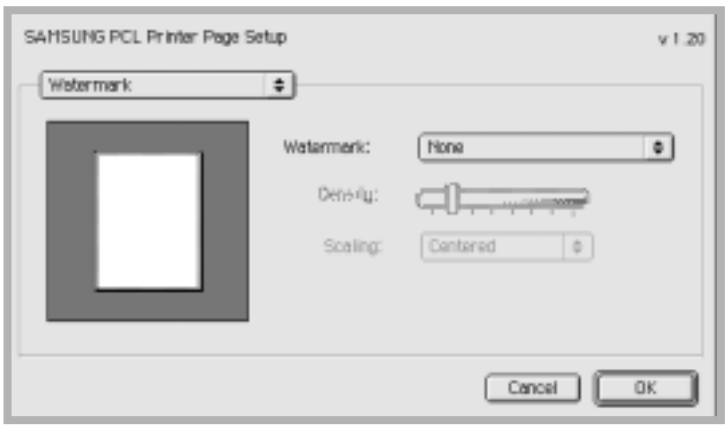
1 Open a Macintosh application and select a file you want to print.

2 Open the **File** menu, and click **Page Setup** (**Document Setup** in some applications). You will see the Page Setup dialog box.

3 Choose your paper size, orientation, paper type and other options and click **OK**.

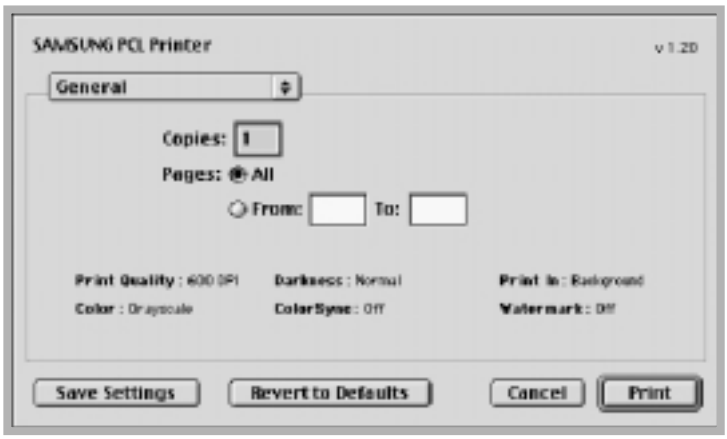


Choose **Watermark** if you want to add a watermark to each page in your document to emphasize its purpose or indicate how it should be handled. For details on the watermark option, see page 5.21.

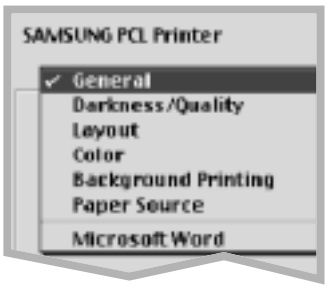


4 Now open the **File** menu and click **Print**. You see the main printer settings dialog box.

5 Choose the number of copies and indicate which pages you want to print. For advanced printing features, select the desired option. For details, see page C.8.



Select the desired option for advanced printing features.



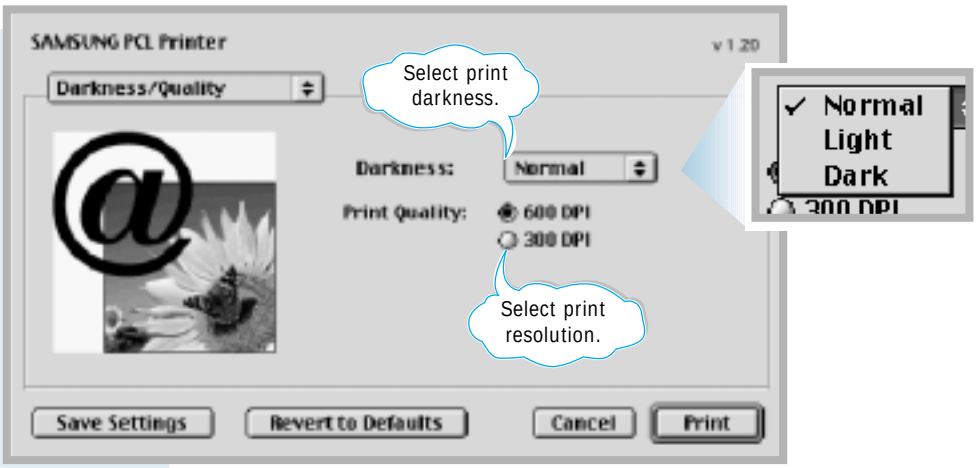
6 Click **Print** when you are finished checking your settings.

Advanced Printing

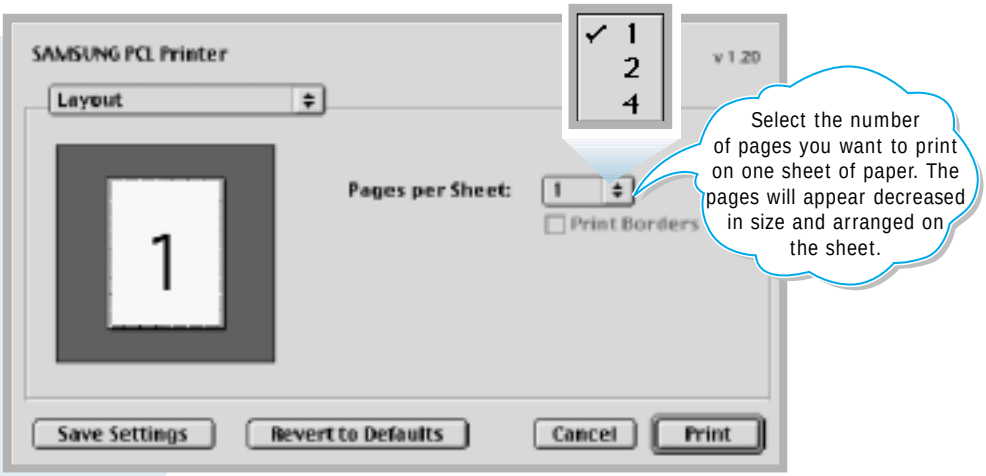
The Page Setup dialog box contains five categories of page setup properties. Listed below is the name of each property.
-Darkness/Quality
-Layout
-Color
-Background Printing
-Paper Source

Figures below display each property in the Page Setup dialog box.

Darkness/Quality



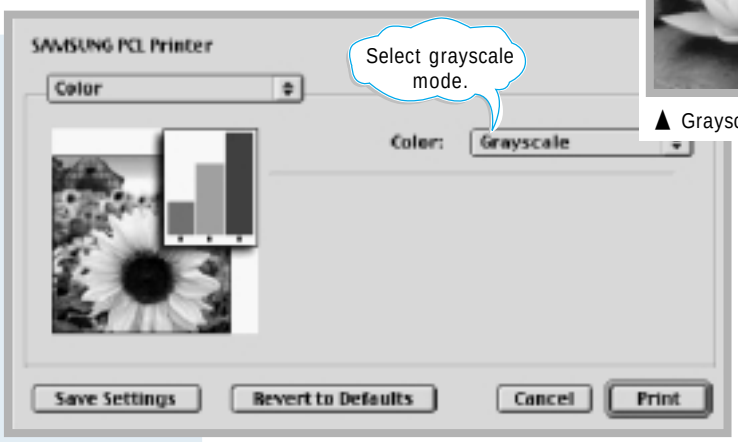
Layout



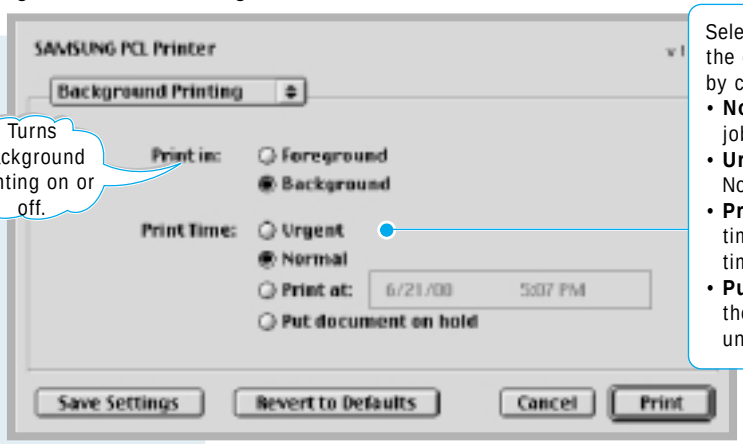
Color

▲ Grayscale

▲ Black&White



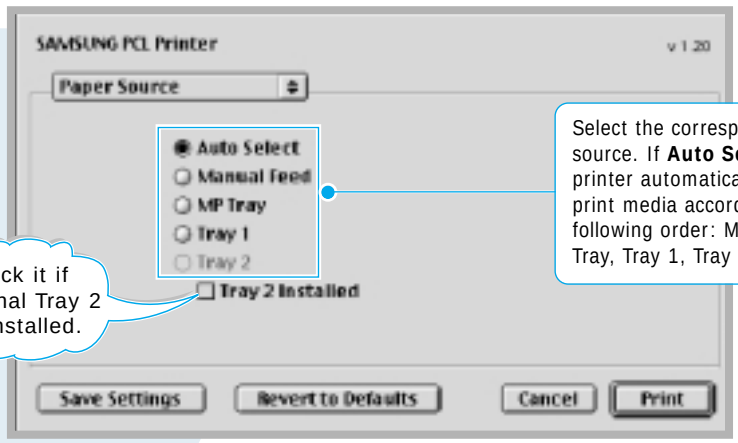
Background Printing



Select a priority for your print job in the queue of jobs waiting to print, by clicking one of the following:

- **Normal** to print in the order the job is received.
- **Urgent** to print before any Normal priority job.
- **Print at:** to print at the specific time you enter in the day and time in the fields to the right.
- **Put document on hold** to hold the print job in the print queue until you are ready to release it.

Paper Source



Select the corresponding paper source. If **Auto Select** is set, the printer automatically selects the print media according to the following order: Multi-Purpose Tray, Tray 1, Tray 2 (option).

Using PS Driver

If you want to use the PS driver which were installed on your Macintosh computer, you must install the PPD file to access your printer features and allow the computer to communicate with your printer.

PPD file installation method is different for USB connection and the network connection.

Installing PPD file on the USB-connected Macintosh

1. Follow the instruction as described on page C.4 to install the PPD file on your computer.
2. Open the **Macintosh HD** and double-click **Apple Extras**.
3. Double-click **Apple LaserWriter Software**.
4. Double-click **Desktop Printer Utility**.
5. Select **LaserWriter 8**, and select **Printer (USB)** in the list box. Then click **OK**.
6. Click the **Change** button in the USB Printer Selection section. The name of your printer appears in the list.
7. Click **ML-1650**, then click **OK**.
8. Click the **Auto Setup** button in the PostScript Printer Description (PPD) File section.

   If Auto Setup does not work properly, click **Select PPD** and choose **Samsung ML-1650 Series**.
9. When the setup is completed, click the **Create** button.
10. Click the **Save** button to save ML-1650 as a desktop printer.

Installing PPD file on the network-connected Macintosh

1 Follow the instruction as described on page C.4 to install the PPD file on your computer.

2 From the **Apple** menu, select **Chooser**.

3 Click **LaserWriter 8** (the PostScript driver provided with your Macintosh). The name of your printer appears in the list. Select **SEC000xxxxxxxxx** from the printer box (where the **xxxxxxxxx** varies depending on each of the products.).

4 When the setup is completed, you see your printer icon is created as a desktop printer.

If Auto Setup does not work properly, click **Select PPD** and choose **Samsung ML-1650 Series**, then click **OK**.

Printing from a Macintosh

Follow these steps to print from a Macintosh:

1 Open a Macintosh application and select a file you want to print.

2 Open the **File** menu, and click **Print**. You see the main printer settings dialog box.

3 Choose the number of copies and indicate which pages you want to print. For advanced printing features, select the desired option.

4 Click **Print** when you are finished checking your settings.

Appendix D

Printing from DOS Applications

While your printer is primarily a Windows printer, you can also print from a DOS software program using the Remote Control Panel utility provided in the ML-1650 series CD-ROM.

Topics included in this Appendix are:

- About Remote Control Panel for DOS
- Installing the Remote Control Panel for DOS Users
- Selecting Print Settings

About Remote Control Panel for DOS

DOS users have access to many printer features through specific DOS printer drivers; however, many software manufactures do not develop printer drivers for their software programs. The Samsung ML-1650 series printer provides the DOS software control panel for improved printer control when DOS printer drivers are not available or when certain print settings are not available through DOS software programs.

Notes:

- ML-1650 series printer's Remote Control Panel for DOS can be used when the printer is connected via the parallel interface.
- The ML-1650 series printer's Remote Control Panel is not a printer driver. It should be used to set print settings that are not available through DOS software programs. Printer drivers are supplied by the manufacturers of your DOS software programs. If your DOS software program does not include a printer driver for your Samsung printer, contact the manufacturer of the software program or use one of the alternate printer drivers.

Installing the Remote Control Panel for DOS Users

The Remote Control Panel utility is provided on the printer software CD-ROM. If you do not have a CD-ROM drive, refer to Appendix G, "Installing Software from Diskette" for information on obtaining printer software on diskettes.

To install the DOS Remote Control Panel:

1. Insert the printer software CD-ROM or RCP diskette in your computer's drive.
2. At the DOS prompt, make a directory that you want to use the DOS software and change to that directory.
3. From the floppy drive, type:
   COPY x:*.* (where **x** is the floppy drive designator)

   From the CD-ROM drive, type:
   COPY x:\1650\xxx\RCP*.* (where **x** is the CD-ROM drive designator and **xxx** is the designator for your language. See the list on the left for the designator for each language).

   Then press **Enter**.

Language Codes

Code	Language
DEU	German
ENG	English
ESN	Spanish
FRN	French
ITA	Italian
KOR	Korean

Selecting Print Settings

When you are running DOS, you can use this Remote Control Panel to select print settings that may not be available from some DOS programs. Typically, duplicate print settings that are selected from a DOS software program override print settings selected in the ML-1650 Series Remote Control Panel.

Note: After you change the RCP settings, you must send it to the printer by pressing **Send** on the RCP screen.

To access the Remote Control Panel

1. Make sure that the Remote Control Panel is in your path statement. You can check your path by typing **PATH** and pressing **Enter**. If the Remote Control Panel directory is not in your path, you will have to change to the default directory **C:\DOSUTIL** to start the program.

2. At the DOS prompt, type **DOSRCP** and press **Enter**.

After the Remote Control Panel appears, you can activate its selections in one of two ways:

- With the mouse – Move the mouse to position the pointer on the desired selection, then click the left mouse button.

- With the keyboard – Press the key that corresponds to the highlighted letter in the selection name.

The Remote Control Panel allows you to access the following features:

PRINTING

- **Paper** sets the paper size.

- **Paper Tray** sets the default paper source.

- **Copies** sets the number of copies printed for each page.

- **Orientation** determines how the output is printed on the page.

- **Top Margin** sets the top margin of the print material.

- **Left Margin** sets the left margin of the print material.

- **AUTO CR** sets how the printer performs a carriage return.

- **Quality** determines the print resolution.

CONFIG

- **Power Save** determines the length of time the printer waits after a job is printed before it goes to a reduced power state. If the printer is used frequently, select **OFF** which keeps the printer ready to print with the minimum warm-up time. This uses more electricity to keep the printer warm and ready to print.

- **Econo Mode** determines the toner quantity the printer should use when printing. If set to **ON**, the printer conserves toner when printing. The default value is **OFF**, which provides 100% usage.

- **Auto Continue** determines what action the printer should take when a manual feed print job is sent to the printer and there is no paper in the Multi-Purpose Tray. If set to **ON**, the printer will pick up the paper from the standard Tray 1 or optional Tray 2 after fifteen seconds. Otherwise, the printer will wait for you to load paper in the Multi-Purpose Tray.

- **Jam Recovery** determines what action the printer should take when a paper jam occurs. When set to **OFF**, the printer does not reprint a page that has jammed. When set to **ON**, the printer keeps the image in memory for a printed page until the printer signals that the page has successfully printed. The printer reprints all jammed pages.

JOB

- **Timeout** determines the amount of time (in seconds) the printer will wait before printing the last page of a print job that does not end with a command to print the page or a formfeed character. Valid range is 0 to 300 seconds.

- **Paper Type** provides the printer with information about the type of paper to be used for a print job. For the best result, set this to the paper type you loaded in the paper tray in the printer. When using the plain paper, set this to **Default**.

- **SRT Mode** makes the printer optimize the print quality to 1200 dpi image quality.

TEST

- **Self Test** prints the configuration sheet. A list of the user default settings, the installed options, and the amount of printer memory available prints.
- **Demo Page** prints the demonstration page. It shows the printer features and specifications.

PCL

- **Typeface** allows you to select the desired typeface. This setting is ignored when the software application specifies a font.
- **Symbol** set determines the symbol set. A symbol set is a set of alphabetic and numeric characters, punctuation, and special symbols used when printing with a selected font.
- **Pitch** sets the font pitch (only if you have selected a scalable monospaced font). Pitch refers to the number of fixed-space characters in a horizontal inch of type.
- **Lines Per Page** sets the number of lines that print on each page. The setting can range from 5 to 128 lines per page.
- **Point Size** sets the font point size (only if you have selected a scalable typographic font). Point size refers to the height of the characters in the font. One point equals approximately 1/72 of an inch. You can select point sizes from 4.0 to 999.75 in increments of 0.25 points.
- **COURIER** determines the courier font type: Regular or Dark.
- **Font List** prints the font list showing all the fonts available for PCL emulation.

PS3

- **Font List** prints the font list showing all the fonts available for PostScript (only available when the PostScript option is installed).
- **Print error information**: Specifies whether to print PostScript error information after your document has been printed. If you want the printer to print an error page when error occurs in the print job, set to ON.

Appendix E

Using Windows PostScript Driver

If you want to use the PostScript driver provided with your system CD-ROM or diskettes to print a document, use the information on this Appendix.

Topics included in this Appendix are:

- ♦ Setting Your Printer with PS Option
- ♦ Installing PPD Files
- ♦ Accessing the PS Printer Driver Features

Setting Your Printer with the PS Option

If you want to use the PostScript driver to print a document, your printer should have:

• PS DIMM (Option)

For instructions on installing the printer options, see Appendix H, “Printer Options.”

Installing PPD Files

PPDs, in combination with the PostScript driver, access the printer features and allow the computer to communicate with the printer. An installation program for the PPDs is provided on the ML-1650 CD-ROM.

Notes:

- Installing the PostScript printer driver may require the use of the operating system files on the original CD-ROM or diskette that came with your system.
- If you have a PostScript 3 driver and want to use it, you must install the PostScript 3 PPD which is also provided on the ML-1650 series CD-ROM.

1 Before installing PPD files, make sure that the printer and the PC are properly connected with parallel, USB, or optional network interface. For information on:

- Connecting with parallel interface, see page 2.8.
- Connecting with an USB interface, see Appendix B, “Using Your Printer with a USB Cable.” To use the USB interface, you must also install the USB port driver.
- Connecting with an optional network interface, see Appendix F, “Using Your Printer on a Network.”

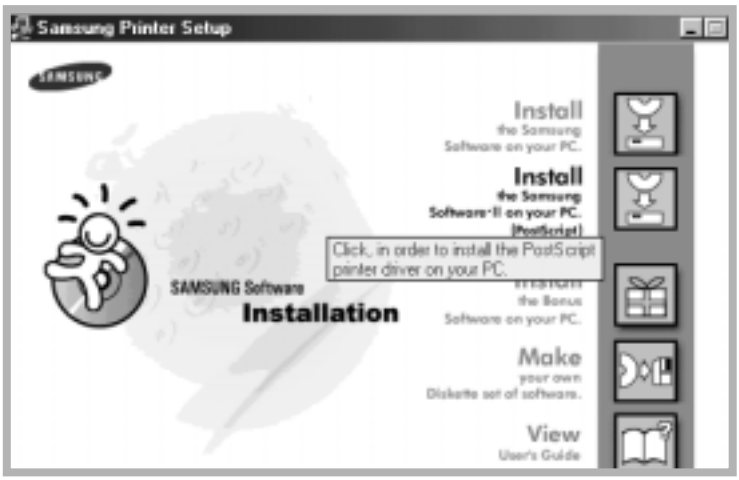
2 Insert the CD-ROM shipped with your printer into your CD-ROM drive.

If the CD-ROM drive does not automatically run:

Select **Run** from the **Start** menu, and type **x:\cdsetup.exe** in the Open box (where **x** is the drive letter for the CD-ROM drive), then click **OK**.

3 When the opening screen appears, select the appropriate language.

4 Click **Install the Samsung Software-II on your PC (PostScript)**.



5 Click on **HaveDisk**, click **Browse**, then choose:

- for Windows 9x, Me, **x:\Eng**(or the desired language code. See page D.2.)**\ps\Win95_98\level 2**
- for Windows NT 4.0, **x:\Eng**(or the desired language code. See page D.2.)**\ps\WinNT\level 2**
- for Windows 2000, **x:\Eng**(or the desired language code. See page D.2.)**\ps\Win2000**

where **x** is the drive letter for the CD-ROM drive, then click **OK**.

6 Follow the instructions on the screen to complete the installation.

Accessing the PS Printer Driver Features

Certain printer features are not available in this PS driver. Refer to “Printer Driver Features” on page 2.14.

The printer automatically switches between PS and PCL printer languages depending on the driver you have selected.

Opening the Printer Properties Window

The properties window for the Windows PostScript printer driver can be opened from the Printers folder or an application.

To open the properties window from the Printer folder:

1. Click the Windows **Start** button.
2. Select **Settings** then **Printers** to open the Printers window.
3. Select **Samsung ML-1650 Series PS**.
4. Click the right mouse button and select **Properties** to open the properties window.

To open the properties window from inside an application:

1. From the **File** menu, select **Print** to open the Print dialog box.
2. Make sure that **Samsung ML-1650 Series PS** is selected in the **Name** drop-down list.
3. Click **Properties** to open the properties window.

Appendix F

Using Your Printer on a Network

If you work in a networked environment, the printer can be shared by other users on the network. ML-1651N printer are network printers and can be connected to the network via direct attachment to an external print server.

This appendix provides information on the following topics:

- About sharing the Printer on a Network
- Setting Up a Locally Shared Printer
- Setting Up a Network-Connected Printer

About Sharing the Printer on a Network

If you work in a networked environment, you can connect the ML-1650 series printer to your network.

Locally Shared

You can connect the printer directly to a selected computer (called the “host computer”) on the network. The printer can then be shared by other users on the network through a Windows 9x, Me, NT 4.0 or 2000 network printer connection.

Network-Connect

If an option network card was installed on your printer (see page H.4 for information on installing the option network card in your printer) or if you have a ML-1651N printer, the printer can be connected to the network via direct attachment to an external print server.

Printing Across a Network

Whether the printer is locally connected or network connected, you need to install the ML-1650 series printer software on each computer that will print documents to the ML-1650 series printer.

Setting Up a Locally Shared Printer

Setting Up Host Computer

1. Start Windows.
2. From the **Start** menu, select **Control Panel**, and double-click on the **Network** icon.
3. Check the **File and Print Sharing** box, then click **OK**. Close the window.
4. Click **Start** and select **Printers** from **Settings**, then double-click your printer name.
5. Select **Properties** in the **Printers** menu.
6. Click the **Sharing** tab, then check the **Shared As** box. Fill in the Shared Name field, then click **OK**.

Setting Up Client PC

1. Right-click **Start**, and select **Explorer.**
2. Open your network folder in the left column.
3. Right-click the shared name, and select **Capture Printer Port**.
4. Select the port you want, check the **Reconnect at log on** box, then click **OK**.
5. From the **Start** menu, select **Settings**, then **Printers**.
6. Double-click your printer icon.
7. From the **Printers** menu, select **Properties.**
8. Press the **Details** tab, select the printer port, then click **OK**.

Setting Up a Network-Connected Printer

To use ML-1650 series printer as a network printer, you must install an optional network card in your printer. See page H.4 for information on installing network card. If you have ML-1651N printer, you do not need to install the network card. The Samsung ML-1651N printer are shipped with the network card.

After the network card is installed, you must set up your printer as a network printer using the documentation and Samsung SyncThru software provided with the network card.

Appendix G

Installing Software from Diskettes

If you need to install the printer software on a system that does not have a CD-ROM drive, use the instruction on this appendix to create the software diskettes and install the printer software from the diskettes.

This appendix provides information on the following topics:

- Making Installation Diskettes
- Installing Software from Diskettes

Making Installation Diskettes

If you do not have a CD-ROM drive but you have access to another computer with a CD-ROM drive, you can copy software installation files from your printer software CD-ROM onto floppy diskettes, and then use the diskettes instead of the CD-ROM to install the software.

You can make installation diskettes for PCL6 printer driver, USB driver for Windows 98, PostScript Printer Description (PPD) file and Remote Control Panel utility independently. Make sure that you have several formatted diskettes ready, and then follow these steps:

1 Insert the CD-ROM shipped with your printer into the CD-ROM drive. Installation will start automatically.

If the CD-ROM drive does not automatically run:

Select **Run** from the **Start** menu, and type **x:\cdsetup.exe** in the Open box (where **x** is the drive letter for the CD-ROM drive), then click **OK**.

2 When the opening screen appears, select the appropriate language.

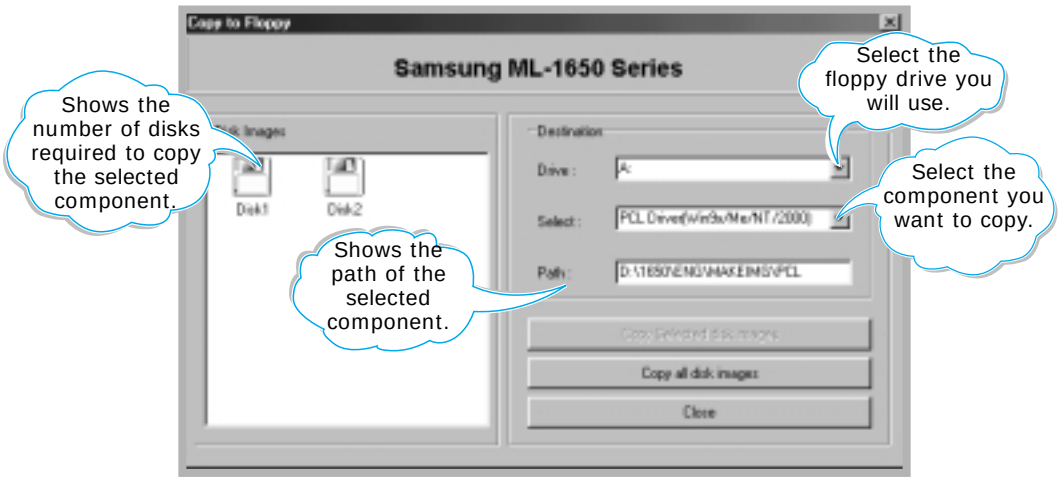
3 Click **Make your own Diskette set of software.**

G

4 The Copy to Floppy dialog box appears.

Select the desired components you want to copy to the diskette from the Select box. You can select PCL6 Printer Driver, PostScript Printer Description file, USB Port Driver and RCP.

Select the floppy disk drive you will use to insert the diskette.



5 Click **Copy all disk images**.

If you want to copy a portion of the selected component, select the disk you want to copy in the Disk Images window, then click **Copy selected disk image**.

6 When prompted, insert a blank, formatted diskette into the floppy drive, and click **Yes** to copy the first diskette. For multiple diskettes, when the first diskette is finished, you are prompted to insert disk 2.

Make sure you label each diskette in order of creation PCL printer driver, disk 1 of 3, etc.

7 If you have more than one disk, insert the next disk and click **Yes**. Repeat this step for a third disk if necessary.

8 When copying to diskettes has been completed, click **Close** in the Copy to Floppy dialog box. Then click **Exit** in the SAMSUNG PRINTER SETUP dialog box.

Installing Software from Diskettes

The instructions to install a PCL 6 printer driver, PPD file and RCP are same. Take the following steps:

1 Insert the first diskette (if you have more than are selected software diskette) which contains the desired installation software; PCL 6 printer driver, USB driver, PPD file or RCP.

2 From the **Start** menu, select **Run**.

3 Type **A:\setup.exe** in the Open box and click **OK**. (if your floppy drive is not **A**, substitute the correct letter.)

4 Follow the on-screen instruction to complete the installation.

Appendix H

Printer Options

Your printer is a full-featured laser printer that has been optimized to meet most of your printing needs. Recognizing that each user may have different requirements, however, Samsung makes several options available to enhance the printer's capabilities.

This appendix provides information on the following topics:

- Precautions
- Memory and PostScript DIMMs
- Network Interface Card
- Paper Tray 2

Precautions

DISCONNECT THE POWER CORD:

Never remove the printer control board while the printer is plugged in.

To avoid the possibility of electrical shock, always disconnect the power cord when installing or removing ANY internal or external printer option.

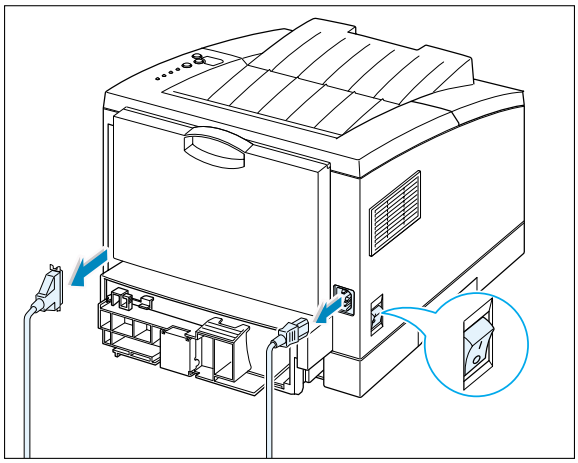
DISCHARGE STATIC ELECTRICITY:

The control board and internal printer options (Memory DIMM, PS DIMM, Network interface) are sensitive to static electricity. Before installing or removing an internal option, discharge static electricity from your body by touching something metal, such as the metal back plate on any device plugged into a grounded power source. If you walk round before finishing the installation, discharge any static electricity once again.

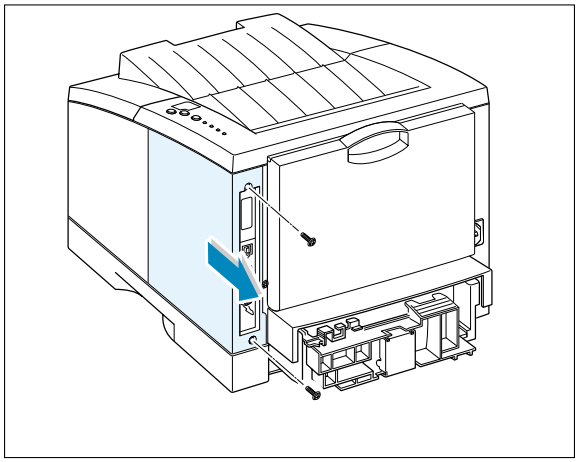
Memory and PostScript DIMMs

Additional printer memory and the PostScript option are provided on DIMMs (dual in-line memory modules). This procedure is applicable to either option.

1 Turn the printer power off and unplug all cables from the printer.

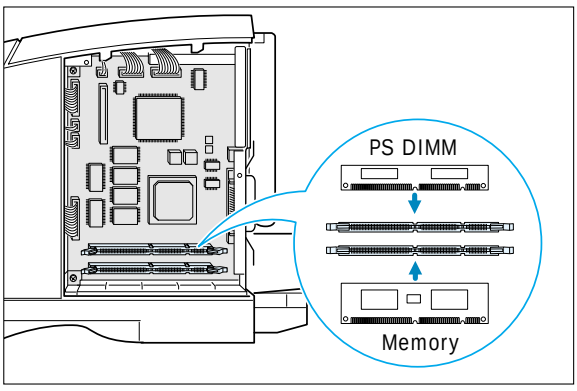


2 Remove the two screws on the rear of the printer, then remove the control board cover.

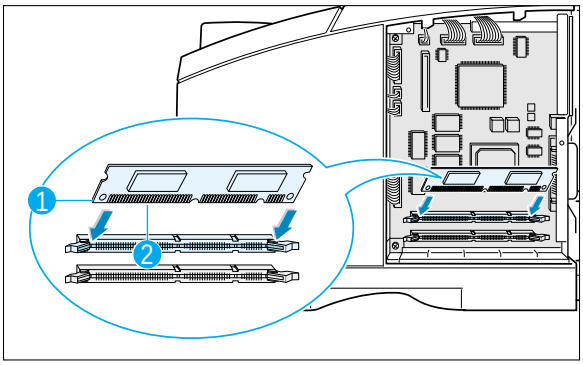


3 Locate the PS DIMM slot (the upper slot on the right as shown) and the memory DIMM slot (the lower slot) on the control board. They are not interchangeable.

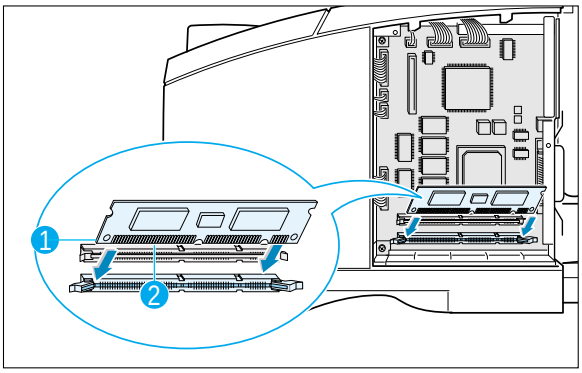
- To install the PS DIMM, continue with Step 4.
- To install the memory DIMM, go to Step 5.



4 Hold the PS DIMM so that the notch ❶ and the connection point ❷ are aligned with the slot as shown, and insert the DIMM all the way into the upper slot labeled **DRAM MODULE** at a 90 (Straight) degrees angle.



5 Hold the memory DIMM so that the notch ❶ and the connection point ❷ are aligned with the slot as shown, and insert the DIMM all the way into the lower slot labeled **FLASH-ROM MODULE** at a 90 (Straight) degrees angle.



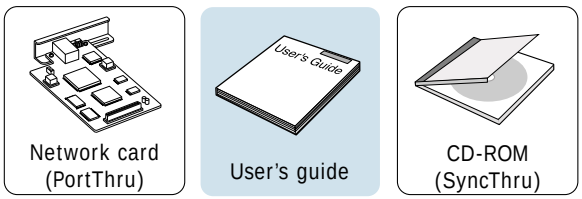
6 Reconnect the power cord and printer cable, then turn the printer on.

Note: For PostScript driver installation and usage information on a Macintosh system, refer to Appendix C, “Using Your Printer with Macintosh.” For PS printing on a Windows system, refer to Appendix E, “Using Windows PostScript Driver.”

Network Interface Card

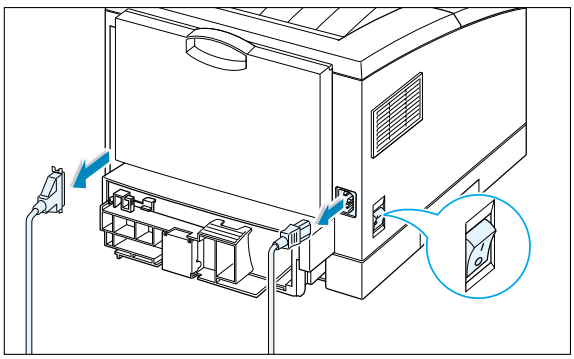
Review the precautions on page H.1 and then follow this procedure to install the Network card option in your printer.

1 Unpack the network printer card. You should find the following items.

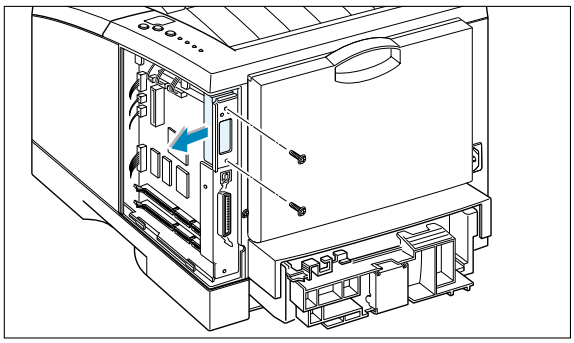


2 Turn the printer power off and unplug all cables from the printer.

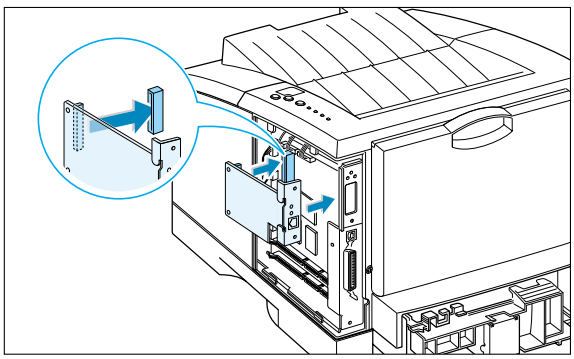
3 Remove the two screws on the back of the printer, then remove the control board cover. See the figure on page H.2.



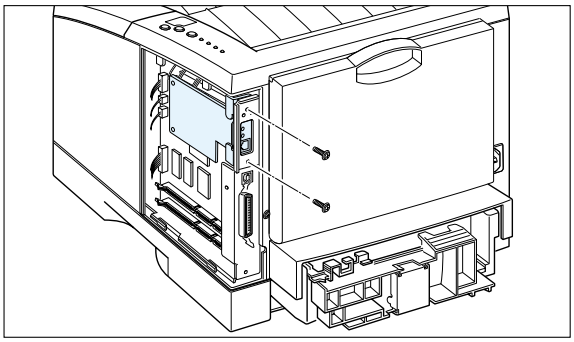
4 Remove the two screws, then remove the plate.



5 Align the connector on the network card with the connector on the control board. Push the card firmly into the connector until it is completely inserted in place.

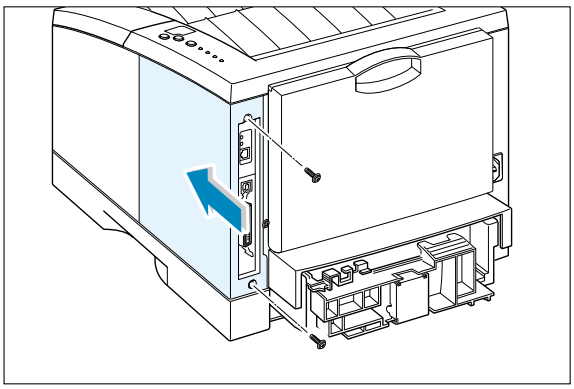


6 Tighten the two screws as shown.



7 Tighten the two screws, then replace the plate.

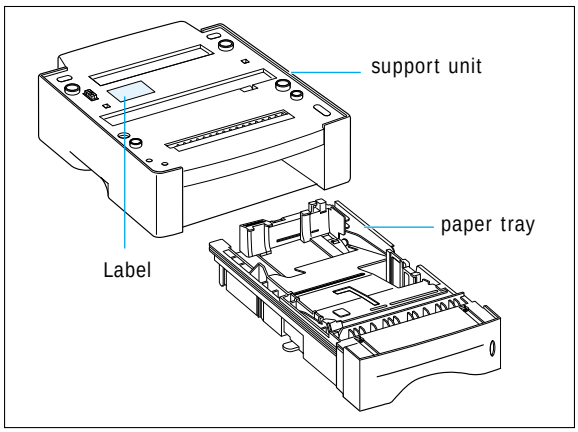
8 Reconnect the power cord and printer cable, then turn the printer on.



Note: For information on configuring and using the printer on a network environment, refer to the documentation provided with the network card option.

Paper Tray 2

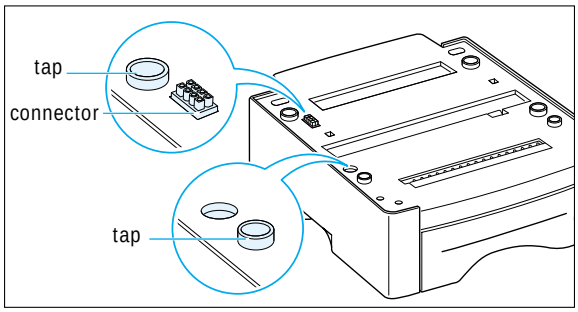
You can increase the paper handling capacity of your printer by installing the optional Tray 2. The optional paper tray consists of two components; the **support unit** and **paper tray**.



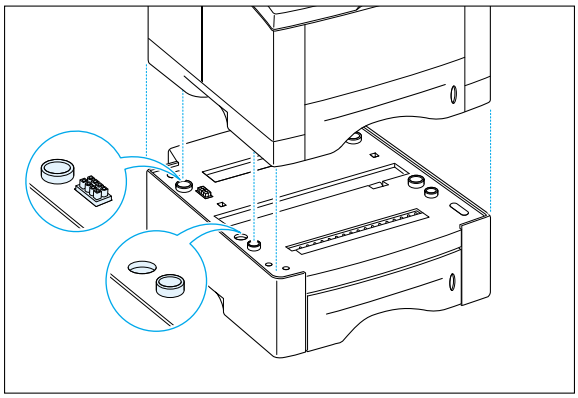
Note: Be sure you check the **label** before using the optional Tray 2. (For use with ML-1650 Series only)

1 Turn off the printer and unplug all cables from the printer.

2 Observe the location of the support unit's connector and tabs.



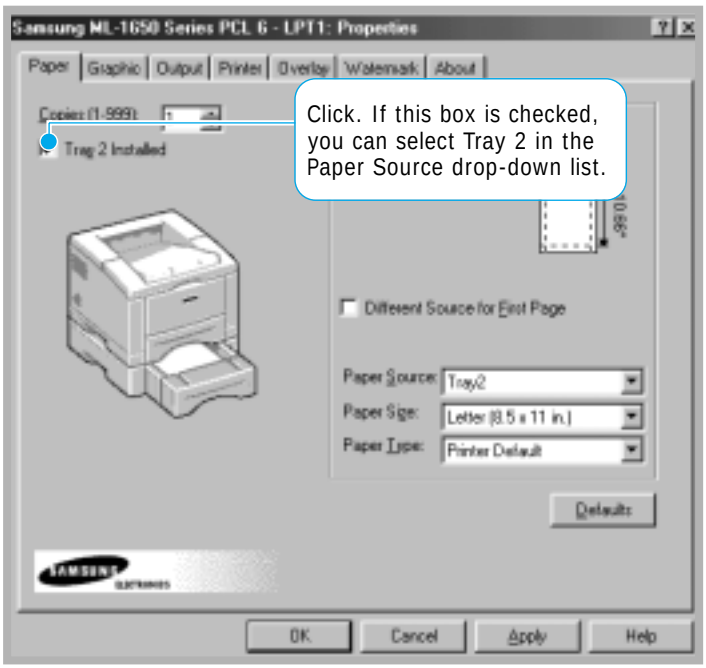
3 Align the printer with the support unit and lower it into place on the tabs and connector.



4 Load paper in Tray 2. For information on loading paper in the tray, see page 2.5.

5 Reconnect the cables, then turn the printer on.

Note: To print from Tray 2, you must configure the printer driver from your application prior to printing. To access the printer driver, see page 5.2.



Appendix I

Using Your Printer in Linux

You can use Samsung ML-1650 Series printer in Linux environment.

This appendix provides information on the following topic:

◆ Linux Driver Installation

Linux Driver Installation

This Linux driver is designed for the Samsung ML-1650 Series printer and supports Linux Red Hat 6.0 or higher and Intel Linux. If your Linux version is not included, this driver might not work properly.

- Install Setup Script file configuration
  a. /cdrom/linux/install.sh
  b. /cdrom/linux/ssprt.db
  c. /cdrom/linux/readme.txt

Installation

To install the driver, open the x terminal screen and take the following steps:

1. Mount the CD-ROM drive.

Note: To mount the CD-ROM drive, you must be a super user or must be authorized to mount the CD-ROM by the super user. If you fail to mount the CD-ROM drive, ask the system administrator.

To mount the CD-ROM drive:

1 Insert the Samsung ML-1650 Series CD-ROM into the CD-ROM drive.

2 Mount the CD-ROM drive under a directory like **/mnt** in order to access the files on the CD-ROM:
>mount -t iso9660 /dev/cdrom /mnt/cdrom

2. Install setup script.

For details on installing the setup script, refer to the **/cdrom/linux/readme.txt** file.

Add the driver to the printer list by typing in:
/cdrom/linux>install.sh (or)
/cdrom/linux>./install.sh (if the path of the current working directory is not determined.)

3. Set up the printer filter.

To set up:

1. Run **printtool** at x terminal.
2. To add the printer driver, click the **Add** button.
3. In the Add a Printer Entry window, decide the printer type you will use. Select **Local Printer** if you have a PC-connected printer.
4. Click the **OK** button.
5. If the **Info** button appears, ignore it, then click the **OK** button.
6. The Edit xxxx Entry window opens (where xxxx is the printer type you have selected at step 3).

   If you are not an advanced user, do not change the **Names/Spool Directory/File Limit in Kb/Printer Device** option.
7. Click the **Select** button in the **Input Filter** to access filter setup.
8. Select **Samsung Printer PCL5e Compatible** for the Printer Type item. Then select the default resolution and paper size.
9. To save the setting, press the **OK** button.
10. In the Edit xxxx Entry window, press the **OK** button to complete the printer driver installation.
11. You can find that the printer driver is added to the driver window. Select **Quit** from the **PrintTool** menu.

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