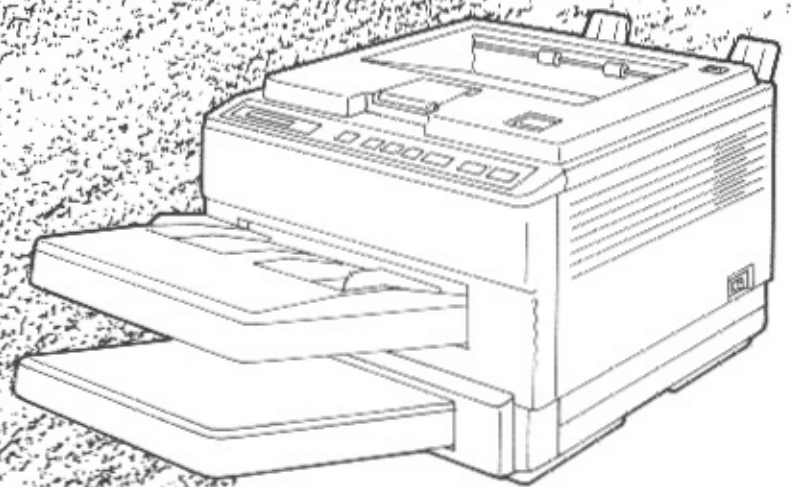


Panasonic

Laser Printer

**OPERATING
INSTRUCTIONS** **KX-P4440**



Before operating this unit, please read these instructions completely.

Danger: Invisible laser radiation when open and interlock defeated.
Avoid direct exposure to beam.

Caution: This product utilizes a laser.
Use of control or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.
Do not open covers and do not repair yourself. Refer servicing to qualified personnel.

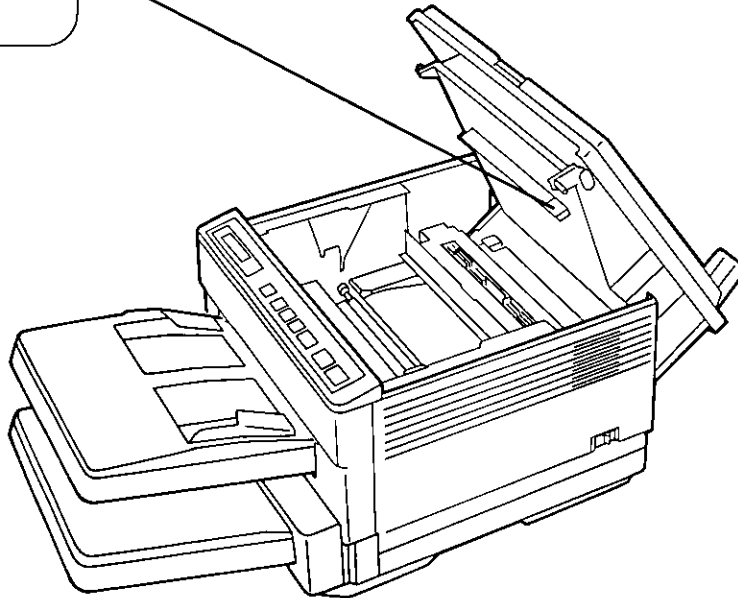
Warning: To prevent fire or shock hazard, do not expose this product to rain or any type of moisture.

The serial number of the unit may be found on the label on the rear of the unit. For your convenience, note this number below, and retain this book, along with your proof of purchase, to serve as a permanent record of your purchase in the event of a theft, or for future reference.

MODEL NO. KX-P4440 NAME OF DEALER _____

SERIAL NO. _____ DATE OF PURCHASE _____

DANGER-Invisible laser radiation when open and interlock defeated.
AVOID DIRECT EXPOSURE TO BEAM.



For United States Only

Important Phone Numbers:

Authorized Service Centers	: 1-800-447-4700
Nearest Sales Dealer	: 1-800-742-8086
To Order Consumables	: 1-800-346-4786
Technical Support	: 1-800-222-0584
Operating Instructions	: 1-206-395-7343

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- IBM and IBM Proprinter are registered trademarks of International Business Machines Corporation.
- Diablo is a registered trademark of Xerox Corporation.
- Times, Helvetica and Univers are trademarks of Linotype AG and/or its subsidiaries.
- CG and Intellifont are registered trademarks of Agfa Corporation.
- CG Times, based on Times New Roman under license from Monotype Corporation Plc, is a product of Agfa Corporation.



Intellifont

All other acknowledgements are trademarks or registered trademarks of their respective holders.

For Users in United States

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

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

The user may find the booklet "Something About Interference" available from FCC local regional offices helpful.

FCC Warning: To assure continued FCC emission limit compliance, the user must use only the recommended shielded interfacing cable when connecting to a host computer. Also, any unauthorized changes or modifications to this equipment would void the users authority to operate this device.

Technical Support Calls

If you have read this manual and tried the troubleshooting procedures and you are still having difficulty please contact the store from which the unit was purchased.

You may also call the end user technical support telephone number which is operational during east coast business hours (9:00 AM to 5:00 PM).

The end user technical support number is 1-800-222-0584.

For Users in Canada

L'interférence radioélectrique générée par cet appareil numérique de type B ne dépasse pas les limites énoncées dans le Règlement sur les perturbations radioélectriques, section appareil numérique, du Ministère des Communications.

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

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Preventive Maintenance

- Keep all liquids away from the printer. Accidental spillage of a liquid into the printer can cause severe damage.
- Do not block the air flow around the printer. Do not place books, paper, or other items on the top of the printer.
- Special care should be taken to protect the printer if it is used in an unfriendly environment such as a machine shop, a dusty or sandy area, etc.
- If the printer is not going to be used for an extended period, unplug the power cord.
- Do not open the cover while in operation.
- Do not leave the paper cassette loaded with paper in a high humidity area when not used.
- Keep the paper cassette away from dust when not used.
- Do not add paper to the paper cassette while paper remains in it.

1. Your New Laser Printer—A Guided Tour

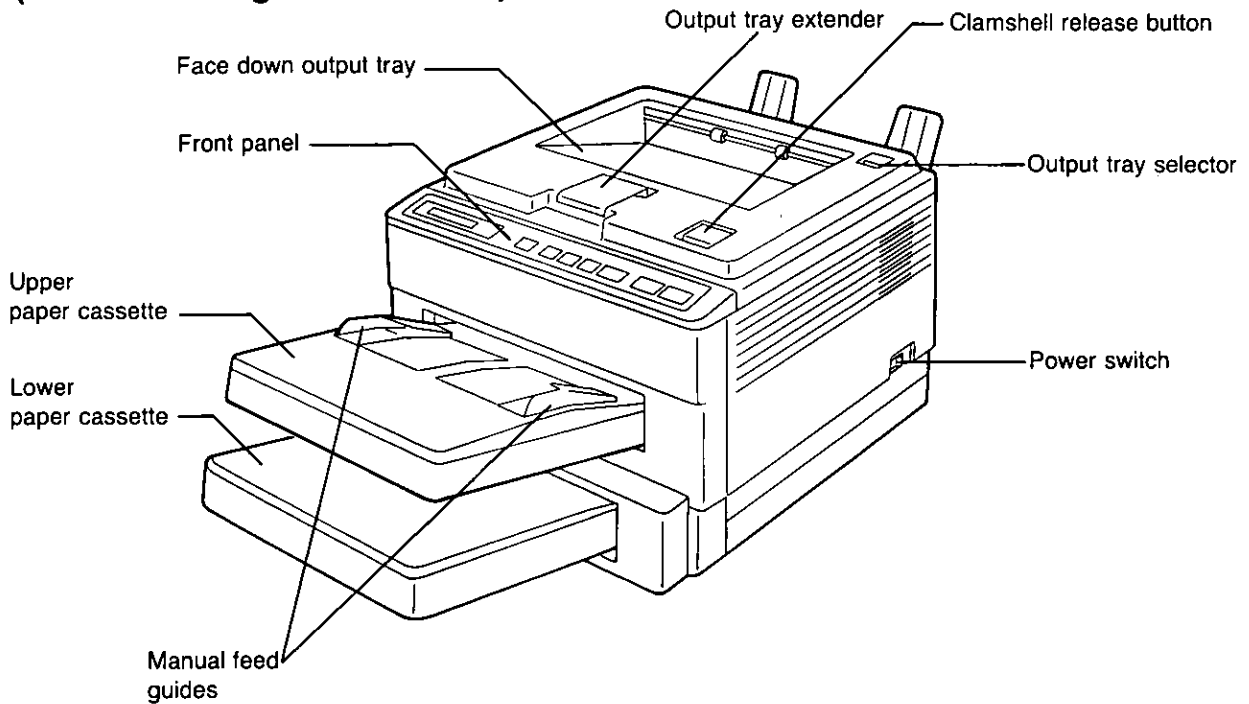
1.1 Product Overview

Congratulations on your purchase of the printer. No matter why you purchased this printer we are sure it will meet your printing needs and give you many years of productive and efficient use.

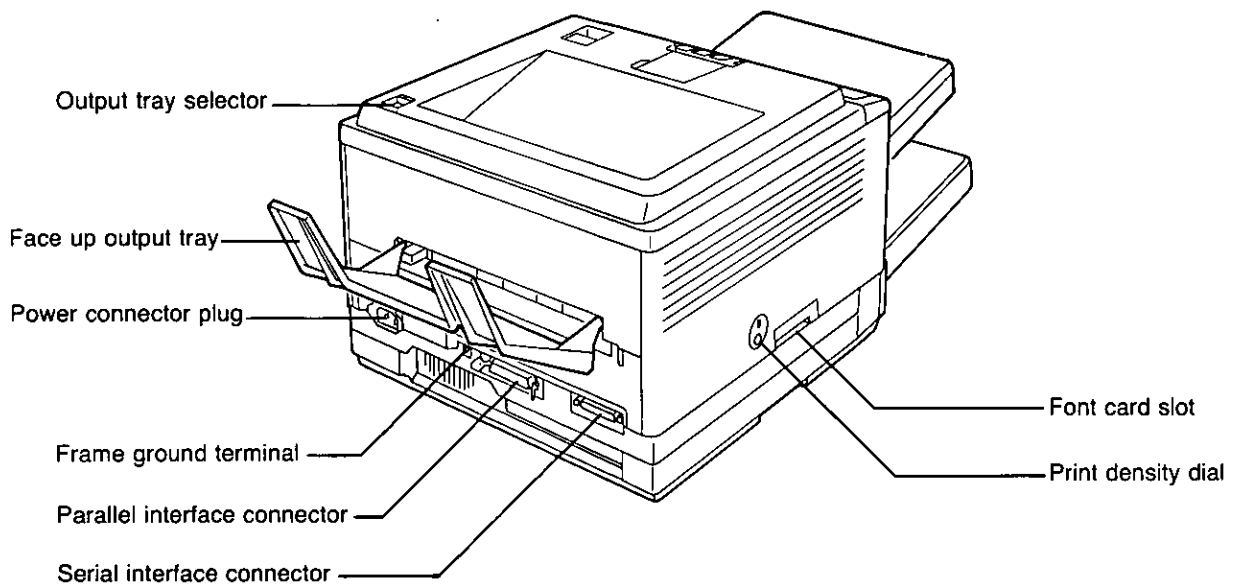
- Printing speed:** 10 pages per minute (Letter size paper, text mode, 5.5% image area, all originals)
- Paper input:** Upper; Multi purpose paper cassette with manual feed
Lower; Multi purpose paper cassette
- Paper output:** Face up and face down paper output
- Interfaces:** Centronics parallel and RS-232C serial
- Emulations:** HP LaserJet Series III
Diablo 630
IBM Proprinter II
- Internal memory:** 1 MB (expandable to maximum 5 MB with optional 0 MB RAM Expansion Module plus 1 MB SIMM or 2 MB SIMM)
- Fonts:** 22 resident
●14 Bitmap fonts available in both portrait and landscape
●8 Outline fonts
(Intellifont Scalable Typefaces)
- SatinPrint:** Panasonic's SatinPrint technology reduces "jaggies" creating a much smoother looking output. By interspacing standard 300 DPI dots at 600 DPI addresses and adding in 600 DPI dots where necessary, SatinPrint provides higher quality output than is available from conventional 300 DPI laser printers.

1.2 Part Names

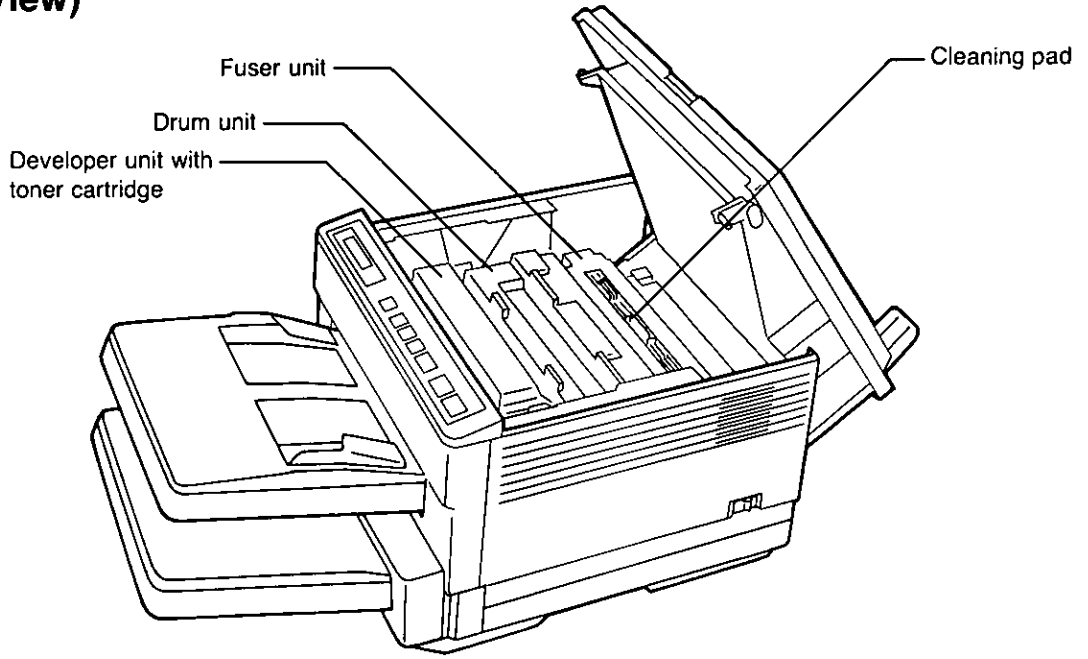
(Front and Right Side View)



(Rear and Left Side View)



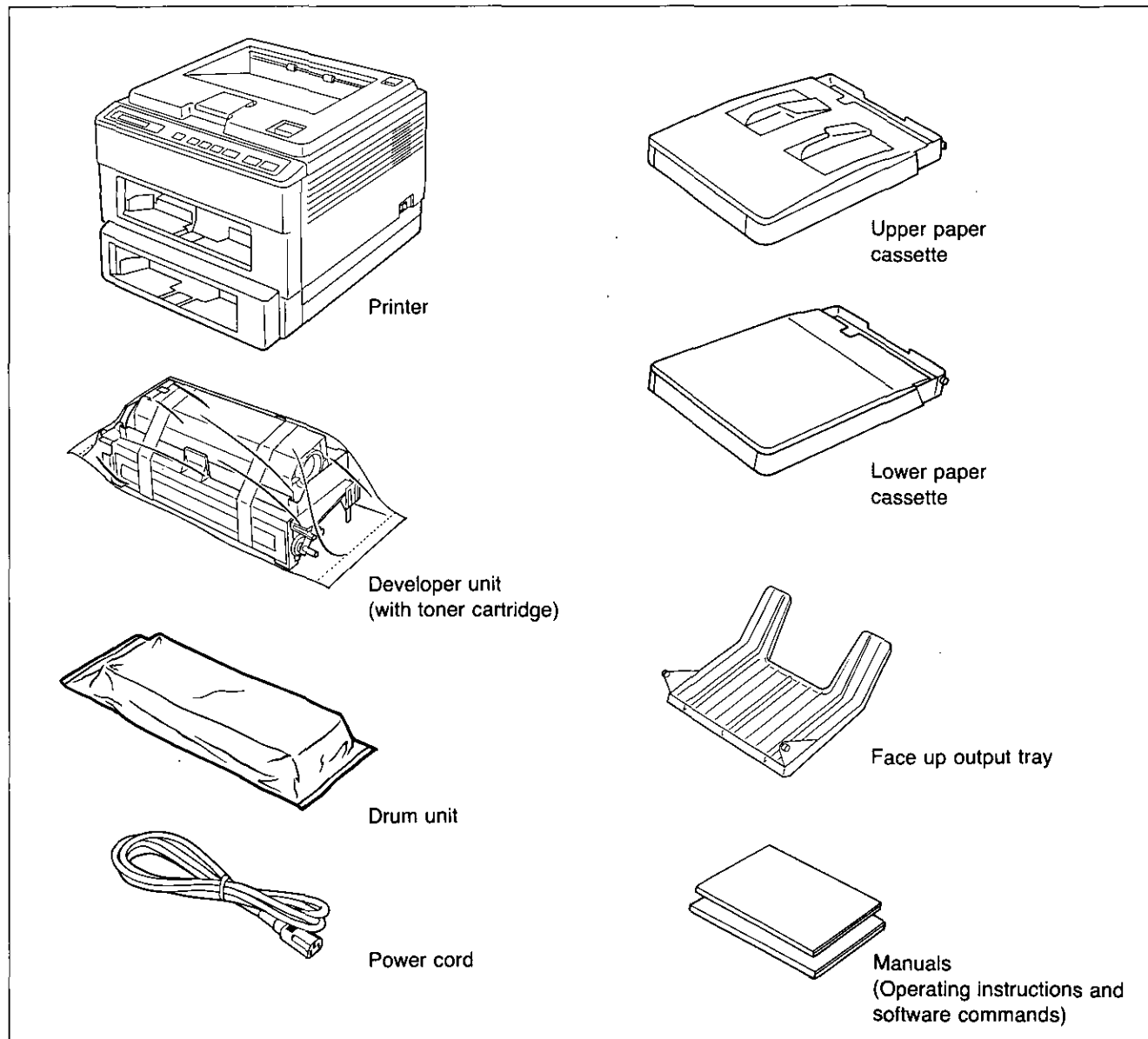
(Inside View)



2. Installation and Initial Setup

2.1 Unpacking and Inspection

Carefully open the shipping carton and remove the contents. The figure below shows the items that the carton should contain. Inspect the printer and accessories for damage. Report damage or shortages to the store from which the unit was purchased. Inside the front cover of this manual is an area for recording important information regarding the printer. Please record the serial number, date of purchase and your dealer's name.



2

Note:

Please keep all packing materials so that they may be used if you transport the printer in the future. They have been specifically designed to protect your printer during shipment.

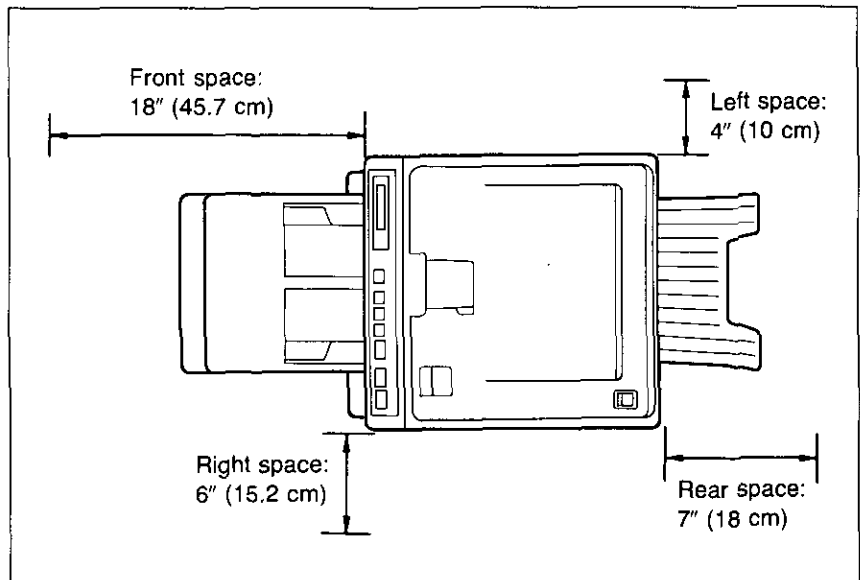
2.2 Installation Requirements

Environment

- Temperature Range: 50° to 90.5°F (10° to 32.5°C)
- Humidity Range: 20% to 80% RH
- Do not install the printer under the following conditions:
 - Extremely high or low temperature or extremely high or low humidity
 - Direct exposure to sunlight
 - Areas of high dust concentration
 - Areas of poor ventilation
 - Areas with chemical fume concentration
 - Areas with extreme vibration
 - Directly in front of air conditioning vents
- Place the printer on a stable, level table.

Minimum Space

Minimum space requirements for setup are shown below.



Power Source

- Use a voltage level which does not vary more than $\pm 10\%$ from the voltage level marked on the nameplate (located on the rear of the printer).
- Do not use an extension cord.
- This printer should be connected to a grounded outlet.
- Do not use a line conditioner, transient suppressor, or surge protector.

2.3 Installing Developer Unit (with Toner Cartridge), Drum Unit, Power Cord and Face Up Output Tray

Developer Unit (with Toner Cartridge)

Important:

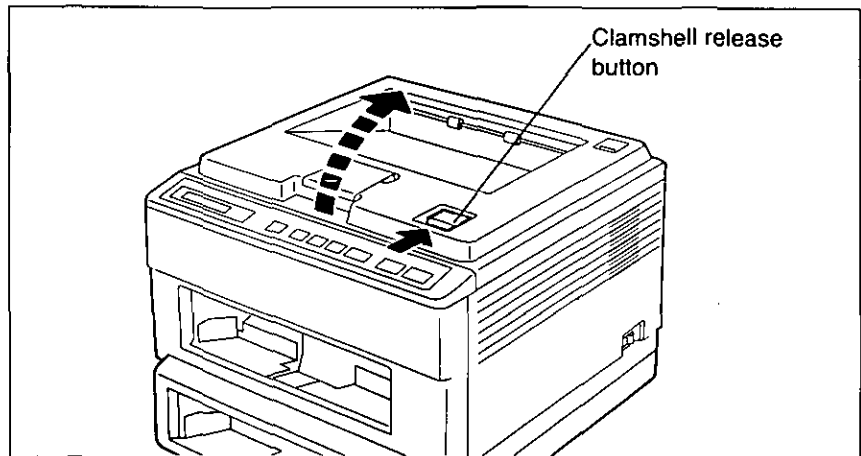
The developer unit contains developer for printing.

- Keep the developer unit away from dust and small objects.
 - Do not place the developer unit in a high humidity or high temperature area.
-

2

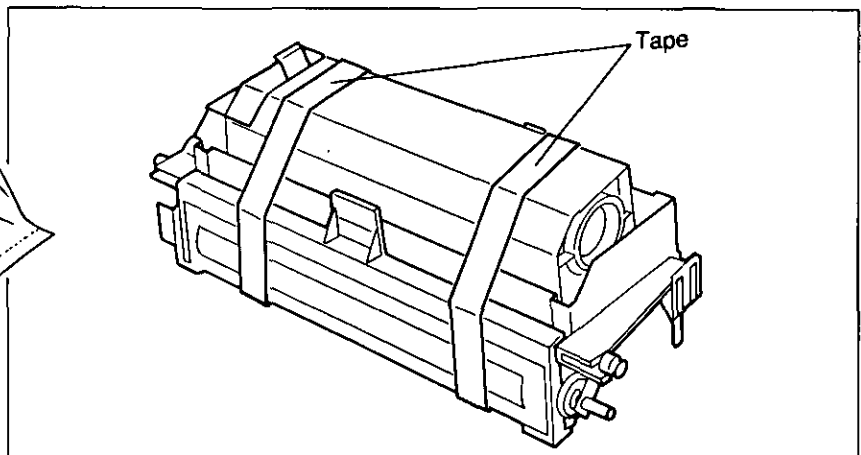
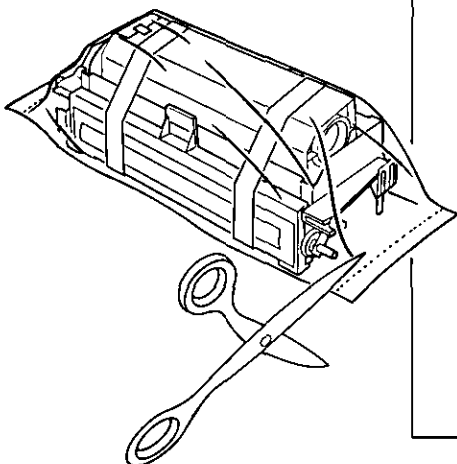
1

Press clamshell release button. Clamshell will open automatically.



2

Open protective bag.
Take out developer unit and remove tape.

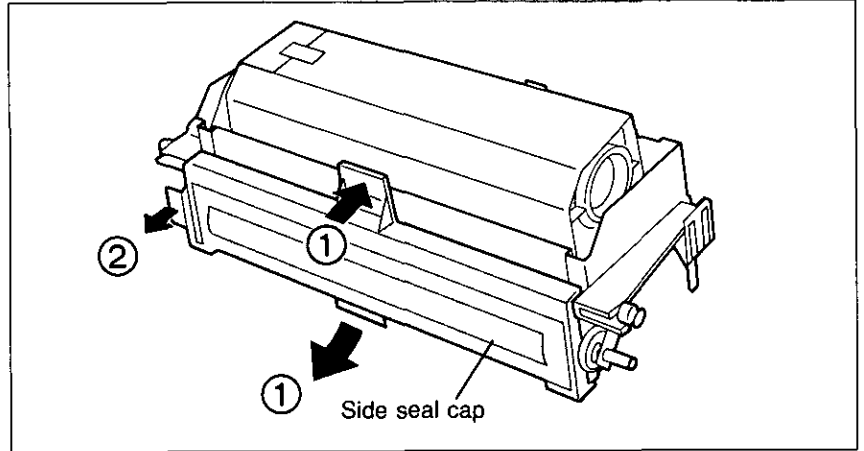


2

3

While keeping developer unit horizontal, remove side seal cap.

- ① Push top tab while pulling bottom tab.
- ② Pull side tab.



Caution

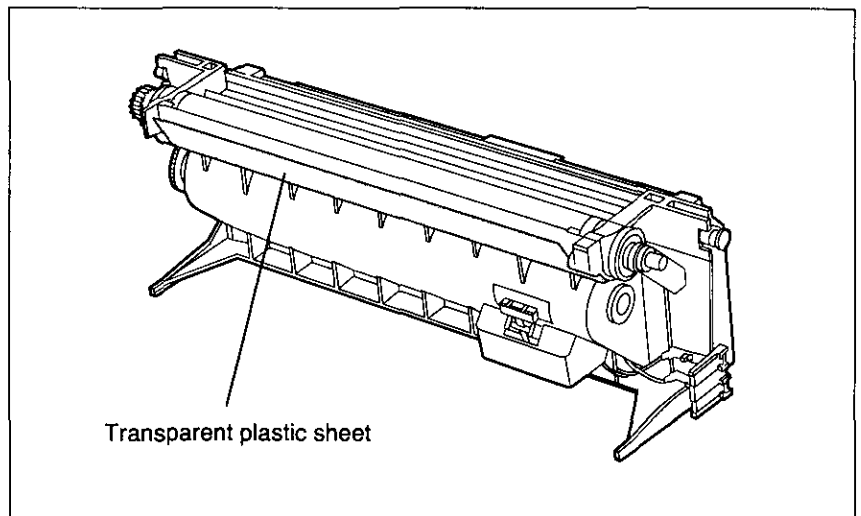
Be sure not to touch exposed developer after you remove the side seal cap.

Note:

Please keep the side seal cap in the event the printer must be repacked.

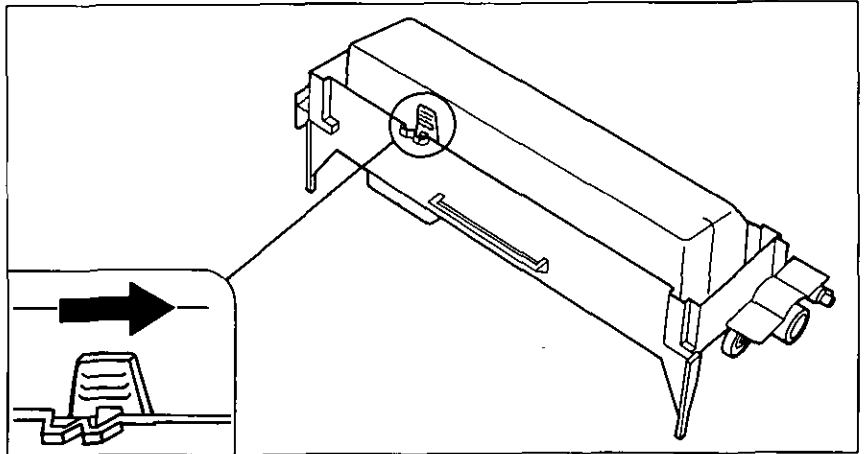
4

Clean the transparent plastic sheet with a soft cloth as shown in the figure.



5

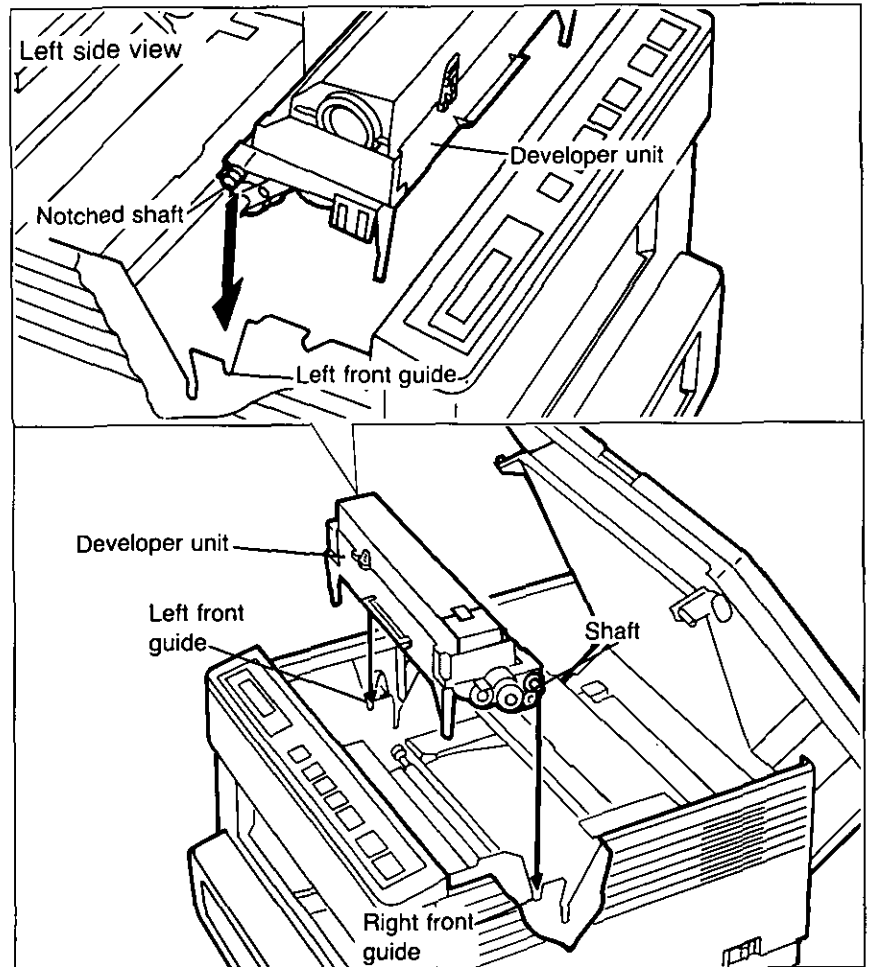
Verify toner cartridge is locked to developer unit.



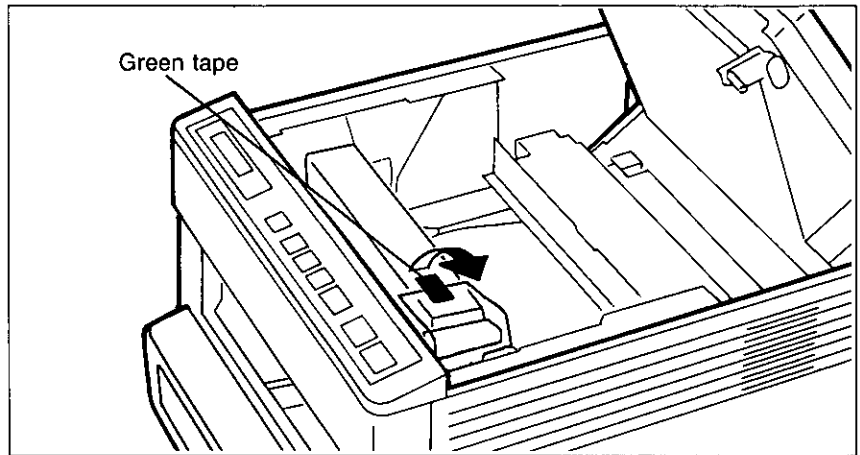
2

6

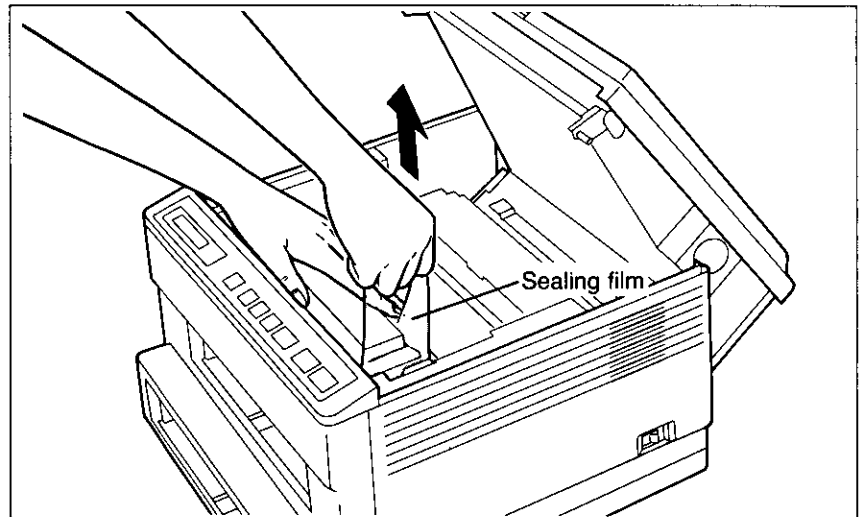
Install developer unit in front guides.
Be sure left notched shaft sets properly in left front guide.



7 Peel back green tape.



8 Hold developer unit in place, grasp clear plastic sealing film and pull upward to completely remove. Lightly tap top of toner cartridge to empty toner into developer unit.



Note:
Be careful handling sealing film since some toner residue may remain.

Drum Unit

Important:

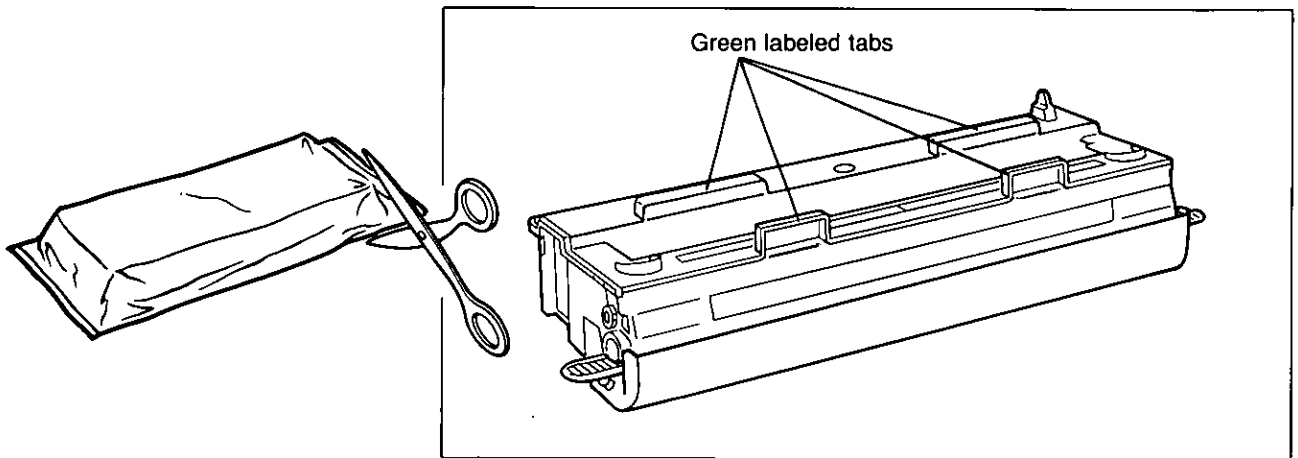
The drum unit contains a photosensitive drum. Exposing it to light may damage the drum. Do not open the protective bag until you've read the following instructions and are ready to install the drum unit. Once you've opened the protective bag:

- Do not expose the drum unit to light for more than 5 minutes.
- Do not touch the yellowish-green drum surface. Lift the drum unit by the green labeled tabs.
- Keep the drum unit away from dust or dirt.
- Do not place the drum unit in a high humidity area, and keep it out of direct sunlight.

1

Open protective bag.
Take out drum unit.

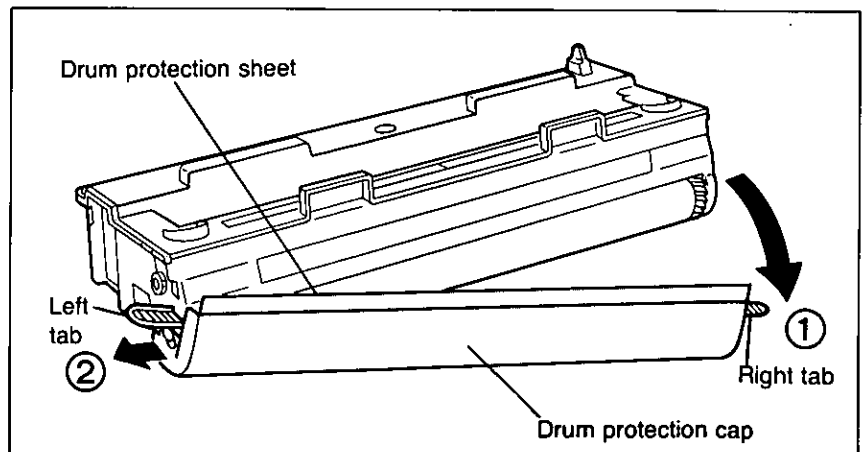
Lift the drum unit by the green labeled tabs.



2

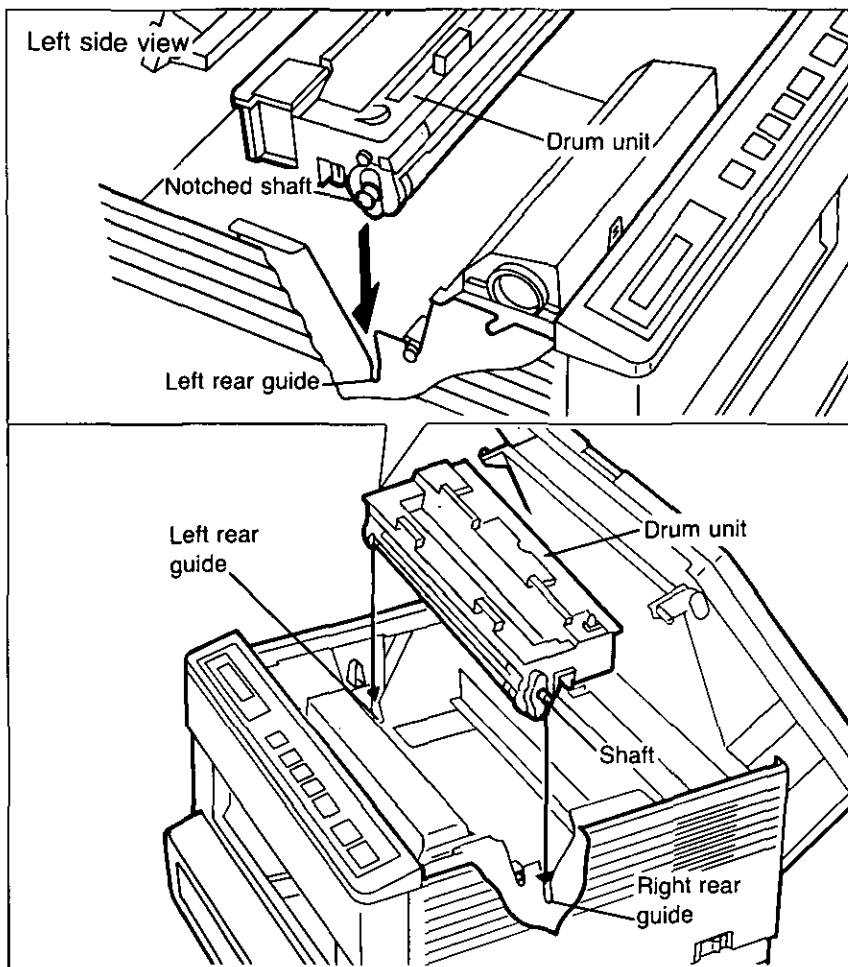
Remove drum protection cap and drum protection sheet by releasing right and left tabs.

Do not expose the drum unit to light for more than 5 minutes.
Do not touch the yellowish-green drum surface.



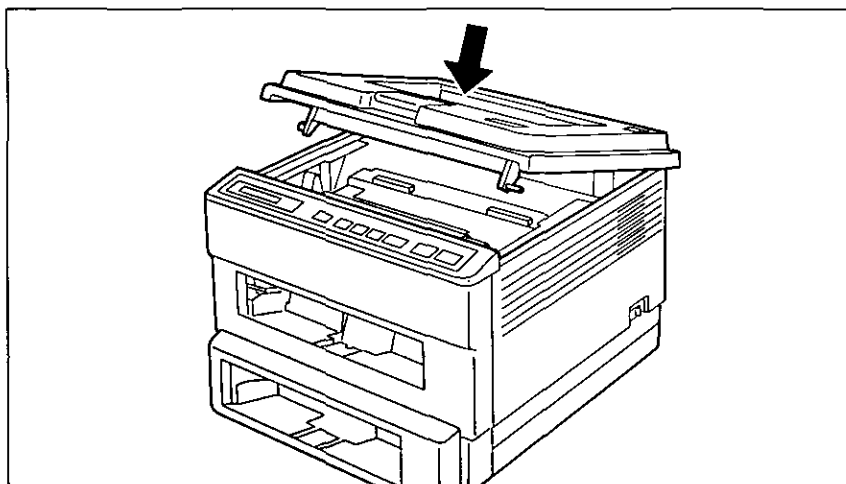
3

Install drum unit in rear guides.
Be sure left notched shaft sets properly in left rear guide.



4

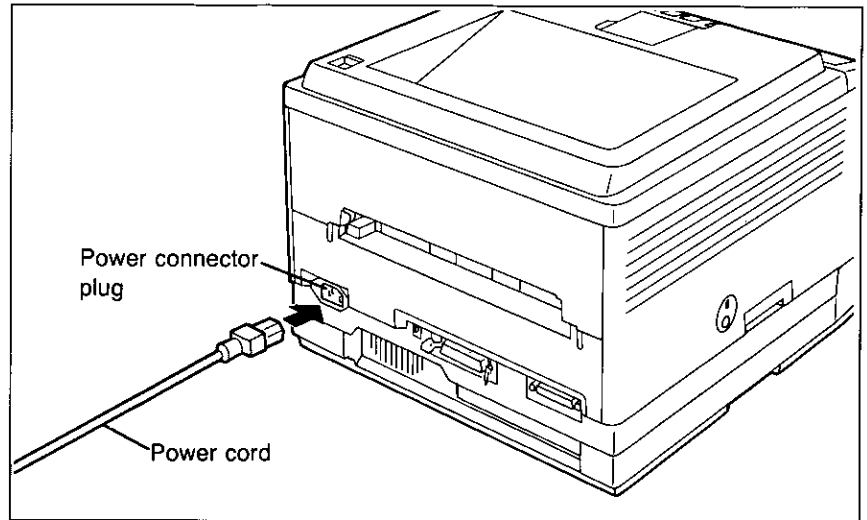
Close clamshell.



Power Cord

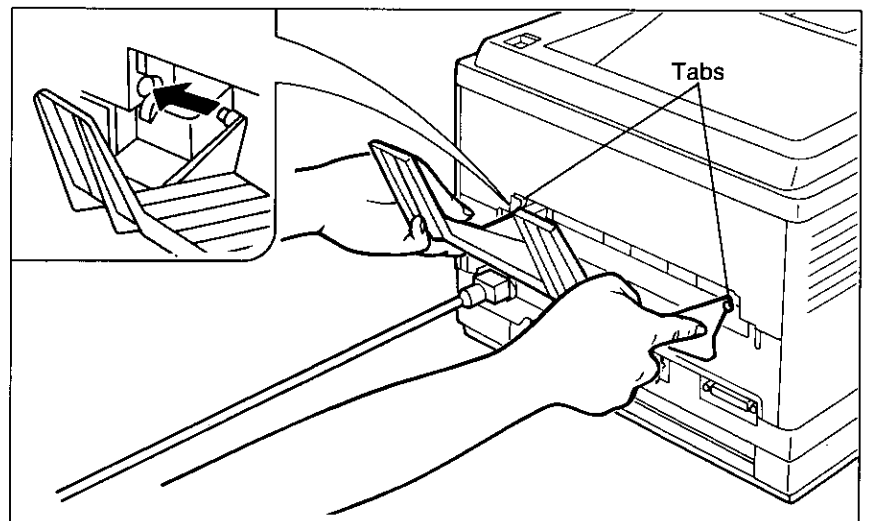
Connect power cord.

Be sure to turn OFF the power switch before you connect the power cord.



Face Up Output Tray

Insert left and right tabs as shown below.

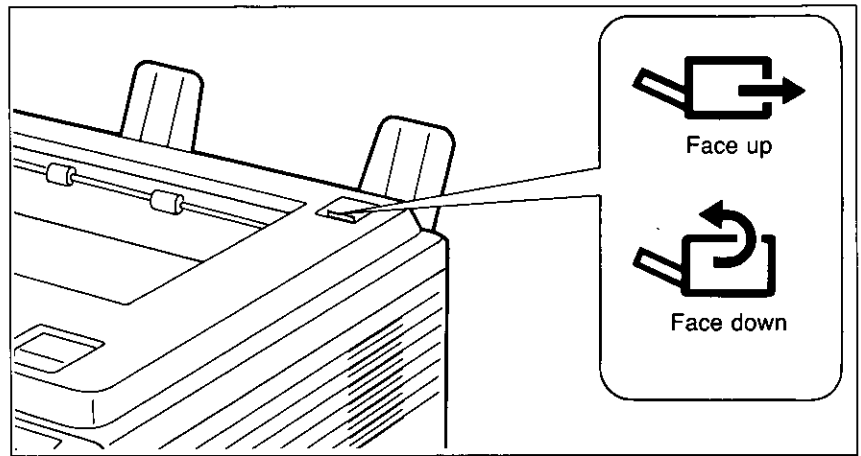


Note:

- Do not print more than 20 sheets at one time [75 g/m² (20 lb.)] through the face up output tray. This may cause a paper jam.
 - Print envelopes, OHP film and labels using the face up output tray to prevent jamming.
-

Output Tray Selector

The output tray selector switches the paper output between face up and face down.

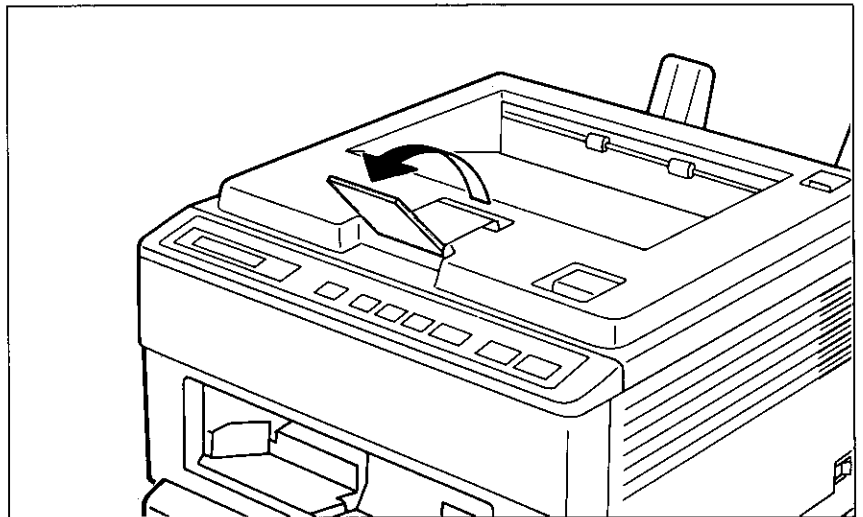


Note:

Do not switch the paper output while the printer is ejecting the paper. This may cause a paper jam.

Output Tray Extender

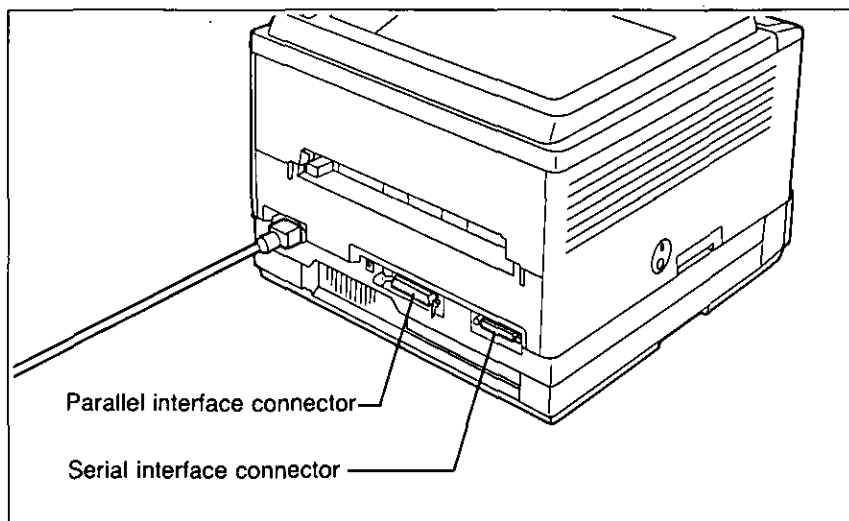
When using the face down output tray, flip the output tray extender forward.



2.4 Interfacing—Connecting Your Printer and Computer

The printer will operate with either a parallel or serial interface. It automatically selects the active interface when both are connected and Auto Switch is selected through the front panel.

If you do not have an interface cable, you will need to purchase one from your local computer store or dealer.

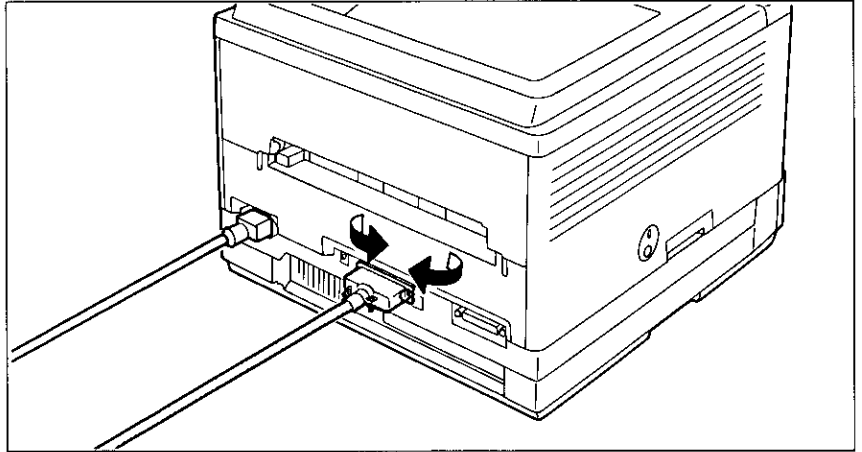


2

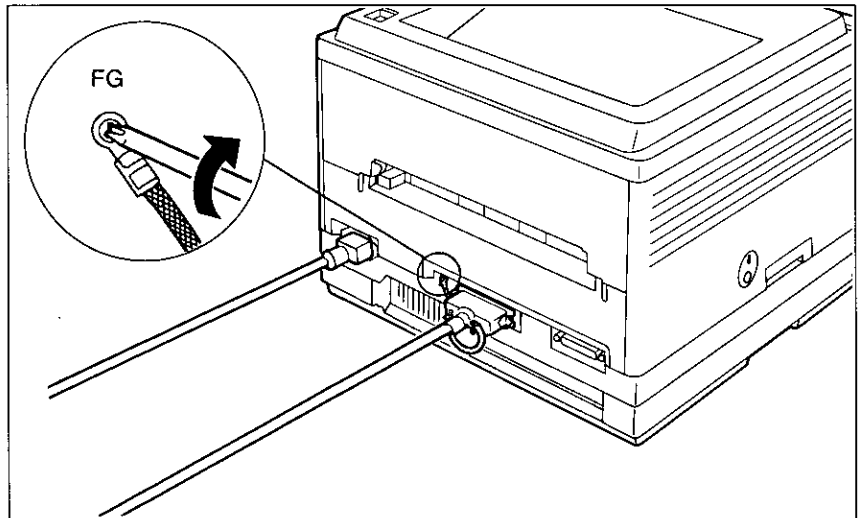
Connect the Parallel Interface Cable

1 Turn OFF both the printer and computer power switches.

2 Plug one end of the cable into the parallel interface connector of the printer.
Snap the clips into place.



If the cable has a frame ground wire, connect it to the frame ground terminal.



3 Plug the other end of the cable into the connector of the computer.

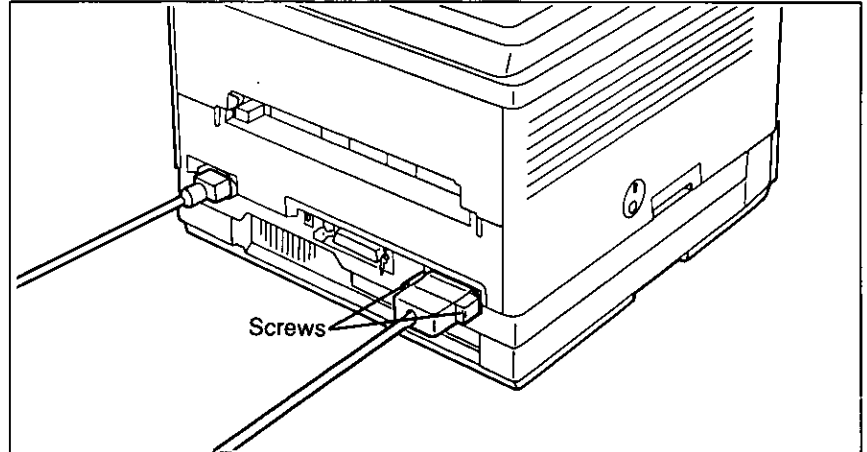
Connect the Serial Interface Cable

1

Turn OFF both the printer and computer power switches.

2

Plug one end of the cable into the serial interface connector of the printer. Tighten screws.



3

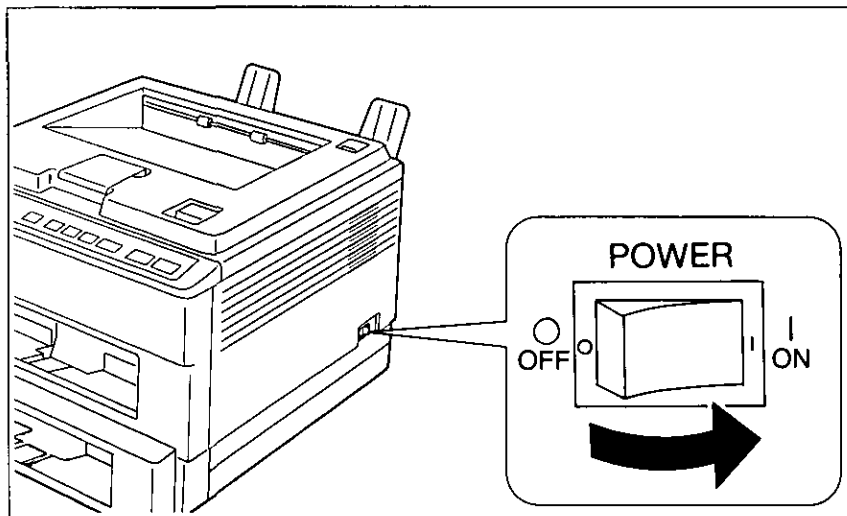
Plug the other end of the cable into the connector of the computer.

2.5 Power On

Make sure the printer is plugged into a 3 prong AC socket. The following procedures should be followed when turning the printer ON.

1 Plug the power cord into the outlet.

2 Turn the power ON.



The display will show:

WARM UP 00

After about 1.5 minutes, if the paper cassettes are not installed, the display will show:

PAPER EMPTY U11

Refer to the next section, to install the paper cassettes.

Note:

If error messages other than "PAPER EMPTY U11" are displayed, refer to Section 5.7 for clearing error messages.

2.6 Loading Paper and Installing Paper Cassettes

This printer has multi purpose upper and lower paper cassettes, and the upper cassette has a manual feed function.

You can adjust the cassettes from envelope size to legal size.

Feed \ Size	Letter	Legal	A4	Executive	Envelope	OHP Film	Label
Lower Cassette	○	○	○	○	—	—	—
Upper Cassette	○	○	○	○	△* ¹	—	—
Manual Feed	○	○	○	○	○* ¹	○	○

Table 2.1 Available Paper Size

*¹ Envelopes must meet specifications. (For details refer to pages 6-5 and 6-6.)

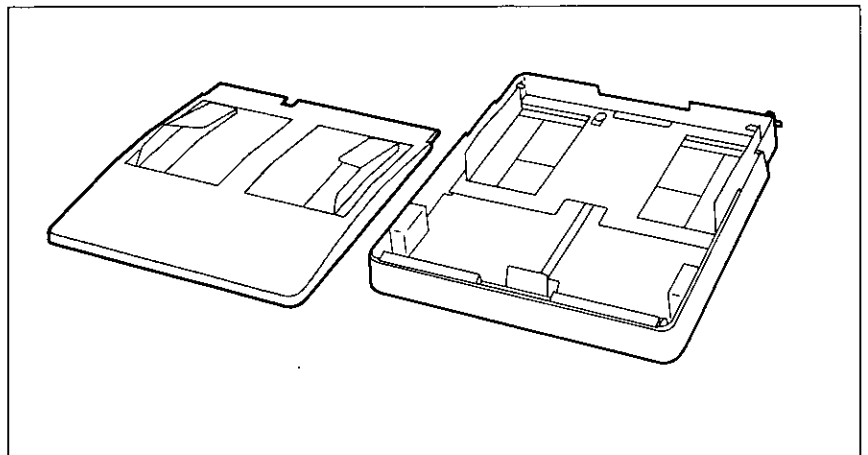
The paper size selected through the front panel or software commands should match the size of the paper in the cassette. If the selected paper size is different from the installed paper size, a paper jam may occur. Refer to “CASSETTE Menu” on page 3-27 for page formatting.

Loading Paper Except Legal Size Paper

Paper is loaded into the upper and lower cassette in the same manner. The figure below shows the upper cassette.

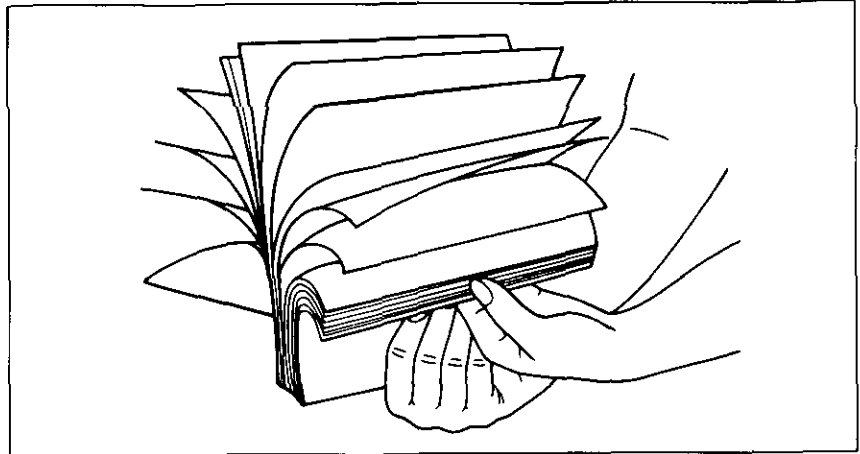
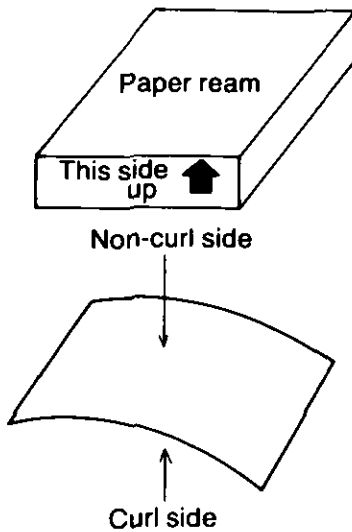
1

Remove paper cassette cover.



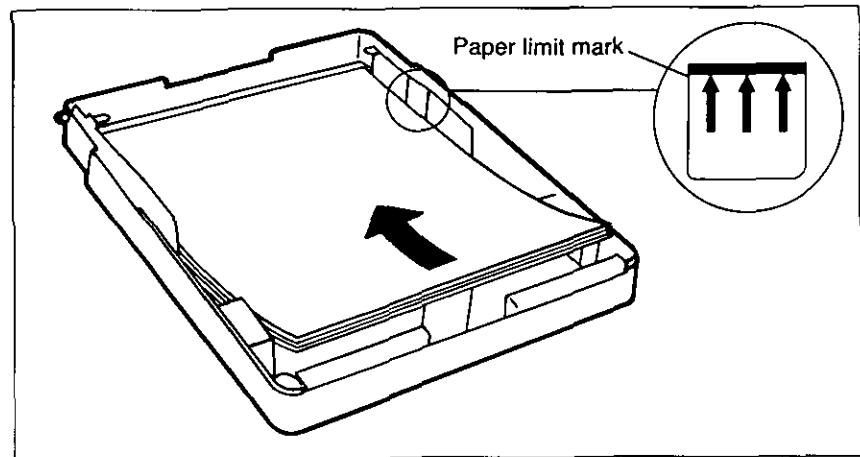
2

Fan the stack of paper.

**2****3**

Place paper in paper cassette.

The height of the paper should not exceed the limit mark on the paper cassette.

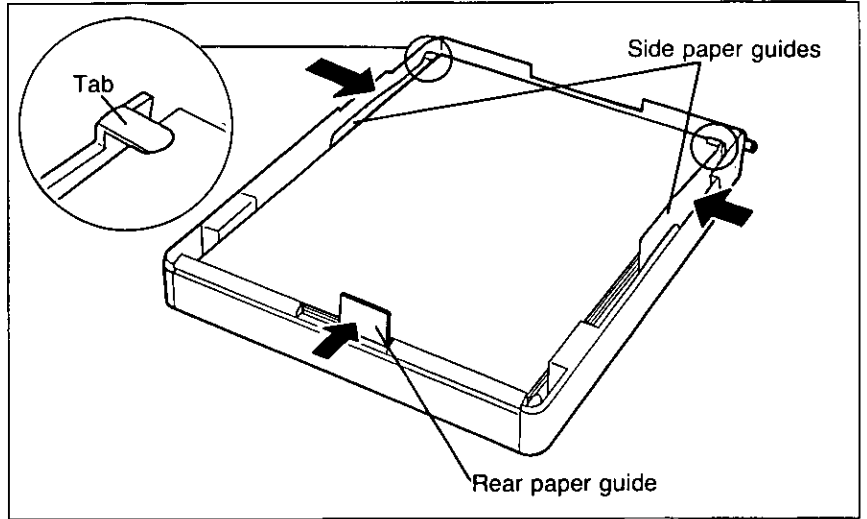


Notes:

- Do not load different types or thickness of paper in the same cassette since this may cause a paper jam.
 - Make sure you load the paper with the print side up. Most paper has instructions recommending the side to be printed first. Please follow these instructions when you load the paper cassette. However, when using 16 lb (60 g/m²) paper, always load the paper with the "non-curl side" up rather than following the instructions on the paper package.
 - For more detailed information on paper, refer to "Paper Specifications" in Section 6.2 on page 6-2.
-

4

Adjust the rear and side paper guides to the correct paper size. Be sure the edges of the paper are under the tabs.



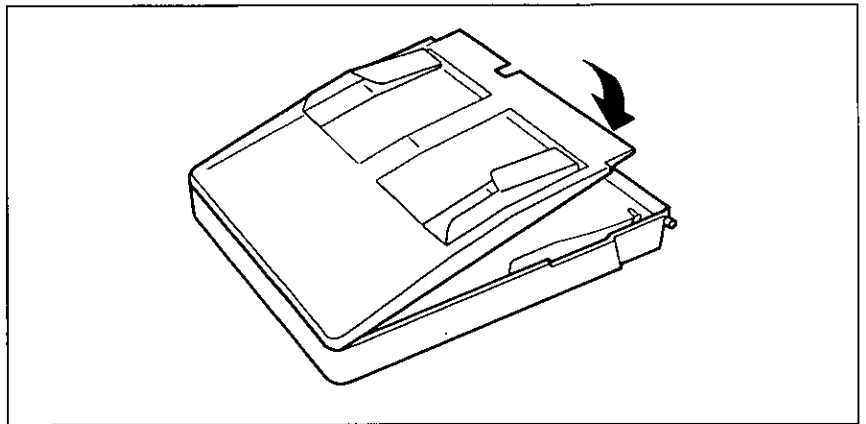
2

Note:

Properly adjust the side paper guides to fit the paper snugly. Improper adjustment may cause skewed paper-feeding, improper printing or a paper jam.

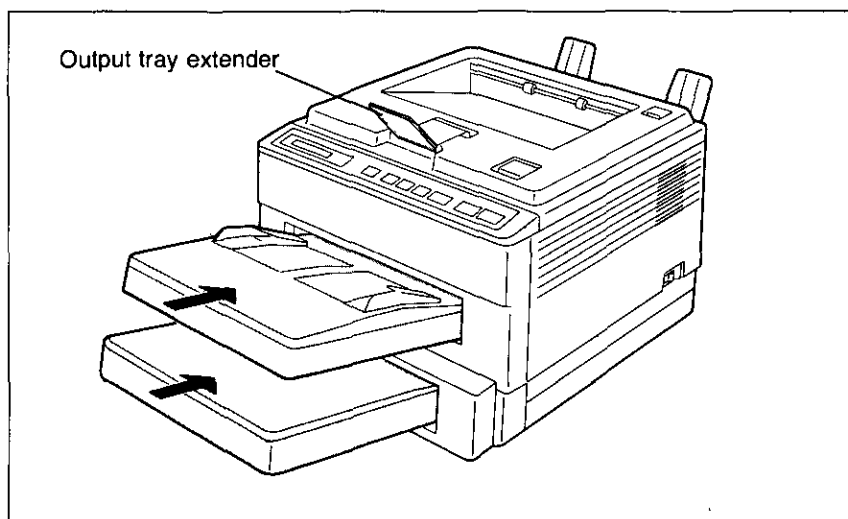
5

Re-install paper cassette cover.



6

Insert paper cassette into upper (lower) front opening. Make sure output tray extender is forward.

**7**

Verify the front panel displays the following message:

OFF LINE **

8

Set the paper size through the front panel. (Refer to page 3-27.)

Notes:

- The paper cassette with manual feed should be installed in the upper front opening.
- Failure to insert the tabs on the cassette sides into the edges in the printer completely may cause a paper jam or skewed paper-feeding.

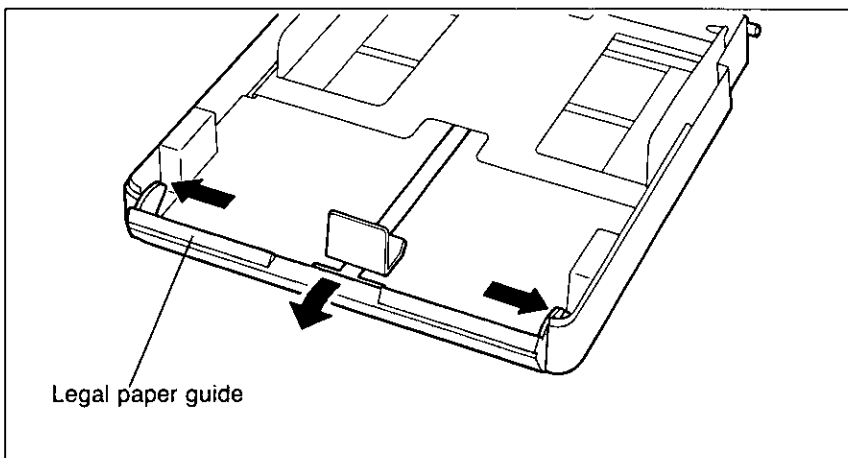
Caution

When setting up the printer for the first time, please allow the printer to warm-up before installing the paper cassette. Installation of the paper cassette before the warm-up period is complete may result in a paper jam. If a paper jam does occur please refer to Section 5.3.

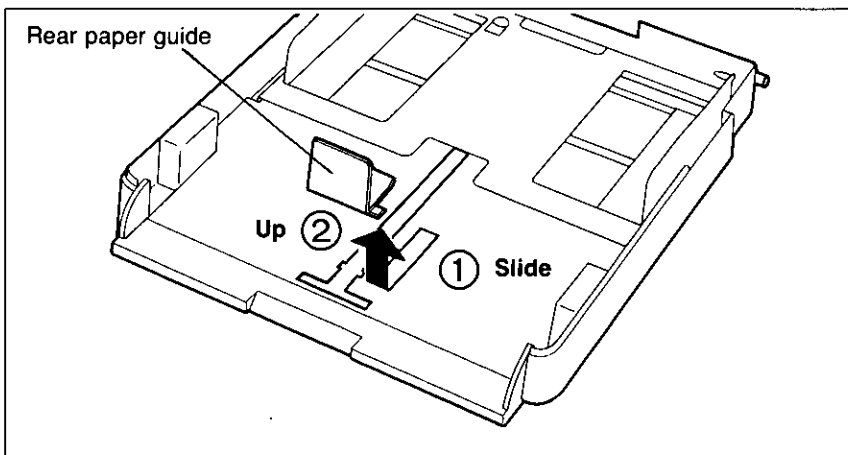
Loading Legal Paper (8 1/2" × 14")

1 Remove paper cassette cover.

2 Pull down legal paper guide while pressing both sides of the paper cassette to the outside.



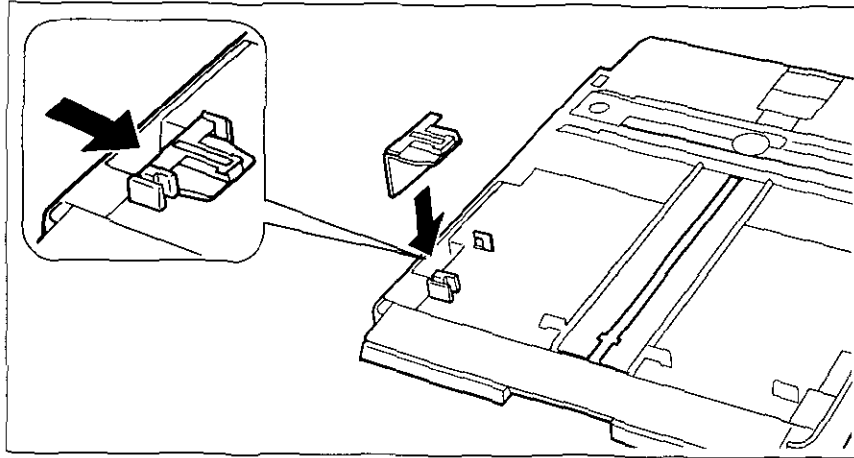
3 Remove rear paper guide.



2

4

Install rear paper guide on bottom of paper cassette for storage.



5

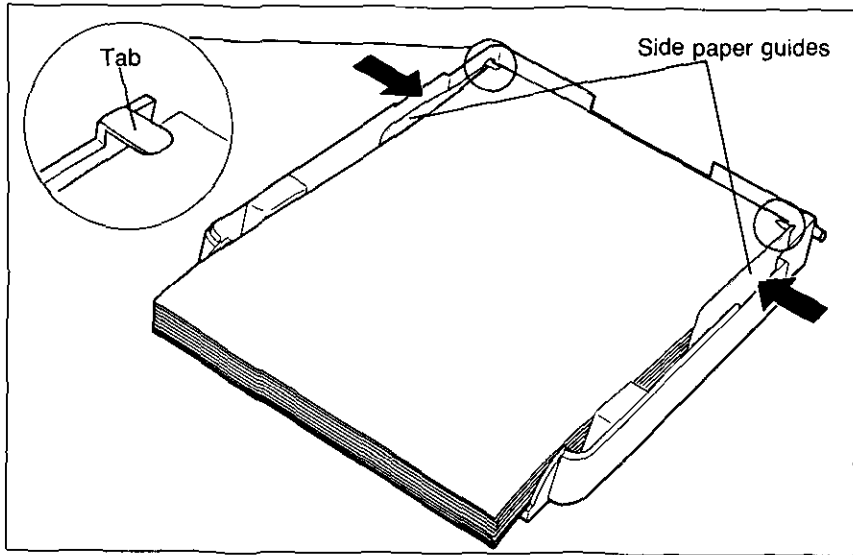
Fan the stack of paper.

6

Place legal paper in paper cassette. Do not exceed the paper limit mark.

7

Adjust the side paper guides to the paper size.
Be sure the edges of the paper are under the tabs.



Note:

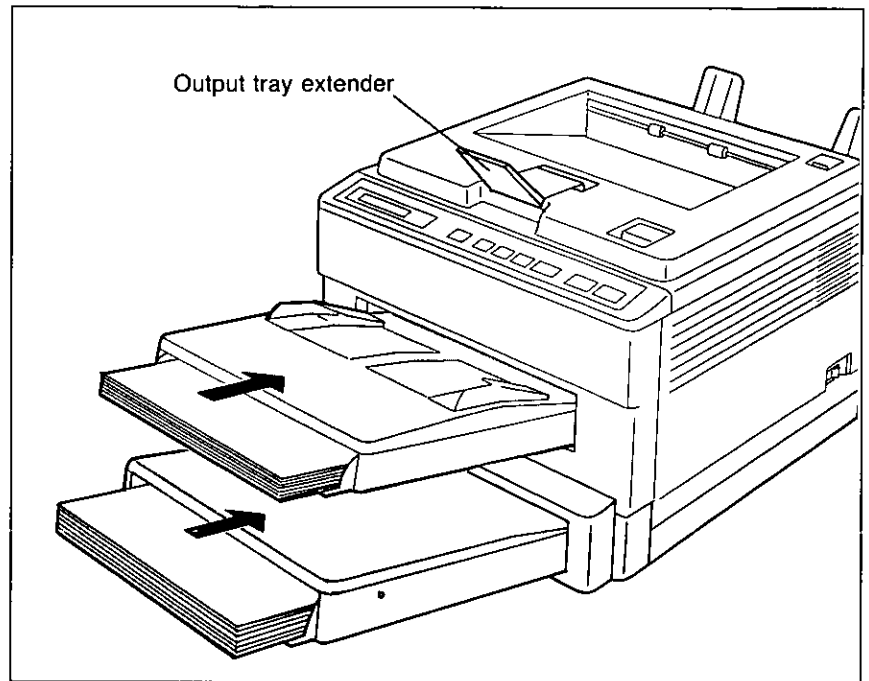
Properly adjust the side paper guides to the paper. Improper adjustment may cause skewed paper-feeding, improper printing or a paper jam.

8

Re-install paper cassette cover.

9

Insert paper cassette into upper (lower) front opening.
Make sure output tray extender is forward.



Note:

Failure to insert the tabs on the cassette sides into the edges in the printer completely may cause a paper jam or skewed paper-feeding.

10










Set the paper size to legal through the front panel. (Refer to page 3-28.)

2.7 Manual Feed

If you wish to print a single sheet of different size paper, you should use the manual feed function.

Before installing the paper, set the manual feed using the front panel (refer to page 3-27) or through software commands (refer to the "Paper Input Control" on the *Software Commands Manual*).

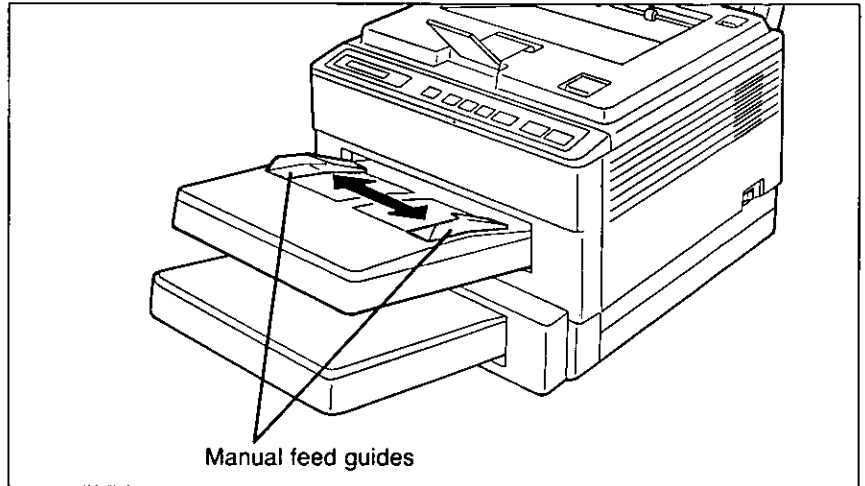
Setting the Manual Feed through the Front Panel

	Operation	Display/Description
1	Press 	OFF LINE **
2	Press 	EMULATION
3	Press  / 	Press the key until the display shows: MANUAL FEED
4	Press 	OFF
5	Press  / 	ON
6	Press 	Manual feed is operational. OFF LINE **
7	Press 	The MANUAL indicator will be lit. ON LINE **

Loading Paper for the Manual Feed

1

Adjust manual feed guides to accommodate your sheet of paper.

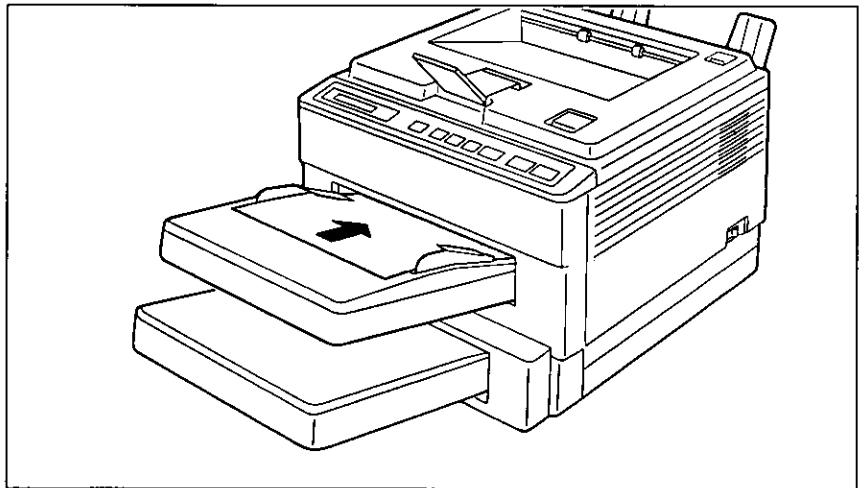


2

2

Be sure that the MANUAL indicator is lit.

Insert a sheet of paper between manual feed guides until you feel resistance.



3

Send data from the computer to the printer.

The printer will start printing when the print data transfer has been completed.

Caution

- Do not insert paper while the printer is feeding paper since this may cause a paper jam.
 - When you use the manual feed function, the paper cassette should contain paper since a jam may occur if the cassette is empty.
-

Notes:

- The paper cassette with manual feed must be on the upper cassette.
- Labels and OHP films should use the manual feed function.
- We recommend using manual feed when you print envelopes.
- Print envelopes, labels and OHP films using the face up output tray to prevent creasing.
- Minimum and maximum paper dimensions that can be fed from the manual feed are shown below.

Paper size:

Width; 3.5" (88 mm) to 8.5" (216 mm)

Length; 6.3" (160 mm) to 14" (355.6 mm)

Weight: 16 to 35 pounds (60 g/m² to 135 g/m²)

2.8 Envelopes

This printer prints envelopes by using either the manual feed or multi purpose paper cassette.

You can use Business Commercial #10, Business Commercial #9, Monarch, International DL and International C5 (manual feed only).

However, when using the multi purpose paper cassette, envelope types and condition, as well as temperature and humidity conditions, may affect accurate feeding and print quality. **For optimum print quality, manual feed is recommended.**

The paper size selected by the front panel or software commands should match the size of the paper in cassette. If the selected paper size is different from the installed paper size, a paper jam may occur. Refer to "CASSETTE Menu" on page 3-27 for page formatting and "Paper Sizes" on page 6-3 for selecting the envelope size.

2

Using Manual Feed

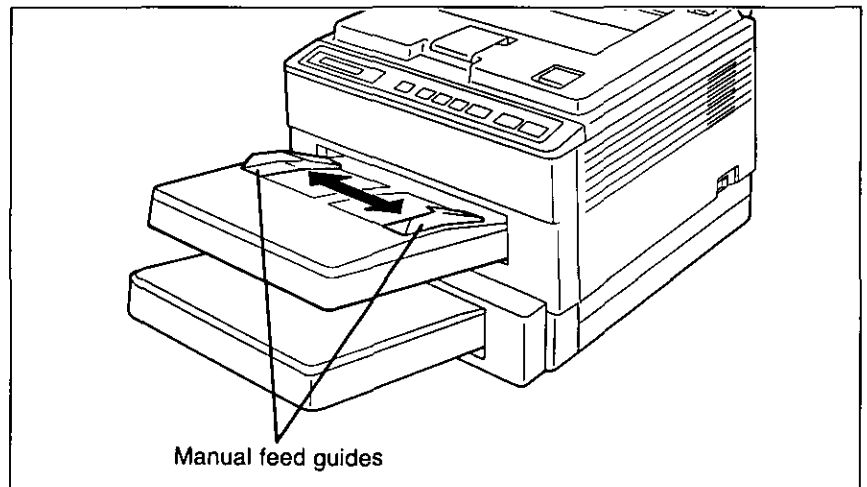
Make sure paper cassette with paper is installed. See section 2.6 for details.

1

Turn Manual Feed ON using front panel. The MANUAL indicator will be lit. See page 2-22.

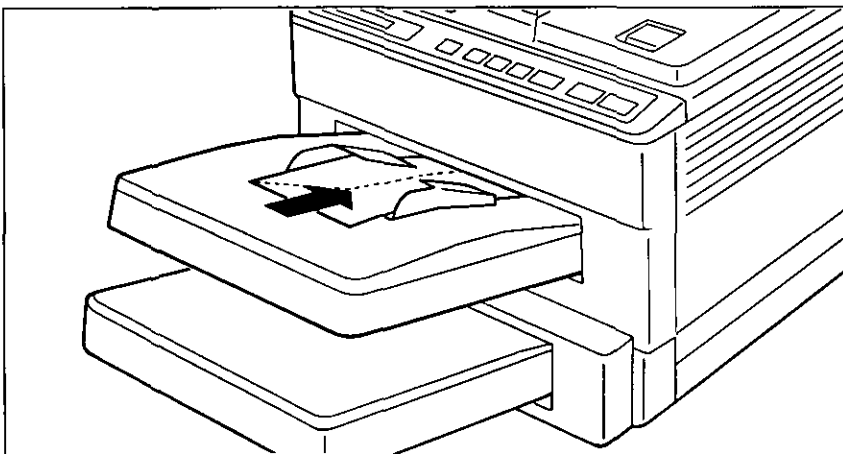
2

Adjust manual feed guides to fit your envelope.



3

Insert envelope, with side to be printed facing up, between manual feed guides until you feel resistance.



Note:

When installing an envelope, the flap should be underneath and to the left.

Using Upper Paper Cassette

Notes:

- When using the upper paper cassette, it is strongly recommended that you test your envelopes before purchasing them, to ensure desirable performance.
 - For International C5, print with manual feed only.
 - To avoid paper jam, do not load more than 10 envelopes in the paper cassette at one time.
 - If you are setting up this printer for the first time, please allow the printer to complete its warm-up cycle before installing the paper cassette.
-

1

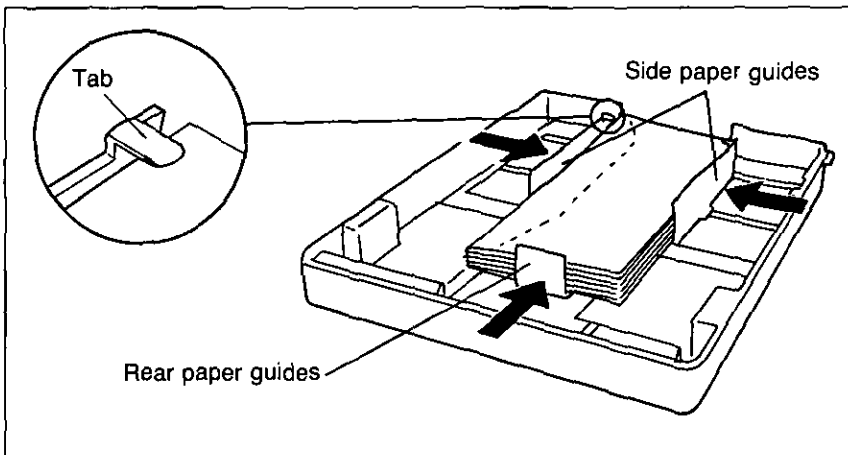
Remove cover from paper cassette.

Fan stack of envelopes.

Place envelopes in paper cassette to the paper limit mark with flap underneath and to the left (maximum 10 envelopes).

2

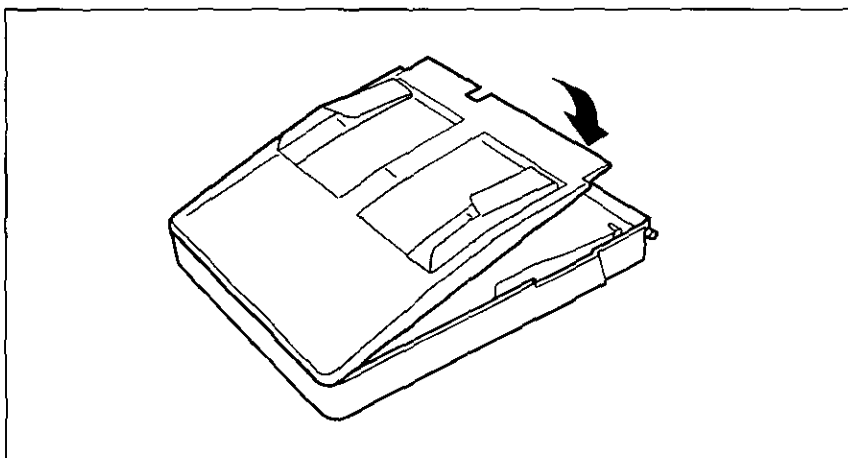
Adjust rear and side paper guides to envelope size.
Be sure envelopes are under tabs.



2

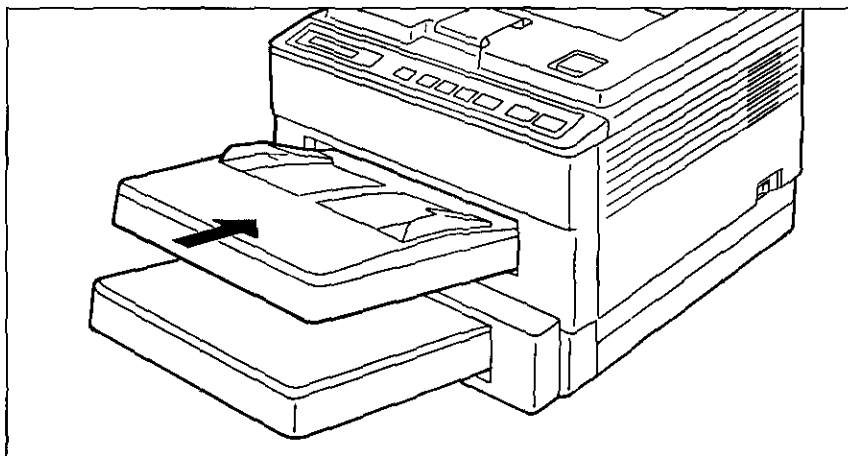
3

Re-install paper cassette cover.



4

Insert paper cassette by firmly pushing cassette into front upper opening.



5

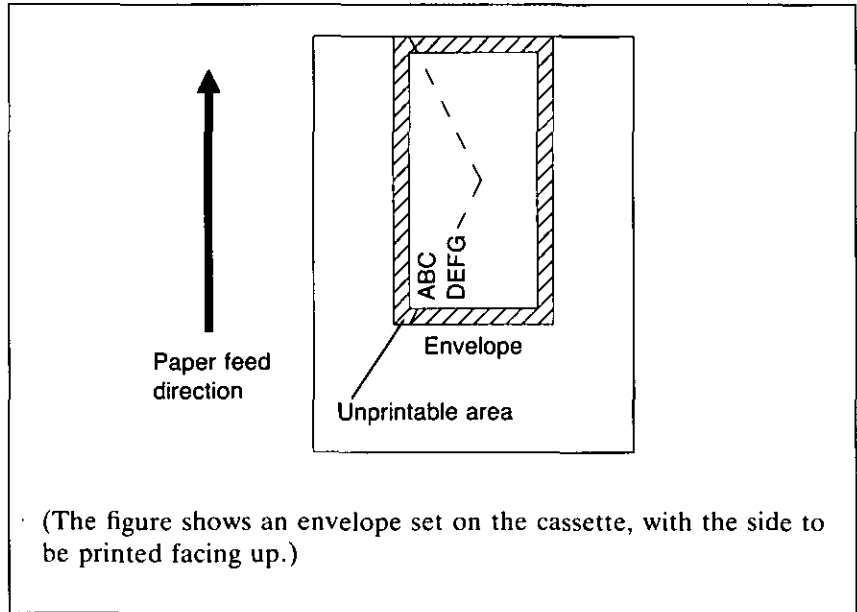
Verify front panel displays the following message:

OFF LINE **

6

Set the paper size to your envelope size through the front panel.
(Refer to "CASSETTE Menu" on page 3-27.)

The origin in the landscape printing mode is set on the upper left corner of the envelope as shown below:



2.9 Test Printing




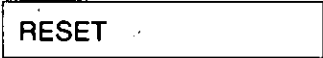
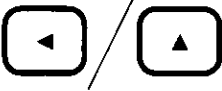
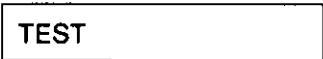






The initial 20 to 30 prints of a drum unit may be noticeably less dense than subsequent prints.

Test printing is operational only in the OFF LINE mode.

Status Printing

This printer has a status print feature that provides the printer configuration and print menu settings selected through the front panel key operations. The printer will feed a single sheet of paper with the current configuration selected via the front panel.















2

	Operation	Display/Description
1	Press 	
2	Press 	
3	Press 	
4	Press 	
5	Press 	The printer will output the STATUS PRINT. 
6	Press 	

Font List Printing




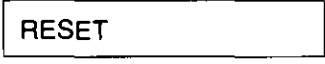











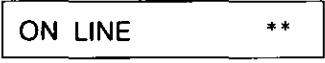
This printer has a font list feature which prints the fonts that can be selected through the front panel key operations.

The printer will output paper with a list of the available fonts including the font source, font number, name, pitch, points size and available symbol sets.

	Operation	Display/Description
2 1	Press 	
2	Press 	
3	Press 	
4	Press 	
5	Press 	Press the key until the display shows: 
6	Press 	The printer will output the FONT LIST PRINT. 
7	Press 	

Character Printing

This printer has a character print feature that will output a full set of ASCII characters in the font selected through the front panel.

	Operation	Display/Description
1	Press 	
2	Press 	
3	Press  / 	
4	Press 	
5	Press  / 	Press the key until the display shows: 
6	Press 	The printer will output the CHARACTER PRINT. 
7	Press 	

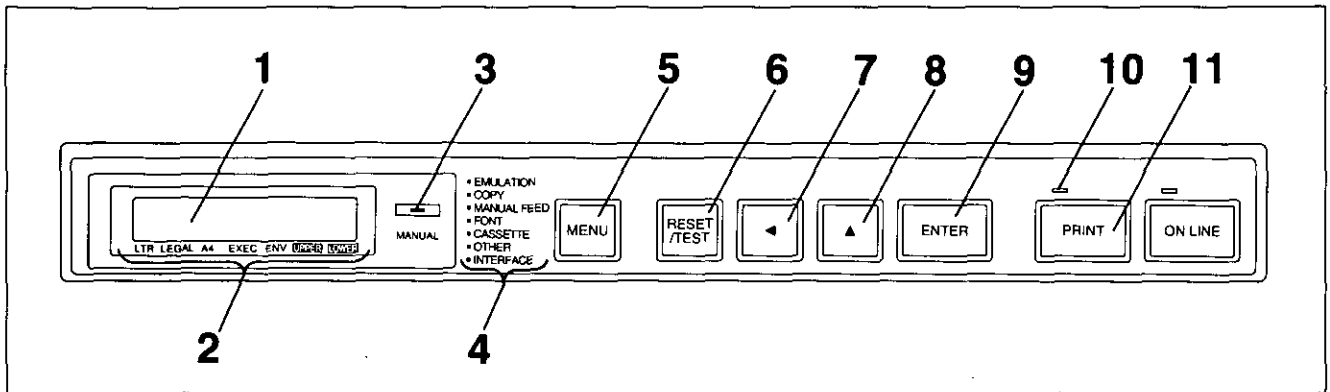
3. Front Panel—All It Takes Is a Touch

3.1 Front Panel Description

The front panel keys allow you to configure your printer to communicate properly with the computer and to set the desired print conditions.

A 16-character LCD display prompts the user with operational messages. When changing settings using the front panel, these messages will guide you through the steps. The display will also indicate the appropriate error message so that you may take corrective action.

Your KX-P4440 has been set, at the factory, to the most commonly used setting. Please check the Factory Default Settings on page 3-44 before changing settings through the front panel. In many cases, your software can control printer functions, eliminating the need to change front panel settings.



Front panel

1 Liquid Crystal Display (LCD)

The KX-P4440 has a 16-character LCD to prompt the user with messages and instructions.

2 Display Guidance

5 labels on the left indicate the selection of paper size; **LTR** (Letter), **LEGAL** (Legal), **A4** (A4), **EXEC** (Executive) and **ENV** (Envelope).

2 labels on the right indicate the selection of cassettes; **UPPER** (Upper cassette) and **LOWER** (Lower cassette).

3 MANUAL Indicator

The **MANUAL** indicator is lit when the **MANUAL FEED** mode is selected.

4 MENU List

A list of menus available in menu mode.

(Refer to page 3-5 “What You Can Perform Through the Front Panel”.)

5 MENU Key

The **MENU** key allows you to enter and exit the menu mode.

6 RESET/TEST Key

The **RESET/TEST** key allows you to enter the **RESET/TEST** operation.

(Refer to page 3-40 “Using the **RESET** Key” and page 3-42 “Using the **TEST** Key”.)

7 ◀ Key

The ◀ key advances the item on the display to the next selection. When you enter a numerical value, the ◀ key allows you to move to the next numerical column.

8 ▲ Key

The ▲ key advances the item on the display to the next selection. When you enter a numerical value, the ▲ key increases the current digit by one.

9 ENTER Key

The ENTER key selects the modes or values shown on the display through the menu mode and makes the desired selection operational.

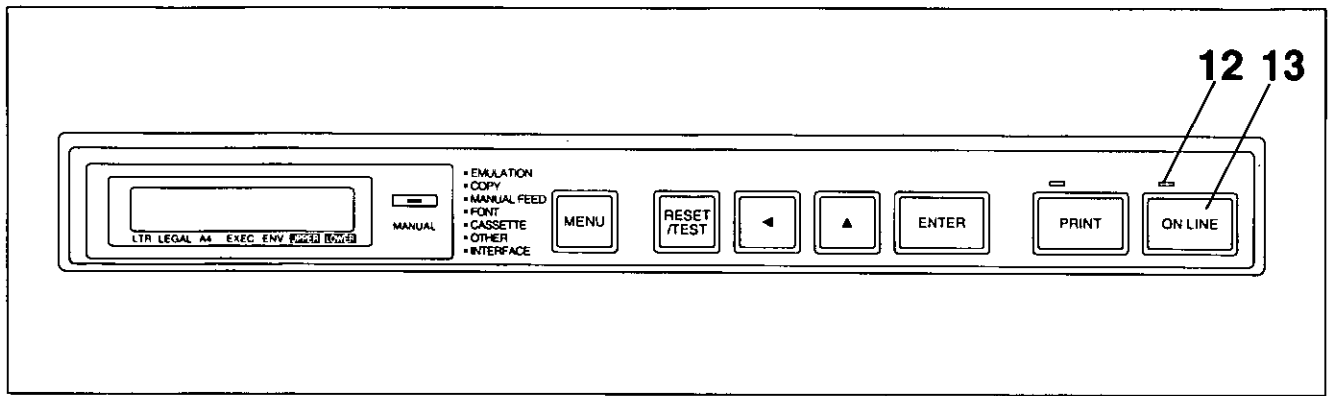
10 PRINT Indicator

The PRINT indicator blinks while data is being received by the printer, and is lit when data remains in the printer.

lit: data remains in the printer
off: data is empty
blink: data is being received by the printer

11 PRINT Key

The PRINT key prints all remaining data in the printer. Data remains in the print buffer when the printer is not in print start condition. For example, when the FF command is not included at the end of the data stream sent from the computer, data will remain in the print buffer.



Front panel

12 ON LINE Indicator

The ON LINE indicator allows you to know whether the printer is in ON LINE or OFF LINE.

lit: ON LINE mode

off: OFF LINE mode

blink: ON LINE key has been pressed when the printer is printing.

13 ON LINE Key

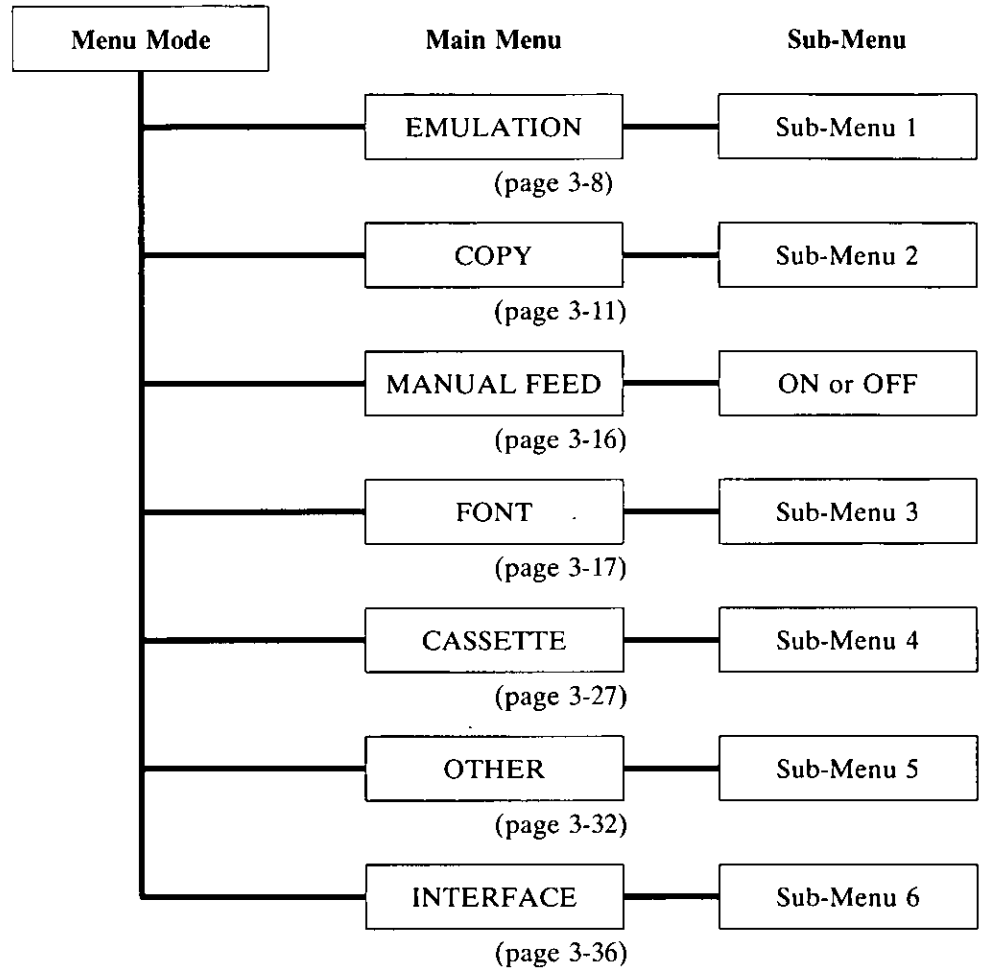
The ON LINE key is an alternate action key which opens (ON LINE mode) and closes (OFF LINE mode) the communications line with the computer.

If the ON LINE key is pressed when the printer is printing, the ON LINE indicator blinks until the printing stops and then, the printer goes OFF LINE.

All other keys are active only after the OFF LINE mode has been selected.

3.2 What You Can Perform Through the Front Panel

You can enter the menu mode by pressing the MENU key while in the OFF LINE mode. Menu mode is composed of a main menu and sub-menus that allow you to select modes and parameters. These menus are diagrammed in the following flow chart.



Menu mode flow chart


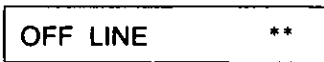

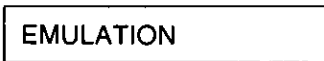



Easy Access to Menu Mode





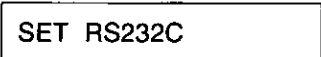






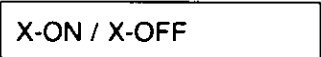

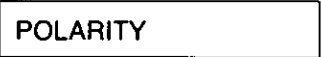
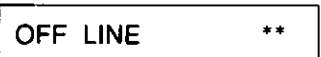
Example: Front Panel Operation Chart

Main Menu	Sub-Menu						
	Level 1	Level 2	Level 3	Level 4			
EMULATION	(See Table 3.1 to 3.8.)						
COPY							
⋮							
INTERFACE	SELECT INTERFACE	AUTO SWITCH*	CENT.BUFF SIZE	1KB*	4KB	64KB	
			232C BUFF SIZE	1KB*	4KB	64KB	
		CENTRONICS	CENT.BUFF SIZE	1KB	4KB	64KB	
		RS232C	232C BUFF SIZE	1KB	4KB	64KB	
	SET RS232C	PROTOCOL		DTR*			
				X-ON / X-OFF			
		POLARITY		MARK*			
				SPACE			
		⋮	⋮				
		STOP BIT		1 STOP BIT*			
2 STOP BITS							

(* = Factory default setting)

Example for Setting the Parameter of RS-232C:

	Operation	Display/Description
1	Press 	You have entered the OFF LINE mode. 
2	Press 	You have entered the menu mode. You will see this menu just after you pressed the MENU key. 
3	Press  / 	Press the key until the display shows:  You have selected the INTERFACE menu.

	Operation	Display/Description
4	Press 	You have entered the level menu. 
5	Press  / 	Press the key until the display shows: 
6	Press 	You have entered Level 2. 
7	Press 	You have entered Level 3. 
8	Press  / 	
9	Press 	You have made the selection operational, and the message will automatically show the Level 2 message.  Return to Step 7 to change other parameters. If the setting of STOP BIT has been completed, the printer will exit the menu mode. 

If you wish to EXIT the menu mode,

- Press the **ON LINE** key.
The display will show "ON LINE". The printer will return to the ON LINE mode.

or

- Press the **MENU** key.
The display will show "OFF LINE". The printer will remain in the OFF LINE mode.

In the both cases, the settings that have been selected with the ENTER key will be active.

EMULATION Menu




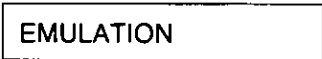




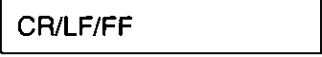


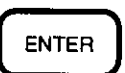



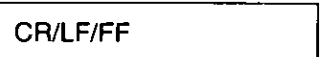
The EMULATION Menu sets the desired printer emulation from Panasonic LP (HP LaserJet Series III), Diablo or IBM modes.


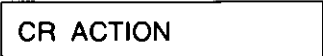


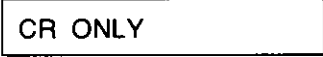


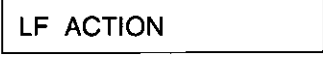





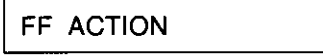


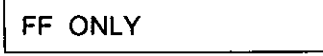
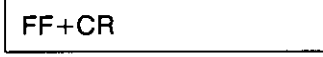

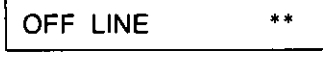

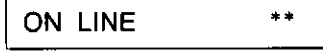
Main Menu	Sub-Menu 1		
	Level 1	Level 2	Level 3
EMULATION	Panasonic LP*		
	Diablo	PITCH	10
			12
			15
		CHARACTER SET	USA
			DENMARK/ NORWAY
			ENGLAND
			FRANCE
			GERMANY
			ITALY
			SWEDEN/ FINLAND
	SPAIN		
	IBM	PRINT MODE	NORMAL
			EMPHASIS
			DOUBLE WIDTH
		CHARACTER SET	IBM CHAR. SET 1
			IBM CHAR. SET 2
	CR/LF/FF	CR ACTION	CR ONLY*
			CR+LF
		LF ACTION	LF ONLY*
			LF+CR
FF ACTION (Panasonic LP, Diablo only)		FF ONLY*	
		FF+CR	

Table 3.1 EMULATION menu operation chart

(* = Factory default setting)

Selecting the Emulation:

	Operation	Display/Description
1	Press 	
2	Press 	
3	Press 	The display will show the level 1 message.
4	Press  / 	Display the selection you desire.
5	Press 	Make the Panasonic LP emulation operational.  <ul style="list-style-type: none">•If you wish to exit the mode, jump to Step 17. or•The display will show the level 2 message.
6	Press  / 	Display the selection you desire.
7	Press 	The display will show the CR/LF/FF Level 3 message.
8	Press  / 	Display the selection you desire.
9	Press 	 <ul style="list-style-type: none">•If you wish to exit the mode, jump to Step 17. or•If you wish to set CR/LF/FF, advance to Step 10.

	Operation	Display/Description
10	Press 	
11	Press  / 	 or 
12	Press 	
13	Press  / 	 or 
14	Press 	
15	Press  / 	 or 
16	Press 	Make the selection operational. 
17	Press 	

3

COPY Menu

The **COPY** menu sets the number of copies to be printed. When multiple copies are required, this function eliminates the need for the computer to send the data to the printer more than once.

The **VERIFY** mode allows you to check that the page being printed is correct before outputting multiple copies using the copy feature. With the **VERIFY** mode enabled the first copy of each page will print. The front panel will then show a message asking whether or not to continue printing the remaining copies. "YES" will continue with the rest of the copies; "NO" will cancel the copies of that page and continue to the next page.




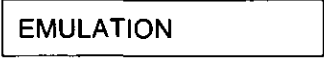


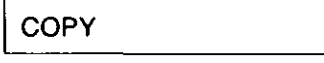

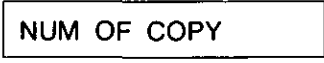






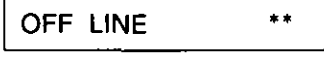

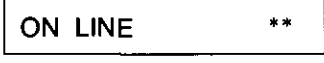
Main Menu	Sub-Menu 2		Function
	Level 1	Level 2	
COPY	NUM OF COPY	COPY = **	
	VERIFY	OFF*	Continuously prints out all pages you set.
		ON	Prints out one page before printing out all pages you set.

Table 3.2 COPY menu operation chart




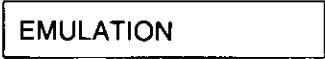




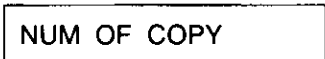


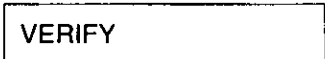

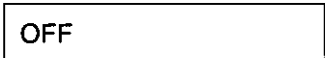


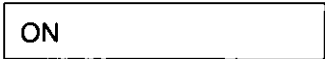

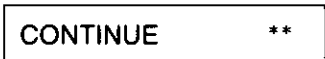

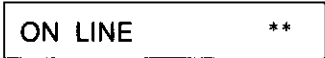
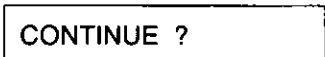
(* = Factory default setting)

- Factory default setting of the number of copies is "01".

Setting the Number of Copies:

	Operation	Display/Description
1	Press 	
2	Press 	
3	Press  / 	Press the key until the display shows: 
4	Press 	
5	Press 	
6	Press  / 	Display the number of copies you desire. 
7	Press 	Makes the selection operational: 
8	Press 	

Setting the Verify Mode:

	Operation	Display/Description
1	Press 	
2	Press 	
3	Press  / 	Press the key until the display shows: 
4	Press 	
5	Press  / 	
6	Press 	
7	Press  / 	
8	Press 	
9	Press 	
10	Send data from your computer.	The printer will output one page. 

	Operation	Display/Description
--	-----------	---------------------

11

Press



YES

- If you wish to continue printing, jump to Step 13.
- If you wish to discontinue printing, advance to Step 12.

12

Press



NO

13

Press



If you selected YES:

ON LINE **

The printer will resume printing the remaining page(s).

ON LINE **

or

If you selected NO, the printer will clear data of the page.

ON LINE **

The printer will print the first page of the next print data (if it exists).

CONTINUE ?

Return to Step 11, until the print out of all print data has been completed.

ON LINE **

If you wish to discontinue printing all print data, execute CLEAR BUFFER in the RESET function (refer to "Using the RESET Key" on page 3-40).

Caution

If you execute the CLEAR BUFFER in the RESET function to discontinue printing, the remaining print data, as well as the first print data, will be cleared.

Notes:

- In verify mode, the “CONTINUE ?” message will display for 30 seconds. If you do not press the ENTER key within this time, the printer automatically assumes “YES” and will print out the remaining copies.
 - The Maximum number of copies you can select is 99 (if you select “00”, the printer will automatically reset to “01”).
 - The reset command (ESC “E”) returns the number of copies setting to the value set by the front panel.
-

MANUAL FEED

The **MANUAL FEED** menu sets the **MANUAL FEED** mode to **ON** or **OFF** as shown in Table 3.3. You may insert a sheet of paper manually at any time but, after printing that sheet, the printer will default to the selected cassette.


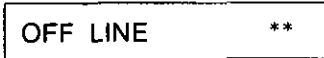

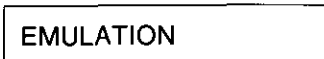



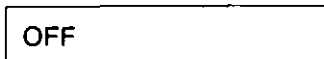

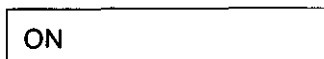




MANUAL FEED ON or **OFF** can be permanently saved as a power on default when saved via the **PERMANENT SAVE** function of the **OTHER** menu.

Main Menu		Function
MANUAL FEED	OFF*	Normally feeds paper from the paper cassette, but if there is a sheet of paper in the manual feed, the printer will feed the paper inserted in the manual feed.
	ON	Only feeds paper from the manual feed.

Table 3.3 MANUAL FEED menu operation chart

(* = Factory default setting)

Selecting the Manual Feed:

	Operation	Display/Description
1	Press 	
2	Press 	
3	Press 	Press the key until the display shows: 
4	Press 	
5	Press 	
6	Press 	Makes the manual feed setting operational. 
7	Press 	The MANUAL indicator will be lit. 

FONT Menu

The FONT menu allows you to select a default font, ZERO CHARACTER and FONT GROUP. The default font can be selected from among RESIDENT or FONT CARD, if an optional font card is installed, SOFT FONT, if downloaded fonts are present, UPLOADED FONT, if uploaded fonts are present. The following table shows all of the items you can select in the FONT menu.

Main Menu	Sub-Menu 3					
	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
FONT	RESIDENT	For Panasonic LP	BITMAP FONTS	COURIER 10*	(Displays of symbol sets shown in Table 3.5*1 on page 3-19.)	
				COURIER 10 BOLD		
				COURIER 10 ITA.		
				COURIER 12		
				COURIER 12 BOLD		
				COURIER 12 ITA.		
				COURIER 15		
				COURIER 15 ITA.		
				COURIER 17		
				COURIER 17 ITA.		
				COURIER 20		
				CENTURY PS		
				CENTURY PS BOLD		
				CENTURY PS ITA.		
			OUTLINE FONTS	CG TIMES	*** ** POINTS (4.00 to 999.75)	
				CG TIMES ITALIC		
				CG TIMES BOLD		
				CG TIMES BD ITA.		
				UNIVERS		
				UNIVERS ITALIC		
				UNIVERS BOLD		
				UNIVERS BD ITA.		
			<p>(Displays of symbol sets shown in Table 3.5*1 on page 3-19.)</p>			

Table 3.4 FONT menu operation chart (continued)

(* = Factory default setting)

Main Menu	Sub-Menu 3			
	Level 1	Level 2	Level 3	Level 4
FONT	RESIDENT	For Diablo & IBM	COURIER 10	
			COURIER 10 BOLD	
			COURIER 10 ITA.	
			COURIER 12	
			COURIER 12 BOLD	
			COURIER 12 ITA.	
			COURIER 15	
			COURIER 15 ITA.	
			COURIER 17	
			COURIER 17 ITA.	
			COURIER 20	
			CENTURY PS	
			CENTURY PS BOLD	
	CENTURY PS ITA.			
	SOFT FONT* ²	SOFT FONT B###* ⁶	(Displays all available symbol sets for each font selected in Level 2.)	(Displays all available symbol sets for each font selected in Level 2.)
		SOFT FONT O###* ⁷	*** ** POINTS (4.00 to 999.75)	
	UPLOADED FONT* ³	UPLOAD FONT ###	(Displays all available symbol sets for each font selected in Level 2.)	
FONT CARD* ⁴	EXT. FONT ###	(Displays all available symbol sets for each font selected in Level 2.)		
UPLOAD FONT CARD* ⁵	NO			
	YES			
ZERO CHARACTER	0*			
	Ø			
FONT GROUP	FONT GROUP 1*			
	FONT GROUP 2			
	FONT GROUP 3			

Table 3.4 FONT menu operation chart

(*=Factory default setting)

- *1 Factory default setting of symbol set is Roman-8.
 *2 The SOFT FONT menu is displayed only when downloaded fonts are available.
 *3 The UPLOADED FONT menu is displayed only when uploaded fonts are available.
 *4 The FONT CARD menu is displayed only when a font card is installed in the font card slot.
 *5 The UPLOAD FONT CARD menu is displayed only when a font card is installed in the font card slot.
 *6 B###=Bitmap fonts ###
 *7 O###=Outline fonts (Intellifont Scalable Typefaces) ###

Caution

When uploading a font card, do not remove the font card from the font card slot until UPLOAD FONT CARD has been completed and the display shows "OFF LINE".

Symbol Sets

A symbol set is the set of printable characters.

The following table lists the Symbol Set Display Number and the corresponding symbol names.

Display	Symbol Set	Display	Symbol Set
8U	Roman-8	6S	ISO 85: ISO Spanish: IBM
0U	ISO 6: US ASCII	4S	ISO 16: ISO Portuguese
0E	Roman-8 Extensions	5S	ISO 84: ISO Portuguese: IBM
0N	ISO 100: ECMA-94 (Latin 1)	0D	ISO 60: ISO Norwegian Version 1
10U	PC-8	1D	ISO 61: ISO Norwegian Version 2
11U	PC-8 Danish/Norwegian	12U	PC-850
1U	Legal		Outline Fonts (Intellifont Scalable Typefaces)
2U	ISO 2: International Reference Version	6M	VN Math: Ventura Math
1E	ISO 4: United Kingdom	13J	VN Intl: Ventura International
0F	ISO 25: ISO French	14J	VN US: Ventura US
1F	ISO 69: ISO French	5M	PS Math: PS Math
0G	German	10J	PS Text: PS Text
1G	ISO 21: ISO German	8M	Math-8: Math-8
0I	ISO 15: ISO Italian	15U	Pi Font: Pi Font
0K	ISO 14: JIS ASCII	6J	MS Publ: Microsoft Publishing
2K	ISO 57: ISO Chinese	9U	Windows: Windows
3S	ISO 10: ISO Swedish/Finnish	7J	DeskTop: DeskTop
0S	ISO 11: ISO Swedish: names		
1S	Spanish		
2S	ISO 17: ISO Spanish		

Table 3.5 Symbol set

Font Group

FONT GROUP allows you to select available fonts by group.

	Font Group		
	1	2	3
Courier 10	A	A	A
Courier 10 Bold	A	A	A
Courier 10 Italic	A	A	A
Courier 12	A	A	A
Courier 12 Bold	A	A	A
Courier 12 Italic	A	A	A
Courier 15	A	A	—
Courier 15 Italic	A	A	—
Courier 17*	A	A	A
Courier 17* Italic	A	A	—
Courier 20	A	A	—
Century PS	A	—	—
Century PS Bold	A	—	—
Century PS Italic	A	—	—
CG Times PS	A	A	A
CG Times PS Italic	A	A	A
CG Times PS Bold	A	A	A
CG Times PS Bold Italic	A	A	A
Univers PS	A	A	A
Univers PS Italic	A	A	A
Univers PS Bold	A	A	A
Univers PS Bold Italic	A	A	A

Table 3.6 Font groups

A=active
—=not active

Courier 17* is actually 16.66 cpi (cpi=characters per inch).

Font group 1 selects all resident fonts.




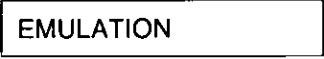






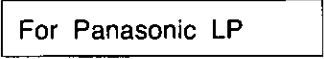
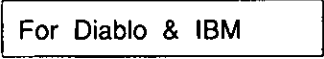






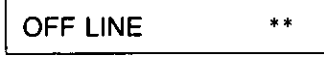
Font group 2 selects all resident fonts except Century.











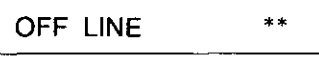


Font group 3 selects LaserJet Series III resident fonts.

Notes:

- When an optional font card is installed in the font card slot, resident Century PS fonts are automatically disabled. If you have selected FONT GROUP 1, the printer will automatically switch to FONT GROUP 2 when a font card is installed. To re-enable the Century PS fonts, re-select FONT GROUP 1 through the front panel.
- When you set the FONT, we recommend that you select the FONT GROUP first. If you change the font group from FONT GROUP 1 to FONT GROUP 2 or 3 after selecting Century PS as a default font, Courier 10 will be substituted as the default font.

Selecting the Resident Font:

	Operation	Display/Description
1	Press 	
2	Press 	
3	Press  / 	Press the key until the display shows: 
4	Press 	
5	Press 	 or 
6	Press  / 	Display the selection you desire.
7	Press 	The display will show the Level 3 message.
8	Press  / 	Display the name of the font you desire.
9	Press 	Makes the selection of a font for Diablo & IBM operational.  •Jump to Step 16. or •The display will show the Level 4 message.




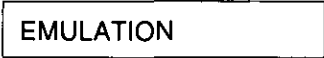








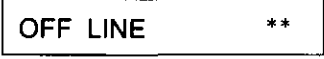
	Operation	Display/Description
10	Press  / 	Display the font you desire.
11	Press 	The display will show the Level 5 message.
12	Press  / 	Display the symbol set number or the point size you desired.
13	Press 	Makes the selection of symbol sets for bitmap fonts operational.  •Jump to Step 16. or •The display will show the symbol set for outline fonts (Intellifont Scalable Typefaces) or Level 6 (refer to Table 3.5 on page 3-19).
14	Press  / 	Display the symbol set display number you desire for outline fonts (Intellifont Scalable Typefaces).
15	Press 	Makes the selection of symbol sets for outline fonts (Intellifont Scalable Typefaces) operational. 
16	Press 	

Notes:




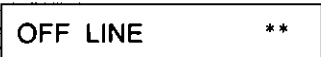



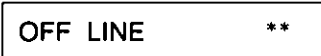

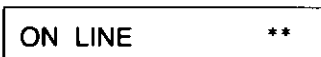
- To select the default font...
 1. Select a font source
 2. Select the desired font
 3. Select the desired symbol set
- When the memory in RAM is not sufficient to upload fonts, the display will show "CANCEL JOB".
- The printer will enable users to upload a maximum of four font cards.
- The maximum number of fonts users can use is 84.

Selecting the Font Card, Soft Font, Uploaded Font or Upload Font Card:




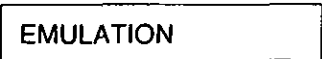
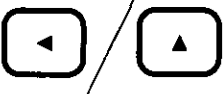
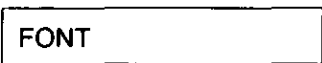

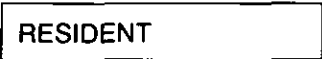



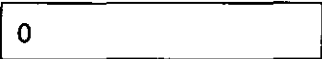

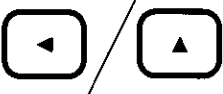

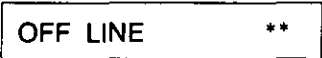


The printer enables the selection of these menus with a font card, downloaded or uploaded fonts present.

	Operation	Display/Description
1	Press 	
2	Press 	
3	Press 	Press the key until the display shows: 
4	Press 	
5	Press 	Display the selection you desire.
6	Press 	The display will show the Level 2 message.
7	Press 	Display the selection you desire.
8	Press 	Makes the selection of NO or YES in the UPLOAD FONT CARD operational.  •Jump to Step 13. or •The display will show the Level 3 message.


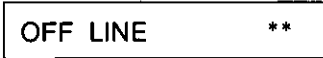









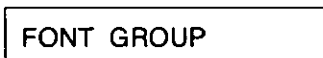

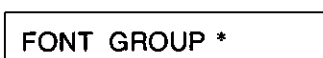






3

	Operation	Display/Description
9	Press  / 	Display the symbol set or the point size you desire.
10	Press 	Makes the selection of the symbol sets in Level 3 operational.  •Jump to Step 13. or •The display will show the Level 4 message of SOFT FONT.
3 11	Press  / 	Display the symbol set you desire.
12	Press 	Makes the selection operational. 
13	Press 	

Setting the Zero Character:

	Operation	Display/Description
1	Press 	
2	Press 	
3	Press 	Press the key until the display shows: 
4	Press 	
5	Press 	
6	Press 	 or 
7	Press 	Display the zero character you desire.
8	Press 	
9	Press 	

Setting the Font Group:

	Operation	Display/Description
1	Press 	
2	Press 	
3	Press  / 	Press the key until the display shows: 
4	Press 	
5	Press  / 	Press the key until the display shows: 
6	Press 	 (* = 1, 2 or 3)
7	Press  / 	Display the font group you desire (refer to Table 3.6 on page 3-20).
8	Press 	Makes the selection operational. 
9	Press 	

CASSETTE Menu

The **CASSETTE** menu determines the format (portrait and landscape). Setting the orientation, paper size, origin X and Y, lines per inch, page length and width, top, bottom, left and right margins completes formatting of the page. Refer to Section 4.2 "Page Formatting" in the *Software Commands Manual*.

The **CASSETTE** menu sets one of three paper feeding modes from cassette; upper cassette, lower cassette and auto mode. The printer supplies paper from the upper cassette in upper mode, from lower cassette in lower mode, and if one cassette is empty when the two cassettes are set to the same paper size, supplies paper from the other cassette in auto mode.

The paper size selected by the front panel or software commands should match the size of the paper in the cassette. If the selected paper size is different from the installed paper size, a paper jam may occur.

Main Menu	Sub-Menu 4								
	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6			
CASSETTE	CASSETTE SEL.	LOWER CASSETTE*							
		UPPER CASSETTE							
		AUTO MODE*1							
	LOWER FORMAT	LETTER	PORTRAIT	ORIGIN X	*** DOT COLUMNS*2				
				ORIGIN Y	*** DOT ROWS*2				
				LINES PER INCH	** LPI*2				
				PAGE LENGTH	# OF INCHES	**.** INCHES*2			
					# OF LINES	*** LINES			
				PAGE WIDTH	# OF INCHES	**.** INCHES*2			
					# OF COLUMNS	**** COLUMNS			
				TOP MARGIN	# OF INCHES	**.** INCHES*2			
					# OF LINES	*** LINES			
				BOTTOM MARGIN	# OF INCHES	**.** INCHES*2			
					# OF LINES	*** LINES			
				LEFT MARGIN	# OF INCHES	**.** INCHES*2			
					# OF COLUMNS	**** COLUMNS			
				RIGHT MARGIN	# OF INCHES	**.** INCHES*2			
					# OF COLUMNS	**** COLUMNS			
						LANDSCAPE	Same selections as PORTRAIT mode.		

Table 3.7 CASSETTE menu operation chart (continued)

(* = Factory default setting)

Main Menu	Sub-Menu 4					
	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
CASSETTE	LOWER FORMAT	LEGAL	Same selections as LETTER mode.			
		A4				
		EXECUTIVE				
	UPPER FORMAT	LETTER	Same selections as LOWER FORMAT mode.			
		LEGAL				
		A4				
		EXECUTIVE				
		ENVELOPE #10				
		ENVELOPE #9				
		MONARCH				
		INTERNATIONAL DL				
INTERNATIONAL C5						

Table 3.7 CASSETTE menu operation chart

(* = Factory default setting)


















- *1 AUTO MODE is available only when lower paper cassette and upper paper cassette are same paper size.
- *2 For the factory default setting of dot columns, dot rows and inches when setting the default paper size to LETTER, refer to Section 3.4 "Factory Default Settings" on page 3-44.

Note:




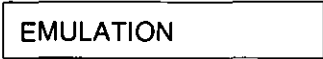


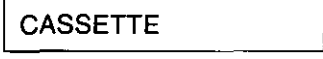










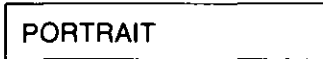



The number value of dot columns, dot rows and lines (***) depends on the paper size selected.











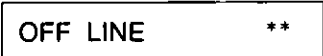


Selecting the Paper Feed from the Cassette:

AUTO MODE is available only when lower paper cassette and upper paper cassette are same paper size.

	Operation	Display/Description
1	Press 	
2	Press 	
3	Press  / 	Press the key until the display shows: 
4	Press 	
5	Press 	The display will show the Level 2 message.
6	Press  / 	Display the cassette selection mode you desire.
7	Press 	Makes the selection operational. The display will show the Level 1 message.  or  <ul style="list-style-type: none">•If you wish to exit the mode, advance to Step 8.or•If you wish to format a page, start at Step 6 in "Formatting the Page" on the next page.
8	Press 	

Formatting the Page:

	Operation	Display/Description
1	Press 	
2	Press 	
3	Press  / 	Press the key until the display shows: 
4	Press 	
5	Press  / 	 or 
6	Press 	The display will show the Level 2 message.
7	Press  / 	Display the paper size you desire.
8	Press 	 or 
9	Press  / 	Display the page orientation you desire.

	Operation	Display/Description
10	Press 	The display will show the Level 4 message.
11	Press  / 	Display the selection you desire.
12	Press 	The display will show the Level 5 message.
13	Press  / 	Display the value or selection you desire.
14	Press 	Makes the selection in ORIGIN X , ORIGIN Y or LINES PER INCH operational. The display will show the Level 4 message. Return to Step 11. or The display will show the Level 6 message.
15	Press  / 	Display the value of INCHES , LINES or COLUMNS in PAGE LENGTH , PAGE WIDTH , TOP MARGIN , BOTTOM MARGIN , LEFT MARGIN and RIGHT MARGIN .
16	Press 	Makes the selection operational. The display will show the Level 4 message. Return to Step 11 to set the other selections. If the setting of RIGHT MARGIN has been completed, 
17	Press 	

OTHER Menu

The **OTHER** menu allows selection and setting of the functions shown in Table 3.8.

Main Menu	Sub-Menu 5			Function	
	Level 1	Level 2	Level 3		
OTHER	PWR ON STAT PRT	OFF*		Does not print a status page.	
		ON		Prints the printer status and active settings when powered on.	
	POWER SAVE	OFF*		Always supplies full power to the printer.	
		ON	30 MINUTES		Reduces power supplied to the printer if data has not been received within the set time.
			1 HOUR		
	2 HOURS				
	HEX DUMP	OFF*		Prints normal ASCII characters.	
		ON		Prints all data received from the computer in hexadecimal form (Function codes for the printer: CR, LF, HT, etc. are not executed).	
	DATA TIME OUT*1	ON*	*** SEC	Automatically prints the remaining data when the computer does not send data to the printer during a present time (minimum 10 seconds).	
		OFF		Does not print the remaining data.	
	AUTO CONTINUE	OFF*		Error conditions are not recovered automatically.	
		ON		Automatically goes ON LINE in approximately 10 seconds, when an error condition occurs, which can be recovered by the ON LINE key.	
	SatinPrint	ON*	MIDDLE*	Achieves higher quality printing of text and graphics by smoothing the edges of the printed image. The SatinPrint option has three choices: MIDDLE, HIGH and LOW.	
			HIGH		
			LOW		
	OFF		Prints normal images.		
	PERMANENT SAVE	NO*		The status set through the front panel key operations is not stored and is not active when the power is turned on.	
		YES		The status set through the front panel key operations is stored as default settings and remain even if the power is turned off.	
	LANGUAGE	ENGLISH*		Selects the display language. The display language set through the front panel key operations is stored as default setting and remains even if the power is turned off.	
		FRENCH			
GERMAN					
SPANISH					
ITALIAN					

Table 3.8 OTHER menu operation chart (continued)

(* = Factory default setting)

Main Menu	Sub-Menu 5		Function
	Level 1	Level 2	
OTHER	PAGE PROTECTION*2	OFF*	Does not reserve additional memory for PAGE PROTECTION.
		LETTER	Additionally reserves memory to process the entire page (in memory) composed with very dense or complex graphics and text before printing out the page. This setting assures complete printing.
		A4	
		LEGAL	

Table 3.8 OTHER menu operation chart

(* = Factory default setting)

- *1 Factory default setting On—30 seconds
Whenever AUTO SWITCH in the INTERFACE menu being selected, DATA TIME OUT is set to ON.
- *2 The PAGE PROTECTION menu is displayed only when optional RAM is installed.

Caution




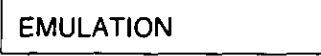









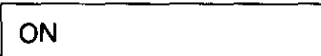

When PAGE PROTECTION is executed, all downloaded and uploaded fonts, including permanently-saved fonts, and all macros, including permanent macros, are erased. You will need to re-download or re-upload fonts and macros you desire.




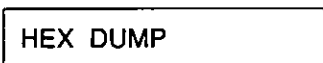

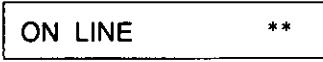
Notes:

- The status in PERMANENT SAVE is automatically defaulted to “NO”, after you set it to “YES”.
- HEX DUMP “ON” cannot be permanently saved and will be released when the power is turned off.
- When HEX DUMP “OFF” is set, data received during HEX DUMP “ON” will be automatically cleared.

Setting the Other Menu:

Example for Setting the Power Save.

	Operation	Display/Description
1	Press 	
2	Press 	
3 3	Press 	Press the key until the display shows: 
4	Press 	
5	Press 	Press the key until the display shows: 
6	Press 	
7	Press 	
8	Press 	The display will show the Level 3 message. •This procedure makes the setting selected at Level 2 operational.

	Operation	Display/Description
9	Press  / 	Display the item you desire.
10	Press 	Makes the selection operational. The display will show the Level 1 message. 
11	Press 	

Notes:

- After PERMANENT SAVE has been completed, the printer will go to the OFF LINE mode and display "OFF LINE".
- After LANGUAGE setting has been changed, the printer will automatically go to the ON LINE mode. "WARM UP" and "ON LINE" will be continuously displayed in the selected language.

INTERFACE Menu

The **INTERFACE** menu sets the interface for communication with the computer. This printer has both Centronics parallel and RS-232C serial interfaces as standard.

In the **AUTO SWITCH** mode, it is not necessary to select an active interface, since this printer polls the interfaces for the active port.

Main Menu	Sub-Menu 6						
	Level 1	Level 2	Level 3		Level 4		
INTERFACE	SELECT INTERFACE	AUTO SWITCH*	CENT.BUFF SIZE		1KB*	4KB	64KB
			232C BUFF SIZE		1KB*	4KB	64KB
		CENTRONICS	CENT.BUFF SIZE		1KB	4KB	64KB
		RS232C	232C BUFF SIZE		1KB	4KB	64KB
	SET RS232C	PROTOCOL	DTR*				
			X-ON / X-OFF				
		POLARITY	MARK*				
			SPACE				
		BAUD RATE	9600*	1200			
			19200	2400			
			300	4800			
			600				
		PARITY	NO*				
			EVEN				
			ODD				
		DATA LENGTH	8 BITS*				
			7 BITS				
		STOP BIT	1 STOP BIT*				
2 STOP BITS							

Table 3.9 INTERFACE menu operation chart

(* = Factory default setting)

Setting the Parameter of RS-232C:


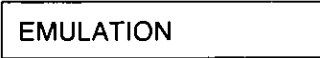


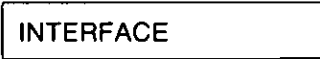




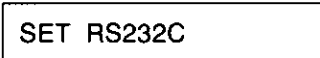

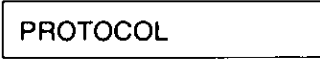








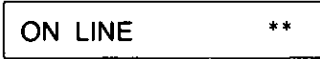
Operation Display/Description

1


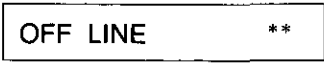


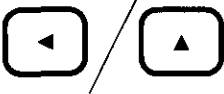









Press






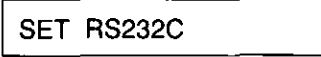


ON LINE

OFF LINE **

	Operation	Display/Description
2	Press 	
3	Press  / 	Press the key until the display shows: 
4	Press 	
5	Press  / 	
6	Press 	
7	Press  / 	Display the selection you desire.
8	Press 	The display will show the Level 3 message.
9	Press  / 	Display the selection you desire.
10	Press 	Makes the selection operational. The display will show the Level 2 message. Return to Step 7 to make the other selections. If the setting of STOP BIT has been completed: 
11	Press 	

Selecting the Interface:

	Operation	Display/Description
1	Press 	
2	Press 	
3 3	Press 	Press the key until the display shows: 
4	Press 	
5	Press 	The display will show the Level 2 message.
6	Press 	Display the interface selection you desire.
7	Press 	The display will show the Level 3 message.  or 
8	Press 	Display the selection you desire.

	Operation	Display/Description
9	Press 	The display will show the Level 4 message.
10	Press  / 	Display the buffer size selection you desire.
11	Press 	Makes the selection operational.  or If you selected RS232C,  If you wish to set the parameter of RS-232C, start at Step 6 in "Setting the Parameter of RS-232C" on page 3-36.
12	Press 	

Caution

- When SELECT INTERFACE has been changed, all downloaded and uploaded fonts, including permanently-saved fonts, and all macros, including permanent macros, are erased. You will need to re-download or re-upload fonts and macros you desire.
- In the AUTO SWITCH mode, you should not send any data from both Centronics parallel and RS-232C serial interfaces at one time to assure a normal printing.

3.3 When You Wish to RESET/TEST








Using the RESET Key


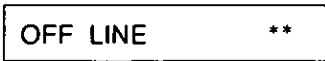



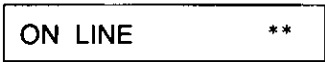
The **RESET** key allows you to reset the printer according to the following table:

Level 1	Level 2	Function
RESET	USER DEFAULT	Resets the printer to user selected parameters.
	CLEAR BUFFER	Clears text produced on the printer, data in the receive buffer and any modes set by software command.
	CLEAR SOFT FONTS	Clears downloaded fonts in RAM.
	CLR UPLOAD FONTS	Clears uploaded fonts in RAM from a bitmap font card.
	CLEAR MACROS	Clears downloaded MACROs in RAM.
	FACTORY DEFAULT	Resets the printer to factory set defaults.

Table 3.10 RESET function operation chart

Resetting the Printer:

	Operation	Display/Description
1	Press 	
2	Press 	
3	Press 	 Jump to Step 5 if you select USER DEFAULT.
4	Press 	Display the selection you desire.

Operation	Display/Description
5 Press 	Makes the selection operational.  or If you selected USER DEFAULT or FACTORY DEFAULT.  and then  Ignore Step 6, if you selected USER DEFAULT or FACTORY DE-FAULT.
6 Press 	

Notes:

- If you try to execute CLEAR SOFT FONTS, CLR UPLOAD FONTS and CLEAR MACROS when print data remains in the buffer, "CANCEL JOB" is displayed for two seconds and the printer will not execute these commands. When this occurs, press the PRINT key to force printing the remaining data, and then execute these commands via the front panel.
- Selecting FACTORY DEFAULT will reset the printer to the configuration set at the factory. The FACTORY DEFAULT settings will not be stored as the USER DEFAULT settings unless they are permanently saved through PERMANENT SAVE of the OTHER menu on page 3-32. For a list of the FACTORY DE-FAULT settings refer to the "Status Printing" on page 2-29.

Using the TEST Key


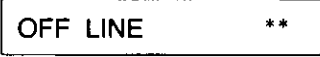






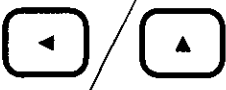

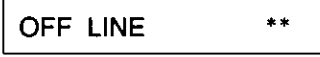


The TEST key allows you to test the operating conditions of the printer.

Level 1	Level 2	Level 3	Function
TEST	STATUS PRINT		Prints currently selected printer settings.
	FONT LIST PRINT		Prints the list of fonts which are available.
	CHARACTER PRINT		Prints an entire page of characters with the currently selected font.
	USER AVAIL. RAM	****.** KB FREE	Shows the remaining memory capacity.

Table 3.11 TEST function operation chart

3

Performing the Test Print (Status Print, Font List Print or Character Print):




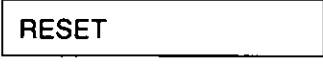
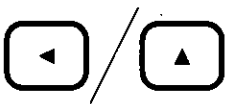
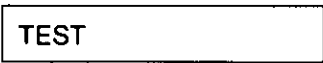



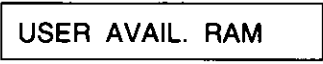






	Operation	Display/Description
1	Press 	
2	Press 	
3	Press 	
4	Press 	 Jump to Step 6, if you wish to select STATUS PRINT.
5	Press 	Display the selection you desire.
6	Press 	The printer will output the paper printed with your selection. 
7	Press 	

Note:

If you execute test print when data remains in the printer, "CANCEL JOB" is displayed for two seconds and the printer will not print the test page.

When this occurs, press the PRINT key to print the remaining data, and then execute test print via the front panel.

Checking the Remaining Memory Capacity:

	Operation	Display/Description
1	Press 	
2	Press 	
3	Press 	
4	Press 	
5	Press 	Press the key until the display shows: 
6	Press 	 The remaining memory capacity will be displayed.
7	Press 	
8	Press 	

3.4 Factory Default Settings

Emulation: Panasonic LP (HP LaserJet Series III)

Number of copies: 1

Verify mode: Off

Interface: Auto (Centronics/RS-232C)

Power On Status Print: Off

Power Save: Off

Hex Dump: Off

Data Time Out: On: 30 seconds

Auto Continue: Off

SatinPrint: On (Middle)

Permanent Save: No

Display Language: English

Format: Portrait

Paper Size;	Letter
Origin X;	75
Origin Y;	0
Lines Per Inch;	6 LPI
Page Length;	11"
Page Width;	8.0"
Top Margin;	0.5"
Bottom Margin;	10.5"
Left Margin;	0.00"
Right Margin;	8.0"

Font: Default; Courier 10 (Resident Bitmap Font)

Symbol Set; Roman-8

Zero Character; Non-Slashed

Font Group; Font Group 1

Cassette Select: Lower

Manual Feed: Off

Buffer Size: Centronics;	1KB
RS-232C;	1KB

3.5 The RS-232C Defaults

Protocol: DTR

Polarity: Mark

Baud Rate: 9600

Parity: No

Data Length: 8 Bits

Stop Bits: 1 Bit

4. Using Your Laser Printer

4.1 General Guidelines

By now you should be familiar with your Laser Printer. This chapter will help make your system work together for you and it will point out the items that you may have to review.

This chapter is designed as a guide to the steps needed to configure your system. Before you proceed, we recommend that you have all the manuals for your system, including software, since you will need them for reference.

The Panasonic Laser Printer is designed to work with virtually all computers and off-the-shelf software. In order to make your printer work for you, there are a few things you need to do.

These include configuring your:

- computer
- and...
- printer
- and...
- software

4

Configuring your entire system is extremely important. If the system is not configured correctly, then you may experience problems.

4.2 Configuring Your Computer

Configuring your computer is the starting point for setting up your system. Some of the things you need to select are: monitor type, printer port and interface output parameters. After you configure your computer, be sure to write down the settings you have made. These will be used again when configuring your printer and software.

If you need specific information on configuring your computer, we suggest you refer to the user's manual or contact the manufacturer or the place of purchase.

4.3 Configuring Your Printer

Now that you have configured your computer, you can move on to the printer. Since this is a printer manual, this section will receive emphasis.

Configuring the printer involves three (3) major areas: selecting the emulation, selecting the font group (this determines the printer driver to be selected), and selecting the interface.

After you configure the printer, you should permanently save the settings. This will eliminate the need to re-configure your printer every time you turn it on. Please note that your printer has been configured to the most common settings at the factory. These settings are listed on page 3-44. Please check these settings before proceeding.

Configuring Your Printer Emulation

4

The KX-P4440 emulates various printers. To get optimum versatility in both text and graphics from your printer, we suggest that you use the Panasonic LP emulation mode. In this mode, the printer emulates an HP LaserJet Series III.

Below is a list of the printer's emulation modes, and the corresponding models it emulates:

Emulation Mode	Printer Emulated
Panasonic LP	HP LaserJet Series III
Diablo	Diablo 630
IBM	IBM Proprinter

Please remember that whichever emulation you choose, all your software should also use that emulation. Before choosing an emulation, we recommend that you refer to your software manuals to determine which of the emulations in the printer are supported by the software.

Selection of the Emulation Mode can be done in two ways:

Front Panel: While in the OFF LINE mode, select the desired emulation mode through the front panel. (See Chapter 3 for a detailed explanation of how to use the front panel.)

Super Set: Send the command from the computer to select the desired emulation mode. [See the *Software Commands Manual* for information on how to use the Special Codes (Super Set) commands.]

Be sure to remember which emulation mode you select. It will be used when you configure your software.

To assist you in selecting your emulation, please note the following:

Panasonic LP: In this mode the printer interprets HP LaserJet Series III commands as the HP LaserJet Series III does.

Diablo: In this mode the printer interprets most of the Diablo 630 commands. Those commands that are not interpreted by the printer are ignored. An example is Auto Backward Printing ON/OFF. Since the printer prints only in the one direction, this command is ignored. The print position will be within $\frac{1}{300}$ " of that from the Diablo 630 since the vertical and horizontal dot resolution of this printer is 300 dots per inch.

IBM: In this mode the printer interprets most of the IBM Proprinter II commands. Those commands that are not interpreted by the printer are ignored. An example is NLQ ON/OFF. Since this printer always prints in the highest quality, this command is ignored. The print position will be within $\frac{1}{300}$ " of that from the IBM Proprinter II, since the vertical and horizontal dot resolution of this printer is 300 dots per inch.

Note:

The printer converts print data to dot data before printing.

An error condition may occur if the total amount of data (including text, macros, downloaded fonts and graphic image data) exceeds the total amount of RAM memory installed. When this occurs, the LCD display will show "RAM OVERFLOW".

If this happens, the image density or data amount must be reduced or the downloaded fonts and macros, if any, may be cleared from RAM memory.

Configuring Your Font Group

The KX-P4440 emulates the HP LaserJet Series III printer. Because of all of its additional fonts, it is actually possible for the printer to be compatible with various printer drivers.

There are 3 different font groups available in the printer. (Refer to page 3-20 for more information on Font Groups.) Below is a summary of the advantages and disadvantages of selecting each as the default:

Font Group 1 This group offers the maximum font versatility of the KX-P4440. It should be selected whenever you are using a Panasonic laser printer driver.

If you select this font group and are using a printer driver other than a Panasonic laser printer and encounter problems, such as improper justification or character spacing of proportional characters, then we suggest that Font Group 2 be selected. This problem may be due your software selecting the resident Century font, which is a proportional space font, while the parameters are set for a mono-space font, such as Courier.

Font Group 2 This group again offers a high level of font versatility. It offers all of the KX-P4440's resident fonts except Century (proportionally-spaced) fonts. It should be selected in the unlikely occurrence that you encounter the problem described above.

Font Group 3 This group supports only those fonts available in the HP LaserJet Series III. While offering less fonts than Font Group 2, this is another alternative if the Century font is selected instead of a different proportionally spaced font. (See above.)

Whenever possible, the KX-P4440 should be set with Font Group 1 selected. This will offer maximum versatility of fonts.

Configuring Your Printer Interface

The KX-P4440 features both Centronics parallel and RS-232C serial interfaces. Please check to see which you are using to connect your system to your printer. The printer is set to AUTO SWITCH at the factory, allowing the printer to accept data through either port. If you choose to send data through the RS-232C serial port, check the settings on both the system and the printer to be sure they match. The factory settings are listed on page 3-44.

As an example if you have an IBM PC or compatible, and you are going to use LPT1: or one of the COM ports as your printer port, then you simply select AUTO SWITCH. Select RS-232C, only if you change the protocol, polarity, baud rate, parity, data length, start and stop bits to match the computer's settings.

4.4 Configuring Your Software

In this section you must again refer to some of the settings you chose earlier. If you do not remember how you configured your computer and printer, you need to go back and check.

When configuring your software, you need to refer to the operator's manual that came with each of your software packages. Be sure to follow the instructions and make all of the correct selections to correspond with those you made for your computer and printer.

Most commercial software will allow you to select a printer. A printer driver is the part of the software that allows the software to communicate with the printer via the interface in use. Do not be afraid to try the printer's different emulation modes and font groups with their corresponding software printer drivers. Different software packages will provide additional features depending upon the printer driver you select.

Whenever possible, a Panasonic laser printer driver should be used with the KX-P4440 set with Font Group 1 selected. This driver will offer maximum versatility of fonts and all other features of this printer.

Always use a KX-P4440 driver if it is available.

The chart below shows alternative drivers that may be used with each of the printer's emulation modes:

Note:

In software that lists Panasonic LP as a printer driver menu selection, it should always be your first choice.

Emulation Mode	First Choice	Second Choice
Panasonic LP	KX-P4440 KX-P4451 KX-P4430	HP LaserJet Series III HP LaserJet Series IIIP HP LaserJet Series IIID
Diablo	Diablo 630	Diablo
IBM	IBM Proprinter II	IBM Graphics

Please remember that you must check the paper size and page format in your software. We recommend that you control the appearance of the printed output through your software, not by the printer. In other words, let the software control the printer.

5. Care and Maintenance of Your Laser Printer

5.1 How to Maintain and Change...

Changing Cleaning Pad and Toner Cartridge (KX-P453)

When the toner decreases to a level requiring replacement, the printer displays the blinking message "CHNG TONER U20" on the display. When this occurs, install an optional Toner Kit, which contains a toner cartridge and cleaning pad.

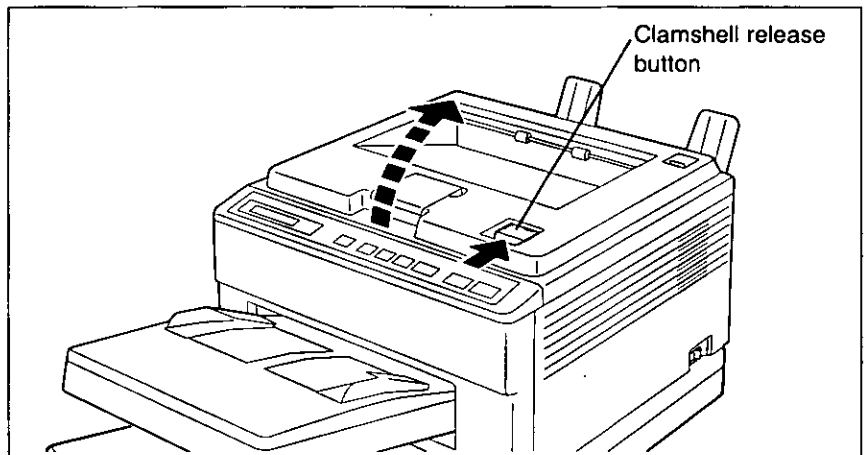
To add toner, follow these procedures:

1

Turn the power OFF.

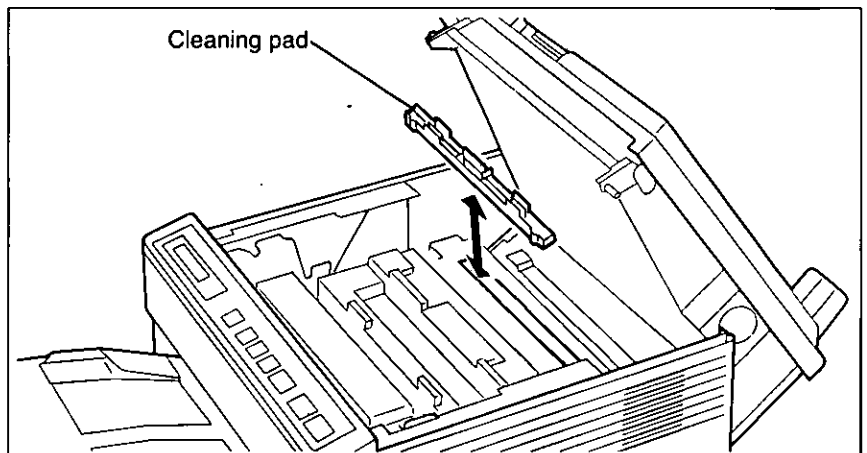
2

Press the clamshell release button. Clamshell will open automatically.



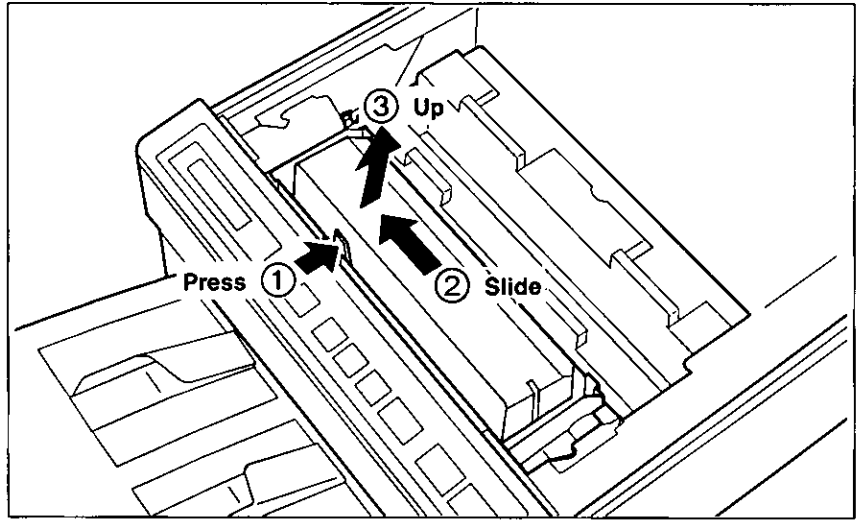
3

Remove the existing cleaning pad and install a new cleaning pad.



4

Tap toner cartridge.
Remove toner cartridge as shown below.

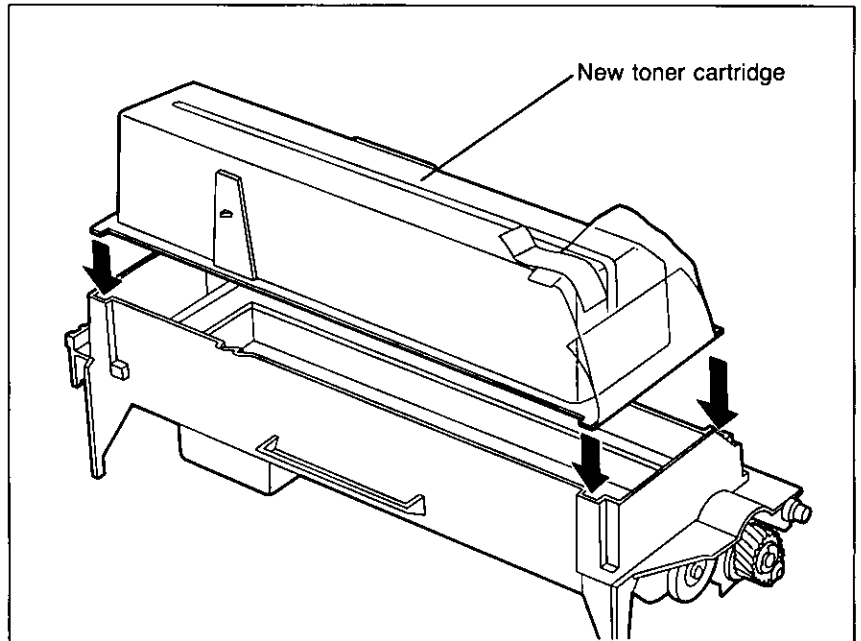


Caution

Be careful not to spill any residual toner in removed toner cartridge.

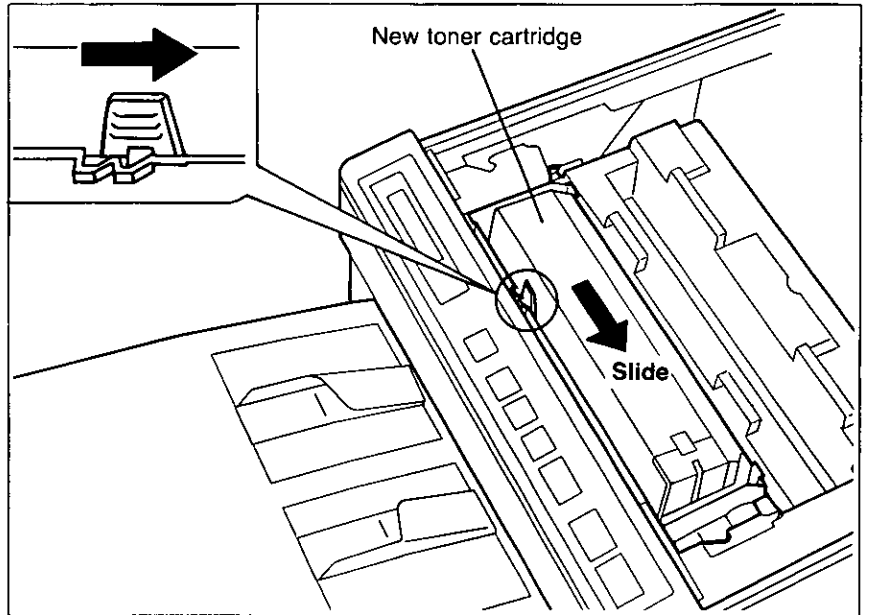
5

Install the new toner cartridge by aligning the four corner tabs on the cartridge with the slots on the developer unit, and push down.



6

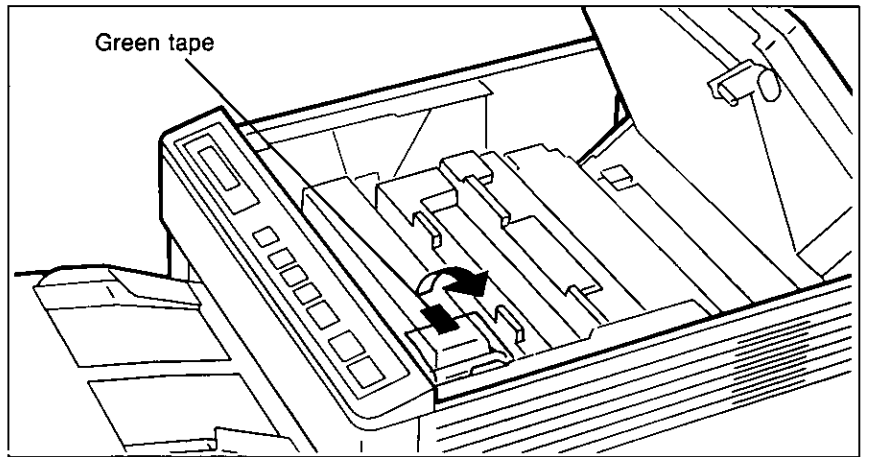
Slide toner cartridge into place.
Verify toner cartridge is locked to developer unit.



5

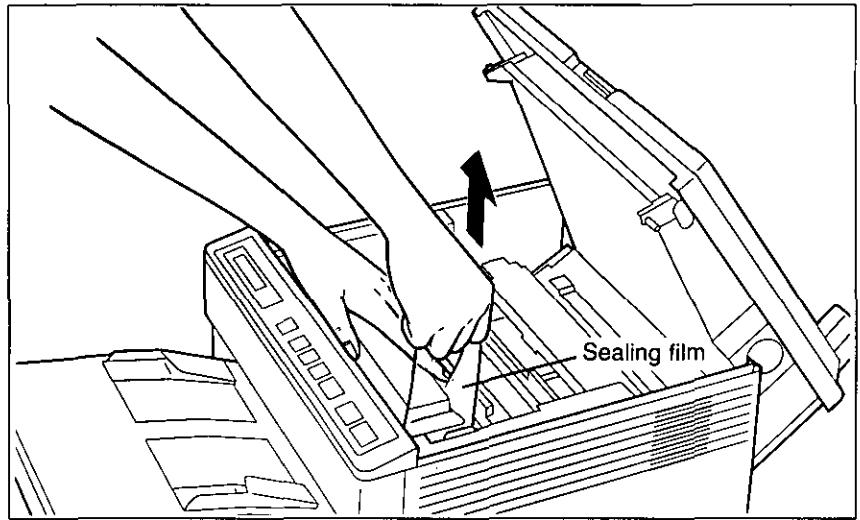
7

Peel back green tape.



8

Hold developer unit in place, grasp clear plastic sealing film and pull upward to completely remove. Lightly tap top of toner cartridge to empty toner into developer unit.



Note:

Be careful handling the sealing film since it may contain toner residue.

9

Close clamshell.

Changing Drum Unit and Ozone Filter (KX-PDM5)

When the printer displays the blinking message “CHNG DRUM U27”, the drum unit and ozone filter should be replaced. The printer will output approximately 50 pages after message is first displayed.

Important:

The drum unit contains a photosensitive drum. Exposing it to light may damage the drum.

- Do not expose the drum unit to light for more than 5 minutes.
 - Do not touch the yellowish-green drum surface. Lift the drum unit by the green labeled tabs.
 - Keep the drum unit away from dust or dirt.
 - Do not place the drum unit in a high humidity area, and keep it out of direct sunlight.
-

To change the drum unit, follow these procedures:

1

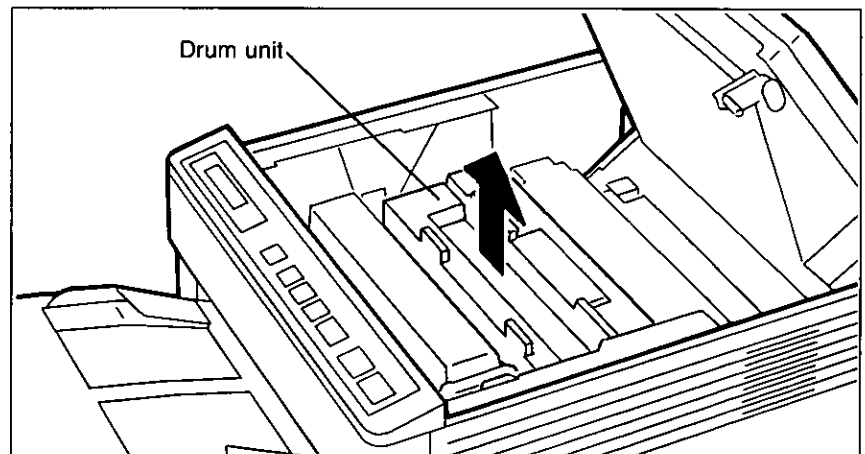
Turn the power OFF.

2

Press clamshell release button. Clamshell will open automatically.

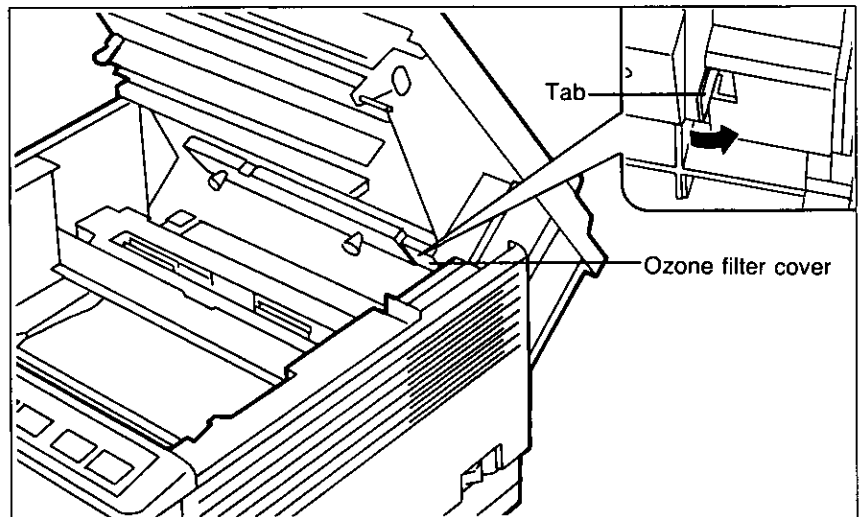
3

Remove drum unit.



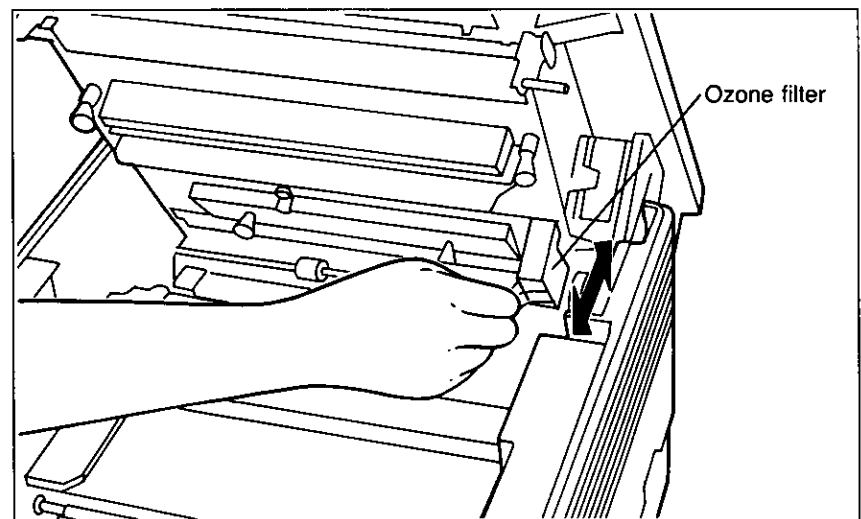
4

Remove green ozone filter cover by moving the tab to the right.



5

Remove ozone filter and install new ozone filter.



6

Re-install green ozone filter cover.

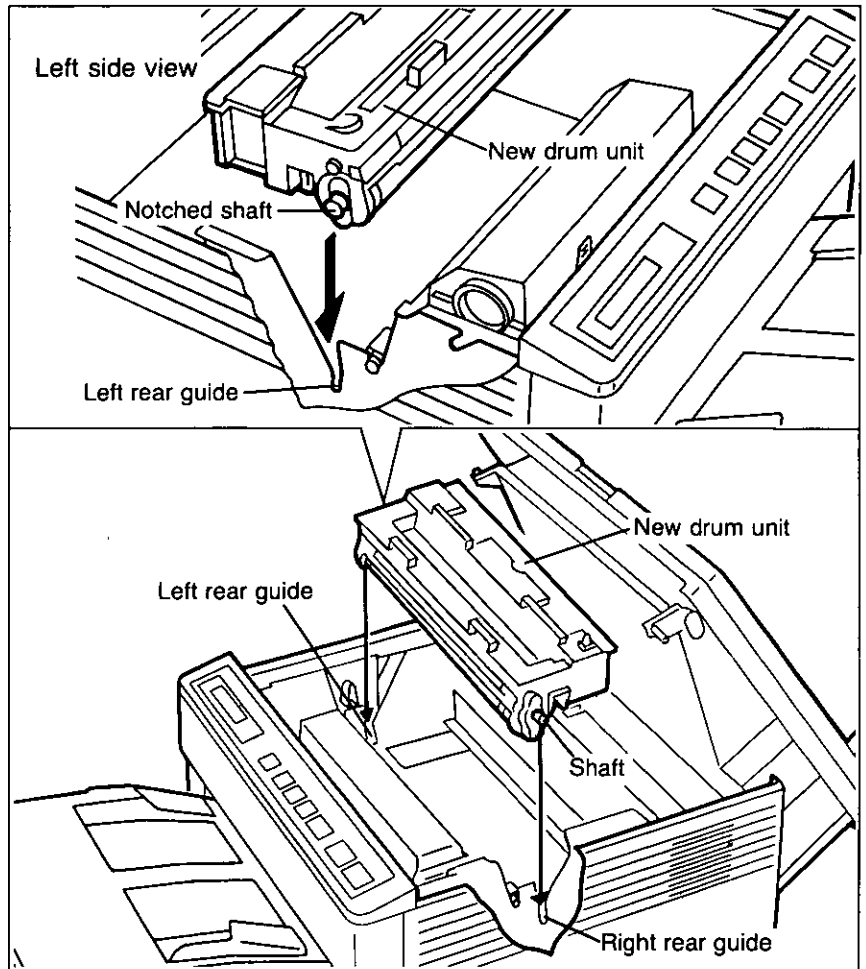
Warning:

It is essential that the ozone filter is replaced after the "CHNG DRUM U27" is displayed. Failure to do so will contravene health and safety requirements.

Panasonic will accept no liability for damages resulting from failure to replace the filter as indicated.

7

Install new drum unit in rear guides.
Be sure left notched shaft sets properly in left rear guide.



5

8

Close clamshell.
Turn the power ON while pressing the MENU key.

Changing Developer Unit with Toner Cartridge (KX-PDP5)

When the printer displays the blinking message "CHNG DEV U26", the developer unit should be replaced.

Important:

- When installing a new developer unit, be sure to use the toner cartridge attached to a new developer unit.
 - Do not use the toner of the previously installed toner cartridge.
-

To change the developer unit, follow these procedures:

1

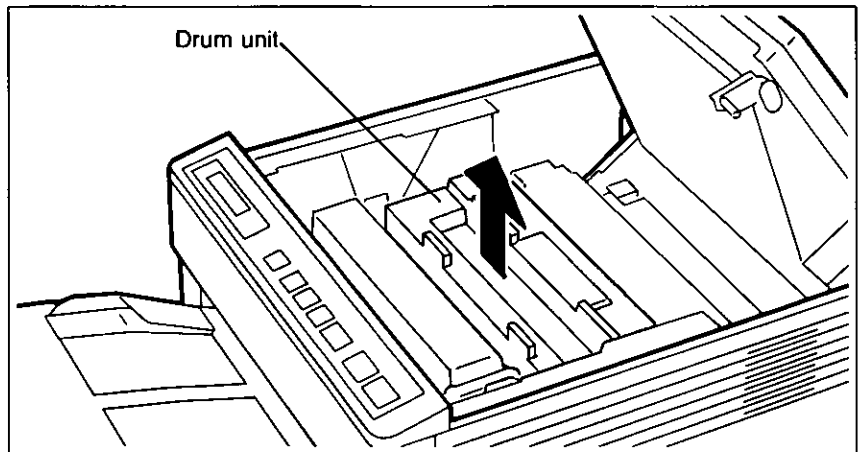
Turn the power OFF.

2

Press clamshell release button. Clamshell will open automatically. Remove the existing cleaning pad and install the new cleaning pad.

3

Remove drum unit.



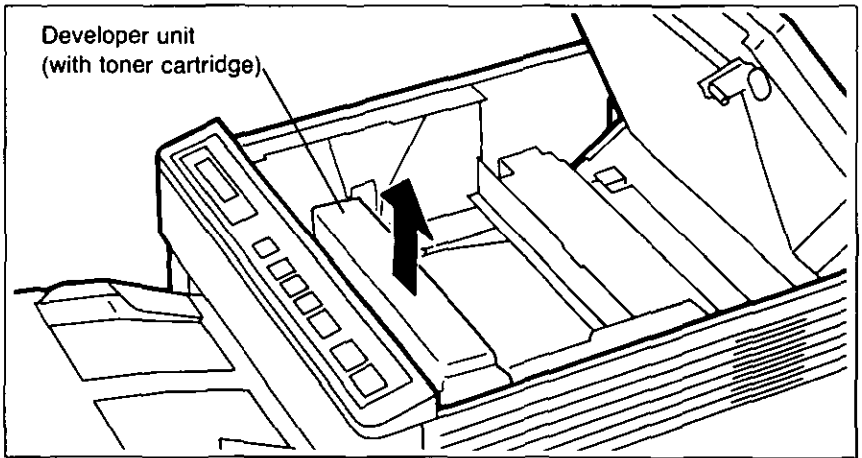
Important:

The drum unit contains a photosensitive drum. Exposing it to light may damage the drum.

- Do not expose the drum unit to light for more than 5 minutes.
 - Do not touch the yellowish-green drum surface. Lift the drum unit by the green labeled tabs.
 - Keep the drum unit away from dust or dirt.
 - Do not place the drum unit in a high humidity area, and keep it out of direct sunlight.
-

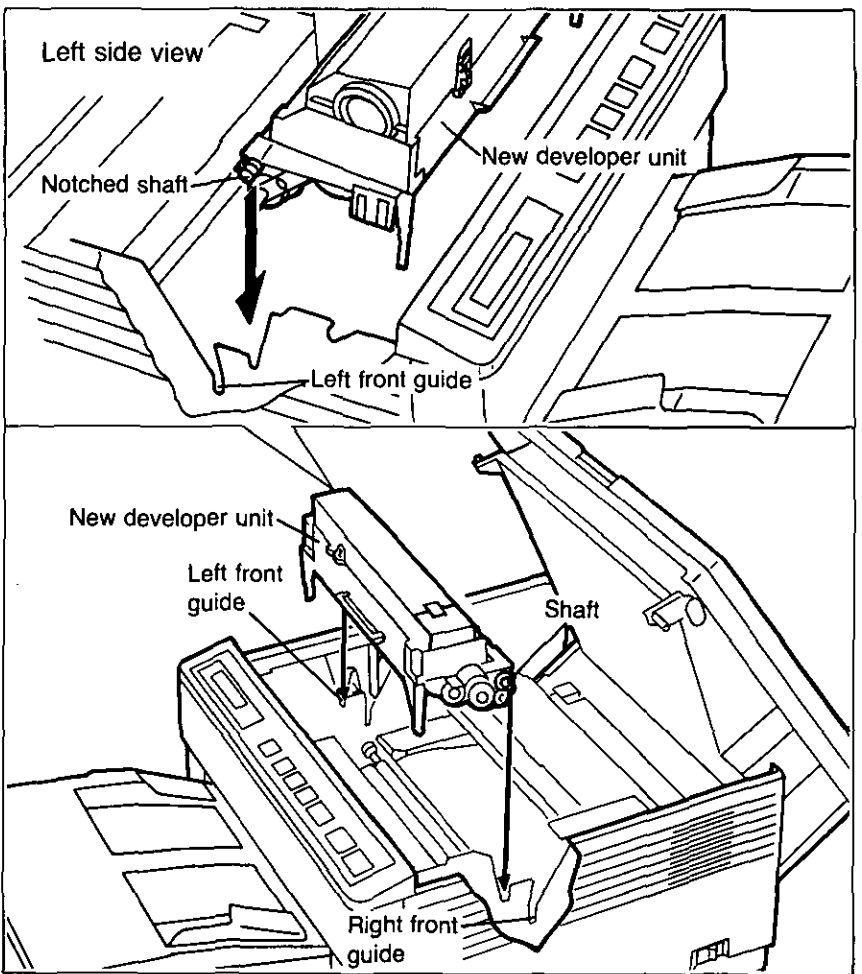
4

Remove developer unit.



5

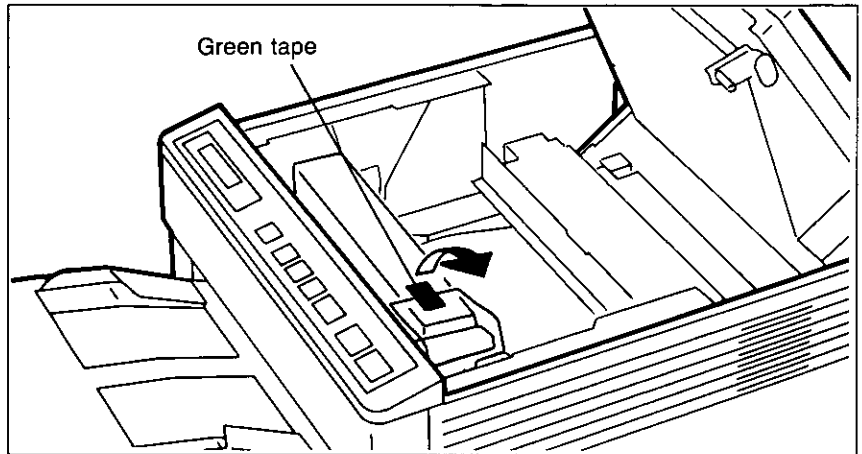
Install new developer unit in front guides.
Be sure left notched shaft sets properly in left front guide.



5

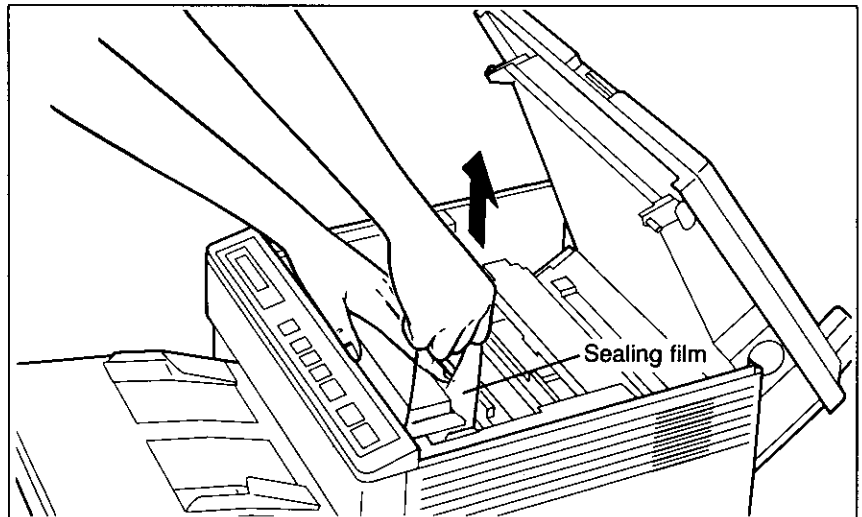
6

Peel back green tape.



7

Hold developer unit in place, grasp clear plastic sealing film and pull upward to completely remove. Lightly tap top of toner cartridge to empty toner into developer unit.



Note:

Be careful handling the sealing film since it may contain toner residue.

8

Re-install drum unit.
(Refer to Step 3 on page 2-8 for installation of drum unit.)

9

Close clamshell.
Turn the power ON while pressing the **ON LINE** key.

5.2 Cleaning the Printer

Periodic cleaning of the printer is recommended. The frequency of cleaning is dependent upon the environment. You should clean the printer:

- at least once a month
- when you install a new drum unit
- when conditions such as blurred printing or stains on paper have occurred

Cleaning the Outside of the Printer

1

Turn the power OFF.

2

Clean the cover with a soft cloth. Use any mild commercial cleaner.

Cleaning the Inside of the Printer

Clean the inside of the printer by wiping any visible toner away with a dry cloth. The following areas should be cleaned.

- Paper transport plate
- Resist pinch roller
- Transfer roller
- Pick up roller
- Fuser roller

1

Turn the power OFF.

Before cleaning the inside of the printer, allow the fuser to cool (about 5 minutes).

2

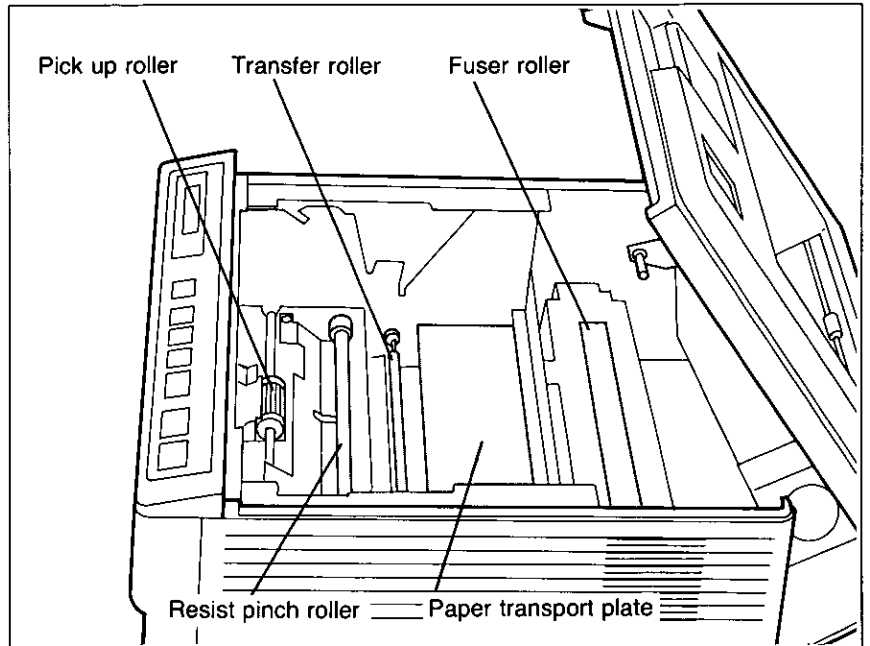
Push clamshell release button. Clamshell will open automatically.

3

Remove drum unit.
Remove developer unit.

4

Clean the inside of the printer.
Remove cleaning pad before you clean fuser roller.



5

Cautions

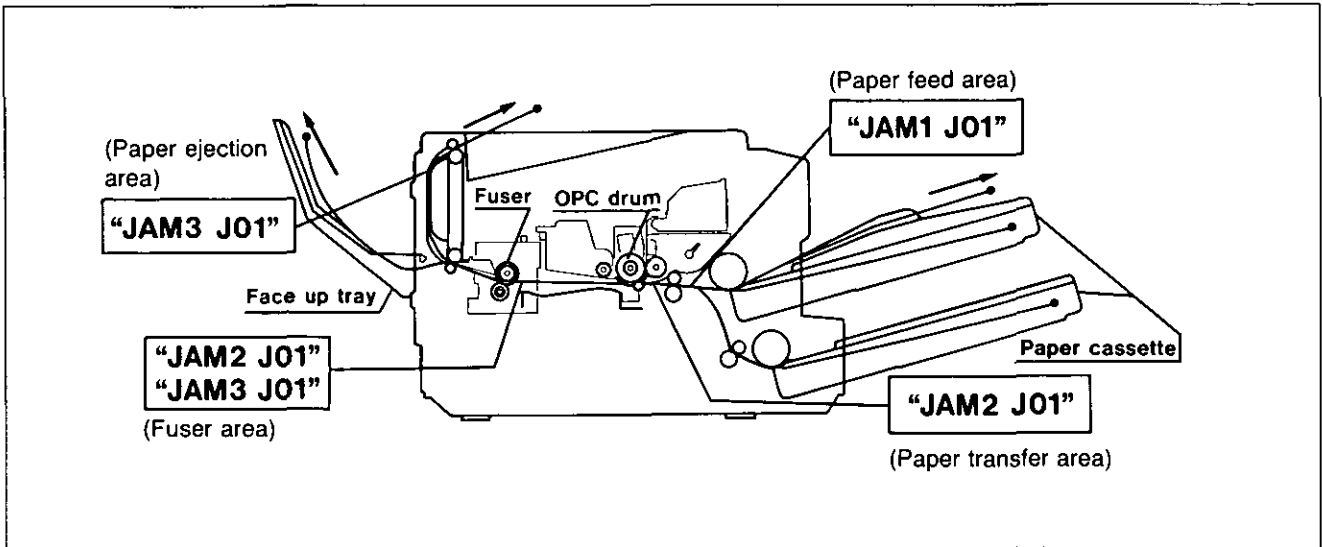
- The printer must be turned OFF prior to cleaning.
- Do not clean the fuser with stiff material, or you may damage the fuser roller.
- Do not expose the drum unit to light for more than 5 minutes.
- Do not touch the yellowish-green drum surface. Lift the drum unit by the green labeled tabs.
- Be sure not to touch the exposed developer.

5

Re-install developer unit. (Refer to Step 6 on page 2-5 for installation of developer unit.)

Re-install drum unit. (Refer to Step 3 on page 2-8 for installation of drum unit.)

5.3 How to Clear a Paper Jam



Paper jam areas

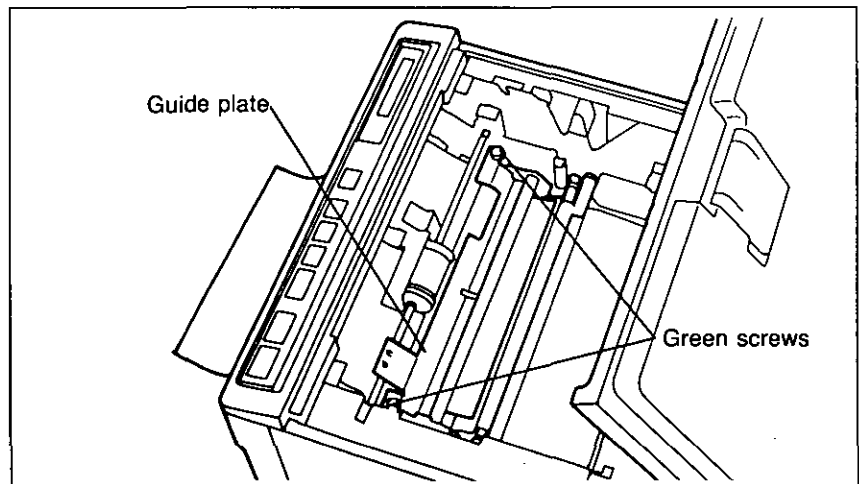
5

Paper Jam 1

When a paper jam occurs in the paper feed input area, the display will show "JAM 1 J01".

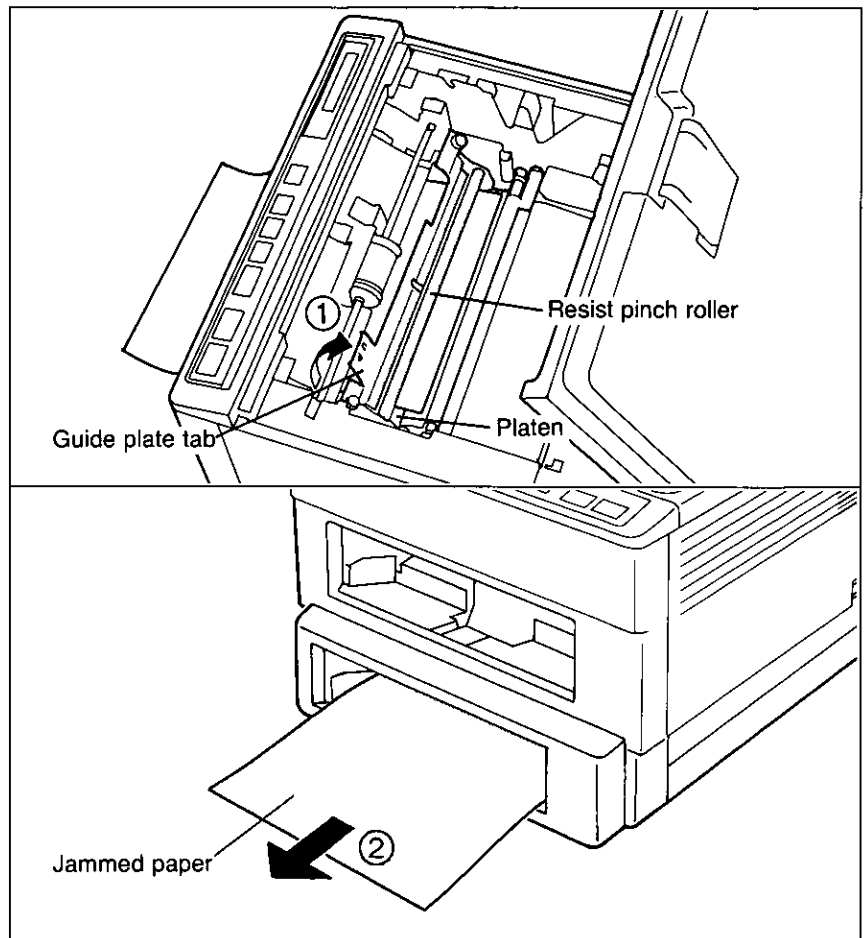
Solution:

- 1 Remove upper and lower paper cassettes.
Press clamshell release button. Clamshell will open automatically.
- 2 Remove drum unit.
Remove developer unit.
- 3 Loosen the two green screws of guide plate.
(The green screws cannot remove.)



4

- ① Lift the guide plate tab until opening is made between resist pinch roller and platen.
- ② Remove jammed paper.

**5**

5

Tighten the two green screws of guide plate.

6

Reinstall developer unit.
Reinstall drum unit.

7

Close clamshell.
Reinstall upper and lower paper cassettes.

To resume printing, press the **ON LINE** key.

Paper Jam 2

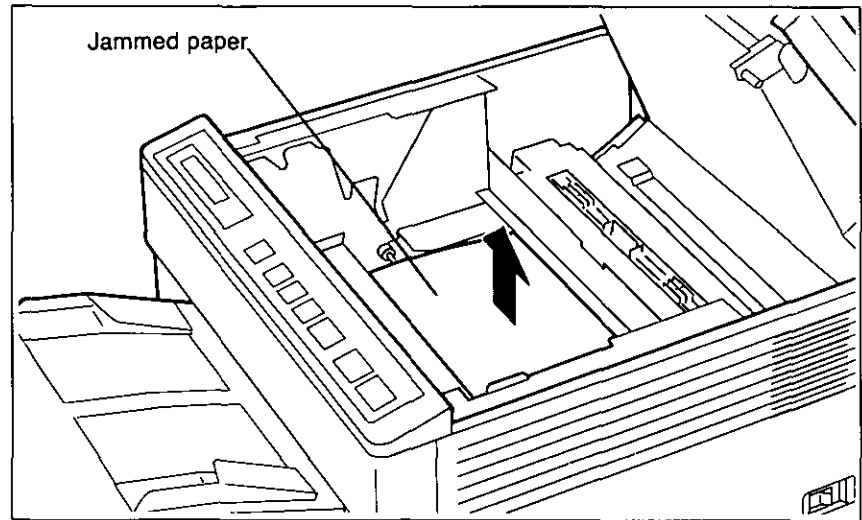
When a paper jam occurs in the paper transfer area or the fuser area, the display will show "JAM 2 J01".

Solution:

1 Press clamshell release button. Clamshell will open automatically.

2 Remove drum unit.
Remove developer unit.

3 Remove jammed paper.



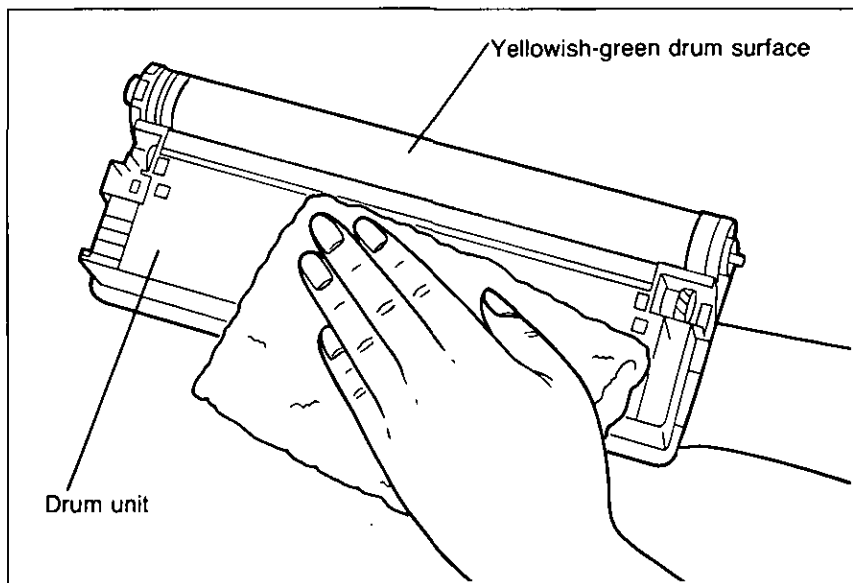
Cautions

- Do not touch the fuser and main motor since they are hot.
- Do not expose the drum unit to light for more than 5 minutes.
- Do not touch the yellowish-green drum surface. Lift the drum unit by the green labeled tabs.
- Be sure not to touch the exposed developer.
- If the jammed paper has toner on it, do not pull it out through the slot for paper feed.
- Be sure that no paper fragments remain in the printer.

4 Re-install developer unit.
(Refer to Step 6 on page 2-5 for installation of developer unit.)

5

If the back side of drum unit is dirty with toner, carefully clean it with a dry and soft cloth without touching the yellowish-green drum surface.



Note:

Keep the drum unit horizontal when you clean it.

5

6

Gently shake drum unit 4 to 5 times horizontally.
Re-install drum unit.
(Refer to Step 3 on page 2-8 for installation of drum unit.)

7

Close clamshell.

To resume printing, press the **ON LINE** key.

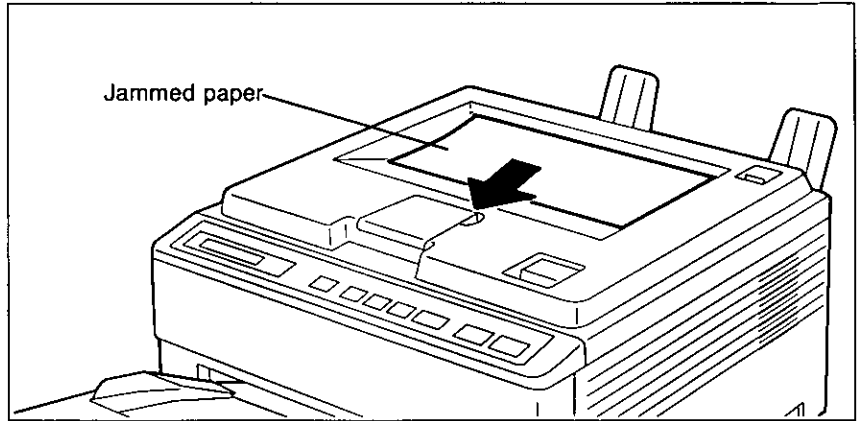
Paper Jam 3

When a paper jam occurs in the paper ejection area, the display will show "JAM 3 J01".

When using face down output tray:

1

Remove jammed paper.

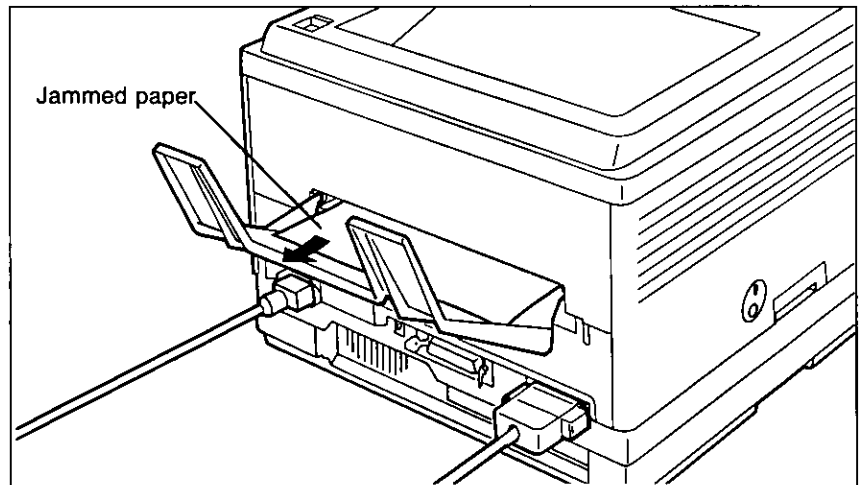


To resume printing, press the **ON LINE** key.

When using face up output tray:

1

Remove jammed paper.



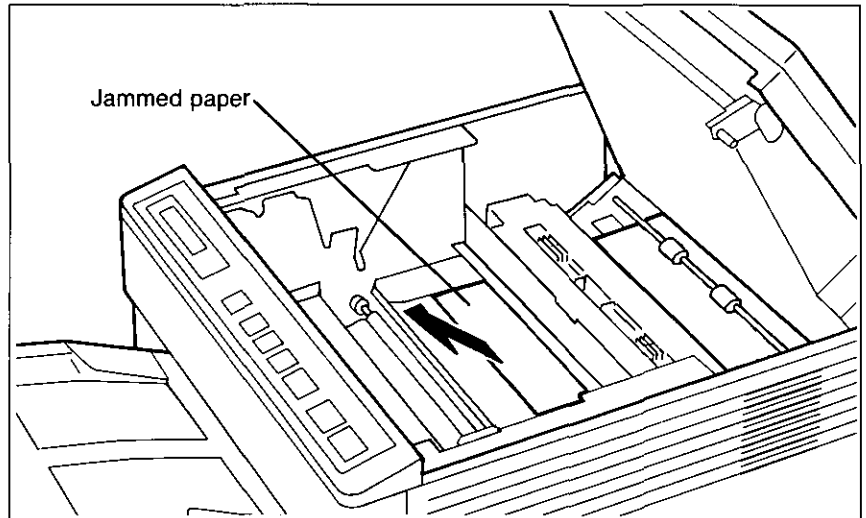
To resume printing, press the **ON LINE** key.

Removing paper from fuser area:

1 Press clamshell release button. Clamshell will open automatically.

2 Remove drum unit.
Remove developer unit.

3 Remove jammed paper.



5

Cautions

- Do not touch the fuser and main motor, since they are hot.
- Do not expose the drum unit to light for more than 5 minutes.
- Do not touch the yellowish-green drum surface. Lift the drum unit by the green labeled tabs.
- Be sure not to touch the exposed developer.
- Be sure that no paper fragments remain in the printer.

4 Re-install developer unit. (Refer to Step 6 on page 2-5 for installation of developer unit.)
Re-install drum unit. (Refer to Step 3 on page 2-8 for installation of drum unit.)

5 Close clamshell.

To resume printing, press the **ON LINE** key.

If Paper Jam Still Occurs in the Fuser Unit...

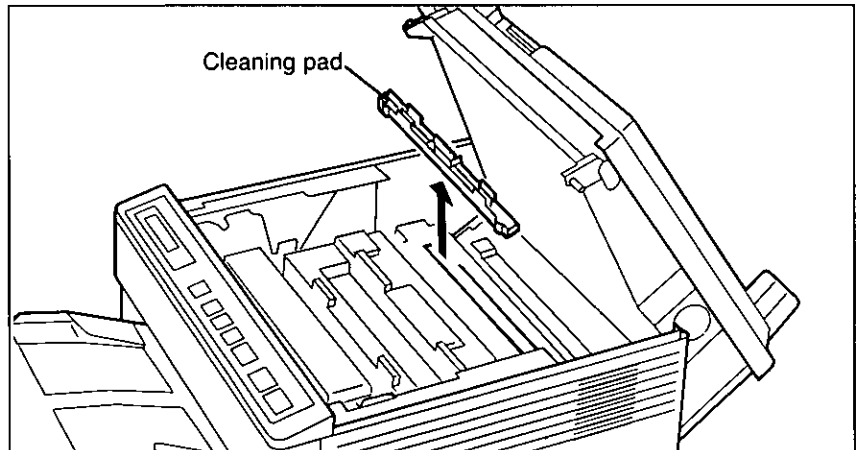
After clearing a Paper Jam 2 or Paper Jam 3, if the paper jam message is still present, there may be paper fragments under the fuser, requiring removal of the fuser unit.

Before checking the inside of the fuser, allow the fuser to cool (about 5 minutes).

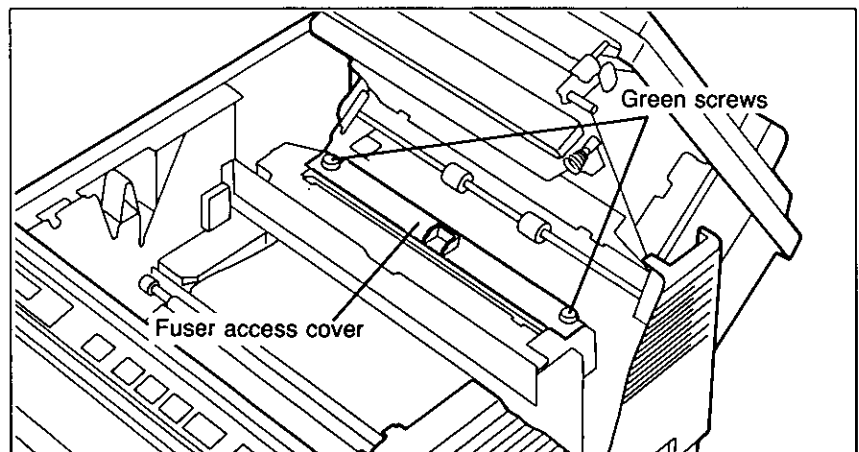
1 Press clamshell release button. Clamshell will open automatically.

2 Remove drum unit.
Remove developer unit.

3 Remove cleaning pad.

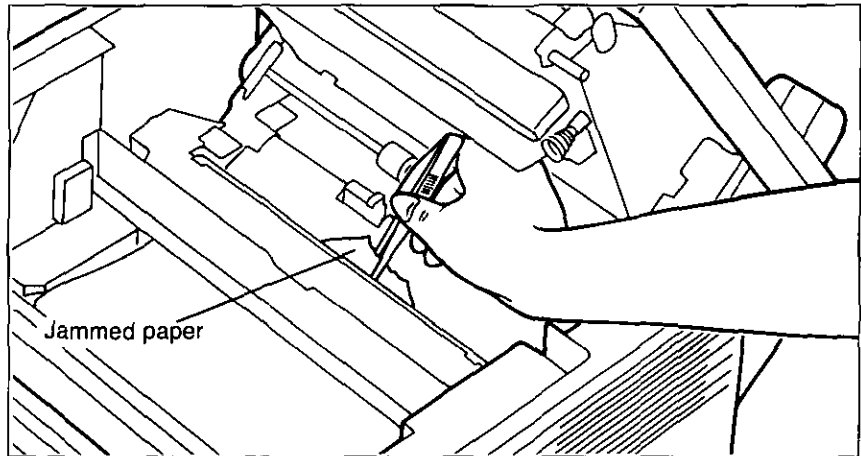


4 Remove fuser access cover by loosening the two green screws.



5

Gently remove jammed paper with a pair of tweezers.



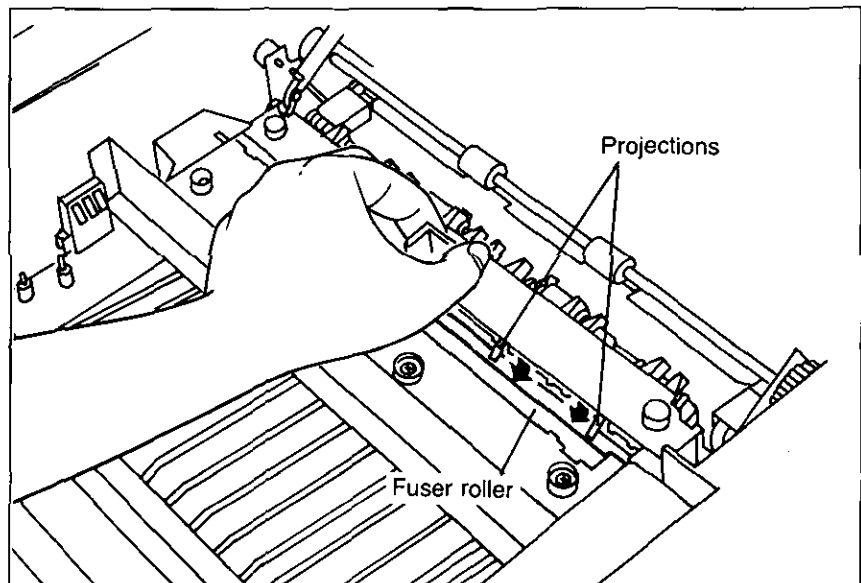
Cautions

- Do not expose the drum unit to light for more than 5 minutes.
- Do not touch the yellowish-green drum surface. Lift the drum unit by the green labeled tabs.
- Be sure not to touch the exposed developer.
- Be sure that no paper fragments remain in the printer.

5

6

Re-install fuser access cover inclining it as shown below, and put it horizontally. Do not rub the fuser roller by projections.



7

Tighten the two green screws and re-install cleaning pad.

8

Re-install developer unit.
Re-install drum unit.

9

Close clamshell.

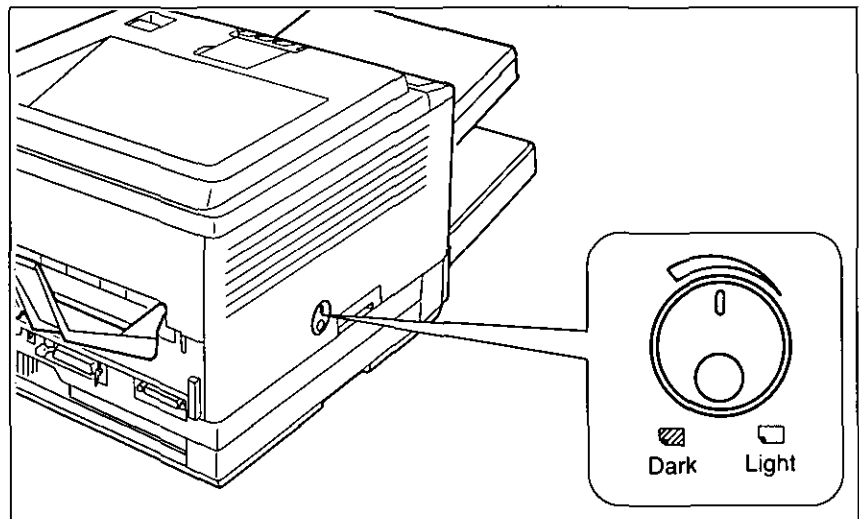
To resume printing, press the **ON LINE** key.

Notes:

- If stains appear on the back of printed paper after a paper jam is cleared, it is recommended that you run several test prints. (Refer to page 2-29 for test print.)
 - After removing the jammed paper, open and close the printer once to clear jam messages.
-

5 5.4 How to Adjust Print Density

Print density refers to the relative darkness of the print on the paper. The print density dial is located on the left side of the printer. Normal position is upright.



5.5 How to Clean the Tungsten Wire

If reduced print quality occurs, clean the tungsten wire of the drum unit with a cotton swab.

Important:

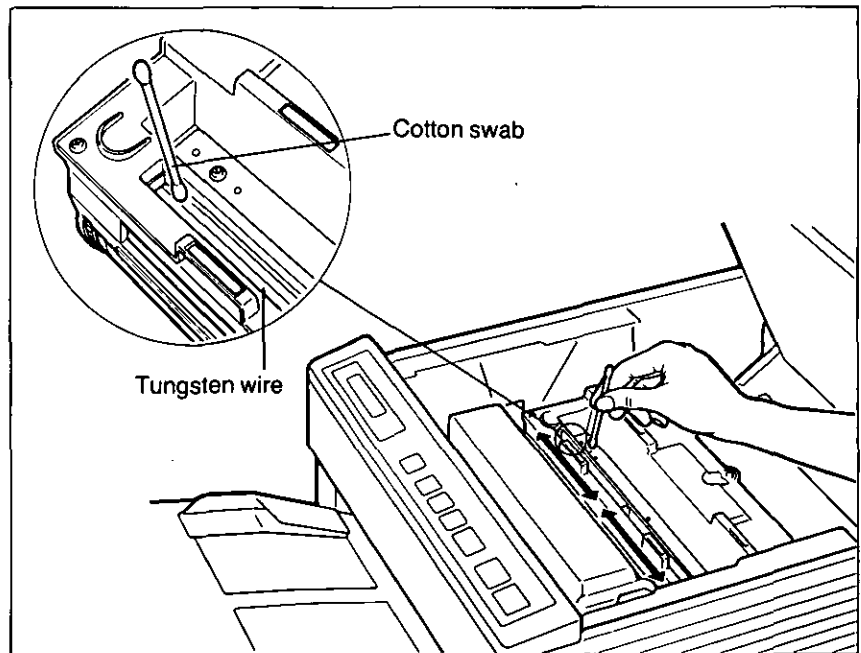
The drum unit contains a photosensitive drum. Exposing it to light may damage the drum.

- Do not expose the drum unit to room light or sun light.

To clean the tungsten wire follow these procedures:

- 1 Turn the power OFF.
- 2 Press clamshell release button. Clamshell will open automatically.
- 3 Carefully wipe the tungsten wire by sliding a cotton swab from end to end 4 to 5 times.

5



- 4 Close clamshell.

5.6 Periodic Maintenance

Performing Periodic Maintenance will help keep your laser printer in its best working condition and give you the highest quality output.

Table 5.1 lists messages, maintenance cycle and recommended procedures for periodic maintenance.

Message	PM Cycle	Items to be Replaced	Model No.	Recovery
CHNG CORONA M85	180,000 pages	Transfer Corona Unit	KX-PCR3	Printing continues.
CHNG FUSER M86	90,000 pages	Fuser Unit	KX-PFS6	Printing continues.

Table 5.1 Periodic maintenance chart

The “CHNG CORONA M85” can be performed by the operator. *Instruction for Transfer Corona Unit* is included with the replacement unit box.

It is recommended that the “CHNG FUSER M86” be performed by a qualified service engineer. Please contact your maintenance organization.

Resetting the LCD Messages

You may turn off the “CHNG CORONA M85” or “CHNG FUSER M86” messages on the display by following the instructions below.

Message	Turn off Sequence
CHNG CORONA M85	Power on while pressing the PRINT key.
CHNG FUSER M86	Power on while pressing the ▲ key.

Also, you may turn off the “CHNG DEV U26” message on the display by following the instructions below.

Message	Turn off Sequence
CHNG DEV U26	Power on while pressing the RESET/TEST key.

5.7 Troubleshooting

Many problems associated with the printer can be traced to improper setup, installation, or cabling. The error messages shown on the display (see Table 5.3) and the following tables will assist the user in identifying and correcting some of the more common problems.

Trouble	Possible Cause	Corrective Action
Printer dead	No AC power	Check power cord.
Power on but printer not printing data	Printer not ON LINE	Press ON LINE key.
	Interface cable not connected	Check interface cable.
Front panel keys not operational	Printer not OFF LINE	Press ON LINE key.
Paper jam occurs continually	Paper size selected by the front panel or software commands is different from the installed paper size	Select the correct paper size through the front panel or software commands. (Refer to page 3-27, refer to <i>Software Commands Manual</i> .)
	Torn paper may be present in fuser	Remove torn paper. (Refer to page 5-19.)
Stains on paper	Dirty paper path	Clean paper path. (Refer to page 5-12.)
Vertical line on paper	Dirty paper path	Clean paper path. (Refer to page 5-12.)
	Scratch on drum	Replace drum.
	Scratch on fuser roller	Replace fuser.
Very faint print	Print density dial not adjusted	Properly adjust the dial.
	Abnormal transfer corona current	Replace transfer corona.
	Developer unit requires replacement	Install a new developer unit. (Refer to page 5-8.)
"CALL SERVICE" message appears on the display, no display or the printer does not function properly.	Internal errors	If one of these error appears, turn the power off for a few seconds then on again. If the error continues, service by an Authorized Panasonic Service Center is required.

Table 5.2 Troubleshooting

Error Messages	Error Code	Possible Cause	Recovery
PAPER EMPTY	U10	In automatic paper feed mode, both upper and lower paper are empty or no cassettes are installed.	Load paper.
PAPER EMPTY	U11	In automatic paper feed mode or upper cassette feed mode, the upper paper is empty or no cassettes are installed.	Load paper.
PAPER EMPTY	U12	In automatic paper feed mode or lower cassette feed mode, the lower paper is empty or no cassettes are installed.	Load paper.
LOAD ENV	U13	Printer requires envelope.	Load envelope or force printing by pressing the ON LINE key.
UC LOAD ENV		Printer requires #9 or #10 envelope in upper cassette.	Load #9 or #10 envelope in upper cassette and set to #9 or #10 envelope format in upper format menu or force printing by pressing the ON LINE key.
UC LOAD MON		Printer requires monarch paper in upper cassette.	Load monarch paper in upper cassette and set to monarch format in upper format menu or force printing by pressing the ON LINE key.
UC LOAD DL		Printer requires international DL paper in upper cassette.	Load international DL paper in upper cassette and set to international DL format in upper format menu or force printing by pressing the ON LINE key.
UC LOAD C5		Printer requires international C5 paper in upper cassette.	Load international C5 paper in upper cassette and set to international C5 format in upper format menu or force printing by pressing the ON LINE key.
MF LOAD ENV		Printer requires #9 or #10 envelope in manual feed area.	Load #9 or #10 envelope in manual feed area or force printing by pressing the ON LINE key.
MF LOAD MON		Printer requires monarch paper in manual feed area.	Load monarch paper in manual feed area or force printing by pressing the ON LINE key.
MF LOAD DL		Printer requires international DL paper in manual feed area.	Load international DL paper in manual feed area or force printing by pressing the ON LINE key.
MF LOAD C5		Printer requires international C5 paper in manual feed area.	Load international C5 paper in manual feed area or force printing by pressing the ON LINE key.

Table 5.3 Error messages (continued)
 5-26 *Care and Maintenance of Your Laser Printer*

Error Messages	Error Code	Possible Cause	Recovery
LOAD LGL	U14	Printer requires legal paper in upper cassette or lower cassette.	Load legal paper in upper cassette or lower cassette and set to legal format in upper or lower format menu or force printing by pressing the ON LINE key.
UC LOAD LGL		Printer requires legal paper in upper cassette.	Load legal paper in upper cassette and set to legal format in upper format menu or force printing by pressing the ON LINE key.
LC LOAD LGL		Printer requires legal paper in lower cassette.	Load legal paper in lower cassette and set to legal format in lower format menu or force printing by pressing the ON LINE key.
MF LOAD LGL		Printer requires legal paper in manual feed area.	Load legal paper in manual feed area or force printing by pressing the ON LINE key.
LOAD LTR	U15	Printer requires letter paper in upper cassette or lower cassette.	Load letter paper in upper cassette or lower cassette and set to letter format in upper or lower format menu or force printing by pressing the ON LINE key.
UC LOAD LTR		Printer requires letter paper in upper cassette.	Load letter paper in upper cassette and set to letter format in upper format menu or force printing by pressing the ON LINE key.
LC LOAD LTR		Printer requires letter paper in lower cassette.	Load letter paper in lower cassette and set to letter format in lower format menu or force printing by pressing the ON LINE key.
MF LOAD LTR		Printer requires letter paper in manual feed area.	Load letter paper in manual feed area or force printing by pressing the ON LINE key.

Table 5.3 Error messages (continued)

Error Messages	Error Code	Possible Cause	Recovery
LOAD EXEC	U16	Printer requires executive paper in upper cassette or lower cassette.	Load executive paper in upper cassette or lower cassette and set to executive format in upper or lower format menu or force printing by pressing the ON LINE key.
UC LOAD EXEC		Printer requires executive paper in upper cassette.	Load executive paper in upper cassette and set to executive format in upper format menu or force printing by pressing the ON LINE key.
LC LOAD EXEC		Printer requires executive paper in lower cassette.	Load executive paper in lower cassette and set to executive format in lower format menu or force printing by pressing the ON LINE key.
MF LOAD EXEC		Printer requires executive paper in manual feed area.	Load executive paper in manual feed area or force printing by pressing the ON LINE key.
LOAD A4	U17	Printer requires A4 paper in upper cassette or lower cassette.	Load A4 paper in upper cassette or lower cassette and set to A4 format in upper or lower format menu or force printing by pressing the ON LINE key.
UC LOAD A4		Printer requires A4 paper in upper cassette.	Load A4 paper in upper cassette and set to A4 format in upper format menu or force printing by pressing the ON LINE key.
LC LOAD A4		Printer requires A4 paper in lower cassette.	Load A4 paper in lower cassette and set to A4 format in lower format menu or force printing by pressing the ON LINE key.
MF LOAD A4		Printer requires A4 paper in manual feed area.	Load A4 paper in manual feed area or force printing by pressing the ON LINE key.
CHNG TONER	U20	Too little toner is in the toner cartridge. (Printing is possible.)	Change toner cartridge. (Refer to page 5-1.)
TONER EMPTY	U21	Over 50 copies tried with "CHNG TONER" cartridge displayed. (Printing is not possible.)	Change toner cartridge. (Refer to page 5-1.)

Table 5.3 Error messages (continued)

Error Messages	Error Code	Possible Cause	Recovery
NO DRUM	U24	Drum unit is not installed.	Install drum unit.
CHNG DEV	U26	Developer unit has been installed for 90,000 print cycles. (Printing is possible.)	Install new developer unit and turn the power on while pressing the ON LINE key. (Refer to page 5-8.)
CHNG DRUM	U27	Drum unit reaches time for replacement.	Install new drum unit and turn the power on while pressing the MENU key. (Refer to page 5-5.) The printer will enable approximately 50 pages print-out after the message is displayed. And then the printer will automatically stop printing.
DOOR OPEN	U30	The clamshell is open.	Close the clamshell.
FONT UNAVAIL	U32	Font card is not installed when requested.	Install font card.
NO FONT CARD	U33	Font card is removed in ON LINE mode.	Power off then on.
RESEND JOB	U34	Communication error is detected in the RS-232C interface during receive.	Press ON LINE key twice. (A little time may be required for recovery.)
BUFFER FULL	U35	Receive buffer overflow.	Power off then on.
RAM OVERFLOW	U36	Page overflow, image overflow or download overflow has occurred.	Press ON LINE key.
PAGE FORMAT	U37	Overrun has occurred.	Press ON LINE key. Set the page size (LETTER, LEGAL or A4) through the front panel keys depending on the installed paper, if a expansion SIMM over 1 Mbyte is installed.
RE-DO FORMAT	U38	Format designation from format menu is not correct.	Reset format.

Table 5.3 Error messages

5.8 Repacking Instructions

Should you need to move your laser printer, either to relocate it or for servicing, please follow these instructions.

Please Note:

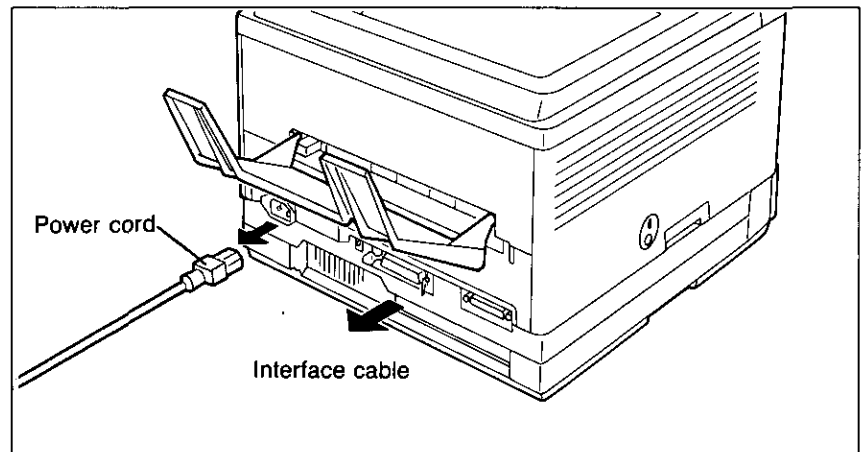
Damage caused by improper repacking may result in a service charge to repair or clean the unit of toner and/or developer that has spilled in the printer.

Please use all of the original packing materials provided with the laser printer.

Additionally, you will need the following items: plastic shipping tape, scissors, newspaper and original packing carton. It is recommended that you wear an old shirt, or one that you do not mind getting dirty.

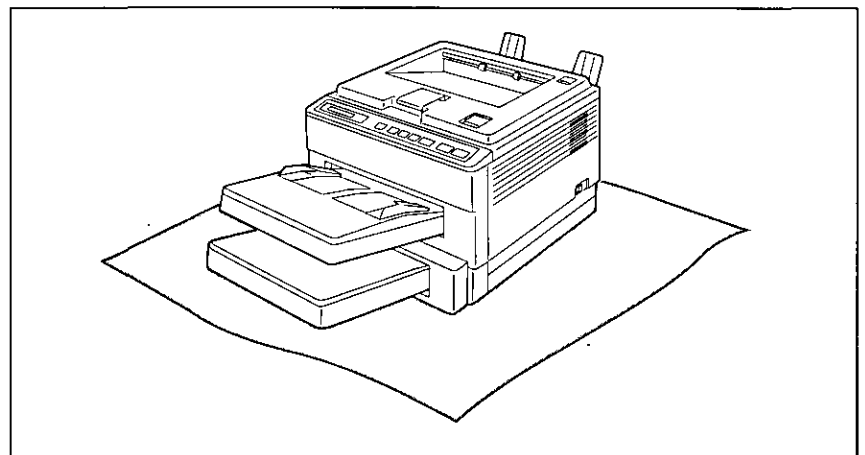
1

Disconnect your laser printer from both electrical outlet and computer.



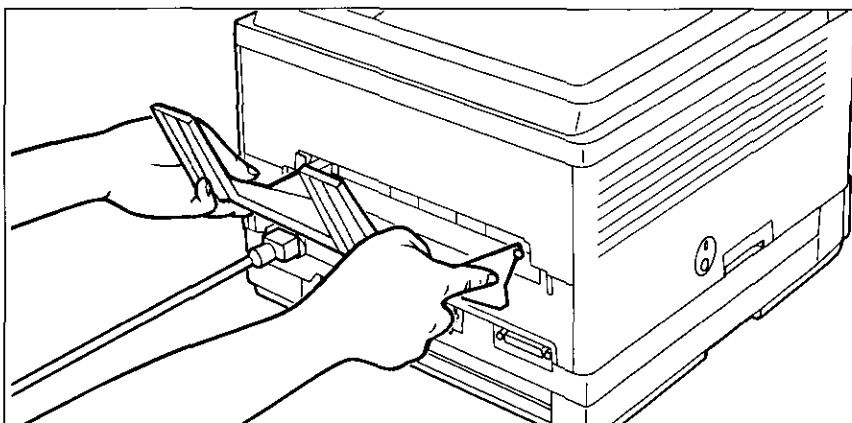
2

Spread newspaper around your laser printer to prevent you or floor from getting dirty.



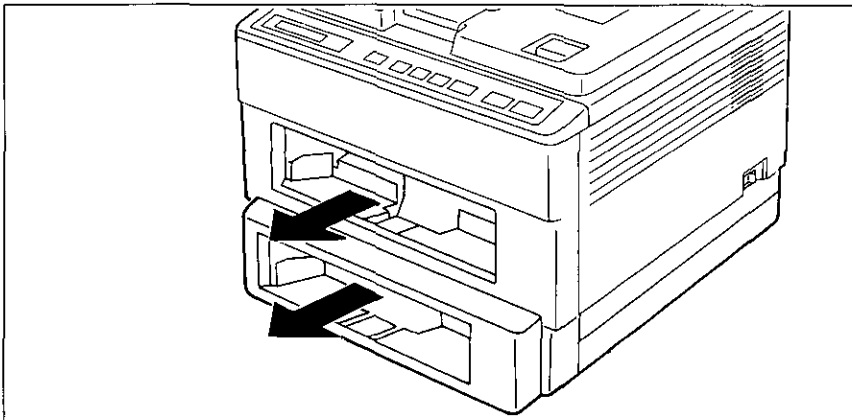
3

Remove face up output tray.



4

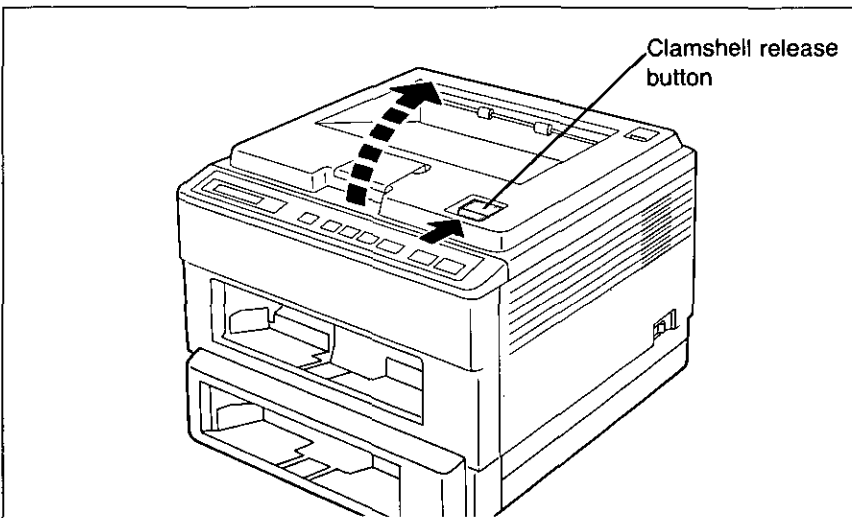
Remove upper and lower paper cassettes.



5

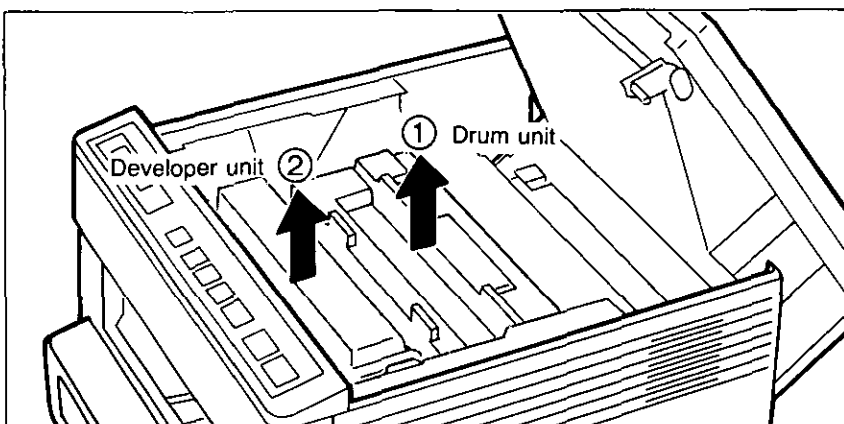
5

Press clamshell release button. Clamshell will open automatically.



6

Remove drum unit and developer unit.



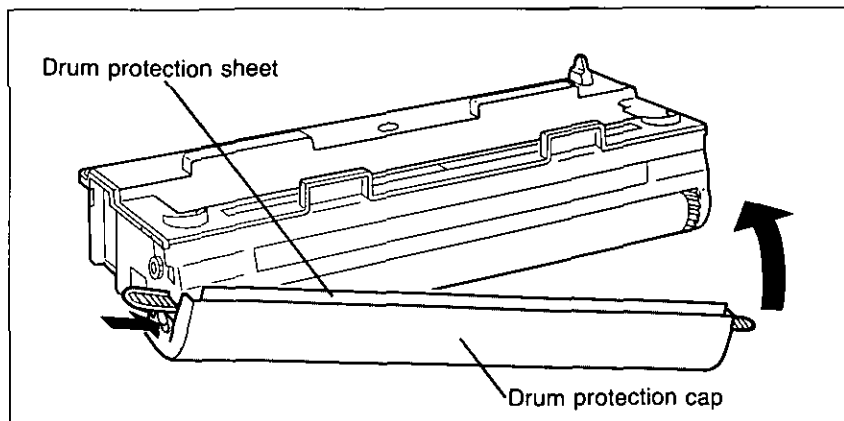
Caution

The drum unit and developer unit should not be shipped with the laser printer.

5

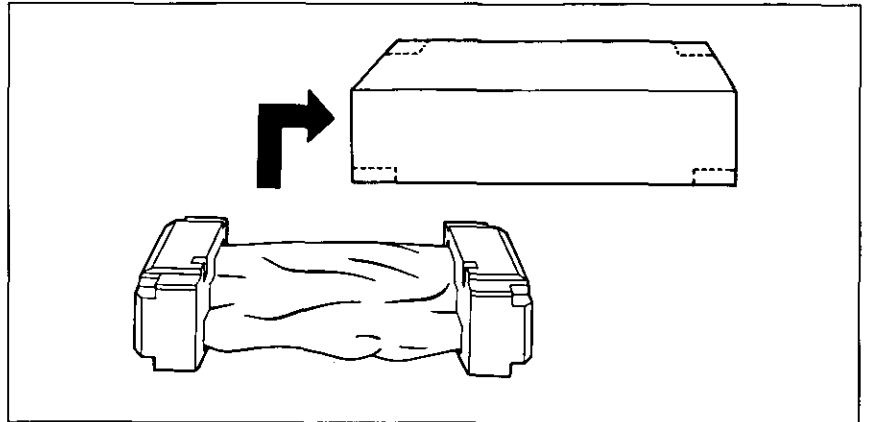
7

Repack drum unit with drum protection sheet and drum protection cap.



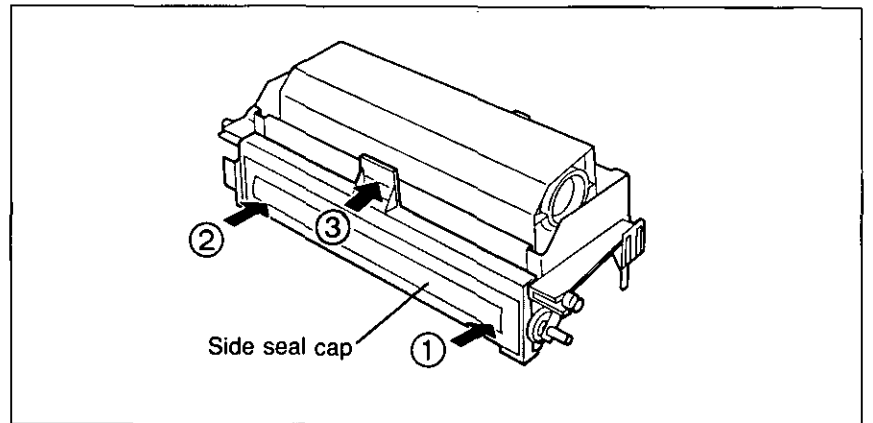
8

Repack drum unit with protective bag.



9

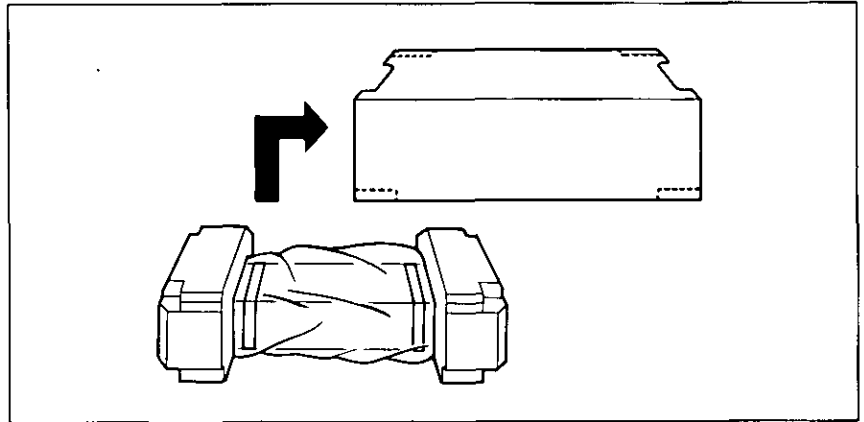
Repack developer unit with side seal cap.



5

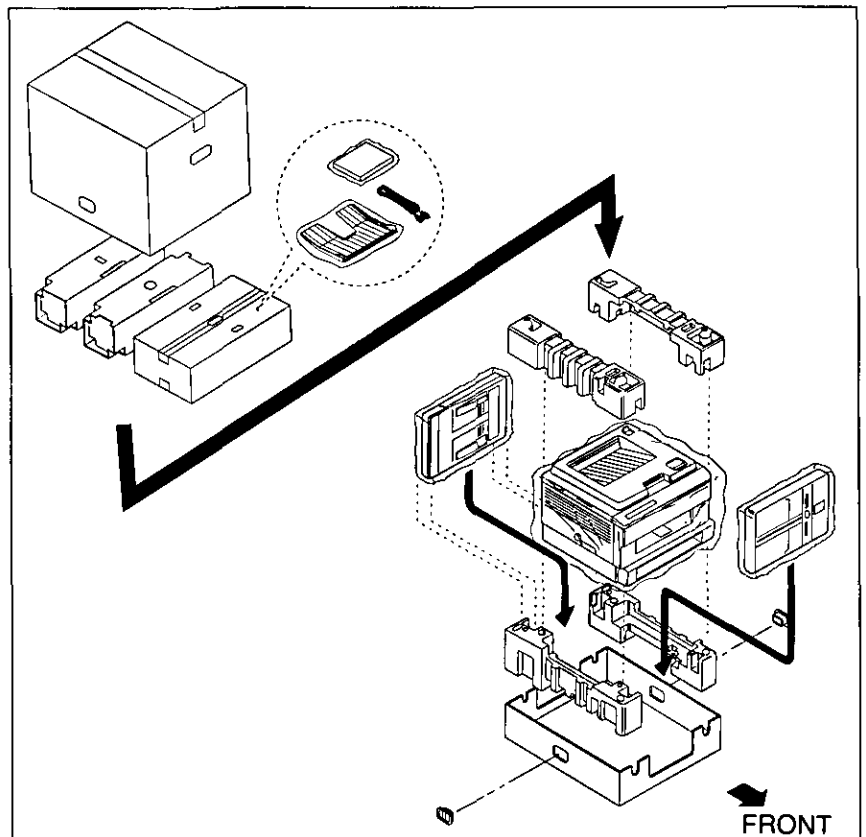
10

Tape around developer unit with packing tape to avoid any spillage. Place developer unit in its original box for shipment.



11

Follow the directions printed on the laser printer box to re-pack the printer. **Do not ship the drum unit and developer unit with the laser printer.** If you are relocating your laser printer we suggest that the drum unit be transported by hand since it is very delicate.



6. Specifications

6.1 Printer Specifications

Printing Method:	Electrophotographic semi-conductor laser	
Print Speed:	10 pages per minute (ppm) maximum (Letter size paper, text mode, 5.5% image area, all originals)	
Resolution:	300 dots per inch (dpi) with SatinPrint	
Paper Feed:	2 multi purpose cassettes (1 with manual feed)	
Paper Output:	Face down;	Up to 150 sheets of paper [75 g/m ² (20 lb.)]
	Face up;	Up to 20 sheets of paper [75 g/m ² (20 lb.)]
Power Source:	Refer to the nameplate on the rear of the unit	
Software Emulation:	Panasonic LP (HP LaserJet Series III) Diablo 630 IBM Proprinter II	
Resident Fonts:	Bitmap fonts	
	Courier 10, 12	Upright, Bold and Italic
	Courier 15	Upright and Italic
	Courier 16.66	Upright and Italic
	Courier 20	Upright
	Century 702	
	Proportional Spacing;	Upright, Bold and Italic
	Outline fonts (Intellifont Scalable Typefaces)	
	CG Times;	Upright, Italic, Bold and Bold Italic
	Univers;	Upright, Italic, Bold and Bold Italic
RAM Buffer:	1 MB (expandable to maximum 5 MB with optional 0 MB RAM Expansion Module plus 1 MB SIMM or 2 MB SIMM)	
Interface:	Centronics compatible parallel and RS-232C serial	
Operating Environment:	10 to 32.5°C {50 to 90.5°F} 20 to 80% RH	
Storage Environment:	0 to 35°C {32 to 95°F} 10 to 80% RH	
Dimensions:	370 (W) × 424.5 (D) × 285 (H) mm {14.6" × 16.7" × 11.2"}	
Mass {Weight}:	Approx. 17 kg {37.8 lb}	
Consumables/Life:	Toner;	3,000 pages average (5.5% image area with repetitive printing of 10 pages)
	Drum;	12,000 pages average (5.5% image area with repetitive printing of 10 pages)
	Developer;	90,000 pages average (5.5% image area with repetitive printing of 10 pages)

6.2 Paper Specifications

General Guidelines

This printer is designed to work well with most types of paper. However, differences in paper may have significant effects on the quality of the print or the reliability of paper handling. It is strongly recommended that you always test paper before purchasing it to make sure it provides desirable performance. The following guidelines will be helpful.

Note:

Please store your paper according to the recommendations of the manufacturer.

Paper Specifications

Basic Weight:	Regular paper using the paper cassette Face up; 60 to 135 g/m ² (16 to 35 pounds) Face down; 60 to 90 g/m ² (16 to 24 pounds) Regular paper using the manual feed Face up; 60 to 135 g/m ² (16 to 35 pounds) Face down; 60 to 90 g/m ² (16 to 24 pounds) Envelope Face up only; 90 g/m ² (24 pounds) only
Thickness:	3.7 to 7.5 mils (1 mil = 1/1000")
Moisture Content:	4% to 6%
Smoothness:	100 to 300 Sheffield
Acid Content:	5.5 PH minimum
Fusing Compatibility:	Must not scorch, melt, offset material, or release hazardous emissions when heated to 392°F (200°C) for 0.1 second
Cutting Dimensions:	±0.0313 inch of nominal, corners 90° ±4°
Grain:	Long grain
Cut Edge Conditions:	Cut with sharp blades, no paper dust
Ash Content:	Not to exceed 10%
Curl:	No allowable curl toward side to be imaged (printed)
Packing:	Poly laminated moisture proof ream wrap

Types of Paper to Avoid

- Extremely smooth or shiny paper or paper that is highly textured
- Coated papers
- Letterhead imprinted with low temperature or thermography. These materials may transfer onto the fusing roller and cause damage. Any pre-printed paper should use inks compatible with 392°F (200°C) for 0.1 second.
- Damaged or wrinkled paper, or paper with irregularities such as tabs, staples, etc.
- Multipart forms or carbonless paper
- Paper with a cotton and/or fiber content over 20%

Paper Sizes

(Paper size)

Paper	Size
Letter	8.5"×11" (216×279 mm)
Legal	8.5"×14" (216×356 mm)
A4	8.27"×11.7" (210×297 mm)
Executive	7.25"×10.5" (184.1×266.7 mm)

(Envelope size)

Envelope	Size
Business #10	4.13"×9.5" (104.9×241.3 mm)
Business #9	3.88"×8.88" (98.5×225.5 mm)
Monarch	3.88"×7.5" (98.5×190.5 mm)
International DL	4.33"×8.66" (110×220 mm)
International C5 (Manual feed only)	6.4"×9.02" (162×229 mm)

[24 pounds (90 g/m²) only]

Note:

Print envelopes using the face up output tray to prevent jamming.

OHP Film and Labels

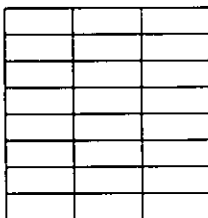
You may also print on labels and transparencies that are made for laser printers. Panasonic has tested and found that the following work satisfactorily.

OHP film	3M154, 3M688, 3M688C, SCOTCH8803, 3M/SCOTCH-CG3300
Labels	AVERY 5351, AVERY XS6016 AVERY ACL01, ACL08, ACL16, ACL24, ACL33 Avery Laser Graphic LG703724, LG704221, LG1053716, LG1054214 Avery Copier Labels (70×36 mm) Avery White (105×37 mm) 16 labels per sheet COPY TACK C-16, C-24 ESSELTE DATALINE, ESSELTE KOPIETIKETTER 15914, 15917, 15920, 15922 FASTONALL COPY-LINE 18-030, 18-033, 18-034, 18-035, 18-036, 18-037 HERMA Copy-print 4455, 4464

Notes:

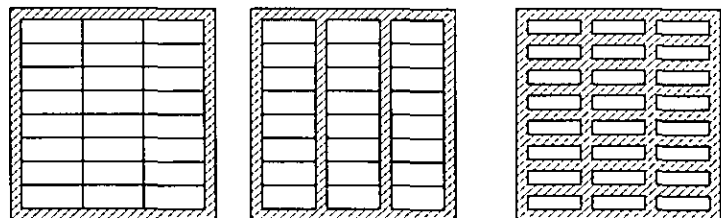
- Use manual feed function for OHP film and labels.
- Print OHP film and labels using the face up output tray to prevent jamming.
- Only OHP film without coating should be used.
- With any label stock, the labels must completely cover the backing material. (See figure below.)

YES



Labels cover the entire backing material.

NO



The backing material is exposed.

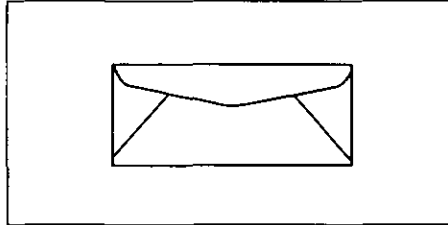
Duplex Printing (Double Sided Printing)

Duplex printing is possible. However, you should not expect the same print quality and reliability that you get with single sided printing. We strongly recommend that you follow the guidelines below.

- Use 20 to 24 lb (75 to 90 g/m²) paper. [Do not use 16 lb (60 g/m²) paper.]
- Do not load more than 100 sheets in the cassette.
- Before loading paper in the cassette, adjust it so that the edges are even.
- Use only upper cassette to duplex print.

Envelope Specifications

It is recommended that you only purchase high quality envelopes, with diagonal seams, as shown in the diagram below:



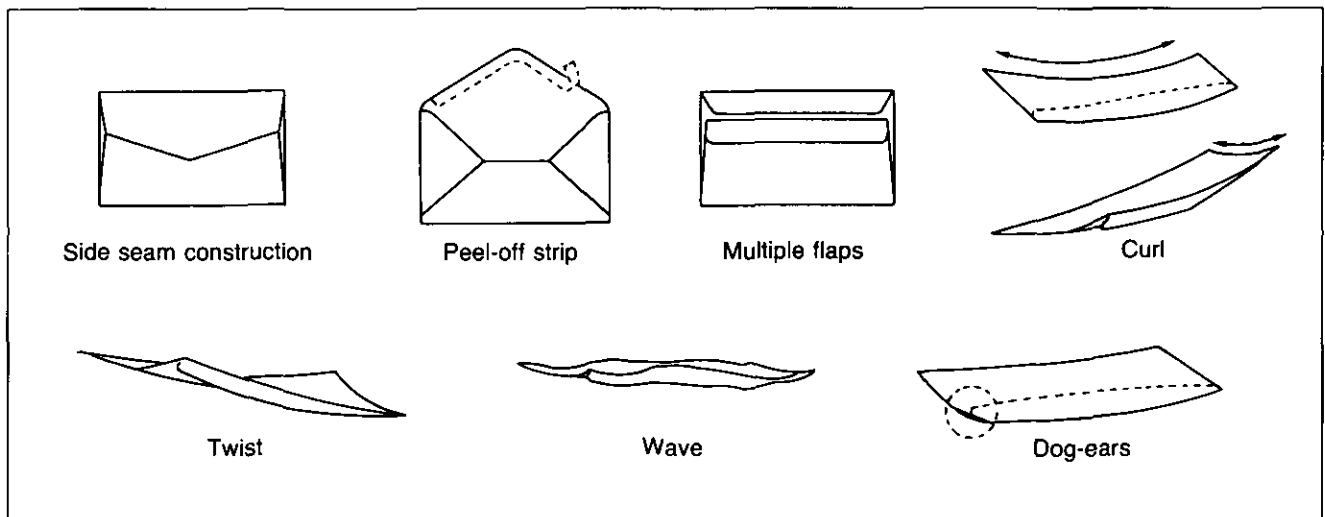
High quality envelopes have the following characteristics:

- A thin, sharply creased leading edge
- Paper weight of 24 pounds (90 g/m²)
- Flat, free of curls, wrinkles, nicks, etc.

It is not recommended that you use envelopes with any of the following characteristics (use of these may result in paper jamming):

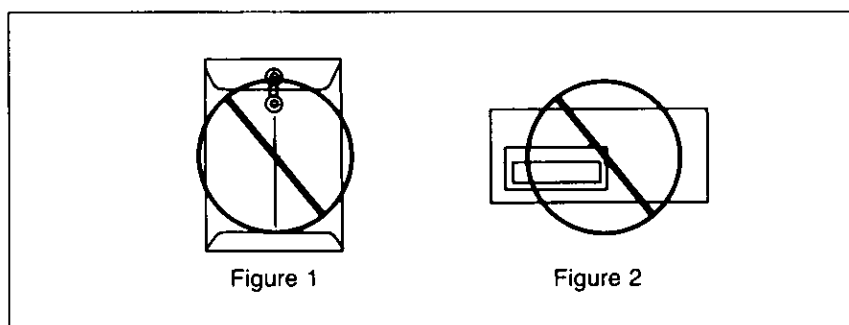
- Irregularly shaped envelopes
- Envelopes with curls, wrinkles, nicks, twist, dog-ears or other damage
- Envelopes with side seam construction
- Highly textured envelopes, or with extremely shiny surfaces
- Envelopes that seal by removing a peel-off strip
- Envelopes with more than one flap to be sealed
- Envelopes that are baggy or not sharply creased
- Embossed envelopes
- Envelopes too bulky to allow the cassette cover to be closed after they are loaded
- Envelopes that have already been printed on once

6



Do not attempt to print on any of the following types of envelopes. These may cause damage to your KX-P4440.

- Envelopes with clasps, snaps or tie strings (See figure 1)
- Envelopes with transparent windows (See figure 2)
- Envelopes that will melt, discolor, scorch offset or release hazardous emissions when exposed to 392°F (200°C) for 0.1 second
- Envelopes that use encapsulated types of adhesive that do not require moistening but, rely on pressure to seal them



Test samples of the envelopes you are thinking of buying. Confirm that the envelope performs acceptably.

For best printing results

- Avoid printing in high humidity i.e., above 70%.
High humidity may cause the envelope to curl and pick up excess toner.
High humidity may also cause the envelope to seal.
- Avoid printing below 50°F (10°C) with less than 30% relative humidity.
Low temperature with low humidity may cause light printing.

The storage of your envelopes is very important. Store them away from moisture and humidity air where they can lay flat and their edges won't be bent and damaged. The humidity should not exceed 70% RH.

6.3 Interface Specifications

Parallel Interface

The parallel interface is based on the Centronics standard.

Specifications:

- data transfer speed: 1000 cps minimum
- synchronization: external STROBE pulse
- logic levels: TTL
- handshaking: BUSY and $\overline{\text{ACK}}$ signals
- connector type: 57-30360 (AMPHENOL) or equivalent
- cable: use a shielded cable 6.6 feet (2 meters) or less in length.

When the printer is processing data, the BUSY signal is high. The printer will not accept new data from the computer. After the processing is completed, the BUSY signal goes low. (The BUSY signal is also high when the printer is OFF LINE.)

When this occurs, the $\overline{\text{ACK}}$ signal goes low indicating to the computer that the data has been processed and the printer is ready to accept more data. This handshaking routine occurs each time a character is sent to the printer.

	BUSY	SLCT	PO	$\overline{\text{ERROR}}$
ON LINE	LOW	HIGH	LOW	HIGH
OFF LINE	HIGH	LOW	LOW	LOW
PAPER OUT	HIGH	LOW	HIGH	LOW

Table 6.1 Printer status signals

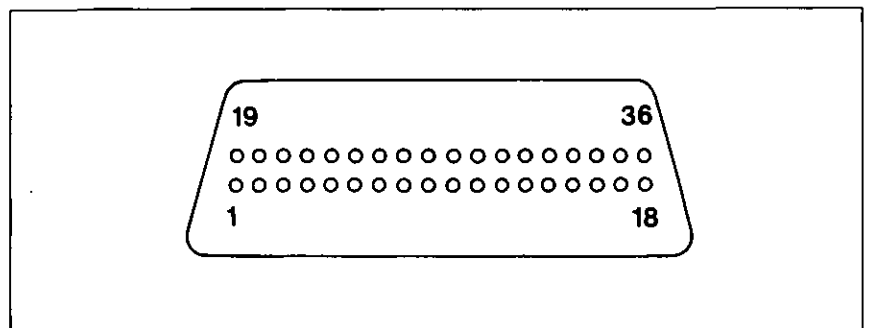


Figure 6.1 Parallel interface connector (Printer side)

Signal pin	Return side pin	Signal	Direction
1	19	\overline{STB}	Input
2	20	DATA 1	Input
3	21	DATA 2	
4	22	DATA 3	
5	23	DATA 4	
6	24	DATA 5	
7	25	DATA 6	
8	26	DATA 7	
9	27	DATA 8	
10	28	\overline{ACK}	Output
11	29	BUSY	Output
12		PO	Output
13		SLCT	Output
14		Do not use.	Input
15			
16		SG	
17		FG	
18		+5 V	Output
31	30	\overline{PRIME}	Input
32		\overline{ERROR}	Output
33		SG	
34			
35			
36			

Table 6.2 Pin configuration (Parallel)

Notes:

- "INPUT" refers to a signal coming into the printer. "OUTPUT" denotes a signal exiting the printer.
- "RETURN" denotes the return side wire of a twisted pair cable and is connected to signal ground.
- All interface signals are at TTL levels.

Connector Pin Signals

STB...STROBE

- This is a synchronizing input signal to read data into the printer.
- This signal is normally high. Data is read in when it goes low.
- The pulse must be low for at least 1 microsecond.

DATA 1–DATA 8

- These are the input signals which carry the 8 data bits of information.
- The signal is read in synchronization with the STROBE pulse. A high level indicates a logical “1”.
- The signal must be present 0.5 microseconds before and after the STROBE pulse.

ACK...ACKNOWLEDGE

- This is an output signal to the computer indicating that the printer is ready to receive the next block of data. It is sent out when the BUSY signal drops from high to low. Therefore, it can be thought of as a data request pulse.
- The signal is normally high. When the condition becomes true, the signal goes low.
- The ACK signal is automatically sent whenever the printer is switched ON LINE.

BUSY

- This output signal indicates the status of the printer. The signal is high when the printer is busy and cannot receive data.
- The signal is high under the following conditions:
 1. receive buffer full
 2. printer is OFF LINE
 3. printer is in an error condition

PO...PAPER OUT

- This output signal indicates that paper out detector detects the absence of paper.
- The signal is normally low and goes high during a “Paper Out” condition.

SLCT...SELECT

- SELECT is an output signal which indicates the ON LINE or OFF LINE state of the printer. The signal is high in the ON LINE state and low when OFF LINE.
- The printer enters the ON LINE state:
 1. when the printer is turned on
 2. when the RESET command is received
 3. when the ON LINE switch is pressed
- The printer enters the OFF LINE state:
 1. when the printer is out of paper
 2. when the printer is switched OFF LINE

SG...SIGNAL GROUND

- The twisted pair return wires (pins 19-30) are connected to signal ground.

FG...FRAME GROUND

- Frame ground is the same as chassis ground.

+5 V...(through register)

- This is for evaluation only. It should not be used to supply power for external equipment.

PRIME...(except Panasonic LP)

- This input signal is used to initialize the printer. The signal is normally high and goes low to reset the printer. It can be received anytime when the printer is ON LINE.

ERROR

- This output signal is an "error" or "fault" condition. Normally high, this signal goes low when an error occurs. An error condition can be caused by:

1. a "Paper Out" condition
2. the printer is OFF LINE
3. a paper jam or a hardware error condition exists

6

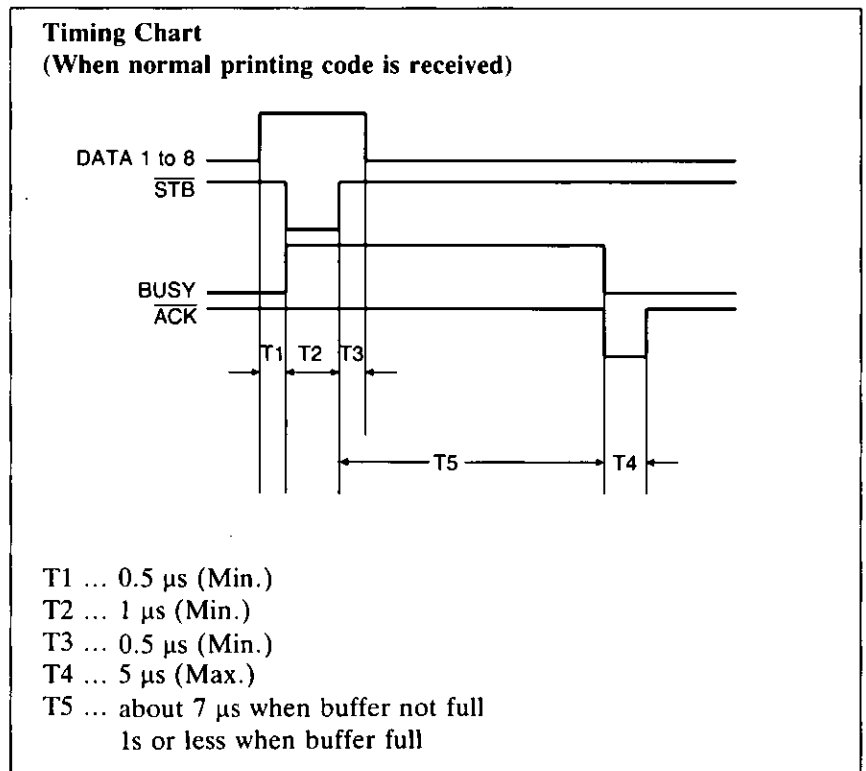


Figure 6.2 Timing diagram

Serial Interface

Data input:

7 bit or 8 bit serial; 1 start bit, data bits (7 or 8), parity bit and stop bit.

Data input codes:

Character; ASCII

Graphics; 8 bit

Transmission speed (Baud rate):

300, 600, 1200, 2400, 4800, 9600 or 19200

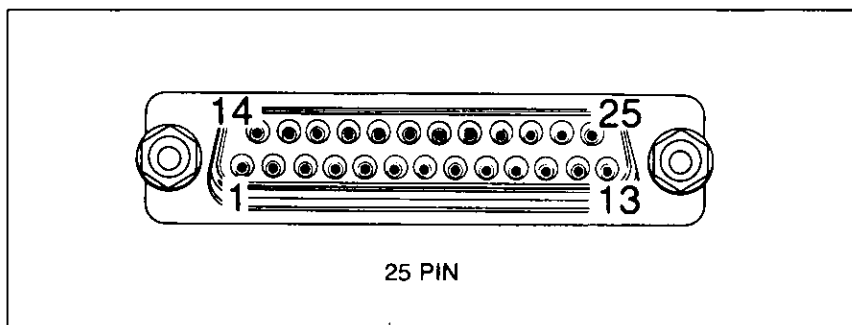


Figure 6.3 RS-232C connector pin assignment

Signal Pin	RS-232C	
	Signal	Direction
1	FG	
2	TXD	OUTPUT
3	RXD	INPUT
7	SG	
20	DTR	OUTPUT

Table 6.3 Pin configuration (Serial)

- Do not connect 4, 5, 6 or 8.

Note:

Use a shielded cable 9.8 feet (3 meters) or less in length when connecting the printer to the computer.

Signal Descriptions

FG...Frame Ground

- Frame ground is the same as chassis ground.

TXD...Transmit Data

- Outputs serial data to the computer. SPACE indicates "0" data; MARK indicates "1" data.

RXD...Receive Data

- Inputs serial data from the computer. SPACE indicates "0" data; MARK indicates "1" data.

SG...Signal Ground

- Connected to the signal ground of the printer's circuit board.

DTR...Data Terminal Ready

- This signal is sent to inform the computer that data reception is not possible at the present time, even though the printer might be on-line. Printer and computer polarities can be matched through the front panel key operations.

Protocol

This printer supports two types of protocol: XON/XOFF and DTR. DTR protocol uses a DTR signal (both MARK and SPACE are selectable) to indicate the condition of the printer, while XON/XOFF protocol uses an ASCII code corresponding to XON/XOFF.

DTR Protocol

When the input buffer is reduced to less than 64 bytes, the printer indicates that data reception is no longer possible by setting the DTR. In this condition, the computer is forced to stop transmitting data. Should the computer continue transmitting, all excessive data will be ignored by the printer.

XON/XOFF Protocol

When the input buffer is reduced to less than 512 bytes, the printer outputs the XOFF character. When this character is output, the computer is forced to stop transmitting data. Should the computer continue transmitting, all excessive data will be ignored by the printer. The XOFF character is also output when the printer is off-line. The XON character is output when the printer goes from the off-line to the on-line condition.

XON=11_{HEX} (17_{DEC})

XOFF=13_{HEX} (19_{DEC})

Designation of Signal Polarity of DTR

Selects POLARITY (MARK or SPACE) to match the computer through the front panel.

MARK: When the signal is "mark", the printer tells the computer that it can not accept transferring data.

SPACE: When the signal is "space", the printer tells the computer that it can not accept transferring data.

MARK is set at shipment.

When XON/XOFF Protocol is selected, DTR signal is held "mark" or "space" depending on POLARITY.

mark: logic "1" (-12 V)

space: logic "0" (+12 V)

Appendix A

Resident Font Print Sample

Bitmap Fonts

Courier 10cpi 12pts Upright Medium

Courier 10cpi 12pts Upright Bold

Courier 10cpi 12pts Italic Medium

Courier 12cpi 10pts Upright Medium

Courier 12cpi 10pts Upright Bold

Courier 12cpi 10pts Italic Medium

Courier 15cpi 8pts Upright Medium

Courier 15cpi 8pts Italic Medium

Courier 16.66cpi 7.2pts Upright Medium

Courier 16.66cpi 7.2pts Italic Medium

Courier 20cpi 6pts Upright Medium

Century PS 10pts Upright Medium

Century PS 10pts Upright Bold

Century PS 10pts Italic Medium

Outline Fonts (Intellifont Scalable Typefaces)

CG Times Upright Medium

CG Times Upright Bold

CG Times Italic Medium

CG Times Bold Italic

Univers Upright Medium

Univers Upright Bold

Univers Italic Medium

Univers Bold Italic

- Performing "CHARACTER PRINT" through the front panel shows you an entire page of characters with the currently selected font. Refer to Section 2.9 on page 2-31.

Appendix B

Options, Accessories and Supplies

Please contact your local Panasonic dealer for availability.

Options and Accessories

KX-PKC2	Multi Purpose Cassette
KX-P496	Manual Feed Cover for KX-PKC2
KX-P446	0 MB RAM Expansion Module
KX-P447	1 MB SIMM
KX-P448	2 MB SIMM

Supplies

KX-P453	Toner Kit—3,000 page life
KX-PDM5	Drum Unit and Ozone Filter—12,000 page life
KX-PDP5	Developer Unit with Toner Kit—90,000 page life
KX-PFS6	Fuser Unit—90,000 page life
KX-PCR3	Transfer Corona Unit—180,000 page life

Note:

The page life above is based upon printing 5.5% image area with repetitive printing of 10 pages.

Optional Font Cards

KX-P470	Font Card—Swiss/Dutch Provides Compatibility with HP's C, F, and P font cartridges
KX-P471	Font Card—Tax Preparation Provides Compatibility with HP's T font cartridge
KX-P472	Font Card—Legal Elite Provides Compatibility with HP's G font cartridge
KX-P473	Font Card—Presentations Provides Compatibility with HP's R font cartridge
KX-P474	Font Card—Prestige Provides Compatibility with HP's D and M font cartridges
KX-P475	Font Card—Swiss/Dutch Provides Compatibility with HP's S2 font cartridge

Glossary

A

ASCII: “ASCII” is an acronym for “American Standard Code for Information Interchange”. In ASCII, each character has a unique code.

B

BASIC: BASIC is a commonly used microcomputer programming language.

Baud (baud rate): Baud is a unit of data transmission speed between computer devices. Can be but not necessarily equal to bits per second.

Bit: Bit is an abbreviation for “binary digit (0-1)”, and is the smallest unit of information used by a printer for computer.

Bitmap Font: Bitmap font is composed with symbols which contains fixed characters size and shape. This printer has another font: outline font (Intellifont Scalable Typeface).

Buffer: Buffer is an area of memory which stores data temporarily.

Byte: Byte is the unit of information used by a printer or computer. One byte is equivalent to eight (8) bits.

C

Configuration: Configuration is a process for your computer to communicate properly with the printer.

CR (Carriage Return): “CR” is a control code that returns the printing position to the left margin of the current line.

D

Defaults: Default has two meanings: one indicates the previously set conditions or setting executed when the power is turned on, reset or initialized; and the other indicates the original settings when shipped from the factory (FACTORY settings).

Downloading: Downloading means to transfer data from your computer to the printer.

E

Emulation: Emulation means to operate like another printer. This printer can emulate the following printers: HP LaserJet Series III, IBM Proprinter II and Diablo 630.

F

Factory Default: Refer to “Defaults” on page G-1.

FF (Form Feed): “FF” is a control code that advances the paper one page.

Font: Font is a style and size of type designated by a family name.

I

Interface: Interface is the connection between two separate systems, such as the computer and the printer. A parallel interface transfers data one character of code at a time, and a serial interface transfers data one bit at a time.

L

LF (Line Feed): “LF” is a control code that advances the paper one line.

Liquid Crystal Display: LCD is a display to show the messages which guide the operation or it may show the error messages (see page 5-20). The message is composed of 16 characters at most.

LPI: “LPI” is an abbreviation for “lines per inch”, and describes the vertical line density.

O

OFF LINE: OFF LINE is the condition in which the printer can not communicate with the computer.

ON LINE: ON LINE is the condition in which the printer can communicate with the computer.

Outline Font (Intellifont Scalable Typeface): Outline fonts (Intellifont Scalable Typefaces) are fonts you can shrink or enlarge to the size you need. After you set a font to a desired size, you can use it as a bitmap font.

P

Page Protection: In Page Protection mode, the printer puts aside memory necessary to prevent “PAGE FORMAT U37” in composing very dense or complex graphics and text.

Parallel Interface: Refer to “Interface” on this page.

Parity: Parity is a method for a computer and printer to check the accuracy of data transfer.

Printer Drivers: Most of today’s off-the-shelf software programs use printer drivers to control printer functions. These drivers contain the software codes your software program uses to access printer features. With the printer driver installed, you will seldom need to know any of this printer’s commands.

Proportional Spacing (PS): Proportional spacing is a printing method of adjusting the character space in which a character is printed. A “w” will take up more space than an “i”.

Protocol: Protocol is the set of rules permitting communication between a computer and printer when a serial interface is used. It covers polarity, baud rate, parity, data length, start bit and stop bit.

R

RAM: RAM is an acronym for “Random Access Memory”. It is the part of the printer’s memory in which data, control codes, or download characters are stored. RAM is cleared when the printer is turned off.

ROM: ROM is an acronym for “Read Only Memory”. It is the part of the printer’s memory in which predefined characters and operating information for the printer are stored. ROM is not cleared when the printer is turned off.

S

SatinPrint: SatinPrint provides you with the technology which smoothes the edge of the print image.

Serial Interface: Refer to “Interface” on page G-2.

SIMM: SIMM is an acronym for “Single Inline Memory Module”. It is the part of the printer’s memory module for expanded RAM memory.

U

Uploading: Uploading means to transfer data from a bitmap font card to the RAM memory in the printer.

G

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MEMO

MEMO

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