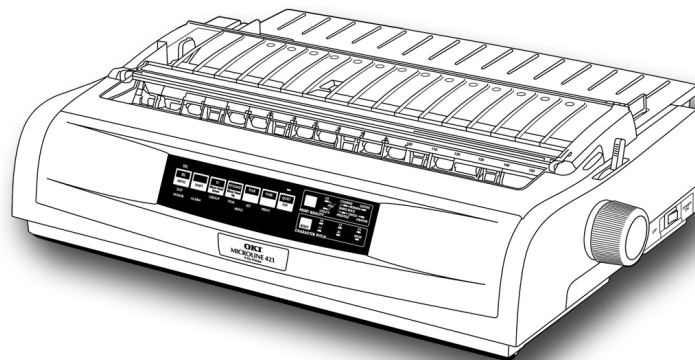


OKI®

Microline® 490/491

User's Guide



*Oki, Network Solutions
for a Global Society*

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ENERGY STAR®



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Safety

Your Oki printer has been carefully designed to give you years of safe, reliable performance. As with all electrical equipment, there are a few basic precautions you should take to avoid hurting yourself or damaging the printer:

- Carefully read all setup and operating instructions. Be sure to save all documents for future reference.
- Read and follow all warning and instruction labels on the printer itself.
- Place your printer on a firm, solid surface. If you put it on something unsteady, it might fall and be damaged.
- Avoid overheating the printer. Do not place it on a soft surface, such as a rug, sofa, or bed. The vents may be blocked, causing the printer to overheat.
- The printer must be installed near a power outlet which will remain easily accessible.

- Be certain that your power source matches the rating listed on the back of the printer. If you aren't sure, check with your dealer or with your local power company.
- Your printer has a grounded, 3-prong plug as a safety feature. It will only fit into a grounded outlet. If you can not plug it in, chances are that you have an older, non-grounded outlet. Contact an electrician to have it replaced with a grounded outlet. Do not use an adapter to defeat the grounding.
- To avoid damaging the power cord, do not put anything on it or place it where it will be walked on. If the cord becomes damaged or frayed, replace it immediately.
- If you're using an extension cord or power strip with the printer, make sure that the total of the amperes required by all the equipment on the extension is less than the extension's rating. Generally, the total ratings of all equipment plugged into any one power line should not exceed 15 amperes. Don't exceed this unless you know that the power line your equipment is plugged into has a rating above 15 amperes.

- Unplug the printer before you clean it. Use only a damp cloth. Do not use liquid or aerosol cleaners.
- To protect your printer from overheating, make sure no openings on the printer are blocked. Do not put the printer on or near a heat source, such as a radiator or heat register. If you put the printer in any kind of enclosure, make sure it is well ventilated.
- The printhead can get quite hot when it has been printing for a length of time. Do not touch the printhead until it has had a chance to cool off.
- Do not use your printer near water. Do not spill liquid of any kind into it.
- Do not poke anything into the ventilation slots on the sides of the printer. You could get a shock or cause a fire.
- Aside from the routine maintenance described in this document, don't try to service the printer yourself. Opening the cover may expose you to shocks or other hazards. Don't make any adjustments other than those outlined in the document. You might cause damage requiring extensive repair work.

- If anything happens that indicates that your printer is not working properly or has been damaged, unplug it immediately. Then, follow the procedures in “Service and Support” for having your printer serviced.

These are some of the things to look for:

- The power cord or plug is frayed or damaged.
- Liquid has been spilled into the housing, or the printer has been exposed to water.
- The printer has been dropped or its cabinet has been damaged.
- The printer doesn't function normally when you're following the operating instructions.

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Chapter 1: Introduction

Printer Features

- Super reliable, durable operation: 20,000 hours Mean Time Between Failures (MTBF) at 25% duty cycle and 35% page density
- Advanced paper handling, with built-in rear push tractor and zero-tear forms capability.
- Blazing print speeds, in characters per second (depending on characters per inch selected):
 - **High Speed Draft Mode:** 420 cps (10 cpi)
 - **Utility Mode:** 269 to 472 cps
 - **Letter Quality Mode:** 105 to 220 cps
- This rugged 24-pin printer can meet the needs of harsh and demanding environments.

Oki Data on the Internet

The Oki Data Web Sites provide the most current information available on your printer.

On-line documents are available for viewing and downloading via Oki Data's Web Sites.

You may reach Oki Data via the Internet at:

- www.okidata.com
- my.okidata.com

Chapter 2: Helpful Hints

Saving Money: Forms Tear-Off

The Forms Tear-Off feature allows a printed continuous forms page to be torn off without wasting paper or adjusting the printer.

When printing stops, Forms Tear-Off automatically moves the paper to align the perforation with the tear bar (located under the access cover), after a time interval which you select through the menu.

Paper remains in the tear-off position until the printer receives more data. Then, the paper moves back down for printing.

Note: This feature is normally turned off.

Important!

Forms Tear-Off and the Top of Form settings interact. For more information, see “Top of Form (TOF) and Forms Tear-Off” in Chapter 3: Using Your Printer.

Saving Time

Internet Support

Oki Data provides support via the Internet:

- **www.okidata.com** is the main web site, the gateway to Oki Data's products and services.
- **<http://my.okidata.com>** is a powerful area of Oki Data's web site designed to help you personalize the information and service you get from Oki Data.

Paper Park

Your printer's paper park feature allows you to print a single sheet (cut-sheet) page without removing continuous feed paper from the printer.

For more information, see “Paper Park” in Chapter 3: Using Your Printer.

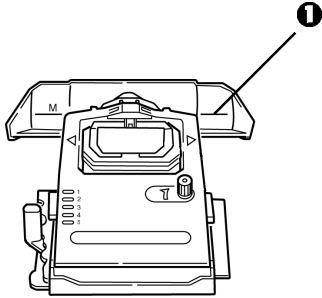
Operation Tips

Top of Form (TOF)

Top of Form (TOF) sets the print start position. The factory default is 1" from the top.

The Top of Form can be changed in increments of 1/180", either for a single print job or set to a new default. The overall amount of adjustment is limited to avoid paper jams.

The first line prints at the red line of the plastic paper shield (1) on the printhead.



For more information, see “Top of Form (TOF)” in Chapter 3.

Turning the Platen Knob

Important!

Always turn the printer off before turning the platen knob! If you turn the platen knob when the printer is on, the Top of Form misaligns.

Controlling Access to the Printer

You can control access to the printer by changing the setting for the Operator Panel Function in the Menu from Full Operation (the factory default) to Limited Operation.

When Limited Operation is selected, the **PRINT QUALITY** and **CHARACTER PITCH** keys don't work. This prevents these settings from being changed from the control panel when several people are using the printer.

For more information, see “Changing the Menu Settings” in Chapter 3: Using Your Printer.

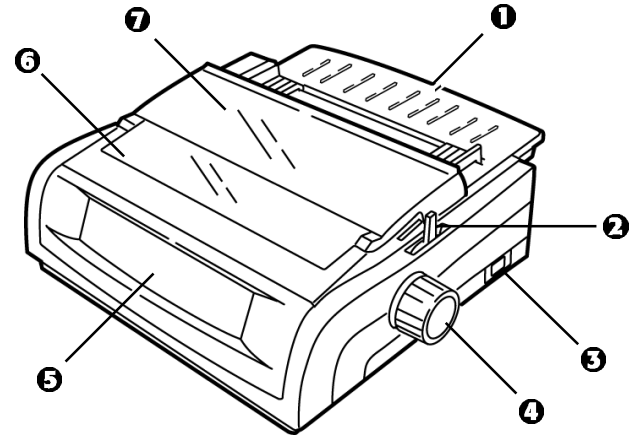
Chapter 3: Using Your Printer

Parts Identification: Rear Feed (Continuous Forms)

Note: The serial number of your printer is on a label on the back, beside "S/N."

- ❶ Sheet Guide
- ❷ Paper Lever
- ❸ On-Off Switch
- ❹ Platen Knob
- ❺ Control Panel
- ❻ Acoustic Cover
- ❼ Access Cover

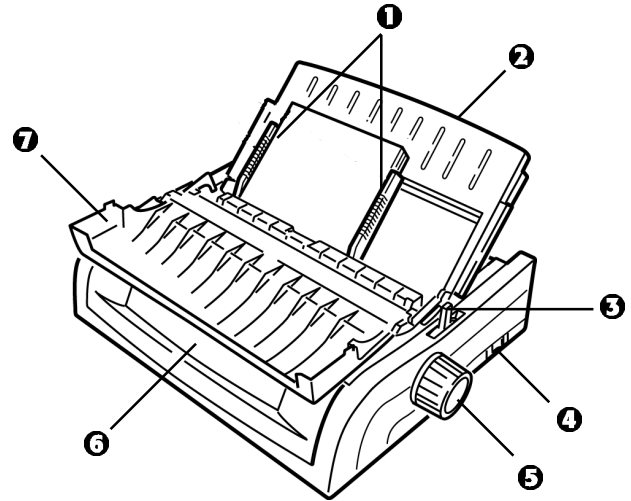
Note: For rear feed, the paper lever must be forward.



Parts Identification: Top Feed (Single Sheets)

- ❶ Paper Guides
- ❷ Sheet Guide
- ❸ Paper Lever
- ❹ On-Off Switch
- ❺ Platen Knob
- ❻ Control Panel
- ❼ Acoustic Cover (open)

Note: For single-sheet printing, the paper lever must be in the middle position.



Top of Form (TOF)

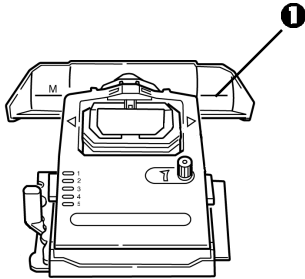
Important!

If you turn the platen knob when the printer is on, the Top of Form misaligns. Always shut the printer off before turning the platen knob!

Note: The factory default setting for the Top of Form (where the printing should begin) is 1" down from the top of the page.

Top of Form sets the print start position for the printer. It is adjustable in increments of 1/180 of an inch. The amount of adjustment is limited to avoid paper jams.

The first line prints at the red line of the plastic paper shield (1) on the printhead.



Top of Form (TOF) and Forms Tear-Off

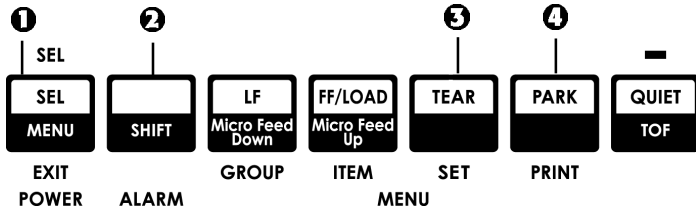
Note: Your software may print the first line of print above or below where TOF is set. You may need to adjust the TOF to meet your software's requirements.

The Top of Form and Forms Tear-Off settings of your printer interact. How you set the Top of Form depends on whether Forms Tear-Off is On (set to 500 ms, 1 sec, or 2 sec) or OFF (the factory default setting).

Determining if Forms Tear-Off is Off or On

There are two ways to determine the status of the Forms Tear-Off menu setting:

- Print the Menu.
- Use the **TEAR** key.



To print the Menu:

- 1 Make sure paper is loaded.
- 2 Hold **SHIFT** (2), then press **SEL** (1) to enter the Menu Mode.
- 3 Press **PARK** (4) to print the menu.
- 4 Look for the Form Tear-Off setting in the paper feed group you are using (Rear Feed, Bottom Feed or Top Feed—Forms Tear-Off appears in the Top Feed group only if the optional Roll Paper Stand is installed).

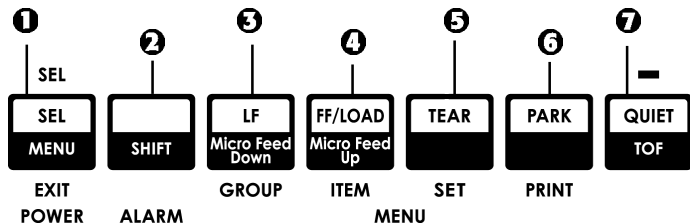
To use the **TEAR** key:

- 1 Make sure paper is loaded.
- 2 Press **TEAR** (3).
 - If the paper moves *up*, Forms Tear-off is *off*.
 - If the paper moves *down*, Forms Tear-off is *on*.

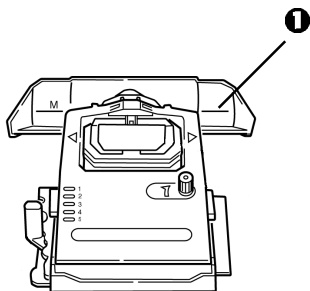
Setting Top of Form (TOF): Forms Tear-Off OFF (Default Setting)

Important!

If you turn the platen knob when the printer is on, the Top of Form misaligns. Always turn the printer off before turning the platen knob!



Note: The first line prints at the red line (1) of the plastic paper shield on the printhead.



With paper loaded and the printer on and selected:

1 Press **SEL | MENU** (1) to take the printer off line.

The SEL light goes out.

2 Press and hold **SHIFT** (2), then

Note: When you begin pressing the Micro Feed key, the printhead will move to the right.

- Press **LF | Micro Feed Down** (3) to set the TOF *higher* (the paper moves down).

- Press **FF/LOAD | Micro Feed Up** (4) to set the TOF *lower* (the paper moves up).

3 When you have the TOF set where you want it, press and hold **SHIFT** (2), then press **QUIET/TOF** (7) to engage the new setting.

The printhead moves back to the left margin.

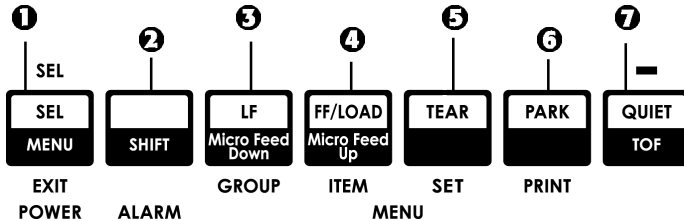
4 Press **SEL/MENU** (1) to save the setting and place the printer back on line.

Note: To reset the Top of Form to the factory default, see “Resetting Top of Form to the Factory Default” later in this chapter.

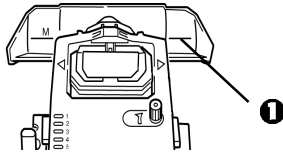
Setting Top of Form (TOF): Forms Tear-Off Set to ON

Important!

If you turn the platen knob when the printer is on, the Top of Form misaligns. Always turn the printer off before turning the platen knob!



Note: The first line prints at the red line (1) of the plastic paper shield on the printhead.



With paper loaded and the printer on and selected:

- 1 Press **PARK** (6) to park the paper.
The SEL light goes off and the red alarm light comes on.

- 2 Press **SHIFT** (2) and **QUIET/TOF** (7) to reset the current TOF.
- 3 Press **FF/LOAD** (4) to load the paper.
- 4 Wait briefly until the paper moves up to the tear position, then press and hold **TEAR** (5).
The paper moves to the current TOF.
- 5 Keep holding **TEAR**, then press and hold **SHIFT** (2) and release **TEAR**.
- 6 Continue to hold **SHIFT**, then

Note: When you begin pressing the Micro Feed key, the printhead will move to the right.

- Press **LF | Micro Feed Down** (3) to set the TOF *higher* (the paper moves down).
 - Press **FF/LOAD | Micro Feed Up** (4) to set the TOF *lower* (the paper moves up).
- 7 When you have the TOF set where you want it, press and hold **SHIFT** (2), then press **QUIET/TOF** (7) to engage the new setting.
The printhead moves back to the left margin.
 - 8 Press **SEL/MENU** (1) to save the setting and place the printer back on line.

Note: To reset the Top of Form to the factory default, see the next page.

Temporarily Changing the Top of Form Position

Important

Do not use the platen knob to change the Top of Form. If you turn the platen knob when the printer is turned on, the Top of Form misaligns. Always turn the printer off before turning the platen knob!

To move the Top of Form position lower *for one page only*:

- 1 Press **SEL** to deselect the printer.
- 2 Press **LF** to lower the position of the Top of Form.

Resetting Top of Form to the Factory Default

The factory default setting for the Top of Form (where the printing should begin) is 1" down from the top of the page.

To reset the Top of Form to the factory default:

- 1 Remove paper from the paper path.
- 2 Turn the printer *off*.
- 3 Press and hold **PARK + QUIET/TOF** while turning on the printer.
- 4 Reload paper.

Forms Tear-Off Feature

Note: This feature is normally turned off. To use Forms Tear-Off, you must enter the menu and change the setting to the desired time interval (see next page).

The Forms Tear-Off feature allows a printed continuous forms page to be torn off without wasting paper or adjusting the printer. It can be used for rear feed continuous forms, bottom feed continuous forms (with the optional push tractor installed) or for top feed roll paper (with optional roll paper stand installed).

When the printer is turned on, the paper feeds to the tear-off position.

When data is received, the paper automatically moves down to the print position (TOF) and printing begins.

*Note: You can also move the paper down to the print position manually by pressing **TEAR**.*

When printing stops, Forms Tear-Off automatically moves the paper to align the perforation with the tear bar (located under the access cover), after the time interval which you selected through the menu.

Paper remains in the tear-off position until the printer receives more data. Then, the paper moves back down for printing.

Notes: The status of the Forms Tear-Off menu setting affects how you set the Top of Form: see “Top of Form (TOF) and Forms Tear-Off” earlier in this chapter.

Do not use Forms Tear-Off with labels or multipart forms!

Forms Tear-Off cannot be used when the optional pull tractor is engaged.

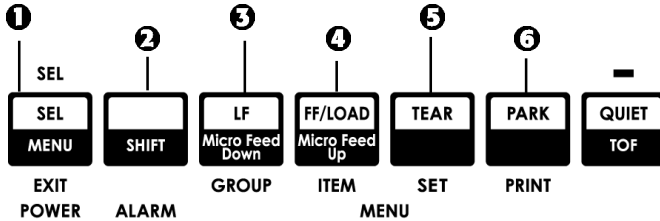
Potential Problems with Software Packages

If Forms Tear-Off is set to On and the software package you are using “pauses” for a long enough interval while sending data to the printer, Forms Tear-Off may be activated. No data is lost, but this causes uneven print registration due to the paper movement.

If this occurs, use the menu to turn off this feature, then use the **TEAR** key to move the paper up to the tear position manually (see next page).

Changing the Forms Tear-Off Setting

Note: The default setting for Forms Tear-Off is OFF.



To change the Forms Tear-Off setting:

- 1 Press **SHIFT** (2) + **SEL** (1).
- 2 Press **GROUP** (3) repeatedly until the Rear Feed or Bottom Feed group shows in the first column of the printed line, depending on which paper feed you are using,
- 3 Press **ITEM** (4) repeatedly until Form Tear-Off appears in the second column:
Rear Feed Form Tear-Off Off
- 4 Press **SET** (5) until the time interval you wish to select appears in the third column:
Rear Feed Form Tear-Off 1 Sec
- 5 Press **SHIFT** (2) + **SEL** (1) to exit Menu Mode and save the setting.

Manual Forms Tear Off

If you don't wish to engage the Forms Tear-Off feature, you can advance

- rear-feed continuous forms loaded on the built-in tractor *or*
- bottom-feed continuous forms loaded on the optional push tractor

up to the tear off position manually by pressing **TEAR** (5).

Paper Park

Important!

Never park labels!

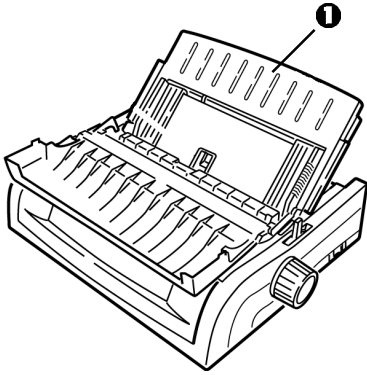
Paper park allows you to switch to single-sheet printing without removing continuous feed paper from the printer.

When you wish to print single sheets, simply press **PARK** (6) to retract the continuous form paper from the paper path, then lift the sheet guide, load the sheet and send the print job.

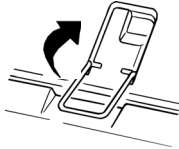
Changing Paper Paths

Continuous Forms to Single Sheets

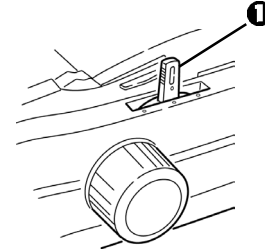
- 1 Tear off any printed pages, then press **PARK**.
- 2 Raise the sheet guide (1) to the single-sheet feed position.



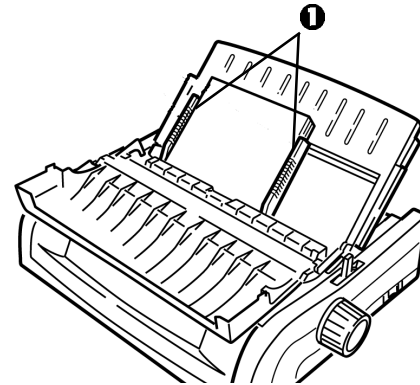
- 3 Pivot the wire feed guide into the sheet guide.



- 4 Move the paper lever (1) to the middle position marked "TOP."

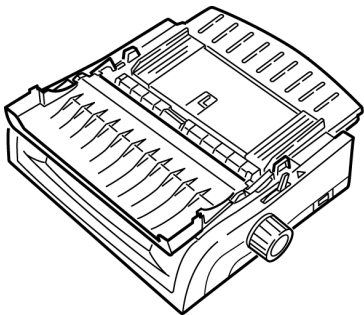


- 5 Adjust the paper guides (1) for the size paper you are using, then place a sheet of paper in the sheet guide.

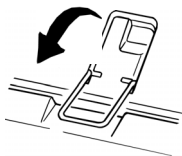


Single Sheets to Continuous Forms

- 1 Press **FF/LOAD** to remove the single-sheet paper.
- 2 Lower the sheet guide into the continuous-forms position.

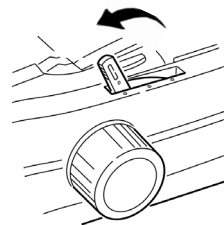


- 3 Swing the wire feed guide over onto the pull-up roller.

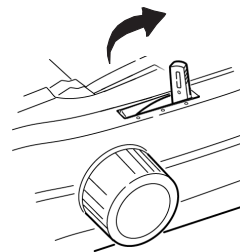


- 4 Move the paper lever to the appropriate position.

- Rear feed:



- Bottom feed:



- 5 If necessary, load continuous-form paper.

- 6 Press **FF/LOAD**.

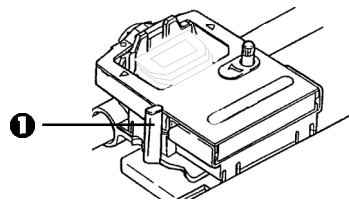
Printhead Gap

The printhead gap is the distance between the printhead and the platen.

CAUTION!

Make sure the printer is turned off before you open the access cover.

To adjust the gap, open the access cover and move the blue lever (1) to the recommended setting from the table.



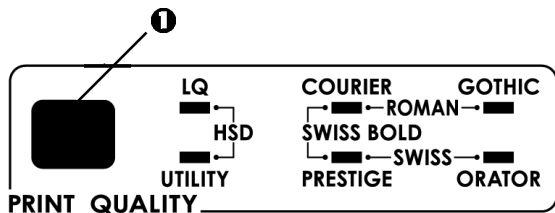
Setting	Media
1	Regular paper
2	2-part form (with carbon)
3	3-part form (with carbon)
4	4-part form (with carbon)
5	Envelopes or extra thick paper

Note: When the head gap is set to 2, 3, 4 or 5, the printer automatically slows down for better print quality with multipart forms.

Print Quality

Important!

Front panel settings for print quality and character pitch are normally overridden by software commands.



Press **PRINT QUALITY (1)** to select:

LQ: Letter Quality **[LQ light on]**

- Highest quality, slowest speed
- Choice of 7 typefaces

Utility **[UTILITY light on]**

- Medium quality, medium speed
- Gothic typeface only

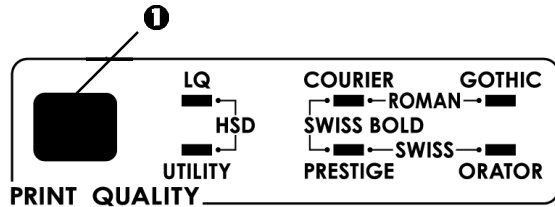
HSD: High Speed Draft **[LQ and UTILITY lights both on]**

- Lowest quality, highest speed
- Gothic typeface only

Typefaces: LQ Mode

Important!

Front panel settings for print quality and typeface are normally overridden by software commands.



To select the typeface you wish to use, press **PRINT QUALITY** (1) until the appropriate front panel lights are on:

Typeface	Lights on
Courier	LQ and COURIER
Gothic	LQ and GOTHIC
Orator	LQ and ORATOR
Prestige	LQ and PRESTIGE
Roman	LQ, COURIER, and GOTHIC
Swiss	LQ, PRESTIGE and ORATOR
Swiss Bold	LQ, COURIER and PRESTIGE

Character Pitch

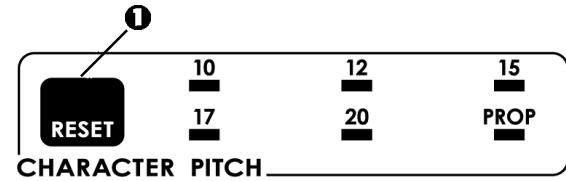
Important!

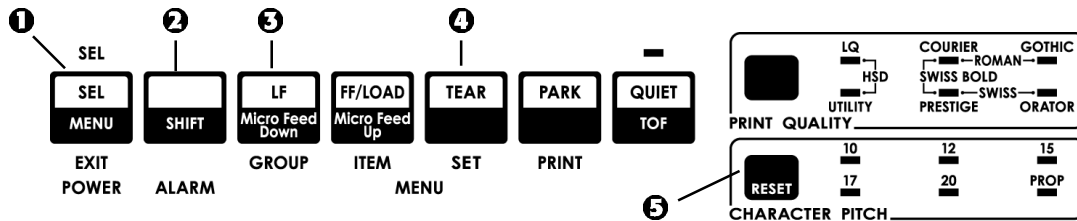
Front panel settings for character pitch are normally overridden by software commands.

Character pitch determines how many characters will print on each line. You can choose a specific fixed width for each character of from 10 to 20 characters per inch (CPI). The higher cpi settings are often used for spreadsheets.

In LQ mode, you can select proportional (PROP) which sets character widths based on the character itself: e.g., the letter i is assigned a narrower width than the letter m. This provides a more polished, typeset appearance.

Set the character pitch by pressing **CHARACTER PITCH/RESET** (1) until the LED beside the desired setting glows.





Printer Reset

Clearing some error conditions requires that you reset (reinitialize) the printer. To do this:

- 1 Press and release **SEL** (1) to take the printer off-line.
The SEL light goes out.
- 2 Press and hold **SHIFT** (2), then press **RESET/CHARACTER PITCH**.

Important!

*Pressing **SHIFT** + **RESET** reinitializes the printer, but does not affect any menu settings and does not reset the printer to the factory defaults. For information on resetting the printer to the factory defaults, see “Resetting the Menu to the Factory Defaults” later in this chapter.*

Emulations

- Epson® LQ — *factory setting*
- IBM® Proprinter
- IBM® AGM

Changing Emulations

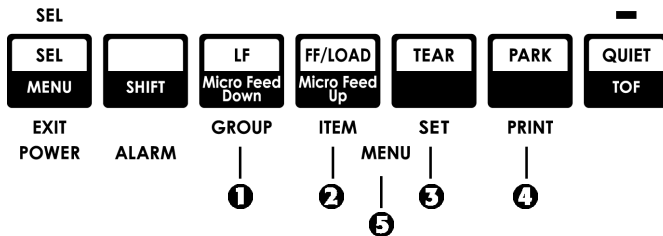
- 1 Make sure paper is loaded.
- 2 Press and hold **SHIFT** (2), then press **SEL** (1).
- 3 Press **LF** (3).
The following line prints:
Printer Control Emulation Mode EPSON LQ
- 4 Press **TEAR** (4) repeatedly until the emulation you wish to select prints in the right-hand column.
- 5 Press and hold **SHIFT** (2), then press **SEL** (1) to save your setting and exit the Menu Mode.

Chapter 4: Menu Mode

Note: Please print the current Menu Mode settings before you reset or change them. This is the only way to have a record of the settings.

In Menu Mode, you use the front panel keys to change the defaults for the printer parameters. The changes you make in the Menu Mode are automatically saved when you exit the Menu Mode and are retained, even when you turn the printer off.

Menu Mode Keys



1 GROUP Key

Prints the next Group in the Menu.

With the **SHIFT** key, prints the previous Group.

2 ITEM Key

Prints the next Item in the Group.

With the **SHIFT** key, prints the previous Item in the Group.

3 SET Key

Prints the next setting for an Item.

With the **SHIFT** key, prints the previous setting for an Item.

4 PRINT Key

Prints a copy of all the Menu settings.

With the **SHIFT** key, prints the current settings for the Group selected.

5 MENU Light

Glows when the printer is in the Menu Mode.

Entering and Exiting Menu Mode

To enter or exit the Menu Mode, hold **SHIFT** while pressing **SEL**.

Resetting the Menu to the Factory Defaults

Note: Please print the current Menu Mode settings before you reset or change them. This is the only way to have a record of the settings.

To reset the Menu to the standard settings (factory defaults):

- 1 Turn the printer off.
- 2 Press **SEL + LF** while turning the printer on.

Printing the Menu Settings

Printing the Current Menu Settings

- 1 Make sure paper is loaded in the printer.
- 2 Press and hold **SHIFT**, then press **SEL** to enter the Menu Mode.
- 3 Press **PRINT (PARK key)**.

Printing All Menu Settings

To print out a listing of the settings for all menu items, regardless of the emulation selected or the accessories installed:

- 1 Make sure paper is loaded in the printer.
- 2 Press and hold **SHIFT**, then press **SEL** to enter the Menu Mode.
- 3 Press and hold **SHIFT**, then press **PRINT QUALITY**.

Changing the Menu Settings

Note: Please print the current Menu Mode settings before you reset or change them. This is the only way to have a record of the settings.

- 1 Press and hold **SHIFT**, then press **SEL** to enter the Menu Mode.
- 2 Use the **GROUP**, **ITEM** and **SET** keys to make your changes:
 - a Press **GROUP** until the Group you wish to change appears in the first column.
 - b Press **ITEM** until the Item you wish to change appears in the second column.
 - c Press **SET** until the setting you want appears in the third column.
- 3 Press and hold **SHIFT**, then press **SEL** to exit the Menu Mode and save your settings.

Important!

If you turn off the printer without first exiting the Menu Mode, the changes you have made will be lost.

Menu Settings Table

For a complete explanation of each menu item, see “Explanations of Menu Items” later in this chapter.

The table below shows the items which may appear in the menu. Settings which are engaged at the factory (defaults) are set in ***bold italic***. Some groups or entries will only appear when a specific emulation is engaged, as noted.

Group	Item	Settings (Defaults are set in <i>bold italic</i>)
Printer Control	Emulation Mode	<i>EPSON LQ</i> , IBM PPR, IBM AGM
Font	Print Mode	<i>LQ Courier</i> , LQ Roman, LQ Swiss, LQ Swiss Bold, LQ Orator, LQ Gothic, LQ Prestige, Utility, HSD
	Pitch	<i>10 cpi</i> , 12 cpi, 15 cpi, 17.1 cpi, 20 cpi
	Proportional Spacing	<i>No</i> , Yes
	Style	<i>Normal</i> , Italics
	Size	<i>Single</i> , Double
Symbol Sets	Character Set	<i>Set I</i> , Set II
	Language Set	<i>American</i> , French, German, British, Danish I, Swedish, Italian, Spanish I, Japanese, Norwegian, Danish II, Spanish II, Latin American, French Canadian, Dutch, Publisher
	Zero Character	<i>Slashed</i> , Unslashed
	Code Page	<i>USA</i> , Canada French, Multilingual, Portugal, Norway, BRASCII, Abicomp, Multilingual 858, ISO 8859-15

Menu Settings Table (Continued)

Group	Item	Settings (Defaults are set in <i>bold italic</i>)
Rear Feed	Line Spacing	<i>6 LPI</i> , 8 LPI
	Form Tear-Off	<i>Off</i> , 500 ms, 1 sec, 2 sec
	Skip Over Perforation	<i>No</i> , Yes
	Page Width (wide model)	<i>13.6"</i> , 8"
	Page Length	<i>11"</i> , 11-2/3", 12", 14", 17", 5", 3", 3.25", 3.5", 4", 5.5", 6", 7", 8", 8.5"
Bottom Feed	Line Spacing	<i>6 LPI</i> , 8 LPI
	Form Tear-Off	<i>Off</i> , 500 ms, 1 sec, 2 sec
	Skip Over Perforation	<i>No</i> , Yes
	Page Width (wide model)	<i>13.6"</i> , 8"
	Page Length	<i>11"</i> , 11-2/3", 12", 14", 17", 5", 3", 3.25", 3.5", 4", 5.5", 6", 7", 8", 8.5"

Menu Settings Table (Continued)

Group	Item	Settings (Defaults are set in <i>bold italic</i>)
Top Feed	Line Spacing	6 LPI , 8 LPI
	Form Tear-Off*	Off , 500 ms, 1 sec, 2 sec
	Bottom Margin	Valid , Invalid
	Page Width (wide model)	8" , 13.6"
	Page Length	11" , 11-2/3", 12", 14", 17", 5", 3", 3.25", 3.5", 4", 5.5", 6", 7", 8", 8.5"
	Wait Time	500 ms, 1 sec , 2 sec
	Page Length Control	by MENU Setting , by Actual Page Length
Set-Up	Graphics	Bi-directional , Uni-directional
	Receive Buffer Size	1 Line, 32K, 64K , 128K
	Paper Out Override	No , Yes
	Print Registration 1	0 , range to 0.25 mmm to the right or left, set in 0.05 mm increments <ul style="list-style-type: none"> • press SEL to shift registration to the left; • press SHIFT + SEL to shift registration to the right.
	Print Registration 2	0 , range to 0.25 mmm to the right or left, set in 0.05 mm increments <ul style="list-style-type: none"> • press SEL to shift registration to the left; • press SHIFT + SEL to shift registration to the right.

* Appears only when the optional Roll Paper Stand is installed.

Menu Settings Table (Continued)

Group	Item	Settings (Defaults are set in <i>bold italic</i>)
Setup (cont.)	Operator Panel Function	<i>Full Operation</i> , Limited Operation
	Reset Inhibit	<i>No</i> , Yes
	Print Suppress Effective	No, <i>Yes</i>
	Auto LF	<i>No</i> , Yes
	Auto CR*	<i>No</i> , Yes
	CSF Bin Select†	<i>Bin 1</i> , Bin 2
	SI Select Pitch (10 cpi)*	15 cpi, <i>17.1 cpi</i>
	SI Select Pitch (12 cpi)*	<i>12 cpi</i> , 20 cpi
	Time Out Print	<i>Valid</i> , Invalid
	Auto Select	<i>No</i> , Yes
	Graphics Speed	<i>Low</i> , High
	Centering Position	<i>DEFAULT</i> , MODE 1, MODE 2
	CSF Type	<i>Wide</i> , Narrow
	Power Saving	<i>Enable</i> , Disable
Power Save Time	<i>5 min</i> , 10 min, 15 min, 30 min, 60 min	

* Appears only when the IBM emulation is selected.

† Appears only when optional Cut Sheet Feeder is installed.

Menu Settings Table (Continued)

Group	Item	Settings (Defaults are set in <i>bold italic</i>)
Parallel I/F	I-Prime	<i>Buffer Print</i> , Buffer Clear, Invalid
	Pin 18	+5V, Open
	Auto Feed XT*	<i>Invalid</i> , Valid
	Bi-Direction	<i>Enable</i> , Disable
Serial IF†	Parity	<i>None</i> , Odd, Even
	Serial Data 7/8 Bits	<i>8 Bits</i> , 7 Bits
	Protocol	<i>Ready/Busy</i> , X/On / X/Off
	Diagnostic Test	<i>No</i> , Yes
	Busy Line	<i>SSD-</i> , SSD+, DTR, RTS
	Baud Rate	19200 bps, <i>9600 bps</i> , 4800 bps, 2400 bps, 1200 bps, 600 bps, 300 bps
	DSR Signal	<i>Valid</i> , Invalid
	DTR Signal	<i>Ready on Power Up</i> , Ready on Select
Busy Time	<i>200 ms</i> , 1 sec.	

* Appears only when the Epson LQ emulation is selected.

† Appears only when the optional Serial Interface is installed.

Menu Settings Table (Continued)

Group	Item	Settings (Defaults are set in <i>bold italic</i>)
CSF Bin 1*	Line Spacing	6 LPI , 8 LPI
	Bottom Margin	Valid , Invalid
	Page Width (Wide model)	8" , 13.6"
	Page Length	11" , 11-2/3", 12", 14", 17", 5", 3.5", 4", 5.5", 6", 7", 8", 8.5"
CSF Bin 2*	Line Spacing	6 LPI , 8 LPI
	Bottom Margin	Valid , Invalid
	Page Length	11" , 11-2/3", 12", 14", 17", 5", 3.5", 4", 5.5", 6", 7", 8", 8.5"

* Appears only when the optional Cut Sheet Feeder is installed.

Explanations of Menu Items

These explanations are in alphabetical sequence to make it easier to look them up. Some items only appear when optional accessories are installed; others appear in several groups in the menu.

Auto CR, Default =No

IBM Only. If you want the printer to automatically add a carriage return when a Line Feed is received at the end of a line, change the setting to Yes.

Auto LF, Default = No

If your printout is consistently double spaced, select No; if it overprints, select Yes.

Auto Feed XT, Default = Invalid

Epson Only. In the Epson emulation, the XT signal on pin 14 of the parallel interface can control automatic line feed. Some interface cables are wired in such a way that automatic line feed is always in effect: this item eliminates this potential problem. If your system uses pin 14 of the parallel interface to control automatic line feed, change the setting to Valid.

Auto Select, Default = No

Determines whether or not your printer will automatically be selected after you load in paper. With the factory default engaged, the printer will be deselected so that you can set the Top of Form. If you always use the same Top of Form position, change the setting to Yes.

Bi-direction, Default = Enable

Change this setting if you wish to disable bidirectional transmission (PnP) in Nibble mode.

Bottom Margin, Default = Valid

Change to Invalid if you want the printer to ignore the bottom margin setting.

CAUTION!!

Setting the Bottom Margin to Invalid can cause loss of data and damage the printhead by allowing printing without paper.

Busy Line, Default = SSD-

Appears only when the optional Serial Interface is installed. If Ready/Busy protocol (factory default) is selected, you can choose which line your system monitors for a busy signal:

- SSD -9V, select SSD-
- SSD +9V, select SSD+
- DTR -9V, select DTR
- RTS -9V, select RTS

Busy Time, Default = 200 ms

Appears only when the optional Serial Interface is installed. Sets the length of the busy signal when the Ready/Busy protocol (factory default) is engaged,

Centering Position, Default = DEFAULT

Used to limit printhead travel when printing narrow columns.

- Select Mode 1 for the narrow carriage printer.
- Select Mode 1 or Mode 2 for the wide carriage printer.

Character Set, Default = IBM Set I

Use this to switch character sets to IBM Set II

Code Page, Default = USA

Choose the Code Page character set you wish to use: USA, Canada French, Multilingual, Portugal, Norway, BRASCII, Abicomp, Multilingual 858, or ISO 8859-15.

CSF Bin Select, Default = Bin 1

Appears only when the optional Dual-Bin Cut Sheet Feeder is installed. Use this to switch to Bin 2 as the default.

CSF Type, Default = Wide

To avoid paper jams, change this setting to Narrow if you are using the optional Cut Sheet Feeder on the wide model ML491 printer.

Diagnostic Test, Default = No

Appears only when the optional Serial Interface is installed. Select yes to perform a diagnostic test of the serial interface.

DSR Signal, Default = Valid

Appears only when the optional Serial Interface is installed. Used with the Ready/Busy protocol (factory default) to select the way your system handles the DSR signal.

DTR Signal, Default = Ready on Power Up

Appears only when the optional Serial Interface is installed. Change to Ready on Select if the DTR signal is required when the printer is selected (leave as Ready on Power Up if the DTR signal is required when the printer is turned on).

Emulation Mode, Default = Epson LQ

Selects the printer command set (emulation) you want to engage.

Form Tear-Off, Default = Off

Choose 500 ms, 1 sec, or 2 sec to turn the Form Tear-Off feature on and to set the time interval for the printer to wait before advancing the paper.

Graphics, Default = Bi-directional

Change to uni-directional graphics for better registration, but slower printing. With this set for bi-directional, you can optimize the registration using the Print Registration setting in the Menu.

Graphics Speed, Default = Low

Change to High for faster printing when optimum print quality is not an issue.

I-Prime, Default = Buffer Print

Determines what the printer will do when it receives the I-Prime signal from the software.

- Buffer Print: prints out the buffer contents before resetting.
- Buffer Clear: dumps the buffer contents immediately.
- Invalid: causes the printer to ignore the I-Prime command. Select this setting if you wish to enter settings through the printer's control panel which will not be automatically overridden by the software's settings when the I-Prime signal is sent.

Language Set, Default = American

Replaces certain standard symbols with special characters used in foreign languages.

Line Spacing, Default = 6 lpi

Change to 8 lines per inch (lpi) to get more lines on a page.

Operator Panel Function, Default = Full Operation

Change to Limited Operation to deactivate the **PRINT QUALITY** and **CHARACTER PITCH** buttons, so that these features can only be controlled through your software. This prevents these from being changed from the control panel when several people are using the printer.

Important!

*This feature also prevents access to the Menu. To access the Menu in these circumstances, turn the printer off, then hold down the **SEL** key while turning on the printer.*

Page Length, Default = 11"

Selects the length of the paper you are using. This enables the printer to keep track of the initial printing position (TOF) on each page.

Page Length Control, Default = by Menu Setting

Change the setting to "by Actual Page Length" if you wish to print on single-sheets longer than 17 inches. When "by Actual Page Length" is selected, the menu setting for Top Feed Page Length is ignored.

Page Width, Default = 8"

Wide carriage model only. Change to 13.6" to print on wide paper.

Paper Out Override, Default = No

Senses when less than 1" (25 mm) of paper remains and stops printing. Change to Yes to override the sensor and print closer to the bottom of the page.

Caution!!

Engaging Paper Out Override can cause loss of data and damage the printhead by allowing printing without paper.

Parity, Default = None

Appears only when the optional Serial Interface is installed. Selects the type of parity your system uses: None, Odd or Even.

Pin 18, Default = +5V

Sets the signal on pin 18 to +5 volts or open.

Pitch, Default = 10 cpi

Choose the character width, in characters per inch (cpi).

Power Save Time, Default = 5 min

Sets the interval the printer waits for more data before it goes into the power save mode. Power Saving must be set to enable (the factory default) for this to be effective.

Power Saving, Default = Enable

Change to Disable if you wish to prevent the printer from entering the Power Save mode after the selected interval.

Print Mode, Default = LQ Courier

Choose the quality and typeface of printing.

Print Registration, Default = 0

Change the setting as required to obtain the best registration for bi-directional printing.

Print Suppress Effective, Default = Yes

If your system uses the DC1 and DC3 codes for something other than the print suppress mode, change the setting to No.

Proportional Spacing, Default = No

Change the setting to Yes to engage proportional spacing of characters.

Protocol, Default = Ready/Busy

Appears only if the optional Serial Interface is installed. Change to X-ON / X-Off if that is the type of protocol your system uses.

Receive Buffer Size, Default = 64K

Selects the amount of memory devoted to holding received data. Choosing 1 Line will tie up your computer while printing, but if you abort the print job, the printer will stop much sooner.

Reset Inhibit, Default = No

Select Yes if you wish the printer to ignore the reset command sent by software. This prevents your software from changing the settings you make through the front panel controls or through printer commands.

Note: This will also prevent your software from clearing out existing settings when you finish printing one document and switch to another.

Serial Data 7/8 Bits, Default = 8 Bits

Appears only if the optional Serial Interface is installed.
Change to 7 Bits if you systems uses a 7-bit data format.

SI Select Pitch 10 cpi, Default = 17.1 cpi

IBM emulation only. Sets the pitch to be engaged when the printer control panel is set for 10 cpi and the SI command is received.

SI Select Pitch 12 cpi, Default = 20 cpi

IBM emulation only. Sets the pitch to be engaged when the printer control panel is set for 12 cpi and the SI command is received.

Size, Default = Single

Change to Double for double width and height printing.

Skip Over Perforation, Default = No

Change to Yes if you want the printer to go to the next page when it comes within 1" (25 mm) of the bottom of the page. Keep it set to No if your software has its own page formatting controls.

Style, Default = Normal

Change to italics if you want the printed characters to be slanted.

Time Out Print, Default = Valid

If your software spends a long time processing between portions of data it feeds to the printer, change the setting to Invalid to keep your printer from dumping the received data while it is waiting for more.

Wait Time, Default = 1 sec

Sets the amount of time the printer will wait for more data before moving to the form tear-off position.

Zero Character, Default = Slashed

If you do not want the printer to use a slash to distinguish the number zero from the capital letter O, change the setting to Unslashed.

Chapter 5: Maintenance

Replacing the Ribbon Cartridge

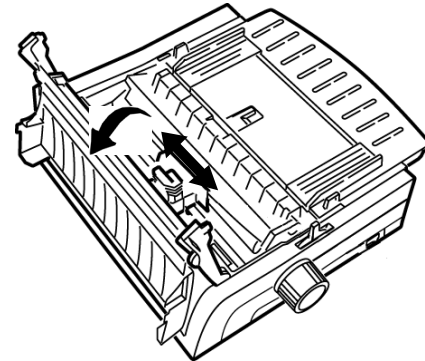
Important!

Make sure you have the correct replacement ribbon for the your printer. The wrong ribbon will not print when installed in your printer.

Ribbon Cartridge Handling

- Leave unused ribbon cartridges in their packages until needed.
- Careful; the ribbon ink may cause permanent stains.
- Ribbon ink on skin or clothing can usually be removed with soap and water.

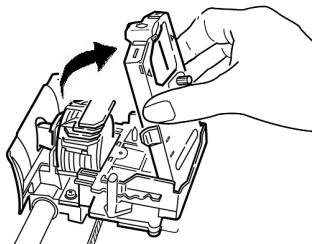
- 1 *Make sure the printer is turned OFF.*
- 2 Open the access cover and center the printhead.



CAUTION!

*The printhead may be **HOT!***

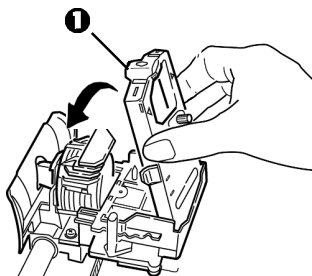
- 3 Swing the used ribbon cartridge up off the printhead, lift it out, and discard it.



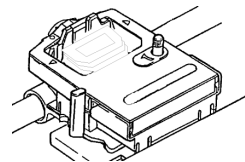
- 4 Unpack the new ribbon cartridge and install it.

Important!

Do not remove the ribbon shield (1) from the ribbon!



- 5 Turn the take-up knob in the direction of the arrow to take up any ribbon slack.



- 6 Close the access cover and turn the printer back on.

CAUTION!

If ribbon should contact the eyes:

Flush eyes with large quantities of water for 15 minutes, keeping eyelids open with fingers. Seek medical attention.

If ribbon should contact the skin

Wash thoroughly with soap and water.

For more information

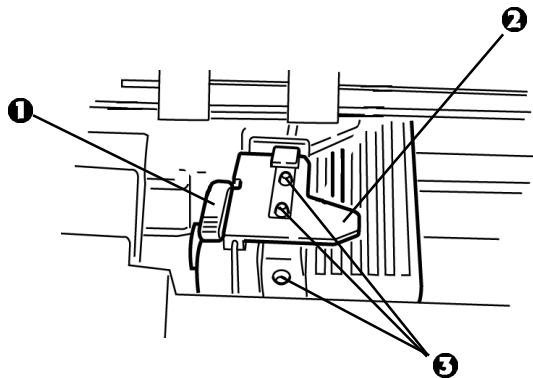
See the Material Safety Data Sheet in your *Warranty, Regulatory, and Safety Information* booklet.

Loading Paper

Rear Feed

Note: If you have any paper in the paper path, remove it before installing rear feed paper.

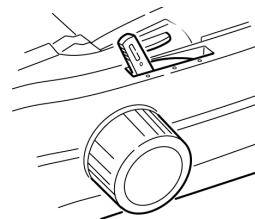
- ❶ Lock Lever
- ❷ Upper Tractor Cover
- ❸ Pins



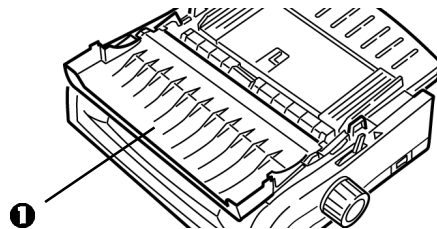
Loading Rear Feed Paper from the *Back* of the Printer

Note: These instructions assume you have ready access to the back of the printer. If you do not, skip down to “Loading Rear Feed Paper from the Front of the Printer.”

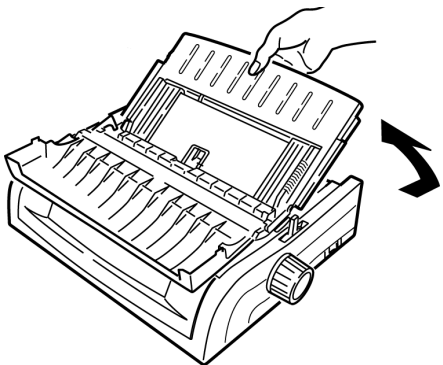
- 1 Make sure the paper lever is forward (position marked “REAR”).



- 2 Open the access cover (1).



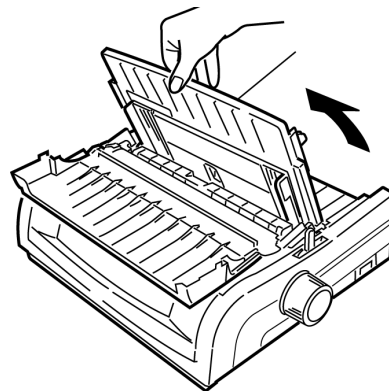
3 Grasp the sheet guide. Lift it slightly, then slide it back.



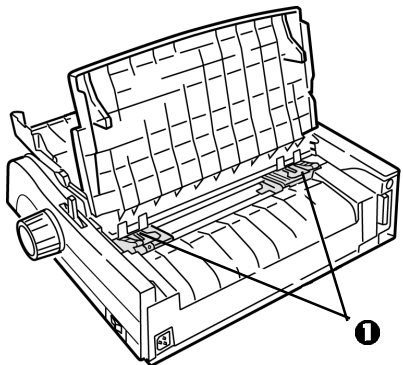
4 Pivot the sheet guide forward and gently rest it against the roller assembly.

Careful!

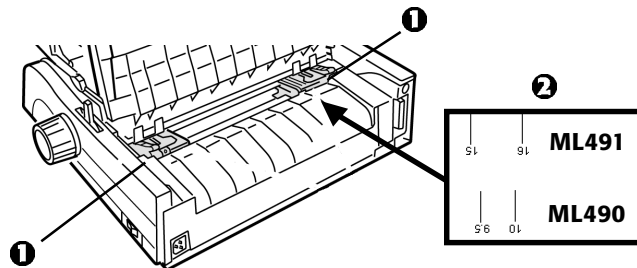
If you push the sheet guide too hard against the roller assembly, it may dislodge it. If it does, be sure to reseat the roller assembly before continuing.



5 From the back of the printer, locate the tractors (1).

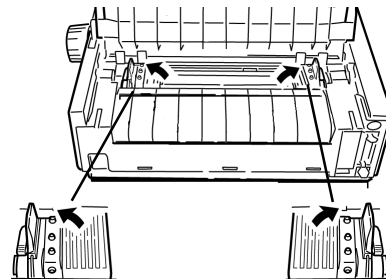


6 Open the lock levers (1) and move the right tractor (*as viewed from the back of the printer*) to the reference mark (2) matching the width of the paper you are loading. Then close the lock lever on the right tractor:



Note: The movement of the right tractor is limited to ensure that the paper covers the paper sensor.

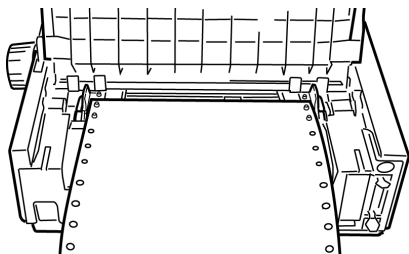
7 Open the tractor covers.



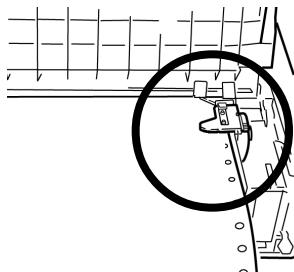
- 8 Place continuous forms paper on the first two pins of either tractor.

Important!

You must keep the number of paper holes engaged on either pin the same. If you don't the paper will skew and jam.

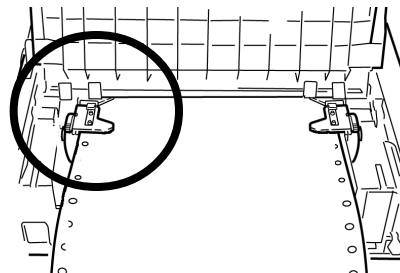


- 9 Close the right tractor cover.

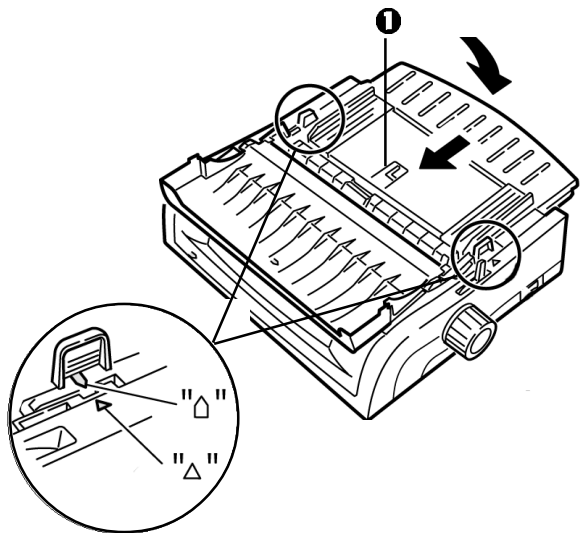


- 10 Adjust the left tractor until the holes in the paper are centered on the pins then lock the lever and close the left tractor cover.

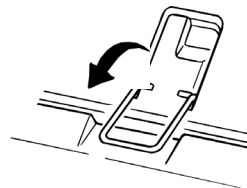
Note: If the paper is too loose or too tight it can cause jams.



- 11** Lower the sheet guide and slide it toward the front of the printer until the marks align.



- 12** Place the wire guide ("1" in the illustration for the step above) in the sheet guide on the pull-up roller assembly.



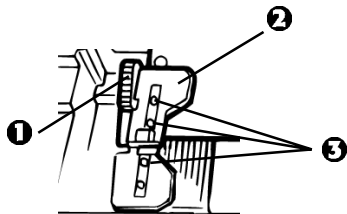
- 13** Press **FF/LOAD**.

Note: The factory default setting for the Top of Form (where the printing should begin) is 1" down from the top of the page. To change the setting, see "Top of Form (TOF)" in Chapter 3.

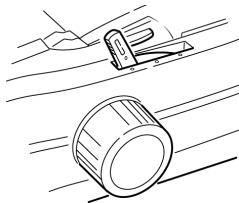
Loading Rear Feed Paper from the *Front* of the Printer

Note: These instructions assume you do not have ready access to the back of the printer. If you do, go back to “Loading Rear Feed Paper from the Rear of the Printer” earlier in this chapter.

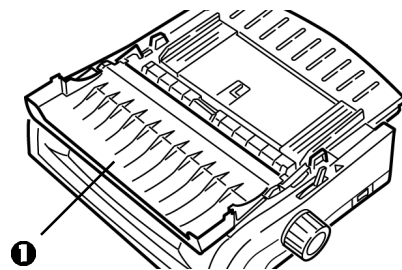
- ❶ Lock Lever
- ❷ Upper Tractor Cover
- ❸ Pins



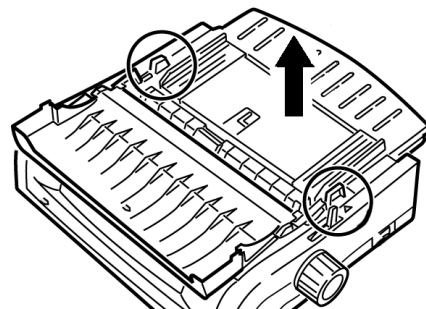
- 1 Make sure the paper lever is forward (position marked “REAR”).



- 2 Open the access cover (1).



- 3 Grasp the tabs and lift off the sheet guide.



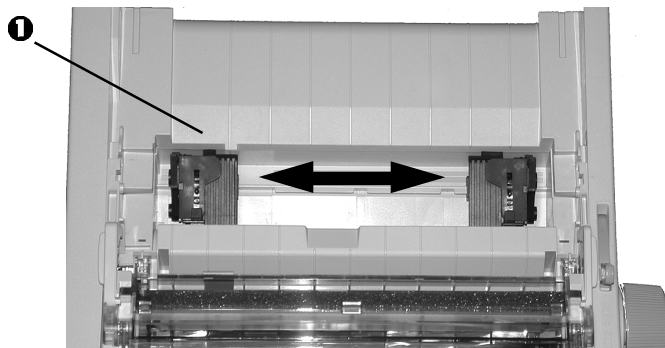
- 4 Pull up on the lock levers to release them.

Note: The movement of the left tractor (as viewed from the front of the printer) is restricted to ensure that the paper covers the paper out sensor.

- 5 You will find reference marks (1 in illustration below) on the printer for the two most common paper sizes:



- 6 Move the left tractor to the position to match your paper size and push back on the lever to lock it in place, then move the right tractor to fit the width of the paper.



- 7 Open the tractor covers and place continuous forms paper on the first two pins of either tractor, then close the *left* tractor cover.

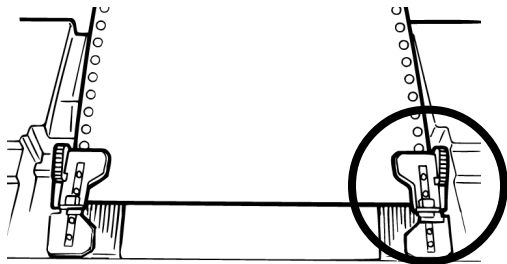
Important!

You must keep the number of paper holes engaged on either pin the same. If you don't the paper will jam.

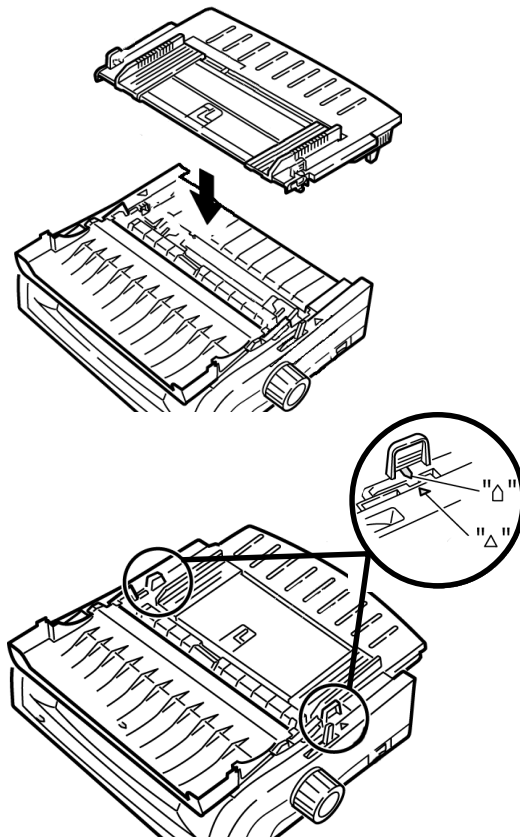


- 8** Adjust the position of the right tractor to center the holes in the paper on the pins. Then, close its tractor cover and push back the lock lever. Do not stretch the paper.

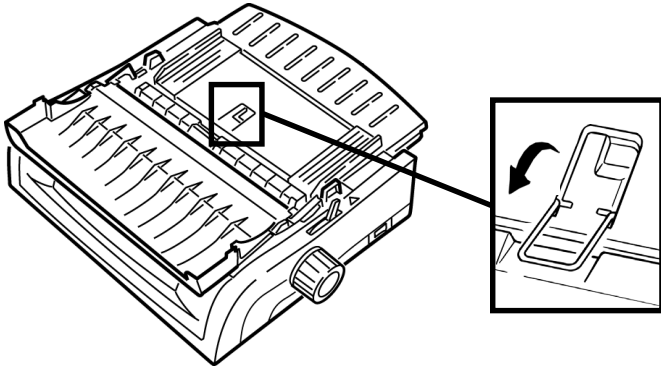
Note: If the paper is too loose or too tight it can cause jams.



- 9** Reinstall the sheet guide.



10 Place the wire guide (1) in the sheet guide on the pull-up roller assembly.



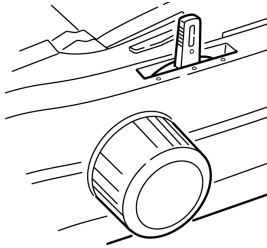
11 Press **FF/LOAD**.

Note: The factory default setting for the Top of Form (where the printing should begin) is 1" down from the top of the page. To change the setting, see "Top of Form (TOF)" in Chapter 3.

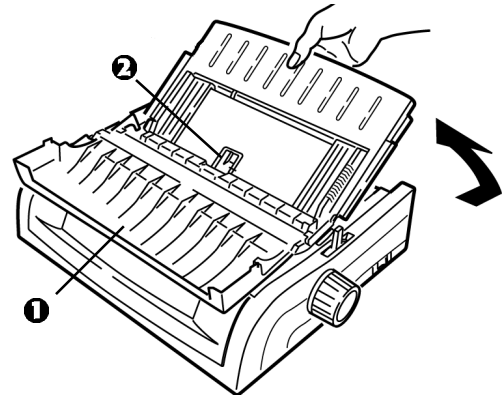
Top Feed (Single Sheets)

*Note: If you have continuous form paper in the path, press **PARK** to remove it before loading single sheets.*

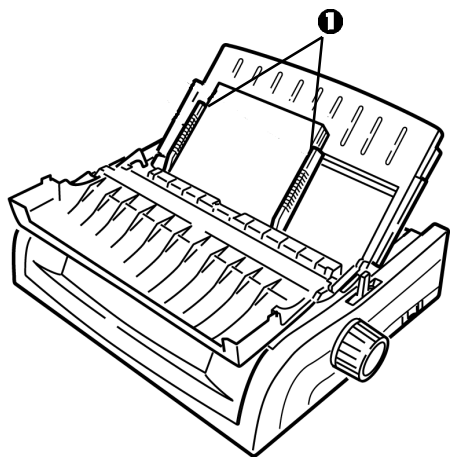
- 1 Make sure the printer is on and *deselected* (**SEL** light off).
- 2 Place the paper lever in the center position (marked "TOP").



- 3 Open the acoustic cover (1) and raise the sheet guide to the single-sheet position. Pivot the wire feed guide (2) up into the sheet guide.



- 4 Adjust the paper feed guides (1) for the width of the paper, then place a sheet of paper in the separator. The paper will feed into the printer.



Important!

If the paper does not feed in, remove it. Check the paper lever position. Make sure the **ALARM** light is on: if it is flashing, hold the **SHIFT** key and press the **CHARACTER PITCH/RESET** key. Reload the sheet of paper.

Note: The factory default setting for the Top of Form (where the printing should begin) is 1" down from the top of the page. To change the setting, see "Top of Form (TOF)" in Chapter 3.

Clearing Paper Jams

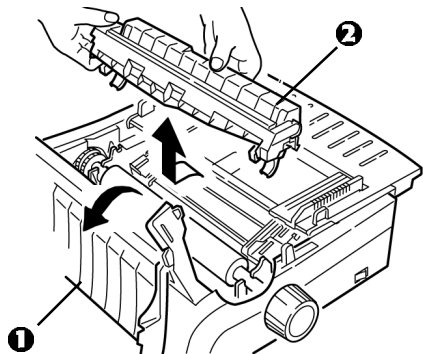
Rear-Feed Paper Jams

- 1 Turn off the printer.
- 2 Use the platen knob to back the paper all the way out of the printer.

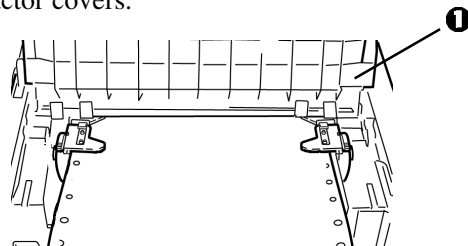
CAUTION!

Make sure the printer is turned off before you open the access cover.

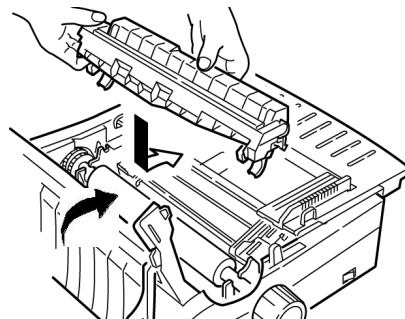
- 3 Open the access cover (1) and remove the pull-up roller assembly (2). Remove any torn pieces of paper.



- 4 Lift the sheet guide (1) and reload paper. Make sure you lock the tractor covers.



- 5 Lower the sheet guide, then install the pull-up roller assembly and close the access cover.



- 6 Turn on the printer and press **FF/LOAD**.

Rear-Feed, Repeating Paper Jams

If the paper keeps jamming, you may have:

- defective paper
- misaligned paper
- bits of paper stuck in the paper path

Defective Paper

Replace the paper with a fresh stack.

Misaligned Paper

- 1 Turn off the printer.
- 2 Use the platen knob to back the paper all the way out of the printer.
- 3 Tear off a couple of sheets of paper, leaving a new, clean, square-cut edge.
- 4 Reload the paper and turn the printer back on.

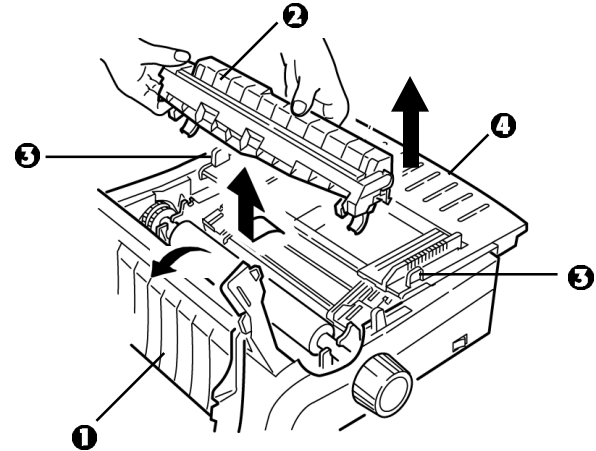
Bits of Paper Stuck in the Paper Path

- 1 Turn off the printer.
- 2 Use the platen knob to back the paper all the way out of the printer.

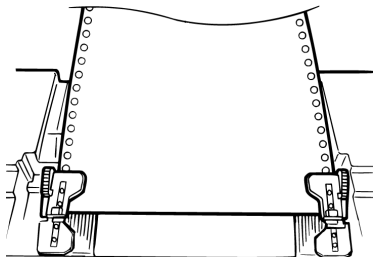
CAUTION!

Make sure the printer is turned off before you open the access cover.

- 3 Open the access cover (1) and remove the pull up roller assembly (2). Then grasp the tabs (3) on the sheet guide (4) and lift it off the printer.

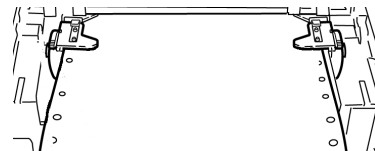


- 4 Remove any torn pieces of paper.
- 5 Fold some continuous-form paper over three times to make a page four sheets thick. Then, load it on the tractors and close and lock the covers.

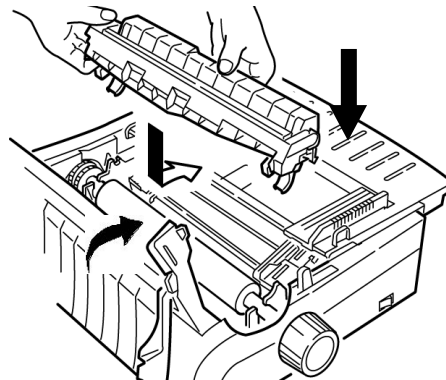


- 6 Use the platen knob to draw the quadruple-thick page around the platen. This brings out jammed pieces of paper.
- 7 Remove the paper pieces. Then, use the platen knob to back the paper out.

- 8 Load regular paper, close and lock the tractor covers.



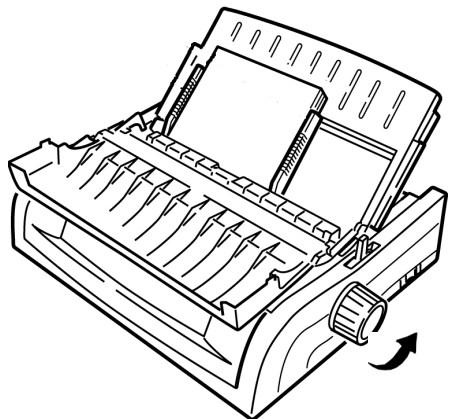
- 9 Install the sheet guide, then install the pull-up roller assembly and close the access cover.



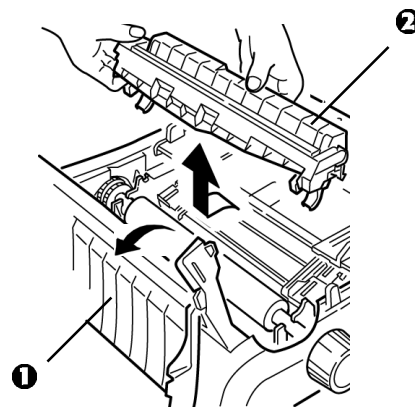
- 10 Turn the printer on and press **FF/LOAD**.

Single-Sheet Paper Jams

- 1 Turn off the printer.
- 2 Use the platen knob to back the paper out.



- 3 Open the access cover (1) and remove the pull-up roller assembly (2).



- 4 Remove any torn pieces from around the carriage.
- 5 Reinstall the pull-up roller assembly and close the access cover.

Cleaning the Housing

You should clean the printer housing every six months (or after about 300 hours of operation).

CAUTION!

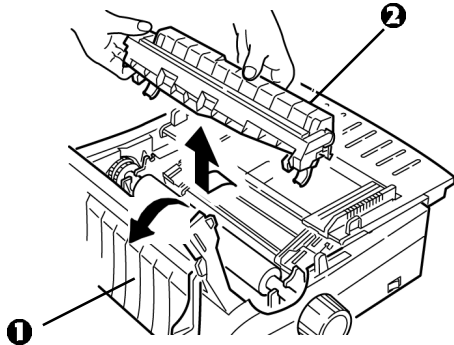
Never use strong solvents or strong detergents on the cabinet—they could damage the housing.

- 1 Turn off the printer.
- 2 Use the platen knob to back the paper out of the printer.

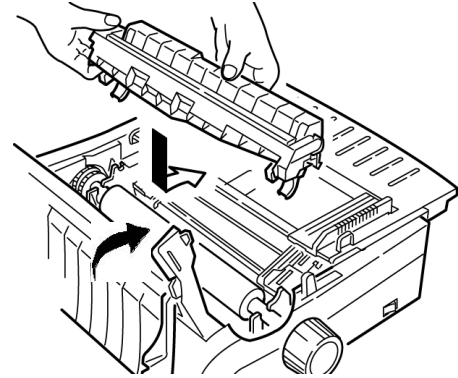
CAUTION!

Make sure the printer is turned off before you open the access cover.

- 3 Open the access cover (1) and remove the pull-up roller assembly (2).



- 4 Use a clean, dry cloth to dust around the carriage shaft and platen. Remove any loose bits of paper.
- 5 Reinstall the pull-up roller assembly and close the access cover.



Chapter 6: Troubleshooting

General Information

Here are some general things to check before proceeding with detailed troubleshooting.

- Is the printer plugged in and turned on?
- Are the connections (power and interface) secure?
- Is the product being operated under the proper ambient conditions?
- Does the paper being used meet the specifications for this product?
- Is the paper properly installed?
- Is the ribbon properly installed?
- Is an Oki ribbon being used?
- Is the printhead gap correctly set?
- Are the correct printer drivers being used for the printer?

Note: Settings in your software application will normally override any settings in your printer driver.

Printer driver settings normally override settings from the printer menu or printer front panel.

Problems / Solutions

Problem

My word processor files do not print the way I have the menu and front panel set.

Solution

Remember:

- Settings in your software application can override settings in your printer driver.
- Your printer driver settings can override any settings from the printer menu or printer front panel.

Before sending a file to the printer, many word processors send either an “initialization string” or an I-Prime signal to the printer.

The **initialization string** contains codes that override the panel and menu settings. To change your printer to ignore the reset code, enter the Menu Mode, go to the Set-Up group and change the setting for Reset Inhibit to Yes.

The **I-Prime signal** will automatically override any front panel settings you have made. To eliminate this problem, enter the Menu Mode, go to the Parallel Interface group and change the setting for I Prime to Invalid.

For more information on changing menu settings, see “Changing the Menu Settings” in Chapter 4.

Problem

Nothing happens when I turn on the printer.

Solution

Check the power cord connection to the outlet and to the printer. If you are using a power strip, make sure it is turned on, and that the fuse hasn’t blown or that the circuit breaker hasn’t tripped.

Problem

The printer does not print when the computer sends data.

Solutions

- 1 Is the **SEL** light on? If not, press the **SEL** key.
- 2 Check that the interface cable is securely connected to both the printer and the computer.
- 3 If you have the optional serial interface board installed, check to be sure that it is firmly seated in the printer.

Problem

I'm getting strange symbols, incorrect fonts, etc., when I try to print a document.

Solutions

- 1 Check to be sure that the printer driver you have selected in your software matches the printer emulation.
 - Press **SHIFT** and **SEL** keys, then press **GROUP** key.
 - This will print a line showing the emulation you have selected.
- 2 If you have embedded any printer commands in your software, check to be sure that you entered them correctly.

Problem

Ink smears on the paper when I print narrow columns.

Solution

This may be caused by excessive printhead travel from the centering position. Enter the Menu and set the Centering Position to MODE 1. See “Using Your Printer, Menu Mode.”

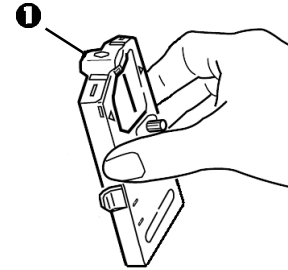
For the wide-carriage printer, if MODE 1 doesn't work, try setting the Centering Position to MODE 2.

Problem

I've installed a new ribbon and the printing is smeared and streaked.

Solution

The ribbon shield (1) is either loose or missing.



Remove the ribbon cartridge and check the ribbon shield.

- If it is loose, secure it.
- If it is missing, find it and install it.

Problem

There are dots missing in my printouts.

Solution

The head gap may not be set correctly. Try moving the headgap lever to a lower setting. If that doesn't help, the printhead may be damaged; call for service.

Problem

The ALARM light is flashing.

Solution

Try turning the printer off and then back on again. If the light still blinks, call for service.

Problem

The ALARM light is on and the Character Pitch 10 light is flashing.

Solution

This indicates that the paper lever is set at the wrong position for the paper you are trying to use. Move it to the proper setting.

Problem

The ALARM light is on and the Character Pitch 15 light is flashing.

Solution

This indicates a paper jam. Press the **SEL** key and correct the paper jam situation. See "Clearing Paper Jams," in Chapter 4.

Problem

The printer needs paper. The ALARM is not on. I can't load paper.

Solution

- 1 Press and release the **SEL** key.
- 2 Press and hold the **SHIFT** key and press the **RESET / CHARACTER PITCH** key.
- 3 The **ALARM** light comes on and you can now load paper.

Problem

Continuous-form paper sticks to the sheet guide.

Solution

In cold dry weather, static charges can build up and make the paper cling to the sheet guide. Try moving the paper guides together so that the paper rests on the guides rather than on the separator.

Problem

The Print Quality and Character Pitch keys on the front panel don't work.

Solution

The Operator Panel Function in the printer menu can be used to disable these buttons (Limited Function). If the printer is part of a customized system or if it is used by a number of people, the system manager may have used this option to make sure the printer is always set properly.

Check with your system manager before changing any menu settings.

Appendix A: Parts & Accessories

Purchasing Parts & Accessories

Before you purchase, know your printer model number (see the front of the unit) and have the correct part number and description of the item. Item descriptions and part numbers are provided in this section.

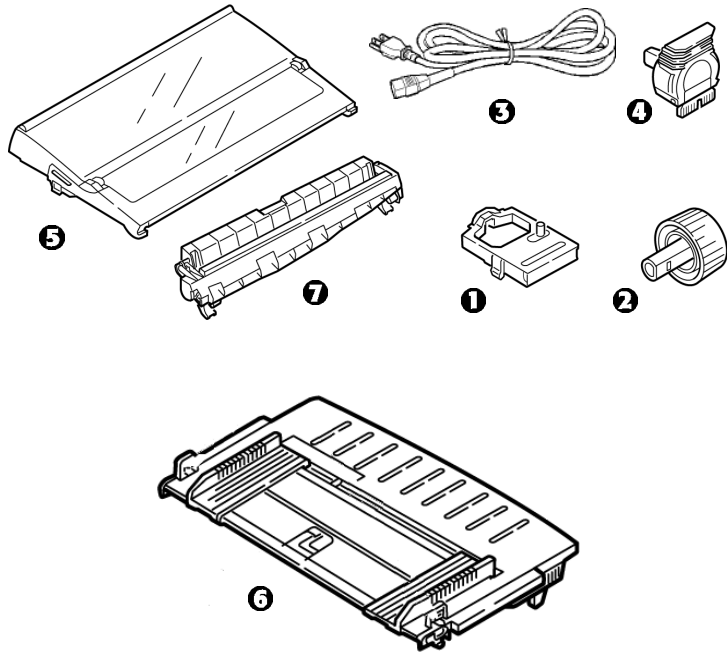
- Consult the dealer where you purchased your printer.
- Locate an Authorized Oki Data Reseller by visiting one of our web sites

<http://my.okidata.com> (allows you to register your product and personalize your own support needs)

<http://www.okidata.com> (provides general information)

- In the United States, purchase directly from Oki Data
 - Via the Internet
<http://my.okidata.com>
<http://www.okidata.com>
 - Via telephone
Order toll-free by phone at 1-800-654-3282 (1-800-OKI-DATA) using VISA[®], MasterCard[®], or AmEx[®].
- In Canada, call 888-309-4570.

Replacement Parts



Item	Part Number
<i>Both Models</i>	
Ribbon Cartridge (1) -----	42377801
Platen Knob (2) -----	51902220
Power Cord (3) -----	56631801
<i>Model ML490</i>	
Printhead (4) -----	42124201
Access Cover (5) -----	42115401
Sheet Guide (6) -----	51009509
Pull-Up Roller Assembly (7) -----	42044701
<i>Model ML491</i>	
Printhead (4) -----	42124201
Access Cover (5) -----	42115301
Sheet Guide (6) -----	51009410
Pull-Up Roller Assembly (7) -----	42045701

Accessories

Option Part Number

Model ML490

Pull Tractor, Top-Mount (1) ----- 70030501

Push Tractor, Bottom-Mount (2) ----- 70030701

Roll Paper Stand (3) ----- 70023301

Model ML491

Pull Tractor, Top-Mount (1) ----- 70030601

Push Tractor, Bottom-Mount (2) ----- 70030801

Both Models

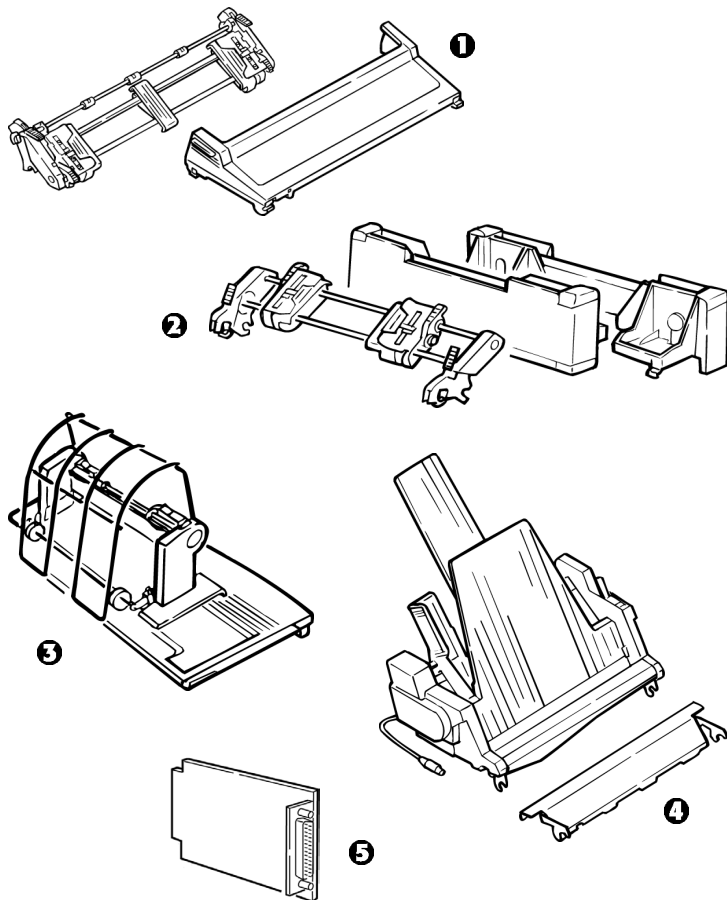
Cut Sheet Feeder (4) ----- 70030101

Serial Interface (5) ----- 70012801

OkiLAN 6120i 10/100 Base-T, Ethernet
Internal Print Server (not shown) ----- 70046501

OkiLAN 6020e 10/100 Base-T Ethernet
External Print Server (not shown) ----- 70036001

OkiLAN® 6010 10 Base-T Ethernet
External Print Server (not shown) ----- 70034401



Appendix B: Printer Control Codes

This section lists the most commonly used printer control codes.

You will find a comprehensive listing of the control codes (English only), on your Printer CD.

To access it:

- 1 Place the CD in your CD-ROM drive and wait for it to AutoPlay.
- 2 Select your printer model, then click **Continue**.
- 3 Click **Documentation** and follow the on-screen prompts to view the file.

Epson LQ Commands

Epson Command	ASCII	Decimal
Backspace	BS	8
Cancel	CAN	24
Carriage Return, Execute	CR	13
Character Pitch		
Select 10 cpi	ESC P	27 80
Select 12 cpi	ESC M	27 77
Select 15 cpi	ESC g	27 103
Begin 10 cpi	ESC SI, or SI	27 15, or 15
Cancel Condensed Print	DC2	18

Epson LQ Commands (Continued)

Epson Command	ASCII	Decimal
Character Style		
Normal	ESC q 0	27 113 48
Outline	ESC q 1	27 113 49
Shadow	ESC q 2	27 113 50
Outline with Shadow	ESC q 3	27 113 51
Delete	DEL	127
Double Height On	ESC w 1 or ESC US 0	27 119 49 or 27 31 48
Double Height Off	ESC w 0 or ESC US 1	27 119 48 or 27 31 49
Double Width On	ESC W 1	27 87 49
Double Width Off	ESC W 0	27 87 48
Double Width for One Line	SO or ESC SO	14 or 27 14
Emphasized Print On	ESC E	27 69
Emphasized Print Off	ESC F	27 70

Epson Command	ASCII	Decimal
Enhanced Print On	ESC G	27 71
Enhanced Print Off	ESC H	27 72
Italic Printing On	ESC 4	27 52
Italic Printing Off	ESC 5	27 53
Form Feed	FF	12
Form Length		
n Inches (n = 1 to 22)	ESC C NUL n	27 67 0 n
n Lines (n = 1 to 127)	ESC C n	27 67 n
Horizontal Tab	HT	9
Initialize Printer	ESC @	27 64
Justification		
Left	ESC a 0	27 97 48
Center	ESC a 1	27 97 49
Right	ESC a 2	27 97 50
Full	ESC a 3	27 97 51

Epson LQ Commands (Continued)

Epson Command	ASCII	Decimal
Line Feed, Execute		
w/ Carriage Return	LF	10
n/180" (n = 0 to 255)	ESC J n	27 74 n
n/360" (n = 0 to 255)	ESC] n	27 93 n
Reverse, n/180" (n = 0 to 255)	ESC j n	27 106 n
Line Spacing, Set		
n/360" (n = 0 to 255)	ESC + n or ESC [n	27 43 n or 27 91 n
n/180" (n = 0 to 255)	ESC 3 n	27 51 n
n/60" (n = 0 to 127)	ESC A n	27 65 n
1/6"	ESC 2	27 50
1/8"	ESC 0	27 48

Epson Command	ASCII	Decimal
Margins		
Set Left Margin (n = 0 to 255)	ESC I n	27 108 n
Set Right Margin (n = 0 to 255)	ESC Q n	27 81 n
Paper Out Sensor		
Disabled (Off)	ESC 8	27 56
Enabled (On)	ESC 9	27 57
Print Quality/Font		
Select LQ	ESC x 1	27 120 49
Select Utility	ESC x 0	27 120 48
Select Roman (LQ only)	ESC k 0	27 107 48
Select Swiss (LQ only)	ESC k 1	27 107 49
Select Courier (LQ only)	ESC k 2	27 107 50
Select Prestige (LQ only)	ESC k 3	27 107 51
Select Orator (LQ only)	ESC k 7	27 107 55

Epson LQ Commands (Continued)

Epson Command	ASCII	Decimal
Print Speed		
Half-Speed On	ESC s 1	27 115 49
Half-Speed Off	ESC s 0	27 115 48
Print Suppress Mode On	DC3	19
Print Suppress Mode Off	DC1	17
Proportional Spacing On	ESC p 1	27 112 49
Proportional Spacing Off	ESC p 0	27 112 48
Skip Over Perforation ON (n = 1 to 127)	ESC N n	27 78 n
Skip Over Perforation OFF	ESC O	27 79
Software I-Prime	ESC } NUL	27 125 0
Subscript On	ESC S 1	27 83 49
Superscript On	ESC S 0	27 83 48
Subscript/Superscript Off	ESC T	27 84

Epson Command	ASCII	Decimal
Underline On	ESC - 1	27 45 49
Underline Off	ESC - 0	27 45 48
Uni-Directional Printing		
One Line Only	ESC <	27 60
On	ESC U 1	27 85 49
Off	ESC U 0	27 85 48
Upper Range Control Codes		
Permit Printing	ESC 6	27 54
Cancel Printing	ESC 7	27 55
Vertical Tab, Execute	VT	11

IBM Proprinter X24e / XL24e and IBM X24e AGM / XL24e AGM Commands

IBM Command	ASCII	Decimal
Backspace	BS	8
Cancel	CAN	24
Carriage Return	CR	13
Character Pitch, Select		
10 cpi	DC2	18
12 cpi	ESC :	27 58
15 cpi	ESC g	27 103
Condensed Print	ESC SI, or SI	27 15, or 15
Character Style		
Normal	ESC q 0	27 113 48
Outline	ESC q 1	27 113 49
Shadow	ESC q 2	27 113 50
Outline with Shadow	ESC q 3	27 113 51

IBM Command	ASCII	Decimal
Double Width		
On	ESC W 1	27 87 49
Off	ESC W 0	27 87 48
for One Line	SO	14
Emphasized Printing On	ESC E	27 69
Emphasized Printing Off	ESC F	27 70
Enhanced Printing On	ESC G	27 71
Enhanced Printing Off	ESC H	27 72
Form Feed	FF	12
Form Length		
n inches		
n = 1 to 255	ESC C NUL n	27 67 0 n
n lines		
n = 1 to 255	ESC C n	27 67 n
Horizontal Tab, Execute	HT	9
IBM Character Set		
Select Set I	ESC 7	27 55
Select Set II	ESC 6	27 54

IBM Commands (continued)

IBM Command	ASCII	Decimal
Print One Character from IBM Set III (n = 0 to 255)	ESC ^ n	27 94 n
Italic Printing On	ESC % G	27 37 71
Italic Printing Off	ESC % H	27 37 72
Line Feed, Execute w/ Carriage Return n/180" AGM only (n = 1 to 255)	LF	10
n/216" PPR only (n = 0 to 255)	ESC J n	27 74 n
n/360" (n = 0 to 255)	ESC % 4 n	27 37 52 n
Reverse	ESC]	27 93
Auto Line Feed On	ESC 5 1	27 53 49
Auto Line Feed Off	ESC 5 0	27 53 48

IBM Command	ASCII	Decimal
Line Spacing		
Set Spacing to 1/8"	ESC 0	27 48
Set Spacing to 7/72"	ESC 1	27 49
Set to n/60": AGM only (n = 1 to 255)	ESC A n	27 65 n
Set to n/72": PPR only (n = 1 to 255)	ESC A n	27 65 n
Activate Spacing Set by ESC A n	ESC 2	27 50
Set to n/180": AGM only (n = 1 to 255)	ESC 3 n	27 51 n
Set to n/216": PPR only (n = 1 to 255)	ESC 3 n	27 51 n
Set to n/360" (n = 1 to 255)	ESC % 8 n	27 37 56 n
Overscore On	ESC _ 1	27 95 49
Overscore Off	ESC _ 0	27 95 48

IBM Commands (Continued)

IBM Command	ASCII	Decimal
Paper Out Sensor Off	ESC 8	27 56
Paper Out Sensor On	ESC 9	27 57
Print Quality / Font		
Select LQ Roman	ESC k 0	27 107 48
Select LQ Swiss	ESC k 1	27 107 49
Select LQ Courier	ESC k 2	27 107 50
Select LQ Prestige	ESC k 3	27 107 51
Select LQ Orator	ESC k 7	27 107 55
Print Suppress Mode On		
ML490	ESC Q \$	27 81 36
ML491	ESC Q #	27 81 35
Print Suppress Mode Off		
	DC1	17
Proportional Spacing On		
	ESC P 1	27 80 49
Proportional Spacing Off		
	ESC P 0	27 80 48

IBM Command	ASCII	Decimal
Skip Over Perforation On (n = 1 to 255)	ESC N n	27 78 n
Skip Over Perforation Off	ESC 0	27 79
Software I-Prime	ESC } NUL	27 125 0
Stop Printing	ESC j	27 106
Subscript On	ESC S 1	27 83 49
Superscript On	ESC S 0	27 83 48
Subscript/Superscript Off	ESC T	27 84
Top of Form, Set at Current Position		
	ESC 4	27 52
Underline Printing On	ESC - 1	27 45 49
Underline Printing Off	ESC - 0	27 45 48
Uni-Directional Print On	ESC U 1	27 85 49
Uni-Directional Print Off	ESC U 0	27 85 48
Vertical Tab, Execute	VT	11

Appendix C: Specifications

Note: Specifications are subject to change without notice.

Print Method

Impact dot matrix

Printhead

24 pins, 0.20 mm (0.0079") diameter, with thermal protection

Interfaces

Standard: Centronics parallel, IEEE-1284 compliant
USB 1.1

Optional: RS-232C Serial

Ethernet Print Servers:

6120i 10/100 Base-TX *Internal*

6020e 10/100 Base-T *External*

6010e 10 Base-T *External*

Receive Buffer Size

Maximum 128K

Reliability

Ribbon Life

4 million characters, on average, 10 cpi utility

Printhead Life

200 million characters average in 10 cpi draft mode at 25% duty and 35% page density

Mean Time Between Failures (MTBF)

20,000 hours at 25% duty cycle and 35% page density

Mean Time to Repair (MTTR)

15 minutes

Emulations (co-resident)

- Epson LQ
- IBM Proprinter X24e / XL24e
- IBM X24e AGM / XL24e AGM

Print Speed

Mode	Pitch	Speed
High Speed Draft (HSD)	10 cpi*	420 cps†
Utility	10 cpi	315 cps
	12 cpi	378 cps
	15 cpi	472 cps
	17.1 cpi	269 cps
	20 cpi	315 cps
Letter Quality (LQ)	10 cpi	105 cps
	12 cpi	126 cps
	15 cpi	157 cps
	17.1 cpi	180 cps
	20 cpi	210 cps

* Characters per inch

† Characters per second

Characters per Line (cpl)

Setting	ML490	ML491
10 cpi	80 cpl	136 cpl
12 cpi	96 cpl	163 cpl
15 cpi	120 cpl	204 cpl
17.1 cpi	137 cpl	233 cpl
20 cpi	160 cpl	272 cpl

Graphics Resolution

360 x 360 dpi maximum (24-dot, hex density)

Paper Thickness: Tractor Feed

Rear Feed: 0.014" (0.36 mm) maximum

Bottom Feed: 0.017" (0.44 mm) max.

Requires optional push or pull tractor.

Resident Fonts

Print Quality	Available Fonts
Letter Quality	Courier, Gothic, Orator, Prestige, Roman, Swiss, Swiss Bold
Utility	Gothic

Bar Codes

- Code 39
- UPC A, UPC E
- EAN 8, EAN 13
- Interleaved 2 of 5
- Code 128
- Postnet

Resident Typefaces

Mode/Font	Size: Style
LQ Courier	10 & 12 cpi: Normal, Superscript, Subscript Proportional: Normal, Superscript, Subscript 8 point: Normal Scalable: 11 to 64 points
LQ Letter Gothic	10 cpi, 12 cpi, Proportional: Normal
LQ Prestige	10 cpi, 12 cpi, Proportional: Normal
LQ Orator	10 cpi, 12 cpi, Proportional: Normal
LQ Roman	10 & 12 cpi: Normal, Superscript, Subscript Proportional & 8 point: Normal Scalable: 11 to 64 points
LQ Swiss	10 & 12 cpi: Normal, Superscript, Subscript Proportional & 8 point: Normal Scalable: 11 to 64 points
LQ Swiss Bold	10 cpi, 12 cpi, Proportional: Normal
Utility Gothic	10 & 12 cpi: Normal, Superscript, Subscript
HSD Gothic	10 cpi: Normal

Paper Specifications: ML490

Single (Cut) Sheets

Feed: Top Only

Weight: 14 to 24 lb. US Bond (52.6 to 90 g/m²)

Width Range: 7.2" to 8.5" (183 to 216 mm)

Single-part, continuous forms

Feed: Rear, Bottom*

Weight: 12 to 24 lb. US Bond (45 to 90 g/m²)

Width Range: 3" to 10" (76 to 254 mm)

Carbonless continuous forms (orig. + 4 copies)

Feed: Rear, Bottom*

Weight: 9 to 11 lb.

Width Range: 3" to 10" (76 to 254 mm)

Interleaf continuous forms (orig. + 4 copies)

Feed: Rear, Bottom*

Weight: 10 to 12 lb. paper, 9 lb carbon

Width Range: 3 to 10" (76 to 254 mm)

* Bottom feed requires optional pull or push tractor

Labels

Feed: Bottom* Only

Weight: Not applicable

Width Range: 3" to 10" (76 to 254 mm)

Envelopes, single feed

Feed: Top Only

Weight: Max. 24 lb.

Width Range: 6.5" to 9.5" (165 to 241 mm)

Envelopes, continuous feed, non-overlap

Feed: Bottom* Only

Weight: Max. 24 lb.

Width Range: 6.5" to 9.5" (165 to 241 mm)

Card Stock

Feed: Bottom*

Weight: Max. 100 lb. Index (180 g/m²)

Width Range: Not applicable

Paper Specifications: ML491

Single (Cut) Sheet

Feed: Top Only

Weight: 14 to 24 lb. US Bond (52.6 to 90 g/m²)

Width Range: 7.2" to 14.3" (182.8 to 363.2 mm)

Single-part, continuous forms

Feed: Rear, Bottom*

Weight: 12 to 24 lb. US Bond (45 to 90 g/m²)

Width Range: 3" to 16" (76.2 to 406.4 mm)

Carbonless continuous forms

Feed: Rear, Bottom*

Weight: 9 to 11 lb.

Width Range: 3" to 16" (76.2 to 406.4 mm)

Interleaf continuous forms

Feed: Rear, Bottom*

Weight: 10 to 12 lb. paper, 9 lb. carbon

Width Range: 3" to 16" (76.2 to 406.4 mm)

* Bottom feed requires optional pull or push tractor

Labels

Feed: Bottom* Only

Weight: Not applicable

Width Range: 3" to 16" (76.2 to 406.4 mm)

Envelopes, single feed

Feed: Top Only

Weight: Max. 24 lb.

Width Range: 6.5" to 9.5" (165.1 to 241.3 mm)

Envelopes, continuous feed, non-overlap

Feed: Bottom* Only

Weight: Max. 24 lb.

Width Range: 6.5" to 9.5" (165.1 to 241.3 mm)

Card Stock

Feed: Bottom* Only

Weight: Max. 100 lb. Index (180 g/m²)

Width Range: Not applicable

Environmental Requirements

Temperature

Operating: 41 to 95°F (5 to 36°C)

Storage: 14 to 122°F (-10 to 50°C)

Humidity

Operating: 20 to 80% RH

Storage: 5 to 95% RH

Electrical Requirements

- 120 volts ac, (+6%, -15%)
50 or 60 Hz ($\pm 2\%$)
78 W Typical, 10 W idle
- 230 ac, (+15%, -14 %)
50 or 60 Hz ($\pm 2\%$)
78 W Typical, 10 W idle

Physical Specifications

Note: Height dimensions do not include the acoustic cover.

ML490

Size (WxDxH): 17.1" x 16.1" x 6"
(434 x 409 x 153 mm)

Weight: 16.7 lbs. (7.6 kg)

ML491

Size (WxDxH): 23.1" x 16.1" x 6"
(588 x 409 x 153 mm)

Weight: 21.1 lbs. (9.6 kg)

Appendix D: Installation

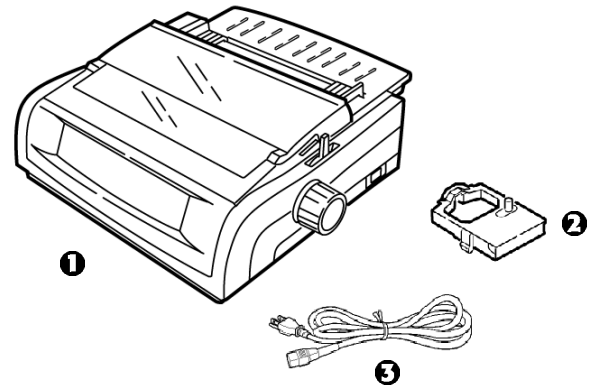
Location

- Place your printer on a firm, solid surface.
- Allow enough space around the printer to easily access the platen knob and the various paper feed paths.
- Make sure a suitable grounded power outlet is available nearby.

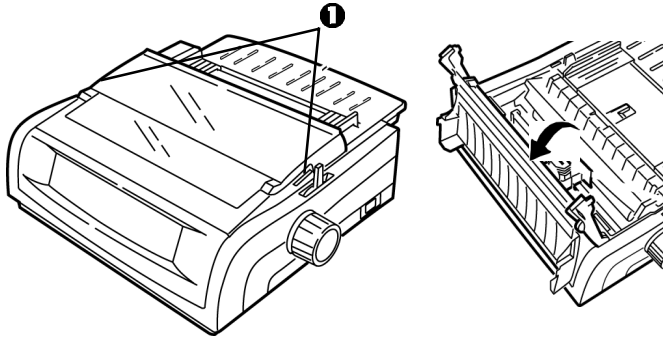
Unpack

- If any items are missing, contact your dealer immediately.
- Keep your packing materials and carton in case you ever need to ship or transport the printer.
- Interface cable and paper are sold separately.

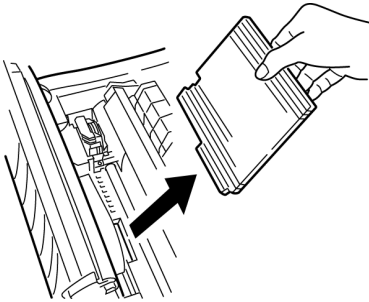
- ❶ Printer
- ❷ Ribbon Cartridge
- ❸ Power Cord



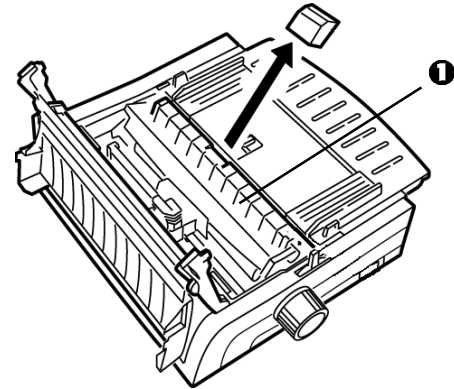
- 1 Remove any packing tape, then grasp the tabs (1) at either end of the access cover and pivot it toward the front of the printer as far as it will go.



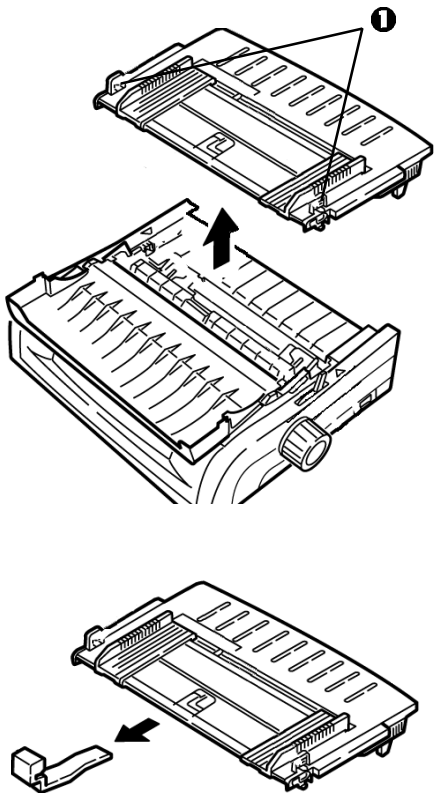
- 2 Remove the printhead shipping restraint.



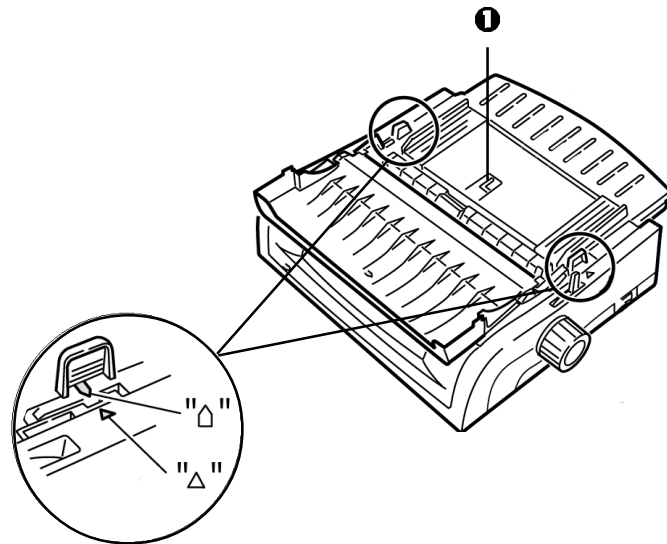
- 3 Remove the shipping restraint from the pull-up roller assembly (1).



- 4 Use the tabs (1) to lift and remove the sheet guide, then remove the shipping restraint.



- 5 Reinstall the sheet guide: insert the clips on either side of the separator into the notches marked with a triangle, then press down to secure the separator in place.



Install the Ribbon Cartridge

Important!

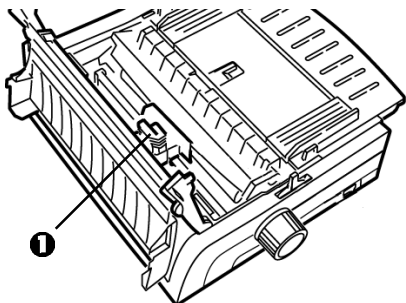
Make sure you have the correct replacement ribbon for the your printer. The wrong ribbon will not print when installed in your printer.

Ribbon Cartridge Handling

- Leave unused ribbon cartridges in their packages until needed.
- Careful; the ribbon ink may cause permanent stains.
- Ribbon ink on skin or clothing can usually be removed with soap and water.

1 *Make sure the printer is turned OFF.*

2 Open the access cover and center the printhead (1).



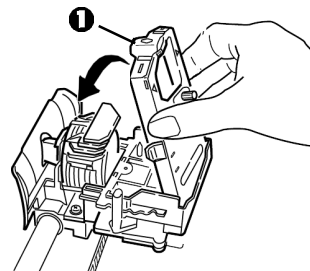
CAUTION!

The printhead may be HOT!

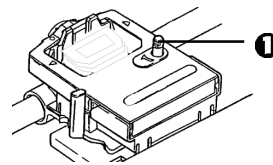
3 Unpack the new ribbon cartridge and install it on the printhead.

Important!

Do not remove the ribbon shield (1) from the ribbon!



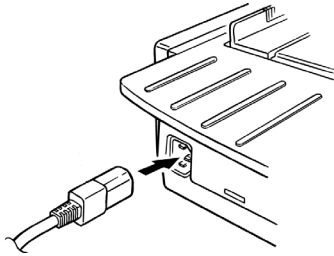
4 Turn the take-up knob (1) in the direction of the molded-in arrow to take up any ribbon slack.



5 Close the access cover and turn the printer on.

Power Connection

- 1 *Make sure both the printer and the computer are OFF.*
- 2 Plug the power cord into the back of the printer, then into a grounded outlet.



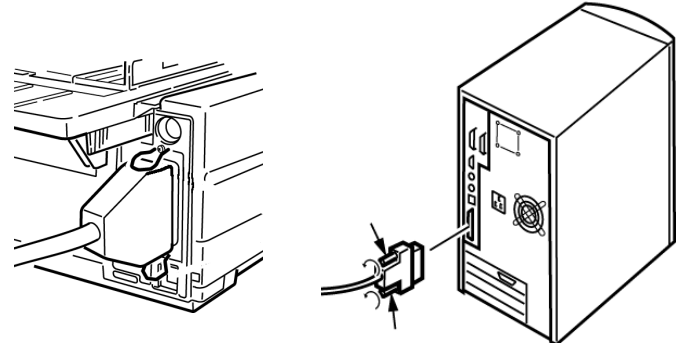
- 3 Turn on the printer.

Computer Connections

Parallel (LPT): IEEE 1284

- Requires bidirectional cable, max. length 6 ft. (1.8 m), not supplied.
- Printer has 36-pin socket

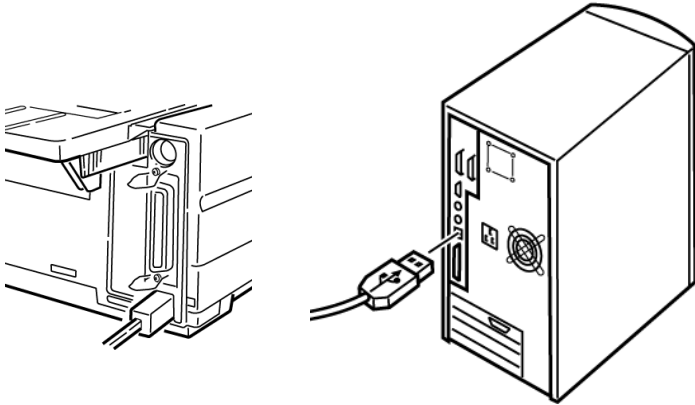
- 1 Make sure the printer and computer are both turned *off*.
- 2 Attach a suitable *bidirectional* cable to the parallel connector on the back of the printer. Then attach and secure the cable to your computer.



- 3 Turn the printer and computer back on.

USB: Specification 1.1 Compliant

- Requires USB 1.1 cable, maximum length 19.7 ft. (5 m), not supplied.
 - Printer has USB “B” receptacle.
- 1 Make sure the printer and computer are both turned *off*.
 - 2 Attach a suitable USB cable to the printer. Then attach the cable to your computer.



- 3 Turn the computer and printer back on.

Loading Paper

For instructions on loading paper, see “Loading Paper” in Chapter 5.

Testing the Printer

- Font Sample Test
- Rolling ASCII Test
- Hexadecimal Dump Mode

Font Sample Test



Important!

Wide carriage Model ML491: If you are using 8.5" paper to run the tests, make sure the paper width selection in the printer menu is set to 8.5 inches. Otherwise, printing on the platen may damage the printer. See Chapter 4: Menu Mode for more information.

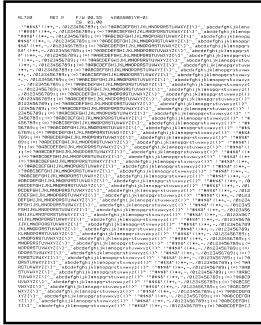
The Font Sample Test prints a sample of the fonts standard to the printer.

The top of the printout shows the Printer Model, Emulation, Country Code, Interface, and Firmware Revision Level.

- 1 Make sure paper is loaded.
- 2 Turn off the printer.
- 3 Press and hold the **LF** key while turning the printer back on.

The printer prints a page of font samples and the test ends.

Rolling ASCII Test



Important!

Wide carriage Model ML491: If you are using 8.5" paper to run the tests, make sure the paper width selection in the printer menu is set to 8.5 inches. Otherwise, printing on the platen may damage the printer. See Chapter 4: Menu Mode for more information.

The Rolling ASCII Print Test produces a continuous printout of all 96 ASCII characters in a rolling pattern in whatever typeface is selected (default = LQ Courier).

The top of the printout shows the Printer Model, Emulation, Country Code, and Firmware Revision Level.

- 1 Make sure continuous forms paper is loaded.
- 2 Turn the printer off.
- 3 Press and hold the **QUIET/TOF** key while turning the printer back on. (If the printer comes on without starting the Rolling ASCII test print, you did not hold the QUIET/TOF key long enough.)
The printer prints the rolling ASCII text page after page.
- 4 Press **SEL** to end the test.

Hexadecimal Dump Mode

When the printer is placed in the Hexadecimal Dump Mode, all data received, including text and printer commands, is printed in both hexadecimal and ASCII format.

For example, the following line of BASIC code

```
LPRINT CHR$( 27) ; "0" ; CHR$( 30) ; "This is an  
example of a hexadecimal dump."
```

would print like this:

```
1B 30 1E 54 68 69 73 20 69 73 20 61 6E 20 65 78 .0.This is an ex  
61 6D 70 6C 65 20 6F 66 20 61 20 68 65 78 61 64 ample of a hexad  
65 63 69 6D 61 6C 20 64 75 6D 70 2E 0D 0A ecimal dump...
```

Note: In the ASCII format, all non-printable characters will be represented by a period.

To engage the Hexadecimal Dump Mode:

- 1 Make sure paper is loaded.
- 2 Turn off the printer.
- 3 Hold the **SEL** and **FF/LOAD** keys for several seconds while turning on the printer.

To exit the Hexadecimal Dump Mode:

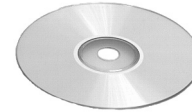
- Press the **SEL** key
or
- Turn the printer off, then on again.

Emulations

The factory default emulation for your printer is Epson® LQ.

If you wish to change to one of the IBM emulations, see “Changing Emulations” in Chapter 3.

Printer Drivers



The Oki driver for your printer is provided on the CD included with the printer. You can either load the Oki driver or select one of the compatible drivers listed below in your software application.

Loading the OKI Driver

Parallel Interface

- 1 Insert the CD into your CD-ROM drive.

Note: If the CD does not AutoPlay, click Start → Run → Browse, then browse to your CD-ROM drive, double-click Install.exe and click OK.

- 2 Select your printer model.
- 3 When the Menu Installer window appears, click the **Printer Software** button.
- 4 Follow the on-screen instructions.

USB Interface

- 1 Turn the printer on.
The Windows Add New Hardware Wizard window displays.
- 2 Click **Next**.
- 3 Insert the CD into your CD-ROM drive.
- 4 Follow the on-screen instructions to install the software for your printer model.

Using a Compatible Driver

Note: See your software documentation for information on how to select a printer driver.

The drivers below are listed by **decreasing** compatibility with your printer. Use one as close to the top of the list as possible.

Epson LQ

- Epson LQ 870/1170
- Epson LQ 80/1000
- Epson LQ 2500

IBM Proprinter

- IBM Proprinter X24e/XL24e
- IBM Proprinter X24/XL24
- IBM Proprinter

IBM X24e AGM/XL24e AGM

Use this emulation only when you've selected an IBM Proprinter X24e/XL24e driver and you need to use Epson Letter Quality (LQ) high density graphics.

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