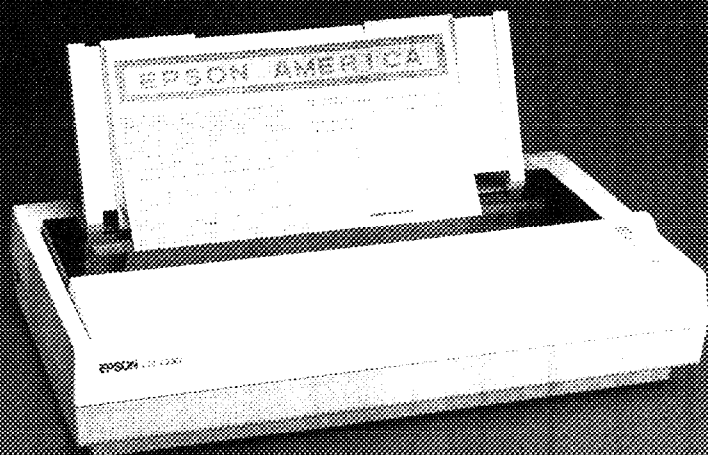


EPSON User's Manual



LQ-1500™ Printer

P8490012-0
Y450991040

EPSON®
LQ-1500™ PRINTER
User's Manual

FCC COMPLIANCE STATEMENT FOR AMERICAN USERS

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause 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 the receiving antenna
- Relocate the computer with respect to the receiver
- Plug the computer into a different outlet so that the computer and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful:

"How to Identify and Resolve Radio-TV Interference Problems."

This booklet is available from the U.S. Government Printing Office, Washington, DC 20402. Stock No. 004-000-00345-4.

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Contents

	Introduction	1
	LQ-1500 Features	1
	About This Manual	2
1	Setting Up Your LQ-1500	3
	Finding a Suitable Location	3
	Getting to Know Your Printer	5
	Installing the paper feed knob	5
	Removing the dust cover	7
	Removing the front cover	7
	Discovering what's inside	8
	Installing the Ribbon Cartridge	9
	Installing the Sheet Guide	12
	Assembling the three pieces	12
	Attaching the sheet guide	12
	Connecting the LQ-1500 to Your Computer	15
	Locating the interface card	15
	Installing the interface card	17
	Attaching the cable to the printer	18
	Connecting the printer cable	18
	Setting the DIP Switches	19
	Switch1	21
	Switch2	22
	Installing the Power Cord	24
2	Operation and Maintenance	25
	Controls and Indicators	25
	The power switch	25
	The control panel	25
	The paper-out detector	27
	Maintenance	27
	Cleaning the LQ-1500	27
	Other maintenance	28

3	Installing Paper and Paper Feeders	29
	Types of Paper and Paper Feeders	29
	Single-sheet paper and sheet guide	29
	Pin-feed paper and tractor unit	29
	More Printer Parts	30
	Platen release lever	30
	Print head adjustment lever	31
	Loading Single-Sheet Paper	31
	Preparing the printer for single-sheet feed	31
	Loading single-sheet paper	32
	Removing single-sheet paper	34
	Loading Pin-feed Paper	34
	Installing the tractor unit	34
	Preparing the printer for pin-feed paper	35
	Inserting pin-feed paper	37
	Proper placement of pin-feed paper	40
	Removing pin-feed paper	41
	Removing the tractor unit	41
	The LQ-1500 Self-Test	42
4	Control codes	45
	Computer-to-Printer-Communications	45
	How Many Names Can One Code Have?	46
	Appendixes	49
A	LQ-1500 Command Summary	49
	Vertical Spacing Commands	50
	Horizontal Spacing Commands	54
	Print Style Commands	56
	Character Set Commands	61
	Graphics Commands	62
	Miscellaneous Commands	64
B	Changing Print Styles	69
	Proportional Print Styles	70
	Letter Quality Print Styles	71
	Draft Pica Print Styles	72
	Draft Elite Print Styles	73

C	The LQ-1500 Character Set	75
	Regular Characters	75
	International Character sets	78
D	Widths of the Proportional Characters	79
E	ASCII Code Conversion Chart	87
F	Specifications of the LQ-1500	91

Figures

1-1	Unpacking the LQ-1500	4
1-2	Paperplacement	5
1-3	The LQ-1500 printer	6
1-4	Paper feed knob	7
1-5	Removing the front cover	8
1-6	Printer parts	9
1-7	Ribbon cartridge	10
1-8	Ribbon installation	11
1-9	Ribbon operation	11
1-10	Sheet guide assembly	13
1-11	Paper guide position	14
1-12	Sheet guide installation	14
1-13	Printing single sheets	15
1-14	The dust cover	16
1-15	Interface card	16
1-16	Locating the interface card	17
1-17	Interface card installation	19
1-18	Interface connection to computer	20
1-19	Switch settings	21
2-1	Controls and indicators	26
2-2	Maintenance	28
3-1	Adjustment levers	30
3-2	Sheetload	33
3-3	Protective cover removed	35
3-4	Tractor unit installation	36
3-5	Printer parts used with pin-feed paper	37
3-6	Paper inserted	38
3-7	Aligning pin frames	39
3-8	Pin-feeder covers	40
3-9	Paper path	41
3-10	Removing the tractor unit	42
3-11	The LQ-1500 self-test	43
D-1	A character and its widths	80

Tables

1-1	Settings for switch 1	22
1-2	Settings for switch 2	23
1-3	International character switch settings	23

Introduction

Congratulations! You've purchased the Epson LQ-1500™. This advanced, state-of-the-art printer combines the quality of typewriter print with the speed of a dot matrix printer. Of course, it has all the capabilities of the other Epson printers-and more too.

LQ-1500 Features

The LQ-1500 is designed to be used day in and day out in an office environment. Its size and rugged good looks proclaim this fact. Its Epson engineering guarantees it.

The LQ-1500 has a long list of features. Just a few of the highlights include:

- Letter quality printing. The LQ-1500's 24-pin print head can print letter quality characters in four widths.
- Proportional letter quality printing. The LQ-1500 can print in two widths of proportional letter quality characters.
- Draft speed. The LQ-1500 can print at 200 characters per second using the draft character set.
- Two hundred and twenty-four printing styles. The LQ-1500 can print in 224 **different** printing styles, not counting superscripts and subscripts.
- Upward compatibility. The LQ-1500 includes all of the major features of the FX series of printers.
- Userdefined characters. The LQ-1500 allows you to design your own character sets, in either draft or letter quality mode.

- High-resolution graphics. The LQ-1500 has all the graphics capabilities of the FX series of printers and more. The 24-pin print head provides top-quality, high-resolution graphics.
- Text buffer. The LQ-1500 has a 2048 character text buffer to increase printing speed. The buffer takes information quickly from your computer, leaving the computer free for other tasks while the LQ-1500 finishes printing.

About This Manual

The LQ-1500 is a sophisticated machine. Although it is simple to operate, writing programs for it can be complicated. In many cases, the people who use the LQ-1500 are not the ones who do the programming. Therefore, Epson has provided two different manuals. This LQ-1500 ***User's Manual*** contains all the information required to set up and operate, the LQ-1500. The LQ-1500 ***Programmer's Manual*** contains the information required to write programs for the LQ-1500. Epson also supplies Application Notes that tell you how to use the LQ-1500 with specific software programs.

The first three chapters of this manual will help you set up, operate and maintain your printer. Chapter **4** contains information on how to use control codes with your printer.

The appendixes contain helpful information about selecting print styles and character sets, and about using control codes to command certain printer functions. Appendix A summarizes the control codes. Appendix B explains how to change from one print style to another and shows examples of different print styles. Appendix C shows the character sets available on the LQ-1500, including the regular and international sets. Appendix D gives the dot width of each of the available proportional characters. Finally, Appendix E, a convenient conversion chart, provides all the possible names for each ASCII code.

This user's manual is not long, but it contains a lot of important information. In spite of its simple design, the LQ-1500 is a precision printer, and you should know the right way to assemble and take care of it. Reading this manual will help assure you of success when you begin to use the LQ-1500.

Chapter 1

Setting Up Your LQ-1500

You've just purchased a terrific new printer, and dug far enough into the box to find this manual. Now what? In this chapter we'll show you how to set up your **LQ-1500** and connect it to your computer.

First, take inventory. Carefully unpack the carton and make sure that you have all of the pieces shown in Figure 1-1:

- LQ-1500 printer
- Sheet guide (three pieces)
- Dust cover
- Front cover (installed on the printer)
- Paper feed knob
- Power cord
- Ribbon cartridge
- This User's Manual.

Note: It's a good idea to save all of the packing materials in case you want to move your LQ-1500 some day.

Finding a Suitable Location

Before you actually set up your printer, you should give some thought to where you are going to put it. Of course, your printer must sit somewhere near your computer (the length of the printer cable is the limiting factor). However, you may not want to place your computer and printer side by side because the printer does make noise

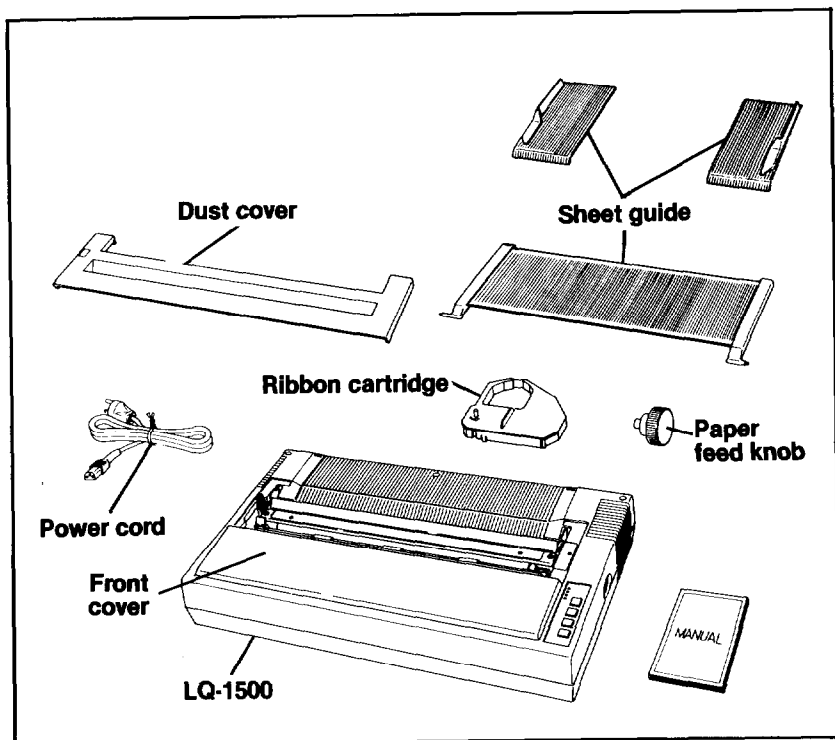


Fig-we 1-1. Unpacking the LQ-1500

during operation. Here are some additional suggestions to follow:

1. Place the LQ-1500 on a flat, stable surface. The printer will make more noise if you place it on a table that moves or vibrates.
2. Connect the printer to a grounded electrical outlet (do not use an adapter plug). It's a good idea to choose an outlet which is not controlled by a wall switch that could be accidentally shut off during the printing process.
3. Choose a location which will allow enough space beneath or behind the printer to load the paper. If you are using continuous (or pin-feed) paper, the paper path should be free from obstruction (see Figure 1-2) .
4. Protect the printer from prolonged exposure to direct sunlight, moisture, and dust. Make sure that it is not close to a heater or any other heat source.

5. Use the LQ-1500 in areas that are comfortable for you. If you find it too hot, too cold, or too humid, the environment is not right for the LQ-1500; it may not operate properly.

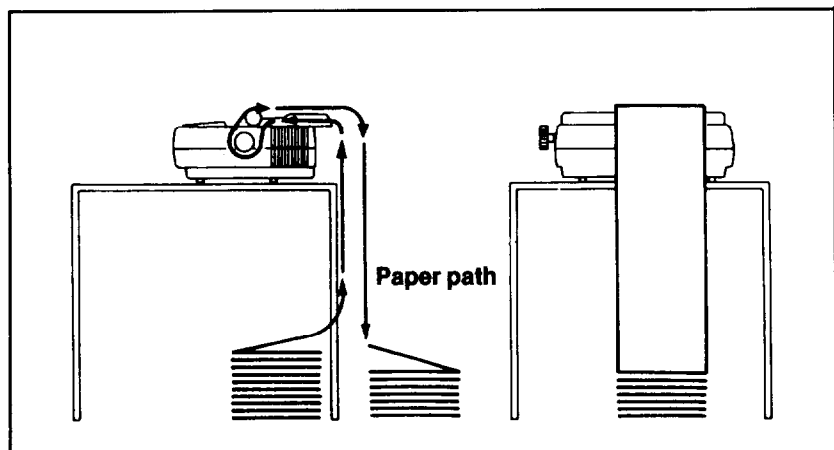


Figure 1-2. Paper placement

Getting to Know Your Printer

Now you've got a small collection of odd-shaped pieces placed in a suitable location. The next step is to put them all together to form a functional printer. Figure 1-3 shows the assembled printer and identifies some of the main parts.

WARNING: To avoid shock hazard and prevent damage to the LQ-1500, complete all of the installation procedures described here with the power to the printer turned OFF.

Installing the paper feed knob

The first piece to install is **the** paper feed knob, which you use to manually turn the platen and advance the paper—just as you do on a typewriter. To install the paper feed knob, simply push it onto the shaft on the right side of the printer. This is shown in Figure 1-4.

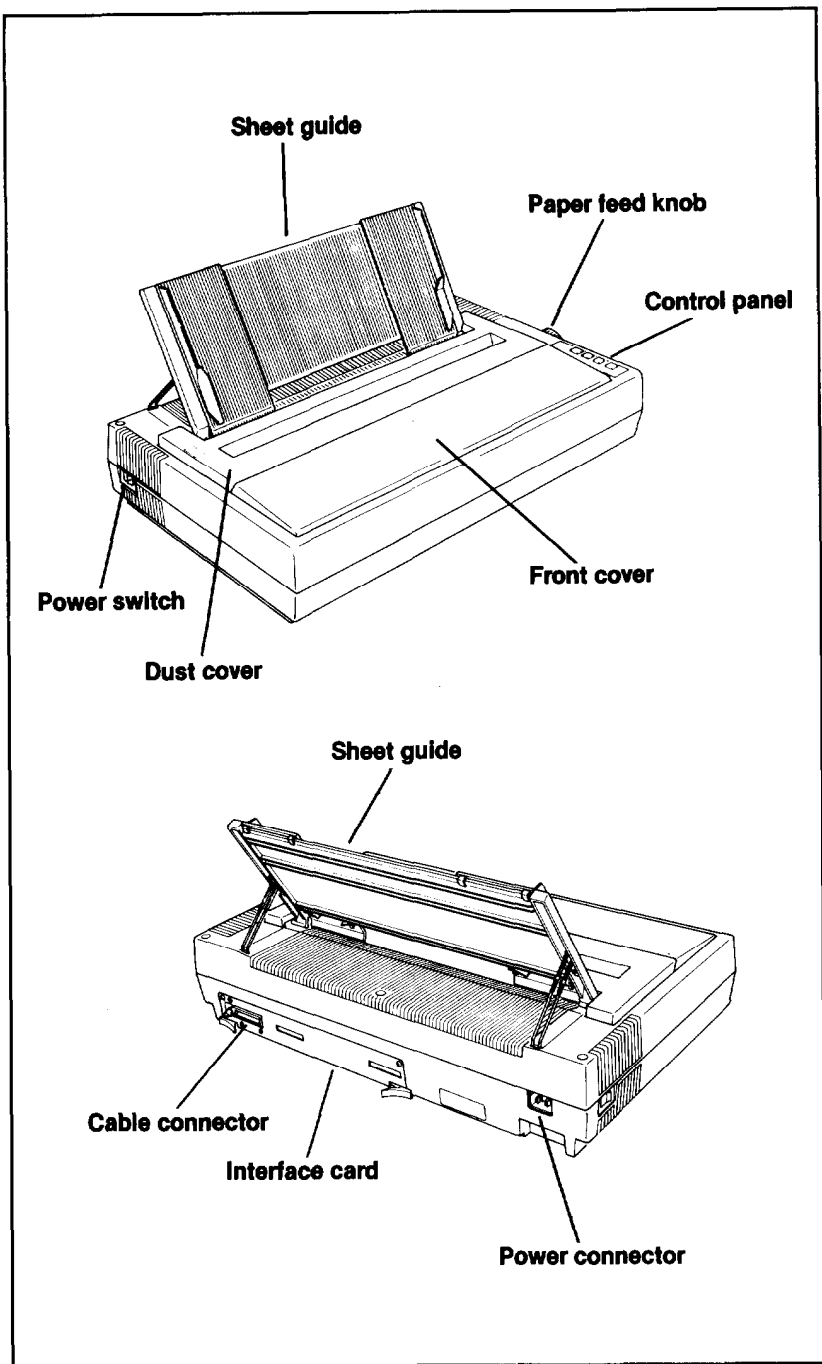


Figure 1-3. *The LQ-1500 printer*

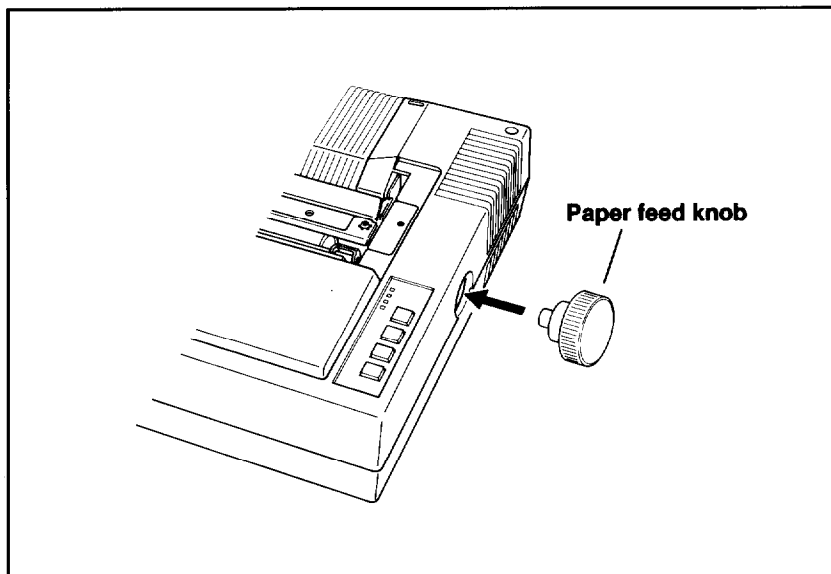


Figure 1-4. Paper feed knob

Removing the dust cover

The dust cover is the brown plastic cover which keeps dust out of the print mechanism and reduces the noise level when the printer is on. If you are using **the** optional tractor unit, you will not use the dust cover.

Lift off the dust cover. It just sits in a recess on the top of the printer so removal is easy. Set the dust cover aside if you will be needing it. Put it away in **the** printer box if you plan to use **the** optional tractor unit.

Removing the front cover

The next assembly step, installing the ribbon cartridge, first requires a bit of disassembly. You should remove the front cover to gain easier access to the print head when you install the ribbon.

Open the front cover by tilting the back edge up and toward you. Push left and up. Gently lift off the cover and set it aside (see Figure 1-5). You'll see it's easier to do than it is to describe!

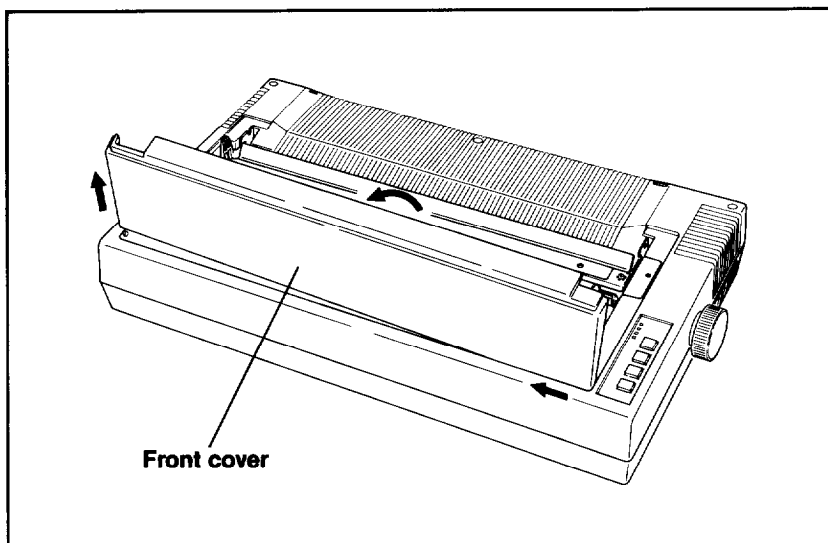


Figure 1-5. Removing the front cover

Discovering what's inside

Now that you can see the insides of the printer, take a few moments to find some of the parts that you need to know about. Study Figure 1-6 until you can identify these parts:

The **print head** is probably the easiest part to locate, so start with it. The print head is the large, black, finned object that moves back and forth on two silver rods across the printer.

The **ribbon guide** is the silver shield on the side of the print head next to the paper. The ribbon guide guides the ribbon between the print head and the paper.

The paper is guided through the printer by a large rubber roller called the **platen**. It has the same function as the platen in a typewriter.

The **paper bail** is the numbered scale with three black rollers on it. The paper bail rests against the platen and holds the paper in place as it moves through the printer.

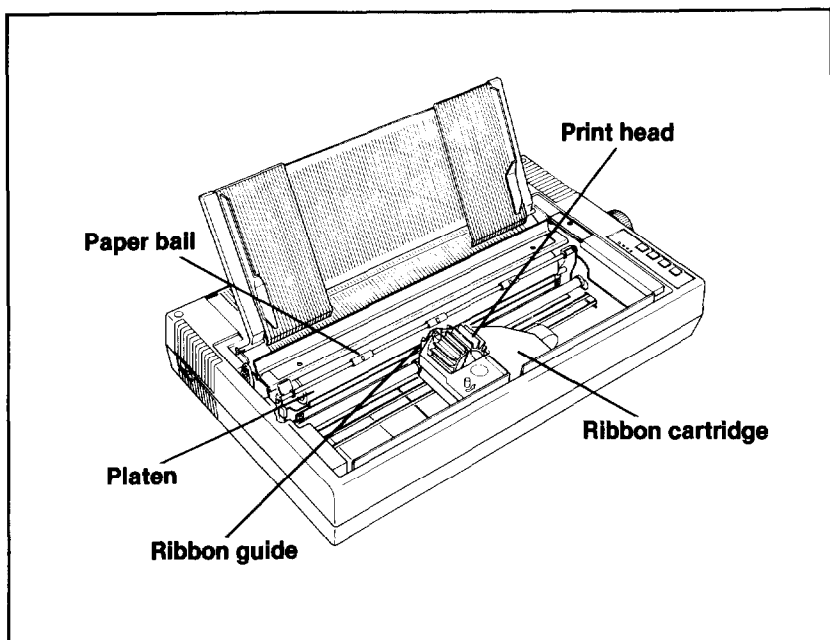


Figure 1-6. Printer parts

Once you identify these parts, you will know enough about the printer to get started. This manual will help you identify other parts as the need arises.

Installing the Ribbon Cartridge

The LQ-1500's ribbon cartridge is easy to install, and it won't get your hands dirty. Follow these steps for a quick installation.

1. Close the paper bail so that it is against the platen.
2. Grasp the print head by the finned part and slide it along the silver rods until it is positioned at **40** on the paper bail scale. You will need space on either side of the print head when you insert the ribbon cartridge.
3. Rotate the ribbon cartridge take-up knob in the direction indicated by the arrow next to it so that the ribbon is tight (see Figure 1-7) . Don't worry about wasting the ribbon by turning too much; the ribbon is a continuous loop inside the ribbon cartridge.

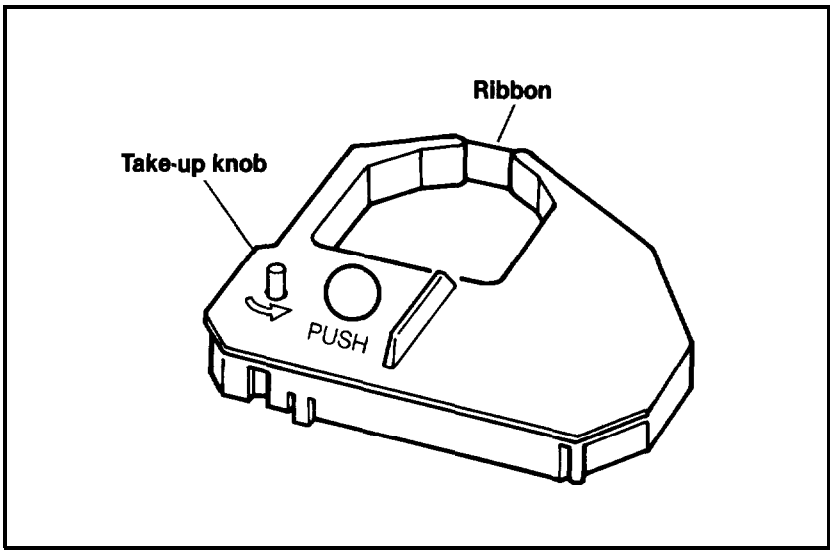


Figure 1-7. Ribbon cartridge

4. Hold the ribbon cartridge in both hands to position it over the print head (the hole in the ribbon cartridge fits over the finned part of the print head). The short piece of exposed ribbon must go between the print head and the ribbon guide so that the ribbon does not rest directly against the platen (see Figure 1-8) . Lower the ribbon cartridge and press the spot marked PUSH to seat the back of the ribbon cartridge first.
5. Once you have positioned the exposed ribbon and secured the back end of the ribbon cartridge, push down on the front of the cartridge to snap it into place. The ribbon cartridge will sit level when it is positioned correctly.
6. Now give the take-up knob several turns to straighten out the ribbon so that it is not wrinkled or twisted. The ribbon should move freely between the print head and the ribbon guide (Figure 1-9).

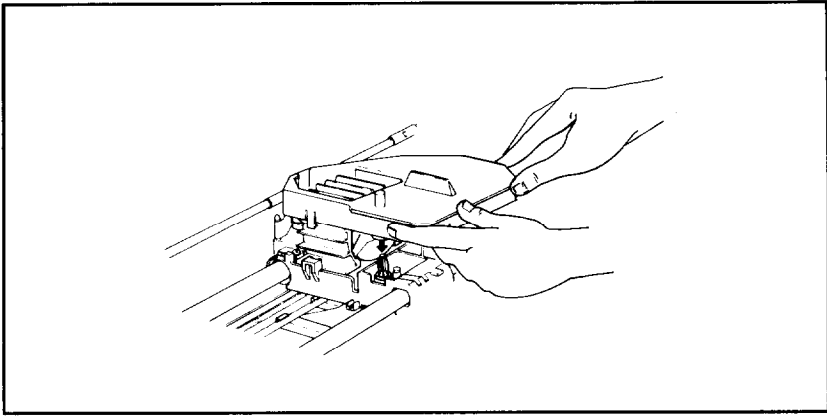


Figure 1-8. Ribbon installation

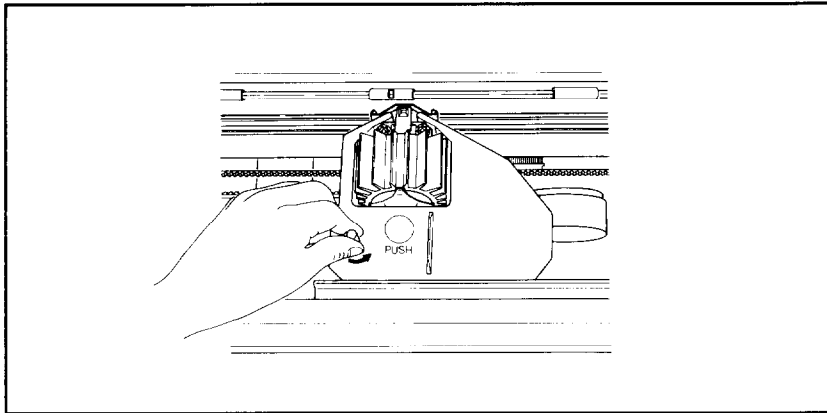


Figure 1-9. Ribbon operation

To replace the front cover, simply reverse the steps you took to remove it. Fit the right end into place first and then lower the left end until it is securely in place. Tilt the cover back into the closed position. It should fit snugly.

Installing the Sheet Guide

The sheet guide serves a dual purpose on the LQ-1500. If you are using single sheets of paper, the guide ensures consistent margins and straight lines of print. If you are using pin-feed paper, the sheet guide is used as a paper separator to keep the incoming and outgoing paper from interfering with each other.

Assembling the three pieces

First, you must assemble the three pieces of the sheet guide.

1. Orient the sheet guide so that the textured side is up and the metal mounting pins are facing you. Lay one of the two sliding paper guides on top of the sheet guide. The matching textured side should be facing up and the lipped end should be facing toward you. Now tilt the top of the sheet guide up so that you can hook the tabs at the top of the sliding paper guide over the top edge of the sheet guide (see Figure 1-10).
2. Next, turn the sheet guide over so the back side is facing you. Use your thumbs to snap the the two plastic spring clips over the bottom edge of the sheet guide. One of the sliding paper guides should now be securely in place.
3. Again, position the sheet guide so that the textured side is facing you. Move the installed sliding guide to the proper end of the sheet guide. The vertical standing edge of the sliding paper guide should be flush against the outer edge of the sheet guide. The flattened side of the sliding guide faces toward the center.
4. To install the other paper guide, just repeat the steps above. Be sure to attach the second sliding guide with the vertical standing edge facing out toward the end of the sheet guide and away from the center (see Figure 1-11).

Attaching the sheet guide

To install the sheet guide, place the metal mounting pin on the right side of the sheet guide into the corresponding hole in the metal frame. Then lower the left side until the tab on the left side drops into the slot in the metal frame. Figure 1-12 shows how to do this.

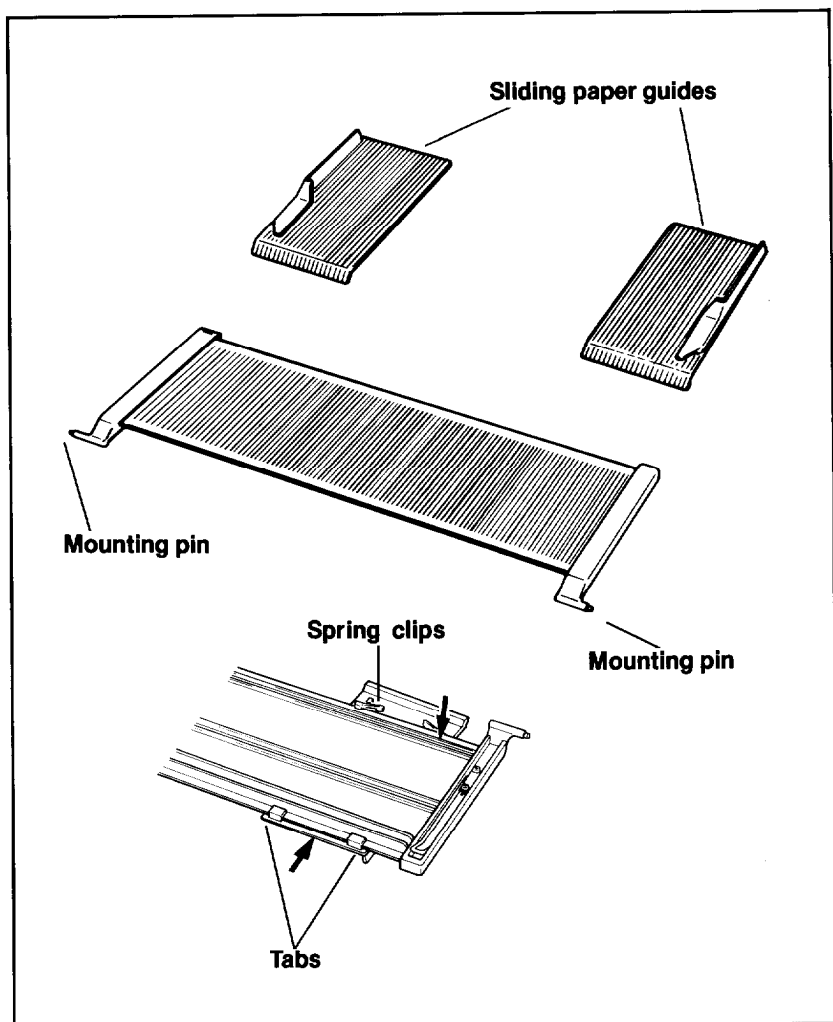


Figure 1-10. Sheet guide assembly

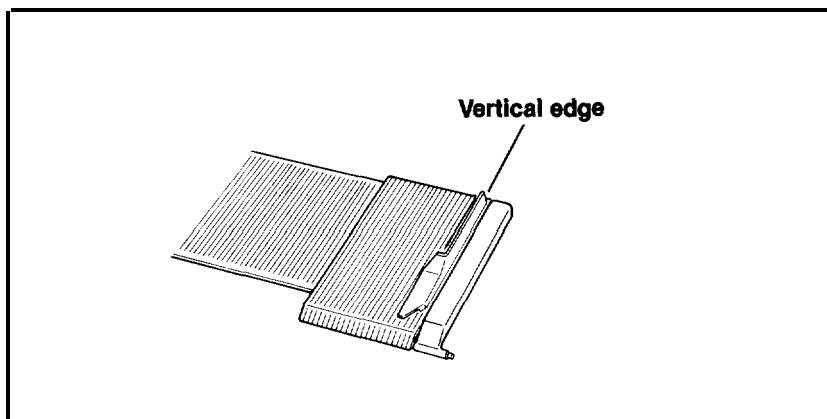


Figure 1-11. Paper guide position

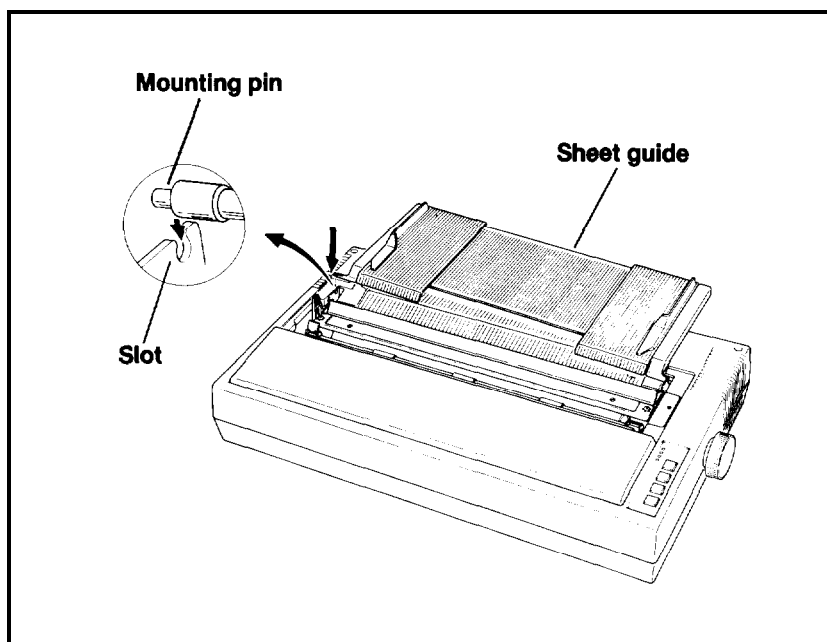


Figure 1-12. Sheet guide installation

If you plan to use your LQ-1500 with single sheets of paper, lift up the sheet guide at the back and fold down the metal legs on the bottom of the sheet guide. As shown in Figure 1-13, the legs fit into slots in the top case of the LQ-1500. (This step is not necessary if you will be using the optional tractor unit.)

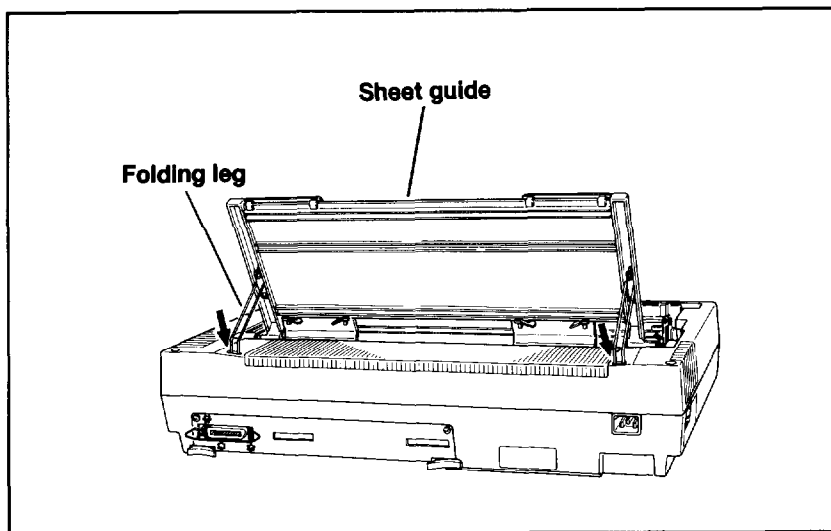


Figure 1-13. Printing single sheets

Once the sheet guide is installed you can replace the dust cover on top, as shown in Figure 1-14. Also, you may want to remove the protective film that is on the switch panel at the right front of the LQ-1500. This film protects the switch panel during manufacture and shipment and can be easily peeled off.

Connecting the LQ-1500 to Your Computer

Your printer setup is now almost complete. The next step will be to connect your printer to your computer. At the printer end of this connection, two additional pieces of equipment are required: an interface card and a printer cable. The interface card consists of a circuit board pre-mounted into a metal carrier (Figure 1-15).

Locating the interface card

Epson makes three types of interface cards for the LQ-1500: parallel, serial, and IEEE 488. With the use of easily interchangeable interface cards, this powerful printer can be driven by nearly any computer or word processor. Your Epson dealer can advise you about which interface is best for your computer and application.

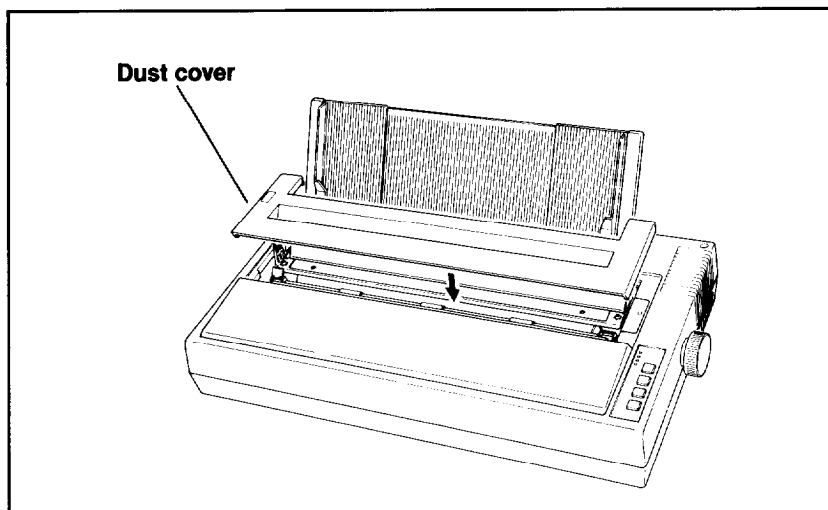


Figure 1-14. The dust cover

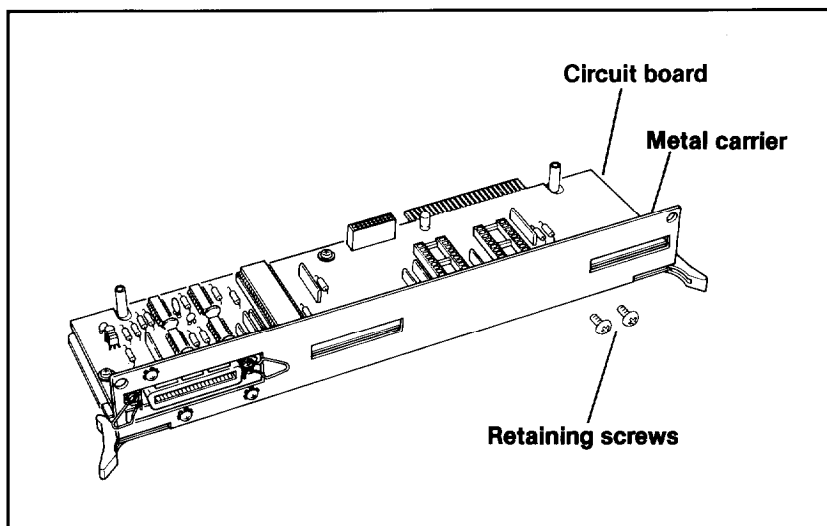


Figure 1-15. Interface card

Installing the interface card

Your dealer may have already installed the interface card for you. Turn your printer around and look at the back of the printer to tell if the interface card has been installed (see Figure 1-16). If there is a large cavity at the lower left, the interface card is missing and you must install it before you can use your LQ-1500. If, on the other hand, there is a plug connector at the lower left, the interface card has been installed for you. (If your interface card has been installed, you can skip to the next section.)

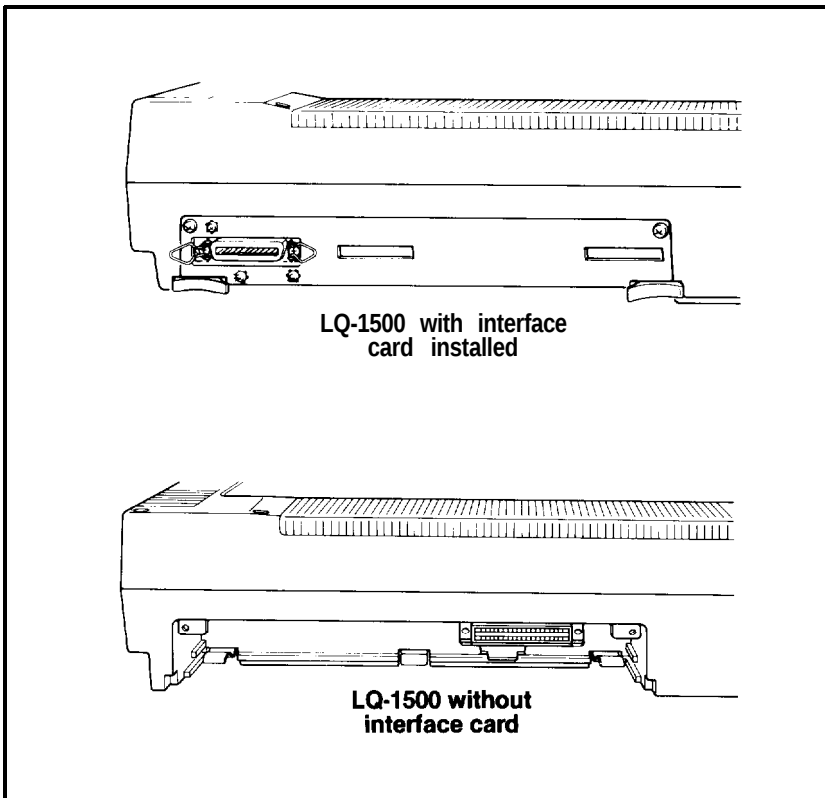


Figure 1-16. *Locating the interface card*

The installation procedure is the same for all three of the available interface cards. The card is easily mounted or removed. The only tool you need is a Phillips screwdriver.

To install the interface card slide it into **the** cavity on the back of the LQ-1500 as **shown** in Figure 1-17. It should slide between the upper and lower plastic guide rails on either side of the opening.

When you feel resistance on the right side of the card, firmly push it in with both hands. It may help to push against the card release levers to snap the card into place. The interface card should be flush and even with the back of the printer; it should not tilt or protrude.

Now, lift up slightly on the card and secure it in place with the screws provided.

If you use your LQ-1500 with different computers, you may have to remove and replace this card. Begin by removing the retaining screws. Then pull **the** release levers **on** both sides of the interface card at the same time. The card will slide out easily.

Attaching the cable to the printer

Note: Before you connect any cables, be sure **that** both the printer and the computer are turned OFF.

One end of your printer cable should plug right into the connector on the interface card (if it doesn't, you have **the** wrong cable). To secure the connection, attach the two clips on **the** interface card to the cable (parallel interface only) or tighten the two screws on the cable connector (serial and IEEE 488 interfaces). If your cable has a ground strap, connect it to the screw just above the interface connector. Figure 1-18 shows both types of connections.

Connecting the printer cable

For many computers, you merely plug the cable into the printer port on your computer. Some computers require a printer interface card, either mounted inside the computer or externally. Check your computer installation and operations manual for details on how to connect your computer to a printer.

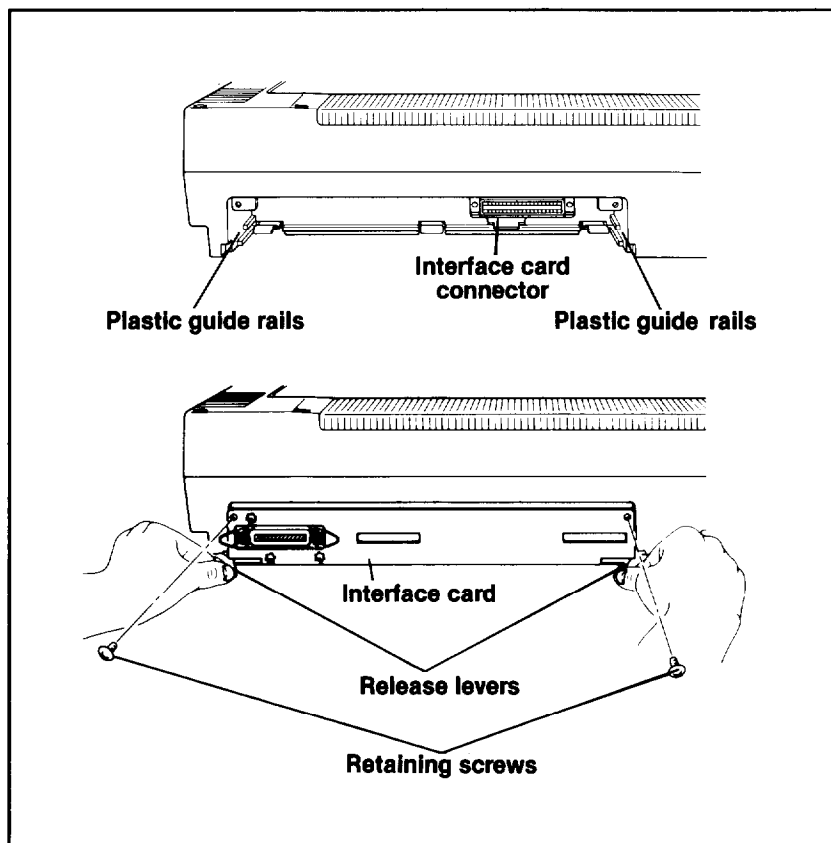


Figure 1-17. Interface card installation

Setting the DIP Switches

This is the last step in installing your printer. Because each computer installation is slightly different, Epson has placed a series of DIP switches on the back of the printer interface, which you can change to best suit your printing application. You can see them through a slot in the back cover of the interface card.

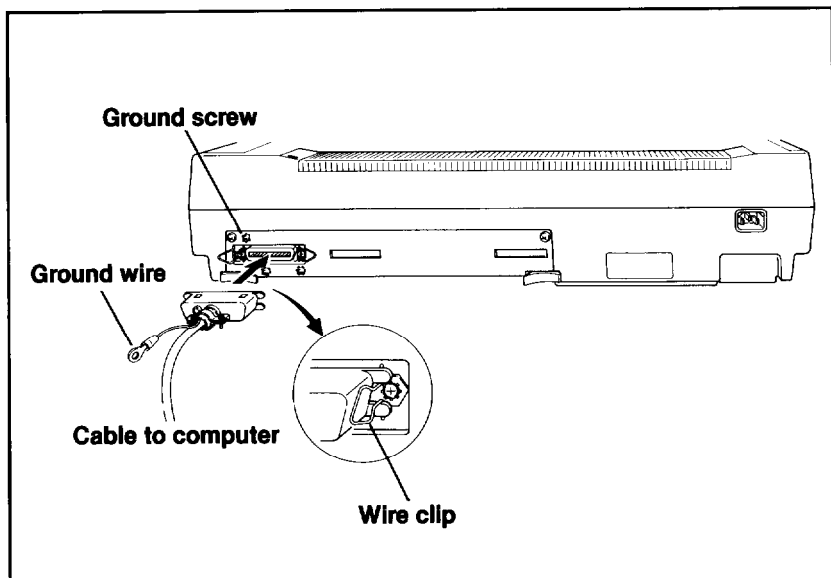


Figure 1-18. Interface connection to computer

WARNING: The DIP switches we are discussing are in the *interface unit on the back of the printer*. Do not change the settings of the DIP switches that are inside the printer. These settings have been determined by the manufacturer to be correct for this LQ-1500 printer. Special knowledge is required to set these switches.

You can use a ballpoint pen to reach into the interface slot and change switch settings.

Note: Be sure that the printer is turned OFF before you make any changes in the DIP switch settings. Your printer does not register changes in switch settings made **while the power is ON**. You must **reinitialize**, or restart, the printer to record the switch settings.

The switches are all numbered for identification. The number has two parts. The first part refers to the switch group. Look at the back of your printer; you will see one group of four and one group of eight switches. You can identify the switch groups by looking at Figure 1-19.

As you can see, each switch group is actually a series of switches. That's the reason that each switch is referred to by two numbers. The

second digit refers to the individual switch number. It is printed right on the switch itself.

You can also see that there is a small arrow on the left side of the switch group which indicates the ON position for these switches. However, it's easier to remember switch settings according to whether the switch is pointing up (toward the top of the printer) or down (toward the bottom of the printer).

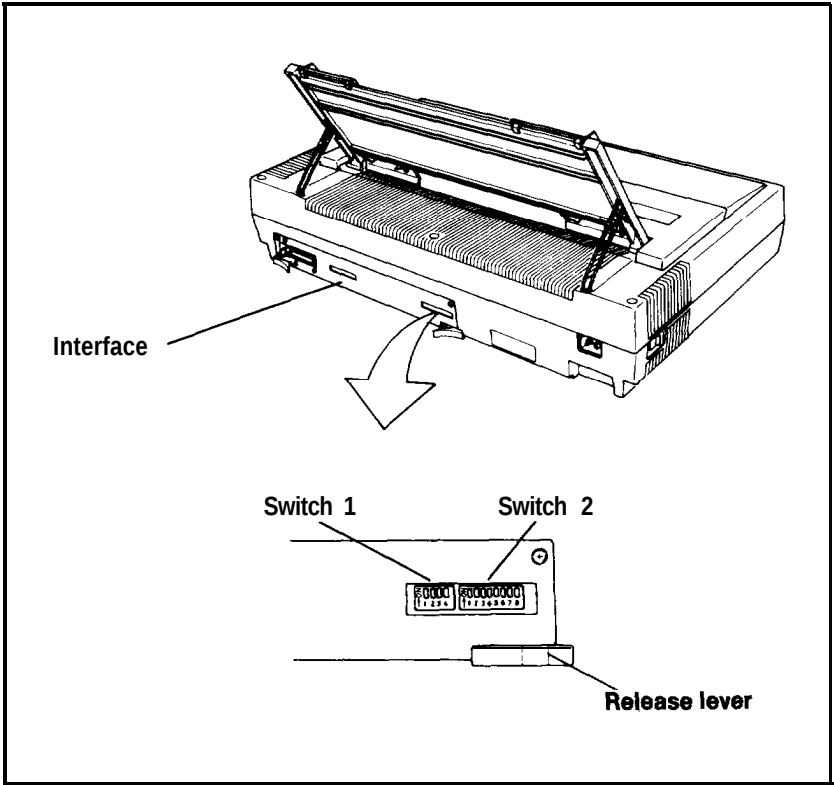


Figure 1-19. Switch settings

Switch1

The functions of the four switches that make up switch 1 are summarized in Table 1-1. The right-hand column shows how the switches are set when the printer is delivered. These predetermined settings are best for most applications.

Table 1-1. Settings for switch 1

Switch	Function	Up	Down	Factory
1-1	2K byte input buffer	Disable	Enable	Down
1-2	Paper-out detector	Disable	Enable	Down
1-3	Automatic line feed	On	Off	Down
1-4	Reserved for future use	Always down		Down

Switch 1-1--In the down position, this switch **allows you to create a buffer of 2048 bytes** of memory. **This** buffer can be useful when you **want** to print a document at the same time you continue to use your computer for other tasks.

WARNING: If you turn OFF the LQ-1500, any information in the buffer is lost.

Switch 1-2--Switch 1-2 enables a detector in the LQ-1500 that warns you when the printer is out of paper. This is very important when you are using continuous paper. The printer stops, issues an audible warning, and waits for you to load more paper before proceeding-and no data is lost.

However, if you are using single sheets, the paper-out detector stops the printer when it nears the bottom of the sheet (even if you want to print all the way to the bottom or if you have another sheet ready to feed). In this case, it is best to disable the paper-out detector by turning switch **1-2** to the Up position. With the printer's paper-out detector disabled, the application software in your computer must determine when it has come to the end of a page. Check with your software dealer if you have difficulty.

Switch 1-3--Switch 1-3 controls whether or not the LQ-1500 does an automatic line feed each time it receives a carriage return. Some computers do not send line feeds to the printer which means that this switch must be up.

Switch 2

Switch 2 determines which print characteristics will be in use when the **LQ-1500** is turned on. Each of these functions can be changed at

any time by sending the appropriate command to the printer. The functions of the individual switches are summarized in Table 1-2.

Table 1-2. Settings for switch 2

Switch	Function	Up	Down	Factory
2-1	International character sets (see Table 1-3)			UP
2-2				UP
2-3				Up
2-4	Form length	12 in.	11 in.	Down
2-5	Skip over perforation	On	Off	Down
2-6	Bell	Disable	Enable	Down
2-7	Print mode	Letter quality	Draft	Down
2-8	SLCT IN signal	Fixed	Not fixed	Up

Switches 2-1, 2-2, and 2-3--These switches are used to determine the default international character set. Appendix C shows the characters that are included in each of the character sets. Table 1-3 shows the required switch settings for each set.

Table 1-3. International character set switch settings

2-1	2-2	2-3	International character set
UP	UP	UP	U.S.A.
UP	UP	Down	France
UP	Down	UP	Germany
Up	Down	Down	United Kingdom
Down	UP	UP	Denmark
Down	UP	Down	Sweden
Down	Down	UP	Italy
Down	Down	Down	Spain

Switch 2-4.--Switch 2-4 is used to tell the LQ-1500 the size of paper that you will be using. It uses this information to keep track of the perforation and the top of the form.

Switch 2-5.--The LQ-1500 automatically leaves a top and bottom margin of 1/2 inch on each page if switch 2-5 is in the up position. The switch tells the printer to skip over each perforation so that nothing is printed on top of the perforation. This is especially useful for printing long program listings. Many word processing programs, however,

have commands for setting top and bottom margins and they work best if the skip-over-perforation feature is turned off.

Switch 2-6--There are occasions when the printer bell (which is actually a buzzer) can be used to signal the operator. For example, you may want to switch paper in the middle of a long document. You can use the bell to signal when it is time to make the change. To make use of this feature, leave switch 2-6 down in the down position. For a rough draft, it may not be necessary to switch paper, so by turning switch 2-6 up, you won't be bothered by unnecessary noise. Generally, switch 2-6 is left in the down position.

Switch 2-7--This switch also selects a feature that you may want to use one way for rough drafts and another way for the final printout. You can select either letter quality printing or draft printing. The LQ-1500 prints much faster in draft mode, but the quality isn't as good. You can also change between draft and letter quality printing by using commands sent from your computer.

Switch 2-8--This switch is used to control the select signal. Most computers require that the select signal be fixed (switch is in the up position). If your computer requires that the select signal not be fixed, then set the switch in the down position.

If you have a parallel interface card, your installation is now complete! Go on to Chapter 2, where you'll learn how to operate the LQ-1500.

If, on the other hand, you have a serial or IEEE 488 interface card, you have a few more switches to set in order to ensure that your computer and LQ-1500 are communicating properly. Consult your interface user manual for instructions on the proper setting of these switches.

Installing the Power Cord

If you have been following along so far you should have one piece left: the power cord. Plug one end into the LQ-1500--the connection is on the rear of the printer near the right side (as you face the rear). Plug the other end into a standard (120 VAC, 60 Hz) **grounded** electrical outlet (do not use an adapter plug).

Chapter 2

Operation and Maintenance

Your LQ-1500 is now set up. You've connected it to your computer and set the switches. Now you're ready to learn how to use the controls and indicators on the printer to operate it correctly. We'll also give you some advice on how to maintain your LQ-1500 and keep it printing smoothly for a long time.

Then, in Chapter 3, you'll learn how to install and load the paper feeders which will give you an opportunity to use the controls discussed here.

Controls and Indicators

There are several controls and indicators on the LQ-1500 (see Figure 2-1). You use them to operate the printer and make your day-to-day printing easier for you. Here's what these controls do:

The power switch

The power switch is located on the left side (toward the rear) of the printer. Press the front side of the switch to turn the printer ON; press the back side to turn it OFF.

The control panel

The control panel, located on top of the computer, has indicator lights and buttons which monitor the printing process. They are:

- POWER light -- glows green when the power is ON.
- READY light -- glows green when the printer is ready to accept data. The light flickers somewhat during transmission. This flickering is normal.

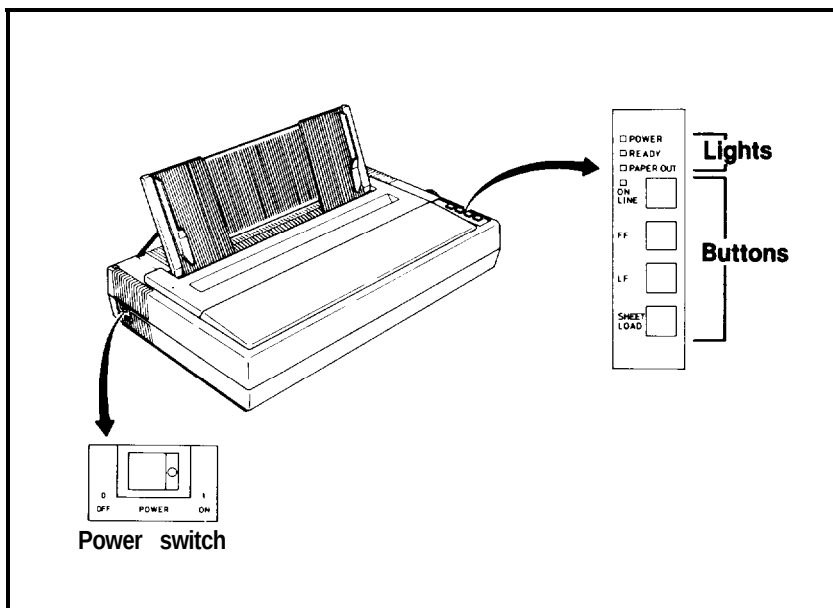


Figure 2-1. Controls and indicators

- PAPER OUT light -- glows red when the printer is out of paper; printer will stop printing (if Switch 1-2 is in the up position).
- ON LINE light -- glows green when data reception is possible.
- ON LINE button -- allows you to switch from on-line to *off-line* status (this is a toggle). When the printer is on line, it is ready to accept data from the computer and the ON LINE light glows green. When the printer is off line, it is not ready to print.

When the printer is off line, you can use the form feed (FF) and line feed (LF) buttons on the control panel to move the paper. The ON LINE and READY lights will be off. You can return the printer to on-line operation at any time, just by pressing the ON LINE button.

- FF button -- stands for *form feed*. When you're off line, pressing this button will advance the paper to the top of a new page.

- LF button -- stands for *line* feed. When you're off line, tapping this button advances the paper one line at a time. To advance multiple lines, hold down the LF button. Do not perform continuous line feeds for more than two minutes.
- SHEET LOAD button -- opens the paper bail and loads single-sheet paper into the printer.

The paper-out detector

The printer is equipped with a device which warns you that the printer is out of paper. When your paper runs out, printing stops, the PAPER OUT light goes on, and the printer buzzer sounds five times.

When you have loaded more paper, the PAPER OUT light goes off. Printing can be resumed in one of two ways. If you are in the middle of printing, press the ON LINE button. If you want to reinitialize the printer, turn the power switch OFF and then back ON.

You can turn off the paper-out detector in two ways: by DIP switch 1-2 on the interface card, or by a control code sent from the computer. Turning off the paper-out detector tells the printer to ignore the paper-out sensor and allows you to print to the bottom of the page. Some computers will stop the printer before the end of the page, even though DIP switch 1-2 is down (off). If this happens, you may need to consult your dealer about the interface between your computer and printer. You may also consult your software dealer for further information.

Maintenance

As with any mechanical device, the best maintenance of your LQ-1500 is preventive maintenance. You've already started by choosing a clean, dust-free location with a comfortable temperature range. Of course, you will change your ribbon cartridge whenever it loses quality through use.

In addition, your printer requires periodic cleaning. Here are a few tips on how to perform this maintenance properly.

Cleaning the LQ-1500

You should clean the outside of the printer case whenever it appears to be dirty. Use a clean damp rag and alcohol. Be careful not to drip alcohol on the printer mechanism.

You should also clean the inside front portion of the printer (Figure 2-2) to get rid of dust and paper lint. To do this, turn the power switch off and disconnect the power cord. Remove the dust cover, the front cover, and the ribbon cartridge. Use a small vacuum cleaner and a soft brush to clean inside the printer. Be careful not to bend or damage any of the parts inside the printer. With the power off, you can easily move the print head back and forth to clean under it. Use as light a touch as possible to get the job done.

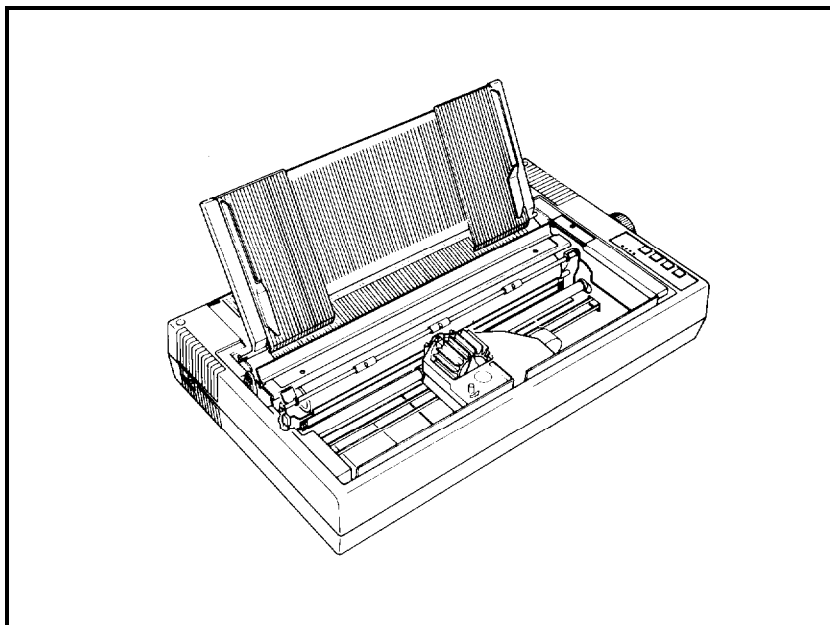


Figure 2-2. Maintenance

Other maintenance

Changing the ribbon cartridge and cleaning **the** printer are the only maintenance tasks that you should do. There are no user-serviceable parts inside the LQ-1500. Leave any other types of maintenance (fuses, print heads, etc.) for your Epson dealer or authorized service center. The LQ-1500's print head is not user-replaceable because it must be carefully aligned with special tools to achieve the best printing quality.

Chapter 3

Installing Paper and Paper Feeders

Now that you are more familiar with your LQ-1500, you're ready to install and load the paper feeders. Since you're into the third chapter, you're probably getting anxious to print something by now. First, you need some facts on the different types of paper and paper feeders the LQ-1500 uses.

Types of Paper and Paper Feeders

You can use a great variety of paper types with the LQ-1500 which makes your printing both flexible and convenient. Paper thickness can range from 0.07 mm to 0.20 mm for both types of paper feeders.

Single-sheet paper and sheet guide

First, you can use single-sheet paper including all the standard sizes of stationery and preprinted business forms. Single-sheet paper may vary in width from 7.2 to 14.3 inches. The sheet guide unit is used to feed single-sheet paper into the LQ-1500. As you may recall, Chapter 1 gave you the details for installing the sheet guide unit.

Pin-feed paper and tractor unit

Second, you can use pin-feed paper (also called continuous-feed paper). This includes the familiar fan-fold paper with pin-holes on either side, pin-feed labels, and other types of continuous forms. The LQ-1500 will handle pin-feed paper from 4 to 16 inches wide. Pin-feed paper is used with an optional tractor unit which pulls the paper through the printer by the pin holes.

More Printer Parts

You also need to become familiar with two other important printer parts before you attempt to load any type of paper. Remove the dust cover and open the front cover to find and identify these parts: the platen release lever and the print head adjustment lever.

Platen release lever

The platen release lever controls the pressure of the friction rollers against the platen. It is the black lever located on the left side of the printer at the end of the platen (as shown in Figure 3-1). This lever has two settings: engaged (back) and released (forward).

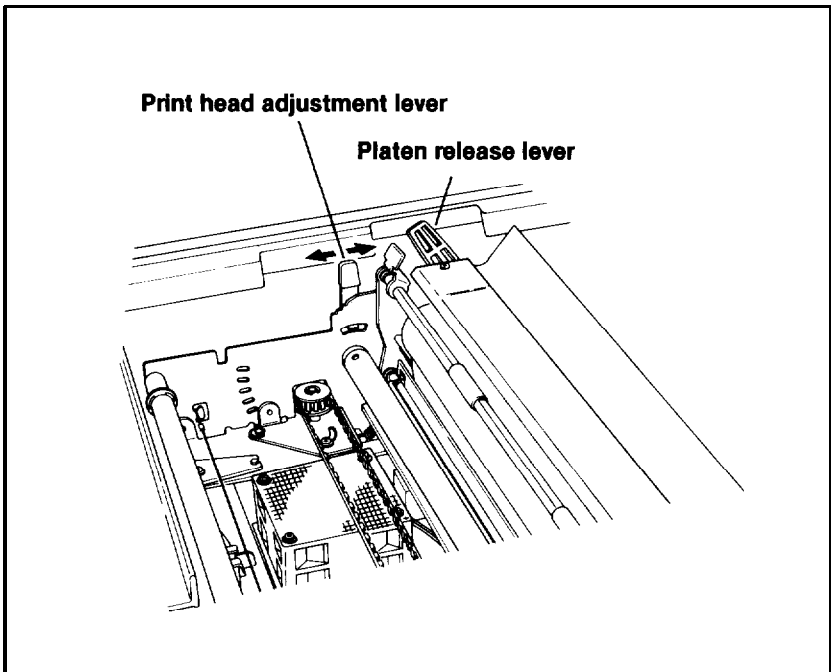


Figure 3-1. Adjustment levers

The first setting, engaged, is used with the single-sheet feed operation which is also called **friction feed**. In this position the pressure of the friction rollers against the paper causes it to feed through the printer.

The second setting, released, is used when the tractor unit is in place. The platen release lever is pulled forward toward the front of the printer. In this position, the friction rollers do not catch the paper but allow it to move freely through the paper path. The tractor unit is installed above the platen and draws the paper through by its pin holes.

Print head adjustment lever

The space between the print head and the platen should be adjusted to accommodate the thickness of the paper you're using. Thicker paper needs a wider space to allow for clean printing and smooth paper movement. Open the front cover of your printer. You'll find that the print head adjustment lever is a small black-tipped lever located on the left side of the printer in front of the platen release lever (as shown in Figure 3-1).

The print head adjustment lever has five positions to widen or narrow the space between the print head and the platen. Move the lever back (toward the rear of the printer) to decrease the space and forward (toward the front of the printer) to increase the space. Most paper of standard thickness should be accommodated with the lever in the straight-up position.

Loading Single-Sheet Paper

Printing on single-sheet paper is fast and easy with the LQ-1500. The printer does most of the work and does it the same way every time. Your main responsibility is to set each sheet of paper in the sheet guide unit evenly and press the correct button. We're sure you'll agree this method is much easier than setting up your paper manually each time you insert a new sheet.

Preparing the printer for single-sheet feed

The following steps tell you how to prepare the printer for single-sheet feed.

1. Remove the dust cover and front cover. Remove the tractor unit if it is installed.

2. Install the sheet guide unit and place it in the upright position (see Chapter 1 for details). Line up the left edge of the left sliding guide with the 1 on the paper bail. This is very important because paper near the center or the right side of the platen will not be detected by the printer.
3. Be sure that switch 1-2 is in the up position to disable the paper-out detector. This allows the printer to print to the end of the page. Remember that your computer is now responsible for stopping the printer when it reaches the end of the paper.
4. Close the paper bail so that it rests against the platen.
5. Engage the platen release lever by pushing it toward the rear of the printer.
6. Set the print head adjustment lever for the paper you are using. Remember that upright is the right adjustment for most paper.
7. Replace the front cover and dust cover.

Loading single-sheet paper

Now that you have prepared the printer, you can load the paper into the sheet guide unit. Remember to load one sheet at a time.

Follow the steps outlined below and refer to Figure 3-2 to load single-sheet paper into the printer.

- 1.Place** a single sheet of paper in the sheet guide unit and adjust the paper guide on the right to the width of the paper. The paper should be square in the guide. Tap the top of the paper gently to work it down into the printer.
2. If the printer is OFF, turn it ON. The PAPER OUT light should be off. If it is on, then the paper is not down in the printer far enough or it is not far enough to the left side of the platen.
- 3.Press** the ON LINE button to put the printer into off-line mode. Both the READY and ON LINE lights are off.
4. Press the SHEET LOAD button. The paper will begin to automatically feed into the printer and the paper bail will open. After the paper has been loaded, the paper bail will automatically close.

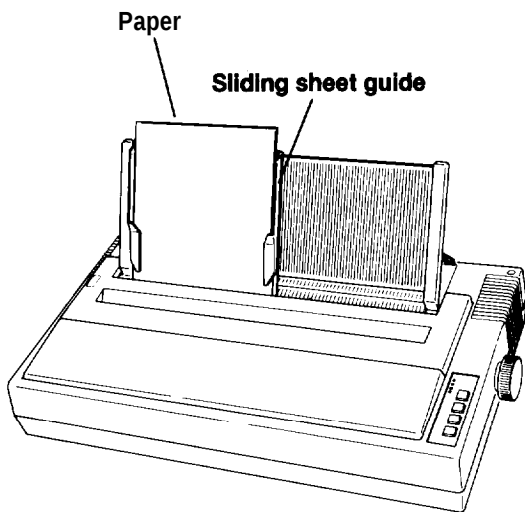


Figure 3-2. Sheet load

Note: If the paper does not advance far enough to be held by the paper bail, turn OFF the power, remove the dust cover, open the paper bail, and use the paper feed knob to advance the paper to the proper position. This problem is caused by not having the paper far enough down in the printer when you press the SHEET LOAD button. ***You may damage your printer parts if you do this repeatedly with the power ON.***

If the paper is not straight in the printer, press **the** FF (FORM FEED) button; **the** paper feeds the rest of the way through **the** printer. Remove the paper and place it back in the sheet guide unit. Repeat step 4 to reload the paper.

WARNING: Do not move the paper backward through the printer because it may damage the paper-out detector.

5. Return the printer to the on-line mode by pressing the ON LINE button. The ON LINE and READY lights should now be on.

You are now ready to print! Repeat **the** steps above to print more single pages.

Removing single-sheet paper

To remove single-sheet paper from the printer, set the printer in the off-line mode by pressing the ON LINE button (remember it's a toggle). The ON LINE and READY lights should now be off. Press the FF (FORM FEED) button and the paper will be ejected from the printer.

Loading Pin-feed Paper

Pin-feed paper is used quite frequently. It is convenient if you do lots of printing or want to use special pin-feed forms such as labels. It is also very convenient for printing rough drafts of documents where you can use less expensive paper.

Loading the LQ-1500 with pin-feed paper is not difficult, but it does require that you have the optional tractor unit purchased separately from your dealer. As with single-sheet feed, the printer does most of the work and virtually takes care of itself until the paper runs out. All you have to do is load the paper correctly.

Installing the tractor unit

The following steps show you how to prepare the printer for pin-feed paper (see Figures 3-3 and 3-4).

1. Turn OFF the printer. Remove the dust cover and the front cover.
2. If the sheet guide unit is installed, lay it back flat against the top of the printer. It should not remain in the upright position when you install the tractor unit.
3. Remove the small protective cover on the right side of the printer to make room for the tractor unit. It is retained by a single Phillips screw as shown in Figure 3-3. Put the piece away in a safe place.
4. Locate the metal brackets on either side of the printer. These brackets have two functions: they hold the sheet guide unit and the tractor unit. Notice that there are two unused wedge-shaped slots which will hold the tractor unit. Pick up the tractor unit by each end and slip the tiny silver pegs into the open slots (see Figure 3-4).

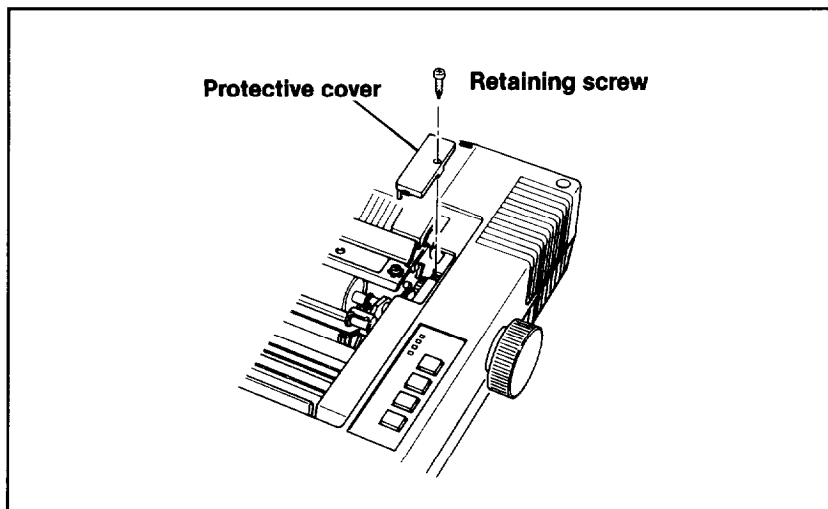


Figure 3-3. Protective cover removed

5. Gently tilt the tractor unit toward you and push the tractor unit down until you feel it lock into place.

Preparing the printer for pin-feed paper

With the tractor unit now installed, you can prepare the printer to load the pin-feed paper. Follow the steps outlined below and refer to Figure 3-5.

1. Set DIP switch **1-2** in the down position to enable the paper-out detector. This allows the printer to stop printing and signal when you are out of pin-feed paper.
2. **Open** the paper bail by pulling it forward (toward the front of the printer).
3. Unlock the gray pin-feeder lock levers on the tractor unit by pulling them toward the front of the printer and slide both pin-feeders outward to the sides. Open the black covers on the pin-feeders.

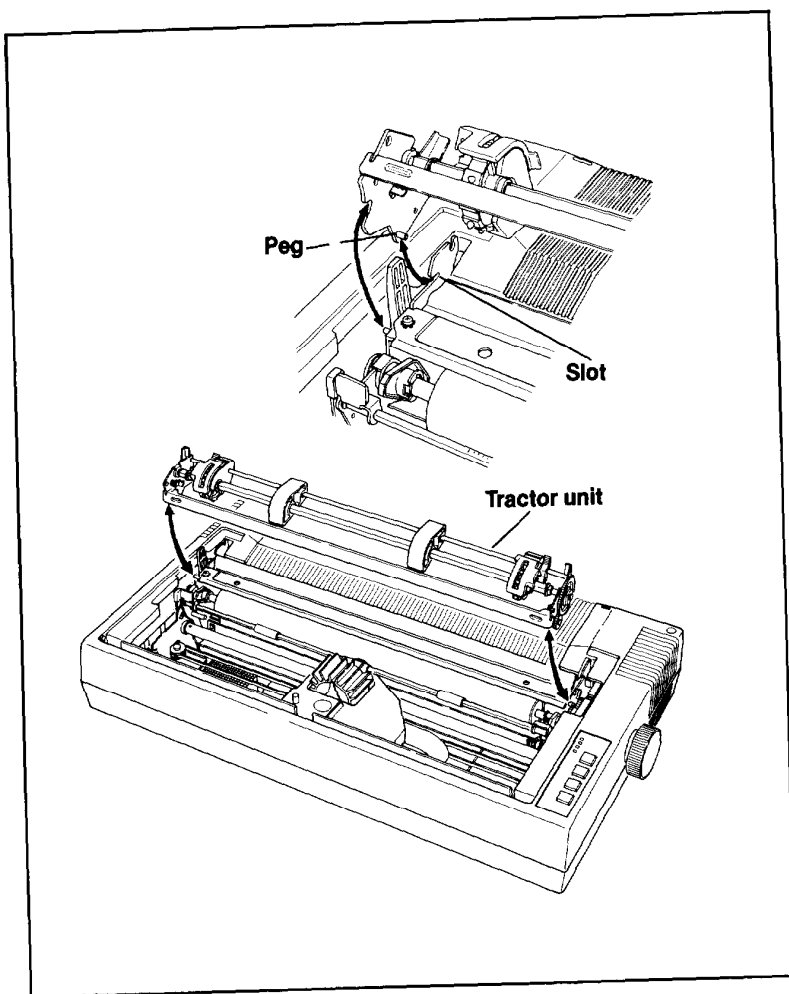


Figure 3-4. Tractor unit *installation*

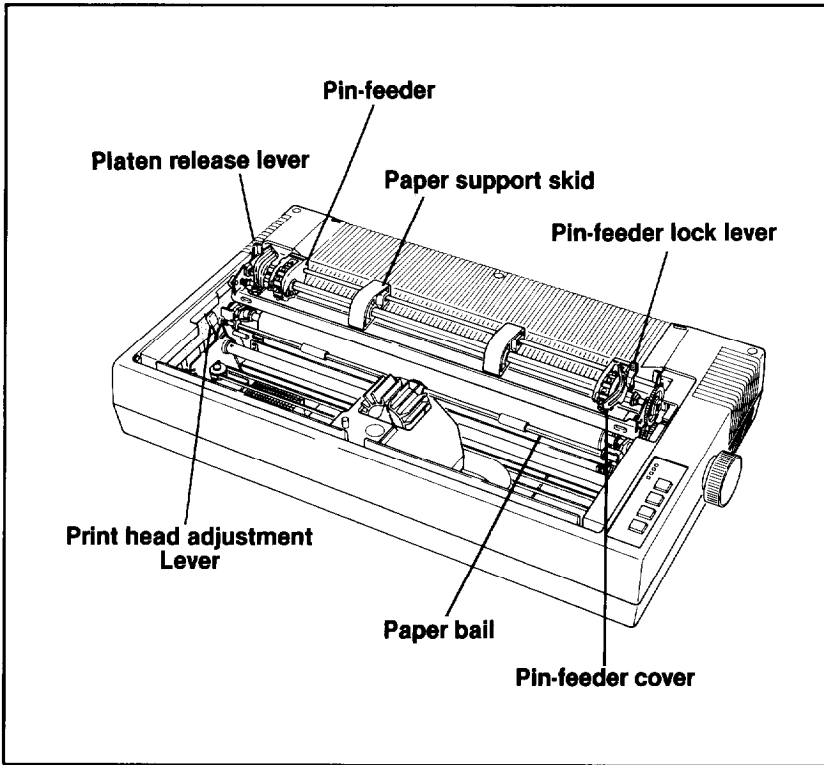


Figure 3-5. Printer parts used with pin-feed paper

4. Set the paper support skids evenly from the approximate center of the paper width (as shown in Figure 3-6). This helps the paper feed smoothly.

Note: If you are using narrow or standard width paper, you must insert it at the far left of the platen (just as you did with single-sheet paper).

5. Make sure the platen release lever is closed (back).

Inserting pin-feed paper

Now that you have prepared the printer, you can load the pin-feed paper by following these steps:

1. Make sure you have a clean top edge. Insert the pin-feed paper into the paper guide slit at the rear of the platen as shown in Figure 3-6. (If the sheet guide unit is installed, slide the paper underneath it.)

Advance the paper by turning the paper feed knob clockwise. With the platen release lever closed, the paper should easily catch on the platen and be fed through.

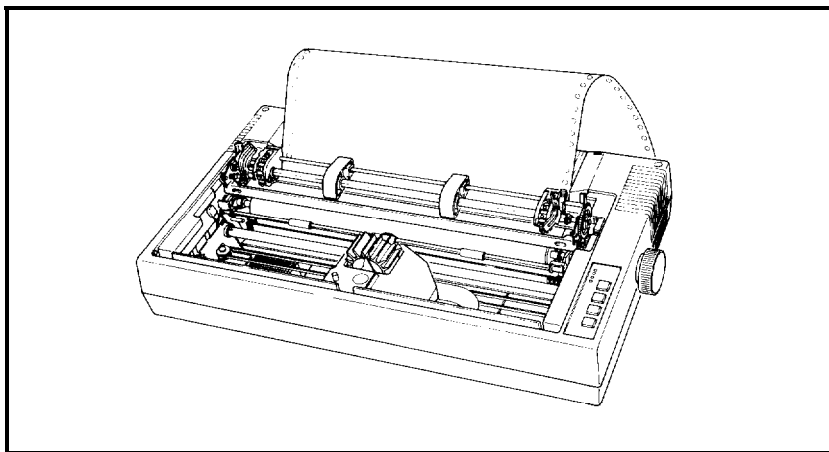


Figure 3-6. Paper inserted

- Note: If the paper is not feeding correctly (or easily), stop, turn the paper feed knob counterclockwise, and at the same time gently pull the paper back out. Check the paper to be sure it is not wrinkled or torn and try again.
2. Stop turning and release the platen release lever (pull it forward) when the top of the paper reaches the two pin-feeders. The paper should now be free to move without using the paper feed knob (see Figure 3-7).
 3. Adjust the pin-feeders to the paper width by sliding them inward to line up with the paper pin-holes. Place the paper pin-holes onto the tractor pins, close the pin-feeder covers, and adjust the paper tension by pulling the pin-feeders gently apart (see Figure 3-8).

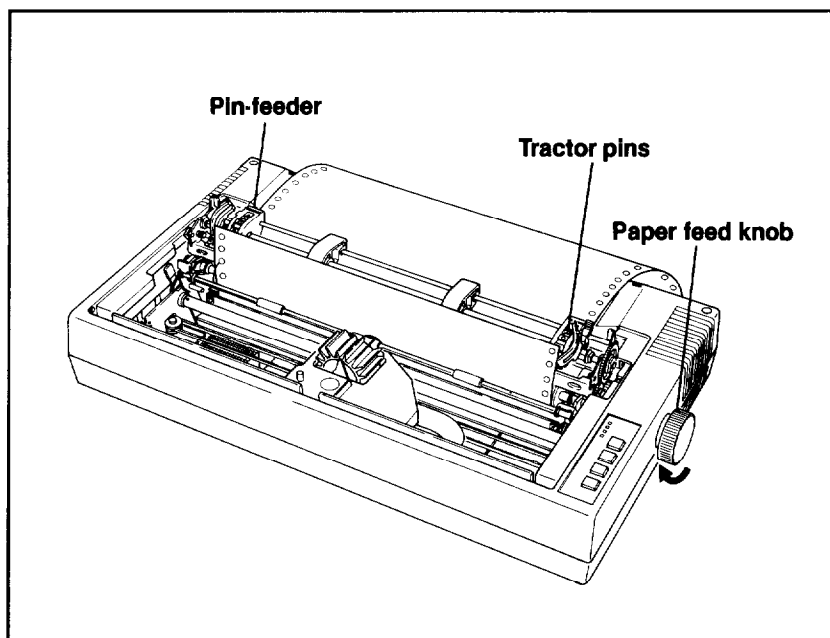


Figure 3-7. Aligning pin frames

Note: Position wide paper **so that** the printable surface is between 1 and 136 on your paper bail (the holes will be outside of these margins on the left and right).

5. Lock **the** pin-feeders in place by pushing the gray pin-feeder lock levers back.
6. Confirm that the tractor pins are centered in the paper pin-holes and that **the** paper tension is correct. If **they** are not, open the pin-feeder covers, readjust **the** paper, and close them again.
7. Close **the** paper bail.
8. Set the print head adjustment lever according to the thickness of your paper.
9. Turn the paper feed knob clockwise to advance **the** paper until **the** print head is positioned just under the first perforation which separates one page from another.
10. Install **the** tractor unit dust cover.
11. Turn **the** printer on. The ON LINE and READY lights should now be on.

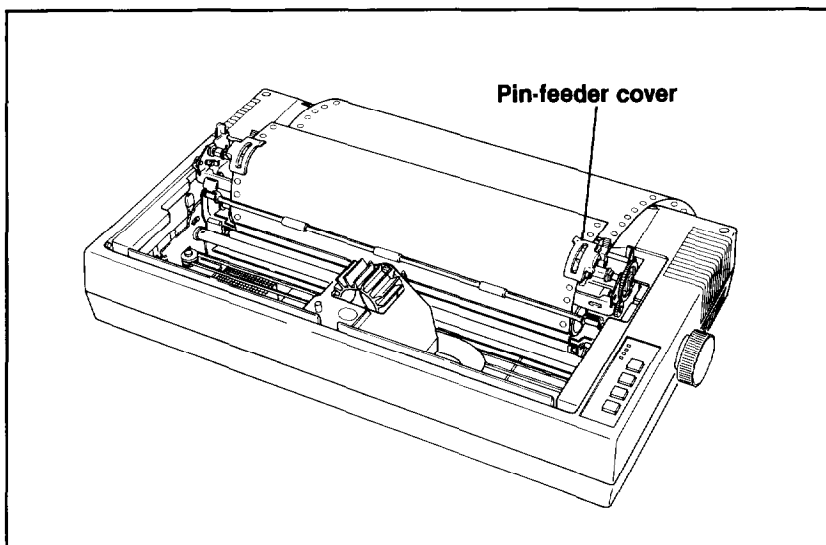


Figure 3-8. Pin-feeder covers

Proper placement of pin-feed paper

When using the LQ-1500 with pin-feed paper, we recommend that you arrange your stack of paper in one of two ways.

First, if you use a stack of paper and **have** to place it behind the printer, make sure **that** it is not higher than the surface of the sheet guide unit. Placing the paper behind the printer makes it difficult for the printed paper to be collected without interfering with the printer operation. You have to **watch** the paper more closely.

Second, if you have room to place the paper on the floor, you should arrange it as shown in Figure 3-9. It's best to leave the paper **right** in the box. We recommend this type of paper placement if at all possible.

Be sure that **the** paper is free to unfold in an accoridian fashion with no obstructions that would hinder the movement of paper through the printer. You're now ready to print with continuous-feed paper!

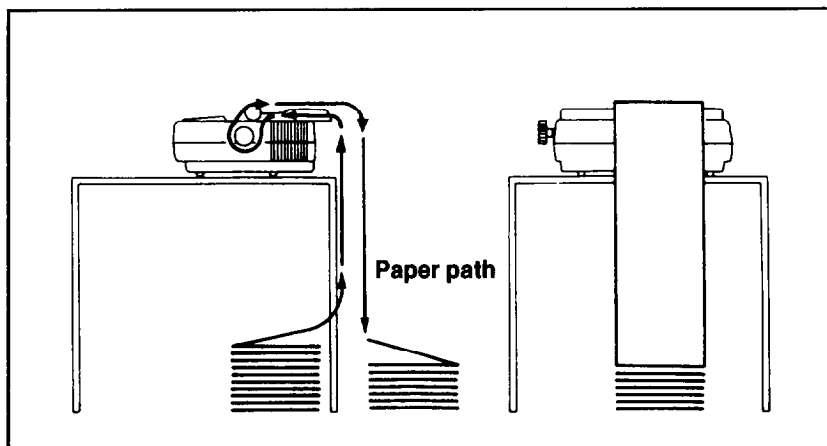


Figure 3-9. Paper path

Removing pin-feed paper

If you want to remove the pin-feed paper from the printer, follow the steps outlined below:

- 1.Remove** the (tractor) dust cover.
2. Tear the paper at the perforation nearest the rear of the printer.
3. Set the printer in the off-line mode by pressing the ON LINE button. The ON LINE and READY lights should now be off.
4. Open the pin-feeder covers (on the tractor unit) and remove the paper from the pins. Make sure the platen release lever is in the forward (released position).
5. Gently pull the paper up through the paper path until it is free from the printer.

Removing the tractor unit

If the tractor unit is installed on the printer, you will have to remove it to use the single and automatic sheet feed options.

Follow the steps outlined below to remove the tractor unit from the printer and refer to Figure 3-10.

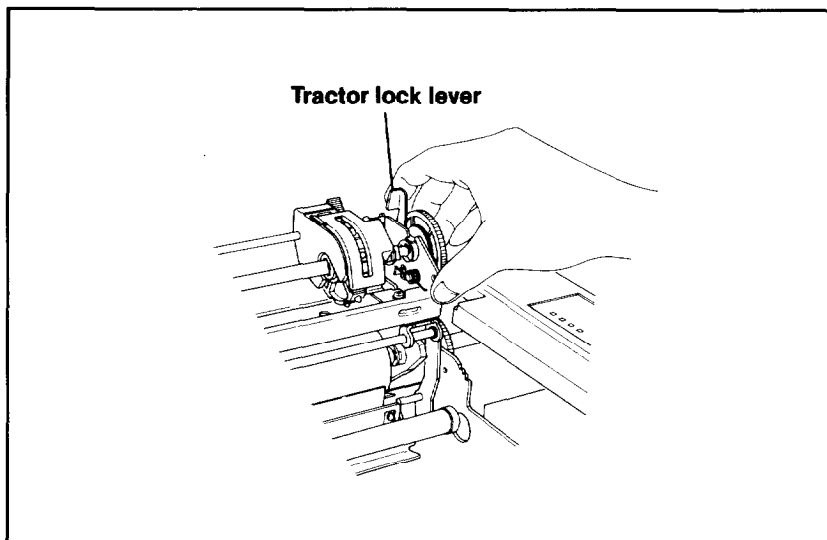


Figure 3-10. Removing the tractor unit

1. Turn OFF the printer. Remove the (tractor) dust cover.
2. Release the metal lock levers on each end of the tractor unit by pulling them forward (toward the front of the printer).
3. Keeping the lock levers pulled forward, move the entire tractor unit toward the front of the printer and up. The pegs at each end of the unit will slide out from the slots on the printer.

The LQ-1500 Self-Test

Now that you are an expert on loading your LQ-1500, you're ready to print. The LQ-1500 self-test is a built-in program which generates a complete printing of all standard characters. The self-test also provides an opportunity to test the ribbon and paper installation without having to request a printout from your computer. In fact, you can perform the self-test without a computer at all! Try it yourself and see by completing the following steps.

1. Install 14-inch wide paper.

2. With the power OFF hold down the LF (LINE FEED) button and turn the printer ON. Watch as all the characters are printed as shown in Figure 3-11. You can release the LF button once printing begins.

Draft (switch 2-7 down)

Version 1.7

!"#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGH
!"#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGHJ
!"#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGH
!"#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJ
!"#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJ
!"#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKL
!"#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKL
!"#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLM
!"#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMN
!"#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNO
!"#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOP
!"#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQ
!"#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQ
!"#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQ
!"#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRS

Letter quality (switch 2-7 up)

Version 1.7

!"#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGH
!"#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGH
!"#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGHI
!"#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJ
!"#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJK
!"#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJK
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!"#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOP
!"#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQ
!"#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQ

3. Turn the printer OFF to end the test. Otherwise, it will continue to print indefinitely.

Now, it's time to start learning to communicate with your LQ-1500. Chapter 4 shows you how to do this efficiently and effectively.

Chapter 4

Control Codes

This chapter introduces you to the control codes you can use to send instructions from your computer to your printer. If you already know **how** to program your printer, you'll want to know how control codes work with the LQ-1500. You'll also be interested in Appendixes A and E which provide **the** control codes.

Please **note** that this chapter contains technical information and you don't have to read it in order to operate your printer or to perform ordinary word processing operations. If you don't know how to program a printer, you can use your applications software to find out how to control the LQ-1500.

Computer-to-Printer-Communications

Alphabetical characters (letters) are foreign to computers; computers only know numbers. However, computers still manage to do a good job of manipulating the letters **that** we use for word processing. The secret lies in the fact **that** a computer doesn't manipulate letters at all—it just manipulates numbers that represent letters and turns these numbers into the letters that we see on the screen and **the** printout.

The computer communicates with the printer by means of numerical codes. There are 256 different codes that the computer can send to the printer, represented by the numbers from 0 to 255. Since there are many different kinds of computers and many different kinds of printers, a standard set of codes was developed **that** almost all computers use to communicate with printers. This set of codes is called the ***American Standard Code For Information Interchange***, or ASCII for short.

There are ASCII codes for all the letters in the alphabet (both upper- and lowercase), the numbers from 0 to 9, most punctuation marks,

and some of the LQ-1500's functions. Because of these standard codes, you can use your LQ-1500 printer with virtually any kind of computer without having to worry about their ability to talk to each other. Your LQ-1500 printer can communicate with any computer that uses ASCII.

How Many Names Can One Code Have?

Although these codes are standard from computer to computer, the way they are referred to is not standard. The same ASCII code can be called by many different names. For example, the letter A is represented by the decimal number 65 in ASCII. This code may either be called **A** or 65. In the BASIC programming language, this code may be referred to as `CHR$(65)`.

At other times, ASCII codes are referred to by their **hex** value. Hex is short for hexadecimal, which is a base-16 numbering system (our usual numbering **system** is a base-10 system). Since 16 digits are required for a base-16 number system, hex uses the digits 0 through 9 and the letters A through F. In hex, A is 41H, where the H stands for hex.

Most of the time we don't have to give this code system a thought. If you press A on the keyboard, the computer sends the code to print an A to the printer.

Some ASCII codes don't **have** keys on the keyboard. The **most** important of these are the codes that have values of less than 32. These codes are used to control many of the LQ-1500's functions. Most keyboards can produce these codes, by holding down the control key (often marked **CTRL**) while pressing a letter key. The combination of **CRTL/A** produces ASCII 1, **CTRL/B** produces ASCII 2, and so on. Because of the way **these** codes are created, they are often referred to as control **A**, **control B**, etc.

Most of these control codes also have names **that** describe their functions. For example ASCII 13, which is the code to start a new line, is called carriage **return**. The following chart shows many different ways of referring to the code for the carriage return function.

Carriage return	Its common name
CR	The abbreviation of its name
13	Its decimal ASCII code
0DH	Its hexadecimal ASCII code
CTRL/M	Its control-code name
CHR\$(13)	Its usage in BASIC

So your problem is to figure out what code you want to use, no matter what it is called. You may find that this can be quite a problem. Your computer's manual may say to use ASCII 10 while your spreadsheet program recommends a **CTRL/J**. You need to know that they are both talking about the same code.

This manual tells you the different names for the same code. Appendix A gives a complete summary of all the control codes (also called commands). Appendix E contains a conversion chart for all the common names for the ASCII codes.

Some of the LQ-1500's functions are controlled by codes consisting of one character. These are the ASCII codes with decimal values between 1 and 31, and are the codes that you can type by holding the control key while you press a letter key. For example, the code ASCII **12** is the same as **CTRL/L** and advances the paper to the top of a new page.

Of course the LQ-1500 has many more than 31 functions. To use the many additional functions, you use one special code to enable all the control codes that consist of more than one character. This code is called Escape, and in this manual it is abbreviated as <ESC> . You will use this code often with the LQ-1500 because it allows you to use the many features of the printer.

Here is an example of how the escape code is used. It may seem tricky at first, but follow along and you'll soon understand. The code to turn on the italic print function is <ESC> "4" . The 4 in this code is the numeral 4, not ASCII 4; the numeral 4 is ASCII 52.

Remember that the ASCII codes 0 through 32 have commonly used abbreviations for their names. In these cases we use the abbreviations. <ESC>q is the abbreviation for escape, which is also ASCII 27.

Therefore, the <ESC> "4" that turns on italic print actually is ASCII 27 followed by ASCII 52. But <ESC> "4" is easier to understand and remember.

Here are some other common abbreviations:

Name	ASCII code (decimal)	Abbreviation
Escape	27	<ESC>
Line Feed	10	<LF>
Form Feed	12	<FF>
Carriage Return	13	<CR>

You now have the basics about codes. This knowledge should help you understand and use the information contained in your software documentation to take advantage of the LQ-1500's many features.

Appendix A

LQ-1500 Command Summary

This appendix gives a brief summary of the LQ-1500 commands (control codes). While this is a complete list of the commands, the descriptions are not complete in all cases. The complete descriptions of all the commands, including examples of their use, can be found in the *LQ-1500 Programmer's Manual*.

In some cases the explanations given here describe the apparent function of the commands, rather than the actual mechanical movements of the printer. For example, since the printer prints in both directions, the line feed command may not actually return the print head to the left margin if the next line prints from right to left, but the final effect on the printed page is the same as if it had.

The commands are organized into five logical groups: Vertical Spacing Commands, Horizontal Spacing Commands, Character Set Commands, Graphics Set Commands, and Miscellaneous Commands. The ***function*** is what the printer will do when given the proper command. The ***format*** is the correct syntax for the ASCII code that the printer understands. This code may be expressed as a symbol, a ***decimal*** value, or a ***hexadecimal*** value depending on the program you are using. Where *n* (or another italic letter) is used as a variable, it stands for a numerical value.

Vertical Spacing Commands

Function:

Line **feed**

Format:

Symbol	<LF>
Decimal	10
Hexadecimal	0A

Remarks :

Returns the print head to the left margin and advances the paper one line.

Function:

One-time n/180-inch line feed

Format:

Symbol	<ESC>	“J”	n
Decimal	27	74	n
Hexadecimal	1B	4A	n

Remarks:

Advances the paper n/180 inches. It does not execute a carriage return (n can range from 0 to 255).

Function:

Select 1/8-inch line spacing

Format:

Symbol	<ESC>	“0”
Decimal	27	48
Hexadecimal	1B	30

Remarks:

Sets the line spacing for subsequent line feed commands to 1/8 inch.

Function:

Select 1/6-inch line spacing

Format:

Symbol	<ESC>	“2”
Decimal	27	50
Hexadecimal	1B	32

Remarks:

Sets the line spacing for subsequent line feed commands to 1/6 inch.

Vertical Spacing Commands (continued)

Function:

Set n/180-inch line spacing

Format :

Symbol	<ESC>	“3”	n
Decimal	27	51	n
Hexadecimal	1B	33	n

Remarks:

Sets the line spacing for subsequent line feed commands to n/180 inch. 1/180 inch is the vertical distance between dots on the LQ-1500 (**n** can range from 0 to 255).

Function:

Set n/60-inch line spacing.

Format:

Symbol	<ESC>	“A”	n
Decimal	27	65	n
Hexadecimal	1B	41	n

Remarks:

Sets the line spacing for subsequent line feed commands to n/60 inches (**n** can range from 0 to 85).

Function:

Form Feed

Format:

Symbol	<FF>
Decimal	12
Hexadecimal	0C

Remarks:

Advances the paper to the top of the next page.

Function:

Set page length by lines

Format:

Symbol	<ESC>	“C”	n
Decimal	27	67	n
Hexadecimal	1B	43	n

Remarks:

Sets the length of the page to n lines (n can range from 1 to 127).

Vertical Spacing Commands (continued)

Function:

Set page length by inches

Format:

Symbol	<ESC> “C”	<NUL> n		
Decimal	7	67	0	n
Hexadecimal	1B	43	00	n

Remarks:

Sets the page length to **n** inches (**n** can range from 1 to 22) .

Function:

Set bottom margin

Format:

ASCII	<ESC> “N”	n
Decimal	27	78 n
Hexadecimal	1B	4E n

Remarks:

Sets a bottom margin of n lines so that you can skip over the perforations in pin-feed paper (**n can** range from 1 to 127).

Function:

Cancel bottom margin

Format:

ASCII	<ESC> “O”
Decimal	27 79
Hexadecimal	1B 4F

Remarks:

Sets the bottom margin to 0 lines. The command uses the letter “O”, not the number zero.

Function:

Vertical tab

Format:

ASCII	<VT>
Decimal	11
Hexadecimal	0B

Remarks:

Advances the paper to the next vertical tab position. If no vertical tabs have been set, this code advances the paper one line.

Vertical Spacing Commands (continued)

Function:

Set vertical tabs

Format:

ASCII	<ESC>	“B”	n1	n2	n3	. . .	<NUL>
Decimal	27	66	nl	n2	n3	. . .	0
Hexadecimal	1B	42	nl	n2	n3	. . .	00

Remarks:

Sets vertical tabs on lines **n1, n2, n3**, etc. You can set up to 16 vertical tab positions. The values of **n1, n2, n3**, etc. can range from 1 to 254 and must be entered in ascending order.

Function:

Select a vertical tab channel

Format:

ASCII	<ESC>	“/”	c
Decimal	27	47	c
Hexadecimal	1B	2F	c

Remarks :

This command selects one of the vertical tab channels. Subsequent vertical tab codes will advance the paper to the next vertical tab position in the selected channel (c can range from 0 to 7).

Function:

Set vertical tabs in tab channels

Format:

ASCII	<ESC>	“b”	c	n1	n2	. . .	<NUL>
Decimal	27	98	c	n1	n2	. . .	0
Hexadecimal	1B	62	c	n1	n2	...	00

Remarks:

Sets vertical tabs on lines **nl, n2, n3**, etc. of vertical tab channel c. You can set up to 16 vertical tab positions. The values of **nl, n2, n3**, etc. can range from 1 to 254 and must be entered in ascending order (c can range from 0 to 7).

Horizontal Spacing Commands

Function:

Carriage return

Format:

ASCII	(CR)
Decimal	13
Hexadecimal	OD

Remarks:

Returns the print head to the left margin. If auto-line feed is on, paper is also advanced one line.

Function:

Set right margin

Format:

ASCII	<ESC>	“Q”	n
Decimal	27	81	n
Hexadecimal	1B	51	n

Remarks:

Sets a right margin at **n** character columns of the current character width. The value of n can range from 1 to 255. This command must be sent at the beginning of a line. If a line to be printed exceeds the right margin, a carriage return and line feed will be inserted to keep the line from exceeding the right margin.

Function:

Set left margin

Format:

ASCII	(ESC)	“I”	n
Decimal	27	108	n
Hexadecimal	1B	49	n

Remarks:

Sets the left margin at **n** character positions of the current character width. The value of n can range from 0 to 160, but if the value is too large (if it results in a left margin greater than 8 inches), the command will be ignored. This command should be placed at the beginning of a line.

Horizontal Spacing Commands (continued)

Function:

Horizontal tab

Format:

ASCII	<HT>
Decimal	9
Hexadecimal	09

Remarks:

This code advances the print head to the next horizontal tab position. The default tab settings are every eight characters.

Function:

Set horizontal tabs

Format:

ASCII	(ESC)	"D"	<i>n1</i>	<i>n2</i>	<i>n3</i>	...	<NUL>
Decimal	27	68	n1	n2	n3	...	0
Hexadecimal	1B	44	n1	n2	n3	...	00

Remarks:

Sets horizontal tabs at positions *n1*, *n2*, *n3*, etc. You can set up to 32 horizontal tab positions. The values of *n1*, *n2*, *n3*, etc. can range from 1 to 137 and must be entered in ascending order.

Function:

Set intercharacter space

Format:

ASCII	<ESC>	<SP>	<i>n</i>
Decimal	27	32	<i>n</i>
Hexadecimal	1B	20	<i>n</i>

Remarks:

Increases the space between characters by *n* dots (***n*** can range from 0 to **127**).

Function:

Absolute dot position

Format:

ASCII	(ESC)	"\$"	<i>n1</i>	<i>n 2</i>
Decimal	27	36	<i>n1</i>	<i>n 2</i>
Hexadecimal	1B	24	<i>n1</i>	<i>n2</i>

Remarks:

Moves the print head to an absolute horizontal position. The position, in inches, is determined by the formula (***n1* + *n2* x 256**) / 60. The maximum position is 13.6 inches.

Horizontal Spacing Commands (continued)

Function:

Move print head

Format:

ASCII	(ESC)	“\”	n1	n2
Decimal	27	92	n1	n2
Hexadecimal	1B	5C	n1	n2

Remarks:

Moves the print head a specified distance from the **last character** printed. It can move the print head either left or right. The distance, in inches, is determined by the following formulas:

Draft: $(n1 + n2 \times 256) / 120$

Letter Quality: $(n1 + n2 \times 256) / 180$

Proportional: **(n1 + n2 x 256) / 360**

To move to the left, add 64 to the calculated value for n2. The maximum distance is 13.6 inches. The command will be ignored if you try to move to a position outside of the current margins.

Print Style Commands

Function:

Select print mode

Format:

ASCII	<ESC>	‘x’	n
Decimal	27	120	n
Hexadecimal	1B	78	n

Remarks:

Selects between the draft mode (**n** = 0) and the letter quality mode. (**n** = 1).

Function:

Select print style (Master Select)

Format:

ASCII	(ESC)	“!”	n
Decimal	27	33	n
Hexadecimal	1B	21	n

Remarks :

Allows you to select multiple print styles (i.e., pica-italic-underlined) with one command. The value of **n** determines the style selected. A chart in Appendix B shows the valid values for **n** and **samples** of the print styles.

Print *Style Commands (continued)*

Function:

Select elite width print

Format:

ASCII	<ESC>	"M"
Decimal	27	77
Hexadecimal	1B	4D

Remarks:

Selects elite width (12 characters per inch) print.

Function:

Cancel elite width print

Format:

ASCII	<ESC>	"I"
Decimal	27	80
Hexadecimal	1B	50

Remarks:

Cancels elite width print and returns the LQ-1500 to pica width print.

Function:

Proportional print on/off

Format:

ASCII	<ESC>	"p"	n
Decimal	27	112	n
Hexadecimal	1B	70	n

Remarks:

This command either selects proportional print (**n = 1**) or cancels proportional print (**n = 0**).

Function:

One-line expanded width print

Format :

ASCII	<SO>
Decimal	14
Hexadecimal	0E

Remarks:

This code selects expanded width print for the remainder of the current line (unless explicitly canceled sooner).

Print Style Commands (continued)

Function:

One-line expanded width print

Format:

ASCII	<ESC>	<SO>
Decimal	27	14
Hexadecimal	1B	0E

Remarks :

This command selects expanded width print for the remainder of the current line (unless explicitly canceled sooner). This command is the same as (SO).

Function:

Cancel one-line expanded width print

Format:

ASCII	<DC4>
Decimal	20
Hexadecimal	14

Remarks:

This code can be used to cancel one-line expanded width print before the end of the line.

Function:

Expanded width print on/off

Format:

ASCII	<ESC>	"W"	n
Decimal	27	87	n
Hexadecimal	1B	57	n

Remarks:

Either turns expanded width print on (n = **1**) or turns expanded width print off (n = 0).

Function:

Select compressed width print

Format:

ASCII	<SI>
Decimal	15
Hexadecimal	0F

Print Style Commands (continued)

Function:

Select compressed width print

Format:

ASCII <ESC> <SI>

Decimal	27	15
---------	----	----

Hexadecimal 1B 0F

Function:

Cancel compressed width print

Format:

ASCII <DC2>

Decimal 18

Hexadecimal 12

Function:

Select emphasized print

Format:

ASCII <ESC> "E"

Decimal	27	69
---------	----	----

Hexadecimal 1B 45

Function:

Cancel emphasized print

Format :

ASCII <ESC> “F”

Decimal	27	70
---------	----	----

Hexadecimal 1B 46

Function:

Select double-strike print

Format:

ASCII (ESC) "G"

Decimal	27	71
---------	----	----

Hexadecimal 1B 47

Function:

Cancel double-strike print

Format:

ASCII (ESC) "H"

Decimal	27	72
---------	----	----

Hexadecimal 1B 48

Print Style Commands (continued)

Function:

Select italic print

Format:

ASCII	<ESC>	"4"
Decimal	27	52
Hexadecimal	1B	34

Function:

Cancel italic print

Format:

ASCII	<ESC>	"5"
Decimal	27	53
Hexadecimal	1B	35

Remarks:

This command **cancels** italic printing and returns you to the standard character set.

Function:

Underline on/off

Format :

ASCII	(ESC)	"-"	n
Decimal	27	45	n
Hexadecimal	1B	2D	n

Remarks :

This command turns underlining on (**n** = 1) or turns underlining off (n = 0).

Function:

Select superscripts or subscripts

Format:

ASCII	<ESC>	"S"	n
Decimal	27	83	n
Hexadecimal	1B	53	n

Remarks:

This command either selects superscripts (n = 0) or selects subscripts (n=1).

Function:

Cancel superscripts and subscripts

Format:

ASCII	<ESC> “T”		
Decimal	27	84	
Hexadecimal	1B	54	

Character Set Commands

Function:

Userdefined character set on/off

Format:

ASCII	(ESC) “%”			n
Decimal	27	37		n
Hexadecimal	1B	25		n

Remarks:

This command either selects the user-defined character set ($n = 1$) or cancels the user-defined character set ($n = 0$).

Function:

Define userdefined characters

Format:

ASCII	<ESC> “&’		<NUL>		<i>nl</i>	<i>n2</i>	data
Decimal	27	30	0	nl	<i>n</i>	2	data
Hexadecimal	1B	26	00	n1	n2		data

Remarks:

Defines user-defined characters of the currently selected style. The function of this command is covered in the LQ-I500 Programmer’s *Manual*.

Function:

Copy normal character set into userdefined character set

Format:

ASCII	<ESC> “.:”		<NUL>	<NUL>	<NUL>
Decimal	27	58	0	0	0
Hexadecimal	1B	3A	00	00	00

Remarks:

This command copies the currently active character set into the user-defined character set.

Character Set Commands (continued)

Function:

Select international character set

Format:

ASCII	(ESC)	“R”	<i>n</i>
Decimal	27	82	<i>n</i>
Hexadecimal	1B	52	<i>n</i>

Remarks:

Selects one of the 11 international character sets. The following table shows the valid values of *n* and the character sets selected for each. Appendix C shows the characters that change in the international character sets.

<i>n</i>	Country
0	U.S.A.
1	France
2	Germany
3	United Kingdom
4	Denmark
5	Sweden
6	Italy
7	Spain
8	Japan
9	Norway
10	Denmark II

Graphics Commands

Function:

Single-density dot graphics

Format :

ASCII	(ESC)	“K”	<i>nl</i>	<i>n2</i>	data
Decimal	27	75	<i>nl</i>	<i>n2</i>	data
Hexadecimal	1B	4B	<i>nl</i>	<i>n2</i>	data

Remarks:

Prints single-density dot graphics at 60 dots per inch. The values of *n1* and *n2* define the number of bytes of data according to the formula *nl* + *n2* x 256. Each byte of data controls the print head pins in one vertical row of dots. The maximum number of bytes of data is 816.

Graphics Commands (continued)

Function:

Double-density dot graphics

Format:

ASCII	(ESC)	"L"	n1	n2	data
Decimal	27	76	nl	n2	data
Hexadecimal	1B	4C	nl	n2	data

Remarks:

Prints double-density dot graphics at 120 dots per inch. The values of nl and n2 define the number of bytes of data according to the formula **nl** + n2 x 256. Each byte of data controls the print head pins in one vertical row of dots. The maximum number of bytes of data is 1632.

Function:

High-speed, double-density dot graphics

Format:

ASCII	(ESC)	"Y"	nl	n2	data
Decimal	27	89	nl	n2	data
Hexadecimal	1B	59	nl	n2	data

Remarks:

Prints high-speed, double-density dot graphics at 120 dots per inch. The values nl and n2 define the number of bytes of data according to the formula **nl** + n2 x 256. Each byte of data controls the print head pins in one vertical row of dots. The maximum number of bytes of data is 1632.

Function:

Quadruple-density dot graphics

Format:

ASCII	(ESC)	"Z"	nl	n2	data
Decimal	27	90	nl	n2	data
Hexadecimal	1B	5A	nl	n 2	data

Remarks:

This function prints quadruple-density dot graphics at 240 dots per inch. The values of nl and n2 define the number of bytes of data according to the formula **nl** + n2 x 256. Each byte of data controls the print head pins in one vertical row of dots. The maximum number of bytes of data is 3264.

Graphics Commands (continued)

Function:

Selected density dot graphics

Format:

ASCII	(ESC)	"*"	s	n1	n 2	data
Decimal	27	42	s	n1	n2	data
Hexadecimal	1B	2A	s	n1	n2	data

Remarks:

Prints dot graphics in a selected density, and with either 8 pins or 24 pins. The functions of this command are covered in the LQ-1500 *Programmer's Manual*.

Function:

Change dot graphics density

Format:

ASCII	(ESC)	"?"	n	s
Decimal	27	63	n	S
Hexadecimal	1B	3F	n	s

Remarks:

Assigns one of the graphics densities of the selected density dot graphics command to any of the four other dot graphics commands. The functions of this command are covered in the LQ-1500 Programmer's *Manual*.

Miscellaneous Commands

Function:

Delete line

Format:

ASCII	<can>
Decimal	24
Hexadecimal	18

Remarks:

Clears the current line from the printer's data buffer.

Miscellaneous Commands (continued)

Function:

Delete character

Format :

ASCII

Decimal 127

Hexadecimal 7F

Remarks:

Deletes the character immediately preceding it, unless that character has already been printed.

Function:

Deselect printer

Format:

ASCII <DC3>

Decimal 19

Hexadecimal 13

Remarks :

Places the LQ-1500 in an off-line state. It will ignore all codes until it receives a select printer code.

Function:

Select printer

Format:

ASCII <DCU>

Decimal 17

Hexadecimal 11

Remarks:

Returns the LQ-1500 to an on-line state. It enables the printer to receive data again after it has been deactivated by a deselect printer code. This code will not override the ON LINE button.

Miscellaneous Commands (continued)

Function:
Set specified data to repeat printing

Format:

ASCII	<ESC>	“V”	<i>n</i>	<i>data</i>	<ESC>	“V”	<NUL>
Decimal	27	86	<i>n</i>	<i>data</i>	27	86	0
Hexadecimal	1B	56	<i>n</i>	<i>data</i>	1B	56	00

Remarks:
This command sequence will repeat data *n* times. This sequence can be nested up to five times, and the data string can contain up to 2K characters. DIP switch 1-1 must be in the down position to use this command sequence.

Function:
Set eighth-bit

Format:

ASCII	<ESC>	“<”
Decimal	27	62
Hexadecimal	1B	3E

Remarks:
Sets the eighth data bit to 1.

Function:
Clear eighth-bit

Format:

ASCII	<ESC>	“=”
Decimal	27	61
Hexadecimal	1B	3D

Remarks:
Sets the eighth data bit to 0.

Function:
Cancel eighth-bit control

Format:

ASCII	(ESC)	“#”
Decimal	27	35
Hexadecimal	1B	23

Remarks:
Cancels control of the eighth data bit set by either the set eighth-bit **or** clear eighth-bit commands.

Miscellaneous Commands *(continued)*

Function:
Bell

Format:
ASCII <BEL>
Decimal 7
Hexadecimal 7

Remarks:
Sounds the LQ-1500's buzzer.

Function:
Backspace

Format :
ASCII <BS>
Decimal 8
Hexadecimal 8

Remarks:
Moves the print head one character to the left. **This** allows you to overstrike characters. (Note: the print head doesn't actually move to the left, the LQ-1500 combines the two characters and prints them as one.)

Function:
Initialize printer

Format:
ASCII <ESC> "@"
Decimal 27 64
Hexadecimal 1B 40

Remarks:
Resets the printer to the power-on state, including top of form.

Function:
Disable paper-out detector

Format:
ASCII <ESC> "8"
Decimal 27 56
Hexadecimal 1B 38

Remarks:
Turns the paper detector off so that you can print to the bottom of single sheets of paper. This code performs the same function as DIP switch 1-2.

Function:

Enable paper-out detector

Format:

ASCII	(ESC)	“9”
Decimal	27	57
Hexadecimal	1B	39

Remarks:

Turns the paper detector on so that it will report when the printer runs out of paper.

Function:

Return print head to home position (one-line unidirectional printing)

Format:

ASCII	<ESC>	“<”
Decimal	27	60
Hexadecimal	1B	3C

Remarks :

Returns the print head to the left side of the printer.

Function:

Unidirectional printing on/off

Format:

ASCII	(ESC)	“U”	<i>n</i>
Decimal	27	85	<i>n</i>
Hexadecimal	1B	55	<i>n</i>

Remarks:

Selects unidirectional printing (*n* = 1) or returns the printer to bidirectional printing (*n* = 0).

Function:

Half-speed printing on/off

Format:

ASCII	(ESC)	“s”	<i>n</i>
Decimal	27	115	<i>n</i>
Hexadecimal	1B	73	<i>n</i>

Remarks:

Either selects half-speed printing (*n* = 1) or returns the printer to full-speed printing (***n*** = 0).

Appendix B

Changing Printing Style

The LQ-1500 can produce 224 different styles of printing. **Although** there are many commands to select these different styles of printing, there is one command that lets you choose at will between **any** of them. This command is called Master Select. The Master Select command consists of <ESC> “!” followed by a single ASCII code. The value of the ASCII code determines the printing style that is selected. A typical Master Select command might look like this:

```
(ESC) "!" 66
```

This command would select italic proportional print. In BASIC the same command would look like this:

```
LPRINT CHR$(27) "!" CHR$( 66);
```

On the following four pages are charts showing each of the printing styles that the LQ-1500 can produce. Following each example is the ASCII code (decimal) **that** will select a particular print style.

The first of **the** four charts **shows** the proportional print styles. These styles are available in both the Letter Quality and Draft sets. The second chart shows the printing styles **that** are available in the Letter Quality set. The third and fourth charts show the printing styles that are available in the Draft set.

The letters, MISwiy were chosen to represent typical wide, medium, narrow, and descending characters. The letters are represented in **these** print styles: regular, emphasized, double-strike, and emphasized and double-strike.

The Select Print Quality command will select either the Letter Quality or the Draft set. The Select Print Quality command looks like this:

<ESC> "x" 0 To select the Draft set

<ESC> "x" 1 To select the Letter Quality set

In BASIC this command would look like this:

```
LPRINT CHR$(27) "x" CHR$(0);
```

or

```
LPRINT CHR$(27) "x" CHR$(1);
```

Proportional Print Styles

	Pica		Expanded	
	Print Sample	Master select Number	Print Sample	Master select Number
Regular	MISwiY	2	M I S w i y	34
Emphasized	MiswiY	10	M 1 S w i y	42
Double-strike	MISwiY	18	M I S w i y	50
Double-strike emphasized	MisWiY	26	M I S w i y	58
Italic				
Regular	MISwiY	66	M I S w i y	98
Emphasized	MISwiY	74	M I S w i y	106
Double-strike	MISwiY	82	M I S w i y	114
Double-strike emphasized	MiswiY	90	M I S w i y	122
Underlined				
Regular	<u>MISwiY</u>	130	<u>M I S w i y</u>	162
Emphasized	<u>MISwiY</u>	138	<u>M I S w i y</u>	170
Double-strike	<u>MISwiY</u>	146	<u>M I S w i y</u>	178
Double-strike emphasized	<u>MISwiY</u>	154	<u>M I S w i y</u>	186
Italic underlined				
Regular	<u>MISwiY</u>	194	<u>M I S w i y</u>	226
Emphasized	<u>MISwiY</u>	202	<u>M I S w i y</u>	234
Double-strike	<u>MISwiY</u>	210	<u>M I S w i y</u>	242
Double-strike emphasized	<u>MISwiY</u>	218	<u>M I S w i y</u>	250

Letter Quality Print Styles

	Pica		Pica Expanded		Elite		Elite Expanded	
	Print Sample	Master Select Number	Print Sample	Master Select Number	Print Sample	Master Select Number	Print Sample	Master Select Number
Regular	MISwiy	0	MISwiy	32	MISwiy	1	MISwiy	33
Emphasized	MISwiy	8	MISwiy	40	MISwiy	9	MISwiy	41
Double-strike	MISwiy	16	MISwiy	48	MISwiy	17	MISwiy	49
Double-strike emphasized	MISwiy	24	MISwiy	56	MISwiy	25	MISwiy	57
Italic								
Regular	<i>MISwiy</i>	64	<i>MISwiy</i>	96	<i>MISwiy</i>	65	<i>MISwiy</i>	97
Emphasized	<i>MISwiy</i>	72	<i>MISwiy</i>	104	<i>MISwiy</i>	73	<i>MISwiy</i>	105
Double-strike	<i>MISwiy</i>	80	<i>MISwiy</i>	112	<i>MISwiy</i>	81	<i>MISwiy</i>	113
Double-strike emphasized	<i>MISwiy</i>	88	<i>MISwiy</i>	120	<i>MISwiy</i>	89	<i>MISwiy</i>	121
Underlined								
Regular	<u>MISwiy</u>	128	<u>MISwiy</u>	160	<u>MISwiy</u>	129	<u>MISwiy</u>	161
Emphasized	<u>MISwiy</u>	136	<u>MISwiy</u>	168	<u>MISwiy</u>	137	<u>MISwiy</u>	169
Double-strike	<u>MISwiy</u>	144	<u>MISwiy</u>	176	<u>MISwiy</u>	145	<u>MISwiy</u>	177
Double-strike emphasized	<u>MISwiy</u>	152	<u>MISwiy</u>	184	<u>MISwiy</u>	153	<u>MISwiy</u>	185
Italic underlined								
Regular	<u><i>MISwiy</i></u>	192	<u><i>MISwiy</i></u>	224	<u><i>MISwiy</i></u>	193	<u><i>MISwiy</i></u>	225
Emphasized	<u><i>MISwiy</i></u>	200	<u><i>MISwiy</i></u>	232	<u><i>MISwiy</i></u>	201	<u><i>MISwiy</i></u>	233
Double-strike	<u><i>MISwiy</i></u>	208	<u><i>MISwiy</i></u>	240	<u><i>MISwiy</i></u>	209	<u><i>MISwiy</i></u>	241
Double-strike emphasized	<u><i>MISwiy</i></u>	216	<u><i>MISwiy</i></u>	248	<u><i>MISwiy</i></u>	217	<u><i>MISwiy</i></u>	249

Draft Pica Print Styles

	Pica		Compressed		Expanded		Compressed Expanded	
	Print Sample	Master Select Number	Print Sample	Master Select Number	Print Sample	Master Select Number	Print Sample	Master Select Number
Regular	MISwi y	0	MISwi y	4	MISwi y	32	MISwi y	36
Emphasized	MISwi y	8	MISwi y	12	MISwi y	40	MISwi y	44
Double-strike	MISwi y	16	MISwi y	20	MISwi y	48	MISwi y	52
Double-strike emphasized	MISwi y	24	MISwi y	28	MISwi y	56	MISwi y	60
Italic								
Regular	<i>MISwi y</i>	64	<i>MISwi y</i>	68	<i>MISwi y</i>	96	<i>MISwi y</i>	100
Emphasized	<i>MISwi y</i>	72	<i>MISwi y</i>	76	<i>MISwi y</i>	104	<i>MISwi y</i>	108
Double-strike	<i>MISwi y</i>	80	<i>MISwi y</i>	84	<i>MISwi y</i>	112	<i>MISwi y</i>	116
Double-strike emphasized	<i>MISwi y</i>	88	<i>MISwi y</i>	92	<i>MISwi y</i>	120	<i>MISwi y</i>	124
Underlined								
Regular	<u>MISwi y</u>	128	<u>MISwi y</u>	132	<u>MISwi y</u>	160	<u>MISwi y</u>	164
Emphasized	<u>MISwi y</u>	136	<u>MISwi y</u>	140	<u>MISwi y</u>	168	<u>MISwi y</u>	172
Double-strike	<u>MISwi y</u>	144	<u>MISwi y</u>	148	<u>MISwi y</u>	176	<u>MISwi y</u>	180
Double-strike emphasized	<u>MISwi y</u>	152	<u>MISwi y</u>	156	<u>MISwi y</u>	184	<u>MISwi y</u>	188
Italic underlined								
Regular	<i><u>MISwi y</u></i>	192	<i><u>MISwi y</u></i>	196	<i><u>MISwi y</u></i>	224	<i><u>MISwi y</u></i>	228
Emphasized	<i><u>MISwi y</u></i>	200	<i><u>MISwi y</u></i>	204	<i><u>MISwi y</u></i>	232	<i><u>MISwi y</u></i>	236
Double-strike	<i><u>MISwi y</u></i>	208	<i><u>MISwi y</u></i>	212	<i><u>MISwi y</u></i>	240	<i><u>MISwi y</u></i>	244
Double-strike emphasized	<i><u>MISwi y</u></i>	216	<i><u>MISwi y</u></i>	220	<i><u>MISwi y</u></i>	248	<i><u>MISwi y</u></i>	252

Draft Elite Print Styles

Pica			Compressed		Expanded		Compressed Expanded	
	Print Sample	Master Select Number	Print Sample	Master Select Number	Print Sample	Master Select Number	Print Sample	Master Select Number
Regular	MISwiY	1	MISwiY	5	MISwiY	33	MISwiY	37
Emphasized	MISwiY	9	MISwiY	13	MISwiY	41	MISwiY	45
Double-strike	MISwiY	17	MISwiY	21	MISwiY	49	MISwiY	53
Double-strike emphasized	MISwiY	25	MISwiY	29	MISwiY	57	MISwiY	61
Italic								
Regular	<i>MISwiY</i>	65	<i>MISwiY</i>	69	<i>MISwiY</i>	97	<i>MISwiY</i>	101
Emphasized	<i>MISwiY</i>	73	<i>MISwiY</i>	77	<i>MISwiY</i>	105	<i>MISwiY</i>	109
Double-strike	<i>MISwiY</i>	81	<i>MISwiY</i>	85	<i>MISwiY</i>	113	<i>MISwiY</i>	117
Double-strike emphasized	<i>MISwiY</i>	89	<i>MISwiY</i>	93	<i>MISwiY</i>	121	<i>MISwiY</i>	125
Underlined								
Regular	<u>MISwiY</u>	129	<u>MISwiY</u>	133	<u>MISwiY</u>	161	<u>MISwiY</u>	165
Emphasized	<u>MISwiY</u>	137	<u>MISwiY</u>	141	<u>MISwiY</u>	169	<u>MISwiY</u>	173
Double-strike	<u>MISwiY</u>	145	<u>MISwiY</u>	149	<u>MISwiY</u>	177	<u>MISwiY</u>	181
Double-strike emphasized	<u>MISwiY</u>	153	<u>MISwiY</u>	157	<u>MISwiY</u>	185	<u>MISwiY</u>	189
Italic underlined								
Regular	<u><i>MISwiY</i></u>	193	<u><i>MISwiY</i></u>	197	<u><i>MISwiY</i></u>	225	<u><i>MISwiY</i></u>	229
Emphasized	<u><i>MISwiY</i></u>	201	<u><i>MISwiY</i></u>	205	<u><i>MISwiY</i></u>	233	<u><i>MISwiY</i></u>	237
Double-strike	<u><i>MISwiY</i></u>	209	<u><i>MISwiY</i></u>	213	<u><i>MISwiY</i></u>	241	<u><i>MISwiY</i></u>	245
Double-strike emphasized	<u><i>MISwiY</i></u>	217	<u><i>MISwiY</i></u>	221	<u><i>MISwiY</i></u>	249	<u><i>MISwiY</i></u>	253

Appendix C

The LQ-1500 Character Set

ASCII	Draft	LQ	Prop.	ASCII	Draft	LQ	Prop.
32				63	?	?	?
33	!	!	!	64	@	Q	@
34	"	"	"	65	A	A	A
35	#	*	#	66	B	B	B
36	\$	\$	\$	67	C	C	C
37	%	%	%	68	D	D	D
38	&	&	&	69	E	E	E
39	'	'	'	70	F	F	F
40	(	(	(	71	G	G	G
41	)	)	)	72	H	H	H
42	*	*	*	73	I	I	I
43	+	+	+	74	J	J	J
44	,	,	,	75	K	K	K
45	...	-	-	76	L	L	L
46	.	.	.	77	M	M	M
47	/	/	/	78	N	N	N
48	0	0	0	79	O	0	O
49	1	1	1	80	P	P	P
50	2	2	2	81	Q	Q	Q
51	3	3	3	82	R	R	R
52	4	4	4	83	S	S	S
53	5	5	5	84	T	T	T
54	6	6	6	85	U	U	U
55	7	7	7	86	V	V	V
56	8	8	8	87	W	W	W
57	9	9	9	88	Y	X	X
58	=	:	:	89	Y	Y	Y
59	;	;	;	90	Z	Z	Z
60	<	<	<	91	[	[	[
61	=	=	=	92	\	\	\
62	>	>	>	93	]	]	]

ASCII	Draft	LQ	Prop.	ASCII	Draft	LQ	Prop.
94	^	^	^	172	,	/	I
95				173	-	-	-
96	ˆ	ˆ	ˆ	174	.	.	.
97	a	a	a	175	/	/	/
98	b	b	b	176	17	0	0
99	c	c	c	177	1	1	1
100	d	d	d	178	2	2	2
101	e	e		179	3	3	3
102	f	f	i”	180	4	4	4
103	g	g		181	5	5	5
104	h	h	ii	182	ci	6	6
105	i	i	i	183	7	7	7
106	j	j	j	184	8	8	8
107	k	k	k	185	9	9	9
108	l	l	1	186	:	:	:
109	m	m	m	187		-	-
110	n	n	n	188	<	<	<
111	o	o	o	189	: ! :	=	=
112	p	p	P	190	>	>	>
113	q	q	q	191	?	?	?
114	r	r	r	192	@	@	@
115	s	s	8	193	A	B	A
116	t	t	t	194	i3		B
117	u	u	U	195	C		C
118	v	v	v	196	D	D	D
119	w	w	w	197	E	E	E
120	x	x	x	198	F	F	F
121	y	y	y	199	G	G	G
122	z		z	200	H	H	H
123	{t	{	;	201	,%	I	I
124			:	202	j	J	J
125	}	}	~	203	K	K	K
126	-	-		204	L	L	L
				205	M	M	M
161	!	!	!	206	N	N	N
162	"	"	"	207	O	O	O
163	#	#		208	P	P	P
164	*	\$	r	209	Q	Q	Q
165	%	%	%	210	R	R	R
166	&	&	&	211	S	S	S
167	,	,	,	212	T	T	T
168	(	(	(	213	U	U	U
169	)	)	)	214	V	V	V
170	*	*	*	215	W	W	W
171	+	+	+	216	X	X	X

ASCII	Draft	LQ	Prop.	ASCII	Draft	LQ	Prop.
217	Y	Y	Y	236	l	l	<i>l</i>
218	Z	Z	Z	237	<i>m</i>	<i>m</i>	<i>m</i>
219	[	[	[	238	<i>n</i>	<i>n</i>	<i>n</i>
220	\	\	\	239	o	o	o
221	]	]	]	240	p	p	<i>P</i>
222	^	^	^	241	<i>q</i>	<i>q</i>	<i>q</i>
223				242	<i>r</i>	<i>r</i>	<i>r</i>
224	<i>r</i>	<i>r</i>	<i>r</i>	243	<i>s</i>	S	<i>s</i>
225	a	a	a	244	<i>t</i>	<i>t</i>	<i>t</i>
226	b	b	b	245	<i>u</i>	<i>u</i>	U
227	c	c	c	246	<i>v</i>	V	V
228	d	d	d	247	<i>w</i>	W	W
229	e	e	e	248	<i>x</i>	X	X
230	f	f	<i>f</i>	249	<i>y</i>	Y	Y
231	g	g	g	250	<i>z</i>	<i>z</i>	<i>z</i>
232	h	h	h	251	{	{	{
233	i	i	i	252	/	/	/
234	j	j	j	253	}	}	}
235	k	k	k	254	~	~	~

International Characters

Draft

U.S.A.	#	\$	@	[	\	]	^	'	{	:	}	~
France	#	\$	à	•	ç	ù	^	'	é	ù	è	~
Germany	#	\$	ä	Ä	ö	ü	^	'	ä	ö	ü	ß
England	£	\$	£	[	\	]	^	'	{	:	}	~
Denmark	#	\$	ø	ø	ø	ø	^	'	æ	ø	å	~
Sweden	#	¤	é	Ä	ö	ü	U	'	é	ö	å	ü
Italy	#	\$	@	•	\	é	^	'	ä	ò	è	ì
Spain	Rs	\$	@	;	Ñ	¿	^	'	ñ	ñ	ñ	~
Japan	#	\$	@	¥	¥	¥	^	'	{	:	}	~
Norway	#	¤	ø	ø	ø	ø	U	'	æ	ø	å	ü
Denmark II	#	\$	ø	ø	ø	ø	U	'	æ	ø	å	ü

Letter quality

U.S.A.	#	\$	@	[	\	]	^	'	{	:	}	~
France	#	\$	à	•	ç	ù	^	'	é	ù	è	~
Germany	#	\$	ä	Ä	ö	ü	^	'	ä	ö	ü	ß
England	£	\$	£	[	\	]	^	'	{	:	}	~
Denmark	#	\$	ø	ø	ø	ø	^	'	æ	ø	å	~
Sweden	#	¤	é	Ä	ö	ü	U	'	é	ö	å	ü
Italy	#	\$	@	•	\	é	^	'	ä	ò	è	ì
Spain	Pt	\$	@	;	Ñ	¿	^	'	ñ	ñ	ñ	~
Japan	#	\$	@	¥	¥	¥	^	'	{	:	}	~
Norway	#	¤	ø	ø	ø	ø	U	'	æ	ø	å	ü
Denmark II	#	\$	ø	ø	ø	ø	U	'	æ	ø	å	ü

ProDortional

U.S.A.	#	\$	@	[	\	]	^	'	{	:	}	~
France	#	\$	à	•	ç	ù	^	'	é	ù	è	~
Germany	#	\$	ä	Ä	ö	ü	^	'	ä	ö	ü	ß
England	£	\$	£	[	\	]	^	'	{	:	}	~
Denmark	#	\$	ø	ø	ø	ø	^	'	æ	ø	å	~
Sweden	#	¤	é	Ä	ö	ü	U	'	é	ö	å	ü
Italy	#	\$	@	•	\	é	^	'	ä	ò	è	ì
Spain	Pt	\$	@	;	Ñ	¿	^	'	ñ	ñ	ñ	~
Japan	#	\$	@	¥	¥	¥	^	'	{	:	}	~
Norway	#	¤	ø	ø	ø	ø	U	'	æ	ø	å	ü
Denmark II	#	\$	ø	ø	ø	ø	U	'	æ	ø	å	ü

Appendix D

Widths of the Proportional Characters

This table lists the widths of the LQ-1500's proportional characters. The values given are in 360ths of an inch (for example: a value of 36 is 36/360 inch). You may need to enter these widths into a special table for your word processing program so that it can calculate the number of proportional characters that will fit on each line. The table shows: the character, its ASCII code (decimal) and lists four widths. Figure D-1 shows what each of the four width values are for. The total width value is the only width that you will probably need to know. The left-space, body and right-space widths are all values that are internal to the LQ-1500.

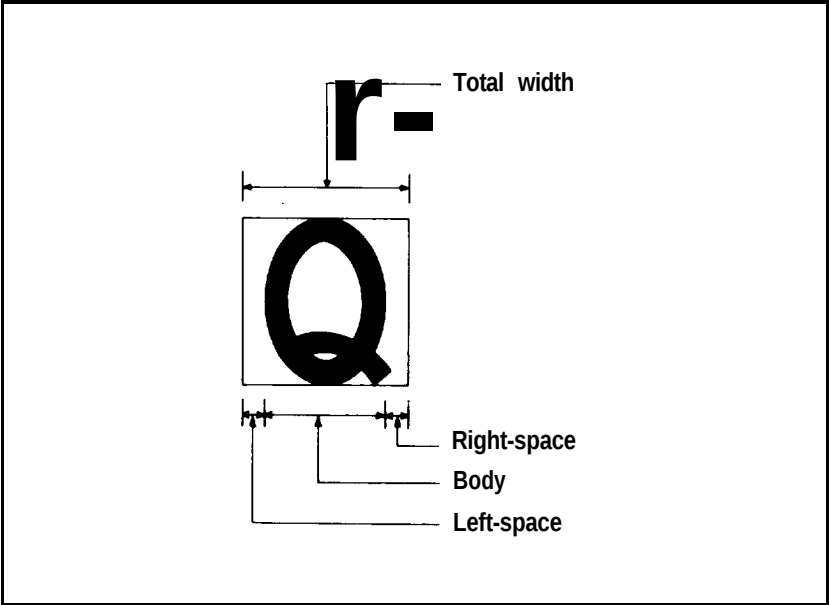


Figure D-1. A character and its widths

LQ Proportional (normal)

Character	ASCII code	Left-space	BUY	Right-space	Total width
	32	30	0	0	30
!	33	7	5	6	18
"	34	6	17	7	30
#	35	3	23	4	30
\$	36	4	21	5	30
%	37	3	29	4	36
&	38	5	28	3	36
'	39	5	8	5	18
(	40	8	9	7	24
)	41	7	9	8	24
*	42	5	19	6	30
+	43	3	23	4	30
,	44	5	8	5	18
-	45	3	23	4	30
.	46	5	7	6	18
/	47	3	23	4	30
0	48	3	23	4	30
1	49	6	18	6	30
2	50	4	21	5	30
3	51	4	21	5	30

LQ Proportional (normal) (continued)

Character	ASCII code	Left- space	Body	Right- space	Total width
4	52	3	23	4	30
5	53	4	21	5	30
6	54	4	22	4	30
7	55	4	21	5	30
8	56	3	23	4	30
9	57	4	22	4	30
:	58	5	7	6	18
;	59	5	7	6	18
<	60	6	17	7	30
=	61	4	21	5	30
>	62	6	17	7	30
?	63	4	21	5	30
@	64	3	29	4	36
A	65	1	33	2	36
B	66	3	28	5	36
C	67	4	28	4	36
D	68	3	29	4	36
E	69	4	28	4	36
F	70	4	28	4	36
G	71	3	31	2	36
H	72	3	31	2	36
I	73	3	17	4	24
J	74	3	23	4	30
K	75	3	31	2	36
L	76	4	28	4	36
M	77	2	37	3	42
N	78	2	31	3	36
O	79	3	29	4	36
P	80	3	29	4	36
Q	81	3	29	4	36
R	82	3	31	2	36
S	83	5	25	6	36
T	84	3	29	4	36
U	85	4	34	4	42
V	86	2	31	3	36
W	87	2	37	3	42
X	88	3	30	3	36
Y	89	2	31	3	36
Z	90	3	24	3	30
[	91	6	11	7	24
\	92	3	23	4	30
]	93	6	11	7	24

LQ Proportional (normal) (continued)

Character	ASCII code	Left-space	Body	Right-	Total
^	94	5	19	6	30
—	95	2	25	3	30
'	96	5	7	6	18
a	97	2	26	2	30
b	98	4	27	5	36
c	99	3	23	4	30
d	100	5	26	5	36
e	101	3	23	4	30
f	102	2	20	2	24
g	103	4	28	4	36
h	104	4	28	4	36
i	105	2	14	2	18
j	106	3	16	5	24
k	107	4	28	4	36
l	108	2	14	2	18
m	109	3	36	3	42
n	110	4	29	3	36
o	111	2	25	3	30
p	112	3	29	4	36
q	113	5	28	3	36
r	114	3	23	4	30
s	115	5	21	4	30
t	116	3	18	3	24
u	117	3	29	4	36
v	118	2	31	3	36
w	119	2	37	3	42
x	120	2	26	2	30
y	121	4	29	3	36
z	122	4	22	4	30
{	123	6	12	6	24
	124	7	3	8	18
}	125	6	12	6	24
~	126	4	21	5	30
°		5	13	6	24
○		2	25	3	30
β		4	27	5	36
∅		3	29	4	36
ϕ		2	25	3	30
°°		6	18	6	30
§		4	21	5	30
ü		3	30	3	36

LQ Proportional (normal) (continued)

Character	ASCII code	Left space	Body	Right space	Total Text
é		3	23	4	30
ä		2	26	2	30
á		2	26	2	30
a		2	26	2	30
ç		3	23	4	30
è		3	23	4	30
ì		2	14	2	18
Ä		1	33	2	36
A		1	33	2	36
É		4	28	4	36
		5	32	5	42
		2	36	4	42
ö		2	25	3	30
ò		2	25	3	30
ù		3	30	3	36
Ö		3	29	4	36
Ü		4	34	4	42
£		3	25	2	30
		3	29	4	36
Pt		2	37	3	42
ñ		4	29	3	36
Ñ		2	31	3	36
¿		5	21	4	30
¡		12	5	13	30
fi		1	27	2	30
fl		2	27	1	30
ff		2	38	2	42
ffi		2	38	2	42
ffl		1	40	1	42

LQ Proportional (superscript/subscript)

Character	ASCII code	Left space	Body	Right space	width
	32	20	0	0	20
!	33	4	3	5	12
"	34	4	11	5	20
#	35	2	16	2	20
\$	36	2	15	3	20
%	37	2	19	3	24
&	38	4	17	3	24
'	39	3	6	3	12
(	40	3	9	4	16
)	41	3	9	4	16
*	42	2	15	3	20
+	43	2	15	3	20
,	44	3	6	3	12
-	45	2	15	3	20
.	46	4	5	3	12
/	47	3	14	3	20
0	48	2	15	3	20
1	49	4	13	3	20
2	50	3	13	4	20
3	51	3	14	3	20
4	52	2	15	3	20
5	53	3	14	3	20
6	54	2	15	3	20
7	55	3	13	4	20
8	56	2	15	3	20
9	57	2	15	3	20
:	58	3	5	4	12
;	59	3	6	3	12
<	60	4	11	5	20
=	61	3	13	4	20
>	62	4	11	5	20
?	63	3	14	3	20
@	64	3	18	3	24
A	65	2	20	2	24
B	66	3	17	4	24
C	67	3	17	4	24
D	68	3	17	4	24
E	69	4	15	5	24
F	70	4	17	3	24
G	71	4	16	4	24
H	72	3	17	4	24
I	73	2	11	3	16
J	74	2	15	3	20

LQ Proportional (superscript/subscript) (continued)

Character	ASCII code	Left-space	Body	Right-space	Total width
K	75	3	18	3	24
L	76	5	15	4	24
M	77	3	21	4	28
N	78	3	17	4	24
O	79	3	17	4	24
P	80	3	17	4	24
Q	81	3	17	4	24
R	82	3	17	4	24
S	83	5	15	4	24
T	84	3	17	4	24
U	85	4	20	4	28
V	86	3	17	4	24
W	87	2	23	3	28
X	88	2	20	2	24
Y	89	2	19	3	24
Z	90	2	15	3	20
[	91	4	9	3	16
\	92	3	14	3	20
]	93	3	9	4	16
^	94	3	13	4	20
_	95	2	15	3	20
`	96	3	6	3	12
a	97	3	15	2	20
b	98	4	17	4	24
c	99	2	15	3	20
d	100	4	17	3	24
e	101	2	15	3	20
f	102	2	13	1	16
g	103	2	16	2	20
h	104	4	17	3	24
i	105	2	7	3	12
j	106	2	11	3	16
k	107	3	18	3	24
l	108	2	7	3	12
m	109	3	21	4	28
n	110	3	17	4	24
o	111	2	15	3	20
p	112	3	17	4	24
q	113	4	17	3	24
r	114	3	14	3	20
s	115	3	14	3	20
t	116	2	12	2	16

LQ Proportional (superscript/subscript) (continued)

Character	ASCII code	Left-space	Body	Right-space	Total width
u	117	3	17	4	24
v	118	3	17	4	24
w	119	2	23	3	28
x	120	2	16	2	20
y	121	4	17	3	24
z	122	3	13	4	20
(	123	2	11	3	16
	124	4	3	5	12
)	125	3	11	2	16
~	126	2	16	2	20
°		3	9	4	16
○		2	15	3	20
β		2	19	3	24
ø		3	17	4	24
ó		2	15	3	20
º		4	11	5	20
§		4	12	4	20
ü		3	17	4	24
é		2	15	3	20
ä		3	15	2	20
à		3	15	2	20
á		3	15	2	20
ç		3	15	2	20
è		2	15	3	20
ì		2	8	2	12
Ä		2	20	2	24
À		2	20	2	24
É		4	15	5	24
		3	21	4	28
		3	21	4	28
ó		2	15	3	20
ô		2	15	3	20
û		3	17	4	24
Ö		3	17	4	24
Ü		4	20	4	28
£		2	16	2	20
		3	17	4	24
Pl		3	22	3	28
ñ		3	17	4	24
Ñ		3	17	4	24
¿		3	14	3	20
¡		4	3	5	12

Appendix E

ASCII Code Conversion Chart

This chart can be used to convert between the different names for ASCII codes. The codes from 0 to 32 have both decimal and hexadecimal numbers, abbreviations, and the control keys used to type them. The codes above 32 have the character that prints instead of the abbreviation .

Decimal	Hexadecimal	Abbreviation	Control key
0	00	<NUL>	Control-@
1	01	<SOH>	Control-A
2	02	<STX>	Control-B
3	03	<ETX>	Control-C
4	04	<EOT>	Control-D
5	05	<ENQ>	Control-E
6	06	<ACK>	Control-F
7	07	<BEL>	Control-G
8	08	<BS>	Control-H
9	09	<HT>	Control-I
10	0A	<LF>	Control-J
11	0B	<VT>	Control-K
12	0C	<FF>	Control-L
13	0D	<CR>	Control-M
14	0E	<SO>	Control-N
15	0F	<SI>	Control-O
16	10	<DLE>	Control-P
17	11	<DC1>	Control-Q
18	12	<DC2>	Control-R
19	13	<DC3>	Control-S
20	14	<DC4>	Control-T
21	15	<NAK>	Control-U
22	16	<SYN>	Control-V
23	17	<ETB>	Control-W
24	18	<CAN>	Control-X

Decimal	Hexadecimal	Abbreviation	Control key
25	19		Control-Y
26	1A	<SUB>	Control-Z
27	1B	<ESC>	Control-[
28	1C	<FS>	
29	1D	<GS>	
30	1E	<RS>	
31	1F	<US>	
32	20	<SP>	

Decimal	Hexadecimal	Character	Decimal	Hexadecimal	Character
33	21	!	68	44	D
34	22	"	69	45	E
35	23	#	70	46	F
36	24	\$	71	47	G
37	25	%	72	48	H
38	26	&	73	49	I
39	27	'	74	4A	J
40	28	(	75	4B	K
41	29	)	76	4C	L
42	2A	*	77	4D	M
43	2B	+	78	4E	N
44	2C	,	79	4F	O
45	2D	-	80	50	P
46	2E	.	81	51	Q
47	2F	/	82	52	R
48	30	0	83	53	S
49	31	1	84	54	T
50	32	2	85	55	U
51	33	3	86	56	V
52	34	4	87	57	W
53	35	5	88	58	X
54	36	6	89	59	Y
55	37	7	90	5A	Z
56	38	8	91	5B	[
57	39	9	92	5C	\
58	3A	:	93	5D	]
59	3B	;	94	5E	^
60	3C	<	95	5F	_
61	3D	=	96	60	`
62	3E	>	97	61	a
63	3F	?	98	62	b
64	40	@	99	63	c
65	41	A	100	64	d
66	42	B	101	65	e
67	43	C	102	66	f

Decimal	Hexadecimal	Character	Decimal	Hexadecimal	Character
103	67	g	115	73	s
104	68	h	116	74	t
105	69	i	117	75	u
106	6A	j	118	76	v
107	6B	k	119	77	w
108	6C	l	120	78	x
109	6D	m	121	79	y
110	6E	n	122	7A	z
111	6F	o	123	7B	[
112	70	p	124	7C	]
113	71	q	125	7D	}
114	72	r	126	7E	~

Decimal	Hexadecimal	Abbreviation	Decimal	Hexadecimal	Abbreviation
127	7F		144	90	<DLE>
128	80	<NUL>	145	91	<DC1>
129	81	(SOH)	146	92	<DC2>
130	82	<STX>	147	93	<DC3>
131	83	<ETX>	148	94	<DC4>
132	84	<EOT>	149	95	<NAK>
133	85	<ENQ>	150	96	<SYN>
134	86	<ACK>	151	97	<ETB>
135	87	<BEL>	152	98	<CAN>
136	88	<BS>	153	99	
137	89	<HT>	154	9A	<SUB>
138	8A	<LF>	155	9B	<ESC>
139	8B	<VT>	156	9C	<FS>
140	8C	<FF>	157	9D	<GS>
141	8D	<CR>	158	9E	<RS>
142	8E	<SO>	159	9F	<US>
143	8F	<SI>	160	A0	<SP>

Decimal	Hexadecimal	Character	Decimal	Hexadecimal	Character
161	A1	!	167	A7	'
162	A2	"	168	A8	(
163	A3	#	169	A9	)
164	A4	\$	170	AA	*
165	A5	%	171	AB	+
166	A6	&	172	AC	,

Decimal	Hexadecimal	Character	Decimal	Hexadecimal	Character
173	A D	-	214	D6	V
174	AE	.	215	D7	W
175	AF	/	216	D8	X
176	B0	0	217	D9	Y
177	B1	1	218	D A	Z
178	B2	2	219	DB	/
179	B3	3	220	DC	\
180	B4	4	221	D D	
181	B5	5	222	DE	<i>J</i>
182	B6	6	223	DF	~,
183	B7	7	224	E0	
184	B8	8	225	E1	a
185	B 9	9	226	E2	b
186	BA	:	227	E3	c
187	BB	;	228	E4	d
188	BC	<	229	E5	e
189	BD	=	230	E6	f
190	BE	>	231	E7	g
191	BF	?	232	E8	h
192	C0	@	233	E9	i
193	C1	A	234	EA	j
194	C2	B	235	EB	k
195	C3	C	236	EC	l
196	C4	D	237	ED	m
197	C5	E	238	EE	n
198	C6	F	239	EF	o
199	C7	G	240	F0	p
200	C8	H	241	F1	q
201	C9	I	242	F2	r
202	CA	J	243	F3	s
203	CB	K	244	F4	t
204	CC	L	245	F5	u
205	CD	M	246	F6	v
206	CE	N	247	F7	w
207	CF	O	248	F8	x
208	D0	P	249	F9	Y
209	D1	Q	250	FA	Z
210	D2	R	251	FB	`
211	D3	S	252	FC	{
212	D4	T	253	FD	{
213	D5	U	254	FE	~
			255	FF	

Appendix F

Specifications

of the Epson LQ-1500

Printing

Printing Method	Impact dot matrix, with 24-pin print head
Printing Speed	Draft 200 characters per second Letter Quality 67 characters per second
Character sets	96 regular, 96 italic, 32 international characters in each of; letter quality, proportional letter quality and draft styles.
Character matrix	Proportional 37 x 17 Letter quality 15 x 17 Draft 9 x 17
Column width	Pica: 136 columns Pica expanded: 68 columns Pica compressed: 233 columns Pica compressed-expanded: 116 columns Elite: 163 Elite expanded: 81 Elite compressed: 272 Elite compressed-expanded: 136 columns
Line spacing	1/6-inch, 1/8-inch or programmable

Paper

Paper types	Single-sheet, friction feed, 7.2 to 14.3 inches wide. Pin-feed, with optional tractor unit, 4 to 16 inches wide. Original and up to three no-carbon copies Single sheet thickness: 0.06mm - 0.1mm Total of all sheets 0.2mm maximum
-------------	---

Printer

Dimensions	Height: 130mm Width: 604mm (without knob) Depth: 363mm
Weight	14kg
Power required	Voltage: 108 to 122 VAC Frequency: 49.5 to 60.5 Hz Power consumption: 300 VA maximum, 60 VA typical
Environment	Temperature: 5° to 35°C Humidity: 10 to 80%, non condensing
Ribbon	Black cloth ribbon in cartridge Ribbon life: 3 x 10 ⁹ draft characters
Printer MTBF	5 x 10 ⁶ lines (print head excluded)
Print head life	2 x 10 ⁹ strokes per wire

INDEX

- American Standard Code for Information Interchange (ASCII) 45
 - codes, conversion 87
- Application Notes 2
- Assembly
 - of printer 5
 - of sheet guide 12
- Backspace 67
- BASIC 46
- Bell 23, 24, 67
- Buttons 25
 - FF (Form feed) 26
 - LF (Line feed) 27
 - ON LINE 26
 - SHEET LOAD 27,32
- Cable, connection of 18
- Carriage return 46, 54
- Cartridge, ribbon 9
- Character matrix 91
- Character set 75, 91
- Character set commands 61
- Characters, international 23, 78
- Characters, proportional widths 79
- Cleaning, of printer 27
- Codes, names of 46
- Commands 49
 - character set 61
 - graphics 62
 - horizontal spacing 54
 - miscellaneous 64
 - vertical spacing 50
- Communications, computer-to-printer 45
- Compressed print 58
- Computer, connecting printer to 15, 18
- Continuous forms 29
- Control codes 45, 46
- Control key (CTRL) 46
- Control panel 25
- Controls 25
- CTRL 46
- Delete character 65
- Delete line 64
- Deselect printer 65
- Dimensions 92

- DIP switches 19
 - switch 121
 - switch 1-122, 66
 - switch **1-2 22, 27, 32, 35, 67**
 - switch 1-3 22
 - switch 2 22
 - switches 2-1, 2-2, 2-323
 - switch **2-4 23**
 - switch **2-5 23**
 - switch **2-6 24**
 - switch **2-7 24, 43**
 - switch **2-8 24**
- Double-strike print 59
- Draft print 23, **24, 72**
- Dust cover 7
- Eighth-bit control 66
- Electrical outlet **4, 24**
- Emphasized print 59
- Environment, of printer **92**
- Escape code <ESC> 47
- Expanded print 57
- FF (Form feed) button **26**
- Foreign (international) characters 23, **62, 78**
- Form feed **51**
- Form length 23, **51**
- Friction feed **30**
- Front cover 7
- Graphics commands **62**
- Half-speed printing 68
- Hexadecimal **46**
- Horizontal spacing commands 54
- Horizontal tab **55**
- IEEE **488** interface card **15, 24**
- Indicators **25**
- Initialize printer **67**
- Input buffer 22
- Installation
 - interface card **17**
 - power cord **24**
 - ribbon cartridge 9
 - sheet guide 12
 - tractor unit **34**
- Inter-character space **55**
- Interface card **15, 24**
 - installation of **17**
- International (foreign) characters 23, **62, 78**
- Italic print **60**
- Letter quality print 23, **24, 71**
- Lever, pin-feeder lock 35, 79
- Lever, platen release **30, 32, 37, 38**
- Lever, print head adjustment **30, 31, 32, 39**

- LF (Line feed) button **27**
- Lights **25**
 - ON LINE **26**
 - PAPER OUT **26,27**
 - POWER **25**
 - READY **25**
- Line feed **50**
 - automatic **22**
- Line spacing **50**
- Loading paper
 - pin-feed **34**
 - single-sheet **31**
- Location, selection **3**
- LQ-1500 Application Notes 2***
- LQ-1500 Programmer's Manual 2, 49***
- Maintenance **27**
 - cleaning **27**
 - other **28**
- Margin
 - bottom **52**
 - left **54**
 - right **54**
- Master Select command **56, 69**
- Miscellaneous commands **64**
- Move print.head **56**
- Off line **26**
- ON LINE button **26**
- ON LINE light **26**
- Page length **23, 51**
- Paper bail **8**
- Paper feed knob **5**
- Paper feeders **29**
- PAPER OUT light **26,27**
- Paper support skids **37**
- Paper, types **29, 92**
 - loading pin-feed paper **34**
 - loading single-sheet paper **31**
 - pin-feed paper **29**
 - placement of pin-feed paper **40**
 - removing pin-feed paper **41**
 - removing single-sheet paper **34**
 - single-sheet paper **14, 29**
- Paper-out detector **22, 27, 32, 35, 67**
- Parallel interface **15**
- Pin-feed paper **29**
 - loading **34**
 - placement **40**
 - removal **41**
- Pin-feeders **35**
 - covers **35**
 - lock lever **35, 39**

- Pinfeed paper, loading 34
- Pitch, print 57
- Platen 8
- Platen release lever 30, 32, 37, 38
- Power cord, installation 24
- POWER light 25
- Power requirements 92
- Power switch 25
- Print head 8, 91
- Print head adjustment lever 30, 31, 32, 39
- Print head, moving 56
- Print pitch 57
- Print style commands 56
- print style 69
 - Compressed 58
 - Double-strike 59
 - Draft 72
 - Emphasized 59
 - Expanded 57
 - Italic 60
 - Letter quality 71
 - Proportional 57, 70
 - Underline 60
- Printing, method 91
 - proportional 57
 - speed 91
- Programmer's manual, LQ-1500 2, 49*
- Proportional print 57, 70
- READY light 25
- Repeat printing 66
- Ribbon cartridge 9, 92
 - installation 9
- Ribbon guide 8
- Select printer 65
- Select signal 23, 24
- Self-test 42
- Serial interface 15, 24
- Sheet guide 29
 - assembly 12
 - installation **12**
- SHEET LOAD button 27, 32
- Single-sheet paper 14, 29
 - loading 31
 - removing 34
- Skip over perforation 23
- Space, intercharacter 55
- Speed of printing 91
- Subscript 60, 84
- Superscript 60, 84

- Switches 19
 - Switch **122**
 - Switch 2 23
- Tab
 - horizontal 55
 - vertical 52
- Technical specifications 91
- Tractor unit 29
 - installation 34
 - removal **41**
- Underline print 60
- Unidirectional printing 68
- Unpacking, of print 2
- User-defined characters **61**
- Vertical spacing commands 50
- Vertical tab 52
- Vertical tab, in channel 53
- Weight, of printer 92
- Widths of proportional characters 79

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EPSON

LC-1500™ Printer

User's Manual

Chapters include:

Setup

Operation

Paper and Paper Feeds

Printer Codes

Command Summary

Print Styles

EPSON AMERICA, INC.
3415 Jambura Street
Torrance, CA 90505

EPSON®

**Quick
Reference**

LQ-1500™ Printer

Using the LQ-1500 Commands with BASIC

Most versions of BASIC use the LPRINT command and the CHR\$(n) function to send codes to the printer. In the CHR\$(n) function the value n is the number of the code that you want to send to the printer. For example, to set a right margin at column 60, the LQ-1500 command is:

```
<ESC> "Q" 60
```

In BASIC it looks like this:

```
LPRINT CHR$(27) "Q" CHR$(60);
```

Control Codes by Function

Vertical Spacing Commands

<LF>	Produces a line feed.
<ESC> "J" n	Advances the paper n/180 inches ($0 \leq n \leq 255$).
<ESC> "0"	Sets the line spacing to 1/8 inch.
<ESC> "2"	Sets the line spacing to 1/6 inch.
<ESC> "3" n	Sets the line spacing to n/180 inch ($0 \leq n \leq 255$).
<ESC> "A" n	Sets the line spacing n/60 inches ($0 \leq n \leq 85$).
<FF>	Produces a form feed.
<ESC> "C" n	Sets the length of the page to n lines ($1 \leq n \leq 127$).
<ESC> "C" <NUL> n	Sets the page length to n inches ($1 \leq n \leq 22$).
<ESC> "N" n	Sets a bottom margin of n lines ($1 \leq n \leq 127$).
<ESC> "O"	Sets the bottom margin to 0 lines.
<VT>	Produces a vertical tab.
<ESC> "B" n1 n2 n3.	<NUL> Sets up to 16 vertical tabs on lines n1 , n2 , n3 , etc. ($1 \leq n \leq 254$).
<ESC> "/ " c	Selects a vertical tab channel ($0 \leq c \leq 7$).
<ESC> "b" c n1 n2 n3	<NUL> Sets up to 16 vertical tabs on lines n1 , n2 , n3 , etc. of vertical tab channel c ($0 \leq c \leq 7$, $1 \leq n \leq 254$).

Horizontal Spacing Commands

<CR>	Produces a carriage return.
<ESC> "Q" n	Sets a right margin at n columns ($1 \leq n \leq 255$).
<ESC> "I" n	Sets the left margin at n columns ($0 \leq n \leq 160$).
<HT>	Produces a horizontal tab.
<ESC> "D" n1 n2 n3 ...	<NUL> Sets up to 32 horizontal tabs at character positions n1 , n2 , n3 , etc. ($1 \leq n \leq 137$).
<ESC> <SP> n	Increases the space between characters by n dots ($0 \leq n \leq 127$).
<ESC> "\$" n1 n2	Moves the print head to an absolute horizontal position.
<ESC> " " n1 n2	Moves the print head a specified distance from the last character printed.

Print Style Commands

<ESC> "x" n	Selects between the draft mode (n=0) and the letter-quality mode (n=1).
<ESC> "I" n	Selects multiple printing styles (Master Select command) ($0 \leq n \leq 255$).
<ESC> "M"	Selects elite pitch.
<ESC> "P"	Cancels elite pitch.
<ESC> "p" n	Turns proportional printing ON (n = 1) or proportional printing OFF (n=0).

<S0>	Selects one-line expanded width print.
<ESC> <S0>	Selects one-line expanded width print.
<DC4>	Cancels one-line expanded print.
<ESC> "W" n	Turns expanded width print ON (n=1) or turns expanded width print OFF (n=0).
<SI>	Selects compressed width print.
<ESC> <SI>	Selects compressed width print.
<DC2>	Cancels compressed width print.
<ESC> "E"	Selects emphasized print.
<ESC> "F"	Cancels emphasized print.
<ESC> "G"	Selects double-strike print.
<ESC> "H"	Cancels double-strike print.
<ESC> "4"	Selects italic print.
<ESC> "5"	Cancels italic print.
<ESC> "_" n	Turns underlining ON (n =1) or turns underlining OFF (n=0).
<ESC> "S" n	Selects superscripts (n =0) or selects subscripts (n = 1).
<ESC> "T"	Cancels superscripts and subscripts.

Character Set Commands

<ESC> "%" n	Selects the user-defined character set (n=1) or cancels the userdefined character set (n =0).
<ESC> "&" <NUL> n1 n2 data	Defines user-defined characters (32 ≤ i ≤ 127).
<ESC> ":" <NUL> <NUL> <NUL>	Copies ROM character set to user-defined character set.
<ESC> "R" n	Selects international character set (0 ≤ i ≤ 10).

Graphics Commands

<ESC> "K" n1 n2 data	Prints single-density dot graphics.
(ESC) "L" n1 n2 data	Prints double-density dot graphics.
(ESC) "Y" n1 n2 data	Prints high-speed double-density dot graphics.
(ESC) "Z" n1 n2 data	Prints quadruple-density dot graphics.
(ESC) "*" s n1 n2 data	Prints selected-density dot graphics.
<ESC> "7" s n	Assigns graphics densities.

Miscellaneous Commands

<CAN>	Cancels the current line.
	Deletes the preceding character.
<DC3>	Turns printer to off-line state.
<DC1>	Turns printer to on-line state.
(ESC) "V" n data <ESC> "V" <NUL>	Repeats data , n times (1 ≤ n ≤ 255).
<ESC> ">"	Sets the eighth data bit to 1.
<ESC> "="	Sets the eighth data bit to 0.
<ESC> "#"	Cancels control of the eighth data bit.
<BEL>	Sounds the buzzer.
<BS>	Produces a backspace.
<ESC> "@"	Resets the printer.
<ESC> "8"	Turns the paper detector OFF.
<ESC> "9"	Turns the paper detector ON.
<ESC> "<"	Causes the next line to be printed left-to-right.
<ESC> "U" n	Selects unidirectional printing (n =1) or bidirectional printing (n=0).
<ESC> "s" n	Selects half speed printing (n = 1) or normal speed printing (n=0).

Master Select Codes

Each print style is assigned a value to be used with the Master Select command. The Master Select command consists of <ESC> "I" followed by a single ASCII code. To create a master select code, add the values of the print styles that you want to combine.

The values of the print styles are as follows:

Elite	1
Proportional	2
Condensed	4
Emphasized	8
Double-strike	16
Enlarged	32
Italic	64
Underlined	128

For example, if you want to find the code for elite emphasized italic print you would add these values:

Elite	1
Emphasized	8
Italic	64
Master Select code	73

The Master Select command would look like this:

(ESC) "I" "I" (I is ASCII 73)

Note: Proportional overrides pica/elite.

Condensed works only in draft print.

DIP Switch Settings

Settings for switch 1

Switch	Function	Up	Down	Factory
1-1	2K byte input buffer	Disable	Enable	Down
1-2	Paper-out detector	Disable	Enable	Down
1-3	Automatic line feed	On	Off	Down
1-4	Reserved for future use	Always down		Down

Settings for switch 2

Switch	Function	UP	Down	Factory
2-1				Up
2-2	International character sets (see Table 1-3)			Up
2-3				Up
2-4	Form length	12 in.	11 in.	Down
2-5	Skip over perforation	On	Off	Down
2-6	Bell	Disable	Enable	Down
2-7	Print mode	Letter quality	Draft	Down
2-8	SLCT IN signal	Fixed	Not fixed	Up

ASCII Code Conversion Chart

Dec	Hex	Abbrev	Control key
0	00	<NUL>	Control-@
1	01	<SOW>	Control-A
2	02	<STX>	Control-B
3	03	<ETX>	Control-C
4	04	<EOT>	Control-D
5	05	<ENQ>	Control-E
6	06	<ACK>	Control-F
7	07	<BEL>	Control-G
8	08	<BS>	Control-H
9	09	<HT>	Control-I
10	0A	<LF>	Control-J
11	0B	<VT>	Control-K
12	0C	<FF>	Control-L
13	0D	<CR>	Control-M
14	0E	<SO>	Control-N
15	0F	<SI>	Control-O
16	10	<DLE>	Control-P
17	11	<DC1>	Control-Q
18	12	<DC2>	Control-R
19	13	<DC3>	Control-S
20	14	<DC4>	Control-T
21	15	<NAK>	Control-U
22	16	<SYN>	Control-V
23	17	<ETB>	Control-W
24	18	<CAN>	Control-X
25	19		Control-Y
26	1A	<SUB>	Control-Z
27	1B	<ESC>	Control-I
28	1C	<FS>	
29	1D	<GS>	
30	1E	<RS>	
31	1F	<US>	
32	20	<SP>	

Dec	Hex	Char	Dec	Hex	Char	Dec	Hex	Char
33	21	!	59	3B	;	85	55	U
34	22	"	60	3C	<	86	56	V
35	23	#	61	3D	=	87	57	W
36	24	\$	62	3E	>	88	58	X
37	25	%	63	3F	?	89	59	Y
38	26	&	64	40	@	90	5A	Z
39	27	'	65	41	A	91	5B	[
40	28	(	66	42	B	92	5C	\
41	29	)	67	43	C	93	5D	]
42	2A	*	68	44	D	94	5E	^
43	2B	+	69	45	E	95	5F	_
44	2C	,	70	46	F	96	60	`
45	2D	-	71	47	G	97	61	a
46	2E	_	72	48	H	98	62	b
47	2F	;	73	49	I	99	63	c
48	30	0	74	2A	J	100	64	d
49	31	1	75	4B	K	101	65	e
50	32	2	76	4C	L	102	66	f
51	33	3	77	4D	M	103	67	g
52	34	4	78	4E	N	104	68	h
53	35	5	79	4F	O	105	69	i
54	36	6	80	50	P	106	6A	j
55	37	7	81	51	Q	107	6B	k
56	38	8	82	52	R	108	6C	l
57	39	9	83	53	S	109	6D	m
58	3A		84	54	T	110	6E	n

Dec	Hex	Char	Dec	Hex	Char	Dec	Hex	Char
111	6F	o	161	A1	!	214	D6	V
112	70	p	162	A2	"	215	D7	W
113	71	q	163	A3	#	216	D8	X
114	72	r	164	A4	\$	217	D9	Y
115	73	s	165	A5	%	218	DA	Z
116	74	t	166	A6	&	219	DB	/
117	75	u	167	A7	'	220	DC	\
118	76	v	168	A8	(	221	DD	
119	77	w	169	A9	)	222	DE	^
120	78	x	170	AA	*	223	DF	~
121	79	y	171	AB	+	224	E0	·
122	7A	z	172	AC	,	225	E1	a
123	7B	[	173	AD	-	226	E2	b
124	7C	1	174	AE	.	227	E3	c
125	7D	}	175	AF	/	228	E4	d
126	7E	--	176	B0	0	229	E5	e
			177	B1	1	230	E6	f
			178	B2	2	231	E7	g
			179	83	3	232	E8	h
Dec	Hex	Abbrev	180	84	4	233	E9	i
127	7F		181	B5	5	234	EA	j
128	80	<NUL>	182	B6	6	235	EB	k
129	81	<SOH>	183	B7	7	236	EC	l
130	82	<STX>	184	88	8	237	ED	m
131	83	<ETX>	185	B9	9	238	EE	n
132	84	<EOT>	186	BA	:	239	EF	o
133	85	<ENQ>	187	BB	;	240	F0	p
134	86	<ACK>	188	BC	<	241	F1	q
135	87	<BEL>	189	BD	=	242	F2	r
136	88	<BS>	190	BE	>	243	F3	s
137	89	<HT>	191	BF	?	244	F4	t
138	8A	<LF>	192	Co	@	245	F5	u
139	8B	<VT>	193	Cl	A	246	F6	v
140	8C	<FF>	194	C2	B	247	F7	w
141	8D	<CR>	195	C3	c	248	F8	x
142	8E	<SO>	196	C4	D	249	F9	y
143	8F	<S0>	197	C5	E	250	FA	z
144	90	<DLE>	198	C6	F	251	FB	{
145	91	<DC1>	199	C7	G	252	FC	
146	92	<DC2>	200	C8	H	253	FD	}
147	93	<DC3>	201	C9	I	254	FE	~
148	94	<DC4>	202	CA	J	255	FF	
149	95	<NAK>	203	CB	K			
150	96	<SYN>	204	CC	L			
151	97	<ETB>	205	CD	M			
152	98	<CAN>	206	CE	N			
153	99		207	CF	O			
154	9B	<SUB>	208	D0	P			
155		<ESC>	209	D1	Q			
156	9C	<FS>	210	D2	R			
157	9D	<GS>	211	D3	S			
158	9E	<RS>	212	D4	T			
159	9F	<US>	213	D5	U			
160	A0	<SP>						