star

USER'S MANUAL

LC-8021
DOT MATRIX PRINTER

Trademark acknowledgments

IS-NP192, LC-8021, LC-8211, LC24-30, LC24-300, NX-2450, NX-2480, SPC-8K: Star Micronics Co. Ltd.

LQ-850, LQ-860, LQ-1050, LQ-1060: Seiko Epson Corporation

IBM PC, IBM Proprinter X24E, IBM Proprinter XL24E, IBM Proprinter X24, IBM Proprinter XL24: International Business Machines Corporation.

MS-DOS: Microsoft Corporation

Notice

About this manual

This manual describes how to set up, use, and care for the Star LC-8021 printer. The following is a list of what you can expect to find in each chapter.

Contents

Chapter 1: Printer Setup

This chapter contains important information on setting up your printer. Be sure to read this chapter carefully before using the printer for the first time.

Choosing a place for the printer

Before actually unpacking the printer, you should take a few minutes to think about where you plan to use it. Remember the following points when doing this.

✓ Choose a firm, level surface where the printer will not be exposed to vibration.

✓ The power outlet you plan to connect to for power should be nearby and unobstructed.

✓ Make sure that the printer is close enough to your computer for you to connect the two with your printer cable.

✓ Allow six inches (15 centimeters) of free space on either side and in the back of the printer.

✓ Make sure that the printer is not exposed to direct sunlight.

✓ Make sure that the printer is well away from heaters.

✓ Make sure that the surrounding area is clean, dry, and free of dust.

✓ Make sure that the printer is connected to a reliable power outlet. It should not be on the same electric circuit as copiers, refrigerators, or other appliances that cause power spikes.

✓ Use a power outlet that matches the power rating noted on the label affixed to the bottom of your printer.

✓ Make sure that the room where you are using the printer is not too humid.

Unpacking the printer

Check to make sure that the carton contains each of the items shown in the following illustration.
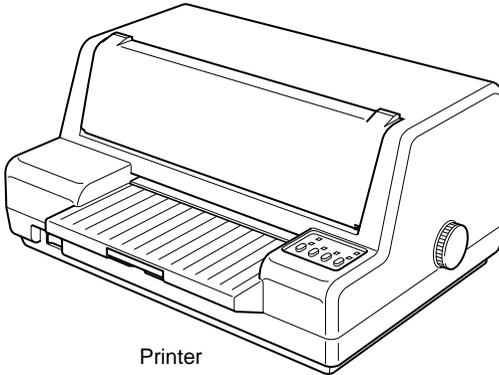
Printer
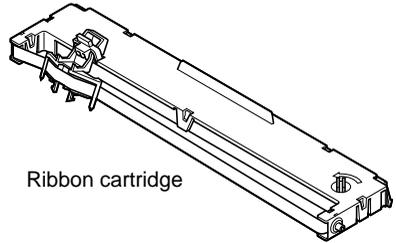
Ribbon cartridge
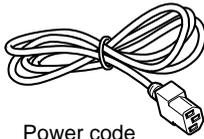
Power code
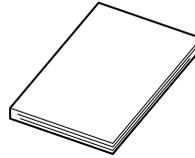
User's manual

If anything is missing, contact the store where you bought the printer and ask them to supply the missing part. Note that it is a good idea to keep the original box and all the packing materials just in case you need to pack the printer up again and send it somewhere at a later date.

Important!

There are several versions of this printer designed for different voltages. It is not possible to change the voltage of a printer. If the voltage shown on the label on the bottom of your printer does not match the voltage for your area, contact your dealer immediately.

General guide

The following illustrations show the major components of the your printer.

Front cover

Power switch

Document
table
extension

Document table

Platen knob

Control panel

Parallel interface
connector

Serial interface
connector

Power terminal
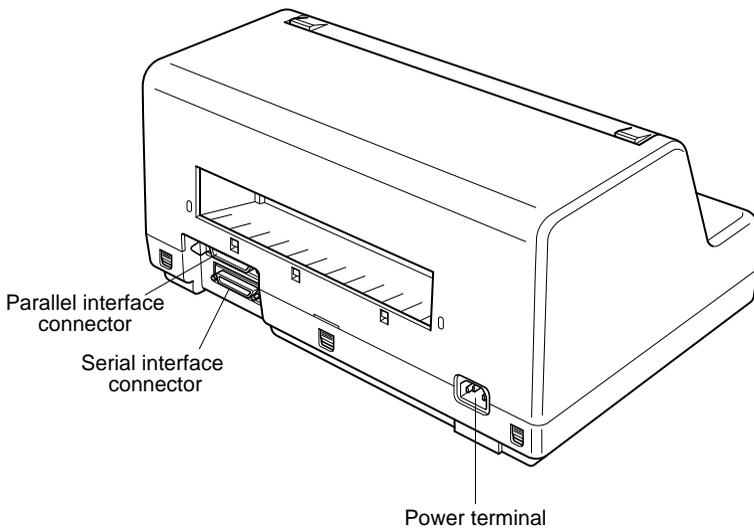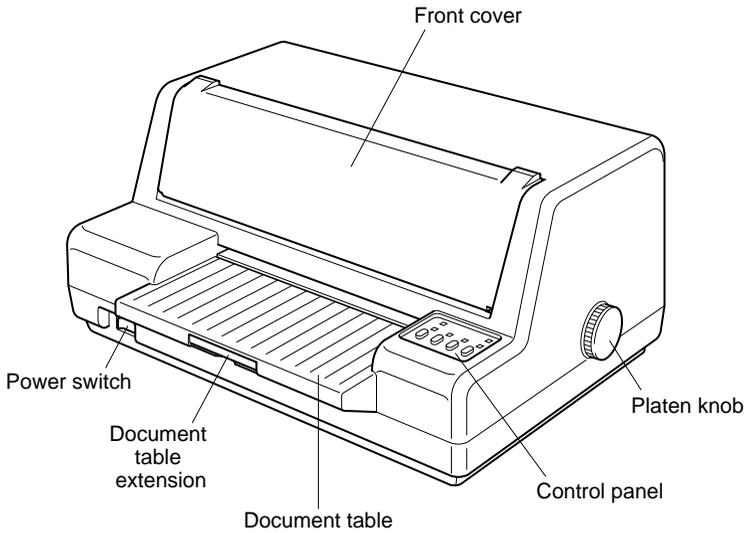
Opening the front cover

❏ Pull on the left and right corners of the front cover to and swing it down until it is fully open.
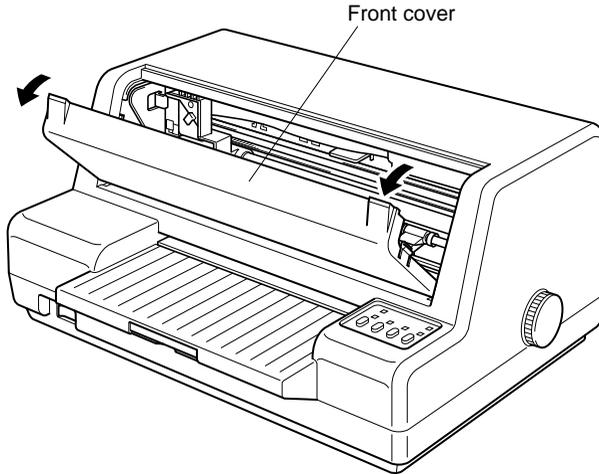
Front cover

Removing the front cover

❏ Once the front cover is fully open, carefully lift it straight up to remove it. To replace the front cover, lower the slots on the left and right of the cover onto the tabs provided on the printer case.
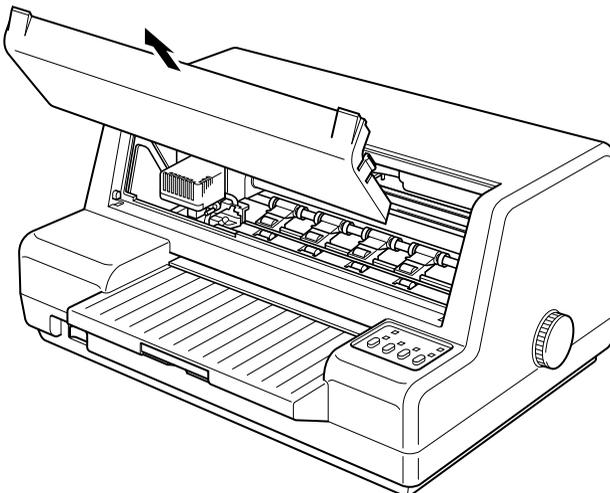
Removing the protective materials

❏ Packing material in the printer protects its components during shipping. Before using the printer for the first time, be sure to remove the packing material, which is located inside the front cover as shown in the illustration.

Cardboard
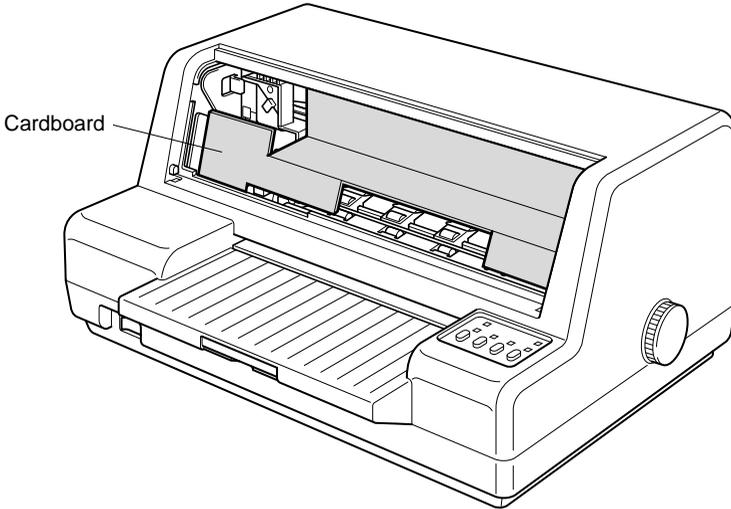
Installing the ribbon cartridge

❏ Make sure that the printer is unplugged from its power outlet.

❏ Open the front cover of the printer.

Note:

You will probably find later steps to perform if you remove the cover.

❏ By hand, move the print head to the left as far as it will go, where there is a cutout to allow easy installation and removal of the ribbon cartridge.

Carriage
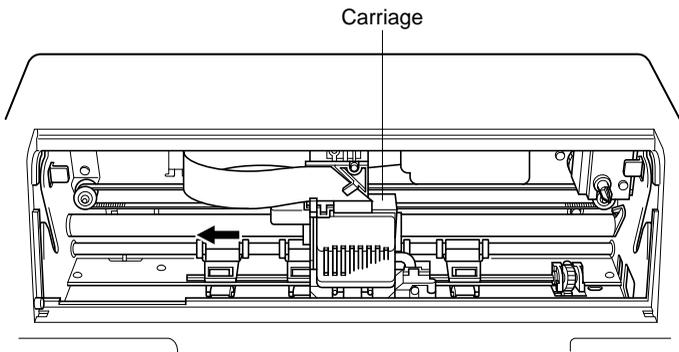
Important!

Never try to move the print head while the printer is plugged into a power outlet. Doing so can damage the printer. If you have just used the printer, let the print head cool for a few minutes before you touch it.

❏ Remove the ribbon cartridge from its package and check to make sure its ribbon guide is correctly in place. If it isn't, thread the ribbon through the guide.

Ribbon guide holder
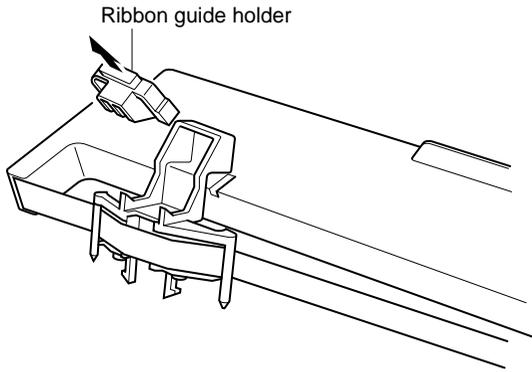
❏ Pull down on the ribbon guide to create considerable slack in the ribbon.

❏ Insert the two round tabs on either side of the ribbon cartridge into the two slots inside the printer and slide the cartridge into place as you rotate the knob on the right side of the cartridge to take up some of the slack in the ribbon.

❏ Press on the top of the cartridge until it snaps securely into place.

Note:

A ribbed ribbon advance shaft must enter into the hole on the back, right side of the ribbon cartridge. You seem to have trouble getting the ribbon cartridge to seat properly, try turning the knob of the ribbon cartridge slightly so the ribs on the shaft align properly with the hole.

❏ Once the ribbon cartridge is securely in place, use your thumb and forefinger to grasp the sides of the ribbon guide handle and attach the guide to the carriage below the print head. The two metal rods below the print head must fit into the holes provided in the ribbon guide. You will feel the ribbon guide snap securely into place when it is installed correctly.

Note:

Angle the ribbon guide downwards so it slips under the print head, and then straighten the guide to slip it onto rods below the print head.

❏ Rotate the knob on the ribbon cartridge to take up any slack in the ribbon.

❏ Close the front cover of the printer.

Print head

Metal rods

Knob

Slot

Slot

Ribbon guide
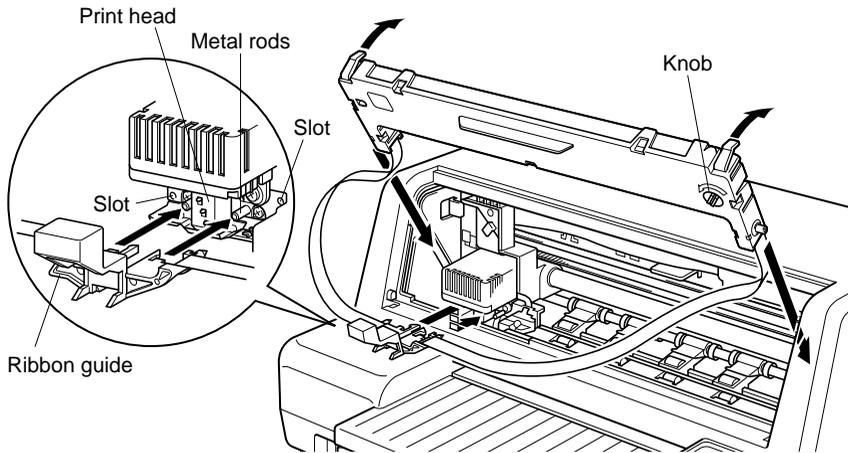
Important!

> *Printing that is poor quality or too light is almost always due to a ribbon that is simply worn out or "used up." If you experience problems with print quality, check the condition of the ribbon. If the black part looks gray and well-worn, replace the ribbon with a new one.*

Removing the ribbon cartridge

Use the following procedure to remove the ribbon cartridge from the printer when you want to replace it with a new one.

❏ Make sure that the printer is unplugged from its power outlet.

❏ Open the front cover of the printer.

Note:

> *You will probably find later steps to perform if you remove the cover.*

❏ By hand, move the print head to the left as far as it will go, where there is a cutout to allow easy installation and removal of the ribbon cartridge.

Important!

> *Never try to move the print head while the printer is plugged into a power outlet. Doing so can damage the printer. If you have just used the printer, let the print head cool for a few minutes before you touch it.*

❑ Pull on the ribbon guide below the print head to detach it.

❑ Pull on the top of the ribbon cartridge and then carefully lift up the cartridge to remove it from the printer.
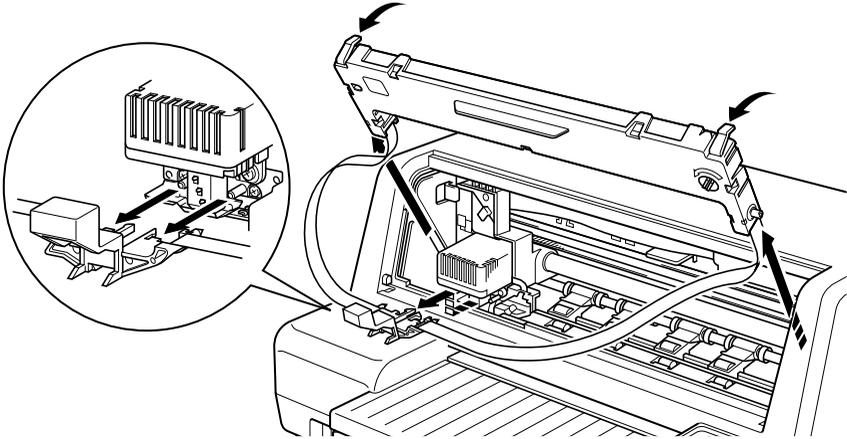
❑ Use the procedure under "Removing the protective materials" on page 5 to install a new cartridge.

Connecting to a power outlet and turning power on and off

❑ Make sure the power switch on the front of the printer is in the OFF position (O).
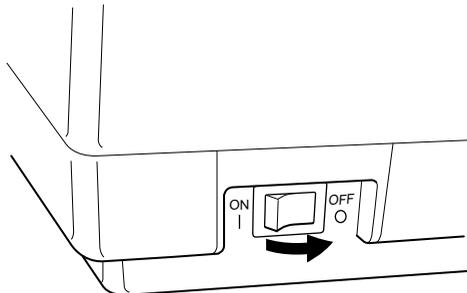
❏ Securely attach the power cord to the power terminal on the back of the printer.
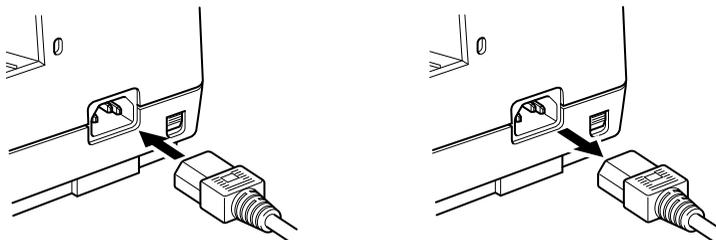
❏ Plug the other end of the power cord into a grounded wall outlet.

Caution!

If the voltage marked on the bottom of your printer does not match the voltage from the outlet you are using, do not plug in the power cord. Contact your dealer for assistance.

❏ Use the printer's power switch to turn power on (|) to turn power on and OFF (O).

Note:

We recommend that you unplug the printer from the power outlet whenever you do not plan to use it for long periods. Because of the this, you should locate the printer so that the power outlet it is plugged into is nearby and easy to access.

Loading paper

This section tells you how to load cut-sheet paper. Note that you can also use passbook. For details on using passbook, see "Paper Handling" on page 35 of this manual.

❏ Check that the control panel's POWER indicator is flashing, which shows that there is no paper in the printer.

❏ When printing on 4-ply or 5-ply paper, the Multi-Part Mode should be used. Check to make sure that the control panel's **MULTI-PART** indicator is lit. If it isn't, press the control panel's **MULTI-PART** button.

❏ Insert the paper into the printer as far as it will go, sliding its left side against the printer's left guide.

Important!

If the paper is not inserted straight into the printer, it will be considered a loading error and the paper will be ejected. Be sure to insert the paper correctly.
Inserting the paper with its left side more than 7 mm to the right of the left guide will be considered an error and the paper will be ejected.

Paper

Document table extension

Document table

Control panel

The paper will automatically be fed into the printer.

If your are using letterhead, make sure the paper is facing up, with the top towards the printer.

❏ Start the printing operation from your software application.

❏ After the printing is complete, press **EJECT** to eject the paper from the printer.

Connecting to your computer

Your printer comes equipped with two interfaces built in as standard: one parallel interface and one serial interface.

This printer does not come with cables, so you must purchase one separately to match the needs of you computer.

To connect with a parallel cable

For connection to the parallel interface, you will probably want to use a standard parallel cable, like the one shown below.
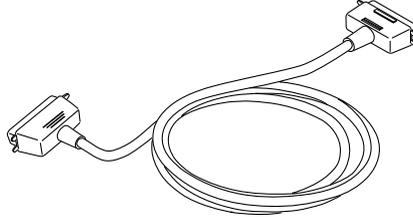
For an IBM-compatible personal computer:

✓ Use a standard 36-pin Centronics parallel cable.

✓ The parallel cable should be no longer than six feet (two meters). Longer cables can result in poor transfer of information.

❏ Plug one end of the parallel cable into the parallel port of your computer.
   The parallel port should be labeled "Printer," "Parallel," "PRN," "LPT1," or
   something similar.

❏ Plug the other end of the parallel cable into the socket on the back of the
   printer and secure it in place with the clips.
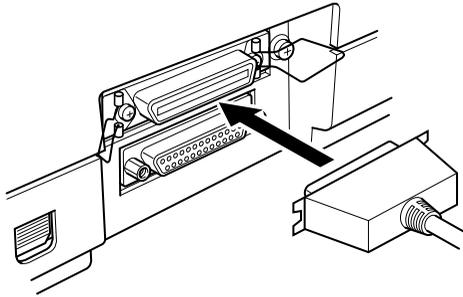
To connect with a serial cable

For connection to the serial interface, you will probably want to use a standard
RS-232C cable, like the one shown below.
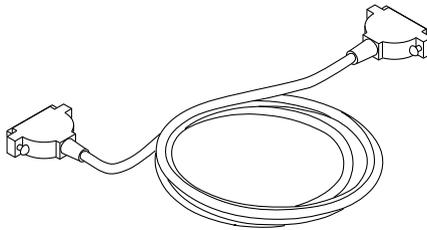
Important!

   • *The following instructions apply to the serial cable that is suitable for use
     with an IBM-compatible personal computer. Note that they do not apply to all
     types of computers and cables. If you are unsure about what type of cable you
     should use, consult your dealer.*

   • *Make sure that the printer is unplugged from the AC outlet and that the
     computer is switched off before connecting them.*

❏ Attach one end of the serial cable to a serial port of your computer (COM1, COM2), and secure the connector with the screws provided on the plug.

❏ Plug the other end of the cable into the socket on the back of the printer and secure it in place with the screws.
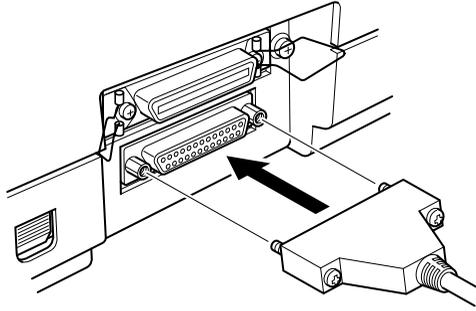
Note:

The parallel interface equipped on the printer as standard can be removed and replaced with an optional IS-NP192 Serial Interface Unit. This makes it possible to connect two separate computers for serial data communication.

Chapter 2: Control Panel Operations

The control panel gives you push-button control over the printer's operations. It includes indicator lights, which tell you the current status of the printer at a glance.

This chapter describes control panel functions that can be performed while the printer is turned on and either on-line or off-line. The buttons perform different functions in the EDS and Dot Adjustment Modes. Functions of control panel buttons in these modes are described in the relevant sections covering them.

```
┌─────────────────────────────────────────┐
│                                           │
│     ■ DATA          POWER ■               │
│                                           │
│           DRAFT    OCR B                  │
│       ■     ■        ■        ■           │
│       •─────────────┘                     │
│      ╭─╮   ╭─╮      ╭─╮      ╭─╮          │
│      │ │   │ │      │ │      │ │          │
│      ╰─╯   ╰─╯      ╰─╯      ╰─╯          │
│     MULTI-  EJECT    LF    ON LINE        │
│     PART                                  │
└─────────────────────────────────────────┘
```
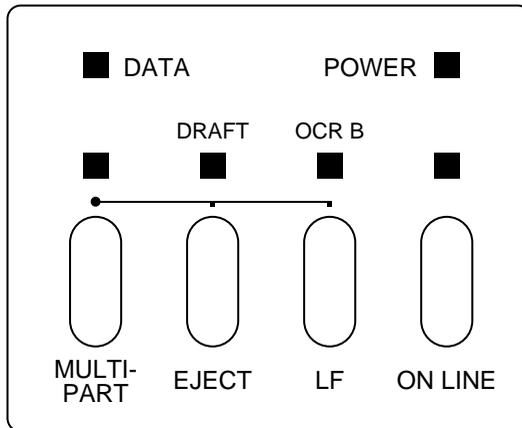
Switching between on-line and off-line

❏ Press **ON LINE** to switch the printer between being on-line and off-line.

❏ When the printer is on-line, the **ON LINE** indicator is lit and the printer can receive data from the computer. You should make sure that the printer is on-line whenever you are trying to print.

❏ When the printer is in off-line, the **ON LINE** indicator goes out, which means that the printer cannot receive any data.

❏ Note that you can also press **ON LINE** while a printing operation is in progress to stop the printing.

Important!

Make sure that the on-line/off-line setting of the printer is correct before performing a control panel operation.

Selecting a font

The printer normally prints at letter quality (LQ) using the default font you select in the EDS Mode (page 19). You can also use the following procedure to enter the Draft Mode for faster draft printing, or the OCR B Mode for bar code printing (page 24).

❏ Make sure the printer is off-line (**ON LINE** indicator is not lit).

❏ While holding down **MULTI-PART**, press **EJECT** to enter the Draft Mode (indicated when the **DRAFT** indicator is lit) or **LF** to enter the OCR B Mode (indicated when the **OCR B** indicator is lit).

Line feed

❏ Make sure the printer is off-line (**ON LINE** indicator is not lit).

❏ Press **LF** once to feed paper one line. Holding down **LF** continually feeds paper, one line at a time, until you release the button.

Form feed

❏ Make sure the printer is off-line (**ON LINE** indicator is not lit).

❏ While holding down **LF**, press **ON LINE** to feed the paper.

Paper eject

❏ Make sure the printer is off-line (**ON LINE** indicator is not lit).

❏ Press **EJECT** to eject the paper.

❏ After the paper is ejected, the printer will beep and the **POWER** indicator will flash to indicate there is no paper in the printer.

Micro feed

Use the following operation to feed the paper in very small increments. This makes it possible to align the print head exactly where you want it.

❏ Make sure the printer is off-line (**ON LINE** indicator is not lit).

❏ While holding down **ON LINE**, press **EJECT** to feed the paper backward or **LF** to feed the paper forward.

Changing the auto load position

Normally the printer automatically feeds paper to a standard position (1/6-inch from the top of the paper) before printing. This is called the auto load position. You can use the following procedure to specify a different auto load position.

❏ Make sure the printer is off-line (**ON LINE** indicator is not lit).

❏ While holding down **ON LINE**, press **MULTI-PART** then release the two buttons.

❏ Insert a new sheet of paper into the printer, and it automatically feeds to the current auto load position.

❏ Feed the paper so the print head is located where you want the new auto load position to be.

Press **LF** to feed the paper forward and **EJECT** to feed the paper backward. These are the same keys you use for the micro feed operation.

❏ After you have the paper at the position you want, hold down **ON LINE** and press **LF** to make the current print head position the new auto load position. The printer will beep twice to indicate that the new auto load position is set.

Note:

The auto load position you set remains in effect until you turn the printer off. If you want to save the auto load position in memory, press EJECT instead of LF above.

❏ To clear the new auto load position and return to the one that you set previously (using the above procedure), press **ON LINE**. To clear the currently set auto load position and return to the standard position (1/6-inch from the top of the paper), hold down **ON LINE** and press **MULTI-PART**.

Clearing the printer's buffer

When the printer receives data from a computer, it temporarily stores it in a memory called a buffer. If you stop a printing job partway through, there is the chance that some data will remain in the buffer. The following procedure clears the printer's buffer by deleting any data that might be there.

❏ Execute the necessary command in the program you are using to stop the print job.

Important!

Be sure to stop the print job before taking the printer off line. Otherwise, the print job will resume from where you interrupted it when you put the printer back on-line.

❏ Use **ON LINE** to take the printer off line (**ON LINE** indicator is not lit).

❏ Hold down **MULTI-PART** and then **ON LINE**. Keep both buttons held down until the printer beeps once, which indicates that the buffer is cleared.

Initializing the printer

The following procedure initializes the printer to its power-on settings.

❏ Use **ON LINE** to take the printer off line (**ON LINE** indicator is not lit).

❏ Hold down **MULTI-PART** and then **ON LINE**. Keep both buttons held down until the printer beeps once (indicating the printer buffer is cleared) and then beeps again three times, which indicates that the printer is reset.

Entering the Multi-part Mode

When the printer is in the Multi-part Mode, the print head prints with greater impact. It should be noted, however, that printing in the Multi-part Mode also reduces the life of the print head. Because of this, you should use the Multi-part Mode only for printing on four or five-ply paper. Return to the normal mode for printing on one to three-ply paper.

Use the following procedure to enter the Multi-part Mode

❏ Use **ON LINE** to take the printer off line (**ON LINE** indicator is not lit).

❏ Press **MULTI-PART** button. The **MULTI-PART** indicator will lit to indicate to enter multi-part mode.

Chapter 3: Using the EDS Mode

The letters "EDS" stand for "Electronic DIP Switches." Just like the small DIP switches that are used by many computers, printers, and other devices, the EDS lets you configure the printer so that it matches your system and software needs.

This chapter describes how to enter the printer's EDS Mode and provides details about available settings and how to change them.

All switch settings, except for EDS 2C-5, are ON when the printer is shipped from the factory.

About EDS Mode settings

The EDS Mode of this printer actually consists of two sub-modes, named EDS-1 and EDS-2. EDS-1 is used for general settings (such as emulation, print pitch, and paper length), while EDS-2 is used to specify communication parameters for the serial interface and a number of paper handling settings.

EDS-1 settings are grouped among six "banks" (representing banks of switches) that are identified by the letters A through F. Each bank contains a number of "switches" numbered 1 through 6 that you can turn on and off to configure the printer.

EDS-2 settings consist of three "banks" named A, B, and C, with each bank containing six switches.

Entering the EDS Mode

❏ Make sure that paper is loaded in the printer.

❏ Turn off the printer.

❏ To enter the EDS-1 Mode, turn the printer on while holding down the control panel's **EJECT**, **LF**, and **ON LINE** buttons.

To enter the EDS-2 Mode, turn the printer on while holding down the control panel's **MULTI-PART**, **EJECT**, and **LF** buttons.

Either of the above operations causes the following message to be printed, which indicates the printer is in the EDS Mode.

```
CURRENT EDS SETTINGS

Bank      1-A     1-B     1-C     1-D     1-E     1-F     2-A     2-B     2-C
Switch   123456  123456  123456  123456  123456  123456  123456  123456  123456
ON       ******  ******  ******  ******  ******  ******  ******  ******  **** *
OFF                                                                            *
```

Note:

The contents of the above message are the same, regardless of whether you enter EDS-1 or EDS-2. The asterisks indicate the current EDS Mode switch settings for all the banks in both sub-modes.

Selecting a bank

❏ While in the EDS Mode (EDS-1 or EDS-2), use the control panel's **MULTI-PART** button to select a bank. While the **DATA** indicator is lit, the lit indicator indicates the currently selected bank.

Lit Indicator	Selected Bank
MULTI-PART	A
MULTI-PART + EJECT	B
EJECT	C
EJECT + LF	D
LF	E
LF + ON LINE	F

Note:

EDS-2 has only three banks, so pressing the BANK button cycles through banks A, B, and C only. Indicators EJECT + LF, LF, and LF + ON LINE do not light with EDS-2.

Selecting a switch

❏ While in the EDS Mode (EDS-1 or EDS-2), use the control panel's **EJECT** button to select a bank switch. While the **DATA** indicator is off, the lit indicator indicates the currently selected switch.

Lit Indicator	Selected Switch
MULTI-PART	1
MULTI-PART + EJECT	2
EJECT	3
EJECT + LF	4
LF	5
LF + ON LINE	6

Changing a switch setting

❏ After selecting a bank and switch, press the control panel's **LF** button to turn the switch on and off. The current setting of the switch is shown by the **POWER** indicator: the indicator is lit when the switch is on, and is not lit when the switch is off.

Printing the current switch settings

❏ In the EDS Mode, hold down the control panel's **ON LINE** button, and then press the **LF** button to print the current EDS settings. Asterisks on the printout show whether a switch is turned on or off.

Exiting the EDS Mode

❏ To save EDS settings you have made and exit the EDS Mode, press the **ON LINE**.

EDS-1 Settings

The following details all of the settings you can make for EDS-1.

BANK A

Switch 1: Emulation
Selects Standard emulation (ON) or IBM emulation (OFF). Standard emulation causes the printer to act like the Epson ESC/P (24-pin), while IBM emulation makes it act like the IBM Proprinter XL24E.

Switch 2: Not used

Switch 3: Character Table
The function of this switch depends on whether you are using IBM or Standard emulation.

Emulation	Switch 2 Setting	Description
Standard	ON	Graphics: IBM Character Set #2
	OFF	Italics: Italic character table used
IBM	ON	IBM Character Set #2
	OFF	IBM Character Set #1

Switch 4: RAM Usage
Specifies whether RAM should be used as an input buffer (ON) or as a download buffer (OFF). Selecting input buffer (ON) tells the printer to use available RAM to store data it receives from the computer, which speeds up the printing. Selecting download buffer (OFF) tells the printer to use available RAM to store character patterns.

Switch 5: Paper Out Detector
Specifies whether the printer's paper out detector is enabled (ON) or disabled (OFF). When the paper out detector is enabled (ON), the printer automatically stops printing whenever it senses there is no more paper. When it is disabled (OFF), the printer continues printing as long as there is data. Selecting disabled (OFF) makes it possible to print right up to the bottom of a page, but it also creates the danger of printing when there is no paper loaded in the printer, which can damage the print head and platen.

Switch 6: Multi-Part Mode
Specifies whether the Multi-Part Mode is enabled (OFF) or disabled (ON). When the printer is in the Multi-part Mode, the print head prints with greater impact. It should be noted, however, that printing the in the Multi-part Mode also reduces the life of the print head.

BANK B

Switch 1: Graphics Direction
Selects unidirectional (OFF) or bidirectional (ON) printing for graphics. Bidirectional printing (ON) is faster, while unidirectional (OFF) printing generally provides better print quality in the graphics mode.

Switch 2: Not used

Switch 3: Line Spacing
Selects 1/6-inch (ON) or 1/8-inch (OFF) spacing between lines.

Switch 4: Auto LF with CR
Specifies whether auto LF with CR is enabled (OFF) or disabled (ON). When auto LF with CR is enabled (OFF), the printer automatically performs a line feed whenever it receives a carriage return from the computer. When it is disabled (ON), the computer must send both a line feed code and a carriage return code at the end of each line. Note the following check points when trying to figure out which setting to use here:

✓ If you find that your output is double-spaced when it should not be, turn this switch ON (Disabled).

✓ If you find that lines are printing over each other, turn this switch OFF (Enabled).

Switch 5: Zero Style
Specifies whether a normal zero (ON) or a slashed zero (OFF) will be used. Selecting Normal (ON) prints zeros without lines running through them, while Slashed (OFF) prints zeros with a diagonal slash running through them.

Switch 6: Not used

BANK C

Switches 1, 2: Print Mode

Turn these switches on or off to select the print mode you want to use.

Print Mode	SW1	SW2
LQ	ON	ON
Draft	OFF	ON

Switches 3, 4, 5: Print Pitch

Turn these switches on or off to form the pattern that matches the print pitch setting you want to make.

Print Pitch	SW3	SW4	SW5
10cpi	ON	ON	ON
12cpi	OFF	ON	ON
15cpi	ON	OFF	ON
17cpi	OFF	OFF	ON
20cpi	ON	ON	OFF
Proportional	OFF	ON	OFF

Switch 6: Not used

BANK D

Switches 1, 2, 3, 4: Page Length
Turn these switches on or off to form the pattern that matches the page length setting you want to use.

Page Length	SW1	SW2	SW3	SW4
11"/Letter	ON	ON	ON	ON
8"	OFF	ON	ON	ON
11.7"/A4	ON	OFF	ON	ON
12"	OFF	OFF	ON	ON
8.5"/Letter	ON	ON	OFF	ON
14"/Legal	OFF	ON	OFF	ON
10.5"/Executive	ON	OFF	OFF	ON
7.25"/Executive	OFF	OFF	OFF	ON
3.5"	ON	ON	ON	OFF
5.5"	OFF	ON	ON	OFF

Switch 5: Cut-sheet eject direction
Specifies whether cut-sheet paper should be ejected towards the front of the printer (ON) or towards the back (OFF).

Switch 6: Skew sensor for cut-sheet paper
Specifies whether the skew sensor for cut-sheet paper should be enabled (ON) or disabled (OFF).

BANK E

Switches 1, 2, 3, 4, 5, 6: Code Page/International Character Set

If your EDS settings specify IBM emulation (Bank A, Switch 1 OFF) with either character table (Bank A, Switch 2), or Standard emulation (Bank A, Switch 1 ON) with the graphics character table (Bank A, Switch 2 ON), use the Bank E switches to select the default character code page you want to use.

Code Page	SW1	SW2	SW3	SW4	SW5	SW6
#437 IBM-PC	ON	ON	ON	ON	ON	ON
#850 Multi-Lingual	OFF	ON	ON	ON	ON	ON
#860 Portuguese	ON	OFF	ON	ON	ON	ON
#861Icelandic	OFF	OFF	ON	ON	ON	ON
#863 Canadian French	ON	ON	OFF	ON	ON	ON
#865 Nordic	OFF	ON	OFF	ON	ON	ON
#866 Russian	ON	OFF	OFF	ON	ON	ON
#3840 IBM-Russian	OFF	OFF	OFF	ON	ON	ON
#3841 Gost-Russian	ON	ON	ON	OFF	ON	ON
#3843 Polish	OFF	ON	ON	OFF	ON	ON
#3844 CS2	ON	OFF	ON	OFF	ON	ON
#3845 Hungarian	OFF	OFF	ON	OFF	ON	ON
#3846 Turkish	ON	ON	OFF	OFF	ON	ON
#3847 Brazil-ABNT	OFF	ON	OFF	OFF	ON	ON
#3848 Brazil-ABICOMP	ON	OFF	OFF	OFF	ON	ON
#852 Latin-2	OFF	OFF	OFF	OFF	ON	ON
#1001 Arabic	ON	ON	ON	ON	OFF	ON
#737 Greek	OFF	ON	ON	ON	OFF	ON
#851 Greek	ON	OFF	ON	ON	OFF	ON
#869 Greek	OFF	OFF	ON	ON	OFF	ON
#928 Greek	ON	ON	OFF	ON	OFF	ON
#2001 Lithuanian-KBL	OFF	ON	OFF	ON	OFF	ON

Code Page	SW1	SW2	SW3	SW4	SW5	SW6
#772 Lithuanian	ON	OFF	OFF	ON	OFF	ON
#774 Lithuanian	OFF	OFF	OFF	ON	OFF	ON
#3001 Estonian-1	ON	ON	ON	OFF	OFF	ON
#3002 Estonian-2	OFF	ON	ON	OFF	OFF	ON
#3011 Latvian-1	ON	OFF	ON	OFF	OFF	ON
#3012 Latvian-2	OFF	OFF	ON	OFF	OFF	ON
#3021 Bulgarian	ON	ON	OFF	OFF	OFF	ON
#3031 Hebrew	OFF	ON	OFF	OFF	OFF	ON
#3041 Maltese	ON	OFF	OFF	OFF	OFF	ON
#3850 Standard KU	OFF	OFF	OFF	OFF	OFF	ON
#3860 Rajvitee KU	ON	ON	ON	ON	ON	OFF
#3861 Microwiz KU	OFF	ON	ON	ON	ON	OFF
#3863 STD 988 TIS	ON	OFF	ON	ON	ON	OFF
#3864 Popular TIS	OFF	OFF	ON	ON	ON	OFF
#3865 Newsic TIS	ON	ON	OFF	ON	ON	OFF

A code page is the set of symbols and characters that your printer can print.
Your printer converts ASCII hexadecimal data according to a code page to print
symbols and characters. By supporting different code pages, the printer can
print in a variety of different languages. The following table shows detailed
information about code pages.

Code Page	Name	Country	Remarks
#437	IBM PC	United Kingdom, France, Germany, Italy, Austria, Switzerland, United States, Spain	
#850	Multi-Lingual	United Kingdom, France, germany, Italy, Austria, Switzerland, United States, Spain	Preferred by Microsoft
#860	Portuguese	Portugal	
#861	Icelandic	Iceland	
#863	Canadian French	Canada	

Code Page	Name	Country	Remarks
#865	Nordic	Denmark, Finland, Norway, Sweden	Preferred by Microsoft
#866	Russian	Russia	Preferred by Microsoft
#3840	IBM-Russian	Russia, Bulgaria	
#3841	Gost-Russian	Russia	Gost: government standard
#3843	Polish	Poland	Also called "Mazovia"
#3844	CS2	Czech Republic	Also called "Kamenicky"
#3845	Hungarian	Hungary	
#3846	Turkish	Turkey	
#3847	Brazil-ABNT		
#3848	Brazil-ABICOMP		
#852	Latin-2	Croatia, Czech Republic, Hungary, Poland, Romania, Serbia, Slovak Republic, Slovenia	Preferred by Microsoft
#1001	Arabic	Egypt, Saudi Arabia	Mainly in Arabic speaking countries
#737	Greek	Greece	Almost 80%
#851	Greek	Greece	
#869	Greek	Greece	
#928	Greek	Greece	For UNIX
#2001	Lithuanian-KBL	Lithuania	Commonly used for DOS
#772	Lithuanian	Lithuania	New standard
#774	Lithuanian	Lithuania	
#3001	Estonian-1	Estonia	
#3002	Estonian-2	Estonia	Most often used
#3011	Latvian-1	Latvia	
#3012	Latvian-2	Latvia	Government standard
#3021	Bulgarian	Bulgaria	

Code Page	Name	Country	Remarks
#3031	Hebrew	Israel	
#3041	Maltese	Malta	
#3850	Standard KU	Thailand	
#3860	Rajvitee KU	Thailand	
#3861	Microwiz KU	Thailand	
#3863	STD 988 TIS	Thailand	
#3864	Popular TIS	Thailand	
#3065	Newsic TIS	Thailand	

If your EDS settings specify Standard emulation (Bank A, Switch 1 ON) with the italic character table (Bank A, Switch 2 OFF), use the Bank E switches to select the international character set you want to use. This setting determines the assignment of 14 character codes in the Standard Italic character set.

International Character Set	SW1	SW2	SW3	SW4	SW5	SW6
U.S.A.	ON	ON	ON	ON	ON	ON
France	OFF	ON	ON	ON	ON	ON
Germany	ON	OFF	ON	ON	ON	ON
England	OFF	OFF	ON	ON	ON	ON
Denmark-1	ON	ON	OFF	ON	ON	ON
Sweden	OFF	ON	OFF	ON	ON	ON
Italy	ON	OFF	OFF	ON	ON	ON
Spain-1	OFF	OFF	OFF	ON	ON	ON
Japan	ON	ON	ON	OFF	ON	ON
Norway	OFF	ON	ON	OFF	ON	ON
Denmark-2	ON	OFF	ON	OFF	ON	ON
Spain-2	OFF	OFF	ON	OFF	ON	ON

International Character Set	SW1	SW2	SW3	SW4	SW5	SW6
Latin America	ON	ON	OFF	OFF	ON	ON
Korea	OFF	ON	OFF	OFF	ON	ON
Ireland	ON	OFF	OFF	OFF	ON	ON
Legal	OFF	OFF	OFF	OFF	ON	ON

BANK F

Switches 1, 2, 3, 4, 5, 6: LQ Font Selection
Turn these switches on or off to form the pattern that identifies the font you want to use for LQ printing.

Font	SW1	SW2	SW3	SW4	SW5	SW6
Roman	ON	ON	ON	ON	ON	ON
Sanserif	OFF	ON	ON	ON	ON	ON
Courier	ON	OFF	ON	ON	ON	ON
Prestige	OFF	OFF	ON	ON	ON	ON
OCR B	OFF	ON	OFF	ON	ON	ON
Orator	OFF	OFF	OFF	ON	ON	ON

Note:

Bank C switches 1 and 2 need to be in the correct positions before the above setting will have any effect.

EDS-2 Settings

The following details all of the settings you can make for EDS-2. For communications protocol settings (Banks A and B), the matching settings you have to make in your MS-DOS AUTOEXEC.BAT file.

BANK A

Switch 1: Data Length

Specifies the number of bits that the computer transmits as one byte. This setting is normally 8.

Data Length	SW1	DOS Setting
8 bits	ON	8
7 bits	OFF	7

Switch 2: Parity Check

This switch specifies whether or not a parity check should be performed on the data.

Parity Check	SW2	DOS Setting
Disabled	ON	Disabled
Enabled	OFF	Enabled

Switch 3: Parity

This switch specifies the parity as non, odd, or even.

Parity	SW3	DOS Setting
Odd	ON	O
Even	OFF	E

Switch 4: Protocol

Protocol, which is sometimes referred to as "handshaking," is the communications convention that is used to allow the printer and computer to regulated the flow of data. DTR is the most commonly used protocol.

Protocol	SW4	DOS Setting
DTR	ON	DTR
XON/XOFF	OFF	XON/XOFF

Switches 5, 6: Not used

BANK B

Switch 1, 2, 3: Baud Rate

The baud rate is the speed, in bits per second, that the printer sends data to the computer. The common setting is 9600 or 19200.

Baud Rate	SW1	SW2	SW3	DOS Setting
300	OFF	OFF	OFF	300
600	ON	OFF	OFF	600
1200	OFF	ON	OFF	1200
2400	ON	ON	OFF	2400
4800	OFF	OFF	ON	4800
9600	ON	OFF	ON	9600
19200	OFF	ON	ON	19200
9600	ON	ON	ON	9600

Switches 4, 5, 6: Not used

BANK C

Switches 1, 2: Top and bottom margins

Use these switches to specify the top and bottom margins for printing.

Switch	Setting	Meaning
SW1	ON	1/6″ top margin for cut-sheet paper
	OFF	0″ top margin for cut-sheet paper
SW2	ON	1/6″ bottom margin for cut-sheet paper
	OFF	0″ bottom margin for cut-sheet paper

Switch 3: Head gap sensing for on each line

Specifies whether head gap sensing for on each line should be enabled (OFF) or disabled (ON).

Switch 4: Control code FF

Control code FF (hexadecimal code 0C):
Specifies whether to eject paper (ON) or form feed (OFF).

Switches 5, 6: Waiting period for paper loading

Waiting Period	SW5	SW6
2.0 seconds	ON	ON
1.5 seconds	OFF	ON
1.0 seconds	ON	OFF
0.5 seconds	OFF	OFF

Chapter 4: Using the Printer with MS-DOS

This chapter contains information about how to use the printer with applications software running under MS-DOS. In this chapter, you will learn about:

❏ How to set up for printing with MS-DOS

Setting up for printing with MS-DOS

To print from an application running under MS-DOS, you must first select the printer from within the application. Typically, the program will feature an INSTALL or SETUP command for selection of printers. Refer to the manual for the application you are using for details on how to select a printer for it.

❏ Start up the application and use the correct procedure for that application to select a printer. The following is a list of printers that can be used. If your application lists more than one of these, select the printer that is nearest to the top of this list. You should also use the EDS mode to select standard emulation (page 22).

Star LC-8021
Star LC-8211
Star LC24-300/ NX-2480
LC24-30/NX-2450
Epson LQ-860/1060
Epson LQ-850/1050

If none of the printers listed above are available in the application, choose one of the printers listed below. Once again, you should choose the printer that is nearest to the top in the following list. For these printers, you should use the EDS Mode to select IBM emulation (page 22).

IBM ProPrinter X24E/XL24E
IBM ProPrinter X24/XL24

❏ To print, follow the instructions given in the manual of the application you are using. Typically, you would select the application's PRINT command, make any necessary changes in the window that appears (such as the number of copies to be printed), and then press the **Enter** key to start printing.

Chapter 5: Paper Handling

This chapter tells you about the type of paper you can print on and how to feed paper into the printer.

Selecting paper types

Use the following information when selecting paper.

Cut-Sheet Paper

Width:	3.0″ to 8.3″ / 76.2 to 210mm
Length:	2.5″ to 11.7″/63.5 to 297mm
Thickness:	One-ply:
	0.0028 to 0.0071″/0.07 to 0.18mm
	Multi-ply:
	0.0028 to 0.014″/0.07 to 0.35mm
Weight:	One-ply:
	14 to 42 lbs / 52 to 156g/m^2 / 45 to 135 kg
	Multi-ply:
	11 to 14 lbs / 40 to 52g/m^2 / 34 to 45 kg

Passbook

Width:	4.0″ to 6.0″ / 101.6 to 152.4mm
Length:	5″ to 8″/127.0 to 203.2mm (with the passbook opening)
Thickness:	2.0mm maximum (total thickness)
Number of Pages:	14 maximum (excluding cover)

Feeding a passbook into the printer

Use the following procedure to feed a passbook into the printer.

❑ Open the pass book to the page you want to print on.

❑ Check that the control panel's POWER indicator is flashing, which shows that there is no paper in the printer.

❑ Check to make sure that the control panel's **MULTI-PART** indicator is not lit. If it is, press the control panel's **MULTI-PART** button.

❑ Insert the open passbook (top first) into the printer as far as it will go, sliding its left side against the printer's left guide.

Important!

If the passbook is not inserted straight into the printer, it will be considered a loading error and the passbook will be ejected. Be sure to insert the passbook correctly.
Inserting the passbook with its left side more than 7 mm to the right of the left guide will be considered an error and the passbook will be ejected.

Pass book

Document table

Control panel
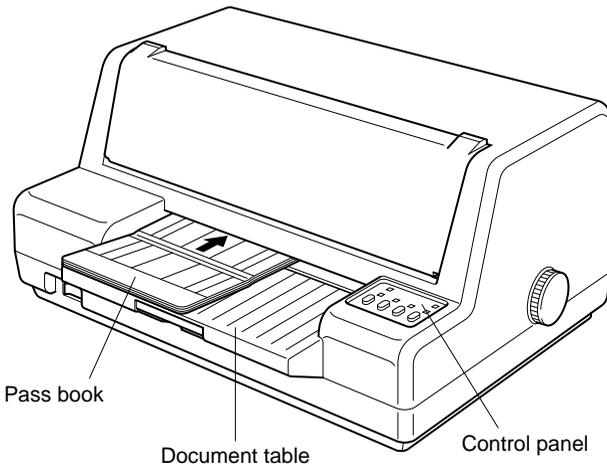
The passbook will automatically be fed into the printer.

❑ Start the printing operation from your software application.

❑ After the printing is complete, press **EJECT** to eject the passbook from the printer.

Feeding cut-sheet paper into the printer

Use the following procedure to feed cut sheet paper into the printer.

When feeding large paper, such as A4-size paper, pull out the document table extension.

❏ Check that the control panel's POWER indicator is flashing, which shows that there is no paper in the printer.

❏ When printing on 4-ply or 5-ply paper, the Multi-Part Mode should be used. Check to make sure that the control panel's **MULTI-PART** indicator is lit. If it isn't, press the control panel's **MULTI-PART** button.

❏ Insert the paper into the printer as far as it will go, sliding its left side against the printer's left guide.

Important!

If the paper is not inserted straight into the printer, it will be considered a loading error and the paper will be ejected. Be sure to insert the paper correctly.
Inserting the paper with its left side more than 7 mm to the right of the left guide will be considered an error and the paper will be ejected.

Paper

Document table extension

Document table

Control panel

The paper will automatically be fed into the printer.

If your are using letterhead, make sure the paper is facing up, with the top towards the printer.

❏ Start the printing operation from your software application.

❏ After the printing is complete, press **EJECT** to eject the paper from the printer.

Print area

❏ The following shows the recommended print area for passbook and cut-sheet paper.

```
         2.54 mm (0.1")              2.54 mm (0.1")

                    Pass book
                                                    10 mm (0.4")

                                                    *1
                                                    4 mm (0.16")
                                                    *1
                                                    4 mm (0.16")

                                                    10 mm (0.4")
```
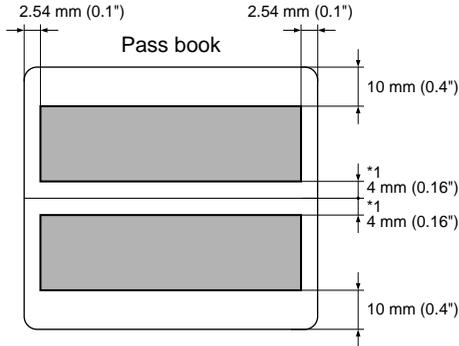
*1 Never allow printing to extend outside
    the print area, otherwise the print head
    may be damaged.

Cut-sheet paper

```
              4 mm (0.16")


2.54 mm (0.1")                        2.54 mm (0.1")




              2.3 mm (0.09")
```
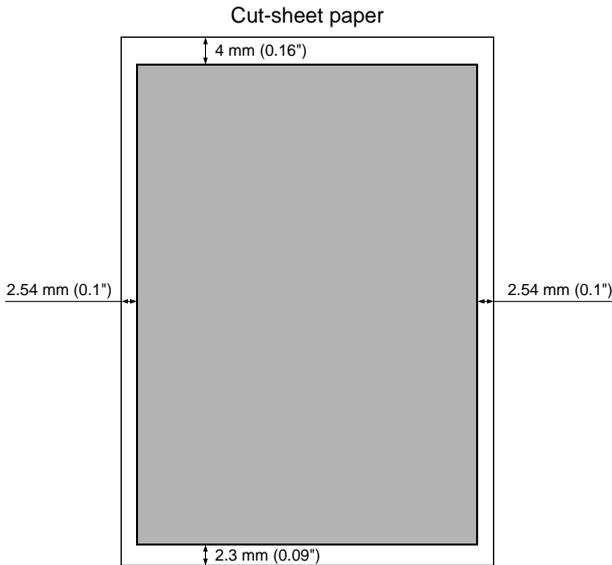
Chapter 6: Optional Accessories

This chapter explains how to install and use the following optional accessories that are available for this printer:

❏ Serial Interface Unit (IS-NP192)

❏ Serial-to-Parallel Converter (SPC-8K)

Important!

Always make sure that printer power is turned off whenever installing or removing optional accessories.

Serial Interface Unit (IS-NP192)

The parallel interface equipped on the printer as standard can be removed and replaced with an optional IS-NP192 Serial Interface Unit. This makes it possible to connect two separate computers for serial data communication.
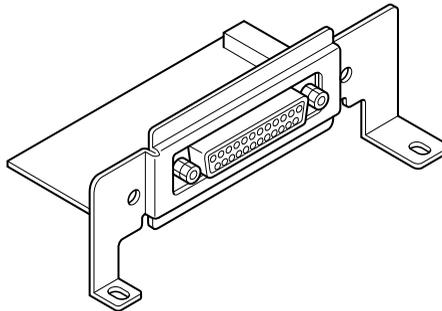
Serial-to-Parallel Interface Converter (SPC-8K)

Connecting the serial-to-parallel converter to the printer's parallel connector provides a second serial connection, which allows serial connections for two separate computers.

Serial connector   Dip switch

Clear button

Parallel connector
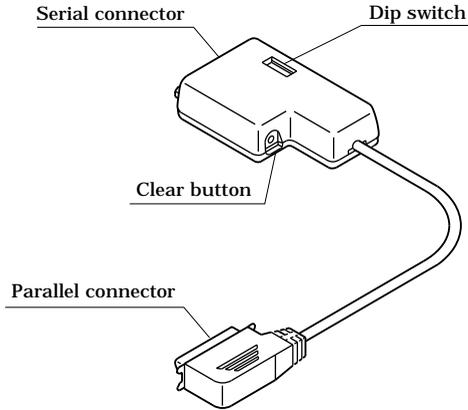
Appendix A: Troubleshooting

The appendix tells you what you need to know if you experience problems with your printer. It tells you how to test the printer, how to check system software settings, and how to adjust the vertical alignment. In addition, there is information on actions to take for specific problems, and on the meanings of printer beep tones.

Warning!

The printer uses high voltage. Do not attempt any other repair or maintenance except as expressly recommended in this appendix. Unauthorized repair and maintenance not only exposes you to the danger of electrical shock, it also may damage your printer and void your warranty.

Short test

Use the following procedure to test the printer to make sure that everything is working correctly.

❏ Make sure that paper is loaded in the printer.

❏ Turn off the printer.

❏ While holding down **ON LINE**, turn on the printer.

   The short test prints the version number of the software contained in the printer's ROM, followed by the current EDS settings of the printer.

❏ To stop printing, turn off the printer.

Long test

Use the following procedure to test the printer to make sure that everything is working correctly.

❏ Make sure that paper is loaded in the printer.

❏ Turn off the printer.

❏ While holding down **LF**, turn on the printer.

   The long test prints a title followed by seven lines of text, and then continues to print the entire character set for each font and pitch available.

❏ To stop printing, turn off the printer.

Note:

> *The test printing prints across the entire width of the carriage. Make sure that the printer is loaded with the widest paper available in order to avoid damage to the print head and platen.*

Hexadecimal dump

This procedure prints in hexadecimal format all codes (character codes and control codes) that are sent to the printer by the computer. The printer does not execute any control codes (such as 0A - linefeed), it just prints them out. The hexadecimal dump is useful when you are writing programs for printer control.

❏ Make sure that paper is loaded in the printer.

❏ Turn off the printer.

❏ While holding down **MULTI-PART** and **EJECT**, turn the printer back on to enter the Hex Dump Mode.

❏ To exit the Hex Dump Mode, turn the printer off.

Adjusting the dot alignment

You may never have to use the procedure described in this section, but after you have been using your printer for some time you may find that the dots of some graphics do not align correctly. For example, what should look like:

|||||

may come out looking like one of the following:

||||| or like this |||||
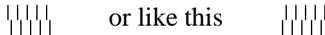
This is caused when mechanical parts of the printer get out of alignment. This happens only rarely and you may never experience it at all throughout the life of the printer. If you do have problems, use the following procedure to correct it.

❏ Make sure that paper is loaded in the printer.

❏ Turn off the printer.

❏ While holding down **EJECT** and **ON LINE**, turn the printer back on to enter the Dot Adjustment Mode.

   The printer will print something like the following.

```
*** DOT ADJUSTMENT SETTING ***

 Normal-density              0:| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
```

❏ If the two lines do not align properly, use **MULTI-PART** to move the lower line to the left or **EJECT** to move it to the right.

   The above step performs alignment for Normal-density mode only. You must make separate adjustments for the CRT graphics mode I. DRAFT Text, DRAFT Graphics, Double-density, CRT graphics mode II, Triple-density, Quadruple-density, LQ Text and LQ Graphics modes as well.

❏ Press **LF** to change to another printing mode.

❏ Repeat the above steps for each printing mode, if necessary.

❏ After making changes to adjustments in all the printing modes you want, press **ON LINE** to exit the Dot Adjustment Mode and register your adjustments.

Important!

   Perform the dot adjustment separately for the Normal Mode and the Multi-Part Mode.

Troubleshooting guide

Use the following table to help track down the causes of problems and to determine the best solution to deal with them.

Problem	Possible Cause	Recommended Action
The ON LINE indicator does not light.	The printer is not receiving power.	Check whether the power cord is correctly plugged into the power outlet.
		Check whether the power outlet is working by unplugging the printer and plugging in another device.
Printer sounds like it is printing, but it is not. Printing is weak.	The ribbon is jammed, twisted, or not set correctly between the print head and the print head shield.	Make sure that the ribbon cartridge is installed correctly.
	The ribbon is worn out or "used up."	Replace the ribbon with a new one.
Printer test works, but printer will not print out data from the attached computer.	The wrong emulation is selected	Check the emulation selection and change it if necessary. See page 22.
	Your application program's or system software's printer selection is wrong.	Check the printer selection of your application software.
	The computer's system software is not set up properly for the printer or for the port you are using.	Check the system software settings. Check the settings for LPT1, COM 1, or COM 2 if you are using the Serial Interface.
	The interface cable is connected incorrectly or damaged.	Check to make sure that the printer interface cable is connected correctly. If it is, try a different cable.

Problem	Possible Cause	Recommended Action
Printer does not feed paper properly.	Jamming paper.	Remove all paper from the printer and then reload it.
Line spacing is incorrect.	The line spacing or leading selected in your application program is wrong.	Choose a different line spacing or leading setting from your application.
	Auto line feed with carriage return is enabled.	Use the EDS Mode to disable auto line feed with carriage return. See "Switch 4: Auto LF with CR" on page 23.
Lines print over each other.	Auto line feed with carriage return is disabled.	Use the EDS Mode to enable auto line feed with carriage return. See "Switch 4: Auto LF with CR" on page 23.
Incorrect number of lines are printed on the page.	Auto line feed with carriage return is enabled.	Use the EDS Mode to disable auto line feed with carriage return. See "Switch 4: Auto LF with CR" on page 23.
	The line spacing or leading selected by your application program is wrong.	Choose a different line spacing or leading setting from your application.
	Dot adjustment is not correct.	See "Adjusting the dot alignment" on page 42.
Text and graphics are malformed. Print quality is poor.	The ribbon is worn out or "used up."	Replace the ribbon with a new one.
	The print head is damaged.	Return the printer to your dealer for repair.

Problem	Possible Cause	Recommended Action
Forms are smudged. Printing is too dark.	The ribbon is jammed, twisted, or not set correctly between the print head and the print head shield.	Make sure that the ribbon cartridge is installed correctly. See "Removing the protective materials" on page 5.
	Print head shield is damaged or missing.	Return it to your dealer for repair.
Printer case is hot.	The printer's air vents are blocked or obstructed.	Switch off the printer and let it cool. Check the air vents on the bottom of the printer to see if they are blocked. Remove the obstruction if possible. If the problem persists, return the printer to your dealer for repair.
Printer makes excessive noise.	The top cover is removed.	Replace the top cover.
	The printer is vibrating.	Move any objects that are touching the printer.
		Make sure that the printer is on a level steady surface.

Problem	Possible Cause	Recommended Action
Printer prints past the edge of the paper.	Incorrect margin settings are selected by your application program.	Choose different margin settings from your application program.
	The paper guide is not positioned correctly.	Remove the paper and adjust the position of the paper guide. Reload the paper and try printing again.
	The ribbon is jammed, causing the print head to jam.	Make sure that the ribbon cartridge is installed correctly. See "Removing the protective materials" on page 5.
	Paper is jamming, causing the print head to jam.	Remove all paper from the printer and reload it. Try printing again.
Left margin moves to the right during printing.	The paper is not loaded correctly, causing the print head to jam.	Remove all paper from the printer and reload it. Try printing again.
	The ribbon cartridge is not installed correctly, causing the print head to jam.	Make sure that the ribbon cartridge is installed correctly. See "Removing the protective materials" on page 5.
	Inappropriate settings are selected by your application program.	Choose different settings in your application.
	Static electricity caused by interference from nearby electrical devices or by low-level humidity is affecting printer operation.	Make sure that the printer is not too close to any devices with electric motors or that raise the humidity level.

Problem	Possible Cause	Recommended Action
Some characters are printed incorrectly.	The wrong emulation is selected	Check the emulation selection and change it if necessary. See page 22.
	The wrong character table, code page, or international character set is selected.	Use the EDS Mode to select the correct character table, code page, or international character set (page 26).
	Static electricity caused by interference from nearby electrical devices or by low-level humidity is affecting printer operation.	Make sure that the printer is not too close to any devices with electric motors or that raise the humidity level.
	Inappropriate settings are selected by your application program.	Choose different settings in your application.
	Wires are missing from the print head.	Return the printer to your dealer for repair.
Printer behaves erratically. Printing suddenly stops.	The interface cable is connected incorrectly or damaged.	Check to make sure that the printer interface cable is connected correctly. If it is, try a different cable.
	Static electricity caused by interference from nearby electrical devices or by low-level humidity is affecting printer operation.	Make sure that the printer is not too close to any devices with electric motors or that raise the humidity level.

Checking system software settings in MS-DOS

If you are using a parallel cable and cannot print a text file using the MS-DOS PRINT command, you may have a problem with your AUTOEXEC.BAT file. Open the file and look for the following line:

```
MODE LPT1:=COM1 or MODE LPT1:=COM2
```

These lines indicate you are using a serial cable connection, and so you should delete them, save the AUTOEXEC.BAT file, reboot and try printing again.

Of course, if you are having problems printing with the optional serial-to-parallel converter, you should conversely check to make sure that one of the above lines is included in your AUTOEXEC.BAT file. The file must also contain information on parameter settings. For details, see the user's manual that comes with the optional Serial-to-Parallel Interface Converter.

If the above is not the problem or if you make the above changes and still experience problems printing using the MS-DOS PRINT command, refer to your *MS-DOS Users' Guide* or consult your software dealer.

If you are successful in printing using the MS-DOS PRINT command but cannot print from an application, check to see what printer driver is selected in the application. See "Setting up for printing with MS-DOS" on page 34. If this does not help, consult your software dealer.

Appendix B: Specifications

Printing System	Serial Impact Dot-Matrix		
Printing Speed	**Pitch**	**Draft (cps/dpi)**	**LQ (cps/dpi)**
	Pica (10 cpi)	250/120H	83/360H
	Elite (12 cpi)	300/120H	100/360H
	Semi-condensed (15 cpi(S))	375/120H	125/360H
	Semi-condensed (15 cpi (I))	150/240H	125/360H
	Condensed pica (17 cpi)	171/240H	142/360H
	Condensed elite (20 cpi)	200/240H	166/360H
	24 cpi (I)	240/240H	200/360H
	H: half-dot (S): Standard mode only (i): IBM mode only		
Print Direction	Draft:	Uni-directional/ bi-directional logic seeking (selectable)	
	LQ:	Uni-directional/ bi-directional logic seeking (selectable)	
	Bit-Image:	Uni-directional/ bi-directional logic seeking (selectable)	
Print Head	Number of pins:	24	
	Life:	200 million dots/pin (Normal Mode) 100 million dots/pin (Multi-Part Mode)	
Line Spacing	1/6″, 1/8″ 7/60″, 7/72″, n/72″, n/180″, n/216″, n/360″: software		
Character Matrix	**Pitch**	**Draft (cps/dpi)**	**LQ (cps/dpi)**
	Pica (10 cpi)	24×9H	24×31H
	Elite (12 cpi)	24×9H	24×27H
	Semi-condensed (15 cpi(S))	16×7H	16×21H
	Semi-condensed (15 cpi (I))	24×9H	24×16H
	Condensed pica (17 cpi)	24×9H	24×16H
	Condensed elite (20 cpi)	24×9H	24×16H
	24 cpi (I)	24×9H	24×14H
	H: half-dot (S): Standard mode only (i): IBM mode only		
Environment	Operating temperature:	41°F to 95°F (5°C to 35°C)	
	Storage temperature:	-22°F to 149°F (-30°C to 65°C)	
	Operating humidity:	30% to 80% (non-condensing)	
	Storage humidity:	20% to 90% (non-condensing)	

Paper	**Cut-sheet**	
	Paper width:	3″ to 8.3″ / 76.2 to 210 mm
	Paper length:	2.5″ to 11.7″ / 63.5 to 297 mm
	Paper thickness:	0.0028″ to 0.0071″ / 0.07 to 0.18 mm (1-ply)
		0.0028″ to 0.014″ / 0.07 to 0.35 mm (multi-ply)
	Paper weight:	14 to 42 lbs. / 52 to 156 g/m^2 / 45 to 135 kg (1-ply)
		11 to 14 lbs. / 40 to 52 g/m^2 / 34 to 45 kg (multi-ply)
	Copy capability	Normal mode:
		Original + 0-2 copies (Total thickness: Max. 0.25 mm)
		Multi-part mode:
		Original + 3-4 copies (Total thickness: Max. 0.35 mm)
	Pass book	
	Paper width:	4″ to 6″ / 101.6 to 152.4 mm
	Paper length:	5″ to 8″ / 127 to 203.2 mm
	Total paper thickness:	2 mm (max.)
	Number of pages:	14 excluding cover
Emulation	Standard Mode:	EPSON ESC/P (24-pin)
	NEC Graphic Compatible	
	IBM Mode:	Proprinter XL24E
Interfaces	Standard:	Centronics parallel and RS-232 (dual interface)
	Option:	Dual serial interface
Ribbon Type	On-carriage, dedicated	
	Monochrome: Black only	
	P24 (Standard)	
Ribbon Life	P24: 2 million characters (ASCII draft)	
Dimensions and Weight	Width:	16.1″ / 410 mm
	Depth:	12.6″ / 320 mm
	Height:	7.66″ / 194.5 mm
	Weight:	18.94 lbs. / 8.6 kg
Power Supply	220V AC ±10%; 50/60Hz	
Power Consumption	13W during stand-by	
	55W during ASCII draft printing	
Options	SPC-8K Serial-To-Parallel Converter	
	IS-NP192 Serial Interface Unit	
	P24 Refill Ribbon	

Appendix C: Interface Pin Outs

Parallel Interface

Pin	Name	Function
1	STROBE	Goes low for ≥0.5μs when active.
2	DATA0	These signals represent information for the 1st through 8th bit of parallel data, respectively. Each signal is HIGH when data is logical 1, and LOW when logical 0.
3	DATA1	
4	DATA2	
5	DATA3	
6	DATA4	
7	DATA5	
8	DATA6	
9	DATA7	
10	ACK	10μs low to acknowledge receipt of data.
11	BUSY	Printer sets line low when ready to receive data.
12	PAPER	High when paper runs out.
13	SELECT	High when printer is on-line.
14	AFXT	Printer ignores this signal.
15		Not used.
16	SIGNAL GND	Signal ground
17	CHASSIS	Chassis ground (isolated from signal ground)
18	+5V	+5V DC output from printer
19 - 30	GND	Twisted pair ground return
31	RESET	Printer is reset when this signal goes low.
32	ERROR	Low when printing cannot continue due to error.
33	EXT GND	External ground
34 - 35		Not used
36	SELECT IN	Printer ignores this signal

Serial Interface

Pin	Name	Function
1	CHASSIS	Printer chassis ground
2	TXD	Data from printer
3	RXD	Data to printer
4	RTS	Always space
5	CTS	Space when computer is ready to send data. Printer ignores this signal.
6		Not used.
7	GND	Signal ground
8 - 10		Not used.
11	RCH	Printer sets line to space when ready to receive data. Same signal as Pin 20.
12		Not used.
13		Not used. (signal ground)
14 - 19		Not used.
20	DTR	Printer sets line to space when ready to receive data.
21 - 25		Not used.

Appendix D: Character Sets

Standard Italic Character Set

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	⟨NUL⟩			0	@	P	`	p	à	§		0	@	P	`	p
1		⟨DC1⟩	!	1	A	Q	a	q	è	ß	!	1	A	Q	a	q
2		⟨DC2⟩	"	2	B	R	b	r	ù	Æ	"	2	B	R	b	r
3		⟨DC3⟩	#	3	C	S	c	s	ò	æ	#	3	C	S	c	s
4		⟨DC4⟩	$	4	D	T	d	t	ì	Ø	$	4	D	T	d	t
5			%	5	E	U	e	u	°	ø	%	5	E	U	e	u
6			&	6	F	V	f	v	£	¨	&	6	F	V	f	v
7	⟨BEL⟩		'	7	G	W	g	w	¡	Ä	'	7	G	W	g	w
8	⟨BS ⟩	⟨CAN⟩	(	8	H	X	h	x	¿	Ö	(	8	H	X	h	x
9	⟨HT⟩	⟨EM⟩	)	9	I	Y	i	y	Ñ	Ü	)	9	I	Y	i	y
A	⟨LF⟩		*	:	J	Z	j	z	ñ	ä	*	:	J	Z	j	z
B	⟨VT⟩	⟨ESC⟩	+	;	K	[	k	{	¤	ö	+	;	K	[	k	{
C	⟨FF⟩	⟨FS⟩	,	<	L	\	l	¦	₧	ü	,	<	L	\	l	¦
D	⟨CR⟩		–	=	M	]	m	}	Á	É	–	=	M	]	m	}
E	⟨SO⟩		.	>	N	^	n	~	å	é	.	>	N	^	n	~
F	⟨SI⟩		/	?	O	_	o	⟨DEL⟩	ç	¥	/	?	O	_	o	

International Character Set
The character codes shown in the table are hexadecimal.

Conutry	23	24	40	58	5A	5B	5C	5D	5E	60	7B	7C	7D	7E
U.S.A.	#	$	@	X	Z	[	\	]	^	`	{	¦	}	~
FRANCE	#	$	à	X	Z	°	ç	§	^	`	é	ù	è	¨
GERMANY	#	$	§	X	Z	Ä	Ö	Ü	^	`	ä	ö	ü	ß
ENGLAND	£	$	@	X	Z	[	\	]	^	`	{	¦	}	~
DENMARK 1	#	$	@	X	Z	Æ	Ø	Å	^	`	æ	ø	å	~
SWEDEN	#	¤	É	X	Z	Ä	Ö	Å	Ü	é	ä	ö	å	ü
ITALY	#	$	@	X	Z	°	\	é	^	ù	à	ò	è	ì
SPAIN 1	₧	$	@	X	Z	¡	Ñ	¿	^	´	¨	ñ	}	~
JAPAN	#	$	@	X	Z	[	¥	]	^	`	{	¦	}	~
NORWAY	#	¤	É	X	Z	Æ	Ø	Å	Ü	é	æ	ø	å	ü
DENMARK 2	#	$	É	X	Z	Æ	Ø	Å	Ü	é	æ	ø	å	ü
SPAIN 2	#	$	á	X	Z	¡	Ñ	¿	é	´	í	ñ	ó	ú
LATIN AMERICA	#	$	á	X	Z	¡	Ñ	¿	é	ü	í	ñ	ó	ú
KOREA	#	$	@	X	Z	[	₩	]	^	`	{	¦	}	~
IRELAND	#	$	@	Ú	،	[	\	]	^	`	Á	É	ó	~
LEGAL	#	$	§	X	Z	°	'	"	¶	`	©	®	†	™

IBM Character Set #2
Code Page #437 (IBM-PC)

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	<NUL>			0	@	P	`	p	Ç	É	á	░	└	╨	α	≡
1		<DC1>	!	1	A	Q	a	q	ü	æ	í	▒	┴	╤	β	±
2		<DC2>	"	2	B	R	b	r	é	Æ	ó	▓	┬	╥	Γ	≥
3	♥	<DC3>	#	3	C	S	c	s	â	ô	ú	│	├	╙	π	≤
4	♦	<DC4>	$	4	D	T	d	t	ä	ö	ñ	┤	─	╘	Σ	⌠
5	♣	§	%	5	E	U	e	u	à	ò	Ñ	╡	┼	╒	σ	⌡
6	♠		&	6	F	V	f	v	å	û	ª	╢	╞	╓	µ	÷
7	<BEL>		'	7	G	W	g	w	ç	ù	º	╖	╟	╫	τ	≈
8	<BS > <CAN>		(	8	H	X	h	x	ê	ÿ	¿	╕	╚	╪	Φ	°
9	<HT> <EM>		)	9	I	Y	i	y	ë	Ö	⌐	╣	╔	┘	Θ	∙
A	<LF>		*	:	J	Z	j	z	è	Ü	¬	║	╩	┌	Ω	·
B	<VT> <ESC>		+	;	K	[	k	{	ï	¢	½	╗	╦	█	δ	√
C	<FF> <FS>		,	<	L	\	l	¦	î	£	¼	╝	╠	█	∞	ⁿ
D	<CR>		−	=	M	]	m	}	ì	¥	¡	╜	=	█	ø	²
E	<SO>		.	>	N	^	n	~	Ä	₧	«	╛	╬	█	ε	■
F	<SI>		/	?	O	_	o	<DEL>	Å	ƒ	»	┐	╧	■	∩	

IBM Character Set #1
Other characters are the same as those for Character Set #2.

	0	1
0	<NUL>	
1		<DC1>
2		<DC2>
3		<DC3>
4		<DC4>
5		
6		<SYN>
7	<BEL>	
8	<BS >	<CAN>
9	<HT >	<EM >
A	<LF >	
B	<VT >	<ESC>
C	<FF >	<FS >
D	<CR >	
E	<SO >	
F	<SI >	

	8	9
0	<NUL>	
1		<DC1>
2		<DC2>
3		<DC3>
4		<DC4>
5		
6		<SYN>
7	<BEL>	
8	<BS >	<CAN>
9	<HT >	<EM >
A	<LF >	
B	<VT >	<ESC>
C	<FF >	<FS >
D	<CR >	
E	<SO >	
F	<SI >	

IBM Special Character Set

The following characters can be printed using the <ESC> ^ command.

	0	1
0	0	►
1	☺	◄
2	☻	↕
3	♥	‼
4	♦	¶
5	♣	§
6	♠	▬
7	•	↨
8	◘	↑
9	○	↓
A	◙	→
B	♂	←
C	♀	∟
D	♪	↔
E	♫	▲
F	☼	▼

Code Page #850
Multi-lingual

Other characters are the same as those for Code Page #437.

	8	9	A	B	C	D	E	F
0	Ç	É	á	░	L	ð	Ó	-
1	ü	æ	í	░	⊥	Ð	β	±
2	é	Æ	ó	▓	T	Ê	Ô	=
3	â	ô	ú	|	├	Ë	Ò	¾
4	ä	ö	ñ	┤	-	È	Õ	¶
5	à	ò	Ñ	Á	+	ı	õ	§
6	å	û	ª	Â	ã	Í	µ	÷
7	ç	ù	º	À	Ã	Î	þ	¸
8	ê	ÿ	¿	©	L	Ï	Þ	°
9	ë	Ö	®	╣	╔	┘	Ú	¨
A	è	Ü	¬	║	╩	┌	Û	·
B	ï	ø	½	╗	╦	█	Ù	¹
C	î	£	¼	╝	╠	▄	ý	³
D	ì	Ø	¡	¢	=	¦	Ý	²
E	Ä	×	«	¥	╬	Ì	¯	■
F	Å	ƒ	»	┐		¤	■	´

Code Page #860
Portuguese

Other characters are the same as those for Code Page #437.

	8	9	A	B	C	D	E	F
0	Ç	É	á	░	L	╨	α	≡
1	ü	À	í	░	⊥	╤	β	±
2	é	È	ó	▓	T	╥	Γ	≥
3	â	ô	ú	|	├	╙	π	≤
4	ã	õ	ñ	┤	-	╘	Σ	⌠
5	à	ò	Ñ	╡	+	╒	σ	⌡
6	Á	Ú	ª	╢	╞	╓	µ	÷
7	ç	ù	º	╖	╟	╫	τ	≈
8	ê	Ì	¿	╕	╚	╪	Φ	°
9	Ê	Õ	Ò	╣	╔	┘	θ	•
A	è	Ü	¬	║	╩	┌	Ω	·
B	Í	¢	½	╗	╦	█	δ	√
C	Ô	£	¼	╝	╠	▄	∞	ⁿ
D	ì	Ù	¡	╜	=	▌	ø	²
E	Ã	₧	«	╛	╬	▐	ε	■
F	Â	Ó	»	┐	╧	■	∩	

Code Page #861
Icelandic

Other characters are the same as those for Code Page #437.

	8	9	A	B	C	D	E	F
0	Ç	É	á	░	L	╨	α	≡
1	ü	æ	í	░	⊥	╤	β	±
2	é	Æ	ó	▓	T	╥	Γ	≥
3	â	ô	ú	|	├	╙	π	≤
4	ä	ö	Á	┤	-	╘	Σ	⌠
5	à	þ	Í	╡	+	╒	σ	⌡
6	å	û	Ó	╢	╞	╓	µ	÷
7	ç	Ý	Ú	╖	╟	╫	τ	≈
8	ê	ý	¿	╕	╚	╪	Φ	°
9	ë	Ö	⌐	╣	╔	┘	θ	•
A	è	Ü	¬	║	╩	┌	Ω	·
B	Ð	ø	½	╗	╦	█	δ	√
C	ð	£	¼	╝	╠	▄	∞	ⁿ
D	Þ	Ø	¡	╜	=	▌	ø	²
E	Ä	₧	«	╛	╬	▐	ε	■
F	Å	ƒ	»	┐	╧	■	∩	

Code Page #863
Canadian French

Other characters are the same as those for Code Page #437.

	8	9	A	B	C	D	E	F
0	Ç	É	¦	▓	└	╨	α	≡
1	ü	È	´	▒	┴	╤	β	±
2	é	Ê	ó	▓	┬	╥	Γ	≥
3	â	ô	ú	│	├	╙	π	≤
4	Â	Ë	¨	┤	─	╘	Σ	⌠
5	à	Ï	¸	╡	┼	╒	σ	⌡
6	¶	û	³	╢	╞	╓	µ	÷
7	ç	ù	‾	╖	╟	╫	τ	≈
8	ê	¤	Î	╕	╚	╪	Φ	°
9	ë	Ô	⌐	╣	╔	┘	θ	∙
A	è	Ü	¬	║	╩	┌	Ω	·
B	ï	¢	½	╗	╦	█	δ	√
C	î	£	¼	╝	╠	▄	∞	ⁿ
D	‗	Ù	¾	╜	═	▌	ø	²
E	À	Û	«	╛	╬	▐	∈	■
F	§	ƒ	»	┐	╧	▀	∩	

Code Page #865
Nordic

Other characters are the same as those for Code Page #437.

	8	9	A	B	C	D	E	F
0	Ç	É	á	▓	└	╨	α	≡
1	ü	æ	í	▒	┴	╤	β	±
2	é	Æ	ó	▓	┬	╥	Γ	≥
3	â	ô	ú	│	├	╙	π	≤
4	ä	ö	ñ	┤	─	╘	Σ	⌠
5	à	ò	Ñ	╡	┼	╒	σ	⌡
6	å	û	ª	╢	╞	╓	µ	÷
7	ç	ù	º	╖	╟	╫	τ	≈
8	ê	ÿ	¿	╕	╚	╪	Φ	°
9	ë	Ö	⌐	╣	╔	┘	θ	∙
A	è	Ü	¬	║	╩	┌	Ω	·
B	ï	ø	½	╗	╦	█	δ	√
C	î	£	¼	╝	╠	▄	∞	ⁿ
D	ì	Ø	¡	╜	═	▌	ø	²
E	Ä	₧	«	╛	╬	▐	∈	■
F	Å	ƒ	¤	┐	╧	▀	∩	

Code Page #866
Russian

Other characters are the same as those for Code Page #437.

	8	9	A	B	C	D	E	F
0	А	Р	а	▓	└	╨	р	Ё
1	Б	С	б	▒	┴	╤	с	ё
2	В	Т	в	▓	┬	╥	т	Є
3	Г	У	г	│	├	╙	у	є
4	Д	Ф	д	┤	─	╘	ф	Ї
5	Е	Х	е	╡	┼	╒	х	ї
6	Ж	Ц	ж	╢	╞	╓	ц	Ў
7	З	Ч	з	╖	╟	╫	ч	ў
8	И	Ш	и	╕	╚	╪	ш	°
9	Й	Щ	й	╣	╔	┘	щ	∙
A	К	Ъ	к	║	╩	┌	ъ	·
B	Л	Ы	л	╗	╦	█	ы	√
C	М	Ь	м	╝	╠	▄	ь	№
D	Н	Э	н	╜	═	▌	э	¤
E	О	Ю	о	╛	╬	▐	ю	■
F	П	Я	п	┐	╧	▀	я	

Code Page #3840
IBM-Russian

Other characters are the same as those for Code Page #437.

	8	9	A	B	C	D	E	F
0	А	Р	а	▓	└	╨	р	≡
1	Б	С	б	▒	┴	╤	с	±
2	В	Т	в	▓	┬	╥	т	≥
3	Г	У	г	│	├	╙	у	≤
4	Д	Ф	д	┤	─	╘	ф	⌠
5	Е	Х	е	╡	┼	╒	х	⌡
6	Ж	Ц	ж	╢	╞	╓	ц	÷
7	З	Ч	з	╖	╟	╫	ч	≈
8	И	Ш	и	╕	╚	╪	ш	°
9	Й	Щ	й	╣	╔	┘	щ	∙
A	К	Ъ	к	║	╩	┌	ъ	·
B	Л	Ы	л	╗	╦	█	ы	√
C	М	Ь	м	╝	╠	▄	ь	ⁿ
D	Н	Э	н	╜	═	▌	э	²
E	О	Ю	о	╛	╬	▐	ю	■
F	П	Я	п	┐	╧	▀	я	

Code Page #3841
Gost-Russian
Other characters are the same as those for Code Page #437.

	8	9	A	B	C	D	E	F
0	F	Г	0	ю	п	Ю	П
1	э	Э	!	1	а	я	А	Я
2	ё	Ё	"	2	б	р	Б	Р
3	i	I	#	3	ц	с	Ц	С
4	ï	Ï	¤	4	д	т	Д	Т
5	j	J	%	5	е	у	Е	У
6	к	К	&	6	ф	ж	Ф	Ж
7	ө	Ѳ	'	7	г	в	Г	В
8	ў	Ў	(	8	х	ь	Х	Ь
9	ү	Ү	)	9	и	ы	И	Ы
A	х	Х	*	:	й	з	Й	З
B	ң	Ң	+	;	к	ш	К	Ш
C	ҷ	Ҷ	,	<	л	э	Л	Э
D	џ	Ҵ	–	=	м	щ	М	Щ
E	є	Є	.	>	н	ч	Н	Ч
F	£	Ѣ	/	?	о	ъ	O	Ø

Code Page #3843
Polish
Other characters are the same as those for Code Page #437.

	8	9	A	B	C	D	E	F
0	Ç	Ę	Ź	▒	└	╨	α	≡
1	ü	ę	Ż		┴	╤	β	±
2	é	ł	ó	▓	┬	╥	Γ	≥
3	â	ô	Ó	│	├	╙	π	≤
4	ä	ö	ń	┤	─	╘	Σ	⌠
5	à	Ć	Ń	╡	┼	╞	σ	⌡
6	ą	û	ź	╢	╞	╟	µ	÷
7	ç	ù	ż	╖	╟	╫	τ	≈
8	ê	Ś	§	╕	╚	╪	Φ	°
9	ë	Ö	⌐	╣	╔	┘	θ	•
A	è	Ü	¬	║	╩	┌	Ω	·
B	ï	zł	½	╗	╦	█	δ	√
C	î	Ł	¼	╝	╠	▄	∞	ⁿ
D	ć	¥	¡	╜	=	▌	ø	²
E	Ä	ś	«	╛	╬	▐	∈	■
F	Ą	ƒ	»	┐	┴	▀	∩	

Code Page #3844
CS2
Other characters are the same as those for Code Page #437.

	8	9	A	B	C	D	E	F
0	Č	É	á	▒	└	╨	α	≡
1	ü	ž	í		┴	╤	β	±
2	é	Ž	ó	▓	┬	╥	Γ	≥
3	ď	ô	ú	│	├	╙	π	≤
4	ä	ö	ň	┤	─	╘	Σ	⌠
5	Ď	ó	Ñ	╡	┼	╞	σ	⌡
6	T	ů	Ů	╢	╞	╟	µ	÷
7	č	Ú	Ô	╖	╟	╫	τ	≈
8	ě	ý	š	╕	╚	╪	Φ	°
9	Ě	Ö	ř	╣	╔	┘	θ	•
A	Ł	Ü	ŕ	║	╩	┌	Ω	·
B	Í	Š	Ř	╗	╦	█	δ	√
C	ĺ	Ľ	¼	╝	╠	▄	∞	ⁿ
D	í	Ý	§	╜	=	▌	ø	²
E	Ä	Ř	«	╛	╬	▐	∈	■
F	Á	ť	»	┐	┴	▀	∩	

Code Page #3845
Hungarian
Other characters are the same as those for Code Page #437.

	8	9	A	B	C	D	E	F
0	Ç	É	á	▒	└	╨	α	≡
1	ü	æ	í		┴	╤	β	±
2	é	Æ	ó	▓	┬	╥	Γ	≥
3	â	ő	ú	│	├	╙	π	≤
4	ä	ö	ñ	┤	─	╘	Σ	⌠
5	à	ó	Ñ	╡	┼	╞	σ	⌡
6	å	ű	ª	╢	╞	╟	µ	÷
7	ç	ű	ő	╖	╟	╫	τ	≈
8	ê	Ű	¿	╕	╚	╪	Φ	°
9	ë	Ö	⌐	╣	╔	┘	θ	•
A	è	Ü	¬	║	╩	┌	Ω	·
B	ï	¢	½	╗	╦	█	δ	√
C	î	£	¼	╝	╠	▄	∞	ⁿ
D	Í	¥	¡	╜	=	▌	ø	²
E	Ä	₧	«	╛	╬	▐	∈	■
F	Á	ƒ	»	┐	┴	▀	∩	

Code Page #3846
Turkish

Other characters are the same as those for Code Page #437.

	8	9	A	B	C	D	E	F
0	Ç	É	á	▒	└	╨	α	≡
1	ü	æ	í	▒	┴	╤	β	±
2	é	Æ	ó	▓	┬	╥	Γ	≥
3	â	ô	ú	│	├	╙	π	≤
4	ä	ö	ñ	┤	─	╘	Σ	⌠
5	à	ò	Ñ	╡	┼	╞	σ	⌡
6	å	û	Ğ	╢	╟	╫	µ	÷
7	ç	ù	ğ	╖	╟	╪	τ	≈
8	ê	İ	Ï	╕	╚	╦	Φ	°
9	ë	ö	⌐	╣	╔	╩	Θ	•
A	è	Ü	¬	║	╩	╠	Ω	·
B	ï	¢	½	╗	╦	█	δ	√
C	î	£	¼	╝	╠	▄	∞	ⁿ
D	ı	¥	¡	╜	═	▌	ø	²
E	Ä	Ş	«	╛	╪	▐	∈	■
F	Å	ş	»	┐	┴	■	∩	

Code Page #3847
Brazil-ABNT

Other characters are the same as those for Code Page #437.

	8	9	A	B	C	D	E	F
0			°	À	Ð	à	đ	
1		¡	±	Á	Ñ	á	ñ	
2		¢	²	Â	Ò	â	ò	
3		£	³	Ã	Ó	ã	ó	
4		¤	´	Ä	Ô	ä	ô	
5		¥	µ	Å	Õ	å	õ	
6		¦	¶	Æ	Ö	æ	ö	
7		§	·	Ç		ç		
8		¨	,	È	Ø	è	ø	
9		©	¹	É	Ù	é	ù	
A		ª	º	Ê	Ú	ê	ú	
B		«	»	Ë	Û	ë	û	
C		¬	¼	Ì	Ü	ì	ü	
D			½	Í	Ý	í	ý	
E		®	¾	Î	Þ	î	þ	
F		¯	¿	Ï	ß	ï		

Code Page #3848
Brazil-ABICOMP

The other characters are the same as in code page #437.

	8	9	A	B	C	D	E	F
0			Ò	¡	ò			
1			À	ó	à	ó		
2			Á	ô	á	ô		
3			Â	õ	â	õ		
4			Ã	ö	ã	ö		
5			Ä	Æ	ä	æ		
6			Ç	ù	ç	ù		
7			È	ú	è	ú		
8			É	û	é	û		
9			Ê	ü	ê	ü		
A			Ë	ÿ	ë	ý		
B			Ì		ì	ß		
C			Í	£	í	ª		
D			Î	¦	î	º		
E			Ï	§	ï	¿		
F			Ñ	°	ñ	±		

Code Page #852
Latin-2

Other characters are the same as those for Code Page #437.

	8	9	A	B	C	D	E	F
0	Ç	É	á	▒	└	đ	Ó	-
1	ü	Ĺ	í	▒	┴	Đ	ß	"
2	é	Í	ó	▓	┬	Ď	Ô	˛
3	â	ô	ú	│	├	Ë	Ň	ˇ
4	ä	ö	Ą	┤	─	ď	ń	˘
5	ů	Ľ	ą	Á	┼	Ň	ň	§
6	ć	ľ	Ž	Â	Ă	ľ	Š	÷
7	ç	Ś	ž	Ě	ă	î	š	¸
8	ł	ś	Ę	Ş	╚	ě	Ř	°
9	ë	Ö	ę	╣	╔	┘	Ú	¨
A	Ő	Ü		║	╩	┌	ŕ	˙
B	ő	Ť	ź	╗	╦	█	Ű	ű
C	î	ť	Č	╝	╠	▄	ý	Ř
D	Ź	Ł	ş	Ż	═	Ţ	Ý	ř
E	Ä	×	«	ż	╪	Ů	ţ	■
F	Ć	č	»	┐	¤	■	´	

Code Page #1001
Arabic

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	⟨NUL⟩			ع	@	♭	`	ِ	ع	٨	ً	٠	L	╨	ﻼ	ﺊ
1		⟨DC1⟩	!	ﺍ	ﺛ	♭	ﺱ	ﺕ	ﺭ	٩		ﺹ	⊥	₸	ﻻ	ﺝ
2		⟨DC2⟩	"	ﺃ	ﺓ	ﻉ	ﻝ	ﺙ	ﻍ	ﺽ	ﺋ	ﺻ	T	π	ﻷ	ﻑ
3	♥	⟨DC3⟩	#	ﺉ	ﺩ	ﻋ	ﻱ	ﺵ	ﺥ	ﺗ	ﺙ	ﻕ	╞	╩	·	ﺡ
4	♦	⟨DC4⟩	$	ﺇ	ﺭ	ﻍ	ﻳ	ﻝ	ﻡ	ﺛ	ﻙ	╡	─	╘	:	٠
5	♣	§	%	ﺅ	ﺯ	ﺯ	ﻳ	ﻉ	ﻁ	ﺟ	⊥	╢	╫	F	ﻉ	„
6	♠		&	ﺁ	ﺭ	ﻭ	ﻝ	ﺡ	ﻉ	ﻡ	ﻙ	╟	╟	π	ٍ	◦
7	⟨BEL⟩		'	ﺏ	ﺱ	ﺯ	ﻡ	ﺡ	—	ﺕ	ﻡ	π	╢	╫	ٔ	'
8	⟨BS⟩	⟨CAN⟩	(	ﺕ	ﺵ	ﻕ	ﻥ	ﺡ	٠	ﺕ	ﻅ	ﻕ	╚	╪	٘	ٮ
9	⟨HT⟩	⟨EM⟩	)	ﺙ	ﺷ	ﺩ	ﻥ	ﺥ	١	ﺝ	ﺩ	╣	╓	┘	؍	٭
A	⟨LF⟩		*	:	ﺽ	ﻑ	ﺩ	ﺥ	٢	ﺭ	ﺭ	║	╩	┌	ﺝ	ﻝ
B	⟨VT⟩	⟨ESC⟩	+	;	ﺽ	[	ﺩ	{	٣	ﺭ	ﺭ	╗	╦	ﺽ	ﺭ	,
C	⟨FF⟩	⟨FS⟩	,	<	ﺽ	\	ﻁ	}	٤	ﺝ	ﺓ	╝	╠	ﺭ	L	ﺡ
D	⟨CR⟩		—	=	ﺽ	]	ﻅ	~	٥	ﺝ	ﻭ	╜	═	ﺽ	ﺝ	ٮ
E	⟨SO⟩		.	>	ﺽ	^	ﻉ	—	٦	ﻁ	ﺽ	╛	╫	ﻻ	ﺝ	ٮ
F	⟨SI⟩		/	ﺽ	ﺽ	_	ﻉ		٧	ﻁ	ﺱ	┐	·	٠	ﺡ	ٮ

Code Page #737
Greek
Other characters are the same as those for Code Page #437.

	8	9	A	B	C	D	E	F
0	A	P	ι	▒	└	╨	ω	Ω
1	B	Σ	κ	▒	┴	╤	ά	±
2	Γ	T	λ	▓	┬	╥	έ	≥
3	Δ	Y	μ	│	├	╙	ή	≤
4	E	Φ	ν	┤	─	╘	ϊ	Ϊ
5	Z	X	ξ	╡	┼	╒	ί	Ϋ
6	H	Ψ	ο	╢	╞	π	ό	÷
7	Θ	Ω	π	╖	╫	╪	ύ	≈
8	I	α	ρ	╕	╙	╧	ϋ	°
9	K	β	σ	╣	╓	┘	ώ	•
A	Λ	γ	ς	║	╩	┌	Ά	·
B	M	δ	τ	╗	╦	█	Έ	√
C	N	ε	υ	╝	╠	▄	Ή	ⁿ
D	Ξ	ζ	φ	╜	═	▌	Ί	²
E	O	η	χ	╛	╬	▐	Ό	■
F	Π	θ	ψ	┐	╧	▀	Ύ	

Code Page #851
Greek
Other characters are the same as those for Code Page #437.

	8	9	A	B	C	D	E	F
0	Ç	I	ϋ	░	└	T	ξ	─
1	ü		ΐ	▒	┴	Y	η	±
2	é	Ό	ό	▓	┬	Φ	θ	υ
3	â	ô	ύ	│	├	X	ι	φ
4	ä	ö	A	┤	─	Ψ	κ	χ
5	à	Ύ	B	K	┼	Ω	λ	§
6	Ά	û	Γ	Λ	Π	α	μ	ψ
7	ç	ù	Δ	M	P	β	ν	΅
8	ê	Ώ	E	N	╚	γ	ξ	°
9	ë	ö	Z	╣	╔	┘	ο	¨
A	è	Ü	H	║	╩	┌	π	ω
B	ï	ά	½	╗	╦	█	ρ	ΰ
C	î	£	Θ	╝	╠	▄	σ	ϋ
D	Ε	έ	I	Ξ	═	δ	ς	ώ
E	Ä	ή	«	O	╬	ε	τ	■
F	Ή	ί	»	┐		Σ	▀	΄

Code Page #869
Greek
Other characters are the same as those for Code Page #437.

	8	9	A	B	C	D	E	F
0		Ι	ϋ	▒	└	Τ	ζ	─
1		Ϊ	ΐ	▒	┴	Υ	η	±
2		Ό	ό	▒	┬	Φ	θ	υ
3			ύ	│	├	Χ	ι	φ
4			Α	┤	─	Ψ	κ	χ
5		Υ	Β	Κ	┼	Ω	λ	§
6	Ά	Ϋ	Γ	Λ	Π	α	μ	ψ
7		©	Δ	Μ	Ρ	β	ν	¨
8	·	Ώ	Ε	Ν	╚	γ	ξ	°
9	¬	²	Ζ	╣	╔	⌐	ο	¨
A	¦	³	Η	║	╩	Γ	π	ω
B	‘	ά	½	╗	╦	█	ρ	ϋ
C	’	£	Θ	╝	╠	■	σ	ϋ
D	Έ	έ	Ι	Ξ	=	δ	ς	ώ
E	―	ή	«	Ο	╬	ε	τ	■
F	Ή	ί	»	┐	Σ	■	΄	

Code Page #928
Greek
Other characters are the same as those for Code Page #437.

	8	9	A	B	C	D	E	F
0			°	ϊ	Π	ϋ	π	
1			‘	±	Α	Ρ	α	ϱ
2			’	²	Β		β	ς
3			£	³	Γ	Σ	γ	σ
4			΄	΄	Δ	Τ	δ	τ
5				΅	Ε	Υ	ε	υ
6			¦	Ά	Ζ	Φ	ζ	φ
7			§	·	Η	Χ	η	χ
8			¨	Έ	Θ	Ψ	θ	ψ
9			©	Ή	Ι	Ω	ι	ω
A				Ί	Κ	Ϊ	κ	ϊ
B			«	»	Λ	Ϋ	λ	ϋ
C			¬	Ό	Μ	ά	μ	ό
D				½	Ν	έ	ν	ύ
E				Ύ	Ξ	ή	ξ	ώ
F			―	Ώ	Ο	ί	ο	

Code Page #2001
Lithuanian-KBL
Other characters are the same as those for Code Page #437.

	8	9	A	B	C	D	E	F
0	А	Р	а	▒	└	╨	р	Ę
1	Б	С	б	▒	┴	╤	с	ę
2	В	Т	в	▓	┬	╥	т	Ė
3	Г	У	г	│	├	╙	у	ė
4	Д	Ф	д	┤	─	╘	ф	Į
5	Е	Х	е	╡	┼	╒	х	į
6	Ж	Ц	ж	╢	╞	╓	ц	Š
7	З	Ч	з	╖	╟	╫	ч	š
8	И	Ш	и	╕	╚	╪	ш	Ų
9	Й	Щ	й	╣	╔	┘	щ	ų
A	К	Ъ	к	║	╩	┌	ъ	Ū
B	Л	Ы	л	╗	╦	█	ы	ū
C	М	Ь	м	╝	╠	Ą	ь	ž
D	Н	Э	н	╜	=	ą	э	Ž
E	О	Ю	о	╛	╬	Č	ю	■
F	П	Я	п	┐	╧	č	я	

Code Page #772
Lithuanian
Other characters are the same as those for Code Page #437.

	8	9	A	B	C	D	E	F
0	А	Р	а	▒	└	ą	р	Ė
1	Б	С	б	▒	┴	č	с	ė
2	В	Т	в	▓	┬	ę	т	≥
3	Г	У	г	│	├	ė	у	≤
4	Д	Ф	д	┤	─	į	ф	„
5	Е	Х	е	Ą	┼	š	х	“
6	Ж	Ц	ж	Č	Ų	ų	ц	÷
7	З	Ч	з	Ę	Ū	ū	ч	≈
8	И	Ш	и	Ė	╚	ž	ш	°
9	Й	Щ	й	╣	╔	┘	щ	•
A	К	Ъ	к	║	╩	┌	ъ	·
B	Л	Ы	л	╗	╦	█	ы	√
C	М	Ь	м	╝	╠	■	ь	ⁿ
D	Н	Э	н	Į	=	▌	э	²
E	О	Ю	о	Š	╬	▐	ю	■
F	П	Я	п	┐	Ž	▀	я	

Code Page #774
Lithuanian
Other characters are the same as those for Code Page #437.

	8	9	A	B	C	D	E	F
0	Ç	Ę	á	▒	└	ą	α	≡
1	ü	æ	í	▒	┴	č	β	±
2	é	Æ	ó	▓	┬	ę	Γ	≥
3	â	ô	ú	│	├	ė	π	≤
4	ä	ö	ñ	┤	─	į	Σ	„
5	à	ò	Ñ	Ą	┼	š	σ	"
6	å	û	ª	Č	Ų	ų	µ	÷
7	ç	ù	º	Ę	Ū	ū	τ	≈
8	ê	ÿ	¿	Ė	╚	ž	Φ	°
9	ë	Ö	⌐	╣	╔	┘	θ	∙
A	è	Ü	¬	║	╩	┌	Ω	·
B	ï	¢	½	╗	╦	█	δ	√
C	î	£	¼	╝	╠	▄	∞	ⁿ
D	ì	¥	¡	Į	═	▌	ø	²
E	Ä	₧	«	Š	╬	▐	∈	■
F	Å	ƒ	»	┐	Ž	▀	∩	

Code Page #3001
Estonian1
Other characters are the same as those for Code Page #437.

	8	9	A	B	C	D	E	F
0	Ç	Ę	á	▒	└	š	ó	–
1	ü	æ	í	▒	┴	Š	β	±
2	é	Æ	ó	▓	┬	Ŗ	Ö	=
3	â	ô	ú	│	├	Ŗ	ò	¾
4	ä	ŏ	ñ	┤	─	Ŗ	õ	¶
5	à	ò	Ñ	Á	┼	ı	Õ	§
6	å	û	ª	Å	ã	ĺ	µ	÷
7	ç	ù	º	Á	Ā	î	ž	¸
8	ê	ÿ	¿	©	╚	Ī	ž	°
9	ë	Ö	®	╣	╔	┘	ú	¨
A	è	Ü	¬	║	╩	┌	ü	·
B	ï	ø	½	╗	╦	█	û	¹
C	î	£	¼	╝	╠	▄	ý	³
D	ì	Ø	¡	¢	=	┆	Ý	²
E	Ä	×	«	¥	╬	ı	‾	■
F	Å	ƒ	»	┐	¤	■	´	

Code Page #3002
Estonian2
Other characters are the same as those for Code Page #437.

	8	9	A	B	C	D	E	F
0			•	À	Š	à	š
1		¡	±	Á	Ñ	á	ñ
2		¢	²	Â	Ò	â	ò
3		£	³	Ã	Ó	ã	ó
4		¤	´	Ä	Ô	ä	ô
5		¥	µ	Å	Õ	å	õ
6		¦	¶	Æ	Ö	æ	ö
7		§	·	Ç	×	ç	÷
8		¨	¸	È	Ø	è	ø
9		©	¹	É	Ù	é	ù
A		ª	º	Ê	Ú	ê	ú
B		«	»	Ë	Û	ë	û
C		¬	¼	Ì	Ü	ì	ü
D		½	Í	Ý	í	ý
E		®	¾	Î	Ž	î	ž
F		¯	¿	Ï	ß	ï	ÿ

Code Page #3011
Latvian1
Other characters are the same as those for Code Page #437.

	8	9	A	B	C	D	E	F
0	Ç	Ę	á	▒	└	Š	α	Ē
1	ü	æ	í	▒	┴	╤	β	ē
2	é	Æ	ó	▓	┬	č	Γ	Ģ
3	â	ô	ú	│	├	Č	π	ķ
4	ä	ö	ñ	┤	─	╘	Σ	Ķ
5	à	ò	Ñ	Ā	┼	╒	σ	ļ
6	å	û	ª	╢	ā	ģ	µ	Ļ
7	ç	ù	º	╖	╟	Ī	τ	ž
8	ê	ÿ	¿	╕	╚	ī	Φ	Ž
9	ë	Ö	⌐	╣	╔	┘	θ	∙
A	è	Ü	¬	║	╩	┌	Ω	·
B	ï	¢	½	╗	╦	█	δ	√
C	î	£	¼	╝	╠	▄	∞	Ņ
D	ì	¥	¡	╜	=	ū	ø	š
E	Ä	₧	«	╛	╬	Ū	∈	■
F	Å	ƒ	»	┐	±	■	∩	

Code Page #3012
Latvian2
Other characters are the same as those for Code Page #437.

	8	9	A	B	C	D	E	F
0	А	Р	а	▒	└	š	р	Ē
1	Б	С	б	▒	┴	╤	с	ē
2	В	Т	в	▓	┬	č	т	Ģ
3	Г	У	г	│	├	č	у	ķ
4	Д	Ф	д	┤	─	Ŀ	ф	Ķ
5	Е	Х	е	Ā	┼	₣	х	ļ
6	Ж	Ц	ж	╢	ā	ģ	ц	Ļ
7	З	Ч	з	ŋ	╟	Ī	ч	ž
8	И	Ш	и	┐	╚	ī	ш	Ž
9	Й	Щ	й	╣	╔	┘	щ	•
A	К	Ъ	к	║	╩	┌	ъ	·
B	Л	Ы	л	╗	╦	█	ы	√
C	М	Ь	м	╝	╠	▄	ь	Ņ
D	Н	Э	н	Õ	=	▀	э	š
E	О	Ю	о	┘	╬	Ū	ю	■
F	П	Я	п	┐	±	■	я	

Code Page #3021
Bulgarian
Other characters are the same as those for Code Page #437.

	8	9	A	B	C	D	E	F
0	А	Р	а	р	└	▒	α	≡
1	Б	С	б	с	┴	▒	β	±
2	В	Т	в	т	┬	▓	Γ	≥
3	Г	У	г	у	├	│	π	≤
4	Д	Ф	д	ф	─	┤	Σ	⌠
5	Е	Х	е	х	┼	℞	σ	⌡
6	Ж	Ц	ж	ц	╣	§	μ	÷
7	З	Ч	з	ч	║	╖	τ	≈
8	И	Ш	и	ш	╚	╜	Φ	°
9	Й	Щ	й	щ	╔	┘	θ	•
A	К	Ъ	к	ъ	╩	┌	Ω	·
B	Л	Ы	л	ы	╦	╥	δ	√
C	М	Ь	м	ь	╠	╟	∞	ⁿ
D	Н	Э	н	э	=	█	ø	²
E	О	Ю	о	ю	╪	▌	∈	■
F	П	Я	п	я	╜	■	∩	

Code Page #3031
Hebrew
Other characters are the same as those for Code Page #437.

	8	9	A	B	C	D	E	F
0	א	ג	á	▒	└	╨	α	≡
1	ב	ס	í	▒	┴	╤	β	±
2	ל	ע	ó	▓	┬	π	Γ	≥
3	ד	ף	ú	│	├	╙	π	≤
4	ה	פ	ñ	┤	─	╘	Σ	⌠
5	ו	ץ	Ñ	╡	┼	₣	σ	⌡
6	ז	צ	ª	╢	╞	π	μ	÷
7	ח	ק	º	╖	╟	╫	τ	≈
8	ט	ר	¿	╕	╚	╪	Φ	°
9	י	ש	⌐	╣	╔	┘	θ	•
A	ך	ת	¬	║	╩	┌	Ω	·
B	כ	¢	½	╗	╦	█	δ	√
C	ל	£	¼	╝	╠	▄	∞	ⁿ
D	ם	¥	¡	╜	=	▌	ø	²
E	מ	₧	«	╛	╬	▐	∈	■
F	ן	ƒ	»	┐	±	■	∩	

Code Page #3041
Maltese
Other characters are the same as those for Code Page #437.

	0	1	2	3	4	5	6	7
0	⟨NUL⟩			0	@	P	ċ	p
1		⟨DC1⟩	!	1	A	Q	a	q
2		⟨DC2⟩	"	2	B	R	b	r
3	♥	⟨DC3⟩	#	3	C	S	c	s
4	♦	⟨DC4⟩	$	4	D	T	d	t
5	♣	§	%	5	E	U	e	u
6	♠		&	6	F	V	f	v
7	⟨BEL⟩		'	7	G	W	g	w
8	⟨BS ⟩	⟨CAN⟩	(	8	H	X	h	x
9	⟨HT⟩	⟨EM⟩	)	9	I	Y	i	y
A	⟨LF⟩		*	:	J	Z	j	z
B	⟨VT⟩	⟨ESC⟩	+	;	K	ġ	k	Ġ
C	⟨FF⟩	⟨FS⟩	,	<	L	ż	l	Ż
D	⟨CR⟩		–	=	M	ħ	m	Ħ
E	⟨SO⟩		.	>	N	^	n	Ċ
F	⟨SI⟩		/	?	O	_	o	

Code Page #3850
Standard KU
Other characters are the same as those for Code Page #437.

Code Page #3860
Rajvitee KU
Other characters are the same as those for Code Page #437.

Code Page #3861
Microwiz KU
Other characters are the same as those for Code Page #437.

Code Page #3863
STD988 TIS
Other characters are the same as those for Code Page #437.

Code Page #3864
Popular TIS

Other characters are the same as those for Code Page #437.

	8	9	A	B	C	D	E	F
0	┌	๙		ฐ	ภ	ะ	เ	๐
1	┐	ๆ	ก	ฑ	ม	ั	แ	๑
2	└	๋	ข	ฒ	ย	า	โ	๒
3	┘	๚	ฃ	ณ	ร	๎	ำ	๓
4	│	๛	ค	ด	ฤ	ิ	ไ	๔
5	─	๊	ฅ	ต	ล	ี	ใ	๕
6	├	์	ฆ	ถ	ฦ	ึ	ฯ	๖
7	┤	๊	ง	ท	ว	ื	ๆ	๗
8	┴	๊	จ	ธ	ศ	'	.	๘
9	┬	๋	ฉ	น	ษ	ุ	๚	๙
A	┼	๋	ช	บ	ส	ู	๛	
B	▓	๋	ซ	ป	ห	ฺ	+	ฎ
C	←	๚	ฌ	ผ	ฬ	็	฿	ฏ
D	↑	๊	ญ	ฝ	อ	์	๐	ฐ
E	→	๋	ฎ	พ	ฮ	๎	ๅ	ฑ
F	↓	๋	ฏ	ฟ	ๆ	฿	๏	

Code Page #3865
Newsic TIS

Other characters are the same as those for Code Page #437.

	8	9	A	B	C	D	E	F
0	┌	ๅ		ฐ	ภ	ะ	เ	๐
1	┐	ๅ	ก	ฑ	ม	ั	แ	๑
2	└	๋	ข	ฒ	ย	า	ๆ	๒
3	┘	๚	ฃ	ณ	ร	๎	ๆ	๓
4	│	๛	ค	ด	ฤ	ิ	ๅ	๔
5	─	๊	ฅ	ต	ล	ี	ไ	๕
6	├	์	ฆ	ถ	ฦ	ึ	ฯ	๖
7	┤	๊	ง	ท	ว	ื	ๆ	๗
8	┴	๊	จ	ธ	ศ	'	.	๘
9	┬	๋	ฉ	น	ษ	ุ	๚	๙
A	┼	๋	ช	บ	ส	ู	๛	
B	▓	๋	ซ	ป	ห	ฺ	+	ฎ
C	←	๚	ฌ	ผ	ฬ	็	฿	ฏ
D	↑	๊	ญ	ฝ	อ	์	๐	ฐ
E	→	๋	ฎ	พ	ฮ	๎	ไ	ฑ
F	↓	๋	ฏ	ฟ	ๆ	฿	๏	

Appendix E: Printer Control Codes

This appendix lists the printer's control commands. It gives the name of each control command, along with the applicable emulation mode (Standard or IBM), and the applicable ASCII code.

Standard Mode

ASCII Code	Function
BEL	Beeper
BS	Backspace
HT	Tab horizontally
LF	Line feed
VT	Tab vertically
FF	Form feed
CR	Carriage return
SO	Select double width printing (1 line)
SI	Select condensed printing
DC1	Select printer
DC2	Cancel condensed printing
DC3	Deselect printer
DC4	Cancel double width printing (1 line)
CAN	Cancel line
ESC LF	Reverse feed by current line space
ESC FF	Reverse form feed
ESC SO	Select double width printing (1 line)
ESC SI	Select condensed printing
ESC EM *n*	Control cut-sheet feeder (printer ignores this code)
ESC SP	Set inter character space
ESC ! *n* *n* = 00 01 02 04 08 10 20 40 80	Master select 10 cpi (ESC P) 12 cpi (ESC M) Proportional (ESC p) Condensed (SI) Emphasised (ESC E) Double-strike (ESC G) Double-wide expanded (ESC W) Italic (ESC 4) Underlining (ESC -)
ESC #	Cancel MSB control
ESC $ *n*$_L$ *n*$_H$	Set absolute horizontal print position

Standard Mode

ASCII Code	Function

ESC % n
    n = 00
        01
	Select user defined characters
	                Normal (ROM) characters
	                User-defined (RAM) characters

ESC & 00 n m a_1 a_2 a_3 d_1...d_k	Define user defined characters

ESC (- n_L n_H m d_1 d_2
    d_1 = 01
        02
        03
    d_2 = 00
        01
        02
        05
        06
	Select line/score
	                Underline
	                Strikethrough
	                Overscore
	                Turn off scoring
	                Single continuous line
	                Double continuous line
	                Single broken line
	                Double broken line

ESC (B n_1 n_2 k m s v_1 v_2
    c d
    k = 00
        01
        02
        03
        04
        05
        06
        07
	Bar-code
	
	                EAN-13
	                EAN-8
	                Interleaved 2 of 5
	                UPC-A
	                UPC-E
	                CODE39
	                CODE128
	                Postnet

ESC (^ n_L n_H d_1...d_k	Print data as characters

ESC (t 03 00 d_1 d_2 00
    d_1 = ESC t dl
    d_2 = 00
        01
        03
        07
        19
        08
        09
        1A
        1B
        1C
        1D
        1E
        1F
        20
        21
        22
        18
	Assign character table
	
	                Italic
	        #437 USA
	        #850 Multi-lingual
	        #860 Portuguese
	        #861 Icelandic
	        #863 Canadian French
	        #865 Nordic
	        #866 Russian
	        #3840 IBM-Russian
	        #3841 Gost
	        #3843 Polish
	        #3844 CS2
	        #3745 Hungarian
	        #3846 Turkish
	        #3847 Brazil-ABNT
	        #3848 Brazil-ABICOMP
	        #852 Latin-2

ESC * m n_L n_H d_1...d_k	Select bit-image
ESC + n	Set n/360″ line spacing

ESC - n
    n = 00
        01
	Turn under line on/off
	                Turns underline off
	                Turns underline on

ESC / m	Select vertical tab channel

Standard Mode

ASCII Code	Function
ESC 0	Select 1/8″ line spacing
ESC 2	Select 1/6″ line spacing
ESC 3 n	Select n/180″ line spacing
ESC 4	Select italic font
ESC 5	Cancel italic font
ESC 6	Enable printing of upper control codes (Character Set #2)
ESC 7	Enable upper control codes (Character Set #1)
ESC 8	Disable paper out detector
ESC 9	Enable paper out detector
ESC <	Unidirectional mode (1 line)
ESC =	Set MSB to 0
ESC >	Set MSB to 1
ESC ? n m	Reassign bit-image mode
ESC @	Initialise printer
ESC A n	Set n/60″ line spacing
ESC B $d_1...d_k$ 00	Set vertical tab
ESC C n	Set page length in lines
ESC C 0 n	Set page length in inches
ESC D $n_1...n_k$ 00	Set horizontal tab
ESC E	Select bold font
ESC F	Cancel bold font
ESC G	Select double strike printing
ESC H	Cancel double strike printing
ESC J n	Advance print position vertically
ESC K n_L n_H $d_1...d_k$	Select 60 dpi graphics
ESC L n_L n_H $d_1...d_k$	Select 120 dpi graphics
ESC M	Select elite pitch
ESC N n	Set bottom margin
ESC O	Cancel bottom margin
ESC P	Select pica pitch
ESC Q n	Set right margin

Standard Mode

ASCII Code	Function

ESC R *n*
   n = 00
       01
       02
       03
       04
       05
       06
       07
       08
       09
       0A
       0B
       0C
       0D
       0E
       40
	Select an international character set
	         #0 U.S.A.
	         #1 France
	         #2 Germany
	         #3 England
	         #4 Denmark I
	         #5 Sweden
	         #6 Italy
	         #7 Spain I
	         #8 Japan
	         #9 Norway
	       #10 Denmark II
	       #11 Spain II
	       #12 Latin America
	       #13 Korea
	       #14 Irish
	       #64 Legal

ESC S *n*
   n = 00
       01
	Select superscript/subscript printing
	      Superscript
	      Subscript

ESC T	Cancel superscript/subscript printing

ESC U *n*
   n = 00
       01
	Turn unidirectional mode on/off
	      Unidirectional
	      Bi-directional

ESC W *n*
   n = 00
       01
	Turn double width printing on/off
	      Turns off double-width
	      Turns on double-width

ESC Y n_L n_H $d_1...d_k$	Select 120 dpi double speed graphics
ESC Z n_L n_H $d_1...d_k$	Select 240 dpi graphics

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Standard Mode

ASCII Code	Function

ESC [T 04 00 00 00 n_1 n_2
n_1 n_2 = 01 B5
03 52
03 5C
03 5D
03 5F
03 61
03 62
0F 00
0F 01
0F 03
0F 04
0F 05
0F 06
0F 07
0F 08
03 54
03 E9
02 E1
03 53
03 65
03 A0
07 D1
03 04
03 06
0B B9
0B BA
0B C3
0B C4
0B CD
0B D7
0B E1
0F 0A
0F 14
0F 15
0F 17
0F 18
0F 19
	Select code page
	    #437 USA
	    #850 Multi-lingual
	    #860 Portuguese
	    #861 Icelandic
	    #863 Canadian French
	    #865 Nordic
	    #866 Russian
	    #3840 IBM-Russian
	    #3841 Gost
	    #3843 Polish
	    #3844 CS2
	    #3845 Hungarian
	    #3846 Turkish
	    #3847 Brazil-ABNT
	    #3848 Brazil-ABICOMP
	    #852 Latin-2
	    #1001 Arabic
	    #737 Greek #737
	    #851 Greek #851
	    #869 Greek #869
	    #928 Greek #928
	    #2001 Lithuanian-KBL
	    #772 Lithuanian #772
	    #774 Lithuanian #774
	    #3001 Estonian-1
	    #3002 Estonian-2
	    #3011 Latvian-1
	    #3012 Latvian-2
	    #3021 Bulgarian
	    #3031 Hebrew
	    #3041 Maltese
	    #3850 Standard KU
	    #3860 Rajvitee KU
	    #3861 Microwiz KU
	    #3863 STD 988 TIS
	    #3864 Popular TIS
	    #3865 Newsic TIS

ESC \ n_L n_H	Move relative horizontal print position
ESC b m n_1...n_k 00	Set vertical tab in VFU channels
ESC g	Select semi-condensed pitch

ESC h n
   n = 00
       01
       02
	Select 1×1, 2×2, 4×4 sized printing
	      Cancels enlargement
	      Select double-high, double-wide (2×2)
	      Select quadruple-high, quadruple-wide (4×4)

ESC j n	Advance reverse feed

ESC k n
   n = 00
       01
       02
       03
       05
       07
	Select typeface
	      Roman
	      Sanserif
	      Courier
	      Prestige
	      OCR-B
	      Orator

Standard Mode

ASCII Code	Function
ESC l *n*	Set left margin

ESC p *n*
    n = 00
         01
	Turn proportional mode on/off
	                    Returns to current fixed character pitch
	                    Selects proportional spacing

ESC q *n*
    n = 00
         01
         02
         03
	Select character style
	                    Cancel shadow/outline printing
	                    Set outline printing
	                    Set shadow printing
	                    Set shadow & outline printing

ESC t *n*
    n = 00
         01
         02
	Select character table
	                    Select italic character table
	                    Select code page table set by EDS Setting
	                    Set download character in "00H-7FH" to "80H-FFH"

ESC w *n*
    n = 00
         01
	Turn double high printing on/off
	                    Turns on double-width
	                    Turns off double-width

ESC x *n*
    n = 00
         01
	Select LQ or Draft
	                    Draft
	                    LQ

FS 3 *n*	Set line spacing to *n*/360″
FS @	Initialise printer

FS C *n*
    n = 00
         01
         02
         03
         05
         07
	Select typeface
	                    Roman
	                    Sanserif
	                    Courier
	                    Prestige
	                    OCR-B
	                    Orator

FS E *n*
    n = 00
         01
         02
	Select double, triple width printing
	                    Cancel expanded print (ESC W 0)
	                    Select double-wide print (ESC W 1)
	                    Select triple-wide print

FS F	Select forward feed

FS I *n*
    n = 00
         01
         02
	Select character table
	                    Select standard character table
	                    Select IBM character table
	                    Set characters downloaded in "00h-7Fh" area to "80h-FFh" area

FS R	Select reverse feed

FS V *n*
    n = 00
         01
	Turn double high printing on/off
	                    Cancel double-high mode
	                    Select double-high mode

FS Z n_L n_H $d_1...d_k$	Select 360 dpi graphics
FS \ n_L n_H	Print characters from all character chart
FS ^	Print a character from all character chart
DEL	Delete last character in buffer

IBM Mode

ASCII Code	Function
BEL	Beeper
BS	Backspace
HT	Tab horizontally
LF	Line feed
VT	Tab vertically
FF	Form feed
CR	Carriage return
SO	Select double width printing (1 line)
SI	Select condensed printing
DC1	Select printer
DC2	Select pica pitch
DC4	Cancel double width printing (1 line)
CAN	Cancel line

ESC - n
    n = 00
        01
	Turn under line on/off
	            Cancel underlining
	            Select underlining

ESC 0	Select 1/8″ line spacing
ESC 1	Select 7/72″ line spacing
ESC 2	Execute "ESC A" definition
ESC 3 n	Select n/216″ or n/180″ or n/360″ line spacing
ESC 4	Set top of form to the current position

ESC 5 n
    n = 00
        01
	Turn automatic line feed on/off
	            Automatic line feeding stops
	            Automatic line feeding starts

ESC 6	Enable printing of upper control codes (Character Set #2)
ESC 7	Enable upper control codes (Character Set #1)
ESC :	Select elite pitch
ESC A n	Define line spacing to n/72″
ESC B $n_1...n_k$ 00	Set vertical tab
ESC C n	Set page length in lines
ESC C 0 n	Set page length in inches
ESC D $n_1...n_k$ 00	Set horizontal tab
ESC E	Select bold font
ESC F	Cancel bold font
ESC G	Select double strike printing

IBM Mode

ASCII Code	Function
ESC H	Cancel double strike printing
ESC I n n = 00 08 10 02 0A 12 03 04 0C 14 06 0E 16 07	Select print pitch and download Resident draft pica Resident draft elite Resident draft condensed Default LQ pica Default LQ elite Default LQ condensed Default LQ proportional Download draft pica Download draft elite Download draft condensed Download LQ pica Download LQ elite Download LQ condensed Download LQ proportional
ESC J n	Advance print position vertically n/180″ or n/216″ or n/360″
ESC K n_L n_H d$_1$...d$_k$	Select 60 dpi graphics
ESC L n_L n_H d$_1$...d$_k$	Select 120 dpi graphics
ESC N n	Set bottom margin
ESC O	Cancel bottom margin
ESC P n n = 00 01	Turn proportional mode on/off Cancel proportional printing Select proportional printing
ESC Q n	Deselect printer
ESC R	Set all tabs to power on defaults
ESC S n n = 00 01	Select superscript/subscript printing Select Superscript Select Subscript
ESC T	Cancel superscript/subscript printing
ESC U n n = 00 01	Turn unidirectional mode on/off Select bi-directional mode Select unidirectional mode
ESC W n n = 00 01	Turn double width printing on/off Cancel expanded print Select expanded print
ESC X n_L n_H	Set left and right margins
ESC Y n_L n_H d$_1$...d$_k$	Select 120 dpi double speed graphics
ESC Z n_L n_H d$_1$...d$_k$	Select 240 dpi graphics
ESC [@ n_L n_H m$_1$...m$_k$	Control width, high and line spacing
ESC [K n_L n_H init id p$_1$ p$_2$	Set initial condition

IBM Mode

ASCII Code	Function

ESC [T 04 00 00 00 n_1 n_2
n_1 n_2 = 01 B5
           03 52
           03 5C
           03 5D
           03 5F
           03 61
           03 62
           0F 00
           0F 01
           0F 03
           0F 04
           0F 05
           0F 06
           0F 07
           0F 08
           03 54
           03 E9
           02 E1
           03 53
           03 65
           03 A0
           07 D1
           03 04
           03 06
           0B B9
           0B BA
           0B C3
           0B C4
           0B CD
           0B D7
           0B E1
           0F 0A
           0F 14
           0F 15
           0F 17
           0F 18
           0F 19
	Select code page
	        #437 USA
	        #850 Multi-lingual
	        #860 Portuguese
	        #861 Icelandic
	        #863 Canadian French
	        #865 Nordic
	        #866 Russian
	      #3840 IBM-Russian
	      #3841 Gost
	      #3843 Polish
	      #3844 CS2
	      #3845 Hungarian
	      #3846 Turkish
	      #3847 Brazil-ABNT
	      #3848 Brazil-ABICOMP
	        #852 Latin-2
	      #1001 Arabic
	        #737 Greek #737
	        #851 Greek #851
	        #869 Greek #869
	        #928 Greek #928
	      #2001 Lithuanian-KBL
	        #772 Lithuanian #772
	        #774 Lithuanian #774
	      #3001 Estonian-1
	      #3002 Estonian-2
	      #3011 Latvian-1
	      #3012 Latvian-2
	      #3021 Bulgarian
	      #3031 Hebrew
	      #3041 Maltese
	      #3850 Standard KU
	      #3860 Rajvitee KU
	      #3861 Microwiz KU
	      #3863 STD 988 TIS
	      #3864 Popular TIS
	      #3865 Newsic TIS

ESC [\ n_L n_H m_1 m_2 m_3 m_4	Set base unit of line spacing
ESC [g n_L n_H m $d_1...d_k$	Select graphic mode
ESC \ n_L n_H	Print characters from all character chart
ESC]	Reverse line feed
ESC ^	Print a character from all character chart

ESC _ n
   n = 00
       01
	Turn over-score on/off
	         Cancel overscoring
	         Select overscoring

ESC d n_L n_H	Move print position to the right
ESC j	Stop printing

Appendix F: Glossary

Centronics cable
    Parallel cable normally used to connect the printer to the computer.

control code
    A numeric code that instructs the printer to perform an operation. For example, the computer sends the printer a form feed control code (12) to tell it to eject the current page.

Electronic DIP Switch settings
    Printer settings that take effect when you switch on the printer. You can change these settings using the control panel.

emulation
    Ability of one printer to act like (emulate) another type of printer.

hexadecimal dump
    Printout of all character codes and control codes as they are received by the printer, along with their hexadecimal values.

multi-part forms
    Forms that consist of more than one sheet. This printer can print on forms that have up to five sheets.

LQ font
    Letter-quality font.

off-line
    Printer mode in which the printer will not accept data or continue printing.

on-line
    Printer mode in which the printer is ready to print.

pitch
    The number of characters printed per horizontal inch.

power outlet
    Local AC power source that you plug into to supply power to your printer. Be sure that your printer is rated for the electrical power in your area. Your printer's rating can be found on the plate on the bottom of the printer.

print head
    The component of the printer that transfers the image to the paper.

Quiet mode
    Mode that reduces printing noise. Also reduces printing speed.

ribbon cartridge
    Contains the printer ribbon.

serial-to-parallel interface converter
    Option that makes it possible to connect the printer to a computer via a serial interface instead of the standard Centronics parallel interface.

Appendix G: Control Panel Operation Guide

DATA   POWER

DRAFT   OCR B

MULTI-PART   EJECT   LF   ON LINE

Multi-part   Eject   Line feed   On line

Draft/LQ   OCR B

Form feed

Back ward   Forward   Micro feed

Auto loading position change mode

Buffer clear & All reset   Off line

Off line   On line

Hex dump   Self test 2   Self test 1

EDS-1 mode

EDS-2 mode

Dot- adjustment mode   Power on

BANK   SW   ON/OFF   Exit

Print   EDS mode

Left   Right   Next   Exit   Dot adjustment mode

Back ward   Forward   Cancel

Set

Save

Factory setting   Auto loading position change mode

Note:

> *A dot means press and hold and an arrow means to just press. A dot and arrow tied together means hold one while pressing the other.*

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