USER'S MANUAL

LC-1021

DOT MATRIX PRINTER

HA10H 80825080

CE
Manufacturer's Declaration of Conformity

EC Council Directive 89/336/EEC of 3 May 1989

This product, has been designed and manufactured in accordance with the International Standards EN 50081-1/01.92 and EN 50082-1/01.92, following the provisions of the Electro Magnetic Compatibility Directive of the European Communities as of May 1989.

EC Council Directive 73/23/EEC and 93/68/EEC of 22 July 1993

This product, has been designed and manufactured in accordance with the International Standards EN 60950, following the provisions of the Low Voltage Directive of the European Communities as of July 1993.

The above statement applies only to printers marketed in EU.

Ambient Noise Statement

Machine Noise Information Ordinance 3. GSGV, January 18, 1991: The sound pressure level at the operator position is equal or less than 70 dB(A) according to ISO 7779.

The above statement applies only to printers marketed in EU.

Trademark acknowledgments

IS-8H192, LC-10, LC-90, LC-100, LC-1021, NX-1000, NX-1010, NX-1040, PT-10HA, SF-10HA, SPC-8K: Star Micronics Co. Ltd.

EX-800, FX-850: Seiko Epson Corporation

IBM PC, IBM Proprinter, IBM Proprinter Ⅱ, IBM Proprinter Ⅲ
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About this manual

This manual describes how to set up, use, and care for the Star LC-1021 printer. The following is a list of what you can expect to find in each chapter.

Chapter 1	Choosing a place for your printer, unpacking and setup, ribbon cassette installation, loading paper, connecting to your computer
Chapter 2	How to use the control panel
Chapter 3	How to use the printer's Electronic DIP Switch (EDS) Mode to set up the printer to match the needs of your system and software
Chapter 4	How to set up for printing with MS-DOS
Chapter 5	Selecting the best type of paper, adjusting for paper thickness, manual sheet feeding, clearing paper jams
Chapter 6	Optional accessories that are available for your printer
Appendix A	How to deal with printing problems
Appendix B	Specifications
Appendix C	Interface information
Appendix D	Character sets
Appendix E	Printer control codes
Appendix F	Glossary
Appendix G	Control panel operation guide

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. In this chapter you will learn about:

- ❑ Choosing a place for the printer
- ❑ Unpacking and setting up the printer
- ❑ Installing the platen knob
- ❑ Installing the ribbon cassette
- ❑ Loading paper
- ❑ Connecting to your computer

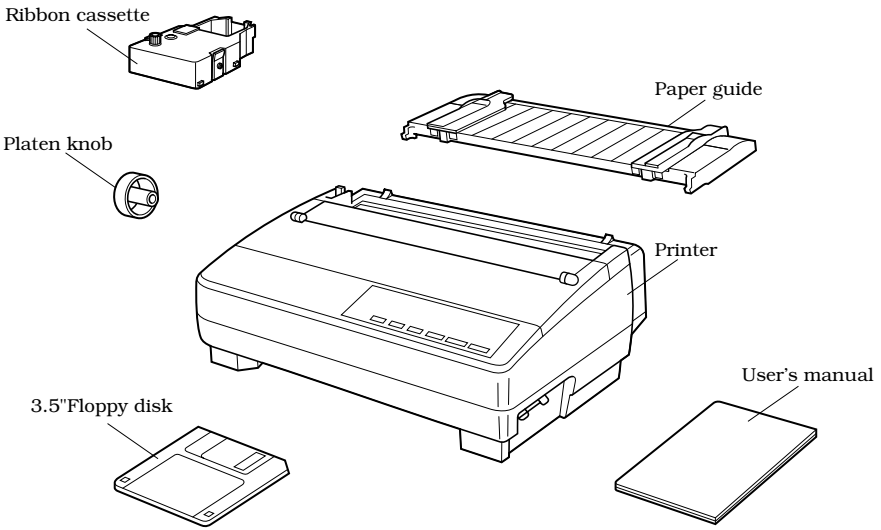
Choosing a place for the printer

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 of the printer. If you are going to use fanfold paper, make sure that there is adequate space for paper behind 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.



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.

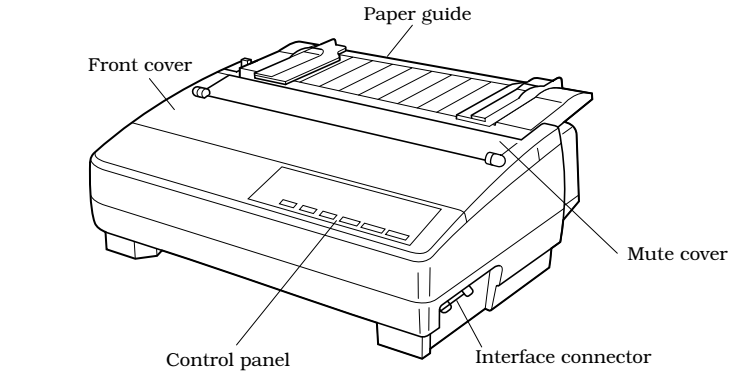
A serial-to-parallel interface converter (SPC-8K), a serial interface unit (IS-8H192), a pull tractor (PT-10HA), and an Automatic Sheet Feeder (SF-10HA) are also available as options. Consult your dealer for details.

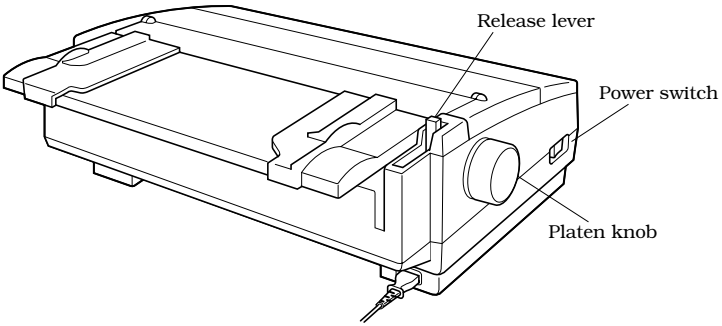
Important!

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

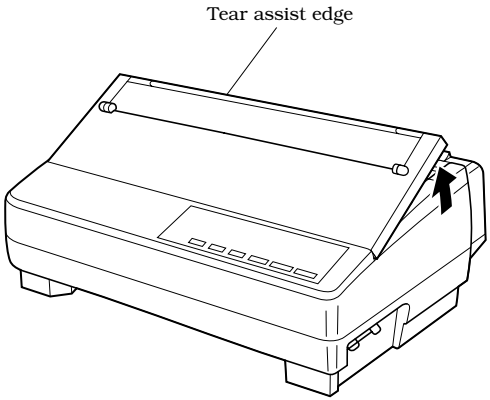
The following illustrations show the major components of your printer.





Opening the front cover

❏ Lift up on the front cover and swing it open until it stops.



❏ To close the front cover, simply lower it back into place.

Caution!

The tear assist edge is rather sharp. Take care to avoid injuring your hands.

Note:

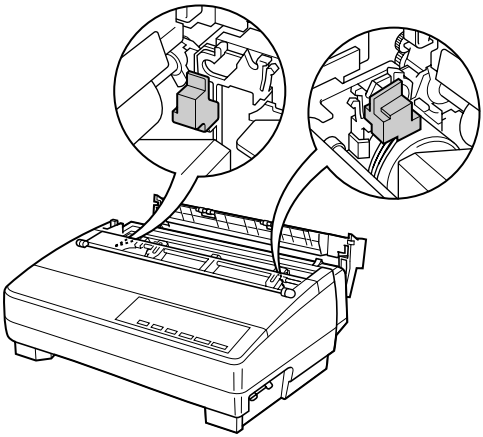
You can completely remove the front cover from the printer or you can stand it up. You should normally leave the front cover closed, because it protects against objects getting into the printer, and it cuts down on printer noise.

Removing the protective materials

Two small pieces of packing material are inserted into the printer to protect components during shipping. Be sure to remove them before using the printer.

❏ Open the rear cover by pushing it back so that the cover swings back and down.

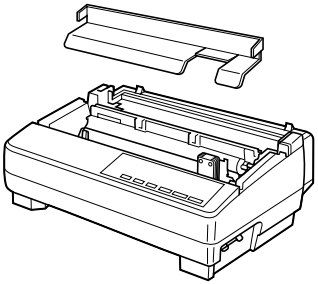
❏ Remove the two white pieces of packing from inside the printer as shown in the illustration.



A piece of cardboard is inserted into the printer to protect components during shipping. Be sure to remove it before using the printer.

❏ Open the front cover.

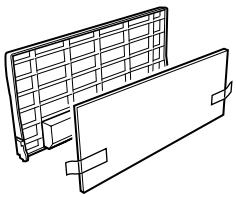
❏ Remove the cardboard from the inside of the front cover as shown in the illustration.



In addition, remove the cardboard from the back of the paper guide.

❏ Remove the tape.

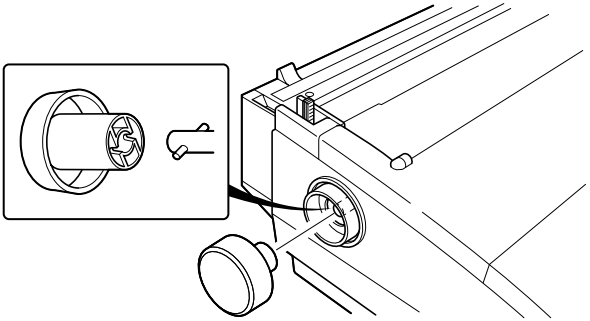
❏ Remove the cardboard from the paper guide as shown in the illustration.



Installing the platen knob

The platen knob is packed into a recess in the packaging material.

❏ Install the knob on the shaft located inside the large hole on the left side of the printer. Make sure that the two splines of the platen shaft inside the printer fit into the slots inside the knob's spindle. Press the knob carefully but firmly into place as far as it will go.



Installing the ribbon cassette

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

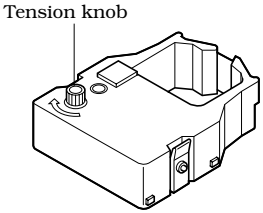
Caution!

Never move the print head while the printer is turned on. Doing so can damage the printer. If you have just finished printing, let the print head cool for a few minutes before you touch it.

❏ Remove the front cover of the printer.

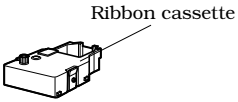
❏ Remove the ribbon cassette from its package.

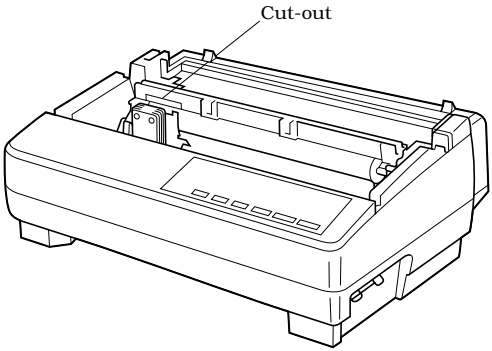
❏ Rotate the knob on the ribbon cassette clockwise to take up any slack in the ribbon.



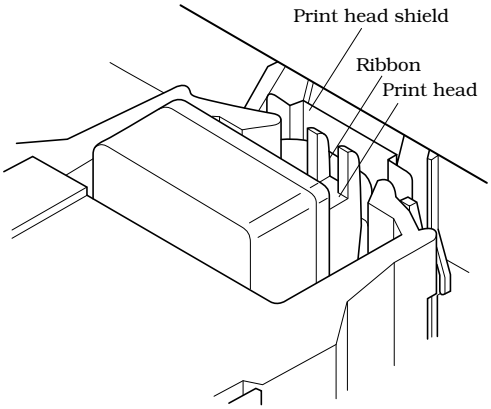
❏ By hand, move the cartridge holder to the left side where there is a cut-out in the top guide to allow easy installation and removal of the ribbon cassette.

❏ Carefully place the cassette onto the cartridge holder making sure that the spindle of the holder fits into the socket on the bottom of the cassette. Also make sure that the side tabs fit into the grooves on the sides of the cartridge holder.





❏ While guiding the ribbon between the print head and print head shield, press down gently but firmly on the cartridge until the side tabs snap securely into place.



❏ Rotate the knob on the cassette again to take up any slack.

❏ Close the front cover of the printer.

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 cassette

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

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

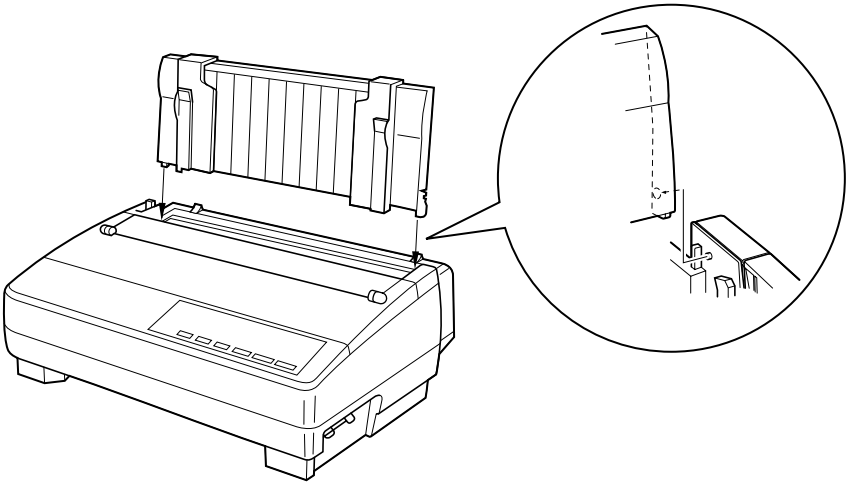
Caution!

Never move the print head while the printer is turned on. Doing so can damage the printer. If you have just finished printing, let the print head cool for a few minutes before you touch it.

- ❏ Open the front cover of the printer.
- ❏ By hand, move the cartridge holder to the left side where there is a cutout in the top guide to allow easy installation and removal of the ribbon cassette.
- ❏ Using your thumb and forefinger to squeeze the two tabs on the ribbon cassette towards the center, carefully remove the cassette from the holder.
- ❏ Use the procedure under “Installing the ribbon cassette” on page 6 to install a new cassette.

Installing the paper guide

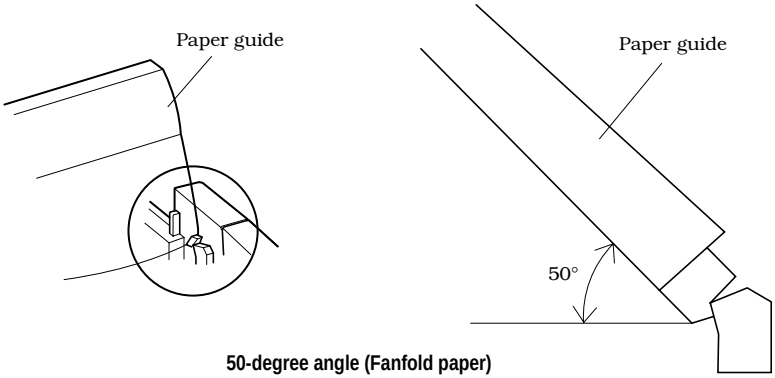
- ❏ Insert the two tabs on the rear cover of the printer into the holes in the bottom of the paper guide.



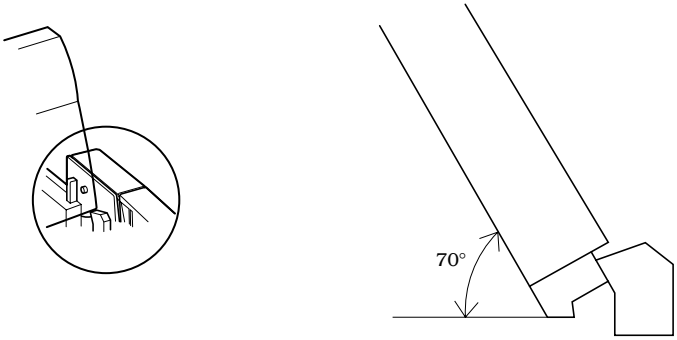
- ❏ To remove the paper guide from the printer, simply pull the tabs out of the holes.

Standing up the paper guide

❑ You can move the paper guide so that it is at angles of 50 or 70 as shown in the illustrations below. The correct angle depends on the type of the paper you are using.



50-degree angle (Fanfold paper)



70-degree angle (Cut-sheet paper)

The following table shows the correct angle to use for each type.

Paper Type	Paper Guide Angle
Fanfold	50 degrees
Cut-sheet	70 degrees

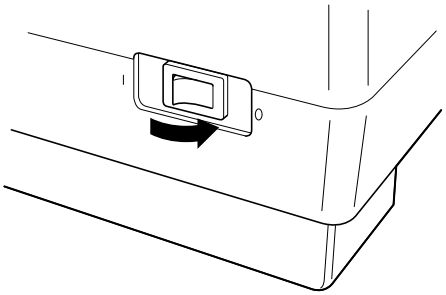
Connecting to a power outlet and turning power on and off

❏ Plug the power cord of the printer into a standard power outlet whose voltage matches the power rating noted on the label affixed to the bottom of your printer.

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.

❏ Set the switch on the left of the printer to 1 (ON) to turn power on, and to 0 (OFF) to turn power off.



Caution!

Whenever you turn off the power, wait for at least five seconds before turning it back on. Otherwise you may damage the printer. We also recommend that you unplug the printer from the power outlet whenever you do not plan to use it for long periods. Because of this, you should locate the printer so that the power outlet it is plugged into is nearby and easy to access.

At this point you may want to perform a test of the printer to make sure it is working properly. See “Testing the printer” on page 49 for details on how to perform tests.

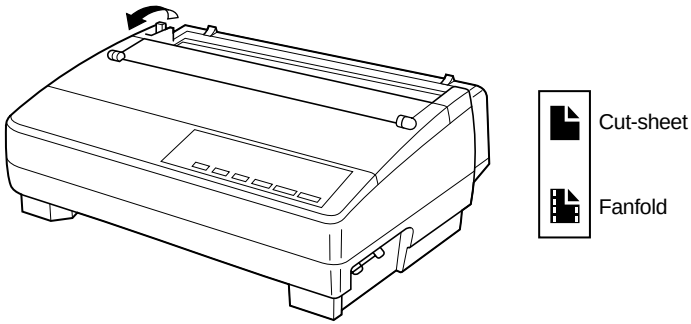
Loading fanfold paper

This section tells you how to load fanfold paper. Note that you can also use cut-sheet paper. For details on using other types of paper, see “Paper Handling” on page 41 of this manual.

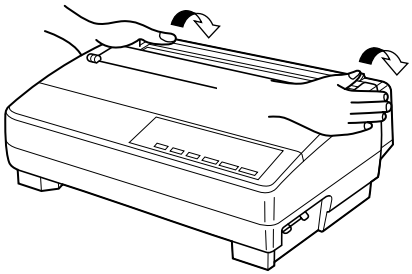
❏ Remove the paper guide from the printer.

❏ Make sure printer power is turned off.

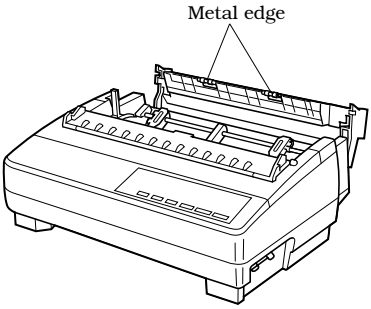
❏ Set the release lever to the fanfold position.



❏ Grasping the two back corners of the printer with the palms of your hands, press back on the two raised areas on the top of the rear cover until it opens.



❏ Swing the rear cover back and down until it stops.



Note:

You can also completely remove the rear cover by simply pulling it away from the back of the printer after you open it.

Caution!

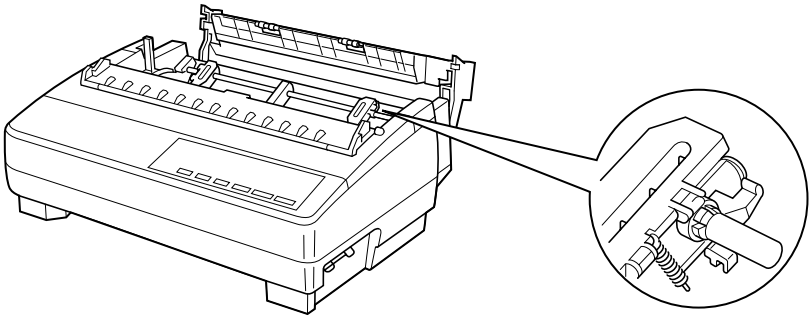
The metal edge of the cover is rather sharp. Take care to avoid injuring your hands when handling it.

❏ Pass the fanfold paper through the space between the printer case and the rear cover.

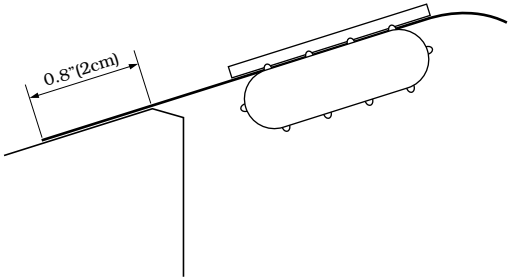
❏ Unlock the two tractor covers by pulling their gray levers up, and slide them so they are aligned approximately with the holes on the sides of the paper. Also move the center paper support so that it is approximately halfway between the two tractors.

❏ Open the covers of both tractors and insert the paper so the tractor pins fit.

❏ Close the tractor covers. At this point you can make final adjustments to the paper position by releasing the gray levers and moving the tractors. The paper should lie flat with no buckling or bulging (tractors too close) or no stretching or elongation of the holes (tractors too far apart). After making these adjustments, be sure that you re-lock the tractors by pushing the gray levers back into their original positions.



❏ Before printing, make sure that the leading edge of the fanfold paper extends about 0.8 inch (two centimeters) past the front the paper chute, as shown in the illustration below.

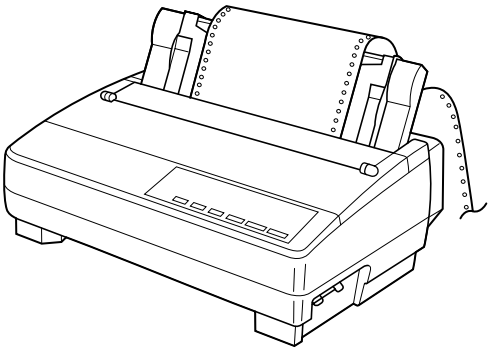


❏ Close the rear cover and press down gently on it until it locks into place with a click.

Caution!

Since printing with an open rear cover may cause paper feeding problems, be sure to close the rear cover before printing.

❏ Install the paper guide so that it is standing up (at a 50-degree angle) as shown on page 10. In this position, the paper guide keeps the printed paper separate from the unprinted paper.
Then slide the right and left paper guides apart so they do not interfere with the fanfold paper feeding.



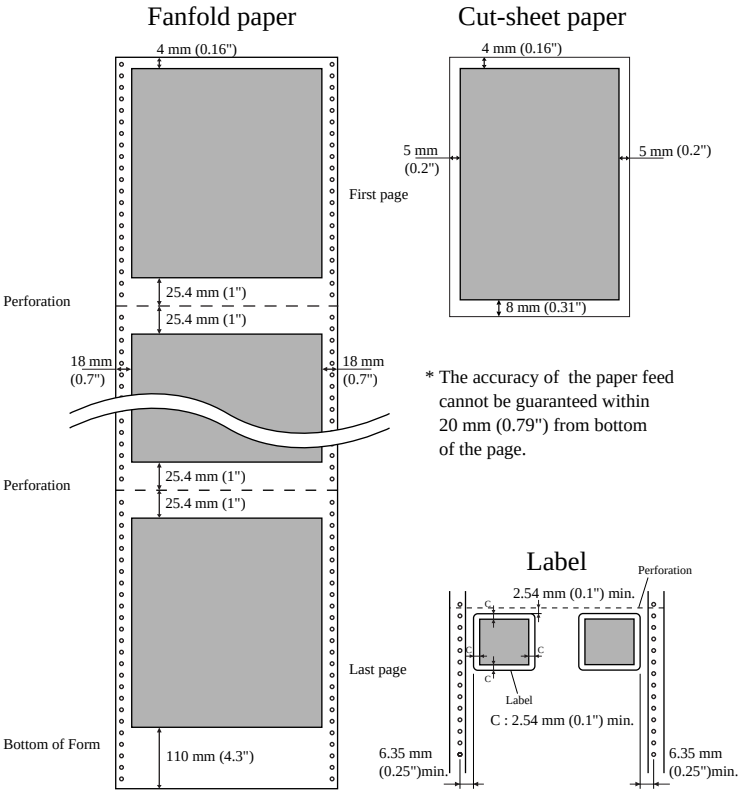
❏ Turn on the printer.

The printer will beep a number of times to indicate that paper is not loaded properly. Also, the control panel's **POWER** indicator flashes whenever paper is not loaded.

❏ Press the **SET/EJECT/PARK** button to feed the paper to the starting position.

Printing on fanfold paper

When printing on fanfold paper, take care not to print too close to the perforations that separate each sheet. The following shows the recommended print area for fanfold paper, cut-sheet paper and label paper.



Parking fanfold paper

It is not necessary to remove fanfold paper currently loaded in the printer in order to print on cut-sheet paper. Instead, simply use the following procedure to *park* the fanfold paper.

- ❏ Tear off the paper at a perforation so there is no more than half a page sticking out of the front cover of the printer.

  If necessary, you can press the control panel's **ON LINE** button to put the printer off-line. and then use the **LINE FEED** button to feed the paper until a perforation is just past the front cover.
- ❏ Press the control panel's **ON LINE** button to put the printer off-line.
- ❏ Press the control panel's **SET/EJECT/PARK** button. The printer automatically reverse feeds the fanfold paper until it is no longer in contact with the platen, which is indicated by the printer beeping a number of times. Also, the control panel's **POWER** indicator starts to flash because paper is not loaded.
- ❏ Move the release lever to the cut-sheet position.
- ❏ Change the paper guide to its upright position.

  You can now load cut-sheet paper into the printer using the procedures under "Manual sheet feeding" on page 43.

Unparking fanfold paper

After you are finished printing on cut-sheet paper, use the following procedure to unpark fanfold paper and make it available for printing.

- ❏ Remove all cut-sheet paper from the printer.
- ❏ Move the paper guide so that it is at a 50-degree angle. (Refer to page 10.)
- ❏ Move the release lever to the fanfold position.
- ❏ Press the **SET/EJECT/PARK** button to feed the paper to the starting position.

  The printer automatically goes back on-line at this time.

Using the tear-off function

The following procedure makes it easy to tear off fanfold paper.

❏ Check to make sure that the printer is on-line.

❏ Press the **FORM FEED** button to perform the long tear-off operation, or press the **LINE FEED** button to perform the short tear-off operation.

The long tear-off operation causes the paper to be fed automatically so the tear assist edge of the printer cover is aligned with the paper's next perforation.

The short tear-off operation causes the paper to be fed automatically so the tear assist edge of the printer cover is located just below the last line printed on the paper.

❏ Pull the paper against the tear assist edge to tear it off.

Connecting to your computer

The computer sends data to the printer through a cable. This printer does not come with a cable, so you must purchase one separately. You will probably want to use a standard parallel cable for connection, but note that you can also use an optional serial-to-parallel interface converter (SPC-8K) or an optional serial interface unit (IS-8H192).

Important!

The following instructions apply to the Centronics parallel cable that is used 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 to connect with your computer, consult your dealer.

For an IBM-compatible personal computer:

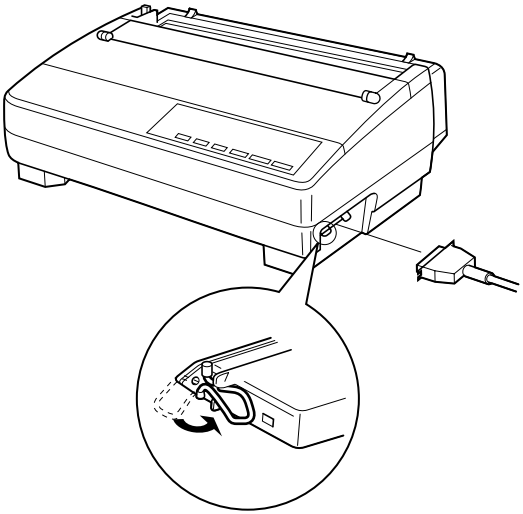
✓ Use a standard 36-pin Centronics parallel cable.

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

Important!

Make sure that the printer and the computer are turned off before connecting them.

- ❏ 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 side of the printer and secure it in place with the clips.

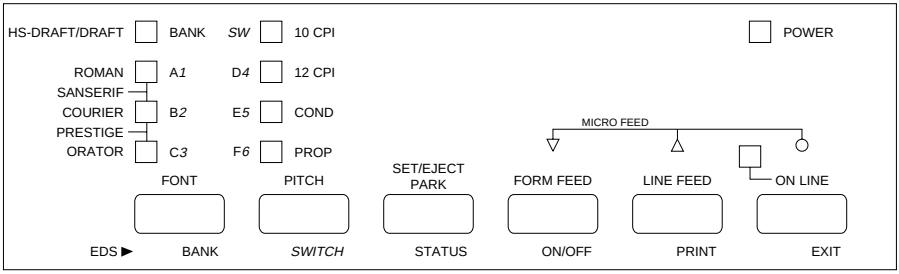


Note:

Consult your dealer for details on how to set up your computer when using the optional SPC-8K serial-to-parallel interface converter or the IS-8H192 serial interface unit.

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.

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

- ❏ Make sure the printer is off-line (**ON LINE** indicator is not lit).
- ❏ Press **FONT** to change the font selection. An indicator lights to the left of the name of the font that is currently selected. HS-Draft is selected when all font indicators are off.

Lit Indicator	Font
DRAFT	Draft
ROMAN	Roman
ROMAN + COURIER	Sanserif
COURIER	Courier
COURIER + ORATOR	Prestige
ORATOR	Orator
(All off)	HS-Draft

Note:

The font setting you make with the above procedure can be changed if the software you are using overrides the setting on the control panel. You can prevent this in some applications by using the following procedure to put the printer into the Font Lock Mode when you turn it on.

Entering the Font Lock Mode

When the printer is in the Font Lock Mode, the font settings you make on the control panel are used even if your software tries to override the font. Use the following procedure to enter the Font Lock Mode.

- ❏ Turn off the printer.
- ❏ While holding down **FONT**, turn printer power on.

  The printer is now in the Font Lock Mode. You could enter the Font Lock Mode and Pitch Lock Mode (page 22) at the same time by holding down both **FONT** and **PITCH** when you turn on printer power.

  To exit the Font Lock Mode, simply turn the printer off.

Important!

Font lock will not function if you are using Windows Truetype fonts.

Setting the character pitch

The character pitch setting controls how many characters are printed per inch. Use the following procedure to select the pitch you want.

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

❏ Press **PITCH** to change the pitch selection.

The following shows the meanings of the indicators that light on the control panel when you press **PITCH**.

Lit Indicators	Meaning
10CPI	10 characters per inch (Pica)
12CPI	12 characters per inch (Elite)
10CPI + COND	17 characters per inch (Condensed Pica)
12CPI + COND	20 characters per inch (Condensed Elite)
PROP	Proportional

Note:

The pitch setting you make with the above procedure can be changed if the software you are using overrides the setting from the control panel. You can prevent this by using the following procedure to put the printer into the Pitch Lock Mode when you turn it on.

Entering the Pitch Lock Mode

When the printer is in the Pitch Lock Mode, the pitch settings you make on the control panel are used even if your software tries to override the pitch. Use the following procedure to enter the Pitch Lock Mode.

❏ Turn off the printer.

❏ While holding down **PITCH**, turn printer power on.

The printer is now in the Pitch Lock Mode. You could enter the Pitch Lock Mode and Font Lock Mode (page 21) at the same time by holding down both **FONT** and **PITCH** when you turn on printer power.

To exit the Pitch Lock Mode, simply turn the printer off.

Important!

Pitch lock will not function if you are using Windows Truetype fonts.

Line feed

- ❏ Make sure the printer is off-line (**ON LINE** indicator is not lit).
- ❏ Press **LINE FEED** once to feed paper one line. Holding down **LINE FEED** continually feeds paper, one line at a time, until you release the button.

Paper eject (cut-sheet paper)

- ❏ Make sure the printer is off-line (**ON LINE** indicator is not lit).
- ❏ Press **SET/EJECT/PARK** 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.

Form feed (fanfold paper)

- ❏ Make sure the printer is off-line (**ON LINE** indicator is not lit).
- ❏ Press **FORM FEED** and the printer will automatically feed the paper to the top of the next page.

Parking fanfold paper

- ❏ Make sure the printer is off-line (**ON LINE** indicator is not lit).
- ❏ Press the control panel's **SET/EJECT/PARK** button.
- ❏ The printer automatically reverse feeds the fanfold paper until it is no longer in contact with the platen.

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 **LINE FEED** to feed the paper forward or **FORM FEED** to feed the paper backward.

Setting the top of form position

The current position of paper loaded in the printer is automatically set as the top of the page whenever you turn power on. You can also use the following procedure at any time to specify a different position as the top of the page.

- ❏ Make sure the printer is off-line (**ON LINE** indicator is not lit).
- ❏ Use the micro feed operations (see above) to move the paper so that the print head is located where you want the new top of form position to be.
- ❏ While holding down **FONT**, press **SET/EJECT/PARK**.

  The printer will beep once to indicate that a new top of form position has been set.

Tear-off function (fanfold paper)

This procedure feeds fanfold paper to a position where it can be torn off easily.

- ❏ Check to make sure that the printer is on-line.
- ❏ Press the **FORM FEED** button to perform the long tear-off operation, or press the **LINE FEED** button to perform the short tear-off operation.

  The long tear-off operation causes the paper to be fed automatically so the tear assist edge of the printer cover is aligned with the paper's next perforation.

  The short tear-off operation causes the paper to be fed automatically so the tear assist edge of the printer cover is located just below the last line printed on the paper.
- ❏ Pull the paper against the tear assist edge to tear it off.
- ❏ When you resume printing, the printer reverse feeds the paper to its former position.

Selecting the Quiet Print Mode

The Quiet Print Mode lets you print with less noise than that produced with normal printing. Use the following procedure to enter and exit the Quiet Print Mode.

Important!

Though the Quiet Print Mode prints more quietly, it also causes printing to take considerably longer than normal printing.

❏ Make sure the printer is on-line (**ON LINE** indicator is lit).

❏ Press **SET/EJECT/PARK**, to toggle between the Quiet Print Mode and normal printing.

The printer emits one short beeps when the Quiet Print Mode is selected, and two short beep when normal printing is selected.

Changing the auto load position

Normally the printer automatically feeds paper to a standard position (1/6-inch from the top of the paper). 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 **SET/EJECT/PARK** and then release the two buttons.

The printer will automatically eject the cut-sheet that is in the printer, or reverse feed fanfold paper until it is no longer in contact with the platen. Also, all the font and pitch indicators on the control panel will light.

❏ Press **SET/EJECT/PARK** to feed the paper to the starting position.

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

Press **LINE FEED** to feed the paper forward and **FORM FEED** to feed the paper backward. This is the micro feed operation.

❏ After you have the paper at the position you want, hold down **ON LINE** and press **LINE FEED** 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.

❏ 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 **SET/EJECT/PARK**.

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 FORM FEED instead of LINE FEED while holding down ON LINE in the above step.

Saving a macro

Normally, any settings you make on the control panel are cleared when you turn the printer off. Use the following procedure to save the current control panel settings so that they are used whenever you turn the printer on.

❏ Make the control panel settings you want.

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

❏ Hold down **FONT** and then **PITCH**. Keep both buttons held down until the printer beeps twice.

Pressing **FONT** normally changes the font setting, so when you press it in the above step the indicator for the next font lights. Pressing **PITCH**, however, returns the font setting to what it was before you pressed **FONT**.

This procedure saves the following settings.

- Current font and pitch settings
- Quiet Print Mode status

These items can be set separately for the Standard mode and the IBM mode.

❏ To clear saved control panel settings repeat the above procedure, but keep **FONT** and **PITCH** depressed after the printer beeps twice. Soon the printer will beep again three times to indicate that the saved control panel settings have been cleared.

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 print 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 **FONT** and then **FORM FEED**. 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. If you have control panel settings stored in memory, this procedure sets up the printer using them.

- ❏ Use **ON LINE** to take the printer off line (**ON LINE** indicator is not lit).
- ❏ Hold down **FONT** and then **FORM FEED**. 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

- ❏ Turn off the printer.
- ❏ While holding down the control panel's **SET/EJECT/PARK** button, turn the printer back on.
- ❏ To exit the Multi-part Mode, Simply turn the printer off and back on again.

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 mode 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 F-2, are ON when the printer is shipped from the factory.

About EDS Mode settings

EDS Mode 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.

Entering the EDS Mode

- ❑ Make sure that paper is loaded in the printer.
- ❑ Turn off the printer.
- ❑ While holding down the control panel’s **ON LINE**, **LINE FEED**, and **FORM FEED** buttons, turn the printer back on.

  This causes the following message to be printed, which indicates the printer is in the EDS Mode.

```
CURRENT EDS SETTINGS

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

Selecting a bank

❑ While in the EDS Mode, use the control panel's **BANK** button to select a bank. When the **BANK** indicator flashes it indicates the current bank selected.

Lit Indicator	Selected Bank
A*1*	A
B*2*	B
C*3*	C
D*4*	D
E*5*	E
F*6*	F

Selecting a switch

❑ While in the EDS Mode, use the control panel's **SWITCH** button to select a bank switch. When the **SW** indicator flashes it indicates the current switch selected.

Lit Indicator	Selected Switch
A*1*	1
B*2*	2
C*3*	3
D*4*	4
E*5*	5
F*6*	6

Changing a switch setting

❑ After selecting a bank and switch, press the control panel's **ON/OFF** button to turn the switch on and off. The current setting of the switch is indicated by the **ON LINE** 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, press the control panel's **PRINT** button to print out the current switch settings. Asterisks on the printout show whether a switch is turned on or off.

Checking the settings of switches in a bank

❑ After selecting a bank, press the control panel's **STATUS** button to view the status of each switch in that bank. The control panel's font indicator is lit when the switch is on, and is not lit when the switch is off.

Lit Indicator	Selected Switch
A*1*	1
B*2*	2
C*3*	3
D*4*	4
E*5*	5
F*6*	6

Exiting the EDS Mode

❑ Press the control panels **EXIT** button to exit the EDS Mode.

EDS Mode Settings

The following details all of the settings you can program in the EDS Mode. You can print out a detailed overview of all the settings by performing a test of the printer (page 49).

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 (9-pin), while IBM emulation makes it act like the IBM Proprinter III.

Switch 2: 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 3: 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 4: Automatic Sheet Feeder

Specifies whether the optional SF-10HA Automatic Sheet Feeder is installed (OFF) or not installed (ON).

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 printer's Multi-Part Mode is enabled (OFF) or disabled (ON). When the Multi-Part Mode is enabled (OFF), the impact of the print head is increased, but head life is decreased. Enable the Multi-Part Mode when printing on 4 to 5-ply paper. Disable the Multi-Part Mode when printing on 1 to 3-ply paper.

BANK B

Switch 1: Graphics Direction

Selects uni-directional (OFF) or bi-directional (ON) printing for graphics. Bi-directional printing (ON) is faster, while uni-directional (OFF) printing generally provides better print quality in the graphics mode.

Switch 2: Auto Tear-off (Long)

Specifies whether the printer's auto tear-off (long) feature (page 24) is enabled (OFF) or disabled (ON). Note that this setting controls the application software's tear-off function only. It does not affect the manual tear-off function that is performed using the control panel buttons as described on page 18. The manual tear-off function is always enabled.

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. Most applications do this automatically. 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: Reserved

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
Draft	ON	ON
NLQ	ON	OFF
HS-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 select.

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

Switch 6: Quiet

When the Quiet Mode is enabled (OFF), the printer prints with less noise than normal printing. Though the Quiet Mode prints more quietly, it also takes considerably longer than normal printing.

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: Reserved

Switch 6: Reserved

BANK E

Switches 1, 2, 3, 4, 5: 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
#437 IBM-PC	ON	ON	ON	ON	ON
#850 Multi-lingual	OFF	ON	ON	ON	ON
#860 Portuguese	ON	OFF	ON	ON	ON
#861 Icelandic	OFF	OFF	ON	ON	ON
#863 Canadian French	ON	ON	OFF	ON	ON
#865 Nordic	OFF	ON	OFF	ON	ON
#866 Russian	ON	OFF	OFF	ON	ON
#3840 IBM-Russian	OFF	OFF	OFF	ON	ON
#3841 Gost-Russian	ON	ON	ON	OFF	ON
#3843 Polish	OFF	ON	ON	OFF	ON
#3844 CS2	ON	OFF	ON	OFF	ON
#3845 Hungarian	OFF	OFF	ON	OFF	ON
#3846 Turkish	ON	ON	OFF	OFF	ON
#3847 Brazil-ABNT	OFF	ON	OFF	OFF	ON
#3848 Brazil-ABICOMP	ON	OFF	OFF	OFF	ON
#852 Latin-2	OFF	OFF	OFF	OFF	ON
#1001 Arabic	ON	ON	ON	ON	OFF
#737 Greek	OFF	ON	ON	ON	OFF
#851 Greek	ON	OFF	ON	ON	OFF
#869 Greek	OFF	OFF	ON	ON	OFF
#928 Greek	ON	ON	OFF	ON	OFF
#2001 Lithuanian-KBL	OFF	ON	OFF	ON	OFF
#772 Lithuanian	ON	OFF	OFF	ON	OFF
#774 Lithuanian	OFF	OFF	OFF	ON	OFF
#3001 Estonian-1	ON	ON	ON	OFF	OFF
#3002 Estonian-2	OFF	ON	ON	OFF	OFF
#3011 Latvian-1	ON	OFF	ON	OFF	OFF
#3012 Latvian-2	OFF	OFF	ON	OFF	OFF
#3021 Bulgarian	ON	ON	OFF	OFF	OFF
#3031 Hebrew	OFF	ON	OFF	OFF	OFF
#3041 Maltese	ON	OFF	OFF	OFF	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	
#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 “Mazowia”
#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	

Code Page	Name	Country	Remarks
#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	
#3031	Hebrew	Israel	
#3041	Maltese	Malta	

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
U.S.A.	ON	ON	ON	ON	ON
France	OFF	ON	ON	ON	ON
Germany	ON	OFF	ON	ON	ON
England	OFF	OFF	ON	ON	ON
Denmark-1	ON	ON	OFF	ON	ON
Sweden	OFF	ON	OFF	ON	ON
Italy	ON	OFF	OFF	ON	ON
Spain-1	OFF	OFF	OFF	ON	ON
Japan	ON	ON	ON	OFF	ON
Norway	OFF	ON	ON	OFF	ON
Denmark-2	ON	OFF	ON	OFF	ON
Spain-2	OFF	OFF	ON	OFF	ON
Latin America	ON	ON	OFF	OFF	ON
Korea	OFF	ON	OFF	OFF	ON
Ireland	ON	OFF	OFF	OFF	ON
Legal	OFF	OFF	OFF	OFF	ON

BANK F

Switches 1, 2, 3, 4, 5: NLQ Font Selection

Turn these switches on or off to form the pattern that identifies the font you want to use for NLQ printing.

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

Note:

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

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 31).

Star LC-1021
Star LC-90/NX-1010
Star LC-100/NX-1040
Star LC-10/NX-1000
Epson FX-850
Epson EX-800

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 31).

IBM Proprinter III
IBM Proprinter II
IBM Proprinter

❑ 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

Your printer is designed to print on a variety of paper types. This chapter tells you everything you need to know about paper, and how to set the printer up for manual paper feed. In this chapter, you will learn about:

- ❏ Selecting the best type of paper
- ❏ Adjusting for paper thickness
- ❏ Manual sheet feeding
- ❏ Clearing paper jams

Selecting paper types

Use the following information when selecting paper.

Cut-Sheet Paper (Manual Feed)

Width:	7.0″ to 10.5″ / 178 to 267mm
Length:	5.5″ to 14″ / 140 to 356mm
Thickness:	0.00276″ to 0.00472″ / 0.07 to 0.12mm
Weight:	14 to 24 lbs / 52 to 90g/m^2 / 45 to 77 kg

Cut-Sheet Paper (with Optional Automatic Sheet Feeder)

Paper size:	B5, A4, LT, Legal
Thickness:	0.00315″ to 0.00472″ / 0.08 to 0.12mm
Weight:	16 to 24 lbs / 60 to 90g/m^2 / 52 to 77 kg
Hopper:	50 sheets of 64g/m^2 30 sheets of 80g/m^2
Stacker:	30 sheets

Fanfold Paper

Width:	4″ to 10.0″ / 101.6 to 254mm
Thickness:	0.00276″ to 0.00433″ / 0.07 to 0.11mm (1-ply) 0.01378″ / 0.35mm max. (total thickness of multi-ply, non-carbon)
Weight:	14 to 22 lbs / 52 to 82g/m^2 / 45 to 70 kg (one-ply) 11 to 14 lbs / 40 to 52g/m^2 / 34 to 45 kg (multi-ply)
Copies:	Original + 1 or 2 (Normal Mode) Original + 3 or 4 (Multi-Part Mode) Multi-part Mode and an optional pull tractor are recommended when printing on 4 or 5-ply paper.

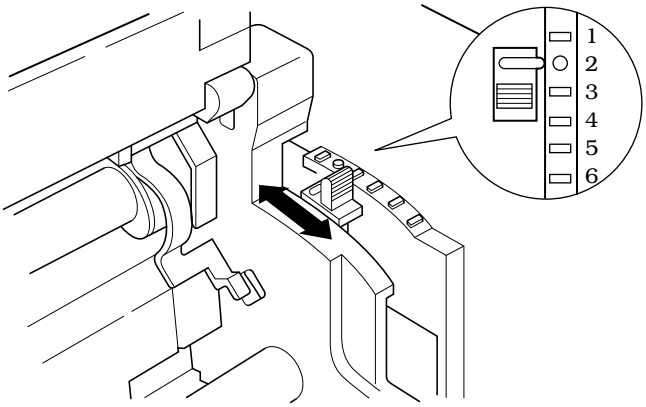
Labels

Backing sheet: 4.5″ to 10.0″ / 114 to 254mm
Thickness
Backing sheet: 0.00276″ to 0.00354″ / 0.07 to 0.09mm
Total: 0.0075″ / 0.19mm

• Use labels under normal temperature and humidity conditions only.

Adjusting for paper thickness

Paper comes in different weights, normally expressed as gsm (grams per square meter) or lbs (pounds). Some forms paper also have multiple pages that make them quite thick. Use the following procedure to change the gap between the print head and the platen and adjust for paper thickness.



❑ Move the adjustment lever to one of its six settings. Position 2 is most suitable for single-sheet paper.

The following table provides a general guide for setting the adjustment lever. Experiment with different settings until you find the one that gives you the print quality you want.

Paper Type		Weight Per Sheet	Thickness	Recommended Position
Cut-sheet		52 to 90 g/m^2	0.07 to 0.12mm	1 or 2
Fanfold	1-ply	52 to 90 g/m^2	0.07 to 0.12mm	2 or 3
	2-ply	40 to 52 g/m^2	0.12 to 0.16mm	2 or 3
	3-ply	40 to 52 g/m^2	0.18 to 0.25mm	3 or 4
	4-ply	40 to 52 g/m^2	0.24 to 0.30mm	4 or 5
	5-ply	40 to 52 g/m^2	0.30 to 0.35mm	5 or 6
Labels (with backing sheet)		—	—	3 or 4

Important!

Continuous use of the wrong adjustment lever setting can drastically reduce print head life! The Multi-part Mode is only recommended when printing on 4 or 5-ply paper.

Automatic fanfold feeding

❏ See “Loading fanfold paper” on page 12 for details on using fanfold paper.

Manual sheet feeding

You can use the following procedure to manually feed single sheets of paper into the printer.

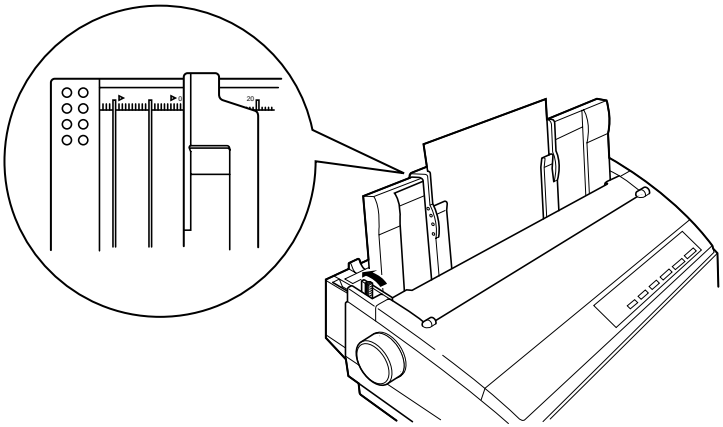
❏ Make sure that there is no fanfold paper in the printer. If there is, use the procedure under “Parking fanfold paper” on page 17 to park the fanfold paper and prepare for manual sheet feeding.

❏ Move the paper guide so that it is at a 70-degree angle. (Refer to page 10.)

❏ Set the release lever to the cut-sheet position.

❏ Align the left paper guide with scale 0 mark.

❏ Adjust the right paper guide so there is enough space to insert the paper.



Important!

In order to prevent a paper jam, do not insert a sheet of paper with a width that would require the paper guides to be moved to the left of the ► mark on the left end or to the right of the ◄ mark on the right end.

❏ Insert a sheet of paper into the paper guide, with the side you want to print on facing the back of the printer. Gently push the paper down into the printer until you feel it stop.

❏ Press the **SET/EJECT/PARK** button to feed the paper to the starting position.

❏ If you want to move the paper to another position, use the micro feed function described under “Micro feed” on page 23.

❏ Start the printing operation from your software application.

Clearing paper jams

Use the following procedure to clear paper jams from the printer.

❏ Unplug the printer from its AC power outlet.

❏ Open the front cover of the printer.

❏ Carefully try to pull the jammed paper from the printer.

If necessary, change the release lever position or rotate the platen knob to remove the paper.

Chapter 6: Optional Accessories

This chapter introduces the following optional accessories that are available for this printer:

- ❏ Automatic Sheet Feeder (SF-10HA)
- ❏ Pull Tractor Unit (PT-10HA)
- ❏ Serial Interface Unit (IS-8H192)
- ❏ Serial-to-Parallel Converter (SPC-8K)

Important!

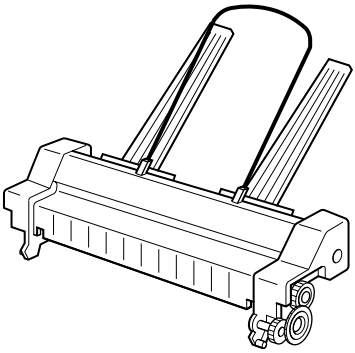
Always make sure that printer power is turned off whenever installing or removing optional accessories.

Automatic Sheet Feeder (SF-10HA)

The automatic sheet feeder automatically feeds cut sheet paper into the printer.

Preparing the printer

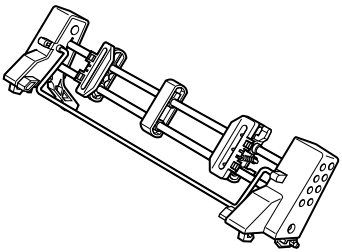
- ❏ Use the printer's EDS Mode to change the setting of Bank A Switch 4 to OFF (page 31), which tells the printer that the automatic sheet feeder is installed.



Refer to the manual that comes with the automatic sheet feeder for further details on installation and operation.

Pull Tractor Unit (PT-10HA)

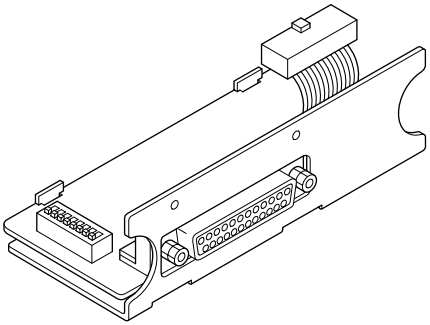
The pull tractor unit is recommended when printing with multi-part continuous forms.



Refer to the manual that comes with the pull tractor unit for further details on installation and operation.

Serial Interface Unit (IS-8H192)

Installing the serial interface unit provides serial data communications capabilities between the printer and your computer.



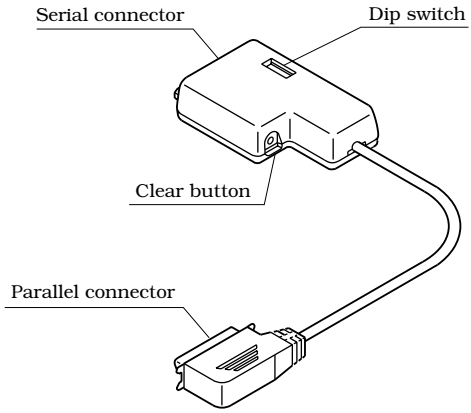
Specifications (IS-8H192)

Interface	RS-232C-level only
Synchronization	Asynchronous
Baud rate	150, 300, 600, 1200, 2400, 4800, 9600, 19200 BPS (selectable)
Word length	
Start bit	1
Data bits	7 or 8 (selectable)
Parity bit	Odd, even, none (selectable)
Stop bits	One or more
Signal polarity	
Mark	Logical 1 (–3V to –15V)
Space	Logical 0 (+3V to +15V)
Handshaking	DTR, XON/XOFF, ETX/ACK
Data buffer	8 kbytes (standard)

Refer to the manual that comes with the serial interface unit for further details on installation and operation.

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

Connecting the serial-to-parallel converter to the printer's parallel connector provides serial data communications capabilities between the printer and your computer.



Specifications

Interface	RS-232C-level
Synchronization	Asynchronous
Baud rate	150, 300, 600, 1200, 2400, 4800, 9600, 19200 BPS (selectable)
Word length	
Start bit	1
Data bits	7 or 8 (selectable)
Parity bit	Odd, even, none (selectable)
Stop bits	One or more
Signal polarity	
Mark	Logical 1 (-3V to -15V)
Space	Logical 0 (+3V to +15V)
Handshaking	DTR, XON/XOFF, ETX/ACK
Data buffer	8 kbytes (standard)

Refer to the manual that comes with the serial-to-parallel converter for further details on installation and operation.

Appendix A: Troubleshooting

This appendix will help you 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.

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.

Testing the printer

There are three different tests you can use: a short test, a long test and a hexadecimal dump.

Short test

- ❏ Make sure that paper is loaded in the printer.
- ❏ Turn the printer off.
- ❏ While holding down the control panel's **ON LINE** button, turn the printer on.

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

Note:

The short test 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.

Long test

- ❏ Make sure that paper is loaded in the printer.
- ❏ Turn the printer off.
- ❏ While holding down the control panel's **LINE FEED** button, turn the printer on.

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

- ❏ To stop demo printing, turn the printer off.

Note:

- *The long test 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.*
- *Since this test can generate many lines of text and graphics, it is a good idea to perform this test only when using continuous fanfold paper rather than single sheets.*

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 the control panel's **FORM FEED** button, turn the printer back on to enter the Hex Dump Mode.
- ❏ The printer will now print out the hexadecimal values of any data that is subsequently sent to it from your computer.
- ❏ To exit the Hex Dump Mode, first press **ON LINE** to set the printer off-line, and then 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:

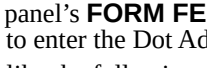
 or like this 

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 the control panel's **FORM FEED** and **ON LINE** buttons, turn the printer back on to enter the Dot Adjustment Mode.

  The printer will print something like the following.

```
*** DOT ADJUSTMENT SETTING ***
 DRAFT       0:
```



  Note that the printer will feed the paper forward and back each time during this operation so you can view the printout.

- ❏ If the three lines do not align properly, use **FONT** to move the middle line to the left or **PITCH** to move it to the right.

  The above step performs alignment for the Draft printing mode only. You must make separate adjustments for the HS-DRAFT, D-Density/Speed, D-Density P-Graph, NLQ, Quadruple Density, Normal Density, Plotter Graphics, CRT Graphics I, CRT Graphics II, and Double Density modes as well.

- ❏ Press **SET/EJECT/PARK** 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.

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 cassette is installed correctly.
	The printer is not set up correctly for the thickness of paper you are using.	Set up the printer for the paper thickness you are using. See “Adjusting for paper thickness” on page 42.
	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.	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 optional serial interface unit.
	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.
	The printer is not set up correctly for the thickness of paper being used.	Set up the printer for the paper thickness you are using. See “Adjusting for paper thickness” on page 42.
Line spacing is incorrect.	Jamming paper.	Set up the printer for the paper thickness you are using. See “Adjusting for paper thickness” on page 42.
	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 32.
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 32.
	Jamming paper.	Set up the printer for the paper thickness you are using. See “Adjusting for paper thickness” on page 42.

Problem	Possible Cause	Recommended Action
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 32 .
	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 51.
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 printer is not set up correctly for the thickness of paper being used.	Set up the printer for the paper thickness you are using. See “Adjusting for paper thickness” on page 42.
	The printer is not in the Multi-part Mode when printing on multi-part forms with an original and three to four copies.	Use the EDS Mode to enter the Multi-part Mode. See “Switch 6: Multi-Part Mode” on page 32.
	The print head is damaged.	Return the printer to your dealer for repair.
Forms are smudged. Printing is too dark.	The printer is not set up correctly for the thickness of paper being used.	Set up the printer for the paper thickness you are using. See “Adjusting for paper thickness” on page 42.
	The ribbon is jammed, twisted, or not set correctly between the print head and the print head shield.	Make sure that the ribbon cassette is installed correctly. See “Installing the ribbon cassette” on page 6.
	Print head shield is damaged or missing.	Return it to your dealer for repair.

Problem	Possible Cause	Recommended Action
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 front cover is removed.	Replace the front cover.
	The printer is vibrating.	Move any objects that are touching the printer.
		Make sure that the printer is on a level steady surface.
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 cassette is installed correctly. See "Installing the ribbon cassette" on page 6.
	Paper is jamming, causing the print head to jam.	Remove all paper from the printer and reload it. Try printing again.
		Set up the printer for the paper thickness you are using. See "Adjusting for paper thickness" on page 42.

Problem	Possible Cause	Recommended Action
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 cassette is not installed correctly, causing the print head to jam.	Make sure that the ribbon cassette is installed correctly. See “Installing the ribbon cassette” on page 6.
	The printer is not set up correctly for the thickness of paper being used.	Set up the printer for the paper thickness you are using. See “Adjusting for paper thickness” on page 42.
	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 try to raise the humidity level.
Some characters are printed incorrectly.	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 try to 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.

Problem	Possible Cause	Recommended Action
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 try to raise the humidity level.
Automatic Sheet Feeder does not feed paper.	The EDS Mode setting for the Automatic Sheet Feeder is wrong.	Enter the EDS Mode and turn off Switch 4 in Bank A (see page 31).

Checking system software settings in Windows

Whenever you have problems printing from a Windows application, you should check the following four things:

- ✓ Is the printer you are using set as the default printer?
- ✓ Is the driver setup correct?
- ✓ Is the printer you are using correctly selected in your application?
- ✓ Is the correct port selected?

You should also refer to your *Microsoft Windows User's Guide* for other information that might be helpful. If you still experience problems, consult your software dealer.

To check the default printer selection

- ❑ Double-click the **Control Panel** icon in the Main window.
- ❑ Double-click the **Printers** icon.
- ❑ Check to see that the name of your Star printer is the default printer. If it is not, double-click on the name of your printer in the list of installed printers.
- ❑ Click on **Close** to return to the Control Panel window.

To check the application printer selection

- ❑ Select Print from the application's File menu, and a window appears listing available printers.
- ❑ Check to see that the name of your Star printer is selected. If it is not, select it and try printing from your application again.

To check the driver setup

- ❑ Double-click the **Control Panel** icon in the Main window.
- ❑ Double-click the **Printers** icon.
- ❑ Double-click on the name of your Star printer in the list of installed printers.
- ❑ Click on **Setup**.
- ❑ Check resolution, paper source, etc.
- ❑ Click **OK**.
- ❑ Click on **Close** to return to the Control Panel window.

To check the port

- ❏ Double-click the **Control Panel** icon in the Main window.
- ❏ Double-click the **Printers** icon.
- ❏ Double-click on the name of your Star printer in the list of installed printers.
- ❏ Click on **Connect**.
- ❏ Make sure that your printer cable is connected to the port highlighted in the list of ports.

  If you are using a parallel cable, you will probably be using LPT1. If you are using the optional serial-to-parallel interface converter or optional serial interface unit, you should be using COM1 or COM2. Click on the correct port name.
- ❏ Click **OK**.
- ❏ Click on **Close** to return to the Control Panel window.

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 or optional serial interface unit, 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 or optional serial interface unit.

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 40. If this does not help, consult your software dealer.

Appendix B: Specifications

Printing System

Serial Impact Dot-Matrix

Printing Speed

Pitch	Draft (cps/dpi)	NLQ (cps/dpi)
Pica (10 cpi)	300/120H (Normal) 400/90H (HS)	75/240H
Elite (12 cpi)	360/120H	90/240H
Condensed pica (17 cpi)	255/240H	127/240H
Condensed elite (20 cpi)	300/240H	150/240H

H: half-dot

Print Direction

Draft:	Uni-directional/ Bi-directional logic seeking (selectable)
NLQ:	Uni-directional/ Bi-directional logic seeking (selectable)
Bit-image:	Uni-directional/ Bi-directional logic seeking (selectable)

Print Head

Number of pins:	9
Life:	200 million dots/pin (Normal Mode) 100 million dots/pin (Multi-Part Mode)

Line Spacing

1/6″, 1/8″
7/72″, *n*/72″, *n*/216″: software

Character Matrix

Pitch	Draft	NLQ
Pica (10 cpi)	9 × 11H (Normal) 9 × 8H (HS)	18 × 23H
Elite (12 cpi)	9 × 9H	18 × 19H
Condensed pica (17 cpi)	9 × 11H	18 × 12H
Condensed elite (20 cpi)	9 × 9H	18 × 10H

H: half-dot

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 (manual feeding)

Paper width:	7″ to 10.5″ / 178 to 267mm
Paper length:	5.5″ to 14″ / 140 to 356 mm
Paper thickness:	0.00276″ to 0.00472″ / 0.07 to 0.12 mm
Paper weight:	14 to 24 lbs. / 52 to 90 g/m^2 / 45 to 77 kg

Cut-sheet (with optional automatic sheet feeder)

Paper size:	B5, A4, LT, Legal
Paper thickness:	0.00315″ to 0.00472″ / 0.08 to 0.12 mm
Paper weight:	16 to 24 lbs. / 60 to 90 g/m^2 / 52 to 77 kg
Hopper:	50 sheets of 64 g/m^2 30 sheets of 80 g/m^2
Stacker:	30 sheets of 64 g/m^2

	Fanfold (with push tractor feeder)	
	Paper width:	4″ to 10.0″ / 101.6 to 254mm
	Paper thickness:	0.00276″ to 0.00433″ / 0.07 to 0.11 mm (one-ply) 0.01378″ / 0.35 mm maximum (total thickness of multi-ply paper, non-carbon)
	Paper weight:	14 to 22 lbs. / 52 to 82 g/m^2 / 45 to 70 kg (one-ply) 11 to 14 lbs. / 40 to 52 g/m^2 / 34 to 45 kg (multi-ply)
	Copies:	Original + 1 or 2 (Normal Mode) Original + 3 or 4 (Multi-Part Mode) * Multi-Part Mode is recommended when using optional pull tractor unit.
	Fanfold (with optional pull tractor feeder)	
	Paper width:	4″ to 10.0″ / 101.6 to 254mm
	Paper thickness:	0.00276″ to 0.00433″ / 0.07 to 0.11 mm (one-ply) 0.01378″ / 0.35 mm maximum (total thickness of multi-ply paper, non-carbon)
	Paper weight:	14 to 22 lbs. / 52 to 82 g/m^2 / 45 to 70 kg (one-ply) 11 to 14 lbs. / 40 to 52 g/m^2 / 34 to 45 kg (multi-ply)
	Copies:	Original + 1 or 2 (Normal Mode) Original + 3 or 4 (Multi-Part Mode)
	Labels	
	Backing sheet:	4.5″ to 10.0″ / 114 to 254mm
	Thickness	
	Backing sheet:	0.00276″ to 0.00354″ / 0.07 to 0.09mm
	Total:	0.0075″ / 0.19mm max.
Emulation	Standard Mode:	EPSON ESC/P (9-pin)
	IBM Mode:	Proprinter III
Interface	Standard:	Centronics parallel
	Option:	RS-232C serial
Ribbon Type	On-carriage, dedicated Monochrome (Y9WH), Black only	
Ribbon Life	2.5 million characters (Draft 10 cpi)	
Dimensions and Weight	Width:	17.6″ / 448mm
	Depth:	13.9″ / 355 mm
	Height:	7.3″ / 186 mm
	Weight:	16.1 lbs. / 7.3 kg
Power Supply	120V AC +10%/–17%, 230V AC +14%/–13%; 50/60Hz (depending on country of purchase)	
Power Consumption	11W during standby / 50W during ASCII draft printing	
Options	PT-10HA Pull Tractor Unit SF-10HA Single-Bin Automatic Sheet Feeder IS-8H192 Serial Interface Unit SPC-8K Serial-To-Parallel Converter	

Appendix C: Interface Pin Outs

Parallel Interface

Pin	Name	Function
1	$\overline{\text{STROBE}}$	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	$\overline{\text{ACK}}$	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	$\overline{\text{AFXT}}$	Printer ignores this signal
15	Not used.	
16	S-GND	Signal ground
17	F-GND	Frame ground
18	+5V	+5V DC output from printer
19 - 30	GND	Twisted pair ground return
31	$\overline{\text{RESET}}$	Printer is reset when this signal goes low.
32	$\overline{\text{ERROR}}$	Low when printing cannot continue due to error.
33	EXT GND	External ground
34 - 35	Not used	
36	$\overline{\text{SELECT IN}}$	Printer ignores this signal

Optional Serial Interface (IS-8H192 and SPC-8K)

Pin	Name	Function
1	F-GND	Frame 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 - 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 #2

	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⟩		,	<	L	\	l	¦	Pt	ü	,	<	L	\	l	¦
D	⟨CR⟩		-	=	M	]	m	}	Å	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.

Conuntry	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	Pt	$	@	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	[	\	]	^	`	Á	É	Ó	ú
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⟩		,	<	L	\	l	¦	î	£	¼		╠	▄	∞	n
D	⟨CR⟩		−	=	M	]	m	}	ì	¥	¡		═	▌	ø	²
E	⟨SO⟩		.	>	N	^	n	~	Ä	₧	«		╬	▐	∈	■
F	⟨SI⟩		/	?	O	_	o	⟨DEL⟩	Å	ƒ	»	▀	╧	▄	∩	

Character Set #1

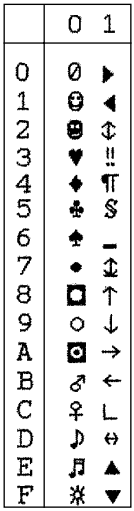
Other characters are the same as those for Character Set #2.

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

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

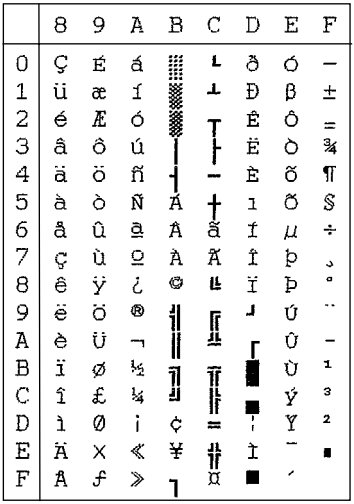
IBM Special Character Set

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



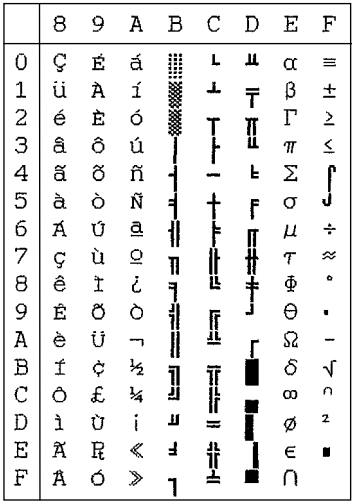
Code Page #850 Multi-lingual

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



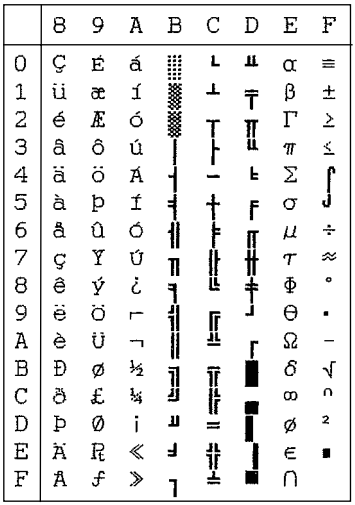
Code Page #860 Portuguese

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



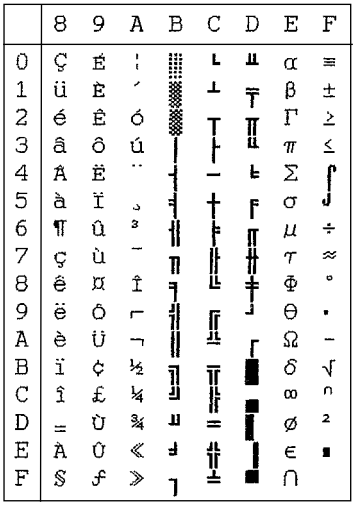
Code Page #861 Icelandic

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



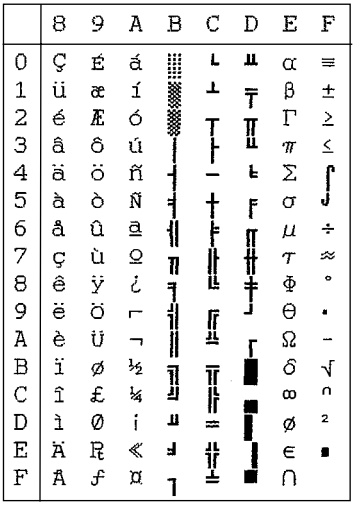
Code Page #863
Canadian French

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



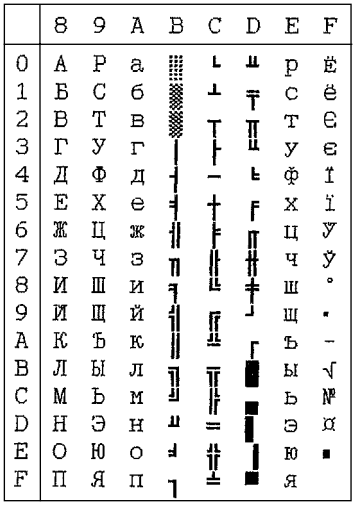
Code Page #865
Nordic

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



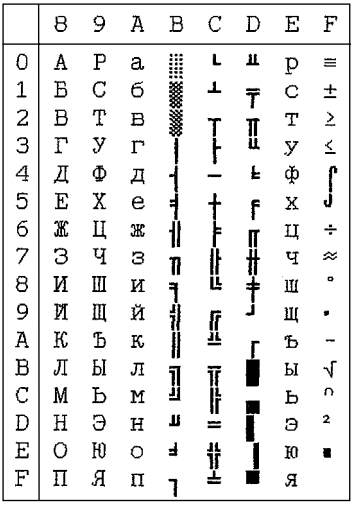
Code Page #866
Russian

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



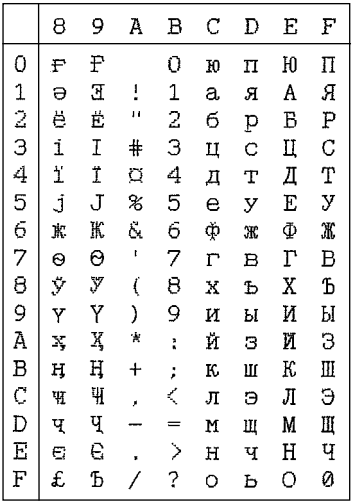
Code Page #3840
IBM-Russian

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



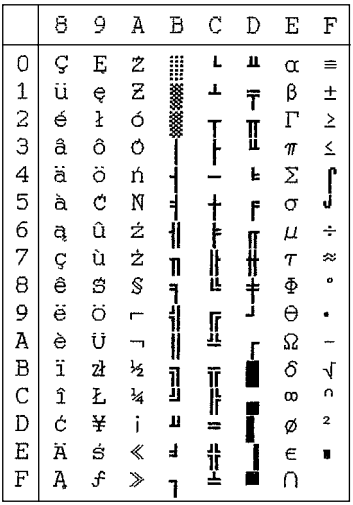
Code Page #3841
Gost-Russian

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



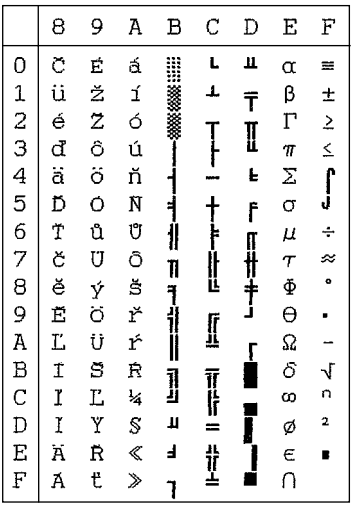
Code Page #3843
Polish

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



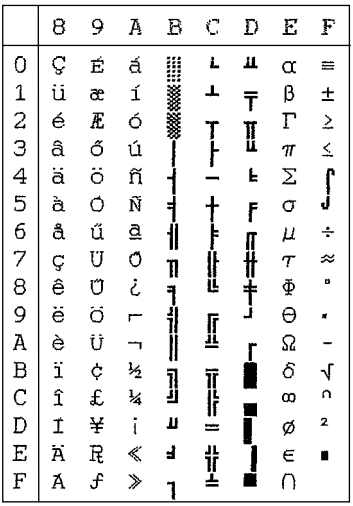
Code Page #3844
CS2

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



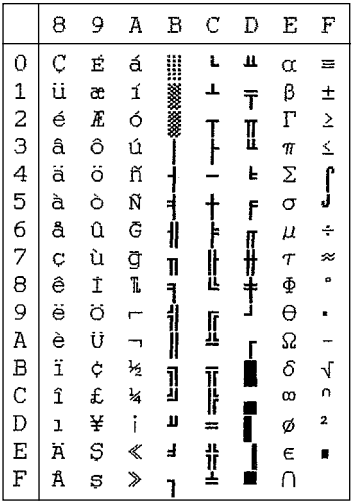
Code Page #3845
Hungarian

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



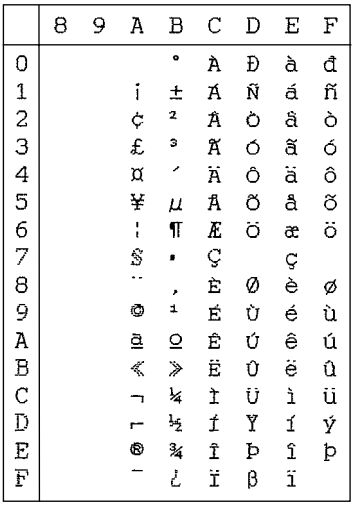
Code Page #3846
Turkish

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



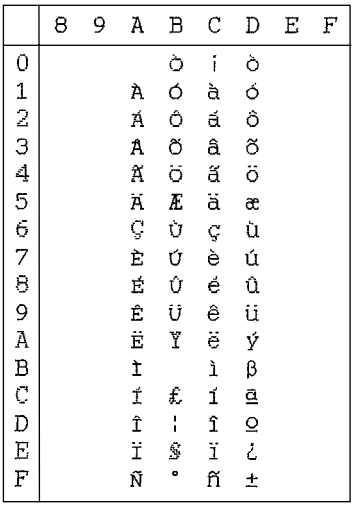
Code Page #3847
Brazil-ABNT

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



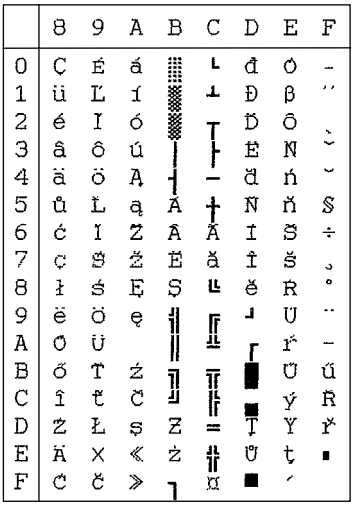
Code Page #3848
Brazil-ABICOMP

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



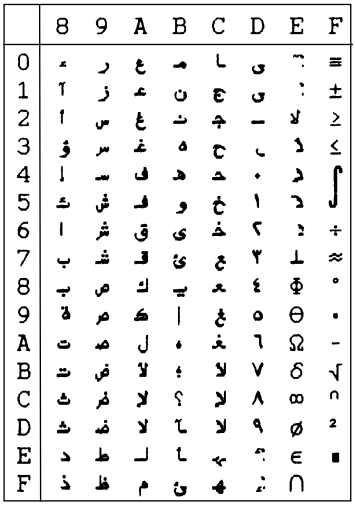
Code Page #852
Latin-2

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



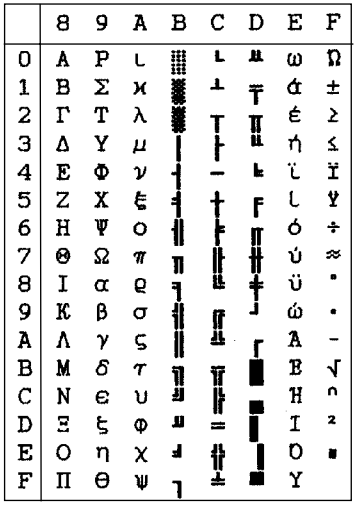
Code Page #1001
Arabic

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



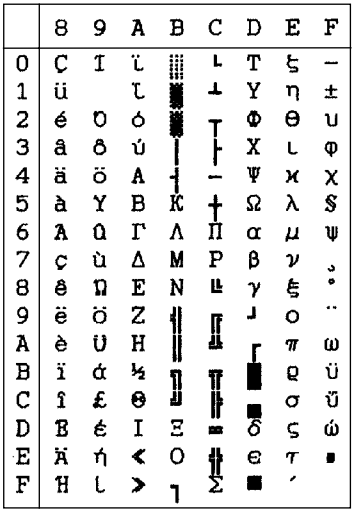
Code Page #737
Greek

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



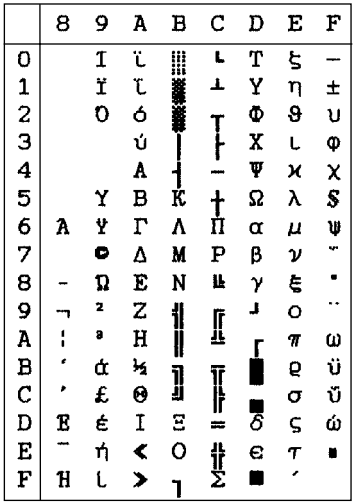
Code Page #851
Greek

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



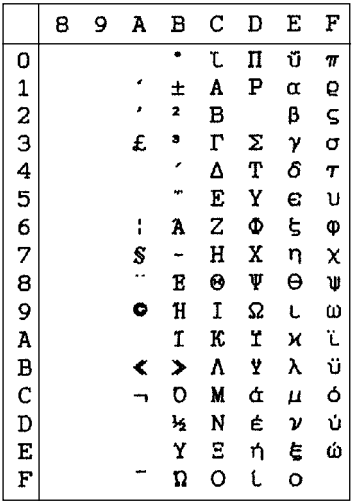
Code Page #869
Greek

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



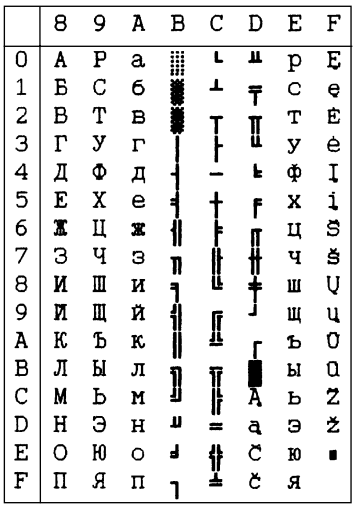
Code Page #928
Greek

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



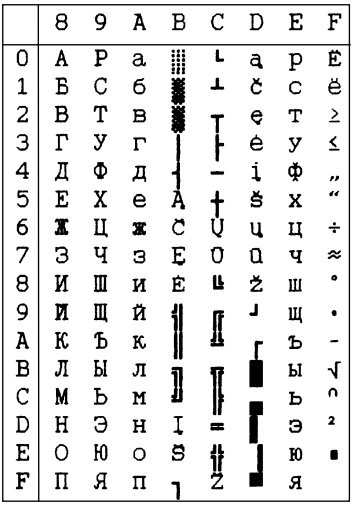
Code Page #2001
Lithuanian-KBL

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



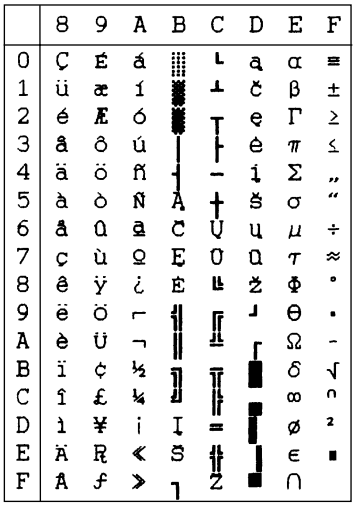
Code Page #772
Lithuanian

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



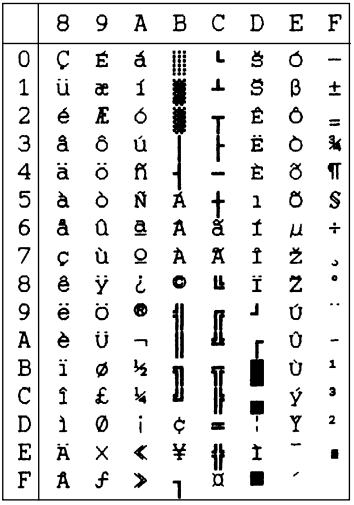
Code Page #774
Lithuanian

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



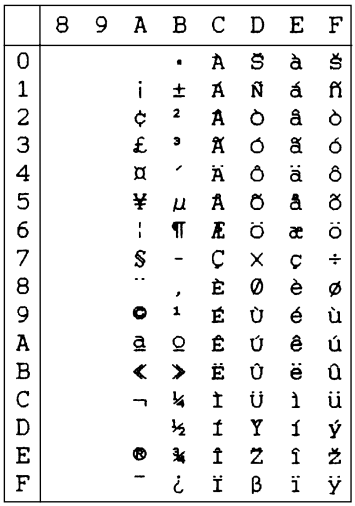
Code Page #3001
Estonian1

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



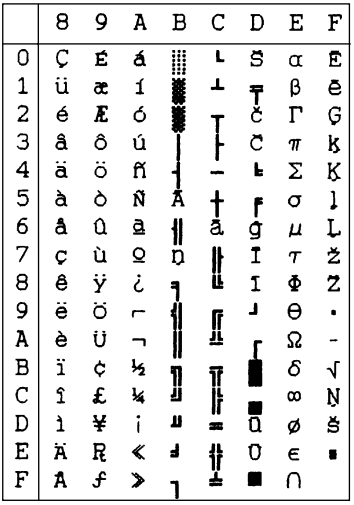
Code Page #3002
Estonian2

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



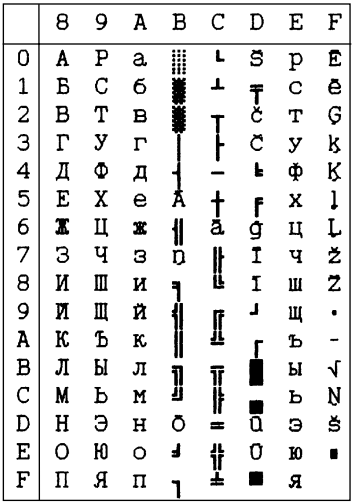
Code Page #3011
Latvian1

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



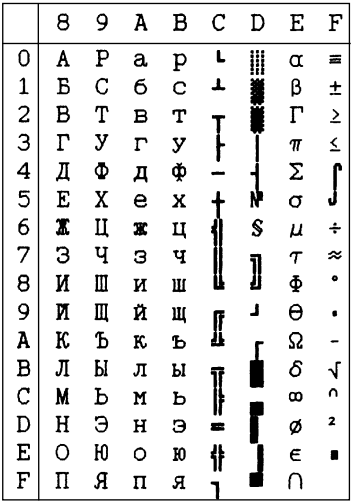
Code Page #3012
Latvian2

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



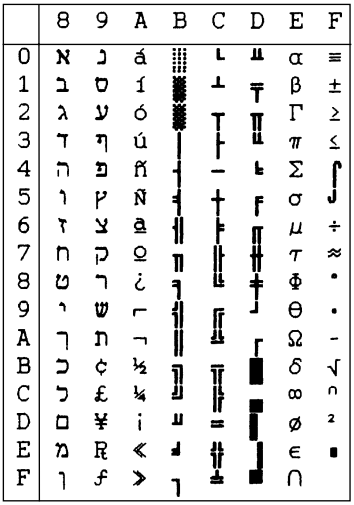
Code Page #3021
Bulgarian

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



Code Page #3031
Hebrew

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



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⟩		,	<	L	ż	l	ż
D	⟨CR⟩		–	=	M	ħ	m	Ħ
E	⟨SO⟩		.	>	N	^	n	ċ
F	⟨SI⟩		/	?	O	_	o	Δ

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, IBM, or Both), and the applicable ASCII code.

Font and Character Set Control Commands

Description	Mode	ASCII Code
Select italic	STD	ESC 4
Cancel italic	STD	ESC 5
Select Character Set #2	Both	ESC 6
Select Character Set #1	Both	ESC 7
Select Draft resident font	IBM	ESC I00H
Select 12 CPI Draft resident font	IBM	ESC I01H
Select NLQ resident font	IBM	ESC I02H
Select Draft resident font	IBM	ESC I03H
Select Draft download font	IBM	ESC I04H
Select 12 CPI Draft download font	IBM	ESC I05H
Select Draft double-strike download font	IBM	ESC I06H
Select NLQ download font	IBM	ESC I07H
Select NLQ italic resident font	IBM	ESC I0BH
Select NLQ italic download font	IBM	ESC I0FH
Select international character set	STD	ESC R*n*
Set Code Page	Both	ESC [T
Print characters from all character chart	IBM	ESC *n1 n2*
Print one character from all character chart	IBM	ESC ^*n*
Select type face	STD	ESC k*n*
Assign character table	STD	ESC (t
Select character table	STD	ESC t*n*
Select /cancel NLQ print mode	STD	ESC x*n*

Print Pitch Control Commands

Description	Mode	ASCII Code
Select condensed print	Both	SI
Same as SI	STD	ESC SI
Select one line expanded print	Both	SO
Same as SO	STD	ESC SO
Cancel condensed print	STD	DC2
Set print pitch to pica	IBM	DC2
Cancel one-line expanded print	Both	DC4
Set print pitch to elite	IBM	ESC :
Set print pitch to elite	STD	ESC M
Set print pitch to pica	STD	ESC P
Cancel proportional print	IBM	ESC P00H
Select proportional print	IBM	ESC P01H
Cancel expanded print	Both	ESC W0
Select expanded print	Both	ESC W1
Cancel proportional print	STD	ESC p0
Select proportional print	STD	ESC p1

Top/Bottom Margin and Vertical Tab Commands

Description	Mode	ASCII Code
Advance paper to next vertical tab position	Both	VT
Select VFU channels	STD	ESC /*n*
Set vertical tab positions	Both	ESC B*n*…NULL
Set bottom margin	Both	ESC N*n*
Cancel bottom margin	Both	ESC O
Set all tabs to power on defaults	IBM	ESC R
Set VFU in a channel	STD	ESC b*n*m…NULL

Special Print Mode Commands

Description	Mode	ASCII Code
Set master print mode	STD	ESC!
Cancel underlining	Both	ESC-0
Select underlining	Both	ESC-1
Select emphasized print	Both	ESC E
Cancel emphasized print	Both	ESC F
Select double-strike print	Both	ESC G
Cancel double-strike print	Both	ESC H
Select superscripts	Both	ESC S0
Select subscripts	Both	ESC S1
Cancel super/subscripts	Both	ESC T
Cancel upperlining	IBM	ESC _0
Select upperlining	IBM	ESC _1

Bit Image Graphic Commands

Description	Mode	ASCII Code
Select bit image mode	STD	ESC *m *n1 n2*
Redefine bit image mode	STD	ESC ? *n1 n2*
8-pin single-density bit image	Both	ESC K *n1 n2*
8-pin double-density bit image	Both	ESC L *n1 n2*
8-pin double-density bit image, double-speed	Both	ESC Y *n1 n2*
8-pin quadruple density bit image	Both	ESC Z *n1 n2*
9-pin bit image mode	STD	ESC ^ *n0 n1 n2*

Form Feed and Related Commands

Description	Mode	ASCII Code
Advance paper to top of next page (form feed)	Both	FF
Return to top line of current page	STD	ESC FF
Set top of form to current position	IBM	ESC 4
Set page length to *n* inches	Both	ESC C 00H *n*
Set page length to *n* lines	Both	ESC C*n*

Line Spacing Commands

Description	Mode	ASCII Code
Advance paper one line (line feed)	Both	LF
Reverse paper one line	STD	ESC LF
Set line spacing to 1/8″	Both	ESC 0
Set line spacing to 7/72″	IBM	ESC 1
Set line spacing to 1/6″	STD	ESC 2
Execute ESC A	IBM	ESC 2
Set line spacing to *n*/216″	Both	ESC 3*n*
Set line spacing to *n*/72″	STD	ESC A*n*
Define line spacing to *n*/72″	IBM	ESC A*n*
One time feed of *n*/216″	Both	ESC J*n*
Reverse line feed	IBM	ESC]
One time reverse feed of *n*/216″	STD	ESC j*n*

Download Character Commands

Description	Mode	ASCII Code
Cancel download character set	STD	ESC %0
Select download character set	STD	ESC %1
Define download characters in RAM	STD	ESC &00H
Copy standard ROM font into RAM	STD	ESC :00H *n* 00H
Define download characters in RAM	IBM	ESC =

Horizontal Print Position Control Commands

Description	Mode	ASCII Code
Move print head to next horizontal tab position	Both	HT
Return print head to left margin (carriage return)	Both	CR
Move print head to absolute horizontal position	STD	ESC $*n1 n2*
Add *n* dot spaces between characters	STD	ESC SPn
Cancel automatic line feed	IBM	ESC 5 00H
Select automatic line feed	IBM	ESC 5 01H
Set horizontal tab positions	Both	ESC D*n*...NULL
Set right margin	STD	ESC Q*n*
Set left and right margins	IBM	ESC X *n1 n2*

Horizontal Print Position Control Commands (Continued)

Description	Mode	ASCII Code
Move print head to specified horizontal position	STD	ESC \ *n1 n2*
Justification	STD	ESC a*n*
Set left margin	STD	ESC l*n*

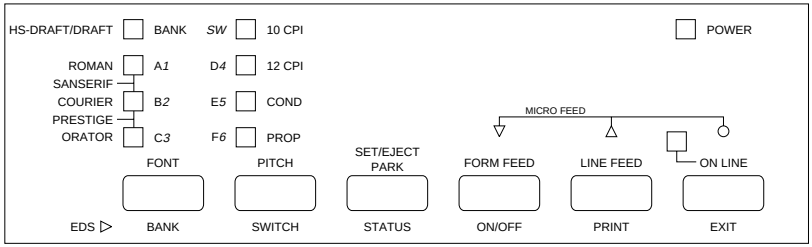
Other Commands

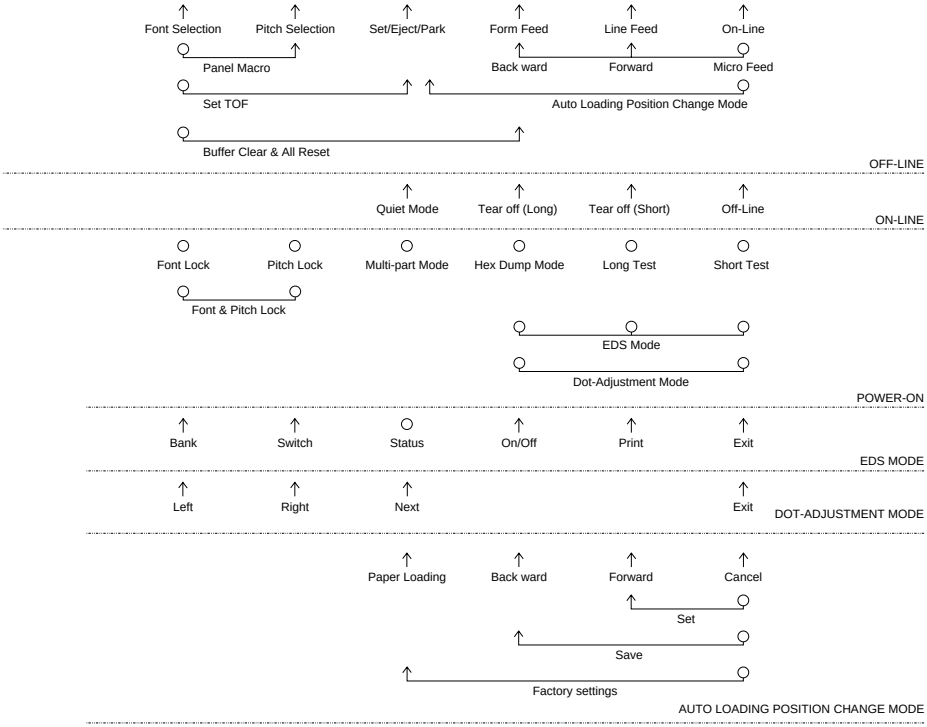
Description	Mode	ASCII Code
Sound printer bell	Both	BEL
Move printer head back one space (backspace)	Both	BS
Set printer on line	Both	DC1
Set printer off line	STD	DC3
Cancel line in print buffer	Both	CAN
Delete last character sent	STD	DEL
ASF control	STD	ESC EM*n*
Cancel MSB control	STD	ESC #
One-line uni-directional printing	STD	ESC <
Set MSB to logical 0	STD	ESC =
Set MSB to logical 1	STD	ESC >
Disable paper out detect	STD	ESC 8
Enable paper out detect	STD	ESC 9
Initialize printer	STD	ESC @
Deselect printer	IBM	ESC Q03H
Cancel uni-directional printing	Both	ESC U0
Select uni-directional printing	Both	ESC U1
Select double or quadruple size	STD	ESC h*n*
Stop printing	IBM	ESC j
Control character height, width, line spacing	IBM	ESC [@
Set initial condition	IBM	ESC [K
Cancel double-high mode	STD	ESC w0
Select double-high mode	STD	ESC w1

Appendix F: Glossary

adjustment lever	Controls the darkness of the printing by adjusting for the thickness of the paper you are printing on.
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.
NLQ font	Near 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.
paper parking	Moving fanfold paper into a position that allows printing of cut-sheets without removing the fanfold paper from 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.
release lever	Releases the paper. This lever must be in the cut-sheet position for cut-sheet paper and in the fanfold position for fanfold paper.
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.
tear-off function	Function that moves fanfold paper to a position where it can be torn off.
tractors	Mechanisms that control the movement of fanfold paper.

Appendix G: Control Panel Operation Guide





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.

E

F

G

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M

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