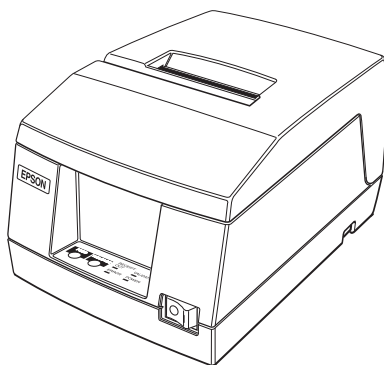
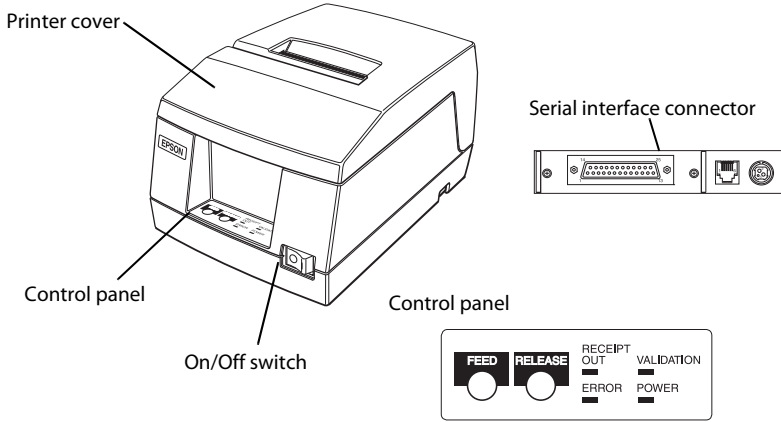


TM-U325D

User's Manual



Printer Parts and Labels



Labels



CAUTION:

Print head cover and print head are hot.



CAUTION:

Caution label for drawer kick-out connector.

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About This Manual

Setting Up and Using

- ❑ Chapter 1 contains information on setting up the printer.
- ❑ Chapter 2 contains information on using the printer.
- ❑ Chapter 3 contains troubleshooting information.

Reference

Chapter 4 contains specifications and character code tables.

Warnings, Cautions, and Notes



WARNING:

Warnings must be followed carefully to avoid serious bodily injury.



CAUTION:

Cautions must be observed to avoid minor injury to yourself or damage to your equipment.

Note:



Notes have important information and useful tips on the operation of your printer.

Downloading Drivers, Utilities, and Manuals

The latest versions of drivers, utilities, and manuals can be downloaded from the following URL:

<http://www.epson.com/support/>

Introduction

Features

The TM-U325D is a high-quality POS printer that can print a multiple-line validation and on receipt paper (roll paper). The printer has the following features:

- Excellent reliability (long life) and good operability (drop-in paper loading).
- Multiple-line validation printing (possible to print a maximum of 9 lines).
- Compact and light in weight.
- High-speed printing through logic-seeking control.
- Excellent reliability and long life due to adoption of stepping motor, both for moving the carriage and for paper feeding.
- Flexible line space setting permits printing in accordance with any user-defined format.
- Conforms with ESC/POS; excellent universality of control.
- Built-in drawer kick-out interface provides capability to drive two drawers.
- Selectable character fonts (7 × 9 and 9 × 9).
- Semi-automatic paper loading capability.
- AC adapter provides compact power supply.
- Automatic status back (ASB) function that automatically transmits changes in printer status.

Accessories

- AC adapter
- Epson ribbon cassette, ERC-38

Options

Printer fastening tape (Model No. DF-10)

Restriction of Use

When this product is used for applications requiring high reliability/safety, such as transportation devices related to aviation, rail, marine, automotive, etc.; disaster prevention devices; various safety devices, etc.; or functional/precision devices, etc.; you should use this product only after giving consideration to including fail-safes and redundancies into your design to maintain safety and total system reliability. Because this product was not intended for use in applications requiring extremely high reliability/safety, such as aerospace equipment, main communication equipment, nuclear power control equipment, or medical equipment related to direct medical care, etc., please make your own judgment on this product's suitability after a full evaluation.

Chapter 1

Setting Up the Printer

Selecting a Location

Place the printer on a surface that is as horizontal as possible. Make sure that the printer does not tilt more than 15 degrees.

The printer should be installed so that it does not move or vibrate during paper cutting or the drawer kick-out operation.

Fastening tape is available as an option.

Adjusting the Roll Paper Near-End Sensor



Notes:

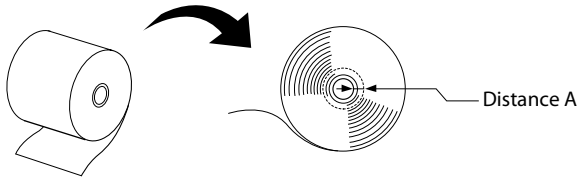
Use rolls of paper with an inner core diameter of 10.5 to 12.5 mm so that the sensor detects the remaining paper correctly.

When the last portion of a roll paper bears red markings, the marking is sometimes an adhesive that pulls the entire roll paper up. In this case, the sensor may not detect the remaining paper correctly.

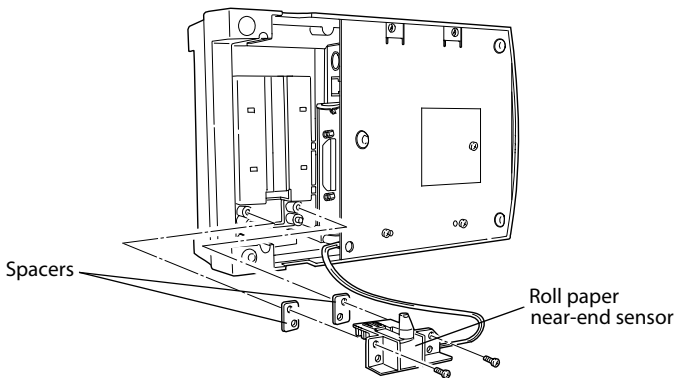
If the roll paper easily becomes loose because of the quality of the paper or other factors, incorrect detection of the paper end may result.

1. Make sure that the power supply is disconnected from the printer.

- Two spacers are included. See the illustration below and decide whether or not you want to use them. Use them if you want the near-end sensor to be triggered when distance A is 3 to 4 mm; otherwise it will be triggered when distance A is approximately 6 mm.



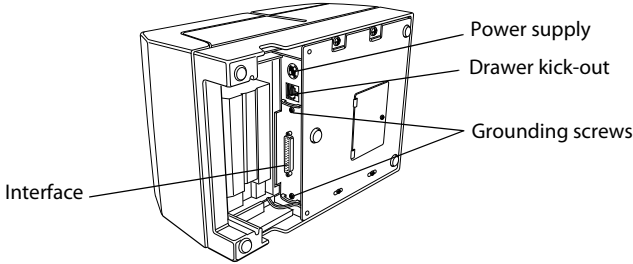
- Secure the roll paper near-end sensor (and spacers) with two screws. When you insert the spacers, be sure you set the spacers in the direction shown in the illustration.



- Check to be sure that the detecting lever moves freely.

Connecting the Cables and Grounding the Printer

You can connect up to three cables and a grounding wire to the printer. They all connect to the connector panel on the bottom of the printer, which is shown below:



Notes:

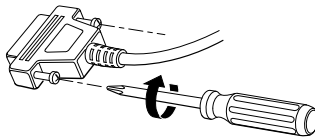
There is a caution label beside the drawer kick-out connector.

Depending on the interface installed, the interface connector on your printer may look different from the one illustrated.

Before connecting any of the cables, make sure that both the printer and the computer are turned off.

Connecting the Computer

1. Plug the cable into the connector on the printer and tighten the screws on both sides of the cable connector, as shown.



2. Connect the other end of the cable to the connector on your computer.

Connecting the Drawer

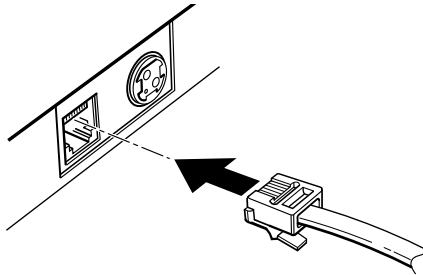
WARNING:

Use a drawer that matches the printer specification. Using an improper drawer may damage the drawer as well as the printer.

CAUTION:

Do not connect a telephone line to the drawer kick-out connector; otherwise the printer and the telephone line may be damaged.

Plug the drawer cable into the drawer kick-out connector on the bottom of the printer next to the power supply connector.



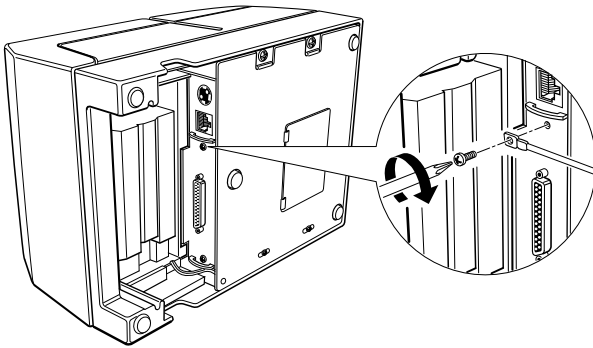
Grounding the Printer

You need a ground wire to ground your printer. Make sure that the wire meets the specifications below.

Thickness of wire:	AWG 18 or equivalent
Diameter of terminal to be attached:	3.2

1. Make sure that the printer is turned off.

2. Connect the ground wire to the printer using the FG screw on the bottom of the printer, as shown.



Connecting the Power Supply



WARNING:

Be sure to use the specified AC adapter. Connection to an improper power source may cause fire.



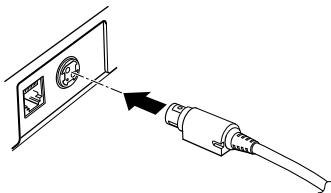
CAUTION:

When connecting or disconnecting the power supply from the printer, make sure that the power supply is not plugged into an electrical outlet; otherwise you may damage the power supply or the printer.

If the power supply's rated voltage and your outlet's voltage do not match, contact your dealer for assistance. Do not plug in the AC cable. Otherwise you may damage the power supply or the printer.

1. Make sure that the printer's power switch is turned off, and the power supply's AC cable is unplugged from the electrical outlet.

2. Plug in the power supply's cord as shown below. Notice that the flat side of the connector faces down.



3. Plug the power supply's AC cable into an outlet.



Note:

If you ever need to remove the cable, unplug the power supply's AC cable from the outlet and then grasp the connector firmly at the arrow mark and pull it straight out.

Installing the Ribbon Cassette

Use the Epson ERC-38 ribbon cassette for your printer.

Note the label inside the printer cover that can assist you in installing the ribbon.

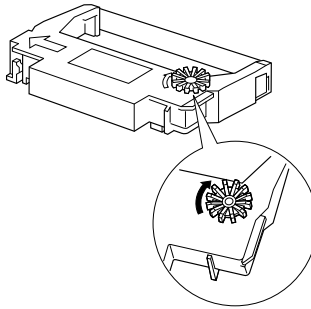


CAUTION:

Never turn the ribbon cassette's feed knob in the opposite direction of the arrow marked on the cassette; otherwise the ribbon cassette may be damaged.

1. Be sure the printer is not receiving data when you replace a ribbon cassette; otherwise data may be lost.
2. Open the printer cover.

3. Turn the ribbon cassette's knob in the direction of the arrow, to take up any slack in the ribbon.

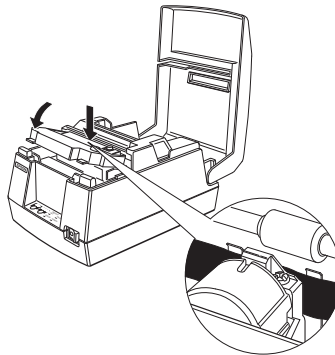


4. Insert the ribbon in the position shown in the illustration below and push the ribbon cassette until it clicks.

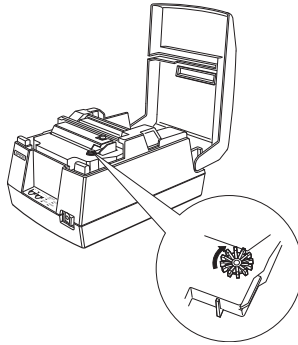


Note:

Make sure that the ribbon is installed between the print head and the platen without wrinkles or creases.



- Turn the ribbon cassette's knob 5 or 6 times in the direction of the arrow again, to take up any slack in the ribbon.



Installing Roll Paper



CAUTION:

Take care not to injure your fingers on the manual cutter

- When you remove printed paper*
- When you perform other operations such as loading/replacing roll paper*

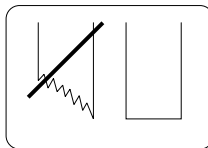


Notes:

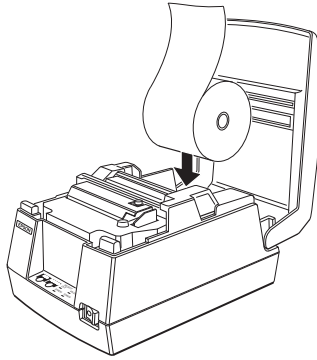
Be sure to use roll paper that meets the specifications.

Do not use rolls of paper that have the paper glued to the core because the printer cannot detect the paper end correctly. However, if you will stop the printing using the roll paper near-end sensor, you can use glued roll paper.

- Using scissors, cut the leading edge of the roll paper as shown below.

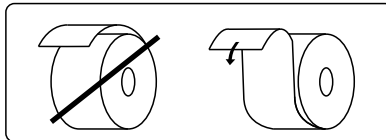


2. Turn on the printer and open the printer cover.
3. Insert the roll paper.

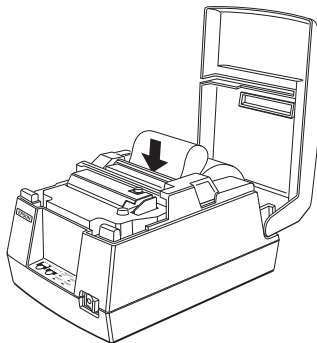


Note:

Be sure to note the correct direction that the paper comes off the roll as shown below.



4. Hold both edges of the paper and insert it straight into the paper slot. The printer feeds the paper automatically.

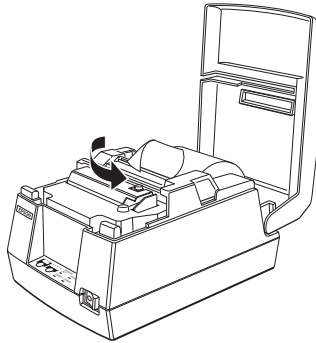


5. Tear off the paper; then close the cover.



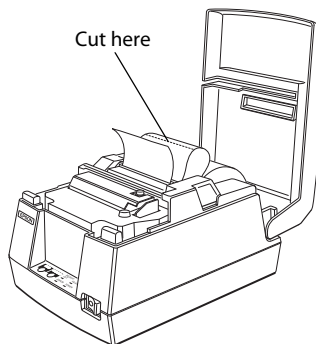
Note:

Before closing the cover, make sure that the roll paper has no slack.



To remove the roll of paper, follow the steps below.

1. Open the printer cover.
2. Pull up the paper and cut the paper at the dotted line shown in the illustration below.



3. Remove the roll paper from the printer.
4. Press the FEED button to remove the remaining paper.

Running a Self-test

Any time that you want to check the performance of your printer, you can run a Self-test described below. This shows whether your printer is working correctly. It is independent of any other equipment or software.



Note:

Be sure to install the ribbon cassette and the roll paper before you run the Self-test.

1. To perform a Self-test, hold down the FEED button while you turn on the printer with the power switch.
2. The printer prints the current printer settings and then the RECEIPT OUT light flashes to indicate that the printer is in the test printing standby state.
3. Press the FEED button to start the second part of the test, in which the printer prints a pattern using the built-in character set.
4. After the printer completes a certain number of lines, it prints the following:

*** completed ***

Then it enters the normal mode.



Note:

If you want to pause the Self-test manually, press the FEED button. Press the FEED button again to continue the Self-test.

Setting the DIP Switches



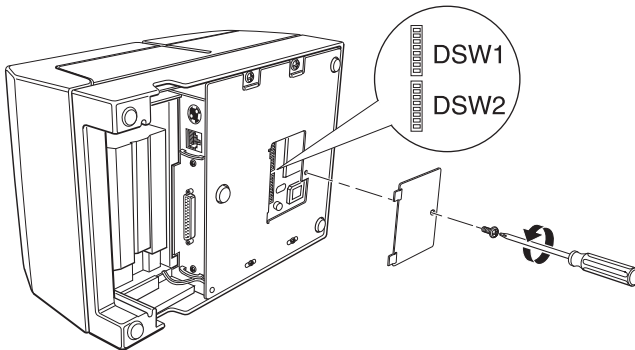
CAUTION:

Turn off the printer while removing the DIP switch cover to prevent an electrical short, which can damage the printer.

If you have special requirements, you can change the DIP switch settings.

1. Make sure that the printer is off.

- Turn the printer over and remove the DIP switch access cover, as shown below.



- There are two sets of switches. Notice that ON is marked on each set of switches. Use tweezers or another narrow tool to move the switches.
- Use the following tables to set the DIP switches. Numbers starting with 1 are in the first set, and numbers starting with 2 are in the second.

DIP Switch Set 1

Switch	Function	ON	OFF
1-1	Data reception error	Ignored	Prints"?"
1-2	Receive buffer capacity	45 bytes	4 KB
1-3	Handshaking	XON/XOFF	DTR/DSR
1-4	Word length	7 bits	8 bits
1-5	Parity check	Yes	No
1-6	Parity selection	Even	Odd
1-7, 1-8	Transmission speed (see table below)		

Transmission Speed

Transmission Speed (BPS)-bits per second	1-7	1-8
2400	ON	ON
4800	OFF	ON
9600	ON	OFF
19200	OFF	OFF

DIP Switch Set 2

Switch	Function	ON	OFF
2-1	Handshaking (BUSY condition)	Receive buffer full	Off line or receive buffer full
2-2	Not defined	—	—
2-3	Select number of characters per line (CPL) 7 × 9 font/9 × 9 font	42CPL/35CPL	40CPL/33CPL
2-4, 2-5	Not defined	—	—
2-6	Internal use	—	Fixed to Off
2-7	Interface pin 6 reset signal	Enabled	Disabled
2-8	Interface pin 25 reset signal	Enabled	Disabled



Notes:

DIP Switch 1, 2-7 and 2-8 are only available when using a serial interface.

Changes in DIP switch settings (excluding switches 2-7 and 2-8) are recognized only when the printer power is turned on or when the printer is reset by using the interface. If the DIP switch setting is changed after the printer power is turned on, the change does not take effect until the printer is turned on again or is reset.

If DIP switch 2-7 or 2-8 is turned on while the printer is turned on, the printer may be reset, depending on the signal state.

DIP switches should not be changed while the printer power is on.

Using the Power Switch Cover

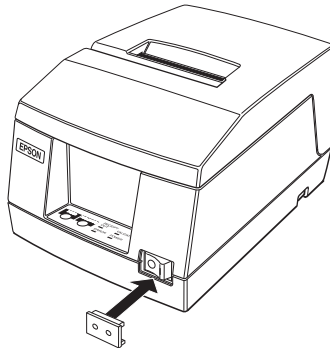


WARNING:

If an accident occurs when the power switch cover is attached, unplug the power supply cord from the outlet immediately; otherwise the printer may be damaged.

You can use the provided power switch cover to protect the power switch from accidental or improper operation. Attach the cover as shown in the illustration below.

You can turn the power on or off with the switch cover attached by inserting a pointed object (like a ball point pen) through either of the two small holes on the switch cover.

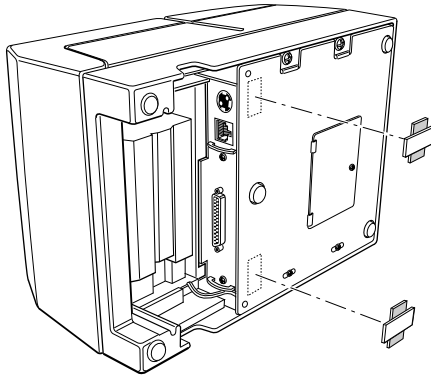


Affixing the Fastening Tape (Option)

Two sets of tape are included as an option to fasten your printer to a countertop or other surface. Follow the steps below:

1. Clean the countertop or other surface where the printer will be installed.

2. Peel the green backing paper off of one side of each of the two sets of tapes and affix them to the bottom of the printer, as shown below.



3. Peel the green backing paper off of the other side of the tapes.
4. Press the printer onto the countertop; it will be held firmly in place by the fastening tape.

Chapter 2

Using the Printer

Operating the Control Panel

You can feed or release paper with the buttons on the control panel. The indicator lights help you monitor the printer's status.



Switch

The power switch on the front of the printer turns the printer on and off.

Buttons

FEED

Press the FEED button once to advance the roll paper one line. You can also hold down the FEED button to feed the paper continuously.

RELEASE

Press the RELEASE button to release the validation paper.



Notes:

*These buttons can be disabled by the **ESC c 5** command, but they work whenever the printer cover is open, even if they have been disabled by the **ESC c 5** command.*

The power switch and FEED button can also be used to start the Self-test.

Indicator lights

The control panel lights provide information on printer conditions.

POWER (Green)

The POWER light is on when the printer power is on.

RECEIPT OUT (Red)

This light is on when the roll paper is at the end or near the end.

This light flashes in the following cases. When it flashes, press the FEED button.

In the Self-test standby state

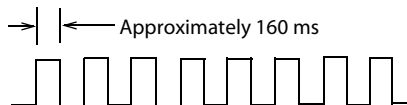
VALIDATION (Green)

The light is on when validation paper is inserted and the printer is ready to print. The light flashes when the printer is in the validation insertion/removal waiting state.

ERROR (Red)

This light is on when the printer is off line (except during paper feed using the FEED button and during the Self-test). It flashes to indicate an error condition.

The flashing pattern shown below indicates that the temperature of the print head is too high. The printer recovers automatically and resumes printing when the head cools.



If the printer stops working and the ERROR light is flashing, turn the printer off, check for jammed paper, and remove the paper by following the instructions on page 3-3, if necessary. Then turn the printer back on. If the printer still does not work, unplug the power supply cord from the outlet immediately, and contact a qualified service person.



CAUTION:

Take care not to injure your fingers on the manual cutter

- *When you remove printed paper*
- *When you perform other operations such as loading/replacing roll paper*

The print head becomes very hot during printing. Allow it to cool before you reach into the printer.

Do not use aerosol sprayers containing flammable gas inside or around this product. Doing so may cause fire.

Validation Paper Handling



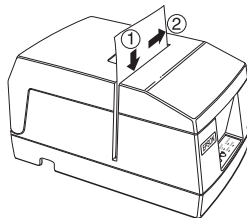
Notes:

Use only validation paper that matches the printer's specifications. See Paper Specifications in Chapter 4.

Be sure that roll paper is loaded before you use validation paper.

Be sure that the validation paper is flat, without curls, folds, or wrinkles.

1. Send appropriate control commands from the computer to print on validation paper.
2. When the VALIDATION light flashes, insert the validation paper into the validation paper inlet using the right edge of the validation paper inlet as a guide. (Follow steps ① and ② in the illustration.)



3. Make sure you insert the validation paper into the inlet as far as it will go.
4. When the validation paper is detected by the sensor, the VALIDATION light is changed from flashing to on and the paper is automatically drawn into the printer and printing begins.
5. When the VALIDATION light begins flashing after printing, remove the validation.

Chapter 3

Troubleshooting

Troubleshooting

This chapter gives solutions to some of the more common printer problems.

General Problems

The lights on the control panel do not come on.

Make sure that the power supply cords are correctly plugged into the printer, the power unit, and to the power outlet.

Make sure that power is supplied to the power outlet. If the outlet is controlled by a switch or timer, use another outlet.

Printing Problems

The ERROR light is flashing and the printer does not print.

First, turn off the printer and check for a paper jam. (See the paper jam description on page 3-3.)

If there is no paper jam and the printer has been printing for quite a while, the print head may be overheated. If the print head is overheated, the printer will resume printing when the head has cooled (usually about 30 seconds).

If there is no paper jam and the print head is not overheated, turn off the printer and turn it back on after about 10 seconds. If the printer still does not work, unplug the power supply cord from the outlet immediately. Then contact a qualified service person.

The ERROR light is off, but nothing is printed.

Try to run the Self-test to check that the printer works properly. See the Self-test instructions in Chapter 1 to run the Self-test. If the Self-test does not work, contact your dealer or a qualified service person.

If the Self-test works properly, check the following:

1. Check the connection at both ends of the interface cable between the printer and the computer. Also make sure that this cable meets the specifications for both the printer and the computer.
2. The data transmission settings may be different between the printer and computer. Make sure that the printer's DIP switch settings for data transmission are the same as the computer's. You can print the printer's interface settings using the Self-test.

If the printer still does not print, contact your dealer or a qualified service person.

The printer sounds like it is printing, but nothing is printed.

The ribbon cassette may not be installed properly. See the instructions in Chapter 1.

The ribbon may be worn out. Replace the ribbon cassette as described in Chapter 1.

The printout is faint.

The ribbon may be worn out. Replace the ribbon cassette as described in Chapter 1.

A line of dots is missing in the printout.

The print head may be damaged. Stop printing and contact your dealer or a qualified service person.

Removing Jammed Paper

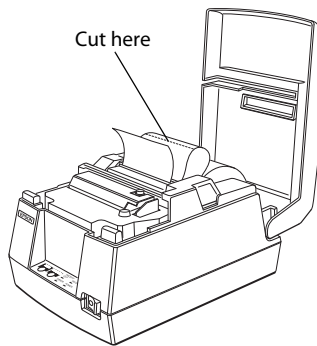
Follow these steps to clear a paper jam:



CAUTION:

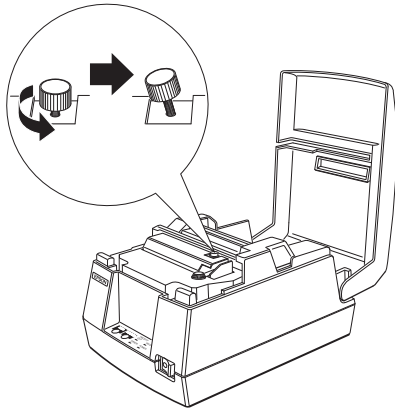
The print head becomes very hot during printing. Allow it to cool before you reach into the printer.

1. Open the printer cover.
2. Pull up the paper and cut the paper at the dotted line shown in the illustration below.

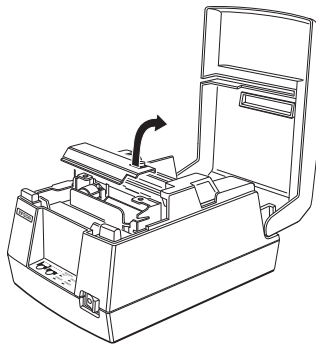


3. Remove the roll paper from the printer.
4. Remove the ribbon cassette.

5. Loosen the screw on the print head cover as shown below.



6. Lift up the print head cover.



7. Remove all the jammed paper.



Note:

Do not pull the jammed paper in the opposite direction of paper feeding.

8. Replace the print head cover and secure it with the screw.
9. Replace the ribbon cassette and roll paper; then close the printer cover.

Hexadecimal Dump

This feature allows experienced users to see exactly what data is coming to the printer. This can be useful in finding software problems. When you turn on the hex dump function, the printer prints all commands and other data in hexadecimal format along with a guide section to help you find specific commands.

To use the hexadecimal dump feature, follow these steps:

1. Turn on the printer while you hold down the FEED button; then close the cover.
2. When the printer enters the hexadecimal dump mode, it prints “Hexadecimal Dump.”
3. Run any software program that sends data to the printer. The printer prints all the codes it receives in a two-column format. The first column contains the hexadecimal codes and the second column gives the ASCII characters that correspond to the codes.

```
Hexadecimal Dump
1B 40 1B 21 30 41 42 43 .@.!0 A B C
44 45 46 47 0A          DE F G.
```

- A period (.) is printed for each code that has no ASCII equivalent.*
 - During the hexadecimal dump, all commands except **DLE EOT** and **DLE ENQ** are disabled.*
4. When the printing finishes, turn off the printer or reset it to turn off the hexadecimal dump mode.



Note:

Insufficient print data to fill the last line can be printed by setting the printer off-line.

Chapter 4

Reference Information

Printing Specifications

Printing Method:	Serial impact dot-matrix
Head wire configuration:	9-pin serial configuration
Printing Direction:	Bi-directional, logic-seeking
Characters/line (default):	See table on page 4-2.
Character spacing (default)	See table on page 4-2.
Fonts A and B:	
Printing speed:	Approx. 3.5 lines/second (40 columns, 16 cpi) Approx. 6.4 lines/second (16 columns, 16 cpi) (excluding data transmission time and processing time)

[cpi: characters per 25.4 mm (characters per inch)]

Note:

When printing exceeds the allowable print duty cycle, the printer automatically stops printing. In this case, the printing speed described above is not guaranteed.

Character Specifications

Number of characters Alphanumeric characters: 95
Extended graphics: 128 × 8 pages,
International characters: 32

Character structure: 7 × 9 (the total number of dots for each
horizontal line: 400 in half dot units)
9 × 9 (the total number of dots for each
horizontal line: 400 in half dot units)

Character size: See table below.

Character Sizes, Character Spacing, Character Columns

Character structure		Character size W x H (mm)	Character spacing Dot space	CPL	CPI
W x H (mm)	Character				
7 x 9	ANK	1.2 x 3.1	3 half dots	40	16
	Graphics	1.7 x 3.1	0	40	16
9 x 9	ANK	1.6 x 3.1	3 half dots	33	13.3
	Graphics	2.0 x 3.1	0	33	13.3
7 x 9	ANK	1.2 x 3.1	2 half dots	42	17.8
	Graphics	1.6 x 3.1	0	42	17.8
9 x 9	ANK	1.6 x 3.1	2 half dots	35	14.5
	Graphics	1.9 x 3.1	0	35	14.5

[cpl: characters per line]

[cpi: characters per 25.4 mm (characters per inch)]

Notes:

- The default is 7 × 9.
- 2-dot spacing in half dot units and 3-dot spacing in half dot units depend on the DIP switch setting.

Paper Specifications

Paper feed method:	Friction feed
Paper feed pitch:	Default 4.23 mm {1/6 inch} Can be set in units of 0.176 mm {1/144 inch} by commands.
Paper feed speed:	Approx. 105.9 mm {4.17 inches}/second (25 lines/second) (continuous feeding)

Paper size and weight:

Roll paper:

Normal paper (single-ply)

Size:	Width 76 mm \pm 0.5 mm {3.0" \pm 0.02"}
Maximum outside dia:	83 mm {3.27"}
Thickness:	0.06 to 0.085 mm {0.0024 to 0.0033"}
Mass:	52.3 to 64.0 g/m ² {13.9 to 17 lbs} (45 to 55 Kg {20.41 to 24.94 lbs}/1000 sheets/1091 mm \times 788 mm {43.00" \times 31.02"}

Pressure sensitive paper

Maximum 1 original + 2 copies

Size: Width 76 mm \pm 0.5 mm
{3.0" \pm 0.02"}

Maximum outside dia: 83 mm {3.27"}

Thickness: 0.05 to 0.08 mm {0.0020 to 0.0031"}
(Total thickness should be 0.2 mm or less and each sheet should be 0.05 to 0.08 mm.)

Recommended paper: MITSUBISHI PAPER MILLS, LTD.

Non-carbon paper
(blue color)

Top and middle sheets: N40
(thickness: 0.06 mm, mass: 47.2 g/m²)

Bottom sheet: N60
(thickness: 0.08 mm, mass: 68.0 g/m²)

Note:

When using original + 2 copies (the total is 3), the edges of the paper might fold when the temperature is 34°C and the humidity is 90%.

Validation paper: Normal, pressure sensitive, and carbon copy paper

Paper size (W × L): 135 mm × 70 mm (minimum) to 182 mm × 182 mm (maximum)
{5.31" × 2.76" to 7.17" × 7.17"}
(maximum 9 lines at 4.23 mm {.17"} pitch)

Single-ply paper thickness (without copy paper): 0.09 mm to 0.12 mm {.0035" to .0047"}

Copy paper thickness: Backing paper: 0.07 mm to 0.12 mm {.0028" to .0047"}

Copy and original paper: 0.04 mm to 0.07 mm {.0016" to .0028"}

Carbon copy paper: Approximately 0.035 mm {.00138"}

Total thickness: 0.09 mm to 0.31 mm {.0035" to .012"}

Example: Original + 2-ply copy
Original paper: 0.04 mm {.0016"}
Carbon copy paper: 0.07 mm {.0028"}
(0.035 mm {.0138"} × 2 sheets)
Copy paper: 0.04 mm {.0016"}
Backing paper: 0.07 mm {.0028"}
Roll paper: 0.08 mm {.0031"}
Total thickness: 0.30 mm {.0118"}

Copy capability

Roll paper and validation paper:

Copy capability is greatly influenced by the ambient temperature, so printing must be performed under the conditions described in the table below.

Relationship between ambient temperature and number of copies

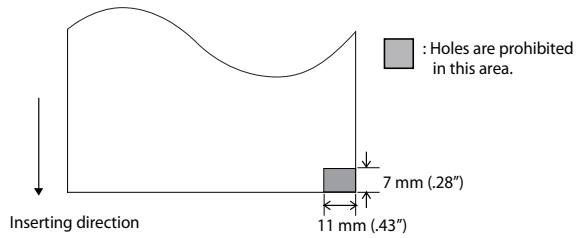
Roll paper and validation paper:

Number of copies	Ambient temperature
Original + 2 copies	10° to 40°C {50° to 104°F}
Original + 1 copy	5° to 50°C {41° to 122°F}

Notes on validation paper

- ❑ For correct validation printing, be sure that roll paper is loaded before you use validation paper. Also be aware that the printing on validation paper may also be visible on the roll paper if the roll paper is pressure-sensitive paper.
- ❑ Use validation paper that is flat, without curls, folds, warps, or wrinkles, especially at the paper edge. Otherwise, the paper may become ink stained or the ribbon may get caught in the printer mechanism.
- ❑ Choose validation paper carefully when glue is on the edge, since paper feeding and insertion are affected by gluing conditions (e.g., glue quality, method, and length) and glue location.
- ❑ Using a multi-ply copy paper with a thick middle sheet may decrease copying capability.
- ❑ Printing noise may change depending on paper thickness. Noise may increase when thick single-ply paper is used.

- ❑ Validation paper with holes (e.g., sprocket holes) within the areas shown below must not be used. Otherwise, the paper cannot be detected by the paper sensor. Translucent paper must not be used.



Reliability

Life:	20,000,000 lines End of Life is defined as the point at which the printer reaches the beginning of the Wearout Period.
MTBF:	180,000 hours Failure is defined as Random Failure occurring at the time of the Random Failure Period.
MCBF:	49,000,000 lines This is an average failure interval based on failures relating to wearout and random failures up to the life of 20 million lines.
Print head life:	150 million characters (when printing an average of 2 dots/wire per character)
Validation switching operation life:	500,000 transactions

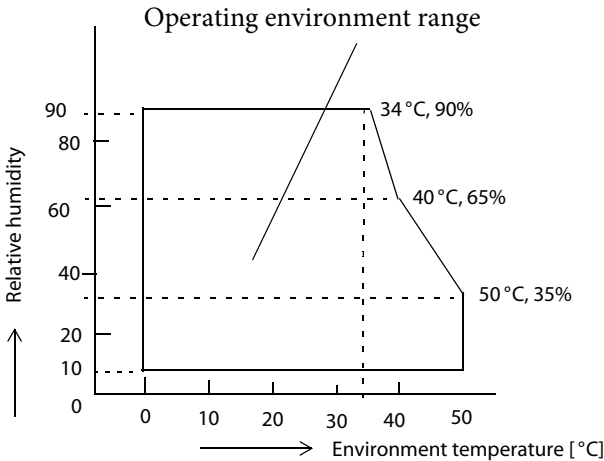
Environmental Conditions

Temperature

- Operating 0 to 50 °C {32 to 122 °F}
 (when the temperature is 30 °C or more,
 there is a limitation for the humidity. Refer to
 the figure below.)
- Storage -10 to 50 °C {14 to 122 °F}
 (except for paper, and a ribbon)

Humidity

- Operating 10 to 90% RH
- Storage 10 to 90% RH
 (except for paper and a ribbon)



Character Code Tables

SP in a table represents space.

Page 0 (PC437: U.S.A., Standard Europe) (International character set: U.S.A)

HEX	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	
HEX	BIN	0000	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111
0	0000	NUL	DLE	SP	0	@	P		p	Ç	È	É	⌘	⌚	α	≡	240
1	0001	XON	!	"	1	A	Q	a	q	ü	æ	í	⌘	⌚	β	±	241
2	0010		"	3	2	B	R	b	r	é	Æ	ó	⌘	⌚	Γ	≥	242
3	0011	XOFF	#	3	5	C	S	c	s	ä	ö	ú	|	⌚	π	≤	243
4	0100	EOT	\$	4	D	T	d	t	ä	ö	ñ	⌚	⌚	⌚	Σ	ƒ	244
5	0101	ENQ	%	5	E	U	e	u	à	ò	Ñ	⌚	+	⌚	σ	⌚	245
6	0110		&	6	F	V	f	v	á	ú	á	⌚	⌚	⌚	μ	÷	246
7	0111		'	7	G	W	g	w	ç	ü	ö	⌚	⌚	⌚	τ	≈	247
8	1000		(	8	H	X	h	x	è	ÿ	ÿ	⌚	⌚	⌚	φ	248	
9	1001	HT	)	9	I	Y	i	y	é	ö	⌚	⌚	⌚	⌚	θ	•	249
A	1010	LF	*	:	J	Z	j	z	è	ù	⌚	⌚	⌚	⌚	Ω	250	
B	1011	ESC	+	;	K	L	k	l	{	í	φ	‡	⌚	⌚	δ	√	251
C	1100	FF	FS	<	L	;	l	;	|	í	æ	‡	⌚	⌚	∞	ñ	252
D	1101	CR	GS	=	M	J	m	j	}	í	¥	⌚	⌚	⌚	ø	ˆ	253
E	1110		>	N	~	n	~	~	À	Pt	«	⌚	⌚	⌚	€	■	254
F	1111		/	?	O	-	o	-	SP	À	ƒ	»	⌚	⌚	∩	SP	255

Page 1 (Katakana)

	HEX	8	9	A	B	C	D	E	F
HEX	BIN	1000	1001	1010	1011	1100	1101	1110	1111
0	0000	一 128	上 144	SP 160	一 176	夕 192	ミ 208	二 224	× 240
1	0001	一 129	下 145	。 161	ア 177	チ 193	ム 209	フ 225	円 241
2	0010	一 130	下 146	「 162	イ 178	ツ 194	メ 210	キ 226	年 242
3	0011	一 131	ト 147	」 163	ウ 179	テ 195	モ 211	コ 227	月 243
4	0100	一 132	一 148	、 164	エ 180	ト 196	ヤ 212	▲ 228	日 244
5	0101	一 133	一 149	・ 165	オ 181	ナ 197	ユ 213	▲ 229	時 245
6	0110	一 134	一 150	ヲ 166	カ 182	ニ 198	ヨ 214	▲ 230	分 246
7	0111	一 135	一 151	ア 167	キ 183	ヌ 199	ラ 215	▲ 231	秒 247
8	1000	一 136	一 152	イ 168	ク 184	ネ 200	リ 216	♠ 232	〒 248
9	1001	一 137	一 153	ウ 169	ケ 185	ノ 201	ル 217	♥ 233	市 249
A	1010	一 138	一 154	エ 170	コ 186	ハ 202	レ 218	◆ 234	区 250
B	1011	一 139	一 155	オ 171	サ 187	ヒ 203	ロ 219	♣ 235	町 251
C	1100	一 140	一 156	ヤ 172	シ 188	フ 204	ワ 220	● 236	村 252
D	1101	一 141	一 157	ユ 173	ス 189	ヘ 205	ン 221	○ 237	人 253
E	1110	一 142	一 158	ヨ 174	セ 190	ホ 206	・ 222	／ 238	■ 254
F	1111	一 143	一 159	ツ 175	ソ 191	マ 207	・ 223	＼ 239	SP 255

	HEX	8	9	A	B	C	D	E	F
HEX	BIN	1000	1001	1010	1011	1100	1101	1110	1111
0	0000	Ç 128	É 144	Á 160	⌘ 176	Ⓕ 192	ð 208	Ó 224	— 240
1	0001	ü 129	æ 145	í 161	⌘ 177	± 193	Ð 209	β 225	± 241
2	0010	é 130	Æ 146	ó 162	⌘ 178	Ⓕ 194	Ê 210	Ô 226	= 242
3	0011	â 131	ô 147	ú 163	⌘ 179	Ⓕ 195	Ë 211	ò 227	¼ 243
4	0100	ä 132	ö 148	ñ 164	⌘ 180	— 196	È 212	õ 228	244
5	0101	à 133	ò 149	Ñ 165	À 181	+ 197	ı 213	ö 229	§ 245
6	0110	á 134	û 150	á 166	Ā 182	ã 198	í 214	μ 230	÷ 246
7	0111	ç 135	ù 151	ó 167	À 183	Ā 199	î 215	þ 231	ˆ 247
8	1000	ê 136	ÿ 152	¿ 168	© 184	Ⓕ 200	Ï 216	Ð 232	° 248
9	1001	ë 137	ÿ 153	® 169	⌘ 185	Ⓕ 201	Ⓕ 217	Ú 233	˚ 249
A	1010	è 138	ÿ 154	¬ 170	|| 186	± 202	Ⓕ 218	Û 234	· 250
B	1011	ï 139	ø 155	½ 171	⌘ 187	Ⓕ 203	■ 219	Ü 235	¹ 251
C	1100	î 140	£ 156	¼ 172	Ⓕ 188	Ⓕ 204	■ 220	Ý 236	³ 252
D	1101	ì 141	∅ 157	ı 173	ϕ 189	= 205	ı 221	Ÿ 237	² 253
E	1110	Ä 142	× 158	« 174	¥ 190	⌘ 206	î 222	238	■ 254
F	1111	Å 143	f 159	» 175	⌘ 191	Ⓕ 207	■ 223	239	SP 255

	HEX	8	9	A	B	C	D	E	F
HEX	BIN	1000	1001	1010	1011	1100	1101	1110	1111
0	0000	Ç 128	É 144	á 160	█ 176	┘ 192	┘ 208	α 224	≡ 240
1	0001	ü 129	À 145	í 161	█ 177	┘ 193	┘ 209	β 225	± 241
2	0010	é 130	È 146	ó 162	█ 178	┘ 194	┘ 210	Γ 226	≥ 242
3	0011	â 131	ô 147	ú 163	| 179	┘ 195	┘ 211	π 227	≤ 243
4	0100	ã 132	õ 148	ñ 164	┘ 180	— 196	┘ 212	Σ 228	ƒ 244
5	0101	à 133	ò 149	Ñ 165	┘ 181	+ 197	┘ 213	σ 229	J 245
6	0110	Á 134	Ú 150	á 166	┘ 182	┘ 198	┘ 214	μ 230	÷ 246
7	0111	ç 135	ù 151	ó 167	┘ 183	┘ 199	┘ 215	τ 231	≈ 247
8	1000	ê 136	î 152	ô 168	┘ 184	┘ 200	┘ 216	Φ 232	° 248
9	1001	Ê 137	Ï 153	Ô 169	┘ 185	┘ 201	┘ 217	θ 233	• 249
A	1010	è 138	Û 154	¬ 170	|| 186	┘ 202	┘ 218	Ω 234	· 250
B	1011	í 139	ϕ 155	½ 171	┘ 187	┘ 203	█ 219	δ 235	√ 251
C	1100	ô 140	£ 156	¼ 172	┘ 188	┘ 204	█ 220	∞ 236	n 252
D	1101	ì 141	Û 157	ı 173	┘ 189	— 205	█ 221	∅ 237	² 253
E	1110	Ã 142	Pt 158	« 174	┘ 190	┘ 206	█ 222	ε 238	█ 254
F	1111	Ã 143	Ó 159	» 175	┘ 191	┘ 207	█ 223	∩ 239	SP 255

	HEX	8	9	A	B	C	D	E	F
HEX	BIN	1000	1001	1010	1011	1100	1101	1110	1111
0	0000	Ç 128	É 144	Ï 160	Ï 176	Ł 192	Ł 208	α 224	≡ 240
1	0001	ü 129	È 145	Ï 161	Ï 177	Ł 193	Ŧ 209	β 225	± 241
2	0010	é 130	È 146	ó 162	Ï 178	Ŧ 194	Ŧ 210	Γ 226	≥ 242
3	0011	â 131	ô 147	ú 163	Ï 179	Ł 195	Ł 211	π 227	≤ 243
4	0100	Ā 132	È 148	Ï 164	Ï 180	— 196	Ł 212	Σ 228	ƒ 244
5	0101	à 133	ÿ 149	Ï 165	Ï 181	Ł 197	Ŧ 213	σ 229	Ƶ 245
6	0110	¶ 134	û 150	³ 166	Ï 182	Ł 198	Ŧ 214	μ 230	÷ 246
7	0111	ç 135	ù 151	Ï 167	Ï 183	Ł 199	Ł 215	τ 231	≈ 247
8	1000	ê 136	œ 152	î 168	Ï 184	Ł 200	Ł 216	φ 232	° 248
9	1001	ë 137	ô 153	Ï 169	Ï 185	Ŧ 201	Ŧ 217	θ 233	• 249
A	1010	è 138	Û 154	Ï 170	Ï 186	Ł 202	Ŧ 218	Ω 234	· 250
B	1011	ï 139	φ 155	½ 171	Ï 187	Ŧ 203	■ 219	δ 235	√ 251
C	1100	î 140	£ 156	¼ 172	Ï 188	Ł 204	■ 220	∞ 236	n 252
D	1101	— 141	Û 157	¾ 173	Ï 189	— 205	■ 221	∅ 237	² 253
E	1110	Ā 142	Ū 158	« 174	Ï 190	Ł 206	■ 222	ε 238	■ 254
F	1111	§ 143	ƒ 159	» 175	Ï 191	Ł 207	■ 223	∩ 239	SP 255

	HEX	8	9	A	B	C	D	E	F
HEX	BIN	1000	1001	1010	1011	1100	1101	1110	1111
0	0000	Ċ 128	Ē 144	á 160	▣ 176	Ł 192	⊥ 208	α 224	≡ 240
1	0001	ü 129	æ 145	í 161	▣ 177	⊥ 193	⊥ 209	β 225	± 241
2	0010	é 130	Æ 146	ó 162	▣ 178	⊥ 194	⊥ 210	Γ 226	≥ 242
3	0011	â 131	ô 147	ú 163	| 179	⊥ 195	⊥ 211	π 227	≤ 243
4	0100	ä 132	ö 148	ñ 164	⊥ 180	— 196	⊥ 212	Σ 228	↑ 244
5	0101	à 133	ò 149	Ñ 165	⊥ 181	⊥ 197	⊥ 213	σ 229	∫ 245
6	0110	å 134	û 150	ä 166	⊥ 182	⊥ 198	⊥ 214	μ 230	÷ 246
7	0111	ç 135	ù 151	ó 167	⊥ 183	⊥ 199	⊥ 215	τ 231	≈ 247
8	1000	ē 136	ÿ 152	č 168	⊥ 184	⊥ 200	⊥ 216	Φ 232	° 248
9	1001	ë 137	Ö 153	č 169	⊥ 185	⊥ 201	⊥ 217	θ 233	• 249
A	1010	è 138	Û 154	⊥ 170	⊥ 186	⊥ 202	⊥ 218	Ω 234	· 250
B	1011	ï 139	ø 155	½ 171	⊥ 187	⊥ 203	■ 219	δ 235	√ 251
C	1100	î 140	£ 156	¼ 172	⊥ 188	⊥ 204	■ 220	∞ 236	n 252
D	1101	ì 141	Ø 157	ı 173	⊥ 189	= 205	■ 221	∅ 237	² 253
E	1110	Ä 142	Pt 158	« 174	⊥ 190	⊥ 206	■ 222	€ 238	■ 254
F	1111	Å 143	f 159	œ 175	⊥ 191	⊥ 207	■ 223	∩ 239	SP 255

	HEX	8	9	A	B	C	D	E	F
HEX	BIN	1000	1001	1010	1011	1100	1101	1110	1111
0	0000	SP 128	SP 144	SP 160	SP 176	SP 192	SP 208	SP 224	SP 240
1	0001	SP 129	SP 145	SP 161	SP 177	SP 193	SP 209	SP 225	SP 241
2	0010	SP 130	SP 146	SP 162	SP 178	SP 194	SP 210	SP 226	SP 242
3	0011	SP 131	SP 147	SP 163	SP 179	SP 195	SP 211	SP 227	SP 243
4	0100	SP 132	ö 148	SP 164	SP 180	SP 196	SP 212	SP 228	SP 244
5	0101	SP 133	SP 149	SP 165	SP 181	SP 197	SP 213	SP 229	SP 245
6	0110	SP 134	SP 150	SP 166	SP 182	SP 198	SP 214	SP 230	SP 246
7	0111	SP 135	SP 151	SP 167	SP 183	SP 199	SP 215	SP 231	SP 247
8	1000	SP 136	SP 152	SP 168	SP 184	SP 200	SP 216	SP 232	SP 248
9	1001	SP 137	SP 153	SP 169	SP 185	SP 201	SP 217	SP 233	SP 249
A	1010	SP 138	SP 154	SP 170	SP 186	SP 202	SP 218	SP 234	SP 250
B	1011	SP 139	SP 155	SP 171	SP 187	SP 203	SP 219	SP 235	SP 251
C	1100	SP 140	SP 156	SP 172	SP 188	SP 204	SP 220	SP 236	SP 252
D	1101	SP 141	SP 157	SP 173	SP 189	SP 205	SP 221	SP 237	SP 253
E	1110	SP 142	SP 158	SP 174	SP 190	SP 206	SP 222	SP 238	SP 254
F	1111	SP 143	SP 159	SP 175	SP 191	SP 207	SP 223	SP 239	SP 255

	HEX	8	9	A	B	C	D	E	F
HEX	BIN	1000	1001	1010	1011	1100	1101	1110	1111
0	0000	SP 128	SP 144	SP 160	SP 176	SP 192	SP 208	SP 224	SP 240
1	0001	SP 129	SP 145	SP 161	SP 177	SP 193	SP 209	SP 225	SP 241
2	0010	SP 130	SP 146	SP 162	SP 178	SP 194	SP 210	SP 226	SP 242
3	0011	SP 131	SP 147	SP 163	SP 179	SP 195	SP 211	SP 227	SP 243
4	0100	SP 132	ö 148	SP 164	SP 180	SP 196	SP 212	SP 228	SP 244
5	0101	SP 133	SP 149	SP 165	SP 181	SP 197	SP 213	SP 229	SP 245
6	0110	SP 134	SP 150	SP 166	SP 182	SP 198	SP 214	SP 230	SP 246
7	0111	SP 135	SP 151	SP 167	SP 183	SP 199	SP 215	SP 231	SP 247
8	1000	SP 136	SP 152	SP 168	SP 184	SP 200	SP 216	SP 232	SP 248
9	1001	SP 137	SP 153	SP 169	SP 185	SP 201	SP 217	SP 233	SP 249
A	1010	SP 138	SP 154	SP 170	SP 186	SP 202	SP 218	SP 234	SP 250
B	1011	SP 139	SP 155	SP 171	SP 187	SP 203	SP 219	SP 235	SP 251
C	1100	SP 140	SP 156	SP 172	SP 188	SP 204	SP 220	SP 236	SP 252
D	1101	SP 141	SP 157	SP 173	SP 189	SP 205	SP 221	SP 237	SP 253
E	1110	SP 142	SP 158	SP 174	SP 190	SP 206	SP 222	SP 238	SP 254
F	1111	SP 143	SP 159	SP 175	SP 191	SP 207	SP 223	SP 239	SP 255

International character set

Country	ASCII code (hexadecimal)												
	Hex	23	24	40	5B	5C	5D	5E	60	7B	7C	7D	7E
	Dec	35	36	64	91	92	93	94	96	123	124	125	126
U.S.A.	#	\$	@	[	\	\]	^	`	{	|	}	~
France	#	\$	à	°	ç	§	^	`	é	ù	è	¨	
Germany	#	\$	§	Ä	Ö	Ü	^	`	ä	ö	ü	ß	
U.K.	£	\$	@	[	\	\]	^	`	{	|	}	~
Denmark I	#	\$	@	Æ	Ø	Å	^	`	æ	ø	å	~	
Sweden	#	¤	É	Ä	Ö	Å	Ü	é	ä	ö	å	ü	
Italy	#	\$	@	°	\	é	^	ù	à	ò	è	ì	
Spain	Pt	\$	@	í	Ñ	¿	^	`	¨	ñ	}	~	
Japan	#	\$	@	[	¥	]	^	`	{	|	}	~
Norway	#	¤	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü	
Denmark II	#	\$	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü	