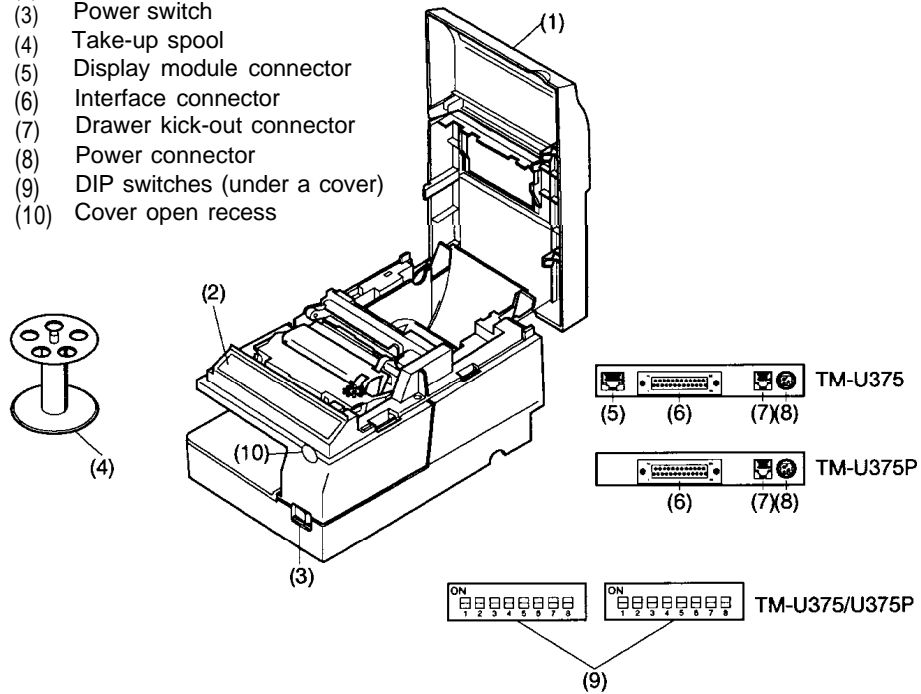Journal, Slip, Validation Printer

TM-U375/U375P
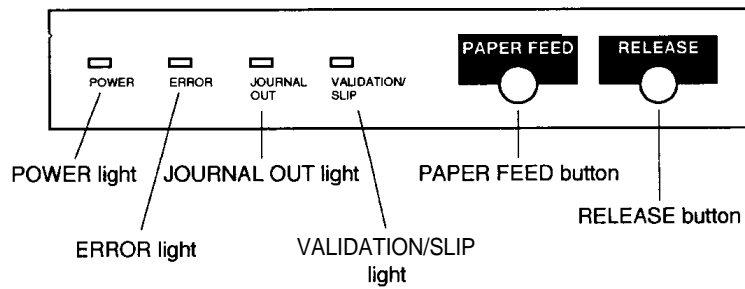
Operator's Manual

Printer Part Names

(1)   Printer cover
(2)   Control panel
(3)   Power switch
(4)   Take-up spool
(5)   Display module connector
(6)   Interface connector
(7)   Drawer kick-out connector
(8)   Power connector
(9)   DIP switches (under a cover)
(10) Cover open recess

(1)

(2)

(4)

(10)

(3)

TM-U375
(5)   (6)   (7)(8)

TM-U375P
(6)   (7)(8)

TM-U375/U375P

(9)

Control Panel

POWER ERROR JOURNAL VALIDATION/ PAPER FEED RELEASE
                OUT   SLIP

POWER light   JOURNAL OUT light   PAPER FEED button

ERROR light   VALIDATION/SLIP   RELEASE button
                        light

DECLARATION of CONFORMITY for CE MARKING

Product Name: Printer

Type Name: M63UA / TM-U375

The printer conforms to the following Directive and Norms

Directive 89/336/EEC

EN 55022 (1986) Class B

EN 50082-1 (1992)

IEC   801-2 level 2

IEC   801-3 level 2

IEC   801-4 level 2

Directive 90/384/EEC

EN45501: (1992)

DECLARATION of CONFORMITY for CE MARKING

Product Name: Printer

Type Name: M115A / TM-U375P

The printer conforms to the following Directive and Norms

Directive 89/336/EEC
EN 55022 (1986 and 1994 2th) Class B
EN 50082-1 (1992 and 1994 2th)
IEC   801-2 level 2
IEC   801-3 level 2
IEC   801-4 level 2

Directive 90/384/EEC
EN45501: (1992)

Introduction

Features

The TM-U375 and TM-U375P are high-performance POS printers which handle slip, validation, and journal printing (both journal and receipt printing with pressure-sensitive paper) in a single unit. The main features of the TM-U375 and TM-U375P printers are as follows:

❑ World's smallest multi-function 1.5 station printer.
❑ High-speed printing using logic seeking.
❑ Easy problem handling (e.g., paper jams or objects dropped into the printer) via a clamshell mechanism.
❑ Two validation/slip paper entrances: from above for validation paper and from the front for slip paper.
❑ Free-format printing in page mode.
❑ Various check printing pattern.
❑ Logic seeking and page mode for check printing.
❑ Movable platen for easy paper insertion.
❑ Paper load switch for easy paper roll loading.
❑ Control capability for two drawers.
❑ Selectable character size (7 x 9 font or 5 x 9 font).
❑ Command protocol based on the ESC/POS® standard.
❑ ASB (Automatic Status Back) function that automatically transmits printer status changes.
❑ EPSON® intelligent module connection (for the TM-U375 only).
❑ EPSON display module series connection (for the TM-U375 only).
❑ Bidirectional parallel interface in accordance with the IEEE 1284 Nibbe/Byte Modes.

About This Manual

Setting up and Using

❑ **Chapter 1** contains information on unpacking the printer, setting it up, setting the DIP switches, and adjusting the paper near end detector.

❑ **Chapter 2** contains information on using the printer.

❑ **Chapter 3** contains troubleshooting information.

Reference

❏ **Chapter 4** contains specifications.

Notes, Cautions, and Warnings

✎ *Note:*
Notes have important information and useful tips on the operation of your printer.

⚠ CAUTION:

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

⚠ WARNING:

Warnings must be followed carefully to avoid serious bodily injury.

Contents

Chapter 1 *Setting Up the Printer*

Chapter 2 *Using the Printer*

Chapter 3 *Troubleshooting*

Chapter 4 *Reference Information*

Chapter 1

Setting Up the Printer

Unpacking

The items illustrated below are included with your printer. If any items are
damaged or missing, please contact your dealer for assistance.

Take-up spool   Paper roll (1 pc)   Ribbon cassette

Printer

Hexagonal lock
screws (2 pcs)
(only for the TM-U375)

Power switch cover
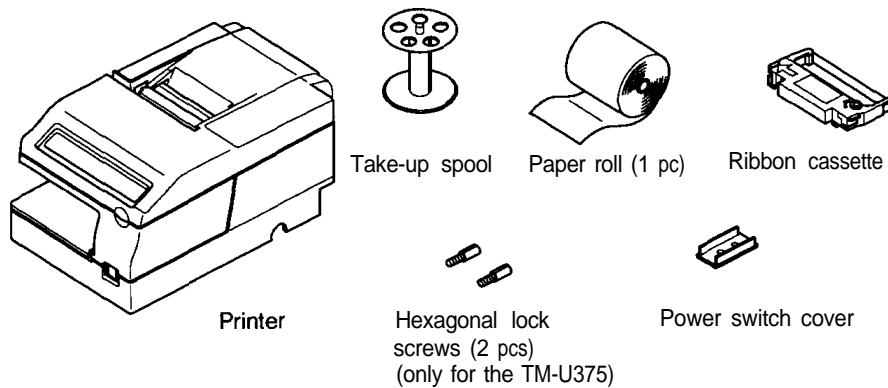
✎ Note:
See the Note on page 1-5 for information on the screws.

Removing the Protective Materials

The printer is protected during shipping by protective materials that must
be removed before you turn on the printer.

1. Loosen the screw and remove the protective material A from the
   printer, as the illustration shows on page 1-3.

Protective material A

Loosen
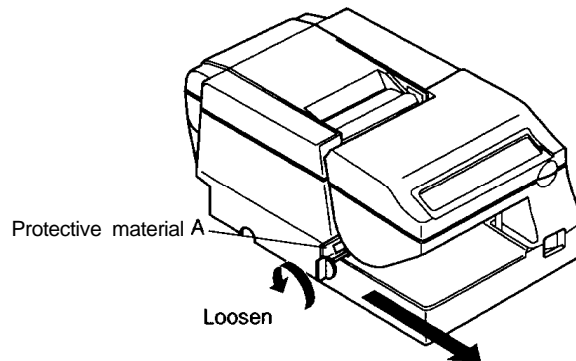
Note:

Store the protective material A on the back of the printer, following the steps below.

1. *Insert the projections on the protective material A into the corresponding holes as the illustration below.*

2. *Tighten the screw.*

Protective material A

A'

B'

C'

A

C

B

Secure
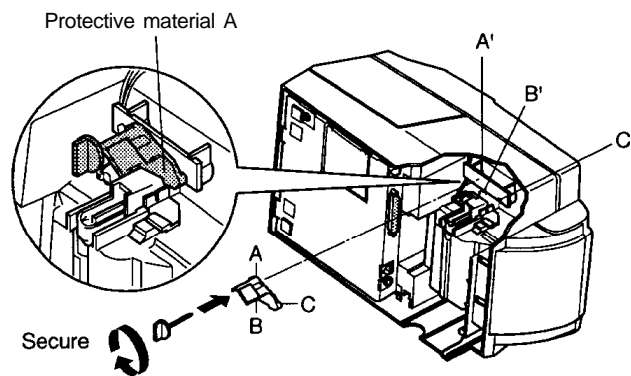
Note:

Put the protective material A back in its original position if you ever ship or store your printer.

2. Remove the protective materials **B** and C as the illustration.

Protective material B

Protective material C
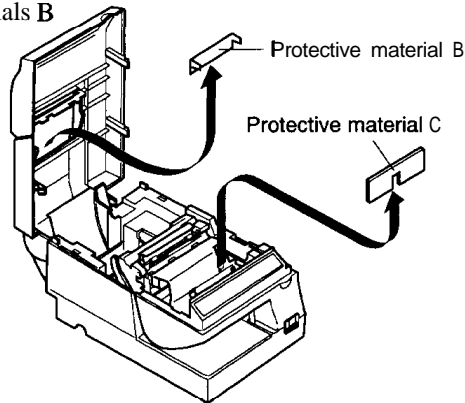
✎ *Note:*
Put the protective materials B and C back in its original position if you ever ship or store your printer.

Connecting the Printer to Your Computer

TM-U375

Follow the procedures below only when you use the printer as a single unit (not connected to an intelligent module). When you use the printer with the intelligent module, refer to the **IT**-**U Series User's Manual** for details.

You need an appropriate serial interface cable to connect your computer to the printer's built-in interface.

1. Make sure that both the printer and computer are turned off; then plug the cable connector securely into the printer's interface connector.

2. Tighten the screws on both sides of the cable connector.
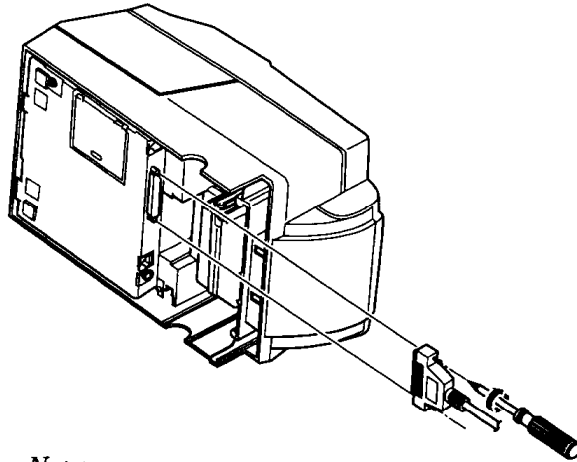
> *Note:*
>
> *Your printer comes with inch-type hexagonal lock screws installed. If you plan to use an interface cable that requires millimeter-type lock screws, replace the inch-type screws with the enclosed millimeter-type screws by using a hex screwdriver (5 mm). To distinguish the two types of screws, see the figure below.*

Notch (one or more lines)

Inch-type

Millimeter-type

3. Plug the other end of the cable into the computer.

TM-U375P

You need an appropriate parallel interface cable to connect your computer to the printer.

1. Make sure that the printer and the computer are turned off.
   Then plug the cable into the connector on the printer, as shown.
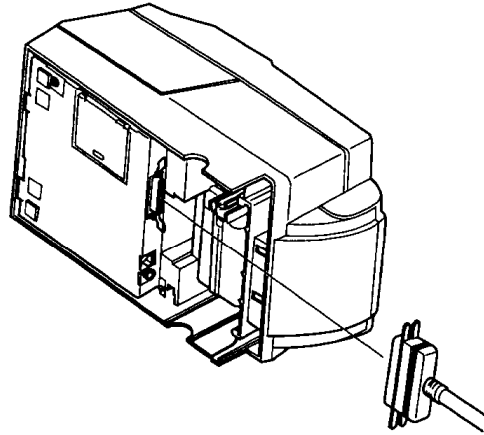
✐ *Note:*
Squeeze the wire clips on the printer together until they lock in place on both sides of the connector.

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

Connecting the Printer to Your Drawer

Follow the procedures below to connect a drawer to the printer only when you use the printer as a single unit (not connected to an intelligent module). (Intelligent module connection is available only for the TM-U375.) When you use the TM-U375 with the intelligent module, refer to the ***IT-U Series User's Manual*** for details.

⚠ CAUTION:

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

1. Make sure that the printer is turned off.

2. Plug the cable connector securely into the printer's drawer kick-out connector until it clicks.
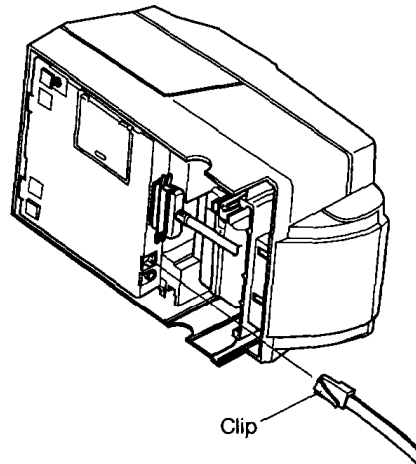
TM-U375

Clip

TM-U375P

Clip

⚠ CAUTIONS:

1. *Do not connect a telephone line to the drawer kick out connector.*
2. *Do not confuse the drawer kick out connector and the display module connector.*

Anschließen des Druckers an Ihre Geldlade

Verfahren Sie wie im folgenden beschrieben, um eine Geldlade an den Drucker anzuschließen, aber nur, wenn der Drucker als Einzeleinheit (nicht angeschlossen an ein intelligentes Modul) betrieben wird. Einzelheiten betr. Verwendung des Druckers mit einem intelligenten Modul siehe Betriebsanleitung der IT-U Serie.

⚠ ACHTUNG:

Nur eine Geldlade verwenden, die der Druckerspezifikation entspricht. Bei Verwendung einer ungeeigneten Geldlade kann sowohl die Geldlade als such der Drucker beschäaligt werden.

1. Stellen Sie sicher, daß der Drucker ausgeschaltet ist.

2. Stecken Sie den Kabelsteckverbinder fest in den Auszug-Steckverbinder am Drucker ein, bis er hörbar einrastet.

TM-U375

Clip
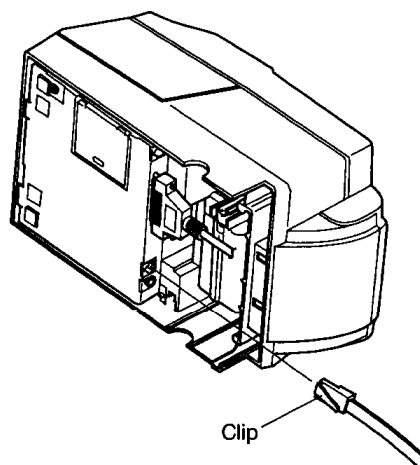
TM-U375P

Clip
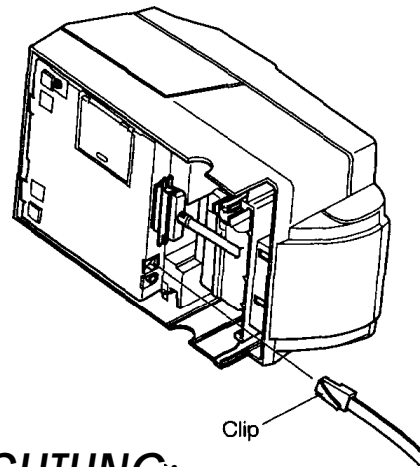
⚠ ACHTUNG:

1. Am Auszug-Steckverbinder für die Geldlade keine Telefonleitung anschließen.
2. Nicht den Auszug-Steckverbinder für die Geldlade und den Displaymodul-Steckverbinder vetwechseln.

Connecting the Printer to Your Direct Connection Display
Module (For the TM-U375 only)

Follow the procedures below to connect a direct connection display module to the printer only when you use the printer as a single unit (not connected to an intelligent module). When you use the printer with the intelligent module, refer to the IT-U Series User's Manual for details.

1. Make sure that the printer is turned off.

2. Plug the cable connector (provided with the direct connection display module) securely into the printer's display module connector until it clicks.
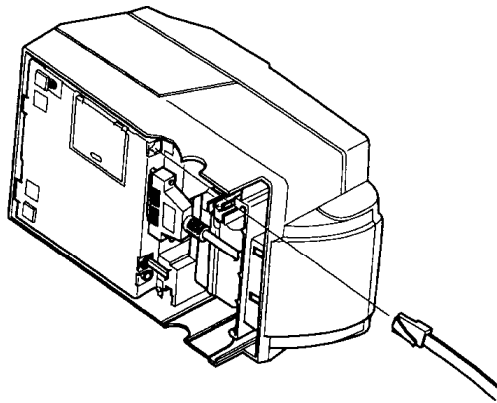
TM-U375

⚠ *CAUTIONS:*

1. Do not connect a telephone line to the drawer kick out connector.
2. Do not confuse the drawer kick out connector and the display module connector.
3. Never connect any product other than the display module to the DM connector.
4. If you connect any product other than the display module to the DM connector, Seiko Epson Corporation is not liable for any damage to the other product or to the TM-U375 itself.

Grounding the Printer

When you use the printer as a single unit (not connected to an intelligent module), you need to ground your printer. (Intelligent module connection is available for the TM-U375 only.)

Recommended wire is described below.
Thickness of wire   : AWG18 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 ground connector (marked FG) on the bottom of the printer with the screw provided on the printer.
   Alternatively, another screw located beside the power connector on the TM-U375P can be used to connect the ground wire.

TM-U375
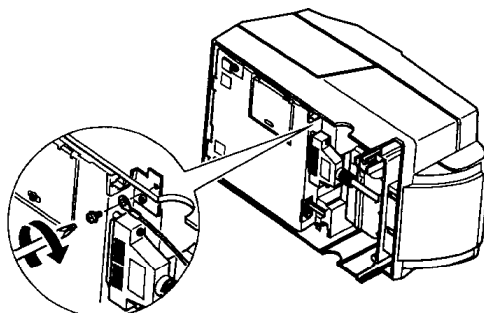
TM-U375P
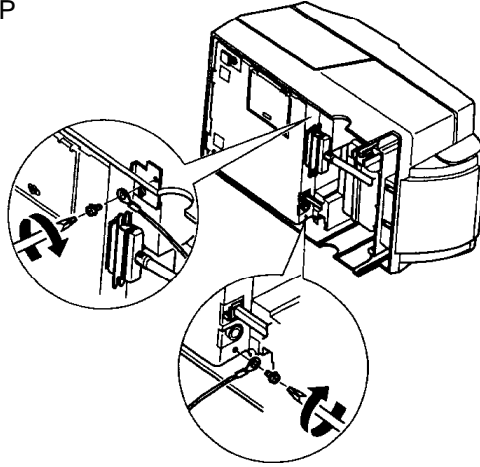
3. Ground the other end of the ground wire.

Connecting the Power Supply

When the printer is used as a single unit, not connected to an intelligent module, use the optional EPSON power supply, PS-150 for your printer. When the printer is connected to an intelligent module, the power is supplied by the intelligent module. Refer to **the IT-U Series User's Manual** for details. (Intelligent module connection is available for the TM-U375 only.)

⚠ WARNING:

Using an incorrect power supply may cause fire or electrical shock.

⚠ CAUTION:

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

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

2. Check the label on the power supply to make sure that the required voltage matches that of your electrical outlet.

3. Plug the power supply's DC cable connector into the printer's power connector as shown below.

TM-U375
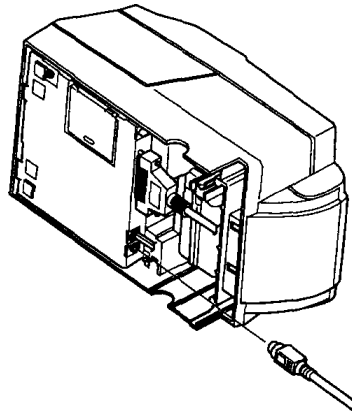
TM-U375P
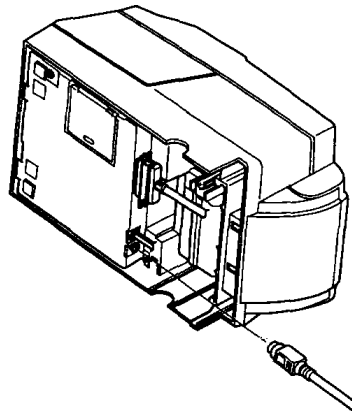
4. Plug the power supply's power cord into an electrical outlet.

✎ *Note:*
To remove the DC cable connector, grasp the connector at the arrow and pull it straight out. Make sure that the power supply's power cord is unplugged before you disconnect the DC cable connector.

Installing the Ribbon Cassette

⚠ CAUTIONS:

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

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

Note:
Use the EPSON ERC-38 ribbon cassette for your printer.

1. Turn on the printer and open the printer cover.

2. Turn the ribbon cassette's knob two or three times in the direction of the arrow, to take up any slack in the ribbon.
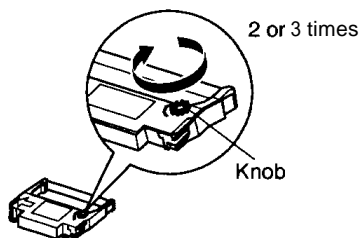
3. Insert the ribbon in the position as the illustration below and push the ribbon cassette until it clicks. Then rotate the cassette's knob two or three more times. This is necessary to place the ribbon in the correct position.

2 or 3 more times

Knob
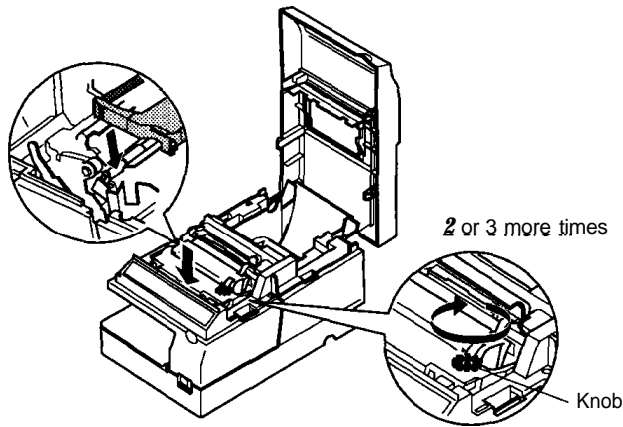
4. Make sure that the ribbon is installed between the print head and the ribbon mask without wrinkles or creases, as shown below.

Ribbon mask

Print head
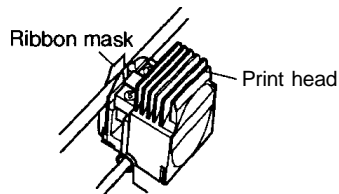
Note:

If the ribbon is not installed correctly, to remove the ribbon cassette, grasp the cassette's tab on the left side, lift the left side out first, and then pull the cassette out of the printer. Repeat steps 2, 3 and 4 above to install the ribbon cassette again.

2

Tab
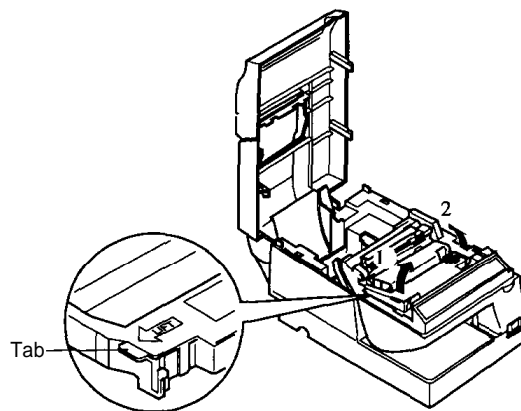
Installing the Paper Roll

Use a paper roll that matches the specifications.

✎ ***Note:***
   The printer must be turned on before installing the paper roll.

1. Fold the paper so it is exactly straight and even, as shown in the
    illustration, and will not tear off jaggedly.
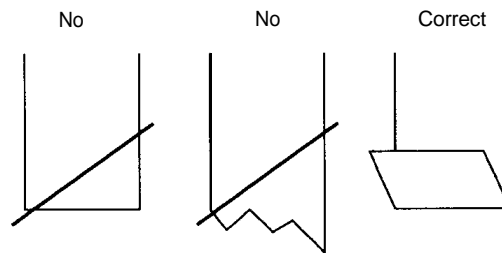
2. Turn on the printer, open the printer cover, and remove the take-up spool.

3. Insert the paper roll as shown below.
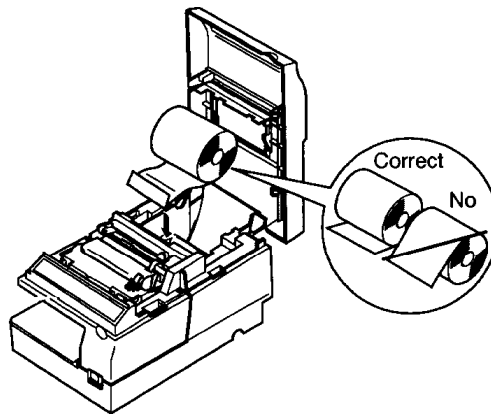
4. Insert the tip of the paper into the paper inlet as far as it will go, and
    push the PAPER LOAD switch to feed the paper roll until the paper
    comes out from the top of the printer.
    Note that the arrow in the exploded drawing below points towards the
    front of the printer.

Paper inlet

PAPER LOAD switch
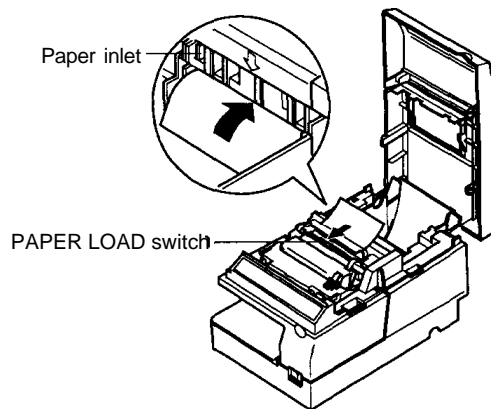
5. When using the take-up spool, follow the steps and the illustration
   below.

   a) Pull out the side of the take-up spool and insert the tip of the paper
      roll into the groove on the spool as the illustration below.

   b) Rotate the spool two or three times to secure the paper and reinsert
      the side of the take-up spool as the illustration below.

2 or 3 times
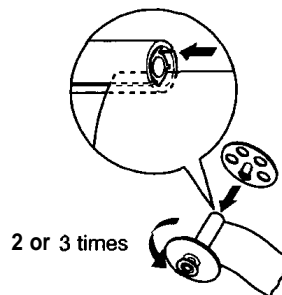
   c) Install the take-up spool in the printer.

6. Tear off the receipt paper on the cutter; then close the printer cover.

Note:
When the printer cover is open, the PAPER FEED button is
inactive.

Running the Self-test

Any time that you want to check the performance of your printer you can run the self test described below. This shows whether your printer is working correctly. It is independent of any other equipment or software. You can run the self-test with the paper roll, slip paper, or validation paper.

Running the self-test with paper roll

✎ *Note:*
Be sure to install the ribbon cassette and the paper roll before you run the self test.

1. Make sure the printer is turned off and the printer cover is closed properly.
2. While holding down the PAPER FEED button, turn on the printer to begin the self-test. The self-test prints the printer settings and pauses printing. (The JOURNAL OUT light flashes.)
3. Press the PAPER FEED button to continue printing. The self-test prints some lines of characters from the character table.
4. The self-test automatically ends after printing "*** completed ***" on the paper. The printer becomes ready to receive data from the computer after the self-test.
5. Self-test mode switches to normal mode.

Running the self-test with the slip paper

✎ *Note:*
Be sure to install the paper roll in the printer to prevent slip paper jams.

1. Make sure the printer is turned off and the printer cover is closed properly.
2. Hold down the RELEASE button and turn on the printer to begin the self-test. The VALIDATION/SLIP light flashes.
3. Feed a sheet of slip paper into the printer. The self-test loads the paper automatically, prints the printer settings, and then ejects the paper. The VALIDATION/SLIP light flashes.
4. Remove the paper and feed another sheet of slip paper into the printer to print characters from the character table. Continue to feed slip paper into the printer until the self-test prints "*** completed ***".

5. The self-test automatically ends after printing "*** completed ***".
    The printer is ready to receive data from the computer after the self-test completes.
6. Self-test mode switches to normal mode.

Running the self-test with validation paper

✎ *Note:*
Be sure to install the paper roll in the printer to prevent validation paper jams.

1. Make sure the printer is turned off and the printer cover is closed properly.
2. Hold down the PAPER FEED and RELEASE buttons and turn on the printer to begin the self-test. The VALIDATION/SLIP light flashes.
3. Feed a sheet of validation paper into the printer. The self-test prints the printer settings, and then ejects the paper. The VALIDATION/SLIP light flashes.
4. Remove the paper and feed another sheet of validation paper into the printer to print characters from the character table. Continue to feed validation paper into the printer until the self-test prints "*** completed ***".
5. The self-test automatically ends after printing "*** completed ***".
    The printer is ready to receive data from the computer after the self-test completes.
6. Self-test mode switches to normal mode.

✎ *Note:*
If you want to pause the self-test for the paper roll, slip paper, or validation paper at any point, press the PAPER FEED button. Press the PAPER FEED button again to resume 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.

You can change your interface and print column settings by changing the DIP switch settings.

1. Make sure the printer is turned off.

2. Remove the screw from the DIP switch cover. Then take off the DIP switch cover, as shown in the illustration below.
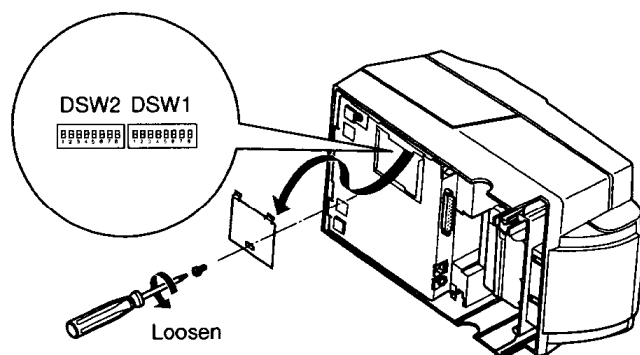
3. There are two sets of switches. Notice that ON is marked on each set of switches. Use tweezers or another narrow tool to move the switches.

4. 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.

TM-U375 DIP-switch functions

DIP Switch Set 1

SW	Function	ON	OFF
l-1	Data reception error	Ignored	Prints '?'
1-2	Receive buffer capacity	40 bytes	4K bytes
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	Transfer speed (see table below)		
1-8	Transfer speed (see table below)		

Transfer Speed (BPS)	SW7	SW8
1200	ON	ON
2400	OFF	ON
4800	ON	OFF
9600	OFF	OFF

BPS: Bits Per Second

DSW2

SW	Function	ON	OFF
2-l	Connection of display module (see Note 1 on the next page)	Connected	Not connected
2-2	Selects number of characters per line (CPL) 7 X 9 font/5 X 9 font (refer to the *Notes on Number of Printable Columns* section in Chapter 4)	42 CPL/ 35 CPL	40 CPU 33 CPL
2-3	Handshaking operation (busy condition)	Receive buffer full	Off-line or receive buffer full
2-4	For internal use only.		
2-5	For internal use only.		
2-6	For internal use only.		
2-7	Pin 6 reset signal (see Note 2 on the next page)	Used	Not used
2-8	Pin 25 reset signal (see Note 2 on the next page)	Used	Not used

⚠ CAUTION:

Do not change the settings of switch 2-4, 2-5 and 2-6.

Notes:

*1. **This function can be used only when a direct connection display module is connected to the display module connector.***

*2. **DIP switch settings cannot be changed after the power is turned on or after the printer is reset through the interface. When turning the power on, do not change the settings of DIP switches 7 and 8.***

TM-U375P DIP-switch functions

DIP Switch Set 1

SW	Function	ON	OFF
1-1	Auto line feed	Enabled	Disabled
1-2	Receive buffer capacity	40 bytes	4K bytes
1-3	Undefined		
1-4	Undefined		
1-5	Undefined		
1-6	Undefined		
1-7	Undefined		
1-8	Undefined		

DIP Switch Set 2

SW	Function	ON	OFF
2-1	Undefined		
2-2	Print column selection 7 X 9 font/9 X 9 font	42CPL/35CPL	40CPL/33CPL
2-3	Handshaking (busy condition)	Receive buffer full	Off-line or receive buffer full
2-4	Reserved.		
2-5	Settings must not be changed.		
2-6	Settings must not be changed.		
2-7	Undefined		
2-8	nInit reset signal Fixed to ON.		

⚠ CAUTION:

Do not change the settings of switch 2-4, 2-5, 2-6 and 2-8.

5. Replace the DIP switch cover and secure it with the screw.

Note:
To attach the DIP switch cover, insert the cover upward then slide the cover leftward, as shown in the illustration below.
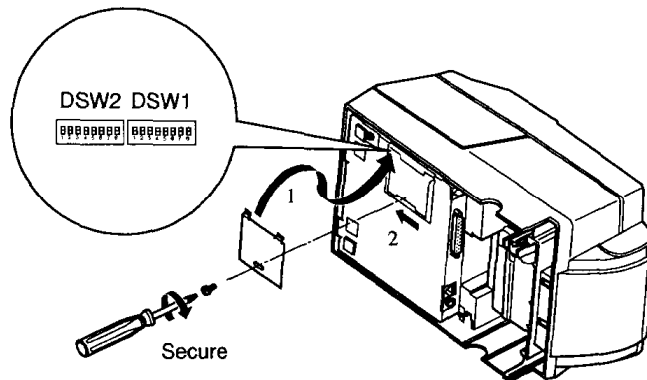
Adjusting the Paper Roll End Sensing Position

The paper near end detector detects when the paper is almost gone by measuring the diameter of the paper roll. Software programs can use the **ESC c 4** command to stop printing when the paper is almost gone.

If you want to change the amount of paper remaining when the printer stops printing, follow the steps below to adjust the paper near end detector.

Note:
If the inner diameter of the paper roll core is less than 10 mm (0.39 inch), the paper roll near-end detector may not work properly.

1. Open the printer cover and remove the take-up spool.

2. Determine the point on the paper roll at which you want the near-end detector to be triggered. Then measure the distance A shown in the illustration.
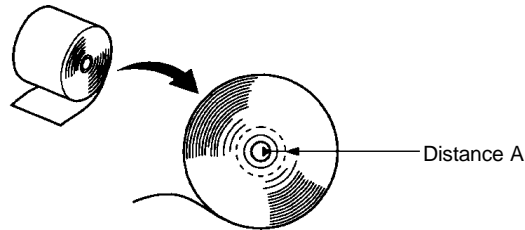
Distance A

Notes:
There may be some difference between the measured distance A and the actual sensing position.

3. Find the corresponding adjustment position number from the table below.

Distance A	Adjustment position number
10 mm (0.39 inch)	#1
8 mm (0.32 inch)	#2
6 mm (0.24 inch)	#3
4 mm (0.16 inch)	#4
2 mm (0.08 inch)	#5

4. Loosen the detector screw with a coin or screwdriver.

5. Set the detector scale to the position you determined from the table by moving the detector screw up or down. The numbers #1, #2, #3... are not marked on the detector scale. Use the illustration below for reference.

Detector scale

#5
#4
#3
#2
#1
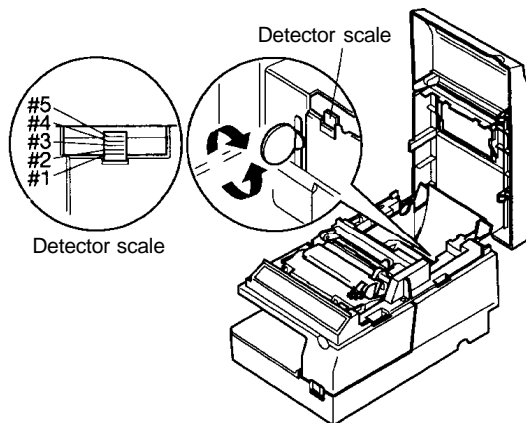
Detector scale

6. Secure the detector screw; then replace the take-up spool and close the printer cover.

Using the Power Switch Cover

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.
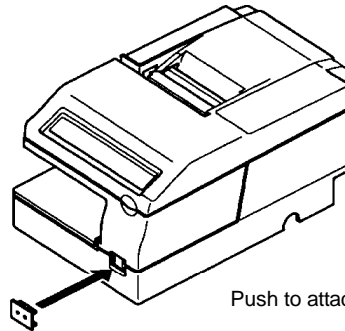
Push to attach the cover.

⚠ WARNING:

If an accident occurs when the power switch cover is attached, unplug the power supply cord from the outlet immediately.

Chapter 2
Using the Printer

2

Operating the Control Panel

The control panel has two buttons and four lights.
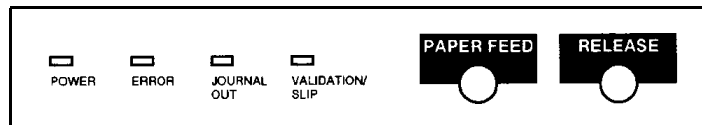
Buttons

The control panel buttons perform paper feeding and release functions.

PAPER FEED

Press the PAPER FEED button once to advance paper one line. You can also press the PAPER FEED button continuously to feed the paper continuously.

RELEASE

Press the RELEASE button to release the paper clamp.

Indicator lights

The control panel lights provide information on printer conditions.

POWER (green)

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

ERROR (red)

The ERROR light is on or is flashing when the printer is not ready to print.

The ERROR light is on under the following conditions:

- When you first turn on the printer or after you reset the printer using the interface. The ERROR light goes off after the printer is initialized.
- When the printer cover is open. Close the printer cover if this is the case.
- When the printer stops printing because it senses the paper roll end. Install a new paper roll if this is the case.

● When you press the PAPER FEED button to stop the self-test temporarily.

The ERROR light flashes when an error occurs.

The blinking 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.
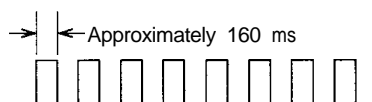
If the printer stops working and the ERROR light is blinking, turn the printer off, check for jammed paper, and remove it by following the instructions on page 3-4, if necessary. Then turn the printer back on. If the printer still does not work, unplug the power supply cord from the outlet immediately; then contact a qualified service person.

⚠ CAUTION:

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

JOURNAL OUT (red)

The JOURNAL OUT light is on when the printer senses that the paper roll is not installed or is nearly or completely depleted. The JOURNAL OUT light flashes after the self-test prints the printer settings on the paper roll.

VALIDATION/SLIP (green)

The VALIDATION/SLIP light is on or is flashing while the printer is in validation/slip paper mode.
The VALIDATION/SLIP light flashes while the printer is waiting for validation/slip paper to be inserted or removed.

Slip Paper Handling

Use only slip paper (flat paper without wrinkles, creases, or folds) that matches the specifications.

📝 ***Note:***
Be sure to install the paper roll in the printer, even if you plan to print only on slip paper. This will prevent paper jams.

1. Send the appropriate control commands from the computer to print on slip paper.
2. When the VALIDATION/SLIP light flashes, insert a slip into the slip paper inlet as shown in the illustration below.

   Make sure you insert the slip paper into the inlet as far as it will go.
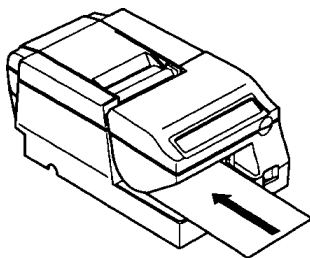
3. The paper will automatically be drawn in and printing will begin.

📝 ***Note:***
When the VALIDATION/SLIP ***light flashes (this depends on the application software), remove the paper from the paper path.***

Validation Paper Handling

Use only validation paper (flat paper, without wrinkles, creases, or folds) that matches the specifications.

📝 ***Note:***
Be sure to install the paper roll in the printer, even if you plan to print only on validation paper. This will prevent paper jams.

1. Send the appropriate control commands from the computer to print on validation paper.

2. When the VALIDATION/SLIP light flashes, insert a sheet of validation paper into the validation paper inlet (see the illustration below); printing will then begin.

    Make sure you insert the validation paper into the inlet as far as it will go.
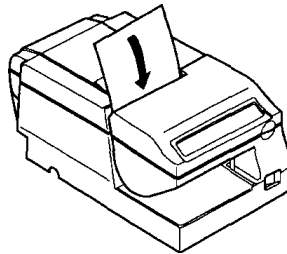
✎ *Note:*
When the VALIDATION/SLIP *light flashes (this depends on the application software), remove the paper from the paper path.*

Replacing the Paper Roll

To change the paper roll, follow the steps below.

1. Cut the journal paper on the cutter; then remove the take-up spool.

2. Pull out the paper roll and cut the paper, as the illustration below.

3. Press the PAPER LOAD switch and remove the paper in the direction of the arrow, as the illustration below.
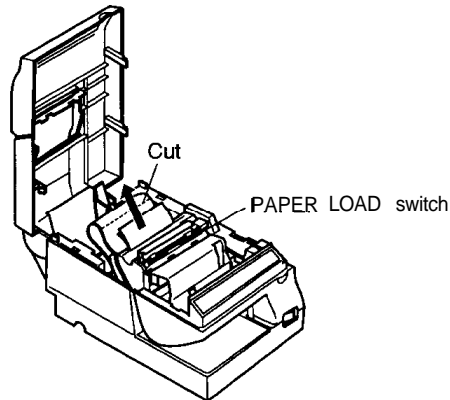
⚠ CAUTION:

Never pull out the paper roll manually.

4. Reinstall a new paper roll by following the steps in **Installing the Paper Roll** in Chapter 1.

Replacing the Ribbon Cassette

⚠ CAUTIONS:

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.

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

✎ *Note:*
Use the EPSON-ERC-38 ribbon cassette for your printer.

✎ **Note:**
There are two ways *to replace the ribbon cassette. One is to turn the printer off and on again before installing or removing the ribbon cassette, making sure that data sent from the computer is not lost. (When you turn off the printer power, data sent from the computer is lost.) The other is to open the printer cover and press the* RELEASE *button before installing or removing the ribbon cassette. Both ways cause the print head to move to the center of the printer and the paper clamp to release. If one of these ways is not used, the ribbon might not be inserted or removed correctly.*

Removing the ribbon cassette

1. Turn the printer power off and on again; then open the printer cover.

2. Grasp the ribbon cassette's tab on the left side, lift the left side out first, and then pull the cassette out of the printer, as shown in the illustration below.
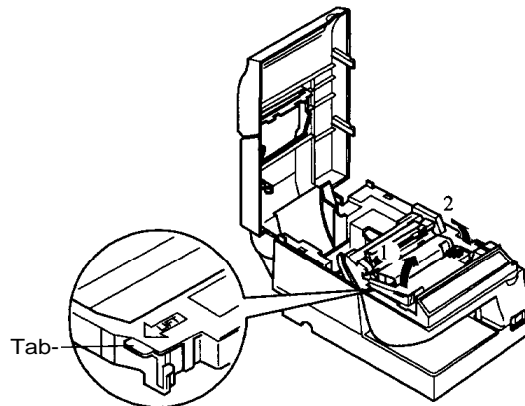
Installing the ribbon cassette

1. Turn the ribbon cassette's knob two or three times in the direction of the arrow, to take up any slack in the ribbon.

2 or 3 times
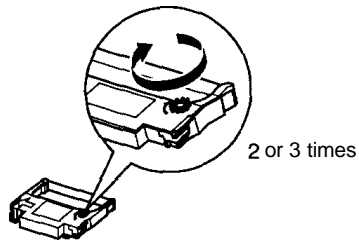
2. Insert the ribbon in the position as shown below, and push the ribbon cassette into the printer until it clicks. Then rotate the cassette's knob two or three more times. This is necessary to place the ribbon in the correct position.

2 or 3 more times

Knob
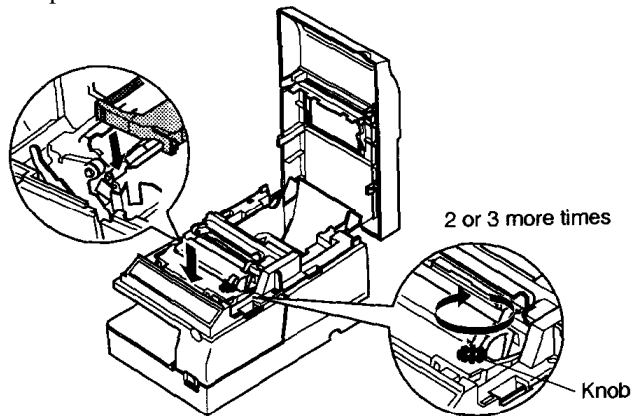
3. Make sure that the ribbon is installed between the print head and the ribbon mask without wrinkles or creases, as shown below.

Ribbon mask

Print head
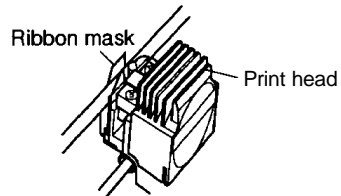
✎ **Note:**
 Remove the ribbon cassette from the printer when you store the printer for a long time.

Chapter 3
Troubleshooting

3

Troubleshooting

Read this section if you have a printer problem.

General problems

The lights on the control panel do not come on.

Make sure that the power supply's DC cable is properly plugged into the printer's power connector.

Make sure that the power supply's power cord is properly plugged in the AC inlet of the power supply.

Make sure that the power supply's power cord is properly plugged into the electrical outlet.

Printing problems

The ERROR light is on (not flashing) and nothing is printed.

If the JOURNAL OUT light is on:

The paper roll is not installed, or the paper roll is nearly or completely depleted. Install a new paper roll in the printer. See Installing the Paper Roll in Chapter 1.

If the JOURNAL OUT light is off:

Make sure that the printer cover is properly closed.

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 3-4.)

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 within two or three minutes).

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 make sure that the printer works properly. See Self-test later in this section. If the self-test does not work, contact your dealer for assistance.

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. 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 the 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. See Running the Self-test in Chapter 1.

If the printer still does not print, contact your dealer for assistance.

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

The ribbon cassette may not be installed properly. See Replacing the Ribbon Cassette in Chapter 2.

The ribbon may be worn out. Replace the ribbon cassette as described in Replacing the Ribbon Cassette in Chapter 2.

The printout is faint.

The ribbon may be worn out. Replace the ribbon cassette as described in Replacing the Ribbon Cassette in Chapter 2.

A line of dots is missing in the printout.

The print head may be damaged. Stop printing and contact your dealer for assistance.

Paper handling problems

The cut sheets (slip and validation paper) are not fed properly or

become jammed frequently.

The paper roll is not installed properly. Remove and reinstall the paper roll as described in ***Replacing the Paper Roll*** in Chapter 2 and ***Installing the Paper Roll*** in Chapter 1.

The paper is jammed inside the printer.

To clear a paper jam, follow the steps below.

⚠ *CAUTION:*

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

1. Turn the printer power off and on again; then open the printer cover.

2. Remove the ribbon cassette from the printer. (See *Replacing the Ribbon Cassette* in Chapter 2.)

3. Lift the print head cover while pulling the lever on its right side in the direction of the arrow, to open the cover as shown in the illustration below.

Print head cover
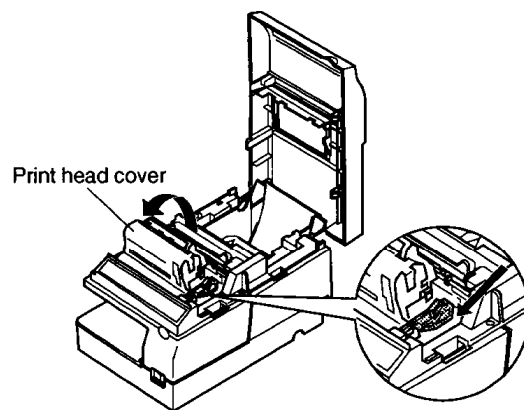
4. Cut the paper roll.

5. Remove the paper jam while pulling the release lever toward you, and pull the paper out in the direction of the arrow as shown in the illustration below.

✏️ ***Notes:***
   1. ***Never pull out the jammed paper in the opposite direction from the ejection side of the printer.***
   2. ***Pull out the paper gently in the paper feeding direction, and make sure you remove any remaining pieces.***

Release lever —

Left side of the printer
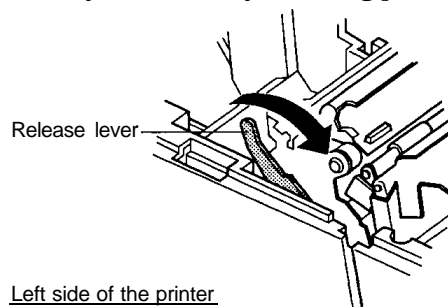
6. Press down the print head cover after confirming that the print head is at the center of the printer. If the print head is not at the center of the printer, bring it to the center by holding the base of the print head.

7. Close the print head cover. The cover clicks when it is closed securely.

8. Install the ribbon cassette, following the steps in *Replacing the Ribbon Cassette* in Chapter 2.

9. Install the paper roll, following the steps in Installing the Paper Roll in Chapter 1.

10. Close the printer cover.

The remaining amount of paper roll is not detected correctly.

If a paper roll with a red end mark at the paper end is used, the mark may cause the paper to stick together. If this occurs, the paper roll near-end detector may not work properly. (See Adjusting the Paper Roll End Sensing Position in Chapter 1.)

Hexadecimal Dumping

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.

Starting hexadecimal dumping

Open the printer cover and turn on the power while pressing the PAPER FEED button, then close the cover. The printer first prints "Hexadecimal Dump" on the paper roll, and prints the data received thereafter in hexadecimal numbers and their corresponding characters.

✎ *Notes:*
   1. "." is printed if no character corresponds to the data received.
   2. Control commands are printed in bold for emphasis.
   3. During hexadecimal dumping, all commands except DLE EOT and DLE ENQ are disabled.

4. If there is insufficient print data to fill one line (such as at the end of a hexadecimal dump), the data will not print. (This means that 8-byte data is required to print on one line.) The remaining data in this case can be printed by placing the printer in off-line mode by opening the cover or pressing the PAPER FEED button.

Example printing

Hexadecimal Dump

```
1B 21 00 1B 26 02 40 40  :  .!..&.@@
1B 25 01 1B 63 34 00 1B  :  .%..c4..
41 42 43 44 45 46 47 48  :  ABCDEFGH
```

Ending hexadecimal dumping

End hexadecimal dumping by turning off the power or by resetting the printer after printing completes.

Chapter 4
Reference Information

4

Printing Specifications

Printing method: Serial impact dot matrix
Head wire layout: Serial type 9-pin 1/72 inch
Printing direction: Bidirectional, minimum distance printing (logic seeking)
Printing speed: Approximately 3.5 LPS
(40 columns,16 CPI, continuous printing)
Approximately 5.4 LPS
(20 columns,16 CPI, continuous printing)
(LPS: Lines Per Second; CPI: Characters Per Inch)

✎ *Note:*
During excessive use, printing stops to protect the print head. In this case, the actual printing speed may be slower than that listed above.

Characters per line: See the table below.
Characters per inch: See the table below.

Character Specifications

Number of characters: Alphanumeric : 95
Extended graphics: 128 X 8 (tables)
(space pages included)
International: 32
Character structure: 7 X 9 (total horizontal dot positions: 400 half dots)
5 X 9 (total horizontal dot positions: 200 dots)
Character size: See the table below.

Character Size, Characters Per Line, Characters per Inch

Character Structure		Character Size W × H	Character Dot Spacing	Characters Per Line (CPL)	Characters Per Inch (CPI)
Horizontal × Vertical	Character Type				
7 × 9 (∗)	Alphanumeric/ International	1.24 x 3.1 mm (.049"×.122")	3 half dots	40	16
	Graphic	1.72 x 3.1 mm (.068"×.122")	0	40	16
5 × 9	Alphanumeric/ International	1.56 x 3.1 mm (.063"×.122")	1 dot	33	13.3
	Graphic	1.88 x 3.1 mm (.074"×.122")	0	33	13.3

(∗) Default font is 7 X 9.

Paper Specifications

Paper feed method: Friction feed

Paper feed pitch: l/6 inch (default)
     Programmable in units of 1/144 inch by using commands.

Paper feed speed: Approximately 2.67 IPS (16 LPS)
     (continuous paper feeding)

Paper size:

a) Paper roll

     Paper width: 76 ± 0.5 mm (2.99" ± .02")

     Outside diameter:

        • Single-ply paper: Journal paper only: $\emptyset$ 60 + 0 mm (2.36") or less
                                   (with take-up flange diameter of $\emptyset$ 75 mm (2.95"))
                                   Receipt paper only: $\emptyset$ 83 + 0 mm (3.27") or less

        • 2-ply paper: $\emptyset$ 83 + 0 mm (3.27") or less (lower paper must be taken up)

     Inside diameter: 10 mm (.39") or more

     ① Normal paper

        Paper thickness: Single-ply paper:
                                   0.06 to 0.085 mm (.0O24 to .0033")

     ② Multi-ply paper

        Paper thickness: 0.05 to 0.08 mm (.0020 to .0031") per sheet
                                   Total thickness: 0.16 mm (.0063") or less

     Maximum number of sheets:
                                   2 (1 original + 1 copy)

     Recommended paper: Mitsubishi Paper Mills Co., no-carbon paper (blue)

        Upper sheet: N4OHi (thickness: 0.06 mm (.0023"), weight: 47.2 g/m^2)

        Lower sheet: N60 (thickness: 0.08 mm (.0031"), weight: 68.0 g/m^2)

b) Cut sheets: Slip/validation paper
                             (Use cut sheet with a paper roll loaded.)

     Paper types: Normal, pressure sensitive, and carbon copy paper

     Paper size (W X L):

        ① Slip paper: 70 to 182 mm X 160 to 257 mm (2.76 to 7.17" X 6.30 to 10.12")
                                   (maximum 58 lines at 4.23 mm (.17") pitch)

        ② Validation paper: 135 to 182 mm X 70 to 257 mm (5.3 1 to 7.17" X 2.76 to 10.12")
                                   (maximum 16 lines at 4.23 mm (.17") pitch)

    • Single-ply paper (without copy paper)
        Thickness: 0.09 to 0.12 mm (.0035 to .0047")

• Copy paper

Thickness:	Backing paper:	0.07 to 0.12 mm (.0028 to .0047")
	Copy and original paper:	0.04 to 0.07 mm (.0016 to. 0028")
	Carbon copy paper:	Approximately 0.035 mm (.00138")
	Total thickness:	0.09 to 0.31 mm (.0035 to .012") (roll paper thickness included)

Example: Original + 2-ply copy

Original paper:	0.04 mm (.0016")
Carbon copy paper:	0.07 mm (.0028") (0.035 mm (.0014")X2 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") |

Copying capability:

As copying capability is influenced by the ambient temperature, printing must be performed under the conditions described in the table below.

Relationship between Ambient Temperature and Number of Copies

Number of Copies	Ambient Temperature
Original + 2-ply copy	10° to 40°C (50° to 104°F)
Original + l-ply copy	5° to 40°C (41° to 104°F)

Notes on using cut sheets

- Use cut sheets with a paper roll loaded.
- Use cut sheet that is flat, without curls, folds, warps, or wrinkles, especially at the paper end. Otherwise, the paper may become ink stained or the ribbon may get caught in the printer mechanism.
  Especially slip paper with curls at the paper end may cause character misalignment within the area about 17 mm (.67") from the paper edge.
- Glue must not be on the bottom edge of slip paper. It is desirable that the glue should be on the top edge of slip paper. Choose slip paper carefully when the glue is on the right or left edge of the slip paper, since paper feeding and paper insertion are affected by gluing conditions (e.g., glue quality, method, and length) and glue location (refer to the figure in the next page). Be careful especially when slip paper is wide and has the glue on the right or left edge, since meandering may occur.

Glue Location of Slip paper
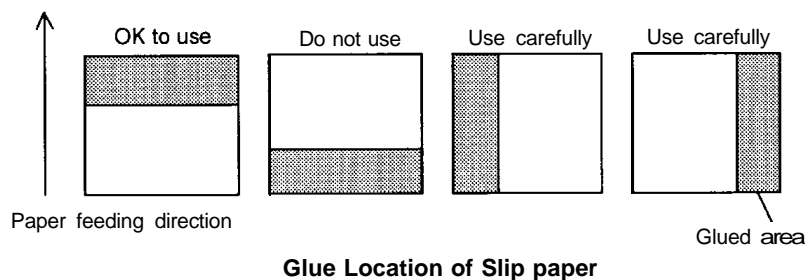
- Cut sheets with holes (e.g., sprocket holes) within the areas shown in the figures below must not be used. Otherwise, the paper cannot be detected by the paper detector. Paper that is translucent must not be used.

Validation paper
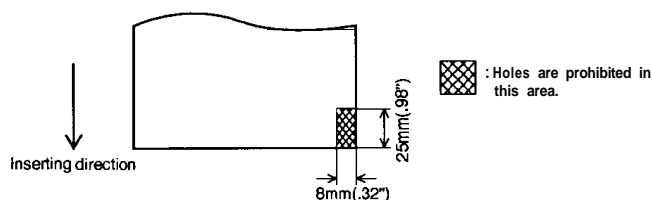
Slip paper
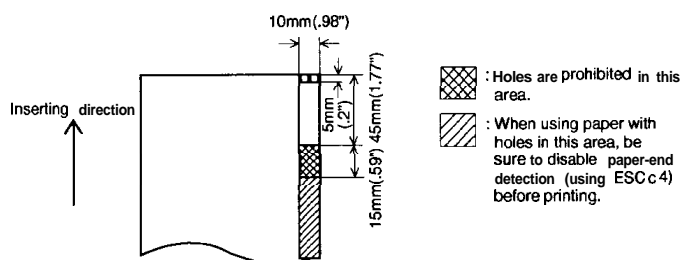
- Use of multi-ply copy paper with a thick middle sheet may decrease copying capability.
- Printing noise may change depending on paper thickness. Noise may increase when thick single-ply paper is used.

Electrical Specifications

Power supply: + 24 VDC ± 10%
Power consumption (at 24 V, excluding drawer kick-out)
    Operating: Approximately 1.4 A (mean)
                  Approximately 5.5 A (peak)
    Standby: Approximately 0.2 A (mean)

Safety and EMI Standards Applied

EMI standards (measured using the EPSON power supply unit PS-150)
U.S.A.: FCC: Class A
Europe: CE marking: EN55022
                    EN50082-1
                    EN45501

Safety Standards

UL1950 - 2TH - D3 (recognized component)
CSA950 - D3 (recognized component)
EN60950 (IEC950 2TH)

Electrostatic Protection (measured) based on the IEC801-2 test conditions)

Air discharge: 8K V clear level
Contact discharge: 4K V clear level

Reliability

Life: 7,500,000 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: 18,000,000 lines
             • This is an average failure interval based on failures relating
               to wearout and random failures up to the life of 7.5 million
               lines.

Print head life: 100,000,000 characters
                       (2 dots on average/print head pin/character)

Environmental   Specifications

Temperature:
Operating: 5° to 40°C (41° to 104°F)
Storage: - 10° to 50°C (14° to 122°F) (excluding paper and ribbon)
Humidity:
Operating: 20 to 80%RH
(see the range in Figure A.10 below, for 30°C (86°F) and above, without condensation)
Storage: 20 to 90%RH (excluding paper and ribbon, without condensation)
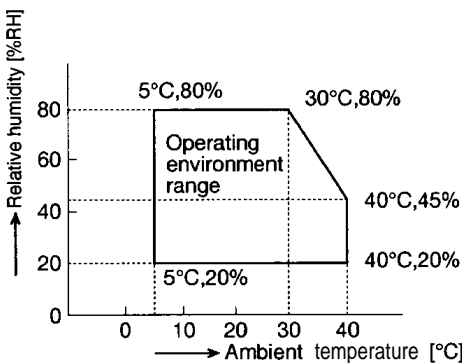
Vibration resistance:
When packed:	Frequency:	5 to 55 Hz
	Acceleration:	2 G
	Sweep:	10 minutes (half circle)
	Time:	1 hour
	Directions:	X, Y, and Z

No external or internal damage should be found after the vibration test, and the printer should operate normally.

Impact resistance:
When packed:	Package:	Epson standard package
	Height:	60 cm (23.62")
	Directions:	1 corner, 3 edges, and 6 surfaces

No external or internal damage should be found after the drop test, and the printer should operate normally.

| When unpacked: | Height: | 5 cm (1.97") |
| | Directions: | Lift one edge and release it (for all 4 edges) |

A non-operating printer should not be damaged after it is dropped (for all 4 edges).

Acoustic noise:
Operating: Approx. 65 dB or less (Bystander position, receipt/journal printing)

Interface Specifications

Serial interface: RS-232 compatible
Parallel interface: IEEE 1284 compatible (Nibble/Byte Modes)

Note:
*Refer to the **EPSON TM-U375/U375P Specification** for details.*

Printing on Cut Sheets

Use the following procedure to print on slip or validation paper.

Step	Host Operation	Printer Operation
1	Transmit the **ESC c 0** command.	Switches to cut sheet mode and waits for a cut sheet to be loaded, according to the time set by the **ESC f m n** command. The VALIDATION/SLIP light blinks.
2	Insert the paper.	Detects the cut sheet and turns on the VALIDATION/SLIP light. When using slip paper, detects the slip after the set time (*t2*) has passed. If the slip is not detected, re-enters the slip waiting state. When the slip paper is detected, feeds the slip as far as the print start position, then redetects the slip and waits for the print data. If the slip is not detected after feeding the paper, re-enters the slip waiting state. When using validation paper, detects the paper after the set time (*t2*) has passed. If the paper is not detected, re-enters the validation paper waiting state. When the validation paper is detected, waits for the print data. If no cut sheet is inserted within the set time (*t-1*), switches from cut sheet mode to paper roll mode automatically.
3	Transmit data and commands.	Prints the data and feeds the paper.
4	Transmit the FF command.	After printing, ejects the paper and selects paper roll mode. Turns off the VALIDATION/SLIP light.

✎ *Notes:*

1. *When printing on a single cut sheet that is narrower than the carriage movement range, once the printer has been put in the cut sheet mode and the sheet of paper has been inserted, the following operations should be avoided: turning the power supply switch on or off, opening the cover, issuing the return home command (ESC <), or sending a reset command through the interface.*

    When the carriage moves away from the home position, it may come in contact with the left end of the paper, causing a paper jam.

2. *The cut sheet waiting state can be canceled by the DLE ENQ 3 command.*

3. *Use the ASB function to correctly determine the paper state. See Example Print Control for Cut Sheet later in this section.*

Example print control for cut sheet
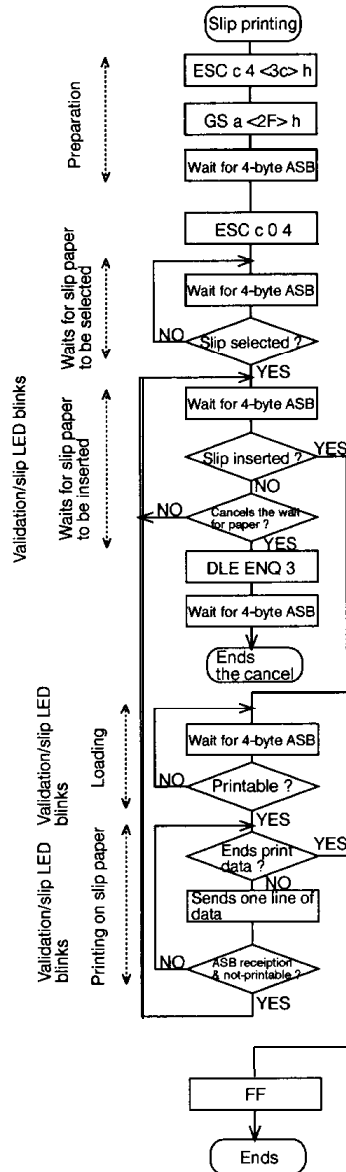
1) Enables printing stop due to slip paper-end.

2) Enables ASB for all status changes.

3) Receives ASB due to 2).

4) Selects slip printing.

5) Waits for slip paper to be selected.
   ASB: waits for slip paper selection (ASB 4-0*) to be "selected" (0). *Indicates bit 0 of the fourth byte of the ASB data. The same rule applies correspondingly to the following:

6) Waits for slip paper to be inserted.
   ASB: wait for cut sheet sensor (ASB 3-5) to be "paper p" (0).

7) To cancel the slip paper waiting state, send DLE ENQ 3.
   When canceled, the printer returns to paper roll mode, and the 4 bytes of ASB are transmitted.
   ASB: slip paper state (ASB 4-1) becomes "not selected" (1).

8) Waits for the slip to be loaded.
   ASB: waits for the slip paper state (ASB 4-1) to be "printable" (0).

9) Transmits each line of print data until there is no data to be transmitted.
   In this case, ASB is transmitted when the paper has run out.
   ASB: slip paper state (ASB 4-1) becomes "not printable" (1).
   Advances to step 10) when all the data has been sent.

10) Ejects the slip paper.


1. **When printing on a single cut sheet that is narrower than the carriage *movement* range, once the printer has been put in the cut sheet mode and the sheet of paper has been inserted, the following operations should be avoided: turning the power supply switch on or off, opening the cover, issuing the return home command (ESC), or sending a reset command through the interface.**
   When the carriage moves away from **the home position, it may come in contact with the left end of the paper, causing a paper jam.**
2. **The cut sheet waiting state can be canceled by the DLE ENQ 3 command.**
3. **Use the ASB function to correctly determine the paper state. See Example Print Control for Cut Sheet later in this section.**

Transmit Status Identification

The values of specific bits are fixed in the status information transmitted by the printer, so that the status bytes of commands can be identified. The user can therefore confirm the command to which the status belongs, as shown in the following table.

When using Auto Status Back (ASB), however, process the consecutive three-byte code (except for XOFF) as ASB data after confirming the first byte of the ASB. Otherwise, the status transmitted by using the command and the status of the second and following bytes of the ASB cannot be differentiated.

Command	Status Replay
ESC u	<0**0****>B
ESC v	<0**0****>B
GSI	<0**0****>B
GS r	<0**0****>B
XON	<00010001>B
XOFF	<00010011>B
DEL EOT	<0**1**10>B
ASB (1st byte)	<0**1**00>B
ASB (2nd byte-4th byte)	<0**0****>B

Notes On Number of Printable Columns

When DIP switch 2-2 is set to ON to increase the number of printable columns, the number of dots and the printable area is as shown below. The OFF setting is shown for comparison.

DIP switch 2-2 setting	Number of Horizontal Dots/Character		Printable Area/Line
	7 X 9 Font	5 X 9 Font	
OFF	10	12 (✱)	400
ON	9	11 (✱)	385

(✱) The 5 X 9 font uses 6 normal dots for one character, but the printer processes the data as 12 half-dots in the print buffer. Therefore, in this case the printer processes the data as 11 half-dots for one character.

There are restrictions when DIP switch 2-2 is ON, as follows:

1) The printable area for one line is decreased.

Setting DIP switch 2-2 to ON increases the number of printable columns per line but decreases the printable area for one line. Be sure to note the end position of a line and the number of dots for bit-images.

2) The 10th dot is not printed in the 7 X 9 font.
The 7 X 9 font uses 10 half-dots for one character. However, when DIP switch 2-2 is ON, the printer does not print 10th dot, since the number of printable dots in this setting is 9 and the 10th byte is truncated. Therefore, the 10th dot in some characters is not printed during extended graphic character printing.
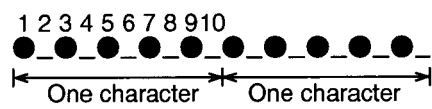
This applies to the character for which dots are defined for the 10th byte.

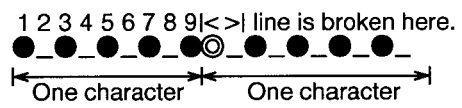3) The printing results may differ even if the same data is printed.
The printer cannot print horizontally adjacent dots. Therefore, the printing results may differ even if the same character codes are transmitted, since the dots placed on the borderline between characters differ depending on the DIP switch 2-2 setting. Particularly in line drawings, a line may be broken when DIP switch 2-2 is ON.

Example: When transmitting two characters of character code <C4>H
(page 0) in the 7 × 9 font (data only), the results are as follows:

DIP switch 2-2 is OFF:

1 2 3 4 5 6 7 8 9 10
●_●_●_●_●_●_●_●_●_●_

|←――――――――――→|←――――――――――→|
One character   One character

DIP switch 2-2 is ON:

1 2 3 4 5 6 7 8 9|< >| line is broken here.
●_●_●_●_●◎_●_●_●_●_

|←――――――――――→|←――――――――――→|
One character   One character

◎cannot be printed due to adjacent half-dot printing restriction.