TM-U300A/U300B TM-U300PA/U300PB

User's Manual

NOTICE:

EMC and Safety Standards Applied

Printer

Product Name: TM-U300A/B, TM-U300PA/PB
Model Name: M51JA/B, M51PA/PB
The following standards are applied only to the printers that are so labeled. (EMC is tested using the packaged AC adapter.)

Europe: CE marking
North America: EMI: FCC/ICES-003 Class A
Japan: EMI: VCCI Class A
Oceania: EMC: AS/NZS 3548
Taiwan: Class B

WARNING

The connection of a non-shielded printer interface cable to this printer will invalidate the EMC standards of this device.

You are cautioned that changes or modifications not expressly approved by SEIKO EPSON Corporation could void your authority to operate the equipment.

AC Adapter

Product Name: PA-6511/6513, PB-6509/6510
Model Name: M34PA, M34PB

The following standards are applied only to the AC adapters that are so labeled. (The printer and the AC adapter together are applied to the EMC standards.)

Europe: CE marking
                Safety: EN60950
North America: Safety: UL 1950/CSA
                        C22.2 No. 950
Japan: Safety: Electrical Appliance and
                        Material Control Law of
                        Japan
Oceania: Safety: AS 3260

CE Marking

The printer conforms to the following Directives and Norms:

Directive 89/336/EEC EN 55022 Class B
                     EN 55024
                         IEC 61000-4-2
                         IEC 61000-4-3
                         IEC 61000-4-4
                         IEC 61000-4-5
                         IEC 61000-4-6
                         IEC 61000-4-11

FCC Compliance Statement For American Users

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

FOR CANADIAN USERS

This Class A digital apparatus complies with Canadian ICES-003.

i

INTRODUCTION

The TM-U300A/U300B and TM-U300PA/U300PB printers are designed to provide a high cost-performance ratio. They are compact, light-weight, and highly reliable one-station printers using plastic mechanical frames. They have the following features and are applicable to the POS 1 station printer market.

- Compact and light-weight.
- High speed printing using logic-seeking.
- High reliability and long life due to the use of stepping motors for both carriage return and paper feeding.
- Printing color switch (red/black) available.
- Various formats are possible because the paper feeding pitch is selectable.
- High general control utility based on the ESC/POS® standard.
- 2 drawers can be driven due to the internal drawer interface.
- Character font (7 X 9, 9 X 9) is selectable.
- Semi-automatic paper loading.
- Compact AC adapter power supply.
- An auto-cutter unit is provided and full cut/partial cut is selectable by command.
- A take-up device is included. (Standard only for the TM-U300A/U300PA)

	Function Available	Interface
TM-U300A	With auto-cutter With take-up device	Serial
TM-U300B	With auto-cutter	Serial
TM-U300PA	With auto-cutter With take-up device	Parallel
TM-U300PB	With auto-cutter	Parallel

Please be sure to read the instructions in this manual carefully before using your new Epson printer.
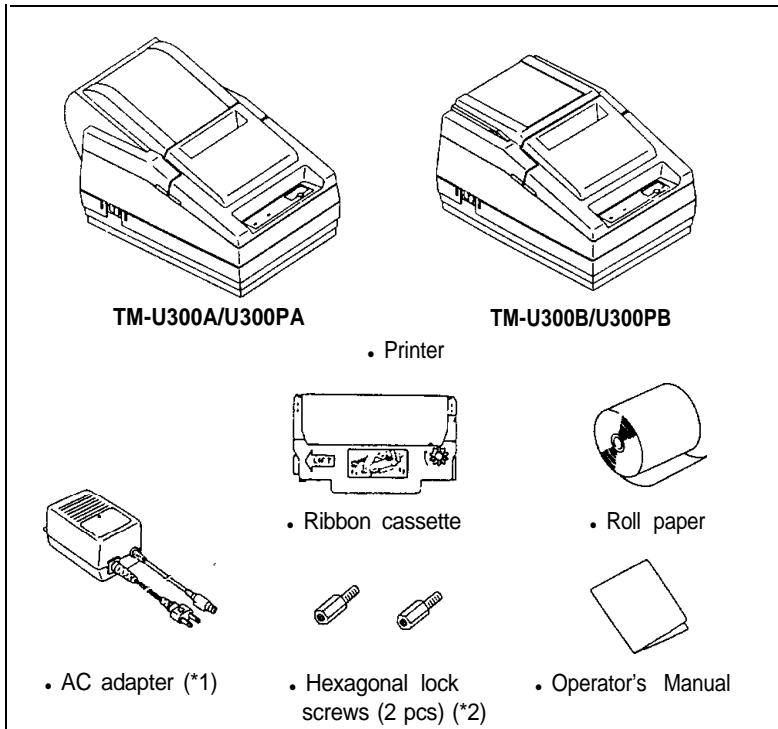
CONTENTS

Chapter 1 Unpacking the Printer

1-1 Checking the Contents of the Box

■ Checking the parts

The illustration below shows the items included for the standard specification printer.

TM-U300A/U300PA   **TM-U300B/U300PB**

. Printer

. Ribbon cassette   . Roll paper

. AC adapter (*1)   . Hexagonal lock   . Operator's Manual
                             screws (2 pcs) (*2)

- (*1)   One of eight types of AC adapters may be included with your printer. Refer to Appendix A, General Specifications for information on your AC adapter's input voltage, dimensions, and weight.
- (*2)   Hexagonal lock screws are provided only if the printer has a serial inter-face. See note on page 7 for more information about these screws.

Make sure no parts are missing or damaged. If you find any damaged or missing parts, please contact your dealer for assistance.

■ Maintenance

Keep the packing case in case you ever need to transport or store your printer.

1

1-2   Choosing a Place for the Printer

■ Avoid locations that are subject to direct sunlight or excessive heat (near heaters).

■ Avoid using or storing the printer in places subject to excessive temperatures or moisture.

■ Do not use or store the printer in a dusty or dirty location.

■ When setting up the printer, choose a stable, horizontal location.
Intense vibration or shock may damage the printer.

■ Ensure the printer has enough space to be used easily.

1-3 Removing the Transportation Damper

The transportation damper must be removed before turning on the printer.
Open the printer cover, and remove this material as follows:
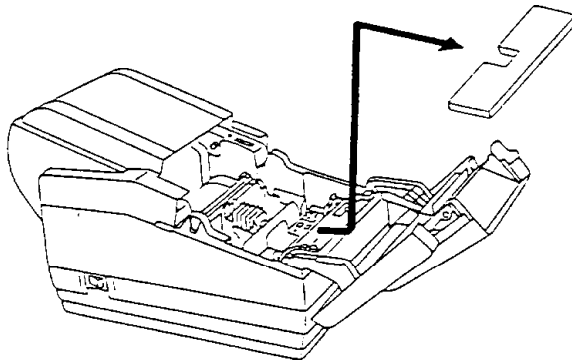
1-4 Names and Functions of Parts

■ **Part names**

① TM-U300A/U300PA: Take-up cover   ⑤ Interface connector
    TM-U300B/U300PB: Roll-paper cover   ⑥ Drawer kick-out connector
② Printer cover   ⑦ Power connector
③ Operation panel   ⑧ DIP switches
④ Power switch

TM-U300A/U300PA   **TM-U300B/U300PB**

3
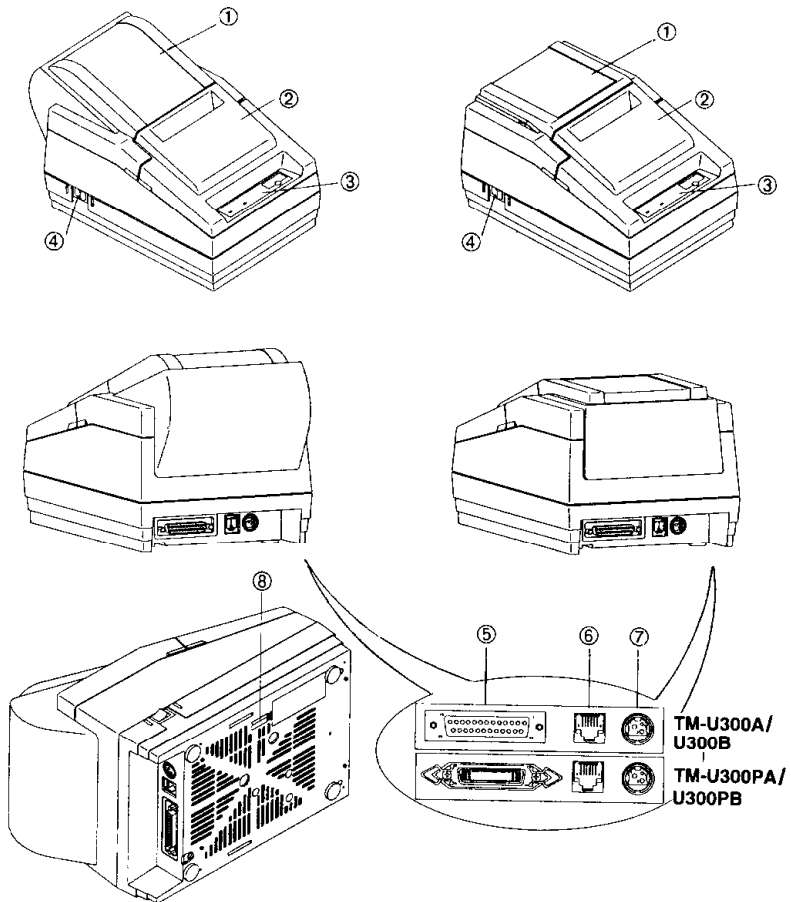
■ **Operation panel**
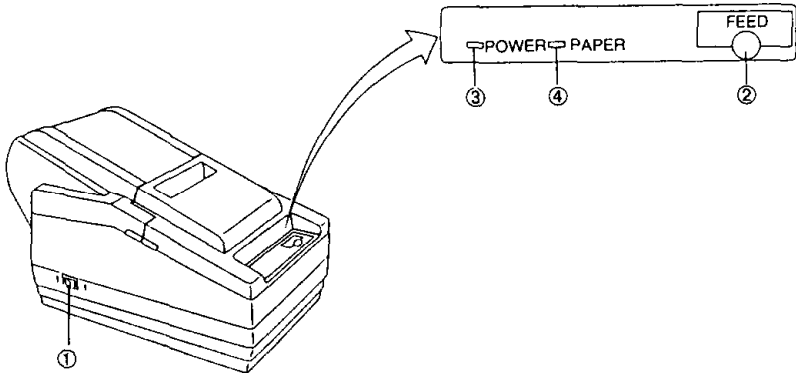
Panel Switches

① **POWER switch**

Turn the printer ON and OFF.

② **FEED switch**

Feeds roll paper.

• Feeds roll paper based on the line feed amount set by **ESC 2** and **ESC 3.**

Panel Lights (LED)

③ **POWER LED (green)**

On when power is turned on.

④ **PAPER LED (red)**

On when the paper roll near the end.

Blinks when an error has been detected, when the printer is in the test printing standby state, or when printing has stopped due to exceeding the allowable print duty cycle.

Chapter 2 Before Setting Up
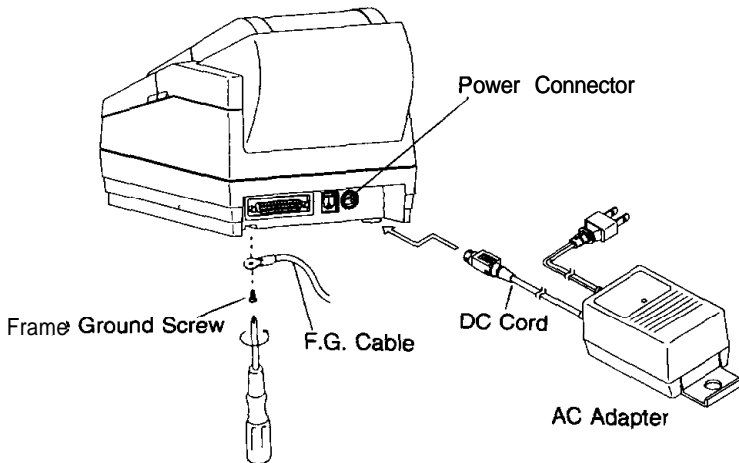
2-1　Connecting the AC Adapter to the Printer

■ **Plugging in AC adapter**

> **CAUTIONS:**
> • Before connecting the printer to the power supply, make sure that the voltage and power specifications match the printer's requirements.
> • Using an incorrect power supply can cause serious damage to the printer.

Connect the AC adapter according to the following procedure.
① Make sure the printer is turned off.
② Plug the power cable connector into the printer's power connector with the arrow mark facing upward. (You can remove the power cable by grasping the connector firmly at the arrow mark and pulling straight out.)

Power Connector

Frame Ground Screw

F.G. Cable

DC Cord

AC Adapter

③ Plug the power cord into the outlet, and turn on the power.
④ Be sure to ground the printer with the frame ground screw on the board at the rear side of the unit via a F.G cable.

2-2   Connecting the Host Computer to the Printer

■   **Connecting the interface cable**

Connect the printer with the host ECR (host computer) through an interface cable matching the specifications of the printer and the host ECR (host computer).

Be sure to use a drawer that matches the printer's specifications.

<TM-U300A/U300B>

Connect the interface cable according to the following procedure.

① Turn off the printer and the ECR (host computer).

② Plug the interface cable connector into the interface connector on the printer; then fasten the screw on both sides of the connector.

③ Plug the drawer kick-out cable connector into the drawer kick-out connector on the printer. (When removing the drawer kick-out cable, press in on the connector's clip and pulling out.)

Drawer Kick-out Connector

Interface Connector

Drawer Kick-out Cable

Serial Interface Cable Connector
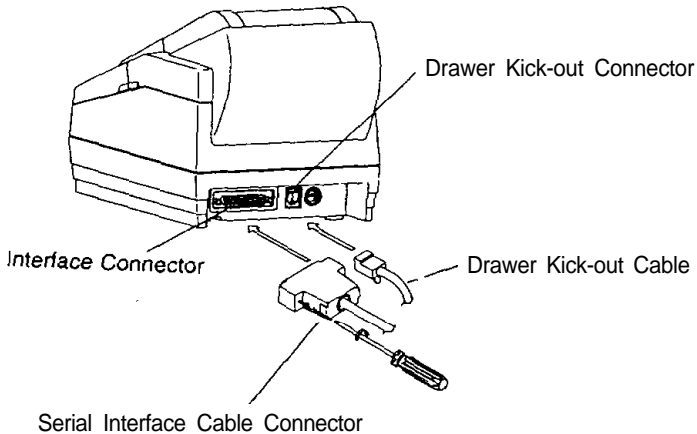
NOTE:
• Your printer comes with inch-type hexagonal lock screws installed. If you plan to use an interface cable that requires millimeter-type lock screws, replace the inch-type screws with the enclosed millimeter-type screws using a hex screwdriver (5 mm). To distinguish the two types of screws, see the figure below.

Notch (one or more line)

Inch-type   Millimeter-type

<TM-U300PA/U300PB>

Connect the interface cable according to the following procedure.

① Turn off the printer, and the ECR (host computer).

② Plug the interface cable connector into the interface connector on the printer.

③ Squeeze the wire clips together until they lock in place on both sides of the connector.

④ Attach the ground wire to the ground connector on the bottom of the printer.

⑤ Plug the drawer kick-out cable connector into the drawer kick-out connector on the printer. (When removing the drawer kick-out cable, press in on the connectors clip and pulling out.)

Drawer Kick-out Connector

Drawer Kick-out Cable

Interface Connector
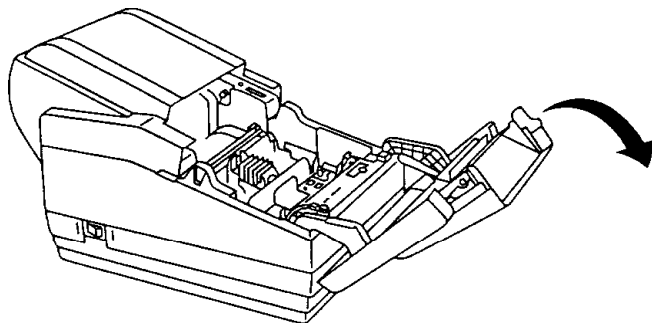
Parallel Interface Cable Connector

Ground Wire
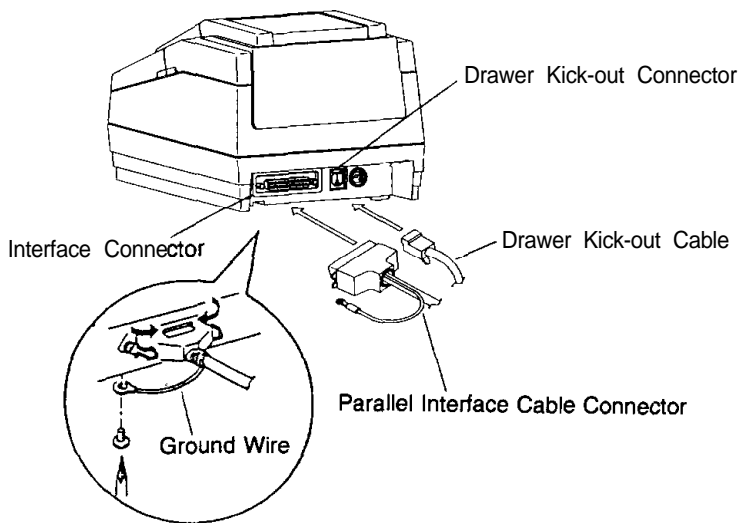
Chapter 3 Installing the Parts

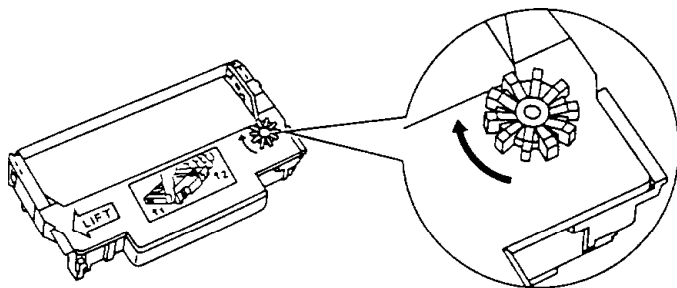## 3-1 Installing the Ribbon Cassette

■ **Installing the ribbon cassette**

Be sure to use a ribbon cassette that matches the printer's specifications.

① Open the printer cover.

② Turn the ribbon-tightening knob in the direction of the arrow to take up any slack in the ribbon.

③ Fit the ribbon between the head unit and the ribbon mask. Then push the cassette firmly into position.

Ribbon Mask   Ribbon
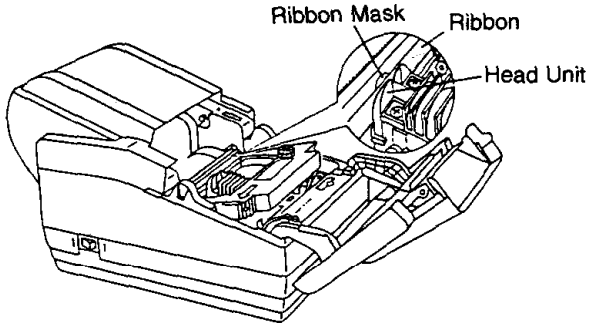
Head Unit

④ Turn the ribbon-tightening knob five or six times in the direction of the arrow to feed the ribbon smoothly into place between the head unit and the ribbon mask.
   • Check that the ribbon is not twisted or creased.

CAUTION:
• Do not turn the ribbon-tightening knob in the reverse direction.
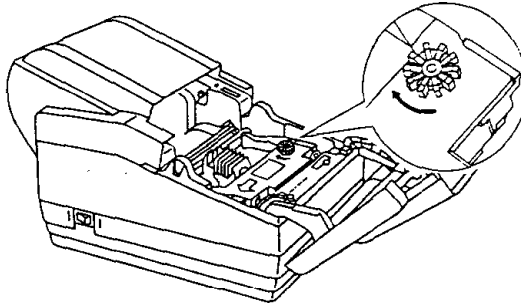
⑤ Close the printer cover.
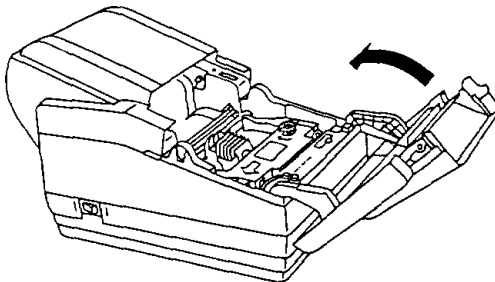
■ Exchanging the ribbon cassette

Be sure to use a ribbon cassette that matches the specifications.

① Open the printer cover.

② When removing the ribbon cassette, grasp the tab on the left side and lift the left side out first.
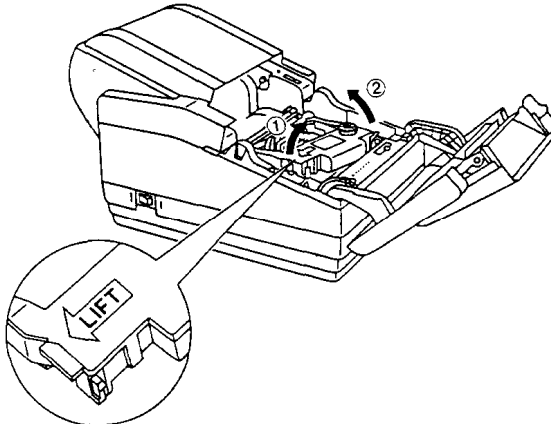
③ Install a new ribbon cassette.
   See 3-1 *Installing the Ribbon Cassette* ② to ⑤.

3-2 Installing the Roll Paper

■ **Installing the roll paper for TM-U300A/U300PA**

Be sure to use roll paper that matches the printer's specifications.

① Using scissors, cut the leading edge of the roll paper perpendicular to the paper feed direction.
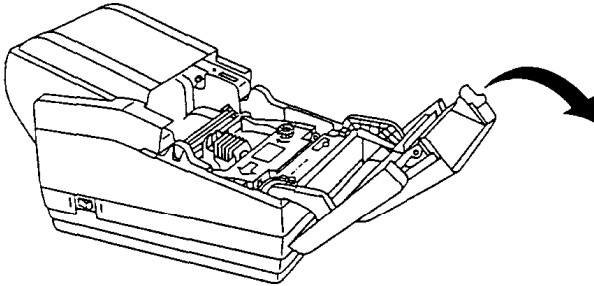

Good   Bad   Bad

② Open the printer cover and the take-up cover.

- Check that the ribbon cassette is properly installed.
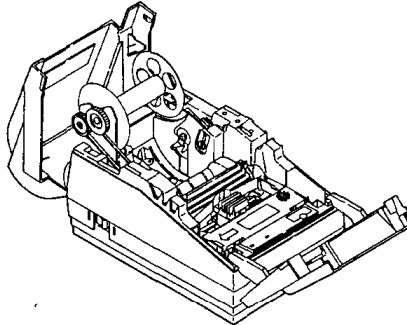
③ Load the roll paper while lightly pressing the left roll-paper holder outward. Release the holder after fitting the paper core onto the holder. Make sure the roll paper turns freely. When loading roll paper, make sure to insert so that it rotates in the correct direction.

Correct

Incorrect
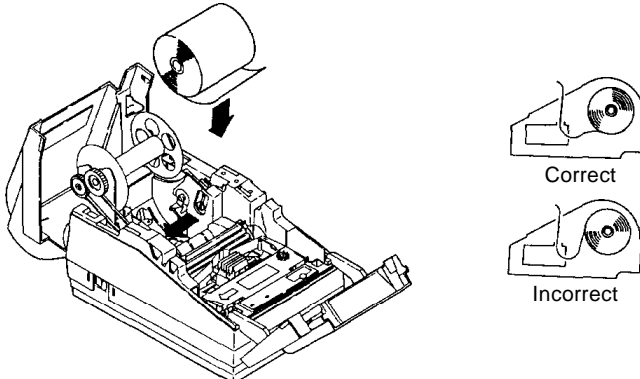
④ Turn on the printer.
⑤ While leaving some slack in the roll paper, insert the end of the roll paper straight into the paper inlet. The printer automatically feeds the roll paper into the printer.
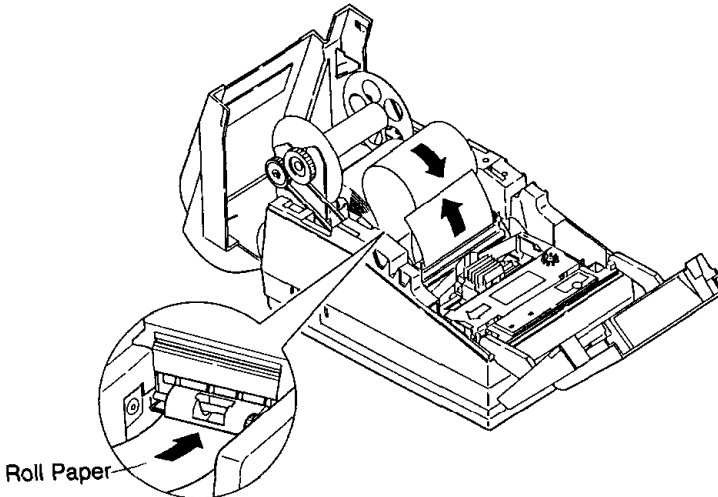
Roll Paper

⑥ Press the FEED switch to continue feeding the paper until it extends about 20 cm beyond tear-off edge.
⑦ Remove the take-up spool from the take-up frame.

Remove the side of the spool and insert the end of the paper roll (journal paper when using 2-ply paper and 3-ply paper) into the groove on the spool and wrap the roll paper around the spool two or three times. Install the flange to flange shaft.

⑧ Install the take-up spool to the take-up frame.
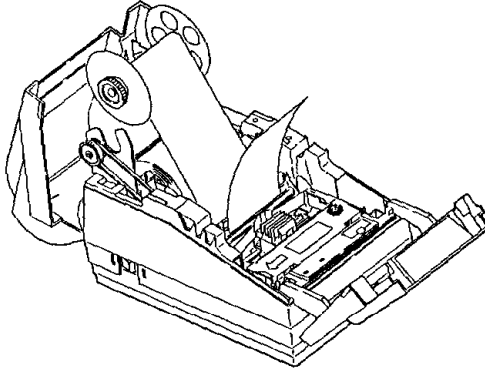
⑨ Tear off the receipt paper by the cutter when using the 2-ply paper and 3-ply paper.

⑩ Close the printer cover and the take-up cover.
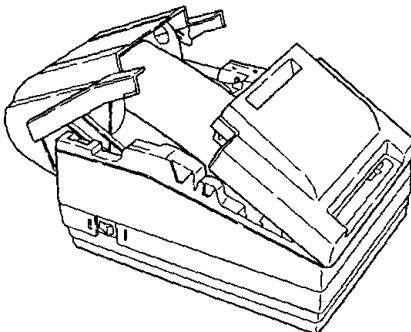
■ Installing the roll paper for TM-U300B/U300PB

Be sure to use roll paper that matches the printer's specifications.

① Using scissors, cut the leading edge of the roll paper perpendicular to the paper feed direction.
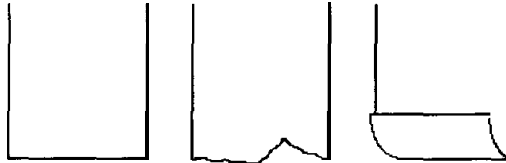
Good   Bad   Bad

② Open the printer cover and the roll-paper cover.
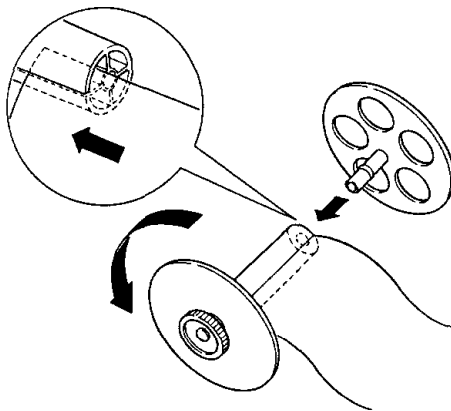- Check that the ribbon cassette is properly installed.

③ Load the roll paper while lightly pressing the left roll-paper holder outward. Release the holder after fitting the paper core onto the holder. Make sure the roll paper turns freely. When loading roll paper, make sure to insert so that it rotates in the correct direction.


Correct

Incorrect

14

④ Turn on the printer.

⑤ While leaving some slack in the roll paper, insert the end of the roll paper straight into the paper inlet. The printer automatically feeds the roll paper into the printer.
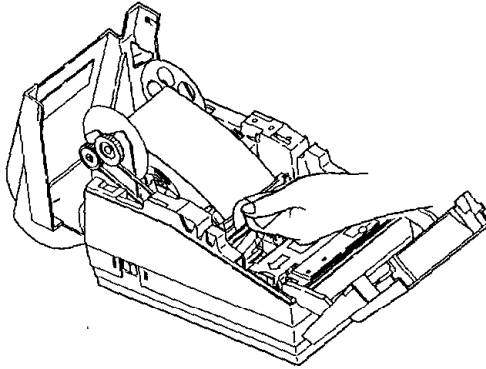

Roll Paper

⑥ Tear off any extra paper at the tear-off edge by pulling the paper toward you.
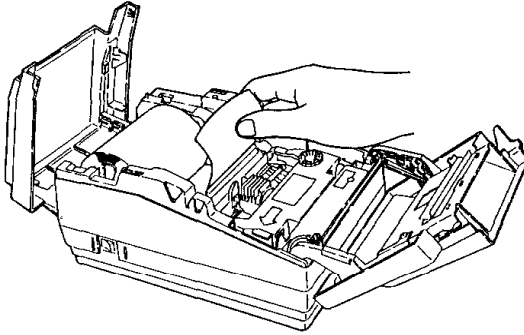
⑦ Close the printer cover and the roll-paper cover.
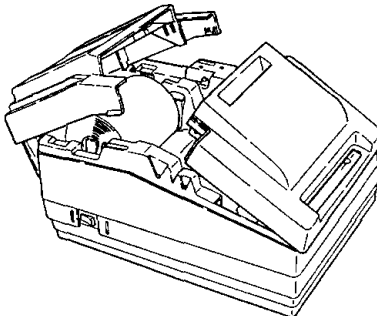
■ **Exchanging the paper roll**

Be sure to use roll paper that matches the printer's specifications.

<TM-U300A/U300PA>

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

Remove the journal paper and the receipt paper. While pressing the FEED switch, remove the remaining paper by pulling it out in the direction of the arrow.
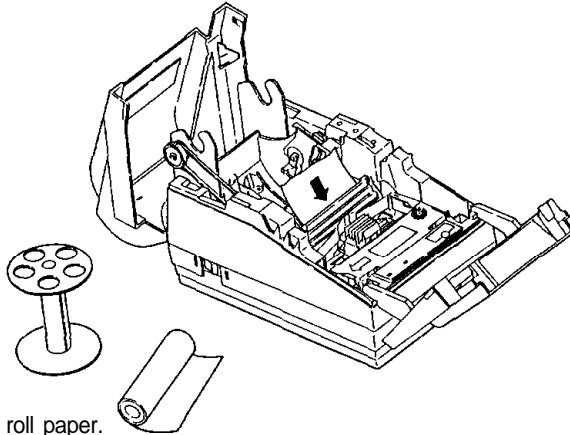
② Install a new roll paper.

See Installing the Roll Paper for TM-U300A/U300PA ① to ⑩.

<TM-U300B/U300PB>

① Open the printer cover and the roll-paper cover.

Remove the roll paper. While pressing the FEED switch, remove the remaining paper by pulling it out in the direction of the arrow.
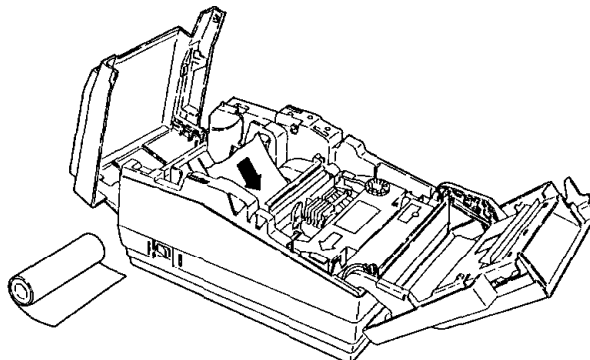
② Install a new roll paper.

See Installing the Roll Paper for TM-U300B/U300PB ① to ⑦.

3-3 Adjusting the Paper Near-End Detector

■ **The paper near-end detector**

The paper near-end detector senses when the paper is nearing its end and turns on the PAPER LED.

The paper near-end detector can be adjusted according the thickness of the paper core.

■ **Adjusting the paper near-end detector**

Roll paper differs in paper core size, so you may need to adjust the paper near-end detector.

① Make sure the paper core inside diameter (Ød) is 10.5 to 12.5 mm.

② Measure the paper core thickness A (Refer to Figure below) for the roll paper to be used.

③ Determine the corresponding adjustment value from the table below.

Table 3-1. Paper Core Thickness and its Graduation Degrees

Dimension A	Adjustment value
4.5 mm l	# 1
6.5 mm	# 2
8.5 mm	# 3
10 mm	# 4
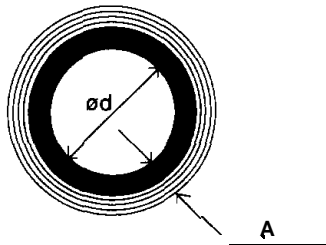
④ The adjusting screw which holds the roll paper near-end detector, may be loosened and then set the top of "B" to the adjustment value found in ③, and tighten the adjusting screw. (The adjusting screw can be turned with a coin.)
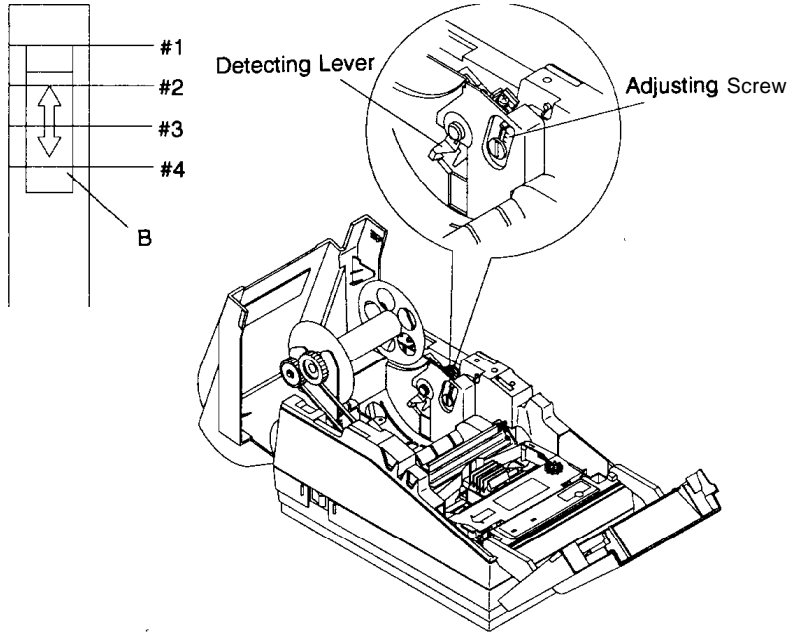
⑤ Be sure that the detecting lever operates smoothly after finishing the adjustment.

NOTES:
- Since the adjustment values in Table 3-1 are calculated from standard measurements, there may be some variations depending on the model.
- If a roll paper with a red end mark at the paper end is used, this mark may cause the paper to stick together. If this occurs, the dimension A differs from the table.
- Be sure that the detecting lever operates smoothly after finishing the adjustment.
- If the roll paper becomes loose due to poor paper quality, the detector may operate incorrectly.

3-4 DIP Switches

■ **Locating DIP switches**

On the bottom of your printer are DIP switches that allow the printer to be set or perform a number of different functions.

• The switches are numbered SW-1 to SW-10 (TM-U300A/U300B) or SW-1 to SW-8 (TM-U300PA/U300PB), from left to right as shown in figure below.
• The lists on the following page describe each switch's function.

■ **Setting the DIP switches**

Follow these steps when changing DIP switch settings.

① Turn the printer power switch off.

② Flip the DIP switches using tweezers or other narrow-ended tool.
   Switches are on when up and off when down.

DIP Switches

TM-U300A/U300B

TM-U300PA/U300PB
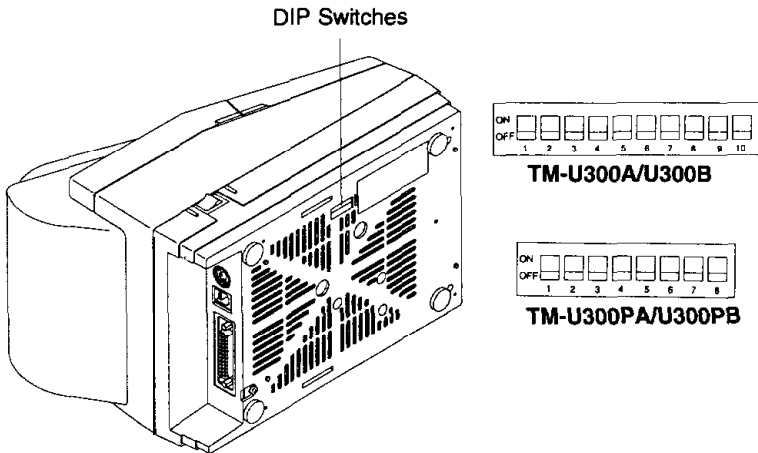
③ The new setting takes effect when you turn on the printer.

NOTES:
• Always change DIP-switch settings when printer is turned off.
• Changes made with the power on have no effect until you turn the printer off and then on again.

■ **TM-U300A/U300B DIP Switch Functions**

Table 3-2. TM-U300A/U300B DIP Switch Functions

Switch	Function	ON	OFF
SW-1	Data receive error	Ignored	Prints "?"
SW-2	Receive buffer capacity	40 bytes	Approx. 1 Kbyte
SW-3	Handshaking	XON/XOFF	DSR/DTR
SW-4	Word length	7 bits	8 bits
SW-5	Parity check	On	Off
SW-6	Parity selection	Even	Odd
SW-7	Baud rate selection (Refer to Table 3-3.)		
SW-8			
SW-9	(Internal use)	∗)	
SW-10	(Internal use)		

∗) Do not change the setting of DIP switches 9 and 10 in the TM-U300A/U300B.

Table 3-3. Baud Rate Selection

Transmission Speed (bps)	SW-7	SW-8
1200	ON	ON
2400	OFF	ON
4600	ON	OFF
9600	OFF	OFF

■ **TM-U300PA/U300PB DIP Switch Functions**

Table 3-4. TM-U300PA/U300PB DIP Switch Functions

Switch	Function	ON	OFF
SW-1	Auto-feed	Always enable	Depends on AUTO FEED XT
SW-2	Receive buffer capacity	0 byte	Approx. 1 Kbyte
SW-3	(Internal use)	∗) Fixed to ON.	
SW-4	(Internal use)	∗) Fixed to OFF.	
SW-5	(Internal use)	∗) Fixed to ON.	
SW-6	(Internal use)	∗) Fixed to ON.	
SW-7	(Internal use)	∗)	
SW-8	(Internal use)		

∗) Do not change the setting of DIP switches 3 to 8 in the TM-U300PA/U300PB.

Chapter 4 The Self Test

4-1 The Self Test

■ The purpose of the self test

The self test checks whether the printer has any problems. When the printer does not function properly, contact the dealer.

The self test checks the following
• Control circuit functions
• Printer mechanism functions
• Print quality
• Control ROM version
• DIP-switch settings

■ Running the self test

Run the self test only when roll paper is loaded the printer.

① Make sure the ribbon cassette and paper have been installed properly.

② Turn on the power while holding down the FEED switch. The self test begins.

③ The following contents are printed for printer current status printing first.
  • Control ROM version
  • DIP-switch settings

④ After printing the printer current status, the printer blinks the PAPER LED and enters the test printing standby state. Press the FEED switch to restart test printing.

⑤ After the printer completes a certain number of lines, it prints "＊＊＊completed＊＊＊", and stops printing automatically.

＊ The printer goes off-line during and after self-test printing.

Turn the power off and on again to put the printer on-line before transmitting data from the host computer.
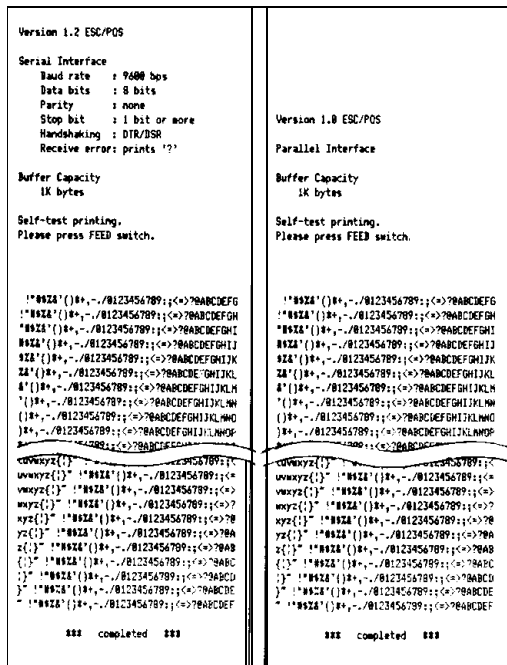
(TM-U300A/U300B)   (TM-U300PA/U300PB)

Self-test Printing Samples

Chapter 5 Removing Jammed Paper

5-1 Removing Jammed Paper

■ Removing jammed paper

Remove jammed paper according to the following steps.

① Open the roll-paper take-up cover (TM-U300A/U300PA) or the roll-paper cover (TM-U300B/U300PB).

② Then turn the paper-feed knob and remove any jammed paper.

Paper-feed Knob
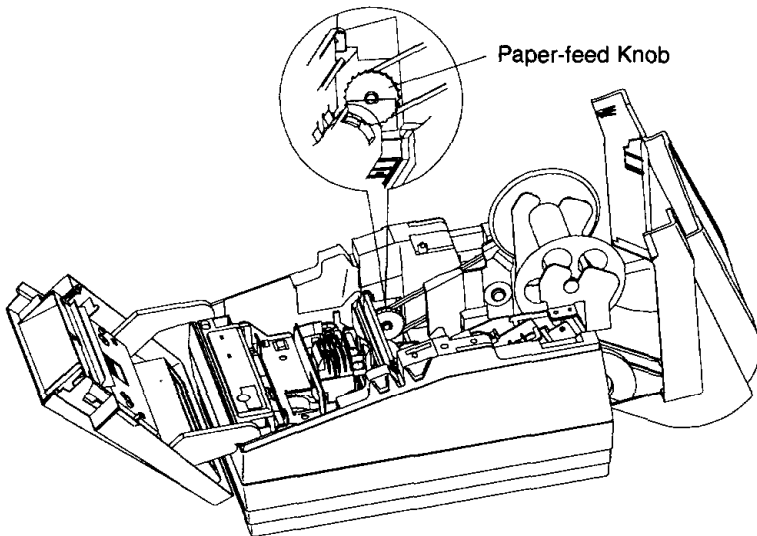
③ Reload roll paper, and close the roll-paper take-up cover (TM-U300A/U300PA) or the roll-paper cover (TM-U300B/U300PB).

See 3-2, *Installing the Roll Paper*.

APPENDIX

APPENDIX A General Specifications

1. Printing specifications

Printing method: Serial impact dot matrix

Head wire arrangement: Serial-type 9 pin

Printing directions: Bi-directional (logic-seeking)

Lines per second: Approx. 3.5 LPS (40 columns, 16 CPI, Single
                                     color continuous printing)

                           Approx. 5.6 LPS (20 columns, 16 CPI, Single
                                     color continuous printing)

                           * In the case of heavy use, printing stops to
                              protect the head.
                              In this case the actual lines per second may be
                              lower.

                              (LPS: Lines Per Second)
                              (CPI: Characters Per Inch)

Characters per line: Refer to Table A-1

Character per inch: Refer to Table A-1

Print color switching mechanism:

                           Selectable black or red printing

2. Character specifications

Number of characters: Alphanumeric: 95

                           Graphics: 126 X 7 tables
                           International characters: 32

Character structure: 7 x 9 (Total number of dots in the horizontal
                                     direction: 400 half dots)

                           9 x 9 (Total number of dots in the horizontal
   direction: 406 half dots)

Character size: Refer to Table A-1

Table A-1. Character Size, Characters Per Line, Characters Per Inch

Character Structure		Character Size	Character	Characters	Characters
Horizontal × Vertical	Characters	W × H (mm)	Dot Spacing	Per Line (CPL)	Per Inch (CPI)
7 × 9	ANK (＊2)	1.24 × 3.1	3 half dots	40	16
(＊1)	Graphic	1.59 × 3.1	0	40	16
9 × 9	ANK (＊2)	1.56 × 3.1	3 half dots	33	13.3
	Graphic	1.91 × 3.1	0	33	13.3

(＊1) 7 X 9 font is the default. (＊2) ANK: Alphanumeric and Kana

Example) 7 X 9 font   [Units: mm]
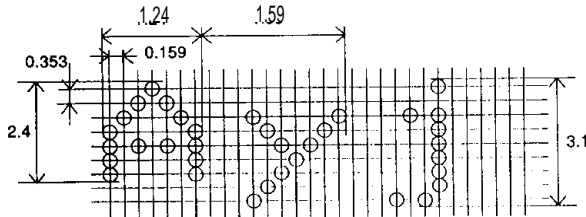
3. Ribbon

Ribbon cassette type: Exclusive ribbon cassette ERC-38 (＊)

Color: Black and Red, Black, Purple

Ribbon life: Black: Approx. 1,500,000 characters
(In case of using 2-color type)   Red: Approx. 750,000 characters

Ribbon cassette overall dimensions:

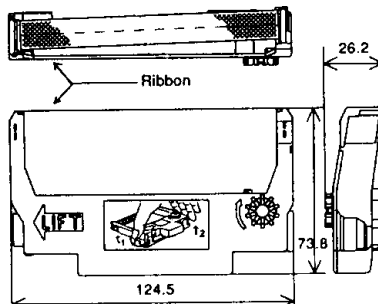Refer to Figure A-1

Units: mm1

Figure A-1. ERC-38 Overall Dimensions

(＊) Single-color ribbons [Part No.:ERC-34(P)(purple) or ERC-34(B)(black)] and
P-color ribbon [Part No.:ERC-34(B/R)(black and red)] are also available. In
case of using the single-color ribbon, the print color selection command,
ESC r must not be used.

24

[Condition]

- Character font: 7 X 9 font
  (with descenders)
- Printing pattern: ASCII 96-character rolling
  pattern continuous printing
- Temperature: 25°C

4. Roll paper supply device

Supply method: Roll paper shaft-support loading

Near-end detector:

- Detection method: Micro switch
- Roll paper core inside diameter:
  Ø 10.5 to 12.5 mm
- Near-end adjustment: Adjustable slider
  (Refer to 3-3, *Adjusting the Paper Near-End Detector*)

5. Roll paper take-up device

The TM-U300A and TM-U300PA are equipped with a take-up device. The paper is automatically take-up by the paper feed motor.

6. Auto-cutter

Both the TM-U300A/U300B and TM-U300PA/U300PB are equipped with the auto-cutter. Full-cut/partial-cut can be executed by commands.

7. Paper

Paper feed method: Friction feed

Paper feed pitch: Default 1/6 inch

Can be set in 1/144 inch units by software command.

Paper feed speed: Approx. 4.17 IPS (25 LPS) (continuous feeding)

(IPS: Inches Per Second)
(LPS: Lines Per Second)

Paper size:

- Roll paper
  Paper width: 76 mm ± 0.5 mm

Maximum diameter: Ø 83 mm (When 2-ply or 3-ply paper is used.
                         When 1-ply paper is employed, the maximum diam-
                         eter shall be Ø 60 mm.)

Paper core inside diameter:

                         Ø 10.5 to 12.5 mm

• Normal paper

Paper thickness: 0.06 to 0.85 mm

Weight: 52.3 g/m² to 64 g/m²

                         (45 to 55 kg/1000 sheets/1091 X 788 mm)

• Pressure sensitive paper

Maximum 1 original + 2 copies. Copy capability is considerably affected by
the ambient temperature.

Refer to table A-2. Relationship between Ambient Temperature and Number
of Copies.

Paper thickness: Total thickness shall be a 0.2 mm or less combina-
                         tion of 0.05 to 0.08 mm sheets. Paper thickness to
                         be auto cut should be 0.06 mm + 0.06 mm, and the
                         total thickness shall be a 0.12 mm or less.

**Table A-2. Relationship between Ambient Temperature
and Number of Copies**

Number of Copies	Temperature
1 original + 1 copy	5 to 40 °C
1 original + 2 copies	Approx. 25°C

8. Receive buffer

Either 40 bytes or approx. 1 Kbyte is selectable using DIP switch. (TM-U300A/U300B)

Either 0 byte or approx. 1 Kbyte is selectable using DIP switch. (TM-U300PA/U300PB)

9. Electrical characteristics

Opening power supply: Packaged AC adapter
                         One of the following 4 AC adapters is selected,
                         depending on the local power:

Table A-3. AC Adapter Types

Factory setting	Voltage	AC adapter type
North America	120 V	PB-6509
Europe (Germany)	230 V	PB-6510
Europa (U.K.)	240 V	PA-6511
Australia	240 V	PA-6513

Printer power consumption (except for drawer kick-out):

Operating:	Mean 33 W
Standby:	Mean 10 W (TM-U300A/U300B)
	Mean 12 W (TM-U300PA/U300PB)

10. Reliability

Life:
- Mechanism: 7,500,000 lines
- Print head: 100 million characters
  (when printing an average of two dots/wire/character)
- Autocutter: 300,000 cuts (total of full and partial cuts)
  ❏ 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.

11. Environmental conditions

Temperature: Operating: 5 to 40°C
(30°C or more: Operating humidity is limited)

Storage: -10 to 50°C (excluding paper and
ribbon cassette)

Humidity: Operating: 20 to 80°C (non-condensing)

Storage: 20 to 90%
(non-condensing, excluding paper
and ribbon cassette)

Relative humidity [%]

80

60

40

20

0

5°C, 80%   30°C, 80%

Operating environment range

40°C, 45%

40°C, 20%

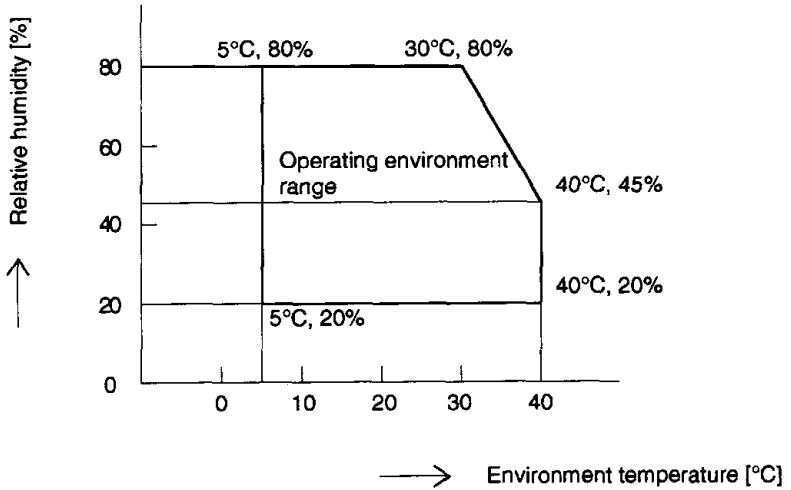5°C, 20%

0   10   20   30   40

Environment temperature [°C]

Figure A-2. Operating Temperature and Humidity Range