Confidential

Developer's Guide
TM-J7500/J7600

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EPSON

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ESC/POS® Proprietary Command System

EPSON took the initiative by introducing ESC/POS, a proprietary POS printer command system including patented commands and enabling versatile POS system construction with high scalability. Compatible with all types of EPSON POS printers and displays, this proprietary control system also offers the flexibility to easily make future upgrades. Its popularity is worldwide.

Revision Information

Revision	Page	Altered Items and Contents
Rev. A	all page	newly authorized

About This Booklet

This booklet was created to provide the information only on the features specific to the TM-J7500/J7600 printer for anyone who needs the information before the mass production.

Key to Symbols

The symbols in this booklet are identified by their level of importance, as defined below. Read the following carefully before handling the product.

⚠ WARNING:

You must follow warnings carefully to avoid serious bodily injury.

⚠ CAUTION:

Provides information that must be observed to prevent damage to the equipment or loss of data.

- ❑ *Possibility of sustaining physical injuries.*
- ❑ *Possibility of causing physical damages.*
- ❑ *Possibility of causing information loss.*

✎ ***Note:***
Provides important information and useful tips on handling the equipment.

Safety Precautions

This section presents important information to ensure safe and effective use of this product. Please read this section carefully and store it in an accessible location.

⚠ WARNING:

- ❑ *Shut down your equipment immediately if it produces smoke, a strange odor, or unusual noise. Continued use may lead to fire or electric shock. Immediately unplug the equipment and contact your dealer or a Seiko Epson service center for advice.*
- ❑ *Never attempt to repair this product yourself. Improper repair work can be dangerous.*
- ❑ *Never disassemble or modify this product. Tampering with this product may result in injury, fire, or electric shock.*
- ❑ *Be sure to use the specified power source. Connection to an improper power source may cause fire or shock.*
- ❑ *Never insert or disconnect the power plug with wet hands. Doing so may result in severe shock.*
- ❑ *Do not allow foreign matter to fall into the equipment. Penetration by foreign objects may lead to fire or shock.*
- ❑ *If water or other liquid spills into this equipment, do not continue to use it. Continued use may lead to fire or shock. Unplug the power cord immediately and contact your dealer or a Seiko Epson service center for advice.*
- ❑ *Do not place multiple loads on the power outlet (wall outlet). Overloading the outlet may lead to fire.*
- ❑ *Always supply power directly from a standard domestic power outlet.*
- ❑ *Handle the power cord with care. Improper handling may lead to fire or shock.*
  - *Do not modify or attempt to repair the cord.*
  - *Do not place any object on top of the cord.*
  - *Avoid excessive bending, twisting, and pulling.*
  - *Do not place cord near heating equipment.*
  - *Check that the plug is clean before plugging it in.*
  - *Be sure to push the prongs all the way in.*
- ❑ *If the cord becomes damaged, obtain a replacement from your dealer or a Seiko Epson service center.*

⚠ CAUTION:

- ❑ *Do not connect cables in ways other than those mentioned in this manual. Different connections may cause equipment damage and burning.*
- ❑ *Be sure to set this equipment on a firm, stable, horizontal surface. Product may break or cause injury if it falls.*
- ❑ *Do not use in locations subject to high humidity or dust levels. Excessive humidity and dust may cause equipment damage, fire, or shock.*
- ❑ *Do not place heavy objects on top of this product. Never stand or lean on this product. Equipment may fall or collapse, causing breakage and possible injury.*
- ❑ *To ensure safety, unplug this product before leaving it unused for an extended period.*
- ❑ *Before moving the product, unplug it and unplug all cables connected to it.*
- ❑ *If ink leaks out of the printer, wipe up the ink with a cloth or similar material immediately and contact your dealer or a Seiko Epson service center for advice.*

Safety Label

⚠ WARNING:

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

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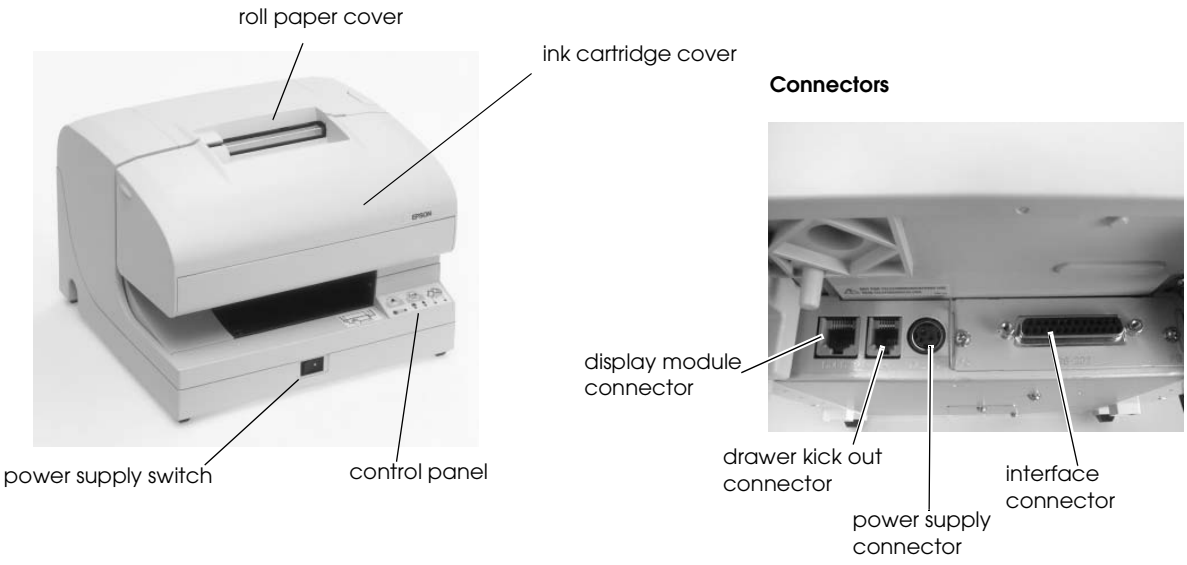
Chapter 1

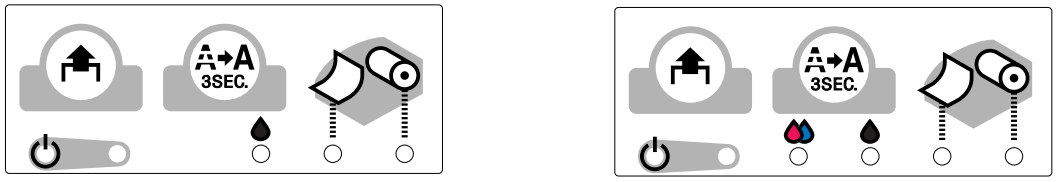
Product Overview

Product Structure

Part Names



Control Panel



TM-J7500 TM-J7600

* For detailed information for the control panel, see "Control Panel (LEDs and Buttons)" in this chapter.

Models

Product name	Ink system	Supplied ink cartridge
TM-J7500 series	Monochrome	SJIC8 (K): (black)
TM-J7600 series	2-color	One of the following SJIC6 (K) + SJIC7 (R): (black) + (red) SJIC6 (K) + SJIC7 (G):(black) + (green) SJIC6 (K) + SJIC7 (B): (black) + (blue)

Accessories

- ❏ Paper roll (60 mm in diameter)
- ❏ Ink cartridge [TM-J7500] SJIC8 × 1
[TM-J7600] SJIC6 × 1, SJIC7 × 1
- ❏ User's manual
- ❏ Hexagonal millimeter screws (only for the serial interface printer) (2)
- ❏ Power switch cover
- ❏ Instruction sheets

Options

- ❏ Power supply: EPSON PS-180
- ❏ Universal interface boards (except for UB-P02)

Interface	Product name
Serial	UB-S01 (RS-232) UB-S02 (RS-485)
Parallel	UB-P02II
USB	UB-U01 / U01II (Downstream hub provided) UB-U02 / U02II (Downstream hub not provided)
Ethernet	UB-E01

Consumables

- ❏ Ink cartridge [TM-J7500] SJIC8
[TM-J7600] SJIC6, SJIC7

Note:
Use Seiko Epson specified ink cartridges. Performance of the printer when other ink cartridges are used is not guaranteed.

Printer Specifications

Printing

Print method

Serial inkjet dot matrix

- ❑ TM-J7500: single-color, 64 nozzles × 1 line
- ❑ TM-J7600: two-color, 64 nozzles × 2 lines
- ❑ Density: 180 × 180 dpi

Interfaces

- ❑ Standard: RS-232 and IEEE 1284 parallel
- ❑ Options: RS-485, all UB boards, except the UB-P02, 10Base-T

Reliability

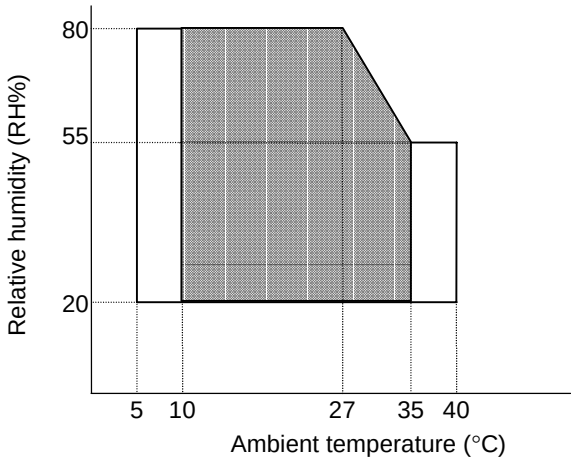
- ❑ Life
  - Mechanism: Receipt: 15,000,000 lines, Slip: 5,000,000 lines
  - Print head: 1600 million shots/nozzle (Shots are defined as the numbers of pulses energized for the print head.)
  - Autocutter: 1,500,000 cuts (End of life: the printer is defined to have reached the end of its life when it reaches the beginning of the Wearout Period.)
- ❑ MTBF: 180,000 hours (Failure is defined as a random failure occurring during the random failure period.)
- ❑ MCBF: 50,000,000 lines (This is an average failure interval based on failures relating to wearout and random failures up to the life of 20,000,000 lines (receipt: 15,000,000 lines plus slip: 5,000,000 lines)

Buffer Sizes

- ❑ Receive: 4KB
- ❑ User-defined (both for user-defined characters and downloaded bit images): 12KB
- ❑ NV graphics and user NV memory: 384KB

Environmental Conditions

- ❑ Temperature and Humidity:
  - Printing: 10 to 35°C {50 to 95°F}, 20 - 80% RH (non-condensing)
    (Shaded area in figure "Operating Temperature and Humidity Range.")
  - Operating: 5 to 40°C {41 to 104°F}, 20 - 80% RH (non-condensing)
    (Area drawn with a solid line in figure "Operating Temperature and Humidity Range.")
  - Storage: When packed (ink not installed)
    -20 to 60C {-4 to 140F}, 5 - 85% RH (non-condensing) (within 120 hours at -20°C {68°F} or 60°C {140°F}
  - Storage: When ink is loaded
    -20 to 40°C {-4 to 104°F}, 20 - 85% RH
  - Maximum absolute rated temperature: 70°C {158F}
    (The printer must be kept at or below 70°C {158°F} whenever it is operating or in storage.



Operating Temperature and Humidity Range

Electrical Characteristics

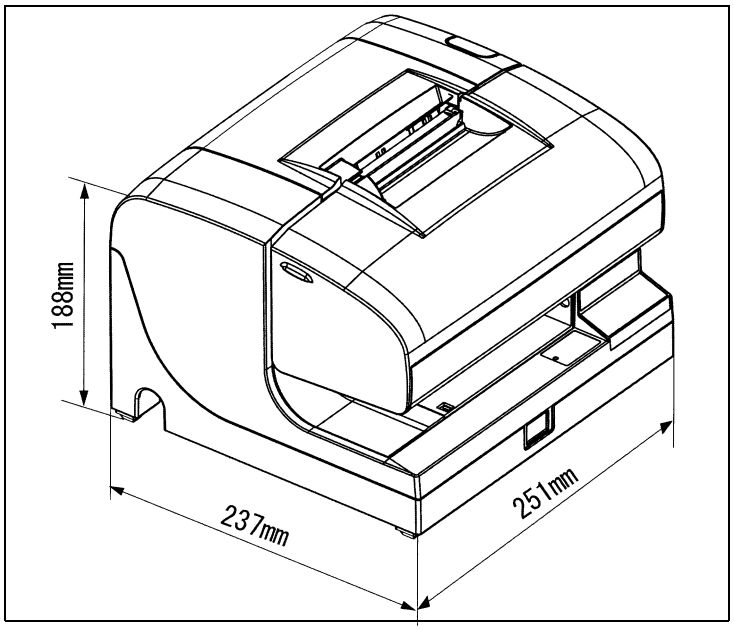
- ❑ Supply voltage 24 V ± 2.4 V (using optional EPSON power supply 180)
- ❑ Current consumption (except when the drawer kick-out is used):

Operating	Mean:	Approximately 0.5A (all lines contain character font A α-N)
	Peak:	Approximately 2.7 A
Standby	Mean:	Approximately 80mA

Overall Dimensions

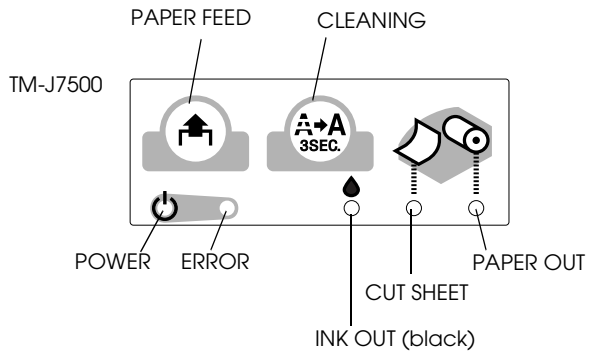
- ❏ Height: 188 mm {7.40"}
- ❏ Width: 251 mm {9.88"}
- ❏ Depth: 237 mm {9.33"}
- ❏ Mass: Approximately 4.9 kg
  (including the ink cartridge and excluding a paper roll and a power supply unit)

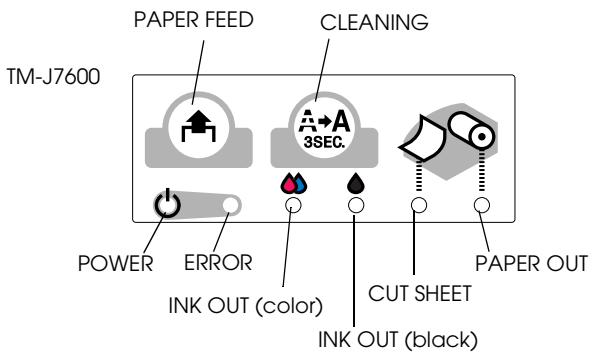
[All numeric values are typical.]



Product Handling

Control Panel (LEDs and Buttons)



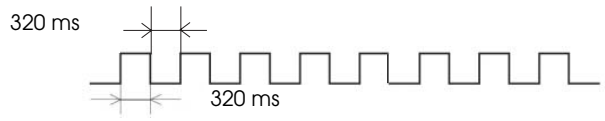


LEDs

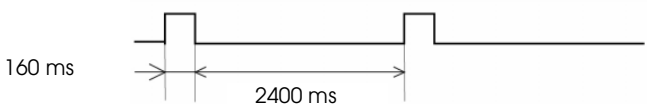
POWER

Lights when the power is on and is off when the power is off; flashes during cleaning and other operations such as power-on and power-off.

Power on process (when an operation is being executed): Flashing



Power off process (after DLE DC4, ***fn*** = 2 is executed): Flashing



Note:
Never open the printer cover or turn off the printer when the POWER *LED is flashing.*

ERROR

Lights when the printer is offline except during paper feeding using the PAPER FEED button, during self-test, or cleaning. Off when the printer is online. Flashes when an error occurs. See the Error LED Codes section in this Chapter.

INK OUT

Lights when the ink cartridge is not installed or ink is out. The ink cartridge needs to be replaced. Off when the ink cartridge is installed and ink is adequate. Flashes when the ink is nearly out. (If the ink is out, the printer also goes offline and the ERROR LED lights.) The TM-J7500 has two INK OUT LEDs, one for the color cartridge and one for the black cartridge.)

Note:
The number of printable characters from when the ink near end status is detected to when the ink is out differs depending on the conditions. When ink near end is detected, prepare to replace the ink cartridge.

Detection of ink cartridge installation and the ink near end status is performed only when the carriage cover is closed. If the carriage cover is open, the INK OUT LED keeps the same status as before the carriage cover was opened.

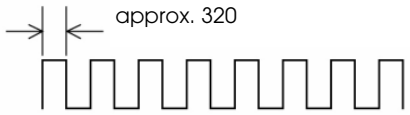
PAPER OUT

Lights when roll paper is out or nearly out. Flashes when the printer is in the self test standby state.

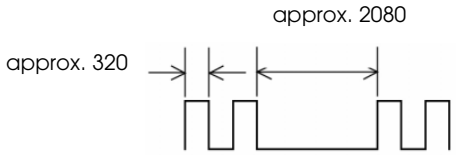
CUT SHEET

Lights when slip is selected as print sheet (= active sheet). Off when roll paper is selected as print sheet. Flashes when the printer is in the slip insertion or removal waiting state.

Slip insertion waiting



Slip removal waiting state



Buttons

PAPER FEED

PAPER FEED feeds the roll paper based on the line spacing set by the **ESC 2** or **ESC 3** command.

The printer feeds the roll paper if the roll paper is selected as the paper source or feeds the cut sheet when the cut sheet is selected as the paper source.

The back of a slip is fed by the PAPER FEED button in the reverse direction to when the paper is fed in the forward direction.

Note:
Paper cannot be fed using this button in the following cases:

- *Roll paper cover is open when roll paper is selected as print sheet (= active sheet).*
- *Printer is in the slip insertion or removal state when slip is selected as print sheet.*
- When cleanning is being performed or an error has occurred with any sheet selected.
- When it is disabled with the ESC c 5 command.

CLEANING

If printing becomes faint or uneven and the INK OUT LED is not on or flashing, use this button to clean the print head. Press the button until the printer mechanism begins to clean the print head (more than 3 seconds). When the cleaning stops, the printer is ready for normal printing.

Note:
Do not use the CLEANING button unless there is a problem with print quality. Unnecessary cleaning will waste ink.

Power Switch and Power Switch Cover

The power switch is on the front of the printer. Press the power switch to turn on the printer.

Note:
Turn on the power only after connecting the power supply.

Executing the power-off sequence

It is recommended to turn the power off only after executing the power-off command (**DLE DC4 fn = 2**). If the power is turned off without executing the power-off command, the ink will be wasted since the cleaning is done when the printer is turned on the next time, or the ink nozzle will be clogged if the unused period exceeds two weeks.

Note:
Never open the printer cover or turn off the printer when the POWER *LED is flashing.*

Power Switch Cover

You can use the enclosed power switch cover to make sure that the power switch is not accidentally pressed. Just press the cover into place to install it. If you need to turn the power switch on or off with the cover attached, you can insert a thin tool into one of the holes in the cover to operate the switch.

⚠ WARNING:

If an accident occurs when the power switch cover is attached, immediately unplug the power supply cable to avoid fire.

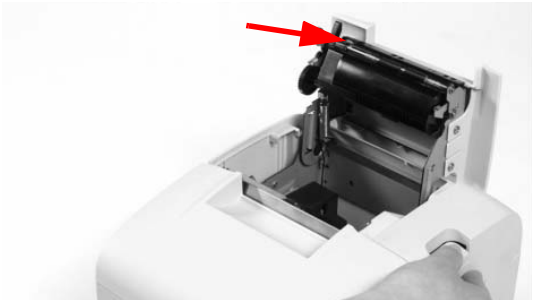
Note: This photo is the TM-J7000 , but the operation is the same.

If you are going to store the printer or leave it unused for a long time, turn it off using the power switch on the printer.

Installing or Replacing Roll Paper

⚠ CAUTION:

Be careful not to insert your fingers into the paper exit. The cutter blade is installed inside the paper exit and you might be injured.

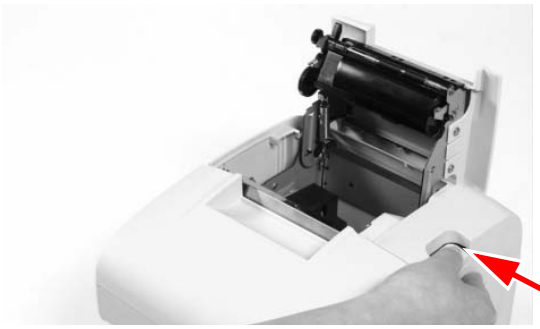


⚠ CAUTION:

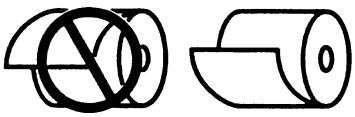
Be sure to use roll paper that meets the specifications.

Follow these steps to install or replace paper:

1. Make sure the printer is on.
2. Open the roll paper cover by pressing the cover open button.



3. Remove the used roll paper core if there is one.
4. Put the roll paper inside the printer in the correct direction, as shown in the illustrations below.



5. Pull out the leading edge of the roll paper; then close the roll paper cover until it is firmly locked by pushing the top of the cover.
6. The printer will automatically feed the roll paper to remove any slack in the paper.

Note:
Do not open the roll paper cover during printing or paper feeding.

Inserting Slip Paper

Note:
Be sure the paper is flat, without curls, folds, or wrinkles.

Do not insert any multiple sheet paper because this may cause a paper jam. Use only single sheet paper.

Because the printer is an inkjet printer, pressure sensitive copy paper cannot be used.

To prevent jams, roll paper must be installed even for printing on slip paper.

Be sure to insert a slip with the right side of the paper against the right side of the paper guide as far as it will go, as shown in the illustration. See the label instructions attached to the printer as a guide.

Note: This photo is the TM-J7000 , but the operation is the same.

Installing or Replacing an Ink Cartridge

⚠ CAUTION:

Usage:

Do not disassemble the cartridge. The ink can permanently stain clothing.

Do not refill ink cartridges. Spills can result, causing damage to the printer.

Do not remove the cartridge except to replace it or to prepare the printer for shipment. Otherwise, ink may be wasted and the life of the ink cartridge may be reduced.

For good printing quality, do not remove the ink cartridge from its packing until immediately before installing it.

Use up the ink cartridge within 6 months after unpacking it.

The expiration date is indicated on the cartridge box or the ink cartridge itself.

Print quality problems may occur if an ink cartridge that is almost empty (the INK OUT LED flashes) is removed and reinstalled.

A used cartridge may have some ink on the convex part of the bottom of the cartridge. Avoid touching that part to keep your hands clean.

Do not puncture the convex part of the bottom of the ink cartridge or remove the transparent film on the bottom of the ink cartridge; otherwise the ink might leak.

Once the ink cartridge is used, the ink supply needle (plastic projection) in the ink cartridge holder that supplies ink to the printer is covered with ink. Avoid touching the cartridge holder to keep your hands clean.

Use Seiko Epson specified ink cartridges. Performance of the printer when other ink cartridges are used is not guaranteed.

Do not open or close the ink cartridge cover during printing. Misalignment of the print position will occur.

Storage:

Keep the ink cartridge out of the reach of children. Do not drink the ink.

Do not store the ink cartridge where it will be subject to high temperatures or freezing.

Instructions

When the INK OUT LED flashes, it is almost time to change the ink cartridge. Change the cartridge as soon as it is convenient. When the INK OUT LED is on, printing stops and you must change the cartridge.

The TM-J7600 has two separate cartridges, one each for black and colored ink (either red, green, or blue). Therefore, the TM-J7600 has two INK OUT LEDs, one for the black and one for the color.

Follow these steps to install an ink cartridge for the first time or to replace an empty ink cartridge.

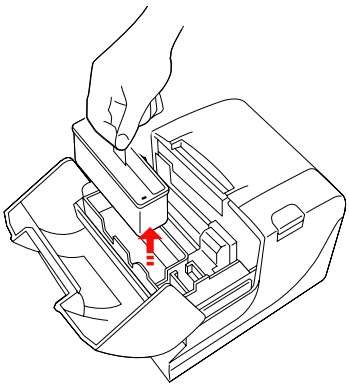
1. Make sure the printer is on. If it is not on, plug in the power supply cable and turn on the power using the switch on the front of the printer.

2. Make sure an INK OUT LED is on or flashing. When using two colors, notice which ink cartridge INK OUT LED is on or flashing; this indicates which cartridge is empty.

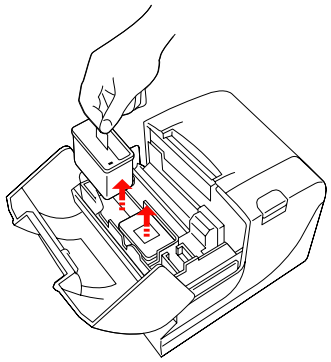
3. Be sure that roll paper is installed.

4. Open the ink cartridge cover using the tabs on the sides of the cover.

5. Lift up the empty ink cartridge by using the tab.



TM-J7500



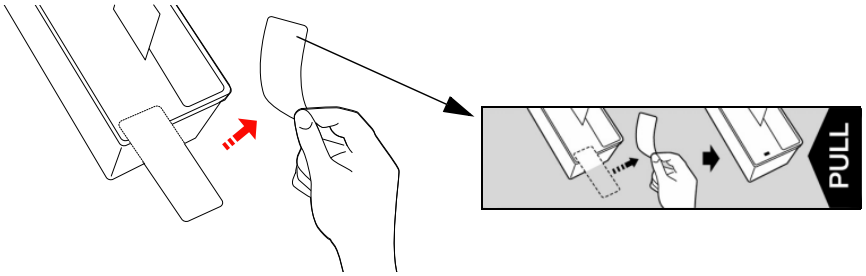
TM-J7500

⚠ CAUTION:

Do not put your fingers inside the ink cartridge compartment or you may be injured by a plastic projection.

Once the ink cartridge is used, the ink supply needle (plastic projection) in the ink cartridge holder that supplies ink to the printer is covered with ink. Avoid touching the cartridge holder to keep your hands clean.

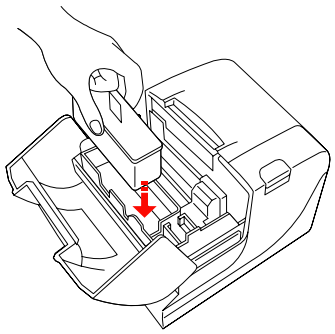
6. Take a new ink cartridge out of its packing and remove the yellow tape.



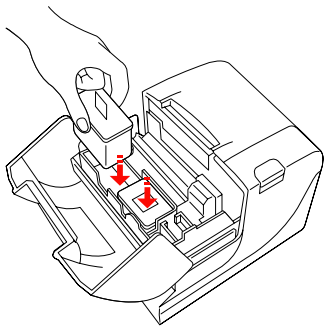
⚠ CAUTION:

You must not remove any tape on which the EPSON logo is printed.

7. Carefully insert a new ink cartridge from the top and push it firmly but gently until it clicks into place. Be sure the inserting direction is correct, as shown in the illustrations below.



TM-J7500



TM-J7600

8. Close the ink cartridge cover completely.

Note:
The INK OUT *LED will now be off.*

The POWER LED flashes for approximately 1 minute as the ink delivery system is charged. To save ink, this sequence will not be executed every time you replace an ink cartridge. The time to execute the sequence is controlled by the printer.

Note:
Do not turn off the power while the POWER *LED is flashing. This will waste ink because the printer has to re-start the ink charging process. Be sure not to open the printer cover while the* POWER *LED is flashing.*

When the POWER LED quits flashing and stays on, the printer is ready for printing.

Disposal of Used Cartridges

Dispose of used ink cartridges as industrial waste products. Obey the laws and regulations of your country and district.

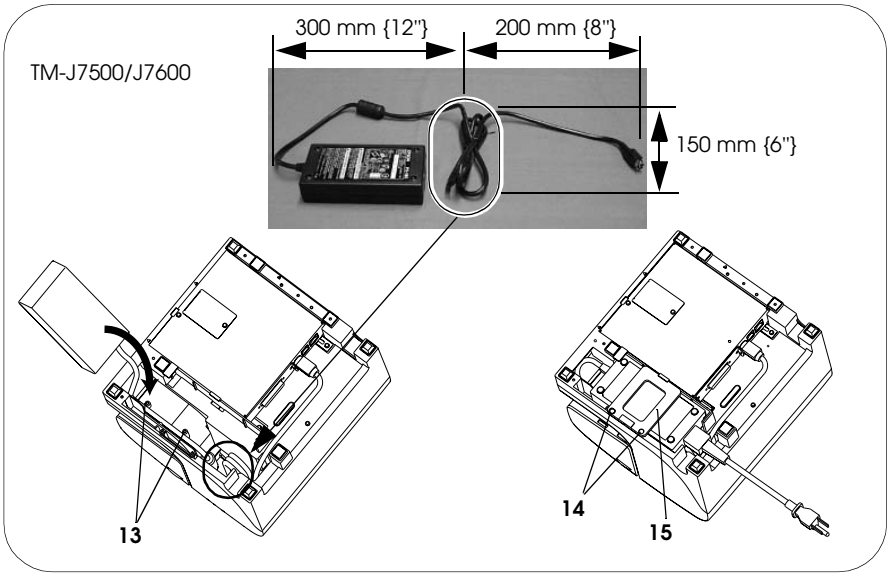
Ink Cartridge Life

To make your ink cartridges last as long as possible, follow these simple rules:

- ❏ Don't turn off the power supply switch immediately after printing is completed.
- ❏ Don't remove an ink cartridge unless you are replacing the cartridge.
- ❏ Don't turn the printer on and off unnecessarily.
- ❏ Don't press the CLEANING button unless the print is faint or uneven.

Attaching the Fixing Plate for AC Adapter

The bold numbers refer to the numbers in the illustration.



1. Loop the middle of the power cord as shown in the illustration.
   (The measurements are only approximate; use them as a guide.)
2. Put the looped part of the power cord inside the printer in the location indicated by the circle.
3. Arrange the power cord beside the two projections (**13**) on the bottom of the printer to hold it in place; then place the power supply into the printer with the label side face up.
4. Attach the fixing plate (**15**) and tighten the screws (**14**).

Self test

The printer has a self-test function that checks the following:

- ❑ Control circuit functions
- ❑ Printer mechanisms
- ❑ Print quality
- ❑ Control software version
- ❑ DIP switch settings
- ❑ Memory switch settings
- ❑ Paper width to be set

Self-test on roll paper

Follow the following procedure to start the self-test on roll paper.

1. To start the self-test on roll paper, hold down the receipt FEED button while turning on the printer with the cover closed.
2. When all printer states have been printed, make sure that the following message is printed and the PAPER OUT LED blinks.

   "**If you want to continue SELF-TEST printing, please press FEED button.**"

   The printer is now in the self-test wait mode.
3. To continue the self-test, press the FEED button when the printer is in the self-test wait mode.
4. Make sure that the following message is printed.

   ```
   ***   completed   ***
   ```

   The printer will now be initialized and returned to the normal operating mode.

Self-test on a cut sheet

Follow the following procedure to start the self-test on a cut sheet.

1. Hold down the CLEANING button while turning on the printer with the cover closed.
2. The printer flashes the CUT SHEET LED and enters the paper insertion waiting state. Insert a cut sheet to begin printing the printer status.
3. After printing the current printer status, the printer ejects the cut sheet and waits for the next sheet of paper to be inserted. Insert another cut sheet to begin printing the test.

4. After a number of lines are printed, the printer indicates the end of the self-test by printing "****** completed *****," initializes, and goes into the normal mode.

NOTES:
Make sure to use a cut sheet with a width wider than 85 mm {3.35"} because the self-test on the cut sheet is full-column printing regardless of the paper width that is currently selected. If the width of the cut sheet is narrower than full-column print width, the ink may make the platen dirty beyond the edge of the paper.

When the self-test is performed on the cut sheet, roll paper also must be loaded.

Hexadecimal Dumping

In hexadecimal dump mode, the data transmitted from the host computer is printed in hexadecimal numbers and in their corresponding characters. Use the following procedure to output a hexadecimal dump.

1. With the paper roll cover open, press and hold down the FEED button while turning on the printer.
2. Close the paper roll cover.

   Data received after this is printed in hexadecimal numbers and their corresponding characters.

   NOTES:
   If no characters correspond to the data received, the printer prints "."

   During hexadecimal dumping, any commands other than DLE EOT, DLE ENQ, and DLE DC4 do not function.
3. When printing stops, turn off the power, or press the FEED button three times, or perform a reset.

<Printing example>

Hexadecimal Dump

```
1B  21  00  1B  26  02  40  40  :  .  !  .  .  &  .  @  @
1B  25  01  1B  63  34  00  1B  :  .  %  .  .  c  4  .  .
41  42  43  44  45  46  47  48  :  A  B  C  D  E  F  G  H
```

Note:
The hexadecimal dumping cannot be used with the APD (Advanced printer driver) or OPOS.

Shipping Procedure

To ship the printer, follow these steps:

1. Remove the roll paper and ink cartridge.
2. Turn off the power supply.
3. Check that the POWER LED is off.
4. Remove the power supply connector and other connectors.

Keep the printer upright and horizontal while you pack it.

Troubleshooting

Check the following cases. See also the "Error LED Codes" item to locate the causes.

- ✔ The print head temperature may be high or low. Wait until the print head cools or warms and the printer resumes printing automatically.
- ✔ Make sure that the roll paper cover is properly closed.
- ✔ If a paper jam has occurred, open the roll paper cover or the ink cartridge cover and remove the jammed paper. Do not pull the jammed paper by force or use tools. Be sure to remove it manually.
- ✔ Turn off the power, wait several seconds, and then turn it on again.

Cleaning

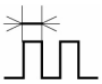
If printing becomes faint or uneven and the INK OUT LED is not on or flashing, press the CLEANING button until the printer mechanism begins to clean the print head (more than 3 seconds). The POWER LED flashes during cleaning. When the cleaning stops, the printer is ready for normal printing.

Note:
Do not use the CLEANING button unless there is a problem with print quality. Unnecessary cleaning will waste ink.

Do not turn off the power or open any covers while the POWER LED is flashing.

Error LED Codes

Errors that Automatically Recover

Error	Description	ERROR LED Flashing Pattern approx. 320 ms 	Recovery Condition
Roll paper cover open error (when auto recovery is selected by the memory switch)	Roll paper cover open is detected during printing on the roll paper.		Recovers automatically when the cover is closed.
Print head high temperature error (*)	The temperature of the print head is too high.		Recovers automatically when the print head cools.
Print head low temperature error (*)	The temperature of the print head is to low.		Recovers automatically when the print head temperature increases.

(*) If the head temperature is only slightly out of range the printer can recover, but a large deviation from the appropriate range causes an unrecoverable error as an internal circuit error.

Errors that are Possible to Recover

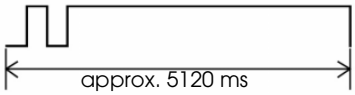
Error	Description	ERROR LED Flashing Pattern approx. 320 ms	Recovery Condition
Paper roll cover open error (when Possible recovery is selected by the memory switch)	Roll paper cover open is detected during printing on the roll paper.		Recovers by **DLE ENQ** (***n*** = 1) or **DLE ENQ** (***n*** = 2) with the cover closed.
Autocutter error	The autocutter does not work correctly.		Recovers by **DLE ENQ** (***n*** = 1) or **DLE ENQ** (***n*** = 2) with the cover closed.
Carriage home position detection error	The home position cannot be detected because of a paper jam.		Recovers by **DLE ENQ** (***n*** = 1) or **DLE ENQ** (***n*** = 2) with the cover closed.
Carriage out of phase detection error	The carriage is out of phase.		Recovers by **DLE ENQ** (***n*** = 1) or **DLE ENQ** (***n*** = 2) with the cover closed.
Cut sheet ejection error	The cut sheet cannot be ejected even if a certain amount is fed.		Recovers by **DLE ENQ** (***n*** = 1) or **DLE ENQ** (***n*** = 2) with the cover closed.

Note:
*If the printer recovers from an error that has the possibility of recovery with **DLE ENQ** (**n = 1**) when the printer has selected the slip as the paper source and an error has occurred while printing on the slip, the printer ejects the slip first if it is still remains, and enters the paper waiting state. However, if the printer recovers from a cut sheet ejection error, the printer ejects the slip only, and does not enter the paper insertion waiting state.*

*If the printer recovers from an error that has the possibility of recovery with **DLE ENQ** (**n = 1**) when the printer has selected the slip as the paper source and an error has occurred except when printing on the slip, the printer ejects the slip first if it is still remains, and selects the slip as the paper source, and does not enter the paper insertion waiting state.*

*If the printer recovers from an error that has the possibility of recovery with **DLE ENQ (n = 2)** when slip is set as the paper source, the printer ejects the slip only if it still remains.*

Errors that are Impossible to Recover

Error	Description	ERROR LED Flashing Pattern approx. 320 ms	Recovery Condition
CPU execution error	The CPU executes an incorrect address or the interface board is not connected.		Impossible to recover.
R/W error	After R/W checking, the printer does not work correctly.		Impossible to recover.
High voltage error	The power supply voltage is extremely high.		Impossible to recover.
Low voltage error	The power supply voltage is extremely low.		Impossible to recover.
Drive circuit error	Drive circuit does not work correctly.		Impossible to recover.
UIB error	UIB does not work correctly.		Impossible to recover.

Note:
When any errors shown above occurs, turn off the power as soon as possible.

Printer Operation When an Error Occurs

The printer executes the following operations when detecting an error.

- ❑ Stops all printer operations.
- ❑ Goes to BUSY mode (if the printer is set to BUSY in offline state by memory switch 1-3. See "Memory Switches" in Chapter 2."
- ❑ The ERROR LED flashes.

Data Receive Error

If one of the following errors occurs during serial interface communication, the printer prints "?" or ignores the data, depending on the setting memory switch 1-4.

- ❑ Parity error
- ❑ Framing error.
- ❑ Overrun error

Chapter 2

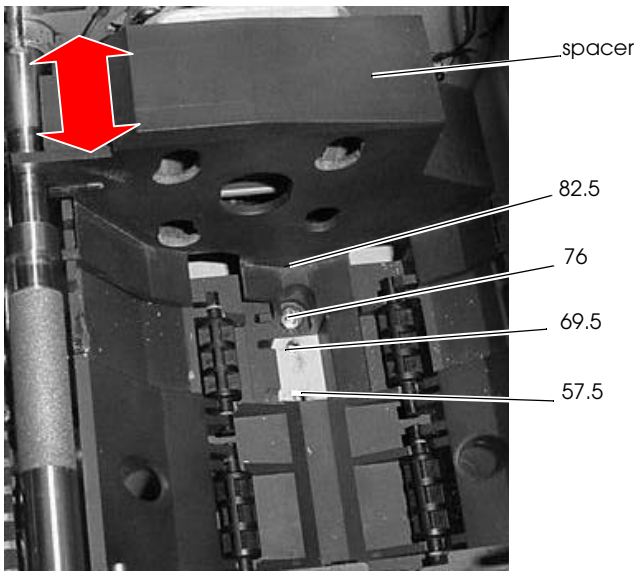
Adjustments and Settings

Using Different Paper Widths

This printer accommodates 76 mm wide paper rolls with no adjustment; however you can change the roll paper width to 82.5 mm, 69.5 mm, or 57.5 mm.

Follow the instructions below to change the roll paper width.

1. Open the roll paper cover.
2. Loosen the screw that holds the roll paper guide.
3. Slide the guide to the desired position.
4. Tighten the screw.



5. After setting the paper width, you need to change the memory switch setting. See xx for instructions.

Paper Near-End Sensor

The diameter of the paper remaining on the roll paper can be detected at one of four levels by the adjustment described below.

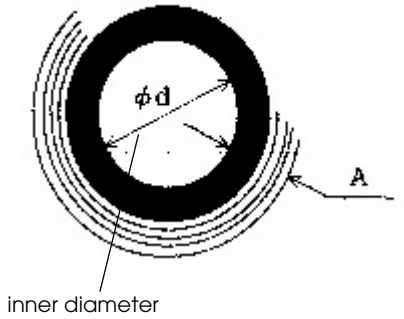
Note:
The amount of paper remaining on roll paper varies depending on the outer and inner diameters of the roll paper core.

1. Set the roll paper diameter A to obtain the corresponding adjustment shown in the table below.

   Note:
   The inner diameter of the paper core should be 10 mm {0.4 in.} or more.

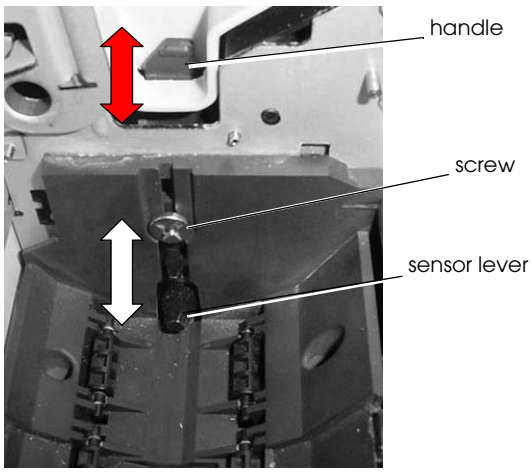
   Since diameter A in the table below is a calculated value, there may be some variations depending on the printer.

   If roll paper with an end mark at the paper end is used, the mark may stick. If this occurs, diameter A differs from the values in the table below.



A	Position
Approx. 10 mm	# 1
Approx. 8.5 mm	# 2
Approx. 7 mm	# 3
Approx. 5 mm	# 4

2. Loosen the adjustment screw and use the handle to slide the sensor lever to an appropriate position.

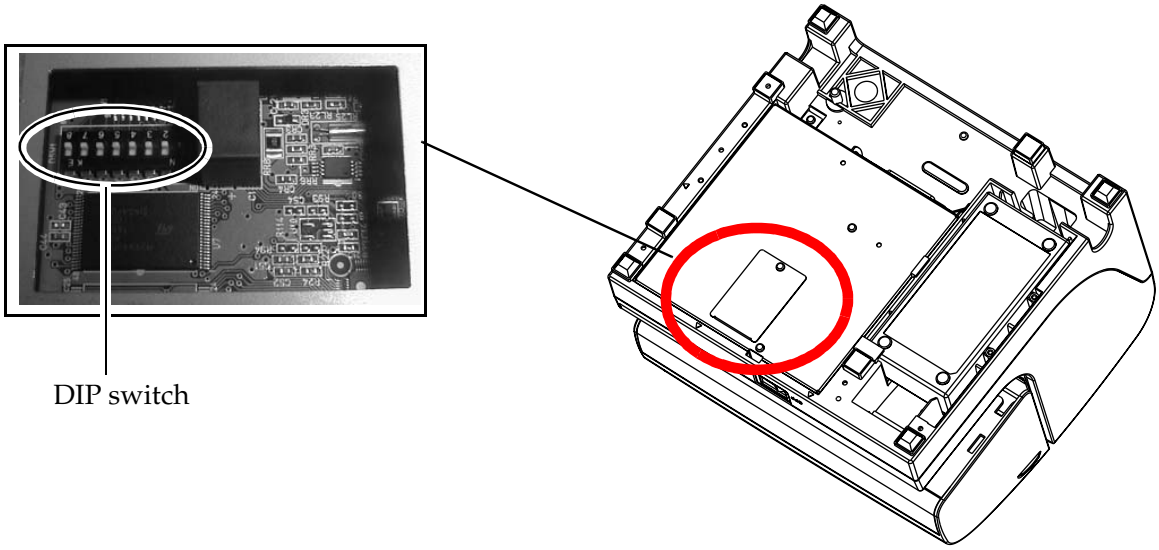


3. Be sure that the sensor lever operates smoothly after setting.

Note:
If the roll paper becomes loose due to the paper quality, the near-end sensor may operate incorrectly.

DIP Switches

The DIP switches are located on the main board inside the bottom cover of the printer.



DIP Switch Settings for Serial Interface Specifications

SW 1	Function	On	Off
1	Reserved	--	Fixed to Off
2	Interface condition selection	By DIP switch	By memory switch
3	Handshaking	XON/XOFF control	DTR/DSR control
4	Word length	7 bits	8 bits
5	Parity check	Yes	No
6	Parity selection	Even	Odd
7	Transmission speed selection	See the following table "Transmission Speed."	
8			

Transmission Speed

Transmission speed (bps)	SW1-7	SW1-8
9600	On	On
19200	Off	On
38400	On	Off
115200	Off	Off

bps: bits per second

Note:
Changes in DIP switch settings are recognized only when the printer power is turned on or when the printer is reset by using the interface. If a DIP switch setting is changed after the printer power is turned on, the change does not take effect until the printer is turned on again or is reset.

DIP Switch Settings for Parallel Interface specifications

SW 1	Function	On	Off
1 ~ 8	Reserved	--	Fixed to Off

Memory Switches

The printer unit has the following memory switches in NV memory.

- Memory switches: MSW1, MSW2, MSW8
- Customized value
- Serial communication conditions

These settings can be set by using the ESC/POS command **GS (E**, or the Memory Switch Setting Utility. For detail of the ESC/POS command, see the ESC/POS Application Programming Guide. For details about the utility, see the user's manual for the utility.

Some of these settings also can be set by panel operation (Memory switch setting mode). (See "Memory switch setting mode" on page 7.)

Msw 1 is defined as follows:

Memory Switch Msw 1

Bit	Function	0 (Off)	1 (On)
1	Transmits the power ON information	Does not transmit	Transmits
2	Reserved	--	--
3	Conditions for BUSY	Receive buffer-full or offline	Receive buffer-full
4	Data processing for receiving error	Prints "?"	Ignored
5	Automatic line feed	Disabled	Enabled
6	Connection of DM-D	Not connected	Connected
7	Pin #6: Selection of reset signal	Not used	Used
8	Pin #25: Selection of reset signal	Not used	Used

NOTE:Msw 1-7 and 1-8 are effective only when the serial interface is used.

Msw 2 is defined as follows:

Memory Switch Msw 2

Bit	Function	0 (Off)	1 (On)
1	Reserved (the setting must not be changed)	--	Fixed to On.
2	Autocutter operation	Disabled	Enabled
3	Reserved	--	--
4	Reserved	--	--
5	Reserved	--	--
6	Reserved	--	--
7	Reserved	--	--
8	Reserved	--	--

Msw 8 is defined as follows:

Memory Switch Msw 8

Bit	Function	0 (Off)	1 (On)
1	Reserved	--	--
2	Reserved	--	--
3	Reserved	--	--
4	Reserved	--	--
5	Reserved	--	--

Bit	Function	0 (Off)	1 (On)
6	Slip print columns (for font A / font B / extended font A) Face of the slip	 80 / 106/ 64	 87 / 120 / 64
7	Receipt print columns (for font A / font B / extended font A) Paper width 57.5 mm {2.26"} 69.5 mm {2.74"} 76 mm {2.99"} 82.5 mm {3.25"}	 30 / 40 / 24 36 / 48 / 28 40 / 53 / 32 42 / 56 / 34	 32 / 45 / 24 39 / 54 / 28 43 / 60 / 32 46 / 64 / 34
8	Paper roll cover open during printing	Automatically recoverable error	Recoverable error

Customized value is defined as follows:

Customized Value

Item	Value
Paper width selection	57.5 mm {2.26"}
	69.5 mm {2.74"}
	76 mm {2.99"}
	82.5 mm {3.25"}

Communication conditions for the serial interface are defined as follows:

Communication Conditions for the Serial Interface

Item	Value
Baud rate	2400 bps
	4800 bps
	9600 bps
	19200 bps
	38400 bps
	57600 bps
	115200 bps
Parity	None
	Odd
	Even
Handshaking	DTR/DSR control
	XON/XOFF control
Data length	7 bits
	8 bits

Memory switch setting mode

In the Memory switch setting mode you can set some Memory switches using printer buttouns. This mode can set following settings.

- ❏ Enable or disable autocutter operation (Msw 2-1)
- ❏ Set the communication condition of the serial interface (Communication conditions for the serial interface)
- ❏ Setting the conditions for communication
  - Conditions for BUSY (Msw1-3)

- Data processing for receiving error (Msw1-4)

❑ Automatic line feed (Msw 1-5)

❑ Interface reset signal (Msw1-7, Msw1-8)

Starting the memory switch setting mode

Use the following procedure to start the memory switch setting mode.

1. Open the roll paper cover.
2. Turn the power on while pressing the paper FEED button until the POWER, ERROR, and PAPER OUT LEDs are all on.
3. Press the FEED button twice while POWER, ERROR, and PAPER OUT LEDs are on.
4. Close the roll paper cover.

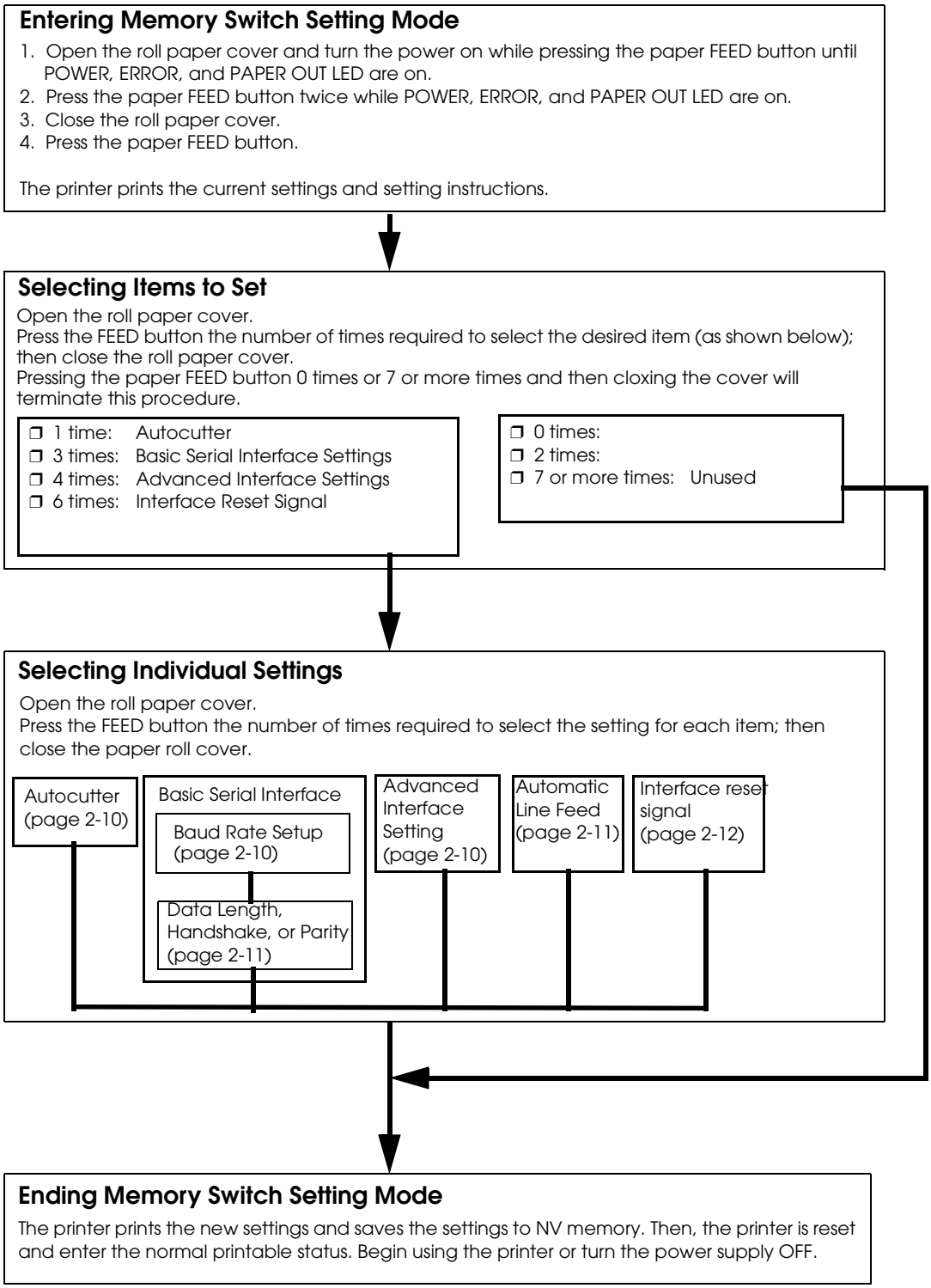
   The printer is now in the memory switch setting wait mode.
5. Press the FEED button. The printer prints the enabled settings of the memory switches and instructions.
6. Follow the instructions to make the switch settings.

Ending memory switch setting mode

Once the setting is performed, the contents of the setting are stored. Then the printer initializes. When initialization is finished, the printer returns to normal operating mode.

Operating procedure

The procedures used for this process are described below.



❑ Autocutter

Press the FEED button the number of times required to select the desired Autocutter setting.

Press FEED button	Setting to select
0 times:	No change
1 time:	Autocutter enabled (Note: "Installed" is printed in the setting guidance)
2 times:	Autocutter disabled (Note: "Not installed" is printed in the setting guidance)
3 or more times:	No change

❑ Basic serial interface setting

To select transmission conditions, first choose "Serial interface settings"; then select "Data length, handshake, or parity."

Press the FEED button the number of times required to select the desired "Serial interface settings" used for transmission conditions.

Press FEED button	Setting selected
0 times:	No change
1 time:	115200 bps
2 times:	57600 bps
3 times:	38400 bps
4 times:	19200 bps
5 times:	9600 bps
6 times:	4800 bps
7 times:	2400 bps
8 or more times:	No change

bps: Indicates the number of transmitted bits per second (bps).

❑ Data length, handshake, or parity

Press the FEED button the number of times required to select the desired "Data length, handshake, or parity" setting used for transmission conditions.

Press FEED button	Setting selected		
	Data Length	Handshake	Parity
0 times:	No change		
1 time:	8 bits	DTR/DSR control	None
2 times:			Even
3 times:			Odd
4 times:		XON/XOFF control	None
5 times:			Even
6 times:			Odd
7 times:	7 bits	DTR/DSR control	None
8 times:			Even
9 times:			Odd
10 times:		XON/XOFF control	None
11 times:			Even
12 times:			Odd
13 or more times:	No change		

❑ Transmission-related conditions (Advanced Interface Setup)

Press the FEED button the number of times required to select the desired "Receive buffer size, receive error sequence, or busy condition" setting used for transmission-related conditions.

Press FEED button	Setting selected	
	Receive error sequence	BUSY condition
0 times:	No change	
1 time:	Change to '?'	Offline or receive buffer full
2 times:		Receive buffer full
3 times:	Ignore	Offline or receive buffer full
4 times:		Receive buffer full
5 or more times:	No change	

❑ Automatic line feed (**CR** command function)

Press the FEED button the number of times required to select the desired auto carriage return setting.

Press FEED button	Setting select ed
0 times:	No change
1 time:	Enabled
2 times:	Disabled
3 or more times:	No change

❑ Interface reset signal

Pins #25 and #6 on the RS-232 I/F circuit board unit (UB-S01/02) are used to input the reset signal. This item is used to "Enable (acknowledge)" or "Disable (not acknowledge)" input of the reset signal from one of these pins. Press the FEED button the number of times required to select the desired interface reset signal setting.

Press FEED button	Setting selected	
	Pin #25	Pin #6
0 times:	No change	
1 time:	Disabled	Disabled
2 times:		Enabled
3 times:	Enabled	Disabled
4 times:		Enabled
5 or more times:	No change	

Connection Form and Cables

Serial Connection

When the TM printer is connected to the host PC with a serial interface, the following connection forms are possible:

- Stand alone
- Y-connection
- Pass-through connection

Connections for usable serial cross cables are as follows:

Type A

D-Sub 25P(TM)			D-Sub 9P(PC)	
Pin No	Signal		Signal	Pin No
1	FG		DCD	1
2	TXD		TXD	3
3	RXD		RXD	2
20	DTR		DTR	4
6	DSR		DSR	6
4	RTS		RTS	7
5	CTS		CTS	8
7	GD		GD	5
25	RESET		RI/RESET	9

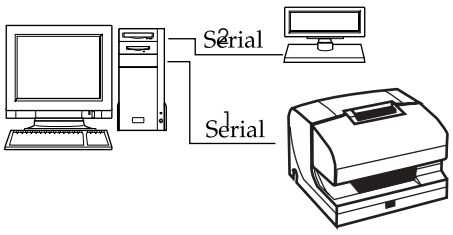
Type B

D-Sub 25P(TM)			D-Sub 9P(PC)	
Pin No	Signal		Signal	Pin No
1	FG		DCD	1
2	TXD		TXD	3
3	RXD		RXD	2
20	DTR		DTR	4
6	DSR		DSR	6
4	RTS		RTS	7
5	CTS		CTS	8
7	GD		GD	5
25	RESET		RI/RESET	9

The type of cable that should be used depends on the operation and the handshake method for the TM printer. You can operate the TM printer with the Windows driver, OPOS, or ESC/POS commands. XON/XOFF, DTR/DSR, or RTS/CTS are available as handshake controls. See tables in the following sections for the cable type for each connection.

Stand alone

Both TM printer and customer display (DM-D) are connected to the host PC via serial port.

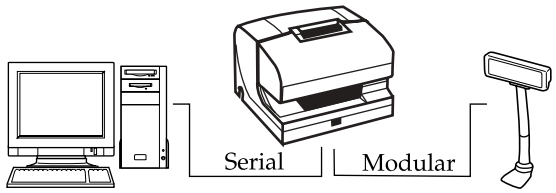


Application / TM side control setting	control	XON/XOFF (except OPOS)	DTR/DSR (DOS, OPOS, Visual C)	RTS/CTS (DOS, Windows driver, Visual C, Visual Basic, MSComm)
XON/XOFF	1	Type A or B	—	—

	2	DM-D500: A,B Other DM-D: not available	—	—
DTR/DSR	1	—	Type A or B	Type B
	2	—	Type A or B	Type B

Y-connection

TM printer is connected to the host PC via serial port and the customer display (DM-D) is connected to TM printer via modular connector.



Application / TM side control / control setting	XON/XOFF (except OPOS)	DTR/DSR (DOS, OPOS, Visual C)	RTS/CTS (DOS, Windows driver, Visual C, Visual Basic, MSComm)
XON/XOFF	Not available	—	—
DTR/DSR	—	Type B (*)	Type B

(*) When RTS/CTS control is used between the TM and DM.

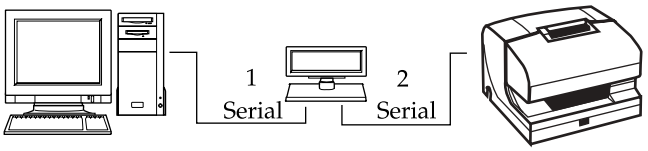
Note:
You need to use the UB-S09 interface when you use a modular connector.

On the DM-D (DM-D500 etc...) which has a DIP switch to select Y-type connection, confirm that the DIP switch has been set to "Y-type connection: Enable."

Pass-through connections

The TM printer is connected to the customer display (DM-D) via a serial port, and the DM-D is connected to the host PC via a serial port.

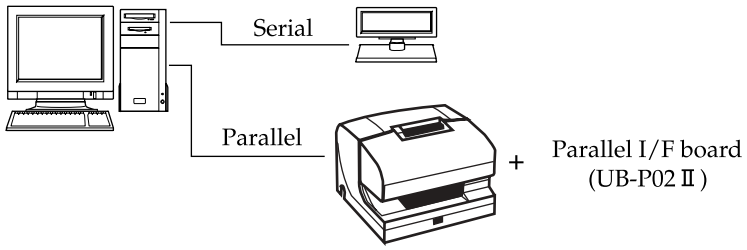
Note:
On the DM-D (DM-D500 etc...) which has DIP switch to select Y-type connection, confirm that the DIP switch has been set to "Y-type connection: Disable."



Application / TM side control / control setting		XON/XOFF (except OPOS)	DTR/DSR (DOS, OPOS, Visual C)	RTS/CTS (DOS, Windows driver, Visual C, Visual Basic, MSComm)
XON/XOFF		Not available	—	—
DTR/DSR	1	—	Type A or B	Type B
	2	—	Type A or B	Type A or B

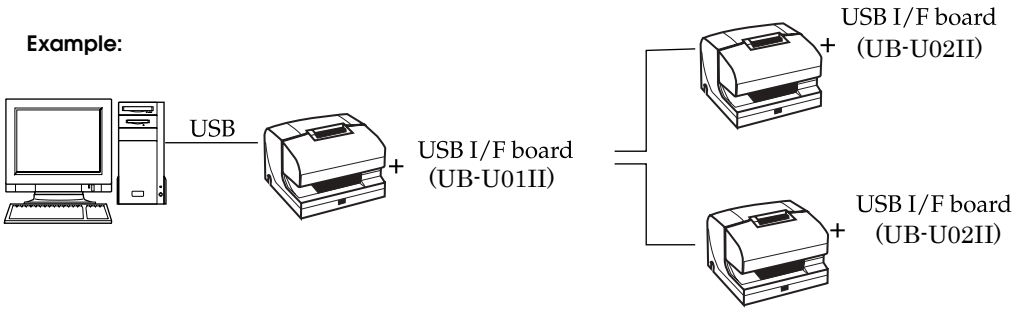
Parallel Connection

The TM printer is connected to the host PC via a parallel interface board (UB-P02II). The customer display (DM-D) is connected to the host PC via a serial port.



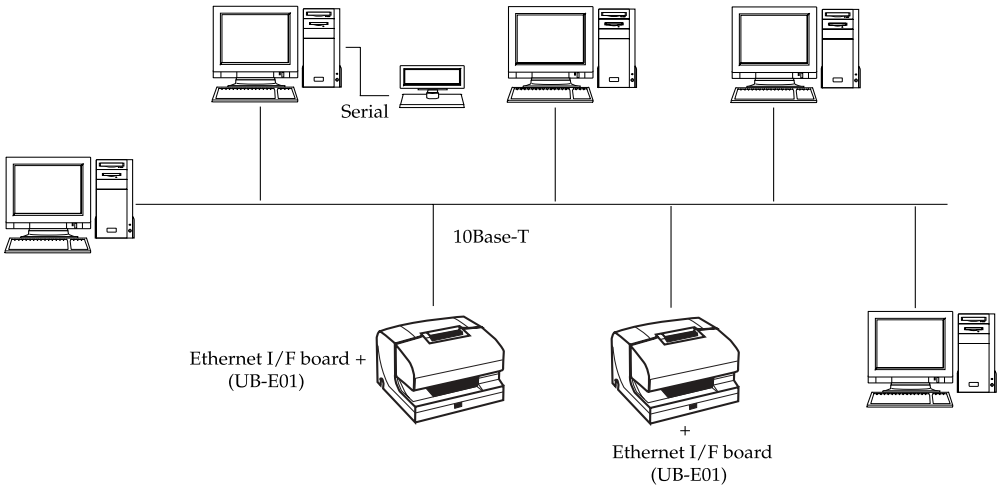
USB

The TM printer can be connected to the host PC via a USB connector, and other TM printers can be connected to the first printer via USB.



Ethernet

TM printers are connected to a network via a hub using an Ethernet cable.

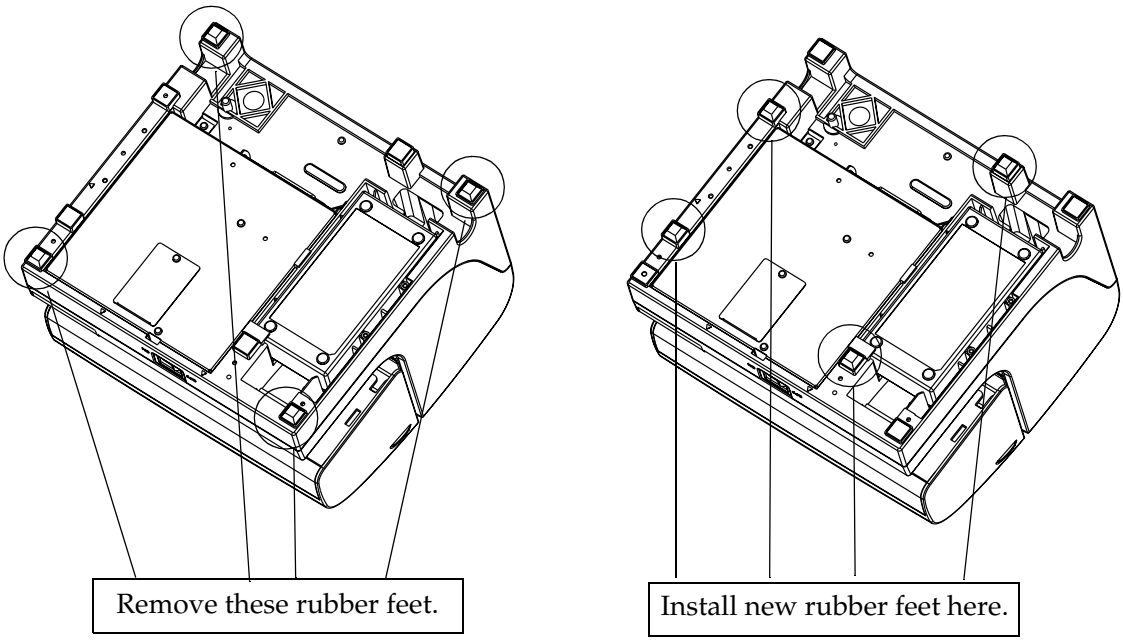


Note:
If the TM printer is connected to the host PC via the Ethernet interface, a DM-D cannot be connected to the TM printer.

For IBM POS systems

When installing this printer on an IBM POS system (IBM Sure POS 700 series, or IBM 4694 models 041, 044, and 144), follow the procedure below.

1. Remove the rubber feet.
2. Install new rubber feet as shown in the following illustration.



Note:
You can get rubber feet separately by using the part numbers in the brackets as follows.

- ❏ Rubber foot <1075187>

Chapter 3

Application Development Information

This section explains key words and miscellaneous information in a question and answer format and the single-pass processing for developing a system with the TM-J7500/J7600.

Key words in Q & A

Category	Question	Answer
Active sheet	What is an active sheet?	Any one of the types of paper the printer can process, such as roll paper, a slip sheet, or a check.
	Why the active sheet is selected?	To select the functions the printer can use. For example, roll paper requires certain functions that the other types of paper do not require.
	What commands are related to the active sheet?	**GS (G function 80** selects the active sheet. For the following actions, the active sheet will be selected automatically without being selected by **GS (G function 80**. • A print sheet will automatically be the active sheet when a print sheet is selected by **ESC c 0**. • Slip will automatically be the active sheet when **FS a 1** (Load check paper to print starting position) is executed. • Slip will automatically be the active sheet when **GS (G function 48** (Specifies slip as the paper type and the side to be printed) is executed. • Roll paper is will automatically be the active sheet when the slip is ejected by **FF** (Print and eject cut sheet) after printing on the slip. • Roll paper is will automatically be the active sheet when a cut sheet is release by **ESC q** is executed. • Roll paper is will automatically be the active sheet when a check is ejection by **FS a 2** is executed.

Obsolete command

There are more suitable substitute commands for the following commands. These obsolete commands will not be supported by future printer models. More suitable substitute commands follow.

GS V is a substitute for **ESC i** and **ESC m**

GS r is a substitute for **ESC u** and **ESC v**

GS (C is a substitute for **FS g 1** and **FS g 2**

GS (L is a substitute for **FS p** and **FS q**

Miscellaneous Information in a Q & A Format

The following Q & A will help you understand more about the printer.

Question	Answer
What happens when an ink out occurs?	The printer prints all data in the line being printed when the ink out signal is received; then it stops printing.
With two ink cartridges (main color and sub color), how does the printer work if only one cartridge is empty?	The printer stops printing. If either one of the ink cartridges is empty, it is impossible to continue printing.
If one color is never used for printing, the color ink isn't consumed?	No. Even if one color is never used, both ink head nozzles are cleaned periodically. The cleaning consumes a small amount of ink.
Disposed ink absorption material is provided only for the sub color side. if only the main color is used frequently, might the capacity of the ink absorption material exceed its tolerance?	No. If the only the main color is used frequently, cleaning of the sub color is also performed, which reduces the sub color ink. If the sub-color is never used for printing and all ink is used only by cleaning while the main color ink is replaced a few times, there will be enough disposed ink absorption material capacity until the sub color ends.
What happens when a pump unit reaches the end of its life (when a message of pump unit life end is printed)?	The life of the pump unit is approximately twice as much as that of the printer; usually the pump unit will last 10 years.
What is the method of extending the printing area on a slip in page mode?	You should use the **Function 48** of the **GS(P** command. A. Adjust the horizontal offset of page mode to the edge of your designed printing area. B. Choose single color using the parameter ***c***.

Chapter 4

Specifications

Product Specifications

Item	Specifications
Printing method	Serial ink jet dot matrix
Paper width	Roll paper: 82.5 ± 0.5 mm, 76 ± 0.5 mm, 69.5 ± 0.5 mm, 57.5 ± 0.5 mm
Autocutter	Circular-type cutting method One point left uncut (partial cut)
Connector	Interface connector, power connector, drawer kick connector, DM-D connector (Available only for the serial interface model)
Switch and Button	Power switch, paper feed Button, cleaning Button
LED	Power LED, Error LED, Ink out LED, Paper out LED, Cut sheet LED
Reception buffer	4 kbytes
Download buffer	12 kbytes for both download characters and download bit images
NV graphics and user NV memory	384 kbytes
Power supply	Power supplied by AC adapter PS-180 (option)
Operating voltage	24V±2.4V
Current consumption (excluding drawer kick drive)	Operating: Mean: Approximately 0.5A (Printing alphanumeric characters in font A, all columns) Peak: Approximately 2.7A Standby: Mean: Approximately 80 mA
External dimensions	188 × 251 × 237 mm (H × W × D)
Weight (mass)	Approximately 4.9 kg (including the ink cartridge and excluding paper roll and power supply unit)

Print Specifications

Item		Specifications
Print method		Serial inkjet dot matrix
Head nozzle array	TM-J7500	64 nozzles × 1 line Nozzle pitch approx. 0.141 mm (1/180 inch)
	TM-J7600	64 nozzles × 2 lines (one line for each color) Nozzle pitch approx. 0.141 mm (1/180 inch)
Printing direction		Bidirectional logical seeking
Paper feed		See each printer section
Printing width (Roll paper)		See each printer section. (roll paper printer, slip printer, and endorsement printer)
Character count		See each printer section. (roll paper printer, and slip printer)
Printing speed		See "Print Speed." table.
Paper feed speed		Approx. 150 mm/s (approx. 5.9 inches/s) at 35.4 lps (lps: lines per second)
Print Control mode		See "Print Control Modes." table. Normal, high-speed, or economy mode can be set using software commands.
Line spacing		Approx. 4.23 mm or 1/6 inch (default) 3.18 mm (1/8 inch) (when printing 3 lines at a time) Set using software commands

Print Control Modes

Print mode		Number of carriage passes (*1)	Vertical resolution (dpi)	Horizontal resolution (dpi)	Dot structure (number of pulses to the head)
Name	Description				
Normal	Offers high-density (high quality) printing.	1	180	180	6
High-speed	Features high-speed printing and ink saving. (Is the default mode)	1	180	180	3
Economy	Features even greater ink saving than high-speed mode.	1	180	180	2

(dpi: Dots per inch (25.4 mm) {1"})

(*1) Pass: To move the carriage from the left to the right or from the right to the left.

Print Speed

Print mode	Font	Unit	Paper width (mm)				Slip
			57.5 {2.26"}	69.5 {2.74"}	76 {2.99"}	82.5 {3.25"}	135.6 mm {5.34"}
Normal	Font A (6 lpi)	lps	7.4	6.7	6.3	6.0	4.0
	Font B (8 lpi)	lps	10.7	9.5	8.9	8.6	5.8
	Graphics	mm/s	32	29	27	26	18
High-speed	Font A (6 lpi)	lps	11.6	10.5	10.1	9.7	6.9
	Font B (8 lpi)	lps	16.4	15.0	14.3	13.8	9.9
	Graphics	mm/s	50	45	43	41	29
Economy	Font A (6 lpi)	lps	11.6	10.5	10.1	9.7	6.9
	Font B (8 lpi)	lps	16.4	15.0	14.3	13.8	9.9
	Graphics	mm/s	50	45	43	41	29

Note:
All values listed above are the printing speed without character modification when the printing is performed continuously for all columns without cleaning.

Printing speed may be slower, depending on the data transmission speed and the combination of control commands. If the data transmission speed is slow, the printing becomes intermittent. Therefore, it is recommended to use high-speed data transmission.

Character Specifications

Character Specifications

Item		Specifications
Character type	Alphanumeric	95 characters
	International	37 types
	Extended graphics	128 characters × 11 pages (including one user-defined page)
	Extended font A	16 characters (incllluding space character)
Character structure		See "Character Configurations and Dimensions" table below. (Default is Font A.)
Character dimensions		See "Character Configurations and Dimensions" table below. (Spaces between characters not included.)

Character structure

	Font A	Font B	Extended font A	* Font A	* Font B	* Extended font A
Dot configuration H × V (includes 2-dot H space)	12 × 24	9 × 17	15 × 24	11 × 24	8 × 17	15 × 24

* : Using the memory switch for characters per line

Note:
The number of characters (columns) per line is selectable by a memory switch.

Selection of characters per line can be performed for receipt and slip (including endorsement).

If memory switch changing of characters per line is performed, one dot on the right side of a graphic character or user-defined character may be missed.

Extended font A is same as the OCR-B font: however, optical font reading is not guaranteed.

Character size

	Standard	Double-height	Double-width	Double-width / Double-height
	W × H (mm)	W × H (mm)	W × H (mm)	W × H (mm)
Font A (12 × 24)	1.69 × 3.38	1.69 × 6.77	3.38 × 3.38	3.38 × 6.77
Font B (9 × 17)	1.27 × 2.40	1.27 × 4.80	2.54 × 2.40	2.54 × 4.80
* Font A (11 × 24)	1.55 × 3.38	1.55 × 5.77	3.10 × 3.38	3.10 × 6.77
* Font B (8 × 17)	1.13 × 2.40	1.13 × 4.80	2.26 × 2.40	2.26 × 4.80
Extended font A (15 × 24)	2.12 × 3.38	--	--	--

The actual print character may be smaller than the size shown in the table above, because the above size includes spaces in the font.

Characters can be scaled up to 64 times as large as the standard size.

Character size not including the horizontal spacing in the standard scale is as follows:
Font A:1.41 (W) × 3.384 (H) mm
Font B: 0.987 (W) × 2.397 (H) mm

Receipt Printer Section

Characters per Line and Printable Area for Roll paper

Paper roll width (mm)		57.5 {2.26"}	69.5 {2.74"}	76 {2.99"}	82.5 {3.25"}	Remarks
Number of dots for printing (dots)		360	432	480	512	
Printable width (mm)		50.8 {2.00"}	61 {2.40"}	67.7 {2.67"}	72.2 {2.84"}	
Characters per line	Font A (12 × 24)	30	36	40	42	When printing at 15 cpi
	Font B (9 × 17)	40	48	53	56	When printing at 20 cpi
	* Font A (11 × 24)	32	39	43	46	When printing at 16.3 cpi
	* Font B (8 × 17)	45	54	60	64	When printing at 22.5 cpi
	Extended font A (15 × 24)	24	28	32	34	When printing at 12 cpi

*: Selectable be a memory switch
(cpi: Characters per inch (25.4 mm) {1"})

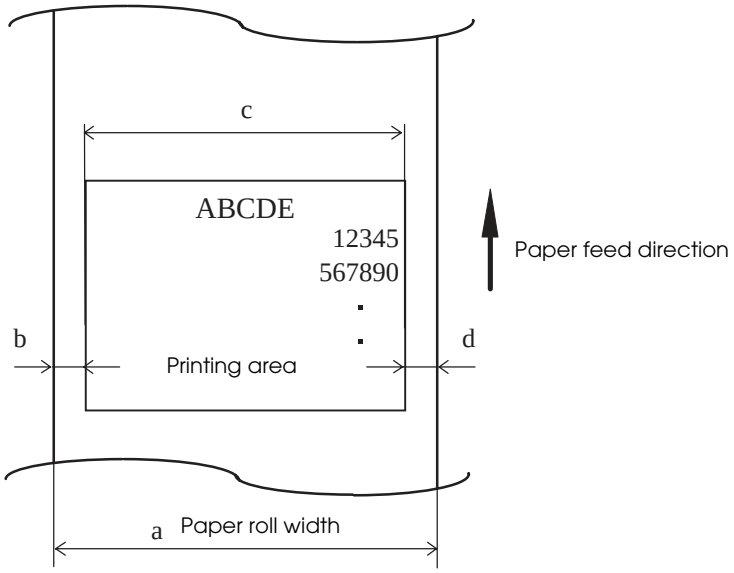
Paper Feed Specifications

Paper Feed Specifications

Item	Specifications
Paper feed method	Friction feed
Paper feed direction	Unidirectional
Feeding pitch	Min. approx. 0.1411 mm (1/180 inch)
Continuous feed speed	Approx. 150 mm/s (approximately 5.9 inches/s) at 35.4 lps

lps: lines per second

Printable Area



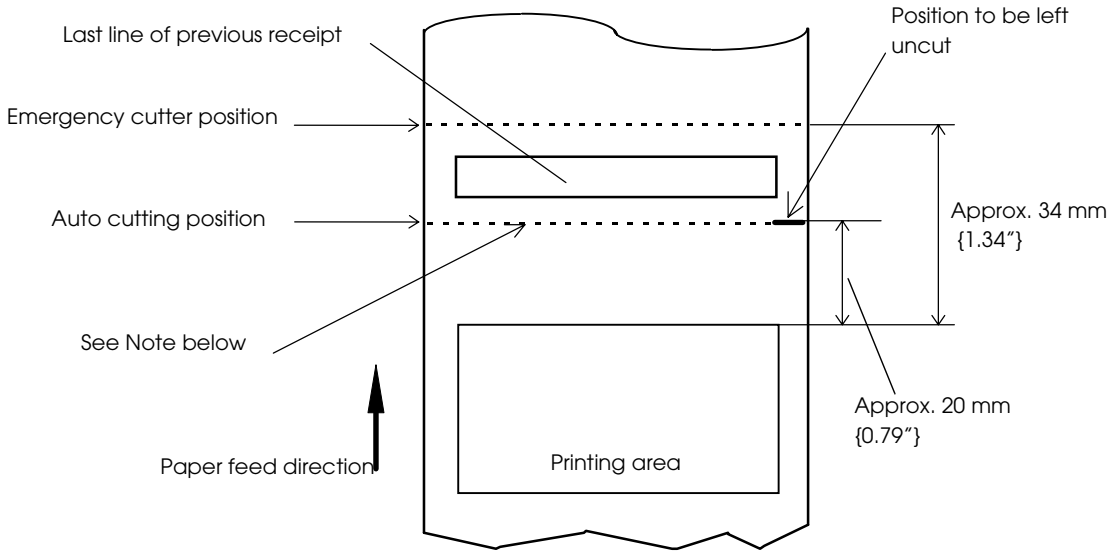
Printable Area

Dimensions

a (paper roll width)	b (left margin)	c (printing area)	d (right margin)
57.5 {2.26″}	3.4 {0.13″}	50.8 {2.00″} (360 dots)	3.3 {0.13″}
69.5 {2.74″}	4.2 {0.17″}	61.0 {2.40″} (432 dots)	4.3 {0.17″}
76 {2.99″}	4.3 {0.17″}	67.7 {2.67″} (480 dots)	4.2 {0.17″}
82.5 {3.25″}	6.0 {0.24″}	72.2 {2.84″} (512 dots)	4.3 {0.17″}

Printing Position Versus Cutter Position

The printing position in relation to cutter position is shown in the figure below.



Printing Position Versus Cutter Position

Note:
Numeric values used here are typical values; the values may vary slightly as a result of paper slack or variations in the paper. Take this note into account when setting the cutting position of the autocutter.

Slip Printer Section

Characters per Line and Printable Area for Slips

Number of dots for printing (dots)		960	
Printable width (mm)		135.6 {5.34"}	
Characters per line	Font A (12 × 24)	80	When printing at 15 cpi
	Font B (9 × 17)	106	When printing at 20 cpi
	* Font A (11 × 24)	87	When printing at 16.3 cpi
	* Font B (8 × 17)	120	When printing at 22.5 cpi
	Extended font A (15 × 24)	64	When printing at 12 cpi

*: Selectable be a memory switch

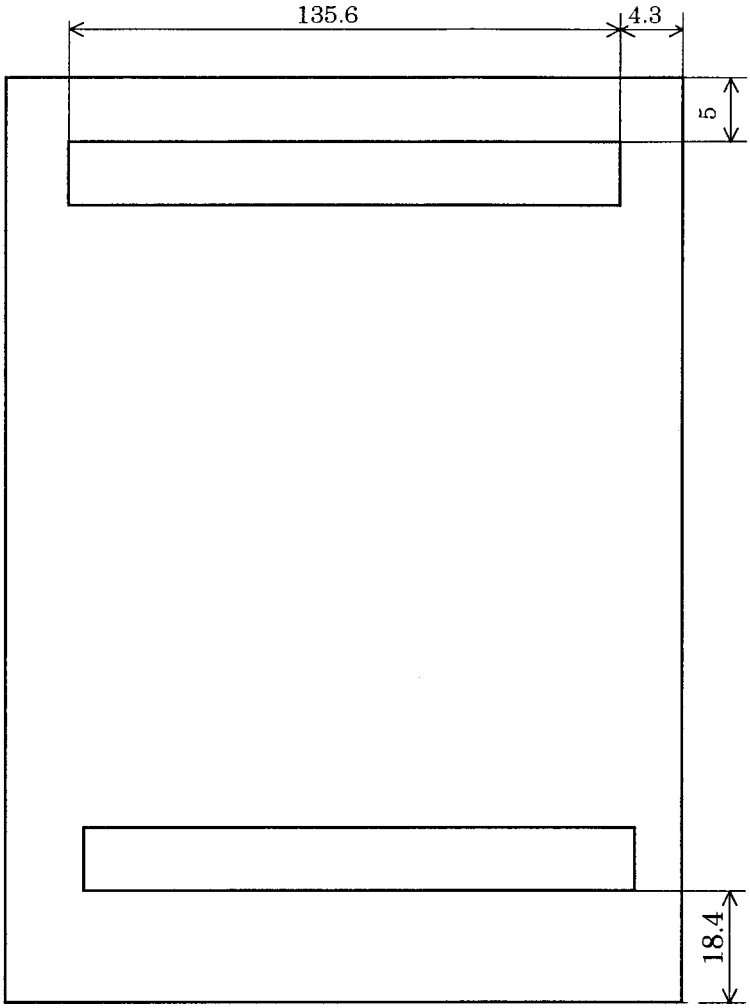
Paper Feed Specifications

Paper Feed Specifications

Item	**Specifications**
Paper feed method	Friction feed
Paper feed direction	Bidirectional
Feeding pitch	Approx. 0.1411 mm (1/180 inch)
Continuous feed speed	Approx. 150 mm/s (approximately 5.9 inches/s) at 35.4 lps

lps: lines per second

Printable Area



Printable area

- ❏ Top margin: 5 mm
- ❏ Bottom margin: 18.4 mm
- ❏ Printing width: 135.6 mm
- ❏ Right margin: 4.3 mm

Note that the values above are typical.

Note:
The values shown in this figure are calculated ones. Consider this for the user design for the print starting position in the paper feeding direction.

Paper Specification

Paper Roll Specification

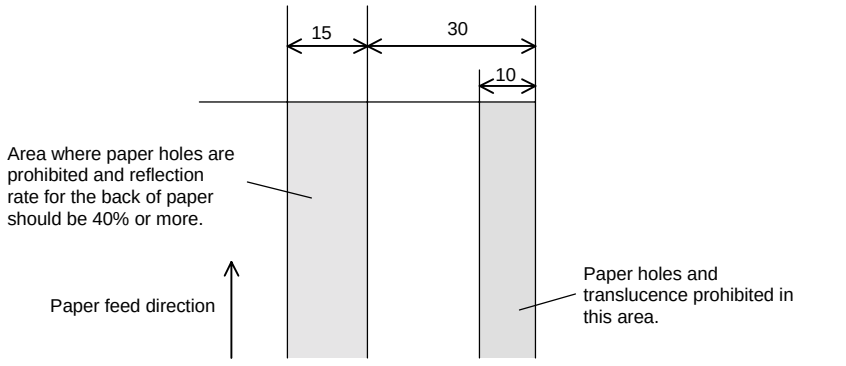
Paper type	Normal quality paper (only single-ply rolls can be used)
Form	Roll paper
Paper width	Can be selected an any of the following: 82.5 ± 0.5mm 76 ± 0.5mm 69.5 ± 0.5mm 57.5 ± 0.5mm
Paper thickness	0.06 ~ 0.09mm
Paper weight	52.3 ~ 64.0 g/m² {14 ~ 17 lb} (JIS P8124) (45 ~ 55 kg / 1000pcs / 788mm × 1091mm)
Spool diameter	inside: 10mm {0.39") or more
Roll paper diameter	Outside: 83mm {3.27"} or less

Slip Paper Specification

Paper type	Normal paper
Paper size	68 ~ 230mm (W) × 68 ~ 297mm (L) {2.7 ~ 9.1" (W) × 2.7 ~ 11.7" (L)} * The minimum paper size is 68mm (W) × 152mm (L) {2.7" (W) × 6.0" (L)}
Paper thickness	0.09 ~ 0.2mm {0.0035 ~ 0.0079"} (only single-ply can be used)

Notes on slip paper

- ❏ The slip paper must be flat, without curls or wrinkles, especially at the top edges. Otherwise, the paper may rub against the nozzles and become dirty.
- ❏ Since the slip BOF sensor uses a photo sensor, do not use paper that has holes at the sensor position, or is translucent.
- ❏ Since the slip TOF sensor uses a reflective photo sensor and it detects from the back of slip paper, do not use paper that has holes or dark portions with low reflection (less than 40% reflection) at the sensor position.



[Units: mm (All the numeric values are typical.)]

Area with No Paper Holes and Low Reflection