

User's Manual

CITIZEN
LINE THERMAL PRINTER
MODEL **CBM-262II**

Japan CBM Corporation

Cautions

1. Please read this user's manual thoroughly before attempting to use this printer. After reading, keep this manual in a secure place where it can be referred to easily if necessary.
2. The contents of this user's manual are subject to partial modification without prior notice.
3. Transfer of the contents of this user's manual, either in part or in whole, without permission is strictly prohibited.
4. Do not attempt maintenance, disassembly or repairs of any parts of this printer except as indicated in this user's manual.
5. This company shall not be responsible for damages caused by improper operation or handling of this printer by the customer, or caused by the operating environment.
6. Do not attempt any operations which are not described in this user's manual. doing so could cause an accident or breakdown.
7. Data, etc. are basically temporary, and cannot be stored or preserved for extended periods or permanently by this printer. This company shall not be liable in any way for damages of loss of profits, etc. resulting from loss of data due to breakdown, repairs or inspections, etc. Please understand this point in advance.
8. If you find any points in these materials which are uncertain, are misprinted or are missing, please notify this company.
9. Please note that this company shall not be liable for any influence which may effect operation of this printer arising from 8 items above.

Declaration of Conformity

This printer conforms to the following Standards

Low Voltage Directive 73/23/EEC, 93/68/EEC and the EMC Directive 89/336/EEC, 92/31/EEC, 93/68/EEC.

LVD : EN60950

EMC : EN55022 Class A

EN61000-3-2

EN61000-3-3

EN55024

This declaration is applied only for 230V model.

FCC COMPLIANCE STATEMENT FOR AMERICA 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.

EMI COMPLIANCE STATEMENT FOR CANADIAN USERS

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

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications. This equipment is designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

CAUTION: Use shielded cables to connect this device to computers.

Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment.

ETAT DE CONFORMITE EMI A L'USAGE DES UTILISATEURS CANADIENS

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

Cet équipement produit et utilise l'énergie à radiofréquences et s'il n'est pas installé et utilisé correctement, c'est à dire en accord strict avec les instructions du fabricant, il risque de provoquer des interférences avec la réception de la radio et de la télévision.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

Cet équipement est conçu pour fournir une protection satisfaisante contre de telles interférences dans une installation résidentielle. Cependant, il n'y a pas de garantie contre les interférences avec les réceptions radio ou télévision, provoquées par la mise en et hors circuit de l'équipement; aussi, il est demandé à l'utilisateur d'essayer de corriger l'interférence par l'une ou plus des mesures suivantes:

- Réorienter l'antenne de réception.
- Installer l'ordinateur autre part, par égard pour le récepteur.
- Brancher l'ordinateur dans une prise de courant différente de façon à ce que l'ordinateur et le récepteur soient branchés sur des circuits différents.

Important Safety Instructions

1. Read all of these instructions and save them for later reference.
2. Follow all warnings and instructions marked on the product.
3. Unplug this product from the wall outlet before cleaning. Do not use liquid or aerosol cleaners. Use a damp cloth for cleaning.
4. Do not use this product near water.
5. Do not place this product on an unstable cart, stand or table. The product may fall, causing serious damage to the product.
6. Slots and openings on the cabinet and the back or bottom are provided for ventilation. To ensure reliable operation of the product and to protect it from overheating, do not block or cover these openings. The openings should never be blocked by placing the product on a bed, sofa, rug or other similar surface. This product should never be placed near or over a radiator or heat register. This product should not be placed in a built-in installation unless proper ventilation is provided.
7. This product should be operated from the type of power source indicated on the marking label. If you are not sure of the type of power available, consult your dealer or local power company.
8. This product is equipped with a 3-wire grounding-type plug, a plug having a third (grounding) pin. This plug will only fit into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the grounding-type plug.
9. Do not allow anything to rest on the power cord. Do not locate this product where cord will be walked on.
10. If an extension cord is used with this product, make sure that the total of the ampere ratings on the products plugged into the extension cord do not exceed the extension cord ampere rating. Also, make sure that the total of all products plugged into the wall outlet does not exceed 15 amperes.
11. Never push objects of any kind into this product through cabinet slots as they may touch dangerous voltage points or short out parts that could result in a risk of fire or electric shock. Never spill liquid of any kind on the product.
12. Except as explained elsewhere in this manual, don't attempt to service this product yourself. Opening and removing those covers that are marked "Do Not Remove" may expose you to dangerous voltage points or other risks. Refer all servicing on those compartments to service personnel.
13. Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:
 - A. When the power cord or plug is damaged or frayed.
 - B. If liquid has been spilled into the product.
 - C. If the product has been exposed to rain or water.
 - D. If the product does not operate normally when the operating instructions are followed. Adjust only those controls that are covered by the operating instructions since improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to normal operation.
 - E. If the product has been dropped or the cabinet has been damaged.
 - F. If the product exhibits a distinct change in performance, indicating a need for service.

Cautions for Safety

The following items are included in this manual to point out precautions that must be taken in order to prevent injury to the user or other persons or damage to property.

- The degree of injury or damage caused by improper operation without heeding the warnings given herein is described as follows.



Warning

This indicates contents in which improper operation of this product without heeding the warnings given may lead to death or severe injury.



Caution

This indicates contents in which improper operation of this product without heeding the cautions given may lead to personal injury or physical damage.



This icon is displayed for items where the user is urged to exercise caution.



This icon is displayed to point out information on how to do important tasks, etc.



Warning

Doing the following actions may cause damage to this product or cause it to break down, overheat, and could also cause fire or electric shock, so by all means do not do them.

If there is damage or breakdown, switch off the power and pull the plug out of the outlet. Contact your dealer immediately.

- Do not step on, drop, hit or otherwise apply a strong impact to the printer.
- Do not install this product in a place with poor ventilation and do not use it with its air vent blocked.
- Do not install this product in a place such as a research laboratory where there are chemical reactions, and do not install it in a place where there is salt or gas in the air.
- Do not use this product at a voltage and frequency other than the specified voltage and frequency.
- Do not disconnect the power cord or data cable by grasping the cable, and do not pull on this product while a heavy weight is bearing on the cables or attempt to carry it by holding the cables.
- Do not drop or poke foreign objects such as paper clips, straight pins, etc. inside this product.
- Do not plug this product into a heavily loaded circuit.
- Do not spill drinks such as tea, coffee or juice on this product, or spray it with insecticides. If water or other liquid is spilled on it by accident, switch off the power immediately and disconnect the power plug from the outlet, then contact your dealer.
- Do not attempt to disassemble or modify this product. It could cause fire or electric shock.

Keep the plastic bag used to pack this product out of the reach of children so they cannot smother themselves with it, or dispose of it promptly. If they pull it over their head, there is danger of them suffocating to death.



Cautions for Installation

- Do not use or store this product in a place where there is fire or water vapor, where it will be exposed to direct sunlight, in a place where it will be exposed to heat or humidity conditions that it was not specified for, such as next to a heater or burner, or a place where there is a lot of oil, iron filings, dust or dirt, etc. Doing so could cause it to break down, emit smoke or catch fire.
- Do not install this product in a place such as an experimental laboratory where there are chemical reactions taking place, or where there is salt or gas in the air. This could cause fire or electric shock.
- Install on a level, stable table which doesn't vibrate, in a location where there is good ventilation. (Do not cover the air holes.)
- Do not place any articles on top of the printer. It could cause it to break down.
- Do not use this printer near, or plug it into the same outlet with, a radio or television receiver. Doing so could interfere with reception.
- Do not use this product at a voltage and frequency other than the specified voltage and frequency.
- Make sure the circuit where this printer is plugged in has sufficient surplus capacity to operate this printer without trouble.
- Avoid attaching this printer's power cord to an overloaded electric circuit. If the circuit is overloaded, it could cause the electric line to overheat and cause a fire, or trip the circuit breaker. Also, do not walk on the power cable or place objects on top of it.
- When disconnecting cables, always switch off the power first, then take hold of the plug or connector and disconnect them. Do not pull on this product while a heavy weight is bearing on the cables or attempt to carry it by holding the cables.
- Connect the cable connectors securely. Particularly, if the cables are connected with the polarity reversed, it could destroy the internal components, and also have a bad effect on the device on the other end of the cable.
- In order to avoid garbling of data, etc. due to noise, always use shielded signal lines or twisted pair lines. Also, please avoid connecting this printer with a device that generates a lot of noise.
- Use this printer in a place where it is near to an outlet, and the power plug can be pulled out easily, and under conditions where the power supply can be cut off easily.



Cautions for Handling

The following methods of handling may lead to breakdown, so please do not use this printer by these methods.

- Do not attempt to print without paper being set in the printer.
- Be careful not to let paper clips, straight pins, screws or other foreign objects fall inside the printer.
- Do not spill any liquids on this product, or let it absorb any chemicals.
- Do not subject this product to a strong impact, such as stepping on it, dropping it or hitting it.
- Never attempt to operate the operation panel using a sharp object such as the point of a pen.
- Do not tape sheets of paper using cellophane tape, etc. and try to print continuously.
- Do not pull hard on the paper once it is set in the printer.

To avoid injury and extended damage,

- Do not touch the printing unit on the print head.
- While the power is on, do not touch the printer's internal cutter, gears or other moving parts, or electrical components with bare hands.
- Be careful not to injure yourself or damage other objects by the edges of metal panels, etc.
- If anything abnormal occurs during operation, stop use immediately and pull the power plug out of the outlet.
- When the printer breaks down, contact your service man. Do not attempt to disassemble the printer yourself.



Daily Maintenance

- When carrying out routine maintenance, always be sure to disconnect the power.
- When cleaning the platen, dampen a cloth with ethyl alcohol and wipe off the dust, etc.
- Wipe off dirt, dust, etc. from the printer's case using a dry, soft cloth. If extremely dirty, wipe it off with a cloth dipped in water and thorough wrung out. Never use alcohol, paint thinner, trichloroethylene, benzene or ketone based organic solvents, or a chemical cleaning rag.

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Chapter 1

Outline

This printer is a tandem type 2-station line thermal printer which accepts 58 mm wide paper, developed for use in PC-POS/ECR terminals and all types of data communications terminals, etc.

Features
Accessories
Names and Functions of Parts

Features

- Compact design with the two rolls of paper set front to back to keep the printer's width narrow.
- Power switch and operation panel are located on the front, and cable connections are made in an indented part, giving it a shape without projections on the sides and rear, which makes installation easy.
- The thermal line head reduces noise and achieves high speed printing at 80 mm/sec.
- An auto cutter is standard equipment in the receipt printer.
- Simple controls which conform to ESC/POS™.
- Drawer control is enabled using the drawer kick interface.
- Paper setting chore is simplified by the roll drop-in type auto loading feature.
- A coin tray, magnet plate and writing table are standard equipment.

Accessories

Standard Specifications (without Journal Protection Key)

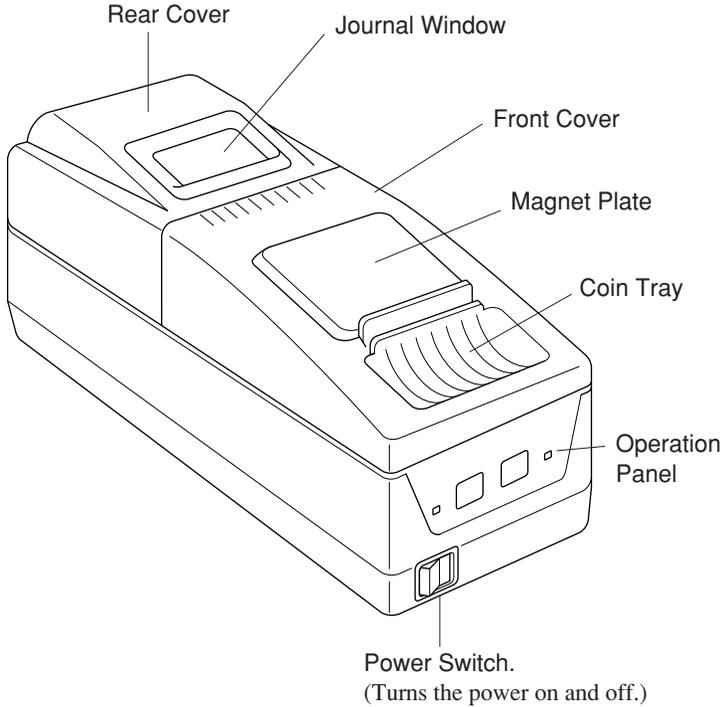
- Roll Paper x 2
- Adapter x 1
- Power Cord x 1
- User's manual x 1

Optional Specifications (with Journal Protection Key)

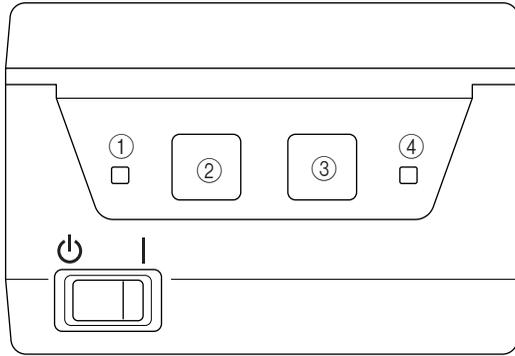
- Roll Paper x 2
- Adapter x 1
- Power Cord x 1
- User's manual x 1
- Journal Protection Key x 1

Names and Functions of Parts

Printer Unit



Operation Panel



① **POWER Indicator (Green)**

Lights up when the power switch is turned on and power is being supplied to the printer.

② **RECEIPT Key**

Feeds receipt paper. Pressing once causes the paper to advance one line, based on the amount for a carriage return set previously. If the key is pressed continuously, the paper is fed continuously.

③ **JOURNAL Key**

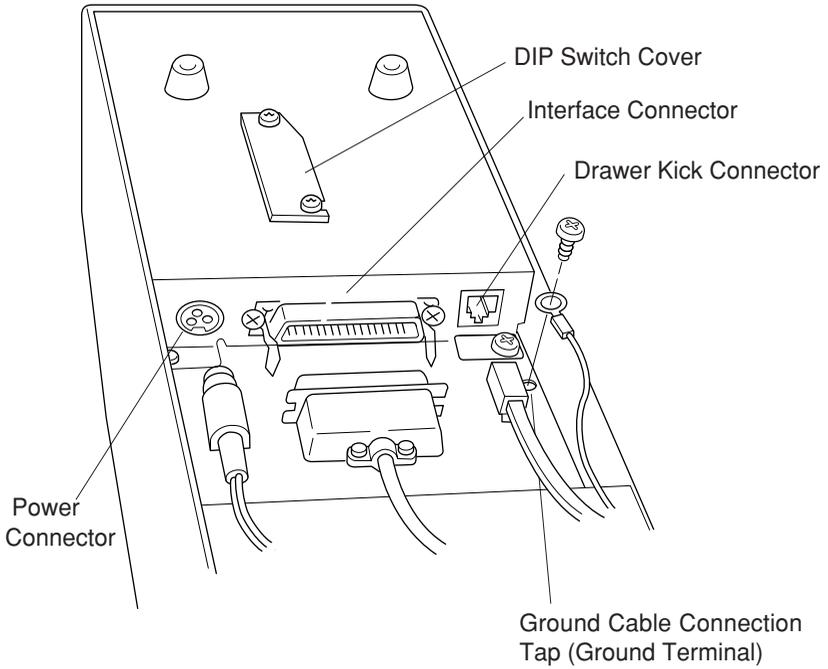
Feeds journal paper. Pressing once causes the paper to advance one line, based on the amount for a carriage return set previously. If the key is pressed continuously, the paper is fed continuously.

④ **ERROR Indicator (Orange)**

Lights up or blinks when an error occurs. The content of the error is indicated by the indicator lighting up or blinking (see “Chapter 5 - Sensors and Error Indications,” on page 30). Goes off when the printer's condition returns to normal.

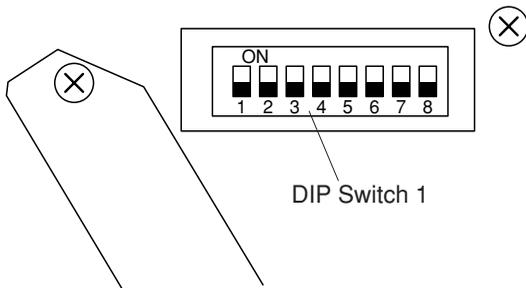
- When the RECEIPT key and JOURNAL key are pressed separately, or are pressed together when the power is switched on, it is possible to enter the test printing and the printer internal setting mode (see “Chapter 4 - Using the Printer,” on pages 21~24).

Connectors



Bottom View

Factory DIP Switch Settings



The above switches are shown in the OFF position.

- (See “Chapter 4 - Using the Printer,” on pages 25).

Chapter 2



Getting Started

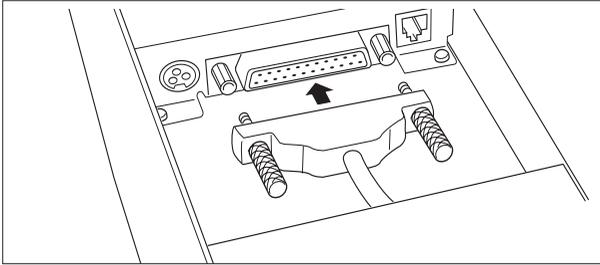
- After all the connections are completed, insert the power cord plug in the receptacle.
- When redoing connections, be sure to turn off the power to the printer main unit and the terminal first.

Connecting the Interface Cable
Connecting the Drawer Kick Cable
Connecting the Power Supply

Connecting the Interface Cable

1. Insert the cable's connector into the interface connector.

Align the top and bottom of the male and female connectors and connect the two connectors.

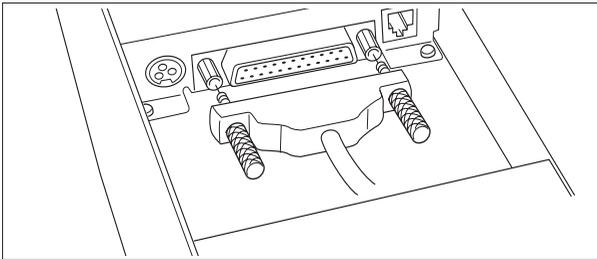


2. Fastening the Cable Terminals

Fastening the Serial Interface Connector:

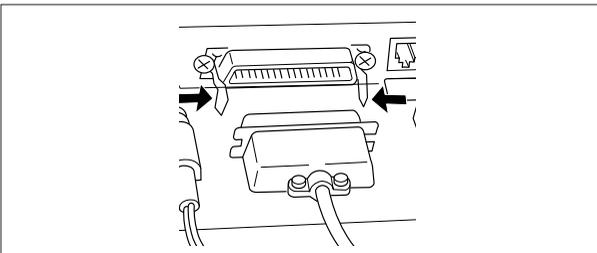
After making sure the connector is inserted fully, tighten the screws to fasten the connector in place.

- Use screws which can be tightened by hand to fasten the connector to the interface.



Fastening the Parallel Interface Connector:

After making sure the connector is inserted fully, turn the wire clamps in the arrow direction to fasten the connector in place.



3. Connecting the Cable to the Computer Terminal.

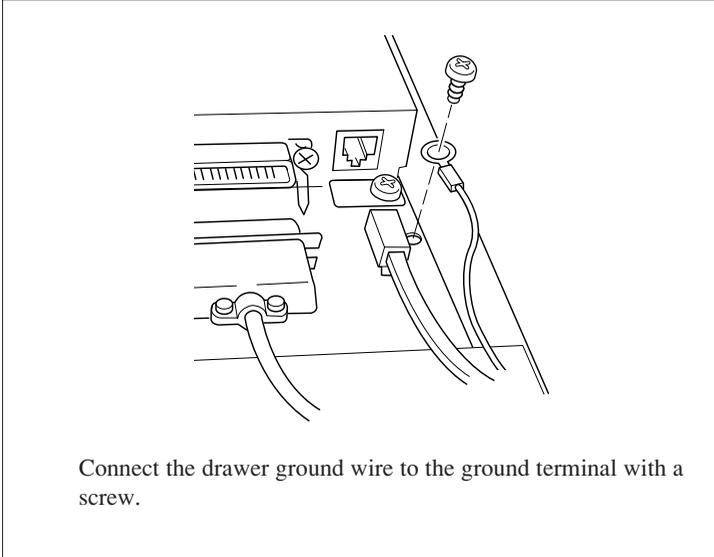
Be sure to turn off the power to the computer first, then make connections.

Connecting the Drawer Kick Cable

Connect the drawer kick cable to the drawer kick connector.

Align the top and bottom of the cable connector and the drawer kick connector, then insert the connector until it makes a clicking sound.

2

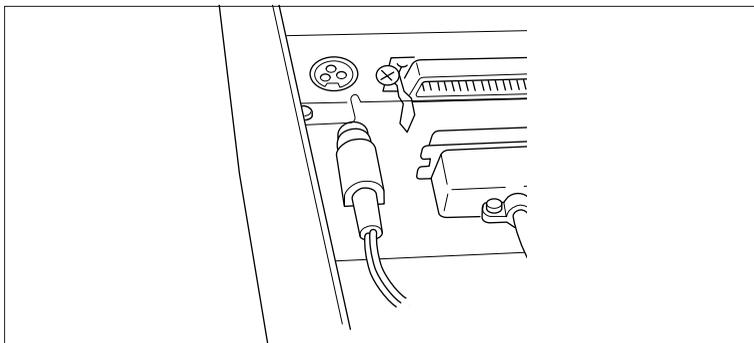


- Do not connect the connector for any other drawer (solenoid) to the drawer kick connector than that specified.
- Use a M3 X 6 self tapping screw to fasten the ground wire.

Connecting the Power Supply

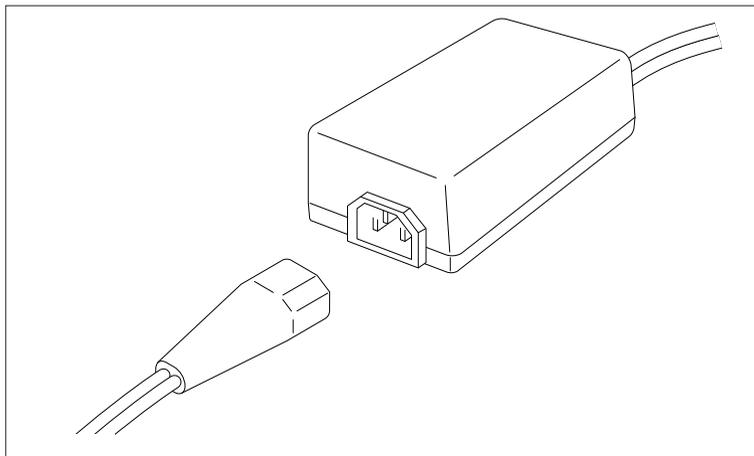
- 1. Connect the connector at the end of the AC adapter cable to the power supply connector.**

Align the top and bottom of the cable and connector to connect them.



When the AC adapter's plug is disconnected from the printer, grasp the plug with your fingers to pull it out.

- 2. Connect the AC power cord and the AC adapter.**



- 3. Connect the power cord to the receptacle.**



Connect the AC adapter with the printer's power supply switched off.

Chapter 3

Paper Handling

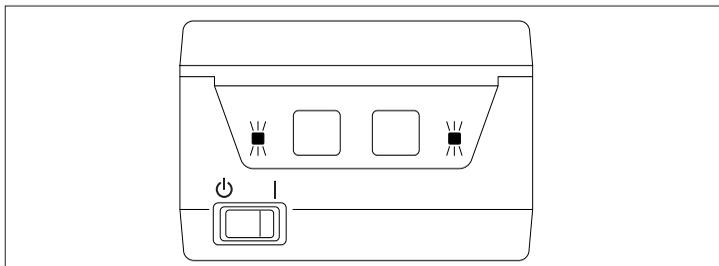
3

Setting the Receipt Roll Paper
Setting the Journal Roll Paper
Replacing Roll Paper
Specified Paper and Printing Area

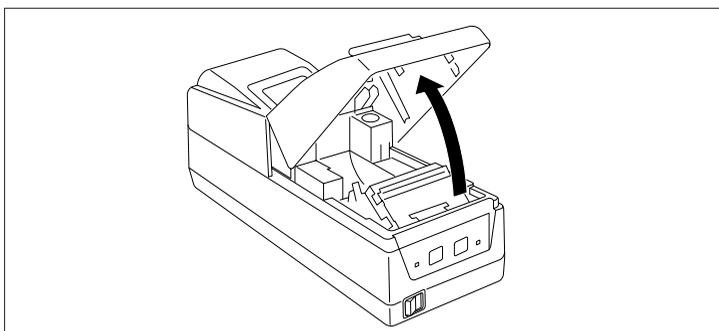
Setting the Receipt Roll Paper

- 1. Press the I side of the power switch to turn the power on.**

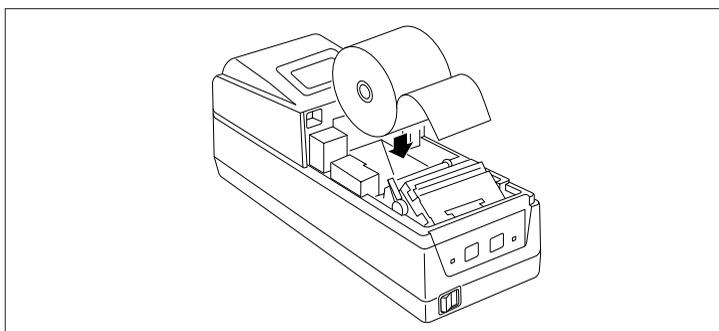
The POWER indicator lights up and the ERROR indicator blinks.



- 2. Remove the front cover.**

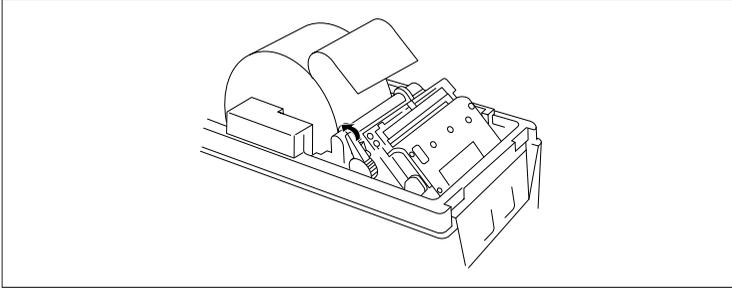


- 3. Place the roll paper in the paper holder as shown in the illustration.**



- Be sure the roll paper's winding direction is correct when inserting the roll.
- Make sure the roll paper turns smoothly in the paper holder.

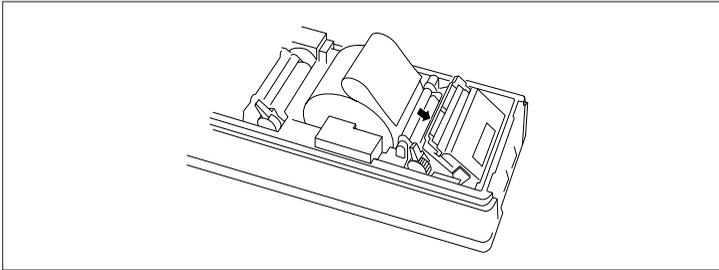
4. Make sure the head is in the down state.



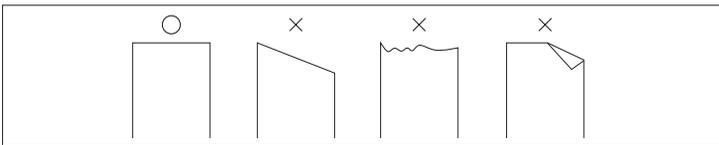
3

5. Insert the end of the roll of paper straight into the printer's paper insertion slot.

The proper amount of paper is then loaded automatically (auto loading).

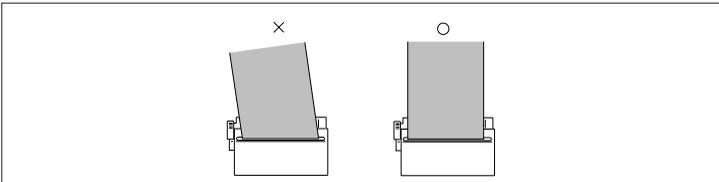


- If the end of the roll of paper is feathered or folded, cut off the end with scissors, etc. so that the end is squared off.



When operation stops, then setting of the roll paper is completed.

- If the paper is inserted crooked, move the head up lever forward, then correct the paper's path manually with the head in the up condition.

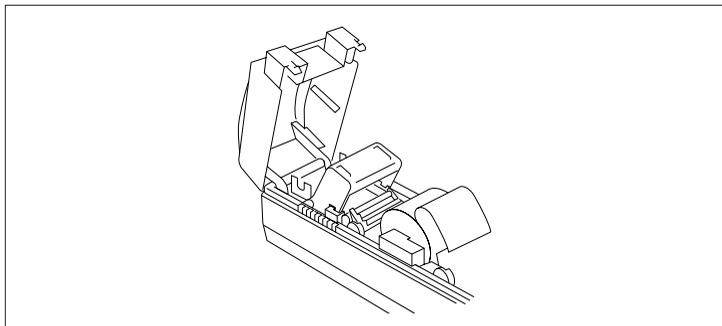


Next, set the journal roll paper.

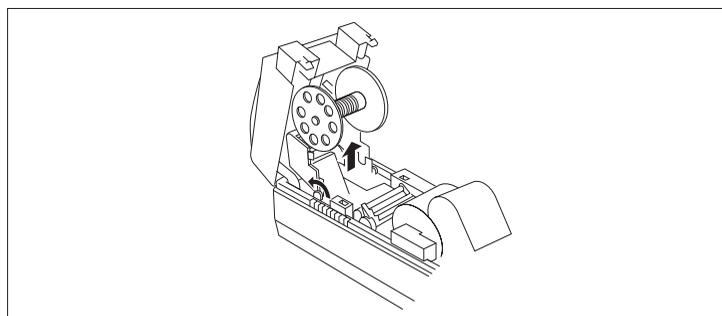
Setting the Journal Roll Paper

1. Open the rear cover.

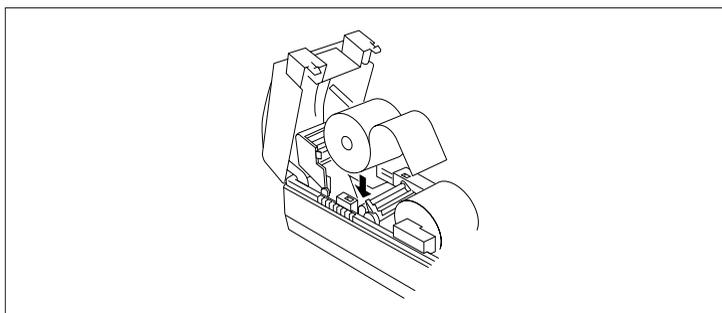
- Be sure to remove the front cover before opening the rear cover.



2. Remove the spool, then lower the writing table to the rear.



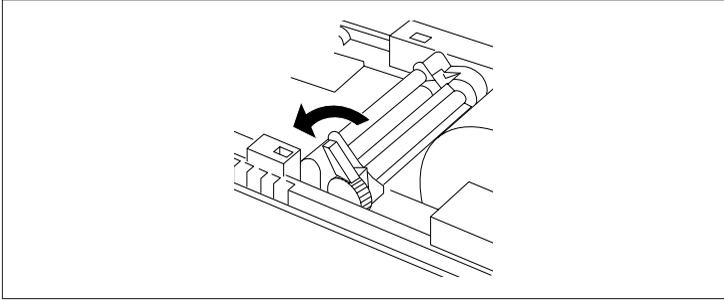
3. Place the roll paper in the paper holder as shown in the illustration.



- Be sure the roll paper's winding direction is correct when inserting the roll.
- Make sure the roll paper is turning smoothly in the paper holder.

4. Lower the head up lever in the arrow direction.

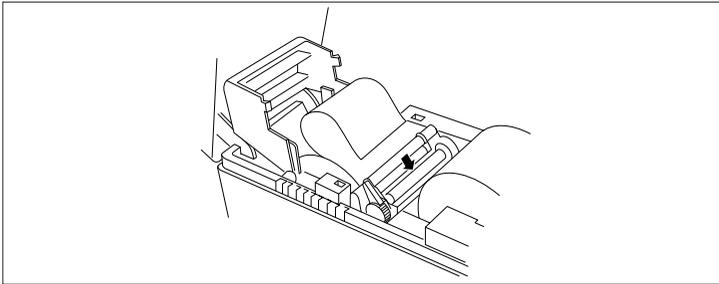
The head will move to the head down condition, with the head platen closed.



3

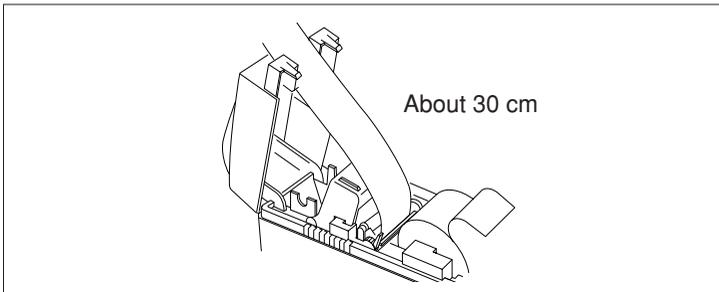
5. Insert the end of the roll of paper straight into the printer's paper insertion slot.

The proper amount of paper is then loaded automatically (auto loading).

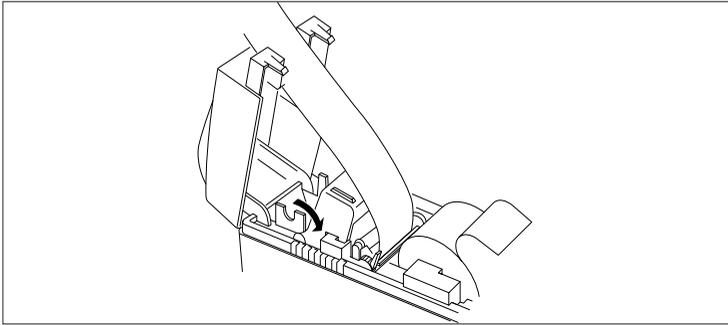


- If the end of the roll of paper is feathered or folded, cut off the end with scissors, etc. so that the end is squared off.
- If the paper is inserted crooked, move the head up lever forward, then correct the paper's path manually with the head in the up condition.

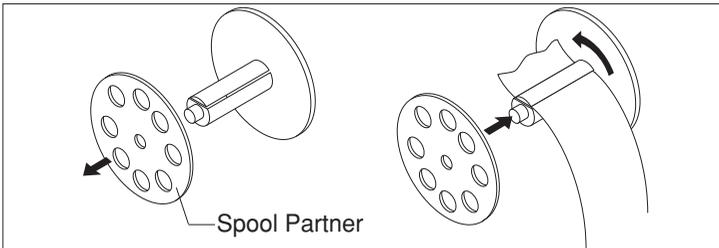
6. Press the JOURNAL key and advance about 30 cm (12 inch) of the roll paper.



7. Move the writing table back to its original position and lock it.



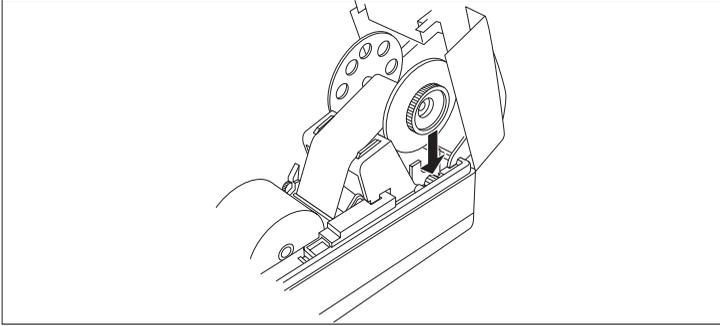
8. Remove the spool partner from the spool temporarily, then insert the end of the roll of paper into the slot in the spool and wind up the paper on the spool two or three times so it will not come off the spool. Replace the spool partner on the spool.



- Wind up the roll paper, making sure it is winding in the correct winding direction when taking up paper from the roll paper.

9. Insert the spool in the spool holder while winding up the paper on the spool.

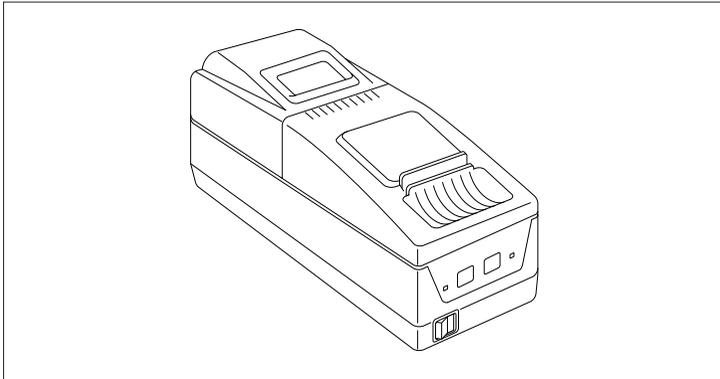
While winding the paper onto the spool so there is no slack, make sure it is moving along the guide in the writing table.



- Make sure the gear of the spool is engaged in the printer gear.

10. Close the rear cover, then replace the front cover, following the procedure used for removing the covers in the reverse order.

The ERROR indicator on the operation panel will go off.



- If the front cover is not closed securely, the ERROR indicator may not go off. At such a time, replace the cover securely once more.

That completes setting of the roll paper.

Replacing the Roll Paper

If the amount of roll paper remaining becomes low, the ERROR indicator blinks, reminding the operator that it will soon be time to replace the roll paper.

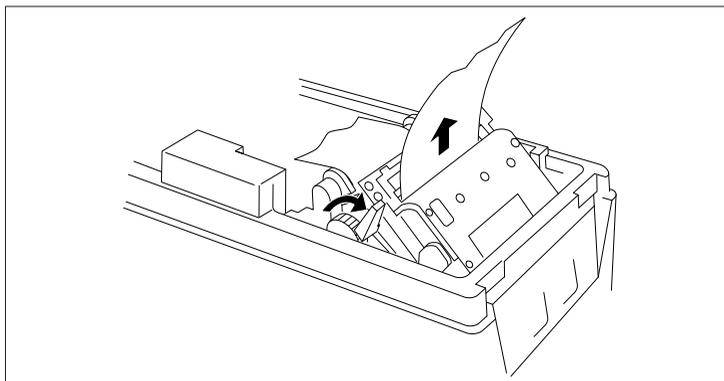
Printing will stop automatically if the printer runs out of roll paper.



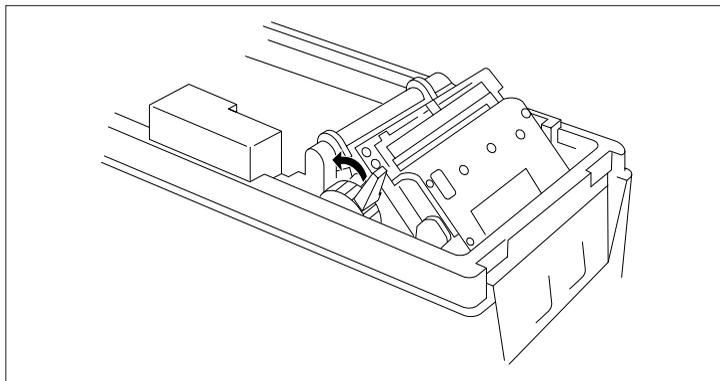
The print head and auto cutter are hot during or immediately after printing. Please wait until the print head and auto cutter have cooled sufficiently before replacing the roll paper.

3

- 1. Remove the cover.**
- 2. Move the head up lever in the arrow direction.**
- 3. Pull the remaining roll paper out of the paper outlet and remove it.**

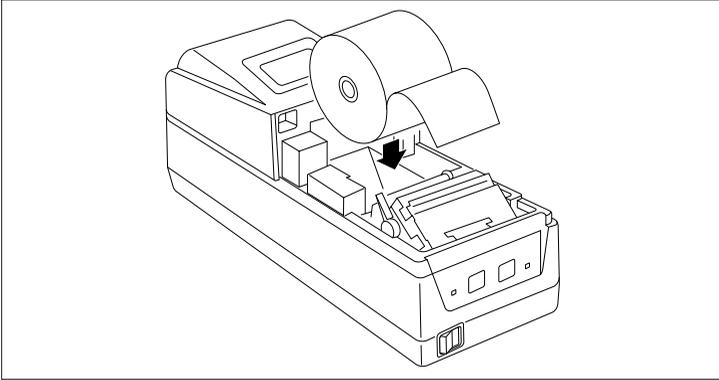


- 4. Return the head up lever to its original position.**



5. Set a new roll of roll paper.

- When replacing the journal roll paper, take out the spool and move the writing table back, then set the roll paper.



- If the paper is inserted crooked, move the head up lever to move the head to the up condition, then correct the paper's path manually.
- Remove the finished journal roll paper from the spool.
- Follow the procedure below when replacing the journal roll paper.
 1. Press the JOURNAL key and wind about 30 cm of paper.
 2. Place the roll paper along the guide in the writing table while winding the roll paper onto the spool, then place the spool in the spool holder (see steps 9 and 10 of “Setting the Journal Roll Paper” (page 17)).
 3. Return the writing table to its original position.

6. Replace the cover.

Specified Paper and Printing Area

Specified Paper

Type: Specified thermal printing paper.

Paper Width: 58 +0/-1 mm

Paper Thickness: 60~75 μ

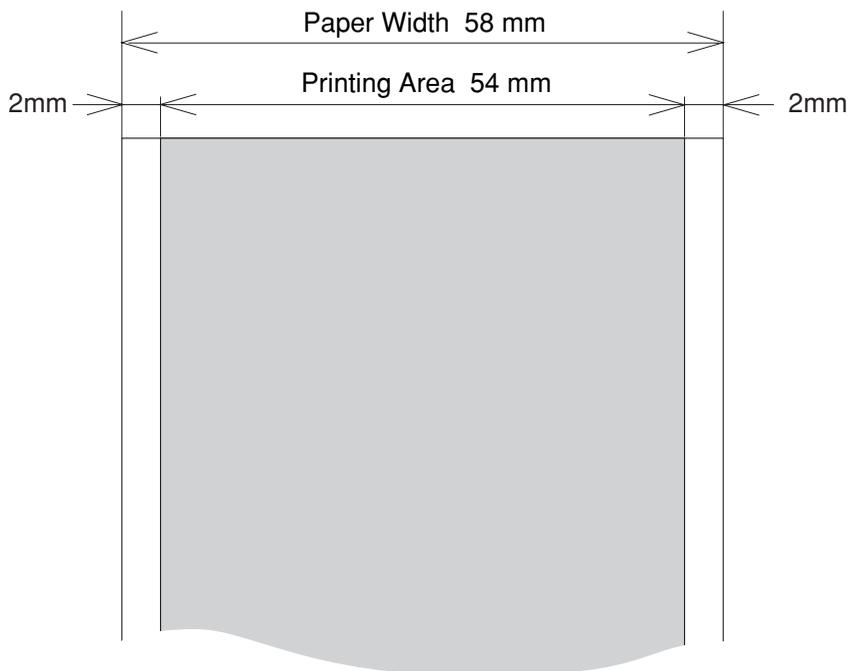
Roll Diameter: 83 dia. mm or less

Printing Surface: Roll Outside (Surface)

Specified Paper: Nihon Paper Co. (Ltd.) TF 50KS-E2C

- Print density may differ depending on the paper used. In such cases, please adjust the print density. (See “Chapter 4 - Using the Printer,” on pages 22 and 23.)

Printing Area



Chapter 4

Using the Printer

4

Settings Using the Operating Buttons
Setting the DIP Switches

Operation Panel Keys

Use the RECEIPT key and JOURNAL key, in accordance with the query printing system, to set the printer internally.

Items which can be set are as follows.

- **Receipt print density.**
Adjusts the receipt print density. (See the table below.)
 - **Journal print density.**
Adjusts the journal print density. (See the table below.)
 - **Cover Open**
Sets the cover sensor on enabled or disabled.
 - **Auto Cutter**
Sets the auto cutter on enabled or disabled.
 - **Auto Loading**
Sets the auto loading function on enabled or disabled for setting roll paper.
 - **Receipt Paper Near End**
Sets the print stop function on enabled or disabled in response to signals from the receipt paper near end sensor.
 - **Journal Paper Near End**
Sets the print stop function on enabled or disabled in response to signals from the journal paper near end sensor.
 - **CR Operation**
Sets CR+LF / LF / Disregard.
 - **Reset by DSR**
Sets enabling or disabling of reset by the serial interface DSR signal.
 - **Reset by INIT**
Sets enabling or disabling of reset by the serial interface INIT signal.
 - **Error Handshake**
Sets whether the interface is changed to the BUSY state when a printer error occurs.
- * Relationship between each specified paper and print density (Use this as a standard.)

Print Density Level	Paper	Condition
1	TF50KS-E2c, F220vp.	Light  Dark
2		
3		
4		

DIP Switches

The contents of DIP switches are as shown in the following tables.
 Bold Characters and shade indicate Factory Default.

DIP Switch

No.	Content	OFF	ON
1	Serial Interface Data Length	8bits	7bits
2	Serial Interface Protocol	DTR	FLOW
3	Parity	See the following table.	
4			
5	Baud Rate	See the following table.	
6			
7			
8		OFF	ON

Interface Setting

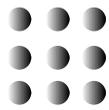
SW-5	SW-6	SW-7	Baud Rate Setting
OFF	OFF	OFF	9600
OFF	OFF	ON	1200
OFF	ON	OFF	2400
OFF	ON	ON	4800
ON	OFF	OFF	19200
ON	OFF	ON	38400
ON	ON	OFF	57600
ON	ON	ON	NOT USE

Parity Settings for serial interface

SW-3	SW-4	Parity Setting
OFF	OFF	No Parity
OFF	ON	Odd Parity
ON	OFF	Even Parity
ON	ON	–

4

Chapter 5



Sensors and Error Indications

This chapter explains the various sensors that this printer is equipped with and the error indications accompanying them.

5

Sensors
Error Indications

Sensors

Printer Cover Open Sensor

This sensor reacts when the front cover is removed, indicated by the ERROR indicator (cover open error). Printing is halted.

Head Up Sensor

If the head is moved to the head up position using the head up lever, it is indicated by the ERROR indicator (Head Up Error.) Printing is halted.

Head Temperature Sensor

To protect the print head from overheating, this sensor functions when the head's temperature becomes high (approximately 60°C (140°F) or higher) and is indicated by the ERROR indicator (Head Overheat). Printing is halted. When the head's temperature drops (approximately 55°C (131°F) or lower), printing resumes automatically.

Paper Sensor

This sensor is located in the paper path of the receipt printer and the journal printer. When paper is inserted in the printer's paper path, the paper is loaded. If the paper in the paper path runs out, it is indicated by the ERROR indicator (Paper End Error). Printing is halted.

Cutter Position Sensor

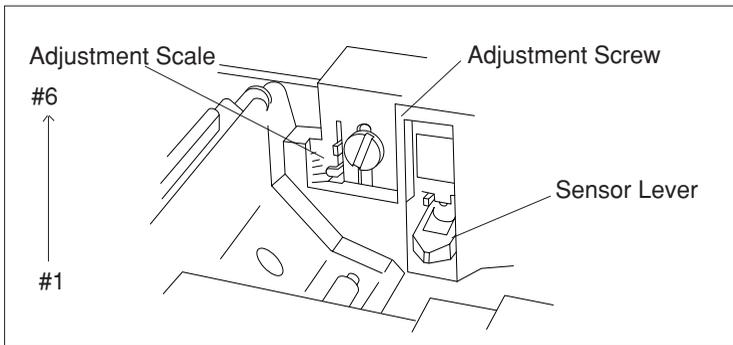
Cutter control is executed by means of the cutter position detection sensor. If detection of the sensor remains ON or OF for 1 second or longer during cutter motor operation, the printer judges that the cutter motor is locked and halts further cutter operation and printing at that point.

Paper Near End Sensor

This sensor is located on the roll paper holder on the receipt side and the journal side. When the winding diameter of the roll paper becomes small, it is indicated by the ERROR indicator. Since the amount of roll paper remaining may differ depending on the thickness of the winding core, the near end sensor can be set so as to correspond to the thickness of the winding core.

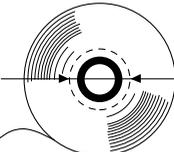
Setting Method

1. Loosen the adjustment screw holding the sensor lever.
2. Set the top end of the sensor lever on the correct step on the adjustment scale.



When the specified paper with a winding core whose outer diameter is $\phi 18$ mm and inner diameter is $\phi 12$ mm is used, the approximate adjustment scale step are as follows. The factory default setting of the scale is lowest position.

Adjustment Scale Step	Dimension T
Lowest position	Approx. 18.5-20.5 mm (Paper length: 20-110 cm)
#2	Approx. 20-23 mm (Paper length: 80-230 cm)
#3	Approx. 25-27.5 mm (Paper length: 300-480 cm)



*Dimension T = Amount of outer diameter remaining on roll of paper.

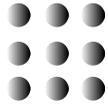
- Dimension T for over #4 adjustment scale is omitted since its paper length is too long.
 - Dimension T, corresponding to the step on the adjustment scale, may vary somewhat.
3. Tighten the adjustment screw and close the sensor lever.
Check if the sensor lever is operating smoothly.

Error Indications

Error contents and error indications, as well as recovery instructions in each case, are as shown below.

Error Content	Indication		Recovery
	POWER LED	ERROR LED	
System Error	Lights up.	Lights up.	Recovery impossible.
Cover Open	Lights up.	 (Blinks slowly.)	Close the cover.
Head Up	Lights up.	 (Blinks fast.)	Return head up lever to original position.
Head Overheat	Lights up.	 (Blinks once.)	Recovers automatically when the temperature drops.
Paper End or Paper Near End	Lights up.	 (Blinks once.)	Set new roll paper.
Cutter Motor Lock	Lights up.	 (Blinks fast + blinks slow.)	Clear the paper jam.
Macro Execution Wait	Lights up.	 (Blinks twice.)	Press the RECEIPT or JOURNAL key.

Chapter 6



Interfaces

Serial Interface
Parallel Interface
Drawer Kick Connector

Serial Interface

Specifications

Transmission Method	Start-Stop Synchronous Full Duplex Communications
Signal Level	RS-232C
Baud Rate	2400, 4800, 9600, 19200, 38400, 57600
Data Length	7 or 8 bits
Start Bit	1 bit
Stop Bit	Receiving 1 bit; Transmitting 2 bits or more
Parity	Even, Odd, No Parity
Connector	Printer Side Compatible with DDK 17LE-13250-27

Signal Lines and Pin Arrangement

Pin No.	Signal Name	Direction	X-ON/X-OFF	DTR/DSR
1	F.GND		Connects the Host CPU and printer.	←
2	TXD	OUT	Sends transmission data and X-ON/X-OFF signals to the Host CPU from the printer.	Not used.
3	RXD	IN	Transmission data from the Host CPU to the printer.	←
4	RTS	OUT	Pulls up the signal to +10V at 3.3k ohms.	←
6	DSR	IN	Not used.	Data are sent when the status information send signal is "HIGH."
7	S.GND			
20	DTR	OUT	Always HIGH.	LOW when Busy. HIGH when Ready.
25	INIT	IN(*1)	Printer's Reset signal.	←

- IN indicates a signal from the Host to the printer. OUT indicates a signal from the printer to the Host.

*1 25pin, INIT is HIGH or the TTL-HIGH level of input (+2V~+15V).

Explanation of Signal Names

F. GND (Frame Ground)

Connected to the printer case.

TXD (Transmit Data (Send Data))

Transmission line for sending serial data from the printer to the Host.

RXD (Receive Data)

Transmission line for the printer to receive serial data from the Host.

DSR (Data Set Ready)

Signal line which indicates to the printer that the Host is ready to receive.

A low level reset can be carried out through the menu setting.

S. GND (Signal Ground)

The GND (earth) for the signal line.

DTR (Data Terminal Ready)

Signal line which indicates to the Host that the printer is ready to receive.

RTS (Request To Send)

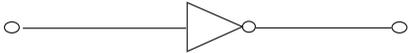
Pulled up to +10V at 3.3k ohms.

INIT

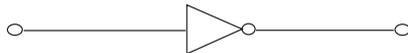
This is the signal line used by the host to send a reset command to the printer. (However, this is when enabling of the INIT signal by the menu setting has been selected.)

Input/Output Circuits

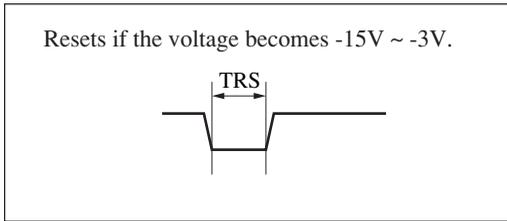
Input Circuit

Signal Name	Configuration
RXD	
DSR	
	Compatible with μ PD4721.

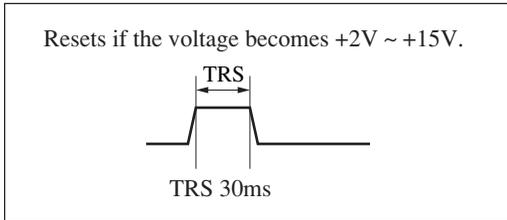
Output Circuit

Signal Name	Configuration
TXD	
DTR	
	Compatible with μ PD4721.

Reset by DSR



Reset by INIT



Protocols

X-ON/X-OFF Protocol

Control is by output of the codes for the data transmission request signal X-ON (11 Hex) and the data transmission stop signal X-OFF (13 Hex). When sending the printer's status to the Host, this is sent irrespective of the level of the DSR signal.

Conditions for Output of the X-ON Code

- When all errors have been cleared.
- When the remaining buffer capacity is greater than Non bytes.
- After the power is turned on, when in the Ready to Receive state.

Conditions for Output of the X-OFF Code

- When the printer has generated an error and has switched from Online to Offline.
- When the remaining buffer capacity is Noff bytes or less.
 - * Even if the X-ON/X-OFF code output conditions are established, the same code is not output two times in succession. However, times when the power is turned ON are expected.
 - * When the menu setting error handshake is disabled, XON/XOFF is not output when the error status changes.

DTR/DSR Protocol

Control is by the level of the DTR signal, Ready “High” /Busy “Low”.

If the printer's status is sent to the Host, it is sent when DSR is “High.” If DSR is “Low,” the printer waits until it goes “High.”

Conditions for the DTR Signal to become Ready “High”

- When all the errors have been cleared.
- When the remaining buffer capacity is greater than Non bytes.
- After the power is turned on, when in the Ready to Receive state.

Conditions for the DTR Signal to become Busy “Low”

- When the printer has generated an error and has switched from Online to Offline.
- When the remaining buffer capacity is Noff bytes or less.
 - * When the menu setting error handshake is disabled, the DTR signal does not change.

Conditions for Non and Noff (Units: Bytes)

- When there is an 8 KB buffer.
 - Non=2048
 - Noff=1024
- When there is a one line buffer.
 - Non= 20
 - Noff=10

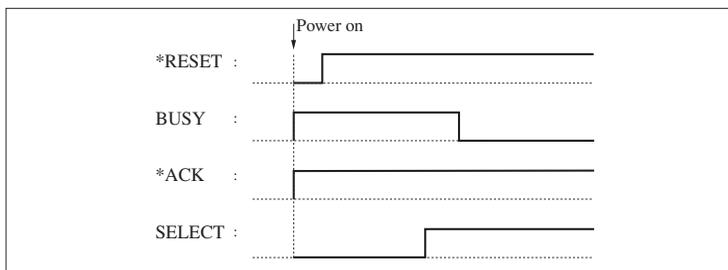
Parallel Interface (option)

Specifications

Transmission Method	8 bit Parallel
Signal Level	TTL Level
Connector	Corresponds to DDK 57RE-40360-803B.

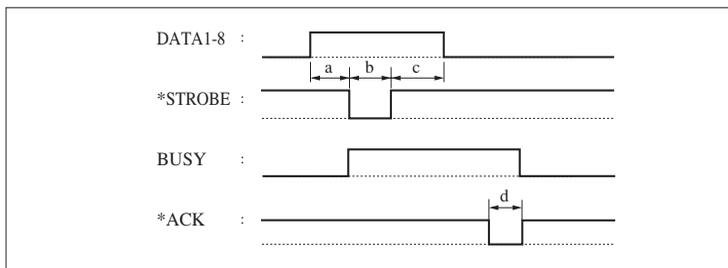
Timing Chart

[At Power On] (If the printer goes Online.)



The * means negative logic signals.

[During Data Reception]



a: Min. 0.5 μ Sec*

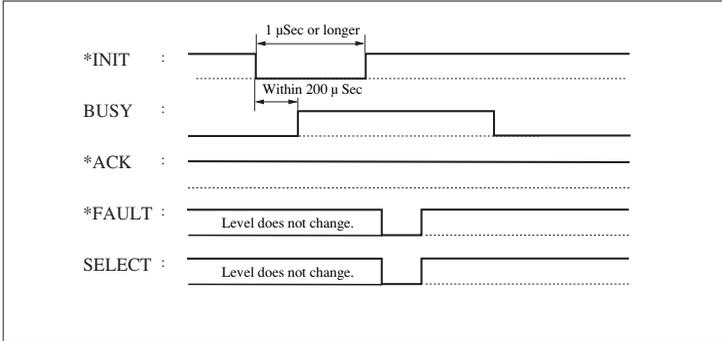
b: Min. 0.5 μ Sec*

c: Min. 0.5 μ Sec*

d: Approx. 2.9 μ Sec

*: Value at the receiving end.

[When Receiving the INIT Signal]



Input/Output Circuits

Input Circuit

Signal Name	Configuration	
DATA1-8 *INIT	<p style="text-align: center;">CMOS</p>	VH=2.0V VL=0.8V
*STROBE	<p style="text-align: center;">CMOS (Schmitt)</p>	VH=1.8V VL=0.9V

Output Circuit

Signal Name	Configuration
SELECT *FAULT *ACK PE BUSY DRAWER KICK STATUS	<p style="text-align: center;">Compatible with 7406.</p>

6

Signal Lines and Pin Arrangement

Pin No.	Signal Name	Direction	Function
1	*STROBE	IN	Synch signal for reading DATA 1-8.
2	DATA1	IN	8-bit parallel data (DATA1: LSB, DATA8: MSB)
3	DATA2		
4	DATA3		
5	DATA4		
6	DATA5		
7	DATA6		
8	DATA7		
9	DATA8		
10	*ACK	OUT	Data request signal output when ready for receiving data.
11	BUSY	OUT	Goes "Low" when ready to receive data, and "High" when not ready. Goes "High" under the following conditions. <ul style="list-style-type: none"> • Printer is in an error state. • The buffer is full and data cannot be received. • After receiving the INIT signal, after printing of the data in the buffer, during the interval until initialization is completed. * When the menu setting error handshake is disabled, it will not go BUSY when an error occurs.
12	PE	OUT	In the case that "Paper End" detection is enabled by the control code, it goes "High" during the paper end state.
13	SELECT	OUT	Indicates whether the printer is in the Online state or the Offline state. Goes "Low" when a printer error occurs.
14			Not used.
15			Not used.
16	GND		Signal line ground.
17	FG		Connected to the printer case.
18	+5V		Connected to +5 V inside the printer. (Cannot be used by the customer.)
19-30	GND		Signal line ground.

Pin No.	Signal Name	Direction	Function
31	*INIT	IN	When this signal goes “Low,” the printer becomes BUSY. It is initialized after all the data are printed. BUSY is not cleared until this signal goes “High.” A pulse width of 1 μ sec or longer is required at the receiving end. (See “When Receiving the INIT Signal.”)
32	*FAULT	OUT	This signal indicates that the printer is in the error state. It goes “Low” under any one of the following conditions. <ul style="list-style-type: none"> • Paper End • When an abnormal operation is detected.
33	GND		Signal line ground.
34	DRAWER KICK STATUS	OUT	The drawer kick connector's status signal is output.
35	FUSE	OUT	Connected to +5 V through a 3.3k ohm resistor.
36			Not used.

- IN indicates signals from the Host to the printer, and OUT indicates signals from the printer to the Host.

* means negative logic signals.

Drawer Kick Connector

Specifications

Drawer Kick Drive Signal

Outputs a pulse signal specified by the ESCp command. Also, the status of SW (+) can be known from pin 34 of the interface connector in the case of the parallel interface and by the GSr, for instance command in the case of the serial interface.

Electrical Characteristics

Drive Voltage: DC 24 V

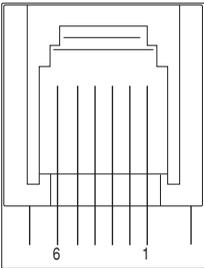
Drive Current: Max. 0.8 A (should be within 510 ms)

SW Signal: Signal level “L”= 0~0.5 V

 “H”= 3~5 V

Connector Connection Diagram

NO.	Signal Name	Function
1	FG	Safety ground.
2	DRAWER1	Drawer 1 drive signal.
3	DRSW	Drawer switch input.
4	VDR	Drawer drive power supply.
5	DRAWER2	Drawer 2 drive signal.
6	GND	Common ground in the circuit.

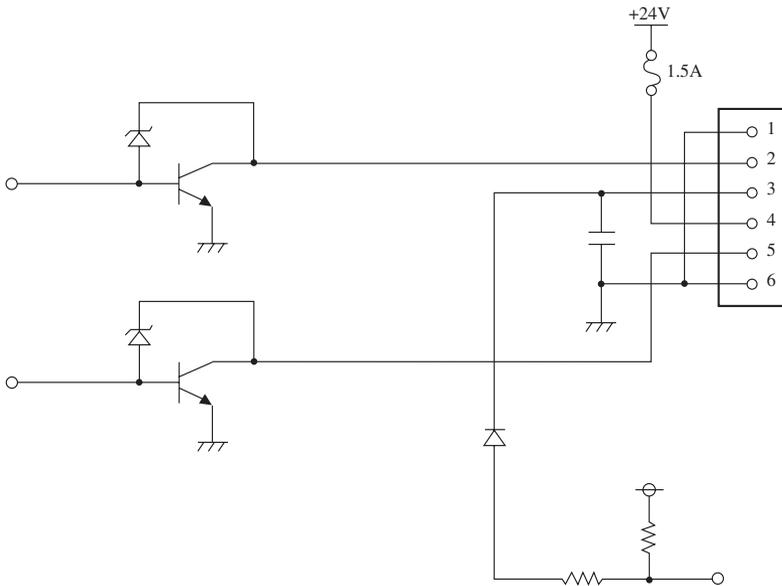


Connector Used: TM5RJ3-66 (Hirose)

Compatible Connector: Compatible with TM3P-66P (Hirose)

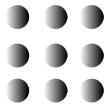
- No signals are output during printing.
- Both drawers 1 and 2 cannot be driven simultaneously.
- Use a 36 ohm or higher drawer solenoid. (Be careful not to let the output current exceed 0.8A. If the output current exceeds 0.8 A, results cannot be guaranteed.)
- The drawer kick connector is not the type used for connections to telephone lines. Do not connect to any device other than a solenoid.

Drive Circuit



6

Chapter 7



Character Code Tables

Code Page
Japanese Code Table
International Character Code Table

Code Page

PC 437 (USA)

L \ H	Bin.		0000	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111
	Bin.	Hex.	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0000	0	NUL		(SP)	0	@	P	`	p	Ç	É	á	█	L	⌘	α	≡	
0001	1		XON	!	1	A	Q	a	q	ü	æ	í	█	⌞	⌟	β	±	
0010	2			"	2	B	R	b	r	é	Æ	ó	█	⌠	⌡	Γ	≥	
0011	3		XOF	#	3	C	S	c	s	â	ô	ú	|	⌢	⌣	⌘	≤	
0100	4			\$	4	D	T	d	t	ä	ö	ñ	⌥	⌦	⌧	Σ	∫	
0101	5			%	5	E	U	e	u	à	ò	Ñ	⌨	〈	〉	∞	∫	
0110	6			&	6	F	V	f	v	â	û	*	⌬	⌭	⌮	μ	÷	
0111	7			'	7	G	W	g	w	ç	ù	°	⌰	⌱	⌲	τ	≈	
1000	8			(	8	H	X	h	x	ê	ÿ	¿	⌴	⌵	⌶	φ	•
1001	9	HT		)	9	I	Y	i	y	ë	ÿ	⌷	⌸	⌹	⌺	θ	•
1010	A	LF		*	:	J	Z	j	z	è	Û	⌹	⌺	⌻	⌼	Ω	•	
1011	B		ESC	+	;	K	[	k	{	ï	ç	½	⌽	⌿	█	δ	√
1100	C		FS	,	<	L	\	l	!	î	£	¼	⌿	⌿	█	∞	∞	
1101	D	CR	GS	-	=	M	]	m	}	ï	¥	;	⌿	=	█	∅	²
1110	E			.	>	N	^	n	~	Ä	£	«	⌿	⌿	█	ε	■	
1111	F			/	?	O	_	o	(SP)	Å	f	»	⌿	⌿	█	∩	(SP)	

PC 850 (MULTILINGUAL)

L \ H	Bin.		0000	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111
	Bin.	Hex.	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0000	0	NUL		(SP)	0	@	P	`	p	Ç	É	á	█	L	ø	Ó	-	
0001	1		XON	!	1	A	Q	a	q	ü	æ	í	█	⌞	Ø	β	±	
0010	2			"	2	B	R	b	r	é	Æ	ó	█	⌠	Ê	Ô	=	
0011	3		XOF	#	3	C	S	c	s	â	ô	ú	|	⌢	Ë	Õ	¾	
0100	4			\$	4	D	T	d	t	ä	ö	ñ	⌥	⌦	È	ø	ƒ	
0101	5			%	5	E	U	e	u	à	ò	Ñ	⌨	〈	〉	Ë	§	
0110	6			&	6	F	V	f	v	â	û	*	⌬	⌭	⌮	μ	÷	
0111	7			'	7	G	W	g	w	ç	ù	°	⌰	⌱	⌲	τ	≈	
1000	8			(	8	H	X	h	x	ê	ÿ	¿	⌴	⌵	⌶	φ	•
1001	9	HT		)	9	I	Y	i	y	ë	ÿ	⌷	⌸	⌹	⌺	Ù	•
1010	A	LF		*	:	J	Z	j	z	è	Û	⌹	⌺	⌻	⌼	Û	•	
1011	B		ESC	+	;	K	[	k	{	ï	ø	½	⌽	⌿	█	Û	•
1100	C		FS	,	<	L	\	l	!	î	£	¼	⌿	⌿	█	ý	•	
1101	D	CR	GS	-	=	M	]	m	}	ï	ø	;	⌿	=	█	Ý	•
1110	E			.	>	N	^	n	~	Ä	x	«	⌿	⌿	█	-	■	
1111	F			/	?	O	_	o	(SP)	Å	f	»	⌿	⌿	█	•	(SP)	

7

PC 860 (PORTUGAL)

L \ H	Bin.	0000	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111
Bin.	Hex.	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0000	0	NUL		(SP)	0	@	P	`	p	Ç	É	á	█	Ł	ł	α	≡
0001	1		XON	!	1	A	Q	a	q	ü	À	í	█	Ł	ł	β	±
0010	2			"	2	B	R	b	r	é	Ê	ó	█	Ł	ł	Γ	≥
0011	3		XOF	#	3	C	S	c	s	ã	ô	ú	|	ł	ł	π	≤
0100	4			\$	4	D	T	d	t	ã	õ	ñ	ł	ł	Ł	Σ	∫
0101	5			%	5	E	U	e	u	à	ò	Ñ	ł	ł	Ł	σ	∫
0110	6			&	6	F	V	f	v	Á	Ú	ª	ł	ł	Ł	μ	÷
0111	7			'	7	G	W	g	w	ç	ù	º	ł	ł	Ł	τ	≈
1000	8			(	8	H	X	h	x	ê	ï	¿	ł	ł	Ł	φ	°
1001	9	HT		)	9	I	Y	i	y	Ê	Ô	Û	ł	ł	Ł	θ	•
1010	A	LF		*	:	J	Z	j	z	è	Û	ł	ł	Ł	Ω	·	
1011	B		ESC	+	;	K	[	k	{	í	ç	½	ł	ł	█	δ	√
1100	C		FS	,	<	L	\	l	!	Ô	£	¼	ł	ł	█	∞	n
1101	D	CR	GS	-	=	M	]	m	}	ï	Û	ı	ł	=	█	ø	²
1110	E			.	>	N	^	n	~	Ã	Pt	«	ł	ł	█	ε	■
1111	F			/	?	O	_	o	(SP)	Â	Ó	»	ł	ł	█	∩	(SP)

PC 863 (CANADA-FRENCH)

L \ H	Bin.	0000	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111
Bin.	Hex.	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0000	0	NUL		(SP)	0	@	P	`	p	Ç	É	ı	█	Ł	ł	α	≡
0001	1		XON	!	1	A	Q	a	q	ü	È	'	█	Ł	ł	β	±
0010	2			"	2	B	R	b	r	é	Ê	ó	█	Ł	ł	Γ	≥
0011	3		XOF	#	3	C	S	c	s	ã	ô	ú	|	ł	ł	π	≤
0100	4			\$	4	D	T	d	t	Â	È	"	ł	ł	Ł	Σ	∫
0101	5			%	5	E	U	e	u	à	Ï	.	ł	ł	Ł	σ	∫
0110	6			&	6	F	V	f	v	Œ	û	³	ł	ł	Ł	μ	÷
0111	7			'	7	G	W	g	w	ç	ù	—	ł	ł	Ł	τ	≈
1000	8			(	8	H	X	h	x	ê	ı	İ	ł	ł	Ł	φ	°
1001	9	HT		)	9	I	Y	i	y	è	Ô	ł	ł	Ł	θ	•	
1010	A	LF		*	:	J	Z	j	z	è	Û	ł	ł	Ł	Ω	·	
1011	B		ESC	+	;	K	[	k	{	ı	ç	½	ł	ł	█	δ	√
1100	C		FS	,	<	L	\	l	!	ı	£	¼	ł	ł	█	∞	n
1101	D	CR	GS	-	=	M	]	m	}	=	Û	¼	ł	=	█	ø	²
1110	E			.	>	N	^	n	~	À	Û	«	ł	ł	█	ε	■
1111	F			/	?	O	_	o	(SP)	\$	f	»	ł	ł	█	∩	(SP)

PC 8 6 5 (NORWAY)

L \ H	Bin.	0000	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111
Bin.	Hex.	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0000	0	NUL		(SP)	0	@	P	`	p	Ç	É	á	⌘	⌘	⌘	⌘	⌘
0001	1		XON	!	1	A	Q	a	q	ü	æ	í	⌘	⌘	⌘	⌘	⌘
0010	2			"	2	B	R	b	r	é	Æ	ó	⌘	⌘	⌘	⌘	⌘
0011	3		XOF	#	3	C	S	c	s	â	ô	ú	|	|	⌘	⌘	⌘
0100	4			\$	4	D	T	d	t	ä	ö	ñ	|	-	⌘	⌘	⌘
0101	5			%	5	E	U	e	u	à	ò	Ñ	⌘	⌘	⌘	⌘	⌘
0110	6			&	6	F	V	f	v	â	û	ª	⌘	⌘	⌘	⌘	⌘
0111	7			'	7	G	W	g	w	ç	ù	º	⌘	⌘	⌘	⌘	⌘
1000	8			(	8	H	X	h	x	ê	ÿ	¿	⌘	⌘	⌘	⌘	⌘
1001	9	HT		)	9	I	Y	i	y	ë	Ö	¬	⌘	⌘	⌘	⌘	⌘
1010	A	LF		*	:	J	Z	j	z	è	Ü	¬	⌘	⌘	⌘	⌘	⌘
1011	B		ESC	+	;	K	[	k	{	ï	ø	½	⌘	⌘	⌘	⌘	⌘
1100	C		FS	,	<	L	\	l	!	î	£	¼	⌘	⌘	⌘	⌘	⌘
1101	D	CR	GS	-	=	M	]	m	}	ï	Ø	;	⌘	=	⌘	⌘	⌘
1110	E			.	>	N	^	n	~	Ä	×	«	⌘	⌘	⌘	⌘	⌘
1111	F			/	?	O	_	o	(SP)	Å	f	»	⌘	⌘	⌘	⌘	⌘

PC 8 5 8 (MULTILINGUAL II)

L \ H	Bin.	0000	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111
Bin.	Hex.	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0000	0	NUL		(SP)	0	@	P	`	p	Ç	É	á	⌘	⌘	⌘	⌘	⌘
0001	1		XON	!	1	A	Q	a	q	ü	æ	í	⌘	⌘	⌘	⌘	⌘
0010	2			"	2	B	R	b	r	é	Æ	ó	⌘	⌘	⌘	⌘	⌘
0011	3		XOF	#	3	C	S	c	s	â	ô	ú	|	|	È	Ò	¾
0100	4			\$	4	D	T	d	t	ä	ö	ñ	|	-	È	ö	¶
0101	5			%	5	E	U	e	u	à	ò	Ñ	À	†	€	Ö	§
0110	6			&	6	F	V	f	v	â	û	ª	Ã	ã	í	µ	÷
0111	7			'	7	G	W	g	w	ç	ù	º	À	Ã	î	þ	.
1000	8			(	8	H	X	h	x	ê	ÿ	¿	©	⌘	⌘	⌘	⌘
1001	9	HT		)	9	I	Y	i	y	ë	Ö	®	⌘	⌘	⌘	⌘	⌘
1010	A	LF		*	:	J	Z	j	z	è	Ü	¬	⌘	⌘	⌘	⌘	⌘
1011	B		ESC	+	;	K	[	k	{	ï	ø	½	⌘	⌘	⌘	⌘	⌘
1100	C		FS	,	<	L	¥	l	!	î	£	¼	⌘	⌘	⌘	⌘	⌘
1101	D	CR	GS	-	=	M	]	m	}	ï	Ø	;	¢	=	;	ÿ	ÿ
1110	E			.	>	N	^	n	~	Ä	×	«	¥	⌘	⌘	⌘	⌘
1111	F			/	?	O	_	o	(SP)	Å	f	»	⌘	⌘	⌘	⌘	⌘

7

SPACES

L \ H	Bin.	0000	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111
Bin.	Hex.	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0000	0	NUL		(SP)	0	@	P	`	p	(SP)							
0001	1		XON	!	1	A	Q	a	q	(SP)							
0010	2			"	2	B	R	b	r	(SP)							
0011	3		XOF	#	3	C	S	c	s	(SP)							
0100	4			\$	4	D	T	d	t	(SP)							
0101	5			%	5	E	U	e	u	(SP)							
0110	6			&	6	F	V	f	v	(SP)							
0111	7			'	7	G	W	g	w	(SP)							
1000	8			(8	H	X	h	x	(SP)							
1001	9	HT)	9	I	Y	i	y	(SP)	(SF)						
1010	A	LF		*	:	J	Z	j	z	(SP)							
1011	B		ESC	+	;	K	[k	{	(SP)							
1100	C		FS	,	<	L	\	l	!	(SP)							
1101	D	CR	GS	-	=	M]	m	}	(SP)							
1110	E			.	>	N	^	n	~	(SP)							
1111	F			/	?	O	_	o	(SP)								

Japanese Cord Table

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	NUL		SP	0	@	P	`	p	-	⌘	SP	-	タ	ミ	=	×
1		XON	!	1	A	Q	a	q	-	⌘	。	ア	チ	ム	ト	円
2			"	2	B	R	b	r	-	⌘	「	イ	ツ	メ	≠	年
3		XOF	#	3	C	S	c	s	■	ト	」	ウ	テ	モ	≠	月
4			\$	4	D	T	d	t	■	一	、	エ	ト	ヤ	▲	日
5			%	5	E	U	e	u	■	一	・	オ	ナ	ユ	▲	時
6			&	6	F	V	f	v	■	|	ヲ	カ	ニ	ヨ	▼	分
7			'	7	G	W	g	w	■	|	ア	キ	ヌ	ラ	▼	秒
8			(	8	H	X	h	x	|	⌘	イ	ク	ネ	リ	♠	〒
9	HT		)	9	I	Y	i	y	|	⌘	ウ	ケ	ノ	ル	♥	市
A	LF		*	:	J	Z	j	z	|	⌘	エ	コ	ハ	レ	◆	区
B		ESC	+	;	K	[	k	{	■	⌘	オ	サ	ヒ	ロ	♣	町
C		FS	,	<	L	¥	|	!	■	⌘	ヤ	シ	フ	ワ	●	村
D	CR	GS	-	=	M	]	m	}	■	⌘	ユ	ス	ヘ	ン	○	人
E			.	>	N	^	n	~	■	⌘	ヨ	セ	ホ	°	/	☼
F			/	?	O	_	o	(SP)	+	⌘	ッ	ソ	マ	°	\	SP



International Character Code Table

n	LANGUAGE	23	24	40	5B	5C	5D	5E	60	7B	7C	7D	7E
0	American English	#	\$	@	[	\	\]	^	'	{	|	}	~
1	French	#	\$	à	°	ç	§	^	'	é	ù	è	¨
2	German	#	\$	§	Ä	Ö	Ü	^	'	ä	ö	ü	ß
3	British English	£	\$	@	[	\	\]	^	'	{	|	}	~
4	Danish 1	#	\$	@	Æ	Ø	Å	^	'	æ	ø	å	~
5	Swedish	#	¤	É	Ä	Ö	Å	Ü	é	ä	ö	å	ü
6	Italian	#	\$	@	°	\	é	^	ù	à	ò	è	ì
7	Spanish 1	Pt	\$	@	;	Ñ	¿	^	'	¨	ñ	}	~
8	Japanese	#	\$	@	[	¥	]	^	'	{	|	}	~
9	Norwegian	#	¤	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
10	Danish 2	#	\$	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
11	Spanish 2	#	\$	á	;	Ñ	¿	é	'	í	ñ	ó	ú
12	Latin American	#	\$	á	;	Ñ	¿	é	ú	í	ñ	ó	ú
13	Korean	#	\$	@	[	₩	]	^	'	{	|	}	~
64	Legal	#	\$	§	°	'	"	¶	'	©	®	†	™

Note) n indicates the ESC R parameter.

Chapter 8

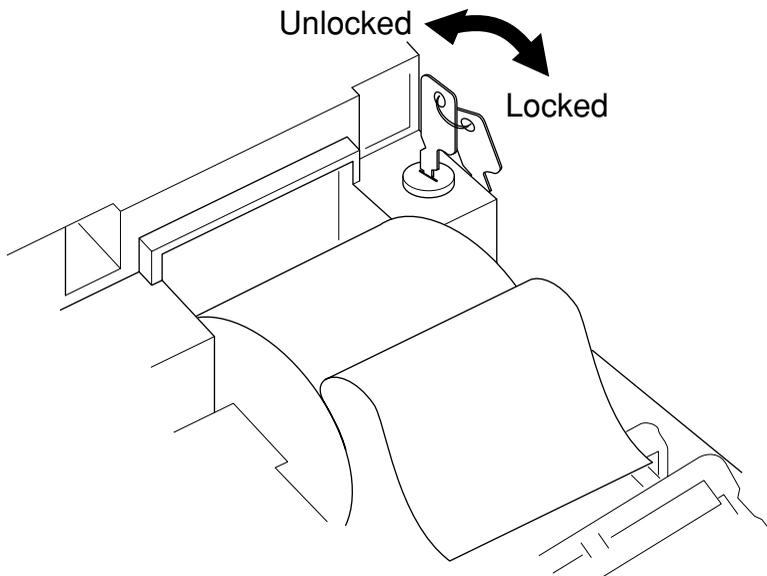
Appendices

**Journal Protection Key
Maintenance, Cautions
Specifications
External View**

8

Journal Protection Key

If a printer with optional specifications is used, the rear cover can be locked using the journal protection key that is included.



Maintenance, Cautions

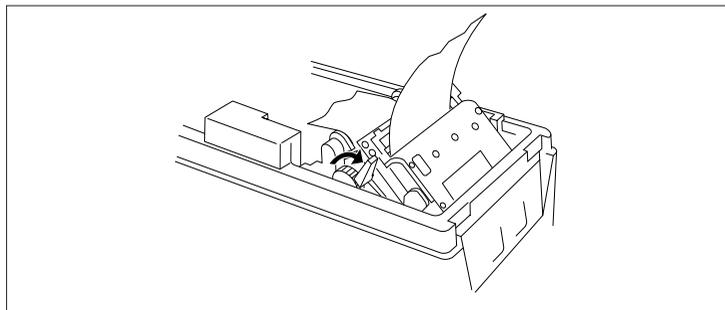
Removing Paper Jams



The print head and auto cutter become hot. Do not touch the print head cover or the outside of the auto cutter with bare hands during printing or immediately after printing. When removing jammed paper, first check to make sure the temperature of the print head and auto cutter has dropped sufficiently.

- 1. Set the printer in the head up condition with the head platen open.**
- 2. Remove the jammed paper with utmost care.**

If the jammed paper is wrapped around the platen roller, take it out a little at a time



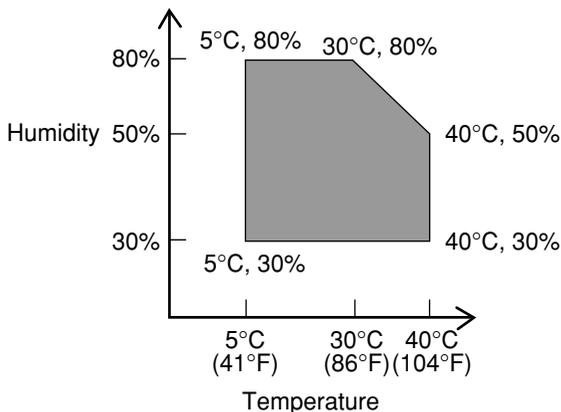
while turning the paper feed knob.

- When removing jammed paper, be sure to set the printer in the head up condition with the head platen open.
Turning the paper feed knob while in the head down state, or attempting to pull the paper out, could cause the printer to break down.
- If the printer is covered with paper dust, remove it using a brush and vacuum cleaner.

Cautions in Handling of Roll Paper

- If chemicals or oil touch the paper, it could become discolored and the printed data could fade away.
- Do not scrape the paper with fingernails or with hard metal objects, etc. This could cause the paper to become discolored.
- Discoloration begins from a temperature of approximately 70°C. (158°F) Be careful of the effects of heat, moisture and light, etc. on the roll paper.

Operating Temperature and Humidity



Specifications

Basic Specifications

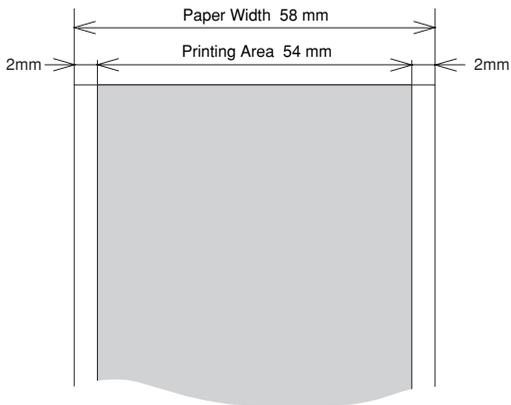
Item	Content	Remarks
Printing Method	Line Thermal Printing Method	
Printing Width	54mm, 432 dots (Total dots in head: 448 dots)	Non-printing area: 2 mm on each end.
Dot Density	8 dots/mm (Horizontal/Vertical)	
Paper Feed Pitch	0.125mm	
Printing Speed	Receipt part 80mm/sec. (640 dot line/sec) Journal part 70mm/sec. (560 dot line/sec)	at maximum speed
Number of Printing Columns	36 Columns (Horizontal 12 × Vertical 24 Font A) 48 Columns (Horizontal 9 × Vertical 24 Font B)	
Types of Characters	Alphanumeric, International Characters	
Emulations	ESC/POS™ compatible	
Bar Code Types	UPC-A/E, JAN(EAN)13 Columns/8 Columns, ITF CODE39, CODABAR, CODE93, CODE128	
Line Interval	4.23 mm (1/6 inch) Can be set by commands. Min. 1/203 inch.	
Paper	Thermal roll paper 58 × φ83 mm	See page 56
Interfaces	RS-232C/Centronics	Factory Option
Input Buffer	72 Bytes/8K Bytes	Set by the configuration Mode
Power Supply Voltage	AC120V±10% 60Hz AC230V±10% 50/60Hz	Factory Option
Power Consumption	42W	ASCII Slide Pattern Printing
Weight	Approx. 2.3 kg	Main unit only
External Dimensions	128 × 359.5 × 162.5mm	
Operating Temperature and Humidity	5~40°C 30~80%RH (There should be no condensation.)	see page 54
Storage Temperature and Humidity	-10~60°C 10~90%RH	
Reliability	Print head life: Pulse resistance: 50 million pulses (Page coverage: 12.5%) Wear Resistance 50 Km (Normal temperature and humidity, using the recommended paper) Printer Mechanism: MCBF 5 million lines Auto Cutter Life: 300,000 cuts	

Paper Specifications

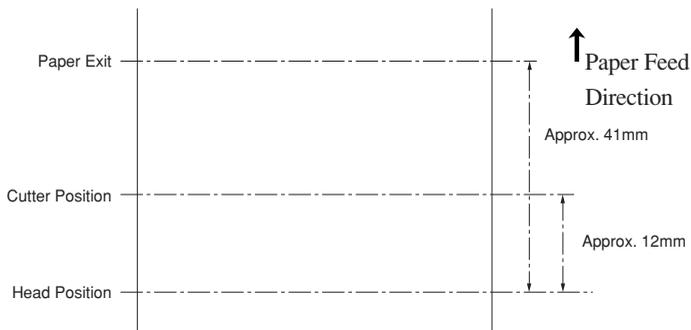
(1) Specified Paper

Type: Thermal Recording Paper
Paper Width: 58 +0/-1 mm
Paper Thickness: 60~75 μ m
Roll Diameter: ϕ 83 mm or less
Printing Surface: Outside of roll (front)
Specified Papers: Nihon Paper Co. (Ltd.) TF 50KS-E2C

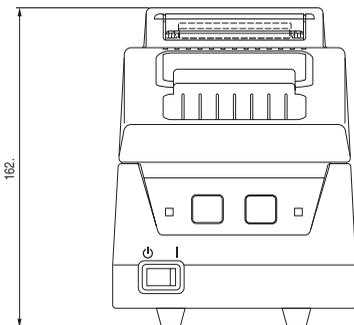
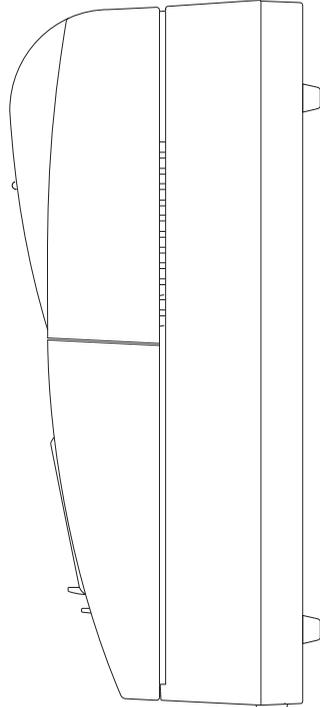
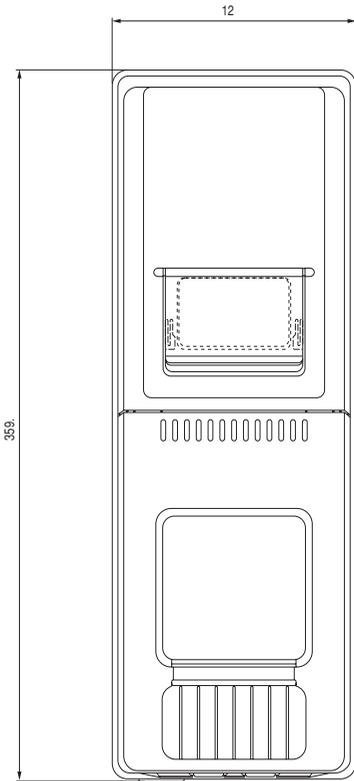
(2) Print Area



(3) Head and Cutter Positions



External View



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