

TEC Thermal Printer

## **B-470 SERIES**

### **User's Manual**

Document No. **EM0-33014**

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## **Precaution**

This service manual is intended for use by service technicians, and designed as a guide for repair & maintenance. The manual is intended to promote smooth service operations of the product in the market place. It is not intended for any other purpose such as development or product specifications. For questions regarding development or product specifications, please contact the TOSHIBA TEC department in charge.

This manual may be changed or revised without notice. If you find any misprints or omissions, please contact the TOSHIBA TEC Overseas Service Engineering Dept. (Ohito) promptly (Facsimile No. 0558-76-9842).

TOSHIBA TEC cannot be held responsible for any trouble which have been caused by misprints or omissions.

The following related manuals contain additional specific information on using B-470 SERIES and can be referred to for more detailed information available from TOSHIBA TEC sales headquarters.

- Interface/Communication Manual
- Supply Manual
- Specifications

## **Safety Summary**

Personal safety in handling or maintaining the equipment is extremely important. Warnings and Cautions necessary for safe handling are included in this manual. All warnings and cautions contained in this manual and written inside or outside of the printer should be read and understood before handling or maintaining the equipment.

Never modify the machine. Changes and modifications to the machine is prohibited except for an installation or removal of options, or modifications instructed by Technical Information issued by TOSHIBA TEC Japan. Unauthorized changes or modifications may affect the machine quality or functions, make the machine unconformable to your country's safety standard, or cause personal injury.

### **Safety Precaution**

Electrical equipment is dangerous. Electrical shock from such equipment can cause death. Never operate electrical equipment unless authorized to do so by a responsible authority.

If emergency work on electrical equipment is authorized, be sure that it is performed in strict compliance with approved safety regulations.

The following safety precautions will help to ensure proper use of the printer:

- Turn off the printer before 1) opening the top cover for any reason, 2) attaching/detaching any cable and memory cards, and 3) changing the dip switch setting.
- Disconnect the power cord whenever you are working inside the printer.
- Keep your work environment static free.



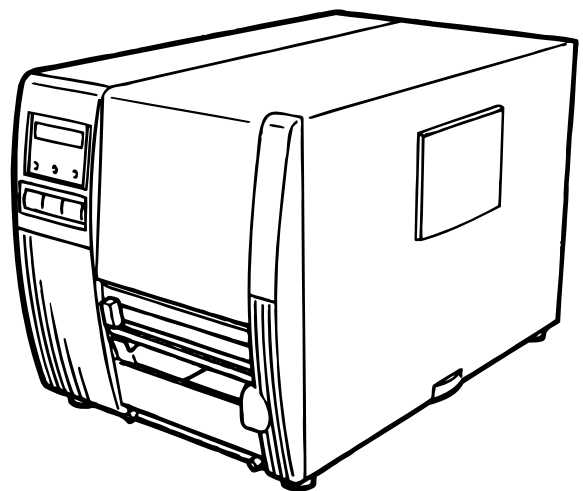


***TEC***

TEC Thermal Printer

# **B-470-QQ SERIES**

## **Owner's Manual**



**TOSHIBA TEC CORPORATION**

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. Operations of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.  
(for USA only)

Changes or modifications not expressly approved by manufacturer for compliance could void the user's authority to operate the equipment.

"This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations."

"Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada."

(for CANADA only)

**CAUTION**

*To avoid injury, be careful not to catch or jam your fingers while opening or closing the cover.*

**CAUTION**

*Do not touch moving parts. To reduce the risk that fingers, jewelry, clothing, etc., be drawn into the moving parts, push the switch in the "OFF" position to stop movement.*

## Safety Summary

Personal safety in handling or maintaining the equipment is extremely important. Warnings and Cautions necessary for safe handling are included in this manual. All warnings and cautions contained in this manual should be read and understood before handling or maintaining the equipment.

Do not attempt to effect repairs or modifications to this equipment. If a fault occurs that cannot be rectified using the procedures described in this manual, turn off the power, unplug the machine, then contact your authorized TOSHIBA TEC representative for assistance.

## Meanings of Each Symbol



This symbol indicates warning items (including cautions). Specific warning contents are drawn inside the  $\triangle$  symbol. (The symbol on the left indicates a general caution.)



This symbol indicates prohibited actions (prohibited items). Specific prohibited contents are drawn inside or near the  $\odot$  symbol. (The symbol on the left indicates "no disassembling".)



This symbol indicates actions which must be performed. Specific instructions are drawn inside or near the  $\bullet$  symbol. (The symbol on the left indicates "disconnect the power cord plug from the outlet".)

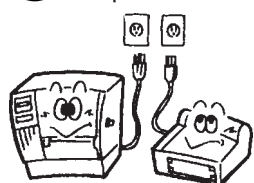


## WARNING

This indicates that there is the risk of **death or serious injury** if the machines are improperly handled contrary to this indication.



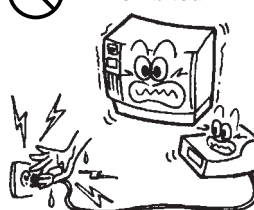
Any other than the specified AC voltage is prohibited.



■ Do not use voltages other than the voltage (AC) specified on the rating plate, as this may cause **fire** or **electric shock**.



### Prohibited



■ Do not plug in or unplug the power cord plug with wet hands as this may cause **electric shock**.



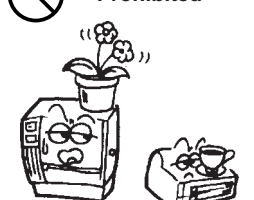
### Prohibited



■ If the machines share the same outlet with any other electrical appliances which consume large amounts of power, the voltage will fluctuate widely each time these appliances operate. Be sure to provide an exclusive outlet for the machine as this may cause the machines to **malfunction**.



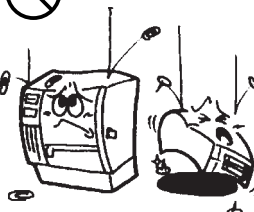
### Prohibited



■ Do not place metal objects or water-filled containers such as flower vases, flower pots or mugs, etc. on top of the machines. If metal objects or spilled liquid enter the machines, this may cause **fire** or **electric shock**.



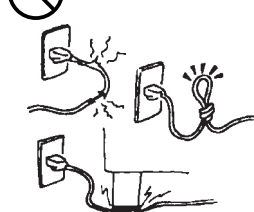
### Prohibited



■ Do not insert or drop metal, flammable or other foreign objects into the machines through the ventilation slits, as this may cause **fire** or **electric shock**.



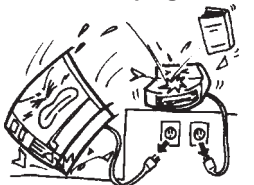
### Prohibited



■ Do not scratch, damage or modify the power cords. Also, do not place heavy objects on, pull on, or excessively bend the cords, as this may cause **fire** or **electrical shock**.



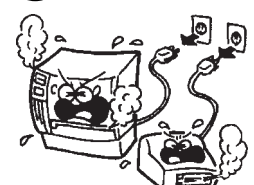
### Disconnect the plug.




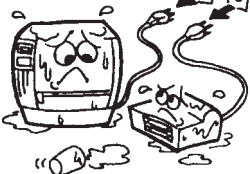

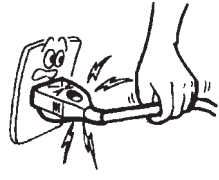

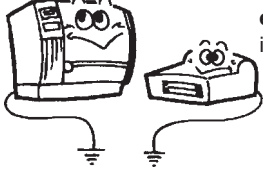

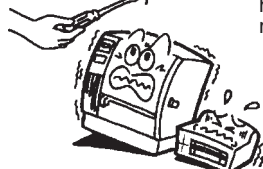
■ If the machines are dropped or their cabinets damaged, first turn off the power switches and disconnect the power cord plugs from the outlet, and then contact your authorized TOSHIBA TEC representative for assistance. Continued use of the machine in that condition may cause **fire** or **electric shock**.



### Disconnect the plug.



■ Continued use of the machines in an abnormal condition such as when the machines are producing smoke or strange smells may cause **fire** or **electric shock**. In these cases, immediately turn off the power switches and disconnect the power cord plugs from the outlet. Then, contact your authorized TOSHIBA TEC representative for assistance.

 <p><b>Disconnect the plug.</b></p>  <p>■ If foreign objects (metal fragments, water, liquids) enter the machines, first turn off the power switches and disconnect the power cord plugs from the outlet, and then contact your authorized TOSHIBA TEC representative for assistance. Continued use of the machine in that condition may cause <b>fire</b> or <b>electric shock</b>.</p>	 <p><b>Disconnect the plug.</b></p>  <p>■ When unplugging the power cords, be sure to hold and pull on the plug portion. Pulling on the cord portion may cut or expose the internal wires and cause <b>fire</b> or <b>electric shock</b>.</p>
 <p><b>Connect a grounding wire.</b></p>  <p>■ Ensure that the equipment is properly grounded. Extension cables should also be grounded. <b>Fire</b> or <b>electric shock</b> could occur on improperly grounded equipment.</p>	 <p><b>No disassembling.</b></p>  <p>■ Do not remove covers, repair or modify the machine by yourself. You may be <b>injured</b> by high voltage, very hot parts or sharp edges inside the machine.</p>



**CAUTION** This indicates that there is the risk of personal **Injury** or **damage** to objects if the machines are improperly handled contrary to this indication.

### Precautions

The following precautions will help to ensure that this machine will continue to function correctly.

- Try to avoid locations that have the following adverse conditions:
  - \* Temperatures out of the specification
  - \* Direct sunlight
  - \* High humidity
  - \* Shared power source
  - \* Excessive vibration
  - \* Dust/Gas
- The cover should be cleaned by wiping with a dry cloth or a cloth slightly dampened with a mild detergent solution. NEVER USE THINNER OR ANY OTHER VOLATILE SOLVENT on the plastic covers.
- USE ONLY TOSHIBA TEC SPECIFIED paper and ribbons.
- DO NOT STORE the paper or ribbons where they might be exposed to direct sunlight, high temperatures, high humidity, dust, or gas.
- Ensure the printer is operated on a level surface.
- Any data stored in the memory of the printer could be lost during a printer fault.
- Try to avoid using this equipment on the same power supply as high voltage equipment or equipment likely to cause mains interference.
- Unplug the machine whenever you are working inside it or cleaning it.
- Keep your work environment static free.
- Do not place heavy objects on top of the machines, as these items may become unbalanced and fall causing **injury**.
- Do not block the ventilation slits of the machines, as this will cause heat to build up inside the machines and may cause **fire**.
- Do not lean against the machine. It may fall on you and could cause **injury**.
- Care must be taken not to injure yourself with the printer paper cutter.
- Unplug the machine when it is not used for a long period of time.

### Request Regarding Maintenance

- Utilize our maintenance services.  
After purchasing the machine, contact your authorized TOSHIBA TEC representative for assistance once a year to have the inside of the machine cleaned. Otherwise, dust will build up inside the machines and may cause a **fire** or a **malfunction**. Cleaning is particularly effective before humid rainy seasons.
- Our preventive maintenance service performs the periodic checks and other work required to maintain the quality and performance of the machines, preventing accidents beforehand. For details, please consult your authorized TOSHIBA TEC representative for assistance.
- Using insecticides and other chemicals  
Do not expose the machines to insecticides or other volatile solvents. This will cause the cabinet or other parts to deteriorate or cause the paint to peel.



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## **CAUTION:**

1. *This manual may not be copied in whole or in part without prior written permission of TOSHIBA TEC.*
2. *The contents of this manual may be changed without notification.*
3. *Please refer to your local Authorized Service representative with regard to any queries you may have in this manual.*

## 1. INTRODUCTION

Thank you for choosing the TEC B-470 series thermal/transfer printer. This high performance printer is equipped with superior hardware including the specially developed (8 dots/mm, 203.2 dots/inch) near edge print head which will allow very clear print at a maximum speed of 254 mm/sec. (10 inches/sec.). The media supply is internal. Combined with the optional features including an automatic ribbon saver, rewinder/strip mechanism and external media supply, you will have a printer to suit a wide variety of applications and environments.

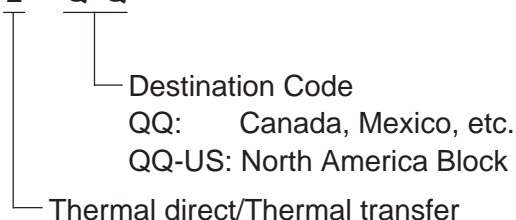
This manual contains general set-up and maintenance information and should be read carefully to help gain maximum performance and life from your printer. For most queries please refer to this manual and keep it safe for future reference.

### 1.1 Applicable Model

- B-472-QQ
- B-472-QQ-US

Model name description

**B - 4 7 2 - Q Q**

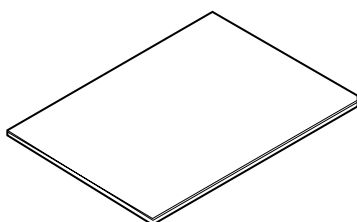


### 1.2 Accessories

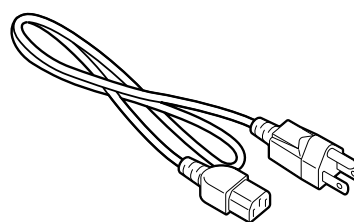
Owner's Manual  
(EM1-33003)



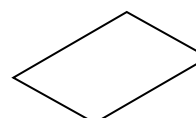
Unpacking Procedure



Power Cord



Quality control report



## 2. SPECIFICATIONS

### 2.1 Printer

Item \ Model	B-470-QQ/QQ-US
Supply voltage	AC 100V ~ 120V +10%, -15%, 50Hz
Power consumption	2.2A, 190W maximum (standby: 260mA, 18W)
Operating temperature range	5°C ~ 40°C (41°F ~ 104°F)
Relative humidity	25% ~ 85%RH (no condensation)
Print head	Thermal print head 8 dots per mm (203.2 dots per inch)
Printing methods	Thermal direct or Thermal transfer
Print speeds	76.2 mm/sec. (3 inch/sec.), 152.4 mm/sec. (6 inch/sec.), 254 mm/sec. (10 inch/sec.)
Maximum print width	104.0 mm (4.09 inches)
Dispensing modes	Batch (Continuous), Strip (On-demand) and Cut modes (Both cut and strip modes are available only when their respective modules are fitted.)
Message display	16 characters x 1 line
Dimensions	291 mm (width) x 460 mm (depth) x 308 mm (height)
Weight	17 kg (without media and ribbon)
Available bar code types	UPC-E, UPC-E+2digits, UPC-E+5digits UPC-A, UPC-A+2digits, UPC-A+5digits JAN8, JAN13, EAN8, EAN8+2digits, EAN8+5digits EAN13, EAN13+2digits, EAN13+5digits MSI, ITF, NW-7, CODE39, CODE93, CODE128, EAN128 PDF417, DATA MATRIX, Industrial 2 to 5
Fonts	Times Roman (6 sizes), Helvetica (6 sizes), Presentation (1 size), Letter Gothic (1 size), Prestige Elite (2 sizes), Courier (2 sizes), OCR (2 types), Writable characters (40types), Outline font (1 type)
Rotations	0°, 90°, 180°, 270°
Standard interface	Serial interface (RS-232C) Parallel Interface (Centronics) (QQ-US)
Optional interfaces	Expansion I/O interface Flash memory card interface Parallel Interface (Centronics) (QQ)

## 2.2 Option

Option Name	Type	Usage	Source
Cutter module	B-4205-QM	A stop and cut swing cutter	See NOTE 1.
I/F PC board	B-4700-IO-QM	I/F PC board is equipped with the flash memory card interface, Centronics interface and expansion I/O interface. To purchase the I/F PC board, please inquire at your local distributor.	See NOTE 3.
Peel off module	B-4905-H-QM	This allows use of on-demand (peel-off) operation or to rewind labels and backing paper together when using the rewind guide plate. To purchase the strip module, please inquire at your local distributor.	See NOTE 1.
Ribbon saving module	B-4905-R-QM	This allows use of ribbon save, reducing ribbon costs. To purchase the ribbon saving module, please contact your distributor or TOSHIBA TEC HQ can assist in finding one for you.	See NOTE 1.
Fanfold paper guide module	B-4905-FF-QM	This is a paper guide exclusively used for fanfold paper. Attaching it in place of the standard paper guide allows the printer to print on fanfold paper.	See NOTE 1.
Flash memory card	—————	A flash ROM card (1MB and 4MB) for storing logos, writable characters and formats.	See NOTE 2.

- NOTES:** 1. Available from your nearest TOSHIBA TEC representative or TOSHIBA TEC Head Quarters.
2. When purchasing flash memory card locally, select one having the specifications described at page 8-1.
3. The B-472-QQ-US model is provided with the I/F PC Board including only the Centronics Interface as standard. When the flash memory card interface or expansion I/O interface is required, it is necessary to exchange this PC board with the B-4700-IO-QM. For details, please contact the nearest TOSHIBA TEC representative or TOSHIBA TEC Head Quarter.

## 2.3 Media

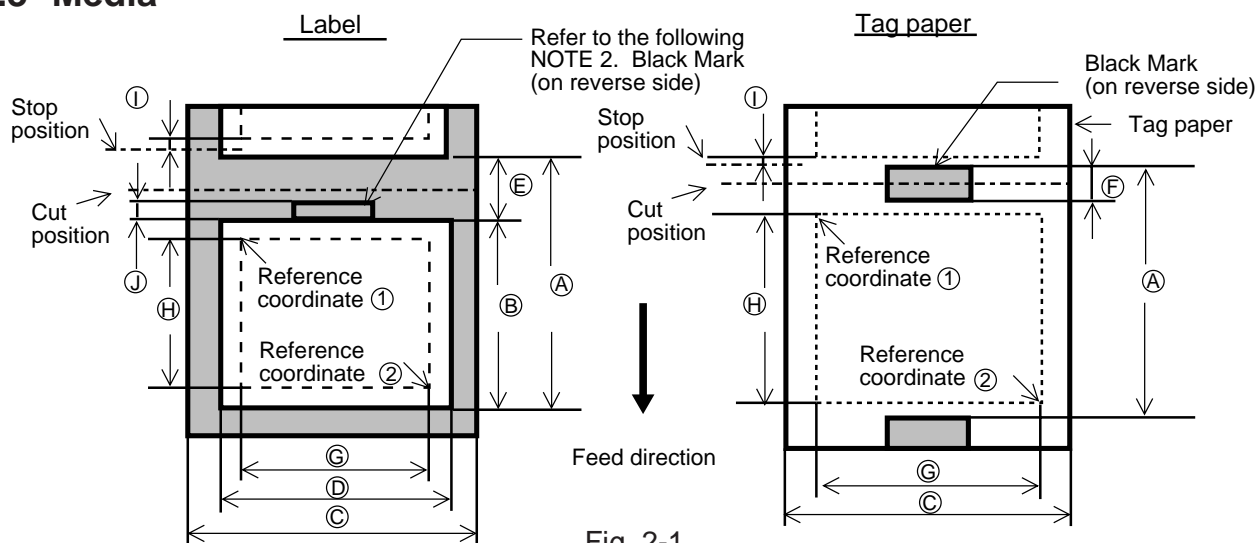


Fig. 2-1

[Unit : mm]

Label dispensing mode			Batch mode	Strip mode	Cut mode
Item					
Ⓐ : Span of one label/tag			10.0 ~ 999.0	25.4 ~ 999.0	Label: 38 ~ 999.0 Tag: 25.4 ~ 999.0
Ⓑ : Label/tag length			8.0 ~ 997.0	23.4 ~ 997.0	25.0 ~ 993.0
Ⓒ : Width including backing paper			50.8 ~ 112.0		
Ⓓ : Label width			47.8 ~ 109.0		
Ⓔ : Gap length			2.0 ~ 20.0	2.0 ~ 20.0	6.0 ~ 20.0
Ⓕ : Black mark length (Tag paper)			2.0 ~ 10.0		
Ⓖ : Effective print width			10.0 ~ 104.0		
Ⓗ : Effectice print length	Label	Standard	6.0 ~ 384.0	21.4 ~ 384.0	23.0 ~ 384.0
		Max. memory	6.0 ~ 896.0	21.4 ~ 896.0	23.0 ~ 896.0
	Tag	Standard	8.0 ~ 384.0	23.4 ~ 384.0	23.4 ~ 384.0
		Max. memory	8.0 ~ 896.0	23.4 ~ 896.0	23.4 ~ 896.0
Ⓛ : Print speed up/slow down area			1.0		
Ⓜ : Black mark length (Label)			Refer to the following NOTE 2.		
Maximum effective length for on the fly issue		Standard	192.0		
		Max. memory	448.0		
Outer roll diameter			ø200 Max.		
Thickness		Label	0.13 ~ 0.17		
		Tag	0.15 ~ 0.29		

**NOTES:** 1. The media specification other than above are unchanged.

2. When marking black marks on label rolls, the following requirements must be satisfied.

When the gap length is less than 4 mm:

The black mark length should be longer than the gap length.

When the gap length is 4 mm or more:

The black mark should not overlap the gap for more than 4 mm and the following label.

## 2.4 Ribbon

Type	Spool type
Width	68 mm ~ 112 mm
Length	600 m
Outer diameter	ø90 mm (max.)

- NOTES:**
1. "On the fly issue" means that the printer can draw and print without stopping between labels.
  2. To ensure print quality and print head life use only TOSHIBA TEC specified media and ribbons.
  3. When using the cutter ensure that label length (Ⓑ) plus inter label gap length (Ⓔ) exceeds 35 mm. (i.e. label pitch should be greater than 35 mm.)
  4. When rewinding the media onto the take-up spool in batch mode, the max. outer roll diameter should be 180 mm.
  5. Use of rough media for the ribbon saving issue may cause ribbon smudges.

## 3. OVERVIEW

### 3.1 Front/Rear View

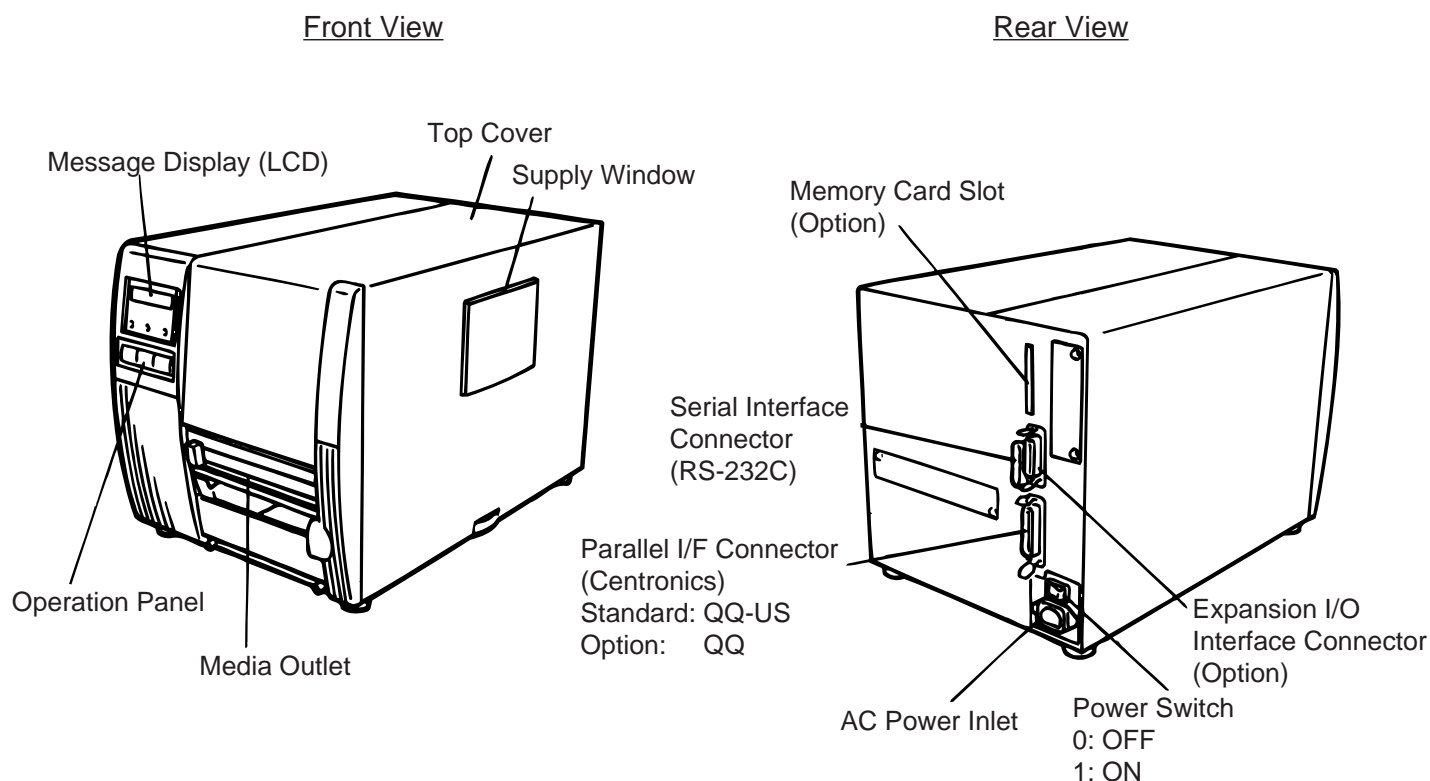


Fig. 3-1

### 3.2 Operation Panel

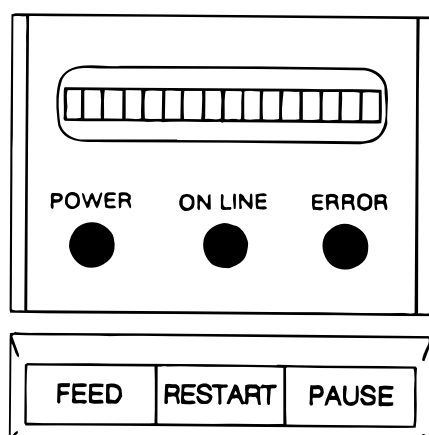


Fig. 3-2

#### MESSAGE DISPLAY (LCD)

Displays messages in the language selected by DIP switch. When power is turned on and it is ready to print, "ON LINE" is displayed.

#### POWER LED (Green)

Lights when the power is turned on.

#### ON-LINE LED (Green)

- 1) Flashes when communicating with a host computer.
- 2) On while printing.

#### ERROR LED (Red)

Lights when a communication error occurs, when the media/ribbon ends or the printer does not operate correctly.

#### FEED key

Feeds paper.

#### RESTART key

Resets the printer when paused or when an error occurs. Used to set the threshold. (Refer to page 10-4)

#### PAUSE key

Pauses printing.

Message display shows "PAUSE" and an unprinted count. Used to set the threshold. (Refer to page 10-4)

## 4. DIP SWITCH FUNCTIONS

The DIP switches are located to the right of the supply shaft.

### **WARNING:**

*Turn the POWER OFF before switching the functions.*

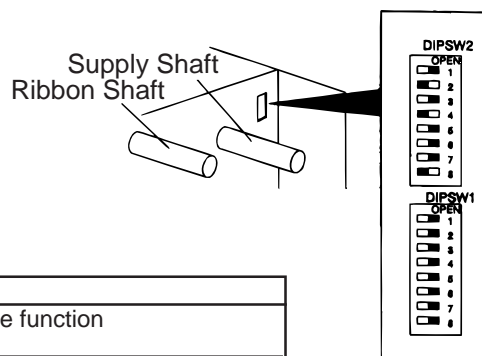


Fig. 4-1

### (1) DIP SW 1

No.	ON/OFF			Function
1	OFF			Auto ribbon save function
	ON			
2	2	3	4	Language to display LCD error message
	OFF	OFF	OFF	
3	ON	OFF	OFF	English
	OFF	ON	OFF	German
	ON	ON	OFF	French
	OFF	OFF	ON	Dutch
4	ON	OFF	ON	Spanish
	OFF	ON	ON	Japanese
	ON	ON	ON	Italian
5	OFF			Auto media feed after a cut issue (See page 6-5)
	ON			
6	OFF			Use of the built-in rewinder/Head up function in cut mode Refer to Note 2.
	ON			
7	OFF			Must be set to OFF.
	ON			
8	OFF			Must be set to OFF.
	ON			

### (2) DIP SW 2

No.	ON/OFF		Function
1	1	2	Transmission speed
	OFF	OFF	
2	ON	OFF	2400 BPS
	ON	ON	
3	OFF	OFF	4800 BPS
	ON	ON	
4	OFF	OFF	9600 BPS
	ON	ON	
5	OFF	OFF	19200 BPS
	ON	ON	
6	OFF	OFF	1 bit
	ON	ON	
7	OFF	OFF	2 bit
	ON	ON	
8	OFF	OFF	7 bit
	ON	ON	
9	OFF	OFF	8 bit
	ON	ON	
10	OFF	OFF	without
	ON	ON	
11	OFF	OFF	Parity check
	ON	ON	
12	OFF	OFF	EVEN
	ON	ON	
13	OFF	OFF	ODD
	ON	ON	
14	7	8	Data protocol
	OFF	OFF	
15	ON	OFF	XON/XOFF (No XON is output at the power on time.) (No XOFF is output at the power off time.)
	ON	ON	
16	OFF	OFF	READY/BUSY (DTR) (No XON is output at the power on time.) (No XOFF is output at the power off time.)
	ON	ON	
17	ON	OFF	READY/BUSY (RTS) (XON is output at the power on time.) (XOFF is output at the power off time.)
	ON	ON	
18	OFF	OFF	XON/XOFF + READY/BUSY (XON is output at the power on time.) (XOFF is output at the power off time.)
	ON	ON	
19	OFF	OFF	XON/XOFF (XON is output at the power on time.) (XOFF is output at the power off time.)
	ON	ON	

- NOTES:**
- The shaded settings are the factory default settings. "OFF" means "OPEN".
  - The Dip switch #1-6 functions in accordance with equipment to be used.
  - If you would like to switch to READY/BUSY (DTR) or to READY/BUSY (RTS) of data protocol, please contact your authorized TOSHIBA TEC representative.

## 5. INSTALLING THE PRINTER

### WARNING!

Turn the **POWER SWITCH** to **OFF** before connecting the power cord or cables.

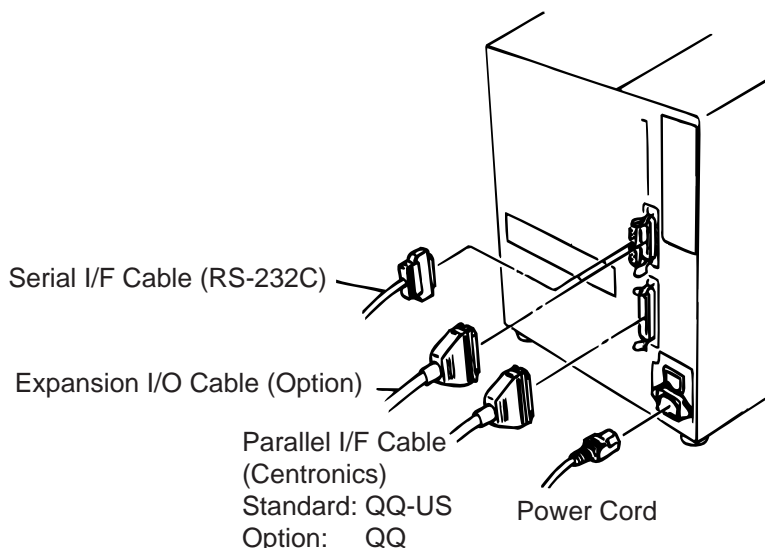


Fig. 5-1

**NOTE:** Only the power cord is provided with this product. If using another cable, it should conform to the following specifications. For more details, please contact your local TOSHIBA TEC service representative.

### Centronics Interface (36 pins, Male)

Printer-Side Connector Pin Signals

Pin No.	Signal	Pin No.	Signal	Pin No.	Signal	Pin No.	Signal
1	DATA•STB	10	ACK	19	Twisted Pair GND (Pin1)	28	Twisted Pair GND (Pin10)
2	DATA1	11	BUSY	20	Twisted Pair GND (Pin2)	29	Twisted Pair GND (Pin11)
3	DATA2	12	PE	21	Twisted Pair GND (Pin3)	30	Twisted Pair GND (Pin31)
4	DATA3	13	PAUSE	22	Twisted Pair GND (Pin4)	31	INPUT•PRIME
5	DATA4	14	0V	23	Twisted Pair GND (Pin5)	32	FAULT
6	DATA5	15	N.C.	24	Twisted Pair GND (Pin6)	33	0V
7	DATA6	16	0V	25	Twisted Pair GND (Pin7)	34	N.C.
8	DATA7	17	CHASSIS GND	26	Twisted Pair GND (Pin8)	35	N.C.
9	DATA8	18	+5V	27	Twisted Pair GND (Pin9)	36	N.C.

### Expansion I/O Interface (24 pins, Male)

Printer-Side Connector Pin Signals

Pin No.	Signal	Pin No.	Signal	Pin No.	Signal
1	IN0	9	OUT2	17	N.C.
2	IN1	10	OUT3	18	N.C.
3	IN2	11	OUT4	19	N.C.
4	IN3	12	OUT5	20	N.C.
5	IN4	13	N.C.	21	COM2
6	N.C.	14	N.C.	22	N.C.
7	OUT0	15	COM1	23	N.C.
8	OUT1	16	N.C.	24	N.C.

### RS-232C Interface

DB-25S (25 pins, Male,  
Metric screw type)  
Connector to Printer

PIN No.	Signal
1	Shield
2	RXD
3	TXD
4	CTS
5	RTS
6	DTR
7	GND
20	DSR

DB-9P  
Connector to PC

PIN No.	Signal
1	N.C.
2	RXD
3	TXD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	N.C.



## 6. LOADING THE MEDIA

### WARNING:

1. Do not touch moving parts. To reduce the risk that fingers, jewelry, clothing, etc., be drawn into the moving parts, push the switch in the "OFF" position to stop movement.
2. To avoid injury, be careful not to catch or jam your fingers while opening or closing the cover.

The printer prints both labels and tags.

1. Turn off the power and open the top cover.
2. Turn the head lever to position ③, then release the ribbon shaft holder plate.

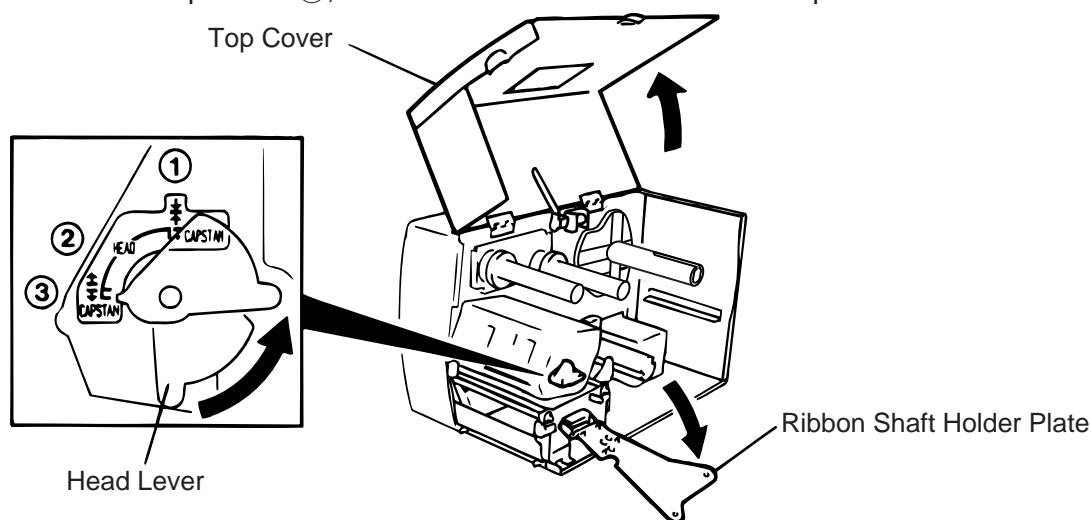


Fig. 6-1

- NOTES:**
1. When the head lever is turned to position ②, the print head is raised.
  2. When the head lever is turned to position ③, the print head and the pinch roller are raised.
  3. To allow printing the head lever must be set to position ①. (This ensures that the print head and the pinch roller are closed.)

3. Turn the locking ring counter clockwise and remove the supply holder from the supply shaft.

**NOTE:** Do not turn the force the locking ring too far counterclockwise or it may come off the supply holder.

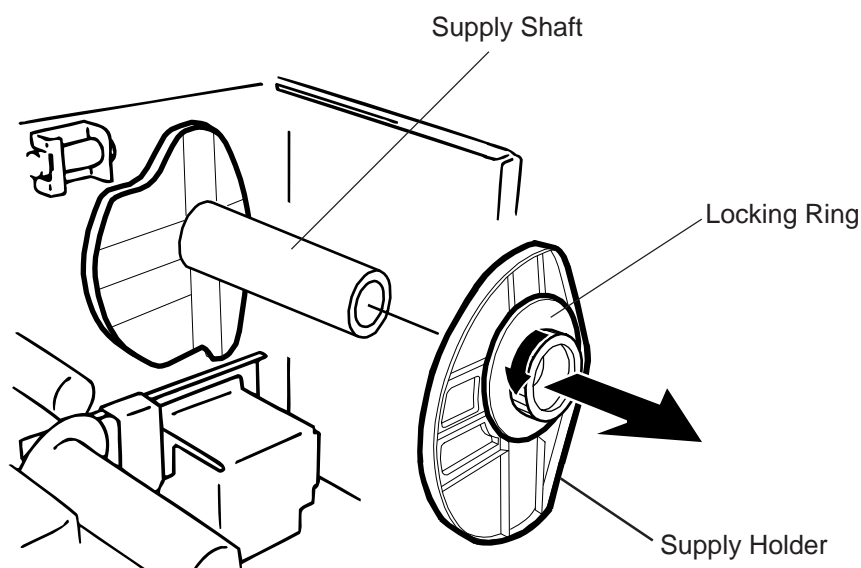


Fig. 6-2

4. Put the media on the supply shaft.
  5. Pass the media around the damper, then pull the media towards the front of the printer.
  6. Insert the ridge of the supply holder into the groove of the supply shaft until the media is fixed. Then turn the locking ring clockwise to secure the supply holder. This will centre the media automatically.
- NOTE:** Do not over tighten the locking ring of the supply holder.

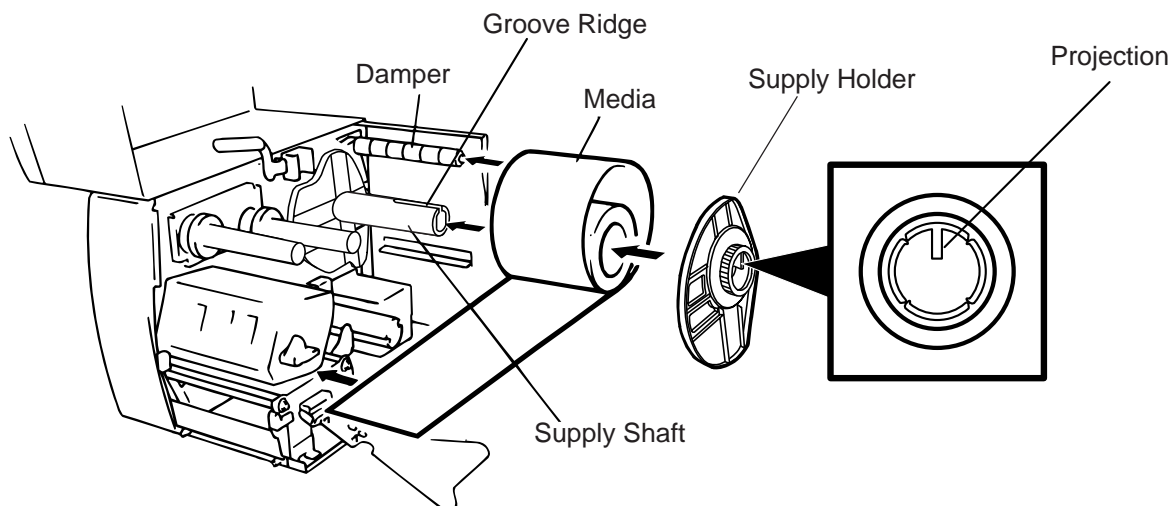


Fig. 6-3

7. Insert the media into the paper holders of the media guide, adjust the media guides to the media width, and tighten the locking screw.
8. Check that the media path through the printer is straight. The media should be centered under the print head.

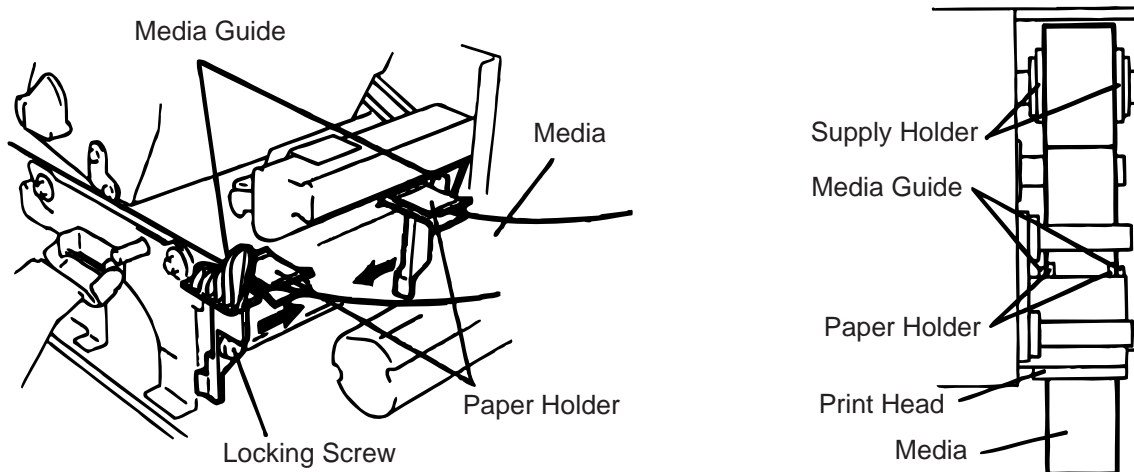


Fig. 6-4

**NOTE:** When using the label rolled with labels facing outside, please remove the upper plates of both paper holders using the following procedure. Failure to do this may cause a paper jam error. If you have any questions, please contact your nearest TOSHIBA TEC service representative.

## ■ Removing the paper holders' upper plates from the media guide

- ① Remove the two T-4x8 screws to detach the media guide from the printer.

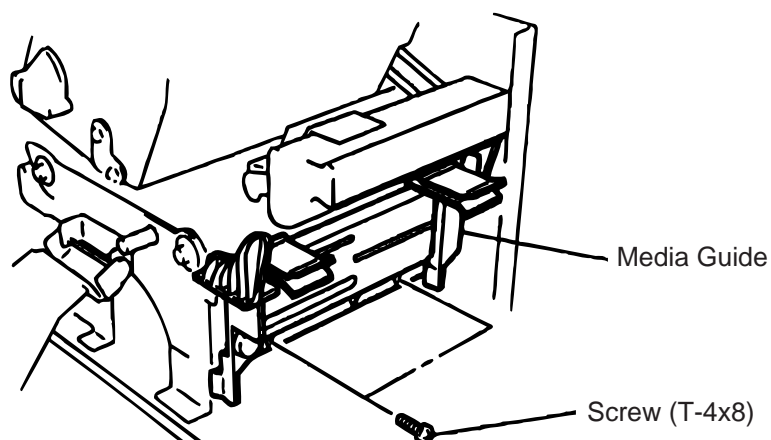


Fig. 6-5

- ② Remove the SM-3x6 screw or the SM-3x8 screw to detach the paper holders' upper plates from the media guide.

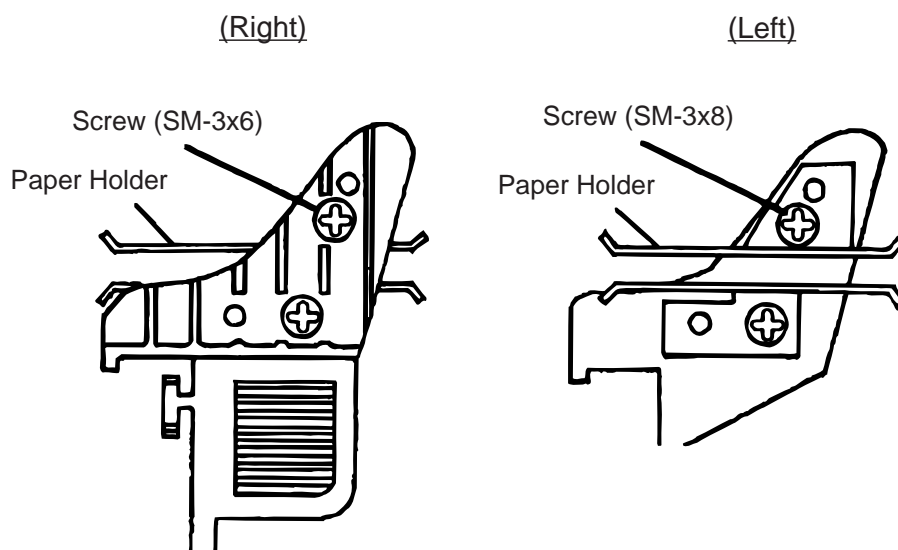


Fig. 6-6

- ③ Attach the media guide back in position.

**NOTE:** Do not lose the removed upper plates because they are required when using the label rolled with labels facing inside.

9. Set the black mark/feed gap sensor to the correct position by turning the adjusting knob. Turning the knob right will move the sensor towards the center of the media while turning left will move it away from the center of the media.

### ■ An easy way to set the black mark sensor position

- ① Pull the media about 500 mm out of the front of the printer, turn the media back on it's self and feed it under the print head past the sensor so that the black mark can be seen from above.
- ② Adjust the sensor position to that of the black mark (the upper hole indicates the position of the black mark sensor).

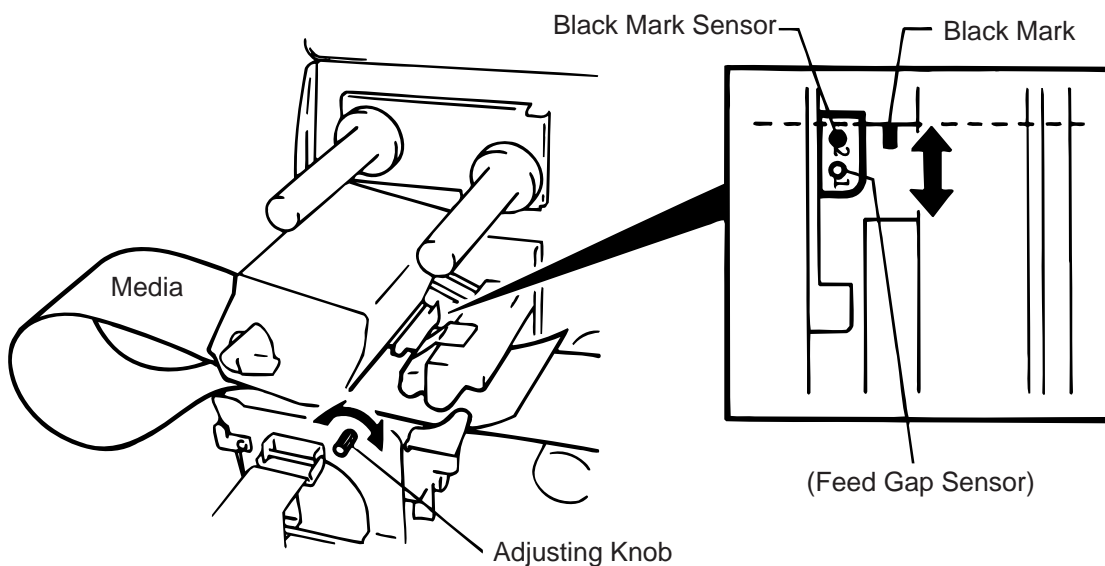


Fig. 6-7

**NOTE:** Make sure to set the sensor to detect the center of the black mark, otherwise a paper jam error could occur.

### ■ Setting the feed gap sensor position

- ① Adjust the sensor to detect on the gap (the lower hole indicates the position of the feed gap sensor.)

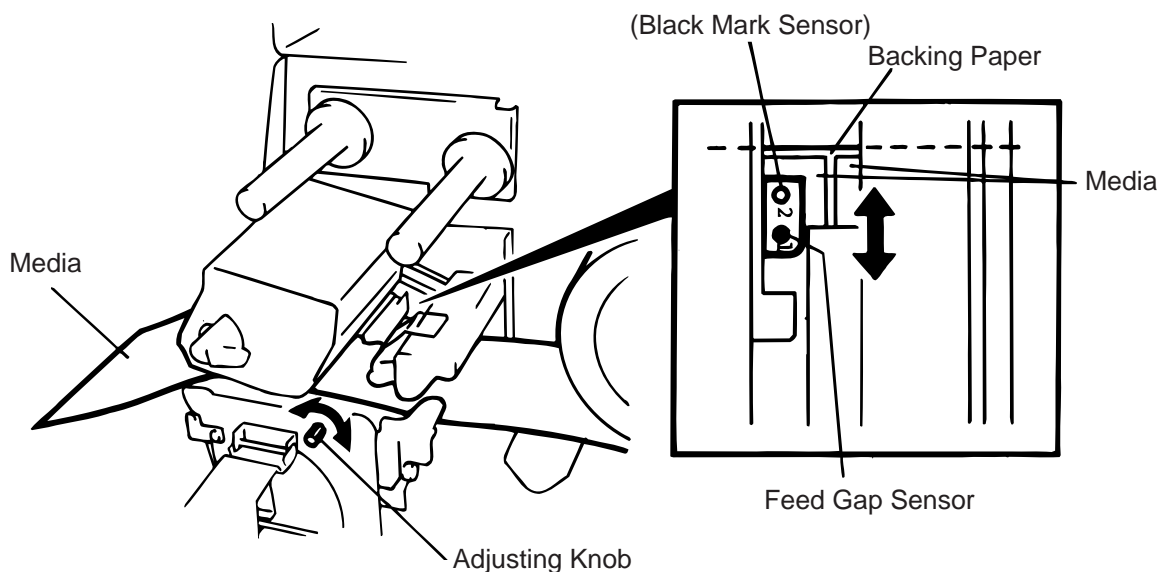


Fig. 6-8

10. The media is now loaded and the sensor position is set.

**Batch type:**

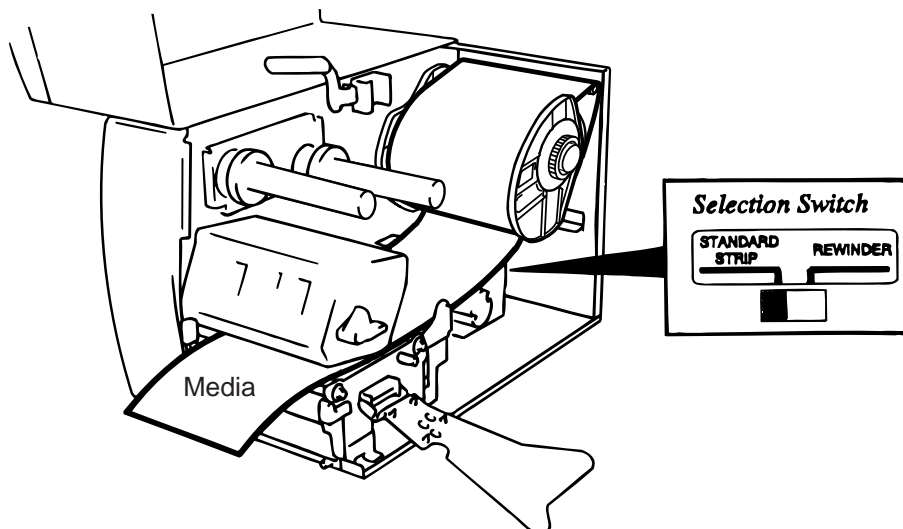


Fig. 6-9

**NOTE:** Set the selection switch to the STANDARD/STRIP position. Improper setting can affect the print quality.

**Strip type:**

- ① Remove enough labels from the leading edge media to leave 500 mm of backing paper exposed.
- ② Wind the backing paper onto the take-up spool and fix in position with the take-up clip. (Wind the paper counter clockwise around the spool as this is the direction it rotates.)
- ③ Rotate the take-up spool anti-clockwise a few times to take up any slack in the backing paper.

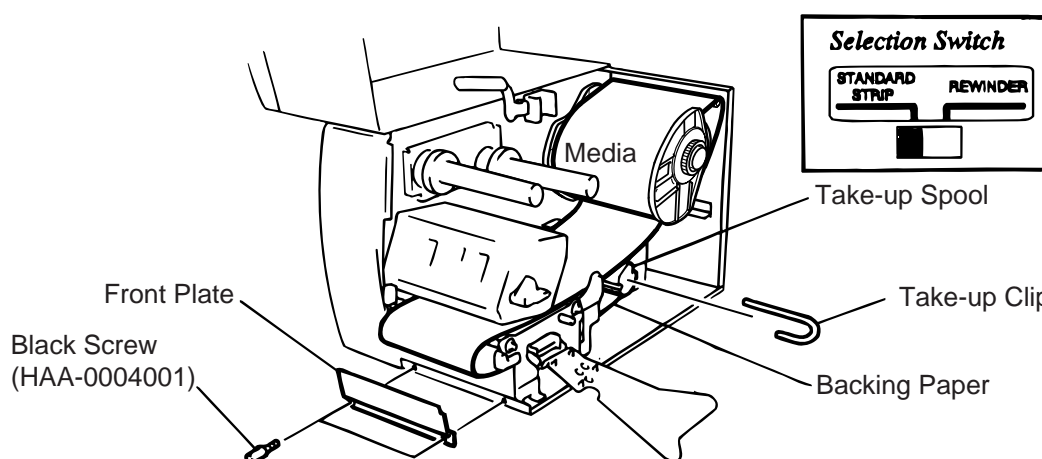


Fig. 6-10

- NOTES:**
1. The backing paper is easier to feed back to the take-up spool if the front plate is removed.
  2. When fitting the take-up clip the longer side of the clip should be fitted into the shallow groove on the take-up spool.
  3. When printer at a speed of 10"/sec., strip function is unavailable.
  4. Set the selection switch to the STANDARD/STRIP position.

**Cutter type:** Where a cutter is fitted load the media as standard and feed it through the cutter module.

- NOTES:**
1. Be sure to cut the backing paper of label. Cutting labels will cause the glue to stick to the cutter, which may affect the cutter quality and shorten the life.
  2. If the top edge of label winds onto the platen in cut issue, set the DIP SW 1-5 to ON.
  3. For the cutter type, the selection switch can be set to either position.

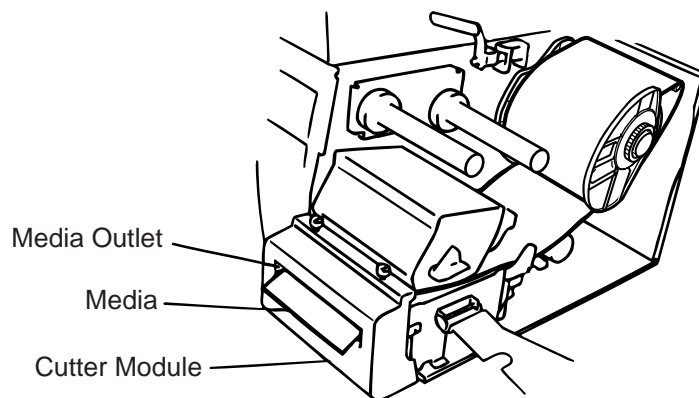


Fig. 6-11

**Built-in rewinder type:**

- ① Remove two black screws and front plate.
- ② Fit the rewinder guide plate to the strip shaft, then attach it with the sems screws.

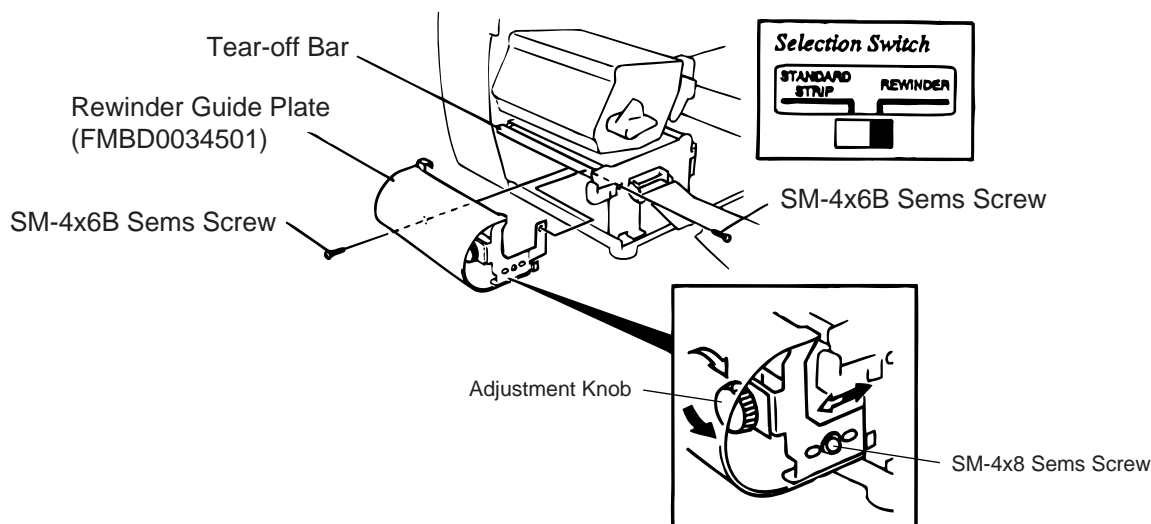


Fig. 6-12

**NOTES:** Set the selection switch to the REWINDER position.

- ③ Follow the procedure for strip type.
- ④ Adjustment

If the label skews when using built-in rewinder unit, turn the adjustment knob of the rewinder guide plate to correct the label feed. Clockwise turn moves the rewinder guide plate forward and counterclockwise moves it backward.

\* When labels skew to the right:

Loosen the SM-4x8 sems screw with a philips-head screw driver. Turn the adjustment knob clockwise, and tighten the SM-4x8 screw when the rewinder guide plate is positioned correctly.

\* When labels skew to the left:

Loosen the SM-4x8 screw with a phillips-head screw driver. Turn the adjustment knob counterclockwise, and tighten the SM-4x8 screw when the rewinder guide plate is positioned correctly.

## 7. LOADING THE RIBBON

### WARNING!

1. Do not touch moving parts. To reduce the risk that fingers, jewelry, clothing, etc., be drawn into the moving parts, push the switch in the "OFF" position to stop movement.
2. To avoid injury, be careful not to catch or jam your fingers while opening or closing the cover.

There are two types of media available for printing on, these are standard media and direct thermal media (a chemically treated surface). DO NOT LOAD a ribbon when using a direct thermal media.

1. When using a narrow width ribbon, slide the ribbon stoppers along the shafts to a position where the ribbon will be centered when it is fitted. When changing from a narrow width to a wider one rotate the ribbon stoppers by 90°, push them back to the correct position and then rotate back to lock.

**NOTE:** When attaching the ribbon stoppers, fit them to the shafts with the pinchers facing into the printer.

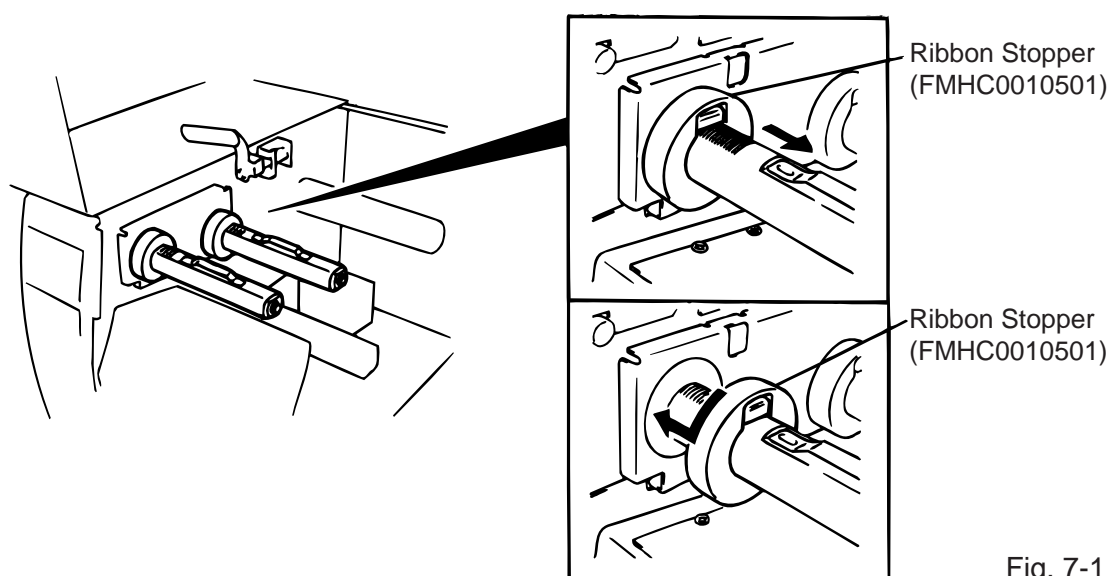


Fig. 7-1

2. Leaving plenty of slack between the spools, fit the ribbon as shown below. When the ribbon is fitted it must be positioned over the ribbon sensor.
3. Wind both shafts towards each other to tighten the ribbon.

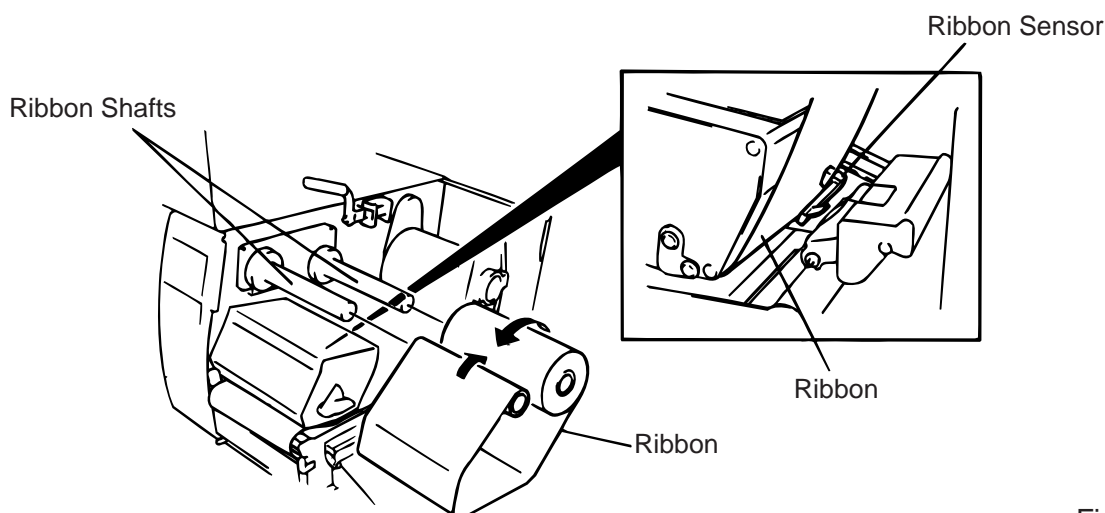


Fig. 7-2

4. Reset the ribbon shaft holder plate by aligning it with the ribbon shaft.
5. Turn the head lever clockwise to lower the print head.
6. Close the top cover.

## 8. INSERTING THE OPTIONAL FLASH MEMORY CARD

### WARNING!

Turn the power OFF when inserting or removing the flash memory card.

### CAUTION:

To protect memory cards, discharge static electricity from your body by touching the printer rear cover prior touching the memory cards.

1. Turn the power off.
2. Insert the flash memory card into the memory card slot on the rear of the printer.
3. Turn the power on.

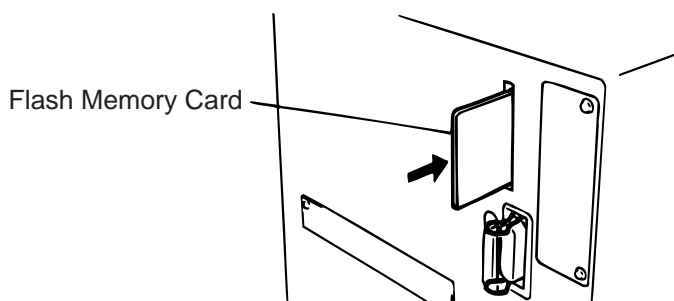


Fig. 8-1

- NOTES:**
1. Be sure to protect a flash memory card when not in use in the printer by putting it in its protective cover.
  2. Do not subject the card to any shocks or excessive forces.
  3. Do not expose the card to extremes of heat by either storing in direct sunlight or close to a heater.
  4. Do not expose the card to excessive humidity by wiping it with a wet cloth or storing it in a damp place.
  5. Before inserting or removing the card, make sure that the power switch is turned off.
  6. The following flash cards can be used. (The 1MB-card is read only and the 4MB card can read/write.)

Capacity	Maker	Type	Device code	Maker code
1M Byte	Maxell	EF-1M-TB <span style="border: 1px solid black; padding: 0 2px;">AA</span>	D0H	1CH
	Mitsubishi	MF81M1-GBDAT01		
4M Byte	Maxell	EF-4M-TB <span style="border: 1px solid black; padding: 0 2px;">CC</span>	88H	B0H
	Maxell	EF-4M-TB <span style="border: 1px solid black; padding: 0 2px;">DC</span>	ADH	04H
	Centennial Technologies INC.	FL04M-15-11119-03		01H
	INTEL	IMC004FLSA	A2H	89H
	Simple TECHNOLOGY	STI-FL/4A		
	Mitsubishi	MF84M1-G7DAT01		
	PC Card KING MAX	FJN-004M6C		
	Centennial Technologies INC.	FL04M-20-11138-67		
	PC Card	FJP-004M6R	A0H	89H
	Mitsubishi	MF84M1-GMCAV01	AAH	



## 9. CARE/HANDLING OF THE MEDIA AND RIBBON

**CAUTION:**

*Be sure to read carefully and understand the Supply Manual. Use only media and ribbon which meet specified requirements. Use of non-specified media and ribbon may shorten the head life and result in problems with bar code readability or print quality. All media and ribbon should be handled with care to avoid any damage to the media, ribbon or printer. Read the following guideline carefully.*

- Do not store the media and ribbon for longer than the manufactures recommended shelf life.
- Store media rolls on the flat end, do not store them on the curved sides as this might flatten that side causing erratic media advance and poor print quality.
- Store the media in plastic bags and always reseal after opening. Unprotected media can get dirty and the extra abrasion from the dust and dirt particles will shorten the print head life.
- Store the media and ribbon in a cool, dry place. Avoid areas where they would be exposed to direct sunlight, high temperature, high humidity, dust or gas.
- The thermal paper used for direct thermal printing must not have the specifications which exceed Na<sup>+</sup> 800 ppm, K<sup>+</sup> 250 ppm and CL<sup>-</sup> 500 ppm.
- Some ink used on pre-printed labels may contain ingredients which shorten the print head's product life. Do not use labels pre-printed with ink which contain hard substances such as carbonic calcium (CaCO<sub>3</sub>) and kaolin (Al<sub>2</sub>O<sub>3</sub>, 2SiO<sub>2</sub>, 2H<sub>2</sub>O).

For further information please contact your local distributor or your media and ribbon manufacturer.

## 10. GENERAL MAINTENANCE

### WARNING!

1. Be careful when handling the print head as it becomes very hot.
2. Care must be taken not to injure yourself with the printer paper cutter.
3. Do not touch moving parts. To reduce the risk that fingers, jewelry, clothing, etc., be drawn into the moving parts, push the switch in the "OFF" position to stop movement.
4. To avoid injury, be careful not to catch or jam your fingers while opening or closing the cover.

### 10.1 Cleaning

To help retain the high quality and performance of your printer it should be regularly cleaned. The greater the usage of the printer, the more frequent the cleaning. (i.e. low usage=weekly : high usage=daily). A print head cleaner is not enclosed with the printer, so please inquire at your local distributor.

1. Turn the power off.
2. Open the top cover.
3. Turn the head lever to raise the print head.
4. Remove the ribbon and media.
5. Clean the element of print head with print head cleaner.
6. Wipe the platen, feed roller and pinch roller with a cleaner moistened with alcohol.  
Remove dust or foreign substances from the internal part of the printer, if any.

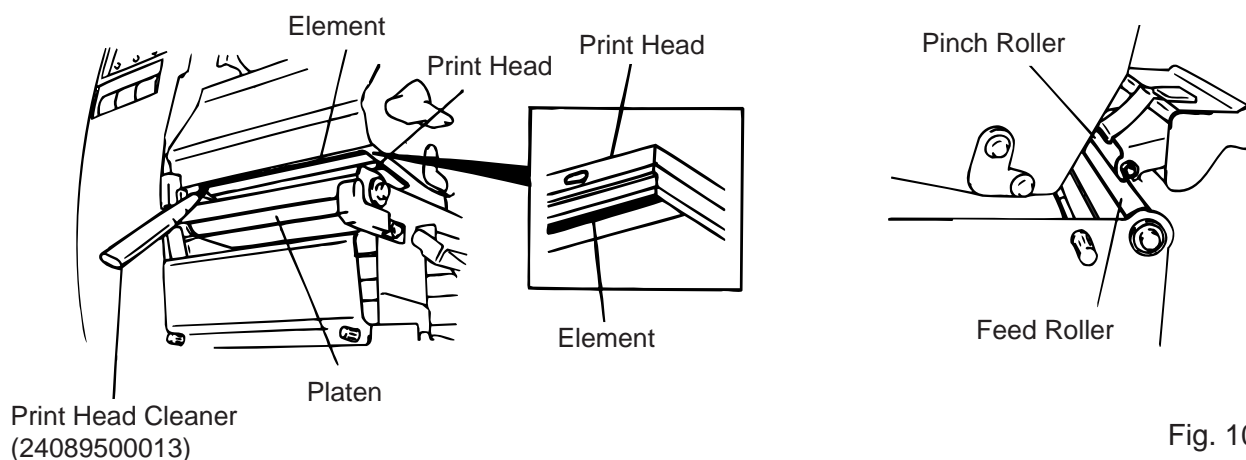


Fig. 10-1

### WARNING!

1. Be sure to disconnect the power cord prior of performing any maintenance.
2. Do not use any tool that may damage the print head.
3. DO NOT POUR WATER directly onto the printer.

## 10.2 Covers and Panels

The covers should be cleaned by wiping with a dry cloth or a cloth slightly dampened with a mild detergent solution.

**NOTE:** Clean the printer cover with an electrostatic free cleaner for automated office equipment.

### WARNING!

1. DO NOT POUR WATER directly onto the printer.
2. DO NOT APPLY cleaner or detergent directly onto any cover or panel.
3. NEVER USE THINNER OR OTHER VOLATILE SOLVENT on the plastic covers.
4. DO NOT clean the panel covers or the supply window with alcohol as it may cause them to discolor, loose their shape or develop structural weakness.

## 10.3 Removing Jammed Paper

1. Turn the power off.
2. Open the top cover.
3. Turn the head lever to position ③, then release the ribbon shaft holder plate.
4. Remove the black screw to detach the media guide plate. (See Fig. 10-2.)
5. Remove the ribbon and media.
6. Remove the jammed paper. DO NOT USE any sharp implement or tool as these could damage the printer.
7. Clean the print head and platen, then remove any further dust or foreign substances.
8. Place the portion ⑥ of the media guide plate on the media sensor. Secure the media guide plate with the black screw.

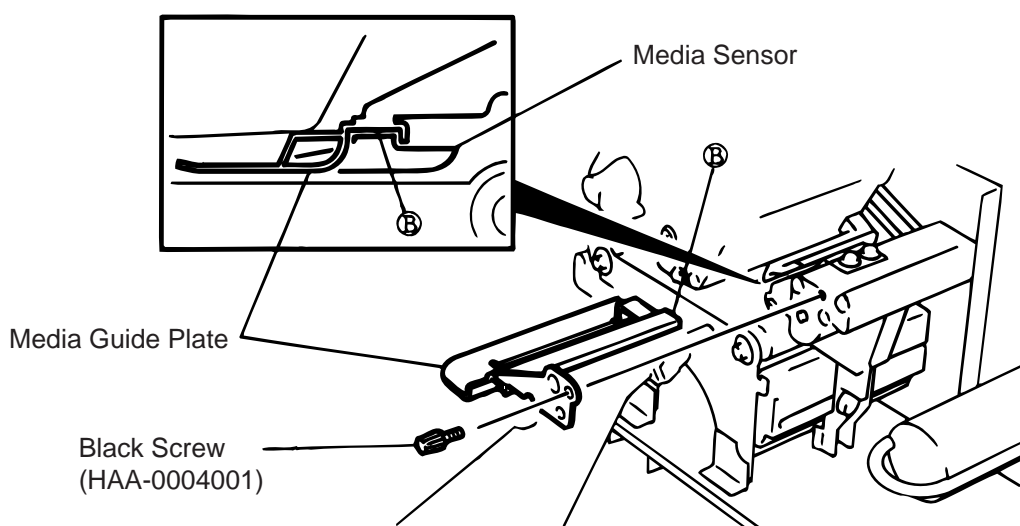


Fig. 10-2

9. Paper jams in the cutter unit can be caused by wear or residual glue from label stock on the cutter. Do not use none specified media in the cutter. If you get frequent jams in the cutter contact your Authorized Service representative.

## ■ Cleaning the Cutter Unit

### **WARNING!**

1. Be sure to turn the power off before cleaning the cutter unit.
2. The cutters are sharp and care should be taken not to injure yourself when cleaning.

1. Loosen two screws and remove the cutter cover.
2. Remove the white screw and media guide.
3. Remove the jammed paper and trash.
4. Clean the cutter with dry cloth.

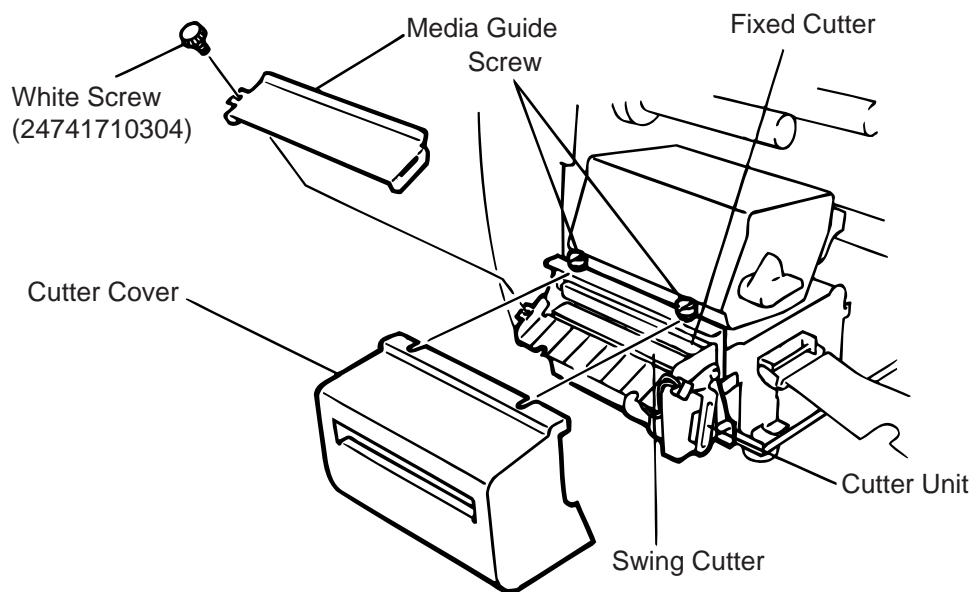


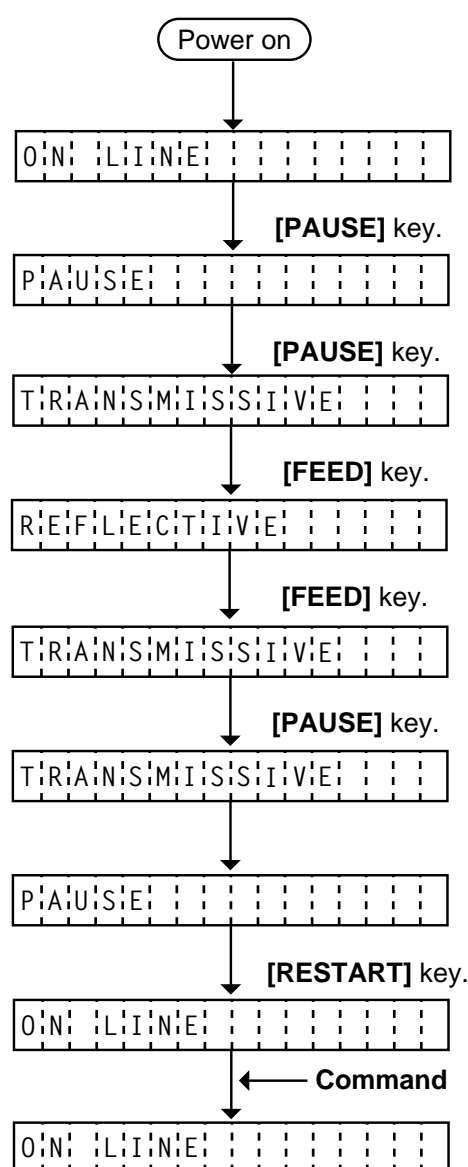
Fig. 10-3

5. Assembling is reverse order of removal.

## 10.4 Threshold Setting

For the printer to maintain a constant print position it uses the transmissive sensor to detect the gap between labels by measuring the amount of light passing through the media. When the media is pre-printed, the darker (or more dense) inks can interfere with this process causing paper jam errors. To get around this problem a minimum threshold can be set for the sensor in the following way.

### ■ Threshold setting procedure (For firmware version 2.5A or later)



- (1) The printer is in stand-by.
- (2) Load a media roll in the usual way.
- (3) Press the **[PAUSE]** key.
- (4) The printer enters the pause mode.
- (5) Press and hold the **[PAUSE]** key for at least 3 seconds in the pause state.
- (6) The sensor type is displayed.
- (7) Press the **[FEED]** key.
- (8) The reflective sensor (black mark sensor) is selected.
- (9) Press the **[FEED]** key again.
- (10) The transmissive sensor (feed gap sensor) is selected.
- (11) Press and hold the **[PAUSE]** key.
- (12) The media is advanced until the **[PAUSE]** key is released.
- (13) Release the **[PAUSE]** key when more than 1.5 labels (tags) are advanced.  
(Threshold setting is completed by this operation.)
- (14) Press the **[RESTART]** key.
- (15) The printer is in stand-by.
- (16) Send an issue command from the PC to the printer.

#### NOTES:

1. If the **[PAUSE]** key is released within 3 seconds whilst in pause state, paper will not feed.
2. Failure to feed more than 1.5 to 2 labels may result in an incorrect threshold setting.
3. While the print head is raised, the **[PAUSE]** key does not work.
4. Error such as paper end and cutter error are not detected during paper feed.
5. Selecting the transmissive sensor (for pre-printed labels) within software commands allows the printer to detect the proper print start position correctly even when using pre-printed labels.
6. If the printer continues to print out of position after setting the threshold, adjust the feed gap sensor in the system mode. Reset the threshold again. Make sure that the transmissive sensor (for pre-printed labels) is selected in the feed and issue commands.

### ■ Threshold setting procedure (For firmware version 2.5 or earlier)

- ① Turn the power on.
- ② Load the pre-printed label. (Any position)
- ③ Press the **[PAUSE]** key once.
- ④ Hold down the **[PAUSE]** key for more than 3 seconds and it will begin to feed. After it has fed the 2 label, release the **[PAUSE]** key.
- ⑤ Press the **[RESTART]** key for ON LINE mode.
- ⑥ Threshold setting is now completed.

**NOTES:** 1. If the **[PAUSE]** key is not held down for more than 3 seconds in PAUSE mode the threshold will not be set.  
2. If the **[PAUSE]** key is released before 2 labels have been issued the setting may not be correct and will have to be re-set.

## 10.5 Auto Ribbon Saving Mode

Auto ribbon saving function is activated when it is selected by DIP switch (Refer to page 4-1) and no print area extends more than 20 mm.

**NOTE:** According to the relation between the outer diameter of rewound ribbon and print speed, ribbon loss per saving varies as follows:

Print speed	Ribbon loss
3"/sec.	Approx. 6 mm
6"/sec.	Approx. 10 mm
10"/sec.	Approx. 20 mm

## 11. TROUBLESHOOTING

### WARNING!

*If you cannot solve a problem with the following solutions, do not attempt to repair it yourself. Turn the power off, unplug the printer, then contact your Authorized Service representative for assistance.*

Error Message	Problem	Solution
PAPER JAM ****	<ol style="list-style-type: none"> <li>1. The media is not fitted correctly.</li> <li>2. The media path is jammed and does not feed smoothly.</li> <li>3. The installed media type does not match the selected sensor.</li> <li>4. The black mark position on the media does not match the sensor position.</li> <li>5. The installed media size is different from the programmed size.</li> <li>6. The feed gap sensor cannot see the difference between the print area and the gap.</li> </ol>	<ol style="list-style-type: none"> <li>1. Re-fit the media correctly. → Press the <b>[RESTART]</b> key.</li> <li>2. Remove the cause of the jam and replace the media correctly. → Press the <b>[RESTART]</b> key.</li> <li>3. Turn the power off then on again. Select the correct sensor. → Feed the media.</li> <li>4. Adjust the sensor position. → Press the <b>[RESTART]</b> key.</li> <li>5. Turn the power off then on again. Set the correct media size. → Feed the media.</li> <li>6. Set the threshold (see page 10-4). Else Turn the power off and call your Authorized Service representative.</li> </ol>
HEAD OPEN ****	Feed or printing has been attempted while the print head is raised.	Lower the print head. → Press the <b>[RESTART]</b> key.
NO PAPER ****	The media has run out.	Load new media. → Press the <b>[RESTART]</b> key.
NO RIBBON ****	The ribbon has run out.	Load a new ribbon. → Press the <b>[RESTART]</b> key.
REWIND FULL ****	Too much backing paper or media is wound on the internal take-up spool.	Remove the backing paper or media from the internal take-up spool. Then press the <b>[RESTART]</b> key.
EXCESS HEAD TEMP	The print head is too hot.	Turn the power off and decrease the print head temperature.
RIBBON ERROR ****	There is a fault with the ribbon sensor.	Turn the power off. Contact your Authorized Service representative.

Error Message	Problem	Solution
CUTTER ERROR ****	Media is jammed in the cutter.	Remove the jammed media and feed the undamaged media through the cutter. → Press the <b>[RESTART]</b> key. Else Turn the power off and contact your Authorized Service representative.
FLASH WRITE ERR.	An error has occurred when loading data onto a flash memory card.	1. Turn the power off, re-seat the flash memory card and try again. 2. Replace the flash memory card and retry. 3. Turn the power off and contact your Authorized Service representative.
FORMAT ERROR	An error has occurred while formatting a flash memory card.	1. Turn the power off, re-seat the flash memory card and try again. 2. Replace the flash memory card and retry. 3. Turn the power off and contact your Authorized Service representative.
FLASH CARD FULL	No more data can be saved in the flash memory card.	Replace the card with a new one and re-send data. (Only 1MB and 4MB cards can be used.)
COMMS ERROR	A communication error has occurred with the host.	Turn the power off then on again or press the <b>[RESTART]</b> key. Check the program data. → Call your Authorized Service representative if necessary.
example) PC001; 0A00,   Command error 0300, 2, 2	When an error is detected in a command 20 bytes of the command are displayed. (ESC, LF, NUL are not displayed.)	Correct the command and re-send it again.
Other Error Message	Hardware or software trouble.	Turn the power off then on again. If the problem still exists turn the power off and contact your Authorized Service representative.

**NOTE:** If an error is not cleared by pressing the **[RESTART]** key, the power must be switched off then on again.

After the power has been switched off and on, all print data in the printer is cleared.

\*\*\*\* denotes a remaining count of unprinted labels.



Problem	Solution
No print.	<ol style="list-style-type: none"><li>1. Check that media and the ribbon is loaded correctly.</li><li>2. Check whether the print head is set correctly or not.</li><li>3. Check the cabling between the printer and the host.</li></ol>
Dots missing in the print.	Dirty print head. → Clean the print head. Call your Authorized Service representative if necessary.
Unclear (or blurred) printing.	<ol style="list-style-type: none"><li>1. Dirty print head. → Clean the print head.</li><li>2. Bad or faulty ribbon. → Replace ribbon.</li><li>3. Poor media quality. → Change media type.</li></ol>
Power does not come on.	<ol style="list-style-type: none"><li>1. Plug power cord into an AC socket.</li><li>2. Check the circuit breakers or fuses.</li><li>3. Plug another appliance into the AC socket to check if there is power supplied.</li></ol> Call your Authorized Service representative if necessary.
Printer does not cut.	Check for a paper jam in the cutter. Call your Authorized Service representative if necessary.
You see a raised nap where the media has been cut.	<ol style="list-style-type: none"><li>1. Clean the cutter blades.</li><li>2. The blades are worn. → Call your Authorized Service representative.</li></ol>





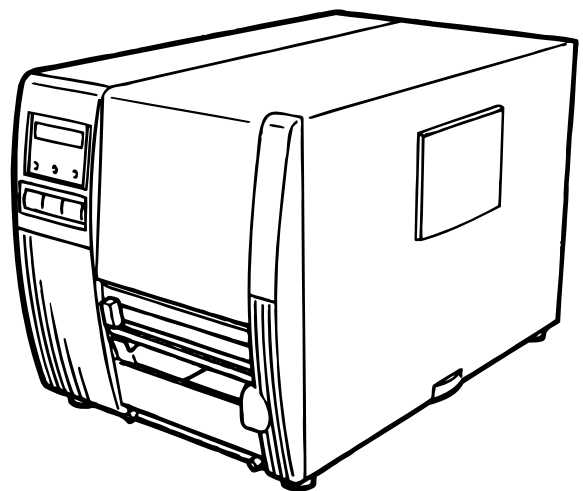


***TEC***

TEC Thermal Printer

**B-472-GH12-QQ**

**Owner's Manual**



**TOSHIBA TEC CORPORATION**

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. Operations of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.  
(for USA only)

Changes or modifications not expressly approved by manufacturer for compliance could void the user's authority to operate the equipment.

"This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations."

"Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada."

(for CANADA only)

**CAUTION**

*To avoid injury, be careful not to catch or jam your fingers while opening or closing the cover.*

**CAUTION**

*Do not touch moving parts. To reduce the risk that fingers, jewelry, clothing, etc., be drawn into the moving parts, push the switch in the "OFF" position to stop movement.*

## Safety Summary

Personal safety in handling or maintaining the equipment is extremely important. Warnings and Cautions necessary for safe handling are included in this manual. All warnings and cautions contained in this manual should be read and understood before handling or maintaining the equipment.

Do not attempt to effect repairs or modifications to this equipment. If a fault occurs that cannot be rectified using the procedures described in this manual, turn off the power, unplug the machine, then contact your authorized TOSHIBA TEC representative for assistance.

## Meanings of Each Symbol



This symbol indicates warning items (including cautions). Specific warning contents are drawn inside the  $\triangle$  symbol. (The symbol on the left indicates a general caution.)



This symbol indicates prohibited actions (prohibited items). Specific prohibited contents are drawn inside or near the  $\odot$  symbol. (The symbol on the left indicates "no disassembling".)



This symbol indicates actions which must be performed. Specific instructions are drawn inside or near the  $\bullet$  symbol. (The symbol on the left indicates "disconnect the power cord plug from the outlet".)

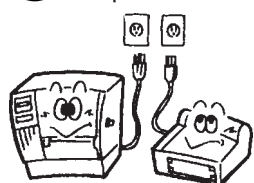


## WARNING

This indicates that there is the risk of **death or serious injury** if the machines are improperly handled contrary to this indication.



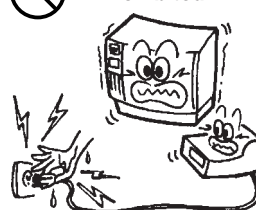
Any other than the specified AC voltage is prohibited.



■ Do not use voltages other than the voltage (AC) specified on the rating plate, as this may cause **fire** or **electric shock**.



### Prohibited



■ Do not plug in or unplug the power cord plug with wet hands as this may cause **electric shock**.



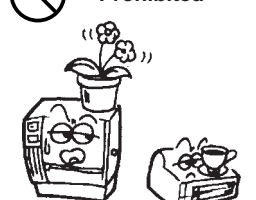
### Prohibited



■ If the machines share the same outlet with any other electrical appliances which consume large amounts of power, the voltage will fluctuate widely each time these appliances operate. Be sure to provide an exclusive outlet for the machine as this may cause the machines to **malfunction**.



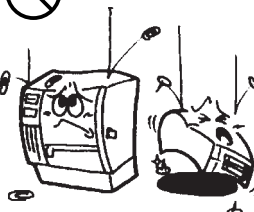
### Prohibited



■ Do not place metal objects or water-filled containers such as flower vases, flower pots or mugs, etc. on top of the machines. If metal objects or spilled liquid enter the machines, this may cause **fire** or **electric shock**.



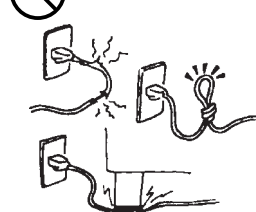
### Prohibited



■ Do not insert or drop metal, flammable or other foreign objects into the machines through the ventilation slits, as this may cause **fire** or **electric shock**.



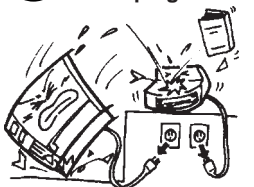
### Prohibited



■ Do not scratch, damage or modify the power cords. Also, do not place heavy objects on, pull on, or excessively bend the cords, as this may cause **fire** or **electrical shock**.



### Disconnect the plug.






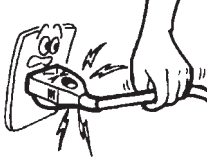

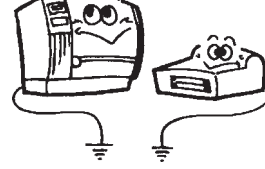

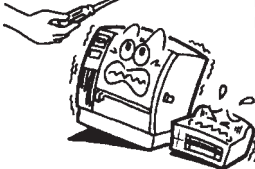
■ If the machines are dropped or their cabinets damaged, first turn off the power switches and disconnect the power cord plugs from the outlet, and then contact your authorized TOSHIBA TEC representative for assistance. Continued use of the machine in that condition may cause **fire** or **electric shock**.



### Disconnect the plug.



■ Continued use of the machines in an abnormal condition such as when the machines are producing smoke or strange smells may cause **fire** or **electric shock**. In these cases, immediately turn off the power switches and disconnect the power cord plugs from the outlet. Then, contact your authorized TOSHIBA TEC representative for assistance.

 <p><b>Disconnect the plug.</b></p>  <p>■ If foreign objects (metal fragments, water, liquids) enter the machines, first turn off the power switches and disconnect the power cord plugs from the outlet, and then contact your authorized TOSHIBA TEC representative for assistance. Continued use of the machine in that condition may cause <b>fire</b> or <b>electric shock</b>.</p>	 <p><b>Disconnect the plug.</b></p>  <p>■ When unplugging the power cords, be sure to hold and pull on the plug portion. Pulling on the cord portion may cut or expose the internal wires and cause <b>fire</b> or <b>electric shock</b>.</p>
 <p><b>Connect a grounding wire.</b></p>  <p>■ Ensure that the equipment is properly grounded. Extension cables should also be grounded. <b>Fire</b> or <b>electric shock</b> could occur on improperly grounded equipment.</p>	 <p><b>No disassembling.</b></p>  <p>■ Do not remove covers, repair or modify the machine by yourself. You may be <b>injured</b> by high voltage, very hot parts or sharp edges inside the machine.</p>



**CAUTION** This indicates that there is the risk of personal **Injury** or **damage** to objects if the machines are improperly handled contrary to this indication.

### Precautions

The following precautions will help to ensure that this machine will continue to function correctly.

- Try to avoid locations that have the following adverse conditions:
  - \* Temperatures out of the specification
  - \* Direct sunlight
  - \* High humidity
  - \* Shared power source
  - \* Excessive vibration
  - \* Dust/Gas
- The cover should be cleaned by wiping with a dry cloth or a cloth slightly dampened with a mild detergent solution. NEVER USE THINNER OR ANY OTHER VOLATILE SOLVENT on the plastic covers.
- USE ONLY TOSHIBA TEC SPECIFIED paper and ribbons.
- DO NOT STORE the paper or ribbons where they might be exposed to direct sunlight, high temperatures, high humidity, dust, or gas.
- Ensure the printer is operated on a level surface.
- Any data stored in the memory of the printer could be lost during a printer fault.
- Try to avoid using this equipment on the same power supply as high voltage equipment or equipment likely to cause mains interference.
- Unplug the machine whenever you are working inside it or cleaning it.
- Keep your work environment static free.
- Do not place heavy objects on top of the machines, as these items may become unbalanced and fall causing **injury**.
- Do not block the ventilation slits of the machines, as this will cause heat to build up inside the machines and may cause **fire**.
- Do not lean against the machine. It may fall on you and could cause **injury**.
- Care must be taken not to injure yourself with the printer paper cutter.
- Unplug the machine when it is not used for a long period of time.

### Request Regarding Maintenance

- Utilize our maintenance services.  
After purchasing the machine, contact your authorized TOSHIBA TEC representative for assistance once a year to have the inside of the machine cleaned. Otherwise, dust will build up inside the machines and may cause a **fire** or a **malfunction**. Cleaning is particularly effective before humid rainy seasons.
- Our preventive maintenance service performs the periodic checks and other work required to maintain the quality and performance of the machines, preventing accidents beforehand. For details, please consult your authorized TOSHIBA TEC representative for assistance.
- Using insecticides and other chemicals  
Do not expose the machines to insecticides or other volatile solvents. This will cause the cabinet or other parts to deteriorate or cause the paint to peel.



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## **CAUTION:**

1. *This manual may not be copied in whole or in part without prior written permission of TOSHIBA TEC.*
2. *The contents of this manual may be changed without notification.*
3. *Please refer to your local Authorized Service representative with regard to any queries you may have in this manual.*

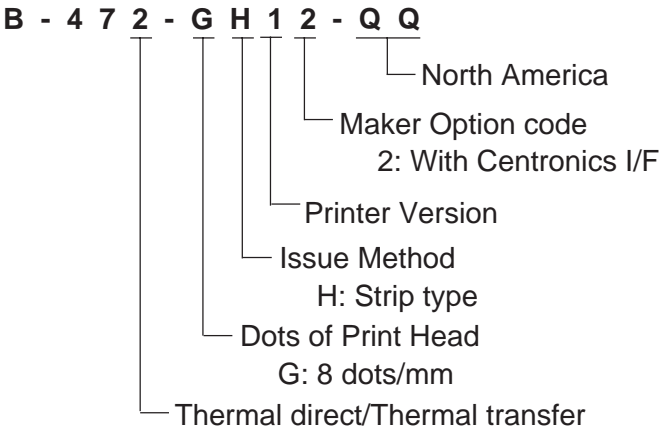
# 1. INTRODUCTION

Thank you for choosing the TEC B-470 series thermal/transfer printer. This high performance printer is equipped with superior hardware including the specially developed (8 dots/mm, 203.2 dots/inch) near edge print head which will allow very clear print at a maximum speed of 254 mm/sec. (10 inches/sec.). Other standard features include a built-in rewinder/strip mechanism and an internal media supply spool. Combine this with an optional high speed PC interface board which allows vastly reduced graphic data transfer times and you have a printer to suit a variety of applications and environments. Optional features include an automatic ribbon saver and external media supply.

This manual contains general set-up and maintenance information and should be read carefully to help gain maximum performance and life from your printer. For most queries please refer to this manual and keep it safe for future reference.

## 1.1 Applicable Model

- B-472-GH12-QQ  
Model name description

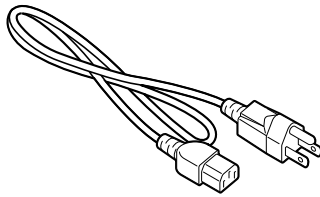


## 1.2 Accessories

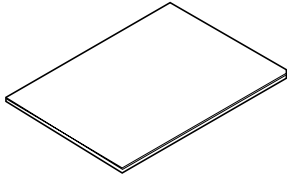
Owner's Manual  
(EM1-33037)



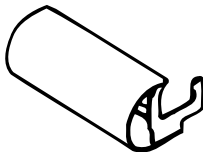
Power Cord



Unpacking Procedure



Rewinder guide plate  
(FMBD0034501)



Screw (SM-4x6B)



## 2. SPECIFICATIONS

### 2.1 Printer

Item	Model	B-470-GH12-QQ
Supply voltage		AC 100V ~ 120V +10%, -15%, 50Hz
Power consumption		2.2A, 190W maximum (standby: 260mA, 18W)
Operating temperature range		5°C ~ 40°C (41°F ~ 104°F)
Relative humidity		25% ~ 85%RH (no condensation)
Print head		Thermal print head 8 dots per mm (203.2 dots per inch)
Printing methods		Thermal direct or Thermal transfer
Print speeds		76.2 mm/sec. (3 inch/sec.), 152.4 mm/sec. (6 inch/sec.), 254 mm/sec. (10 inch/sec.)
Maximum print width		104.0 mm (4.09 inches)
Dispensing modes		Batch (Continuous), Strip (On-demand) and Cut modes (Cut mode is only available when optional cutter is fitted.)
Message display		16 characters x 1 line
Dimensions		291 mm (width) x 460 mm (depth) x 308 mm (height)
Weight		17 kg (without media and ribbon)
Available bar code types		UPC-E, UPC-E+2digits, UPC-E+5digits UPC-A, UPC-A+2digits, UPC-A+5digits JAN8, JAN13, EAN8, EAN8+2digits, EAN8+5digits EAN13, EAN13+2digits, EAN13+5digits MSI, ITF, NW-7, CODE39, CODE93, CODE128, EAN128 Maxi Code
Fonts		Times Roman (6 sizes), Helvetica (6 sizes), Presentation (1 size), Letter Gothic (1 size), Prestige Elite (2 sizes), Courier (2 sizes), OCR (2 types), Writable characters (40types), Outline font (1 type)
Rotations		0°, 90°, 180°, 270°
Standard interface		Serial interface (RS-232C) Parallel interface (Centronics) Expansion I/O interface Flash memory card interface
Optional interfaces		High speed PC interface

## 2.2 Option

Option Name	Type	Usage	Source
Cutter module	B-4205-QM	A stop and cut swing cutter	See NOTE 1.
High speed PC Interface kit	B-4800-PC-QM	This interface kit allows extremely high speed information transfer between the printer and PC.	See NOTE 1.
Ribbon saving module	B-4905-R-QM	This allows use of ribbon save, reducing ribbon costs.	See NOTE 1.
Fanfold paper guide module	B-4905-FF-QM	This is a paper guide exclusively used for fanfold paper. Attaching it in place of the standard paper guide allows the printer to print on fanfold paper.	See NOTE 1.
Flash memory card	_____	A flash ROM card (1MB and 4MB) for storing logos, writable characters and formats.	See NOTE 2.

**NOTES:** 1. Available from your nearest TOSHIBA TEC representative or TOSHIBA TEC Head Quarters.

2. When purchasing flash memory card locally, select one having the specifications described at page 8-1.

## 2.3 Media

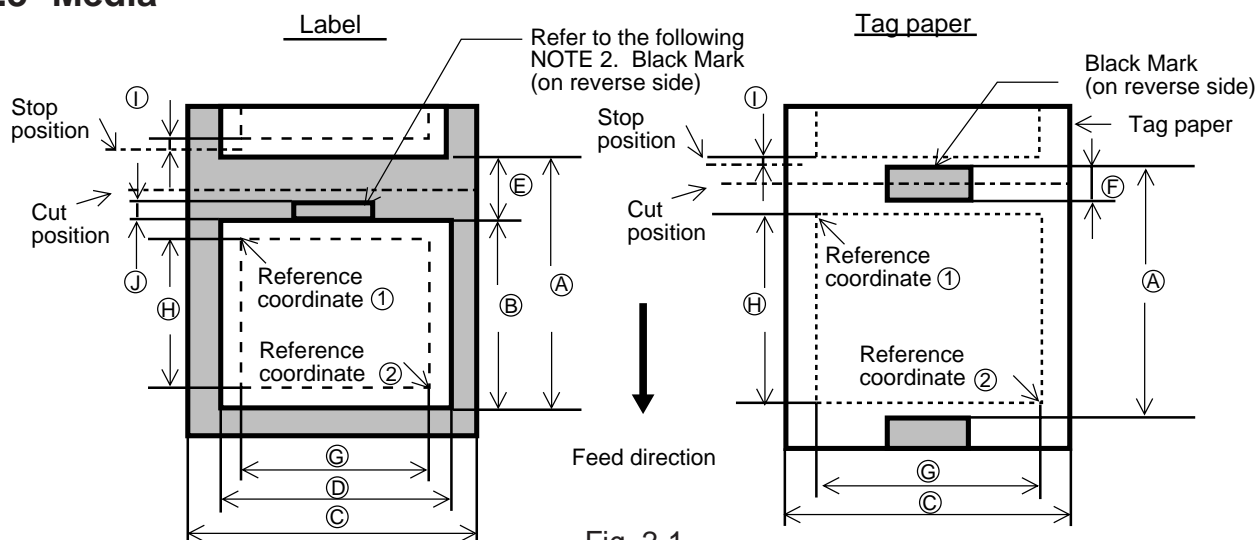


Fig. 2-1

[Unit : mm]

Label dispensing mode			Batch mode	Strip mode	Cut mode
Item					
Ⓐ : Span of one label/tag			10.0 ~ 999.0	25.4 ~ 999.0	Label: 38 ~ 999.0 Tag: 25.4 ~ 999.0
Ⓑ : Label/tag length			8.0 ~ 997.0	23.4 ~ 997.0	25.0 ~ 993.0
Ⓒ : Width including backing paper			50.8 ~ 112.0		
Ⓓ : Label width			47.8 ~ 109.0		
Ⓔ : Gap length			2.0 ~ 20.0	2.0 ~ 20.0	6.0 ~ 20.0
Ⓕ : Black mark length (Tag paper)			2.0 ~ 10.0		
Ⓖ : Effective print width			10.0 ~ 104.0		
Ⓗ : Effectice print length	Label	Standard	6.0 ~ 384.0	21.4 ~ 384.0	23.0 ~ 384.0
		Max. memory	6.0 ~ 896.0	21.4 ~ 896.0	23.0 ~ 896.0
	Tag	Standard	8.0 ~ 384.0	23.4 ~ 384.0	23.4 ~ 384.0
		Max. memory	8.0 ~ 896.0	23.4 ~ 896.0	23.4 ~ 896.0
Ⓢ : Print speed up/slow down area			1.0		
Ⓣ : Black mark length (Label)			Refer to the following NOTE 2.		
Maximum effective length for on the fly issue		Standard	192.0		
		Max. memory	448.0		
Outer roll diameter			ø200 Max.		
Thickness		Label	0.13 ~ 0.17		
		Tag	0.15 ~ 0.29		

**NOTES:** 1. The media specification other than above are unchanged.

2. When marking black marks on label rolls, the following requirements must be satisfied.

When the gap length is less than 4 mm:

The black mark length should be longer than the gap length.

When the gap length is 4 mm or more:

The black mark should not overlap the gap for more than 4 mm and the following label.

## 2.4 Ribbon

Type	Spool type
Width	68 mm ~ 112 mm
Length	600 m
Outer diameter	ø90 mm (max.)

- NOTES:**
1. "On the fly issue" means that the printer can draw and print without stopping between labels.
  2. To ensure print quality and print head life use only TOSHIBA TEC specified media and ribbons.
  3. When using the cutter ensure that label length ② plus inter label gap length ⑤ exceeds 35 mm. (i.e. label pitch should be greater than 35 mm.)
  4. When rewinding the media onto the take-up spool in batch mode, the max. outer roll diameter should be 180 mm.
  5. Use of rough media for the ribbon saving issue may cause ribbon smudges.

## 3. OVERVIEW

### 3.1 Front/Rear View

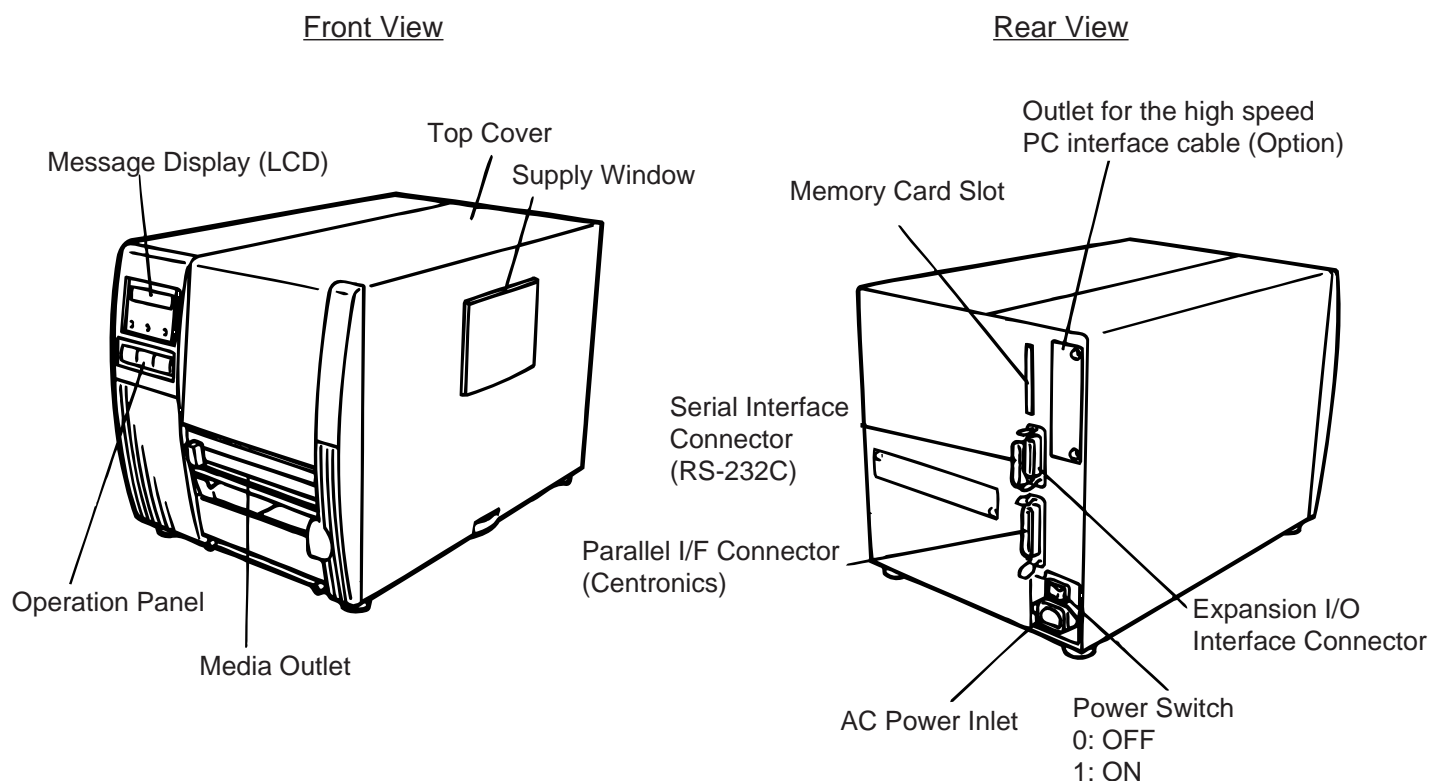


Fig. 3-1

### 3.2 Operation Panel

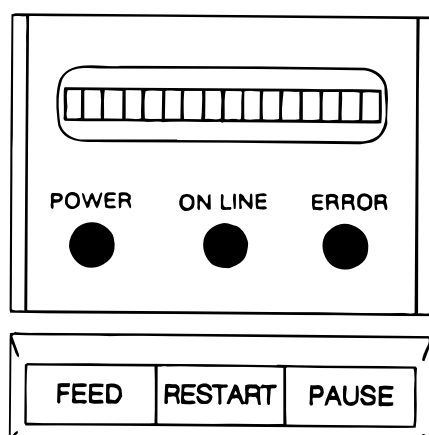


Fig. 3-2

#### MESSAGE DISPLAY (LCD)

Displays messages in the language selected by DIP switch. When power is turned on and it is ready to print, "ON LINE" is displayed.

#### POWER LED (Green)

Lights when the power is turned on.

#### ON-LINE LED (Green)

- 1) Flashes when communicating with a host computer.
- 2) On while printing.

#### ERROR LED (Red)

Lights when a communication error occurs, when the media/ribbon ends or the printer does not operate correctly.

#### FEED key

Feeds paper.

#### RESTART key

Resets the printer when paused or when an error occurs. Used to set the threshold. (Refer to page 10-4)

#### PAUSE key

Pauses printing.

Message display shows "PAUSE" and an unprinted count. Used to set the threshold. (Refer to page 10-4)

## 4. DIP SWITCH FUNCTIONS

The DIP switches are located to the right of the supply shaft.

### **WARNING:**

*Turn the POWER OFF before switching the functions.*

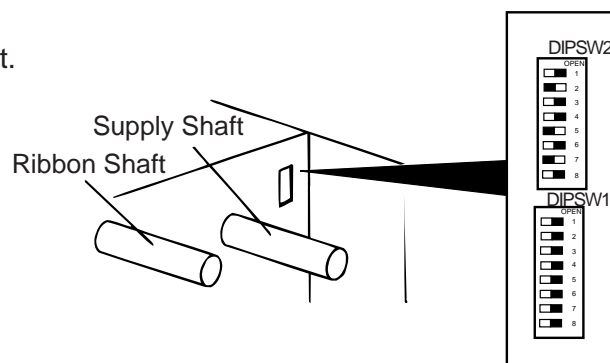


Fig. 4-1

### (1) DIP SW 1

No.	ON/OFF			Function
1	OFF			Auto ribbon save function
	ON			
2	2	3	4	Language to display LCD error message
	OFF	OFF	OFF	
	ON	OFF	OFF	
	OFF	ON	OFF	
3	ON	ON	OFF	
	OFF	OFF	ON	
	ON	OFF	ON	
4	OFF	ON	ON	
	ON	ON	ON	
	ON	ON	ON	
5	OFF			Auto media feed after a cut issue (See page 6-5)
	ON			
6	OFF			Use of the built-in rewinder/Head up function in cut mode Refer to Note 2.
	ON			
7	OFF			Must be set to OFF.
	ON			
8	OFF			Must be set to OFF.
	ON			

### (2) DIP SW 2

No.	ON/OFF		Function		
1	1	2	Transmission speed		
	OFF	OFF		2400 BPS	
	ON	OFF		4800 BPS	
2	OFF	ON	9600 BPS		
	ON	ON	19200 BPS		
3	OFF		1 bit	Stop bit length	
	ON		2 bit		
4	OFF		7 bit	Data length	
	ON		8 bit		
5	OFF		without	Parity check	
	ON		with		
6	OFF		EVEN	Parity check (effective when DIP SW #5 is set to ON.)	
	ON		ODD		
7	7	8	Data protocol		
	OFF	OFF			XON/XOFF (No XON is output at the power on time.) (No XOFF is output at the power off time.)
	ON	OFF			READY/BUSY (DTR) (No XON is output at the power on time.) (No XOFF is output at the power off time.)
8	OFF	ON	XON/XOFF + READY/BUSY (XON is output at the power on time.) (XOFF is output at the power off time.)		
	ON	ON	XON/XOFF (XON is output at the power on time.) (XOFF is output at the power off time.)		

**NOTES:** 1. The shaded settings are the factory default settings. "OFF" means "OPEN".  
2. The Dip switch #1-6 functions in accordance with equipment to be used.

## 5. INSTALLING THE PRINTER

**WARNING!**

Turn the **POWER SWITCH to OFF** before connecting the power cord or cables.

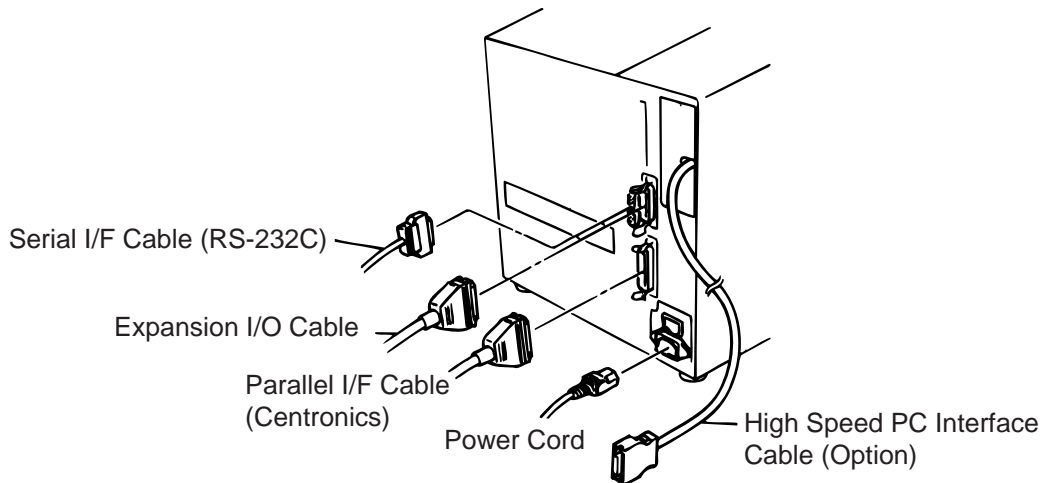


Fig. 5-1



## 6. LOADING THE MEDIA

### WARNING:

1. Do not touch moving parts. To reduce the risk that fingers, jewelry, clothing, etc., be drawn into the moving parts, push the switch in the "OFF" position to stop movement.
2. To avoid injury, be careful not to catch or jam your fingers while opening or closing the cover.

The printer prints both labels and tags.

1. Turn off the power and open the top cover.
2. Turn the head lever to position ③, then release the ribbon shaft holder plate.

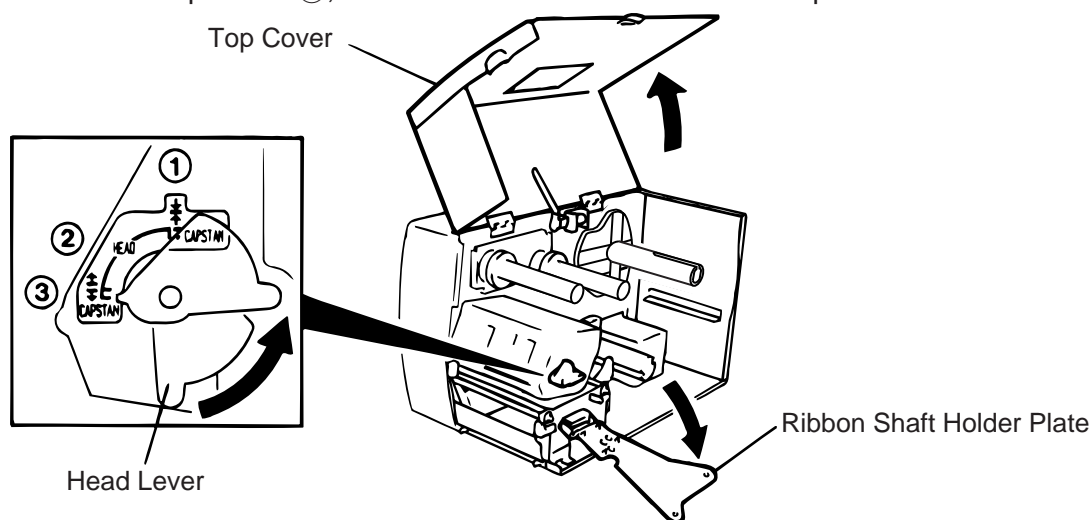


Fig. 6-1

- NOTES:**
1. When the head lever is turned to position ②, the print head is raised.
  2. When the head lever is turned to position ③, the print head and the pinch roller are raised.
  3. To allow printing the head lever must be set to position ①. (This ensures that the print head and the pinch roller are closed.)

3. Turn the locking ring counter clockwise and remove the supply holder from the supply shaft.

**NOTE:** Do not turn the force the locking ring too far counterclockwise or it may come off the supply holder.

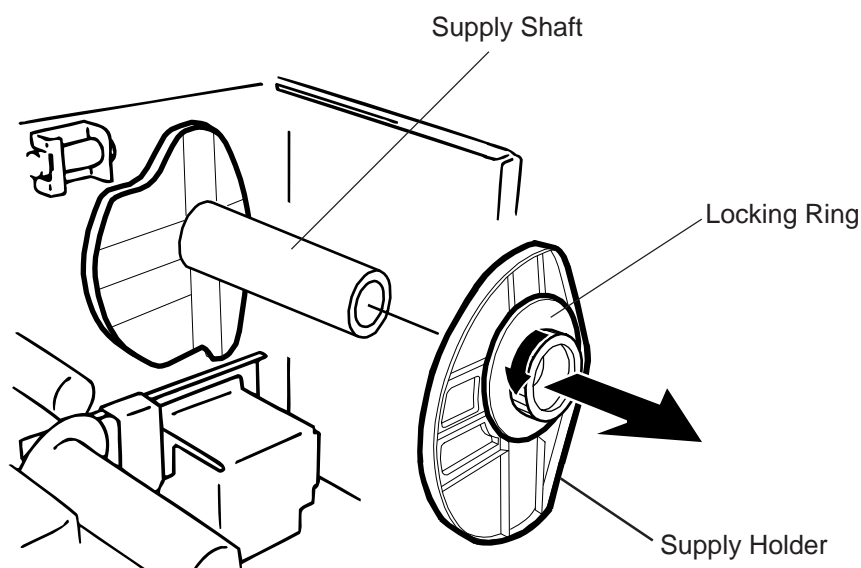


Fig. 6-2

4. Put the media on the supply shaft.
  5. Pass the media around the damper, then pull the media towards the front of the printer.
  6. Insert the ridge of the supply holder into the groove of the supply shaft until the media is fixed. Then turn the locking ring clockwise to secure the supply holder. This will centre the media automatically.
- NOTE:** Do not over tighten the locking ring of the supply holder.

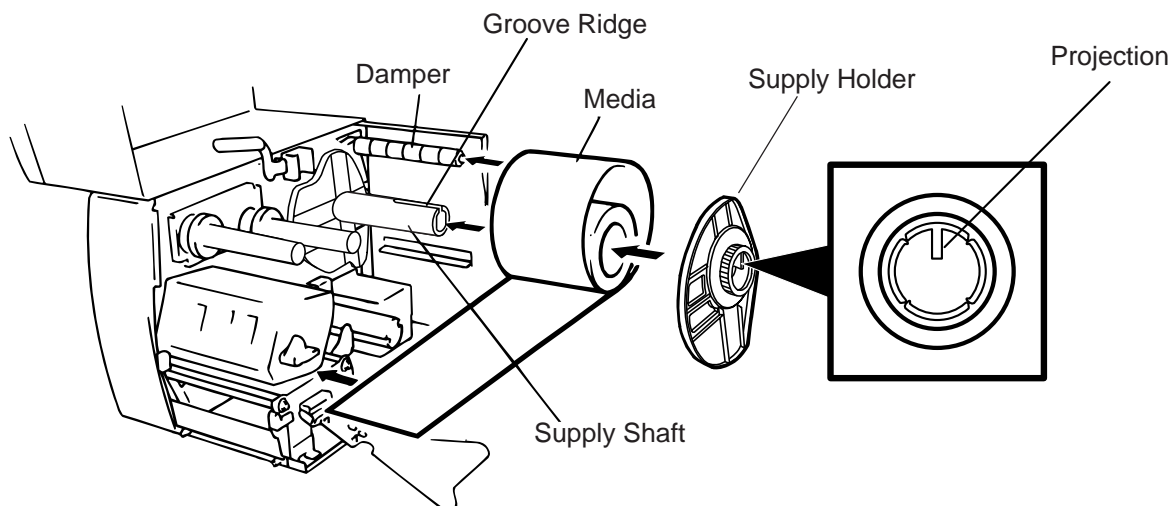


Fig. 6-3

7. Insert the media into the paper holders of the media guide, adjust the media guides to the media width, and tighten the locking screw.
8. Check that the media path through the printer is straight. The media should be centered under the print head.

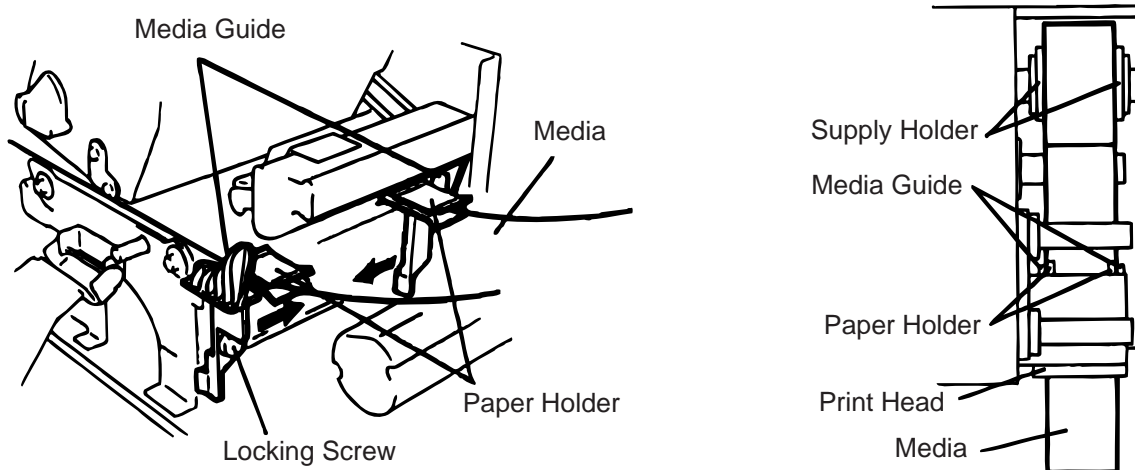


Fig. 6-4

**NOTE:** When using the label rolled with labels facing outside, please remove the upper plates of both paper holders using the following procedure. Failure to do this may cause a paper jam error. If you have any questions, please contact your nearest TOSHIBA TEC service representative.

## ■ Removing the paper holders' upper plates from the media guide

- ① Remove the two T-4x8 screws to detach the media guide from the printer.

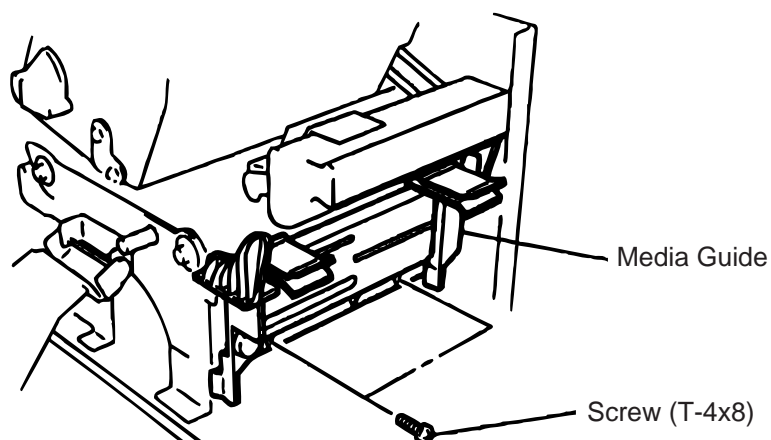


Fig. 6-5

- ② Remove the SM-3x6 screw or the SM-3x8 screw to detach the paper holders' upper plates from the media guide.

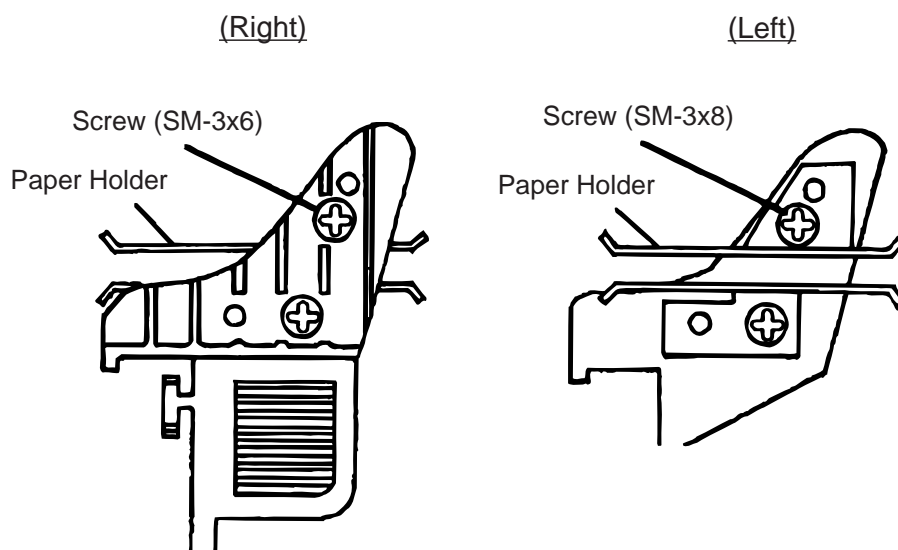


Fig. 6-6

- ③ Attach the media guide back in position.

**NOTE:** Do not lose the removed upper plates because they are required when using the label rolled with labels facing inside.

9. Set the black mark/feed gap sensor to the correct position by turning the adjusting knob. Turning the knob right will move the sensor towards the center of the media while turning left will move it away from the center of the media.

### ■ An easy way to set the black mark sensor position

- ① Pull the media about 500 mm out of the front of the printer, turn the media back on it's self and feed it under the print head past the sensor so that the black mark can be seen from above.
- ② Adjust the sensor position to that of the black mark (the upper hole indicates the position of the black mark sensor).

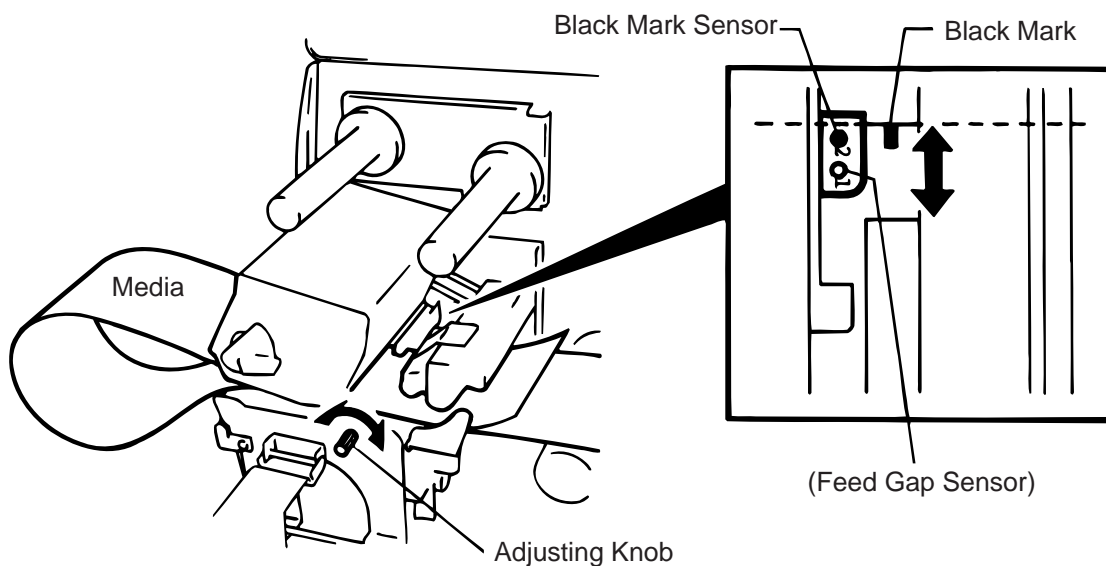


Fig. 6-7

**NOTE:** Make sure to set the sensor to detect the center of the black mark, otherwise a paper jam error could occur.

### ■ Setting the feed gap sensor position

- ① Adjust the sensor to detect on the gap (the lower hole indicates the position of the feed gap sensor.)

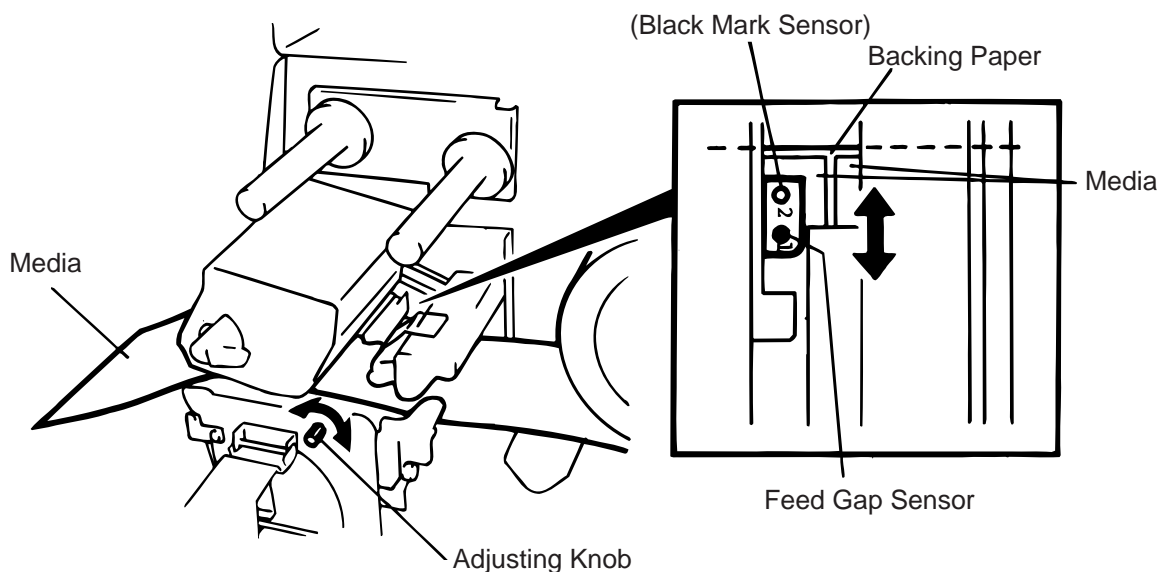


Fig. 6-8

10. The media is now loaded and the sensor position is set.

**Batch type:**

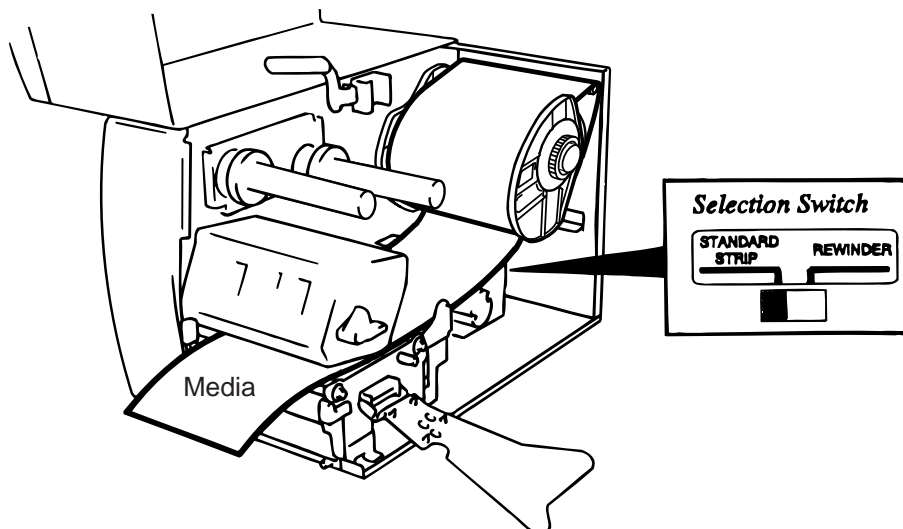


Fig. 6-9

**NOTE:** Set the selection switch to the STANDARD/STRIP position. Improper setting can affect the print quality.

**Strip type:**

- ① Remove enough labels from the leading edge media to leave 500 mm of backing paper exposed.
- ② Wind the backing paper onto the take-up spool and fix in position with the take-up clip. (Wind the paper counter clockwise around the spool as this is the direction it rotates.)
- ③ Rotate the take-up spool anti-clockwise a few times to take up any slack in the backing paper.

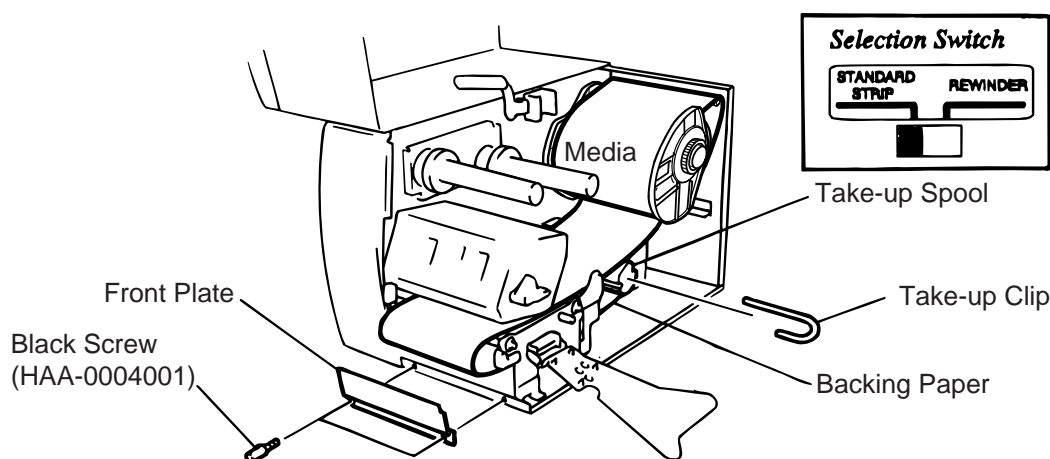


Fig. 6-10

- NOTES:**
1. The backing paper is easier to feed back to the take-up spool if the front plate is removed.
  2. When fitting the take-up clip the longer side of the clip should be fitted into the shallow groove on the take-up spool.
  3. When printing at 10ips and using the dispense mode, paper type and print format may create some variations in the printed output of the printer. Therefore it is recommended that dispense mode be used with a maximum print speed of 6ips only.
  4. Set the selection switch to the STANDARD/STRIP position.

**Cutter type:** Where a cutter is fitted load the media as standard and feed it through the cutter module.

- NOTES:**
1. Be sure to cut the backing paper of label. Cutting labels will cause the glue to stick to the cutter, which may affect the cutter quality and shorten the life.
  2. If the top edge of label winds onto the platen in cut issue, set the DIP SW 1-5 to ON.
  3. For the cutter type, the selection switch can be set to either position.

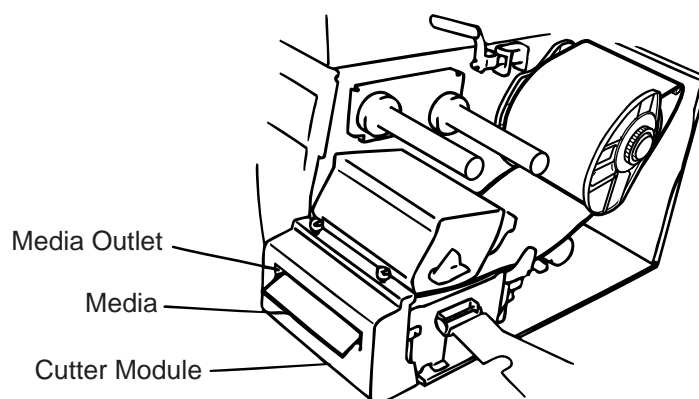


Fig. 6-11

**Built-in rewinder type:**

- ① Remove two black screws and front plate.
- ② Fit the rewinder guide plate to the strip shaft, then attach it with the sems screws.

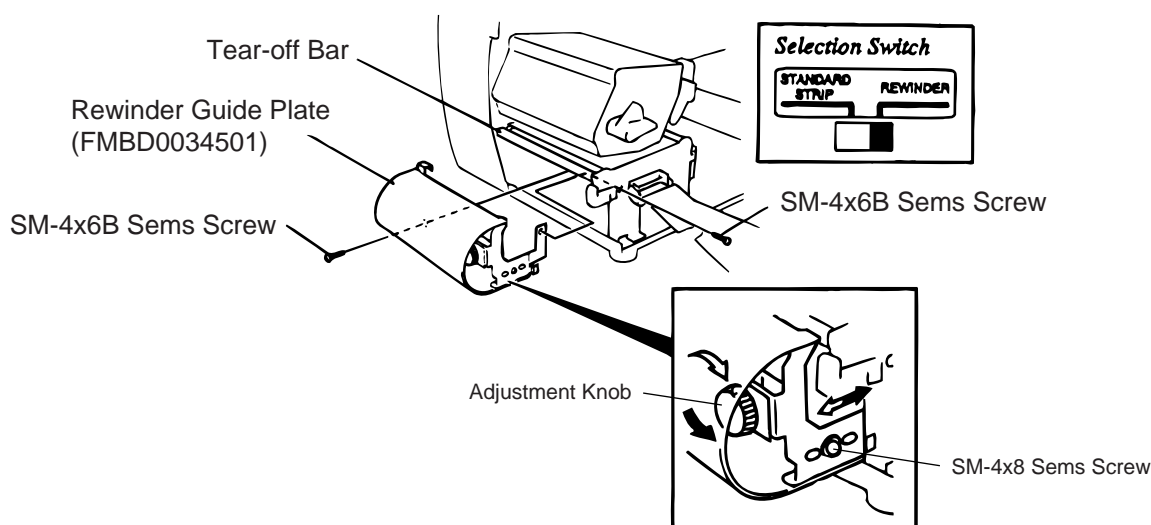


Fig. 6-12

**NOTES:** Set the selection switch to the REWINDER position.

- ③ Follow the procedure for strip type.
- ④ Adjustment

If the label skews when using built-in rewinder unit, turn the adjustment knob of the rewinder guide plate to correct the label feed. Clockwise turn moves the rewinder guide plate forward and counterclockwise moves it backward.

\* When labels skew to the right:

Loosen the SM-4x8 sems screw with a philips-head screw driver. Turn the adjustment knob clockwise, and tighten the SM-4x8 screw when the rewinder guide plate is positioned correctly.

\* When labels skew to the left:

Loosen the SM-4x8 screw with a phillips-head screw driver. Turn the adjustment knob counterclockwise, and tighten the SM-4x8 screw when the rewinder guide plate is positioned correctly.

## 7. LOADING THE RIBBON

### WARNING!

1. Do not touch moving parts. To reduce the risk that fingers, jewelry, clothing, etc., be drawn into the moving parts, push the switch in the "OFF" position to stop movement.
2. To avoid injury, be careful not to catch or jam your fingers while opening or closing the cover.

There are two types of media available for printing on, these are standard media and direct thermal media (a chemically treated surface). DO NOT LOAD a ribbon when using a direct thermal media.

1. When using a narrow width ribbon, slide the ribbon stoppers along the shafts to a position where the ribbon will be centered when it is fitted. When changing from a narrow width to a wider one rotate the ribbon stoppers by 90°, push them back to the correct position and then rotate back to lock.

**NOTE:** When attaching the ribbon stoppers, fit them to the shafts with the pinchers facing into the printer.

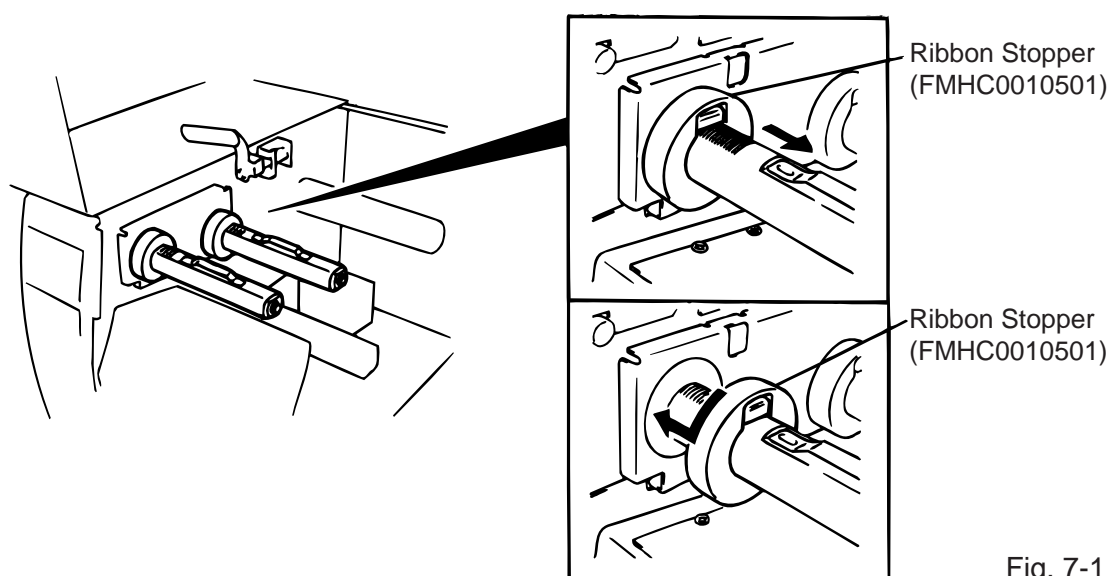


Fig. 7-1

2. Leaving plenty of slack between the spools, fit the ribbon as shown below. When the ribbon is fitted it must be positioned over the ribbon sensor.
3. Wind both shafts towards each other to tighten the ribbon.

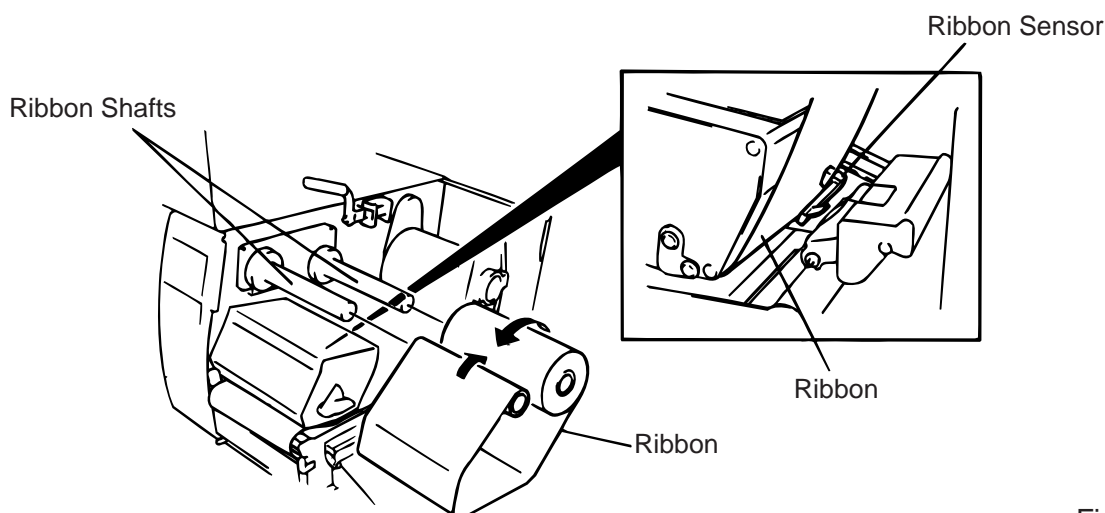


Fig. 7-2

4. Reset the ribbon shaft holder plate by aligning it with the ribbon shaft.
5. Turn the head lever clockwise to lower the print head.
6. Close the top cover.

## 8. INSERTING THE OPTIONAL FLASH MEMORY CARD

### WARNING!

Turn the power OFF when inserting or removing the flash memory card.

### CAUTION:

To protect memory cards, discharge static electricity from your body by touching the printer rear cover prior touching the memory cards.

1. Turn the power off.
2. Insert the flash memory card into the memory card slot on the rear of the printer.
3. Turn the power on.

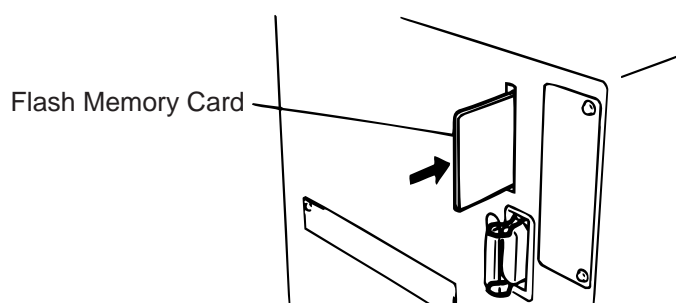


Fig. 8-1

- NOTES:**
1. Be sure to protect a flash memory card when not in use in the printer by putting it in its protective cover.
  2. Do not subject the card to any shocks or excessive forces.
  3. Do not expose the card to extremes of heat by either storing in direct sunlight or close to a heater.
  4. Do not expose the card to excessive humidity by wiping it with a wet cloth or storing it in a damp place.
  5. Before inserting or removing the card, make sure that the power switch is turned off.
  6. The following flash cards can be used. (The 1MB-card is read only and the 4MB card can read/write.)

Capacity	Maker	Type	Device code	Maker code
1M Byte	Maxell	EF-1M-TB <span style="border: 1px solid black; padding: 0 2px;">AA</span>	D0H	1CH
	Mitsubishi	MF81M1-GBDAT01		
4M Byte	Maxell	EF-4M-TB <span style="border: 1px solid black; padding: 0 2px;">CC</span>	88H	B0H
	Maxell	EF-4M-TB <span style="border: 1px solid black; padding: 0 2px;">DC</span>	ADH	04H
	Centennial Technologies INC.	FL04M-15-11119-03		01H
	INTEL	IMC004FLSA	A2H	89H
	Simple TECHNOLOGY	STI-FL/4A		
	Mitsubishi	MF84M1-G7DAT01		
	PC Card KING MAX	FJN-004M6C		
	PC Card	FJP-004M6R	A0H	89H



## 9. CARE/HANDLING OF THE MEDIA AND RIBBON

**CAUTION:**

*Be sure to read carefully and understand the Supply Manual. Use only media and ribbon which meet specified requirements. Use of non-specified media and ribbon may shorten the head life and result in problems with bar code readability or print quality. All media and ribbon should be handled with care to avoid any damage to the media, ribbon or printer. Read the following guideline carefully.*

- Do not store the media and ribbon for longer than the manufactures recommended shelf life.
- Store media rolls on the flat end, do not store them on the curved sides as this might flatten that side causing erratic media advance and poor print quality.
- Store the media in plastic bags and always reseal after opening. Unprotected media can get dirty and the extra abrasion from the dust and dirt particles will shorten the print head life.
- Store the media and ribbon in a cool, dry place. Avoid areas where they would be exposed to direct sunlight, high temperature, high humidity, dust or gas.
- The thermal paper used for direct thermal printing must not have the specifications which exceed Na<sup>+</sup> 800 ppm, K<sup>+</sup> 250 ppm and CL<sup>-</sup> 500 ppm.
- Some ink used on pre-printed labels may contain ingredients which shorten the print head's product life. Do not use labels pre-printed with ink which contain hard substances such as carbonic calcium (CaCO<sub>3</sub>) and kaolin (Al<sub>2</sub>O<sub>3</sub>, 2SiO<sub>2</sub>, 2H<sub>2</sub>O).

For further information please contact your local distributor or your media and ribbon manufacturer.

## 10. GENERAL MAINTENANCE

### WARNING!

1. Be careful when handling the print head as it becomes very hot.
2. Care must be taken not to injure yourself with the printer paper cutter.
3. Do not touch moving parts. To reduce the risk that fingers, jewelry, clothing, etc., be drawn into the moving parts, push the switch in the "OFF" position to stop movement.
4. To avoid injury, be careful not to catch or jam your fingers while opening or closing the cover.

### 10.1 Cleaning

To help retain the high quality and performance of your printer it should be regularly cleaned. The greater the usage of the printer, the more frequent the cleaning. (i.e. low usage=weekly : high usage=daily). A print head cleaner is not enclosed with the printer, so please inquire at your local distributor.

1. Turn the power off.
2. Open the top cover.
3. Turn the head lever to raise the print head.
4. Remove the ribbon and media.
5. Clean the element of print head with print head cleaner.
6. Wipe the platen, feed roller and pinch roller with a cleaner moistened with alcohol.  
Remove dust or foreign substances from the internal part of the printer, if any.

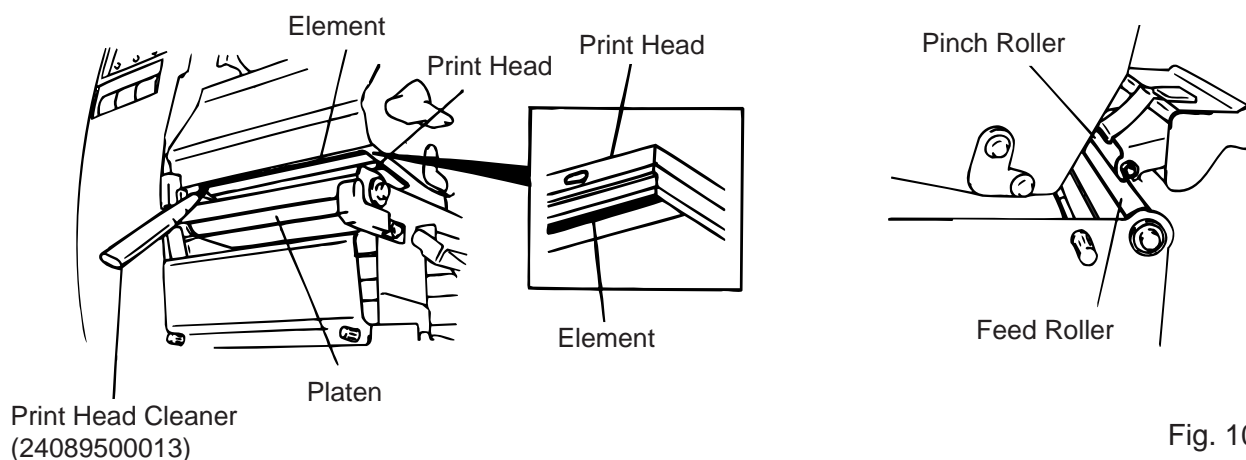


Fig. 10-1

### WARNING!

1. Be sure to disconnect the power cord prior of performing any maintenance.
2. Do not use any tool that may damage the print head.
3. DO NOT POUR WATER directly onto the printer.

## 10.2 Covers and Panels

The covers should be cleaned by wiping with a dry cloth or a cloth slightly dampened with a mild detergent solution.

**NOTE:** Clean the printer cover with an electrostatic free cleaner for automated office equipment.

### WARNING!

1. DO NOT POUR WATER directly onto the printer.
2. DO NOT APPLY cleaner or detergent directly onto any cover or panel.
3. NEVER USE THINNER OR OTHER VOLATILE SOLVENT on the plastic covers.
4. DO NOT clean the panel covers or the supply window with alcohol as it may cause them to discolor, loose their shape or develop structural weakness.

## 10.3 Removing Jammed Paper

1. Turn the power off.
2. Open the top cover.
3. Turn the head lever to position ③, then release the ribbon shaft holder plate.
4. Remove the black screw to detach the media guide plate. (See Fig. 10-2.)
5. Remove the ribbon and media.
6. Remove the jammed paper. DO NOT USE any sharp implement or tool as these could damage the printer.
7. Clean the print head and platen, then remove any further dust or foreign substances.
8. Place the portion ⑥ of the media guide plate on the media sensor. Secure the media guide plate with the black screw.

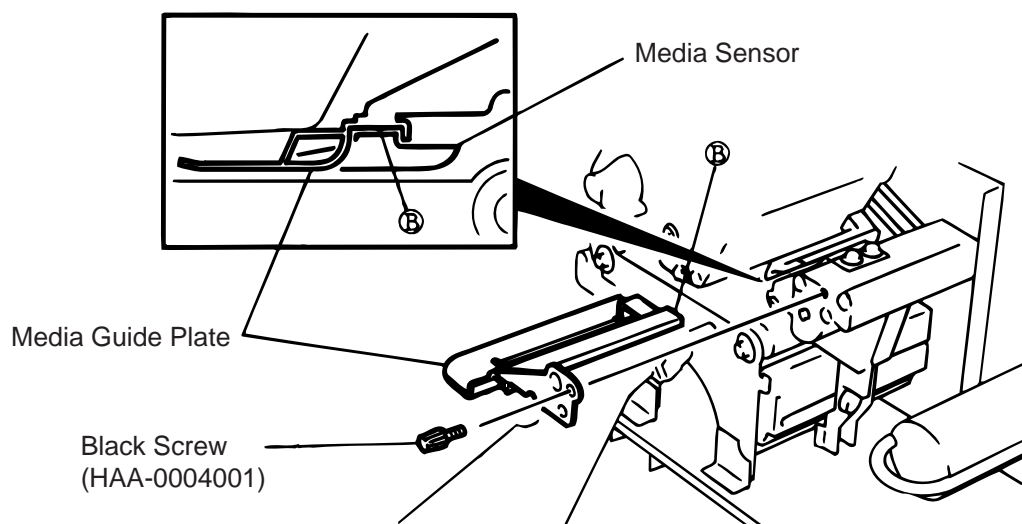


Fig. 10-2

9. Paper jams in the cutter unit can be caused by wear or residual glue from label stock on the cutter. Do not use none specified media in the cutter. If you get frequent jams in the cutter contact your Authorized Service representative.

## ■ Cleaning the Cutter Unit

### **WARNING!**

1. Be sure to turn the power off before cleaning the cutter unit.
2. The cutters are sharp and care should be taken not to injure yourself when cleaning.

1. Loosen two screws and remove the cutter cover.
2. Remove the white screw and media guide.
3. Remove the jammed paper and trash.
4. Clean the cutter with dry cloth.

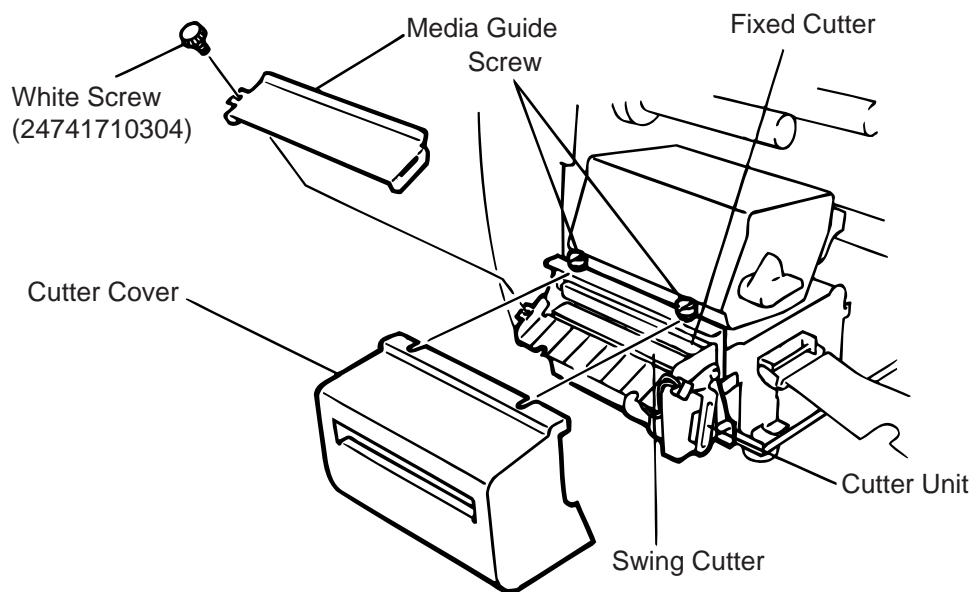


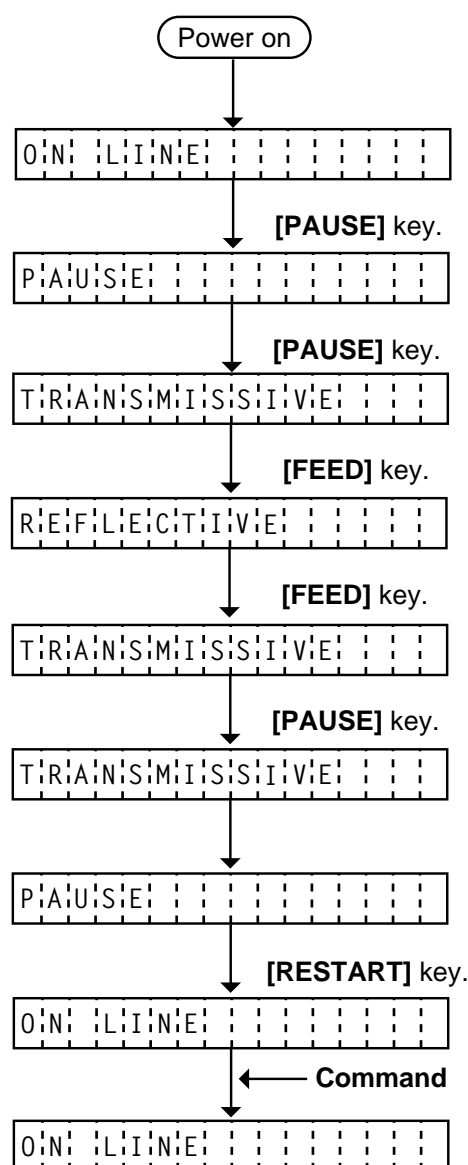
Fig. 10-3

5. Assembling is reverse order of removal.

## 10.4 Threshold Setting

For the printer to maintain a constant print position it uses the transmissive sensor to detect the gap between labels by measuring the amount of light passing through the media. When the media is pre-printed, the darker (or more dense) inks can interfere with this process causing paper jam errors. To get around this problem a minimum threshold can be set for the sensor in the following way.

### ■ Threshold setting procedure (For firmware version 2.0A or later)



- (1) The printer is in stand-by.
- (2) Load a media roll in the usual way.
- (3) Press the **[PAUSE]** key.
- (4) The printer enters the pause mode.
- (5) Press and hold the **[PAUSE]** key for at least 3 seconds in the pause state.
- (6) The sensor type is displayed.
- (7) Press the **[FEED]** key.
- (8) The reflective sensor (black mark sensor) is selected.
- (9) Press the **[FEED]** key again.
- (10) The transmissive sensor (feed gap sensor) is selected.
- (11) Press and hold the **[PAUSE]** key.
- (12) The media is advanced until the **[PAUSE]** key is released.
- (13) Release the **[PAUSE]** key when more than 1.5 labels (tags) are advanced.  
(Threshold setting is completed by this operation.)
- (14) Press the **[RESTART]** key.
- (15) The printer is in stand-by.
- (16) Send an issue command from the PC to the printer.

#### NOTES:

1. If the **[PAUSE]** key is released within 3 seconds whilst in pause state, paper will not feed.
2. Failure to feed more than 1.5 to 2 labels may result in an incorrect threshold setting.
3. While the print head is raised, the **[PAUSE]** key does not work.
4. Error such as paper end and cutter error are not detected during paper feed.
5. Selecting the transmissive sensor (for pre-printed labels) within software commands allows the printer to detect the proper print start position correctly even when using pre-printed labels.
6. If the printer continues to print out of position after setting the threshold, adjust the feed gap sensor in the system mode. Reset the threshold again. Make sure that the transmissive sensor (for pre-printed labels) is selected in the feed and issue commands.

**■ Threshold setting procedure (For firmware version 2.0 or earlier)**

- ① Turn the power on.
- ② Load the pre-printed label. (Any position)
- ③ Press the **[PAUSE]** key once.
- ④ Hold down the **[PAUSE]** key for more than 3 seconds and it will begin to feed. After it has fed the 2 label, release the **[PAUSE]** key.
- ⑤ Press the **[RESTART]** key for ON LINE mode.
- ⑥ Threshold setting is now completed.

**NOTES:** 1. If the **[PAUSE]** key is not held down for more than 3 seconds in PAUSE mode the threshold will not be set.

2. If the **[PAUSE]** key is released before 2 labels have been issued the setting may not be correct and will have to be re-set.

**10.5 Auto Ribbon Saving Mode**

Auto ribbon saving function is activated when it is selected by DIP switch (Refer to page 4-1) and no print area extends more than 20 mm.

**NOTE:** According to the relation between the outer diameter of rewound ribbon and print speed, ribbon loss per saving varies as follows:

Print speed	Ribbon loss
3"/sec.	Approx. 6 mm
6"/sec.	Approx. 10 mm
10"/sec.	Approx. 20 mm

## 11. TROUBLESHOOTING

### WARNING!

*If you cannot solve a problem with the following solutions, do not attempt to repair it yourself. Turn the power off, unplug the printer, then contact your Authorized Service representative for assistance.*

Error Message	Problem	Solution
PAPER JAM ****	<ol style="list-style-type: none"> <li>1. The media is not fitted correctly.</li> <li>2. The media path is jammed and does not feed smoothly.</li> <li>3. The installed media type does not match the selected sensor.</li> <li>4. The black mark position on the media does not match the sensor position.</li> <li>5. The installed media size is different from the programmed size.</li> <li>6. The feed gap sensor cannot see the difference between the print area and the gap.</li> </ol>	<ol style="list-style-type: none"> <li>1. Re-fit the media correctly. → Press the <b>[RESTART]</b> key.</li> <li>2. Remove the cause of the jam and replace the media correctly. → Press the <b>[RESTART]</b> key.</li> <li>3. Turn the power off then on again. Select the correct sensor. → Feed the media.</li> <li>4. Adjust the sensor position. → Press the <b>[RESTART]</b> key.</li> <li>5. Turn the power off then on again. Set the correct media size. → Feed the media.</li> <li>6. Set the threshold (see page 10-4). Else Turn the power off and call your Authorized Service representative.</li> </ol>
HEAD OPEN ****	Feed or printing has been attempted while the print head is raised.	Lower the print head. → Press the <b>[RESTART]</b> key.
NO PAPER ****	The media has run out.	Load new media. → Press the <b>[RESTART]</b> key.
NO RIBBON ****	The ribbon has run out.	Load a new ribbon. → Press the <b>[RESTART]</b> key.
REWIND FULL ****	Too much backing paper or media is wound on the internal take-up spool.	Remove the backing paper or media from the internal take-up spool. Then press the <b>[RESTART]</b> key.
EXCESS HEAD TEMP	The print head is too hot.	Turn the power off and decrease the print head temperature.
RIBBON ERROR ****	There is a fault with the ribbon sensor.	Turn the power off. Contact your Authorized Service representative.

Error Message	Problem	Solution
CUTTER ERROR ****	Media is jammed in the cutter.	Remove the jammed media and feed the undamaged media through the cutter. → Press the <b>[RESTART]</b> key. Else Turn the power off and contact your Authorized Service representative.
FLASH WRITE ERR.	An error has occurred when loading data onto a flash memory card.	1. Turn the power off, re-seat the flash memory card and try again. 2. Replace the flash memory card and retry. 3. Turn the power off and contact your Authorized Service representative.
FORMAT ERROR	An error has occurred while formatting a flash memory card.	1. Turn the power off, re-seat the flash memory card and try again. 2. Replace the flash memory card and retry. 3. Turn the power off and contact your Authorized Service representative.
FLASH CARD FULL	No more data can be saved in the flash memory card.	Replace the card with a new one and re-send data. (Only 1MB and 4MB cards can be used.)
COMMS ERROR	A communication error has occurred with the host.	Turn the power off then on again or press the <b>[RESTART]</b> key. Check the program data. → Call your Authorized Service representative if necessary.
example) PC001; 0A00,   Command error 0300, 2, 2	When an error is detected in a command 20 bytes of the command are displayed. (ESC, LF, NUL are not displayed.)	Correct the command and re-send it again.
Other Error Message	Hardware or software trouble.	Turn the power off then on again. If the problem still exists turn the power off and contact your Authorized Service representative.

**NOTE:** If an error is not cleared by pressing the **[RESTART]** key, the power must be switched off then on again.

After the power has been switched off and on, all print data in the printer is cleared.

\*\*\*\* denotes a remaining count of unprinted labels.



Problem	Solution
No print.	<ol style="list-style-type: none"><li>1. Check that media and the ribbon is loaded correctly.</li><li>2. Check whether the print head is set correctly or not.</li><li>3. Check the cabling between the printer and the host.</li></ol>
Dots missing in the print.	Dirty print head. → Clean the print head. Call your Authorized Service representative if necessary.
Unclear (or blurred) printing.	<ol style="list-style-type: none"><li>1. Dirty print head. → Clean the print head.</li><li>2. Bad or faulty ribbon. → Replace ribbon.</li><li>3. Poor media quality. → Change media type.</li></ol>
Power does not come on.	<ol style="list-style-type: none"><li>1. Plug power cord into an AC socket.</li><li>2. Check the circuit breakers or fuses.</li><li>3. Plug another appliance into the AC socket to check if there is power supplied.</li></ol> Call your Authorized Service representative if necessary.
Printer does not cut.	Check for a paper jam in the cutter. Call your Authorized Service representative if necessary.
You see a raised nap where the media has been cut.	<ol style="list-style-type: none"><li>1. Clean the cutter blades.</li><li>2. The blades are worn. → Call your Authorized Service representative.</li></ol>







TEC Thermal Printer

# **B-470 SERIES**

## **Product Description**

Document No. **EM10-33007**

Original **Feb., 1994**

(Revised **Feb., 2000**)

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### **CAUTION:**

- 1. This manual may not be copied in whole or in part without prior written permission of TOSHIBA TEC.*
- 2. The contents of this manual may be changed without notification.*
- 3. Please refer to your local Authorized Service representative with regard to any queries you may have in this manual.*

# 1. OUTLINE OF THE SYSTEM

## 1.1 FEATURES OF THE B-470 SERIES

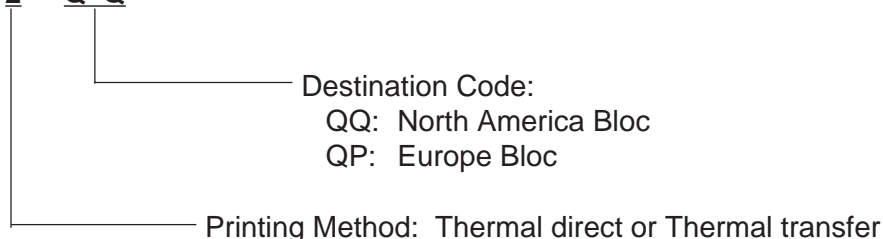
- 1) Various bar codes, characters and graphic data can be printed using both thermal transfer and thermal direct methods.  
This printer can also print writable characters and logos at designated coordinates by using a graphic command.
- 2) The RS-232C is available as a standard interface between the printer and a PC. In addition, optional interfaces such as I/F PC board (Centronics, flash memory and expansion I/O interface) and high speed PC interface board are available.
- 3) A 16-bit CPU and a Gate Array equipped with several peripheral LSIs realizes high system performance.
- 4) With the element positioned at the edge of the print head, print quality is improved because the media passes straight through. No adjustment of media thickness or printing pressure is necessary.  
A high dot density of 8.0 dots/mm produces a clear print and the heat history control system optimizes applied pulse signal to the head.
- 5) This printer accommodates a max. format size of 104.0 mm wide, by 896.0 mm long and a max. print speed of 10"/sec.
- 6) High throughput can be obtained with "on-the-fly" formatting.
- 7) Installation space is minimized because the media is loaded internally.
- 8) The metal cover and damper provide a heavy-duty enclosure.
- 9) A strip unit and rewinder are provided as optional equipment on this printer. And a high-speed ribbon saving function which economizes ribbon usage is available.
- 10) Optional devices such as a cutter module, strip module, ribbon saving module, I/F PC board, high speed PC interface board and flash memory card (1MB or 4MB) are available.

**NOTE:** Every size is written in millimeter (mm) in this manual. To obtain the size in inch, divide by 25.4

## 1.2 DESCRIPTION OF MODEL NUMBER

### • QQ/QP models

**B - 4 7 2 - Q Q**



### • CN model

**B - 4 7 2 - G S 1 2 - C N**



## 1.3 OVERVIEW AND DIMENSIONS (APPROXIMATE)

### 1.3.1 Front View/Rear View

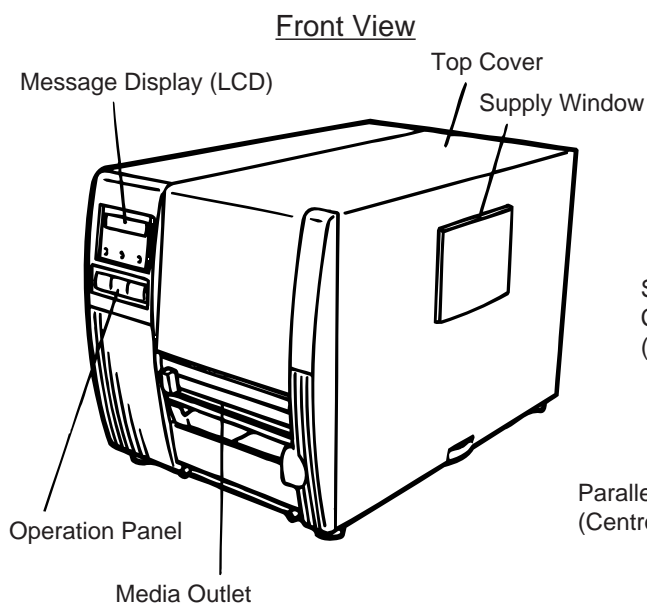


Fig. 1-1

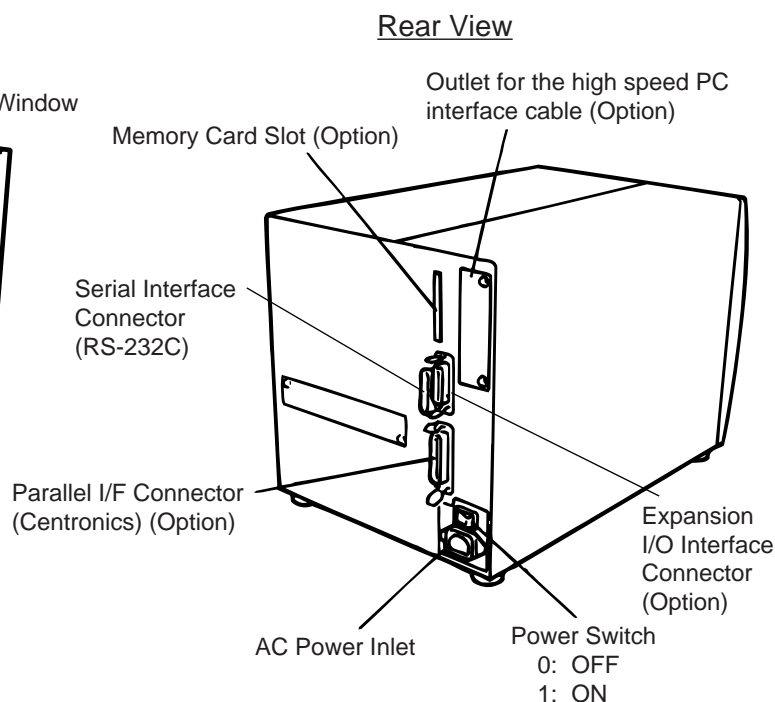


Fig.1-2

### 1.3.2 Operation Panel

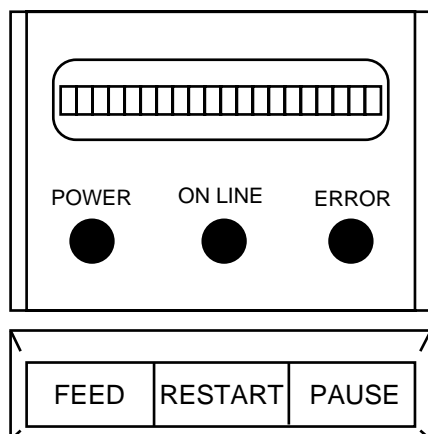


Fig. 1-3

#### MESSAGE DISPLAY (LCD)

Displays messages in the language selected by DIP switch. When power is turned on and it is ready to print, "ON LINE" is displayed.

#### POWER LED (Green)

Lights when the power is turned on.

#### ON-LINE LED (Green)

- 1) Flashes when communicating with a host computer.
- 2) On while printing.

#### ERROR LED (Red)

Lights when the printer does not operate correctly.

#### FEED Key

Feeds paper.

#### RESTART Key

Resets the printer when paused or when an error occurs.  
Used to set the threshold. (Refer to Owner's Manual)

#### PAUSE Key

Pauses printing.  
Message display shows "PAUSE" and an unprinted count.  
Used to set the threshold. (Refer to Owner's Manual)

### 1.3.3 Dimensions (Approximate)

Standard: 291 mm (W) x 460 mm (D) x 308 mm (H)

With cutter module: 291 mm (W) x 521 mm (D) x 308 mm (H)



## 1.4 BASIC SPECIFICATIONS

- 1) Printing method ..... Thermal direct printing or thermal transfer printing
- 2) Print head (4 inches)
  - ① Total number of dots ..... 832 dots
  - ② Dot density ..... 8.0 dots/mm
  - ③ Maximum print width ..... 104.0 mm
  - ④ Thermal pitch ..... 0.125 mm
- 3) Print speed 3"/sec., 6"/sec., 10"/sec. (selectable)

**NOTES:**

1. These print speeds are available when printing ratio is less than 15% of the entire label or tag paper.
2. Since the thermal direct printing at a speed of 10"/sec. does not provide satisfactory print quality at present, it is not guaranteed.
3. For the thermal transfer printing at a speed of 10"/sec., the print tone may become light within about 20 mm from the print start position on the first label after pausing. In this case, adjust the print tone with the print tone fine adjustment (see the Maintenance Manual) and by changing the print speed.

- 4) Format size (W) x (L) ..... 104.0 x 896.0 max.
- 5) Issuing mode ..... Batch printing  
Auto cut (Auto cut mode is only available when an optional cutter is attached.)  
Strip printing (Strip mode is only available when an optional strip module is attached.)
- 6) Type of bar code
  - ① UPC-A, UPC-A+2digits, UPC-A+5digits
  - ② UPC-E, UPC-E+2digits, UPC-E+5digits
  - ③ EAN8, EAN8+2digits, EAN8+5digits, EAN13, EAN13+2digits, EAN13+5digits, EAN128
  - ④ JAN8, JAN13
  - ⑤ NW-7
  - ⑥ CODE39 (standard/full ASC II)
  - ⑦ CODE93, CODE128 (auto code switch with/without)
  - ⑧ ITF
  - ⑨ MSI
  - ⑩ Data Matrix
  - ⑪ PDF417
  - ⑫ Industrial 2 of 5
  - ⑬ UCC 128
  - ⑭ Maxi Code
  - ⑮ Customer Bar Code
  - ⑯ Priority Customer Bar Code
  - ⑰ POSTNET
  - ⑱ RM4SCC (ROYAL MAIL 4STATE CUSTOMER CODE)
  - ⑲ KIX CODE
  - ⑳ Micro PDF
  - ㉑ QR Code
  - ㉒ CP Code
- 7) Bar code rotation ..... 0°, 90°, 180°, 270°
- 8) Magnification of bar code
  - UPC/EAN/JAN/CODE93/128/PDF417 ..... Up to 6 modules can be automatically calculated using 1-module width designation (1 to 15 dots).

Dots/Module		2	3	4	5	6	7	8
Bar code								
UPC-A/E	Min. Module Width (mm)	0.25	0.38	0.50	0.63	---	---	---
EAN8/13	Magnification (times)	0.76	1.14	1.51	1.91	---	---	---
JAN8/13								
CODE93	Min. Module Width (mm)	0.25	0.38	0.50	0.63	0.75	0.88	1.00
EAN128								
CODE128								
PDF417								

Dots/Module		9	10	11	12	13	14	15
Bar code								
UPC-A/E	Min. Module Width (mm)	---	---	---	---	---	---	---
EAN8/13 JAN8/13	Magnification (times)	---	---	---	---	---	---	---
CODE93 EAN128 CODE128 PDF417	Min. Module Width (mm)	1.13	1.25	1.38	1.50	1.63	1.75	1.88

- NW-7/CODE39/ITF/MSI/Industrial 2 of 5 .... The width of narrow bars, wide bars and spaces can be optionally changed in a range of 1 to 99 dots.

- Data Matrix ..... The width of one cell can be changed in a range of 1 to 99 dots.

## 9) Type of characters

- |                                       |                                      |
|---------------------------------------|--------------------------------------|
| ① Times Roman medium (12, 15 point)   | ⑨ Prestige Elite medium (10.5 point) |
| ② Times Roman bold (15, 18, 21 point) | ⑩ Prestige Elite bold (15 point)     |
| ③ Times Roman Italic (18 point)       | ⑪ Courier medium (15 point)          |
| ④ Helvetica medium (9, 15, 18 point)  | ⑫ Courier bold (18 point)            |
| ⑤ Helvetica bold (18, 21 point)       | ⑬ OCR-A, B (12 point)                |
| ⑥ Helvetica Italic (18 point)         | ⑭ Outline font (Helvetica bold)      |
| ⑦ Presentation bold (27 point)        | ⑮ Writable characters                |
| ⑧ Letter Gothic medium (14.3 point)   | (40 types) (224 char./types)         |

## • CN model only

- |                      |                                  |
|----------------------|----------------------------------|
| ① Japanese (16 x 16) | ⑤ Chinese Song Style (24 x 24)   |
| ② Japanese (24 x 24) | ⑥ Chinese Gothic Style (32 x 32) |
| ③ Japanese (32 x 32) | ⑦ Writable characters (44 types) |
| ④ Japanese (48 x 48) |                                  |

## 10) Character code

- |          |        |
|----------|--------|
| ① PC-850 | ② PC-8 |
|----------|--------|

## 11) Character magnification

- ① Regular font: 0.5 ~ 9.5 times (magnified by 0.5 times in each direction)  
② Outline font: 2.0 ~ 85.0 mm (magnified by 0.1 mm in each direction)

**NOTE:** When the outline font size is large, the ribbon may wrinkle according to the quality of the ribbon or print tone.

## 12) White or black background ..... All types of characters are available

## 13) Character rotation ..... 0°, 90°, 180°, 270°

## 14) Character strings rotation ..... 0°, 90°, 180°, 270°

## 15) Type of line

- ① Horizontal line ② Vertical line ③ Slant line ④ Square ⑤ Rounded Rectangle ⑥ Circle

## 16) Line width ..... 1 dot to 8 dots can be specified (in units of 0.1 mm)

Guaranteed only when a line has more than 2 dots.

## 17) Mechanism

## ① Batch mechanism

This is the standard mechanism which let the printer print continuously without winding the label and tag paper. The stirp or auto-cut function is available when the optional module is installed.

## ② Strip mechanism

Labels are stripped from the backing paper by the strip shaft when the strip module is installed. The next label will not be printed until the preceding label is taken away. The backing paper is wound onto the take-up spool. By installing the rewinder guide plate the tag paper and label can be wound onto the take-up spool.

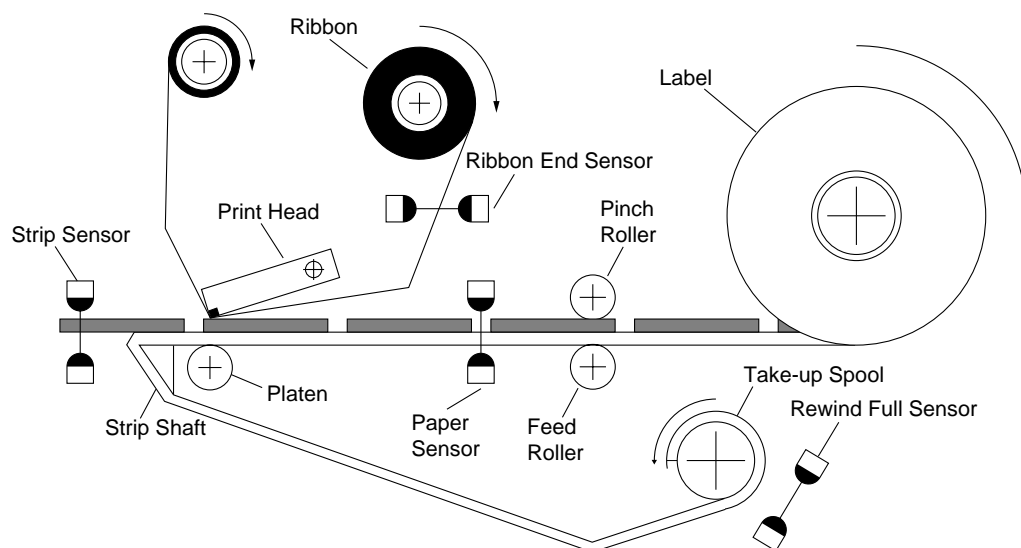


Fig. 1-4

## ③ Auto cut mechanism

When the cutter module is installed, the backing paper and tag paper are cut individually (stop and cut). Minimum cut length is 25.4 mm (tag paper) or 38 mm (label).

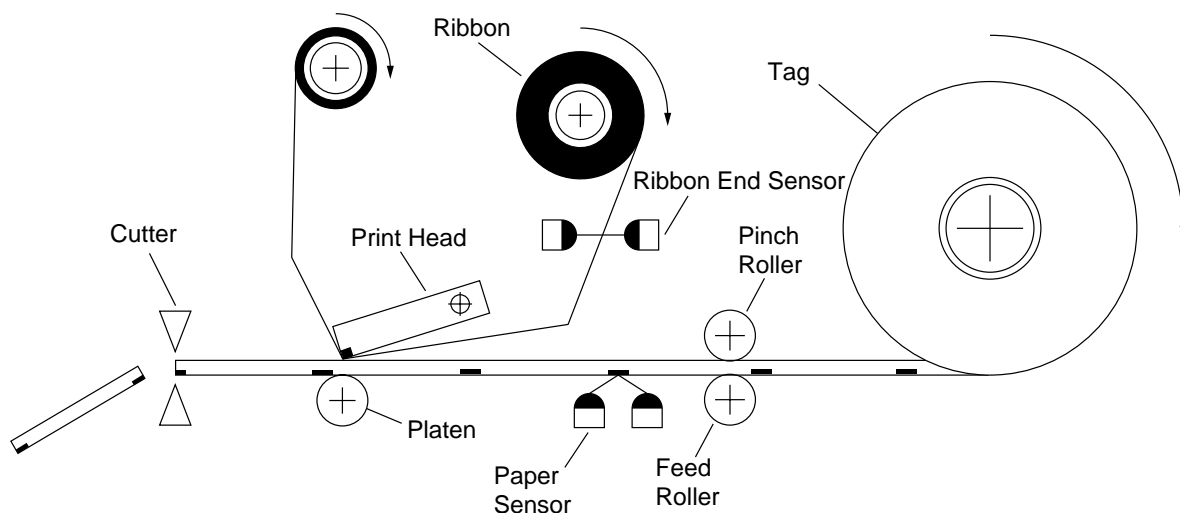


Fig. 1-5

## 18) Power supply

QQ model: AC 100 ~ 120 V + 10%, -15%, 50/60Hz  $\pm$  2Hz

QP model: AC 220 ~ 240 V + 10%, -15%, 50Hz  $\pm$  2Hz

## 19) Current consumption

Printing: 190 W max., QQ model: 2 A max., QP model: 1 A max.

(Stand by: 18 W, QQ model: 500 mA, QP model: 250 mA)

## 20) Rush current ..... 15 A or less

## 1.5 ELECTRONICS SPECIFICATIONS

- 1) CPU .....  $\mu$ PD70236AGD-16-588
- 2) Memory
  - ① Program + Character generator: Flash ROM 1 MB
  - ② Backup: EE-PROM 128 Bytes
  - ③ Image buffer + Work: D-RAM 2 MB
- 3) Interface
  - ① RS-232C interface
    - (1) Communication mode: Full-duplex
    - (2) Transmission speed: 2400, 4800, 9600, 19200 BPS (selectable)
    - (3) Synchronization: start-stop synchronization
    - (4) Transmission parameter
      - Parity: None, EVEN, ODD
      - Start bit: 1-bit
      - Stop bit: 1-bit or 2-bit
      - Word length: 7-bit or 8-bit
    - (5) Error detection
      - Parity check: VRC (Vertical parity check)
      - Framing error: This error occurs when no stop bit is found in the frame specified starting with the start bit.
      - Overrun error: This error occurs when subsequent data is input before the data input to the UART from the host is read by the printer.
    - (6) Data entry code: ASCII, 8-bit code for European characters, 8-bit code for graphic
    - (7) Receiving buffer: 5KB
    - (8) Protocol
      - XON/XOFF (DC1/DC3) protocol
        - When initialized after power on, this printer becomes ready to receive data and sends an XON code (11H). (Transmission or non-transmission of XON code is selectable by means of the DIP switch.)
        - The printer sends an XOFF code (13H) when the blank positions in the receive buffer becomes 800 Bytes or less.
        - The printer sends an XON code (11H) when the blank positions in the receive buffer are 2KB or more.
        - When there are no blank positions in the receive buffer, the printer discards data received which exceeds the receive buffer capacity, without storing it in the buffer. (After detecting the XOFF code, the host computer must stop transmission before the printer receive buffer becomes full.)
        - The printer sends an XOFF code (13H) at power off time. (XOFF code send is selectable with Dip switch.)
      - READY/BUSY (DTR) protocol
        - When initialized after power on, this printer becomes ready to receive data and converts the DTR signal to "High" level (READY).
        - The printer converts the DTR signal to "Low" level (BUSY) when the blank positions in the receive buffer amount to 800 Bytes or less.
        - The printer converts the DTR signal to "High" level (READY) when the blank positions in the receive buffer amount to 2KB or more.
        - When there are no blank position in the receive buffer, the printer discards data received which exceeds the receive buffer capacity, without storing it in the buffer. (After detecting a BUSY signal, the host computer must stop transmission before the printer receive buffer becomes full.)

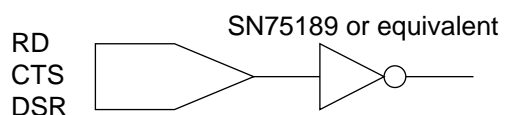
- XON/XOFF (DC1/DC3) protocol+READY/BUSY (DTR) protocol
    - When initialized after power on, this printer becomes ready to receive data and converts the DTR signal to “High” level (READY). The printer sends an XON code (11H).
    - When the blank positions in the receive buffer are 800 Bytes or less, the printer converts the DTR signal to “Low” level (BUSY) and sends an XOFF code (13H).
    - When the blank positions in the receive buffer are 2KB or more, the printer converts the DTR signal to “High” level (READY) and sends an XON code (11H).
    - When there are no blank positions in the receive buffer, the printer discards data received which exceeds the receive buffer capacity, without storing it in the buffer. (After detecting the XOFF code or BUSY signal, the host computer must stop transmission before the printer receive buffer becomes full.)
    - The printer sends an XOFF code (13H) at power off time.
  - READY/BUSY (RTS) Protocol
    - When initialized after power on, this printer becomes ready to receive data and converts the RTS signal
    - The printer converts the RTS signal to “Low” level (BUSY) when the blank positions in the receive buffer amount to 800 Bytes or less. to “High” level (READY).
    - The printer converts the RTS signal to “High” level (READY) when the blank positions in the receive buffer amount to 2 KB or more.
    - When there are no blank position in the receive buffer, the printer discards data received which exceed the receive buffer capacity, without storing it in the buffer. (After detecting a BUSY signal, the host computer must stop transmission before the printer receive buffer becomes full.)
    - Both the DTR signal output from the printer and the DSR signal output from the PC are always “High”.
- NOTES:** 1. When performing the flow control with Windows, in the port setting screen, select “Hardware” for flow control. [set to the READY/BUSY (RTS) protocol]
2. Under the READY/BUSY (DTR) protocol, after turning the printer power ON, send data 200ms after the DTR signal is converted to “High” level (READY). And under the READY/BUSY (RTS) protocol, after turning the printer power ON, send data 200ms after the RTS signal is converted to “High” level (READY).

## (9) Pin description

Pin No.	Signal	I/O	Description
1	FG (Framed Ground)	-	Ground line for circuit protection.
2	RD (Received Data)	I	Data line from which the printer receives data from the host (receive data line). Logic "1" is "Low", and "0" "High". It is LOW (MARK) while no data is being sent.
3	TD (Transmit Data)	O	Data line from which the printer sends data to the host (send data line). Logic "1" is "Low", and "0" "High". It is LOW (MARK) while no data is being sent.
4	CTS (Clear to Send)	I	Input signal from the host. It must be "High" for the printer to send data.
5	RTS (Request to Send)	O	Output signal to the host. (1) READY/BUSY (DTR) protocol (2) READY/BUSY (RTS) protocol Indicates whether the printer is ready to receive data. The signal is at the Low level when the data amount in the data buffer is near full, and at the high level when near empty.
6	DTR (Data Terminal Ready)	O	Output signal to the host. (1) READY/BUSY (RTS) protocol It indicates there is data to send to the host. After power is ON, it is always "High". (2) READY/BUSY (DTR) protocol Indicates whether the printer is ready to receive data. The signal is at the Low level when the data amount in the data buffer is near full, and at the high level when near empty.
7	SG (Signal Ground)	-	Ground line for all data and control signals.
20	DSR (Data Set Ready)	I	Input signal from the host. It must be "High" for the printer to receive data.

## (10) Interface circuit

## ■ Input circuit



## ■ Output circuit

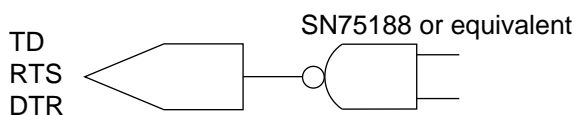


Fig. 1-6

## ■ Signal level

Input voltage	"H"	+3 V ~ +15 V
	"L"	-3 V ~ -15 V
Output voltage	"H"	+6 V ~ +13 V
	"L"	-6 V ~ -13 V

## ② Centronics interface

- (1) Data input method: 8-bit parallel (DATA 1~8)  
 (2) Control signals: ACK, BUSY, PAUSE, DATA; STB, INPUT; PRIME, FAULT, PE  
 (3) Data input code: ASCII, JIS 8-bit code for European characters, 8-bit code for graphic  
 (4) Receiving buffer: 5KB  
 (5) Input/Output circuit configuration and Input/Output conditions

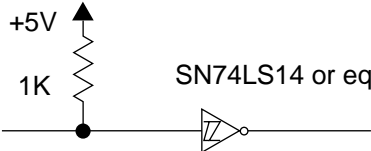
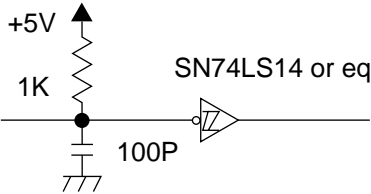
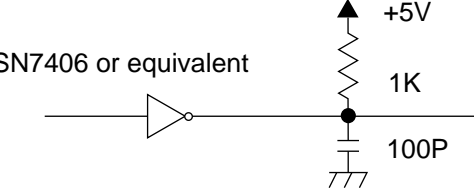
Type	Signal Name	Configuration	
Input	DATA 1 ~ 8		Logical level (input) 1 = 2 ~ 5 V 0 = 0 ~ 0.4 V
	INPUT • PRIME DATA • STB		
Output	BUSY FAULT PAUSE ACK PE		Logical level (input) 1 = 2.4 ~ 5 V 0 = 0 ~ 0.4 V

Fig. 1-7

## ③ External I/O interface

## (1) Interface circuit

## ■ Input circuit

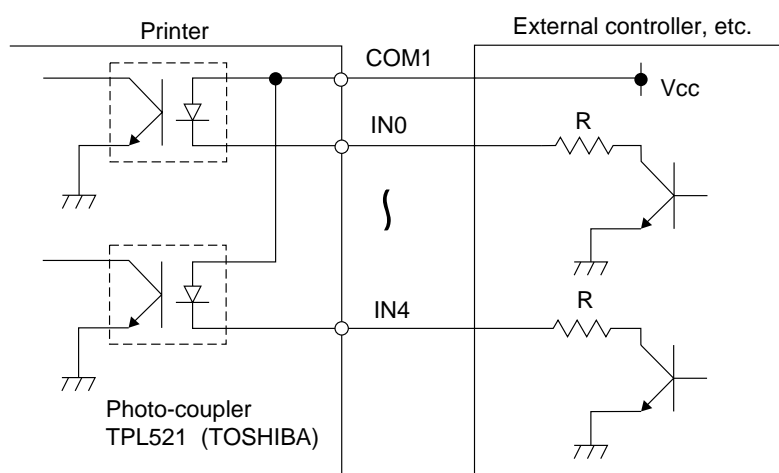


Fig. 1-8

There are five input circuits, and each input is a current loop using a photo-coupler. The anode of the photo-coupler is connected to common pin COM1 in each of the five circuits. Each cathode is independent. The voltage of Vcc is 24 V (max.) while the diode operating current is 16 mA.

### ■ Output circuit

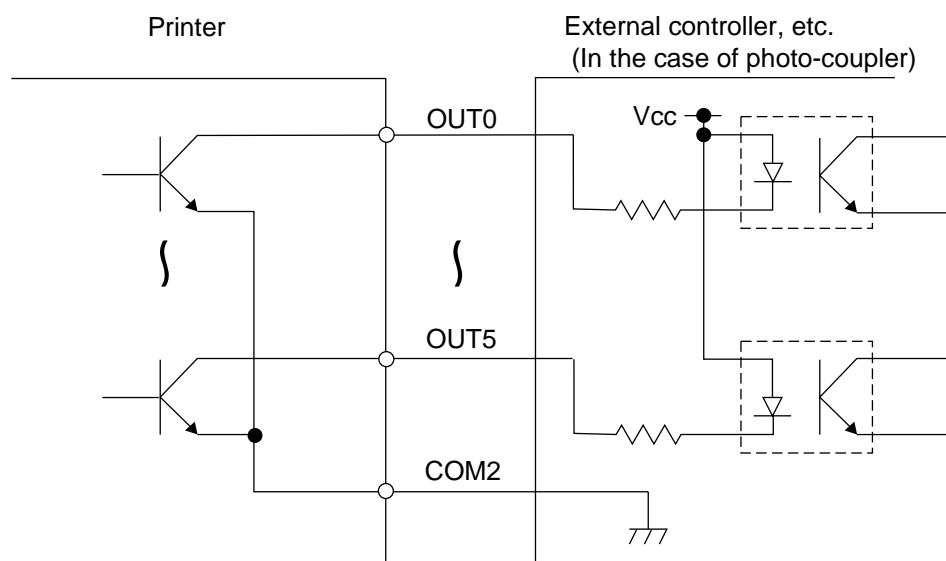


Fig. 1-9

There are six output circuits, and each output is an open collector. The voltage of  $V_{cc}$  is 24 V (max.) while the operating current is 150 mA.

For other details, please refer to the Expansion I/O specification.

#### 4) Sensor/switch

##### ① Head up switch (micro switch)

This switch, attached at the lower left of the print head as viewed from the media outlet, detects that the print head is ready to print (head is down). When the head lever is lowered, the head down cam pushes up the print head, the micro switch is turned on and the print head prepares to print.

##### ② Paper sensor

This sensor is comprised of the black mark sensor and feed gap sensor. It is positioned 92.1 mm from the platen.

The sensor position is adjustable according to the media width. It moves toward the main frame a max. of 70 mm by turning the knob counterclockwise.

##### ■ Black mark sensor (Reflective sensor)

This sensor detects the difference of potential between the black mark and tag paper to find the print position of the tag paper.

It is located at the home position with the tag paper or print head before shipment.

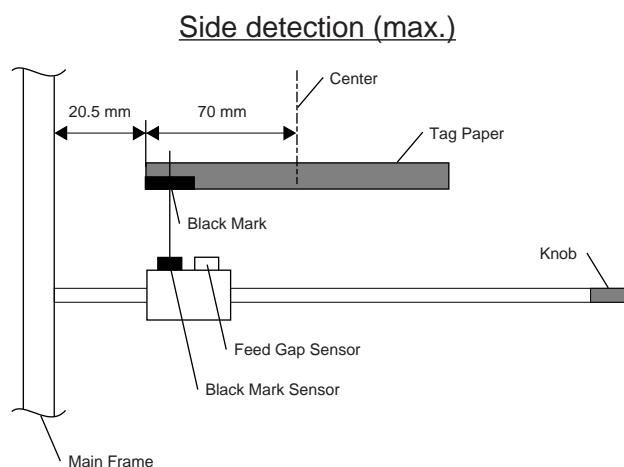


Fig. 1-10

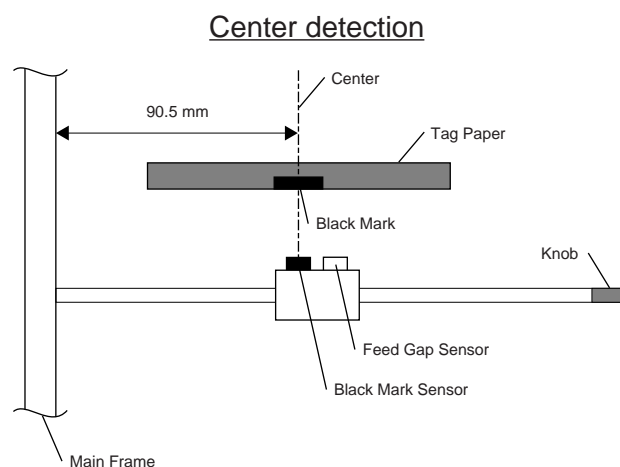


Fig.1-11



### ■ Feed gap sensor (Transmissive sensor)

This sensor detects the difference in potential between the backing paper and the label to find the print position of the label. The feed gap sensor is located 8 mm to the right of the black mark sensor.

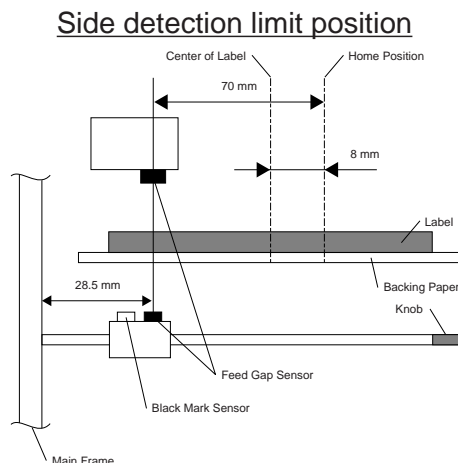


Fig. 1-12

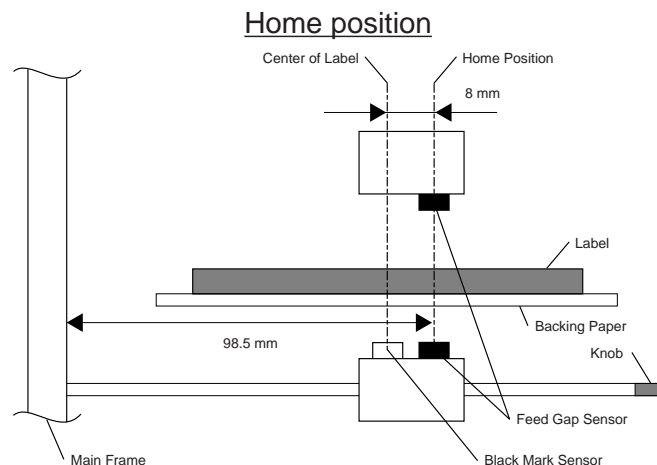


Fig.1-13

### ③ Strip sensor (Transmissive sensor)

This sensor detects whether or not the label has been removed and controls the label feed. It is positioned 13.7 mm from the platen.

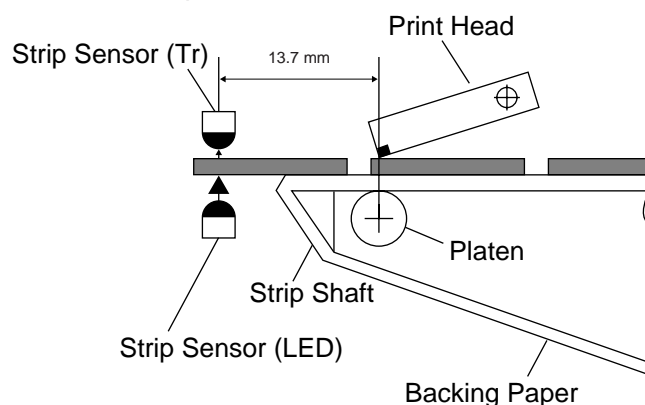


Fig.1-14

### ④ Ribbon end sensor (Transmissive sensor)

When printing in thermal transfer mode, this sensor detects the difference in potential between the ribbon and the ribbon end to indicate the ribbon end. It is positioned 94.8 mm from the platen and the detection point is 76.5 mm from the main frame.

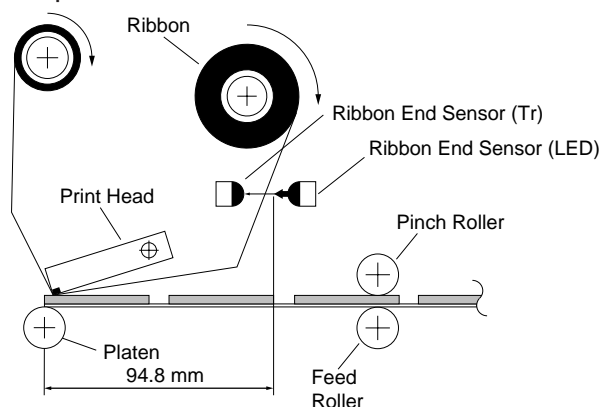


Fig.1-15

## ⑤ Rewind full sensor (Transmissive sensor)

This sensor detects excessive winding when winding backing paper or label onto the take-up spool. It is positioned 195.3 mm (Tr side) and 150.9 mm (LED side) from the platen, and the detection point is 92.5 mm from the main frame. Excessive winding is detected when backing paper blocks the light from the LED.

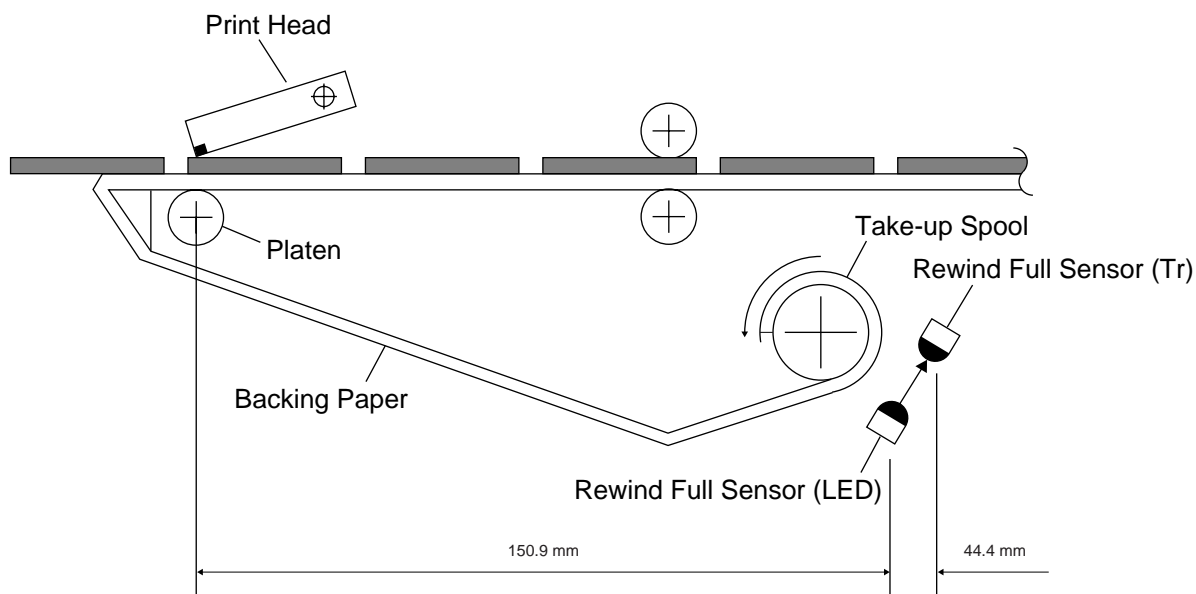


Fig.1-16

## ⑥ Slit sensor (Transmissive sensor)

This sensor detects the rotation count of the ribbon shaft and the ribbon motors. The ribbon motors torque works to take up slack in the ribbon and is dependent on the detected count. The slit sensor is a photo coupler combining an LED and a transistor.

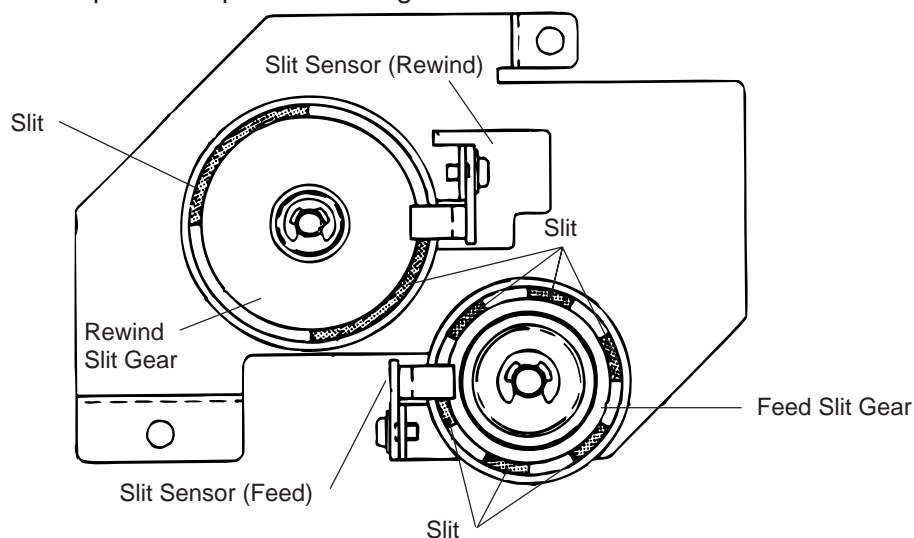


Fig.1-17

## ⑦ Cutter home position switch (micro switch)

A cam positioned at the end of the cutter motor arm turns the micro switch on/off in accordance with the cycle of the cutter motion (one rotation). The micro switch status indicates if the cutter is in the home position.

For details, please refer to the Maintenance Manual section 4.1 Cutter Drive.

## 2. SUPPLY SPECIFICATIONS

Information regarding the supply specifications contained in the Product Description is essential to service engineers. Detail specifications and other information on the media and ribbon are described in the Supply Manual by model. It is issued by and sent from TOSHIBA TEC H.Q. (Sales Division) upon release of new model or manual's revision. When purchasing the supplies locally, be sure to refer to the Supply Manual for details, or trouble may occur. Be sure to read carefully and understand the Supply Manual since it also includes the details about notes, precision of the print start position, limitations on printing, etc.

### 2.1 MEDIA

Item \ Type	Thermal Label			Taag Paper	
	Batch	On-demand	Auto-cut	Batch	Auto-cut
Width (mm)	50.8 ~ 112.0			50.8 ~ 112.0	
Length (mm)	10.0 ~ 999.0	25.4 ~ 999.0	38.0 ~ 999.0	10.0 ~ 999.0	25.4 ~ 999.0
Thickness (mm)	0.13 ~ 0.17			0.15 ~ 0.29	
Outer roll diameter (mm)	200.0 max.			200.0 max.	
Recommended paper	RICOH: 140LA/OSAKA SEALING: C6TB			I-BEST S/I-BEST W	

- NOTES:**
1. When rewinding the media onto the take-up spool in batch mode, the max. outer roll diameter should be 180 mm.
  2. When cutting the thermal label, secure a gap of 6 mm or more and cut in the middle of the gap.
  3. The thermal paper used for direct thermal printing must not have the specifications which exceed  $\text{Na}^+$  800 ppm,  $\text{K}^+$  250 ppm and  $\text{Cl}^-$  500 ppm.
  4. Some ink used on pre-printed labels may contain ingredients which shorten the print head's product life. Do not use labels pre-printed with ink which contain hard substances such as carbonic calcium ( $\text{CaCO}_3$ ) and kaolin ( $\text{Al}_2\text{O}_3$ ,  $2\text{SiO}_2$ ,  $2\text{H}_2\text{O}$ ).
  5. The label should be at least three times as long as the detection gap.
  6. Relations between media roll length and core diameter.  

$$L = \frac{(D^2 - d^2) \times \pi}{4t}$$

$$L: \text{Media length} \quad d: \text{Media core outside diameter}$$

$$D: \text{Max. roll diameter} \quad t: \text{Media thickness}$$
  7. Use of media with a width less than the minimum media width may shorten the print head life.

#### 1) Thermal Label

<Design>

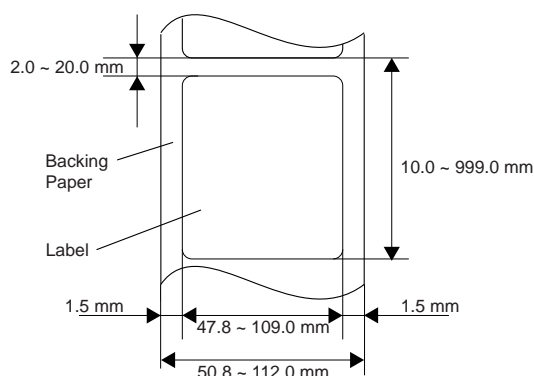


Fig.2-1

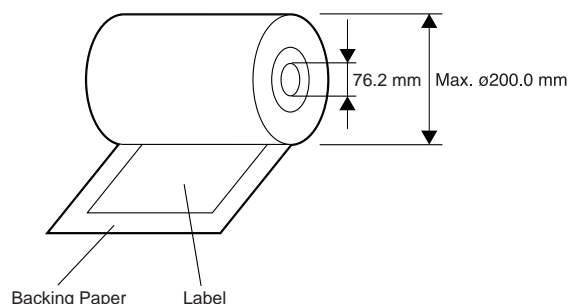


Fig.2-2

## 2) Tag Paper

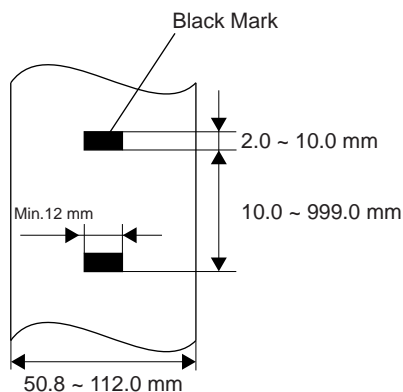


Fig.2-3

## &lt;Design&gt;

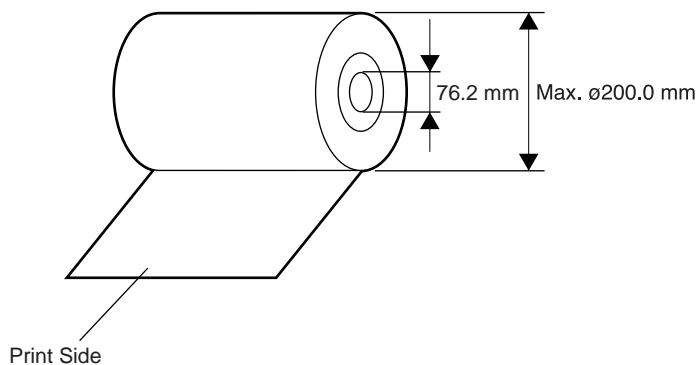


Fig.2-4

**NOTE:** The reflection rate of the black mark is 10% or less at wavelength of 950nm. A square hole can substitute for the black mark. When the square hole is used, no printing is allowed on the black side.

## &lt;Non Print Area&gt;

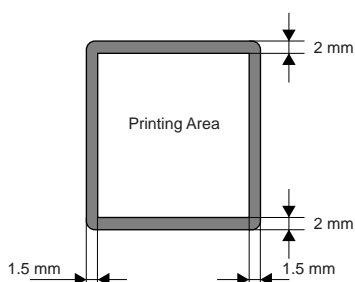


Fig.2-5

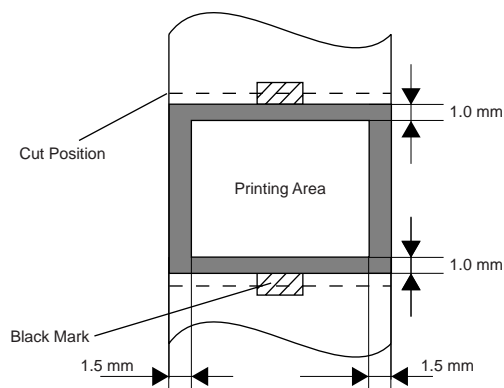
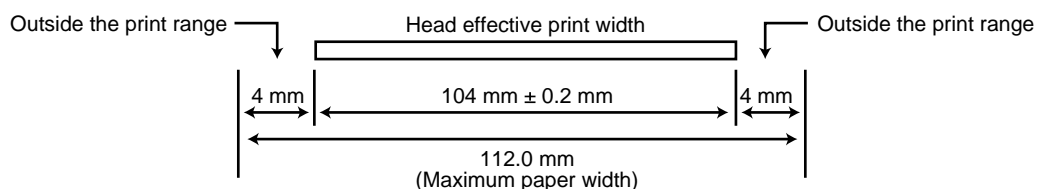


Fig.2-6

**NOTE:** Max effective print area is 104.0 mm (W) x 896.0 mm (L).

## 3) Relationship between the head effective print width and paper



## 2.2 RIBBON

No.	Item		Specification
1	Shape		Spool type
2	Width		68 ~ 112 mm
3	Max. length		600 m
4	Max. OD		ø 90 mm
5	Back treatment		Coated
6	Core	Material	Cardboard
		Shape	See Fig. 2-7.
7	Leader tape		Polyester film (Opaque), 300 ± 5 mm long
8	End tape		Polyester film (Opaque), 250 ± 5 mm long
9	Winding method		The ink side is outside of ribbon winding.

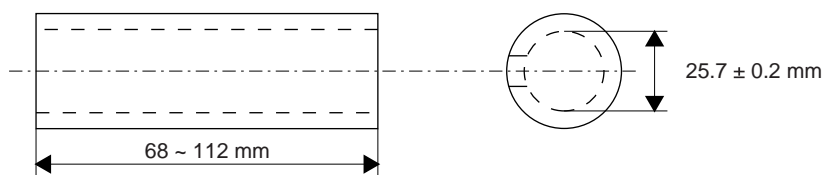


Fig.2-7

**NOTE:** When purchasing ribbons locally, they must meet the above size. There may be TOSHIBA TEC-approved ribbons which do not fall within the above size, however, they have no functional problem.

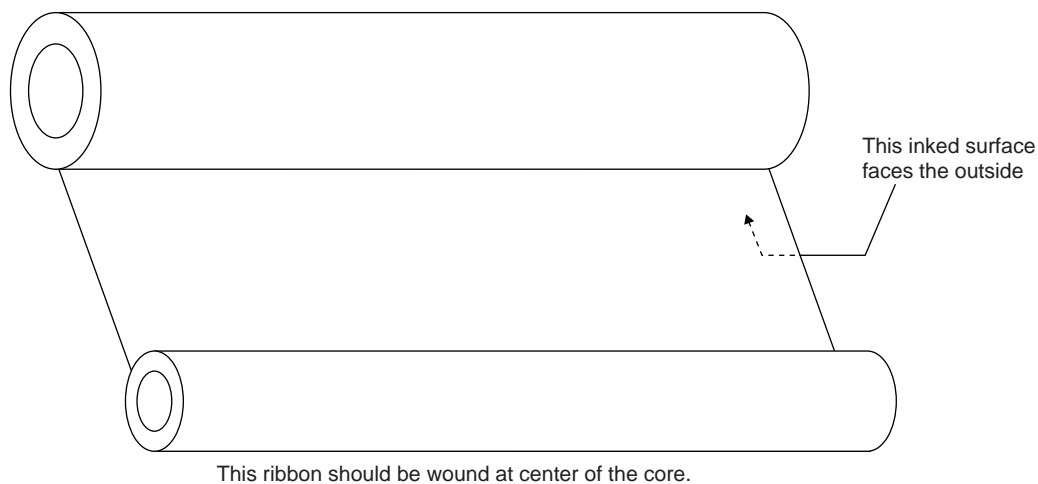


Fig.2-8 Positional relationship between core and ribbon

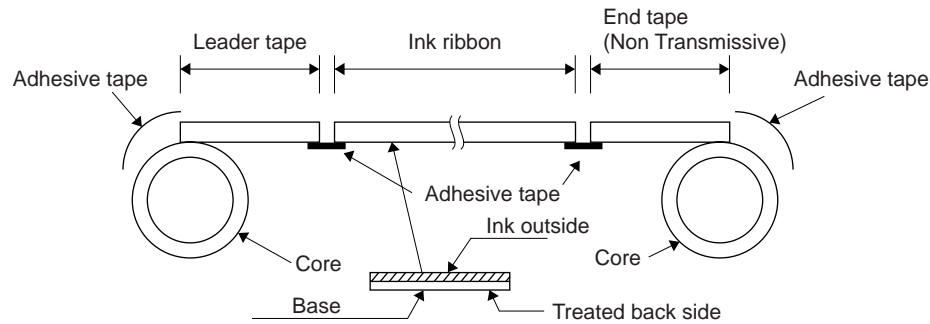


Fig.2-9 Connection between leader tape and ribbon

## 2.3 CARE AND HANDLING OF THE MEDIA AND RIBBON

### CAUTION:

*Be sure to read carefully and understand the Supply Manual. Use only media and ribbon which meet specified requirements. Use of non-specified media and ribbon may shorten the head life and result in problems with bar code readability or print quality. All media and ribbon should be handled with care to avoid any damage to the media, ribbon or printer. Read the following guideline carefully.*

- Do not store the media and ribbon for longer than the manufactures recommended shelf life.
- Store media rolls on the flat end, do not store them on the curved sides as this might flatten that side causing erratic media advance and poor print quality.
- Store the media in plastic bags and always reseal after opening. Unprotected media can get dirty and the extra abrasion from the dust and dirt particles will shorten the print head life.
- Store the media and ribbon in a cool, dry place. Avoid areas where they would be exposed to direct sunlight, high temperature, high humidity, dust or gas.
- The thermal paper used for direct thermal printing must not have the specifications which exceed  $\text{Na}^+$  800 ppm,  $\text{K}^+$  250 ppm and  $\text{CL}^-$  500 ppm.
- Some ink used on pre-printed labels may contain ingredients which shorten the print head's product life. Do not use labels pre-printed with ink which contain hard substances such as carbonic calcium ( $\text{CaCO}_3$ ) and kaolin ( $\text{Al}_2\text{O}_3$ ,  $2\text{SiO}_2$ ,  $2\text{H}_2\text{O}$ ).
- Avoid using media containing  $\text{SiO}_2$  or talc which wears the print head protection layer.

For further information please contact your local distributor or your media and ribbon manufacturer.

### 3. OPTIONAL KIT

Option Name	Type	Use
Cutter module	B-4205-QM	This cutter module uses a swing cutter. It cuts backing paper of labels and tag paper automatically in "stop and cut" mode. To purchase the cutter module, please contact your distributor or TOSHIBA TEC H.Q. can assist in finding one for you.
High speed PC interface board	B-4800-PC-QM	This interface board quickly controls command transfer and printing. To purchase the high speed PC interface board, please contact your distributor or TOSHIBA TEC H.Q. can assist in finding one for you.
Strip module	B-4905-H-QM	This strip module strips the label from the backing paper with the take-up block and strip block. When the rewinder guide plate is attached, the tag paper and label with backing paper are wound. To purchase the strip module, please contact your distributor or TOSHIBA TEC H.Q. can assist in finding one for you.
Ribbon saving module	B-4905-R-QM	The ribbon saving module moves the print head up and down by using a solenoid to save the ribbon loss as far as possible. To purchase the ribbon saving module, please contact your distributor or TOSHIBA TEC H.Q. can assist in finding one for you.
I/F PC board	B-4700-IO-QM	I/F PC board is equipped with the flash memory card interface, centronics interface and expansion I/O interface for the external equipment. To purchase the I/F PC board, please contact your distributor or TOSHIBA TEC H.Q. can assist in finding one for you.
Flash memory card	-----	This flash memory card of 1MB or 4MB is used to save logos, writable characters and print format. It is available at retail outlets.

#### 3.1 CUTTER MODULE: B-4205-QM

This compact cutter module uses a built-in swing cutter. The specification is provided below:

- ① Cutting method ..... Swing cut
- ② Cut mode ..... Stop cut
- ③ Minimum cut length ..... Tag paper: 25.4 mm, Label: 38 mm
- ④ Home position switch..... Micro switch

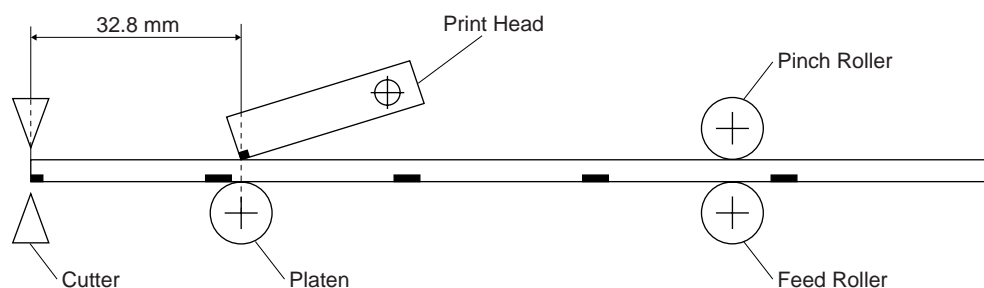


Fig. 3-1

### 3.2 HIGH SPEED PC INTERFACE BOARD: B-4800-PC-QM

Command transfer and printing can be processed quickly by connecting a PC and the printer via a FIFO (first-in first-out) IC on the high speed PC interface board. For details, refer to the specification for high speed PC interface.

#### ① Configuration of interface

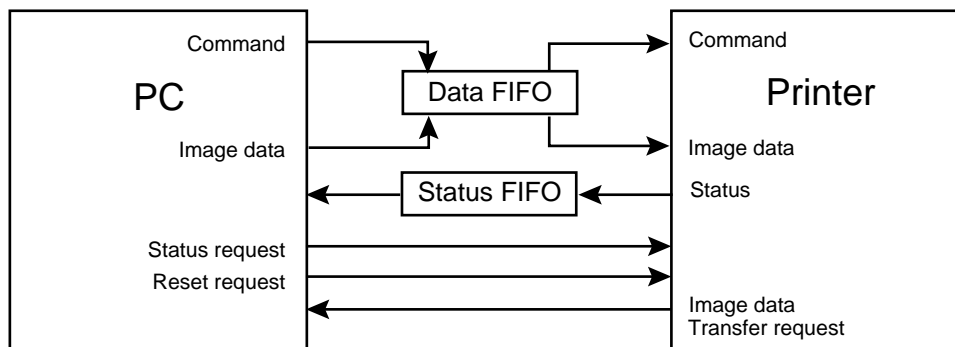


Fig. 3-2

#### ② Signal description

Signal	Direction	Description
Data FIFO	PC → Printer	FIFO to transfer commands and image data. In case of a command, FIFO data reading is performed by the CPU. In case of image data, reading is performed by DMA transfer.
Status FIFO	PC ← Printer	FIFO to transfer status. The status for a status autosending or for status request is written by the BPE.
Status request signal	PC → Printer	The PC turns this signal high-level to request for a status. It is cleared when reading is performed.
Reset request signal	PC → Printer	The PC turns this signal high-level to request for reset. It is cleared when reading is performed.
Image data transfer request signal	PC ← Printer	The printer turns this signal high-level when ready for an image data transfer. When transfer is completed, it is turned low-level. The PC must not write the image data to the FIFO until this signal turns high-level. Also, the PC must confirm that this signal is low-level for sending a command.

#### ③ Transmission control

- When a command is sent from the PC to the printer:  
Confirms that the image data transfer request bit has not been ON and that the FIFO is vacant, then writes a command to the FIFO.
- When image data is sent from the PC to the printer:  
Confirms that the image data transfer request bit has been ON, then writes the image data to the FIFO.
- When the printer transfers image data from the PC using DMA:  
Turns the image data transfer request bit high-level to start DMA. When DMA transfer of all the image data is completed, turns the image transfer request bit low-level.
- When a status is sent from the printer to the PC: Writes a status to the FIFO.



### 3.3 STRIP MODULE: B-4905-H-QM

Strip module consists of the take-up block and strip block. Installing the strip module enables the printer to not only strip labels from the backing paper, but wind the tag paper and label with backing paper onto the take-up spool by using the rewinder guide plate. The rewind full sensor which detects the overflow if the wound tag paper or label exceeds the specified amount is provided.

### 3.4 RIBBON SAVING MODULE: B-4905-R-QM

By moving the print head up and down with a solenoid, the ribbon saving module saves loss of the ribbon as far as possible. It is small enough to be put into the print block.

### 3.5 I/F PC BOARD: B-4700-IO-QM

The I/F PC board contains the flash memory card interface for registering logos, writable characters and PC commands, a centronics interface for printing controlled by the PC and an expansion I/O interface for printing controlled by external equipment.

### 3.6 FLASH MEMORY CARD

This flash memory card of 1MB or 4MB is used to save logos, writable characters and print format data. It is directly connected to CN1 on the I/F PC board, and stored data can be overwritten by down-line-loading from the PC.

When purchasing flash memory cards, refer to the following table. The proper operation of these memory cards have been verified.

Capacity	Maker	Type	Device code	Maker code
1M Byte	Maxell	EF-1M-TB <span style="border: 1px solid black;">AA</span>	D0H	1CH
	Mitsubishi	MF81M1-GBDAT01		
4M Byte	Maxell	EF-4M-TB <span style="border: 1px solid black;">CC</span>	88H	B0H
	Maxell	EF-4M-TB <span style="border: 1px solid black;">DC</span>	ADH	04H
	Centennial Technologies INC.	FL04M-15-11119-03		01H
	INTEL	IMC004FLSA	A2H	89H
	Simple TECHNOLOGY	STI-FL/4A		
	Mitsubishi	MF84M1-G7DAT01		
	PC Card KING MAX	FJN-004M6C		
	PC Card	FJP-004M6R	A0H	89H

### 3.7 FANFOLD PAPER GUIDE MODULE: B-4905-FF-QM

This is a paper guide exclusively used for fanfold paper. Attaching it in place of the standard paper guide allows the printer to print on fanfold paper.

For the installation procedure, refer to the Maintenance Manual.









TEC Color Printer

# **B-470 SERIES**

## **Maintenance Manual**

Document No. **EM18-33011**

Original **Feb., 1994**

(Revised **Feb., 2000**)

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### **CAUTION:**

- 1. This manual may not be copied in whole or in part without prior written permission of TOSHIBA TEC.*
- 2. The contents of this manual may be changed without notification.*
- 3. Please refer to your local Authorized Service representative with regard to any queries you may have in this manual.*

# 1. UNPACKING

## 1.1 Procedure

- 1) Open the carton.
- 2) Unpack the accessories from the carton.
- 3) Unpack the side pad (L)/(R) and the printer from the carton.
- 4) Place the printer on the level surface.

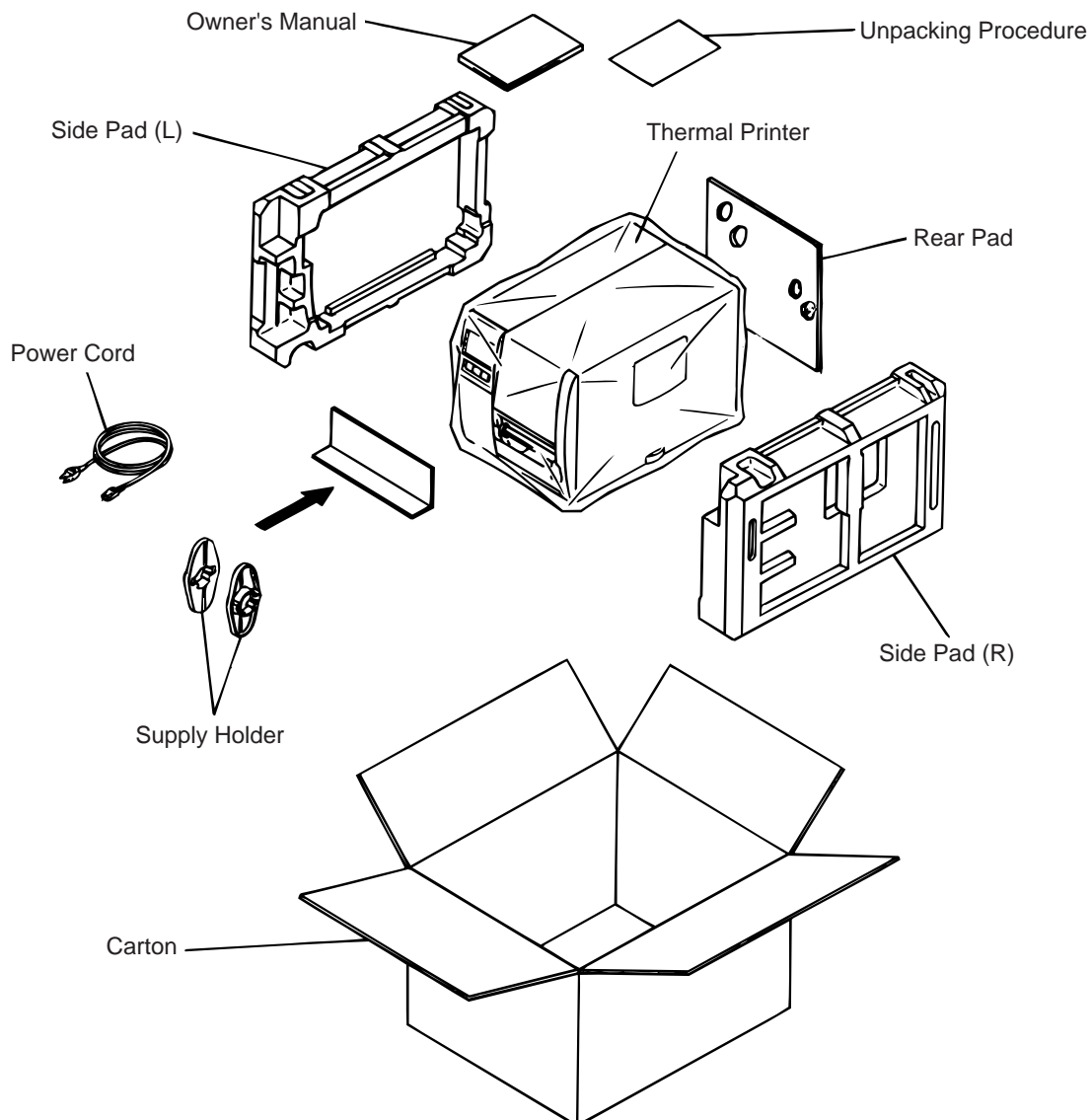


Fig. 1-1

## 1.2 Checks

- 1) Check for damages or scratches on the machine.
- 2) Confirm that none of the accessories are missing.

**NOTE:** Keep the carton and side pads for later transport.

## 2. MAJOR UNIT REPLACEMENT

### WARNING!

*Disconnect the power cord before replacing the main parts.*

### CAUTION:

1. NEVER separate the ribbon motors from the attaching plate, (bracket) because doing so will change their adjustment. (See Fig. 2-8)
2. NEVER remove the two screws painted red on the side of the print block. (See Fig. 2-13)
3. NEVER remove the four screws on the side of the print block. (See Fig. 2-13)
4. NEVER remove the four screws painted red fixing the right plate and reinforcing plate. (See Fig. 2-16) However, the machine with a serial number of 4Txxxxxx or later is not equipped with the red screws because of the change in the right plate shape.
5. NEVER remove unmentioned screws because doing so will change their adjustment.

- 1) Turn the power off.
- 2) Open the top cover to remove the four FL-3x5 screws. Slide the top cover to the left to release the damper and remove the top cover.
- 3) Remove the seven screws (FL-4x5 and B-4x5) to remove the left side cover.
- 4) Disconnect the FAN motor connector from the PS unit.

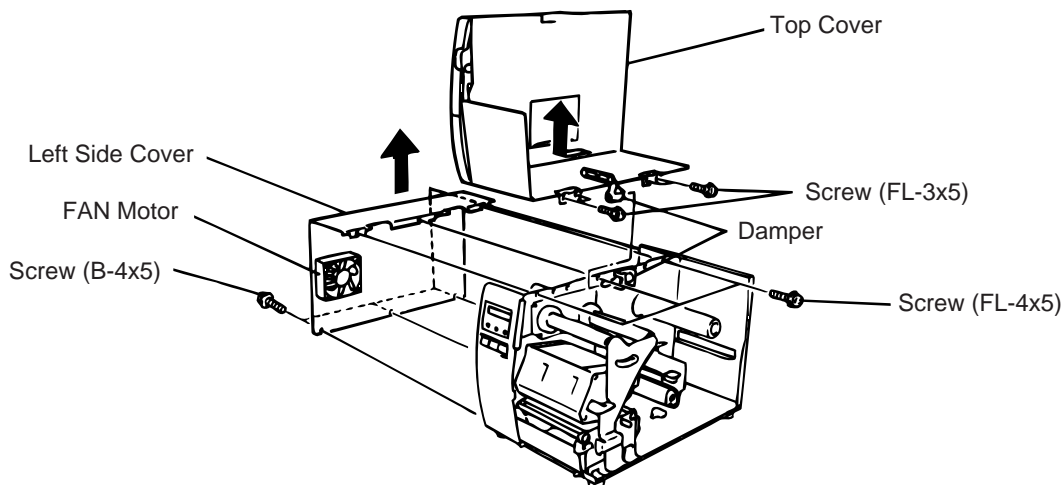


Fig. 2-1

**NOTE:** Instructions to remove the top cover and left side cover are omitted from each removal/ installation procedure provided below.

### ■ Lubrication

**CAUTION:** 1. Lubrication: During parts replacement  
2. Kinds of oil: FLOIL G-488: 1kg kan (Part No. 19454906001)

Any machine is generally in its best condition when delivered; therefore, it is necessary to try to keep this condition. Unexpected failure occurs due to lack of oil, debris or dust. To keep its best condition, periodically clean the machine and apply proper kinds of oil to each part in which lubrication is needed. Although the frequency of lubrication varies according to how much the machine is used, at least it is necessary to lubricate before the machine becomes dry. It is also necessary to wipe off excessive oil as it collects dirt.

**CAUTION:** Do not spray the inside of the printer with lubricants unsuitable oil can damage the mechanism.



## 2.1 Replacing the PS Unit, I/F PC Board and CPU PC Board

**CAUTION:** Replace only with same type and ratings of fuse for continued protection against risk of fire.

- 1) Remove the three FL-4x6 screws and disconnect the two connectors to detach the PS unit.
- 2) Remove the FL-3x5 screw and the four locking supports to remove the I/F PC board.

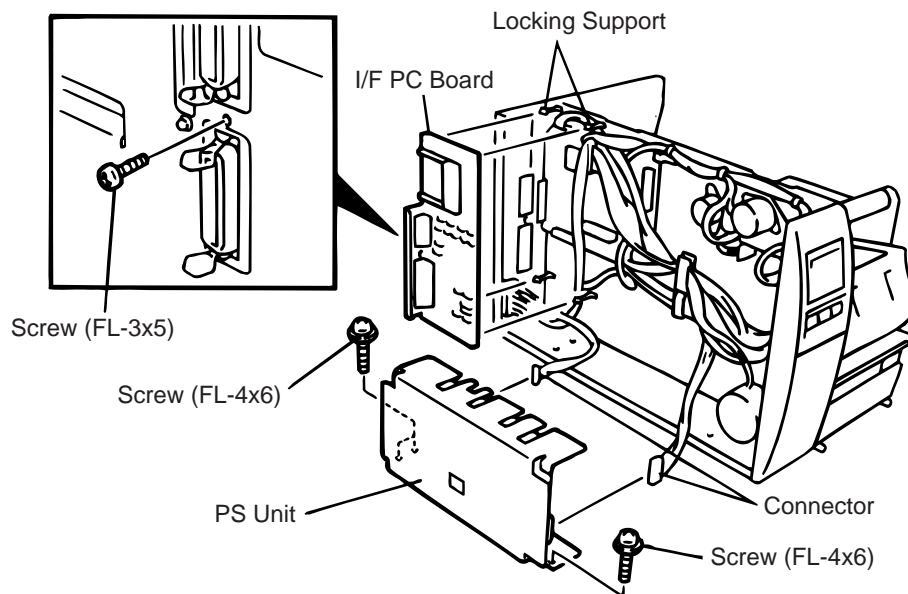


Fig. 2-2

- 3) Disconnect the 9 connectors from the CPU PC board.
- 4) Remove the six screws (SM-3x6B, SM-3x6C) to detach the CPU PC board from the printer.

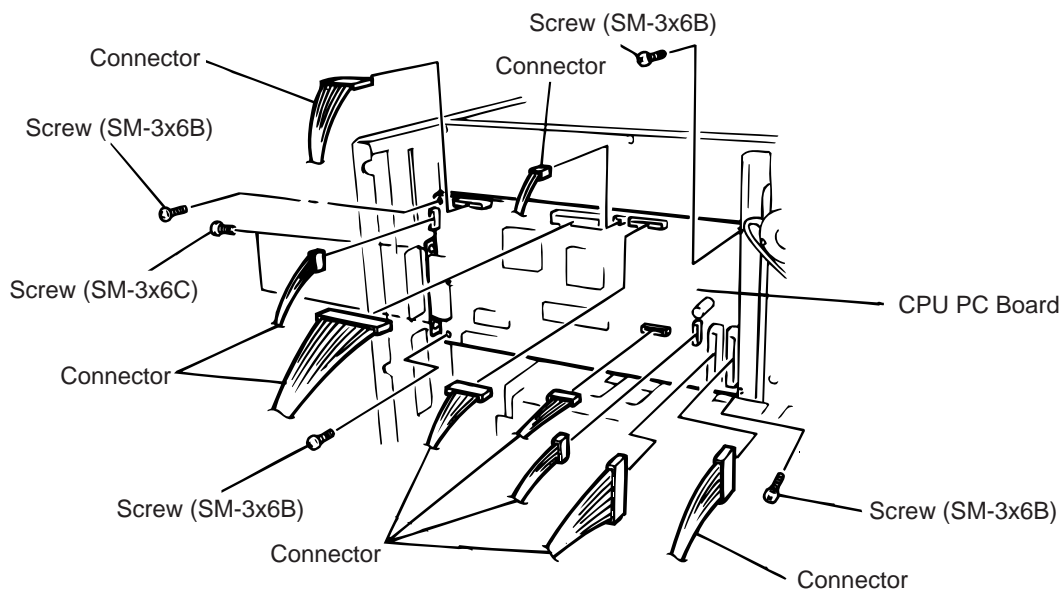


Fig. 2-3

- 5) Replace the PS unit, I/F PC board and CPU PC board. Insert the connectors correctly and install in the reverse order of removal above. Do not mount the left side cover and top cover.
- 6) Make sure to adjust the various voltages after replacing the CPU PC board.

## 7) Adjust the ribbon end sensor.

Use the following Ribbons; TTM-78 (Maker: Fujicopian)

- ① Set the ribbon so that the ribbon end sensor can detect the ribbon. Turn the power on.
- ② Turn the VR1 so that the voltage between Pin 1 (GND) and Pin 7 of CN12 is  $3.0 \pm 0.2$  V with an oscilloscope.
- ③ Turn the power off and mount the left side cover and top cover.

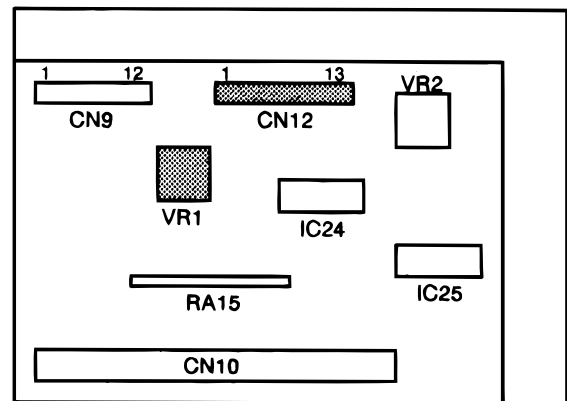


Fig. 2-4

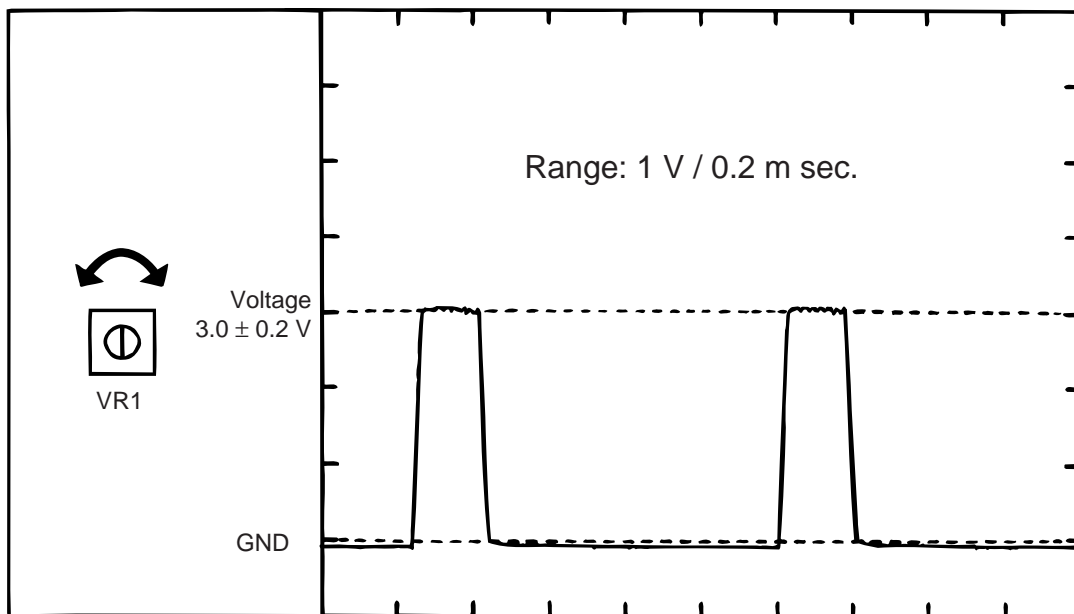


Fig. 2-5

## 8) Adjust the black mark sensor.

As the black mark sensor is adjusted by key entries in system mode, refer to page 6-38 for the adjustment procedure.

## 9) Adjust the feed gap sensor.

As the feed gap sensor is adjusted by key entries in system mode, refer to page 6-39 for the adjustment procedure.

**CAUTION:** Be careful when replacing the CPU PC board, since a non-resettable counter (IC13) is installed on this board. (Refer to Section 6.2.1 Maintenance Counter Printing.)  
If this counter should be reset, replace IC13.

## 2.2 Replacing the Stepping Motor

- 1) Remove the two black screws to detach the front plate, remove the two FL-4x6 screws to detach the belt cover.

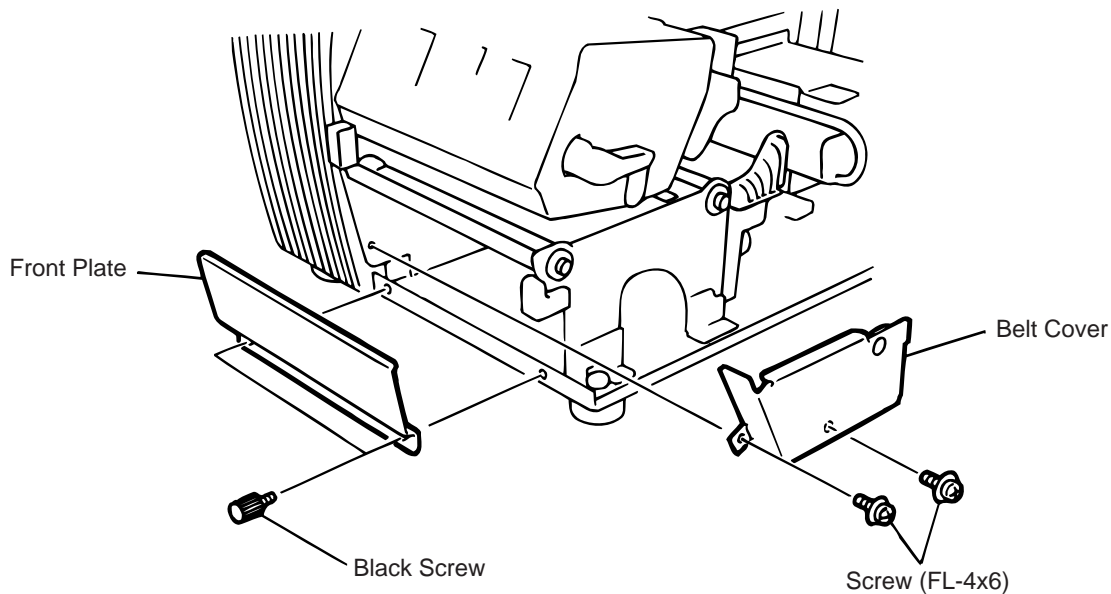


Fig. 2-6

- 2) Unclamp and disconnect the connector from CN13 on the CPU PC board.
- 3) Remove the two SM-4x10C screws, loosen the two belts from the pinion gear, and remove the stepping motor.

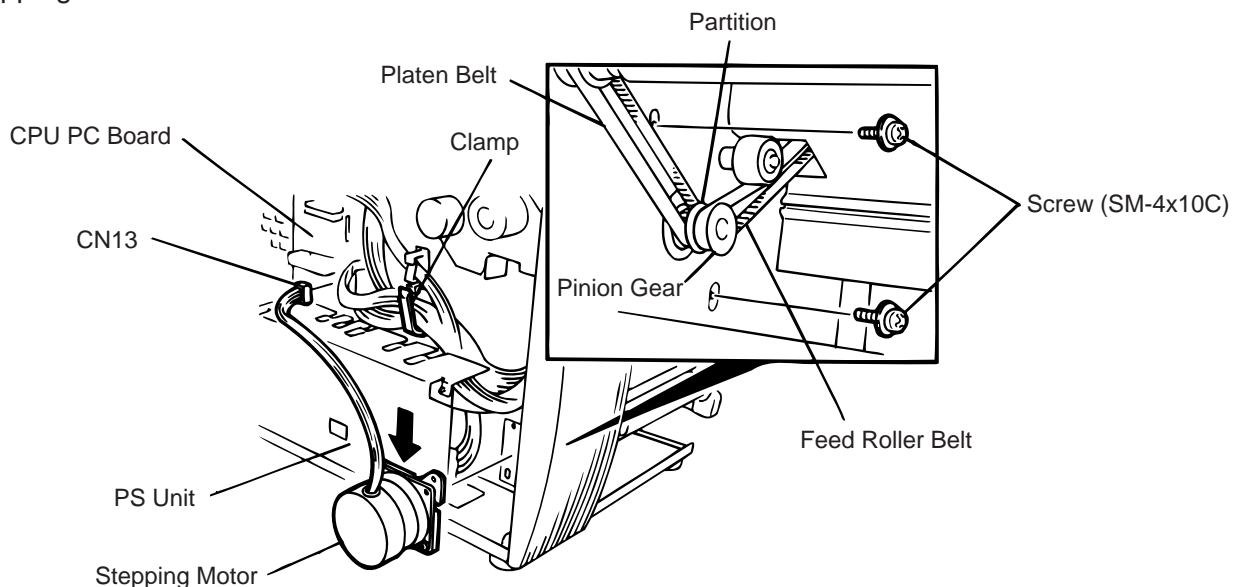


Fig. 2-7

- 4) When replacing the stepping motor, place the platen belt first then the feed roller belt around the pinion gear so that the partition is positioned between two belts. Hold down the stepping motor at  $3.5 \text{ kg} \pm 300 \text{ g}$  force and secure it so that the belts have no slack or disengagement.
- 5) Reassemble in the reverse order of removal.

## 2.3 Replacing the Ribbon Motors

**CAUTION:** NEVER separate the ribbon motors from the attaching plate because doing so will change their adjustment.

- 1) Disconnect the connector and remove the two SM-3x5B screws to detach the ribbon motors.  
FLOIL G-488

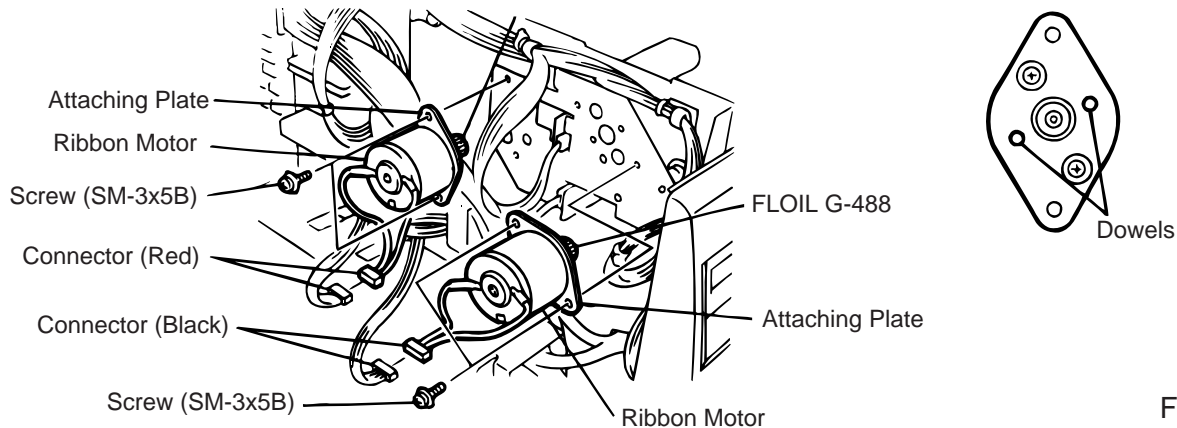


Fig. 2-8

- 2) Replace the ribbon motors, then align the dowels to attach the ribbon motors. Reassemble in the reverse order of removal.

## 2.4 Replacing the Take-up Motor

**CAUTION:** NEVER separate the take-up motor from the bracket because doing so will change the adjustment.

**NOTE:** The following procedure can be employed without removing the top cover and left side cover.

- 1) Remove the four FL-3x5 screws to detach the motor cover.
- 2) Remove the connector for the rewind full sensor (LED).
- 3) Disconnect the connector from the CN1 on the PWM PC board and remove the two FL-3x5 screws to detach the take-up motor.

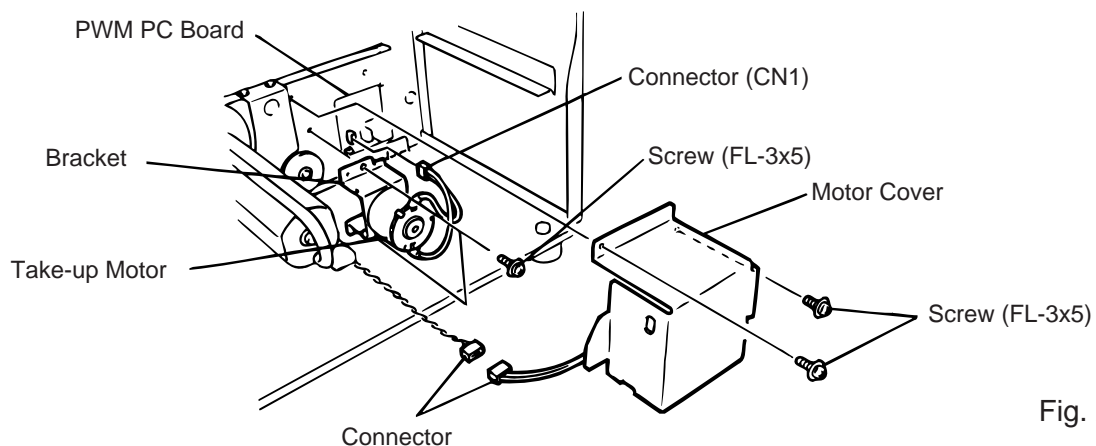


Fig. 2-9

- 4) Replace the take-up motor, then align the dowels to attach the motor cover and rewind full sensor (Tr).

## 2.5 Replacing the Solenoid

**NOTE:** The following procedure can be employed without removing the top cover and left side cover.

- 1) Before removing the ribbon stopper, check its attaching direction for later installation. Remove the ribbon stopper from the ribbon shaft on which the ribbon is wound.
- 2) Remove the two SM-4x8B screws, disconnect the connector CN1 on the RSV PC board to detach the solenoid unit.

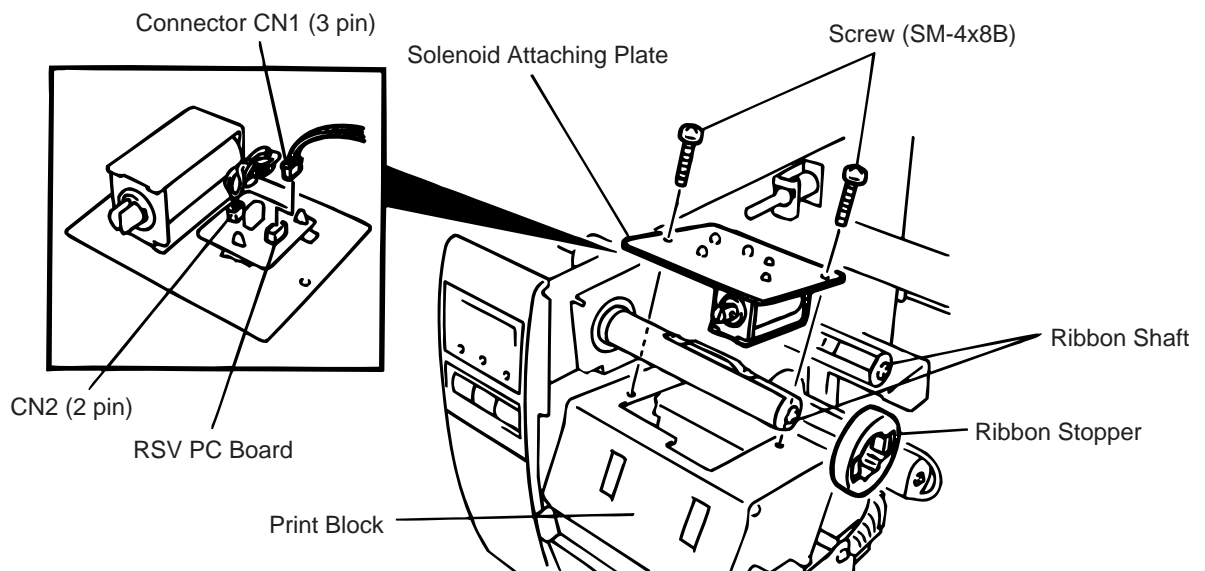


Fig. 2-10

- 3) Remove the two SM-3x5B screws and disconnect the connector CN2 on the RSV PC board to detach the solenoid.

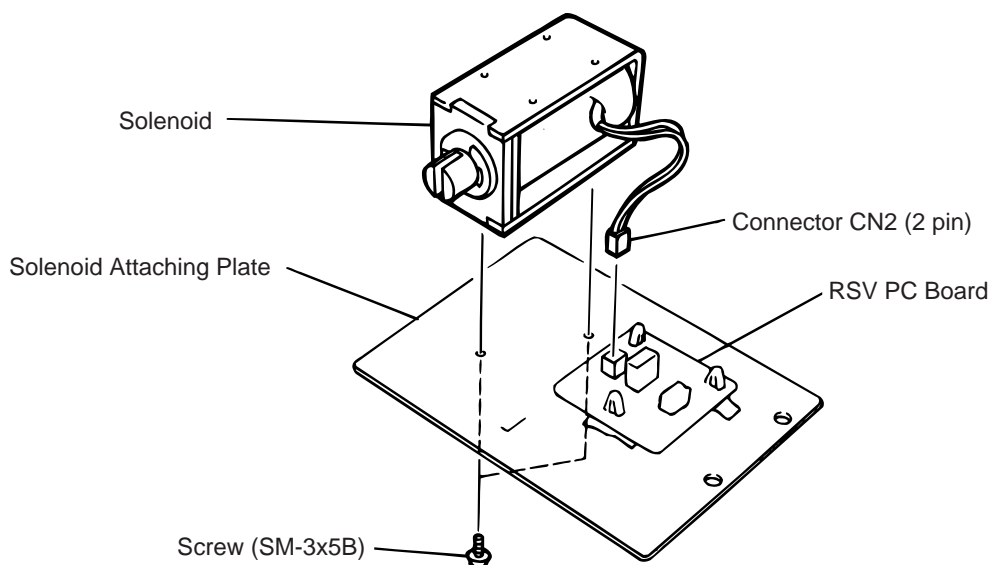


Fig. 2-11

**NOTE:** Make sure to remove any dust that appears during removal or installation because it may affect the print quality.

- 4) Replace the solenoid and attach it to the solenoid attaching plate.
- 5) Assemble the solenoid unit so that the head up link engages the spring pin.

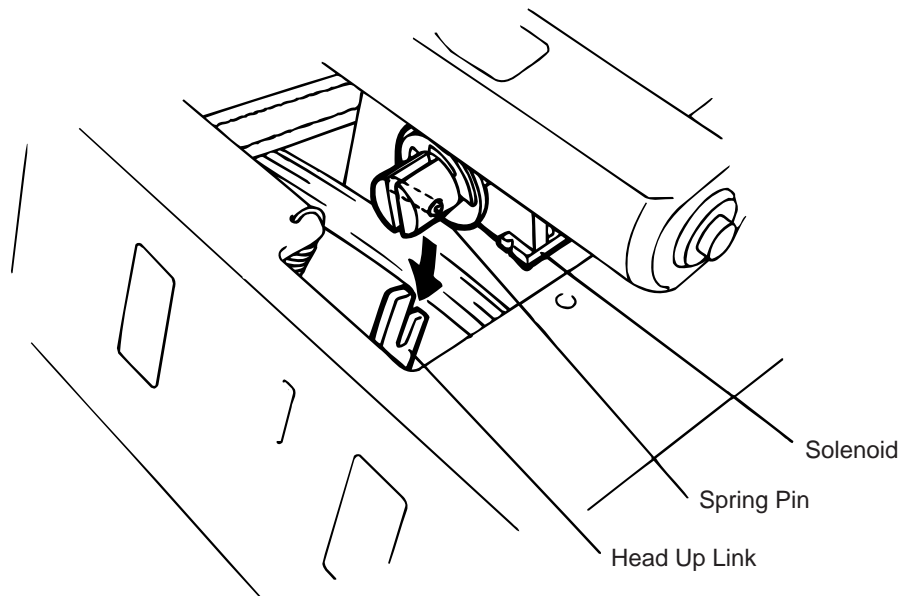


Fig. 2-12

**CAUTION:** Take care to orient the screw so that they are vertically aligned with the solenoid attaching plate.

- 6) Reassemble in the reverse order of removal.

## 2.6 Replacing the Print Head

### **CAUTION:**

1. NEVER touch the element when handling the print head.
2. NEVER touch the connector pins to avoid a breakdown of the print head by static electricity.
3. NEVER remove the two screws painted red on the side of the print block.
4. NEVER remove the four screws on the side of the printer block.
5. NEVER remove the print block, otherwise it requires the adjustment of the position when reassembling.

**NOTE:** The following procedure can be employed without removing the top cover and the left side cover.

### 2.6.1 Old type print head

- 1) Turn the head lever clockwise to lower the print head. Remove the two SM-4x8B screws.
- 2) Turn the head lever counter clockwise and disconnect the two connectors to detach the print head from the print block.

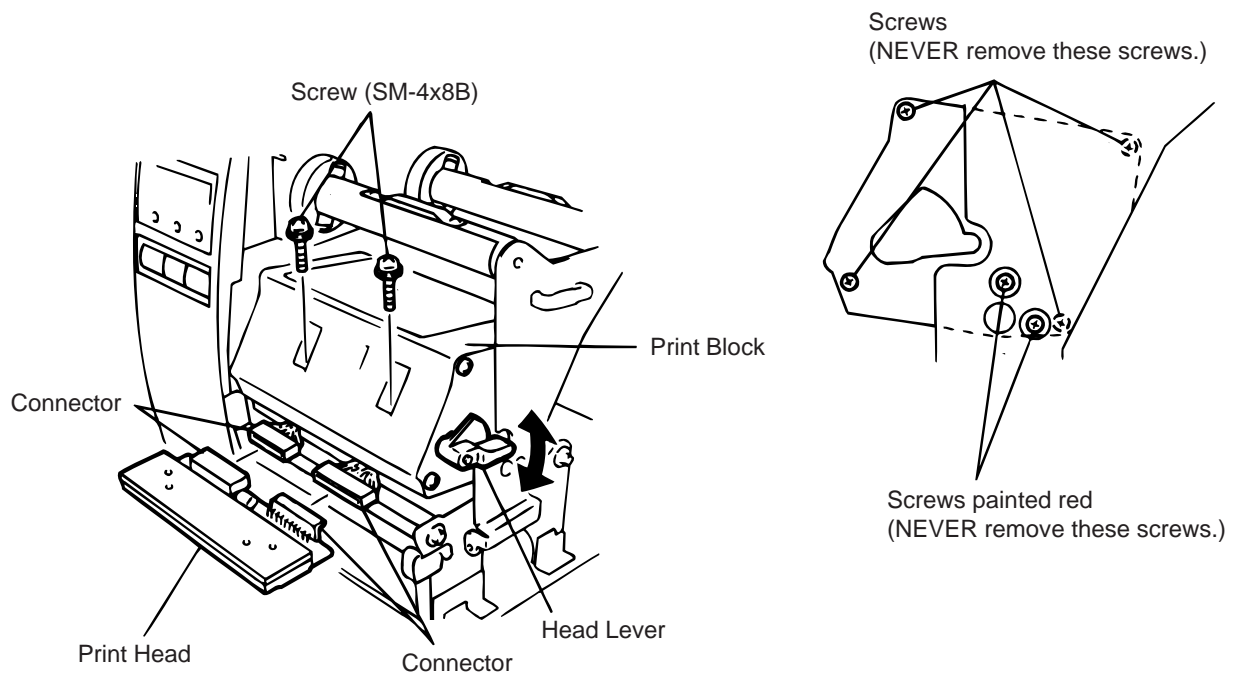


Fig. 2-13

- 3) Replace the print head, connect the connectors and install it in the print block.
- 4) Turn the head lever clockwise. Push the print head and secure it temporarily.  
Follow the procedure on the next page.

## ■ Adjusting the print head position

- ① Fit the jig in the platen and strip shaft.
- ② Press the jig at an angle of 45° until it is snug against the print head. Then secure the print head.

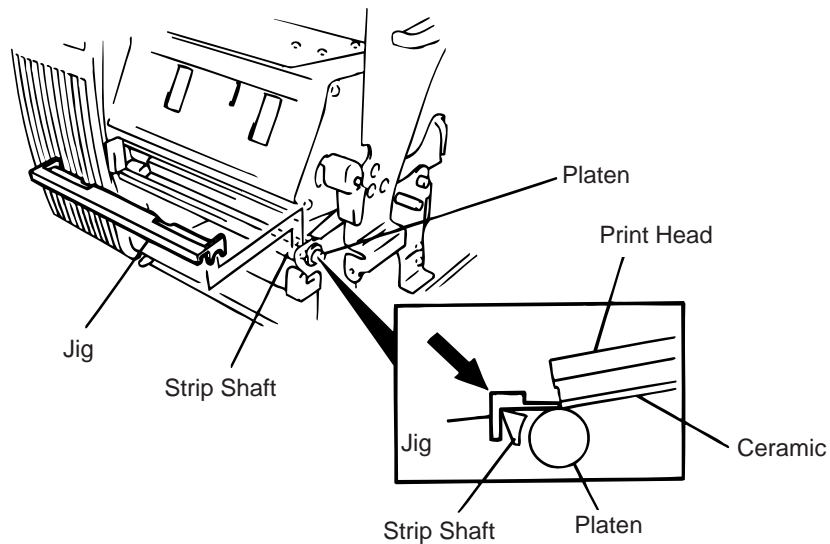


Fig. 2-14

- ③ Remove the jig.
- ④ Refer to page 6-42 and clear the maintenance counter.
- ⑤ Refer to page 6-30 and perform test print.

**NOTE:** Use caution to prevent damage to the element during adjustment of the print head.



## 2.6.2 New type print head

**NOTE:** Never loosen screws other than two SM-4x8B.

- 1) Turn the head lever clockwise to lower the print head. Remove the two SM-4x8B screws.
- 2) Turn the head lever counterclockwise and disconnect the two connectors to detach the print head from the print block.

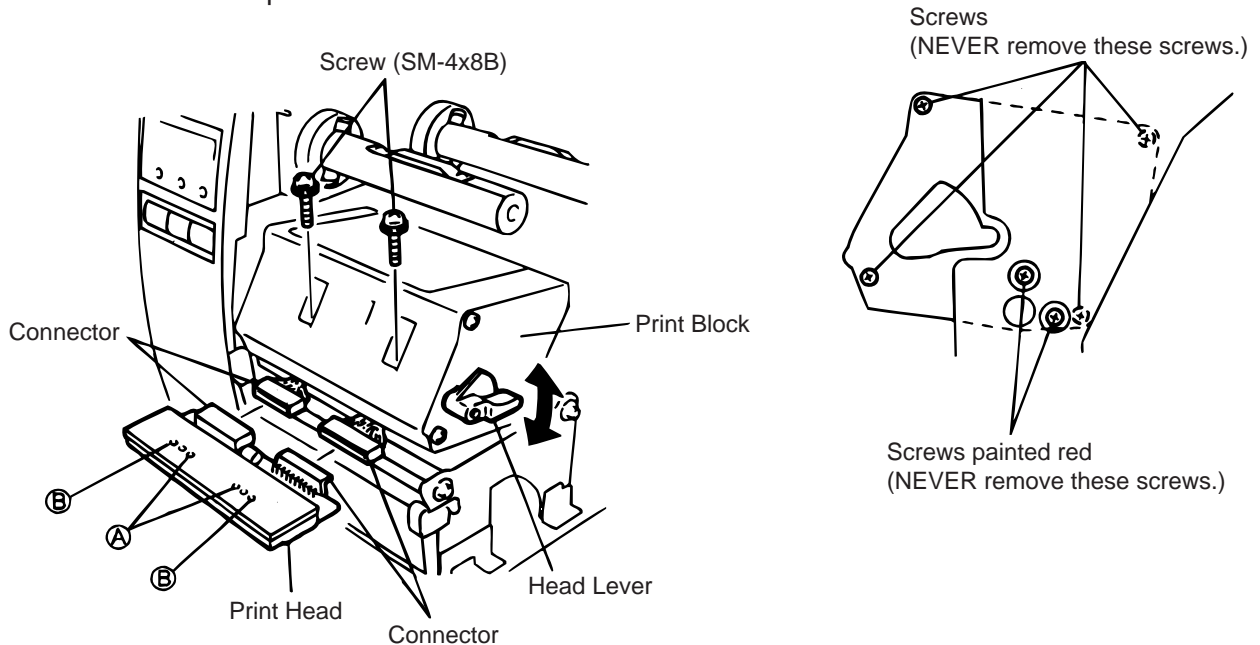


Fig. 2-15

- 3) Replace the print head and connect the connectors.
- 4) Align the two holes (A) in the middle of the print head with the print head position adjusting pins provided in the print block and fit the print head into the print block.
- 5) Turn the head lever clockwise and secure the print head with screws in the holes (B).

**NOTE:** Use caution to prevent damage to the element during print head adjustment.

#### ■ Adjusting the print head position

When print tone becomes light from using special paper with improper print head position, please follow the procedure below and adjust the print head position.

**NOTE:** Never loosen screws (C) unless print position fine adjustment is required because they have been adjusted properly. Doing so will change the adjustment.

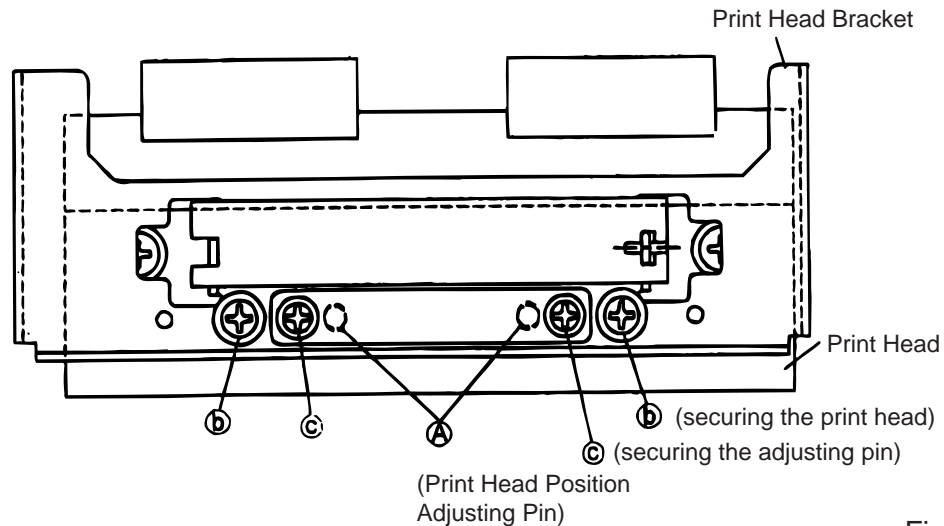


Fig. 2-16

- (1) Loosen the screws (c) securing the print head position adjusting pin.
- (2) Loosen the screws (b) one by one, slightly move the print head backward or forward, and then tighten the screws (b) and (c). Ensure that the print head is parallel to the platen. If not, print tone will be uneven.
- (3) Make a test print and if necessary, repeat Step 2) until the printer prints properly.

## 2.7 Replacing the Platen and Feed Roller

### CAUTION:

1. NEVER remove the four screws painted red fixing the right plate and reinforcing plate. (See Fig. 2-16)
2. The pinch roller belt assembled inside the printer does not need to be replaced because it receives less load.

- 1) Remove the front plate and belt cover. (See Fig. 2-6.)
- 2) Turn the head lever counterclockwise, then release the ribbon shaft holder plate.

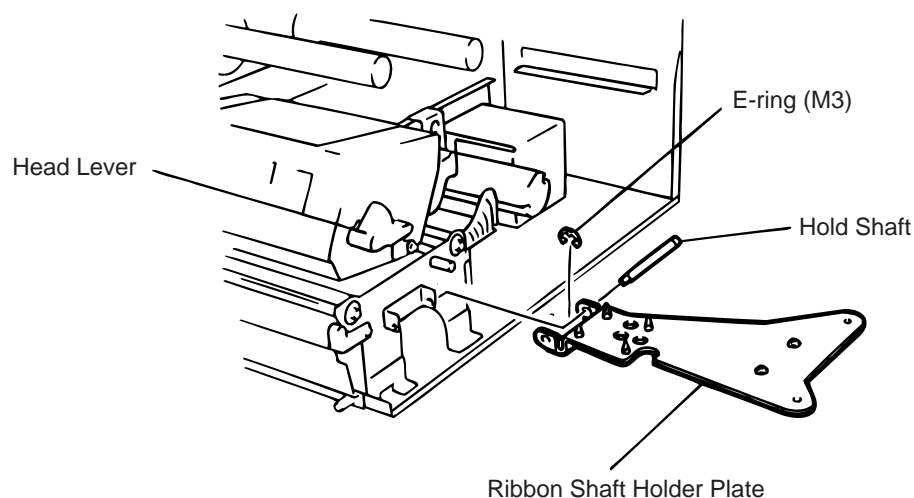


Fig. 2-17

- 3) Disconnect the connector for the strip sensor (LED).
- 4) Remove the six screws (FL-4x6, B-4x12 and P-3x12) to detach the right plate Ass'y.

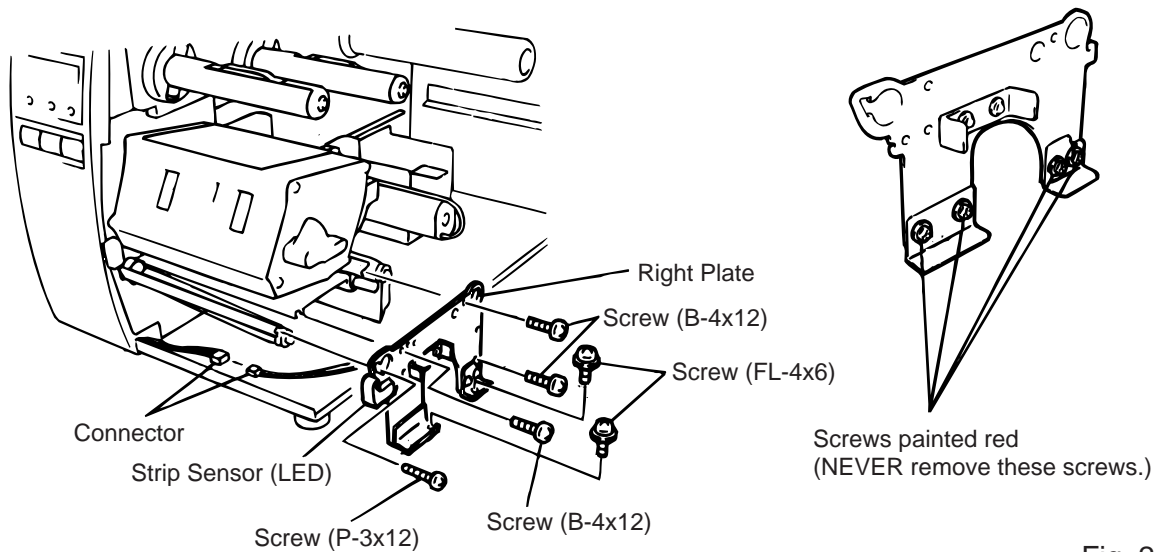


Fig. 2-18

**NOTE:** The machine with a serial number of 4Txxxxxx or later is not equipped with the red screws because of the change in the right plate shape.

- 5) Loosen the two screws (SM-4x8B) fixing the stepping motor to loosen the platen belt and feed roller belt.
- 6) Remove the platen belt to detach the platen. Remove the feed roller belt to detach the feed roller.
- 7) Remove both bearings from the platen or feed roller.

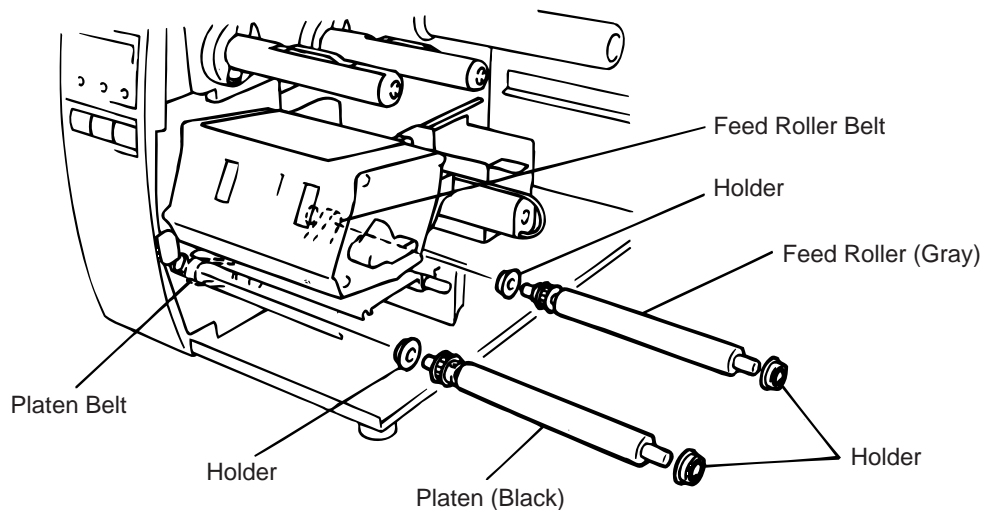


Fig. 2-19

- 8) Replace the platen and feed roller, put on the belt and assemble it with the printer. The longer belt is the platen belt.
- 9) Attach the right plate.
- 10) Hold down the stepping motor and secure it so that the belts have no slack or disengagement.
- 11) Reassemble in the reverse order of removal.

## 2.8 Replacing the Paper Sensor

**NOTE:** Turn the knob until the paper sensor reaches full forward.

- 1) Disconnect the connector for the strip sensor (LED) to remove right plate ass'y. (See Figs. 2-17 and 2-18.)
- 2) Disconnect the connectors for the paper sensor.
- 3) Remove M1.5 E-ring, M3 washer and paper sensor unit.
- 4) Remove M1.5 E-ring, turn the knob counter clockwise, then remove the paper sensor.

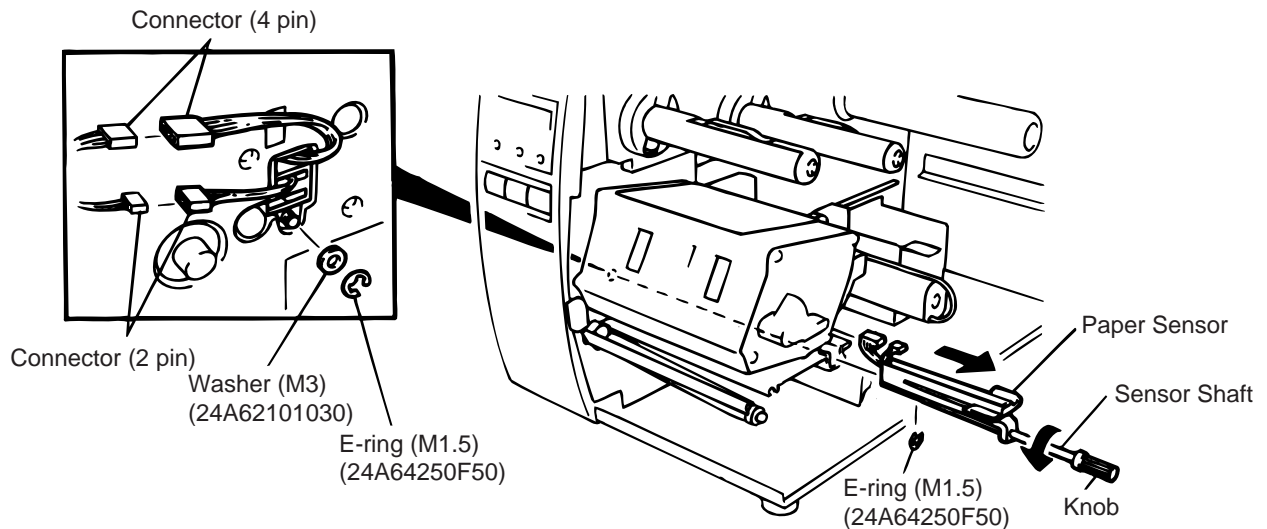


Fig. 2-20

- 5) Replace the paper sensor and reassemble in the reverse order of removal.
- 6) After replacing the paper sensor, refer to page 6-32/6-33 and adjust the voltage.

## 2.9 Replacing the Ribbon Back Tension Block

- 1) Turn the head lever counterclockwise, then release the ribbon shaft holder plate.
- 2) Remove the M3 E-ring and the two M3 washers to remove the ribbon back tension block. At this time, remove the back tension stopper and ribbon back tension washer from the ribbon back tension block.

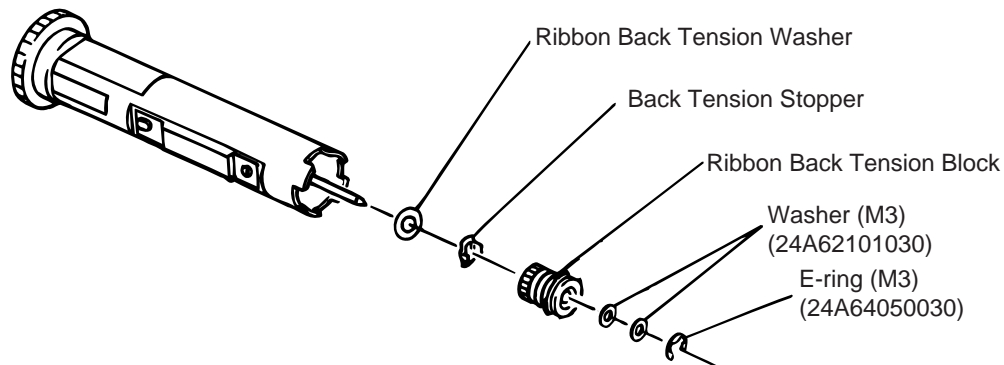


Fig. 2-21

- 3) Replace the ribbon back tension block and reassemble in the reverse order of removal.

## 2.10 Replacing the Pinch Roller Shaft Ass'y

- 1) Turn the head lever to position ③, and release the ribbon shaft holder plate.
- 2) Remove the black screw to detach the media guide plate.

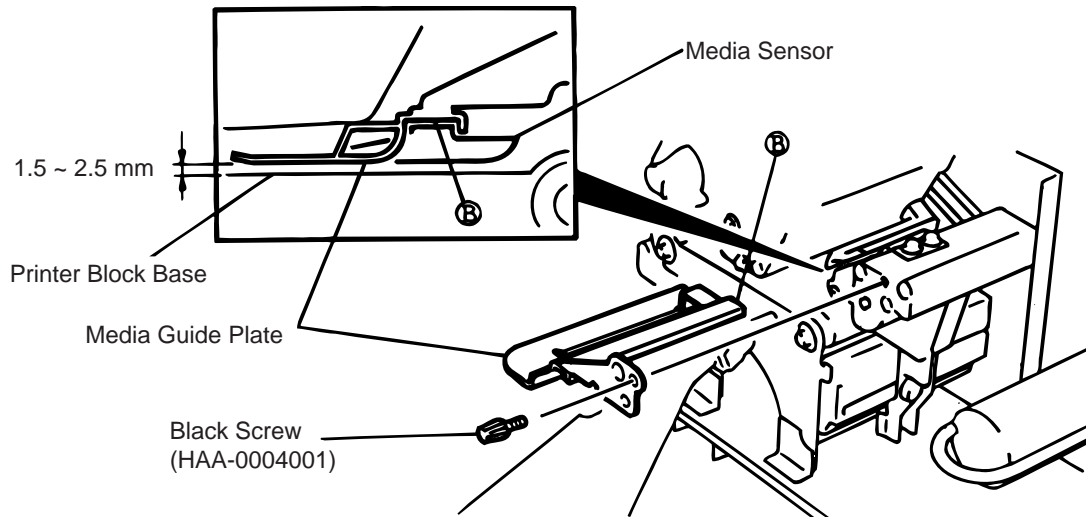


Fig. 2-22

- 3) Remove the SM-4x8B screw to detach the spring plate.
- 4) Remove the six B-4x12 screws to detach the pinch roller cover.
- 5) Remove the E-5 E-ring to loosen the pinch roller belt, and remove the pinch roller shaft ass'y.

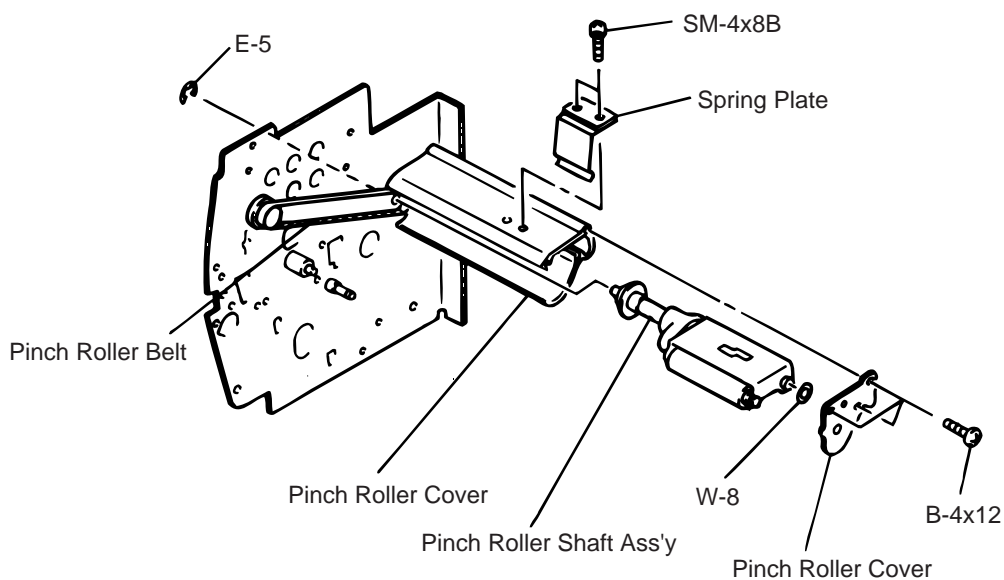


Fig. 2-23

- 6) After replacing the pinch roller shaft ass'y, make the following adjustment while you reassemble the pinch roller shaft ass'y in the reverse order of removal.

### ■ Adjustment

1. Install the pinch roller unit so it parallels the base. If it does not, change the engaging position of the pinch roller belt and the pulley.

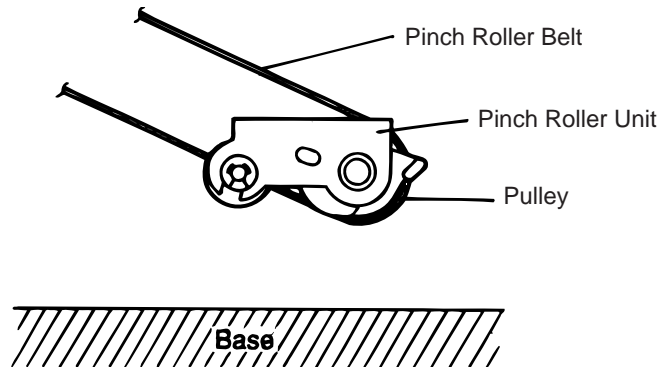


Fig. 2-24

2. Attach the jig to the platen, feed roller and pinch roller shaft as shown in the figure below. Then attach the pinch roller cover to the pinch roller frame with the three B-4x12 screws. Then secure the pinch roller frame with the three B-4x12 screws.

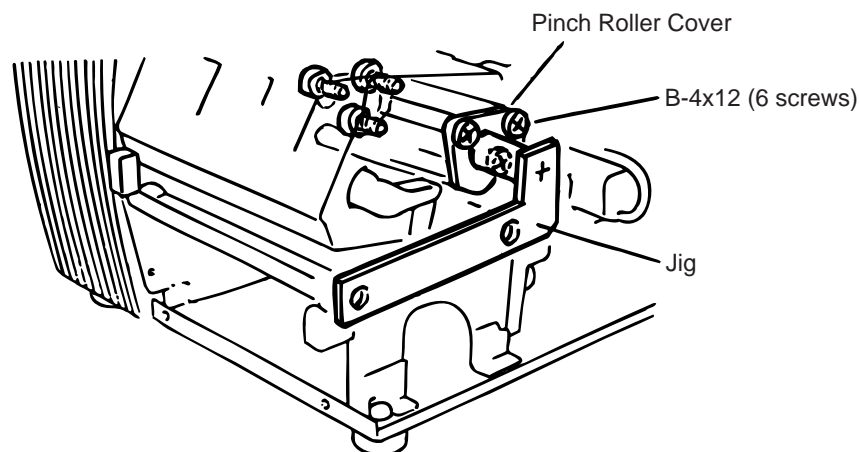


Fig. 2-25

- NOTES:**
1. Replace the platen and the feed roller prior to attaching the jig.
  2. Attach the jig while the pinch roller frame is tentatively attached to the main frame with the B-4x12 screws. Secure the pinch roller cover to the pinch roller frame with the three B-4x12 screws, then tighten the other side of the screws.
  3. The flat top of the pinch roller frame must be installed in parallel to bosses on the printer frame.
- Check**
- ① Check if excessive load is applied to the jig after the above NOTE 2.  
(For example, check if the pinch roller frame moves when the jig is removed.)
  - ② Check that there is no gap caused by a slant shaft between the pinch roller and the feed roller when the pinch roller is lowered.

3. Turn the head lever clockwise to lock the pinch roller shaft ass'y. Attach the spring plate to the pinch roller frame with the two SM-4x8B screws, pushing the spring plate toward the rear of the printer.

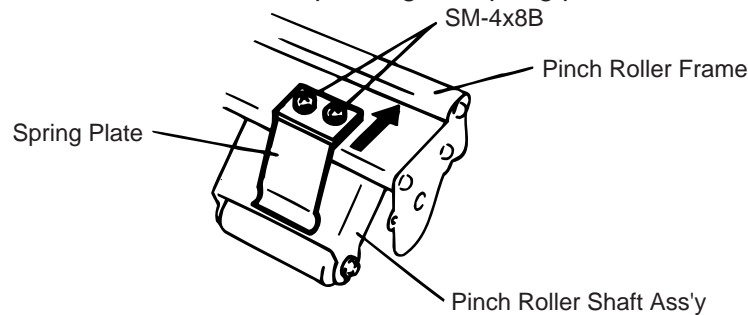


Fig. 2-26

**NOTE:** Check that the pinch roller shaft ass'y moves up and down smoothly when turning the head lever clockwise/counterclockwise.

4. Install the media guide plate to the printer so there is a 1.5 to 2.5 mm gap between the media guide plate and the printer block base.

## 2.11 Correcting Skew Printing

- If media still skews after adjusting the pinch roller shaft ass'y with the jig, follow the procedure below to correct the skew problem.

- Check if the media skews right or left.
- Loosen the B-4x12 screw to move the pinch roller cover to the front or rear of the printer depending on the skew direction.

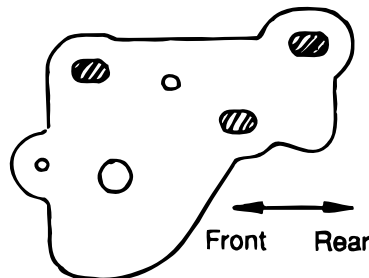


Fig. 2-27

When the media skews right, move the pinch roller cover to the front.

When the media skews left, move the pinch roller cover to the rear.

- If a paper skew problem should occur when using rolls wound with labels facing outside after completing the modification, adjust the paper guide as follows.

- \* In case the label skews to the right side of the print head, move the guide downward.
- \* In case the label skews to the left side of the print head, move the guide upward.

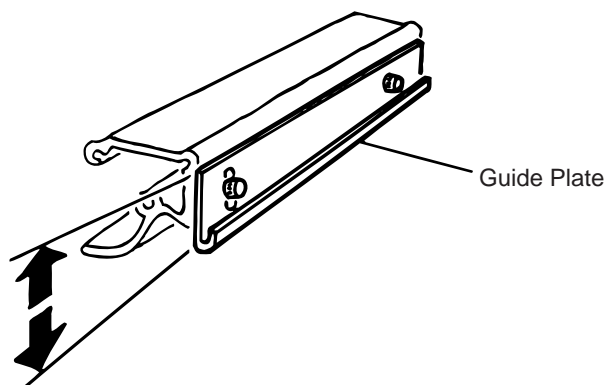


Fig. 2-28

### 3. INSTALLATION PROCEDURE FOR THE OPTIONAL EQUIPMENT

#### **WARNING!**

*Make sure to unplug the power cord before installing the optional equipment.*

#### 3.1 High Speed PC Interface Board (B-4800-PC-QM)

The high speed PC interface board can be used together with the IBM PC-AT or its compatible machine only.

Description	Q'ty/Unit	Description	Q'ty/Unit
BPE PC board	1	Locking support	2
BPC PC board	1	Program diskette	1
Printer cable	1	Manual	1
Cable support	1		

1. Remove the top cover and left side cover. (See Fig. 2-1.)
2. Remove the two FL-3 x 5 screws to detach the blind plate.
3. Pass the printer cable through the opening.
4. Fasten the ground wire of the printer cable to the CPU PC board at the upper right with the SM-3 x 6B screw securing the CPU PC board.
5. Attach the two locking supports to the main frame plate. Install the BPE PC board aligning with the connector (CN10) and locking supports.

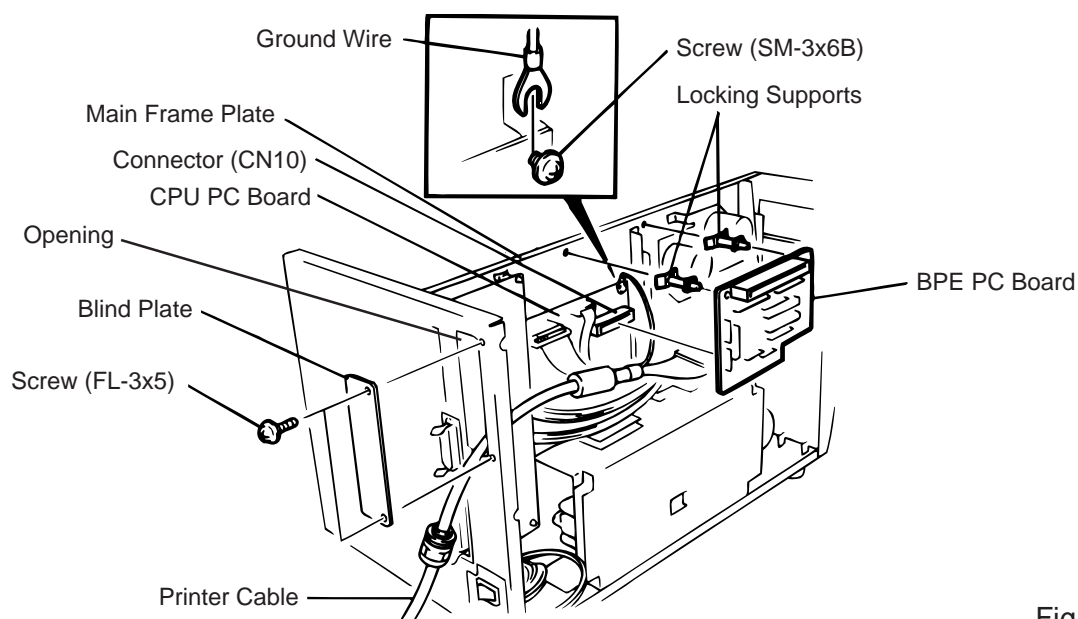


Fig. 3-1



6. Connect the printer cable to the connector (CN1) on the BPE PC board.
7. Put the cable strain relief of the printer cable in the notch of the cable support plate. Secure the cable strain relief to the cable support plate by turning the nut.
8. Attach the cable support plate to the printer with the FL-3X5 screws removed in step 2.

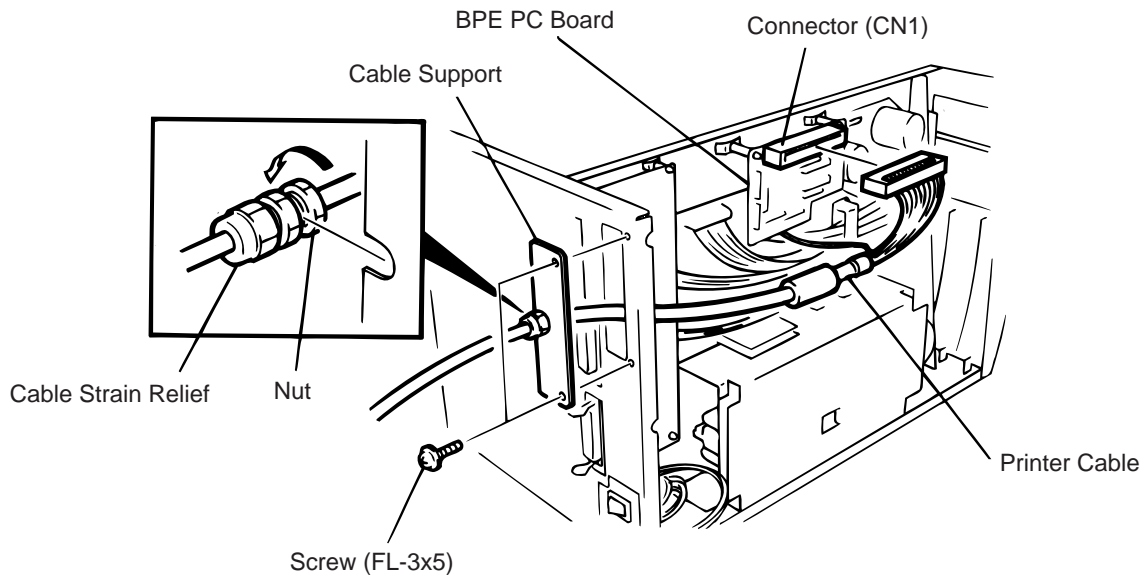


Fig. 3-2

9. Reassemble in the reverse order of removal.
10. Following procedure should be employed with your PC after this.
11. Set the DIP SW. on the BPC PC board for the I/O address according to your PC.
12. Install the BPC PC board on the expansion port bus line of your PC.
13. Connect the printer cable mentioned in step 5 to the BPC PC board.
14. Insert the attached FDK into the FDD and install the data in the hard disk. Since the installation procedure is different between MS-DOS and Windows, refer to the attached manual.
15. Perform a motion check.

### 3.2 Cutter Module (B-4205-QM)

Description	Q'ty/Unit	Description	Q'ty/Unit
Cutter Unit	1	Cutter Attaching Screw	2
Cutter Cover	1	Screw (FL-4x6)	1
Take-up/Cutter Harness	1	Cleaner	1

1. Remove the top cover and left side cover. (See Fig. 2-1.)
2. Remove the front plate. (See Fig. 2-6.)
3. Remove the screw (SM-4 x 8B) and two connectors to detach the operation panel.

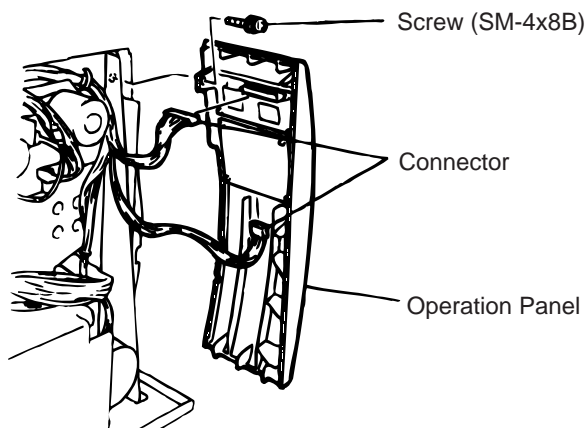


Fig. 3-3

4. Install the cutter unit with the attached screws (cutter attaching screw, FL-4 x 6). When installing the cutter, make sure that the guide is not in contact with the platen. If it is, print failure or noise may be caused.

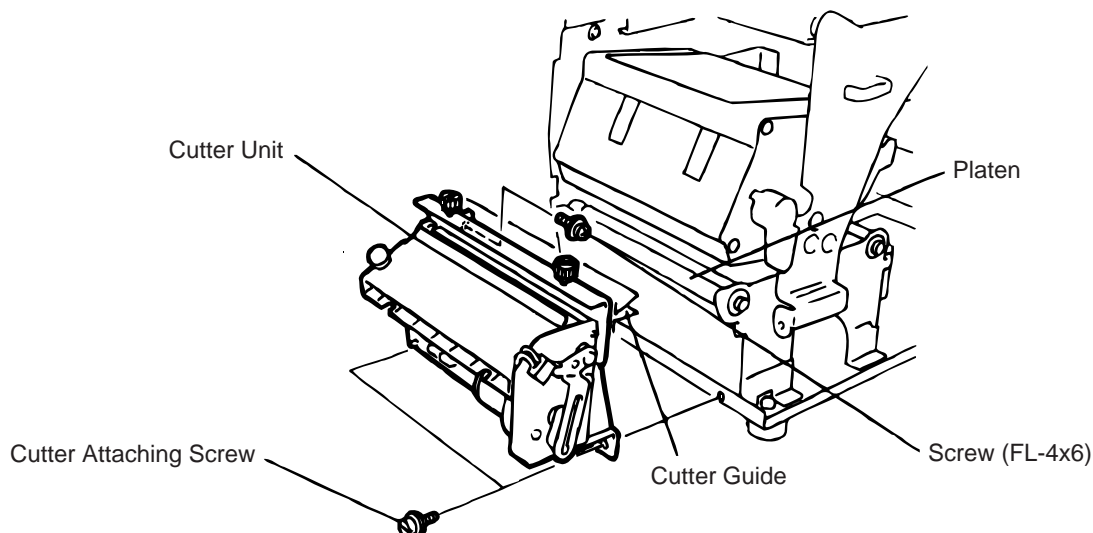


Fig. 3-3

5. Connect the take-up/cutter harness to CN1 on the Cutter I/F PC board and CN15 on the CPU PC Board, then fix it with the clamp.

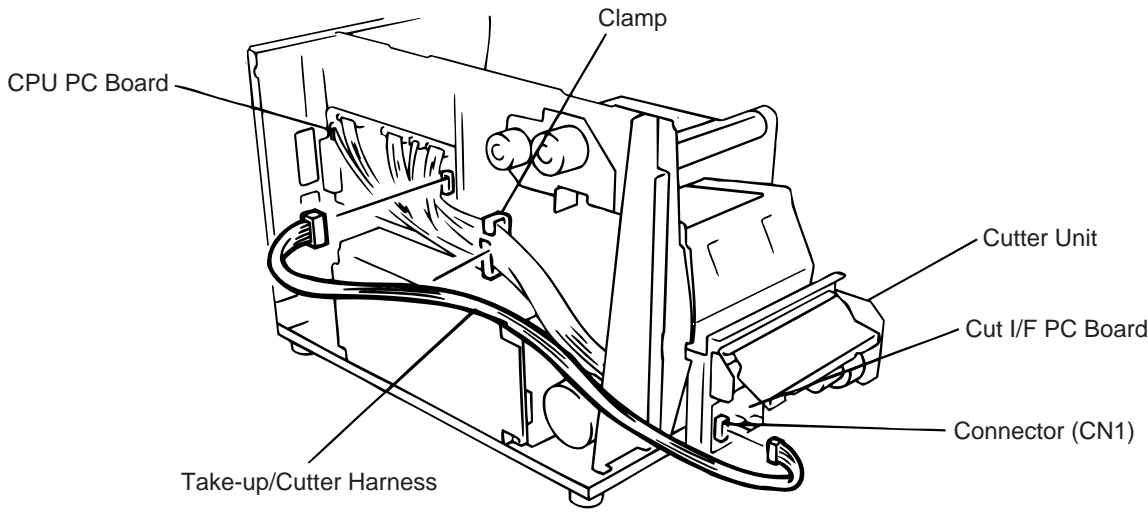


Fig. 3-5

6. Mount the cutter cover with the two white screws.

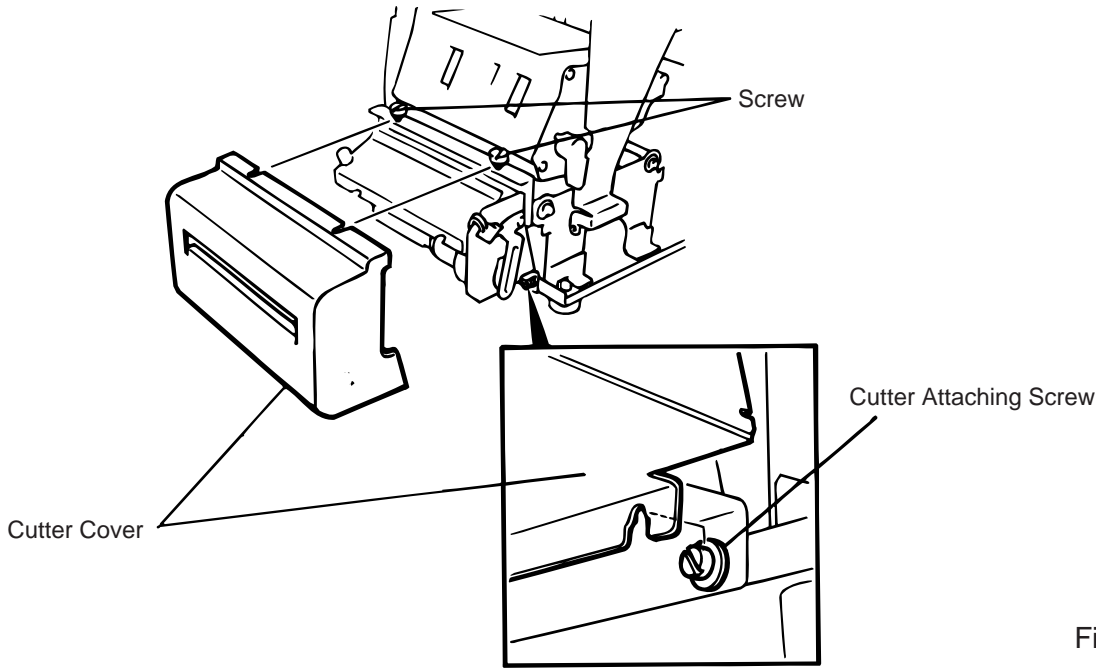


Fig. 3-6

7. Reassemble the left side cover and the top cover in the reverse order of removal.
8. After reassembly is complete, perform a test print to confirm that the cutter works properly.  
After printing a print sample at a speed of 6"/sec., feed the media about 33 mm and check that the swing cutter works without error. After cutting the media, feed the media about 33 mm in the reverse direction and check that it correctly stops at the print start position.

**NOTES:** 1. If the top edge of label winds onto the platen in cut issue, set DIP SW. 1-5 to ON.  
(Refer to the Owner's Manual)

2. Retain the parts that are removed during installation of the cutter unit. They will be required when the printer is modified to a standard type.

Removed Parts	Q'ty/Unit	Removed Parts	Q'ty/Unit
Front plate	1	Black screws	2

### ■ Adjusting the Cutter Guide Plates

After replacing the cutter unit the following adjusting procedure should be employed to prevent paper jams.

1. Attach the cutter guide plate A with two SM-4 x 6C screws so that the fixed cutter is positioned 0.1 mm to 0.4 mm above the bottom of the cutter guide plate A.
2. Attach the cutter guide plate B with two FL-4 x 8 screws so that there is a clearance of 0.5 mm between the cutter guide plate A and cutter guide plate B using a clearance gauge.

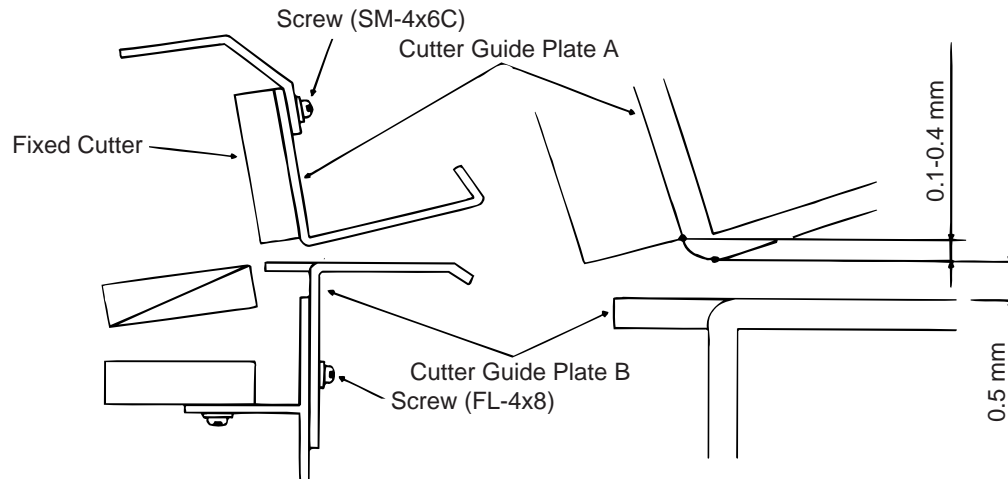


Fig. 3-7

### 3.3 Memory Module - For old CPU PC Board (Ref. No. 0Dxxxxxx or earlier)

1. Remove the top cover and left side cover. (See Fig. 2-1.)
2. Hold the memory module so that the Pin 1 is on the upper right, then solder the memory module to the CPU PC board. Expanding the memory must be performed in sequence, IC21 and IC22.

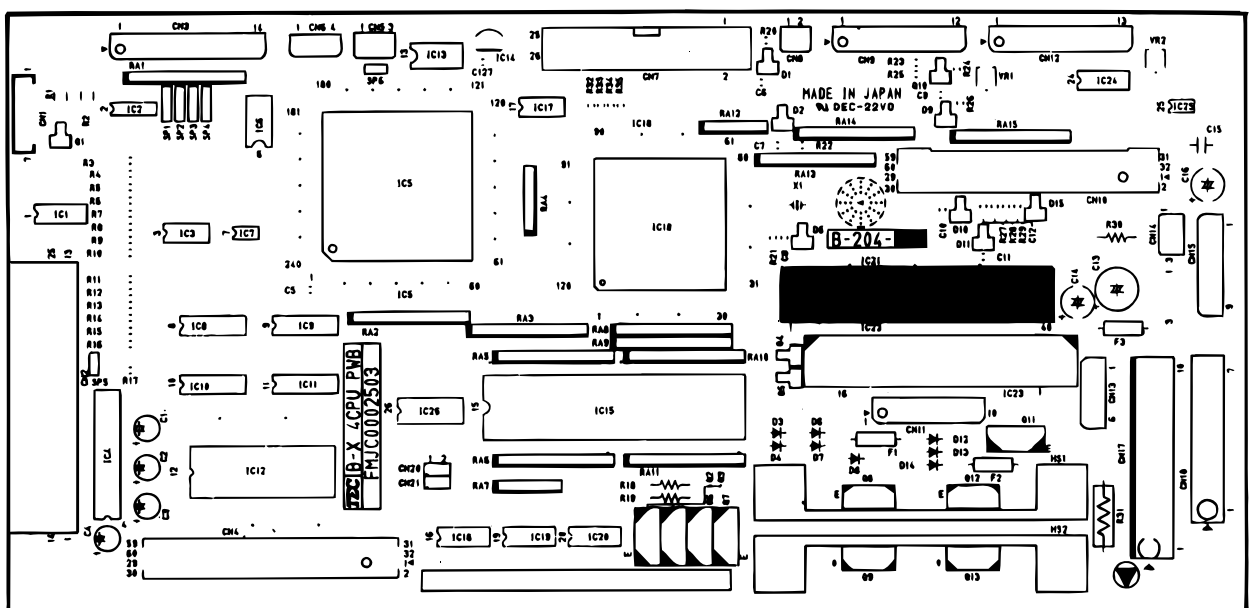


Fig. 3-8

3. Reassemble the left side cover in the reverse order of removal.

### ■ Expansion memory and drawing size

Applicable Type	RAM Capacity	Max. drawing size (normal) (W) x (H) (mm)			Max. drawing size (on-the-fly) (W) x (H) (mm)			Remarks
		Batch	Strip	Auto-cut	Batch	Strip	Auto-cut	
Old CPU PC Board (Ref. No. 0Dxxxxxx or earlier)	512KB	104.0 x 384.0			104.0 x 192.0			Standard (IC21)
	1MB	104.0 x 896.0			104.0 x 448.0			Option (IC21,22)
NEW CPU PC Board (Ref. No. 0Exxxxxx or later)	2MB	104.0 x 896.0			104.0 x 448.0			Standard (IC19)

**NOTE:** Addition of the D-RAM can expand the memory of the old CPU PC board up to 1MB, however, the expansion of the memory module is not required for the new CPU PC board, which is equipped with the 2MB memory as standard.

### 3.4 Ribbon Saving Module (B-4905-R-QM)

Description	Q'ty/Unit
Ribbon Saving Module	1

1. Turn the head lever counterclockwise to release the ribbon shaft holder plate.
2. Remove the ribbon stopper from the ribbon shaft on which the ribbon is wound. Before removing the ribbon stopper, check its attaching direction for later installation. Remove the ribbon stopper from the ribbon shaft on which the ribbon is wound.
3. Remove the two SM-4 x 8 screws to detach the solenoid attaching plate.

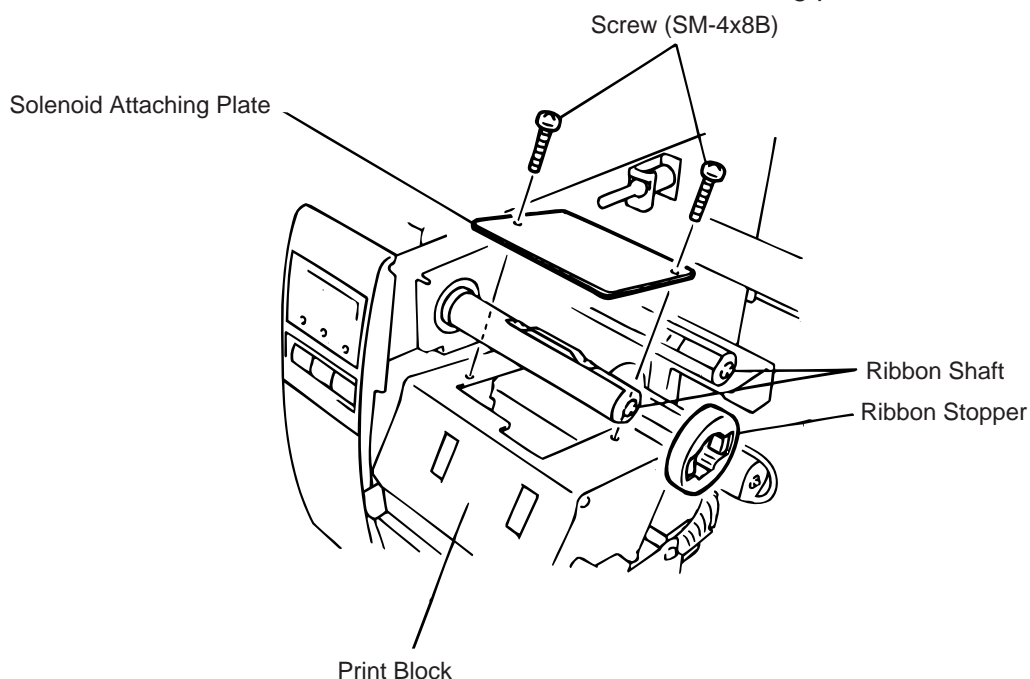


Fig. 3-9

4. Pass the solenoid harness of the ribbon saving module through the opening from the print block side and connect to CN14 on the CPU PC board. Fix the harness with the clamp.
5. Install the ribbon saving module on the print block.
6. Assemble the solenoid unit so that the head up link engages the spring pin.
7. Secure the ribbon saving module with the SM-4x8B screws removed in Step 3.

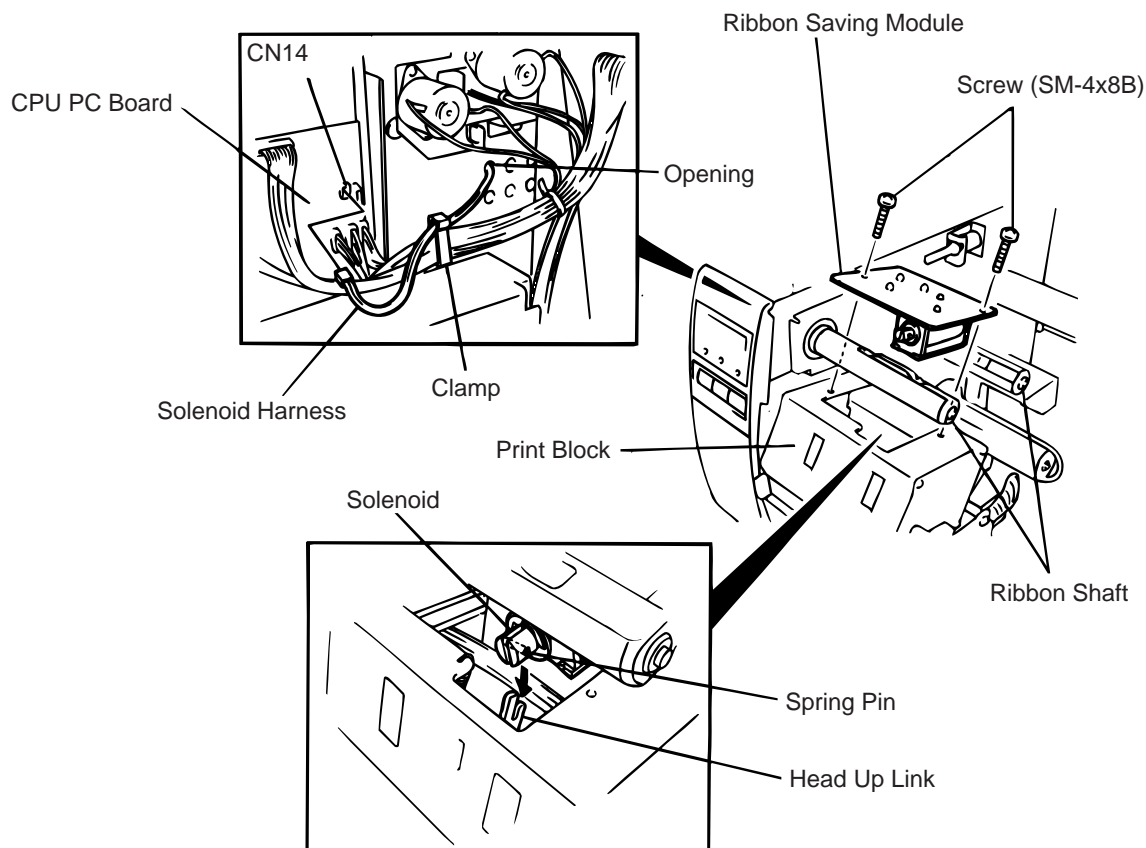


Fig. 3-10

8. Set the DIP SW 1-1 to ON.

**NOTE:** Make sure to remove any dust that appears during removal or installation because it may affect the print quality.

**CAUTION:** Take care to orient the screws so that they are vertically aligned with the ribbon saving module.

### 3.5 Strip Module (B-4905-H-QM)

Description	Q'ty/Unit	Description	Q'ty/Unit
Rewinder Ass'y	1	Rewinder Guide Plate	1
Rewind Full Sensor (LED)	1	Screw (FL-4x6)	4
Strip Sensor (Tr)	1	Screw (SM-3x6B)	1
Strip Sensor (LED)	1	Screw (SM-4x6B)	2
Rewind Paper Guide	1		

1. Remove the top cover and left side cover (See Fig. 2-1.)
2. Remove the operation panel. (See Fig. 3-3.)
3. Fasten the rewind paper guide to the base with the two SM-4 x 6B screws.

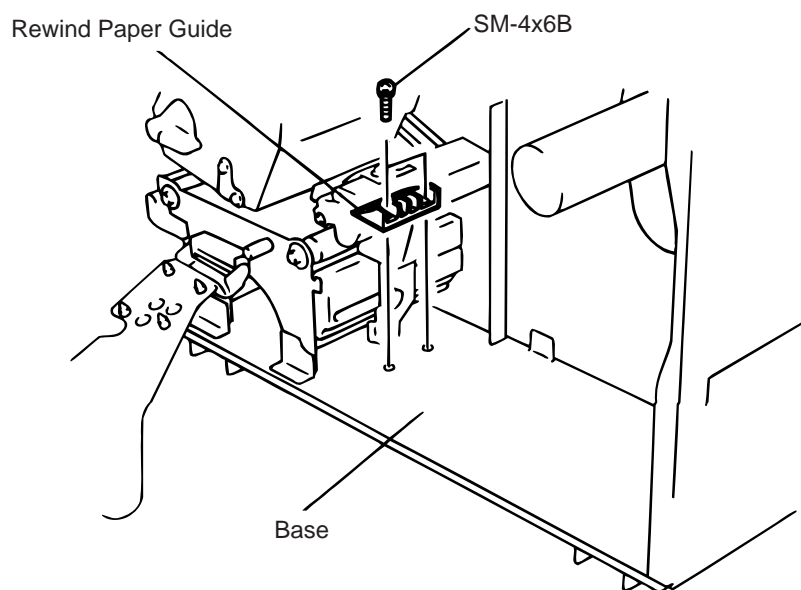


Fig. 3-11

4. Pass the take-up harness of the rewinder ass'y and the longer harness of the rewind full sensor through the hole of the main frame. Connect the take-up harness and rewind full sensor harness to CN15 and CN5 on the CPU PC board respectively. Fix the harness at two points with the clamps.
5. Connect the connector of the rewind full sensor (LED) with the other harness of the rewind ass'y.
6. Align the notch of the take-up holder with the screw hole of the rewinder ass'y and attach it to the printer with four FL-4 x 6 screws.
7. Attach the rewind full sensor (LED) to the base with SM-3 x 6B screw.

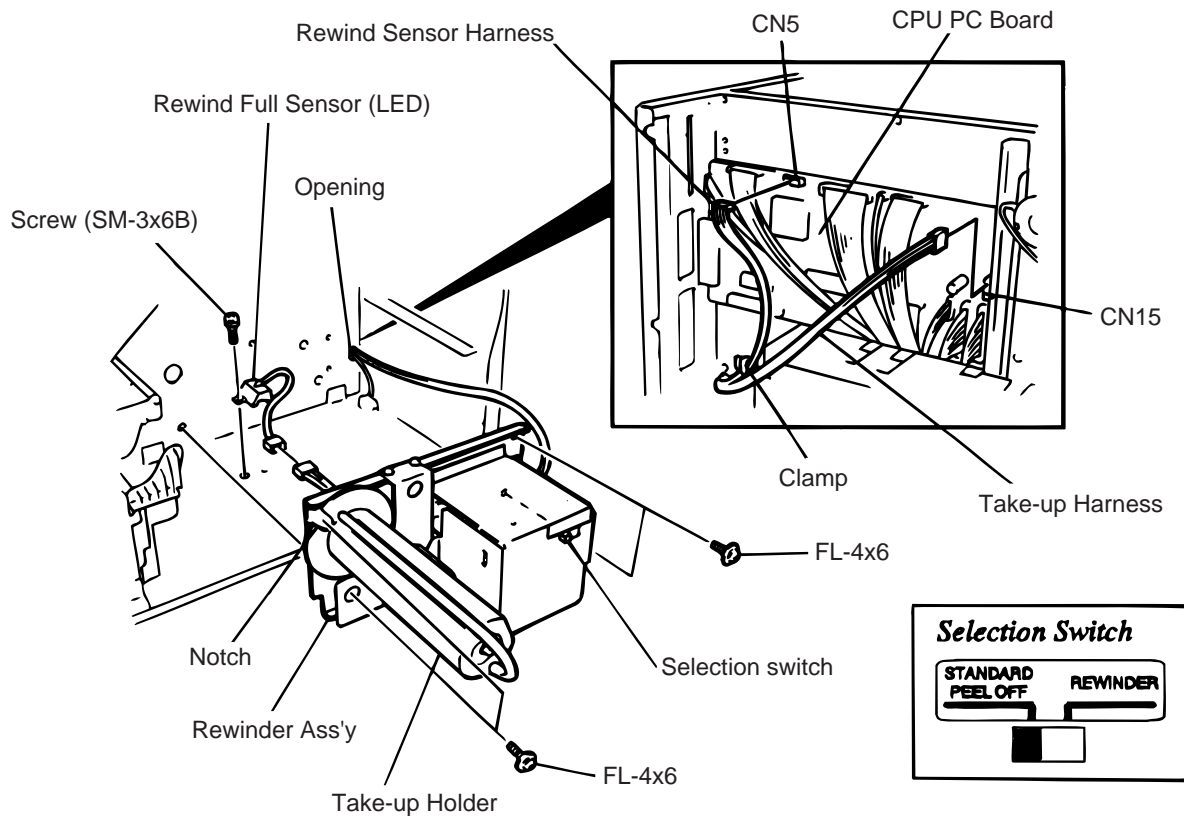


Fig. 3-12

**NOTE:** You should change the selection switch position depending on the usage of the take-up holder. Improper setting can affect the print quality.

**STANDARD/PEEL OFF (STRIP):** Batch and strip types

**REWINDER:** Built-in rewinder type

For the cutter type, the selection switch can be set to either position.



8. Connect the shorter harness of the strip sensor (Tr) with the strip sensor harness (LED).
9. Pass the other the strip sensor (Tr) harness through the clamp and connect to CN6 on the CPU PC Board.
10. Secure the strip sensors (Tr) and (LED) with SM-4 x 6B screw.
11. Fix the harness mentioned in Step 7 with the clamp. Be sure to wire the harness along with the main frame, base and right plate.

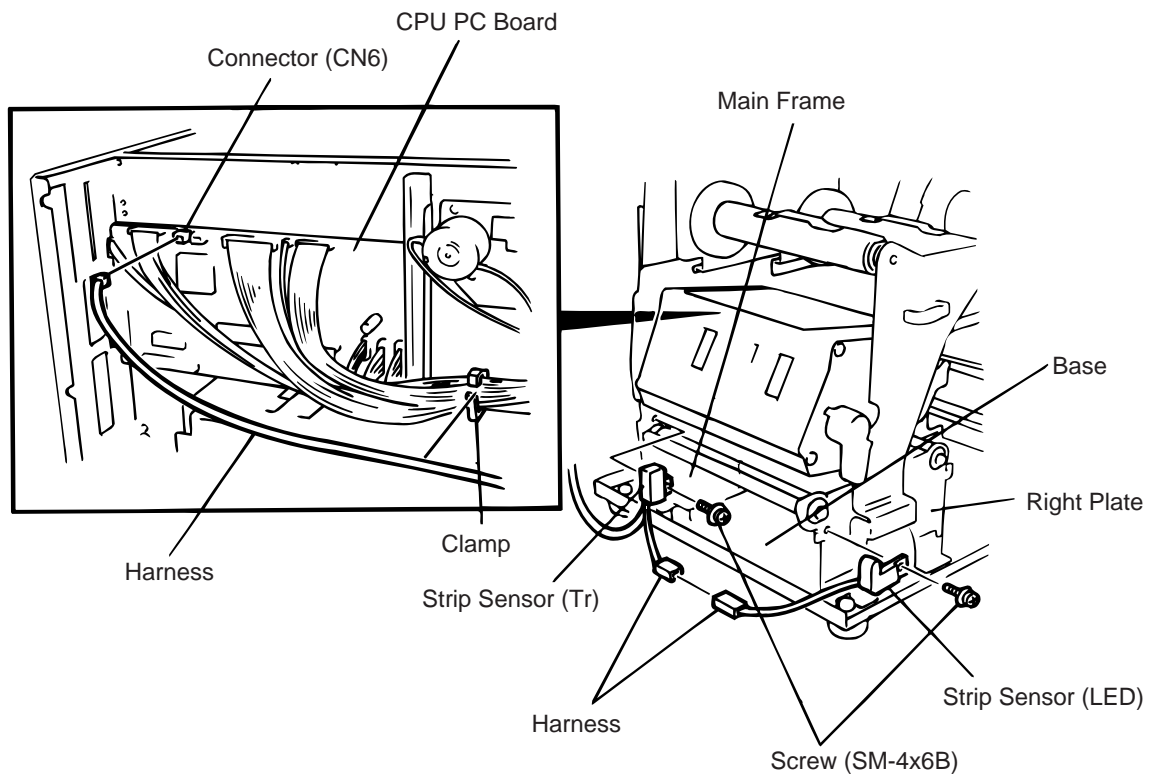


Fig. 3-13

12. Reassemble the operation panel, top cover and left side cover in the reverse order of removal.
13. Set the DIP SW 1-6 to ON.
14. When using the built-in rewinder in Batch mode, fit the rewinder guide plate to the strip shaft, then attach it with the black screws which were removed in step 4.

### 3.6 I/F PC Board (B-4700-IO-QM)

Description	Q'ty/Unit	Description	Q'ty/Unit
I/F PC Board	1	Locking Support (LCBT-14S)	3
Screw (FL-3x5)	1	Locking Support (EMS-14S)	1

1. Remove the top cover and left side cover (See Fig. 2-1.)
2. Remove the two FL-3 x 5 screws to detach the blind plate A.
3. Attach the four locking supports to the main frame, then install the I/F PC board aligning with the CN4 on the CPU PC board and the locking supports.
4. Secure the I/F PC board with FL-3 x 5 screw.

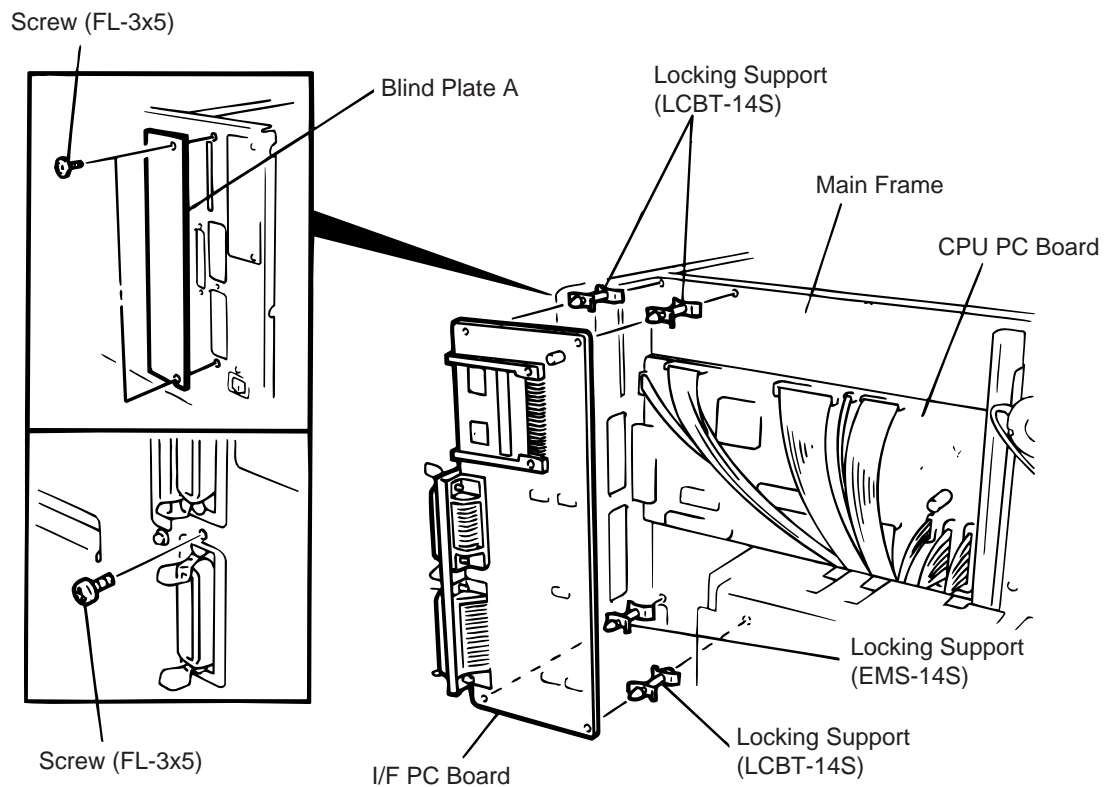


Fig. 3-14

5. Reassemble the top cover and left side cover in the reverse order of removal.

### 3.7 Fanfold Paper Guide Module (B-4905-FF-QM)

Description	Q'ty/Unit
Fanfold Paper Guide (rear)	1
Fanfold Paper Guide (front)	1

1. Open the top cover.
2. Remove the T-4 x 8 screws to detach the paper guide ass'y at the center of the printer and attach the fanfold paper guide (front) with these same screws.

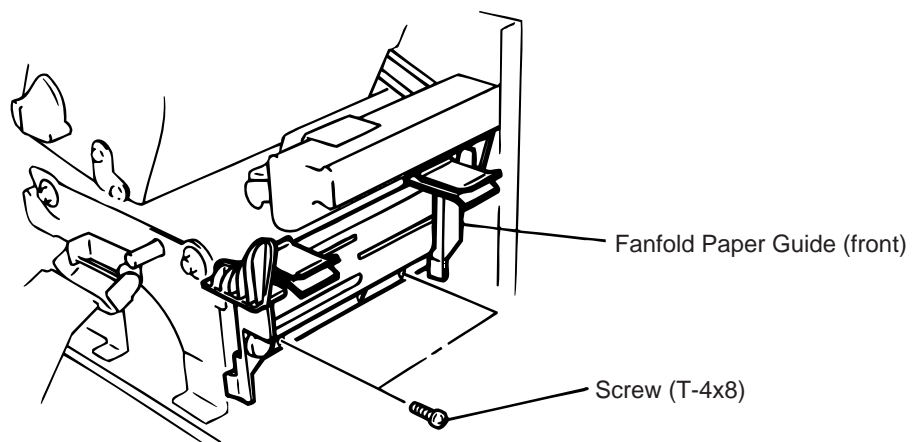


Fig. 3-15

3. Remove the FL-4 x 5 screws to detach the blind plate on the back of the printer and attach the fanfold paper guide (rear) with the same screws.

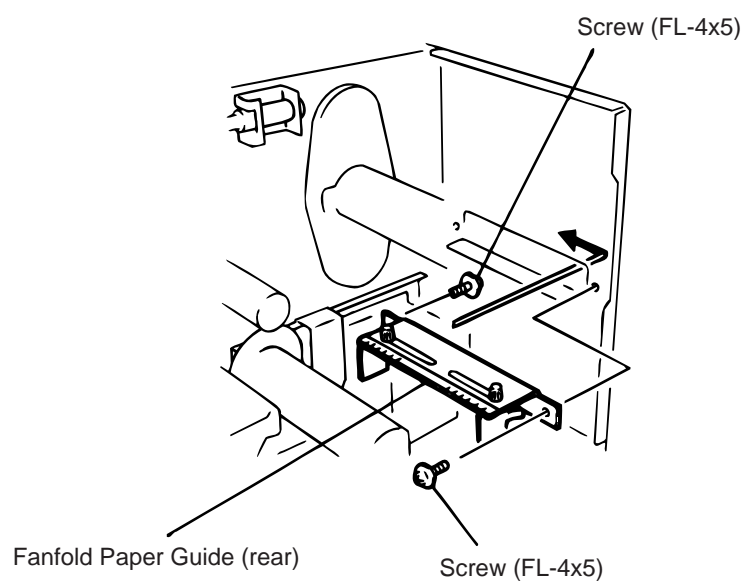


Fig. 3-16

# 4. MECHANISM DESCRIPTION

## 4.1 Cutter Drive (Cutter mode)

The printer supplies DC +27 V to the cutter motor to rotate the cutter motor and clutch counter clockwise. The arm swings like a pendulum and moves the fixed slide cutter up and down to make a cut.

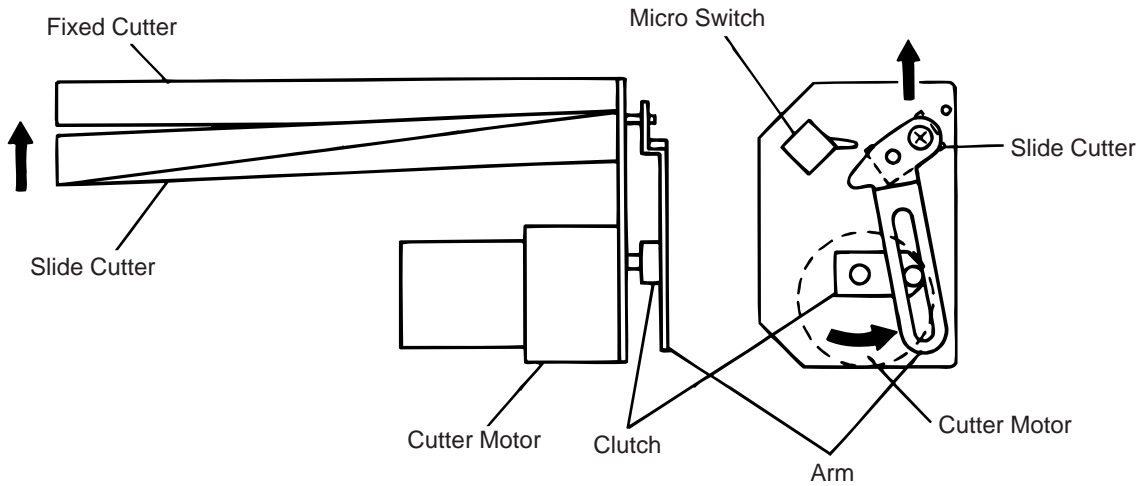


Fig. 4-1

After making a cut the arm turns the micro switch off and the cutter home position is detected. When the cutter does not return to the home position because of a paper jam, an error occurs and the next piece of paper will not be cut.

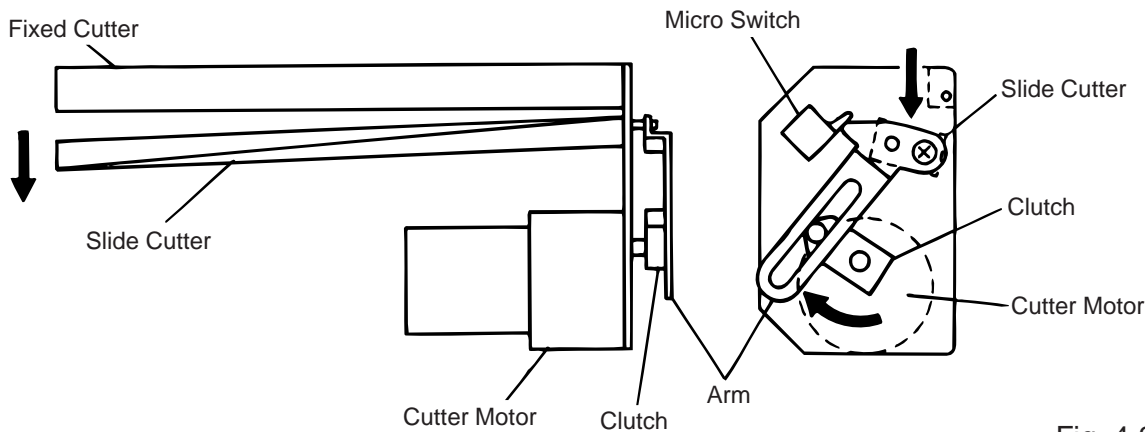
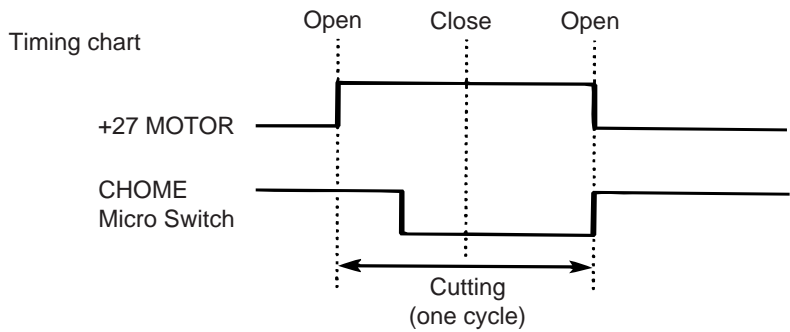


Fig. 4-2



4.2 Harness Wiring

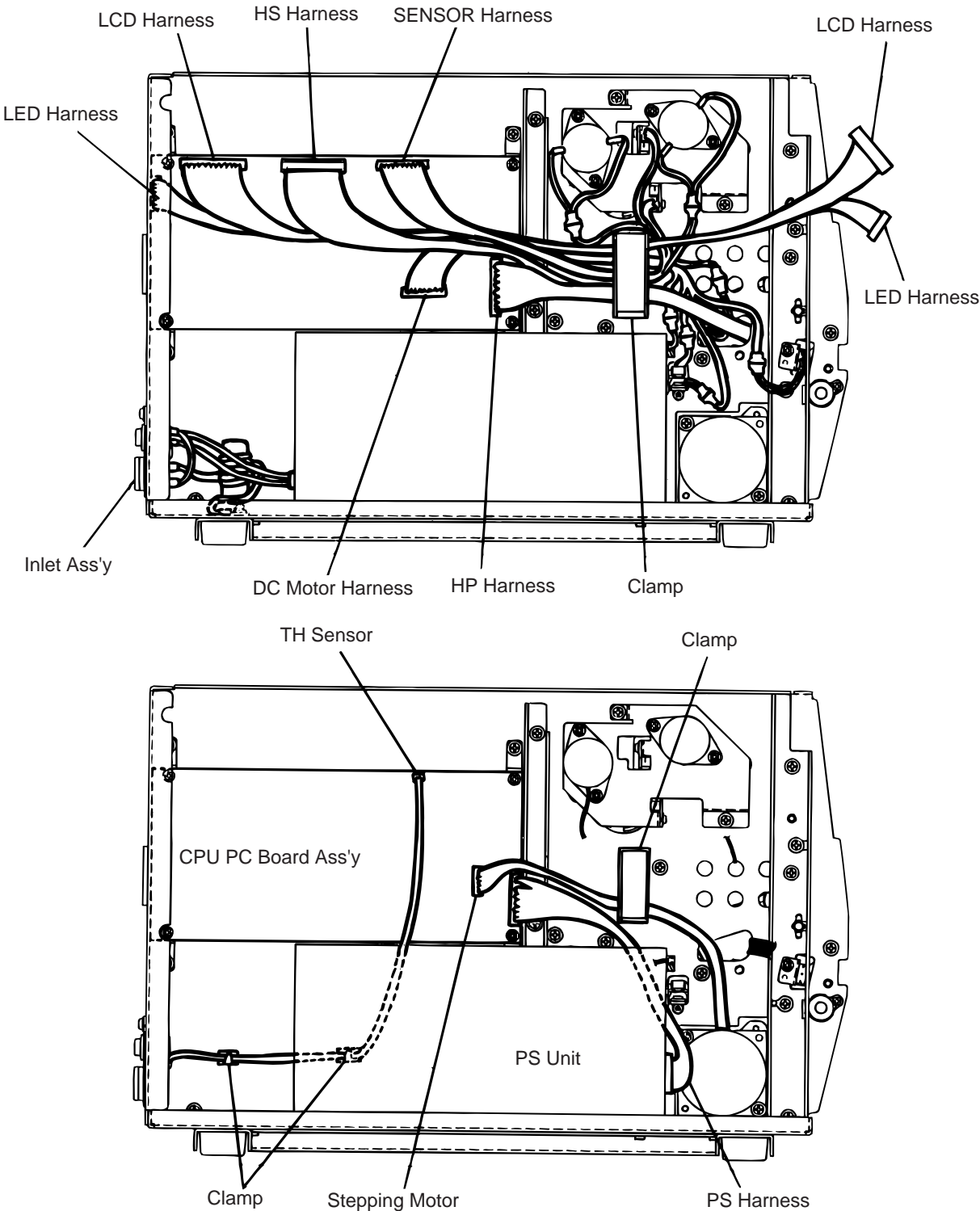


Fig. 4-3

## 5. TROUBLESHOOTING

Problems	Cause	Solution
Power is not turned ON.	<ol style="list-style-type: none"> <li>1. Input voltage to the printer is not within the rated voltage. (Check by CN1 on the PS unit.)</li> <li>2. Output voltage from the printer is not within the rated voltage. (Check that the voltage between Pin 4 and Pin 6 (GND) of CN2 on the PS unit is 27 V. And check the voltage between Pin 1 and Pin 3 (GND) is 5 V.)</li> <li>3. CPU PC board is not applied with voltage. (Check the voltage between Pin 1 and Pin 3 (GND) of the CN18 on the CPU PC board is 27 V.)</li> <li>4. Failure of CPU PC board.</li> </ol>	<ul style="list-style-type: none"> <li>• Replace the power cable or power inlet.</li> <li>• Replace the PS unit.</li> <li>• Replace the power harness.</li> <li>• Replace the CPU PC board.</li> </ul>
LED or LCD does not light.	<ol style="list-style-type: none"> <li>1. Failure of the LED board/LCD</li> <li>2. Failure of the LCD/LED harness</li> <li>3. Failure of the CPU PC board</li> </ol>	<ul style="list-style-type: none"> <li>• Replace the LED board/LCD.</li> <li>• Replace the LCD/LED harness.</li> <li>• Replace the CPU PC board.</li> </ul>
Poor printing.	<ol style="list-style-type: none"> <li>1. The print paper is of poor quality.</li> <li>2. Dirty print head</li> <li>3. The head lever fastens the print head incompletely.</li> <li>4. Alignment adjustment of the print head is improper.</li> </ol>	<ul style="list-style-type: none"> <li>• Use the media approved by TOSHIBA TEC.</li> <li>• Clean the print head.</li> <li>• Fasten the head lever completely.</li> <li>• Re-adjust the head.</li> </ul>
Printer does not print.	<ol style="list-style-type: none"> <li>1. Print head failure</li> <li>2. Connection of the print head connector is incomplete, a bad contact, or broken wires.</li> <li>3. Failure in the rewinding/feeding of the ribbon.</li> <li>4. Failure of the CPU PC board</li> <li>5. Failure of the software</li> <li>6. Failure of the printer cable</li> </ol>	<ul style="list-style-type: none"> <li>• Replace the print head.</li> <li>• Connect the harness completely, or replace the harness.</li> <li>• Replace the ribbon rewind motor, ribbon feed motor or CPU PC board.</li> <li>• Replace the CPU PC board.</li> <li>• Check the program.</li> <li>• Replace the printer cable.</li> </ul>

Problems	Cause	Solution
Dot missing	<ol style="list-style-type: none"> <li>1. Broken element of print head</li> <li>2. Broken wires of print head cable</li> <li>3. Failure of the CPU PC board</li> </ol>	<ul style="list-style-type: none"> <li>• Replace the print head.</li> <li>• Replace the print head harness.</li> <li>• Replace the CPU PC board.</li> </ul>
Blurred print	<ol style="list-style-type: none"> <li>1. Poor quality of media.</li> <li>2. Dust is attached to the media.</li> </ol>	<ul style="list-style-type: none"> <li>• Use only TOSHIBA TEC specified media.</li> <li>• Clean the print head and remove the dust from the media.</li> </ul>
Ribbon wrinkle	<ol style="list-style-type: none"> <li>1. Poor quality of the ribbon</li> <li>2. Ribbon is not rewound or fed smoothly.</li> </ol>	<ul style="list-style-type: none"> <li>• Use only TOSHIBA TEC specified ribbon.</li> <li>• Replace the ribbon rewind motor or ribbon feed motor.</li> </ul>
Ribbon end error	<ol style="list-style-type: none"> <li>1. Poor quality of the ribbon</li> <li>2. Improper voltage applied to the ribbon end sensor</li> <li>3. Failure of the ribbon end sensor</li> <li>4. Failure of the circuit which controls the ribbon end sensor.</li> </ol>	<ul style="list-style-type: none"> <li>• Use only TOSHIBA TEC specified ribbon.</li> <li>• Refer to page 2-3 to adjust the ribbon end sensor.</li> <li>• Replace the ribbon end sensor.</li> <li>• Replace the CPU PC board.</li> </ul>
Label feed failure	<ol style="list-style-type: none"> <li>1. Paper is not set properly.</li> <li>2. Paper of poor quality</li> <li>3. Improper adjustment of the feed gap sensor or black mark sensor.</li> <li>4. Failure of the feed gap sensor or black mark sensor</li> <li>5. Labels cannot be stripped off the backing paper or the backing paper with labels cannot be wound properly.</li> <li>6. The cutter mechanism is not installed properly.</li> <li>7. Failure of the stepping motor</li> </ol>	<ul style="list-style-type: none"> <li>• Set the paper properly.</li> <li>• Use the paper approved by TOSHIBA TEC.</li> <li>• Re-adjust the sensor.</li> <li>• Replace the feed gap sensor or black mark sensor.</li> <li>• Replace the take-up motor or CPU PC board.</li> <li>• Install the cutter mechanism properly.</li> <li>• Replace the stepping motor or CPU PC board.</li> </ul>
Communication error	<ol style="list-style-type: none"> <li>1. Failure of the communication cable</li> <li>2. Failure of the RS-232C connector</li> <li>3. Failure of the communication connector</li> <li>4. Failure of the PC or application software</li> <li>5. Failure of the CPU PC board</li> </ol>	<ul style="list-style-type: none"> <li>• Replace the cable.</li> <li>• Replace the connector.</li> <li>• Replace the connector.</li> <li>• Modify the program.</li> <li>• Replace IC3 (MC145407). If the trouble is not solved, replace the CPU PC board.</li> </ul>





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### **CAUTION:**

1. This manual may not be copied in whole or in part without prior written permission of TOSHIBA TEC.
2. The contents of this manual may be changed without notification.
3. Please refer to your local Authorized Service representative with regard to any queries you may have in this manual.

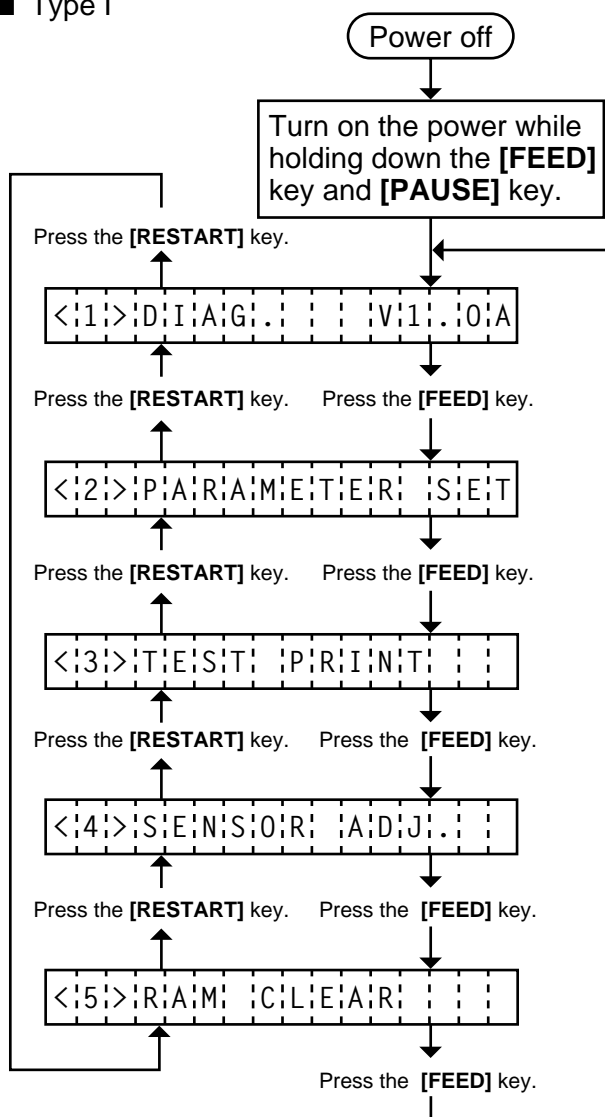
## 6. DIAG. TEST OPERATION

### 6.1 OUTLINE OF THE DIAG. TEST OPERATION

In system mode the diag. test operation is used to diagnose the printer and to set the parameters by using the **[FEED]**, **[RESTART]** and **[PAUSE]** keys on the operation panel. Diag. test operation (Type I) is started from the power off state and the parameter setting (Type II) is started while the printer is on-line or printing. For further details, please refer to the corresponding pages.

**NOTE:** Every size in this manual is written in millimeter. To obtain the size in inch, divide by 25.4.

#### ■ Type I



#### ■ Self Test Mode (See page 6-3)

Data from the maintenance counter and automatic diagnosis are printed on the media.

#### ■ Parameter Setting Mode (See page 6-13)

Fine adjustment of the feed length, cut/strip position, back feed, X axis, print tone, and thresholds of the black mark sensor and feed gap sensor, and selection of character font, font zero, control code, ribbon type, ribbon motor torque, strip wait status, Euro font code, transmission control mode, reset ON/OFF when the INPUT • PRIME signal is ON and motor type are available in this mode.

#### ■ Test Print Mode (See page 6-40)

Print condition and test print type (slant line, characters and bar code) are selectable.

#### ■ Sensor Setting Mode (See page 6-47)

A thermistor check and the adjustment of the black mark and feed gap sensors are available in this mode.

A transmission check is made to both a print head thermistor and an environmental temperature thermistor.

#### ■ RAM Clear Mode (See page 6-52)

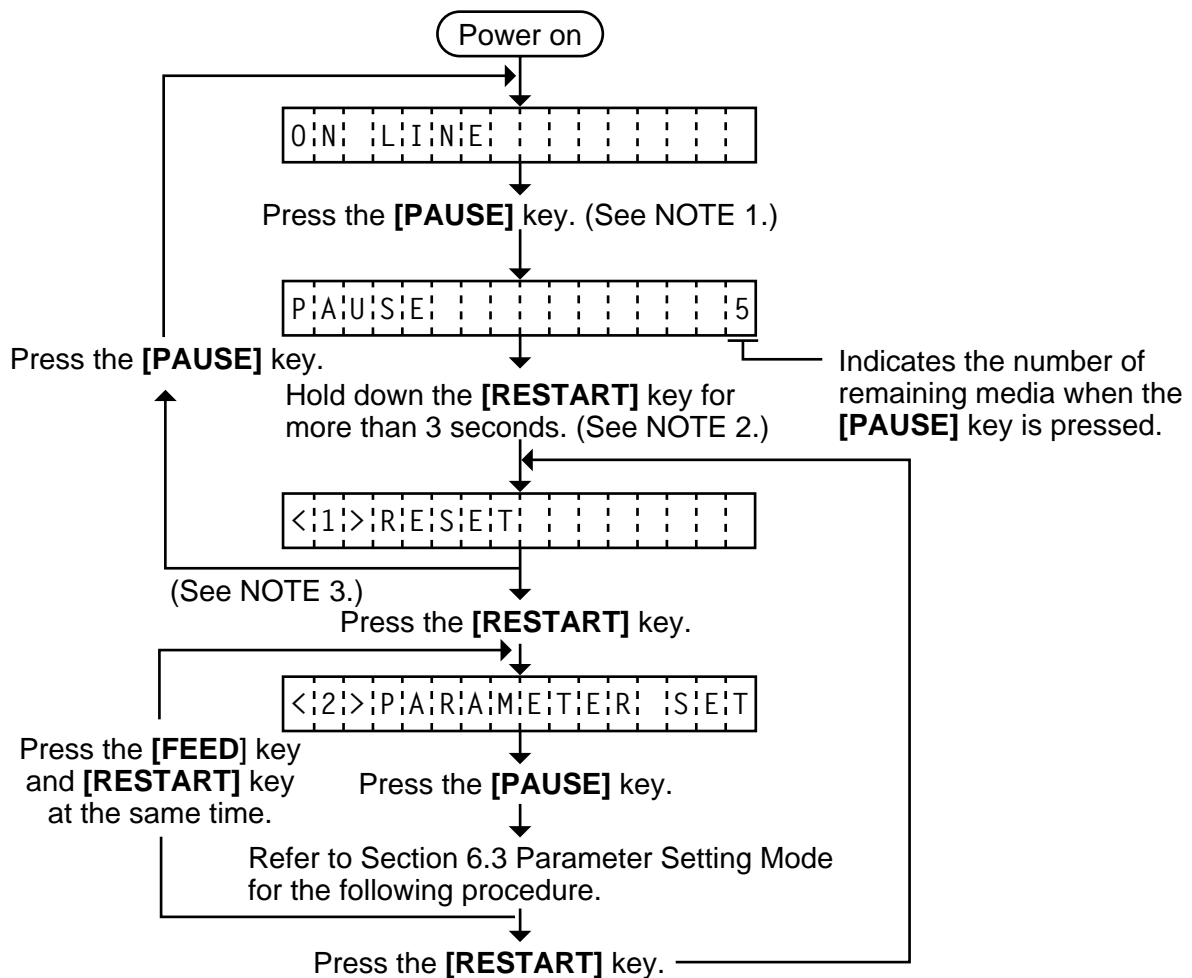
Data from the maintenance counter is cleared and parameter setting is initialized in the RAM clear mode.

In system mode the **[FEED]**, **[RESTART]** and **[PAUSE]** keys function as described below.

Key Name	Function
<b>[FEED]</b> key	Used to start the system mode as a <b>[PAUSE]</b> key does. Used to select the parameter mode or to fine adjust the parameters in the negative direction ( - ).
<b>[RESTART]</b> key	Used to select the parameter mode or to fine adjust the parameters in the positive direction ( + )
<b>[PAUSE]</b> key	Used to start the system mode as a <b>[FEED]</b> key does and to select the parameter mode. Used as an enter key.

### ■ Type II

The parameter setting such as feed length fine adjustment or cut/strip position fine adjustment can be changed while the printer is on-line or printing. Pressing the **[PAUSE]** key causes the printer to enter parameter setting mode. Reset mode is provided for this procedure to cancel the steps which follow the **[PAUSE]** key without turning the power off.



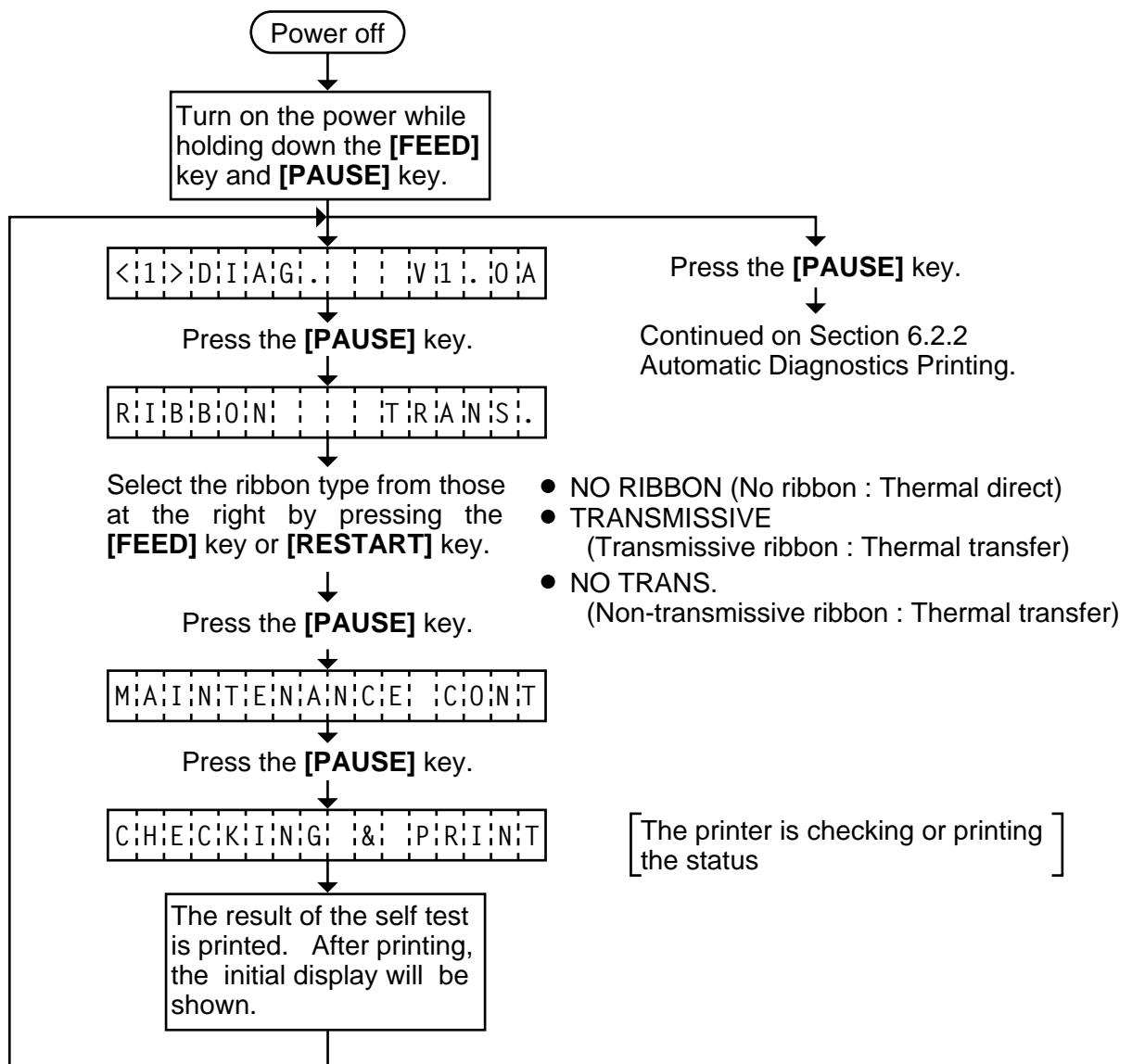
- NOTES:** 1. Pressing the **[PAUSE]** key during printing causes the printer to pause printing and show the number of remaining media.
2. If the **[RESTART]** key is released within 3 seconds, the printer will resume printing because the **[RESTART]** key is activated.
3. Since the reset is performed when terminating this mode, the printer cancels the remaining media and returns to on-line mode. This reset will not clear the changed parameter settings.

## 6.2 SELF TEST MODE

In self test mode the printer status is printed in two types of sample print.

### 6.2.1 Maintenance Counter Printing

The data from 1 to 31 on a sample print is printed. This data is the printer status and the value set in the parameter setting mode.



- NOTES:** 1. If the maintenance counter printing results in an error, the printer will display the error message and stop printing. The error status can be cleared by the [PAUSE] key, however, the display will return to the initial display "<1> DIAG. V1.0A". Printing is not automatically resumed after the error is cleared.
2. Both label and tag paper can be used for printing.

## ■ Sample Print

[Print Condition]

- Preset count : 1
- Print speed : 6"/sec.
- Sensor : No sensor
- Printing method : Thermal transfer
- Supply length : 50 mm
- Issuing mode : Batch printing  
(without rewinder)

(1)	TL FEED	1882.3km	[PC]		
(2)	FEED	20.5km	FEED	+10.0mm	(14)
(3)	PRINT	15.0km	CUT	-5.0mm	(15)
(4)	CUT	148150	BACK	+3.0mm	(16)
(5)	HEAD U/D	170	TONE(T)	+3step	(17)
(6)	RIBBON	32h	TONE(D)	+5step	(18)
(7)	SOLENOID	0h	[KEY]		
(8)	232C ERR 1		FEED	+5.0mm	(19)
(9)	SYS ERR 0		CUT	-1.5mm	(20)
(10)	PW FAIL 0		BACK	+0.5mm	(21)
(11)	FONT [PC-850] [0]		TONE(T)	+0step	(22)
(12)	CODE [ESC LF NUL]		TONE(D)	+1step	(23)
(13)	RIBN [TRANS.]		X ADJ.	+35.0mm	(24)
(27)	RIBN ADJ. [PC] +0 +0 [KEY]+0 +0				
(28)	STATUS [OFF]				
(25)	THRESHOLD R1.0V				
(26)	THRESHOLD T 1.4V				
(29)	KANJI [TYPE1]				
(30)	MOTOR [TYPE2]				
(31)	EURO CODE B0H				
(32)	DTR/RTS [DTR]				
(33)	INPUT PRIME [ON]				

## 1) Maintenance Counter

Fig. 6-1

#	Item	Count Condition	Range
(1)	Total media distance covered	Counted when the feed motor drives to feed, print and issue the media. (Counted also during ribbon save operation and back feed.) [See NOTE 2.]	0.0 ~ 3200.0 km
(2)	Media distance covered		0.0 ~ 200.0 km
(3)	Print distance	Counted while printing. (Feeding and issuing media, and ribbon saving operation are not counted.) [See NOTE 2.]	0.0 ~ 200.0 km
(4)	Cut count	Counts every cut. [See NOTE 3.]	0 ~ 1000000 times
(5)	Head up and down count	Counts every up and down of the print head using the solenoid for ribbon save operation. (Up+Down=1 count) [See NOTE 3.]	0 ~ 2000000 times
(6)	Ribbon motor driving time	Counts when the ribbon motor drives to feed, print and issue the media. (The driving time is not counted during ribbon saving operation, but is during back feed.) [See NOTE 4.]	0 ~ 2000 hours
(7)	Solenoid driving time	Counted during ribbon saving operation. [See NOTE 4.]	0 ~ 1000 hours
(8)	RS-232C hardware error count	Counted when a parity, overrun or framing error occurs. [See NOTE 5.]	0 ~ 255 times
(9)	System error count	Counted when a zero-dividing error occurs or undefined command is retrieved.	0 ~ 15 times
(10)	Momentary power failure count	Counts the number of times the power restores while the CPU is busy after reset.	0 ~ 15 times

**NOTES:** 1. Item from (2) through (10) are initialized to "0" after RAM clear.

2. If the distance is 8.2 m or less, it is rounded down and no data is added to the memory at power off.

3. If the count is 31 counts or less, it is rounded down and no data is added to the memory at power off.

4. If the driving time is 32 sec. or less, it is rounded down and no data is added to the memory at power off.

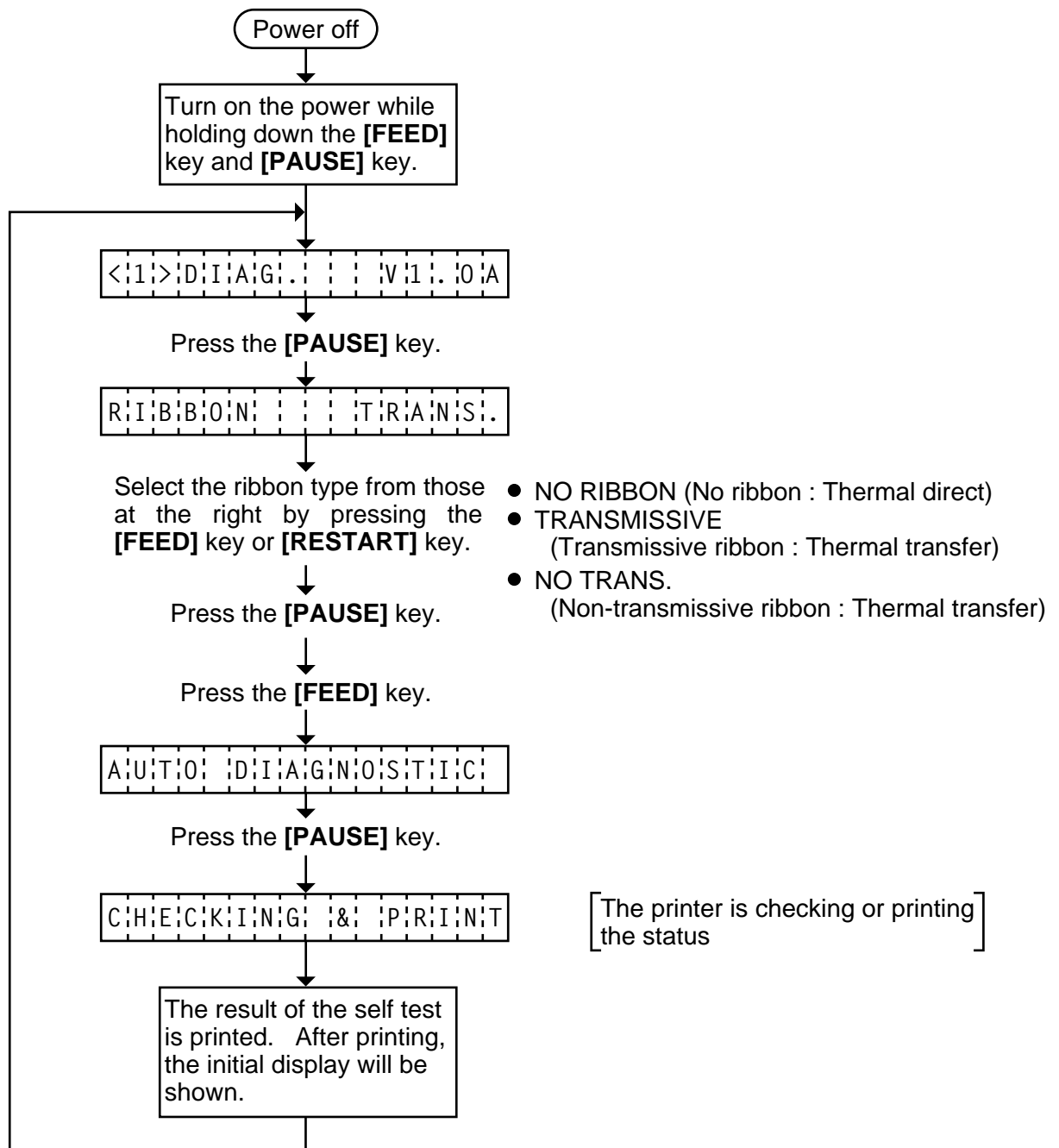
5. When a sent command results in an error, the same number as the data capacity of the command is counted by byte.

## 2) Parameters

#	Item	Contents
(11)	Character code selection	PC-850 : PC-850 PC-8 : PC-8
	Font zero selection	0 : No slash used. Ø : Slash used.
(12)	Control code selection	AUTO : Automatic selection ESC LF NUL : ESC LF NUL mode { } : Mainframe mode 1B 1C 1D : Manual
(13)	Ribbon type selection	TRANS. : Transmissive ribbon NON TRANS. : Non-transmissive ribbon
(14) (19)	Feed length fine adjustment (PC), (KEY)	-50.0 mm to +50.0 mm
(15) (20)	Cut/strip position fine adjustment (PC), (KEY)	-50.0 mm to +50.0 mm
(16) (21)	Back feed length fine adjustment (PC), (KEY)	-9.9 mm to +9.9 mm
(17) (22)	Print tone fine adjustment (Thermal transfer ) (PC), (KEY)	-10 step to +10 step
(18) (23)	Print tone fine adjustment (Thermal direct) (PC), (KEY)	-10 step to +10 step
(24)	X axis fine adjustment	-99.5 mm to +99.5 mm
(25)	Threshold manual fine adjustment for the black mark sensor	0.0V to 4.0 V
(26)	Threshold manual fine adjustment for the feed gap sensor	0.0V to 4.0 V
(27)	Ribbon Motor	-15 Strip to +0 Step
(28)	STATUS	1: Strip wait status is not sent to the PC. 2: Strip wait status is sent to the PC.
(29)	Kanji code type (Not supported by QQ/QP models)	TYPE1: Windows code TYPE2: Original code
(30)	MOTOR	TYPE1: SANYO motor TYPE2: NMB motor
(31)	EURO font code setting	20H to FFH
(32)	Transmission Control Mode	DTR: READY/BUSY (DTR) protocol (DTR/DSR) RTS: READY/BUSY (RTS) protocol (RTS/CTS)
(33)	Reset selection when the INPUT • PRIME signal is ON.	ON: The printer will restore to the initial status. OFF: The printer will not restore to the initial status.

### 6.2.2 Automatic Diagnostic Printing

The data from ① to ⑨ on a sample print is printed.



**NOTES:** 1. If the automatic diagnosis printing results in an error, the printer will display the error message and stop printing. The error status can be cleared by the **[PAUSE]** key, however, the display will return to the initial display "<1> DIAG. V1.0A". Printing is not automatically resumed.

2. Both label and tag paper can be used for printing.

■ Sample Print

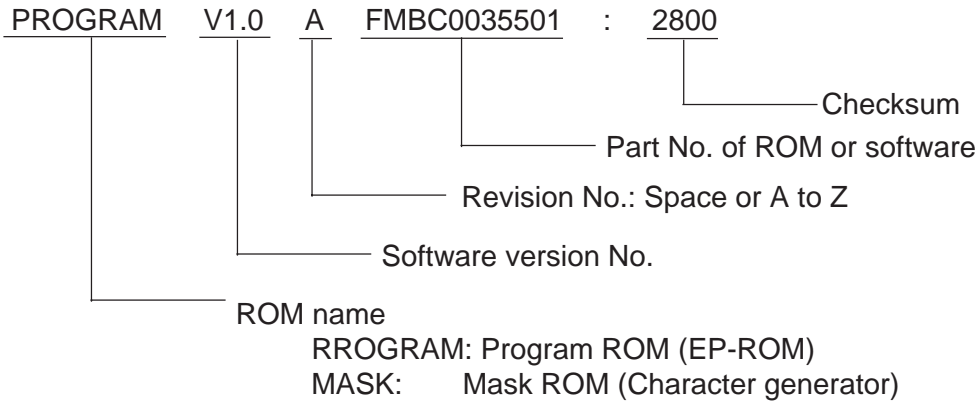
[Print Condition]

- Preset count : 1
- Print speed : 6"/sec.
- Sensor : No sensor
- Printing method : Thermal transfer
- Supply length : 50 mm
- Issuing mode : Batch printing  
(without rewinder)

①	PROGRAM	V1.0A	FMBC0035501:2800
	MASK	V1.0	FMRM0034901:B100
②	KANJI	0000:0000	
		0000:0000:0000:0000	
③	EEPROM	0K	
④	DRAM	512KB	
⑤	CARD	0K	
⑥	SENSOR1	00000000,10110011	
⑦	SENSOR2	[H]3.1V [A]2.8V [R]3.3V [T]2.4V [RANK]3	
⑧	DIP SW	00000000,00001010	
⑨	EXP.I/O	OK	

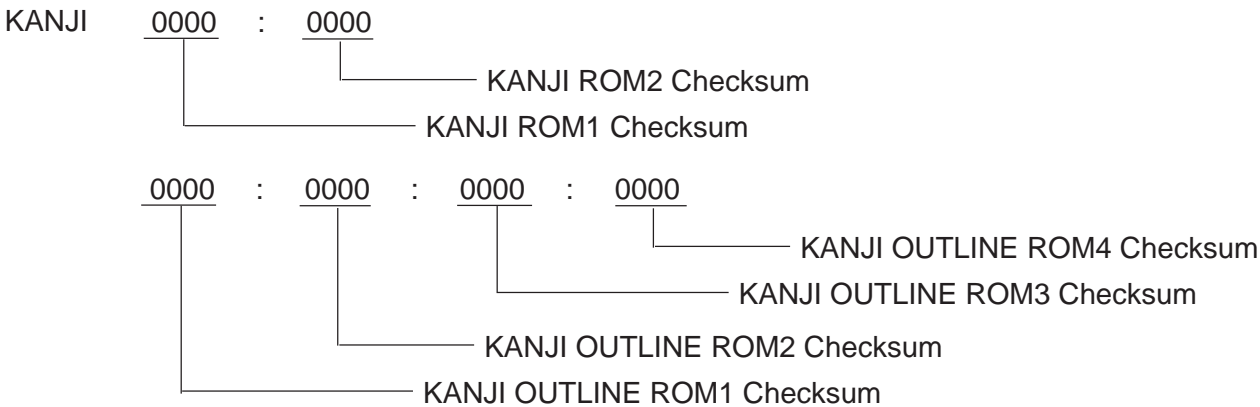
Fig. 6-2

① PROGRAM/MASK ROM Check



- NOTES:** 1. Software version No., part No. of ROM and checksum vary according to the software version of PROGRAM/MASK ROM.
2. The last two digits of the checksum are usually 0.

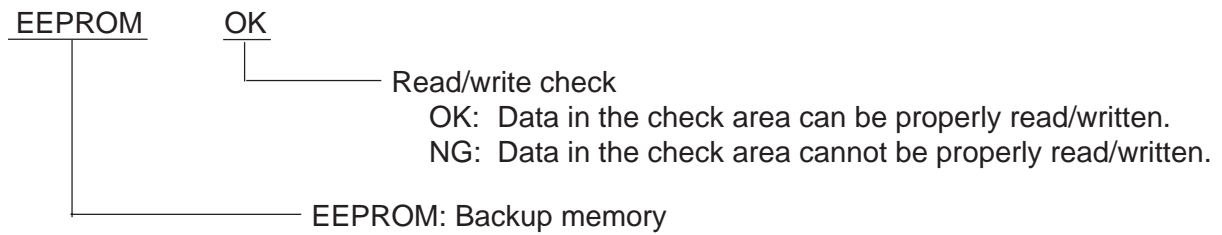
② KANJI ROM Check



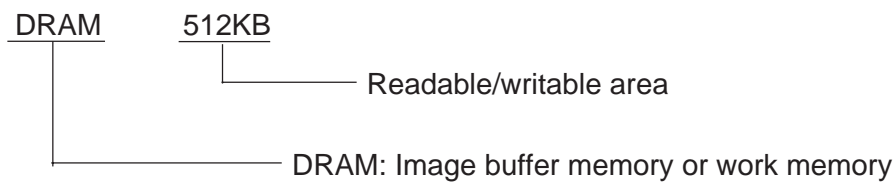
- NOTES:** 1. Checksum varies according to the software version.
2. When the KANJI ROM or KANJI OUTLINE ROM is not installed, the checksum becomes "0000".
3. The last two digits of the checksum are not 0.



## ③ EEPROM Check

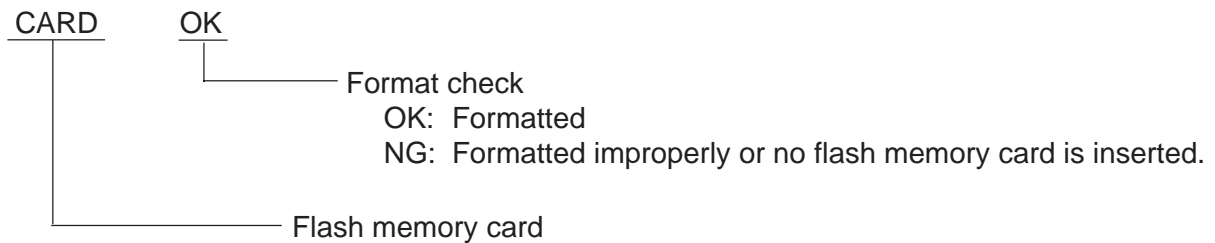


## ④ DRAM Check

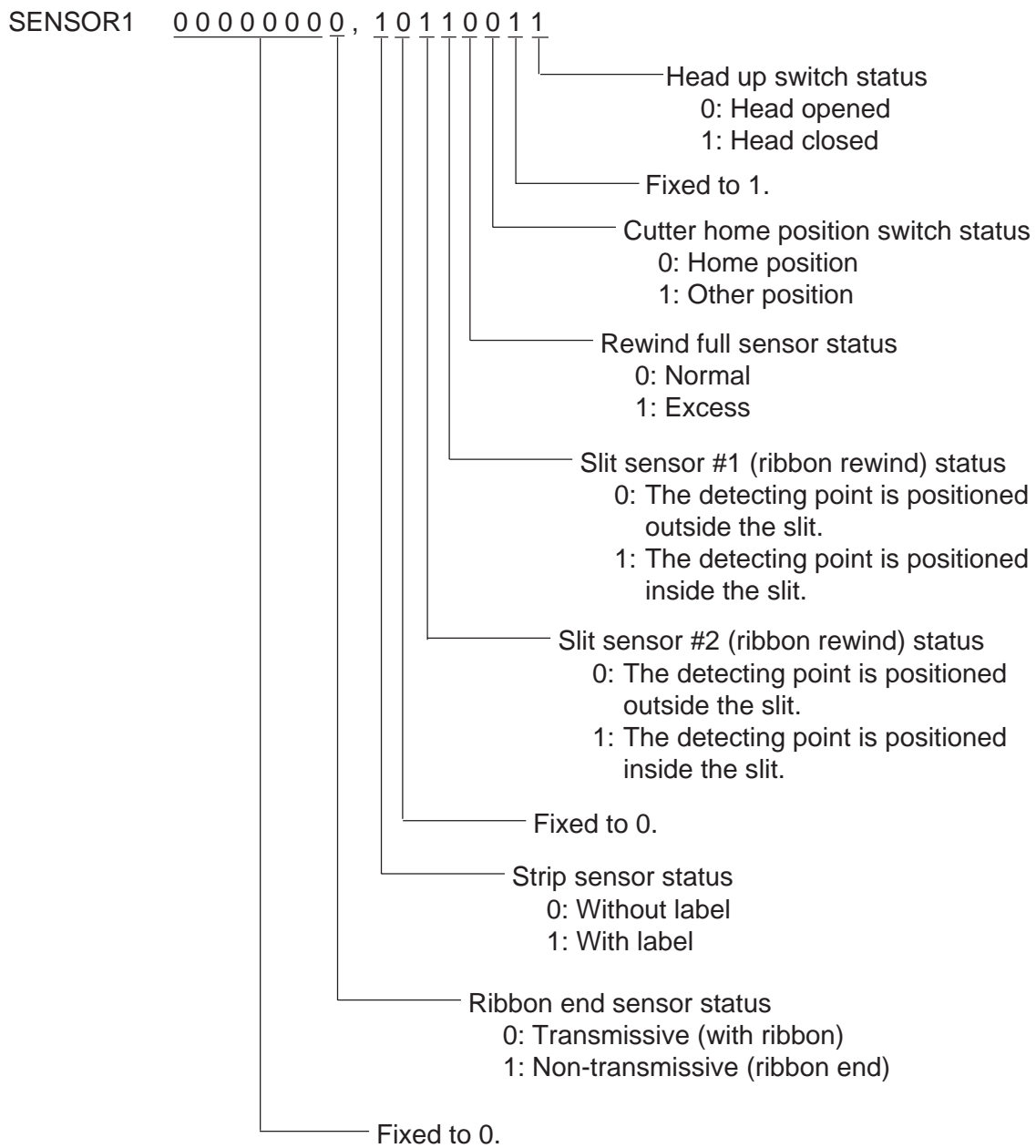


**NOTE:** 1. If an error is detected during DRAM check, the display of readable/writable area will stop when the error occurs.

## ⑤ Flash Memory Card Check



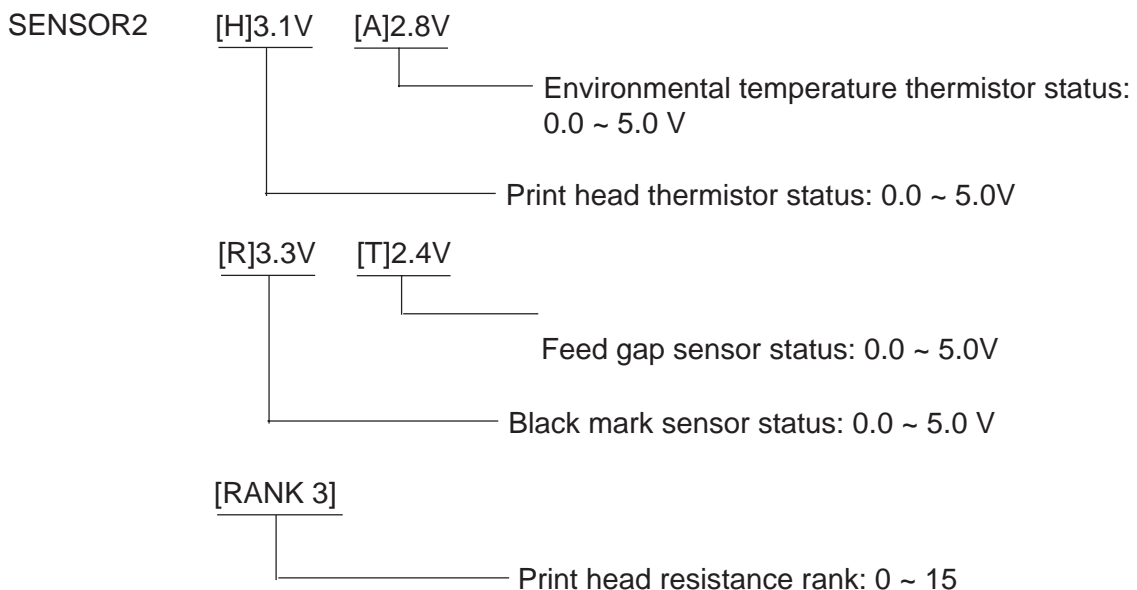
## ⑥ Sensor 1 Check



■ Print status content description of each sensor/switch

Sensor/Switch	Print status content description									
Head up switch	Indicates whether the print head is opened or closed.									
Cutter home position switch	Indicates whether the cutter is at the home position or not.									
Rewind full sensor	Indicates whether the media is wound to peak capacity on the built-in take-up spool or not.									
Slit sensor #1 (ribbon rewind) Slit sensor #2 (ribbon feed)	Controls ribbon motor rotation by detecting the slit on the ribbon rewind motor and the ribbon feed motor. Indicates the position of the slit sensor.									
Strip sensor	Indicates the existence of label in strip mode. When no label is detected (0), the subsequent label is issued, when a label is detected (1), the subsequent label will not be issued until the current label is removed.									
Ribbon end sensor	<p>The display of the ribbon end sensor only shows whether the ribbon is transmissive or non-transmissive. The status of the ribbon end detection differs according to the parameter setting. The following table shows the parameter settings in the parameter setting mode.</p> <table><tr><th>Type of ribbon Ribbon end sensor</th><th>Transmissive</th><th>Non-transmissive</th></tr><tr><th>Transmissive</th><td>With ribbon</td><td>Ribbon end</td></tr><tr><th>Non-transmissive</th><td>Ribbon end</td><td>With ribbon</td></tr></table>	Type of ribbon Ribbon end sensor	Transmissive	Non-transmissive	Transmissive	With ribbon	Ribbon end	Non-transmissive	Ribbon end	With ribbon
Type of ribbon Ribbon end sensor	Transmissive	Non-transmissive								
Transmissive	With ribbon	Ribbon end								
Non-transmissive	Ribbon end	With ribbon								

⑦ SENSOR2 Check

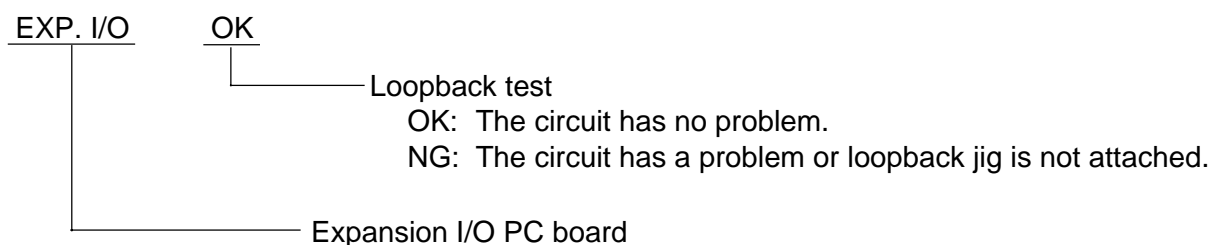


## ⑧ DIP SW Check

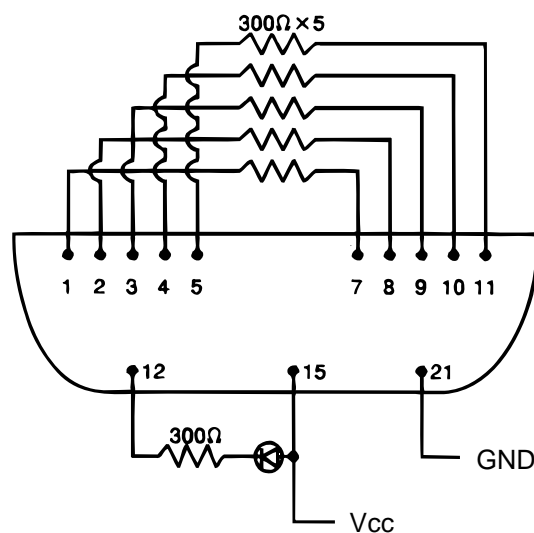
DIP SW	8	7	6	5	4	3	2	1	8	7	6	5	4	3	2	1	Pin No.
	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0		Status
																	DIP Switch 2
																	0: OFF (OPEN)
																	1: ON (SHORT)
																	DIP Switch 1
																	0: OFF (OPEN)
																	1: ON (SHORT)

**NOTE:** The DIP switch 1-7 is to be set to 0 (OFF : OPEN) regardless of setting item.

## ⑨ EXP. I/O Check



For the loopback test, connect a jig as shown below and check HIGH output / HIGH input and LOW output / LOW input.

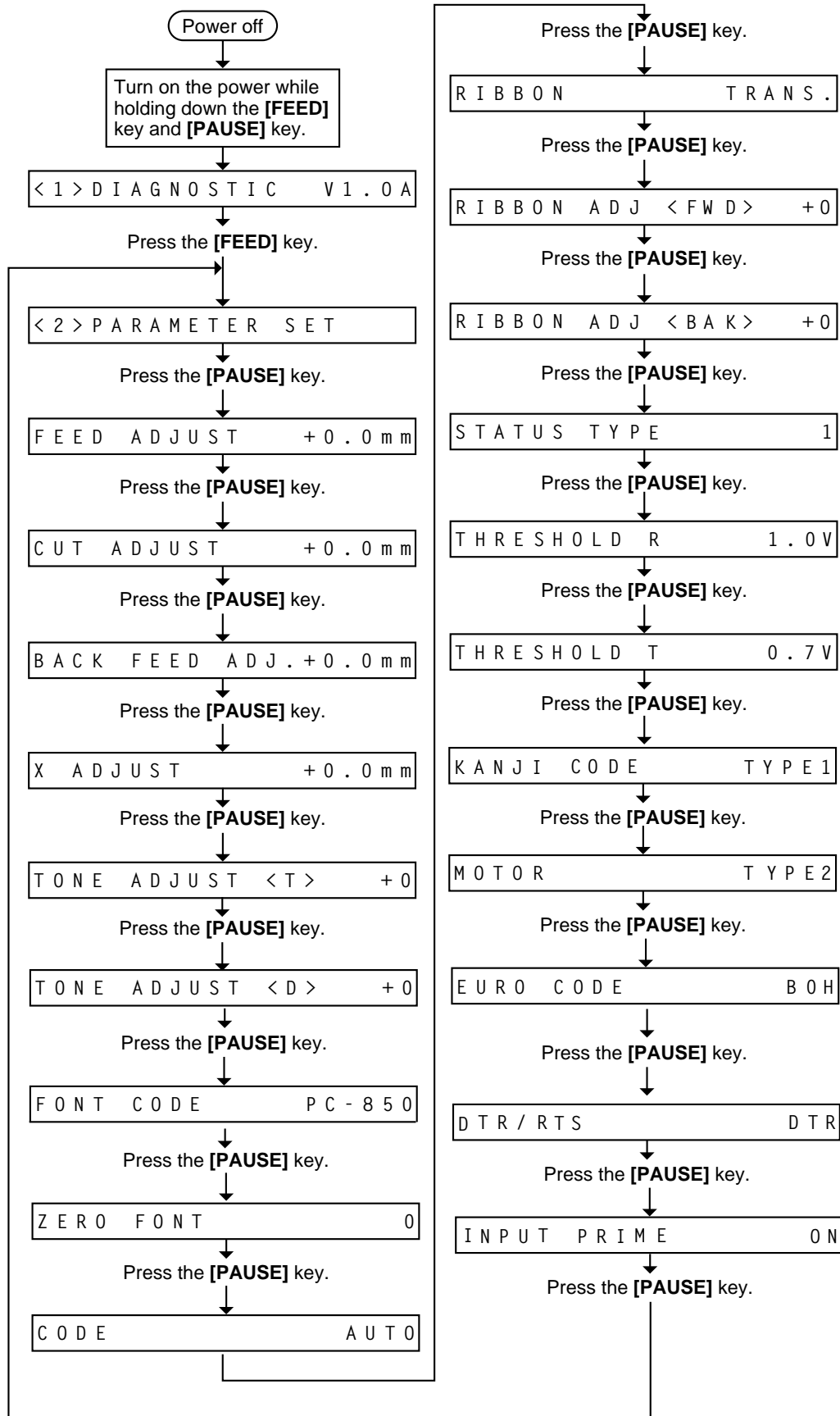


Connector: FCN-781P024-G/P

Fig. 6-3

## 6.3 PARAMETER SETTING MODE

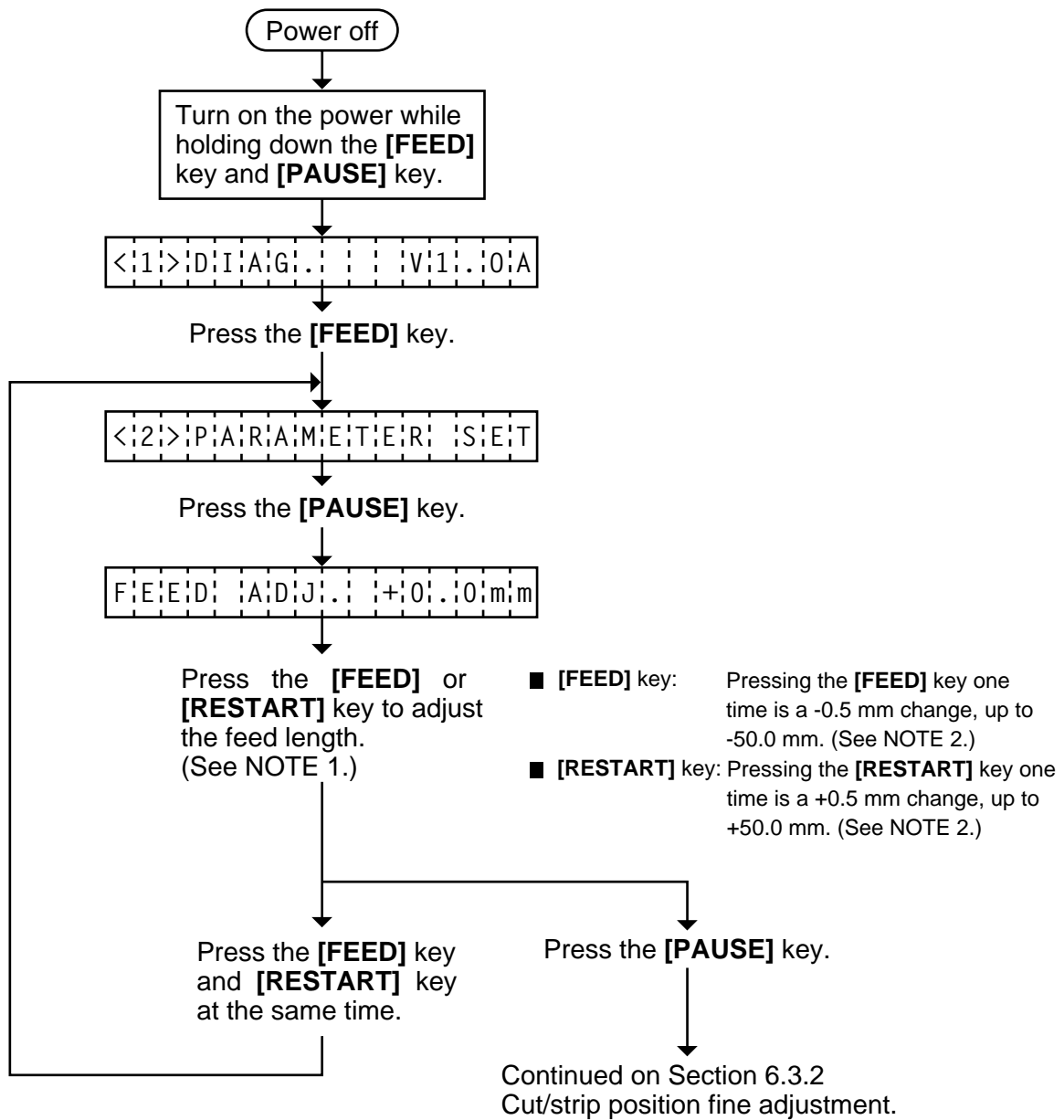
The following items are set in the parameter setting mode. The values set in this mode are printed on the sample print of the maintenance counter. Setting procedure and functions are provided below.



## ■ Parameter Setting Mode Table

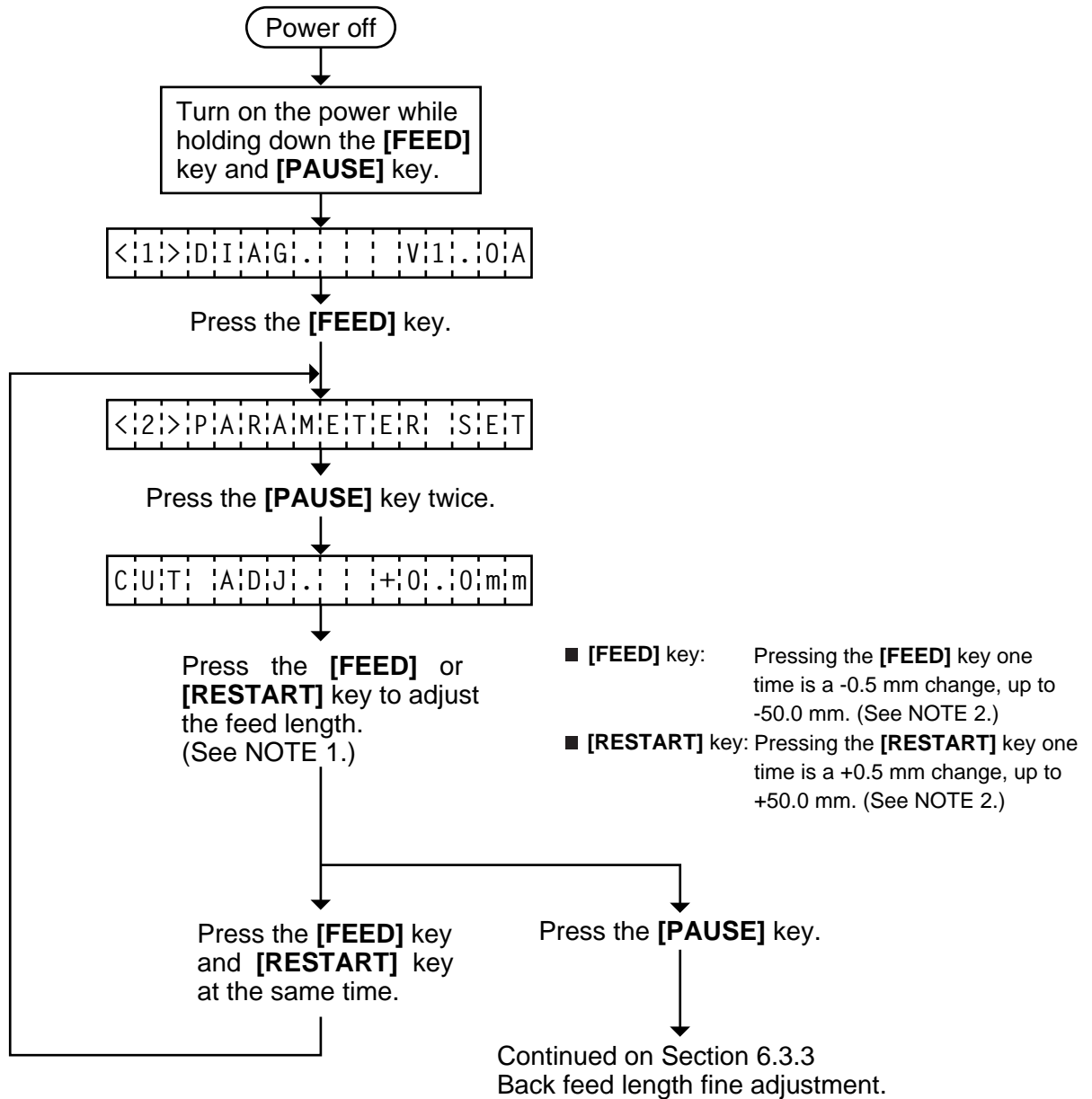
Mode Name	Function
FEED ADJUST	Using this parameter the feed length is fine adjusted.
CUT ADJUST	Using this parameter the cut position or strip position is fine adjusted.
BACK FEED ADJ.	Using this parameter the back feed length from the cut/strip position to the home position is fine adjusted.
X ADJUST	This setting is used to finely adjust print position in the X axis.
TONE ADJUST <T> (Thermal transfer printing) TONE ADJUST<D> (Thermal direct printing)	Using this parameter the print tone is fine adjusted. The longer the print pulse width, the darker the print tone becomes. The shorter, the lighter the print tone becomes.
FONT CODE	The character code either PC-850 or PC-8 is selected.
ZERO FONT	The font zero either 0 or Ø is selected.
CODE	The command code out of AUTO, ESC/LF/NUL, or { I } is selected.
RIBBON	Ribbon type either transmissive or non-transmissive is selected.
RIBBON ADJ <FWD> (Ribbon feed motor) RIBBON ADJ <BAK> (Ribbon feed motor)	Using this parameter the torque of the ribbon motors is fine adjusted.
STATUS TYPE	Whether or not the strip wait status (05H) is sent in response to the status request command from the PC is selectable.
THRESHOLD R	The threshold of the black mark sensor is manually fine adjusted.
THRESHOLD T	The threshold of the feed gap sensor is manually fine adjusted.
MOTOR	The stepping motor type is selected.
KANJI CODE	Kanji code either Windows code or original code is selected. (Not supported by QQ/QP models.)
EURO CODE	EURO code is selected from 20H to FFH.
DTR/RTS	Transmission Control mode is selected from DTR or RTS.
INPUT PRIME	Reset ON/OFF when the INPUT • PRIME signal on is selected.

### 6.3.1 Feed Length Fine Adjustment



- NOTES:** 1. Holding the [FEED] key or [RESTART] key down for more than 0.5 seconds enables a fast forward.
2. Max. fine adjustment  $\pm 50.0$  mm = Key fine adjustment value ( $\pm 50.0$  mm) + PC fine adjustment value ( $\pm 50.0$  mm)
- When the value reaches the maximum, the value remains unchanged even if the subsequent fine adjustment is performed.
3. A changed feed value is stored in memory by pressing the [PAUSE] key.

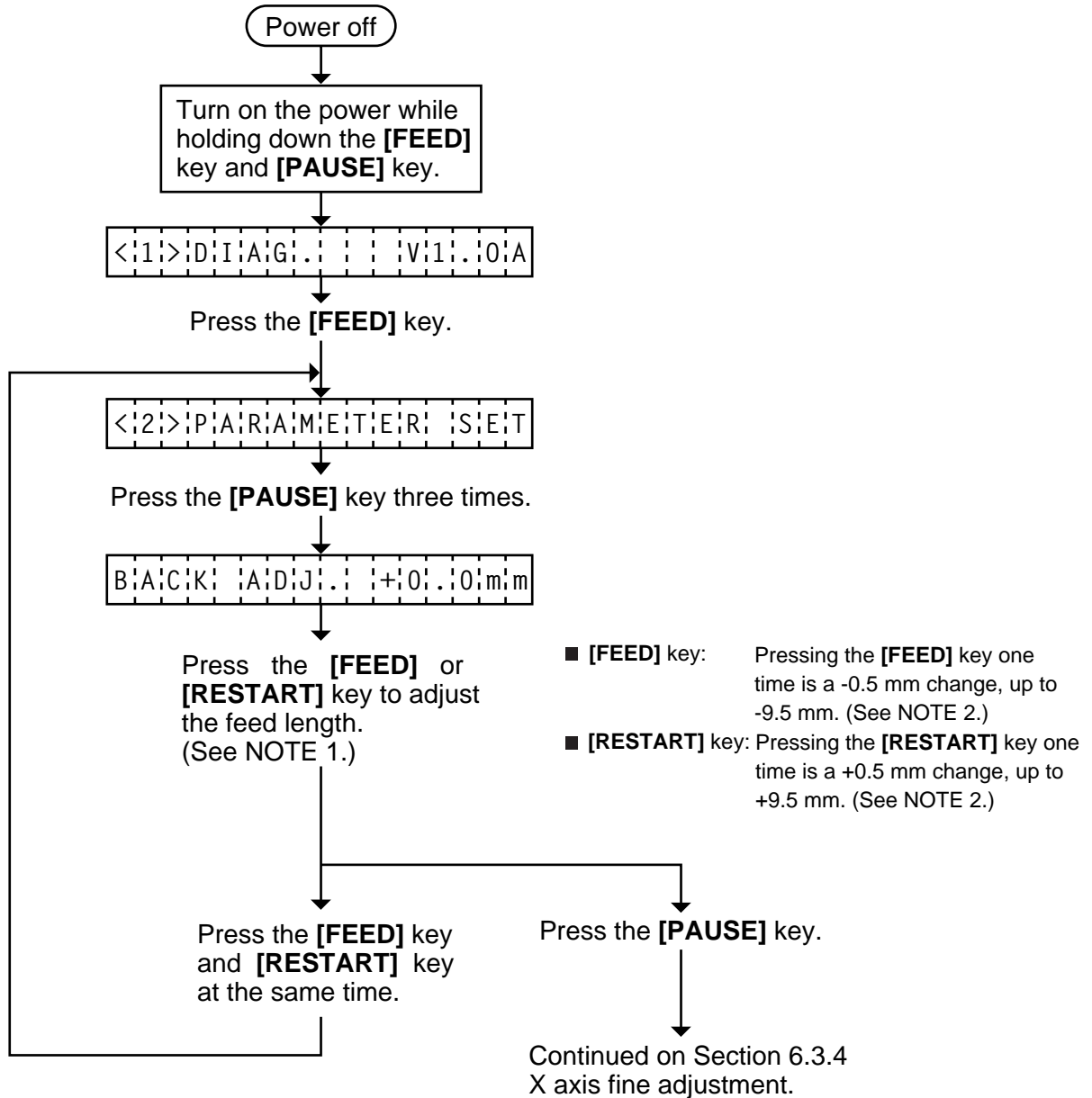
## 6.3.2 Cut/Strip Position Fine Adjustment



- NOTES:** 1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.
2. Max. fine adjustment  $\pm 50.0 \text{ mm} = \text{Key fine adjustment value } (\pm 50.0 \text{ mm}) + \text{PC fine adjustment value } (\pm 50.0 \text{ mm})$   
When the value reaches the maximum, the value remains unchanged even if a subsequent fine adjustment is performed.
3. A changed cut/strip position value is stored in memory by pressing the **[PAUSE]** key.
4. When using label with length of less than 38 mm, calculate the cut position fine adjustment value using the expression provided on page 6-18.



### 6.3.3 Back Feed Length Fine Adjustment



**NOTES:** 1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.

2. Max. fine adjustment  $\pm 9.9 \text{ mm} = \text{Key fine adjustment value } (\pm 9.5 \text{ mm}) + \text{PC fine adjustment value } (\pm 9.9 \text{ mm})$

When the value reaches the maximum, the value remains unchanged even if the subsequent fine adjustment is performed.

3. A changed back feed value is stored in memory by pressing the **[PAUSE]** key.

■ Feed Length Fine Adjustment Example

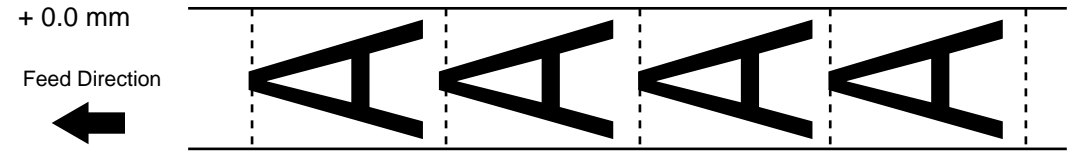


Fig. 6-3

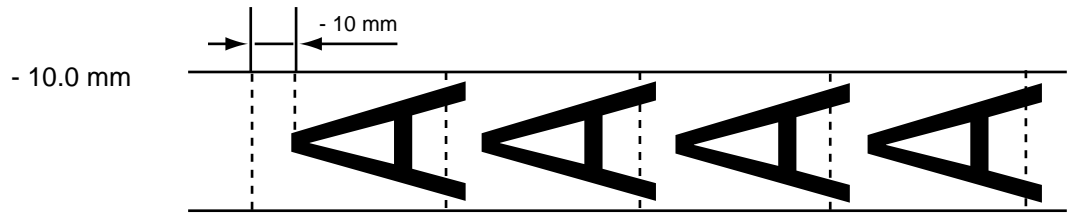


Fig. 6-4

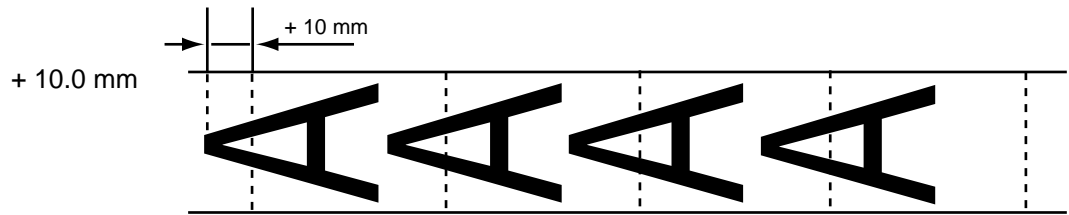


Fig. 6-5

■ Cut Position Fine Adjustment Example

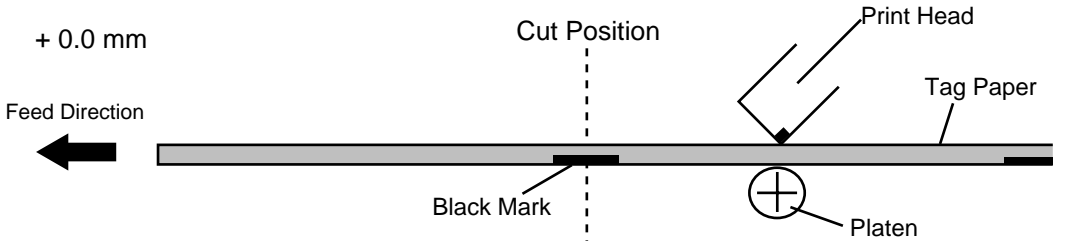


Fig. 6-6

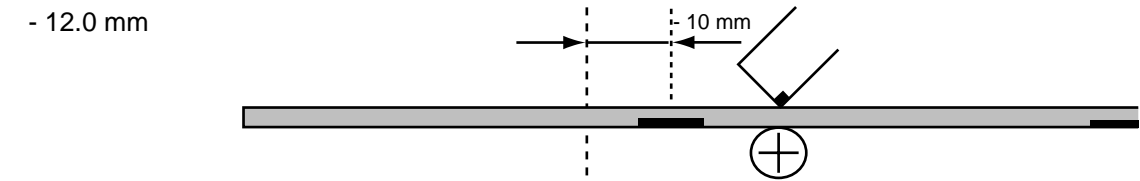


Fig. 6-7

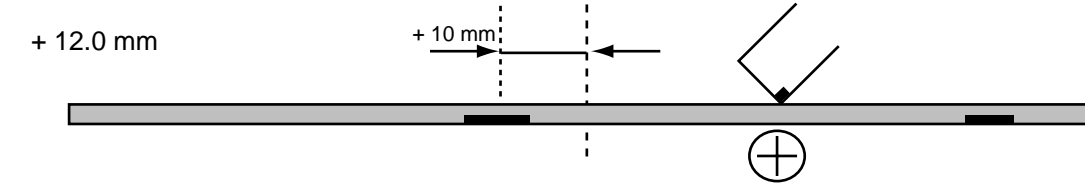


Fig. 6-8

### ■ When using a label with a length of less than 38 mm :

#### Case 1

Conditions: Issue command **[ESC]XS**, feed command **[ESC]T** and eject command **[ESC]IB** are received. Label pitch: 38.0 mm or less, with cut, feed gap sensor, cut position fine adjustment value  $\pm 10$  mm or less, and issue mode set to C (cut). When the above conditions are all met, the issue operation in cut issue mode is as follows:

- ① Head lifted → ② Forward feed to the cut position → ③ Head lowered → ④ Cut →  
⑤ Head lifted → ⑥ Backfeed to the home position → ⑦ Head lowered.

#### Case 2

Generally the minimum label length which is available in cut mode is 38.0 mm. When using a label with a length of less than 38 mm, the edge of the label may be caught on the print head during back feed to the print start position after cutting the label gap, causing a improper print start position.

In this case set the cut position fine adjustment value after calculating the value using the following formula so that the unprinted label returns to the correct print start position.

However, use of this method will leave one or two printed label(s) between the print head and the cutter. Feed or print the label(s) to remove them.

#### (a) Formula for cut position fine adjustment value

Cut position fine adjustment value

= (the number of labels left between the print head and the cutter) x (span of label)

= (32.8 mm/label length) x (span of label)

\* Omit the decimals of the value obtained by dividing 32.8 mm by the label length for one unit.

(example) Span of label : 30.0 mm, Label length : 24.0 mm

$(32.8 \text{ mm}/30.0 \text{ mm}) \times 30.0 \text{ mm} = 1 \times 30.0 \text{ mm} = +30.0 \text{ mm}$

#### (b) Example

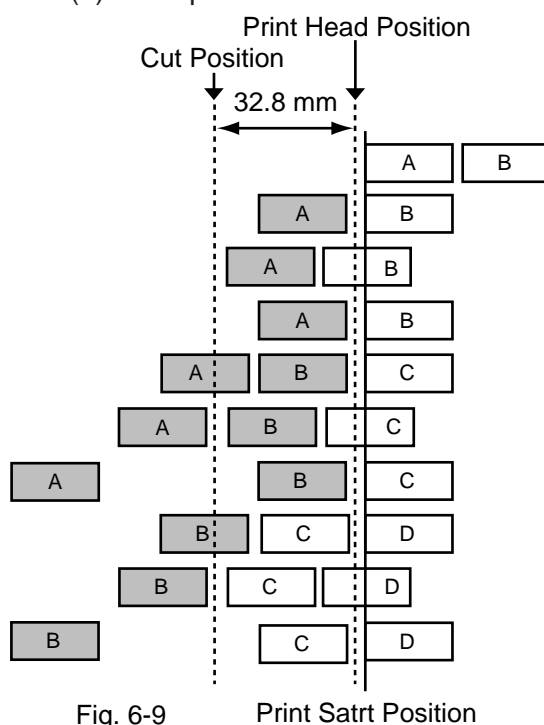


Fig. 6-9

Print Start Position

- ① Idling
- ② Printing the first label (A) is completed.
- ③ Label A is fed to the cut position and the front gap is cut.
- ④ Label B is fed in the reverse direction to the print start position.
- ⑤ Printing the second label (B) is completed.
- ⑥ Label B is fed to the cut position and the front gap is cut.
- ⑦ Label C is fed in the reverse direction to the print start position.
- ⑧ To take away label B, label (C) is fed.
- ⑨ Label B is fed to the cut position and the front gap is cut.
- ⑩ Label D is fed in the reverse direction to the print start position.

### ■ Strip Position Fine Adjustment Example

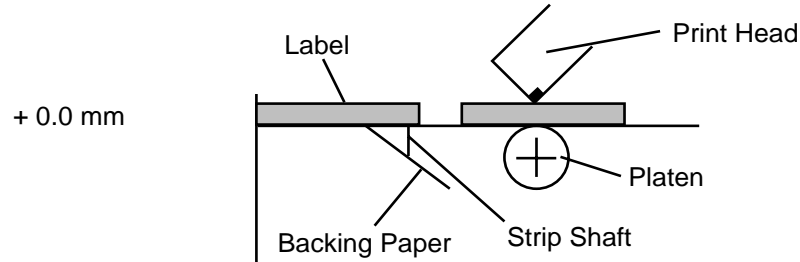


Fig. 6-10

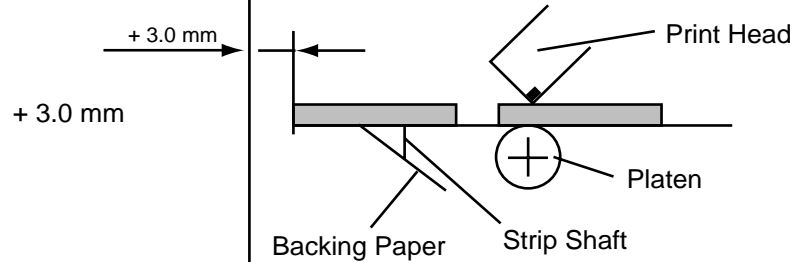


Fig. 6-11

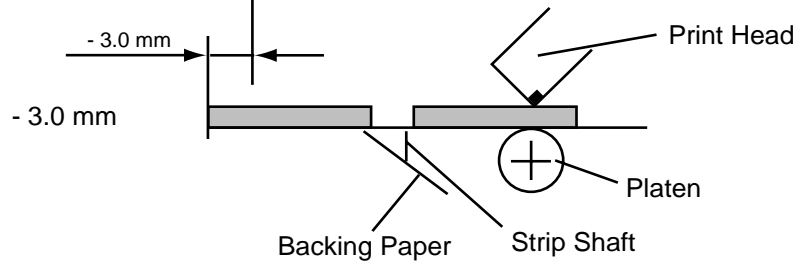


Fig. 6-12

**NOTE:** The print stop position when printing the label in strip mode varies according to label length for the strip mode printing stops so that the edge of the strip shaft is 4 mm from the middle of the gap. This is because the gap length is programmed as 2 mm. When the gap length is 5 mm or more, the effective print length should be set to the value obtained by subtracting 2 mm from the label pitch, that is, set the gap length to 2 mm. If the print format hangs over the gap as a result, correct the print start position. If the print stop position is improper, refer to Section 6.3.2 and make a fine adjustment.

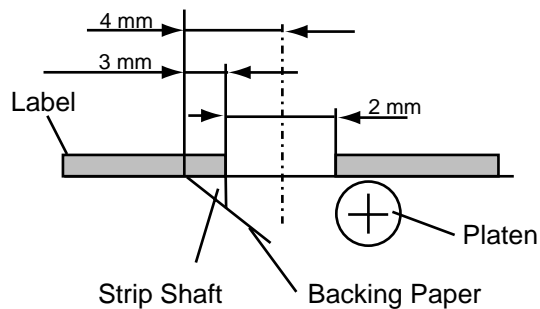


Fig. 6-14

■ Back Feed Length Fine Adjustment Example

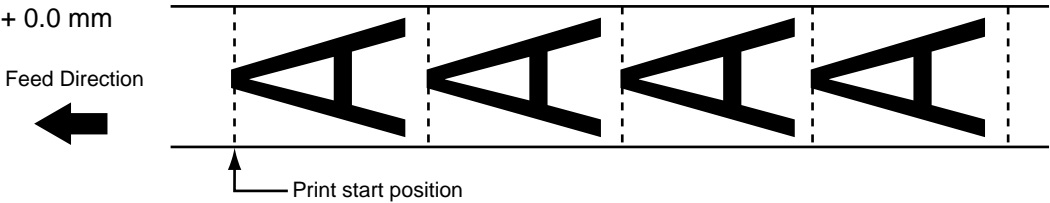


Fig. 6-14

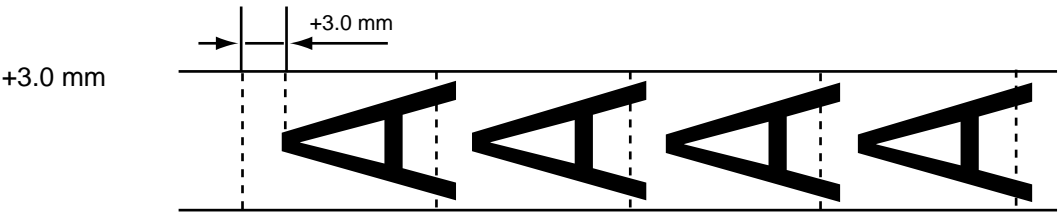


Fig. 6-15

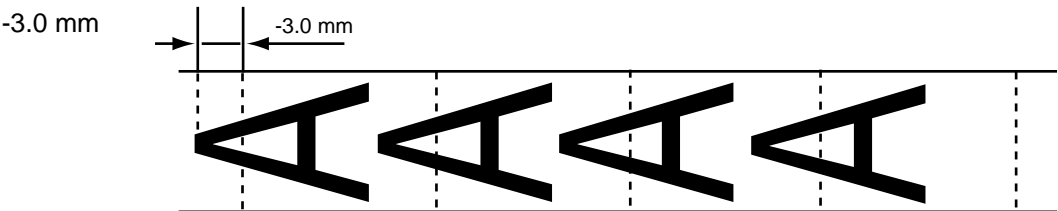
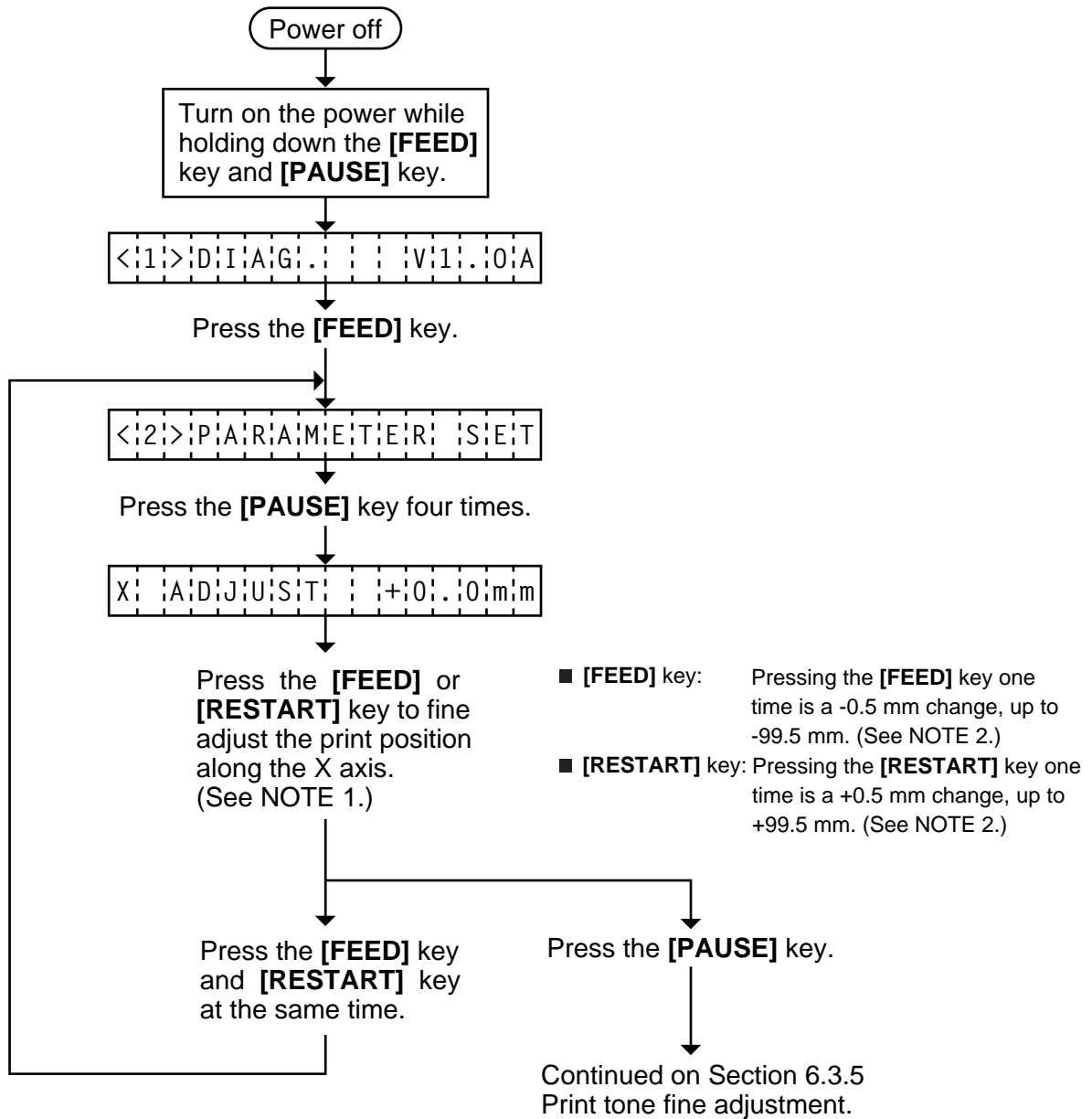


Fig. 6-16

### 6.3.4 X Axis Fine Adjustment



**NOTES:** 1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.

2. Max. fine adjustment  $\pm 99.5$  mm = X axis value

When the value reaches the maximum, the value remains unchanged even if the subsequent fine adjustment is performed.

3. A changed X axis is stored in memory by pressing the **[PAUSE]** key.

### ■ X Axis Fine Adjustment Example

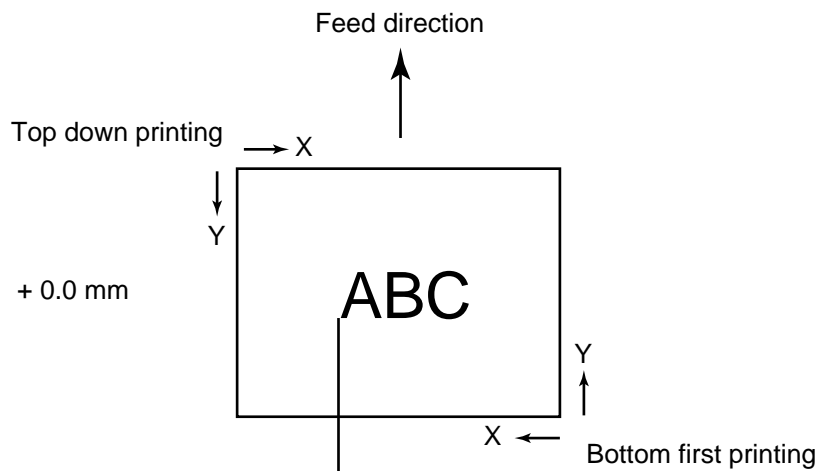


Fig. 6-18

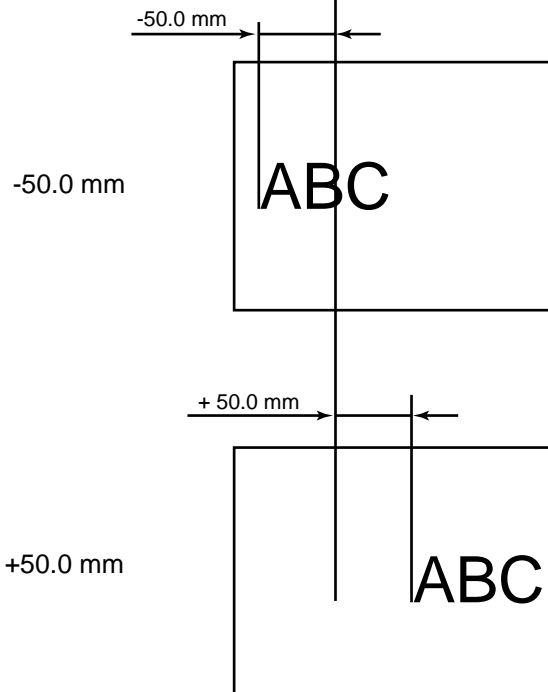


Fig. 6-19

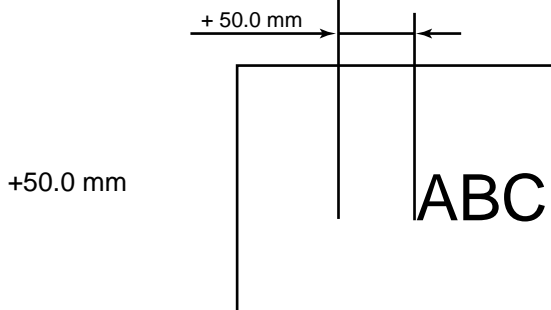
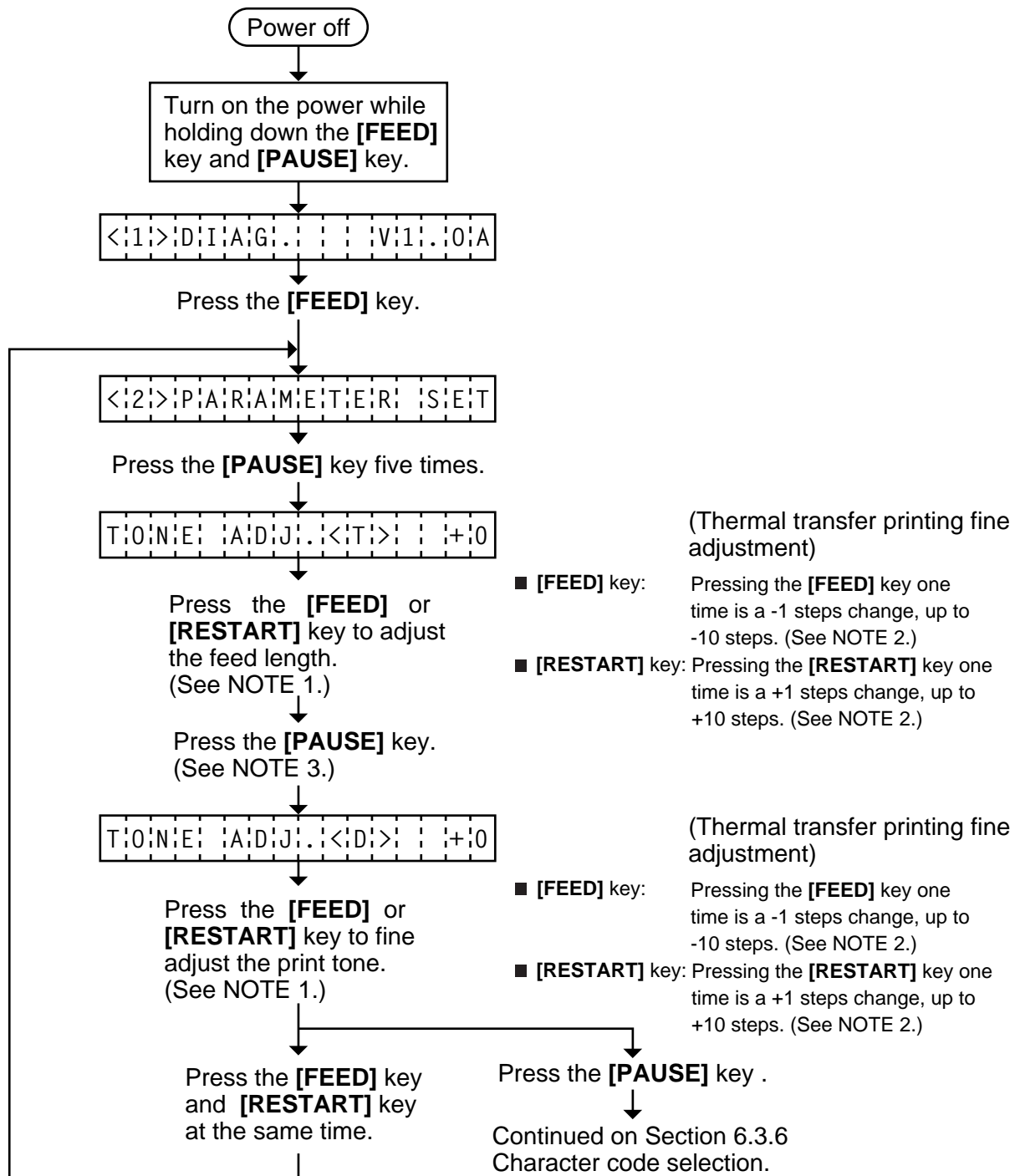


Fig. 6-20

- NOTES:**
4. The X axis fine adjustment is performed to fine adjust the X axis of the drawing in the left or right direction.
  5. Adjust the X axis in the effective print range. (After the value reaches the coordinate "0", the value remains unchanged even if the subsequent fine adjustment is performed in the negative direction.)
  6. X axis fine adjustment cannot be used in self test mode or test printing.

## 6.3.5 Print Tone Fine Adjustment



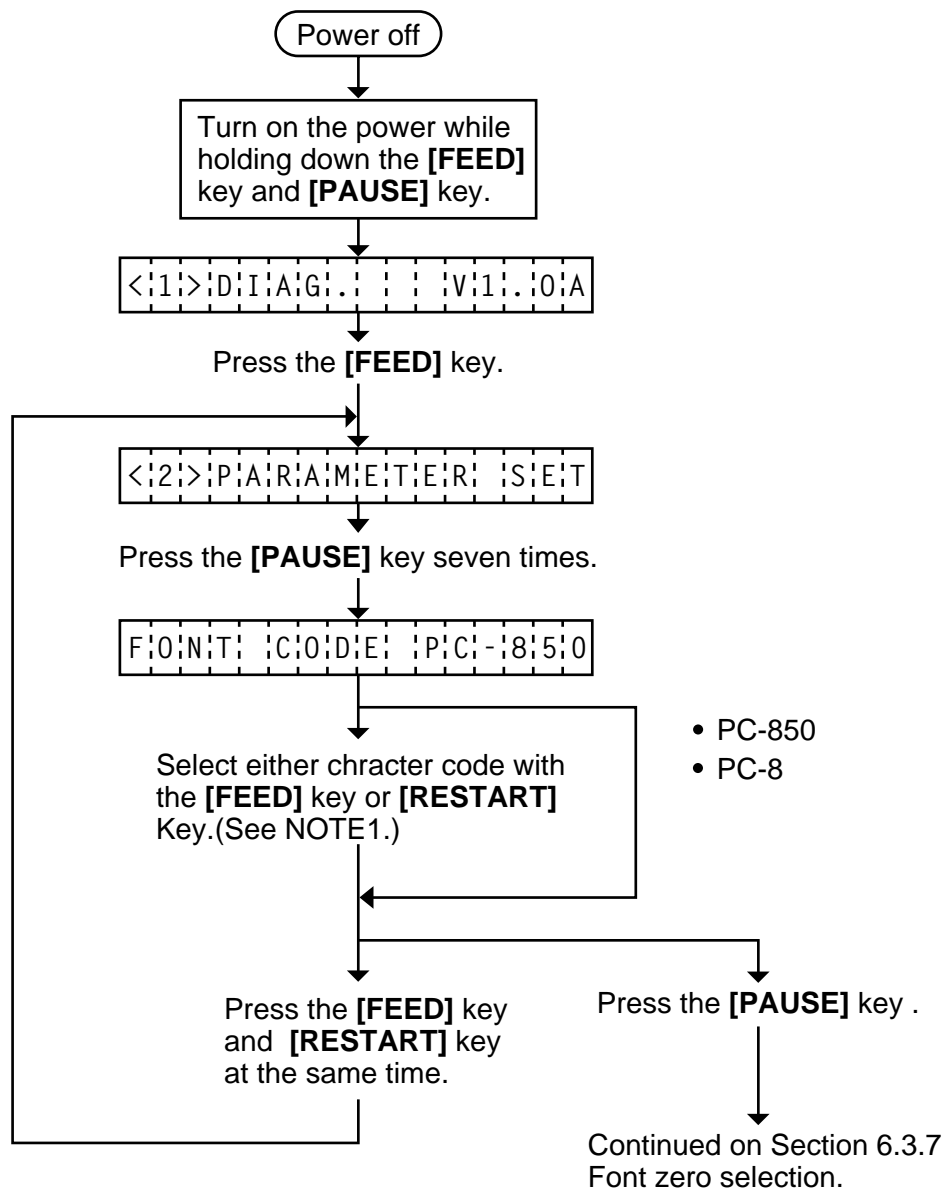
**NOTES:** 1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.

2. A changed print tone value is stored in memory by pressing the **[PAUSE]** key.

3. Fine adjustment value equals to the sum of the values set by the PC command and system mode (key operation) and each max. value is  $\pm 10$  step. However, the upper limit of the adjustment value is decided according to the print speed to protect the print head. If the set value exceeds the following upper limit, it is automatically corrected to the proper value.  
Upper limit: 3"/sec.: +10 step, 6"/sec.: +5 step, 10"/sec.: +2 step



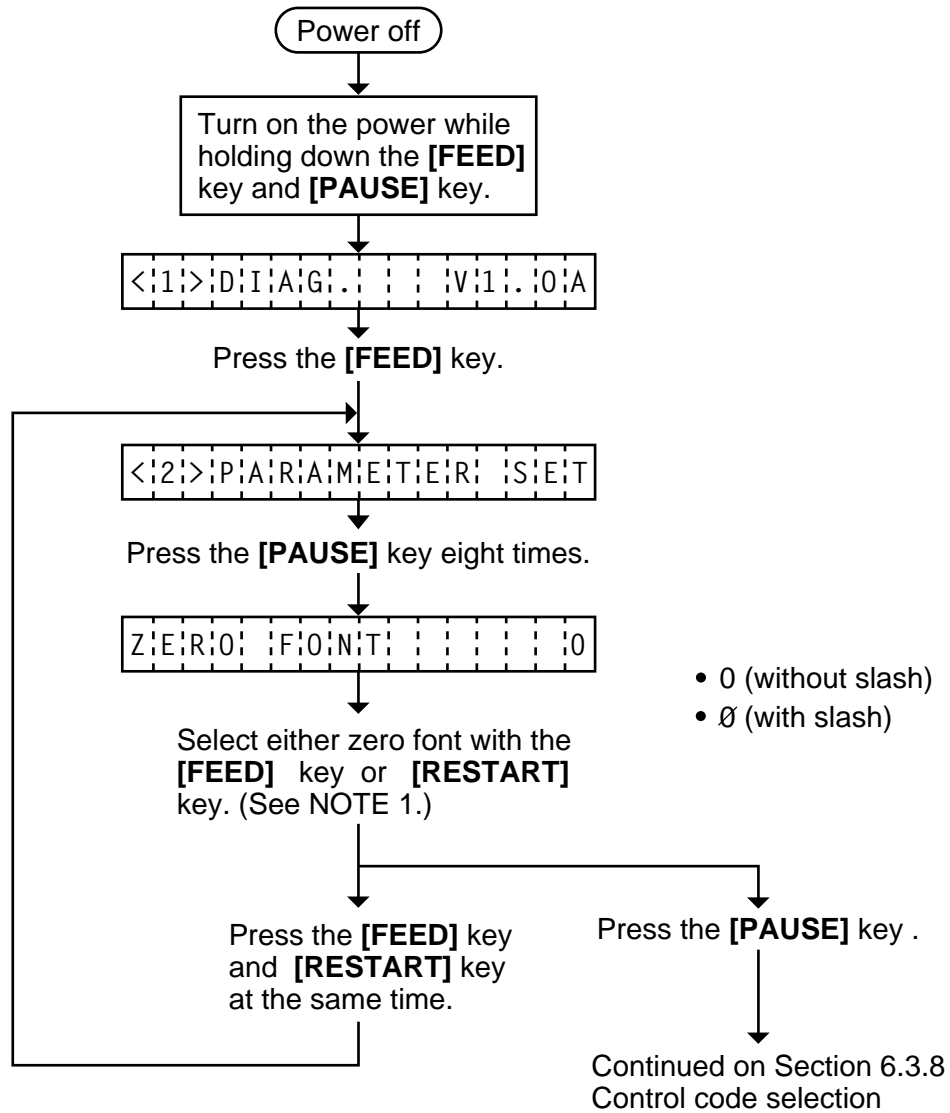
### 6.3.6 Character Code Selection



**NOTES:** 1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.

2. A changed font code is stored in memory by pressing the **[PAUSE]** key.

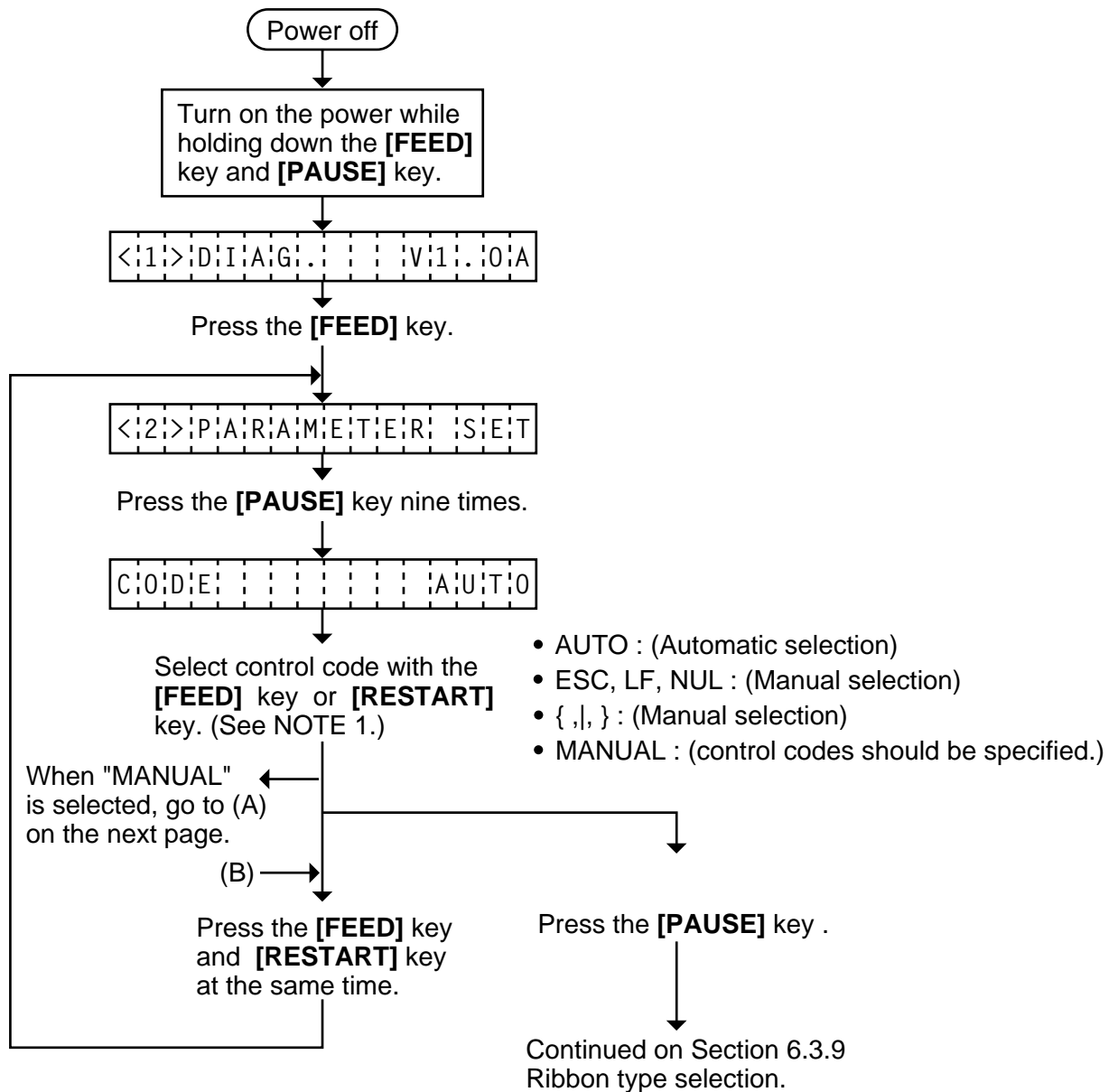
### 6.3.7 Font Zero Selection



**NOTES:** 1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.

2. A changed zero font is stored in memory by pressing the **[PAUSE]** key.

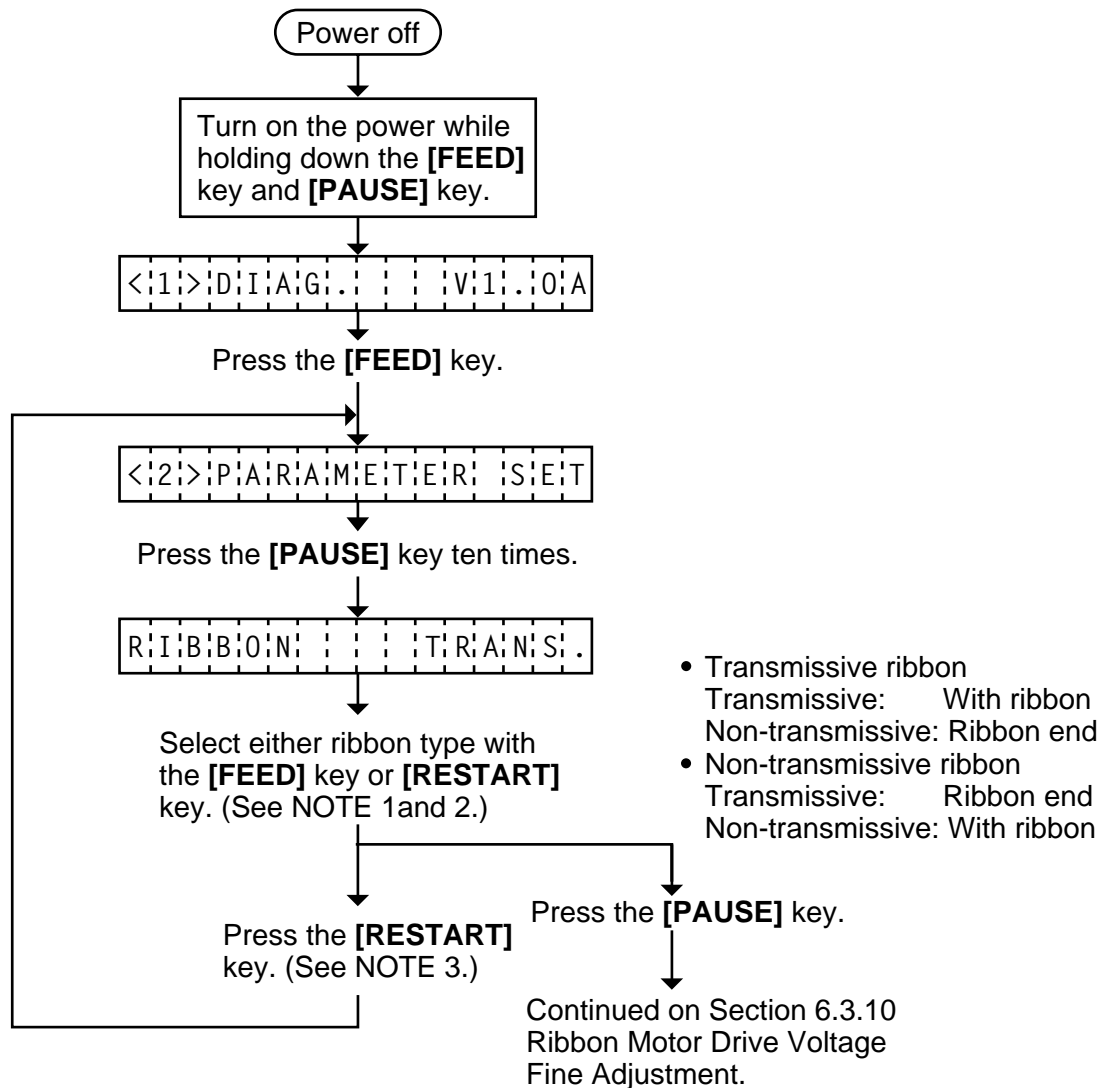
## 6.3.8 Control Code Selection



- NOTES:** 1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.
2. A changed control code is stored in memory by pressing the **[PAUSE]** key.
3. When "AUTO", "ESC, FL, NUL", or "{ , | , }" is selected, be sure to select the Non-transmissive ribbon in the ribbon type selection operation.
4. When "MANUAL" is selected be sure to specify all the control codes 1 to 3. Failure to do this disables selection of "MANUAL".

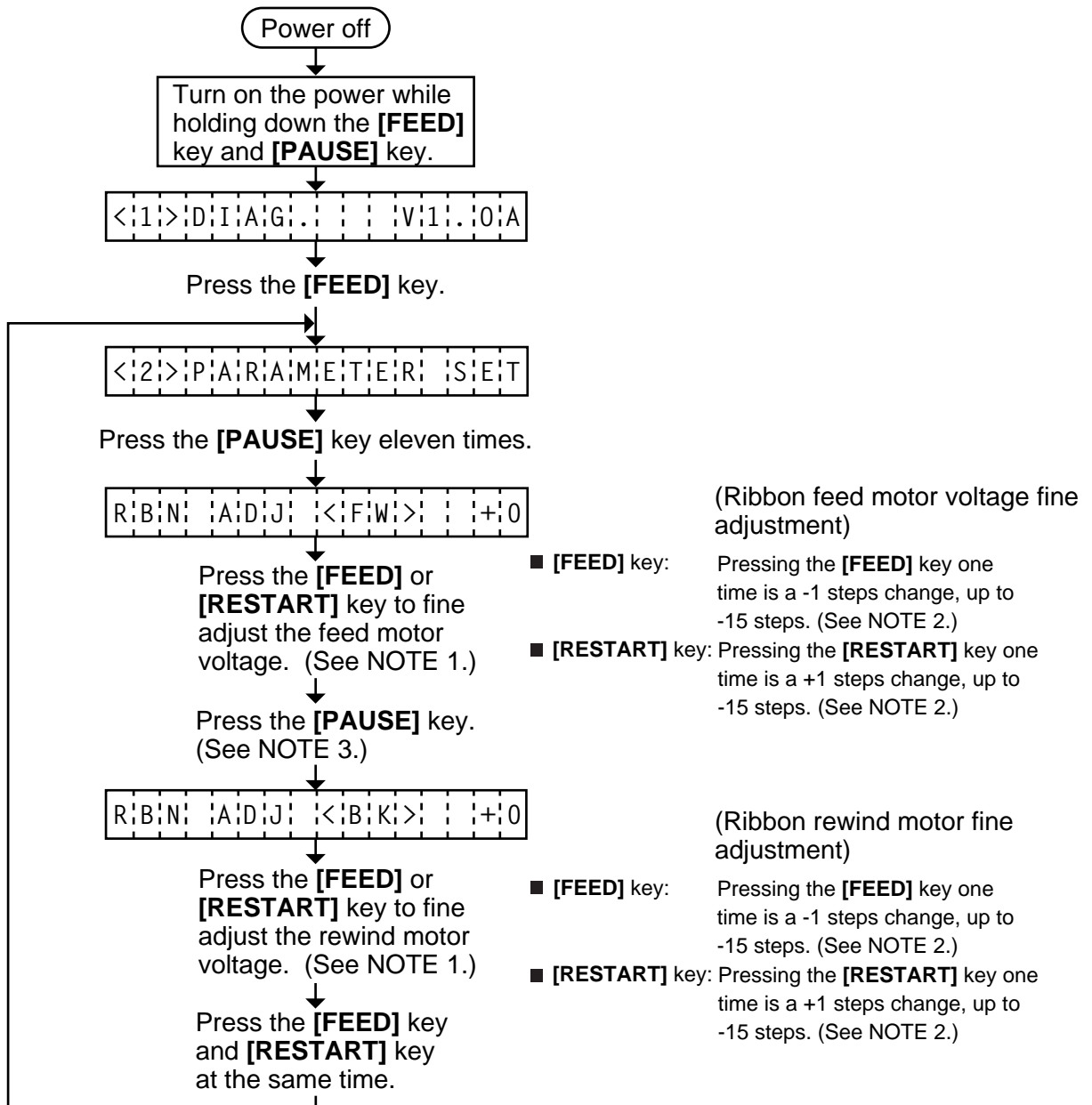


## 6.3.9 Ribbon Type Selection



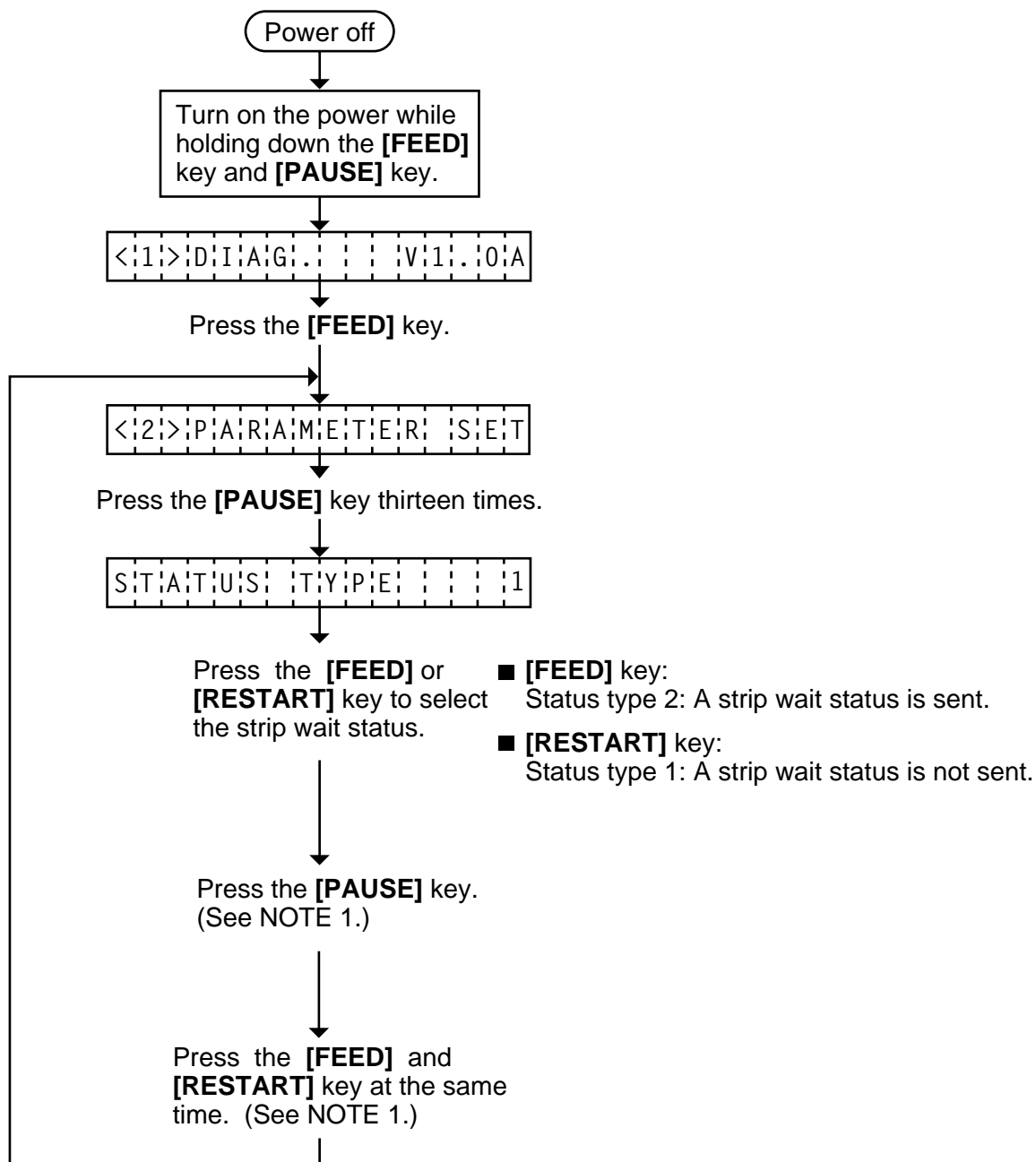
- NOTES:** 1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.
2. Non-transmissive (NON TRANS.) ribbon cannot be used so the ribbon type must be set to transmissive (TRANS.) ribbon.
3. A changed ribbon type is stored in memory by pressing the **[PAUSE]** key.

## 6.3.10 Ribbon Motor Drive Voltage Fine Adjustment



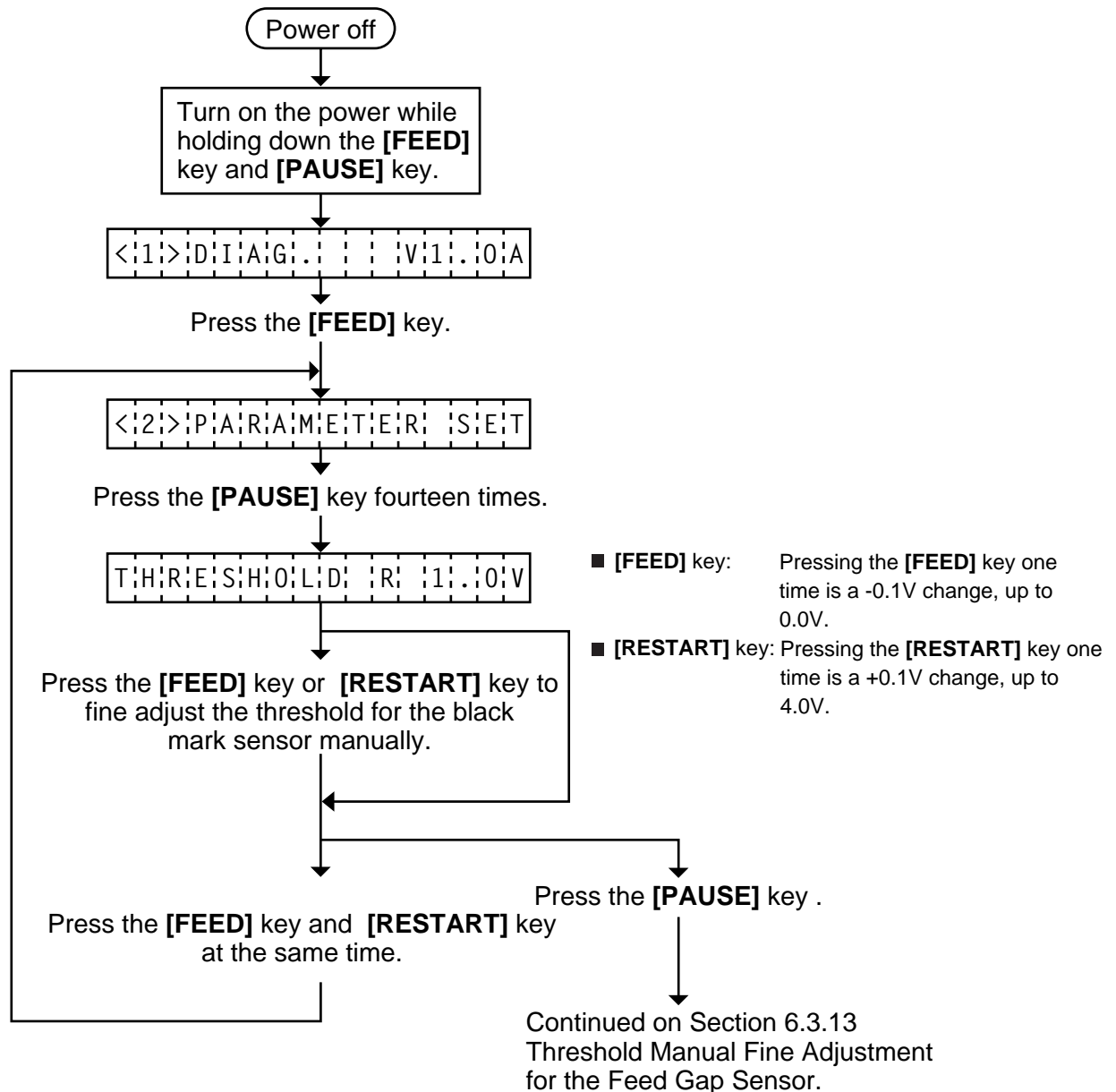
- NOTES:** 1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.
2. Max. fine adjustment -15 steps = Key fine adjustment value (-15 steps)+PC fine adjustment value (-15 steps)  
When the value reaches the maximum, the value remains unchanged even if the subsequent fine adjustment is performed.
3. A changed motor voltage value is stored in memory by pressing the **[PAUSE]** key.
4. One step corresponds to 5% of the standard voltage and up to 75% of the voltage can be decreased.

## 6.3.11 Strip Wait Status Setting



**NOTE:** When the status type 1 is selected, the printer will send (00H) in response to the status request command sent from the PC while a label stays at the strip sensor (when idling, after feeding, or all printing finished).  
When the status type 2 is selected, the printer will send (05H) in response to the status request command sent from the PC while a label stays at the strip sensor (when idling, after feeding, or all printing finished.)  
If the status request command is sent during printing, the printer will always send (05H) regardless of the setting.

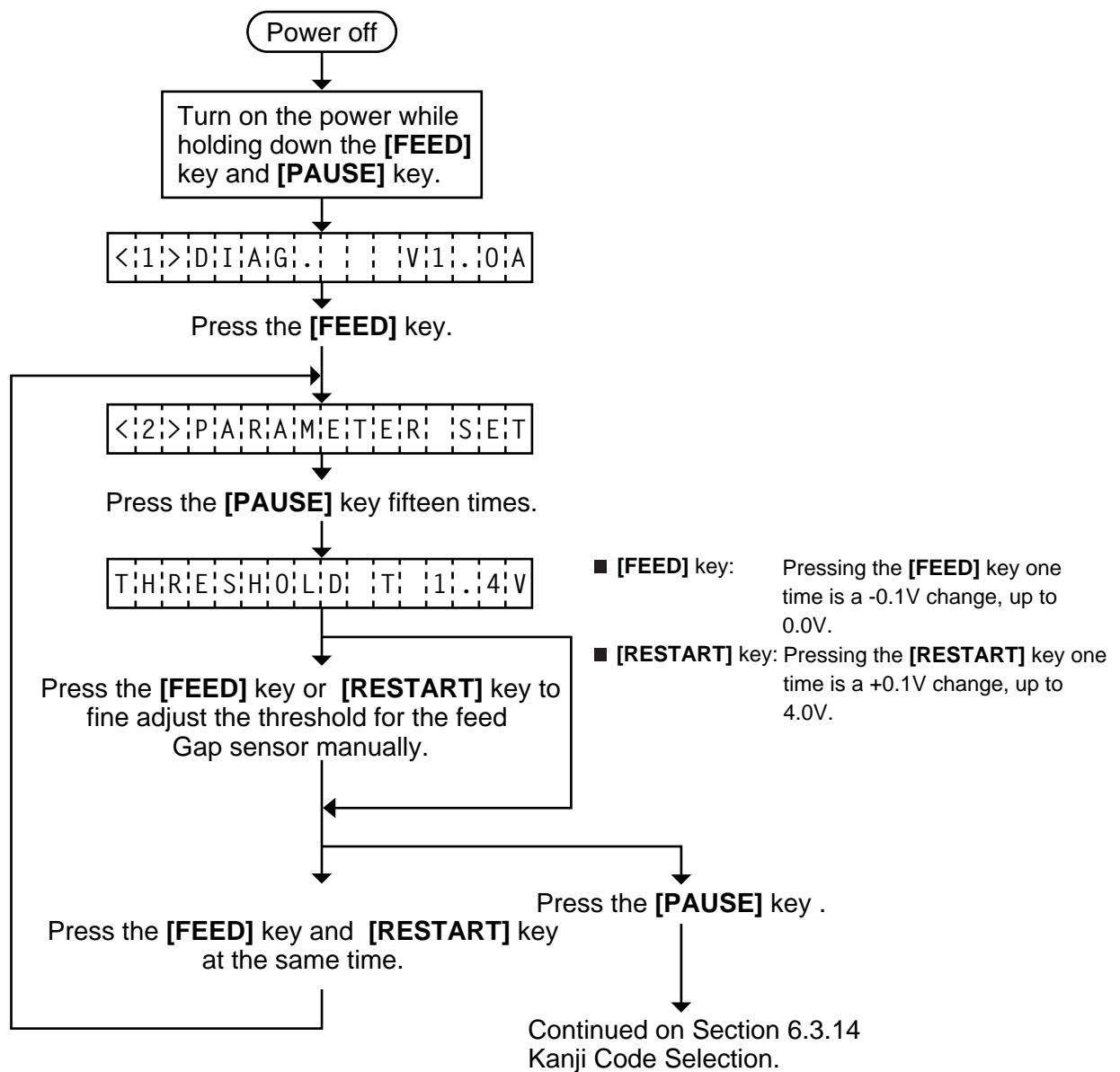
## 6.3.12 Threshold Manual Fine Adjustment for the Black Mark Sensor



- NOTES:**
1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.
  2. A changed threshold fine adjustment value is stored in memory by pressing the **[PAUSE]** key.
  3. The above operations do not require any more threshold setting.



## 6.3.13 Threshold Manual Fine Adjustment for the Feed Gap Sensor



- NOTES:** 1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.
2. A changed threshold fine adjustment value is stored in memory by pressing the **[PAUSE]** key.
3. The above operations do not require any more threshold setting.

- **How to Calculate Threshold Fine Adjustment Value**

If the following cases occurred, threshold value for the paper sensors should be fine adjusted after referring to the next page.

**Case 1:**

When using tag paper, the black mark and the print area are distinguished from each other by the 1.5V or more difference of sensor output voltage. If a low-sensitive sensor is installed in the printer, it may not detect 1.5V or more difference between the black mark and the print area. This may cause the printer to feed over one and a half tags, and then stop with "PAPER JAM" displayed.

**Case 2:**

The presence and lack of label are distinguished from each other by the reflective sensor voltage. When the voltage is more than 1.5V, it is regarded as the presence of paper. And less than 1.5V is regarded as the paper end. If a low-sensitive-sensor is used, 1.5V or more may not be detected at the backing paper since the reflectance of backing paper is low. In such case, more than 5mm-long gap is regarded as the no paper. And trying to print or feed the label when the sensor stops at the gap results in a NO PAPER error. This problem tends to occur when using labels with thin backing paper.

**Case 3:**

If the reflective sensor's output voltage when detecting no paper is 1.5V or more, the sensor does not recognize the actual paper end during printing. Accordingly, the printer continues to print despite of the paper end. This problem may occur on printers of which the resistors on the CPU PCB have been changed according to the Technical Information #SVM7A1010/1 (issued on April 16, 1997).

**Case 4:**

When using perforated fanfold labels, the transmissive sensor mistakes the perforation on the gap for a print area, resulting in a PAPER JAM error.

**Case 5:**

When using such a particular label stock that a black mark is printed on every two or three gaps, the sensor detects three different voltages at the label, unmarked gap and black mark, respectively. The sensor cannot distinguish the unmarked gap from the black mark, so the printer stops with displaying "PAPER JAM".

**NOTE:** The following operation cannot be performed unless the sensor type is changed by the issue command or feed command.

- (1) Using the sensor adjustment in Diag. mode, measure the sensor voltage at the following four points.

Label:      Print area    Backing paper

Tag paper: Print area    Black mark

Example:

[ R E F L E C T I V E ]	2 . 8 V
[ T R A N S M I S S I V E ]	4 . 1 V

- (2) Using the following formula, calculate the threshold from the measured voltage:

**When using labels (transmissive sensor):**

Threshold = (Max. voltage at the backing paper) - (Voltage at the print area) - 0.7V

e.g.)  $2.0V = 4.2V - 1.5V - 0.7V$

**When using perforated labels (transmissive sensor):**

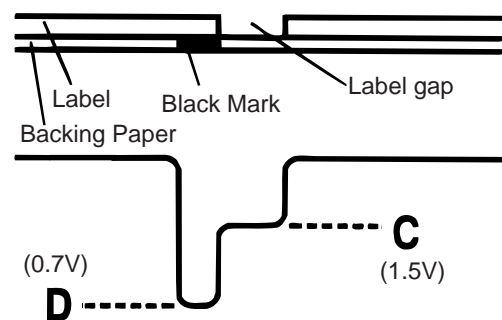
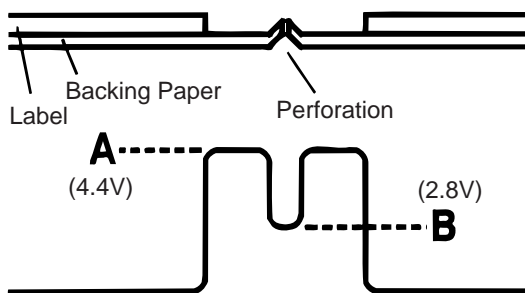
Threshold =  $\frac{\text{A}}{\text{A}}$  (Max. voltage at the backing paper) -  $\frac{\text{B}}{2}$  (Min. voltage at the backing paper) -  $\frac{\text{A}}{2}$  (Min. voltage at the backing paper)

e.g.)  $2.2V = 4.4V - (2.8V/2) - (1.6V/2)$

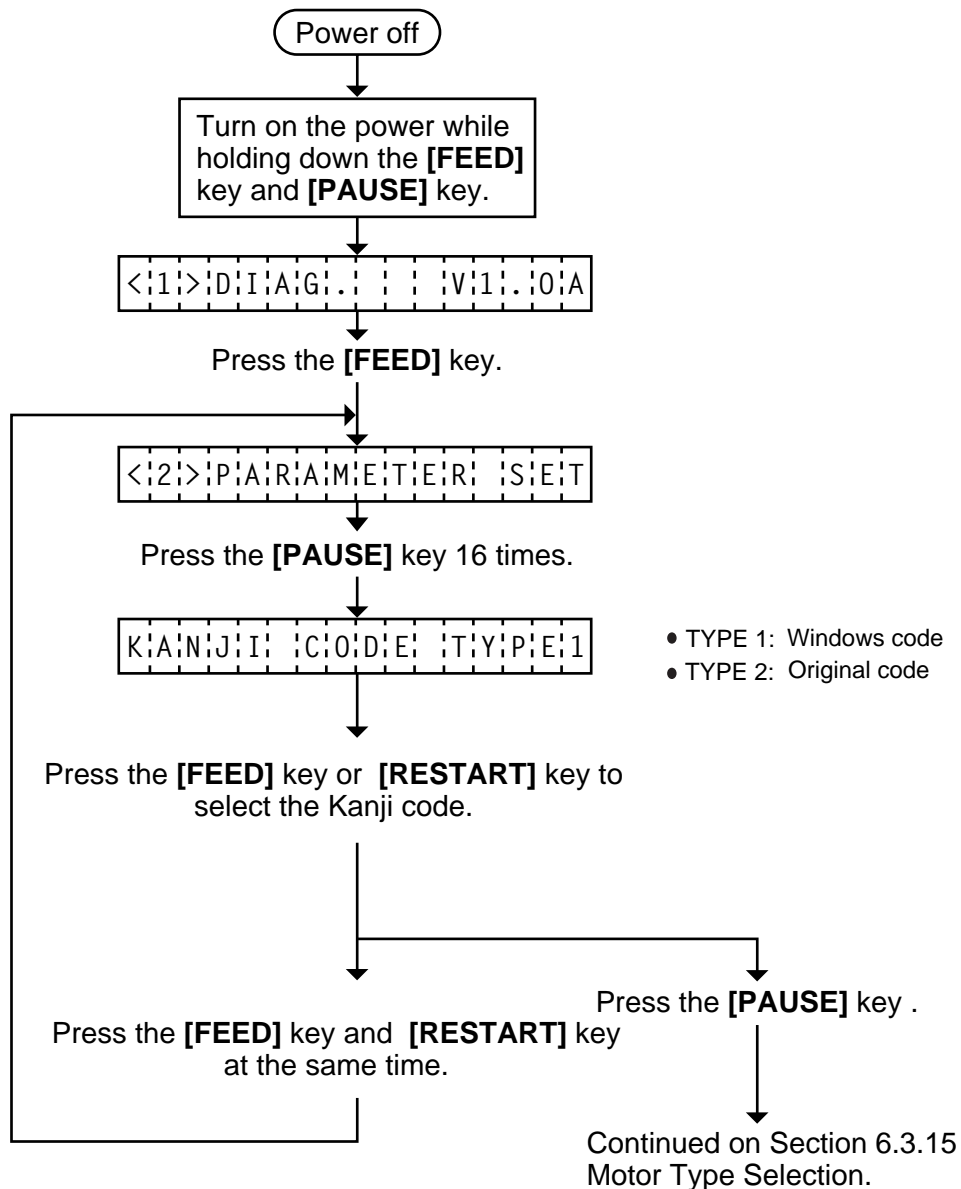
**When using labels with black marks (reflective sensor):**

Threshold =  $\frac{\text{C}}{2}$  (Min. voltage at the print area) -  $\frac{\text{D}}{2}$  (Min. voltage at the black mark)

e.g.)  $0.4V = (1.5V - 0.7V)/2$

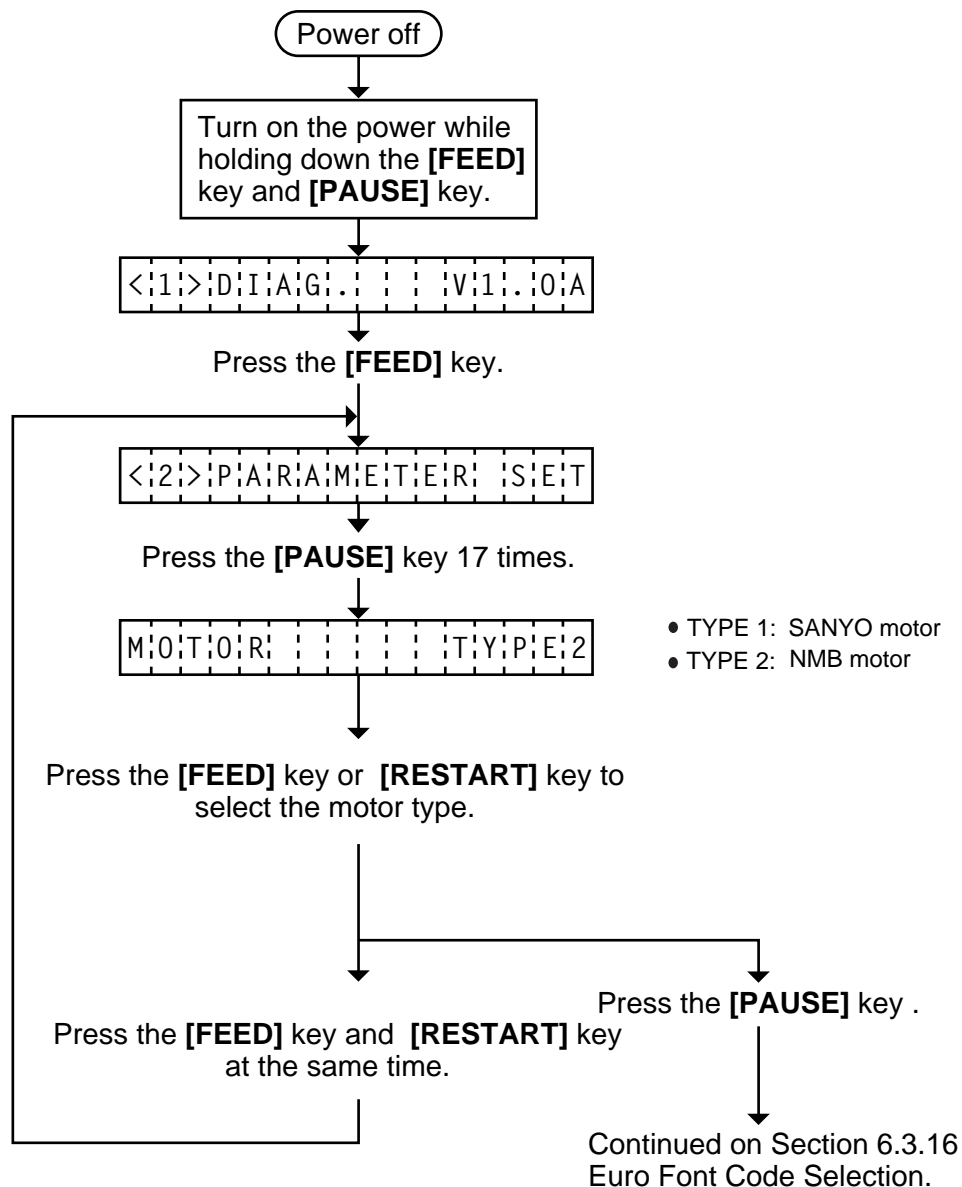


## 6.3.14 Kanji Code Selection



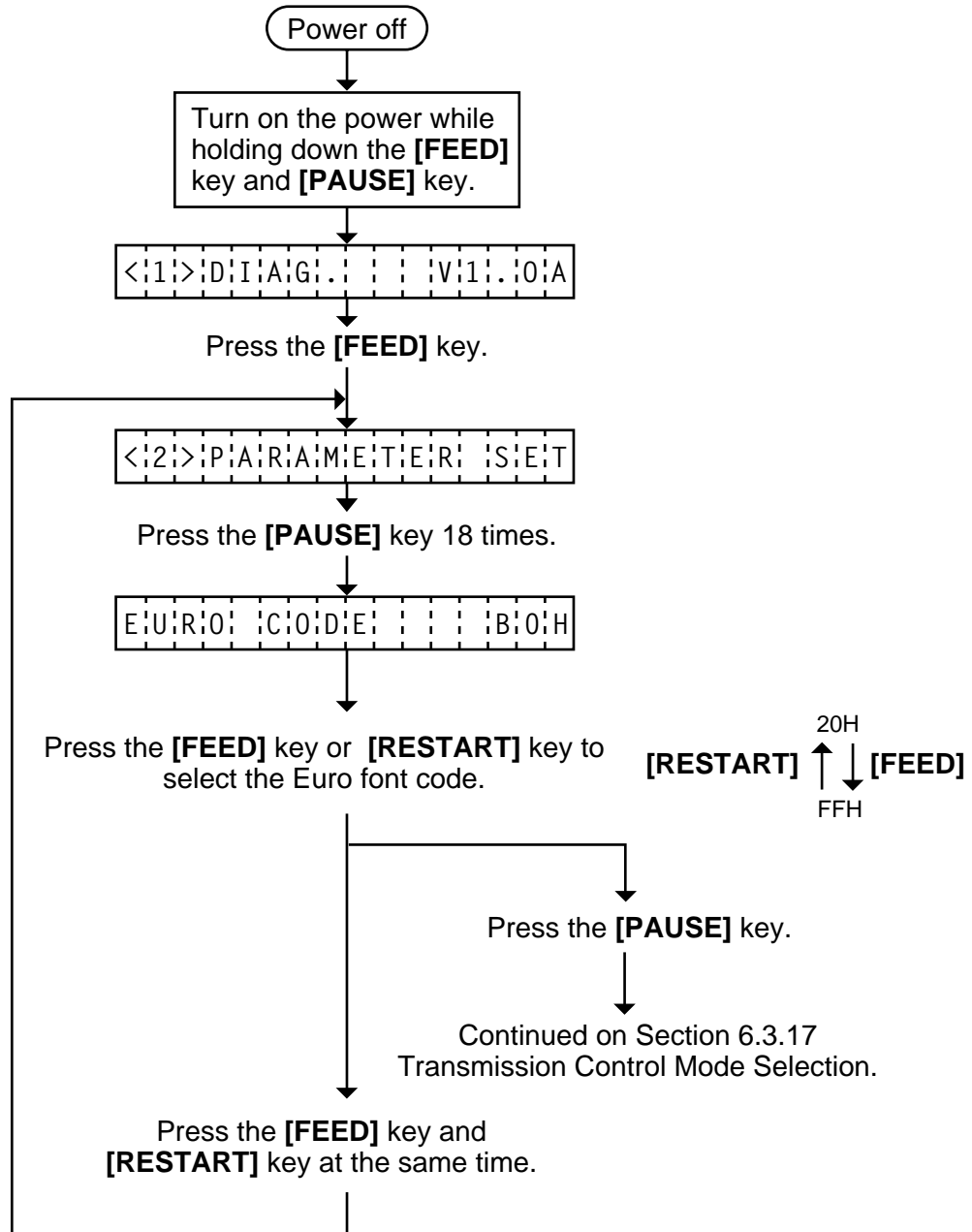
- NOTES:** 1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.
2. A changed Kanji code is stored in memory by pressing the **[PAUSE]** key.

## 6.3.15 Motor Type Selection



- NOTES:**
1. Holding the [FEED] key or [RESTART] key down for more than 0.5 seconds enables a fast forward.
  2. A changed threshold fine adjustment value is stored in memory by pressing the [PAUSE] key.
  3. The default setting is TYPE 2 (NMB motor).
  4. When replacing the motor with a service part, make sure that it is a SANYO motor, then select TYPE 1.

## 6.3.16 Euro Font Code Selection

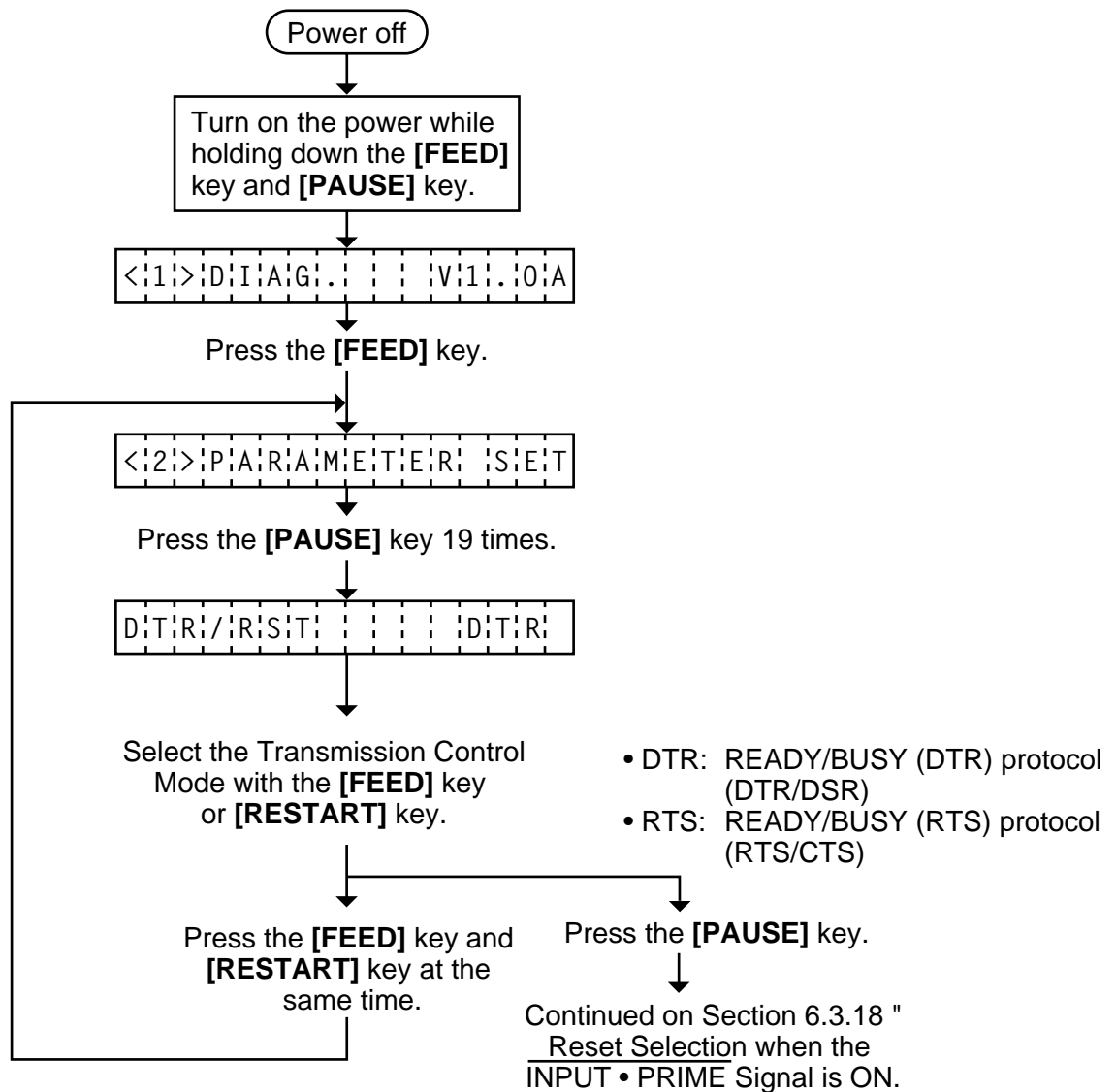


**NOTES:** 1. Holding the **[FEED]** key or **[RESTART]** key down for more than 0.5 seconds enables a fast forward.

2. A changed Euro font code is stored in memory by pressing the **[PAUSE]** key.

3. Press the **[FEED]** key and **[RESTART]** key at the same time.

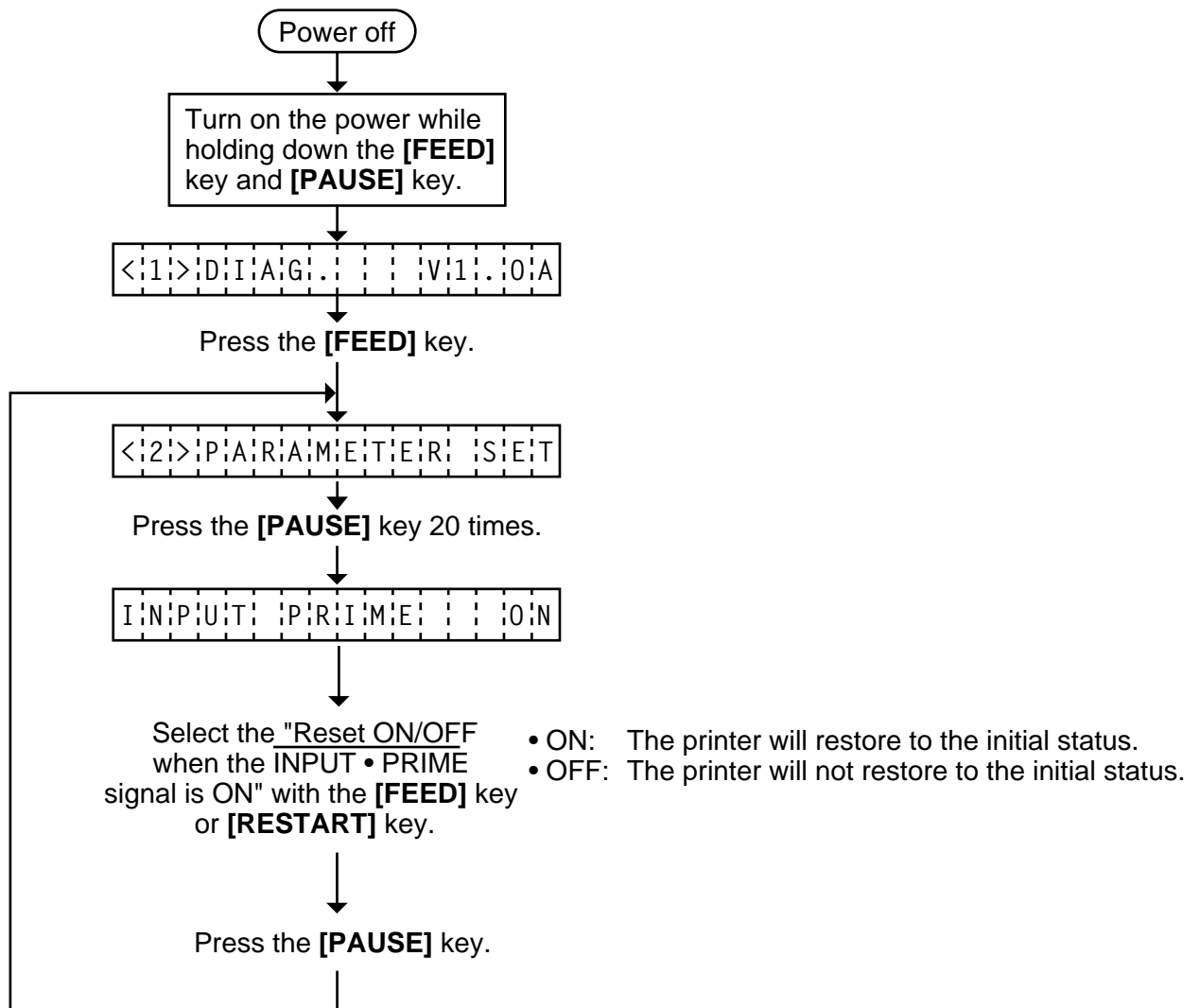
## 6.3.17 Transmission Control Mode Selection



- NOTES:** 1. Holding the [FEED] key or [RESTART] key down for more than 0.5 seconds enable.  
2. A changed Transmission Control Mode is memory by pressing the [PAUSE] key.

**6.3.18 Reset Selection when the INPUT • PRIME Signal is ON.**

Reset ON/OFF when the INPUT • PRIME signal ON is selected.



- NOTES:** 1. Holding the [FEED] key or [RESTART] key down for more than 0.5 seconds enable.  
2. A changed "Reset ON/OFF when the INPUT • PRIME signal is ON" is stored in memory by pressing the [PAUSE] key.



## 6.4 TEST PRINT MODE

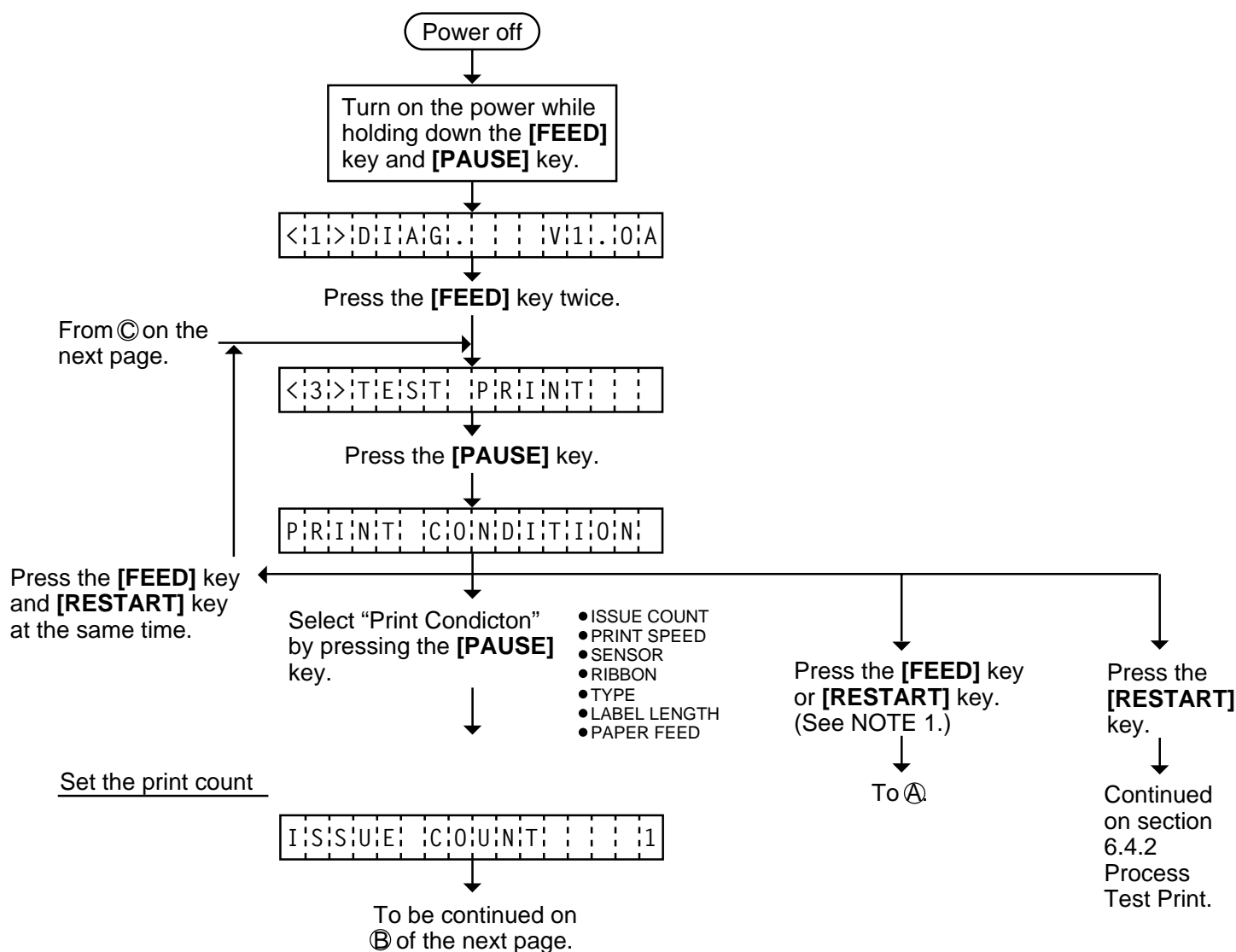
Test print mode contains normal test print and process test print.

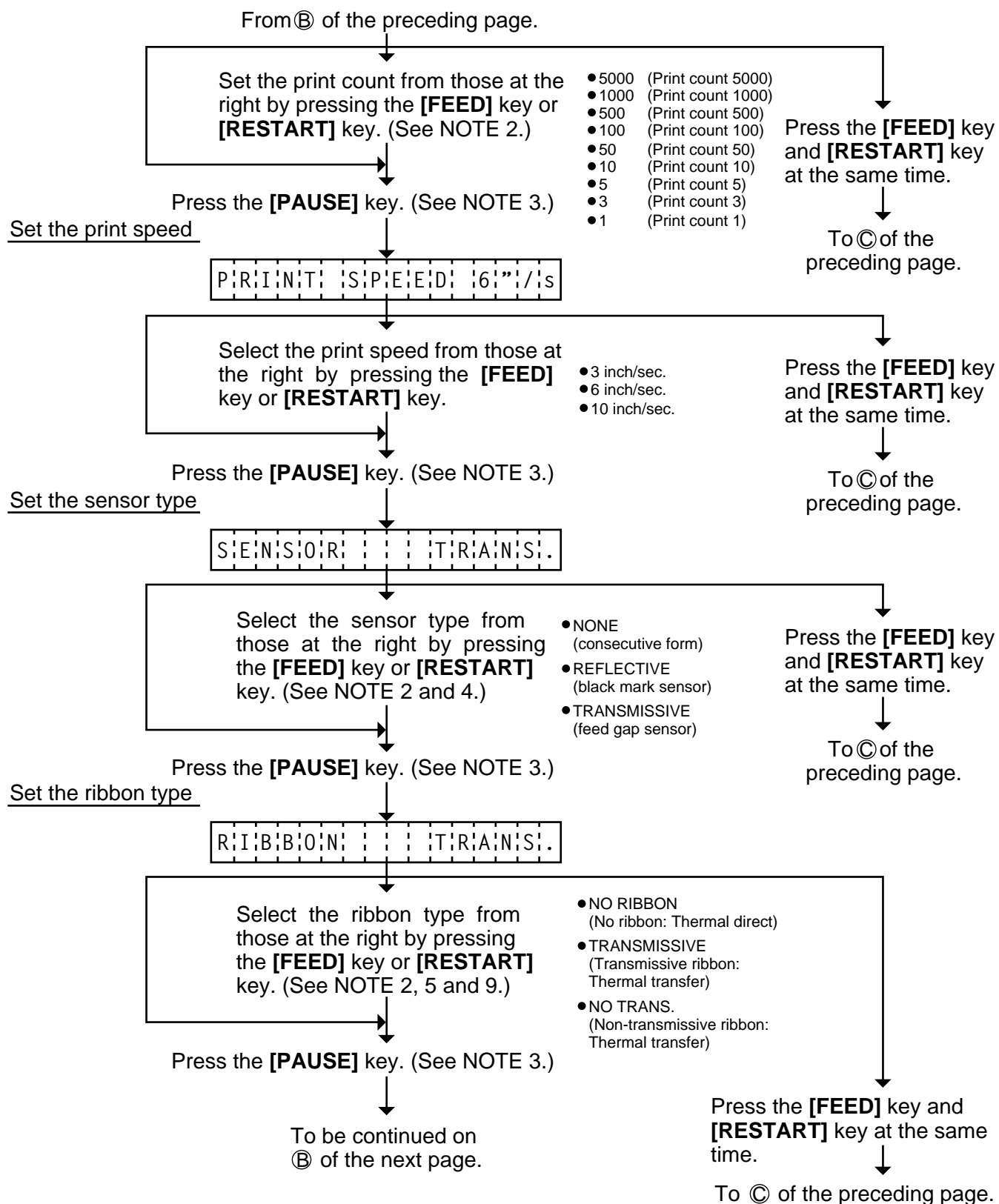
### 6.4.1 Normal Test Print

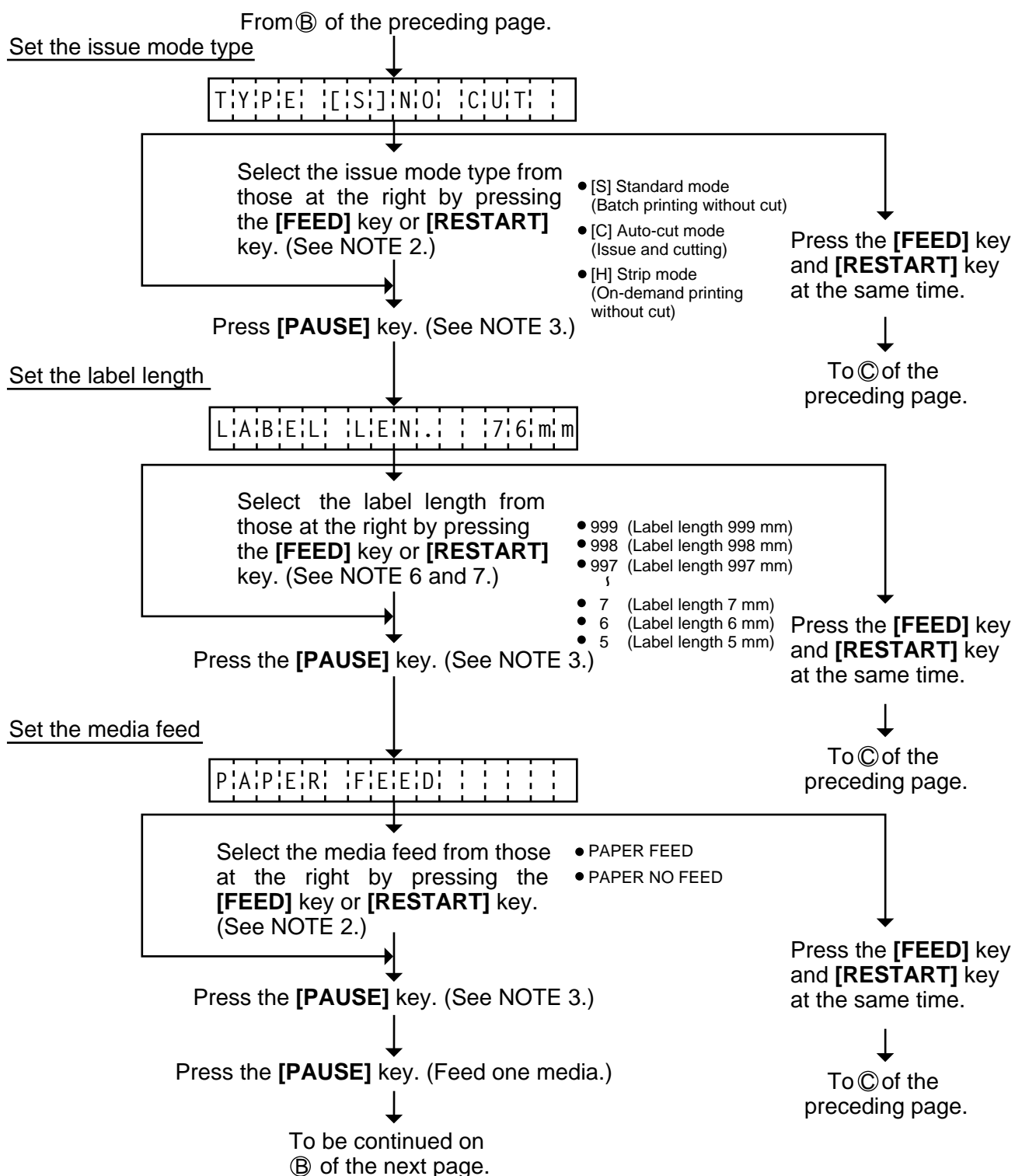
Eight kinds of test prints are provided in the test print mode. When performing the test print, 7 parameters should be set. The default parameter at power on is as below:

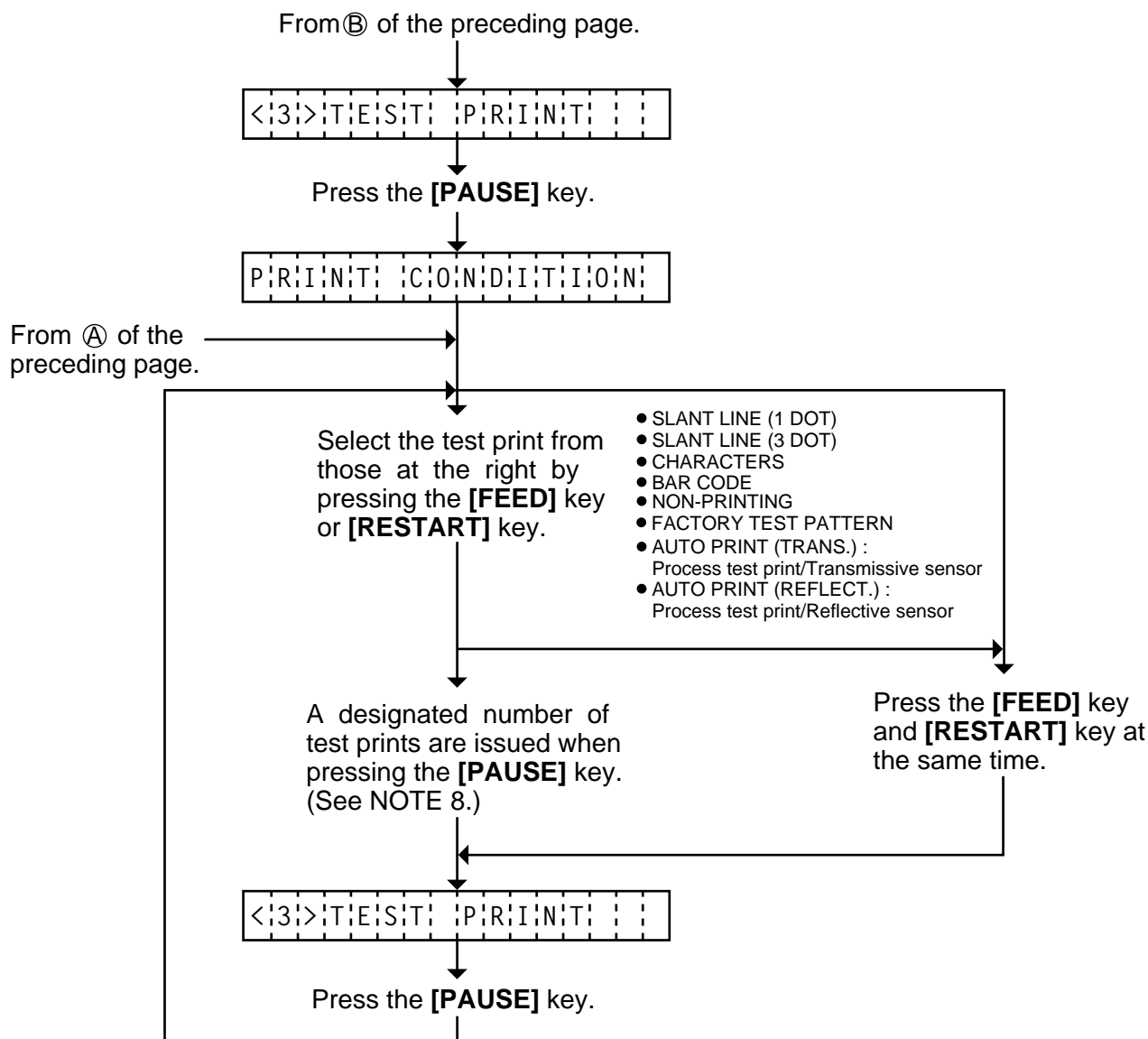
- ISSUE COUNT : 1
- PRINT SPEED : 6"/sec.
- SENSOR : Transmissive sensor
- RIBBON : Transmissive ribbon
- TYPE : Batch (without cut)
- LABEL LENGTH : 76 mm
- PAPER FEED : Feed

Operating procedure for the test mode is provided below.









- NOTES:**
1. When there is no change to the print condition, select one of the test print options to issue the test print.
  2. Holding the [FEED] key or [RESTART] key down for more than 0.5 seconds enables a fast forward.
  3. A selected print condition is activated when the [PAUSE] key is pressed.
  4. When the feed gap sensor is selected, the gap between labels becomes 3mm long.
  5. Non-transmissive (NON TRANS.) ribbon cannot be used so the ribbon type must be set to transmissive (TRANS.) ribbon or no ribbon.
  6. A label size greater than the image buffer length cannot be designated. The image buffer length differs according to memory size. If designated, the printer prints in the image buffer, or the printer stops because of an error.
  7. Pressing the [FEED] key changes the label length -1 mm, pressing the [RESTART] key changes +1 mm.
  8. When an error occurs during a test print, the error message is displayed and printing is stopped. The error is cleared by pressing the [PAUSE] key and the display shows "<3> TEST PRINT". Printing is not automatically resumed after the error is cleared.

9. When the transmissive ribbon is selected and DIP SW. 1-1 is set to ON, and the space area is also 20 mm or more when the print speed is 3"/sec. or 6"/sec. or 30 mm or more when 10"/sec., the printer automatically enters ribbon saving print mode.
10. When "AUTO PRINT" is selected, 5 pcs. of the 3-dot slant line labels, bar code labels and character labels are printed respectively after one label is fed.

### ■ Test Print Sample

#### • Slant line (1 dot)

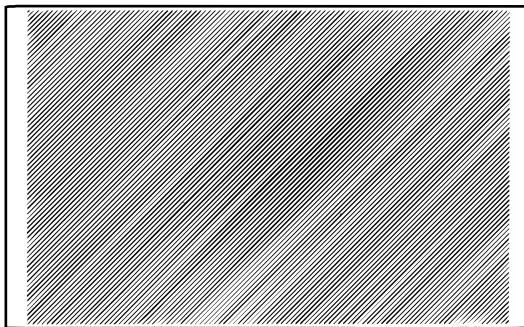


Fig. 6-21

#### • Slant line (3 dot)

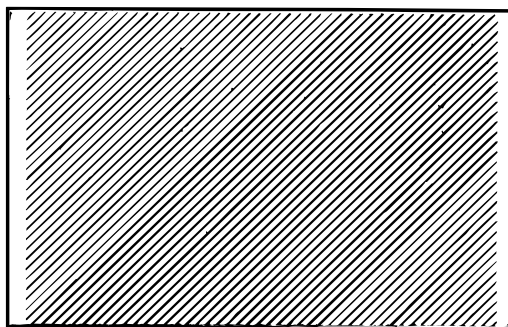


Fig. 6-22

#### • Characters



Fig. 6-23

#### • Bar code

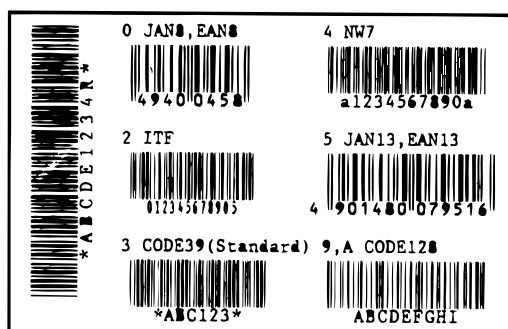


Fig. 6-24

#### • FACTORY TEST PATTERN

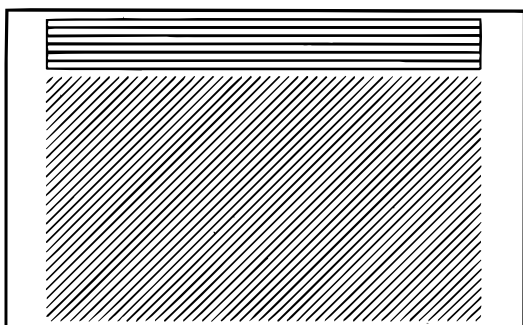


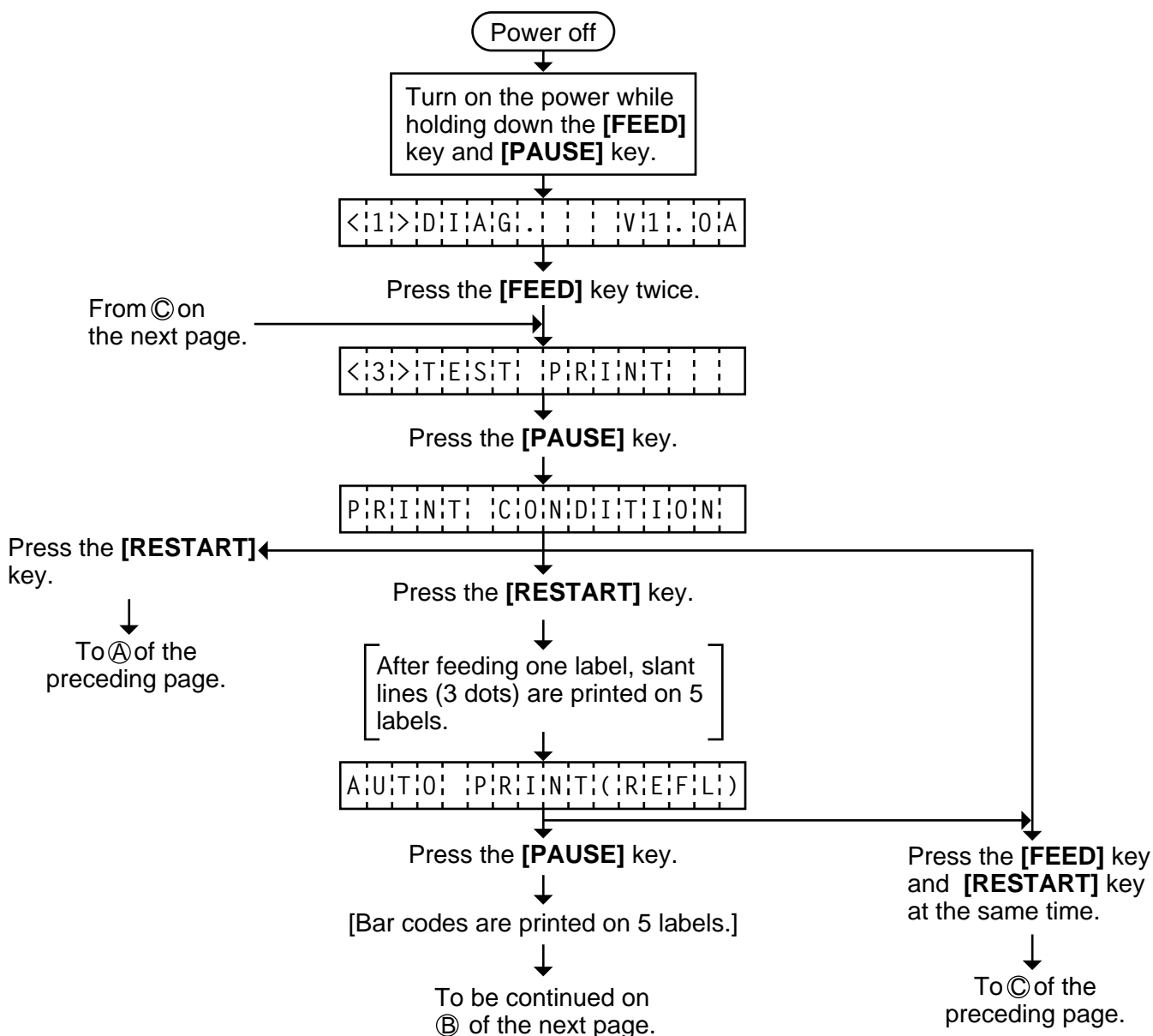
Fig. 6-25

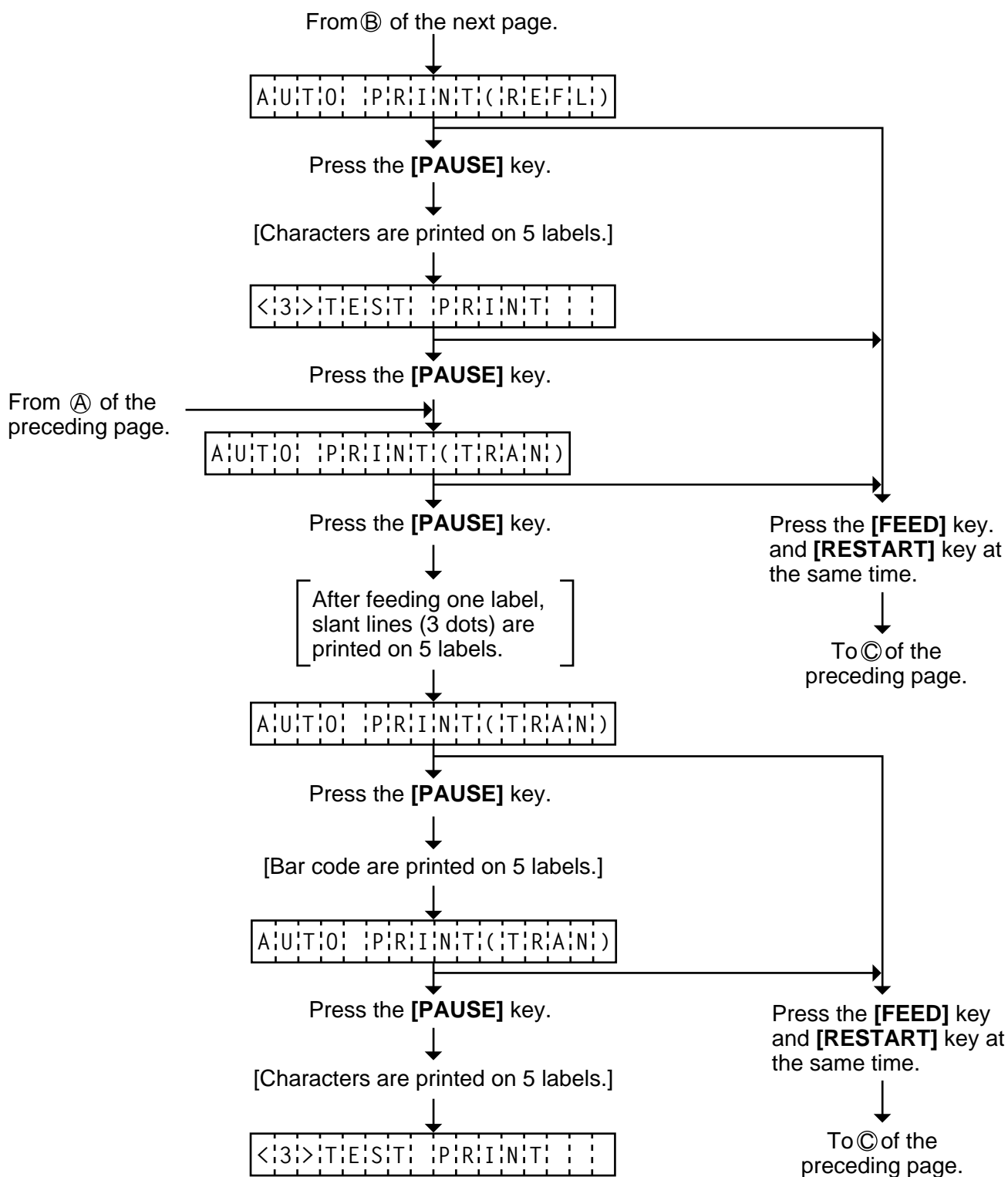
### 6.4.2 Process Test Print

In the process test print, the test print is automatically performed under the following conditions. Parameter setting and print tone fine adjustment value is ignored.

- OPERATION : One label feed, 3-dot slant line print, bar code print, character print
- ISSUE COUNT : 5 labels each
- PRINT SPEED : 8 inches/sec.
- SENSOR : Transmissive sensor (feed gap sensor) or reflective sensor (black mark sensor)
- RIBBON : Transmissive ribbon
- TYPE : Batch (without cut)
- LABEL LENGTH : 76 mm
- PRINT TONE FINE ADJUSTMENT VALUE : +0

Operating procedure for the test mode is provided below.



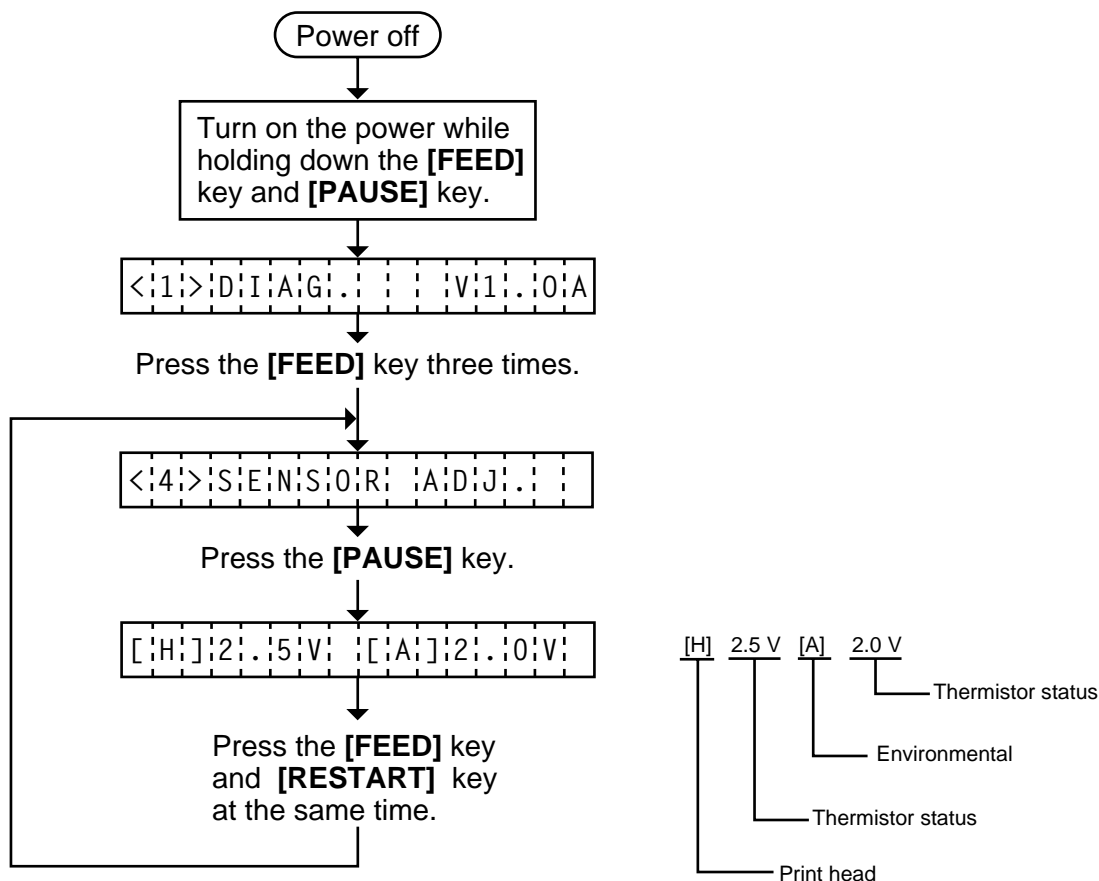


## 6.5 SENSOR SETTING MODE

Thermistor check and black mark/feed gap sensor settings are provided in the sensor setting mode. The value set in this mode is printed as data of sensor 2 in Automatic diagnosis printing in self test mode.

### 6.5.1 Thermistor Check (Read only)

Thermistor check should be performed to check the environmental temperature and print head temperature after the excess head temp. error occurs or batch printing is performed for a long time.

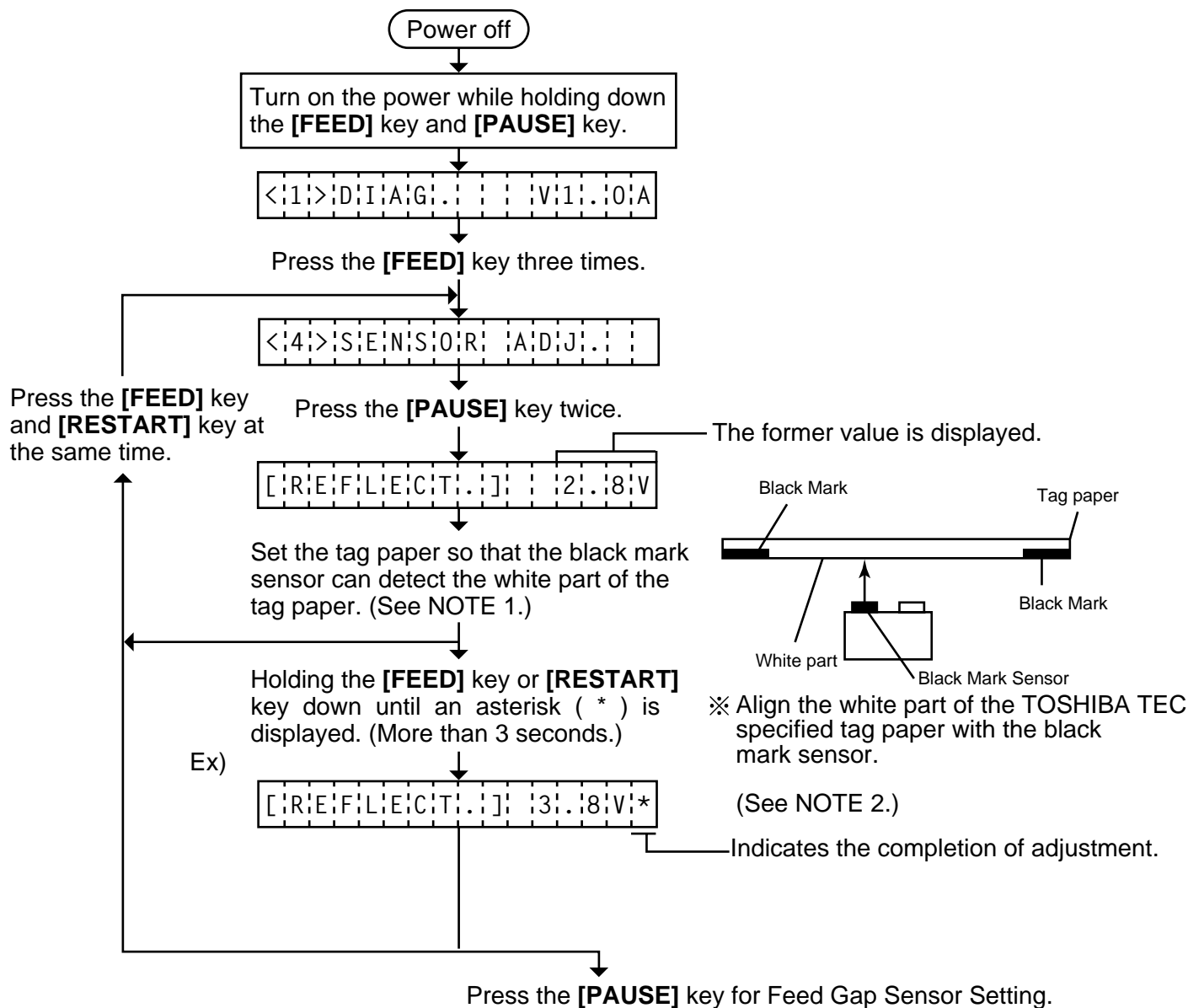


**NOTE:** 1. Since the thermistor is supervised every 200 ms while displaying the status, the display could vary.



### 6.5.2 Black Mark Sensor Adjustment

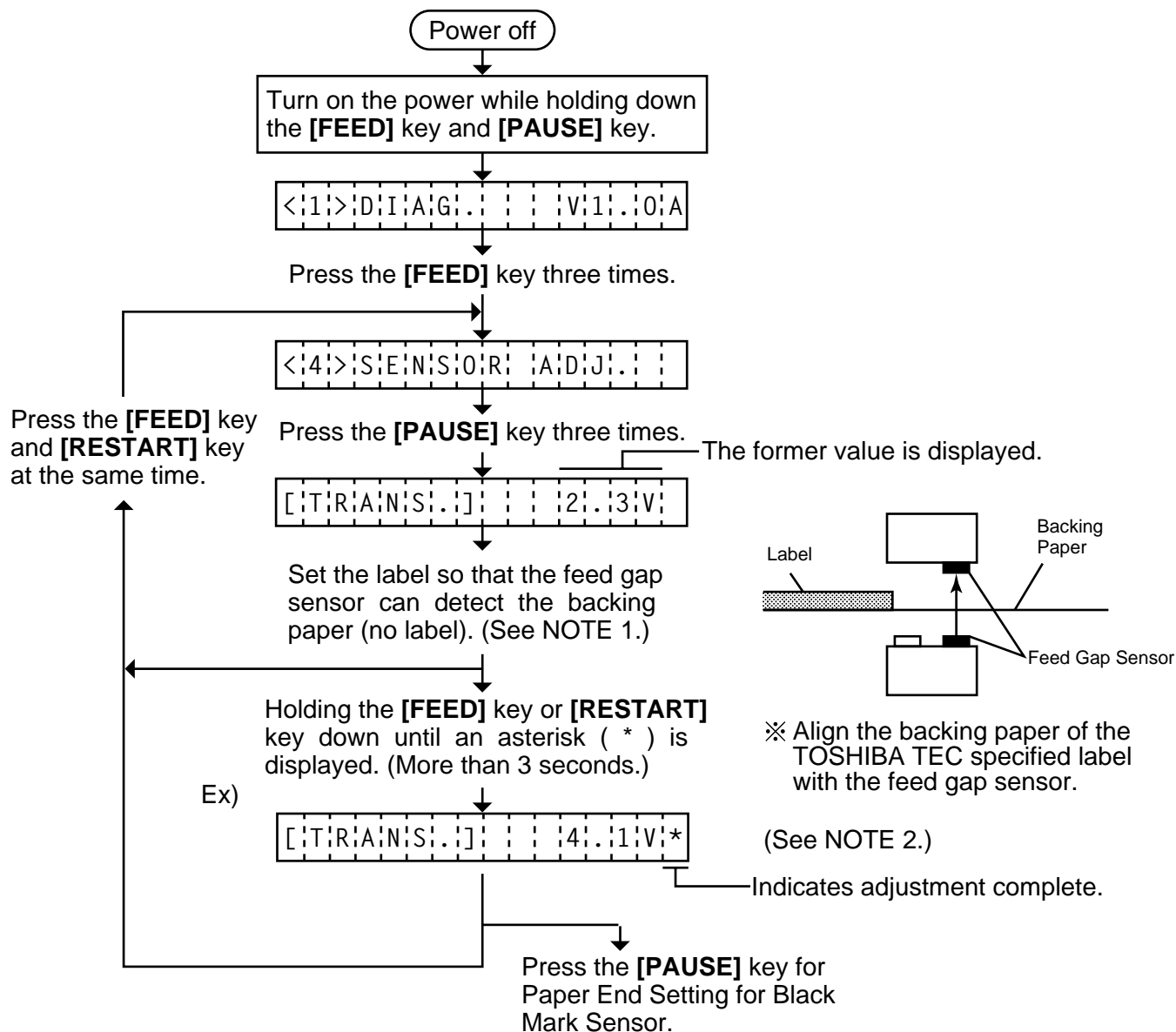
Black mark sensor setting should be performed after replacing the CPU PC board or changing the tag paper to other maker's one, or when a paper feed error occurs.



- NOTES:** 1. Make sure to adjust the black mark sensor using the white part of the tag paper as a criterion. Though an adjustment can be performed with the black mark, it may cause a paper jam error.
2. Pressing the **[PAUSE]** key validates the sensor adjustment. The value of the sensor is displayed up to 5.0 V.

### 6.5.3 Feed Gap Sensor Adjustment

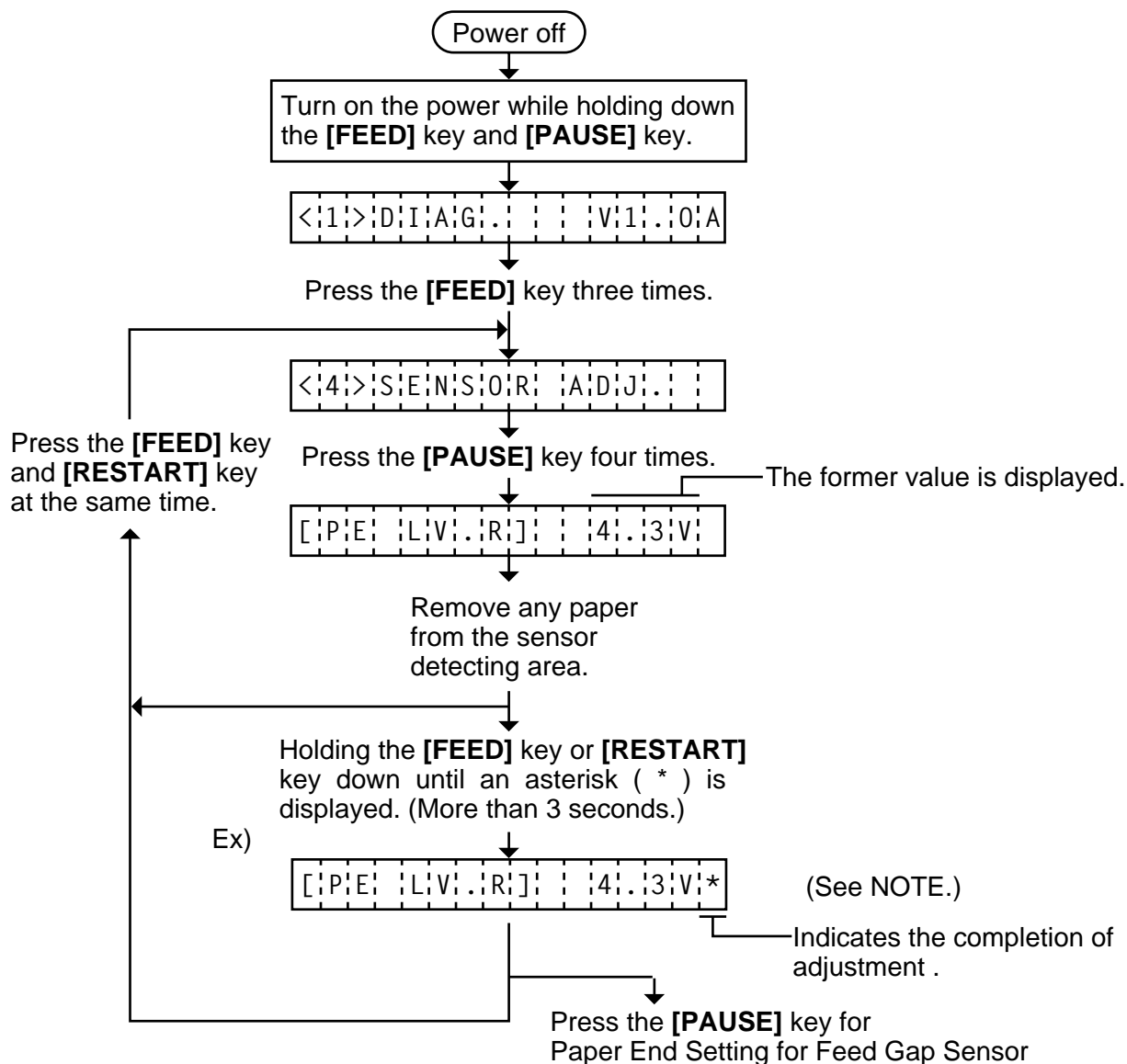
Feed gap sensor setting should be performed after replacing the CPU PC board or changing the label to other maker's one, or when a paper feed error occurs.



- NOTES:** 1. Make sure to adjust the feed gap sensor using the backing paper with no label as a criterion. Though an adjustment can be performed with the label, it could cause a paper jam error.
2. Pressing the **[PAUSE]** key validates the sensor adjustment. The value of the sensor is displayed up to 5.0 V.

### 6.5.4 Paper End Setting for Black Mark Sensor

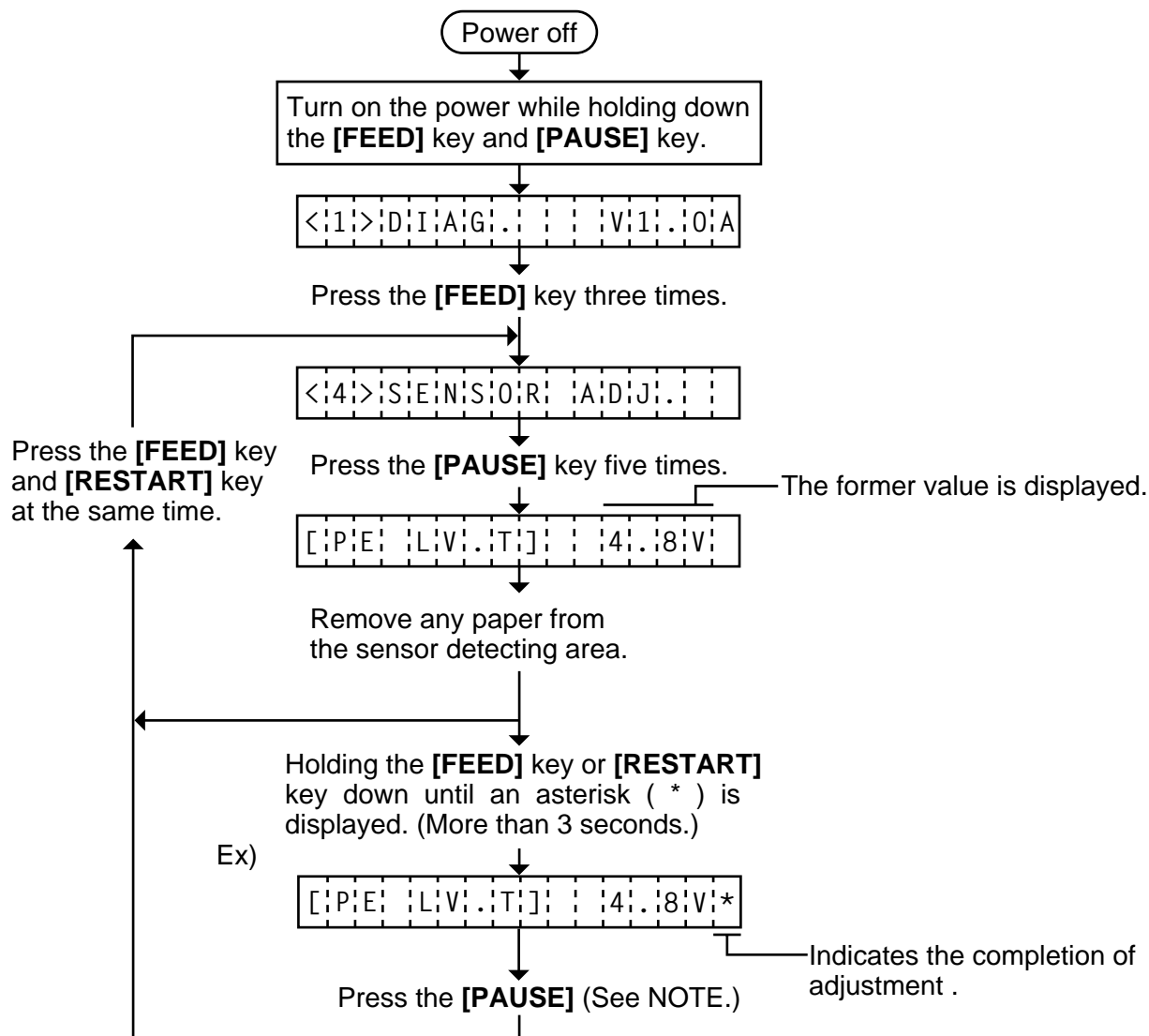
Paper end setting should be performed after replacing the CPU PC board or changing the tag paper to other maker's one, or when a paper feed error occurs.



**NOTE:** Pressing the **[PAUSE]** key validates the sensor adjustment. The value of the sensor is displayed up to 5.0 V.

### 6.5.5 Paper End Setting for Feed Gap Sensor

Paper end setting should be performed after replacing the CPU PC board or changing the label to other maker's one, or when a paper feed error occurs.



**NOTE:** Pressing the **[PAUSE]** key validates the sensor adjustment. The value of the sensor is displayed up to 5.0 V.

## 6.6 RAM CLEAR MODE

In RAM clear mode, various data written on the EEP-ROM can be initialized. There are two clear functions; Maintenance counter clear and parameter clear in the parameter setting mode. After referring to the following table specify and clear or initialize the data.

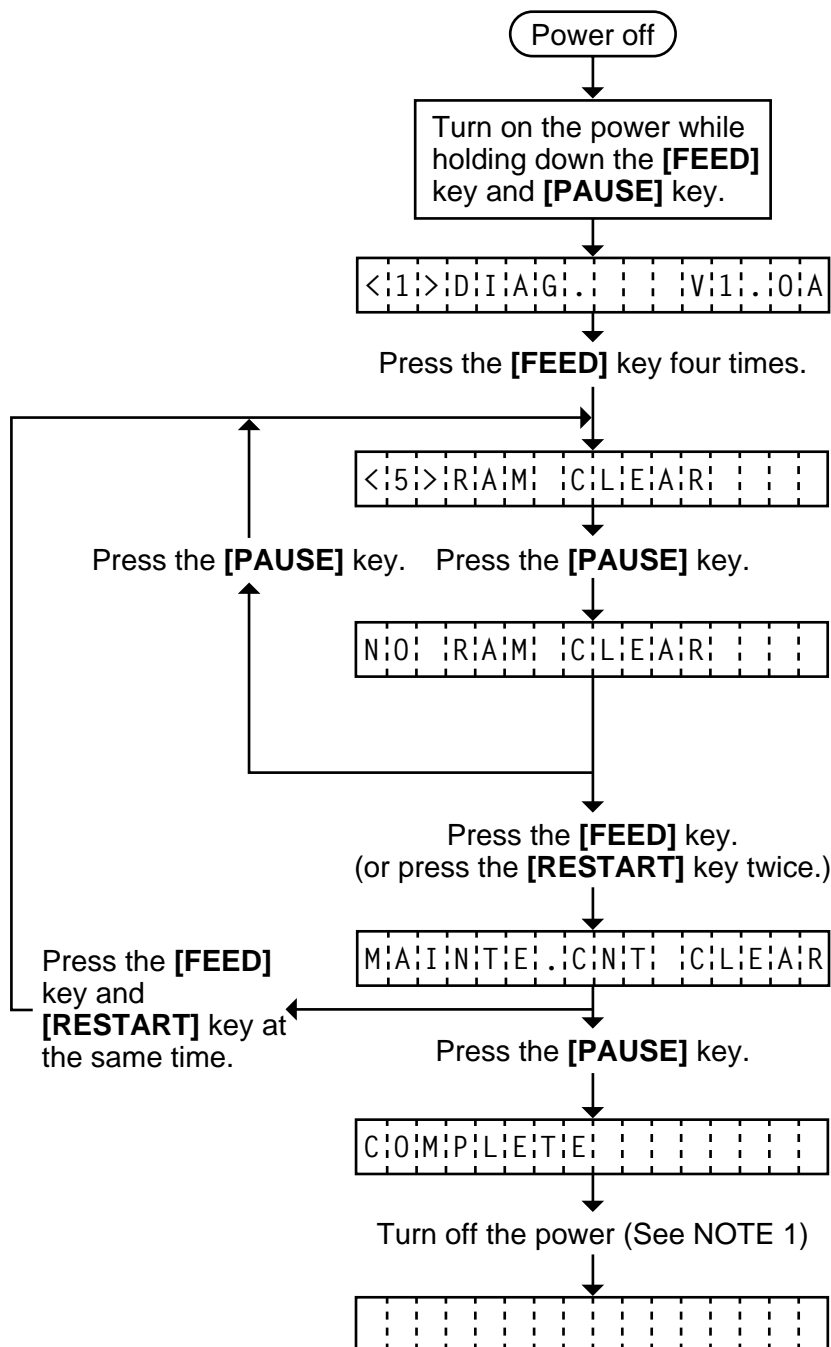
### ■ RAM Clear Mode Table

Mode Name	Function																				
NO RAM CLEAR	If you enter the RAM clear mode by mistake, specify this mode to escape from the RAM clear mode without executing RAM clear.																				
MAINTE. COUNTER CLEAR	<p>After replacing the print head, cutter module, ribbon feed/rewind motor, solenoid and CPU PC Board, clear the maintenance counter. The following data will be cleared to zero. Confirmation can be made through the maintenance counter procedure in self test mode. (See NOTE 1 and 2.)</p> <table> <tr> <th>Item</th><th>Initial Value</th></tr> <tr> <td>Media distance covered</td><td>0.0 km</td></tr> <tr> <td>Print distance</td><td>0.0 km</td></tr> <tr> <td>Cut count</td><td>0 times</td></tr> <tr> <td>Head up and down count</td><td>0 times</td></tr> <tr> <td>Ribbon motor driving time</td><td>0 hours</td></tr> <tr> <td>Solenoid driving time</td><td>0 hours</td></tr> <tr> <td>RS-232C hardware error count</td><td>0 times</td></tr> <tr> <td>System error count</td><td>0 times</td></tr> <tr> <td>Momentary power failure count</td><td>0 times</td></tr> </table>	Item	Initial Value	Media distance covered	0.0 km	Print distance	0.0 km	Cut count	0 times	Head up and down count	0 times	Ribbon motor driving time	0 hours	Solenoid driving time	0 hours	RS-232C hardware error count	0 times	System error count	0 times	Momentary power failure count	0 times
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Print distance	0.0 km																				
Cut count	0 times																				
Head up and down count	0 times																				
Ribbon motor driving time	0 hours																				
Solenoid driving time	0 hours																				
RS-232C hardware error count	0 times																				
System error count	0 times																				
Momentary power failure count	0 times																				
PARAMETER CLEAR	<p>This clear should be employed when initializing the following parameters to the settings before shipment. Confirmation can be made through the automatic diagnostic procedure in self test mode. (See NOTE 1 and 2.)</p> <table> <tr> <th>Item</th><th>Initial Value</th></tr> <tr> <td>Feed length fine adjustment (PC)</td><td>0.0 mm</td></tr> <tr> <td>Cut/strip position fine adjustment (PC)</td><td>0.0 mm</td></tr> <tr> <td>Back feed length fine adjustment (PC)</td><td>0.0 mm</td></tr> <tr> <td>Print tone fine adjustment (Thermal transfer) (PC)</td><td>0 step</td></tr> <tr> <td>Print tone fine adjustment (Thermal direct) (PC)</td><td>0 step</td></tr> <tr> <td>Feed length fine adjustment (KEY)</td><td>0.0 mm</td></tr> <tr> <td>Cut/strip position fine adjustment (KEY)</td><td>0.0 mm</td></tr> <tr> <td>Back feed length fine adjustment (KEY)</td><td>0.0 mm</td></tr> <tr> <td>Print tone fine adjustment (Thermal transfer) (KEY)</td><td>0 step</td></tr> </table>	Item	Initial Value	Feed length fine adjustment (PC)	0.0 mm	Cut/strip position fine adjustment (PC)	0.0 mm	Back feed length fine adjustment (PC)	0.0 mm	Print tone fine adjustment (Thermal transfer) (PC)	0 step	Print tone fine adjustment (Thermal direct) (PC)	0 step	Feed length fine adjustment (KEY)	0.0 mm	Cut/strip position fine adjustment (KEY)	0.0 mm	Back feed length fine adjustment (KEY)	0.0 mm	Print tone fine adjustment (Thermal transfer) (KEY)	0 step
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Cut/strip position fine adjustment (PC)	0.0 mm																				
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Back feed length fine adjustment (KEY)	0.0 mm																				
Print tone fine adjustment (Thermal transfer) (KEY)	0 step																				

Mode Name	Function																																																		
PARAMETER CLEAR	<table> <tr> <th>Item</th><th>Initial Value</th></tr> <tr> <td>Print tone fine adjustment (Thermal direct) (KEY)</td><td>0 step</td></tr> <tr> <td>X axis fine adjustment</td><td>0.0 mm</td></tr> <tr> <td>Character code selection</td><td>PC-850</td></tr> <tr> <td>Font zero selection</td><td>"0" (without slash)</td></tr> <tr> <td>Control code selection</td><td>Auto.</td></tr> <tr> <td>Ribbon type selection</td><td>Trans.</td></tr> <tr> <td>Ribbon motor drive voltage fine adjustment (PC)</td><td>0</td></tr> <tr> <td>Ribbon motor drive voltage fine adjustment (KEY)</td><td>0</td></tr> <tr> <td>Strip wait status setting</td><td>1</td></tr> <tr> <td>Status response</td><td>ON</td></tr> <tr> <td>Threshold manual fine adjustment for the black mark sensor</td><td>1.0 V</td></tr> <tr> <td>Threshold manual fine adjustment for the feed gap sensor</td><td>1.4 V</td></tr> <tr> <td>Label pitch</td><td>76.2 mm</td></tr> <tr> <td>Effective printing length</td><td>74.2 mm</td></tr> <tr> <td>Effective printing width</td><td>80 mm</td></tr> <tr> <td>With/without ribbon</td><td>with</td></tr> <tr> <td>Sensor type</td><td>Transmissive sensor (Feed gap sensor)</td></tr> <tr> <td>Feed Speed</td><td>5 inch/sec.</td></tr> <tr> <td>Issue mode</td><td>Standard (Batch printing)</td></tr> <tr> <td>PC save automatic calling</td><td>ON</td></tr> <tr> <td>Kanji code</td><td>TYPE 1</td></tr> <tr> <td>EURO font code</td><td>B0H</td></tr> <tr> <td>Transmission Control Mode</td><td>DTR</td></tr> <tr> <td>Reset selection when the INPUT • PRIME signal is ON.</td><td>ON</td></tr> </table>	Item	Initial Value	Print tone fine adjustment (Thermal direct) (KEY)	0 step	X axis fine adjustment	0.0 mm	Character code selection	PC-850	Font zero selection	"0" (without slash)	Control code selection	Auto.	Ribbon type selection	Trans.	Ribbon motor drive voltage fine adjustment (PC)	0	Ribbon motor drive voltage fine adjustment (KEY)	0	Strip wait status setting	1	Status response	ON	Threshold manual fine adjustment for the black mark sensor	1.0 V	Threshold manual fine adjustment for the feed gap sensor	1.4 V	Label pitch	76.2 mm	Effective printing length	74.2 mm	Effective printing width	80 mm	With/without ribbon	with	Sensor type	Transmissive sensor (Feed gap sensor)	Feed Speed	5 inch/sec.	Issue mode	Standard (Batch printing)	PC save automatic calling	ON	Kanji code	TYPE 1	EURO font code	B0H	Transmission Control Mode	DTR	Reset selection when the INPUT • PRIME signal is ON.	ON
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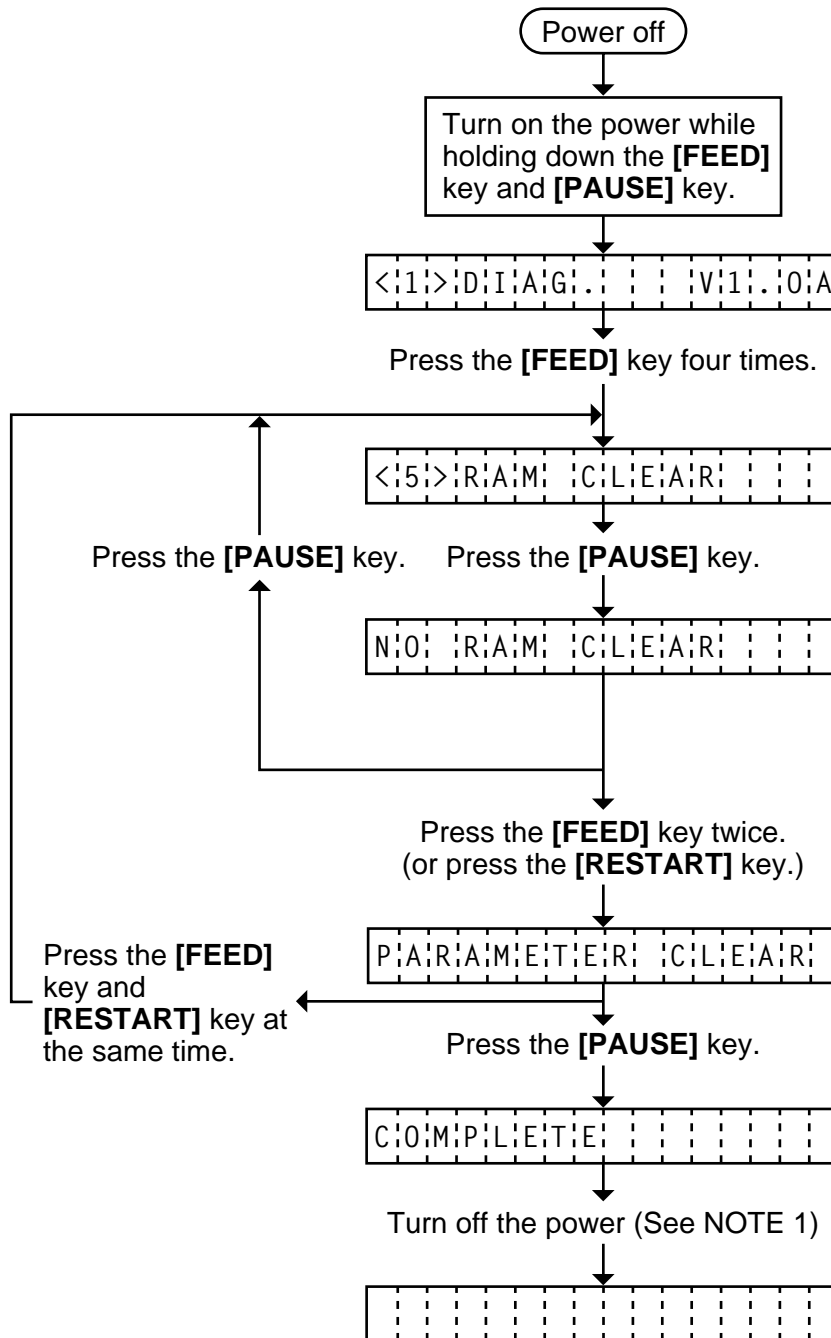
- NOTES:**
1. Total media distance covered (TL FEED) and the adjustment value for the sensors cannot be cleared.
  2. Data stored on the flash memory card cannot be cleared with this procedure. To clear data on the flash memory card, send the format command to initialize the card. For details, refer to the External Equipment Interface Specification.
  3. For data to be cleared in the RAM clear mode, refer to the RAM clear mode table.
  4. After RAM clear is performed, the threshold setting value will turn to the default (0). When using pre-printed labels, be sure to set the threshold after referring to the Owner's Manual.

## 6.6.1 Maintenance Counter Clear



**NOTE:** 1. Confirm that "COMPLETE" is displayed, then turn the power off.

## 6.6.2 Parameter Clear



**NOTE:** 1. Confirm that "COMPLETE" is displayed, then turn the power off.



## 7. PROGRAM DOWN LOAD

### 7.1 DOS VERSION

The main program for the printer has been written onto the flash ROM. If the main program is upgraded, due to the addition/change of the specification, down load the main program from the PC to the printer with the down-load floppy disk and RS-232C interface or high speed PC interface.

**NOTE:** The program can be down loaded to the printers having the new CPU PC board. (Serial No.: 0Exxxxxx and after.)

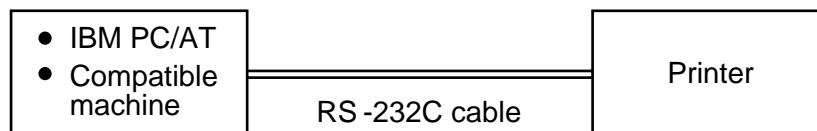
#### 7.1.1 FLOPPY DISK

- (1) Media ..... 3.5 inches (2DD)
- (2) System disk ..... 1 disk (This floppy disk contains the main program written onto the printer and the tool program for down load.)

#### 7.1.2 SETUP

The transmission control code for the printer must be set to either the automatic selection or manual selection (ESC, NUL, LF). For details, refer to Section 6.3.8 Control Code Selection.

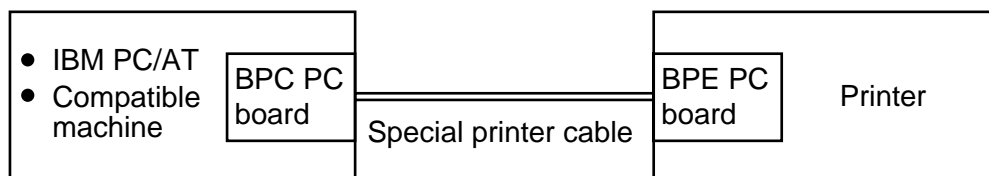
- (1) Program down load with RS-232C interface



Connect the PC to the printer with an RS-232C cable. Set the DIP SW2 on the CPU PC board of the printer as follows:

SW#	Status	Function	Description
1	OFF	9600 BPS	Transmission Speed
2	ON		
3	OFF	1 bit	Stop bit length
4	ON	8 bits	Data length
5	OFF	No	Presence/absence of parity

- (2) Program down load with high speed PC interface



Install the BPC and BPE PC boards in the PC and printers, respectively, and connect both boards to each other with the special printer cable after referring to the Maintenance Manual Section 3.1. Refer to the Owner's Manual enclosed with the high speed PC interface board kit to set the DIP SW on the BPC PC board and to install the BPC driver in the PC (hard disk drive).

**7.1.3 DOWN LOAD PROCEDURE**

- (1) Turn the PC power on.
- (2) Turn the printer power on.
- (3) Insert the program down load floppy disk into the PC.
- (4) Change the drive to A. Type
- (5) Start the batch file "PDL". Type      
Or copy the contents of the floppy disk in to the hard disk and start the program in the hard disk.
- (6) After starting the batch file "PDL", the following menu is displayed. ① indicates the main program version.

This is the down load program for B-X
DD-MM-YYYY

This program down line loads  
the program file (Version V1.0A) to the B-X

Select the communication device. [ ]  
( 1=RS-232C , 2=High Speed PC interface)

Are you sure ? (Y/N) [ ]  
(Pressing the <Y key> will transmit the program file.)

---

To end the program press the <F1 key>

- (7) Select the interface.
  - RS-232C interface
  - High speed PC interface
- (8) Start the main program transmission.    
When changing the interface, press   and go back to step (7).
- (9) While the main program is being transmitted, the following message is displayed in line ② .  
"###" in the message, a running count, from 0 through 128 is shown indicating the number of KB transferred.  
\*\* Now transmitting (###/128KB)\*\*
- (10) When the transmission is successfully completed, the following message is displayed in ② line.  
End of Transmission. Continue (Y/N) ? [ ]
  - To continue
    - ① Turn the printer power off and exchange the printer with another one.
    - ② Turn the printer power on.
    - ③ Start the main program transmission.
  - To terminate

- (11) When an error occurs, the following message is displayed together with the error code in ⑧ line.

The following error occurred during transmission. (ERROR=###)

Press any key to retry.

\_\_\_\_\_ Error  
code

Doing so will revert to the displayed described in step (6). Refer to the error code to find the cause of the error. then retry the down load.

- (12) After terminating the down load, refer to the Maintenance Manual Section 6.2 SELF TEST MODE and perform diagnostic printing. Check that the printer operates properly and the main program version and checksum is printed on the label.

#### 7.1.4 ERROR CODE

Error Code (#)	Error	Remarks
06	Communication error (Error is detected during command analysis.)	Status from the printer
07	Communication error (Parity error, overrun error or framing error occurred during communication with RS-232C.)	
50	Write error occurred during formatting of the flash ROM.	
51	Delete error occurred while data was being written onto the flash ROM.	
57	Chacksum error occurred in the transmission program data.	
81	Image data transmission request signal is not converted to "L"	Error detected in PC
82	Data FIFO of the high speed PC interface is not empty.	
88	Underfined status is received when a wating data in RS-232C.	
89	An IOCTL carry is detected in the high speed PC interface.	
90	A parameter error occurred.	
92	An overrun occurred in RS-232C.	
93	A parity error occurred in RS-232C.	
94	A framing error occrred in RS-232C.	
95	A break is detected in RS-232C.	
97	COM1 open error occurred in RS-232C.	
98	Undefined status is received against the loading setup command.	
99	Underfined status is received when the loading operation is terminated.	

Check the following when an error occurs:

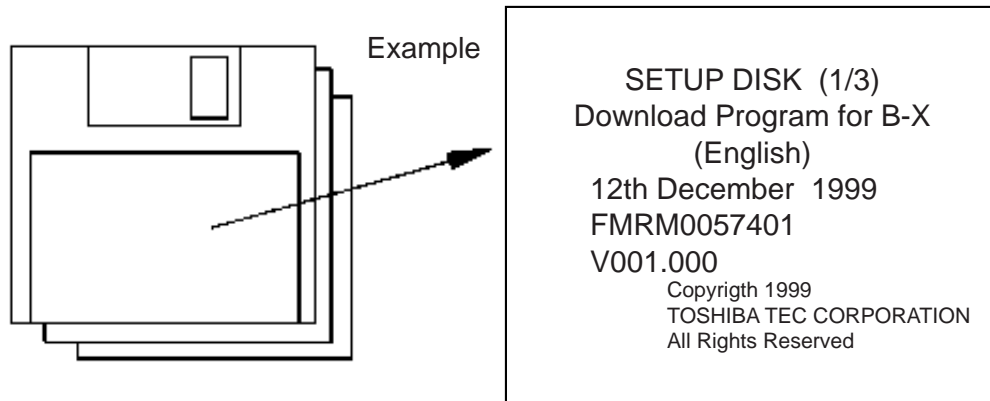
- The printer power is turned on.
- The RS-232C cable or high speed PC interface cable is connected properly.
- The DIP SW on the CPU PC board or BPC PC board is set correctly.
- With the high speed PC interface, that the BPC/BPE PC boards are installed in the PC/printer properly. That the BPC driver is installed in the PC (hard disk drive) properly.

## 7.2 WINDOWS VERSION

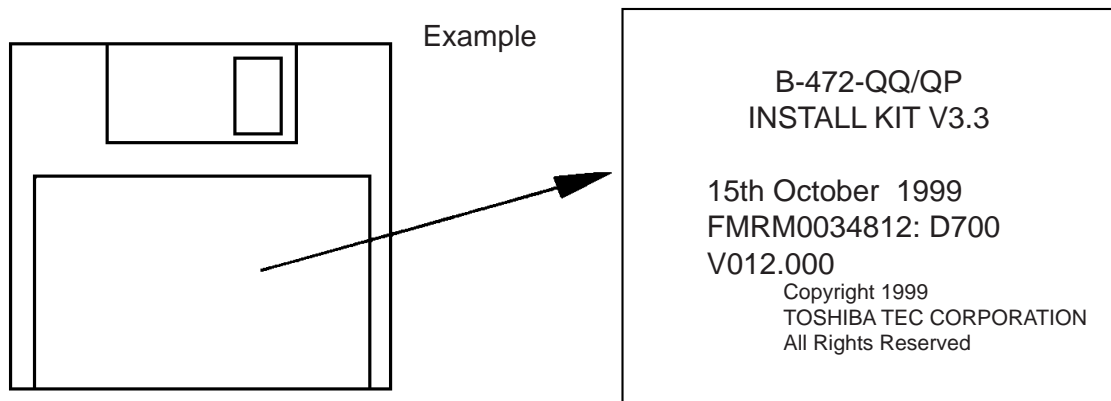
The main program for the printer has been written onto the flash ROM. If the main program is upgraded, due to the addition/change of the specification, download the main program from the PC to the printer with the download floppy disks and RS-232C interface.

### 7.2.1 Floppy Disk

- (1) Program Loader Setup Disk  
Media 3.5 inch (2HD)  
Disk Program Loader Setup Disks1, 2 and 3 (Total 3 pcs.)



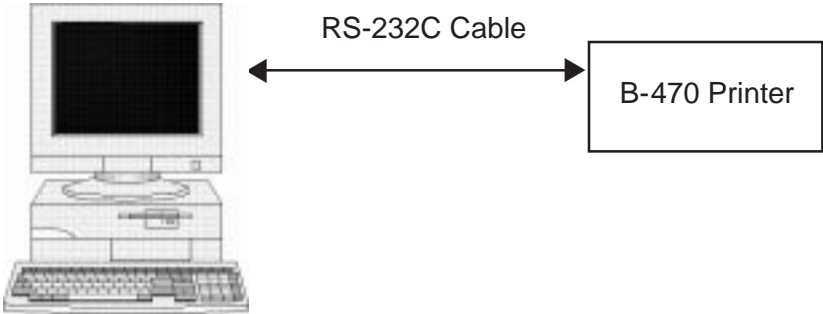
- (2) Program Data Disk (Firmware Disk)  
Media 3.5 inch (2DD0)  
Disk Install Kit (Total 1pc.)



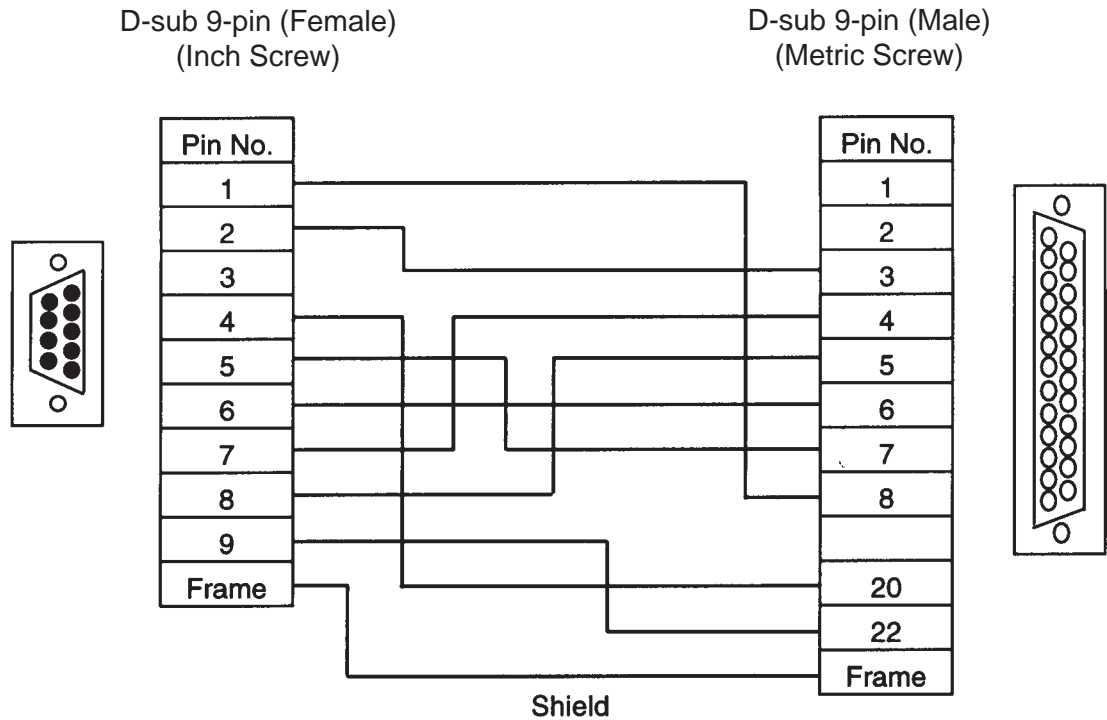
**NOTE:** This program data disk is used to download the program and character generator to the printer. The program download can also be performed from the PC hard disk, therefore, copy the binary file (\*.BIN) contained on the program data disk to any folder of the PC hard disk, if necessary.

7.2.2 Setup and System requirements

Connect the B-470 printer to the PC via the RS-232C cable.



- (1) System      Windows 95 or Windows 98 (Windows 3.1 is not supported.)
- (2) Interface    Serial Interface only
- (3) Memory      16M byte minimum (32M byte or more recommended)
- (4) Hard Disk    5M byte minimum (10M byte or more recommended)
- (5) Wiring of RS-232C Interface Cable

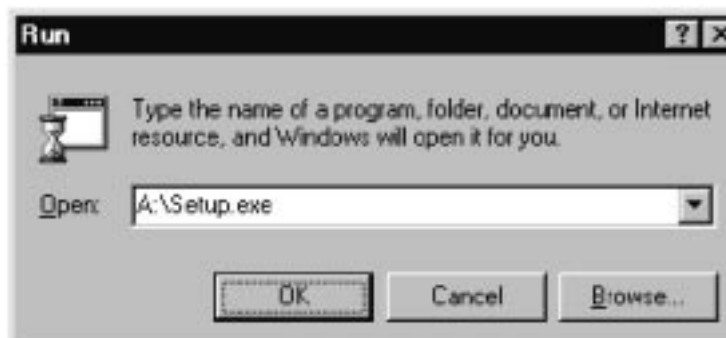


### 7.2.3 Installation Procedure of Down Load Program

- (1) Start up Windows 95 or Windows 98, and then insert the Program Loader Setup Disk (1/3) into the PC floppy drive.
- (2) Click on the Start button then highlight Run and click on Run.



- (3) When the Run display appears, type in A:\SETUP.EXE and click on OK button.



- (4) When requested, insert the Program Loader Setup Disk (2/3) and then the Program Loader Setup Disk (3/3) to complete the program download.

**NOTE:** In some PCs, the Program Loader Setup Disks (1/3) and (2/3) may complete the program download. In this case, installing the Program Loader Setup Disk (3/3) is not required.

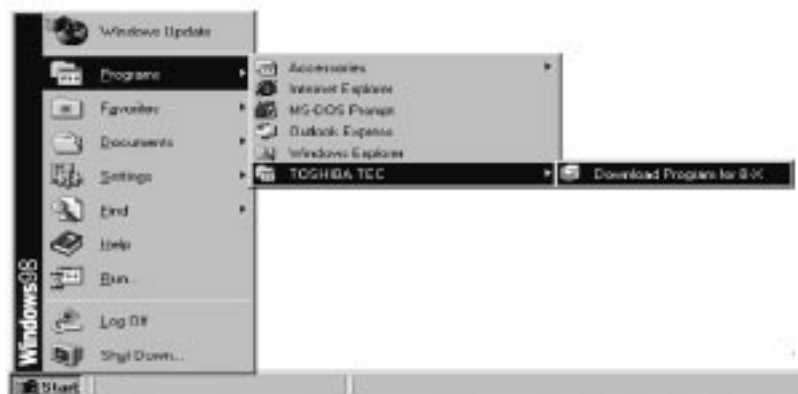
### 7.2.4 Installation Procedure of Firmware

- (1) Before performing the program download to the Printer, set the DIP SW2 on the CPU PC board as shown below.

DIP SW2

NO.	Status	Description	Function
1	OFF	Transmission speed	9600 bps
2	ON		
3	OFF	Stop bit length	1 bit
4	ON	Data length	8 bit
5	OFF	Presence/absence of parity	No

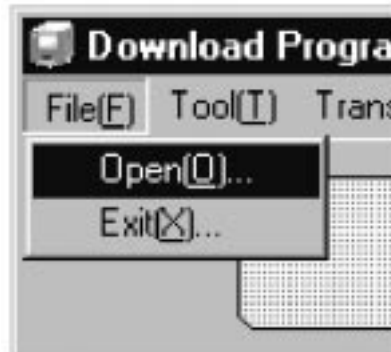
- (2) Connect the printer to the PC via the RS-232C cable, and then start up the PC. (Refer to section 7.2.2)
- (3) Click on the Start button to access the program menu.
- (4) Highlight "Programs" then highlight "TOSHIBA TEC" and click on Download Program for B-X.



- (5) The screen will change to display the initial screen of the Download Program for B-X.



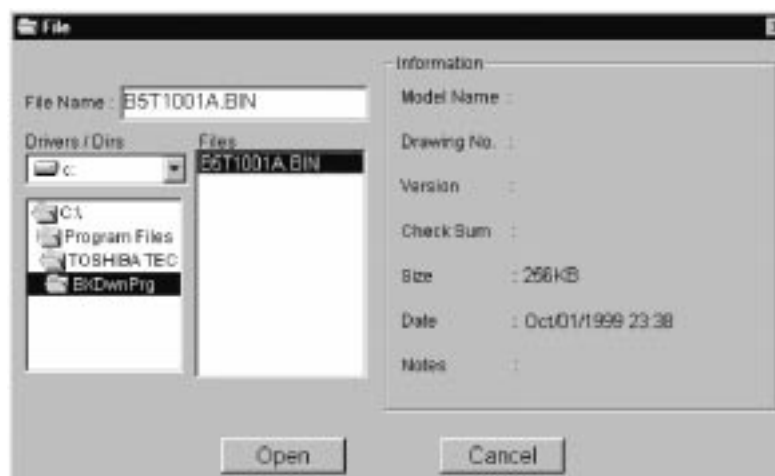
- (6) From the File (F) drop down menu, select Open (O).



- (7) The file open screen will appear. Select the drive and the folder in which the binary file is stored. If you copy the binary file into the C:\Program Files\Toshiba TEC\BXDownPrg folder which appears as the default, you will reduce the time for the program download.



- (8) Confirm the data in the Information column to select the desired download file (\*.BIN), and then click on Open button.

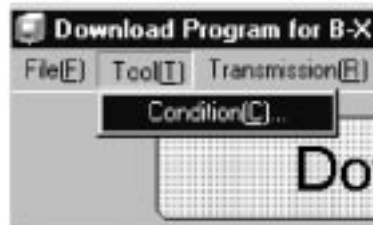




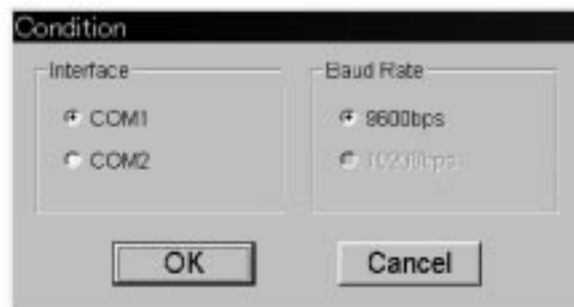
- (9) The display restores to the Download Program for B-X. Make sure of the Download file.



- (10) Select the Tool (T) drop down menu and then select Condition (C).



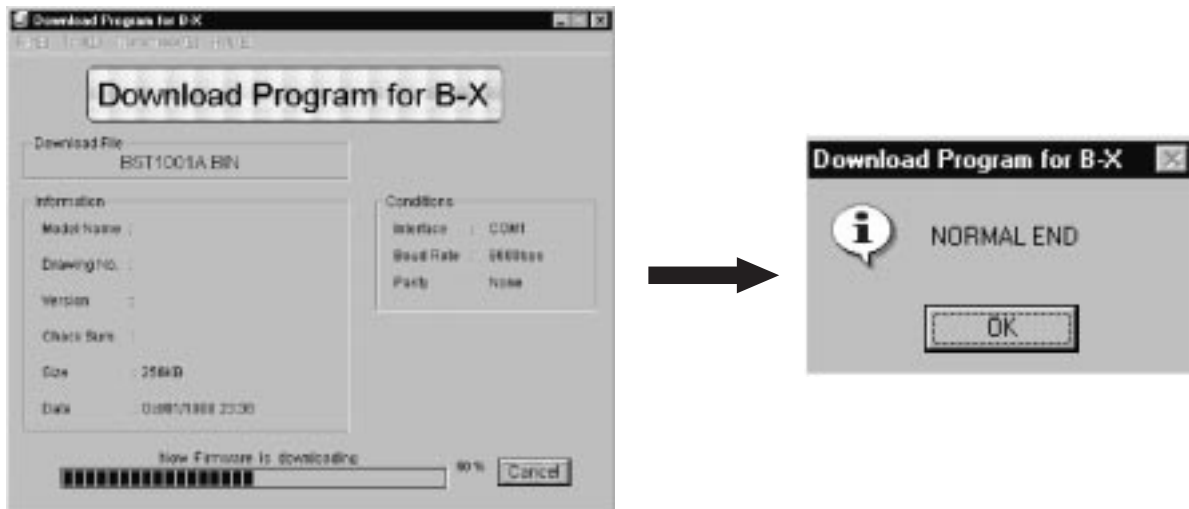
- (11) The communication setting window will appear. Choose COM1 or COM2 and then click on OK button.



- (12) Select the Transmission (R) drop down menu and then select Start (S).  
If the desired download file is not selected, start (S) cannot be selected. Therefore, be sure to open the file before selecting start (S).



- (13) When the program has been successfully downloaded, the following message will appear.  
If an error occurs during downloading, make sure of the connection of the RS-232C cable, the DIP SW setting, the condition of the communication, and then retry the program download.



**NOTE:** If you terminate the program download, select the File (F) drop down menu and then select Exit (X). When the following message appears, click on Yes button.

