



**TTP 243 Pro/ 243E Pro/ 342 Pro Series**  
**TTP-244 Pro Series**

**THERMAL TRANSFER BAR CODE PRINTER**

**Service  
Manual**

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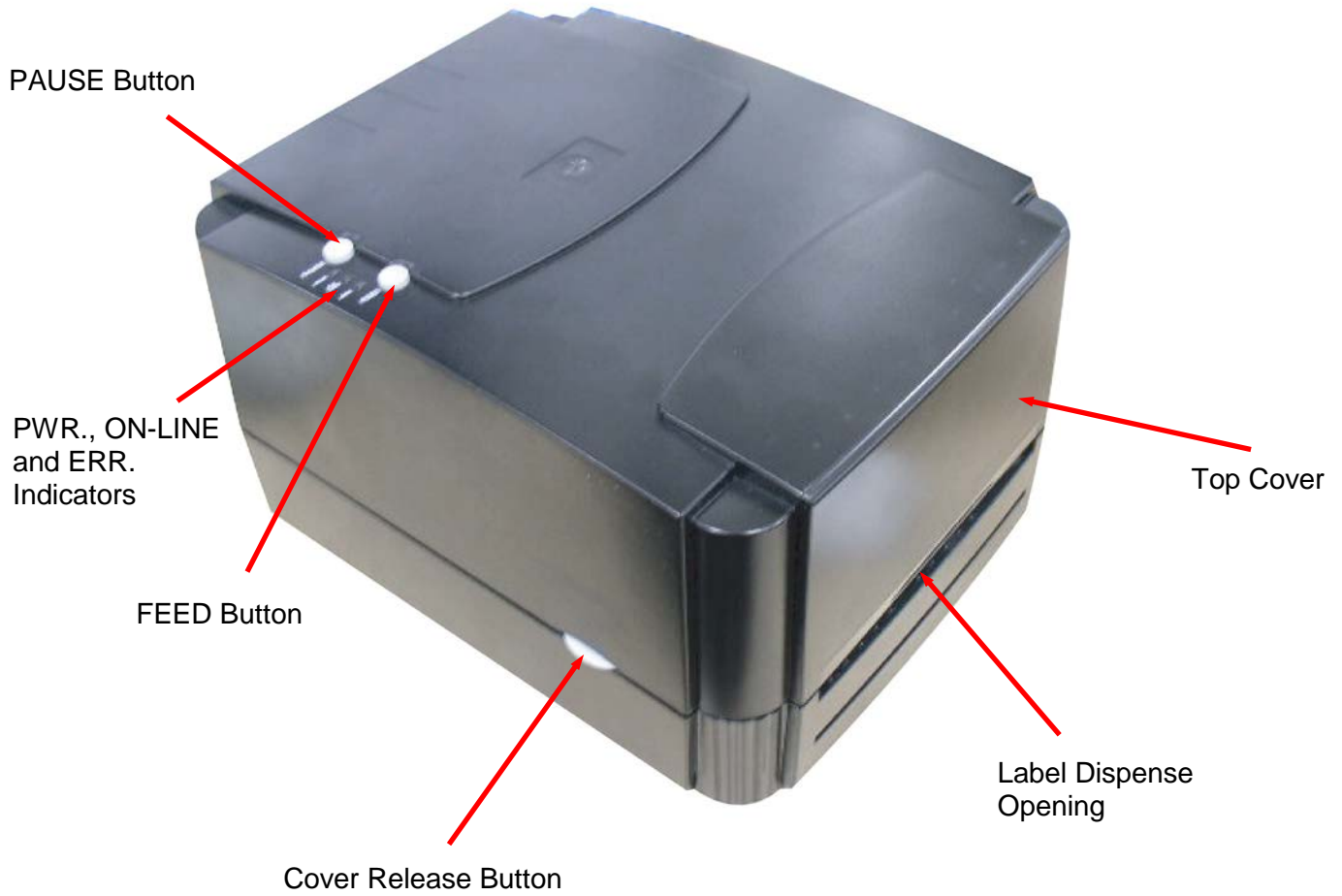
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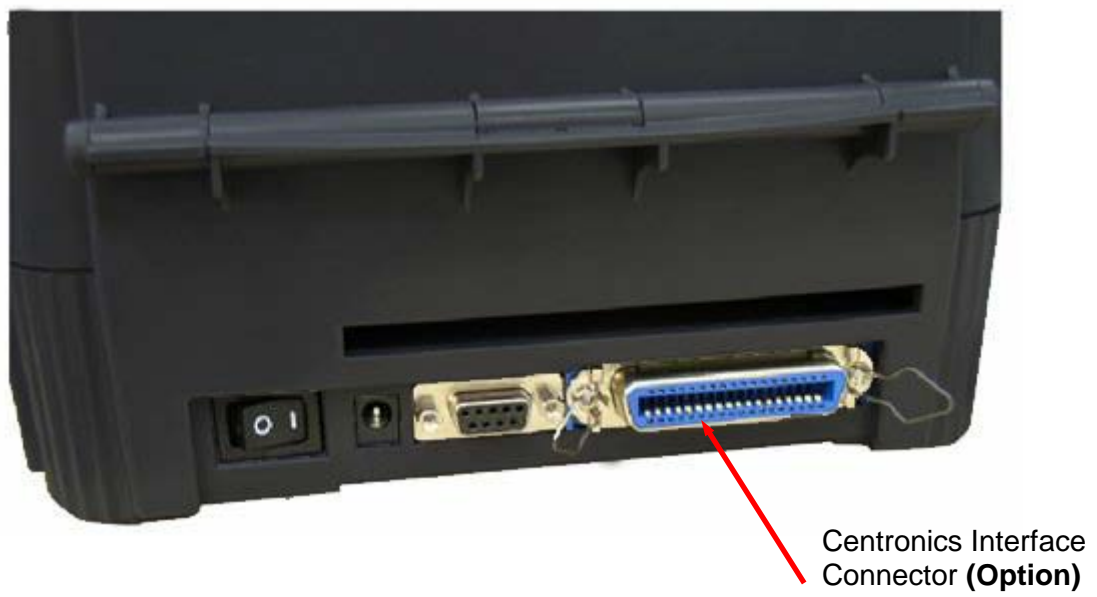
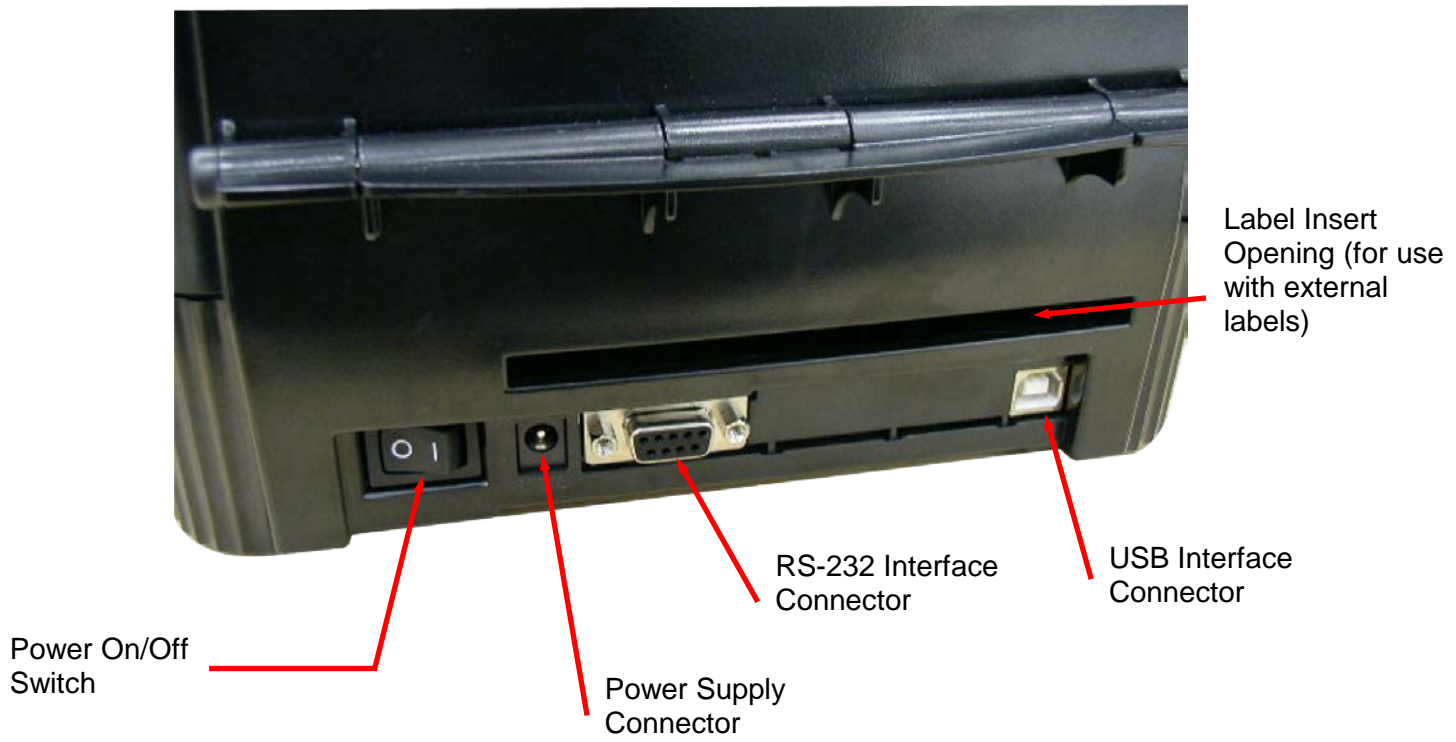
# 1. FUNDAMENTALS ABOUT THE SYSTEM

## 1.1 Overview

### 1.1.1 Front View



### 1.1.2 Rear View



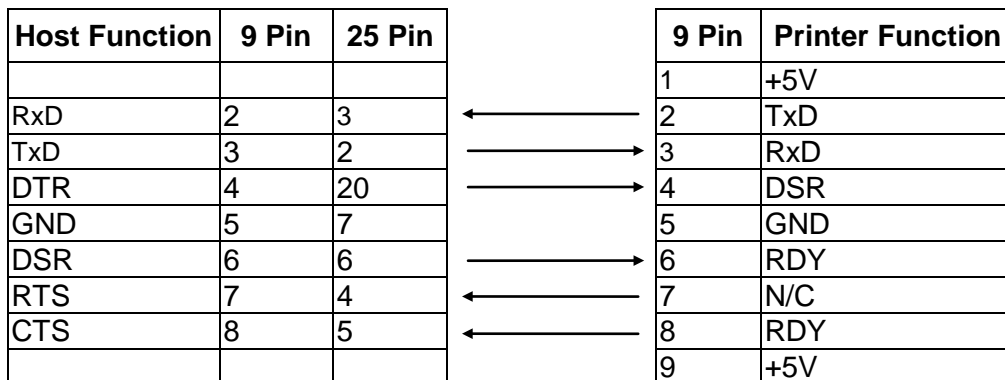
## 1.2 Basic Specifications

- Thermal transfer and direct thermal printing
- High dot density printing; TTP-243(E)/244 Pro series: 203 dots/inch, TTP-342 Pro series: 300 dots/inch
- Selectable print speeds (TTP-243 Pro series: 1.5, 2 or 3 ips / TTP-342 Pro series: 1, 1.5 or 2 ips/ TTP-244 Pro series: 2.0, 3.0, 4.0 or 5.0 ips)
- Maximum media width up to 4.9" (114mm) for TTP-243 Pro series/ 4.4" (112 mm) for TTP-244 Pro series
- Adjustable label edge guide
- International character sets
- 8 MB SDRAM memory
- 4 MB FLASH memory
- Print area: TTP-243 Pro/243E Pro : 4.09" W x 90" L ; TTP-342 Pro : 4.09"W x 40"L ; TTP-244 Pro: 4.25"W x 90"L (without any file downloaded in the printer memory)
- User selectable bar code ratios and heights
- Prints on labels or tickets
- Equipped with black mark sensor
- Equipped with Real Time Clock (Not available for TTP-243E Pro and TTP-244 Pro)
- Comes with self-peeling function (Not available for TTP-243E Pro and TTP-244 Pro)
- Label stock and thermal transfer ribbon are easy to install
- Internal label print counter
- Self test and hex dump mode
- Downloadable fonts from label design software
- Power
  - External universal switching power supply
  - Input: AC 100-240V, 2.5A, 50-60Hz
  - Output: DC 24V, 2.5A, 60W
- Communications Interface:

\* RS-232/USB

\* RS-232/Centronics (factory option)

- RS-232 Interface Pin Configuration:



### 1.3 Available Bar Codes

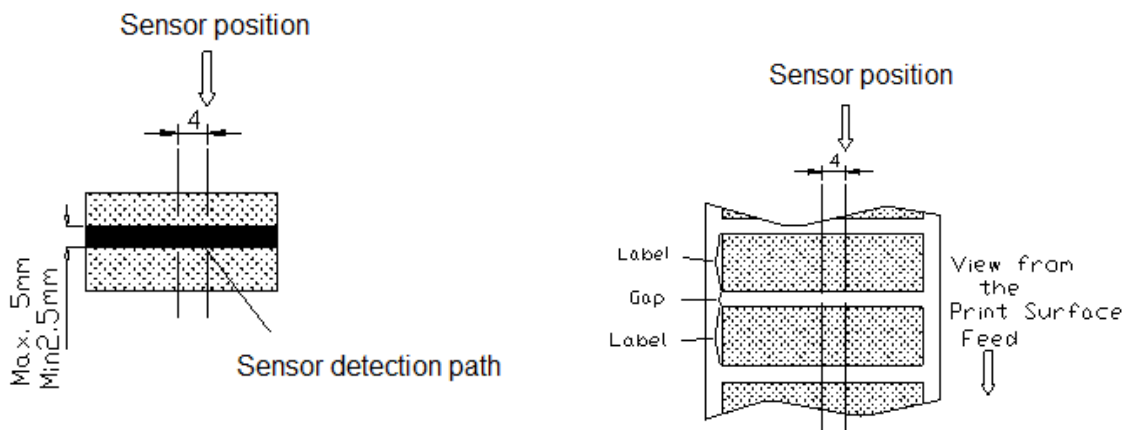
Supported bar code	
1D bar code	2D bar code
Code 39, Code 93, Code 128UCC, Code 128 subset A, B, C, Codabar, Interleave 2 of 5, EAN-8, EAN-13, EAN-128, UPC-A, UPC-E, EAN and UPC 2 (5) digits add-on, MSI, PLESSEY, POSTNET, RSS-Stacked, GS1 DataBar, Code 11	DataMatrix, Maxicode, PDF-417, Aztec, QR code

### 1.4 Various Sensors

#### Gap Sensor

The feed gap sensor detects a label gap to locate the starting print position of the next label. The sensor is mounted 4 mm off the center line of the main mechanism.

In case of Label

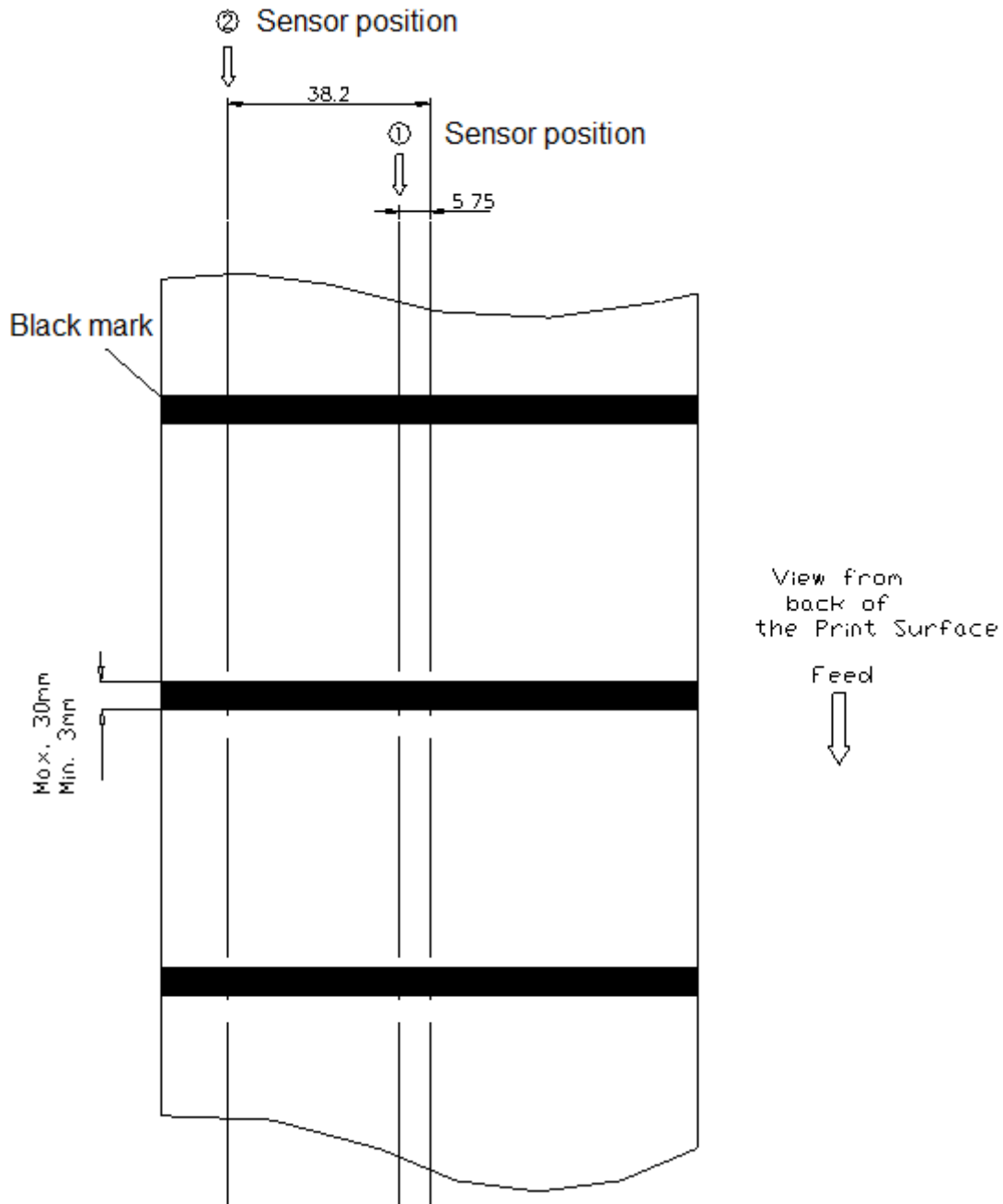


#### Black Mark Sensor

The black mark sensor locates the position of label by emitting infrared rays onto the black mark at the back of the ticket. The sensor is mounted 5.75 mm off the center line of the ticket roll width on the mechanism.

### In case of Ticket

The default sensor position is (1) as shown on the figure below. To change to the (2) position, the customer should notify the manufacturer in advance. There can be only one position for the sensor. Once the sensor position is agreed upon, it can not be changed afterwards.



### Ribbon End Sensor

The sensor detects the end portion of the ribbon. The ribbon end must be transparent.

### Peel off Sensor

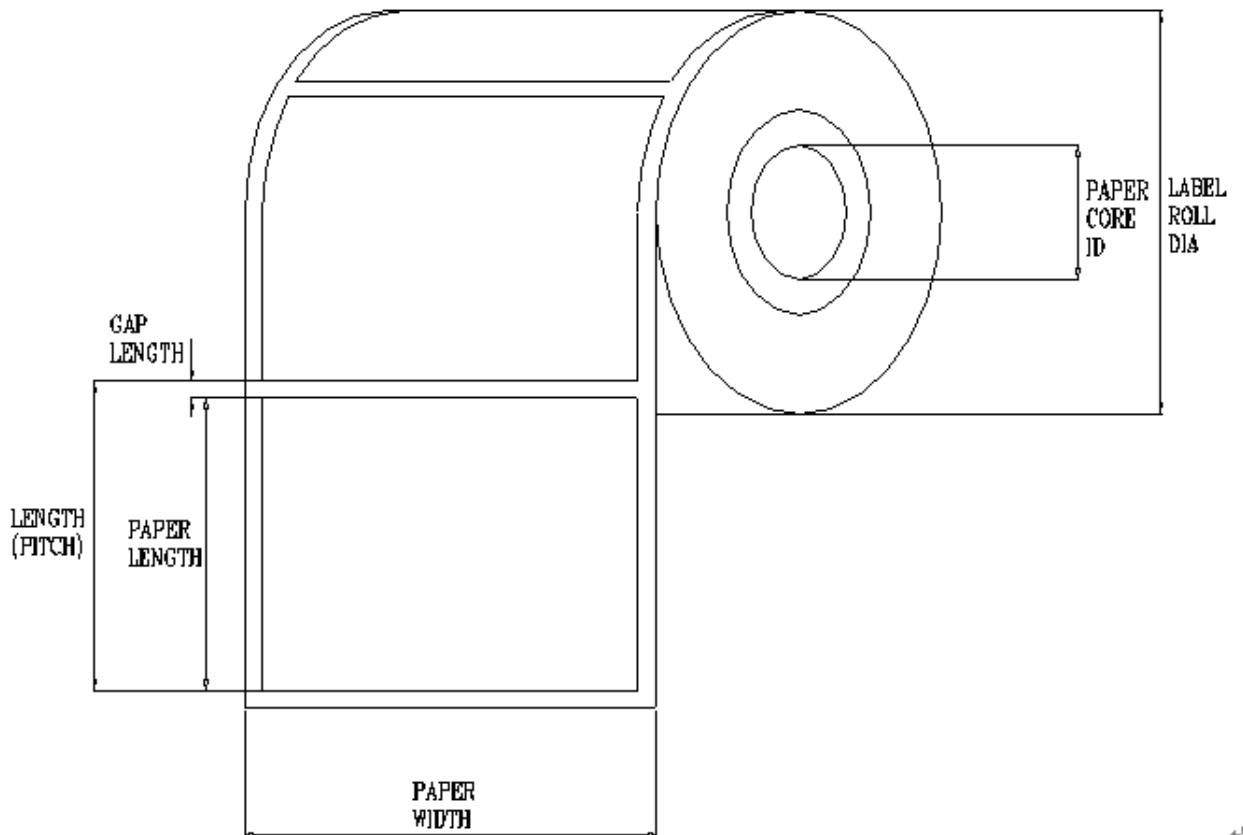
The sensor detects the backing paper of a label. (Not available for TTP-243E Pro and TTP-244 Pro)



## 2. SUPPLY SPECIFICATIONS

### 2.1 Media Specifications

Media Specifications		
Printer Model	TTP-243 Pro Series	TTP-244 Pro Series
Label roll capacity	110 mm (4.33") OD	
Media core diameter	25.4 ~ 76.2 mm (1" ~ 3")	
Media type	Continuous, die-cut, black mark, External fan-fold, notched	
Media wound type	Outside wound	
Media width	25.4 ~ 114 mm (1.0" ~ 4.49")	25.4 ~ 112 mm (1.0" ~ 4.4")
Media thickness	0.06 ~ 0.25 mm (2.36 ~ 9.84 mil)	0.06 ~ 0.19 mm (2.36 ~ 7.48 mil)
Label length	203 dpi: 10 ~ 2,286 mm (0.39" ~ 90") 300 dpi: 10 ~ 1,016 mm (0.39" ~ 40")	10 ~ 2,286 mm (0.39" ~ 90")



## 2.2 Ribbon Specifications

Ribbon Specifications	
Ribbon outside diameter	Max. 67 mm OD
Ribbon length	300 m
Ribbon core inside diameter	1" core
Ribbon width	40 mm ~ 110 mm (1.6" ~ 4.3")
Ribbon wound type	Ink coated outside

**Note:** The maximum length of ribbon depends on its thickness and core outside diameter.

The formula below defines the correlation between ribbon roll length and ribbon core diameter.

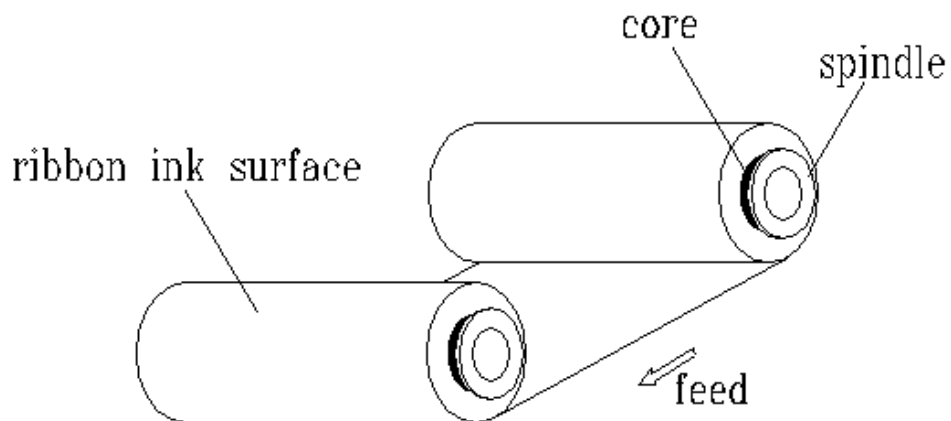
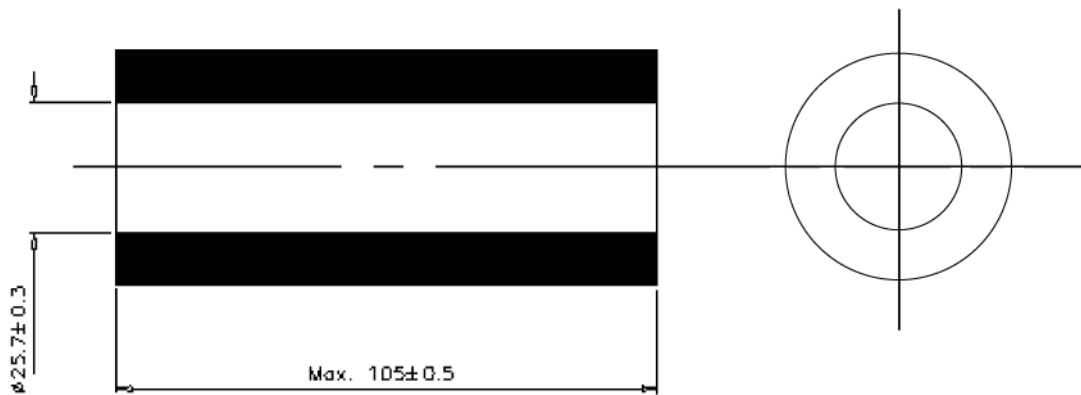
$$L = \frac{(D^2 - d^2) \times \pi}{4t}, \text{ where}$$

L = Ribbon length

D = Max. roll diameter

d = Ribbon core outside diameter

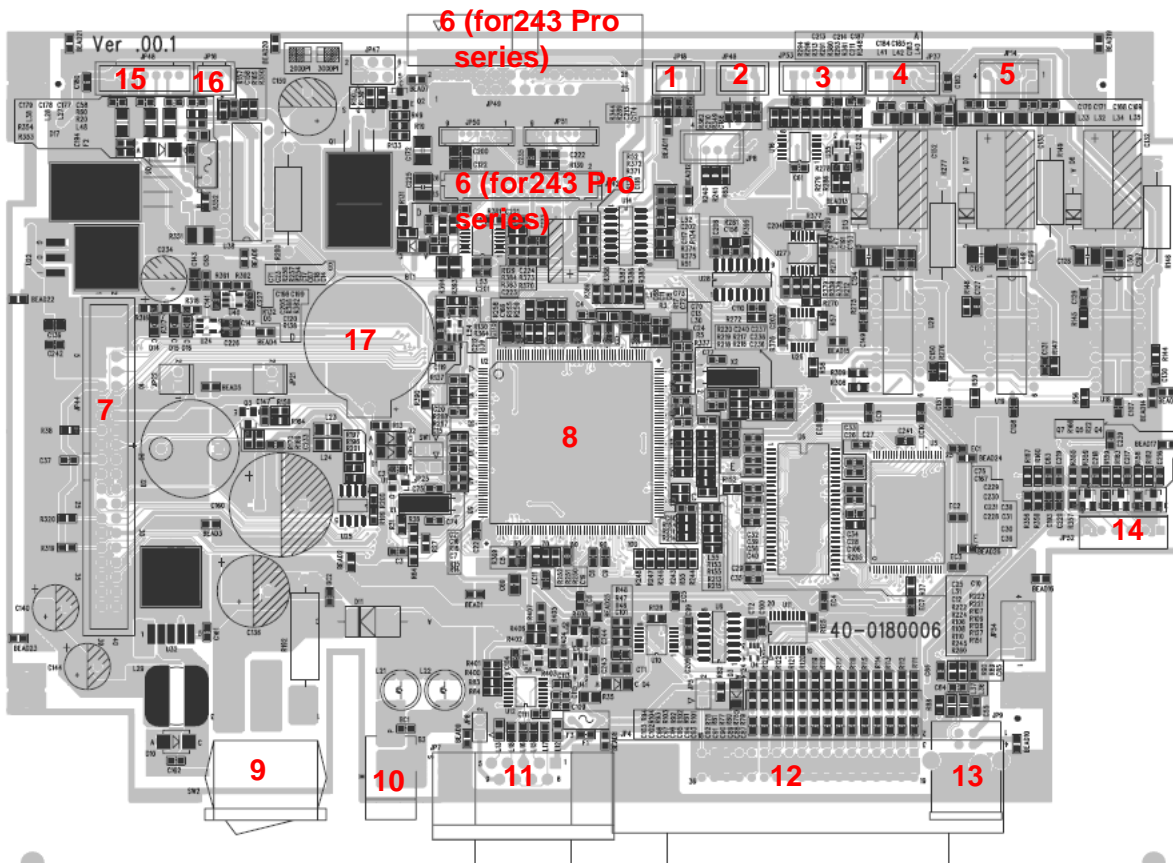
t = Ribbon thickness





### 3. ELECTRONICS

#### 3.1 Summary of Board Connectors

##### Main board



Connector	Description	Remark											
1	Ribbon sensor connector	JP18											
2	Black mark sensor connector	JP46											
	<table border="1"> <thead> <tr> <th>Pin</th> <th>Description</th> <th>Voltage</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Power</td> <td>5V</td> </tr> <tr> <td>2</td> <td>Black mark sensor receiver</td> <td>No paper or black mark : 3.1~3.2V Detect paper: 0~0.3V</td> </tr> <tr> <td>3</td> <td>GND</td> <td>0V</td> </tr> </tbody> </table>	Pin	Description	Voltage	1	Power	5V	2	Black mark sensor receiver	No paper or black mark : 3.1~3.2V Detect paper: 0~0.3V	3	GND	0V
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3	GND	0V											

	Gap sensor connector	JP53																					
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5	Gap sensor receiver	No paper or gap: 3.1~3.2V Detect paper: 0~0.3V																					
6	Power	5V																					
4	Ribbon encoder sensor & DC motor connector	JP37																					
5	Stepping motor connector	JP14																					
6	Print head connector for TTP-243 Pro series	<b>JP49</b>																					
	Print head connector for TTP-244 Pro series	<b>JP42</b>																					
7	SD memory card module connector	JP44																					
8	Micro processor	U2																					
9	Power switch	SW2																					
10	Power supply output (24V DC) connector	B3																					
11	RS-232C connector	JP7																					
12	Centronics port connector (Option)	JP4																					
13	USB connector	JP9																					
	Push button connector	JP52																					
14	 <table border="1"> <thead> <tr> <th>Pin</th> <th>Description</th> <th>Voltage</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>LED green (PWR)</td> <td>LED light on: 2.0~2.2V LED light off: 0~0.3V</td> </tr> <tr> <td>2</td> <td>LED green (ONLINE)</td> <td>LED light on: 2.0~2.2V LED light off: 0~0.3V</td> </tr> <tr> <td>3</td> <td>LED red (ERR)</td> <td>LED light on : 2.0~2.2V LED light off: 0~0.3V</td> </tr> <tr> <td>4</td> <td>Pause switch</td> <td>0V: Push key 3.3V: Stand-by</td> </tr> <tr> <td>5</td> <td>Feed switch</td> <td>0V: Push key 3.3V: Stand-by</td> </tr> <tr> <td>6</td> <td>GND</td> <td>0V</td> </tr> </tbody> </table>	Pin	Description	Voltage	1	LED green (PWR)	LED light on: 2.0~2.2V LED light off: 0~0.3V	2	LED green (ONLINE)	LED light on: 2.0~2.2V LED light off: 0~0.3V	3	LED red (ERR)	LED light on : 2.0~2.2V LED light off: 0~0.3V	4	Pause switch	0V: Push key 3.3V: Stand-by	5	Feed switch	0V: Push key 3.3V: Stand-by	6	GND	0V	
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4	Pause switch	0V: Push key 3.3V: Stand-by																					
5	Feed switch	0V: Push key 3.3V: Stand-by																					
6	GND	0V																					
15	Cutter /peel-off sensor connector (Option for TTP-243/342 Pro, not available for TTP-243E/244 Pro)	JP48																					
16	Head open sensor connector (Not available for TTP-244 Pro)	JP16																					
17	RTC Battery (Not available for TTP-243E/244 Pro)	BT1																					

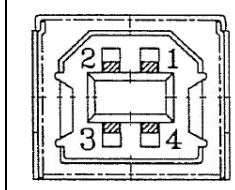
### 3.2 Pin Configuration

#### RS-232C

PIN	CONFIGURATION
1	+5 V
2	TXD
3	RXD
4	CTS
5	GND
6	RTS
7	N/C
8	RTS
9	N/C

#### USB

PIN	CONFIGURATION
1	N/C
2	D-
3	D+
4	GND



#### Centronics

Pin	SPP Mode	Nibble	In/Out	Function
1	Strobe	N/A	In	A <b>low</b> on this line indicates that there are valid data at the host. When this pin is de-asserted, the +ve clock edge should be used to shift the data into the device.
2-9	Data 0-7	N/A	In	Data Bus. Single-directional.
10	Ack	N/A	Out	A <b>low</b> on this line indicates that there are valid data at the Device. When this pin is de-asserted, the +ve clock edge should be used to shift the data into the host.
11	Busy	N/A	Out	When in reverse direction, a <b>high</b> indicates data, while a <b>low</b> indicates a command cycle. In forward direction, it functions as PtrBusy.
12	Paper Out / End	N/A	Out	When <b>low</b> , device acknowledges reverse request.
13	Select	N/A	Out	Extensibility flag
14	Ground	N/A	GND	
15	No Defined	N/A	N/A	
16-17	Ground	N/A	GND	Ground
18	No Defined	N/A	N/A	
19-30	Ground	N/A	GND	Ground
31	No Defined	N/A	N/A	
32	Error / Fault	N/A	Out	A <b>low</b> set by the device indicates that the reverse data is available

33-35	Ground	N/A	GND	Ground
36	No Defined	N/A	N/A	

## 4. MECHANISM

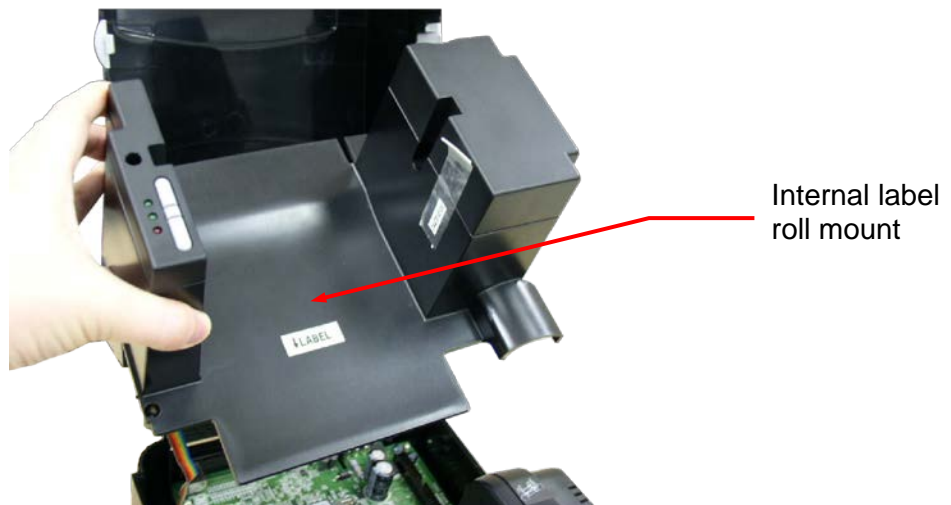
### 4.1 Mainboard Replacement

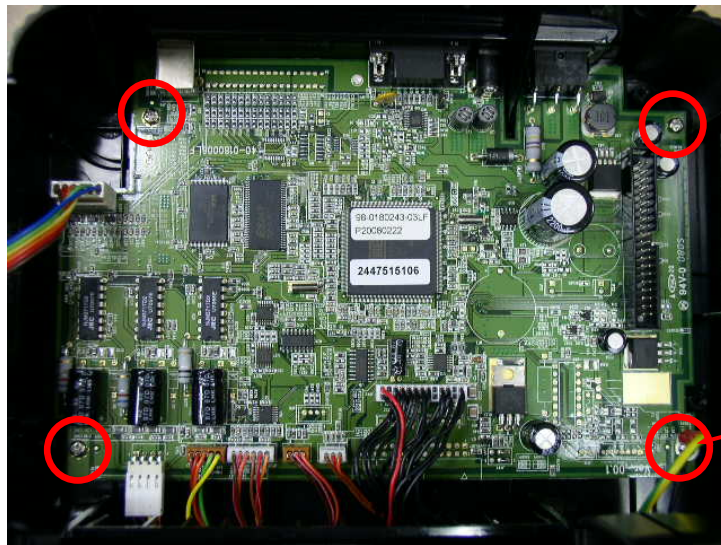
1. Turn off the printer power.
2. Remove the power cord and RS-232 and/or USB port cable.
3. Open the top cover of the printer.
4. Remove the four screws of the internal label roll mount.



**Remove screws of the label roll mount**

5. Move the mechanism about 5 mm in the label feed direction.
6. Take out the internal label roll mount.





Screw with  
Ground Wire

7. Remove all connectors on the main board.
8. Remove the screw of ground wire on the main board.
9. Remove the rest three screws on the mainboard.
10. Replace the mainboard.
11. Reassemble the internal label roll mount in the reverse procedures of the removal.

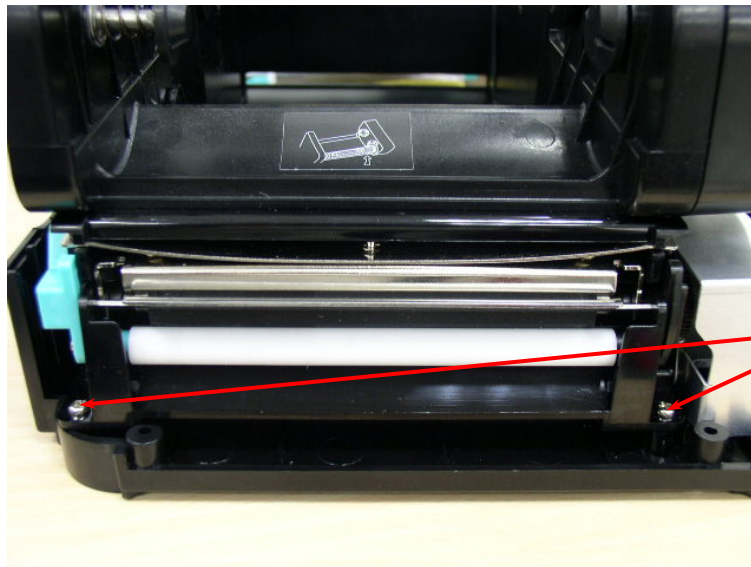


## 4.2 DC Motor Replacement

1. Turn off the printer power.
2. Remove the power cord and RS-232 and/or USB port cable.
3. Open the top cover of the printer.
4. Remove the printer front panel.

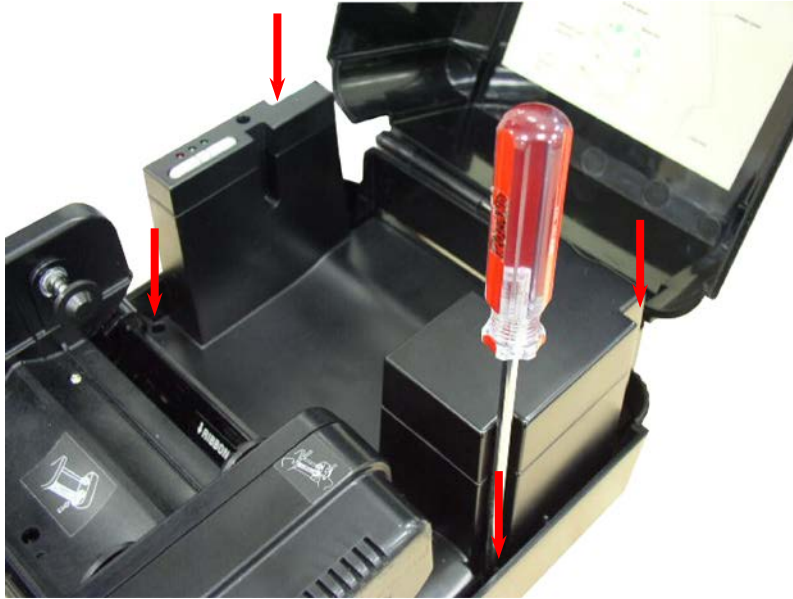


5. Remove the screws in the lower left, lower right corners of the main mechanism.



Screws

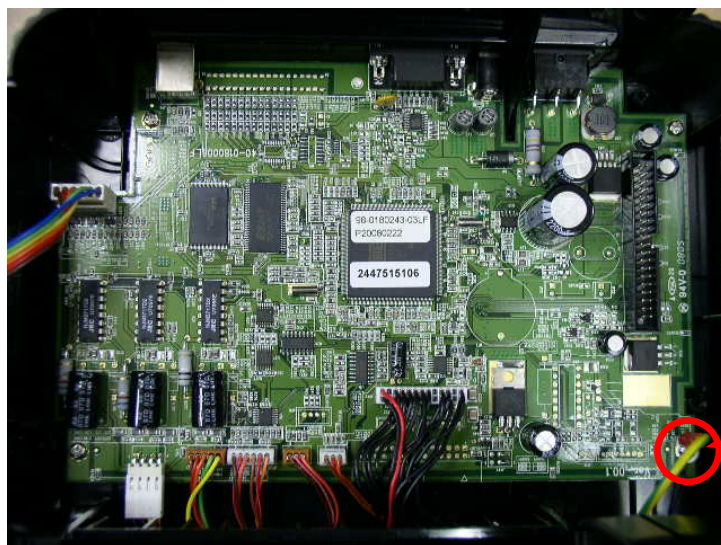
6. Remove all four screws of the internal label roll mount.



7. Move the mechanism in the label feed direction about 5 mm.

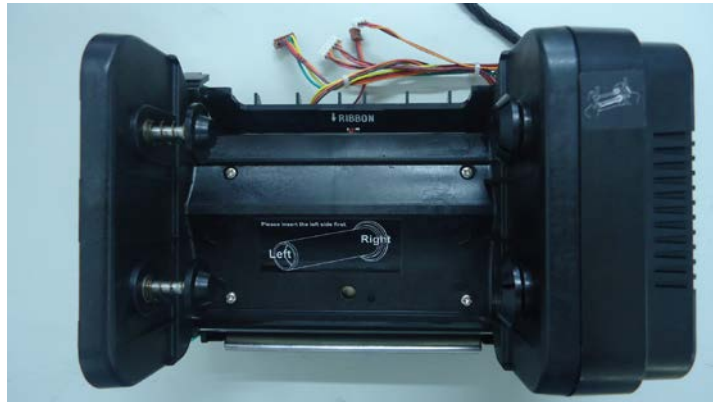
8. Take out the internal label roll mount and remove connectors as below.

9. Remove the screw of ground wire on the mainboard.



Screw with  
Ground Wire

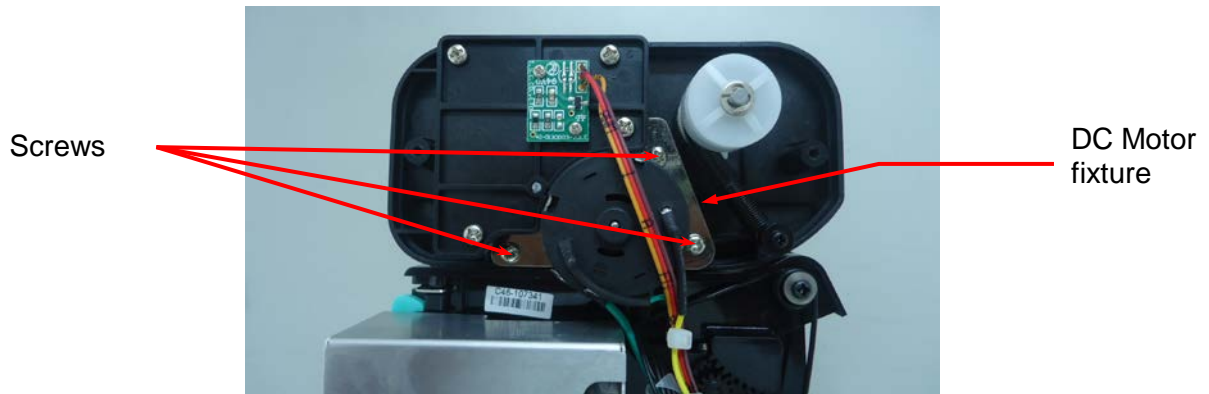
10. Take out the mechanism.



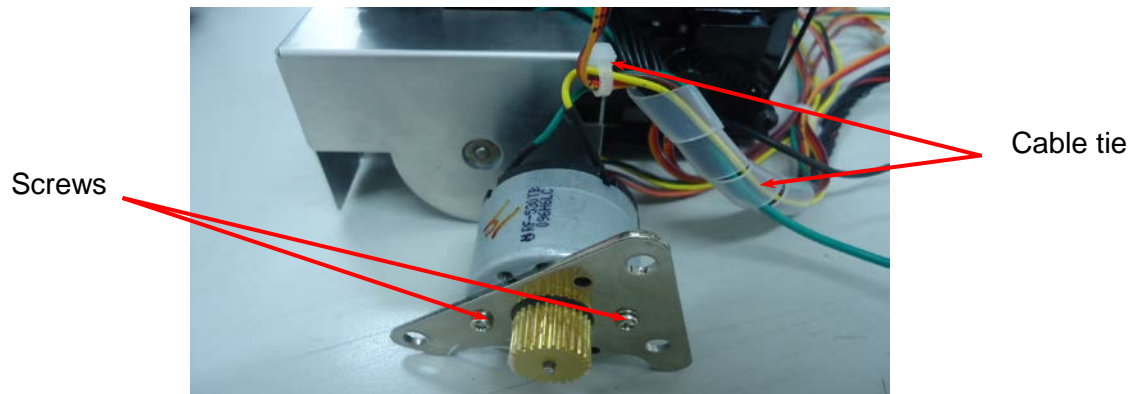
11. Remove the two screws.



12. Remove the three screws on DC motor fixture.



13. Remove the two screws used to fix DC motor on the fixture and remove the cable tie.



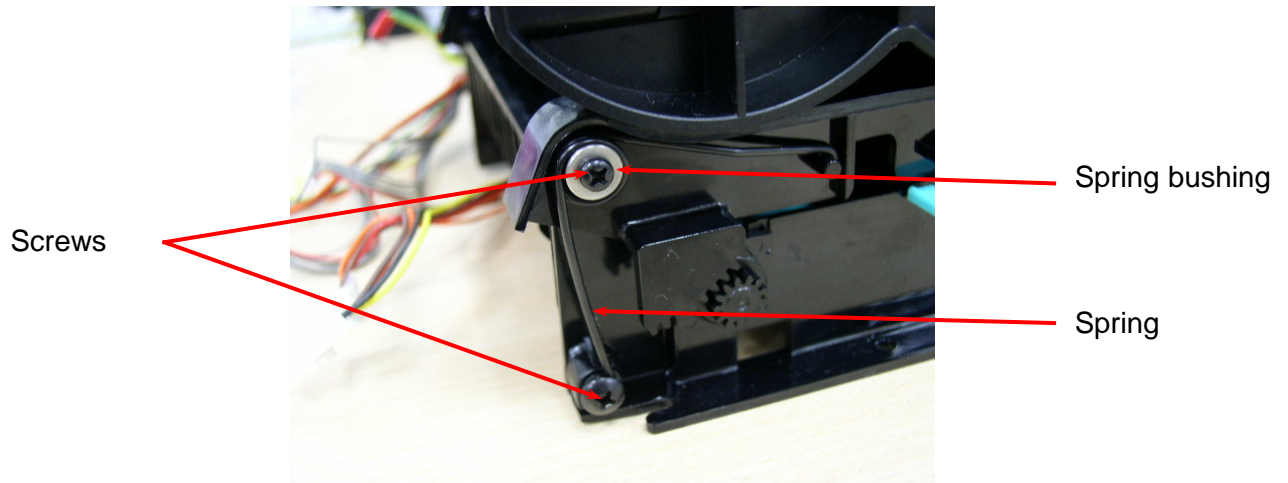
14. Replace the DC motor and pull out the cables in connector JP 37.

***Note: The colors of DC motor wires in connector JP 37 are yellow (outside) and green (inside).***

15. Reassemble the removed parts in the reverse order of the removal.

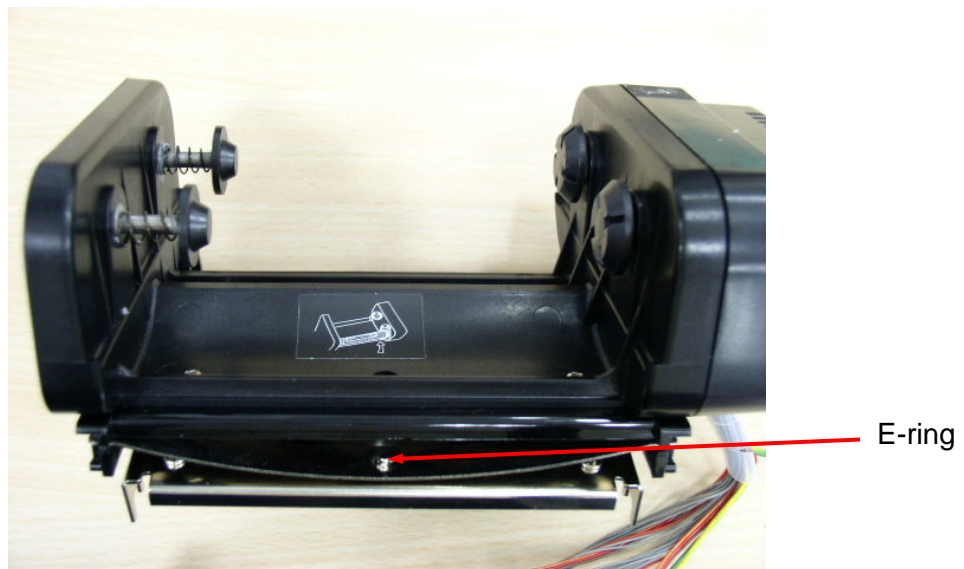
### 4.3 Print Head Replacement

1. Follow the instructions in section 4.2 to take out the mechanism.
2. Open the print carriage.
3. Remove the screws, springs and spring bushing on both sides of the mechanism.

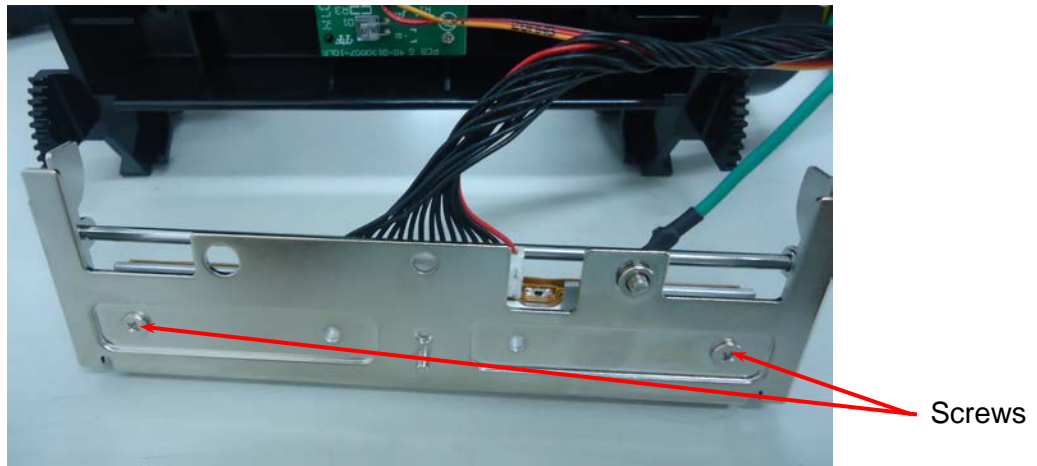


**Note: The left side spring and the right side spring are different in shape. The right side spring has a straight end, when the left side spring has an end that is curved 90 degrees.**

4. The main mechanism is divided into upper mechanism and lower mechanism.
5. Remove the e-ring at the mechanism, as shown.



6. Remove the screws.



7. Disconnect the print head cables.
8. Resplace the print head.
9. Reassemble the removed parts in the reverse order of removal.

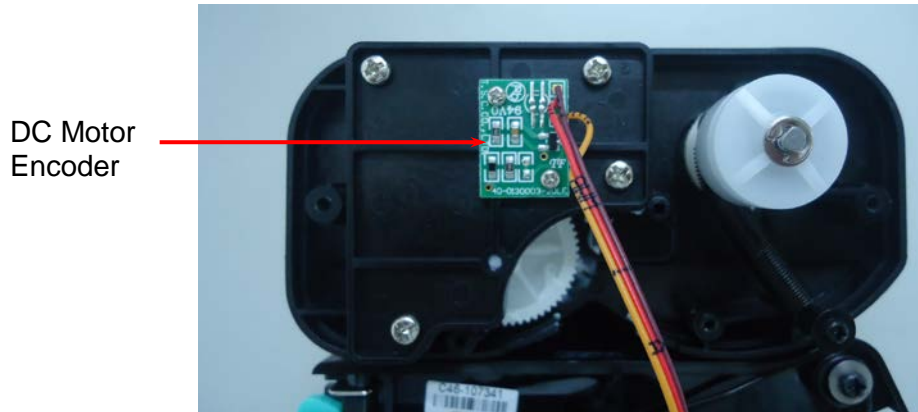
**Note:**

1. Tidy up the cable so that it does not protrude or interfere with the ribbon.
2. Do not touch the elements of the print head.
3. Do not disassemble the print head.

#### 4.4 Ribbon Rewind Spindle Encoder Replacement

The encoder is installed on the gear box of DC motor, and is used to detect if the ribbon is unerringly rewound by the spindle. The encoder is connected to JP6 on the mainboard. Please switch the printer to thermal transfer mode. The multi-meter is used to measure the voltage of Pin2 (+5V). If the voltage changes continuously from 0 to 5 volts DC, the encoder is in condition. Otherwise, please follow the steps below to replace the encoder PCB.

1. Follow directions in section 4.2 to remove DC motor and DC motor fixture.

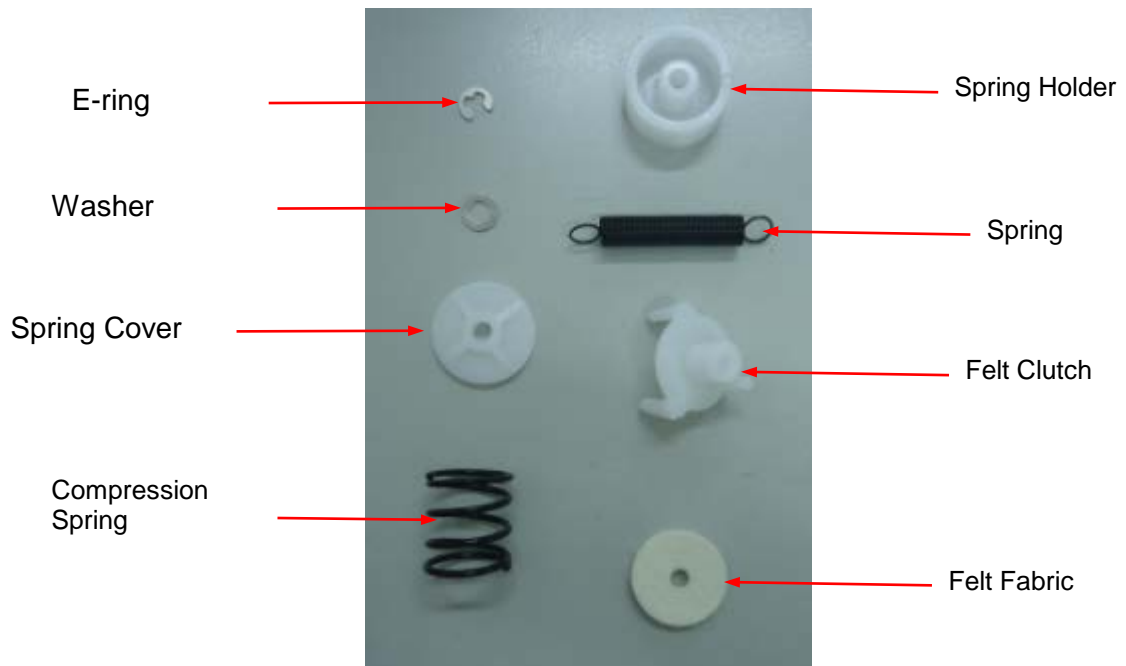


2. Remove the two flat tap screws and cable tie.
3. Replace the Encoder PCB.
4. Reassemble the removed parts in the reverse order of removal.

## 4.5 Felt Fabric Replacement

Felt Fabric is located in the ribbon supply spindle. It is used to tighten the ribbon to prevent it from getting wrinkled during printing. If the ribbon can not be tightened when label back feeds during printing, please replace with a new felt to secure the best printing quality. Follow the steps below to replace the felt fabric.

1. Follow the instructions in section 4.2 to remove DC motor and DC motor fixture.
2. Remove the E-ring and washer on ribbon supply spindle.



**Components of the  
Ribbon Supply Spindle**

3. Remove the spring cover, compression spring and spring holder.
4. Remove the spring, felt clutch and felt fabric.
5. Replace with a new felt.



**Side View of the  
Ribbon Supply Spindle Assembly**



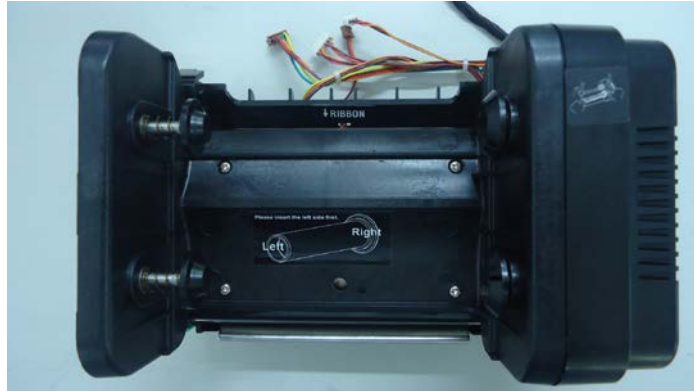
6. Reassemble the removed parts in the reverse order of removal.



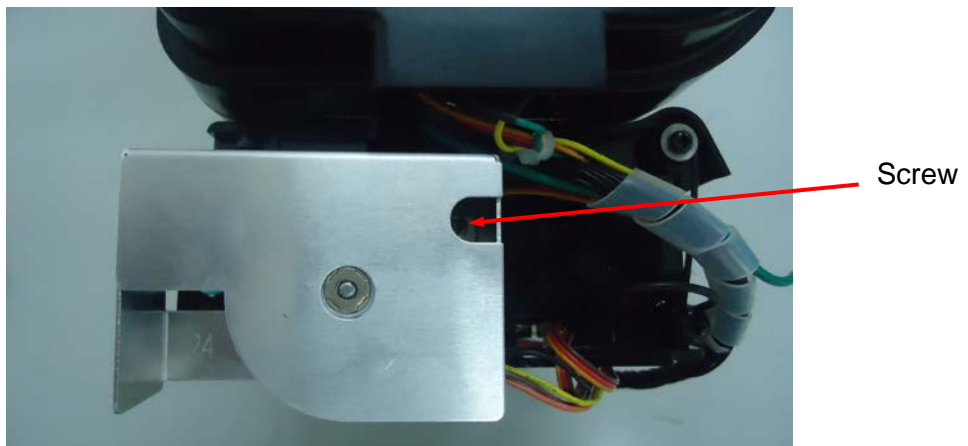
**Front View of the  
Ribbon Supply Spindle**

## 4.6 Stepping Motor Replacement

1. Follow the instructions in Section 4.2 to take out the mechanism.



2. Remove the one screw on stepping motor fixture.

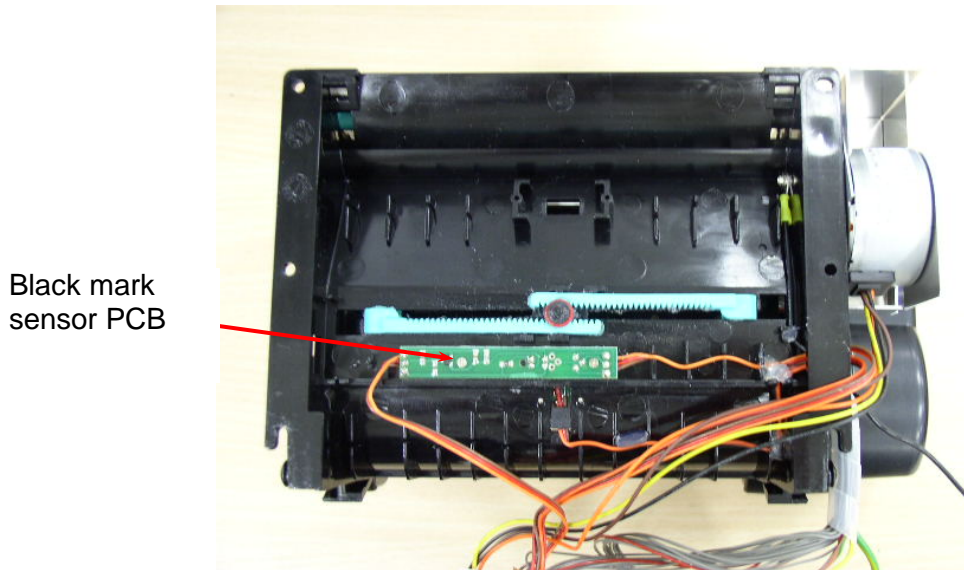


3. Replace the stepping motor and reassemble the removed parts in the reverse order of removal.

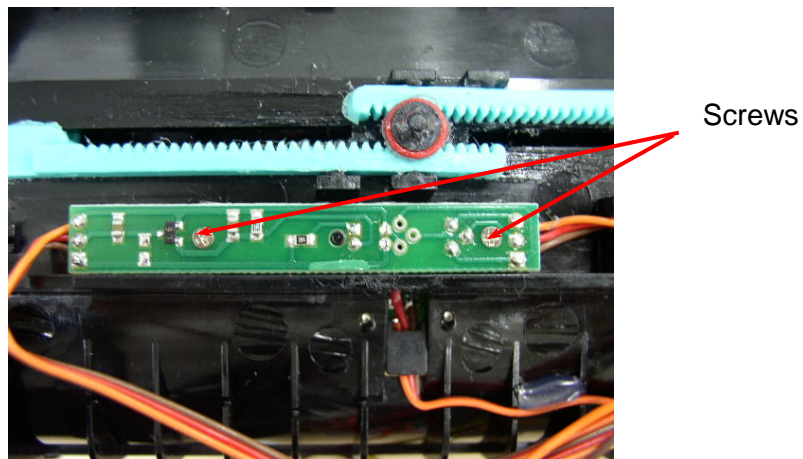
## 4.7 Black Mark Sensor / Gap Sensor (Receiver) Replacement

Black mark sensor is reflection type sensor. It is connected to JP4 (3 pin connector). A multi-meter is used to measure the signal of Pin2 to see if there is voltage variation when black mark is detected. Before conducting the test, please issue the BLINE command first. The printer will switch from gap sensor to black mark sensor. If there is no voltage variation, please follow steps below to replace the black mark sensor / gap sensor (receiver) PCB.

1. Follow the instructions in Section 4.2 to take out the mechanism.



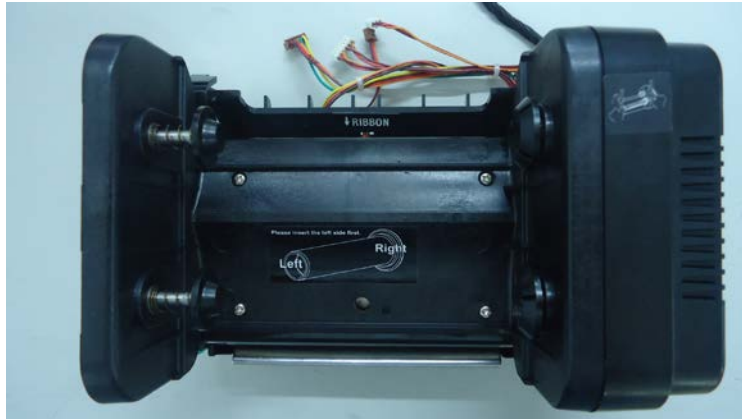
2. Remove two flat tap screws and black mark sensor PCB.



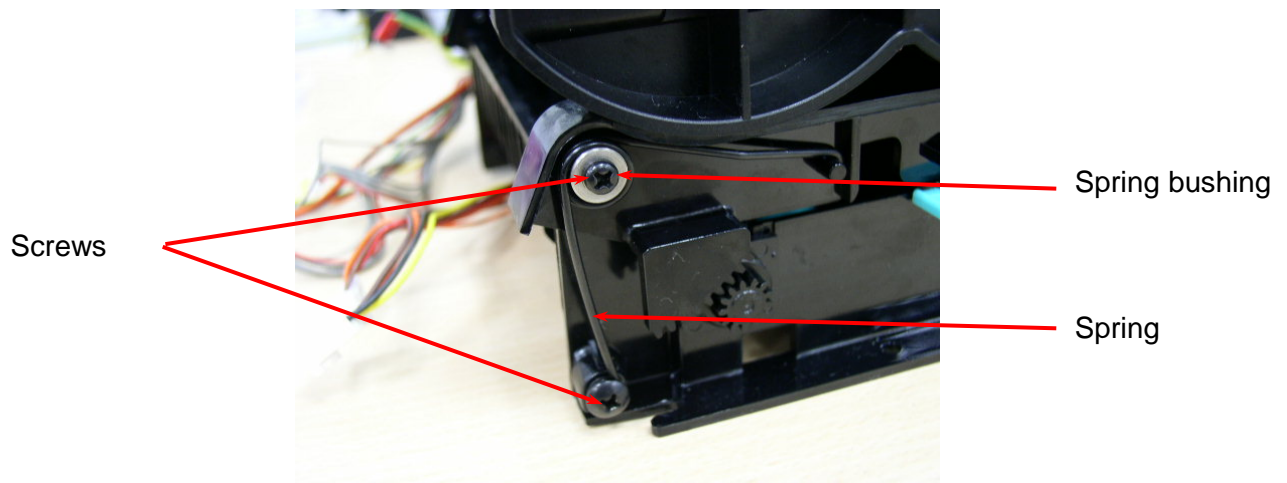
3. Reassemble the removed parts in the reverse order of removal.

## 4.8 Ribbon Sensor (Receiver) Replacement

1. Follow the instructions in Section 4.2 to take out the mechanism.

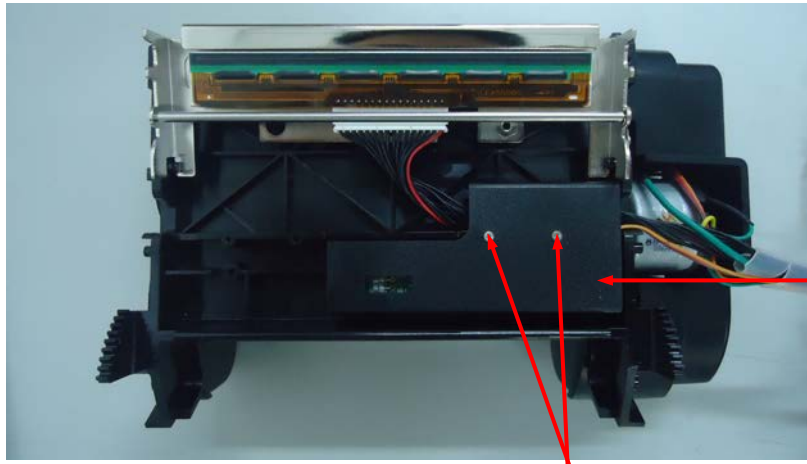


2. Open the print carriage.
3. Remove the screws, springs and spring bushing on both sides of the mechanism.



**Note: The left side spring and the right side spring are different in shape. The right side spring has a straight end, when the left side spring has an end that is curved 90 degrees.**

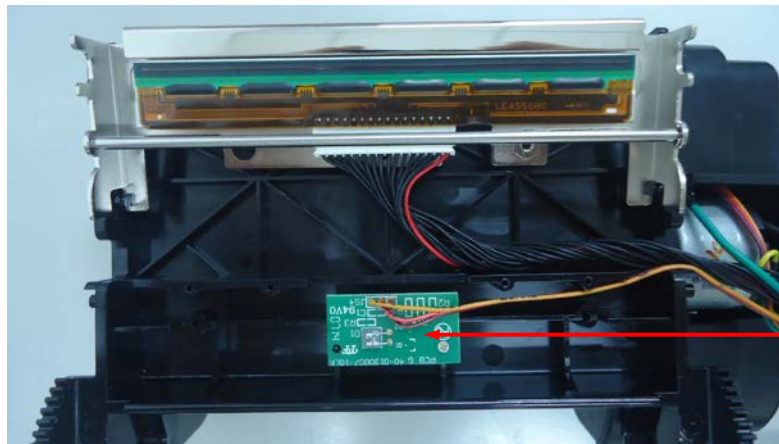
4. The main mechanism is divided into upper mechanism and lower mechanism.
5. And ribbon sensor (receiver) is located in the upper mechanism. Remove the screws on the ribbon sensor cover.



Sensor Cover

Flat Tap Screw

6. Replace with a new ribbon sensor PCB.

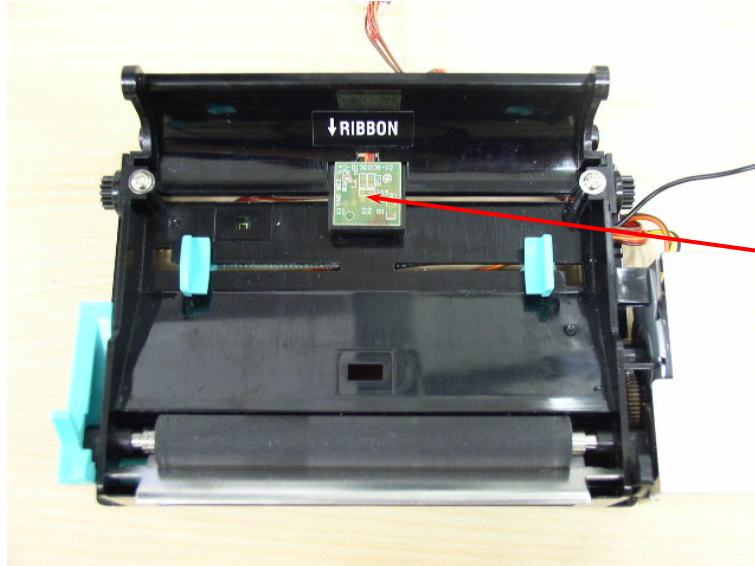


Ribbon sensor PCB

7. Reassemble the removed parts in the reverse order of removal.

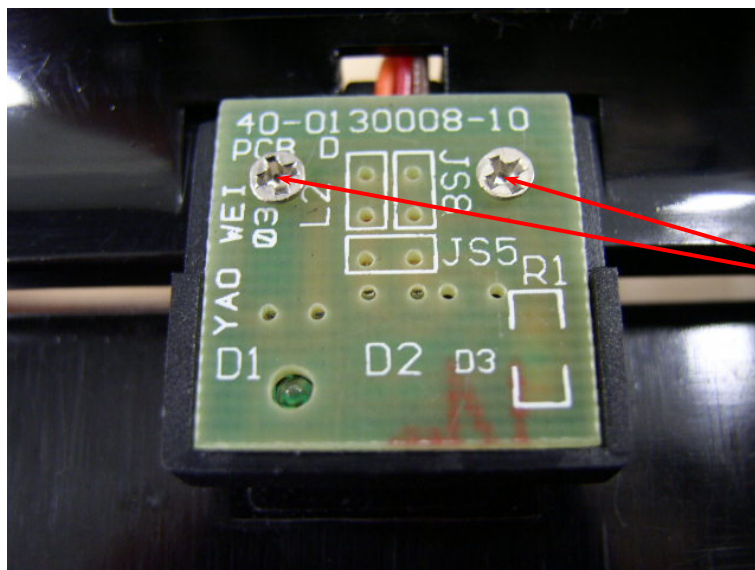
## 4.9 Ribbon Sensor (Transmitter) / Gap Sensor (Transmitter) Replacement

1. Please follow the steps in Section 4.8 to separate the upper mechanism from the lower mechanism.
2. The ribbon sensor (transmitter) is located in the center of the lower mechanism.



Ribbon sensor (transmitter) PCB

3. Remove the two flat tap screws

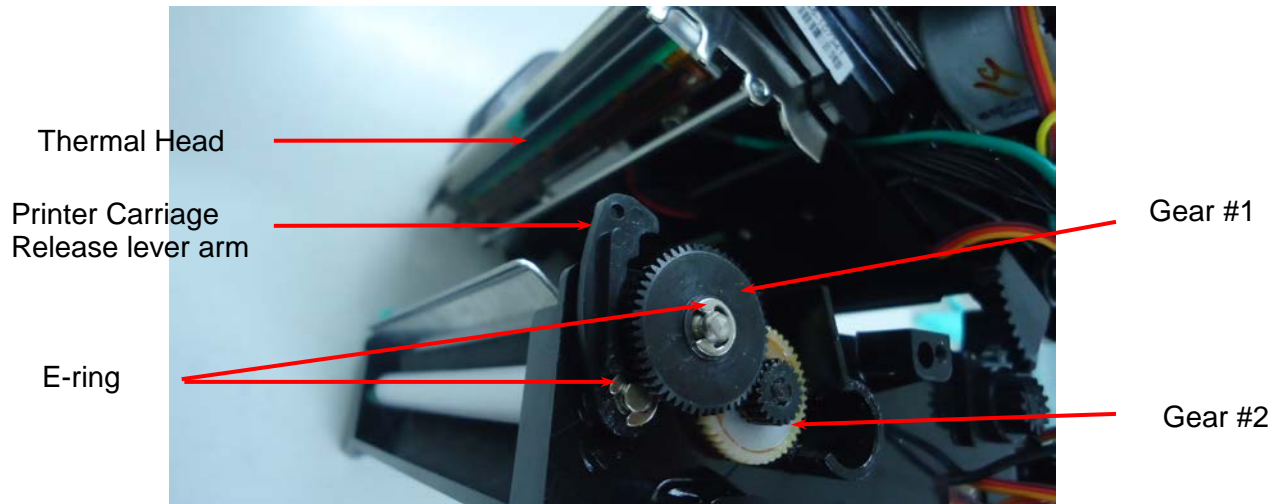


Screws

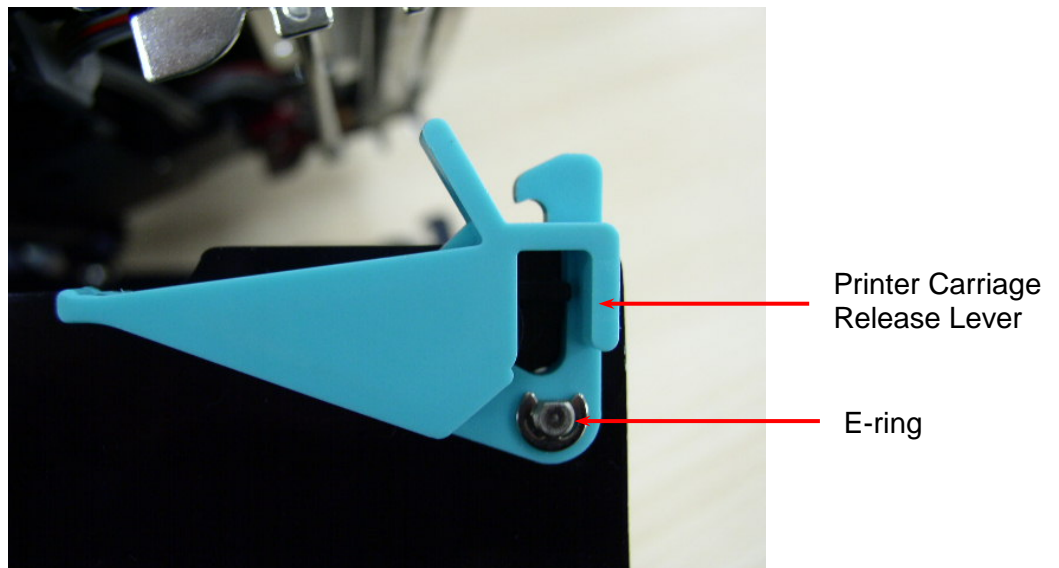
4. Remove the cable tie and sensor PCB.
5. Replace with a new PCB. Reassemble the removed parts in the reverse order of removal.

## 4.10 Platen Replacement

1. Follow the instructions in Section 4.6 to remove the stepping motor fixture and stepping motor.
2. Remove the E-ring and two gears.
3. Remove the E ring and the printer carriage release lever arm.



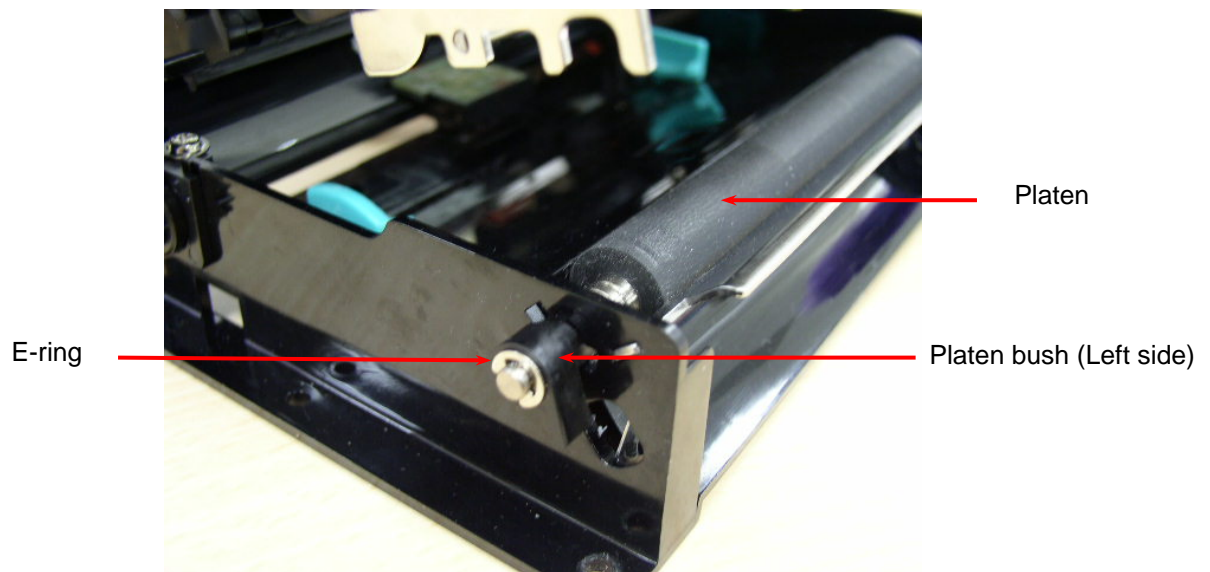
4. Remove the E-ring and the printer carriage release lever on the left side of the mechanism.



5. Remove the teflon tube and stripper rod.



6. Remove the E ring, the right side and left side platen bushes.



7. Move the platen to the right of the mechanism.

8. Replace the platen and reassemble the removed parts in the reverse order of removal.

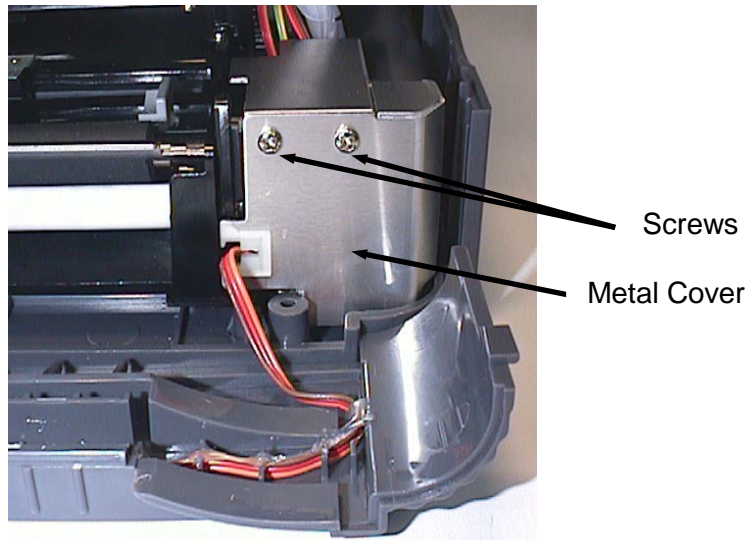


#### 4.11 Cutter Installation (Option / Not available for TTP-243E/244 Pro model)

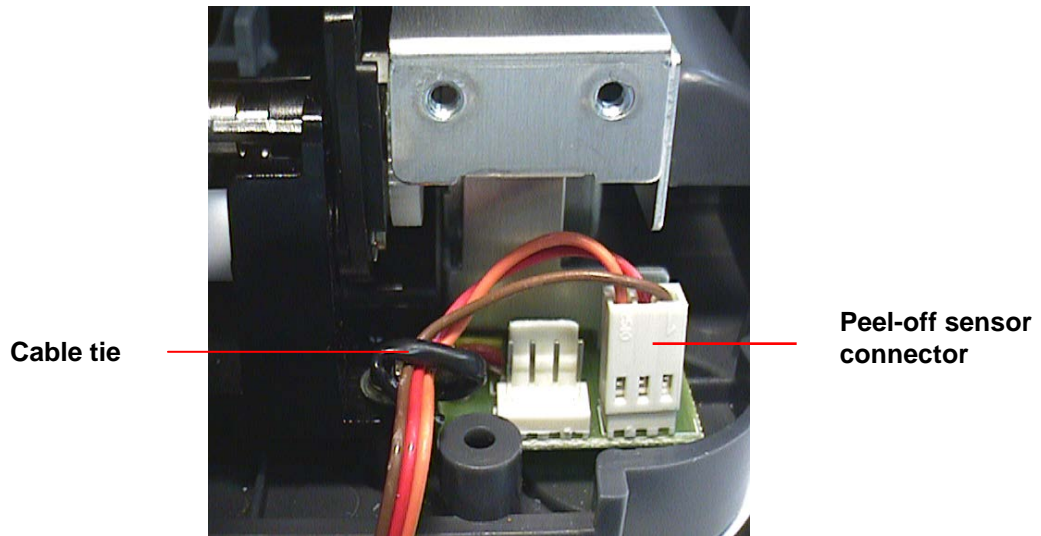
1. Turn off the printer power.
2. Open the top cover of the printer.
3. Remove the printer front panel slowly and carefully.



4. Remove the two screws and the metal cover.

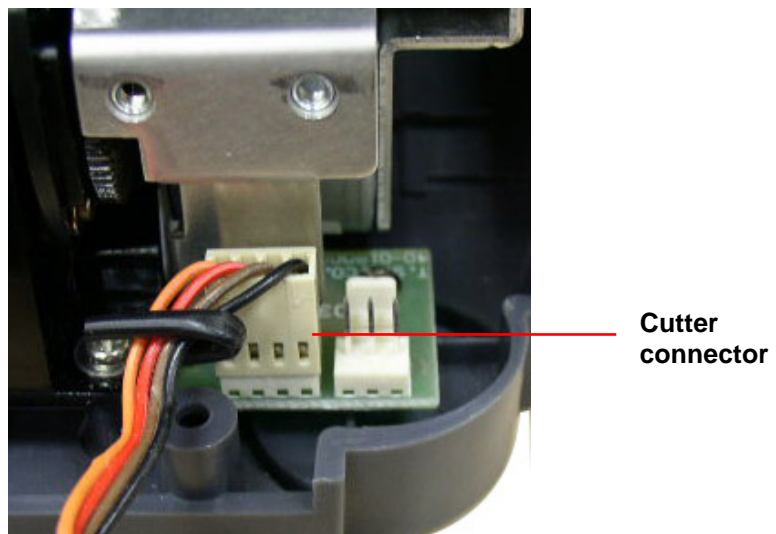


5. Release the cable tie and remove the peel-off sensor connector.

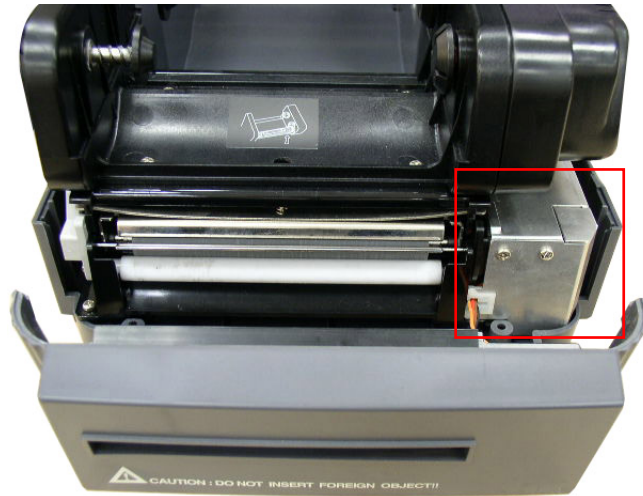


6. Remove the peel-off sensor connector.

7. Connect the cutter module harness connector to the 4-pin white socket on the printer main board. Hook back the cable tie.



8. Replace the metal cover and 2 screws.



9. Place the cutter module into the both sides notches of lower inner cover, then push cutter to lock into the lower inner cover.



**Note:**

- \* Specifications, accessories, parts and programs are subject to change without notice.
- \* Except for the linerless cutter, all regular/ heavy duty/ care label cutters DO NOT cut on media with glue. For more details, please refer to the cutter specification in the user's manual.

## 5. TROUBLE SHOOTING

### 5.1 Trouble Shooting

Problems	Solutions
1. Ribbon does not advance.	Check the printing mode setting and reset the printer.
2. Poor print quality.	Clean the print head. Adjust the print density setting.
3. Only prints diagonal pattern in the self-test.	Ribbon and paper are incompatible. Use a different type of ribbon.
4. Power indicator light does not illuminate.	Check the connection of serial port cable.
5. On-line indicator light does not to illuminate.	Check the DIP switch setting and reset the printer. Check that power cord is properly connected.
6. Error indicator remains illuminated.	Out of paper or out of ribbon.  Check the DIP switch setting  Check the paper core, make sure it is installed on the ribbon rewind spindle.  Press the FEED key. The error message will be printed out on the print media or sent out through RS-232 port.  If there is no problem with direct thermal printing, but error occurs in thermal transfer printing. Please check the encoder of the DC motor.

## **5.2 Calibrate the Gap Register**

Install the label.

Turn on the printer power while pressing the PAUSE button. The printer will calibrate the transparency of the backing paper and adjust the gap register.

## **5.3 Self-test**

Install the label.

Turn on the printer power while pressing the FEED button, the printer will:

- Print head checking pattern.

- Calibrate the label length.

- Print internal settings.

- Initiate self-test.

- Enter dump mode.

## **5.4 Ram Clear**

Press the PAUSE and FEED button simultaneously for more than 3 seconds. The printer will clear the memory and reset the printer.

Be sure to calibrate the gap register with blank label before printing.

## **5.5 Diagnosis Operation Procedure**

When the power is turned on without any button pressed, self diagnosis is performed automatically to test the available memory. If any error occurs during this period, the ERR light will flash.

Do the self test and inspect the test pattern to check if the thermal head is available.

## 5.6 Testing Sensors

### A. Checking Ribbon Sensor

Switch the multimeter to the DC gear. Connect the black wire to DC GND, and the red wire to PIN2 of JP18.

1. When ribbon is detected between TX and RX of the ribbon sensor, the measured voltage should be 5 Vdc.
2. When ribbon is not detected between TX and RX of the ribbon sensor, the measured voltage should be 0 Vdc.

The ribbon sensor is normal if the checking complies with the two cases above. Or else, the ribbon sensor is out of order.

### B. Checking DC Motor Encoder Sensor

Switch the multimeter to the DC gear. Connect the black wire to DC GND, and the red wire to PIN4 of U35.

1. When gap of the gear box is detected by the DC motor encoder sensor, the measured voltage should be 5 Vdc.
2. When gap of the gear box is not detected by the DC motor encoder sensor, the measured voltage should be 0 Vdc.

The DC motor encoder sensor is normal if the checking complies with the two cases above. Or else, the DC motor encoder sensor is out of order.

### C. Checking Black Line Sensor

Switch the multimeter to the DC gear. Connect the black wire to DC GND, and the red wire to PIN2 of U2. Load black line label on the printer.

1. When black line is detected by the black line sensor, the measured voltage should be 3 Vdc.
2. When black line is not detected by the black line sensor, the measured voltage should be 0 Vdc.

The black line sensor is normal if the checking complies with the two cases above. Or else, the black line sensor is out of order.

## 5.7 Cleaning the Print Head

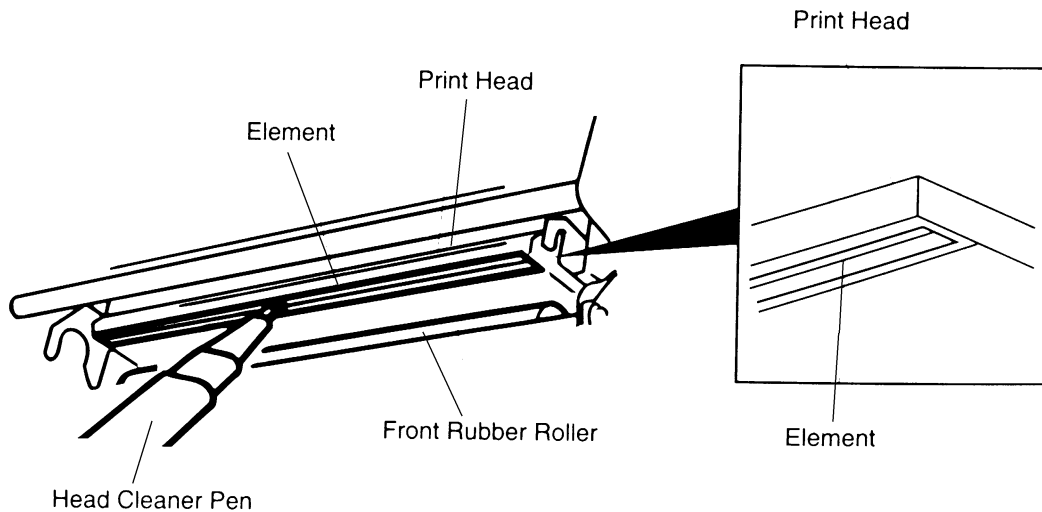
The printer should be cleaned regularly to retain high quality and optimum performance. The greater the usage of the printer, the more frequent the cleaning.

Always turn off the printer before cleaning the print head. Allow the printhead to cool for a minimum of one minute.

1. Open the printer cover.
2. Open the printer carriage by pulling up the release lever to the left of the front rubber roller.
3. Remove the ribbon and label.
4. Clean the print head element with a head cleaner pen or use a cotton swab and 100% ethanol to clean the print head surface.

Note:

- \* Do not touch printer head by hand. If you touch it careless, please use ethanol to clean it.
- \* It's industry alcohol. Please do not use regular alcohol, which may damage the printer head.



## UPDATE HISTORY

<b>Date</b>	<b>Content</b>	<b>Editor</b>
2018/8/15	<ul style="list-style-type: none"> <li>▪ Add TTP-243 Pro series models</li> <li>▪ Update the SEPC</li> <li>▪ Add the section 4.11 for Cutter Installation</li> <li>▪ Add the section 5.7 for Cleaning the Print Head</li> </ul>	Camille





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