Desktop Barcode Printer

DH220 Series

Direct Thermal

Series Models

DH220/ DH320

DH220T/ DH320T

DH220THC/ DH320THC

Service Manual

www.tscprinters.com

Copyright Information

Contents

1 Introduction

Thank you very much for purchasing TSC bar code printer.

The DH220 series of thermal desktop barcode printers support more printing applications than any other printer in its class. The four-inch wide DH220 series can address everything from higher volume 4x6 shipping labels, higher resolution product marking and graphic solutions, to high resolution labels used in electronics marking applications.

The DH220 series features a user-friendly spring-loaded center-biased clamshell design for easy drop-in media loading of 5-inch rolls of media. The printer construction features a rugged double-wall design that is stronger and more durable than other thermal transfer mechanisms on the market. Its strong motor is powerful enough to handle a 300-meter-long ribbon.

As with all TSC printers, the DH220 Series features the TSPL-EZD printer-control language, which is fully compatible with other TSC printer languages, while supporting TPLE (Translation Printer Language Eltron®), TPLZ (Translation Printer Language Zebra®) and TPLD (Translation Printer Language Datamax®). The languages automatically decipher and translate the format of each label as it is sent to the printer. TSPL-EZD also features internal scalable True Type fonts (based on the Monotype® font engine), which are typically found only in more expensive printers.

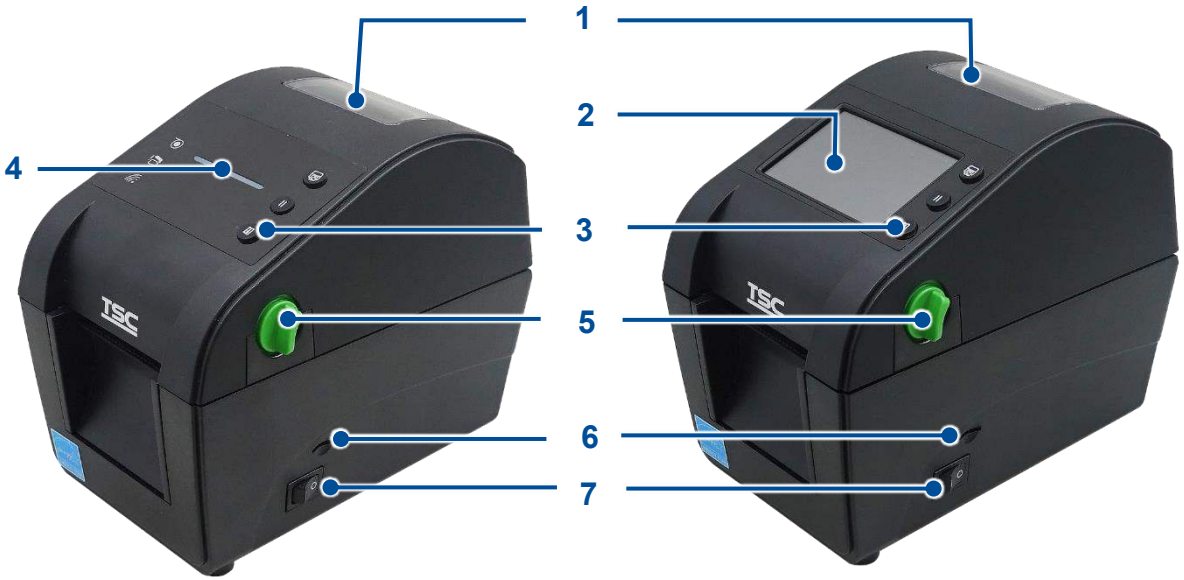
This document provides an easy reference for operating this printer. TSC printers include the Windows labeling software for creating your label template. For system integration, the TSPL/TSPL2 printer programming manual or SDKs can be found on TSC website at: https://www.tscprinters.com.

1.1 Printer Features

Front View

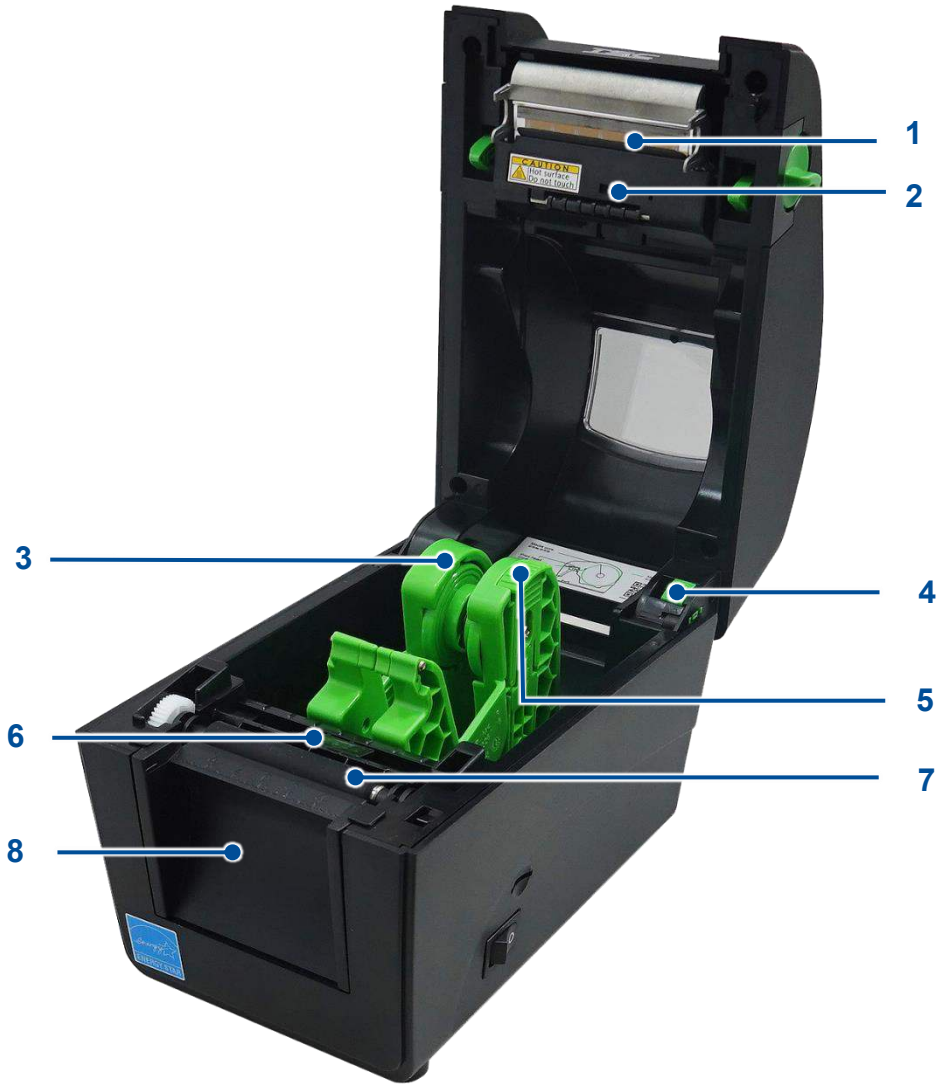
DH220 Series

DH220T Series



1. Media viewer window
2. LCD
3. Operating buttons
4. LED
5. Cover lever
6. microSD card slot
7. Power switch

Interior View



1. Printhead
2. Upper black mark sensor
3. Media holder
4. Media cover holder lock
5. Media holder lock
6. Black mark sensor
7. Platen roller
8. Lower front panel

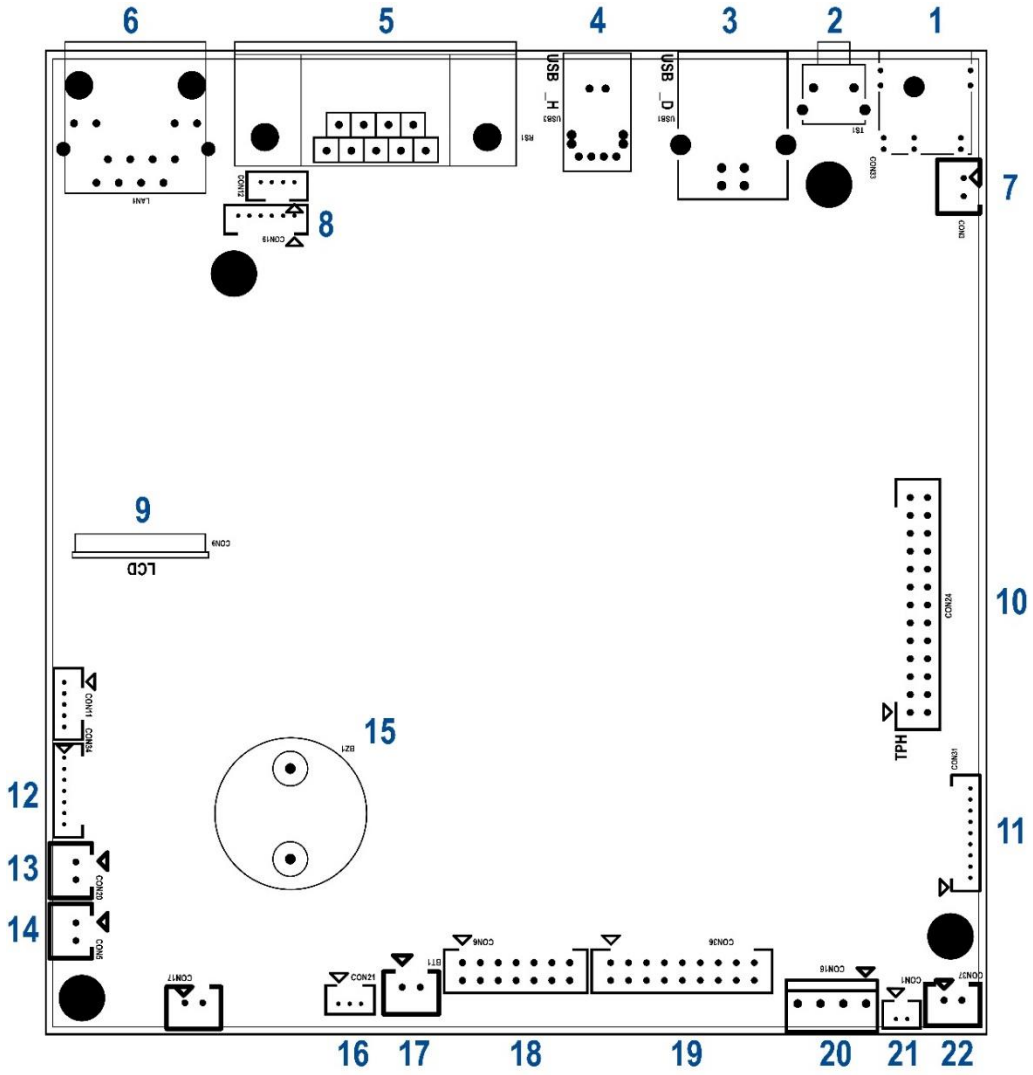
Rear View

1. Power Jack
2. USB interface
3. USB host
4. RS-232C interface
5. Ethernet LAN port

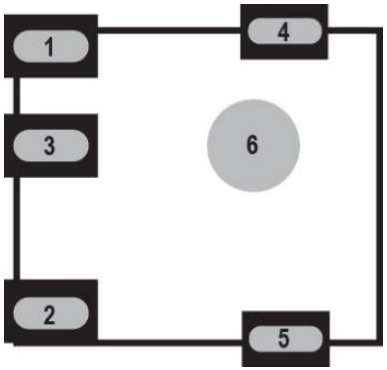
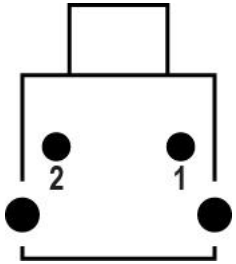
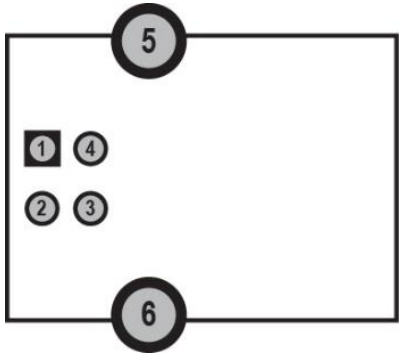
2 Electronics

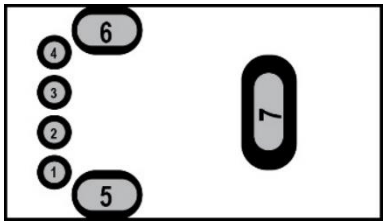
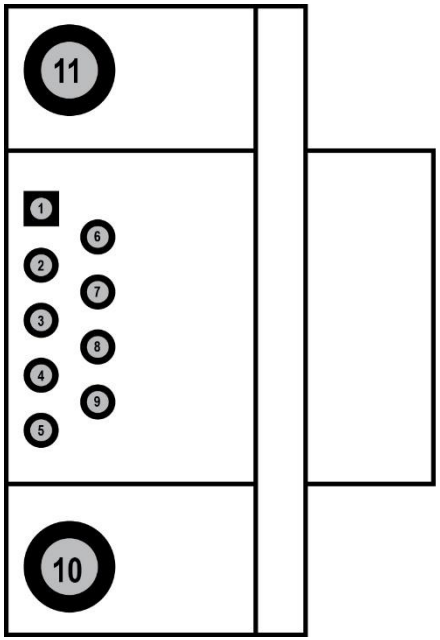
2.1 Summary of the Board Connectors

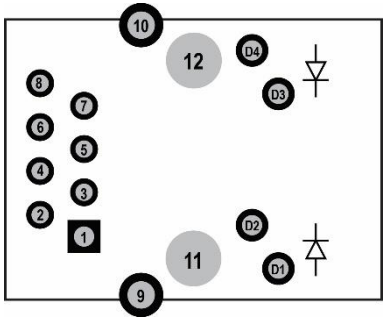
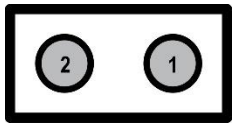
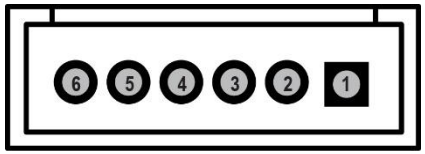
Main board

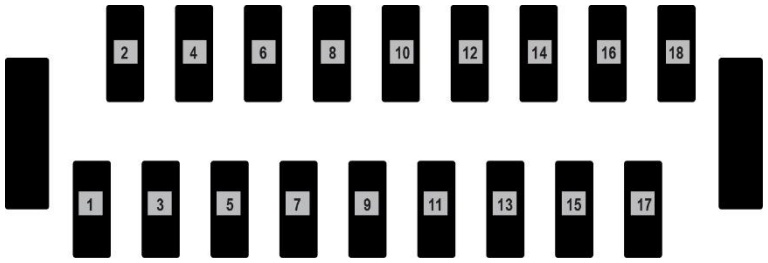


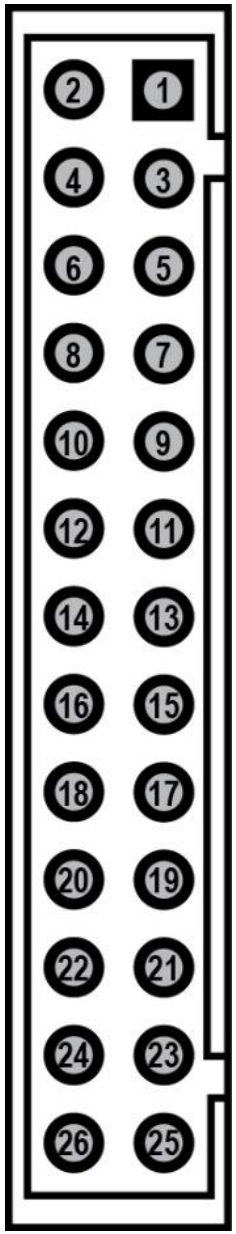
1. Power supply output (24V DC) connector
2. System reset switch
3. USB device connector
4. USB host connector
5. RS-232C connector
6. Ethernet connector
7. ESD cable connector
8. Panel touch and key connector
9. LCD connector
10. TPH connector
11. Micro SD card connector
12. NFC connector
13. Black mark sensor connector for print side (transmitter)
14. Black mark sensor connector for print side (receiver)
15. Buzzer
16. Black mark sensor connector for back side
17. Coin battery connector
18. Cutter / Peeler / RFID connector
19. Wi-Fi & Bluetooth connector
20. Stepping motor connector
21. Head open connector
22. Power switch connector

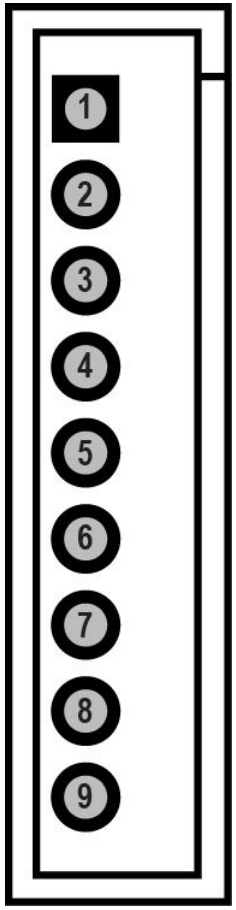
<table>
<tr><th>No.</th><th>Function</th><th>Pin Definition</th></tr>
<tr><td rowspan="2">1</td><td colspan="2">Power supply output (24V DC) connector</td></tr>
<tr><td> 
</td><td>
<table>
<tr><th>No.</th><th>Definition</th></tr>
<tr><td>1</td><td>DCIN 24V</td></tr>
<tr><td>2</td><td>GND</td></tr>
<tr><td>3</td><td>GND</td></tr>
<tr><td>4</td><td>GND</td></tr>
<tr><td>5</td><td>GND</td></tr>
</table>
</td></tr>
<tr><td rowspan="2">2</td><td colspan="2">System reset switch (for resetting RTC or when printer hangs)</td></tr>
<tr><td> 
</td><td>
<table>
<tr><th>No.</th><th>Definition</th></tr>
<tr><td>1</td><td>Vbattery</td></tr>
<tr><td>2</td><td>VDDBU reset signal</td></tr>
</table>
</td></tr>
<tr><td rowspan="2">3</td><td colspan="2">USB device connector</td></tr>
<tr><td> 
</td><td>
<table>
<tr><th>No.</th><th>Definition</th></tr>
<tr><td>1</td><td>NC</td></tr>
<tr><td>2</td><td>D-</td></tr>
<tr><td>3</td><td>D+</td></tr>
<tr><td>4</td><td>GND</td></tr>
</table>
</td></tr>
</table>

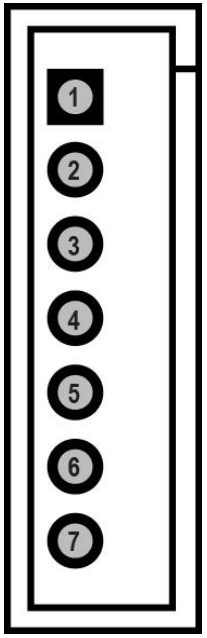
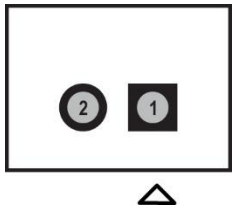
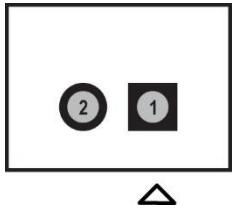
<table>
<tr><th>No.</th><th>Function</th><th>Pin Definition</th></tr>
<tr><td rowspan="2">4</td><td colspan="2">USB host connector</td></tr>
<tr><td> 
</td><td>
<table>
<tr><th>No.</th><th>Definition</th></tr>
<tr><td>1</td><td>VBUS 5V</td></tr>
<tr><td>2</td><td>D-</td></tr>
<tr><td>3</td><td>D+</td></tr>
<tr><td>4</td><td>GND</td></tr>
</table>
</td></tr>
<tr><td rowspan="2">5</td><td colspan="2">RS-232C connector</td></tr>
<tr><td> 
</td><td>
<table>
<tr><th>No.</th><th>Definition</th></tr>
<tr><td>1</td><td>VBUS 5V</td></tr>
<tr><td>2</td><td>TXD</td></tr>
<tr><td>3</td><td>RXD</td></tr>
<tr><td>4</td><td>CTS</td></tr>
<tr><td>5</td><td>GND</td></tr>
<tr><td>6</td><td>RTS</td></tr>
<tr><td>7</td><td>NC</td></tr>
<tr><td>8</td><td>RTS</td></tr>
<tr><td>9</td><td>NC</td></tr>
</table>
</td></tr>
</table>

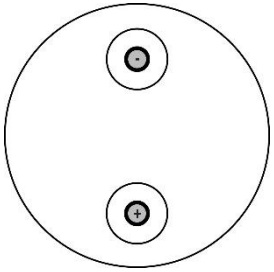
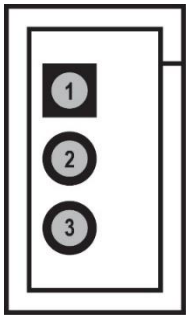
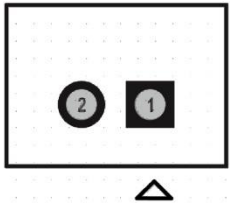
<table>
<tr><th>No.</th><th>Function</th><th>Pin Definition</th></tr>
<tr><td rowspan="2">6</td><td>Ethernet connector</td><td></td></tr>
<tr><td> 
</td><td>
<table>
<tr><th>No.</th><th>Definition</th></tr>
<tr><td>1</td><td>TX+</td></tr>
<tr><td>2</td><td>TX-</td></tr>
<tr><td>3</td><td>RX+</td></tr>
<tr><td>4</td><td>NC</td></tr>
<tr><td>5</td><td>NC</td></tr>
<tr><td>6</td><td>RX-</td></tr>
<tr><td>7</td><td>NC</td></tr>
<tr><td>8</td><td>FGND</td></tr>
<tr><td>D1</td><td>3.3V</td></tr>
<tr><td>D2</td><td>Green LED Control</td></tr>
<tr><td>D3</td><td>Yellow LED Control</td></tr>
<tr><td>D4</td><td>3.3V</td></tr>
</table>
</td></tr>
<tr><td rowspan="2">7</td><td>ESD cable connector</td><td></td></tr>
<tr><td> 
</td><td>
<table>
<tr><th>No.</th><th>Definition</th></tr>
<tr><td>1</td><td>GND</td></tr>
<tr><td>2</td><td>GND</td></tr>
</table>
</td></tr>
<tr><td rowspan="2">8</td><td>Panel touch and key connector</td><td></td></tr>
<tr><td> 
</td><td>
<table>
<tr><th>No.</th><th>Definition</th></tr>
<tr><td>1</td><td>3.3V</td></tr>
<tr><td>2</td><td>KEY_SDA</td></tr>
<tr><td>3</td><td>KEY_SCL</td></tr>
<tr><td>4</td><td>KEY_INT</td></tr>
<tr><td>5</td><td>GND</td></tr>
<tr><td>6</td><td>TOUCH_INT</td></tr>
</table>
</td></tr>
</table>

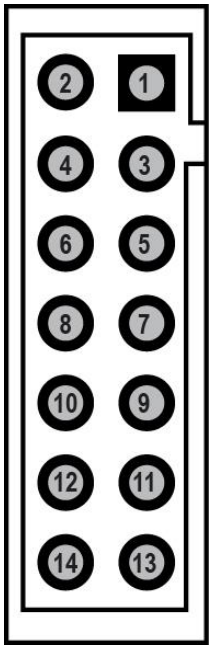
<table>
<tr><th>No.</th><th>Function</th><th>Pin Definition</th></tr>
<tr><td rowspan="2">9</td><td colspan="2">LCD connector</td></tr>
<tr><td> 
</td><td>
<table>
<tr><th>No.</th><th>Definition</th></tr>
<tr><td>1</td><td>3.3V</td></tr>
<tr><td>2</td><td>3.3V</td></tr>
<tr><td>3</td><td>GND</td></tr>
<tr><td>4</td><td>3.3V</td></tr>
<tr><td>5</td><td>LCD_BL</td></tr>
<tr><td>6</td><td>LCD_D/CX</td></tr>
<tr><td>7</td><td>LCD_D0</td></tr>
<tr><td>8</td><td>LCD_D1</td></tr>
<tr><td>9</td><td>LCD_D2</td></tr>
<tr><td>10</td><td>LCD_D3</td></tr>
<tr><td>11</td><td>LCD_D4</td></tr>
<tr><td>12</td><td>LCD_D5</td></tr>
<tr><td>13</td><td>LCD_D6</td></tr>
<tr><td>14</td><td>LCD_D7</td></tr>
<tr><td>15</td><td>LCD_NCS</td></tr>
<tr><td>16</td><td>LCD_RESET</td></tr>
<tr><td>17</td><td>LCD_WE</td></tr>
<tr><td>18</td><td>GND</td></tr>
</table>
</td></tr>
</table>

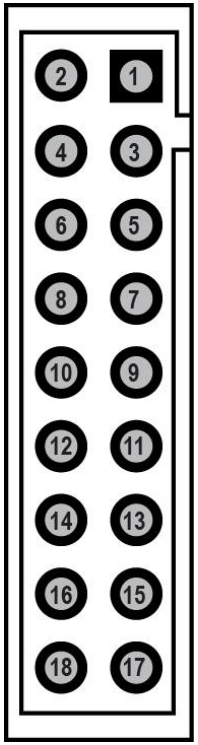
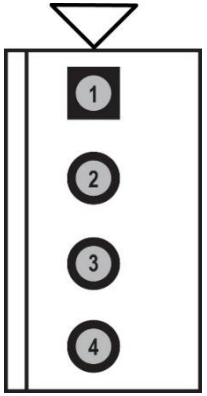
<table>
<tr><th>No.</th><th>Function</th><th>Pin Definition</th></tr>
<tr><td rowspan="2">10</td><td colspan="2">TPH connector</td></tr>
<tr><td> 
</td><td>
<table>
<tr><th>No.</th><th>Definition</th></tr>
<tr><td>1</td><td>TPH 24V</td></tr>
<tr><td>2</td><td>TPH 24V</td></tr>
<tr><td>3</td><td>TPH 24V</td></tr>
<tr><td>4</td><td>TPH 24V</td></tr>
<tr><td>5</td><td>GND</td></tr>
<tr><td>6</td><td>GND</td></tr>
<tr><td>7</td><td>Strobe2</td></tr>
<tr><td>8</td><td>Data2</td></tr>
<tr><td>9</td><td>TPH ID</td></tr>
<tr><td>10</td><td>Temperature sensor</td></tr>
<tr><td>11</td><td>5V</td></tr>
<tr><td>12</td><td>GND</td></tr>
<tr><td>13</td><td>Strobe1</td></tr>
<tr><td>14</td><td>GND</td></tr>
<tr><td>15</td><td>Clock</td></tr>
<tr><td>16</td><td>GND</td></tr>
<tr><td>17</td><td>GND</td></tr>
<tr><td>18</td><td>GND</td></tr>
<tr><td>19</td><td>Data1</td></tr>
<tr><td>20</td><td>Latch</td></tr>
<tr><td>21</td><td>GND</td></tr>
<tr><td>22</td><td>GND</td></tr>
<tr><td>23</td><td>TPH 24V</td></tr>
<tr><td>24</td><td>TPH 24V</td></tr>
<tr><td>25</td><td>TPH 24V</td></tr>
<tr><td>26</td><td>TPH 24V</td></tr>
</table>
</td></tr>
</table>

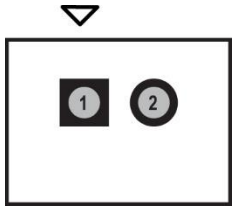
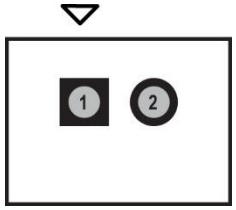
<table>
<tr><th>No.</th><th>Function</th><th>Pin Definition</th></tr>
<tr><td rowspan="2">11</td><td colspan="2">Micro SD card connector</td></tr>
<tr><td> 
</td><td>
<table>
<tr><th>No.</th><th>Definition</th></tr>
<tr><td>1</td><td>Micro_SD_DATA1</td></tr>
<tr><td>2</td><td>Micro_SD_DATA0</td></tr>
<tr><td>3</td><td>GND</td></tr>
<tr><td>4</td><td>Micro_SD_CLK</td></tr>
<tr><td>5</td><td>3.3V</td></tr>
<tr><td>6</td><td>Micro_SD_CMD</td></tr>
<tr><td>7</td><td>Micro_SD_DATA3</td></tr>
<tr><td>8</td><td>Micro_SD_DATA2</td></tr>
<tr><td>9</td><td>Micro_SD_DT</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>No.</th><th>Function</th><th>Pin Definition</th></tr>
<tr><td rowspan="2">12</td><td>NFC connector</td><td></td></tr>
<tr><td> 
</td><td>
<table>
<tr><th>No.</th><th>Definition</th></tr>
<tr><td>1</td><td>3.3V</td></tr>
<tr><td>2</td><td>NFC_TWD</td></tr>
<tr><td>3</td><td>NFC_TWCK</td></tr>
<tr><td>4</td><td>GND</td></tr>
<tr><td>5</td><td>NFC_RTS</td></tr>
<tr><td>6</td><td>NFC_CTS</td></tr>
<tr><td>7</td><td>NFC_UPDATE</td></tr>
</table>
</td></tr>
<tr><td rowspan="2">13</td><td>Black mark sensor connector for print side (transmitter)</td><td></td></tr>
<tr><td> 
</td><td>
<table>
<tr><th>No.</th><th>Definition</th></tr>
<tr><td>1</td><td>3.3V</td></tr>
<tr><td>2</td><td>Black Mark Sensor for Print Side (transmitter)</td></tr>
</table>
</td></tr>
<tr><td rowspan="2">14</td><td>Black mark sensor connector for print side (receiver)</td><td></td></tr>
<tr><td> 
</td><td>
<table>
<tr><th>No.</th><th>Definition</th></tr>
<tr><td>1</td><td>NC</td></tr>
<tr><td>2</td><td>Black Mark Sensor for Print Side (receiver)</td></tr>
</table>
</td></tr>
</table>

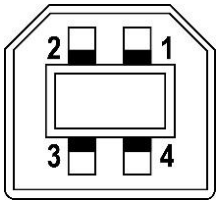
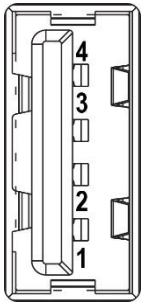
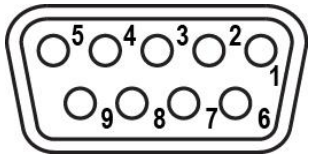
<table>
<tr><th>No.</th><th>Function</th><th>Pin Definition</th></tr>
<tr><td rowspan="2">15</td><td colspan="2">Buzzer</td></tr>
<tr><td>  </td><td>
<table>
<tr><th>No.</th><th>Definition</th></tr>
<tr><td>+</td><td>SYS 24V</td></tr>
<tr><td>-</td><td>Buzzer control</td></tr>
</table>
</td></tr>
<tr><td rowspan="2">16</td><td colspan="2">Black mark sensor connector</td></tr>
<tr><td> 
</td><td>
<table>
<tr><th>No.</th><th>Definition</th></tr>
<tr><td>1</td><td>Black Mark Sensor Receiver</td></tr>
<tr><td>2</td><td>Black Mark Sensor Emitter</td></tr>
<tr><td>3</td><td>3.3V</td></tr>
</table>
</td></tr>
<tr><td rowspan="2">17</td><td colspan="2">Coin battery connector</td></tr>
<tr><td> 
</td><td>
<table>
<tr><th>No.</th><th>Definition</th></tr>
<tr><td>1</td><td>Vbattery</td></tr>
<tr><td>2</td><td>GND</td></tr>
</table>
</td></tr>
</table>

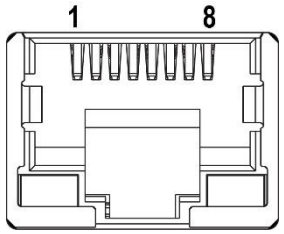
<table>
<tr><th>No.</th><th>Function</th><th>Pin Definition</th></tr>
<tr><td rowspan="2">18</td><td colspan="2">Cutter / Peeler / RFID connector</td></tr>
<tr><td> 
</td><td>
<table>
<tr><th>No.</th><th>Definition</th></tr>
<tr><td>1</td><td>CRFID_RXD</td></tr>
<tr><td>2</td><td>CRFID_TXD</td></tr>
<tr><td>3</td><td>5V_RFID</td></tr>
<tr><td>4</td><td>GND</td></tr>
<tr><td>5</td><td>Peeler_TWD</td></tr>
<tr><td>6</td><td>Peeler sensor receiver</td></tr>
<tr><td>7</td><td>5V_Cutter</td></tr>
<tr><td>8</td><td>Peeler_TWCK</td></tr>
<tr><td>9</td><td>Cutter rotate direction</td></tr>
<tr><td>10</td><td>Cutter enable signal</td></tr>
<tr><td>11</td><td>GND</td></tr>
<tr><td>12</td><td>Cutter status</td></tr>
<tr><td>13</td><td>GND</td></tr>
<tr><td>14</td><td>24V</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>No.</th><th>Function</th><th>Pin Definition</th></tr>
<tr><td rowspan="2">19</td><td colspan="2">Wi-Fi & Bluetooth connector</td></tr>
<tr><td> 
</td><td>
<table>
<tr><th>No.</th><th>Definition</th></tr>
<tr><td>1</td><td>GND</td></tr>
<tr><td>2</td><td>3.3V_WIFI</td></tr>
<tr><td>3</td><td>WIFI/ BT Detect</td></tr>
<tr><td>4</td><td>WIFI_RX0</td></tr>
<tr><td>5</td><td>WIFI_RX1</td></tr>
<tr><td>6</td><td>WIFI_RXDV</td></tr>
<tr><td>7</td><td>WIFI_REFCK</td></tr>
<tr><td>8</td><td>GND</td></tr>
<tr><td>9</td><td>WIFI_WAKEUP</td></tr>
<tr><td>10</td><td>WIFI_TXEN</td></tr>
<tr><td>11</td><td>WIFI_TX0</td></tr>
<tr><td>12</td><td>WIFI_TX1</td></tr>
<tr><td>13</td><td>BT_TXD</td></tr>
<tr><td>14</td><td>BT_CTS</td></tr>
<tr><td>15</td><td>BT_RXD</td></tr>
<tr><td>16</td><td>BT_RTS</td></tr>
<tr><td>17</td><td>3.3V_WIFI</td></tr>
<tr><td>18</td><td>WIFI_RESET</td></tr>
</table>
</td></tr>
<tr><td rowspan="2">20</td><td colspan="2">Stepping motor connector</td></tr>
<tr><td> 
</td><td>
<table>
<tr><th>Pin No.</th><th>Definition</th></tr>
<tr><td>1</td><td>BOUT2</td></tr>
<tr><td>2</td><td>BOUT1</td></tr>
<tr><td>3</td><td>AOUT1</td></tr>
<tr><td>4</td><td>AOUT2</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>No.</th><th>Function</th><th>Pin Definition</th></tr>
<tr><td rowspan="2">21</td><td colspan="2">Head open connector</td></tr>
<tr><td> 
</td><td>
<table>
<tr><th>Pin No.</th><th>Definition</th></tr>
<tr><td>1</td><td>Head open sensor (receiver)</td></tr>
<tr><td>2</td><td>GND</td></tr>
</table>
</td></tr>
<tr><td rowspan="2">22</td><td colspan="2">Power switch connector</td></tr>
<tr><td> 
</td><td>
<table>
<tr><th>Pin No.</th><th>Definition</th></tr>
<tr><td>1</td><td>EN_24V</td></tr>
<tr><td>2</td><td>SW_24V</td></tr>
</table>
</td></tr>
</table>

2.2 Interface Pin Configuration

<table>
<tr><th>No.</th><th>Function</th><th>Pin Configuration</th></tr>
<tr><td rowspan="2">1</td><td colspan="2">USB device</td></tr>
<tr><td> 
</td><td>
<table>
<tr><th>No.</th><th>Configuration</th></tr>
<tr><td>1</td><td>NC</td></tr>
<tr><td>2</td><td>D-</td></tr>
<tr><td>3</td><td>D+</td></tr>
<tr><td>4</td><td>GND</td></tr>
</table>
</td></tr>
<tr><td rowspan="2">2</td><td colspan="2">USB host</td></tr>
<tr><td> 
</td><td>
<table>
<tr><th>No.</th><th>Configuration</th></tr>
<tr><td>1</td><td>5V</td></tr>
<tr><td>2</td><td>D-</td></tr>
<tr><td>3</td><td>D+</td></tr>
<tr><td>4</td><td>GND</td></tr>
</table>
</td></tr>
<tr><td rowspan="2">3</td><td colspan="2">RS-232C</td></tr>
<tr><td> 
</td><td>
<table>
<tr><th>No.</th><th>Configuration</th></tr>
<tr><td>1</td><td>+5V</td></tr>
<tr><td>2</td><td>TXD</td></tr>
<tr><td>3</td><td>RXD</td></tr>
<tr><td>4</td><td>CTS</td></tr>
<tr><td>5</td><td>GND</td></tr>
<tr><td>6</td><td>RTS</td></tr>
<tr><td>7</td><td>NC</td></tr>
<tr><td>8</td><td>RTS</td></tr>
<tr><td>9</td><td>NC</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>No.</th><th>Function</th><th>Pin Configuration</th></tr>
<tr><td rowspan="2">4</td><td colspan="2">Ethernet LAN port</td></tr>
<tr><td> 
</td><td>
<table>
<tr><th>No.</th><th>Definition</th></tr>
<tr><td>1</td><td>Tx+</td></tr>
<tr><td>2</td><td>Tx-</td></tr>
<tr><td>3</td><td>Rx+</td></tr>
<tr><td>4</td><td>NC</td></tr>
<tr><td>5</td><td>NC</td></tr>
<tr><td>6</td><td>Rx-</td></tr>
<tr><td>7</td><td>NC</td></tr>
<tr><td>8</td><td>NC</td></tr>
</table>
</td></tr>
</table>

3 Replacing Parts

3.1 Before You Begin

WARNING:

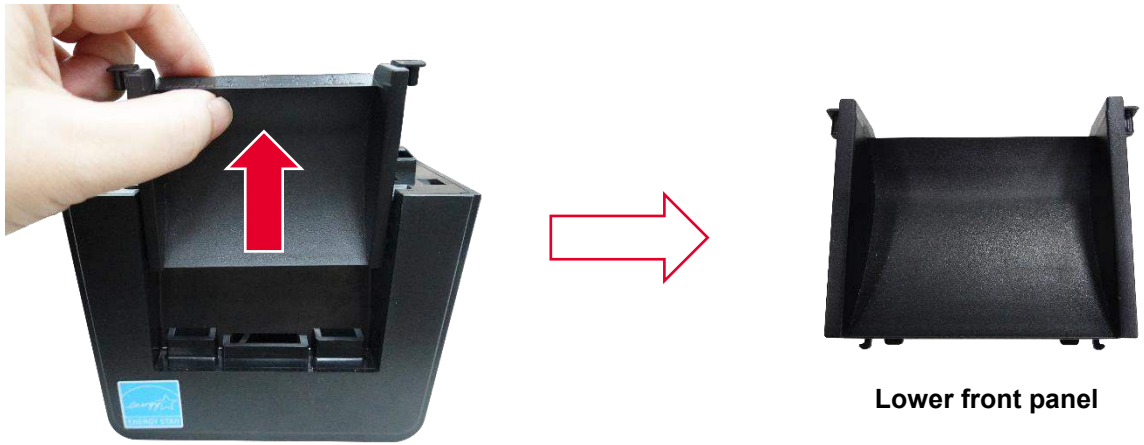
To avoid the risk of personal injury from electrical shock, before performing any replacement procedures, unplug the power cord from the printer or power outlet to ensure that power is removed.

To prepare the printer for the replacement or installation:

1. Protect yourself from ESD and wear protective gloves.
2. Place the printer on a flat surface.
3. Set the printer's power switch to the O (Off) position.
4. Remove the power adapter from the printer or unplug the power cord from the AC power outlet.
5. Disconnect all interface cables from the rear panel of the printer.
6. Remove the media from the printer.
7. Read through the maintenance procedures.

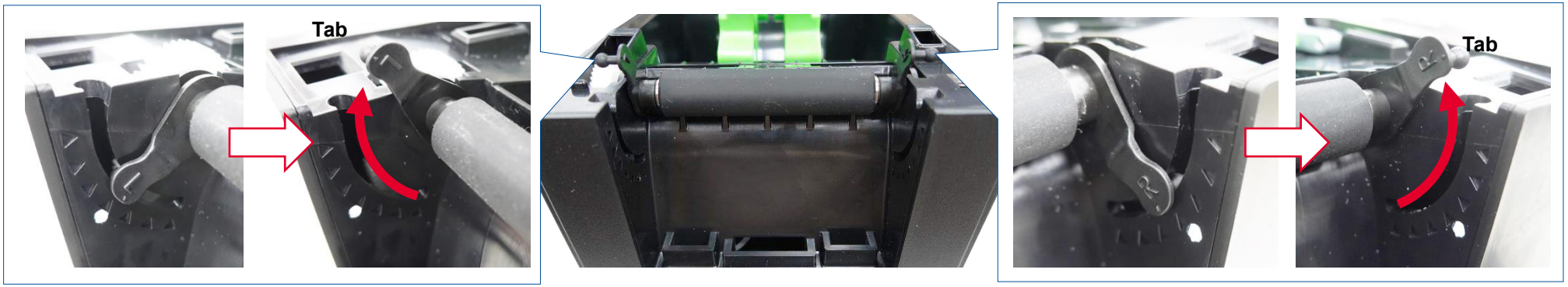
3.2 Replacing the Platen Roller Assembly

1. Follow the steps in Before You Begin to prepare the printer.
2. Open the printer cover by pulling the green levers, located on each side, toward the front of the printer, then lift the printer cover.
3. Remove the lower front panel as shown.

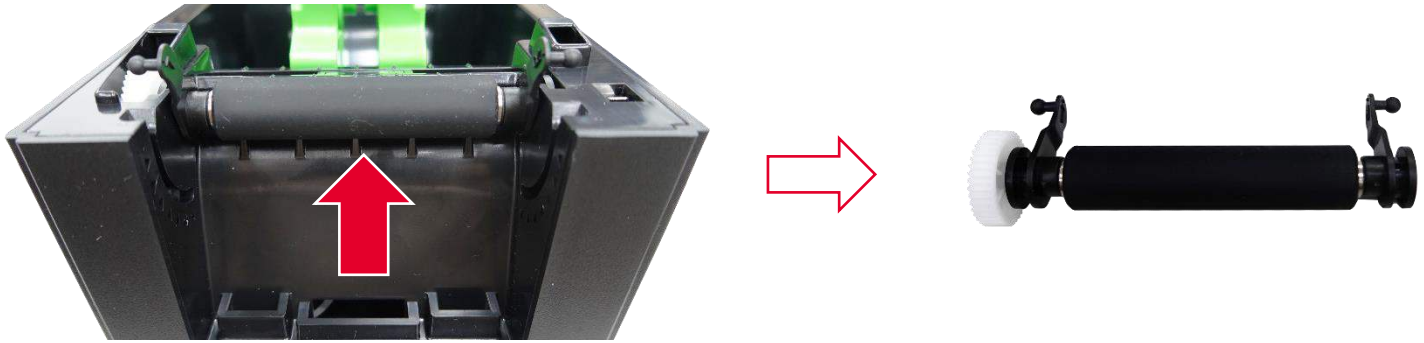


Lower front panel

4. Rotate the two tabs of the platen roller to the indicated position.



5. Pulling upward to remove/ replace the platen roller assembly.

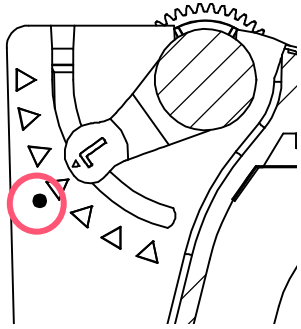


6. Reassemble the parts in the reverse procedure.

Note:

The default position of the platen roller tab is shown below (with a mark).

Default setting

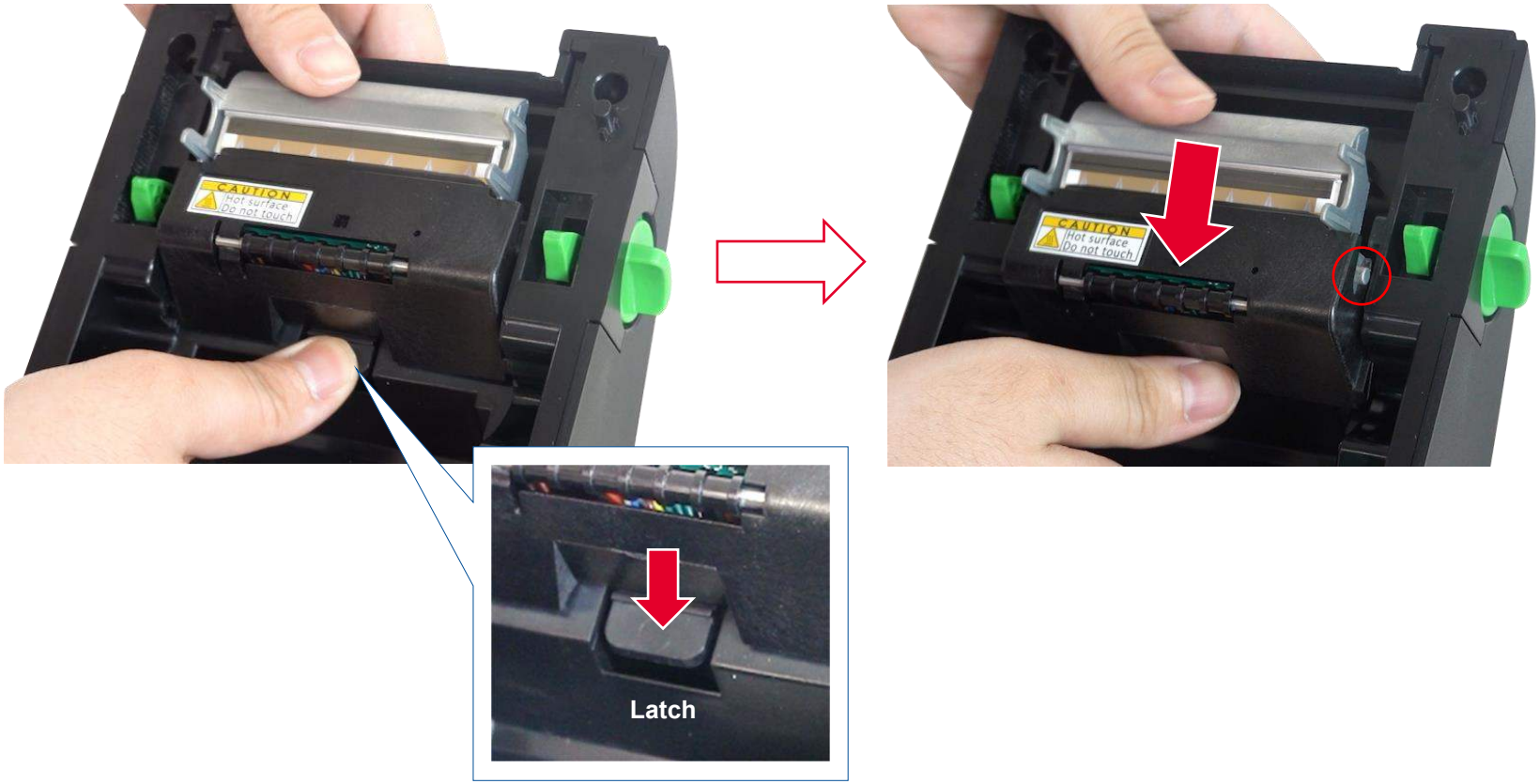


3.3 Replacing the Printhead & Upper Black Mark Sensor

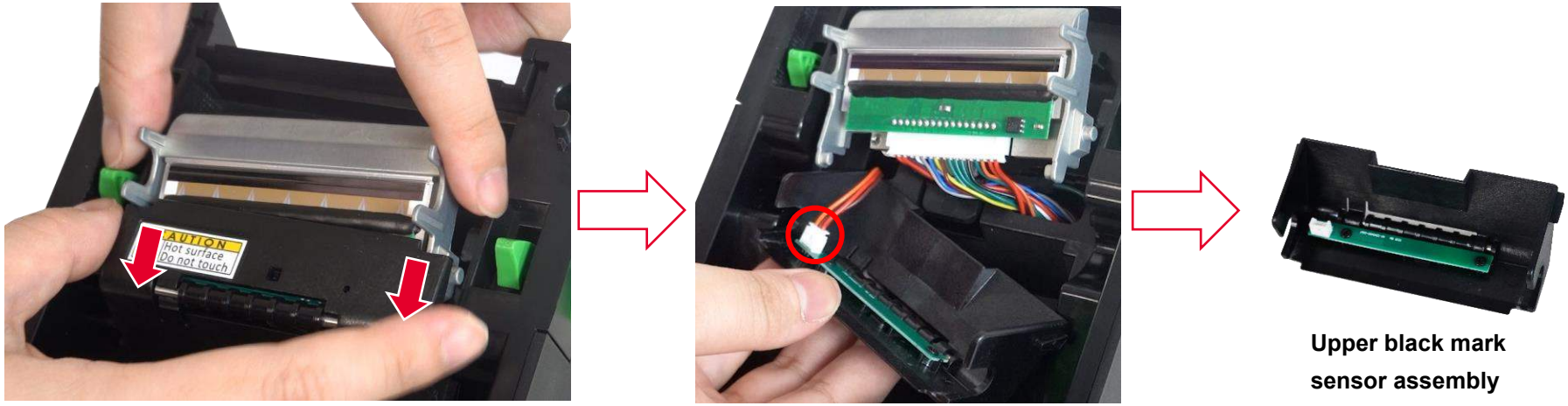
CAUTION:

To prevent electrostatic damage to electronic components, ground yourself by touching an unpainted part of the printer frame before removing or installing the printhead assembly.

1. Follow the steps in Before You Begin to prepare the printer.
2. Open the printer cover by pulling the green levers, located on each side, toward the front of the printer, then lift the printer cover.
3. Slide the printhead assembly down while pressing and holding the latch to disengage it from inner cover.

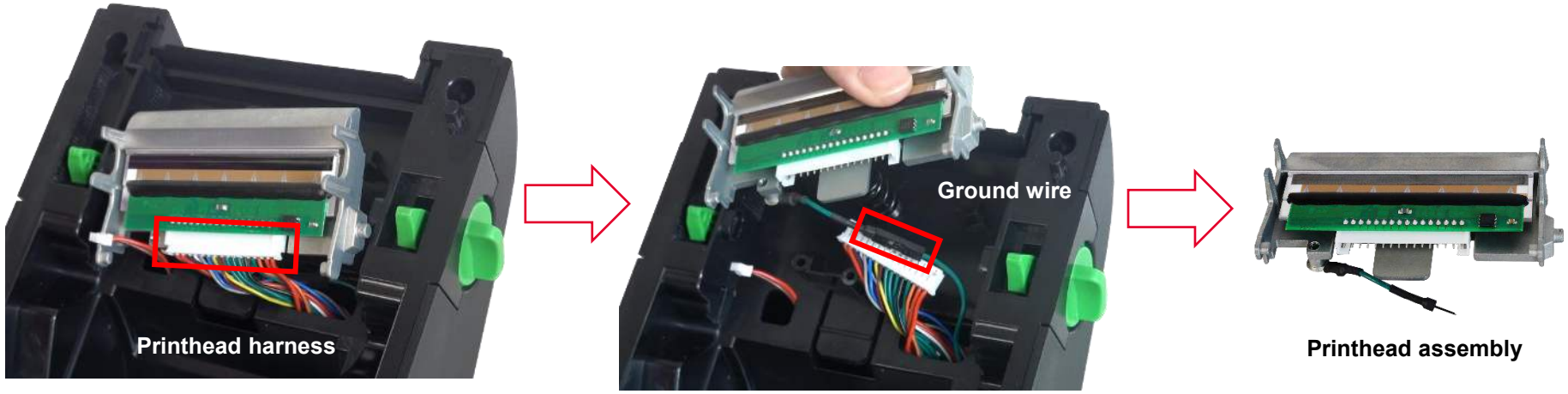


4. Slide the cover down. Disconnect the upper black mark sensor connector to remove the cover.



Upper black mark sensor assembly

5. Disconnect the printhead harness and the ground wire. Remove/ Replace the printhead assembly.



Printhead assembly

CAUTION:

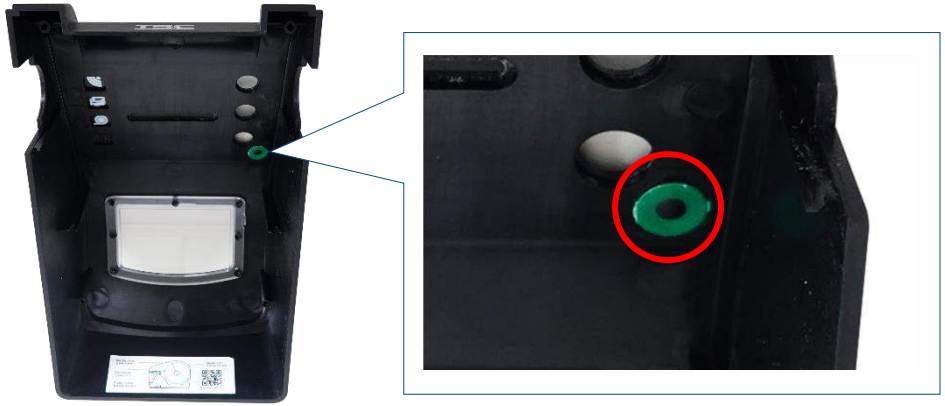
Oils from your hands can damage the light brown area (heating elements) of the printhead. Do not touch the light brown area when you handle the printhead assembly.

6. Reassemble the parts in the reverse procedures.

3.4 Replacing the Top Cover

1. Follow the steps in Before You Begin to prepare the printer.
2. Open the printer cover by pulling the green levers, located on each side, toward the front of the printer, then lift the printer cover.
3. Remove four screws on the printer top inner cover as shown below. Remove/replace the printer top cover. Reassemble the parts in the reverse procedures.

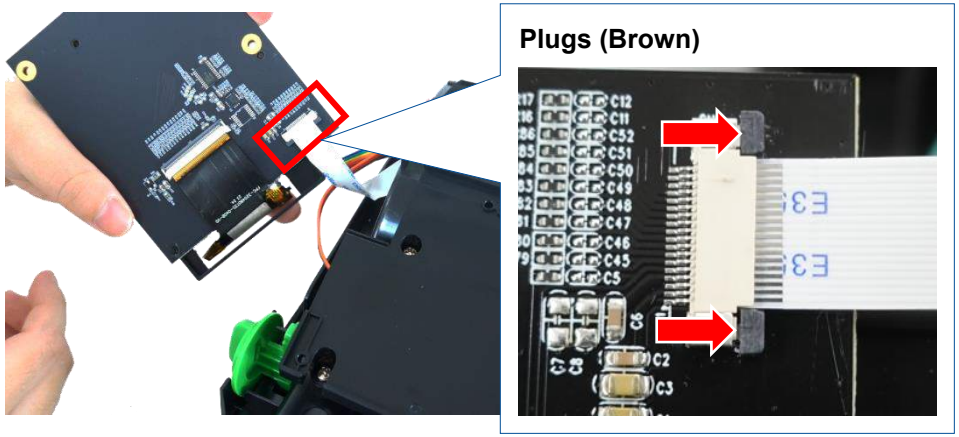
Note: If your printer is equipped with a wireless module (Wi-Fi or Bluetooth) with LED version, please note that the NFC tag should be installed back into the LED top cover. (For LCD version, the NFC tag is in the LCD module bracket.)



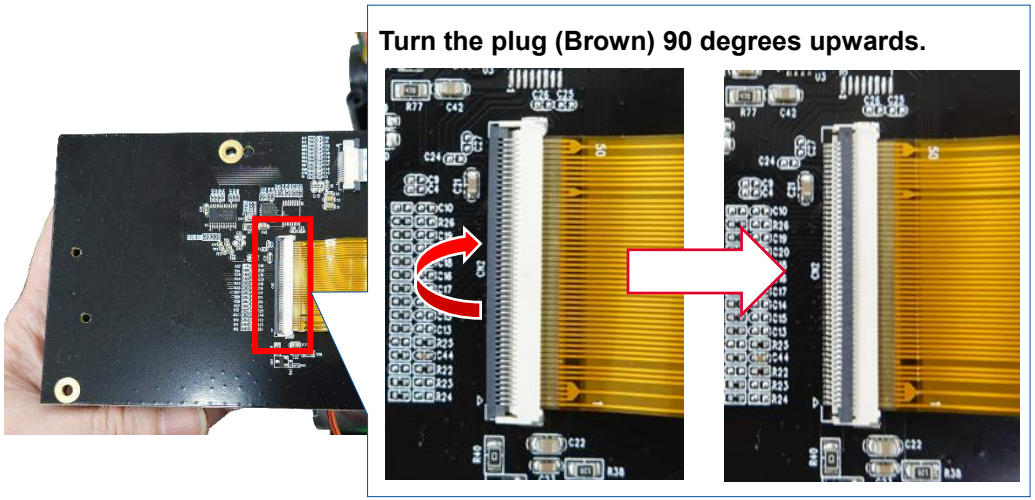
3.5 Replacing the Control Panel Assembly

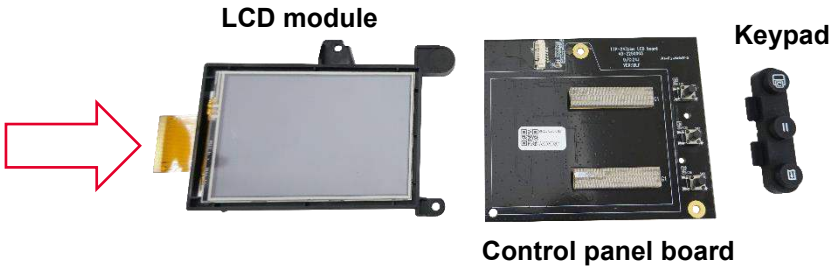
1. Follow the steps in Before You Begin to prepare the printer.
2. Refer to Replacing the Top Cover to remove the printer top cover.
3. For LCD version (For LED version, go to the next step), remove two screws on LCD bracket and one connector as shown below.

Disconnect two flat cables on back of LCD control panel board. For flat cable, press the plug(s) to unlock it from connector on the control panel board, and carefully pull the flat cable free (do not pull on the wires; pull on the plug only).



LCD control panel assembly

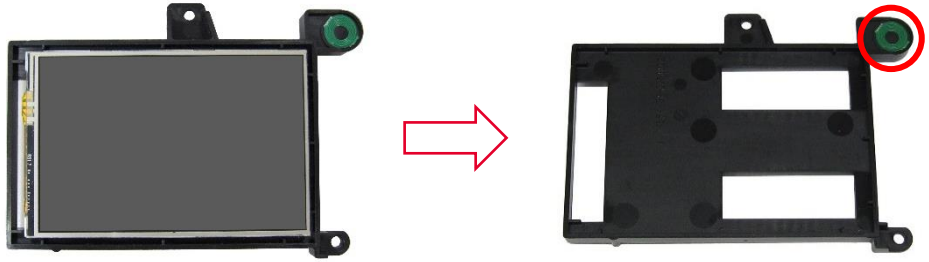




Note:

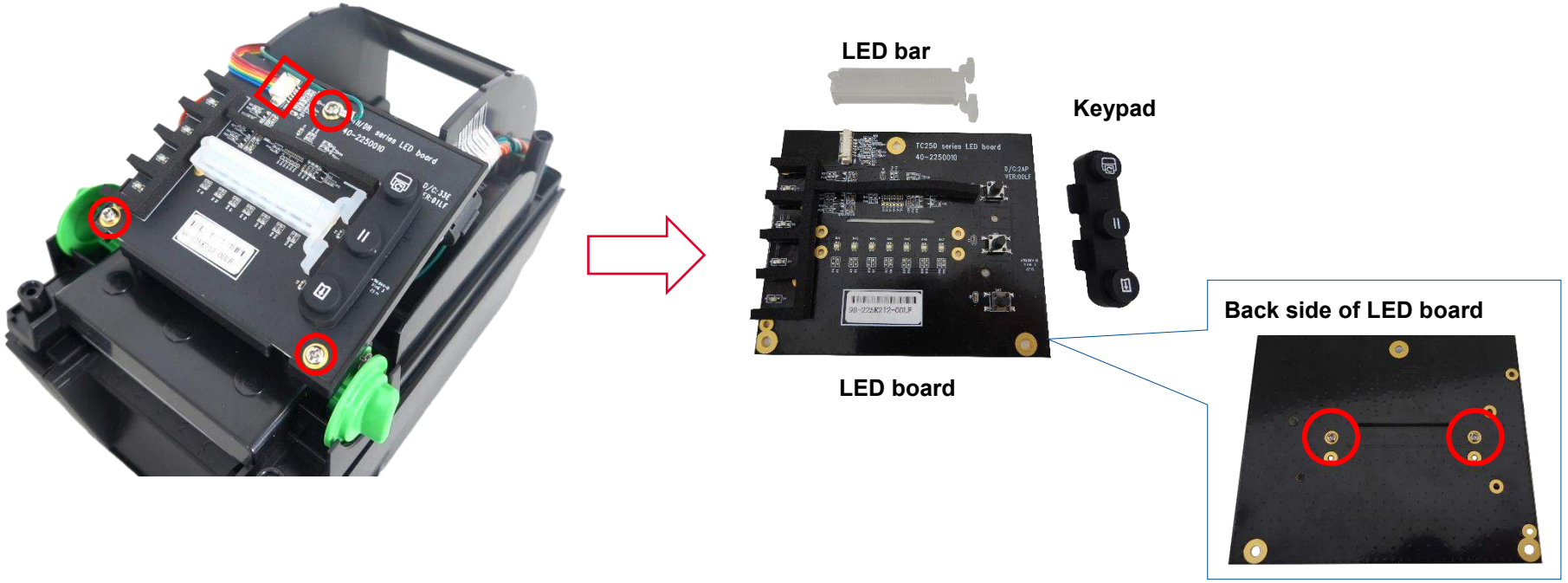
- **When installing the control panel assembly, the ground cable must be secured underneath the control panel bracket.**

- **If your printer is equipped with a wireless module (Wi-Fi or Bluetooth), please note that the NFC tag should be installed back into the LCD module bracket.**



LCD module bracket with NFC tag

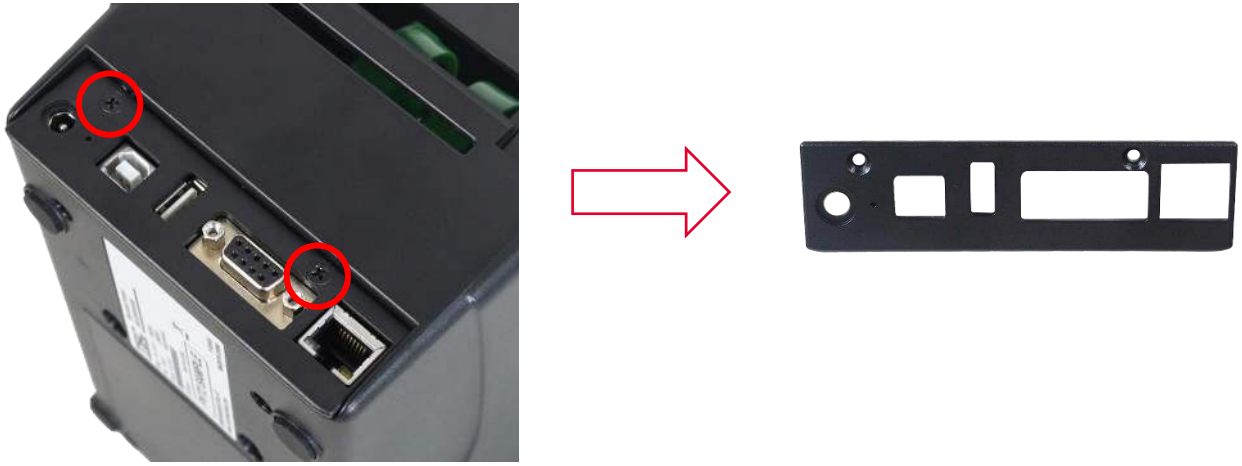
4. For LED version, remove three screws and one connector on LED board as shown below. Remove two screws on back of LED board to replace the LED bar and the keypad.



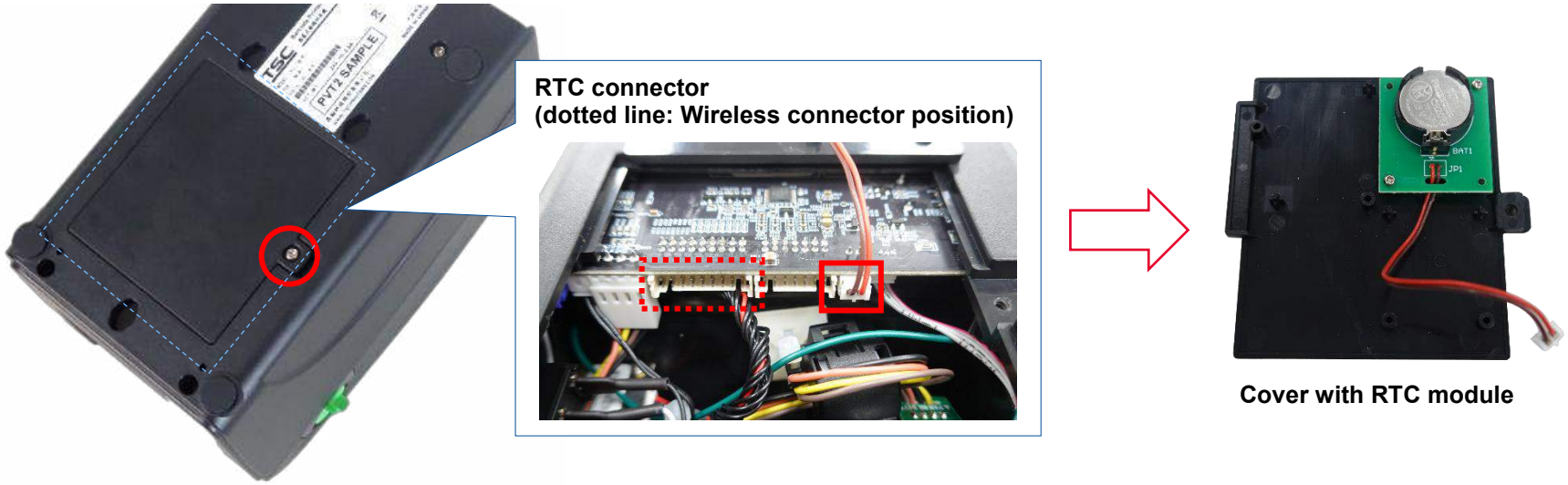
5. Reassemble the parts in the reverse procedures.

3.6 Replacing the Lower Cover

1. Follow the steps in Before You Begin to prepare the printer.
2. Remove two screws on the rear of printer to remove the interface cover.



3. Put the printer upside down. Remove one screw on the RTC cover to disconnect the RTC connector from main board first. (disconnect the Wi-Fi or MFi BT cable if installed.) Remove the cover.

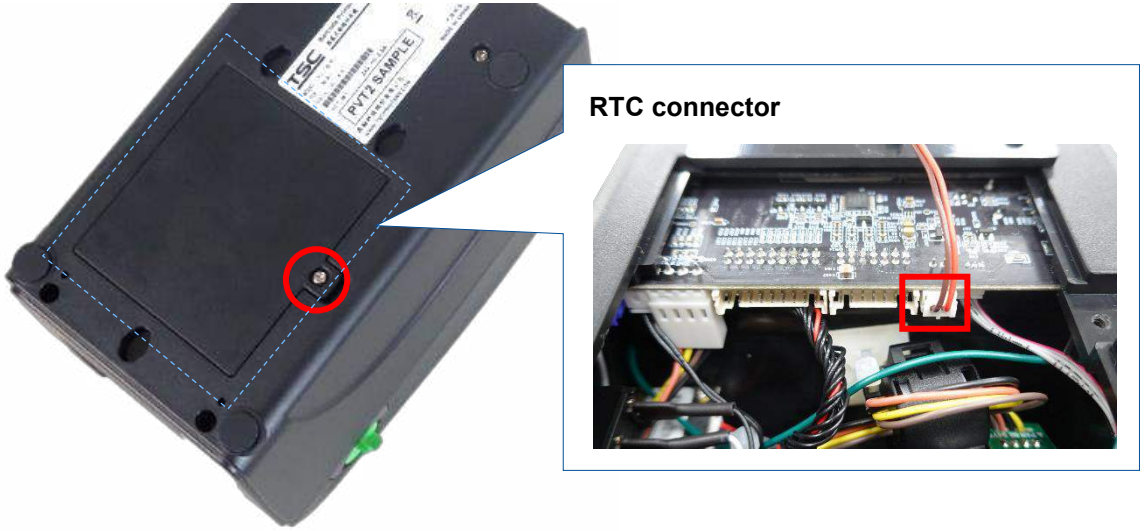


4. Remove four screws on the printer lower cover. Remove the lower cover to disconnect the power switch connector (blue).

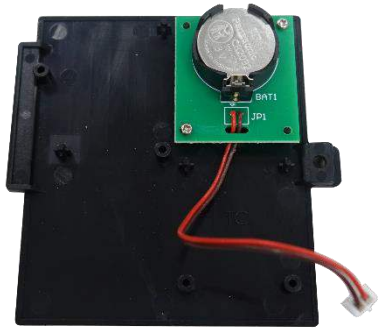
5. Reassemble the parts in the reverse procedures.

3.7 Replacing the RTC Module

1. Follow the steps in Before You Begin to prepare the printer.
2. Put the printer upside down. Remove one screw on the RTC module to disconnect the RTC cable from main board.



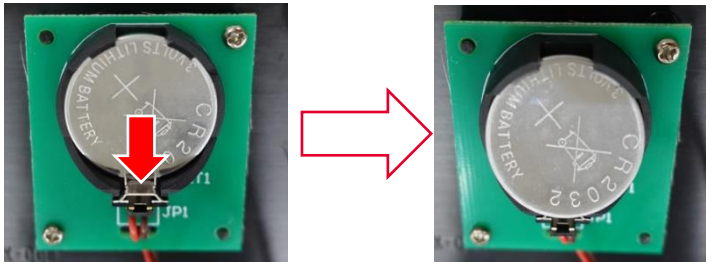
3. Remove/ Replace the RTC module. Please note that RTC battery (CR2032) is not included in the RTC module kit.
   Reassemble the parts in the reverse procedures.



RTC module

Note:

Press the tab to release the battery in the direction shown in the figure below.



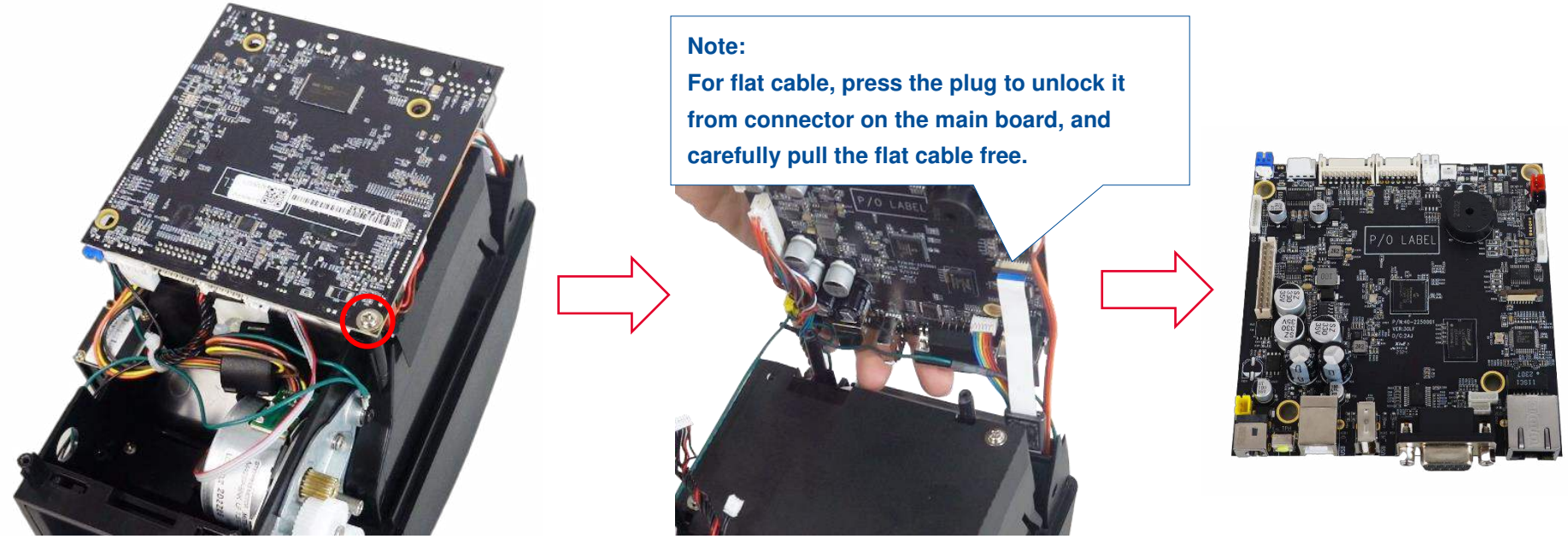
3.8 Replacing the Main Board

1. Follow the steps in Before You Begin to prepare the printer.
2. Refer to Replacing the Lower Cover to remove the printer lower cover.

CAUTION

To prevent electrostatic damage to electronic components, always wear a properly grounded static wrist strap when you handle circuit boards.

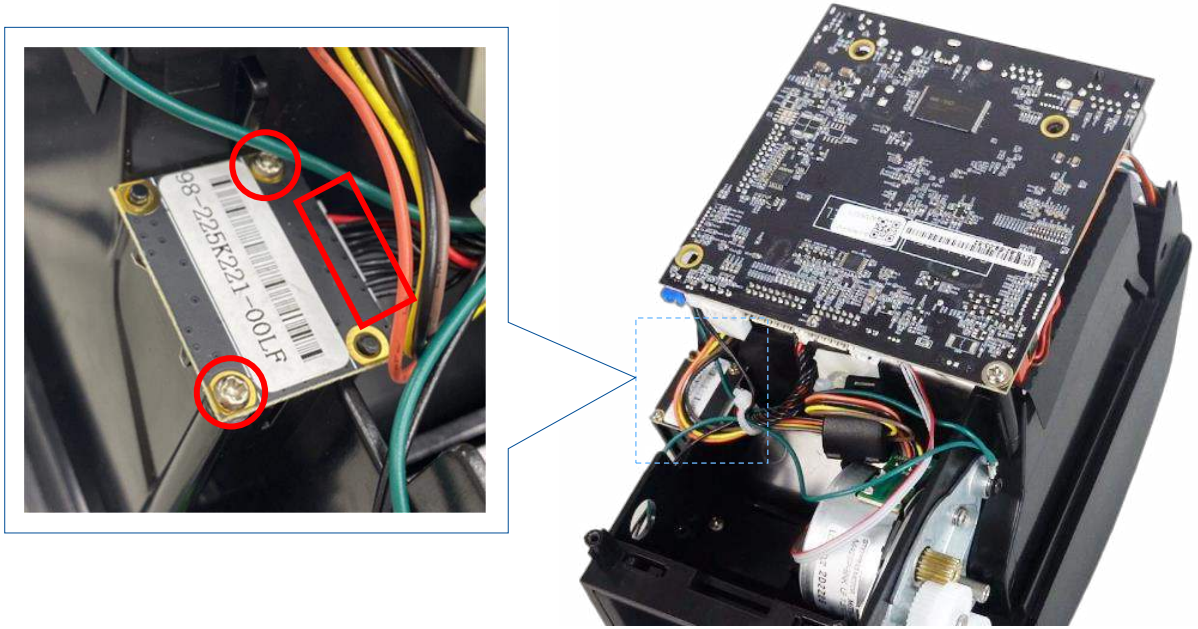
3. Remove one screw on main board. Unplug all cable assemblies from the main board. Remove/ Replace the main board.



4. Reverse the steps of the removal procedure.

3.9 Replacing the SD Card Board

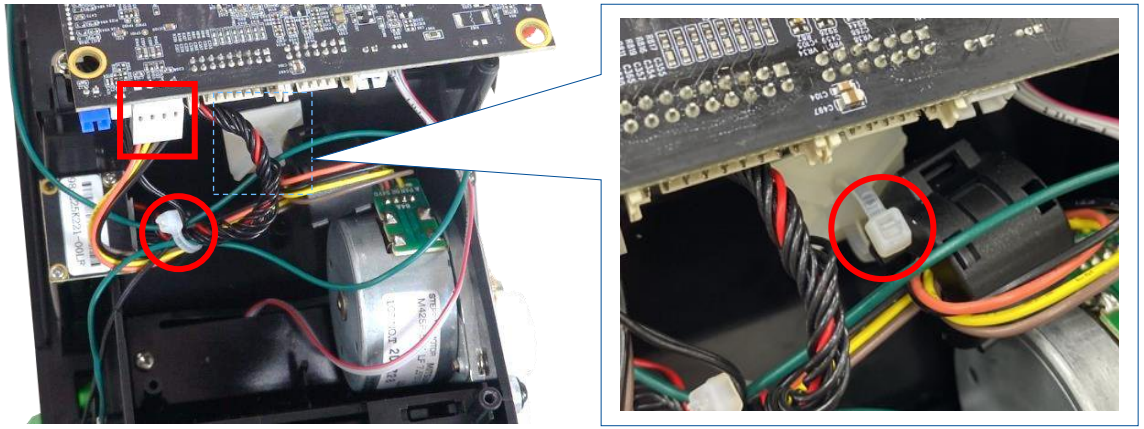
1. Follow the steps in Before You Begin to prepare the printer.
2. Remove the SD card, if one is installed, from the SD card slot.
3. Refer to Replacing the Lower Cover to remove the printer lower cover.
4. Remove two screws on SD card board. Unplug one cable connector from the SD card board. Remove/ Replace the SD card board.



5. Reverse the steps of the removal procedure.

3.10 Replacing the Stepping Motor

1. Follow the steps in Before You Begin to prepare the printer.
2. Refer to Replacing the Lower Cover to remove the printer lower cover.
3. Disconnect the stepping motor connector from the main board. Remove two cable ties as shown.

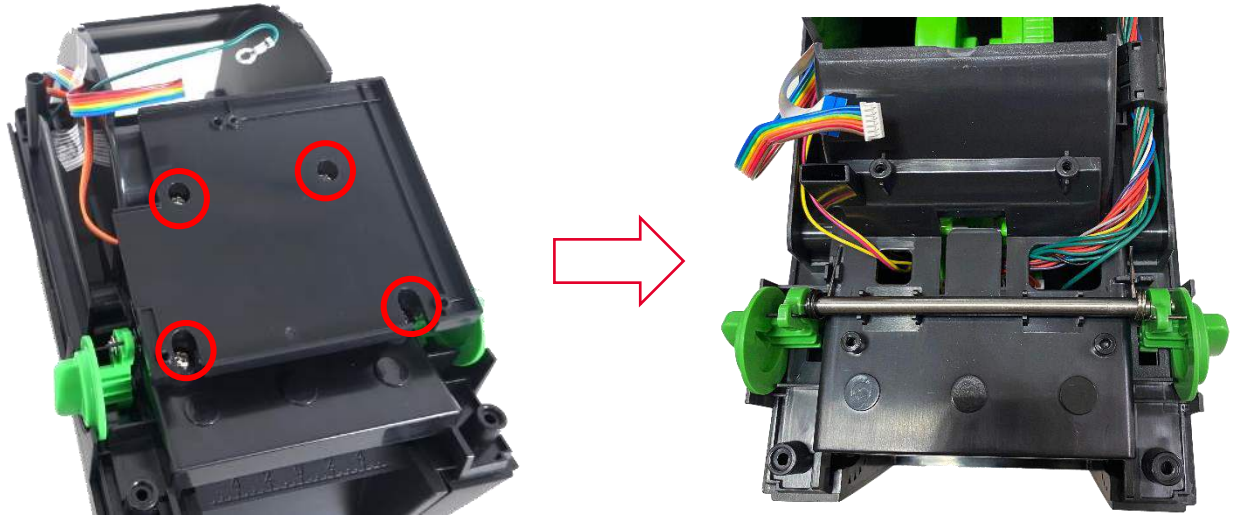


4. Remove two screws securing the stepping motor to the base of the printer frame. Remove/ Replace the stepping motor.

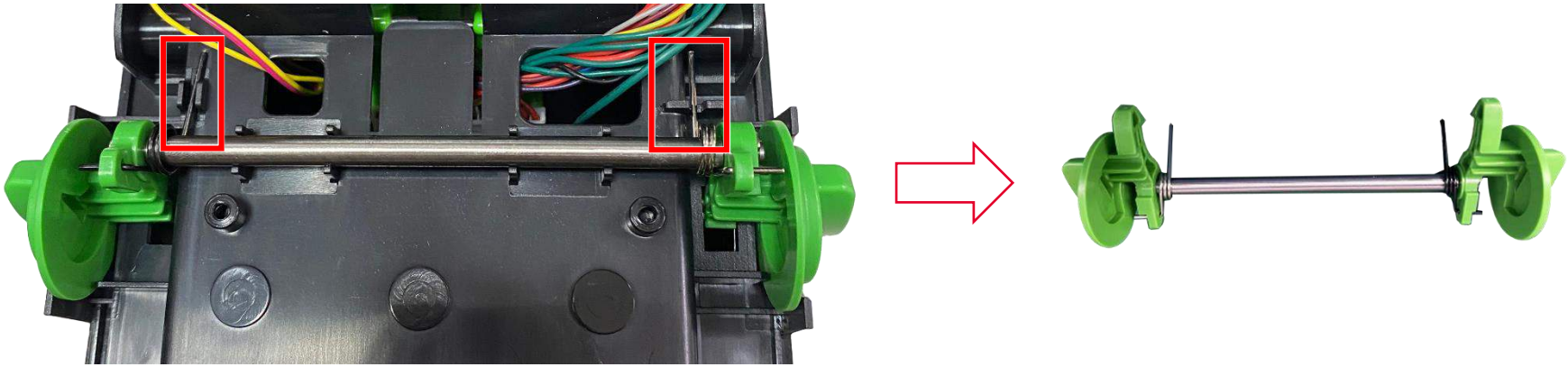
5. Reverse the steps of the removal procedure.

3.11 Replacing the Hook Assembly

1. Follow the steps in Before You Begin to prepare the printer.
2. Refer to Replacing the Top Cover to remove the printer top cover.
3. Remove the control panel assembly. For how to remove the control panel assembly, refer to Replacing the Control Panel Assembly.
4. Remove the four screws securing the hook assembly cover in place and then remove the hook assembly cover.



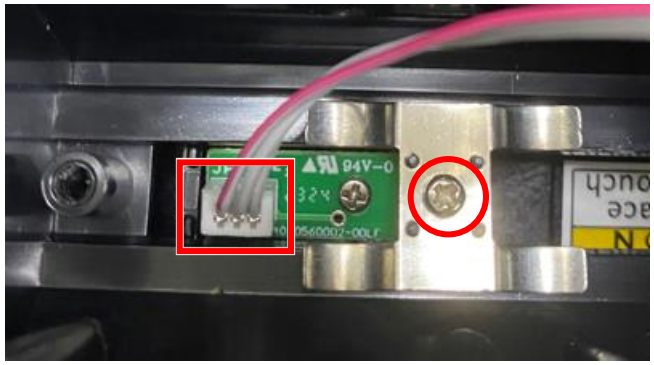
5. Release the two springs from their rib on the chassis and then remove the hook assembly from the printer. Reverse the steps of the removal procedure.



3.12 Replacing the Black Mark Sensor

1. Follow the steps in Before You Begin to prepare the printer.
2. Refer to Replacing the Stepping Motor to remove the stepping motor.
3. Remove two screws to remove the mylar.

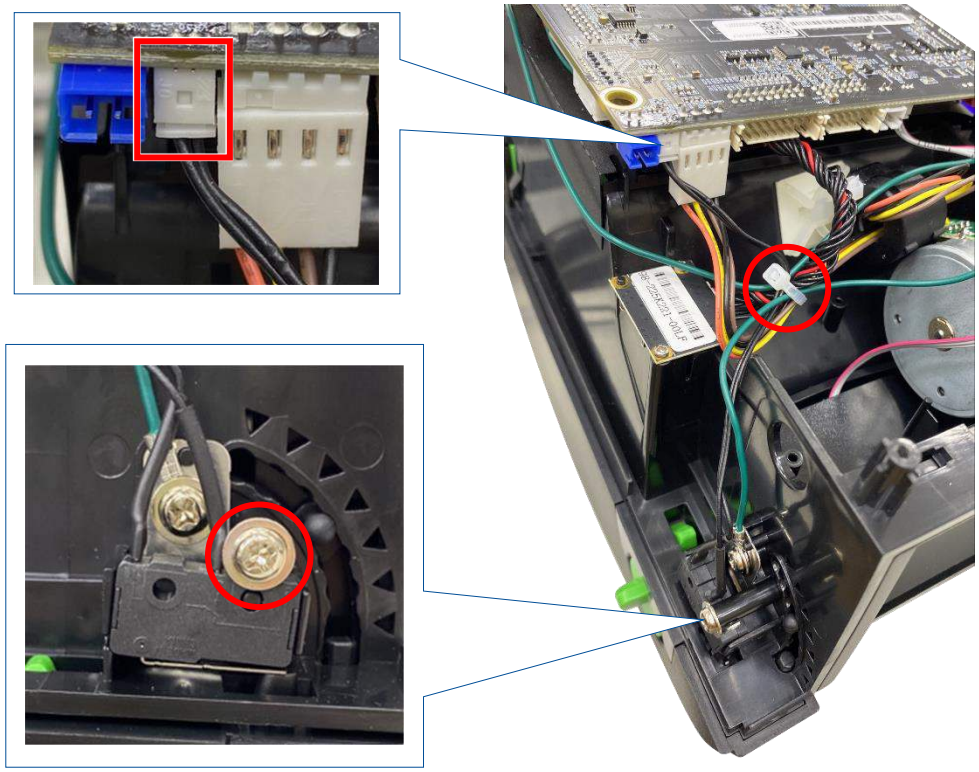
4. Disconnect the black mark sensor cable connector and remove one screw securing black mark sensor to the fixing plate.



5. Remove/ Replace the black mark sensor. Reverse the steps of the removal procedure.

3.13 Replacing the Head Open Sensor

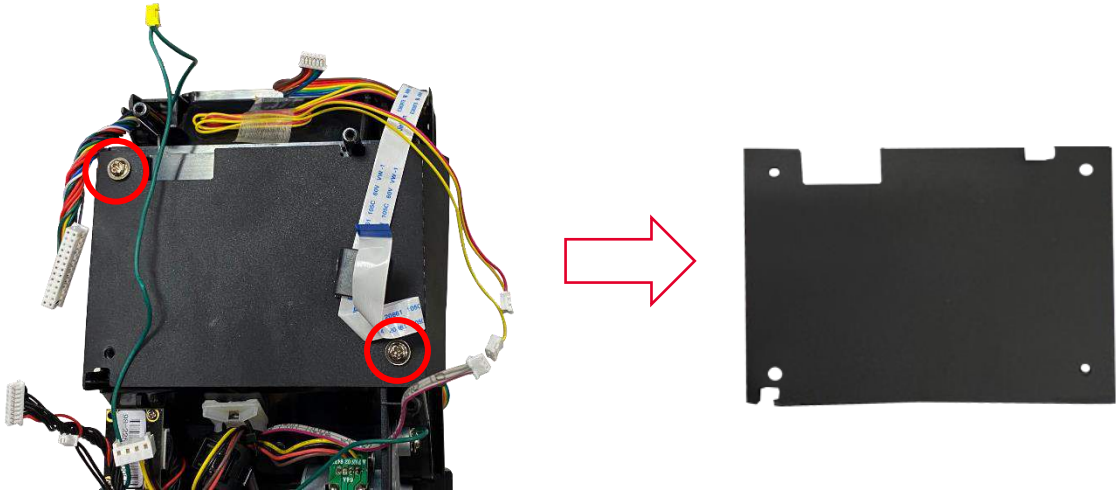
1. Follow the steps in Before You Begin to prepare the printer.
2. Refer to Replacing the Lower Cover to remove the printer lower cover.
3. Remove one screw securing head open sensor to the printer frame. Refer to the Replacing the Main Board to disconnect the head open sensor cable connector from main board. Remove cable tie as shown.



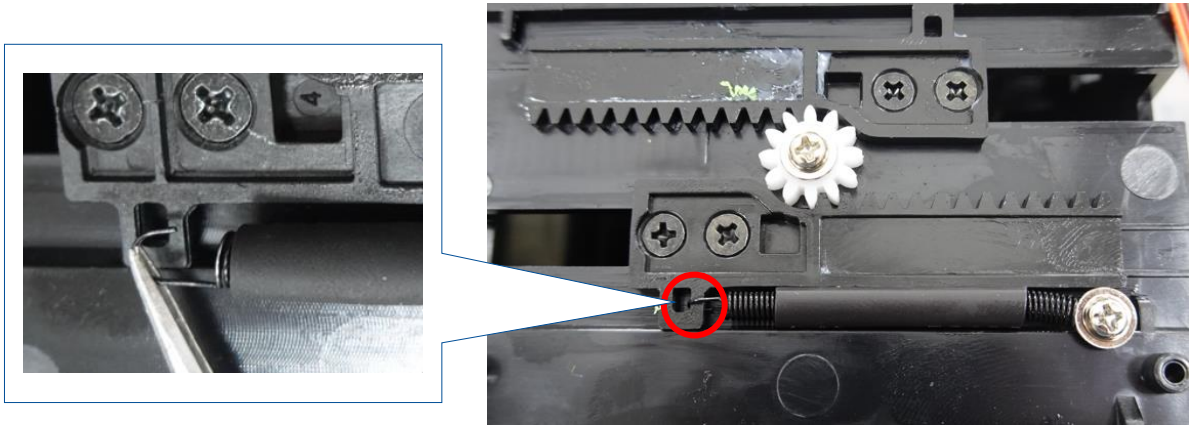
4. Remove/ Replace the head open sensor. Reverse the steps of the removal procedure.

3.14 Replacing the Media Holder

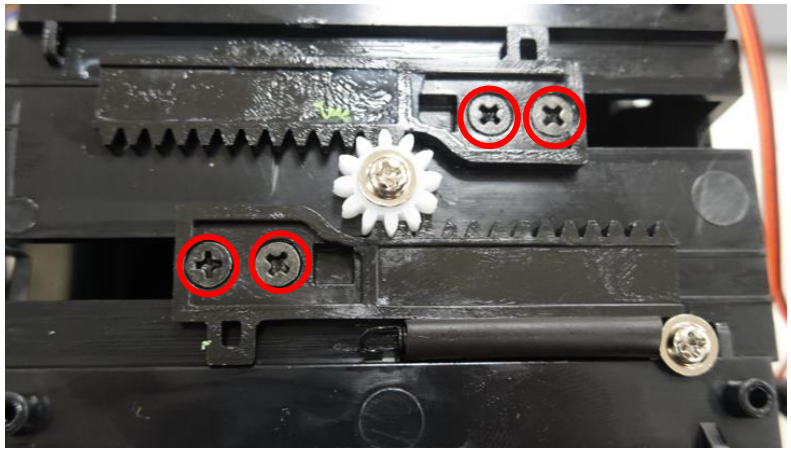
1. Follow the steps in Before You Begin to prepare the printer.
2. Refer to Replacing the Main Board to remove the main board.
3. Remove two screws to remove the mylar.



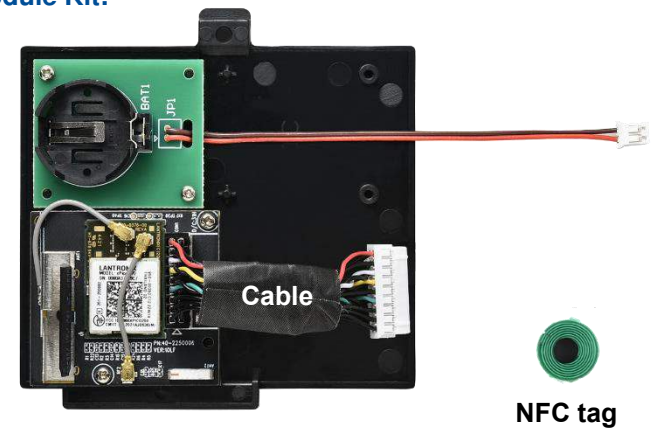
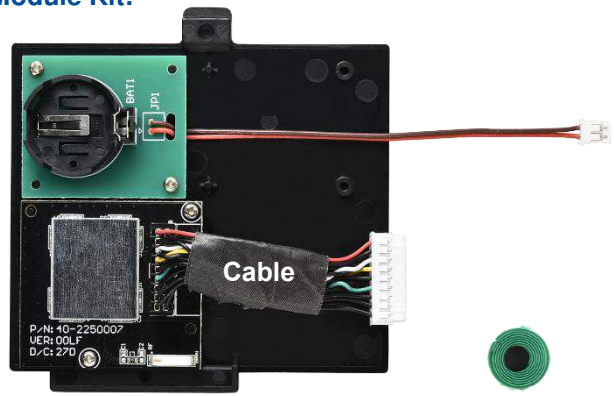
4. Use a tool to release the spring as shown below.



5. Remove the four screws securing the media holders in place and then replace the media holders. Reverse the steps of the removal procedure.



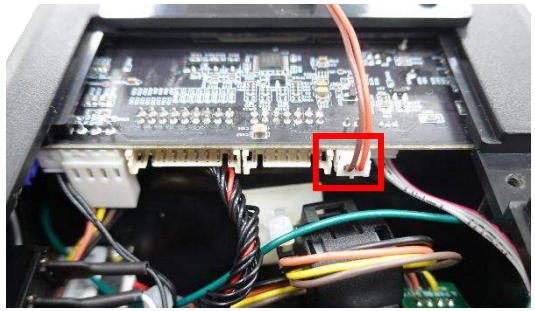
3.15 Installing the Wi-Fi/ Bluetooth Module

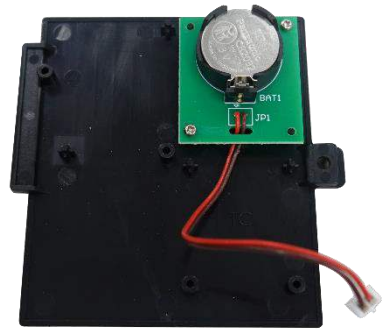
Wi-Fi Module Kit:	Bluetooth Module Kit:
 Wi-Fi module NFC tag	 Bluetooth module NFC tag

Note:
The Wi-Fi module and the Bluetooth module are installed in the same way, and this section mainly demonstrates the Wi-Fi module.

1. Follow the steps in Before You Begin to prepare the printer.
2. Put the printer upside down. Remove one screw as shown to disconnect RTC connector. Remove the RTC module.

RTC connector

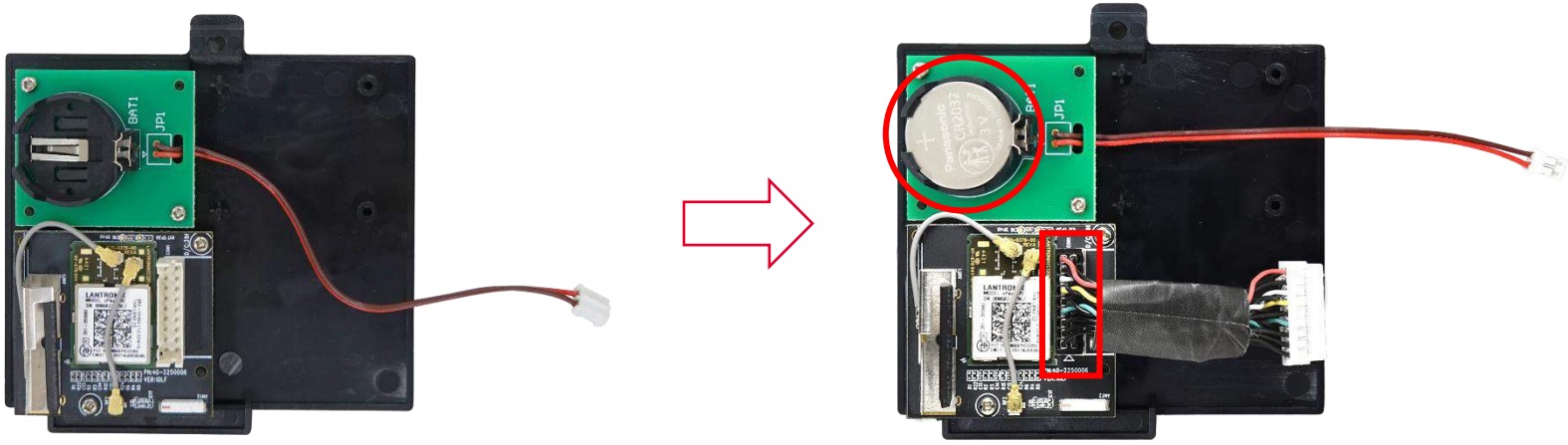




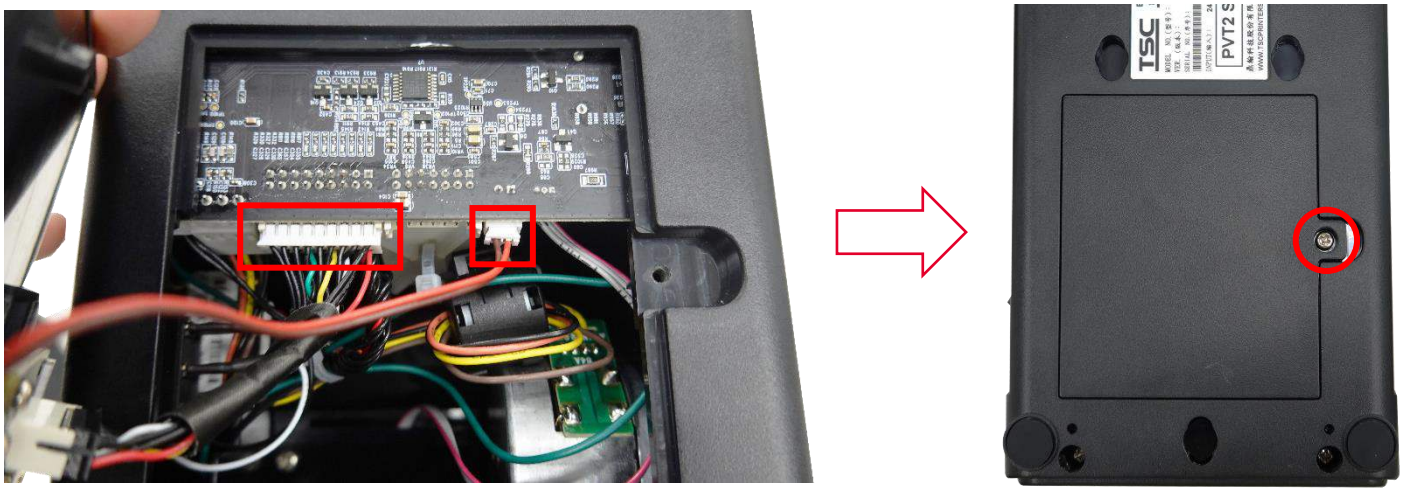
RTC module

3. Connect the black end of Wi-Fi cable to Wi-Fi module and install the RTC battery on Wi-Fi module.

Note: RTC battery (CR2032) is not included in the wireless module kit.



4. Connect another side of Wi-Fi cable and RTC cable into the main board. Install the Wi-Fi module to the bottom of the printer with one screw.



5. For LED version printer, refer to Replacing the Top Cover to stick the NFC tag on the LED top cover.

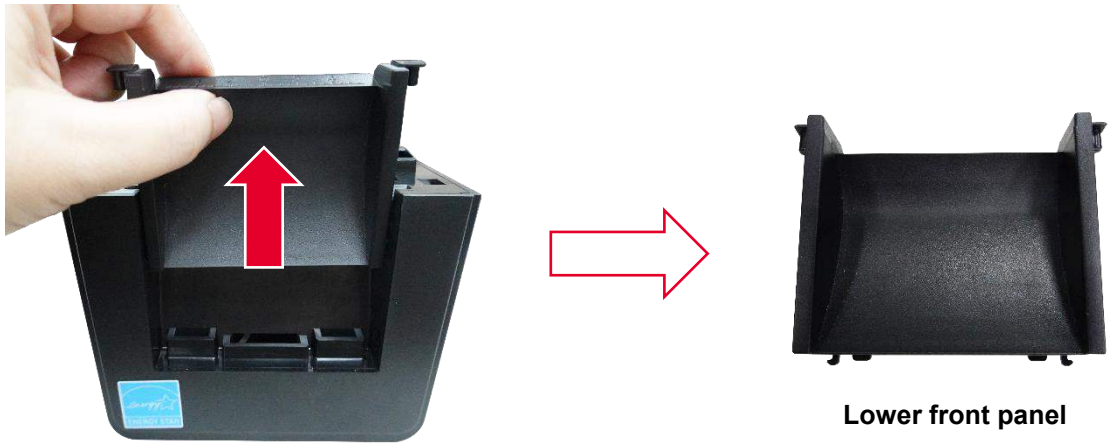
   For LCD version printer, refer to Replacing the Control Panel Assembly to stick the NFC tag on the LCD module bracket.

LED version (NFC tag on top cover)	LCD version (NFC tag on LCD module bracket)
	

6. Reassemble the parts in the reverse procedures.

3.16 Installing the Cutter Module

1. Follow the steps in Before You Begin to prepare the printer.
2. Open the top cover to remove the lower front panel as shown.

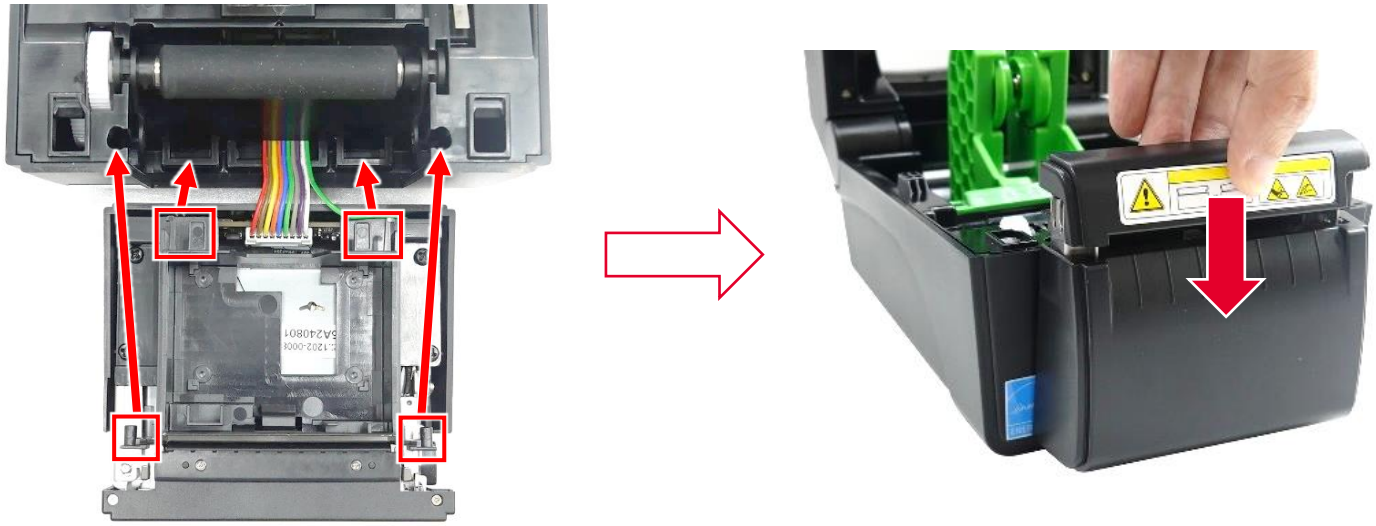


Lower front panel

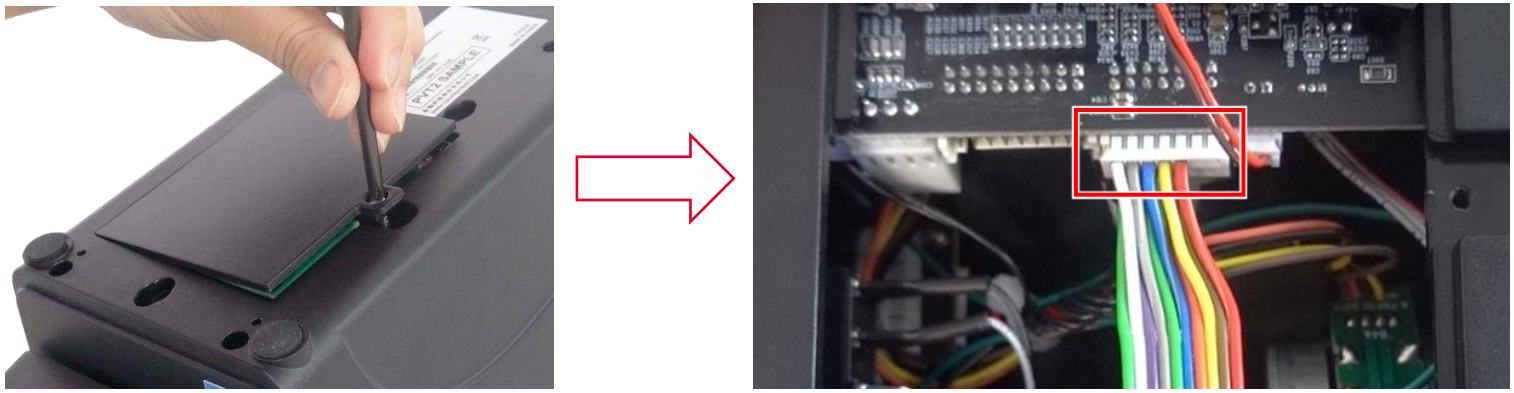
3. Thread the module's cables through the opening on the front side of the printer.

4. Press down to install the module ensuring that the ribs on the module are correctly inserted into the indicated openings.

Note:
Make sure that the cable is fed completely into the printer and that the cable is not pressed during installation.



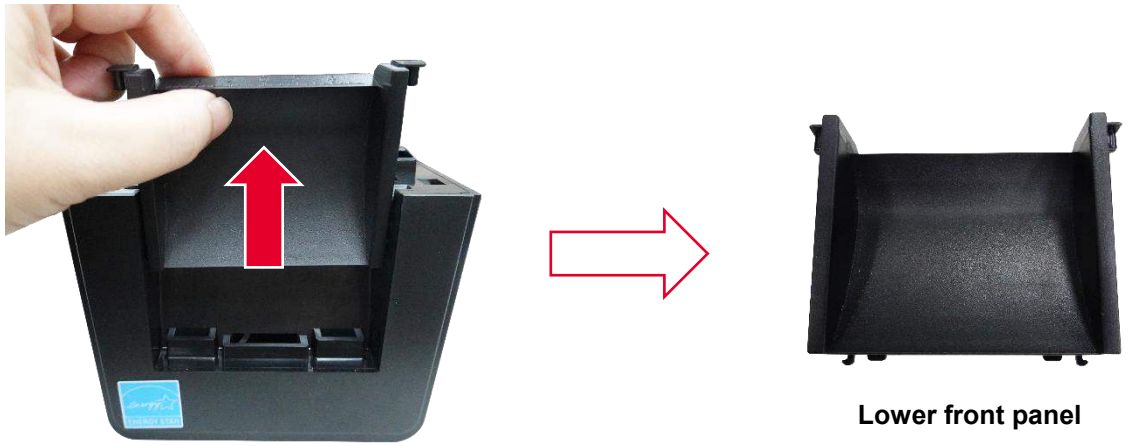
5. Remove one screw securing the RTC module cover in place and then open the cover. Connect the module's cable harness to the connector on the main board.



6. Reassemble the RTC module cover and install the single screw to secure the cover in place.

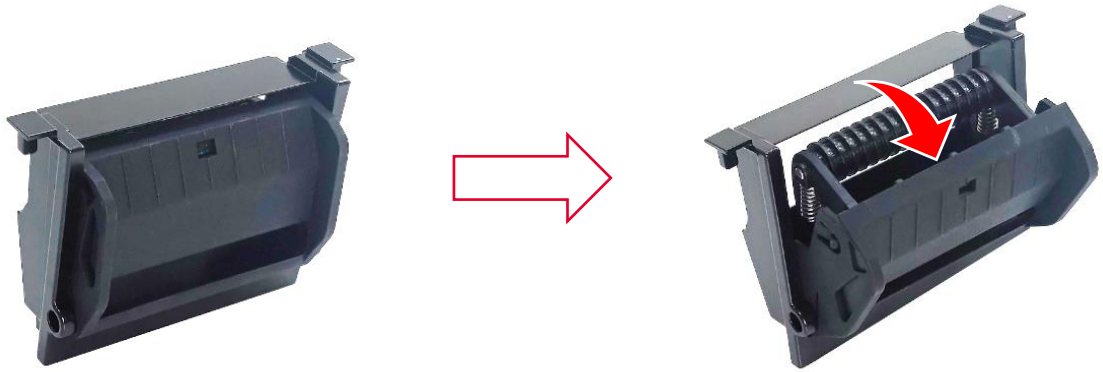
3.17 Installing the Peel-off Module

1. Follow the steps in Before You Begin to prepare the printer.
2. Open the top cover to remove the lower front panel as shown.



Lower front panel

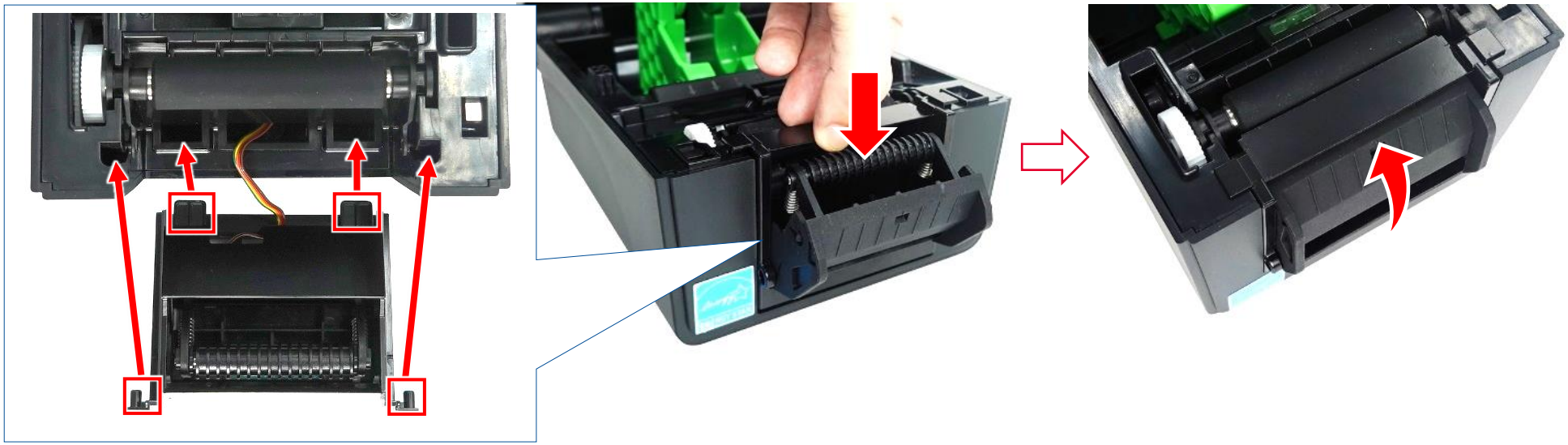
3. Open the peel roller.



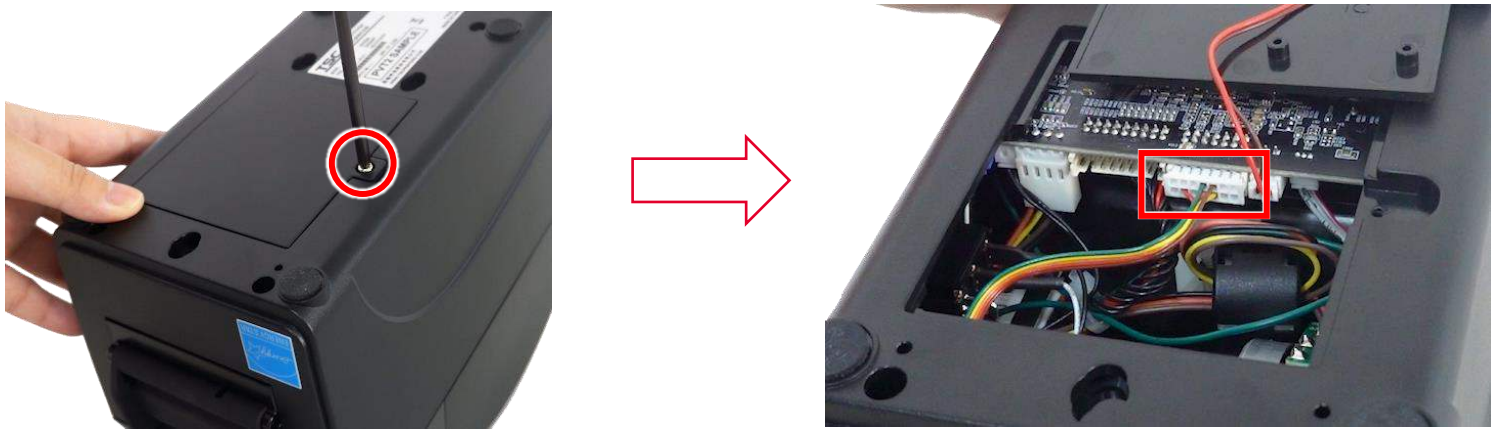
4. Thread the module's cable through the opening on the front side of the printer.

5. Press down to install the module ensuring that the ribs on the module are correctly inserted into the indicated openings. Close the peel roller.

Note:
Make sure that the cable is fed completely into the printer and that the cable is not pressed during installation.



6. Turn the printer upside down to remove the screw securing the RTC module cover in place and then open the cover. Connect the module's cable harness to the connector on the main board.

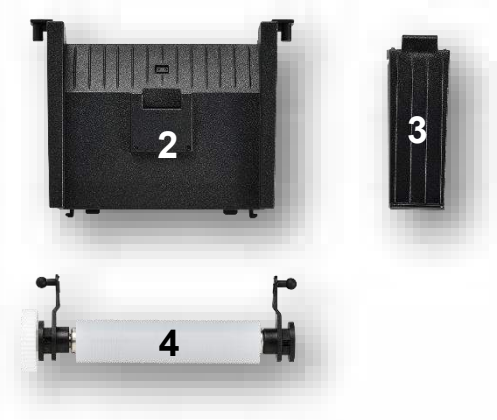


7. Reassemble the RTC module cover and install the single screw to secure the cover in place.

3.18 Installing the Linerless Tear/Cutter Module

Linerless Cutter Kit

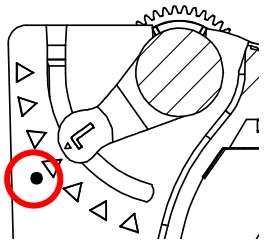
Linerless Tear Kit



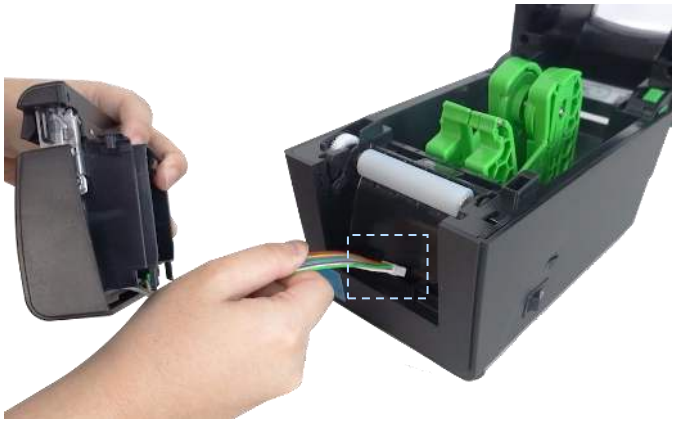
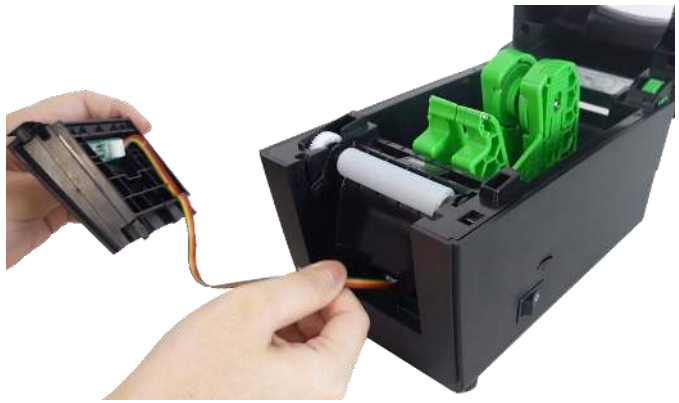
1. **Linerless cutter**
2. **Linerless tear**
3. **Label tray**
4. **Linerless platen roller**

1. Follow the steps in Before You Begin to prepare the printer.
2. Refer to Replacing the Platen Roller Assembly to replace the roller with the linerless roller (white).

The default position of the platen roller tab is shown below.

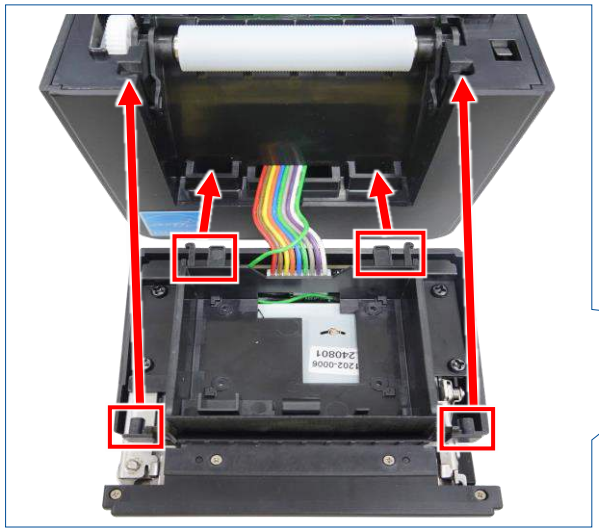


3. Thread the linerless module's cable through the opening on the front side of the printer.

Linerless Cutter	Linerless Tear
	

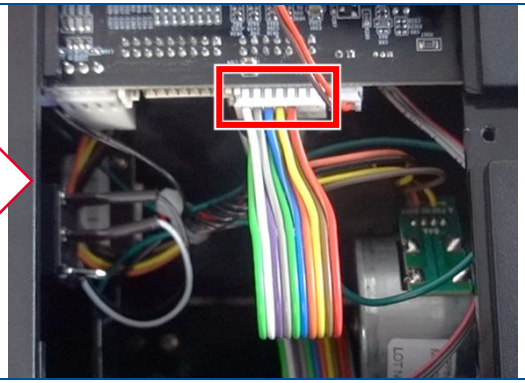
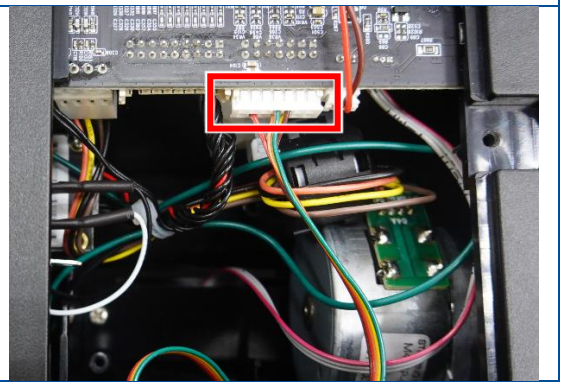
4. Press down to install the linerless module ensuring that the ribs on the module are correctly inserted into the indicated openings.

Note:
Make sure that the cable is fed completely into the printer and that the cable is not pressed during installation.



Linerless Cutter	Linerless Tear
	

5. Remove the single screw securing the RTC module cover in place and then open the cover. Connect the linerless module's cable to the connector on the main board.

Linerless Cutter	Linerless Tear
	

6. Install the label tray onto the linerless module.

Linerless Cutter	Linerless Tear
	

3.19 Installing the Narrow Media Adaptor

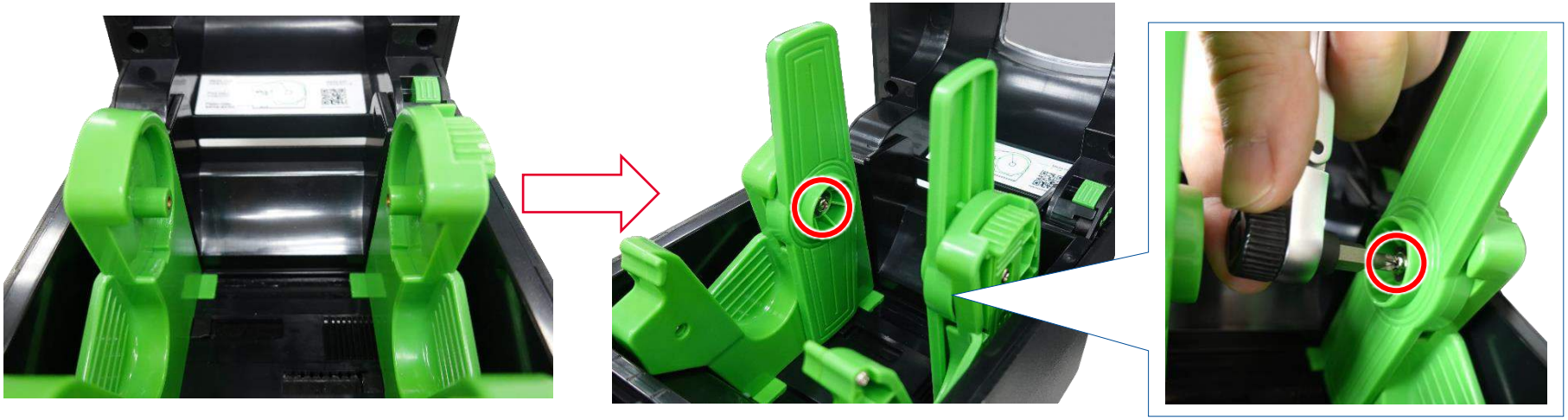
Narrow Media Adaptor Kit

1. Narrow media core x 2
2. Narrow media adapter (L)
3. Narrow media adapter (R)
4. Screw x 2

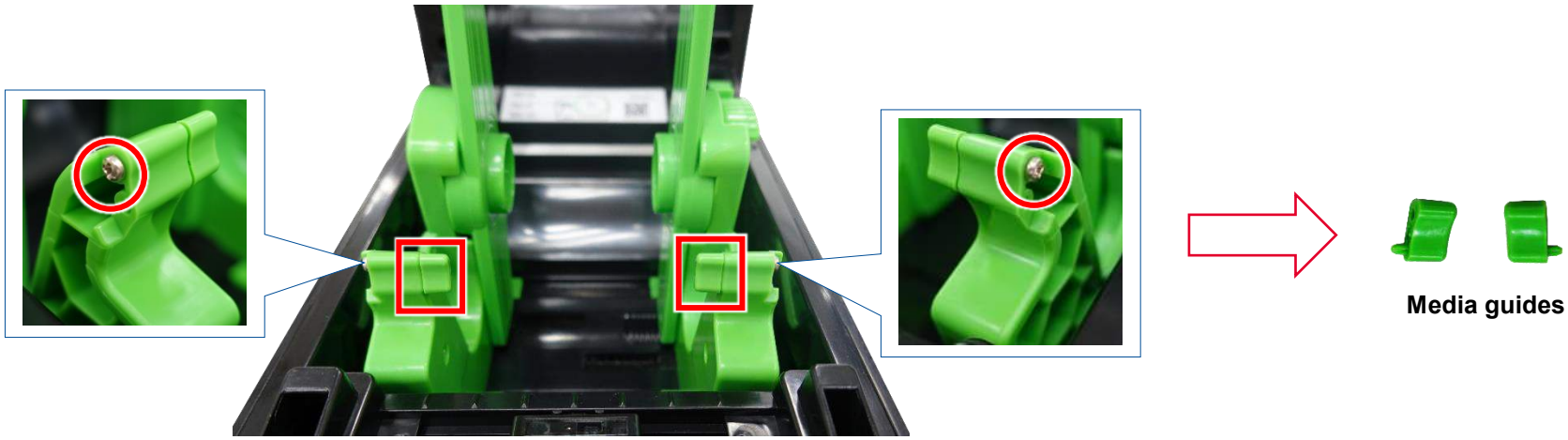
1. Open the printer's top cover and separate the media holders, then press down the media holder lock switch to fix the media holder. Remove the two screws on media holder as shown to remove both side of media cores.

Media cores

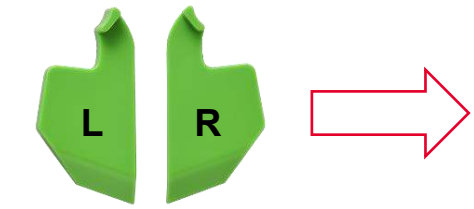
2. Secure the narrow media cores on both side of media holder with the two screws.



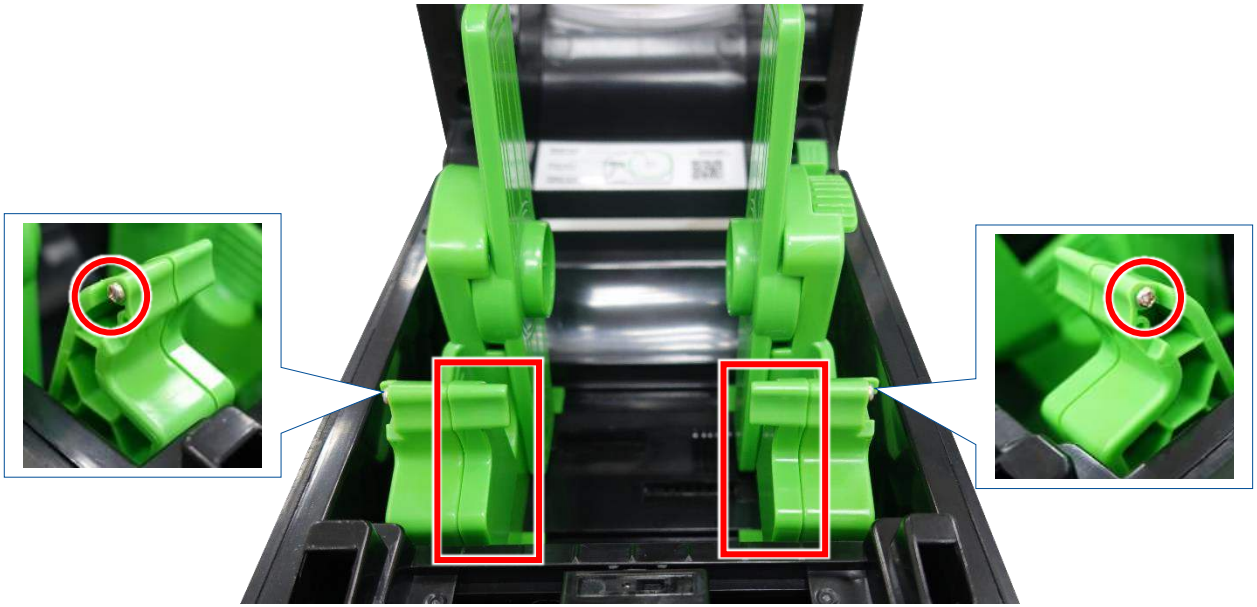
3. Remove the two screws on front of media holder as shown to remove both side of media guides.



4. Secure the two narrow media adapters inside the media guide with the two screws.



Narrow media adapters



4 Troubleshooting

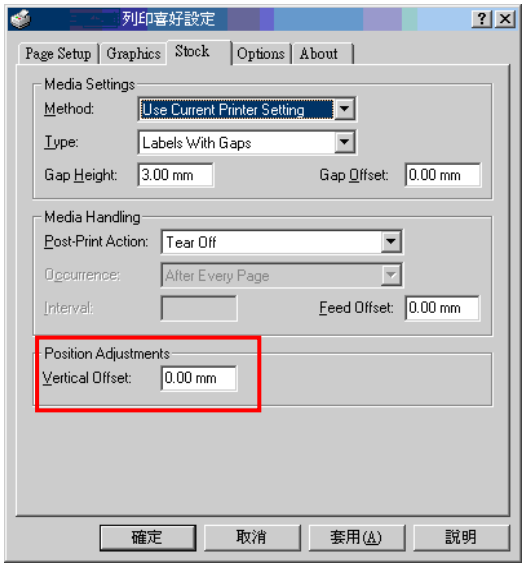
4.1 Common Problems

Problem	Possible Cause	Recovery Procedure
Power indicator/ LCD does not illuminate	The power cord is not properly connected.	• Plug the power cord in printer and outlet. • Switch the printer on.
LED turn on (Carriage Open)	The printer head is open.	Please close the print carriages.
Not Printing	• Check if interface cable is well connected to the interface connector. • Check if wireless or Bluetooth device is well connected between host and printer. • The port specified in the Windows driver is not correct.	• Re-connect cable to interface or change a new cable. • If using serial cable, - Please replace the cable with pin to pin connected. - Check the baud rate setting. The default baud rate setting of printer is 9600,n,8,1. • If using the Ethernet cable, - Check if the Ethernet RJ-45 connector green LED is lit on. - Check if the Ethernet RJ-45 connector amber LED is blinking. - Check if the printer gets the IP address when using DHCP mode. - Check if the IP address is correct when using the static IP address. - Wait a few seconds let the printer get the communication with the server

Problem	Possible Cause	Recovery Procedure
		then check the IP address setting again. • Please reset the wireless device setting. • Select the correct printer port in the driver. • Print head's harness connector is not well connected with printhead. Turn off the printer and plug the connector again. • Check your program if there is a command PRINT at the end of the file and there must have CRLF at the end of each command line.
No Paper	• Running out of label. • The label is installed incorrectly. • Gap/black mark sensor is not calibrated.	• Supply a new label roll. • Reinstall the label roll. • Calibrate the gap/black mark sensor.
Paper jam	• Gap/black mark sensor is not set properly. • Make sure label size is set properly. • Labels may be stuck inside the printer mechanism.	• Calibrate the media sensor. • Set media size correctly. • Remove the stuck label inside the printer mechanism.
Can't downloading the file to memory (FLASH / CARD)	The space of memory is full.	Delete unused files in the memory.
SD card is unable to use	• SD card is damaged. • SD card doesn't insert correctly.	• Use the supported capacity SD card. • Insert the SD card again.

Problem	Possible Cause	Recovery Procedure
	• Use the non-approved SD card manufacturer.	
Poor Print Quality	• Media is loaded incorrectly. • Dust or adhesive accumulation on the print head. • Print density is not set properly. • Print head element is damaged. • The print head pressure is not set properly.	• Reload the supply. • Clean the print head. • Clean the platen roller. • Adjust the print density and print speed. • Run printer self-test and check the print head test pattern if there is dot missing in the pattern. • The release lever does not latch the print head properly.
Missing printing on the left or right side of label	Wrong label size setup.	Set the correct label size.
Gray line on the blank label	• The print head is dirty. • The platen roller is dirty.	• Clean the print head. • Clean the platen roller.
Irregular printing	• The printer is in Hex Dump mode. • The RS-232 setting is incorrect.	• Turn off and on the printer to skip the dump mode. • Re-set the Rs-232 setting.
Label feeding is not stable (skew) when printing	The media guides do not touch the edge of the media.	• If the label is moving to the right side, please move the label guide to left. • If the label is moving to the left side, please move the label guide to right.

Problem	Possible Cause	Recovery Procedure
Skip labels when printing	• Label size is not specified properly. • Sensor sensitivity is not set properly. • The media sensor is covered with dust.	• Check if label size is setup correctly. • Calibrate the sensor by Auto Gap or Manual Gap options. • Clear the GAP/Black mark sensor by blower.
RTC time is incorrect when reboot the printer	The battery has run down.	Check if there is a battery on the main board.
The left side printout position is incorrect	• Wrong label size setup. • The parameter Shift X in printer is incorrect.	Set the correct label size.
The printing position of small label is incorrect	• Media sensor sensitivity is not set properly. • Label size is incorrect. • The parameter Shift Y is incorrect. • The vertical offset setting in the driver is incorrect.	• Calibrate the sensor sensitivity again. • Set the correct label size and gap size. • Enter LCD menu (or via TSC Console) to fine tune the parameter of Shift Y. • If using the software BarTender, please set the vertical offset in the driver.

Problem	Possible Cause	Recovery Procedure
		

5 Maintenance

This session presents the clean tools and methods to maintain the printer.

For Cleaning

Depending on the media used, the printer may accumulate residues (media dust, adhesives, etc.) as a by-product of normal printing. To maintain the best printing quality, you should remove these residues by cleaning the printer periodically. Regularly clean the print head and supply sensors once change a new media to keep the printer at the optimized performance and extend printer life.

For Disinfecting

Sanitize your printer to protect yourself and others and can help prevent the spread of viruses.

Important

- Set the printer power switch to O (Off) prior to performing any cleaning or disinfecting tasks. Leave the power cord connected to keep the printer grounded and to reduce the risk of electrostatic damage.
- Do not wear rings or other metallic objects while cleaning any interior area of the printer.
- Use only the cleaning agents recommended in this document. Use of other agents may damage the printer and void its warranty.
- Do not spray or drip liquid cleaning solutions directly into the printer. Apply the solution on a clean lint-free cloth and then apply the dampened cloth to the printer.
- Do not use canned air in the interior of the printer as it can blow dust and debris onto sensors and other critical components.
- Only use a vacuum cleaner with a nozzle and hose that are conductive and grounded to drain off static build up.
- All reference in these procedures for use of isopropyl alcohol requires that a 99% or greater isopropyl alcohol content be used to reduce the risk of moisture corrosion to the printhead.
- Do not touch printhead by hand. If you touch it careless, please use 99% Isopropyl alcohol to clean it.

- Always taking personal precaution when using any cleaning agent.

Cleaning Tools:

- Cotton swab
- Lint-free cloth
- Brush with soft non-metallic bristles
- Vacuum cleaner
- 75% Ethanol (for disinfecting)
- 99% Isopropyl alcohol (for printhead and platen roller cleaning)
- Genuine printhead cleaning pen
- Mild detergent (without chlorine)

Cleaning Process:

Printer Part	Method	Interval
Print Head	**I.** Always turn off the printer before cleaning the printhead. **II.** Allow the printhead to cool for at least one minute. **III.** Use a cotton swab and 99% Isopropyl Alcohol or genuine print head cleaning pen to clean the print head surface.	Clean the print head when changing a new label roll.
Platen Roller	**I.** Turn off the printer. **II.** Rotate the platen roller and wipe it thoroughly with the lint-free 99% Isopropyl Alcohol.	Clean the platen roller when changing a new label roll
Peel Bar	Use the lint-free cloth with 99% Isopropyl Alcohol to wipe it.	As needed

Printer Part	Method	Interval
Sensor	Use brush with soft non-metallic bristles or a vacuum cleaner, to remove paper dust. Clean upper and lower media sensors to ensure reliable Top of Form and Paper Out sensing.	Monthly
Exterior	Clean the exterior surfaces with a clean, lint-free cloth (water-dampened cloth). If necessary, use a mild detergent or desktop cleaning solution then use the 75% Ethanol to wipe it.	As needed
Interior	Clean the interior of the printer by removing any dirt and lint with a vacuum cleaner, as described above, or use a brush with soft non-metallic bristles then use the 75% Ethanol to wipe it.	As needed
Linerless Printer	Please refer to Linerless Cleaning Kit User Manual for more information.	◆ Clean as needed or after printing every 1 km. ◆ Please determine the maintenance intervals based on actual usage.

Revise History

Date	Content	Editor
2023/11/6	First release	Camille
2024/3/12	Modify the “Maintenance” section (add the linerless cleaning info.)	Camille

www.tscprinters.com