TSC PRINTRONIX AUTO ID

Alpha-30R

Dicrect Thermal

Mobile Barcode Printers

Service Manual

Copyright Information

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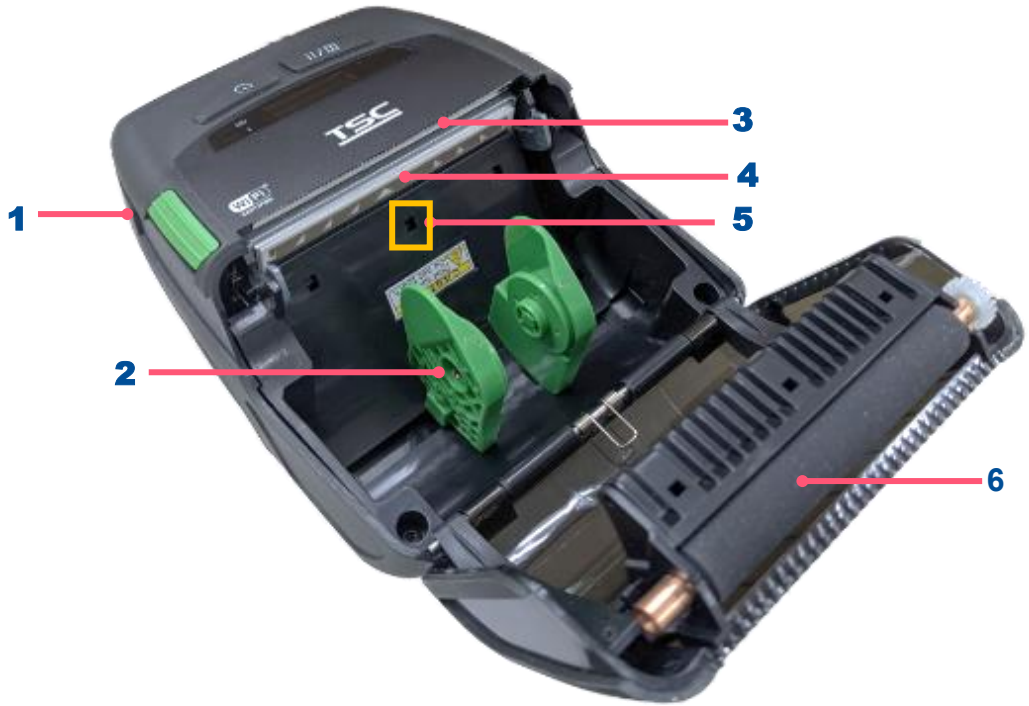

1. Power jack & Type C interface
2. Media holder
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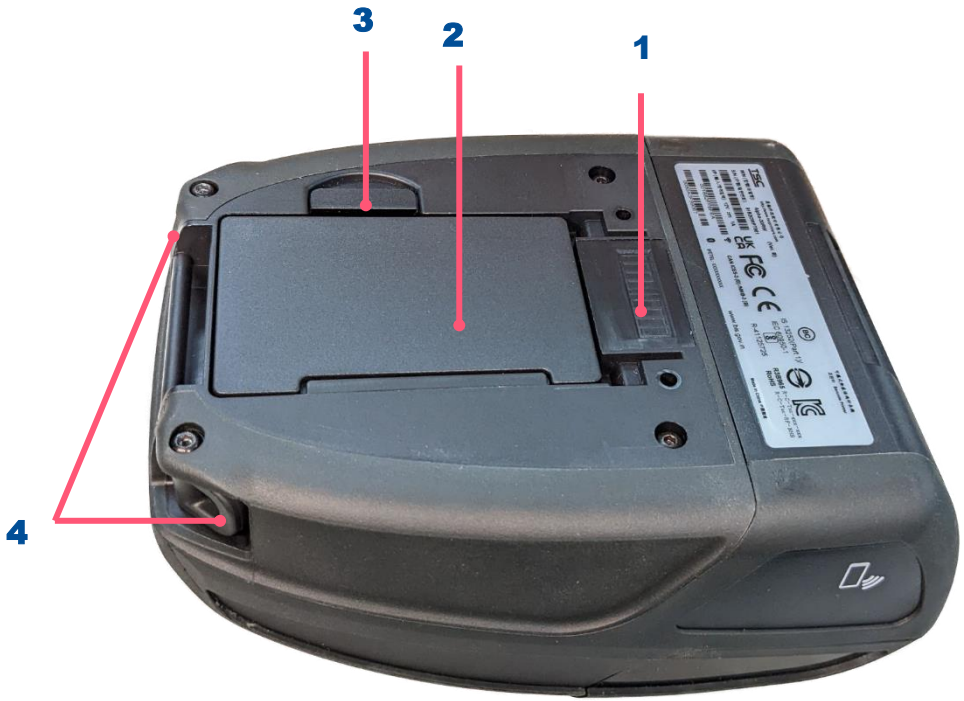

1. Charging position for docking cradle
2. Li-ion battery
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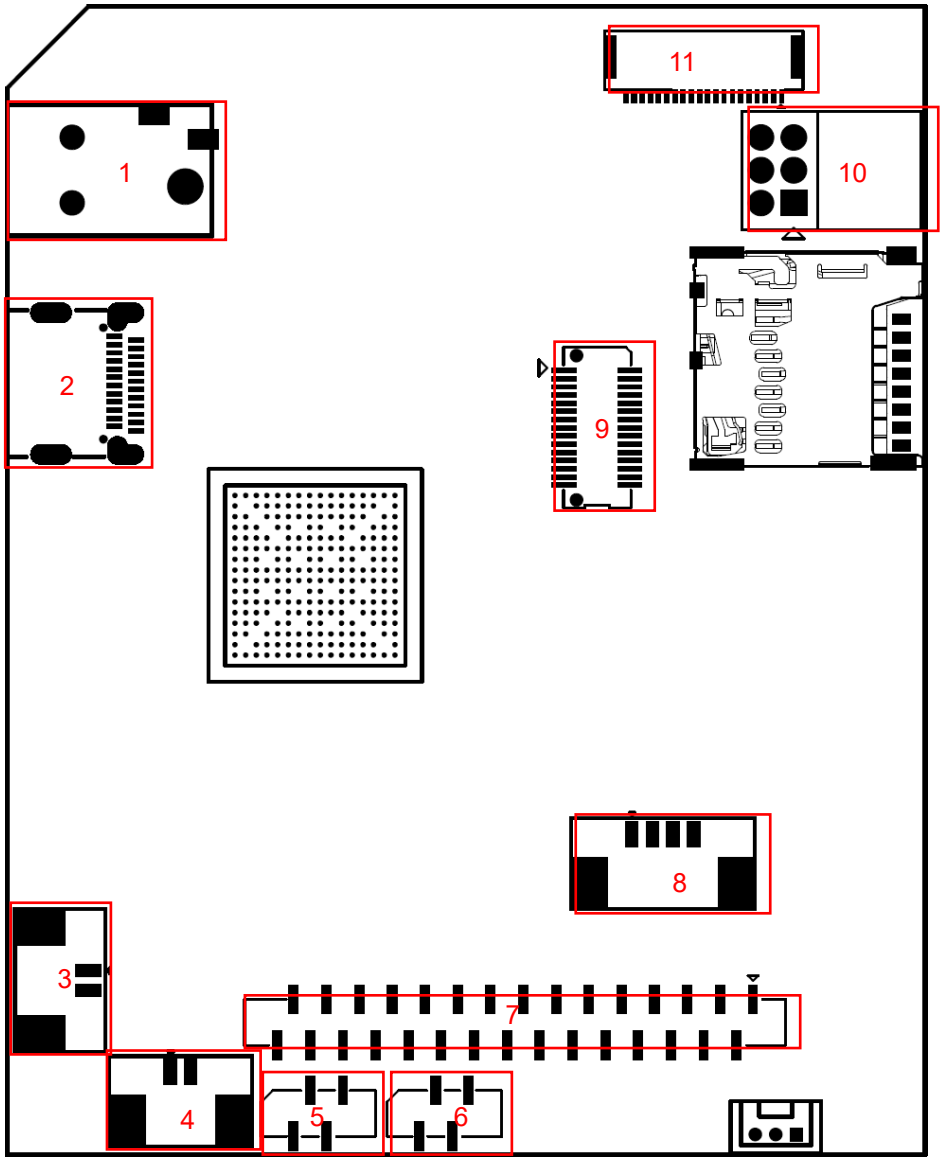
4. Installation location for belt clip

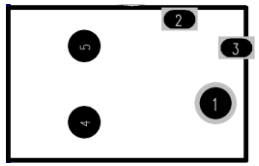
1.2 Controls and Indicators

When Wifi is connected, the IP Address will replace the firmware version and Bluetooth number on the display.

2. Electronics

2.1 Summary of the Board Connectors



<table>
<tr><th>Connector</th><th>Description</th><th>Remark</th></tr>
<tr><td rowspan="2">1</td><td>Power supply output (12V/2A DC) connector</td><td>DCIN1</td></tr>
<tr><td colspan="2">


<table>
<tr><th>Pin</th><th>Description</th></tr>
<tr><td>1</td><td>12V</td></tr>
<tr><td>2</td><td>GND</td></tr>
<tr><td>3</td><td>GND</td></tr>
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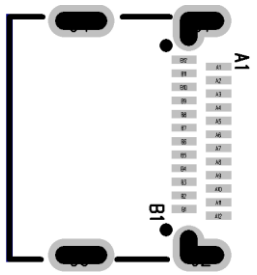
</td></tr>
<tr><td rowspan="2">2</td><td>USB Device connector</td><td>CON2</td></tr>
<tr><td colspan="2">


<table>
<tr><th>Pin</th><th>Description</th></tr>
<tr><td>A1</td><td>GND</td></tr>
<tr><td>A5</td><td>Pull-down resistor 5.1K</td></tr>
<tr><td>A6</td><td>D+</td></tr>
<tr><td>A7</td><td>D-</td></tr>
<tr><td>A12</td><td>GND</td></tr>
<tr><td>B1</td><td>GND</td></tr>
<tr><td>B5</td><td>Pull-down resistor 5.1K</td></tr>
<tr><td>B6</td><td>D+</td></tr>
<tr><td>B7</td><td>D-</td></tr>
<tr><td>B12</td><td>GND</td></tr>
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<tr><td>3</td><td>Head open connector</td><td>CON10</td></tr>
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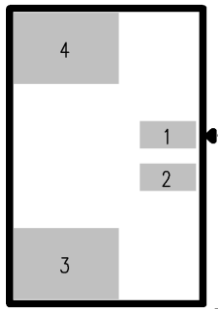

<table>
<tr><th>Pin</th><th>Description</th></tr>
<tr><td>1</td><td>GND</td></tr>
<tr><td>2</td><td>Head open sensor receiver</td></tr>
<tr><td></td><td></td></tr>
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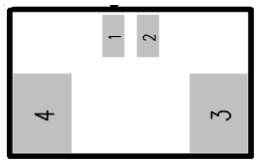
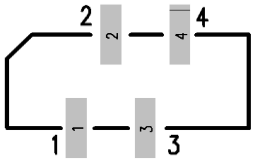
</td><td></td></tr>
<tr><td rowspan="2">4</td><td colspan="2">RTC battery connector</td><td>CON18</td></tr>
<tr><td colspan="3">


<table>
<tr><th>Pin</th><th>Description</th></tr>
<tr><td>1</td><td>GND</td></tr>
<tr><td>2</td><td>3V</td></tr>
<tr><td></td><td></td></tr>
</table>
</td></tr>
<tr><th>Connector</th><th colspan="2">Description</th><th>Remark</th></tr>
<tr><td rowspan="2">5</td><td colspan="2">Black mark sensor connector (Roll side)</td><td>CON7</td></tr>
<tr><td colspan="3">


<table>
<tr><th>Pin</th><th>Description</th></tr>
<tr><td>1</td><td>Black mark sensor emitter</td></tr>
<tr><td>2</td><td>Black mark sensor receiver</td></tr>
<tr><td>3</td><td>3.3V</td></tr>
<tr><td>4</td><td>GND</td></tr>
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<tr><td>6</td><td colspan="2">Black mark sensor connector (TPH side)</td><td>CON8</td></tr>
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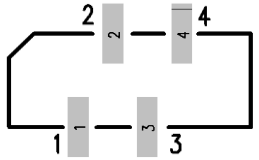
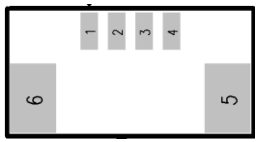
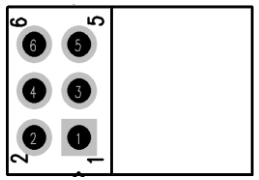
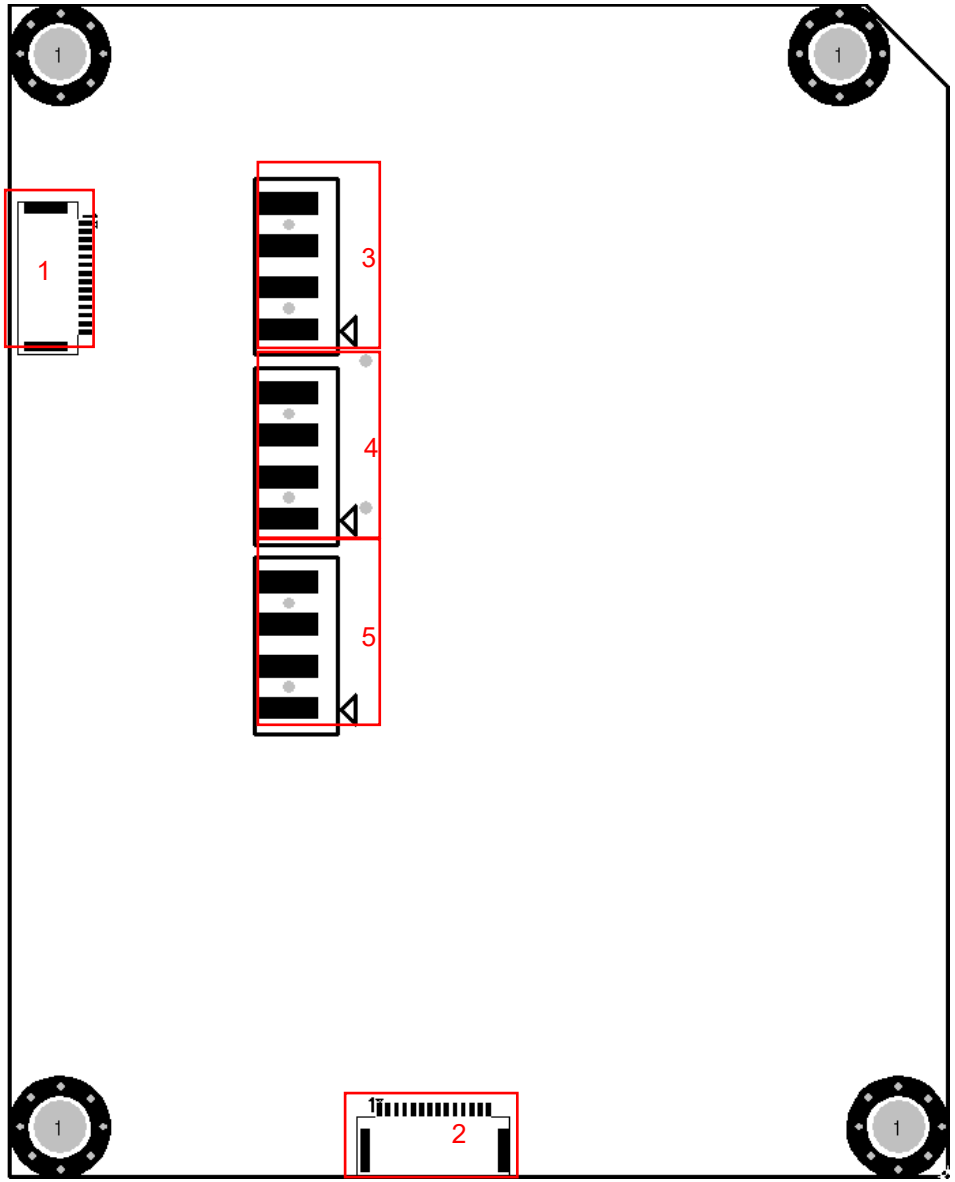
<tr><td></td><td colspan="2"> 

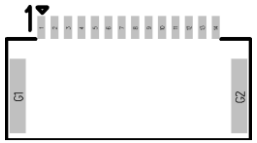
<table>
<tr><th>Pin</th><th>Description</th></tr>
<tr><td>1</td><td>3.3V</td></tr>
<tr><td>2</td><td>Black mark sensor emitter</td></tr>
<tr><td>3</td><td>Black mark sensor receiver</td></tr>
<tr><td>4</td><td>3.3V</td></tr>
</table></td></tr>
<tr><td>7</td><td>Print head connector</td><td>CON13</td></tr>
<tr><td rowspan="2">8</td><td>Motor connector</td><td>CON14</td></tr>
<tr><td colspan="2"> 

<table>
<tr><th>Pin</th><th>Description</th></tr>
<tr><td>1</td><td>A+</td></tr>
<tr><td>2</td><td>A-</td></tr>
<tr><td>3</td><td>B-</td></tr>
<tr><td>4</td><td>B+</td></tr>
</table></td></tr>
<tr><td>9</td><td>Wi-Fi/Bluetooth module connector</td><td>CON4</td></tr>
<tr><td rowspan="2">10</td><td>RFID Module connector</td><td>CON12</td></tr>
<tr><td colspan="2"> 

<table>
<tr><th>Pin</th><th>Description</th></tr>
<tr><td>1</td><td>Enable</td></tr>
<tr><td>2</td><td>Reset</td></tr>
<tr><td>3</td><td>UART-RXD</td></tr>
<tr><td>4</td><td>UART-TXD</td></tr>
<tr><td>5</td><td>GND</td></tr>
<tr><td>6</td><td>12V</td></tr>
</table></td></tr>
<tr><td>11</td><td>Panel/Key board connector</td><td>CON3</td></tr>
</table>

Main board bottom



<table>
<tr><th>Connector</th><th>Description</th><th>Remark</th></tr>
<tr><td>1</td><td colspan="2">Micro SD FPC connector</td><td>CON9</td></tr>
<tr><td rowspan="2">2</td><td colspan="2">Cradle adapter board connector</td><td>CON5</td></tr>
<tr><td colspan="3">

<table>
<tr><th>Pin</th><th>Description</th></tr>
<tr><td>1</td><td>12V</td></tr>
<tr><td>2</td><td>12V</td></tr>
<tr><td>3</td><td>12V</td></tr>
<tr><td>4</td><td>12V</td></tr>
<tr><td>5</td><td>12V</td></tr>
<tr><td>6</td><td>12V</td></tr>
<tr><td>7</td><td>NC</td></tr>
<tr><td>8</td><td>NC</td></tr>
<tr><td>9</td><td>GND</td></tr>
<tr><td>10</td><td>GND</td></tr>
<tr><td>11</td><td>GND</td></tr>
<tr><td>12</td><td>GND</td></tr>
<tr><td>13</td><td>GND</td></tr>
<tr><td>14</td><td>GND</td></tr>
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<tr><td>3</td><td colspan="2">Battery connector</td><td>CON15</td></tr>
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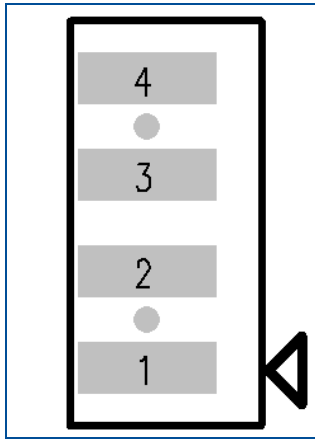
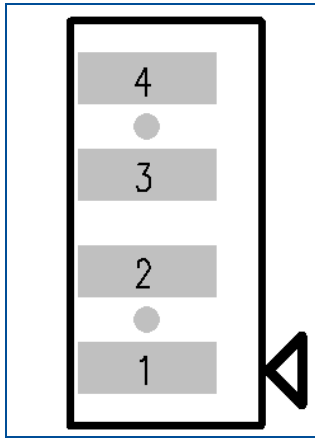
<tr><td></td><td> 

<table>
<tr><th>Pin</th><th>Description</th></tr>
<tr><td>1</td><td>NTC</td></tr>
<tr><td>2</td><td>NTC</td></tr>
<tr><td>3</td><td>Battery positive</td></tr>
<tr><td>4</td><td>Battery positive</td></tr>
<tr><td></td><td></td></tr>
</table></td></tr>
<tr><td rowspan="2">4</td><td>Battery connector</td><td>CON16</td></tr>
<tr><td> 

<table>
<tr><th>Pin</th><th>Description</th></tr>
<tr><td>1</td><td>GND</td></tr>
<tr><td>2</td><td>GND</td></tr>
<tr><td>3</td><td>I2C-SCL</td></tr>
<tr><td>4</td><td>I2C-SDA</td></tr>
<tr><td></td><td></td></tr>
</table></td></tr>
<tr><td>5</td><td>Battery connector</td><td>CON17</td></tr>
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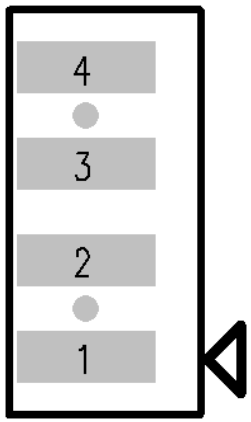


Pin	Description
1	Battery positive
2	Battery positive
3	GND
4	GND

3. Mechanism

3.1 Replacing the Battery

1. Turn the printer to the backside then take out the battery.

2. Reassemble the parts in reverse procedures.

3.2 Replacing the Lower Cover

1. Turn the printer to the backside then unscrew 4 screws as indicated.

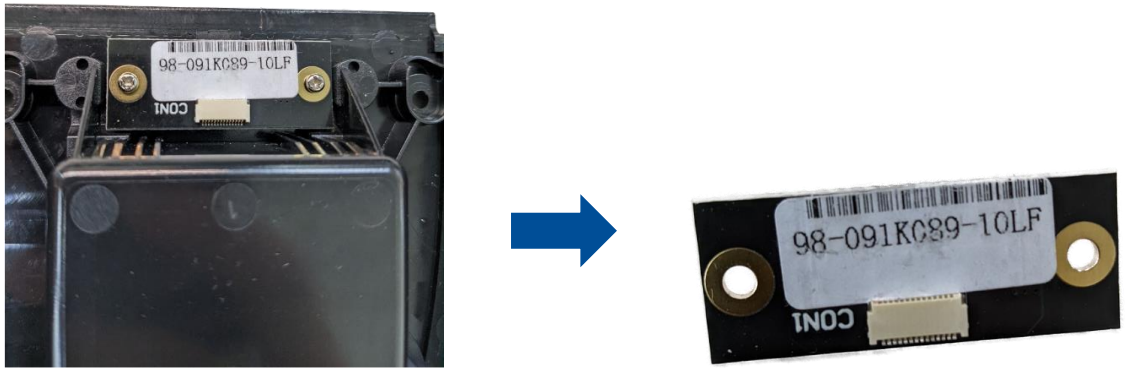
2. Take out the lower cover.

3. Reassemble the parts in reverse procedures.

3.3 Replacing the Viechle Charger PCB Assembly

1. Refer to 3.2 to remove printer's lower cover.

2. Unscrew 2 screws to take out the cradle charger PCB.



3. Reassemble the parts in reverse procedures.

3.4 Replacing the Top Cover

1. Refer to 3.2 to remove printer's lower cover.

2. Take out the lid then turn back to unscrew 2 screws as shown

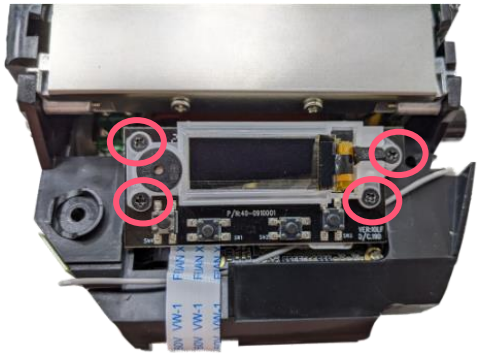
3. Take out the cover as shown.

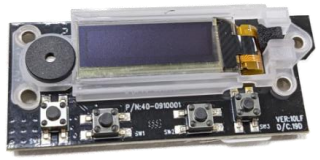
4. Reassemble the parts in reverse procedures.

3.5 Replacing the LCD Board PCB Assembly

1. Refer to 3.2 & 3.4 to remove lower cover and outer cover.

2. Unscrew 4 screws on the LCD panel and detach the cable from the mainboard.



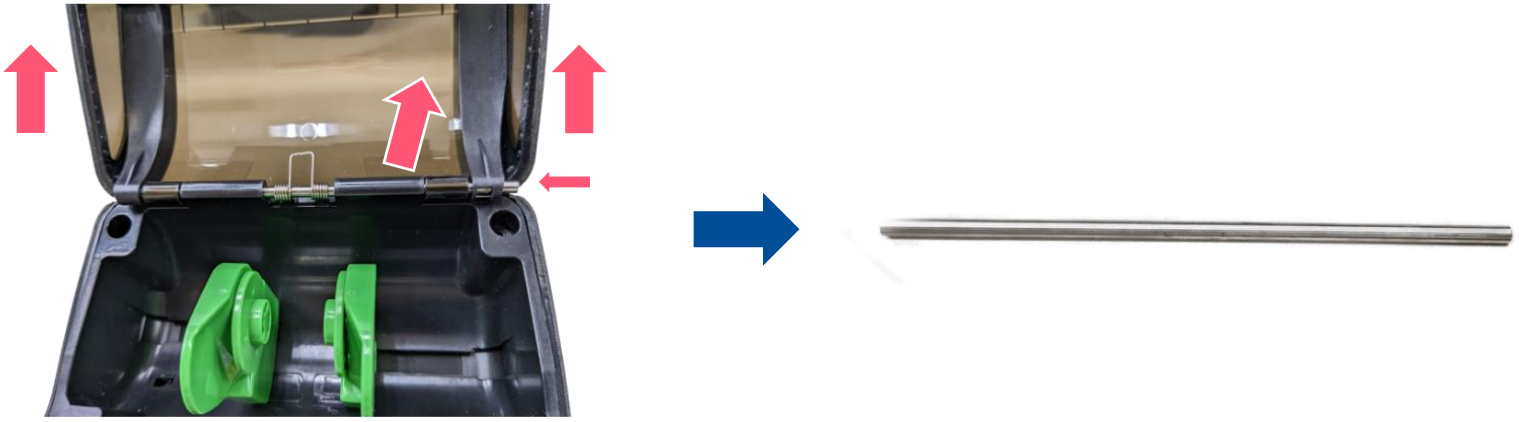


3. Reassemble the parts in reverse procedure.

3.6 Replacing the Shaft

1. Refer to 3.2 remove lower cover and unscrew 2 screws as shown.

2. Gently lift up the printer mechanism and use tool to pull out the shaft

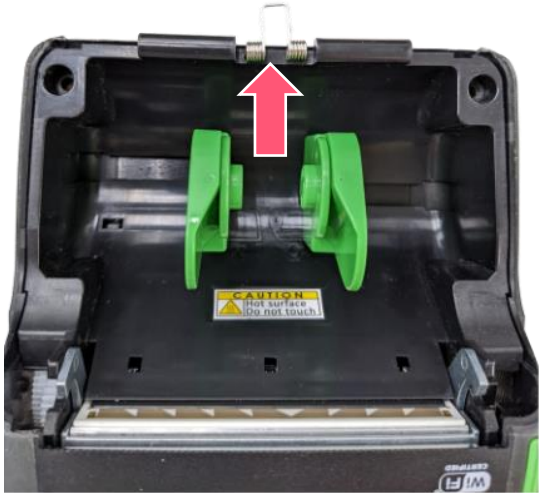


3. Reassemble the parts in the reverse procedures.

3.7 Replacing the Spring

1. Refer to 3.6 to remove the spring

2. Take out the Spring

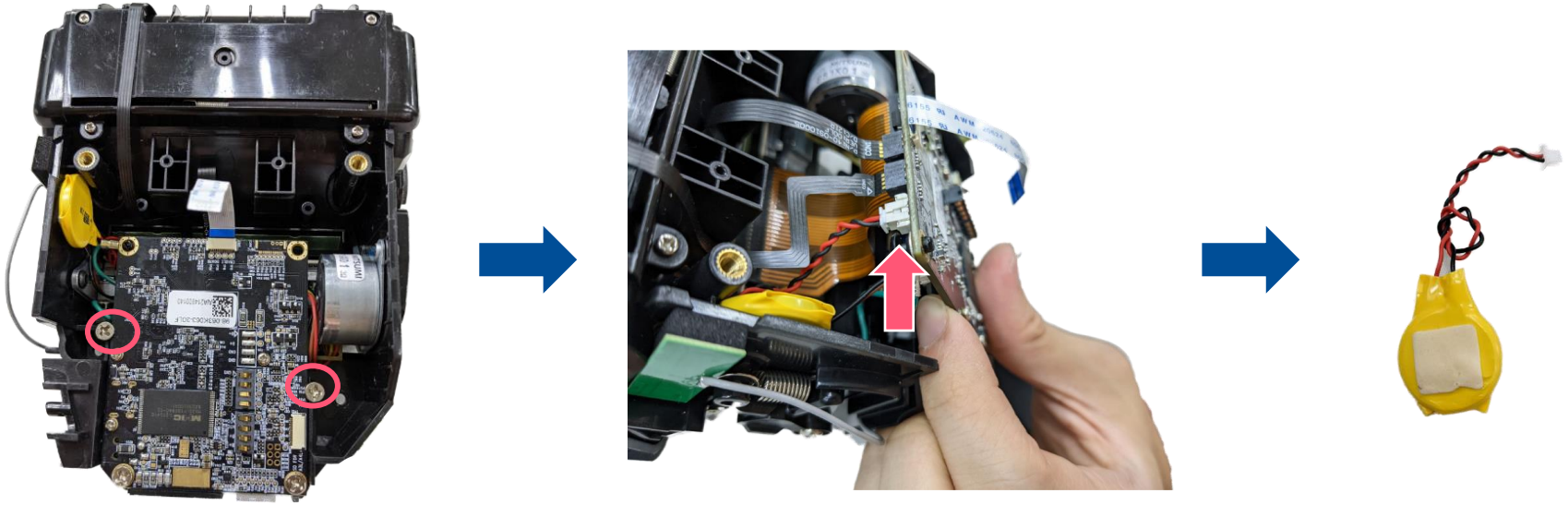


3. Reassemble the parts in reverse procedures.

3.8 Replacing the RTC Battery

1. Refer to 3.2 & 3.4 to remove lower cover and outer cover.

2. Unscrew 2 screws on the mainboard then remove the RTC and the cable.

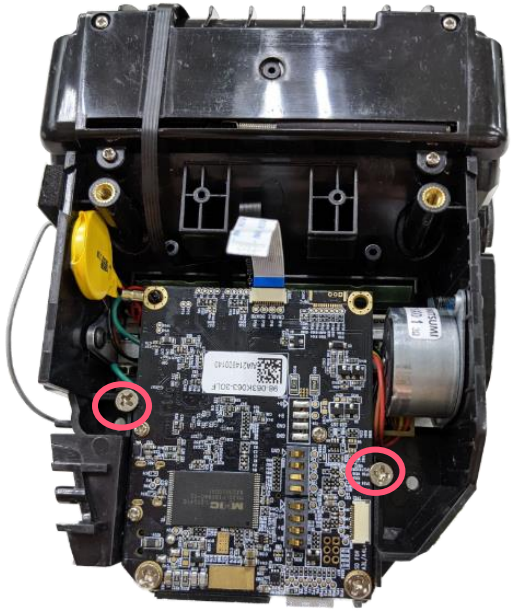


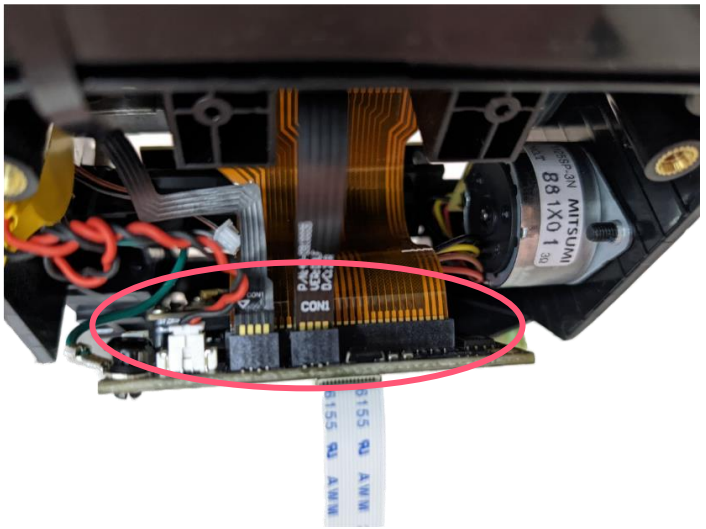
3. Reassemble the parts in reverse procedures.

3.9 Replacing the Stepping Motor Assembly

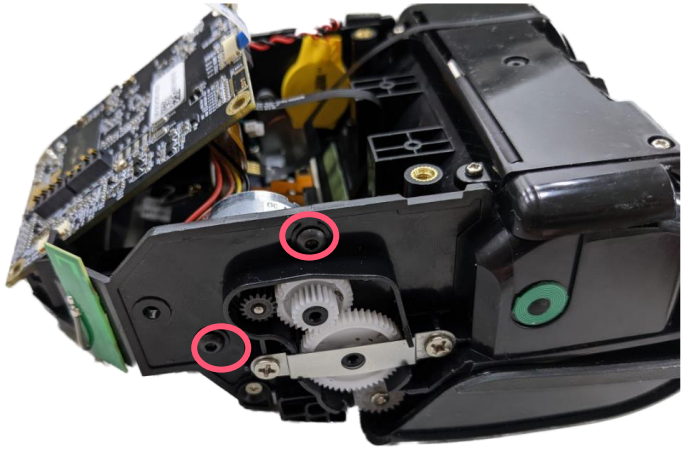
1. Refer to 3.2 & 3.4 to remove lower cover and outer cover.

2. Unscrew 2 screws on the mainboard and remove the front parts of the cables.

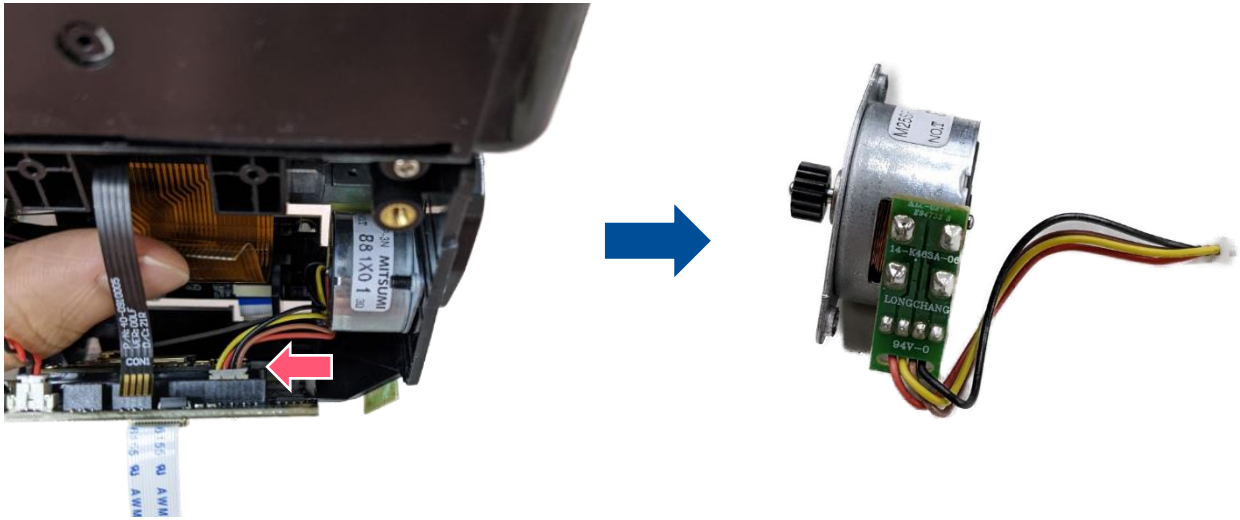




3. Unscrew 2 hex screws to remove the motor assembly.



4. Remove the cable and take out the motor.

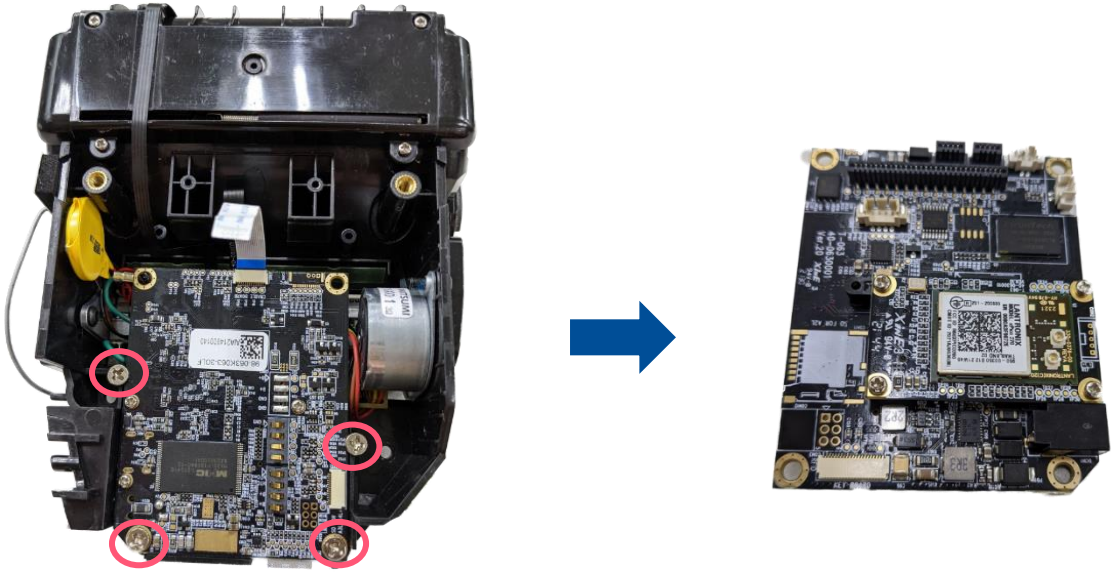


5. Reassemble the parts in reverse procedures.

3.10 Replacing the Mainboard Assembly

1. Refer to 3.2 & 3.4 to remove lower cover and outer cover.

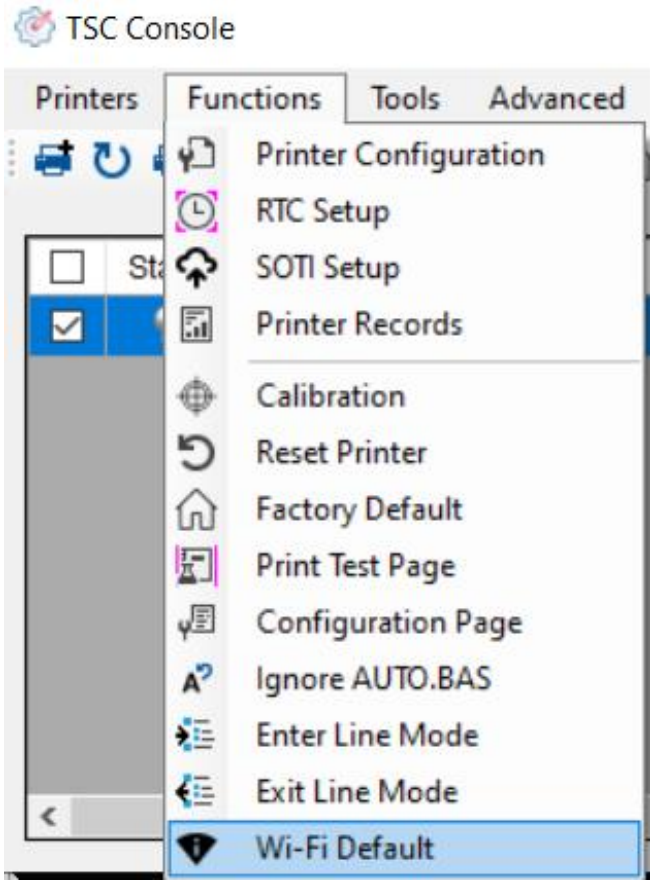
2. Unscrew 4 screws on the mainboard and remove all the cables.



3. Reassemble the part in reverse procedures.

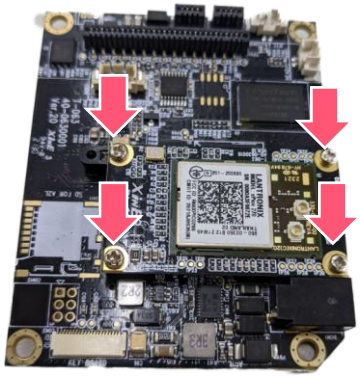
3.11 Replacing the Wi-Fi/BT Combo Module

※ Before replacing the new Wi-Fi module, please set the default to clear the old Wi-Fi settings in the printer via TSC Console. And you need to reset the Wi-Fi settings after replacing the new Wi-Fi module.



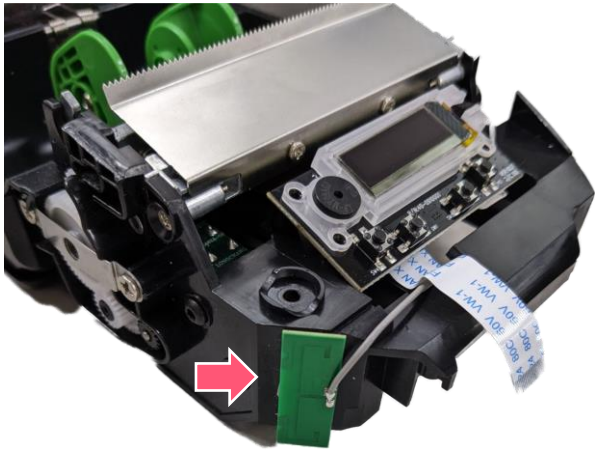
1. Refer 3.10 to remove the mainboard

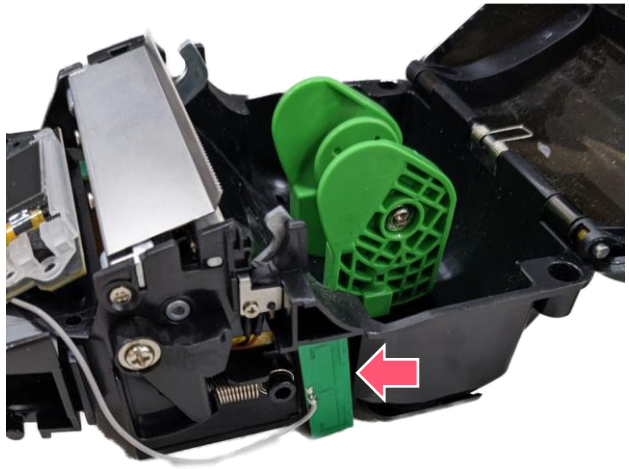
2. Unscrew 4 screws as shown.



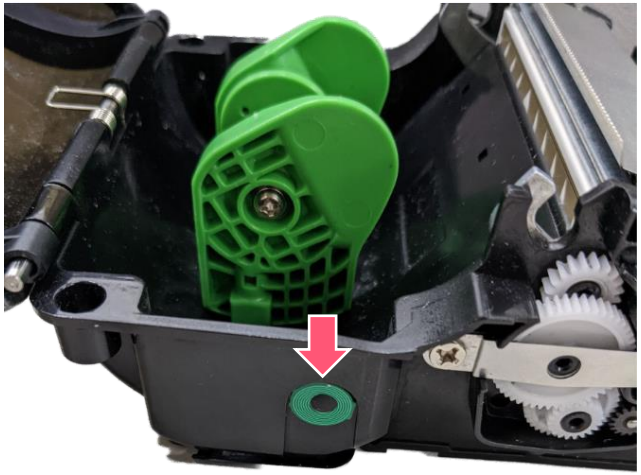
3. Take out the Wi-Fi module

4. Remove 2 antennas





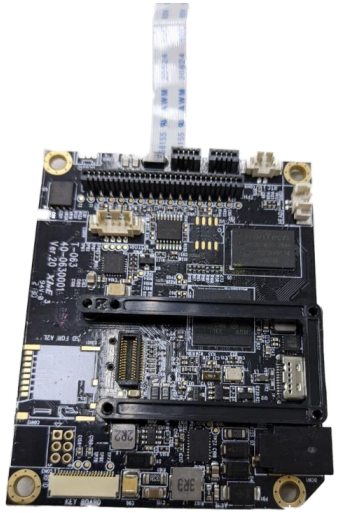
5. Remove the NFC tag.



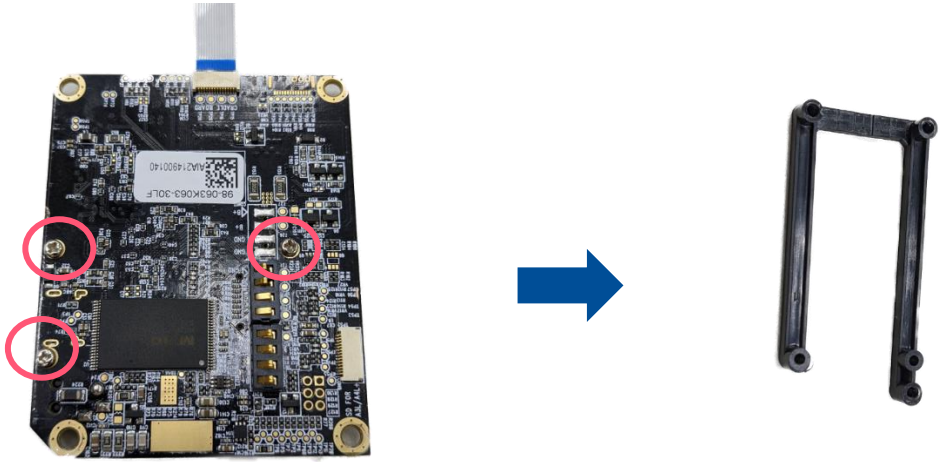
6. Reassemble the part in reverse procedures.

3.12 Replacing the Wi-Fi/BT Module Holder

1. Refer 3.11 to remove the Wi-Fi module.



2. Turn to the opposite side and unscrew 3 screws to remove the Wi-Fi transfer board.

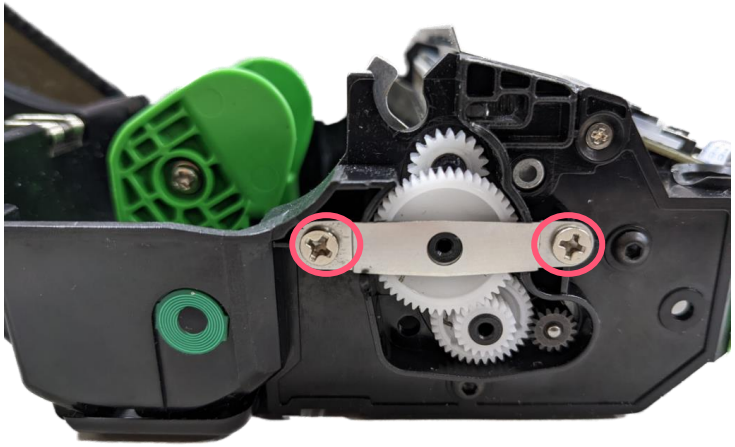


3. Reassemble the parts in reverse procedures.

3.13 Replacing the Stepping Motor Gears

1. Refer to 3.2 & 3.4 to remove lower cover and outer cover.

2. Remove 2 screws and take out the gears.

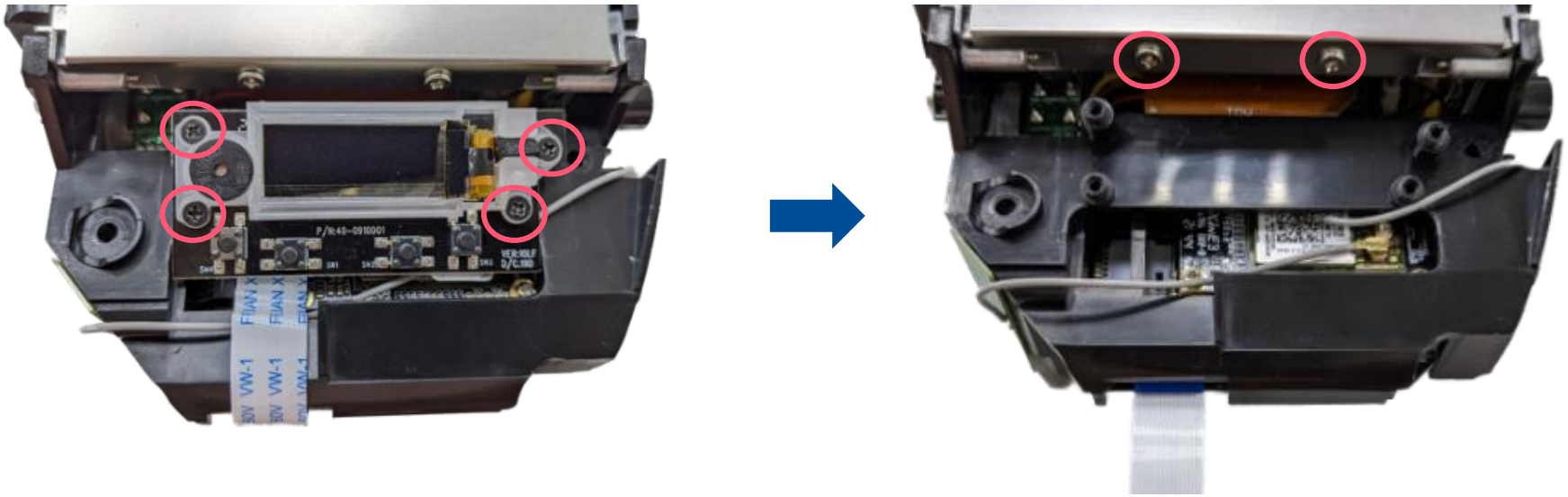


3. Reverse the parts in reverse procedures.

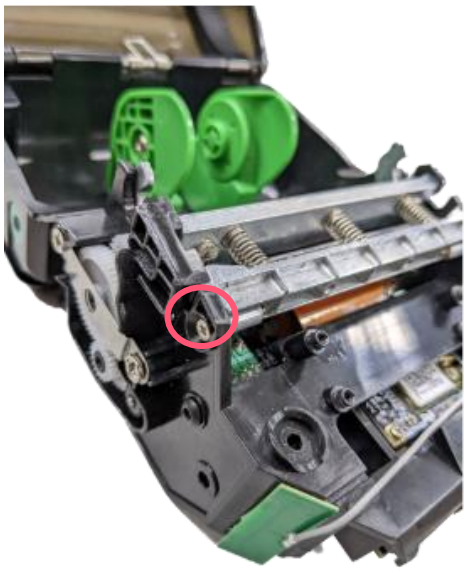
3.14 Replacing the Print Head

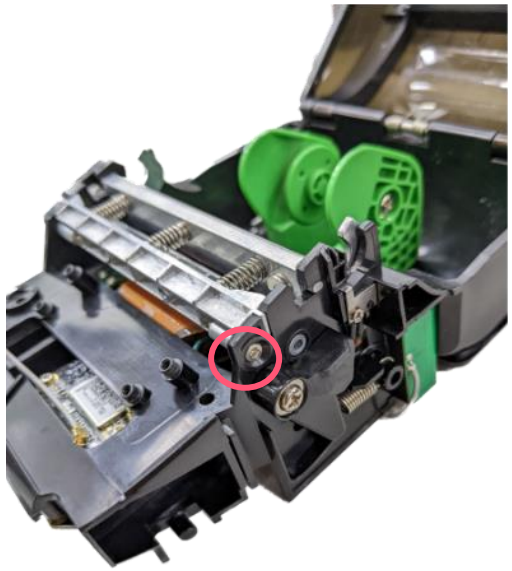
1. Refer to 3.2 & 3.4 to remove lower cover and outer cover.

2. Remove 4 screws on the LCD module then remove 2 screws on the tear bar.

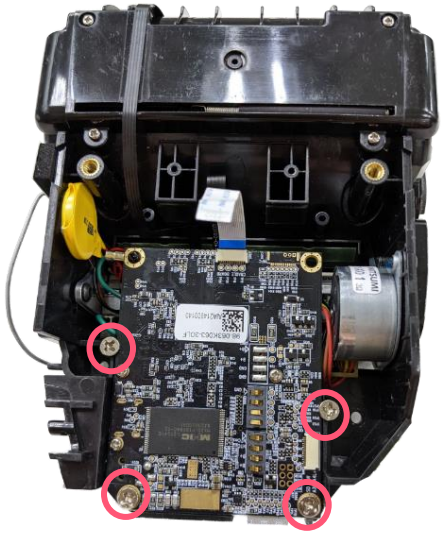


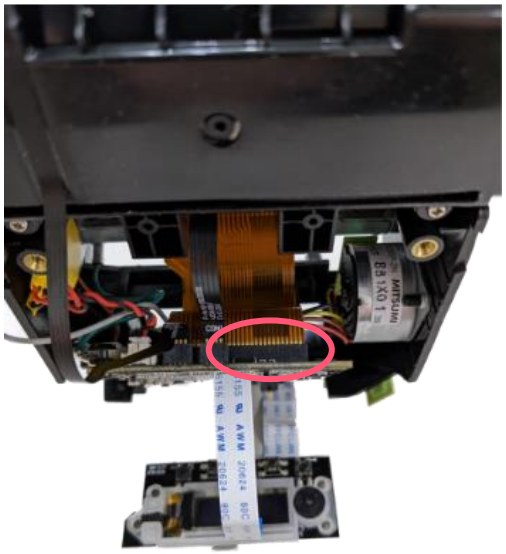
3. Unscrew 2 screws as shown to take out the x





4. Unscrew 4 scres and remove the Printhead cables to take out the print head module.

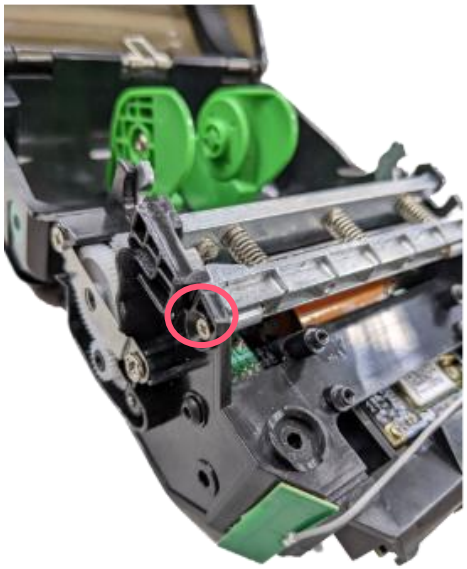


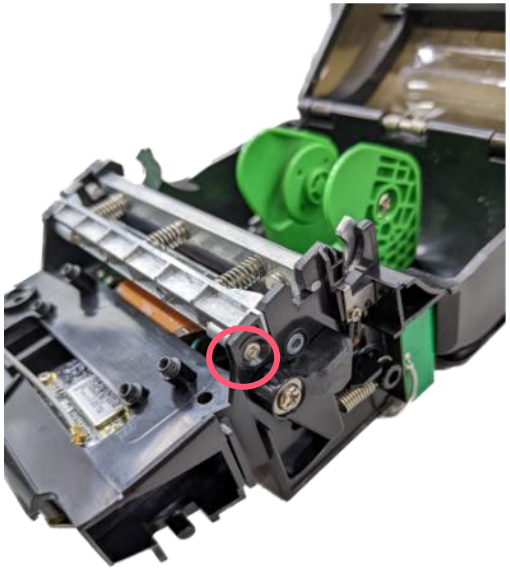


5. Reassemble the parts in reverse procedure.

3.15 Replacing the Springs

1. Refer 3.14 to remove the tear bar and the x





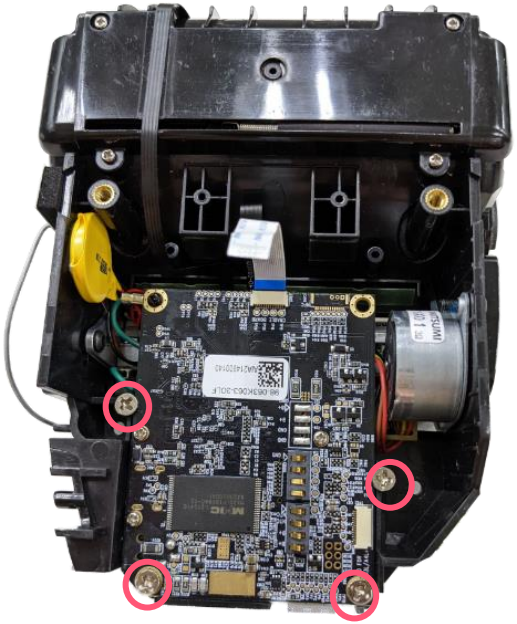
2. Take out the springs.

3. Reassemble the parts in reverse procedures.

3.16 Replacing the Open Sensor Module Assembly

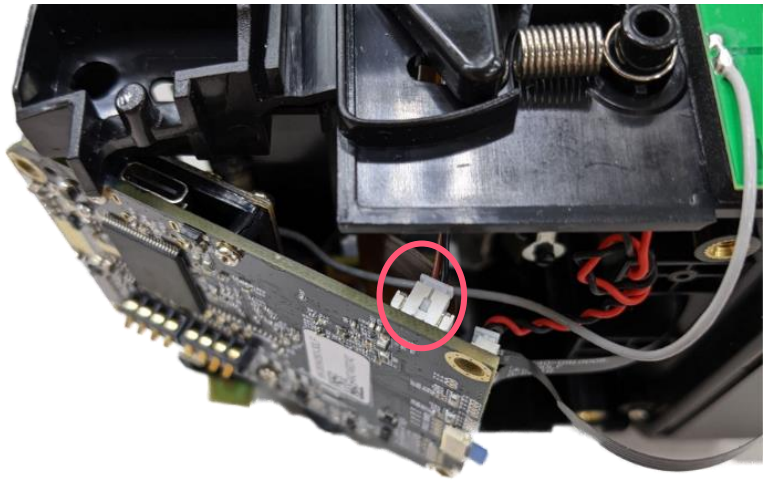
1. Refer to 3.2 & 3.4 to remove lower cover and outer cover.

2. Unscrew 4 screws.



3. Unscrew the marked screw.

4. Remove the cable from the mainboard and pull out the Open Sensor.

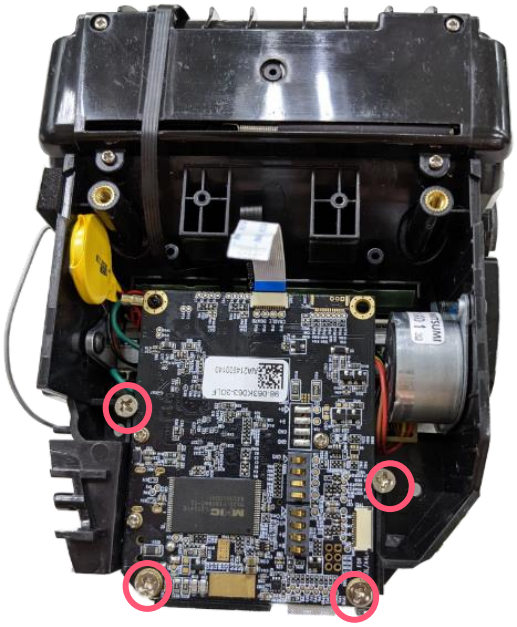


5. Reassemble the parts in reverse procedures

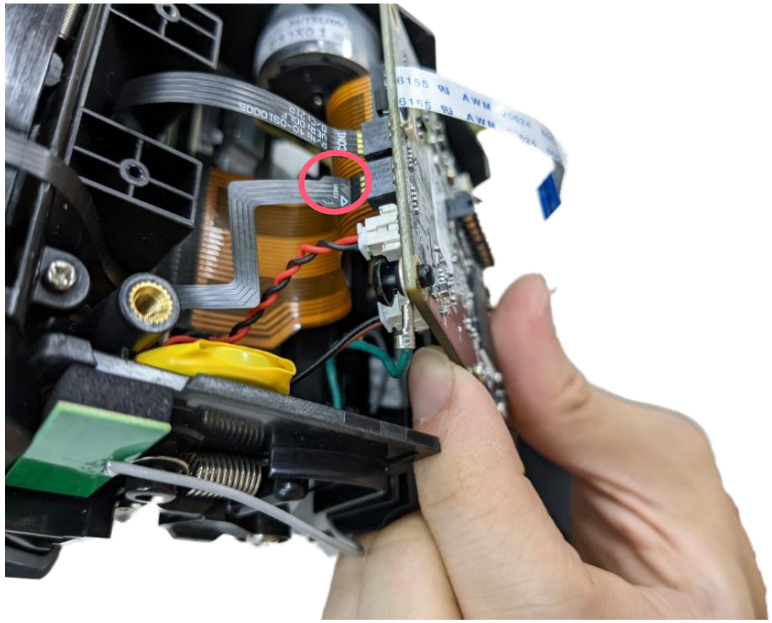
3.17 Replacing Media Holder Cover.

1. Refer to 3.2 & 3.4 to remove lower cover and outer cover.

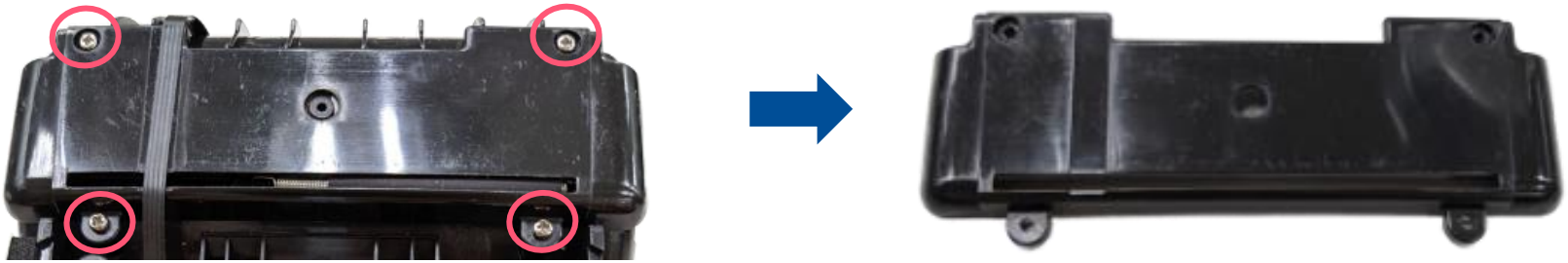
2. Unscrew 4 screws.



3. Detach the marked cable on the main board.



4. Unscrew 2 screws on the Media Holder Cover to take out the cover.

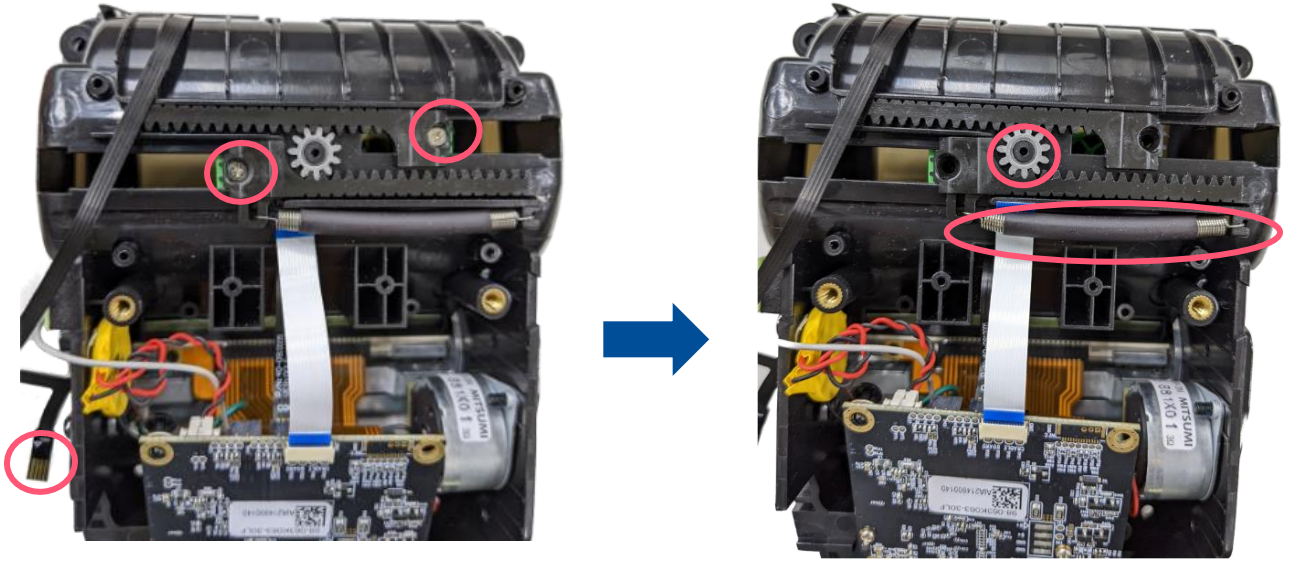


6. Reassemble the parts in reverse procedures

3.18 Replacing Media Holder Assembly

1. Refer 3.17 to remove the Media Holder Cover.

2. Remove the cable and unscrew 2 marked screws and take out the gears and the spring.



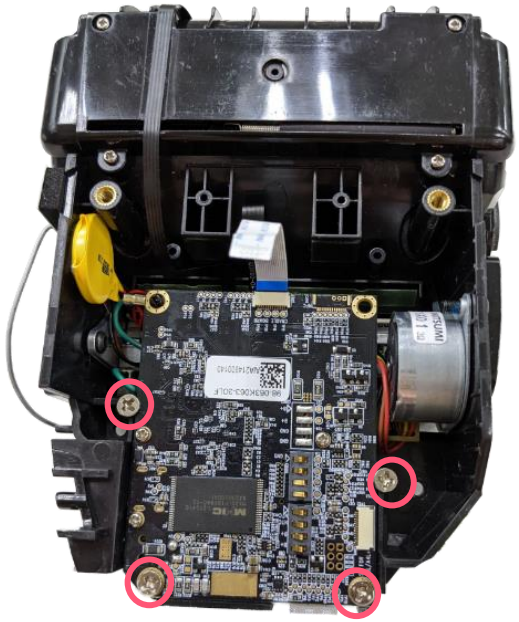
3. The Media Holder's components will detach from the mechanism.

4. Reassemble the parts in reverse procedure.

3.19 Replacing the Black Mark Sensor

1. Refer 3.1 to open top cover. Refer to 3.2 & 3.4 to remove lower cover and outer cover.

2. Unscrew 4 screws as indicated.



3. Open the Media Cover and Unscrew 2 screws as shown.

4. Unscrew 2 marked screws.

5. Remove the gap sensor cable from mainboard then pull it out.

6. Reassemble the parts in reverse procedures.

3.20 Replacing the Platen Roller

1. Open the Media Cover and use tool to pry up the platen roller.

2. Reassemble the parts in reverse procedures.

3.21 Replacing the Inner Case

1. Remove lower case and outer case.
2. Remove the mainboard
3. Remove the gears/ motor / RTC / open sensor
4. Remove printhead / media holder
5. Detach the Media Cover by pulling out the shaft.

6. Reassemble the parts in reverse procedures.

4. TroubleShooting

Problem	Possible Cause	Recovery Procedure
No Power	* The battery is not properly installed. * Battery out of power. * Battery damage.	* Reinstall the battery. * Switch the printer on. * Charge the battery. * Replace a new battery.
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 change a new cable. * Please reset the wireless device setting. * Select the correct printer port in the driver. * 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 print on the label	* Label loaded not correctly * Use wrong type paper	* Follow the instructions in loading the media. * Use thermal type paper
The printer status from LCD shows "Carriage Open".	* The printer carriage is open.	* Please close the print carriage.
The printer status from LCD shows "No Paper".	* Running out of media roll. * The media is installed incorrectly. * Media sensor is not calibrated.	* Supply a new media roll. * Follow the instructions in loading the media to reinstall the media roll. * Calibrate the media sensor.
The printer status from LCD shows "Paper Jam".	* Media sensor is not set properly. * The media size is set incorrectly. * Label may be stuck inside the printer mechanism.	* Calibrate the media sensor. (Select the correct sensor) * Set media size correctly. * Remove the stuck label inside the printer mechanism.
Take Label	* Peel function is enabled.	* If use peel-off mode, please remove the label.
Can't download the file to memory (FLASH / DRAM/ 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.
Poor Print Quality	* Media is loaded incorrectly * Dust or adhesive accumulation on the print head. * Print density is not set properly. * Print speed is not set properly. * Print head element is damaged.	* 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. * Change proper media roll. * Make sure the print carriage is closed properly.
Missing printing on the left or right side of label	* Wrong label size setup.	* Set the correct label size.
Irregular printing	* The printer is in Hex Dump mode.	* Turn off and on the printer to skip the dump mode.
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 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.

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
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

Revise History

Date	Content	Editor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