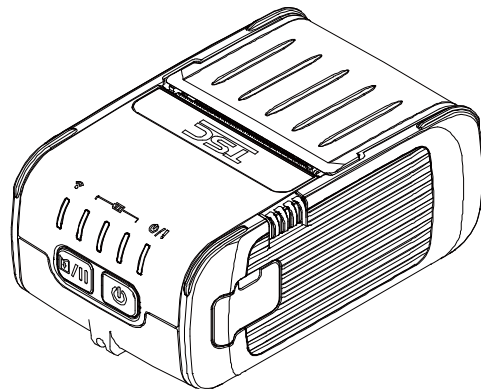


Alpha-2R

Direct Thermal Portable Printer

**SERVICE
MANUAL**



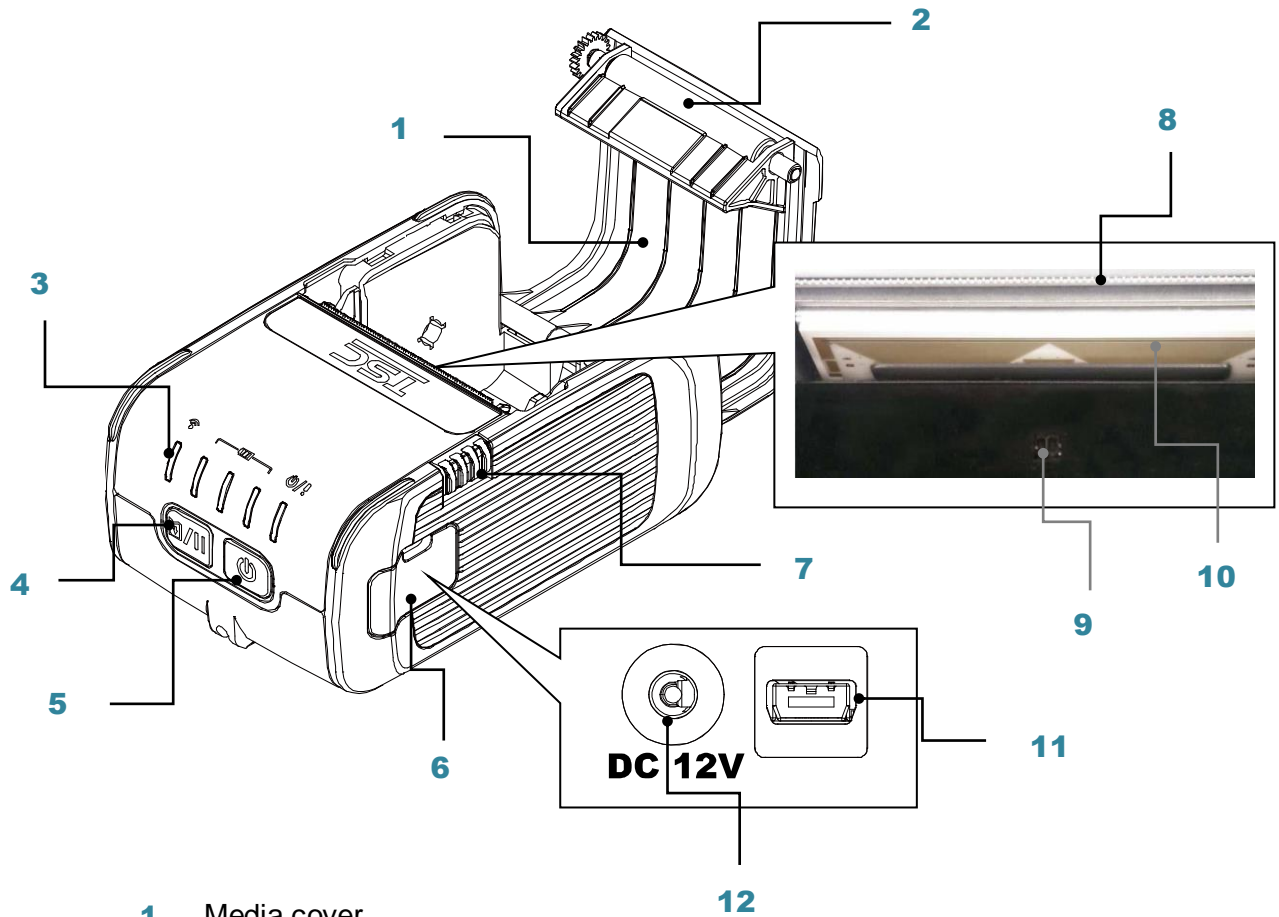
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1. FUNDAMENTAL OF THE SYSTEM

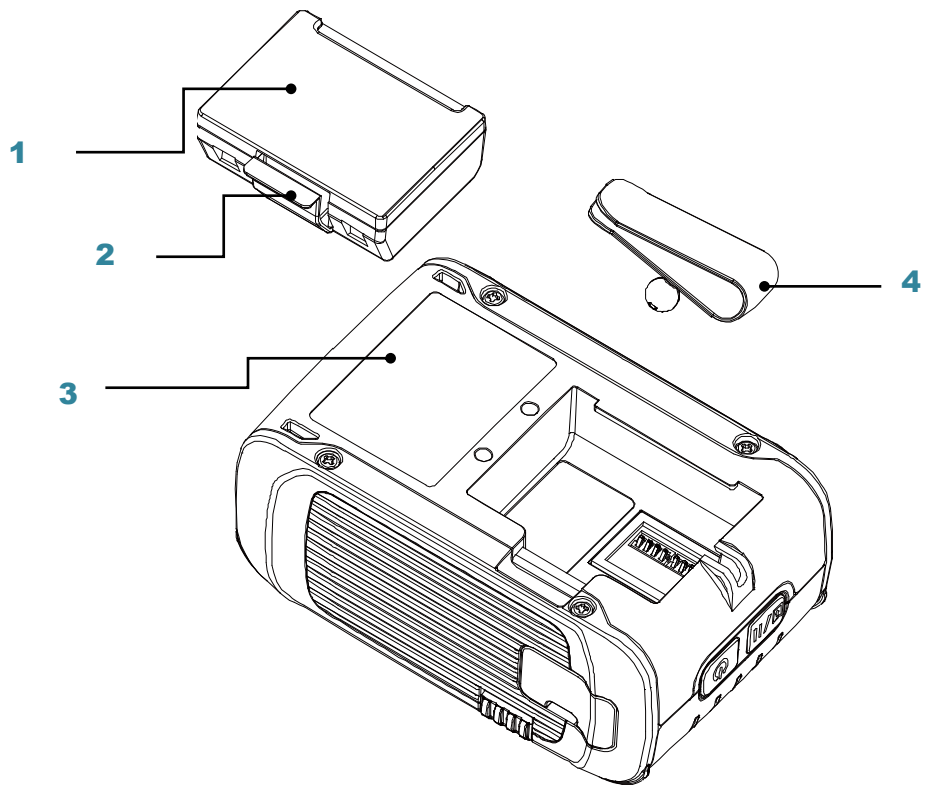
1.1 Overview

Front View



1. Media cover
2. Platen roller
3. LED indicator
4. Feed/Pause button
5. Power on/off button
6. Interface cover
7. Media cover release button
8. Tear bar
9. Black mark sensor
10. Print head
11. USB interface
12. Power jack

Rear View

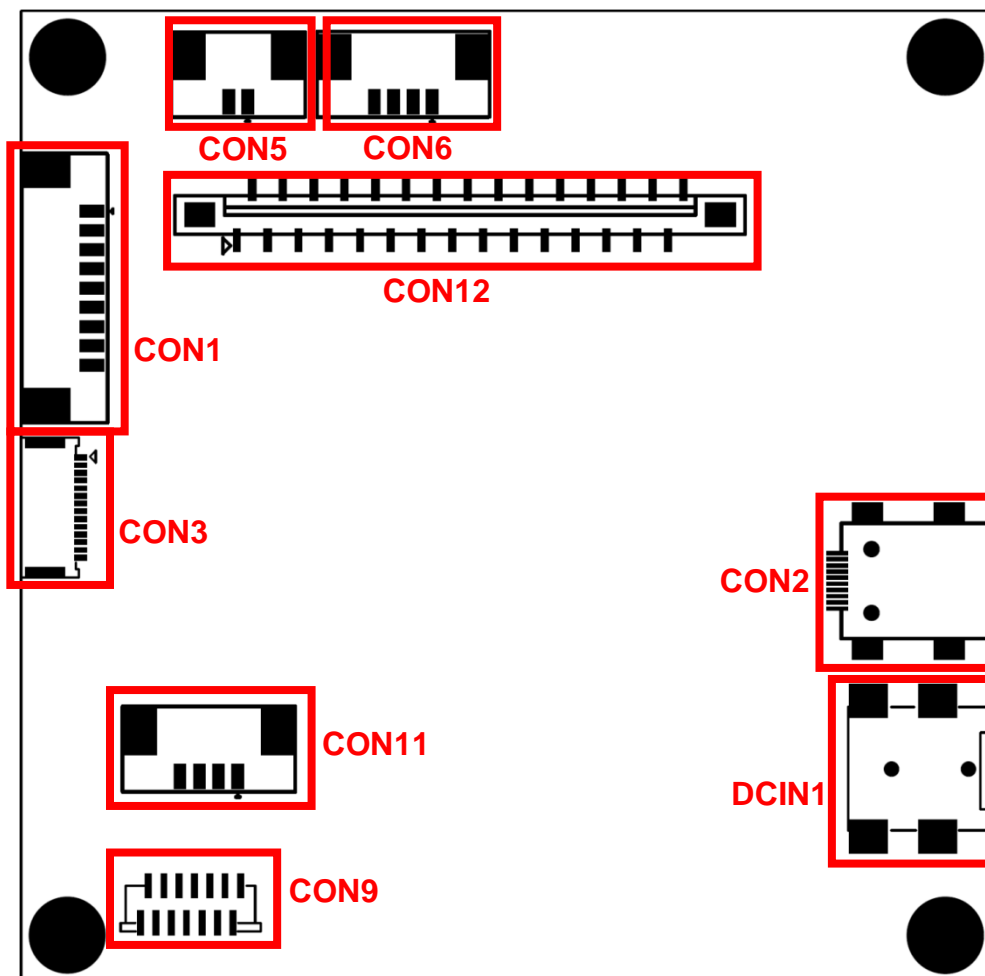


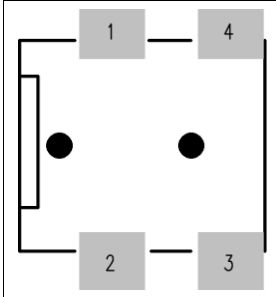
1. Li-ion battery
2. Battery open clasp
3. Printer serial number label
4. Belt chip

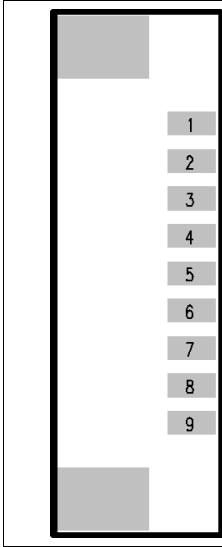
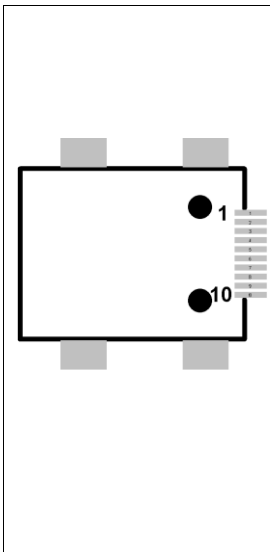
2. ELECTRONICS

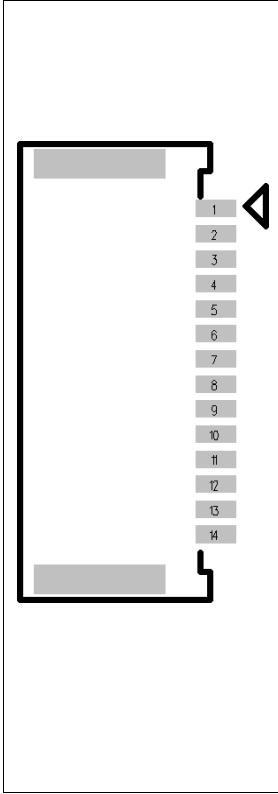
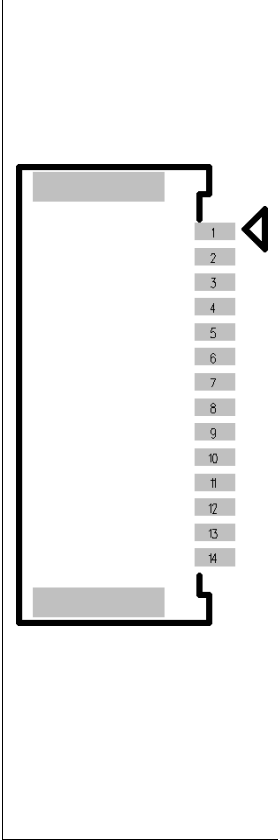
2.1 Summary of Board Connectors

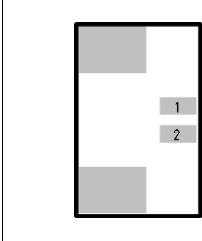
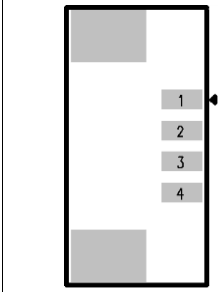
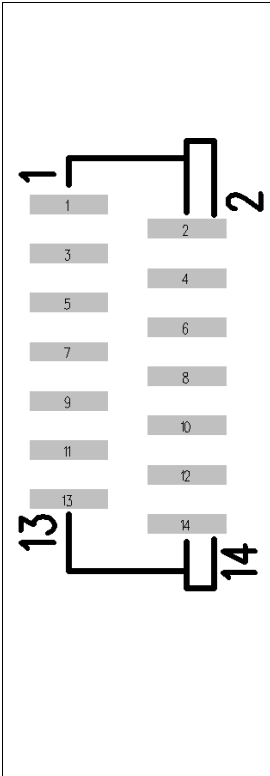
Main board top

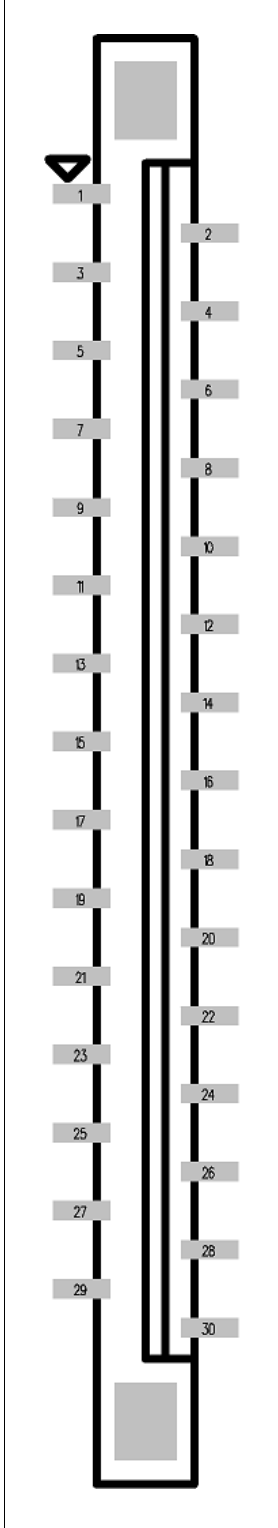


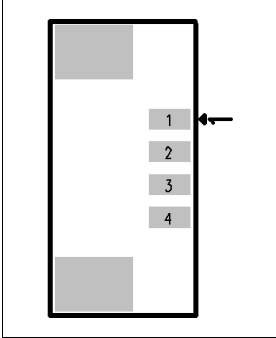
Connector	Description	
DCIN1	DC Jack	
		
	Pin	Description
	1	12V
	2	GND
3	GND	
4	12V	

Connector	Description																						
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Pin	Description																						
1	3.3V																						
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3	Data1																						
4	Data2																						
5	Data3																						
6	Clock																						
7	Command																						
8	NC																						
9	GND																						
CON2	<p data-bbox="483 909 643 940">USB&RS-232</p> <div data-bbox="544 947 1362 1496">  <table border="1" data-bbox="826 947 1362 1496"> <thead> <tr> <th data-bbox="826 947 943 999">Pin</th> <th data-bbox="943 947 1362 999">Description</th> </tr> </thead> <tbody> <tr> <td data-bbox="826 999 943 1050">1</td> <td data-bbox="943 999 1362 1050">NC</td> </tr> <tr> <td data-bbox="826 1050 943 1102">2</td> <td data-bbox="943 1050 1362 1102">VBUS</td> </tr> <tr> <td data-bbox="826 1102 943 1153">3</td> <td data-bbox="943 1102 1362 1153">TX</td> </tr> <tr> <td data-bbox="826 1153 943 1205">4</td> <td data-bbox="943 1153 1362 1205">D-</td> </tr> <tr> <td data-bbox="826 1205 943 1256">5</td> <td data-bbox="943 1205 1362 1256">RX</td> </tr> <tr> <td data-bbox="826 1256 943 1308">6</td> <td data-bbox="943 1256 1362 1308">D+</td> </tr> <tr> <td data-bbox="826 1308 943 1359">7</td> <td data-bbox="943 1308 1362 1359">RTS</td> </tr> <tr> <td data-bbox="826 1359 943 1411">8</td> <td data-bbox="943 1359 1362 1411">NC</td> </tr> <tr> <td data-bbox="826 1411 943 1462">9</td> <td data-bbox="943 1411 1362 1462">CTS</td> </tr> <tr> <td data-bbox="826 1462 943 1496">10</td> <td data-bbox="943 1462 1362 1496">GND</td> </tr> </tbody> </table> </div>	Pin	Description	1	NC	2	VBUS	3	TX	4	D-	5	RX	6	D+	7	RTS	8	NC	9	CTS	10	GND
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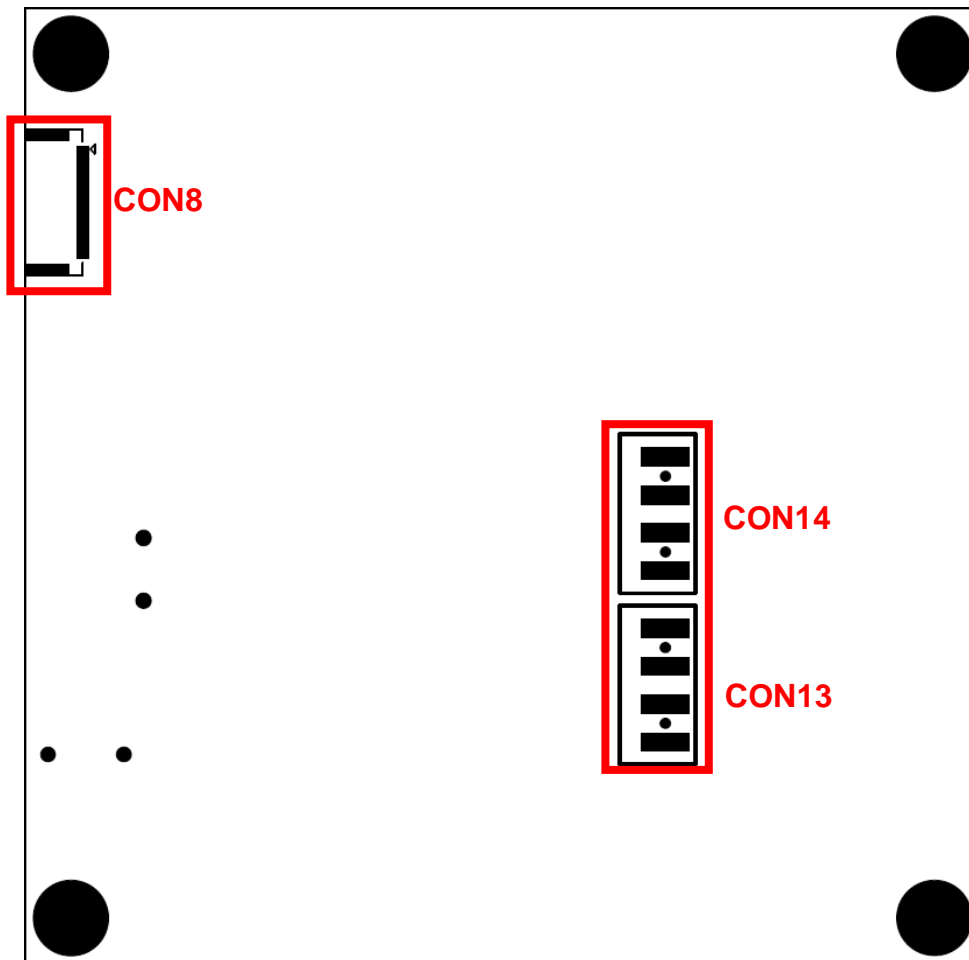
Connector	Description																														
CON3	<p>Wi-Fi module:</p>  <table border="1" data-bbox="823 230 1362 1021"> <thead> <tr> <th>Pin</th> <th>Description</th> </tr> </thead> <tbody> <tr><td>1</td><td>3.3V</td></tr> <tr><td>2</td><td>3.3V</td></tr> <tr><td>3</td><td>3.3V</td></tr> <tr><td>4</td><td>Reset</td></tr> <tr><td>5</td><td>SPI (MISO)</td></tr> <tr><td>6</td><td>SPI (RTS)</td></tr> <tr><td>7</td><td>SPI (MOSI)</td></tr> <tr><td>8</td><td>SPI (CTS)</td></tr> <tr><td>9</td><td>Interrupt</td></tr> <tr><td>10</td><td>SPI (Clock)</td></tr> <tr><td>11</td><td>Mode: High : BT/Low : Wi-Fi</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> </tbody> </table>	Pin	Description	1	3.3V	2	3.3V	3	3.3V	4	Reset	5	SPI (MISO)	6	SPI (RTS)	7	SPI (MOSI)	8	SPI (CTS)	9	Interrupt	10	SPI (Clock)	11	Mode: High : BT/Low : Wi-Fi	12	GND	13	GND	14	GND
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<p>Bluetooth module:</p>  <table border="1" data-bbox="823 1070 1362 1906"> <thead> <tr> <th>Pin</th> <th>Description</th> </tr> </thead> <tbody> <tr><td>1</td><td>3.3V</td></tr> <tr><td>2</td><td>3.3V</td></tr> <tr><td>3</td><td>3.3V</td></tr> <tr><td>4</td><td>Reset</td></tr> <tr><td>5</td><td>UART (RX)</td></tr> <tr><td>6</td><td>UART (RTS)</td></tr> <tr><td>7</td><td>UART (TX)</td></tr> <tr><td>8</td><td>UART (CTS)</td></tr> <tr><td>9</td><td>Configurable Functional GPIO</td></tr> <tr><td>10</td><td>Bluetooth link status indication</td></tr> <tr><td>11</td><td>Boot mode selection</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> </tbody> </table>	Pin	Description	1	3.3V	2	3.3V	3	3.3V	4	Reset	5	UART (RX)	6	UART (RTS)	7	UART (TX)	8	UART (CTS)	9	Configurable Functional GPIO	10	Bluetooth link status indication	11	Boot mode selection	12	GND	13	GND	14	GND	
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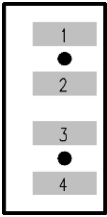
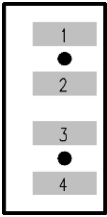
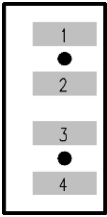
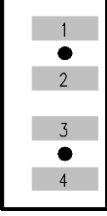
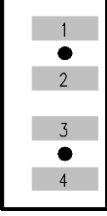
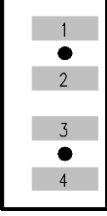
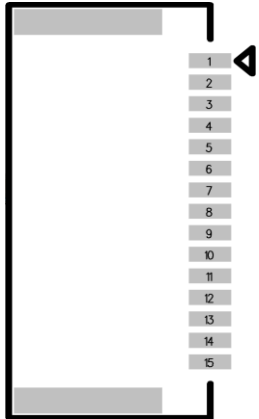
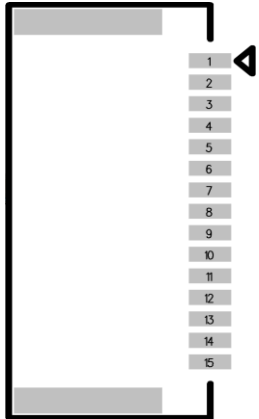
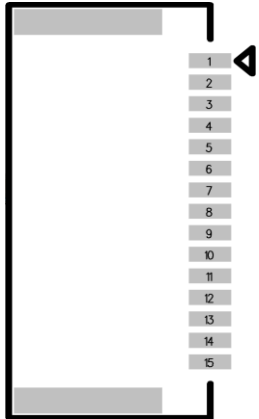
Connector	Description																															
CON5	Head open sensor																															
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		Pin	Description																													
1	Head open sensor receiver																															
2	GND																															
CON6	Black mark sensor																															
		<table border="1"> <thead> <tr> <th>Pin</th> <th>Description</th> </tr> </thead> <tbody> <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> </tbody> </table>	Pin	Description	1	3.3V	2	Black mark sensor emitter	3	Black mark sensor receiver	4	3.3V																				
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CON9	LED Board																															
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		Pin	Description																													
		1	VDDBU_3.3V																													
		2	LED Wi-Fi (Green)																													
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		4	LED Wi-Fi/Bluetooth (White)																													
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		11	3.3V																													
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13	Power key																															
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Connector	Description																																																														
CON12	<p data-bbox="483 190 614 224">Print head</p>  <table border="1" data-bbox="821 235 1364 1758"> <thead> <tr> <th data-bbox="821 235 933 280">Pin</th> <th data-bbox="933 235 1364 280">Description</th> </tr> </thead> <tbody> <tr><td>1</td><td>VH</td></tr> <tr><td>2</td><td>VH</td></tr> <tr><td>3</td><td>VH</td></tr> <tr><td>4</td><td>Data output</td></tr> <tr><td>5</td><td>/Latch</td></tr> <tr><td>6</td><td>Clock</td></tr> <tr><td>7</td><td>TPH 3.3V</td></tr> <tr><td>8</td><td>Strobe1</td></tr> <tr><td>9</td><td>Strobe2</td></tr> <tr><td>10</td><td>Strobe3</td></tr> <tr><td>11</td><td>TM</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> <tr><td>15</td><td>GND</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>/AEO1</td></tr> <tr><td>20</td><td>/AEO2</td></tr> <tr><td>21</td><td>Strobe4</td></tr> <tr><td>22</td><td>Strobe5</td></tr> <tr><td>23</td><td>Strobe6</td></tr> <tr><td>24</td><td>NC</td></tr> <tr><td>25</td><td>Data input</td></tr> <tr><td>26</td><td>VH</td></tr> <tr><td>27</td><td>VH</td></tr> <tr><td>28</td><td>VH</td></tr> <tr><td>29</td><td>GND</td></tr> <tr><td>30</td><td>GND</td></tr> </tbody> </table>	Pin	Description	1	VH	2	VH	3	VH	4	Data output	5	/Latch	6	Clock	7	TPH 3.3V	8	Strobe1	9	Strobe2	10	Strobe3	11	TM	12	GND	13	GND	14	GND	15	GND	16	GND	17	GND	18	GND	19	/AEO1	20	/AEO2	21	Strobe4	22	Strobe5	23	Strobe6	24	NC	25	Data input	26	VH	27	VH	28	VH	29	GND	30	GND
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30	GND																																																														

Connector	Description											
CON11	Stepping motor											
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	Pin	Description										
	1	A										
	2	/A										
3	/B											
4	B											

Main board bottom



Connector	Description																																	
CON13 CON14	Battery CON13: <table border="1" data-bbox="544 277 1362 533"> <tr> <td rowspan="4">  </td> <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> </table>		Pin	Description	1	NTC	2	NTC	3	Battery positive	4	Battery positive																						
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3		Battery positive																																
4	Battery positive																																	
CON14:	<table border="1" data-bbox="544 582 1362 828"> <tr> <td rowspan="4">  </td> <th>Pin</th> <th>Description</th> </tr> <tr> <td>1</td> <td>Battery negative</td> </tr> <tr> <td>2</td> <td>Battery negative</td> </tr> <tr> <td>3</td> <td>NC</td> </tr> <tr> <td>4</td> <td>NC</td> </tr> </table>		Pin	Description	1	Battery negative	2	Battery negative	3	NC	4	NC																						
	Pin		Description																															
	1		Battery negative																															
	2		Battery negative																															
	3	NC																																
4	NC																																	
CON8	NFC Module <table border="1" data-bbox="544 925 1362 1718"> <tr> <td rowspan="15">  </td> <th>Pin</th> <th>Description</th> </tr> <tr> <td>1</td> <td>3.3V</td> </tr> <tr> <td>2</td> <td>GND</td> </tr> <tr> <td>3</td> <td>NC</td> </tr> <tr> <td>4</td> <td>NC</td> </tr> <tr> <td>5</td> <td>Interrupt</td> </tr> <tr> <td>6</td> <td>GND</td> </tr> <tr> <td>7</td> <td>I2C (Data)</td> </tr> <tr> <td>8</td> <td>I2C (Clock)</td> </tr> <tr> <td>9</td> <td>GND</td> </tr> <tr> <td>10</td> <td>Reset</td> </tr> <tr> <td>11</td> <td>Firmware download control</td> </tr> <tr> <td>12</td> <td>NC</td> </tr> <tr> <td>13</td> <td>3.3V</td> </tr> <tr> <td>14</td> <td>3.3V</td> </tr> <tr> <td>15</td> <td>GND</td> </tr> </table>		Pin	Description	1	3.3V	2	GND	3	NC	4	NC	5	Interrupt	6	GND	7	I2C (Data)	8	I2C (Clock)	9	GND	10	Reset	11	Firmware download control	12	NC	13	3.3V	14	3.3V	15	GND
	Pin		Description																															
	1		3.3V																															
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	13		3.3V																															
	14	3.3V																																
15	GND																																	

3. MECHANISM

3.1 Replacing the Platen Roller Assembly

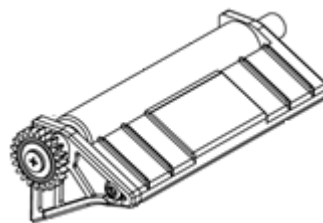
1. Open the printer cover by pressing the media release button.



2. Use a Phillips screwdriver to remove two screws on platen roller assembly.



3. Replace the platen roller assembly.



4. Reassemble the parts in the reverse procedures.

3.2 Replacing the Linerless Platen Roller Assembly

1. Open the printer cover by pressing the media release button.



2. Use a Phillips screwdriver to remove two screws on platen roller assembly.



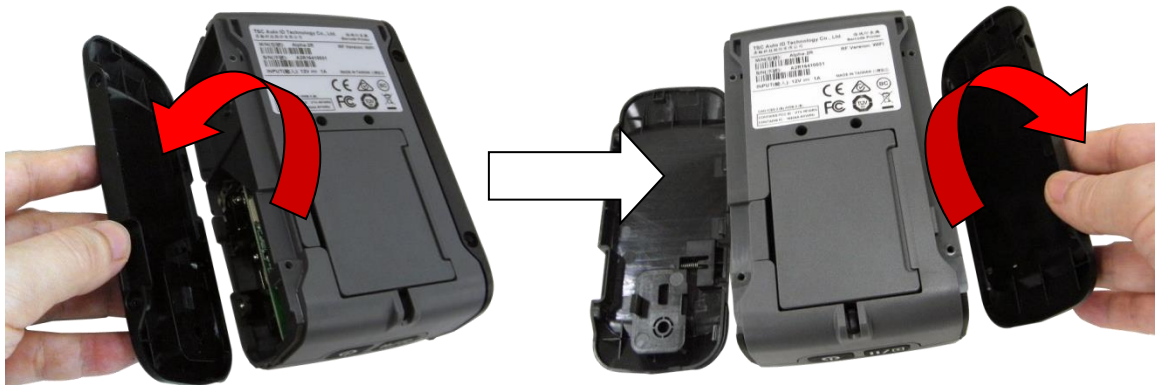
3. Replace the linerless platen roller assembly.
4. Reassemble the parts in the reverse procedures.

3.3 Replacing the 1" / 2" paper core adapter

1. Use hex wrench (#9) to remove four screws on lower cover.



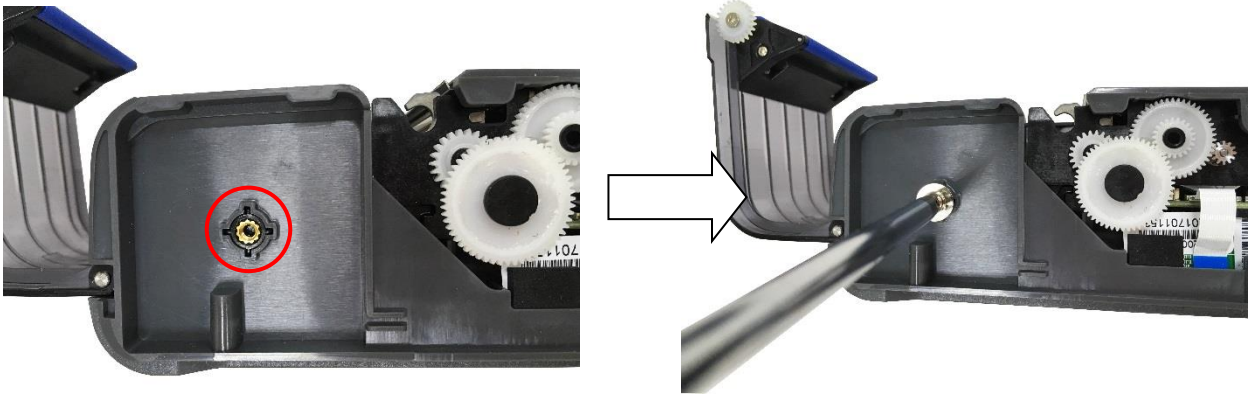
2. Remove the right and left side covers by rotating the covers as shown below.



3. Replace the adapters on both sides of paper core. (Please note the direction shown as below)



4. Fix the screws on the adapters with both sides as indicated.



5. Complete the installation of 1" / 2" paper core adapter.



1" / 2" paper core with spindle installed

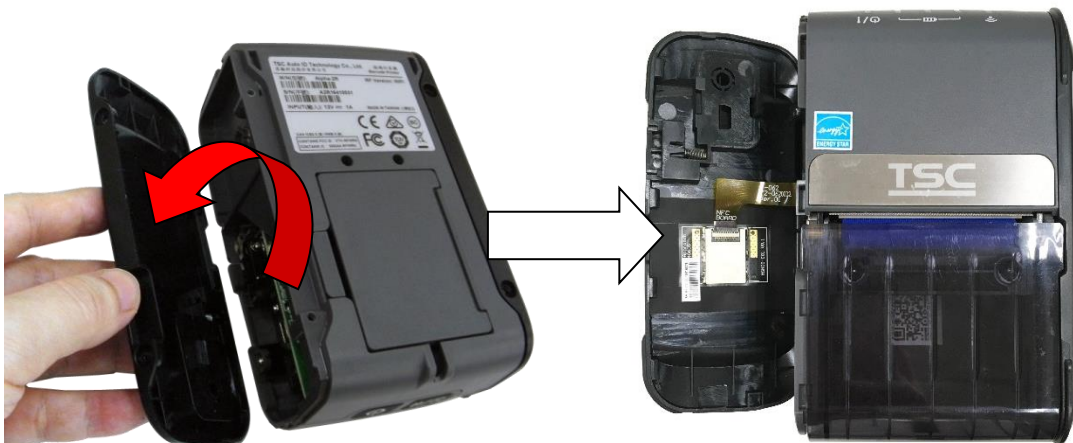
6. Reassemble the parts in the reverse procedures.

3.4 Replacing the NFC module

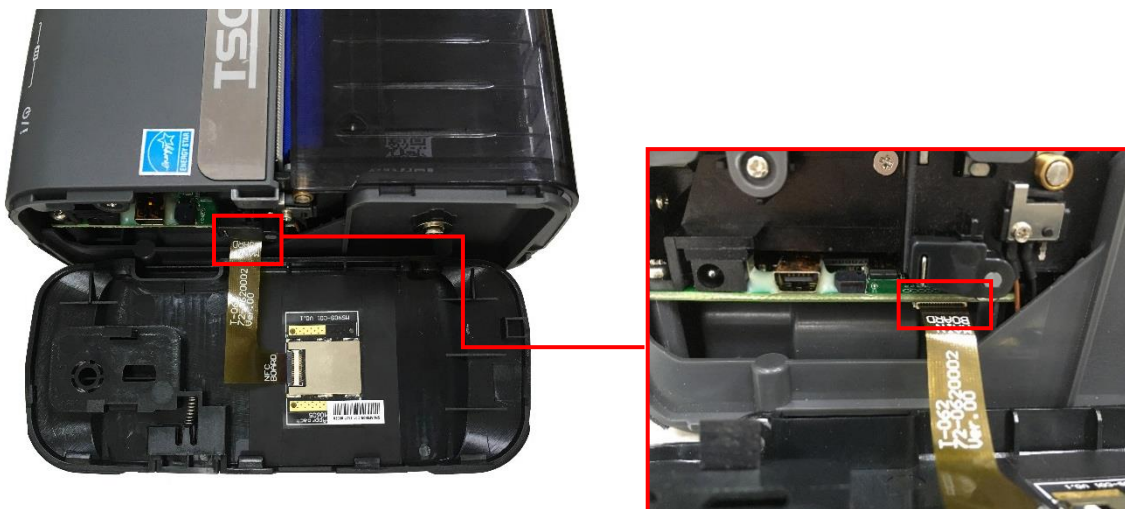
1. Use hex wrench (#9) to remove two screws on lower cover.



2. Remove the left side cover by rotating the cover as shown below.



3. Unplug the flat cable on the slot as indicated.



NFC module cable slot

4. Replace the NFC module. (Please place the NFC module on the edge of rib as indicated.)



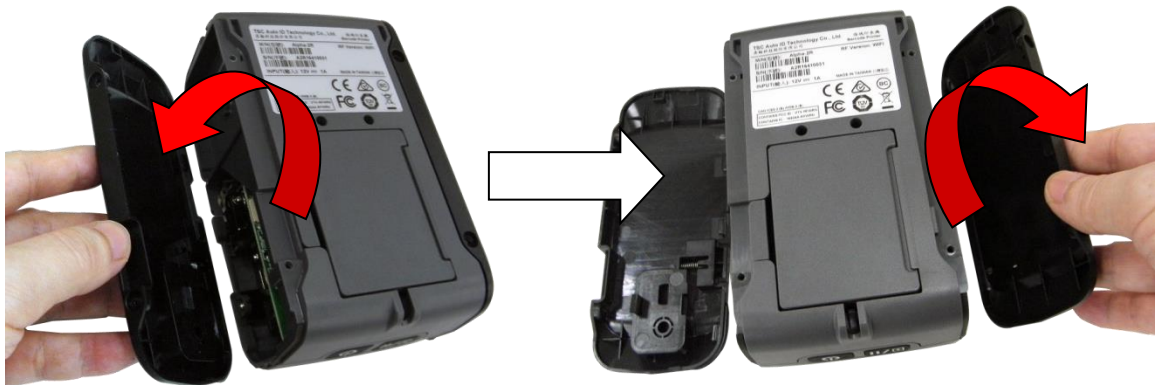
5. Reassemble the parts in the reverse procedures.

3.5 Replacing the LED & Keys Panel Board

1. Use hex wrench (#9) to remove four screws on lower cover.



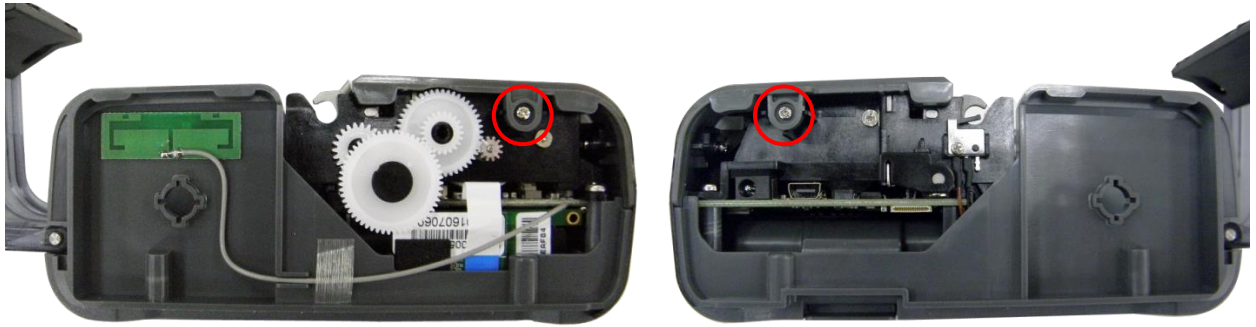
2. Remove the right and left side covers by rotating the covers as shown below.



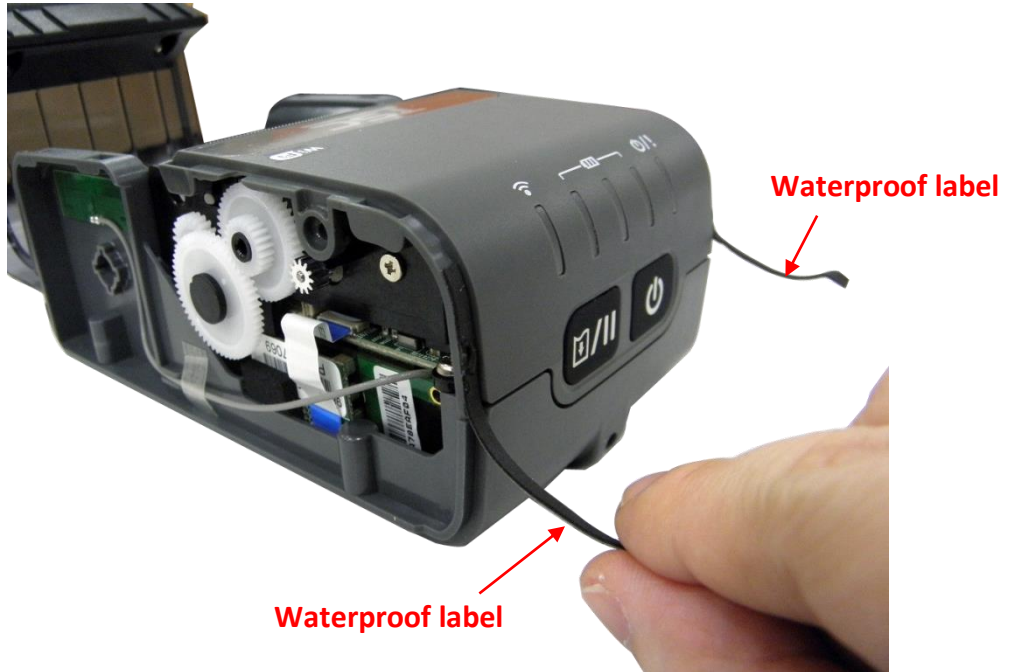
3. Open the printer cover by pressing the media release bar as shown.



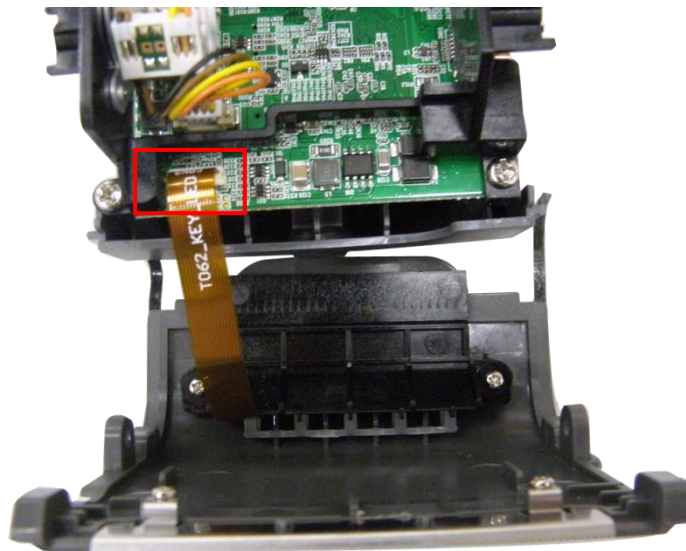
4. Remove the two screws on both side of the printer.



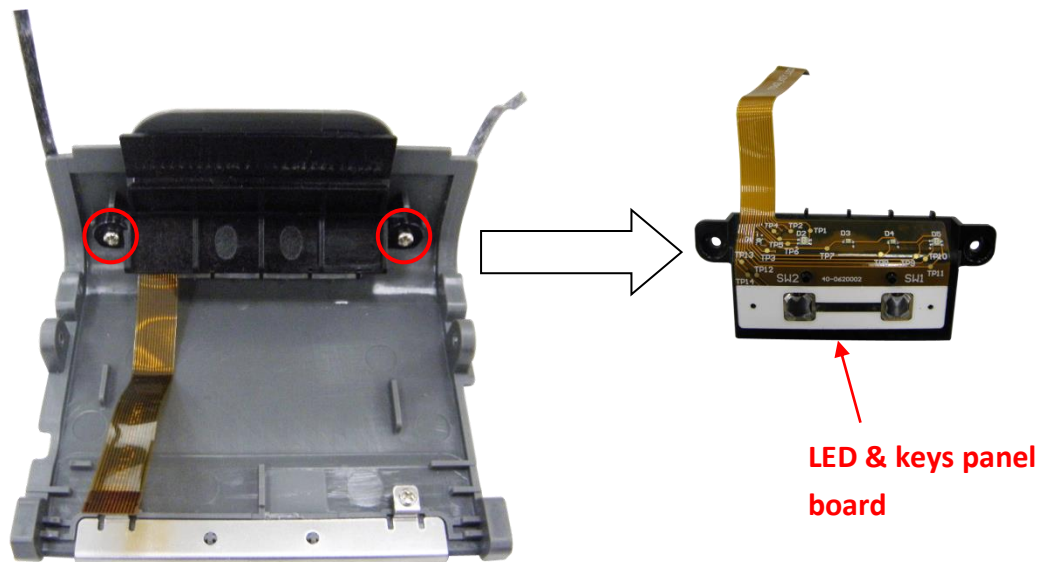
5. Peel off the waterproof labels on two sides of printer.



6. Disconnect the flat cable on the main board. Remove the top cover assembly.



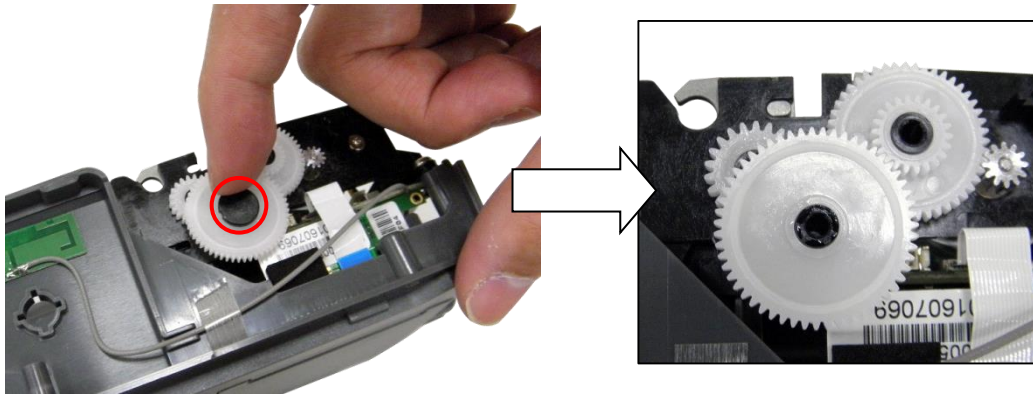
7. Remove two screws on top cover assembly to replace the LED & keys panel board.



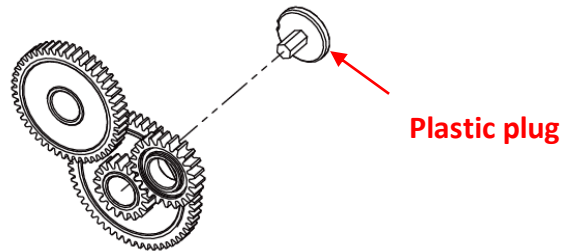
8. Reassemble the parts in the reverse procedures.

3.6 Replacing the Gear Assembly & Stepping Motor

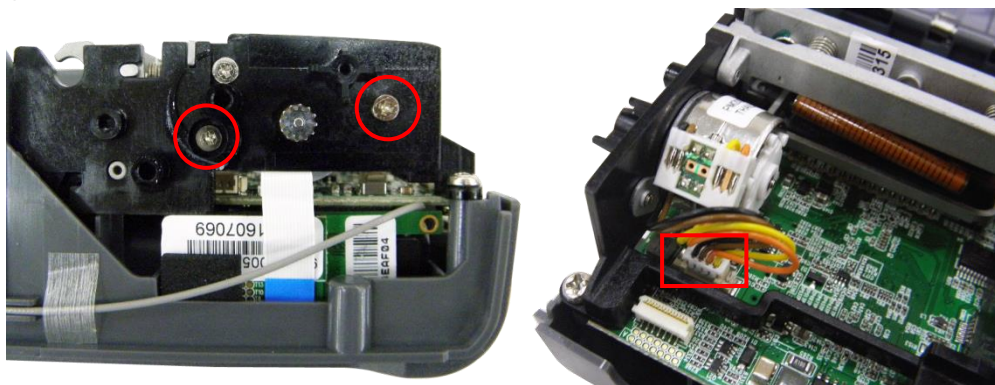
1. Refer to section 3.2 to remove the right, left side and top covers.
2. Remove the plastic plug (black) securing the gears at the top.



3. Remove/Replace the gears assembly.



4. Remove two screws securing on the printer side as shown below. Disconnect the stepping motor connector on main board.



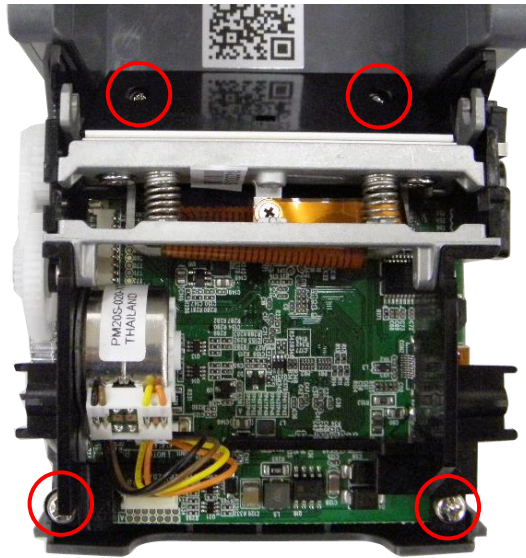
5. Remove/Replace the stepping motor assembly.



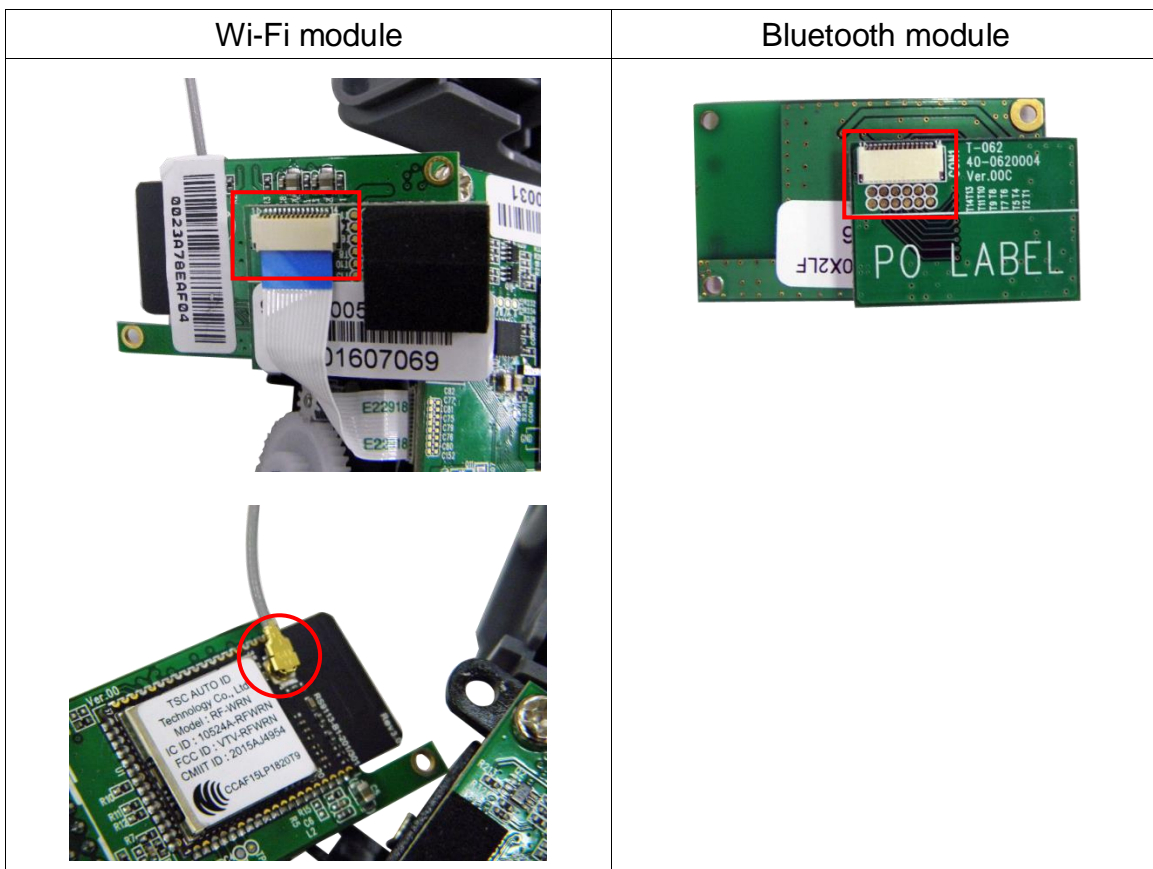
6. Reassemble the parts in the reverse procedures.

3.7 Replacing the Wi-Fi/Bluetooth Module

1. Refer to section 3.2 to remove the right, left side and top covers.
2. Remove four screws securing the internal mechanism.



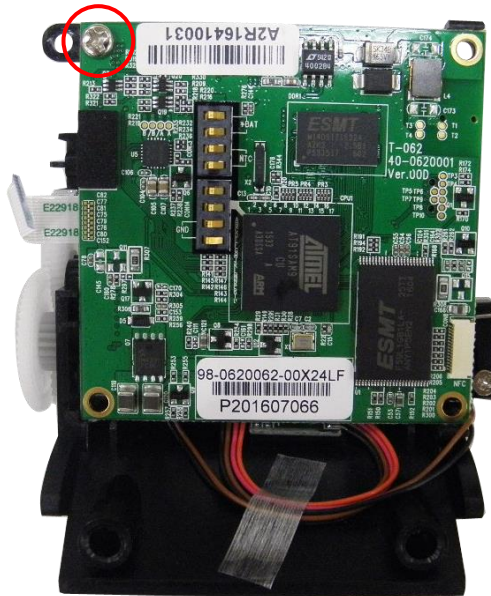
3. Disconnect the flat cable on the Wi-Fi/Bluetooth control board. (For Wi-Fi module, disconnect the antenna connector on the Wi-Fi module.) Remove/Replace the Wi-Fi/Bluetooth module.



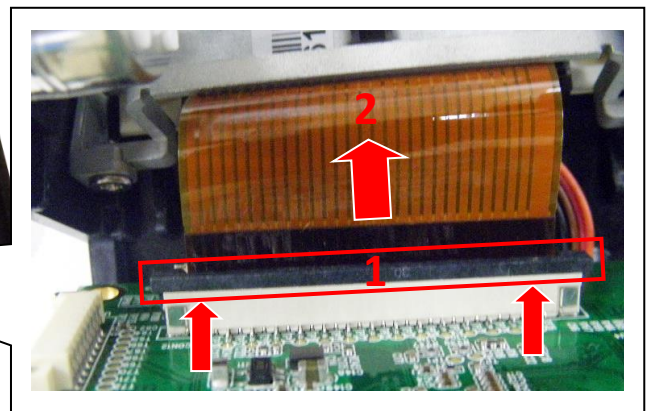
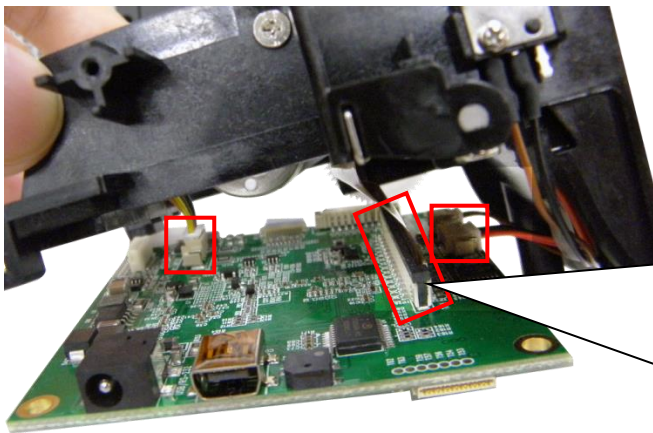
4. Reassemble the parts in the reverse procedures.

3.8 Replacing the Main Board Assembly

1. Refer to section 3.4 to remove the Wi-Fi or Bluetooth module.
2. Remove a screw on the main board.



3. Disconnect all the connectors on the main board. (For TPH connector, loosen the connector lock (black) then disconnect the flat cable from the main board.)



4. Replace the main board.



Note:

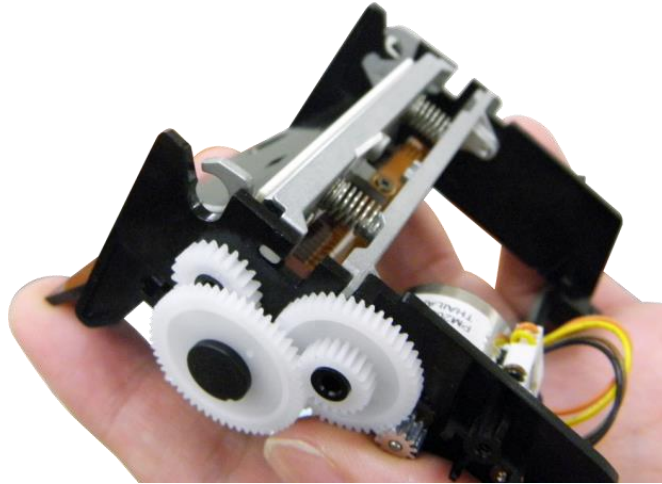
If installing Wi-Fi module, please check the Wi-Fi signal band on configuration page for your using region after replacing the main board. If any questions, please contact the Customer Service Department of your purchased reseller or distributor for assistance.

US	EUR
<pre>***** WIFI VERSION: 1.3.1c WIFI MAC ADDRESS: 00-23-A7-65-19-30 WIFI Region: US WIFI MODE: INFRASTRUCTURE WIFI SSID: RD_AP24 WIFI DHCP ENABLED: YES WIFI IP ADDRESS: 0.0.0.0 WIFI SUBNET MASK: 0.0.0.0 WIFI DEFAULT GATEWAY: 0.0.0.0 WIFI PRINTER NAME: PS-651930 WIFI RAW PORT: 9100 *****</pre>	<pre>***** WIFI VERSION: 1.3.1c WIFI MAC ADDRESS: 00-23-A7-65-19-30 WIFI Region: EUR WIFI MODE: INFRASTRUCTURE WIFI SSID: RD_AP24 WIFI DHCP ENABLED: YES WIFI IP ADDRESS: 0.0.0.0 WIFI SUBNET MASK: 0.0.0.0 WIFI DEFAULT GATEWAY: 0.0.0.0 WIFI PRINTER NAME: PS-651930 WIFI RAW PORT: 9100 *****</pre>

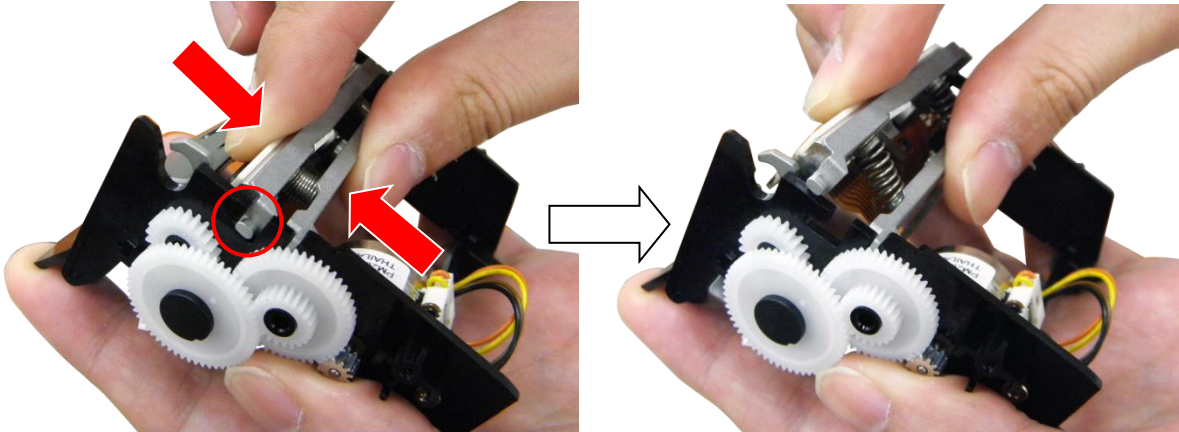
5. Reassemble the parts in the reverse procedures.

3.9 Replacing the Print Head Assemble

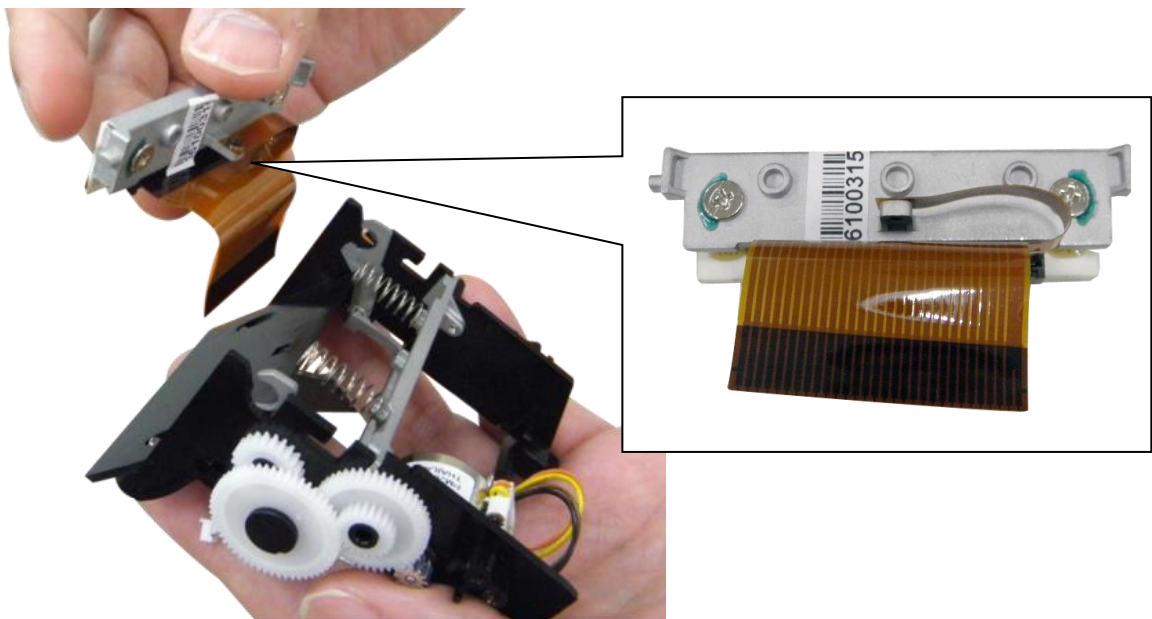
1. Refer to section 3.5 to remove the main board, take out the internal mechanism as shown below.



2. Loosen both side tabs of print head module by pressing the bracket as shown below.

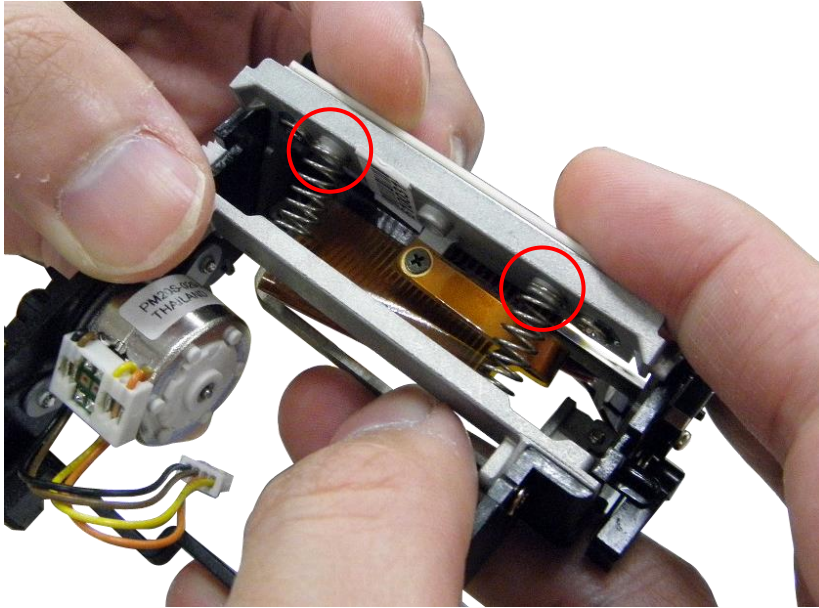


3. Replace the print head module.



Note:

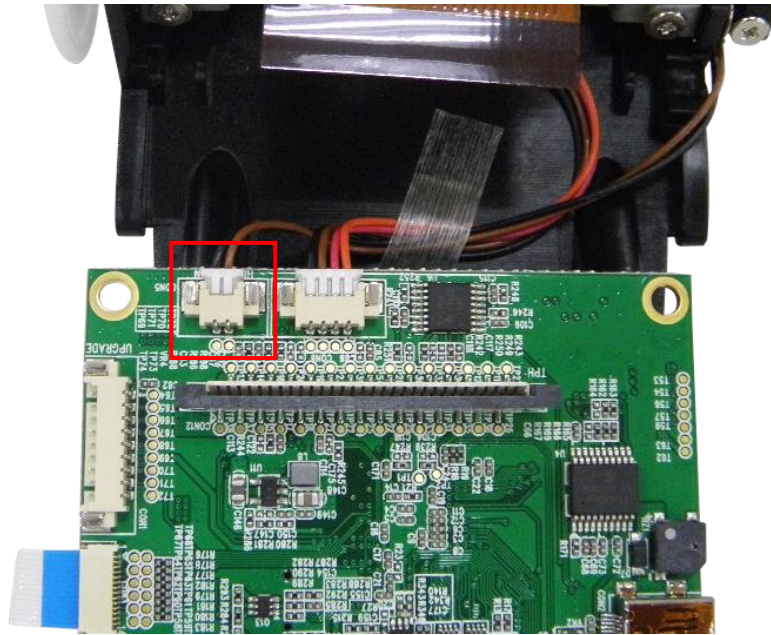
Please insert the springs into the boss first to install print head module.



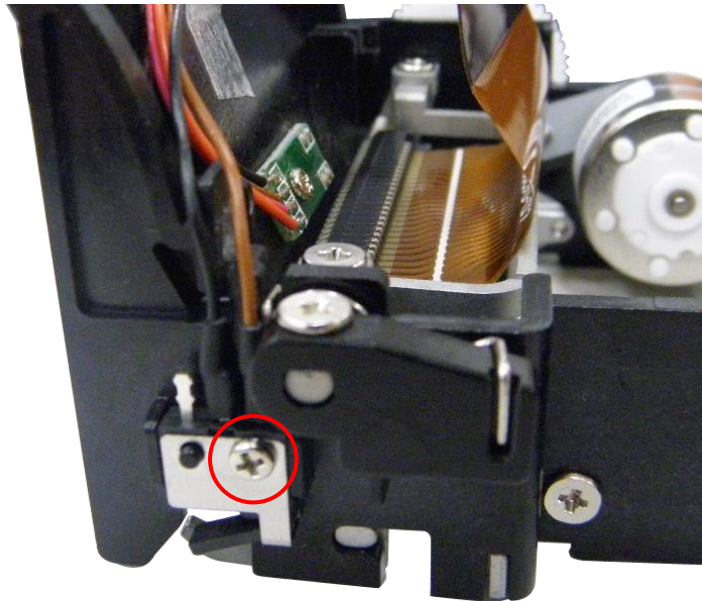
4. Reassemble the parts in the reverse procedures.

3.10 Replacing the Hand Open Sensor Assemble

1. Refer to section 3.5 to remove the main board. Disconnect the hand open sensor connector on main board.



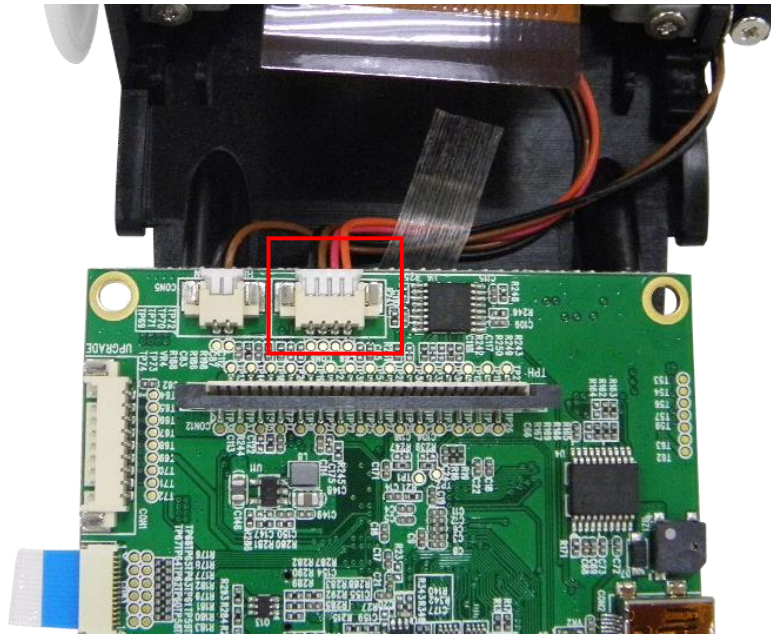
2. Remove a screw to replace the hand open sensor assembly.



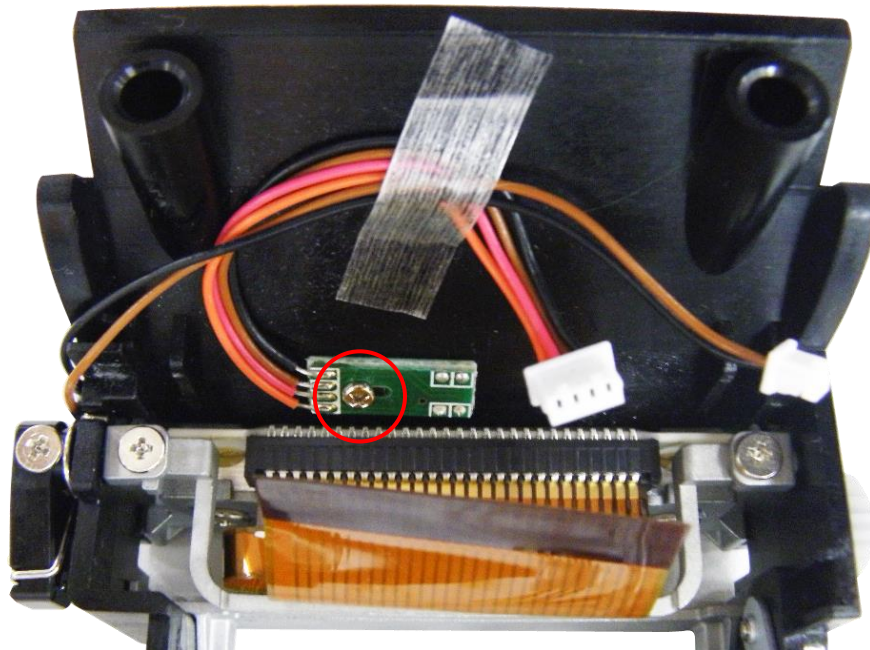
3. Reassemble the parts in the reverse procedures.

3.11 Replacing the Black Mark Sensor Assembly

1. Refer to section 3.5 to remove the main board. Disconnect the black mark sensor connector on main board.



2. Remove a screw to replace the black mark sensor assembly.



3. Reassemble the parts in the reverse procedures.

4. TROUBLESHOOTING

4.1 Common Problems

The following guide lists the most common problems that may be encountered when operating this bar code printer. If the printer still does not function after all suggested solutions have been invoked, please contact the Customer Service Department of your purchased reseller or distributor for assistance.

Problem	Possible Cause	Recovery Procedure
Power indicator does not illuminate	<ul style="list-style-type: none"> * The battery is not properly installed. * The battery is dead. 	<ul style="list-style-type: none"> * Reinstall the battery. * Switch the printer on. * Charge the battery.
- The printer status from DiagTool shows “ Head Open ”.	<ul style="list-style-type: none"> * The printer carriage is open. 	<ul style="list-style-type: none"> * Please close the print carriage.
- The printer status from DiagTool shows “ Out of Paper ”.	<ul style="list-style-type: none"> * Running out of media roll. * The media is installed incorrectly. * Black mark sensor is not calibrated. 	<ul style="list-style-type: none"> * Supply a new media roll. * Reinstall the media roll. * Calibrate the black mark sensor.
- The printer status from DiagTool shows “ Paper Jam ”.	<ul style="list-style-type: none"> * Black mark sensor is not set properly. * Make sure media size is set properly. * Media may be stuck inside the printer mechanism. 	<ul style="list-style-type: none"> * Calibrate the black mark sensor. * Set media size correctly.
Memory full (FLASH / DRAM)	<ul style="list-style-type: none"> * The space of FLASH/DRAM is full. 	<ul style="list-style-type: none"> * Delete unused files in the FLASH/DRAM. * Run printer self-test and check the available memory space for DRAM or FLASH. * Check the available memory space for DRAM or FLASH via DiagTool.
Poor Print Quality	<ul style="list-style-type: none"> * Media is loaded incorrectly * Dust or adhesive accumulation on the print head. * Print density is not set properly. * Printhead element is damaged. 	<ul style="list-style-type: none"> * 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.
Missing printing on the left or right side of label	<ul style="list-style-type: none"> * Wrong label size setup. 	<ul style="list-style-type: none"> * Set the correct label size.
Gray line on the blank label	<ul style="list-style-type: none"> * The print head is dirty. * The platen roller is dirty. 	<ul style="list-style-type: none"> * 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.
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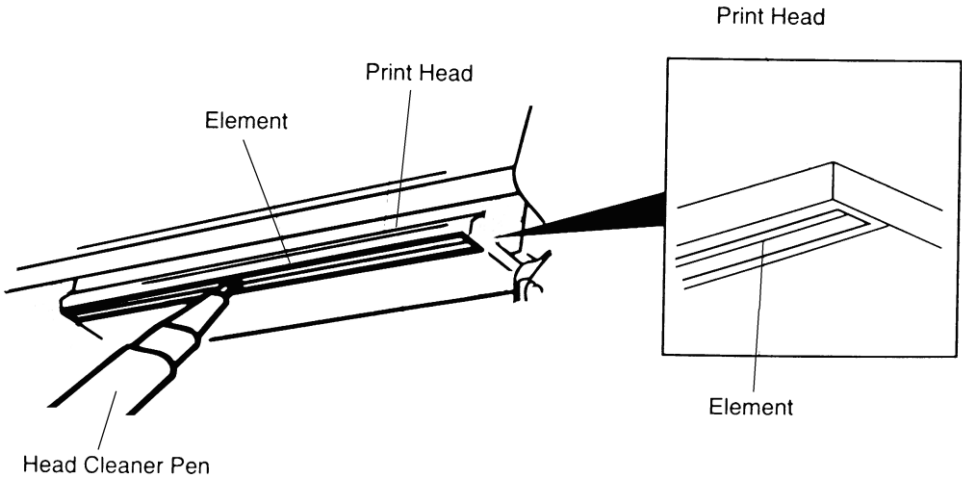
5. MAINTENANCE

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

1. Please use one of following material to clean the printer.

- Cotton swab
- Lint-free cloth
- Vacuum / Blower brush
- 100% ethanol

2. The cleaning process is described as following,

Printer Part	Method	Interval
Print Head	<ol style="list-style-type: none"> 1. Always turn off the printer before cleaning the print head. 2. Allow the print head to cool for a minimum of one minute. 3. Use a cotton swab and 100% ethanol to clean the print head surface. 	Clean the print head when changing a new label roll
		
Platen Roller	<ol style="list-style-type: none"> 1. Turn the power off. 2. Rotate the platen roller and wipe it thoroughly with 100% ethanol and a cotton swab, or lint-free cloth. 	Clean the platen roller when changing a new label roll
Tear Bar/Peel Bar	Use the lint-free cloth with 100% ethanol to wipe it.	As needed
Sensor	Compressed air or vacuum	Monthly
Exterior	Wipe it with water-dampened cloth	As needed
Interior	Brush or vacuum	As needed

Note:

- Do not touch printer head by hand. If you touch it careless, please use ethanol to clean it.
- Please use 100% Ethanol. DO NOT use medical alcohol, which may damage the printer head.
- Regularly clean the print head and supply sensors once change a new ribbon to keep printer performance and extend printer life.



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