TSC PRINTRONIX AUTO ID

PEX1001 Series

Thermal Transfer / Dicrect Thermal

Industrial Barcode Printers

Series Lists:

PEX1121/ PEX1131/ PEX1161

PEX1221/ PEX1231/ PEX1261

Service Manual

Copyright Information

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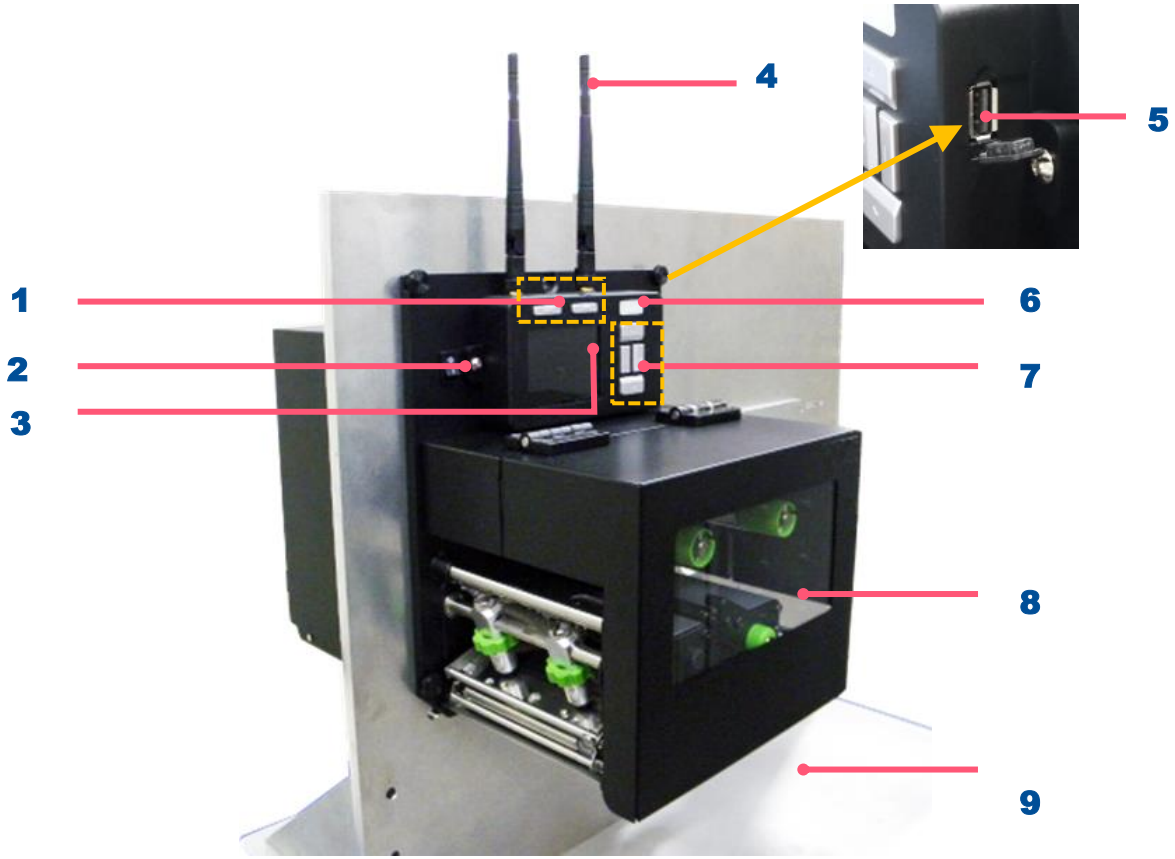
1. Fundamental of the System

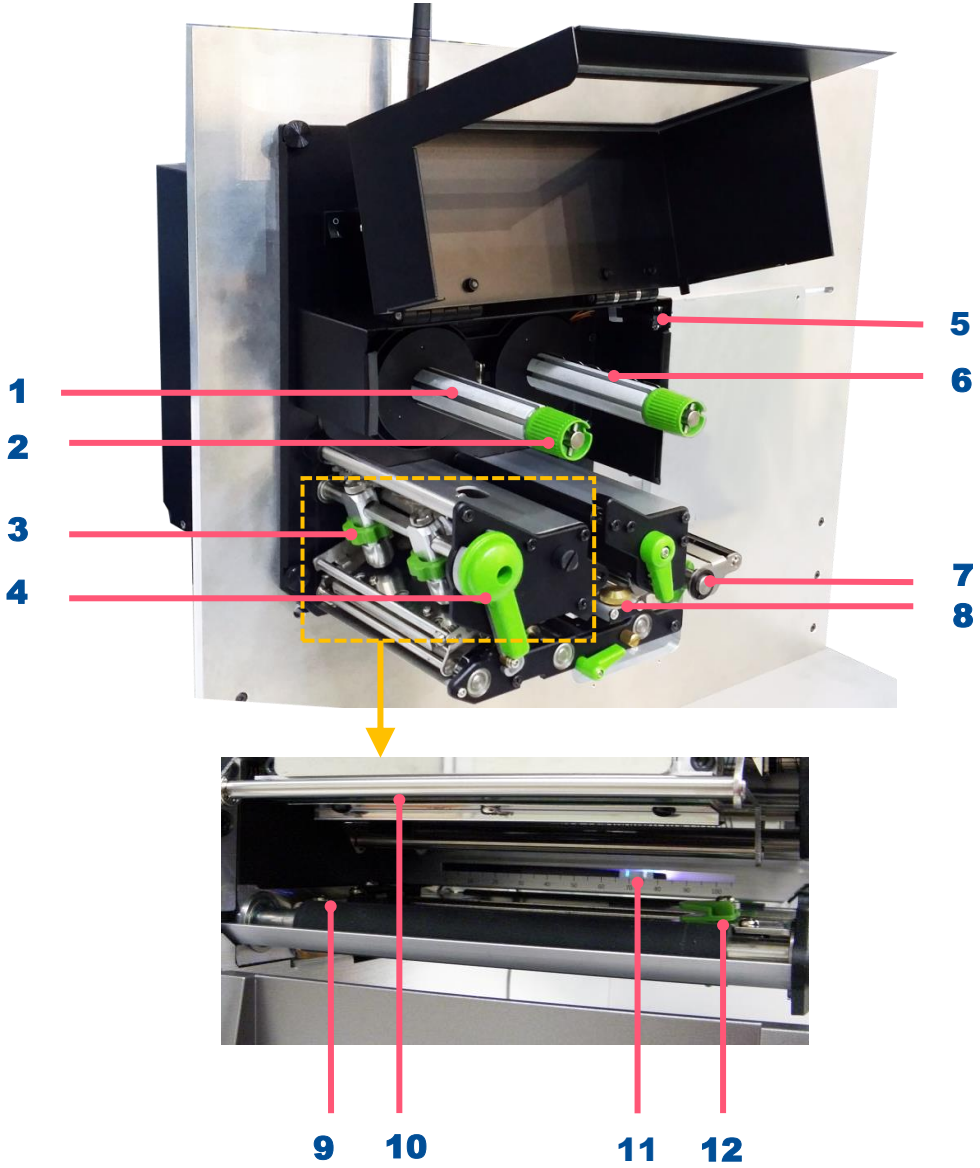
1.1 Printer Overview

Front View



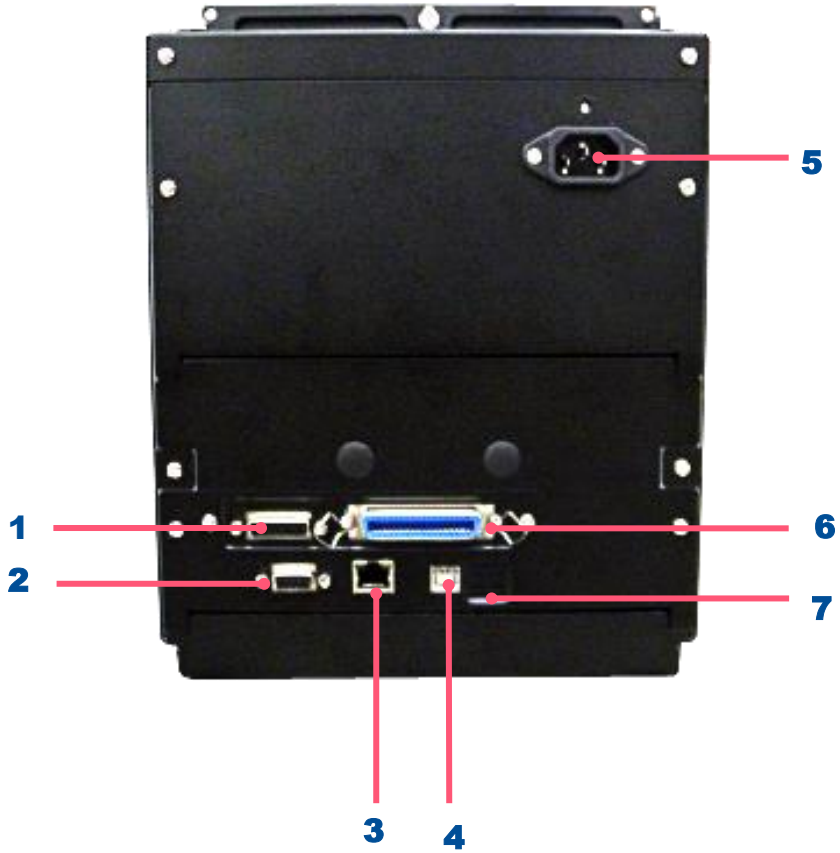
1. Soft keys
2. Power switch
3. LCD display
4. Wi-Fi antenna (option)
5. USB host
6. LED indicator
7. Navigational keys
8. Media view window
9. Print engine cover

Interior View



1. Ribbon rewind spindle
2. Ribbon tension adjustment knobs
3. Print head pressure adjustment knobs
4. Print head release lever
5. Print engine cover open sensor
6. Ribbon supply spindle
7. Label guide bar release lever
8. Media sensor position adjustment knob
9. Platen roller
10. Print head
11. Media sensor Black mark :Blue ; Gap: Whilte)
12. Label guide

Rear View

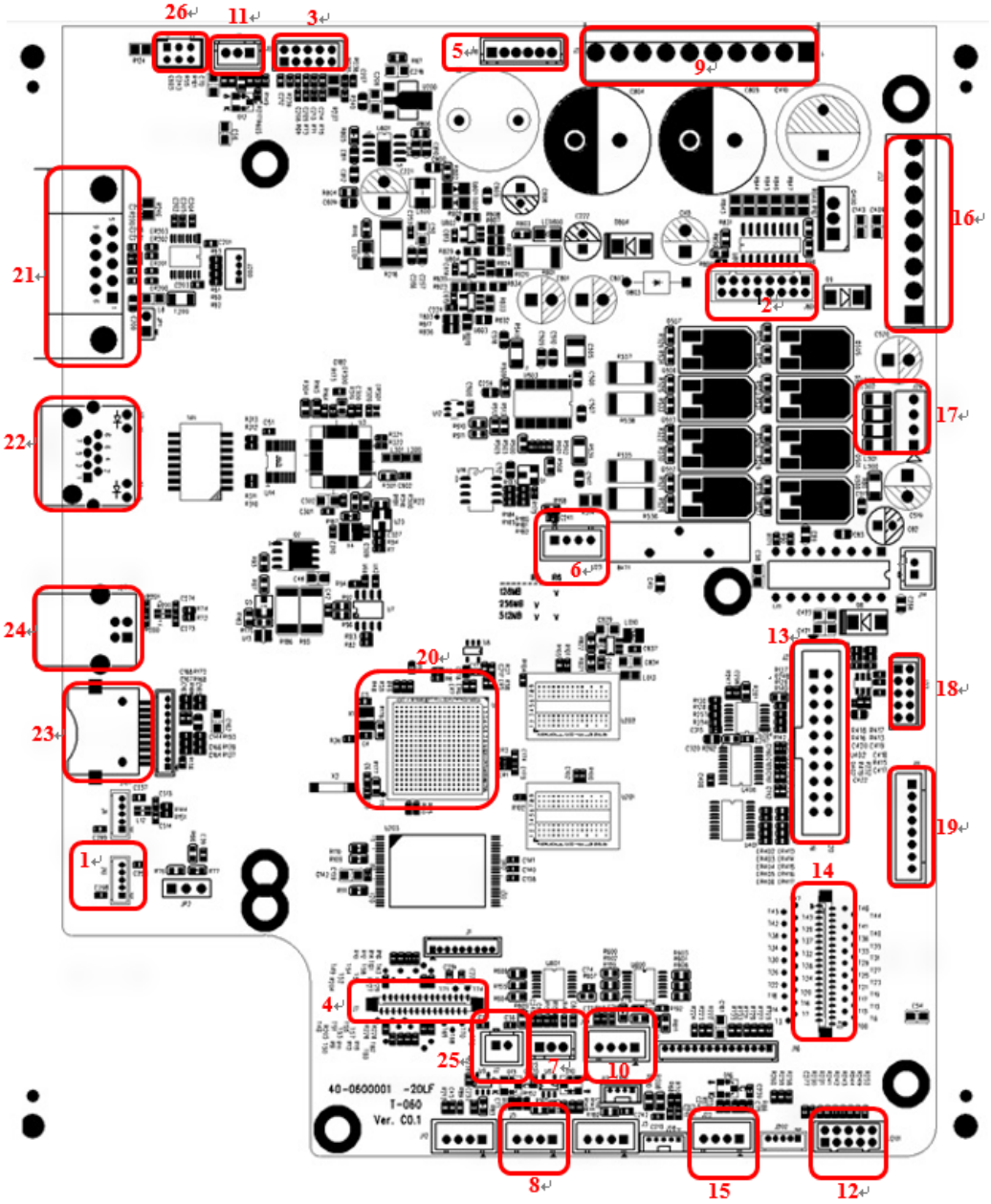


1. GPIO interface (Applicator interface with DB15F connector +5V I/O)
2. RS-232C interface
3. Ethernet interface
4. USB interface
5. Power cord socket
6. Centronics interface
7. Micro SD card socket

Note:
The interface picture here is for reference only. Please refer to the product specification for the interfaces availability.

2. Electronics

2.1 Summary of the Board Connectors



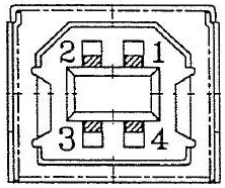
Connector	Description
1	USB Host connector
2	Power supply output (5V~24V DC) connector
3	Wi-Fi Module connector
4	Parallel Port board connector
5	GPIO interface board connector
6	Head open sensor connector
7	Gap sensor connector
8	Ribbon encoder sensor connector
9	Power supply output (24V DC) connector
10	BM Sensor connector
11	Paper Distance Sensor connector
12	BT module connector
13	Print head connector
14	LCD panel connector
15	Ribbon end sensor connector
16	TPH Power (24V DC) connector
17	Stepping motor connector
~~**18**~~	~~Cutter/peel-off connector~~
19	Paper REWIND connector
20	Micro processor
21	RS-232C connector
22	Ethernet interface
23	MICRO SD card socket
24	USB interface
25	Upper BM Sensor Connector
26	Wi-Fi interface

2.2 Interface Pin Configuration

RS-232C

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

USB Device

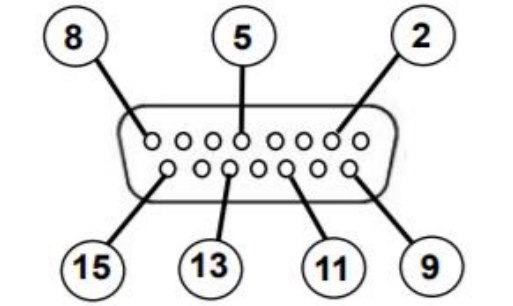


PIN	CONFIGURATION
1	N/C
2	D-
3	D+
4	GND

Ethernet

PIN	CONFIGURATION
1	Tx+
2	Tx-
3	Rx+
4	N/C
5	N/C
6	Rx-
7	N/C
8	N/C

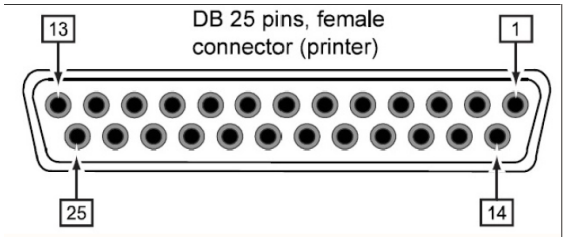
GPIO (Applicator interface with DB15F connector +5V I/O)



Female Connector Front View

PIN	CONFIGURATION
1	GND
2	5V(JP2 short)
3	GPI_1
4	GPI_2
5	GPI_3
6	GPI_4
7	24V
8	GND
9	GPO_1
10	GPO_2
11	GPO_3
12	GPO_4
13	GPO_5
14	GPO_6
15	GPO_7

GPIO (Applicator interface with DB25F connector +5V I/O)



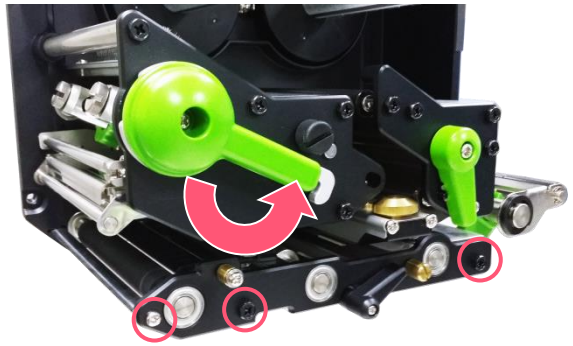
PIN	CONFIGURATION
1	FGND
2	+5V
3	GPO_1
4	GPO_3
5	GPO_5
6	GPO_7
7	GPI_1
8	GPI_3
9	GPI_5
10	GPI_7
11	OUT_COM
12	+5V
13	+24V
14	GND
15	OUT_COM
16	GPO_2
17	GPO_4
18	GPO_6
19	GPO_8
20	GPI_2
21	GPI_4
22	GPI_6
23	GPI_8
24	IN_COM
25	GND

3. Mechanism

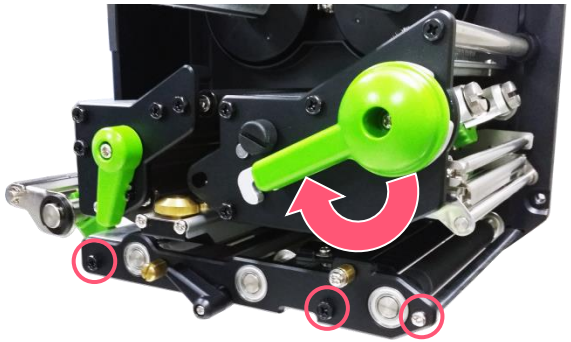
3.1 Replacing the Platen Roller Assembly

1. Open printer media cover.
2. Disengage print head release lever.
3. Remove screws from the platen holder.

Left-hand model



Right -hand model



4. Take out the platen holder, tear bar and platen roller assembly and replace a new platen roller assembly.

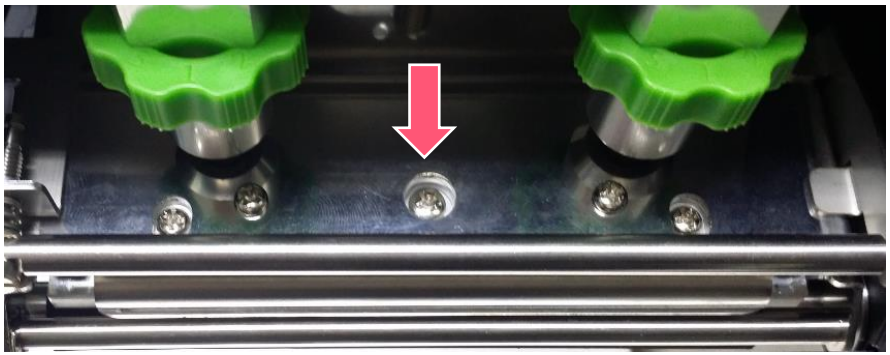
Platen roller assembly

Holder

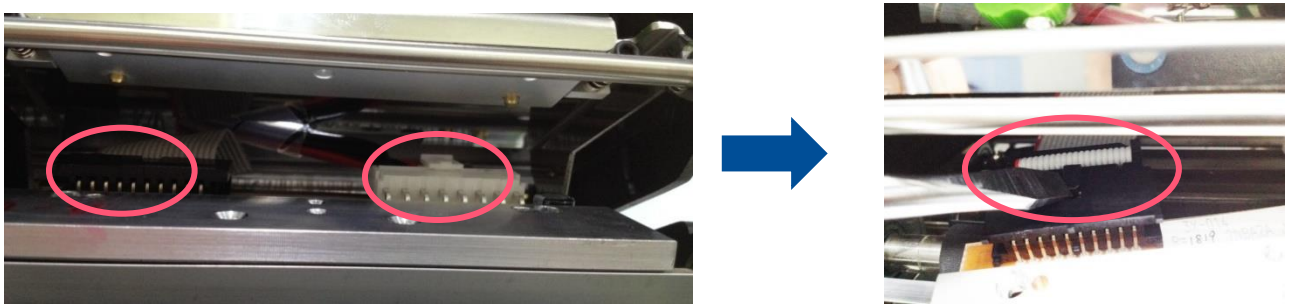
5. Reassemble the parts in the reverse procedures.

3.2 Replacing the Print head ASS'Y

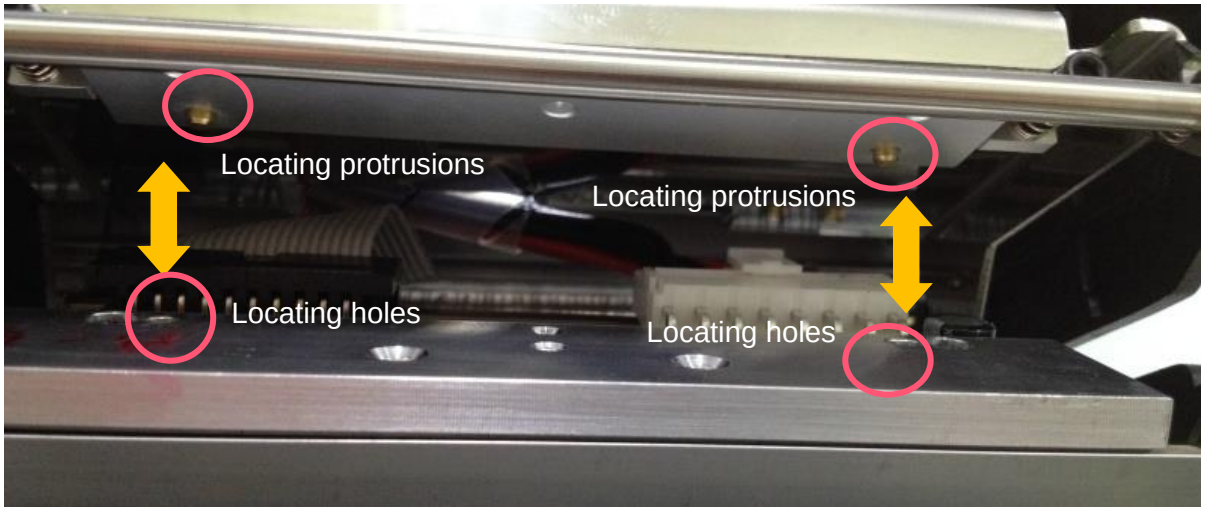
1. Loosen the print head secure screw counterclockwise until it can be taken out from the mechanism.
2. Disengage the print head release lever.



3. Carefully disconnect connectors from the print head assembly. Please do not pull the cable to right and left side alternatively in order to disconnect it from the print head connector. Please use the flat screw driver to push at the key in the middle of the connector. When the connector becomes loose from the print head connector, you can disconnect it.



4. Remove/Replace the print head assembly.
5. Connect the print head cable and carefully slide print head assembly into the print mechanism. Make sure the two locating protrusion pins on the print mechanism mounting plate snap into the locating holes on the print head.



6. Reassemble the parts in the reverse procedures.

3.3 Remove the Electronics Cover

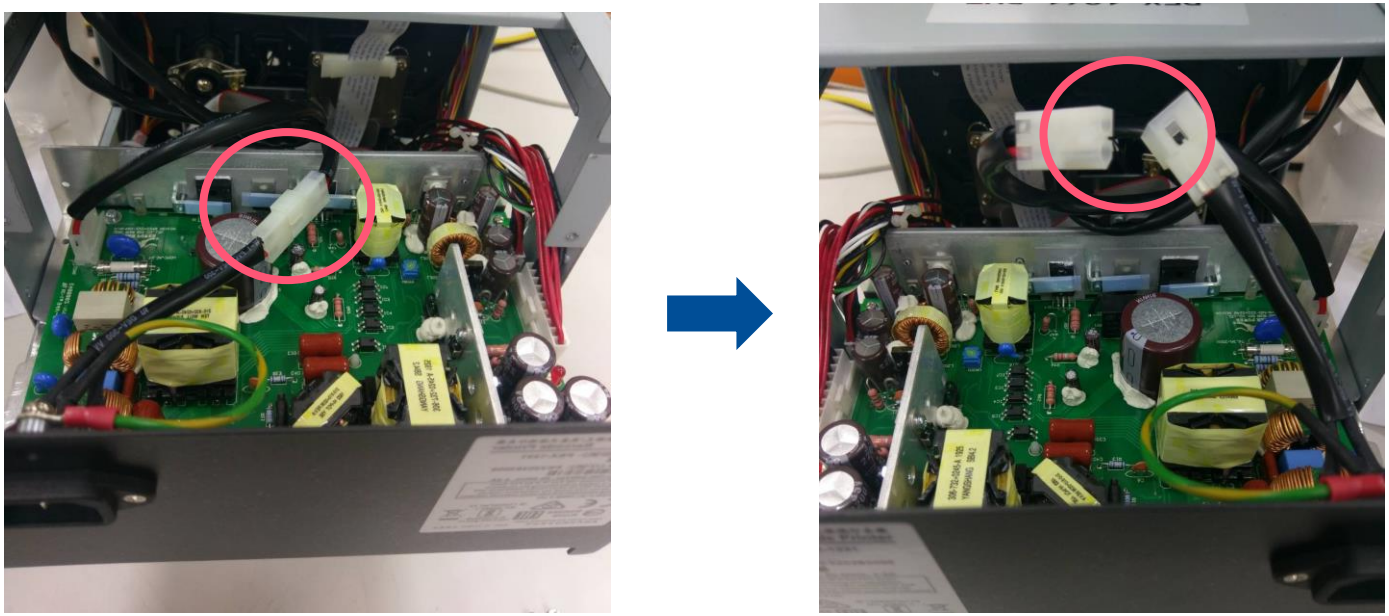
1. Remove four screws on the electronics cover.
2. Draw out the electronics cover to remove it.

3. Reassemble the parts in the reverse procedures.

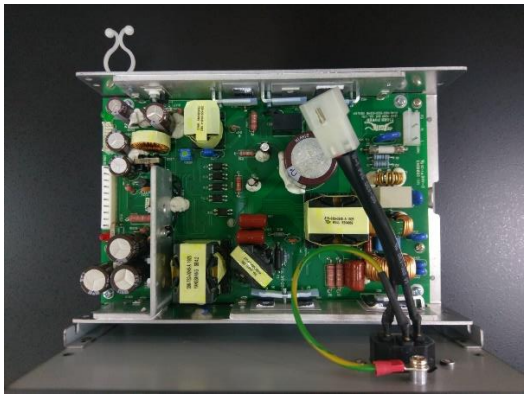
3.4 Replacing the Power Supply Unit

1. Refer to section 3.3 to remove the electronics cover.
2. Disconnect three connectors as shown.
3. Remove two screws on power supply cover.

4. Pull the power supply unit to loosen the cable tie and disconnect one connector as shown.



5. Remove/Replace the power supply unit.

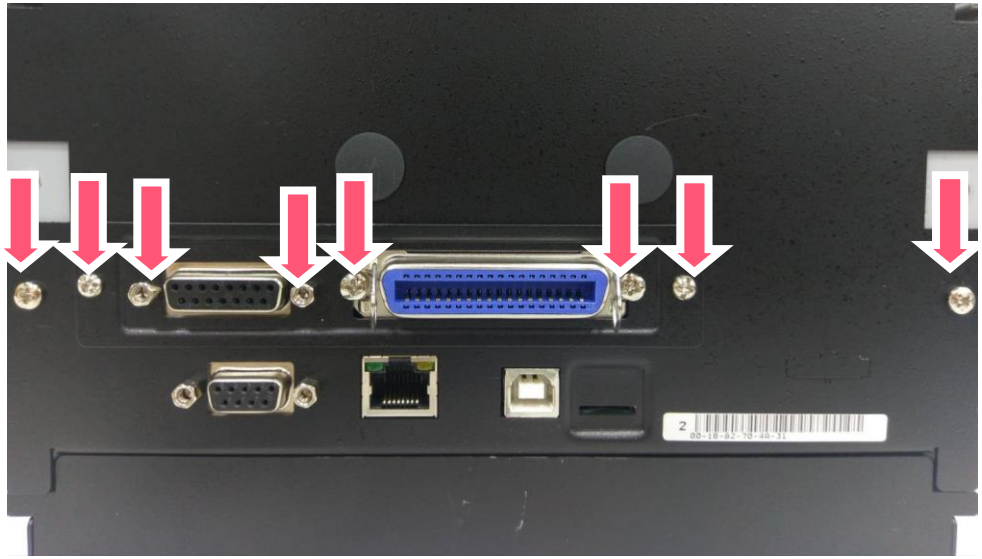


6. Reassemble the parts in the reverse procedures.

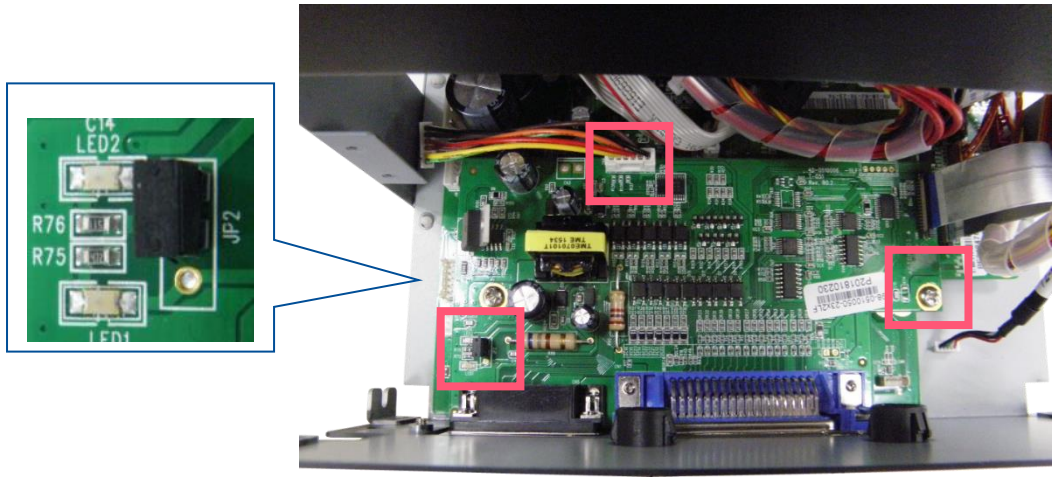
3.5 Replacing GPIO & parallel Board and GPIO DB25 Board

For GPIO&parallel Board:

1. Refer to section 3.3 to remove the electronics cover.
2. Remove6 screws on main board cover.

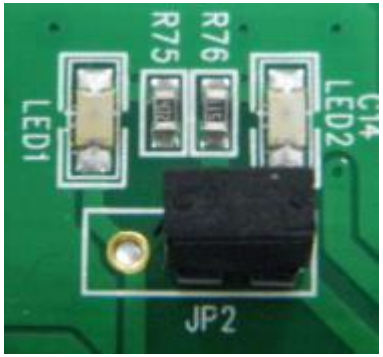
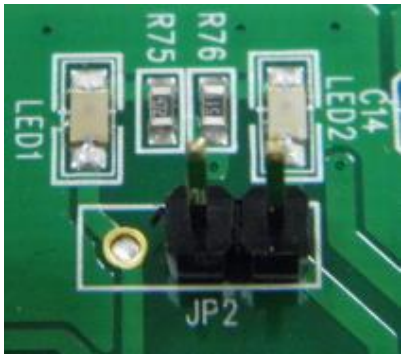


3. Disconnect the connectors and screws as below to take out the GPIO board



Note:

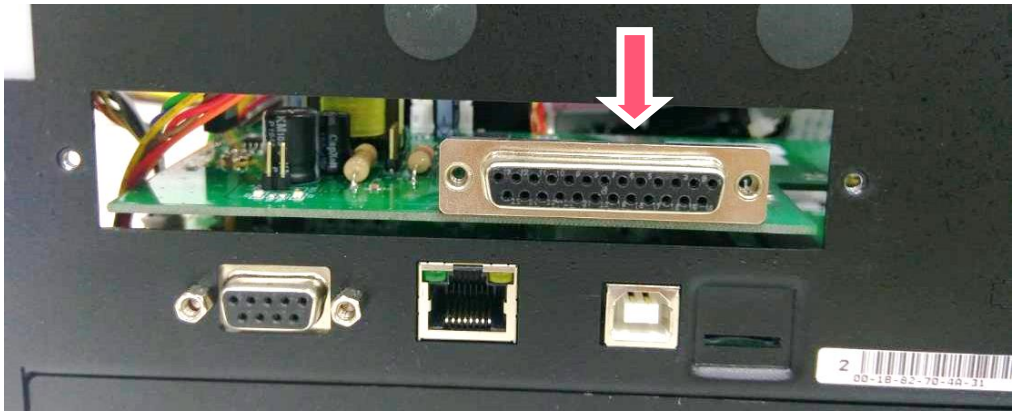
This GPIO interface (Applicator interface with DB15F connector +5V I/O) supports internal 5V power supply (default). For external power supply, please remove the jumper on main board JP2.

Internal power supply (5V I/O)	External power supply (5~24V I/O)
	

4. Reassemble the parts in the reverse procedures.

For Installing GPIO DB25 Board.

1. Put the DB25 Board in to the slot



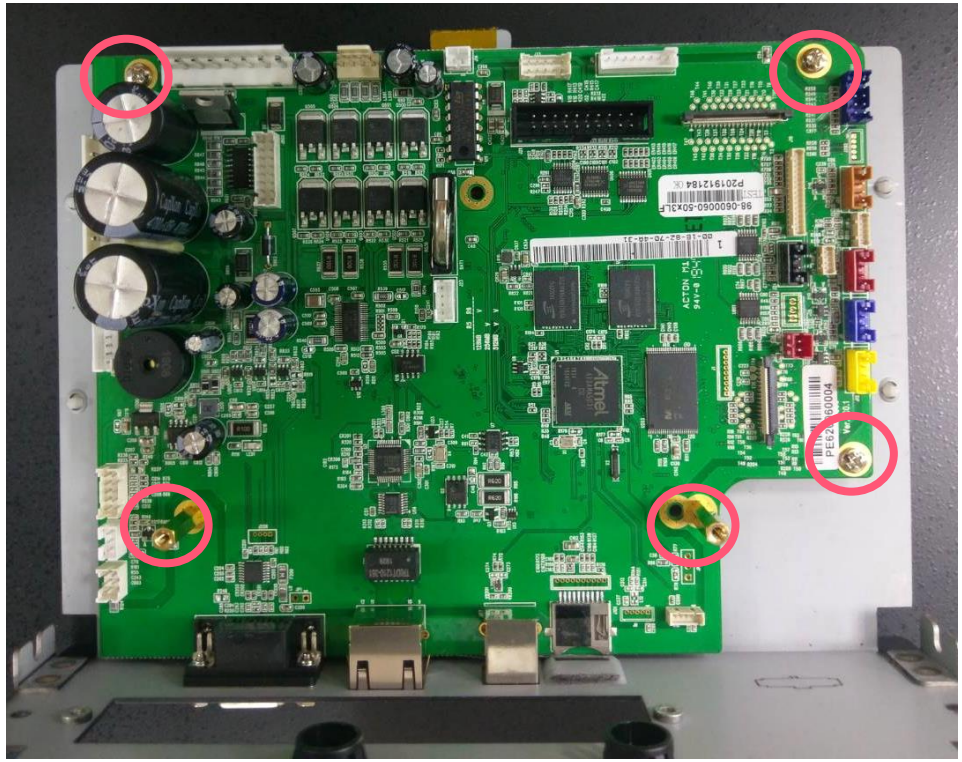
2. Lock the below screws.

3. Put the lid and lock the below screws.

4. Refer Section 3.5 to remove the board and reassemble the parts in the reverse procedures

3.9 Replacing the Main Board

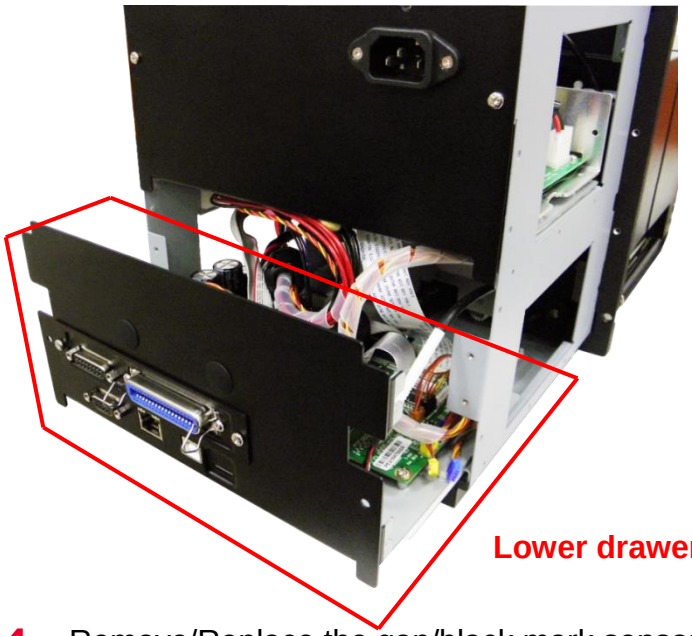
1. Refer to section 3.3 & 3.5 to remove the electronics cover and multi-interface board first.
2. Disconnect all connectors from the mainboard.
3. Remove 2 copper pillars, 3 screws on the main board.
4. Remove two screws to loosen the serial port.



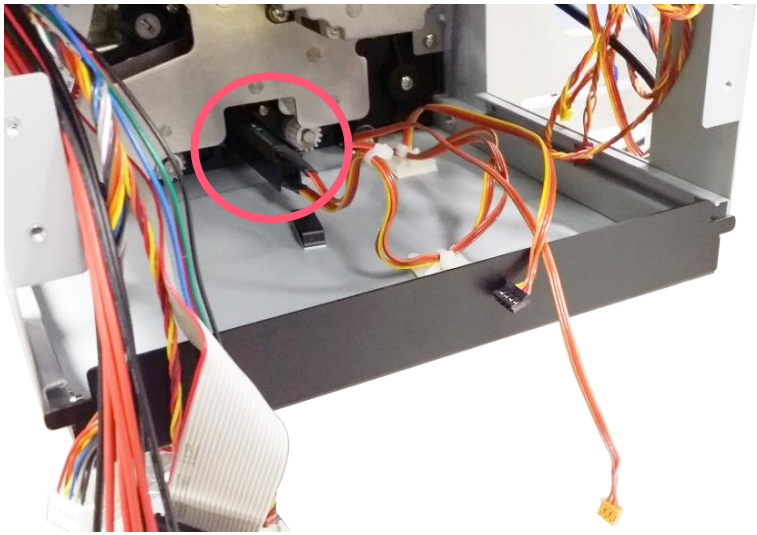
5. Remove/Replace the main board.
6. Reassemble the parts in the reverse procedures.

3.7 Replacing Gap/Black Mark Sensor Module

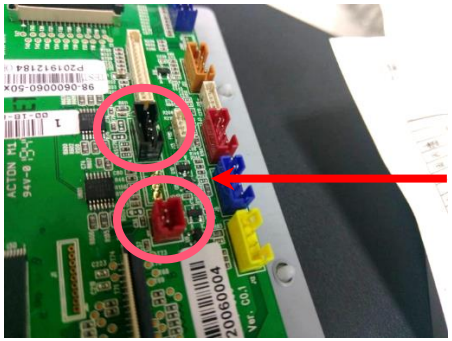
1. Refer to section 3.6 to remove all connectors on the multi-interface board and main board.
2. Pull the lower drawer (interface unit) and remove it.
3. Pull the media sensor module and loosen the cable ties.



Lower drawer (interface unit)



4. Remove/Replace the gap/black mark sensor.



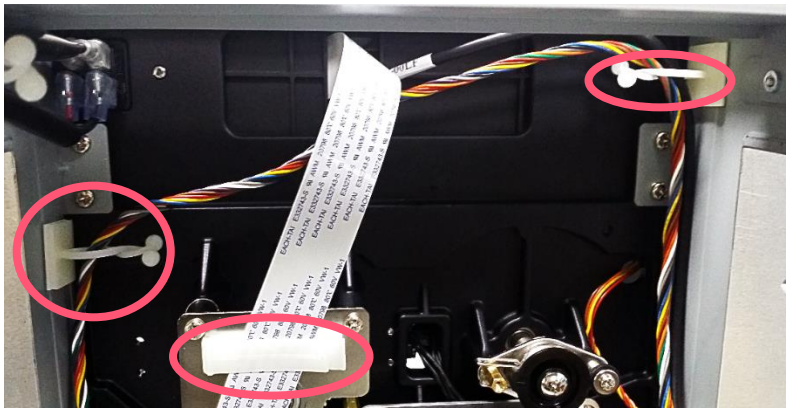
Gap/black mark sensor connectors

5. Reassemble the parts in the reverse procedures.

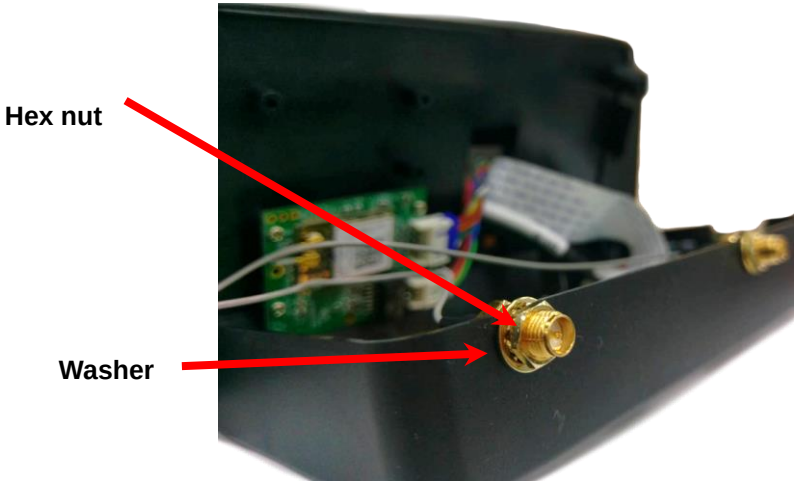
3.8 Replacing the Panel Control Board & LCD Panel

1. Refer to section 3.3, 3.4 and 3.5 to remove the electronics cover, power supply unit and interface unit.
2. Remove the marked fix LCD panel module two screws.

3. Loosen cable ties to remove the LCD panel assembly and remover four screws and antenna



4. Remover the hex nut and washer as shown to open the LCD cover.



5. Remove two screws, three cables and open the USB host cover to replace the panel control board & LCD panel.

Note:
Please unlock the plug from connect for the flat cable, and carefully pull the flat cable free.

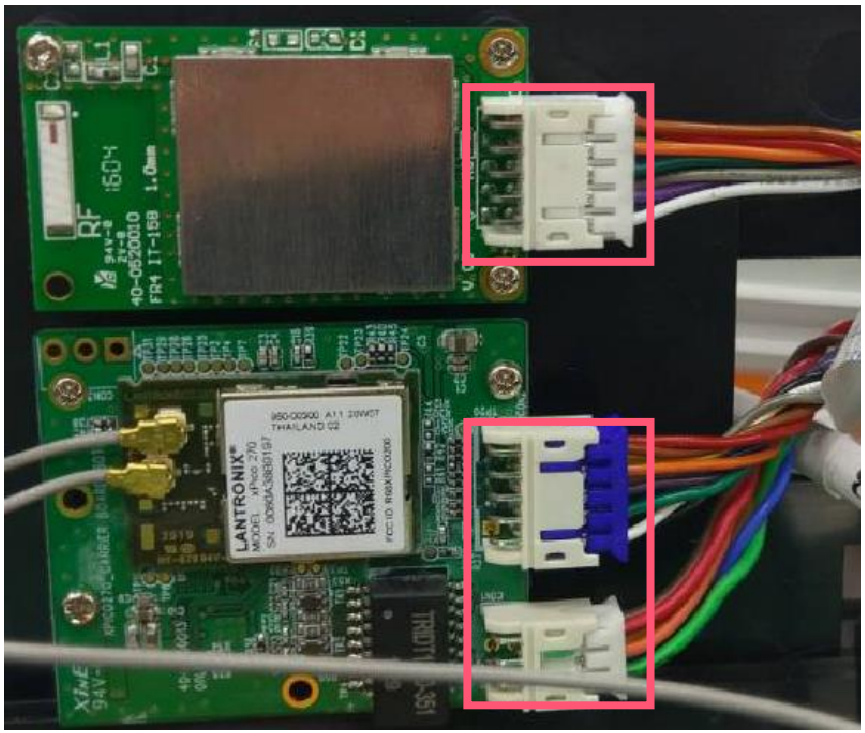
6. Reassemble the parts in the reverse procedures.

3.9 Replacing the Bluetooth Module & Wi-Fi Module and MFi

1. Refer to section 3.1 to remove the electronics cover.
2. Follow the previous section 3.8 to open the LCD cover.

MFi Bluetooth module

WiFi+Bluetooth module

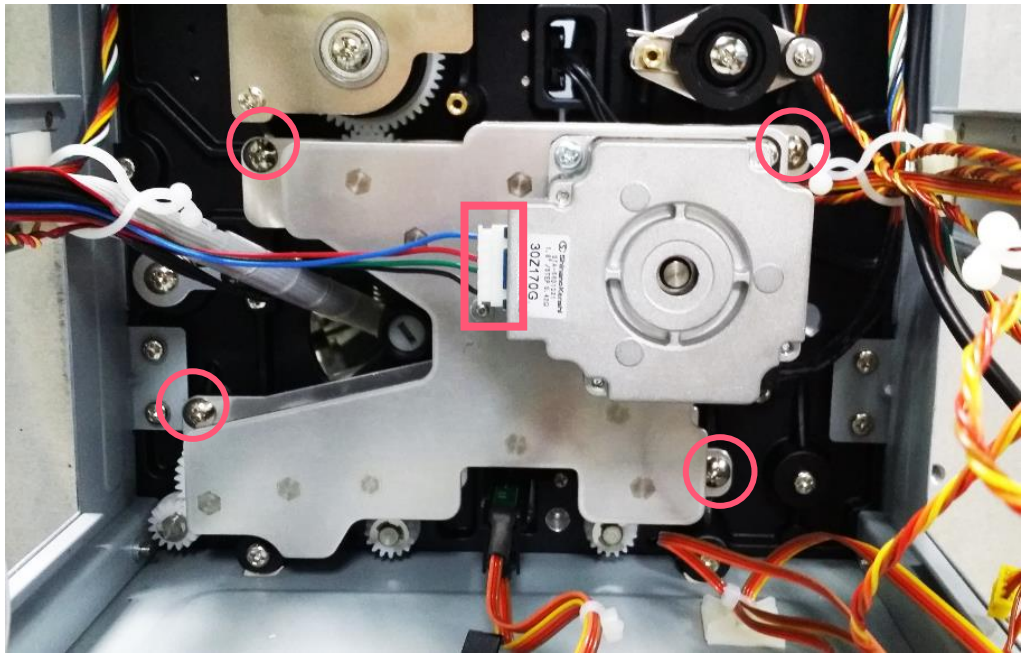


- For MFi Bluetooth module, disconnect 1 cable connector, 3 screws and to replace it.
- For WiFi+Bluetooth module, disconnect 2 cable connector and 3 screws to replace it.

3. Reassemble the parts in reverse procedures.

3.10 Replacing the Stepping Motor Assembly

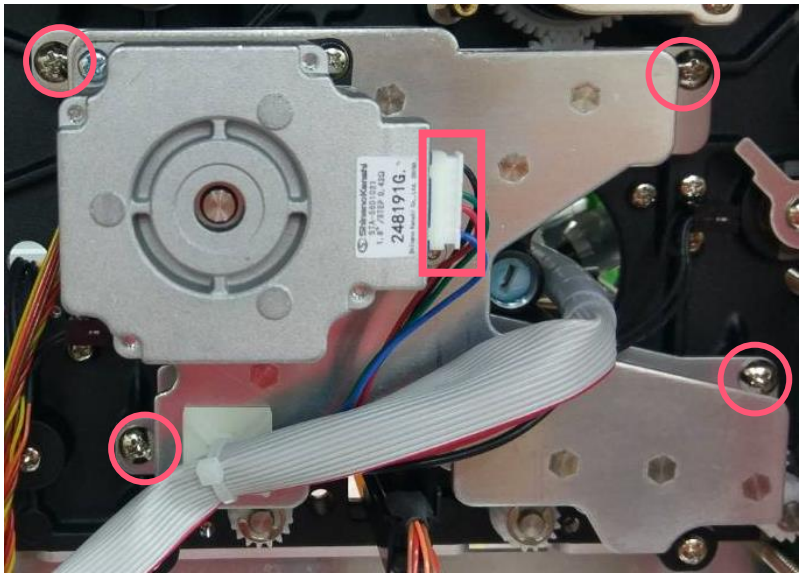
1. Follow the previous step (refer to section 3.3, 3.4 and 3.5) to remove the electronics cover, power supply unit and interface unit.
2. Remove four screws and one connector on the stepping motor assembly.



3. Remove/Replace the stepping motor assembly (including belt, gears, stepping motor)
4. Reassemble the parts in the reverse procedures.

3.11 Replacing the Stepping Motor Assembly

1. Remove 4 screws and 1 connector on the stepping motor assembly.
2. Remove/Replace the stepping motor assembly (including belt, gears, stepping motor)



3. Reassemble the parts in the reverse procedures.

3.12 Replacing the Peel-off Roller Module

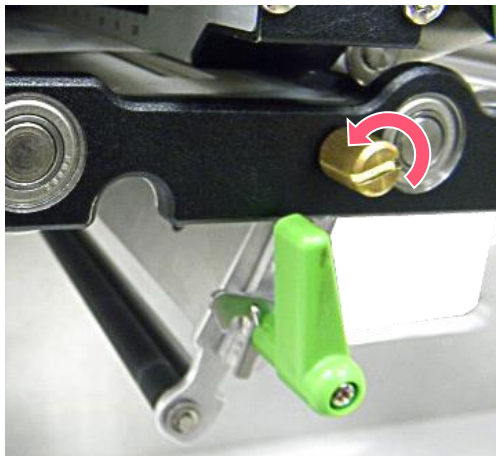
1. Open the peel-off roller release lever.

Left-handed configuration

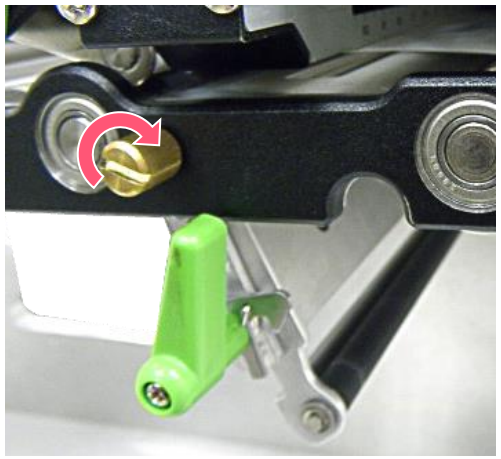
Right -handed configuration

2. Turn the thumb screw on the peel-off roller module to remove/replace the peel-off roller module.

Left-handed configuration



Right -handed configuration



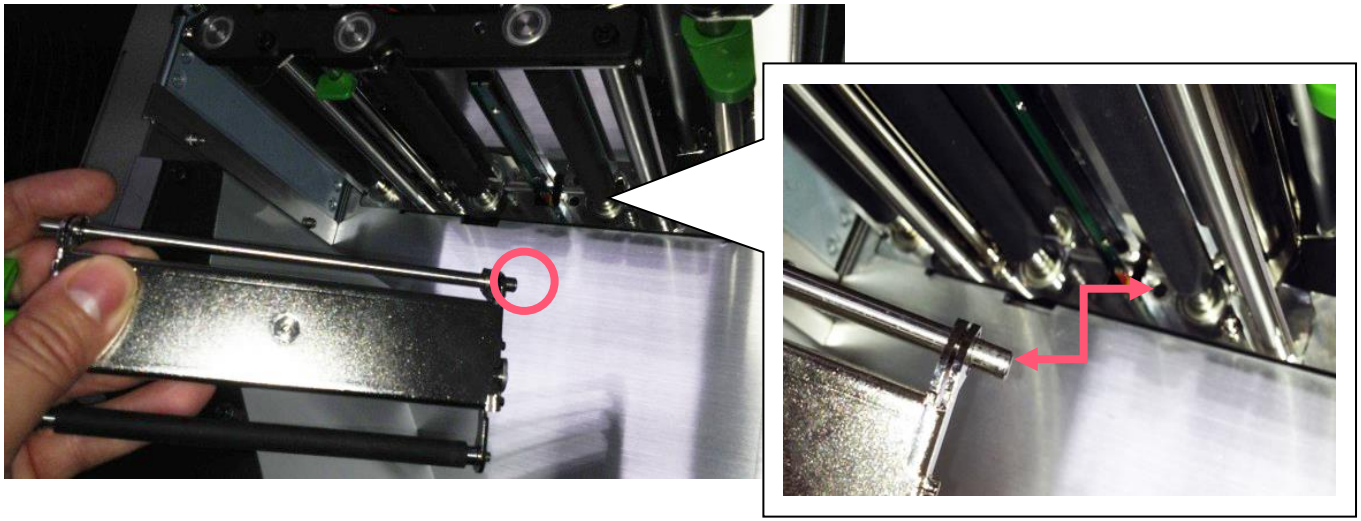
3. There is a locating hole between media sensor and rear paper-feed roller (most right one).

Left-handed configuration

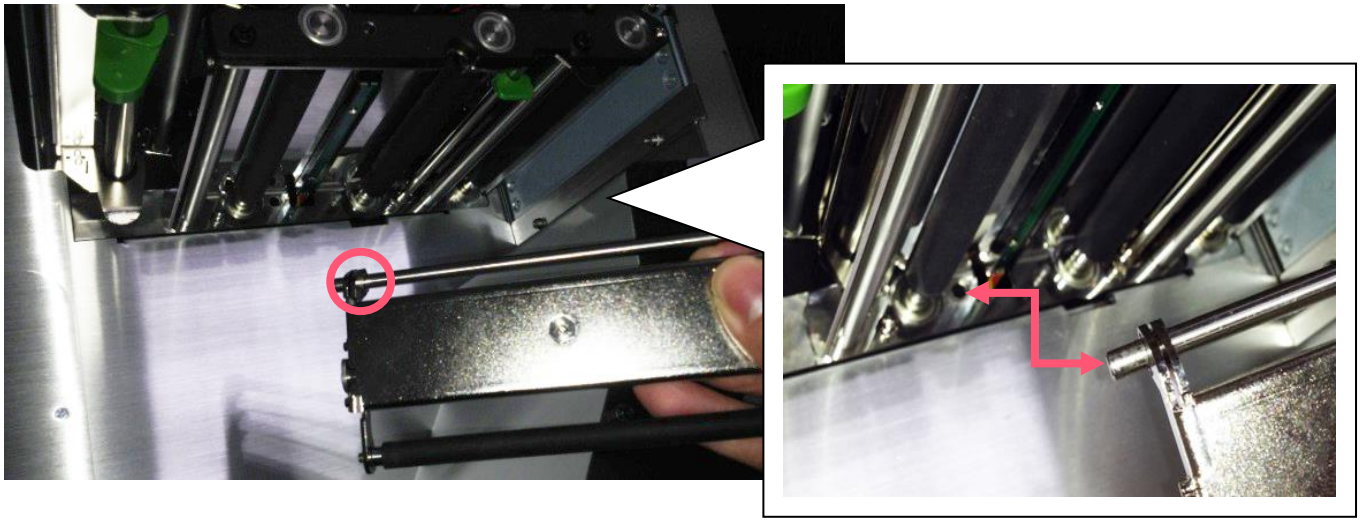
Right -handed configuration

4. Put the shaft of the peel-off roller module into the locating hole.

Left-handed configuration:

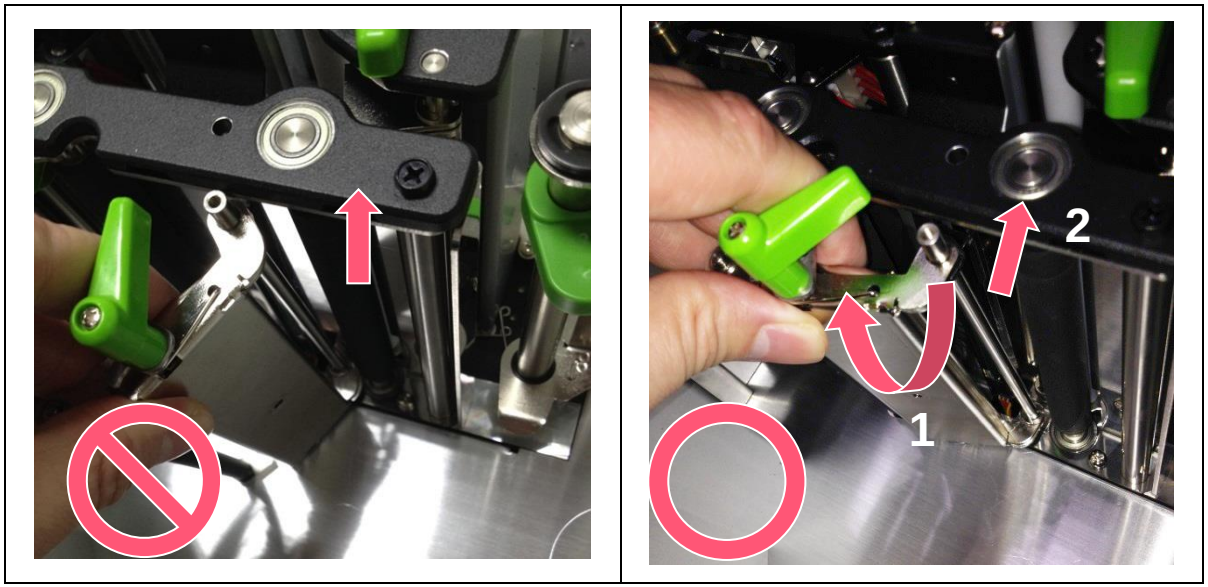


Right -handed configuration:

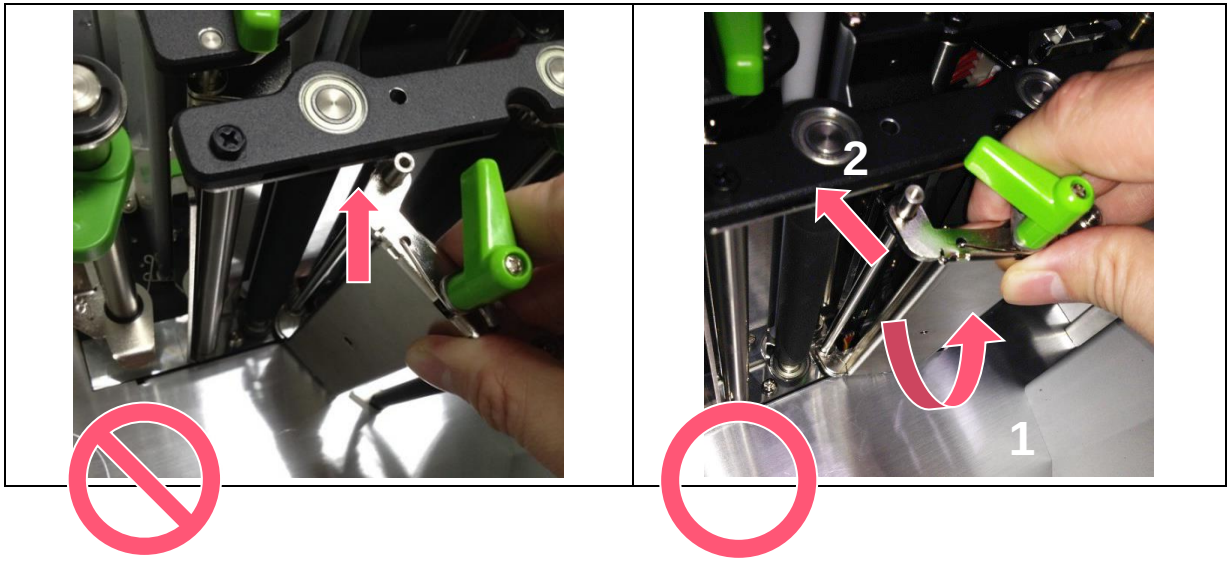


5. After putting shat into locating hole, at certain angle, the module would not be able to put inside. Please turn the module in the clockwise direct to put the module inside.

Left-handed configuration:

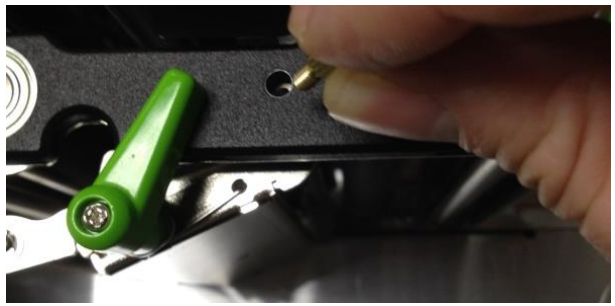


Right -handed configuration:

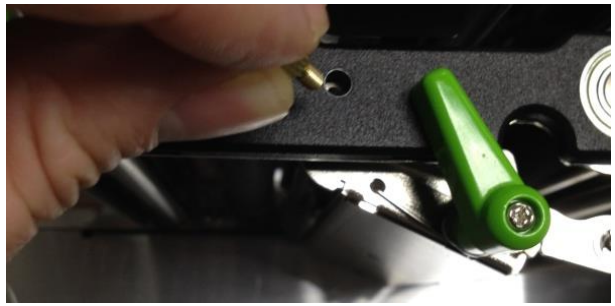


6. Put back the golden color screw, and turn it in the clockwise direction to fix the screw.

Left-handed configuration:



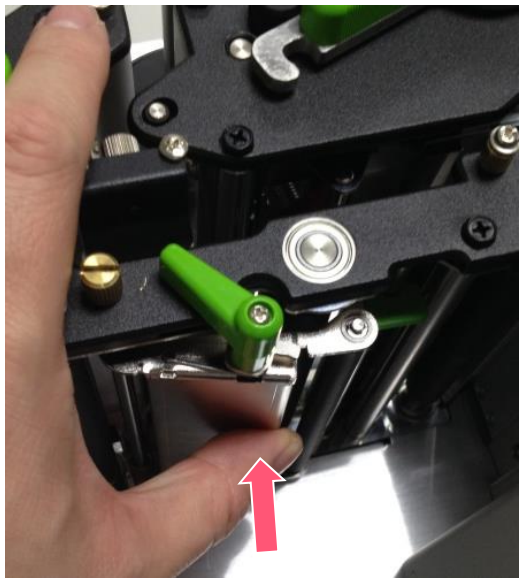
Right -handed configuration:



7. Pushing the peel-off roller module upward.

Left-handed configuration

Right -handed configuration



8. After hearing the click sound, the module is fixed to its position without dangling. Finished the installation of peel-off roller module.

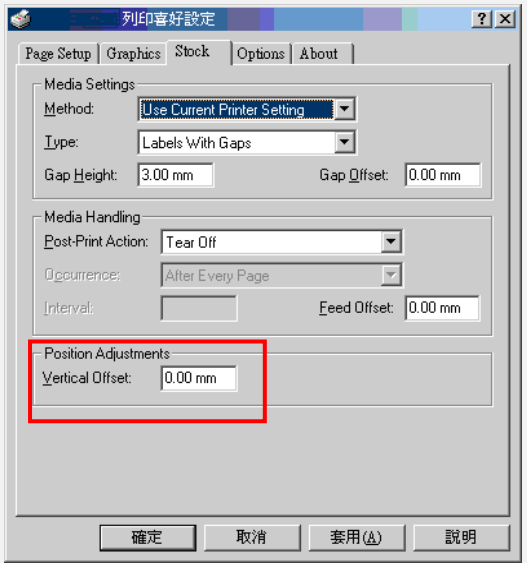
Left-handed configuration

Right -handed configuration

4. TroubleShooting

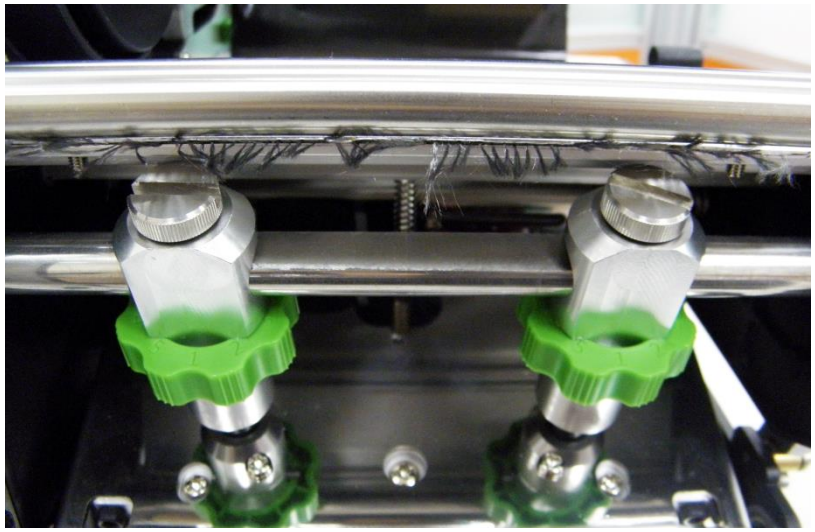
Problem	Possible Cause	Recovery Procedure
Power indicator does not illuminate	* The power cord is not properly connected.	* Plug the power cord in print engine and outlet. * Switch the power on.
Carriage Open	* The print head carriages are open.	* Please close the print carriages.
Not Printing	* Check if interface cable is well connected to the interface connector. * Check if wireless or Bluetooth device is well connected between host and print engine. * The port specified in the Windows driver is not correct.	* Re-connect cable to interface or change a new cable. * Please reset the wireless device setting. * Select the correct print port in the driver. * Clean the printhead. * Printhead's harness connector is not well connected with printhead. Turn off the power 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 print on the label	* Label or ribbon is loaded not correctly. * Use wrong type paper or ribbon	* Follow the instructions in loading the media and ribbon. * Ribbon and media are not compatible. * Verify the ribbon-inked side. * The print density setting is incorrect.
No Ribbon	* Running out of ribbon. * The ribbon is installed incorrectly.	* Supply a new ribbon roll. * Please refer to the steps in user's manual to reinstall the ribbon.
No Paper	* Running out of label. * The label is installed incorrectly. * Gap/black mark sensor is not calibrated.	* Supply a new label roll. * Please refer to the steps in user's manual to 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 print engine mechanism.	* Calibrate the media sensor. * Set media size correctly. * Remove the stuck label inside the print engine 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 non-approved SD card manufacturer.	* Use the supported capacity SD card. * Insert the SD card again.

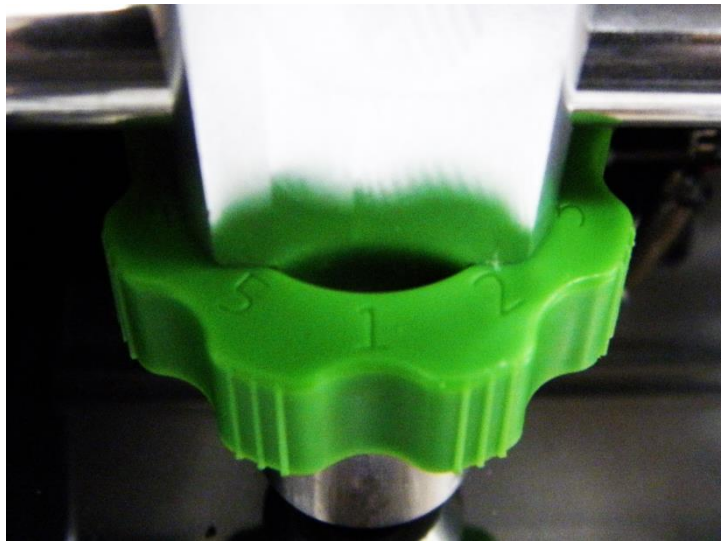
Poor Print Quality	* Ribbon and media is loaded incorrectly * Dust or adhesive accumulation on the print head. * Print density is not set properly. * Printhead element is damaged. * Ribbon and media are incompatible. * The printhead pressure is not set properly.	* Reload the supply. * Clean the print head. * Clean the platen roller. * Adjust the print density and print speed. * Run self-test and check the print head test pattern if there is dot missing in the pattern. * Change proper ribbon or proper label media. * Adjust the printhead pressure adjustment knob. * The release lever does not latch the printhead 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 print engine is in Hex Dump mode. * The RS-232 setting is incorrect.	* Turn off and on the print engine to skip the dump mode. * Re-set the Rs-232 setting.
Label feeding is not stable (skew) when printing	* The media guide does 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.
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.
Wrinkle Problem	* Printhead pressure is incorrect. * Ribbon installation is incorrect. * Media installation is incorrect. * Print density is incorrect. * Media feeding is incorrect.	* Please refer to the next chapter. * Please set the suitable density to have good print quality. * Make sure the label guide touch the edge of the media guide.
RTC time is incorrect when reboot the print engine	* 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 LCD menu is incorrect.	* Set the correct label size. * Press [MENU] → [SELECT] x 3 → [DOWN] x 5 → [SELECT] to fine tune the parameter of Shift X.

The printing position of small label is incorrect	* Media sensor sensitivity is not set properly. * Label size is incorrect. * The parameter Shift Y in the LCD menu 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 DiagTool) to fine tune the parameter of Shift Y. * If using the software BarTender, please set the vertical offset in the driver. 

4.1 Knob Adjustment

Print Head Pressure Adjustment Knob has 5 levels' adjustment. Different number means different pressure to the print head . Due to media is aligned to the inbound of the printer mechanism, different media width requires the different pressure. Users can try which level can meet their expectation.

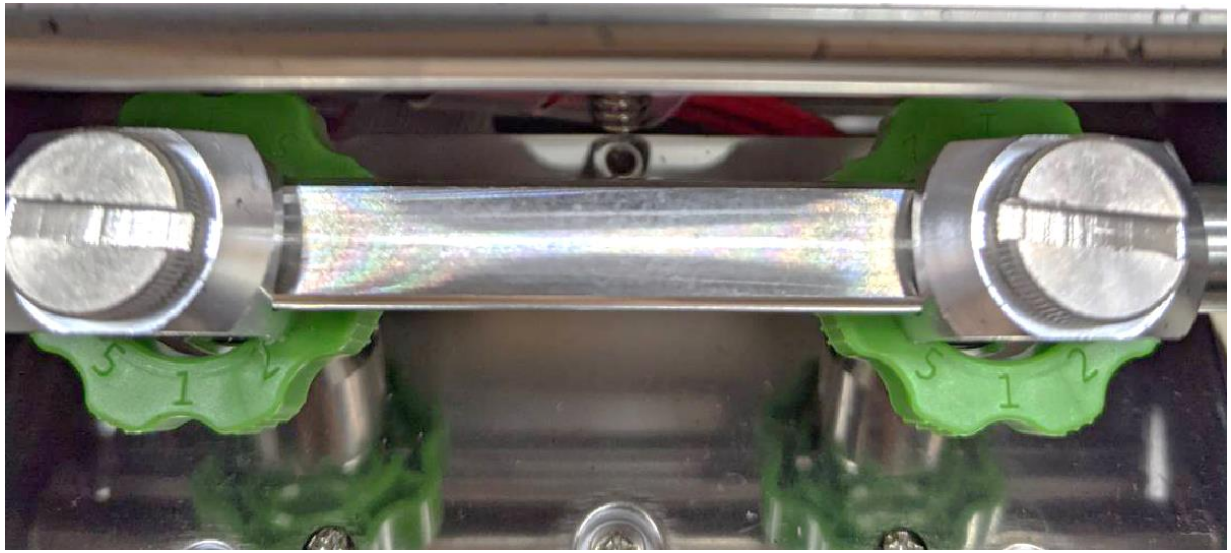




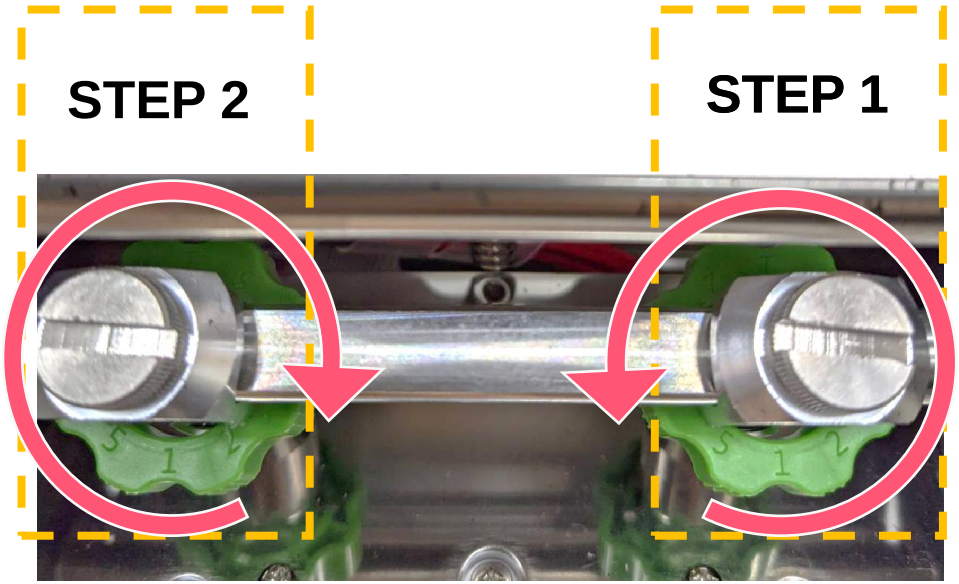
- **Pressure level: 5>4>3>2>1 (5 is the highest)**
- If the label width is 4", adjust both print head pressure to the same level.
- If the label is less than 2" wide, increase the pressure of left adjustment knob and decrease the right side pressure.

4.2 Mechanism Fine Adjustment to Avoid Ribbon Wrinkles

Ribbon wrinkle is related to the media width, thickness, print head pressure balance, ribbon film characteristics, print darkness setting…etc. In case the ribbon wrinkle happens, please follow the instructions below to adjust the printer parts.



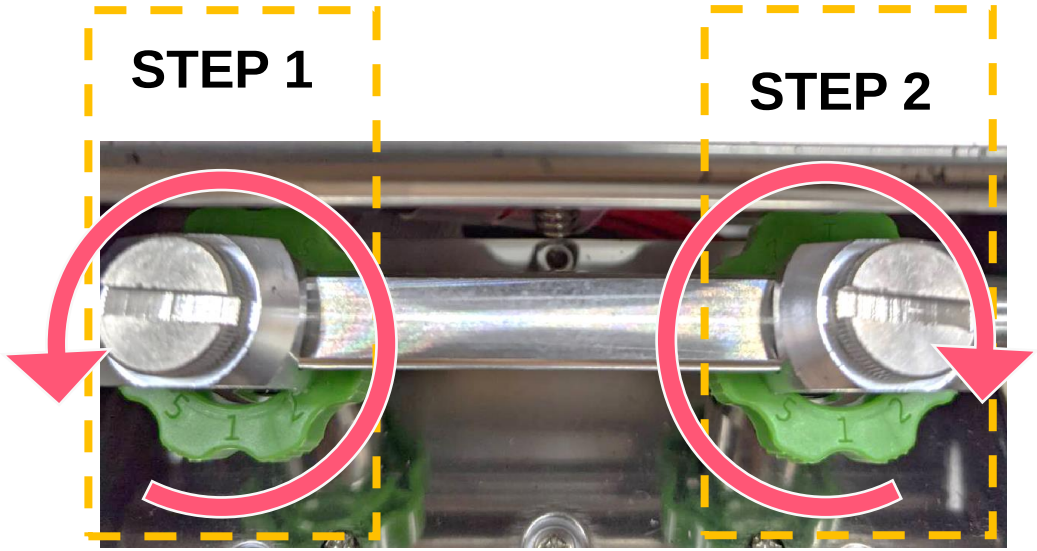
Wrinkle happens from label lower left to upper right direction



Pressure level: 5>4>3>2>1 (5 is the highest)

- **Step 1** Decrease the right side's pressure per level to check whether wrinkles is gone. adjustment knob.
- **Step 2** If right side pressure knob has been turned to level 1, but the wrinkle still exists, increase the left side pressure knob per level to check whether the wriknle has been disappeared or not..

Wrinkle happens from label lower right to upper left direction



Pressure level: 5>4>3>2>1 (5 is the highest)

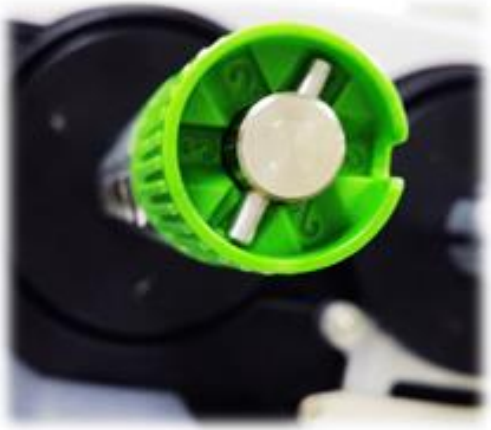
- **Step 1** Decrease the left side's pressure per level to check whether wrinkles is gone. adjustment knob.
- **Step 2** If right side pressure knob has been turned to level 1, but the wrinkle still exists, increase the left side pressure knob per level to check whether the wriknle has been disappeared or not..

4.3 Suggestion of Ribbon Tension Adjustment

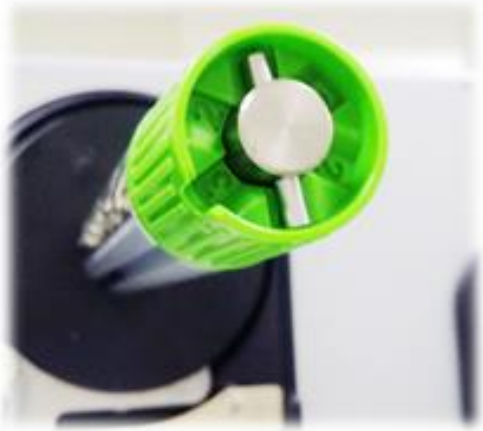
For 4” width ribbon

If the ribbon width is 4”, adjust both ribbon tension adjustment knobs to the #1 on ribbon supply & rewind spindles. (Factory default ribbon tension is #1)

Ribbon Rewind Spindle Tension # 1



Ribbon Supply Spindle Tension # 1



For 3” width ribbon

If the ribbon width is 3”, adjust both ribbon tension adjustment knobs to the #2 on ribbon supply & rewind spindles.

Ribbon Rewind Spindle Tension # 2

Ribbon Supply Spindle Tension # 2

For 2” width ribbon

If the ribbon width is 2”, adjust both ribbon tension adjustment knobs to the #3 on ribbon supply & rewind spindles.

Ribbon Rewind Spindle Tension # 3

Ribbon Supply Spindle Tension # 3

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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